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ADVANCED SCIENCE & PARTNERSHIPS FOR INTEGRATED RESOURCE DEVELOPMENT PROJECT

QUARTERLY REPORT

October-December 2016

January 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 FIRST QUARTER FY 2017

January 2017

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

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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 |
| 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 |
| PMP | Performance Management Plan |
| PPR | Performance Plan and Report |
| PSRC | Public Services Regulatory Commission |
| QA/QCQuality | Assurance and Quality Control |
| 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 |
| WUA | Water User Association |
| WUP | Water Use Permit |
| USAID | United States Agency for International Development |
| USATF | United States-Armenia Task Force |
| 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 first quarter of Year 2 of the project. It covers the period from October 1, 2016 through December 31, 2016. 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 the 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:
 - Drafting the modification of the ASPIRED budget based on the changes to the scope of work and the project's 18-month extension.
- Data component:
 - Completion of the Final Report on Inventory of Groundwater Wells, Natural Springs and Fish Farms in the Ararat Valley by the Hydrogeological Monitoring Center (HMC) and conduction of public presentation of the Report on December 16, 2016.
 - Submission of the Draft Report and collected database to USAID in December 2016.
 - Preparation of tender documents for procurement, installation, and maintenance of online monitoring systems on 20 groundwater wells in fish farms.

- Preparation of the Terms of Reference on the technical features and the data requirements for the State Water Cadaster Information System (SWCIS).
- Provision of input to the Government Resolution on establishing procedure for maintenance of the State Cadaster on Water Resources submitted by the Ministry of Nature Protection (MNP) to the Ministry of Justice.
- Technology component:
 - Completion of the construction and installation work in the Hayanist project.
- Legal component:
 - Submission of the Draft Report “Achieving Sustainable Groundwater Water Use in the Ararat Valley: Role of the Fisheries Sector” to USAID in December 2016.
 - Organization in the High-Level Policy Meeting to present key findings and recommendations of the Report to the stakeholders on November 9, 2016.
- Performance Management, Communication and Donor Coordination component:
 - Collaboration with Coca-Cola on activities specified in the Memorandum of Understanding (MoU), and nomination of the Hayanist project for the 2016 Best Public and Regulatory Initiative Award of Coca-Cola Hellenic.
 - Preparation of a video to highlight implementation of the innovative irrigation rehabilitation project in Hayanist.
 - Submission to USAID of the annual Performance Plan and Report (PPR) and indicators for portfolio reporting.
 - Completion of project’s Performance Management Plan (PMP) updates based on the changes on the USAID Master List of Indicators, and submission of PMP to USAID for approval in November 2016.

2. Summary of Performance Indicators

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

| | Indicator | Target for Year 2 | Quarter 1 | Life of project (as of end of Q1 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. | 30% | 30% | 100% | This indicator refers to the total number of wells mapped in the Ararat Valley. This task started during Year 1 with the inventory of the groundwater wells, natural springs and fish farms of the Ararat Valley to be completed during the first quarter of Year 2. The inventory covered all wells, including legal, illegal and non-operational, and the entire data was finalized and entered into the database. Both the database and the Draft Final Report on the Inventory were submitted to USAID in December 2016. |
| 1.1.3 | Number of stakeholders engaged in data collection activities | 8 | 2 | 9 | 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 Ministry of Agriculture, Metsamor Nuclear Power Plant is reportedly involved in the data collection process in the Ararat Valley. |

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|---|--|---|---|---|---|
| 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 | - | - | Installation of automated data systems will begin starting from the third quarter of Year 2. |
| 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 | - | - | The 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 | | | | | |
| 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 | 2 | 1 | 1 | The ASPIRED team completed the irrigation rehabilitation project in Hayanist |

¹ During the latest inventory of the groundwater wells, natural springs and fish farms of the Ararat valley, the total of 2807 wells were inventoried 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.

| | | | | | |
|--|--|-----|---|---|---|
| | reduction technologies piloted and evaluated | | | | in November 2016 ² . |
| 2.1.2 | Thousands of cubic meters of water saved annually in Ararat Valley | 300 | - | - | The target is contingent upon Indicator 2.1.1. Although the construction phase of the project was completed in November 2016, the data on water savings will be reported next quarter after the system is in full operation. |
| 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. |
| 2.2.2 | Megawatt hour of energy saved annually | 87 | - | - | This target is contingent upon indicator 2.2.1. The pilot activities related to indicator 2.2.1 will begin during Year 2. |
| 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. This target is contingent upon Indicator 2.2.1; data collection under this indicator will commence at a later date. |
| 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. This target is contingent upon indicator 2.2.1; data collection under this indicator will commence at a later date, |
| 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. Whenever applicable, pre and post-implementation water tests will be taken to detect the qualitative changes in water. The term water users refers to, households, local farmers and others benefitting from this improvements. The indicator will be reported starting from Year 3 to include data from the upcoming USAID PURE project. |

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 in his turn plans to reduce abstraction of the groundwater by recirculating the water in his fishery with the help of the new pump.

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

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| 2.2.6 | Number of water users experiencing improved efficiency of water resource use | 3 | - | - | 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. The ASPIRED Project will report on indicators based on the results of the Hayanist Project. |
| 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. Data collection regarding the progress of the pilot projects started during Years 1 and 2; this information will be available 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 in Year 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. | | | | | |
| 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 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 | 12 | - | 11 (3 women and 8 men) | The indicators refer to the trainings 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. |

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.

| | | | | | |
|--|--|---|---|----------------|--|
| | resource management, and/or water source protection as a result of USG assistance ⁵ . | | | | |
| 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 | 4 | 8 ⁶ | 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 in-depth consultations with key stakeholders from the MNP, the Ministry of Agriculture, the President’s Office, the Ministry of Economy. Additionally, a high-level policy meeting was convened in November 2016. |
| 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 | | | | | |
| 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 | 4 | 21 | 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 Plan (provision of data for the Fee Report); and Sat-Agro. The latter will provide data support to the ASPIRED Project (satellite imagery for the Valley). |
| 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 | | | | | |

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

⁶ Four Interagency Task Force (ITF) meetings were organized during the first 3 quarters in Year 1, plus the data on the last quarter.

| Indicators | | | | | |
|------------------------------------|---|------------------|-----|----------------|--|
| 4.2.1 | Percent of total funding leveraged from stakeholders for water resources management activities. | 7 ⁷ % | 34% | 34% | This indicator refers to the in-kind and financial contribution by implementing partners. The reported figure is taken from 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 ASPIRED Team will estimate the target during subsequent quarters when the positive impact on the community is visible (Hayanist) |
| 5.2 | Number of key implementation steps taken to improve water management in Ararat Valley | 3 | 0 | 1 ⁸ | This indicator relates to policy, analysis and other activities targeted towards improvement of water data-related activities, including training and pilot projects. The recommendations on the groundwater use fees and other mitigations measures were incorporated into the ASPIRED Report “Achieving Sustainable Groundwater Use in the Ararat Valley: The Role of the Fisheries Sector.” USAID will submit the Report to the GOA during the next quarter, while follow-up policy actions are anticipated on the part of the GOA. |
| 5.3 | Number of private sector firms that have improved management practices or technologies as a result of USG assistance ⁹ | 7 | 1 | 1 | For Q1 of Y2, the new resource management practice will be adopted by the fish farm owner Samvel Lablajyan who participates in the Hayanist project. Due to the installation of the high-capacity pump, owner of the fishery will be able to re-circulate water in the fish ponds thus opting for the semi-closed production process. |
| 5.4 | Number of innovations supported through USG assistance ¹⁰ | 3 | 1 | 1 | Re-use of water from fisheries for irrigation is an innovative approach and has never been practiced in Armenia at the community scale. |

⁷ 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 may think to revise the target indicator.

⁸ The inventory of groundwater wells and springs was completed in September 2016.

⁹ 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.

¹⁰ 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

Inventory: Throughout the last quarter, the data team focused on supporting the HMC in fine-tuning the Final Report on Inventory of Groundwater Wells, Natural Springs and Fish Farms in the Ararat Valley and organization of the official presentation of the inventory data to the stakeholders.

Overall, the inventory covered 2807 wells, 14 groups of natural springs, and 235 fish farms (of which 135 are operational and 100 are non-operational fisheries) which contain 570 wells. The research measured the physical-geographical and the technical parameters of wells and natural springs. In addition to well inventory parameters, the measurements were done on the number of basins, their storage capacity and total surface area, and the actual volumes of wastewater discharge from fisheries. Additionally, the HMC was able to obtain the water use data from the



Field measurements by the HMC team during the inventory work in the Ararat Valley.

fisheries. Access to this water use data ensured the widest possible coverage of the inventory, as well as validity and high quality of the reported data.

The ASPIRED team requested from the Water Resource Management Agency (WRMA) access to the water use permits (WUPs) database for the comparative analysis of the actual water abstraction data

revealed through the inventory with the permitted water use by the fisheries. During subsequent working meetings, the ASPIRED team and WRMA discussed the discrepancies between these two data categories.

The technical assistance to the HMC included revising and editing the Armenian version of the final report, the report's translation into English, statistical analysis of the inventoried wells, springs and fisheries, preparation of the charts and graphs for the report based on this analysis, and provided support in the preparation and rehearsal of the presentations. The ASPIRED team assumed the organizational portion of the event, which was planned to be high-profile given the GOA's attention to the issue of the groundwater use.

On December 16, 2016, the ASPIRED project co-facilitated the presentation on the final report of the inventory results to some 70 participants from the Ministries of Nature Protection (MNP), Agriculture (MoA), Energy Infrastructures and Natural Resources (MoENR), the President's office, representatives of international organizations, non-governmental organizations (NGOs) and academic institutions. The Minister of Nature Protection, Artsvik Minasyan, and USAID Mission Director, Deborah Grieser, provided opening remarks. The HMC staff presented the overall approach and the organization of the field studies, zoning of the area, the main parameters researched, the tools and instruments utilized during field work, and key conclusions derived from the inventory process and analysis of the SWCIS data and the information available in the HMC, WRMA, other agencies and groundwater users. The ASPIRED staff introduced the activities

resulting from the inventory in the period between 2017-2019, such as preparation of the Digital Hydrogeological Map of the Ararat Valley, design of the Ararat Valley groundwater resources database, development and calibration of the Ararat Valley groundwater basin 3-dimensional model in collaboration with the USGS and installation of the automated online system of the actual groundwater use monitoring.

The topic of the groundwater resources is currently among the most disputable environmental issues in Armenia. In particular, many civil sector representatives have criticized the MNP and the WRMA for neglecting the excessive consumption of the groundwater in the Ararat region for years. The MNP representatives conducted an overview of recent regulatory and policy steps undertaken to reverse the situation and assured participants that the issue is currently under the Government's strict control. The discussion focused on the need to reach a rational use of resources by a) imposing stricter control mechanisms and anti-corruption measures and b) identifying a proper balance between country's economic challenges, the needs of the fish breeding sector, and the groundwater resource conservation priorities.

Based on the field measurement data and available materials, the HMC and the ASPIRED team created a comprehensive database which provides baseline data on the groundwater resources in the Ararat Valley for the year of 2016. This database may be used for analytical purposes and may serve as the basis for estimating the allowable volume of the groundwater abstraction from the Ararat Artesian Basin (AAB).

The Final Report is available in the project's web [Library](#). In December 2016, ASPIRED submitted its draft Final Report along with the database to USAID, who plans to formally provide the report and database to the GOA. Based on the GOA's approach, the inventory results will be released to the public through the WRMA's website.

Groundwater Use Monitoring: In 2017, the ASPIRED team plans to begin installation of automated online monitoring systems for the groundwater use in selected fisheries in partnership with the MNP and Coca-Cola Hellenic Armenia. Coca-Cola will participate in the system installation process as part of the Memorandum of Understanding (MOU) on water stewardship, which Coca-Cola signed with USAID in July 2016. The MNP will serve as the key coordinator for linking the ASPIRED Project with the fisheries. The WRMA will assist the ASPIRED team and the Coca-Cola Hellenic Armenia teams with the selection of the fish farms and assurance of access to the premises.

In December 2016, the ASPIRED team drafted procurement documentation for the announcement of a competitive bidding process for the installation and maintenance of flow meters and data loggers, and software for data collection and maintenance on about 20 groundwater wells used by the fish farms. The ASPIRED team shared the draft bidding documentation package with Coca-Cola and the WRMA for their comments and recommendations. The procurement process will begin in February 2017.

SWCIS: Last quarter, the ASPIRED team and the WRMA discussed the issue of the SWCIS upgrade. The working group, consisting of the WRMA and ASPIRED specialists, finalized the Terms of Reference describing the technical features and the data requirements for the SWCIS.

During the reporting period, the ASPIRED team also reviewed the Government Resolution on establishing procedures for maintenance of the State Cadaster on Water Resources. The WRMA prepared the document and must submit the final version to the Ministry of Justice. The final draft

of the document contains input from stakeholder agencies during the regulations drafting process, as well as some of the recommendations made by the ASPIRED technical team during October-November 2016. However, comments provided by the ASPIRED team were only partially included into the final version of the document, such as several provisions on mechanisms of information dissemination through the Cadaster. In addition, the team believes that the frequency of data and information entry in the information system is not sufficient for timely and effective management of water resources. The team sent a letter to the Deputy Minister of Nature Protection with the team's observations on the Draft resolution and further recommendations for its improvement.

Applying remote sensing technologies for data analysis: From November 2016 through December 2016, the ASPIRED team began working with SatAgro Polish Company, the World Bank's project implementer, to develop technical tools for the agricultural sector using satellite imagery and other services of the European Space Agency (ESA).

During meeting between the ASPIRED team and SatAgro Polish Company in November 2016, the World Bank experts expressed interest in collaborating with the ASPIRED Project on the acquisition and processing of high resolution satellite imagery for the Ararat Valley, including part of the valley on Turkish territory.

The World Bank experts also expressed their commitment to provide the Sentinel-2 imagery for the Ararat Valley to the ASPIRED team in an appropriate format for the Project activities, as well as to further collaborate in performing the land cover and land use analysis.

Low Cost and Water Efficiency Technologies

During the reporting period, the ASPIRED team collaborated with the Coca-Cola Hellenic Armenia and the Environmental Research and GIS (ERGIS) NGO to complete the main construction phase of the irrigation system rehabilitation project in Hayanist village. This collaboration involved the following activities:

- Construction of the pumping station, installation of pipes and related control equipment, as well as training of the pumping station operator in exploitation of the pump and safety measures.
- Construction of the water main, as well as individual connections.
- Backfilling, compaction and removal of construction debris.
- Installation of valve-boxes at end-users' connections.



The mayor of Hayanist Balabek Sarkisyan took personal responsibility for the timely completion of the trench works.

The ASPIRED team also prepared supporting documentation to establish relations between the community and the fish farm on formal footing. In December 2016, the community mayor and the owner of the fish farm signed the contract on the exploitation of the pumping station located in the fishery. Additionally, the village and the land owners signed the contract for the provision of

irrigation services. The local council adopted the decision on the method of calculation of irrigation water rates, based on which farmers would be charged for the used irrigation water.

During Spring 2017, the fish farmers will participate in a training exercise facilitated by ERGIS NGO on crop cultivation, selection of high-value crops and irrigation practices. ERGIS NGO will also train participants on the use of safe fertilizers in farming.

During the reporting period, the ASPIRED team worked on the preparation of the Aquaculture Technology Transfer Center (ATTC) concept paper, which was shared with the fish farmer for comments. Additionally, the ASPIRED team subcontracted a private-sector entrepreneur, Karen Aghababyan, to provide technical feedback on the feasibility of technologies proposed in the ATTC concept. USAID proposed that the ASPIRED team also shares the concept paper with other organizations and academic institutions involved in aquaponics and ichthyologic studies in order to gain expert opinions and, if possible, ensure wider involvement of the stakeholders in the project. The ASPIRED team plans to finalize the concept papers along with the environmental documentation for USAID submission during the next reporting period.

Water Regulation and Enforcement

A major achievement under the Water Regulation and Enforcement task was the ASPIRED team's completion and USAID submission of the Report "Achieving Sustainable Groundwater Use in the Ararat Valley: the Role of the Fisheries Sector" in December 2016. The report provides a comprehensive analysis of the groundwater use in the Ararat Valley, including an economic analysis of the aquaculture sector, the level of water abstraction by fisheries and its negative implications in terms of water availability in the region. The report also includes survey results from the affected communities and Water User Associations (WUAs) of the Ararat and Armavir regions – which are suffering from irrigation and drinking water shortage – and data from the Armenian Nuclear Power Plant on the water needs. The last section of the report provides policy, administrative and economic recommendations for bringing the groundwater consumption to sustainable levels. Recommended measures include introduction of the increasing block pricing structure in three scenarios, strengthening of the compliance monitoring of the water user permits conditions, encouraging a more sound use of groundwater resources by means of modern water saving technologies, and liquidation of abandoned wells.

Furthermore, the ASPIRED team collaborated with International Environmental Economist Benoit Laplante and Economist David Manukyan to host a series of preliminary consultations with the government officials from the MNP, MoA, and the Ministry of Economic Development and Investments before the high-level policy meeting. The purpose of these preliminary consultations was to explain the three-block scheme scenarios and other recommendations within the report to relevant decision-makers. During these consultations, the ASPIRED team provided the report to meeting attendees for their review and feedback.



Right to left: ASPIRED Project COR Marina Vardanyan, USAID Mission Director Deborah Grieser, the Minister, Head of Staff Davit Harutyunyan, the Deputy-Minister of Nature Protection Khachik Hakobyan

On November 9, 2016, the ASPIRED team organized a high-level policy meeting with decision makers to discuss the current situation, issues and prospects of the groundwater resource conservation of the Ararat Valley. About 70 participants attended the event, including USAID Mission Director Deborah Grieser, Minister-Chief of Staff Davit Harutyunyan, Deputy-Ministers of Nature Protection, Agriculture, Energy Infrastructures and Natural Resources, and other decision-makers, public and private sector representatives. The ASPIRED team, composed of international and local experts, presented various sections of the report to the stakeholders. There was a heated discussion on the part of the fish farming industry representatives on the issue of the water resource use fee increase and its negative impact on the industry. The arguments from the GOA representatives and the ASPIRED experts advocated for the rational use of the groundwater in the region and the balanced approach to the business needs and the artesian basin conservation issue.

Within the report, the analysis provided a basis for subsequent follow-up actions by the GOA which realizes the importance of the protection of the groundwater resources and is committed to taking serious actions. The meeting was facilitated at the suggestion of Chief Advisor to the President Aram Gharibyan to discuss the details of the report, including the block scheme scenarios and the application of water saving technologies. Mr. Gharibyan was instrumental in providing useful comments on the block scheme scenarios, which the ASPIRED team took into consideration while finalizing the report for USAID submission.

The high-level policy meeting and the assignment of David Harutyunyan to Minister-Chief of Staff augmented the level of Armenian Government interest in and commitment to issues in the Ararat Valley. Following the request of Deputy Minister of MNP, Khachik Hakobyan, the ASPIRED team assisted the MNP in preparing the presentation and full coverage of the issue to the Prime-Minister of Armenia.

Pending USAID final approval, the final report will be presented to Government during the next reporting period.

On December 23, 2016, following the request of Ignati Arakelyan, the Armenian Minister of Agriculture, the ASPIRED team facilitated a presentation of the project at the MoA. The Deputy Director of USAID Economic Growth Office (EGO), ASPIRED Project Contracting Officer's Representative (COR) and ASPIRED team members were present at the meeting. The presentations and discussion focused specifically on the fisheries sector, particularly on the resource fee calculation scenarios recommended by the ASPIRED team, as well as water and energy saving projects to be implemented in the fisheries. The Minister of Agriculture expressed interest in promoting innovative technologies in fisheries that would allow for sustainable use of water. The Minister asked whether the ASPIRED team would be able to prepare calculations for the financial model of the fish breeding in the Ararat Valley, as these calculations would be a useful tool for MoA to identify mechanisms for subsidizing introduction of the modern technologies in fisheries by the GOA. The ASPIRED project will provide the calculations to the Minister of Agriculture next quarter.

Donor Coordination and Communications

During the reporting period, the ASPIRED communications team collaborated with the partners of the Coca-Cola HBC and ERGIS to facilitate the implementation of the irrigation project in Hayanist.

A number of joint visits were made with Coca-Cola to the project site to collect promotional materials for future dissemination and use during the opening event. The teams attended the signing of the agreement between the fish farm owner and the mayor of Hayanist on the joint use of the pumping station, as well as discussed the project benefits with the mayor of Hayanist and farmers.

In December 2016, Coca-Cola HBC nominated the joint project in Hayanist for the 2016 Best Public and Regulatory Initiative Award. The ASPIRED team helped the Coca-Cola team to fill in the application, which was provided to USAID for review before submission.

Furthermore, the ASPIRED team subcontracted a specialized company to produce and release a short video about the project in Hayanist. The video will be showcased during a presentation for the USAID partners meeting. The ASPIRED team, together with the sub-contractor, prepared the script and shooting plan before capturing footage of the project in December 2016. The ASPIRED and Coca-Cola teams exchanged collected video materials. The draft film was provided by the sub-contractor to the ASPIRED for review in late-December 2016. The comments of the team will be taken into account in the final version of the film, which will be prepared by late-January 2017.

Other activities under the communications task include:

- Preparation of the project-related information, news stories and project highlights
- Update of the project [website](#) and [Facebook pages](#) with project news and photos
- Supporting the November 2016 high-level policy meeting and the presentation of the inventory results. The reports executive summaries regarding the fisheries sector were formatted for consistency and compliance with USAID branding and marking requirements, and the Executive Summary was designed in-house for printing. Both reports were posted in the [Library](#) section of the project web page.
- Media monitoring for the media coverage¹¹ on the events.

4. General Administrative Issues

In addition to financial reporting and accounting, ASPIRED made modifications to the project budget based on changes to the project's scope of work (SOW) and the project's 18-month extension.. The ASPIRED team will finalize the draft budget modification for USAID submission next quarter.

During the reporting period, subcontract agreements were signed for the following tasks:

- Trench work in Hayanist village with ST Services
- Provision of consultancy services during the preparation of the ATTC project concept by Karen Aghababyan
- Production of the video on Hayanist project – E-motion studio

The ASPIRED team revised the project's Performance Management Plan (PMP) based on the new Indicator Master List of USAID. The updated PMP includes applicable new indicators and modified descriptions of some existing indicators under the PMP to make them consistent with the new

¹¹ <http://ecolur.org/hy/news/sos/overexploitation-of-groundwater-resources-in-ararat-valley-continuing/8672/>
<http://www.a1plus.am/1500400.html>; <http://www.mnp.am/?aid=5706>
http://www.shanttv.com/en/news/political/2016_12_16/19270/ - starting from 34:43 min

USAID's Master List of Indicators. In November 2016, the ASPIRED team submitted the updated PMP to COR for approval.

Starting from December 2016, the ASPIRED team hosted a volunteer of the Armenian Volunteer Corps who will support the pilot technologies component. The second volunteer will join the ASPIRED Project in January 2017.

5. Environmental Compliance

The Project Environmental Specialist reviewed the draft concept on the establishment of an Aquaculture Technology Transfer Center in the Ararat Valley. She will visit the site in January 2017 to observe the environmental conditions as part of the environmental review process and recommend the mitigation measures for likely adverse impacts of the project during the initial stages of the project design.

Additionally, the ASPIRED team modified the environmental documentation and the Environmental Mitigation and Monitoring Plan (EMMP) for the Hayanist project. Since the irrigation pipelines were crossing the community road during installation, the ASPIRED team included the potential environmental impact and mitigation measures into the project package.

6. Planned Activities for the Next Quarter

6.1 Data

- Official USAID submission of the Final Report and database on inventory of groundwater wells, fish farms and natural springs in the Ararat Valley to the GOA.
- Development of the GIS layers for the Ararat Valley, using datasets available to the ASPIRED Project and new datasets provided by the stakeholder agencies. This process includes geo-referencing and digitizing paper maps on geology and hydrogeology of the Ararat Valley that were provided by the Hydrogeological Fund of the MoENR and using inventory data.
- Preparation of the technical approach for land cover-use classification using high resolution satellite images, including methodology and timeline.
- Needs assessment of the key stakeholder organizations on the decision support tools for the Ararat Valley, including calibration of the Decision Support System (DSS) developed with the framework of the Clean Energy and Water Program (CEWP) in 2015 for the river basins of the Ararat Valley catchment area, and groundwater model (using the USGS' MODFLOW software).
- Cooperation with the USGS team on preparing the hydrogeological framework of the Ararat Valley and linking it with the DSS for the Ararat Valley water resources.

6.2 Pilot technologies

- Submission of the finalized ATTC Project Concept to the USAID;

- Planning and organization of Pesticide Awareness Training in Hayanist;
- Preparation of the engineering design of the ATTC Project facilities.

6.3. Legal and Policy Issues

- Follow-up with the MNP for improving the new governmental resolution on the State Water Cadaster procedure.
- Recruitment of the local Legal Expert.
- Needs assessment of GOA agencies for a capacity building program for improved groundwater management, including the groundwater use monitoring, application of advanced analytical tools to support decisions.
- Follow-up activities after the submission of the “Report on Achieving Sustainable Groundwater Use in the Ararat Valley: The Role of the Fisheries Sector”, including:
 - Meetings with GOA agencies regarding their feedback on the report recommendations;
 - Possible assistance in drafting legal amendments by request of the GoA, based on the recommendations of the report.

6.4 Performance Management, Communication and Donor Coordination

- Plan and implement communications and outreach activities to highlight the project partnership with Coca-Cola HBC;
- Plan and initiate Ideathon event, as well as meet with potential event partners;
- Support other project teams in project-related events and prepare necessary information;
- Provide project news and updates on the project, as well as manage the ASPIRED website and Facebook pages;
- Follow-up on the PMP updates and prepare weekly highlights, monthly reports and quarterly reports.

6.5 Environmental Compliance

- Finalize the environmental documentation for the ATTC project concept in January 2017, based on information updates in the concept and site observations.
- Deliver farmer training on use of pesticides and fertilizers in Hayanist community in February – March 2017. ASPIRED will conduct the training in accordance with the Armenia Agricultural Sector Pesticide Evaluation Report and Safe Use Action Plan (PERSUAP), prepared by the USAID Enterprise Development and Market Competitiveness Project (2014). It will include a presentation featuring a list of registered in Armenia pesticides, as well as the benefits of using high quality pesticides and the consequences of using cheap and unregistered pesticides. Information on genetically modified organisms (GMO) will also be included during training with a purpose of increasing farmers’ awareness on the GMO’s,

selection of the seeds, etc.

- Following completion of the Hayanist project activities, prepare the Record of Compliance with the activity-specific EMMP, as required under the TO.

6.6 Project Management

- Overall project administration in line with the approved work plan, project progress tracking and solutions to any issues
- Budget management and administration of tenders for the ATTC project (once approved)
- Hiring of short-term technical assistance (STTA) specialists for the project and contractual procedures.