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October 8, 2020

Sonia Iszler  
City of Marco Island Water and Sewer Department  
Project Manager/ Regulatory Compliance Coordinator  
50 Bald Eagle Dr.  
Marco Island, FL 34145

Subject: America's Waters Infrastructure Act (AWIA) Assessment Proposal

Dear Ms. Iszler:

As you are aware, a new federal legislative requirement to America's Water Infrastructure Act of 2018 (AWIA) was signed into law on October 23, 2018 (Act). This new Act is more broad than other assessments related to risks and resilience, and specifically calls out the risks of "natural hazards" that have not been assessed by all utilities in the past under previously required vulnerability assessments. Per your request, CDM Smith is pleased to provide the attached scope and fee proposal to provide services to the City of Marco Island (City) for implementation of the City's AWIA Assessment and development of its Emergency Response Plan (ERP) as required by the Act.

Based on the size of the City's water service system, the City's must complete the AWIA Assessment by June 20, 2021 and the ERP within six months of completion of the Assessment. CDM Smith's schedule (included in the proposal) will have AWIA Assessment completed within 17 weeks of notice to proceed and the ERP completed within 12 weeks of the completion of the Assessment. This schedule, which includes City review time, will allow the City to complete the required work in advance of the regulatory deadlines.

Please review the proposal at your convenience and let me know if you have any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "JAS", written over a light blue horizontal line.

Jason A. Sciandra, P.E.  
Principal  
CDM Smith Inc.

cc: Marc Stonehouse, P.E. - CDM Smith



# Marco Island America's Waters Infrastructure Act (AWIA) Assessment

## Introduction

A new federal legislative requirement to America's Water Infrastructure Act of 2018 (AWIA) was signed into law on October 23, 2018 (Act). This new Act is broader than other assessments related to risks and resilience, and specifically calls out the risks of "natural hazards" that have not been assessed by all utilities in the past under previously required vulnerability assessments. The AWIA encompasses:

- Pipes and constructed conveyances, physical barriers, source water, water collection and intake, pretreatment, treatment, storage and distribution facilities, electronic, computer, or other automated systems;
- Monitoring practices;
- Financial infrastructure (such as billing mechanisms);
- Use, storage or handling of chemicals;
- Operation and maintenance; and
- May include capital and operational needs for risk management (optional)

As part of the AWIA, the following must be performed:

- Conduct risk assessments for assets listed above for malevolent acts and natural hazards
- Determine the System's resilience to those hazards
- Prepare an Emergency Response Plan (ERP)

The United States Environmental Protection Agency (EPA) has prepared the guidance document "Baseline Information on Malevolent Acts for Community Water Systems" guidance document from EPA (July 2019) which identifies the following malevolent acts that are recommended to be evaluated as part of this project. They have not provided guidance on natural hazards – instead recommend that the utility identify these threats themselves. CDM Smith recommends using a local, state, or regional natural hazard mitigation plan for guidance. Threats for evaluation may include:

Malevolent Acts (recommended by EPA)	Natural Hazards (examples)
<ul style="list-style-type: none"> <li>▪ Assault on Utility</li> <li>▪ Contamination <ul style="list-style-type: none"> <li>▪ Finished Water</li> <li>▪ Source Water</li> </ul> </li> <li>▪ Cyber Attack <ul style="list-style-type: none"> <li>▪ Business Enterprise Systems</li> <li>▪ Process Control Systems</li> </ul> </li> <li>▪ Sabotage</li> <li>▪ Theft or Diversion</li> </ul>	<ul style="list-style-type: none"> <li>▪ Pandemic</li> <li>▪ Drought</li> <li>▪ Extreme temperatures</li> <li>▪ Flooding</li> <li>▪ Wind events <ul style="list-style-type: none"> <li>▪ Sustained wind (tropical cyclones)</li> <li>▪ Thunderstorm winds/Lightning/Hail</li> <li>▪ Tornado</li> </ul> </li> <li>▪ Wildfire</li> </ul>

CDM Smith Inc. (CDM Smith) proposes the following approach to perform the Risk and Resilience Assessment (RRA) and Emergency Response Plan (ERP), along with associated tasks to facilitate compliance with AWIA requirement. These will be conducted in accordance with American Water Works Association (AWWA) – specifically the “Risk and Resilience Management of Water and Wastewater Systems” (ANSI/AWWA J100-10 (R13)) and the “Emergency Preparedness Practices” (ANSI/AWWA G440-17) for guidance.

The overall goal of the project is to build upon prior vulnerability and risk assessments performed by Marco Island Utilities and conduct a current assessment of the utility’s existing assets and business processes to determine risks associated with malevolent acts and natural hazards, in order to comply with the AWIA. After identification of risks, an assessment of the utility’s resilience of the operational and business needs will then be conducted.

Previous work completed by the utility that will be built upon are:

- Vulnerability Assessment Final Report, 2010
- Marco Island Emergency Response Plan, 2014

## Scope of Service

CDM Smith will perform the following scope of services for the utility to comply with the requirements of this Act.

### Task 1: Project Kickoff, Data Gathering, Review Existing Materials

CDM Smith will facilitate a kick-off meeting to be held via conference call with representatives of the utility to confirm project goals and key stakeholders for the project.

CDM Smith will request existing information to be provided by the utility at the start of the project, such as:

- GIS/asset management program for applicable assets
- Locations and facility descriptions of assets
- As-built drawings of following critical facilities

- Water Treatment Plant 1 (WTP1)
- Water Treatment Plant 2 (WTP2)
- Water Treatment Plant 3 (WTP3)
- Raw Water Lake and Aquifer Storage Recovery Site (RW1 and ASR Site)
- Wellfield (RW2)
- Critical Mains and Aerial Crossings (RW1, MAIN, AC1, AC2, AC3 and AC4)
- Administrative Buildings (ADMIN)
- Interconnect (IC1)
- SCADA
- Remote Hydrants and Selected Master Meters
- After-action reports
- Local hazard mitigation plans
- Previously prepared vulnerability or risk assessments
- Previously prepared Emergency Response Plans (ERP) and associated appendices.

CDM Smith will perform an initial review of the documents provided by the utility and summarize additional data requests as needed throughout the project. CDM Smith will use EPA and AWWA guidance and AWIA experience to inform additional data that could be useful for this project. The data review will be documented by CDM Smith to summarize the contents, which will streamline efforts for Tasks 2-3.

## **Task 2: Stakeholder Workshops and Development of the Threat-Asset Matrix**

The main focus of this task is a one-day stakeholder workshop. The goal of the workshop is to engage leaders and decision-makers at the utility in the AWIA requirements. At the workshop CDM Smith will facilitate the discussion to allow the team to identify the vulnerabilities, consequences, and possible solutions from the top threats on the utility's critical assets. This will result in important information for the Risk and Resilience Assessment, to make the results useful and beyond a desktop exercise. It is also intended to gain buy-in from the utility's leaders and decision-makers on the work, to ultimately reduce risk and improve resilience at the utility.

In preparation for the workshop, CDM Smith will conduct an initial threat characterization and create a "threat-asset pair" matrix which identifies threats to the water system from a comprehensive list of malevolent acts and natural hazards that may impact critical assets. CDM Smith will split the utility's critical assets into broad categories (i.e. water production, water distribution, information technology, SCADA systems, finance and accounting) as necessary to move the discussion forward. These assets will be evaluated into "threat-asset pairs" based on the types

of malevolent acts or natural hazards (threats) that may impact the asset. Malevolent acts will be determined based on the “Baseline Information on Malevolent Acts for Community Water Systems” guidance document from EPA (July 2019). Natural hazards will be determined based on a state, regional, or local natural hazard mitigation plan. This draft Threat-Asset Matrix will serve as a discussion point at the stakeholder workshop and the final will be the basis for Task 3. During the initial asset characterization stage, the following will be performed:

- Identification and evaluation of critical assets, mission-critical functions, and supporting infrastructure and evaluation if there have been changes to the system that warrant an update to the critical asset list.
- Identification of the critical internal and external supporting infrastructure which will likely include the following: Operations & Maintenance, Monitoring Practices, and Financial Infrastructure.

The stakeholder workshop will be used to gather institutional knowledge about hazards, risks, and resilience from utility stakeholders by:

- Understanding connections between ongoing issues and challenges, hazards, and current plans or actions
- Identifying vulnerabilities to inform the risk and resilience profiles for the threat-asset pairs
- Developing and prioritizing actions to improve resilience that inform the Emergency Response Plan

The workshop is anticipated to take place immediately after the initial threat-asset matrix is completed.

The deliverables for this task will be:

1. Initial threat characterization in the form of a threat-asset matrix, prior to the workshop.
2. Preparation for and facilitation of the Stakeholder workshop. This will include an agenda, PowerPoint slides, handouts, and other materials needed for a successful workshop.

### **Task 3: Risk and Resilience Assessment**

After completion of Task 2, CDM Smith will conduct the Risk and Resilience Assessment. CDM Smith developed a Microsoft Excel Tool which follows the J100 guidance and incorporates EPA AWIA resources for AWIA projects (RRA Tool). The RRA Tool will be delivered to the client at the end of the project, for use for future RRA requirements.

The specific tasks to conduct the assessment are as follows:

1. Finalize the threat-asset pairs based on the utility’s priorities and the findings of Tasks 2 to identify, rank, and record critical assets. The goal of this is to determine the critical and high-consequence assets and the high threat-likelihoods. CDM Smith will use input from the workshop (conducted as part of Task 2) and data review (conducted as part of Task 1) to check that medium-consequence or likelihood threat-asset pairs are also included,

as appropriate. The high-criticality threat-asset pairs will move on to the Consequence Analysis, Vulnerability Assessment, and Threat Analysis stages described below.

2. In order to conduct the Consequence, Vulnerability, and Threat Calculations for high-priority threat-asset pairs, the following will be performed:
  - Consequence Analysis: Develop and refine consequence metrics or criteria (i.e. replacement costs, casualties, loss of revenue). The RAMCAP (Risk Analysis and Management for Critical Asset Protection) methodology is used to define ranges of consequence and analyze based on the consequence metrics for each threat-asset following the RAMCAP process and are measured in dollars.
  - Vulnerability Assessment: For each critical threat-asset pair the vulnerability is determined by estimating the likelihood of a threat occurrence. The output of a vulnerability analysis is to determine the likelihood of success of the malevolent actor for each specified attack scenario on each threat-asset pair, given that the attack is carried out. The parallel concept for natural hazards is the likelihood that the hazard will produce the consequences already estimated, given that the hazard occurs. This is expressed in a numerical value from zero (the threat is unlikely to occur and produce the consequence) to one (the threat is very likely to occur and produce the consequence). Vulnerability considers advanced preparation, immediate response, and long-term recovery ability.
  - Threat Likelihood Analysis: Conduct the threat analysis to estimate the likelihood or frequency of malevolent threats and the probability of natural hazards. This is expressed in a numerical value from nearly zero (the threat is unlikely to occur) to one (the threat is certain to occur). The EPA has provided guidance on these values for malevolent acts; natural hazard likelihood will be informed by available resources from natural hazard mitigation plans, FEMA flood maps, or other sources as needed.
3. The Risk and Resilience Analysis includes:
  - Calculation risk for each threat-asset pair as the product of the results from Consequence Analysis, Vulnerability Analysis, and Threat Analysis, using the following equation:  
$$\text{Risk} = \text{Consequences} \times \text{Vulnerability} \times \text{Threat Likelihood} (R = C \times V \times T)$$
  - Create the Utility Resilience Index (URI) as outlined in J100 as:
    - Operational – These indicators reflect the tactical capacity of the utility to react quickly and/or cope with various incidents that have the potential to disrupt services.
    - Financial – These indicators reflect the fiscal capacity of the utility and supporting community to react quickly and/or cope with various incidents that have the potential to disrupt revenue.

Each of these indicators are numerical values from zero (not resilient) to one (highly resilient) designed to reflect the resilience of the utility as a whole. They help to further focus the utility toward areas that need further attention to reduce risk and improve

resilience. This will be presented in easy-to-understand dashboards as it applies to each critical asset.

***Note: the completion of steps 1-3 is for certifying compliance with the Act. They will be completed prior to the Act deadline for certification. CDM Smith will assist utility in completing the EPA certification process, as needed. EPA has created an online portal for certification, which must be done by an authorized (as determined by the utility, not EPA) individual from the utility. Certifications may also be submitted by email or mail to EPA. Only the certification is submitted to EPA, not the RRA results, tool, or report. It is acknowledged that this certification must be completed by the utility no later than June 20, 2021.***

CDM Smith will meet with the utility leadership to discuss, review, and refine the findings of the draft risk and resilience analysis prior to finalizing the results and creating the RRA report.

Following this meeting, the methodology, findings, and recommendations of the Risk and Resilience Assessment will be documented in a report format. An electronic copy of the draft Risk and Resilience Analysis Report will be provided to the utility for review. CDM Smith will incorporate utility's written comments on this draft report into a final Risk and Resilience Assessment report.

The deliverables for this task will be two documents:

1. The completed Risk and Resilience Assessment in a Microsoft Excel tool. The completion of this deliverable meets the AWIA requirements and will allow the utility to certify compliance with the Act.
2. A companion write-up of the Risk and Resilience Assessment, which documents the RRA Tool methodology, assumptions, and results.
3. Assistance with certification, if needed.

#### **Task 4: Emergency Response Plan**

CDM Smith will update the Emergency Response Plan (ERP) for the utility as required by AWIA.

The ERP must include the following items to enable the utility to both respond to and proactively prepare for threats, including:

- Strategies and resources to improve resilience, including physical security and cybersecurity;
- Plans, procedures, and equipment for responding to a malevolent act or natural hazard;
- Actions, procedures, and equipment to lessen the impact of a malevolent act or natural hazard, including alternative source water, relocation of intakes, and flood protection barriers;
- Strategies to detect malevolent acts or natural hazards.

An electronic copy of the draft ERP will be provided to utility for review. CDM Smith will incorporate the utility's written comments on this draft report into a final ERP.

The deliverables for this task will be:

1. The completed Emergency Response Plan. The completion of this deliverable meets the AWIA requirements and will allow the utility to certify compliance with the Act.
2. Assistance with certification, if needed.

## COMPENSATION AND PAYMENT

For the Basis Services performed under the Scope of Work, the OWNER agrees to pay the CONSULTANT the lump sum fee of \$95,700, partial payments to be made on a monthly basis in proportion to the percentage of work completed. For invoice purposes only the value of each task is as shown in Table One. A detailed breakdown of hours by staff is provided in Attachment 1.

**Table 1 - Task Value for Invoice Purpose Only**

<b>Task No.</b>	<b>Description</b>	<b>Value</b>
1.0	Project Kickoff, Data Gathering, Review Existing Materials	\$16,300
2.0	Shareholder Workshops and Development of the Threat-Asset Matrix	\$19,500
3.0	Risk and Resilience Assessment	\$36,700
4.0	Emergency Response Plan	\$23,200
<b>TOTAL (Lump Sum)</b>		<b>\$95,700</b>

## SCHEDULE

The following schedule is proposed as shown in Table 2.

**Table 2 - Schedule**

<b>Description</b>	<b>Duration</b>
Task 1 - Project Kickoff, Data Gathering, Review Existing Materials	3-weeks (from Kickoff meeting)
Task 2 - Shareholder Workshops and Development of the Threat-Asset Matrix	4-weeks (from receiving City comment of Task 1)
Task 3 - Risk and Resilience Assessment	6-weeks (from receiving City comment of Task 2)
Task 4 - Emergency Response Plan	12-weeks (from completion of Task 3)

Allowing 2-weeks for City review and comments after Tasks 1 and 2 gives a total of 17 weeks for completion of Task 3. The completion of Task 3 includes EPA certification that must be completed by June 20, 2021.



## PROPOSED STAFF

CDM Smith proposes the following key staff for this project:

- Client Service Leader – Jason Sciandra, P.E.
- Project Manager – Marc Stonehouse, PMP, P.E.
- AWIA RRA Advisor / Technical Lead– Lauren Miller, CC-P

## Attachment 1 – Budget Breakdown by Staff and Hours

Tasks	Client Service Leader	AWIA RRA Advisor	Project Manager	Junior Professional	Contract Admin	Project Controls Specialist	Admin Clerical	Total Hours	Labor	Other Direct Costs	Total Budget
<i>Bill Rate:</i>	\$255.00	\$255.00	\$235.00	\$145.00	\$135.00	\$135.00	\$95.00				
TASK 1 - Project Kickoff, Data Gathering, Review Existing Materials	1	4	16	72	2	1	2	98	\$16,070	\$ 250	\$ 16,300
TASK 2 - Stakeholder Workshop and Development of the Threat-Asset Matrix	1	10	19	77	2	1	5	115	\$19,315	\$ 150	\$ 19,500
TASK 3 - Risk and Resilience Assessment	2	9	26	167	9	4	18	235	\$36,595	\$ 150	\$ 36,700
TASK 4 - Emergency Response Plan	1	3	21	104	5	3	10	147	\$23,065	\$ 150	\$ 23,200
<b>PROJECT TOTALS</b>									<b>\$95,045</b>	<b>\$ 700</b>	<b>\$ 95,700</b>