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MUNICIPAL INFRASTRUCTURE AND IDP HOUSING REHABILITATION PROJECT II

END OF ACTIVITY REPORT

CONTRACT: AID-EDH-I-00-08-00027-00

TASK ORDER: AID-I I4-TO-13-00005



April 29, 2015

This document was produced for review by the United States Agency for International Development. It was prepared by Tetra Tech for the Municipal Infrastructure and IDP Housing Rehabilitation Project, Task Order number AID-I I4-TO-13-00005 under the USAID Architectural and Engineering (A&E IQC).



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CONTRACT: AID-EDH-I-00-08-00027-00,

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April 29, 2015

The following document was prepared by Tetra Tech (<http://www.Tetra Tech.com>).

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April 29, 2015

Mr. George Kokochashvili
Contracting Officer's Representative (COR)
United States Agency for International Development
11 George Balanchine Street
Tbilisi, Georgia 0131

Re: Contract No. EDH-I-00-08-00027-00, AID-I14-TO-13-000025; Municipal Infrastructure and IDP Housing Rehabilitation Project II; End of Activity Report

Dear Mr. Kokochashvili:

Per section F.6, "Reports and Deliverables or Outputs," paragraph H of the above referenced contract, we are submitting the final *End of Activity Report* for the Municipal Infrastructure and IDP Housing Rehabilitation Project II. This report has been amended per the request of USAID to incorporate additional information provided in the Municipal Development Fund Annual Report (10/2013 – 09/2014).

We look forward to your review and welcome your comments and suggestions.

Very truly yours,



Glen A. Wills, PLS
Chief of Party
Tetra Tech, Inc.

CC: Carol Wilson, USAID
Firouz Rooyani, Tetra Tech
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ACRONYMS

BEO	USAID Bureau Environmental Officer
BOQ	Bill of Quantities
BSG	Black Sea Group LTD
CC	Collective Centers
CM	Construction Management
COP	Chief of Party
COR	Contracting Officer's Representative
CQS	Consultants' Qualification Selection
DB	Design-Build
DCC	Document Control Center
DH	Durable Housing
Dm	Station distance along canal
DQC	Design Quality Control
DRC	Danish Refugee Council
EA	Environmental Assessment
EHS	Environmental, Health & Safety
EOI	Expression of Interest
ERW	Explosive Remnants of War
ESS	Environmental Scoping Statement
EC	Evaluation Committee
FBO	Federal Business Opportunities
GEL	Georgian Lari
GMIP	Municipal Infrastructure and IDP Housing Rehabilitation Project (the project)
GoG	Government of Georgia
GUWC	Georgian United Water Company
Ha	Hectare
HO	Home Office
IDP	Internally Displaced Persons
IFB	Invitation for Bid
IL	Implementation Letter
ITQ	Invitation to Quotation
JSC	Joint Stock Company
JV	Joint Venture
KM	Kilometer
LOE	Level of Effort
LTTA	Long Term Technical Assistance
M	Meter
M80	Mshenebeli 80 LTD
MDF	Municipal Development Fund

MRA	Ministry of Internally Displaced Persons from Occupied Territories, Accommodations and Refugees of Georgia
MRDI	Ministry of Regional Development and Infrastructure
NEO	New Economic Opportunities (USAID Project)
O&M	Operations & Maintenance
PEA	Programmatic Environmental Assessment
PM	Project Manager
PMP	Performance Monitoring Plan
QA/QC	Quality Assurance/Quality Control
QBS	Quality Based Selection
RCO	USAID Regional Contract Officer
RFP	Request for Proposal
RFQ	Request for Quotation
SSEMP	Site Specific Environmental Mitigation and Monitoring Plans
SSECP	Site Specific Environmental Compliance Plans
STTA	Short Term Technical Assistance
SWWIS	Septic Tank with Infiltration Field
TOR	Terms of Reference
USAID	United States Agency for International Development
USD	United States Dollar
WWT	Wastewater Treatment
WWTF	Wastewater Treatment Facilities

1.0 INTRODUCTION

The dual shocks of Georgia's August 2008 conflict with Russia and the global economic downturn posed serious challenges to Georgia's economic stability. This, in turn, put pressure on Georgia's political stability. The conflict, crisis, and subsequent slowdown in economic growth and foreign direct investment have placed a severe strain on Georgia's national budget and its ability to finance core investments in critical regional development initiatives. Many years of decline in the quality, coverage and maintenance of basic services, including water supply, sewage, local roads, solid waste services, and irrigation systems have dramatically reduced Georgia's quality of life in rural areas and constrained private sector growth. Such degradation and instances of conflict-related damage have resulted in significant constraints to the productive capacity and quality of life of thousands of Georgians, including old and new Internally Displaced Persons (IDPs), rural poor, and persons directly or indirectly affected by the 2008 conflict with Russia.

Under the United States Agency for International Development (USAID)/Caucasus Municipal Infrastructure and IDP Housing Rehabilitation Project II (GMIP II) Contract No. AID-EDH-I-00-08-00027-00; Task Order No: AID-I14-TO-13-0005, Tetra Tech provided engineering oversight and quality control for select municipal infrastructure, irrigation, and IDP housing projects to ensure they were implemented effectively and in accordance with U.S. and Georgian standards and regulations. GMIP II's approved period of performance for the contract was 17 months from July 29, 2013 to December 31, 2014. GMIP II was a continuation of work, implemented by Tetra Tech, initiated under the USAID/Caucasus Municipal Infrastructure and IDP Housing Rehabilitation Project Contract No. AID-EDH-I-00-08-00027-00; Task Order No: AID-I14-TO-II-00002 (GMIP I), which had an overall 26-month period of performance from May 23, 2011 to July 28, 2013.

The overall goals of GMIP I and II were to provide: improved infrastructure, economic opportunities, and support for IDPs. Two main objectives were identified specifically for GMIP II: 1) Providing resident professional engineering and technical services to support construction efforts that result in safe, long-lived and sustainable infrastructure and housing and 2) Reinforcing USAID/Georgia and its implementing partners' goal to promote private sector growth and increased productive capacity of rural poor and IDPs through infrastructure and housing improvements. These goals were supported through the implementation of two (2) major components and two (2) subcomponents on GMIP II:

Component 1: Municipal Infrastructure and Irrigation

Component 1 focused on rehabilitation of infrastructure projects in municipalities impacted by the 2008 conflict with Russia. The five (5) municipalities that were pre-selected by the Ministry of Regional Development and Infrastructure (MRDI) were: Dusheti, Mtskheta, Gori, Kareli, and Oni. Additionally, this component focused on irrigation rehabilitation of the Saltvisi Irrigation System main and distributary canals as well as rehabilitation of the Tiriponi Irrigation System main and secondary canals. \$17.47 Million USD was allocated for this component.

Component 2: IDP Durable Housing

Component 2 focused on providing IDPs with durable housing solutions and water and sanitation upgrades using the most appropriate technology and standards. \$33.54 Million was allocated for this component. Subcomponents are listed below.

- **Subcomponent 1:** Provide Water and Sanitation Upgrades for IDP Cottage Housing for IDPs from the August 2008 War. \$13.26 Million was allocated for this subcomponent.
- **Subcomponent 2:** Provide Durable Housing Solutions for IDPs from 1990s Conflict. \$20.28 Million was allocated for this subcomponent.

The purpose of this End of Activity Report is to present the objectives, major activities, results, and costs as of GMIP II completion on December 31, 2014. This report also identifies recommendations regarding unfinished work, as well as lessons learned through the course of the program that may be applied to future projects to improve overall project performance.

2.0 PROGRAM OBJECTIVES AND ACTIVITIES

2.1 COMPONENT I – MUNICIPAL INFRASTRUCTURE AND IRRIGATION IMPROVEMENTS

Component I includes the rehabilitation of infrastructure in municipalities impacted by the 2008 conflict with Russia. The rehabilitated infrastructure should impact at least 60% of the municipal population and contribute to economic growth in these locations. USAID/Georgia projected that at least 270,000 persons, including 24,000 IDPs, could benefit from receiving improved municipal infrastructure due to this USAID assistance. USAID/Georgia projected that up to 20,000 households and farms (IDPs and Non-IDPs desegregated) could benefit from receiving improved infrastructure service due to this USAID assistance.

Component I also includes rehabilitation of irrigation canals and related structures. USAID/Georgia projected an increase of 20,000 hectares of land area that would benefit from the rehabilitation of the Saltvisi and Tiriponi irrigation systems relating to USD \$7m (based on average 350 USD/Ha/Yr in additional income of family/farm due to the improved irrigation systems).

Tables 2.1 and 2.2 present a status summary of six municipal infrastructure projects and two irrigation projects, as of GMIP II project close out.

Table 2.1 – Municipal Infrastructure Status

STATUS OF COMPONENT I ACTIVITIES MUNICIPAL INFRASTRUCTURE		
PROJECT	ACTIVITY	STATUS
USAID/W/ICB/06-2013: ONI Water Supply - improvement of water supply system for the town of Oni - ICB	DB Construction Management	Completed
USAID/W/ICB/03-L2/1-2012 ONI Roads	Construction Warranty Monitoring	Completed
USAID/CW/ICB/03-2012 Gorijvari Road	Construction Warranty Monitoring	Additional remedial repairs recommended to MDF
USAID/CW/ICB/03-2012 Mtskheta Roads	Construction Warranty Monitoring	Completed
USAID/CW/ICB/03-2012 Dusheti Roads	Construction Warranty Monitoring	Completed
USAID/CW/ICB/03-2012 Sagolasheni-Dvani Road	Construction Warranty Monitoring	Completed

Gorijvari Road Project Warranty Monitoring identified two areas of concern for follow up by MDF with the local Municipality. They are: excessive sediment loading of the drainage structures at the top of the road and potential ground settlement issues of a parking lot area. These were identified and submitted to USAID and MDF as part of the inspection process for additional follow up.

Table 2.2 – Irrigation Projects Status

STATUS OF COMPONENT I ACTIVITIES IRRIGATION PROJECTS		
PROJECT	ACTIVITY	STATUS
USAID/W/ICB/02-2012 Saltvisi Irrigation System Rehabilitation of 48.84 km of canals, associated control structures and canal access roads	DB Construction Management	Completed *
USAID/W/ICB/02-2012 Tiriponi Irrigation System Rehabilitation of 47.65 km of canals, associated control structures and canal access roads	DB Construction Management	Completed *

* During the end of the irrigation construction season of 2014 (April and the first week of May), Tetra Tech teams conducting site inspections found numerous areas of additional concerns, previously identified in the weekly site inspection reports. The areas identified were outlined in a series of reports presented to USAID and MDF for remediation by MDF's contractor. The reports encompassed both the Tiriponi and Saltvisi canal systems and utilized photographs with brief descriptions to identify the type of defects observed. Where possible, photographs of the defects were taken with the closest station markings so that they could be easily found in the field. Numerous defects were repetitive in nature, such as concrete panel joints, and these were not tied to specific stationing unless the defect was of a significant concern.

All of the canals were inspected during the summer of 2014 while the irrigation season was underway. All observable defects in both the canal structures and adjoining work areas above the water line were identified and reported. Additional inspections were conducted in the fall of 2014 at the completion of the irrigation season. Due to areas of heavy siltation within the canals and continual discharge of water into the system at various points, conducting a complete inspection of the bottom of the canals was not possible. The inspection report prepared in the spring of 2014 along with the two fall reports should have been used by MDF and their contractor as a comprehensive list of defects needing corrective action.

Three main construction defects were observed during the inspections. These included: low quality poured concrete base slabs in the Saltvisi Alternative Canal due to freezing, inferior quality flow control gates installed during the 2013-2014 construction season in all canals and the previously mentioned concrete panel joints. Inspection of the Saltvisi Alternative Canal and Tiriponi Canal issues, during the fall of 2014, was not completely possible due to water and siltation in the canals. Recommendations were made to clean the canal and eliminate water intrusion so that the inspections could be conducted but that request was not fulfilled. The issue of the gate construction was outlined in a separate memo that requested specific remediation. Based on observed conditions in the field after notice of defective materials, construction and attempted remediation, recommendations were made to withhold payment.

At the end of the reporting period, issues remained to be remediated. The specific areas of concern to be re-evaluated by USAID and MDF during the warranty period are: substandard materials supplied for new gate installations during the 2013-2014 construction season at various locations in all canals; inspection of concrete panel joints for failure of joint materials used where the material is cracked or spalling off in those areas of all canals rehabilitated; cleaning and inspection of the concrete base slabs of the Saltvisi Alternative Canal for diminished concrete quality and erosion or spalling of the concrete due to previously identified concrete curing issues. USAID should require continued warranty

inspections to be conducted, utilizing the submitted inspection reports to ensure contract compliance. Please see Appendix 'A' for the Irrigation System General Plan that shows the canals receiving rehabilitation during this Program.

Completion of other deliverables, to be provided by the construction contractor, include hydraulic modeling for the system with user manual, flow measurement manual, canal and structure inventory in GIS (ArcView format), operations and maintenance (O&M) manuals, and satellite imagery for the irrigated area. As of project close out, these items have not been provided to MDF or USAID by the construction contractor.

The total length of constructed canals was reduced by USAID and MDF to the following: Saltvisi – 9.3 Km, Tiriponi – 17.7 km due to design and construction costs. Design plans were prepared for the remaining length of canals and submitted to the Amelioration Company, the ultimate end-user of the constructed irrigation canals, for future use as additional funding becomes available.

2.2 COMPONENT 2 - IDP DURABLE HOUSING

Subcomponent 2.1: Provide Water and Sanitation Upgrades for IDP Cottage Housing for IDPs from the August 2008 War

USAID/Georgia projected that upgrades could be provided for nearly 12,250 persons equal to 3,500 cottages to include equipping each cottage with a shower, sink, toilet, water taps and other renovation as necessary. A monetary value would also be added due to the upgraded living facilities for the cottages. Separate contracts were implemented for construction for the water supply works and a design-bid-build for the drainage, household water supply hookups, and the sanitary upgrades.

Table 2.3 presents a summary of project status as of GMIP II close out.

Table 2.3 – IDP Cottage Housing Water and Sanitation Upgrades Status

STATUS OF SUBCOMPONENT 2.1 ACTIVITIES WATER AND SANITATION UPGRADES FOR COTTAGE HOUSING FOR IDPS FROM THE AUGUST 2008 WAR		
PROJECT	ACTIVITY	STATUS
USAID/CW/ICB/05-1-2012 Rehabilitation of Drainage/Storm Water Systems (in 7 Villages) and Water Supply Systems (in 9 Villages) for IDP's Cottage Settlements (Gori, Kareli, Kaspi and Mtskheta Districts)	Construction Management	Completed
USAID/C/CQS/01-2013 Preparation of the Detailed Engineering Design and Bidding Documentation Package for Sanitary Upgrades, Household Water Supply and Drainage for 11 IDP Cottage Settlements and Provision of Design Inspection Services	Design	Completed

**STATUS OF SUBCOMPONENT 2.1 ACTIVITIES
WATER AND SANITATION UPGRADES FOR COTTAGE HOUSING FOR IDPS
FROM THE AUGUST 2008 WAR**

PROJECT	ACTIVITY	STATUS
USAID/W/ICB/08-Lot 1-2014 USAID/W/ICB/08-Lot 2-2014 USAID/W/ICB/08-Lot 3-2014 USAID/W/ICB/08-Lot 4-2014 Rehabilitation Works for Sanitary Upgrades, Household Water Supply and Drainage for 11 IDP Cottage Settlements and Provision of Design Inspection Services	Construction Management	Completed *

* During the course of the contract period, all work was completed with the exception of one cottage settlement, Tsilkani, where design changes were required due to high ground water conditions in a portion of the settlement. Designs were prepared by the design engineer and approved after requested information and revisions were made on November 4, 2014. As of project closeout, work was continuing on the construction of the revised design.

In addition to the Tsilkani work, the issue of water supply pressure in the cottage settlement of Berbuki remains. Three other cottage settlements also reported pressure issues: Skra, Khurvaleti and Shayshvebi although Berbuki remained the most affected. After construction of the internal cottage water supply to the kitchen sinks and gas water heaters, it was noted that insufficient water pressure was available. The cause of this remains to be clarified although lack of water management by the residents of the settlement likely plays a major role. Numerous water taps throughout the settlements are never turned off. Community outreach was conducted by DRC in all settlements on the proper use and conservation of water to inform the residents that these taps contribute to low water pressure and the lack of water supply at times.

It should be noted that the water supply system itself was designed and installed prior to USAID involvement in this program. As a result of the concerns raised by the Berbuki settlement, the design engineer was tasked with performing a design review of the installed systems to ascertain if sufficient pressure should be available. The calculations of the theoretical evaluation found that there should be sufficient pressure. Based on this, recommendations were made to USAID for MDF to perform field measurements to support the theoretical evaluation. Tetra Tech was tasked with performing this evaluation, and USAID requested that MDF instruct their contractor conduct the study. Simple procedures for testing were outlined to USAID and MDF on different occasions and a request by USAID for MDF to have the contractor conduct said tests was made. As of project closeout, the issue remained unresolved. Close monitoring and continued community outreach should be conducted to help mitigate loss of water through open yard taps and illegal water connections to these systems.

Subcomponent 2: Provide Durable Housing Solutions for IDPs from 1990s Conflict

USAID/Georgia projected that assistance could be provided for the rehabilitation of approximately 2,600 family apartments for a minimum of USD \$50m (based on an MDF estimated value of apartment from USD \$20,000 (1 room) to USD \$40,000 (2 room) in Kutaisi).

Table 2.4 – Durable Housing Status

STATUS OF SUBCOMPONENT 2.2 ACTIVITIES DURABLE HOUSING SOLUTIONS FOR IDPS FROM THE 1990S CONFLICT		
PROJECT	ACTIVITY	STATUS
USAID/W/ICB/01-2011 Rehabilitation Works for IDP Housing (10 Buildings)	DB Project Oversight Construction Warranty Monitoring	Completed
USAID/ITQ/01-2012 Preparation of the Detailed Engineering Design and Bidding Documentation Packages and Provision of Design Inspection Services for Rehabilitation Works for IDP Housing for 8 Former Hospital Buildings	Consulting Services (Design/Design Inspection)	Completed
USAID/ITQ/02-2012 Preparation of the Detailed Engineering Design, Bidding Documentation Package and Provision of Design Inspection Services for Rehabilitation Works for IDP Housing for 28 Collective Centers	Consulting Services (Design/Design Inspection)	Completed
USAID/W/ICB/07-Lot 2-2013 USAID/W/ICB/07-Lot 7-2013 Rehabilitation Works for IDP Housing for Eight (8) Former Hospital Buildings	Construction Management	Completed *
USAID/W/ICB/07-Lot 3-2013 USAID/W/ICB/07-Lot 4-2013 USAID/W/ICB/07-Lot 5-2013 Rehabilitation Works for IDP Housing for 28 Buildings	Construction Management	Completed
USAID/C/CQS/02-2013 IDP Participant/Resident Outreach Pilot Program	Consulting Services	Completed
USAID/SSS/04-2013 Removal of Medical Waste at 1 Former Hospital Building for IDPs (Kutaisi)	Consulting Services	Completed
USAID/SSS/01-2013 Survey of Medical Waste at Zestaphoni Former Central Hospital Building	Consulting Services	Completed
USAID/SSS/02-2013 Survey of Medical Waste at 8 Former Hospital Buildings for	Consulting Services	Completed

**STATUS OF SUBCOMPONENT 2.2 ACTIVITIES
DURABLE HOUSING SOLUTIONS FOR IDPS FROM THE 1990S CONFLICT**

PROJECT	ACTIVITY	STATUS
IDPs		
USAID/ITQ/03-2013 Removal of Medical Waste at 6 Former Hospitals for IDPs and Hospital's Sites	Consulting Services	Completed
New Buildings for IDP Housing	Consulting Services	Cancelled

*During the renovation of the Kutaisi Hospital Building, known as Lot 7, significant structural issues were observed during the initial demolition process. Specifically, the integrity of the rear wall was questionable as large areas of degraded brick and concrete were observed along with adjacent floor weakness. Based on a series of site inspections conducted by all parties involved, the design engineer was tasked with preparing amended designs to strengthen the areas of concern. Numerous inspections and recommendations were made to stop or limit construction activities on the walls in question so that the final design for strengthening could be prepared and implemented. These recommendations were, in essence, ignored in many areas and construction continued on the rear wall disregarding presented designs and objections to construction methodology. At a joint meeting of all parties involved, held at the offices of MDF on Nov. 18, 2014, it was stated that MDF, in conjunction with the design engineer, would take full responsibility for the issues associated with the rear wall pending verification of testing on the shotcrete. Although the verification of the rear wall shotcrete testing was provided, as of the end of program no official notice was submitted accepting responsibility. Continued close inspection of the rear wall and associated apartments, should be an ongoing requirement of this particular contract.

3.0 RESULTS ACHIEVED

The Performance Monitoring Plan (PMP) was included within the Program Work Plan as approved on May 15, 2014. The indicators and targets of expected results for each component are included in Table 3.1, where available. As of this writing, additional result details are pending from MDF which is now responsible for monitoring project performance. They will be releasing an independent report on project outcomes. Additional information reported in the MDF Annual Report for 10/2013 – 09/2014 is incorporated herein.

Table 3.1 - Performance Monitoring Plan Indicators and Targets

INDICATOR	TARGET	RESULT ACHIEVED
COMPONENT I: MUNICIPAL INFRASTRUCTURE AND IRRIGATION		
Number of beneficiaries receiving improved infrastructure service	270,000 Individuals Including 22,000 IDPs	205,000 Individuals Including 17,600 IDPs About 80% per MDF
Number of beneficiaries receiving improved infrastructure service	20,000 Households/Farms (incl. 8,000 IDP HH)	30,000 Households/Farms (incl. 12,000 IDP HH) About 150% per MDF

INDICATOR	TARGET	RESULT ACHIEVED
Number of additional and improved hectares irrigated as result of USAID assistance	20,000 Hectares (improved and additional)	18,222 Hectares directly impacted – 12,000 Hectares indirectly impacted
Increased income as a result of improved irrigation by family/farm	6.3 Million US Dollars (based on average additional income 350 USD/Ha/Yr.)	7.0 Million US Dollars (based on average additional income 350 USD/Ha/Yr.)
COMPONENT 2: IDP DURABLE HOUSING		
Subcomponent 2.1: Provide water and sanitation upgrades for IDP Cottage Housing for IDPs from the August 2008 War		
Number of beneficiaries receiving improved infrastructure service	IDPs – 12,250 Persons (Equal to 3,500 Cottages, assumption 3.5 Persons per cottage)	IDP's – 6870 Persons (Equal to 1,963 Cottages, assumption 3.5 Persons per cottage) 56% per MDF
Number of IDP family dwellings with upgraded living facilities and monetary value of benefit due to upgraded living facilities for cottages	3,500 Cottages	1,963 cottages \$13,769,000 Contract value issued by MDF \$7,014 per cottage expended
Subcomponent 2.2: Provide durable housing solutions for IDPs from '90s conflict		
Number of beneficiaries receiving improved infrastructure service	IDPs – 8,500 Persons (Equal to 2,428 Apartments, assumption 3,5 Persons per Apartment)	IDPs – 2,915 Persons (Equal to 833 Apartments, assumption 3,5 Persons per Apartment)
Number and value of IDP family dwellings with upgraded living facilitie	2,428 Apartments Min 45 Million US Dollars (estimated value of Apartment from 20 (1 Room) to 40 (2 Room) KUSD, based on market value in Kutaisi)	Approximately 833 apartments (308 in 21 collective centers 525 in new created apartments) \$19,130,000 per MDF Report (\$22,965 per apartment average)

4.0 PROGRAM COSTS

The Tetra Tech contract ceiling was \$2,899,935. The original obligated funding was \$2,225,935. Modification I of the contract decreased the obligated funding to the total amount of \$2,899,737.

The cumulative costs for Tetra Tech's Task Order (AID-114-TO-13-00005) are shown in Tables 4.1 and 4.2.

Table 4.1 - Table 4.1 - AID-114-TO-13-00005 Program Costs

Cumulative Expenditures through December 31, 2014	\$2,651,134
Contract Ceiling	\$2,899,737
Remaining Balance	\$248,802

Table 4.2 - AID-114-TO-13-00005 Financial Summary through December 31, 2014 Billing (not including trailing costs)

EXPENSE TYPE	BUDGET (USD)	CUMULATIVE TO DATE (USD)	PERCENT EXPENDED
Salaries Workdays Ordered	\$9,834	\$7,811.78	79.44%
Fringe/Overhead	\$8,668	\$6,883.49	79.41%
Other Direct Costs/Travel	\$1,890	\$341.55	18.07%
Intercompany/Subcontractors	2,687,646	\$2,461,048.63	91.57%
G&A	\$2,182	\$1,609.68	73.77%
Subtotal	\$2,710,219	\$2,477,695.14	91.42%
Fixed Fee	\$189,715	\$173,439.40	91.42%
Total	\$2,899,935	\$2,651,134.54¹	91.42%¹

1. Does not include trailing costs to be invoiced to USAID

5.0 ACTIONS TAKEN TO LEVERAGE RESOURCES AND ENSURE SUSTAINABILITY

5.1 GOVERNMENT COUNTERPART CONTRIBUTIONS

Tetra Tech facilitated partnerships that leveraged resources from public and private organizations to directly support the goals and strategic objectives of the program. These partnerships with other USAID Implementing Partners, GoG counterparts, and other donors were instrumental to the success of the program.

Per the Assistance Agreement between Georgia and the United States of America, the GoG provided counterpart contribution worth an estimated USD \$24,376,437 to support the shared objectives, as outlined in Table 5.1.

Table 5.1 - Overall Government Counterpart Contributions

GOVERNMENT AGENCY	ITEM	VALUE
Ministry of Finance	VAT Exclusion (18%)	\$14,479,604
MDF	Supervision Employees ¹	N/A
MRA	Donated Buildings	\$28,952,309
MRDI - GUWC	HOLINGER Designs for Cottages Drainage and Water Contract ²	\$236,000
MRA	Utility Connections ³	\$50,198
Total:		\$43,718,111
Notes:		
1. Values for MDF Employees were not included in the recent MDF Semi-Annual Report		
2. The HOLINGER Designs included thermo insulation for the cottages, which is not part of the work being completed under GMIP II.		
3. At this time, this only includes the estimated costs for water/sewer connections and canal wall design for Vani.		

Key Government Organizations involved in the project included the following:

Municipal Development Fund (MDF) – Through the Implementation Letters for the Municipal Infrastructure Program, MDF was tasked with the contracting for the project. USAID supplemented the GoG's MDF staff with the hiring of additional employees to provide direct support of the program.

Ministry of Internally Displaced Persons from Occupied Territories, Accommodations and Refugees of Georgia (MRA) – The MRA is responsible for IDPs including selection of buildings and beneficiaries for the durable housing program. The MRA is involved in program implementation and acts as focal points for the municipalities.

Ministry of Regional Development and Infrastructure (MRDI) – The MRDI is responsible for the development, implementation and coordination of the policy of regional development of Georgia. MRDI coordinated with MRA for selecting buildings for the durable housing schemes, selection of beneficiaries and coordination of regional project implementation, as well as coordination with other donors and technical assistance activities.

Ministry of Agriculture (MOA) – The MOA is responsible for support of projects from the perspective of agricultural development.

Local Governments – The municipalities are responsible for managing and disposing of local government property; regulating use of natural resources, protecting the environment; resolving issues of land use in subordinate territories, organizing waste disposal; organizing sanitation, anti-epidemic and veterinary measures; preserving cultural heritage; developing and maintaining power, gas, water supply and land improvement systems; and constructing, maintaining and repairing regional roads. The municipalities committed funds to provide sewage connections or on-site treatment to one building (Vani) where external sewage connections were identified as a problem.

5.2 ENSURING CONTINUATION AND SUSTAINABILITY

Tetra Tech placed capacity building at the forefront of all activities. To ensure continuation and sustainability, trainings and workshops were designed and presented as needed for the appropriate parties. Tetra Tech worked closely with Georgian project staff, local government agencies, and construction contractors to develop project-specific capacity through on-the-job training and mentoring.

Georgian Project Staff

To provide a high level of direct capacity development, local nationals were hired to perform many of the project requirements, as outlined in Table 5.2.

Table 5.2 - GMIP II Tetra Tech Local Long-Term Technical Assistance (LTTA) Positions

POSITION	EMPLOYEE	START DATE	END DATE
Office Administrator	George Nizharadze	May 24, 2011	Dec 31, 2014
Housing Rehabilitation Manager	Teimuraz Levanishvili	May 24, 2011	Dec 31, 2014
Program Specialist/Public Outreach/Consultant	Archil Lezhava	June 6, 2011	Dec 31, 2014
Environmental Specialist	Mamuka Shaorshadze	June 13, 2011	Dec 31, 2014
Translator/Interpreter	Maia Dvali	June 16, 2011	Dec 31, 2014
Water and Wastewater Engineer	Irakli Gogrichiani	May 13, 2013	Dec 31, 2014
Irrigation Engineer	Otar Magalashvili	July 15, 2011	Dec 31, 2014
Civil Engineer	Givi Varduashvili	Dec. 9, 2011	Sep 30, 2014
QA/QC Engineer	Vasil Apkhazava	Dec. 22, 2011	Dec 31, 2014
Regional Engineer Kutaisi	Koba Tsiramua	Feb. 1, 2012	Dec 05, 2014

POSITION	EMPLOYEE	START DATE	END DATE
Regional Construction Over-Site Engineer Kutaisi/Consultant	Avtandil Baramia	May 14, 2012	Dec 31, 2014
Document Control Manager	Anna Urotadze	May 17, 2012	Dec 31, 2014

In addition the local LTTA staff provided, Table 5.3 identifies the local short-term technical assistance (STTA) support staff. Many of these staff members provided services as needed throughout the project.

Table 5.3 - GMIP II Tetra Tech Local STTA Positions

POSITION	EMPLOYEE	START DATE	END DATE
Environmental Consultant	Mamuka Gvilava	June 15, 2011	Dec 31, 2014
QC Engineer/Consultant	Giorgi Kiria	March 18, 2014	Dec 31, 2014
Financial Management Specialist	Demna Sakhitkhutsishvili	June 26, 2012	Dec 31, 2014
Procurement Specialist	Mamuka Makhatadze	May 27, 2013	Sep 30, 2013
Architect	Maia Davitidze	June 6, 2013	Nov 30, 2013
Architect	Tamar Guraspauli	March 6, 2014	Aug 31, 2014

Georgian Government Agencies and Local Contractors

Tetra Tech strengthened the capacity of the MDF, the Ministry of IDPs from the Occupied Territories, Accommodation and Refugees of Georgia (MRA), and local construction contractors, to help ensure the long-term sustainability of project interventions through mentoring and formal training, and on-the-job-training. Tetra Tech also supported classroom, field, and on-the-job training and capacity building for the operators and managers of the newly rehabilitated infrastructure projects.

Based on a gap analysis conducted in May 2012, Tetra Tech developed a three-tiered training program for MDF featuring on-the-job, informal internal experience sharing meetings, and formal workshops. Tetra Tech provided and trained MDF staff in all areas of project implementation, from procurement planning to final acceptance.

Additionally, construction management training was provided to MDF and construction contractors involved in the GMIP subprojects. Training typically began with project management and on-site inspection staff, and continued with construction contractor staff.

For the Tiriponi and Saltavisi Irrigation Systems rehabilitation projects, Tetra Tech established a technical committee consisting of two (2) members from USAID/Tetra Tech, two (2) members from MDF and two (2) members from United Amelioration Systems Company. During the beginning of the 2013 fall construction season, Tetra Tech embedded two engineers, one of which was the DCOP, to help the contractor make substantial changes in their construction management, schedule and performance.

6.0 ASSESSMENTS AND RECOMMENDATIONS

6.1 REGARDING UNFINISHED WORK AND PROGRAM CONTINUATION

On GMIP II, Tetra Tech dedicated two senior level, experienced expatriate staff (COP and DCOP) to project progress monitoring and reporting. This approach allowed our team to 1) Provide overall guidance and monitoring related to the technical and engineering construction oversight performed by local contractors, 2) Maintain continuous liaison with MDF on procurement related issues and financial performance, and 3) Meet USAID's reporting and planning, information management/PMP,

and administrative deliverables. We recommend that future programs involving construction on this magnitude include fully funded positions at this level to address delays in construction that are commonplace in developing countries.

At the completion of GMIP II, there are still ongoing construction works not completed on two sites, Lot 3 of the cottage settlements and Lot 7, the Kutaisi Regional Hospital site. Although the capacity of MDF was increased throughout the course of this project, there is still much more to be accomplished, particularly to ensure compliance with contractor terms and conditions, and to provide financial oversight for completion and verification of the final scope of accomplished works (SAW), Hand Over acts, and future warranty inspection. At the time of the Tetra Tech contract ending, there was not a defined path forward for either USAID or MDF on inspections, contract management, financial oversight or program management made known to Tetra Tech. It is imperative to ensure that compliance with the contract terms and conditions are met before final release of withheld monies and securities by MDF at the completion of the warranty periods. MDF will continue to need guidance on these areas to ensure the successful completion of construction projects. Specific recommendations are listed in Section 6.2 below.

6.2 REGARDING MDF

Per the Implementation Letters (ILs) for the project, MDF was assigned the responsibility to perform the contracting to implement the USAID/Georgia Economic Infrastructure Program. MDF is responsible for all development of rehabilitation work, including designing and planning infrastructure activities; performing required works; implementing environmental mitigation practices; tendering, awarding and managing rehabilitation-related activities that have been outsourced to a contractor; applying Georgian and applicable USG Standards and regulations to all appropriate processes and practices; and closing out all rehabilitation activities.

To further strengthen the MDF's capabilities, we recommend the following:

- Provide sufficient experienced, full-time inspection staff to enable daily on-site inspection (i.e., 34 inspectors were recommended following a 2013 Gap Analysis but less than half that number were utilized), provide written CM guidelines, QA/QC plans, safety plans, and environmental compliance plans.
- Provide an expat or highly qualified local employee to lead construction management inspection teams, and empower the team leader with the clear ability to enforce contract terms and conditions, and impose stop work orders when needed to prevent poor construction methods or defective construction.
- Strengthen the technical engineering leadership within MDF through the hiring of an expat Project Manager (PM) and Project Management Assistant (PMA), with experience in international codes and current construction means and methods that best suit the type of construction.
- Establish clear lines of responsibility and authority to act on issues as they become evident to the PM or PMA with autonomy from higher management within MDF who may not have working experience or knowledge in construction.
- Eliminate the practice of allowing contractors to fund vehicle and fuel costs for MDF inspectors to avoid conflict of interest and to decrease the likelihood of favoritism.
- Provide capacity building and training to permanent MDF employees to avoid losing institutional knowledge when the contracts for the USAID-funded employees terminate.

7.0 LESSONS LEARNED

The end of a project provides an excellent opportunity to capture lessons learned so that they may be applied to future similar projects. In completing GMIP II, several areas for improvement were noted as follows:

- Establish requirements of project beneficiaries early to ensure project interventions are well received.
- Use effective outreach tools early on to gain community buy in and avoid release of misinformation that can hamper project progress.
- Coordinate activities closely with project stakeholders to avoid overlapping efforts.
- Determine property ownership with clear written documentation of project sites to avoid confusion and delays in project implementation.
- Promote responsive bids to enhance the pool of prospective contractors for selection.

The following provides additional discussion of these lessons learned and recommendations to mitigate these issues for future program success.

Establishing Requirements of Project Beneficiaries

During the Rapid Appraisal stage, possible dissatisfaction of the beneficiaries (mostly IDPs) was identified as a risk to project success. Nearly two years later, after the Rapid Appraisal, MRA was still fielding complaints from IDPs, stating that they were not interested in settling into the 300-unit renovated building. A Focus Group Meeting was held and it was found that the building was too far from the center of town and that there were only enough IDPs in the community to fill half of the proposed apartments. The issue of sufficient beneficiaries to fill the newly created apartments still exists as of the end of this contract for other sites as well. In addition to the IDP's concerns, a number of residents in these buildings were found to be non-IDP families.

The process of identifying recipients should be conducted earlier on in the process by the GOG so that the selection of buildings can better be defined. The importance of using a third party, such as the hiring of the Danish Refugee Council, to help in this was significant in facilitating this process and for future programs should be considered much earlier on.

Using Effective Outreach to Gain Community Buy In

IDPs from the Cottage Settlements requested that the drainage canal work be stopped unless the canals were to be concrete lined. Lining the canals had already been determined to be cost prohibitive. Outreach was performed at each of the cottage settlements resulting in a positive outcome. Khurvaleti is the one cottage community refusing to agree to this condition. Since concrete channels were not an option that can be provided, additional outreach meetings were held with the Khurvaleti residents with an objective of obtaining more than 50% participation to validate the desire to discontinue the ditch cleaning program in that community. The community decided not to proceed with the proposed work. Although the community had been previously identified, the result of the decision could have been ascertained earlier had additional coordination by the GOG been done. Various other issues such as this came to light as work progressed. The IDP communities have their own internal ways of communicating between them to request above and beyond that which is being proposed and will always be a struggle to be overcome. Clear and concise informational meetings between the donor and the IDP communities must be a first priority to avoid potential conflicts once the work begins. If changes are required due to the finding of the design or due diligence phase of design, additional community outreach must be provided as soon as practical.

IDPs in some of the occupied buildings (also known as collective centers) identified for rehabilitation have refused to agree to vacate the building that they are currently occupying. This refusal stems from fears that they will not be able to return to their original apartment, will be moved to a smaller apartment or will be relocated to a less desirable location. Focus group meetings were held to show the renovation plans for each building and to obtain signed agreements assuring the IDPs they could return, however, they were stopped since temporary housing for the IDPs could not be identified by the GOG. This raised concern regarding timing for construction activities to begin. Due to safety concerns, it would take just one family refusing to relocate to make the building ineligible for rehabilitation as phased construction would require a much longer construction period. Based on findings like this, the total number of collective centers that received partial rehabilitation was reduced to 21.

For future projects like this, mitigation measures for building rehabilitation are needed in the form of a detailed Resettlement Plans that include regular and inclusive communication that adequately considers places for temporary housing as well as assistance for costs associated with moving out of the current residence. Additionally, establishing a formalized system of consistent communication throughout project set-up would allow for inputs and requests to be considered early on, and would define criteria for the approval of adjustments.

Coordinating Activities with Project Stakeholders and Determining Property Ownership

Coordination with project stakeholders, including MRA and USAID/NEO is necessary to encourage the MRA and MoED to finalize the turnover of buildings. There remain issues on overall building ownership as well as challenges with the ownership of property by the IDP families.

Designs were completed on all buildings, but there were challenges in completing the construction works due to various issues. Issues included relocation and resettlement concerns with IDPs during construction as well as structural issues with the buildings that were discovered after the design process. Final plans and specifications that were produced for these buildings were turned over to the GOG for later use should additional funding sources become available and issues resolved.

Ownership of the buildings and surrounding property was not resolved prior to building and apartment turnover to the IDPs. MRA is responsible for the ownership transfer and for establishing property lines. Intelligent Cadastre Group LTD was contracted to conduct an ownership survey for the buildings selected for consideration. An additional contract was let to the firm of Mamuli-2, LTD to conduct as-built surveys of each new residential building to prepare plans of each apartment to clearly define the property to be transferred to each IDP family. This process was delayed as the MRA and other entities required multiple revisions to the ownership documents. As this process proceeded, land title and ownership issues were difficult to resolve.

Handing over plans and specifications to the host government should be considered as a way of providing support should a program not be able to reach its intended targets.

When a program involves construction activities, clear lines of ownership and permissions to proceed should be provided before a contract is let for design or construction. This should include verification at the property registry as they are the final authority on property ownership or transfer of property ownership.

Promoting Responsive Bids

Only one bidder participating or lack of responsive bidders has been a repeated GMIP problem. Interviews with non-responsive bidders has uncovered some useful information. The following comments were received from contractors hesitant to bid on the contracts:

- Reluctance to tender MDF projects due to contractor financial qualification requirements
- Reluctance to participate due to USAID contract management requirements
- High costs of bid security
- Significant logistical challenges on some projects
- Inclusion of previously designed packages not prepared as part of this program
- Scope changes are often required after contract award and contractors are expected to cover unforeseen expenses
- Restrictive field inspection and oversight practices that hold the contractor accountable
- Reluctance to work for the Government of Georgia

On numerous occasions, it became evident during the procurement phase that there were specific contractors that were in favor or out of favor with the Government and this played a role in evaluation of bids. There was a persistent rumor of black listed contractors that the Government of Georgia would not consider.

USAID should require additional resources in the proposal phases of a program to better mentor and provide additional training on procurement procedures.

There was also confusion over the rules for procurement and which would be used (e.g., USAID, World Bank or Georgian procurement rules and regulations), and the lack of clearly defined links

between these rules led to confusion between the implementing partners and USAID as well as the contractors.

Clearly defined standards and bidding procedures should be identified in the early stages of project planning. The variations between standards of a host country and the requirements of USAID often cause confusion between parties involved. This would require expertise early in the process so that standards can be known and understood by potential contractors.

Also there remains the issue of a language inconsistencies and engineering code differences. Often contracts would not maintain equal meaning in both languages. Additionally, there exists a lack of working knowledge of the donor requirements to utilize basic worldwide engineering standards and selected codes and standards are often unclear. This leads to longer delays in design and conflict between the GoG and donors.

Parties should define the regulations and codes to be used early-on, and maintain consistency throughout the project. In addition, when translating between languages, equal meaning must be maintained and verified, especially for contract documents.

During the previous program, GMIP I, the lack of bidders led to the use of design/build contracts. It became evident that this process is not a practical solution for numerous reasons, the most significant is lack of design and engineering expertise. Although there are qualified designers and engineers to be found, the general findings are that they are individual and not within the realm of a company. It is typical for a bidder to hire out the resources needed to fulfill the need of the project. Experience found that these hires would be working for multiple employers at once and this fact led to long delays in designs and revisions when required. The capacity of firms encountered were limited in this manner.

Engineering and architectural work, including designs and oversight, need to be carefully evaluated prior to undertaking this kind of activity. The rapid analysis of a program should include evaluation of local firms that provide such services to allow for consideration of international firms should it be warranted.

The Construction Management Contractor's (CMC) role was to provide direct integration of construction and contract management. This type of management was recommended by Tetra Tech and USAID to MDF in order to facilitate progress on the program. Complications in the program due to changing requirements, late contract vetting, and construction issues created delays beyond the control of the CMC. The result of contract changes by a host country agency implementing the contract led to diminished authority by the CMC, led to reduced oversight and poor management of the contractors, and negatively impacted construction quality.

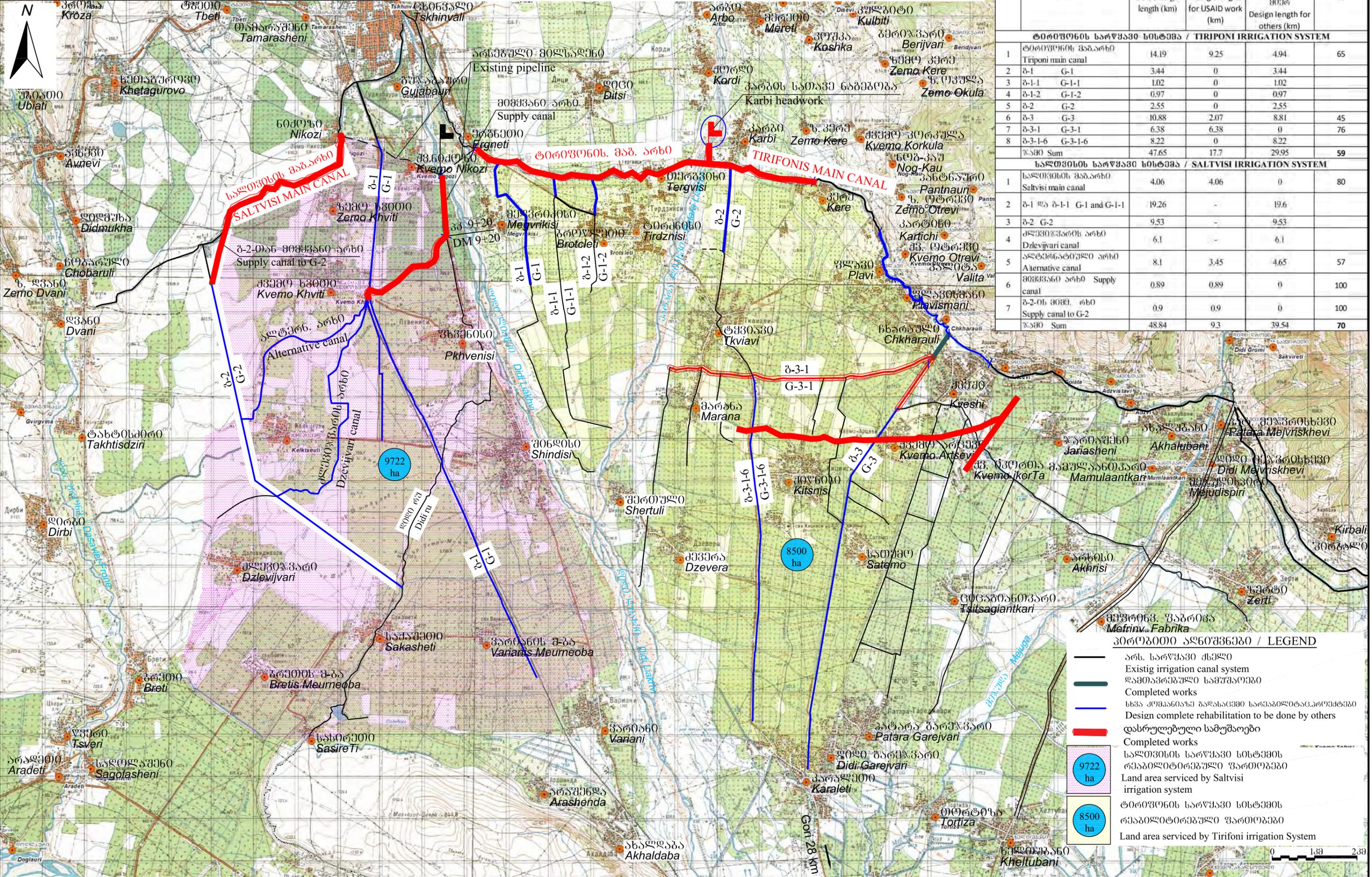
Clear lines of communication between all parties is critical in utilizing this type of oversight. For future considerations on the use of CMC's, their role and responsibilities must be clearly defined and the terms of the contract held firm and not be allowed to be changed during the course of the contract without full knowledge and understanding by USAID.

APPENDIX A:TIRIPONI-SALTVISI IRRIGATION NETWORK MAP

REHABILITATION OF TIRIPONI AND SALTVISI IRRIGATION SYSTEM

SYSTEM GENERAL PLAN 2011-2014

No. №	დასახელება Description	შოლასო საპროექტო სიგრძე Total design length (km)	საპროექტო სიგრძე ამ პროექტის ფარგლებში Design length for USAID work (km)	საპროექტო სიგრძე სხვა პროექტების ფარგლებში Design length for others (km)	პროგრესი PROGRESS %
ტირიფონის სარწყავი სისტემა / TIRIFONI IRRIGATION SYSTEM					
1	ტირიფონის მთავარი Tiriponi main canal	14.19	9.25	4.94	65
2	ბ-1 G-1	3.44	0	3.44	
3	ბ-1-1 G-1-1	1.02	0	1.02	
4	ბ-1-2 G-1-2	0.97	0	0.97	
5	ბ-2 G-2	2.55	0	2.55	
6	ბ-3 G-3	10.88	2.07	8.81	45
7	ბ-3-1 G-3-1	6.38	6.38	0	76
8	ბ-3-1-6 G-3-1-6	8.22	0	8.22	
ჯამო Sum		47.65	17.7	29.95	59
სალტვისის სარწყავი სისტემა / SALTVISI IRRIGATION SYSTEM					
1	სალტვისის მთავარი Saltvisi main canal	4.06	4.06	0	80
2	ბ-1 და ბ-1-1 G-1 and G-1-1	19.26	-	19.6	
3	ბ-2 G-2	9.53	-	9.53	
4	კლვიჯვარის არხი Dzlevijvari canal	6.1	-	6.1	
5	ალტერნატიული არხი Alternative canal	8.1	3.45	4.65	57
6	მიწის მიწოდების არხი Supply canal	0.89	0.89	0	100
7	ბ-2-ის მიწოდების არხი Supply canal to G-2	0.9	0.9	0	100
ჯამო Sum		48.84	9.3	39.54	70



სიმბოლოების ლეგენდი / LEGEND

- არს. სარწყავი ქსელი
Existing irrigation canal system
- დასრულებული სამუშაოები
Completed works
- სხვა პროექტების ფარგლებში აღსრულებული სამუშაოები
Design complete rehabilitation to be done by others
- დასრულებული სამუშაოები
Completed works
- სალტვისის სარწყავი სისტემის რეაბილიტაციის ფარგლებში
Land area serviced by Saltvisi irrigation system
- ტირიფონის სარწყავი სისტემის რეაბილიტაციის ფარგლებში
Land area serviced by Tirifoni irrigation system



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