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Final Consistency Decision ELIS 10 3 16 CORRECTED	NY DOS CZMA Objection ELDS_10-3-16
57 pages (384 KB)	55 pages (906 KB)
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October 3, 2016

Mr. Kenneth Moraff
Director, Office of Ecosystem Protection
U.S. Environmental Protection Agency, Region 1
5 Post Office Square, Suite 100
Boston, Massachusetts 02109-3912

Re: F-2016-0638 DA - U.S. EPA - Designation of One or More Open-Water Disposal Sites – Eastern Long Island Sound (ELDS).
Objection to Consistency Determination – CORRECTED VERSION

Dear Mr. Moraff:

The Department of State (DOS) has completed its evaluation of the U.S. Environmental Protection Agency's (EPA) consistency determination for the proposed rule to designate one or more dredged material disposal sites in eastern Long Island Sound.[1] Pursuant to 15 C.F.R. § 930.41(a), and based on the information that has been provided, DOS objects to EPA's consistency determination on the grounds that the proposed action is not consistent to the maximum extent practicable with the enforceable policies of the Long Island Sound Coastal Management Program (LIS CMP) and the Town of Southold Local Waterfront Revitalization Program (LWRP), each of which is a component of the New York State Coastal Management Program (CMP). EPA's Proposed Rule designating permanent open water disposal sites in eastern Long Island Sound is inconsistent with LIS CMP and Southold LWRP Policies # 5 (water quality), # 6 (ecosystem protection), # 8 (hazardous waste management), # 10 (water-dependent uses) and # 11 (living marine resources).

Executive Summary

Long Island Sound is a valuable resource treasured by millions of New Yorkers. The health and robustness of its ecosystems and cleanliness of its waters dearly matter to the communities along its coast and beyond. In the past few decades, laws and regulations have been tightened to protect the nation and the Sound from pollution. New uses and alternatives for disposal of dredged sediments in open waters have been identified. Federal, State, and local governments have spent billions of taxpayer dollars to help restore this vital waterway. Much progress has been made and much work still needs to be done. New York's commitment to reducing open water disposal of dredged sediments has been unwavering.

[1] Hereinafter referred to as the "Proposed Rule."

Governor Andrew Cuomo recently said:

> The EPA's plan to establish a new disposal site not only poses a major threat to this ecologically vital habitat, but impedes our progress in ending open water dumping in Long Island's waters once and for all. This state is committed to ensuring the Sound remains a viable source of economic and tourist activity and we will continue to take any action necessary to preserve this precious jewel for generations to come.

Through the Coastal Zone Management Act (CZMA) New York has authority to review EPA's action to ensure that it is consistent with the federally approved policies that have been established for Long Island Sound, known as the Long Island Sound Coastal Management Plan (LIS CMP). In addition to the LIS CMP, New York is bound by the terms of the CZMA to represent the Town of Southold in this determination, as they have developed a local waterfront revitalization plan, the Southold LWRP which has been formally approved and incorporated into New York's Coastal Management Program.

New York has for many years actively participated in the process that preceded EPA's latest action and has expressed concerns every step of the way, as detailed in this document. Through laying out the history of New York's involvement with the actions that have led up to this rulemaking, we will show that New York's position on this issue has been steadfast and clear, and that EPA has failed to address many of the State's and the Town of Southold's concerns. These concerns are summarized as follows:

Issues with Testing and Site Monitoring
EPA and the Army Corps of Engineers (the Corps) currently use inadequate and outdated testing methodologies and analytical approaches that do not accurately determine the toxicity levels of dredged sediments. For example, instead of testing separate areas of a dredge site to determine where "hot spots" of contamination are located, they regularly composite or mix their sediment samples together in order to achieve testing results that show the material is suitable for open-water disposal. In addition, they neglect to show sub-lethal and long-term effects on fish and shellfish. Given the types of contamination proven to exist in some of the priority dredge areas, and the current testing and monitoring protocols, it is impossible to guarantee the protection of water quality. Therefore, the designation is inconsistent for water quality (policy #5), the Long Island Sound ecosystem (policy #6), and living marine resources (policy #11).

Site Specific Geography
The eastern part of Long Island Sound is a dynamic location characterized by strong currents, vulnerability to ecological stressors, and a net western movement of sediments. These factors make Eastern Long Island Sound the wrong place to designate a dredged material disposal site and therefore the designation is inconsistent with the Long Island Sound CMP policies for water quality (policy #5), the Long Island Sound ecosystem (policy #6), hazardous waste management (policy #8), and living marine resources (policy #11).

Lack of Consistent Alternatives Analysis
New York's coastal policies set a clear preference for reducing and recycling dredged material. Using clean, coarse dredged material to increase coastal resiliency and compatible sediments for marsh and wetland restoration accomplishes multiple benefits. Yet, EPA disqualified appropriate alternative management strategies on the basis of cost and then used the lack of alternatives as a basis for site designation. This makes EPA's proposed designation inconsistent with the CMP policy for solid waste management (policy #8).

Inappropriate Use of Cost as a Factor for Designation
EPA argues that it proposes to designate ELDS in order to make the most cost-effective method of dredge material disposal available to the Eastern Long Island Sound region. However, they did not utilize full-cost accounting approaches that include the costs of environmental harm. Simultaneously, EPA concluded that there are no beneficial reuse options that meet the long-term disposal need and ruled out other sites within the Zone of Siting Feasibility. This suggests that EPA is inappropriately placing cost-savings over environmental responsibility and stewardship, constitutes an improper use of cost as a justification under the CZMA, and is inconsistent with the Long Island Sound CMP policies for water quality (policy #5), the Long Island Sound Ecosystem (policy #6), hazardous waste management (policy #8), and living marine resources (policy #11).

Inadequate Cumulative Impacts Analysis
EPA failed to thoroughly analyze the effects of legacy contamination in the sediments of Long Island Sound, as well as the possible effects of having three dump sites within the semi-enclosed waters of Long Island Sound all operating at the same time. Furthermore, they did not consider the effects of climate change, rising water temperature, or increasing acidification on the bioavailability of contaminants in sediments. Without a thorough and accurate cumulative impacts analysis, New York is compelled to find the EPA proposal inconsistent with the protection of water quality (policy #5), the Long Island Sound Ecosystem (policy #6), and living marine resources (policy #11)

Finally, EPA's proposed designation of one or more disposal sites in eastern Long Island Sound (EPA Proposed Rule) is inconsistent with the massive public investment and policies – including their own mandates - aimed at restoring and protecting Long Island Sound. The EPA Proposed Rule is also inconsistent with EPA's own goal, required in regulation, of reducing or eliminating open water disposal of dredged material in Long Island Sound. Further, this proposal to establish additional disposal sites immediately follows EPA's 2016 Amended Final Rule that designated two open water sites for the disposal of dredged material in the Central and Western regions of Long Island Sound. The EPA Proposed Rule fails to establish the need for additional disposal sites and undermines the goal of reducing and eliminating open water disposal Long Island Sound.

<u>Subject of the Review</u>

On July 20, 2016, DOS received EPA's consistency determination (EPA Determination) asserting that the EPA Proposed Rule is consistent to the maximum extent practicable with New York's enforceable coastal policies. The receipt of the EPA Determination initiated the consistency review period for DOS to either concur with or object to the consistency determination, which is due on or before October 3, 2016.[2]

In this rulemaking, EPA proposes to designate at least one, and possibly up to three, open water disposal sites in eastern LIS for the receipt of dredged material. EPA has identified three alternatives: (1) the newly configured and re-named Eastern Long Island Sound Disposal Site (ELDS), previously named New London Disposal Site (NLDS); (2) the reconfigured historic

[2] The original decision date was September 18, 2016. By letter dated September 16, 2016, DOS notified the EPA that, pursuant to 15 C.F.R. 930.41(b), DOS was taking a fifteen (15) day extension of time to allow DOS to further review the matter

Niantic Bay Disposal Site (NBDS); and (3) the Cornfield Shoals Disposal Site (CSDS). EPA has indicated that ELDS is the preferred alternative, but that CSDS and NBDS are also being considered instead of, or in addition to ELDS.[3]

Open Water Sites Description

EPA has chosen ELDS as its preferred alternative and increased its area 100% from the 1 square nautical mile (nmi^2) area of NLDS to 2.0 nmi^2. EPA did so "[i]n order to accommodate the dredged material disposal needs for the eastern Long Island Sound region over for the next 30 years (which includes 13.5 million cy [10.3 million m3] of fine-grained material…) . . . the recommended New London Alternative includes the area of the active NLDS as well as two areas immediately to the west (referred to as "Site NL-Wa" and "Site NL-Wb")".[4] EPA has expanded the site to allow for even greater amounts of dredged material to be dumped over the next 30 years.[5] The NBDS site was also expanded[6] and CSDS, a dispersive site, remains unchanged in area.[7]

Statutory Framework

The CZMA authorizes a coastal state to review certain activities directly undertaken by a federal agency to ensure their consistency with the enforceable policies of the state's CMP.

Under the CZMA, "each Federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs." (16 USC § 1456 (c)(1)(A)). The CZMA regulations define the

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[3] See EPA Proposed Rule at: 81 FR 24748 [April 27, 2016]. According to the Federal Register Notice: "EPA is not currently recommending the NBDS and CSDS as preferred alternatives, but [invited] public comments on the option of designating one or both of these sites instead of, or as a complement to, ELDS." https://www.federalregister.gov/articles/2016/04/27/2016-09603/ocean-disposal-designation-of-a-dredged-material-disposal-site-in-eastern-region-of-long-island

[4] See Draft Supplemental Environmental Impact Statement (DSEIS), at p. 3-29. See also DSEIS Appendix I at p. 2.

> The ELDS site encompasses 50% of the western portion of the existing New London Disposal Site (NLDS), along with an adjacent area immediately west of the NLDS (*i.e.,* Sites NL-Wa and NL-Wb). The ELDS (western portion) is located to the south of the mouth of Thames River estuary. It has a total area of 2.0 nmi2 (8.6 km2). The closest upland points to the alternative site are Goshen Point, Connecticut, approximately 1.2 nautical miles (nmi), or 2.2 kilometers (km), to the north, and Fishers Island, New York, 1.4 nmi (2.6 km) to the southeast. DSEIS at p. 3-29.

[5] See 81 FR 24751. "The capacity of the ELDS is approximately 27 million cy..., which would be sufficient to meet the dredging needs of the eastern Long Island Sound region for the next 30 years and beyond."

[6] See DSEIS at p. 3-34, sec. 3.4.3.2. The NBDS includes the historical area 1.8 nmi^2 and the extended site of NB-E with an area of 1.0 nmi^2 for a total area of 2.8 nmi^2.

> The Niantic Bay Alternative is located to the south of Niantic Bay, between the Connecticut and Thames Rivers (Figure 3-9). It consists of the historic NBDS and Site NB-E immediately to the east. The northern edge of the alternative site is located approximately 0.6 nmi (1.1 km) from Black Point (southwestern corner of Niantic Bay) and 1.6 nmi (3.0 km) from Millstone (southeastern corner of Niantic Bay). The site is located entirely within Connecticut waters.

[7] See DSEIS at p. 3-34, sec. 3.4.3.3.

> The Cornfield Shoals Alternative consists entirely of the active CSDS, located in a central location of eastern Long Island Sound, approximately 3.3 nmi (6.1 km) south of Cornfield Point in Old Saybrook, Connecticut (Figure 3-10). The site has an area of 1 nmi2 (3.4 km2) centered at 41°12.686' N, 72°21.491' W (NAD83); corner coordinates are included in Table 3-8. The water depth is approximately 150 feet (46 m). The larger portion of the site is located within Connecticut waters with the remainder of the site located in New York State waters.

phrase "consistent to the maximum extent practicable" to mean "fully consistent with the enforceable policies of management programs unless full consistency is prohibited by existing law applicable to the Federal agency".[8]

The CZMA authorizes "interstate consistency" review where a federal action occurring in one state will affect uses or resources of another state's coastal zone.[9] Since 2006, DOS has exercised its interstate consistency review authority over 15 C.F.R. 930 subpart C, D, and F federal agency activities in the Connecticut state waters of LIS to the -20 foot bathymetric contour closest to the Connecticut shoreline. Within this area, DOS is authorized to review the consistency of all direct federal agency actions as well as federal permit actions involving dredged material disposal in LIS.

In 1972, Congress passed Title I of the Marine Protection, Research, and Sanctuaries Act (MPRSA), commonly referred to as the "Ocean Dumping Act" (ODA), to "prevent or strictly limit the dumping in ocean waters of any material which would adversely affect human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities."[10] The ODA authorizes the EPA Administrator to designate sites where ocean disposal may be permitted. In 1980, Congress amended the ODA to subject the dumping of dredged material in Long Island Sound by federal agencies, or by private parties dumping more than 25,000 cubic yards of dredged material, to the site selection, site designation. and environmental testing criteria of the ODA (known as the "Ambro Amendment"), making the waters of Long Island Sound the only area inside the nation's territorial sea in which the ODA applies.[11]

For designation of ocean disposal sites in the Sound, the ODA site selection criteria apply. The ODA § 102 site designation process requires that EPA demonstrate compliance with four general criteria in 40 C.F.R. § 228.5 and eleven specific criteria in 40 C.F.R. § 228.6. An evaluation of each of these criteria is a necessary component of the site evaluation process prior to an EPA site designation and the development of a site management plan.

In 2001, the LIS CMP was incorporated into the State's federally approved CMP. The LIS CMP policies are the enforceable policies for consistency review of federal activities that may affect the coastal resources and land and water uses of Long Island Sound.

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[8] (15 C.F.R. § 930.32(a)(1)). EPA has not identified an existing law that would legally prohibit it from being fully consistent with the NYS enforceable coastal policies.

[9] See Letter March 28, 2016 from John King, Chief, Coastal Programs Division, National Oceanic and Atmospheric Administration (NOAA) to George Stafford, Director, Division of Coastal Resources. "Based on our review of your Submission, we concur that the changes to Table 2 and the addition of Table 2A are RPCs [routine program changes] to Uses Subject to Management and Coordination, Public Involvement and the National Interest, and OCRM approves the incorporation of these tables into the NYSCMP. Table 2A, Interstate Activities, was developed in accordance with 15 C.F.R. part 930, subpart I." See 15 C.F.R. Part 930 Subpart I "Consistency of Federal Activities Having Interstate Coastal Effects".

[10] 33 U.S.C. § 1401(b).

[11] 33 U.S.C. § l416(f). Congressional history confirms that the ODA was made applicable to Long Island Sound to afford greater protection to the marine environment from open water disposal than was otherwise available under the Clean Water Act. Congress' intention was to afford Long Island Sound "equal or greater protection from polluted dredged spoils [as that afforded to] open ocean waters." 126 Cong.Rec. H34063 (Dec. 13, 1980) (remarks of Rep. Ambro).

The Town of Southold has prepared a local waterfront revitalization program, which has been incorporated into the State's federally-approved CMP.[12] The Southold LWRP encompasses the entire town, including its waters in Long Island Sound as well as natural, public, and developed waterfront resources. The Southold LWRP's enforceable coastal policies guide federal and state agencies in their decision-making responsibilities for activities affecting the town's coastal resources.

Introduction to Long Island Sound: An Estuary of National Significance

Long Island Sound is one of the largest estuaries along the Atlantic coast of the United States and has historically been one of the most productive estuarine waters in the world. In 1987, the U. S. Congress designated Long Island Sound as an Estuary of National Significance.[13] The Long Island Sound region is also one of the most densely populated areas in North America; about 23 million people live in the Sound's watershed.[14] Today the Sound continues to provide valuable breeding, nesting and feeding habitats for myriad aquatic, avian and terrestrial species and supports a regional economy based in part on fishing and shellfishing, shipping, recreational boating, tourism and other coastal recreation, and water dependent industries, augmented by a much reduced commercial fishing industry, that benefits coastal communities in New York, Connecticut and Rhode Island. For these reasons, the health, robustness and resilience of the Long Island Sound ecosystem is of paramount importance to New York State.

Long Island Sound Physical Geography

Long Island Sound is a 110-mile-long, semi-enclosed, tidal estuary at the interstate boundaries of New York, Connecticut, and Rhode Island. It is hydrologically connected to the Atlantic Ocean

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[12] The Town of Southold prepared and adopted an LWRP which was approved by NYS Secretary of State, Randy Daniels and concurred with by the U.S. Office of Ocean and Coastal Resource Management on November 2, 2005. The LWRP was later amended by the Town; those amendments were approved by NY Secretary of State Cesar Perales and concurred with by the U.S. Office of Ocean and Coastal Resource Management on July 24, 2014. The LWRP was prepared in accordance with Executive Law Article 42 and 19 NYCRR Parts 601 and 603.

[13] See P.L. 100-4 § 317. NATIONAL ESTUARY PROGRAM

(a) PURPOSES AND POLICIES.-

(1) FINDINGS.-Congress finds and declares that-

(A) the Nation's estuaries are of great importance for fish and wildlife resources and recreation and economic opportunity;

(B) maintaining the health and ecological integrity of these estuaries is in the national interest;

(C) increasing coastal population, development, and other direct and indirect uses of these estuaries threaten their health and ecological integrity;

(D) long-term planning and management will contribute to the continued productivity of these areas, and will maximize their utility to the Nation; and

(E) better coordination among Federal and State programs affecting estuaries will increase the effectiveness and efficiency of the national effort to protect, preserve, and restore these areas.

(2) PURPOSEs.-The purposes of this section are to-

(A) identify nationally significant estuaries that are threatened by pollution, development, or overuse;

(B) promote comprehensive planning for, and conservation and management of, nationally significant estuaries;

(C) encourage the preparation of management plans for estuaries of national significance; and

(D) enhance the coordination of estuarine research.

See also P.L. 100-4, § 320. NATIONAL ESTUARY PROGRAM

(B) PRIORITY CONSIDERATION-The Administrator shall give priority consideration under this section to Long Island Sound, New York and Connecticut.

[14] http://longislandsoundstudy.net/about-the-sound/by-the-numbers/

at its eastern end through the Block Island Sound, and at its western end through the East River at Throgg's Neck and the New York City incorporated municipal boundary. As noted by the U.S. Geological Survey (USGS), the circulation of waters in Long Island Sound, is controlled by an east-to-west tidal current coupled with a westward-directed estuarine bottom drift.[15] This circulation pattern has produced a succession of sedimentary environments, which begin with erosion at the narrow eastern entrance to the Sound. This environment is followed by an extensive area of coarse-grained bed load transport in the east-central Sound, which is followed by a contiguous band of sediment sorting where the estuary noticeably widens. The last of the sedimentary environments is characterized by broad areas of fine-grained deposition on the flat basin floor in central and western Long Island Sound.

The semi-enclosed geographical nature of the Sound causes sediments to accumulate and concentrate on the floor of the Sound rather than being flushed out to the open ocean. Wind, current, and flow dynamics in the Sound tend to transport sediments from Connecticut's higher energy and flow eastern Sound waters toward New York's western Sound waters where suspended contaminants are deposited. When a scow releases dredged sediments in the eastern Sound, the finer sediments and silts – to which heavy metals and organic carbons adhere - are transported by currents beyond the confines of the disposal site.[16]

Eastern Long Island Sound

EPA's proposed designation of ELDS would encompass substantial portions of NLDS, which is located in the northeastern side of the eastern basin of Long Island Sound at its juncture with Fishers Island Sound approximately two nautical miles from the entrance to the New London, Connecticut Harbor and one-and-one-half nautical miles west of Fishers Island. Beginning in 1955, NLDS has served intermittently as an open water disposal site for dredged sediments. Since approximately 1995, NLDS has been classified as an "interim site" under ODA § 103. NLDS has not been formally designated by EPA under ODA § 102. The DMMP estimates that, since 1955, NLDS has received in excess of 8.9 million cubic yards (mcy) of dredged material.[17]

Eastern Long Island Sound is characterized by strong to moderate currents. The eastern basin of the Sound includes the area between Six Mile Reef to the west and The Race to the east. The Race has particularly strong tidal currents.[18] Ocean waters generally flow into the LIS as bottom currents through the constricted eastern entrance, and Sound waters generally leave the Sound as surface currents through the same eastern entrance. NLDS is located near this eastern entrance to the Sound, and is affected by these water flow patterns. At NLDS, water depths range from approximately 46 to 79 feet. At the eastern edge of the LIS, extending approximately 5 to 8 km westward from The Race, there is a large erosion or non-deposition basin, likely caused by a combination of strong currents and a net westward movement of sediments into the LIS estuary. Current speeds in the eastern basin are the strongest observed in the Sound. These current velocities have been measured at 62-82 cm/sec and are sufficient to erode and move silt and sand and prevent the deposition of silts and clays. There is a paucity of silt and clay sized particles in surficial sediments in the eastern basin, reflecting the high energy current resuspension of fine

[15] http://woodshole.er.usgs.gov/project-pages/longislandsound/overview.html.
[16] DSEIS, Chapter 5 – Environmental Consequences, Section 5.1 "Open-Water Disposal Processes" p. 5-1 to 5-3.
[17] DSEIS at p. ES-5.
[18] DSEIS at p. 3-6.

sediments.[19] Additionally, the eastern Sound has benthic habitat features including diverse bottom topography and hard bottom. These features support high quality habitats in the marine environment.

The eastern Sound has several geographic features that make it especially vulnerable to ecological stressors. Due to its coastal proximity, the Sound is a regular target for major coastal storms and hurricanes that contribute high winds, upwelling, storm surge, flooding, and circulation dynamics that cause resuspension and remobilization of contaminated sediments. The strong currents that characterize the eastern LIS reflect that it is poorly suited to serve, as it has for decades, as a dump site for contaminated and uncontaminated dredged materials.[20]

Finally, the LIS CMP identified Fishers Island and its surrounding waters as one of the State's regionally important natural areas; these areas possess significant natural resources which are at risk and require additional management to protect or restore resource values.[21] The importance of the natural resources of the island are more than just regional as The Nature Conservancy has named the Peconic Bay/Block Island Sound area, including Fishers Island, as one of the world's "Last Great Places," and has included the region in its program designed to protect and manage natural habitats.[22]

History of Contamination

Two centuries of industrial activities along New York's and Connecticut's rivers and harbors, much of which occurred before modern environmental protection laws offered pollutant regulation, have generated an accumulating deposit of heavy metals and toxic organic compounds in the sediments of the Sound.

Industrial pollution of Connecticut rivers and harbors is well documented.[23] With this industrialization came enormous quantities of raw material and waste products. "The Sound has seen the most severe environmental changes over the last 400 years during its 10,000 year history…suggesting that human impacts have overwhelmed the natural forces at play."[24]

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[19] The Geology of Six Mile Reef, Eastern Long Island Sound Physiographic and Geologic Setting (USGS) http://woodshole.er.usgs.gov/pubs/of2007-1191/html/setting.html; The Residual Circulation In Long Island Sound: Gyral Structure In The Central And Western Basins (NOAA Technical Memorandum NOS CS 2, 2003) http://www.nauticalcharts.noaa.gov/csdl/publications/TM_NOS-CS02_FY2003-Schmalz_LIS_circulation.pdf

[20] As stated in the DSEIS for the ELDS designation: "Eastern Long Island Sound increasingly narrows and deepens toward the east and has stronger tidal currents that scoured the seafloor. Water enters Long Island Sound from Block Island Sound through two deep elongate depressions (The Race), located between Fishers Island and Little Gull Island. These depressions reach a maximum water depth of approximately 330 feet (101 m) on the Long Island Sound side." (p. 4-9)
"Parts of the seafloor in eastern Long Island Sound is relatively flat and featureless, as strong tidal currents prevent the deposition of marine sediments and erode the finer grain size fractions in the sediments. This process leaves exposed lag deposits of gravel and gravelly sand that armor the seafloor. Larger sessile benthic organisms were not observed on these gravel pavements, suggesting periodic mobilization of the gravel." (DSEIS at p. 4-15)

[21] LIS CMP p. 92.

[22] http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/rhodeisland/placesweprotect/block-island.xml; see also Town of Southold LWRP Section II –J Reach 10 pp 12 and 13.

[23] Metals, Organic Compounds, and Nutrients in Long Island Sound: Sources, Magnitudes, Trends, and Impacts, Johan C. Varekamp, Anne E. McElroy, John R. Mullaney and Vincent T. Breslin, Chapter 5, J. S. Latimer et al. (eds.), Long Island Sound: Prospects for the Urban Sea (2014).

[24] Id.

In 1982, the Oceanic Society prepared and submitted a report to the New England Governors' Conference entitled "Dredging and Dredged Materials Management in the Long Island Sound Region". The Report outlined the flagrant abuses shown by dredgers for the massive amounts of pollution deposited in the Sound.

> An estimated 126 million cubic yards of material (the vast majority of which is dredged material) have been disposed of in the open waters of Long Island Sound in the period 1890-1977. (Schubel et al, 1979). Some 100 million cubic yards was dredged from federal maintenance channels during the same period with the majority (80%) coming from Connecticut ports and harbors. The remainder of material came from private dredging for which records are incomplete.[25]

Since the 1980s, the USGS Coastal and Marine Geology Program has been comprehensively studying the Long Island Sound environment and has also documented trace metal contamination. Sediments of the Sound "are a sink for wastes and contaminants from various sources such as riverine input, wastewater treatment plants, urban and agricultural runoff, and sediment and waste disposal".[26] Due to the significant human population, the Sound is used heavily and its sea floor has been impacted by human activities. Existing background levels of heavy metal contamination from legacy pollution remain toxic and harmful indefinitely, but the full extent of the impacts of all contaminants present in the Sound, including dredge disposal sites, is unknown. Neither EPA nor the Corps has conducted comprehensive research to understand the condition of the benthic marine environment.[27] In the absence of such studies,

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[25] https://www.gpo.gov/fdsys/pkg/CZIC-tc187-d768-1982/pdf/CZIC-tc187-d768-1982.pdf. This important report provided a historical perspective on over a century of dredge material dumping in the Sound. In an attempt to control open water disposal, around the turn of the century, 19 disposal sites were designated. The report observed: "Although disposal of dredged materials in the Sound was supposed to be confined to the 19 designated sites, it is important to recognize that little or no effort was made to enforce this requirement. Observations by divers confirm the presence of dredged materials outside designated disposal sites, but the distribution and quantity of improperly dumped materials is not known. In part, this situation may have developed from imprecise navigation combined with little thought of the need to dump spoils at the designated site... Regulated only by the Rivers and Harbors Act of 1899, Long Island Sound was the disposal option for any and all of the region's waste. Studies and reports conducted in the late 1960's and early 1970's document deteriorating water quality around the Sound. While disposal of dredged material is named as a contributor to the degraded quality (US EPA 1971), no report ever qualified or quantified dredged material's contribution. Instead, dredged material was thrown together with industrial, domestic, and marine vessel pollution." PP. 10-12. As a consequence, the Sound floor is polluted with heavy metals, toxic organic compounds, and nutrients. Despite many improvements, Long Island Sound is still considered one of the most polluted estuaries in the United States. See Footnote 114. This pollution, along with other ecological stressors, has resulted in the steady decline of the marine coastal economy that was based on fishing, shellfishing and seafood processing and has harmed the workers that depend on it. The decline and, in some cases, collapse of commercial fishing in Long Island Sound was documented in the programmatic environmental impact statement for the DMMP with descriptions of the steady declines in the most commercially viable species: American Lobster, Eastern Oyster, Scallop, Blue Crab, Hard Clams, Atlantic Surf Clam, Blue Mussel, and Horseshoe crabs. PEIS pp. 4-123 through 4-131.

[26] U.S. Geological Survey Studies in Long Island Sound: Geology, Contaminants, and Environmental Issues http://woodshole.er.usgs.gov/project-pages/longislandsound/overview.html

[27] "Sandy Point in West Haven is located in the outer harbor. During the 1800's Sandy Point was home to flourishing oyster beds. Oysters were taken from the Chesapeake Bay and transplanted along the site. Today the only signs of oysters on the beach are the signs, which read that oyster beds are contaminated and that shellfishing is prohibited." Historical Harbor Habitats, Matthew D. Cacopardo (Yale-New Haven Teachers Institute) http://teachers.yale.edu/curriculum/viewer/new_haven_05.05.04_u See also "Biogeochemistry and Contaminant Geochemistry of Marine and Estuarine Sediments, New Haven, Connecticut," (Kruge & Benoit 2002)

informed decisions about whether to authorize continued disposal of dredged materials cannot be made.

The Eastern Long Island Sound region is home to numerous contaminated sites

The Navy and the Coast Guard, which have facilities located on the 17-mile-long Thames River, are the primary users of the NLDS.[28] The Navy maintains a homeport for the Naval Submarine Base New London (SUBASE) on the eastern bank of the Thames River in the towns of Groton and Ledyard, Connecticut. Periodically, it requests the Corps to arrange for maintenance dredging of the pier area and the channel in order to have adequate depth of water for floating dry docks and navigation within the river by various sizes of submarines. The Thames River adjacent to the SUBASE contains a significant amount of very fine grained material and silt, to which contaminants readily adhere. In its more than 6 decades of use as an open water dump site, NLDS has received a total of approximately 8.9 million cubic yards of dredged material.[29]

The toxicity of Connecticut's river and harbors has been well documented over the years. For example, in 1990, the Navy's SUBASE in New London Harbor was placed by EPA on the Superfund National Priorities List (NPL).[30]

Despite the heavy contamination of the Thames River and New London Harbor,[31] sediments from these locations have continued to be disposed of in Long Island Sound.[32] If this proposed

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[28] CENAE-R-PEB, Final Navy Site Selection, Memorandum for the Record, Thomas L. Koning, Colonel, Corps of Engineers, District Engineer (April 15, 2005) p. 5 "The largest volumes have come from U.S. Navy-related dredging projects, and as such the site has experienced large fluctuations in annual volumes. NLDS receives the largest volumes from the Thames River."

[29] DSEIS at p. ES-5.

[30] https://www3.epa.gov/region1/superfund/sites/newlondon/263757.pdf. It was identified as Naval Submarine Base - New London (NSB-NLON).

[31] Lee, Metal concentrations in the sediment of the Thames River and New London Harbor. Dissertation, Southern Connecticut State University, New Haven, CT (2010). https://www.southernct.edu/research/research-centers/ccms/Lee-Thesis.pdf The author observed: "Sediment copper concentrations in the Thames river and New London harbor ranged from 3.20 mg/kg for station 33 at Pine Island to 252 mg/kg for station 28 at a Dry Dock facility in New London harbor. Twelve out of the fifteen stations sampled in this study had copper concentrations that exceeded the crustal abundance of copper (25 mg/kg). Similarly, sediment zinc concentrations ranged from 10 mg/kg at station 33 to 642 mg/kg at station 28. Twelve out of the fifteen stations had zinc concentrations that exceeded crustal abundance (65 mg/kg). Sediment metal contamination was highest at stations located near industry where there was evidence of industrial discharge and near the highway overpasses, in which polluted runoff may have contributed to sediment metal contamination. A comparison of sediment metals in this study and the Breslin (2009) study for the Thames river and New London harbor showed that twenty six out of the thirty five stations analyzed had copper and zinc concentrations that exceed the Effects Range Low (ERL) values for these respective sediment metals. Station 28, located proximate to the dry dock, was the only station where both zinc and copper concentrations approached or exceeded Effects Range Medium thresholds. Based on both copper and zinc exceeding the ERL thresholds at multiple locations throughout the river/harbor complex it is likely that some adverse effects are occurring to benthic organisms at these locations along the Thames river." P. 1.

[32] The Navy's Consistency Determination for Waterfront Maintenance Dredging of Naval Submarine Base New London (2008) contains the following statement:

> Sediment samples were recovered from 30 designated locations along the SUBASE waterfront during the period from October 29 to October 31, 2008… The results of the sediment chemistry analysis for the waterfront area samples indicate that these sediments contain a wide variety of environmental pollutants including detectable concentrations of all metals tested; detectable concentrations of one or more of the 22 PCB congeners tested; detectable concentrations of all PAHs tested; and detectable concentrations of pesticides. Results of the bulk sediment chemistry analysis are summarized in tables contained in the attached Sediment Sampling Results Report, January 2009 (TEC, 2009). **The results of the sediment chemistry analysis indicate that the**

designation of ELDS was to go forward, it is highly likely that the despoliation of the Sound would continue unabated into the future.

Efforts to Improve the Environmental Health of Long Island Sound

Over the past four decades, major efforts have been undertaken by all levels of government and by the general public to improve the quality of the Sound. Billions of taxpayer dollars have been invested and new laws, regulations and policies have been enacted in an effort to stem the tide of decline. This is a remarkably complex objective, since the Sound itself is a highly complex and sensitive ecosystem with multiple uses and stressors.

As early as 1973, Federal and state agencies sought to address both the need for navigational dredging and environmentally wise disposal options. The New England River Basins Commission, a partnership including the federal government and the states of New York and Connecticut, developed the Long Island Sound Regional Study to protect, conserve and wisely develop the Sound as a major economic and life-enriching resource for the region. On June 20, 1980, the Commission released the Interim Plan for the Disposal of Dredged Material from Long Island Sound, which identified the need to limit dredged materials disposal and develop a comprehensive dredged materials management plan for the Sound. Other efforts that have reflected and acknowledged the need to reduce open water disposal of dredged materials in order to improve the Long island Sound ecosystem include: Congressional amendments to the federal ODA limiting the disposal of contaminated materials in the Sound; the Sound's designation as an Estuary of National Significance pursuant to the National Estuary Program, the Long Island Sound CCMP, the federal Office of Coastal Resource Management's (OCRM) concurrence with the incorporation of the regional Long Island Sound Coastal Management Program into the New York State CMP, and OCRM's concurrence with New York's and Connecticut's interstate consistency lists. Despite these clear policies, the open-water disposal of dredged materials has continued largely unabated.

Because of actions taken by state, federal and local partners to improve the health of the Sound and to implement the Long Island Sound CCMP, the Sound continues to maintain promising future potential for restored ecosystem productivity and sustainable natural resource-based economic activities as long as the current array of stressors continue to be reduced in number and intensity. For this reason, the progress which EPA, New York and Connecticut are making through the CCMP must not be undermined through the unnecessary and biologically damaging disposal of dredged material at ELDS.

New York's History of Long Island Sound Consistency Objections and Federal Lawsuits

At the National Estuary Program designation ceremony, New York pledged to support the goals of the Long Island Sound Management Conference and to restore and protect the environmental quality of Long Island Sound. New York State continues to honor this "commitment to act". At

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waterfront area sediments have concentrations of various contaminants at levels that would most likely prevent the unconfined ocean disposal of this dredged material.

The Navy has publicly recognized that dredged material from the SUBASE waterfront area is "moderately contaminated due to the presence of various contaminants commonly associated with historically industrialized waterfronts" and "therefore it is likely that unconfined ocean disposal at approved ocean disposal sites would not be viable." US Navy, Dredged Material Disposal Alternatives Analysis Waterfront Maintenance Dredging -SUBASE NLON (May 2009) pp. 1-1 and ES-2.

Emphasis added. See U. S. Navy Consistency Determination sent to DOS on NY STATE REGISTER, September 9, 2009 p. 77 http://docs.dos.ny.gov/info/register/2009/sep9/pdfs/miscellaneous.pdf.

times, New York has taken legal and regulatory actions to ensure that other government agencies play their part in protecting the Sound. That occasionally has taken the form of consistency objections under the CZMA and lawsuits in federal court.

Federal lawsuits regarding non-compliance with ODA requirements

Lawsuits have been brought by the State and private organizations to ensure that federal agencies comply with the procedures of the ODA and with the National Environmental Policy Act (NEPA) when conducting dredged material disposal and site designation.[33]

The 1975 case of Natural Resources Defense Council, Inc. v. Callaway[34] remains significant today because it concerned a conflict over the dumping of dredged spoils at NLDS in Long Island Sound. In Callaway, the Second Circuit found that the Navy, the Corps and others had violated NEPA by failing to consider the cumulative effects of other dumping projects in Long Island Sound for a dredging project proposed by the Navy. The final environmental impact statement (FEIS) prepared by the Navy had only evaluated the environmental impact of a specific dredging and dumping project. The Court found that the Navy's failure to analyze the effects of such other dumping projects rendered the FEIS "deficient."[35] The Court cautioned that an agency cannot treat "a project as an isolated 'single-shot' venture in the face of persuasive evidence that it is but one of several substantially similar operations, each of which will have the same polluting effect in the same area. To ignore the prospective cumulative harm under such circumstances could be to risk ecological disaster." *id*. at 88. If other projects are closely enough related so that they are "expected to produce a cumulative environmental impact", such impacts must be evaluated as a whole, under NEPA's "comprehensive evaluation" requirement.[36] The Court concluded that the Navy's failure to do so constituted "isolated decision making sought to be eliminated by NEPA." [37]

Dumping in Long Island Sound was also at issue in a 1988 case entitled Town of Huntington v. Marsh.[38] The case was reviewed under the Ambro amendment which required that the dumping of dredged material in Long Island Sound by federal agencies, or by private parties whose projects exceed 25,000 cubic yards of waste, be subject to the provisions of the ODA. In Town of Huntington, the Second Circuit found violations of both NEPA and the ODA, as a result of deficiencies in EIS procedures. As in Callaway, the EIS was deemed to be insufficient under NEPA for failing to assess the cumulative effects of other dredge material disposal projects in Long Island Sound. The court cautioned against "segmentation" of projects and stated that such a

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[33] See Town of Huntington v. Marsh, 859 F.2d 1134, 1135 (2nd Cir. 1988) where the Second Circuit Court of Appeals observed:

> "The Long Island Sound (the "Sound") is host to a myriad of recreational and industrial uses, including swimming, boating and fishing. Recreational users, commercial fisheries and environmentalists share a sometimes uneasy coexistence with use of the Sound as a waste dumping ground. Marinas and harbors which line the Sound must be dredged periodically to provide safe berthing for pleasure craft, commercial fishing boats, and military ships. The spoil from these dredging operations has for decades been dumped into the Sound. This litigation arises out of the ongoing effort of citizens and the federal government to balance the use of the Sound as a waste dumpsite with the need to protect its increasingly fragile waters."

See also Town of Huntington v. Marsh (II), 884 F.2d 648 (2nd Cir. 1989).

[34] 524 F.2d 79 (2nd Cir. 1975).

[35] Id. at 87.

[36] Id. at 89.

[37] Id. at 89.

[38] 859 F.2d 1134 (2nd Cir. 1988).

process is to be "avoided."[39] The Court stated that it was improper to defer a cumulative effects analysis when *designating a new open water disposal site*.[40]

DOS Actions and Involvement to Protect the Sound

On March 8, 2004, EPA submitted to DOS a consistency determination that its designation of two Long Island Sound dredged material disposal sites, Central Long Island Sound (CLDS) and Western Long Island Sound (WLDS), would be consistent with New York's Coastal Management Program. On June 3, 2004, in accordance with the CZMA, DOS objected to EPA's designation of CLDS and WLDS.[41] In that objection, DOS pointed out that EPA had not adequately addressed the availability of alternatives to open-water disposal of dredged materials in the Sound or analyzed the cumulative impacts of historic dump sites and decades of dumping events on Long Island Sound. DOS called for EPA and Corps to prepare a comprehensive plan for managing dredged material in the region to identify the alternatives to open water dumping.

On May 15, 2004, following negotiations with federal and State agencies, DOS agreed to withdraw its federal consistency objection in return for the insertion of certain terms and conditions in the EPA 2005 Final Rule. Those terms and conditions required restrictions on the use of CLDS and WLDS for all federal dumping projects and those for private applicants exceeding 25,000 cubic yards. The agreement was intended to reduce or eliminate the disposal of dredged materials in Long Island Sound.[42]

On June 3, 2005, EPA issued the 2005 Final Rule,[43] which directly linked the continued use of the two new open water disposal sites to a requirement that the Corps prepare and complete a regional Long Island Sound Dredged Material Management Plan (DMMP) by June 2013. The DMMP was to achieve the "goal of reducing or eliminating the disposal of dredged material in Long Island Sound" by identifying alternatives to open-water disposal.[44] The Final Rule also

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[39] *Id*. at 1142.

[40] *Id*. at 1143 (italics added). See also Conservation Law Foundation v. Watt, 560 F. Supp. 561, 577 (Dist. Ct. of Mass. [March 28, [1983]). In Conservation Law Foundation, the U.S. Department of the Interior separated future actions of lease sales on the Outer Continental Shelf, to take place at a future date from the lease plan it submitted to Massachusetts for consistency review under CZMA (15 C.F.R. Part 930 Subpart C). The Court rejected the Department of Interior's segmentation of the lease plan from the activities that would to take place pursuant to the plan and found that "[h]owever, even at this early stage in the procedure, I find that it is simply insufficient for the Secretary [of the Interior] to base a finding of consistency on similar aims and goals between the State and federal regulatory schemes and the admittedly significant amount of state participation to come in the future. If that participation is to be meaningful overall, it must be considered at every stage, including this one. Therefore, I find that the Secretary has failed to articulate a proper basis for his finding that the proposed Lease Sale is consistent with the Massachusetts Coastal Zone Management Program, and I conclude that he has failed to discharge his obligations under the Coastal Zone Management Act." As the Secretary of the Interior was found to have erred in segmenting associated future actions to take place within a federal agency activity subject to CZMA consistency review, the EPA here has also improperly segmented the anticipated dredged disposal activities from consideration in this rulemaking.

[41] See Letter dated June 3, 2004 from George Stafford, Director, Division of Coastal Resources to Linda M. Murphy, Director, Office of Ecosystem Protection, U.S. Environmental Protection Agency, Region 1.

[42] See Objection withdrawal letter from George Stafford, Director, Coastal Resources Division, to Linda M. Murphy, Director, Office of Ecosystem Protection, U.S. Environmental Protection Agency, Region 1. The letter contains an Appendix A inclusive of fourteen (14) restrictions of the use open water disposal in Long Island Sound.

[43] 70 Fed. Reg. 32498-01 (June 3, 2005); see also 40 C.F.R. § 228.15(b)(4)(vi)(C) [2005].

[44] The Preamble to the EPA Final Rule states, "the DMMP for Long Island Sound will include the identification of alternatives to open-water disposal and the development of procedures and standards for the use of practicable alternatives to open-water disposal, so as to reduce wherever practicable the open-water disposal of dredged material … [and] also may contain recommendations regarding the use of the sites themselves." This goal was reiterated in

made clear that the failure to complete the DMMP on time would result in CLDS and WLDS losing their ODA § 102 designations.[45]

Despite many meetings, as well as participation and comments submitted by New York State, Connecticut, and members of the public, the Corps issued a DMMP that recommended a continuation of open water dumping and the designation of three or more disposal sites. Ignoring its mandate, the DMMP failed to identify, primarily on the basis of cost, any practicable alternatives to open water disposal other than beach nourishment with coarse sand.

On November 2, 2009, DOS objected to the U.S. Department of Navy's use of NLDS to dispose of approximately 170,000 cubic yards of dredged material from a Confined Aquatic Disposal cell in the Thames River. DOS found that the disposal of the dredged material was not consistent with the Long Island Sound coastal policies. The Navy subsequently disposed of the material at CLDS.[46]

In 2011, a provision for five-year interim extensions for NLDS, pursuant to ODA § 103(b) was set forth in an omnibus appropriations bill for the Corps, the Military Construction and Veterans Affairs and Related Agencies Appropriations Act, 2012 (PL 112-74) section 116. The temporary authorization allowed the Corps to use NLDS for open water disposal and stated that EPA would use the five-year time period to complete a supplemental environmental impact statement (SEIS) for eastern Long Island Sound. Within the last five years, DOS has issued numerous objections to disposal projects headed to NLDS.[47]

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the Long Island Sound "Project Management Plan for Regional Dredged Material Management Plan" (LIS DMMP PMP), as issued in October of 2007 (*see* LIS DMMP PMP § 1.4, "LIS DMMP Goals and Objectives").

[45] The central and western disposal sites (CLIS and WLIS, respectively) were renamed during the DMMP process to the Central Long Island Sound and Western Long Island Sound Disposal Sites (CLDS and WLDS).

[46] In 2006, the Navy failed to follow the consistency review process when it disposed of the sediments from the CAD cell for a SUBASE project at NLDS. (See 15 C.F.R. § 930.36(a)) The Navy violated the CZMA when it conducted the dredged material disposal without obtaining a consistency concurrence from New York State. The Navy also failed to provide DOS with a consistency determination for the 2008 proposed federal agency activity until NY specifically requested the Navy's submission. See Letter dated July 22, 2009 from Fred Anders, Chief Natural Resources Management Bureau, DOS, to Diane Ray, U.S. Department of the Army, Corps of Engineers/New England District informing the Corps of DOS's intent to review the U.S. Navy activity involving the proposed disposal of 237,000 cubic yards at NLDS because DOS "determined that this federal agency activity within New York and Connecticut waters will have reasonably foreseeable effects on uses and resources in New York's coastal area."

[47] **F-2014-0047** – Objection to consistency certification of Gwenmor Marina, Stonington, Ct. to dispose of 13,500 cubic yards (c.y.) of dredged material at NLDS (suitability determination showed that sediments contained 3.5 to 10 times the levels of cadmium present at the NLDS); **F-2014-0109 (DA**), Objection to consistency certification of U.S. Army Corps of Engineers to place 250,000 c.y. of dredged material from the Mystic River Federal Navigation Project, Groton and Stonington, Ct. at NLDS (suitability determination showed elevated concentrations of arsenic, cadmium, chromium, copper, lead, mercury, zinc, pesticides (4,4'DDD ; 4,4'DDE ; 4,4'DDT) and PAHs that were identified in the FNP sediment as compared to the NLDS reference values); **F-2014-0254-** Objection to consistency certification of Town of Stonington, Ct., to place 13,300 c.y. of dredged material from the Primary Auxiliary Channel, Upper Mystic Harbor at NLDS (suitability determination showed that sediments contained between 3.8 to 7.8 times the levels of cadmium, 2.4 to 2.8 times the levels of copper, and up to 2 times the levels of mercury present at the NLDS); **F-2014-0255** – Objection to consistency certification of Town of Stonington, Ct., to place 6,340 c.y. of dredged material from the Secondary Auxiliary Channel, Upper Mystic Harbor at NLDS (suitability determination showed that sediment contained 5.6 to 8.6 times the levels of cadmium and up to 2.4 times the levels of copper present NLDS); **F-2014-0279** – Objection to consistency certification of Spicer's Marina, Noank, Ct. to place 16,000 c.y. of silty dredged material at NLDS (suitability determination showed that sediments contained 2 times the levels of cadmium and copper present at the NLDS); **F-2014-0434** - Objection to consistency certification of Mason Island Landing, LLC, Stonington, Ct. to place 13,238 c.y. of dredged material at NLDS (suitability determination showed that dredged material contains over 2 times the levels of cadmium, copper, and mercury

On July 7, 2016, EPA issued an Amended Final Rule permanently designating two open water sites for the disposal of dredged materials in the Central and Western Regions of Long Island Sound. DOS concurred with this rule only after EPA agreed to place restrictions on the use of the two sites to help meet the goal of reducing or eliminating dredged material disposal in the open waters of Long Island Sound and set standards and procedures to promote the development and use of practicable alternatives to open-water disposal, with measureable reductions in open water disposal over time - a goal EPA disregarded when it issued the EPA Proposed Rule on April 27, 2016.

Town of Southold LWRP

The Southold LWRP's enforceable coastal policies guide federal and state agencies in their decision-making responsibilities for activities affecting the town's coastal resources.

In its consistency determination, EPA provided a cursory discussion of the consistency of designating one or more open-water disposal site in eastern Long Island Sound with the Southold LWRP generally. EPA did not address the specific local policies.[48] Despite its failure to perform an LWRP policy analysis, EPA broadly concluded that the proposed designation is consistent to the maximum extent practical with the LWRP's enforceable coastal policies. By contrast, DOS carefully considers both the LIS CMP and the LWRPs policies in the policy analysis section below.

The Southold LWRP anticipates and specifically addresses EPA's possible designation of an open water disposal site in the eastern Sound. Under the CZMA, EPA had an opportunity to review Southold's LWRP as part of the routine program change process and did not object to its content. This LWRP passage is relevant to the interpretation of the LWRP policies:

> The Town also requests cooperation and support from federal agencies such as the U.S. Environmental Protection Agency, the U.S. Navy and the U.S. Army Corps of Engineers during the review of dredging and dredging disposal projects proposed within or near Town waters. Of primary concern are projects where contaminated underwater land may be dredged (or contaminated sediment disposed of) near highly productive and pristine

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present at the NLDS); **F-2014-0435 -** Objection to consistency certification of Pine Island Marina, Groton, Ct. to dispose of 21,545 c.y. of dredged sediments at NLDS (suitability determination showed that sediments contained over 2 times the levels of arsenic, 2.8 to 3.2 times the levels of cadmium, up to 4.2 times the levels of copper, over 2 times the levels of zinc, over 2 times the levels of 13 PAHs than those present at the NLDS); **F-2012-0691 -** Objection to consistency certification of Noank Village Boat Yard, Groton, Ct. to dispose of 9,000 c.y. of dredged material at the NLDS (suitability determination showed that sediment contained 5.5 to 8.0 times the levels of cadmium present NLDS); **F-2009-0645(DA) -** Objection to consistency certification of Navy to dispose of ~230,000 c.y. of dredged material from the Thames River at NLDS (no suitability determination for the CAD cell material was conducted or provided however the Thames River sediments were composed of 50/50 silt and clay, to which contaminants readily adhere); and **F-2009-0140 -**Objection to consistency certification of Fishers Island Yacht Club, Southold, NY to dispose of ~19,000 c.y. of material at NLDS (suitability determination showed that sediments contained low levels of PCBs and elevated mercury levels; source and chemical analysis of cap material not disclosed). Also, in **F-2014-0123,** New York conditionally concurred with the consistency certification of the Shennecosset Yacht Club, Groton, Ct. to dispose of ~9,000 c.y. of clean sediments provided that the disposal site was changed from NLDS to CLIS.

[48] EPA stated: "Although a separate discussion of the Southold LWRP is not necessary because of the above discussion of the LIS CMP, EPA discusses the Southold LWRP below just to be doubly sure of the adequacy of this determination." pp. 38-39.

fisheries resource areas. A case in point is the dredging of the mouth of the Thames River near Groton and the disposal of that dredged material near the Fishers Island Race.

The dredging issue is of central importance because Long Island Sound has been designated an estuary of national significance under the *National Estuary Program*. Pursuant to that designation, millions of dollars have been and will continue to be spent to improve the water quality and to protect the ecosystem from further degradation. The eastern portion of Long Island Sound, including Fishers Island Sound, consists of and supports some of the most physically and biologically diverse marine environments in the State of New York. Accordingly, this region supports lucrative commercial and recreational fishing and shellfishing industries.

Deposition of the dredged material from this channel to the NLDS is of concern because of the extent of the material, (millions of cubic yards), its contaminated nature, and its location relative to physically dynamic, biologically diverse and heavily fished waters. Since 1981 and 1990, the *Ocean Dumping Act* (ODA) has been in effect in Long Island Sound. However, the NLDS has not been formally designated as an approved disposal site in accordance with that act. It is the Town's position that the New London site does not meet the criteria set forth in the ODA, and therefore should be closed to future depositions of dredged material. The standards of the ODA ought to be upheld, not circumvented by federal agencies.[49]

EPA's Proposed Rulemaking for the Permanent Designation of Eastern Long Island Sound Disposal Sites

On October 16, 2012, EPA published a Notice of Intent to prepare a supplemental environmental impact statement (SEIS) identifying site(s) in Eastern Long Island Sound for potential designation under ODA § 102(c).[50] On October 22, 2012, DOS accepted EPA's request to serve as a cooperating agency in the preparation of the SEIS under the following conditions: "DOS reserves all of its statutory rights and jurisdictional authority as New York's CZMA administrator, including but not limited to the ability to seek judicial review of its federal consistency decisions in federal court as it relates to any EPA proposed open water disposal site designations (Marine Protection, Research, and Sanctuaries Act §1412) arising from the completion of the ELDS SEIS or to otherwise legally challenge the content, sufficiency or scope of the information and analyses contained in the ELDS SEIS and subsequent Record of Decision."[51]

In designating dredged material disposal sites, the EPA Administrator is required to choose a site that will "mitigate adverse impact on the environment to the greatest extent practicable."[52] Before such designation, EPA must prepare a site management plan that includes:

> "(A) a baseline assessment of conditions at the site; [and]

[49] Southold LWRP Section II – K pp.25- 26.
[50] 77 Fed. Reg. 63312 [Oct. 12, 2012].
[51] Letter from George Stafford, Deputy Secretary of State to H. Curtis Spalding, EPA Region 1 Administrator (July 27, 2012).
[52] 33 U.S.C. § 1412(C)(1).

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> (D) consideration of the quantity of the material to be disposed of at the site, and the presence, nature, and bioavailability of the contaminants in the material;"[53]

To meet this directive, EPA must consider both the quantity and quality of the material to be disposed of at ELDS over the next 30 years. EPA projects that, during that time period, approximately 13.5 million cubic yards of fine-grained sediment will be classified as "suitable" for open water disposal, a huge quantity that vastly exceeds the total amount dumped at NLDS in more than 6 decades.[54] If past practice is any guide, ELDS is expected to receive most, if not all, of the sediment from the New London Dredging Center.[55]

On September 17, 2014, DOS submitted comments on the Physical Oceanography Study Report prepared for the Draft Supplemental Environmental Impact Statement (DSEIS) that focuses on several deficiencies, including: the absence of supporting field data or an analysis thereof used to inform the sediment transport model; the lack of quantitative evidence that the sample sizes collected were adequate for performing statistical analyses; the failure of the data to account for seasonal differences; the failure to address sediment transport in the water column versus on-bottom transport stresses; and gaps in the statistical analysis.[56] EPA did not address these deficiencies in the DSEIS. DOS also submitted comments on the DSEIS on November 6, 2013 (Fishing Survey) and July 10, 2013 (Biological Characterization) citing the numerous deficiencies of those sections of the SEIS as well.[57]

On March 4, 2016, DOS and New York State Department of Environmental Conservation (DEC) issued joint comments to EPA on the pre-draft of the Eastern Long Island Sound DSEIS. These comments also highlighted deficiencies in the DSEIS.[58] EPA has not addressed these deficiencies.

<u>EPA's Consistency Determination</u>

On July 20, 2016, DOS received the EPA Determination, which concluded that EPA's proposed designation of a third dredged material disposal site in eastern LIS is consistent with the enforceable policies of New York's Coastal Management Program. In its determination, EPA relied on a number of arguments to support its reasons for concluding that the designation of

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[53] 33 USC § 1412(C) (3).

[54] EPA Region 1 Determination of Federal Action's Consistency with Enforceable Policies of New York's Coastal Zone Management Program (July 20, 2016) p. 16. EPA estimates that 9.1 mcy are projected to be coarse-grained sand that also meets MPRSA and CWA standards for aquatic disposal.

[55] DMMP Table 5-35 - New London Area Dredging Center - Available/Potential Placement Alternatives (DMMP pp. 5-51 and 5-52**.)** "For the purposes of this DMMP, the Navy's improvement dredging materials and the Coast Guard's maintenance materials [from the Thames River] will be assumed to be suitable for open water placement or any other use for fine-grained suitable materials." (DMMP p. 5-50.)

[56] See Letter dated September 17, 2014 from Jeffrey Herter, Asst. Director of Development Division, DOS, to Jean Brochi, U.S. EPA, Region 1.

[57] DOS comments includes "[DOS] believes that the Report will be seriously flawed unless these comments are appropriately addressed with the Report revised accordingly." See Letter dated July 10, 2014 from Jennifer Street, DOS Coastal Specialist to Jeannie Brochi, US EPA Region 1, "Re: New York State Department of State comments on the Eastern Long Island Sound Dredged Material Disposal Sites – Biological Characterization Final Report" (July 10, 2014). DOS has not received responses to these comments.

[58] See Letter dated March 4, 2016 from Sandra Allen, Deputy Secretary of State, Office of Planning and Development, DOS to Jean Brochi, LIS DMMP Manager, EPA, Region 1.

ELDS would be consistent to the maximum extent possible with New York's Long Island Sound policies. Two of those arguments, and New York's summary response to them, are set forth below.[59]

Disposal Conditions

EPA generally asserts that designation will not cause any adverse coastal effects. Before authorizing a given project for open-water dumping, the Corps must first find that: (a) There are no practicable alternatives (as defined in 40 C.F.R. 227.16(b)) to open-water disposal in Long Island Sound, and that any available practicable alternative to open water disposal will be fully utilized for the maximum volume of dredged material practical; and (b) The dredged material satisfies the applicable environmental impact criteria specified in EPA's regulations at 40 C.F.R. part 227. See 40 C.F.R. 227.1(b), 227.2 and 227.16.

Objectively, both factors appear reasonable. However, there are problems in the details.

a. *No Practicable Alternatives (as defined in 40 C.F.R. 227.16(b))*

The proposed EPA regulation designating ELDS has been written to allow the Corps to use cost alone to judge the practicability of an alternative to open water disposal. § 40 C.F.R. § 227.16(b) provides that ocean dumping "will be considered to have been demonstrated when a thorough evaluation of the factors listed in § 227.15 has been made," and the Corps' District Engineer has determined that waste treatment or storage technologies are unavailable which could otherwise reduce open water disposal of dredged materials.

> (b) …[W]aste treatment or improvements in processes and alternative methods of disposal are practicable <u>when they are available at reasonable incremental cost and energy expenditures</u>, which need not be competitive with the costs of ocean dumping, taking into account the environmental benefits derived from such activity, including the relative adverse environmental impacts associated with the use of alternatives to ocean dumping.

Cited above, 40 C.F.R. § 227.15 sets forth factors in the consideration of open water disposal, which include:

> (c) The relative environmental risks, impact and <u>cost</u> for ocean dumping as opposed to other feasible alternatives.

As discussed further below, the reliance on cost as a factor in the selection of alternatives for individual disposal decisions will lead to open water disposal as a preferred option every time. The cost of disposing of dredged sediments from the Thames River and New London Harbor at ELDS will always be cheaper than any alternative, even if the alternatives were latch-key or shovel-ready.

b. *Dredged materials satisfy the applicable environmental impact criteria.*

[59] EPA's individual policy analyses will be dealt with later in the policy discussion.

The EPA Determination states that, following site designation, the Corps' compliance with the ODA's strict dumping protocols will protect the marine environment:

> Designating the ELDS would make a dredged material disposal site available, when needed, for the management of suitable dredged material from the eastern region of Long Island Sound. Dredged material is only suitable for placement at a site designated by EPA under the MPRSA if the material satisfies the rigorous sediment quality criteria of EPA's regulations under the MPRSA. See 40 C.F.R. Part 227. Thus, even if the proposed designation of the ELDS (or another site or sites) is finalized, any specific proposal to place dredged material at the site will still have to go through a separate, case-specific review and authorization process. See 33 U.S.C. §1413; 40 C.F.R. Part 227.

Compliance with the rigorous sediment quality criteria of the MPRSA/ODA has been the rule since 1980, when the Ambro amendment was enacted into law. Whether dredged material is disposed of at an ODA § 102 designated site or an ODA § 103(b) Corps' selected alternative site, the dredged material must meet all testing criteria in 40 C.F.R. Part 227, Subpart B, which sets forth the limitations on the disposal of certain types of materials and sets forth the standards for the disposal of such material in open sites. However, while the proposed rule includes a statement that "the dredged material from each proposed disposal project will be subjected to MPRSA and/ or CWA sediment testing requirements to determine its suitability for possible

open-water disposal at an approved site"[60], 40 C.F.R. § 227.13(b) and 40 C.F.R. § 230.60(b) provide the testing exemptions for dredged material that would negate this reassurance.[61] [62]

The proposed EPA rule would also permit the open water placement of "*suitable fine-grained material,"* which it explains "typically has greater than 20 to 40 percent fine content but has been determined to be suitable for open-water placement by testing and analysis." Contaminants adhere to fine grained sediments and the suitability may not be environmentally safe to place them for unconfined open water disposal. EPA allows this practice to continue in the proposed Rule:

> Materials dredged from upper river channels in the Connecticut, Housatonic and Thames Rivers should, whenever possible, be disposed of at existing Confined Open Water sites, onshore, or through in-river placement. <u>If no other alternative is determined to be practicable, suitable fine-grained material may be placed at the designated sites</u>.[63]

DOS's Conditional Concurrence with EPA's Designation of WLDS and CLDS

The EPA Determination repeatedly cites to New York's concurrence with conditions with EPA's designation of WLDS and CLDS. New York did in fact conditionally concur subject to the requirement that EPA "establish additional procedures and standards that will result in clear,

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[60] See 81 FR 24749; see also 40 C.F.R. § 227.1(b). "With respect to the criteria to be used in evaluating disposal of dredged materials, this section and subparts C, D, E, and G apply in their entirety. To determine whether the proposed dumping of dredged material complies with subpart B, only §§ 227.4, 227.5, 227.6, 227.9, 227.10 and 227.13 apply."

[61] 40 C.F.R. § 227.13 (b) Dredged material which meets the criteria set forth in the following paragraphs (b)(1), (2), or (3) of this section is environmentally acceptable for ocean dumping without further testing under this section:

> (1) Dredged material is composed predominantly of sand, gravel, rock, or any other naturally occurring bottom material with particle sizes larger than silt, and the material is found in areas of high current or wave energy such as streams with large bed loads or coastal areas with shifting bars and channels; or
> (2) Dredged material is for beach nourishment or restoration and is composed predominantly of sand, gravel or shell with particle sizes compatible with material on the receiving beaches; or
> (3) When: (i) The material proposed for dumping is substantially the same as the substrate at the proposed disposal site; and (ii) The site from which the material proposed for dumping is to be taken is far removed from known existing and historical sources of pollution so as to provide reasonable assurance that such material has not been contaminated by such pollution.

See 40 C.F.R. § 230.60(b). Subpart G of the CWA 404(b)(1) Guidelines provide for testing exemptions of the dredged material sediment composition is similar to that of the open water disposal site. See also DSEIS at p. 1-12. "National guidance for determining whether dredged material is acceptable for open-water disposal is provided in the Ocean Testing Manual (Green Book; USEPA and USACE, 1991) and in the Inland Testing Manual (USEPA and USACE, 1998). The Regional Implementation Manual, consistent with the Green Book and the Inland Testing Manual, provides specific testing and evaluation methods for dredged material projects at specific sites or groups of sites (USEPA and USACE, 2004c)"; See also DSEIS, Appendix G, "Physical and Chemical Properties of Sediments in Eastern Long Island Sound", which contains a complex inventory of sediments that can be used when "(i) The material proposed for dumping is substantially the same as the substrate at the proposed disposal site; and (ii) The site from which the material proposed for dumping is to be taken is far removed from known existing and historical sources of pollution so as to provide reasonable assurance that such material has not been contaminated by such pollution." 40 C.F.R. § 227.13(b)(3).

[62] As noted elsewhere in this decision, DOS has on numerous occasions objected to the consistency of dredged projects proposed by the Corps, the Navy and private applicants on the basis that the materials contained contaminants, including heavy metals that exceeded MRPSA/ODA standards. That the federal agencies themselves were the project sponsors raises serious questions about how seriously the Corps is following the rigorous standards of the ODA and how seriously it will follow them in the future.

[63] 80 FR 24764. See also, EPA Region 1 Determination of Federal Action's Consistency with Enforceable Policies of New York's Coastal Zone Management Program (July 20, 2016) p.7.

staged reductions in open water disposal of dredge material over time," and EPA altered its rule accordingly. However, New York made clear in its conditional concurrence that these conditions were specific for CLDS and WLDS only.[64], [65]

Inclusion of the same conditions in the EPA Proposed Rule cannot not override the fact that, under an objective analysis, ELDS cannot meet the ODA criteria, due to its shallow waters (less than 40 feet in places),[66] vulnerability to storm wave action, strong tidal currents (the Race has some of the strongest on the East Coast),[67] and location near a major military and commercial navigation channel, surrounded by finfish and shellfish habitats, fisheries and aquaculture sites.[68]

Unlike CLDS and WLDS, ELDS has never been designated an ocean disposal site by EPA under the ODA. The Corps has used the area for placement of often contaminated sediments without first complying with the public notice, public comment and designation requirements for interim or alternate sites under the ODA, or complying with the consistency provisions of the CZMA. This EPA rulemaking presents a belated first opportunity for New York to voice its strong opposition to sanctioned dumping of dredged sediments in eastern Long Island Sound.

State Issues with Respect to Impacts from the Dumping Dredged Materials and the Designation Process for ELDS

A number of issues have been central to New York's concerns with open water disposal of dredged material in Long Island Sound and have been raised repeatedly by State agencies in comment letters and consistency decisions. These issues are discussed below and have been integrated more specifically into the individual policy analyses that follow.

Reduce and Eliminate Open Water Disposal of Dredged Materials

In a joint letter[69] dated February 8, 2005, then New York Governor Pataki and Connecticut Governor Rell wrote to the Commanding General of the Corps requesting that the North Atlantic Division develop a Dredged Material Management Plan (DMMP) to address the management of dredged material for the Sound region. The Governors urged the Corps to "identify feasible and environmentally sound alternatives and establish future protocols for dredged material management,… [which] include, but are not limited to, reducing sediment sources, reducing

[64] See Conditional Concurrence dated April 25, 2016 from Sandra Allen, Deputy Secretary of State to Mel Coté ("The conditions included in this letter are specific for CLDS and WLDS only").

[65] Both WLDS and CLDS have been designated and have served as ocean disposal sites for 11 years, are situated far from New York waters and are located in the most heavily polluted region of Long Island Sound. See Mitch AA, Anisfeld SC, "Contaminants in Long Island Sound: data synthesis and analysis."
Est Coasts 33:609–628 (2010); "Metals, Organic Compounds, and Nutrients in Long Island Sound: Sources, Magnitudes, Trends, and Impacts" Johan C. Varekamp, Anne E. McElroy, John R. Mullaney and Vincent T. Breslin, Chapter 5, J. S. Latimer et al. (eds.), Long Island Sound (2015).

[66] See 40 C.F.R. § 228.5(e) "EPA will, wherever feasible, designate ocean dumping sites beyond the edge of the continental shelf and other such sites that have been historically used."

[67] See 40 C.F.R. § 228.6(a)(6) "Dispersal, horizontal transport and vertical mixing characteristics of the area, including prevailing current direction and velocity, if any".

[68] See 40 C.F.R. § 228.5(a) "The dumping of materials into the ocean will be permitted only at sites or in areas selected to minimize the interference of disposal activities with other activities in the marine environment, particularly avoiding areas of existing fisheries or shellfisheries, and regions of heavy commercial or recreational navigation.; 40 C.F.R. § 228.6(a)(2) "Location in relation to breeding, spawning, nursery, feeding, or passage areas of living resources in adult or juvenile phases."

[69] Joint letter from Governors George E. Pataki and M. Jodi Rell to General Strock, Chief of Engineers, February 8, 2005.

contaminant loading, and developing feasible beneficial reuses for dredged material*, with the goal of reducing or eliminating the need for open water disposal*."[70]

More than 10 years and $7 million later, the DMMP prepared by the Corps ignored the Governors' directive and simply recommended permanent designation of multiple dumpsites in the Sound, guaranteeing the open water placement of millions more cubic yards of sediments. Instead of "reducing sediment sources, reducing contaminant loading, and developing feasible beneficial reuses for dredged material with the goal of reducing or eliminating the need for open water disposal", the final DMMP merely reflected the Corps' determination to dump, in the cheapest manner possible, in the Sound.

EPA's recent designations of WLDS and CLDS in July 2016, and its current effort to designate additional sites in eastern Long Island Sound, make clear that EPA is willing to facilitate the Corps' preferred approach, which favors open water disposal over all other disposal options on the basis of cost alone. This approach ignores EPA's directive to "mitigate adverse impacts on the environment to the greatest extent practicable," when determining whether to designate a potential site. The effort to designate additional sites based on a perceived need for additional capacity necessarily assumes that alternatives will not be developed and, therefore, reduction and elimination of open water disposal will not take place.

EPA has provided no scientific evidence or explanation, in either its consistency determination or in the DSEIS, that shows how designating a new site and thereby authorizing permitting for subsequent open water disposal of contaminated and non-contaminated sediments "will ensure protection of waters" in the Sound or reduce or eliminate open water sediment disposal. It is illogical to contend that designating a third or fourth disposal site will somehow "ensure protection of the waters of Long Island Sound" and "help reduce or eliminate open-water dredged material disposal in the Sound over time." It would do exactly the opposite.

New York has not wavered in its steadfast opposition to open water disposal in Long Island Sound and its continued commitment to reducing or eliminating such disposals.[71] DOS's prior consistency objections have reflected New York's intention to prevent further pollution of the Sound's benthic environment and its adherence to the overriding policy objective that has, without exception, focused on use of alternatives over open water disposal.[72]

EPA's Failure to Consider Viable Alternatives to Open Water Disposal in Long Island Sound

Despite the clear requirement that EPA adhere to the ODA's site selection criteria, EPA appears to have ignored these criteria. Much of EPA's justification for the designation of ELDS is based on the DMMP's conclusion that there are no readily available practicable alternatives to open water disposal that can handle the dredged material from eastern Long Island Sound. EPA argues that because none of the alternatives identified in the DMMP can individually handle all sediments dredged in the future, the only option is to designate an open water disposal site. In its explanation of this rulemaking, EPA stated:

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[70] Id.

[71] See past communications to federal agencies: October 16, 2015 letter to Megan Quinn Project Manager, LIS DMMP Comments on the Public Review Draft DMMP and PEIS; and Joint letter of DOS and DEC July 18, 2016 letter to Jean Brochi, EPA, providing comments on DSEIS for ELDS, the draft Site Management and Monitoring Plan, and the proposed rule for the designation of one or more open water Dredged Material Disposal Site(s) in Eastern Long Island Sound, Connecticut and New York.

[72] See footnote 47.

> While the DMMP and associated PEIS identified potential alternatives to open-water disposal for some amount of dredged material from the waters of Long Island Sound, these reports also make clear that the alternatives to open-water disposal (e.g., beneficial use alternatives, upland and confined in-water disposal) do not provide sufficient capacity to handle the full amount of material expected to be dredged from the central, western and eastern regions of Long Island Sound, either individually or collectively. In light of this, and other factors, EPA decided not to forego designating … ELDS.[73]

During the DMMP development process, the Corps determined that "[t]he total estimated dredged material disposal needs for the eastern Long Island Sound region (i.e., ports and harbors of Connecticut, New York, and southwestern Rhode Island, located within the ZSF) over the next 30 years are 22.6 million cubic yards (cy), or 17.3 million cubic meters (m3)."[74] The DMMP evaluated numerous sites within the Zone of Siting Feasibility (ZSF) including the following:

Site Name[75]	Capacity (cubic yards)
Shoreline CDF Norwalk Outer Harbor Islands – Marsh	930,000
Shoreline CDF Norwalk Outer Harbor Islands – Shore	400,000
CAD Sherwood Island Borrow Pit	750,000
Island CDF New Haven Breakwaters	58,250,000
Island CDF Falkner Island	17,180,000
Shoreline CDF Clinton Harbor	700,000
Island CDF Duck Island Roads	1,610,000
Island CDF Twotree Island	3,400,000
Island CDF Groton Black Ledge	7,500,000

Total capacity = 90,720,000 cubic yards

Despite the DMMP's identification of the above alternatives for eastern LIS, which clearly show sufficient potential capacity, the DSEIS eliminated those alternative sites identified in the DMMP and selected ELDS as the preferred alternative for receipt of all projected dredged material for the next 30 years.[76]

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[73] DSEIS at p. 1-2. "A review of reports prepared in support of the LIS DMMP (i.e., the dredging needs report and alternatives reports) helped USEPA determine that the amount of dredged material expected to be collected over the next 30 years far surpasses the capacity of all of the possible alternatives to open-water disposal (see Chapters 2 and 3)." In selecting ELDS as the preferred alternatives, EPA misapplies 40 C.F.R. § 228.6(a)(4) to mean that an alternative, whether open water or beneficial use, be capable of receiving the entire anticipated quantity of dredged material for the next 30 years. See DSEIS at p. 3-27. "*Site Dimension* [40 C.F.R. 228.6(a)(4)]: Alternative sites were evaluated based on the need and capacity using a minimum area of 1 nmi2 (3.4 km2), and adequate capacity to accommodate the dredged material disposal needs over the next 30 years." See also DSEIS at p. 1-2. "A review of reports prepared in support of the LIS DMMP helped USEPA determine that the amount of dredged material expected to be collected over the next 30 years far surpasses the capacity of all of the possible alternatives to open-water disposal". However, the 40 C.F.R. § 228.6(a)(4) criterion applies *only* to the selection of open water disposal sites and only requires the consideration of the type and quantity of material and not the requirement for the site to accommodate the entirety of all future anticipated dredging needs for a region.

[74] See EIS at p. ES-4.

[75] See DMMP, sections 5 and 6, Table 5-35; see also DSEIS at § 3.2.5 "Dredged Material Containment Facilities". Table 3-5 identifies 30,390,000 mcy of capacity at potential containment facilities in eastern LIS.

[76] Neither the EPA nor the DMMP appropriately explain why certain combinations of alternative technologies aren't even considered as alternatives to disposal of sedimentary waste. For example, one alternative site that is available to and capable of receiving dredged materials from Long Island Sound is the innovative sediment decontamination

EPA has also provided conflicting reasons for rejecting alternate disposal sites as practicable alternatives. For example, EPA deemed the Rhode Island Sound Disposal Site (RISDS) to be "infeasible" for receipt of dredged material from eastern LIS, due to its close proximity to nearby communities. As a result, EPA eliminated RISDS as an alternative for eastern LIS in the DSEIS. (RISDS is located approximately 9.1 nmi (16.8 km) south-southeast of Point Judith, Rhode Island, and approximately 11.3 nmi (21 km) south of the entrance to Narragansett Bay). [77] At the same time, EPA did not exclude ELDS for these same reasons, even though ELDS is a mere 1.4 nmi (2.6 km) from Fishers Island, NY. EPA has provided no additional information or rationale to support its conflicting conclusion that RISDS, an EPA designated site that has received 5 million cy of dredged material since 2004, is unsuitable as an open water alternative while EPA seeks to designate ELDS, a site that is six times closer to New York local communities.

Through the elimination of all possible alternatives, or the combination of alternative, on a number of suspect and questionable grounds, EPA has improperly skirted the requirements of the ODA and the CZMA.

The DMMP Is Deficient

EPA has apparently relied on the DMMP, and the accompanying PEIS, to support its rulemaking. However, as DOS has previously commented,[78] these documents are flawed and should not be relied on by EPA. Instead of establishing a pathway to reduce or eliminate open water disposal in Long Island Sound, the DMMP established a pathway to achieve the opposite result by identifying the use of open water disposal sites for the next 30 years as the only practicable alternative.

The DMMP contains a list of the proposed navigation projects that are accompanied by a "Federal Base Plan".[79] The use of the open water sites would permit a significant increase in the volume of dredged material disposed of at the sites.[80] In order to ensure this outcome, the DMMP contains pre-selected "Federal Base Plans" for each of the identified federal navigation projects based upon the Corps' "Federal Standard" (33 C.F.R. § 335.7; 33 C.F.R. § 336.1(c)(1)) calculations. These plans included NLDS as the "preferred option" for the majority of the eastern Long Island Sound federal navigation projects. In fact, at the time that the DMMP was completed on January 7, 2016, NLDS had not yet been designated for receipt of dredged material in accordance with ODA § 102 (33 U.S.C. § 1412).

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facility in New York Harbor, which converts contaminated sediments into clean by-products. This alternative is already in use for one important nearby harbor, and could, if properly considered, eliminate the need for designation of an open water disposal site at ELDS and indeed, future use of the newly designated sites at WLDS and CLDS.

[77] See DSEIS, Appendix B, Sec, 3.1.

[78] See Letter dated July 10, 2015 from DOS and the NYS Department of Environmental Conservation to the Corps, New England District indicting that the then draft version of the DMMP does not achieve the goal of reduce or eliminating the use of open water disposal. See also Letter dated October 16, 2015 from Sandra Allen, Deputy Secretary of State for Planning and Development, DOS to Meghan Quinn, Project Manager, LIS DMMP Corps of Engineers/New England District provide extensive comments on the DMMP document in not achieving the 2005 Final Rule goals to reduce or eliminate open water disposal.

[79] Section 6 of the DMMP contains the listing of the "Federal Base Plans", of which a majority reflect open water disposal sites (CLDS, WLDS, NLDS) as the "preferred option".

[80] See 81 RF 24650 "The DMMP also included a detailed assessment of alternatives to open-water disposal and determined that, while all the sand generated in this region should be able to be used beneficially to nourish beaches, there are not practicable alternatives to open-water disposal with sufficient capacity to handle the projected volume of fine-grained sediment."

Impermissible Cost Determinations Under the CZMA and the ODA

Cost has pervaded the Corps' and EPA's decisions on dredged material dumping and choice of interim disposal sites in Long Island Sound for decades, and EPA has previously joined the Corps in using cost, not environmental protection, as the determinative factor in choosing to designate permanent open water disposal as the repository for often contaminated sediments from Connecticut rivers and harbors.

For example, in Callaway, the Second Circuit highlighted the Corps' overreliance on costs, and EPA's failure to challenge the Corps' decision-making. The Navy's first choice of disposal site was Brenton Reef, a site located in Rhode Island Sound that was some 23 miles from the mouth of Thames River in Connecticut. However, this choice was rejected by the Corps in favor of the closer New London site, NLDS. In rejecting the Corps arguments in favor of the disposal action at NLDS, the Court observed: "The basis for the Corps' decision is not altogether clear, but the choice seems to have been based upon economics, sketchy information regarding the extent to which sediment at the New London site was moved by currents, the fact that the latter site had been previously used, and the abandonment by EPA of its objections to disposal in Long Island Sound." The Corps' arguments, rejected by the Second Circuit 40 years ago, are still invalid today.

EPA's consistency determination makes clear that EPA has impermissibly followed the Corps' lead in dismissing any alternatives that would increase the costs of disposal. EPA explained: "EPA also considered relying on existing designated sites outside of the eastern region of the Sound, but this would contribute to prematurely using up capacity at those sites and would **increase costs**, vessel air emissions and the risk of vessel accidents."[81] In fact, WDLS, CLDS, and RISDS have sufficient capacity for the total amounts of dredged sediments planned for open water disposal over the next 30 years, even if no alternatives to open water disposal are implemented and used. And none of the balance of EPA's reasons for dismissing alternatives outside eastern Long Island Sound, including increased costs, are relevant to the selection criteria to be used in selecting a disposal site under the ODA.

The environmental costs of open water dumping are also important to consider. Long Island Sound, as a public resource, is not priced and allocated by market forces; therefore, open water dumping will always appear cheaper to the Corps than land disposal. The lands under water have no human population so it is the State that must protect its fragile benthic environment.

EPA's proposed boundary change to move ELDS entirely into Connecticut waters responds only to an imaginary political boundary; because of its semi-enclosed nature, what happens in the Sound literally stays in the Sound and affects the entire marine environment. The contaminants deposited on the Sound floor have already made their way up the food chain and have affected fish consumption. No one can seriously question that it is ecologically wiser to reprocess harmful sediments as is currently being done at the decontamination facility in NY-NJ Harbor, than to dump them in the Sound; allowing cheap open water disposal minimizes the pressures to choose the cleaner, more responsible approach.

The CZMA acknowledges that federal agencies retain their jurisdictional authorities when conducting activities affecting a coastal state,[82] however, the implementing regulations also

[81] EPA Determination at 17.
[82] See 16 U.S.C. § 1456(e).

make clear that a lack of funding or a federal agency's failure to properly budget, is not a limiting factor to avoid full consistency.[83] Federal courts have disagreed with a federal agency's general claim that a "lack of funding" meets the 15 C.F.R. Part 930 Subpart C requirement that an action be "consistent to the maximum extent practicable" with a State's enforceable coastal policies and instead held such an interpretation is noncompliant with CZMA.[84]

In brief, neither the CZMA nor the ODA permit EPA to rely on cost factors to support its site designations in eastern Long Island Sound.

The "Federal Standard" Does Not Control EPA's Action

In its proposal to designate one or more additional sites in eastern Long Island Sound, EPA has relied on the DMMP prepared by the Corps. The DMMP adhered to the "Federal Standard", which encourages use of a "lowest cost option" to the exclusion of other viable environmentally-sound alternatives.[85]

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[83] See 15 C.F.R. § 32(a)(2) and (3).

> For the purpose of determining consistent to the maximum extent practicable under paragraphs (a)(1) and (2) of [930.32], federal legal authority includes Federal appropriation Acts if the appropriation Act includes language that specifically prohibits full consistency with specific enforceable policies of management programs. **Federal agencies shall not use a general claim of a lack of funding or insufficient appropriated funds or failure to include the cost of being fully consistent in Federal budget and planning processes as a basis for being consistent to the maximum extent practicable with an enforceable policy of a management program.** The only circumstance where a Federal agency may rely on a lack of funding as a limitation on being fully consistent with an enforceable policy is the Presidential exemption described in section 307(c)(1)(B) of the Act (16 U.S.C. 1456(c)(1)(B)). **In cases where the cost of being consistent with the enforceable policies of a management program was not included in the Federal agency's budget and planning processes, the Federal agency should determine the amount of funds needed and seek additional federal funds. Federal agencies should include the cost of being fully consistent with the enforceable policies of management programs in their budget and planning processes, to the same extent that a Federal agency would plan for the cost of complying with other federal requirements.** (Emphasis added).

[84] See City of Sausalito v. O'Neill, 386 F.3d 1186, 1222 (Ninth Cir. 2004) (holding that "[t]he Park Service's and the Bay Commission's reliance on a proscribed criterion in concluding that the Fort Baker Plan is "consistent to the maximum extent possible" with the Bay Plan is a "compelling reason" for holding that the Park Service's consistency determination was improper under the CZMA . . . [as] the Park Service 'relied on factors which Congress has not intended [them] to consider,' we hold that the Park Service acted arbitrarily and capriciously with respect to its statutory obligations under the CZMA.").

[85] See 33 C.F.R. § 335.7. "Federal standard means the dredged material disposal alternative or alternatives identified by the Corps which represent the least costly alternatives consistent with sound engineering practices **and meeting the environmental standards established by the 404(b)(1) evaluation process or ocean dumping criteria**." (Emphasis added). See also 33 C.F.R. § 336.1(c)(1). "**(1)** ***Navigation and Federal standard.*** The maintenance of a reliable Federal navigation system is essential to the economic well-being and national defense of the country. The district engineer will give full consideration to the impact of the failure to maintain navigation channels on the national and, as appropriate, regional economy. It is the Corps' policy to regulate the discharge of dredged material from its projects to assure that dredged material disposal occurs in the least costly, environmentally acceptable manner, consistent with engineering requirements established for the project. The environmental assessment or environmental impact statement, in conjunction with the section 404(b)(1) guidelines and public notice coordination process, can be used as a guide in formulating environmentally acceptable alternatives. The least costly alternative,

In the final version of the DMMP, released by the Corps on January 11, 2016, the document contained, for the first time, an Appendix K entitled "USACE October 21, 2015 Guidance Memorandum on the Federal Standard" ("2015 Federal Standard Guidance" or "Guidance"). The 2015 Federal Standard Guidance was appended to only the final version DMMP after the public comment period had closed on October 16, 2015.[86]

The distinction between a federal agency Guidance document and a federal regulation is critical, as the Corps has relied upon the contents of the 2015 Federal Standard Guidance to justify its selection of open water disposal sites as the "Federal Base Plan" in the DMMP.
In the selection of open water disposal sites as the "Federal Base Plan", the Corps asserts that "[t]he 1978 guidance [the predecessor to the 2015 document] and USACE [Corps] current regulations are predicated on the essential principle that federal funds available for maintenance of federal navigation channels nationwide are limited, and thus must be allocated and spent responsibly and carefully."[87] Unlike the Corps, EPA's reliance of the Federal Base Plan to designate an open water disposal site in eastern Long Island Sound makes no sense and leads to conflict with the CZMA.

In summary, the EPA Proposed Rule endorses the elimination of existing affordable beneficial use alternatives identified in the DMMP and provides for a new and expanded open water disposal site at ELDS that would guarantee the availability of the open water disposal site as the "Federal Base Plan" and the "lowest cost" option for the open water disposal for millions of cubic yards of dredged material. By this measure, beneficial use options will be permanently relegated to an "unaffordable" and not "practicable" classification, justifying the use of open water disposal as the solution for dredged material disposal for the next 30 years.[88]

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consistent with sound engineering practices and selected through the 404(b)(1) guidelines or ocean disposal criteria, will be designated the Federal standard for the proposed project."

[86] On October 15, 2015, DOS had requested an extension of the October 16, 2015 comment period to provide additional time for the public's participation in reviewing and providing comments on the voluminous DMMP document. The Corps denied DOS's request.

[87] 2015 Federal Standard Guidance at p. K-3. The Corps' selection of open water disposal sites as the "lowest cost option" expands the scope of the definition of the "Federal Standard" in 33 C.F.R. § 335.7 in order to avoid "full consistency" with a State's enforceable coastal policies due to a lack of funding. See 16 U.S.C. § 1456(c)(1)(B); see also 65 FR 77124, 77134 [Dec. 8, 2000].

[88] In support of its proposed rule for the designation of an eastern LIS disposal site, EPA's consistency determination states that:

> Designating the ELDS (or another site or sites) would make a dredged material disposal site available, when needed, for the management of *suitable* dredged material from the eastern region of Long Island Sound. Dredged material is only suitable for placement at a site designated by EPA under the MPRSA if the material satisfies the rigorous sediment quality criteria of EPA's regulations under the MPRSA. *See* 40 C.F.R. Part 227. Thus, even if the proposed designation of the ELDS (or another site or sites) is finalized, any specific proposal to place dredged material at the site will still have to go through a separate, case-specific review and authorization process. *See* 33 U.S.C. § 1413; 40 C.F.R. Part 227.

However, the EPA's explanation improperly segments the designation of an open water disposal site as an event to be evaluated separately from the dredged material slated to be disposed at the site (see LIS DMMP section 6 that identifies NLDS as the "Federal Base Plan" for the majority of eastern LIS dredging projects). The EPA's approach to site designation pursuant of ODA § 2 is in direct conflict of the Court's holding in Town of Huntington v. Marsh, 859 F.2d 1134, 1142 (Oct. 19, 1988), which rejected this segmentation approach by finding that such "segmentation" has been rejected by the courts and site "designation clearly has no utility apart from its planned

Need Was Not Properly Established

A demonstration of need prior to the dumping of dredged material is an important component of compliance with the ODA and is required to be factored into the decision to designate a disposal site under the ODA.[89]

EPA has determined that there is a need to designate additional open water disposal sites in eastern Long Island Sound for two primary reasons. First, EPA asserts there is inadequate capacity at the existing and available disposal sites. Second, EPA has determined that use of sites outside eastern Long Island Sound would present a host of additional problems, including (1) dredging delays; (2) the potential for "a proliferation" of Corps-authorized short term disposal sites in the eastern part of Long Island Sound that would not be subject to Site Management and Monitoring Plans (SMMPs) and would impose resource demands on regulatory agencies due to required site selection procedures; and (3) the consequences that would stem from hauling dredged material for longer distances, such as greater costs, more energy use, greater air emissions, and greater risk of vessel accidents.[90]

In their July 18, 2016 joint comment letter to the EPA Proposed Rule, DOS and Department of Environmental Conservation (DEC) stated:

> The primary justification provided by the EPA and Army Corps for an eastern Long Island Sound dredged material disposal site is based on the assertion that there is inadequate capacity at the Western Long Island Sound (WLIS), Central Long Island Sound (CLIS) and Rhode Island Sound (RISDS) sites. Our review of the estimates has yielded a much different conclusion. Based on our analysis of the information in the DMMP, over the next 30 years there is anticipated to be approximately 34.4 million cubic yards (mcy) of fine-grained dredged material suitable for open water disposal, well within the current stated capacity at the Central and Western sites of 40 mcy. This is in addition to the approximately 3 mcy cubic yards of unsuitable material and approximately 15 mcy of coarse-grained material suitable for beach nourishment and other beneficial uses that comprises the remainder of the estimated 52.9 mcy to be dredged in LIS over the next 30 years.

The "need" for this site designation is not due to the lack of upland alternatives or other available disposal sites, because the DMMP *did* identify numerous environmentally-protective alternatives as well as in-water alternatives to using ELDS.[91] However, because of the imposition of the "federal standard," in-water placement at NLDS was determined to be the lowest cost option, and has ended up being a choice endorsed by EPA:

> The least cost placement alternative for the maintenance dredging of suitable fine-grained material from the New London Harbor FNP [Federal Navigation Project] is open water placement at the New London site. The second least costly alternative is open water placement at the Cornfield Shoals site at about twice the cost of using the NLDS. The

usage as a disposal site" … and "[I]t is simply untenable to view site designation as distinct from issuing permits to use the site."

[89] 33 USC § 1413.

[90] EPA Determination, pp. 15-16.

[91] DMMP, Sections 4 and 6.

> next least costly alternatives are open water placement at either the Central Long Island Sound or Rhode Island Sound sites (at 2.7 times the cost of using the NLDS).… Placement upland at a landfill would be between 7 and 8 times as costly as using the NLDS.[92]

Similar cost-based reasoning was used in the DMMP, the document relied on by EPA to determine the need for the additional disposal sites in eastern Long Island Sound, to justify the selection of NLDS for receipt of sediments from the U.S. Coast Guard's New London Station,[93] lower Thames River FNP,[94] upper Thames River channel,[95] U.S. Coast Guard Academy,[96] and the U.S. Navy facilities in the lower Thames River,[97] over all other available upland and in-water disposal options.

A cost-based selection of ELDS over other more distant disposal sites, such as WLDS, CLDS, and RISDS, or other more environmentally protective options, runs counter to several of the LIS CMP's and Southold LWRP's coastal policies. A "need" analysis based on these grounds defies logic, especially considering the fact that, except in Long Island Sound, all federal and state agencies wishing to dispose of dredged sediments under the ODA must currently travel beyond the territorial sea[98] to dispose of their dredged sediments. Convenience and cost savings should are insufficient factors to support a finding of need for an additional disposal site in eastern Long Island Sound, especially in light of the many Congressional and administrative efforts that have been enacted and implemented over the years to improve the ecology of the Sound.

Cumulative Impacts and Segmentation

Given the Sound's 100-year history as a "waste dumping ground"[99] for the polluted sediments and other wastes, the analysis of the cumulative impacts of designating a third disposal site at ELDS becomes a matter of paramount importance. The analysis of cumulative impacts or effects of designating ocean disposal sites is required under the CZMA regulations, the NEPA regulations and the ODA regulations.[100] As will be shown, because EPA filed to complete a reasonable cumulative impact analysis, the Proposed Rule is suspect under all three statutes and regulations.

The CZMA regulations state that:

> [t]he term ''effect on any coastal use or resource'' means any reasonably foreseeable effect on any coastal use or resource resulting from a Federal agency activity or federal license or permit activity …. Effects are not just environmental effects, but include effects on coastal uses. Effects include both direct effects which result from the activity and occur at the same time and place as the activity, and indirect (cumulative and secondary) effects which result from the activity and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects are effects resulting from

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[92] DMMP p. 5-54.
[93] DMMP p. 5-55.
[94] DMMP p. 5-56.
[95] DMMP p. 5-57.
[96] DMMP p. 5-58.
[97] DMMP p. 5-58.
[98] 40 C.F.R. § 228.5(e).
[99] See Town of Huntington v. Marsh, 859 F.2d 1134, 1135 (2nd Cir. 1988).
[100] See ODA § 102(a)(E) and (F); 40 C.F.R. § 228.6(a)(7); and 15 C.F.R. § 930.11(g).

> the incremental impact of the federal action when added to other past, present, and reasonably foreseeable actions, regardless of what person(s) undertake(s) such actions.

15 C.F.R. § 930.11(g).

The term "cumulative impact" is defined in the NEPA regulations as follows:

> *"Cumulative impact" is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other action. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.*[101]

The White House Council on Environmental Quality (CEQ) publishes a handbook that articulates eight principles to aid in the preparation of a meaningful cumulative effects study.[102] These principles state:

1. Cumulative effects are caused by the aggregate of past, present and reasonably foreseeable future actions.
2. Cumulative effects are the total effect, including both direct and indirect effects, on a given resource, ecosystem, and human community of all actions taken, no matter who (federal, nonfederal or private) has taken the actions.
3. Cumulative effects need to be analyzed in terms of the specific resource, ecosystem, and human community being affected.
4. It is not practical to analyze the cumulative effects of an action of the universe; the list of environmental effects must focus on those that are truly meaningful.
5. Cumulative effects on a given resource, ecosystem, and human community are rarely aligned with political or administrative boundaries.
6. Cumulative effects may result from the accumulation of similar effects or the synergistic interaction of different effects.
7. Cumulative effects may last for years beyond the life of the action that caused the effects.
8. Each affected resource, ecosystem, and human community must be analyzed in terms of its capacity to accommodate additional effects, based on its own time and space parameters.[103]

Under the ODA, the criteria for site designation for dredged material are set forth in 40 C.F.R. §§228.4, 228.5 and 228.6. With respect to cumulative impacts, 40 C.F.R. §228.6 states:

> §226.6 Specific criteria for site selection.
>
> (a) In the selection of disposal sites, in addition to other necessary or appropriate factors determined by the Administrator, the following factors will be considered:
>
> . . .

[101] 40 C.F.R. §1508.7.
[102] https://ceq.doe.gov/nepa/ccenepa/sec1.pdf
[103] https://ceq.doe.gov/nepa/ccenepa/sec1.pdf at p.8.

> (7) Existence and effects of current and previous discharges and dumping in the area (*including cumulative effects*).[104]

EPA has prepared a guidance document entitled "Consideration of Cumulative Impacts in EPA Review of NEPA Documents"[105] to assist EPA reviewers with the assessment of cumulative impacts. The document states:

> The combined, incremental effects of human activity, referred to as cumulative impacts, pose a serious threat to the environment. While they may be insignificant by themselves, cumulative impacts accumulate over time, from one or more sources, and can result in the degradation of important resources. Because federal projects cause or are affected by cumulative impacts, this type of impact must be assessed in documents prepared under the National Environmental Policy Act (NEPA).[106]

EPA's DSEIS purports to address cumulative impacts to the environment that could result from the designation of ELDS.[107] EPA recognized that: "(r)eported effects of disposing dredged material at open-water sites include direct, indirect, and cumulative impacts, both short-term and long-term (e.g. , Wright, 1978; USACE, 1981; USACE, 1982a; USACE, 1982b; Fredette et al., 1993; Fredette and French, 2004; Germano et al., 2011; Lopez et al., 2014)."[108]

Section 5.7 of the DSEIS addresses cumulative effects of dumping in the Sound. It broadly states:

> *The area of analysis for cumulative impacts is the entire Long Island Sound.* Projects and activities that could interact with the proposed action to cause cumulative impacts on the resources of Long Island Sound, and that are considered in this analysis, include dredged material disposal events within the Sound, namely at the two designated dredged material disposal sites within western and central Long Island Sound (WLDS and CLDS), and other, unrelated activities such as shipping, recreation, and fishing that occur on or near Long Island Sound. [109]

It then inadequately addresses[110] the anticipated cumulative effects of dumping following this site designation together with dumping at the other designated disposal sites. It concluded:

> Overall, any cumulative impacts from the proposed action on natural resources, as well as air quality and noise, would be ***imperceptible***. Cumulative impacts to socioeconomic resources in the Long Island Sound region would be beneficial, as designation of dredged material disposal sites can facilitate that dredging of harbors and navigational channels, which would help keep harbors fully operational, thus avoiding a partial shift to truck traffic for some commercial goods.[111]

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[104] 40 C.F.R. § 228.6(a)(7).
[105] https://www.epa.gov/sites/production/files/2014-08/documents/cumulative.pdf
[106] Id.
[107] 40 C.F.R. § 228.6(b).
[108] DSEIS at p.5-4.
[109] DSEIS at p. 5-105, italics added.
[110] DSEIS at pp. 5-91 through 5-94.
[111] DSEIS at p. ES-18.

The DSEIS also notes, in the cumulative effects discussion of "Sediment Quality", that dredged sediments dumped in the eastern Sound would be resuspended over time by strong tidal flows and storms.

> On balance, the larger portion of resuspended dredged material would be transported westward toward deeper areas of central Long Island Sound where particles would be expected to partially settle. Considering the physical and chemical characteristics of the sediment in Long Island Sound and of the dredged material to be disposed, and considering the sediment transport processes with extensive dispersion throughout the water column, *impacts to sediment quality in other parts of Long Island Sound would be minimal*…. Additional dredged material would not be eroded and dispersed in the water column of Long Island Sound from the WLDS and CLDS since they are containment sites. [112]

The cumulative impact of dredged material on water quality is also easily dismissed in the DSEIS:

> Similar to the nature of impacts within eastern Long Island Sound resulting from the proposed action, the disposal of dredged material at the WLDS and CLDS could potentially have short-term impacts to the water column from the release of suspended dredged material. However, as would be the case for disposal at alternative sites in eastern Long Island Sound, the suspended material would rapidly dilute and disperse in the water column. *Therefore, cumulative impacts to the water quality in Long Island Sound from the disposal at the eastern Long Island Sound alternative sites would not be expected*.[113]

Despite multiple references to cumulative impacts in the DSEIS, nowhere is there an analysis of all past, current, and future direct and indirect cumulative impacts on the health and ecology of Long Island Sound. Neither is there any analysis of the adverse environmental impacts, including cumulative impacts, of multiple dredging projects in the Sound and the potential for simultaneous dumping of dredged material at more than one designated disposal site. This is simply not sufficient due to the many studies that have shown that the Sound is heavily polluted[114], and EPA's own assertion that dispersal of dumped sediments is expected and common.[115]

Notably, EPA has stated it has also relied on the PEIS prepared for the DMMP and the EIS prepared in 2004 for Central and Western LIS as support for its review of environmental effects

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[112] DSEIS at pp. 5-105 and 5-106.

[113] DSEIS at p. 5-106.

[114] See Varekamp, McElroy, Mullaney and Breslin, "Metals, Organic Compounds, and Nutrients in Long Island Sound: Sources, Magnitudes, Trends, and Impacts" Ch. 5, Long Island Sound: Prospects for the Urban Sea (2015); Final Report (March 31, 2006) "New Approaches for Assessing Mutagenic Risk of Contaminants in the Long Island Sound Environment", Prof. Anne McElroy, MSRC, SUNY Stony Brook: "Several national surveys characterizing chemical contamination in sediment and biota in U.S. estuarine waters have identified a number of sites in [Long Island Sound] as being among the most contaminated in country (Long et al., 1993, Gronlund et al. 1991, Wolf et al., 1994)."

[115] See DSEIS at p.5-90. "For the New London Alternative, disposed dredged material would be contained on-site since the maximum bottom stress expected at the site would be below the bottom stress required to erode the disposed dredged material. This is supported by DAMOS observations of disposal mounds at the NLDS." However, these overly simplistic observations do not support a conclusion that no materials placed at ELDS located in eastern LIS, a high energy environment containing high velocity currents.

of designating ELDS. However, none of those documents, singly or combined with the DSEIS for the proposed ELDS designation, adequately considers and assesses the cumulative impacts from three Sound dredge disposal sites – ELDS, CLDS and WLDS. Conducting separate environmental analyses of these closely related events constitutes impermissible "segmentation."

The DSEIS downplays the cumulative impacts of dredged material disposal as being "imperceptible". It therefore fails to address the century-long history of open-water disposal in the Sound, conditions in the ambient marine and benthic environment, simultaneous sediment disposal actions or the direct impacts on resident species. In addition, the draft SEIS fails to address the cumulative impacts of multiple stressors that currently or will impact benthic life in the Sound. Information and analysis are lacking on the following points:

- When Connecticut's harbors are dredged, the dredged materials have been tested and found to contain an array of contaminants, including heavy metals, PCBs, DDT and other pesticides, PAH's, ammonia, nitrogen, phosphorus, radioactive isotopes and other contaminants.

- Long Island Sound's hypoxia (low oxygen) events can be compounded by contaminants found in dredged materials disposed in Long Island Sound, and natural upwelling events can bring hypoxic and more contaminated benthic waters to the surface.

- Under hypoxic conditions, marine benthic layers become a toxic layer when low to no oxygen results in the creation of ammonia—enhanced by dredged materials—and hydrogen sulphide. While some marine species may be tolerant to any one of these conditions, the synergistic effects of this toxic layer usually causes adverse effects and/or death.

- As Long Island Sound benthic chemistry changes under warming waters, ocean acidification, increased hypoxia, migration of marine species, collapse of food chains involving marine organisms with calcium carbonate-based shells and skeletons, and change in water flow dynamics from sea level rise and storm activities, preliminary scientific evidence shows that legacy heavy metal contaminants will drastically change bioavailability and increase in toxicity. Combined with eutrophication, hypoxic/anoxic conditions, and a layer of ammonia and hydrogen sulfide, this will create a deadly "toxic soup" effect for benthic level marine life.

- There is inadequate scientific analysis of the comprehensive, sub-lethal and long-term ecological impacts, especially on fish and other marine life of Long Island Sound, of contaminated sediments, included dredged material disposal sites.

- There is inadequate scientific information about the dynamics and impacts of currently unfolding climate change effects, especially rapid ocean acidification, on the chemistry of Long Island Sound waters, contaminated sediments and benthic marine life.

The EPA's obligation to consider cumulative impacts as part of the EIS process for both dredged material dumping and for designation of open water disposal sites has also been clear for decades based on the Second Circuit's decisions in Callaway[116] and Town of Huntington, [117] which

[116] 524 F.2d 79, at 87- (2nd Cir. 1975)
[117] 859 F.2d 1134, at 1142-43. See also Manatee County v. Gorsuch, 554 F.Supp 778 (M.D. Florida, 1982), also decided under both NEPA and the ODA.

clarified that segmentation is prohibited because it fragments a single action into multiple actions, each with less-than-significant environmental effects. Accordingly, EPA's segmentation of the proposed designations and its failure to properly consider the cumulative environmental impacts from past and future dredge spoil disposal in the Sound have created a deficient rulemaking that violates the ODA and is inconsistent with LIS CMP policy #5. If EPA finalizes the EPA Proposed Rule it will also have violated the CZMA.

Deficiencies of EPA's Sediment Analysis

While EPA and the Corps claim that the dredged sediments will only be deposited at the eastern Long Island Sound disposal site(s) if they are "suitable", the EPA/Corps sediment testing manual used to determine the suitability of dredged material for offshore disposal in LIS (the Green Book) does not actually provide a testing protocol to ensure that no contaminants are present in the dredged sediments. "Suitable" does not mean "contaminant free." The EPA/Corps sediment testing protocol only determines if the level of contaminants "statistically exceeds" the already existing level of contaminants in the Sound by more than 10-20%. And if it does exceed this level, the testing protocol then determines if the level of contaminants is statistically likely to bioaccumulate in fish at levels that exceed FDA standards for human consumption (based on eating contaminated seafood). The EPA/Corps Green Book sets up a testing protocol that not only permits contaminants to be deposited into Long Island Sound, it also allows the average contaminant concentration levels to exceed the existing contaminant concentration levels by 10 - 20%, effectively increasing the reference sediment contamination levels incrementally over time.

While the amount of contaminants that can permissibly be deposited under these testing parameters for any particular dredging project may appear to be relatively small, when multiplied over the 22.6 million cubic yards EPA anticipates will be dredged over the next twenty nine years, New York is concerned that these same amounts will incrementally create a significant and persistent impairment to water quality, benthic species, benthic habitat and ecosystem cycles and functions as a result of cumulative and synergistic effects (interactions) under the Sound's already stressed and changing benthic water conditions (increasingly warm, acidic, anoxic, and periodically turbulent from storms).

EPA and the Corps use two categories of assessments as part of the dredged sediment disposal process: (1) suitability assessments for assessing the suitability of dredged sediments for disposal, and (2) impacts assessments to monitor the short-term and long-term effects of dredged material disposal sites. In order to minimize costs and efficiency, both categories of assessments use a tiered approach that allows simpler, quicker and less expensive screening processes at the lowest level tiers to be used to determine suitability or acceptable levels of impacts.

For suitability assessments, which are described in the USEPA/Corps "Green Book"[118] , the upper level testing tiers are used only when absolutely necessary, because of their increased costs and the additional time it takes to receive laboratory testing results. For example, Tier IV testing is used only when lower tier levels demonstrate that the dredged sediments contain high enough levels of contaminants that they could harm the environment, benthic aquatic species and/or human health.

The MPRSA does not allow the EPA or the Corps to approve the dumping of dredge materials when their composition and properties are insufficiently described. Under 40 C.F.R. 227.5(c), dredged materials inadequately described in terms of their compositions and properties are

[118] Evaluation of Dredged Material Proposed for Ocean Disposal – Testing Manual, 1991.

prohibited from being dumped into Long Island Sound. The Corps has not provided the full documentation that is required. The burden of proof rests squarely on the Corps to prove that the dredged material is not contaminated before it can be approved for disposal in Long Island Sound.

The EPA and the Corps developed the Evaluation of Dredged Material Proposed for Ocean Disposal Testing Manual (Green Book) as an internal set of guidelines to assist the agencies in interpreting the ODA and its implementing regulations. Included in this EPA/Corps guidance is a tiered testing process for determining appropriate disposal decisions. This tiered testing protocol, however, is structurally flawed. It creates a series of loopholes that heavily biases the testing protocols toward findings of suitability, almost always guaranteeing the dredged material will be found suitable for disposal in Long Island Sound. DOS has previously raised its concerns with EPA on the deficiencies in the Green Book and these concerns have not been addressed.[119]

It is commonly known that Connecticut's rivers and embayments contain some of the most contaminated sediments in the United States (EPA National Sediment Quality Survey). It is this contaminated sediment from Connecticut's river bottoms and embayments that is dredged and disposed of into Long Island Sound. It is expected that any new dredged sediment may still be contaminated with heavy metals, PCB's, dioxins and other toxins, including newer contaminants like pharmaceuticals and endocrine disruptors.

The future projections of dredging needs in eastern Long Island Sound include dredged materials from Clinton/Westbrook Area (including Clinton Harbor, Westbrook Harbor, and the Patchogue River), Connecticut River Area, New London/Thames River Area (including New London Harbor Complex, Thames River, and Mystic River, Guilford/Branford Area (including Guildford Harbor and Branford Harbor), and the Niantic Area (including Niantic Bay). Ongoing sediment contaminant research over the past few decades confirms the level of contamination in these areas.

The second categories of assessments used as part of the dredged sediment disposal process is the impacts assessment ("monitoring") of the short-term and long-term effects of dredged material disposal sites. This monitoring process has been turned over to the Corps DAMOS program, which also uses a tiered assessment process. At this time, however, the DAMOS monitoring only determines if the dredged sediment disposal mounds are staying in place and

[119] See SEIS Scoping Comments in a letter dated January 31, 2013 from Fred Anders, Bureau Chief, DOS to Jean Brochi, EPA. DOS Scoping Comment # 7: "There is a need for enhanced testing and study to ensure that the disposal of dredged material pursuant to Ocean Dumping Act toxicity standards "Evaluation of Dredged Material Proposed for Ocean Disposal Testing Manual" (Green Book) is safe for disposal within the estuary environment of LIS. Study of the biology, chemistry, and hydrology that reflects the unique LIS estuarine environment should be used to evaluate whether the current Green Book standards are appropriate for LIS. Reference site locations for baseline evaluations and comparisons need to be located outside of an affected area to adequately reflect ambient levels to determine suitability for disposal. It is suggested that the ELIS SEIS should refer to such material as "legally permissible" under the applicable standards, rather than 'clean' or 'safe'". See also DOS Scoping Comment # 12 "The chemical containment and biological testing of the organisms re-colonizing new mounds of disposed dredged material, as well as those feeding on those communities, needs to be fully evaluated to also determine whether organisms are bringing those contaminants back to the surface or to other locations in LIS. Advancement in the methodology and technology are available to conduct marine field research on dispersion of sediment contaminants via subaquatic vegetation and benthic macroinvertebrates (especially polychaetes) and subsequent bioaccumulation in fish. This research should be done to determine environmental and human health impacts of contaminant dispersal from disposal." EPA has not addressed DOS's concerns in the either the proposed rule or the DSEIS.

intact, and if the sites are being colonized by benthic aquatic species. The monitoring of dredged sediment disposal mounds is no longer assessing broader environmental impacts. According to a Corps report on the DAMOS Program:

> Bioaccumulation monitoring is not part of routine monitoring for unconfined, open water disposal mounds in the DAMOS program, because numerous past DAMOS investigations that used the current guidelines for sediment characterization to determine suitability for open-water disposal (the "Green Book"; EPA/Corps 1991) have revealed no adverse ecological effects. Although the possibility exists that contaminant hot spots may be missed during the evaluation of sediment deemed suitable for unconfined open-water disposal, the probability is extremely low.[120]

According to the Corps' own research, there are flaws in its own assessments of dredged sediments:

> As noted in a recent EPA report, "Decision-making processes predicated on bioaccumulation are complicated by numerous factors, including site-specific issues and the variability in chemical bioavailability due to seasonal physicochemical conditions or anthropogenic changes to the environment. It is no longer sufficient to know only whether chemicals accumulate, because bioaccumulation itself is not an effect but a process. Regulatory managers must know whether the accumulation of chemicals is associated with or responsible for adverse effects to aquatic organisms and organisms that prey on them, including humans" (EPA 2000). The many complex issues underlying these statements are the subjects of on-going research within numerous monitoring and regulatory programs, as documented in several recent publications (Bridges et al. 1996; EPA 1998, 2000).
>
> In practice, using the specified tiered approach to evaluate bioaccumulation associated with dredged material disposal has raised complex technical and regulatory problems (Bridges et al. 1996). For example, the Tier II screening test used to calculate the "Theoretical Bioaccumulation Potential" (TBP) of neutral organic chemicals is based on a relatively simple equilibrium partitioning model that does not account for metabolism of compounds, disequilibrium and non-constancy of exposure, organism feeding behavior, or numerous other processes that can influence bioaccumulation (EPA 1998).
>
> Interpreting Tier III and IV bioaccumulation test results has also proven to be problematic because of a reliance on a number of subjective evaluation factors (Bridges et al. 1996; Lechich 1998). […] Given these considerations, there has been interest for some time in evaluating the bioaccumulation potential in the small benthic organisms that are typically the first to colonize new dredged material deposits. Many of these "Stage 1" organisms are opportunistic polychaetes that have high population growth and turnover rates. They colonize new dredged material deposits in high numbers and live at the sediment surface, where they are readily preyed upon by secondary consumers such as crustaceans and fish. Some are surface deposit-feeders that ingest sediment particles, particulate organic matter, and associated chemical contaminants (Rhoads et al. 1978; Rhoads and Germano 1982; 1986). Such characteristics have engendered questions about the bioaccumulation potential of these organisms, even though chemicals of concern are

[120] Valente, R. M; Rhoads, D. C; Myre, P. L.; Read, L. B.; Carey, D.A. 2006. Evaluation of Field Bioaccumulation as a Monitoring Tool. DAMOS Contribution No. 169. U.S. Army Corps of Engineers, New England District, Concord, MA, p. 3.

> typically present at relatively low concentrations in the dredged material. The specific concern is that rapid bioaccumulation by these abundant, fast-growing organisms might result in significant trophic transfer of low level contaminants. Ultimately, this could result in food-chain biomagnification that might pose significant ecological or human health risks.[121]

Also, of particular concern is the focus on DAMOS recolonization studies. The recolonization rate of benthic species is not a good proxy for measuring the ability of the LIS benthic ecosystem for naturally restoring its own health. Recolonization must be seen in context of bioturbation rates.

> Sediment-dwelling organisms modify their local environment as they burrow, scavenge for food, and hide from predators. Biological reworking of sediments, termed bioturbation, mixes particles in the sediment bed. Reworked sediments encounter different biogeochemical environments that control particle transformation, for example, by microbial metabolism, precipitation/dissolution, and sorption/desorption processes. Particulate organic matter is metabolized more slowly in anoxic sediments, and particles retained in such environments are more likely to be preserved. Similarly, reduced metal sulfides are oxidized when transported from depth into oxic surficial environments, leading to liberation of bioavailable dissolved metals. Bioturbation is thus an important transport process that should be included in biogeochemical models for sediment diagenesis and contaminant fate in sediments.[122]

Recolonization is evidence of bioturbation that can remobilize dredged sediment contaminants into the benthic layer of eastern Long Island Sound. Remobilized contaminants then may become bioavailable to the food chain, especially fish and shellfish. Earlier Corps research confirms that heavy recolonization by benthic species occurs even on heavily contaminated dredged sediment mounds. The DAMOS studies do not provide this type of research data which is essential for New York to determine the effects and impacts of disposal of contaminated dredge materials into Long Island Sound.[123]

In brief, current sediment assessment protocols do not provide New York with the adequate and appropriate research data necessary to draw adequate conclusions on the contaminant content and quantity in dredged materials destined for disposal in Long Island Sound. Sediment assessment data do not provide adequate answers for determining the impacts and effects on the Long Island Sound environment, especially concerning bioturbation, bioavailability, bioaccumulation, and sub-lethal effects. Moreover, data on levels of contaminants in tissues of LIS aquatic species are limited.[124]

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[121] Valente, R. M; Rhoads, D. C; Myre, P. L.; Read, L. B.; Carey, D.A. 2006. Evaluation of Field Bioaccumulation as a Monitoring Tool. DAMOS Contribution No. 169. U.S. Army Corps of Engineers, New England District, Concord, MA.

[122] Kevin R. Roche, Antoine F. Aubeneau, Minwei Xie, Tomás Aquino, Diogo Bolster, and Aaron I. Packman (2016). An Integrated Experimental and Modeling Approach to Predict Sediment Mixing from Benthic Burrowing Behavior. Environ. Sci. Technol. 2016, 50, 10047−10054.

[123] Monitoring Survey of the Central Long Island Sound Disposal Site – September and October 2011, USACE DAMOS - Disposal Area Monitoring System, January 2013 found at: http://www.nae.usace.army.mil/portals/74/docs/DAMOS/TechReports/192.pdf

[124] Johan C. Varekamp, Anne E. McElroy, John R. Mullaney and Vincent T. Breslin. (2014) Chapter 5 Metals, Organic Compounds, and Nutrients in Long Island Sound: Sources, Magnitudes, Trends and Impacts in Latimer, James S; Tedesco, Mark A; Swanson, R. Lawrence; Yarish, Charles; Stacey, Paul E; Garza, Corey. Long Island Sound: Prospects for the Urban Sea. New York: Springer, 2014.

The EPA/Corps dredged sediment assessment process is also not transparent. Materials submitted by the Corps for New York's coastal policy consistency determinations often lack the backup data from sediment assessment results despite requests for the data. The sediment assessment data are not available on the Corps DAMOS site, nor are these sediment assessment results included in Corps reports submitted as part of international ocean disposal reports. Accordingly, New York is not satisfied that current testing protocols are sufficient for it to determine that the designation of a permanent disposal site in eastern Long Island Sound would be consistent with the LIS CMP and Southold LWRP policies.

Ecological Stressors and Resilience

An environmental or ecological stressor can be most simply defined as any environmental condition, situation, or factor that causes a biological system to mobilize its resources and increase its energy expenditure (S. Marshal Adams, 2002). Stress may be triggered by just one stressor, however when several stressors are introduced or acting simultaneously, multiple stress occurs. Nearly all ecosystems are subject to periodic disturbances by natural events, and in healthy ecosystems, these perturbations are seldom more than a temporary setback and recovery is generally rapid (Odum, 1969). Stated another way, a healthy ecosystem that successfully accommodates and adapts to a normal amount of stressors is resilient.

Environmental stressors can also overtax the system, triggering a process of environmental degradation. As an urban estuary, Long Island Sound is surrounded by developed coastal lands, industrial activities, and a dense human population making intensive use of its waters. As a result, Long Island Sound is continually exposed to a variety of overwhelming anthropogenic stressors, and as a result is losing its capacity to adapt to prolonged, multiple, intense stressors, and its ability to maintain its normal functions and structure. Long Island Sound is losing its resilience.

A degraded ecosystem is commonly characterized by less biodiversity, reduced primary and secondary production, increased disease prevalence, reduced efficiency of nutrient cycling, increased dominance of exotic species, increased dominance by smaller, shorter lived or opportunistic species, and, overall, an impaired ability to recover from disturbances of all kinds.[125] Stress can cause changes in bioenergetics, metabolism, behavior, and spatial distribution of individuals, populations and communities. Exposure can ultimately affect growth, survival, and reproductive success at all levels. Impacts to populations and community structures have implications for other populations and communities as food web interactions may be dramatically changed.

Stress can manifest as reduction in genetic diversity within populations, reduced taxonomic richness within communities and, ultimately, can impacts ecosystem biodiversity. Multiple indicators are useful for assessing cumulative and/or synergistic effects of stress and can be early warning indicators of environmental problems in an ecosystem (S. Marshal Adams, 2002). As an additional complicating factor, the various stressors do not always act independently. In some cases the effects can be additive, or even amplified, and a cumulative analysis is essential (S. Marshal Adams, 2002). According to a 2008 NOAA report:

[125] Barrett and Rosenberg, 1981; Odum, 1985; Mageau et al, 1995; Rapport, 1999.

> The end point of gradual declines in the quality of habitat can be the complete loss of habitat structure and function (Deegan and Buchsbaum 2005). Losses of habitat quantity and quality may reduce the ability of a region to support healthy and productive fish populations. From the population perspective, the loss of habitat quantity and quality creates stresses on a population. *Populations that are stressed by one or more factors can be more susceptible to stresses caused by other factors (Robinson and Pederson 2005), resulting in cumulative effects.* [Emphasis added].[126]

The Long Island Sound, like any other ecosystem, functions within thresholds (various system parameters and limits), but too many stressors can shock the system into a regime change, where the entire systems flips into a "new normal" arrangement or regime. This new regime may no longer provide all the ecosystem services, functions, resources, and uses needed from the ecosystem. An ecosystem under too much stress is forced to operate close to system thresholds, where the system experiences wild fluctuations—like rapid species population spikes and dips--and hovers precariously on the verge of a system regime flip. These wild fluctuations make the system even more unpredictable than normal.

Some of the major stressors to Long Island Sound include intensive coastal development and heavy human recreational and commercial use of the Sound; a 250 year history of legacy industrial pollution; a legacy of dredged contaminated sediment disposal in Long Island Sound; impacts of major hurricanes and floods that can mobilize many of these legacy pollutants; hypoxic (low oxygen) conditions from excessive nutrient loads (eutrophication) causing "Dead Zones" with oxygen levels too low to support aquatic life; loss of marine habitats; loss of marine species biodiversity; fish and shellfish overharvesting and species collapse. A special set of current and future anticipated stressors are resulting from unfolding climate change impacts. These include water acidification and warming in the Sound; sea level rise; increased intensity of coastal storms and amounts of precipitation; increased coastal flooding with contaminated coastal flood waters draining into the Sound; migration of marine species; collapse of food chains involving marine organisms with calcium carbonate-based shells and skeletons; changing toxic benthic water chemistry; increased hypoxia and upwelling of benthic layer waters to the surface, and bioavailability of benthic level contaminants through remobilization. The cumulative effects of already existing stressors reduce the ability of the Long Island Sound estuary and its species to adapt to additional stressors and shocks under climate change.

Level of scale of analysis of stressors is important. Stress can occur at various levels or scales – e.g., molecular, tissue, organismal, population, community, or ecosystem. While the cumulative impacts analysis of the DSEIS assigns the area of analysis for cumulative impacts to the entire Long Island Sound, it is important to analyze the effects at other scales. Some stressors have the greatest impact on the level of the entire estuary (like sea level rise) and some stressors, including disposal of contaminated dredge material, have the greatest impact at a lower level scale.

For the most appropriate analysis of stressors, the Sound can be divided into nine discrete (though intimately interconnected and interdependent) segments: the surface waters, where most human activities take place; the water column, where most fish, marine plants and plankton live; and the benthic layer (bottom layer), which includes the lowest level of the water below the water column, the bottom sediments, and the benthic species, including lobsters, crabs, shellfish,

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[126] Impacts to Marine Fisheries Habitat from Nonfishing Activities in the Northeastern United States, NOAA Technical Memorandum NMFS-NE-209, February 2008 found at http://www.fpir.noaa.gov/Library/HCD/NOAA%20Technical%20Memo%20NMFS-NE-209.pdf

and macroinvertebrates (like such as worms). The Sound is also commonly divided into three geographic sections—Eastern Sound, Central Sound, and Western Sound—for research, planning and management purposes because of the distinct sediment types, bathymetry, currents, water quality, levels of stressors, and levels of soil contamination. Since each of the three geographic sections has the three discrete layers (surface waters, water column, and benthic layer), the stressors on the Sound need to be considered at the most appropriate scale. Many stresses caused by the effects of dredged sediment disposal concentrate on the lower scale and in particular the benthic layer of the Eastern Long Island Sound.

According to the same 2008 NOAA Report:

> Sediment particles can bind to some nutrients, and resuspension of sediments following dredge material disposal can cause a rapid release of nutrients to the water column (Lohrer and Wetz 2003). Ocean disposal of dredge material with high organic content can result in oxygen reduction (hypoxia) or even anaerobic conditions (anoxic) on the bottom and overlaying waters, particularly during periods when strong thermoclines are present (Kurland et al. 1994). Hypoxic and anoxic conditions can kill benthic organisms or even entire communities and lead to a proliferation of stress-tolerant species of reduced value to the ecosystem (Kurland et al. 1994). Generally, offshore waters are less sensitive to disposal of dredge material containing nutrients than inshore, enclosed water bodies. [127]

A particular vulnerability to the stressors at the benthic layer is a result of the changing benthic water chemistry. This is of special concern because of its impacts on the remobilization and bioavailability of legacy contaminants, and upwelling effects that bring these toxic benthic waters to the surface to compound water quality and hypoxic conditions. Hypoxia occurs when dissolved oxygen (DO) levels in seawater are below what is essential for supporting marine life. Long Island Sound's current hypoxic (low oxygen) conditions have a synergistic effect when combined with anticipated effects of climate change at the benthic layer, and the additional heavy metals and other contaminants accumulating at the benthic layer of dredge disposal sites. Under the right conditions, marine benthic layers become a toxic layer when low to no oxygen results in the creation of ammonia—enhanced by dredged materials—and hydrogen sulphide. While some marine species may be tolerant to any one of these conditions, the synergistic effects of this toxic layer usually causes adverse effects and/or death.

> In marine sediments sulphate reduction is the dominant microbiological process, and results in ammonia accumulation within anoxic sediments and a concentration gradient towards the sediment surface. If the water above the sediment surface is anoxic then ammonia can be released, otherwise the ammonia is rapidly oxidised. Thus it is only under extremely poor conditions with almost no oxygen that high amounts of ammonia and hydrogen sulphide occur in bottom waters. From the foregoing it is clear that the effects that are produced are not caused by a single factor but are the interaction of a number of different factors. It is not just 'organic enrichment' that leads to the effects, but the interaction of sedimenting organic matter with reduced oxygen concentrations, and the presence of hydrogen sulphide and possibly ammonia.[128]

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[127] Impacts to Marine Fisheries Habitat from Nonfishing Activities in the Northeastern United States, NOAA Technical Memorandum NMFS-NE-209, February 2008 pp 173-174found at http://www.fpir.noaa.gov/Library/HCD/NOAA%20Technical%20Memo%20NMFS-NE-209.pdf

[128] John S. Gray, Rudolf Shiu-sun Wu, Ying Or (2002) Effects of hypoxia and organic enrichment on the coastal marine environment. Marine Ecology Progress Series, Vol. 238: 249–279.

> Once anaerobic conditions ensue and H2S is present, mass mortalities of nearly all organisms occur (Stachowitsch 1984). In the innermost Oslofjord (Bunnenfjord) at dephts greater than 50 m, H2S is found in the water column and no macrobenthic fauna exists (J.S.G. unpubl.). Such conditions occur naturally under the thermocline in upwelling areas off Peru, where mats of the bacterium *Thioplaca* sp. can attain wet weight biomass of 2 kg m–2.[129]

As Long Island Sound benthic chemistry is transformed under climate change, preliminary scientific evidence warns that legacy heavy metal contaminants will drastically change bioavailability and increase in toxicity.[130] Combined with eutrophication, hypoxic/anoxic conditions, and a layer of ammonia and hydrogen sulfide, this will create a deadly "toxic soup" effect for benthic level marine life.

To continue to improve Long Island Sound's water quality and benthic environment quality, to prevent further system stressors and declines, and to ensure that the Long Island Sound Estuary system is a healthy, vibrant, resilient and adaptive system, it is important to avoid, reduce or completely eliminate as many major stressors and shocks to the system as possible. Efforts to significantly reduce and eventually eliminate all new contaminant inputs must be actively pursued, including those inputs that will be added through planned open water disposals of contaminated dredged materials in Long Island Sound. For this reason, designation and disposal of dredged material at ELDS is an unnecessary and biologically damaging action.

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[129] Rosenberg et al. 1983, Tarazona et al. 1986.

[130] The Incidence and Severity of Sediment Contamination in Surface Waters of the United States, National Sediment Quality Survey: Second Edition EPA-823-R-04-007, Washington, D.C.: U.S. Environmental Protection Agency, 2004. W. Sunda and W. Cai (2012). "Eutrophication Induced CO2-Acidification of Subsurface Coastal Waters: Interactive Effects of Temperature, Salinity, and Atmospheric PCO2" Environ SciTechnol. Oct 2:46(19):10651-9; Melzner, Frank, Jörn Thomsen, Wolfgang Koeve, Andreas Oschlies, Magdalena Gutowska, Hermann Bange, HansPeter Hansen, Arne Körtzinger (2013). "Future ocean acidification will be amplified by hypoxia in coastal habitats", Marine Biology, 160: 8. August 1. p. 1875-1888; "Synthesis of Climate Change Drivers and Responses in Long Island Sound." November 13, 2009. US Environmental Protection Agency at http://longislandsoundstudy.net/wp-content/uploads/2011/03/LISS-Synthesis-of-CC-Impacts-Memo.pdf; J. Latimer, M. Tedesco, R. Swanson, C. Yarish, P. Stacey, and C. Garza. 2014. Long Island Sound: Prospects for the Urban Sea. New York: Springer, p.163; S. Moffitta, T. Hillb, P. Roopnarined, and J. Kennette. (2014) "Response of seafloor ecosystems to abrupt global climate change", Proceedings of the National Academy of Sciences of the USA, vol. 112 no. 15; J. Slater and D. Capone (1984). "Effects of metals on nitrogen fixation and denitrification in slurries of anoxic saltmarsh sediment" Marine Ecology - Progress Series Vol. 18: 89-95; K. Sakadevan, H. Zheng and H. Bavor. 1999. Impact of heavy metals on denitrification in surface wetland sediments receiving wastewater. Wat. Sci. Tech 40(3), 349-355; J. Camargoa and Á. Alonsob (2006) Ecological and toxicological effects of inorganic nitrogen pollution in aquatic ecosystems: A global assessment. Environment International, Vol 32, Iss 6, August, Pages 831–849; J. Gray, R. Shiu-sun Wu and Y. Ying Or (2002) Effects of hypoxia and organic enrichment on the coastal marine environment. Marine Ecology Progress Series, Vol. 238: 249–279; R. Jones and G. Lee (1981). "The Significance of Dredging and Dredged Material Disposal as a Source of Nitrogen and Phosphorus for Estuarine Waters," IN: Estuaries and Nutrients, Humana Press, Clifton, NJ, pp 517-530; J. Varekamp (2102). "Long Island Sound in the 21st century: Cleaner but some problems linger." Sound UPDATE: Newsletter of the Long Island Sound Study - Fall 2012 found at http://longislandsoundstudy.net/wp-content/uploads/2012/11/ToxPath2012_for-Web.pdf

Policy Analysis

Policy 5 **Protect and improve water quality and supply in the Long Island Sound coastal area.**

Sub-Policy 5.3 **Protect and enhance the quality of coastal waters.**

Protect water quality based on physical factors (pH, dissolved oxygen, dissolved solids, nutrients, odor, color, and turbidity), health factors (pathogens, chemical contaminants, and toxicity), and aesthetic factors (oils, floatables, refuse, and suspended solids). Protect water quality of coastal waters from adverse impacts associated with excavation, fill, dredging, and disposal of dredged material.

Southold LWRP Policy 5

Protect and improve water quality and supply in the Town of Southold.

Sub-policy 5.1 **Prohibit direct or indirect discharges that would cause or contribute to contravention of water quality standards.**

A. Restore the Town of Southold's water quality by limiting major sources of surface water quality impairment.

3. Remediate existing contaminated sediment and limit the introduction of new contaminated sediment in order to reduce loading of toxic materials into surface waters

Sub-policy 5.2 **Minimize non-point pollution of coastal waters and manage activities causing nonpoint pollution.**

A. Minimize non-point pollution of coastal waters using the following approaches, which are presented in order of priority.

2. Reduce pollutant loads to coastal waters by managing unavoidable nonpoint sources and by using appropriate best management practices as determined by site characteristics, design standards, operational conditions, and maintenance programs.

Sub-policy 5.3 **Protect and enhance quality of coastal waters.**

A. Protect water quality based on an evaluation of physical factors (pH, dissolved oxygen, dissolved solids, nutrients, odor, color and turbidity), health factors (pathogens, chemical contaminants, and toxicity), and aesthetic factors (oils, floatables, refuse, and suspended solids).

C. Protect water quality of coastal waters from adverse impacts associated with excavation, fill, dredging, and disposal of dredged material

LIS CMP Policy # 5 is directed at protecting and improving water quality in the Sound, including the protection of water quality caused by the introduction of pathogens, chemical contaminants, and toxicity, and "from adverse impacts associated with excavation, fill, dredging, and disposal of dredged material." (Subpolicy 5.3). Cumulative impacts from past, present and future dredged disposal events must be considered when judging water quality.

Long Island Sound has a long history of open water disposal of contaminated sediments, which has contributed to its water quality problems. Despite these problems, the Sound remains a national treasure. The Federal, State and local governments have invested billions of dollars in actions to improve water quality in Long Island Sound. The continuation of dumping contaminated sediments as embodied in EPA's Proposed Rule is inconsistent with this policy because expanding areas affected by dumping of contaminated dredged material contributes to the degradation of water quality in Long Island Sound and negatively impacts the productivity, health, and economic viability of the Sound, including sportfishing and other recreational activities, commercial and recreational fishing.

Dumping dredged material in the open waters of the Sound already has and will continue to damage the Sound and its estuarine environment. It therefore needs be managed in a way that reduces or eliminates continued impairment of Sound waters. Development of any sediment management plans for the Sound must first start with a demonstrated understanding of the history of use and misuse of its waters and resources. Unfortunately, the DSEIS lacks any discussion or analysis of the more than 100-year history of open water disposal in the Sound, does not contain information on this dumping history, and, more importantly, does not provide any scientific documentation of the chemical composition of sediments on the Sound's bottom. Therefore, the selection of an eastern LIS open water disposal site was evidently made without consideration of the residual toxicity levels in this enormous quantity of disposed sediments.

Also absent in the DSEIS is an analysis of cumulative impacts from the designation and use of all dredged material disposal sites in this semi-enclosed shallow estuary. Given the well-documented estuarine circulation patterns,[131] the effects of dumping at one or more sites in Long Island Sound necessarily affects all basins in the semi-enclosed Sound. With the possible long-term designation of up to three new open water disposal sites, in addition to the two previously designated in July 2016, the DSEIS should have acknowledged the possibility of multiple projects occurring contemporaneously. However, nowhere in the DSEIS is there an analysis of the cumulative effects of multiple dredging projects and the dumping of dredged material at multiple sites across the Sound on water quality, sediment quality, and natural resources.

Furthermore, EPA's consistency determination does not sufficiently consider important and available water quality data and trends, particularly as they relate to cumulative and secondary effects, and does not sufficiently consider the continued disposal of millions of cubic yards of contaminated fine grained sediments on water quality. Of particular concern is the absence of a discussion of bioavailability as it relates to the range of toxins potentially available to the biota of the Sound. Sediment-bound toxins may be remobilized by storm and flooding activity, as well as changing benthic layer water chemistry under a range of environmental factors -- such as

[131] Lelacheur, E.A. and Sammons, J.C., 1932. Tides and currents in Long Island and Block Island Sounds. *U.S. Coast and Geodetic Survey, Special Publication* 174; Gadd, P.E.; Lavelle, J.W., and Swift, D.J.P., 1978. Estimates of sand transport on the New York shelf using near-bottom current meter observations; *Journal of Sedimentary Petrology,* 48, 239252.Bokuniewicz, H.J. and Gordon, R.B., 1980a. Sediment transport and deposition in Long Island Sound. *Advances in Geophysics, 22,*69-106; Signell, R.P.; List, J.H, and Farris, A.S., 2000; Physical processes affecting the sea-floor environments of Long Island Sound. *Journal of Coastal Research,* 16(3),551-566. West Palm Beach (Florida), ISSN 0749-0208; Richard P. Signell, Jeffrey H. List and Amy S. Farris (2000) Bottom Currents and Sediment Transport in Long Island Sound: A Modeling Study. Journal of Coastal Research, vol. 16, No. 3 (Summer), pp. 551-566.

increasing temperatures and acidification, nitrogen loading and anoxic conditions -- that are magnified by climate change.[132]

The resuspension of sediments during dredging and placement operations may result in the re-exposure and bioavailability of contaminants in dredged sediments readily transferable to the Sound ecosystem and may also result in substantial local oxygen depletion. EPA's consistency determination should identify known, understood and reasonably foreseeable beneficial and adverse effects of this activity, commensurate with CZMA 16 U.S.C. § 1456(c)(2).[133]

The reasonable and foreseeable coastal effects on New York's resources include, but are not limited to, the following parameters:

1. physical parameters such as living space, circulation, turbidity, morphology, substrate type, and erosion and sedimentation rates;
2. biological parameters such as community structure, food chain relationships, species diversity, predator/prey relationships, population density and size, mortality rates, reproductive rates, meristic features, behavioral patterns and migratory patterns; breeding, feeding, and nursery areas.
3. chemical parameters such as dissolved oxygen, carbon dioxide, acidity, dissolved solids, nutrients, organics, and pollutants such as heavy metals, volatile organics, and hazardous materials;
4. use of alternatives which minimize the need for dumping; and
5. use of methods to minimize sediment sources which, in turn, reduces the need for dredging.

Additionally, as DOS has noted in previous consistency decisions regarding dredged material disposals in Long Island Sound, the effects of subaqueous capping of contaminated disposals on water quality are varied and of limited scope. It is also an impermissible practice under the ODA regulations. There have been very few long term studies of the viability and effectiveness of capping in isolating and containing toxic materials. However, there have been many studies that have focused on the limits and failures of cap design and installation that result in remobilization of contaminants. When capping is required as an alleged remedy to sequestering higher concentrations of contaminated materials from the environment, that management approach results in the contaminated materials remaining exposed to the environment during removal and placement prior to any final capping or complete sequestration. This exposure may remain for several months until cap material is placed on the disposal site since the most contaminated material is disposed of first in the sequence. These effects may be significantly exacerbated with the presence of elevated levels of known contaminants, such as mercury, PCB congeners, and copper.[134] Further, capping disturbs the underlayment, causing spatial expansion of dispersal footprints. Experience in numerous locations[135] has shown that capping dredged material may be

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[132] Rice, E., Dam, H.G. & Stewart, G. (2015) Impact of Climate Change on Estuarine Zooplankton: Surface Water Warming in Long Island Sound Is Associated with Changes in Copepod Size and Community Structure, Estuaries and Coasts 38: 13.; Chris Field and Chris Elphick (2014), Sentinels of climate change: coastal indicators of wildlife and ecosystem change in Long Island Sound - Final report September, 2014 , Connecticut Department of Energy and Environmental Protection/ US EPA Long Island Sound Study found at http://www.sound.uconn.edu/lissm/documents/Elphick_et_al_Sentinels_final_report.pdf.

[133] See 15 C.F.R. § 930.31(a).

[134] See CENAE Suitability Determination for Mystic River Dredging (F-2014-0109 (DA))

[135] J. Brannon, R. Hoeppel, T. Sturgis, I. Smith, Jr., D. Gunnison (1985), Effectiveness of Capping in Isolating Contaminated Dredged Material from Biota and the Overlying Water. U.S. Army Corps of Engineers Technical

unpredictable as a reliable management technique for isolating contaminant-bearing fine-grained sediment from the environment.

The disposal of additional dredged material in eastern Long Island Sound, –in waters which have already been significantly compromised as a result of historic industrial discharges and dredged material disposal, will exacerbate this condition and further degrade water quality. Disposal at an eastern Long Island Sound site would require consistency New York's water quality standards, which seek to maintain or restore waters so that they are suitable for fish, shellfish and wildlife propagation and survival. Disposal at an eastern LIS site could violate New York's water quality standards.

Given the potential risk of adverse effects on human health and the environment by exposure to contaminants in sediment, systematically reducing or avoiding open-water disposal is the most appropriate approach to managing dredged material. This management approach requires both an accurate assessment of present and future dredging and disposal needs, and a thorough and comprehensive review of alternative strategies to disposal that pose reduced risk to impaired water quality. EPA provided neither.

Based on the potential risks to ecological integrity as discussed above, EPA's failure to adequately consider alternatives that would reduce this risk, sufficiently consider legacy contamination, and conduct a cumulative impacts assessment, has led to insufficient information in the record that would allow DOS to conclude that the proposed designations of the ELDS dump site(s) will be consistent to the maximum extent practicable with the New York State CMP. Therefore, the proposed activity is not consistent with this policy.

Policy 6 **Protect and restore the quality and function of the Long Island Sound ecosystem.**

Sub-Policy 6.1 **Protect and restore ecological quality throughout Long Island Sound**

Avoid significant adverse changes to the quality of the Long Island Sound ecosystem as indicated by physical loss, degradation, or functional loss of ecological components. Avoid fragmentation of natural ecological communities and maintain corridors between ecological communities. Maintain structural and functional relationships between natural ecological communities to provide for self-sustaining systems. Avoid permanent adverse change to ecological processes. Reduce adverse impacts of existing development when practical. Mitigate impacts of new development; mitigation may also include reduction or elimination of adverse impacts associated with existing development.

Southold LWRP Policy 6

Protect and restore the quality and function of the Town of Southold ecosystem.

Sub-policy 6.1 **Protect and restore ecological quality throughout the Town of Southold.**

A. Avoid adverse changes to the Long Island Sound and the Peconic Bay ecosystems that would result from impairment of ecological quality as indicated by:

Report D-85-10; S. Nadeau and M. Skaggs (2015), Analysis of Recontamination of Completed Sediment Remedial Projects in: A.K. Bullard, D.T. Dahlen (Chairs), Remediation and Management of Contaminated Sediments—2015. Eighth International Conference on Remediation and Management of Contaminated Sediments (New Orleans, LA; Jan 12–15, 2015).

2. *Degradation of ecological components*
Degradation occurs as an adverse change in ecological quality, either as a direct loss originating within the resource area or as an indirect loss originating from nearby activities. Degradation usually occurs over a more extended period of time than physical loss and may be indicated by increased siltation, changes in community composition, or evidence of pollution.
3. *Functional loss of ecological components*
Functional loss can be indicated by a decrease in abundance of fish or wildlife, often resulting from a behavioral or physiological avoidance response. Behavioral avoidance can be due to disruptive uses that do not necessarily result in physical changes, but may be related to introduction of recreational activities or predators. Timing of activities can often be critical in determining whether a functional loss is likely to occur. Functional loss can also be manifested in physical terms, such as changes in hydrology.

B. Protect and restore ecological quality by adhering to the following measures.
1. Maintain values associated with natural ecological communities.
Each natural ecological community has associated values which contribute to the ecological quality of the Town of Southold. These values should be assessed on a case-by-case basis.
3. Avoid fragmentation of ecological communities and maintain corridors to facilitate the free exchange of biological resources within and among communities.
4. Maintain ecological integrity of particular locales by maintaining structural and functional attributes, including normal variability, to provide for self-sustaining systems.
5. Avoid permanent adverse change to ecological processes

The history of the Long Island Sound coastal area is one of population growth and increased development pressure in the region, resulting in significant adverse impacts to the Sound's natural resources. Those familiar with its condition acknowledge the need to clean the Sound and reverse its decline.[136]

Successful resolution of problems, such as estuarine water quality, in such complex, interdependent social-ecological systems, requires identifying and addressing the full array of potential stressors affecting that system.[137] Long Island Sound water quality impairment should be viewed from a perspective of environmental degradation (and ecosystem collapse) and is best addressed from this perspective. The Sound's cumulative legacy of pollution and habitat degradation has resulted from a range of human activities, such as historical point discharges, wetland filling and draining, dumping of waste, channel dredging and harbor deepening, road and hard surface runoff, agricultural runoff, wastewater contamination, and dredged material disposal. Following a systems approach in managing these issues, Policy 6.1 requires a reduction in adverse impacts resulting from existing stressors, when practical, as well as mitigation of impacts from new stressors. However, EPA's analysis does not take this system stressors approach to addressing potential contaminant issues associated with continued reliance on open

[136] This fact was noted by Congress when it designated the Sound as an estuary of national significance in 1987.
[137] F. Berkes (2015). *Coasts for People: Interdisciplinary Approaches to Coastal and Marine Resource Management*. New York: Routledge.

water disposal as the preferred means of managing dredged material. Instead, EPA proposes to individually select, separate and apart from related actions within the Sound, additional open water disposal sites based, in part, on the assumption that the sites proposed for designation, because of their past use for receiving dredged material and the attributable presence of elevated contaminant levels in baseline sampling, are appropriate and would not significantly degrade the Long Island Sound ecosystem.

Utilizing this outdated approach, EPA significantly underestimates the breadth and extent of ecosystem impacts. As a result, its determination has not addressed reasonably foreseeable ecological effects of bioavailability of contaminants from dumping dredged material into Long Island Sound. EPA's consistency determination also fails to examine legacy and new contamination, regardless of relative amounts, from the perspective of open water disposal acting as a system stressor that contributes to compromising ecosystem function. While the DSEIS contains data reflecting elevated contaminant levels (e.g., mercury, copper, and pesticides such as toxaphene) in their baseline sediment surveys, EPA concludes, without supporting evidence, that the historical use of the site, and the presence of contaminants such as mercury and copper, does not preclude continuing use of the site as a dredged material disposal area and would not result in further degradation of the Long Island Sound ecosystem. However, the historical use of the site has already contributed to the overall degradation of ecological quality throughout the Sound. Dumping at the ELDS would add stress on the estuarine system, resulting in reasonably foreseeable, and avoidable, cumulative effects and would exacerbate the Sound ecosystem's exposure to additional contamination. EPA's expansion of the ELDS to include 1.5 square miles of "new" benthic habitat simply expands the ecosystem stressor to cover greater acreage, adding further stress to an already impaired area, and impacting previously unaffected areas as well.

EPA maintains, in its consistency determination, that the designation and continuing use of this site for disposal of dredged material would have negligible or "imperceptible" effects on water quality in the LIS ecosystem. Their assertions fail to assess any cumulative effects of the proposed designations, including the cumulative effects of the long-term use of the site after designation. In the absence of specific criteria for determining the potential toxicity of dredged material in a changing environment and an assessment of the cumulative effects and bioavailability of contaminants that accompany open-water dumping according to those criteria, New York concludes that EPA has not demonstrated the consistency of its proposed designations with Policy #6.1. For these reasons, the activity is not consistent to the maximum extent practicable with this policy.

Policy 8	**Minimize environmental degradation in the long Island Sound coastal area from solid waste and hazardous substances and wastes.**
Sub-Policy 8.1	**Manage solid waste to protect public health and control pollution.**
Sub-Policy 8.3	**Protect the environment from degradation due to toxic pollutants and substances hazardous to the environment and public health.**

Plan for proper and effective solid waste disposal prior to undertaking major development or activities generating solid wastes. Manage solid waste by: reducing the amount of solid waste generated, reusing or recycling material, and using land burial or other approved methods to dispose of solid waste that is not otherwise being reused or recycled. Prevent the discharge of solid wastes into the environment by using proper handling, management, and transportation practices.

Prevent release of toxic pollutants or substances hazardous to the environment that would have a deleterious effect on fish and wildlife resources. Prevent environmental degradation due to persistent toxic pollutants by: limiting discharge of bioaccumulative substances, avoiding resuspension of toxic pollutants and hazardous substances and wastes, and avoiding reentry of bioaccumulative substances into the food chain from existing sources.

Southold LWRP Policy 8

Minimize environmental degradation in Town of Southold from solid waste and hazardous substances and wastes.

Sub-policy 8.3 **Protect the environment from degradation due to toxic pollutants and substances hazardous to the environment and public health.**

A. Prevent release of toxic pollutants or substances hazardous to the environment that would have a deleterious effect on fish and wildlife resources.
The Town's Site Plan application process will determine whether proposed land use activities will involve toxic substances. Protection measures to prevent their release to the environment, particularly fish and wildlife resources, will be determined during the environmental review.
Further, the dredging of toxic material from underwater lands and the deposition of such material shall be conducted in the most mitigative manner possible so as not to endanger fish and wildlife resources, in either the short or long term.
B. Prevent environmental degradation due to persistent toxic pollutants by:
1. limiting discharge of bio-accumulative substances,
2. avoiding re-suspension of toxic pollutants and hazardous substances and wastes, and avoiding reentry of bio-accumulative substances into the food chain from existing sources

The intent of Policy 8 is to protect both human health and Long Island Sound's coastal resources from degradation through proper control and management of wastes and hazardous materials. This policy identifies avoidance and minimization as particularly critical components of any such waste management planning.

Over the past twenty years, federal, state and local agencies have worked cooperatively, investing billions of public dollars to clean up the Sound. In addition, due to the Ambro Amendment, the ODA standards have been applicable since 1980 and the guidance, procedures and standards contained in the ODA provide a template for proper management of dredged materials in the Sound. EPA has failed to properly use these ODA standards in its analysis supporting its site designation proposal. In particular, the cumulative impact analysis required by the ODA is insufficient.

Further, EPA has failed to fully consider all adverse impacts of open water disposal pertinent to Long Island Sound. In addition to the adverse effects associated with the re-introduction of dredged material contaminants to the water column and benthos discussed under the Policy #5 section, the open-water disposal of dredged material potentially affects aquatic species, especially the benthic community, directly through sediment dispersal through the water column, burial of biota and habitat under dumped dredged sediments, and long term bioavailability of pollutants within the dredged material disposal mounds and surrounding benthic sediments. In addition, disposal in eastern Sound and its resulting adverse effects are exacerbated because strong middle and bottom currents disperse the descending fine sediments and clays to other areas in the Sound. Moreover, following placement, the bottom currents will continue to erode the deposition and transport materials and any associated contaminants elsewhere in the Sound.

Since at least 1975, the Corps has claimed NLDS was a containment site. Their standard practice has been to "cap" the finer material with coarser sand. According to EPA, this is impermissible. As noted in EPA's comments on the draft DMMP: "14. 'Capping' is not allowed under the Ocean Dumping Act regulations …." So the unconfined disposal of "suitable" fine sediment may not be readily contained at the disposal site. Compounding the problems associated with EPA's analysis, several known contaminants present in the sediments of Connecticut's rivers and harbors are not tested for in dredged materials before disposal into Long Island Sound.[138] Even more concerning to New York, some known contaminants have never been assigned a standard for safe levels by EPA.[139]

Exacerbating the assessment inadequacies resulting from these gaps in information and analysis, EPA and the Corps currently use inadequate and outdated testing methodologies and analytical approaches that do not accurately determine the toxicity levels of contaminants in the dredged sediments before disposal.[140] Review of EPA's analysis shows that inadequate efforts have been made to determine sub-lethal and long term effects on fish and shellfish species. Research has shown that the adverse effects of chemical contamination to an ecosystem may not be manifest until after several generations of species propagation. A good example of this is provided by contamination by PCBs, known to exist in sediments near LIS dredging centers, and now present

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[138] See 40 C.F.R. § 228.13(b) and 40 C.F.R. 230.60. These regulatory exemptions provide for sediments to evade biological and chemical testing if certain sediment types are present in the dredged material. This exemption pathway is problematic because the contaminated sediments in eastern LIS dredging areas could evade testing when mixed with coarser grained material collected during sampling.

[139] See SEIS Scoping Comments in a letter dated January 31, 2013 from Fred Anders, Bureau Chief, DOS to Jean Brochi, EPA. DOS Scoping Comment # 7: "There is a need for enhanced testing and study to ensure that the disposal of dredged material pursuant to Ocean Dumping Act toxicity standards "Evaluation of Dredged Material Proposed for Ocean Disposal Testing Manual" (Green Book) is safe for disposal within the estuary environment of LIS. Study of the biology, chemistry, and hydrology that reflects the unique LIS estuarine environment should be used to evaluate whether the current Green Book standards are appropriate for LIS. Reference site locations for baseline evaluations and comparisons need to be located outside of an affected area to adequately reflect ambient levels to determine suitability for disposal. It is suggested that the ELIS SEIS should refer to such material as "legally permissible" under the applicable standards, rather than 'clean' or 'safe'". See also DOS Scoping Comment # 12 "The chemical containment and biological testing of the organisms re-colonizing new mounds of disposed dredged material, as well as those feeding on those communities, needs to be fully evaluated to also determine whether organisms are bringing those contaminants back to the surface or to other locations in LIS. Advancement in the methodology and technology are available to conduct marine field research on dispersion of sediment contaminants via subaquatic vegetation and benthic macroinvertebrates (especially polychaetes) and subsequent bioaccumulation in fish. This research should be done to determine environmental and human health impacts of contaminant dispersal from disposal." EPA has not addressed DOS's concerns in the either the proposed rule or the DSEIS.

[140] Jones, R. A., Mariani, G. M., and Lee, G. F., "Evaluation of the Significance of Sediment-Associated Contaminants to Water Quality," Proc. Am. Water Resources Assoc. Symposium, Utilizing Scientific Information in Environmental Quality Planning, AWRA, Minneapolis, MN, pp. 34-45 (1981); Jones, R. A., and Lee, G. F. (1981). "The Significance of Dredging and Dredged Material Disposal as a Source of Nitrogen and Phosphorus for Estuarine Waters," in Estuaries and Nutrients, Humana Press, Clifton, NJ, pp 517-530; G. Fred Lee and Anne Jones-Lee (1993). Sediment Quality Criteria: Numeric Chemical– vs. Biological Effects–Based Approaches, Proceedings of Water Environment Federation National Conference, Anaheim, CA, October 1993; Jones-Lee, A., and Lee, G. F., "Water Quality Aspects of Dredged Sediment Management," Water Encyclopedia: Water Quality and Resource Development, Wiley, Hoboken, NJ pp 122-127 (2005); Valente, R. M; Rhoads, D. C; Myre, P. L.; Read, L. B.; Carey, D.A. 2006. Evaluation of Field Bioaccumulation as a Monitoring Tool. DAMOS Contribution No. 169. U.S. Army Corps of Engineers, New England District, Concord, MA, 40 pp.; Anne Jones-Lee and G. Fred Lee (2005) Unreliability of Co-Occurrence-Based Sediment Quality Guidelines for Contaminated Sediment Evaluations at Superfund/Hazardous Chemical Sites, Remediation, Spring 2005; Long, E. R., Field, L. J., & MacDonald, D. D. (1998). Predicting toxicity in marine sediments with numerical sediment quality guidelines. Environmental Toxicology and Chemistry, 17(4), 714–727.

at the disposal sites as a result of past disposals.[141] These contaminants have been shown to bioaccumulate in benthic and aquatic marine species,[142] with long term low level exposure resulting in an array of behavioral and physiological impacts on specific species.[143] The persistent presence of PCBs in and near open water disposal sites should be analyzed and considered in a cumulative impact analysis.

New York regulates dredged material as a solid waste when managed upland and regulates dredging and dredged material disposal under the NYSDEC, Division of Water Technical and Operational Guidance Series (TOGS) 5.1.9 when managed in-water and in the riparian area. The DEC is currently in the process of revising its solid waste regulations, in part to facilitate the beneficial reuse of dredged material at upland sites.[144] EPA's analysis of prospective alternative options, particularly the beneficial use of material dredged in the Long Island Sound region was not adequately addressed in the consistency determination, the DSEIS or in the LIS DMMP. Because of this, EPA has not demonstrated the need for additional sites, particularly in light of the States of New York and Connecticut, and EPA's agreed upon goal of phased measurable reductions over time and developing viable alternatives to open water dumping, such as coastal marsh restoration, coastal resiliency projects, confined disposal facilities, containment islands, and the use of upland containment and processing sites. EPA's decision to follow the U.S. Army Corps "Federal Standard", which is implemented in part through a Corps' "guidance" document and not through an Administrative Procedures Act rulemaking,[145] serves as a recurring theme and primary basis of need through the low cost of open water disposal. As EPA has been influenced by the Corps' "lowest cost" approach in the "Federal Standard" 2015 guidance and has incorporated it into this rulemaking, it has not adequately considered all adverse effects resulting from open water disposal. EPA disqualified appropriate alternative management strategies due to cost and failed to include sufficient substantive analysis to justify conclusions regarding disposal impacts. As a result, EPA has failed to provide a supportable justification for dredged material disposal that requires designation of additional sites in eastern Long Island Sound. Furthermore, if a permanent open water disposal site were to be created in eastern Long Island Sound, as EPA proposes, and given the current reliance on the Army Corps application of the "Federal Standard", there would cease to be any economic reasons to find alternative ways to dispose of dredged material. Open water disposal will always be the lowest cost option when externalized environmental harms, environmental costs and other benefits are not considered.

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[141] DMMP PEIS p. 4-50: "The PCB content in one sample from the Mystic River and in samples from the East River were extremely high, exceeding 500 ng/g (Varekamp, et al., 2014)…. The median PCB concentration in western Long Island Sound was, on a concentration basis, within the top 15% of samples analyzed nationally, exceeded ERL SQGs, and was an order of magnitude above the Eastern Basin median (Mitch & Anisfeld, 2010)."

[142] The EPA has determined PCBs to be probable human carcinogens. See "Health Effects of PCBs", U.S. EPA, June 13, 2013. https://www.epa.gov/pcbs/learn-about-polychlorinated-biphenyls-pcbs#healtheffects.

[143] https://www.epa.gov/sites/production/files/2015-06/documents/ny_hh_227_f_03121998.pdf

[144] Colwell, R. and G. Sayler. (1977) Effects and Interactions of Polychlorinated Biphenyls (PCB) with Estuarine Microorganisms and Shellfish. U.S. Environmental Protection Agency, Washington, D.C., EPA/600/3-77/070; r.n. Reid, J.E. O'Reilly, and V.S. Zdanowicz (eds.), (1980). Contaminants in New York Bight and Long Island Sound Sediments and Demersal Species, and Contaminant Effects on Benthos, NOAA Technical Memorandum NMFS-F/NEC-16; Greig RA and Sennefelder G. (1985) Metals and PCB concentrations in mussels from Long Island Sound, Bull Environm Contam Toxicol. 35(3):331-4; Greig, R.A. & Sennefelder G. (1987) PCB concentrations in winter flounder from Long Island Sound, 1984-1986, G. Bull. Environ. Contam. Toxicol. (1987) 39:863; Gronlund, W.D., Chan, S. McCain, B.B. et al. (1991) Multidisciplinary assessment of pollution at three sites in Long Island Sound. Estuaries 14: 299.)

[145] U.S Army Corps of Engineers Memorandum on the Federal Standard Clarification Regarding Federal Dredging Mission and Interactions with Non-Federal Agencies, October 21, 2015 found at http://planning.usace.army.mil/toolbox/library/MemosandLetters/15Oct-FederalStandardClarification.pdf

EPA's proposal would, therefore, have the effect of using this already stressed urban estuary as a permanent dumping ground.

Overall, the information presented in the DSEIS does not adequately support the conclusion that potential risks to human health "appear to be very low" for EPA's preferred disposal option. The DSEIS is deficient in that it did not characterize the potential health risks associated with other disposal options and, therefore, comparison of various alternatives on the basis of health risk is not possible. Furthermore, the location of this proposed designation could actually compound effects elsewhere in the Sound. EPA did not adequately analyze these impacts.

Finally, the Southold LWRP specifically addresses dredged site designation and indicates such a designation would be inconsistent with its approved program, to wit:

> Deposition of the dredged material from this [federal navigation] channel to the NLDS is of concern because of the extent of the material, (millions of cubic yards), its contaminated nature, and its location relative to physically dynamic, biologically diverse and heavily fished waters. Since 1981 and 1990, the *Ocean Dumping Act* (ODA) has been in effect in Long Island Sound. However, the NLDS has not been formally designated as an approved disposal site in accordance with that act. It is the Town's position that the New London site does not meet the criteria set forth in the ODA, and therefore should be closed to future depositions of dredged material. The standards of the ODA ought to be upheld, not circumvented by federal agencies.[146]

After decades of directives to include in planning efforts and to develop and implement innovative alternatives to the disposal of dredged materials in Long Island Sound and reflecting that in the Long Island Sound Coastal management Program and its policies, EPA's treatment and analysis of the proposed site designation essentially dismisses innovative alternatives to the disposal of dredged materials in Long Island Sound and the possibilities of advancing them. The designation of this site for the continued disposal and dredged materials would allow varied and continuing impairments to Long Island Sound from solid wastes and toxic pollutants and substances hazardous to the environment and public health. Rather than advancing applicable coastal policy objectives it would be contrary to and undermine them. The designation of these sites in the open waters of Long Island Sound would therefore, not be consistent with these policies. In addition, failing to develop and implement alternatives to open water disposal of dredged materials because of the added costs of doing so, would contravene CZMA requirements that this proposed activity be undertaken in a manner consistent to the maximum extent practicable with New York's Long Island Sound Coastal Management Program.

For the foregoing reasons, the designation of these sites in the open waters of Long Island Sound is not and would not be consistent to the maximum extent practicable with this policy.

Policy 10	**Protect Long Island Sound's water-dependent uses and promote siting of new water- dependent uses in suitable locations.**
Sub-Policy 10.6	**Provide sufficient infrastructure for water-dependent uses.**

[146] Southold LWRP Section II – K p. 26.

Use suitable dredged material for beach nourishment, dune reconstruction, or other beneficial uses. Avoid placement of dredged material in Long Island Sound when opportunities for beneficial reuse of the material exist. Allow placement of suitable dredged material in nearshore locations to advance maritime or port-related functions, provided it is adequately contained and avoids negative impacts on vegetated wetlands and significant coastal fish and wildlife habitats. Avoid shore and water surface uses which would impede navigation.

Southold LWRP Policy 10

Protect Southold's water-dependent uses and promote siting of new water-dependent uses in suitable locations.

Sub-policy 10.5 Provide sufficient infrastructure for water-dependent uses.

A. Provide adequate navigation infrastructure.

Dredging is an essential activity but with costs and impacts that require it to be undertaken only to the extent necessary to meet the current and future needs of water-dependent uses of the Town of Southold. The Town of Southold will work in cooperation with New York State, Suffolk County, the Village of Greenport and private owners of water-dependent uses to:

5. Avoid placement of dredged material in Long Island Sound when upland alternatives exist.

6. Put clean dredge material to beneficial use for either beach nourishment or dune reconstruction.

Sub-policy 10.6 Promote efficient harbor operation.

C. Promote efficient harbor operation in the waters off Fishers Island

5. Maintain the chemical, physical and biological integrity of the island's surrounding waters and harbors and their dependent habitats.

Policy 10 first aims to promote beneficial uses of dredged material, consistent with past practices in the Long Island Sound region, by requiring the beneficial use of suitable dredged material wherever possible; and second, it speaks to the importance of planning shore and surface uses so as to not impede navigation and other water-dependent uses

EPA states in its consistency determination that open-water site designation advances water-dependent uses and the infrastructure that supports those uses. Having a way to dispose of dredge material makes it easier to dredge rivers and harbors for navigation. However, open water disposal is not the only way to dispose of dredged material and New York's Coastal Policies value beneficial reuse as a preferred disposal option. EPA did not adequately address beneficial reuse options, including containment options in the Proposed Rule and supporting documents. Instead, EPA simply concluded that a disposal site needed to be created in Eastern Long Island Sound to make available an even more "cost effective" method of disposal. This approach would support a dredged material disposal site adjacent to every dredging need in the Sound. EPA's definition of "cost-effective", however, does not utilize full-cost accounting approaches that include the costs of environmental harm. The end result is that EPA, in making its cost-effective, but environmentally damaging disposal option readily available, while simultaneously concluding that no alternatives to open-water disposal in Long Island Sound would meet the long-term regional disposal need, is guaranteeing that few, if any, beneficial reuse projects will be meaningfully pursued. This lack of due diligence to seek viable alternatives to open water dumping suggests EPA places cost savings over environmental responsibility and stewardship. This is particularly troubling as Long Island Sound is a designated Estuary of National Significance and continues to receive federal and state funding for environmental improvement projects while at the same time EPA is proposing open water dumping. Given the high risk for

environmental damage, no demonstrated need, and a singular focus on an artificially generated lowest cost option, EPA's Proposed Rulemaking seems contrary, ill conceived, and at cross purposes with EPA stewardship responsibility for Long Island Sound.

In support of its determination that open water site designation advances water dependent uses, EPA claims that there is inadequate capacity at the existing designated sites (CLDS and WLDS) to facilitate disposal. As stated in New York's joint agency comment letter of July 18, 2016, New York's analysis of the DMMP, and EPA's own submission documents yields a much different conclusion. There is more than enough capacity in existing designated sites within the Zone of Siting Feasibility. Furthermore, EPA, New York and Connecticut, have agreed to work towards measurable reductions in open water dumping over time. Those reductions over the next thirty years will further diminish the notion that there is not adequate capacity elsewhere.

While The EPA Determination contends that beneficial use options are inadequate to accommodate projected disposal needs, their analysis fails to adequately and comprehensively evaluate those alternatives. Examples of alternatives to open-water disposal for both contaminated and uncontaminated dredged material are available and have been used in the LIS region, including in New York Harbor, Eastchester Creek, and Hempstead Harbor, and should be thoroughly evaluated in a region-wide assessment of potential dredged material management options. New York has previously provided an extensive list of potential alternative uses that would result in reduction or elimination of adverse coastal impacts.[147] EPA has not fully considered these options in its determination.

EPA has also neglected to provide any analysis of current vessel uses and any potential conflicts with those uses. For example, the proposed ELIS is located in one of the busiest recreational and ferry traffic areas in the Sound (NROC boating survey, and AIS CG data). The Coast Guard AIS data show significant commercial vessel traffic, including cargo, ferry, and barge traffic. The EPA Determination, however, includes inadequate or no recreational or commercial use analysis for this area of eastern Long Island Sound and fails to recognize the area as having some of the best recreational fishing waters and busiest boating traffic in the region. Absent this analysis, it is not possible to determine if these user groups are potentially subject to any significant adverse effects as a result of continued disposal operations.

EPA failed to fully investigate the feasibility of implementing alternatives and did not conduct a full environmental analyses on those alternatives; therefore, the proposed site designation fails to provide adequate information to support EPA's consistency determination and the need for designating one or more additional sites in Long Island Sound. Accordingly, the proposed activity is not consistent to the maximum extent practicable with this policy.

Policy 11 Promote sustainable use of living marine resources in Long Island Sound.
Sub-Policy 11.1 Ensure the long-term maintenance and health of living marine resources.

Ensure that commercial and recreational uses of living marine resources are managed in a manner that: results in sustained useable abundance and diversity of the marine resource; does not interfere with population and habitat maintenance and restoration efforts; uses best

[147] See DOS Scoping Letter dated January 13, 2013 from Fred Anders to EPA.

available scientific information in managing the resources; and minimizes waste and reduces discard mortality of marine fishery resources.
Ensure that the management of the state's transboundary and migratory species is consistent with interstate, state-federal, and interjurisdictional management plans. Protect, manage, and restore sustainable populations of indigenous fish, wildlife species, and other living marine resources.
Foster occurrence and abundance of Long Island Sound's marine resources by: protecting spawning grounds, habitats, and water quality; and enhancing and restoring fish and shellfish habitat, particularly for anadromous fish, oysters, and hard clams.

Southold LWRP Policy 11

Promote sustainable use of living marine resources in Long Island Sound, the Peconic Estuary and Town waters.

Sub-policy 11.1 **Ensure the long-term maintenance and health of living marine resources.**

A. Ensure that commercial and recreational uses of living marine resources in the Town of Southold are managed in a manner that:
1. places primary importance on maintaining the long-term health and abundance of marine fisheries, *3. does not interfere with population and habitat maintenance and restoration efforts,*
4. uses best available scientific information in managing the resources

C. Foster the occurrence and abundance of the Town's marine resources through:
1. protection of spawning grounds, habitats, and water quality,
2. enhancement and restoration of fish and shellfish habitat

Sub-policy 11.2 **Provide for commercial and recreational use of the Town of Southold's finfish, shellfish, crustaceans, and marine plants.**

C. Protect the public health and the marketability of marine and fishery resources by:
4. maintaining and improving water quality of fishery and marketable marine resources to protect public health.

The living marine resources of the Sound play an important role in the social and economic well-being for millions of people in the Long Island Sound region. New York's commercial and recreational uses are dependent on the Sound's living marine resources, ranging from boating and swimming, to fishing, and diving. The continued use of the Sound's living resources by New Yorkers depends on maintaining a healthy ecosystem structure – the physical, chemical, and biological attributes that together support its ecological functions. Ensuring the long-term health and abundance of marine animals, and the range of habitats important to their life stages, is critical to ensure that commercial and recreational uses can be maintained for future generations.

Open water disposal may result in a range of different water quality and ecosystem effects, many of which can be stressors for marine resource populations. The DSEIS and consistency determination acknowledge the adverse effects of the direct burial of living benthic organisms during placement of dredged material at the sites during open-water dumping operations. Motile organisms that do survive dumping disposal events may respond through the bioaccumulation of dredged material contaminants in the sediment and in the water column. Effects of

bioaccumulation and toxicity have the potential to multiply through the ecosystem.[148] EPA states these effects are acceptable due to the re-colonization that may happen after a period of time. However, re-colonization does not indicate the level of contaminants in the biota, sub-lethal effects of this contamination, or normal patterns of spatial distribution. In fact, re-colonization can create bioturbation that re-suspends more fine sediments into the water column for dispersal. Other EPA regions have rigorous capping programs to avoid the very recolonization and resuspension of material that EPA Region 1 asserts is good and indicates a healthy "recovery" form dumping events. In addition, the proposed dumping will be done periodically and repeatedly over 30 years with little, if any, adequate recovery time between dumping events and these repeated dumping events will result in cumulative effects over time that lead to a slow and steady increase in risk to the ecological health of the Sound.

It remains unclear from the information provided by EPA what effects the impermissible practice of "capping" would have on the re-colonization that is suggested to occur at the disposal sites. Even less certain, and left undefined in the DSEIS and EPA's consistency determination, is the nature of potential trophic changes likely to result from such activities, particularly when the dumped material is composed of different physical characteristics than the ambient, benthic material. These physical habitat alterations will affect species colonization and may result in lower biodiversity and longer re-colonization periods.[149]

In addition to potential direct and indirect effects on the Sound ecosystem, contaminants, both legacy and future, adversely affect the ecosystem cumulatively. Insufficient data has been provided by EPA on the cumulative effects to the Sound's benthic ecology from repeated disposal activities at these sites. While the Corps and EPA have relied heavily on the DAMOS monitoring program,[150] this program provides limited and inadequate details in the accompanying revised SMMPs as required by ODA § 102(c); and there is no evidence that proposed 'management' of contaminated material would successfully encourage comparable re-colonization patterns at the disposal sites by the same species that may have inhabited these locations prior to disposal activities.

Another ecosystem stressor that is inadequately addressed by EPA is the changing climate and how it affects the Sound and its living resources. There is mounting evidence that climate change-induced alterations in the Sound ecosystem, including increased precipitation and flooding, increased storm activity and intensity, ocean acidification (reduced pH), and warming of marine waters, are changing the chemistry of the Sound environment and amplifying negative

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[148] J. Lake, G. Hoffman, S. Schimmel (1985). Bioaccumulation of Contaminants from Black Rock Harbor Dredged Material by Mussels and Polychaetes US Environmental Protection Agency Technical Report D-85-2; A Jakimska, P Konieczka, K Skóra, and J Namiesnik (2011). Bioaccumulation of metals in tissues of marine animals, Part I: the role and impact of heavy metals on organisms. Pol. J. Environ. Stud; C. Hammerschmidt and W. Fitzgerald (2006). Bioaccumulation and Trophic Transfer of Methylmercury in Long Island Sound. Archives of Environmental Contamination and Toxicology V 51, pp 416-424; Chen, C., Amirbahman, A., Fisher, N. et al. (2008) Methylmercury in Marine Ecosystems: Spatial Patterns and Processes of Production, Bioaccumulation, and Biomagnification EcoHealth 5: 399.

[149] Valente, R. and Fredette, T. (2003) Benthic Recolonization of a Capped Dredged Material Mound at an Open Water Disposal Site in Long Island Sound. Dredging '02: pp. 1-14.; Wilber DH, Clark DG, 2007. Defining and assessing benthic recovery following dredging and dredged material disposal, p. 603–618. In: R.E. Randall (ed.), Proceedings of the XVIII World Dredging Congr., Lake Buena Vista, FL, USA.; A. Brooks (1983) A Study of the Benthic Macrofauna at the Central Long Island Sound Disposal Site, US Army Corps of Engineers.

[150] DAMOS (Disposal Area Monitoring System) is a program initiated in 1977 by the New England District of the U.S. Army Corps of Engineers to manage and monitor offshore dredged material disposal sites from Long Island Sound to Maine.

impacts of legacy contaminants already present in benthic sediments.[151] This changing chemistry of the system will create new toxic threats, stressors, risks and vulnerabilities. Studies show warming temperatures and lower pH can "activate" contaminants in the bottom sediments and increase their bioavailability. Climate change effects may also reduce the Sound's capacity to absorb the stress of additional contamination loads, particularly because of warming of marine waters and ocean acidification. With this level of risk and uncertainty of continued dumping and subsequent elevated contaminants to living resources in the Sound, proposals to expand the distribution of open water dump sites should be avoided.

Overall, EPA's analysis lacks a competent and comprehensive consideration of ecosystem stressors in LIS, including those associated with a changing climate, that directly or indirectly affect living resources of importance to New Yorkers. EPA's failure to address and evaluate the proposed redistribution of contaminated materials resulting from dumping invalidates its ability to determine the range of subsequent potential effects on ecosystem function necessary to sustain the Sound's marine resources. Therefore, the proposed activity is not consistent to the maximum extent practicable with this policy.

Conclusion

Pursuant to 15 C.F.R. § 930.43 and §930.112, you may attempt to resolve these issues with DOS, or request Secretarial Mediation from the U.S. Department of Commerce. Given that the mediation process may be lengthy, if you would like to continue discussions with this office while pursuing mediation, please call Ms. Sandra Allen at (518) 474-6000.

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[151] W. Sunda and W. Cai (2012). Eutrophication Induced CO_2-Acidification of Subsurface Coastal Waters: Interactive Effects of Temperature, Salinity, and Atmospheric PCO2. *Environ. Sci. Technol.*, *46* (19), pp 10651–10659; R. Feely, et al. (2008). Evidence for Upwelling of Corrosive "Acidified" Water onto the Continental Shelf, Science, v320, 1490-1492; R. Feely, et al. (2004), Impact of Anthropogenic CO2 on the CaCO3 System in the Oceans, Science, v305, 362-366; C. Kennedy (2009). An Upwelling Crisis: Ocean Acidification. National Oceanic and Atmospheric Administration's Climate.gov website at https://www.climate.gov/news-features/features/upwelling-crisis-ocean-acidification. October 30, 2009. Accessed September 1, 2016; F. Melzner, J. Thomsen, W. Koeve, A. Oschlies, M. Gutowska, H. Bange, H. Hansen, A. Körtzinger, (2013). Future ocean acidification will be amplified by hypoxia in coastal habitats, Marine Biology, 160: 8. August 1, pp 1875-1888; Doney et al., 2009 and Pew Center, 2009 as quoted in EPA's "Synthesis of Climate Change Drivers and Responses in Long Island Sound" at http://longislandsoundstudy.net/wp-content/uploads/2011/03/LISS-Synthesis-of-CC-Impacts-Memo.pdf Accessed September 1, 2016; S. Moffitta, T. Hillb, P. Roopnarined, and J. Kennette (2014). Response of seafloor ecosystems to abrupt global climate change, *PNAS; J.* Latimer; M. Tedesco, R. L. Swanson, C. Yarish, P. Stacey, C. Garza (2014). *Long Island Sound: Prospects for the Urban Sea*. New York: Springer; E. Mecray, M. Buchholtz ten Brink, and E. Galvin (2000). Distribution and accumulation of contaminated sediments in Long Island Sound, Long Island Sound Research Conference, Stamford, CT; I. Johnson (1987). The effects of combinations of heavy metals, hypoxia and salinity on oxygen consumption and carbohydrate metabolism in *Crangon crangon* (L.) & *Carcinus maenas* (L.) *Ophelia* Volume 27, Issue 3; J. Camargoa, and Á. Alonsob (2006) Ecological and toxicological effects of inorganic nitrogen pollution in aquatic ecosystems: A global assessment. Environment International, Vol 32, Iss 6, August, Pages 831–849; C. Magalhãesa, J. Costaa, C. Teixeiraa, and A. Bordaloa (2007). "Impact of trace metals on denitrification in estuarine sediments of the Douro River estuary, Portugal" *Marine Chemistry*, Vol 107, Iss 3, Pages 332–341; J. Gray, R. Shiu-sun Wu, Y. Ying Or (2002) Effects of hypoxia and organic enrichment on the coastal marine environment. Marine Ecology Progress Series, Vol. 238: 249–279; T.I. Moiseenko, (2010). Effect of Toxic Pollution on Fish Populations and Mechanisms for Maintaining Population Size. Russian Journal of Ecology, Vol. 41, No. 3, pp. 237-243; USEPA (2011) Synthesis of Climate Change Drivers and Responses in Long Island Sound" USEPA at http://longislandsoundstudy.net/wp-content/uploads/2011/03/LISS-Synthesis-of-CC-Impacts-Memo.pdf. Accessed September 1, 2016.

The U.S. Department of Commerce is being notified of this decision by copy of this letter.

Sincerely,

Rossana Rosado
Secretary of State

cc:
OCM - David Kennedy, Director
OCM - David Kaiser, Chief, Coastal Programs Division
OCM - John King
COE/New England District - Diane Ray, Timothy J. Dugan
COE/New York District - Randall G. Hintz
USEPA Region 1 – Curtis Spaulding, Regional Administrator
USEPA Region 2 – Judith Enck, Regional Administrator
Connecticut DEP – Brian Thompson
NYSDEC Central Office – Tom Berkman
NYSDEC Region 1 - Roger Evans
NYSDEC Region 2 - Stephen Watts