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March 24, 2021

Via Email to: jwestermeyer@tritoncoastal.com
Jeff Westermeyer
Triton Coastal Consultants, LLC
385 Church Street
Guilford, CT 06437

Re: **F- 2020-0863**
U.S. Army Corps of Engineers/New England District Permit Application – **Norwalk Cove Marina, Inc**. – Proposed confined open-water placement of approximately 24,500 cubic yards (cy) of dredged material at the Central Long Island Sound Disposal Site (CLDS), with an undisclosed volume of capping material to contain the unsuitable material. Long Island Sound, CT.
Objection to Consistency Certification

Dear Mr. Westermeyer:

The Department of State has completed its review of the above-referenced proposal and the consistency certification provided for it.

Pursuant to 15 CFR § 930.63, and based on the information that has been provided, DOS objects to the consistency certification on the grounds that the proposed action is not consistent with the enforceable policies of the Long Island Sound Coastal Management Program (LIS CMP), which is a regional component of the New York State Coastal Management Program (CMP). DOS objects to your consistency certification on the basis that confined disposal of unsuitable dredged material at CLDS is not consistent with LIS CMP Policies 5, 6, 8, and 11. As a result of this objection, the consistency provisions of the federal Coastal Zone Management Act (16 U.S.C. § 1451 et seq.) prohibit the U.S. Army Corps of Engineers (Corps) from authorizing this activity unless this objection is overridden on appeal to the U.S. Secretary of Commerce.[1]

Stated Project Purpose

The applicant has stated that the purpose of this proposal is "To accommodate the larger, deeper draft vessels that will be utilizing the recently approved expansion of the South Dock configuration"[2] of the existing marina. To accomplish this purpose, the applicant proposes to "Conduct improvement dredging of approximately 123,000 square feet of the existing authorized dredge footprint in the vicinity of the South Dock to a depth of -13 feet at MLW with an allowed one foot of overdredge. Dispose of approximately 24,500 cubic yards of marine sediment at the Central Long Island Sound Disposal Site with capping by suitable material."[3]

Description of the Proposed Project Under Review

[1] See 15 CFR § 930.64
[2] See Norwalk Cove marine Federal Consistency Certification submission to DOS at p. 2 of 200. The applicant's full submission can be found at: http://www.dos.ny.gov/opd/programs/pdfs/Consistency/F-2020-0863ConsistencyCert.pdf
[3] Id.

DOS did not review the proposed dredging portion of the project at the applicant's property location for consistency with the enforceable New York State coastal policies as the marina and dredging are geographically located outside of the NYS interstate consistency boundary with Connecticut.[4] DOS reviewed the proposed open water disposal of the dredged material described by the applicant as "dredging approximately 24,500 cubic yards by clamshell bucket and disposing of the material at the Central Long Island Sound Disposal Site."[5] Herein after, the proposed open water disposal of 24,500 CY is referred to as the "proposed activity".

DOS used all of the materials provided within the permit application to the Connecticut Department of Energy and Environmental Protection (CTDEEP) and the Corps to review the proposed open-water disposal of the dredged material described by the applicant. It is noted that although the applicant submitted a consistency certification and a Suitability Determination (SD or Corps SD) indicating that CLDS was the site for the unsuitable material, the applicant's form for the 401 Water Quality Certification to CTDEEP indicated that the proposed activity was to "Dispose of approximately 24,500 cubic yards of marine sediment at the Western Long Island Disposal Site."[6] DOS did not evaluate the proposed activity for consistency at the Western Long Island Disposal Site (WLDS) location as this site was not indicated in the Corps SD or the consistency certification.

The dredged material was sampled in a marine sediment coring program at the project location to characterize the physical and chemical quality of sediments within the existing and proposed dredge footprints.[7] The sediment coring program consisted of the collection of five marine sediment cores and subsequent laboratory testing. The program was prepared in accordance with the "Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters, April 2004". Marine sediments were evaluated for disposal at an authorized ocean disposal location.

The results of the sediment analysis for contaminants of concern (COCs) are shown in Table 2 (see below at pp. 9-10) of the Corps SD,[8] and compare the contaminant levels to the effects-range low (ERL), effects-range medium (ERM), and the CLDS reference site values. Values below the ERL are thought to likely have little toxic effect, while values at or above the ERM are thought to likely have toxic effects. The range between ERL and ERM can be quite large for some contaminants and the exact effects under certain conditions remains unknown or variable. These same COCs were measured at the CLDS reference site and were all either non-detectable, or very low.[9] The measured values for cadmium, copper, mercury, nickel, total polycyclic aromatic hydrocarbons (HPAH), DDD (pesticides) and total polychlorinated biphenyls (PCBs) in the applicant's sediment exceed the ERL, are multiple magnitudes above the CLDS reference site, and are within the range of variable or unknown toxicity. For example, the concentration of copper (which is toxic to fish and shellfish larvae even at low levels) measured in the applicant's sediment averaged at 53.4 mg/kg across all 4 samples, while copper was measured at 3.8 mg/kg at the CLDS reference site, which is an entire order of magnitude lower than the ERL. The same trend of exceedances is present for cadmium, mercury, nickel, DDD and PCBs, with concentration levels at the CLDS reference site that are either non-detectable, or orders of magnitude lower that the ERL.

Following laboratory testing on the individual cores, the Corps concluded in its Suitability Determination that:

[4] See U.S. Army Corps of Engineers Suitability Determination (SD), July 21, 2020 at p. 2.
[5] See Statement of Consistency with Long Island Sound Coastal Policies and the Town of Southold Local Waterfront Revitalization Program and FCAF (September 16, 2020) at p.1.
[6] Structures Dredging and Fill & 401 Water Quality Certificate Application Report Norwalk Cove Marina Dredge Footprint Deepening Project (DRAFT) at p. 5.
[7] See Structures Dredging and Fill & 401 Water Quality Certificate Application Report Norwalk Cove Marina Dredge Footprint Deepening Project (DRAFT) at p. 6. "Marine sediment coring was performed at a total of five locations. Four cores were collected from the maintenance dredging area and one core from the proposed new dredge area. [] Cores extended to the authorized depth including overdredge at each location. Core recovery ranged between 46.8 inches and 78 inches in length." Id.
[8] See U.S. Army Corps of Engineers Suitability Determination (SD), July 21, 2020, Table 3 at p. 4.
[9] See Id.

> Based on the weight of evidence including the conceptual site model, low-moderate project risk ranking, project footprint, and the elevated sediment chemistry results for these sediments, an increased potential to cause unacceptable adverse effects to the environment is indicated. According to the testing and evaluation requirements set forth in Section 404 of the CWA the sediments to be dredged from Norwalk Cove Marina are considered **unsuitable for unconfined open water placement at CLDS without additional testing to further evaluate the potential risk to human health and the environment**.[10] (Emphasis added)

However, notwithstanding this clear and direct conclusion that the 24,500 CY of dredged material are unsuitable for open water disposal, on September 9, 2020, Connecticut Department of Energy & Environmental Protection (CTDEEP) mischaracterized the material as "suitable for open water disposal at Central Long Island Sound Disposal site provided that is capped with suitable sediments."[11] It is unclear how CTDEEP would characterize the 24,500 CY of unsuitable material as "suitable" merely by attempting to "cap" the material with suitable material. Capping unsuitable material with suitable material does not alter or change the underlying unsuitable material's chemical composition.

On September 24, 2020, the applicant submitted a consistency certification and other supporting materials indicating that the 24,500 CY of unsuitable material would be "capped". CLDS is designated and managed as an ODA section 102 site.[12] Unsuitable material is prohibited for disposal at CLDS and the EPA has prohibited "capping" of unsuitable materials in Long Island Sound since 1996.[13]

Factors Relevant to this Review

Description of Clean Water Act and Ocean Dumping Act

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."[14] 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.[15]

CZMA also incorporates state water quality standards into each state's CMP.[16] The U.S. Department of Commerce, National Oceanographic and Atmospheric Administration, Office of Coastal Management, has long

[10] Suitability Determination (July 30, 2020) at p. 6.
[11] CTDEEP LWRD License Application, Pre-Submission Consultation Form (Dredging) (September 9, 2020) at p. 2.
[12] See 81 FR 41220, 44224 (July 7, 2016) "As the Proposed and Final Rule make clear, sediments that do not pass these tests are considered ''unsuitable'' and shall not be disposed of at the sites.
[13] Disposal Area Monitoring System (DAMOS), Monitoring Surveys at the Central Long Island Sound Disposal Site December 2013, January 2014, & August 2014 (USACE New England District, Contribution 197 (February 2017) at p. 2.
[14] 33 U.S.C. § 1401(b).
[15] 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).
[16] See 16 U.S.C. § l 456(f) (CZMA § 307(f)). "Construction with existing requirements of water and air pollution programs".

recognized that a state's water quality standards are a component of each state's CMP and appropriate to use as a standard in a federal consistency review.[17]

One objective of the federal Clean Water Act (CWA) is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters" (33 U.S.C. § 1251(a)). Pursuant to the CWA, no discharge of dredged or fill material may be permitted if a practicable alternative exists that is less damaging to the aquatic environment. In other words, the applicant must show that steps have been taken to: (1) avoid aquatic environmental impacts to the extent possible; (2) minimize any remaining impacts on the aquatic environment; and (3) compensate for those impacts that are unavoidable.[18] In evaluating proposed placement activities in inland or coastal waters, the USACE is required to apply guidelines given by Section 404 of the CWA to ensure that such proposed discharge will not result in unacceptable adverse environmental impacts to waters of the United States.

The CLDS site designation rule requires material to be suitable for unconfined disposal

CLDS is a Marine Protection and Sanctuary Reserve Act 16 USC § 1412 (Ocean Dumping Act (ODA) section 102) site.[19] CLDS is located within Long Island Sound and was designated by the U.S. Environmental Protection Agency (EPA) on July 7, 2016, effective August 8, 2016. According to the DAMOS website, CLDS "covers a 11.04 km² (3.2 nmi²) area and is centered at 41° 08.950' N, 72° 52.950' W (NAD 83). It is located approximately 10.89 km (5.6 nmi) south of South End Point, East Haven, Connecticut. Historically, CLDS has been one of the most active disposal sites in the New England region."[20]

The 2004 FEIS for CLDS and WLDS was completed for the ODA designation without evaluating the potential for capping of unsuitable material at those sites because "by 1996, the USEPA no longer allowed placement of unsuitable dredged material with capping to confine the material at Long Island Sound open water sites."[21] The CLDS site designation prohibits the use of capping of unsuitable materials and only allows disposal of suitable material at CLDS.[22]

The 2016 Final Rule requires that all material to be disposed of at CLDS meet either the CWA or ODA testing standards, or both, depending upon the quantity of the project. Private applicants disposing of <25,000 cy of dredged material in the Sound are also required to obtain a water quality certification from the respective issuing state. EPA has previously asserted in response to public comment on the CLDS site designation rule "that if the material is contaminated and found unsuitable for open-water disposal, it cannot be placed at one of

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Notwithstanding any other provision of this chapter, nothing in this chapter shall in any way affect any requirement (1) established by the Federal Water Pollution Control Act, as amended, or the Clean Air Act, as amended, or (2) established by the Federal Government or by any state or local government pursuant to such Acts. Such requirements shall be incorporated in any program developed pursuant to this chapter and shall be the water pollution control and air pollution control requirements applicable to such program.

[17] See 81 FR 78514, 78519 (Nov. 8, 2016).

CZMA § 307(f) states that CAA and CWA requirements established by the Federal Government or by any state or local government pursuant to the CWA and CAA shall be incorporated in state management programs and shall be the water pollution control and air pollution control requirements applicable to such management program. NOAA's longstanding interpretation of 307(t) has been that these CWA and CAA pollution control requirements are automatically enforceable policies of the state management programs and, therefore, states are not required to submit as program changes any changes to state CAA and CWA provisions.

[18] See CWA 404(b)(1), Subpart A

[19] 81 FR 44220, 44228 (July 7, 2016), available at: https://www.govinfo.gov/content/pkg/FR-2016-07-07/pdf/2016-16147.pdf

[20] See https://www.nae.usace.army.mil/Missions/Disposal-Area-Monitoring-System-DAMOS/Disposal-Sites/CentralLong-Island-Sound/

[21] DAMOS (Contribution 197) at p. 2.

[22] See CLDS and WLDS Site Designation Rule (81 FR 44220, 44224) (July 7, 2016).

the designated open-water sites."[23] DOS conditionally concurred with the site designation of CLDS (40 CFR § 228.15(b)(4)) on April 27, 2016, on the condition that use of the site remain consistent with the associated site restrictions and the EPA revised Site Management and Monitoring Plan (November 2018).[24] DOS has recently objected to the disposal at CLDS of unsuitable material for other proposed disposals of quantities <25,000 CY.[25]

The applicant is proposing to "cap" the proposed 24,500 CY of contaminated material with a future and separate unknown quantity of dredged material. The chemical concentrations of toxicity and exceedances remain unchanged in the presence of capped material.[26] As stated above, the Corps' finding for the proposed activity concluded that applying the "testing and evaluation requirements set forth in Section 404 of the CWA the sediments to be dredged from Norwalk Cove Marina are considered unsuitable for unconfined open water placement at CLDS without additional testing to further evaluate the potential risk to human health and the environment.[27] In addition, the Corps identified the following alternatives: "Alternative options include upland disposal (which may require additional sampling and testing depending on the selected disposal location) or capping of the dredged material at CLDS. Per 40 CFR § 230.72(b) capping the sediment at a specified 404 disposal site with material suitable for open water placement can be used to isolate the dredged material after discharge."[28] However, the Corps failed to note that the CLDS site restriction rules do not permit capping at CLDS, and that CLDS is also not a "specified 404 disposal site."[29]

The Proposed Activity is Improperly Segmented and Lacks a Cumulative Impacts Analysis

Cumulative impacts are the successive, incremental and combined impacts of one or more activities on any coastal policy concern. These may be the product of past, present or future activities, can be both positive and negative, and can vary in intensity as well as spatial and temporal extent. They can therefore occur at the project-level (for example where repeated activities are undertaken at the same site) or regional-level (for example multiple projects in close proximity). Given the Sound's 100-year history as a "waste dumping ground"[30] for polluted sediments and other wastes, the analysis of the cumulative impacts of disposal of any quantity of dredged material at CLDS becomes a matter of paramount importance.

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[23] See "Response to Public Comments on Proposed Amendments to Designation of Central and Western Long Island Sound Dredged Material Disposal Sites (81 FR 7055; February 10, 2016)", June 2016, at p. 2, available at: https://www.epa.gov/sites/production/files/2016-07/documents/epa-r01-ow-2016-0068_response_to_comments.pdf

[24] See DOS Conditional Concurrence with CLDS and WLDS site designation rule (April 25, 2016), available at: https://www.dos.ny.gov/opd/programs/pdfs/consistencyDecisions/F-2016-0116CDL.pdf.See also CLDS and WLDS Site Designation Rule (81 FR 44220) (July 7, 2016).

[25] See DOS Objection letter (October 10, 2017) to a consistency certification for disposal of 20,000 CY containing unsuitable dredged material from the Milford Wharf Company at CLDS (DOS File # F-2017-0195); see DOS Objection letter (August 17, 2017) to a consistency certification for disposal of 2,700 CY containing unsuitable dredged material from Westcott Cove Shippen Ave. at CLDS (DOS File # F-2017-0168; see DOS Objection letter (April 7, 2017) to a consistency certification for disposal of 24,900 CY containing unsuitable dredged material from the Byram Shore Park Marina at Western Long Island Sound Disposal Site (WLDS) (DOS File # F-2016-0952).

[26] CTDEEP improperly concludes that unsuitable dredged material "becomes: suitable if capped by concluding without scientific findings that the 24,5000 CY "is suitable for open water disposal at Central Long Island Sound Disposal site provided that is capped with suitable sediments." See CTDEEP LWRD License Application Pre-Submission Consultation Form Dredged at p. 2 (p. 81 of 200 of the federal consistency submission to DOS)

[27] SD at p. 6.

[28] Id.

[29] CLDS is an ODA § 102 designated site and not a "specified 404 disposal site". See CWA 40 CFR § 230.80 "Advanced identification of disposal areas." (Subpart I – Planning to Shorten Permit Processing Time) CWA has a regulatory process for the advanced selection of disposal locations that is separate and distinct from ODA section 102. See 81 FR 44220, 44226. The CLDS site designation rule confirms that ODA and CWA site selection process are distinct and separate by stating "While the CWA does not apply specifically to an EPA designation of a long-term dredged material disposal site under the MPRSA, future federal and non-federal projects involving dredged material disposal in Long Island Sound will require both a section 404 permit as well as a State Water Quality Certification pursuant to section 401 of the CWA."

[30] See *Town of Huntington v. Marsh*, 859 F.2d 1134, 1135 (2nd Cir. 1988).

The applicant's submission fails to acknowledge the cumulative impacts of the disposal of unsuitable dredged material. The analysis of cumulative impacts or effects of designating ocean disposal sites is required under the CZMA regulations, the ODA regulations, and the CWA regulations.[31] As noted in federal regulations at 15 C.F.R. § 930.11(g):

> [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 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.[32]

The applicant's statement that the disposal of 24,500 CY "is suitable for open water disposal at the Central Long Island Sound Disposal Site with capping by suitable material",[33] improperly segments the proposed open water disposal activity from future activities that have not been identified or disclosed. It also avoids biological testing of the contaminated dredged material. Each disposal must be looked at through the lens of not only the disposal proposed but also reasonably foreseeable future "activities" that come after it and the cumulative adverse coastal effects those activities may have. As described further below at pp. 13-14, contaminated dredged material that is slated to be capped will remain unconfined at the disposal site while awaiting a future undisclosed amount of suitable dredged material to cap the disposal at an unknown future date. Frequently, several seemingly unrelated disposal projects that require capping are timed to occur within the same disposal season in order to create efficiencies and schedule one capping event for all.[34]

In addition, and as evidence of improper segmenting of the projects to evade ODA testing requirements, the applicant's failure to include the material to be used as cap within its total project amount leads to the mischaracterization of the applicant's project as a project falling under the 25,000 CY CWA threshold. Once the capping materials are considered together with the 24,500 CY that the applicant intends to be dredged and disposed at CLDS, the total amount of material to be disposed by the applicant will exceed 25,000 CY, thus turning the applicant's project into one that must be tested using ODA standards.

The improper segmentation of the dredged material, which was separately evaluated and determined to be unsuitable, from an unknown and undisclosed amount of "cap" material has been previously found to be a violation of the National Environmental Policy Act (NEPA). In Natural Resources Defense Council, Inc. v. Callaway,[35] 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 U.S. Navy as the final environmental impact statement had only evaluated the environmental impact of a *specific* dredging and dumping project. 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

[31] See ODA § 102(a)(E) and (F); 40 CFR § 228.6(a)(7); 15 CFR § 930.11(g); and 40 CFR §§ 230.11(a), (b), (c), (e), (g); §§ 230.31 and 230.32; §§ 230.61(b)(2) and (3).
[32] 15 CFR § 930.11(g).
[33] Norwalk Federal Consistency Certification at p. 35 of 200.
[34] The applicant has not identified any other disposal projects that might be coordinated to take place within the same dredging season or that would be capped at the same time. The Corps has previously deemed multiple disposals, all in need of "capping" as the dredged material is assumed contaminated, as having been disposed without suitable "cap" material and remained exposed to the Sound ecosystem for five or more months See i.e. DAMOS No. 197 at Appendix B at pp. 7-10, and 17-21. See infra fn. 37.
[35] 524 F.2d 79 (2nd Cir. 1975).

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."[36] In this case, the applicant segmented its proposed activity and treated the proposed capping and possibly other similar projects as "discrete" events in contravention of this well-settled caselaw.[37]

Coastal Policy Analysis

In conducting its federal consistency review, DOS assesses the effects of this project on any coastal use or resource of the New York coastal area. As noted in federal regulations, coastal 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.

As described in detail below, DOS objects to the applicant's consistency certification because the deposition of potentially toxic quantities of the multiple metals, pesticides, PAHs, and PCBs will have adverse effects on New York's coastal resources and uses. Additionally, the CZMA consistency certification and supporting information fails to evaluate and describe the cumulative and secondary, direct and indirect effects and impacts on New York State's coastal land and water uses and resources, including impairment of the state water quality standards.

CLDS is an ODA designated site that mandates the use of biological testing (Tier IV) if the material is initially found unsuitable, to ensure contaminants are not bioavailable (at least in a laboratory setting). As the Corps identified in the Suitability Determination,[38] biological testing would be required before the disposal of the applicant's dredged material could proceed as proposed at CLDS. The applicant's selection of capping as an appropriate disposal method is not only not permitted at this site, it also attempts to avoid the requirement that any proposed disposal of the identified unsuitable materials must undergo biological testing. The applicant has not provided any information as to how its proposed use of this ODA Section 102 designated site, which prohibits capping, for the identified unsuitable dredged material conforms with the CLDS site designation rule and CLDS SMMP.

Applicable Policies

LIS CMP Policy 5: Protect and improve water quality and supply in the Long Island Sound coastal area.
LIS CMP 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.[39]

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[36] Id. at 88; see also *Town of Huntington v. Marsh*, 859 F.2d 1134 (2nd Cir. 1988) (cautioning against the segmentation of open water disposal activities and that such a process is to be avoided).
[37] DOS has recently received federal consistency certifications for the additional disposal of unsuitable dredged material for individual quantities of 11,680 CY (Shore & Country Club); 850 CY (195 Investment LLC); 20,340 CY (T. Greenwich); and 12,350 CY (Dutch Wharf Boatyard & Marina). All the proposed activities, in addition to Norwalk proposed activity, are seeking to dispose of the unsuitable dredged materials as a discrete activity and capping the material with an undisclosed "suitable" material. None of the proposed future disposals have completed additional biological testing but are instead seeking to use a CWA management method of capping at CLDS, an ODA section 102 designated site that prohibits the disposal of or capping of unsuitable dredged material.
[38] See SD at 6.
[39] See LIS CMP at p. 78.

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." (LIS CMP Policy 5.3). One of the principal purposes of these policies is to protect the overall water quality of Long Island Sound through a combination of managing new sources and remediating existing sources of pollution. Cumulative impacts from past, present and future dredged material disposal events must be considered when judging water quality. As one of a number of causes of water quality impairment, disposal of unsuitable dredged material in the open waters of the Sound at CLDS has significant potential to adversely affect human health and the estuarine environment.

One of the principal purposes of this policy is to protect water quality of coastal waters from adverse impacts associated with excavation, fill, dredging, and disposal of dredged material. Water quality protection and improvement in the region must be accomplished by the combination of managing new and remediating existing sources of pollution. The potential impacts of increased sediment volume required as capping material, as well as the likely efficacy of the capping material, is considered evaluating the proposed action's consistency with this policy.

Disposal of dredged material in open-water may impair water quality during the disposal process, especially when the material is deemed unsuitable for open water disposal and contains toxic levels of contaminants. Adverse effects to human health and the estuarine environment can be directly attributed to the discharge of toxic dredged sediments in open water and into the water column, in particular fine silty material that is resuspended or dispersed prior to settling on the benthic habitat. As noted in the EPA's Final Environmental Impact Statement for the Designation of Dredged Material Disposal Sites in Central and Western Long Island Sound,

> [d]redged material particles may be transported horizontally in two ways. They may be carried by local currents while still in the water column immediately after disposal, or they may be deposited on the seafloor and then periodically resuspended into the water column and transported by the currents. Most of the dredged material to be disposed in Long Island Sound consists of very fine sand to silt and clay. Low concentrations (2 to 5 percent of the dredged material) of the finest fraction of dredged material particles may persist for several hours in the water column as turbid plumes before depositing on the bottom Once deposited, current and wave energy affect the transport and dispersion of dredged material. The deep basins of western and central Long Island Sound are covered with fine-grained deposits and have recorded net accumulation rates ranging from 0.26 to 1.3 millimeters (0.01 to 0.05 inches) per month. The finest fraction of sediments may be deposited and then resuspended, transported, dispersed, and redeposited many times before ultimately being incorporated into permanent sediment deposits.[40]

These effects may be exacerbated with the presence of elevated levels of certain contaminants known to exist in LIS, such as copper. Warming ocean temperatures alter the ambient environment and can serve as a catalyst to and compound these effects that are expected to increase in the future. Moreover, the cumulative long-term impact of previous repeated disposal actions has not been adequately assessed, nor has the multitude of future proposed disposal actions. In addition, this disposal action is dependent on unidentified future disposal actions

[40] See Final Environmental Impact Statement for the Designation of Dredged Material Disposal Sites in Central and Western Long Island Sound, Connecticut and New York, Prepared by the U.S. Environmental Protection Agency, New England Region, In Cooperation with U.S. Army Corps of Engineers, New England District, March 2004, p. 4- 16. (Internal citations omitted); see also SAIC, 1994. Analysis of the Contribution of Dredged Material to Sediment and Contaminant Fluxes in Long Island Sound. Special Technical Report. Contribution #88. Prepared for the U.S. Army Corps of Engineers, New England District, Waltham, MA. Disposal Area Monitoring System (DAMOS) Report. June; Kim, B.H. and H.J. Bokuniewicz. 1991. Estimates of sediment fluxes in Long Island Sound. Estuaries.14:237-247.

which would be required to isolate and sequester (i.e., "cap") the toxic contaminants from the waters and biota of the Sound.

Site reference material is the baseline of evaluation, but it only tests whether the sediments proposed for open water disposal present a threat significantly worse than the sediments already in the vicinity of the site. The dredged material has not been evaluated to determine if it would present an increased threat when added to the reference sediments, which may be contaminated by any number of sources other than dredged spoils that are dumped in the Sound. The consistency certification or the information and data submitted by the applicant failed to address the cumulative effects of continuing disposal of contaminated sediments at the proposed sites using reference data that, itself, reflects elevated levels of contamination from the ubiquitous presence of chemical contamination in the Sound.

Sediment description and chemical composition of the 24,500 CY of dredged materials

A series of four sediment core/sample areas (Stations A, B, C, D, and E) were taken from the proposed project dredging area revealing that the dredged materials would be 95%, 98.1%, 96%, 94.2% and 95.8 % fine-grained sediments with minimal sands including two samples (RS-3 and RS-4) with minimal to zero presence of medium to coarse grain sands.[41]

Table 1: Gain Size Distribution

Grain Size %	Station A	Station B	Station C	Station D	Station E
Gravel	0	0	0	0	0
Coarse Sand	0.4	0.1	0.2	0.2	0.1
Medium Sand	0.4	0.3	0.8	1	0.8
Fine Sand	4.2	1.5	3	4.6	3.3
Fines	95	98.1	96	94.2	95.8

The results of the sediment analysis for contaminants of concern (COCs) in the Corps SD[42] compare the contaminant levels to the effects-range low (ERL), effects-range medium (ERM), and the CLDS reference site values. The SD defines the chemical concentrations (Sediment Quality Guidelines) testing for the presence of contaminants in dredged materials expressed as effects-range low (ERL) and effects-range median (ERM). (See Table 2). The ERL and ERM are not considered to be toxicity pass-fail thresholds, instead "the ERL and ERM values are empirically derived guidelines based on a large number of studies nationwide that identify contaminant levels that indicate probability of toxic effects to inform decision making."[43] The range between ERL and ERM can be quite large for some contaminants and the exact effects under certain conditions remains unknown or variable. The ERL and ERM values are then compared to the disposal site reference values (REF) to compare the levels of contamination in the dredged material to the benthic habitat of the disposal site. The USACE sediment analysis evaluation further instructs:

> Effects are considered unlikely at concentrations below the ERL with an increased probability of toxic effects as concentrations increase. At concentrations above the ERM toxic effects are considered likely. For samples with sediment concentrations that fall between the ERL and ERM levels, consideration is given to both the number contaminants that exceed ERL values and where

[41] See SD at Table 3, p. 4.
[42] See U.S. Army Corps of Engineers Suitability Determination, July 21, 2020, Table 3 at p. 54.
[43] SD at p. 4. The USACE is the preparer of the applicant's Suitability Determination.

the concentrations fall in the range between ERL and ERM values in assessing the probability of toxic effects and the potential need for additional testing.[44]

The following contaminant exceedances as compared to the CLDS reference sites are confirmed in the Corps SD for the proposed activity as follows:

Table 2. Suitability Determination for Norwalk Cove Marina, Norwalk Harbor, Norwalk, CT, File Number NAE-2007-457

Norwalk Cove Marina Stations				Station A	Station B	Station C	Station D	Station E
NAE-2007-00457	ERL	ERM	CLDS					
Total Organic Carbon %			1.76	2.0	1.8	2.1	2.1	2.5
Metals (mg/kg)								
Arsenic	8.2	70	5.86	6.26	6.87	8.64	8.04	7.4
Cadmium	1.2	9.6	0.08*	1.97	1.97	2.07	2.42	2.17
Chromium	81	370	35.7	69.7	69.6	80.5	84.6	73.4
Copper	34	270	26.1	121	124	142	177	140
Lead	46.7	218	24.3	53.2	48.1	59.3	64.8	50.8
Mercury	0.15	0.71	0.112	0.440	0.450	0.560	0.660	0.450
Nickel	20.9	51.6	20.0	25.9	25.4	27.3	29	26.8
Zinc	150	410	91.3	169	182	194	208	198
Total LPAH (ug/kg)	552	3,160	77.1	48.3*	37.3*	29.3*	174*	101.4*
Total HPAH (ug/kg)	1,700	9,600	725	720	753	877	1653	1180
4,4'DDD (ug/kg)	2	20	0.38*	0.33U	0.33U	1.80	3.20	0.33U
4,4'DDE (ug/kg)	2.2	27	0.56	1.8	0.50U	3.40	4.30	2.30
4,4'DDT (ug/kg)	1	7	0.15*	0.33U	0.33U	1.10	1.70	0.33U
Total DDX	1.58	46.1	1.09*	2.46*	1.15*	6.3	9.2	2.96*

[44] SD at p. 4.

Total PCBs (ug/kg)	22.7	180.0	7.3*	35.7*	26.7*	38.8*	78.1*	50.5*

Source: USACE Suitability Determination, at p. 5, Table 3. Bulk Sediment Chemistry (December 2019) [45]
*One of more non-detect or estimated value used in the calculation
Yellow shaded values above the ERL
Non-detects reported as half the MDL
PCB means polychlorinated biphenyls
DDD, DDT and DDE are pesticides
PAH means polycyclic aromatic hydrocarbons
TPAH means total high molecular weight PAHs
Reference site data from DAMOS monitoring surveys (2016 CLDS)

The measured values for cadmium, copper, mercury, nickel, total HPAH, DDD and total PCBs in the applicant's sediment exceeded the ERL and are within the range of variable or unknown toxicity, dependent upon site conditions. As noted in the Corps SD,

> [a]ll samples had total PCB concentrations above the ERL and 3 to 10 times the CLDS reference site concentration. All samples had copper concentrations 3.5-5 times the ERL and mercury concentrations 3 to over 4 times the mercury ERL and the CLDS reference concentration. All five samples also had concentrations of cadmium, lead, nickel and zinc above the ERL and CLDS reference site concentrations. Samples C and D had total DDX pesticide concentrations 3 to almost 6 times the ERL and samples A and E also had total DXX pesticide concentrations above the ERL.[46]

Certain metal concentrations of the samples also exceed the existing concentrations within the boundary of CLDS, which are Zinc (140 mg/kg or µg/g); Chromium (80.0 mg/kg or µg/g); Nickel (23.2 mg/kg or µg/g); Copper (76.7 mg/kg or µg/g); Cadmium (0.59 mg/kg or µg/g); Mercury (0.20 mg/kg or µg/g); and Lead (44.6 mg/kg or µg/g).[47] The additional chemical contaminants of the samples also exceeded the CLDS site values for PAH (1036 ng/g or ug/kg); PCB (59.0 ng/g or ug/kg); and DDT (0.4 ng/g or ug/kg).[48]

Cumulative effects tests have not been conducted to measure the levels of contamination released from capped mounds by fauna, food chain effects, or bioaccumulation at CLDS. Over the longer term, such effects could be having impact on resources in New York. In particular, as noted in the Corps SD,

> [b]ased on the weight of evidence including the conceptual site model, low moderate project risk ranking, project footprint, and the elevated sediment chemistry results for these sediments, an increased potential to cause unacceptable adverse effects to the environment is indicated. According to the testing and evaluation requirements set forth in Section 404 of the CWA the sediments to be dredged from Norwalk Cove Marina are considered unsuitable for unconfined

[45] Highlights are from the original document.
[46] SD at p. 5
[47] See LIS Dredged Material Management Plan Programmatic Environmental Impact (DMMP PEIS) at Tables 4-8. available at: https://www.nae.usace.army.mil/portals/74/docs/Topics/LISDMMP/LISDMMP%20Final/02-LIS-PEIS-Final-Dec15.pdf.
[48] See Id. at Table 4-9. The USACE conducted an experiment at CLDS (Field Verification Program) in the 1980s by leaving 72,000 CTY of contaminated dredged material from Black Rock Harbor at the site and monitoring over the next few decades found the material, consisting of organic-fine-grained material containing heavy metals, PAHs, and PCBs, to have demonstrated to "have both acute and chronic toxicity." Id. at p. 4-67.

open water placement at CLDS without additional testing to further evaluate the potential risk to human health and the environment.[49]

Cadmium is a naturally occurring metal that is generally present as an industrial by product associated with the production of other metals such as zinc, lead or copper. Soluble forms of cadmium migrate in water while insoluble forms are immobile and will deposit and adsorb to sediments. The sensitive targets of cadmium toxicity are the kidney and bone following oral exposure and kidney and lung following inhalation exposure. Studies in animals support the identification of these sensitive targets and provide some suggestive evidence that the developing organisms may also be a sensitive target. There is also evidence to suggest that cadmium is a human carcinogen. Some effects that have been observed in humans and/or animals include reproductive toxicity, hepatic effects, hematological effects, and immunological effects.[50]

Copper is highly toxic in marine environments and continuous exposure has chronic effects on behavior, growth and reproduction rates and success of benthic biota, as well as finfish, crustaceans, turtles and marine mammals.[51] These contaminant laden constituents of dredged material will bio-accumulate and remain exposed to transfer throughout the ecosystem. Chronic plumes and frequent resuspension of particles are also expected due to the fine-grained nature of the materials and winnowing of the mounds. The chemical effects associated with the disposal to the site and surrounding environment cause physical disturbances to the site and surrounding areas that result in varying degrees of biological and chemical effects.[52]

Mercury occurs naturally and is distributed throughout the environment by both natural and anthropogenic processes. The natural global bio-geochemical cycling of mercury is characterized by degassing of the element from soils and surface waters, followed by atmospheric transport, deposition of mercury back to land and surface water, and sorption of the compound to soil or sediment particulates. Mercury deposited on land and open water is in part re-volatilized back into the atmosphere. Dietary intake is the most important source of non-occupational exposure to mercury, with fish and other seafood products being the dominant source of mercury in the diet. Most of the mercury consumed in fish or other seafood is the highly absorbable methylmercury form. The health effects of mercury vary considerably based on route of exposure and the chemical state of the mercury but can have systemic, immunological, neurological, reproductive, developmental genotoxic and carcinogenic effects.[53]

Cadmium, mercury, nickel, and copper adsorb to sediments and are exposed to bottom-feeders and microorganisms, which is consumed and bioaccumulate and biomagnify through the food chain, thus causing human consumptive risks. Contaminants like cadmium and copper can also have synergistic effects. The Corps has stated: "During disposal operations, the anaerobic sediments are mixed with aerated surface water, and a complex chemical interaction occurs. Heavy metals such as cadmium, copper, chromium, lead, and zinc, which had been stabilized in oxygen-free sediments, form precipitates and coagulate in the presence of oxygen."[54] As Long Island Sound benthic chemistry is transformed under climate change, preliminary scientific evidence

[49] SD at p. 6.
[50] U.S Dept. of H&HS 2012. Toxilogical Profile for Cadmium available at https://www.atsdr.cdc.gov/toxprofiles/tp5.pdf.
[51] Kennish, M. 2002. Environmental threats and environmental futures of estuaries. Environmental Conservation. Available at https://www.researchgate.net/publication/2 l 6769684 _ Environmental_threats _and_ environmental_ future_ of_ estuaries
[52] See Varekamp, J., et al., "Metals, Organic Compounds, and Nutrients in Long Island Sound: Sources, Magnitudes, Trends, and Impacts" Chapter 5, J. S. Latimer et al. (eds.), Long Island Sound: Prospects for the Urban Sea (2014); 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).
[53] U.S Dept. of H & HS 2012. Toxilogical Profile for Mercury available at https:/ /www.atsdr.cdc.gov/toxprofi les/tp46.pdf.
[54] U. S. Army Corps of Engineers (1987). Beneficial Uses of Dredged Material - Engineer Manual No. 1110-2-5026, Washington. DC: U.S. Army Corps of Engineers - Engineering and Design, pp. 2-8.

warns that legacy heavy metal contaminants will drastically change bioavailability and increase in toxicity.[55] 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.

Scientific evidence warns that legacy heavy metal contaminants will drastically change bioavailability and increase in toxicity,[56] accordingly, LIS benthic chemistry will be foreseeably transformed due to climate change. The continuing exposure and permanent presence of contaminated and sediment-bound toxins may be remobilized by storm and flooding activity in LIS, as well as changing benthic layer water chemistry under a range of environmental factors -- such as increasing temperatures and acidification, nitrogen loading and anoxic conditions -- that are magnified by climate change.[57] The resuspension of sediments during and after disposal, including during foreseeable future climate changes, could result in the disturbance through re-exposure and bioavailability of contaminants in dredged sediments and may lead to substantial local oxygen depletion.[58] The applicant has produced no scientific evidence to counter New York's concerns regarding bioavailability and these cumulative impacts.

Adverse impacts of chemical contamination to an ecosystem may not manifest until after several generations of species propagation. Contaminants have been shown to bioaccumulate in benthic and aquatic marine species with long term, low level exposure resulting in an array of behavioral and physiological impacts on specific species.[59] "Bioavailability is affected by the complex interaction between a given contaminant and sediment [and] [t]here can be a high degree of variability in the concentration of a contaminant that is bioavailable and likely to cause toxicity in different sediments, and no single concentration of a contaminant in sediment can accurately represent a threshold toxicity for benthic organisms in all sediments."[60] For example, metal bound to

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[55] See "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.; see also 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. Camargoa and Á. Alonsob (2006) Ecological and toxicological effects of inorganic nitrogen pollution in aquatic ecosystems: A global assessment. Environment International, Vol 32, Issue 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 (2012). "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

[56] See Id.

[57] See 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(1): 13-23.; 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.;

[58] See LIS DMMP PEIS at Tables 4-8 and 4-9.

[59] See 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; see also 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, at pp. 10047−10054.

[60] Screening and Assessment of Contaminated Sediment, NYS Department of Environmental Conservation, Division of Fish, Wildlife, and Marine Resources, Bureau of Habitat (June 24, 2014) at pp. 7-8, available at: https://www.dec.ny.gov/docs/fish_marine_pdf/screenasssedfin.pdf

a clay particle is not available for uptake through a fish gill system but may become bioavailable through the digestive system following ingestion.[61] The bioavailability of the metals is correlated to the presence of sulfide in the sediment to determine the presence of an insoluble precipitate; however, an increasingly acidic environment (lowering of pH) as a result of a changing climate will increase the bioavailability of metals to the ecosystem organisms.[62]

Capping of unsuitable material is not consistent with this policy

According to the Corps SD, the proposed activity relies on undisclosed quantities of "suitable" material to serve as cap for the toxic material and to future dredging projects and thus maintains the unsubstantiated assumption that merely "burying" the multiple metals and pesticide, PAH, and PCB exceedances of contamination with future dredged material will remedy the harmful environmental impacts that will otherwise adversely impact the coastal zone and New York's resources and water quality. Instead, the disposal of multiple metals, pesticides, PAHs, and PCBs into the marine environment at CLDS will cause burrowing organisms to be exposed to multiple metals, pesticide, PAH, and PCB exceedances of contamination by ingesting the material and making it bioavailable through the food chain. Moreover, future disposals of dredged sediments may also contain elevated levels of contaminants, thus layering toxic materials upon toxic materials.

When capping is required as a "management measure" to sequester 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. The disposal of "cap" material then disturbs the unsuitable material causing spatially large dispersals. 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.[63] These effects may be significantly exacerbated with the presence of elevated levels of known contaminants, such as mercury, PCB congeners, and copper. Further, capping disturbs the underlayment, causing spatial expansion of dispersal footprints. Experience in Long Island Sound, as well as numerous locations, has shown that capping dredged material is an unreliable management technique for isolating contaminant-bearing fine-grained sediment from the surrounding environment, particularly in depths of water such as that found at CLDS. Moreover, sediment dumping before the unidentified "capping" occurs will leave the multiple metals, pesticide, PAH, and PCB exceedances of contamination available to resuspension and disturbance thus serving as a continuous source of water quality impairment for New York's coastal area. These effects may be significantly exacerbated with the presence of elevated levels of known contaminants, such as mercury, PCB congeners, and copper.[64] Moreover, future disposals of dredged sediments may also contain elevated levels of contaminants, thus layering toxic materials upon toxic materials.

Based on the potential risks to human health and ecological integrity discussed above, and the failure to adequately consider alternatives that would reduce this risk, the proposed activity is not consistent with these policies.

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[61] Id.

[62] See Id. at p. 29. Further the SD and CLDS SMMP do not discuss the presence of sulfur in the sediment samples as the excess presence of metals when compared to sulfur concentrations renders the metals bioavailable for uptake and contamination. See LIS DMMP PEIS at p. 4-84 (recognizing the adverse impacts from climate change on lowering pH levels in the Sound).

[63] See J. Brannon, R. Hoeppel, T. Sturgis, I. Smith, Jr., D. Gunnison (1985), Effectiveness of Capping iii Isolating Contaminated Dredged Material from Biota and the Overlying Water. U.S. Army Corps of Engineers Technical Report D-85- I 0: S. Nadeau and M. Skaggs (2015), Analysis of Recontamination of Completed Sediment Remedial Projects in: A.I. 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).

[64] See SD, Table 4, p. 5; see also LIS DMMP PEIS at p. 4-64 "Maximum concentrations of total PCBs in bluefish, striped bass, winter flounder, and scup were elevated above those levels at many locations", which includes CLDS.

LIS CMP Policy 6: Protect and restore the quality and function of the Long Island Sound ecosystem.
LIS CMP 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.[65]

The LIS ecosystem consists of physical components, biological components, and their interactions. Ecosystem health relative to its function has been a focus of NYS for several decades. Healthy ecosystems support functional habitats, providing a resilience to risk for sustainable resources. LIS CMP Policy 6 seeks to protect and restore the ecological quality of the Sound. The ecological integrity of the Sound is protected by the avoidance of segmentation and ensuring the habitats of fisheries maintain functionality and avoid adverse changes to these systems. The high natural resource value of the Long Island Sound ecosystem is a product of its physical and biological components, and their interactions. Certain natural resources that are important for their contribution to the quality, function and biological diversity of the Sound ecosystem have been specifically identified by the State for protection. The disposal of dredged material, and its attendant effects on water quality, are likely to adversely affect other natural resources within Long Island Sound. The contaminants typically found in dredged material are also likely to affect the restoration of vulnerable plant and animal species and the ecosystems that depend on them.[66]

LIS water quality impairment should be viewed from a perspective of environmental degradation and ecosystem stressors. The Sound's cumulative legacy of long-term 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.

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.[67] The short-term, direct environmental impacts of the deposition of dredged material at an open water disposal site include:

1) water quality impacts (turbidity and toxicity) during the disposal process;
2) permanent alteration of the bottom substrate through deposition of material;
3) loss of bottom dwelling organisms through burial and suffocation; and
4) resuspension, transport, and redeposition of contaminants during disposal.

[65] See LIS CMP at pp. 79-80.
[66] See 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).
[67] See F. Berkes (2015). *Coasts for People: Interdisciplinary Approaches to Coastal and Marine Resource Management*. New York: Routledge.

The long-term concerns associated with dredged material disposal at an open water disposal site include:

1) potential for cumulative effects on both water quality and the benthic ecology of repeated, consecutive dumping episodes over the course of the project schedule;
2) cumulative, indirect and secondary effects on the LIS ecosystem from use of several designated open water disposal sites and in concert with other stressors acting on the system;
3) the possibility of bioaccumulation of contaminants up the food chain;
4) nutrient enrichment at the disposal site leading to localized hypoxic events; and
5) the possibility for transport/ migration of dredged materials outside the boundary of the disposal site.

Over the past five decades, major efforts have been undertaken by all levels of government and by the general public to improve the quality of LIS. Billions of taxpayer dollars have been invested to restore LIS, and laws, regulations and policies have been enacted and implemented to stem the tide of the estuary's decline. The efforts to maintain LIS extended to the national level through a range of designations and federal laws beginning in 1973, when the New England River Basins Commission -- a partnership involving the federal government, New York, and Connecticut -- developed the Long Island Sound Regional Study to conserve the Sound as an important resource for the region. The EPA Secretary has previously observed that "[i]n 1987, Long Island Sound was designated by the U.S. Environmental Protection Agency (EPA), with the cooperation of the Long Island Sound Study, as an Estuary of National Significance under the Clean Water Act's National Estuary Program, and that […] the Long Island Sound Study found that 'Long Island Sound is a national treasure, to be prized for its beauty'."[68] NYS has sought to continue to these advancements by pursuing the goal to reduce or eliminate open water disposal in LIS and not to increase and expand such use.[69]

The LIS CMP and subsequent interstate consistency approval provides for DOS to complete federal consistency review of CWA Section 404 and ODA Section 103 permits because of demonstrated adverse impacts of the continued unabated use of open water disposal in the Sound.[70] The applicant dismisses the reasonably foreseeable effects on New York's coastal resources and uses by stating that "It is anticipated that the dredged sediment will be disposed of at the Central Long Island Sound Disposal Site, which is over ten miles from the NY shoreline. Therefore, the disposal activities will not significantly interfere with the natural coastal processes in New York."[71] This inaccurate statement does not account for the fact that the closest corner of CLDS to the New York state border in the Sound is only approximately 1.5 miles away.[72] As incoming ocean waters upwell along the Connecticut shore and move oceanward via a counterclockwise gyre along the northern shore of Long Island, NY,[73] this ocean physiology of the Sound means that material and the attendant unsuitable high level

[68] DOS Objection to Broadwater, LNG (April 10, 2008) at p. 14, available at https://www.dos.ny.gov/opd/programs/pdfs/consistencyDecisions/F-2006-0345Dec.pdf; see also 33 U.S.C. § 1330; P.L. 100-4 §§ 317, 320(B). National Estuary Program. "The Administrator shall give priority consideration under this section to Long Island Sound, New York and Connecticut."

[69] See DOS conditional concurrence letter for CLDS and WLDS (April 25, 2016).

[70] See 15 CFR Part 930 Subpart I; see also 2006 NOAA Approval to DOS for Interstate consistency review in LIS to include activities in Connecticut state waters to the 20-foot bathymetric contour closest to the Connecticut shoreline. See LIS CMP Routine Program Change Approval February 26, 2002 at pp. 1-4; see also LISCMP. (This special area management plan contains 13 enforceable coastal policies which provide region-specific standards addressing the economic, environmental, and cultural characteristics of the LIS coastal region.); see also letter dated March 28, 2006 NOAA Approval Letter at pp. 26-28/254 (documenting the adverse coastal effects of open water disposal in LIS).

[71] Norwalk Marina Federal Consistency Certification policy analysis at p. 1.

[72] See 40 CFR § 228.15(b)(4) Location: Corner Coordinates (NAD 1983) 41°9.5′ N., 72°54.4′ W.; 41°9.5′ N., 72°51.5′ W.; 41°08.4′ N., 72°54.4′ W.; 41°08.4′ N., 72°51.5′ W.

[73] See ENSR International 2001. Physical Oceanographic Evaluation of Long Island Sound and Block Island Sound; see Long E.E. 1978 Tide and Tidal Current Observations from 1965 through 1967 in Long Island Sound, Block Island Sound and Tributaries. NOS Oceanographic Circulatory Survey Report No. 1:91 pages. see also Final Environmental Impact Statement for the Designation of Dredged Material Disposal Sites in Central and Western Long Island Sound. September 2003. U.S. Environmental Protection Agency, New England Region, Boston, MA. U.S. Army Corps of Engineers, New England Division, Concord, MA. Appendix G1. Section 2.1.2.

chemistries disposed of in Connecticut waters will be moved through natural processes of currents and uptake by benthic organisms and finfish through bioaccumulation. The adverse impacts to the ecology of the Sound and New York State waters can be neither denied nor ignored.

These impacts can manifest themselves beyond the borders of the proposed disposal location in sensitive areas including nearby designated Significant Coastal Fish and Wildlife Habitats (SCFWH) in both Long Island Sound and in waters proximate to the City of New York. These designated SCFWHs include: Huntington Bay, Lloyd Harbor, Caumsett State Park, Lloyd Point, Oyster Bay and Cold Spring Harbor, Hempstead Harbor, Playland Lake and Manursing Island Flats, Marshlands Conservancy, Prospect Point, Premium River- Pine Brook Wetlands, Huckleberry Island, Pelham Bay Park Wetlands, Manhasset Bay, Little Neck Bay, North and South Brothers Islands and potentially others more distant.[74] The narratives that describe these SCFWH generally discuss the importance of maintaining high water quality in these areas and preventing the bioaccumulation of pollutants.

Cadmium, mercury, and copper adsorb to sediments and are exposed to bottom-feeders and microorganisms, which are consumed and bioaccumulate and biomagnify through the food chain, thus causing human consumptive risks. Contaminants like cadmium and copper can also have synergistic effects. The Corps has stated: "During disposal operations, the anaerobic sediments are mixed with aerated surface water, and a complex chemical interaction occurs. Heavy metals such as cadmium, copper, chromium, lead, and zinc, which had been stabilized in oxygen-free sediments, form precipitates and coagulate in the presence of oxygen."[75] It remains unclear from the information provided by the applicant 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 is the nature of potential trophic changes likely to result from such activities, and these physical habitat alterations will affect species colonization and may result in lower biodiversity and longer re-colonization periods.[76]

Due to the above considerations, this proposal is inconsistent with these policies.

LIS CMP Policy 8: Minimize environmental degradation in the long Island Sound coastal area from solid waste and hazardous substances and wastes.

LIS CMP Policy 8.1: Manage solid waste to protect public health and control pollution.

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.[77]

LIS CMP Policy 8.3: Protect the environment from degradation due to toxic pollutants and

[74] The habitat narratives are found at: http://www.dos.ny.gov/opd/programs/consistency:scfwhabitats.html and the SCFWH maps can be viewed, and the GIS Layers and metadata downloaded at: http://opdgig.dos.ny.gov/#/map

[75] U.S.: Army Corps of Engineers (1987). Beneficial Uses of Dredged Material - Engineer Manual No. 1110-2-5026 Washington. DC: U. S. Army Corps of Engineers - Engineering and Design, pp. 2-8.

[76] See 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.

[77] See LIS CMP at p. 81. "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." Id.

substances hazardous to the environment and public health.

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.[78]

The intent of this policy is to protect people from sources of contamination and to protect Long Island Sound's coastal resource from degradation through proper control and management of wastes and hazardous materials. The open-water disposal of contaminated dredged material will result in adverse effects on aquatic species and the benthic community directly through sediment dispersal through the water column and burial. The effects of chemical contamination may not be manifest until after several generations of species propagation and at such time, the adverse impacts would be irreversible.

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.[79] 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."[80] 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, remains unknown.

The consistency certification or the information and data submitted by the applicant failed to address the cumulative effects of continuing disposal of contaminated sediments at CLDS using reference data that, itself, reflects elevated levels of contamination from the ubiquitous presence of chemical contamination in LIS. The proposed activity's dredged material contamination levels confirm the presence of toxic metals, pesticides and PCBs that exceed the CLDS reference site levels and the public health minimum standards for toxicity. The disposal of the 24,500 CY of contaminated dredged material will continue to spread the toxic sediments from Connecticut riverine sediments to the open waters of the Sound in the absence of the adverse environmental impact review of the proposed activity. Reference material is the baseline of evaluation, but it only tests whether the sediments proposed for open water disposal present a threat significantly worse than the sediments already in the vicinity of the site. Testing dredged material to determine if it would present an increased ecological threat when added to the site sediments, which may be contaminated by any number of sources other than dredged spoils that are dumped in the Sound, is not discussed or considered by the applicant in their submission to DOS.

The proposed sediments to be disposed at CLDS contain metal level exceedances of arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc. Copper becomes toxic when present in excess. Research has indicated that copper is among the more toxic metals to aquatic animals, especially crustaceans. Toxicity profiles presented in the EPA's website concerning ecological risk assessment include information on copper as a toxic inorganic substance. According to the profile, "[c]opper is highly toxic in aquatic environments and has

[78] See Id. at p. 82
[79] See Varekamp, J., et al., "Metals, Organic Compounds, and Nutrients in Long Island Sound: Sources, Magnitudes, Trends, and Impacts" Chapter 5, J. S. Latimer et al. (eds.), Long Island Sound: Prospects for the Urban Sea (2014).
[80] Id.

effects in fish, invertebrates, and amphibians, with all three groups equally sensitive to chronic toxicity." [81] Lobster represents a valued resource to commercial fisheries and is consumed by humans. Copper will bioconcentrate in many different organs in fish and mollusks.[82] Contaminant accumulations in this resource pose direct threats in sufficient quantities to human health.[83] So too, cadmium is a chemical that adsorbs to sediments; when dredging and open water dumping occurs, the cadmium is exposed to water-column and benthic bottom-feeders and microorganisms, which in turn are consumed and bioaccumulate and biomagnify through the food chain, thus causing human consumptive risks.

In addition to the adverse effects associated with the re-introduction of dredged material contaminants to the water column and benthos, the open-water disposal of dredged material has adverse effects on aquatic species and the benthic community directly through sediment dispersal through the water column, and burial. The effects of chemical contamination may not be manifest until after several generations of species propagation. Copper is shown to have predictably fatal effects on American lobster (a LIS fishery that has declined drastically in recent years) in low concentrations. For example, copper as a heavy metal that persists indefinitely in the environment is considered lethal to lobster at concentrations of 0.056 ppm (parts per million).[84]

Due to the above considerations, this proposal is inconsistent with these policies.

Policy 11: Promote sustainable use of living marine resources in Long Island Sound

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 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.[85]

Policy 11.2 Provide for commercial and recreational use of the Sound's finfish, shellfish, crustaceans, and marine plants.

Maximize the benefits of marine resource use so as to provide a valuable recreational resource experience and viable business opportunities for commercial and recreational fisheries.

Where fishery conservation and management plans require actions that would result in resource allocation impacts, ensure equitable distribution of impacts among user groups, giving priority to existing fisheries in the state.

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[81] See Ecological Toxicity Information, E.P.A., Region 5 Superfund (https://archive.epa.gov/reg5sfun/ecology/web/htm l/toxprofiles.html); see also U.S. EPA. 1993. Wildlife Exposure Factors Handbook. vol. I. EPA/600/R-93/l 87a.; Horne, M. T. and W. A. Dunson. l 995. Effects of low pH, metals, and water hardness on larval amphibians. Archives of Environmental Contamination and Toxicology. 29:500-505.

[82] See Owen, C. A. 198 J. Copper deficiency and toxicity: acquired and inherited, in plants, animals, and man. Noyes Publications, New Jersey

[83] See Ezeonyejiaku, C.D., Obiakor, M.O. and Ezenwelu, C.O. 2011. Toxicity of Copper Sulphate and Behavioural Locomotor Response of Tilapia (Oreochromis niloticus) and Catfish (Cl arias gariepinus) Species. Online .J. Anim. Feed Res., 1(4): 130-134.

[84] "Copper was high in lobster tissue at … CLDS." LIS DMMP PEIS at p. 4-69.

[85] See LIS CMP at p. 86.

Protect the public health and the marketability of marine and fishery resources by maintaining and improving water quality.

The guidance for sub-policy 11.1 states "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." The guidance for policy 11.2 states "Maximize the benefits of marine resource use so as to provide a valuable recreation resource experience and viable business opportunities for commercial and recreational fisheries ... Protect the public health and the marketability of marine and fishery resources by maintaining and improving water quality."

The living marine resources of the Sound including those in nearby designated SFCWHs, play an important role in the social and economic well-being of the people of the Long Island Sound region. Commercial and recreational uses of the Sound's living marine resources constitute an important contribution to the economy of the region and the State. The continued use of the Sound's living resources depends on maintaining the long-term health and abundance of marine fisheries resources and the habitats, and on ensuring that the resources are sustained in usable abundance and diversity for future generations.

Given these potential impacts outlined throughout this objection, the proposed action is not consistent with these policies.

Conclusion

Your action, as currently proposed, to use the CLDS open water disposal site for the disposal of contaminated sediments with capping, is inconsistent with Long Island Sound Coastal Management Program Policies 5, 6, 8, and 11.

Pursuant to 15 CFR Part 930, Subpart H, and within 30 days from receipt of this letter, you may request that the U.S. Secretary of Commerce (Secretary) override this objection. In order to grant an override request, the Secretary must find that the activity is consistent with the objectives or purposes of the Coastal Zone Management Act, or is necessary in the interest of national security. A copy of the request and supporting information must be sent to the New York Department of State and to the federal permitting or licensing agency. The Secretary may collect fees from you for administering and processing your request.

If you would like to continue discussions with this office while pursuing an appeal, please call Mr. Greg Capobianco at (518) 474-6000. If you or your client are represented by counsel, kindly have your attorney contact Mr. Capobianco for referral to our Legal Division.

Sincerely,

Kisha Santiago-Martinez
Office of Planning, Development and
Community Infrastructure

KSM/jls
cc: OCM – Director Jeff Payne, David Kaiser, Kerry Kehoe
COE/NAE – Diane Ray (NAE-2007-457)
COE/NAN – Steve Ryba
NYS DEC/DEP Region 1 – Sue Ackerman

NYSDEC/DMR – Dawn McReynolds
CTDEEP – Brian Thompson