



# Operations Support Tool (OST) Fact Sheet

- 💧 OST is a decision-support system for water supply operations and planning.
- 💧 Built by a joint effort of DEP staff, consultants, leading scientists, and the National Weather Service (NWS).
- 💧 Fully operational as of Jan 2014. Four-year development cycle with ongoing modifications.
- 💧 Cost: \$8.5 million, including \$1 million to NWS to accelerate development of cutting-edge “ensemble” streamflow forecasts.
- 💧 Basic principle: Computer models of water quantity and water quality, initialized by a large amount of near-real-time data, and driven by streamflow forecasts allow DEP to make projections of reservoir water quantity and quality up to one year in the future. Alternative operational scenarios can be tested and compared to further inform decision-making. Impact of forecasted storm events and ongoing dry periods can be evaluated.
- 💧 OST is one of the most advanced and complex support tools for water supply operations in the world.
- 💧 Models:
  - OASIS (Hydrologics, Inc.). Reservoir operations and water quantity model.
  - CE-QUAL W2. USACE water quality model calibrated for the NYC reservoirs.
- 💧 Forecasts: National Weather Service, Hydrologic Ensemble Forecast Service (HEFS).
  - It is difficult to make highly accurate “single value” forecasts of weather and streamflow, and there is a large amount of uncertainty in such forecasts.
  - Ensemble forecasts mitigate this problem by providing a set (“ensemble”) of multiple forecasts created by different weather models, precipitation estimates, etc.
  - The ensemble of forecasts provides information on range and probability, which in turn reduces uncertainty and facilitates decision-making.
  - HEFS forecasts have meteorological drivers for the first 15 days and thus account for upcoming storm events.
  - HEFS forecasts are informed by current snowpack data and thus include magnitude and timing of snowmelt as part of the streamflow prediction.
  - DEP was the first water supply utility in the world to use ensemble forecasts for decision-making, and leads the ongoing development of this approach.
- 💧 OST can be used in long-term planning mode for purposes including but not limited to:
  - Testing alternative reservoir operating rules.
  - Evaluating proposed new river basin management policies.
  - Assessing the impact of climate change on the water supply system.
  - Testing operational strategies to mitigate the impact of climate change.