



USAID
FROM THE AMERICAN PEOPLE

ADVANCED SCIENCE & PARTNERSHIPS FOR INTEGRATED RESOURCE DEVELOPMENT PROJECT

QUARTERLY REPORT

January-March 2017

April 2017

This publication was produced for review by the United States Agency for International Development. It was prepared by Mendez England & Associates.

Advanced Science & Partnerships for Integrated Resource Development

QUARTERLY REPORT SECOND QUARTER FY 2017

April 2017

Contract No. AID-OAA-I-14-00070/AID-111-TO-15-00001

Prepared for:

United States Agency for International
Development
Armenia Mission
1 American Avenue
Yerevan 0082, Armenia

Prepared by:

Mendez England and Associates (ME&A)
4300 Montgomery Ave.
Suite 103
Bethesda, MD 20814
Tel: +1 301 652 4334
Fax: +1 301.652.3733
www.mendezengland.com

Armenian Branch of ME&A
105/1 Teryan St., Suite 204,
Yerevan 0009
Republic of Armenia
Tel. +374 10 514 315
Fax: +374 10 514 317
Email: aspired@engl.com

DISCLAIMER

This report is made possible by the support of the American people through the United States Agency for International Development (USAID). The contents are the sole responsibility of the Mendez England & Associates and do not necessarily reflect the views of USAID or the United States Government.

Table of Contents

List of Acronyms	4
1. Executive Summary	5
1.2 ASPIRED Summary	5
1.3 Main Highlights from the Reporting Period	5
2. Summary of Performance Indicators	7
3. Program Implementation	14
Water Resource Data	14
Low Cost and Water Efficiency Technologies	17
Water Regulation and Enforcement	17
Donor Coordination and Communications	18
4. General Administrative Issues	19
5. Environmental Compliance	19
6. Existing Problems or Issues	20
7. Planned Activities for the Next Quarter	20

List of Acronyms

ASPIRED	Advanced Science and Partnerships for Integrated Resource Development
ATTC	Aquaculture Technology Transfer Center
AAB	Ararat Artesian Basin
BMO	Basin Management Organization
BMP	Basin Management Plan
CADI	Computer Assisted Development, Inc.
CEW	Clean Energy and Water
CoP	Chief of Party
COR	Contracting Officer's Representative
DO	Development objective
DSS	Decision Support System
EA	Environmental Assessment
EC	European Commission
EE/RE	Energy Efficiency/Renewable Energy
EGO	Economic Growth Office
EIMC	Environmental Impact Monitoring Center
EMMP	Environmental Mitigation and Monitoring Plan
ERGIS	Environmental Research and GIS
ESS	Environmental Scoping Statement
EU	European Union
ESA	European Space Agency
GIS	Geographic Information System
GOA	Government of Armenia
HMC	Hydrogeological Monitoring Center
ICARE	International Center for Agribusiness Research and Education
IEE	Initial Environmental Examination
IR	Intermediate Result
ITF	Interagency Task Force
The Lab	U.S. Global Development Lab
ME&A	Mendez England and Associates
MoA	Ministry of Agriculture
MNP	Ministry of Nature Protection
MoENR	Ministry of Energy and Natural Resources
MoU	Memorandum of Understanding
NGO	Non-Governmental Organization
PEER	Partnership for Enhanced Engagement and Research
PERSUAP	Pesticide Evaluation Report and Safe Use Action Plan
PIRS	Performance Indicator Reference Sheet
PMP	Performance Management Plan
PPR	Performance Plan and Report
RFA	Request for Approval
SCADA	Supervisory Control and Data Acquisition
SCWS	State Committee on Water Systems
SOW	Scope of Work
STTA	Short-Term Technical Assistance
SWCIS	State Water Cadaster Information System
TO	Task Order
WRMA	Water Resources Management Agency
WADI	Water and Development Indefinite Delivery/Indefinite Quantity Contract
WUP	Water Use Permit
USAID	United States Agency for International Development
USGS	United States Geological Survey

1. Executive Summary

This report describes the programmatic activities implemented by the Advanced Science and Partnerships for Integrated Resource Development (ASPIRED) Project in the second quarter of Year 2 of the project. It covers the period from 1st of January through 31st of March, 2017. The report reviews progress and achievements in each of the project areas during the reporting period, and describes planned activities for the next quarter. The report also highlights challenges and actions taken to address these challenges.

1.2 ASPIRED Summary

On September 29, 2015, the United States Agency for International Development (USAID) awarded Mendez England & Associates (ME&A) a contract to implement the ASPIRED Project under the Water and Development IDIQ (WADI). The purpose of the ASPIRED Project is to support sustainable water resource management and sustainable practices of water users in the Ararat Valley through the use of science, technology, innovation and partnership initiatives. The ultimate goal is to reduce the rate of groundwater extraction in the Ararat Valley to sustainable levels.

To this end, the ASPIRED Project focuses several critical areas:

1. Water Resource Data
2. Technology
3. Regulatory framework/enforcement of laws
4. Coordination across stakeholders

The ASPIRED Project places a strong emphasis on building partnerships with the U.S. Global Development Lab (the Lab), the United States Geological Survey (USGS), the private sector, research organizations and international donors to pilot innovative water and energy efficiency technologies, and to promote better water resource monitoring, planning and sustainable management.

1.3 Main Highlights from the Reporting Period

- Project Management and Administration:
 - Re-submission the following two reports to USAID: the final version of the Report “Achieving Sustainable Groundwater Water Use in the Ararat Valley: Role of the Fisheries Sector” to USAID; and Inventory of Groundwater Wells, Natural Springs and Fish Farms of the Ararat Valley. USAID presented the two reports to the Government of Armenia (GOA).
- Data component:
 - The Ministry of Nature Protection (MNP) led a workshop for fisheries to increase awareness of the online groundwater use monitoring system to be installed at 20 water use points and facilitate the dialogue between the ASPIRED and the fish farms.

- ASPIRED's involvement in the Interagency Task Force (ITF) - established by the GOA – to develop a program of measures of improving groundwater management in the Ararat Valley and mitigate environmental risks. In coordination with the Ministry of the Nature Protection (MNP) and the Hydrogeological Monitoring Center (HMC), the ASPIRED team contributed to the recommendation of activities that would allow reducing groundwater abstraction in the Ararat Valley to 1.1 million cubic meters per year during 2017-2018.
- Technology component:
 - Submission of the proposal package for the Aquaculture Technology Transfer Center (ATTC) to USAID on March 17, 2017.
- Legal component:
 - Providing input to the Ministry of Agriculture (MOA) for the financial analysis of investments into the application of water saving technologies in the fisheries. The ASPIRED team made comparative estimates of fish product cost using the input data from two different data sources – ASPIRED analysis and the MOA data.
- Performance Management, Communication and Donor Coordination component:
 - Updating the Performance Indicator Reference Sheets (PIRS) and Quality Assurance Checklists in consistency with the current PMP of the Project.
 - Preparation of a video to highlight implementation of the innovative irrigation rehabilitation project in Hayanist.
 - Updating the web site design and adding two new pages on the partnership with Coca-Cola HBC and Pilot Projects
- Environmental Compliance
 - Preparation of the environmental review documents for the ATTC project
 - Organization of the Training on Sustainable Farming for the beneficiaries of Hayanist project, which was co-facilitated with the Environmental Research and GIS (ERGIS) on March 24, 2017.

2. Summary of Performance Indicators

Summary of performance indicators for the second quarter of FY 2017 (Year 2 of the project) is presented in the table below.

	Indicator	Target for Year 2	Quarter 2	Life of project (as of end of Q2 of Year 2)	Notes: Descriptions/Comments/Assumptions
IR 1: Establish a comprehensive, user-friendly, open data system that is accessible to all stakeholders.					
Sub-IR 1.1: Ararat Valley Geocoded, real-time, publically accessible data system that incorporates water resource, groundwater, and hydrological datasets from multiple stakeholders built and shared with the GOA					
Indicators					
1.1.1	Percent (of total) of datasets for the Ararat Valley publicly accessible	20%	-	-	80% of all datasets available on Ararat Valley will be made public, which accounts for 100% of all the data that can be available to the public according to the Armenian legislation
1.1.2	Percent (of total) wells mapped in the Ararat Valley.		-	100%	The inventory of the groundwater wells, natural springs and fish farms of the Ararat Valley was completed during the first quarter of Year 2 and the indicator is fully met. The database and the Draft Final Report on the Inventory were submitted to USAID in Quarter 1.
1.1.3	Number of stakeholders engaged in data collection activities	8	1	10	The target for Year 2 includes the number of the stakeholders reported during Year 1, (i.e. four GOA agencies and Partnership for Enhanced Engagement and Research (PEER) grantee, the USGS, the Institute of Water Problems which are engaged in data collection activities). The indicator refers to the newly launched European Union (EU) Water Initiatives+ project which, in addition to its other programmatic tasks in the water sector, will also collaborate with the ASPIRED team on the technical upgrade of the State Water Cadaster Information System (SWCIS).
Sub-IR 1.2: An online tool for hydrogeological modelling and decision-support for the Ararat Valley that incorporates hydrologic, economic, energy, social equity and environmental data generated					
Indicators					

1.2.1	GIS based DSS for the Ararat Valley developed	-	-	-	The DSS will be available starting from Year 3. No data to report during Year 2.
Sub-IR 1.3: A publicly accessible system that maximizes the use of open source technology and produces reports based on high-quality, real-time monitoring data created					
Indicators					
1.3.1	Number of fisheries with automatic data system installed	5	-	-	The data on this activity will be reported starting from Quarter 3, upon resolving the challenges described below. ASPIRED delayed the announcement of the tender for the installation of online monitoring systems in fisheries, the issuance of which was planned in February 2017. During the, February workshop with fisheries organized by the MNP, attendees expressed their reluctance to participate in the project. Another challenge concerns the GOA plans to shift the USAID's assistance towards small fisheries. However, USAID and the ASPIRED team strongly support the installation of the monitoring systems in the large fisheries, which are using the major share of the groundwater. This issue should be discussed and resolved between the GOA and USAID to begin the process.
Sub-IR 1.4: Plan for decentralized, sustainable data collection methods to monitor groundwater resources and strengthened implementation capacities of partners developed in partnership with the Government of Armenia (GOA) and local stakeholders					
Indicators					
1.4.1	Percent (of total) coverage of groundwater extraction points monitored	4	-	-	This indicator refers to the percentage of the groundwater extraction wells monitored with the use of the online automated system installed by the ASPIRED Project (in partnership with Coca-Cola) versus the total number of the operational groundwater wells available in the fisheries ¹ . Since this activity has not started yet, there is no data under this indicator to report at this time.
IR 2: Introduce locally appropriate, cost effective technologies to improve water resource management					

¹ During the latest inventory of the groundwater wells, natural springs and fish farms of the Ararat valley, ASPIRED inventoried a total of 2807 wells in the Ararat Valley, of which 1795 were found to be operational. Out of 1795 functioning wells, 336 are reportedly located in the fisheries of Ararat and Armavir marzes.

Sub-IR 2.1: Technologies developed, piloted, and evaluated at different sized fish farms with the objective of improving water resources management					
Indicators					
2.1.1	Number of groundwater extraction reduction technologies piloted and evaluated	2	-	1	The ASPIRED team completed the irrigation rehabilitation project in Hayanist in November 2016 ² . The new project is scheduled to start next quarter, pending USAID approval.
2.1.2	Thousands of cubic meters of water saved annually in Ararat Valley	300	16	16	The target is dependent upon Indicator 2.1.1. The system will be fully operated at the beginning of the irrigation season, spring 2017. The groundwater well with the flow of 0.5 l/sec was sealed in Hayanist village. Initially the well was intended for irrigation. The data on the water savings due to the operation of the pump in Hayanist will be reported in Quarter 3.
Sub-IR 2.2: Technologies with the objective of increasing energy efficiency and/or renewable energy generation of water users developed, piloted, and evaluated					
Indicators					
2.2.1	Number of energy efficiency and/or renewable energy (EE/RE) technologies piloted and evaluated	1	-	-	The indicator refers to water-use related EE/RE technologies to be piloted during the project implementation. The ASPIRED team plans to install two types of RE technologies in the ATTC project: photovoltaic and biogas. ASPIRED will carry out the installation work during Quarters 3 and 4.
2.2.2	Megawatt hour of energy saved annually	87	-	-	This target is dependent upon Indicator 2.2.1. The data will be reported based on the operation of the pilot projects: Hayanist and ATTC.
2.2.3	Clean energy generated annually, MWh	7	-	-	This indicator refers to the clean energy generation capacity resulting from the introduction of RE technologies aimed at minimizing extraction of the groundwater. The ASPIRED team plans to install two types of RE technologies in the ATTC project: photovoltaic and biogas. The ASPIRED team plans to carry out the installation work during Quarters 3 and 4.
2.2.4	Gains in the reduction of GHG emissions as a result of USG assistance	25	-	-	GHG emissions reduction-related data will be calculated based on the kilowatt hour of savings resulting from application of energy saving technologies in metric tons/year. The data will be reported based on the operation of the pilot projects in Hayanist and ATTC starting from Quarter 3.

² The project helped to avoid drilling of an additional groundwater well for irrigation purposes by channeling the outlet water from the fishery to irrigate 40 hectares of land belonging to Hayanist community. The pumping station was built at the outlet section of the fishery to be shared between the community and the owner of the fish farm who plans to reduce abstraction of the groundwater by recirculating the water in his fishery with the help of the new pump.

2.2.5	Number of people receiving improved service quality from an existing basic or safely managed drinking water service as a result of USG assistance ³	-	-	-	Qualitative improvement of the water resource resulting from the pilot projects implemented by the ASPIRED Project. When applicable, ASPIRED will conduct pre- and post-implementation water tests to detect the qualitative changes in water. The term “water users” refers to households, local farmers and others benefitting from these improvements. The indicator will be reported starting from Year 3 to include data from the upcoming USAID PURE project.
2.2.6	Number of water users experiencing improved efficiency of water resource use	3	2	2	More efficient use of water resulting from the pilot projects implemented under the ASPIRED Project. Examples of such projects may be reduced water abstraction by fish farms due to new technologies installed. Based on the results of Hayanist project, (a) the community avoided drilling of an additional well for irrigation needs; (b) the fishery became a more efficient water user by providing water to the community instead of dumping to the drainage water and gaining a possibility to use the existing pump for the recirculation of water, thus reducing its water abstraction from the groundwater well.
Sub-IR 2.3: Based on the pilot process and available research, recommendations developed for successful water and energy technologies for policy-makers and stakeholders shared					
Indicators					
2.3.1	Number of successful technologies recommended and shared with the stakeholders and policy-makers	1	-	-	Throughout the ASPIRED Project, the project team will pilot at least six technologies. Following these pilot implementations, the project team will conduct evaluations and provide recommendations during Year 5 of the project. Information related to this indicator will be available upon the operation of pilot projects. ASPIRED will report on this indicator by the end of Year 2.
Sub-IR 2.4: Technology or method to permanently close illegal and/or abandoned wells, developed, piloted, and evaluated					
Indicators					
2.4.1	Number of technologies to permanently close illegal or abandoned wells piloted	-	-	-	This task will begin during Year 3. ASPIRED began preparations for the pilot project on well conservation. The ASPIRED team completed the well selection process and will prepare the concept paper during Quarter 3.
IR 3: Introduce new policies and regulations to improve integrated water resource management.					
Sub-IR 3.1: Trainings to build groundwater monitoring capabilities, capacity strengthening, and knowledge of how to use equipment; and follow-up assessments to test knowledge on groundwater monitoring and analysis of the basin management organizations (BMOs) and relevant water management agency officials to improve enforcement.					

³ The indicators marked red are the modified ones in the updated PMP, still pending formal approval of USAID.

Indicators					
3.1.1	Number of trainings for building capacity of MNP including BMO in groundwater monitoring	1	-	1 ⁴	This indicator refers to the number of trainings on enhanced up-to-date SWCIS and MIS for the Ararat Valley and on enhanced transparent water use permitting, control and oversight systems and decision support tools.
3.1.2	Number of people educated on tools, approaches, and/or methods for water security, integrated water resource management, and/or water source protection as a result of USG assistance ⁵ .	12	-	11 (3 women and 8 men)	The indicator refers to the training on enhanced up-to-date SWCIS and MIS for the Ararat Valley and on enhanced transparent water use permitting, control and oversight systems. The indicator will be disaggregated by gender.
Sub-IR 3.2: Rigorous, evidence-based analysis of optimal water fee levels completed, shared with engaged stakeholders and recommendations provided to the GOA					
Indicators					
3.2.1	Number of workshops and consultations with stakeholders to discuss water fee levels	3	1	9	To facilitate understanding of the groundwater issues in the Ararat Valley and mitigation measures recommended in the Report “Achieving Sustainable Groundwater Use in the Ararat Valley: the Role of the Fisheries Sector,” the ASPIRED Project conducted interagency task force meetings and consultations with the stakeholders ⁶ . In the last quarter, the water fees and fish cost calculation data were discussed with the MOA representatives. ASPIRED team provided the requested analysis, as reported in Water Regulation and Enforcement Sub-Section .
Sub-IR 3.3: Water permitting monitoring and enforcement measures assessed and publicly available and recommendations, including development of regulations, provided to the GOA.					
Indicators					
3.3.1	Package of recommendations to address water permitting monitoring and enforcement measures provided to GoA	-	-	-	This indicator refers to the package of recommendations, drafted by the ASPIRED project and submitted to the GOA. This activity will start in Year 3.
IR: Ensure communications and coordination with stakeholders to avoid duplication of efforts					

⁴ The ASPIRED team supported the USGS in organizing the well inventory training for its stakeholders (HMC, WRMA) during Quarter 2 of Year 1 of the project.

⁵ This indicator is not cumulative and reported on an annual basis.

⁶ Four Interagency Task Force (ITF) meetings were organized during Year 1. Additionally, a high-level policy meeting was convened in November 2016, including also separate in-depth consultations with the following stakeholders: the MNP, the Ministry of Agriculture, the President’s Office, and the Ministry of Economy.

Sub-IR: 4.1 Systems-mapping to gain and apply knowledge of points of influence, incentives, and resources of stakeholders in water and the water-energy nexus completed and shared					
Indicators					
4.1.1	Number of international and local organizations participating in the system mapping activities	1	1	22 ⁷	The newly identified partner for the ASPIRED Project is the EU Water Initiative Plus project on the SWCIS enhancement activities.
Sub-IR 4.2: A transformative partnerships model to respond to needs for research, pilots, analysis and other coordinated efforts that is demand-driven, flexible, and has a plan for financial sustainability created					
Indicators					
4.2.1	Percent of total funding leveraged from stakeholders for water resources management activities.	7 ⁸ %	-	34%	This indicator refers to the in-kind and financial contribution by implementing partners. The sources of reported figures is the actual cost-share of partners (Coca-Cola HBC, ERGIS and Hayanist community) in the implementation of the irrigation rehabilitation project in Hayanist.
5. Cross-cutting indicators					
5.1	Percent of population living in targeted areas with improved water management	30%	-	-	Ararat Valley currently includes 170 communities with a total population of 486,500. The data on this indicator will be reported starting from Quarter 3 when the irrigation system in Hayanist is put into operation with the start of the irrigation season and the positive impact on the community is visible.
5.2	Number of key implementation steps taken to improve water management in the Ararat Valley	3	2	3 ⁹	This indicator relates to policy, analysis and other activities targeted towards improvement of water data-related activities, including training and pilot projects. The following two key implementations steps were achieved during this quarter: (a) USAID presented to the GOA two reports - Achieving Sustainable Groundwater Use in the Ararat Valley: the Role of the Fisheries Sector and the Final Report on the Inventory of Groundwater Wells, Natural Springs and Fisheries of the Ararat Valley; (b) In March 2017, the GOA Task Force set the schedule for the installation of the systems in the fish farms of

⁷ Organizations to be involved in the mapping process are: Coca-Cola HBC and the President's office (Both organizations demonstrate vivid participation in addressing water issues of the Ararat Valley); Metsamor Power Plant (provision of data for the Fee Report); and Sat-Agro. The latter provided data support to the ASPIRED Project (satellite imagery for the Valley).

⁸ ASPIRED team was cautious in setting cost-share margins. However, if ASPIRED is successful in raising additional funds for cost-shares in Year 2, the Project will consider revising the target indicator.

⁹ The inventory of groundwater wells and springs was completed in September 2016.

					Ararat Valley following the GOA's decision to include the project on installation of the online groundwater use monitoring system the Program of Priorities for 2017.
5.3	Number of private sector firms that have improved management practices or technologies as a result of USG assistance ¹⁰	7	-	1	The data on this indicator will be available once the ASPIRED team begins implementing the ATTC project.
5.4	Number of innovations supported through USG assistance ¹¹	3	-	1	The data on this indicator will be available once the ASPIRED team begins implementing other activities, such as ATTC project.

¹⁰ The indicator refers to (a) the number of fisheries with Supervisory Control and Data Acquisition (SCADA) systems installed and (b) fisheries which have adopted innovative water or energy efficiency (including renewable) technologies. In both cases, it will ultimately lead to improved management practices and more efficient resource use by the private sector entities with the USG assistance.

¹¹ Innovative technologies, management/monitoring tools or practices introduced by the ASPIRED in fish farms, at water use points and/or communities of Ararat Valley which contribute to the reduction of the groundwater use.

3. Program Implementation

Water Resource Data

Groundwater use monitoring: Starting from January 2017, ASPIRED, Coca-Cola HBC and the Ministry of Nature Protection (MNP) began negotiations on the installation of the online groundwater use monitoring systems in the fisheries as per the Memorandum of Understanding (MoU) on water stewardship in the Ararat Valley, which was signed between the three parties in July 2016. The installation of monitoring systems at 20 water abstraction points in fisheries is included in the Government of Armenia's (GOA) Program of Priorities for 2017, which refers to USAID's ASPIRED Project in conjunction with the implementation of the pilot project.

The MNP was committed to facilitating interaction between the ASPIRED team and the fisheries and their further participation in this project. Both USAID and ASPIRED insisted on the installation of the online monitoring systems in the large fisheries which have the largest share in the groundwater extraction amounts. Without MNP's support, access to these fisheries would be problematic for the ASPIRED team.

On February 16, 2017, the MNP conducted the informational workshop for the representatives of fish farms with the aim of increasing awareness among the potential recipients of the pilot project and encouraging the dialogue between the GOA and the fishery sector representatives. The head of the Water Resources Management Agency (WRMA), Vahan Davtyan, presented the GOA's actions towards stricter enforcement of the groundwater use permit conditions, including the measures on the mandatory installation of the monitoring systems at fish farms in the future. The newly introduced automated online system will provide real-time data on actual water abstraction from a particular water use point, immediately revealing cases of over-abstraction. Through access to controlled water abstraction data, WRMA can revise the water use permits for fisheries where actual consumption is reportedly below the permitted level. The installation of the online automated system is intended to reduce corruption risks and strengthen the monitoring of groundwater use in the Ararat Valley.

Although the purpose of the meeting was to enroll interested fisheries into the project on a first-come, first-serve basis, the fish farmers who attended the meeting expressed their reluctance to enroll for the automated online groundwater use monitoring system pilot at their fisheries. This reluctance from the fish farmers was on the basis that to be fair and efficient, the system must be installed in all operational farms, especially those which use significant amounts of water. There was a heated discussion between the WRMA management and the fishery sector representatives which were criticizing the WRMA and the MNP for first issuing water use permits and then adopting regulatory decisions that will eventually destroy their business.

In March 2017, the Task Force, established by the order of the Prime-Minister, presented to the GOA the following schedule for having the automated online monitoring system installed on the wells of all fish farms operating in the Ararat Valley:

1. Fish farms using 150l/sec and more water should complete installation of the system by August 31, 2017;
2. Fish farms using t 100 l/sec-150 l/sec groundwater should complete installation of the system by December 31, 2017; and

3. Fish farms using up to 100 l/sec water should complete the installation of the system during 2018.

On March 13, Simon Papyan, the Deputy Minister of Nature Protection, discussed with the ASPIRED team and the MNP staff the approach for developing technical specifications for the online monitoring system that will be adopted as a Government resolution. MNP established a working group to develop technical specification for the system, including needed hardware and software. The working group consists of the representatives of the WRMA, National Institute of Standards and a private company – Hybrid Telematica, and the ASPIRED Project. MNP Deputy Minister Khachik Hakobyan hosted the first working group on March 14th. During the meeting, the working group members decided that the representatives of Hybrid Telematica and the Institute of Standards would draft the technical specification for the monitoring system, which would to be discussed during the second meeting on Friday, March 17. However, the second meeting was not convened.

Assistance to the GOA in improving policy on groundwater management in the Ararat Valley: Adopted on January 23, 2017, a decree by the Armenian Prime Minister stipulated for the creation of the Interagency Task Force (ITF) to develop a rigorous program of measures for improving groundwater management in the Ararat Valley and prevent ecological risks. The program of measures to be implemented by the GOA in 2017 - 2020 must be presented to the Prime Minister in March-April 2017.

USAID and the ASPIRED Project team participated in the ITF along with the representatives of the Ministries of Nature Protection, Agriculture, State Committee on Water Systems, State Revenues Committee under the GOA, and other experts. The ASPIRED team served as the data source on the groundwater issues for the MNP and other stakeholders and provided input during the meetings of the ITF and technical discussions and consultative meetings called by the MNP. During the quarter reported, the Project team worked with the MNP, the WRMA and HMC on conducting analyses for proposing specific, measurable actions aimed at reducing groundwater abstraction in the Ararat Valley to 1.1 mln cubic meters per year during 2017-2018. This is the volume of renewable groundwater resources established since the Soviet times, which can be annually used in the Ararat Valley without damaging the groundwater aquifers. These analyses are based on results of the comprehensive inventory of groundwater wells, natural springs and fish farms that was completed in November 2016. ASPIRED also provided information on the fishery sector in the Ararat Valley based on the findings of the report “Achieving Sustainable Groundwater Use in the Ararat Valley: the Role of the Fishery Sector”.

A draft program of measures that was presented to the GOA includes activities implemented or planned for implementation by the ASPIRED Project in 2017-2020, namely: improved monitoring of groundwater use in the selected fish farms and data management system for the Ararat Valley - as part of enhanced State Water Cadaster Information System (SWCIS); preparation of a digital hydrogeological map and groundwater model for the Ararat Valley to be used by the GOA for re-assessing renewable groundwater resources in the aquifers of the Ararat Valley; introducing water and energy efficient technologies in the selected fisheries, etc.

State Water Cadaster Information System (SWCIS) enhancement: In February the GOA adopted a new structure and procedures for operation and maintenance of the SWCIS. In March, the ASPIRED recruited an expert on database programming who will be working with the

WRMA on enhancement of the SWCIS in accordance with requirements of the newly adopted government resolution on Cadaster.

In February-March 2017, the ASPIRED technical team convened three working meetings with the representatives of WRMA on discussing the content and format of tabular information in the enhanced SWCIS. ASPIRED also discussed the list and structure of the new tables and reports proposed for design by WRMA. ASPIRED prepared the technical report summarizing the results of these meetings and proposing the action plan and the timeline of the SWCIS improvement. The document was provided to the Ministry for review.

To speed up the process of the SWCIS enhancement, ASPIRED requested that the MNP nominate the representatives of various WRMA divisions into the joint technical working group that would allow for a more consistent and formalized collaboration with the WRMA staff.

ASPIRED cooperates with a newly launched EU Water Initiative + project in this area. During the discussions conducted between the Project teams and the WRMA, it was agreed that the ASPIRED team will assist the WRMA in programming the new SWCIS, while the EU WI+ Project will host the system on a Cloud online platform and assist the data exchange between various users of the data management system. If needed, the EU Project can procure a server for the data management system. The ASPIRED and EU Water Initiative + Projects will continue their collaboration on SWCIS development.

Decision Support Tools: In February 2017, ASPIRED started the review of the Hydrological, Climate Change and Economic Models of the DSS calibrated for Armenia's Vorotan, Voghji and Meghri river basins. The team discussed the approach for revising and calibrating the DSS for the river basins of the Ararat Valley catchment area proposed by the experts. The technical team worked on preparation of datasets for calibrating the climate components of the Hydrological model of the DSS for 5 rivers basins of the Ararat Valley catchment area.

During the reporting period, the ASPIRED team prepared and shared with USAID a detailed description of the training needs for preparing the groundwater model for the Ararat Valley. ASPIRED also provided clarifications to the questions raised by the USGS team regarding the inventory data, which is used for developing the hydrogeological framework of the Ararat Valley.

During the reporting period, the Hydrologist working under the ASPIRED Project initiated a review of available groundwater modeling tools developed by USGS, such as MODFLOW and its front-end and back-end extensions (i.e. GMS, Modelmuse, etc.). The overview of the further steps on the DSS tools development is described in [Section 7: Planned Activities for the Next Quarter](#).

Applying remote sensing technologies for data analysis: During the reporting period, the ASPIRED Project continued its successful cooperation with SatAgro Polish Company that works for the World Bank for developing technical tools for the agricultural sector using satellite imagery and other services of the European Space Agency. Specifically, SatAgro Polish Company provided Sentinel-2 imagery for the Ararat Valley of 10 meter resolution for the summer of 2016 to the ASPIRED Project.

The STTA Remote Sensing Analyst working under the ASPIRED Project started the

unsupervised classification of the land cover for the Ararat Valley, using methodology developed within the framework of the USAID Clean Energy & Water (CEW) Program.

Low Cost and Water Efficiency Technologies

On March 17, the ASPIRED team submitted a Request for Approval (RFA) of the ATTC Project to USAID. Meanwhile, the team focused on the preparation of the engineering designs and construction blueprints of the ATTC Project facilities, with extensive technical support of the volunteers of the Armenian Volunteer Corps who recently joined the ASPIRED Project. The Armenian Volunteer Corps volunteers assist the ASPIRED team with the design and preparation of the construction blueprints as well as research of information on aquaculture technologies similar to those to be demonstrated in the ATTC.

Prior to submitting the package to USAID, the ASPIRED team made efforts to promote the ATTC Project among potential stakeholders. Given that the ATTC Project offers opportunities for research and testing of new technologies, establishing effective partnerships with the research institutions, labs, environmental organizations or fisheries is essential for the success of the ATTC Project. The ASPIRED team contacted the Scientific Center of Zoology and Hydroecology, [Green Age NGO](#) and the Agricultural Academy. At the moment, collaboration is feasible with the Green Age NGO with its aquaponics gardening practice in Armenia with the use of the symbiotic nature of plant cultivation and fish growing. Grigor Janoyan, a Green Age NGO Director, will provide expertise on the aquaponics to the ATTC Project. To obtain more information on the best aquaculture technology practice, the ASPIRED team met with International Center for Agribusiness Research and Education (the representatives of ICARE) to get acquainted with the results of ICARE's U.S. fishery study tour, which included both private and University-run laboratories and fish farms.

To continue implementation of the pilot projects in accordance with the Task Order, the ASPIRED team discussed with the WRMA the strategy for sealing the unused and/or abandoned artesian wells. The ASPIRED team and the WRMA carried out the well selection based on the findings of the well inventory and the savings of the groundwater generated after well conservation.

As a result of careful data analysis and discussions with the HMC, ASPIRED selected the groundwater well (inventory number # 1/403) located in the vicinity of Sipanik village in Ararat marz for the conservation project. The ASPIRED team carried out the desk research of the existing technologies for the decommissioning of artesian wells applied in the USA and CIS countries. Furthermore, the project team conducted the initial feasibility assessment of the project and started developing the concept paper and other related documents. The full proposal package will be submitted to USAID next quarter.

Water Regulation and Enforcement

STTA Khosrov Harutyunyan resumed his assignment on coordination of the ASPIRED Project's Legal Component. On March 2, the ASPIRED team met with the Deputy Minister of Agriculture

Armen Harutyunyan to discuss the fish product cost calculation model designed by the ASPIRED team, as well as the source of data the team retrieved their estimates from. The MOA requested that the ASPIRED team provide calculations of the fish product cost based on the MOA's input data in order to compare the results. This information will be used in the financial analysis of investments into the application of water saving technologies in fisheries.

Donor Coordination and Communications

During the reporting period, the ASPIRED team and Coca-Cola HBC discussed the joint PR and communications activities and preliminary schedules related to the project in Hayanist and the installation of the groundwater use monitoring system in the fisheries. With respect to the latter, the representatives of Coca-Cola HBC participated in the MNP's workshop with the fisheries and presented their input in this pilot project. ASPIRED and Coca-Cola set the preliminary date of the opening of Hayanist project on May 23, 2017, subject to USAID approval. The ASPIRED team anticipates attendance by the U.S Ambassador and other officials from USAID, Coca-Cola HBC and the Coca-Cola Company, the GOA and local communities. The ASPIRED team will organize logistics for the event.

During the reporting period, the ASPIRED team also updated the project's webpage with a separate section dedicated to the [USAID and Coca-Cola HBC partnership](#). Within this section, the ASPIRED team features information on implemented pilot project demonstrations with photos and descriptions of projects, including cross-reference links between different pages. The ASPIRED team updates this section with news from the partnership on an ongoing basis.

ASPIRED and ERGIS co-organized the community training on Sustainable Farming in Hayanist on March 24, 2017. The training focused on the best irrigation practices in the context of the Ararat Valley, as well as the selection of safe fertilizers and chemicals. More details are available under [Section 5: Environmental Compliance](#).

The ASPIRED team also finalized the English and Armenian versions of the film on the Hayanist Project. Although the film was initially produced for a presentation during one of the USAID's partners' meetings, the ASPIRED team will continue to utilize the film for outreach purposes.

Other activities under the communications and performance management task included:

- Update of the quality assurance checklists and PIRS to reflect changes in the project PMP.
- Participation in the meetings with other partners and/or stakeholders, namely ICARE, EU Water Initiative Plus, etc.
- Support of other project components
- Preparation of the project highlights for outreach purposes and for input in the USAID newsletter
- Update of the project [website](#) and [Facebook pages](#) and submission of the final versions of the reports to the USAID Development Experience Clearinghouse.

4. General and Administrative

In January 2017, ASPIRED re-submitted the Reports “Sustainable Groundwater Use in the Ararat Valley: the Role of the Fisheries Sector” and “Inventory of Groundwater Wells, Natural Springs and Fish Farms of the Ararat Valley” to USAID edited as per the USAID requirement. The USAID further presented the Reports to the Armenian Government.

Over the reporting period, the ASPIRED team recruited new STTA staff for the following assignments:

- The ME&A Head Office contracted Tom Cyrs to edit and proof-read the report “Sustainable Groundwater Use in the Ararat Valley: the Role of the Fisheries Sector” and the Final Report on the Inventory of the Groundwater Wells, Natural Springs and Fish Farms in the Ararat Valley. The ASPIRED Team finalized the English and Armenian versions of the two reports based on edits and recommendations from Mr. Cyrs.
- In January 2017, a second volunteer from the Armenian Volunteer Corps joined the ASPIRED Project to assist in the design and implementation of the ATTC project.
- In March 2017, Movses Baghdassarian, a student from Aix Marcel University, joined the ASPIRED Project as an intern to assist with preparations for the May 2017 outreach event in Hayanist..
- The DSS Programmer Mushegh Mkrtchyan works on the revision, improvement and amendment of the hydrological, climate change and economic models of the DSS for the river basins of the Ararat Valley catchment area.
- Araik Mkrtchyan was hired for improvement of the SWCIS of the WRMA.
- Khosrov Harutyunyan will continue his assignment on coordination of the legal component of the ASPIRED project.
- The ASPIRED Project contracted Hovhannes Aghinyan as the hydrogeologist who will prepare a digital hydrogeological map.
- David Vardanyan will conduct supervised and unsupervised classification of land use/land cover in the Ararat Valley using Sentinell – 2 imagery.

5. Environmental Compliance

In March 2017, the ASPIRED team finalized the environmental review of the proposed ATTC Project in the Ararat Valley. The environmental review consisted of a review of the project concept, supporting literature and observations made during the visits to the project site on the likely environmental and social effect from the Project. The project team used findings from the review to develop the Environmental Review Checklist and the Environmental Mitigation and Monitoring Plan (EMMP). ASPIRED submitted the ATTC Project concept and environmental documentation to USAID for review and approval.

Following USAID approval of the ATTC Project, ASPIRED will provide a training on environmental and social safety to the implementing partners and subcontractors prior to initiation of the on-site construction and installation work. The training will focus on implementation of mitigation measures as defined in the EMMP, as well as initiate the environmental monitoring process of the project.

In February-March 2017, the ASPIRED Project team collaborated with the ERGIS NGO experts on the design and delivery of a training program on Sustainable Irrigation in the Hayanist village. About 28 farmers – beneficiaries of the improved irrigation water supply network – participated in the training program, which consisted of the following sessions: best irrigation practices; safe use and disposal of fertilizers; fertilization; most common crop diseases; and application of fertilizers for different crops. ASPIRED and ERGIS NGO provided participants with the list of fertilizers defined by the GOA that are allowed or prohibited for use in Armenia. Farmers were also provided schemes of fertilization of the crops planned for farming (cereals, alfalfa, eggplants and other vegetables), based on the results of soil and irrigation water samples testing.

The ASPIRED Project plans to test the quality of irrigation water in early April 2017, before the start of the irrigation season. The ASPIRED team will communicate test results to the village mayor, farmers and the owner of the fish farm for taking precaution measures if the indicators violate the acceptable benchmarks. The ERGIS NGO will continue checking soil samples, and guiding the farmers on sustainable agricultural practices.

6. Existing Problems or Issues

Due to issues associated with GOA plans to shift the USAID's assistance towards small fisheries, ASPIRED delayed the announcement of an open tender for submission of the proposals on installation of the automated online groundwater use monitoring system in the fisheries, initially planned for February 2017. . USAID and the ASPIRED team strongly support the installation of the monitoring systems in the large fisheries, which are using the major share of the groundwater.

7. Planned Activities for the Next Quarter

7.1 Data

- Once the USAID's and the GOA reach agreement on support of the installation of the automated groundwater use monitoring systems in the fish farms, the ASPIRED team will follow-up with the WRMA on finalizing selection of the fisheries. The ASPIRED team representative will continue assisting the MNP-established working group on developing technical specifications for the online groundwater use monitoring system.
- The ASPIRED project team will continue assisting WRMA in accordance with the action plan on the SWCIS improvement. The members of the joint technical working group are expected to actively participate in the discussions and provide technical guidance to the database programmer throughout implementation of his activities. Regular meetings with the joint working group will help the ASPIRED project monitor the progress of task implementation.
- The short-term remote sensing analyst under ASPIRED project will complete the unsupervised classification of the land cover for Ararat Valley using the SENTINEL-2 high-resolution satellite imagery. Following this activity, the ASPIRED team will work with the remote sensing analyst to develop a geodatabase on the results of unsupervised

classification. In addition, ASPIRED will compile the geo-referenced list of conflict sites for a subsequent field survey (or groundtruthing), which will begin in June 2017 and last for three summer months. The ASPIRED project will hire two short-term groundtruthing specialists to complete the assignment.

- The ASPIRED project team will follow up with the calibration of the existing DSS for Akhuryan, Metsamor, Hrazdan, Vedi and Azat river basins, including calculations of water balances and water supply and demand balances for the mentioned basins. The ASPIRED project team will design the training program through a “learning-by-doing” approach, based on the needs of key beneficiaries. The Project will also continue reviewing available open-source software for the groundwater modelling.
- The ASPIRED project team will continue working with USGS on the development of the hydrogeological framework of the Ararat Valley.
- The ASPIRED project team will complete the preparation of the digital hydrogeological map of the Ararat Valley, using data from the inventory of the groundwater wells and natural springs. The map will include GIS layers on boundaries of the Ararat Valley and Ararat Artesian Basin, tectonic structure, geological formations, aeration zone, drainage network of the Ararat Valley, directions and volumes of groundwater inflow into the valley, directions and volumes of groundwater outflow out of the valley, and the piezo-line of the groundwater pressure. These digital datasets, along with the data from hydrogeological framework, will serve as input data for further development of the Ararat Valley groundwater 3D model.

6.2 Pilot technologies

- Submission of the finalized Well Decommissioning Project Concept to USAID (Sipanik Project);
- Inception of the ATTC Project (subject to USAID approval).
- Preparation of tender documents for implementation of the ATTC Project (subject to USAID approval).

6.3. Legal and Policy Issues

- Follow-up with MNP and continue discussions on the analysis presented in the Report “Achieving the Sustainable Use of Groundwater in Ararat Valley, the Role of Fisheries Sector.”
- Complete the fish product cost calculation based on MOA input data and present the information to Deputy Minister Armen Harutyunyan.

6.4 Performance Management, Communication and Donor Coordination

- Plan and conduct the community event in Hayanist on May 23. Preparation activities include: providing input to the briefer; drafting a press release; developing media invitation forms; inviting participants; coordinating with Coca-Cola on outreach materials and media coverage; identifying site visits; coordinating with community stakeholders on

event logistics; and following-up with the media coverage of the event.

- Prepare outreach materials, develop USAID project highlights, and manage the ASPIRED web site and Facebook pages.
- Follow-up on the PMP updates and prepare weekly highlights, monthly reports and quarterly reports.
- Meet with the staff of the USAID PURE grantee to discuss joint activities.

6.5 Environmental Compliance

- ASPIRED will prepare and deliver the environmental training for the ATTC project partners and sub-contractors.
- During the next quarter, the ASPIRED Environmental Specialist will work with the Engineer on the environmental review of the project activities related to the permanent closure of an identified groundwater well.

6.6 Project Management

- Overall project administration in line with the approved work plan, project progress tracking, and providing solutions to any issues that may develop.
- Budget management and administration of tenders for approved projects (ATTC and Well project)
- Handling of contractual procedures with the STTAs.