



## **Enhancing Resilience and Emergency Preparedness of Water Utilities through Improved Mapping**

### **A Critical Infrastructure GIS Mapping Initiative**

#### **Project Background**

Throughout the Commonwealth, maps are utilized by Public Water Systems (PWSs) and Publicly Owned Treatment Works (POTWs) for operational purposes and to meet federal and state regulatory requirements. Maps are also used during emergency response efforts and for non-emergency scenarios, such as MassDEP permitting, inspection and review of regulated facilities, troubleshooting water utility issues, watershed/resource protection, and climate change resilience planning. Available maps can vary from hand drawings and old blue-prints, to fully engineered Geographic Information Systems (GIS) or Computer-Aided Design (CAD) maps based upon the available resources of any given water utility.

The project is designed to assist water utilities with enhancing their ability to better manage infrastructure assets, respond to emergencies, and meet regulatory mapping requirements as necessary. In addition, the data developed from this project is providing MassDEP with the tools necessary to evaluate, prioritize and assist water utilities with critical infrastructure resilience planning and climate change adaptation, as well as improve MassDEP's ability to more efficiently respond to water utility emergencies.

#### **2016 Project Work**

In 2016, a collaborative effort was initiated between MassDEP's Water Utility Resilience Program (WURP) and MassDEP's GIS program to develop a uniform approach in tracking map availability, improve internal accessibility to water utility critical infrastructure, and develop a consistently formatted, statewide water utility infrastructure map for state agency use. The initiative resulted in a preliminary statewide inventory of available community (COM) PWSs and POTWs mapping information, and included a comprehensive review of historical mapping projects, available online information, and internal MassDEP files. The inventory allowed MassDEP to identify water utilities that may potentially be in need of GIS mapping technical assistance.

## **2017 Project Work**

In 2017, state grant funding through MassDEP's Water Management Act (WMA) program secured \$300,000 to assist in jumpstarting GIS mapping for water utilities that were initially identified through the 2016 inventory as potentially in need of GIS assistance, and lacked the resources for such work. In January 2017, MassDEP issued a Request for Quotes (RFQ) seeking bids from pre-qualified firms on the ITS53ProjServGIS statewide contract in order to select a Contractor for this work. The work included confirming information contained within MassDEP's mapping inventory, updating PWS interconnection information, and providing GIS mapping services for up to 50 water utilities.

In March 2017, MassDEP contracted with Tighe & Bond, Inc. to provide these GIS services. As a result, a total of 32 communities, prioritized as 34 PWSs and 15 POTWs, received GIS mapping services free of charge. The 49 water utilities were prioritized based upon factors that included system size, need(s), interest in participation, and MassDEP regional program staff input.

Data developed from the 2017 project resulted in MassDEP and each PWS and/or POTW receiving a hard copy paper map of their respective drinking water distribution or sewer collection system, along with a thumb drive that contained a pdf image of the map, the GIS data for their system, and a GIS metadata description report.