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FINAL PERFORMANCE EVALUATION Lebanon Water and Wastewater Sector Support Project (LWWSS) & Litani River Basin Management Support (LRBMS)

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FINAL PERFORMANCE EVALUATION

Lebanon Water and Wastewater Sector Support Project (LWWSS) & Litani River Basin Management Support (LRBMS)

DISCLAIMER

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ACRONYMS

AAM	Atomic Absorption Meter
ADS	Automated Directives System
AO	Assistance Objective
AUB	American University of Beirut
BMLWE	Beirut Mount Lebanon Water Establishment
BWE	Bekaa Water Establishment
CA	Contract Agreement
CCIA	Chamber of Commerce, Industry and Agriculture
CDCS	Country Development Cooperation Strategy
CDR	Council for Development and Reconstruction
CLIN	Component Line Item Number
CO	Contracting Officer
COP	Chief of Party
COR	Contracting Officer's Representative
DAI	Development Alternatives Inc.
DG	Director General
DO	Development Objective
DO	Dissolved Oxygen
ERP	Enterprise Resource Planning
EU	European Union
FY	Fiscal Year
GIS	Geographic Information System
GIZ	German International Cooperation
GLAAS	Global Acquisition and Assistance System
GOL	Government of Lebanon
GW	Ground Water
IQC	Indefinite Quantity Contract
IR	Intermediate Result
IRBM	Integrated River Basin Management
IRG	International Resources Group
IT	Information Technology
IWRM	Integrated Water Resources Management
LOE	Level of Effort
LRA	Litani River Authority
LRBMS	Litani River Basin Management Support
LWPP	Lebanon Water Policy Program
LWWSS	Lebanon Water and Wastewater Sector Support
M&E	Monitoring and Evaluation
MOA	Ministry of Agriculture
MOEW	Ministry of Energy and Water
MOU	Memorandum of Understanding
MSI	Management Systems International

NGO	Non-Governmental Organization
NLWE	North Lebanon Water Establishment
NOWARA	National Observatory for Women in Agriculture and Rural Areas
NWSS	National Water Sector Strategy
NWWSS	National Waste Water Sector Strategy
O&M	Operation and Maintenance
pH	Potential Hydrogen
PMP	Performance Management Plan
PMPL	Performance Management Program for Lebanon
PPP	Public Private Partnership
PSV	Project Site Visit
RFA	Request for Application
RFTOP	Request for Task Order Proposal
RIG	Regional Inspector General
SI	Social Impact
SOP	Standard Operating Procedures
SOW	Scope of Work
STTA	Short-term technical assistance
TDS	Total Dissolved Solids
TO	Task Order
UN	United Nations
UPS	Uninterruptible Power Supply
USAID	United States Agency for International Development
USBR	United States Bureau of Reclamation
USG	United States Government
WE	Water Establishment
WISE	Water Infrastructure Support and Enhancement
WQ	Water Quality
WWTP	Waste Water Treatment Plant

EXECUTIVE SUMMARY

In August 2013, the respective Contracting Officer's Representatives (CORs) for the Lebanon Water and Wastewater Sector Support (LWWSS) project and Litani River Basin Management Support (LRBMS) project requested a final performance evaluation of the LWWSS and LRBMS projects to analyze the extent of achievement of the program objectives, to evaluate its outcomes, to document successes, challenges, and lessons learned from the projects and to assess the VEs improvement of performance compared to benchmarks set under GIZ "Assistance to the Water Sector Reform" program.

Finally, the Mission requested the final performance evaluation to analyze the extent to which LWWSS and LRBMS fulfilled the mission's Gender Integration requirements and to analyze the overall sustainability risks associated with assistance to the water sector in Lebanon.

The methodology used in the performance evaluation included: review of documents, key informant interviews (KII) and site visits. The implementation of the evaluation method is provided in Annexes II, III and IV. The evaluation team was tasked to answer the following questions:

1. To what extent have the projects achieved their expected outcomes and stated objectives? For instance, to what extent did LWWSS achieve its objectives in improving the efficiency of the water management, in improving the water infrastructure and in enhancing the water governance, and to what extent did LRBMS achieve its objectives of setting the ground for improved, more efficient and sustainable river basin management at the Litani River basin?
2. What were the factors influencing the achievement or non-achievement of the projects' objectives?
3. Regarding the project implementation and specifically the managerial, administrative, operational, and technical successes and challenges:
 - a. What were the successful aspects or the successes stories and lessons learned for implementation in the future?
 - b. What were the challenges in project implementation or aspects that did not properly contribute to meeting objectives of the projects?
4. Were mechanisms put in place to ensure the sustainability of projects' results? If not, why not? If so, how effective were they? What are the factors influencing the achievement or non-achievement of sustainability of the projects' results?
 - a. Is there a defined exit strategy? If so, to what extent would it contribute to sustainability?
5. To what extent the project has fulfilled the mission's gender integration requirements?

The evaluation should provide recommendations for USAID/Lebanon on:

- Possible follow-up activities to enhance the sustainability of the projects' outcomes and the sustainability of the provided infrastructure.
- A possible replication of this program, and future programs/activities that address the enhancement of the water sector in Lebanon and of the management and conservation of water resources in the Litani Basin.
- The need of continuing to promote for transformation of LRA into an integrated Basin Agency and the viability of such an agency.
- How to fulfill the mission's Gender integration requirements in the overall water sector in Lebanon including the documentation of initiatives taken by Government of Lebanon and other donors in this regard.

PROJECT BACKGROUND

The United States Agency for International Development (USAID) Lebanon Mission has contracted with Development Alternatives Inc. (DAI) to implement the Lebanon Water and Wastewater Sector Support Program (LWWSS) under a \$34.4 million contract number EPP-I-00-04-00023-00/04. The period of performance of the LWWSS contract is September 30, 2009 to April 30, 2015.

At the same time, International Resources Group (IRG) was contracted by USAID/Lebanon (Contract EPP-I-00-04-00024-00 Task Order No. 7) under the Integrated Water and Coastal Resources Management Indefinite Quantity Contract (IQC) II to implement the Litani River Basin Management Support (LRBMS) Program. The period of performance of this contract is September 29, 2009 to March 31, 2014.

Both projects were designed under a previous country development strategy to achieve USAID's then Intermediate Results (IR) 1, 2 and 3 and Assistance Objective 4: Improved water services for all in Lebanon. In July, 2012 a Country Development Cooperation Strategy (CDCS) for the period 2013 – 2017 was drafted. Under the draft CDCS the two projects serve Development Objective I (DO 1): Improved capacity of the public sector in providing transparent, quality services across Lebanon; IR 1.2: Improved availability of water-related public services to all in Lebanon.

FINDINGS AND CONCLUSIONS

I. LRBMS

Finding 1.1: LRBMS has been implemented in accordance with USAID's Country Development Cooperation Strategies (CDCS), GOL's National Water Sector Strategy and the IRG Task Order.

Conclusion 1.1: As stated in the project purpose and objectives LRBMS did improve the efficiency of water management, improved the water infrastructure and enhanced water governance by setting the ground for improved, more efficient and sustainable management of the Litani river basin through provision of technical support to the Litani River Authority and implementation of limited small scale infrastructure activities.

Finding 1.2: Improved Water Governance was successfully done through preparation of plans, assessments, workshops, study tours, formation of river basin and water user stakeholder committees. However successful implementation of plans, assessments, and the river basin committee was limited.

Conclusion 1.2: LRBMS was successful in affecting attitude change on the understanding and importance of IWRM within LRA as well as in sensitizing directly and indirectly other stakeholders on the IWRM concept, like for instance a number of Litani Basin Municipalities, Ministry of Energy and Water, and Ministry of Environment This was confirmed with the interviews held at various levels. LRA endorsed but was unable to implement many of the LRBMS plans and proposed institutional changes due to the lack of support and approval from MoEW.

Finding 1.3: Operational improvements of LRA were carried out through introduction of Enterprise Resource Planning (ERP) software provided by LRBMS. No business plan was prepared due to not being identified as a priority necessity for LRA specifically for the promotion of the IWRM concept. Though a

River Basin Decision Support System was not developed, LRBMS developed many of the components required for a DSS: databases, models (flood, ground water, water quality, water balance, ERP).

Conclusion 1.3: The introduction of the ERP was very successful, however because of LRA's "profit" making status they do not seem to be interested in improving their business model at this time. LRA's technical staff is limited. Although appreciative of receiving the results of technical assessment, studies and models they do not have the staff to support these efforts on their own.

Finding 1.4: Knowledge Development/Awareness Raising of Water Users was integral to the LRBMS. Several of the initiatives such as the Canal 900 users committee and pilot wetland are new to LRA and still require project assistance.

Conclusion 1.4: LRBMS made considerable efforts to raise water user awareness. The efforts were generally at a pilot level. Without continued external TA support LRA's ability and political will to continue and expand these efforts is questionable. Although supported by the municipalities & LRA the farmers' user committee is "informal and unregistered". It may have been more sustainable to reactivate and address the needs of the existing Water User Association or to empower it rather than to support the creation of a new informal organization. The continuation of the farmers' committee after the departure of LRBMS is questionable.

Finding 1.5: LRBMS provided a number of tools, procedures, and upgrades for strengthening LRA's water monitoring capabilities.

Conclusion 1.5: LRA recognizes that they need to expand and automate their surface and groundwater water quantity and quality monitoring capabilities. LRBMS helped with this effort. However LRA still requires significant improvements to effectively cover the Litani basin and other areas in Lebanon as per LRA mandate to include additional staff, updated equipment, proper data processing procedures (models), a more extended database, and more regular reporting.

Finding 1.6: LRBMS improved LRA irrigation management practices with benefits for farmers, public health and pollution mitigation.

Conclusion 1.6: It would have been preferred if there were another full irrigation season to evaluate the effectiveness of several of the LRBMS activities. Canal 900 is limited in the area it can serve even with the infrastructure improvements provided by the project. Increased attention to improved irrigation scheduling and user water management may return better results. Farmers are willing to try new irrigation techniques and systems but they normally would not turn to LRA to provide information on these systems.

Finding 1.7: LRBMS has successfully contributed to the mitigation of the risks associated with the Qaraoun Dam and floods in the Litani River Basin.

Conclusion 1.7: The Qaraoun Dam is safe. LRBMS has provided appropriate and updated equipment and procedures for monitoring the dam and addressing possible emergencies resulting from a dam failure. LRBMS also prepared a mapping of flood prone areas and a flood management plan to mitigate flood damage along the Litani River. It is up to LRA how they will use these tools and training.

Finding 1.8: Factors influencing the achievement of project's objectives included: tailoring the program to LRA needs, focus on one agency and one basin, emphasis on water governance and stakeholder participation, and use of innovative and appropriate technology

Conclusions I.8: Overall the project was designed and implemented well.

Finding I.9: Some of the factors influencing non-achievement of project objectives included: limited environment allowing for good water governance, lack of participation and **buy-in** from MoEW, inability of LRA to get approval to implement various plans and organizational changes, reluctance of LRA to shift from a power and water delivery organization to water management organization, perception by LRA that irrigation is a social service, limited staff expertise, unofficial status of the water user committee, basin water authority limited to only municipalities, and uncertainty on ability of the LRA Water Resources Department to manage water monitoring data in the future.

Conclusion I.9: Many but not all of the factors influencing non-achievement of project objectives were outside the influence of LRBMS and due to the capacity, interest, and capabilities of LRA and involvement of MoEW. Hence, the future of the water basin authority and water user committee is uncertain.

Finding I.10: Project implementation managerial, administrative, operational, and technical successes included: well defined TO SOW, diversified and flexible program, good budget, full time LRA coordinator, good consultant team, close partner coordination, LRBMS embedded in LRA, extensive and tailored training program, useful international study tours, procurement of good quality equipment, and good documentation.

Conclusion I.10: USAID, LRBMS and LRA were successful in working together to achieve the aims and objectives of the program. Having LRBMS embedded in LRA, as well as a highly motivated full time coordinator, a professional and experienced consulting team supported by a technical and supportive USAID COR created an environment for successful implementation.

Finding I.11: Project implementation managerial, administrative, operational, and challenges included: Initial Length of Project (LOP), Lack of action from LRA management and MOEW in responding to LRBMS proposals, limited LRA staff, LRA institutional organization unfamiliar with IWVRM, and unofficial status of water user & river basin organizations.

Conclusion I.11: Most of the challenges were understood at the start of the project. The original project duration was not long enough. Institutional change takes time and close mentoring. Though addressing proper irrigation and agricultural practices is an integral part of promotion of IWVRM at the Litani Basin, the success of the LRBMS ag research component is questionable. All equipment and inputs were given to the farmers engaged with the LRBMS. LRA's role was limited. LRA's inexperience and the lack of a successful model for Lebanon created difficulties in establishing official and recognized river basin and farmer user committees. Implementation with MOA, a university, an NGO, or a drip irrigation equipment supplier would have been more successful.

Finding I.12: Mechanisms are in place to ensure the sustainability of the equipment and infrastructure activities.

Conclusion I.12: LRA has the funds and local support is available to maintain the equipment procured under the project.

Finding I.13: Some of the constraints to sustainability of the project are the lack of LRA mandate and trained staff to move forward with IWVRM on their own; unofficial water user and river basin stakeholder organizations; and failure to receive full approval of management and staffing reorganization plans at higher levels.

Conclusion 1.13: LRA ability to adopt improved water governance and IWRM may be outside their experience and expertise and need donor support.

Finding 1.14: Gender was not included in the original Task Order. Although LRBMS included Gender Equity in its work plans as a cross-cutting activity, there were no specific programs targeting gender integration.

Conclusion 1.14: LRBMS has not fully considered the mission's gender integration requirements in the implementation of the program; however it was not a contract requirement.

II. LWWSS

Finding 2.1: Project is being implemented in accordance with USAID's CDCS Results Framework, GOL's NWSS, LWWSS Task Order (TO) contract modifications, and annual work plans.

Conclusion 2.1: As designed and adjusted through agreed work plans and contract modifications, LWWSS successfully implemented its expected outcomes and stated objectives.

Finding 2.2: Most of the activities under the Improved Capacity by WEs component were delivered through training. Many of the trainings were done in support of activities carried out under other components.

Conclusion 2.2: The approach and philosophy used to select and develop the training programs were appropriate.

Finding 2.3: Support to increased Financial and Commercial Viability has been one of LWWSS's most effective programs. Activities implemented varied between the different WEs.

Conclusion 2.3: All WEs have business plans. ERP is a tool that can be used successfully to improve WE management functions. The budget, internal audit and cost tariff model are well designed financial tools. If implemented as proposed by LWWSS during 2014 it will be a major achievement.

Finding 2.4: Activities under Capital Investment Planning are limited but extremely useful for improving planning and management of the WEs.

Conclusion 2.4: The GIS based asset inventory and master plan are very useful planning and management tools that should be extended to all other WEs.

Finding 2.5: Eighty percent of the LWWSS budget was allocated to the provision of technical equipment and the implementation of small-medium-scale projects.

Conclusion 2.5: Funds spent on equipment and projects were well spent.

Finding 2.6: The activities carried out in support of improving customer service and customer relations were generally well received by the WEs, in some WEs more than others, depending on the interest of the DG.

Conclusion 2.6: The LWWSS program has improved corporate culture.

Finding 2.7: Factors influencing the achievement of project objectives included the USAID close relationships with the water sector stakeholders in Lebanon, the LWWSS relationships with the WE DGs, and its understanding of the Water sector, the broad and flexible SOW, the project approach to selection of activities, the maintenance, supplies and follow-up support, the quality of equipment, the LWWSS qualified and experienced staff and sub-contractors and the leveraging of previous work by other projects and donors.

Conclusion 2.7: The overall good project implementation and approaches adopted in the design and implementation of the selected activities contributed to the achievement of the project's objectives.

Finding 2.8: Factors influencing non-achievement of project objectives include: legal framework, status of wastewater sector, procurement time, WE staffing resistance to change, program diversity, lack of standardization, embedment of staff, cost uncertainties, MoEW involvement, feedback to WEs, WE DG support, MOU, and energy costs covered by GOL.

Conclusion 2.8: Many but not all of the factors influencing non-achievement of project objectives were outside the influence of LWWSS and due to the capacity, interest, and capabilities of the WE and the availability of project resources and funds.

Finding 2.9: Project implementation managerial, administrative, operational, and technical successes included well defined TO, detailed activity selection criteria, capable LWWSS staff, good training procedures, and introduction of innovations and international best practices.

Conclusion 2.9: USAID, LWWSS and the WEs have been successful in working together to achieve the aims and objectives of the program.

Finding 2.10: Some of the project implementation managerial, administrative, operational, and technical challenges included LOP time period, limited budget, procurement process, and limitations in working within the constraints of the current GOL policies and working environment.

Conclusion 2.10: Most of the challenges were understood at the start of the project. The original project duration was not long enough. Procurement time was a major issue with the WEs and requires serious review.

Finding 2.11: Mechanisms put in place to ensure the sustainability of the project results include: proper training, provision of spare parts, availability of local support, and written assurance of WE commitment.

Conclusion 2.11: LWWSS has put in place sufficient mechanisms to ensure sustainability.

Findings 2.12: Constraints to sustainability of the project results include: uncertainty on higher management support and interest, appropriation of sufficient funds to maintain equipment, and motivated staff.

Conclusion 2.12: WEs seem to have sufficient funds to cover O&M requirements. Sustainability will depend on support from higher level management in allocating appropriate funds and providing incentives to keep their staff motivated.

Findings 2.13 Gender was not included in the original TO. LWWSS has not included Gender Equity included it in its work plans. Disaggregation by gender is included in the PMP.

Conclusions 2.13: LWWSS has not fully considered the mission's gender integration requirements in the implementation of the program.

III. Water Sector

Finding 3.1: GOL has made reform of the water sector a national priority and has prepared the National Water Sector Strategy (NWSS).

Conclusion 3.1: The NWSS is a comprehensive framework for implementation of a Lebanon water sector program.

Finding 3.2: Major WE problems include lack of enabling political & legal environment, power outages that reduce supply hours, need for pump & network replacement, excessive non-revenue water losses, continued distrust resulting from the previous civil strife, limits on recruitment of key staff, no drought management plans; strain on water systems due to Syrian refugees, GOL procurement process, lack of customer payment in rural areas, and potential for overlap of donor aid.

Conclusion 3.2: MoEW and the WEs understand their problems and their priorities in improving service coverage. They welcome donor assistance in helping to solve these problems; however although MoEW is very receptive to capital assistance projects, they are more reluctant to policy reform assistance.

Finding 3.3: WE Priorities include funding for infrastructure, replacement of pumps and networks, tariff collection, develop urban area infrastructure before rural areas, customer service, household metering, and source & network metering.

Conclusion 3.3: WEs have many of the same priorities.

Finding 3.4: The WEs understand that waste water management is part of their mandate but are not ready to accept responsibility at this time. 92% of Lebanon's sewage running untreated into watercourses and the sea (NWSS).

Conclusion 3.4: Waste water is a neglected sector by the WEs that needs attention.

Finding 3.5: Lebanon's irrigation potential is 177,000 ha; currently only 90,000 ha are equipped for irrigation.

Conclusion 3.5: The potential and benefits for introducing modern irrigation management in Lebanon is high.

Finding 3.6 More than 20 agencies including four UN agencies are actively involved in Lebanon's water sector.

Conclusion 3.6: Good coordination to prevent donor overlap is required.

Finding 3.7 There are active NGOs such as Blue Gold willing to take an active role in Lebanon's water sector. Lebanon has a strong private sector. A number of WWTPs are already being run by contractors under outsourced O&M contracts. This was confirmed in meetings with several of the WE DGs. Unfortunately the legal framework governing PPP activities is not yet ready (NWSS).

Conclusion 3.7: Lebanon has high potential for successful PPPs.

RECOMMENDATIONS

Recommendations on possible follow-up on LRBMS and LWWSS activities to enhance the sustainability of the projects' outcomes and of the provided infrastructure.

- In follow-up on LRBMS, activities might include encouraging the participation and decentralization and focus on empowering Municipalities and water user entities; continuing support to Water Monitoring extend and expand to groundwater and water quality as well support to initiatives to establish and legalize water committees and water user associations.
- Support should also be provided to the Litani River Basin Federation focusing on pollution control and ground water regulation and the promotion of increased involvement of other agencies in the Federation.
- The approval and implementation of management and staffing plans prepared by LRBMS should be encouraged. Finally, the IWRM should continue to be promoted.
- In follow-up on LWWSS, GIZ common Bench Mark systems should be included. The performance benchmarking could be considered as a funding mechanism to support the WEs.
- The water sector donors and partners coordination should continue to be promoted and the exchange of successes and lessons learned between WEs should be encouraged. LWWSS components 2/3/4/7 activities should be extended and expanded to all WEs.
- Emphasis should be put on standardized WE/MoEW data collection & databases.
- The equipment/infrastructure support to BMLWE should be limited, but they should be encouraged to participate in capacity building and institutional reform initiatives.
- Finally, USAID procurement procedures should be evaluated.

Recommendations on possible replication of LRBMS and LWWSS projects and future programs/activities that address the enhancement of the water sector in Lebanon and of the management and conservation of water resources in the Litani Basin.

- USAID should consider a follow-up program to LRBMS since much remains to be done to improve river basin water management in Lebanon, and a follow-up program to LWWSS to be done to improve potable water and waste water management in Lebanon.
- Support to LRA should continue but perhaps as component of a wider program.
- Activities of LRBMS that should be emphasized include: Integrated Water Resource Management; River Basin Federation; Stakeholder participation; water committees and water user associations; use of NGOs and the private sector (Blue Gold); water monitoring: surface, groundwater, quality; pollution control; groundwater management; small scale irrigation; introducing modern irrigation equipment and techniques; and Gender Equity. While infrastructure and irrigation and Agriculture extension support through LRA should be deemphasized and LRA and the private sector encouraged contributing in this regard.
- Continuity of LWWSS programs with WEs through on-going projects such as WISE & WISE AE should be supported. Working with all WEs should also continue. USAID should reengage with waste water support to WEs with waste water included as a component to new projects or as a separate project.
- Activities of LWWSS that should be emphasized include: increased focus on improved O&M, customer service and public awareness, standardized financial and database management, use of equipment/infrastructure to support capacity building and institutional reform, close coordination between donors and WEs, streamlined procurement and outreach to private sector.

- With relation to the support of the Water Sector in Lebanon, collaboration with the MoEW in all Water Sector Programs is recommended; also the embedment of staff in WEs and possibly in MoEW is encouraged. The support to the NWSS & NWWS is recommended and MOEW/WEs are to be encouraged to prepare drought and flood emergency plans. The WEs should be involved in decisions regarding the Syrian refugee influx crisis; and emergency funds should be used wisely.
- The promotion of next steps in developing and approving the Water Code should be taken into consideration. Also, the promotion of Water Governance in all Water Sector Programs should continue.
- Preparation of a National Water Sector Environmental Assessment (Dams, GW, and climate) should be supported and ground water management initiatives are to be encouraged. This includes groundwater monitoring, permitting, regulation and recharge.
- Support funding for irrigation activities with WEs, LRA, municipalities, NGOs should be considered. The promotion of modernization of irrigation equipment with MoA & the private sector is recommended and agriculture waste water reuse by the municipalities and the private sector should be promoted.
- The role of private sector should be supported; the potential of private sector initiatives such as Blue Gold for public advocacy should be investigated.

Recommendations on the need of continuing to promote for transformation of LRA into an integrated Basin Agency and the viability of such an agency.

- The idea and concept for transformation of LRA into an integrated Basin Agency is a good one but it would require that LRA has as a minimum the mandate, authority, and staff to manage and allocate water resources for water quality and groundwater management. Unless MoEW is fully supportive and the government moves towards amending the govern laws to change LRAs mandate, it is questionable whether LRA would be able to carry out the roles and responsibilities of a basin agency.
- The LRBMS initiative with LRA and the municipalities to form a river basin committee was commendable especially if the committee is able to register as an official organization. Any forum for addressing these serious basin water issues should be promoted whether as a government or non-government organization. However the committee needs to include active involvement of other GOL stakeholders such as MoEW, Ministry of Environment, Ministry of Agriculture, Ministry of Interior and Municipalities, WE, etc.

Recommendations on how to fulfill the Mission’s gender integration requirements in the overall water sector in Lebanon including the documentation of initiatives taken by Government of Lebanon and other donors in this regard.

- A cross-cutting component on Gender Equality and Female Empowerment in all Contracts and Grants should be included.
- Gender specific assessments should be conducted on such topics as role of women in Lebanese agriculture, irrigation, water sector (water supply and waste water). In all user and customer surveys gender specific questions should be required.
- Activities listed in Gender Assessment for USAID/Lebanon (Social Impact, July 2012) should be implemented to include:

- Cooperation with “Lebanese National Observatory for Women in Agriculture and Rural Areas” (NOWARA), “Mainstreaming Gender Dimensions into Water Resources Development and Management in the Mediterranean Region” (GEWAMED) division at the Renee Mouawad Foundation, relevant UN agencies, and related NGOs. The cooperation would also allow reaching out to rural women.
- Build on the success of a recent awareness campaign conducted as part of LWWSS (on the benefits of water conservation, of preventing water contamination, and of paying water dues on time) to develop a new campaign focused on women’s key role in water conservation
- Provide assistance to the National Council for Lebanese Women to produce and implement sector training for Gender Focal Points.
- Support women’s centers to undertake in-depth research and disaggregated data collection on gender and water in Lebanon.

EVALUATION PURPOSE & EVALUATION QUESTIONS

EVALUATION PURPOSE

The respective Contracting Officer's Representatives (CORs) for the LWWSS project and LRBMS Project have requested in August 2013 a final performance evaluation of the LWWSS and LRBMS projects to analyze the extent of achievement of the program objectives, to evaluate its outcomes, to document successes, challenges, and lessons learned from the project and to assess the WEs improvement of performance compared to benchmarks set under GIZ "Assistance to the Water Sector Reform" program.

Finally, the Mission requested that this final performance evaluation analyzes the extent to which LWWSS and LRBMS fulfilled the mission's Gender Integration requirements and provide analysis of the overall sustainability risks associated with assistance to the water sector in Lebanon.

EVALUATION QUESTIONS

Questions to be answered are:

1. To what extent have the projects achieved their expected outcomes and stated objectives? For instance, to what extent did LWWSS achieve its objectives in improving the efficiency of the water management, in improving the water infrastructure and in enhancing the water governance, and to what extent did LRBMS achieve its objectives of setting the ground for improved, more efficient and sustainable river basin management at the Litani River basin?
2. What were the factors influencing the achievement or non-achievement of the projects' objectives?
3. Regarding the project implementation and specifically the managerial, administrative, operational, and technical successes and challenges:
 - a. What were the successful aspects or the successes stories and lessons learned for implementation in the future?
 - b. What were the challenges in project implementation or aspects that did not properly contribute to meeting objectives of the projects?
4. Were mechanisms put in place to ensure the sustainability of projects' results? If not, why not? If so, how effective were they? What are the factors influencing the achievement or non-achievement of sustainability of the projects' results?
 - a. Is there a defined exit strategy? If so, to what extent would it contribute to sustainability?
5. To what extent the project has fulfilled the mission's gender integration requirements?

The evaluation should provide recommendations for USAID/Lebanon on:

- Possible follow-up activities to enhance the sustainability of the projects' outcomes and the sustainability of the provided infrastructure.
- A possible replication of this program, and future programs/activities that address the enhancement of the water sector in Lebanon and of the management and conservation of water resources in the Litani Basin.

- The need of continuing to promote for transformation of LRA into an integrated Basin Agency and the viability of such an agency.
- How to fulfill the mission's Gender integration requirements in the overall water sector in Lebanon including the documentation of initiatives taken by Government of Lebanon and other donors in this regard.

PROJECT BACKGROUND

LWWSS Project Background

The United States Agency for International Development (USAID) Lebanon Mission has contracted with Development Alternatives Inc. (DAI) on September 30, 2009 to implement the Lebanon Water and Wastewater Sector Support Program (LWWSS) under a \$19,508,162 million baseline contract number EPP-I-00-04-00023-00/04. The baseline period of performance of this contract is September 30, 2009 to September 30, 2013. As a result of several Task Order modifications that followed the issuance of the initial Task Order, the total estimated cost was increased to an amount of \$34,357,088.

The LWWSS is designed to continue the USAID commitment to improve water supply and sanitation services for the people of Lebanon. The predecessor Lebanon Water Policy Program (LWPP) reflected a bold action by USAID to work directly with the Government of Lebanon. It demonstrated that carefully designed interventions joined with leadership from the government can produce impressive and inspiring results. Based in the MOEW, the LWPP team helped the CEO of the South Lebanon Water Establishment (SLWE) forge a single entity from four water authorities, adopt an improved financial and accounting system, reduce non-revenue water, and put in place a business planning process that incorporates five-year capital planning and tariff adjustments. Through these efforts, the SLWE became a model that could be emulated by the other WEs in Lebanon. The LWPP team also helped the Beirut-Mount Lebanon Water Establishment (BMLWE) develop a business plan and cost recovery model. If one measure of success is the willingness of other donors to adopt USAID's approach, then LWPP was a resounding success. In the past year, both the German International Cooperation program (GIZ) and the European Union (EU) have adopted LWPP's approach and activities in their support programs to the WEs.

With LWWSS, USAID extends its support to help all four WEs advance toward financial and operational sustainability. It builds on LWPP's successes and introduces new areas of assistance in staff capacity building, capital investment planning, and customer service. It also includes direct investments in infrastructure and equipment that will enable the establishments to improve and extend services to their customers. Working closely with the GIZ and EU programs, the DAI team applied the lessons learned under LWPP and introduced best practices and innovations from other countries to help each water establishment improve its service delivery, financial management, planning, and customer outreach—all essential ingredients to long-term financial and operational sustainability.

LWWSS is intended to complete seven tasks through the USD 34,357,088 contract. These tasks are:

1. Complete an initial assessment that included a detailed list of proposed deliverables, activities, and tasks, as well as a plan identifying the equipment and infrastructure needs of each water establishment and MOEW.
2. Strengthen the water establishments' managerial, technical, and operational capacities.
3. Increase the capacity of the establishments' employees to manage financial systems and help each establishment adopt improved commercial practices.
4. Increase the establishments' capacity in capital investment planning and project management.
5. Provide equipment to improve the water establishments' performance.

6. Implement small- to medium-scale water and wastewater projects.
7. Improve customer service and relations.

One of the findings made by the RIG audit was that DAI had implemented only two major activities in the wastewater sector that had a limited effect. As a result, the RIG audit recommended that USAID/Egypt's regional contracting office, in coordination with USAID/Lebanon, modify the contract, indicating that the primary focus of the program is on potable water activities and not wastewater activities, and to adjust the contract deliverables accordingly. In response to this recommendation, on June 12, 2013, the COR submitted GLAAS Requisition "REQM-26813-000047" to USAID/Egypt's regional contracting office requesting modification of Task Order no. EPP-I-05-04-00023-00 so that the primary focus of the program is on potable water activities and not wastewater activities, and to adjust the contract deliverables accordingly.

LRBMS Project Background

The Litani River Basin suffers the fate of many river basins around the world: increasing demands compete for limited natural resources. Groundwater over-exploitation, deforestation and overgrazing, unplanned urban sprawl, untreated wastewater effluents, and unsustainable agricultural practices contribute to environmental degradation in the form of declining water and soil quality. Solutions do exist to reverse these trends and establish sustainable management practices. The key to successfully implementing such solutions requires applying the principles of Integrated Water Resources Management (IWRM) through a single river basin authority rather than multiple agencies responsible for different aspects of water management as is the case in many countries. The existence of the LRA provides a unique platform to become such an IWRM river basin authority that will mobilize stakeholders in the river basin and address these challenges in an integrated manner. Successful implementation of LRBMS will prepare the LRA to assume the role of an integrated river basin authority when legal constraints are removed.

The concept of basin management here includes not only management at the macro scale, but also the delivery of water services to basin users. The overall USAID water sector AO referred specifically to improving water services for all while at the same time, the LRA has responsibilities for both for irrigation service delivery in basin canal commands and for water resource management at the basin level. Some of the most critical issues facing the basin are resource-level issues such as surface water quality degradation and ground water over drafting.

International Resources Group (IRG) was awarded a \$10,448,535 contract by USAID/Lebanon (Contract EPP-I-00-04-00024-00 Task Order No.7) under the Integrated Water and Coastal Resources Management Indefinite Quantity Contract (IQC) II to implement the Litani River Basin Management Support (LRBMS) Program. The period of performance of this contract is September 29, 2009 to March 30, 2014.

The LRBMS program is part of USAID's increasing support to the water sector in Lebanon. The purpose of the LRBMS Program, as stated in the RFTOP, is to set the ground for improved, more efficient and

sustainable management of the Litani river basin through provision of technical support to the Litani River Authority and implementation of limited small scale infrastructure activities.

The LRBMS technical assistance team was to provide technical services and related resources to LRA in order to improve their planning and operational performance and equip them with the necessary resources for improved river basin management. To achieve the LRBMS program objectives, IRG was to undertake tasks grouped under the following four components:

- 1) Building Capacity of LRA towards Integrated River Basin Management (IRBM)
- 2) Long Term Water Quality Monitoring of the Litani River
- 3) Integrated Irrigation Management which will be implemented under two components:
 - a. Participatory Agriculture Extension Program: implemented under a Pilot Area: West Bekaa Irrigation Management Project
 - b. Machghara Plain Irrigation Plan
- 4) Improving Litani River and Qaraoun Dam Monitoring System which will be implemented under two components:
 - a. Litani Qaraoun Dam Monitoring System
 - b. Litani River Flood Management Model

EVALUATION METHODS & LIMITATIONS

The performance evaluation was undertaken by a Technical Expert and Evaluation Specialists over a 6-week period between 27th January and 5th March 2014, including the preparation of the evaluation, review of documents, field visits and draft report. The evaluation matrix is available in Annex II.

Desk Review

The assignment started with a review of a large number of reports and related material prepared by DAI, IRG, USAID, World Bank, Lebanese Government, and other organizations. The review of documents continued as the evaluation team collected documents during the field visits and interviews. Documents of particular significance include the projects documents (i.e. CA SOW, Work Plans, PMPs, and quarterlies), the CDCS, the National Water and Wastewater Strategy, and the GIZ Water Sector benchmarks. The list of the documents other than those prepared under the projects is at Annex IV.2.

Key Informant Interviews

Key informant interviews followed the documentation review. Meetings were held with LWWSS and LRBMS program COPs and staff; Projects' Respective CORs were met during the inbrief and debrief but were not interviewed as KII; Water Establishments Director General and LRA Chairman; Heads of Department at LRA and technical staff as well as other projects donors and other Litani River Management stakeholders and beneficiaries of both projects. The purpose of these KII was to obtain more detailed, in-depth understanding about specific issues. A specific interview guide was developed for each interviewee. A typical interview lasted one hour and a half. The individuals interviewed for this evaluation are listed at Annex IV.1. The interview guides are also found in Annex III.

Site Visits

Field visits to the sites were conducted. They allowed checking on the adequate utilization or not of equipment procured by both projects, and on the ERP systems installed in the WEs and LRA offices. Site visits were also conducted at the BWE Customer Service Center, pump stations, WE laboratories in Saida and Zahle and some of the Water monitoring stations. The itinerary of the evaluation is found in Annex IV.4.

Limitations

- It would have been ideal if a complete list of all of the reports prepared and delivered under LRBMS was available at the time of the evaluation. Though such a list was being prepared by LRBMS, the list available at the time of the evaluation was the DEC list which was not finalised. A complete list of all of the reports would have made it easier to know what reports had been prepared on certain subjects and thus reduced the time spent by the evaluation team to ask for and review the reports which were nevertheless immediately provided once they've been identified and requested by the evaluation team.
- It was also difficult to meet with all the Key informant as some of them were not available, such as the LRA DG.
- Some field visits to areas such as Akkar and areas of Baalbek, where some of the projects activities were implemented, were not attempted for security reasons.

- LWWSS is an ongoing project and the final measurement of some M&E Plan indicators were not yet available.

FINDINGS, CONCLUSIONS & RECOMMENDATIONS

Findings for this evaluation were separated into three sections: LRBMS, LWWSS, and the Water Sector. Findings for LRBMS and LWWSS were directed towards answering the five questions stated above and developed for this evaluation. The findings presented in the water sector section were included to assist in helping to provide recommendations on follow-up USAID activities to support Lebanon’s water sector.

I. LRBMS

To what extent has the project achieved the expected outcomes and stated objectives?

Finding I.1: LRBMS has been implemented in accordance with USAID’s Country Development Cooperation Strategies (CDCS), GOL’s National Water Sector Strategy and the IRG Task Order.

- LRBMS has met or exceeded most of the 16 PMP results framework indicator targets with the following exceptions:
 - #6 Management systems & plans used by LRA as a result of LRBMS; The plans were endorsed by LRA but implementation depends on approval from MoEW which was outside the control of the project.
 - #11 Operating automated monitoring stations in Litani River Basin; 19 out of 20 were installed and are operating.

- Budget allocation by CLIN:

CLIN 001-Assessment and Building Capacity of the Litani River	19%
CLIN 002-Long Term Water Quality Monitoring of the Upper	19%
CLIN 003-Integrated Irrigation Management	28%
CLIN 004-Improving Litani River and Qaraoun Dam Monitoring	12%
CLIN 005-Administrative Budget	22%

- Status of deliverables as reported by LRBMS (February 2014) is found in annex IV.3.

Conclusion I.1: As stated in the project purpose and objectives LRBMS did improve the efficiency of water management, improved the water infrastructure and enhanced water governance by setting the ground for improved, more efficient and sustainable management of the Litani river basin through provision of technical support to the Litani River Authority and implementation of limited small scale infrastructure activities.

Assessment & Building Capacity of the LRA towards IRBM

Finding I.2: Improved Water Governance was successfully done through preparation of plans, assessments, workshops, study tours, formation of river basin and water user stakeholder committees. However successful implementation of plans, assessments, and the river basin committee was limited.

- Training has been a major activity under LRBMS. From LRA 98 persons (28% women) were trained in several training activities. For the water users 112 person (12 % women) were trained from Canal 900.

- Preparation of management systems & plans for LRA was a major output of LRBMS. Although they were generally reviewed and endorsed by LRA, without approval of MoEW it will be difficult to formally implement them. The four Plans that were endorsed (Year 4) are: the Dam Safety Monitoring Plan, the O&M Plan for Canal 900, the Water Quality Data Base and Flood Management Plan. Two of the plans were still under review by LRA during the period of this evaluation: the Water Monitoring Plan and the Emergency Management Plan.
- A River Basin Management and Action Plan were prepared and discussed at various levels. The plans were endorsed by local municipalities (20), LRA, & MOEW; however they are not being implemented.
- A Litani River Basin Committee made up of representatives of municipalities was established to introduce IWRM and involve stakeholders in helping to understand and solve water issues in the basin. Originally LRBMS tried to involve MoEW in the process. When this was unsuccessful LRBMS focused on the municipalities which strongly supported the initiative. At this time the committee has no official status but has initiated efforts to register as an NGO.
- The two participatory/decentralized water management Study Tours to France - Oct 2012 & Feb 2014 with municipality heads were good ideas. One of the outputs was a meeting with the Speaker of the Parliament, Nabih Berri, to discuss the River Basin Committee. Another major output was the drafting of a programming law ("loi-programme") for the Litani River.
- LRBMS has conducted a staffing and organization assessment with recommendations. No action has been taken by LRA or MoEW to date.

Conclusion 1.2: LRBMS was successful in affecting attitude change on the understanding and importance of IWRM within LRA. This was confirmed with the interviews held at various levels. LRA was unable to implement many of the LRBMS plans and proposed institutional changes due to the lack of support and approval from MoEW.

Finding 1.3 Operational improvements of LRA were carried out through introduction of Enterprise Resource Planning (ERP) software provided by LRBMS. No business plan was prepared due to not being identified as a priority necessity for LRA specifically for the promotion of the IWRM concept. A River Basin Decision Support System was not developed.

- LRA is satisfied with their current business model and declined the proposal to prepare a business plan. Instead a financial forecasting spreadsheet model was prepared by LRBMS and provided to the LRA Board. LRA seems to be satisfied that they are making a profit with their two sources of revenues i) the government for electricity; and ii) customers from three irrigation systems. LRA covers 60% of costs for Bekaa irrigation. They get a discount for Bekaa electricity for pumping. LRA does not see irrigation as a business (profit making endeavor) but as social service.
- LRBMS has procured, supplied, and provided training for the ERP system. LRA is very pleased with the results. They are implementing the budget, purchasing, warehouse, billing and collection and payroll modules. The implementation is still not 100%. For accounting LRA would like to run it side by side their current package for one year to test. Even though this will require double entry of the data, the head of LRA accounting said it was worth it. LRBMS provided a one year follow-up contract for LRA until the end of 2014. LRA will include similar yearly support contracts following the end of 2014 using their own funds.

- LRBMS did not develop a River Basin Decision Support System for LRA. It was expected that the WEAP model prepared by EU for MoEW would be provided to LRA for update by LRBMS. Unfortunately LRA could not retrieve the model from MoEW. LRBMS did prepare a water balance report and a groundwater model for the upper Litani river basin. LRA staff participated in the process and have reviewed the work.

Conclusion I.3: The introduction of the ERP was very successful, however because of LRA's "profit" making status they do not seem to be interested in improving their business model at this time. LRA's technical staff is limited. Although appreciative of receiving the results of technical assessment, studies and models, they do not have the staff to support these efforts on their own.

Finding I.4: Knowledge Development/Awareness Raising of Water Users was integral to the LRBMS. Several of the initiatives such as the Canal 900 users committee and pilot wetland are new to LRA and still require project assistance.

- LRBMS conducted a Knowledge Assessment Survey involving 700 respondents residents of the Litani River Basin from the cazas of West Bekaa, Zahle and Baalbeck.
- LRBMS successfully conducted various awareness activities, with schools (booklets, drawing contest) and residents at large (posters and brochures). A documentary film was prepared.
- The LRBMS efforts in organizing the Canal 900 users (150 members, 6 women) committee was well received by LRA and the users. LRBMS decided not to attempt to revive the existing (but inactive) Water User Association. It was never supported by LRA. Instead LRBMS took a softer approach. Lead farmers representing the six villages were selected to form a farmers' committee. With LRBMS support they met with the LRA Canal 900 operations manager to discuss their issues. LRA has addressed many of these issues. For Yr 2014 preseason LRA is meeting with the committee to discuss water delivery plans for the upcoming irrigation season. According to LRBMS staff this shows big improvements in the manager's will to communicate with farmers. However these meetings are still being facilitated by LRBMS.
- The Canal 900 farmers satisfaction survey showed little change in farmer satisfaction between 2010 (46%) and 2013 (45 %)
- LRBMS did construct a pilot wetland along the Litani River to demonstrate natural water treatment technology for treating polluted Litani River water. At 2.5 ha in size, the wetland will receive 30 l/s flow during the dry season and 60 l/s flow during the rest of the year representing 20 to 100% of the Litani River flow during the dry season and 1 to 2% of the flow in the wet season. The wetland system will remove 30 to 90% of the mass of pollutants entering depending on the individual pollutant and the time of year. Solar energy will run the pumps. The facility was put into operation in February 2014 and is under testing.

Conclusion I.4: LRBMS made considerable efforts to raise water user awareness. The efforts were generally at a pilot level. Without continued external TA support LRA's ability and political will to continue and expand these efforts is questionable. Although supported by the municipalities the farmers' user committee is "informal and unregistered". It may have been more sustainable to reactivate and address the needs of the existing Water User Association or to empower it rather than to support the creation of a new informal organization. The continuation of the farmers' committee after the departure of LRBMS is questionable.

Long-Term Water Monitoring

Finding I.5: LRBMS provided a number of tools, procedures, and upgrades for strengthening LRA's water monitoring capabilities.

- LRA is responsible for surface water flow monitoring for all of Lebanon and water quality monitoring in Litani Basin. Before LRBMS LRA had 10 surface monitoring sites in the Upper Litani basin, five with automatic level recorders, and 21 groundwater monitoring sites. Twelve of the surface and groundwater sites were monitored for water quality.
- A water monitoring plan including procedures for data collection, control, storage, analysis was prepared to improve their surface water and ground water monitoring capability in the Litani basin.
- LRBMS provided flow and water quality measurement equipment with training for the following equipment: automated water level and water quality recorders for gauging stations (5); installation of observations wells (14) with automated groundwater water level and TDS recorders; one ag met station; flow velocity meters (2); Sontec River surveyor for direct flow measurements using acoustic Doppler technology; smart portable lab to measure 24 water quality parameters; digital Spectrophotometer with over 40 pre-programmed tests; and conductivity, bacteria, pH, TDS, DO field sensors/test kits.
- The automated water level and water quality recorders were installed at existing gage stations side by side with previously installed water level recorders provided under a previous donor project. The ground water observation wells are all newly constructed by LRBMS.
- The data from the 5 gage stations and the groundwater observation wells is being downloaded manually through a laptop computer weekly by a trained technician contracted by the LRA Monitoring Unit located in Chtoura. The gage station data is being recorded at 4 hour intervals.
- One set of water quality and water level data is sent electronically by email to head of Water Resources and Environmental Unit weekly where it is stored in a database prepared by LRBMS. One set of water level data is sent to the Monitoring unit in Beirut by hard copy weekly.
- A report template has been prepared by LRBMS; however no regular official reports have been issued.
- LRA requested support for updating their HYDATA software from DOS to Windows. LRBMS supplied the software and provided training.
- GIS software was supplied to LRA. LRBMS compiled all existing GIS at LRA (3 or 4 of them) into one which was installed on the main server for all LRA staff to access. Additional data was entered, while a scanner was procured to scan existing maps. The GIS software was used to prepare a Litani basin land use analysis using satellite images and to develop an in-house water quality GIS database.
- LRBMS used the groundwater data to prepare a groundwater study for the upper Litani basin using the software package Modflow.

Conclusion 1.5: LRA recognizes that they need to expand and automate their surface and groundwater water quantity and quality monitoring capabilities. LRBMS helped with this effort. However LRA still requires significant improvements to effectively cover the Litani basin and other areas in Lebanon as per LRA mandate to include additional staff, updated equipment, proper data processing procedures (models), a more extended hydrologic database, and more regular reporting and open access to data (website).

Integrated Irrigation Management

Finding 1.6: LRBMS improved LRA irrigation management practices with benefits for farmers, public health and pollution mitigation.

- LRBMS focused on the LRA West Bekaa Canal 900 irrigation project, a pressurized, technical irrigation system that takes its water from the Quaroun Reservoir. Phase I was rehabilitated in 2000 with World Bank funding to irrigate 2000 ha. It now serves around 600 ha. and 120 farmers in 6 villages. Initially water is pumped 100 meters up to a lined open channel designed to deliver 5 m³/s but now is only delivering 2-3 m³/s. The 18 km canal has three outlets. At each

outlet the water is pumped up another 50 meters into a regulating reservoir where it discharges under gravity to a closed pipe system serving multiple hydrants in the irrigated area in the valley below. The system delivers water at the hydrants with a pressure of up to 6 bars. Farmers request water on a seasonal basis based on area to be irrigated. A seasonal tariff based on area to be irrigated averaging USD 600/ha is paid by the farmer at the beginning of the season. LRA controls the physical connection to the hydrant. Farmers say they typically are only provided water to serve 40% of the area they request. The rest they take from groundwater. Interviews with several farmers and the farmer survey carried out by LRBMS indicate that, because the cost of LRA water is less expensive than pumping groundwater, farmers usually prefer LRA water.

- LRBMS completed the construction of two gravity diversions in 2013 to increase the capacity of the system and thus the served area. The diversions allow water to be diverted directly to the closed pipe network instead of being pumped to the regulator reservoirs. Water is delivered at a lower pressure but is expected to allow irrigation of an additional 220 ha. The system has been tested but the 2014 season will be the first time the new scheme will be fully implemented.
- LRBMS at the request of USAID constructed a 1500 mm, 2 km pipeline to convey irrigation water from the Canal 900 inlet box structure to the Machghara irrigation system. The purpose was to provide freshwater to 100 ha that had been diverting waste water for irrigation that otherwise should be delivered to the USAID-funded Aitanit wastewater treatment plant. The Machghara pipeline was built and transferred to LRA. LRA is not requesting payment for delivery of this water.
- A pilot drip irrigation activity was implemented by LRBMS. The purpose was to demonstrate the benefits of adopting drip irrigation for potato and other vegetables. 14 Bekaa Valley farmers were provided with drip irrigation and mini sprinkler systems. Tensiometers were installed to monitor soil moisture. Although some of the farmers failed to cooperate, the feedback from the farmers was generally positive and the results supported the advantages of drip irrigation. One of the farmers that participated in the program said that he was using the drip system but only for vegetables. The drip tubing supplied was only good for two seasons so it is uncertain what will happen with the pumps and filters installed by LRBMS. One drip demo site was set up at the LRA Kherbet Kanafar extension center. It is still operational.
- The farmers' satisfaction survey confirmed that the majority of farmers expect the Ministry of Agriculture to handle the extension services, while users expect all aspects of water distribution and delivery to the farmers should be with LRA. Most farmers usually meet with LRA staff only when they pay their annual fees or when there is a problem.
- LRBMS tried unsuccessfully to involve the LRA Kherbet Kanafar extension center in various activities.

Conclusion I.6: It would have been preferred if there were another full irrigation season to evaluate the effectiveness of several of the LRBMS activities. Canal 900 is limited in the area it can serve even with the infrastructure improvements provided by the project. Increased attention to improved irrigation scheduling and user water management may return better results per investment dollar than infrastructure improvements. Farmers are willing to try new irrigation techniques and systems but they normally would not turn to LRA to provide information on these systems.

Qaraoun Dam and Litani River Monitoring System

Finding I.7: LRBMS has successfully contributed to the mitigation of the risks associated with the Qaraoun Dam and floods in the Litani River Basin.

- A dam safety monitoring program was introduced.
- LRA staff were sent to the United States Bureau of Reclamation in Colorado for dam safety training.

- Dam safety monitoring equipment was supplied and installed including a rover (Remotely Operated Vehicle) to carryout underwater inspections of the upstream facing of the dam.
- A seismic vulnerability analysis of the dam was conducted.
- Potential impacts of a dam failure by modeling the routing of the resulting flood were evaluated.
- A Dam Emergency Management Plan and a Flood Management Plan was prepared. It is under review by LRA.
- LRBMS conducted a flood field survey on the 2003 flood and developed a computer river flow model using topographical data and satellite imagery to predict the extent and magnitude of different levels of floods. A flood management plan was prepared to assist LRA and Municipalities to prepare for future events.
- MoEW is aware of these effort and recognizes the importance of these types of plans.

Conclusion 1.7: The Qaraoun Dam is safe. LRBMS has provided appropriate and updated equipment and procedures for monitoring the dam and addressing possible emergencies resulting from a dam failure. A flood computer flow model and management plan were also prepared. It is up to LRA how they will use these tools and training.

Factors Influencing Achievement and Non-Achievement

Findings 1.8: Factors influencing the achievement of the project's objectives:

1. Program was tailored according to the needs of LRA.
2. LRA has technically competent staff at senior levels.
3. Focus on one agency and one basin
4. Broad based program covering all aspects of IWRM.
5. Emphasis on water governance and stakeholder participation at basin (municipalities) and user level (Canal 900 farmers & municipalities).
6. Use of innovative and appropriate technology (drum filters for Canal 900; river surveyor for stream gage measurement; Remotely Operated Vehicle for underwater dam inspection, smart portable lab and digital spectrophotometer for water quality measurements, automated water level and water quality recorders, pilot wet lands wastewater treatment facility, and ERP for finance section.

Conclusion 1.8: Overall, the project was designed and implemented well.

Finding 1.9 Factors influencing the non-achievement of some of the project's objectives:

1. Lack of policy and legal environment allowing for good water governance
2. Lack of participation of MoEW and inability of LRA to implement various plans and organizational changes without approval of MoEW and other GOL bodies.
3. Reluctance of LRA to shift from a power and water delivery organization to water management organization. Their current scope and mandate limits their ability and political will to take a leadership role in issues such as ground water regulation, development of a river basin authority, involvement in basin wide environmental and pollution control, agriculture extension, development of water user associations, and irrigation management outside their own systems.
4. LRA do not see irrigation as a business making profit endeavor but as social service.
5. Lack of depth in expertise of technical cadre.
6. Unofficial status of the water user committee.
7. LRBMS made the decision not to resurrect a previous unsuccessful, but legally accepted water user association may have jeopardized the chance to institutionalize (to become accepted and

used by many people; to establish as a formal organization) the work done with users under LRBMS.

8. The basin water authority only included municipalities. Other government stakeholders such as the Water Establishment, MoEW, Ministry of Agriculture, Ministry of Environment, Ministry of Interior and Municipalities etc. should have been more involved.
9. Limited provisions and follow-up on data management for water monitoring due to challenges in coordination and decision making processes within LRA Water Resource Department.
10. Limited effort on assistance with water scheduling and implementation of Canal 900 O&M procedures due to lack of collaboration from LRA Rural Development Department
11. Limited assistance to LRA on customer service procedures and tariff modeling for irrigation subscribers.

Conclusion 1.9: Many but not all of the factors influencing non-achievement of project objectives were outside the influence of LRBMS and due to the capacity, interest, and capabilities of LRA and involvement of MoEW. The future of the water basin authority and water user committee is uncertain.

Project Implementation Managerial, Administrative, Operational, and Technical Successes and Challenges

Finding 1.10: Successful aspects or the successes stories for these projects, and lessons learned applicable to implementation in the future regarding the project implementation and specifically the managerial, administrative, operational, and technical successes include:

1. Well defined TO SOW
2. Diversified and flexible program covering all four LRA directorates (Administration, Technical, Irrigation, Hydroelectric) and various departments and functions within these directorates.
3. Good budget balance between capacity building and equipment procurement.
4. Well qualified LRA coordinator assigned full time to LRBMS
5. Good consultant team with local qualified staff supported by experienced Expat STTA
6. Close coordination and involvement of LRBMS, USAID and LRA;
7. LRBMS embedded in LRA
8. Extensive and tailored training program
9. Well-structured international study tours
10. Procurement of good quality equipment with local or regional distributors
11. Numerous and documented studies and management plans for future reference.

Conclusion 1.10: USAID, LRBMS and LRA were successful in working together to achieve the aims and objectives of the program. Having LRBMS embedded in LRA, as well as a highly motivated full time coordinator, a professional and experienced consulting team supported by a technical and supportive USAID COR created an environment for successful implementation.

Findings 1.11: Some of the challenges in project implementation or aspects that did not properly contribute to meeting objectives of the projects:

1. Initial Length of Project.
2. Lack of action from LRA senior board management and MOEW in responding to LRBMS change proposals.
3. Limited LRA staff.
4. Lack of incentives for LRA staff
5. Weak institutional organization within LRA for implementing IWRM
6. Failure to formalize several of the LRBMS stakeholder participation activities such as the water user program and the river basin authority.

7. Use of LRA to implement activities outside LRAs mandate for example agriculture research and extension.
8. LRA already has a number of automated water monitoring equipment provided by other donors. It would have been preferred if LRBMS had procurement from the same manufacturer. Unfortunately the equipment was German made and at the time USAID procurement rules demanded US equipment.

Conclusion 1.11: Most of the challenges were understood at the start of the project. The original project duration was not long enough. Institutional change takes time and close mentoring. Though addressing proper irrigation and agricultural practices is an integral part of promotion of IWRM at the Litani Basin, the success of the LRBMS ag research component is questionable. All equipment and inputs were given to the farmers engaged with the LRBMS. LRA's role was limited. LRA inexperience and the lack of a successful model for Lebanon created difficulties in establishing official and recognized river basin and farmer user committees. Implementation with MOA, a university, an NGO, or a drip irrigation equipment supplier would have been more successful.

Project Sustainability

Finding 1.12: Mechanisms put in place or that should be considered to ensure the sustainability of the project results include:

1. LRBMS provided a suggested exit strategy in a report titled "Achievements and Possible Follow-Ups" dated February 2013.
2. LRBMS provided extensive training, provision of spare parts and use of local suppliers and distributors that are able to provide support after the end of the project.
3. LRA has sufficient funds to maintain equipment
4. LRBMS demonstrated procedures and advantages of using IWRM and involving stakeholders as part of their management strategy.
5. LRBMS provided extensive documentation on project activities, outputs, accomplishments, management plans.
6. Lebanon has educated and skilled farmers with a sophisticated agriculture sector.

Conclusion 1.12: LRA has the funds and local support is available to maintain the equipment procured under the project.

Finding 1.13: Constraints to sustainability of the project results include:

1. Scope of problems such as GW depletion and pollution control is quite large. LRA is only one of several agencies required to help solve the problem.
2. Informal stakeholder organizations.
3. Approval and implementation of management and staffing reorganization plans at higher levels.

Conclusion 1.13: LRA ability to adopt improved water governance and IWRM may be outside their experience and expertise and need donor support.

Gender Integration

Finding 1.14: Gender was not included in the original Task Order; however LRBMS has included Gender Equity in its work plans as a cross-cutting activity.

- LRBMS promoted women participation in all project activities (notably awareness and collaborative activities), while involving LRA staff and water users (farmers and residents);

- LRBMS established a baseline of information, disaggregated by gender, to create a foundation of measurement from which to monitor increased participation among female stakeholders.
- The PMP indicators where applicable include gender disaggregation. Gender disaggregation was also included in the farmer user survey and Knowledge Assessment Survey. The Canal 900 water user group has 4 female farmers.

Conclusion 1.14: LRBMS has not fully considered the mission’s gender integration requirements in the implementation of the program mainly because Gender was not mentioned in the LRBMS TO. However, LRBMS did consider gender in the selection of staff, development of awareness programs and implementation of training activities, and gender disaggregation information was also collected as part of their surveys and included in the PMP. No special assessment was conducted on the role of gender in irrigation or in water management at the community level.

II. LWWSS

To what extent has the project achieved the expected outcomes and stated objectives?

Finding 2.1: Project is being implemented in accordance with USAID’s CDCS Results Framework, GOL’s NWSS, LWWSS TO contract modifications, and annual work plans.

- The budget allocation by CLIN: CLIN 1- Initial Assessment (2%), CLIN 2- Capacity building (6%), CLIN 3- Financial viability (7%), CLIN4- Capital Planning (3%), CLIN 5- Equipment (34%), CLIN 6- Rehabilitation (43%), CLIN 7- Corporate Culture (5%).
- LWWSS implemented different activities tailored toward each of the four WEs. The budget expenditure by WEs to date is as follows: BWE (16%), BMLWE (18%); SLWE (29%); NLWE (37%). The funds have been expended based on criteria set by USAID & LWWSS and priorities set by the WEs.
- Activity selection by LWWSS was based on extensive, participatory investigation through LWWSS and subcontractors’ specialists using the following criteria: i) demand-driven, ii) not duplicating other donor’s, iii) focus of the activity, iv) relevance to the LWWSS scope, v) fund availability, vi) long-term impact, vii) sustainability, viii) timing & schedule, and ix) measurable benefit.
- USAID Regional Inspector General (RIG) carried out an audit of LWWSS in 2013. One of the recommendations was that “USAID/Egypt’s regional contracting office, in coordination with USAID/Lebanon, modify the contract, indicating that the primary focus of the program is on potable water activities and not wastewater activities, and adjust the contract deliverables accordingly” The TO modification (7) with these changes was signed in September 2013. Wastewater activities are not being carried out under the TO.
- Because of current U.S. Government policy, the RIG also did not recommend to work directly with MOEW at this time.
- LWWSS has equaled or surpassed 6 of 8. Numbers for Indicator # 2 “Percent of water revenues collected by targeted water entities” will not be available until April 2014. Activities for Indicator 5 “Number of management systems and plans used at water management entities as a result of USG assistance” are on-going and are expected to be met before the completion of the project.
- LWWSS activities carried with each WE are found in annex IV.3.

Conclusion 2.1: As designed and adjusted through agreed work plans and contract modifications, LWWSS successfully implemented its expected outcomes and stated objectives. Allocation of activities within the WEs based on priorities set by the WEs was a successful strategy and appreciated by the WEs. Activity selection by LWWSS based on extensive, participatory investigation through LWWSS and subcontractors’ specialists using defined criteria was also a successful strategy. Having offices in MoEW

and coordinating more closely with MoEW would have been more cost effective and benefitted the project. This was initially the plan as per LWWSS proposal (refer to Mod 3 program description p. 10). However, it was not pursued due to USG policy requirements not to work directly with the GOL central public institutions.

Improved Capacity by WEs for Managerial, Technical, and Operational Efficiency

Finding 2.2: Most of the activities under the Improved Capacity by WEs component were delivered through training. Many of the trainings were done in support of activities carried out under other components.

Establishing and Building the Capacity of Metering Teams

- 218 flow meters were installed in SLWE. The measurement program although effective, the initial measurement program is being implemented through the contractor. DG places high priority on this activity. The DG SLWE: “If you cannot measure you cannot manage”. Unless SLWE staff are assigned and are directly involved in the measurement this will be a problem once the contractor’s agreement expires.
- All WE DGs expressed the importance of measuring and monitoring supply and demand; all strongly support metering of their systems. DG NLWE requested meters but they were not provided. For BWE, Master Plan was substituted for metering.

Building the WEs' Water Quality Management Capacity

- Water quality equipment and training were provided to BWE and SLWE. As a result both Water Quality units show an increased pride and sense of purpose.
- With the USAID procured Atomic Absorption Meter (AAM) the capabilities of the SLWE lab have been upgraded to measure heavy metals. The Lab has indicated a strong interest in ISO certification.
- Both WEs (BWE & SLWE) have been able to hire some permanent staff to support the WQ labs in the last several years.
- Water Quality labs and samplers exist in all WEs. Focus of sampling is on potable water supply to include source, networks, and taps.
- Databases are not standardized. Sampling is done through monthly scheduling. Reports are sent through the DGs to MOEW. SLWE seems to be most advanced, having implemented an access database designed and supported by the WE IT team.
- Both the WE labs visited understand that they are now responsible for Waste Water monitoring. Some equipment has been provided from various sources.
- Water Quality monitoring programs for Waste Water are in initial stages and have not been formalized. Lab directors are requesting training and assistance.
- The BWE DG appreciated the water quality study carried out under LWWSS by AUB that included 153 wells and 28 springs.

Build Pump Stations Operators Capacity in Operation and Maintenance

- LWWSS has provided formal O&M training to BWE and SLWE. The programs were well received and found to be quite useful.
- SI attended several of the trainings. One observation by SI was that the experience level of the participants varied between new operators and highly experienced operators. Initially this

caused some issues; however trainers recognized this and had their programs designed accordingly.

- LWWSS also made O&M training an integral part of all their equipment procurement and rehabilitation/ upgrade/ extension programs.

Capacity Building in Enhancing Administrative Performance

- Basic IT (Microsoft Office) training was provided to BMLWE
- WE systems training was provided to BWE.
- Servers were provided to BWE, NLWE, and SLWE. BML agreed to put in their own server. The equipment was installed and training given to the IT staff at each location. UPS capability was also provided. There seem to be no problems or complaints. Local support for maintenance is available.

Increasing Capacity in Water Distribution Network Monitoring and Repair

- This training was provided to BWE in support of LWWSS Rehabilitation/Upgrade/Extension programs.

Conclusion 2.2: The approach and philosophy used to select and develop the training programs were appropriate. The success of the training to improve capacity in support of other activities such as equipment procurement and infrastructure improvement varied depending on the targeted WE and the subject. Only SLWE are benefitting from the metering program; without metering measurement of supply, demand and losses in a network are guesswork. O&M training as an integral part of all equipment procurement and rehabilitation/ upgrade/ extension programs was successful. Although not included as part of the current LWWSS contract modification, in the future WE lab staff will need equipment and training to be able to monitor wastewater quality testing.

Increased Financial and Commercial Viability of Water Establishments

Finding 2.3: Support to increased Financial and Commercial Viability has been one of LWWSS's most effective programs. Activities implemented varied between the different WEs.

- Upgrade Finance and Accounting Standards and Methods

Business Plans: All WEs have business plans. The business plan for BML was initially prepared under LWPP and updated by GIZ and LWWSS, the one for SLWE was prepared under LWPP and updated under LWWSS, the one for BWE was prepared under GIZ in 2013 and will be updated by LWWSS, and finally the one for NLWE was prepared with GIZ in 2009 and updated under LWWSS this year. A single consultant (Value Add Management Services) was involved in the preparation of the business plans for LWPP, GIZ, and LWWSS. All DGs recognize the importance of the five year business plans and the importance of keeping them updated. However comments on the plans vary. DG NLWE said that the plan was not realistic. The DG BMLWE was following his plan (2010-2014) and wanted it updated for the next five year period. He said that he had implemented 10% of the 1st plan that was prepared under LWPP and 50% of the 2010-2014 plan. He requested assistance with an update of his business plan and said that he would be able to implement 90%.

Corporate Identity: LWWSS worked with each of the WEs on the effort on preparation of a corporate identity. NLWE DG expressed his satisfaction with this effort.

Budget/Internal Audit Manuals: LWWSS has prepared a budget manual for BMLWE and an internal audit manual for NLWE. These procedures are common to all the WEs. LWWSS intends to work with the other WEs on these issues during year 5 of the project. During the interview with the NLWE DG was asked about internal audit and budget support from LWWSS and he said that he was not familiar with the activities. LWWSS is expecting to implement during 2014.

Cost Tariff Model: Cost Tariff Analysis Module was originally prepared under LWPP. LWWSS is expecting to implement during 2014.

- Integrate the WEs Financial, Accounting, Customer Service and Business Process Systems

Enterprise Resources Planning (ERP) :ERP is a family of enterprise resource planning software products primarily geared toward midsize organizations with simple corporate structures and low-to-moderately complex production models designed to assist companies including public sector organizations manage their financial, human resources, and operations. LWWSS has introduced nine modules: including Accounting, Budget, Purchasing, Warehousing, Human Resources and Payroll, billing and collection, document registry, customer service management, and intranet. The strength of the ERP package is its interconnectivity. BMLWE and BWE were provided with the Microsoft Enterprise Resources Planning (ERP) during the second year of LWWSS. SLWE initiated their program in January 2014. NLWE has a similar system provided through a French donor program. However the DG did express an interest in having his system reviewed and updated. LWWSS implementation costs: BML/BWE (\$620 K), SLWE (\$280 K). There have been mixed results:

- **BWE** has implemented all modules. The system is under review and testing. Some of the modules were well received. The head of BWE human resource department says that there is an 85% time savings because of the ERP. BWE was initially reluctant to convert the billing and collection & the accounting from their current systems. This was solved by working with BWE to ensure that the ERP successfully reproduces the results from the old system. ERP consultant support staff have been embedded in BWE to help with the process.
- **BMLWE** implemented all modules. The DG said the ERP implementation process did not work very well. He complained that the local implementer wanted the WE to do all the work. As a consequence the DG decided to stop the work with the local implementer and hire his own consultant at a cost of \$100 K to finalize the implementation of the ERP system. The DG said that this speeded up the process which is expected to be finished by 1 March 2014. Trial testing is expected to take 3-6 months before full system implementation. According to LWWSS staff, the DAI sub-contractor did install, customize and implement all the modules, but only when it was about time to fine-tune two specific modules (the billing and collection and the customer relationships) and go live, the DG preferred to do the work with a consultant of his own choice.
-
- **SLWE** implementation began in January 2014. A similar software package, JD Edwards system, was implemented under LWPP by a local service provider (ITEC). Unfortunately the service provider was charging a service support fee of \$50,000/yr. and not providing the required support. There were several other mistakes made in the implementation of the JD Edwards system. When the system was originally implemented there were no qualified WE accounting and financial staff. The system was designed and operated by the service provider. Since 2009 qualified staff has been hired. This staff is currently

participating in the design and implementation of ERP. The ERP service provider is embedding staff to work directly with the WE. SLWE will take over the ERP once conversion from the old system is complete. The annual software maintenance cost is expected to be \$ 15,000 and the cost of annual service support will be \$9,500. An annual cost savings of \$24,500 to the WE over the J Edwards system is expected.

Time attendance: Time attendance machines were installed at the BWE administrative building and are being used.

Conclusion 2.3: All WEs have business plans. The use of a single consultant by all USAID and GIZ to support preparation of the business plans has contributed to the success of this process. ERP is a tool that can be used successfully to improve WE management functions. ERP has not yet been implemented successfully in its entirety in any of the WEs. It is still a work-in-progress at BWE, and just started at SLWE. The appreciation of ERP package interconnectivity may not be fully understood by all WEs. Implementation requires close coordination and even day to day support during development and conversion. The budget, internal audit and cost tariff model are well designed financial tools. These procedures are common to all the WEs. If implemented as proposed by LWWSS during 2014 it will be a major achievement.

Improved Capital Investment Planning and Project Management

Finding 2.4: Activities under Capital Investment Planning are limited but extremely useful for improving planning and management of the WEs.

Implement Asset Survey, Inventory and Valuation

LWWSS worked with SLWE to prepare a GIS based asset survey and inventory of key water supply networks. SLWE has a GIS team under their Special Studies unit. They have AutoCAD and ARCGIS software although it was not procured under LWWSS. A GPS-based topographic survey unit was supplied under LWWSS. The SLWE head of studies and the GIS lab said that they were making full use of the GPS-based topographic survey equipment for water network mapping. Training was given to pump-station managers/operators to assist with this process. LWWSS reports that the GIS Integration of South Lebanon Water Establishment Pumping Stations inventory database developed for SLWE by LWWSS is being used.

Master Planning

LWWSS is working with BWE to prepare a “water and waste water master plan”. The DG commented that this was well appreciated. Unfortunately it does not consider the Syrian refugee crisis. He did say that it included irrigation but he would like more follow-up on this subject.

There is confusion on the difference between the NWSS, the WE business plans, and a master plan and who should be responsible for preparing each. The BML DG when asked about the need for a master plan responded that it was the responsibility of MOEW and with his business plan it was not needed at this time.

Conclusion 2.4: The GIS based asset inventory developed for SLWE and the water & waste water master plan prepared for BWE are very useful planning and management tools and could serve as models for the other WEs.

Provision of Technical Equipment to Improve Water Establishment Performance/ Implementation of Small-Medium-Scale Projects to Improve Operations and Services

Finding 2.5: Eighty percent of the LWWSS budget was allocated to the provision of technical equipment and the implementation of small-medium-scale projects. Funds were initially allocated based on needs and priorities set by the WEs in accordance with specific LWWSS criteria. Therefore equipment and infrastructure improvements varied between the different WEs.

For this evaluation the focus was primarily on the outcomes as reflected by the DGs and their staff.

- All the DGs and staff were generally very pleased with the equipment and assistance they received with one common exception: the time it took to implement the works.
- Although no funding promises only a commitment to activities were made by USAID and LWWSS, the NLWE DG (in an interview) misunderstood and complained that originally he was promised \$5.5 million to replace the networks for 27 villages and now he is only receiving \$2.2 million for one village. He said he is now doing the rest with a loan from GOL. Although the designs for the network were finished in December 2013 and the tender for the construction was completed in February 2013, the DG stated that he felt the procurement procedures were way too slow. He also mentioned the excessive time it took to install the backup generators (8) purchased for various pump stations. LWWSS confirmed that the request for the procurement was made 3 years back (Mid 2011), the procurement process was started in May 2012, and the generators were finally installed in September 2013. The DG said he had informed the USAID regional inspector general of the problem during their visit. Although he appreciated and was thankful for the equipment and support he received, he commented that next time when asked for priority projects he would take from the bottom of the list not the top. The head of the Behsas Water Treatment plant agreed on the slowness of the generator procurement but stated that the quality of the equipment was excellent. The generators have helped increase the delivery hours to customers.

LWWSS provided the following responses to the DG's comments:

- "Procurement is preceded by due diligence, technical investigations, and development of design specifications that consume the largest portion of the time frame and finally bidding and manufacturing i.e procurement. These should not be mixed with procurement itself as perceived by the DG. Additionally, the information provided by the different WEs needed validation in almost all the cases. DAI had to conduct extensive field investigations that require time and effort. The DGs are not used to such procedures prior to conducting the works. However, this is what LWWSS missed transmitting to them clearly".
- On the 8 backup generators: They were manufactured in the US and France and installed in eight potable water pump stations. The works not only included the supply of generators, but also a group of associated works such as power management panels, protection and fencing, power cables, concrete pad, steel bollards, generator tanks as well as necessary electrical and safety protection installations. Discussions with the DG started in June 2011. The project was included in the work plan in August 2011 after DAI ensured its feasibility. The survey, data gathering, and bidding specifications were completed in April 2012. This process took longer than expected because throughout the stage of information collection, DAI realized that NLWE's initially supplied data for the pump stations sites was extremely unreliable and imprecise. The request necessitated several rounds of investigations and negotiations to ensure it meets the program's activity selection criteria. The procurement and manufacturing started in May 2012 and was completed in September 2012. The

- shipment, supply and installation was supposed to be completed in May 2013 as per the engineering schedule, however these were completed in September 2013 (4 months delays).
- LWWSS offered the view that the real problem was that they missed informing regularly the DG on work progress.

The BMLWE DG (interview) did comment that the USAID funded Jeita Pump station rehabilitation project was the most successful ever implemented by the WE. This is one of the main stations for Beirut water supply. One aspect he liked was that the project was co-funded with the WE doing the installation. The DG did mention that USAID procurement process was very slow.

The LWWSS provided the following responses to the DG's comments on procurement process. "There is a mixing of procurement process and field surveys and design process as explained above. The scope of this project underwent several modifications due to several factors including budget limitations". The initial negotiations period took a lot of time due to the changes in the project scope.

The SLWE DG (interview) complaint on procurement time was even stronger¹. He said that he had been working with USAID since 2003 and that now it was a different USAID. He mentioned that he had talked personally with the Mission Director on this issue. Referencing the replacement and rehabilitation of two different pump stations serving over 70,000 persons, he said that discussions on the proposed works took more than 2 years and that it took more than 5 months to approve the pumps and another 5 months to supply. He said that the promised rehabilitation involved 40 villages and asked the question how long must they wait for water. He was concerned on when the rehabilitation would be finished. Referring to WISE and LWWSS he was also confused on which implementing partner was doing what. A third pumping plant is being done under the WISE program. One issue that is a problem for the DG; once a donor project commits to providing funds for a station or network, the government will not allow him to commit any other funds to do rehabilitation or repairs even though the work may be top priority. In the future he said he will be more careful on the projects he would propose for USAID assistance. The DG however did express strong appreciation for the 224 production meters and related equipment as well as the assistance in upgrading the water quality lab. The SLWE head of studies and the GIS lab said that they were making full use of the GPS-based topographic survey equipment for water network mapping.

The LWWSS provided the following responses to the DG's comments on procurement:

- Discussions with DG started in summer 2011. Initial scope approved by USAID in October 2011 as part of the DAI follow on modification. As stated above, from this date to start of the design in July 2012, the project went through several modifications due to many factors including budget limitations.
- Design including procurement of design subcontractor took 6 months from July 2012 to January 2013. This was part of the engineering schedule. Bidding: 5 months Feb 2013 to July 2013
- Manufacturing and installation started in August 2013. The installation work was supposed to start in May 2013 as per the work plan, however it started in August 2013. (3 months delays). All reported in annual work plans.

¹ The scope of this project underwent several modifications due to several factors including budget limitations. According to the COR, the DG refers to the initial negotiations period which took a lot of time due to the changes in the project scope.

- Time was also needed for manufacturing in the US and their shipment (pumps & related equipment), which was also part of the engineering schedule.

The BWE DG said that the USAID procurements were slow but it was something that he had adjusted to. He said USAID was honest; when something was approved it was delivered. Quality was excellent. He had only positive comments on the USAID support for the upgrade of the water testing laboratories, the 15 km of network upgrades in Zahle, the renovation and furnishing of a modern customer service center, and the provision of the server and IT upgrades.

Conclusions 2.5: Funds spent on equipment and projects were well spent. Quality of equipment supplied, selection of contractors, and QA/QC procedures were done well. Consideration of each WE's priorities in selection of equipment and projects for implementation also worked well. However, limited funds and resources affected the scope of the work that could be implemented under the program. Management of WE expectations on LWWSS funding limits, available resources, and procurement times needs improvement. Finally, in several cases procurement times were quite long and the reasons why need to be reviewed and if possible streamlined.

Improved Customer Service and Customer Relations

Finding 2.6: The activities carried out in support of improving customer service and customer relations were generally well received by the WEs, in some more than others, depending on the interest of the DG.

- The **NLWE DG** strongly supports communications and awareness. He sees this as a key to success especially in dealing with the public during installation of household water meters and water conservation. He has organized and staffed a separate communications unit for the WE. Under a separate program with French support in collaboration with twelve local NGOs he has organized a community based initiative called "Friends of Water in Tripoli". As well as providing outreach material promoting public awareness and education on water conservation which is displayed throughout the WE admin building, LWWSS has worked step by step to assist in developing a corporate website which should be going on line very soon. LWWSS also helped with an awareness campaign with schools.
- The **BWE DG** also mentioned the importance of customer service in achieving WE success. He referred to a CDR implemented project funded by World Bank that he had inherited. Over 30,000 household meters were installed in a rural area without an awareness campaign. As a consequence customers are not paying. He was appreciative of the customer service center provide by USAID. The BWE DG also strongly supported the awareness campaign to help with illegal connections.

Conclusion 2.6: The LWWSS program has improved corporate culture. All WE DGs recognize the importance of meeting customer expectations if they are to be successful in their jobs. The success in increasing subscription levels and collection rate does not seem to depend only on customer service orientation and public awareness outreach programs. WE willingness to turn off water and a more intense fee collection program may be more important. Introducing and installing household metering, water conservation measures, and reducing illegal connections must be accompanied by a public awareness program.

Factors influencing achievement and non-achievement

Finding 2.7: Factors influencing the achievement of the project's objectives:

1. Role of USAID: USAID has close relationships with the other donors, LWWSS and GOL agencies, understands and has taken a leadership role in development of Lebanon's water sector.
2. LWWSS relationships with WE DGs: The relationships and respect for the LWWSS and its sub-contractors is generally excellent. The time it takes for design, tender, supply, installation of technical equipment and construction of physical works was however a major issue with the WEs.
3. LWWSS Understanding the Water Sector: The LWWSS and sub-contractors have a good understanding of the difficult, complex and diverse conditions facing the water sector and have used this experience to implement their program.
4. Broad and Flexible SOW: The SOW allowed for implementation by the LWWSS of a mix of activities targeting staff capacity building, improved technical and management tools, improved customer service, procurement of equipment, and funding urgent infrastructure works
5. Project approach to selection of activities: Developing the program and tailoring the implementation activities to the needs of each of the WEs was greatly appreciated by the WEs and contributed to its successes.
6. Maintenance, supplies & follow-up support: Local vendors were used to the maximum extent possible. Brand compatibility and input from the WEs was considered in the selection of equipment.
7. Quality of work/equipment: There was general agreement among the DGs that the work and equipment provided by LWWSS was of high quality.
8. LWWSS staff and sub-contractors: Successfully maximized the use of Lebanese experts and staff. A number of the LWWSS staff had worked with LWPP or GIZ. The key expat consultant for the Business Plan had participated in preparation of business plans under LWPP, GIZ, and now LWWSS.
9. Leveraging previous work by other projects & donors: LWWSS has been successful in working with and coordinating with other donors and projects such as GIZ, EU, and LWPP in leverage their resources and avoiding duplication

Conclusion 2.7: Overall the project was implemented well. USAID's has close relationships with the other donors, LWWSS and GOL agencies; LWWSS had good relationships with WE DGs and understands the Water Sector. It successfully leveraged previous work done by other projects & donors, and the adopted approach to selection of activities by tailoring the implementation activities to the needs of each of the WEs was highly successful.

LWWSS successfully provided maintenance, supplies & follow-up support by using local vendors to the maximum extent possible and ensuring compatibility between new and old equipment. The quality of the work carried out and the equipment supplied under LWWSS was of high quality and perceived as such by the WE DGs. LWWSS also successfully maximized the use of Lebanese experts and staff.

Finding 2.8: Factors influencing non-achievement of project objectives:

1. Legal Framework: Reforms initiated under Law 221 of 2000 were designed to increase accountability between public agencies and between WEs and customers. The institutional and legal framework envisaged has not been effectively implemented, creating institutional uncertainty over sector responsibilities (NWSS). Without the appropriate legal framework in place (bylaws, water code) giving them autonomy and independence it is difficult for the WEs to be implement institutional reforms needed for operating their organizations as a self-sustaining public utility.
2. Wastewater Sector: The WEs have been given the directive to take over the O&M for the wastewater sector only in the last several years. The roles and responsibilities of the WEs concerning waste water management are still not clearly defined. The WEs have no staff

assigned to manage the waste water activities. Only one of four even has waste water listed in their organization chart. Until these issues are addressed it will be difficult to work with the WEs on waste water issues.

3. Procurement time: DGs from all WEs complained that the procurement time took too long. This has resulted in a less than positive view of USAID by several of the WE DGs
4. WE Staffing: The lack of permanent staff and large numbers of contract staff effect project implementation. The degree to which this factor influences project outcomes is difficult to determine.
5. Resistance to Change: Billing, budgeting, procurement, payrolls, etc. are always sensitive issues within an organization. This is highlighted when introducing new management systems such as with the ERP. Special training, user's participation, and side by side testing are usually required to convince staff of the advantages of converting to a new system. This takes time and support from upper management.
6. Program diversity: Because LWWSS targeted a number of different activities in each of the WEs, allocation of resources and focus of improvements varied between the WEs. The achievement of the objectives of the project may have been better served if the activities had been more uniform and directed; However, each geographically and culturally diverse WE has different problems and differing priorities. It was the LWWSS project's position that they would obtain more commitment and buy-in from the WE's if they worked with their particular needs and priorities rather than conduct a standard set of imposed solutions across the board.
7. Lack of Standardization: WEs are being encouraged to operate autonomously. Many of the activities are the same for all the WEs. It would be more cost effective and efficient if SOPs, databases, accounting and financial procedures, equipment, software, etc. were standardized where practical.
8. Embedment of Staff: The original SOW proposed embedding full-time advisors in each water establishment. Only SLWE has such an adviser. This would have helped in coordination of all of the activities.
9. Cost uncertainties²: A number of activities were reduced, substituted, or eliminated because of budget constraints.
10. MOEW involvement: Role and influence of MOEW in the success of LWWSS is not clear. However they seem to be a distant player.
11. Feedback to WEs: LWWSS has been quite successful in learning from mistakes. However it would be good if the WEs were included in this process. One example: LWWSS carried out an awareness campaign targeting schools. One DG was curious on the effectiveness of the campaign and whether he should repeat. Because many of the activities were only implemented in one or two WEs it might be useful for the recipient WEs to share their experiences.
12. WE DG Support: Implementation of activities requires full support of the WE DGs. Failure to meet promised commitments and expectations must be properly explained and understood by the beneficiaries to avoid conflict, disappointment, and withdrawal of support. BML has sufficient

² COR's and COP's clarification: In hindsight, it appears that too much project programming and defined activities were developed early in the work planning stage, relying on cost estimates from previous programs or other donors, the veracity of which could not be known at that time, without proper concept engineering designs (what we call 10% level design) being prepared. A concept design usually represents about 10% of a detailed engineering design, and can give you cost information with a reliability of about +/- 20% accuracy. It is at this point that it can be decided to proceed or not with a particular project, while not having invested too much time or money, i.e., commitment. With this cost information, the millions of dollars of project funds can be allocated then more accurately without creating false hopes or misleading promises to the beneficiary agency, the WE's. DAI clearly stated in their follow on proposal that costs are just estimates that will be adjusted based on further field investigations. Again this should have been better communicated to the WEs.

funds to implement their own programs therefore they are less likely to commit to donor's conditions for receiving funding if they do not see direct benefit.

13. MOU: The LWWSS MOU was signed between USAID and MOEW. The WE DGs would prefer separate MOUs directly between USAID and the WEs.
14. Energy costs covered by GOL: Three of the four WEs do not pay for their energy operating costs. This decreases incentive for implementing or introducing energy cost saving reforms.

Conclusion 2.8: Many but not all of the factors influencing non-achievement of projects' objectives were outside the influence of LWWSS and due to the capacity, interest, and capabilities of the WE and the availability of project resources and funds. The appropriate legal framework is still not in place to allow the WEs the autonomy and independence needed for them to achieve full status as a self-sustaining public utility. Also, the roles and responsibilities of the WEs concerning waste water management need to be more clearly understood before than can effectively begin to manage these activities. LWWSS engineering schedule (design, tender, supply, installation of technical equipment and construction of physical works) took considerable time resulting in dissatisfaction from the WE partners. Availability of trained and motivated WE Staff did have an effect on implementation success. Finally, because LWWSS has limited resources and time, they were only able to target a limited number of different activities in each of the WEs.

Project Implementation Managerial, Administrative, Operational, and Technical Successes and Challenges

Finding 2.9: Successful aspects or the successes stories for these projects, and lessons learned applicable to implementation in the future regarding the project implementation and specifically the managerial, administrative, operational, and technical successes include:

1. The TO was well defined and incorporated the proposal as part of the SOW allowing DAI the flexibility to implement the project as proposed.
2. LWWSS selection of activities based on extensive, participatory investigation through LWWSS and subcontractors' specialists using detailed and transparent selection criteria.
3. Waste Water activities were removed by the RIG from the required deliverables
4. High quality technical and admin staff as well as sub-contractors
5. Good coordination with sub-contractors
6. Procurement procedures that allowed for supply of good quality equipment through local distributors
7. Training procedures well-tailored to the needs of the WE staff.
8. The BWE Customer Service Center, the SLWE water quality lab upgrade with AAM, the NLWE generator installation, and the BML pump station rehabilitation with sand trap are just a few of the examples of how LWWSS was able to introduce innovations and international best practices.

Conclusion 2.9: USAID, LWWSS and the WEs have been successful in working together to achieve the aims and objectives of the program. LWWSS decision to assign TA staff to sit in SLWE 4 times per week to ensure the implementation of the ERP is a good initiative. The selection of activities based on WE interest and priorities was a successful approach. USAID has been supportive and flexible in working with LWWSS on the implementation of the program. LWWSS provided high quality technical and admin staff as well as sub-contractors, as well as high quality equipment with local support that allowed introducing innovations and international best practices. Training procedures were also well-tailored to the needs of the staff.

Findings 2.10: Some of the challenges in project implementation or aspects that did not properly contribute to meeting objectives of the projects:

1. Original Life of Project was too short for procuring equipment and carrying out infrastructure work required under the program
2. Original budget distribution was unrealistic for the number of activities and number of WEs involved. Although stated by DAI in their follow on proposal that budgets were estimates that required further investigations, this message was not properly transmitted to the WEs.
3. LWWSS engineering schedule (design, tender, fabrication, supply, installation, construction) took longer in many cases than expected by the WEs. Several of the WE DGs made personal commitments to their customers that were not realized. This created frustration on the part of the WEs.
4. The PMP targets are not disaggregated by WE.

Conclusion 2.10: Most of the challenges were understood at the start of the project. The original Life of Project was too short and original budget was not realistic. This was evidenced by USAID's decision to extend the project and add additional funds.

LWWSS engineering schedules did experience delays. This message was not properly transmitted to the WEs and caused serious frustration especially with the NLWE and SLWE DGs. If LWWSS staff had been embedded with the WEs this may have helped prevent this miscommunication process.

PMP Indicators should be more specific to project activities and WEs to better evaluate the effectiveness of LWWSS.

Project Sustainability

Finding 2.11: Mechanisms put in place or that should be considered to ensure the sustainability of the project results include:

RIG Recommendations

- In accordance with the RIG (June 2013) recommendation LWWSS has implemented a plan to help each water establishment develop written scopes of work and/or other contracting procedures so they can sign operation and maintenance contracts with firms and individuals before USAID/Lebanon finishes a construction activity or an infrastructure improvement

Training

- LWWSS has implemented a major training effort to support its activities with over 47 training courses and 435 persons trained (23% women).
- In specific instances the personnel trained did not perform the functions trained for and therefore LWWSS provided remedial training as needed, even though the problem was not the adequacy or effectiveness of the training.
- All the staff at the facilities had undergone training on the equipment and software they had received. All the equipment inspected had manuals available with the office using the equipment.
- LWWSS also applies a sustainability review that takes into account lessons learned prior to inclusion of an activity into the annual work plan. When LWWSS proposes an activity with a specific WE, it reviews the history of the WE and its staff and will implement training as a part of the work plan as required.

Spare parts

- Where practical and cost effective LWWSS has provided spare parts such as backup pumps and generators were provided.
- Supply of Consumables to Equipment Procured, where appropriate, to enable the equipment to be operated, trained on, and serviced during the warranty period,
- The WEs seem satisfied that LWWSS has used local distributors or international dealers will be able to support the equipment procured and installed under the project.
- In many cases the WE staff confirmed that the brands and technical specs were ones recommended by them because of the availability of spare parts and local service & support.

Local support

- The WEs confirmed that LWWSS procured their equipment through local distributors in order to ensure local supply of spare parts, local service and local support.
- Lebanon has strong private sector advisors, consultants, and engineering firm capability.
- Outsourcing seems to be an accepted process by the WEs.

WE Commitment

- LWWSS requested written commitment from WEs prior to each major procurement, confirming that the WE will supply the future consumables and assume the O&M responsibility for the procured equipment. Discussion with WE DGs indicated that they had sufficient funds to cover O&M costs. This was evidenced by the equipment and projects being implemented by the WEs outside the USAID program. Staff that was interviewed indicated that the WEs had sufficient funds to provide expendables such as paper and chemicals.
- In compliance with the Foreign Assistance Act of 1961, Section 611(e), the WEs provided letters stating that they would operate and maintain systems that USAID/Lebanon supplied, and provide the staff needed for maintenance.
- Priority programs, projects, and activities seem to get funded either through donors, private sector, or the government. For example: WE facilities are well maintained, staff all have computers, staff seem to have vehicles and fuel to do their work, salaries are paid, staffing shortages have been supported by hiring contract workers, critical permanent staff have been hired, support contracts with local providers are common, and GOL can provide funds to implement priority projects.

Conclusion 2.11: LWWSS has put in place sufficient mechanisms to ensure sustainability. It has offered extensive training, provided spare parts; and ensured availability of local support and/or local providers for equipment purchased under the project. It has also implemented a plan to help each water establishment develop written scopes of work and/or other contracting procedures so they can sign operation and maintenance contracts with firms and individuals before USAID/Lebanon finishes a construction activity or an infrastructure improvement. WEs have signed letters of commitment to provide required O&M and they have sufficient O&M funds to do so if they are convinced of the need.

Finding 2.12: Constraints to sustainability of the project results include:

Higher management support and interest

- Without their support sustainability is unlikely. If WE DGs are convinced of the usefulness of an activity they seem to be able to find funds and staff to support O&M.

Decentralization of Water Sector

- All WE DGs agree to improve their operations they need more independence and authority to be able to manage their own finances, prepare their own budgets, procure their own equipment and hire their own staff.
- This requires changes to the current legal system.

Sufficient funds to maintain equipment

- One Staff member commented that it was necessary to make sure O&M costs for the new USAID items were properly included in the annual budget.

Waste Water

- Wastewater treatment plants and main sewage networks built and run by the municipalities are being turned over to the WEs. The WEs are not prepared for this responsibility and are reluctant to take it over. This may distract and impact on their effort to fulfil their current role in providing potable water.
- The roles and responsibilities between WEs and municipalities is still unclear.

Use of Private sector

- Privatization of water utilities is not allowed under current law.

Conclusion 2.12: WEs seem to have sufficient funds to cover O&M requirements. Sustainability will depend on continued higher management support, interest, and acceptance of the management tools and techniques provided through LWWSS and other donors. Further decentralization of Water Sector; allocation of sufficient O&M funds to cover new equipment, infrastructure improvements, and support staff in the annual budget; and continued use of private sector outsourcing will also affect sustainability. Now is a good time for LWWSS to prepare an exit strategy.

Gender Integration

Finding 2.13: Gender was not included in the original Task Order. LWWSS has not included Gender Equity included it in its work plans.

- Gender was not mentioned in the TOR, Annual Work Plans, Quarterly reports, the Environmental Mitigation and Monitoring Plan (EMMP), or the RIG audit.
- Gender was mentioned in the Lebanon Water Sector Customer Satisfaction Survey Report but only in the context that “the sample characteristics of the main survey of 1,230 respondents was split equally between male and female across the country”. The results were not disaggregated by sex.
- Sex/Gender is mentioned in the PMP for 3 out of 8 indicators. For the indicator on number of staff trained the number of females trained is measured. For number of people receiving improved service quality and number of water users receiving guidance on efficient water use the assumption is made that ratio of male to female population in Lebanon as 49% male and 51% female. For the number of staff trained it is not clear how the gender targets were set.

Conclusion 2.13: LWWSS has not fully considered the mission’s gender integration requirements in the implementation of the program. Gender was not mentioned in the TO, however, LWWSS did consider gender in the implementation of training activities. Finally, the use of the ratio of male to female population in Lebanon as 49% male and 51% female in the PMP may not be accurate.

III. WATER SECTOR

Findings 3.1: National Water Sector Strategy

- GOL has made reform of the water sector a national priority and has prepared the National Water Sector Strategy (NWSS).
- The NWSS was adopted by the Council of Ministers in March 2012.
- The overall goal of the NWSS is ‘to ensure water supply, irrigation and sanitation services throughout Lebanon on a continuous basis and at optimal service levels, with a commitment to environmental, economic and social sustainability.
- The strategy targets key outcomes that would improve water services and make them more financially and environmentally sustainable.
- The strategy proposes the following:
 - 1) Improved, sustainable and affordable water supply by:
 - Developing infrastructure to ensure continuous access to high-quality water supply through increased coverage, reduced unaccounted for water and optimized network management
 - Transformation of the VEs progressively into autonomous and accountable utilities by moving them to a service orientation and increasing accountability and administrative and financial autonomy, allowing them to operate as professional service providers, and involving them in project planning and implementation
 - Moving towards financial sustainability by increasing efficiency and applying over time tariff structures that cover costs and contribute to demand management
 - Increasing the role of private capital and management by developing an enabling environment for PPP
 - 2) Sustainable water resources management and allocation to priority uses by:
 - Developing water resources infrastructure to:
 - (i) maximize the potential and improve the quality of surface water resources;
 - (ii) improve the management and protection of groundwater as a strategic reserve, moderate its abstraction and promote artificial recharge;
 - (iii) meet deficits through ground and surface water, prioritizing surface water storage wherever possible.
 - Improving water resources management by creating the enabling environment for integrated water resources management and sector regulation
 - 3) Putting wastewater on a sustainable footing and protecting the environment by
 - Developing wastewater infrastructure to increase coverage of collection networks and treatment capacities, optimizing treatment processes and sludge disposal, and ensuring reuse where possible.
 - Improving wastewater management by implementing an institutional and business model for wastewater collection, treatment and reuse.
 - Environmental protection by factoring in climate change, and improving water quality, flood mitigation, and protection of recharge zones
 - 4) Profitable and sustainable irrigated agriculture by:
 - Developing irrigation infrastructure to provide adequate quantity and quality of irrigation water, and to increase efficiency through modern water-saving irrigation techniques
 - Improvements in the performance and sustainability of the irrigation sector, through stakeholder participation, demand management and cost recovery
 - 5) Strengthened sector oversight and reform implementation by restructuring and equipping MoEW to take on a policy-making, planning and regulatory role, and by building human capacity in the sector through recruitment and staff development.
 - 6) Improved efficiency of public investment by integrating investment planning, financing and implementation

- The NWSS investment budget:

Capital expenditures proposed in the NWSS for 2011-2015 (US \$ millions)	2011	2012	2013	2014	2015	Total	Annual average	Annual average 1994-2008
Additional water resource mobilization	191	271	313	367	242	1,384	277	n.a
Water supply	221	285	302	305	282	1,395	279	97
Wastewater	326	372	473	386	338	1,895	379	32
Irrigation	37	42	87	91	86	343	69	13
Total	775	970	1,175	1,149	948	5,017	1,003	[142]*

Source: National Water Sector Strategy. * Annual average 1994-2008 excludes additional water resource mobilization

* Seven times the historical annual average investment in the sector 1994-2008 (\$142 million); three times the CDR plans.

* Expenditures would be spread across the four areas: BML 40%; Northern 23%; Southern 21%; and Bekaa 15%.

Conclusion 3.1: The NWSS is a comprehensive framework for implementation of a Lebanon water sector program.

Findings 3.2: Major WE problems:

- Current laws that limit decentralize the operations of the WEs. Decentralization from MOEW is needed if WEs are to manage water as a business.
- Electricity outages that reduce the hours customers can be supplied water
- Additional pump replacement. New pumps can increase power and supply efficiency by 25%
- Non-revenue water, Illegal connections, leakages. System losses are extremely high (60%)
- In some areas there is continued distrust resulting from the previous civil strife.
- Recruitment of key staff positions is not possible under the current government approval process on hiring
- No plans in place for drought management.
- Influx of Syrian refugees will affect all the water sector:
 - BML: expected to increase 250 K persons and costs by 10-15%;
 - BWE Lebanese current population is 600,000 persons, 329,000 registered refugees; many more unregistered;
 - SLWE no accurate estimate;
 - NLWE increase is 20% in water requirements; the same as 10 year growth.
- GOL procurement process. The process restricts performance of the WEs. WE DGs cannot approve anything over \$7000. Usually GOL contracts must go to the lowest bidder.
- Customer payment from rural areas is uncertain at best.
- Overlap of donor aid is an issue. There are dozens of relief agencies to deal with especially in connection with the Syrian crisis. Donor fatigue and interference is a potential problem and needs to be managed.

Conclusion 3.2: MoEW and the WEs understand their problems and their priorities in improving service coverage. They welcome donor assistance in helping to solve these problems.

Findings 3.3: WE Priorities:

- NLWE: Funding requirements for the short term is \$ 30-50M; for the long term is \$ 150M; GOL's number for the long term is \$ 800M to include dam construction

- BML: Tariff collection is top priority; construction of a dam (90 MCM) with self-financing that includes hydro has started.
- BWE: prefers to develop urban areas before rural
- BWE/NLWE: Customer service
- All: Household Metering is supported by all WEs; must conserve water instead of increasing supply to meet demand.
- All: Source and network metering

Conclusion 3.3: WEs have many of the same priorities.

Findings 3.4: Waste Water

- The WEs understand that Waste water management is part of their mandate but are not ready to accept responsibility at this time.
- Placing wastewater management with the municipalities has not worked. In many cases they have insufficient funds and trained staff to operate the plants properly.
- Outsourcing to private O&M contractors seems to be the most practical solution at this time.
- Sector needs leadership and coordination
- Works moving forward IAW NSWWS under CDR; USAID works
- WW management WE mandate; not ready or able to accept.
- Municipalities' ability to operate and maintain waste water treatment facilities are limited by limited funds and lack of trained staff.
- Outsourcing to private contractors for O&M of WWTPs is a good alternative
- Cost recovery mechanism for waste water sector needs to be worked out

Conclusion 3.4: The waste water is a neglected sector that needs attention.

Findings 3.5: Irrigation:

- Large potential: 177,000 Ha
- Currently 90,000 ha equipped for irrigation
- LRA is only one of several organizations involved in irrigation
- BWE and NLWE recognize their responsibility for irrigation management and welcome support for this sector.
- WE/LRA only cover 10% of the irrigated systems.
- Considerable small scale irrigation & local irrigation committees
- Problem with GW depletion
- High potential for modern irrigation systems

Conclusion 3.5: The potential and benefits for introducing modern irrigation management in Lebanon is high

Findings 3.6 Donor Coordination

The following are some of the donors/NGOs currently actively involved in the water sector: 1) Groupe Agence Française de Développement; 2) European Commission; 3) European Investment Bank; 4) Italian Ministry of Foreign Affairs /Italian Cooperation; 5) UN agencies (UNRWA, UNICEF, UNDP, UNHCR, UNIFIL); 6) International Committee of the Red Cross; 7) International Orthodox Christian Charities; 8) IRL; 9) Kuwait Fund; 10) Mercy Corps; 11) OXFAM; 12) Swiss Agency for Development and Cooperation; 13) USAID; 14) World Bank; 15) World Vision.

Conclusions 3.6: More than 20 agencies including four UN agencies are actively involved in Lebanon's water sector clearly requiring good coordination to prevent donor overlap.

Findings 3.7 Public Private Partnerships (Blue Gold)

- "Blue gold" (<http://bluegoldlebanon.com/>) is a proposed national 5-year project optimizing the Lebanese Government water strategy. It is based on an analysis of all the studies done on the water sector launching a new vision that transforms water from a simple commodity to a national wealth, and at the same time aims at fixing weaknesses therein and monitoring projects and initiatives that fall within the strategy with the partnership of the Lebanese citizens.
- It is to be funded by the private sector with controls that prevent monopoly and encourage the contribution of citizens as partners, provided that the water remains the property of the Lebanese State.

Conclusion 3.7: Lebanon has high potential for successful PPPs

RECOMMENDATIONS

Possible follow-up activities to enhance the sustainability of the projects' outcomes and the sustainability of the provided infrastructure.

LRBMS

Possible follow-up activities include:

1. Encourage participation and decentralization and focus on empowering Municipalities and water user entities by:
 - Continuing to raise awareness among water users and residents to change water practices and behaviors
 - Supporting local water activities (to protect and preserve water resources) which are decided and implemented locally to promote stewardship
 - Funding small-scale water infrastructure that can be operated and managed by Municipalities
2. Continue support to Water Monitoring, extend and expand to GW & WQ.
3. Continue support initiatives to establish and legalize water committees and water user associations. This could be done using NGOs. Expand outside Canal 900.
4. Support Litani River Basin Federation focusing on pollution control and ground water regulation.
5. Promote increased involvement of other agencies in the Federation.
6. Include LRA in water sector donors' and water sector partners' coordination meetings.
7. Archive LRBMS technical reports with LRA, MoEW, and possibly Blue Gold.
8. Encourage approval and implementation of management and staffing plans prepared by LRBMS.
9. Continue to encourage IWRM by promoting :
 - Long-range basin planning
 - Basin-level surface water monitoring and modeling
 - Basin-level groundwater monitoring and modeling
 - Water quality monitoring, regulation and enforcement
 - Surface and groundwater withdrawal and discharge permitting
 - Two-way public communication and awareness raising

LWWSS

Possible follow-up activities include:

1. Include common Bench Mark systems such as system prepared by GIZ.
2. Continue to promote water sector donors and partners coordination.
3. Encourage exchange of successes and lessons learned between WEs.
4. Extend and expand LWWSS Comp 2/3/4/7 activities to all WEs to include:
 - Business plan updates,
 - ERP implementation,
 - internal audit control, budget preparation, Cost Tariff Model development
 - GIS based tool for asset inventory essential
 - Water and waste water master plan preparation and update
 - Website development
 - Source and network flow metering
 - HH metering program
 - Water quality lab upgrades and monitoring program
 - Customer Service & Public Outreach activities including dialog with customers, municipalities, and other stakeholders
5. Emphasize standardized WE/MoEW data collection & databases.
6. Continue to use equipment/infrastructure to support capacity building and institutional reform.
7. Consider performance benchmarking as a funding mechanism to support the WEs.
8. Limit equipment/infrastructure support to BML, but encourage them to participate in capacity building and institutional reform initiatives.
9. Evaluate USAID procurement procedures.

A possible replication of this program, and future programs/activities that address the enhancement of the water sector in Lebanon and of the management and conservation of water resources in the Litani Basin.

LRBMS

1. USAID should consider a follow-up program to LRBMS since much remains to be done to improve water management in Lebanon.
2. Continue support to LRA perhaps as component of wider program
3. Emphasize:
 - Integrated Water Resource Management
 - River Basin Federation
 - Stakeholder participation
 - Water committees and water user associations
 - Use of NGOs and the private sector (Blue Gold)
 - Water monitoring: surface, groundwater, quality
 - Pollution control
 - Groundwater management
 - Small scale irrigation
 - Introducing modern irrigation equipment and techniques
 - Gender Equity
4. Deemphasize:
 - Infrastructure
 - Irrigation and Ag extension support through LRA. (do with others)

LWWSS

1. USAID should consider a follow-up program to LWWSS to be done to improve water management in Lebanon.
2. Support initiatives implemented under LWWSS through on-going projects such as WISE & WISE AE.
3. Continue working with all WEs.
4. Include Waste Water as a component or separate project.
5. Emphasize:
 - Increased focus on improved O&M
 - Customer service and public awareness
 - Standardized financial and database management
 - Use of equipment/infrastructure to support capacity building and institutional reform
 - Close coordination between donors and WEs
 - Streamlined procurement
 - Outreach to private sector

Water Sector

1. Engage and collaborate with MoEW in all Water Sector Programs. It sits on top of the Pyramid. The embedment of Staff in WEs and possibly in MoEW is also encouraged to facilitate the collaboration.
2. Support NWSS & NWWSS; encourage update to include emergency preparedness program, i.e. Syrian refugee influx and severe drought crisis.
3. Promote next steps in developing and approving Water code.
4. Continue to Promote Water Governance in all Water Sector Programs; it works; Lebanon is ready.
5. Encourage Ground Water management initiatives: monitoring, permitting, regulation, and recharge.
6. Re-engage Waste Water support with WEs.
7. Consider Irrigation support funding (WEs, LRA, municipalities, NGOs).
8. Support the role of private sector; investigate potential of private sector initiatives such as Blue Gold for public advocacy.
9. Encourage Water Establishments and MoEW to prepare drought and flood emergency plans.
10. Involve WEs in Syrian refugee decisions; use emergency funds wisely.
11. Support a National Water Sector Environmental Assessment (Dams, GW, and climate).
12. Promote agriculture waste water reuse by the municipalities and the private sector.
13. Promote modernization of irrigation equipment with MoA & the private sector.

The need of continuing to promote transformation of LRA into an integrated Basin Agency and the viability of such an agency.

The idea and concept for transformation of LRA into an integrated Basin Agency is a good one.

For LRA to take up the role as an integrated Basin Agency it would require as a minimum the mandate, authority, and staff to:

- Manage and allocate water resources other than for irrigation and hydropower.
- Water quality management.
- Groundwater management.

Unless MoEW is fully supportive and the government moves towards amending the govern laws and mandate for LRA to take over this role it is questionable whether LRA would be able to carry out the roles and responsibilities of such an agency.

The LRBMS initiative with LRA and the municipalities to form a river basin committee was commendable especially if committee is able to register as an official organization. The initiative successfully identified an alternative to deal with serious basin water issues under the current political and institutional realities. Any forum for addressing these issues should be promoted whether as a government or non-government organization. However to be effective the committee needs to include involvement of other GOL stakeholders such as MoEW, Ministry of Environment, Ministry of Agriculture, Ministry of Interior and Municipalities, WE, etc.

How to fulfill the mission’s Gender integration requirements in the overall water sector in Lebanon including the documentation of initiatives taken by Government of Lebanon and other donors in this regard.

The following recommendations are made to ensure USAID Gender integration requirements are properly addressed in Lebanon’s water sector:

1. Include a cross-cutting component on Gender Equality and Female Empowerment in all Contracts and Grants.
2. Conduct Gender specific assessments on such topics as role of women in Lebanese agriculture, irrigation, water sector (water supply and waste water).
3. Require gender specific questions in all user and customer surveys and make sure surveys are designed in a gender sensitive way (incorporate sex criteria and use gender sensitive methodologies), and that all data are disaggregated by sex.
4. Implement activities listed in Gender Assessment for USAID/Lebanon (Social Impact, July 2012) to include:
 - Cooperation with “Lebanese National Observatory for Women in Agriculture and Rural Areas” (NOWARA), “Mainstreaming Gender Dimensions into Water Resources Development and Management in the Mediterranean Region” (GEWAMED) division at the Renee Mouawad Foundation, relevant UN agencies, and related b NGOs.
 - Build on the success of a recent awareness campaign conducted as part of LWWSS (on the benefits of water conservation, of preventing water contamination, and of paying water dues on time) to develop a new campaign focused on women’s key role in water conservation
 - Provide assistance to the National Council for Lebanese Women to produce and implement sector training for Gender Focal Points
 - Support women’s centers to undertake in-depth research and disaggregated data collection on gender and water in Lebanon
 - Cooperate with NOWARA to reach out to rural women.

ANNEXES

Annex I: Evaluation Statement of Work

EXECUTIVE SUMMARY

The United States Agency for International Development (USAID) Lebanon Mission has contracted with Development Alternatives Inc. (DAI) to implement the Lebanon Water and Wastewater Sector Support Program (LWWSS) under a \$34.4 million contract number EPPI-00-04-00023-00/04. The period of performance of the LWWSS contract is September 30, 2009 to April 30, 2015.

At the same time, International Resources Group (IRG) was contracted by USAID/Lebanon (Contract EPP-I-00-04-00024-00 Task Order No. 7) under the Integrated Water and Coastal Resources Management Indefinite Quantity Contract (IQC) II to implement the Litani River Basin Management Support (LRBMS) Program. The period of performance of this contract is September 29, 2009 to March 31, 2014.

Both projects were designed to achieve USAID's Intermediate Results 1, 2 and 3 and ultimately the Assistance Objective 4: Improved water services for all in Lebanon.

The respective Contracting Officer's Representatives (CORs) for the LWWSS and LRBMS projects have requested in August 2013 a final performance evaluation of the LWWSS and LRBMS projects to analyze the extent of achievement of the projects' objectives, to evaluate their outcomes, to document successes, challenges, and lessons learned from the projects.

Finally, the mission requested that this final external performance evaluation analyze the extent to which LWWSS and LRBMS are fulfilling the mission's Gender Integration requirements and provide analysis of the overall sustainability risks associated with assistance to the water sector in Lebanon.

In accordance with ADS 203.3.1, the evaluation questions to be answered are:

1. To what extent have the projects achieved their expected outcomes and stated objectives? For instance, to what extent did LRBM achieve its objectives in improving the efficiency of the water management, in improving the water infrastructure and in enhancing the water governance, and to what extent did LRBMS achieve its objectives of setting the ground for improved, more efficient and sustainable river basin management at the Litani River basin?
2. What were the factors influencing the achievement or non-achievement of the projects' objectives?
3. Regarding the project implementation and specifically the managerial, administrative, operational, and technical successes and challenges:
 - a. What were the successful aspects or the successes stories and lessons learned for implementation in the future?
 - b. What were the challenges in project implementation or aspects that did not properly contribute to meeting objectives of the projects?
4. Were mechanisms put in place to ensure the sustainability of projects' results? If not, why not? If so, how effective were they? What are the factors influencing the achievement or non-achievement of sustainability of the projects' results?
 - a. Is there a defined exit strategy? If so, to what extent would it contribute to sustainability?
5. To what extent the project has fulfilled the mission's gender integration requirements?

The evaluation should provide recommendations for USAID/Lebanon on:

- Possible follow-up activities to enhance the sustainability of the projects' outcomes and the sustainability of the provided infrastructure.
- A possible replication of this program, and future programs/activities that address the enhancement of the water sector in Lebanon and of the management and conservation of water resources in the Litani Basin.
- The need of continuing to promote for transformation of LRA into an integrated Basin Agency and the viability of such an agency.
- How to fulfill the mission's Gender integration requirements in the overall water sector in Lebanon including the documentation of initiatives taken by Government of Lebanon and other donors in this regard.

The development of this evaluation scope of work (SOW) follows recommendations laid down in ADS 203.3.1.5, and draws materials from Social Impact's "Evaluation for Evaluation Specialists (EES)" Course for USAID. Amongst those course material is Evaluation Statements of Work: Good Practice Examples" prepared for United States Agency for International Development (USAID) by Micah Frumkin and Emily Kearney with Molly Hageboeck (editor/advisor), from Management Systems International (July, 2011) that provided a useful guide for preparing this SOW.

The estimated duration for completion of the evaluation is 7 weeks including the pre-field work, commencing by the late January 2014. A six-day work week is assumed. A team of an evaluation specialist and an expert who combines expertise in water utility management and civil engineering in the water sector are proposed for the evaluation. It is estimated that the evaluation specialist has 24 days LOE and the technical specialist has 36 days LOE.

INTRODUCTION

An external evaluation was requested for both the Lebanon Water Wastewater Sector Support (LWWSS) and Litani River Basin Management Support (LRBMS) by the projects respective Contracting Officer's Representatives (CORs). As described in the USAID Evaluation Policy, this is a project final managerial and program implementation evaluation. "A performance evaluation focuses on descriptive and normative questions: what a particular project or program has achieved (either at an intermediate point in execution or at the conclusion of an implementation period); how it is being implemented; how it is perceived and valued; whether expected results are occurring; and to answer other questions that are pertinent to future program design, management and operational decision making" (USAID Evaluation Policy, 2011). This evaluation gives most weight to answering "other questions that are pertinent to future program design, management and operational decision making."

The development of this evaluation scope of work (SOW) follows recommendations laid down in ADS 203.3.1.5, and draws materials from Social Impact's "Evaluation for Evaluation Specialists (EES)" Course for USAID. Amongst those course material is "Evaluation Statements of Work: Good Practice Examples" prepared for United States Agency for International Development (USAID) by Micah Frumkin and Emily Kearney with Molly Hageboeck (editor/advisor), from Management Systems International (July, 2011) that provided a useful guide for preparing this SOW.

Both projects, the LWWSS and LRBMS Projects were designed to support USAID's Assistance Objective 4 (AO 4) for Lebanon: "Improved water services for all in Lebanon", and more specifically under Intermediate Result (IR) 1: "More efficient management of water resources", IR2: "Improved water infrastructure" and IR3: "Enhanced Water Governance". In the scope of the Mission's Country Development Cooperation Strategy (CDCS) 2013, the LWWSS Project and the LRBMS Project fit

under DOI: “Improved capacity of the public sector in providing transparent and quality services across Lebanon.”

The context and details of the projects are described below:

A- The LWWSS Project

A.1 - Project Context

The LWWSS is designed to continue the USAID commitment to improve water supply and sanitation services for the people of Lebanon. The predecessor Lebanon Water Policy Program (LWPP) reflected a bold action by USAID to work directly with the Government of Lebanon. It demonstrated that carefully designed interventions joined with leadership from the government can produce impressive and inspiring results. Based in the MOEW, the LWPP team helped the CEO of the South Lebanon Water Establishment (SLWE) forge a single entity from four water authorities, adopt an improved financial and accounting system, reduce non-revenue water, and put in place a business planning process that incorporates five-year capital planning and tariff adjustments. Through these efforts, the SLWE became a model that could be emulated by the other WEs in Lebanon. The LWPP team also helped the Beirut-Mount Lebanon Water Establishment (BMLWE) develop a business plan and cost recovery model. If one measure of success is the willingness of other donors to adopt USAID's approach, then LWPP was a resounding success. In the past year, both the German International Cooperation program (GIZ) and the European Union (EU) have adopted LWPP's approach and activities in their support programs to the WEs.

With LWWSS, USAID extends its support to help all four WEs advance toward financial and operational sustainability. It builds on LWPP's successes and introduces new areas of assistance in staff capacity building, capital investment planning, and customer service. It also includes direct investments in infrastructure and equipment that will enable the establishments to improve and extend services to their customers. Working closely with the GIZ and EU programs, the DAI team will apply the lessons learned under LWPP and introduce best practices and innovations from other countries to help each water establishment improve its service delivery, financial management, planning, and customer outreach—all essential ingredients to long-term financial and operational sustainability.

A.2- Project Identification

The United States Agency for International Development (USAID) Lebanon Mission has contracted with Development Alternatives Inc. (DAI) to implement the Lebanon Water and Wastewater Sector Support Program (LWWSS) under contract number EPP-I-00-04-00023-00/04. The period of performance of this contract is September 30, 2009 to April 30, 2015.

A.3- Scope of the Project

The Lebanon Water and Wastewater Sector Support Program (LWWSS), implemented by Development Alternatives Inc. (DAI), provides technical assistance and related resources (e.g., technical equipment) to the four WEs and the MOEW in order to:

- Build the capacity of their staff
- Increase their managerial, administrative, technical, financial, and operational efficiencies
- Improve the quality of water and wastewater services
- Expand access to water and sanitation services
- Improve capital investment planning and asset management

- Undertake limited and selected urgent and critical infrastructure projects

A.4- Contract and Contract Modification

A.4.1- Baseline Task Order under Water IQC

The United States Agency for International Development (USAID) Lebanon Mission has contracted with Development Alternatives Inc. (DAI) on September 30, 2009 to implement the Lebanon Water and Wastewater Sector Support Program (LWWSS) under a \$19,508,162 million baseline contract number EPP-I-00-04-00023-00/04. The baseline period of performance of this contract is September 30, 2009 to September 30, 2013.

A.4.2- Task Order Modification

Several Task Order modifications followed the issuance of the initial Task Order. One of these modifications was issued on September 30, 2011. The purpose of this modification was to:

- Revise the statement of Work by modifying certain activities, adding activities and revising the deliverables section.
- Add the branding strategy and marking plan.
- Increase the total estimated cost by \$14,852,153 to a revised amount of \$34,360,315.
- Increase the total obligated amount by \$6,384,611 to a revised amount of \$13,628,139.
- Add a language on environmental compliance.
- Change key personnel.
- Extend the completion date to April 30, 2015.

Another Task Order modification followed on April 3, 2012. The purpose of this modification was to:

- Revise the Statement of Work,
- Change the source and nationality code,
- Add language on vetting requirements of sub-awardees,
- Add clause 52.222-50 Combating Trafficking in Persons,
- Add clause 52.225-13 Restrictions on Certain Foreign Purchases.
- Add the revised AIDAR 752.225-70 Source and Nationality requirements.

Finally, one of the findings made by the RIG audit was that DAI had implemented only two major activities in the wastewater sector that had a limited effect. They found that water establishment officials said the wastewater sector was a priority and a necessary legal obligation for the establishments. However, DAI officials said they did not focus on wastewater because as they started implementing activities, they realized that this sector, in reality, was not a priority for the Lebanese Government. The COP said DAI did what was feasible in the environment in which it was working. Moreover, mission officials said that since wastewater projects may not be sustainable, the mission decided to focus on potable water projects and technical assistance as it related to overall management of potable water, and, to a lesser degree, irrigation and wastewater.

As a result, RIG audit recommended that USAID/Egypt's regional contracting office, in coordination with USAID/Lebanon, modify the contract, indicating that the primary focus of the program is on potable water activities and not wastewater activities, and to adjust the contract deliverables accordingly. In response to this recommendation, on June 12, 2013, the COR submitted GLAAS Requisition "REQM-26813-000047" to USAID/Egypt's regional contracting office requesting modification of Task Order no.

EPP-I-05-04-00023-00 so that the primary focus of the program is on potable water activities and not wastewater activities, and to adjust the contract deliverables accordingly.

As a result, a Task Order modification was issued on September 12, 2013. Its purpose is to:

- Reduce the budget from \$34,360,315 to a revised amount of \$34,357,088.
- Reduce the fee for CLIN I from 32,272 to \$29,005.
- Reduce the fixed fee from \$1,837,219 to \$1,833,992.
- Realign the budget.
- Revise the Statement of Work.
- Revise the deliverables schedule and key personnel.

A.5- Institutional Context

DAI implements the LWWSS project with the participation of Camp, Dresser, Mckee (CDM), ValueAdd Management Services, KREDO, ABA, EMC, and other engineering subcontractors. LWWSS coordinates with other donors in order to avoid unnecessary duplication and to identify areas of coordination with other donors on specific projects or programs. LWWSS also works in cooperation with the MOEW to assist Lebanon's four WEs in order to achieve the USAID's Intermediate Results and ultimately the Assistance Objective. The LWWSS Program aims to help Lebanon's WEs overcome the many challenges they face, including staff shortages and an aging workforce, poor customer relations, low tariffs that fail to recover operating costs, lack of metering, excessive non-revenue water, and underinvestment in the water and wastewater infrastructure.

A.6- Project Intended Results

LWWSS is intended to complete seven tasks through a USD 34,357,088 contract. These tasks are:

1. Complete an initial assessment that included a detailed list of proposed deliverables, activities, and tasks, as well as a plan identifying the equipment and infrastructure needs of each water establishment and MOEW.
2. Strengthen the water establishments' managerial, technical, and operational capacities.
3. Increase the capacity of the establishments' employees to manage financial systems and help each establishment adopt improved commercial practices.
4. Increase the establishments' capacity in capital investment planning and project management.
5. Provide equipment to improve the water establishments' performance.
6. Implement small- to medium-scale water and wastewater projects.
7. Improve customer service and relations.

The areas of focus that LWWSS targets in working with the WEs include:

- Building management capacity within the WEs;
- Increasing financial management capacity and financial systems integration;
- Procuring equipment to complement technical assistance and capacity building;
- Business planning to increase capital planning and benchmarking capacity;
- Funding urgent infrastructure works to enhance delivery or access and coverage;
- Developing a corporate culture, customer service orientation and public outreach programs.

AO: Improved water services for all in Lebanon

1. Number of people in target areas with access to improved drinking water supply as a result of USG assistance (F)
2. Number of people in target areas connected to functioning sewerage system as a result of USG assistance (F)
3. Customer satisfaction with water services (i.e. households, farmers and industrial water services users)

IR 1: More Efficient Management of Water Resources

1. Percent of water revenues collected by targeted water entities

IR 2: Improved water infrastructure

1. Number of functioning water and wastewater facilities constructed or rehabilitated with USG assistance.
2. Volume of treated wastewater in targeted areas as a result of USG assistance.

IR 3: Enhanced water governance

1. Number of USG proposed legal, regulatory and policy actions to enhance efficiency and effectiveness of water entities as a result of USG assistance.

IR 1.1: Improved capacity of water entities

1. Number of staff from water entities trained as a result of USG assistance
2. Number of management systems and plans used at water management entities as a result of USG assistance.

IR 1.2: Increased participation of water users in water management

1. Number of water users trained on efficient water management
2. Number of dialogue events held between stakeholders and water authorities as a result of USG assistance.

Key Development Challenges in the Water Sector

- Poor quality of drinking water
- Inadequate infrastructure
- Inefficient distribution of water
- Weak institutions governing water sector

A.9- Development Hypothesis

In light of discussions with each of the WE Director Generals, the challenges facing the WEs in achieving long-term financial and operational sustainability were identified and included the following: 1) Crippling staff shortages and an aging workforce; 2) Low tariffs; 3) Lack of metering; 4) Poor customer relations and 5) a Lack of investment.

LWWSS brings together the technical expertise, management capability and in-country experience through the maximization of the use of Lebanese experts and staff; the close coordination with GIZ and EU; the introduction of innovations and international best practices and finally through the establishment of a clear plan for monitoring and evaluating results.

As a result of LWWSS approach, Water Establishments will improve their operations and deliver high quality services that customers are willing to pay for. They will be able to achieve long-term financial and operational sustainability.

A.10- Critical Assumptions

- The Lebanese Government and particularly the Water Establishments will continue to collaborate with USAID/Lebanon.
- Sufficient level of political stability to enable program operations and no eruption of major, wide-scale conflict during the life of LWWSS Program.
- No terrorism threats specifically directed at USAID or U.S. government-funded programs or organizations and freedom of movement for program staff and partners across Lebanese territory.

A.11- Audit Findings

The Regional Inspector General/Cairo (RIG/Cairo) conducted an audit of LWWSS project as part of its fiscal year (FY) 2013 audit plan to determine whether USAID/Lebanon's Water and Wastewater Sector Support Program was improving water and wastewater treatment services in Lebanon. The audit also reviewed USAID/Egypt's regional contracting office and financial management office's support services provided to USAID/Lebanon to manage and administer its contract. Based on the audit findings the following actions were recommended:

1. USAID/Egypt's regional contracting office, in coordination with USAID/Lebanon, modify the contract to state that the program's primary focus is on potable water activities and not wastewater activities, and adjust the deliverables accordingly.
2. USAID/Lebanon implement a plan to help each water establishment develop written scopes of work and/or other contracting procedures so they can sign operation and maintenance contracts with firms and individuals before USAID/Lebanon finishes a construction activity or an infrastructure improvement.
3. USAID/Egypt's regional contracting office, in coordination with USAID/Lebanon, realign the program budget to include all \$12.1 million subcontract costs in one budget category.
4. USAID/Egypt's financial management office, in coordination with USAID/Lebanon, specify in writing the voucher examiner's and contracting officer's representative's responsibilities and the type of documents they must verify.
5. USAID/Egypt's regional contracting office determine the allowability of \$1,322,281 in unsupported questioned costs and recover from Development Alternatives Inc. any amount determined to be unallowable.

6. USAID/Egypt's regional contracting office determine the allowability of the fixed fee of \$32,272 and recover from Development Alternatives Inc. any amount determined to be unallowable.
7. USAID/Lebanon, in coordination with Development Alternatives Inc., adjust targets, indicator definitions, and reported results in writing to measure the results of the program more accurately.

B- The LRBMS Project

B.1- Project Context

The Litani River Basin suffers the fate of many river basins around the world: increasing demands compete for limited natural resources. Groundwater over-exploitation, deforestation and overgrazing, unplanned urban sprawl, untreated wastewater effluents, and unsustainable agricultural practices contribute to environmental degradation in the form of declining water and soil quality. Solutions do exist to reverse these trends and establish sustainable management practices. The key to successfully implementing such solutions requires applying the principles of Integrated Water Resources Management (IWRM) through a single river basin authority rather than multiple agencies responsible for different aspects of water management as is the case in many countries. The existence of the LRA provides a unique platform to become such an IWRM river basin authority that will mobilize stakeholders in the river basin and address these challenges in an integrated manner. Successful implementation of LRBMS will prepare the LRA to assume the role of an integrated river basin authority when legal constraints are removed. The concept of basin management here includes not only management at the macro scale, but also the delivery of water services to basin users. The overall USAID water sector AO refers specifically to improving water services for all while at the same time, the LRA has responsibilities for both for irrigation service delivery in basin canal commands and for water resource management at the basin level. Some of the most critical issues facing the basin are resource-level issues such as surface water quality degradation and ground water overdrafting.

B.2- Project Identification

International Resources Group (IRG) was awarded a \$10,448,535 contract by USAID/Lebanon (Contract EPP-I-00-04-00024-00 Task Order No.7) under the Integrated Water and Coastal Resources Management Indefinite Quantity Contract (IQC) II to implement the Litani River Basin Management Support (LRBMS) Program. The period of performance of this contract is September 29, 2009 to March 30, 2014.

B.3- Scope of the Project

The LRBMS program is part of USAID's increasing support to the water sector in Lebanon. The purpose of the LRBMS Program, as stated in the RFTOP, is to set the ground for improved, more efficient and sustainable management of the Litani river basin through provision of technical support to the Litani River Authority and implementation of limited small scale infrastructure activities.

The LRBMS technical assistance team was to provide technical services and related resources to LRA in order to improve their planning an operational performance and equip them with the necessary resources for improved river basin management. To achieve the LRBMS program objectives, IRG was to undertake tasks grouped under the following four components:

- 1) Building Capacity of LRA towards Integrated River Basin Management (IRBM)
- 2) Long Term Water Quality Monitoring of the Litani River

- 3) Integrated Irrigation Management which will be implemented under two components:
 - a. Participatory Agriculture Extension Program: implemented under a Pilot Area: West Bekaa Irrigation Management Project
 - b. Machghara Plain Irrigation Plan
- 4) Improving Litani River and Qaraoun Dam Monitoring System which will be implemented under two components:
 - a. Litani Qaraoun Dam Monitoring System
 - b. Litani River Flood Management Model

B.4- Contract and Contract Modification

B.4.1- Baseline Cooperative Agreement

The United States Agency for International Development (USAID) Lebanon Mission has contracted with International Resources Group (IRG) on September 29, 2009 to implement the Litani River Basin Management Support (LRBMS) under a baseline contract number EPP-I-00-04-00024-00 Task Order No.7 with baseline obligation of \$500,000. The baseline period of performance of this contract is September 29, 2009 to September 30, 2012.

B.4.2- Contract Modification

On November 04, 2009 the contract was modified to increase the obligated amount by \$3,500,000 from \$500,000 to a revised amount of \$4,000,000. On September 28, 2010 a second modification was issued to increase the obligated amount by \$1,800,000 to a revised amount of \$5,800,000 and to eliminate the Deputy Chief of Party position and naming Eric Viala as Chief of Party. A third modification was issued on September 29, 2011. The purpose of this modification is to:

- revise the Statement of Work by modifying certain activities and adding activities;
- add the Branding Strategy and Marking Plan;
- add language on environmental compliance;
- increase the total estimated cost by \$2,492,958 to a revised amount of \$10,448,535;
- increase the total obligated amount by \$2,515,389 to a revised amount of \$8,315,389;
- extend the completion date to September 30, 2013.

A fourth modification signed on August 15, 2012 allowed to incrementally fund the Task Order by adding \$2,133,146 to increase the total obligated amount from \$8,315,389 to \$10,448,535.

The last modification was issued on September 25, 2013 to extend the period of performance of IRG TO by 6 months at no additional cost to USAID and change the completion date from September 30, 2013 till March 31, 2014 and to re-align the budget.

B.5- Institutional Context

Under the LRBMS program, IRG works with national and regional institutions and stakeholders to set the ground for improved, more efficient and sustainable basin management at the Litani River basin. LRBMS assists the Litani River Authority (LRA) with improving its capacity to transition into an Integrated Water Resources Management (IWRM) river basin management entity. As stated in Section C of the Contract Agreement, capacity building activities conducted by LRBMS were to engage the LRA Board of Directors and other Key stakeholders such as the Ministries of Water and Energy, Agriculture, Environment and Industry, Council of Development and Reconstruction (CDR), Water

Establishments (WEs) of Bekaa and South Lebanon, municipalities of Zahle and Taanayel, the Federation of Municipalities of Bekaa and Qaraoun, the Chamber of Commerce and Industries and representatives from farmers and other types of water users, including environmental NGOs and local businesses. However, due to some constraints and projects needs as they unfolded and became clearer during progress of the project, the collaboration with the CDR, Ministries and WEs remained very limited. All these entities were engaged at some stage with different extents, but they did not participate in any capacity building activity.

B.6- Project Intended Results

The primary objective of the LRBMS program is to support improved, more efficient and sustainable water resource management in the Litani River Basin. It aims to assist the LRA to transform into a River Basin Agency. LRBMS is to achieve this through its four components:

- Capacity-Building for LRA and main stakeholders in the Litani River Basin: to support legal, institutional, and policy reforms that would allow the equitable and sustainable development and management of water and related resources
- Long-Term Water Monitoring: to ensure the routine collection by LRA of water data for information-based decision-making;
- Integrated Irrigation Management: to improve irrigation practices with benefits for farmers, public health and pollution mitigation;
- Qaraoun Dam and Litani River Monitoring System: to mitigate the risks associated with the Qaraoun Dam and floods in the Litani River Basin.

B.7- Results Framework

The LRBMS Results Framework is very similar to The USAID/Lebanon Water Services Results Framework, with the project objective being phrased like the USAID/Lebanon Water Services Assistance Objective as:

- Improved water services for all in the Litani River Basin.

Intermediate Results have also been defined to match those of the USAID/Lebanon Water Services Results Framework:

- IR 1: More efficient water management in the Litani RB
- IR 2: Improved water infrastructure
- IR 3: Enhanced water governance

LRBMS Results Framework and indicators are presented next page.

LRBMS RESULTS FRAMEWORK

Project Objective: Improved water services for all in the Litani River Basin

1. Percent customer satisfaction with water services in Canal 900 area
2. Number of RBMP endorsed by LRA

IR 1: More efficient water management in the Litani RB

3. % of Canal 900 area actually served
4. # ha formerly irrigated from sewage and now irrigated from freshwater
15. # water monitoring reports (*)
16. Canal 900 water efficiency (*)
17. Annual groundwater balance (*)

IR 2: Improved water infrastructure

9. Number of Dam Safety equipment installed by LRBMS
10. Kilometers of additional irrigation networks built by LRBMS
11. Number of operating gaging stations in Litani River Basin
12. Number of hectares of constructed wetland (*)

IR 3: Enhanced water governance

13. Number of LRBMS-prepared reports proposing legal, policy, institutional measures
14. Revised LRA mandate

B.9- Development Hypothesis

The LRA is a governmental agency established in 1954 to harness water resources of the Litani River for the development of the central and southern Lebanon. For the past 50 years, it has operated the Qaraoun reservoir, produced electricity from three hydroelectric power plants and managed several irrigation systems. However LRA has no water management mandate.

The successful implementation of LRBMS based on international best practices and lessons learned from implementing water sector initiatives around the world, and on IRG understanding of the challenges and opportunities to improve water management in the river basin, and vision of how to transform the LRA into an empowered and sustainable River Basin Agency, will prepare LRA to assume the role of an integrated river basin authority when legal constraints are removed and will also set the ground for improved, more efficient and sustainable management of the Litani river basin.

B.10- Critical Assumptions

The general critical assumptions made in the USAID Results Framework are:

1. There is a persistent risk of violence. If conflict flares up, then activities in the affected areas would be temporarily suspended and possibly modified to respond to changing needs
2. The Ministry of Energy & Water will remain an allowed partner, or at least that working with sub-national water entities such as the Water Establishments will not be prevented by US and Lebanese legal considerations
3. Water earmarks will remain sufficiently generic so as not to be uniquely limited to water supply and sanitation activities, or else that economic growth funds will be available to work on water/irrigation management activities.

In addition, the following assumptions were considered to be critical for producing project outputs and the eventual achievement of project outcomes:

1. The LRA and the GoL will embrace and support the fundamental approaches of the project, notably the concept of river basin management which is essentially based on water user participation.
2. The LRA and other Lebanese water authorities will share with the project the data needed to compute the various indicators included in the M&E Plan.

EXISTING PROJECT INFORMATION

- Contract and contract modifications
- Work plans
- PMPs
- Periodic reports
- Reports of audit undergone by LWWSS,
- LRBMS Initial Assessment Report; February 2010.
- Country Development Cooperation Strategy (CDCS) USAID/Lebanon
- Other specific documents, for instance: benchmarks set under the GIZ “Assistance to the Water Sector Reform” program; Republic of Lebanon Water Sector: Public Expenditure Review, World Bank, May 2010; National Water Sector Strategy, Ministry of Water and Energy, 2010; Comprehensive sector analysis report, Water and Wastewater Sector Lebanon (ME&A for USAID/Lebanon) March 2011; Lebanon Country Water Sector Assistance Strategy, 2012-2016, World Bank, April 2012.
- Other Special studies and assessments reports.

PURPOSE OF THE EVALUATION

The respective Contracting Officer's Representatives (CORs) for the LWWSS project and LRBMS Project have requested in August 2013 a final performance evaluation of the LWWSS and LRBMS projects to analyze the extent of achievement of the program objectives, to evaluate its outcomes, to document successes, challenges, and lessons learned from the project and to assess the VEs improvement of performance compared to benchmarks set under GIZ "Assistance to the Water Sector Reform" program.

Finally, the mission requested that this final performance evaluation analyzes the extent to which LWWSS and LRBMS fulfilled the mission's Gender Integration requirements and provide analysis of the overall sustainability risks associated with assistance to the water sector in Lebanon.

In accordance with ADS 203.3.1, the evaluation questions to be answered are:

1. To what extent have the projects achieved their expected outcomes and stated objectives? For instance, to what extent did LRBMS achieve its objectives in improving the efficiency of the water management, in improving the water infrastructure and in enhancing the water governance, and to what extent did LRBMS achieve its objectives of setting the ground for improved, more efficient and sustainable river basin management at the Litani River basin?
2. What were the factors influencing the achievement or non-achievement of the projects' objectives?
3. Regarding the project implementation and specifically the managerial, administrative, operational, and technical successes and challenges:
 - a. What were the successful aspects or the successes stories and lessons learned for implementation in the future?
 - b. What were the challenges in project implementation or aspects that did not properly contribute to meeting objectives of the projects?
4. Were mechanisms put in place to ensure the sustainability of projects' results? If not, why not? If so, how effective were they? What are the factors influencing the achievement or non-achievement of sustainability of the projects' results?
 - a. Is there a defined exit strategy? If so, to what extent would it contribute to sustainability?
5. To what extent the project has fulfilled the mission's gender integration requirements?

The evaluation should provide recommendations for USAID/Lebanon on:

- Possible follow-up activities to enhance the sustainability of the projects' outcomes and the sustainability of the provided infrastructure.
- A possible replication of this program, and future programs/activities that address the enhancement of the water sector in Lebanon and of the management and conservation of water resources in the Litani Basin.
- The need of continuing to promote for transformation of LRA into an integrated Basin Agency and the viability of such an agency.
- How to fulfill the mission's Gender integration requirements in the overall water sector in Lebanon including the documentation of initiatives taken by Government of Lebanon and other donors in this regard.

AUDIENCE AND INTENDED USES

This final performance evaluation is intended to be used by USAID/Lebanon, LWWSS and LRBMS and others at the discretion of the Mission. In the spirit of the USAID Evaluation Policy the evaluation should

provide USAID/Lebanon with concise actionable recommendations based on evidence that will inform future Water programming.

EVALUATION DESIGN AND METHOD

This evaluation will be a non-experimental design performance evaluation. The evaluation will rely on primary and secondary data from desk reviews (RFA, CA, Work Plans, Quarterly reports, Annual report, Assessment studies...), monitoring and evaluation data; key informant interviews (KII) and Focus Groups discussions with LWWSS and LRBMS program COPs and staff; personnel of the Water Establishments projects donors and other Litani River Management stakeholders and beneficiaries of both projects. Field visits inter alia to the sites where ERP modules have been installed by LWWSS project, the WE Customer Service Center, WEs pumps, WE laboratory in Saida and Zahle and Chlorination Stations are proposed. The results of training provided will be assessed by interviewing WE staff who attended the training sessions under LWWSS and LRBMS projects.

Illustrative Data Collection Methods and Tools

This evaluation will gauge the performance of LWWSS based on work plans, project sites reports and progress reports. The evaluation methodology shall include desk review of the program documents, Water Establishment documents, other donor's reports on similar activities, interviews of KII of LWWSS project officials, case studies of successful stories.

The consultant's should follow the following methodology:

- Meet with the project staff and key informant meetings to obtain more detailed, in-depth understanding about specific issues.
- Review of general project information available in the existing project documents, country strategy document, previous evaluation reports if applicable, quarterly reports and indicators, etc.;
- Interview key stakeholders, using a structured questionnaire as a guide during interviews.
- Prepare first draft of the evaluation report including a review of projects' activities achievements, success stories, challenges and results.
- Provide recommendations in terms of possible replication of both projects, and future programs/activities that address the enhancement of the management and conservation of water resources in the Litani Basin.

Data Analysis Methods

The evaluation team will prepare a data source matrix (sometimes called an evaluation matrix) that will include the evaluation questions, and the evaluation tool(s), data source(s) and analysis plan for each question.

Evaluation matrix (illustrative template)

Evaluation criteria	Evaluation questions related to the criteria	Data sources	Data collection methods and tools	Data analysis plan
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Effectiveness

Sustainability

Gender integration

This matrix will ensure that a multitude of data sources are considered and the team will be able to use triangulation of data to answer each question with more validity. All the data collected from different sources will be reviewed for reliability and validity and findings are to be compared based on multiple methods, form of data, sources of data and levels of data or respondents. Data will be organized to answer evaluation questions in the final report.

FINAL PERFORMANCE EVALUATION DELIVERABLES

- Scope of Work with Outline of the Work Plan: The PMPL Team will prepare an outline of the work plan that will include the methodologies to be used in the evaluation. The work plan outline will be submitted to the COR at USAID/Lebanon for approval with the SOW by December 15.
- Mid-point briefing to USAID: Statement of progress, preliminary findings, problems encountered and resolutions.
- Outbrief with USAID and final presentation: Major findings of the evaluation will be presented to USAID/Lebanon using a PowerPoint presentation. The debriefing will include a discussion of achievements and issues as well as any recommendations the PMPL Team has for course corrections to the LWWSS and LRBMS projects.
- Draft report and outline of the final report: A draft report of the findings and recommendations is to be submitted to the USAID COR, clearly describing findings, conclusions, and recommendations, by early March 2014. USAID will provide comment on the draft report within one week of submission. The PMPL Team will consider USAID comments and revise the draft report accordingly as appropriate.
- Final Report: The PMPL Team will submit a final report of not more than 25 pages excluding annexes that incorporate the responses to Mission comments and suggestions no later than seven days after USAID/Lebanon provides written comments on the draft evaluation report. The format will include an executive summary, table of contents, methodology, findings related to the evaluation questions and specific areas of interest (above), and recommendations. The report will be submitted in English, electronically in MS Word format and compliant with USAID Graphic Standards.

REPORTING GUIDELINES

USAID's evaluation policy requires that all evaluation SOWs include USAID's Criteria to Ensure the Quality of the Evaluation Report. The LWWSS final performance evaluation team is advised to

incorporate these guidelines in their report where relevant and applicable to the evaluated cooperative agreement.

Structure of the Evaluation Report

The findings from the evaluation will be presented in a draft report at a full briefing with USAID/Lebanon and possibly at a follow-up meeting with key stakeholders. The format for the evaluation report is as follows:

1. Executive Summary: concisely states the most salient findings and recommendations with respect to the evaluation questions (2 pp.);
2. Table of Contents (1 pp.);
3. Introduction: purpose, audience, and synopsis of task (1 pp.);
4. Background: brief overview of LWWSS and LRBMS projects context, USAID/Lebanon program strategy and activities implemented in response to the development problem, a brief description of LWWSS and LRBMS, and purpose of the evaluation (3 pp.);
5. Methodology: describes evaluation methods, including constraints and gaps (1 pp.);
6. Findings/Conclusions for each evaluation question; including a reference to the data quality of the evidence provided; (10 pp.);
7. Issues: provide a list of key technical and/or administrative, if any (1 pp.);
8. Recommendations (1 pp.);
9. The final version of the evaluation report will be submitted to USAID/Lebanon in hard copy as well as electronically in MS Word format. The report should not exceed 25 pages, excluding references and annexes.

TEAM COMPOSITION

USAID's ADS requires that at least one member of every evaluation team be an evaluation specialist. An evaluation specialist is a person with significant experience designing evaluations and a strong understanding of data collection and analysis methodologies.

In accordance with evaluating the performance of the project towards achieving its intended results, the ideal technical expert's qualifications would combine expertise in water utility and resources management and civil engineering in the water sector. The expert should be familiar with water sector development strategies and programs. Thus the evaluation team will consist of an evaluation expert and a technical expert. The evaluation expertise will be provided by the PMPL resident staff or from the SI head office. PMPL proposes to recruit a Water Utility Management/Civil Engineer expert to collaborate in this evaluation. The Water Utility Management/Civil Engineer expert should possess a Master's degree in Public Administration, Civil Engineering or a related field and have at least 10 years professional experience in water sector project management. The technical expert is to be recruited through Management Systems International (MSI) the SI sub-contractor for PMPL.

PMPL might also solicit the services of a National Consultant that has the experience and is familiar with general water sector situation of Lebanon, the national water policies, and the institutional context, to support and facilitate the missions of both international technical experts. The national consultant must also have advanced education in Water resources management, water engineering or other related fields.

PMPL is prepared to start this evaluation during Quarter 2.

EVALUATION MANAGEMENT

1. Pre Field-Work (21 Jan - 1 Feb): Identify and recruit a water engineer and a team leader. Obtain key documents, make key contacts and plan for interviews and discussions with LWWSS and LRBMS stakeholders, liaising with LWWSS and LRBMS field staff to set up necessary interviews with project

staff and other USAID project representatives as needed. The pre field work should be accomplished one week prior to the evaluation starting date. The water engineer arrives in country on 1st of February.

2. Evaluation kick-off and Field Work - Week one (3- 8 Feb): the evaluation team meets with the PMPL COP to assign roles and responsibilities, the outline of the evaluation report is prepared, the team meets with USAID for an in-country briefing during which the evaluation methodology is confirmed and the report outline agreed. Additional documentation may be requested at this time. Logistics for the field visits are made final. Interviews with key staff begin.

3. Field Work - Weeks two and three (10-22 Feb): The focus will be on interviewing USAID key staff who are responsible for LWWSS and LRBMS, the staff of LWWSS and LRBMS and others who work with or have been impacted by the activities under evaluation. Other donors supporting Water Projects (i.e. GIZ, EU...) in Lebanon and Water Establishments staff will be also interviewed.

4. Post Field-Work - Weeks Four and Five (24 Feb - 5 March): The team begins preparing the first few sections of the draft report on the background, setting and institutional context related to the project. An outbrief is to be conducted at USAID and to be followed with the completion of the data analysis and of the evaluation draft report. Submission and presentation of the completed draft final report by 5 March 2014.

5. Post Field-Work- Week Six (6-22 March): The technical expert travels from Lebanon on the 6th of March. The final report will be submitted no later than two weeks following receipt of final comments from USAID/Lebanon.

Annex II: Evaluation Methods and Limitations

This evaluation relies on qualitative methods. Quantitative methods, such as a statistical sample, were less feasible as this evaluation covers two projects that are both within the water sector, but with different objectives, and different beneficiaries. Within each project there were surveys undertaken of users of irrigation water provided through LRA, and another survey done by LWWSS of WE customers. The latter survey will be done later in the year for comparison with baseline survey data.

A broad spectrum of key informant interviews was conducted. The list of key persons interviewed is provided in Annex IV. Each key informant interview was guided by a prepared questionnaire that ensured important topics were covered. These questionnaires are provided in Annex III.

Much has been written about the water sector in Lebanon. USAID, GIZ and the World Bank have long been involved in the water sector and their work provided important reference documents. These documents are listed in Annex IV. The two projects themselves developed studies and reports as deliverables of the project; these are not listed. Each of the WE prepared business plans that provided information critical to an assessment of water sector strategy.

The evaluation captured the scope of activities undertaken by the projects and the beneficiaries of those activities. For this reason it is believed that the evaluation results presented here are a fair assessment of the projects and the information collected provided a sound basis for looking ahead at USAID's future activities in the Water Sector.

Limitations included the lack of access to some key informants, and security restrictions that limited access to regions in the North of Lebanon (Akkar and parts of Baalbek). It was not felt that these access restrictions resulted in a biased understanding of the true situation.

Table 1: Evaluation Matrix

Evaluation criteria	Evaluation questions related to the criteria	What to look for	Data sources	Data collection methods
Relevance of the projects	Were the projects designed and implemented to respond to the needs of the water sector in Lebanon?	How did the projects supported or contributed to relevant national strategies?	- National Water Sector Strategy - Projects documents - USAID CDCS - Minister's advisor - USAID staff	- Desk review of secondary data - Interview with Representatives of the Ministry of Energy and Water - Interview with USAID staff
Effectiveness	To what extent have the projects achieved their expected outcomes and stated objectives?	To what extent did LWWSS achieve its objectives in improving the efficiency of the water management, in improving the water infrastructure and in enhancing the water governance? What were the factors influencing the achievement or non-achievement of the projects' objectives?	- Project documents - LWWSS staff - Water Establishment DGs	- Desk review of secondary data - Interviews with LWWSS staff - Interviews with Water Establishments DGs - Observations from field visits
		To what extent did LRBMS achieve its objectives of setting the ground for improved, more efficient and sustainable river basin management at the Litani River basin? What were the factors influencing the achievement or non-achievement of the projects' objectives?	- Project documents - LRBMS staff - LRA staff - Beneficiaries : Farmer and presidents of municipalities	- Desk review of secondary data - Interviews with LWWSS staff - Interviews with LRA staff - Interviews with the farmers and presidents of municipalities - Observations from field visits
Efficiency and management	What were the project implementation and specifically the managerial, administrative,	- What were the successful aspects or the successes stories and lessons learned for implementation in the future? - What were the challenges in	- Projects documents - Projects staff - USAID staff - Projects beneficiaries	- Desk review of secondary data - Procurement procedures - Interviews with projects staff - Interviews with projects

	operational, and technical successes and challenges?	<p>project implementation or aspects that did not properly contribute to meeting objectives of the projects?</p> <ul style="list-style-type: none"> -Existence and effectiveness of collaboration with other donors? -Importance and role of M&E procedures? 		beneficiaries.
Sustainability	<p>Were mechanisms put in place to ensure the sustainability of projects' results? If not, why not? If so, how effective were they? What are the factors influencing the achievement or non-achievement of sustainability of the projects' results?</p>	<ul style="list-style-type: none"> - -Will the projects achievements be maintained over time after the projects end? -Are there any indications that the beneficiaries or the projects partners will continue to support the projects' activities? -Is there a defined exit strategy? If so, to what extent would it contribute to sustainability? 	<ul style="list-style-type: none"> -Projects staff -Projects beneficiaries 	<ul style="list-style-type: none"> - Interviews with projects staff - Interviews with projects beneficiaries. - Observations from field visits
Gender integration	To what extent the project has fulfilled the mission's gender integration requirements?	<ul style="list-style-type: none"> -How the projects contributed to gender equality? -Are results of the projects disaggregated by sex? 	<ul style="list-style-type: none"> -Projects documents -Projects staff -Projects beneficiaries 	<ul style="list-style-type: none"> - Desk review of secondary data - Interviews with projects staff - Interviews with projects beneficiaries.

Annex III: Data Collection Instruments

Interview Guides

I - Questions for WE DG:

1. How long have you held the Position of DG?
2. Roles & responsibilities?
 - a. Water Supply
 - b. Waste Water
 - c. Irrigation
 - d. GW
 - e. WQ
3. How many staff? How many women?
4. Service Area; households, municipalities;
5. How many facilities? Km; plants;
6. Budget: Revenue vs expenditures
7. Major problems?
 - 1.
 - 2
 - 3.
8. Major needs:
 - a. *Increase and/or secure production, new wells, pump replacements*
 - b. *Transmission line repair and/or replacement*
 - c. *Water supply network extension and/or replacement*
 - d. *Procurement of pumps and pipes for warehouses*
 - e. *Increase storage capacity; reservoirs*
 - f. *Procurement and installation of chlorination units*
 - g. *Procurement of repair tools and equipment*
 - h. *O&M crew trucks and vehicles*
9. Priorities:
 - a. Infrastructure
 - b. Management
 - c. Finance
 - d. O&M
 - e. Staff
 - f. Training
 - g. Customer awareness
 - h. Syrian Refugee Crisis
10. What is your relationship with MOEW; Municipalities? Can they manage facilities?
11. Have you developed Business Plan? Master Plan? Are you implementing?
12. What USAID projects are you involved in? Other Donor projects?
13. How do you interact with USAID project?
14. Were you involved in planning the project? Selecting interventions?

15. Achievements with LWRSS? Before/After?
16. How was the project able to help you solve your problem/issues?
17. Success story to share
18. What Project activities worked/didn't work? Why?
 - a. Capacity Building/Management
 - i. Business Plans
 - ii. ERP
 - iii. Internal Audit:
 - iv. Budget:
 - v. Cost Tariff Model:
 - b. Equipment
 - c. Training
 - d. Field projects
 - e. Awareness campaigns.
19. Have you discussed possible follow-up project with USAID? Other donors?
20. Additional training:
 - a. Laws and regulations,
 - b. Management,
 - c. Business Process,
 - d. Accounting,
 - e. Financial,
 - f. Subscribers management,
 - g. Maintenance (preventive and regular).

II- Questions for LRA Chairman:

1. How long have you held the Position of Chairman?
2. How many staff?
3. How many facilities?
4. Roles & responsibilities?
5. Major problems?
6. Major needs:
 - a. *Increase and/or secure production, new wells, pump replacements*
 - b. *Transmission line repair and/or replacement*
 - c. *Water supply network extension and/or replacement*
 - d. *Procurement of pumps and pipes for warehouses*
 - e. *Increase storage capacity; reservoirs*
 - f. *Procurement and installation of chlorination units*
 - g. *Procurement of repair tools and equipment*
 - h. *O&M crew trucks and vehicles*
7. Reference the June 2009 Workshop sponsored by EU MEDA Water Programme Initiative:
 - a. Listed 11 Problems; progress towards solution? Still the same issues?
 - b. Listed 10 Tasks for LRA on mid-term; have they been taken up?
 - c. Do you see any changes in the near future on LRAs mandate?
8. How do you interact with USAID project

9. How was the project able to help you with these problem issues?
10. Success story to share
11. What Project activities worked/didn't work?
 - a. Equipment
 - b. Training
 - c. Field projects
12. Have you discussed possible follow-up project with USAID?
13. Are you working with other donors?
14. Suggested persons to meet/places to see?

III- Questions for MOEW Adviser (Abdo Tayyar):

- I. What is your current Role with the new government?
2. Current position of MOEW on water sector? Problems & issues? Same as NWSS?
3. Role in preparing NWSS? Analysis provided in WB assessment?
4. Status of implementation of NWSS (Yr 2010)?
5. Infrastructure requires USD 7 Billion? Through Yr 2020(2B, 3 B, 2.5 B) Source of funds?
 - a. Govt.
 - b. Donors (WB, EU, GIZ, USAID, Kuwait Fund)
 - c. Private sector (Blue Gold); strong private technical sector.
6. Management estimated cost? How to balance?
7. Key problems?
8. Water Sector issues: GW, WW, pollution, storage; irrigation, WS (service standards); funding, cost recovery; legal; institutional.
 - a. Infrastructure: WW, storage,
 - b. Management: legal, institutional; tariffs;
 - c. Water Code, Law 221, 241, Standards
9. Role of MOEW, Min Env, MinAg, CDR, Water Establishments, LRA, Municipalities? Autonomy of WEs & LRA?
10. Status of legal and regulation activities? Who is taken leadership role?
11. How accurate is Water Balance? Data collection & monitoring system? Water resources data base?
12. Refugee issue?
13. What do you know about USAID activities? Have you been involved with USAID?
14. What is your opinion of USAID activities?
15. What can USAID do to improve?
16. What can USAID do next?
17. GOL & Gender? Is there an awareness program?
18. Suggestions?

IV- Questions for Water Quality Lab

- I. What is the role of the WQ Lab
 - a. Roles & responsibilities
 - b. How many Pump stations
 - c. How many GW monitoring sites

- d. How many WQ sites?
 - e. How many met stations?
 - f. Network map
 - g. Funds for O&M; field visits; data collection
 - h. How many staff?
2. Do you have a WQ data base:
 - a. How is the data collected?
 - b. How often?
 - c. How is it processed
 - d. How is it stored?
 - e. How is it distributed?
 - f. Do you use GIS?
 - g. Equipment
 - h. Website
 3. What assistance did USAID project provide?
 4. Equipment
 5. Training
 6. Where you provided with manuals for the equipment?
 7. How will you maintain equipment provided by USAID?
 - a. Budget
 - b. Staff
 - c. Local support
 8. What else do you need to better do your job?
 - a. Equipment
 - b. Staff
 - c. Training

V- Questions for Jeita Pump Station Operator and LRA Dam Station Operator

1. Name:
2. Organization:
3. Water Supply system network:
 - a. # & type pumps:
 - b. Source:
 - c. Capacity:
 - d. Lift:
 - e. Hrs/day
 - f. Volume/day
 - g. Peak hrs
 - h. Volume/year
4. Cost
 - a. Initial cost
 - b. O&M
 - c. Labour

- d. Energy
 - e. Replacement parts
 - f. Life of pumps
 - i. Motor
 - ii. Pump
5. Local maintenance contract
- a. Replacement parts
 - b. Source of pumps
 - c. Turned over to water establishment
 - d. Training
 - e. Ops manual

VI. Questions for Farmer:

1. Where is your land located?
2. How many hectares
3. Crops:
4. Source of Irrigation:
 - LRA
 - a. Q:
 - b. WQ
 - c. Duration
 - d. Cost
 - e. Pressure:
5. How is water delivered?
 - a. Schedule? Time & amount?
 - b. Quality
 - c. Measured
 - d. Pay for services?
 - e. How often?
 - GW
 - f. Depth
 - g. Flow
 - h. WQ
6. Type of Irrigation
7. Major problems in system
8. Farmer Organization
 - a. Water Organization
 - b. MOA
9. Roles & resp of LRA:
 - a. Who is your contact with LRA?
 - b. Do you work with MOA or other organizations?
10. What training & support have you received from USAID Project?
11. Are you making money?

VII- Questions for Monitoring Unit

1. What is the role of the Monitoring Unit
 - a. Roles & responsibilities
 - b. How many stream gage stations do you operate?
 - c. How many GW monitoring sites
 - d. How many WQ sites?
 - e. How many met stations?
 - f. Network map
 - g. Funds for O&M; field visits; data collection
 - h. How many staff?
2. Do you have a Water Resources data base:
 - a. How is the data collected?
 - b. How often?
 - c. How is it processed
 - d. How is it stored?
 - e. How is it distributed?
 - f. Do you use GIS?
 - g. Equipment
 - h. Website
3. What assistance did USAID project provide?
4. Equipment
5. Training
6. Where you provided with manuals for the equipment?
7. How will you maintain equipment provided by USAID?
 - a. Budget
 - b. Staff
 - c. Local support
8. What else do you need to better do your job?
 - a. Equipment
 - b. Staff
 - c. Training

VIII- Questions for Municipalities (Mayors):

1. Introductions
 - a. Name
 - b. Municipality
 - c. Population
2. What problems do you face in the water sector:
 - a. Drinking water (coverage/pressure/hrs per day
 - b. Waste water removal (septic tank/central)

- c. Stream pollution
 - d. GW quality/costs
 - e. Urban drainage/floods
 - f. Solid waste
3. Who provides you with water/waste removal services:
 - a. Drinking water
 - b. Waste water removal
 - c. Solid waste removal
 - d. Urban drainage
 - e. Flood/emergency management
 4. What is your connection with LRA? Water Establishment?
 5. Do you have funds & expertise for managing water services yourself?
 - a. Planning
 - b. Construction
 - c. O&M
 - d. Billing
 6. Is this something you can do? Up to what level?
 7. Are the Municipalities involved in the irrigation or ag sector?
 8. How has the USAID project helped the municipalities?
 9. Do you see the need for a River basin Committee?
 - a. Why?
 - b. What is needed to make this happen?

Annex IV: Sources of Information

IV.1 List of Key Informants

USAID:

Sana Saliba, LWWSS COR
Rami Wehbe, LRBMS COR

WISE Project:

Rick Albani, Project COP
Salah Saliba, Technical Advisor

LWWSS Project:

William Parente, Project COP
Rana Maalouf, Program Manager
Bassem Jaber, LWWSS and LRBMS Senior Advisor
Philip Giantris, President of Value Add Management Service, a sub-contractor of DAI.
Mike Chalah, Finance Specialist
Elias Hasbini, Operations and Procurement Manager
Mitri Abi Jreich, Management Advisor
Bassem Ghayda, Senior Project Engineer

LRBMS Project:

Eric Viala, LRBMS COP
Marie-Helene Nassif, Consultant
Michel Estefan, Land owner and Farmer.

LRA:

Dr. Selim Catafago, LRA Chairman
Dr. Nabil Amasha, Head of Water Monitoring and Environmental Studies Department
Elie Hawi, Head of Water resources department
Mazen Sweidan, Head of Financial department/Accounting
Jamal Ayoub, Head of engineers
Ali Tarif, Technician
Amin Ghazal, LRA technician responsible of the WQ and Level Data Collection

Governmental Institutions:

Abdo Tayar, Advisor of the Minister of Energy and Water's
Joseph Nseir, BMLWE Director General
Jamal Krayyem, NLWE Director General
Maroun Msallem, BWE Director General
Sleiman Geammal, BWE Head of Lab department
Ahmad Nizam, SLWE Director General
Amal Chidiac, SLWE Head of Lab Department

Italian Cooperation for Development:

Georges Chrabieh, Engineer
Chadi Salem. Engineering Advisor

IV.2 List of documents other than reports, studies and documents prepared by LWWSS and LRBMS projects

1. USAID, Bureau for Asia and the Near East, 2003. Water quality assessment of the upper Litani River Basin and Lake Qaraoun Lebanon.
2. European Community, 2009. “Litani River Authority (LRA) and River Basin Management – constraints and possibilities in integrated Lebanese water management”. Workshop held in Lebanon on 11th and 12th of June 2009.
3. Government of Lebanon, 2000. Law 221. Organization of Water Sector.
4. Government of Lebanon, Ministry of Energy and Water, 2010. National Water Sector Strategy.
5. USAID, Washington DC, 2013. Safeguarding the World’s Water Report for USAID Fiscal Year 2012 Water Sector Activities.
6. World Bank, 2010. Gender in Water and Sanitation. Mainstreaming Gender in Water and Sanitation.
7. USAID, Bureau for Asia and the Near East, 2005. Litani Basin Management Advisory Services (BAMAS). Litani Water Quality Management Project. Rapid Review Report.
8. USAID, Lebanon, 2011. Comprehensive Water and Wastewater Sector Analysis Report. Final report. Prepared by Mendez England & Associates.
9. World Bank, Sustainable Development Department, Middle East and North Africa Region 2012. Lebanon Country Water Sector Assistance Strategy 2012-2016.
10. World Bank, Sustainable Development Department, Middle East and North Africa Region 2010. Republic of Lebanon Water Sector: Public Expenditure Review.
11. USAID, Lebanon. LEBANON WATER POLICY PROGRAM (LWPP) FINAL REPORT May 2002 – May 2007. Prepared by DAI.
12. European Commission, 2010. Water Framework Directive.
13. GTZ, 2010. Technical Assistance to the Water Sector Reform in Lebanon. Performance Monitoring and Benchmarking Program Water Establishments of Lebanon.

IV. 3 Extracts from the Quarterly reports

- Status of deliverables as reported by LRBMS (February 2014)

Component 1: Building Capacity of the Litani River Authority (LRA) towards Integrated River Basin Management	
Steering Committee	Initial idea was to coordinate among central GoL agencies to get endorsement for LRBMS activities. MEW has unfortunately been indifferent to LRBMS efforts (if not hostile to empowerment/decentralization efforts). LRBMS focused then on grouping LRB municipalities and developing a trusting relationship between these and LRA. The concept of River Basin Committee has been proposed, along with a template for a Water Federation of Litani Municipalities. LRBMS is currently assisting registration of this Federation formed by 9 Municipalities.
Recommendations for integrated river basin management	Role of LRA - report prepared July 2010 Action Plan for Awareness/Enforcement, draft being prepared
River Basin Management Plan (Volume 1 Assessment & Volume 2 Action Plan)	RBMP volume 1 - prepared and endorsed by 20+ Municipalities RBMP volume 2 - drafted and endorsed by about 20 Municipalities
River Basin Decision Support System	WEAP model developed by EU for MEW. Despite request, LRA could not retrieve model from MEW for LRBMS to update/upgrade it.
Study tours and workshops on integrated river basin management and related subjects	Participatory/decentralized water management Study Tour to France - Oct 2012 Second water management study tour to France planned Feb 2014
Operational systems/plans/tools developed & used	Upgrading of IT system (hardware and software) to manage communications and archives
Outsourcing plan	LRBMS explored the idea but public contracting mechanism in Lebanon make it difficult to contract a provider over a one year period.
Training program	LRBMS proposed to develop training program for new hires at LRA but no buy-in
Training on O&M, outsourcing, and procurement	Capacity-building activities provided to 100 LRA staff on many topics, notably operation and maintenance of procured equipment (under all four components).
Training activities for staff and for senior and mid-level managers on program management financial management and planning, capital investment planning, and asset management;	
Organizational and staffing plan	Restructuring LRA - report prepared May 2012
Report on recommendations on new organizational structure	
Outreach and awareness sessions and materials for water users related to accountable/sustainable water use/management practices and to integrated basin management;	Posters, brochures, school competition and calendars, notebooks, puppet Show
Communications and outreach plan	Upgrading of website, filming of documentary
Corporatization procedures and recommendations	LRA is (legally and financially) an autonomous GOL agency. In reality strategic decisions, as well as promotions/ appointments within LRA, are controlled at higher levels (MEW and MPs). LRBMS suggestions (strategic vision, transition towards IRBM) have been timidly endorsed by LRA.
Modern management and financial systems	Upgrading of financial/accounting/inventory system. LRBMS is now providing on-the-job debugging assistance.
Business Plan	Financial forecasting model was prepared and provided to LRA Board
Economic analysis on water pollution impact	Economic Assessment Report - March 2012
Water valuation study in the Litani River Basin	
Feasibility study for pilot wetland scheme	Feasibility Report -Feb 2012 Design Report - May 2012
Wetland construction	Construction completed, startup ongoing
Climate change	Training event was planned but little interest from LRA
Gender	Attention paid to gender in all activities, with gender disaggregated M&E data
Component 2: Long Term Water Monitoring of the Upper Litani River	
Improved surface water monitoring network (notably gauging stations)	Provision/installation of 5 surface gauging stations, and of 3 flowmeters
Improved Groundwater monitoring network including a	Provision/installation of 14 groundwater observation wells

number of additional observation wells	
Computer-based groundwater model for trends analysis and simulations	Model built, results presented, report being finalized
Data analysis, interpretation and reporting tools developed (notably improved databases)	Water quantity: transfer from HYDATA-DOS to HYDATA-Windows, training provided. Water quality: compilation of all past data into GIS-Excel database.
Improved procedures for assessment of water use and water use efficiency	Prepared remote sensing analysis of cropped areas and water uses in the Litani River Basin (2 reports: 2011 and 2012)
Water Monitoring Plan (including procedures for data collection, control, storage, analysis)	Prepared and provided to LRA, pending feedback and buy-in.
Training sessions and workshops on data quality control, data analysis, and interpretation	Formal and on-the-job training sessions on O&M of gauging stations, groundwater observation wells, water databases, GIS, etc.
Component 3: Integrated Irrigation Management	
Task 3.a: Participatory Agricultural Extension Program (in Canal 900 area)	
Report on current agricultural practices and needs assessment within Canal 900 Project area	Several technical reports prepared by Utah State Univ experts in 2009-10-11
Installation and procurement of irrigation systems and equipment, and training	Pilot drip demonstration program
Rehabilitation of selected components of Canal 900 and network	Procurement and installation of replacement air vents. Procurement of additional cutoff valves and flow meters
O&M plan for Canal 900	Operation and maintenance procedures for the canal 900 irrigation system - prepared April 2011
System for efficient and equitable water distribution developed and used in pilot area(s) of Canal 900	Due to design, construction and operational constraints, Canal 900 network operates at much reduced capacity. LRBMS first focused on addressing these issues through the installation of equipment (air vents, flow meters), the construction of gravity diversions. LRBMS also promoted enhanced coordination among farmers, and between them and LRA. The entire Canal 900 area has thus been considered as the project pilot area for improved and participatory irrigation management.
Comprehensive training program for farmers on the use of fertilizers and pesticides and modern irrigation techniques and practices	Capacity-building activities for 80 farmers on various topics: drip irrigation, soil analysis, sustainable agricultural practices, fertilization, irrigation water monitoring, wheat irrigation
Task 3.b: Machghara Plain Irrigation Plan	
Irrigation pipe (or other alternative) constructed	Pipeline constructed in 2011
O&M procedures developed and used	O&M instructions provided to LRA, pipeline operating satisfactorily since 2011
Component 4: Improved Risk Management	
Task 4.a: Qaraoun Dam Monitoring System	
Field Inspections	Joint inspections May 2010 and April 2012
Dam safety monitoring equipment installed and used	Potential Failure Mode Analysis-Recommendations for dam instrumentation Report - April 2010
	Dam Safety Monitoring Plan - March 2011
	Procurement of rover + capacity building
Earthquake sensitivity analysis	Seismic Deformation Analysis Report - Jan 2012
Emergency Management Plan	Dambreak Modeling Report for Qaraoun Dam - Jan 2012
	EMP Report prepared and submitted to LRA
Capacity-Building	Study Tour on Dam Safety Monitoring to US Bureau of Reclamation - August 2010
Task 4.b: Litani River Flood Management Model	
Flood management model installed and used	Flood Field Survey Report - August 2010
Flood Management Plan	Flood Management Plan Report - June 2012
Capacity-Building	Several trainings for LRA staff, presentations of plan to Municipalities of Marj/Bar Elias

- LWWSS activities carried with each WE

	Component 2: Capacity Building for Managerial, Technical and Operational Efficiency	BML	B	NL	SL
2.1	Establishing and Building the Capacity of Metering Teams				✓
2.2	Building the WEs' Water Quality Management Capacity		✓		✓
2.3	Build Pump Stations Operators Capacity in Operation and Maintenance	✓	✓	✓	✓
2.4	Capacity Building in Enhancing Administrative Performance	✓	✓		
2.5	Increasing Capacity in Water Distribution Network Monitoring and Repair		✓		
	Component 3: Increase Financial and Commercial Viability of Water Establishments				
3.1	Upgrade Finance and Accounting Standards and Methods	✓	✓	✓	✓
3.2	Integrate the WEs Financial, Accounting, Customer Service and Business Process Systems	✓	✓		✓
3.3	Pilot Stakeholder Exercise to Sustain O&M of USAID WWTP		✓		
	Component 4: Capital Investment Planning and Program/Project Management				
4.1	Increase Capacity in Business Planning, Capital Investment Planning and Benchmarking	✗			✓
4.2	Implement Asset Survey, Inventory and Valuation				✓
4.3	Build Decision-Makers' Managerial Capacity in Water Utility Management	✓	✓	✓	✓
4.4	Master Planning		✓		
	Component 5: Procurement of Technical Equipment to Strengthen WEs				
5.1	Identifying Water Production and Contributing to Water Demand Management				✓
5.2	Upgrading Pumping and Energy Efficiency	✓		✓	
5.3	Increasing Supply Hours to Areas Facing Supply Shortage			✓	
5.4	Upgrading the Water Analysis Laboratories		✓		✓
5.5	Water Treatment and O&M Training		✓		
5.6	Increase IT Infrastructure Efficiency	✓	✓		✓
5.7	Upgrade the WEs Topographic Surveying Capacity				✓
5.8	Establishing Direct Customer Interface		✓		
	Component 6: Small to Medium Scale Rehabilitation/Upgrade/Extension Water and Wastewater Works within WEs				
6.1	Decreasing Water Losses and Upgrading Existing Networks		✓		
6.2	Expanding Service Provision to Non-Served Areas			✓	
6.3	Pump Station Rehabilitation				✓
	Component 7: Corporate Culture, Customer Service Orientation, and Public Outreach				
7.1	Building Customer Service Management Structure		✓		
7.2	Customer Service Management Capacity Building	✓	✓	✓	

IV.4. Sites visited and itinerary of the evaluation

Date	Location/Site	Purpose	Key interviewee/ Informant
Monday 3rd of February	LRBMS office, Bechara El Khoury, Beirut	Briefing about LRBMS activities – Presenting the Evaluation SOW	Mr. Eric Viala, LRBMS COP
Tuesday 4th of February	LWWSS office, Zalka	Briefing about LWWSS activities Presenting the Evaluation SOW	Mr. William Parente, Project COP
Wednesday 5th of February	Social Impact Office	Capturing the Background of the Water Sector in Lebanon	Mr. Bassem Jaber, LWWSS and LRBMS Senior Advisor
	LRA office, Bechara El Khoury, Beirut	Identifying the scope of work of LRA under its legal mandate.	Mr. Nabil Amasha, Head of Water Monitoring and Environmental Studies Department at LRA
	LWWSS office, Zalka	Checking on the development of the Business Plans and the Master Plan for the Water Establishments under LWWSS.	Mr. Philip Giantris, President of Value Add Management Service, a sub-contractor of DAI.
Thursday 6th of February	WISE project COP	Understanding the scope of work of WISE project, and their relation and collaboration with other USAID projects.	Mr. Rick Albani, WISE COP Mr. Salah Saliba, Technical Advisor
	LWWSS office, Zalka	Verifying administrative and procurement procedures	LWWSS procurement and engineer staff
Friday 7th of February	USAID , Awkar	Weighting the Projects Performance Evaluation vs. Future Recommendations for the Water Sector in Lebanon.	LWWSS and LRBMS CORs, Economic Growth Officer.
Tuesday 11th of February	LRA office, Bechara El Khoury, Beirut	Capturing the satisfaction of the LRA with the USAID project – Identifying the outcomes and achievement of LRBMS as perceived by LRA – Perspectives for future collaboration	Dr. Selim Catafago, LRA Chairman
	LRBMS, Bechara El Khoury, Beirut		Mr. Eric Viala, LRBMS COP
Wednesday 12th of February	LRA Chtoura station	Visiting a site for Surface Water Monitoring a site for groundwater monitoring	Mr. Amin Ghazal, LRA technician responsible of the WQ and Level Data Collection

	Canal 900	Checking on a gravity diversion installed by LRBMS	Eng. Jamal Ayoub, LRA Head of engineers
	Agricultural Land	Verifying the knowledge of the farmers about the drip irrigation, their satisfaction with the LRA services and their perception of the Water Users Association.	Mr. Michel Estefan, Land owner and Farmer.
	Municipality of Saghbine	Attending the meeting of the presidents of villages members of the Water Federation of Municipalities.	Presidents of 8 Municipalities: Zahle, Bar ELlias, Jib Jinine, Baalbak, Qaroun, Saghbine, El Marj, Anjar
Thursday 13th of February	LRA Kherbet Kanafar Branch : rural development center, Lab and wetland	Verifying the wetland constructed under LRBMS	Director of the center and lab technician
		Verifying the knowledge of the farmers about the drip irrigation, their satisfaction with the LRA services and their perception of the Water Users Association.	A farmer from Baaloul
	LRA Qaroun office	Looking at the operation of the Dam	Mr. Ali Tarif, Technician
	Qaroun Dam site	Verifying equipment provided by the LRBMS project	
Friday 14th of February	Jeita Pump Station	Verifying equipment (pumps and motors) provided by the project	Mr. Bassem Ghayda, LWWSS Engineer
Monday 17th of February	LRBMS Office, Bechara El Khoury, Beirut	Reviewing LRBMS activities	Mr. Eric Viala, COP
Tuesday 18th of February	LRA, Bir Hassan Branch	Verifying on the Water Quantity monitoring system	Mr. Elie Hawi- Head of Water resources department
	Ministry of Energy and Water - Beirut	Reviewing the Ministry's Strategy and priorities in the Water Sector	Mr. Abdo Tayar, Minister's advisor
Wednesday 19th of February	North Lebanon Water Establishment, Tripoli	Looking at the relationship between the establishment and the USAID/LWWSS, the satisfaction of	Mr. Jamal Krayyem, Director General

		the DG with the quality of work provided under LWWSS – Priorities for future collaboration with USAID.	
	Bahsas Pump Station	Verifying equipment (generator) provided by the LWWSS Project	Mr. Kamal Mawloud, Director of operations at the Bahsas Station
Thursday 20th of February	Bekaa Water Establishment, Zahle	Looking at the relationship between the establishment and the USAID/LWWSS, the satisfaction of the DG with the quality of work provided under LWWSS – Priorities for future collaboration with USAID. ERP status in different departments of the establishment.	Mr. Maroun Msallem, Director General
	Customer Service Center	Looking at the input of the LWWSS in this center – Equipment, training, ERP system...	Customer Service Center Staff
	Bekaa Water Laboratory	Verifying the equipment provided by LWWSS and verifying the Data collection and analysis system.	Mr. Sleiman Geammal, Head of Lab department
Friday 21st of February	LRA, Bechara El Khoury, Beirut	Verifying the ERP status	Mr. Mazen Sweidan, Head of Financial department/Accounting at LRA
	Beirut Mount Lebanon Water Establishment, Badaro	Looking at the relationship between the establishment and the USAID/LWWSS, the satisfaction of the DG with the quality of work provided under LWWSS – Priorities for future collaboration with USAID. ERP status in different departments of the establishment.	Mr. Joseph Nseir, Director General
Monday 24th of February	South Lebanon Water Establishment, Saida	Looking at the relationship between the establishment and the USAID/LWWSS, the satisfaction of the DG with the quality of work	Mr. Ahmad Nizam, Director General

		provided under LWWSS – Priorities for future collaboration with USAID. GIS system in the design and studies department.	
	Saida Laboratory	Verifying the equipment procured by LWWSS and its utilization, the Water Quality Monitoring and the data management and reporting system.	Amal Chidiac, Head of Lab Department
Friday 28th of February	Italian Cooperation for Development, Hazmieh	Identification of other donors projects and cooperation with the Lebanese Government.	Mr. Georges Chrabieh, Engineer Mr. Chadi Salem. Engineering Advisor
	LWWSS office, Zalka	Recap and clarification of some findings.	Mr. William Parente, COP Mrs. Rana Maalouf, Program Manager Mr. Mike Chalah, Finance Specialist

ANNEX V: Statement of Differences

Comments received from PPL

- The evaluation report was written in an outline fashion. It would have been great if the author wrote the report in a more contextualized and narrative manner for better and easier readability.
- The report was written in a findings/conclusions/recommendations format. Difficult for the reader to connect the findings - conclusion - recommendations to the evaluation questions/ activity objectives. Although there was a matrix that tied the evaluation questions to the findings, still difficult for the reader to understand the context for the findings. This is more a formatting issue. If the author used narratives that pulled the information together in appropriate categories then it would make it more readable. Additionally, the Executive Summary was written in the same fashion. It would be difficult for outsiders of the activities to read it and understand, especially upper management.
- Several instances where the recommendations did not align to the findings and conclusions. There might have been rationale behind some of the recommendations but they were not given.
- Perhaps the SOW could have focused or limited the number of questions so that the report could have been more focused in turn. PPL acknowledges that the water projects had many elements that needed to be covered and was technically challenging, but there is a need in the future to focus the evaluation questions in a way to manage to get at the core of what the evaluation is supposed to get.

For more information, please visit
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