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The Dardara Water
System in
South Lebanon

Collaborative
Planning
Situational Analysis

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FORWARD



Collaborative Approaches for Resolving Water Issues

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Table of Contents

1. Introduction	1
Purpose of the Situational Analysis	2
Selection of the Dardara Case	2
2. Water Resources in Dardara	5
Water Resources and Management	6
Other Considerations	9
Technical Analyses	9
Estimated Water Requirements and Options	12
3. Stakeholder Concerns and Interests	15
Al Khiam Town	15
Al Qlaia Village	21
Borj Al Mulouk Village	24
Other Stakeholders	28
4. Conclusions and Recommendations	35
People Interviewed	37
 Tables	
1. Issues and Opportunities in the Dardara System	4
2. Pumping Tests Summary	11
3. Settlements in the Dardara Water System	16
4. Al Khiam Stakeholders	17
5. Al Qlaia Stakeholders	22
6. Borj Al Mulouk	27
7. Interests and Concerns of Major Stakeholders	33
 Figures	
1. Siting Dardara on the Marjeyoun Plain	5
2. Dardara Command and Surrounding Villages	7
3. Dardara Pond	8

Chapter 1 Introduction

The liberation of southern Lebanon in May 2000 has led to the emergence of new political forces and the establishment of new local entities, with as yet only a partial return of people to their homes. The Government of Lebanon has called for the rehabilitation of the area by allocating budget and inviting donor investment, but progress has been slow.

Following the Israeli withdrawal, the U.S. Agency for International Development (USAID) quickly provided support to the South through its Rural Community Development Cluster (RCDC) Program. RCDC is implemented nation-wide in 430 villages grouped into 42 clusters by five NGOs: Cooperative Housing Foundation, Creative Associates International, Inc., Mercy Corps International, Pontifical Mission, and Young Men's Christian Association.

The clusters are groups of villages that are economically deprived, yet have a good potential for growth and development. Local communities, through appointed local committees, select and implement projects designed to increase income, restore basic infrastructure and services, and protect the environment. The program has helped local communities to rehabilitate and maintain roads, schools and clinics; installed potable water networks and irrigation systems; treated solid waste and wastewater with appropriate technologies; and stimulated agricultural production and marketing.

Guidelines for program implementation include the following:

- Each village, through its local committee, generates a list of development needs and priorities.
- Local committees working with USAID-funded NGOs are the basic decision-making units of the RCDC program.
- Municipal councils, as local government representatives, participate but do not control the selection and implementation of RCDC projects.
- Communities contribute at least 25 percent of project costs in labor, material or cash.

Before submitting a proposal, a needs assessment and a village profile are elaborated, where for every project, the quality and purpose of implementation are identified, as well as its cost, and its duration.

The area under study encompasses several localities that are working areas of both the Mercy Corps and Pontifical Mission. Only two villages and a town are of direct concern to the present study. The villages of Al Qlaia and Borj Al Mulouk and Al Khiam town are brought together by their water sources: the Dardara system in South Lebanon.

Purpose of the Situational Analysis

This situational analysis explores the history of the Dardara system, identifies the major stakeholders and their interests and concerns, and determines the willingness to conclude the perceived dispute or not. It concludes with recommendations for next steps. It also serves as an initial attempt to develop a model for others, particularly the NGOs in the village services program, to conduct rapid and low cost assessments of issues which emerge in the course of implementation.

It seeks to answer these basic questions:

- Is there available water in the Dardara system to justify investment by the NGOs?
- What kinds of investments should those be?
- Are the stakeholders prepared to seriously enter into negotiations to resolve outstanding issues?
- What kinds of interventions supported by USAID could be made to address these issues?

The analysis has been carried out by USAID's Fostering the Resolution of Water Resources Disputes Project (FORWARD), which offers expertise in collaborative planning and problem-solving to resolve water issues in the Middle East. More specifically, FORWARD assists national and local governments, private sector representatives, donors and water users in designing and carrying out an open decision-making process for forming policy in sensitive areas; addressing specific disputes between stakeholders that provoke obstacles for implementing sustainable development principles; and strengthening the capacity of collaborative problem-solving and consensus building through training.

Selection of the Dardara Case

In selecting a site, the team sought a location which was institutionally complex and interesting for collaborative interventions. As such, more than one village would need to be involved. Stakeholders would also need to reflect the regional diversity, either in confessional or political allegiances. Due to FORWARD's mandate, the issue would need to be water-related. Finally, the project would best be of either governorate or national importance in order to attract the attention and gain the participation of government officials.

The Dardara system was selected because it offered a number of interesting characteristics consistent with these requirements, including its:

- **Political prominence:** The project has the attention of many Government of Lebanon officials at the governorate and national levels and was mentioned by them as a continuing matter of concern.
- **Intervillage focus:** Three villages have rights to the pond's water for irrigation.

- Competing administrative entities: The system could be managed by water committee created by the government or village cooperatives established by the NGOs.
- Diverse stakeholders: The villagers are members of different confessional groups with different political leanings.
- Implementation by two USAID NGO contractors: Mercy Corps and Pontifical Mission have different responsibilities for system improvements.
- Multiple water use: The system supplies water for irrigation and could have a wastewater treatment facility on land donated by one of the villages.

Located within a few kilometers of the Israeli border, the Dardara system is an ambitious project which brings together two NGOs, Mercy Corps and Pontifical Mission, to develop an infrastructure for irrigation for the farmers of three villages, including the rehabilitation of the pond, the building of a conveyance system and a treatment plant for wastewater reuse, and the creation of a park. The project was mentioned by Ministry of Energy and Hydraulics officials as a source of concern. The Governor of South and his district commissioner have taken a personal interest in the site and become involved in how the system will be managed, either by a water committee or village cooperatives. The site promises to be an interesting test case for collaborative planning and problem-solving in South Lebanon.

Table 1 provides a list of the major issues related to the Dardara system and the main opportunities to support a negotiated effort.

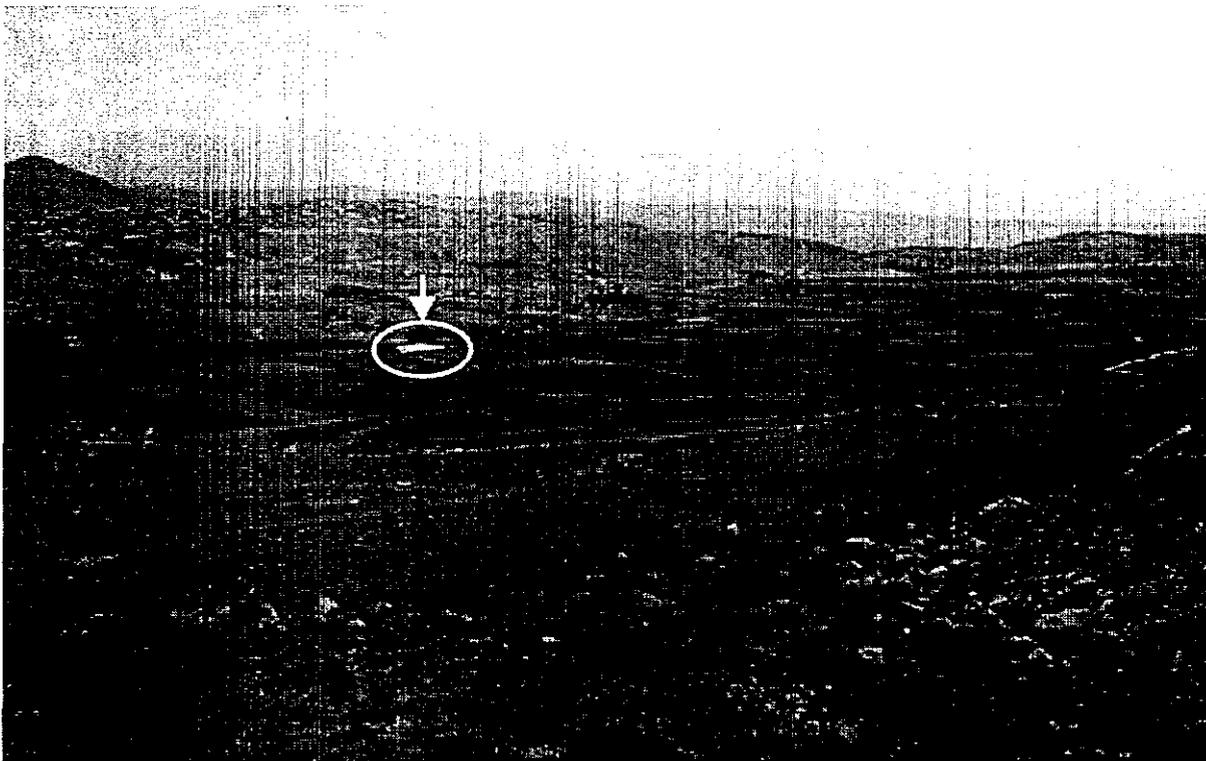
Table 1
Issues and Opportunities in the Dardara system

	Issues	Opportunities
Administrative	<ul style="list-style-type: none"> • Absence of the water committee and of a systematic management of the Dardara water • Absence of needed data related to Dardara system to facilitate decision making for the various stakeholders involved 	<ul style="list-style-type: none"> • Formation and building capacities of the Dardara Water Committee • Provision of necessary tools to the committee like training, data and information, and relevant links with local and central authorities
Water Supply	<ul style="list-style-type: none"> • Presence of wells and continuous drilling • Irrigation practices being used by the farmers in the Dardara Command Area • Proposed Mercy Corps ditch 	<ul style="list-style-type: none"> • Well drillers as (or could be) partners • The government decision to close down illegal wells • Introduction of alternative irrigation techniques • Creation of new water collection ponds • Drawing water projects of central government
Political and Confessional	<ul style="list-style-type: none"> • The quarry problem between the municipalities of Al Khiam and Borj Al Mulouk and the president of municipality of Al Qlaia • The feeling of unbalanced political power distribution among the three localities 	<ul style="list-style-type: none"> • Positive willingness of stakeholders involved as each of them recognize the water rights of others and all are cautious not to show the case as of political or confessional dimensions • Consultative formation of the Dardara Water Committee • Provision of necessary support and authority to the committee
Socioeconomic	<ul style="list-style-type: none"> • General lack of job opportunities • Loss of job opportunities because of Israeli withdrawal • Lack of alternative sources of income after the Israeli withdrawal • Competition with agricultural products from outside the area • Government delays in introducing developmental projects after the liberation 	<ul style="list-style-type: none"> • Mobilizing support to agriculture as a main source of income and benefiting from various agricultural opportunities in the area • Introduction of alternative agricultural practices and products • Establishment of closer marketing links with other USAID supported clusters • Use of systematic participatory approaches while assessing of local needs like the Participatory Rural Appraisal Techniques • Establishment of the Local Development Committees within the three localities

Chapter 2 Water Resources in Dardara

The Dardara system is a spring-fed pond situated in the Marjeyoun plain, located about 100 kilometers south of Beirut in the Marjeyoun Caza/District of the South Lebanon Governorate. The area near the pond is a flat plain surrounded by high grounds. On the eastern side, the plain rises smoothly until it reaches Al Khiam village. On the western side, the slope is steeper and traversed by few valleys and deep stream channels reaching Marjeyoun, Al Qlaia, and Borj Al Mulouk villages. The plain slopes smoothly from the north (Ebl Al Saqi) to the south (international border) at an altitude ranging from 500 to 600 meters above sea level. The area receives on annual average 900 millimeters of rainfall, a high precipitation rate that permits the tree cultivation year round. However, vegetables grown in the dry period and in greenhouse require supplementary irrigation.

Figure 1
Siting Dardara on the Marjeyoun Plain



Water Resources and Management

Water Resources

The Dardara System (Dardara Command Area) is part of the Marj Basin. There are a few springs upstream and downstream of the Dardara Spring which originate from the same aquifer system. The groundwater aquifer is shallow and is formed by two layers of 15 and 85 meters, respectively. It is believed that discharges from the lower layer feeds into Dardara Spring. The Marj system has been studied, but there is not enough long-term monitoring data to understand the system fully.

As one would expect, water discharges from the springs are lower in the summer (July-September) where most of the supplementary irrigation is needed. Previous studies indicate that summer discharges are about one-quarter the annual rate. Dardara is the most significant spring in the region and has an average annual discharge of about two million cubic meters. However, recent groundwater pumping after the Israeli withdrawal may have affected the spring flow. There are no pumping data available to accurately estimate the current flows.

In the Dardara Command Area, several groundwater wells have been constructed in the last couple of years. These wells are used for irrigation purposes in the area particularly for lands that do not have access to spring or surface waters. The vast majority of these wells are not licensed nor monitored by the government. The wells draw from the same layer of Dardara Spring. This will absolutely affect the dynamic balance available to the spring discharge. The wells located in Ebl Al Saqi and Marj Al Khaoukh and controlled by the government are connected to the same aquifer system and affecting the springs in Al Marj. In addition, water is pumped directly from the Dardara pond for irrigation, consequently decreasing the water surface level such that water no longer flows in the supplying channels.

Historic Perspective

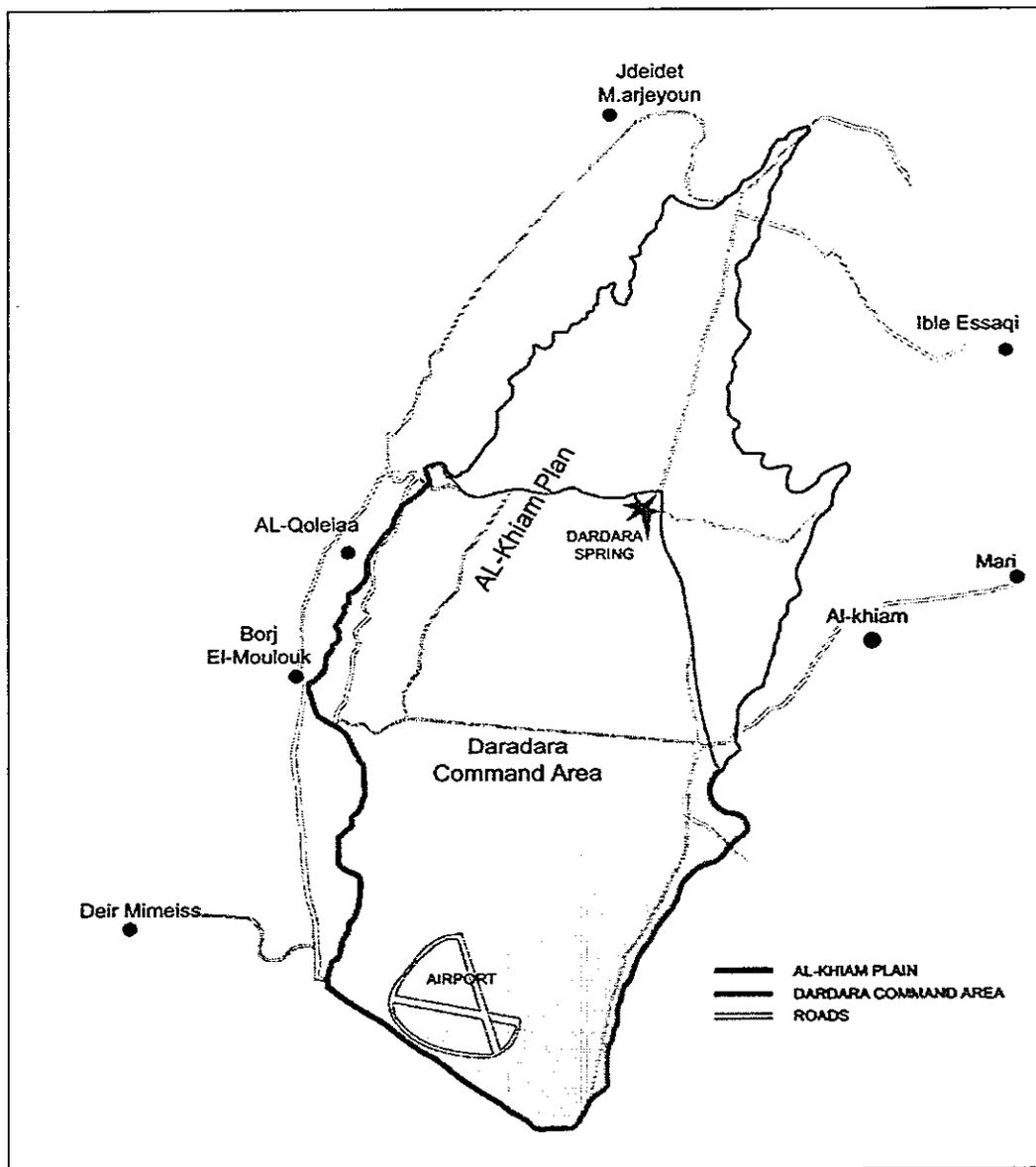
Dardara Spring supplies water to an existing canal network used to irrigate the plain. Prior to 1977, orchards, especially of olive trees, surrounded the spring. After Al Khiam's evacuation by the Southern Lebanese Army (SLA), the trees in the orchards were cut with the exception of an orchard close to the spring that was owned by the Church.

The Dardara spring used to be a major source of water for irrigating Al Khiam's lands. In 1954, the government (represented by the Governor of the South) created a committee to manage water in the Dardara command area. This Dardara Water Committee was appointed and presided over by the district commissioner (qaemmaqam) and was the only entity responsible for water distribution.

This committee ceased operations due to security conditions during the war. Because of this situation, water allocation became randomly based on the relationship with either the Palestinian Resistance or one of the Al Khiam keepers, Ali Ismail, who kept on running water shares for two years after the 1975 war. To improve water distribution, the

government constructed two canals to draw water over long distances away from the spring: the western canal and the southern canal. The southern canal irrigates all the lands of Al Khiam and some of Al Qlaia lands and supposedly lands of Borj Al Mulouk; while the western canal irrigate some of the Al Qlaia lands. The water flow in each of the two canals is still one of the conflicting issues in the Dardara spring especially, between the farmers of Al Khiam and the farmers of Al Qlaia.

Figure 2
Dardara Command and Surrounding Villages

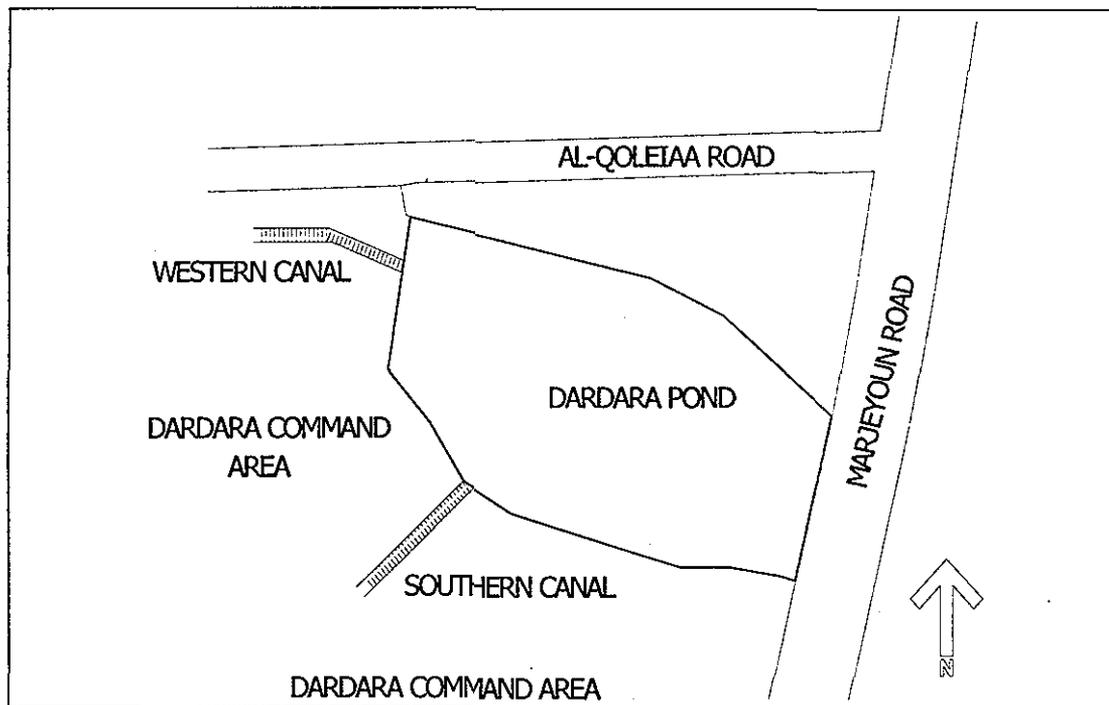


After the Israeli withdrawal, many families returned to the towns and villages neighboring the spring. Some invested in agriculture, since work provided by the SLA and in Israel no longer existed. At present, it is probably the most likely way for large numbers of people in Al Kham and Al Qlaia, and to a lesser extent in Borj Al Mulouk, to make a living.

Al Kham farmers say the southern canal is the only canal that existed before the war and the western canal is just a small canal for what is called "the bishop's field". During the war, the farmers from Al Qlaia took advantage of the absence of the Al Kham farmers to draw water from the southern canal and constructed a concrete outlet, while the farmers of Al Qlaia claims their rights to the western canal since before the war. Due to the effects of the drought of the last years, Mercy Corps rehabilitated the spring to improve its water level. The conflict of the western canal and the southern canal raised some tensions among the farmers until both sides destroyed the pond outlets to both canals aiming at proving their water rights. Mercy Corps recently completed the construction of the Dardara and Al Requika ponds and rehabilitated portions of the irrigation canal system. The latter includes three kilometers of primary and secondary canals. Pontifical Mission has completed designs for the construction of a six-kilometer canal system.

To alleviate the water-shortage problems, Mercy Corps proposed the excavation of an open trench canal in the middle of the plain. The trench canal, located below the water table level, would store water through seepage from the ground. This solution, according to Mercy Corps, provides large amounts of water and is economical and easy to implement.

Figure 3
Dardara Pond



Other Considerations

Besides its role as a water source for agriculture, the Dardara system plays an additional role in preserving the local ecosystem balance and its biodiversity. The pond is the primary resource for many species in the area, providing them with a suitable environment for their survival. It contains a diversity of plants and algae providing nutrients and oxygen to water. A variety of fishes, frogs, turtles, ducks, birds, and insects are encountered in and around the pond. The pond is also used by local visitors and tourists. Some recreational activities were seen in the area around the pond.

The environmental conditions of the project area suffer from the lack of solid waste and water and wastewater facilities. Solid litters with dark scum are found on the pond's surface. Villages on the surrounding hills use seepage pits for wastewater disposal, which ultimately pollute groundwater resources. Moreover, the usage of fertilizers and pesticides in agriculture can leave contaminant traces in this shallow water aquifer system.

Technical Analyses

FORWARD conducted a series of limited technical analyses of the water resources in Dardara through fact-finding interviews, pump tests, and canal withdrawals. The results are presented below.

Fact-Finding Interviews

The objective of the fact-finding effort was to collect data about the project area from diverse stakeholders. Those interviewed included local farmers, owners, well owners, and water authority staff. Most of the farmers used the same agricultural practices and had the same problems. The following observations were made:

- Mainly two agricultural cycles are adopted in the plain. Vegetables, cereals, and potatoes are grown in the summer and wheat in the winter. Olive and other irrigated trees are also present.
- Farmers complained about renters that are growing potatoes, since they consume larger amounts of water, which may have lead to the decrease of the water storage in the Dardara pond.
- Land renters are not responsible or liable towards involved authorities.
- Though soil was reported to be of good quality, the usage of fertilizers and pesticides in agriculture is common practice among all farmers.
- Existing irrigation systems included earth channels, sprinklers, and drip systems.
- Most farmers depend on water from the Dardara pond for irrigation. Those having lands above the pond level depend on private wells for water supply. Farmers, located in the

lower-middle part of the plain, extracted water from an earth channel constructed for that purpose.

- Farmers indicated a noticeable decrease in irrigated and cultivated lands compared to 30 years ago and even to the occupation period.
- Farmers do not trust government authorities. They hardly expect any support in equipment, agricultural products, or technical training. They also suffer from government's disability to purchase their harvest and from low market prices due to uncontrolled foreign competition.
- In addition to water scarcity for irrigation, farmers complained about the lack of a responsible authority. Farmers are willing to cooperate with any assigned authority. Many suggested the newly elected municipalities or an independent unit to manage the Dardara pond system.

Jabal Amal Water Authority supplies water for domestic use to the surrounding villages (Marjeyoun, Ebl Al Saqi, Al Khiam, Borj Al Mulouk). The authority is interested in the Dardara system, and the plain as a whole, and seems willing to manage the irrigation system of the plain. However, the acceptance of the locals to such suggestion remains questionable.

Pumping Tests

Eleven wells were identified in the project area, and three extra wells in Marj Al Khaoukh are tapping the same aquifer. Most wells were drilled in a short period of time following the liberation of South Lebanon. They were drilled without a permit or control on water discharge rates. The owners claim rights based on land ownership and because authorities do not meet their water needs. Note that an extensive survey of all wells in the area was not conducted; additional wells may exist.

Four wells underwent pumping tests. They were selected based on location, depth, pump size, and availability of observation wells. The pumping test conducted on well W1 resulted in an appreciable drawdown. The water pumped from the well was discharged several hundred meters away into man made channels so as not to recharge the aquifer. The pumping test was continued for 4.5 hours and recovery data after the shutdown of the pump were recorded for one hour.

A pumping test was conducted on well W5, located about 360 meters from the Dardara pond and having an observation well (W10) at a distance of ten meters. Plastic hoses were connected to the pump pipes, and water discharged from the well was disposed at a distance of 350 meters from the pumping well into the Dardara pond.

Water levels from the top of the well casing on both of the pumping and observation wells were measured using a water level meter. The pumping rate was measured by recording the time it takes to fill a 60-liter container. Prior to the start of the pumping test, the static water level was recorded in both the pumping and observation wells. After several hours of

pumping, no significant drawdown was observed and it was evident that the pumping rate was too low to result in a drawdown and the pumping test was terminated, as analysis cannot be performed if no appreciable drawdowns are observed.

No other well had an observation well in its proximity so the remaining pumping tests were performed on single wells. Similar to W5, wells W3 and W9 did not exhibit a significant drawdown after several hours of pumping with the pumped water being discharged at a distance from the well. These wells were also deemed unsuitable for a time-drawdown analysis and pumping tests were terminated on the wells.

**Table 2
Pumping Tests Summary**

Pumping well	Observation Well	Flow Rate (m³/hr)	Time of Test (hr)	Maximum Recorded Drawdown (cm)
W1	-	25.2	5.5	48
W3	-	19.0	1	13
W5	W10	6.1	3	3
W9	-	15	1	1

Contrary to expectations, the tests revealed that pumping in the command is not affecting the level of the water in the aquifer. There appears to be adequate groundwater in the system. However, it should be noted that these pumping tests were carried out in September at the time of no or little irrigation is witnessed.

Canal Withdrawal Test

Mercy Corps is exploring the idea of an open trench in the command so that its bottom level is below the existing water table. Groundwater would seep into the trench, providing more water for irrigation. The volume of water that the canal can supply is directly related to the rate of water seepage into the canal from the ground. For this purpose, the rate of groundwater seepage was determined by recording the time required to fill a trench with groundwater. A rectangular ditch was dug to a depth of 40 centimeters below the bottom of the existing canal with a length of 1.03 meters and a width of 80 centimeters. The ditch was emptied from water to a starting water depth of 0.5 cm. The time to reach several water heights in the ditch was then recorded to obtain the seepage or recharge. Seepage rates and velocity values were calculated to estimate the quantity of water that could be collected from the trench canal.

Estimated Water Requirements and Options

Water requirements for various crops and under different efficiency scenarios were estimated. In the Dardara Command, estimates for irrigation water requirements vary between 22 m³/ha/day to 56 m³/ha/day. These are considered on the very high end, and there is a major room for conservation. Moreover irrigation efficiency estimates range between 40% to 70%. If these numbers are considered, the spring water flows can irrigate about 550 hectares, provided the irrigation system has a high efficiency and the adopted crops have the lowest water demand (e.g. maize). In the worst case scenario, the 2.115 MCM of water can irrigate only 125 hectares given a highest water demand for the crops and a lowest efficiency of the irrigation system.

However, the limiting factor of the system is the available amount of water in July. Although the sources can irrigate larger areas in other months, water does not cover the total required four-month period to grow crops, and thus the land that could be irrigated is the minimum range during the entire cropping period. Improving the efficiency of the system by altering crop patterns or by improving the irrigation networks will, at most, increase the irrigated lands to maximum areas that could be irrigated in July.

There are several options that could be pursued to improve the situation. These are:

- Distribution of Spring Reserves
- Augmenting the spring water by groundwater supplies
- Canal Withdrawal Option
- Efficiency Improvements and Changing Cropping Patterns

Distribution of Spring Reserves

The concept behind this alternative is to distribute the water spring reserves such that larger amounts of water are available continuously during the entire cropping period. The month of July constitutes the limiting factor. Thus, during that month, it is proposed to pump water from a well into the system such that the total amount of water extracted is equal to the volume of water discharged in September. This option will not affect the water budget of the aquifer.

Canal Withdrawal Option

The canal withdrawal option consists of excavating an open trench-canal in the middle of the plain such that it intercepts the groundwater flow. Water will seep into the canal and form a reserve for irrigation. For effective interception of the flowing groundwater, the trench-canal direction should be perpendicular to that of the groundwater flow. Referring to the delineated flow pattern in the aquifer (the trench-canal should traverse Al Marj plain perpendicularly to the groundwater flow, i.e. in the E-W direction. The existing trench-canal, excavated in the SW-NE direction, would not intercept groundwater as efficiently. Furthermore, a downstream trench allows greater aquifer recharge from water reserves used for upstream irrigation. However, multiple recharges with irrigation water increases the

potential groundwater contamination because of the heavy reliance of the farmers on fertilizers and pesticides and the relatively shallow water table.

Quantitatively, the key factor in this concept is the water seepage flow rate, which determines the rate of water that the trench-canal could yield for a specific period of time. Consider a 1 m section of a trench in the N-S direction of the plain and assuming a trench width of 1.5 m, water will seep into this section at the rate, which was determined during the field test (i.e. 6.7×10^{-5} m/s). At this seepage rate, the one meter section yields about 261 m^3 of water per month. Given that irrigation water requirements range between 950 and 4,195 $\text{m}^3/\text{ha}/\text{month}$, the estimated area that can be irrigated by a 1 m long and 1.5 m wide trench section ranges between 0.062 to 0.275 hectare depending on crop types and the irrigation efficiency.

The primary assumption in the above estimation is that there is always enough groundwater to seep into the trench. This volume could be estimated by assuming that the trench intercepts all the groundwater upstream of the trench and above the trench bottom level i.e. at that level the trench is totally dried. Moreover, a trench located down gradient in the aquifer, is estimated to extract at most the water volume extending over the entire aquifer surface ($8,600 \text{ m} \times 1,200 \text{ m}$) and above the bottom level of the trench (i.e., an unconfined aquifer). The water table is estimated to drop at most by the equivalent trench depth.

As such, a 592 meter long, 1.5 meter wide, and 3 meter deep open trench canal can irrigate 37 to 163 hectares only depending on the crop types and irrigation efficiency. The trench however, should yield the $619,200 \text{ m}^3$ during a four-month period. In this context, while the trench may theoretically satisfy the irrigation water requirements on a seasonal basis, practically it may not meet the demand on a daily basis depending on the required water delivery period. For example, the daily water requirement for the 163 hectares is $5,158 \text{ m}^3$, which may have a required delivery period of eight hours. On the other hand, the trench can store $2,644 \text{ m}^3$ ($592 \text{ m} \times 1.5 \text{ m} \times 3 \text{ m}$) and will seep about $1,740 \text{ m}^3$ during the eight hours. Consequently, the trench would dry out before irrigating the 163 hectares ($5,158 \text{ m}^3 > 2,644 + 1,740 \text{ m}^3$). The solution is to further increase the length or the width of the trench to increase seepage reserves or storage capacity. Increasing the trench length will not increase the total amount of intercepted water over the season but it will provide the same volume of water in shorter periods of time. An increase in water yield can be achieved by increasing the trench depth. However, the integrity of the trench cannot be maintained at greater trench depths.

Augmenting the Spring Water with Groundwater Supplies

This option would require cooperation between the groundwater well owners and the management of Dardara Command. It provides for some groundwater to augment the spring water supply during the dry season particularly from June to August. This water could be conveyed through a closed piping system to eliminate or reduce potential losses to farms. This option will provide controlled supplies to water-short farmers.

Efficiency Improvements and Cropping Pattern Changes

The rainfall in the area is about 900 mm/year. This is a very high precipitation rate that enables most trees to grow with little irrigation in the dry season. However vegetables grown in dry periods and greenhouses too would require supplementary irrigation. However, the irrigation requirements of these vegetables vary which provides any opportunity for changing cropping patterns from intensive irrigation crops to drought tolerate or less water consumption crops.

Given the open canal conveyance system and furrow irrigation, water is lost on the way and on-farm. This water could be double than the irrigation water requirements. If this is coupled with over irrigation by farmers, the opportunity for improvement would be immense. Water conservation experience suggests that crop productivity would not be even affected by that option.

Chapter 3

Stakeholder Concerns and Interests

Four major issues affect the Dardara system:

- There is no Water Committee, a serious administrative drawback. Sociopolitical conditions will be analyzed to appoint committee members so that dispute resolution is put on a solid track. This issue is directly affected by political, confessional and social factors.
- There is an apparent decrease in irrigation and domestic water supply from the wells in the Al Khiam plain. This serious technical issue is analyzed to assess the feasibility of new investment in the Dardara Water System.
- The political confessional conflicts present in the area might negatively affect the water management. The impact of these conflicts, and the possibility of additional tension in the concerned localities are analyzed.
- Socioeconomic limitations and local needs are addressed to assess the extent of local community dependence on Al Khiam plain which includes the Dardara Command Area.

Al Khiam Town

Bordered by the villages of Mari and Ible Essaqi to the east, Jdeidet Marjeyoun to the west, Ible Essaqi to the north and the international borders to the south, the town of Al Khiam is situated at an altitude of 650 to 800 meters. With 32,000 registered inhabitants, only 10,000 now live in the town. The population is composed of a majority of Muslims (Shiites) and a minority of Christians. Because of its diversity in culture and sociopolitical confessions, Al Khiam is considered a political and cultural reference for the whole area.

Al Khiam inhabitants used to depend on agriculture for their living; the Al Abdallah and Faour families were the main landowners in the plain. In the 1940s they sold a large part of the land to former agricultural workers living in Al Qlaia. Agriculture remained the main source of income until the 1960s when the situation deteriorated due to shrinking markets low population density, inadequate transportation, poor communication, and lack of security. The Arab-Israeli war and the presence of the Palestinian Resistance in Al Khiam hindered opportunities to sell local goods. In 1968, after the so-called Cairo Agreement that allowed for Palestinian military activities within the Lebanese territories, an office was opened for the Palestinian Resistance in Al Khiam. Israel bombed the office in 1969.

In the absence of any Lebanese authority, the area fell into total chaos, Farmers were unable to cultivate their lands and the inhabitants looked for alternative employment in teaching, in the army, or in the security forces. The situation persisted until 1977, when the Southern Lebanese Army (SLA militias) forced the people of Al Khiam to leave. A massacre left 70 dead, most of them elderly. For almost five years, the town was totally deserted. SLA

**Table 3
Settlements in the Dardara Water System**

Village/ Town	Religion	Population	Major Stakeholders
Al Khiam	<ul style="list-style-type: none"> • 85% Muslim • 15% Shiite • 15% Christian 	<ul style="list-style-type: none"> • 10,000 actual residents • 32,000 registered 	<ul style="list-style-type: none"> • Mercy Corps • Farmers • Municipality • Agricultural Cooperative • Amal Movement • Well owners • Hezbollah
Al Qlaia	<ul style="list-style-type: none"> • Christian Maronite 	<ul style="list-style-type: none"> • 5,000 actual residents • 400 living in Israel since May 2000 • 2,600 estimated to be living in Lebanon outside Al Khiam and immigrants 	<ul style="list-style-type: none"> • Pontifical Mission • Farmers • Municipality • Agricultural Cooperative • Social National Party • Supporters of Shadi Masaad, former President of Displaced Fund
Borj Al Mulouk	<ul style="list-style-type: none"> • Christian Roman Orthodox 	<ul style="list-style-type: none"> • 300 actual residents • 2,000 registered 	<ul style="list-style-type: none"> • Pontifical Mission • Farmers • Municipality • Agricultural Cooperative • Shadi Masaad • Social National Party

militias destroyed hundreds of homes and uprooted all the trees: Al Khiam was declared totally devastated. In 1982, the date of the Israeli invasion of Lebanon, inhabitants started to come back to Al Khiam. The population reached 4000 inhabitants prior to liberation. Now Al Khiam is experiencing active development at all levels due to the increasing return of its inhabitants.

Since the Israeli withdrawal in May 2000, the two dominant parties, Hezbollah and the Amal Movement, both of them Shiite, have not carried out any developmental project due to lack of funds. In addition to the displacement, the area suffers from a continuous neglect in the majority of its sectors. The Government has not offered any support to the local inhabitants, but Al Khiam migrants have provided funds that have enabled some families to return.

Table 4
Al Khiam Stakeholders

Stakeholder	Interests	Concerns
Municipality	<ul style="list-style-type: none"> • Restore and establish needed infrastructure: water networks, waste management, roads, health care, agricultural roads; • Remove equipment brought by Al Qlaia Mayor to prevent environmental degradation; • Restore Dardara spring as a tourist site for the surrounding villages: Borj Al Mulouk and Al Qlaia; • Identify Al Khiam representatives to the Dardara water committee; • Maintain the political balance within Al Khiam; and • Control all activities related to the Dardara spring which is owned by the municipality. 	<ul style="list-style-type: none"> • Political conflict that would delay the municipality's work; • Neglect during the formation of the Dardara water committee; • Further activities by Mercy Corps or other organizations related to Dardara without full approval and support of the municipality; • Losing the case against the Mayor of Al Qlaia, and being unable to remove the quarry and the cement factory from town lands; and, • Infrastructure activities by Mercy Corps or other organizations without proper impact assessment studies.
Agricultural Cooperative	<ul style="list-style-type: none"> • Protect the Cooperative from political influence by securing support through non-political means; • Continue representing Al Khiam farmers in Mercy Corps work; • Irrigate 200 hectares of the Al Wata plain east of town; and, • Revive pre-1975 olive project to export seedlings abroad. 	<ul style="list-style-type: none"> • Neglect during the formation of the Dardara water committee; • Changes in the distribution of Dardara water; and, • Loss of job opportunities for farmers displaced during the Israeli occupation.

Farmers	<ul style="list-style-type: none"> • Mobilize support for agriculture and find new job opportunities; • Manage Dardara water properly; • Protect legal rights in Dardara water; and, • Benefit from agricultural opportunities in the area and to learn more about agricultural manufacturing for better job opportunities. 	<ul style="list-style-type: none"> • Negative impact of artesian wells on the Dardara spring; • Continued chaos in Dardara water distribution; and, • Continued competition from outside agricultural products.
Well Owners	<ul style="list-style-type: none"> • Secure agricultural investment in the plain. 	<ul style="list-style-type: none"> • Loss of irrigation water from wells without alternative sources.
Hezbollah	<ul style="list-style-type: none"> • Benefit from the USAID program without any interference. 	<ul style="list-style-type: none"> • Construction of canals in the plain whereby Israel could benefit from the water

Farmers

Al Kham farmers believe that the only canal made by the government was the southern canal, which was constructed in the fifties, although SLA militias constructed the western canal in 1976. This reflects the feeling among some of them that Al Qlaia farmers illegally established the western canal to change the historic water rights. The present lack of job opportunities and the competitiveness of foreign agricultural products are additional concerns for farmers who hope to learn new agricultural practices that could help them improve their income.

Al Kham General Characteristics	
Total Area	1800 hectares
Non-Agricultural area	200 hectares
Agricultural area:	1100 hectares
- Irrigated	600 hectares
- Rainfed	500 hectares
Non-cultivable area	500 hectares
Wooded Area	0 hectare

*Source: Mercy Corps International
October 2000*

Aware of the impact of the plain-drilled wells on the Dardara water supply, most of the farmers believe that there is no conflict between them and the farmers of Al Qlaia and Borj Al Mulouk. They admit their rights to the Dardara water. However, in the absence of an operational water committee and with no mechanism to manage water distribution, chaos still prevails.

Well Owners

There are three types of wells drilled in the Al Kham plain and the surrounding areas which affect the water supply in the Dardara spring. First, the wells drilled by the government for domestic uses, like the Ible Essaqui well, will never be closed because the extracted water flows are for domestic uses. There are illegal wells for domestic uses drilled close to buildings, especially in Al Kham. It would be impossible to trace all of these wells and close them since some of them are under houses or in hidden places. A third type of well was drilled for irrigation. These are much easier to trace but it is still difficult to close them down. The Ministry of Water and Hydraulic Resources has decided to close 19 wells. The decision is now at the Police Department in Al Kham town, and it is supported by another decision from the municipality. Farmers believe that these wells will resume operations when it comes time to irrigate. The well owners have political cover and there is no water committee responsible for managing the plain's water resources. The main interest of the well owners is to invest in agriculture in Al Kham plain; they are concerned that the closure of their wells may not give them alternative sources of water.

Municipality

A new municipal council was elected during the latest municipal elections of September 9, 2001. Kamel Faour, politically independent, was elected as a mayor with the approval of Amal and Hezbollah. The new municipality called for an emergency plan to be applied in Al Kham. The municipality's priorities are to develop and provide the city with a better landscape, including the Dardara spring:

- Establish water, telecommunication and power networks;
- Build an environmentally sound wastewater treatment plant jointly with Marjeyoun, Al Qlaia and Borj Al Mulouk;
- Build a solid waste treatment plant to replace the dump where wastes are burnt in communal lands 200 meters from the town;
- Rehabilitate roads and establish agricultural roads;
- Secure drinking water from Al Wazzani river water;
- Construct a dam on the Al Khardali River to secure water for irrigation purposes; and
- Establish healthcare units.

The municipality considers it unfeasible to conduct such projects in the present situation of financial uncertainty and human resource problems. Yet, some of these projects could be realized. In particular, the wastewater networks could be implemented with Mercy Corps, which has new contacts with the municipality and plans to implement a sewage network project.

The municipality owns the land that includes the Dardara spring, so any project within that area would require the prior consent of the municipality. In addition, the municipality has a major interest in controlling Al Khiam's share in the Dardara water through its active participation in the formation of the Dardara water committee. In particular, the municipality is interested in restoring the Dardara spring as a tourist site for the surrounding villages, including Borj Al Mulouk and Al Qlaia. The municipality's role in forming the Dardara water committee would ensure the political cover needed for the Al Khiam representatives on the committee.

The municipality is facing a conflict with the Mayor of Al Qlaia, a contractor who is moving a quarry and equipment for an asphalt factory to a plot of land located in Al Khiam territories, without approval. The Mayor of Al Qlaia has refused the interference of the municipality in licensing and approving the site of the asphalt factory and the quarry. The conflict is likely to be raised in the courts. Tensions arising from this conflict could be politicized reviving other conflicts between the two different confessional communities.

Agricultural Cooperative

The Agricultural Cooperative was established in 1995 through the efforts of Al Khiam residents. It started its operations with eight members and now has a membership of 75. The cooperative collaborates with a number of NGOs. It assists farmers and upgrades their economic situation by providing agricultural equipment for various uses. The cooperative plans to revive a pre-war agricultural project producing olive plants for export to Arab countries. It also provides agricultural guidance to farmers in cooperation with the Agricultural School of Al Khiam, which was established in 1992 by the Lebanese Government.

The cooperative has been the local partner of Mercy Corps since the latter started working in Al Khiam. It aims to be part of the Dardara water committee and remain the local partner of Mercy Corps. It plans to secure water for 200 hectares of fertile

land in the Al Wata Plain located to the east of the town. It also aims to draw Wazzani water to irrigate Al Khiam plain, using ponds for water storage.

The cooperative is facing the new distribution political power in the town. Amal considers that the cooperative does not really represent the farmers. Some politically-oriented farmers are not happy with the political independence of the cooperative and its president.

Al Qlaia Village

Al Qlaia is a small village situated 650 meters above sea level in the neighborhood of Al Khiam plain. It has 7,000 inhabitants, all of them Christian Maronites. Most of them worked as farmers prior to the Israeli invasion in 1982. Al Qlaia farmers own around 35 percent (560 ha) of Al Khiam plain lands, almost all of it within the Dardara Command Area. Most of these lands were acquired from the Al Abdallah family from Al Khiam which owned a sizeable share of the plain agricultural plots before the 1960s.

Since a large number of Al Qlaia inhabitants were affiliated with the SLA militias, more than 2500 individuals left for Israel after the Israeli withdrawal in May 2000; 400 of them are still living there. Most of them are young people who supported economic growth during the occupation.

Although more than 18 months have passed since the Israeli withdrawal, Al Qlaia still suffers from neglect, and many basic needs remain unmet.

Farmers

In the 1970s, Al Qlaia farmers and those in neighboring villages suffered from the presence of the Palestinian Resistance. Most of them ceased their agricultural activities during that time. A few farmers worked sporadically until 1977, the date of the Al Khiam exodus, when Al Qlaia farmers took over the agricultural plots and cultivated them with water from the Dardara spring. This continued until the liberation in May 2000.

Al Qlaia General Characteristics	
Total area	750 hectares
Irrigated land area	250 hectares
Rain-fed area	Not available
Potential area for farming	450 hectares
Forestry	Not available
<i>Source: GNEWA-Pontifical Mission</i>	

During the Israeli occupation, the agricultural situation deteriorated. Local products were no longer competitive in the local market; they could not be promoted beyond the security zone because of military barriers and the frequent closure of the border zone. In this period, farmers worked in Israeli industries or joined the SLA militias. There was an exodus from agriculture towards other sectors of higher profitability.

**Table 5
Al Qlaia Stakeholders**

Stakeholder	Interests	Concerns
Farmers	<ul style="list-style-type: none"> • Ensure protection of legal rights in the Dardara water within the western canal • Ensure relevant support for the village agricultural sector as a main source of income 	<ul style="list-style-type: none"> • Loss of “historic” rights to the Dardara water after the change in political power distribution due to the Israeli withdrawal • Loss of job opportunities for the farmers displaced to Israel
Municipality	<ul style="list-style-type: none"> • Reconstruct infrastructure: water networks, retaining walls, rural roads • Control the work within the village owned areas including Al Qlaia owned lands in the Dardara command area • Keep the political support of the Social National Party to ensure protection for the work of the municipality and demands to the central government • Have the major say in choosing Al Qlaia representatives to the Dardara water committee 	<ul style="list-style-type: none"> • Loss of some village rights to Dardara water as a result of the new power distribution after Israeli withdrawal • Mercy Corps work without prior coordination with and approval from the municipality • End or reduction of Pontifical Mission work in the area as a result of political pressure related to confessional discrimination • An unsatisfactory outcome to the conflict between the mayor and the municipality of Borj Al Mulouk leading to more conflicts between the two Christian villages • A serious problem within the municipality council due to four minority members supported by Shadi Masaad from Borj Al Mulouk
Agricultural Cooperative	<ul style="list-style-type: none"> • Dig wells in Al Qlaia to irrigate lands in the Dardara Command Area and elsewhere in the village • Participate in the formation of the Dardara water committee • Mobilize needed financial and human resources, increasing membership 	<ul style="list-style-type: none"> • Loss of “historic” rights to the Dardara water • Loss of access for villagers returning from Israel • Neglect of farmers’ interests and views in Pontifical Mission development projects and others

Presently, agriculture is the only refuge for Al Qlaia inhabitants, but the number of farmers is greatly diminished. Some of the farmers are now in Israel; local goods are difficult to market due to foreign competitiveness; the decline in the Dardara water supply has led to irrigation shortfalls; and there is a lack of basic inputs such as pesticides, fertilizers, agricultural machinery and farming assistance.

Al Qlaia farmers claim to have a historic right to use the Dardara water, but they feel that their rights are threatened in the present political context. The Governor of Nabatieh did not approve the Qaemmaqam proposal to form the Dardara Water Committee. The Al Qlaia farmers believe that Deputy Hajj Ali Hassan Khalil from Al Khiam, the local representative of Amal, influenced the Governor's decision, and that Hezbollah and Amal might interfere in the water distribution. Al Khiam is represented and Al Qlaia is not.

In addition, Al Qlaia farmers believe that the rehabilitation of the Dardara spring does not match the levels of water outfalls. They believe there are differences between the southern and western canals, and Al Khiam farmers are getting more water through the southern canal.

According to some farmers, the three kilometer long ditch made by Mercy Corps could be used to store large amounts of water to irrigate their lands. Farmers whose lands are located to the west of the trench complained about the location of the ditch. The municipality then complained about Mercy Corps to the Qaemmaqam. Although the ditch structure is still debated among farmers, technicians and the municipality, the main reason behind the conflict is that some of the farmers, as well as the agricultural cooperative and the municipality, feel that Mercy Corps implemented the ditch in Al Qlaia without consulting them.

During the Israeli occupation, some farmers from Al Qlaia cultivated agricultural lands owned by the Al Abdallah family from Al Khiam and located near the "airport" on the international borders. After liberation, the Al Abdallah family reclaimed their lands, without any compromise with previous users. Apart from this special case, farmers from both localities recognize each other's rights to water and land.

Municipality

The municipality has 14 members who newly elected on September 9, 2001. Nine are supported by the Social National Party, the only active Christian political party. The five minority members are supported by Shadi Masaad from Borj Al Mulouk. There is a significant financial deficit reaching LL 20 million. The priorities of the municipality are to build the infrastructure of the village, maintain good political support from the Social National Party, and represent Al Qlaia in resolving local issues, including those related to Dardara Water System.

Political influence becomes an issue within the municipal council when there are two competing political groups. The municipality, being controlled by the majority, is looking to keep the support of the Social National Party to ensure necessary coordination with the central government. However, the majority is concerned with potential changes in the internal balance that might affect the support it needs to proceed with its development plan. Currently, the municipality council is keen to rehabilitate major infrastructure such as water

networks, retaining walls and rural roads. Some of these activities could be implemented with the support of Pontifical Mission. However, the municipality fears that the NGO would reduce its activities in the village under political pressure that might be associated with confessional discrimination.

The municipality is seeking to have a major say in the identification of the Al Qlaia representatives in the Dardara water committee for the sake of preserving the village water rights. It is also concerned with any potential work of Mercy Corps in Al Qlaia without its prior consent, like the ditch that was recently established in the Al Qlaia territories (within Dardara Command Area) without previous coordination with the municipality. Ultimately, the municipality complained to the Qaemmaqam.

The president of the municipality, Hanna Al Khoury, a contractor and owner of a quarry and an asphalt factory in Borj Al Mulouk, faces a personal conflict with the Municipality of Borj Al Mulouk. He has refused to pay LL 250,000,000 for using Borj Al Mulouk public land during and after the war and has moved the quarry and the asphalt factory equipment to Al Khiam land without the agreement of the concerned municipality. The Municipality of Borj Al Mulouk has brought the conflict to court, and this will probably be replicated in Al Khiam. The personal conflicts of the President of Municipality with the two neighboring municipalities could easily raise tensions between the various confessional groups living in the area, especially if the local political parties do not push for a resolution of these disputes.

Agricultural Cooperative

In 1966, the Agricultural Cooperative was established in Al Qlaia to assist farmers in marketing their products; provide seeds, pesticides and fertilizers; and assist the farmers in tilling their lands. The cooperative blocked its services during the war and resumed operations after the Israeli withdrawal. The election process resulted in an administrative board of five members chaired by Milad Nemr, and the cooperative now has 60 members. It looks towards mobilizing more financial and human resources to enable the cooperative to have a better communal role in the village.

The cooperative was the local partner of Pontifical Mission during and after the Israeli invasion. Upon request from the cooperative, Pontifical Mission agreed to fund a modern olive oil press and two agricultural trucks. Despite this assistance, the agricultural cooperative is not confident that Pontifical Mission will consider the views or interests expressed by the farmers and the cooperative regarding the type and quality of projects that should be executed in the village.

Through its role on the water committee, the cooperative works towards preserving water rights for villagers who have recently returned from Israel. It also seeks to increase the availability of irrigation water by digging wells in Al Qlaia.

Borj Al Mulouk

Located 600 meters above sea level, Borj Al Mulouk (previously known as Al Kerbeh) is a small Christian village with a population of 2000 inhabitants; only 300 of them now live in

the village. They depend on irrigated agriculture in summer and rainfed winter cultivation. In the late 1970s, Borj Al Mulouk farmers were unable to farm in the plain due to the heavy local presence of the Palestinian Resistance. The agricultural sector was reactivated during the Israeli occupation. By 1984, a large number of farmers renounced cultivating their plots due to competition from Israeli goods and lack of market and went to work in Israeli industries (as was the case of Al Qlaia). Borj Al Mulouk maintained good relations with the surrounding Christian and Muslim villages during and after the Israeli occupation.

Like other villages of the South, Borj Al Mulouk has suffered from neglect to basic infrastructure, increase in unemployment rates, and deterioration of the local economic situation. The agricultural sector was the sole recourse for the villagers after the Israeli withdrawal. This sector needs support to become effective, namely facilitating competitiveness of local products and providing support to farmers, but most importantly water, since water scarcity is frequent during the summer season, thus reducing potential profits from summer plantations.

The region in general and the village in specific suffered from environmental violations. In particular, some of the village communal lands were used for sand and stone quarries in the absence of Government control.

Municipality

As in Al Khiam and Al Qlaia, the first municipal elections in almost 30 years were held on 9 September 2001. The municipal council includes nine members headed by Rizkallah Al Homsy, whose election was unanimous. The municipality plans to develop the agricultural sector to provide better job opportunities for the returning inhabitants including those who are coming back from Israel. In particular, the municipality is interested in digging wells to irrigate the village lands within and outside the Al Khiam Command Area. The aim is to encourage farmers to go back to the plain and cultivate their lands. The municipality wants to retain the village water rights in the Dardara spring. To this end, it wants to contribute to the formation of the Dardara Water Committee. So far, the municipality has not collaborated with Pontifical Mission whose activities related to the Dardara Command Area (trying to rehabilitate water canals and establishing agricultural roads) took place before the municipal elections. The municipality is worried about the approach of Pontifical Mission which has been working in the village without consultation or coordination with the municipality.

Total area	350 hectares
Irrigated land area	100 hectares
Rain-fed area	200 hectares
Potential area for farming	50 hectares
Forestry	Not available
<i>Source: CNEWA-Pontifical Mission</i>	

The conflict between Borj Al Mulouk municipality and Hanna Al Khoury, President of Al Qlaia Municipality, creates a great deal of tension, the repercussions of which have reached Al Khiam municipality as well. Al Khoury used Borj Al Mulouk lands to establish a quarry and an asphalt factory that were operational prior to and after the Israeli withdrawal. After the municipal elections of September 2001, the new municipal council asked Al Khoury to pay the amount of LL 250,000,000 for the past use of Borj Al Mulouk public land. With the intervention of Shadi Masaad, the former president of the National Displaced Fund and a main political leader in Borj Al Mulouk, a consensus was reached allowing for payment in installments over a certain number of years not exceeding five. Al Khoury refused to pay

and moved the quarry and the asphalt factory equipment to Al Khiam's lands without reaching consensus with the municipality. The municipality brought the conflict to the attention of the General Prosecutor of the Governorate of Nabatieh and to the courts. Its main interest is receive payment since it has very limited financial resources. If the conflict is resolved in its favor, the municipality will use some of the money to restore the quarry site.

Agricultural Cooperative

The Public Agricultural Cooperative of Borj Al Mulouk (formerly Cooperative of Al Kerbeh) is the first cooperative in the study area, and the second created in Lebanon. Created in 1958, its goals were to assist the farmers at all levels. The cooperative flourished in the 1960s when it provided the farmers with agriculture machinery, pesticides and fertilizers. However, it ceased all activities during the war and did not resume them until after the Israeli withdrawal. The cooperative's new elections gave place to 40 members, whose priority is to promote organic farming and to ensure environmental conservation through the identification of alternative farming practices. The cooperative suffers from weak financial revenues and is currently seeking funds to study land types and suitable plantations and identify new sources of water for irrigation. It fears any potential loss of Borj Al Mulouk farmers' water rights in the context of the Dardara Water System conflicts between Al Khiam and Al Qlaia, and it is concerned with the political dimension of the case.

Farmers

Borj Al Mulouk farmers own five to eight percent of the Dardara Command Area located to the southwest of the plain. Their lands benefited from three days of irrigation by the decision of the post-war committee:

- seven days for Al Khiam territorial lands
- five days for Al Qlaia territorial lands
- three days for Borj Al Mulouk territorial lands

In 1977, Al Khiam was abandoned leaving Al Qlaia as the sole beneficiary of Dardara water. At that time, farmers in Borj Al Mulouk shifted to non-irrigated summer plantations until 1984.

Presently, Borj Al Mulouk inhabitants are not concerned with Dardara water. There are many political and technical considerations hindering them from using these waters. Dardara water does not reach the village land. The water supply is not enough and there are no functional water canals that connect Dardara spring to the village land. Despite that, farmers are keen to preserve their rights in the Dardara water while they fear losing these rights due to the conflicts between Al Khiam and Al Qlaia. Since agriculture is the only available profession, the farmers need to support the sector for job creation and improving life conditions while facing a difficult economic situation that is mainly due to the absence of the Lebanese Government development projects. This will not be that easy. After the Israeli withdrawal, income gained from working either in Israeli industries or serving in the SLA militias ceased to exist.

**Table 6
Borj Al Mulouk Stakeholders**

Stakeholder	Interests	Concerns
Municipality	<ul style="list-style-type: none"> ▪ Develop the village through support of village agriculture; ▪ Resolve the conflict with the Mayor of Al Qlaia in his capacity as a contractor – to bring financial benefit of the village ▪ Dig wells to support the villagers who were displaced to Israel after the Israeli withdrawal ▪ Restore land that was used as a quarry by the president of the municipality of Al Qlaia in his capacity as a contractor 	<ul style="list-style-type: none"> ▪ Loss of rights of Borj Al Mulouk in the Dardara water ▪ Neglect of the municipality in forming the Dardara water committee ▪ Continued work by Pontifical Mission without consulting the municipality <p>An unsatisfactory end to the conflict with the president of the municipality of Al Qlaia in his capacity as a contractor thus losing the amount of LL 250,000,000 as a compensation for the use of the municipality land during the war</p>
Agricultural Cooperative	<ul style="list-style-type: none"> ▪ Ensure proper financial and technical support to strengthen capacities ▪ Conduct a geological study to identify the water resources available in the village ▪ Promote biological farming ▪ Ensure environmental conservation through scientific identification of alternative farming practices ▪ Demonstrate efforts to satisfy the needs of the farmers in Borj Al Mulouk 	<ul style="list-style-type: none"> ▪ Continued neglect of of Borj Al Mulouk farmers' rights to the Dardara water ▪ Inclusion of Borj Al Mulouk in the political conflicts between Al Kham and Al Qlaia ▪ Any political pressure in addressing the Dardara issues
Farmers	<ul style="list-style-type: none"> ▪ Ensure rights to Dardara water denied since 1977 ▪ Find alternative sources of income following Israeli withdrawal ▪ Ensure support for the agricultural sector in the village ▪ Address the Dardara issues based on technical approaches 	<ul style="list-style-type: none"> ▪ Loss of water rights in Dardara spring in a new water distribution between Al Kham and Al Qlaia ▪ Continued competition of agricultural products from outside the area ▪ Exodus from the village because of lack of job opportunities ▪ Delay in the return of the Lebanese Government through development projects.

Other Stakeholders

Mercy Corps

Mercy Corps' main scope of work is restricted to Al Khiam, in particular, and the Marjeyoun and Jizzine cazas, in general. Mercy Corps seems satisfied with results already obtained from the cooperation with the Al Khiam municipality, and the NGO is willing to continue collaborating with the newly elected council. However it requires a wider representation to execute the projects. So far, there is no local committee in Al Khiam that would combine various stakeholders such as the municipality and the agricultural cooperative. At the time of the Israeli invasion, the civil administration imposed by the Israeli forces and the so-called Southern Lebanese Army (SLA militias) forbade all types of gatherings that could have enabled the constitution of such a committee. Mercy Corps had to execute its developmental projects through the agricultural cooperative, the only local entity that was allowed. Recently, Mercy Corps established contacts with the municipality in order to implement a sewage network in the town.

Mercy Corps' interest in the Dardara situational analysis relies on the fact that such an initiative could be the first locally (and maybe nationally) documented study area where social, economical, technical, and political backgrounds are all analyzed. In addition, Mercy Corps has been highly involved in the Dardara Water System: the NGO restored the spring early last year, and currently conducts a 3 kilometer ditch to be used for irrigation in the plain. There has been much criticism of the ditch. It is still debated among technicians, farmers, and other concerned stakeholders and restoration of the spring, considered by many stakeholders as a tourist site, was not environmentally friendly. Nevertheless, Mercy Corps' work has been the only implemented initiative aimed at improving the use of the Dardara water. Mercy Corps could play a major role in addressing the various issues of the Dardara Water System especially with the locally existing capacities in the demonstration farm that exists just near the spring within the Al Khiam plain boundaries.

Pontifical Mission

Pontifical Mission works within a cluster of villages that includes Odayseh, Deir Mimeiss, Kfarkila, Al Qlaia and Borj Al Mulouk. The Mission started its work in the area by digging a 3.15 kilometer irrigation canal. In order to cover most of the required irrigation needs, it established close collaboration with the Council of the South. After discussions, a contract was prepared and signed between Pontifical Mission and the Council of the South to provide the NGO with cement (overall cost estimated at around USD 70,000) free of charge. After much political interference, Pontifical Mission was able to get the support of Nabih Berri, President of the Amal Movement and Speaker of Parliament, and thus the NGO was ready to proceed in constructing and restoring the irrigation canals. Water flow was measured in order to determine the size of the canal and the Pontifical Mission discovered to its surprise a decrease in water flow from 85 lit/sec to 8 lit/sec in wintertime. The decrease is attributed to the high number of artesian wells drilled for irrigation. There was no reason to draw the canals. The problem was no longer a matter of appointing a water committee, laying cement or even settling a dispute among villages. Instead the question was whether or not to implement a project of USD 280,000 in a site that was almost deprived from water (where only 10% of the initial water existed). The NGO started looking for an alternative

project. After five months, Pontifical Mission went back to the village profile in to identify other priorities, such as agricultural roads.

Pontifical Mission has not completely given up investing in some Dardara water projects. They must have an impact on the income of some beneficiaries, be within the financial and technical capabilities of the NGO, logistically sustainable through the presence of a solid partner in the area, and cost effective. All of these considerations are met in addressing the major issues of this analysis in the two villages of Al Qlaia and Borj Al Mulouk. Like Mercy Corps, Pontifical Mission seems to be a key player in supporting the return of farmers to the their lands, since no other alternative for making a living. With the availability of water, the agricultural sector could be developed and new crops could be planted in accordance with financial capabilities and know-how.

Pontifical Mission self-satisfaction regarding its approach in assessing the local needs of the area is still facing several constraints. There is a difficulty in dealing with some situations due to the political conflicts. In addition, the social interaction is much more important than politics since there were forces on the ground that could not be ignored. The level of funding allocated for the area (around USD 500.000) did not allow for the implementation of large-scale projects nor could it change the development policy of the area. These funds were only enough to enable Pontifical Mission to carry out pioneer projects. A final constraint is the overlapping responsibilities in providing licenses to implement projects such as wastewater projects.

Pontifical Mission has been criticized for not conducting better local needs assessment. The process needs to be more participatory. Pontifical Mission is trying to improve its approach for better allocation of funds and a better impact on the local community. Currently, studies are under preparation to choose the most cost-effective project.

USAID

USAID is interested in the area targeted by this situational analysis as part of its Rural Community Development Cluster (RCDC) Program. The three localities involved are included in the two integrated clusters selected by Pontifical Mission and Mercy Corps, and share similar socioeconomic characteristics. Among other operational objectives, USAID is interested in dealing with projects in rural areas through rehabilitating and maintaining water networks and irrigation systems. The controversies related to the Dardara Water System led USAID to define the direction of its projects and activities through this fact-finding study and analysis.

The local population sees USAID as an arm of the American Government. People always ask why the "Americans" are interested in developing areas like Al Khiam Plain. Both local inhabitants and politicians raised concerns about the political dimensions of USAID's interest in the Dardara water. Despite that, all concerned stakeholders are willing to collaborate and contribute to USAID initiatives. They represent unique opportunities for the poor rural communities of the three localities that still suffer from the absence of Lebanese government support.

NGO approaches to the local needs assessment were criticized by some of the local stakeholders due to weaknesses in the participatory processes. Despite USAID macro

management, there is a need to further assess NGO performance to help them identify better approaches and methodologies for dealing with the local communities. This will help prepare the platform for consensus building and sustainable rural development to meet the objectives of USAID program.

Amal Movement

The Shiite Amal Movement won the parliamentary election of 2000 in the South of Lebanon as part of a broad coalition which included Hezbollah and the Social National Party. The single electoral constituency included the Mohafazats of Nabatyieh and the South. Amal returned to the three localities directly after the Israeli withdrawal. Its representative, Deputy Hajj Ali Hassan Khalil from Al Khiam, went to Al Qlaia and stayed in its church during and right after the withdrawal to calm the Christians and work with other political groups to prevent any revenge attempts especially from the "Muslim newcomers" in Al Khiam and other villages. The main interest of Amal is to show goodwill in containing any potential political or confessional conflict in the area by taking measures to protect the remaining Christian minorities in the three localities.

Regarding the Dardara issue, Amal is represented by Deputy Al Khalil who owns lands that benefit from Dardara water and has full acquaintance of the area. The Movement does not see any political, sectarian, or religious problem in relation to the Dardara Water System. If there is conflict, it is among landowners and not among the different political or confessional groups of the three localities. Consequently, the approach to the issue of the Dardara Water System should be scientific referring to water by-laws and local norms for distributing water.

On the other hand, Amal is concerned with the approach being used by Mercy Corps to assess needs in Al Khiam. There are new forces at the local level but Mercy Corps has ignored that so far. In general, Amal is dissatisfied with the way Mercy Corps has implemented development activities in terms of landscape management and environmental impact. Consensus has not yet been built between Mercy Corps and Amal in Al Khiam. This seems to be a real concern due to the influence Amal has at the local level; without Amal's support there will be no easy resolution of the major issues related to the Dardara Water System.

Social National Party

The Social National Party won the election of the year 2000 as a member of the broad coalition of the South, along with Amal and Hezbollah. The party returned to the area right after the Israeli withdrawal to allay the concerns of Christian remaining in the area after the displacement of most of the people that were close to SLA militias towards Israel. During the municipal elections, the party supported a list of candidates in Al Qlaia that won the majority of the municipal council of the village. Currently, the party supports the president of the municipality of Al Qlaia and the majority of the municipal council.

The Social National Party plays a key role in the Christian villages of the area. It is represented by Deputy Assad Hardan and his assistant Kamal El Jamal who is from Deir Mimeiss, a village 5 kilometers from both Al Qlaia and Borj Al Mulouk, and thus aware of the political map of the villages and distribution of political power. The party's main concern is to

reach a solution that protects the water rights of all owners, regardless of the location and the ownership of lands, and prevents any political or confessional conflict.

The Social National Party is keen to preserve the water rights of both Al Qlaia and Borj Al Mulouk. It provides continuous support to the municipality of Al Qlaia, but one of its main interests is to bridge the gap between the Christian villages and the neighbouring Muslim communities working closely with its political allies: the two Shiite parties Amal and Hezbollah.

Hezbollah

Despite the major presence of the Shiite Hezbollah Party in Al Khiam, there was not a single sign of any type of interference on the part of the party in the issue related to the Dardara Water System. Hezbollah's main concern is to ensure that any existing or potentially water canal would not draw water to the other side of the international border towards Israel.

Former President of the National Displaced Fund

Shadi Masaad from Borj Al Mulouk village is the Former President of the National Displaced Fund. Based in Beirut, Masaad seems not to be involved in the local conflicts of his village and the surrounding area but in reality, he is deeply involved. All of the candidates he supported in the Borj Al Mulouk municipal elections won. Only five of the candidates he supported won the municipal elections in Al Qlaia. To the Orthodox people of Borj Al Mulouk, Masaad is a very strong man supported by the President of the Republic. The Maronite Al Qlaia village is divided between his supporters and those of the Social National Party. Knowing the history of disputes between the two villages, Masaad has to deal with a serious conflict between the municipality of his village and a contractor from Al Qlaia, who became the mayor (supported by Social National Party), related to the settlement of quarry dues. He is afraid of political interference in the process of the resolving the dispute solving and looks forward to the development of eco and rural tourism in the plain if Israel does not intervene to stop the plans.

The Governor

Lebanon is composed of six governorates (mohafazats), the Nabatieh Mohafazat being the second governorate of the South of Lebanon. It includes the villages and towns where the Dardara Command Area is located. The Governor has the legal responsibility to approve the decrees proposed by the Qaemmaqam of the area. He can stop or allow the Qaemmaqam to form the water committee of Dardara.

For more than twenty years, a large number of villages and towns that form part of the Nabatieh Governorate remained under Israeli occupation and the SLA militia's power. Upon liberation, the Governorate of Nabatieh regained its official authority and new municipal councils were elected within the newly liberated areas on September 9, 2001.

The Governor is highly familiar with the case of Dardara Water System. Being politically close to the Amal, the governor's concern was not to reach an agreement that is not supported by the politicians concerned by the case. The need is to have a political

agreement (or at least a support to an agreement) that Amal and the Social National Party would. Only after this agreement is secured would the Governor be ready to endorse the Qaemmaqam's proposal to form the Dardara Water Committee. The Governor's interest is to give the elected municipalities a major role in addressing the issues of the Dardara Water System.

The Qaemmaqam

The Qaemmaqam represents the Governor at the district level. Each Governorate is composed of several districts each headed by a Qaemmaqam who has the responsibility to approve major decisions of municipalities knowing that some decisions might require the approval of the governor or even the central government. Also, the Qaemmaqam acts as a president of municipality for small villages that do not have municipal councils. He is in charge of other inter-municipal affairs such as the unions of municipalities and joint municipal concerns related to more than one municipality within the same district. The Dardara spring is located within the jurisdiction of Marjeyoun district that has been headed by "the Qaemmaqam of Marjayoun" for more than 25 years. The Qaemmaqam, Semaan Atweh, witnessed the various events pre- and post-war and tried to apply rules and regulations without political interference. The main concern of the Qaemmaqam is to provide needed authority to newly elected municipalities. They can assess their local needs better than any other Government official.

Legally, the Dardara Water Committee is formed by the Qaemmaqam and approved by the Governor. In February 2001, the Qaemmaqam proposed a list of suggested candidates as potential members of the committee. He also proposed some changes to the by-laws, especially for the appointment of an accountant. The Governor did not approve the proposal for political reasons related the representation of Al Khiam. This latter did not want to deprive Al Qlaia farmers of their rights, but rather sought to reach consensus before constituting the committee. The Qaemmaqam has a major role in forming the water committee, and it is extremely important for candidates be protected from political pressure and interference.

Table 7
Interests and Concerns of Major Stakeholders

Stakeholder	Interests	Concerns
Qaemmaqam	<ul style="list-style-type: none"> • Keep the authority of the Qaemmaqam free from any political influence; • Form legally the water committee; and, • Ensure control through the newly elected municipalities. 	<ul style="list-style-type: none"> • Any political pressure on the process of committee formation; and • Loss of control and authority through the interference of other stakeholders.
Governor	<ul style="list-style-type: none"> • Show goodwill; • Minimize the impacts of any political or social problem; and • Regain complete authority through working with the newly elected municipalities. 	<ul style="list-style-type: none"> • Any political disagreement that would lead politicians to exert pressure on the governorate; • Neglect of the newly elected municipalities; and • Confessional interpretation of conflicts.
Amal Movement	<ul style="list-style-type: none"> • Show goodwill; • Demonstrate that there is no real water conflict (especially confessional); • Maintain control over new development plans in the area as a reflection of the new power distribution after the withdrawal of the Israeli Army; • Actively contribute (or lead) to confessional and political reconciliation in the area; and, • Demonstrate that the Christians are a major integral part of the local community through protecting their rights as declared by law and recognized by the traditions and norms of the community practiced far beyond the war era. 	<ul style="list-style-type: none"> • Appearance of the Dardara case as a confessional or political conflict; • Return to the discouraging historic relationship between the three villages; • Any type of confessional conflict; • Working in Al Khiam (Mercy Corps) without recognizing the new power distribution (mechanisms adopted and identification of priorities); • Working with the agricultural cooperative in Al Khiam (Mercy Corps) which does not reflect the new representation of farmers; and • Continuing Mercy Corps projects without environmental impact studies especially with regard to infrastructure activities.

Social National Party	<ul style="list-style-type: none"> • Provide all necessary support to the Municipality of Al Qlaia and its president which the party supported during the last municipal elections; • Demonstrate its major role of protecting the Christians after the Israeli withdrawal; • Politically contain the Christian families that had ties with the so called Southern Lebanon Army (SLA militias); • Bridge the gaps between the Christian villages and Muslim communities working with other political allies. especially the Shiite Amal Movement; and • Maintain a major political presence in the Christian villages to cover the absence of Christian political parties. 	<ul style="list-style-type: none"> • Any additional confessional conflict; • Presenting the Dardara case as a confessional conflict; • Abusing any of the Christian rights as a result of the new forces; and • Failing to contain Christian families that were depending on Israel, and failing to respond to their needs.
Shadi Masaad	<ul style="list-style-type: none"> • Provide all necessary support to the municipality of Borj Al Mulouk and its president which he supported during the election; • Provide relevant support for the minority in the municipal council in Al Qlaia to balance the majority supported by the Social National Party; • Achieve an integrated development plan for Borj Al Mulouk and Al Qlaia; • Present good leadership for Christians in the absence of other Christian politicians; and • Develop the plain including the Dardara Spring area to be feasible for rural and ecotourism. 	<ul style="list-style-type: none"> • Loss of influence among the Christian local communities in both Al Qlaia and Borj Al Mulouk in favor of Social National Party; • An approach to the Dardara water distribution system based on political factors; • Any Israeli intervention in the plain thus affecting its development plans.

Chapter 4 Conclusions and Recommendations

- The Dardara Command has suffered from water shortages in dry periods because of several reasons: over irrigation and low efficiencies, spring supplies unable to meet growing water demands, and groundwater abstraction that might affect spring flows. Before 1975, most of the crops grown required supplementary irrigation during dry periods. This has changed with more water intensive crops being cultivated in plastic greenhouses upstream and in the Dardara Command.
- The Dardara annual average discharge reaches more 2 MCM. The pond provides good storage, regulates the spring flow, and allows for irrigation in the dry period. Moreover, the pond provides an opportunity for tourism development in the area. Excess groundwater abstractions that might affect the pond should be controlled.
- The pond system could provide water to 200-250 hectares based on a reasonable mix of crops and irrigation efficiency. This development will have major economic returns and social benefits that justify the investment in increasing the supplies.
- Based on an average revenue of \$200/dunum/year (\$2000 dunum/ha/year), it is estimated a total revenue of \$500,000 in the three villages for cultivating the command. This revenue level justifies investment in making more water available to the farmers. Based on the four options identified earlier in this analysis, the following priority actions are recommended:

- First priority: Improve efficiencies and change cropping pattern – while demanding in terms of training and regular oversight, this approach has the greatest likelihood of being sustained beyond the direct interventions of the NGOs.

The NGO programs in Dardara focused on increasing water supplies, which is good but insufficient, since they did not provide training in improving water use efficiencies and environmental practices that are sustainable. People did not look beyond the traditional conflict-triggering argument of how they could get more water from the system.

- Second priority: Augment spring water with groundwater supplies – The approach requires meeting and reaching agreements between the well owners and the water committee or other managing entity.
- Third priority: Distribute spring reserves – Since this option does not provide additional supply, users may be less interested in carrying it out.
- Fourth and last priority: Implement canal withdrawal – Questions remain about whether this costly method will produce the desired results, but if the above three approaches are not possible, this remains a final option.

- The farming returns could even go higher if cash crops are cultivated in the area. Crops with a market window in Lebanon and abroad include fava beans, strawberries, cherry tomatoes, among others. The social benefits of such scheme go beyond the direct economic impact. However, attention should have been given to reducing water demand by water conservation and efficiency improvements. The village program should provide a model for modern irrigation practices in the three villages.
- Farmers and other residents of the area display little environmental concern and understanding. An awareness campaign on the intensive use of fertilizers and pesticides and their potential effects on environmental and water resources is needed in the area. With an adequate educational program this issue could be controlled.
- Some of the stakeholders appear to be hesitant to work with Mercy Corps and Pontifical Mission. Building trust among stakeholders is a priority before the water issues can be adequately resolved.
- Local development committees need to be established and strengthened in order to address major issues related to the Dardara system.
- The NGOs need to employ participatory rural appraisal techniques for identifying local needs and concerns during project design and prior to implementation.
- Mercy Corps needs to work more closely with the municipality of Al Khiam and to build consensus with Amal Movement. Pontifical Mission should establish stronger links with the municipalities of Al Qlaia and Borj Al Mulouk.
- Given the pace of government action, assistance to the Dardara system should continue, based on the following criteria:
 - The NGO program should not conflict with government program. It appears that the proposed program - development of storage pond in Dardara - does not.
 - The NGO program should introduce a win-win situation at the local level and act as a model for future water projects at a larger level.
 - The NGO program should be collaborative and have a major participatory component.
 - The NGO programs should be cost-effective and have benefits (social, environmental, and economic) that justify the investment, even in short term

People Interviewed

Name	Entity	Telephone
Sanaa Saliba	USAID	03 639 631
Mahmoud Al Moula	Governorate of Nabatieh	07 764 001
Semaan Atweh	Qaemaqam of Marjeyoun	03 200 980
Deputy Assad Hardan	Social National Party	03 786 660
Kamal Al Jamal	Social National Party	03 786 660
Deputy Ali Hassan Khalil	Amal Movement	03 632 629
Shadi Masaad		
Issam Bshara	Pontifical Mission	03 707 474
Michel Qostantin	Pontifical Mission	
Nora Bazzy	Mercy Corps	03 701 543
Said Zaher	Mercy Corps	03 359 122
Ghassan Sayyah	YMCA	03 305 003
Kamil Faor	Municipality of Al Khiam	03 221 271
Ahamd Abou Abbass	Municipality of Al Khiam	03 258 063
ssam Al Abdallah	Municipality of Al Khiam	03 410 161
Mhanna Rafeh	Police station – Al Khiam	03 898 685
Ahmed Atweh	Agricultural Cooperative – Al Khiam	03 614 889
Abou Nabih Al Abdallah	Farmer – Al Khiam	
Hossain Awadeh	Farmer, Well owner – Al Khiam	
Abou Samra Wanna	Well owner – Al Khiam	
Rida Wehbe	Farmer, Well owner – Al Khiam	03 397 548
Hanna Al Khoury	Municipality of Al Qlaia	03 555 003
Lotfallah Daher	Municipality of Al Qlaia	03 513 500
Elena Fhaily	Municipality of Al Qlaia	03 433 100
Milad Nemr	Agircultural Cooperative – Al Qlaia	03 591 455
Khalil Rizk	Agriclultural Cooperative – Al Qlaia	03 523 733
Jean Daher	Farmer – Al Qlaia	03 933 471
Gerges Shaker	Farmer – Al Qlaia	
Joseph Salameh	Farmer – Al Qlaia	03 203 854
Rizkallah Al Homsy	Municipality of Borj Al Mulouk	03 285 612
Abdelmassih Hoshan	Municipality of Borj Al Mulouk	03 207 524
Walid Nassour	Agricultural Cooperative – Borj Al Mulouk	03 356 731
Hatem Yousif	Farmer – Borj Al Mulouk	
Mounif Al Hajj	Farmer – Borj Al Mulouk	
Yacoub Hoshan	Farmer – Borj Al Mulouk	
Khalid Al Hajj	Farmer – Borj Al Mulouk	