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Appendix D Correspondence C

New York State Correspondences

New York State Department of Environmental Conservation

Assistant Commissioner

Office of Water Resources, 14th Floor

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Joe Martens
Commissioner

MAR 20 2014

Commissioner Shila Shah-Gavnaudias, P.E.
Nassau County
Department of Public Works
1194 Prospect Avenue
Westbury, New York 11590-2723

**Re: Bay Park Waste Water Treatment Plant:
Nitrogen Treatment and Proposed Ocean Outfall**

Dear Commissioner Shah-Gavnaudias:

I write on behalf of the New York State Department of Environmental Conservation (DEC) as a follow-up to recent technical discussions concerning upgrades to the Bay Park Wastewater Treatment Plant. DEC is very pleased to be collaborating with Nassau County and other partners to improve the effectiveness of effluent treatment and the storm resiliency of this critical facility.

DEC serves as the agency within New York with primary responsibility for setting water quality standards, specifying discharge limits to protect water quality, and setting other water pollution control requirements under both State law and the federal Clean Water Act. This letter is to formally inform Nassau County that DEC fully supports Nassau County's initiative to deploy systems to remove nitrogen discharged from the Bay Park Wastewater Treatment Plant. It is our understanding that Nassau County is evaluating treatment systems that would operate to reduce nitrogen concentrations in effluent to 8 mg/L, coupled with an ocean outfall. While setting precise nitrogen discharge limits generally requires lengthy, detailed, assessments of water quality, DEC confirms that it does not foresee circumstances where a nitrogen discharge limit, if required, would be more stringent than 8 mg/L on the Bay Park facility so long as this facility is discharging through a properly designed and sized ocean outfall to meet water quality standards.

DEC looks forward to collaborating with Nassau County on the sizing, design, location, environmental assessment and other attributes of the contemplated ocean outfall. I request that your technical and consultant team continue to coordinate with Joseph DiMura, P.E., as DEC's lead technical point of contact on the ocean outfall and related projects.

As always, please feel free to contact me at (518) 402-2794 if I can be of assistance.

Sincerely,

James M. Tierney

ANDREW M. CUOMO
GOVERNOR



JOE MARTENS
COMMISSIONER

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

JUN 12 2014

Laura A. Phillips, Executive Director
Sandy Recovery Office
U.S. Department of Homeland Security
Federal Emergency Management Agency
118-35 Queens Boulevard
Forest Hills, New York 11375

Dear Ms. Phillips:

Re: FEMA Public Assistance Funding for the Bay Park Wastewater Treatment Plant

This is in response to your May 22, 2014 letter concerning New York's request for FEMA "Public Assistance" (PA) funding for an ocean outfall and a mid-stage level of nitrogen treatment from the Bay Park wastewater treatment plant in Nassau County, New York. This letter responds to your characterization of New York's request for eligibility and clarifies the basis for using FEMA PA funding for the ocean outfall and mid-stage nitrogen treatment systems (8 gm/L) at the Bay Park facility. Although your letter relied on one component of the federal Clean Water Act to reach its conclusion, the analysis should include a broader evaluation of the federal and state Clean Water Act's legal and regulatory requirements as applied to the Bay Park facility to establish Bay Park's eligibility for this funding.

At the outset, New York welcomes and appreciates FEMA's determination to allocate approximately \$810 million in funding to repair systems at the Bay Park facility and to rebuild the facility with components (such as a perimeter levee) with an engineered level of resilience against the 500-year level storm. Along with FEMA's implementation of its innovative Alternative Procedures pilot program, the Bay Park facility will be restored to pre-Sandy conditions along with the previously approved restoration and resiliency commitments.

We also request that FEMA employ its "Alternative Procedures" pilot program to fund consolidation of flows from two wastewater treatment plants located on a barrier island into the Bay Park facility as a highly cost effective and resilient option. Your letter indicated that Nassau County must first take possession of, or full legal responsibility for, these facilities before FEMA would entertain discussions on this proposal. In the interests of building in a more resilient and sustainable fashion in storm impacted areas, examination of this option should proceed without Nassau County first having to take possession of, or legal responsibility for, facilities owned by separate municipalities.

Relevant State and Federal Water Quality Standards

Under the New York Environmental Conservation Law (ECL), it is illegal for discharged effluent from a wastewater treatment plant to cause a violation of a state water quality standard. See, ECL Section 17-0501 and ECL Section 17-0511.

The federal Clean Water Act requires states to promulgate water quality standards that consist of the “uses” that apply to a particular water body (e.g., for fishing, swimming, drinking, etc.) along with the applicable criteria to assure that the designated “uses” are achieved or protected (e.g., expressed as prohibitions on concentrations of contaminants, limits on the amount of pathogens, adequate dissolved oxygen levels, conditions that are reasonably free of algae blooms or bio-slimes, etc). Under the Clean Water Act, the state water quality standards must meet or exceed minimum federal requirements. When that is achieved (along with other reviews and approvals under the Act) the state water quality standards become the operable federal water quality standards for the particular water body. That situation exists in New York.

The Bay Park wastewater treatment plant discharges through an outfall to a water body known as Reynolds Channel that mixes directly with and is part of a larger water body known as the Western Bays that includes Hempstead Bay. This entire area is classified as “Class SB” water under Title 6 of the New York Code of Rules and Regulations (NYCRR) Part 701.11 (Effective 1985, last amended 2008). Under 6 NYCRR Part 701.11, the best uses of Class SB Waters is as primary and secondary contact recreation [e.g., swimming], fishing, and suitability for fish, shellfish and wildlife propagation and survival.

The water quality standards that are most relevant to the Bay Park facility are those for nitrogen and ammonia (note, ammonia contains nitrogen and is a component of overall nitrogen pollution). The narrative water quality standard for nitrogen applicable to Class SB waters such as Reynolds Channel and Hempstead Bay is: “none in amounts that will result in growths of algae, weeds, and slimes that will impair the waters for their best usage.” 6 NYCRR Part 703.2 (effective 1967, last amended 2008).

Excessive nitrogen in the Western Bays and Reynolds Channel have resulted in substantial and degrading algal growths (especially *Ulva* or “sea lettuce”) that covers surface waters and washes up onto the shore in mats that then decays and causes foul odors. The nitrogen loadings also contribute to lower dissolved oxygen in Hempstead Bay and the Western Bays. The water quality standard for ammonia for such waters is a concentration of 8.9 mg/L. 6 NYCRR Part 703.5 (effective 1968, last amended 2008). Levels exceeding 8.9 mg/L have the reasonable potential to have negative impacts on the survival of juvenile aquatic organisms. Significantly, in the event the receiving waters violate water quality standards then further action is legally required to meet the standard.

In 2006, DEC with EPA’s approval, first adopted the formal Clean Water Act section 303(d) listing of Hempstead Bay as “impaired” due to excessive nitrogen. Thus, DEC formally identified the water quality in Hempstead Bay as violating state water quality standards due to excessive levels of nitrogen. The violation of state water quality standards places these waters in violation of federal Clean Water Act and New York State Environmental Conservation Law requirements. Importantly for the purposes of this request for FEMA PA funding, the standard

against which Bay Park is measured and the obligation for Bay Park to meet the water quality standards existed at the time that Superstorm Sandy struck. Your suggestion that these are “new” water quality standards or that Bay Park was found to have violated water quality standards after Superstorm Sandy is not the case.

The Bay Park permit sets the effluent limitation for ammonia at 8.9 mg/L. Any discharge greater than this limitation causes or contributes to a contravention of water quality standards. The permit for the Bay Park plant requires Nassau County to report ammonia discharges on a monthly basis. Over the sixty month period from April 2009 to March 2014, the Bay Park plant reported that the level of ammonia exceeded 8.9 mg/L during 50 out of 60 months. The average discharge level was 20.50 mg/L, and the maximum discharge level was 39.7 mg/L. A discharge level of 39.6 mg/L occurred in February 2011, prior to Hurricane Sandy. Ammonia is a component of total nitrogen and is removed through the same treatment processes.

New York State similarly applied the nitrogen and ammonia standard to the Long Island Sound. As a result, New York embarked on an approximately \$2 billion nitrogen treatment upgrade program covering 23 facilities that discharge to Long Island Sound. Connecticut conducted a nitrogen reduction program of similar scope for the Sound – all under the oversight of EPA and required by the Clean Water Act. Similarly, New York State entered into enforcement orders with New York City requiring the addition of nitrogen treatment systems to the four large waste water treatment plants that discharge to Jamaica Bay, also for the purposes of curing a violation of a water quality standard caused by excess nitrogen.

Methods to Cure the Water Quality Standard Violation Caused by the Bay Park Facility

On June 11, 2011, DEC and Nassau County entered into an administrative order on consent that addressed among other things, water quality standard violations caused by the Bay Park plant in the Reynolds Channel and the Western Bays.

The June 11th order requires strict compliance with all requirements, codes and standards going forward. This includes an obligation to cease further violations of the ECL, and its implementing regulations, more particularly ECL Article 17 and 6 NYCRR Part 750 – which includes the prohibition on violating water quality standards. Among its provisions, the order specifically required Nassau County to:

conduct a feasibility study designed to evaluate the possibility of eliminating the existing outfall to Reynolds Channel and discharging instead directly to a new Ocean Outfall (this type of outfall currently exists at two similar plants in Nassau and Suffolk Counties – Cedar Creek Sewage Treatment Plant and Bergen Point Sewage Treatment Plant).

The engineering feasibility Study was submitted by Nassau County to DEC in June 2013. The engineering feasibility study examined and ranked five alternatives to meet water quality standards including constructability, life cycle costs, and environmental benefit. The construction of a new ocean outfall ranked the highest of the five alternatives, including variations of the “limit of technology” treatment alternative. The conclusion of the review was that constructing the ocean outfall was the best alternative for ensuring that water quality standards will be met.

Your May 22nd letter misunderstands a letter that Assistant Commissioner Tierney sent to the owners of the three wastewater treatment plants that discharge to the Western Bays area of Nassau County. That letter was sent as a reminder that the plant owners, when making post-Sandy repairs, should be careful to account for achieving water quality standards. What you understood as a “new” standard of some sort was, in fact, a reminder of the obligation to cure a long-standing violation and to account for this responsibility when moving forward with engineering plans and projects during post-Sandy recovery efforts.

From a legal, fiscal and public policy perspective the significant repair and resiliency projects going forward at the Bay Park plant (which New York is expediting) should take into account the full range of measures necessary to meet the standards established under the Clean Water Act and New York law. The large size of the Bay Park plant (70 MGD permit limit, 50 MGD average actual flow) and the technical estimate that the Bay Park facility (along with two much smaller barrier island plants) contribute over 80% of the nitrogen pollution to the Western Bays/Hempstead Bay waters, is the fundamental reason why DEC and Nassau County have both identified the ocean outfall and a mid-level of nitrogen treatment as the preferred remedial activity to correct the water quality standard violation in the Western Bays.

FEMA PA “Standard and Code” Criteria

The Western Bays are badly impaired by excess nitrogen in effluent discharged from the Bay Park facility. And, as discussed in my May 6th letter to Administrator Fugate and DEC’s technical white paper, excess nitrogen damages and destroys the coastal marshlands that serve as an important component of resiliency against coastal storm surge and wave action. In our view, these factors are a basis to find the use of FEMA PA funds “reasonable,” especially given the high-density population centers of southern Nassau County. Indeed, prior to understanding the mechanism by which excess nitrogen degrades and destroys marshlands, resilient marshlands were documented as reverting to un-vegetated and submerged mudflats within the nitrogen impaired Jamaica Bay on the south shore of geographic Long Island at a rate of approximate 44 acres annually. On-going efforts are now underway with the Army Corps to restore those marshlands for both coastal resiliency and habitat (some 146 acres restored to date).

The nitrogen water quality standard and the prohibitions against violating this standard are “in writing, formally adopted and implemented by the state” and federal government both generally in New York and specifically in the instance of the Bay Park facility at the time Superstorm Sandy struck and the federal disaster was declared. Given that the Clean Water Act required the “impaired” listing of the water body adversely impacted by the Bay Park discharge, and required the violation to be cured, addressing the nitrogen violation caused by the Bay Park plant’s effluent constitutes a “legal Federal requirement applicable to the type of restoration.”

We are hopeful that the forthcoming meeting of involved federal, state and local entities will clarify the basis for New York’s request for FEMA PA funding to address the Bay Park nitrogen violation and enhance the resiliency of Long Island’s south shore. Rather than implementing

limit of technology treatment systems, we are hopeful that the superior alternative of an ocean outfall with mid-stage nitrogen treatment will be the preferred method to meet the water quality standard.

I look forward to exploring these issues with you and our state and federal partners.

Sincerely,



Joseph J. Martens

c: Administrator Fugate
Deputy Administrator Robert Perciasepe
Regional Administrator Judith Enck
Jamie Rubin, Director, Governor's Office of Storm Recovery

New York State Department of Environmental Conservation

Assistant Commissioner

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Joe Martens
Commissioner

March 13, 2014

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Shila Shah-Gavnoudias, P.E.
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Nassau County
Dept. of Public Works
1194 Prospect Avenue
Westbury, NY 11590-2723

Dear Sir or Madame:

**Re: Post Sandy Recovery and Nitrogen Limits on Waste Water Treatment
Plants Discharging to the Impaired Western Bays in Nassau County**

I write on behalf of the New York State Department of Environmental Conservation (DEC) to inform you of important information as your community considers various options to address waste water treatment and water quality in the aftermath of Superstorm Sandy.

Water quality impairments due to excessive nitrogen discharges into the "Western Bays" area (to the north of Long Beach Island) are a matter of significant public concern. A number of waste water treatment plants that discharge into the Western Bays were badly damaged by Superstorm Sandy. DEC understands that plans are being formulated now in consultation with federal and state agencies to both rebuild the Bay Park, Long Beach and Atlantic Beach facilities to assure effective treatment of sewage effluent and to increase engineered resiliency to withstand major future storm events to achieve the protective "500-year storm" criteria.

DEC is in the process of evaluating the Western Bays water quality conditions and appropriate nitrogen treatment requirements under a Clean Water Act (CWA) process known as a Total Maximum Daily Load (TMDL). TMDLs are required by section 303(d) of the CWA for water bodies that are "impaired" – in other words, water bodies that are in a condition that violate applicable water quality standards, as is found in the Western Bays. A TMDL specifies the

maximum amount of a pollutant that a water body can receive while still complying with legally binding water quality standards. TMDLs account for all contributing pollutant sources that cause the impairment and incorporate a margin of safety that accounts for unknown or unexpected sources of the problematic pollutant.

Under the CWA, once a TMDL pollution budget is established, limitations on the amount of the particular pollutant of concern (in this instance, nitrogen) are allocated to various sources so as to achieve compliance with water quality standards in the affected water body. This pollution reduction is accomplished through requirements placed within a facility's "State Pollutant Discharge Elimination Permit," which also serves as the facility's permit pursuant to the Clean Water Act. The facility's owner must then implement the construction of all necessary treatment facilities to ensure permit compliance and attainment of water quality standards.

In light of your pending reconstruction and design efforts, DEC is advising you that it is expected that the TMDL process presently underway will conclude that wastewater treatment plants discharging to the Western Bays will be required to meet the "Limit of Technology" (3 to 5 mg/L) effluent limit for total nitrogen. DEC is informing you of this highly likely future requirement so that cost and construction efficiencies may be obtained by informed planning as you consider a range of options in the aftermath of Sandy. I emphasize, however, that this is not a formal determination and that the TMDL report, or other potential regulatory process to set nitrogen limits, is not yet completed for the Western Bays area.

DEC is in the process of developing a TMDL for the Western Bays to address impairment due to excessive algal growth (specifically *ulva lactuca*, *Ulva*, or sea lettuce) which occurs as a result of excess nitrogen loading. (Portions of the Western Bays are also listed as violating water quality standards for pathogens). Studies of the effects of excess nitrogen in the Western Bays indicate that roughly 80 to 90% of the nitrogen load to the Western Bays comes from the four wastewater treatment plants (WWTPs) that discharge to this system. The results of these studies are found in the Battelle consultant's draft report entitled: *Ecosystem Assessment and Nitrogen Management in Western Bays, New York September 2013*.

It is clear from the data and recommendations provided in the Battelle report, and other data and information reviewed by DEC, that nitrogen reductions required for discharges to the Western Bays will be very significant, not just to address *Ulva*, but to address other algal growth, as well as hypoxia (low dissolved oxygen) that results from algal growth.

Another factor to consider when evaluating nitrogen discharges is the effect of nitrogen on salt marsh loss, and with it, the loss of the natural resiliency provided by marshlands. Research has demonstrated that waves along coastal regions lose energy as they travel through coastal vegetation including marshlands and seagrass (see, e.g. Jadhav, Ranjit and Chen, Qin, "Field Investigation of Wave Dissipation Over Salt Marsh Vegetation During Tropical Cyclone" Coastal Engineering, 2012). A team of researchers released a detailed study in 2012 that demonstrated that nutrient enrichment can be a major factor in salt-marsh loss (Deegan LA, Johnson DS, Warren RS, Peterson BJ, Fleeger JW, Fagherazzi S, and Wollheim WM, "Coastal

Eutrophication as a Driver of Salt Marsh Loss” *Nature*: doi:10.1038) (18 Oct 2012). Similarly, Governor Cuomo’s recent NYS 2100 Commission expert report found that, “tidal wetlands can protect coastal communities from storm damage by reducing wave energy and amplitude, slowing water velocity, and stabilizing the shoreline through sediment deposition. More than half of normal wave energy is dissipated within the first three meters of marsh vegetation such as cord grass. In addition, given sufficient sediment deposition, wetlands are able to build elevation in response to sea-level rise, providing a buffer against climate change and coastal submergence.”

Excess nitrogen can contribute to reduced coastal resiliency by harming marshlands. This is a factor for consideration by your community as the Western Bays area is characterized by extensive marshlands that may be thought of as a natural line of defense against coastal storm surge.

Given that:


(i) excessive nitrogen in the Western Bays contributes to impairments due to excessive *Ulva*, hypoxia, algal blooms, and

(ii) there is not yet a final TMDL (or other regulatory process) with calculated, required nitrogen reductions – but it is clear that the magnitude of nitrogen reductions in waste water effluent will likely be very high.

DEC is informing you of the potential that Limit of Technology nitrogen treatment systems will almost certainly be required for waste water treatment plant discharges to the Western Bays. We recommend that you consider this information when making decisions about pending, expensive, wastewater treatment options that will be made prior to the completion of the TMDL process.

We look forward to discussing this important matter with you in the near future. If you have any questions or comments, please do not hesitate to call me at (518) 402-2794.

Sincerely,



James M. Tierney

c: Edward P. Mangano, Nassau County Executive
Rob Walker, Chief Deputy County Executive