STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
625 BROADWAY
ALBANY, NEW YORK 12233-1010

In the Matter

- of -

the Application for a State Pollutant Discharge Elimination System Permit for the Discharge from the Shandaken Water Tunnel located in the Town of Shandaken, County of Ulster

- by -

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION,

Applicant.

DEC Application No. 3-5150-00420/00001

DECISION OF THE COMMISSIONER

July 27, 2006

DECISION OF THE COMMISSIONER

I hereby adopt the attached hearing report of Administrative Law Judge ("ALJ") Helene G. Goldberger in the matter of the application of the New York City Department of Environmental Protection ("NYCDEP" or "City") for a state pollutant discharge elimination system ("SPDES") permit for the City's discharge of water from the Shandaken Water Tunnel ("Tunnel") to the Esopus Creek as my decision in this matter, subject to the comments below.

The Tunnel, which is located in the Town of Shandaken in Ulster County, is part of the City's water supply system that delivers drinking water to its residents (see Appendix A to the Hearing Report for a diagram of the water supply system). In this system, water from the Schoharie Reservoir, which is created by the Gilboa Dam, is diverted through the Tunnel and discharged into the Esopus Creek, a trout stream which is used for flyfishing and other recreational activities. This water then flows from the creek into the Ashokan Reservoir, is conveyed through the Catskill Aqueduct to a series of reservoirs and tunnels, and eventually reaches New York City.

The water that is diverted from the Schoharie Reservoir through the Tunnel contains suspended solids which cause

turbidity (see, e.g., Adjudicatory Hearing ["AH"] Transcript ["Tr"], Volume 2 ["2:"], at 82-89). The turbidity, which results from the design of the Schoharie Reservoir, the geology of the drainage basin, and erosion in the Schoharie watershed, has a detrimental impact on the recreational uses of the Esopus Creek and can adversely affect the trout in that waterbody.

In addition to turbidity, the diversion also affects temperature and flow (see id., at 80-81). With respect to temperature, the discharge from the Tunnel to the creek is generally cooler, and these cooler temperatures are conducive to trout growth and survival. The diversion also increases the amount of water in the Esopus Creek which is beneficial to the trout population in that waterbody.

Part 670 of title 6 of the Official Compilation of the Codes, Rules and Regulations of the State of New York ("6 NYCRR") governs the diversion of water from the Schoharie Reservoir through the Tunnel to the Esopus Creek. In the past, the City was not required to obtain a SPDES permit for the discharge from the Tunnel. As noted in ALJ Goldberger's hearing report, in 2001 the U.S. Court of Appeals for the Second Circuit held that the City was required to obtain a SPDES permit for its discharge of water from the Tunnel to the Esopus Creek (see Catskill Mountains

Chapter of Trout Unlimited, Inc. v City of New York, 273 F3d 481 [2d Cir 2001]["Catskill I"]).[1] As a result of this litigation, the City submitted an application for a SPDES permit to the New York State Department of Environmental Conservation ("DEC" or "Department") which is the subject of this proceeding.

The ALJ, in her issues ruling, identified the following adjudicable issues with respect to the City's SPDES permit application: turbidity limits; compliance schedules for the implementation of structural and non-structural measures to reduce turbidity and temperature; and phosphorus limits. Because issues relating to non-structural measures and phosphorus limits were subsequently resolved, only turbidity limits and structural measures to reduce turbidity and temperature were addressed at the adjudicatory hearing.

[1] The Second Circuit in Catskill I remanded the matter to the federal district court for further proceedings. On remand, the district court, among other things, assessed a civil penalty against the City (see Catskill Mountains Chapter of Trout Unlimited, Inc. v City of New York, 244 F Supp 2d 41 [NDNY 2003]). The City appealed from the district court's 2003 decision and requested that the Second Circuit reconsider its prior holding of Catskill I that the discharge of water from the Tunnel into the Esopus Creek required a SPDES permit. On appeal, the Second Circuit rejected the City's arguments and confirmed its prior holding in Catskill I that a permit is required (see Catskill Mountains Chapter of Trout Unlimited, Inc. v City of New York, 451 F3d 77 [2d Cir 2006]).

Turbidity Limits

The genesis of these proceedings was the concern raised about the introduction of turbid water into the Esopus Creek, an A(T) stream (see Hearing Report, at 8). Section 703.2 of 6 NYCRR provides that for class A waters the water quality standard for turbidity is "[n]o increase that will cause a substantial visible contrast to natural conditions" (emphasis added).

Turbidity, which is caused by the presence of suspended solids (see Catskill I, at 488), is measured in terms of nephelometric turbidity units ("NTU") (see Hearing Report, at 8). With respect to turbidity, the draft SPDES permit, under "Interim Permit Limits, Levels and Monitoring," provides an action level of an increase of 15 NTU for the period June-October, an action level of an increase of 20 NTU for the period November-May, and a shutdown limit of 100 NTU. The draft permit, under "Final Permit Limits, Levels and Monitoring," establishes an increase of 15 NTU as an effluent limit and a shutdown limit of 100 NTU (see Hearing Report, at 8-9; AH Exhibit ["Exh"] 53, at 3; see also AH Tr, Volume 1 ["1:"], at 8).

At the adjudicatory hearing, the City accepted the turbidity numbers proposed in the draft permit. However, intervenors (referred to in the hearing report as "Trout

Unlimited, et al.") maintained their objection that the proposed turbidity numbers were too high and failed to meet water quality standards. They also contended that, due to the turbid conditions in the Esopus Creek caused by the discharge, it was neither safe nor desirable for fisherman to fish in the creek. A review of the record, however, demonstrates that Department staff appropriately derived the turbidity numbers based upon considerations relating to the fishery, water quality and water supply (see, e.g., Hearing Report, at 9-10, 24-25; AH Tr, at 2:96-106, 2:119-129; AH Exhs 45-51; see also Post-Adjudicatory Hearing Brief of the City of New York dated December 14, 2005, at 4-6 [reviewing the testimony demonstrating that the draft permit satisfies water quality standards]).

Department staff's testimony detailed how staff exercised its best professional judgment to set appropriate limits consistent with applicable laws. According to Department staff, the most critical element in establishing these limits was to maintain the flow in the Esopus Creek,[2] and, then, in order of priority, to address temperature and turbidity (see, e.g., AH Tr, at 2:79-85; Hearing Report, at 23). The draft SPDES permit

[2] Department staff noted that flow in the Esopus Creek can be too low during the summer months and under those circumstances, absent discharge from the Tunnel, the amount of water in the Esopus Creek would be insufficient to sustain fish (see, e.g., AH Tr, at 2:80, 84).

addresses all three of these elements -- flow, temperature and turbidity (see AH Exh 53, at 3-6).[3]

With respect to turbidity limits, the testimony in the adjudicatory hearing detailed the review that Department staff conducted, including direct field observation and data evaluation. Criteria established by other states with respect to turbidity were examined (see, e.g., AH Tr, at 2:123-125; AH Exh 51). In addition, particular consideration was given to the scientific literature concerning the impacts of turbidity on trout (see, e.g., AH Exhs 45-48; AH Tr, at 2:98-105).

Based on its review, Department staff determined that the turbidity numbers in the draft permit satisfied the "no substantial visual contrast" standard in 6 NYCRR 703.2. Trout Unlimited, et al., however contended that 15 NTU was too high a threshold because that, even at 10 NTU there was a substantial visible contrast between the discharge from the Tunnel and the Esopus Creek and, accordingly, the 15 NTU threshold should be lowered. However, Trout Unlimited, et al.'s argument that a substantial visual contrast occurs at a turbidity increment of 10

[3] The draft SPDES permit also establishes, among other things, requirements with respect to phosphorus and solids, compliance actions including but not limited to the submission of progress reports and annual monitoring data summaries, and discharge notification requirements.

NTU was not supported by the evidence that they presented (see, e.g., Hearing Report, at 23 [noting the deficiencies in Trout Unlimited, et al.'s evidence]).

I conclude that the turbidity numbers set forth in the draft SPDES permit are fully supported by the record and satisfy water quality standards.

The draft SPDES permit appropriately provides for exemptions from turbidity limits and action levels in certain circumstances. These exemptions, which take into account the complex environment relating to the City's water supply system and activities necessary to maintain public safety, include, for example, emergency actions to ensure the continued existence or safe operation of the Schoharie Reservoir, the Gilboa Dam and appurtenant structures and emergency actions to ensure public health and safety (see AH Exh 53, at 4 [footnote ("fn") 2(C)&(I), incorporating by reference 6 NYCRR 670.7]), actions regarding the operation of the Tunnel as directed by the Department (id., fn 2[B]&[H]), and where releases are made to prevent spilling of the Schoharie Reservoir (id., fn 2[F]&[J]).[4]

[4] I take official notice of three emergency authorizations that the Department has issued to the City to address the installation of a temporary siphon system, a temporary spillway notch and a post-tensioned anchor system on Gilboa Dam (see, respectively, emergency authorizations dated January 5, 2006 [DEC

Structural Measures and Implementation Timetable

The draft SPDES permit requires the City to develop a program to reduce the turbidity in the Tunnel and to maximize the volume of cold water available for discharge to the Esopus Creek (AH Exh 53, Schedule of Compliance, at 10).

The City noted that it is already required, pursuant to the U.S. Environmental Protection Agency ("EPA") Filtration Avoidance Determination – November 2002 ("FAD")(see AH Exh 40), to examine and implement structural measures to address turbidity. Section 4.9 of the FAD establishes milestone and reporting requirements for the City with respect to the development of a Catskill turbidity control program to address elevated turbidity in the Catskill watershed (AH Exh 40, at 46-47; see also id. at 12-13).

#4-4334-00043/00013], dated February 3, 2006 [DEC #4-4334-00043/00015], and dated March 10, 2006 [DEC #4-4334-00043/00017]). Pursuant to these emergency authorizations, work has been undertaken to strengthen the dam and further protect public safety. The emergency authorizations provide that the work so authorized must be carried out in a manner that will cause the least change, modification or adverse impact to life, health, property or natural resources. Subsequent to the issuance of the emergency authorizations, the City submitted a permit application, which the Department is now considering, to continue the work to strengthen the dam.

The City submitted a report on phase I of its study to EPA in which the City identified several potentially viable structural measures that could be implemented to address turbidity, including a multi-level intake structure ("MLIS"), an in-reservoir baffle, and modification of reservoir operations (see AH Exh 25 [Phase I Final Report, Catskill Turbidity Control Study, December 2004]; AH Tr, at 1:122-123). The City is due to submit the report on the second phase of its study to EPA by September 30, 2006 ("September 2006 submission"). The report will include preliminary designs and detailed cost information from which a plan will be developed, with appropriate milestones, for implementing "feasible, cost effective measures" to address turbidity (see AH Exh 40, at 46)("structural measures plan" or "plan"). The plan will be subject to the review and approval of the EPA, DEC and the New York State Department of Health ("DOH").

The Department's draft SPDES permit specifically provides that the measures that the City is evaluating in accordance with the FAD (see AH Exh 53, at 10, ¶ 1) are to be considered for purposes of this permit. By December 31, 2006, the City is to provide a report to the Department ("December 2006 submission") that includes an investigation of structural measure alternatives, projected turbidity reductions and increases in available cold water volume, and recommended actions to be taken,

along with an implementation schedule (id. at 11). Within seven years of the effective date of the permit, the City is to complete the structural measures that were selected by the City and approved by the Department, and achieve compliance with the permit's final effluent turbidity requirements (id.; Hearing Report, at 11).

At the adjudicatory hearing, the City objected to the timetable in the draft SPDES permit for implementation of the structural measures. The City claimed that the timetable was too short in the event that the City selects the MLIS alternative. However, the City in its closing and reply briefs withdrew its objection in reliance on Department staff's willingness to renegotiate the implementation schedule in the SPDES permit as necessary.

Trout Unlimited, et al., however, contended that sufficient information exists at this time to select the MLIS as the structural measure to address the turbidity associated with the Tunnel discharge and to require the City to construct it. They further argued that the draft permit should require the City to complete construction of the MLIS by September 2011 (see Hearing Report, at 28).

The ALJ concluded, however, that the City's September 2006 and December 2006 submissions will provide significant information with respect to the merits of the MLIS and other technologies for controlling turbidity and temperature. The ALJ stated that this information should be considered prior to the selection of any structural measure in order to design the best project (id., at 29).

I agree with the ALJ and reject Trout Unlimited, et al.'s call for immediate selection of the MLIS. The studies that the City is now undertaking will provide critical information regarding the feasibility, cost-effectiveness and efficacy of the various structural measures under consideration. In particular, as discussed in the record, the City has developed a model to forecast temperature and turbidity ranges with respect to alternative mitigation measures (see, e.g., Hearing Report, at 17-18; AH Tr, at 1:116-117, 123, 131, 137-139, 144-147, 160; Post-Adjudicatory Hearing Reply Brief of the City of New York dated January 20, 2006 ["City's Reply Brief"], at 6-8; AH Exh 40, at 46 [noting that the City's September 2006 submission will "incorporate the results of a fully calibrated and verified reservoir model"]).

This information, as indicated in the record, will be

essential to an informed selection of appropriate structural measures to address environmental concerns. To ignore this information would be short-sighted and imprudent. In fact, the City has maintained that, based on the information it has developed, the MLIS alternative which Trout Unlimited, et al. promotes may not be the most environmentally effective strategy (see, e.g., City's Reply Brief, at 8-12; see also Hearing Report, at 25-26). Moreover, because the information that the City will be submitting will be available for Department review in the near future, no significant or meaningful delay will occur by allowing for its consideration.

In addition, I have reviewed the arguments of Trout Unlimited, et al., for a more expedited schedule for implementing the MLIS. Even assuming that the MLIS is selected as the appropriate structural measure, the record reflects various deficiencies in the schedule proposed by Trout Unlimited, et al. for the construction of an MLIS (see, e.g., Hearing Report, at 28-29). Accordingly, the record does not support altering the schedule set forth in the proposed SPDES permit.

Based on my review of the record in this proceeding, I agree with the ALJ's recommendation that the SPDES permit should be issued as drafted.

Other Hearing Report Recommendations

In the hearing report, certain other recommendations are presented. The ALJ recommends that the Department, in cooperation with the staff of the City's Department of Environmental Protection, continue to monitor the turbidity levels in the tunnel discharge and the Esopus Creek to determine what causes "substantial visible contrast" in the Esopus Creek and to take turbidity measurements "above and below the portal" in an effort to more precisely identify "substantial visible contrast" (Hearing Report, at 27 & 32). The proposed SPDES permit, as drafted, provides for the City to monitor turbidity levels and to submit reports to the Department. In addition, the permit provides for the construction of an upstream monitoring station to measure upstream turbidity samples (see AH Exh 53, at 7).

Because the City will be taking turbidity measurements pursuant to the SPDES permit, I decline to adopt the recommendation that Department staff take such measurements (see Hearing Report, at 32) but leave it to Department staff's discretion whether it will independently take any such measurements. However, it is the City's responsibility, as permittee, to conduct monitoring as required or as otherwise directed.

The ALJ further recommends that Department staff publicly notice the City's proposal on the structural measure or measures to be implemented and solicit public comment on the structural measure(s). The ALJ concludes that, as the draft permit does not provide a mechanism for the public's input on the City's structural measure(s), it is not in compliance with the public participation requirements of the Clean Water Act (see Hearing Report, at 31). I disagree, and do not accept that recommendation.

The hearing report cites, as support, the Second Circuit decision in Waterkeeper Alliance, Inc. v United States Envtl. Protection Agency (399 F3d 486 [2d Cir 2005]) ("Waterkeeper"), which vacated provisions of a regulation that EPA promulgated to abate and control emission of pollutants from concentrated animal feeding operations ("CAFOs"). The Second Circuit concluded that the regulation, which provided for a general permit for large CAFOs, in part violated the federal Clean Water Act because it allowed "nutrient management plans" (one of the best management practices that constituted the effluent limitation guidelines for land application for large CAFOs) to be devised solely by the regulated entities without review by permitting authorities or the public before a permit was issued, and because it did not provide the public with any

access to the nutrient management plans (see id. at 499-504).

In contrast to Waterkeeper, both public participation and public agency review have been provided or are contemplated in this case and on this application. Before me is a site-specific SPDES permit where the public has had a full and fair opportunity to participate in the permit's development. The permit establishes effluent limits and other conditions with which the City must comply, including those relating to turbidity.

The process governing the consideration of the City's permit application has allowed the public to meaningfully assist in the development of effluent limits governing discharges from the Tunnel (see section 1251[e] of title 33 of the United States Code), as well as other conditions established by the draft permit. Consequently, whatever technology the City selects must satisfy the limits and conditions established through this public process. Also, the draft SPDES permit, under "Compliance Action," requires that the City engage in public participation efforts with respect to the future progress of its turbidity reduction projects (see AH Exh 53, at 7).

In addition, the structural measures plan that the City

will be proposing will receive significant public agency review. Pursuant to the requirements of the FAD, it will be submitted to three agencies (the Department, EPA and DOH) for review and approval.

The ALJ also recommends that, in the event that the City's September and December 2006 submissions provide a foundation for modifying the turbidity numbers or the structural measures schedule in the SPDES permit, Department staff should modify the SPDES permit and invite comment on the modifications. At this point, it is not known whether the City's submissions would lead to consideration of any such modifications to the SPDES permit. However, if Department staff, based on its review of the City's September and December 2006 submissions, proposes to modify the SPDES permit (see 6 NYCRR 621.14), I hereby determine that, based on the circumstances of this case, a public comment period should be provided. Accordingly, I direct that Department staff provide for a public comment period, including a public hearing, on any such Department-initiated modifications.[5]

[5] The hearing report refers to the Deputy Commissioner's decision in Matter of Seven Springs, LLC (May 7, 2004)("Seven Springs") as support for providing a comment period on the City's structural measures plan and modifications to the SPDES permit. However, Seven Springs is distinguishable. At issue in Seven Springs was whether a linear adsorption system to capture, store and treat stormwater runoff from a proposed golf course would meet design standards. As a condition to the permit, a pilot study was proposed to be undertaken and the intervenor towns and

Based upon the record of this proceeding, I hereby direct Department staff to issue the SPDES permit to the City, consistent with the draft permit entered into the adjudicatory hearing record as exhibit 53, and to simultaneously provide copies of the SPDES permit to the other parties in this proceeding.

NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION

By:_____/s/_____
Denise M. Sheehan
Commissioner

Albany, New York

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village were given the opportunity to submit comments on the pilot study results to Department staff. The permit language allowing for these comments was an outgrowth of that specific proceeding and was not mandated by the Clean Water Act or applicable state requirements.

Accordingly, Seven Springs does not stand for the general proposition that additional comment periods are required in the selection of technologies where effluent limits have been established by a SPDES permit or in those circumstances where a SPDES permit is subsequently modified. The extent to which comment periods, beyond those required by applicable statutes and regulations, may be provided is subject to a case-by-case determination. In the matter pending before me, the City's structural measures plan will be reviewed by the EPA, DOH and DEC and the turbidity limits which the proposal(s) in the structural measures plan must satisfy have been established in an adjudicatory hearing pursuant to 6 NYCRR part 624. In light of the foregoing, a comment period on the structural measure or measures that the City will be proposing is not being provided by this decision. However, as noted above, should Department staff, based on its review of the City's September and December 2006 submissions, propose to modify the SPDES permit, a public comment period will be provided on any Department-initiated modifications.

STATE OF NEW YORK: DEPARTMENT OF ENVIRONMENTAL CONSERVATION

In the Matter of the Application of the

NEW YORK CITY **HEARING REPORT**
DEPARTMENT OF ENVIRONMENTAL PROTECTION

for a state pollutant discharge elimination system permit for its discharge from the Shandaken Water Tunnel located in the Town of Shandaken, County of Ulster.

DEC Application No. 3-5150-00420/00001

PROCEEDINGS

Background and Project Description

These proceedings involve the application of the City of New York Department of Environmental Protection (DEP or City) to the New York State Department of Environmental Conservation (DEC or Department) for a state pollutant discharge elimination system (SPDES) permit for the City's discharge of water from the Shandaken Water Tunnel located in Shandaken, Ulster County. Since 1926, the City of New York has discharged from the tunnel as part of its water supply system. The unpermitted discharge results from the City's conveyance of water from the Schoharie Reservoir through the 18-mile-long tunnel into the Esopus Creek, which eventually empties into the Ashokan Reservoir. The tunnel operation is governed by Part 670 of Title 6 of the New York Compilation of Codes, Rules and Regulations (6 NYCRR) which the Department adopted in 1977. For a visual overview of the City's water supply system, see Hearing Exhibit (Ex.) 26 annexed hereto as Appendix A.

Federal Litigation

Due to concerns about turbid water being released from the tunnel to the Esopus Creek, a popular flyfishing venue, in March 2000, the Catskill Mountains Chapter of Trout Unlimited, Inc., Theodore Gordon Flyfisher, Inc., Federated Sportsmen's Clubs of Ulster County, Inc., Catskill-Delaware Natural Water Alliance, Inc., and Riverkeeper, Inc. (hereinafter collectively referred to as Trout Unlimited, et al. or TU, et al.) sued the City and DEP in the U.S. Northern District of New York alleging that these releases were in violation of the Clean Water Act because they were not permitted. After dismissal by the district court and appeal, by decision dated October 23, 2001, the U.S. Court of

Appeals for the Second Circuit reinstated the plaintiffs' action, finding that a SPDES permit was necessary for this point source discharge. See, Catskill Mountains Chapter of Trout Unlimited v. City of New York, 273 F.3d 481 (2d Cir. 2001).

On remand, Judge Scullin of the U.S. District Court issued an order dated February 6, 2003, requiring DEC, as a third party defendant, to make a determination on DEP's application for a SPDES permit within 18 months. See, Catskill Mountains Chapter of Trout Unlimited v. City of New York, 244 F. Supp. 2d 41 (NDNY 2003) and Ex. 21.[1] Pursuant to that order, on February 18, 2004, DEC staff issued a draft SPDES permit to DEP which was publicly noticed in the *Environmental Notice Bulletin* (ENB) published that same day. Based upon comments received in response to the terms of that initial draft permit, DEC staff suspended Uniform Procedures Act (UPA) time frames and developed a second draft permit. This proposed permit was publicly noticed in the August 4, 2004 *ENB*.

By letter dated October 10, 2005, Senior Counsel Hilary Meltzer, of the Corporation Counsel's Environmental Law Division, informed me that the City maintains an appeal of Judge Scullin's decision and order to the U.S. Court of Appeals for the Second Circuit. According to Ms. Meltzer, argument in that matter was to be heard the week of November 21, 2005. In addition, the City has pending before Judge Scullin a motion to stay the District Court's 2003 order and to enjoin DEC from continuing the permit process. This motion has not been decided.[2]

Request for Administrative Hearing

Because of its disagreements with the August 2004 draft permit, by letter dated September 3, 2004 to Louis A. Alexander,

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[1] While the original order of Judge Scullin required DEC to issue a permit within 18 months, on the motion of the Department, the judge modified the order to require that DEC complete the application process and make a determination on " . . . whether to issue a SPDES permit . . ." within that time frame. See, Order, dated March 12, 2003, Hearing Ex. 22.

[2] According to the copy of the City's motion papers filed in the Northern District and the supplemental brief filed in the Second Circuit that I reviewed, the City's applications are based upon a U.S. Environmental Protection Agency memorandum dated August 5, 2005 that concluded that water transfers are not subject to the Clean Water Act NPDES permit program.

the Department's Assistant Commissioner for the Office of Hearings and Mediation Services (OHMS), the City requested an adjudicatory hearing pursuant to 6 NYCRR § 621.7(f). Trout Unlimited, et al. also requested an adjudicatory hearing in their written comments on the proposed draft permit. Based upon these submissions as well as written comments received by other interested organizations and individuals, the Department staff determined that a public hearing would be held.

The City published a notice of hearing in the March 9, 2005 *Catskill Mountain News* and in the March 11, 2005 *Kingston Freeman*. The Department also published the notice in the March 9, 2005 *ENB*. The notice of hearing provided that written comments were to be received by the Department no later than April 13, 2005.

SEQRA Status

Because the New York State Conservation Commission - a predecessor agency to the Department - approved the Schoharie Reservoir and the Shandaken Tunnel as Water Supply Application 166 on October 21, 1914, Department staff have determined that this project is grandfathered and, therefore, exempt from the State Environmental Quality Review Act. See, Environmental Conservation Law (ECL) § 8-0111(5)(a) and 6 NYCRR § 617.5(c)(34).

Legislative Hearing

The legislative hearing was held on April 12, 2005 at 7 p.m. at the Onteora Central School in Boiceville. Approximately forty people were in attendance including staff of the Department and DEP and representatives of interested organizations. In all, there were 12 speakers, most representing whitewater recreational users. The recreational users raised concerns that the SPDES permit would further limit recreational releases. The City summarized its objections to the permit and the speakers representing the fishing interests spoke to the turbidity problems caused by the discharge.

In addition to the statements made at the legislative hearing, the Department received over 60 e-mails and letters in support of the recreational users of the Esopus Creek and asking that recreational releases be made a part of any SPDES permit that is issued.

Issues Conference and Ruling

Trout Unlimited, et al. petitioners, the Coalition for Watershed Towns (hereinafter, the Coalition), the Kayak and Canoe Club of New York and New York Rivers United (hereinafter referred to collectively as KCCNY, et al.); and Harry G. Jameson, III representing Mountain Creek Recreation, Inc., d/b/a Town Tinker Tube Rental (Town Tinker Tube Rental) filed petitions for party status. The Appalachian Mountain Club (AMC) sought amicus status. AMC agreed to be represented along with KCCNY (collectively, KCCNY).

At the issues conference, the City was represented by William Plache, Assistant Corporation Counsel; William C. Becker, Ph.D., P.E. of Hazen & Sawyer - the engineering company responsible for the Turbidity Control Study (Ex. 25) and DEP staff members: Jeff Helmut, Operations Engineer for Schoharie and Ashokan Reservoirs; Paul Costa, P.E., Executive Project Manager, Bureau of Environmental Design and Construction, Watershed Facilities Design Division; Paul Rush, Director of the Operations Division - West of Hudson Bureau of Water Supply; Elizabeth Reichheld, Program Manager, Stream Management; Tina Johnstone, Water Supply; David Smith, Ph.D., Section Chief, Bureau of Water Supply in charge of infiltration management and modeling; and Jim Mayfield, Supervisor, Water Hydrology Program.

The Department staff was represented by Assistant Regional Attorney Carol Krebs, as well as DEC staff members Brian Baker, P.E., SPDES permit writer; Thomas R. Snow, Jr.; Kenneth J. Markussen, P.E., Division of Water (DOW), NYC Watershed Section; Francis G. Zagorski, P.E., NYC Watershed Section, Bureau of Water Compliance; Wayne Elliot, Region 3 Regional Fisheries Manager; Michael J. Flaherty of Region 3's Fisheries office and Thom Engel, Environmental Analyst, Division of Environmental Permits.

The Trout Unlimited, et al. intervenors were represented by Karl S. Coplan, Esq., Supervising Attorney and Co-Director of Pace Environmental Litigation Clinic and Craig Michaels, Legal Intern.

Representing the Coalition of Watershed Towns (hereinafter referred to as the Coalition) was Kevin Young, Esq. of Young Sommer . . . LLC. Lauren Cook appeared on behalf of KCCNY; and Harry G. Jameson, III represented Mountain Creek Recreation, Inc., d/b/a Town Tinker Tube Rental.

Based upon the issues conference record and petitions, I found the following issues to be adjudicable:

- Turbidity limits
- Compliance Schedule - structural and non-structural measures to reduce turbidity and temperature. Both the specific measures and the time frames proposed in the draft permit were to be subject to hearing.
- Phosphorus limits - in the event that the involved parties failed to reach a resolution with EPA and among themselves.

The City and the Department staff are automatically parties to this proceeding pursuant to 6 NYCRR § 624.5(a). Party status was designated to Trout Unlimited, et al. and the Coalition. The issues ruling designated KCCNY, NYRU, AMC and Town Tinker Tube Rental as amici.

Due to the time pressures of this proceeding associated with Judge Scullin's court order, I scheduled the adjudicatory hearing while the appeals process ensued.

Only the City appealed the issues ruling and that appeal was withdrawn by letter dated October 7, 2005 from Mr. Plache to Acting Commissioner Denise Sheehan.

Adjudicatory Hearing

Because the City, DEC staff, and the Coalition were able to resolve their differences on the non-structural measures as well as the phosphorus limits, the adjudicatory hearing was limited to the issues of turbidity limits and structural measures to reduce turbidity and temperature. The revised draft SPDES permit (Ex. 53) reflecting these latest agreements and also certain concessions staff made to the City with respect to turbidity and temperature limits is annexed hereto as Appendix B.

The hearing was held on October 17, 18 and 19, 2005 at Belleayre Mountain in Highpoint, New York. Assistant Corporation Counsels Hilary Meltzer and William Plache represented the City; Assistant Regional Attorney Carol Krebs represented the DEC staff; Messrs. Michaels and Coplan represented Trout Unlimited, et al. and Mr. Young represented the Coalition. Neither KCCNY nor Town Tinker Tube Rental made an appearance at the adjudicatory hearing.

At the commencement of the hearing, we marked and took into evidence the documents (Exs. 1-52) that the parties had agreed upon prior to the hearing session. I have marked the most recent draft of the SPDES permit as Exhibit 53. This draft permit was submitted to me and the parties by DEC staff after the hearing

concluded based on the agreements made during the proceedings. See, exhibit list annexed hereto as Appendix C.

Prior to the hearing, the parties and I agreed that the party that maintained objections to the permit would take the lead on that issue at the hearing.[3] Accordingly, to begin the session on turbidity, Trout Unlimited, et al. presented its witnesses Mr. Bert Darrow and Dr. Bruce A. Bell. In response, the City presented a panel of witnesses on turbidity comprised of Dr. William Becker, P.E. of Hazen and Sawyer, P.C., Dr. Steven W. Effler, Upstate Freshwater Institute, Inc., and Paul Rush, P.E., District Engineer, West of Hudson Water Supply, DEP. The Department staff presented Wayne Eliot, DEC Region 3 Fisheries Manager, Michael Flaherty, DEC Region 3 Senior Aquatic Biologist and Brian Baker, Section Chief, Division of Water, Bureau of Water Permits.

On the structural issue, the City presented Donald Cordell, P.E., Vice President, Hazen and Sawyer, P.C. and Paul Costa, P.E., Executive Project Manager, Bureau of Environmental Design and Construction, Watershed Facilities Design Division, DEP. In response to the City's case on structural measures, Trout Unlimited, et al. presented Peter N. Skinner, P.E. The Department staff's witness on this issue was Kenneth Markussen, P.E., Director of the Bureau of Water Resources Management in the DEC Division of Water. The City presented a rebuttal case on this issue with a panel of Dr. Effler, Dr. Becker, and Mr. Cordell.

At the conclusion of the adjudicatory hearing, a briefing schedule was agreed upon. Closing briefs were due on December 9, 2005 and replies were due on January 11, 2006. On October 20, 2005, I distributed a memorandum to all parties with this schedule as well as other details on completing the record in this matter. Based upon a request of Mr. Michaels, the due date for closing briefs was extended to December 14, 2005. The City, DEC staff, and Trout Unlimited, et al. submitted their briefs to this office by e-mail on December 14, 2005. Based upon a request by the City, the due date for the reply briefs was extended to January 20, 2006. The City and TU, et al. submitted replies; the

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[3] This procedural determination does not alter the requirement that the City, as the applicant, bears the burden of proof in demonstrating that its discharge meets all regulatory requirements. 6 NYCRR § 624.9(b)(1). Pursuant to 6 NYCRR § 624.9(c), the City ". . . must sustain that burden by a preponderance of the evidence."

staff did not. The *amici* did not make any post-hearing submissions. The record closed upon the receipt of the replies on January 20, 2006.

Pursuant to the agreed upon schedule, the staff circulated the revised draft permit on October 21, 2005. The parties were given until October 28, 2005 to provide comments on this document. Mr. Michaels submitted a letter dated October 26, 2005 to staff maintaining the objections that Trout Unlimited, et al. had raised in their initial comments, petition, and issues conference briefs. Ex. 54. Ms. Meltzer submitted a letter dated October 28, 2005 in which she suggested a number of seemingly minor language changes to conform the draft permit and accompanying fact sheet terms to the understandings reached between the City and staff. Ex. 55. On behalf of the Coalition, Mr. Young submitted a letter on the same day proposing one modification concerning the TMDL allocation on page 4 of the fact sheet relating to phosphorus. Ex. 56. In addition, he provided his understanding of several provisions of the revised permit based upon the settlement discussions. Id. Ms. Meltzer sent her response the same day, further clarifying some of these conditions. Ex. 57. On November 1, 2005, Mr. Young replied stating his agreement. Ex. 58. I am not aware of any further revisions to the draft permit by staff based upon these submissions.

On November 29, 2005, I circulated an *errata* sheet to the parties after I reviewed the hearing transcript. Corrections were also received from the City on December 19, 2005, and incorporated.

In the City's closing brief, Mr. Plache represented that " . . . the City supports the draft permit as reflecting an appropriate exercise of Department staff's best professional judgment." DEP Br., p. 2. The City maintained its legal objections to the necessity for a SPDES permit based upon its view, that as a water supply, the discharge from the Shandaken Tunnel is not subject to the Clean Water Act. Id., p. 1. The City also contended that the seven-year timeframe provided in the draft permit for the construction and implementation of the multi-level intake structure is insufficient if that alternative is chosen. However, the City did not brief this matter based on DEC staff's expressed willingness to revisit this schedule when the alternative measure(s) is selected. Id., p. 2, fns. 3-4.

Positions of the Parties

Turbidity

As explained above and in the issues ruling of June 22, 2005 (see, issues ruling at p. 12), the genesis of these proceedings is the concern of Trout Unlimited, et al. regarding the introduction of turbid water into the Esopus Creek, an A(T) stream.[4] In *Turbidimetric Characteristics of Schoharie Reservoir* (Ex. 8), the writer quotes Lind (1979) in defining turbidity as "an optical property of water which is determined by the scattering and absorption of light caused by suspended particles." This turbidity is caused by the design of the Schoharie Reservoir, the geology of the Schoharie drainage basin as well as erosion in the Schoharie watershed resulting from land disturbance by human activities. See, Catskill Mountains Chapter of Trout Unlimited, Inc., et al., *supra* at 46; *Turbidimetric Characteristics of Schoharie Reservoir, supra;* Ex. 8. According to 6 NYCRR § 703.2, the water quality standard for discharges of turbidity to waters classified as A is "no increase that will cause a substantial visible contrast to natural conditions."

Turbidity is measured as NTU which is an abbreviation for nephelometric turbidity units. See, *Standard Methods for the Examination of Water and Wastewater*, 20th edition (1998), p. 2-9. NTU is a measurement of light scattering - a beam of light is shone on a sample and the equipment measures the degree of light scattering. Hearing Transcript (TR), Volume 1 (1):70.

As an interim limit for turbidity, the draft SPDES permit (Exs. 37 and 53) provides an action level of an increase of 15 NTU for June - October and an action level of an increase of 20 NTU for the period November - May.[5] There is also a shutdown

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[4] Section 701.6 provides that "[t]he best uses for Class A fresh waters are: a source of water supply for drinking, culinary or food processing purposes; primary and secondary contact recreation; and fishing. The waters shall be suitable for fish propagation and survival." The "T" in the Esopus Creek classification refers to trout.

[5] Exhibit 37 was the version of the draft permit available at the hearing. Exhibit 53 is the revised version that incorporates further agreements among the City, DEC staff and the Coalition. The language with respect to turbidity limits did not change between the two versions.

limit of 100 NTU. Staff revised the draft permit to reflect its determination that because Part 703 expresses turbidity in terms of "substantial visible contrast" and not "absolute numbers", the final limits are "monitor only." TR 1:8; Ex. 53. These monitor-only final permit limits provide for an effluent limit of an increase of 15 NTU and a shutdown limit of 100 NTU.

The City has accepted these action levels for the interim permit requirements and the final limits along with the numerous exemptions provided in the draft SPDES permit. See, City Br., p. 2. The draft permit exempts the City from meeting the turbidity and temperature requirements when there is agreement between the City and the Department that water supply management concerns require additional resources; when the City is required to take an action with regard to operation of the tunnel pursuant to a Department mandate or pursuant to a compliance schedule in the permit; when the City and DEC determine that a release is consistent with Part 670 to protect the fishery or other natural resource of the Esopus Creek; with Department concurrence in the event of drought conditions; with Department concurrence to prevent spilling of the Schoharie Reservoir; and in the event of emergency action in regard to operation of the tunnel pursuant to Part 670. See, Ex. 53, Footnote 2, p. 4.

The Department staff explains that these limits were derived based upon the goal of balancing the protection of the fishery, water quality, and the water supply. Specifically, staff includes the following language in Note 2 of the draft permit:

> Due to conflicting requirements between 6 NYCRR Parts 700-706 (Water Quality Regulations) and 6 NYCRR Part 670 (Reservoir Release Regulations: Schoharie Reservoir - Shandaken Tunnel - Esopus Creek), Action Levels have been established for Turbidity and Temperature in the discharge from the Shandaken Tunnel. If levels higher than the Action Levels are detected, the permittee shall reduce the flow from the Shandaken Tunnel at the maximum allowable ramping rate until either the specified Action Level is met or the flow from the Tunnel (as measured at the portal) is at the minimum flow necessary to achieve a combined flow from the

Tunnel and the Esopus Creek (as measured at the upstream monitoring location) of no less than 160 MGD in accordance with Footnotes 1 and 4 on Pages 4 and 5 of this Permit.

The Department staff explains that the turbidity limits were derived based upon a best professional judgment (BPJ) that rested on balancing the needs of the various resources with particular consideration of the documented impacts of turbidity on trout. In the absence of an applicable effluent limit guideline, BPJ is exercised to develop appropriate effluent limitations. See, 33 U.S.C. § 1342(a)(1); 40 C.F.R. § 125(3)(d). As noted in the reply briefs of the City and TU, et al., there is no disagreement as to the need to apply BPJ because there are no established technology-based standards. City Reply, p. 1; TU, et al. Reply, p. 2.

Trout Unlimited, et al. contend that due to the turbid conditions in the Esopus that they have found to be caused by the discharge from the Shandaken Tunnel, it is not safe or desirable for fishermen to fish the Esopus Creek. They maintain that their observations reveal that even at 10 NTU, there is a substantial visible contrast between the discharge from the tunnel and the Esopus Creek on many occasions. TR 1:39, 42-43, 45; TU, et al. Reply, pp. 6-8. Accordingly, they find that the limits established by staff do not meet water quality standards. In addition, Trout Unlimited, et al. argue that because the staff did not base the draft permit requirements on any specific technological control, they do not meet BPJ requirements in violation of Clean Water Act requirements. TU, et al. Br., pp. 7-8; TU, et al. Reply, pp. 2-5.

Structural Measures

The draft permit contains a section that requires the City to “develop a program consisting of structural and nonstructural measures to reduce the turbidity in the Shandaken Tunnel and maximize the volume of cold water available for discharge to the Esopus Creek. The goals of this program shall be to **protect the water supply, fishery, and recreational uses of the Esopus Creek through:**

1. Achieving consistent compliance with the turbidity limits . . . of this Permit; and

2. Providing adequate cold water volume to assure that the

> discharge from the Shandaken Tunnel does not exceed the water quality based effluent limit of 70 degF during the months of May through September."

Ex. 53, Schedule of Compliance, p. 10, emphasis in original.

The permit requires that the City submit a report to the Department by no later than December 31, 2006 that details the short and long term measures that the applicant proposes to implement to achieve the above mentioned requirements. The report is to include the turbidity reductions to be achieved as a result of the proposed measures and a schedule for implementation. Within two months from the Department's approval of the report, the City is to begin implementation of the structural measures. Within seven years of the effective date of the permit, the City is to complete the structural measures and meet the final turbidity limits. Ex. 53, Schedule of Compliance - Turbidity Reduction Measures, p. 11.

The City maintains that it is already required pursuant to the Filtration Avoidance Determination (FAD) (Ex. 40) to embark on an examination and implementation of structural measures to address turbidity. The FAD is the EPA's Surface Water Treatment Rule Determination for the City's Catskill/Delaware Water Supply System. It sets forth a strategy for the City to undertake to meet Safe Drinking Water Act standards and avoid constructing an extremely costly filtration plant. Part of this strategy is to reduce turbidity in the system, including reductions in the Schoharie watershed. Id., pp. 12-13.

Pursuant to the FAD, the City has completed Phase I of an extensive study of alternative strategies to reduce turbidity. See, Phase I Final Report, *Catskill Turbidity Control Study*, December 2004 (Ex. 25). As a result of this study, the City has identified several potentially viable measures including the multi-level intake structure (MLIS), an in-reservoir baffle, and modification of reservoir operations. Id., pp. ES-1 - ES-5. The City is currently engaged in further studies and modeling efforts in order to develop the appropriate strategy. The final report is due to be submitted to EPA in September 2006. In the event that the MLIS is selected, the City's consultants and in-house personnel advise that ten years is a realistic schedule for implementation. Ex. 43.

Trout Unlimited, et al. relies upon a report produced by the New York Attorney General's office in September 2003 - *Clean Water - Clean Creek - A Proposal for a Multiple Level Water Intake Structure in the Schoharie Reservoir to Improve Drinking*

Water Quality, Protect the Esopus Creek and Expand the New York City Water Supply (Ex. 9). In this report, Attorney General Spitzer recommended that the MLIS be constructed to reduce turbidity. Based principally on this report, Trout Unlimited, et al. maintains that there is no reason to delay further and that the project should be completed within seven years of the date Judge Scullin selected for a determination on the SPDES permit (August 2004). Trout Unlimited, et al. also notes that the requirements pursuant to the FAD respond to EPA's concerns under the Safe Drinking Water Act and that ultimately, the City could select a turbidity reduction alternative that does not address the problems in the Esopus. TU, et al. Br., pp. 18-24.

In its closing brief, Trout Unlimited, et al. cites CWA § 101(e) regarding public input into the selection of the ultimate structural remedy. TU, et al. Br., pp. 14-19. The draft permit provides for a decision on the selection of the structural measure in late 2006 by DEP and the Department staff and does not provide for an associated notice and comment period. Trout Unlimited, et al. maintains that the Clean Water Act requires that there be public participation in the selection of the alternative. Id.; TU, et al. Reply, pp. 8-9. The City did not respond to this argument in its reply.

While the permit reflects a tighter timeframe than the City agrees is feasible, at the hearing, the Department staff acknowledged that depending on the location, it was possible that the construction of the MLIS would take ten years. TR 3:182. Overall, staff and the City agree on the need for the City to complete its report in order to ensure that the most effective system is selected, designed, and implemented.

Findings of Fact

Tunnel and NYC Water Supply System

1. The Shandaken Tunnel is an 18-mile-long conduit of water from the Schoharie Reservoir to the Esopus Creek near Allaben, New York. Ex. 25, p. 2-1. From there, the combined flow of the Esopus Creek and the tunnel discharge travel another 12 miles southeast before discharging into the Ashokan Reservoir. Id.; TR 1:99. The City has operated the tunnel as part of the New York City water supply system since 1926. Ex. 25, p. 2-1. Without the tunnel, the water would go to the Mohawk River and eventually to the Hudson River. TR 1:99.

2. The City's surface water supply, of which the tunnel is

a part, contains 19 reservoirs and 3 lakes with a capacity of 550 billion gallons. Ex. 26. This system delivers about 1.3 billion gallons of water per day and drains a watershed area of approximately 2,000 square miles through three interconnected reservoir systems - the Croton, Catskill (comprised of the Ashokan and Schoharie reservoirs), and Delaware. Comments of Dr. Michael Principe at Legislative Hearing, April 12, 2005, Boiceville. The releases from the tunnel comprise 15-20% of the City's water supply and the Catskill System comprises 40%. Exs. 25, p. 2-4, 26; TR 1:90-91, 99. The Catskill system is capable of providing half of the City's supply. TR 1:94. The water supply system serves 9 million people, eight million of whom reside in New York City. TR 1:91.

3. The City manages its water so that it supplies the highest quality water while assuring that the supply is always available. TR 1:92. It does this by diverting water from the highest quality sources to the City. Id. By the time of year that drawdown begins - when demand on the system exceeds inflow to the system - the City's water managers strive to have all the reservoirs as close to capacity as possible. Id. When the last reservoir in the system stops filling, all others should be as close to full as possible. Id. The City's managers continually strive to move the water down closest to the City so as to allow room for more storage and not "waste" water by allowing spilling. TR 1:92-93.

4. The Schoharie Reservoir has a capacity of 22 billion gallons. TR 1:95. Three billion gallons is in a "dead storage" area of the reservoir because it is below the intake and therefore unavailable for withdrawal. TR 1:95. The Schoharie Reservoir is served by a watershed of 314 square miles and fills quickly. TR 1:96, 98. It was constructed to divert water from the Schoharie basin to the Ashokan Reservoir. TR 1:95. The intake at the Schoharie Reservoir is currently located on the border of Delaware and Schoharie counties and consists of a single level intake with an elevation of 1,065 feet and an eight gate operation. TR Vol. 2 (2):60. The City constructed the intake in this manner because the reservoir was engineered as a diversion reservoir. TR 2:61. The City anticipated that the water from the Schoharie would settle out in the Ashokan Reservoir before it got to the City. TR 2:61.

5. The Ashokan Reservoir has a capacity of 128 billion gallons of storage - eight times the capacity of the Schoharie Reservoir. TR 1:94, 97. During the construction of the reservoir system, the City recognized the turbid condition of the Schoharie Reservoir and addressed this with two settling basins

in the Ashokan Reservoir in order to maximize water quality. TR 1:96-97, 100.

6. One of the challenges to the City's water managers is the variability of weather - storms that cause more turbidity and degrade water quality require switches in sources. Likewise, drought conditions require the City to move water as close to the City as possible. TR 1:101-104. There are also seasonal changes in water quality requiring that a system be shut down completely. TR 1:93. Part 670 of Title 6 of NYCRR requires the City to release water in order to maintain a flow of 160 mgd in the Esopus Creek and to refrain from releases when the flow in the Esopus exceeds 300 mgd. 6 NYCRR § 670.3; TR 1:112. Periodically, maintenance requirements may take a system out of service, necessitating more reliance on the Catskill System. TR 1:108-111. Demands on the system require the City to maintain flows. TR 1:102. In other portions of the system such as the Delaware System, the City is also bound by certain requirements to limit diversions and maintain certain releases. TR 1:105-107.

7. The City has never had a SPDES permit to operate the tunnel. Ex. 21, pp. 6, 16.

Turbidity and the Esopus Creek

8. Turbid water is released from the Schoharie Reservoir into the Esopus Creek. Exs. 4B, 4D, 4F, 17, 21, p. 5; TR 1:42-45, 47-48. The turbidity is caused by the design of the Schoharie Reservoir, the geology of the Schoharie drainage basin, and erosion in the Schoharie watershed resulting from land disturbances from human activities. Ex. 21, p. 5.

9. The Esopus Creek is classified as an A(T) stream and its best uses are: water supply for drinking, culinary or food processing, primary and secondary contact recreation and fishing. In addition, the Esopus is supposed to be suitable for the propagation and survival of trout. 6 NYCRR § 701.6.

10. The Esopus Creek is an important trout habitat. TR 2:79; 93-96. Above the Shandaken Tunnel, the stream gets very low in the summer and the temperatures increase to in excess of 80 degrees. TR 2:79-80. These temperatures are not conducive for trout which are a cold water species. TR 2:80. Below the Shandaken Tunnel portal in the Esopus Creek, ninety percent of the flow is comprised of the discharge from the tunnel, making this volume an asset to the stream. Id. This discharge is often cooler than the stream itself in late summer allowing for trout growth and survival. TR 2:81. There are times when the

temperature of the discharge is too high. TR 2:81-82. And, often the discharge from the tunnel is more turbid than the Esopus Creek causing problems for the trout population. TR 2:82-83. For the trout, the most important feature is flow, followed by temperature and turbidity. TR 2:84-85, 96-97.

11. In the past, the Esopus Creek has held the reputation of being a noted trout fishing stream. Ex. 16; TR 2:93. Due to increased turbidity, the stream often has limited clarity, making it less desirable for fishermen. TR 2:84-85. The fishermen cannot see where they are wading, making conditions potentially hazardous and lessening the Creek's aesthetic appeal. TR 1:39, 2:84-85; Ex. 21, pp. 3-4. In these circumstances, the fish are less likely to be able to see bait, making successful fishing unlikely. TR 1:41, 2:88-89.

12. Studies on the impact of turbidity on trout reveal greater negative effects as the NTU level increases. Over two days, between 9 and 25 NTUs produce reduced growth rate and delayed hatching. Exs. 46, 47; TR 2:102. Those same impacts may not occur in juvenile fish for 11 months. Ex. 46; TR 2:103. Between 63 NTUs and 155 NTUs, the severity of ill effects increases in a shorter time. Ex. 46; TR 2:104. Using this data as well as the City's records on turbidity, staff's own observations, and national information, Department staff devised the 15 NTU difference in turbidity and 100 NTU shut-off. TR 2:96-105, 103-104, 112, 120-125; Exs. 45-51.

<u>The FAD and the City's Examination of Alternatives to Address Turbidity</u>

13. The City's water supply is unfiltered. In order to avoid building an extremely costly filtration plant to continue to meet Safe Drinking Water Act standards, the City has committed to a variety of measures in the EPA's Filtration Avoidance Determination. Exs. 21, p. 15, fn. 13, 40, pp. 1-8.

14. Among the issues that the City must address as a result of the FAD is turbidity in the Schoharie basin. Ex. 40, p. 6.

15. The City has completed a Phase I study of the various options available to address turbidity in the Schoharie Reservoir system. Ex. 25; TR 1:122; 2:8-9. In this study, the City's consultants identified the MLIS, in-reservoir baffle, and modifications to operations at the Schoharie and Ashokan Reservoirs as sufficiently viable turbidity reduction methods warranting further investigation. Ex. 25, p. ES-5.

16. Pursuant to its FAD obligations, the City is preparing a Phase II report that will convey the results of a more detailed study of these potential turbidity reduction measures. TR 1:123; 2:9-12; Vol. 3(3):11-12. The investigation that the City's consultants will undergo for the Phase II report will include an examination of data going back as far as 1948. TR 2:18-19. The use of this data in modeling demonstrations will allow for a fuller representation of the conditions in the reservoir. TR 2:19. The model will be able to analyze the relationship between turbidity and temperature and "forcing conditions" such as weather and withdrawals. TR 1:131, 138. The model will also be able to predict outcomes using hypothetical alternative structural and operational measures. TR 1:153-157. The report based upon these investigations is due to EPA in September 2006. TR 2:9; 3:12.

17. The next stage is "development of a plan with appropriate milestones for implementing any feasible cost effective measure identified by the analysis." TR 3:12.

18. The multi-level intake system operates by selectively withdrawing water from the reservoir strata so as to obtain the best quality water. Ex. 25, p. 4-1. Temperature and clarity are two qualities that this system could allow the operator to select for. Id., p. 4-2. These systems are commonly used in the United States for these purposes and others. Id. Of the facilities surveyed by the City that used these devices, "an 88 percent overall average compliance was achieved in meeting downstream water quality goals." Id.

19. The Phase I study revealed that certain locations for the MLIS could provide an additional benefit of providing access to 3.6 billion gallons of additional storage. Id., p. 4-14. However, when the reservoir level drops, the rate of withdrawal slows. TR 2:64-65.

20. The City currently has these systems in all of its reservoirs except Schoharie. TR 2:38-41. At the Cannonsville and Pepacton reservoirs, the City does not have the capability of selecting better quality water for releases - the systems at these facilities only work for the withdrawals. TR 2:40.

21. The City's consultants have studied and continue to study factors such as placement of the MLIS in order to determine its effect on turbidity and temperature control. Ex. 25, pp. 4-14 - 4-44. It is the only device that alone can control for both temperature and turbidity. TR 2:57. Depending upon where it

would be constructed, it could cost over $200 million and take ten years to complete. Ex. 25, Table 10-1, p. 10-3; Ex. 43.

22. Based upon the shape of the reservoir and the location of the Shandaken Tunnel intake, a baffle constructed near the intake has the possibility of increased dilution of inflows, increased settlement time, and improvement of particle deposition. Ex. 25, p. 6-1.

23. As is the case with the MLIS, the City's consultants have performed modeling to predict the results of the use of this device. Id., pp. 6-3 - 6-15. The Three-Dimensional Hydrodynamic Model performed in the Phase I investigation revealed that the use of the baffle to divert water away from the intake during storm events is effective. TR 2:26, 29; Exs. 36, 38. The Phase I report revealed that this device "is not expected to have a significant impact on the temperature of withdrawals." Ex. 25, p. 6-19. It is estimated that it would cost $9.8 million and take about five years to construct this device. Ex. 25, Table 10-1, p. 10-3; TR 3:175.

24. The operational changes to address turbidity would not involve construction except for updated computer systems and meteorological measurement equipment. TR 2:46. Based upon factors such as weather events, Esopus Creek temperature, and water quality, computer models may be utilized to assist reservoir managers to better predict when is the best time to release. Exhibit 25, pp. 7-6 -7-12. Development and evaluation of the models reviewed in the Phase I report will provide the City and regulatory agencies with information to assess whether operational modifications can reduce turbidity - alone or in combination with other strategies. Id.; TR 2:13-14.

25. The City has compiled data on turbidity and temperature of its releases to the Esopus Creek over a long period of time. TR 1:124; Exs. 17. But the Phase I report was based upon only one year's data due to time constraints. TR 2:23. In order to get a more accurate picture of turbidity and temperature, the historic data (over a lengthy period) must be viewed along with the many factors that influence the quality of the releases. TR 1:140-141. In addition, the City's recent studies allowed for measurements throughout the water column daily. TR 1:133. This review will include the hypothetical use of the alternative measures to determine what mechanism will best achieve lower turbidity and cooler temperatures. TR 1:139-160, 2:6-31, 58, 66-67, 3:193-196.

26. The City's consultants have compiled data such as

thermal stratification (different temperatures in different layers of the reservoir) and turbidity patterns in tandem with meteorological factors and operational imperatives to develop models that will best forecast conditions. Exs. 27, 28, 31, 33; TR 1:126-160. The City's modeling results when compared to actual measurements have correlated favorably indicating that such tools could assist efforts to predict turbidity levels and temperature and the best means to address these conditions. Exs. 34, 35, TR 2:70-71. Prior to these efforts, there has not been any such model available to address turbidity. TR 1:148-149. The City will be able to use the models to forecast temperature and turbidity with hypothetical use of the alternative mitigation measures - the multi-level intake system, the baffle, or operational changes. TR 1:153-156, 2:55.

27. The use of a model - a mathematical representation of the system and the issues of concern - is the optimal way to predict temperature and turbidity. The models will allow the City and others to see patterns that will support the selection of the best remedies. TR 1:116,138-140; 3:161; Ex. 9, pp. 18, E-6. The City has already run models for the completion of the Phase I report. TR 2:18, 23. Additional data and refinement of the models will allow a more thorough examination of the alternative measures including a comparison of locations for the multi-level intake structure. TR 2:19-31.

28. Part of the Phase II study will involve the City's examination of different locations in the Schoharie Reservoir to determine the feasibility of locating the intake structure. TR 3:23-24.

29. At the conclusion of this process, the City and others will be in a more knowledgeable position to choose a better system. None of these alternative remedies will guarantee the achievement of specific turbidity levels based on the variability of the problem. The MLIS can address turbidity when the reservoir is stratified - that is, when there are greater levels of turbidity in some strata of the water than others. TR 2:136. When the turbidity is uniform, the MLIS will not work and the means to meet a certain level may only be achieved through a shut-down of the tunnel. TR 2:34. At times, the cooler water is at the bottom of the reservoir and the less turbid water is at the top. On such occasions, it will be difficult for the City to achieve optimal discharge quality given the opposing goals and circumstances. TR 2:34-36, 3:159; Ex. 39.

Timeframe for Implementation

30. The construction of the multi-level intake structure will take many years - the exact number to be determined primarily on the basis of location in the reservoir. TR 3:17-20. Certain locations will present greater engineering challenges than others, due to issues related to excavation, infiltration, and support which shall be investigated through soil borings and other methods. TR 3:20, 38-39, 75. Because the structure would be built in a functioning reservoir, there will be construction constraints. TR 3:22-23. Cost estimates for the construction of the MLIS vary with the location ranging from $82 to $276 million. Ex. 25, Appendix E - Engineer's Opinion of Probable Costs.

31. The City's procurement practices in combination with design, preliminary engineering, environmental impact review, permitting, and construction of this structure make this project a long-term endeavor. Ex. 43; TR 3:25-56, 58-73.

32. A significant part of the construction work for the MLIS will be the construction of a coffer dam. The coffer dam or cell allows for the maintenance of a dry construction work site. TR 3:31-35; Exs. 41-42; TR 3:70-71. Because the reservoir will have to remain in use during construction, the coffer dam is necessary. TR 3:30. At the Croton Gatehouse in the late 1980's and early 1990's, the work there necessitated the construction of a coffer dam. Exs. 41-42; TR 3:73. Once the work on the MLIS is completed, the coffer cell will have to be removed. TR 3:72-73.

33. The construction of the MLIS will likely also require the construction of a new tunnel to connect the new intake with the existing intake shaft. TR 3:35-41.

34. The location of the new intake will either prolong or lessen the construction schedule. TR 3:75; Ex. 43. The schedule presented by the City for the MLIS construction presumes that the intake would be located at site 1.5. TR 3:75; Ex. 43. If the intake was located immediately offshore from the existing intake at site three, no tunnel would be required. TR 3:75. This would reduce the construction schedule by approximately two years. TR 3:75; Ex. 43, note 4.

35. The construction of the baffle would not take as long as the construction of the multi-level intake structure. TR 2:59, 3:175.

36. The operational modifications do not involve

construction and therefore should be able to be implemented in a relatively short period after the City identifies what model best suits the goals of temperature and turbidity reduction.

Development of Permit Conditions

37. In devising the draft SPDES permit, the DOW staff consulted with the Fisheries staff. TR 2:125. Based upon the data described above in Finding of Fact no. 12, the staff derived an NTU of 15 as the measure of "substantial visible contrast." 6 NYCRR § 703.2.

38. In addition, the DEC DOW staff examined the existing data regarding turbidity levels above and below the portal. TR 2:119-120.

39. These individuals also reviewed the available technologies that could be used to address turbidity. Id.

40. The staff reviewed EPA data that provide sediment-related criteria for surface water quality throughout the nation. TR 2:124-125; Ex. 51.

41. Based upon the City's continued study of the potential methodologies, the Department staff did not use a specific technology to set permit limits. TR 2:121. The staff estimated conservatively that whatever technology the City employed, there would be a reduction of ten to fifteen percent in turbidity. TR 2:121-122.

DISCUSSION

Turbidity Limits

Clean Water Act Requirements

Putting aside the City's legal position that its water supply should not be subject to the SPDES program, I do not believe the parties dispute the basic tenets of the SPDES program. That is, "[g]enerally speaking, the NPDES requires dischargers to obtain permits that place limits on the type and quantity of pollutant that can be released into the Nation's waters." South Florida Water Management District v. Miccosukee Tribe of Indians, 541 U.S. 95 (2004). Through Title 8, Article 17 of the ECL, New York has adopted the SPDES program which has been approved by EPA. CWA § 402(b), 33 U.S.C. § 1342(b).

Prior to 1972, the Clean Water Act principally relied upon water quality standards to address water pollution. See, Riverkeeper v. EPA, 358 F.3d 174, 184 (citations omitted) (2d Cir. 2004). To address the difficulty of determining what sources were responsible for the various pollutants found in the nation's waterways and to more effectively address pollution, Congress amended the Clean Water Act to require effluent limitations based upon technology regardless of water quality. Id.

These effluent limitations are governed by effluent limit guidelines (ELGs) that are promulgated by EPA. They present technology-based restrictions on water pollution. Waterkeeper Alliance v. EPA, 399 F.3d 486, 491 (2d Cir. 2005) (challenge to EPA rule on concentrated animal feed operations); CWA §§ 301, 304, 33 U.S.C. §§ 1311, 1314. According to their status, facilities must attain best available technology economically achievable (BAT) for discharges of toxic and nonconventional pollutants and best practicable control technology currently available (BPT) or best conventional pollutant control technology (BCT) for conventional pollutants. See, *The Clean Water Handbook, supra* at pp. 17-21. These standards do not 'prescribe a specific design or process in order to meet requirements of best . . . technology[,] [EPA] shall set out effluent limitations which are consistent with such technology,' "leaving to each facility the burden of meeting those limits using whatever methods and devices it prefers." Riverkeeper v. EPA, supra, citing H.R. Rep. No. 92-911, at 108 (1972). When these effluent limitations are insufficient to attain or maintain water quality standards, water quality effluent limitations are also required. CWA §§ 301, 302, 33 U.S.C. §§ 1311(b)(1), 1312(a).

In the absence of an ELG for a specific discharge as is the case in this matter, § 402(a)(1)(B) of the Clean Water Act requires EPA to use best professional judgment (BPJ) to set proper limits. CWA § 402(a)(1), 33 U.S.C. § 1342(a)(1); NRDC v. USEPA, 859 F.2d 156, 183 (DC Cir. 1988). And as noted by Trout Unlimited, et al. in their closing brief citing this same case, the states issuing permits pursuant to the NPDES program, "stand in the shoes of [EPA] and are bound by 1311(b)'s technology based standards." NRDC v. Costle, 568 F.2d 1369, 1380-81 (DC Cir. 1977). These limits are based on all the available information - draft regulations if they exist, the application, and information on similar dischargers in other parts of the country. See, *Clean Water Handbook*, p. 50 (Third Edition 2003).

Staff's Draft Permit

While the City initially objected to the draft permit on the grounds that the turbidity limits put forward by Department staff were unreasonable, it has withdrawn its objections to the current version of the permit. TR 1:10; City Br., p. 2.

The staff established the monitor-only limits based upon its consultation with Fisheries staff, review of data revealing turbidity impacts on fish, as well as review of information concerning turbidity in the Esopus Creek. Exs. 46, 47, 49, 53. These action level monitoring requirements provide that in the event levels higher than action levels are detected, the City will reduce the flow from the Shandaken Tunnel at the maximum allowable rate until either the action level is met or the flow from the tunnel is at the minimum necessary to achieve a combined flow from the tunnel and the Creek of no less than 160 mgd. Ex. 53, p. 2, Note 2. The Department staff explains in this footnote in the draft permit that these requirements were drafted with an intention to meet both water quality and reservoir release requirements set forth in Parts 700-706 and 670 of 6 NYCRR.

Trout Unlimited, et al. maintains their objection to the permit limits based upon their contentions that 15 NTU is too high a threshold because they found a "substantial visible contrast" at 10 NTU. TR 1:73, TU Br., p. 12. In addition, they argue that the Department staff did not utilize best professional judgment in deriving permit limitations. TR 1:75-76; TU, et al. Br., pp. 7-11; TU, et al. Reply, pp. 2-8.

As noted by all parties, concerning turbidity, for Class A waters, 6 NYCRR § 703.2 provides a water quality standard of "[n]o increase that will cause a substantial visible contrast to natural conditions." At the hearing, Trout Unlimited, et al. introduced photographs that it took above and below the Shandaken Tunnel portal on September 25, 2002 and October 7, 2002 to demonstrate that the discharge from the tunnel was causing a substantial visible difference in turbidity in the Esopus Creek. Exs. 4a-f and 5a-b; TR 1:59. Trout Unlimited, et al. offered DEP data to show that on September 25, 2002, the turbidity measured by DEP was 10 NTUs. Ex. 17, p. 2. Based on the photographs taken by Trout Unlimited members on that day that show a substantial difference in the water clarity in the Esopus from the tunnel discharge, these intervenors seek to establish that 15 NTUs is far too high a limit for the SPDES permit. TR 1:47-50; Exs. 4a-f.

The difficulty with the Trout Unlimited, et al. presentation is that although the data obtained from NYC DEP does indicate 10 NTUs for September 25, 2002, we do not know at what time that measurement was taken. Ex. 17. Trout Unlimited, et al. did not present any of its own sampling information to show that at the time that their members observed turbid conditions in the Esopus Creek resulting from the discharge from the tunnel, the NTU level was 10, 15 or 100 NTUs. TR 1:56-57. In their brief, Trout Unlimited, et al. argues that "no witness at the permit hearing refuted the City's turbidity data or suggested that the photos taken . . . on September 25, 2003 did not show a substantial visible contrast." That is true; however, there was no evidence to show that the time that the City's measurement was taken was the same time that Mr. Darrow made his observations. The data upon which Trout Unlimited, et al. relied did not reflect a continuous measurement of NTUs. Accordingly, it is possible that the turbidity level was much greater at the time Mr. Darrow made his observations for TU, et al.

While there is no debate that turbid water enters the Creek from the tunnel and often contravenes water quality standards, the basis for Trout Unlimited's argument that 15 NTU is too high a threshold is not supported by the evidence presented by these intervenors.

In contrast, in developing an appropriate standard for the draft SPDES permit, the Department staff looked to the scientific literature concerning turbidity effects on trout. Ex. 48. This literature revealed that at between 9 and 25 NTUs and over two days there is reduced growth rate and delayed hatching. Exs. 46, 47; TR 2:102. Those same impacts may not occur in juvenile fish for 11 months. Ex. 46; TR 2:103. Between 63 NTUs and 155 NTUs, the severity of ill effects increases in a shorter time. Ex. 46; TR 2:104. Based upon this data, Department staff devised the 15 NTU difference in turbidity and the 100 NTU shut-off. TR 2:103-104; Ex. 48.

Wayne Elliot, DEC Region 3 Fisheries Manager, made clear in his testimony that of the three problems facing fish in the Esopus - turbidity, flow, and temperature - turbidity is of least concern. TR 2:79-85. That is because the flow in the Esopus can get too low during the summer and without the discharge from the tunnel, there would not be sufficient water to sustain the fish. TR 2:80. In addition, this same discharge may at times be helpful in cooling the Creek. TR 2:81-82. Mr. Elliot agrees that turbidity is a serious problem that can "physically impair the respiration functions of the gills and smother organisms that . . . live in the substrate, . . . and impair the visibility for

trout and other largely sight-feeding game fish." TR 2:83. And, he readily concurred that for the fisherman, turbidity is both a hazard and an aesthetic problem that interferes with the sport. TR 2:84-85. However, given the circumstances in the Creek, the maintenance of the flow is the most critical factor for fish survival. TR 2:84. Thus, this fisheries professional, recognizing that at times the only means to restrict turbidity sufficiently would be to turn off the discharge, concluded that such action would be worse for the Creek. TR 2:86. Therefore, he agreed with the DEC Division of Water staff that the draft SPDES permit struck the appropriate balance for this resource. TR 2:86-88.

Mr. Baker, the permit writer for DEC, testified that the Department staff looked at the DEP turbidity data, actual measurements taken by staff in the Creek, turbidity limits used in other areas of the country as well as information on the potential structural and the non-structural measures the City will implement to reduce turbidity. TR 2:120-125. As explained above, for dischargers for which the U.S. EPA has not issued effluent guidelines, permit writers are required to apply "best professional judgment" to establish permit limits. 40 C.F.R. § 125.3(c). EPA has defined BPJ as "the highest quality technical opinion developed by a permit writer after consideration of all reasonably available and pertinent data or information that forms the basis for the terms and conditions of a NPDES permit." EPA, NPDES Permit Writers Manual, p. 68 (1996), at: http://www.epa.gov/npdes/pubs/owm0243.pdf. It would appear that DEC staff compiled all the information available to it in determining an appropriate standard.

The balancing that staff needed to do in this instance was not limited to the environmental factors that could be detrimental to the fish. Department staff had to also consider the Part 670 release requirements for the Shandaken Tunnel that are intended to protect the water resource for public drinking water and recreational purposes. 6 NYCRR § 670.1. Trout Unlimited, et al. cites CWA § 301(b)(1)(C), 33 U.S.C. § 1311(b)(1)(C) for the proposition that because the Clean Water Act requires that water quality standards be achieved "through more stringent limitations necessary to meet any state regulation or to meet any applicable water quality standard," Part 670 requirements should not be considered. TU, et al. Br., p. 14. Such a course is not possible. Part 670 governs the releases from the Shandaken Tunnel for the purposes of protection of public water supply as well as recreational uses. 6 NYCRR

§ 670.1. The Department staff are governed by these regulations as well as the Clean Water Act requirements and therefore, it is their job to determine a viable balance.

Dr. Bell, on behalf of Trout Unlimited, et al. criticized the Department staff's permit writing based on a failure to analyze any particular technology in development of the permit. TR 1:82. However, the problem in doing so in this instance is that until New York City embarked on its investigation and modeling of various technologies for use in reducing turbidity in the Schoharie Reservoir's effluent, there was not any such data available. TR 1:83; TR 2:120-121. In its brief, Trout Unlimited, et al. cite to the factors that should guide BPJ in CWA § 304(b)(2) such as age of equipment and facilities involved; process employed; engineering aspects of various type of control techniques; cost of achieving effluent reduction; and non water-quality environmental impacts. 33 U.S.C. § 1314(b)(2)(B). TU, et al. Br., p. 5. These are precisely the factors that the City's experts testified are being studied pursuant to the FAD requirements.

In its reply brief, Trout Unlimited, et al. states that DEC has left the choice of technology in the hands of the permit applicant. Reply, p. 2. They also contend that the Department and the City informed this tribunal that "a comprehensive evaluation of technologies was conducted." Id. Both of these arguments are incorrect. The draft permit provides for the City to submit a report to the Department and for the Department to review the recommendations contained therein to approve or disapprove the City's plan. Ex. 53, p. 11. In addition, the testimony of Dr. Effler, Mr. Rush, and Mr. Becker went into great detail about the nature and scope of the City's current studies to determine the best technologies to address temperature and turbidity.

As the City is undergoing this intensive and detailed examination that will be completed at the end of 2006, does it make any sense to have the Department begin its own review at this time? Such a conclusion would not speed up this process and would not necessarily result in the best decisionmaking. That is because this is new territory - there is no established technology for the Department staff to utilize in assessment of the appropriate limits. While the MLIS is a potentially viable option, according to all of the information submitted by the parties, the unique factors of the Schoharie Reservoir and the Shandaken Tunnel operation must be considered before a leap to judgment is made. City, Reply Br., pp. 8-9, TU, et al. Br., pp. 9-10; TR 1:82. It cannot be ignored that the MLIS is

substantially more expensive than the other options under review. Ex. 25, Table 10-1, p. 10-3. And, as noted by the City, cost is an appropriate consideration. City, Reply, p. 12; CWA § 304(b)(2)(B), 33 U.S.C. § 1314(b)(2)(B); 40 C.F.R. §§ 125.3(d)(1)(I), (d)(2)(I).

The City's experts testified at length and persuasively about the detailed and complex efforts to use the many years of turbidity and flow data available to DEP along with the newly developed models to identify the most effective means of addressing the turbidity problem. TR 1:125-160; 2:17-71; Exs. 27-36. Prior to conclusions of the Phase II report, it would be premature to fix a specific technology and attempt to use that to establish a permit number. TR 2:55-56.

Trout Unlimited, et al. points to the information provided by Mr. Skinner to support its view that the MLIS can be selected now and built as soon as possible without further review. However, as noted by the City and admitted by Mr. Skinner himself, his conclusions were not based upon an interactive model but rather on limited historical data. City, Reply, p. 8. Dr. Effler convincingly explained that to make the correct decision, there is a need to analyze the changing operations and weather along with the turbidity and temperature data. TR 1:141, 3:194.

I am satisfied that at this point in time the conditions and numbers set forth in the draft permit are appropriate. In NRDC v. Muszynski, 268 F.3d 91, 103 (2d Cir. 2001), the Court of Appeals held that it was appropriate for EPA to use the information available at the time to develop limits and that as more information became available, appropriate revisions could be made. Based upon the finer analysis that the City is scheduled to complete in 2006, I recommend that the permit terms be revisited in the Fall 2006. At such time, the Department and DEP will know what technologies will be used for turbidity control and therefore, the Department will be in a superior position to define the numerical limitations.

In addition, while the Department staff had to address both the Part 670 concerns along with the applicable water quality standard to develop the permit requirements, there is a need to develop more information as to what exactly causes a "substantial visible contrast" as this is the standard that the Department must strive to achieve. See, TU, et al.'s analysis in its reply brief that the permit must set limits to achieve water quality standards. Reply, p. 7 citing American Paper Inst., Inc. v. EPA, 996 F.2d 346, 350 (D.C. Cir. 1993). Since "substantial visible contrast" is the standard, it is not sufficient to rely upon the

fisheries data or the occasional sampling to derive the correct NTU. At this time, this is the information that DEC staff had and reasonably relied upon. However, I recommend that the Department, in cooperation with DEP staff, continue to monitor the turbidity levels in the tunnel discharge and the Creek in order to best reveal what NTU level provides the "substantial visible contrast."

Structural Measures

Prior to the commencement of the adjudicatory hearing, the City withdrew most of its objections to the draft SPDES permit. TR 1:7. The City agreed to the Department staff's proposed conditions with respect to nonstructural measures such as stream restoration and funding for local implementation of stream management. Ex. 53, p. 10, Nonstructural programs.

In addition, during the hearing, the Coalition, the City, and DEC entered into additional agreements that further refined certain aspects of the nonstructural measures such as the establishment of a fund to finance environmental reviews of proposed development projects in the Schoharie Watershed. Ex. 53, p. 8, Schedule of Compliance - Turbidity Reduction Program.

However, with respect to implementation of structural measures, the City reserved its objection to the timetable in the draft SPDES permit for implementation of the structural measures on the basis that this schedule is too short for the construction of a MLIS, in the event this alternative is selected. TR 1:10-11. The City maintains that seven years for completion of this major engineering project is not sufficient time. TR 1:24-25. However, in the City's closing brief and its reply, it has withdrawn objections to the current draft permit based on its reliance on the Department staff's willingness to renegotiate the schedule if necessary. City Br., p. 2, fns. 3-4; Reply, p. 6, fn 3.

Trout Unlimited, et al. maintains that there is already enough information about the viability of the MLIS and this is the remedy that should be selected. TR 3:121; Trout Unlimited, et al. Br., pp. 19-24. In addition, Trout Unlimited, et al. finds the schedule to be too lengthy and instead proposes that the City construct the MLIS within seven years from the month that Judge Scullin ordered that the Department make a determination on the permit application (August 2004). See, Ex. 22; TR 3:128.

Trout Unlimited, et al. relies substantially on the Attorney General's report *Clean Water - Clean Creek* in its conclusion that the MLIS is the alternative of choice. Ex. 9; TU Br., pp. 21-22. While the City's experts agree that this report is a useful starting point for examination of the MLIS as a potential solution to the turbidity issues in the Schoharie Reservoir, they demonstrate conclusively that further investigations and design work if an MLIS is chosen will reveal much more. TR 3:193-195.

As discussed in Findings of Fact 23-29, the City's modeling efforts in the Phase II report will bring forward a great deal of information with respect to what effect an MLIS can have with respect to control of turbidity and temperature, what location would be the best for siting this measure, and whether other measures could work effectively in tandem or in lieu of the MLIS towards these goals. The volume of data that will be examined in this effort will ensure the selection of the best technology.

While Trout Unlimited, et al. would have this project completed in September 2011, there is little basis for this timeframe. Mr. Costa and Mr. Cordell, who have vast experience in this type of construction, testified to the many stages of pre-construction and construction efforts. TR 3:5-107. Mr. Costa explained the processes of selection of contractors and the design efforts. TR 3:42-69; Ex. 43. While it may be possible to shorten these timeframes slightly, it appears that much of the projected schedule is well spent in efforts to ensure the protection of the public resources in terms of finances and a successful project. TR 3:99-101. Mr. Cordell provided a good picture of the many variables that will dictate time and expense of the construction of the MLIS such as boring of the reservoir deposits to determine their stability and strength, disposal issues, and construction of the coffer dam and tunnel. TR 3:70-73, 75-82, 85-88, 184-192, 197-202.

Assuming that the draft SPDES permit is made effective by March 2006, the Department's schedule would have the structural measures in place by March 2013. The staff and City agree that if Site 1.5 is chosen, three more years will likely be needed, making the year of completion 2016. TR 3:182. The staff and City agree that ten years is not needed for implementation of the baffle or operational measures. City Reply, p. 12. In addition, if the MLIS is selected and one of the other sites is chosen, the schedule can be shortened accordingly. TR 3: 175-176.

In cross examination of Mr. Skinner, one of the authors of the Attorney General's report, it became clear that there were a number of factors - such as cost and stages of pre-construction

and construction - that were not considered in calculating cost of the MLIS and the amount of time it would take to build it. TR 3:154-157. The draft SPDES permit was not yet written and obviously, the Attorney General's report did not consider meeting its conditions. TR 3:158. Mr. Skinner agreed that modeling should be performed prior to determinations on location and operation regimes for the MLIS. TR 3:136, 161, Ex. 9, p. E-6.

On behalf of Department staff, Mr. Markussen testified that additional modeling would provide information to determine what the best mechanism is to achieve controls on turbidity and temperature. TR 3:181.

Given the many years that the tunnel has operated and the great expense that will result from the implementation of the structural measures, it makes no sense to ignore the Phase II work (which is required under the FAD in any case) and embark on a set course in the interests of possibly saving a couple of years.[6] Rather, the more intelligent option is to take advantage of all the information that is forthcoming to design the best project in the interests of cleaner water for all concerned. In addition, while I strongly encourage the Department staff and the City to do their utmost to tighten the proposed schedule and to ensure that there are no lapses in achieving the milestones set forth in the draft permit and the forthcoming implementation schedule, I see no basis to radically alter the schedule the Department has set forth in the draft permit.

Based upon the expert information presented by the City's witnesses with respect to the need for development of more information combined with the realistic schedule to accomplish the work for the MLIS (assuming this alternative is chosen), I recommend that the draft permit be issued as written.

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[6] In fact, such a course would appear counter to the Trout Unlimited intervenors' interests. These parties have urged the Department to adopt the appropriate technology-based effluent limitations by mandating best control technology for turbidity and best available technology for temperature citing CWA §§ 301(b)(2)(A), 304(b)(2)(a); 33 U.S.C. §§ 1311(b)(2)(A), 1314(b)(2)(A). As discussed above at pp. 25-26, the means to determine what is BPJ rests with the completion of the technical investigations being performed by the City. To cut this process short would potentially result in an alternative that is not the best means of reducing turbidity.

I do recommend that based upon the Phase II report and the December 31, 2006 submission to the Department, that staff reassess the structural implementation schedule. In the event that a measure or measures are chosen that can be achieved in less than 7 years such as the baffle, the operational measures, and/or the placement of the MLIS in a site where construction would be less time-consuming, the Department staff should modify the schedule to reflect these circumstances. And as discussed below, such modifications should be subject to public review and comment.

Public Participation

In its closing brief, Trout Unlimited, et al. states that the draft permit's schedule for a decision regarding what technology will ultimately be employed to reduce turbidity from the tunnel deprives the public of its ". . . say in determining not only what the best technology is, but what effluent limitations should result from that technology." TU, et al. Br., pp. 14-19. See also, TU, et al., Reply, pp. 8-9. Trout Unlimited, et al. argues that this process violates the requirements of the Clean Water Act to ensure that the public has a meaningful role. CWA § 101(e); 33 U.S.C. § 1251(e). These intervenors further maintain that the draft permit puts this decision entirely in the hands of the City.

As stated above, I do not agree that the City is the final arbiter of the technology ultimately chosen to address the turbidity issues. The Department will have to review the City's studies and proposal and make a determination whether or not the course recommended by City DEP is the appropriate method. Draft permit, Schedule of Compliance - Turbidity Reduction Measures, Ex. 53, p. 11 of 15. Nonetheless, I agree with Trout Unlimited, et al. that the draft permit provides that a critical aspect of the turbidity control - the selection and implementation of the structural measure(s) - will be decided outside of a public forum.

The Clean Water Act requires that public participation be included "in the development, revision, and enforcement of any regulation, standard, effluent limitation, plan, or program established by the Administrator or any State . . ." CWA § 101(e); 33 U.S.C. § 1251(e). ECL § 17-0805 provides for public notice of SPDES permit applications including permit renewals and modifications. In addition to inviting public comment on such applications, the Department may decide to hold public hearings where there is "substantial public interest". ECL § 17-0805(b); 6 NYCRR § 621.7(a); Industrial Liaison Committee of

Niagara Falls Chamber of Commerce v. Flacke, 108 AD 2d 1095 (3d Dep't 1985).

In a recent case cited by Trout Unlimited, et al., the Second Circuit found rules promulgated by EPA governing the operation of concentrated animal feeding operations (CAFOs) to be violative of the Clean Water Act because they allowed the "nutrient management plans" - a pollution control device - to be devised solely by the regulated industry without review by the regulators or the public. Waterkeeper Alliance v. EPA, supra. While DEC will be reviewing the City's structural measures plan, the draft permit does not provide a mechanism for the public's input and therefore is out of compliance with public participation requirements. CWA § 101(e), 33 U.S.C. § 1251(e). Like the nutrient management plans in Waterkeeper, the structural alternative chosen to reduce turbidity in the Esopus Creek is a critical aspect of this permit and should be subject to public scrutiny.

In the issues ruling in this matter, based upon the dispute between the City, the Department, and the Trout Unlimited intervenors on the issue of the appropriate technology and permit limits, I determined these matters adjudicable. See, Issues Ruling, pp. 18, 20-21. We have completed the hearing on these matters but because the City's investigation on structural alternatives is yet to be finished, I have concluded that it is premature to make a selection in this report. It would be counterproductive to hold this record open and defer permit issuance because there are actions that the City can begin to effectuate such as the nonstructural measures. Draft permit, Ex. 52, p. 8. And, the federal District Court's order requires that the Department proceeds promptly. Amended Order, Ex. 22. However, a mechanism must be introduced to ensure that this vital element of the permit be subject to public comment as it would have been if the information necessary for decisionmaking was available.[7]

ECL § 17-0815(6)(c) provides that a permit may be modified when there is a change in conditions. Section 621.14(a)(4) of 6 NYCRR provides that a permit may be modified at the request of any party or upon the Department's initiative where there is, *inter alia*, change in material information or relevant technology.

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[7] As the City did not respond to Trout Unlimited, et al.'s arguments on this matter, I would also assume that it does not object to provision of this opportunity.

As I stated above, I find that it is appropriate based upon the new information that will be offered in the Fall of 2006 for the staff to revisit the permit terms. To respond to the concerns of Trout Unlimited, et al. concerning public input, I recommend that at the time that the City completes its Phase II report and delivers to DEC its submission that identifies the structural measure(s) to be implemented, the Department staff publicly notice these recommendations along with a draft modified SPDES permit and invite comment on the City's proposal and the modified permit. These procedures will satisfy both the legal requirements for public participation and the concerns of Trout Unlimited, et al. In Matter of Seven Springs, LLC (5/7/04), Deputy Commissioner Johnson took a similar approach in requiring that the results of a pilot study be subject to review of the intervenor Towns prior to a final determination by Department staff.
http://www.dec.state.ny.us/website/ohms/decis/sevenspringsd.html

CONCLUSION

Based upon the record presented in this matter, I find the Department staff's draft SPDES permit dated October 20, 2005 to be in conformity with the applicable regulatory requirements. I recommend that upon review of the City's Phase II report in September 2006 and its submission to the Department in December 2006, the staff reconsider the turbidity limits and structural timeframes set forth in this draft permit. In the event that this information provides a foundation for modifying the turbidity numbers and/or the structural measures schedule, the staff should modify the SPDES permit accordingly. In addition, I recommend that the staff and the City DEP take turbidity measurements above and below the portal to continue the effort to more precisely identify "substantial visible contrast" in this location.

Once the Department staff has a modified draft permit available, based upon this new information, I recommend that the draft permit be subject to public review and comment.

At this time, I recommend that the Department staff finalize the October 2005 draft SPDES permit and issue it expeditiously.

Albany, New York
January 27, 2006

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Helene G. Goldberger
Administrative Law Judge

To: Service List