

Additional Descriptions of Water Supply Use Cases

- **Strategic Planning & Road Mapping Tool:** A planning tool to track maintenance, testing, operations, and capital projects to flag spatial/timing conflicts.
 - **Explanation:** The NYC Water Supply System relies on numerous redundancies and interconnections to convey water from its three reservoir systems to New York City and more than 70 wholesale communities. Maintenance, repairs, and new construction require careful planning to ensure a safe, reliable supply of approximately 1.1 billion gallons of water per day to wholesale customers and NYC residents. With many projects and special operations competing for similar windows of time, it is often difficult to coordinate, deconflict, and plan for work that is spread across such a huge geographic area. (More than 2,000 square miles.) In a worst-case scenario, conflicts can lead to costly delays or water quality impacts. Because coordination is difficult, DEP might also miss the opportunity for efficiencies that come from coordinating multiple projects within the same work windows. That's why our water supply is seeking a tool that coordinates capital project schedules, special operations, system interconnections, seasonal limitations, and other if-then scenarios. This will help us develop and refine a schedule to manage the scope, schedule, budget, and risk for the Bureau's capital improvement plan.
- **Deep Rock Aqueduct Leak Detection & Surface Tracking:** Technology to detect leaks in large-diameter, deep rock tunnel aqueducts and track surface leak expressions over time.
 - **Documents/Resources:** [USGS study for High Falls](#) provides a useful case study outlining ways the Bureau studies deep-rock aqueduct and tunnel leaks. DEP's water supply aqueducts are located anywhere from a few feet to 2,400 feet below the surface, making it difficult to detect leaks. Leaks are sometimes found through surface expression, when water from the aqueducts finds a path of least resistance through bedrock and soil until it reaches the surface. Finding these surface expressions, and tracking how they change in size and location, is important to help DEP plan for capital repairs and to work with the communities that host our infrastructure.
- **Dam Safety Data Acquisition & Trend Tracking:** A system to capture, store, and analyze dam safety instrument data (from piezometers and extensometers) to detect small changes over time.
 - **Documents/Resources:** Dam safety is an important part of our work at DEP. The City owns and operates 29 large water supply dams that impound approximately 570 billion gallons of water. DEP is seeking a system that can help us with two aspects of our dam safety work. Each of our earthen and masonry dams is equipped with monitoring equipment that tracks the conditions at our dams. DEP seeks a more robust system to acquire these data from the field instruments. Therefore, a system to capture, store, and analyze these data would help with the efficiency and accuracy of our work. Our dam safety team – and the other DEP employees who work at our dams – is required to make visual inspections of our dams on a regular basis. This

work might include looking for animal burrows, measuring seepage, and other observations that can tell us about changes at each dam. We are also seeking a system that would allow us to document, store, and analyze these changes over time.

- **Sample Line Biofouling Mitigation:** Tools to prevent and clear water quality sampling lines from zebra mussel buildup without requiring staff to physically disconnect and clean the lines every several times per year.
 - **Documents/Resources:** DEP monitors water quality throughout much of our system using automated systems that pump a representative sample of water from a reservoir or stream through equipment that measures temperature, pH, turbidity, and other parameters. At New Croton Aqueduct, some of these lines are now being clogged periodically by invasive zebra mussels. This requires staff to disassemble the equipment, physically remove the mussels, and reassemble the equipment. We are seeking a system that can automate the process of periodically cleaning the lines to reduce staff hours and eliminate sample interruptions. Photos of the zebra mussels clogging sampling lines can be found in on the pages below.



