SUPREME COURT OF THE STATE OF NEW YORK
COUNTY OF NEW YORK

In the Matter of the Application of SIERRA CLUB and the HUDSON RIVER FISHERMEN'S ASSOCIATION, Petitioners, For a Judgment Pursuant to Article 78 of the Civil Practice Laws and Rules - against- JOSEPH MARTENS, AS COMMISSIONER, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, and CONSOLIDATED EDISON COMPANY OF NEW YORK INC. Respondents.	:	**AFFIDAVIT IN SUPPORT OF PETITIONERS' MEMORANDUM OF LAW** Index No. 100524/2015 Hon. Alice Schlesinger

State of New Jersey)
Bergen County) ss.:

GILBERT HAWKINS, being duly sworn, deposes and says:

1. I am a resident of Leonia, a borough of Bergen County, New Jersey. My home at 123 Knapp Terrace is about 1.5 miles from the western shore of the Hudson River and about ½ mile from Overpeck Creek, a tributary of the Hudson.

2. I am the 2015 President of the Hudson River Fishermen's Association, New Jersey Chapter, Inc. (hereinafter "HRFA" or the "Association"), a Petitioner in the above-captioned proceeding.

3. HRFA has its mailing address at P. O. Box 421, Cresskill, New Jersey, holds Executive Board meetings at River Edge Knights of Columbus at Kinderkamack Road, River Edge, New Jersey, and holds general membership meetings at Elk's Club Lodge

#1506 in Ridgefield Park, New Jersey, and occasionally at the Palisades Center Mall in West Nyack, New York.

4. HRFA has been incorporated as a non-profit organization since 1988 and represents approximately 325 recreational fishermen who make active use of the New York Bight and the surrounding water system and are concerned with the present and future state of these fisheries. HRFA is the largest fishing group on the Hudson River and represents fishermen along the total length of the river. Most members of HRFA live in New York and New Jersey.

5. HRFA members fish in the East River, the Hudson River estuary, and the New York Bight and are adversely affected by the actions complained of in this petition. Our ability to fish in these waters is adversely affected by the project complained of herein.

6. HRFA was founded in 1966 when a group of fishermen in Garrison, New York decided they had had enough of the industrial abuse of the Hudson River. The pollutants of the industrial revolution had brought the majestic Hudson River to her knees. The Association used the laws of the land to bring the Hudson River back to life, bringing lawsuits and regulatory proceedings to challenge the harms being done to the River and its watershed. The New York chapter of the Association changed its name to Riverkeeper in 1986.

7. HRFA's mission is to encourage the responsible use of aquatic resources and protection of habitat. The Association assists where possible in efforts to abate pollution and promote sport fishing and the management of that recreation.

8. Power plant fish kills have been a concern of HRFA for many years. Among the many accomplishments of HRFA are stopping the mass slaughter of striped bass by the first Indian Point nuclear power plant, and exposing cover-ups of the fish kills. HRFA also participated in an administrative challenge to the fish kills caused by the once-

through cooling system at the Danskammer power plant on the Hudson River that was decided in 2006.

9. I have been a member of HRFA since 1994. I have served as Environmental Director and as a member of the Board of Directors of HRFA from 1996 to the present. I have been president for two years.

10. I am a member of the Community Advisory Group for the Hudson River PCBs Superfund Site which encompasses a nearly 200-mile stretch of the Hudson River in eastern New York State from Hudson Falls, New York to the Battery in New York City, and I am a member of the Stakeholders' Advisory Working Groups for the Tappan Zee Bridge/I-287 Corridor Project.

11. I am a member of the Sierra Club. I have been a member of the Club since 2005. I am active in the Club's Hudson-Meadowlands New Jersey Group, and have served as member of the Executive Committee of the Group since 2005.

12. I go out fishing whenever I can. Lately, that has been about once a month. Because of where I live, I am almost always fishing somewhere in the Hudson River watershed.

13. A photograph taken in 2005 of myself and my son with a catch of weakfish is attached as **Exhibit A**. We have not seen weakfish like this in the harbor for a number of years.

14. The East River plays a critical role in the Hudson River estuary and the New York Bight. It is one of the main fish migration routes between the Atlantic Ocean and both the Hudson River and Long Island Sound. Some of the fish migrating through the East River include sturgeon, shad, herring, blue fish, and striped bass.

15. Sturgeon, shad, herring, blue fish, and striped bass are anadromous. Anadromous comes from a Greek word meaning "running upward." Anadromous fish are essentially marine fish. They spend many years in ocean waters until they mature and run

up to the freshwater Hudson to spawn. After spawning, the adult fish return to the Atlantic and rejoin the larger, migratory coastal populations. Each year's spawn of shad, herring, and bass spend only their first summer in the river before they join in the ocean migration.

16. Because the East River is constantly filled with moving water, it is a very attractive location for fish. There are two tides a day in the East River, which means that there are strong currents in the river four time a day—the incoming and outcoming flows for each tide. Millions of fish are riding on these flows in the migratory seasons.

17. During the fall and spring migration seasons—generally September to November and March to May—our members are fishing in the New York harbor estuary every day. Based on my experience fishing in the harbor and on the fishing reports given each month at our meetings, I estimate that three to six members are out in their boats on the East River each day during the migration season.

18. The members of HRFA are sport fishermen and are taking fish with lines and bait. We do not fish for shad, which are taken by net. Of course, sturgeon are protected and no one is fishing for sturgeon. We rarely encounter sturgeon or shad.

19. We are concerned about the decline of these species in the Hudson River watershed and are concerned that the once-through cooling system at the four thermo-electric generating stations located on the East River, a major migration route for these fish, may be a contributing to their decline.

20. Due to my association with HRFA and active participation in the activities of the organization, I am familiar with the activities of our members. HRFA has a general membership meeting once a month in Ridgefield Park, New Jersey or West Nyack, New York. The membership meetings are attended by approximately 75-100 members. I attend every meeting. At each meeting, members give reports on the fishing conditions in New York harbor. The reports at the meetings often relate to fishing on East River. At each

meeting we have a lecture or guest who gives us tips and instructions of how to fish local waterways often including the East River.

21. We have had several presentations at recent membership meetings by Captain Tony DiLernia, the owner of Rocket Charters. Captain DiLernia's boat, the Rocket is docked at New York Skyports Marina, East 23rd Street and F.D.R. Drive in Manhattan.. Captain DiLernia is a commercial fisherman who takes executives out to fish striped bass in the harbor. He has reported at our recent meetings that two or three years ago he and his clients were able to catch large striped bass in the East River, but recently they have only caught smaller bass.

22. Striped bass is the top predator species in the estuary. For this reason, the health of the striped bass population is a reflection of the health of all the species in the estuary.

23. In addition to striped bass, we see declines of many other types of fish in the East River and the harbor estuary.

24. We are concerned that water withdrawals by the East River Generating Station owned by Consolidated Edison ("Con Ed") for the plant's once-through cooling system are contributing to these declines. The plant is located on the west bank of the East River between East 14th Street and East 15th Street in Manhattan just south of where Captain DiLernia docks his boat at East 23rd Street and F.D.R. Drive.

25. The enormous withdrawals by this generating station for its once-through cooling system does tremendous damage to aquatic life in the estuary and the entire Hudson River watershed.

26. The cooling systems of most power plants "impinge" and "entrain" fish and other aquatic organisms. "Impingement" refers to the entrapment of adult fish and larger organisms against a power plant's water intake screens. Impinged organisms usually die or suffer injury as a result of starvation, exhaustion, descaling by screen wash sprays, or

asphyxiation when forced against a screen by velocity forces which prevent proper gill movement for prolonged periods of time. “Entrainment” refers to organisms being carried through a power plant’s condenser system. The organisms that become entrained are relatively small, including the eggs and larvae of larger species.

27. We are particularly concerned about the very high levels of impingement and entrainment of aquatic life by the Con Ed East River Generating Station, whose water withdrawal permit is at issue in this case.

28. The water withdrawal permit issued November 21, 2014, to Con Ed for its East River plant authorizes withdrawals of up to 373.4 million gallons per day.

29. In the last year and a half, DEC has authorized four electric generating stations located on the East River to take a combined amount of almost 3.4 billion gallons per day from the River for their once through cooling systems. In addition to Con Ed’s East River facility, TransCanada’s Ravenswood Generating Station in Long Island City has been authorized by DEC to take up to 1.528 billion gallons per day from the River, US Power’s Astoria Generating Station is authorized to take up to 1.454 billion gallons of water a day, and the Brooklyn Navy Yard facility owned by Brooklyn Navy Yard Cogeneration Partners is authorized to take up to 72 million gallons per day.

30. Although these plants have used water from the East River for some time, it is only recently that they have been required to obtain a water withdrawal permit from the DEC. The issuance of a water withdrawal permits to them puts their water use on a different legal footing.

31. Impingement and entrainment studies show that impingement and entrainment by the Con Ed power plant is much higher than at the Ravenswood plant, even though, judging by their permitted capacities, the Con Ed plant is withdrawing only *one/seventh* the volume of water.

32. Although the impingement and entrainment studies conducted by Con Ed are not contained in the Administrative Record provided in this proceeding ("AR"), they are summarized in the Biological Fact Sheet provided at AR 232-235. The Biological Fact Sheet provides as follows:

> The Department required an impingement mortality and entrainment (IM&E) study to be conducted in 2005-2006. Consistent with other New York Harbor and East River power plants, results of this study indicated a large increase in IM&E from the 1990s abundances. An estimated *1.5 million fish were impinged*, with Atlantic croaker, Atlantic tomcod, scup, bay anchovy and Atlantic menhaden making up 84 percent of the total It was estimated that *1.34 billion fish eggs and larvae were entrained* with 92.6 percent being eggs. Cunner, bay anchovy, Atlantic menhaden, weakfish, and tautog were the principle species entrained.

AR 232-233, emphasis added.

33. These amounts are dramatically larger than the amounts reported in DEC's statement of the most recent impingement and entrainment results at the Ravenswood plant, which are contained in the Biological Fact Sheet attached as Exhibit B to the Ravenswood SPDES permit issued September 12, 2012, and attached as Exhibit B hereto. The Biological Fact Sheet for the Ravenswood plant provides as follows:

> The most recent Impingement and Entrainment studies were conducted from March 2005 to February 2006. About *25,850 fish were impinged* over the year, representing 61 taxons. Blueback herring (21.8%), bay anchovy (13.5%) and alewife (11.3%) were impinged in greatest numbers. Approximately *149.7 million eggs, larvae and juveniles were entrained* through the station. Bay anchovy (22.8%), Atlantic menhaden (18.5%) and the goby family (12.5%) were the predominant taxons entrained. Post-yolk-sac larvae (51.2%) and eggs (47.0%) were the main life stages found in the entrainment collections.

Ex. B, p. 1, emphasis added.

34. We note that the most recent studies for both plants were conducted in the same year—2005-2006, so the data should be relatively comparable.

35. Comparing the entrainment data for the two plants, we find that the Con Ed plant entrained 1.34 billion fish eggs and larvae during the study year and the Ravenswood plant entrained 149.7 million eggs, larvae and juveniles. This means that the Con Ed plant entrained almost *nine times* as many eggs and larvae as the Ravenswood plant.

36. If the permitted water withdrawal capacities of the two plants are taken into account and entrainment per gallon of water withdrawn is calculated, the Con Ed plant entrained eggs and larvae at a rate *36 times* the rate for the Ravenswood plant.

37. Comparing the impingement data for the two plants, we find that the Con Ed plant impinged an estimated 1.5 million fish during the study year compared to only 25,850 fish impinged by the Ravenswood plant. This means that the Con Ed plant entrained *58 times* as many eggs and larvae as the Ravenswood plant!

38. If the permitted water withdrawal capacities of the two plants are taken into account and impingement per gallon of water withdrawn is calculated, the Con Ed plant impinged fish at a rate an astronomical *237 times greater* than the rate at the Ravenswood plant!

39. These differences may reflect differences in the two plants' water intake structures, differences in amounts of organisms in the River at the locations of the plants' water intake structures, or errors in the studies. In any event, the differences demonstrate that new studies and cumulative impact analyses must be conducted.

40. As fishermen, we are well aware that some locations in the East River are more attractive to fish than other locations. Fish, eggs and larvae are not evenly distributed in the river.

41. We can see that the Con Ed plant is located in a strategic position to catch fish coming in on the incoming (north flowing) tide.

42. HRFA has been watching the implementation of New York's new water withdrawal permitting requirements with much concern. It appears to us that the water

permitting program is not being implemented responsibly. As a result, great harm may be done to the entire Hudson River watershed.

43. I have reviewed DEC's Draft Harbor Estuary Action Agenda 2015-2020 released on April 1, shortly we filed this case. The Agenda is posted on DEC's website at http://www.dec.ny.gov/docs/remediation_hudson_pdf/dhreaa15.pdf.

44. The draft Agenda lists four priority targets and selected actions for 2015-2020. I am pleased to see that Target 4 for Benefit 3 "Vital Estuary Ecosystem Vision," calls for the reduction of fish kills in the estuary by taking steps to:

> Reduce or have schedules to reduce fish kills at the four remaining steam electric power plants that use once-through cooling systems by imposing the "best technology available" standard pursuant to 6 NYCRR§704.5 and §316(b) of the Clean Water Act, which both call for minimizing adverse environmental impacts. Require that future Hudson River power-generating facilities have closed-cycle cooling systems.

45. DEC's 2011 guidance on Best Available Technology ("BTA") for Cooling Water Intake Structures, "BTA for Cooling Water Intake Structures," July 10, 2011, http://www.dec.ny.gov/docs/fish_marine_pdf/btapolicyfinal.pdf , requires closed cycle cooling. The guidance states that cooling water intake structures will be subject to one of four "performance goals" when selecting BTA--all four require "closed-cycle cooling." A copy of the guidance is attached hereto as **Exhibit C**.

46. Given this goal, I cannot understand why DEC rushed to issue a water withdrawal permit for the once-through cooling system at the Con Ed power plant without an examination of the alternative of closed-cycle cooling or any examination of impacts of the withdrawals by this facility and the other once-through cooling systems in the harbor on the harbor estuary.

47. DEC's violation of SEQRA through its Type II determination and its failure to conduct an environmental review of the Con Ed permit application deprived HRFA and our members of an adequate airing of the relevant issues and impacts of the proposed water

withdrawal permit, as well as an accurate assessment of the environmental impacts involved.

48. As fishing men and women, the members of HRFA have great interest in and great knowledge of the state of aquatic life in the estuary. Depriving us of a voice in the issuance of the Con Ed water withdrawal permit not only hindered HRFA's ability to advocate on behalf of our members and aquatic life in the estuary, it deprived the public of the benefit of our member's knowledge and experience.

49. I have personal knowledge of all facts set out in this affidavit.

Gilbert Hawkins

GILBERT HAWKINS
123 Knapp Terrace
Leonia, New Jersey

Sworn to before me this
6th day of July, 2015

Aleta Zygiel

Notary Public

ALETA ZYGIEL
ID # 2211209
NOTARY PUBLIC
STATE OF NEW JERSEY
My Commission Expires March 23, 2018

EXHIBIT A


LEON
JR. FOOT

EXHIBIT B

APPENDIX B
Biological Fact Sheet - Cooling Water Intake Structure
Bureau of Habitat, Steam Electric Unit

Description of Facility
The Ravenswood Generating Station, located on the East River, contains three units with rated capacities of 400, 400 and 1027 megawatts. The facility has a combined flow of condenser cooling water and service water of 1457 million gallons per day. The shoreline intake structure consists of 14 intake bays and conventional through flow traveling screens to keep the station's condensers clear. Marine organisms and debris are continuously washed off the screens at each unit are returned to the East River through a Department approved, low stress fish return pipe.

Ecological Resource
The East River is part of the Hudson-Raritan Estuary System, extending approximately 170 miles from the dam at Troy, NY to Sandy Hook, NJ. The estuary system connects to the coastal marine waters of the New York Bight, between Sandy Hook, NJ and Rockaway Point, NY, and to the western end of the Long Island Sound through the East River.

The East River is a tidal strait extending about 16 miles from the battery to Throgs Neck at Long Island Sound. At Hell's Gate, a natural sill divides the strait into two distinct hydrological sections. The upper East River, which connects to Long Island Sound, is broader, more shallow and characterized by more natural shoreline habitat. The Lower East River, where the Station is located, is a narrower 10 mile section, bulkheaded along most of its length. The channel here is steep sided with depths at approximately 35 to 80 feet. Current velocities in the vicinity of the Station are high, with average peak flood and ebb currents at about 4.6-4.7 feet per second, and maximum tidal velocities exceeding 5.5 feet per second (ASA, 2001).

More than 140 species of fish have been reported from the Hudson-Raritan Estuary System, representing marine, estuarine, freshwater and diadromous fish, as well as species adapted to northern and southern climates. More than 50 species of fish, mostly marine in origin, have been identified from studies conducted at the Station in the 1990s. Under a 1992 consent order with the Department, Con Edison conducted a series of studies to assess the Station's impact on aquatic resources in the East River and determine best technology available for the cooling water intake system. Impingement and entrainment studies conducted were between 1991 and 1994. Approximately 83,000 fish were estimated to be impinged per year, mainly winter flounder, blueback herring, bay anchovy and grubby. Entrainment studies conducted over that time estimated that an average of 220 million eggs, larvae and juvenile fish were entrained per year, with eggs accounting for approximately 75% of the total. The principal species entrained were four beard rockling, bay anchovy, winter flounder, grubby and silver hake (Con. Ed., 1996).

Studies required under the consent order determined that several species of impinged fish, including winter flounder, bay anchovy and Atlantic tomcod, experience thermal stress and possibly increased levels of mortality upon exposure to the high summer temperatures in the cooling water discharge canal. A mark-recapture study was then conducted to determine suitable location(s) to return fish directly to the East River without exposure to the station's thermal discharge. Construction of three fish return pipes, one for each unit, was completed in 2005. The system safely transports impinged fish back to the East River and was the first step in mitigating the impacts of the Station's cooling water intake system.

The most recent Impingement and Entrainment studies were conducted from March 2005 to February 2006. About 25,850 fish were impinged over the year, representing 61 taxons. Blueback herring (21.8%), bay anchovy (13.5%) and alewife (11.3%) were impinged in greatest numbers. Approximately 149.7 million eggs, larvae and juveniles were entrained through the station. Bay anchovy (22.8%), Atlantic menhaden (18.5%) and the goby family (12.5%) were the predominant taxons entrained. Post-yolk-sac larvae (51.2%) and eggs (47.0%) were the main life stages found in the entrainment collections.

Alternatives Evaluated

Feasible technological and operational alternatives were evaluated for this facility, including the use of closed cycle cooling, in order to determine best technology available to minimize adverse environmental impact from operation of the cooling water intake system. The Department selected the alternatives that will minimize impacts, consistent with 6NYCRR Part 704.5 and the federal Clean water Act.

Determination of Best Technology Available

According to 6NYCRR Part 704.5 - Intake structures and Section 316(b) of the federal Clean Water Act, the location, design, construction, and capacity of cooling water intake structures must reflect the "best technology available" (BTA) for minimizing adverse environmental impact. After evaluating all of the available alternatives, the New York State Department of Environmental Conservation (NYSDEC) determined that, in combination, the following technologies and operational measures listed here represent the best technology available (BTA) for minimizing adverse environmental impacts from the cooling water intake system. Implementation of these items was completed by early 2012. The SPDES permit requires that these alternatives achieve a 90% reduction in impingement mortality and a 65% reduction in entrainment from the calculation baseline. The cost of these technologies is not wholly disproportionate to the benefits.

a) Installation of variable speed pumps and ancillary equipment at Ravenswood Units 1, 2 and 3 that will allow for the reduction in cooling water use during periods of low electrical generation;

b) Scheduling of a planned outage process that will require cooling water pumps to be shut down to reduce impingement and entrainment during periods of non electrical generation;

c) Upgrades to the existing traveling intake screens at Ravenswood Units 1, 2 and 3 to allow for the continuous operation of all traveling intake screens and construction of low stress fish returns, to increase fish impingement survival;

A Supplemental Technology and Operation Review/Plan was submitted and approved by the Department in May 2011. Based upon performance testing of variable speed pumps installed at Unit 30, simulations of variable speed pump operation and cooling water use reduction was established for the entire station. Plant generation data from 2005-2009 and several years of in-plant impingement, impingement survival and entrainment data were then used to estimate what the likely reductions in impingement mortality and entrainment would have been over the 2005-2009 period with the BTA alternatives in place. The assessment indicated that under the stated operating conditions and time period, the impingement mortality reduction of 90% and entrainment reduction of 65% from baseline, required by the SPDES permit, would have been achieved.

Monitoring Requirements

A *Verification Monitoring Plan* for was submitted and approved by the Department in December 2011. The plan details the procedures necessary to confirm that the reductions in impingement mortality and entrainment required by this permit are being achieved. The specific requirements of the monitoring plan are set forth in Additional Requirements Nos. 4.a.- e. of the modified SPDES permit.

Legal Requirements

The requirements for the cooling water intake structure in this State Pollutant Discharge Elimination System permit are consistent with the policies and requirements embodied in the New York State Environmental Conservation Law, in particular - Sec.1-0101.1.; 1-0101.2.; 1-0101.3.b., c.; 1-0303.19.; 3-0301.1.b., c., i., s. and t.; 11-0107.1; 11-0303.; 11-0535.2; 11-1301.; 11-1321.1.; 17-0105.17.; 17-0303.2., 4.g.; 17-0701.2. and the rules thereunder, specifically 6NYCRR Part 704.5. Additionally, the requirements are consistent with the Clean Water Act, in particular Section 316(b) and the rules thereunder, specifically Subpart J of 40 CFR §125 - Requirements Applicable to Cooling Water Intake Structures for Phase II Existing Facilities Under 316(b) of the Clean Water Act.

Summary of Changes

Deletions (Former Permit Conditions)

Former Permit Condition	Reason for Deletion or Change
Additional Requirement No. B.1	Condition has been met.
Additional Requirement No.B.8.	Condition is no longer relevant, now that BTA has been established.

References

ASA 2001. Ravenswood Generating Station. Final Action Report. Prepared by ASA Analysis and Communication, Inc. for the Keyspan Corporation.

ASA 2004. Evaluation of the Fish Protection Benefits of Cooling Water Intake System Alternatives at the Ravenswood Generating Station. Phase 2 Report. Prepared by ASA Analyses and Communication, Inc. for the Keyspan Corporation. April 2004. Revised February 2005.

Con. Ed. 1996. Ravenswood Generating Station. Diagnostic Study Report. Prepared by Consolidated Edison Company of New York, Inc. Pursuant to the December 23, 1993 Order On Consent in DEC file No. R2-2985-90-04. April 30, 1996.

Document prepared by Michael J. Calaban, and last revised on 25 January 2012.

EXHIBIT C

CP-#52 / Best Technology Available (BTA) for Cooling Water Intake Structures

New York State Department of Environmental Conservation

DEC Policy

Issuing Authority: Joe Martens, Commissioner	
Date Issued: July 10, 2011	**Latest Date Revised:**

I. Summary:

This policy outlines the reductions in impingement mortality and entrainment required to minimize the adverse environmental impact caused by industrial facilities having a cooling water intake structure (CWIS) in connection with a point source thermal discharge. Water withdrawals from surface waterbodies through a CWIS cause injury and mortality to fish and shellfish through impingement at the intake and/or entrainment through the cooling system. Through this policy, the Department identifies closed-cycle cooling or the equivalent as the performance goal for the best technology available (BTA) to minimize adverse environmental impacts pursuant to Section 704.5 of 6 NYCRR and Section 316(b) of the federal Clean Water Act in State Pollutant Discharge Elimination System (SPDES) permits issued by the Department in accordance with ECL Article 17, Title 8, and Part 750 of 6 NYCRR.

II. Applicability:

This policy applies to all existing and proposed industrial facilities designed to withdraw twenty (20) million gallons per day (MGD) or more of water from the waters of New York State, where at least twenty five (25) percent is used for contact or non-contact cooling, and that are subject to the requirements of Section 704.5 of 6 NYCRR. Existing and proposed industrial facilities subject to the requirements of 6 NYCRR § 704.5 that are designed to use less than 20 MGD of contact or non-contact cooling water or those with a higher design capacity that use less than twenty five (25) percent of water for cooling purposes will continue to be subject to the requirements of 6 NYCRR § 704.5 and CWA § 316(b) or another subpart of 40 C.F.R. Part 125, as determined by the Department on a case-by-case, best professional judgment (BPJ) basis.

III. Policy:

This Policy was prepared in furtherance of the powers and duties of the Commissioner and the Department of Environmental Conservation, pursuant to ECL Articles 1, 3, and 11 *et seq.* to conserve and protect the natural resources of the state and to minimize adverse impacts to the environment. In addition, it seeks to clarify the Department's Best Technology Available (BTA) review process and to provide certainty to Department staff's ongoing implementation of 6 NYCRR Part 704.5 regarding requirements applicable to CWIS.

The following performance goals are identified for selection of BTA to minimize adverse environmental impact from a CWIS:

1. Dry closed-cycle cooling as the performance goal for all new industrial facilities sited in the marine and coastal district (ECL § 13-0103) and along the Hudson River up to the Federal Dam in Troy;
2. Wet closed-cycle cooling as the minimum performance goal for all new industrial facilities located along all waters other than those covered by 1 above;
3. Wet closed-cycle cooling or its equivalent as the performance goal for existing industrial facilities that operate a CWIS in connection with a point source thermal discharge; and
4. Wet closed-cycle cooling as the performance goal for all repowered industrial facilities that operate a CWIS in connection with a point source thermal discharge.

Facilities for which a BTA determination has been issued prior to the effective date of this policy and which are in compliance with an existing compliance schedule of BTA implementation and verification monitoring will not be subject to new requirements as a result of this policy unless/until the results of verification monitoring demonstrate the necessity of more stringent BTA requirements. A full technical review will be conducted when a permit renewal or modification application is submitted following the completion of the verification monitoring program.

Facility owners and/or permittees of existing industrial facilities seeking to meet the equivalent performance goal set by this policy shall propose a suite of technologies and operational measures to the Department for consideration as BTA. Operational measures proposed by the facility owner may include but not be limited to: (1) reductions in cooling water capacity, (2) fish protective outages, and (3) reducing cooling water capacity use.

Definitions:

Adverse environmental impact – the fish and shellfish killed or injured through entrainment and impingement by the operation of cooling water intake structures. The "adverse environmental impact" that must be minimized by the BTA standard of 6 NYCRR §704.5 relates only to aquatic resources.

Available – technologies and operational measures that are technically and administratively feasible for a particular facility, consistent with other applicable regulations and public health and safety considerations, with costs not wholly disproportionate to the benefits.

Best Technology Available (BTA) – technology based standard established under CWA Section 316(b), 40 C.F.R. Part 125, subpart I; 40 C.F.R. Part 125.90(b); and 40 C.F.R. Part 125, subpart N and 6 NYCRR Part 704.5 as the most effective technology, process or operational method for minimizing adverse environmental impact from a CWIS.

Calculation baseline – an estimate of impingement mortality and entrainment that would occur at a facility CWIS assuming that: the cooling water system has been designed as a once-through system; the opening of the cooling water intake structure is located at, and the face of the standard 3/8-inch mesh conventional traveling screen is oriented parallel to, the shoreline near

the surface of the source waterbody and is operated at the full rated capacity 24 hours a day, 365 days a year. This is the baseline of adverse environmental impact to be used in estimating reductions in impingement mortality and entrainment resulting from operating a closed-cycle cooling system.

Cooling water - the water used for contact or non-contact cooling, including water used for equipment cooling, evaporative cooling tower makeup, and dilution of effluent heat content. The intended use of the cooling water is to absorb waste heat rejected from the process or processes used, or from auxiliary operations on the facility's premises [6 NYCRR § 700.1(a)(11)].

Cooling water intake structure (CWIS) - the total physical structure and any associated constructed waterways used to withdraw cooling water from waters of New York State. The cooling water intake structure extends from the point at which water is withdrawn from the waters of the State up to, and including the intake pumps [6 NYCRR § 700.1(a)(12)].

Dry closed-cycle cooling - cooling system that uses air flow, rather than the evaporation of water, to remove heat from the power station in order to reduce or eliminate the consumptive use of surface waters.

Entrainment – the incorporation of all life stages of fish with intake water flow entering and passing through a cooling water intake structure and into a cooling water system. The Department assumes that entrainment results in 100 percent mortality of the entrained organisms unless a lesser mortality is demonstrated to Department staff based on site-specific studies.

Equivalent – reductions in impingement mortality and entrainment from calculation baseline that are 90 percent or greater of that which would be achieved by a wet closed-cycle cooling system.

Feasible – capable of being done; able to be installed and function efficiently within the operating constraints of the facility.

Impingement mortality – the death of all life stages of fish as a result of being entrapped on the outer part of a cooling water intake structure or against a screening device during periods of water withdrawal.

Industrial facilities –includes all facilities listed in CWA § 306(b)(1)(A) and all other facilities that have a cooling water intake structure in connection with a point source thermal discharge.

Minimize - reduce to the smallest amount, extent or degree reasonably possible.

Once-through cooling water system - a system designed to withdraw water from a natural or other water source, use it at the facility to support contact and/or noncontact cooling uses, and then discharge it to a waterbody without recirculation.

Shellfish – for the purposes of this policy, this includes the horseshoe crab (*Limulus polyphemus*) and members of the Class *Decapoda* [lobster (*Homarus americanus*), crayfish, crabs, and shrimp].

Wet closed-cycle cooling – a system designed to withdraw the smallest amount of water to support contact and/or non-contact cooling uses within a facility. A closed-cycle cooling system uses between 93 and 98 percent less water than a once-through cooling system. The water is usually sent to a cooling canal, channel, pond, or tower to allow waste heat to be dissipated to the atmosphere and then is returned to the system. New source water (makeup water) is added to the

system to replenish losses that have occurred due to cooling tower blow-down, drift, and evaporation.

Wholly disproportionate test – is neither a traditional cost-benefit analysis nor an economic analysis but simply a comparison of the proportional reduction in impact (benefit) as compared to the proportional reduction in revenue (cost) of installing and operating BTA technology to mitigate adverse environmental impact. This comparison does not monetize the resource and gives presumptive weight to the value of the environmental benefits to be gained.

IV. Purpose and Background:

State regulations and federal laws mandate that industrial facilities employ BTA to minimize adverse environmental impact when proposing a new or operating an existing CWIS. The purpose of this policy is to identify the goals of the Department in implementing this standard and to ensure consistent application of those goals to industrial facilities in New York State. In addition, this Policy outlines Department staff's ongoing review process and procedures for decision-making.

Throughout New York, over 16 billion gallons of water are withdrawn from state waters through a CWIS system each day for the purpose of industrial cooling. The adverse environmental impact of these CWIS systems results in over 17 billion fish of all life stages (eggs, larvae, juveniles and adults) being entrained or impinged annually. The fish can suffer from lethally high water temperatures, contact with screens, impellers or heat-exchangers, or from exposure to the chemicals used to maintain heat-exchanger cleanliness. Steam electric power plants account for the majority, though not all, of this environmental impact with some of these power plants using well over a billion gallons of water every day for cooling purposes.

Establishing Closed-Cycle Cooling or the Equivalent as the Performance Goal:

One of the most efficient and effective ways to minimize or eliminate the number of and mortality to aquatic organisms impinged and entrained during industrial cooling is to minimize or eliminate the use of once-through, non-contact cooling water from the surface waters of New York. The demonstrated technology that achieves the greatest reduction in non-contact cooling water use is closed-cycle cooling. Under the U.S. EPA CWA 316(b) Phase I Rule (40 C.F.R. Part 125, subpart I), wet closed-cycle cooling was identified as the best technology available for new facilities to minimize impingement and entrainment and New York has already required closed-cycle cooling technology to be employed on new facilities and for electric generating facilities being repowered[1]. Given the effectiveness of closed-cycle cooling at reducing adverse environmental impact caused by a CWIS, the biological significance of New York's surface waterbodies and their importance for commercial and recreational uses, particularly in the

[1] See *Matter of Athens Generating Co., LP,* Interim Decision of the Commissioner, June 2, 2000 [2000 WL 33341184 (N.Y.Dept.Env.Conserv.)]. *Citizens for the Hudson Valley v. New York State Bd. on Electric Generation Siting and the Environment,* 281 AD2d 89 (3d Dept. 2001). *Matter of Mirant Bowline, LLC,* Decision of the Commissioner, March 19, 2002 [2002 WL 444950 (N.Y.Dept.Env. Conserv.)]. *Matter of Bethlehem Energy Center,* Interim Decision of the Commissioner, Jan. 31, 2002 [Siting Board Decision Feb. 2002].

marine and coastal district, the tidal reach of the Hudson River and the Great Lakes, this policy establishes closed-cycle cooling as the performance goal for all new and repowered industrial facilities in New York. The performance goal for all existing industrial facilities in New York is closed-cycle cooling or the equivalent.

Exemption from the Entrainment Performance Goal

An existing electric generating facility operated at less than fifteen (15) percent of its electric generating capacity over a current 5-year averaging period will be subject to the impingement mortality reduction performance goals of this policy and may be exempt from meeting the entrainment performance goal of this policy provided that the facility is operated in a manner that minimizes the potential for entrainment. For these facilities, site-specific performance goals for entrainment will be determined by the Department on a on a case-by-case, BPJ basis.

V. Responsibility:

The Division of Fish, Wildlife and Marine Resources has the primary responsibility to ensure that BTA determinations are made consistent with this Policy. Additionally, the Divisions of Water and Environmental Permits ensure that the requirements of this policy are reflected in all final SPDES permits issued to industrial facilities that operate or propose to operate a CWIS in connection with a point source thermal discharge. Specific Division responsibilities are as follows:

Division of Environmental Permits (Permits) - As the Project Manager, Permits staff coordinate the BTA determination with the development of the SPDES permit modification. Permits staff also ensure compliance with 6 NYCRR Part 621 (Uniform Procedures) and 6 NYCRR Part 617 (State Environmental Quality Review). This includes preparation of all required public notices and coordination with other state and federal agencies, including but not limited to the New York State Department of Public Service and the New York Independent Systems Operator (NYISO). Permits staff are also the primary contact for the public expressing interest in a SPDES modification. In addition, Permits staff oversee the permit process with respect to compliance with Uniform Procedures Act (UPA) and State Environmental Quality Review Act (SEQRA) requirements. With respect to non-BTA land use and other environmental impacts, Permits staff seek other agency or outside expertise as needed.

Division of Fish, Wildlife and Marine Resources (DFWMR) - DFWMR staff conduct the biological assessment of the facility CWIS and take the lead role in making the BTA determination with respect to aquatic resource impacts. In addition, DFWMR staff identify natural resource impacts associated with BTA compliance.

Division of Water (DOW) - DOW Staff assess the potential for water quality impacts that may result from construction and implementation of BTA technologies and incorporate the final BTA determination into the SPDES permit.

VI. Procedure:

Implementation of this Policy:

This policy will be implemented when: (i) an applicant seeks a new SPDES permit; (ii) a permittee seeks to renew an existing SPDES permit; or (iii) a SPDES permit is modified either by the Department or by the permittee, for a facility that operates a CWIS in connection with a point source thermal discharge pursuant to 6 NYCRR § 704.5; 40 CFR Part 125, subpart I and subpart N; and 40 CFR Part 125.90(b). In addition, when issuing SPDES permits for industrial facilities using a CWIS, staff are guided by the applicable SPDES regulations, including 6 NYCRR 750-1.11 "Application of Standards, Limitations and Other Requirements." These regulations require that both federal minimum requirements and State water quality requirements are met, and that other impacts are evaluated and mitigated as required by applicable law and regulations.

DFWMR staff will develop permit conditions for BTA compliance on a site-specific, case by case basis in accordance with this Policy and 6 NYCRR Part 704.5, and Section 316(b) of the federal Clean Water Act (*see* *Matter of Athens Generating Co., L.P.*, Interim Decision of the Commissioner, June 2, 2000).

Once a site-specific BTA determination is made by DFWMR staff, the Department will undertake a SEQRA review to ensure that any significant impacts associated with the construction and operation of the selected BTA are avoided, minimized, or mitigated.

Cost Considerations in Making Site Specific BTA Determinations

After selecting the best technology available for an industrial facility, the Department will consider the cost of the feasible technologies and will determine whether or not the costs of the technologies are wholly disproportionate to the environmental benefits to be gained from the technology. The Department will not undertake a formal cost-benefit analysis whereby the environmental benefits would be monetized. Such an analysis is neither desirable nor required by law. *See Entergy Corp v Riverkeeper, Inc., et al.*, 556 U.S. __, 129 S.Ct. 1498 (2009). For each site-specific BTA determination, the Department will select a feasible technology whose costs are not wholly disproportionate to the environmental benefits to be gained.

Nuclear-Fueled Power Plants

If the owner or operator of a new or existing nuclear-fueled power plant demonstrates to Department staff that compliance with the performance goals of this Policy would result in a conflict with any safety requirement established by the Nuclear Regulatory Commission (NRC), with appropriate documentation or other substantiation from the NRC, the Department will make a site-specific determination of best technology available for minimizing adverse environmental impact that would not result in a conflict with the NRC's safety requirements.

Failure to Meet the Entrainment Performance Goal of this Policy

The performance goal for existing industrial facilities in New York is closed-cycle cooling or the equivalent. Department staff believe that the majority of facilities that install and properly operate and maintain approved closed-cycle-equivalent technologies should be capable of meeting the performance goals established in this policy. This is based on multiple years of experience in assessing BTA for facilities in New York State, on continued review of research and studies associated with performance of BTA technologies, and on participation in the national rulemaking effort associated with CWA Section 316(b). However, for facilities that fail to meet the entrainment performance goal through the use of technologies other than closed-cycle cooling, the Department may initiate a modification to a facility's SPDES permit to require additional mitigative measures to meet the entrainment performance goal, or if appropriate, propose a BTA determination with site-specific entrainment reduction requirements if no other available mitigative alternative remains.

VII. Related References:

California Environmental Resources Control Board. 2010. Water quality control policy on the use of coastal and estuarine waters for power plant cooling. State Water Resources Control board Resolution No. 2010-0020. May 4, 2010. 6pp.

California Environmental Resources Control Board. 2008. Scoping Document: Water quality control policy on the use of coastal and estuarine waters for power plant cooling. State Water Resources Board. March 2008. 91pp.

Clean Water Act, 33 U.S.C. §§ 1251 – 1387

Clean Water Act §§ 306, 316(b)

Environmental Protection Agency. 1977. Permits Division, Office of Waste Enforcement, EPA, *Guidance for Evaluating the Adverse Impact of Cooling Water Intake Structures on the Aquatic Environment: Section 316(b)*, PL 92-500 (Draft 1977).

Entergy Corp. v Riverkeeper, Inc., et al., 556 U.S. __, 129 S.Ct. 1498 (2009).

Entergy Nuclear Indian Point 2, LLC, et al. v. New York State Dept. of Envtl. Conservation, 23 AD3d 811 (3d Dept. 2005), *leave to appeal dismissed in part, denied in part* 6 NY3d 802 (2006).

Hudson Riverkeeper Fund, Inc. v. Orange and Rockland Utilities, Inc., 835 F.Supp. 160 (S.D.N.Y. 1993)

Maulbetsch, John S., and Michael N. DiFilippo. 2008. *Performance, Cost, and Environmental Effects of Saltwater Cooling Towers.* California Energy Commission, PIER Energy-Related Environmental Research Program. CEC-500-2008-043.

Matter of Dynegy Northeast Generation, Inc., on behalf of Dynegy Danskammer, LLC, Decision of the Deputy Commissioner, May 24, 2006 [2006 WL 1488863 (N.Y.Dept.Env.Conserv.)]; Riverkeeper, Inc. v Johnson, 52 AD3d 1072 (3d Dept. 2008), appeal denied 11 NY3d 716 (2009).

Matter of Athens Generating Co., LP, Interim Decision of the Commissioner, June 2, 2000 [2000 WL 33341184 (N.Y.Dept.Env.Conserv.)], *Citizens for the Hudson Valley v. New York State Bd. on Electric Generation Siting and the Environment,* 281 AD2d 89 (3d Dept. 2001).

Matter of Mirant Bowline, LLC, Decision of the Commissioner, March 19, 2002 [2002 WL 444950 (N.Y.Dept.Env. Conserv.)].

Matter of Bethlehem Energy Center, Interim Decision of the Commissioner, Jan. 31, 2002 [Siting Board Decision Feb. 2002].

Matter of Besicorp-Empire Development Co., LLC, Decision of the Commissioner, Sept. 23, 2004 [Siting Board Decision Sept. 2004].

Matter of Public Service Co. of New Hampshire, et al. (Seabrook Station, Units 1 and 2 - National Pollutant Discharge Elimination System), June 10, 1977 [1977 WL 22370 (E.P.A.), 1 E.A.D. 332].

National Pollutant Discharge Elimination System: Regulations Addressing Cooling Water Intake Structures for New Facilities; Final Rule, 66 Fed.Reg. 65,255 (Dec. 18, 2001) (codified at 40 C.F.R. pts. 9, 122-25 [Phase I Rule].

National Pollutant Discharge Elimination System: Regulations to Establish Requirements for Cooling Water Intake Structures at Phase II Existing Facilities; Final Rule, 69 Fed.Reg. 41,576 (July 9, 2004) (codified at 40 C.F.R. pts. 9, 122-25) [Phase II Rule].

NERC (2008). Electric reliability impacts of a mandatory cooling tower rule for existing steam generating units, U.S. Department of Energy/North American Electric Reliability Corporation**:** 46 pp.

Riverkeeper I: *Riverkeeper, Inc. et al. v U.S. EPA*, 358 F.3d 174 (2d Cir. 2004) Riverkeeper II: *Riverkeeper, Inc. et al. v U.S. EPA*, 475 F.3d 83 (2d Cir. 2007).

Stark letter (2005) 24 January 2005 letter to EPA B. Grumbles from Deputy Commissioner L. Stark.

Tetra Tech, Inc. 2008. California's coastal power plants: alternative cooling system analysis. Final report to the California Ocean Protection Council. February 2008.

Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Parts 700, 704 and 750.

40 C.F.R. Part 125 - Criteria and Standards for the National Pollutant Discharge Elimination System (NPDES) permits.