

CES501695

# An Innovative Approach to Emergency Response Planning with Innovyze

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## Learning Objectives

- Understand the importance of planning for water service disruptions
- Outline the strategies to develop an effective emergency response plan
- Examine how communities can develop an effective and interactive interface using InfoWater Pro and ArcGIS Dashboards to manage service disruptions

## Description

Service disruptions are inevitable regardless of your water source, and they often result in chaos for operators, administrators, and residents. Even as communities move toward more proactive water system management, unanticipated disruptions will always occur. Utilities should be as prepared as possible to respond quickly and effectively. This presentation will explore the innovative ways the City of Livonia, located outside Detroit, is planning for and exploring potential water service disruption scenarios with hydraulic modeling through InfoWater Pro and ArcGIS Dashboards. With aging assets the city has experienced increasingly severe water system failures. Susan Knepper (OHM Advisors) will share the tools and practices she used to help the city plan for its water service disruptions, and she'll cover the creative way she documented the city's disruption protocols. Tim Medearis (Autodesk) will briefly share how Info360 can make this workflow even easier in the future.

## Speaker(s)



Susan Knepper, PE received her BS in Environmental Engineering from the University of Florida in 2013. She began her career in South Florida working in the environmental remediation field but has since found her passion helping communities with their drinking water needs. Her mission is to advance communities by providing innovative solutions for her clients.



Tim Medearis, PE received civil engineering BS and MS from Colorado State University in 2015 & 2016 respectively. He is a solutions engineer who has worked with hundreds of utilities around the country and around the world with their hydraulic modeling and asset management solutions. He is passionate about water resources and technology, loves the Colorado outdoors, and lives in Longmont, Colorado.

## Importance of Planning for a Water Service Disruption

In 2018 the City of Livonia, Michigan experienced a large water system failure at one of their master meter feeds. The City did not have operational protocol in place for this type of emergency and was responding reactively to the system failure. The City identified an opportunity as part of the 2018 America's Water Infrastructure Act (AWIA) requirement to complete an enhanced emergency response plan so that they could avoid reactive responses in the future. Utilizing InfoWater Pro and ArcGIS Dashboards, the City created an unprecedented tool to help guide their operators through numerous service disruption scenarios.



## Strategies to Develop an Effective Emergency Response Plan

OHM Advisors and the City worked together to identify a variety of service disruption scenarios which included the loss of each one of their master meter feeds and their key city facilities. The City wanted over 40 scenarios analyzed utilizing InfoWater Pro so developing a strategy and path for this project was key. The City wanted to improve their communication strategies and understand all of their critical customers. An effective emergency response plan should guide a community step by step on the operational protocols they can take to counteract the emergency.

### Service Disruption Scenarios

The City wanted their identified service disruptions analyzed under two demand scenarios:

- Emergency Service Disruptions: Max Day Demands
- Planned Service Disruptions: Average Day Demands (asset replacement)

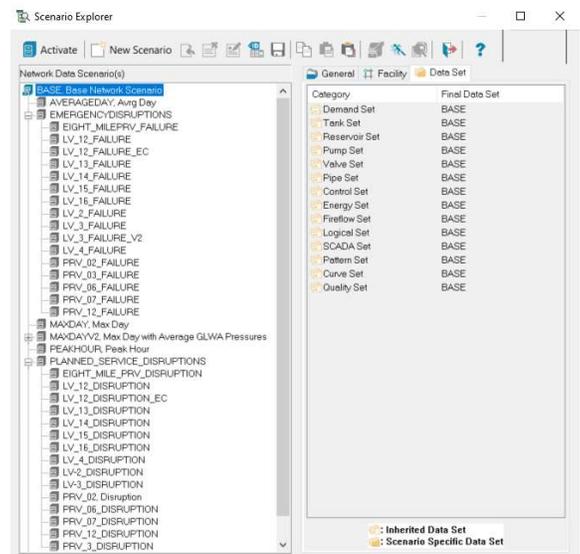
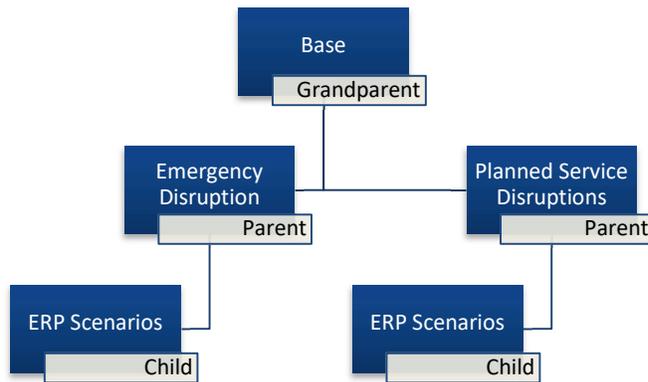
## Level of Service Goals

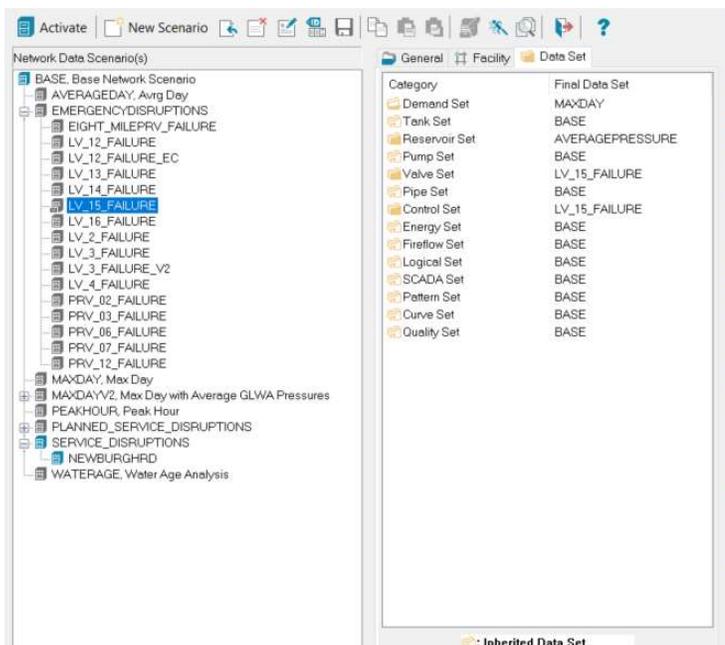


## InfoWater Pro Model Organization

Keep the InfoWater Pro scenario explorer organized so not only the original modeler can easily reference the scenario they built but an unfamiliar modeler can easily hop into the model and not get lost.

### Scenario Explorer





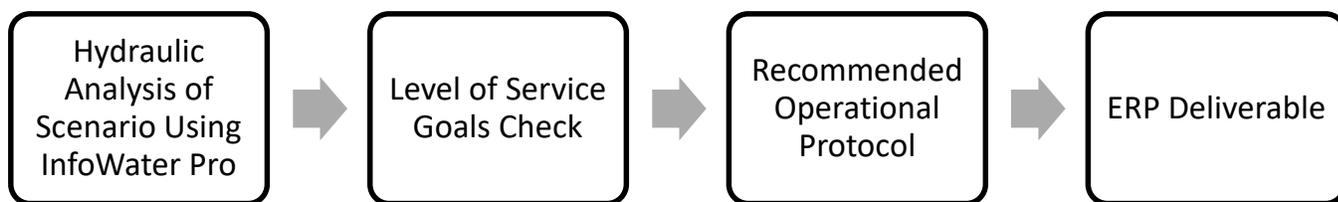
### Dataset Manager

Keep the InfoWater Pro data set organized so that the modeler is ensured they are referencing the right data set for their scenarios. Its super easy for a scenario to accidentally be referencing an incorrect data. If settings are changed that are associated with the dataset, then the scenario it was originally built for will be impacted and work will potentially be lost.

**Dataset Name = Scenario Name**

### Workflow Summary

A shortened workflow is shown below

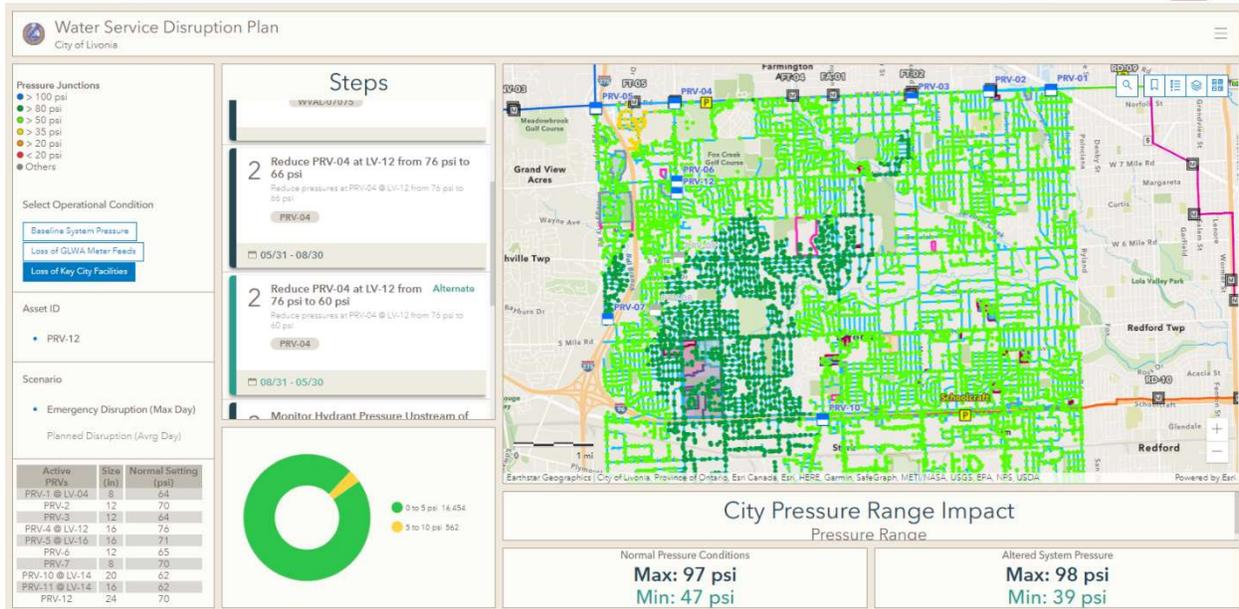


### Emergency Response Plan Interface

To have an effective emergency response plan a lot of data and information must be gathered and presented in a way that is easy to understand and use during an emergency. Going beyond a typical report format where a lot of effort would need to be put into to develop an effective plan that a user can interpret on 8.5" x 11" paper, OHM Advisors advocated to the City to hub their information in ArcGIS Dashboards.

Utilizing ArcGIS Dashboards, OHM Advisors created an interactive and user-friendly environment for the City's water system operators to use and reference during multiple service disruption scenarios. The best part of this dashboard is that it can continue to be developed and improved as the City identifies additional scenarios they want modeled or other information they want stored. This dashboard can hub institutional knowledge that the existing operators who are

near retirement can update. This dashboard can also send pre-populated emails to their critical customers who are impacted during different service disruption scenarios. The City is thrilled to have this tool which they agree is more useful than a typical report deliverable.



## The Future of Water Datahubs and Dashboards

Autodesk recognizes the desire within many utilities and consultants for less standalone, 8.5" x 11" paper, "left on the shelf for years", emergency response plan reports and many other deliverables. OHM Advisors work with the City of Livonia is the perfect example of a dynamic, user-friendly solution based on sophisticated hydraulic modeling which is becoming more necessary for more job roles. Today, Autodesk is growing and investing in dashboard, cloud solutions such as Info360 Insight to make these modeling insights accessible, powerful tools to more roles within every utility.

## Additional Resources

- [An Introduction to InfoWater Pro](#)
- [OHM Advisors website](#)
- [Info360 Insight](#)
- [How to Create an Esri Dashboard](#)