

***NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF WATER SUPPLY***

**Catskill Turbidity Control  
Expert Panel Scope of Work**

July 2014

*Prepared in accordance with Section 4.11 of the NYSDOH  
Revised 2007 Filtration Avoidance Determination*



*Prepared by:  
New York City Department of Environmental Protection  
Bureau of Water Supply*

## **Expert Panel Review of Operations Support Tool Proposed Scope of Work**

### **Background**

A major component of the New York City Department of Environmental Protection (DEP) Catskill Turbidity Control Program is the Operations Support Tool (OST) - a state of the art modeling, data management and forecasting system that DEP has developed and is applying to assist in decisions regarding water supply operations. OST makes use of the Operational Analysis and Simulation of Integrated Systems (OASIS) reservoir system model coupled with CEQUAL-W2 reservoir water quality models along with dozens of measured inputs, including near-real-time data as well as hydrological forecasts. OST integrates the measured data, hydrological forecasts, model simulations and post-processing tools to evaluate the effects of alternative operations strategies on water system performance and provide guidance in the decision making process. OST enables DEP to make more informed decisions concerning diversions and/or releases from its reservoirs to optimize water supply operations and to help ensure that high quality drinking water is delivered to water system users. Additionally, the optimized operations help DEP to maintain water supply reliability while affording a range of potential benefits to downstream stakeholders.

Section 4.11 of the Revised 2007 NYC Filtration Avoidance Determination requires that DEP fund a panel of experts ("Expert Panel") to review DEP's use of OST. DEP and the New York State Department of Health (NYSDOH) have requested that the National Research Council (NRC) select and manage the Expert Panel. The NRC is in a unique position to bring together a group of experts with the breadth of experience and expertise needed to undertake this study and to ensure a comprehensive and scientifically objective review. Created by an act of Congress in 1863, the National Academy of Sciences (NAS) is a private, non-profit, national institution of distinguished scholars dedicated to promoting the effective utilization of scientific and technologic resources of the country and to advancing the general interests of science. The NRC, established in 1916 by NAS, undertakes studies on the various technologic and scientific questions presented for consideration by federal and other government agencies and nongovernmental institutions, or by mandates of Congress.

### **Description and Scope of Activities**

The NRC will select a group of experts to serve on an Expert Panel to evaluate DEP's use of OST. NRC staff will provide management and oversight of the Expert Panel. Members of the Expert Panel, who are the primary authors of NRC reports, are selected expressly for their expertise in the relevant scientific issues at hand. In this case, the Expert Panel selected by NRC will include approximately 10-12 members and is expected to include cutting-edge researchers and experts with extensive practical experience in the following areas: reservoir operations; drinking water treatment; water quality, water quantity and watershed modeling; water quality monitoring and statistics; and hydro-climate systems and dynamics. In forming the Expert

Panel, NRC will avoid conflicts of interest and bias to ensure a balanced and objective review. It will also reflect other objectives of achieving diversity in terms of age, gender, geographical distribution, and other factors.

Scientific objectivity and rigor are also ensured by an extensive independent review of the Panel's report that will be carried out by the NRC. The purpose of this review is to assist the Expert Panel in making its report as accurate as possible. Once the Panel has developed a draft report, it is reviewed both by NRC staff, as well as a number of external reviewers, selected by NRC for their expertise on the topics covered in the report. The NRC staff and Panel must respond to all review comments, either by making a change to the draft report, or explaining why the Panel will choose not to make changes in response to a given comment. This process is overseen by the NRC Report Review Committee (RRC). Only after the Panel has responded adequately to review comments does the RRC approve the final report. The names of the reviewers are published in the Panel's final report. Their review comments are not available to the public, or the sponsor, and are for internal use only. This separate staff review distinguishes NRC from many other organizations offering scientific and technical advice on important national issues and makes it uniquely qualified to perform this scope of work.

The goals of the Expert Panel will be to:

1. evaluate the effectiveness of DEP's use of OST for water supply operations, and identify ways in which DEP can more effectively use OST to manage turbidity;
2. evaluate the performance measures/criteria that DEP uses to assess the efficacy of the Catskill Turbidity Control Program, and recommend additional performance measures, if necessary;
3. review DEP's proposed use of OST in evaluating the proposed modification to the Catalum SPDES Permit as well as the alternatives to be considered in the environmental review of those proposed modifications; and
4. review DEP's existing studies of the potential effects of climate change on the City's water supply to help identify and enhance understanding of areas of potential future concern in regard to the use of OST.

To accomplish these goals, the Expert Panel's tasks will include:

- Review of general literature and methods related to use of dynamic reservoir management to improve water supply water quality as implemented by other utilities and water managers.
- Attend a workshop at which DEP will present to the Expert Panel an overview of the Catskill Turbidity Control Program with emphasis on use of OST. Information presented by DEP on OST will include detailed descriptions of the underlying models, current modeling assumptions, performance measures, model validation information and example applications. DEP will also provide information about the sources of and measures used to address Catskill turbidity.
- Review of DEP's work using OST to date. Past results of studies and applications related to OST development and usage will be provided to the Expert Panel by DEP.

- Provide a prepublication version of the final report to DEP for fact-checking purposes.
- Provide a final report detailing the findings of the Expert Panel to DEP, NYSDOH, the United States Environmental Protection Agency (EPA), the New York State Department of Environmental Conservation (NYSDEC) and the Watershed Inspector General (WIG). The final report will be a public document and will be posted on the DEP website.
- Once the final report is released, NRC staff will participate in a meeting to discuss the Panel's findings with NYSDOH, EPA, NYSDEC and the WIG. Members of the Expert Panel may also attend this meeting, as NRC shall deem necessary.

In addition to assembling the Expert Panel, the NRC will provide a variety of services to help organize, facilitate and administer the work of the Expert Panel including:

- NRC staff will provide project management services to include progress reporting, management of the project within NRC and the Expert Panel, tracking the Expert Panel's progress and deliverables, interacting with DEP, invoicing and financial reporting, and other project management activities to ensure the project proceeds on-schedule and within budget.
- NRC will provide management and oversight of the Expert Panel. Work includes all actions necessary to constitute the Expert Panel, organize information for dissemination to Panel members, coordinate with DEP to schedule meetings, and facilitate travel arrangements for members of the Expert Panel.
- NRC will participate in meetings, and assist in the preparation and production of a final report.

### **Milestones and Deliverables**

NRC will meet the following milestones and produce the following deliverables in connection with the work of the Expert Panel:

#### *Milestones*

1. Develop the list of Expert Panel members.
2. Five Expert Panel meetings are anticipated. The first meeting will likely include the introductory workshop. Meetings will be held at roughly 3 month intervals. All meetings except the final meeting shall include a scheduled session that will be open to the public. At these public sessions NRC and the Expert Panel shall take comments raised by any member of the public. The final meeting will be a closed session where the Expert Panel will finalize its draft report.
3. Subsequent to the release of the final report, NRC will participate in a meeting with DEP, NYSDOH, EPA, NYSDEC and the WIG. This meeting will be scheduled shortly after the release of the report; if convenient, the meeting will be scheduled to coincide with the annual

**Catskill Turbidity Control Progress Meeting specified in the Revised 2007 FAD.**

***Deliverables***

1. Prepublication version of final report for DEP fact-checking.
2. Final report in accordance with the Expert Panel Tasks described above.

**Project Duration**

The project duration is projected to be 21 months, commencing upon registration of a valid contract between DEP and NRC.