Fig. 5. Entrainment Probability at High Flow[123]

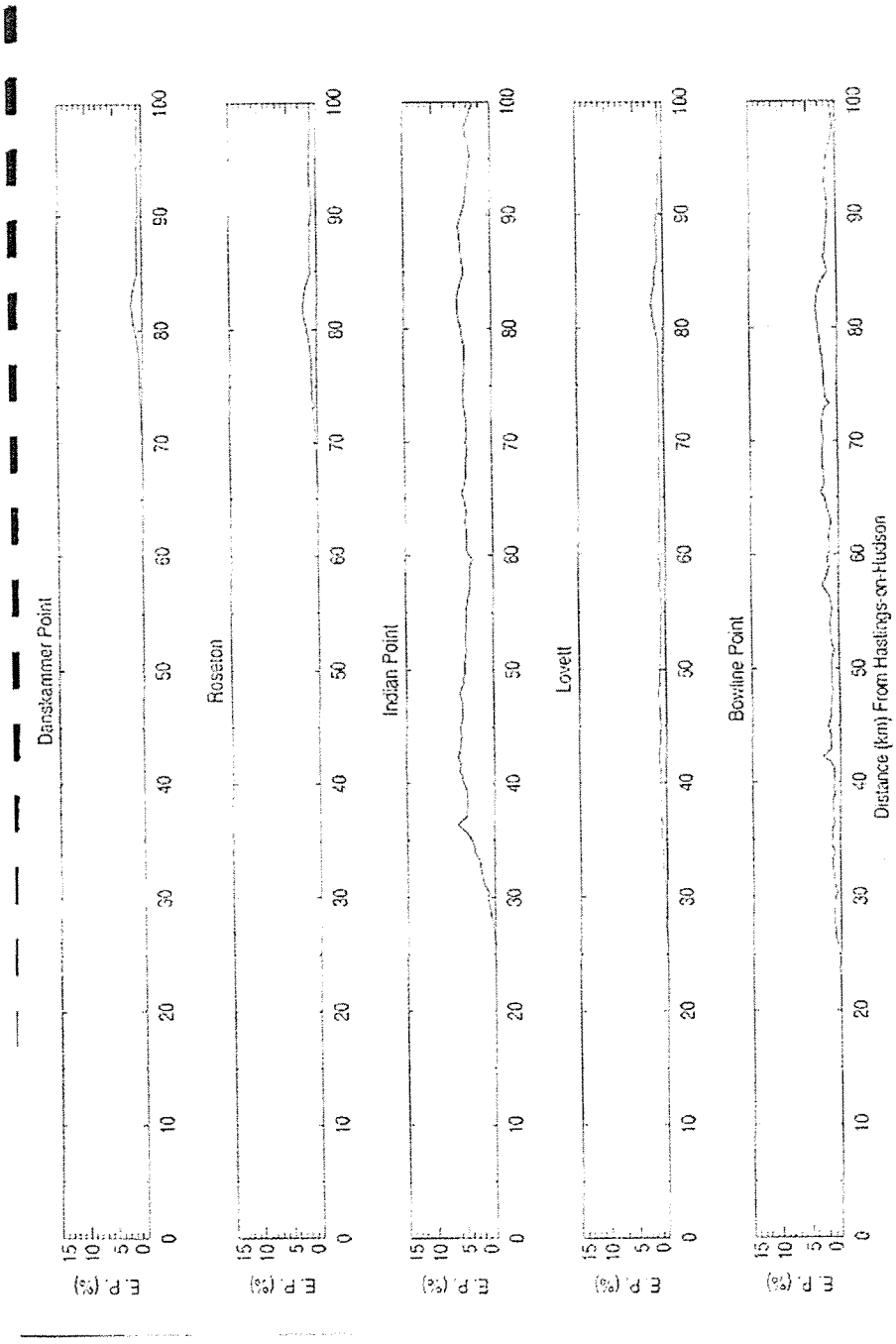

Figure 3-8. Entrainment probability (E. P.) at each of the five power plants versus particle releasing locations along the main river channel under the high-flow condition.

[123] HydroQual, 1999.

Fish Populations - 2. Many species in the Hudson River system are actually declining. While the striped bass (SB) population is up, that increase may be the result of other management decisions and activities. Historic baseline or trend data is not substantially discussed.

In Section VI (p. 36), the DEIS concludes that "...the fish community in this system remains healthy and robust, and consistent with that expected in a large temperate estuary like the Hudson." It further states that "While changes in the composition and abundance of this fish community have been observed, all appear attributable to factors other than power plant operation."

The Hudson River has been the subject of more than 25 years of fisheries investigations, and, as such, is one of the most intensively studied rivers in the world. These studies have revealed that, although overall species richness (the total number of species) is high, with more than 200 species recorded, diversity (which incorporates consideration of abundance and distribution amongst the species) is relatively low; most of the River's fish production is concentrated among a few of these species. Overall species richness and overall abundance of fish larvae in the river have increased since 1974. However, increases in species richness are mainly due to an increase in use of the River by marine species, and increases in abundance can be attributed to increases in but two species, striped bass and Atlantic silversides. Species richness and abundance in both young-of-year and older fish have decreased over this same period, especially among freshwater species, as described below.[124]

Several species of fish in the Hudson River estuary, such as American shad, white perch, Atlantic tomcod and rainbow smelt, have shown trends of declining abundance.[125] The American shad stock in the Hudson river has been in decline since the early 1990's. White perch eggs, yolk-sac and post yolk-sac larvae abundance has remained stable since the mid 1980's; however, indices of young-of-year and older fish have shown declines since the late 1970's.[126] Atlantic tomcod juvenile abundance has shown no trend, but adult abundance over the last 10 years has been lower than in previous years and continues to show high interannual

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[124] Dey, W., S. Jinks and N. Decker, 2003. Changes in the Fish Community Throughout the Hudson River Estuary. *At* Hudson River Environmental Society Presents: Hudson River Fishes & Their Environment. March 20-21, 2003, Marist College, Poughkeepsie, NY. No published proceedings.

[125] ASA Analysis and Communications. 2002. 1999 Year Class Report for the Hudson River Estuary Monitoring program. August 2002.

[126] Wells, A. W. 2003. Status of White Perch in the Hudson River. *At* Hudson River Environmental Society Presents: Hudson River Fishes & Their Environment. March 20-21, 2003, Marist College, Poughkeepsie, NY. No published proceedings.

variability.[127] Rainbow smelt have been virtually absent from the collections from the long river and fall shoals surveys since 1995.[128]

Declines in the abundances of several species and changes in species composition raises concerns and questions regarding the health of the River's fish community. The Hudson River environment has undergone a number of significant changes in recent decades. In addition to changes directly attributable to power plants, these changes include: water quality, especially as a result of major improvements in sewage treatment; invasions by exotic species such as water chestnut and zebra mussels; hazardous substances contamination, especially PCBs, organochlorine pesticides and heavy metals; global climate change, which includes both increasing annual mean temperatures and higher frequencies of extreme weather events; and the management of individual species, such as striped bass, which have undergone strict regulation for both the recreational and commercial fisheries. Each is a stressor, to a greater or lesser extent, on the River's biota. For example, the zebra mussel invasion, which began in 1991, is thought to have caused very large reductions in the biomass of plankton and non-zebra mussel macroinvertebrates. Overall, it is estimated that the biomass of these forage invertebrates has dropped by approximately 50 percent, leading to large changes in the fish community.[129]

The impingement, entrainment and thermal impacts caused by the HRSA facilities are well-documented elsewhere in this FEIS and in other portions of the HRSA proceedings. The millions of fish that are killed by power plants each year represent a significant mortality and are yet another stress on the River's fish community. Although the primary cause of these population changes cannot conclusively be attributed entirely to the operation of these three steam electric generating stations, the mortality that they cause must be taken into account when assessing these population declines.

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[127] Young, J., M. T. Mattson , Q. E. Ross and D. J. Dunning. 2003. Population Fluctuation of Atlantic Tomcod in the Hudson River Estuary. *At* Hudson River Environmental Society Presents: Hudson River Fishes & Their Environment. March 20-21, 2003, Marist College, Poughkeepsie, NY. No published proceedings.

[128] The "long river", or Longitudinal River Ichthyoplankton Survey (LRS) encompasses the entire length of the Hudson River Estuary, from the Battery (River Mile, RM, 1) to the Federal Dam in Troy (RM 152). The LRS yields ichthyoplankton data to support calculations of standing crop, temporal and geographical indices, and growth rates for selected Hudson River species (Atlantic tomcod, American shad, striped bass, white perch and bay anchovy). LRS sampling is concentrated during the spring, summer and early fall when eggs and larvae of the selected species have been historically abundant.
Fall Shoals Survey (FSS) samples are collected every other week from the Battery to the Federal Dam in Troy from mid-summer through the fall. The FSS objective is to provide data on young-of-year (YOY) fish to support calculation of standing crop and temporal and geographical indices of for selected Hudson river species (Atlantic tomcod, American shad, striped bass and white perch). *From* ASA 2002.

[129] Strayer, D. L., N. F. Caraco, J. J. Cole, M. L. Pace, S. Finlay, K. A. Hattala, and A. W. Kahnle. 2003. Ecological Changes From Two Recent Species Invasions in the Freshwater Tidal Hudson River. *At* Hudson River Environmental Society Presents: Hudson River Fishes & Their Environment. March 20-21, 2003, Marist College, Poughkeepsie, NY. No published proceedings.

Fish Populations - 3. Several commentors questioned one or more of the assumptions used in one or more of the population models; in particular, density-dependence is unproven.

The DEIS relies on fish population modeling to support the generators' conclusion that entrainment mortality is not significant for two species, tomcod and striped bass, based upon compensatory density dependence.[130] Bay anchovy do not have a population model presented in the DEIS. However, a Production Foregone model that is based upon data from the Chesapeake Bay predicts that bay anchovy populations in the Hudson River could remain stable if there were an annual influx of migrants from a general east coast population. A population dynamics model is not presented for white perch in the DEIS. Thus, estimated impacts of entrainment and impingement for this species are highly speculative. The American shad population model in the DEIS shows significant variation in abundance between 1990 and 1997; the stock apparently has not recovered from low numbers in recent years and may be over-exploited unless high density-dependence is assumed. Models were not prepared for other species.

The Department concludes that the models and analyses presented in the DEIS are somewhat useful, but that there are significant questions and concerns regarding the inputs and assumptions for each species analysis which may result in very different conclusions than those presented in the DEIS. It is noteworthy that the analyses and conclusions performed by three different sets of professional fisheries population modelers, in three different countries and with different backgrounds, all point out significant concerns within each model and that alternative results could easily be presented. These modelers represent the generators, the Department and ESSA Technologies, Ltd., and environmental organizations; this is a diverse group that is not predisposed toward a common outcome. What is clear from the data and analyses presented in the DEIS is that entrainment and impingement, primarily the former, are eliminating a significant portion of the above-listed species in their egg and larval forms, as well as many more species which spawn or spend part of their life stages in the lower Hudson River. While it is reasonable to conclude that some of these losses may be compensated for by increased survival of organisms not killed, it is not possible to determine the impact of these losses on adult populations with much confidence.

Fisheries scientists are keenly aware of dramatic natural changes in fish populations, both on an annual basis and long term. There are a great many natural reasons for these changes. The Hudson River is a dynamic system with many environmental

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[130] The *Dictionary of Ichthyology*, Brian W. Coad and Don E. McAllister, Revised: 13 May 2003, provides the following definitions:
Density dependence = the dependence of a factor influencing population dynamics (such as survival rate or reproductive success) on population density. The effect is usually in the direction that contributes to the regulative capacity of a stock.
Compensatory survival = a decrease in the rate of natural mortality that some fish show when their populations fall below a certain level. This may be caused by less competition for food and living space.
For a general discussion of the concepts, *see* Boreman, John. 2001. Surplus Production is a Myth. 10 pp. Included in Appendix F-V.

parameters differing from apparently natural causes each year. Flow, temperature, salinity, dissolved oxygen, nutrients and others fluctuate markedly. Many of these same parameters are influenced by human activities, too. Addition or deletion of pollutants, invasion by exotic species of plants and animals, habitat management, and fishing pressure and regulations all combine with the withdrawal of billions of gallons of water each day, for cooling purposes at steam electric stations as well as for other industrial or public water supply uses, and with very large amounts of thermal inputs, to contribute to changes in the River. Attempts to identify, measure and understand specific impacts are complicated by the array of interacting and potentially confounding variables. The inherent uncertainties of data management and especially population models cast further doubt on available information and analyses.

Data in the 1999 DEIS and comments on the topic of population dynamics and modeling identify entrainment rates for fish eggs and larvae as significant impacts. They also indicate that neither the terms of the HRSA and subsequent Consent Orders nor the applicants' proposed actions would reduce this impact to levels consistent with BTA requirements. The body of analyses in the fish population models presented in the DEIS indicates that the models overestimate the role of density dependence and thereby underestimate impacts associated with entrainment and impingement. This leads the Department to conclude that this modeling effort alone will not conclusively show whether or not fish populations are significantly affected by entrainment and impingement. Therefore, the Department has determined to not rely on these models to make conclusions for this FEIS or for the SPDES permits to be issued for each of the three HRSA power plants.

Detailed reviews of population dynamics models are presented in the ESSA Technologies, Ltd. report *Review of the Draft Environmental Impact Statement*, dated October 20, 2000, and the reviews of the Atlantic Tomcod, Bay Anchovy, Striped Bass, and American Shad models appended to it.[131] Additional comment on the models, as well as other topics, was provided by Dr. Peter Henderson of Pisces Conservation, Ltd. representing the Riverkeeper, Scenic Hudson and NRDC.[132]

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[131] ESSA Technologies, Ltd. 2000. Review of the Draft Environmental Impact Statement for SPDES Permits for the Bowline Point 1 & 2, Indian Point 2 & 3, and Roseton 1 & 2 Steam Electric Generating Stations. Report to the Parties to the Application. Prepared by ESSA Technologies, Ltd., Richmond Hill, ON, for NYS DEC, Albany, NY. 31 pp plus Appendices; the full set of ESSA reports is included as Appendix F-V to this FEIS.

[132] PISCES, 2000.

Atlantic Tomcod

The Atlantic Tomcod population in the Hudson River appears to be declining rapidly. This conclusion is supported in the DEIS by 1989-97 early life-stage data.[133] The DEIS further asserts that, "... Adult abundance in recent years is distinctly lower than it was in the 1970s ...".[134] Because this species is at the southern edge of its geographic range, observed declines could be the result of increasing river temperatures, whether from thermal discharges, global climate change, or other unidentified factors. Nevertheless, the population stability predicted by the population model in the DEIS is predicated upon a conclusion that significant density-dependent mortality occurs for this species at the life stage *after* most entrainment mortality has occurred. If the conclusion proves to be based upon limited data or errors in analysis (as suggested by ESSA Technologies, Ltd. in their initial DEIS review),[135] then the Hudson River tomcod population is *not* determined by this density-dependent mortality and the generators proposed actions could instead increase the conditional entrainment mortality rate (CEMR) of this species.[136]

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[133] 1999 DEIS, p. V-43, Figure V-65

[134] 1999 DEIS, p. VI-11

[135] Parnell, I., D. Marmorek, and R. Deriso. 2000. Review of the Assessment of Atlantic Tomcod. Companion Report to Chapter 3 *in* ESSA, 2000.

[136] Conditional Entrainment Mortality Rate (CEMR) is the probability of a fish dying from passage through the cooling water system of a power plant. It is expressed as a percentage and measures how many fewer Hudson River fish exist at the end of their first year of life (actually at September 1) than would exist if not for the loss to entrainment. The actual computations are based on measurements of mortality rates of all life stages of fish. These stages include eggs, larvae, juveniles and even some small adults; larger fish usually do not become entrained because they can swim well enough to escape from the intake current or are protected by mechanical devices such as racks or screens installed expressly to prevent entrainment. Because much of the raw data involves early life stages, the mortality rates of eggs and larvae are "normalized" to a rate expected of young-of-the-year fishes on September 1. This statistical process is based on existing information about expected mortality (or its inverse, survival) of each life stage from natural causes, such as predation.
This survival information varies among species. For most species, natural mortality of early life stages is very high. For example, for striped bass, about 75 percent of eggs die before they hatch to become yolk sac larvae. Similarly, mortality can be as high as 89 percent as the yolk sac larvae mature to become post-yolk sac larvae. This natural attrition continues throughout the life cycle. Typically, only two-hundredths of one percent of striped bass eggs would survive to become juveniles on September 1; this is a survival rate of .0002. The CEMR, then, accounts for such natural mortality rates when it is used to calculate mortality attributable to entrainment at power plants.
See Public Service Electric and Gas Company (PSE&G). 1999. 316(b) Demonstration for the Salem Nuclear Generating Station. Appendix L in Application for Certification of a Major Electric Generating Facility Under Article X of the New York State Public Service Law, Appendix 8b. 2000. TRC Environmental for KeySpan Energy.

Population declines could continue and ultimately result in the elimination of this species in the lower River.[137]

Striped Bass

The DEIS presents arguments in support of the generators' proposed action, and the resulting mortality of this species due to entrainment and impingement, that are based upon the assumption of strong density dependence within the striped bass population in the Hudson River. ESSA Technologies, Ltd. has noted that this conclusion is based upon data and model assumptions that, if not faulty, may not be the only data and assumptions that could be employed in the model.[138] For example, fishing mortality estimates presented in the model are inconsistent with recent tagging analyses and stock assessments developed for Atlantic coast stocks.[139] An alternative analysis could be presented that indicates much lower density-dependence; such an indication would lead to a prediction of a much greater impact from entrainment and impingement.

White Perch

A population dynamics model was not prepared for this species because the Technical Workshops concluded that the data do not support development of a defensible model. However, juvenile and age-1 abundance indices suggest that white perch numbers in the Hudson River are declining.[140] This contrasts with the DEIS conclusion that the population appears resilient enough to sustain its population in the future under similar levels of power plant mortality. These conditional mortality rates (CMR) are stated to be approximately 21 percent over the period of analysis presented. As with other species, use and interpretation of other available information can easily result in very different conclusions regarding impacts

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[137] *See also* Everly, A. W. and J. Boreman. 1999. Habitat use and requirements of important fish species inhabiting the Hudson River Estuary: Availability of Information. NOAA Tech. Memorandum NMFS-NE-121. US Dept. of Commerce, National Marine Fisheries Service, Northeast Fisheries Science Center, Woods Hole, MA.
http://www.nefsc.noaa.gov/nefsc/publications/tm/tm121/tm121.pdf
Of the 140 species that occur in the Hudson River Estuary, Everly and Boreman also chose Atlantic Tomcod as one of their 11 representative species for their study. Tomcod were chosen as important and representative of the fish community of the Hudson River as euryhaline nonmigratory species. The life history synopsis on p.14 illustrates the exposure of this species to entrainment, impingement, and thermal pollution impacts from once-through cooling, by virtue of its life cycle in the Hudson River.

[138] Deriso, R., D. Marmorek, and I. Parnell. 2000. Review of the Assessment of Striped Bass. Companion Report to Chapter 5, *in* ESSA, 2000.

[139] Deriso et al, 2000.

[140] Parnell, I. and D. Marmorek. 2000. Review of the Assessment of White Perch. Companion Report to Chapter 6, *in* ESSA, 2000.

of entrainment and impingement. In their earlier reviews, the HRSA technical workshops and the review by ESSA Technologies, Ltd. recommended that topics and issues stemming from data limitations be considered in the DEIS analysis. This was not done.

American Shad

American shad population impact analysis in the DEIS is based upon Hudson River Shad Assessment and Equilibrium Calculations: Revision of the 1995 Report to Include Data Through 1997, by Dr. Richard Deriso, Kathryn Hattala, and Andrew Kahnle.[141] Ms. Hattala and Mr. Kahnle are Department staff and Dr. Deriso is a consultant to ESSA Technologies, Ltd., the Department contractor that assists in review of population dynamics modeling, among other topics. This analysis was the only model which employed more than one level of density dependence to determine abundance. The DEIS concludes that the American shad population appears healthy and able to sustain itself within the constrains of the proposed action. This is the least conservative conclusion that can be drawn from the data presented. More likely is the conclusion that the stock has not shown any recent recovery from very low levels ("At the present time, shad stocks in the Hudson River are at an all-time low" [142]), and both entrainment and fishing mortality rates need to be minimized.

Bay Anchovy

Bay anchovy population modeling presented in the DEIS was developed to analyze this species in the Chesapeake Bay and used data from that water body, not from the Hudson River. The model's author, Dr. Kenneth Rose, presented many analytical caveats that should be used in the application of the model; the model is very sensitive to different assumptions. The discussion of the model results presented in the DEIS, however, does not acknowledge these limitations. This model estimates production foregone, in contrast to other population dynamics models. The analysis overestimates the predatory demand of striped bass and bluefish because their populations have increased so markedly and suggests that anchovy spawner immigration serves to avoid population extinction caused by entrainment and impingement in the Hudson; this immigration would come from the Atlantic coast stock. This assumption appears to ignore entrainment and impingement impacts from the many other coastal power plants which affect the coastal anchovy population. Therefore, the conclusions concerning bay anchovy presented in the DEIS are not sufficiently supported by the model.

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[141] Appended to ESSA, 2000.

[142] DEIS, p. V-101

Fish Populations - 4. Climate, disease, and the changing ecology of the Hudson River system are not considered in the population models.

Any measurement of ecological impacts attributable to power generating stations is confounded by the changing ecosystem itself. As will be discussed here and in following sections, the Hudson River ecosystem has undergone numerous profound changes in the last few decades, many of which are continuing. The population models presented in the DEIS do not account for such fundamental and dynamic ecosystem influences as climate, disease, water quality, flow and invasive species. For example, n the years since the 1999 DEIS was published, Atlantic tomcod have continued to decline, contrary to the predictions of the model presented in the DEIS.[143] Rainbow smelt numbers, too, have declined significantly during this period.

In addition, many assumptions in the model and the selective use of datasets for the various models cast doubt on the validity of many of the conclusions presented in the DEIS.[144] For example, different years of data are used throughout the DEIS in order to demonstrate a lack of correlation between post-yolk sac (PYS) and juvenile fish of a selected species. Although the DEIS asserts that this relationship between PYS and juveniles demonstrates density-dependent compensation, other, more plausible explanations are available.

If one is to entertain the concept of density-dependent compensation as a mechanism by which fish populations respond to changing stressors within their environment, it must be evaluated against the many changes which can impact the population, not only the indiscriminate cropping imposed by cooling water intakes. Even if density dependent compensation exists, it cannot be presumed that the ability to make up for natural and anthropogenic induced mortality is infinite. The factors above, which are only recent examples of changes affecting fish in the Hudson, illustrate how many factors can consume portions of any compensation ability fish populations may have.

Climate Change

Over the past decade a large body of data has been collected in a variety of scientific disciplines which indicates that climatic changes are occurring on a global scale.[145] Growing evidence suggests that temperature has increased over the past century at an accelerated rate. One indicator of this change has been increased ocean temperatures. Of the marine waters of the world, coastal areas and estuaries are most susceptible to climatic changes due to their relatively shallow depth and proximity to land. These coastal areas are also the most biologically productive as

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[143] ASA, 2002.

[144] PISCES, 2000.

[145] Kennedy, V., et al. 2002. Coastal and Marine Ecosystems and Global Change. Prepared for the Pew Center on Global Climate Change, Arlington, VA.

the majority of marine fishes spawn, and many mature in near shore or inshore areas. Though estuaries only represent approximately 0.5 percent of the world's marine environment, they support about 5 percent of global fish production.[146]

Many scientists believe that the accelerated increase in global temperatures is due primarily to anthropogenic impacts. Chief among these is the emission of "greenhouse gases" produced by burning fossil fuels. The accumulation of these emissions in the atmosphere causes air temperatures to increase; this indirectly increases temperatures of oceans, estuaries and other surface waters. Because of their proximity to land, estuaries and coastal waters are also directly influenced by other human activities which may increase temperature, such as by storm water runoff from impervious surfaces, wastewater effluent and cooling water discharges. A review of data collected over a 51-year period indicates increases in water temperature of the Hudson River Estuary in the last half of the twentieth century.[147]

Very small changes in water temperature have been shown to affect many species of fish, particularly during early life stages.[148] Temperature changes may influence spawning success, early life stage development, and survival of ichthyoplankton and adults.[149] Most vulnerable would be cold water species, and impacts upon these species would be an early indicator of changes which could eventually affect any and all species inhabiting a water body.

Rainbow Smelt

Rainbow smelt may be disappearing from some reaches of the Hudson because of thermal discharges from electric generating stations. The rainbow smelt *(Osmerus mordax)* is a small soft-bodied species which inhabits coastal areas of North America from Labrador to as far south as Virginia. Smelt also occur naturally as landlocked populations in some lakes in New England and eastern Canada. In 1912, smelt were introduced into Crystal Lake in Michigan. From there they spread throughout the Great Lakes where they are now found in abundance.[150] Coastal populations support

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[146] Kennedy, 2002.

[147] Ruggiero, R. Hudson River Temperature Data Collected at the City of Poughkeepsie Water Treatment Facility. Unpublished; submitted to Department March 6, 2003. Copy in Appendix F-V.

[148] Kennedy, 2002.

[149] USEPA - New England, 2002. CWA NPDES Permit Determinations for Thermal Discharge and Cooling Water Intake from Brayton Point Station in Somerset, MA. July 22, 2002.

[150] Buckley, J. L. 1989. Species Profiles: Life Histories and Environmetnal Requirements of Coastal Fishes and Invertebrates (North American) Rainbow Smelt. USFWS Biological Report 82(11.106) TR EL-82-4.

recreational fisheries and modest commercial fisheries in New England .[151] Ecologically, smelt serve as forage for species such as striped bass and bluefish.[152]

Research conducted by the Massachusetts Division of Marine Resources has documented relatively stable populations of smelt in several rivers located in Massachusetts through 2000.[153] Studies conducted by Dominion Nuclear Connecticut, Inc. as a requirement of the operation of the Millstone Power Station also demonstrate a stable population of smelt in the Niantic River and adjacent areas of Long Island Sound through 2000.[154] In contrast, data collected by the Hudson River Estuary Monitoring Program, contained in the 1999 Year Class Report, document the apparent local disappearance of rainbow smelt.[155]

Because the Hudson River is located in the southern portion of the rainbow smelt's east coast range, one might reasonably conclude that observed increases in ocean and coastal water temperatures, as from global climate change, have caused a range shift northward, with the smelt abandoning its southernmost range. However, smelt populations at nearly the same latitudes as the Hudson River Estuary remain stable. This fact may indicate that localized influences have caused the apparent local disappearance of this species in the Hudson River. Thermal discharges, as from power plants, may be a principal factor in the disappearance of this species from the Hudson estuary. Such a trend, if continued, could impact other species. This circumstance warrants review of thermal contributions to the Hudson River Estuary.

Atlantic Tomcod

Atlantic tomcod declines, too, may be attributable to the effects of cooling water intakes at electric generating stations in the Hudson River. Like smelt, the Atlantic tomcod (*Microgadus tomcod*) is a cold water species that has declined dramatically since 1995.[156] Tomcod populations in the Hudson River have been monitored since 1974 with a mark-recapture program using box traps. In 1982, trawling, primarily south of the George Washington Bridge, was added as a means of collecting fish. The population of tomcod fluctuated but remained abundant through 1995, after

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[151] Chase, B. and C. Childs, 2001. Rainbow Smelt (*Osmerus mordax*) Spawning Habitat in the Weymouthfore River. Massachusetts Division of Marine Fisheries Technical Report TR-5.

[152] Buckley, 1989.

[153] Chase & Childs, 2001.

[154] Keser, M. 2001. Monitoring the Marine Environment of Long Island Sound at Millstone Power Station, 2000 Annual Report. Environmental Laboratory, Millstone Power Station, Dominion Nuclear, Waterford, CT.

[155] ASA, 2002.

[156] ASA, 2002, and prior (1996-99) Hudson River Year Class Reports. Normandeau Associates, Inc. (NAI). Letter reports and field data from M. Ricci to J. Kelly on the Striped bass and Atlantic tomcod Mark Recapture Program; April 26, 2002, and April 22, 2003.

which a steady decline has occurred. During the 2001-2002 and 2002-2003 sampling seasons, tomcod have become virtually absent.[157]

The tomcod has a much shorter life span in the Hudson River than in more northern systems, living only about 2 years. Three-year and older fish represent a tiny fraction of the population (0.6 percent in 1995-96 season) and the majority of the spawning stocks are 1-year-old fish.[158] In contrast, stocks in other areas in New England and Canada are much longer-lived and spawning stocks are dominated by 2-year-and-older fish.

Numerous studies have been conducted investigating anthropogenic impacts upon tomcod inhabiting the Hudson River Estuary and have revealed a very high incidence of liver cancer.[159] Recent research indicates a synergistic effect from elevated levels of polycyclic aromatic hydrocarbons (PAHs), which appear to damage hepatic DNA, leaving the fish more susceptible to PCB-induced early life-stage toxicities.[160]

In addition to chemical contaminants, other impacts upon the Atlantic tomcod population which have been investigated include: reductions in food sources; predation; and mortality due to cooling water intakes estimated at approximately 22 percent of each year class (1974-1997). The Hudson River is the southern extreme of the range for tomcod. While stocks in Massachusetts waters appear to be stable, preliminary observations suggest that the abundance of tomcod in Connecticut has declined.[161] As discussed above, these declines in populations at the southernmost portion of the species range could indicate temperature-induced impacts from climatic changes acting to shrink the species range. In the Hudson River this effect could be exacerbated by the addition of thermal discharges from power plants.

Atlantic tomcod spawning begins in mid-February and extends into mid-March in the Hudson River. The area of peak spawning is in the Highlands section of the river

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[157] NAI, 2002-03.

[158] Lawler, Matusky and Skelly Engineers (LMS),1999. Abundance and Stock Characteristics of Atlantic Tomcod Spawning Population in the Hudson River, Winter 1995-1996. Prepared for NYPA, White Plains, NY.

[159] Schreibman, M. and J. Young. 2002. Physiology Investigations of the Atlantic Tomcod. Aquatic Research and Environmental Assessment Center *and* ASA Analysis & Communications, Inc.

[160] Wirgin, I. 2003. Contaminants: Use of Atlantic Tomcod as a Model to Evaluate the Possible Toxic Effects of Pollutants on Hudson River Populations. *At* Hudson River Environmental Society Presents: Hudson River Fishes & Their Environment. March 20-21, 2003, Marist College, Poughkeepsie, NY. No published proceedings.

[161] Simpson, D. 2003. Personal communication from Connecticut Department of Environmental Protection to this Department regarding Connecticut information on Atlantic tomcod abundance in tributaries to Long Island Sound. Included in Appendix F- V.

near Con Hook approximately 5 river miles upriver from Indian Point.[162] When eggs and yolk sac larvae drift down river, in addition to being exposed to entrainment, they are also exposed to a thermal plume from Indian Point Units 2 and 3 which extends the entire width of the river on flood tide and across more than two thirds of the width on ebb.[163] In years of high freshwater floods, larvae are transported down river by current into the Haverstraw region or the Tappan Zee region while maturing. Post yolk sack tomcod then concentrate near the leading edge of the salt front (approximately 1 ppt salinity) and move with the tidal flow.[164] In dry years with low freshwater input, this front can be located in the Indian Point region. This results in tomcod larvae congregating in the leading edge of the salt front, being repeatedly moved past the Indian Point station discharge and intakes, potentially increasing the thermal and entrainment effects of the plant on this species.[165] Less than average rainfall from 1995 into 2002 reduced the freshwater flow in the Hudson River. This period corresponds to the period of rapid decline in numbers of Atlantic tomcod in the Hudson River.

Many factors are impacting tomcod populations: climatic trends leading to increased water temperatures; decreases in available food resources caused by improvements in waste water treatment and the invasion of zebra mussels; increased predation from increased striped bass populations; and the physiological effects of chemical pollutants.[166] These multiple stressors can exacerbate the effects of heat discharged from generating stations, particularly during low freshwater flow periods. Not only could increases in river temperatures decrease the survival of larval tomcod, but higher temperatures could also depress the growth rate of this species. Since the fecundity of females is proportional to size, higher water temperatures could result in fewer young produced. Should these factors, in combination with the mortality induced by entrainment, significantly depress tomcod populations in the Hudson River, further ecological repercussions could be expected to follow on populations including striped bass, for which tomcod are a significant food source.[167] Neither the tomcod nor the striped bass population model proposed in the DEIS, however, has any means to integrate these variables.

Comb Jellies

Members of the phylum Ctenophora are commonly known as comb jellies and are found in the Hudson River. In most years they become abundant in the lower reaches of the River and New York Harbor from June to September when increases

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[162] Dew, B. C. 1991 Early Life History and Population Dynamics of Atlantic Tomcod (*Microgadus tomcod*) in the Hudson River Estuary, New York. Doctoral thesis submitted to the City University of New York, NYC, NY.

[163] DEIS, Appendix VI

[164] Dew, 1991.

[165] Dew, 1991.

[166] Wirgin, 2003.

[167] Dew, 1991.

in salinity and temperature typically occur. Comb jellies are a voracious predator feeding on invertebrates and larval fishes. In areas of high comb jelly density, ichthyoplankton samples collected contain few larval fish.

An analysis of data collected to assess the impacts of the Brayton Point station located on Mount Hope Bay in Massachusetts determined that water temperature increases resulted in an increase in the population of comb jellies, as well as the extent of their range and the length of time they were present. The warming was directly attributable to the cooling water discharge of the plant.[168]

Observations of the comb jelly population in the Hudson River over the past 10 years indicate that a similar trend is occurring. While the warming climate may be influencing the abundance and distribution of comb jellies, thermal discharges, particularly in spawning and nursery areas of the Hudson River, should not be discounted.

Zebra Mussels

Zebra mussels (*Dreissena polymorpha*), an invasive species of bivalve first observed in the Hudson River in 1992, appear to have caused very significant reductions in primary production (plant life, including phytoplankton) in the freshwater portion upriver of River Mile 63. Between 1987 and 1991, before the invasion of zebra mussels, summertime concentrations of chlorophyll averaged 30 mg/m^3. During 1993 and 1994, concentrations dropped to 5 mg/m^3.[169] This ecological change is not presented in the DEIS or reflected in the models offered in the DEIS.

Densities of both phytoplankton and small zooplankton (rotifers, tintinnids, and copepods) dropped to 10 to 20 percent of their previous levels after zebra mussels invaded the Hudson.[170] This reduction directly affects planktivorous fishes and early-life-stages of fishes which feed upon small zooplankton. The copepod population did not change with the arrival of zebra mussels, however, *Bosmina* (a genus of water flea) declined by 50 percent.[171] The continued presence of copepods, a preferred prey of young fish, may have insulated higher trophic levels in the Hudson from the negative effects of the zebra mussel population.[172] However, in contrast to Dr. Strayer's assumption, the 1999 Hudson River Year Class Report provides clear evidence of several anadromous and resident species of fish in decline during the

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[168] USEPA, 2002.

[169] Caraco, N. F., et al. 1997. Zebra Mussel Invasion in a Large, Turbid River: Phytoplankton Response to Increase Grazing. Ecology 78(2), 1997, pp. 588-602. Ecological Society of America.

[170] Caraco et al., 1997.

[171] Strayer, D. L., et al. 1999. Transformation of Freshwater Ecosystems by Bivalves, A Case Study of Zebra Mussels in the Hudson River. BioScience, volume 49(1), pp. 19 - 27.

[172] Strayer et. al., 1999.

post-zebra mussel invasion period.[173] One group of organisms which has increased significantly since the appearance of zebra mussels is bacteria, but no information on any pathogenic effects upon fishes in the Hudson has been found.[174]

[173] ASA, 2002.

[174] Strayer et. al., 1999.

Fish Population - 5. Thermal analyses need to be updated to reflect recent, more extreme conditions.

The Department concurs with this comment. Thermal discharges were inadequately addressed in the DEIS. The DEIS asserts, with no supporting evidence, that "... [t]he surface water orientation of the plume allows a zone of passage in the lower portions of the water column, the preferred habitat of the indigenous species." Other data and analyses cast doubt on this assertion.

The sheer volumes of water necessary to meet the HRSA plants' cooling requirements are enormous. Together, Indian Point, Roseton, and Bowline are authorized to withdraw 1.69 trillion gallons per year for cooling water, and they discharge 220 trillion BTU of waste heat per year.[175] The volume of once-through cooling water is raised between 15° and 18° F, depending on the plant,[176] or an average of 16.2°F.[177]

Some graphics and imagery effectively illustrate the basis for the Department's concerns. A study by HydroQual, Inc., examined passive particle movement and also investigated thermal and salinity profiles in several river reaches, including the portion of the Hudson River where the HRSA plants are located.[178] Figures 6 and 7 of this FEIS (following pages), excerpted from that study, show two vertical temperature profiles of the Hudson River from NYC to just above the northernmost of the HRSA plants, one during a spring and the other during a neap tide. Based on these representations, it appears that there may be times and conditions where effluent-warmed waters occupy nearly the entire vertical water column.

The surface extent of thermal discharges from the HRSA plants is also a concern. Figure 8 is an aerial thermal image of the plume from Indian Point, Unit 3 only, on the east side of the Hudson plus the smaller plume from Lovett on the west bank.[179] In this image, the two plumes came very close to meeting on the surface, even with Indian Point running at less than its full capacity.

Because the HRSA facilities and two other steam electric generating stations are essentially clustered in two relatively compact stretches of the Hudson River, there

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[175] Power Plants with SIC code 4911, *in* Appendix F-V. Indian Point, Roseton, and Bowline are the first-, sixth, and seventh-largest users of water in the State, with a combined intake flow of 7,177 CFS (cubic feet per second).

[176] DEIS Chapter IV-B, Tables IV-6, IV-9, and IV-11. NOTE: ΔT (change in temperature) should read °F not °C.

[177] $\sum$ (volume each plant * ΔT each plant) / ($\sum$ volume of the 3 plants) = mean ΔT

[178] HydroQual, 1999.

[179] Note that Unit 2 discharge canal is cold, so the plume shown resulted from generation and discharge at Unit 3, only, at Indian Point, plus Lovett.

is a strong potential for thermal effects on the river and its aquatic resources to be additive. Given the extent of warming shown in the HydroQual graphs, combined with the recent dramatic declines in tomcod and rainbow smelt as discussed previously, the Department believes it prudent to seek additional thermal discharge data for each facility, including a mixing zone analysis, and anticipates requiring tri-axial thermal studies as conditions to each of the SPDES renewals. Depending on the results of those analyses, additional controls may be required to minimize thermal discharges.

Fig. 6. Temperature Profile of the Hudson River, NYC to Newburgh, During a Spring Tide[180]

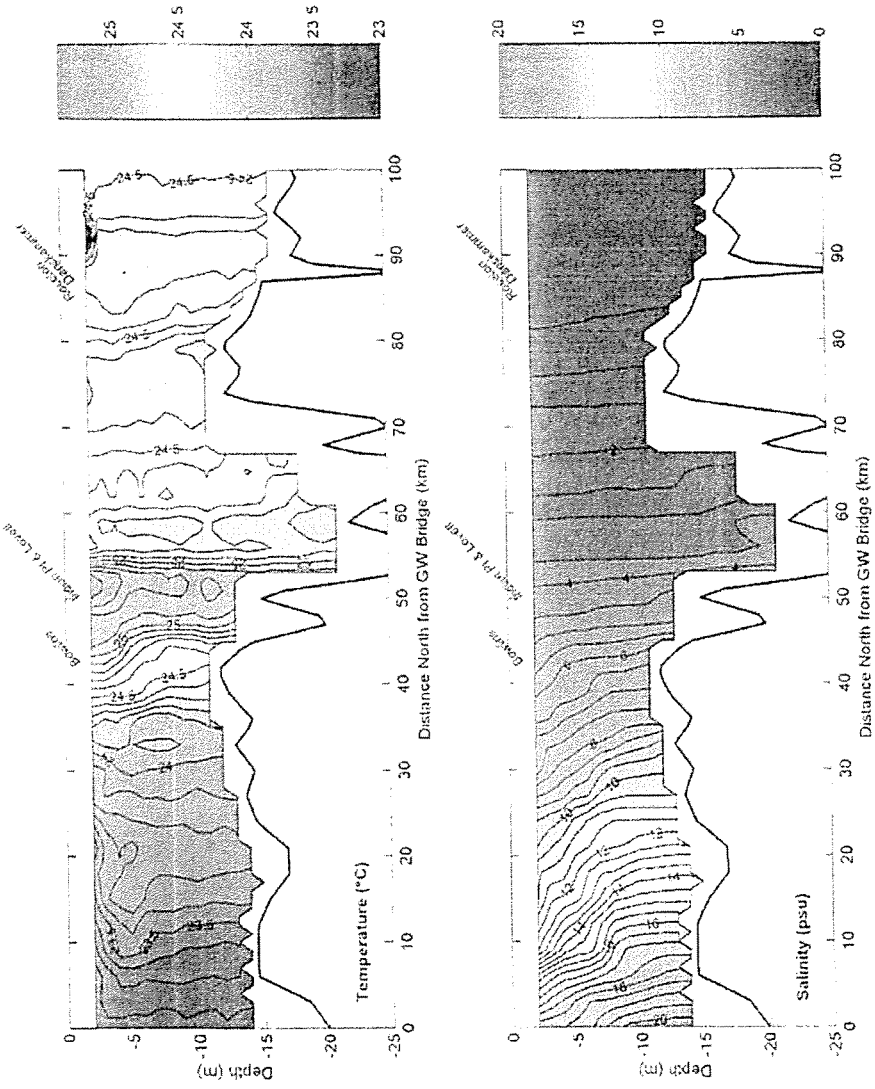


Figure 12. *(continued)* Contours of the along-river temperature (upper panel) and salinity (lower panel) from the neap tide farfield survey, August 28, 1997. (Contour intervals 0.1 °C and 0.5 psu)

[180] HydroQual, 1999.

Fig. 7 Temperature Profile of the Hudson River, NYC to Newburgh, During a Neap Tide[181]

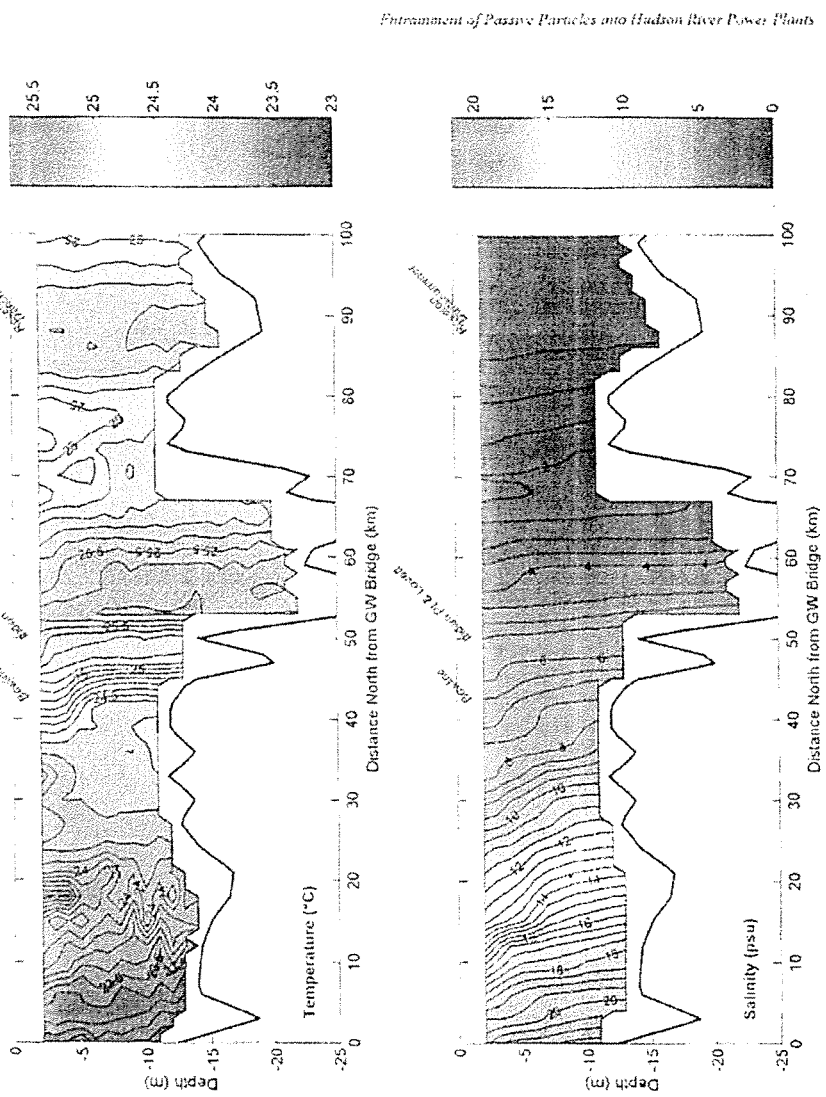
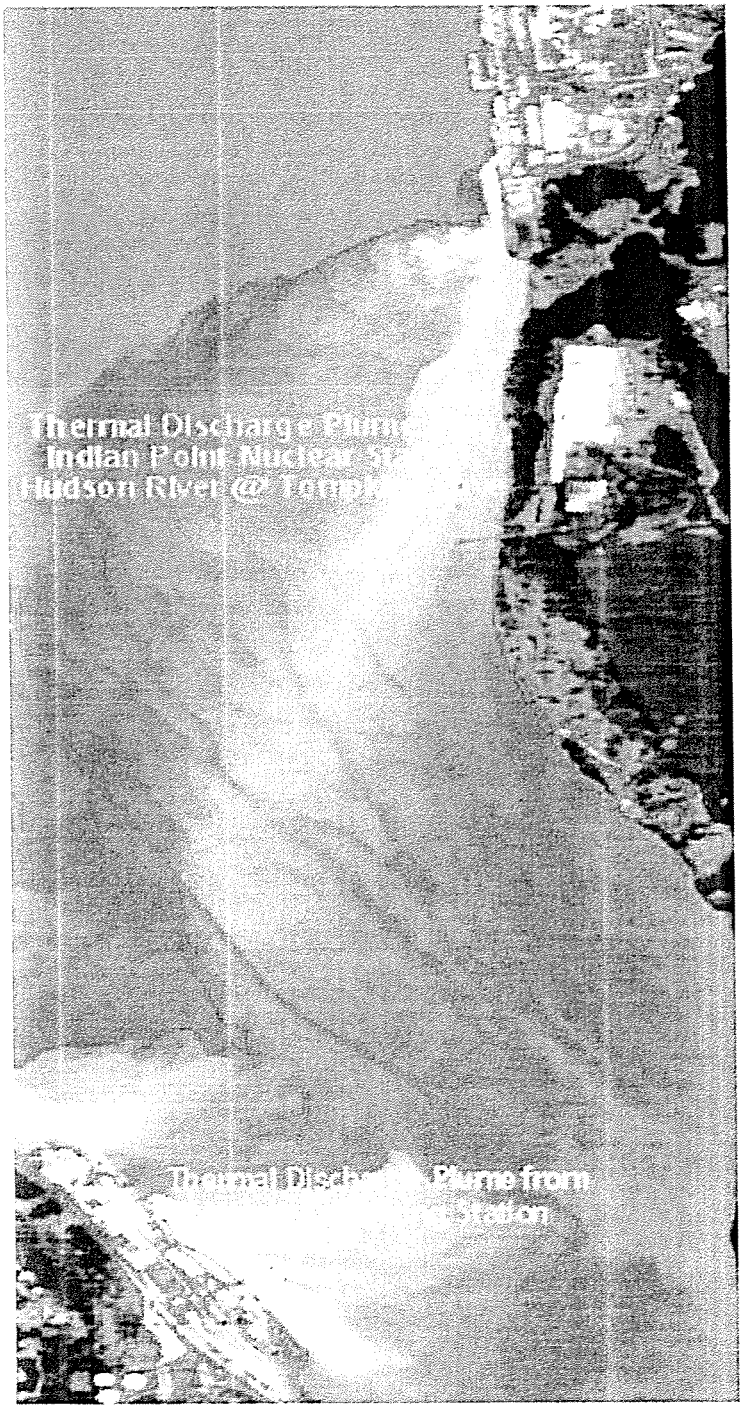


Figure 12 Contours of the along-river temperature (upper panel) and salinity (lower panel) from the spring tide farfield survey, August 21, 1997 (Contour intervals 0.1 C and 0.5 psu)

[181] HydroQual, 1999.

Fig.8. Thermal Plumes from Indian Point, Unit 3, and Lovett Station, Tompkins Cove, Hudson River, New York State.



(Original photo ©Spectra Vista Corp, with permission)

Fish Protection Points - 6. Fish protection points (FPP) would provide operational flexibility but even less protection than conditions in the Hudson River Settlement Agreement (HRSA).

The Fish Protection Point system proposed by the generators in the 1999 DEIS would allow a great deal of operational flexibility for the three HRSA plants. While some consideration of the need for generation capacity is warranted, particularly during periods of high electricity demand, the proposed system would sacrifice reductions in fish mortality in order to maximize freedom of plant operations. As proposed, the DEIS' preferred alternative would be less protective of aquatic resources than measures under the HRSA and subsequent Consent Orders.

Tables 4-A, B and C (following) compare several alternative operating scenarios and entrainment or impingement mitigation strategies for the HRSA plants. The tables display predictions of conditional mortality rates for 6 fish species, the volume of water used, and the volume of water lost to evaporation under a variety of mitigation strategies at each of the 3 plants. The tables use italicized text to indicate those values which would result from the implementation of the strategies agreed upon in the 1981 Settlement Agreement; they serve as the basis for comparison. Values which would reduce environmental impacts, by providing a higher level of fish protection or by using less water, are indicated by bold text. Values which cause greater environmental harm, by providing lower levels of fish protection or using more water, are indicated by both bold text and gray shading. It is instructive to note that, with respect to fish protection, only the proposed Fish Protection Points strategy would result in lower levels of protection than would be provided by the 1981 Settlement Agreement strategies. At Bowline Point, a single species would suffer greater losses, but at both Roseton and Indian Point, protection would be reduced for 3 of the 6 species.

Table 4. Comparisons of Selected Mitigation Alternative Strategies

Key:

x.xx	Same as 1981 Settlement Agreement
y.yy	Better than 1981 Settlement Agreement
z.zz	Worse than 1981 Settlement Agreement
CEMR	Conditional Entrainment Mortality Rate[182]
MGD	Million Gallons per Day

A. BOWLINE POINT

	Striped Bass	American Shad	River Herring	Bay Anchovy	Atlantic Tomcod	White Perch	Water Volume	Water Evaporated
Alternative	**CEMR**	**CEMR**	**CEMR**	**CEMR**	**CEMR**	**CEMR**	**MGD**	**MGD**
1981 Settlement conditions	*0.80*	*0.05*	*0.19*	*3.93*	*6.39*	*1.01*	*910.00*	*5.18*
Hybrid Towers (full year)	**0.10**	**0.00**	**0.00**	**0.14**	**0.53**	**0.02**	**43.20**	**12.96**
Hybrid Towers (seasonal)	**0.10**	**0.00**	**0.00**	**0.14**	**0.53**	**0.02**	**369.30**	**10.04**
Fish Protection Points	**0.77**	**0.02**	**0.12**	**3.93**	**7.13**	**0.27**	*910.00*	*5.18*
Gunderboom (full year)	**0.18**	**0.01**	**0.04**	**0.86**	**1.39**	**0.22**	*910.00*	*5.18*
Gunderboom (seasonal)+ net	**0.10**	**0.00**	**0.17**	**0.14**	**0.53**	**0.12**	*910.00*	*5.19*
32-week Outage	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**349.80**	**1.99**

Notes:

GG. Values for the CEMR for 1981 Settlement Conditions, Hybrid Towers and the Fish Protection Points are from the 1999 DEIS.

HH. Values for seasonal use of the Hybrid Towers (seasonal) are based on their use February 15 to September 15 (approximate dates) and were computed by Department staff.

II. Values for Gunderboom assumed an 80 percent efficiency, with full flow to the facility and were computed by Department staff.

JJ. Values for the 32-week outage are based on an outage from February 15 to September 15 (approximate dates) and were computed by Department staff.

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[182] *See* Footnote 134 of this FEIS.

Table 4 (cont). Comparisons of Selected Mitigation Alternative Strategies

Key:

x.xx	Same as 1981 Settlement Agreement
y.yy	Better than 1981 Settlement Agreement
z.zz	Worse than 1981 Settlement Agreement
CEMR	Conditional Entrainment Mortality Rate[175]
MGD	Million Gallons per Day

B. ROSETON								
	Striped Bass	American Shad	River Herring	Bay Anchovy	Atlantic Tomcod	White Perch	Water Volume	Water Evaporated
Alternative	**CEMR**	**CEMR**	**CEMR**	**CEMR**	**CEMR**	**CEMR**	**MGD**	**MGD**
1981 Settlement conditions	*2.40*	*0.78*	*3.28*	*0.51*	*1.67*	*4.92*	*923.00*	*5.18*
Hybrid Towers (full year)	**0.37**	**0.02**	**0.13**	**0.03**	**0.12**	**0.39**	**25.90**	**12.96**
Hybrid Towers (seasonal)	**0.37**	**0.02**	**0.13**	**0.03**	**0.12**	**0.39**	**370.00**	**10.04**
Fish Protection Points	**3.32**	**0.45**	**3.21**	**1.01**	1.59	6.39	*923.00*	*5.18*
Gunderboom (full year)	**0.50**	**0.16**	**0.68**	**0.11**	**0.35**	**1.03**	*923.00*	*5.18*
32-week Outage	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**355.00**	**1.99**

Notes:

AA. Values for the CEMR for 1981 Settlement Conditions, Hybrid Towers and the Fish Protection Points are from the 1999 DEIS.

BB. Values for seasonal use of the Hybrid Towers (seasonal) are based on their use February 15 to September 15 (approximate dates) and were computed by Department staff.

CC. Values for Gunderboom assumed an 80 percent efficiency, with full flow to the facility and were computed by Department staff.

DD. Values for the 32-week outage are based on an outage from February 15 to September 15 (approximate dates) and were computed by Department staff.

Table 4(cont). Comparisons of Selected Mitigation Alternative Strategies

Key:

x.xx	Same as 1981 Settlement Agreement
y.yy	Better than 1981 Settlement Agreement
z.zz	Worse than 1981 Settlement Agreement
CEMR	Conditional Entrainment Mortality Rate[175]
MGD	Million Gallons per Day

C. INDIAN POINT

	Striped Bass	American Shad	River Herring	Bay Anchovy	Atlantic Tomcod	White Perch	Water Volume	Water Evaporated
Alternative	**CEMR**	**CEMR**	**CEMR**	**CEMR**	**CEMR**	**CEMR**	**MGD**	**MGD**
1981 Settlement conditions	*7.82*	*0.64*	*1.20*	*10.38*	*12.04*	*4.94*	*2505.0*	*12.82*
Hybrid Towers (full year)	**1.20**	**0.01**	**0.04**	**0.45**	**1.16**	**0.26**	**69.00**	**34.56**
Hybrid Towers (seasonal)	**1.20**	**0.01**	**0.04**	**0.45**	**1.16**	**0.26**	**982.00**	**26.40**
Fish Protection Points	**10.69**	**0.18**	**0.81**	**13.22**	**13.95**	**4.35**	***2419.0***	*12.82*
32-week Outage	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**964.00**	**4.94**

Notes:

AA. Values for the CEMR for 1981 Settlement Conditions, Hybrid Towers and the Fish Protection Points are from the 1999 DEIS.

BB. Values for seasonal use of the Hybrid Towers (seasonal) are based on their use February 15 to September 15 (approximate dates) and were computed by Department staff.

CC. Values for Gunderboom assumed an 80 percent efficiency, with full flow to the facility and were computed by Department staff.

DD. Values for the 32-week outage are based on an outage from February 15 to September 15 (approximate dates) and were computed by Department staff.

The proposed system would allow the trading of fish protection credits among the HRSA plants and their operators. Such trading would alter fish protection significantly in years in which one plant was off-line because credit for the inactive facility could be applied to one or both of the other two. The nature of the aquatic resource impacts would change because the different plant locations support different species and different life stages of fish. For this reason, trading among facilities and different operators could lead to unpredictable and probably less effective mitigation. As of the writing of this FEIS in mid-2003, Roseton and Bowline operate as peaking load facilities, as opposed to base load operation which was the case when the DEIS was published in 1999. If trading of credits among facilities and operators were to be incorporated into the permits of the HRSA facilities, credits from Bowline and Roseton could allow Indian Point to operate with little or no mitigation. This scenario would be contrary to the site-specific nature of BTA determinations required by 6 NYCRR Part 704 and CWA §316(b). Carrying credits accumulated in one year forward to subsequent years would *not* be a change from HRSA requirements. However, as proposed in the DEIS, credits could be carried forward and transferred to another facility. As discussed above, trading credits between the three facilities would add a new dimension of uncertainty to fish protection. Allowing credits accumulated at one facility in one year to be credited to another facility in a subsequent calendar year would be likely to compound this uncertainty.

Fish protection credit would also be added for the difference between SPDES flows (maximum pumping rate) and efficient flows at Indian Point, in contrast to the HRSA where credits were earned by operating Indian Point at mitigative flows (less than efficient). This change would lower the baseline from which credit for mitigation is measured. While not necessarily a reduction in fish protection from HRSA levels in and of itself, it would be coupled with a proposed level of protection less than HRSA levels. The lower starting point would mask some of the resultant reduction in fish protection.

The proposed measures specific to Indian Point would provide a significant reduction of fish protection by eliminating any requirement for outages (days off line). The preferred alternative proposes to achieve fish protection at that site solely through flow reductions without any outages. This would eliminate the previous HRSA requirement for 42 unit-days off line each calendar year.

The cumulative effect of the three changes described above would produce a scenario much lest protective than current conditions. In addition, no new measures to reduce fish mortality at Roseton and Bowline are proposed. These relaxations in mitigation appear inconsistent with "anti-backsliding" prohibitions of the Clean Water Act.[183]

The following excerpt from the review of the 1999 DEIS written by ESSA Technologies Inc., for the Department, summarizes differences between the generators' preferred alternative and HRSA conditions.

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[183] CWA §303(d)(4)(B); 33 U.S.C. §1313(d)(4)(B); *see also* 40 CFR 131.12, 40 CFR 122.62, and 40 CFR 122.44.

"The proposed action put forward in the DEIS is a derivative of the Settlement Agreement scheme with some very critical differences. The proposed action:

1. translates the prior entrainment mitigation outage targets based on units of days to targets based on the aggregate Conditional Mortality Rate (CMR) due to entrainment for five target species: striped bass, American shad, bay anchovy, river herring and tomcod;

2. proposes that unlike the prior Credit Points, the new Fish Protection Points (FPPs) may be carried forward across years as well as traded between stations;

3. consistent with stipulated maximum flow requirements in the 1981 and 1987 SPDES permits for Indian Point, the proposal calculates and adds to the protection target the number of FPPs equivalent to the difference between "SPDES flows" and efficient flows for Indian Point Units 2 & 3;

4. proposes to continue the operation of current Modified Ristroph screen technology at the Indian Point Station for reduction of impingement mortality;

5. proposes to continue deployment of the barrier net at the Bowline Station for reduction of impingement mortality;

6. proposes to continue the management and mitigation regime for "thermal and chemical" discharge as carried out under the prior 1981 and 1987 permits, and

7. proposes to meet the requirements for entrainment mitigation exclusively through the management of station flows without necessarily invoking requirements for unit outages as previously required."[184]

[184] ESSA, 2000; Section 2.2.

Mitigation - 7. DEIS includes little information on barrier systems and acoustic deterrents.

The Department concurs that additional information and updates to the data used in the DEIS are necessary. Additional information on several technologies follows.

Wedge-Wire Screens

Recent designs in water withdrawal technology have included development of wedge-wire screens to "filter" water prior to entrance into a system. Wedge-wire screens usually are designed with small openings, for example 2 mm slot width, but they can be designed with larger or smaller openings. Screening of water being withdrawn from a source water body is standard practice to eliminate fouling and clogging of pumps and cooling systems by detritus or large fishes, thus older power generation facilities typically employed traveling screens with approximately 3/8 inch mesh openings. This design excludes sticks, macrophytes (large aquatic plants) and large fishes from being entrained with the cooling water but does not exclude smaller organisms or particles. Bowline Point, Roseton and Indian Point facilities incorporate various types of large-mesh traveling screens, often with improved collection mechanisms and fish/detritus return mechanisms, in their intake designs.

The advantage of fine mesh wedge-wire screens is that the small openings prevent small aquatic organisms from being entrained into the circulating water system. Two millimeter slot width has been employed in new facility designs and it is expected that this opening will prevent ichthyoplankton larger than 15 mm from being entrained. In general, fishes greater than 15 mm length are greater than 2 mm in width, and are thus not susceptible to entrainment. The velocity of the water drawn into a system is directly associated with the size of the slot through which it is drawn. The Department imposes a low through-slot velocity to ensure that organisms are not impinged on the screen because they cannot swim away from the intake velocity. EPA recommends a through-slot velocity of 0.5 fps or less, but the Department has issued recent permits for intakes that generally have halve that velocity.[185] Additional protection is afforded by the current from tides or river flow on a wedge-wire screen because it assists in moving organisms away from the influence of the intake.

New power generation facilities recently approved in New York are all combined-cycle designs with closed-cycle cooling.[186] Combined-cycle facility produces two thirds of its power with a gas turbine (which does not require cooling), only one third of the facility requires cooling. This cooling requirement is further reduced by approximately 95 percent by employing closed-cycle cooling. Thus, typical cooling water requirements are 7 to 9 million gallons of water per day (MGD). This volume can be accommodated with two T-shaped sets of cylindrical screens six feet in diameter with 1 mm slot openings, with through-slot velocity of 0.2 feet per second.

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[185] Athens Interim Decision.

[186] Athens Interim Decision.

In contrast, a single-cycle power generating facility using once-through cooling, such as Roseton Generating Station, requires a maximum of 926 MGD for cooling at full flow operation (less at efficient flow). For such a once-through cooling system, even with larger screens at higher intake velocities, a great number of wedge-wire screens would be required to supply the necessary cooling water; engineering challenges, higher costs and loss of generating capacity would likely result.

Fish Barriers

Since the preparation and filing of the DEIS in 1999, a new technology for eliminating aquatic organisms from a cooling water intake structure has emerged and been permitted by the Department. The technology is known generally as an "aquatic filter barrier" (AFB); the Gunderboom® Marine Life Exclusion System™ (MLES™) is the system which has been deployed, studied and permitted in NYS. Despite its name, use of the MLES™ is not restricted to marine systems.

The MLES™ is a semi-permeable fabric barrier which surrounds an intake structure and allows water to enter while excluding most very small particles, including aquatic organisms. Additional components of the MLES™ include: the structures necessary to maintain the barrier in place, such as anchors and floatation; a cleaning device; monitoring equipment; and other miscellaneous equipment as necessitated by the specific site conditions. Because the system is flexible, it may be shaped to follow desired water depth or to increase surface area. The barrier may be constructed in sections, allowing easier maintenance, installation and retrieval. At present, only one company, Gunderboom, has a patent to construct this type of barrier. Thus, an MLES™ is commonly referred to by the "Gunderboom®" trade name.

Gunderboom® MLES™, alone and in combination with other technologies, have been determined to be BTA at a number of facilities on the Hudson River, and requirements for installation have been written into the SPDES permits. Those with MLES™ requirements include the new electric generation facilities at Bowline Unit 3 (700 MW combined cycle) and Bethlehem Energy Center (750MW combined cycle). The Empire State Newsprint Project, a 500 MW combined-cycle facility in Rensselaer, New York, was issued a draft permit for an MLES™ in 2001. Lovett Generating Station Units 3-5, an existing facility with a 450 MW generating capacity, was issued a SPDES permit which included an MLES™ in February, 2003.

The Bowline Unit 3 MLES™ may generally be described as a straight line fabric screen, 137 feet in length and 27 feet deep, that allows 7.5 MGD of intake flow (maximum). ® Flow-through velocity is predicted to be approximately 0.004 fps with a flow rate of approximately 1.4 gallons per minute per square foot. An air-flow backwash system, strain gauges, water level monitors, and special bottom sealing fabric are required as part of the system. Seasonal deployment of the MLES™, from February 15 through September 30, will allow protection during the reproductive seasons of major Hudson River fish species.

The Bethlehem Energy Center facility will employ a different MLES™ design, yet still use Gunderboom fabric material as the principal screening device. A 16' by 145' rectangular H-pile and sheet pile structure will be constructed to support twelve

removable filter panels orientated to the river flow. The structure is sized for a maximum of 8.5 MGD flow with a fabric flow-through rate of 3.1 gallons per minute per square foot. (0.007 fps). Seasonal deployment of the MLES™ from April through August will be necessary for adequate protection to organisms. These filter panels will be removed mechanically for maintenance and at the end of each seasonal deployment; monitoring by the plant operator to ensure water passage, of strain on the panels, and related variables will be required.

The SPDES permit issued for the existing Lovett Generating Station requires the permittee to provide information, analyses and plans necessary to install, operate and maintain an MLES™. It is anticipated that this structure will be a Gunderboom curtain in the river that surrounds the intakes of Units 3,4 & 5. This means the curtain will be subject to tidal influence and will have some movement with river currents and wind. Close attention to operational parameters and maintenance will be required. The permit includes a protocol for operation, maintenance, monitoring, and responses.

The draft permit for the proposed Empire State Newsprint Project (ESNP) specifies an MLES™ that is somewhat different from those already permitted. The intake will be constructed a distance into the river along the bottom. The proposed Gunderboom® barrier of the MLES™ will necessarily be offshore, too, surrounding the wedge-wire intake screens in an oval shape 90' by 60' and be attached to 16 fender piles permanently installed in the river. This system is designed for a maximum of 9.7 MGD, with a through-screen flow of 0.01 feet per second and a flow rate of approximately 4.0 gallons per minute per square foot through the Gunderboom® fabric. The MLES™ would be deployed and operational during the primary fish spawning season in that section of the Hudson River, April 15 - June 30.

The Department is working with other facility owners toward investigating this method of aquatic mitigation at other existing generation facilities within New York State where an MLES™ could potentially reduce impingement and entrainment mortality.

Acoustic Deterrent System

A number of behavioral deterrent systems (e.g. fish hammers, hanging chains, bubble curtains, strobe lights, mercury lights etc.) have been studied by utilities in New York State for reducing impingement impacts at cooling water intakes. High frequency sound is the only behavioral deterrent technology shown to be effective and currently in use as an impingement mitigation technology in New York. The technology is in use at the J. A. Fitzpatrick Nuclear Generating Station (NGS), located on the south shore of Lake Ontario, and has effectively reduced the impingement of alewife at the station. The fish deterrent system, known by the trademark "Fish Startle System", emits a high frequency, broadband sound (122 - 128 KHz) at a source level of 190 decibels. The system has three major components: the integrated projector assemblies (IPAs), the power cable running from shore to intake, and the control panel. The IPAs contain the signal generators and transducers that emit the high frequency, broadband sound which has been shown to be strongly avoided by members of the clupeid family.

In 1989, the New York Power Authority, which owns and operates the Fitzpatrick NGS, started developing the mitigation system after learning that high frequency sound evoked a strong avoidance effect in some species of herring. Laboratory testing was successfully conducted on alewife, then a temporary sound system was developed and tested in Lake Ontario in 1991. Preliminary results showed that the number of fish in front of the intake was reduced by 81 to 87 percent when the system was operated. Between April and July 1993, a second full scale test was conducted. Paired impingement samples were collected with the system on and off and compared against impingement samples collected at the nearby Nile Mile Point Unit 1 NGS (control facility). The Nile Mile Point station is a similar sized NGS, with a similar offshore intake structure. The 1993 study reported the overall effectiveness of the system to be 84 percent (i.e., an 84 percent reduction in impingement as compared to the control facility).[187]

In 1995, the Department determined the acoustic deterrent system to be BTA for minimizing adverse environmental impact at the Fitzpatrick NGS, and the system was therefore incorporated as a condition of its SPDES permit. Because sound at this frequency and decibel level has been shown to be effective for certain clupeid species only (alewife, blueback herring and American shad), the technology by itself has limited application. However, in combination with other mitigative technologies, its application may be more widespread.

British researchers have been testing an acoustic deterrent system on a number of species at a nuclear generating station in Belgium since 1997. The effectiveness of the system is stated to vary among species, due to species-specific hearing sensitivities and the levels at which a species will react to a sound stimulus. System efficiencies (deflection of fish) from 21 percent for flatfish, to up to 98 percent for herring are reported.[188] This work is promising if it proves to be effective over a wide range of species.

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[187] Ross et al, 1996; Radle et al, 2003.

[188] Maes et al, 2003.

Mitigation - 8. The DEIS significantly overstates costs and energy impacts of closed cycle cooling.

A discussion of cooling tower design and operation was presented in Section VIII and Appendix VIII of the DEIS. The Department requested ESSA Technologies, Ltd., to review these analyses. This work was performed by D.B. Grogan Associates, Inc. and is included in Appendix V to this FEIS.

The information presented in the DEIS regarding cooling tower design and cost estimates is generally reasonable, based upon the assumptions used for this analysis. In order to determine BTA for individual sites, these assumptions should be modified or expanded to present further site-specific cooling tower alternatives which will result in different construction and operational costs, as well as different environmental impacts. Such additional analyses should include: tower designs based on a variety of wet/dry bulb scenarios; wet towers; a variety of tower fill and nozzle scenarios modified to increase operational efficiency; pre-treatment of cooling tower makeup water; and historical operation information from large, existing wet/dry (hybrid) systems.

The different closed-cycle cooling alternatives each result in different environmental impacts, including land use, aesthetics, fogging, evaporative losses, drift impacts, composition of the blowdown discharge, and thermal effects on the river. Energy efficiency, too, varies among the cooling technologies. For example, wet/dry cooling tower systems create a larger parasitic load when compared with wet systems. This results in a need for replacement power from other facilities whose air and water emissions may have an adverse environmental impact.

Costs of both construction and operation of closed systems are a concern when analyzing cooling system alternatives. The operational costs have been presented in the DEIS, but D.B. Grogan Associates, Inc. points out that the cost of lost electric generation may be significantly different in the present era of power deregulation and may be seriously underestimated in the DEIS.[189] Alternative designs that minimize this loss would significantly change the cost projections.

A recent EPA update, published on March 19, 2003, concerning 40 CFR Part 125, *Proposed Regulations To Establish Requirements for CWIS at Phase II Existing Facilities; Notice of Data Availability; Proposed Rule*, provides additional information on the cost of connecting a new facility to a closed-cycle system. It noted that the period of time for interconnections to be made for installations at existing facilities should be increased from EPA's earlier estimate and could require up to seven months at nuclear facilities. This could significantly increase the cost of closed-cycle systems unless very detailed planning and construction schedules are carried out to expeditiously complete this activity. Other revisions in EPA's analysis, however, show that compliance costs may actually be lower regarding energy penalties than originally forecast.

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[189] Grogan, 2000.

Mitigation - 9. DEIS alternatives and proposed action do not present a fair picture of available alternatives.

The Department concurs strongly with this comment. As discussed in the "Mitigation and Alternatives" section earlier in this FEIS, based on the more specific descriptions of newer technologies and recent advances in established technologies discussed in preceding responses, and on discussions in the original DEIS, including DEIS Sections VII and VIII and Appendix VIII, the Department contends that a range of alternatives exist from which site-specific aquatic resource protection programs can be developed which will meet the requirements for BTA. Furthermore, the Department maintains that some of the most promising approaches for existing plants like these three Hudson River facilities will be in combinations of technologies, or technologies combined with improvements to management systems.

Other Topics - 10. The DEIS needs to consider effects of New York's recent conversion to a competitive energy market, take the State Energy Plan into account, or impose parity among facilities.

The concept of parity, or leveling the playing field between two or more separate holders of the same type of permit, is not a Department policy *per se*; nor is it required in law or regulation. For each SPDES permit application that includes a cooling water intake structure, the Department must determine whether the location, design, construction, and capacity of the cooling water intake structure reflects the "best technology available" (BTA) to minimize adverse environmental impact.[190] The Department makes each BTA decision on a case-by-case, site-specific basis, without necessarily applying the technology(s) or methodology(s) to minimize impacts between separate facilities in a rote manner that supports comparisons.[191]

To make a BTA decision, the Department must assess the proposed action (issuance or renewal of a SPDES permit) against the environmental impacts (direct, indirect and cumulative) and determine whether the applicant's proposed method of addressing impacts outweighs alternative methods. This is necessarily a site-specific endeavor that requires examination of technologies having the potential to "fit" the facility and minimize adverse impacts to the extent warranted by the environmental harm in the source water body. A particular mitigative technology may not produce comparable reductions of impacts between two otherwise comparable facilities. Furthermore, for any particular mitigative technology a success differential is likely to exist between facilities with different types of generation systems, CWIS, and/or cooling systems.

Mandating parity between existing facilities and new facilities subject to BTA determinations would require that an agency be able to resolve inherent difficulties and numerous issues, such as: (a) environmental impacts may not be the same, (b) construction, operation, and maintenance costs may not be the same (even using the same technology), (c) water bodies may be different, (d) public reaction to the project and/or perception of the need for minimization of impacts may be different, and (e) impacts to the State's energy capacity may be different. Such a mandate would also limit a decision maker's flexibility to prescribe BTA remedies within the boundaries of the statute, which does not require parity between facilities or BTA decisions.

In cases where the issues listed above are not present, in other words, where there is a strong basis for comparison between facilities, it is reasonable to expect that similar technologies and associated costs would be involved in prescribing a BTA remedy. However, this does not necessarily translate to "parity" because it is more likely to occur between the same types of facilities (i.e., between existing facilities or new facilities but not between an existing facility and a new facility). The

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[190] 33 U.S.C. §1326(b); 6 NYCRR §704.5.

[191] Athens Interim Decision

distinguishing issues listed above as examples are more likely to create discrepancies that interrupt attempts to level the playing field between or among separate BTA determinations.

Parity thus does not present itself as a clear component of mitigation remedies in making a BTA determination. That does not prevent a decision making agency from assessing whether the level of costs imposed on an existing facility can generally be measured in terms of costs of mitigative technology installed by other (new or existing) facilities. However, the apparent physical, engineering discrepancies between an existing and a new facility and the potential biological differences between source water bodies militate against direct comparisons of such facilities.

In conclusion, parity is not defined in the context of making a BTA determination. Absent a policy or administrative or judicial decision which identifies an acceptable equation for leveling out inherent discrepancies, the differences between existing and new facilities (and, potentially, the source water bodies) present significant obstacles to imposing parity to make newer, less polluting facilities cost competitive with older facilities.

Other Topics - 11. Radiation discharges are not discussed in the DEIS, but should be.

Under the Atomic Energy Act of 1954 (AEA/1954), authority to regulate nuclear discharges is reserved to the federal government.[192] Discharges of cooling water from Indian Point Units 2 and 3 are regulated by NYS as SPDES discharges to the extent they contain effluent substances regulated pursuant to 6 NYCRR Part 703. Because Indian Point is a nuclear power generating facility, its construction, operation, and maintenance are regulated by the federal Nuclear Regulatory Commission(NRC), pursuant to the AEA/1954.

In 1962, the Atomic Energy Commission (AEC), the NRC's predecessor agency, and then-Governor Nelson A. Rockefeller, executed an "Agreement . . . for Discontinuance of Certain Commission Regulatory Authority" (Agreement). Pursuant to that Agreement the AEC discontinued its regulatory authority over certain radioactive materials ("byproduct materials, source materials, and special nuclear materials in quantities not sufficient to form a critical mass") so that NYS could apply its own licensing program to those substances. However, the AEC retained its licensing authority with respect to, among other things, the construction and operation of any production or utilization facility, including nuclear power generation facilities. Consequently, radioactive releases or discharges from nuclear power generation facilities are regulated, today, by the NRC, not NYS.

Under the authority of the AEA/1954 and 10 CFR Part 50, the NRC issues licenses and license extensions to nuclear power generating facilities and regulates any releases of radioactive material from licensed facilities. The current NRC licenses for Indian Point Unit 2 and Indian Point Unit 3 expire in 2013 and 2015, respectively.[193] The New York State SPDES permit for Indian Point Units 2 and 3 will control effluent discharges as to all substances controlled by the regulations set forth in 6 NYCRR Part 703 that are not otherwise controlled by the federal NRC authority in 10 CFR Part 50. Thus, the Department does not have the authority to require a SPDES permit renewal application to identify discharges that do not fall within its SPDES jurisdiction.

The 1962 Agreement fostered the creation of a licensing program at the state level for limited purposes where NYS had demonstrated to the AEC that sufficient technical expertise had been developed with regard to a short list of regulated substances. It bears repeating that in 1962, NYS did not undertake to acquire the AEC's authority to license nuclear power generation facilities or any radiation releases or discharges that could be associated with them, nor does NYS presently have or seek to develop the expertise necessary to administer such a licensing program.

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[192] Atomic Energy Act of 1954, 42 U.S.C. 2021; *see* §2021(c)(1).

[193] Entergy Nuclear Indian Point 2 and Entergy Nuclear Indian Point 3, operators of the respective nuclear generation plants, have stated in the media that they expect to begin the process of NRC license extension in 2006. Department staff understand from an independent inquiry to NRC staff that the 2006 date projected to start license extension is a reasonable one.

As noted above, New York State's SPDES permit renewal process is entirely separate from the federal NRC license extension process. However, the Department does have a role in the NRC license extension process. Because these facilities discharge cooling water into navigable waters of the United States, the Department's role in the NRC license extension proceeding will be to process and issue or deny the licensee's application for a state water quality certificate, pursuant to §401 of the Clean Water Act[194]. Obtaining a state water quality certificate is a prerequisite to extending an NRC license. For the NRC to make a decision to grant or deny license extension, Entergy Nuclear Indian Point 2 and Entergy Nuclear Indian Point 3 will need to deliver a NYS water quality certificate to the NRC applicable to both Units 2 and 3. In considering whether to issue or deny a water quality certificate for Indian Pont Units 2 and 3, the Department will apply the water quality standards set forth in 6 NYCRR Part 700, et seq.

In light of the foregoing, concerns for possible radioactive releases in the cooling water discharged from Indian Point, or concerns for possible health effects from radioactive emissions, should be addressed directly to the NRC, not the Department, either as a license compliance matter or in the course of license extension proceedings. Such concerns cannot be addressed in conditions to a SPDES permit.

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[194] 33 U.S.C. §1341

Other Topics - 12. Several commentors expressed generalized opposition to renewal for one or more facilities.

These comments, while clearly deeply felt, did not raise substantive issues which can be addressed in the context of the issues and information included in this FEIS. Accordingly, no response or analysis is offered.

List of Appendices

Please note that appendices are not available on the website. However, you may request one or more of the appendices by contacting Betty Ann Hughes at bahughes@gw.dec.state.ny.us.

F-I. Notices and Comments on 1999 DEIS

- DEIS Notices
- Full texts of written public comments
- Public hearing transcripts
- Department comments (on CD; hard copy available on request)

F-II. Text of HRSA

F-III. Fourth Amended Consent Order

F-IV. ESSA reports

- On CD; hard copy available on request.

F-V. Other cited references and letters not readily available:

- 1991 letters by former Commissioner Jorling to HRSA utility executives
- Article by John Boreman
- Normandeau Associates, Inc. letter/reports
- Simpson letter
- List of Industrial Code 4911 Facilities in NYS
- On CD; hard copy available on request:
  - ASA 2002 (1999 year class report)
  - City of Poughkeepsie Hudson River Temperature Data (spreadsheet)

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APPENDIX IV

Appendix IV-1

Index of Fish Protection for Five Taxa of Fish Based on the 1981 and 1987 SPDES Permits for the Bowline, Indian Point, and Roseton Power Plants

APPENDIX TO IV-1

INDEX OF FISH PROTECTION FOR FIVE TAXA OF FISH BASED ON THE 1981 AND 1987 SPDES PERMITS FOR THE BOWLINE, INDIAN POINT, AND ROSETON POWER PLANTS

A. PURPOSE OF THE INDEX

Under the proposed action in this DEIS, the owners of Bowline Point, Indian Point Units 2 and 3, and Roseton will operate their respective power plants to assure levels of protection for Hudson River fishes at least equal to the levels ensured by the 1981 and 1987 SPDES permits on average for five taxa (striped bass, white perch, Atlantic tomcod, bay anchovy, and river herring) during the 10-year period from 2001 through 2010. The 1981 and 1987 SPDES permits did not specify levels of fish protection. Rather, they stipulated outages and flow limits during certain months. Therefore, an index of fish protection was developed for this DEIS to: 1) convert the outage days and flow limits into equivalent (target) levels of fish protection and 2) create an accounting system for meeting those target levels.

B. DESCRIPTION OF THE INDEX

1. Definition of Fish Protection

Fish protection, for the index, is defined as a reduction in the conditional mortality rate (CMR) due to entrainment of fish. Entrainment CMR is the probability of fish dying from passage through the cooling water system of a power plant. It is expressed as the fractional reduction in the number of fish in the Hudson River at the end of the first year of life.

2. Selection of the Fish Taxa in the Index

The five taxa of fish included in the index are intended to represent the fish community susceptible to entrainment. The taxa were jointly selected by technical staffs representing the New York State Department of Environmental Conservation, the Hudson River utilities, Natural Resources Defense Council, Scenic Hudson, and Riverkeeper. Collectively, these taxa cover the entire 32-week period of entrainment, i.e., from week 8 (late February) through week 39 (mid September).

3. *Derivation of The Target Levels of Fish Protection*

The target levels of fish protection are based on both the outages and flows stipulated by the 1981 and 1987 SPDES permits over the 10-year period beginning in May 1981. The 1981 and 1987 SPDES permits stipulated that the total number of unit outage days to be taken were:

- 42 each year on average at Indian Point between May 10 and August 10
- 30 days each year at Bowline and Roseton between May 15 and June 30
- 31 days each year at Bowline in July.

The flows stipulated in the SPDES permits (Table IV-1) for Bowline and Roseton were the same as the flows required to efficiently operate these plants. However, the flows stipulated in the SPDES permit for Indian Point were below those required for efficient operation at full power. Therefore, the target level for Indian Point includes fish protection associated with the lower–than-efficient flows stipulated in its SPDES permit as well as fish protection associated with outages.

The target levels of fish protection are expressed as the annual number of fish protection points (FPP) summed over 10 years. The annual FPP number was determined using the equations:

$$FPP_{Flows} = \sum_{Weeks} \frac{E2Flow_{week} - P2Flow_{week}}{E2Flow_{week}} \left(1000 \sum_{Taxa} CMR_{week,taxa} \right) \quad (1)$$

$$FPP_{Outages} = \sum_{Weeks} \frac{D_{week}}{7} \frac{P2Flow_{week} - P1Flow_{week}}{P2Flow_{week}} \left(1000 \sum_{Taxa} CMR_{week,taxa} \right) \quad (2)$$

$$FPP_{Target} = FPP_{Flows} + FPP_{Outages} \quad (3)$$

where

$CMR_{week,taxa}$ = the weekly entrainment CMR for a taxon at efficient flow and full power, using estimated through-plant mortality rates

$E2Flow_{week}$ =the average flow for the week required to operate the station at maximum efficiency and full power during 2-unit operation;

$P1Flow_{week}$ =the average flow for the week allowed under the 1981 and 1987 SPDES permits during 1-unit operation ;

$P2Flow_{week}$ =the average flow for the week allowed under the 1981 and 1987 SPDES permits during 2-unit operation;

D_{week} = the number of days in a week that are within the specified outage period under the 1981 and 1987 SPDES permits and during which only 1 unit is operating.

$\sum_{Weeks} D_{week}$ equals the number of outage days stipulated under the 1981 and 1987 SPDES permits.

Weekly entrainment CMRs were estimated using a modified Empirical Transport Model (See DEIS Appendix VI.1.A). The entrainment CMRs were based on spatial and temporal distribution data for the years 1991 through 1997 because these years are more likely to represent future conditions than previous years (See DEIS Section V).

For calculating the annual $FPP_{Outages}$, the outage days stipulated in the 1981 and 1987 SPDES permits were assigned to weeks, within their associated outage period, that had the lowest fish protection point values, totaled across taxa. Week 1 is defined as the first week in January with a Monday. The starting date of week 1 can vary from January 1 through January 7. For the index, January 4 was selected as the starting date for week 1 because it is midway between January 1 and January 7.

The fish protection index accords greater importance to those weeks that have a higher total entrainment CMR value, regardless of the contribution of individual taxa. Thus, it is intended to provide greater protection for those taxa that make a greater contribution to the total entrainment CMR.

4. The Target Level of Fish Protection by Plant

a. Indian Point

The 42 unit outage days each year on average stipulated for Indian Point equal 6 weeks. Weeks 19 through 32 occur partly or completely within the outage period of May 10 through August 10 for Indian Point. Of those weeks, the six with the lowest total FPP potential are weeks 19, 20, 29, 30, 31, and 32 (Appendix Table IV-2. However, only two days in week 32 fall within the May 10 through August 10 period. Therefore, five days are needed from the week with the next lowest total FPP total (week 21). The total number of fish protection points for a 6-week, 1-unit outage at Indian Point based on weeks 19, 20, 21, 29, 30, 31, and 32 is 37.6.

The potential FPPs totaled across all weeks and taxa for both Indian Point units is 527.40 using efficient flows and 502.89 using SPDES permit flows. The difference, 24.5, represents the fish protection points afforded by the SPDES permit flows.

The annual number of fish protection points for outages (37.6) plus those for SPDES permit flows (24.5), result in a target level of fish protection for Indian Point of 621 over the 10-year period from 2001 through 2010, i.e., an average of 62.1 fish protection points per year.

The 1981 and 1987 SPDES permits stipulated that a minimum of 20 outage weeks shall have been taken at the end of four years, i.e., 83% of the 24 outage weeks that would be taken if an average of 6 outage weeks were taken over the four years, and that a minimum of 45 outage weeks shall have been taken at the end of eight years, i.e., 94% of the 48 outage weeks that would be taken if an average of 6 outage weeks were taken over the eight years. Therefore, the index of fish protection at Indian Point will be at least 206 (4 x 62.1 x 0.83) at the end of four years and at least 467 (8 x 62.1 x 0.94) at the end of eight years.

b. Bowline

The 30 unit outage days each year stipulated for Bowline between May 15 and June 30 require four full weeks and two days from a fifth week. Weeks 19 through 26 occur partly or totally within the outage period of May 15 through June 30. Of those weeks, the five with the lowest total potential FPP are weeks 19 through 23 (Appendix Table IV-3). However, only two days from week 19 fall within the May 15 through June 30 period. Therefore, the two days from week 19 plus the 28 days from weeks 20 through 23, equal 30 days. The total number of fish protection points for a 30-day, 1-unit outage at Bowline based on weeks 19 through 23 is 7.68.

The 31 unit outage days each year stipulated for Bowline in July require four full weeks and three days from a fifth week. Weeks 26 through 30 occur partly or totally within July. Four days from week 26, 21 days from weeks 27 through 29, and 6 days from week 30 equal 31 days. The total number of fish protection points for a 31-day, 1-unit outage at Bowline based on weeks 26 through 30 is 14.42.

The annual number of fish protection points for a 30-day outage between May 15 and June 30 (7.68) plus those for a 31-day outage in July (14.42), result in a target level of fish protection for Bowline of 221 over the 10-year period from 2001 through 2010, i.e., 22.1 fish protection points per year.

c. Roseton

The 30 unit outage days each year stipulated for Roseton between May 15 and June 30 require four full weeks and two days from a fifth week. Weeks 19 through 26 occur partly or totally within the outage period of May 15 through June 30. Of those weeks, the five with the lowest total potential FPP are weeks 19, 23, 24, 25, and 26 (Appendix Table IV-4). However, only two days from week 19 fall within the May 15 through June 30 period. Therefore, four days are needed from week with the next lowest potential FPP (week 22). The total number of fish protection points for a 30-day, 1-unit outage at Roseton based on weeks 19, 22, 23, 24, 25, and 26 is 17.59. The target level of fish protection for Roseton is 175.9 over the 10-year period from 2001 through 2010.

TABLE IV-1

PROPOSED COOLING WATER FLOW RATES AT
ROSETON, INDIAN POINT AND BOWLINE POINT

APPROXIMATE PERIOD	AVERAGE MAXIMUM RIVER TEMPERATURE DURING PERIOD (°F)	APPROXIMATE FLOW gpm
ROSETON (2 units)		
Jan 1 – May 14	60	418,000
May 15 – Jun 14	71	561,000
Jun 15 – Sep 24	82	641,000
Sep 25 – Oct 16	72	561,000
Oct 17 – Dec 31	64	418,000
INDIAN POINT (each unit)		
Jan 1 – May 15	67	504,000
May 16 – May 22	70	560,000
May 23 – May 31	72	672,000
Jun 1 – Jun 8	75	731,000
Jun 9 – Sep 30	81	840,000
Oct 1 – Oct 31	76	731,000
Nov 1 – Dec 31	67	504,000
BOWLINE POINT (2 units)		
Jan 1 – May 14	61	514,000
May 15 – Jun 15	72	514,000
Jun 16 – Oct 15	84	632,000[a]
Oct 16 – Dec 31	64	514,000

[a] The Bowline Point plant will operate at 632,000 gpm from June 16 through October 15 of each year, until flows have to be increased to 768,000 gpm to maintain unit efficiency or to meet thermal standards. This decision will be reviewed on a weekly basis. The increase in flow will be at the sole discretion of O & R, but will be considered a deviation from normal operating flows for the purposes of reporting.

Appendix Table IV-2. Fish protection points (FPP) for a 6-week outage at one Indian Point unit between May 10 and August 10 based on entrainment CMRs for 2-unit operation and SPDES permit flows.

			Entrainment CMR x 1000						Outage Period FPP		
Starting date of week	Week No.	SPDES Permit Flow (gpm)	White perch	Striped bass	River herring	Bay anchovy	Atlantic tomcod	Total	Days in May-Aug. period	Unit outage days	FPP
5-Jan	1	1008	0.00	0.00	0.00	0.00	0.00	0.00			
12-Jan	2	1008	0.00	0.00	0.00	0.00	0.00	0.00			
19-Jan	3	1008	0.00	0.00	0.00	0.00	0.00	0.00			
26-Jan	4	1008	0.00	0.00	0.00	0.00	0.00	0.00			
2-Feb	5	1008	0.00	0.00	0.00	0.00	0.00	0.00			
9-Feb	6	1008	0.00	0.00	0.00	0.00	0.00	0.00			
16-Feb	7	1008	0.00	0.00	0.00	0.00	0.00	0.00			
23-Feb	8	1008	0.00	0.00	0.00	0.00	13.33	13.33			
1-Mar	9	1008	0.00	0.00	0.00	0.00	19.22	19.22			
8-Mar	10	1008	0.00	0.00	0.00	0.00	25.75	25.75			
15-Mar	11	1008	0.00	0.00	0.00	0.00	23.80	23.80			
22-Mar	12	1008	0.00	0.00	0.00	0.00	15.21	15.21			
29-Mar	13	1008	0.00	0.00	0.00	0.00	7.65	7.65			
5-Apr	14	1008	0.00	0.00	0.00	0.00	3.18	3.18			
12-Apr	15	1008	0.00	0.00	0.00	0.00	5.91	5.91			
19-Apr	16	1008	0.08	0.00	0.15	0.00	3.67	3.90			
26-Apr	17	1008	0.22	0.00	1.19	0.00	5.56	6.97			
3-May	18	1008	0.53	0.07	0.73	0.00	4.01	5.34			
10-May	19	1024	0.96	1.09	0.64	0.26	5.39	8.34	7	7	4.17
17-May	20	1152	2.34	4.53	0.71	0.14	5.03	12.75	7	7	6.38
24-May	21	1344	4.21	8.50	0.58	1.07	7.84	22.21	7	5	7.93
31-May	22	1440	5.83	16.16	0.44	2.03	6.62	31.08	7	0	0.00
7-Jun	23	1616	8.90	25.32	0.99	7.22	2.97	45.39	7	0	0.00
14-Jun	24	1680	6.67	24.13	1.85	10.47	0.00	43.13	7	0	0.00
21-Jun	25	1680	5.85	26.26	1.03	21.13	0.00	54.26	7	0	0.00
28-Jun	26	1680	5.43	13.62	0.31	22.63	0.00	41.97	7	0	0.00
5-Jul	27	1680	5.42	4.30	0.10	28.75	0.00	38.57	7	0	0.00
12-Jul	28	1680	2.15	1.23	0.10	21.36	0.00	24.83	7	0	0.00
19-Jul	29	1680	1.12	0.61	0.20	15.00	0.00	16.94	7	7	8.47
26-Jul	30	1680	0.41	0.31	0.10	10.20	0.00	11.02	7	7	5.51
2-Aug	31	1680	0.10	0.20	0.00	8.26	0.00	8.56	7	7	4.28
9-Aug	32	1680	0.00	0.00	0.00	6.01	0.00	6.01	2	2	0.86
16-Aug	33	1680	0.00	0.00	0.00	3.36	0.00	3.36			
23-Aug	34	1680	0.00	0.00	0.00	1.63	0.00	1.63			
30-Aug	35	1680	0.00	0.00	0.00	1.02	0.00	1.02			
6-Sep	36	1680	0.00	0.00	0.00	0.71	0.00	0.71			
13-Sep	37	1680	0.00	0.00	0.00	0.51	0.00	0.51			
20-Sep	38	1680	0.00	0.00	0.00	0.20	0.00	0.20			
27-Sep	39	1584	0.00	0.00	0.00	0.10	0.00	0.10			
4-Oct	40	1456	0.00	0.00	0.00	0.00	0.00	0.00			
11-Oct	41	1456	0.00	0.00	0.00	0.00	0.00	0.00			
18-Oct	42	1456	0.00	0.00	0.00	0.00	0.00	0.00			

			Entrainment CMR x 1000						Outage Period FPP		
Starting date of week	Week No.	SPDES Permit Flow (gpm)	White perch	Striped bass	River herring	Bay anchovy	Atlantic tomcod	Total	Days in May-Aug. period	Unit outage days	FPP
25-Oct	43	1456	0.00	0.00	0.00	0.00	0.00	0.00			
1-Nov	44	1008	0.00	0.00	0.00	0.00	0.00	0.00			
8-Nov	45	1008	0.00	0.00	0.00	0.00	0.00	0.00			
15-Nov	46	1008	0.00	0.00	0.00	0.00	0.00	0.00			
22-Nov	47	1008	0.00	0.00	0.00	0.00	0.00	0.00			
29-Nov	48	1008	0.00	0.00	0.00	0.00	0.00	0.00			
6-Dec	49	1008	0.00	0.00	0.00	0.00	0.00	0.00			
13-Dec	50	1008	0.00	0.00	0.00	0.00	0.00	0.00			
20-Dec	51	1008	0.00	0.00	0.00	0.00	0.00	0.00			
27-Dec	52	1008	0.00	0.00	0.00	0.00	0.00	0.00			
Total			50.22	126.32	9.12	162.08	155.15	502.89			37.60

Appendix Table IV-3. Fish protection points (FPP) for a 30-day outage at one Bowline unit between May 15 and June 30 and for a 31-day outage at one Bowline unit in July based on entrainment CMRs for 2-unit operation and SPDES permit flows.

			Entrainment CMR x 1000						Outage Period FPP			
Starting date of week	Week No.	SPDES Permit Flow (gpm)	White perch	Striped bass	River herring	Bay anchovy	Atlantic tomcod	Total	Days in May-Jun	Days in July	Unit outage days	FPP
5-Jan	1	514	0.00	0.00	0.00	0.00	0.00	0.00				
12-Jan	2	514	0.00	0.00	0.00	0.00	0.00	0.00				
19-Jan	3	514	0.00	0.00	0.00	0.00	0.00	0.00				
26-Jan	4	514	0.00	0.00	0.00	0.00	0.00	0.00				
2-Feb	5	514	0.00	0.00	0.00	0.00	0.00	0.00				
9-Feb	6	514	0.00	0.00	0.00	0.00	0.00	0.00				
16-Feb	7	514	0.00	0.00	0.00	0.00	0.00	0.00				
23-Feb	8	514	0.00	0.00	0.00	0.00	6.10	6.10				
1-Mar	9	514	0.00	0.00	0.00	0.00	8.60	8.60				
8-Mar	10	514	0.00	0.00	0.00	0.00	13.50	13.50				
15-Mar	11	514	0.00	0.00	0.00	0.00	12.20	12.20				
22-Mar	12	514	0.00	0.00	0.00	0.00	8.90	8.90				
29-Mar	13	514	0.00	0.00	0.00	0.00	6.00	6.00				
5-Apr	14	514	0.00	0.00	0.00	0.00	3.70	3.70				
12-Apr	15	514	0.00	0.00	0.00	0.00	4.10	4.10				
19-Apr	16	514	0.10	0.00	0.00	0.00	3.80	3.90				
26-Apr	17	514	0.10	0.00	0.20	0.00	4.70	5.00				
3-May	18	514	0.10	0.00	0.10	0.00	3.60	3.80				
10-May	19	514	0.10	0.10	0.10	0.10	3.30	3.70	2		2	0.53
17-May	20	514	0.20	0.40	0.10	0.00	2.40	3.10	7		7	1.55
24-May	21	514	0.30	0.50	0.10	0.20	2.70	3.80	7		7	1.90
31-May	22	514	0.30	0.90	0.10	0.40	1.70	3.40	7		7	1.70
7-Jun	23	514	0.50	1.40	0.20	1.40	0.50	4.00	7		7	2.00
14-Jun	24	598	0.30	1.60	0.30	2.80	0.00	5.00	7		0	0.00
21-Jun	25	632	0.40	1.90	0.10	5.40	0.00	7.80	7		0	0.00
28-Jun	26	632	0.30	0.90	0.00	7.10	0.00	8.30	3	4	4	2.37
5-Jul	27	632	0.20	0.50	0.00	7.70	0.00	8.40		7	7	4.20
12-Jul	28	632	0.10	0.20	0.00	6.30	0.00	6.60		7	7	3.30
19-Jul	29	632	0.10	0.20	0.00	5.20	0.00	5.50		7	7	2.75
26-Jul	30	632	0.00	0.10	0.00	4.10	0.00	4.20		6	6	1.80
2-Aug	31	632	0.00	0.00	0.00	3.30	0.00	3.30				
9-Aug	32	632	0.00	0.00	0.00	2.20	0.00	2.20				
16-Aug	33	632	0.00	0.00	0.00	1.10	0.00	1.10				
23-Aug	34	632	0.00	0.00	0.00	0.60	0.00	0.60				
30-Aug	35	632	0.00	0.00	0.00	0.40	0.00	0.40				
6-Sep	36	632	0.00	0.00	0.00	0.30	0.00	0.30				
13-Sep	37	632	0.00	0.00	0.00	0.20	0.00	0.20				
20-Sep	38	632	0.00	0.00	0.00	0.10	0.00	0.10				
27-Sep	39	632	0.00	0.00	0.00	0.00	0.00	0.00				
4-Oct	40	632	0.00	0.00	0.00	0.00	0.00	0.00				

			Entrainment CMR x 1000						Outage Period FPP			
Starting date of week	Week No.	SPDES Permit Flow (gpm)	White perch	Striped bass	River herring	Bay anchovy	Atlantic tomcod	Total	Days in May-Jun	Days in July	Unit outage days	FPP
11-Oct	41	598	0.00	0.00	0.00	0.00	0.00	0.00				
18-Oct	42	514	0.00	0.00	0.00	0.00	0.00	0.00				
25-Oct	43	514	0.00	0.00	0.00	0.00	0.00	0.00				
1-Nov	44	514	0.00	0.00	0.00	0.00	0.00	0.00				
8-Nov	45	514	0.00	0.00	0.00	0.00	0.00	0.00				
15-Nov	46	514	0.00	0.00	0.00	0.00	0.00	0.00				
22-Nov	47	514	0.00	0.00	0.00	0.00	0.00	0.00				
29-Nov	48	514	0.00	0.00	0.00	0.00	0.00	0.00				
6-Dec	49	514	0.00	0.00	0.00	0.00	0.00	0.00				
13-Dec	50	514	0.00	0.00	0.00	0.00	0.00	0.00				
20-Dec	51	514	0.00	0.00	0.00	0.00	0.00	0.00				
27-Dec	52	514	0.00	0.00	0.00	0.00	0.00	0.00				
Total			3.10	8.70	1.30	48.90	85.80	147.80				22.10

Appendix Table IV-4. Fish protection points (FPP) for a 30-day outage at one Roseton unit between May 15 and June 30 based on entrainment CMRs for 2-unit operation and SPDES permit flows.

Starting date of week	Week No.	SPDES Permit Flow (gpm)	Entrainment CMR x 1000						Outage Period FPP		
			White perch	Striped bass	River herring	Bay anchovy	Atlantic tomcod	Total	Days in May-June period	Unit outage days	FPP
5-Jan	1	418	0.00	0.00	0.00	0.00	0.00	0.00			
12-Jan	2	418	0.00	0.00	0.00	0.00	0.00	0.00			
19-Jan	3	418	0.00	0.00	0.00	0.00	0.00	0.00			
26-Jan	4	418	0.00	0.00	0.00	0.00	0.00	0.00			
2-Feb	5	418	0.00	0.00	0.00	0.00	0.00	0.00			
9-Feb	6	418	0.00	0.00	0.00	0.00	0.00	0.00			
16-Feb	7	418	0.00	0.00	0.00	0.00	0.00	0.00			
23-Feb	8	418	0.00	0.00	0.00	0.00	2.10	2.10			
1-Mar	9	418	0.00	0.00	0.00	0.00	4.80	4.80			
8-Mar	10	418	0.00	0.00	0.00	0.00	2.10	2.10			
15-Mar	11	418	0.00	0.00	0.00	0.00	2.10	2.10			
22-Mar	12	418	0.00	0.00	0.00	0.00	2.90	2.90			
29-Mar	13	418	0.00	0.00	0.00	0.00	1.90	1.90			
5-Apr	14	418	0.00	0.00	0.00	0.00	0.50	0.50			
12-Apr	15	418	0.00	0.00	0.00	0.00	0.10	0.10			
19-Apr	16	418	0.10	0.00	0.30	0.00	0.20	0.60			
26-Apr	17	418	0.50	0.00	0.50	0.00	0.20	1.20			
3-May	18	418	2.20	0.70	0.90	0.00	0.10	3.90			
10-May	19	459	7.60	2.30	1.60	0.00	0.10	11.60	2	2	0.99
17-May	20	561	12.30	3.70	4.20	0.00	0.20	20.40	7	0	0.00
24-May	21	561	13.30	5.60	3.90	0.00	0.40	23.20	7	0	0.00
31-May	22	561	9.50	6.00	2.20	0.00	0.40	18.10	7	4	3.10
7-Jun	23	561	7.70	4.70	3.40	0.00	0.10	15.90	7	7	4.77
14-Jun	24	630	6.00	4.90	2.90	0.00	0.00	13.80	7	7	4.14
21-Jun	25	641	3.70	3.60	2.30	0.20	0.00	9.80	7	7	2.94
28-Jun	26	641	4.50	3.20	4.50	0.60	0.00	12.80	3	3	1.65
5-Jul	27	641	3.10	1.20	4.00	1.70	0.00	10.00			
12-Jul	28	641	1.50	0.60	3.00	2.20	0.00	7.30			
19-Jul	29	641	0.70	0.60	1.30	1.50	0.00	4.10			
26-Jul	30	641	0.30	0.30	0.70	1.20	0.00	2.50			
2-Aug	31	641	0.20	0.10	0.40	1.30	0.00	2.00			
9-Aug	32	641	0.10	0.00	0.30	1.20	0.00	1.60			
16-Aug	33	641	0.10	0.00	0.10	0.80	0.00	1.00			
23-Aug	34	641	0.00	0.00	0.00	0.40	0.00	0.40			
30-Aug	35	641	0.00	0.00	0.00	0.10	0.00	0.10			
6-Sep	36	641	0.00	0.00	0.00	0.10	0.00	0.10			
13-Sep	37	641	0.00	0.00	0.00	0.10	0.00	0.10			
20-Sep	38	618	0.00	0.00	0.00	0.00	0.00	0.00			
27-Sep	39	561	0.00	0.00	0.00	0.00	0.00	0.00			
4-Oct	40	561	0.00	0.00	0.00	0.00	0.00	0.00			
11-Oct	41	541	0.00	0.00	0.00	0.00	0.00	0.00			

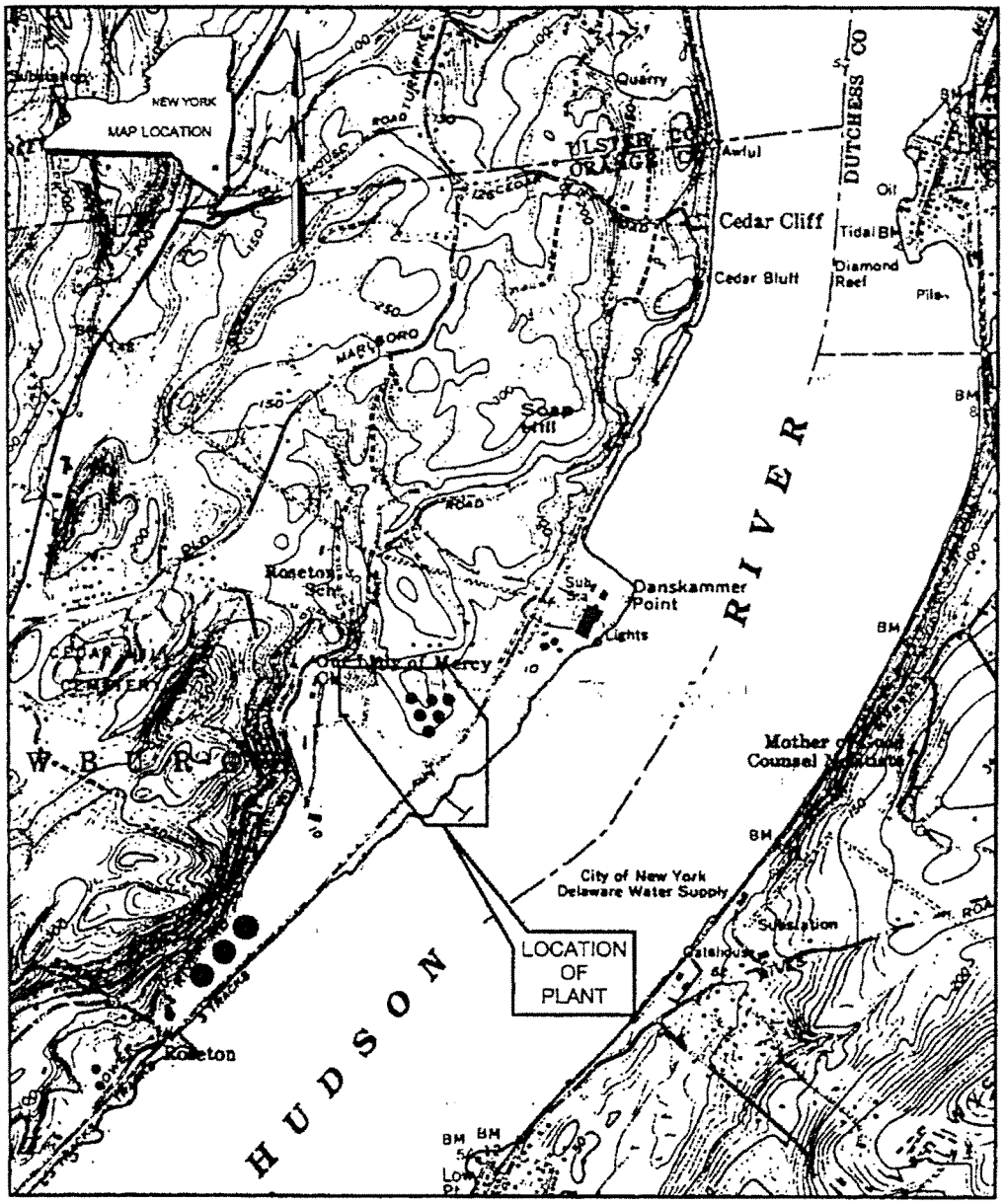
Starting date of week	Week No.	SPDES Permit Flow (gpm)	Entrainment CMR x 1000						Outage Period FPP		
			White perch	Striped bass	River herring	Bay anchovy	Atlantic tomcod	Total	Days in May-June period	Unit outage days	FPP
18-Oct	42	418	0.00	0.00	0.00	0.00	0.00	0.00			
25-Oct	43	418	0.00	0.00	0.00	0.00	0.00	0.00			
1-Nov	44	418	0.00	0.00	0.00	0.00	0.00	0.00			
8-Nov	45	418	0.00	0.00	0.00	0.00	0.00	0.00			
15-Nov	46	418	0.00	0.00	0.00	0.00	0.00	0.00			
22-Nov	47	418	0.00	0.00	0.00	0.00	0.00	0.00			
29-Nov	48	418	0.00	0.00	0.00	0.00	0.00	0.00			
6-Dec	49	418	0.00	0.00	0.00	0.00	0.00	0.00			
13-Dec	50	418	0.00	0.00	0.00	0.00	0.00	0.00			
20-Dec	51	418	0.00	0.00	0.00	0.00	0.00	0.00			
27-Dec	52	418	0.00	0.00	0.00	0.00	0.00	0.00			
Total			73.40	37.50	36.50	11.40	18.20	177.00			17.59

Appendix IV-2

Maps

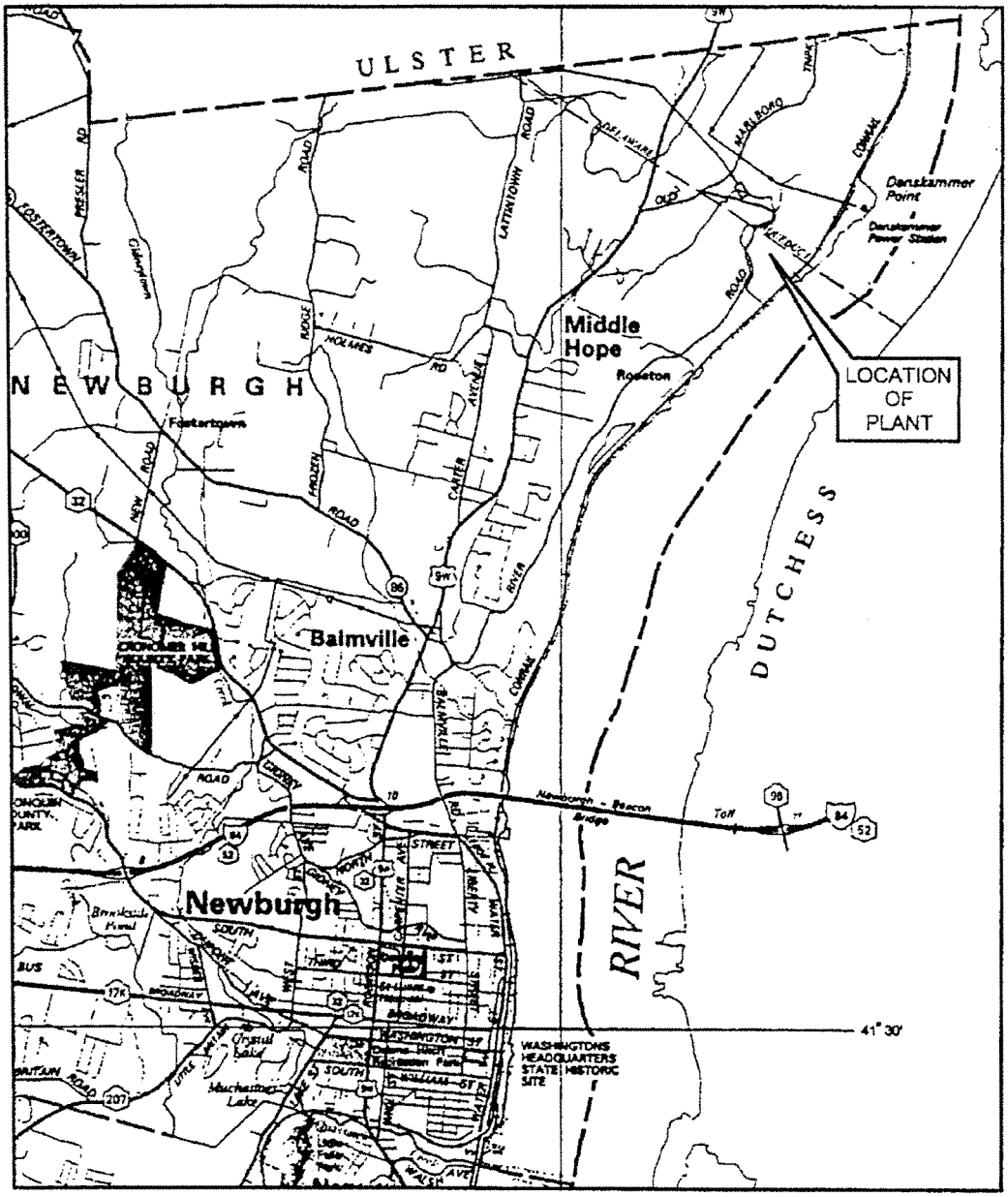
a. Roseton

1. USGS
2. DOT
3. Plot Plan
4. Soil Survey
5. NYSDEC Wetlands
6. NWI Wetlands
7. FEMA



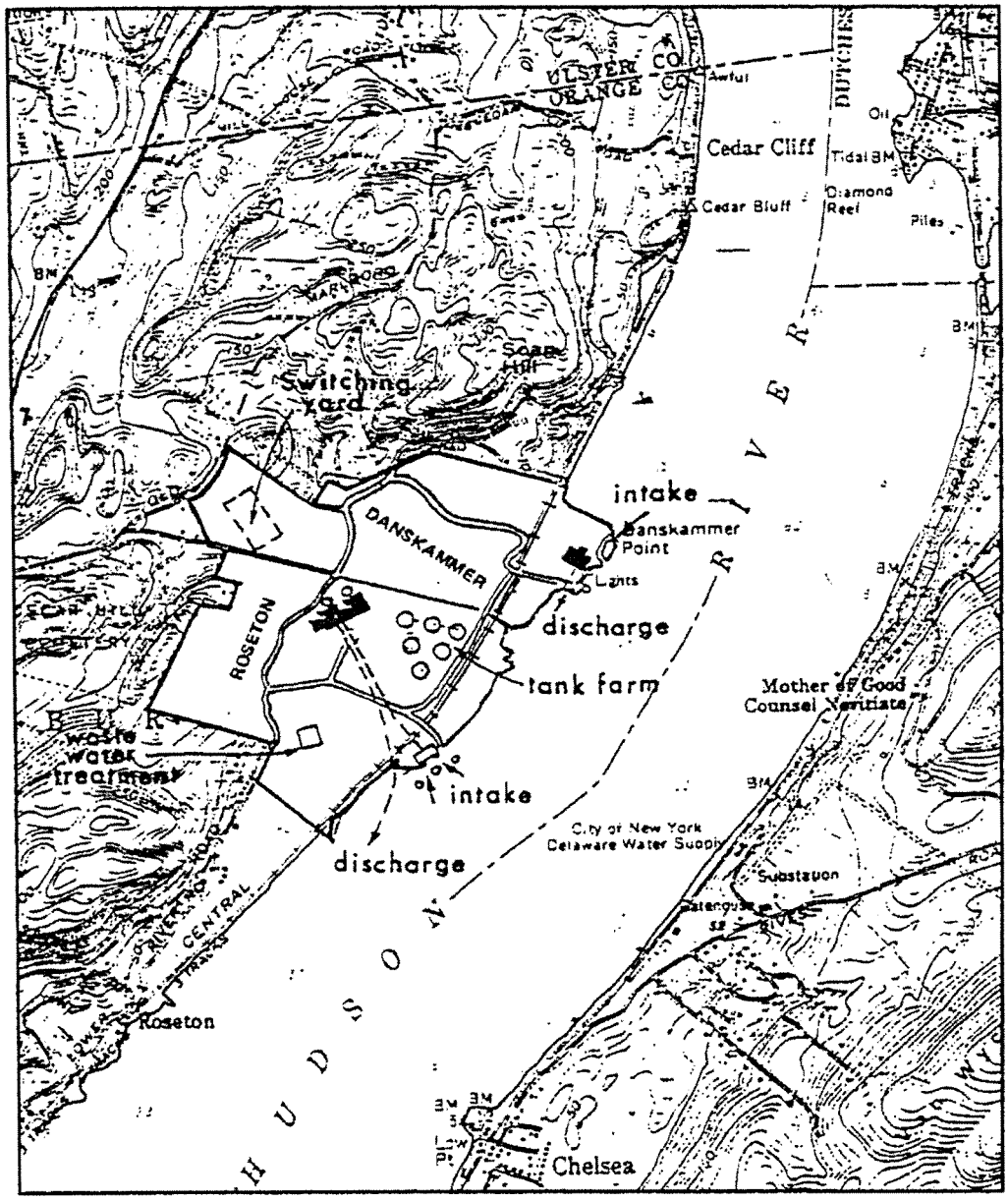
Source: USGS quadrangle map, Wappingers Falls, NY, 1956, photorevised 1981.

Map 1. Location of the Roseton Generating Station.



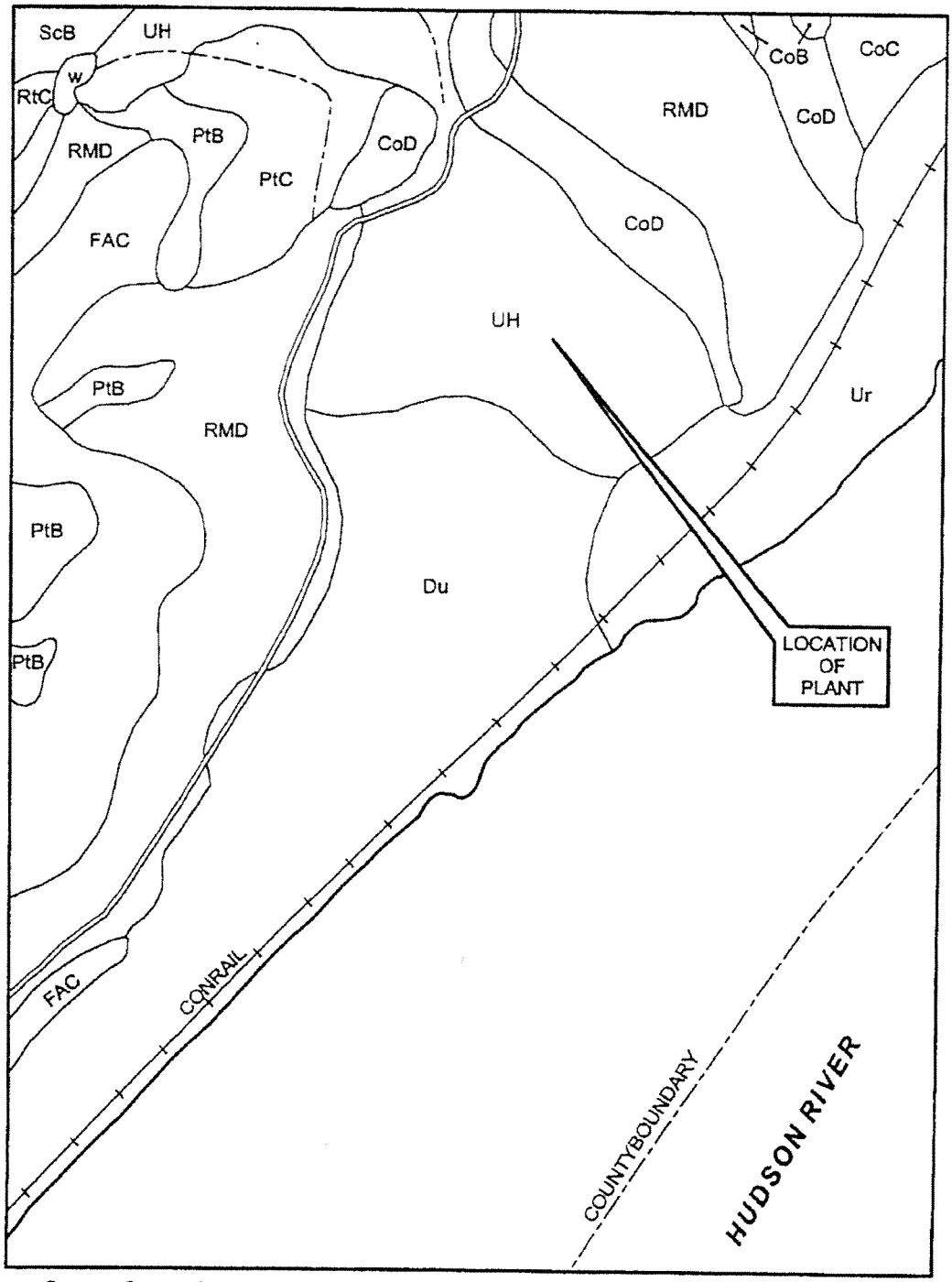
Source: New York State Department of Transportation, 1973.

Map 2. Location of the Roseton Generating Station.



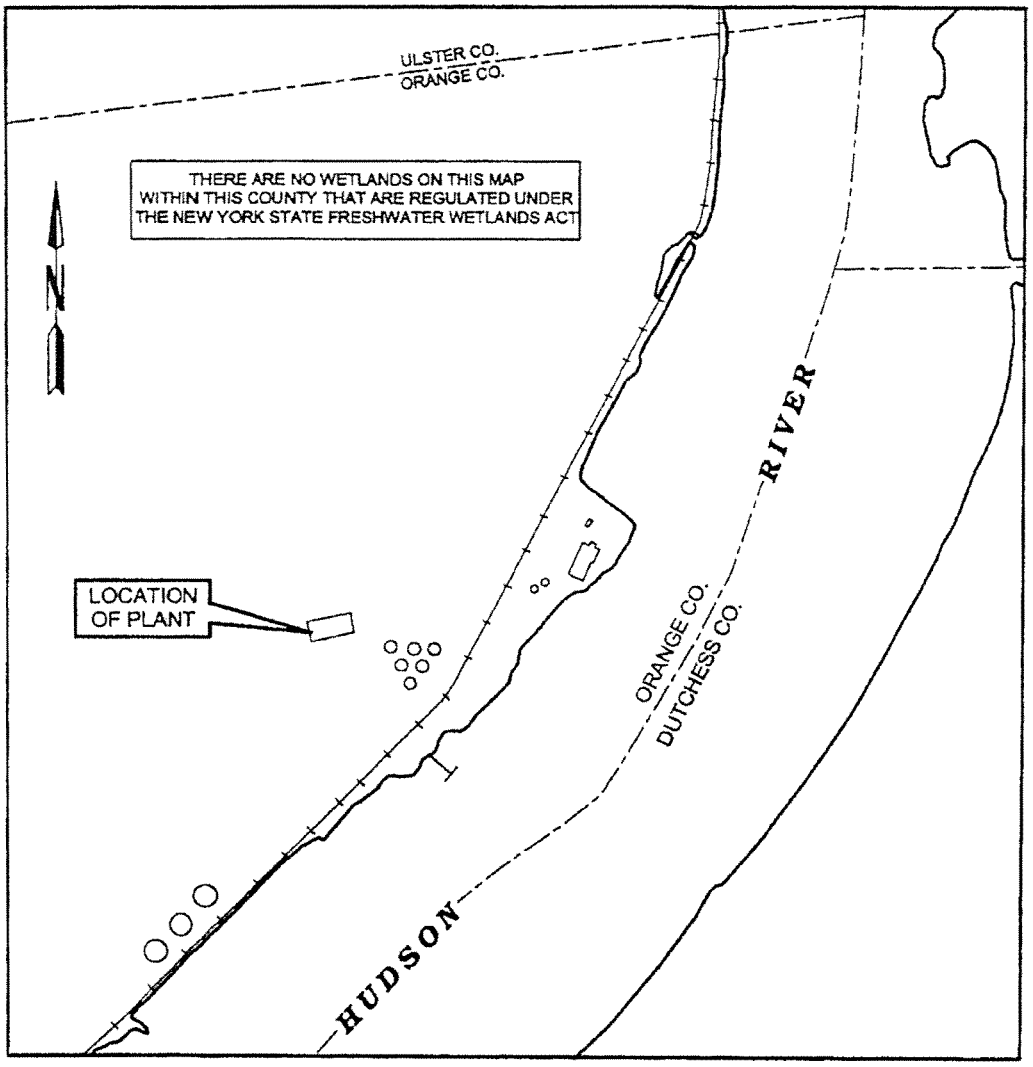
Source: USGS quadrangle map, Wappingers Falls, NY, 1956, photorevised 1981.

Map 3. Plot plan, Roseton site.



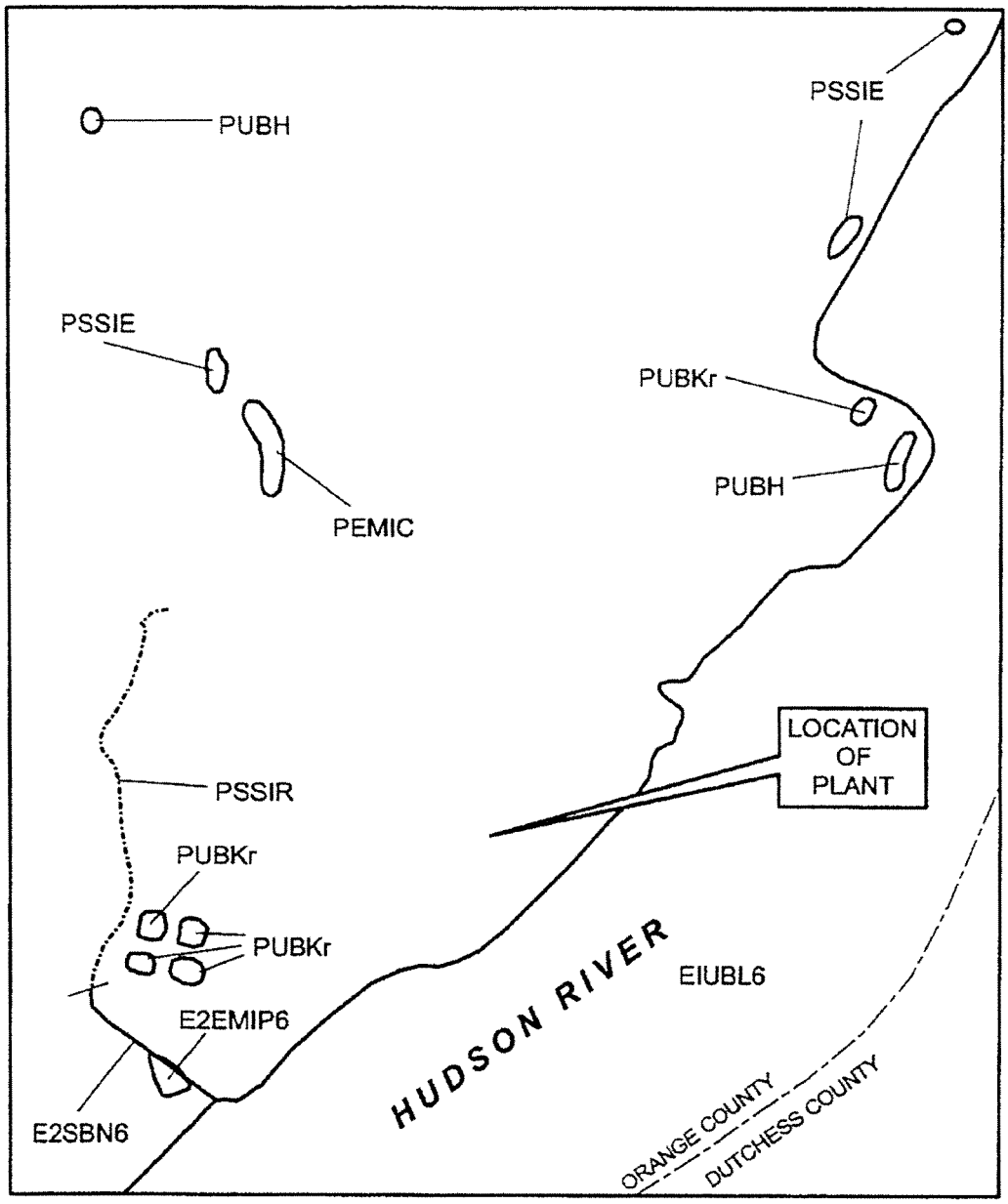
Source: Orange County Soil Survey, USDA, October 1981.

Map 4. Soil survey map, Roseton site.



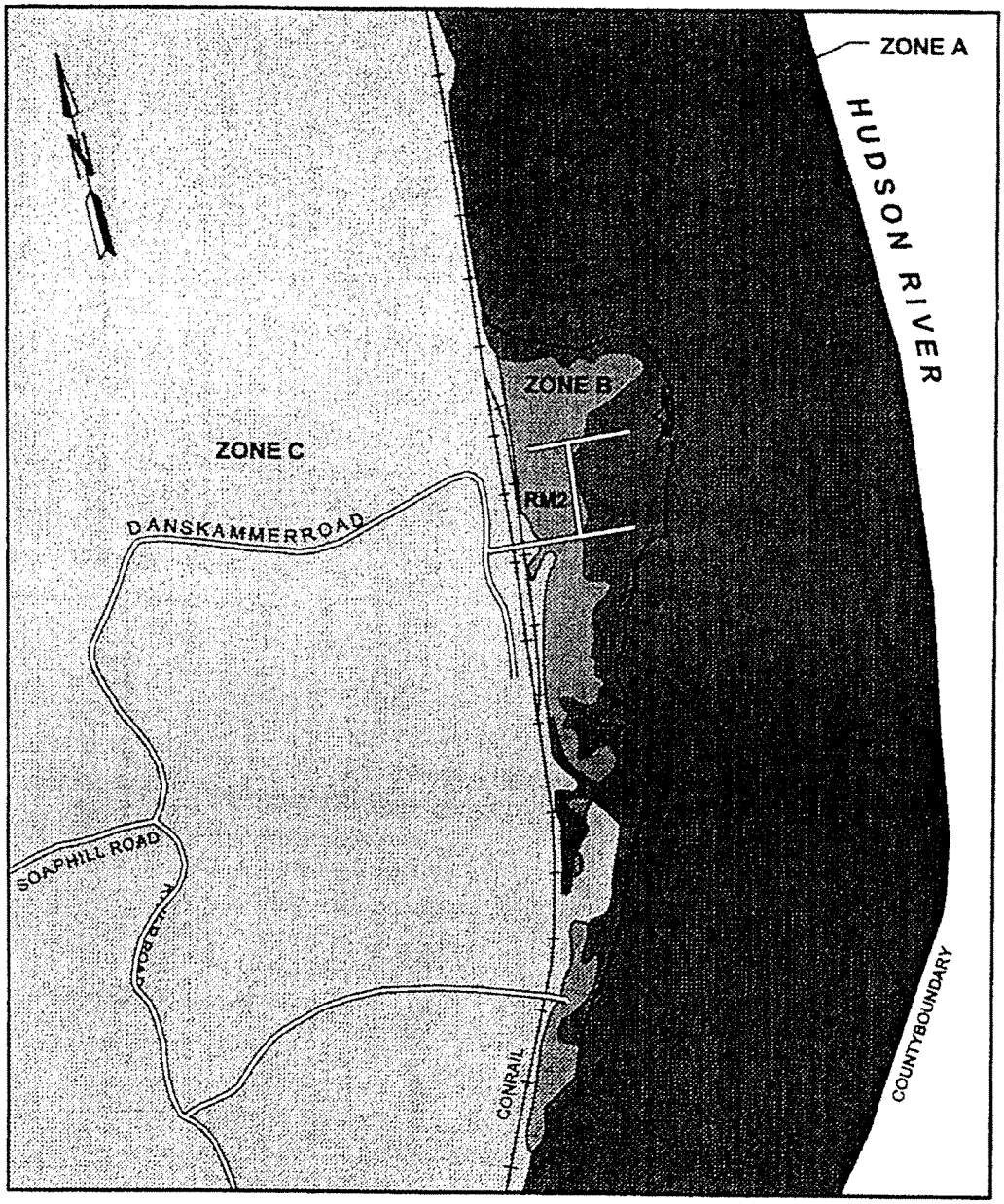
Source: USGS quadrangle map, Wappingers Falls, Orange County, NY, 1973.

Map 5. NYSDEC wetlands map, Roseton site.



Source: USGS quadrangle map, Wappingers Falls, NY, 1990.

Map 6. NWI wetlands map, Roseton site.

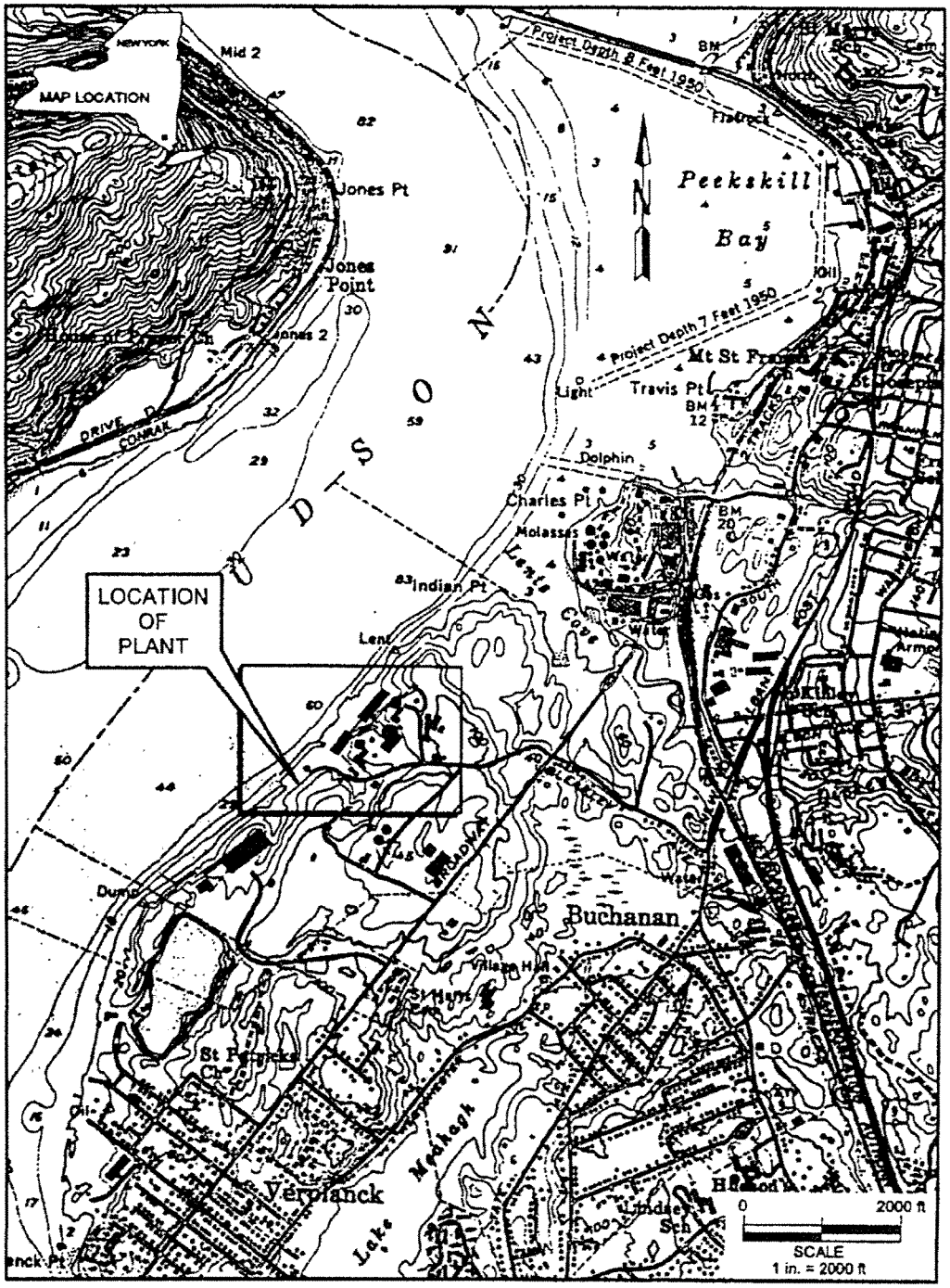


Source: FEMA, Flood Insurance Rate Map (FIRM), Panel No. 360627-0001-0005.

Map 7. Federal Emergency Management Agency flood zone designations, Roseton site.

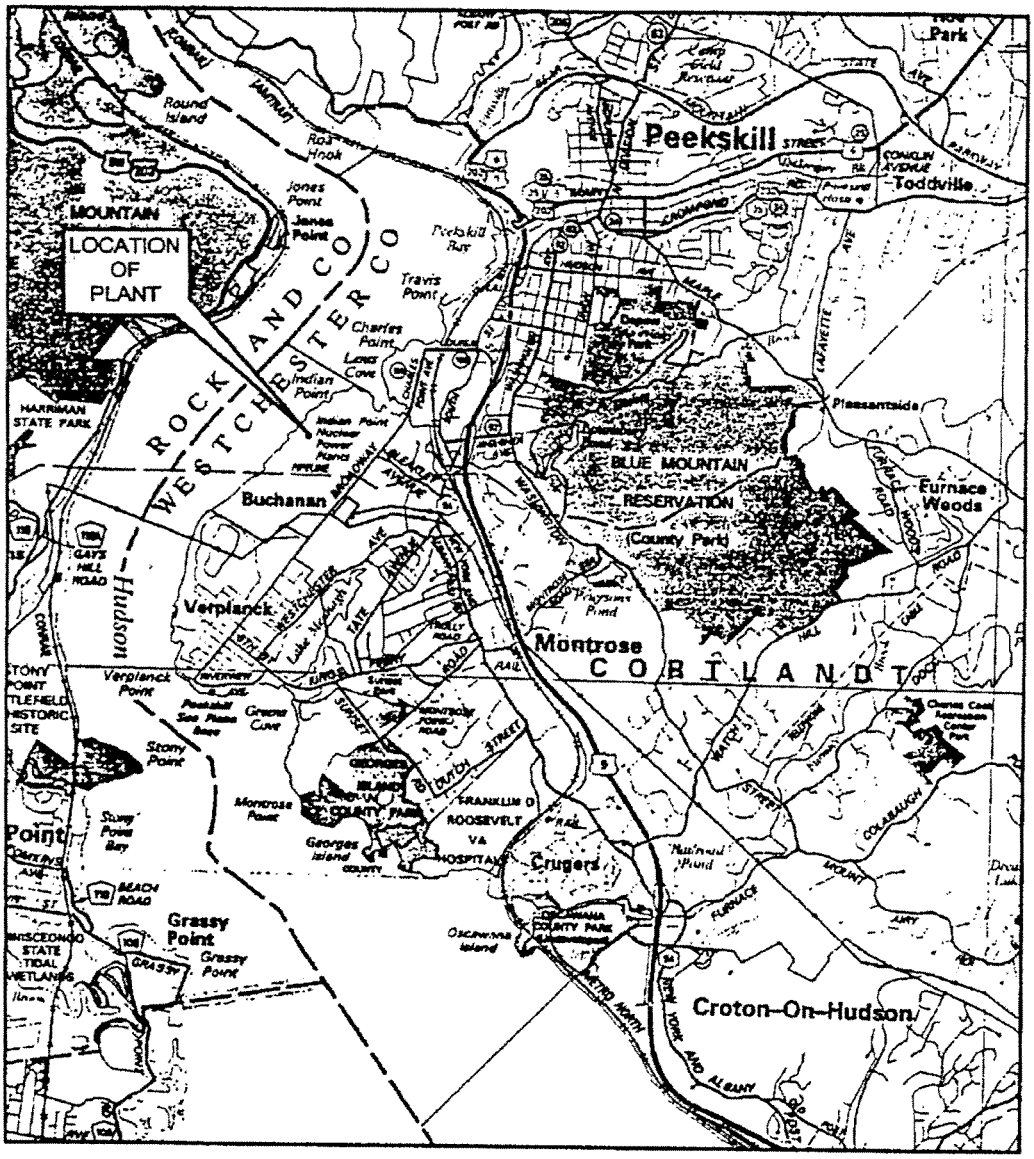
b. Indian Point

1. USGS
2. DOT
3a. Plot Plan, Unit 3
3b. Plot Plan, Unit 2
4. Soil Survey
5. NYSDEC Wetlands
6. NWI Wetlands
7. FEMA



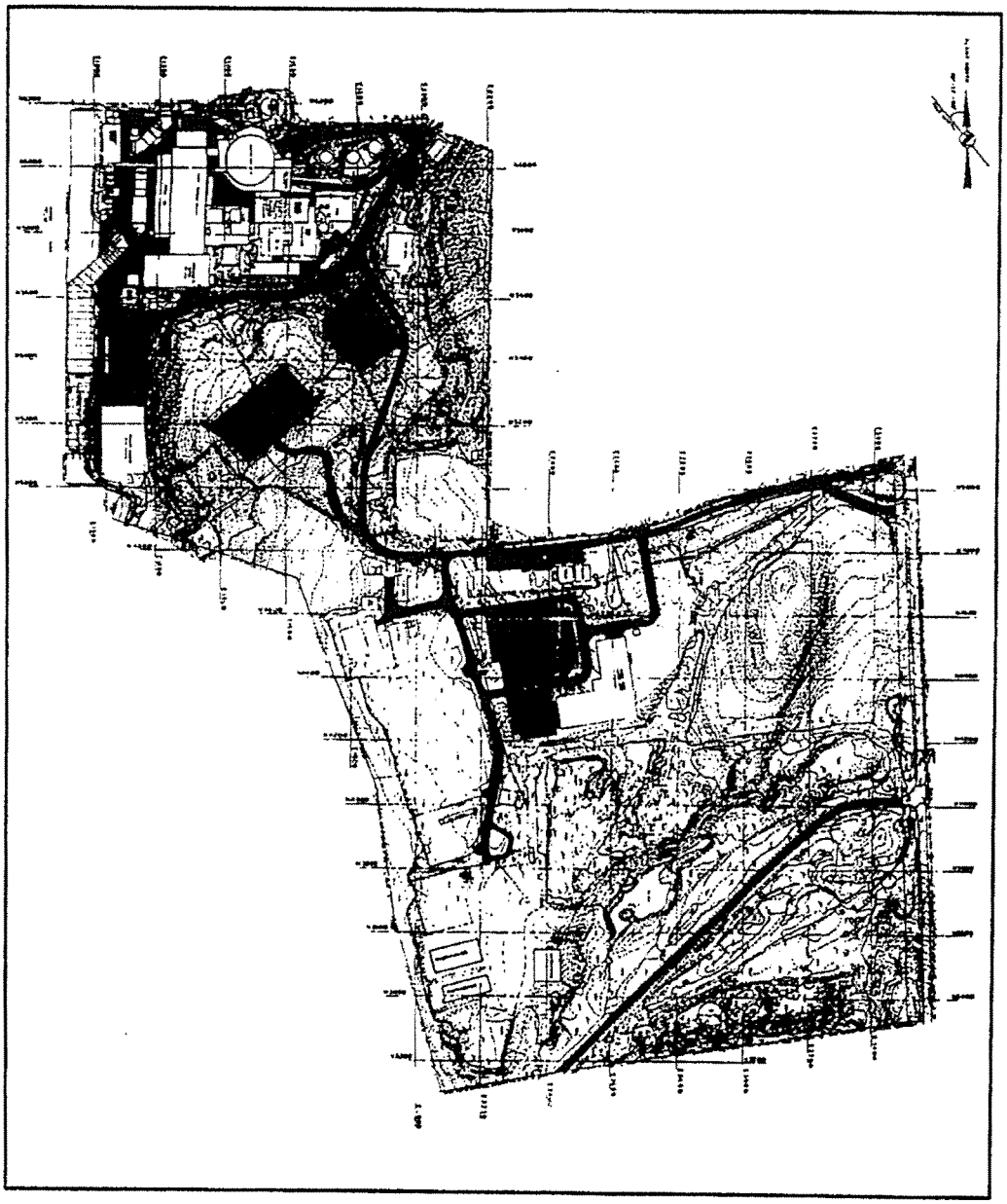
Source: USGS quadrangle map, Peekskill, NY, 1957, photorevised 1981.

Map 1. Location of the Indian Point Generating Station.



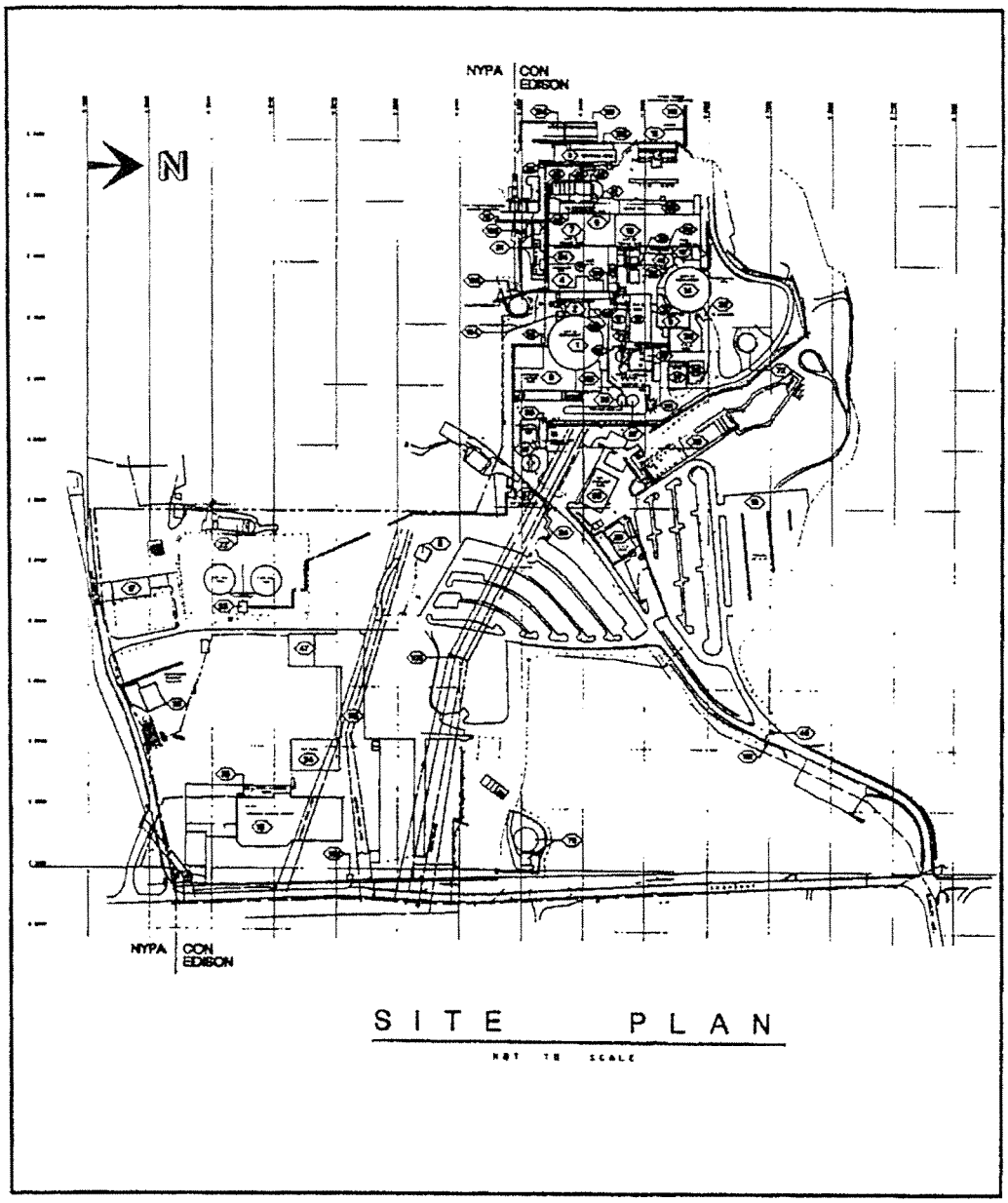
Source: New York State Department of Transportation, 1973.

Map 2. Location of the Indian Point Generating Station.



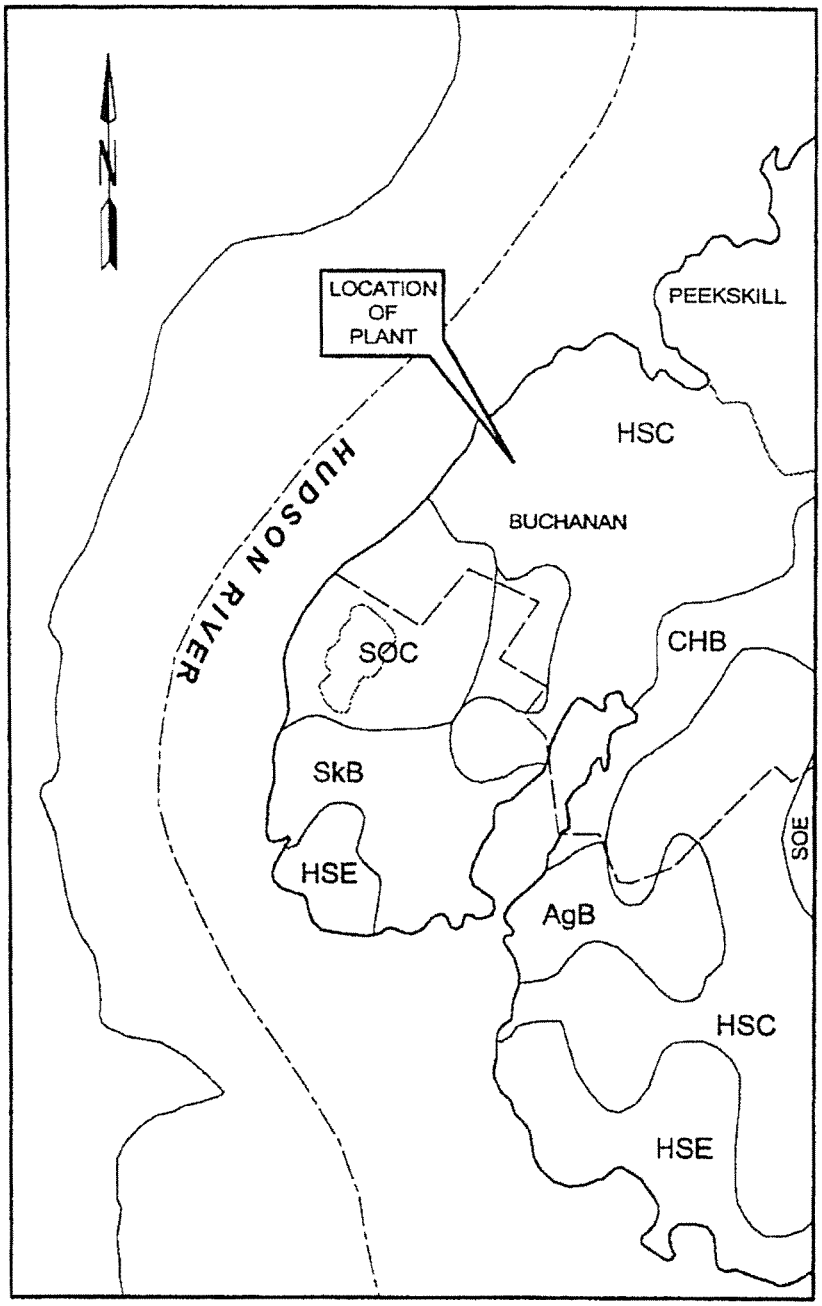
Source: Con Edison

Map 3a. Plot plan, Unit 3, Indian Point site.



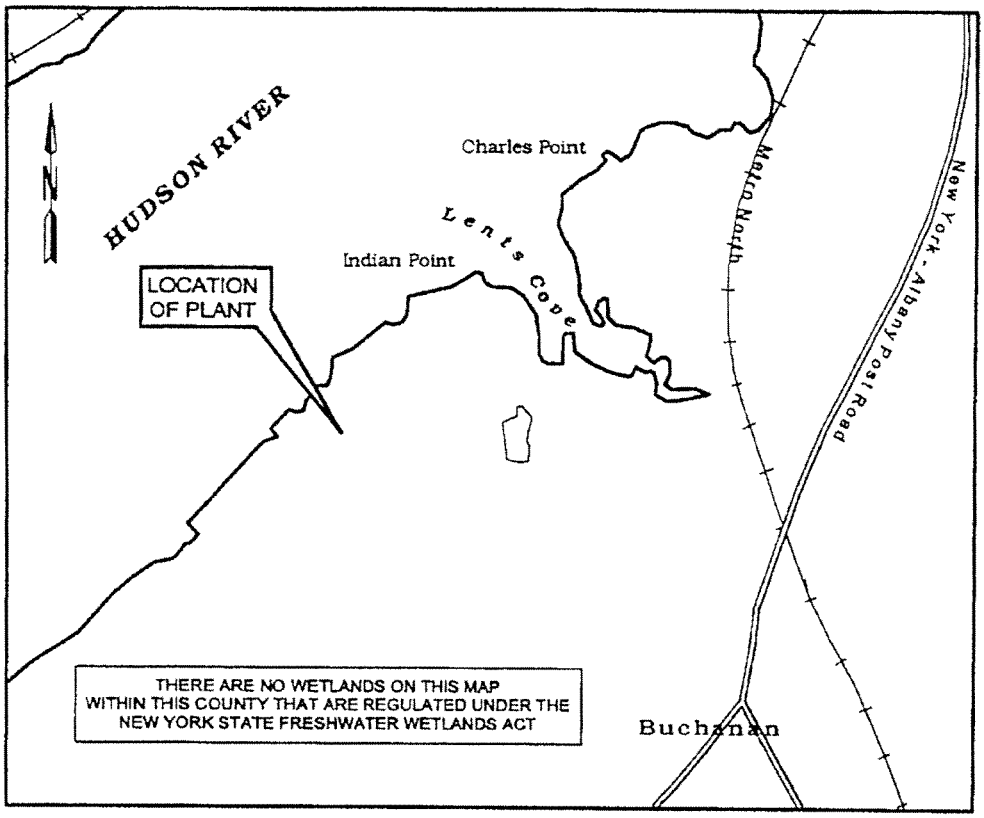
Source: Con Edison

Map 3b. Plot plan, Unit 2, Indian Point site.



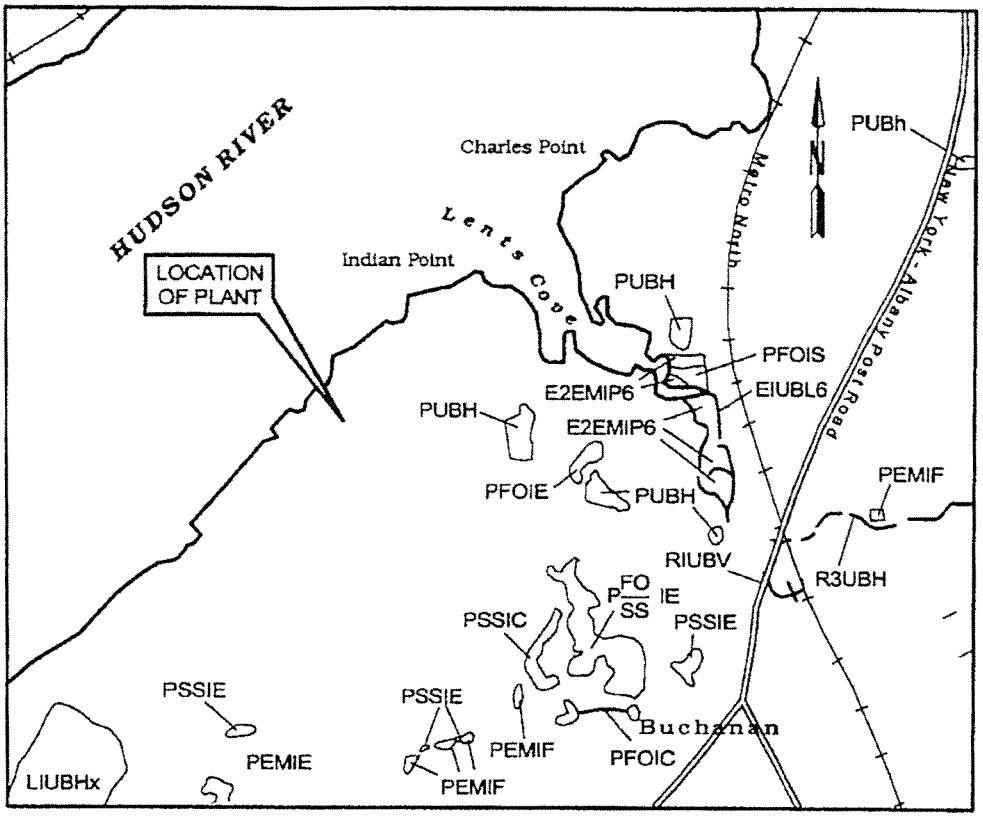
Source: Putnam and Westchester County Soil Survey, USDA, September 1994.

Map 4. Soil survey map, Indian Point site.



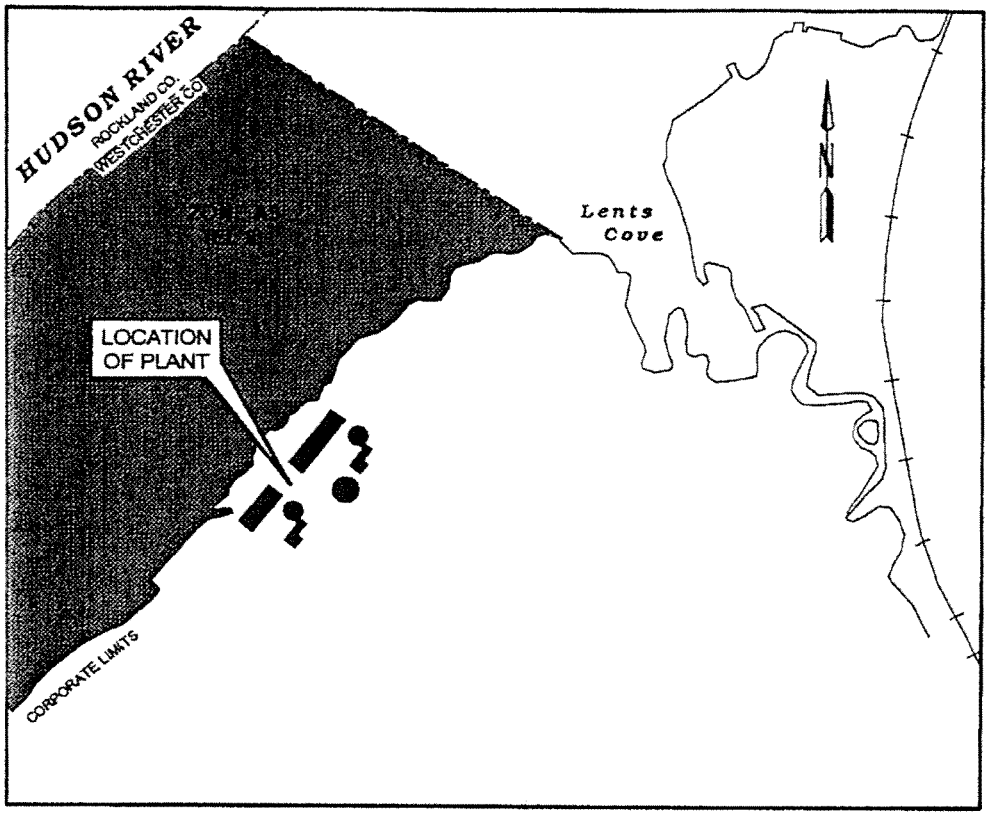
Source: USGS quadrangle map, Peekskill, NY, 1973.

Map 5. NYSDEC wetlands map, Indian Point site.



Source: USGS quadrangle map, Peekskill, NY, 1990.

Map 6. NWI wetland map, Indian Point site.

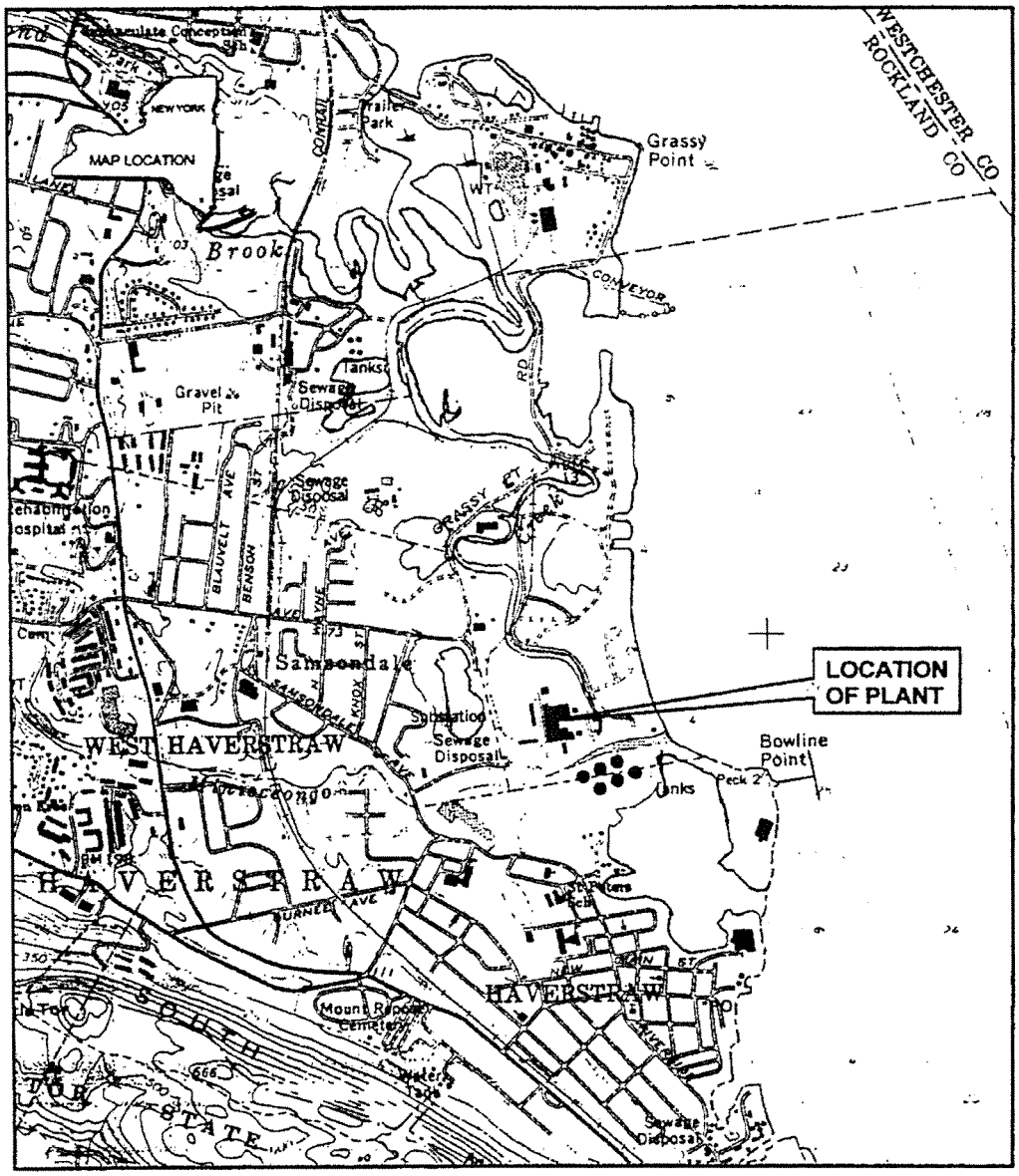


Source: FEMA, Flood Insurance Rate Map (FIRM), Panel No. 360-906-0004-B.

Map 7. Federal Emergency Management Agency shoreline designations, Indian Point site.

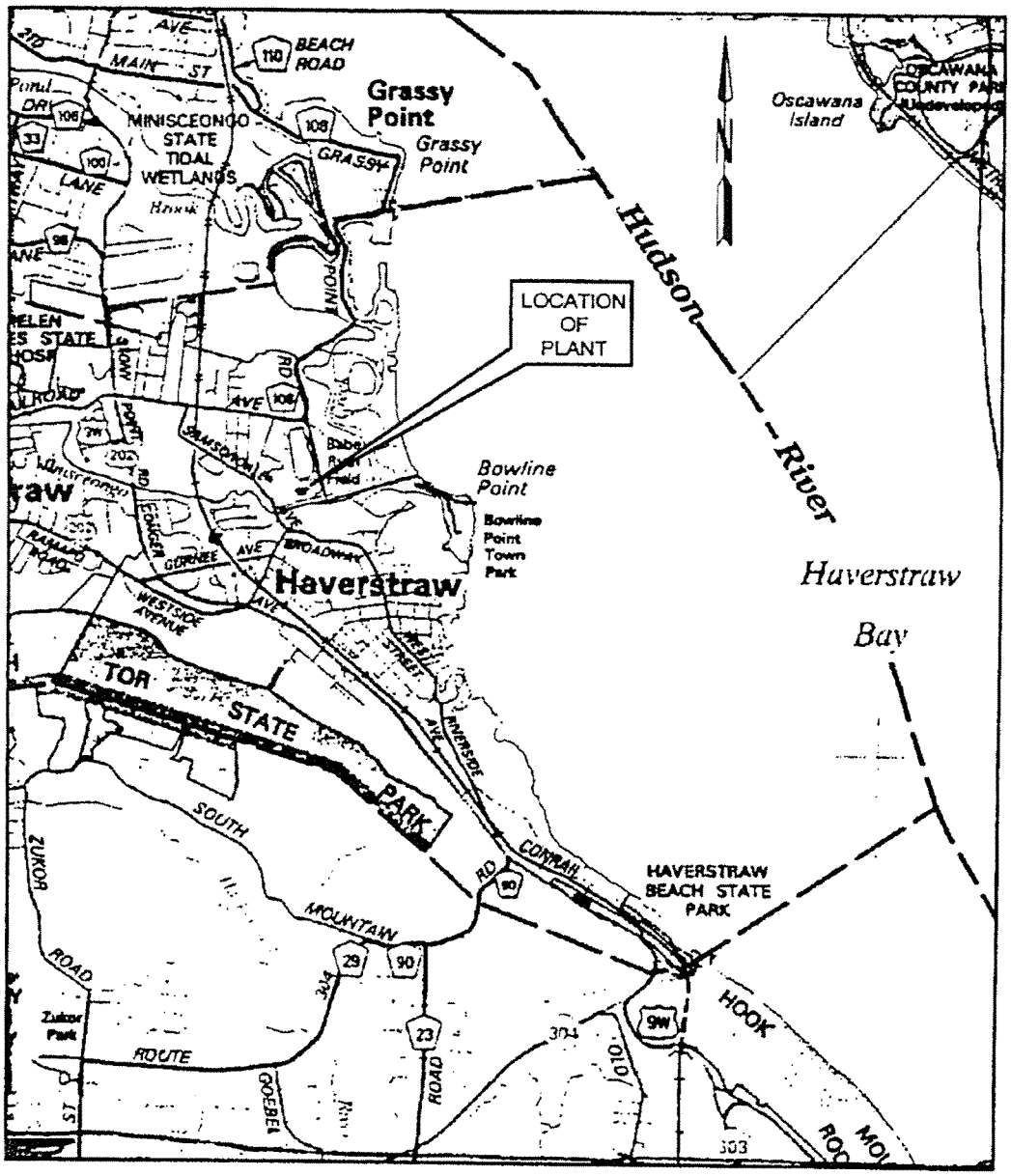
c. Bowline Point

1. USGS
2. DOT
3. Plot Plan
4. Soil Survey
5. NYSDEC Wetlands
6. NWI Wetlands
7. FEMA



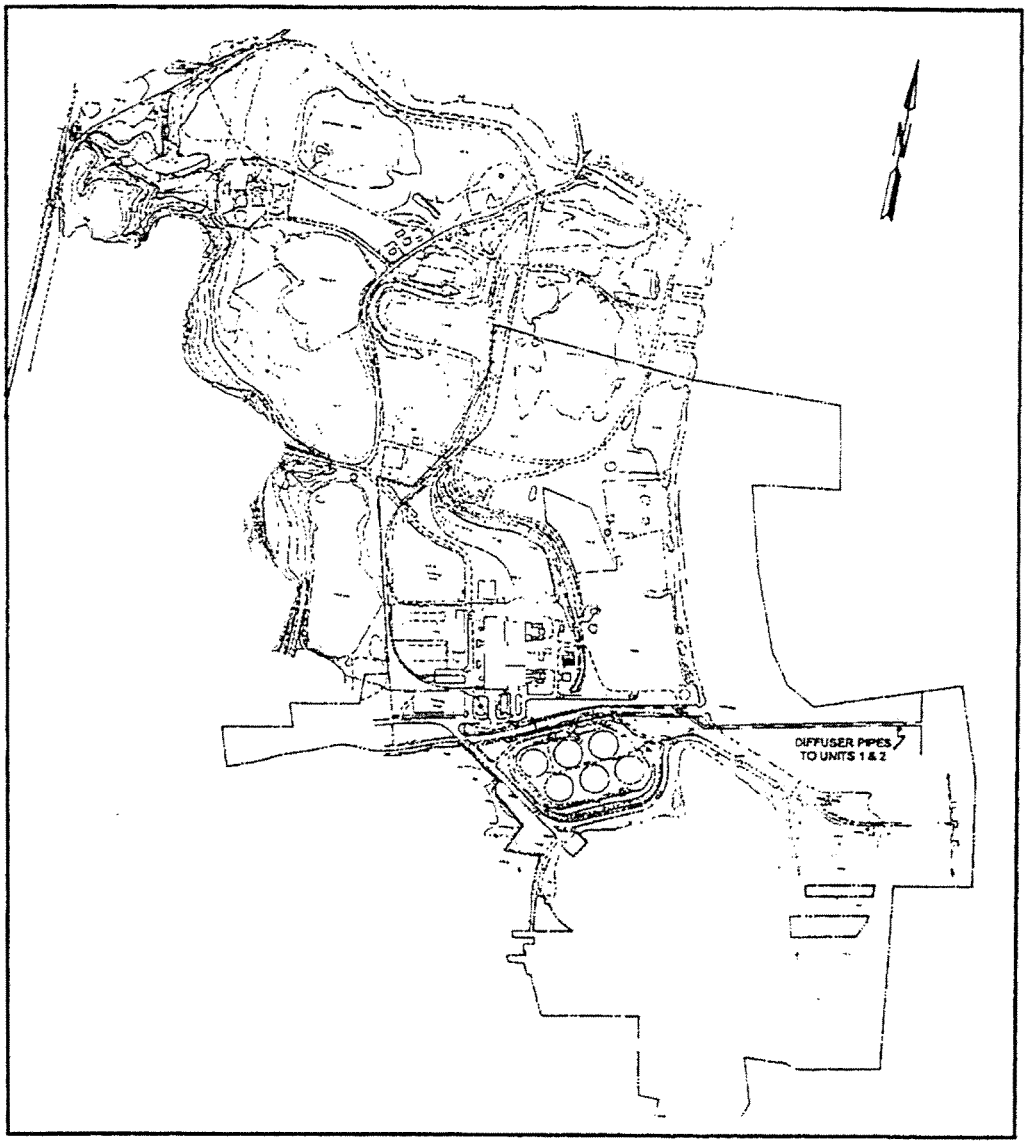
Source: USGS quadrangle map, Haverstraw, NY, 1967, photorevised 1979.

Map 1. Location of the Bowline Point Generating Station.



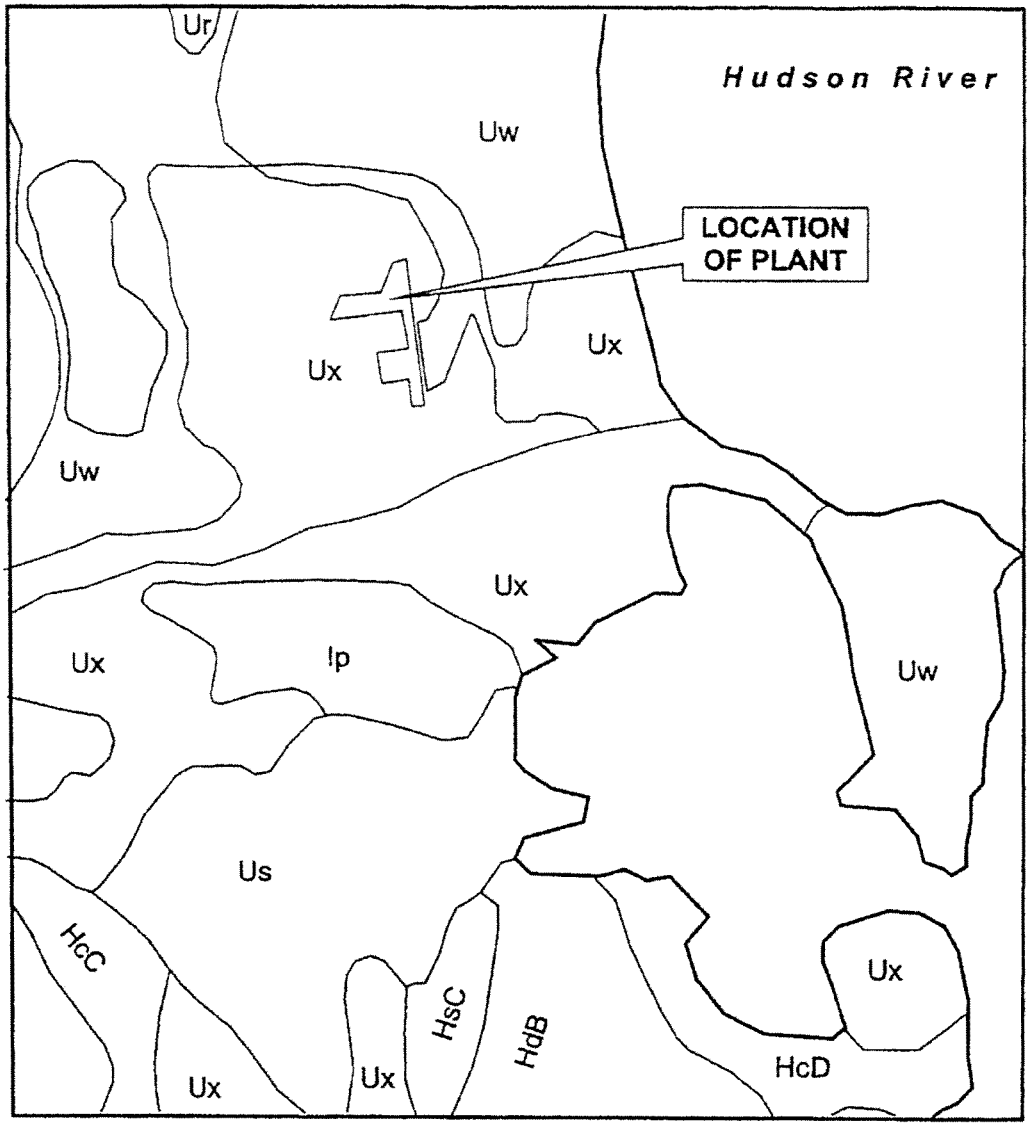
Source: New York State Department of Transportation, 1973.

Map 2. Location of the Bowline Point Generating Station.



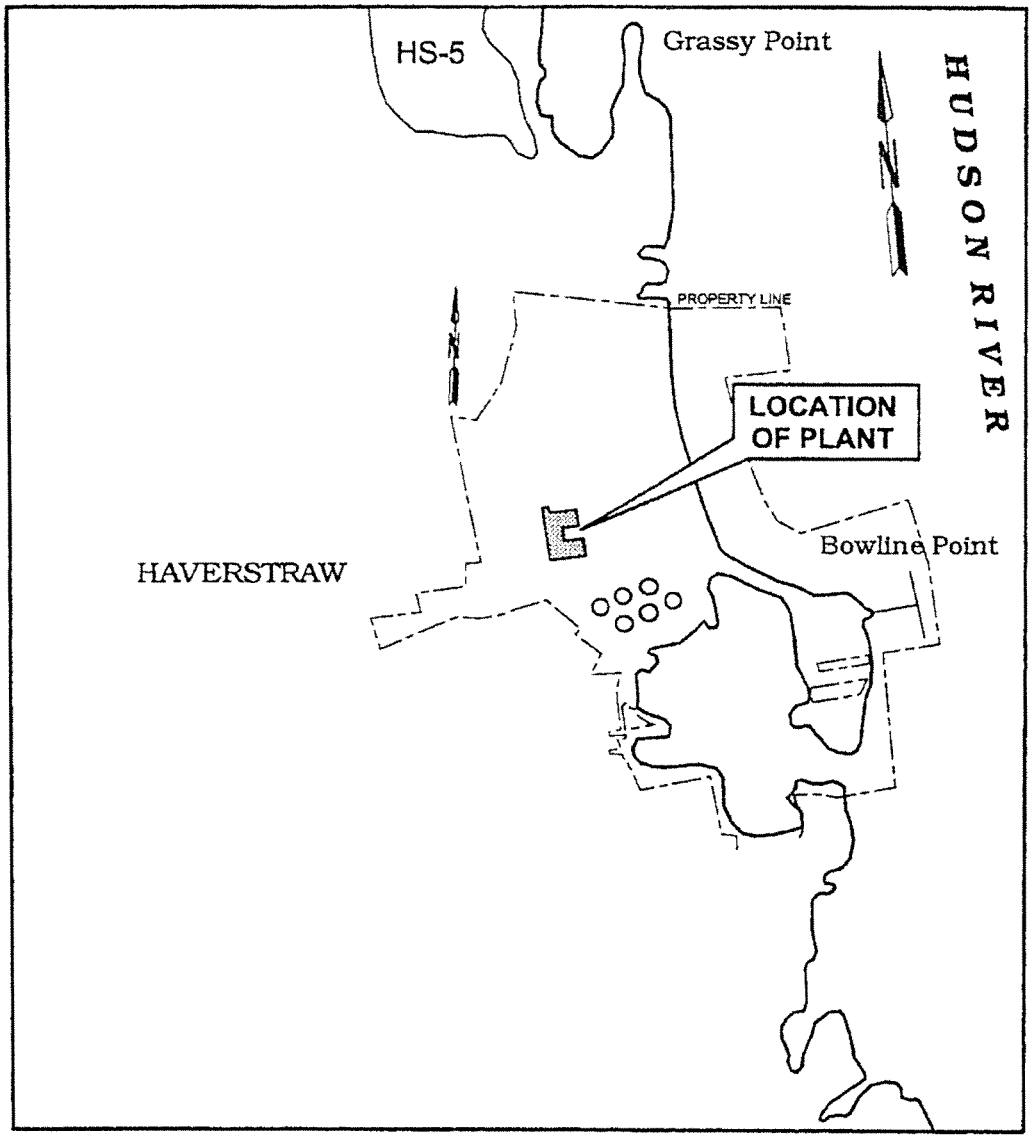
Source: Orange and Rockland Utilities, Inc.

Map 3. Plot plan of Bowline Point Generating Station.



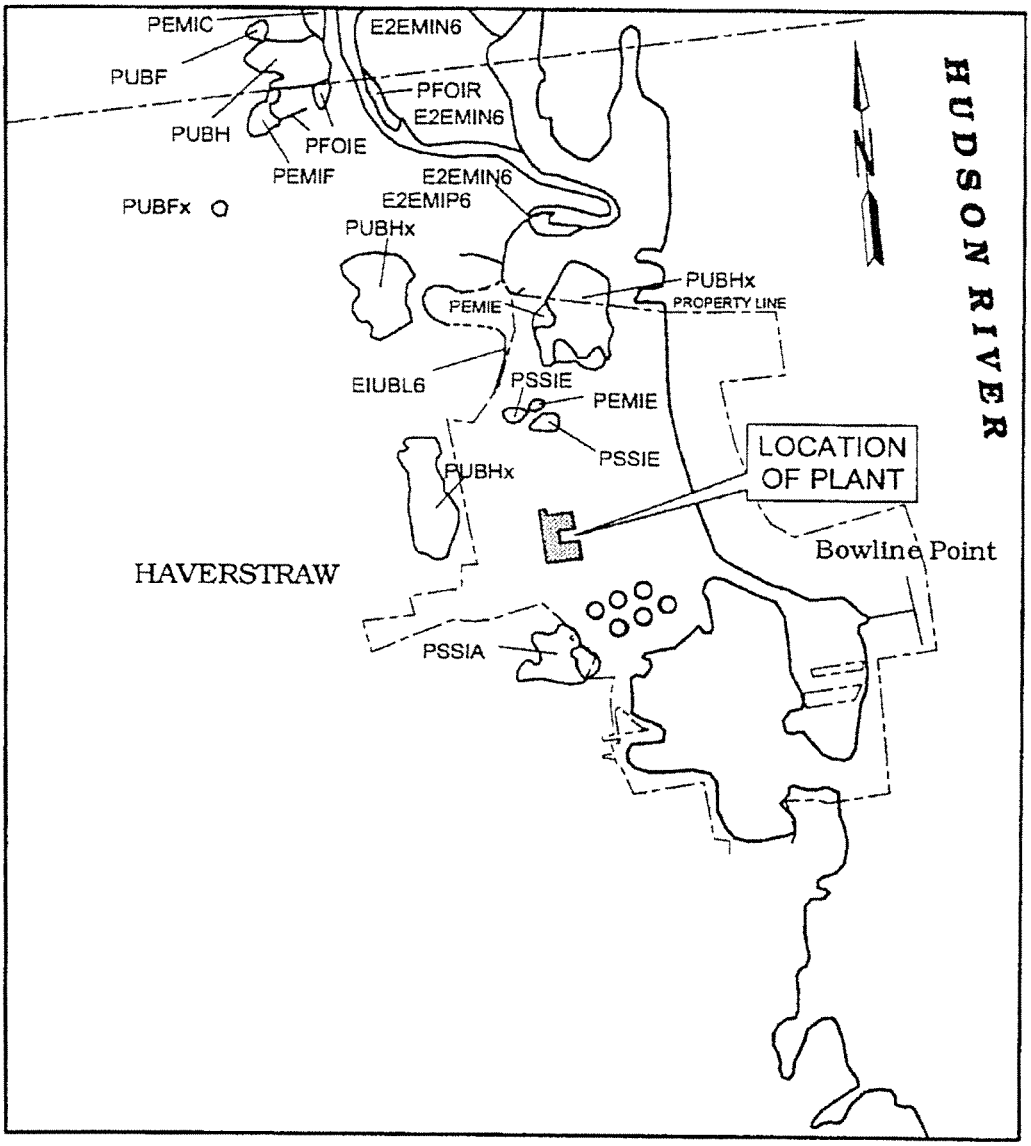
Source: Rockland County Soil Survey, USDA, October 1990.

Map 4. Soil survey map, Bowline Point site.



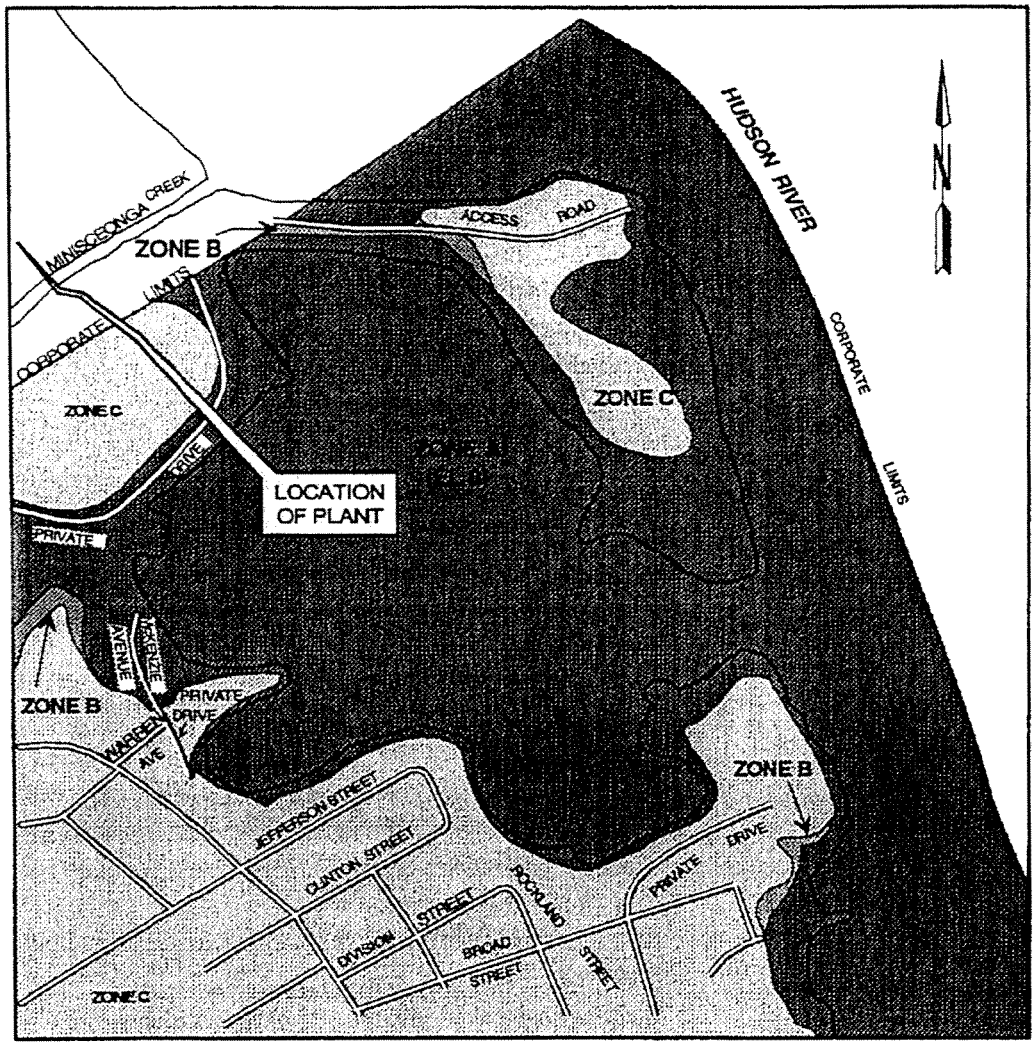
Source: USGS quadrangle map, Haverstraw, NY, 1973.

Map 5. NYSDEC wetlands map, Bowline Point site.



Source: USGS quadrangle map, Haverstraw, NY, 1990.

Map 6. NWI wetlands map, Bowline Point site.



Source: FEMA, Flood Insurance Rate Map (FIRM), Panel No. 360682-0001-C.

Map 7. Federal Emergency Management Agency shoreline designations, Bowline Point site.

MAP CODES

ROSETON

Soil Survey

CoB	Collamer silt loam, 3 – 8% slopes
CoC	Collamer silt loam, 8 – 15% slopes
CoD	Collamer silt loam, 15 – 25% slopes
Du	Dumps
FAC	Farmington silt loam, sloping
PtB	Pittsfield gravelly loam, 3 – 8% slopes
PtC	Pittsfield gravelly loam, 8 – 15% slopes
RMD	Rock outcrop-Farmington complex, hilly
ScB	Scio silt loam, 3 – 8% slopes
UH	Udorthents, smoothed
Ur	Urban land
w	Perennial pond

NWI Wetlands

E1UBL6	Estuarine; subtidal; unconsolidated bottom; cobble-gravel
E2EM1P6	Estuarine; intertidal; emergent; persistent; irregular flooding; subtidal; oligohaline
E2SBN6	Estuarine; intertidal; sand; regular flooding; oligohaline
PEM1C	Palustrine; emergent; seasonal flooding
PSS1E	Palustrine; scrub/shrub; broad-leaved deciduous; seasonal; saturated
PSS1R	Palustrine; scrub/shrub; broad-leaved deciduous; seasonal-tidal
PUBH	Palustrine; unconsolidated bottom; permanently flooded;
$PUBH_x$	Palustrine; unconsolidated bottom; permanently flooded; excavated
PUBKr	Palustrine; unconsolidated bottom; artificially flooded; artificial substrate
$PUBKr_x$	Palustrine; unconsolidated bottom; artificially flooded; artificial substrate; excavated

FEMA Shoreline

	Zone A	Area of 100-year floods
	Zone B	Area of 100-500 year floods
	Zone C	Area of minimal flooding
INDIAN POINT		
Soil Survey		
	AgB	Agawam soils, nearly level through sloping
	ChB	Charlton soils, nearly level through sloping
	HSC	Hollis soils, nearly level through sloping
	HSE	Hollis soils, moderately steep and steep
	SkB	Stockbridge soils, nearly level through sloping
	SOC	Stockbridge-rock outcrop, nearly level through sloping
	SOE	Stockbridge-rock outcrop, moderately steep and steep
NWI Wetlands		
	E1UBL6	Estuarine; subtidal; unconsolidated bottom; (subtidal); oligohaline
	E2EM1P6	Estuarine; intertidal; emergent; persistent; irregular flooding; oligohaline
	L1UBH$_x$	Lacustrine; limnetic; unconsolidated bottom; permanently flooded; excavated
	PEM1E	Palustrine; emergent; persistent; seasonal flooding/saturated
	PEM1F	Palustrine; emergent; persistent; semipermanent flooding
	PFO1S	Palustrine; forested; broad-leaved deciduous; temporary tidal
	PFO1E	Palustrine; forested; broad-leaved deciduous; seasonal flooding/saturated
	PFO1C	Palustrine; forested; broad-leaved deciduous; seasonal flooding
NWI Wetlands (continued)		Palustrine; forested/scrub-shrub; broad-leaved deciduous; seasonal flooding/saturated
	$P\frac{FO}{SS}1E$	
	PSS1C	Palustrine; scrub-shrub; broad-leaved deciduous; seasonal flooding

	PSS1E	Palustrine; scrub-shrub; broad-leaved deciduous; seasonal flooding/saturated
	PUBh	Palustrine; unconsolidated bottom; diked/impounded
	PUBH	Palustrine; unconsolidated bottom; permanent flooding
	R1UBV	Riverine; tidal; unconsolidated bottom; permanent tidal
	R3UBH	Riverine; upper perennial; unconsolidated bottom; perment flooding
FEMA Shoreline		
	Zone A3	Area of 100-year floods
	EL8	Base flood elevation = 8 ft

BOWLINE POINT

Soil Survey

	HcC	Hinckley gravelly loamy sand, 8 – 15% slopes
	HdB	Hinckley-urban land complex, 0 – 8% slopes
	HcD	Hinckley gravelly loamy sand, 15 – 25% slopes
	Ip	Ipswich mucky peat
	Ur	Udorthents, refuse substratum
	Us	Udorthents, smoothed
	Uw	Udorthents, wet substratum
	Ux	Urban land
DEC Wetlands		
	HS-5	Indicates a wetlands >12.4 acres (minimum size for qualifying as a DEC wetlands)

NWI Wetlands		
	E1UBL6	Estuarine; subtidal; unconsolidated bottom; (subtidal); oligohaline
	E2EM1N6	Estuarine; intertidal; emergent; persistent; regular flooding; oligohaline
	EZEM1P6	Estuarine; intertidal; emergent; persistent; irregular flooding; oligohaline
	PEM1C	Palustrine; emergent; persistent; seasonal flooding/well drained
	PEM1E	Palustrine; emergent; persistent; seasonal flooding/saturated
	PEM1F	Palustrine; emergent; persistent; semipermanent flooding
	PFO1E	Palustrine; forested; broad-leaved deciduous; seasonal flooding/saturated
	PFO1R	Palustrine: forested; broad-leaved deciduous; seasonal-tidal
	PSS1A	Palustrine; scrub-shrub; broad-leaved deciduous; temporary flooding
	PSS1E	Palustrine; scrub-shrub; broad-leaved deciduous; seasonal flooding/saturated
	PUBF	Palustrine; unconsolidated bottom; semipermanent flooding
	$PUBF_x$	Palustrine; unconsolidated bottom; semipermanent flooding; excavated
	$PUBH_x$	Palustrine; unconsolidated bottom; permanent flooding; excavated
FEMA Shoreline		
	Zone A	Area of 100-year floods
	Zone B	Area of 100-500 year floods
	Zone C	Area of minimal flooding

Appendix IV-3

Correspondence

March 9, 1999
File No. 115-187

Diane Rusanowsky
Habitat & Protected Resource Division
National Marine Fisheries Service
212 Rodgers Avenue
Milford, CT 06460

RE: State Pollutant Discharge Elimination System Permits for Bowline Point, Indian Point 2 & 3, and Roseton Steam Electric Generating Stations

Dear Ms. Rusanowsky,

Lawler, Matusky & Skelly Engineers LLP (LMS) is conducting an inventory of the natural resources in the vicinity of Roseton, Indian Point Units 2 and 3, and Bowline power plants. The plants are located in Orange, Rockland and Westchester Counties. The areas of study are identified on the enclosed topographic U.S. Geological Survey (USGS) maps labeled the following: Map 1: Location of the Roseton Generating Station –USGS quadrangle map, Wappingers Falls, NY; Map 2: Location of the Indian Point Generating Station – USGS quadrangle map, Peekskill, NY; and Map 3: Location of the Bowline Point Generating Station – USGS quadrangle map, Haverstraw, NY.

We ask you to please provide us with any information on any rare or significant species and communities in the indicated area of study.

If you have any questions regarding this request, please call me at (914) 735-8300 Ext.294. Thank you very much for your assistance.

Respectfully,

Kara Sprague
Project Coordinator
Lawler, Matusky & Skelly Engineers

Enc.

cc: Susan Metzger

March 9, 1999
File No. 115-187

Nancy Davis-Ricci
New York Natural Heritage Program
Information Services
New York State Department of Environmental Conservation
700 Troy- Schenectady Road
Albany, New York 12110-2400

RE: State Pollutant Discharge Elimination System Permits for Bowline Point, Indian Point 2 & 3, and Roseton Steam Electric Generating Stations

Dear Ms. Davis- Ricci,

Lawler, Matusky & Skelly Engineers LLP (LMS) is conducting an inventory of the natural resources in the vicinity of Roseton, Indian Point Units 2 and 3, and Bowline power plants. The plants are located in Orange, Rockland and Westchester Counties. The areas of study are identified on the enclosed topographic U.S. Geological Survey (USGS) maps labeled the following: Map 1: Location of the Roseton Generating Station –USGS quadrangle map, Wappingers Falls, NY; Map 2: Location of the Indian Point Generating Station – USGS quadrangle map, Peekskill, NY; and Map 3: Location of the Bowline Point Generating Station – USGS quadrangle map, Haverstraw, NY.

We ask you to please provide us with any information on any rare or significant species and communities in the indicated area of study.

If you have any questions regarding this request, please call me at (914) 735-8300 Ext.294. Thank you very much for your assistance.

Respectfully,

Kara Sprague
Project Coordinator
Lawler, Matusky & Skelly Engineers

Enc.

cc: Susan Metzger

New York State Department of Environmental Conservation
Division of Fish, Wildlife & Marine Resources
Wildlife Resources Center – New York Natural Heritage Program
700 Troy-Schenectady Road, Latham, New York 12110-2400
Phone: (518) 783-3932 FAX: (518) 783-3916

John P. Cahill
Commissioner

March 26, 1999

Kara Sprague
Lawler, Matusky & Skelly Engineers
1 Blue Hill Plaza, PO Box 1509
Pearl River, NY 10965

Dear Ms. Sprague:

We have reviewed the New York Natural Heritage Program files with respect to your recent request for biological information concerning the State Pollutant Discharge Elimination System Permits for Bowline Point, Indian Point 2 and 3, and Roseton Steam Electric Generating Stations, sites as as indicated on your enclosed maps, located in the Towns of Newburgh, Haverstraw and Cortlandt, Counties of Orange, Rockland and Westchester.

Enclosed is a computer printout covering the area you requested to be reviewed by our staff. The information contained in this report is considered sensitive and may not be released to the public without permission from the New York Natural Heritage Program.

Your project location is within, or adjacent to, a designated Significant Coastal Fish and Wildlife Habitat. This habitat is part of New York State's Coastal Management Program (CMP), which is administered by the NYS Department of State (DOS). Projects which may impact the habitat are reviewed by DOS for consistency with the CMP. For more information regarding this designated habitat and applicable consistency review requirements, please contact:

Greg Capobianco or Steven C. Resler - (518) 474-6000
NYS Department of State
Division of Coastal Resources and Waterfront Revitalization
162 Washington Avenue, Albany, NY 12231

Our files are continually growing as new habitats and occurrences of rare species and communities are discovered. In most cases, site-specific or comprehensive surveys for plant and animal occurrences have not been conducted. For these reasons, we can only provide data which have been assembled from our files. We cannot provide a definitive statement on the presence or absence of species, habitats or natural communities. This information should not be substituted for on-site surveys that may be required for environmental assessment.

This response applies only to known occurrences of rare animals, plants, natural communities and/or significant wildlife habitats. Please contact the appropriate NYS DEC Regional Office, Division of Environmental Permits, at the address enclosed for information regarding any regulated areas or permits that may be required (e.g., regulated wetlands) under State Law.

If this proposed project is still active one year from now we recommend that you contact us again so that we can update this response.

Sincerely,

Teresa Mackey

Teresa Mackey
Information Services
NY Natural Heritage Program

Encs.

cc: Reg. 3, Wildlife Mgr.
Reg. 3, Fisheries Mgr.
Peter Nye, Endangered Species Unit, Delmar
Pat Festa, Bureau of Fisheries, Wolf Rd, Albany

NATURAL HERITAGE REPORT on RARE SPECIES and ECOLOGICAL COMMUNITIES

Prepared 24 MAR 1999 by NY Natural Heritage Program, NYS DEC, Latham, New York.

Records with a PRECISION value of "S" are known to be in a location which may be impacted by the proposed action.
Records with a PRECISION value of "M" may possibly occur within the project area in appropriate habitat.
This report contains SENSITIVE information which should be treated in a sensitive manner -- Please see cover letter.

REFER TO THE USERS GUIDE FOR EXPLANTIONS OF CODES, RANKS, AND FIELDS.

* LOCATION SCIENTIFIC NAME & Common Name	NY LEGAL STATUS & HERITAGE RANK	FEDERAL STATUS	PRECISION & ACRES	EORANK & LAST SEEN	GENERAL HABITAT AND QUALITY	TOWN(S) & DETAILED LOCATION	USGS TOPO QUAD LAT & LONG	OFFICE USE
CAREX MOLESTA Troublesome sedge VASCULAR PLANT	RARE G4 S2		M	H 1957		HAVERSTRAW. N SIDE OF GAS TANK, E OF WILLOW ROAD, BESIDE HUDSON RIVER IN HAVERSTRAW.	HAVERSTRAW 41 12 20 N 73 57 49 W	410732 16

4 Records Processed

NATURAL HERITAGE REPORT on RARE SPECIES and ECOLOGICAL COMMUNITIES

Prepared 24 MAR 1999 by NY Natural Heritage Program, NYS DEC, Latham, New York.

Records with a PRECISION value of "S" are known to be in a location which may be impacted by the proposed action.
Records with a PRECISION value of "M" may possibly occur within the project area in appropriate habitat.
This report contains SENSITIVE information which should be treated in a sensitive manner -- Please see cover letter.

REFER TO THE USERS GUIDE FOR EXPLANTIONS OF CODES, RANKS, AND FIELDS.

* LOCATION SCIENTIFIC NAME & Common Name	NY LEGAL STATUS & HERITAGE RANK	FEDERAL STATUS	PRECISION & ACRES	EORANK & LAST SEEN	GENERAL HABITAT AND QUALITY	TOWN(S) & DETAILED LOCATION	USGS TOPO QUAD LAT & LONG	OFFICE USE
* HUDSON RIVER MILE 44-56								
ACIPENSER BREVIROSTRUM Shortnose sturgeon FISH	ENDANGERED G3 S1	LE	S	E 1986	12 MILE SECTION OF DEEP, TURBULENT, NARROW RIVER.	HIGHLANDS, CORNWALL, PHILIPSTOWN, CORTLANDT. 12 MILE SECTION OF HUDSON RIVER FROM CORNWALL S TO DUNDERBERG MT.	PEEKSKILL 41 20 47 N 73 57 47 W	410735 53 BOF
ANADROMOUS FISH CONCENTRATION AREA	UNPROTECTED S3		S	E 1986	12 MILE SECTION OF DEEP TURBULENT NARROW RIVER.	HIGHLANDS, CORNWALL, PHILIPSTOWN, CORTLANDT. HUDSON RIVER FROM CORNWALL SOUTH TO DUNDERBERG MT, RIVER MILE 44-56.	PEEKSKILL 41 20 47 N 73 57 47 W	410735 52
* WAPPINGERS CREEK MOUTH								
ANADROMOUS FISH CONCENTRATION AREA	UNPROTECTED S3		S 222	E 1986	2 MI SEGMENT OF FRESHWATER TRIBUTARY, PERENNIAL, TIDAL WARMWATER, 180 SQUARE MI DRAINAGE, DAMMED UPSTREAM.	WAPPINGER, POUGHKEEPSIE. WAPPINGERS CREEK, TRIBUTARY ON E SIDE OF HUDSON RIVER BETWEEN TOWNS OF POUGHKEEPSIE AND WAPPINGER.	WAPPINGERS FALLS 41 34 44 N 73 56 56 W	410735 9
* WILLOW ROAD GAS TANK								

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL PERMITS REGIONAL OFFICES

REGION	COUNTIES	NAME	ADDRESS AND PHONE NO.
Region 1	Nassau Suffolk	Robert Greene Permit Administrator	Loop Road, Bldg. 40 SUNY Stony Brook, NY 11790-2356 (516) 444-0365
Region 2	New York City	George Danskin Permit Administrator	Hunters Point Plaza 4740 21st Street Long Island City, NY 11101-5407 (718) 482-4997
Region 3	Dutchess Orange Putnam Rockland, Sullivan Ulster, Westchester	Margaret Duke Permit Administrator	21 South Putt Corners Road New Paltz, NY 12561-1696 (914) 256-3059
Region 4	Albany Columbia Delaware Greene, Montgomery, Otsego Rensselaer, Schenectady, Schoharie	William J. Clarke Permit Administrator	1150 N. Westcott Road Schenectady, NY 12306-2014 (518) 357-2234
Region 5	Clinton Essex Franklin Fulton, Hamilton Saratoga, Warren, Washington	Richard Wild Permit Administrator	Route 86 Ray Brook, NY 12977 (518) 897-1234
Region 6	Herkimer Jefferson Lewis Oneida, St. Lawrence	Randy Vaas Permit Administrator	State Office Building 317 Washington Street Watertown, NY 13601 (315) 785-2246
Region 7	Broome Cayuga Chenango Cortland, Madison, Onondaga Oswego, Tioga, Tompkins	Ralph Manna, Jr. Permit Administrator	615 Erie Blvd. West Syracuse, NY 13204-2400 (315) 426-7439
Region 8	Chemung Genesee Livingston Monroe, Ontario, Orleans Schuyler, Seneca, Steuben Wayne, Yates	Albert Butkas Permit Administrator	6274 East Avon-Lima Road Avon, NY 14414 (716) 226-2466
Region 9	Allegany Cattaraugus Chautauqua Erie, Niagara, Wyoming	Steven Doleski Permit Administrator	270 Michigan Avenue Buffalo, NY 14203-2999 (716) 851-7165

USERS GUIDE TO NY NATURAL HERITAGE DATA

New York Natural Heritage Program, 700 Troy-Schenectady Road, Latham NY 12110-2400 phone: (518) 783-3932

NATURAL HERITAGE PROGRAM: The Natural Heritage Program is an ongoing, systematic, scientific inventory whose goal is to compile and maintain dat on the rare plants and animals native to New York State, and significant ecological communities. The data provided in the report facilitate sound plannin conservation, and natural resource management and help to conserve the plants, animals and ecological communities that represent New York's natural heritag

DATA SENSITIVITY: The data provided in the report are ecologically sensitive and should be treated in a sensitive manner. The report is for your in-hous use and should not be released, distributed or incorporated in a public document without prior permission from the Natural Heritage Program.

NATURAL HERITAGE REPORTS (may contain any of the following types of data):

COUNTY NAME: County where the occurrence of a rare species or significant ecological community is located.
TOWN NAME: Town where the occurrence of a rare species or significant ecological community is located.
USGS 7 ½' TOPOGRAPHIC MAP: Name of 7.5 minute US Geological Survey (USGS) quadrangle map (scale 1:24,000).
LAT: Centrum latitude coordinate of the location of the occurrence. Caution: latitude & longitude must be used with PRECISION (e.g. the location of an occurrence with M (minute) precision is not precisely known & is thought to occur within a 1.5 mile radius of the latitude/longitude coordinates).
LONG: Centrum longitude coordinate of the location of the occurrence. See also LAT above.
PRECISION: S - seconds: location known precisely. (within a 300' or 1-second radius of the latitude and longitude given.
M - minutes: location known only to within a 1.5 mile (1 minute) radius of the latitude and longitude given.
G - general: location known to within a 5 mile radius of the latitude and longitude given.
SIZE (acres): Approximate acres occupied by the rare species or significant ecological community at this location.
SCIENTIFIC NAME: Scientific name of the occurrence of a rare species or significant ecological community.
COMMON NAME: Common name of the occurrence of a rare species or significant ecological community.
ELEMENT TYPE: Type of element (i.e. plant, animal, significant ecological community, other, etc.)
LAST SEEN: Year rare species or significant ecological community last observed extant at this location.
EO RANK: Comparative evaluation summarizing the quality, condition, viability and defensibility of this occurrence. Use with LAST SEEN and PRECISION.
A-E = Extant: A=excellent, B=good, C=marginal, D=poor, E=extant but with insufficient data to assign a rank of A - D.
F = Failed to find. Did not locate species, but habitat is still there and further field work is justified.
H = Historical. Historical occurrence without any recent field information.
X = Extirpated. Field/other data indicates element/habitat is destroyed and the element no longer exists at this location.
? = Unknown.
Blank = Not assigned.

NEW YORK STATE STATUS (animals): Categories of Endangered and Threatened species are defined in New York State Environmental Conservation Law section 11-0535. Endangered, Threatened, and Special Concern species are listed in regulation 6NYCRR 182.5.

E = Endangered Species: any species which meet one of the following criteria:
1) Any native species in imminent danger of extirpation or extinction in New York.
2) Any species listed as endangered by the United States Department of the Interior, as enumerated in the Code of Federal Regulations 50 CFR 17.11.

T = Threatened Species: any species which meet one of the following criteria:
1) Any native species likely to become an endangered species within the foreseeable future in NY.
2) Any species listed as threatened by the U.S. Department of the Interior, as enumerated in the Code of the Federal Regulations 50 CFR 17.11.

SC = Special Concern Species: those species which are not yet recognized as endangered or threatened, but for which documented concern exists for their continued welfare in New York. Unlike the first two categories, species of special concern receive no additional legal protection under Environmental Conservation Law section 11-0535 (Endangered and Threatened Species).

P = Protected Wildlife (defined in Environmental Conservation Law section 11-0103): wild game, protected wild birds, and endangered species of wildlife.

U = Unprotected (defined in Environmental Conservation Law section 11-0103): the species may be taken at any time without limit; however a license to take may be required.

G = Game (defined in Environmental Conservation Law section 11-0103): any of a variety of big game or small game species as stated in the Environmental Conservation Law; many normally have an open season for at least part of the year, and are protected at other times.

NEW YORK STATE STATUS (plants): The following categories are defined in regulation 6NYCRR part 193.3 and apply to NYS Environmental Conservation Law section 9-1503.

(blank) = no state status

E = Endangered Species: listed species are those with:
1) 5 or fewer extant sites, or
2) fewer than 1,000 individuals, or
3) restricted to fewer than 4 U.S.G.S. 7 ½ minute topographical maps, or
4) species listed as endangered by U.S. Department of Interior, as enumerated in Code of Federal Regulations 50 CFR 17.11.

T = Threatened: listed species are those with:
1) 6 to fewer than 20 extant sites, or
2) 1,000 to fewer than 3,000 individuals, or
3) restricted to not less than 4 or more than 7 U.S.G.S. 7 and ½ minute topographical maps, or
4) listed as threatened by U.S. Department of Interior, as enumerated in Code of Federal Regulations 50 CFR 17.11.

R = Rare: listed species have:
1) 20 to 35 extant sites, or
2) 3,000 to 5,000 individuals statewide.

U = Unprotected

V = Exploitably vulnerable: listed species are likely to become threatened in the near future throughout all or a significant portion of their range within the state if causal factors continue unchecked.

NEW YORK STATE STATUS (communities): At this time there are no categories defined for communities.

continued on next page

March 9, 1999
File No. 115-187

Leonard Corin
Field Supervisor
U.S. Fish & Wildlife
United State Department of the Interior
3817 Luker Road
Cortland, New York 13045

RE: State Pollutant Discharge Elimination System Permits for Bowline Point, Indian Point 2 & 3, and Roseton Steam Electric Generating Stations

Dear Mr. Corin,

Lawler, Matusky & Skelly Engineers LLP (LMS) is conducting an inventory of the natural resources in the vicinity of Roseton, Indian Point Units 2 and 3, and Bowline power plants. The plants are located in Orange, Rockland and Westchester Counties. The areas of study are identified on the enclosed topographic U.S. Geological Survey (USGS) maps labeled the following: Map 1: Location of the Roseton Generating Station –USGS quadrangle map, Wappingers Falls, NY; Map 2: Location of the Indian Point Generating Station – USGS quadrangle map, Peekskill, NY; and Map 3: Location of the Bowline Point Generating Station – USGS quadrangle map, Haverstraw, NY.

We ask you to please provide us with any information on any rare or significant species and communities in the indicated area of study.

If you have any questions regarding this request, please call me at (914) 735-8300 Ext.294. Thank you very much for your assistance.

Respectfully,

Kara Sprague
Project Coordinator
Lawler, Matusky & Skelly Engineers

Enc.

cc: Susan Metzger

United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, NY 13045

March 26, 1999

Ms. Kara Sprague
Project Coordinator
Lawler, Matusky & Skelly Engineers
P.O. Box 1509
Pearl River, NY 10965

Dear Ms. Sprague:

This responds to your letter of March 9, 1999, requesting information on the presence of endangered or threatened species in the vicinity of the following locations:

1. The Roseton Steam Electric Generating Station in the Town of Newburgh, Ulster County, New York.

2. The Indian Point Steam Electric Generating Station, Units 2 & 3, in the Town of Peekskill, Putnam County, New York.

3. The Bowline Steam Electric Generating Station in the Town of Haverstraw, Rockland County, New York.

The information will be used in application for New York State Pollutant Discharge Elimination System Permits for the above steam electric generating stations.

Except for occasional transient individuals, no Federally listed or proposed endangered or threatened species under our jurisdiction are known to exist in the respective project impact areas. Therefore, no Biological Assessment or further Section 7 consultation under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) is required with the U.S. Fish and Wildlife Service (Service). Should project plans change, or if additional information on listed or proposed species becomes available, this determination may be reconsidered.

The above comments pertaining to endangered species under our jurisdiction are provided pursuant to the Endangered Species Act. This response does not preclude additional Service comments under the Fish and Wildlife Coordination Act or other legislation.

Federally listed endangered and threatened marine species may be found near the respective project areas. These species are under the jurisdiction of the National Marine Fisheries Service. You should contact Mr. Stanley Gorski, Habitat and Protected Resources Division, Area Coordinator, National Marine Fisheries Service, James J. Howard Marine Sciences Laboratory, 74 Magruder Road, Highlands, NJ 07732, for additional information (telephone: [908] 872-3037).

For additional information on fish and wildlife resources or State-listed species, we suggest you contact:

New York State Department
of Environmental Conservation
Region 3
21 South Putt Corners Road
New Paltz, NY 12561-1676
(914) 256-3000

New York State Department
of Environmental Conservation
Wildlife Resources Center - Information Services
New York Natural Heritage Program
700 Troy-Schenectady Road
Latham, NY 12110-2400
(518) 783-3932

National Wetlands Inventory (NWI) maps may or may not be available for the respective project areas. However, while the NWI maps are reasonably accurate, they should not be used in lieu of field surveys for determining the presence of wetlands or delineating wetland boundaries for Federal regulatory purposes. Copies of specific NWI maps can be obtained from:

Cornell Institute for Resource Information Systems
302 Rice Hall
Cornell University
Ithaca, NY 14853
Telephone: (607) 255-4864

Work in certain waters and wetlands of the United States may require a permit from the U.S. Army Corps of Engineers (Corps). If a permit is required, in reviewing the application pursuant to the Fish and Wildlife Coordination Act, the Service may concur, with or without stipulations, or recommend denial of the permit depending upon the potential adverse impacts on fish and wildlife resources associated with project implementation. The need for a Corps permit may be determined by contacting Mr. Joseph Seebode, Chief, Regulatory Branch, U.S. Army Corps of Engineers, 26 Federal Plaza, New York, NY 10278 (telephone: [212] 264-3996).

If you require additional information please contact Michael Stoll at (607) 753-9334.

Sincerely,

Mark W. Clough
ACTING FOR

David A. Stilwell
Acting Field Supervisor

cc: NYSDEC, New Paltz, NY (Environmental Permits)
NYSDEC, Latham, NY
NMFS, Highlands, NJ (Attn: S. Gorski)
NMFS, Milford, CT
COE, New York, NY

Appendix IV-4

Waste Streams

IV-4. INDIAN POINT NON-COOLING WATER WASTE STREAMS

001B – Steam Generator Blowdown

Water from the nuclear steam generator containing various impurities – e.g., chlorides, sulfate, calcium, magnesium, and some organic acids. This water is sent to a flash tank where it is cooled before release to the river.

001C and 001D – Primary Wastes

These are intermittent discharges of treated (filtration/ion exchange) primary (nuclear system) wastewater. The source of the waste is generally primary wastewater and floor drains from the primary side of the plant. The discharged water in these streams may contain boron and low ppb concentrations of lithium, chromium, and other ionic impurities. These wastes are treated by filtration and ion exchange systems prior to their discharge.

001E – Make-Up Ion Exchange Plant Wastes

The ion exchange plants treat feedwater for the steam generators by removing ionic impurities. These wastes consist of acidic (H_2SO_4) and caustic (NaOH) rinse wastes and rinse water from the cation and anion resin regenerations. The regeneration wastes are neutralized prior to discharge.

001G – Service Boiler Blowdown

The house service boilers supply steam for heating and auxiliary equipment. Blowdown of the boilers is necessary to prevent the accumulation of solids. This is a continuous discharge when a service boiler is in operation.

001J – Secondary Floor Drains

This is typically a continuous discharge of city water, river water, and condensate from floor drains on the secondary side of the plant. There are no chemicals added or disposed

of through this outfall. This discharge is monitored to ensure that there is no visible oil sheen present.

001K – Unit 1 & 2 Make-Up Filter Backwash

This is an intermittent discharge. City water is treated by carbon filters and sand filters before it goes through the ion exchange plant (see 001E). Each of the two carbon filters and the two sand filters are backwashed and rinsed to the filter backwash pit, which overflows to the discharge canal. Carbon filters remove raw water impurities and sand filters remove flocculated (aluminum sulfate) raw water impurities.

001L – Unit 3 High and Low Total Dissolved Solids Tank (TDS)

TDS tank water has been used to either flush, rinse, or regenerate resin for the Condensate Polisher Facility (CPF), which pretreates feedwater for the steam generators by removing ionic impurities, and also acts as a filtration device. TDS water is first pumped to sumps, and then pumped to one of two holding tanks. It contains trace levels of boron, iron, copper, and fluorides.

Appendix IV-5

Coastal Assessment Forms

NEW YORK STATE DEPARTMENT OF STATE
COASTAL MANAGEMENT PROGRAM

Federal Consistency Assessment Form

applicant, seeking a permit, license, waiver, certification or similar type of approval from a federal agency which is subject to New York State Coastal Management Program (CMP, shall complete this assessment form for any proposed activity that will occur within and/or directly affect the State's Coastal Area. This form is intended to assist an applicant in certifying that the proposed activity is consistent with New York State's CMP as required by U.S. Department of Commerce regulations (15 CFR 930.57). It should be completed at the time when the federal application is prepared. The Department of State will use the completed form and accompanying information in its review of the applicant's certification of consistency.

A. APPLICANT

1. Name: Central Hudson Gas & Electric Corporation
(please print)

2. Address: 992 River Road, Newburgh, NY 12550

3. Telephone: Area Code ( ) (914) 562 - 5757

B. PROPOSED ACTIVITY

1. Brief description of activity: Renewal of State Pollutant Discharge Elimination System (SPDES) permit for Roseton Generating Station

2. Purpose of activity: same as above

3. Location of activity:

Orange	Newburgh	992 River Road
County	City, Town or Village	Street or Site Description

4. Type of federal permit/license required: N/SPDES Permit

5. Federal application number, if known:

6. If a state permit/license was issued or is required for the proposed activity, identify the state agency and provide the application or permit number, if known: New York State Department of Environmental Conservation

C. COASTAL ASSESSMENT Check either "YES" or "NO" for each of the following questions. The numbers following each question refer to the policies described in the CMP document (see footnote on page 2) which may be affected by the proposed activity.

	YES	NO
1. Will the proposed activity result in any of the following:		
a. Large physical change to a site within the coastal area which will require the preparation of an environmental impact statement? (11, 22, 25, 32, 37, 38, 41, 43)	___	X
b. Physical alteration of more than two acres of land along the shoreline, land under water or coastal waters? (2, 11, 12, 20, 28, 35, 44)	___	X
c. Revitalization/redevelopment of a deteriorated or underutilized waterfront site? (1)	___	X
d. Reduction of existing or potential public access to or along coastal waters? (19, 20)	___	X
e. Adverse effect upon the commercial or recreational use of coastal fish resources? (9,10)	___	X
f. Siting of a facility essential to the exploration, development and production of energy resources in coastal waters or on the Outer Continental Shelf? (29)	___	X
g. Siting of a facility essential to the generation or transmission of energy? (27)	___	X
h. Mining, excavation, or dredging activities, or the placement of dredged or fill material in coastal waters? (15, 35)	___	X
i. Discharge of toxics, hazardous substances or other pollutants into coastal waters? (8, 15, 35)	___	X
j. Draining of stormwater runoff or sewer overflows into coastal waters? (33)	___	X
k. Transport, storage, treatment, or disposal of solid wastes or hazardous materials? (36, 39)	___	X
l. Adverse effect upon land or water uses within the State's small harbors? (4)	___	X
2. Will the proposed activity affect or be located in, on, or adjacent to any of the following:		
a. State designated freshwater or tidal wetland? (44)	___	X
b. Federally designated flood and/or state designated erosion hazard area? (11, 12, 17,)	___	X
c. State designated significant fish and/or wildlife habitat? (7)	___	X
d. State designated significant scenic resource or area? (24)	___	X
e. State designated important agricultural lands? (26)	___	X
f. Beach, dune or barrier island? (12)	___	X
g. Major ports of Albany, Buffalo, Ogdensburg, Oswego or New York? (3)	___	X
h. State, county, or local park? (19, 20)	___	X
i. Historic resource listed on the National or State Register of Historic Places? (23)	___	X

a. Waterfront site? (12, 21, 22) . . . . . ___ X
b. Provision of new public services or infrastructure in undeveloped or sparsely populated sections of the coastal area? (5) . . . . . ___ X
c. Construction or reconstruction of a flood or erosion control structure? (13, 14, 16) . . . . . ___ X
d. State water quality permit or certification? (30, 38, 40) . . . . . X ___
e. State air quality permit or certification? (41, 43) . . . . . ___ X

4. Will the proposed activity occur within and/or affect an area covered by a State approved local waterfront revitalization program? (see policies in local program document*) . . . . . ___ X

D. ADDITIONAL STEPS

1. If all of the questions in Section C are answered "NO", then the applicant or agency shall complete Section E and submit the documentation required by Section F.

2. If any of the questions in Section C are answered "YES", then the applicant or agent is advised to consult the CMP, or where appropriate, the local waterfront revitalization program document*. The proposed activity must be analyzed in more detail with respect to the applicable state or local coastal policies. In the space provided below or on a separate page(s), the applicant or agent shall: (a) identify, by their policy numbers, which coastal policies are affected by the activity, (b) briefly assess the effects of the activity upon the policy; and, (c) state how the activity is consistent with each policy. Following the completion of this written assessment, the applicant or agency shall complete Section E and submit the documentation required by Section F.

E. CERTIFICATION

The applicant or agent must certify that the proposed activity is consistent with the State's CMP or the approved local waterfront revitalization program, as appropriate. If this certification cannot be made, the proposed activity shall not be undertaken. If this certification can be made, complete this Section.

"The proposed activity complies with New York State's approved Coastal Management Program, or with the applicable approved local waterfront revitalization program, and will be conducted in a manner consistent with such program."

Applicant/Agent's Name: Central Hudson Gas & Electric Corporation

Address: 992 River Road Newburgh, NY 12550

Telephone: Area Code ( ) (914) 562-5757

Applicant/Agent's Signature: Matthew J. Dale Date: 3/30/99

F. SUBMISSION REQUIREMENTS

1. The applicant or agent shall submit the following documents to the New York State Department of State, Division of Coastal Resources and Waterfront Revitalization, 162 Washington Avenue, Albany, New York 12231.

   a. Original signed form.
   b. Copy of the completed federal agency application.
   c. Other available information which would support the certification of consistency.

2. The applicant or agent shall also submit a copy of this completed form along with his/her application to the federal agency.

3. If there are any questions regarding the submission of this form, contact the Department of State at (518) 474-6000.

*These state and local documents are available for inspection at the offices of many federal agencies, Department of Environmental Conservation and Department of State regional offices, and the appropriate regional and county planning agencies. Local program documents are also available for inspection at the offices of the appropriate local government.

NEW YORK STATE DEPARTMENT OF STATE
COASTAL MANAGEMENT PROGRAM

Federal Consistency Assessment Form

An applicant, seeking a permit, license, waiver, certification or similar type of approval from a federal agency which is subject to the New York State Coastal Management Program (CMP, shall complete this assessment form for any proposed activity that will occur within and/or directly affect the State's Coastal Area. This form is intended to assist an applicant in certifying that the proposed activity is consistent with New York State's CMP as required by U.S. Department of Commerce regulations (15 CFR 930.57). It should be completed at the time when the federal application is prepared. The Department of State will use the completed form and accompanying information in its review of the applicant's certification of consistency.

A. APPLICANT

1. Name: ORANGE AND ROCKLAND UTILITIES, INC. (please print)
2. Address: ONE BLUE HILL PLAZA, PEARL RIVER, NEW YORK 10965
3. Telephone: Area Code ( ) (914) 577-2989

B. PROPOSED ACTIVITY

1. Brief description of activity: RENEWAL OF STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM (SPDES) FOR BOWLINE STEAM ELECTRIC GENERATING STATION.
2. Purpose of activity: SAME AS ABOVE
3. Location of activity:

ROCKLAND	VILLAGE OF W. HAVERSTRAW	SAMSONDAL AVE.
County	City, Town or Village	Street or Site Description

4. Type of federal permit/license required: SPDES PERMIT
5. Federal application number, if known:
6. If a state permit/license was issued or is required for the proposed activity, identify the state agency and provide the application or permit number, if known: NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

C. COASTAL ASSESSMENT Check either "YES" or "NO" for each of the following questions. The numbers following each question refer to the policies described in the CMP document (see footnote on page 2) which may be affected by the proposed activity.

	YES	NO
1. Will the proposed activity result in any of the following:		
a. Large physical change to a site within the coastal area which will require the preparation of an environmental impact statement? (11, 22, 25, 32, 37, 38, 41, 43)		X
b. Physical alteration of more than two acres of land along the shoreline, land under water or coastal waters? (2, 11, 12, 20, 28, 35, 44)		X
c. Revitalization/redevelopment of a deteriorated or underutilized waterfront site? (1)		X
d. Reduction of existing or potential public access to or along coastal waters? (19, 20)		X
e. Adverse effect upon the commercial or recreational use of coastal fish resources? (9,10)		X
f. Siting of a facility essential to the exploration, development and production of energy resources in coastal waters or on the Outer Continental Shelf? (29)		X
g. Siting of a facility essential to the generation or transmission of energy? (27)		X
h. Mining, excavation, or dredging activities, or the placement of dredged or fill material in coastal waters? (15, 35)		X
i. Discharge of toxics, hazardous substances or other pollutants into coastal waters? (8, 15, 35)		X
j. Draining of stormwater runoff or sewer overflows into coastal waters? (33)		X
k. Transport, stroage, treatment, or disposal of solid wastes or hazardous materials? (36, 39)		X
l. Adverse effect upon land or water uses within the State's small harbors? (4)		X
2. Will the proposed activity affect or be located in, on, or adjacent to any of the following:		
a. State designated freshwater or tidal wetland? (44)		X
b. Federally designated flood and/or state designated erosion hazard area? (11, 12, 17,)		X
c. State designated significant fish and/or wildlife habitat? (7) (LOCATED)	X	
d. State designated significant scenic resource or area? (24)		X
e. State designated important agricultural lands? (26)		X
f. Beach, dune or barrier island? (12)		X
g. Major ports of Albany, Buffalo, Ogdensburg, Oswego or New York? (3)		X
h. State, county, or local park? (19, 20)		X
i. Historic resource listed on the National or State Register of Historic Places? (23)		X

	YES	NO
a. Waterfront site? (2, 21, 22)	___	X
b. Provision of new public services or infrastructure in undeveloped or sparsely populated sections of the coastal area? (5)	___	X
c. Construction or reconstruction of a flood or erosion control structure? (13, 14, 16)	___	X
d. State water quality permit or certification? (30, 38, 40)	X	___
e. State air quality permit or certification? (41, 43)	___	X

4. Will the proposed activity occur within and/or affect an area covered by a State approved local waterfront revitalization program? (see policies in local program document*) ... ___ X

D. ADDITIONAL STEPS

1. If all of the questions in Section C are answered "NO", then the applicant or agency shall complete Section E and submit the documentation required by Section F.

2. If any of the questions in Section C are answered "YES", then the applicant or agent is advised to consult the CMP, or where appropriate, the local waterfront revitalization program document*. The proposed activity must be analyzed in more detail with respect to the applicable state or local coastal policies. In the space provided below or on a separate page(s), the applicant or agent shall: (a) identify, by their policy numbers, which coastal policies are affected by the activity, (b) briefly assess the effects of the activity upon the policy; and, (c) state how the activity is consistent with each policy. Following the completion of this written assessment, the applicant or agency shall complete Section E and submit the documentation required by Section F.

E. CERTIFICATION

The applicant or agent must certify that the proposed activity is consistent with the State's CMP or the approved local waterfront revitalization program, as appropriate. If this certification cannot be made, the proposed activity shall not be undertaken. If this certification can be made, complete this Section.

"The proposed activity complies with New York State's approved Coastal Management Program, or with the applicable approved local waterfront revitalization program, and will be conducted in a manner consistent with such program."

Applicant/Agent's Name: ORANGE AND ROCKLAND UTILITIES, INC.

Address: ONE BLUE HILL PLAZA, PEARL RIVER, NEW YORK 10965

Telephone: Area Code ( ) (914) 577-2989

Applicant/Agent's Signature: William D. Schaefer Jr. Date: 4/19/99

F. SUBMISSION REQUIREMENTS

1. The applicant or agent shall submit the following documents to the New York State Department of State, Division of Coastal Resources and Waterfront Revitalization, 162 Washington Avenue, Albany, New York 12231.

   a. Original signed form.
   b. Copy of the completed federal agency application.
   c. Other available information which would support the certification of consistency.

2. The applicant or agent shall also submit a copy of this completed form along with his/her application to the federal agency.

3. If there are any questions regarding the submission of this form, contact the Department of State at (518) 474-6000.

C.2,c.

"APPLICATION FOR A GENERAL INCIDENTAL TAKE PERMIT OR GENERAL AND INDIVIDUAL INCIDENTAL TAKE PERMITS UNDER THE ENDANGERED SPECIES ACT OF 1973" SUBMITTED TO U.S. DEPARTMENT OF COMMERCE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, NTIONAL MARINE FISHERIES SERVICE IN APRIL 1998."

*These state and local documents are available for inspection at the offices of many federal agencies, Department of Environmental Conservation and Department of State regional offices, and the appropriate regional and county planning agencies. Local program documents are also available for inspection at the offices of the appropriate local government.

NEW YORK STATE DEPARTMENT OF STATE
COASTAL MANAGEMENT PROGRAM

Coastal Assessment Form

A. INSTRUCTIONS (Please print or type all answers)

1. State agencies shall complete this CAF for pr NYCRR. This assessment is intended to sup determination of significance pursuant to the If it is determined that a proposed action assessment is intended to assist a state agen Section 600.4.

2. If any question in Section C on this form is answered "yes", then the proposed action may affect the achievement of the coastal policies contained in Article 42 of the Executive Law. Thus, the action should be analyzed in more detail and, if necessary, modified prior to either (a) making a certification of consistency pursuant to 19 NYCRR Part 600 or, (b) making the findings required under SEQR, 6 NYCRR, Section 617.9, if the action is one for which an environmental impact statement is being prepared. If an action cannot be certified as consistent with the coastal policies, it shall not be undertaken.

3. Before answering the questions in Section C, the preparer of this form should review the coastal policies contained in 19 NYCRR Section 600.5. A proposed action should be evaluated as to its significant beneficial and adverse effects upon the coastal area.

B. DESCRIPTION OF PROPOSED ACTION

1. Type of state agency action (check appropriate response):

(a) Directly undertaken (e.g. capital construction, planning activity, agency regulation, land transaction) ___
(b) Financial assistance (e.g. grant, loan, subsidy) ___
(c) Permit, license, certification X

2. Describe nature and extent of action: Renewal of Existing State Pollutant Discharge Elimination System Permit for the Indian Point Station Units 1,2 & 3

3. Location of action

Westchester	Buchanan	Indian Point Station
County	City, Town or Village	Street or Site Description

4. If an application for the proposed action has been filed with the state agency, the following information shall be provided:

(a) Name of applicant: New York Power Authority/Consolidated Edison Co. of New York, Inc.
(b) Mailing address: 123 Main Street, White Plains, New York 10601
(c) Telephone Number: Area Code (914) 681-6298
(d) State agency application number: ___

5. Will the action be directly undertaken, require funding, or approval by a federal agency?

Yes ___ No X If yes, which federal agency? ___

C. COASTAL ASSESSMENT (Check either "Yes" or "No for each of the following questions)

	YES	NO
1. Will the proposed action be located in, or contiguous to, or have a significant effect upon any of the resource areas identified on the coastal area map:		

1	(b) Scenic resources of statewide significance?	___	X
	(c) Important agricultural lands?	___	X

2. Will the proposed action have a significant effect upon:

(a)	Commercial or recreational use of fish and wildlife resources?	___	X
(b)	Scenic quality of the coastal environment?	___	X
(c)	Development of future, or existing water dependent uses?	___	X
(d)	Operation of the State's major ports?	___	X
(e)	Land and water uses within the State's small harbors?	___	X
(f)	Existing or potential public recreation opportunities?	___	X
(g)	Structures, sites or districts of historic, archeological or cultural significance to the State or nation?	___	X

	YES	NO
3. Will the proposed action involve or result in any of the following:		
(a) Physical alteration of two (2) acres or more of land along the shoreline, land under water or coastal waters?	___	X
(b) Physical alteration of five (5) acres or more of land located elsewhere in the coastal area?	___	X
(c) Expansion of existing public services or infrastructure in undeveloped or low density areas of the coastal area?	___	X
(d) Energy facility not subject to Article VII or VIII of the Public Service Law?	___	X
(e) Mining, excavation, filling or dredging in coastal waters?	___	X
(f) Reduction of existing or potential public access to or along the shore?	___	X
(g) Sale or change in use of state-owned lands located on the shoreline or under water?	___	X
(h) Development within a designated flood or erosion hazard area?	___	X
(i) Development on a beach, dune, barrier island or other natural feature that provides protection against flooding or erosion?	___	X
4. Will the proposed action be located in or have a significant effect upon an area included in an approved Local Waterfront Revitalization Program?	___	X

D. SUBMISSION REQUIREMENTS

If any question in Section C is answered "Yes", AND either of the following two conditions is met:

Section B.1(a) or B.1(b) is checked; or
Section B.1(c) is checked AND B.5 is answered "Yes",

THEN one copy of the completed Coastal Assessment Form shall be submitted to:

New York State Department of State
Coastal Management Program
162 Washington Avenue
Albany, New York 12231

If assistance or further information is needed to complete this form, please call the Department of State at (518) 474-3642.

E. REMARKS OR ADDITIONAL INFORMATION

er's Name: John J. Kelly (Please print) Telephone Number: (914) 681-6298

Director - RES Agency: New York Power Authority Date: _____

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Policy 7. Significant coastal fish and wildlife habitats, as identified on the coastal area map, shall be protected, preserved, and where practicable, restored so as to maintain that viability habitats.

The proposed activity will not affect any state designated significant fish and wildlife habitat.

IP2 and IP3 Permits Index

Tab	Date of Issuance/Renewal	Expiration Date	Duration	Agency	Permit Number	Plant(s)	Authorized Activity
1	6/10/1959			NYSDOH			Discharge of sewage effluent from the proposed sewage disposal works to serve the Indian Point Generating Station in the Village of Buchanan
2	10/14/1966			USAEC	CPPR-21	IP2	Construction of a pressurized water nuclear reactor to be located at the Indian Point site
3	6/22/1967	12/31/1968	~1.5 years	NYSDEC	8-31067		Construction of a new screen well and relocation of discharged channel
4	7/11/1967			VOB	427		Building permit for nuclear electric generating station
5	11/30/1967	1/31/1968	~2 mths	NYSDEC	8-78-67		Dredge a channel ~150 ft. wide by 1,800 ft. long in Lents Cove of Hudson River
6	4/12/1968			NYSDOH	HA680101		Permit to construct an air pollution facility
7	5/28/1968			VOB	458	IP3	Building permit for addition to IP3
8	5/28/1968			VOB	459	IP3	Building permit for addition to IP3
9	5/28/1968			VOB	460	IP3	Building permit for turbine room
10	7/15/1968			VOB	463		Building permit for fuel storage building
11	2/24/1969			VOB	473	IP3	Building permit for primary auxiliary building
12	8/13/1969			USAEC	CPPR-62	IP3	Construction of a utilization facility, designed to operate at 3,025 megawatts (thermal) located at the Indian Point site
13	8/25/1969			VOB	491		Building permit for waste holding tank pit
14	8/26/1969			VOB	492	IP3	Building permit for IP3 service building
15	12/7/1970			NYSDEC		IP1 & IP2	Water quality certification under Section 21(b) of Water Quality Improvement Act of 1970
16	4/24/1973			NYSDEC		IP1 & IP2	Water quality certification under Sections 401 and 402 of FWPCAA for operational testing period
17	9/24/1973			NYSDEC		IP1 & IP2	Water quality certification under Sections 401 and 402 of FWPCAA for full power operation
18	9/28/1973	9/28/2013	40 years	USAEC	DPR-26	IP2	Operation of IP2 at 100% of rated power
19	5/2/1975			NYSDEC		IP3	Water quality certification for operation
20	12/12/1975	12/12/2015	40 years	NRC	DPR-64	IP3	Operation of IP3
21	2/8/1975			EPA		IP1 & IP2	NPDES permit
22	4/24/1981			NYSDEC		IP1, IP2, & IP3	Water quality certification for operation, reflecting the shared discharge canal
23	5/14/1981	5/13/1986	5 years	NYSDEC	NY-0004472	IP1, IP2, & IP3	Discharge of wastewaters and stormwaters to waters of the state.
24	6/18/1982	6/18/1987	5 years	NYSDEC		IP1, IP2, & IP3	Water quality certification under Section 401 of FWPCAA
25	10/5/1984	10/5/1994	10 years	Dept of the Army (Corps of Engineers)	13384		Dredge a 15,000 square foot area to a depth of 27 feet below mean low water to remove 6,000 cubic yards of material with upland disposal (dredging in the Hudson River)
26	10/1/1987	10/1/1992	5 years	NYSDEC	NY-0004472	IP1, IP2, & IP3	Cooling water discharge through a common discharge canal
27	3/19/1990	3/19/1995	5 years	NYSDEC	3-5522-00011/00006	IP3	
28	3/1/1993	3/1/1998	5 years	NYSDEC	NY-0234826	Gas Turbines 1 & 2	Discharge of wastewaters to waters of the state.

Tab	Date of Issuance/Renewal	Expiration Date	Duration	Agency	Permit Number	Plant(s)	Authorized Activity
29	3/1/1993	3/1/1998	5 years	NYSDEC	NY-0250414	IP Simulator Transformer Vault	Discharge of wastewaters to waters of the state.
30	3/17/1993	5/30/1993	~2 mths	NYSDEC	3-5522-105/4-0	IP3	Remove debris and silt from the bases of the intake screens, dredge ~3,200 cubic yards of silt and debris from the intake approach, and remove ~800 cubic yards of silt from the intake forebays
31	2/1/1995	2/1/2000	5 years	NYSDEC	NY-0251135	IP Tank Farm	Discharge of wastewaters to waters of the state.
32	9/9/1996	9/9/2006	10 years	NYSDEC	3-5522-00105/00008	IP3	Accumulation and temporary onsite storage of mixed waste
33	10/17/1996	10/17/2001	5 years	EPA	NYD085503746	IP3	Accumulation and storage of mixed waste
34	2/28/1997	2/28/2007	10 years	NYSDEC	3-5522-00011/00018	IP3	Accumulation and temporary onsite storage of mixed waste
35	10/14/1997	10/14/2002	5 years	EPA	NYD991304411	IP2	Accumulation and temporary onsite storage of mixed waste
36	12/31/1997	12/31/2000	3 years	WCDOH	0152-00021	IP2 Gas Turbine 1	Operation of an air contamination source
37	12/31/1997	12/31/2000	3 years	WCDOH	0152-00022	IP2 Gas Turbine 2	Operation of an air contamination source
38	12/31/1997	12/31/2000	3 years	WCDOH	0152-00023	IP2 Gas Turbine 3	Operation of an air contamination source
39	3/1/1998	3/1/2003	5 years	NYSDEC	NY-0250414	IP Simulator Transformer Vault	Discharge of wastewaters to waters of the state.
40	3/1/1998	3/1/2003	5 years	NYSDEC	NY-0234826	Gas Turbines 1 & 2	Discharge of wastewaters to waters of the state.
41	3/31/1998	3/31/2000	2 years	NYSDEC	3-2140	IP2	Onsite bulk storage of >400K gallons of petroleum products
42	3/23/1999	3/23/2004	5 years	NYSDEC	3-5522-00105/00009	IP3	Operation of air emission sources (boilers, turbines, and generators)
43	3/23/1999	3/23/2004	5 years	NYSDEC	3-5522-00105/00010	IP3	Operation of air emission source
44	3/23/1999	3/23/2004	5 years	NYSDEC	3-5522-00105/00011	IP3	Operation of air emission source
45	3/23/1999	3/22/2004	5 years	NYSDEC	3-5522-00105/00012	IP3	Operation of air emission source (stationary combustion installation for Emission Points: 00001C; 00APRC; EDG31C; EDG32C; EDG33C; 00TSCC; 00IACDC; FPD01C; FPD02C)
46	3/23/1999	3/23/2004	5 years	NYSDEC	3-5522-00105/00013	IP3	Operation of air emission source
47	3/23/1999	3/23/2004	5 years	NYSDEC	3-5522-00105/00014	IP3	Operation of air emission source
48	3/23/1999	3/23/2004	5 years	NYSDEC	3-5522-00105/00015	IP3	Operation of air emission source
49	3/23/1999	3/23/2004	5 years	NYSDEC	3-5522-00105/00016	IP3	Operation of air emission source
50	5/5/1999	12/31/2000	1.5 years	NYSDEC	3-5522-00105/00019		Water quality certification for work on discharge canal tieback cables
51	5/5/1999	5/5/2001	2 years	NYSDEC	3-000071	IP3	Onsite bulk storage of hazardous substances
52	6/15/1999	6/15/2001	2 years	NYSDEC	3-000107	IP2	Hazardous substance bulk storage
53	10/26/1999	10/31/2000	1 year	NYSDOL	99-0894		Asbestos handling license
54	12/31/1999	12/31/2000	1 year	SCDHEC	0019-31-00		Transportation of radioactive waste into the state of South Carolina
55	2000	12/31/2000	License expires Dec. 31 of each year	TDEC	T-NY010-L00		Radioactive waste license for delivery

Tab	Date of Issuance/Renewal	Expiration Date	Duration	Agency	Permit Number	Plant(s)	Authorized Activity
56	2/1/2000	2/1/2005	5 years	NYSDEC	NY-0251135	IP Tank Farm	Discharge of wastewaters to waters of the state.
57	3/31/2000	3/31/2002	2 years	NYSDEC	3-2140		Major petroleum facility license
58	6/3/2000	6/3/2001	1 year	NYSDOL	99-0304		Asbestos handling license
59	9/29/2000	9/25/2005	5 years	NYSDEC	3-5522-00011/00019	IP2	Title V air emission -- covers Gas Turbines 1, 2 & 3, and House Boilers
60	12/31/2000	12/31/2001	1 year	SCDHEC	0019-31-00		Transportation of radioactive waste into the state of South Carolina
61	2001	12/31/2001	License expires Dec. 31 of each year	TDEC	T-NY010-L00		Transportation of radioactive waste into the state of Tennessee
62	6/27/2001	No expiration	No expiration	WCDOH	52-4493	IP2 Boiler	Operation of an air contamination source
63	9/9/2001	9/9/2006	5 years	NYSDEC	3-5522-00105/00027	IP3	Industrial SPDES - surface discharge
64	1/9/2002	No expiration	No expiration	NYSDEC	3-5522-00011/00026	IP2	Operation of air emission sources (boilers, turbines, and generators) - emissions cap for existing emission sources
65	6/30/2002	6/30/2003	1 year	USDOT	062300001 0331K		Hazardous materials certificate of registration
66	8/15/2002			Village of Buchanan	2143	IP2	Construction permit to construct General Services Building
67	3/1/2003	3/1/2008	5 years	NYSDEC	NY-0234826	Gas Turbines 1 & 2	Discharge of wastewaters to waters of the state.
68	3/1/2003	3/1/2008	5 years	NYSDEC	NY-0250414	IP Simulator Transformer Vault	Discharge of wastewaters to waters of the state.
69	10/24/2003			Village of Buchanan	1685	IP2	Certificate of Occupancy for General Services Building (floors 2, 3, and 4; entrance vestibule, and elevator lobby)
70	2/24/2004			Village of Buchanan	1706	IP2	Certificate of Occupancy for General Services Building (first floor conference center area)
71	12/28/2004	No expiration	No expiration	NYSDEC	3-5522-00011/00026	IP2	Operation of air emission sources (boilers, turbines, and generators) - emissions cap for existing emission sources
72	1/1/2004	12/31/2006	3 years	WCDOH	0152-00021	IP2 Gas Turbine 1	Operation of an air contamination source
73	1/1/2004	12/31/2006	3 years	WCDOH	0152-00022	IP2 Gas Turbine 2	Operation of an air contamination source
74	1/1/2004	12/31/2006	3 years	WCDOH	0152-00023	IP2 Gas Turbine 3	Operation of an air contamination source
75	1/1/2004	12/31/2006	3 years	WCDOH	52-5682	IP2 Vapor Extractor Air Permit	Operation of an air contamination source
76	1/9/2004			Village of Buchanan	1700	IP2	Certificate of Occupancy for General Services Building (first floor kitchen, cafeteria, dining room, office suites, service area, and utility space)
77	6/7/2004			NYSDEC	NYR 10H166	IP2	Stormwater discharge during construction of dry fuel cask storage
78	1/18/2005	No expiration	No expiration	WCDOH	52-6497	IP3 Boiler	Operation of an air contamination source
79	1/18/2005	No expiration	No expiration	WCDOH	52-6498	IP3 Training Center Boiler	Operation of an air contamination source
80	2/1/2005	2/1/2010	5 years	NYSDEC	NY-0251135	IP Tank Farm	Discharge of wastewaters to waters of the state.
81	4/6/2005	3/31/2007	~2 years	NYSDEC	3-2140	IP1 & IP2	Major petroleum facility license
82	7/8/2005	9/4/2007	~2 years	NYSDEC	3-000107	IP2	Onsite bulk storage of hazardous substances
83	9/1/2005	9/7/2010	5 years	WCDOH	3-166367	IP3	Onsite bulk storage of petroleum products
84	4/26/2006	4/30/2009	3 years	NYSDEC	12696	IP2	Pesticide application
85	4/26/2006	4/30/2009	3 years	NYSDEC	13163	IP3	Pesticide application

Tab	Date of Issuance/Renewal	Expiration Date	Duration	Agency	Permit Number	Plant(s)	Authorized Activity
86	6/8/2006	8/16/2008	2 years	NYSDEC	3-000071	IP3	Onsite bulk storage of hazardous substances
87	6/28/2006	6/30/2009	3 years	DOT	0627065520610Q	IP2	Radioactive and hazardous materials shipments
88	6/28/2006	6/30/2009	3 years	DOT	0627065520690Q	IP3	Radioactive and hazardous materials shipments
89	12/19/2006	12/31/2007	~1 year	SCDHEC	0019-31-07	IP2	Transportation of radioactive waste into the state of South Carolina
90	12/19/2006	12/31/2007	~1 year	SCDHEC	0072-31-07	IP3	Transportation of radioactive waste into the state of South Carolina
91	1/1/2007	12/31/2009	3 years	WCDOH	0152-00021	IP2 Gas Turbine 1	Operation of an air contamination source
92	1/1/2007	12/31/2009	3 years	WCDOH	0152-00022	IP2 Gas Turbine 2	Operation of an air contamination source
93	1/1/2007	12/31/2009	3 years	WCDOH	0152-00023	IP2 Gas Turbine 3	Operation of an air contamination source
94	1/1/2007	12/31/2009	3 years	WCDOH	0152-VE0001	IP2	Operation of an air contamination source
95	1/1/2007	12/31/2007	1 year	TDEC	T-NY010-L07	IP1 & IP2	Shipment of radioactive material into Tennessee to a disposal/processing facility
96	1/1/2007	12/31/2007	1 year	TDEC	T-NY005-L07	IP3	Shipment of radioactive material into Tennessee to a disposal/processing facility
97	9/4/2007	9/4/2009	2 years	NYSDEC	3-000107	IP2	Onsite bulk storage of hazardous substances
98	2/28/2008	2/28/2013	5 years	NYSDEC	NY-0250414	IP Simulator Transformer Vault	Discharge of wastewaters to waters of the state.
99	2/28/2008	2/28/2013	5 years	NYSDEC	NY-0234826	Gas Turbines 1 & 2	Discharge of wastewaters to waters of the state.
100	3/13/2008	No expiration	No expiration	Village of Buchanan	2259	ISFSI	Certificate of Occupancy for the ISFSI
101	9/7/2008	9/7/2010	2 years	NYSDEC	3-000071	IP3	Onsite bulk storage of hazardous substances
102	2009	12/31/2009	License expires Dec. 31 of each year	TDEC	T-NY-010-L09	IP2	Shipment of radioactive material into Tennessee to a disposal/processing facility
103	2009	12/31/2009	License expires Dec. 31 of each year	TDEC	T-NY-005-L09	IP3	Shipment of radioactive material into Tennessee to a disposal/processing facility
104	4/30/2009	4/30/2012	3 years	NYSDEC	12696	IP2	Pesticide application
105	4/30/2009	4/30/2012	3 years	NYSDEC	13163	IP3	Pesticide application
106	12/31/2009	12/31/2012	3 years	WCDOH	0152-00021	IP2 Gas Turbine 1	Operation of an air contamination source
107	12/31/2009	12/31/2012	3 years	WCDOH	0152-00022	IP2 Gas Turbine 2	Operation of an air contamination source
108	12/31/2009	12/31/2012	3 years	WCDOH	0152-00023	IP2 Gas Turbine 3	Operation of an air contamination source
109	8/16/2010	8/16/2012	2 years	NYSDEC	3-000071	IP3	Onsite bulk storage of hazardous substances
110	2011	12/31/2011	License expires Dec. 31 of each year	TDEC	T-NY-010-L11	IP2	Shipment of radioactive material into Tennessee to a disposal/processing facility
111	2011	12/31/2011	License expires Dec. 31 of each year	TDEC	T-NY-005-L11	IP3	Shipment of radioactive material into Tennessee to a disposal/processing facility
112	1/28/2011	9/7/2015	~5 years	WCDOH	3-166367	IP3	Onsite bulk storage of petroleum products
113	8/8/2011	9/4/2013	2 years	NYSDEC	3-000107	IP2	Onsite bulk storage of hazardous substances

Tab	Date of Issuance/Renewal	Expiration Date	Duration	Agency	Permit Number	Plant(s)	Authorized Activity
114	Date Unknown			NYSDEC	NY-0027065	IP3	Discharge of wastewaters to waters of the state
115	Date Unknown			NYSDEC	3-5522-0015/8		Hazardous waste storage facility (mixed waste)
116	Date Unknown			NYSDEC	NYR 00E125		Stormwater discharge during operation of the dry fuel cask storage project
117	Date Unknown			NYSDEC	NYD000765073	IP2	Hazardous waste generation
118	Date Unknown			NYSDEC	NYD000765073	IP3	Hazardous waste generation
119	Date Unknown	6/30/2012		DOT	051909552032RT	IP2	Radioactive and hazardous materials shipments
120	Date Unknown	6/30/2012		DOT	051909552037RT	IP3	Radioactive and hazardous materials shipments

TAB

IP2 & IP3 Permits

TAB 1

FORM SAN NO. 2-B.

NEW YORK STATE DEPARTMENT OF HEALTH "LIBER 25 263

BUREAU OF ENVIRONMENTAL SANITATION

AND

WATER POLLUTION CONTROL BOARD

PERMIT TO DISCHARGE SEWAGE OR WASTES

INTO THE WATERS OF THE STATE

Application having been duly made as provided by the Public Health Law, permission is hereby given to the Consolidated Edison Company of New York Incorporated, its successors and assigns, to discharge sewage effluent from the proposed sewage disposal works to serve the Indian Point Generating Station in the Village of Buchanan, as shown on the plans approved this day, into the ground waters of the State tributary to the Hudson River at the points on the property indicated on the approved plans

within the VILLAGE of BUCHANAN, WESTCHESTER COUNTY, NEW YORK
under the following conditions:

I. THAT this permit shall be revocable at any time or subject to modification or change when in the judgment of the Water Pollution Control Board such revocation, modification or change shall become necessary.

II. THAT the proposed sewage disposal works shown on the plans approved this day shall be fully constructed in complete conformity with such plans or approved amendments thereto.

III. THAT only sewage and no ground water, storm water or surface water from streets, foundations, roofs or other areas shall be admitted to the proposed sewage disposal works.

IV. THAT the sludge and scum shall be removed from any settling tank whenever they shall have accumulated so as to occupy one-fourth the capacity of the tank below the flow line.

V. THAT whenever sludge or scum is removed from a settling tank or any part of the system, it shall be done in such a manner as to cause no nuisance and the sludge or scum disposed of by burying in some remote place at least 250 feet from any house, road, well, spring, stream or other body of water and covered with not less than 6 inches of earth in such a manner that it will not flow or be washed by rain or melted snow or other means over the surface of the ground or into any well, spring, stream or other body of water.

VI. THAT whenever any seepage of sewage to the surface of the ground is detected, the Water Pollution Control Board shall be notified immediately and prompt action shall be taken by the owner to correct this condition satisfactorily.

VII. THAT whenever required by the Water Pollution Control Board, additional or more adequate works for the collection or disposal of sewage shall be installed and put in operation, plans for which shall first be submitted to and receive the approval of the said Board.

DEPARTMENT OF HEALTH

Dated June 10, 1959

By: [signature]
Chief, Sewerage and Wastes Section, Bureau Environmental Sanitation

By: [signature]
Executive Secretary, Water Pollution Control Bd.

NOTE.-This permit before being operative shall be recorded in the County Clerk's office of WESTCHESTER County.

over

264 LIBER 25

STATE OF NEW YORK }
COUNTY OF ALBANY } SS.

On the 10 TH day of JUNE in the year 1959, before me personally came JOHN C. HABERER residing in Delmar, N. Y., to me known, who being by me duly sworn, did depose and say, that he is Chief, Sewerage and Wastes Section of the Department of Health of the State of New York, the Department named in and which executed the above instrument; that said instrument was so executed pursuant to the authority vested in him by law and that he signed his name thereto pursuant to like authority.

KATHERINE H. CAMPION
Notary Public in the State of New York
Residing in Albany County
My Commission Expires March 31, 19..

STATE OF NEW YORK }
COUNTY OF ALBANY } SS.

On the 10 TH day of JUNE in the year 1959, before me personally came ANSELMO F. DAPPERT residing in Delmar, N. Y. to me known, who being by me duly sworn, did depose and say, that he is Executive Secretary of the Water Pollution Control Board of the Department of Health of the State of New York, the Department named in and which executed the above instrument; that said instrument was so executed pursuant to the authority vested in him by law and that he signed his name thereto pursuant to like authority.

KATHERINE H. CAMPION
Notary Public in the State of New York
Residing in Albany County
My Commission Expires March 31, 19..

Recorded in the office of the Clerk of the County of Westchester, in Liber 28, at Page 263 of Miscellaneous Records, on July 9, 1959, and returned to Mr. H.B. Guckel, Room 1500, 4 Irving Place, New York 3, N.Y.

RECORD
Sewer Permit

Clerk

JUL 9 59 0010 5 PAGE $ 3.50
NAME $
1 cert.

EDWARD L. WARREN
COUNTY CLERK

DEPUTY

TOTAL $ 3.50

TAB 2

Distribution:
Doc. Room — DRL Reading
Formal — R&PRSB Reading
Suppl. — Orig: HSteele
C. Henderson
E. G. Case
L. Kornblith (2)
N. Stoner (5)
R. Huard, encl. only
G. Page, encl. only
D. Skovholt, encl. only
P. Norian
M. Rosen
bcc: H. J. McAlduff, ORO
E. E. Hall, GMR/H
J. A. Harris, PI
E. Tremmel, IP
R. Leith, OC
O. Townsend
J. Verme, NMM
D. Nussbaumer, DML

Docket No. 50-247

OCT 14 1966

Consolidated Edison Company
of New York, Inc.
4 Irving Place
New York, New York 10003

Attention: Mr. W. C. Beattie
Vice President

Gentlemen:

Enclosed is Construction Permit No. CPPR-21 which has been issued pursuant to the Atomic Safety and Licensing Board's Initial Decision dated October 3, 1966. The construction permit authorizes Consolidated Edison Company of New York, Inc., to construct the Indian Point Station Unit No. 2 at its Indian Point site in the Town of Buchanan, Westchester County, New York.

Also enclosed is a copy of a related notice which has been transmitted to the Office of the Federal Register for publication.

Sincerely yours,

Original signed by
E. G. Case

Peter A. Morris, Director
Division of Reactor Licensing

Enclosures:
As stated above

cc: Arvin E. Upton, Esquire
Messrs. LeBoeuf, Lamb & Leiby
1821 Jefferson Place, N. W.
Washington, D. C. 20036

OFFICE ▶	DRL	OGC	DRL	DRL	DRL
SURNAME ▶	HSteele/dj		RSBoyd	ESCase	PAMorris
DATE ▶	10/13/66	10/14/66	10/ /66	10/ /66	10/ /66

AEC-318 (Rev. 9-53) U. S. GOVERNMENT PRINTING OFFICE 16—62761-3

UNITED STATES ATOMIC ENERGY COMMISSION

DOCKET NO. 50-247

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

NOTICE OF ISSUANCE OF PROVISIONAL CONSTRUCTION PERMIT

Please take notice that, pursuant to the Initial Decision of the Atomic Safety and Licensing Board, dated October 3, 1966, the Director of the Division of Reactor Licensing has issued Provisional Construction Permit No. CPPR-21 to Consolidated Edison Company of New York, Inc., for the construction of a pressurized water nuclear reactor, designated as Indian Point Station Unit No. 2, to be located at Consolidated Edison Company's Indian Point site on the Hudson River in the Town of Buchanan, Westchester County, New York.

The construction permit is in the form set forth in Attachment "B" to the Initial Decision except that the allocation figure specified in paragraph 4 has been increased to reflect the greatest quantity of special nuclear material (24,325 kilograms of uranium 235) outstanding during the term of the license, and a typographical error in line 1 of subparagraph 2.B. has been corrected to change the work "operated" to "located".

A copy of the Initial Decision is on file in the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C.

FOR THE ATOMIC ENERGY COMMISSION

Original signed by
E. G. Case

Peter A. Morris, Director
Division of Reactor Licensing

Dated at Bethesda, Maryland
this 14 of October, 1966.

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

DOCKET NO. 50-247

PROVISIONAL CONSTRUCTION PERMIT

Construction Permit No. CPPR-21

1. Pursuant to Section 104b of the Atomic Energy Act of 1954, as amended (the Act), and Title 10, Chapter 1, Code of Federal Regulations, Part 50, Licensing of Production and Utilization Facilities, and pursuant to the order of the Atomic Safety and Licensing Board, the Atomic Energy Commission (the Commission) hereby issues a provisional construction permit to Consolidated Edison Company of New York, Inc. (Consolidated Edison) for a utilization facility (being a part of an electric generating plant designated as Indian Point Station Unit No. 2) described in the application and amendments thereto filed in this matter by Consolidated Edison and as also described in the evidence received at the public hearing upon that application. The utilization facility is a pressurized water reactor having a thermal capacity of and designated to operate at 2758 megawatts. The plant of which the facility is a part will be located on the Hudson River in the Village of Buchanan, Westchester County, New York.

2. This permit shall be deemed to contain and is subject to the conditions specified in Sections 50.54 and 50.55 of said regulations; is subject to all applicable provisions of the Act, and rules, regulations and orders of the Commission now or hereafter in effect; and is subject to the conditions specified or incorporated below:

   A. The earliest date for completion of the facility is January 1, 1969 and the latest date for completion of the facility is June 1, 1969.

   B. The facility shall be constructed and located at the site as described in the application as amended in the Village of Buchanan, Westchester County, New York.

   C. This construction permit authorizes Consolidated Edison to construct the facility described in the application and the hearing record in accordance with the principal architectural and engineering criteria set forth therein.

3. This permit is provisional to the extent that a license authorizing operation of the facility will not be issued by the Commission unless: (A) Consolidated Edison submits to the Commission, by amendment to the application, the complete final hazards summary report, portions of which may be submitted and evaluated from time to time; (B) the Commission finds that the final design provides reasonable assurance that the health and safety of the public will not be endangered by the operation of the facility in accordance with procedures approved by it in connection with the issuance of said license; and (C) Consolidated Edison submits proof of financial protection and the execution of an indemnity agreement as required by Section 170 of the Act.

4. Pursuant to Section 50.60 of the regulations in Title 10, Chapter 1, CFR, Part 50, the Commission has allocated to Consolidated Edison for use in the operation of the reactor 24,325 kilograms of uranium 235 contained in uranium in the isotopic ratios specified in the application. Estimated schedules of special nuclear material transfers to Consolidated Edison and returns to the Commission are contained in Appendix A which is attached hereto. Transfers by the Commission to Consolidated Edison in accordance with the column entitled "AEC to Con Ed" in Appendix A will be conditioned upon Consolidated Edison's return to the Commission of material substantially in accordance with the column entitled "Con Ed to AEC" in Appendix A.

FOR THE ATOMIC ENERGY COMMISSION

Original signed by
E. G. Case

Peter A. Morris, Director
Division of Reactor Licensing

Attachment:
Appendix A

Date of Issuance: OCT 1 4 1966

APPENDIX A

ALLOCATION OF SPECIAL NUCLEAR MATERIALS
TO CONSOLIDATED EDISON COMPANY
INDIAN POINT #2
(KG U-235)

FY	AEC to Con Ed 1/	Con Ed to AEC		Year Net	Cumulative Net
		Cold 1/	Irrad. 4/		
1968	2,378 2/	-0-	-0-	2,378	2,378
1969	-0-	238 3/	-0-	(238)	2,140
1970	1,904	-0-	-0-	1,904	4,044
1971	952	190	295 5/	467	4,511
1972	952	95	206 6/	651	5,162
1973	952	95	197 7/	660	5,822
1974	952	95	252	605	6,427
1975	952	95	504	353	6,780
1976	952	95	252	605	7,385
1977	952	95	252	605	7,990
1978	952	95	252	605	8,595
1979	952	95	252	605	9,200
1980	952	95	252	605	9,805
1981	952	95	252	605	10,410
1982	952	95	252	605	11,015
1983	952	95	252	605	11,620
1984	952	95	252	605	12,225
1985	952	95	252	605	12,830
1986	952	95	252	605	13,435
1987	952	95	252	605	14,040
1988	952	95	252	605	14,645
1989	952	95	252	605	15,250
1990	952	95	252	605	15,855
1991	952	95	252	605	16,460
1992	952	95	252	605	17,065
1993	952	95	252	605	17,670
1994	952	95	252	605	18,275
1995	952	95	252	605	18,880
1996	952	95	252	605	19,485

(continued)

1/ 2.92% unless otherwise indicated.
2/ 727 kg at 2.23%; 776 kg at 2.38; 875 kg at 2.68.
3/ 73 kg at 2.23%; 77 kg at 2.38; 88 kg at 2.68.
4/ 0.92% unless otherwise indicated
5/ 1.06%
6/ 0.75%
7/ 0.72%

Allocation of Special Nuclear Materials to
Consolidated Edison Company, Indian Point #2
(Kg U-235)

FY	AEC to Con Ed	Con Ed to AEC		Year Net	Cumulative Net
		Cold	Irrad.		
1997	952	95	252	605	20,090
1998	952	95	252	605	20,695
1999	952	95	252	605	21,300
2000	952	95	252	605	21,905
2001	952	95	252	605	22,510
2002	952	95	252	605	23,115
2003	952	95	252	605	23,720
2004	952	95	252	605	24,325
2005	-0-	95	252	(347)	23,978
2006	-0-	-0-	252	(252)	23,726
2007	-0-	-0-	252	(252)	23,474
2008	-0-	-0-	252	(252)	23,222
TOTAL	36,650	3,658	9,770	23,222	---

TAB 3

WRC FORM #3 1/66

Jul 7 4 10 PM '67

PERMIT NO. 8-31067
DAM NO.

STATE OF NEW YORK
WATER RESOURCES COMMISSION
CONSERVATION DEPARTMENT

Consolidated Edison Company of New York, Inc., residing at 4 Irving Place, New York, N.Y.

is hereby permitted to: (construct) (reconstruct) (repair) (alter the bed or banks of) (dredge) (place fill in) and dredge Hudson River.

Located in County Westchester Town Buchanan by carrying out the following works: Construct a new screen wall and relocate discharged channel as indicated on attached plans entitled "Proposed Screenwell Structure, Discharge Channel, Excavation, Dredging and Fill in Hudson River at Indian Point.

Section of stream to which this permit applies At Indian Point Generating Plant, Buchanan.

Note: (a) This permit does not relieve the permittee of responsibility for damages to riparian owners or others.

(b) If the structure or work herein authorized is not completed on or before 31st day of December, 19 68, this permit, if not specifically extended, shall cease and be null and void.

CONDITIONS

1. The permitted work shall be subject to inspection by authorized representative of the Water Resources Comsion who may order the work suspended if the public erest so requires.

2. The permittee shall file in the office of the Local Permit Agent a notice of intention to commence work at least 48 hours in advance of the time of commencement and shall also notify him promptly in writing of the completion of the work.

3. As a condition of the issuance of this permit, the applicant has accepted expressly, by the execution of the application, the full legal responsibility for all damages, direct or indirect, of whatever nature, and by whomever suffered, arising out of the project described herein and has agreed to indemnify and save harmless the State from suits, actions, damages and costs of every name and description resulting from the said project.

4. Any material dredged in the prosecution of the work herein permitted shall be removed evenly, without leaving large refuse piles, ridges across the bed of the waterway, or deep holes that may have a tendency to cause injury to navigable channels or to the banks of the waterway.

5. Any material to be deposited or dumped under this permit, either in the waterway or on shore above high-water mark, shall be deposited or dumped at the locality shown on the drawing hereto attached, and, if so prescribed thereon, within or behind a good and substantial bulkhead or bulkheads, such as will prevent escape of the material into the waterway.

6. There shall be no unreasonable interference with navigation by the work herein authorized.

7. That if future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Water Resources Commission it shall cause unreasonable obstruction to the free navigation of said waters or endanger the health, safety or welfare of the people of the State, or loss or destruction of the natural resources of the State, the owner may be ordered by the Commission to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State; and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners shall, without expense to the State, and to such extent and in such time and manner as the Water Resources Commission may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

8. That the State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

9. That if the display of lights and signals on any work hereby authorized is not otherwise provided for by law, such lights and signals as may be prescribed by the United States Coast Guard shall be installed and maintained by and at the expense of the owner.

10. All work carried out under this permit shall be performed in accordance with established engineering practice and in a workmanlike manner.

11. This permit shall not be construed as conveying to the applicant any right to trespass upon the lands of others to perform the permitted work or as authorizing the impairment of any right, title or interest in real or personal property held or vested in a person not a party to the permit.

12. Nothing in this permit shall be deemed to affect the responsibility of the permittee to comply with any applicable Rules and Regulations of the U.S. Army Corps of Engineers or any other governmental agency having jurisdiction.

Other Conditions:

The Division of Fish & Game, Region 8 Office will be notified 48 hours prior to any blasting operations.

The issuance of this permit certifies that it is not contrary to the public interest that the proposed works be done.

The applicant in accepting this permit signifies his agreement to abide by the conditions set forth above.

Application Date 5/22/67 Expiration Date December ~~XX~~ 31, 1968

Permit Issued 6/22/67

By Warren H. McKeon
(Permit Agent) (Name and Address)

Warren H. McKeon, Regional Supervisor
Region 8
N.Y.S. Conservation Dept.
105 Dutchess Turnpike
Poughkeepsie, N.Y.

cc: Robert A. Cook (1)
George A. Odell (1)
Robert Mahon (1)

(58)

JUL 7 4 07 PM '67

NOTE

Your special attention is called to condition #2 of this permit which requires that the permittee file in the office of the Local Permit Agent a notice of intention to commence work at least 48 hours in advance of the time of commencement and shall also notify him promptly in writing of the completion of the work.

A phone call to this office (914-GL 4-7900, 914-GL 4-7901, 914-GL 4-7902) will suffice as sufficient notice of commencement of work.

Failure to comply with this condition will constitute a violation of the Conservation Law and punishment for such violation is described in Section 429-F of the Conservation Law.

NOTE

TAB 4

To be kept on the work

Village of Buchanan

BUILDING PERMIT

No 427 Date July 11, 1967

Permission is hereby granted Con Edison Co. of New York

Location Indian Point

Sec. 9 Bl. 32 Lot 1 Tax Map

Owner Same Address

Contractor Address

Dimensions (over all) Remove wood pier, Dredge, Cofferdam for Seawall.

Stories High —

Use Nuclear, Steam Elect. Gen. Station

Date of Issue July 11, 1967

Fee 1335.50

Elias White
Building Inspector

TAB 5

WRC FORM #3 1/66

PERMIT NO. 8-78-67
DAM NO. _____

STATE OF NEW YORK
WATER RESOURCES COMMISSION
CONSERVATION DEPARTMENT

Edgar G. Watkins c/o Consolidated Edison Company residing at
4 Irving Place, New York 10003
is hereby permitted to: (construct) (reconstruct) (repair) (alter the bed or banks of) (dredge) (place fill in) _____
Hudson River in Lents Cove
Located in County Westchester Town Peekskill by
carrying out the following works: Dredge a channel approximately 150 feet wide by 1800 feet long in Lents Cove of Hudson River adjacent to Consolidated Edison Co. generating plant at Indian Point. Channel will be used for beaching heavy equipment barges.
Section of stream to which this permit applies on property of permittee

Note: (a) This permit does not relieve the permittee of responsibility for damages to riparian owners or others.
(b) If the structure or work herein authorized is not completed on or before 31st day of January, 1968, this permit, if not specifically extended, shall cease and be null and void.

CONDITIONS

1. The permitted work shall be subject to inspection by an authorized representative of the Water Resources Commission who may order the work suspended if the public interest so requires.

2. The permittee shall file in the office of the Local Permit Agent a notice of intention to commence work at least 48 hours in advance of the time of commencement and shall also notify him promptly in writing of the completion of the work.

3. As a condition of the issuance of this permit, the applicant has accepted expressly, by the execution of the application, the full legal responsibility for all damages, direct or indirect, of whatever nature, and by whomever suffered, arising out of the project described herein and has agreed to indemnify and save harmless the State from suits, actions, damages and costs of every name and description resulting from the said project.

4. Any material dredged in the prosecution of the work herein permitted shall be removed evenly, without leaving large refuse piles, ridges across the bed of the waterway, or deep holes that may have a tendency to cause injury to navigable channels or to the banks of the waterway.

5. Any material to be deposited or dumped under this permit, either in the waterway or on shore above high-water mark, shall be deposited or dumped at the locality shown on the drawing hereto attached, and, if so prescribed thereon, within or behind a good and substantial bulkhead or bulkheads, such as will prevent escape of the material into the waterway.

6. There shall be no unreasonable interference with navigation by the work herein authorized.

7. That if future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Water Resources Commission it shall cause unreasonable obstruction to the free navigation of said waters or endanger the health, safety or welfare of the people of the State, or loss or destruction of the natural resources of the State, the owner may be ordered by the Commission to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State; and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners shall, without expense to the State, and to such extent and in such time and manner as the Water Resources Commission may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

8. That the State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

9. That if the display of lights and signals on any work hereby authorized is not otherwise provided for by law, such lights and signals as may be prescribed by the United States Coast Guard shall be installed and maintained by and at the expense of the owner.

10. All work carried out under this permit shall be performed in accordance with established engineering practice and in a workmanlike manner.

11. This permit shall not be construed as conveying to the applicant any right to trespass upon the lands of others to perform the permitted work or as authorizing the impairment of any right, title or interest in real or personal property held or vested in a person not a party to the permit.

12. Nothing in this permit shall be deemed to affect the responsibility of the permittee to comply with any applicable Rules and Regulations of the U.S. Army Corps of Engineers or any other governmental agency having jurisdiction.

Other Conditions:

NONE

The issuance of this permit certifies that it is not contrary to the public interest that the proposed works be done.

The applicant in accepting this permit signifies his agreement to abide by the conditions set forth above.

Application Date October 23, 1967 Expiration Date January 31, 1968

Permit Issued November 30, 1967

By Warren H. McKeon
(Permit Agent)

(Name and Address)

Warren H. McKeon
Regional Supervisor
Region 8
21 South Putt Corners Road
New Paltz, New York 12561

c.c. R. Cook
G. Odell
C.O Mahon

TAB 6

RECEIVED
APR 22 1968
E. G. WATKINS

NEW YORK STATE DEPARTMENT OF HEALTH

DIVISION OF AIR RESOURCES

PERMIT TO CONSTRUCT AN AIR POLLUTION FACILITY

Number: HA680101

Date: April 12, 19

This permit is issued under the provision of Article 12-A of the Public Health Law for the project described below:

Issued to:	Facility and Name of City, Village or Town and County in which the point of emission is located:
Consolidated Edison Company of New York, Inc. 4 Irving Place New York, New York 10003 Attention: Mr. E. G. Watkins	Fuel Burning Equipment Indian Point Generating Station Buchanan (V) - Westchester County

Type of Facility		Type of Installation	
/X/	New Installation	/XXX/	Permanent
/XX/	Modification	/ /	Secret
/ /	Air Cleaning Device Included	/ /	Trial
/ /	Relocation	/ /	Waived (Sec. 176.2)

Complete description of facilities such as number, name and capacity of units:

2 Babcock and Wilcox integral furnace boilers Type FM with steam atomizing burner and forced draft consuming a total of 6940 pounds No. 6 fuel oil per hour.

Permission to construct this air pollution facility is granted upon and subject to the following conditions which by initiating the construction of these facilities, the permittee accepts and agrees to abide by and conform with the following:

That this permit shall be deemed null and void unless construction of these facilities for which this permit is issued commenced by July 12, 1968 and is fully completed by April 12, 1969.

2) That the proposed facilities shown on the approved plans and approved specifications shall be fully constructed in complete conformity with such plans and specifications, or approved amendments thereto.

3) That the proposed facilities shall not be placed in operation until they have been completed in accordance with the approved plans, or approved amendments thereto.

4) That the Permit to Construct is not a Certificate to Operate and operation prior to the issuance of a Certificate to Operate shall be confined to these operations needed to test the facilities and the firms shall notify the designated representative at least 15 days before any temporary operation is started or any tests are made.

5) That the permit shall be revocable at any time or subject to modifications or change when in the judgement of the Commissioner such revocation, modification or change shall become necessary or desirable.

6) That tests shall or may be required in accordance with Part 178. Additional air pollution control equipment may be required prior to the issuance of a Certificate to Operate if stack emission tests, acceptable to the Commissioner of Health, show that the installation does not conform to rules established by the Air Pollution Control Board.

THIS PERMIT TO CONSTRUCT IS NOT TRANSFERABLE EITHER FROM ONE LOCATION TO ANOTHER OR FROM ONE FACILITY TO ANOTHER.

A COPY OF THIS PERMIT MUST BE DISPLAYED IN A CONSPICUOUS PLACE NEAR THE FACILITY FOR WHICH THE PERMIT IS ISSUED.

Date: April 12, 1968

Issued for the State Commissioner of Health

Eric A. Seiffer

Eric A. Seiffer
Chief, Engineering Plans Review Section

Name and Title
Designated Representative

TAB 7

To be kept on the work

Village of Buchanan
BUILDING PERMIT

No 458 Date May 28, 1968

Permission is hereby granted Con. Edison Co. of N.Y. Inc.

Location Indian Point

Sec. 24 Bl. 33 Lot 1 Tax Map

Owner same Address

Contractor — Address

Dimensions (over all) 120'4" x 32'4" x 33+ Ft.

Stories High —

Use Control Room Bldg.: add of Unit #3

Date of Issue May 28, 1968

Fee 497.00

Chas. White
Building Inspector

TAB 8

To be kept on the work

Village of Buchanan
BUILDING PERMIT

Nº 459 Date May 20, 1968

Permission is hereby granted Con Edison Co. of N.Y., Inc.

Location Indian Point

Sec. 24 Bl. 33 Lot 1 Tax Map

Owner same Address

Contractor — Address

Dimensions (over all) (Perimeter) 146' x 219'+ Ht.

Stories High (Containment Building)

Use Generation Station Unit 3 addition

Date of Issue May 20, 1968

Fee $8,778.50

Chas. White
Building Inspector

TAB 9

To be kept on the work

Village of Buchanan

BUILDING PERMIT

Nº 460 Date May 28, 1968

Permission is hereby granted Con. Edison Co. of N.Y. Inc.

Location Indian Point

Sec. 24 Bl. 33 Lot 1 Tax Map

Owner Same Address

Contractor — Address

Dimensions (over all) 328' x 256' x 166' x 123'4"

Stories High (Turbine Room - Including Heater Bay)

Use Generation Station addition of Unit #3

Date of Issue May 28, 1968

Fee $3937.50

Elias White

Building Inspector

TAB 10

To be kept on the work

Village of Buchanan

BUILDING PERMIT

№ 463 Date July 15, 1965

Permission is hereby granted Con. Edison Co.

of New York

Location Indian Point

Sec. 24 Bl. 33 Lot 1 Tax Map

Owner Same Address

Contractor — Address

Dimensions (over all) —

Stories High 1

Use Fuel Storage Bldg.

Date of Issue July 15, 1965

Fee 844.60

Elias White
Building Inspector

TAB 11

To be kept on the work

Village of Buchanan

BUILDING PERMIT

No. 473. Date Feb. 24, 1969.

Permission is hereby granted Lee Edelson Co.

.....

Location Indian Road

Sec. 24 Bl. 33 Lot 1 Tax Map .....

Owner Same Address .....

.....

Contractor ——— Address .....

.....

Dimensions (over all) .....

Stories High 1 St. x 74

Use Primary Bus. Bldg. for Unit #3

Date of Issue Feb. 24, 1969

Fee 1,711.50

Leland White

Building Inspector

TAB 12

TLPC ON)

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

(Indian Point Nuclear Generating Unit No. 3)

DOCKET NO. 50-286

PROVISIONAL CONSTRUCTION PERMIT

Construction Permit No. CPPR-62

1. Pursuant to Section 104(b) of the Atomic Energy Act of 1954, as amended (the Act), and Title 10, Chapter 1, Code of Federal Regulations, Part 50, "Licensing of Production and Utilization Facilities," and pursuant to the order of the Atomic Safety and Licensing Board, the Atomic Energy Commission (the Commission) hereby issues a provisional construction permit to Consolidated Edison Company of New York, Inc. (the applicant) for a utilization facility (the facility), designed to operate at 3,025 megawatts (thermal) described in the application and amendments thereto (the application) filed in this matter by the applicant and as more fully described in the evidence received at the public hearing upon that application. The facility, known as Indian Point Nuclear Generating Unit No. 3, will be located at the applicant's 235-acre site on the east bank of the Hudson River at Indian Point, Village of Buchanan in upper Westchester County, New York, located approximately 24 miles north of the New York City boundary line.

2. This permit shall be deemed to contain and be subject to the conditions specified in Sections 50.54 and 50.55 of said regulations; is subject to all applicable provisions of the Act, and rules, regulations and orders of the Commission now or hereafter in effect; and is subject to the conditions specified or incorporated below:

   A. The earliest date for the completion of the facility is March 1, 1972, and the latest date for completion of the facility is September 1, 1972.

   B. The facility shall be constructed and located at the site as described in the application in the upper part of Westchester County, New York.

   C. This construction permit authorizes the applicant to construct the facility described in the application and hearing record in accordance with the principal architectural and engineering criteria set forth therein.

3. This permit is provisional to the extent that a license authorizing operation of the facility will not be issued by the Commission unless (a) the applicant submits to the Commission, by amendment to the application, the complete final safety analysis report, portions of which may be submitted and evaluated from time to time; (b) the Commission finds that the final design provides reasonable assurance that the health and safety of the public will not be endangered by the operation of the facility in accordance with procedures approved by it in connection with the issuance of said license; and (c) the applicant submits proof of financial protection and the execution of an indemnity agreement as required by Section 170 of the Act.

FOR THE ATOMIC ENERGY COMMISSION

Original signed by
Frank Schroeder, Jr.
for Peter A. Morris, Director
Division of Reactor Licensing

Date of Issuance:

AUG 13 1969

TAB 13

To be kept [illegible] the work

Village of Buchanan
BUILDING PERMIT

No. 491 Date Aug. 25, 1969

Permission is hereby granted Con Edison Inc

Location Indian Point

Sec. 24 Bl. 33 Lot 1 Tax Map

Owner same Address

Contractor — Address

Dimensions (over all) 75 x 75

Stories High 1

Use Waste holdup Tank pit

Date of Issue

Fee $11.00

Chas. White
Building Inspector

TAB 14

To be kept on the work

Village of Buchanan
BUILDING PERMIT

№ 492 Date Aug. 26, 1969

Permission is hereby granted Con Edison Co. Inc.

Location Indian Point

Sec. 24 Bl. 33 Lot 1 Tax Map

Owner same Address

Contractor — Address

Dimensions (over all) 106' x 60

Stories High 3

Use Unit #3 Service Bldg

Date of Issue Aug. 26, 1969

Fee 1,283.50

[signature]
Building Inspector

TAB 15

(Special Messenger)

New York State Department of Environmental Conservation
Albany, N. Y. 12201

Henry L. Diamond
Commissioner

December 7, 1970

Mr. Harry G. Woodbury
Senior Vice President
Consolidated Edison Company of
New York, Inc.
4 Irving Place
New York, New York 10003

Dear Mr. Woodbury:

Water Quality Certification
Indian Point Generating Station

In response to your letter of September 2, 1970 and in accordance with Section 21-b of the Water Quality Improvement Act of 1970 (P.L. 91-224), reasonable assurance is hereby given by the State of New York that the effluent from Generating Station Units #1 and #2 to be discharged through the submerged jet outlet will not contravene the applicable water quality standards for the Hudson River at the point of discharge. This letter supercedes our letter of September 29, 1970.

Accordingly, an operating permit will be issued upon receipt of the required application under provisions of Part 73, Title 10 of the Official Compliation of Codes, Rules and Regulations of the State of New York. However, prior to the granting of operating permits for the discharge of effluents from Unit 3, the applicant must demonstrate that thermal criteria relating to limits and distribution of temperature and the thermal standard relating to conditions noninjurious to fish life will be satisfied.

Very truly yours,

T. P. Curran
For Department of Environmental
Conservation

cc: Mr. D. Stevens
Mr. I. Grossman
Mr. W. McKeon
Mr. R. Mt. Pleasant
Mr. T. Quinn
Corps of Engineers - New York
Federal Water Quality Administration
U.S. Department of the Interior

TAB 16

Permit Identified

Hard Copy Not Available

TAB 17

RA-73-85-2

50-247

New York State Department of Environmental Conservation
Albany, N. Y. 12201

Henry L. Diamor
Commissioner

September 24, 1973

Mr. Carl L. Newman
Vice President
Consolidated Edison Company
of New York, Inc.
4 Irving Place
New York, New York 10003

Dear Mr. Newman:

We have reviewed your application of July 17, 1973, pursuant to Section 401 of the Federal Water Pollution Control Act Amendments of 1972 (the "Act").

Based upon the foregoing, and that public notice was duly given pursuant to Part 608.16 of the Official Compilation of Codes, Rules and Regulations of the State of New York, the Department of Environmental Conservation, (the "Department") hereby issues this certification with conditions to the above-mentioned application of July 17, 1973, for certification, in accordance with Section 401 of the Act, that, as of the date hereof, there is no applicable effluent limitation or other limitation under Section 301(b) and 302 of the Act, and there is no standard under Sections 306 and 307 of the Act applicable to the activity which Consolidated Edison Company of New York, Inc. ("Con Edison") proposed to conduct (i.e., operatic of its Indian Point Nuclear Power Plant Unit No. 2, on the Hudson River at Buchanan Town of Cortlandt, Westchester County, New York).

This certification with conditions is issued with the full understanding and acknowledgement by Con Edison that the State of New York, in cooperation with the U. S. Environmental Protection Agency, is in the process of promulgating revised thermal criteria in order to bring such criteria into conformity with the Act. Furthermore it is intended that both Indian Point Units No. 1 and No. 2 will be required to comply with the above-mentioned revised criteria. Con Edison does not hereby waive its right to seek relief from compliance as authorized under Section 316(a) of the Act or other provisions of law.

Pursuant to Section 401(d) of the Act, and in accordance with the requirements of the New York State Environmental Conservation Law and the Official Compilation of Codes, Rules and Regulations of the State of New York, particularly Parts 700-704, Classification and Standards of Quality and Purity of Waters of New York State, this certification hereby sets forth the following requirements which shall become conditions on any federal license or permit for the heretofore described proposed activity of Con Edison:

1. If the Con Edison operation of the intake screening system results in the killing of an unreasonable number of fish, the designated representative of the Department shall direct Con Edison to take immediate corrective action to reduce the rate of fish kill. If Con Edison fails to take such action, such representative is authorized to direct Con Edison to suspend the operation of the system causing the unreasonable kill; provided, however, no such suspension shall be directed if:

1) Such suspension would require a power reduction at the facility and Con Edison establishes to the reasonable satisfaction of the Department that:

(a) An emergency need for power exists on its system which cannot otherwise be met; or

(b) Such suspension would create an impact on the indigenous aquatic population of the Hudson River potentially more adverse than such fish kill; or

(c) Such suspension would cause a significant violation of U. S. Atomic Energy Commission Facility Operating License No. DPR-26; or

2) Such suspension would prevent planned experiments approved by the Department and designed to minimize fish kills.

2. The Department shall have the right to designate appropriate Department personnel to observe operations of Indian Point Unit No. 2, and to report these observations to the Department.

3. Con Edison will continue to conduct a continuous monitoring program in accordance with the "Environmental Technical Specification Requirements", which are incorporated by the U. S. Atomic Energy Commission in Facility Operating License No. DPR-26, (the "ETSR"), and will transmit to the Department concurrently with the reports to the U. S. Atomic Energy Commission such reports as are required by the ETSR. This monitoring shall be carried on under the surveillance of the Department and it is further understood that such monitoring is in no way intended to supersede the independent monitoring program of the Department, but to supplement it. A copy of any other reports for Indian Point Unit No. 2 pertaining to the environment which Con Edison submits to any federal, state, or local agency, shall also be submitted to the Department.

4. Con Edison will notify this Department of any requested change in the ETSR at the time of such request.

5. The U. S. Atomic Energy Commission Staff has recommended that a condition be placed in Facility Operating License No. DPR-26 for Indian Point Unit No. 2 which requires that Con Edison develop a plan of action to minimize detrimental effects of the plant on aquatic biota. If such a condition is placed in such License,

Con Edison is required to advise the Department of all action being taken with the Staff of the Atomic Energy Commission pursuant to this condition and Con Edison is required to consult with the Department before implementing any changes in the plant design or operating procedures pursuant to any such plan. Nothing contained herein shall be deemed to limit or restrict the Department's exercise of its powers, authorities and responsibilities under any provision of law.

6. Con Edison will prepare, by January 1, 1974, for the Department's approval, a biological monitoring program to determine the effects of facility operation on aquatic organisms. Such a program shall include collections and sampling of such organisms, including fish, in the intake structures and discharge canal. It is further understood that the purpose of this program is to determine additional appropriate methods and procedures which will be implemented to reduce, to the fullest extent possible, the effects of facility operation on aquatic organisms.

7. As part of Con Edison's evaluation of the fish pumps, Con Edison will evaluate present methods and determine the best method of removing these fish from the traveling screens and returning them to the water. In addition, Con Edison will determine the proportion of fish expected to survive this process, by species, size, and season of the year.

8. Discharge shall occur only through the subsurface ports of the outfall structure for which a construction permit has heretofore been issued by the Department.

9. The flow rate per circulating water pump will be recorded. Any changes in the flow rate of each circulating water pump shall be recorded, including the date and time of day. This information will be reported monthly. Standard hydraulic flow measuring devices or manufacturers performance curves will be employed for determination of flow rate.

10. Temperature in °F shall be measured continuously in the intake forebay and effluent canal prior to discharge, and recorded for permanent record. Minimum, maximum, and average temperatures shall be determined daily for each location and reported monthly. Methods and accuracy of equipment used to measure temperature shall be subject to the approval of the Department.

11. Consolidated Edison shall monitor electrical output of Indian Point Unit No. 2 and record daily maximum, minimum and average output in kilowatts and determine and record daily output in kilowatt hours and report such records monthly.

12. Con Edison shall monitor chemical discharges according to the frequency established in the table below. Analyses shall be performed in accordance with appropriate standard methods and shall be reported monthly as mg./l and pH units (nearest tenth).

ITEMS	FREQUENCY
pH	DD
Chromium^{+6}	WK
Boron	D
Phosphate	WK
Hydrazine	WK
Cyclohexylamine	WK
Lithium Hydroxide*	WK
Chlorine	I
Suspended Solids	WK

DD - Continuous at discharge of Neutralization Facility.

D - Daily during discharge.

WK - Weekly

I - At start and at 10 minute intervals during chlorination.

*By pH measurement.

13. (a) Intensive Surveys - Dissolved oxygen in ppm shall be measured at the intake forebay and in the effluent canal prior to discharge for thirty (30) consecutive days, each in spring, summer, fall, and winter of the first year of operation and reported within fifteen (15) days of the close of each survey.

(b) Routine Surveys - Dissolved oxygen in ppm shall be measured monthly at the intake forebay and in the effluent canal prior to discharge and reported monthly.

14. After November 1, 1973, at power levels greater than 50% of Indian Point Units Nos. 1 and 2 (combined), an average discharge velocity of 10 ft/sec at the vena contracta of the discharge ports shall be employed. The relationships between discharge velocity, open port area, and canal head above river level shall be confirmed by actual measurement. Port openings shall be adjusted within twelve hours of any change in circulating flow rate so as to attain and maintain such ten ft/sec velocity and, after controls for such port openings have been motorized, port openings will be so adjusted within four hours. Such motorization is anticipated to be accomplished by December 1, 1974.

15. Con Edison shall establish and conduct, subject to the Department's approval, a monitoring program in order to establish that the thermal discharge shall comply with the Classifications and Standards of Quality and Purity of Waters, Parts 700-704 of the Official Compilation of Codes, Rules and Regulations of the State of New York. Thermal monitoring shall include tri-axial isothermal mapping by actual temperature measurements and must be conducted on a frequency and in such a manner and pursuant to a program approved by the Department. Con Edison shall cooperate with the Department in developing such monitoring programs.

16. All monthly reports, previously referred to and required in this certification shall be forwarded by Con Edison first class mail to the Commissioner, New York State Department of Environmental Conservation, 50 Wolf Road, Albany, New York 12201, not later than the twelfth (12th) of the following month. Other reports shall be sent likewise upon dates required.

17. This certification with conditions shall not be deemed to modify, extend, or affect in any manner any order of the Commissioner of Environmental Conservation against Consolidated Edison Company of New York, Inc.; does not constitute a condonation of any violation of any order or release, compromise, or waiver of any rights or any course of action which the Commissioner of Environmental Conservation has or may have against Con Edison because of any violation of any order and does not preclude compliance of the discharge from Indian Point Unit No. 2 with any permit with respect to such discharge which may be hereafter issued by the Commissioner.

This certification with conditions is issued solely for the purpose of Section 401 of the Act.

A copy of this certification with conditions is being forwarded to the Director of Regulations, U. S. Atomic Energy Commission and the Regional Administrator of the Environmental Protection Agency.

Sincerely,

James L. Biggane
Executive Deputy Commissioner

TAB 18

Permit Identified

Hard Copy Not Available

TAB 19

STATE OF NEW YORK
DEPARTMENT OF
ENVIRONMENTAL CONSERVATION
ALBANY

OGDEN REID
COMMISSIONER

May 2, 1975

Dear Sirs:

We have reviewed your application of October 4, 1974, for certification pursuant to Section 401 of the Federal Water Pollution Control Act Amendments of 1972, Public Law 92-500 ("the Act"). In the application, Consolidated Edison Company of New York, Inc. (Con Edison) requested certification for its Indian Point Nuclear Power Plant Unit No. 3 (Indian Point No. 3), for the purposes of the U.S. Atomic Energy Commission, now the U.S. Nuclear Regulatory Commission (Commission), license to operate Indian Point No. 3 and the U.S. Environmental Protection Agency permit pursuant to the National Pollutant Discharge Elimination System (NPDES). Indian Point No. 3 is located on the east bank of the Hudson River in the Village of Buchanan, Westchester County, New York, adjacent to two other nuclear power plants, Units No. 1 and 2.

Con Edison or any assignee or successor to the license or permit of Con Edison or any of its obligations hereunder is hereinafter referred to as the "Licensee".

This certification applies to the Commission license to operate Indian Point No. 3 and any appurtenant devices, structures or facilities used in conjunction with Indian Point No. 3, such as, but not limited to, the discharge structure which is common to Indian Point Units No. 1, 2 and 3. This certification also applies to the U.S. Environmental Protection Agency NPDES permit. In view of the changes in operation of the common discharge structure and the recent promulgation of State thermal standards and criteria (6 NYCRR Part 704) this certification is supplemental to the certification dated September 24, 1973 with respect to Indian Point Unit No. 2. To the extent any requirement of this certificate for the Indian Point site is inconsistent with a requirement of the certificate for Indian Point Unit No. 2, the requirements of this certificate shall prevail.

Public notice of the application has been duly given pursuant to Part 608.16 of the official Compilation of Codes, Rules and Regulations of the State of New York.

Based upon the foregoing, the Department of Environmental Conservation (Department) hereby certifies that the Licensee will comply with all applicable provisions of Sections 301, 302, 306 and 307 of the Act, provided that

I. There are no future changes in any of the following that would result in non-compliance with Sections 301, 302, 306 and 307 of the Act:

A. The proposed construction and operation of the facility;
B. The characteristics of the waters into which discharges are made;
C. The water quality criteria applicable to such waters; or
D. Applicable effluent limitations or other requirements;

II. The applicable provisions of State laws and regulations are complied with; and

III. The following effluent limitations and other limitations and monitoring requirements, which shall become conditions on any Commission license and NPDES permit for Indian Point No. 3, pursuant to Section 401(d) of the Act, are complied with:

A. REQUIREMENTS FOR MINIMIZING ENVIRONMENTAL IMPACT

1. In the event that an alternative to the present once-through cooling system is ultimately required pursuant to final Commission action, NPDES permit or other circumstance, a compliance schedule for the construction of such a system shall be established by the State pursuant to the provisions of Article 15, 17 and 19 of the Environmental Conservation Law and the applicable provisions of the Act.

If the Commission does not require such alternative system, or, if as a result of any intermediate or final Commission order, NPDES permit, court decision, settlement or other circumstance there is, in the judgment of the Department, a substantial likelihood that no such alternative system will be required, whichever event may first occur, Licensee shall, within sixty days of the date of

Commission action, NPDES permit or receipt by Licensee of the Department's notice of determination, present to the Department for its approval an implementation plan for the site, including schedules, for compliance with the State's water quality standards and criteria.

2. Within six (6) months of the date of issuance of the Commission operating license, or NPDES permit, whichever shall first occur, Licensee shall prepare and submit to the Department for its approval an implementation plan for minimizing to the extent practicable environmental impacts on aquatic biota from the operation of Indian Point Units 1, 2 and 3 with once-through cooling systems detailing:

a. OPERATING PROCEDURES

This section of the plan shall contain plant procedures relevant to the intake of water and the discharge of effluents.

b. CONTINGENCY PROCEDURES

This section of the plan shall contain the procedures which the plant will follow in order to minimize environmental effects in case of large fish kills and other detrimental effects on aquatic biota. Among other requirements:

(1) The Contingency Procedures shall contain requirements that if the number of fish of all sizes and species collected from the fixed and traveling screens of all forebays at the Indian Point Station exceeds 5,000 per day for three consecutive days or such number in a single day exceeds 15,000, or such other numbers as may be approved by the Department upon application by Licensee, Licensee shall immediately notify the Department by telegram or telephone and shall take immediate corrective action to reduce the number to below these levels. If Licensee fails to reduce such collections to below the levels specified above, Licensee shall immediately notify the Department of its inability to attain such reduction, and the Department may direct Licensee to suspend the operation of the system causing the excess collections; provided, however, no such suspension shall be directed if:

(a) Such suspension would require a power reduction at the facility and Licensee establishes to the reasonable satisfaction of the Department that:

(i) An emergency need for power exists on its system which cannot otherwise be met by consumption reductions or otherwise; or

(ii) Such suspension would create an impact on the indigenous aquatic population of the Hudson River potentially more adverse than such fish kill; or

(iii) Such suspension would cause a significant violation of the appropriate Commission operating license.

(b) The Department believes such suspension would invalidate planned experiments approved by the Department and designed to minimize fish kills.

(2) The Contingency Procedures in the plan shall also contain requirements that if the number of fish of any specified size, species or both collected from the fixed and traveling screens of all forebays at the Indian Point site or otherwise determined to be killed or unduly stressed exceeds such numbers for such lengths of time as may be determined under the biological study program undertaken pursuant to Condition C(7) or otherwise approved by the Department or, if any other specified effect on aquatic biota exceeds such parameters as may be determined under such study program or otherwise approved by the Department, Licensee shall immediately notify the Department and take immediate corrective action to prevent such effect from continuing to occur. If Licensee fails to prevent such effect from continuing to occur, Licensee shall immediately notify the Department of its inability to do so, and the Department may direct Licensee to suspend the operation of the system causing the effect to continue to occur; provided, however, no such suspension shall be directed in the circumstances set forth in Condition A(2)(b)(1)(a) and (b) above.

(3) The plan will include conditions applicable to Indian Point 1, 2 and 3 under which the licensees of Indian Point 1, 2 and 3 will alter the operation of their respective plants and, if necessary, the dispatch of their systems consistent with their obligations for furnishing reliable and economical electric utility service and taking into consideration the national policy for conservation of fuel oil.

(4) The Contingency Procedures shall provide for prompt notification to the Department of shutdowns of all units during the months of December through March which result in significant reduction of the plants' thermal effluent.

c. MODIFICATION TO THE PRESENT DESIGN OF THE ONCE-THROUGH COOLING SYSTEM INCLUDING THE INTAKE STRUCTURES

This section of the plan will explain modifications to intake and discharge structures and other cooling system modifications which the Licensee believes can be made as possible interim solutions to potential biological problems at Indian Point prior to completion of the biological study program, and as possible permanent solutions after the end of that study program.

If it is subsequently determined by a final order of any governmental agency or court that an alternative to the present once-through cooling system is not required for Indian Point Nos. 2 and 3, the Licensee shall design, construct and operate, as provided below, a new intake system for Indian Point Nos. 1, 2 and 3 as required by the Department construction permit dated December 10, 1970 in order to provide a level of fish protection significantly higher than the existing intake system. After obtaining Department approval of the intake system and implementation schedule, Licensee shall forthwith apply for all permits, licenses, approvals and land rights required for the construction and operation of such new intake system and shall prosecute all such applications

with due diligence. Upon the granting of all such applications, Licensee shall with due diligence construct and operate said new intake system.

The plans pursuant to a, b and c above shall be designed to reduce to the extent practicable fish impingement, entrainment mortality, and detrimental effects on aquatic biota in the Hudson River from the Indian Point plants during the period during which Indian Point No. 3 utilizes a once-through cooling system. Upon approval by the Department, Licensee shall implement this program in accordance with an approved schedule.

3. Prior to operation of any alternative to the present once-through system, Licensee shall submit to the Department for its approval a plan to minimize to the extent practicable the environmental effects of such alternative cooling system.

4. Within three (3) months of the date of issuance of the Commission operating license, or NPDES permit, whichever shall occur first, the Licensee shall file for approval with the Department at its offices in New Paltz and in Albany a plan on chlorine use and chlorination practice. Such plan shall include practices which minimize the impact of chlorine on water resources.

a. After the Department approves the plan and so long as the once-through cooling system is used, there shall be no use of chlorine which results in a discharge except at times and in circumstances in accordance with the approved report as necessary for the proper functioning of the plants at Indian Point.

b. The maximum concentrations of the total residual chlorine in the cooling water discharged at the confluence of the discharge canal with the Hudson River shall not exceed 0.5 ppm.

B. DISCHARGE LIMITS AND MONITORING

1. The New York State Standards (NYCRR Parts 700, 701, 702, 704) as applicable to the receiving waters shall be complied with including the following:

a. Oil and floating substances - No residue attributable to sewage, industrial waters or other wastes nor visible oil film nor globules of grease.

b. Toxic wastes and deleterious substances - None in amounts that will interfere with use for primary contact recreation or that will be injurious to edible fish or shellfish or the culture or propagation thereof, or which in any manner shall adversely affect the flavor, color, odor or sanitary condition thereof or impair the waters for any other best usage as determined for the specific waters which are assigned to this class.

c. Thermal Discharges -

(1) All thermal discharges to the waters of the State shall assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on the body of water.

(2) For the protection of the aquatic biota from severe temperature changes, routine shutdown of an entire thermal discharge at any site shall not be scheduled during the period from December through March.

(3) All mixing zones shall have definable numerical limits specified by the Department (e.g., linear distances from the point of discharge, surface area involvement, or volume of receiving water entrained in the thermal plume).

(4) Conditions in the mixing zone shall not be lethal in contravention of water quality standards to aquatic biota which may enter the zone.

(5) The location of mixing zones for thermal discharges shall not interfere with spawning areas, nursery areas and fish migration routes.

(6) The location, design, construction and capacity of cooling water intake structures, in connection with point source thermal discharges, shall reflect the best technology available for minimizing adverse environmental impact.

d. Suspended, colloidal or settleable solids - None from sewage, industrial wastes or other wastes which will cause deposition or be deleterious for any best usage determined for the specific waters which are assigned to each class.

e. Estuaries or portions of estuaries - As used herein, estuary shall refer to the Hudson River in the vicinity of Indian Point.

(1) The water temperature at the surface of an estuary shall not be raised to more than 90°F at any point.

(2) At least 50 percent of the cross sectional area and/or volume of the flow of the estuary including a minimum of one-third of the surface as measured from water edge to water edge at any stage of tide, shall not be raised to more than 4 Fahrenheit degrees over the temperature that existed before the addition of heat of artificial origin or a maximum of 83°F whichever is less.

(3) From July through September, if the water temperature at the surface of an estuary before the addition of heat of artificial origin is more than 83°F an increase in temperature not to exceed 1.5 Fahrenheit degrees at any point of the estuarine passageway as delineated above, may be permitted.

2. Licensee shall continue to conduct a continuous chemical, physical, hydraulic, biological, meteorological, and thermal monitoring program in accordance with the ETSR which will be incorporated by the Commission in the applicable operating license and will transmit to the Department concurrently with the reports to the Commission such reports as are required by the ETSR.

This monitoring shall be carried on under the surveillance of the Department and is further understood that such monitoring is in no way intended to supersede the independent monitoring program of the Department, but to supplement it.

3. Licensee shall monitor chemical discharges according to the frequency established in the table below. Analyses shall be performed in accordance with appropriate standard methods and shall be reported monthly as mg/1 and pH units (nearest tenth).

ITEMS	FREQUENCY
pH	DD
Chromium +6 (and +3)**	WK
Boron	D
Phosphate	WK
Hydrazine	MO
Cyclohexylamine	MO
Lithium Hydroxide*	D
Chlorine	I
Suspended Solids	WK
Dissolved Oxygen ***	MO

DD - Continuous at discharge of Neutralization Facility
D - Daily during discharge
WK - Weekly
MO - Monthly
I - At start and at 10 minute intervals during chlorination.

* By pH measurement.

** If total chromium tests show detectable chromium concentrations, a test for trivalent chromium will also be conducted.

*** Dissolved oxygen in ppm shall be measured monthly at the intake forebay and in the effluent canal prior to discharge.

A limitation of 0.05 mg/1 each of trivalent and hexavalent chromium shall apply at the discharge.

A discharge limitation of 100 lbs. chromium per year shall also apply.

A limitation of 0.1 mg/1 Boron shall apply at the outlets of the discharge canal.

4. Dissolved Oxygen - In addition to the requirements above, dissolved oxygen in ppm shall be measured at the intake forebay and in the effluent canal prior to discharge for five (5) days during the week of each routine thermal survey and reported within ninety (90) days of the close of each survey.

5. Discharge shall occur only through the subsurface ports of the outfall structure for which a construction permit has heretofore been issued by the Department. After the date of issuance of the operating license, under all conditions, modes, and sequences of operation of Units 1, 2 and 3 above a combined power level from any and all units of 600 MW gross electric output or whenever the discharge canal temperature exceeds 90°F., Licensee shall maintain an average discharge velocity of not less than ten ft/sec. at the vena contracta of the discharge ports. The relationships between discharge velocity, open port area, and canal head above river level shall be confirmed by actual measurement and reported to the Department. The manual adjustments in the ports shall be made within 12 hours after any change in the flow rate of the circulating water pumps has occurred. After June 1, 1975, the adjustments shall be made within four hours.

C. STUDIES AND BIOLOGICAL DATA

1. Licensee shall study the relationship between the salt water front passing the intakes at Indian Point and the number and kinds of fish impinged. A report presenting this information and data shall be submitted to the Department by September 1, 1975, and if the Department deems it necessary Licensee shall implement an approved program to reduce fish impingement occasioned by salt water passage.

2. Impingement and Entrainment Data and Reports.

a. Within three (3) months of the date of issuance of the operating license, or NPDES permit, whichever is earlier, Licensee shall file for approval with the Department a report containing a tabulation of all fish impingement data collected to date at Indian Point.

b. Within five (5) months of the date of issuance of the operating license, or NPDES permit, whichever is earlier, Licensee shall file for approval with the Department a report containing a tabulation of all entrainment data collected to date at Indian Point.

c. Fish impingement data will be collected, recorded and reported as described in the ETSR.

Also, once a week (or sooner as required by the Contingency Procedure 2.b.(1)), impingement records will be reported to the New Paltz office by telephone or telegram.

Previously submitted reports need not be duplicated, but data location must be completely identified. Reported data shall specify cooling water flow, dates, times, available operating conditions, species, numbers and other available biological information.

3. Upon issuance of the operating license, or NPDES permit, whichever is earlier, the Licensee shall continue the previously initiated site program, or Department approved amendments thereto, for monthly triaxial isothermal measurements for the Indian Point plume. The program shall provide for temperature measurements in increments of 1°F down to a level of 2°F temperature excess above addition of heat of artificial origin. Surveys shall not be required during the months of December, January, February and March. A summary report shall be submitted within 90 days of completing each survey. The program shall continue through November 1977.

4. Within two (2) months of the date of issuance of the operating license, or NPDES permit, whichever is earlier, Licensee shall file for approval with the Department a report for intensive seasonal triaxial isothermal measurements which shall be conducted during April, August and October in the waters receiving the discharge. The program shall provide for temperature measurements in increments of 1°F down to a level of 1°F temperature in excess of the temperature which existed prior to the addition of heat of artificial origin. The data and following analyses for all previous surveys shall be presented at the time of the first required report. Such surveys shall not be required during the year 1975.

Beginning February 1, 1977, for the 1976 surveys, and each February 1st thereafter, Licensee shall file with the Department a complete report on the previous year's intensive isothermal surveys. Such report shall include:

a. A summary and assessment of the data presented for the individual surveys including a complete evaluation of the observed data in respect to the predictive mathematical and hydraulic models, and the assumptions used for their construction, as have been previously filed with the Department.

b. Meteorological conditions, hydrological conditions, heat transfer coefficients, dispersion coefficients, salinity, tidal data and any other appropriate data deemed necessary by the Department to supplement and assist interpretation of the thermal plume mapping program.

c. Data correlated and integrated to the predictive models previously presented to the Department with full justification made for adjustments in previous assumptions and predictions.

d. A revision of expected temperature distributions as appropriate and justified from the data gathered.

e. Background ambient temperature which would persist but for the addition of heat of artificial origin from any and all discharges which would affect the survey area, incremental effects from the operation of the Indian Point plants, and incremental effects of thermal discharges of others that may have influence in the area of the Indian Point discharge.

As there is only one combined discharge from the Indian Point site, for Units Nos. 1, 2 and 3, the triaxial isothermal measurement programs relate to all three units. The intensive program will be suspended if, and when (a) the Licensee shall provide clear and convincing proof, to the satisfaction of the Department that it will comply with all provisions of water quality standards and criteria applicable at the site under any and all conditions of operation of Indian Point Units 1, 2 and 3 or any combination of units,

or (b) the Licensee shall initiate construction of an alternative to the present once-through cooling system (provided, however, such program shall be reinstituted if such system is not completed and operated), whichever circumstance, (a) or (b), should first occur.

5. Within three (3) months of the date of issuance of the Commission operating license, or NPDES permit, whichever is earlier, Licensee shall file for approval with the Department a report on all water treatment, corrosion inhibitor, anti-fouling, slimicide, biocide and boiler cleaning chemicals or compounds used in Indian Point Units No. 1, 2 or 3. Such report shall identify each product by chemical formula and/or composition, annual consumption, frequency of use, maximum use per incident, effluent concentration, available bioassay and toxicity limits and procedures for use. Approval shall only be granted for uses which do not contravene New York State Water Quality Standards. Except for emergency measures which shall be reported to the Department within twenty-four hours, no substitutions will be allowed without prior written approval of the Department. As determined by the Department, wastewaters containing chemicals and/or oil shall be collected and treated prior to dilution with non-contact cooling water on a schedule to meet effluent limitations and in facilities which shall be approved by the Department provided that Licensee shall have sixty days from the date of receipt of the Department's determination to present for consideration alternative facilities, controls and measures.

6. Within three (3) months of the date of issuance of the Commission operating license, or NPDES permit, whichever is earlier, the Licensee shall file for approval with the Department a report on practices which minimize the impact and use of chlorine on water resources and identify reports previously submitted to the Department.

7. Within four (4) months of the date of issuance of the operating license, or NPDES permit, whichever is earlier, Licensee shall file for approval with the Department the detailed biological study program it is conducting to determine effects of once-through cooling system operation on aquatic organisms. The Department and Licensee shall from time to time consult on any necessary changes to the program. Segments of such biological study program shall be implemented as approved by the Department. A summary progress report shall be submitted six (6) months following

implementation of the first segment and every six (6) months thereafter. An annual report shall be submitted by July 31 of each year covering the preceding calendar year's operation. Additional reporting requirements may be imposed for certain segments of the program as necessary.

D. SUBMISSION OF ADDITIONAL REPORTS.

1. Starting one month from the date of issuance of the operating license, or NPDES permit, whichever is earlier, Licensee shall submit to the Department a monthly report of daily operating data by the 15th of the following month for:

a. Daily minimum, maximum and average station electrical output in kilowatts which shall be monitored and recorded, and daily minimum, maximum and average electrical output in kilowatt hours, which shall be determined and recorded.

b. Daily minimum, maximum and average water use for each pump, which shall be directly or indirectly measured or calculated and logged. The basis for such measurements or calculation shall be reported.

c. Temperature in degrees Fahrenheit of the intake forebay and effluent canal prior to discharge, which shall be measured and recorded continuously. Daily minimum, maximum, and average intake and discharge temperatures, which shall be logged.

d. Daily fish collections by number, size, weight, and species of fish and other aquatic biota impinged as a result of operation of all units.

2. Licensee shall file with the Department at its offices in New Paltz and in Albany, concurrently with filing with the U.S. Environmental Protection Agency, copies of all applications, reports, and supporting data filed pursuant to Sections 316(a) and 316(b) of the Act.

3. Copies of any other reports for Indian Point Unit No. 3 pertaining to the environment which Licensee submits to any federal, state or local agency, shall also be concurrently submitted to the Department.

4. Licensee shall notify the Department within one week from the time of submission to the Commission of any requested change in the ETSR at the time of such request. Such notification shall fully discuss the requested change.

5. All reports and notifications Licensee provides to the Department pursuant to this certification shall be submitted to the Director of Environmental Analysis in Albany and the Regional Supervisor of Environmental Analysis in New Paltz.

E. OTHER

1. Licensee shall provide access to the Indian Point site at any time to representatives of the Department, subject to site security regulations, to assess the environmental impacts of the operations of Indian Point Units No. 1, 2 and 3 and to review the data gathering techniques of Licensee.

2. Should any limitation or condition of this certification or any permit issued require construction in or on waters of the State or the banks or bed thereof, such construction and associated excavation, fill or disturbance shall require prior approval of the Department under stream protection regulations.

3. This certification with conditions shall not be deemed to modify, extend, or affect in any manner any order of the Commissioner against Licensee; nor does it constitute a condonation of any violation of any order or release, compromise, or waiver of any rights or any course of action which the Commissioner has or may have against Licensee because of any violation of any order and does not preclude compliance of the discharge from Indian Point Units Nos. 1, 2 or 3 with any permit with respect to such discharge which may be hereafter issued by the Commissioner.

This certification with conditions is issued on the basis that the Licensee has not yet established that Indian Point No. 3 as presently designed will meet the State's water quality criteria and standards, and with the full understanding and acknowledgement by Licensee that the Department, in cooperation with the U.S. Environmental Protection Agency, has promulgated revised thermal criteria in order to bring such criteria into conformity with the Act.

The acceptance by Licensee of this certification with conditions shall not be deemed a waiver by Licensee of its right to obtain judicial review of any disapproval of a plan, report or other document submitted by Licensee to the Department for its approval, as provided by law.

This certification with conditions is issued solely for the purpose of Section 401 of the Act.

If any condition of this certification is declared invalid, the Department shall reconsider the entire certification and may make appropriate amendments or modifications as a result of such reconsiderations.

A copy of this certification with conditions is being forwarded to the Director of Regulations, U.S. Nuclear Regulatory Commission, and the Regional Administrator of the Environmental Protection Agency.

Sincerely yours,

Consolidated Edison Company
of New York
4 Irving Place
New York, New York 10003

Attention: Mr. Carl L. Newman
Vice President

cc: Nuclear Regulatory Commission
Environmental Protection Agency, Region II

TAB 20

Permit Identified

Hard Copy Not Available

TAB 21

Permit Identified

Hard Copy Not Available

TAB 22

Permit Identified

Hard Copy Not Available

TAB 23

John D O'Toole

PD82 110

June 10, 1982

Re: Indian Point Units 1 and 2
Docket Nos. 50-3 & 50-247

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Denton:

Please find enclosed a copy of the approved State Pollutant Discharge Elimination System permit renewal with conditions effective May 14, 1981 for Indian Point Unit Nos. 1, 2 and 3. This submittal is in accordance with the requirements of Section 3.2 of the Part I, Non-Radiological Environmental Protection Plan of Appendix B Environmental Technical Specification Requirements for the Indian Point Units.

Very truly yours,

enclosure

C002

tachments: GENERAL CONDITIONS PART II (8/81), COST OF BIOLOGICAL MONITORING, SUMMARY OF MONITORING PROGRAM STUDIES, & THE HUDSON RIVER SETTLEMENT AGREEMENT

"NW-P" RENEWAL SIC 4911

Facility ID No. : NY-0004472

Effective Date (EDP) : May 14, 1981

Expiration Date (ExDP) : May 13, 1986

pies: SPDES FILE, BWFD-ADAMCZYK, BWFD-PULASKI, EPA-BAKER, EPA-SPEAR, DEC REGION #3 SUBOFFICE, WESTCHESTER CO. H.D., ISC, NYCDCOE

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM (SPDES)
DISCHARGE PERMIT

Special Conditions
(Part I)

This SPDES permit is issued in compliance with Title 8 of Article 17 of the Environmental Conservation Law of New York State and in compliance with the Clean Water Act, as amended, (33 U.S.C. §1251 et. seq.) (hereinafter referred to as "the Act").

Permittee Name: CONSOLIDATED EDISON CO. OF NEW YORK, INC.
4 Irving Place
New York, New York 10003
Attn: Robert Keegan, Director
Room #1026

&

POWER AUTHORITY OF THE STATE OF NEW YORK
10 Columbus Circle
New York, New York 10019
Attn: John W. Blake, Director

is authorized to discharge from the facility described below:

Facility Name: INDIAN POINT GENERATING STATION (UNITS 1 & 2 (ConEd) & 3 (PASNY))

Facility Location (C,T,V): Buchanan (V) County: Westchester

Facility Mailing Address (Street): Broadway and Bleakley Avenue

Facility Mailing Address (City): Buchanan State: New York Zip Code: 10511

into receiving waters known as:
Hudson River (Class SB)

in accordance with the effluent limitations, monitoring requirements and other conditions set forth in this permit.

This permit and the authorization to discharge shall expire on midnight of the expiration date shown above and the permittee shall not discharge after the expiration date unless this permit has been renewed, or extended pursuant to law. To be authorized to discharge beyond the expiration date, the permittee shall apply for permit renewal as prescribed by Sections 17-0803 and 17-0804 of the Environmental Conservation Law and Parts 621, 752, and 755 of the Departments' rules and regulations.

By Authority of William L. Garvey, P.E., Chief, Permit Administration Section
Designated Representative of Commissioner of the
Department of Environmental Conservation

Date

Signature

20-276/80(R)-1

INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 14, 1981
and lasting until April 26, 1982
the discharges from the permitted facility shall be limited and monitored by the permittee as specified below:

Outfall Number & Effluent Parameter	Discharge Limitations		Units	Monitoring Reqmts.	
	Daily Avg.	Daily Max.		Measurement Frequency	Sample Type

Except for the limits on condenser cooling water listed in paragraphs 10a and 10g of NPDES permits NY 002 7065 and NY 000 4472 all provisions of those permits shall apply to this facility.

FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning April 26, 1982
and lasting until May 13, 1986
the discharges from the permitted facility shall be limited and monitored by the permittee as specified below:

Outfall Number & Effluent Parameter	Discharge Limitations Daily Avg.	Daily Max.	Units	Monitoring Reqmts. Measurement Frequency	Sample Type
001* Discharge Canal (a, b)					

The Permittee shall discharge condenser cooling water so that the following conditions are satisfied:

1. At no time shall the maximum discharge temperature at Station DSNC01 exceed 43.3°C (110°F).

2. Between April 15 and June 30, the daily average discharge temperature at Station DSN001 shall not exceed 34°C (93.2°F) for an average of more than ten days per year during the term of this permit beginning with 1981; provided that in no event shall the daily average discharge temperature at Station DSN 001 exceed 34°C (93.2°F) on more than 15 days between April 15 and June 30 in any year.

3. Whenever, due to forced outage or other technical problem, e.g. equipment failure, it is necessary to remove one or more circulating water pumps from service at an operating unit (or units) pumps at any non-operating unit (or units), including Unit 1, may be used to augment flow in the discharge canal as necessary to meet temperature limits, and will not be considered a violation of settlement outage requirements at the non-operating unit provided that in no event shall total Station flow, as so augmented, exceed the equivalent of full circulator flow at each unit which is then operating.

4. If the discharge temperature limits in clauses 1 and 2 above are exceeded as a result of reduced flow required by Section 2.D of the Settlement Agreement, corrective action, which may include increasing cooling water flow as necessary up to the equivalent of full circulator flow for each unit then operating, shall be taken as quickly as practical and will not be considered a violation of outage requirements at the non-operating unit. During the period required for corrective action (which shall not exceed 2 hours), the discharge will not be considered to be in excess of the foregoing temperature limits. To the extent practical the Permittee shall anticipate when the ambient river temperature will rise to such level that the prevailing reduced cooling water flow rate specified in the Settlement will fail to maintain discharge temperature below 34°C, and may, upon consultation with DEC, increase flow to the next rate scheduled in the Settlement prior to the discharge temperature exceeding 34°C.

5. Nothing contained herein shall be construed to change or otherwise affect the provisions of the Settlement Agreement.

6. Except as set forth above, there shall be no thermal effluent limitations which govern or otherwise affect the operation of the Station or discharges therefrom.

FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning April 26, 1982
and lasting until May 13, 1986
the discharges from the permitted facility shall be limited and monitored by the permittee as specified below:

Internal Waste Stream Number & Effluent Parameter	Discharge Limitations Daily Avg.	Daily Max.	Units	Monitoring Reqmts. Measurement Frequency	Sample Type
001* Discharge Canal (a, b)					
Total Residual Chlorine (c)		0.5	mg/l	Continuous during periods of chlorination	
Total Chromium		30[d]	lbs/dy	Weekly	Calculation
Total Chromium		200[d]	lbs/yr	Annual	Calculation
Lithium Hydroxide		0.01[d]	mg/l	Weekly	Calculation
Boron		1.0[e]	mg/l	Weekly	Calculation
Boron		525[e]	lbs/dy	Weekly	Calculation
pH (Range)		6.0 - 9.0	S.U.	Weekly	Grab
Biocides					

* Outfall 001 is the point prior to confluence of the discharge from the common discharge canal and the Hudson River.

Internal Waste Streams Effluent Limitations

001A - Sewage Treatment Plant

Flow		20,000[h]	GPD	Continuous	Recorder
BOD_5	30[g]	45[h]	mg/l	Monthly	6-hr composi
Total Suspended Solids	30[g]	45[h]	mg/l	Monthly	6-hr composi
Settleable Solids		0.3	ml/l	Weekly	Grab
Fecal Coliform	200[i]	400[j]	MPN/100 ml	Weekly	Grab
pH (Range)	6.0 - 9.0		S.U.	Weekly	Grab
Free Available Chlorine	0.5	2.0	mg/l	Weekly	Grab

Sum of 001B, 001C, 001D, 001E, 001F*, 001G, & 001H

Flow	Monitoring Only		MGD	Weekly	Instantaneous
Total Suspended Solids	30	50	mg/l	Weekly	Grab[k]

Sum of 001C & 001D

Flow	Monitoring Only		MGD	Weekly	Instantaneous
Hexavalent Chromium	0.05	0.1	mg/l	Weekly	Grab[l]
Total Chromium	0.5	1.0	mg/l	Weekly	Grab[l]
Surfactants	3	6	lbs/dy	Weekly	Calculated[m]
Oil & Grease		15	mg/l	Weekly	Grab[n]

001F**

Total Suspended Solids	30	50	mg/l	Weekly	Grab

**If river water is used in the Flash Evaporator, internal waste stream 001F must be sampled separately, and not included in the composite, the limits for 001F using river water are Net Limits.

FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning April 26, 1982
and lasting until May 13, 1986
the discharges from the permitted facility shall be limited and monitored by the permittee as specified below:

Internal Wastes Streams Number & Effluent Parameter	Discharge Limitations Daily Avg.	Daily Max.	Units	Monitoring Reqmts. Measurement Frequency	Sample Type
Sum of 001B, 001C, & 001D					
Flow	Monitoring Only		MGD	Weekly	Instantaneous
Boron	Monitoring Only		mg/l	Weekly	Grab[o]
001C					
Flow	Monitoring Only		MGD	Monthly	Instantaneous
001E					
Flow	Monitoring Only		MGD	Weekly	Instantaneous
pH (Range)	6.0 - 9.0		SU	Weekly	Grab
001F					
Flow	Monitoring Only		MGD	Monthly	Instantaneous
001G					
Flow	Monitoring Only		MGD	Weekly	Instantaneous
Phosphates as P	16	38	lbs/day	Weekly	Grab
001H					
Flow	Monitoring Only		MGD	Monthly	Instantaneous
001I					
Flow	Monitoring Only		MGD	P	P
001J ***					
Flow	Monitoring Only		MGD	Weekly	Estimate
Oil & Grease		No visible oil or sheen	mg/l	Weekly	Visual Observation.

***Because this outfall cannot be monitored, the following shall apply:
1. All oil spills shall be handled under the SPCC plan.
2. Flow tributary to the floor drains shall not contain more than 15 mg/l of oil and grease nor any visible sheen.

Footnotes

a. Discharge 001 shall occur only through the subsurface ports of the outfall structure.

b. When the temperature in the discharge canal exceeds 90°F or the site gross electric output equals or exceeds 600MW the head differential across the outfall structure shall be maintained at a minimum of 1.75 feet. When required adjustment of the ports shall be made within 4 (four) hours of any change in the flow rate of the circulating water pumps. If compliance is not achieved, further adjustments of the ports shall be made to achieve compliance. The requirements of the Settlement Agreement flow schedules shall take priority over the requirements of this footnote.

c. Condenser Chlorination

Total residual chlorine at DSN 001 shall not exceed 0.5 mg/l. Should the circulating water system be chlorinated, the maximum frequency of chlorination for the condensers of each unit shall be limited to 3 (three) times per week. The duration of any chlorination period shall not exceed one hour, with a maximum of 2 (two) chlorination periods occurring in a 24 hour period. The total time for chlorination of the three units for which this permit is issued shall not exceed 9 (nine) hours per week. Chlorination shall take place during daylight hours and shall not occur at more then one unit at a time.

d. The calculated quantity of these substances in the discharge shall be determined by using the analytical results obtained from sampling that is to be performed on interr waste streams 001C and 001D.

e. The calculated quantity of this substance in this discharge shall be determined by using the analytical results obtained from sampling that is to be performed on internal waste streams 001B, 001C and 001D.

f. No biocides, corrosion control chemicals, or other water treatment chemicals are authorized for use by the permittee except those listed below or limited as a parameter in the permit.

Morpholine
Cyclohexylamine
Hydrazine

Drewgard 100 may be added so the calculated concentration shall not exceed 11 mg/l the active ingredient E.D.T.A. shall not exceed .28 mg/l in the discharge canal.

g. Arithmetic mean of the values for effluent samples collected over a 30-day period.

h. Arithmetic mean of the values for effluent samples collected over a 7-day period.

i. 30 day geometric mean.

j. 7 day geometric mean.

k. One flow proportioned composite sample shall be obtained from one grab sample taken from each of the internal waste streams 001B, 001C, 001D, 001E, 001F, 001G, and 001H.

l. One flow proportioned composite sample shall be obtained from one grab sample taken from each of the internal waste streams 001C and 001D, during periods when chromium is being used.

m. The calculated quantity of these substances in the discharge shall be based on the quantity of the substances consumed at the facility.

n. One grab sample shall be obtained from each of the internal waste streams 001C and 001D and the samples shall be analyzed separately. The results of the two analyses shall be averaged and reported.

o. One flow proportioned composite sample shall be obtained from one grab sample taken from each of the internal waste streams 001B, 001C, and 001D.

p. The flow of condenser cooling water discharges shall be monitored and recorded by hourly recording of the operating mode of the circulating water pumps. Any changes in the flow rate of each circulating water pump shall be recorded, including the date and time, and reported monthly together with the Discharge Reporting Form. The permittee shall indicate whether any circulating pumps were not in operation due to pump breakdown or required pump maintenance and the period(s) (dates and times) the discharge temperature limitation was exceeded, if at all. For all other discharges or internal waste streams (only those which are limited), the flow shall be measured and recorded at a frequency coinciding with the most frequently sampled parameter. Methods, equipment, installation, and procedures shall conform to those prescribed in the Water Measurement Manual, U.S. Department of the Interior, Bureau of Reclamation, Washington, D.C.: 1967 or equivalent approved by the permit issuing authority.

Additional Requirements:

1. There shall be no discharge of PCB's from this facility.

2. All collected solids from the washing of intake screens shall be disposed of by a New York State licensed contractor or by the permittee at a NYSDEC approved landfill.

3. The permittee shall submit on a quarterly basis to the NYSDEC at its offices in White Plains and Albany a monthly report of daily operating data, by the 28th of the month following the end of the quarter, that includes the following:

   a. Daily minimum, maximum, and average station electrical output shall be determined and logged.

   b. Daily minimum, maximum and average water use shall be directly or indirectly measured or calculated and logged.

   c. Temperature of the intake and discharges shall be measured and recorded continuously. Daily minimum, maximum and average intake and discharge temperatures shall be logged.

4. The use of chlorine for condenser cleaning shall be kept to the minimum amount which will maintain plant operating efficiency. By issuance date + 6 months the applicant shall submit for NYSDEC approval, a plan of study for a chlorine minimization program. This program shall be conducted in accordance with the requirements of Appendix A of the proposed Steam Electric Effluent Limitations (Part 423) as shown on pages 60354 and 60355 of the Federal Register published on October 14, 1980.

   EPA has proposed draft limitations that would prohibit the discharge of chlorine from this facility. This permit contains water quality limitations on the discharge of chlorine. Following the promulgation of EPA BAT limitations on the discharge of chlorine, this permit may be revised to reflect these limitations.

5. Biological Monitoring and Reporting

   The permittee shall comply with biological monitoring requirements which shall be embodied in a Memorandum of Agreement (MOA) to be entered into between the NYSDEC and the Permittee for the permits issued to Indian Point operating Station Unit 2 and Indian Point Generating Station Unit 3. Monitoring requirements **shall be consistant with the Hudson River Settlement Agreement and Attachment V thereto.**

   Live sturgeon collected during scheduled biological monitoring studies will be counted, measured, and examined for tags, then carefully returned to the river as quickly as possible. Dead sturgeon collected during scheduled biological monitoring studies shall be counted, weighed, measured, examined for tags and frozen for salvage for the Department of Environmental Conservation for up to one year, at which time the sturgeon will be disposed of in a sanitary landfill. Each sturgeon shall be individually labeled indicating date of capture and appropriate measurements.

6. Notwithstanding any other requirements in this permit, the permittee shall also comply with all of the Water Quality Regulations promulgated by the Interstate Sanitation Commission on October 15, 1977 including Sections 1:01 and 2.05 (f) as they relate to oil and grease.

7. It is recognized that influent quality changes, equipment malfunction, acts of God, or other circumstances beyond the control of the Permittees may, at times, result in effluent concentrations exceeding the permit limitations despite the exercise of appropriate care and maintenance measures, and corrective measures by the permittees. The permittees, either individually or jointly, may come forward to demonstrate to the DEC that such circumstances exist in any case where effluent concentrations exceed those set forth in this permit. The DEC, however, is not obligated to wait for, or solicit, such demonstrations prior to the initiation of any enforcement proceedings, nor must it accept as valid on its face the statements made in any such demonstration.

In the event of non-compliance attributable to only one facility, DEC will initiate enforcement proceedings against the permittee responsible for such facility.

DEC shall not initiate enforcement proceedings concurrently against both the Permittees, unless DEC has been unable to identify the non-complying facility. If DEC seeks to enforce in an administrative or judicial proceeding any provision of this permit, the Permittees may raise at that time the issue of whether, under the United States Constitution, statute, or decisional law, they are entitled to a defense that their conduct was caused by circumstances beyond their control.

8. The Hudson River Settlement Agreement, dated December 19, 1980, is annexed to this permit as Appendix 2 and is incorporated herein as a condition to this permit. The Settlement Agreement satisfies New York State Criteria Governing Thermal Discharges.

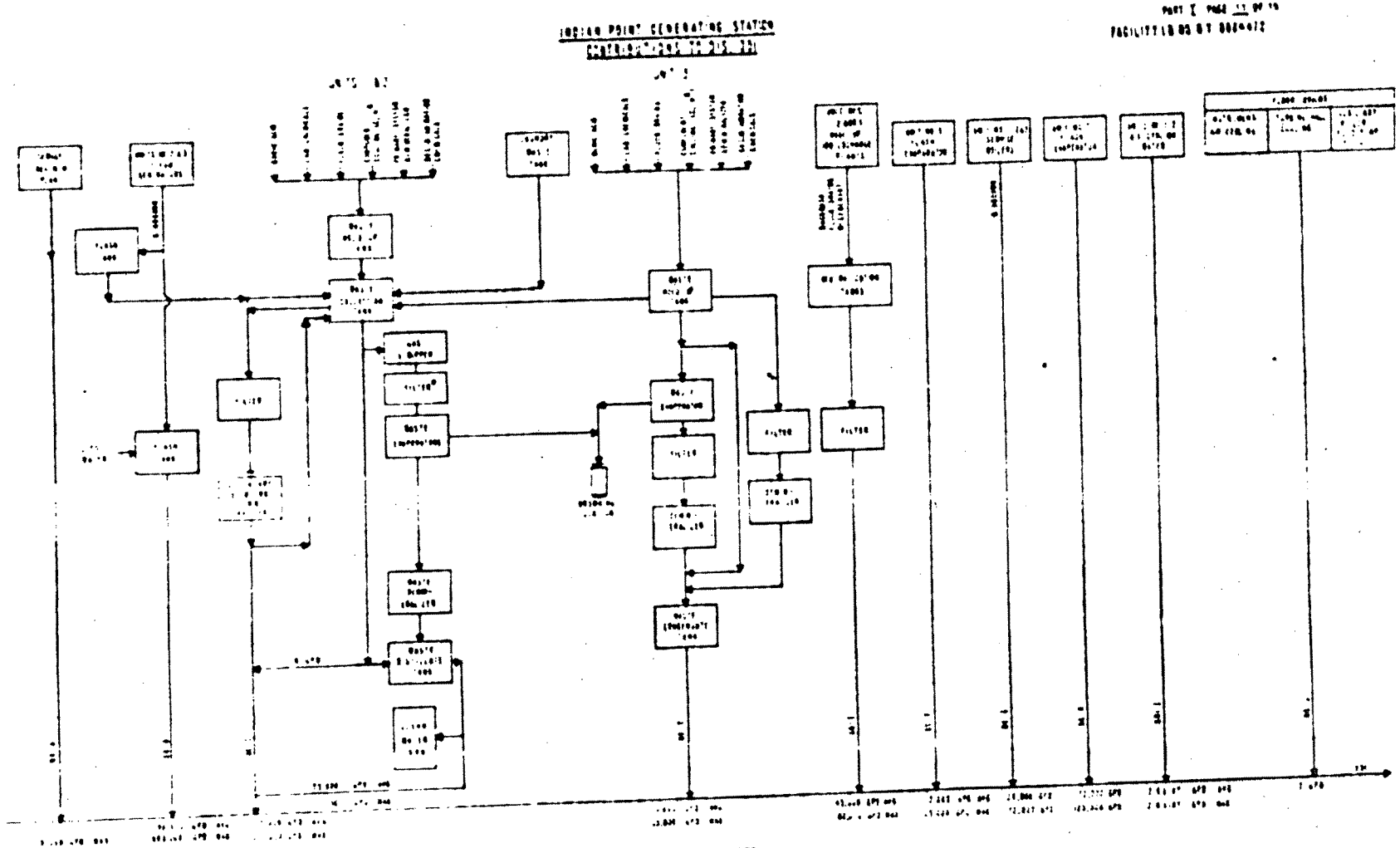
Definition of Daily Average and Daily Maximum

The daily average discharge is the total discharge by weight or in other appropriate units as specified herein, during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required by this permit, the daily average discharge shall be determined by the summation of all the measured daily discharges in appropriate units as specified herein divided by the number of days during the calendar month the measurements were made.

The daily maximum discharge means the total discharge by weight or in other appropriate units as specified herein, during any calendar day.

Monitoring Locations

Permittee shall take samples and measurements to meet the monitoring requirements at the location(s) indicated below: (Show locations of outfalls with sketch or flow diagram as appropriate). The sampling for the internal waste streams 001A thru 001J shall be taken in the internal waste streams before entering the river.



AVERAGE AND MAXIMUM FLOWS
DISCHARGE BOX CANAL

SCHEDULE OF COMPLIANCE FOR EFFLUENT LIMITATIONS

The permittee shall submit copies of the written notice of compliance or noncompliance required herein to the following offices:

Chief, Compliance Section
New York State Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233

Regional Engineer
New York State Department of Environmental Conservation
Region 3
202 Mamaroneck Avenue
White Plains, New York 10601

Westchester County Health Department
150 Grand Street
White Plains, New York 10601

Dr. Richard Baker, Chief
Permits Administration Branch
Planning and Management Division
U.S. Environmental Protection Agency
Region II
26 Federal Plaza
New York, New York 10278

The permittee shall submit copies of any engineering reports, plans of study, final plans, as-built plans, infiltration-inflow studies, etc. required herein to the New York State Department of Environmental Conservation Regional Office specified above unless otherwise specified in this permit or in writing by the Department or its designated field office.

MONITORING, RECORDING AND REPORTING

a) The permittee shall also refer to the General Conditions (Part II) of this permit additional information concerning monitoring and reporting requirements and conditions.

b) The monitoring information required by this permit shall be summarized and reported by submitting a completed and signed Discharge Monitoring Report form once every 1 month to the Department of Environmental Conservation and other appropriate regulatory agencies at the offices specified below. The first report will be due no later than April 28, 1982 Thereafter, reports shall be submitted no later than the 28th of the following month(s): Each Mont

Water Division
New York State Department of Environmental Conservation
50 Wolf Road - Albany, New York 12233

New York State Department of Environmental Conservation
Regional Engineer - Region #3
202 Mamaroneck Avenue, White Plains, NY 10601

Westchester County Health Department, 150 Grand St , White Plains, NY 10601
Interstate Sanitation Commission, Attn: Mr. Thomas R. Glenn, Jr.
Director and Chief Engineer, 10 Columbus Circle, New York, NY 10019

☒ (Applicable only if checked):,

Dr. Richard Baker, Chief - Permits Administration Branch
Planning & Management Division
USEPA Region II
26 Federal Plaza
New York, New York 10278

c) If so directed by this permit or by previous request, Monthly Wastewater Treatment Plant Operator's Reports shall be submitted to the DEC Regional Office and county health department or county environmental control agency specified above.

d) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

e) If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR 136 or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharge Monitoring Reports.

f) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in the permit.

g) Unless otherwise specified, all information submitted on the Discharge Monitoring Form shall be based upon measurements and sampling carried out during the most recently completed reporting period.

h) Blank Discharge Monitoring Report Forms are available at the above addresses.

Memorandum of Agreement
Between
New York State Department of Environmental Conservation
and
the Hudson River Utilities

1. This Memorandum of Agreement (MOA) is entered into by the New York State Department of Environmental Conservation (Department) with Consolidated Edison of New York, Inc. (Consolidated Edison), the Power Authority of the State of New York (Power Authority), Orange and Rockland Utilities, Inc. (O and R), and Central Hudson Gas and Electric Corp. (CH) in accordance with the Department's certification pursuant to Section 401 of the Clean Water Act and to supply the appropriate conditions "Biological Monitoring and Reporting" of the SPDES discharge permit numbers:

NY 000 4472 Consolidated Edison's Indian Point Station Units 1 & 2

NY 002 7065 The Power Authority's Indian Point Station Unit 3

NY 000 8010 Orange and Rockland Utilities' Bowline Point Station

NY 000 8231 Central Hudson's Roseton Station,

and in accordance with the "Biological Monitoring Program" as provided for in Section 2.J and Attachment V to the Hudson River Settlement Agreement entered into December 19, 1980 (Settlement Agreement).

2. This MOA is to embody the agreement of the Utilities to conduct monitoring program studies as described in Attachment 1. The Department is of the view that the biological monitoring program described in Attachment 1 is consistent with program objectives and the funding level to which the Utilities have committed as identified in the Settlement Agreement. Nothing contained in this MOA shall cause the Utilities to perform activities or incur expenses in excess of or less than the amount specified in Attachment 2. Any further studies necessary to fulfill the dollar value of the Utilities' monitoring obligations will be conducted only with the prior written approval of DEC.

3. The Utilities agree to use their best efforts to conduct fully the biological monitoring program as specified in the Settlement Agreement and as identified in Attachment 1 hereto. The Department acknowledges that the Utilities will not be deemed to be in non-compliance with the Settlement Agreement or any Condition of any applicable discharge permit or Section 401 Certification if the full complement of all biomonitoring cannot be completed within the original calendar year for reasons beyond the reasonable control of the Utilities. However, should the full complement of biomonitoring not be completed within the original year, at the sole discretion of DEC, either the time to complete such studies shall be extended or the unexpended funds shall be used to supplement the biomonitoring program in the subsequent year.

4. The Department and the Utilities hereby agree that the study programs may be modified at any time by written agreement of the Department and the Utilities to fulfill the objectives of the study, provided that any cost savings which accrue through such modifications be redirected to other studies as appropriate.

5. Reports based on these studies and an accounting of funds expended will be submitted within six months of the completion of component studies and no later than June 30 of the subsequent year unless an extended schedule is mutually agreed upon by the Department and the Utilities.

6. The term of this MOA shall be from the date of the last signature hereto until December 31, 1985, after which time this MOA shall be of no further force or effect except for completion of reports, accountings, or studies identified in paragraphs 3 to 5.

7. The term of Attachment 1 shall be until December 31, 1981 and each subsequent Attachment 1 shall expire at the end of its calendar year.

Signatures

_____/_____
Con Edison Date

_____/_____
Orange & Rockland Date

_____/_____
Central Hudson Date

_____/_____
Power Authority Date

_____/_____
Niagara Mohawk Date

_____/_____
NYSDEC Date

Summary Description of Monitoring Program Studies Mutually Agreed Upon by New York State Department of Environmetal Conservation and the Hudson River Utilities

A. Impingement - Indian Point, Bowline Point, Roseton

Impingement collections will be made at each plant from January 1981 through December 1981. Sampling frequency at Indian Point Unit Nos. 2 and 3 will be daily at water intakes at which circulating water pumps are in operation until such time as relief from this requirement is granted. Thereafter, collections will be made as specified by DEC. Impingement collections will be made once per week at Bowline Point and Roseton over a continuous 24-hour sampling period. At each plant, fish will be identified and enumerated to determine total number, total weights and length/frequency distributions of the collected species, utilizing appropriate subsumpling methodologies. Water quality data and plant operating conditions will be recorded as appropriate.

B. Entrainment - Indian Point, Bowline Point, Roseton

Entrainment abundance sampling will be conducted approximately twice each week over a continuous 24-hour period weekly from mid-April at Roseton and early May at Bowline and Indian Point through August, 1981. Fish eggs and larvae will be identified and enumerated by species to the lowest taxonomic level practicable. Length of larvae will be determined from subsamples. Water quality data and plant operating conditions will be recorded as appropriate.

C. Fall Juvenile Survey

Beach seine, Tucker trawl and epibenthic sled samples will be collected between river miles 14 and 153 from August 1981 through October 1981. Approximately 100 randomly selected beaches will be seined biweekly. An aggregate of approximately 200 samples will be collected with the Tucker trawl and epibenthic sled during each biweekly sampling period.

Length and weight measurements of subsampled young-of-the-year and older striped bass, white perch and other selected fish species will be made. Striped bass and white perch will be examined for marks and suspected recaptures preserved for later verification. Appropriate water quality measurements will be taken with each sample.

D. River Ichthyoplankton

From early May through June 1981 approximately 200 samples will be collected weekly between river miles 14 and 140. At each sample [illegible] water quality will be determined. From the samples collected, [illegible] will be analyzed for determination of the distribution and abundance of the eggs, larvae and juveniles of striped bass, white perch, Atlantic tomcod and other fish species within the Hudson River estuary.

E. BARRIER NET EVALUATION - BOWLINE POINT

Studies will be conducted at Bowline Point in the spring (periods of no river ice) of 1981 to further evaluate the efficiency of using a barrier net to reduce fish impingement. Methodologies using hydroacoustics, gill nets and fish tags will be used to refine previous efficiency estimates derived solely from tagging studies.

F. IMPINGEMENT SURVIVAL - BOWLINE POINT

Impingement survival studies at Bowline Point will be continued through the spring of 1981 to refine previous estimates of survival and evaluate any potential effects of the new return system for impinged fish. Initial and latent mortality estimates will be compared for impinged and control fish. Water quality data will be recorded as appropriate.

G. ENVIRONMENTAL TECHNICAL SPECIFICATION REQUIREMENTS

Biological studies conducted by Consolidated Edison and the Power Authority in accordance with the Environmental Technical Specification Requirements for the Indian Point plants in effect during April 1981 shall constitute part of the monitoring program identified in the Settlement Agreement.

The settlement specifies that the biological monitoring program will be conducted "at a cost of at least $2 million per year, adjusted annually from the base year, which shall be the first year of the term of this Agreement, in accordance with the Implicit Price Deflator, GNP, published by the US Dept. of Commerce in the Survey of Current Business".

1981 represents the base year for which the biological monitoring expenditures will be $2,000,000.

TAB 24

4/22

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233 -0001

June 18, 1982

Robert F. Flacke
Commissioner

Mr. John A. Nutant
Vice President
Consolidated Edison Co. of New York, Inc.
4 Irving Place
New York, NY 10003
and
Mr. Joseph Schmieder
Executive Vice President &
Chief Engineer
Power Authority of the State of New York
10 Columbus Circle
New York, NY 10019

Dear Messrs. Nutant and Schmieder:

Re: 401 certification for Indian Point Nuclear Regulatory Commission Licenses DPR-5, DPR-26 and DPR-64 (Consolidated Edison Co. of New York, Inc. and Power Authority of the State of New York, as joint permittees)

The New York State Department of Environmental Conservation hereby certifies, pursuant to Section 401 of the Federal Water Pollution Control (the Act), that compliance with the terms of the attached SPDES Permit #NY-0004472 for Consolidated Edison Company of New York, Inc.'s Indian Point Units Nos. 1 and 2 and for Power Authority of the State of New York's Indian Point Unit No. 3 Nuclear Power Plants will result in compliance with all applicable provisions of Section 208(e), 301, 302, 303, 306 and 307 of the Act and the appropriate provisions of state law.

This certification supersedes and replaces all prior certifications pursuant to Section 401 of the Act.

Sincerely yours,

William L. Garvey, P.E.
Chief, Permit Administration Section

Attachment
cc: Dr. Baker - EPA

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

TAB 25

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
26 FEDERAL PLAZA
NEW YORK, N. Y. 10278
October 5, 1984

REPLY TO
ATTENTION OF

Regulatory Branch

SUBJECT: Department of the Army Permit No. 13384

Mr. Christopher Zeppie
Power Authority of the State of New York
123 Main Street
White Plains, New York 10601

Gentlemen:

Enclosed is a Department of the Army permit for your work.

Please display the enclosed Notice of Authorization sign at your work site.

Condition (n) of the permit requires you to submit to this office the dates of commencement and completion of your work. Enclosed are two postage paid postcards for you to use to submit the required dates.

If, for any reason, a change in your plans or construction methods is found necessary, please contact us immediately to discuss modification of your permit. Any change must be approved before it is undertaken.

Sincerely,

Dennis J. Suszkowski, Ph.D.
Chief, Regulatory Branch

Enclosure

Application No. 84-115-Y.. (Public Notice No. 11775-84-. .-YW)

Name of Applicant Power Authority of the State of New York

Effective Date 5 October 1984

Expiration Date (*If applicable*) 5 October 1994

DEPARTMENT OF THE ARMY
PERMIT NUMBER 13384

Referring to written request dated 7 February 1984 for a permit to:

(X) Perform work in or affecting navigable waters of the United States, upon the recommendation of the Chief of Engineers, pursuant to Section 10 of the Rivers and Harbors Act of March 3, 1899 (*33 U.S.C. 403*);

( ) Discharge dredged or fill material into waters of the United States upon the issuance of a permit from the Secretary of the Army acting through the Chief of Engineers pursuant to Section 404 of the Clean Water Act (*33 U.S.C. 1344*);

( ) Transport dredged material for the purpose of dumping it into ocean waters upon the issuance of a permit from the Secretary of the Army acting through the Chief of Engineers pursuant to Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (*86 Stat. 1052; P.L. 92-532*);

Power Authority of the State of New York
10 Columbus Circle
New York, New York 10019
(212) 397-6200

is hereby authorized by the Secretary of the Army:
to

dredge a 15000 square foot area to a depth of 27 feet below mean low water to remove 6000cubic yards of material with upland disposal where it will be suitably retained to prevent its return to the waterway

in Hudson River

at Indian Point Power Plant, Buchanan, Westchester County, New York

in accordance with the plans and drawings attached hereto which are incorporated in and made a part of this permit (*on drawings, give file number or other definite identification marks.*)

1522-15 (Hudson River - PASNY - dredge)

subject to the following conditions:

I. General Conditions:

a. That all activities identified and authorized herein shall be consistent with the terms and conditions of this permit; and that any activities not specifically identified and authorized herein shall constitute a violation of the terms and conditions of this permit which may result in the modification, suspension or revocation of this permit, in whole or in part, as set forth more specifically in General Conditions j or k hereto, and in the institution of such legal proceedings as the United States Government may consider appropriate, whether or not this permit has been previously modified, suspended or revoked in whole or in part.

b. That all activities authorized herein shall, if they involve, during their construction or operation, any discharge of pollutants into waters of the United States or ocean waters, be at all times consistent with applicable water quality standards, effluent limitations and standards of performance, prohibitions, pretreatment standards and management practices established pursuant to the Clean Water Act (*33 U.S.C. 1344*), the Marine Protection, Research and Sanctuaries Act of 1972 (*P.L. 92-532, 86 Stat. 1052*), or pursuant to applicable State and local law.

c. That when the activity authorized herein involves a discharge during its construction or operation, or any pollutant (*including dredged or fill material*), into waters of the United States, the authorized activity shall, if applicable water quality standards are revised or modified during the term of this permit, be modified, if necessary, to conform with such revised or modified water quality standards within 6 months of the effective date of any revision or modification of water quality standards, or as directed by an implementation plan contained in such revised or modified standards, or within such longer period of time as the District Engineer, in consultation with the Regional Administrator of the Environmental Protection Agency, may determine to be reasonable under the circumstances.

d. That the discharge will not destroy a threatened or endangered species as identified under the Endangered Species Act, or endanger the critical habitat of such species.

e. That the permittee agrees to make every reasonable effort to prosecute the construction or operation of the work authorized herein in a manner so as to minimize any adverse impact on fish, wildlife, and natural environmental values.

f. That the permittee agrees that he will prosecute the construction or work authorized herein in a manner so as to minimize any degradation of water quality.

g. That the permittee shall allow the District Engineer or his authorized representative(s) or designee(s) to make periodic inspections at any time deemed necessary in order to assure that the activity being performed under authority of this permit is in accordance with the terms and conditions prescribed herein.

h. That the permittee shall maintain the structure or work authorized herein in good condition and in reasonable accordance with the plans and drawings attached hereto.

i. That this permit does not convey any property rights, either in real estate or material, or any exclusive privileges; and that it does not authorize any injury to property or invasion of rights or any infringement of Federal, State, or local laws or regulations.

j. That this permit does not obviate the requirement to obtain state or local assent required by law for the activity authorized herein.

k. That this permit may be either modified, suspended or revoked in whole or in part pursuant to the policies and procedures of 33 CFR 325.7.

l. That in issuing this permit, the Government has relied on the information and data which the permittee has provided in connection with his permit application. If, subsequent to the issuance of this permit, such information and data prove to be materially false, materially incomplete or inaccurate, this permit may be modified, suspended or revoked, in whole or in part, and/or the Government may, in addition, institute appropriate legal proceedings.

m. That any modification, suspension, or revocation of this permit shall not be the basis for any claim for damages against the United States.

n. That the permittee shall notify the District Engineer at what time the activity authorized herein will be commenced, as far in advance of the time of commencement as the District Engineer may specify, and of any suspension of work, if for a period of more than one week, resumption of work and its completion.

o. That if the activity authorized herein is not completed on or before 5th day of Oct, 19 87, (*three years from the date of issuance of this permit unless otherwise specified*) this permit, if not previously revoked or specifically extended, shall automatically expire.

p. That this permit does not authorize or approve the construction of particular structures, the authorization or approval of which may require authorization by the Congress or other agencies of the Federal Government.

q. That if and when the permittee desires to abandon the activity authorized herein, unless such abandonment is part of a transfer procedure by which the permittee is transferring his interests herein to a third party pursuant to General Condition t hereof, he must restore the area to a condition satisfactory to the District Engineer.

r. That if the recording of this permit is possible under applicable State or local law, the permittee shall take such action as may be necessary to record this permit with the Register of Deeds or other appropriate official charged with the responsibility for maintaining records of title to and interests in real property.

s. That there shall be no unreasonable interference with navigation by the existence or use of the activity authorized herein.

t. That this permit may not be transferred to a third party without prior written notice to the District Engineer, either by the transferee's written agreement to comply with all terms and conditions of this permit or by the transferee subscribing to this permit in the space provided below and thereby agreeing to comply with all terms and conditions of this permit. In addition, if the permittee transfers the interests authorized herein by conveyance of realty, the deed shall reference this permit and the terms and conditions specified herein and this permit shall be recorded along with the deed with the Register of Deeds or other appropriate official.

u. That if the permittee during prosecution of the work authorized herein, encounters a previously unidentified archeological or other cultural resource within the area subject to Department of the Army jurisdiction that might be eligible for listing in the National Register of Historic Places, he shall immediately notify the district engineer.

II. Special Conditions: *(Here list conditions relating specifically to the proposed structure or work authorized by this permit)*:

1. No dredging will be performed between March 1st and June 30th of any given year.

The following Special Conditi. .ill be applicable when appropriate:

STRUCTURES IN OR AFFECTING NAVIGABLE WATERS OF THE UNITED STATES:

a. That this permit does not authorize the interference with any existing or proposed Federal project and that the permittee shall not be entitled to compensation for damage or injury to the structures or work authorized herein which may be caused by or result from existing or future operations undertaken by the United States in the public interest.

b. That no attempt shall be made by the permittee to prevent the full and free use by the public of all navigable waters at or adjacent to the activity authorized by this permit.

c. That if the display of lights and signals on any structure or work authorized herein is not otherwise provided for by law, such lights and signals as may be prescribed by the United States Coast Guard shall be installed and maintained by and at the expense of the permittee.

d. That the permittee, upon receipt of a notice of revocation of this permit or upon its expiration before completion of the authorized structure or work, shall, without expense to the United States and in such time and manner as the Secretary of the Army or his authorized representative may direct, restore the waterway to its former conditions. If the permittee fails to comply with the direction of the Secretary of the Army or his authorized representative, the Secretary or his designee may restore the waterway to its former condition, by contract or otherwise, and recover the cost thereof from the permittee.

e. Structures for Small Boats: That permittee hereby recognizes the possibility that the structure permitted herein may be subject to damage by wave wash from passing vessels. The issuance of this permit does not relieve the permittee from taking all proper steps to insure the integrity of the structure permitted herein and the safety of boats moored thereto from damage by wave wash and the permittee shall not hold the United States liable for any such damage.

MAINTENANCE DREDGING:

a. That when the work authorized herein includes periodic maintenance dredging, it may be performed under this permit for 10 years from the date of issuance of this permit (*ten years unless otherwise indicated*);

b. That the permittee will advise the District Engineer in writing at least two weeks before he intends to undertake any maintenance dredging.

DISCHARGES OF DREDGED OR FILL MATERIAL INTO WATERS OF THE UNITED STATES:

a. That the discharge will be carried out in conformity with the goals and objectives of the EPA Guidelines established pursuant to Section 404(b) of the Clean Water Act and published in 40 CFR 230;

b. That the discharge will consist of suitable material free from toxic pollutants in toxic amounts.

c. That the fill created by the discharge will be properly maintained to prevent erosion and other non-point sources of pollution.

DISPOSAL OF DREDGED MATERIAL INTO OCEAN WATERS:

a. That the disposal will be carried out in conformity with the goals, objectives, and requirements of the EPA criteria established pursuant to Section 102 of the Marine Protection, Research and Sanctuaries Act of 1972, published in 40 CFR 220-228.

b. That the permittee shall place a copy of this permit in a conspicuous place in the vessel to be used for the transportation and/or disposal of the dredged material as authorized herein.

This permit shall become effective on the date of the District Engineer's signature.

Permittee hereby accepts and agrees to comply with the terms and conditions of this permit.

[redacted] 12 Oct 84

PERMITTEE — DATE

DIRECTOR, ENVIRONMENTAL DIVISION
POWER AUTHORITY OF THE STATE OF NEW YORK

BY AUTHORITY OF THE SECRETARY OF THE ARMY:

[redacted] 5 October 1984

[redacted] — DATE

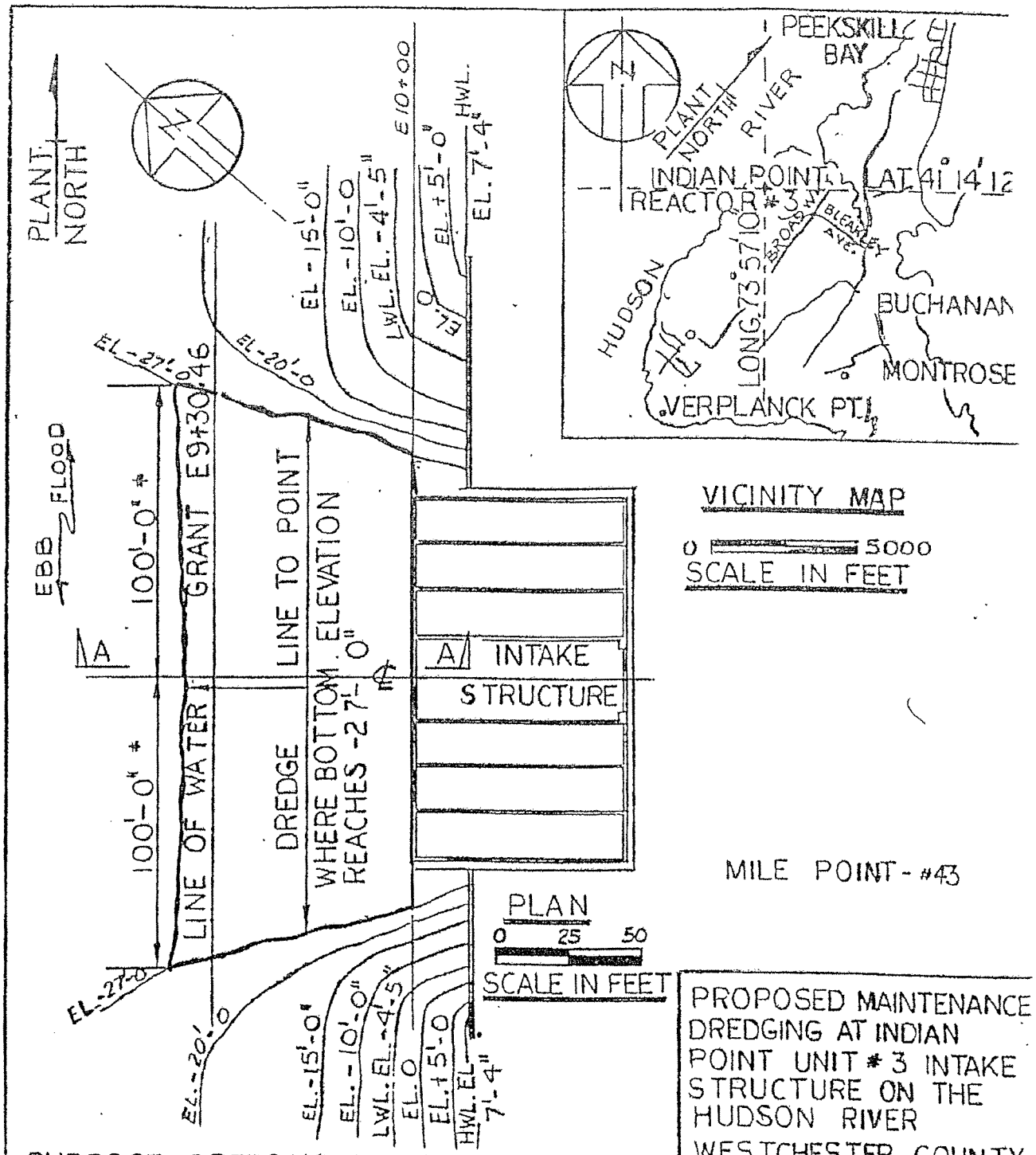
E. H. Griffis
Colonel, Corps of Engineers
DISTRICT ENGINEER,
U.S. ARMY, CORPS OF ENGINEERS

Transferee hereby agrees to comply with the terms and conditions of this permit.

TRANSFEREE — DATE

U.S. GOVERNMENT PRINTING OFFICE : 1983 O - 404-305

1522-15 (Hudson River - PASNY - dredge)



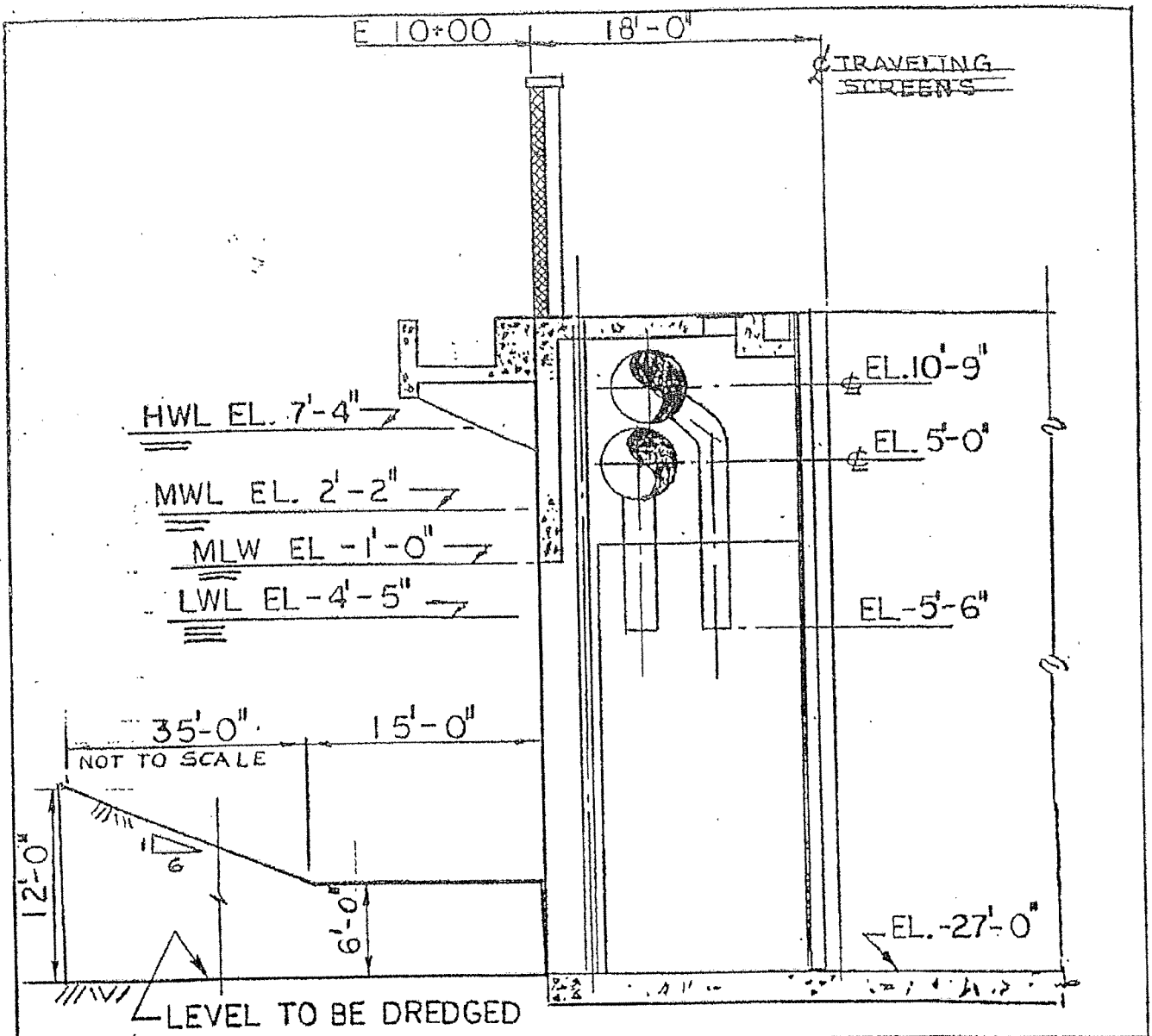
PURPOSE. DREDGING HUDSON RIVER AT INDIAN POINT UNIT # 3 INTAKE STRUCTURE.

DATUM - ALL SOUNDINGS ARE MINUS ELEVATIONS & REFER TO STANDARD DATUM (1929)

ADJACENT PROPERTY OWNERS. 1. CON EDISON
2. GEORGIA-PACIFIC

PROPOSED MAINTENANCE DREDGING AT INDIAN POINT UNIT # 3 INTAKE STRUCTURE ON THE HUDSON RIVER
WESTCHESTER COUNTY
NEW YORK
APPLICATION BY
THE POWER AUTHORITY
OF THE STATE OF
NEW YORK
SHEET 1 OF 2 DATE 9.30.82

1522-15 (Hudson River - PASNY - dredge)



SECTION A-A

0 5 10

SCALE IN FEET

PURPOSE. DREDGING HUDSON RIVER AT INDIAN POINT UNIT #3 INTAKE STRUCTURE

DATUM. ALL SOUNDINGS ARE MINUS ELEVATIONS & REFER TO STANDARD DATUM (1929)

ADJACENT PROPERTY OWNERS. 1. CON. EDISON
2. GEORGIA-PACIFIC

PROPOSED MAINTENANCE DREDGING AT INDIAN POINT UNIT # 3 INTAKE STRUCTURE ON THE HUDSON RIVER WESTCHESTER COUNTY NEW YORK

APPLICATION BY THE POWER AUTHORITY OF THE STATE OF NEW YORK

SHEET 2 OF 2 DATE 9.30.82

This notice of authorization must be conspicuously displayed at the site of work.

United States Army Corps of Engineers

5 OCT 19 84

A permit to maintenance dredge with upland disposal to maintain -27 feet MLW datum in the Hudson River for the cooling water intakes at Indian Point Power Plant, Buchanan, Westchester County, New York

has been issued to Power Authority of the NY on 5 OCT 19 84

Address of Permittee 10 Columbus Circle New York, NY 10019

Permit Number

13384

F.H. Griffis
Colonel, Corps of Engineers
District Commander

ENG FORM 4336 , Jul 81 (ER 1145-2-303) EDITION OF JUL 70 MAY BE USED *(Proponent: DAEN-CWO)*

TAB 26

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

State Pollutant Discharge Elimination System (SPDES)
DISCHARGE PERMIT
Special Conditions (Part 1)

EW

Industrial Code: 4911
Discharge Class (CL): 03
Toxic Class (TX): T
Major D.B.: 13
Sub D.B.: 01
Water Index Number: H

Facility ID Number: NY- 000 4472
UPA Tracking Number: 3086-0062
Effective Date (EDP): October 1, 1987
Expiration Date (ExDP): October 1, 1992
Modification Date(s):
Attachment(s): General Conditions (Part II, 2/85)
"A" - Order on Consent, July 17, 1986
"B" - Order on Consent, August 20, 1987

This SPDES permit is issued in compliance with Title 8 of Article 17 of the Environmental Conservation Law of New York State and in compliance with the Clean Water Act, as amended, (33 U.S.C. §1251 et. seq.) (hereinafter referred to as "the Act").

Attn: Robert Keegan/John W. Blake

Permittee Name: Consolidated Edison Co. of New York/New York Power Authority

Street: 4 Irving Place, Room 300/123 Main Street

City: New York/White Plains State: NY/NY Zip Code: 10003/10601

is authorized to discharge from the facility described below:

Facility Name: Indian Point Generating Station (Units 1&2 Con Ed) & (Unit 3 PASNY)

Location (C,T,V): Buchanan (V) County: Westchester

Mailing Address (Street): Broadway and Bleakley Avenue

Mailing Address (City) Buchanan State: NY Zip Code: 10511

from Outfall No. 001 at: Latitude 41°16'7" & Longitude 73°57'19"

into receiving waters known as: Hudson River Class SB

(List other Outfalls, Receiving Waters & Water Classification)

001	Hudson River SB	005	Hudson River SB
002	Hudson River SB	006	Hudson River SB
003	Hudson River SB	007	Hudson River SB
004	Hudson River SB	008	Hudson River SB
		009	Hudson River SB

in accordance with the effluent limitations, monitoring requirements and other conditions set forth in this permit.

This permit and the authorization to discharge shall expire on midnight of the expiration date shown above and the permittee shall not discharge after the expiration date unless this permit has been renewed, or extended pursuant to law. To be authorized to discharge beyond the expiration date, the permittee shall apply for permit renewal as prescribed by Sections 17-0803 and 17-0804 of the Environmental Conservation Law and Parts 621, 752, and 755 of the Departments' rules and regulations.

PERMIT ADMINISTRATOR	DATE ISSUED	ADDRESS
Ralph Manna, Jr.	8/28/87	21 South Putt Corners Rd. New Paltz, NY 12561

Distribution: C. Manfredi/P. Doshna
R. Hannaford - BWFD
Westchester Co. H.D.
EPA, NY - R. Baker
EPA, NJ - R. Spear
ISC
E. Reilly (pg. 1)
E. Radle, BEP - Albany
B. Brandt

Ralph Manna, Jr.
SIGNATURE

as "the Act").

Attn: Robert Keegan/John W. Blake

Permittee Name: Consolidated Edison Co. of New York/New York Power Authority

Street: 4 Irving Place, Room 300/123 Main Street

City: New York/White Plains State: NY/NY Zip Code: 10003/10601

is authorized to discharge from the facility described below:

Facility Name: Indian Point Generating Station (Units 1&2 Con Ed) & (Unit 3 PASNY)

Location (C,T,V): Buchanan (V) County: Westchester

Mailing Address (Street): Broadway and Bleakley Avenue

Mailing Address (City) Buchanan State: NY Zip Code: 10511

from Outfall No. 001 at: Latitude 41°16'7" & Longitude 73°57'19"

into receiving waters known as: Hudson River Class SB

and (list other Outfalls, Receiving Waters & Water Classification)

001	Hudson River SB	005	Hudson River SB
002	Hudson River SB	006	Hudson River SB
003	Hudson River SB	007	Hudson River SB
004	Hudson River SB	008	Hudson River SB
		009	Hudson River SB

in accordance with the effluent limitations, monitoring requirements and other conditions set forth in this permit.

This permit and the authorization to discharge shall expire on midnight of the expiration date shown above and the permittee shall not discharge after the expiration date unless this permit has been renewed, or extended pursuant to law To be authorized to discharge beyond the expiration date, the permittee shall apply for permit renewal as prescribed by Sections 17-0803 and 17-0804 of the Environmental Conservation Law and Parts 621, 752, and 755 of the Departments' rules and regulations.

PERMIT ADMINISTRATOR	DATE ISSUED	ADDRESS
Ralph Manna, Jr.	8/28/87	21 South Putt Corners Rd. New Paltz, NY 12561

Distribution: C. Manfredi/P. Doshna
R. Hannaford - BWFD
Westchester Co. H.D.
EPA, NY - R. Baker
EPA, NJ - R. Spear
ISC
E. Reilly (pg. 1)
E. Radle, BEP - Albany
B. Brandt

Ralph Manna Jr.
SIGNATURE

FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the Period Beginning October 1, 1987

lasting until October 1, 1992

discharges from the permitted facility shall be limited and monitored by the ittee as specified below:

FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

ng the Period Beginning October 1, 1987

lasting until October 1, 1992

discharges from the permitted facility shall be limited and monitored by the

ittee as specified below:

ifall Number & ent Parameter	Discharge Limitations Daily Avg.	Daily Max.	Units	Minimum Monitoring Requirements Measurement Frequency	Sample Type

001* Discharge Canal[a,b]

The permittee shall discharge condenser cooling water so that the following conditions are satisfied:

1. At no time shall the maximum discharge temperature at Station DSN 001 exceed 43.3°C (110°F).
2. Between April 15 and June 30, the daily average discharge temperature at Station DSN 001 shall not exceed 34°C (93.2°F) for an average of more than ten days per year during the term of this permit beginning with 1981; provided that in no event shall the daily average discharge temperature at Station DSN 001 exceed 34°C (93.2°F) on more than 15 days between April 15 and June 30 in any year.
3. Whenever, due to forced outage or other technical problem, e.g. equipment failure, it is necessary to remove one or more circulating water pumps from service at an operating unit (or units), pumps at any non-operating unit (or units), including Unit 1, may be used to augment flow in the discharge canal as necessary to meet temperature limits, and will not be considered a violation of settlement outage requirements at the non-operating unit provided that in no event shall total Station flow, as so augmented, exceed the equivalent of full circulator flow at each unit which is then operating.
4. If the discharge temperature limits in clauses 1 and 2 above are exceeded as a result of reduced flow required by Section 2.D of the Settlement Agreement, corrective action, which may include increasing cooling water flow as necessary up to the equivalent of full circulator flow for each unit then operating, shall be taken as quickly as practical and will not be considered a violation of outage requirements at the non-operating unit. During the period required for corrective action (which shall not exceed 24 hours), the discharge will not be considered to be in excess of the foregoing temperature limits. To the extent practical the permittee shall anticipate when the ambient river temperature will rise to such level that the prevailing reduced cooling water flow rate specified in the Settlement will fail to maintain discharge temperature below 34°C, and may, upon consultation with DEC, increase flow to the next rate scheduled in the Settlement prior to the discharge temperature exceeding 34°C.
5. Nothing contained herein shall be construed to change or otherwise affect the previsions of the Settlement Agreement.
6. Except as set forth above, there shall be no thermal effluent limitations which govern or otherwise affect the operation of the Station or discharges therefrom.

INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

g the Period Beginning October 1, 1987

Lasting until January 1, 1989

discharges from the permitted facility shall be limited and monitored by the

rmittee as specified below:

Outfall Number & Effluent Parameter	Discharge Limitations Daily Avg.	Daily Max.	Units	Minimum Monitoring Requirements: Measurement Frequency	Sample Type
001* Discharge Canal[a,b]					
Total Residual Chlorine[c]	NA	0.2	mg/l	(See footnotes q,r)	
Lithium Hydroxide	NA	0.01[d]	mg/l	Monthly	Calculation
Boron	NA	1.0[e]	mg/l	Weekly	Calculation
Boron	NA	525[e]	lbs/day	Weekly	Calculation
pH (Range) 6.0 - 9.0			SU	Weekly	Grab

*Outfall 001 is the point prior to confluence of the discharge from the common discharge canal and the Hudson River.

Internal Waste Streams Effluent Limitations

001A - Sewage Treatment Plant Flow	Monitor	Monitor	GPD	Continuous	Recorder
BOD	30[g]	45[h]	mg/l	Monthly	6hr Composite
Total Suspended Solids	30[g]	45[h]	mg/l	Monthly	6hr Composite
Settleable Solids		0.3	ml/l	Weekly	Grab
Fecal Coliform	200[i]	400[j]	NO./100 ml	Weekly	Grab
Total Residual Chlorine[p]	0.5(min.)	3.0	mg/l	Weekly	Grab
pH (Range)	Monitor	Monitor	SU	Weekly	Grab
Sum of 001B, 001C, 001D, 001E, 001G & 001K, 001L					
Flow	Monitoring Only		MGD	Weekly	Instantaneous
Total Suspended Solids	30	50	mg/l	Weekly	Grab[k]
Sum of 001C & 001D					
Flow	Monitoring Only		MGD	Weekly	Instantaneous
Hexavalent Chromium	0.05	0.1	mg/l	Monthly	Grab[l]
Total Chromium	0.5	1.0	mg/l	Weekly	Grab[l]
Lithium Hydroxide	Monitoring Only		mg/l	Monthly	Grab[l]

FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the Period Beginning January 1, 1989

and lasting until October 1, 1992

The discharges from the permitted facility shall be limited and monitored by the Permittee as specified below:

Outfall Number & Effluent Parameter	Discharge Limitations Daily Avg.	Daily Max.	Units	Minimum Monitoring Requirements Measurement Frequency	Sample Type
001* Discharge Canal[a,b]					
Total Residual Chlorine[c]	NA	0.2	mg/l	(See footnotes q,r)	
Lithium Hydroxide	NA	0.01[d]	mg/l	Monthly	Calculation
Boron	NA	1.0[e]	mg/l	Weekly	Calculation
Boron	NA	525[e]	lbs/day	Weekly	Calculation
pH (Range) 6.0 - 9.0			SU	Weekly	Grab

*Outfall 001 is the point prior to confluence of the discharge from the common discharge canal and the Hudson River.

Internal Waste Streams Effluent Limitations

001A - Sewage Treatment Plant

No Discharge Allowed

Sum of 001B, 001C, 001D, 001E, 001G & 001K, 001L					
Flow	Monitoring Only		MGD	Weekly	Instantaneous
Total Suspended Solids	30	50	mg/l	Weekly	Grab[k]
Sum of 001C & 001D					
Flow	Monitoring Only		MGD	Weekly	Instantaneous
Hexavalent Chromium	0.05	0.1	mg/l	Monthly	Grab[l]
Total Chromium	0.5	1.0	mg/l	Weekly	Grab[l]
Lithium Hydroxide	Monitoring Only		mg/l	Monthly	Grab[l]

FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the Period Beginning October 1, 1987

and lasting until October 1, 1992

the discharges from the permitted facility shall be limited and monitored by the permittee as specified below:

Outfall Number & Effluent Parameter	Discharge Limitations Daily Avg.	Daily Max.	Units	Minimum Monitoring Requirements: Measurement Frequency	Sample Type
Sum of 001B, 001C, 001D & 001L					
Flow	Monitoring Only		MGD	Weekly	Instantaneous
Boron	Monitoring Only		mg/l	Weekly	Grab[n]
001C					
Flow	Monitoring Only		MGD	Monthly	Instantaneous
001E					
Flow	Monitoring Only		MGD	Weekly	Instantaneous
001G					
Flow	Monitoring Only		MGD	Weekly	Instantaneous
Phosphates as P	16	38	lbs/day	Monthly	Grab
001I					
Flow	Monitoring Only		MGD	Footnote o	Footnote o
001J***					
Flow	Monitoring Only		MGD	Weekly	Estimate
Oil & Grease		No visible oil or sheen	mg/l	Weekly	Visual Observation.
Sum of 001C, 001D, 001K and 001L					
Oil & Grease		15	mg/l	Monthly	Grab[m]

***Because this outfall cannot be monitored, the following shall apply:
1. All oil spills shall be handled under the SPCC plan.
2. Flow tributary to the floor drains shall not contain more than 15 mg/l of oil and grease nor any visible sheen.

FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the Period Beginning October 1, 1987

and lasting until October 1, 1992

... discharges from the permitted facility shall be limited and monitored by the ...ermittee as specified below:

Internal Wastes Streams

...tfall Number & ...uent Parameter	Discharge Limitations Daily Avg.	Daily Max.	Units	Minimum Monitoring Requirements Measurement Frequency	Sample Type
001E - Filter Backwash					
Flow	Monitor	Monitor	GPD	Weekly	Instantaneous
001-L - Condensate Polisher System Effluent					
Flow	Monitor	Monitor	GPD	Weekly	Instantaneous
002-009 - Uncontaminated Stormwater Discharge					
No monitoring required.					

ACTION LEVEL REQUIREMENTS

The parameters listed below have been reported present in the discharge but at levels that currently do not require water-quality or technology-based limits. Action levels have been established which if exceeded will result in re-consideration of Water Quality and Technology based limits

Routine action level monitoring results, if not provided for on the Discharge Monitoring Report (DMR) form, shall be appended to the DMR for the period during which the sampling was conducted.

If any of the action levels is exceeded, the permittee shall undertake a short-term, high-intensity monitoring program for this parameter. Samples identical to those required for routine monitoring purposes shall be taken on each of at least three operating days and analyzed. Results shall be expressed in terms of both concentration and mass, and shall be submitted no later than the end of the third month following the month when the action level was first exceeded. Results may be appended to a DMR or transmitted under separate cover to the same addresses. If levels higher than the action levels are confirmed, the result shall constitute a revised application and the permit shall be reopened for consideration of revised action levels or effluent limits.

The permittee is not authorized to discharge any of the listed parameters at levels which may cause or contribute to a violation of water quality standards.

			Minimum Monitoring Requirements	
Outfall Number and Effluent Parameter	Action Level	Units	Measurement Frequency	Sample Type
001L - Condensate Polisher System Effluent				
Fluorides	5	lbs/day	Semi-Annual	Grab
Iron	4	mg/l	Semi-Annual	Grab
Copper	1.0	mg/l	Semi-Annual	Grab
002A - Sewage Treatment Plant (No discharge allowed after January 1, 1989)				
Copper	0.5	mg/l	Semi-Annual	Grab
Mercury	0.1	mg/l	Semi-Annual	Grab
Zinc	1.0	mg/l	Semi-Annual	Grab

Footnotes

a. Discharge 001 shall occur only through the subsurface ports of the outfall structure.

b. When the temperature in the discharge canal exceeds 90°F or the site gross electric output equals or exceeds 600MW the head differential across the outfall structure shall be maintained at a minimum of 1.75 feet. When required, adjustment of the ports shall be made within four hours of any change in the flow rate of the circulating water pumps. If compliance is not achieved, further adjustments of the ports shall be made to achieve compliance. The requirements of the Settlement Agreement flow schedules shall take priority over the requirements of this footnote.

c. The service water system may be chlorinated continuously. Should the condenser cooling water system be chlorinated, the maximum frequency of chlorination for the condensers of each unit shall be limited to two hours per day. The total time for chlorination of the three units for which this permit is issued shall not exceed nine hours per week. Chlorination shall take place during daylight hours and shall not occur at more than one unit at a time.

d. The calculated quantity of these substances in the discharge shall be determined by using the analytical results obtained from sampling that is to be performed on internal waste streams 001C and 001D.

e. The calculated quantity of this substance in this discharge shall be determined by using the analytical results obtained from sampling that is to be performed on internal waste streams 001B, 001C, 001D and 001L.

(Footnote f has been removed. Text has been placed in Additional Requirement #8.)

g. Arithmetic mean of the values for effluent samples collected over a 30 day period.

h. Arithmetic mean of the values for effluent samples collected over a 7 day period.

i. 30 day geometric mean.

j. 7 day geometric mean.

k. One flow proportioned composite sample shall be obtained from one grab sample taken from each of the internal waste streams 001B, 001C, 001D, 001E, 001G, 001K and 001L.

l. One flow proportioned composite sample shall be obtained from one grab sample taken from each of the internal waste streams 001C and 001D. Sampling is not required if use of chromium is discontinued.

m. One grab sample shall be obtained from each of the internal waste streams 001C, 001D, 001K and 001L and the samples shall be analyzed separately. The results shall be reported by computing the flow-weighted average.

n. One flow proportioned composite sample shall be obtained from one grab sample taken from each of the internal waste streams 001B, 001C, 001D and 001L.

o. The flow of condenser cooling water discharges shall be monitored and recorded by hourly recording the operating mode of the circulating water pumps. Any changes in the flow rate of each circulating water pump shall be recorded, including the date and time, and reported monthly together with the Discharge Reporting Form. The permittee shall indicate whether any circulating pumps were not in operation due to pump breakdown or required pump maintenance and the period(s) (dates and times) the discharge temperature limitation was exceeded, if at all. Methods, equipment, installation, and procedures shall conform to those prescribed in the Water Measurement Manual, U.S. Department of the Interior, Bureau of Reclamation, Washington D.C.: 1967 or equivalent approved by the permit issuing authority.

p. Effluent disinfection is required all year. If chlorine is used for disinfection, a chlorine residual of 0.5 - 3.0 (Range) shall be maintained in the chlorine contact chamber effluent.

q. Continuous monitoring of TRC during condenser chlorination is required. A continuous TRC monitor shall be installed by October 1, 1987 or by the date condenser chlorination begins, whichever is later. Prior to installation of the continuous monitor or when the continuous monitor fails, is inaccurate, or is unreliable, TRC shall be monitored during condenser chlorination by analyzing grab samples taken at least once every 30 minutes during each chlorination period.

r. Grab samples shall be taken at least once daily during low level service water chlorination and at least once every 30 minutes during high level service water chlorination. During service water chlorination, Outfall 001 TRC concentrations may be determined by either direct measurement at Outfall 001 or by multiplying a measured TRC concentration in the service water system by the ratio of chlorinated service water flow to the total site flow.

Additional Requirements:

1. There shall be no discharge of PCB's from this facility.

2. Collected screenings, sludges, and other solids and precipitates separated from the Permittee's discharges and/or intake water authorized by this permit shall be disposed of in such a manner as to prevent entry of such materials into navigable waters or the tributaries. Any fish, shellfish, or other organisms collected or trapped as a result of intake water screening or treatment may be returned to the water body habitat, together with associated solids.

3. The permittee shall submit on a quarterly basis to the NYSDEC at its offices in White Plains and Albany a monthly report of daily operating data, by the 28th of the month following the end of the quarter, that includes the following:

   a. Daily minimum, maximum and average station electrical output shall be determined and logged.

   b. Daily minimum, maximum and average water use shall be directly or indirectly measured or calculated and logged.

   c. Temperature of the intake and discharges shall be measured and recorded continuously. Daily minimum, maximum and average intake and discharge temperatures shall be logged.

4. Biological Monitoring and Reporting

   The permittee shall comply with biological monitoring requirements which shall be embodied in a Memorandum of Agreement (MOA) to be entered into between the NYSDEC and the Permittee for the permit issued to Indian Point Generating Station Unit 1-3. Monitoring requirements shall be consistent with the Hudson River Settlement Agreement and Attachment V thereto.

   Live sturgeon collected during biological monitoring studies will be counted, measured, and examined for tags, then carefully returned to the river as quickly as possible. Dead sturgeon collected during biological monitoring studies shall be counted, weighed, measured, examined for tags and frozen for salvage for the Department of Environmental Conservation for up to one year, at which time the sturgeon will be disposed of in a sanitary landfill. Each sturgeon shall be individually labeled indicating date of capture and appropriate measurements. The permittee shall provide written notice to the Chief, Bureau of Environmental Protection one (1) month prior to the disposal of any sturgeon.

5. Notwithstanding any other requirements in this permit, the permittee shall also comply with all applicable Water Quality Regulations promulgated by the Interstate Sanitation Commission including Sections 1.01 and 2.05 (f) as they relate to oil and grease.

6. It is recognized that influent quality changes, equipment malfunction, acts of God, or other circumstances beyond the control of the Permittees may, at times, result in effluent concentrations exceeding the permit limitations despite the exercise of appropriate care and maintenance measures, and corrective measures by the permittees. The permittees, either individually or jointly, may come forward to demonstrate to the DEC that such circumstances exist in any case where effluent concentrations exceed those set forth in this permit. The DEC, however, is not obligated to wait for, or solicit, such demonstrations prior to the initiation of any enforcement proceedings, nor must it accept as valid on its face the statements made in any such demonstration.

   In the event of non-compliance attributable to only one facility, DEC will initiate enforcement proceedings against the permittee responsible for such facility.

   DEC shall not initiate enforcement proceedings concurrently against both the Permittees, unless DEC has been unable to identify the non-complying facility. If DEC seeks to enforce in an administrative or judicial proceeding any provision of this permit, the Permittees may raise at that time the issue of whether, under the United States Constitution, statute, or decisional law, they are entitled to a defense that their conduct was caused by circumstances beyond their control.

7. The Hudson River Settlement Agreement, dated December 19, 1980, is annexed to this permit as Appendix 2 and is incorporated herein as a condition to this permit. The Settlement Agreement satisfies New York State Criteria Governing Thermal Discharges. The Agreement for Installation of Modified Ristroph Screens at Indian Point Units 2 & 3, dated October 31, 1988 is annexed to this permit as Appendix 3 and is incorporated herein as a condition to this permit. The Agreement for Installation of Modified Ristroph Screens at Indian Point Units 2 & 3 implements Section 2.F of the Hudson River Settlement Agreement and satisfies New York State Criteria Governing Thermal Discharges.

8. All chemicals listed and/or referenced in the January 17, 1986 permit application as well as Drewgard 315, Betz Corr-Shield 736 and Nalco 8325 are approved for use. Drewgard 100 may be added so the calculated concentration shall not exceed 11 mg/l and the active ingredient E.D.T.A. shall not exceed 0.28 mg/l in the discharge canal. If use of new biocides, corrosion control chemicals or water treatment chemicals is intended, application must be made prior to use. No use will be approved that would cause exceedance of state water quality standards.

9. Beginning upon the effective date of this permit, the permittees shall submit to the NYSDEC Offices in Albany and White Plains, a copy of their Semi-Annual Effluent and Waste Disposal Reports submitted to the Nuclear Regulatory Commission.

10. Permittee will (at Permittee's option) submit a report to analyze the suitability of continuous chlorine monitoring for compliance purposes. The report will compare results of continuous monitor to results of grab sampling program (for total residual chlorine). Within 60 days from receipt of the report, DEC shall either (a) approve the report's conclusions and recommendations and initiate any appropriate permit modification requested by the permittees or (b) provide the permittees with the detailed technical reasons for rejection. If DEC fails to meet this 60-day deadline, the Department shall initiate a permit modification to require grab samples at least once every 30 minutes during condenser chlorination.

11. The data, results and information being generated pursuant to aquatic studies and analyses and impact mitigation programs being conducted at this Facility under the terms of the Hudson River Settlement Agreement, dated December 19, 1980, shall constitute sufficient grounds for the applicant or the DEC to seek modification of this permit under 6 NYCRR 621.13.

Definition of Daily Average and Daily Maximum

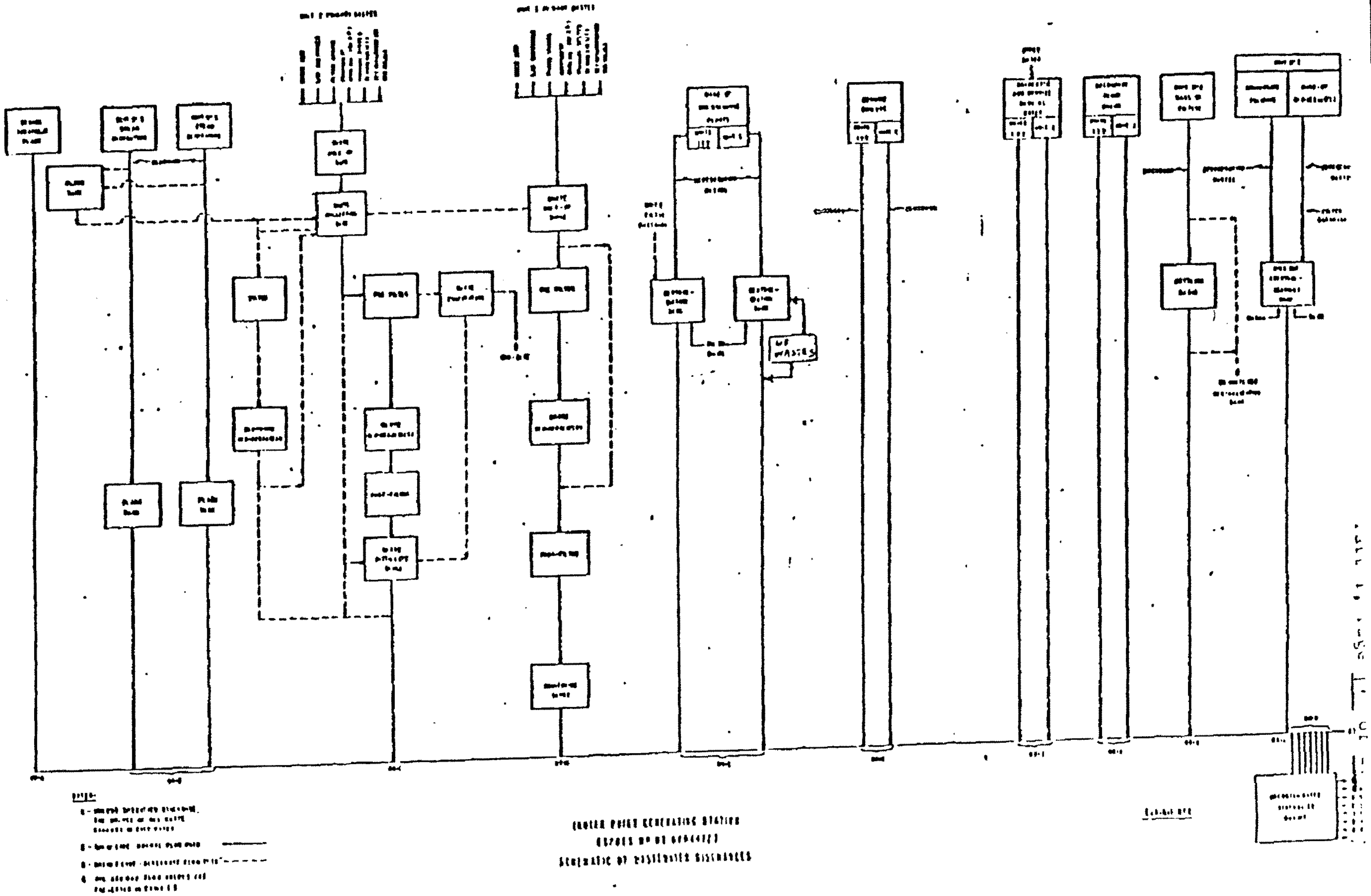
The daily average discharge is the total discharge by weight or in other appropriate units as specified herein, during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required by this permit, the daily average discharge shall be determined by the summation of all the measured daily discharges in appropriate units as specified herein divided by the number of days during the calendar month when the measurements were made.

The daily maximum discharge means the total discharge by weight or in other appropriate units as specified herein, during any calendar day.

Monitoring Locations

Permittee shall take samples and measurements to meet the monitoring requirements at the location(s) indicated below:

(Show locations of outfalls with sketch or flow diagram as appropriate). The sampling for the internal waste streams 001A thru 001L shall be taken in the internal waste streams before entering the circulating cooling water discharge canal.



Generating Station

Schematic of Wastewater Discharges

FINAL SCHEDULE OF COMPLIANCE FOR EFFLUENT LIMITATIONS

(a) Permittee shall achieve compliance with the effluent limitations specified in this permit for the permitted discharge(s) in accordance with the following schedule:

Action Code	Outfall Number(s)	Compliance Action	Due Date
04	001A	Respondent shall begin construction of the "Sanitary Waste Pipeline Connection from the Indian Point Generating Facility to the Village of Buchanan.	4/1/88
08	001A	Respondent shall complete construction of the "Sanitary Waste Pipeline Connection from the Indian Point Generating Facility to the Village of Buchanan."	12/1/88
27	001A	Respondent shall cease discharges from the Sanitary Waste Treatment Plant, Outfall 001A, at the Indian Point Generating Facility.	1/1/89

The permittee shall comply with all terms and conditions of the orders on consent dated July 17, 1986 and August 20, 1987, described as attachments "A & B". Said terms and conditions are incorporated, herein, by reference.

(b) The permittee shall submit to the Department of Environmental Conservation the required document(s) where a specific action is required in (a) above to be taken by a certain date, and a written notice of compliance or noncompliance with each of the above schedule dates, postmarked no later than 14 days following each elapsed date. Each notice of noncompliance shall include the following information:

1. A short description of the noncompliance;

2. A description of any actions taken or proposed by the permittee to comply with the elapsed schedule requirement without further delay;

3. A description of any factors which tend to explain or mitigate the noncompliance; and

4. An estimate of the date permittee will comply with the elapsed schedule requirement and an assessment of the probability that permittee will meet the next scheduled requirement on time

SCHEDULE OF COMPLIANCE FOR EFFLUENT LIMITATIONS (continued)

(c) The permittee shall submit copies of the written notice of compliance or noncompliance required herein to the following offices:

Chief, Compliance Section
New York State Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233

Regional Water Engineer, Region 3
New York State Department of Environmental Conservation
202 Mamaroneck Avenue
White Plains, NY 10601

The permittee shall submit copies of any engineering reports, plans of study, final plans, as-built plans, infiltration-inflow studies, etc. required herein to the New York State Department of Environmental Conservation Regional Office specified above unless otherwise specified in this permit or in writing by the Department or its designated field office.

MONITORING, RECORDING AND REPORTING

a) The permittee shall also refer to the General Conditions (Part II) of this permit for additional information concerning monitoring and reporting requirements and conditions.

b) The monitoring information required by this permit shall be:

☒ Summarized, signed and retained for a period of three years from the date of sampling for subsequent inspection by the Department or its designated agent.

☒ Summarized and reported by submitting completed and signed Discharge Monitoring Report forms once every 1 month(s) to the locations specified below. Blank forms available at department offices listed below.

The first report will be due no later than November 28, 1987

Thereafter, reports shall be submitted no later than the 28th of the following month(s). each month

Department of Environmental Conservation
Regional Water Engineer, Region 3
202 Mamaroneck Avenue
White Plains, NY 10601

Westchester County Health Department
112 East Post Road
White Plains, NY 10601

Department of Environmental Conservation
Division of Water
50 Wolf Road,
Albany, New York 12233

Interstate Sanitation Commission
ATTN: Mr. Thomas R. Glenn, Jr.
Director and Chief Engineer
10 Columbus Circle
New York, NY 10019

☒ (Applicable only if checked)

Dr. Richard Baker, Chief
Permit Administration Branch
Planning & Management Division
USEPA Region II, 26 Federal Plaza
New York, New York 10278

c) [redacted], Monthly Wastewater Treatment Plant Operator's Reports should be submitted to the Regional Engineer and County Health Department or County Environmental Control Agency specified above (outfall 001A only

d) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

e) If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR 136 or as specified in the permit, the results of this monitoring shall be included in the calculations and recording of the data on the Discharge Monitoring Reports.

f) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in this permit.

g) Unless otherwise specified, all information recorded on the Discharge Monitoring Report shall be based upon measurements and sampling carried out during the most recently completed reporting period

h) On or after April 1, 1984, any laboratory test or sample analysis required by this permit for which the State Commissioner of Health issues certificates of approval pursuant to section five hundred two of the Public health Law shall be conducted by a laboratory which has been issued a certificate of approval. Inquires regarding laboratory certification should be sent to the Laboratory Certification/Quality Assurance Group, New York State Health Department Center for Laboratories and Research, Division of Environmental Sciences, The Nelson A. Rockefeller Empire State Plaza, Albany, New York 12201

Memorandum of Agreement
Between
New York State Department of Environmental Conservation
and
the Hudson River Utilities

1. This Memorandum of Agreement (MOA) is entered into by the New York State Department of Environmental Conservation (Department) with Consolidated Edison of New York, Inc. (Consolidated Edison), and Power Authority of the State of New York (Power Authority), Orange and Rockland Utilities, Inc. (O and R), and Central Hudson Gas and Electric Corp. (CH) in accordance with the Department's certification pursuant to Section 401 of the Clean Water Act and to supply the appropriate conditions "Biological Monitoring and Reporting" of the SPDES discharge permit numbers:

   NY 000 4472 Consolidated Edison's Indian Point Station Units 1 & 2

   NY 002 7065 The Power Authority's Indian Point Station Unit 3

   NY 000 8010 Orange and Rockland Utilities' Bowline Point Station

   NY 000 8231 Central Hudson's Roseton Station,

   and in accordance with the "Biological Monitoring Program" as provided for in Section 2.J and Attachment V to the Hudson River Settlement Agreement entered into December 19, 1980 (Settlement Agreement).

2. This MOA is to embody the agreement of the Utilities to conduct monitoring program studies as described in the Settlement Agreement. Specific studies will be carried out in accordance with work scopes approved by the Department. Nothing contained in this MOA shall cause the Utilities to perform activities or incur expenses in excess of or less than the amount specified in the settlement agreement. Any further studies necessary to fulfill the dollar value of the Utilities' monitoring obligations will be conducted only with the prior written approval of DEC.

3. The Utilities agree to use their best efforts to conduct fully the biological monitoring program as specified in the Settlement Agreement. The Department acknowledges that the Utilities will not be deemed to be in non-compliance with the Settlement Agreement or any Condition of any applicable discharge permit or Section 401 Certification if the full complement of all biomonitoring cannot be completed within the original calendar year for reasons beyond the reasonable control of the Utilities. However, should the full complement of biomonitoring not be completed within the original year, at the sole discretion of DEC, either the time to complete such studies shall be extended or the unexpended funds shall be used to supplement the biomonitoring program in the subsequent year.

4. The Department and the Utilities hereby agree that the study programs may be modified at any time by written agreement of the Department and the Utilities to fulfill the objectives of the study, provided that any cost savings which accrue through such modifications be redirected to other studies as appropriate.

5. Reports based on these studies and an accounting of funds expended will be submitted within six months of the completion of component studies and no later than June 30 of the subsequent year unless an extended schedule is mutually agreed upon by the Department and the Utilities.

6. The term of this MOA shall be from the expiration of the permit currently in force until the expiration date of this permit, after which time this MOA shall be of no further force or effect except for completion of reports, accountings, or studies identified in paragraphs 3 to 5.

Signatures

Con Edison	Date
Orange & Rockland	Date
Central Hudson	Date
Power Authority	Date
Niagara Mohawk	Date
NYSDEC	Date

Clam-Trol (7/91)

SPDES No.: NY 0004472

Part 1, Attachment #: C

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 15, 1992

and lasting until October 1, 1992

the discharges from the permitted facility shall be limited and monitored by the permittee as specified below:

Outfall Number & Effluent Parameter	Discharge Limitations Daily Avg.	Daily Max.	Units	Minimum Monitoring Requirements Measurement Frequency	Sample Type
Outfall(s) 001					
Betz Clam-Trol CT-1 (whole product)	N/A	0.2	mg/l	Duration of chemical application & discharge	Multiple Grab*

* For purpose of this authorization, multiple grab is defined as individual grab samples collected at three hour intervals during the duration of chemical addition and discharge.

Special Conditions

The Betz Clam-Trol CT-1 program for zebra mussel control, application submitted by letter application dated 04/20/92 to NYSDEC Region 3 New Paltz Office, is approved with the following conditions:

1. The effluent concentrations at the discharge shall not exceed 10 ug/l (ppb) of quaternary ammonium compounds and 6 ug/l (ppb) of dodecylguanidine hydrochloride. For Betz Clam-Trol CT-1, these limitations will be achieved by limiting effluent whole product concentrations.
2. Clam-Trol CT-1 detoxification with bentonite clay or other Department approved adsorption medium is required for all affected discharge waste streams throughout the treatment period.
3. Each individual zebra mussel control treatment is limited to a maximum of 24 hours duration.
4. Treatments for zebra mussel control shall be limited to a maximum of four treatments annually. Treatments shall be separated by at least 45 days.
5. Caged fish studies are required to be conducted during the discharge of the molluscicide. Sample study protocols are available from the Department's Division of Fish and Wildlife. Specific caged fish study protocols must be approved by the Department prior to commencement of the zebra mussel control program.
6. Records of product dosage concentration, effluent flow and effluent concentration of product during addition and discharge must be maintained. The flow shall be measured at the frequency specified for flow elsewhere in this permit or at the frequency of the parameter specified above, whichever is more frequent.
7. The Regional Water Engineer shall be notified not less than 48 hours before initiation of a zebra mussel control program.
8. Reports describing caged fish studies shall be sent to New York State Department of Environmental Conservation, Division of Fish and Wildlife, Standards and Criteria Unit - Room 530, 50 Wolf Road, Albany, New York 12233-4756, within 60 days following each individual zebra mussel control treatment.
9. Reports describing the results of the effectiveness of the zebra mussel control program and the effluent analyses for Betz Clam-Trol CT-1 shall be submitted to the Regional Water Engineer, NYSDEC, within 60 days following each chemical treatment.
10. This permit modification is issued based on the best environmental and aquatic toxicity information available at this time. This authorization is subject to modification or revocation any time new information becomes available which justifies such modification or revocation.

TAB 27

Permit Identified

Hard Copy Not Available

TAB 28

91-20-2 (1/89)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

State Pollutant Discharge Elimination System (SPDES)

DISCHARGE PERMIT

Special Conditions (Part I)

Industrial Code: 4931
Discharge Class (CL): 01
Toxic Class (TX): T
Major Drainage Basin: 13
Sub Drainage Basin: 01
Water Index Number:
Compact Area:

SPDES Number: NY-0234826
DEC Number: 3-5522-130/1-0
Effective Date (EDP): 03/01/93
Expiration Date (ExDP): 03/01/98
Modification Date(s):
Attachment(s): General Conditions (Part II) Date: 11/90

This SPDES permit is issued in compliance with Title 8 of Article 17 of the Environmental Conservation Law of New York State and in compliance with the Clean Water Act as amended, (33 U.S.C. Section 1251 et. seq.)(hereafter referred to as "the Act").

PERMITTEE NAME AND ADDRESS

Attention: Mary Jane McCarthy, AVP

Name: Consolidated Edison Company of New York, Inc.
Street: 4 Irving Place Room 300
City: New York State: NY Zip Code: 10003
is authorized to discharge from the facility described below:

FACILITY NAME AND ADDRESS

Name: Buchanan Gas Turbine Site
Location (C,T,V): Buchanan (T) County: Westchester
Facility Address: Broadway
City: Buchanan State: NY Zip Code: 10511
NYTM - E: NYTM - N: 4
From Outfall No.: 001 at Latitude: 41° 16′ 07″ & Longitude: 73° 57′ 19″
into receiving waters known as: Ground Surface Trib. to Hudson River Class: SB
and; (list other Outfalls, Receiving Waters & Water Classifications)

in accordance with the effluent limitations, monitoring requirements and other conditions set forth in Special Conditions (Part I) and General Conditions (Part II) of this permit.

DISCHARGE MONITORING REPORT (DMR) MAILING ADDRESS

Mailing Name: Consolidated Edison Company of New York, Inc.
Street: 4 Irving Place Room 300
City: New York State: NY Zip Code: 10003
Responsible Official or Agent: Robert T. Keegan, Dir. Phone: (212)460-4833

This permit and the authorization to discharge shall expire on midnight of the expiration date shown and the permittee shall not discharge after the expiration date unless this permit has been renewed, or extended pursuant to law. To be authorized to discharge beyond the expiration date, the permittee shall apply for a permit renewal no less than 180 days prior to the expiration date shown above.

DISTRIBUTION:

E. Zicca
J. McCarthy
R. Hannaford (3505)
Westchester Co. DOH
USEPA (NYC)

Permit Administrator: Michael D. Merriman LGB
Address: 21 S. Putt Corners Rd., New Paltz, NY 12561
Signature: Michael D. Merriman Date: Jan 27 93

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning EDP

and lasting until EDP + 5 YEARS

the discharges from the permitted facility shall be limited and monitored by the permittee as specified below:

Outfall Number & Effluent Parameter	Discharge Limitations Daily Avg.	Daily Max.	Units	Minimum Monitoring Requirements Measurement Frequency	Sample Type
001 Stormwater Runoff to Groundwater					
Flow	NA	Monitor	GPD	Monthly	Instantaneous
Oil & Grease	NA	15	mg/l	Monthly	Grab*
Benzene	NA	0.7	ug/l	Monthly	Grab
Toluene	NA	0.005	mg/l	Monthly	Grab
Xylenes	NA	0.005	mg/l	Monthly	Grab

*One, two, or three samples may be collected and analyzed per sampling event. The samples will be grab samples obtained at 15 minute intervals with the primary samples collected during the first 15 minutes of discharge. If more than one grab sample is collected and analyzed per sampling event, the number reported will be the arithmetic average of the separate analysis.

PROHIBITIONS:

No industrial or manufacturing process wastewater effluents are permitted, including wastewaters resulting from vehicle maintenance or washing operations. Washing operations are those cleaning operations which involve the use of detergents or other emulsifying chemicals.

DEFINITIONS OF DAILY AVERAGE AND DAILY MAXIMUM

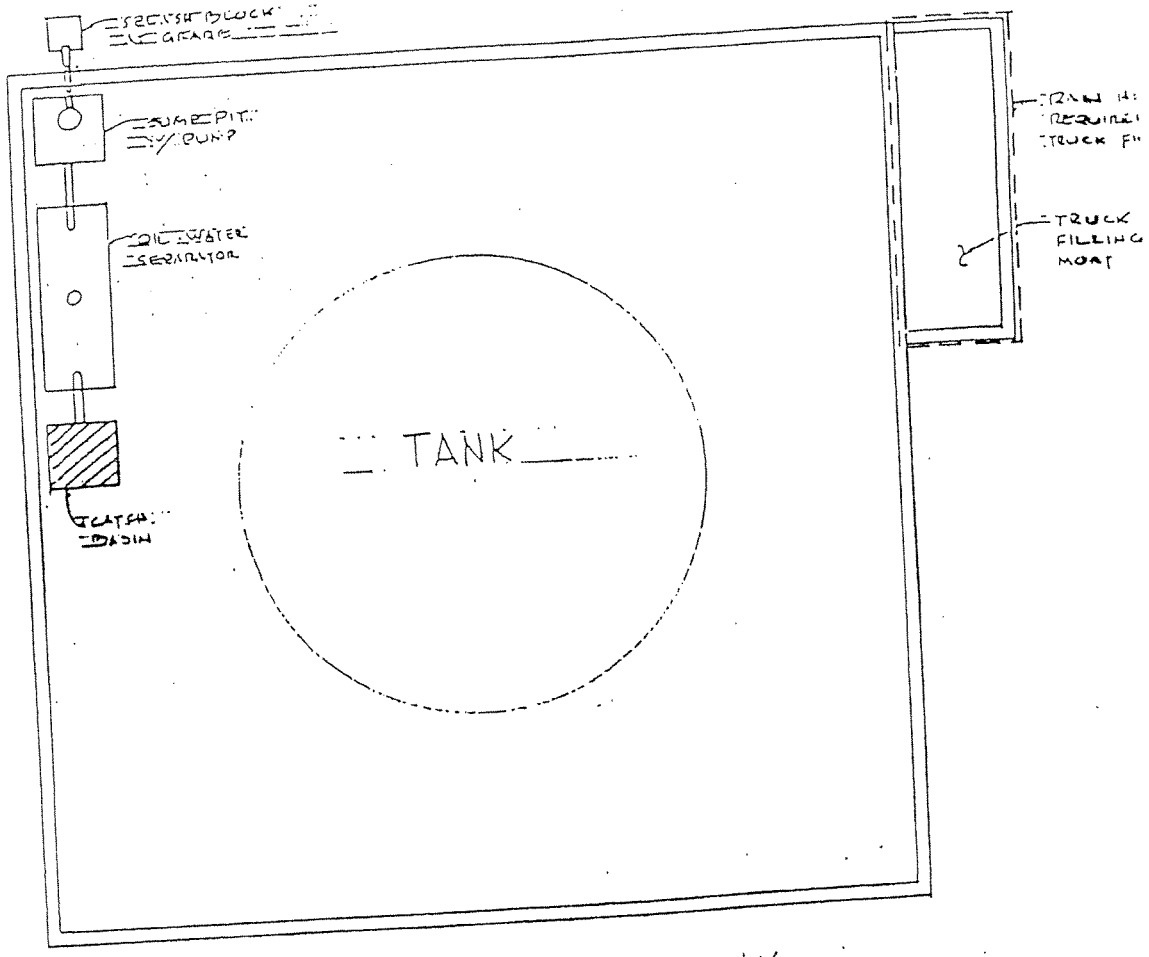
The daily average discharge is the total discharge by weight or in other appropriate units as specified herein, during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required by this permit, the daily average discharge shall be determined by the summation of all the measured daily discharges in appropriate units as specified herein divided by the number of days during the calendar month when measurements were made.

The daily maximum discharge means the total discharge by weight or in other appropriate units as specified herein, during any calendar day.

MONITORING LOCATIONS

The permittee shall take samples and measurements, to comply with the monitoring requirements specified in this permit, at the location(s) indicated below: (Show sampling locations and outfalls with sketch or flow diagram as appropriate)

from separator effluent prior to discharge to ground.



BUCHANAN G.T. TANK

ORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS

a) The permittee shall also refer to the General Conditions (Part II) of this permit for additional information concerning monitoring and reporting requirements and conditions.

b) The monitoring information required by this permit shall be summarized, signed and retained for a period of three years from the date of the sampling for subsequent inspection by the Department or its designated agent. Also;

[X] (if box is checked) monitoring information required by this permit shall be summarized and reported by submitting completed and signed Discharge Monitoring Report (DMR) forms for each _____ month reporting period to the locations specified below. Blank forms are available at the Department's Albany office listed below. The first reporting period begins on the effective date of this permit and the reports will be due no later than the 28th day of the month following the end of each reporting period.

Send the original (top sheet) of each DMR page to:

Department of Environmental Conservation
Division of Water
Bureau of Wastewater Facilities Operations
50 Wolf Road
Albany, New York 12233-3506

Phone: (518) 457-3790

Send the first copy (second sheet) of each DMR page to:

Department of Environmental Conservation
Regional Water Engineer
Region 3
202 Mamaroneck Ave.
White Plains, NY 10601

c) A monthly "Wastewater Facility Operation Report..." (form 92-15-7) shall be submitted (if box is checked) to the [ ] Regional Water Engineer and/or [ ] County Health Department or Environmental Control Agency listed above.

d) Noncompliance with the provisions of this permit shall be reported to the Department as prescribed in the attached General Conditions (Part II).

e) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

f) If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR Part 136 or as specified in this permit, the results of this monitoring shall be included in the calculations and recording on the Discharge Monitoring Reports.

g) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in this permit

h) Unless otherwise specified, all information recorded on the Discharge Monitoring Report shall be based upon measurements and sampling carried out during the most recently completed reporting period.

Any laboratory test or sample analysis required by this permit for which the State Commissioner of Health issues certificates of approvalpursuant to section five hundred two of the Public Health Law shall be conducted by a laboratory which has been issued a certificate of approval. Inquiries regarding laboratory certification should be sent to the Environmental Laboratory Accreditation Program, New York Health Department Center for Laboratories and Research, Division of Environmental Sciences, The Nelson A. Rockerfeller State Plaza, Albany, New York 12201

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM (SPDES)
DISCHARGE PERMIT

GENERAL CONDITIONS
(PART II)