ACTIVITY-SPECIFIC INITIAL ENVIRONMENTAL EXAMINATION  
SILTATION OF AL WAHDA DAM ACTIVITY  
UNDER THE ENGINEERING SURGE SUPPORT TASK ORDER  

PROGRAM/ACTIVITY DATA:  
Program: E3/E&I Engineering Surge Support Task Order  
Activity: Siltation of Wahda Dam  
Project Country: Morocco  
Time Period: March 2020 through April 2021  
Budget: $1,384,000  
Prepared by: Sonia Massis, METS  
Date: January 28, 2020  
IEE/RCE Amendment (Y/N): Yes, IEE number: E3-16-29, July 24, 2016  

ENVIRONMENTAL ACTION RECOMMENDED: (Place X where applicable)  
Categorical Exclusion: X  Negative Determination: X  
Positive Determination:  
Deferral:  

ADDITIONAL ELEMENTS: (Place X where applicable)  
CONDITIONS: X  PVO/NGO:  

BACKGROUND  
USAID's Environmental Compliance Procedures (22 CFR 216) apply to all USAID programs, projects, and activities. As required by these procedures, the potential for environmental, human, and social impacts must be carefully evaluated during project planning, and practical environmental protection and mitigation strategies must be identified. Successful inclusion of environmentally sound design and management criteria in program implementation plans and budgets benefits communities by avoiding environmental failures that would otherwise be damaging to community lives and livelihoods.  

The Engineering Support Task Order is a 5-year, $13.3 million Task Order issued under the Global Architect and Engineering II Indefinite Delivery/Indefinite Quantity contract (IDIQ) contract (A&E II IDIQ) to complement the capacity of E3/E&I to provide engineering technical support for USAID Washington, field Missions, and other operating units for short-term assignments in support of USAID’s infrastructure, engineering, and construction portfolio. Engineering support activities include, but are not
limited to project design, implementation, and evaluation. Some activities could potentially be first response engineering services in a post-disaster or post-conflict environment. The Engineering Support Task Order is implemented by Perez, A Professional Corporation.

The Middle East Regional Bureau (MER) is buying into the Engineering Surge Support Task Order to address a water security problem that is affecting the sustainability of a primary source of water in Morocco. The MER funded activity, titled “Siltation of Al Wahda Dam” will assess the siltation phenomenon affecting Al Wahda Dam, analyze the root cause of this phenomenon, and identify potential engineering and biological solutions to address it.

An Initial Environmental Examination for the Engineering Support Task Order (TO-IEE) was approved in July 2016. The TO-IEE, E3-16-29, evaluated the potential impacts of the Task Order potential activities and determined that a Negative Determination with Conditions is appropriate for certain activities, while a Categorical Exclusion (CE) is appropriate for the other activities. Activities falling under the Negative Determination with Conditions must be implemented in accordance with a pre-specified set of conditions.

Pursuant to the requirements set forth in TO-IEE, and in compliance with the requirements of 22 CFR 216, this Activity-Specific Initial Environmental Examination is prepared for the new Activity planned under this Task Order; Siltation of Al Wahda.

**PLANNED INTERVENTIONS:**

Water security is a major challenge for the development and stability of the MENA region. In this world’s most water-scarce and dry region, increasing consumption, over-abstraction, climate change, and under-investment in wastewater treatment are driving further depletion and contamination of scarce water resources. One half of the MENA population lives under conditions of water stress, with the expectations that population and migration associated with conflict are expected to further exacerbate the situation.

Furthermore, in certain MENA countries which highly depend on surface water, such as Morocco, the siltation phenomenon is further aggravating the water scarcity by causing a loss of approximately ten percent of total storage capacity. It is estimated that over 1,740 million cubic meter of the storage capacity in Morocco has already been lost by sediment build-up.

To address the siltation phenomenon affecting water security in Morocco, the Middle East Regional Bureau in consultation with the Field Mission and E3/W identified a need to analyze this problem and identify engineering solutions to address it, starting with Al Wahda Dam catchment area.

Al Wahda Dam, Morocco’s largest dam and one of its primary sources of water, was built in 1996 with a storage capacity of 3,800 million cubic meters. Al Wahda Dam provides water for irrigating over 100,000 hectares in the Gharb plain and the lower Ouergha valley; supplies 600 million cubic meters of domestic water; and generates 400 million kWh of electrical power per year. Yet, the combination of silt buildup and climate change is threatening the long-term sustainability of this dam. With the annual silting rate amounting to 14.3 million cubic meters per year, Al Wahda Dam has already lost approximately 6% of its storage capacity.
To identify effective biological interventions (e.g. revegetation, riparian restoration, etc.) and engineering solutions to protect and ensure the quantity, quality, and sustainable supply of Al Wahda Dam, the Architectural and Engineering Firm, Perez, will have to undertake the following three main interventions (sub-activities):

Sub-activity 1: Assessment of Al Wahda Dam catchment area;
Sub-activity 2: Analysis of the root cause of the siltation phenomenon of Al Wahda Dam; and
Sub-activity 3: Identification of cost-effective biological interventions and engineering solutions to the siltation phenomenon of Al Wahda Dam.

**Sub-Activity 1** will require, inter-alia, meeting with the stakeholders and dam operators to understand and quantify the magnitude of the problem; conducting on-site evaluation of the upstream area to assess land characteristics, topography, land use and vegetation, and rainfall patterns; reviewing the monitoring surveys of Al Wahda Dam, as well as collecting data on the sediment loads and dams construction specifications.

While conducting **Sub Activity No. 2**, Perez will use the collected data and field visits to identify the root cause of the siltation phenomenon. The results of the data verification and root cause analysis shall be summarized in an “Assessment Report”.

During **Sub Activity No. 3**, Perez will identify cost effective potential biological interventions and engineering solutions to the siltation phenomenon of Al Wahda Dam. The identified interventions and solutions shall offer cost effective options for the site-specific conditions, topography and flows, sediment type, and environmental requirements. During this activity Perez will develop cost estimates for restoration and/or construction and operation and maintenance.

If more than one solution is identified, Perez will rank the solutions in priority order in terms of effectiveness, biological intervention and construction costs, operation and maintenance cost, and social and environmental factors.

**ENVIRONMENTAL ANALYSIS**

USAID Environmental Procedures (22 CFR 216) and the TO-IEE require preparation of this Activity Specific IEE. All potential activities of the project have been assessed for potential environmental impacts in compliance with 22 CFR 216. **Table 1** below lists the three main sub-activities anticipated under Siltation of Al Wahda Dam Activity and their recommended threshold decisions.

**Table 1: Project activities and recommended threshold decisions**

<table>
<thead>
<tr>
<th>Project Sub Activity Number and Description</th>
<th>Effect on Natural or Physical Environment</th>
<th>Determination and Reg. 216 actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: Assessment of Al Wahda Dam catchment area</td>
<td>No significant effects</td>
<td>§216.2(c)(2)(iii) Analyses, studies, academic or research workshops and meetings</td>
</tr>
<tr>
<td>2: Analysis of the root cause of the siltation phenomenon of Al Wahda Dam</td>
<td>No significant effects §216.2(c)(2)(iii) Analyses, studies, academic or research workshops and meetings</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>3: Identification of cost-effective biological interventions and engineering solutions.</td>
<td>Potential interventions may result in adverse impacts on the environment</td>
<td><strong>Negative Determination with Conditions</strong> as listed below:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Perez will ensure that services are provided by qualified and licensed/registered individuals.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Perez will ensure that the identified biological interventions and engineering solutions reflect environmentally sound design and help to avoid and/or mitigate the adverse impact of the siltation phenomenon on both the social fabric and the environment.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. When developing the cost estimates for restoration and/or construction and operation and maintenance, Perez will ensure that social and environmental measures are accounted for.</td>
</tr>
</tbody>
</table>

**DISCUSSION**

Sub activity 1 and 2 fall under 22 CFR 216.2(c)(2)(iii) Analyses, studies, academic or research workshops and meetings. Sub activity 3 which will propose interventions to mitigate siltation, which if/when undertaken may involve construction and impact the environment and as such falls under a Negative Determination.

**Recommended Action:** Sub activity 1 and 2 are recommended for a Categorical Exclusion. Sub activity 3 is recommended for a Negative Determination with conditions as stated in Table 1:

1. Perez will ensure that services are provided by qualified and licensed/registered individuals.
2. Perez will ensure that the identified biological interventions and engineering solutions reflect environmentally sound design and help to avoid and/or mitigate the adverse impact of the siltation phenomenon on both the social fabric and the environment.
3. When developing the cost estimates for restoration and/or construction and operation and maintenance, Perez will ensure that social and environmental measures are accounted for.

**CLIMATE RISK MANAGEMENT:**

As per ADS 201 "Climate Risk Management for USAID Projects and Activities" USAID shall factor climate resilience into international development programs and investments. This activity directly contributes to this goal and provides technical assistance to mitigate the impact of climate change in a country that is expected to have worsening climate conditions. The main climate risk to this activity is the
changing precipitation patterns, increasing temperature, droughts, and floods and their associated risk of limited supply of water for food and health.

This activity will address and help mitigate these risks by identifying effective engineering solutions to the siltation phenomenon which will, in turn improve climate resilience in Northern Morocco, in particular and across Morocco, in general, and promote water security. The climate risk rating for sub-activity 1 and 2 is considered LOW. For sub-activity 3 the climate risk is considered HIGH, but has been accepted as USAID assistance under this activity is making recommendations for potential interventions taking into account potential climate risks to the recommended intervention(s). The climate risk screening is attached in Annex A.

APPROVAL OF THE RECOMMENDED ENVIRONMENTAL ACTIONS- SILTATION OF AL WAHDA DAM

CLEARANCES:

Jeffrey Ploetz
ME Climate Integration Lead: draft Date: 1/30/2020

Bryan Pittman
Surge Support TO COR draft Date: 1/31/2020

Carol Wilson
ME/TS/Office Director email Date: 1/31/2020

APPROVAL:

Andy Plitt
ME/DAA Date: 2/6/2020

CONCURRENCE:

John Wilson
ME Bureau Environmental Officer Date: 2/6/2020

Teresa Bernhard
E3 Bureau Environmental Officer Date: 2/6/2020
Annex A: Climate Risk Screening

Climate Risk Screening: Siltation of Al Wahda Dam Activity implemented under the Engineering Surge Support Task Order. The Middle East Regional Bureau seeks to address a water security problem that is affecting the sustainability of Al Wahda Dam, the largest dam in Morocco and one of its primary sources of water. The MER-funded activity, titled "Siltation of Al Wahda Dam" will assess the siltation phenomenon affecting Al Wahda Dam, analyze the root cause of this problem and identify potential engineering solution(s) to address it.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Timeframe</th>
<th>Geography</th>
<th>Climate Risks</th>
<th>Adaptive Capacity</th>
<th>Climate Risk Rating</th>
<th>Opportunities</th>
<th>Climate Risk Management Options</th>
<th>How Climate Risks Are Addressed in the Project</th>
<th>Next Steps for Activity Design</th>
<th>Accepted Climate Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Assesssment of Al Wahda Dam catchment area,</td>
<td>5 years</td>
<td>Fès-Meknès (Fes) region in Morocco</td>
<td>Morocco suffers from severe water scarcity as a result of population growth, very high reliance on irrigated agriculture, urbanization, and climate change. Over the past few years, Morocco has witnessed severe climate change in the form of declining precipitation, higher temperatures, floods, and droughts. The expected worsening climate change and Morocco’s high dependence on surface water (60% of its water is surface water) make it very sensitive to any degradation in the existing dams’ capacity to store the water. A major phenomenon that is adversely affecting water security in Morocco is the siltation phenomenon, the primary source of which this activity seeks to identify. Climate change is likely strongly linked to increased levels of siltation given that prolonged droughts and increased flooding can impact soil stability resulting in an increase in prevalence of siltation. While climate risk relevant to the specific USAID investment is low, the risk to the area of study area is high.</td>
<td>Low</td>
<td>Low</td>
<td>This activity will support the Government of Morocco to sustain the supply of water for domestic and agricultural purposes by protecting a primary source of water for further degradation in quality and quality. This activity mitigates climate risks identified in this table, and helps maintain the capacity of the Morocco to absorb floods and droughts as they hit in Fès-Meknès (Fes) region in particular, and the entire country, in general, as the results of these assessment could be applicable to several other major dams across Morocco. Identifying effective feasible biological and engineering solutions to the siltation phenomenon will improve climate resilience in Northern Morocco, in particular and across Morocco, in general. Each of the three sub activities under this Activity will improve the country’s capacity to mitigate the devastating impacts of reduced precipitation, floods, and droughts as follows: (1) Assessing of the catchment will allow a better understanding of the magnitude of the problem and its short and long term impacts on water security in particular, and on the ecosystem of the Al Wahda Dam catchment area. (2) Analyzing the root cause of the siltation phenomenon is the first step toward mitigating, and possibly, avoiding it. This analysis will support the identification of effective solutions that improve water security while safeguarding the ecosystem from the climate change’s adverse impacts. (3) Identifying efficient engineering solutions to this phenomenon will promote water security, support the sustainable supply of water for food and for health, boost the capacity of the country to absorb the impacts of climate change, and safeguard the environment from the adverse impacts of climate change.</td>
<td>n/a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Analysis of the root cause of the siltation phenomenon of Al Wahda Dam</td>
<td>5 years</td>
<td>Fès-Meknès (Fes) region in Morocco</td>
<td>Climate change impacts across the basin have the potential to impact the effectiveness of the selected intervention/solutions. As such the potential climate risks must be considered as part of the recommendations.</td>
<td>Low</td>
<td>Low</td>
<td>n/a</td>
<td>n/a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) Identification of cost effective biological interventions and engineering solutions.</td>
<td>10-25 years</td>
<td>Fès-Meknès (Fes) region in Morocco</td>
<td>n/a</td>
<td>n/a</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>