VSAT – Risk Assessment Tool for Water Sector Utilities

Purpose

VSAT is a risk assessment software tool for water, wastewater, and combined utilities of all sizes. The tool assists drinking water and wastewater owners and operators in performing security threats and natural hazards risk assessments, as well as updating utility Emergency Response Plans (ERPs). The U.S. Environmental Protection Agency (EPA), in collaboration with Water Sector partners, has updated VSAT to be consistent with other Water Sector risk assessment methodologies. The upgraded tool includes a new user-interface, an enhanced natural disaster threat assessment process, and a revised risk assessment approach. VSAT 5.0 software will provide the following benefits:

- An intuitive process with improved navigation and enhanced work tracking features;

- An improved analytical approach that will make consequence, vulnerability, and probability of occurrence assessments of threats more transparent; and

- A natural disaster assessment process supported by historical information to enable likelihood determinations.

Features

VSAT supports the user in developing a risk assessment utilizing an intuitive step-by-step assessment process. The methodology assesses risk in terms of public health and economic consequence, the likelihood of consequence based on the effectiveness of countermeasures, and the likelihood of a threat occurrence. VSAT also includes a module to assist in development of utility-specific ERPs. The user can apply information from the risk assessment to develop an ERP or use VSAT to develop an ERP independent of the risk assessment.

The new interface includes a series of guided steps and screen controls that are familiar to users of Microsoft (MS) Windows. No additional software is required to conduct an assessment, although users may wish to use additional software for detailed evaluations of consequences. The users will employ commonly utilized applications such as MS Word and MS Excel for editing the reports generated by VSAT.

The software includes user-friendly entry/exit features, save/undo options, smart navigation controls, road maps, and work tracking approaches to assist users in understanding where they are in the analysis process and to suggest the next step in the process. Other features include:

- Standard asset templates for water supply and wastewater systems;

- A reference threat library with standard threats and the ability to add new user specified threats;

- The addition of natural disaster threats to the threat library and the inclusion of likelihood and consequence information. This information assists the user in determining which natural disaster threat(s) apply to the system and the potential consequences if an event where to impact the utility;

- A baseline and improvement analysis to allow users to evaluate their current consequences and threats and assess if/how potential additional countermeasures would improve the analysis;

- A cost-risk benefit evaluation allowing users to assess reductions in risk against costs associated with the implementation of new countermeasures to further reduce risk; and

- An automated tutorial to assist new VSAT users.

VSAT Risk Assessment Process

VSAT includes eight main steps after login. These steps and the associated functions are shown in Figure 1 and described below.
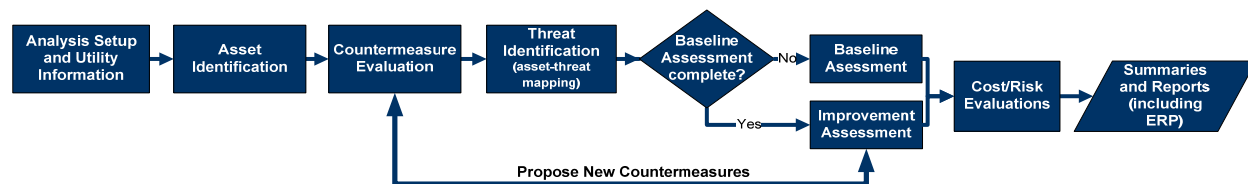

Figure 1: VSAT 5.0 Risk Assessment Process

1. **Analysis Setup and Utility Information** – Users will input utility-specific information (e.g., location, population served) and select the "best estimate" or "conditional" method for determining the likelihood of the threat.

2. **Asset Identification** – Users will identify, select, update, and edit assets specific to the utility.

3. **Countermeasure Evaluation** – Users will identify existing countermeasures specific to the utility. They will then assign countermeasures to assets based on their relevance related to man-made threats (detection, delay, and response) and/or natural disasters (preparation, active response, and recovery).

4. **Threat Identification** – Users will identify threats and pair their assets with their selected corresponding threats.

5. **Baseline Assessment** – Users will specify the potential public health and economic consequences as well as the likelihood of those consequences and the likelihood of threat occurrence.

6. **Improvement Assessment (Propose New Countermeasures)** – Once users have evaluated the risk of the identified threats to their current asset base, they will propose a series of potential countermeasures which could possibly help reduce the consequences or the likelihood of consequences facing the asset/threat pair. Users will then reassess the expected public health and economic consequences, as well as the likelihood of those consequences.

7. **Cost/Risk Evaluations** – Users will develop and evaluate packages of countermeasures specific to cost and effectiveness.

8. **Summaries and Reports** – Users will generate their risk analyses and ERP in a variety of formats (PDF, MS Word and MS Excel formats).

Throughout these steps, guidance is provided to assist the users in completing the analysis properly.

Contact

VSAT 5.0 will be provided via download, free of charge, and is scheduled for release in the fall of 2010. For more information on VSAT, contact Curt Baranowski of EPA at baranowski.curt@epa.gov.