

PROJECT SUMMARY

Organizations:

United Water
IDModeling

Solution:

Water and Wastewater

Project Location:

NJ, USA

Project Objectives:

- Standardize and streamline how models are built, developed, calibrated, documented, and updated using Bentley software.
- United Water combined its forward thinking with IDModeling's workflows, templates, and techniques, and Bentley's WaterGEMS and SewerGEMS technology to improve the quality of its hydraulic models

Products used:

WaterGEMS
SewerGEMS
WaterObjects.NET

FAST FACTS

- United Water determined that it spent a disproportionate amount of time repeating model construction tasks necessary for all hydraulic models.
- United Water worked with IDModeling to improve the quality of United Water's hydraulic models.
- Essential to the project was the interoperability of Bentley's water products, which helped streamline modeling tasks
- Establishing modeling standards, particularly through WaterGEMS' customization and documentation functions, provided a concrete way for United Water employees and contractors to better coordinate work.

UNITED WATER ADOPTS INNOVATIVE MODELING PROCESSES TO IMPROVE WATER SYSTEM MANAGEMENT

UNITED WATER AND IDMODELING STANDARDIZE WATER MODEL BUILDING AND ANALYSIS USING BENTLEY'S WATER SOFTWARE

The mission of United Water, which provides water and wastewater services to 7 million people throughout the United States, is to establish itself as the premier water-services company in North America. In so doing, United Water realizes that hydraulic models are mission-critical tools, and instrumental in achieving business goals and maximizing efficiencies for its customers. These tools help evaluate designs, aid in master planning and water quality studies, and facilitate energy management, operation scenarios, and capital improvement plans to name a few.

To focus on improving efficiency in its water networks, United Water worked with IDModeling, a company that delivers hydraulic modeling solutions for growing and maintaining rapidly aging and increasingly stressed water and wastewater infrastructure, to develop four models representing four separate water systems in the states of Connecticut, Delaware, New Jersey, and Rhode Island. IDModeling worked under the leadership of Buck, Seifert, and Jost, water and wastewater engineering specialists, for the United Water New Jersey model.

THE PROJECT GOALS

The two companies set out to standardize and streamline how these four models, and any future models, are built, developed, calibrated, documented, and updated using Bentley software. United Water combined its forward thinking with IDModeling's workflows, templates, and techniques, and Bentley's WaterGEMS® and SewerGEMS® technology to improve the quality of its hydraulic models.

The company first determined that it spent a disproportionate amount of time repeating model construction tasks necessary for all hydraulic models. Similar challenges that faced each model included:

- Disparate data sources
- Multiple people working on the model simultaneously
- Managing updates from CAD/GIS
- Standardizing symbology for each project

- Documenting projects
- Starting from scratch for each new model
- Varying data confidence
- Learning curve for new modelers
- Model sustainability

The teams came to a general consensus that if they could reduce the time it took to build, develop, and calibrate models, they could more appropriately allocate their budget dollars toward learning the water system and establishing proactive scenarios within the model for improved planning and operational strategies. Ultimately, the resulting benefit would be improved project selection, enhanced customer service, and significant capital-operational cost savings.

COMPLETING THE PROJECT

IDModeling leveraged the extensibility and flexibility of Bentley WaterGEMS platforms to create modeling templates that provide customized components. This greatly enhanced the model creation, quality assurance-quality control, calibration, and analysis process.

WaterGEMS uses ODBC and XML to allow for scalable, sharable, and customizable model templates/standards that work for any model. The WaterGEMS templates help streamline the learning curve and reduce errors commonly associated with data entry.

Essential to the project was the interoperability of Bentley's water products, which helped streamline modeling tasks. (see figure on page 2)

IDModeling also developed standardized ranking matrices that are deployed on every modeling project and linked to WaterGEMS FlexTables®. These matrices help the modeling project team track the quality of each piece of data included in the model. Each matrix adds tremendous value to the project, as low data scores can point the model calibrator toward those data that might be candidates for further research and improvement.

"The user-friendliness and interoperability of WaterGEMS and SewerGEMS, enhanced by IDModeling's modeling templates, serve to improve the quality of United Water's hydraulic models"

ABOUT BENTLEY

Bentley Systems, Incorporated is the global leader dedicated to providing comprehensive software solutions for sustaining infrastructure. Architects, engineers, constructors, and owner-operators are indispensable in improving our world and our quality of life; the company's mission is to improve the performance of their projects and of the assets they design, build, and operate. Bentley sustains the infrastructure professions by helping to leverage information technology, learning, best practices, and global collaboration – and by promoting careers devoted to this crucial work.

For more information, visit www.bentley.com

BENTLEY OFFICES

Corporate Headquarters

685 Stockton Drive
Exton, PA 19341 USA
1-800-BENTLEY (1-800-236-8539)
Outside the US +1 610-458-5000

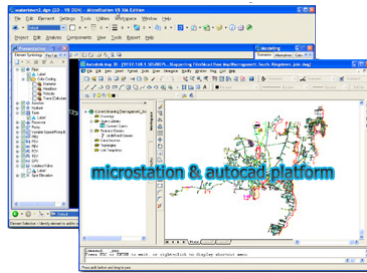
Bentley Systems Europe B.V.

Wegalaan 2
2132 JC Hoofddorp
Netherlands
+31 23 556 0560

Bentley Asia

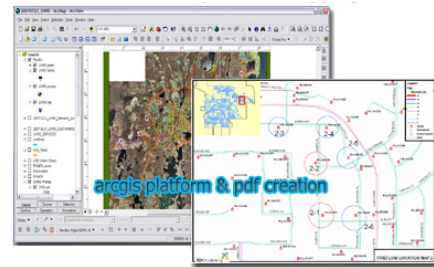
Unit 1402-06, Tower 1,
China Central Place,
No. 81 Jianguo Road,
Beijing, 100025, China
+86 108 518 5220

Model Construction & QA



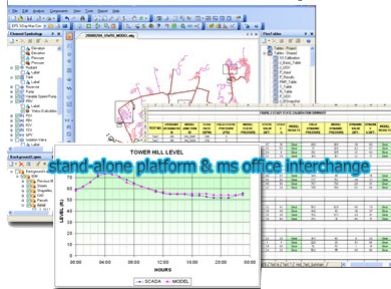
United Water used the AutoCAD and MicroStation® platforms of WaterGEMS to prepare the CAD base-map and import it into the model.

Model Development & Mapping



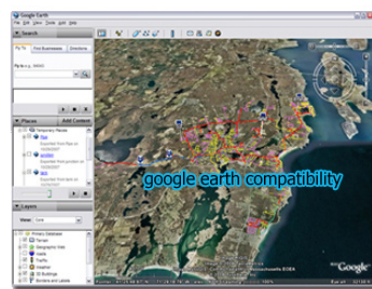
United Water used the ArcGIS version of WaterGEMS to develop maps for field collection.

Calibration & Analysis



The stand-alone Windows version became the preferred platform for quickly reviewing calibration results and for performing "what-if" analysis.

Results Presentation & Distribution



Lastly, the model data results were easily exported to Google Earth for dynamic results presentation.

Other innovations implemented using Bentley's technology include calibration routines, which are currently under development, using Bentley's Water-Objects.NET. These tools give the user much greater flexibility to explore "what-if" scenarios to pursue optimal system calibration and greatly reduce model calibration time.

Commenting on the project, Nick Curcio, Hydraulic Model Specialist, United Water, said, "The user-friendliness and interoperability of WaterGEMS and SewerGEMS, enhanced by IDModeling's modeling templates, serve to improve the quality of United Water's hydraulic models. This technology moves the models into a central role to manage and maintain information that improves the stewardship of United Water's critical infrastructure assets."

DETAILING THE BENEFITS OF THIS PROJECT

This project significantly contributes to United Water's quality assurance programs by providing the data integrity and reliability of a standards system for United Water's models.

"Our team has defined standards and hard-coded expectations for these critical tools, which is unique in our industry," said Curcio. "The next step is to realize our ROI expectations and apply the ergonomics of our model toward better operations and planning."

Establishing modeling standards contributed to the accuracy of data and information, which decreases the

possibility of system design errors from bad data, and contributes to the bottom line of managing or operating a water system. For example, if there is a single, agreed-upon, defined convention to represent items in a model, it eliminates varying representations of the same element and reduces interpretation errors.

United Water's modeling standards are part of a defined, repeatable process that guarantees that models are built, developed, and calibrated the same way each time so that gaps in the process or opportunities for errors are eliminated. The standards also reduce the learning curve for developing and reviewing these models as each one has the same "feel" and functions in the same way.

United Water's large-scale, multi-teamed modeling projects require extraordinary coordination of data and information. Establishing modeling standards, particularly through WaterGEMS customization and documentation functions, provides a concrete way for United Water employees and contractors to better coordinate work, hand off data electronically, and negotiate change orders with regard to model criteria, re-work, correctness and completion.

Lastly, United Water now has the ability to know, with 100 percent certainty, that the quality and status of the models provide a level of service that differentiates them from other water-service utilities.

To learn more, go to:
www.bentley.com/waterproducts



© 2009 Bentley Systems, Incorporated. Bentley, the "B" Bentley logo, FlexTables, MicroStation, SewerGEMS, and WaterGEMS are either registered or un-registered trademarks or service marks of Bentley Systems, Incorporated or one of its direct or indirect wholly-owned subsidiaries. Other brands and product names are trademarks of their respective owners. BAA016040-1/0001