



PUBLIC NOTICE

US Army Corps
of Engineers
New York District
Jacob K. Javits Federal Building
New York, N.Y. 10278-0090
ATTN: Regulatory Branch

In replying refer to:

Public Notice Number: **NAN-2020-00512-EBR**

Issue Date: January 8, 2021

Expiration Date: February 7, 2021

The New York District, of the U.S. Army Corps of Engineers has received an application for a Department of the Army permit pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403), Section 404 of the Clean Water Act (33 U.S.C. 1344) and Section 103 of the Marine Protection, Research & Sanctuaries Act of 1972, as amended (33 U.S.C. 1413):

APPLICANT: Global Terminal and Container Services, LLC
1 Port Jersey
Jersey City, New Jersey 07072

ACTIVITY: Installation of a bulkhead and pile-supported wharf and dredging, with subsequent placement of the dredged material upland and in the Historic Area Remediation Site (HARS) for the purpose of remediation.

WATERWAY: Port Jersey Channel, off of Upper New York Bay

LOCATION: Global Container Terminal, City of Jersey City, Hudson County, New Jersey

A detailed description and plans of the applicant's activity are enclosed to assist in your review.

The decision whether to issue a permit will be based on an evaluation of the probable impact, including cumulative impacts, of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, consideration of property ownership and, in general the needs and welfare of the people. The decision of whether to issue a Department of the Army Permit for maintenance dredging and placement of the dredged material at the Historic Area Remediation Site (HARS) will also be based on whether the material meets the requirements of applicable implementing regulations. This activity is also being evaluated to determine that the proposed placement of dredged material will not unreasonably degrade or endanger human health, welfare or amenities, the marine environment, ecological systems or economic potentialities.

On September 26, 2000, the U.S. Environmental Protection Agency (USEPA) and U.S. Army Corps of Engineers (USACE) signed a joint Memorandum of Agreement (MOA) outlining the steps to be taken to ensure that remediation of the HARS continues in a manner appropriately protective of human health and the aquatic environment. In making the determination evaluating placement of dredged material, the criteria established by the USEPA will be applied, including the interim change to one matrix value for polychlorinated biphenyls (PCB's) as described in the joint MOA. In addition, based upon an evaluation of the potential effect which the failure to utilize this ocean site will have on navigation, economic, and industrial development, and foreign and domestic commerce of the United States, an independent determination will be made of the need to place the dredged material in ocean waters, other possible methods of disposal, and other appropriate locations.

The U.S. Army Corps of Engineers neither favors nor opposes permit issuance for the applicant's proposed activity. The purpose of this public notice is to solicit comments from the public; federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

ALL COMMENTS REGARDING THE PERMIT APPLICATION MUST BE PREPARED IN WRITING AND EMAILED TO WILLIAM.T.BRUNO@USACE.ARMY.MIL OF THIS OFFICE BEFORE THE EXPIRATION DATE OF THIS NOTICE, otherwise, it will be presumed that there are no objections to the activity.

Comments submitted in response to this notice will be fully considered during the public interest review for this permit application. Comments provided will become part of the public record for this permit application. All written comments, including contact information, will be made a part of the administrative record, available to the public under the Freedom of Information Act. The Administrative Record, or portions thereof, may also be posted on a Corps of Engineers internet web site. Due to resource limitations, this office will normally not acknowledge the receipt of comments or respond to individual letters of comment.

Any person may request, in writing via email, before this public notice expires, that a public hearing be held to collect information necessary to consider this application. Requests for public hearings shall state, with particularity, the reasons why a public hearing should be held. It should be noted that information submitted via email is considered just as carefully in the permit decision process and bears the same weight as that furnished at a public hearing.

The proposed project was reviewed based upon the "Biological Assessment for the Closure of the Mud Dump Site and Designation of the Historic Area Remediation Site (HARS) in the New York Bight and Apex," (USEPA, 1997), Based upon this review, and a review of the latest public listing of threatened and endangered species, it has been preliminarily determined that the proposed dredging and placement activities for which authorization is sought herein, may affect, but are not likely to adversely affect the following federally threatened or endangered species (Humpback Whales, Finback Whales, Right Whales, Loggerhead Turtles, Leatherback Turtles, Green Turtles, Kemp's Ridley Turtles, Atlantic Sturgeon and Shortnose Sturgeon) or their critical habitat pursuant to Section 7 of the Endangered Species Act (ESA; 16 USC 1531). The USACE New York District is conducting informal consultations with the National Marine Fisheries Service in accordance with Section 7 of the Endangered Species Act.

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires all federal agencies to consult with the National Marine Fisheries Service on all actions, or proposed actions, permitted, funded, or undertaken by the agency, that may adversely affect Essential Fish Habitat (EFH). Consultation with the National Marine Fisheries Service regarding EFH impacts and conservation recommendations is being conducted and will be concluded prior to the final decision.

Based upon a review of the latest published version of the National Register of Historic Places, the

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only known wrecks on or eligible for inclusion on the National Register at the HARS are located in Primary Remediation Area Number 1. As noted in the designation of the HARS, Remediation Material would not be allowed to be placed within 0.27 nautical miles of the identified wrecks or other wrecks that might be found. Otherwise, there are no known sites eligible for, or included in, the National Register within the proposed permit area.

Review of activities pursuant to Section 404 of the Clean Water Act will include application of the guidelines promulgated by the Administrator, U.S. Environmental Protection Agency, under authority of Section 404 (b) of the Clean Water Act. The applicant has obtained a water quality certificate on July 20, 2020 from the New Jersey Department of Environmental Protection in accordance with Section 401 of the Clean Water Act.

Pursuant to Section 307 (c) of the Coastal Zone Management Act of 1972 as amended [16 U.S.C. 1456 (c)], for activities under consideration that are located within the coastal zone of a state which has a federally approved coastal zone management program, the applicant has certified in the permit application that the activity complies with, and will be conducted in a manner that is consistent with, the approved state coastal zone management program. The applicant has obtained concurrence to their coastal zone management consistency determination on July 20, 2020 from the New Jersey Department of Environmental Protection. For activities within the coastal zone of New Jersey State, the applicant's certification and accompanying information is available from the New Jersey Department of Environmental Protection, Coastal Management Program, P.O. Box 418, 401 E. State Street, Trenton, NJ, 08625, Telephone (609) 633-2201. Comments regarding the applicant's certification, and copies of any letters to this office commenting upon this proposal, should be so addressed.

The proposed work is being coordinated with the following federal, state, and local agencies:

- US Environmental Protection Agency;
- US Department of the Interior, Fish and Wildlife Service;
- US Department of Commerce, National Marine Fisheries Service;
- US Coast Guard;
- New Jersey Department of Environmental Protection

It is requested that you communicate the foregoing information concerning this activity to any persons known by you to be interested and who did not receive a copy of this notice.

If you have any questions concerning this application, you may contact this office at (917) 790-8516 and ask for Mr. William T. Bruno. Questions about the HARS can be addressed to Mr. Mark Reiss, Chief, Dredging, Sediments and Oceans Section, Water Division, US Environmental Protection Agency, Region 2 at (212) 637-3799.

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CENAN-OP-RE
Public Notice NAN-2020-00512-EBR

In order for us to better serve you, please complete our Customer Service Survey located at <http://www.nan.usace.army.mil/Missions/Regulatory/CustomerSurvey.aspx>. For more information on New York District Corps of Engineers programs, visit our website at <http://www.nan.usace.army.mil>.

FOR
Stephan A. Ryba
Chief, Regulatory Branch

Enclosures

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DESCRIPTION OF PROPOSED WORK

The applicant, Global Terminal and Container Services, LLC, has requested Department of the Army authorization to perform regulated construction work in waters of the United States to facilitate the expansion of the existing Global Marine Terminal onto the former North East Auto Terminal (NEAT) site located in Port Jersey Channel, off of Upper New York Bay, in the City of Jersey City, Hudson County, New Jersey. The proposed regulated activities within waters of the United States would include the following:

Proposed activities include:

- Install 1,340 linear feet of steel sheet-pile bulkhead cut-off bulkhead and bank stabilization
- 37,551 CY of filling for armor stone slope protection into 3.60 acres of waters
- Install a 114-foot-wide by 1340-foot-long pile-supported platform
- 206,000 cubic yards (CY) of dredging to a maximum depth of 51 feet below the plane of MLW plus 2-feet of allowable over-dredge from a 7.58 acre area
- HARS placement of 47,000 CY of Pleistocene dredge sediments
- Upland disposal of 159,000 CY of Holocene dredge sediments

The installation of the steel sheet-pile bulkhead cut off wall and bank stabilization, the filling of wetlands and waters of the U.S., installation of the relieving platform and dredging the berthing area has been previously authorized under DA Permit NAN-2010-01444 on April 4, 2012 and expired on April 4, 2015. The filling of an on-site wetland was accomplished; however, the remaining work was not undertaken. As compensation for the project impacts authorized under NAN-2010-01444, the applicant was required to complete successful enhancement, establishment and preservation of a total of 16.12 acres of offsite wetlands and open waters located along Moonachie Creek, within the Hackensack River watershed, in the Borough of Carlstadt, Bergen County, New Jersey. The compensatory mitigation was successfully completed in 2015.

Install a Steel Sheet-Pile Cut-Off Bulkhead and Bank Stabilization:

To increase the upland area and the existing marine terminal capacity, the permit applicant proposes to discharge approximately 37,551 CY of fill material into a total of approximately 3.60 acres of waters of the U.S. The total 3.60 acres of waters of the U.S. consists of 1.74 acres of intertidal and subtidal shallows and 1.86 acres of open water which are centrally located on the 70-acre project site. Of the total volume of fill for expanding the marine terminal approximately 31,000 CY will be discharged below the plane of Spring High Water (SHW) and approximately 6,551 CY will be discharged above the plane of SHW to construct the sloped protective rip-rap bank stabilization. Then, the permit applicant would install a 1,340-linear-foot steel sheet cut-off wall. The steel sheet pile cut-off wall would be installed using a vibratory hammer and impact hammer. The area landward of the steel sheet cut-off wall would be filled to the existing site elevation (approximately 10 feet above the plane of Mean Low Water (MLW)). Waterward of the steel sheet cut-off wall would be configured to a 1.86 Horizontal: 1.0 Vertical grade that would slope down toward the new berth area. A combination of dredging and filling will be used to create the subaqueous slope to stabilize the waterward slope, depending on the existing mudline variation along the length of the wharf. The waterward slope would be stabilized by the placement of armor rock rip-rap and thirty-six inch thick mats consisting of two 18-inch layers of 550 lb. armor stone and an 18 inch thick mat of 55 lb. filter stone.

Construct Pile-Supported Platform Wharf:

The permit applicant proposes to construct a new pile-supported wharf seaward of the new section of bulkhead. The wharf will be 114-feet-wide by 1,340-feet-long (approximately 153,000

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square feet measured from the line of Mean High Water). The wharf platform would be supported by approximately 600, 24-inch square pre-cast concrete piles with steel H-pile stingers which would be installed using impact pile hammers and vibratory pile hammers. Concrete pile caps and beams would either be cast in place using sealed forms or would be precast. The total volume of fill below the plane of SHW used for the precast concrete piles will be approximately 2,226 CY. Wharf decking would consist of precast planks, lifted into place by crane, with a cast-in-place concrete overlay. This work will be done using barge-mounted cranes and supply barges.

One-Time Dredging with Historic Area Remediation Site (HARS) and Upland Placement:

The total area to be dredged is approximately 7.58 acres all located seaward of the new bulkhead cut off wall. Starting from immediately waterward of the new steel cut off wall toward the seaward edge of the pile-supported platform the permit applicant proposes to dredge to depths varying from approximately the plane of Mean Low Water (MLW) to a maximum depth of 51 feet below the plane of MLW plus 2-feet of allowable over-dredge. The proposed dredging area located waterward of the existing slope and south of the proposed wharf, and consists of an approximately 162-foot-wide by 1,340-foot-long area for the new berthing area, covering a total area of approximately 217,080 square feet (4.98 acres) and is proposed to be dredged to a depth of 50 feet below the plane of Mean Low Water (MLW) plus 2-feet of allowable over-dredge. Beneath the seaward end of the new wharf the applicant proposes to dredge a 14-foot-wide by 1,340-foot-long strip to a depth of 51 feet below the plane of MLW plus 2-feet of allowable over-dredge. All dredging activities will result in a total dredge volume of approximately 206,000 CY. For dredged material subject to upland placement, the proposed method of dredging is mechanical using an environmental clamshell (closed) bucket with the dredged sediment loaded into solid hull barges. Barge overflow and decanting of excess water at the dredging site is not proposed for dredged material subject to upland placement. For dredge material subject to HARS placement, the proposed method of dredging is a hard-digging bucket. The dredged material would be transported by bottom-opening barges for placement at the HARS for the purpose of remediation. Barge overflow for HARS-bound sediments is proposed. It is anticipated that over the three-year period only one dredging event will occur. The dredged material would be transported by bottom-opening barges for placement at the HARS for the purpose of remediation.

- HARS placement of 47,000 CY of Pleistocene dredge sediments
- Upland disposal of 159,000 CY of Holocene dredge sediments

Approximately 47,000 CY of the total volume of dredged material would be used for remediation purposes at the HARS by placing it over degraded sediments within the site, which is located in the Atlantic Ocean off of Sandy Hook, New Jersey. The proposed dredged material would be transported by bottom-opening barges to the placement site.

Should approval of the requested permit be issued, consideration is being given to issuance of a three-year permit for the annual maintenance work. Subsequent to an initial dredging cycle, the applicant would have to request authorization to perform maintenance dredging during the remaining life of the permit. Such authorization is dependent on the applicant demonstrating that each maintenance event requiring placement at the HARS is in compliance with the Ocean Dumping Regulations cited at 40 CFR Sections 220 - 229 in effect at that time, and will be dependent upon the availability of an approved disposal or remediation site.

Non-HARS Suitable Dredged Material:

Approximately 159,000 CY of the upper layer of non-HARS suitable dredged material consisting of silt would be dredged with an environmental closed-bucket clamshell dredge to minimize turbidity and prevent excess sediments from entering the water column. The material would then

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be loaded, without barge overflow, into a barge. Excess water would be decanted in a holding barge located in close proximity to the dredging area, and the decanting would be performed in accordance with the requirement of the water quality certificate issued by the New Jersey Department of Environmental Protection for this project. The applicant intends to seek an Acceptable Use Determination from the New Jersey Department of Environmental Protection Office of Dredging and Sediment Technology in order to dispose of the material at the Bellmawr Waterfront Development upland site, located in Camden County, New Jersey.

HARS Suitable Dredged Material:

Approximately 47,000 CY of the lower layer of the dredged material consists of HARS-suitable Pleistocene sediments (glacial till and red clay) which would be dredged and transported for placement in the HARS.

Dredged Material Separation Plan:

The dredging would be performed in accordance with an approved Dredged Material Separation Plan to ensure that only HARS-suitable dredged material is placed at the HARS.

The stated purpose of this project is to perform regulated construction work in waters and wetlands of the United States to facilitate the expansion of the existing Global Marine Terminal onto the former North East Auto Terminal (NEAT) site to ensure the long term viability of the marine container terminal operation at the Port Jersey Peninsula, and to strengthen the competitive position of the Port of New York/New Jersey.

INTRODUCTION TO THE HISTORIC AREA REMEDIATION SITE (HARS):

In 1972, the Congress of the United States enacted the Marine Protection, Research and Sanctuaries Act (MPRSA) to address and control the dumping of materials into ocean waters. Title I of the Act authorized the US Environmental Protection Agency (USEPA) and the US Army Corps of Engineers (USACE) to regulate dumping in ocean waters. The USEPA and the USACE share responsibility for MPRSA permitting and ocean disposal site management. Regulations implementing MPRSA can be found at 40 CFR Sections 220 through 229. With few exceptions, MPRSA prohibits the transportation of material from the United States for the purpose of ocean dumping except as may be authorized by a permit issued under the MPRSA. The MPRSA divides permitting responsibility between the USEPA and USACE. Under Section 102 of the MPRSA, USEPA has responsibility for issuing permits for all materials other than dredged material. Under Section 103 of MPRSA, the Secretary of the Army has the responsibility for issuing permits for dredged material. Determinations to issue MPRSA permits for dredged material are subject to USEPA concurrence.

In the fall of 1997, the USEPA de-designated and terminated the use of the New York Bight Dredged Material Disposal Site (commonly known as the Mud Dump Site or MDS). The MDS had been designated in 1984 for the disposal of up to 100 million CY of dredged material from navigation channels and other port facilities within the Port of New York and New Jersey. Simultaneous with the closure of the MDS, the site and surrounding areas that had been used historically as disposal sites for dredged materials were re-designated as the HARS under authority of Section 102(c) of MPRSA at 40 CFR Sections 228.15(d)(6) (See 62 Fed. Reg. 46142 (August 29, 1997); 62 Fed. Reg. 26267 (May 13, 1997). The HARS will be managed to reduce impacts of historic disposal activities at the site to acceptable levels in accordance with 40 CFR Section 228.11(c). The need to remediate the HARS is supported by the presence of toxic effects, dioxin bioaccumulation exceeding Category 1 levels in worm tissue (a definition of which appears in a memorandum reviewing the results of the

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applicant's testing), as well as TCDD/PCB contamination in area lobster stocks. Individual elements of those data do not establish that sediments within the Study Area are imminent hazards to the New York Bight Apex ecosystem, living resources, or human health. However, the collective evidence presents cause for concern, and justifies the need for remediation. Further information on the conditions in the Study Area and the surveys performed may be found in the Supplemental Environmental Impact Statement (USEPA, 1997).

The designation of the HARS identifies an area in and around the former Mud Dump Site (MDS) that has exhibited the potential for adverse ecological impacts. The HARS will be remediated with dredged material that meets current Category 1 standards and will not cause significant undesirable effects including through bioaccumulation or unacceptable toxicity, in accordance with 40 CFR 227.6. This dredged material is referred to as "Material for Historic Area Remediation Site (HARS)" or "HARS Material."

As of the end of November 2020, dredged materials from one hundred and thirty-five (135) different completed and ongoing private and federal dredging projects in the Port of New York and New Jersey have been dredged and placed as Remediation Material in the ocean at the HARS since the closure of the Mud Dump Site and designation of the HARS in 1997. This represents approximately 78,239,000 CY of Remediation Material.

The HARS, which includes the 2.2 square nautical mile area of the MDS, is an approximately 15.7 square nautical mile area located approximately 3.5 nautical miles east of Highlands, New Jersey and 7.7 nautical miles south of Rockaway, New York. The MDS is located approximately 5.3 nautical miles east of Highlands, New Jersey and 9.6 nautical miles south of Rockaway, New York. When determined by bathymetry (a map depicting the relative depths of water in a particular area) that capping is complete, the USEPA will take any necessary rulemaking to de-designate the HARS. The HARS includes the following three areas:

Priority Remediation Area (PRA): A 9.0 square nautical mile area to be remediated with at least 1 meter of Remediation Material. The PRA encompasses the area of degraded sediments as described in greater detail in the SEIS.

Buffer Zone: An approximately 5.7 square nautical mile area (0.27 nautical mile wide band around the PRA) in which no placement of the Material for Remediation will be allowed, but may receive Material for Remediation that incidentally spreads out of the PRA.

No Discharge Zone: An approximately 1.0 square nautical mile area in which no placement or incidental spread of Material for Remediation is allowed.

To improve management and monitoring of placement activities at the HARS, electronic monitoring equipment will be on-board any barges carrying Remediation Material to the HARS. This equipment records vessel positions and scow drafts throughout the duration of each trip to the HARS and during remediation operations. To improve communication reliability between tugs and scows, a prescribed formal communication procedure has been put in place (copies of this procedure are available upon request).

Additional information concerning the HARS can be obtained from Mr. Mark Reiss, Chief, Dredging, Sediments and Oceans Section, Water Division, US Environmental Protection Agency, Region 2 at (212) 637-3799.

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HARS SUITABILITY TESTING FOR PLEISTOCENE RED-BROWN CLAY AND GLACIAL TILL

Pleistocene red-brown clay (from the Newark Bay complex) and Pleistocene glacial till (from the New York Harbor area) were previously tested to determine their suitability for use as remediation material at the HARS. Testing was conducted in accordance with test protocols for ocean placement established by the U.S. Environmental Protection Agency Region 2 and U.S. Army Corps of Engineers New York District.

Notification of the Pleistocene red-brown clay test results and a determination of suitability for HARS remediation purposes were provided in U.S. Army Corps of Engineers New York District Public Notice Supplement FP63-345678CC issued on July 14, 2000. Those test results are included in this public notice (attached Tables 1-3) for informational purposes only. A Joint Memorandum for Record (MFR) signed by both agencies on January 26, 2000 concluded that the Pleistocene red-brown clay found throughout the Newark Bay Complex, including the Port Jersey Channel, was suitable for HARS placement and would not require further testing.

Notification of Pleistocene glacial till test results and a determination of suitability for HARS remediation purposes were provided in U.S. Army Corps of Engineers New York District Public Notice FP63-PJCA1-2003 issued on April 7, 2003 for the Port Jersey Federal Navigation Channel, Contract Area 1. Those test results are included in this public notice (Tables 1-3) for informational purposes only. A Joint MFR signed by both agencies on July 29, 2003, concluded that the Pleistocene glacial till from selected area of New York Harbor (including the Port Jersey Channel) was suitable for HARS placement and would not require further testing.

ALTERNATIVES TO HARS PLACEMENT:

Regarding ocean placement of dredged material, the Ocean Dumping Regulations [Title 40 CFR Sections 227.16(b)] states that "... alternative methods of disposal are practicable when they are available at reasonable incremental cost and energy expenditures which need not be competitive with the costs of ocean dumping, taking into account the environmental impacts associated with the use of alternatives to ocean dumping . . ." The permit applicant has investigated the use of alternative placement sites for the dredged material that include beneficial use, upland placement, and open water placement. Beneficial uses such as on-site upland placement were investigated but were deemed impractical due to the sediment characteristics being incompatible for substrate for armored slope protection or sub-base for concrete paving. Additionally, as there are no remaining fill areas on-site where the material could be beneficially re-used. The applicant also investigated the use of upland placement of the dredged material. However, upland disposal locations in the metropolitan area are extremely limited. In addition, upland storage space is limited and there is virtually no commercial use for this type of material, thereby making upland placement not a practicable alternative. Therefore, alternative sites for the placement of the dredged material are either not available or not available at reasonable incremental costs, thus leaving HARS placement as the applicant's preferred alternative.

CONCLUSIONS:

The U.S. Army Corps of Engineers New York District and the U.S. Environmental Protection Agency Region 2 have determined that the Pleistocene glacial till and clay proposed for dredging and ocean placement from the Global Container Terminal, City of Jersey City, New Jersey is Category I under USEPA Region 2/CENAN Guidance, and is suitable for placement at the HARS

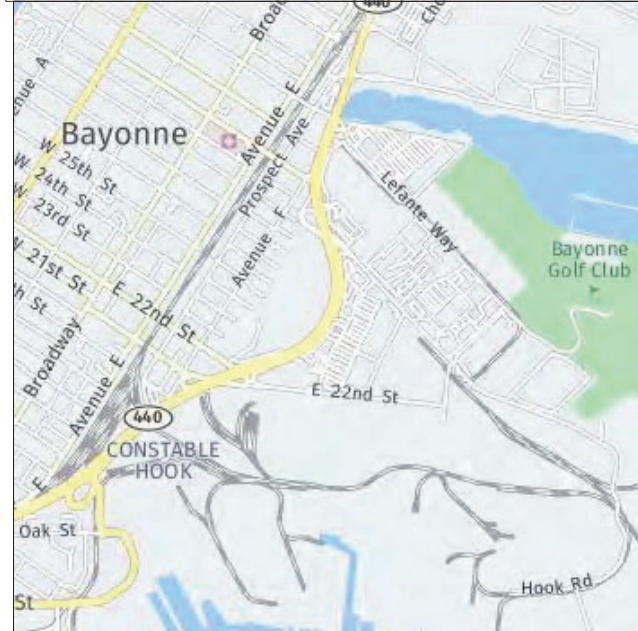
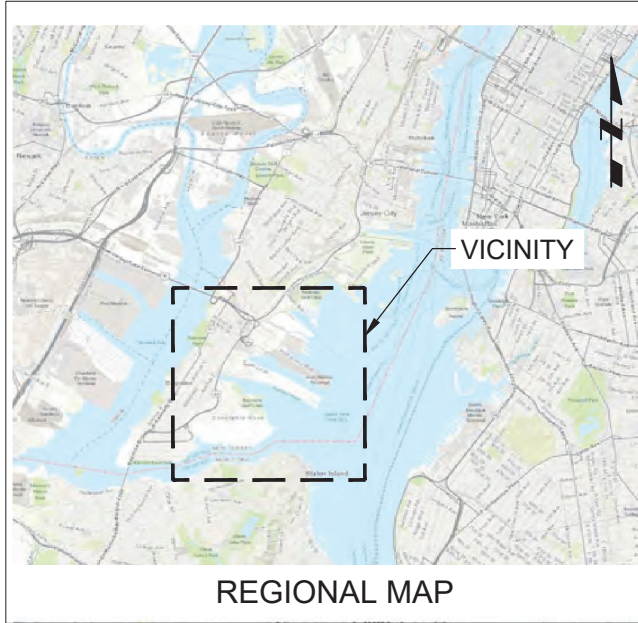
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under Section 228.15(d)(6) as Remediation Material, without need for further site-specific testing, in accordance with the January 26, 2000 Memorandum for the Record (MFR) signed by USACE and USEPA, that concluded that the Pleistocene red-brown clay found throughout the Newark Bay Complex, including the Port Jersey Channel, was suitable for HARS placement and would not require further testing. A Joint MFR signed by both agencies on July 29, 2003, concluded that the Pleistocene glacial till from selected area of New York Harbor (including the Port Jersey Channel) was also suitable for HARS placement and would not require further testing.

Placement of this material at the HARS will serve to reduce impacts to acceptable levels and improve benthic conditions. Sediments in the HARS have been found to be acutely toxic to sensitive benthic marine organisms in laboratory tests, whereas project sediments used in laboratory acute toxicity tests with the same species were determined not to be toxic. Placement of project material over existing toxic sediments would serve to remediate those areas for toxicity. In addition, by covering the existing sediments in the site with this project material, surface dwelling organisms will be exposed to sediments exhibiting Category 1 qualities whereas the existing sediments exceed these levels.

COMMUNICATIONS:

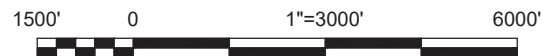
For additional information regarding this project or the HARS contact Mr. William T. Bruno, Regulatory Project Manager, USACE, New York District at (917) 790-8516 or Mr. Mark Reiss, Chief, Dredging, Sediments and Oceans Section, Water Division, US Environmental Protection Agency, Region 2 at (212) 637-3799. If the determination is made to issue a permit, the permittee will contact the US Coast Guard with the details of the authorized work.



SOURCE: MAPS.YAHOO.COM

VICINITY MAP

SCALE: 1" = 3000'



PURPOSE:
REGIONAL ECONOMIC
DEVELOPMENT

PREPARED BY:

JACOBS



VICINITY MAP

PROPOSED: PORT JERSEY EXPANSION

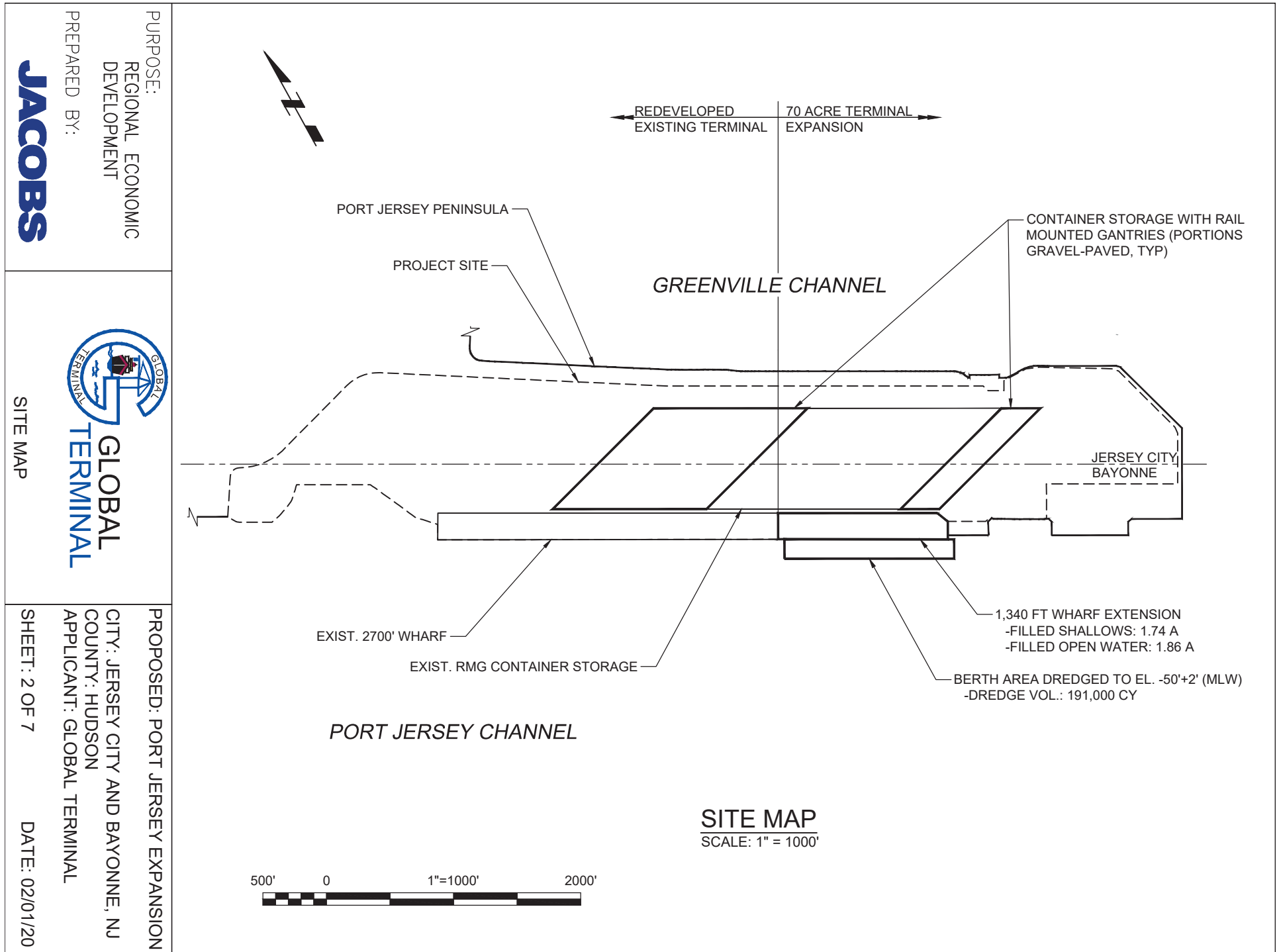
CITY: JERSEY CITY AND BAYONNE, NJ
COUNTY: HUDSON
APPLICANT: GLOBAL TERMINAL

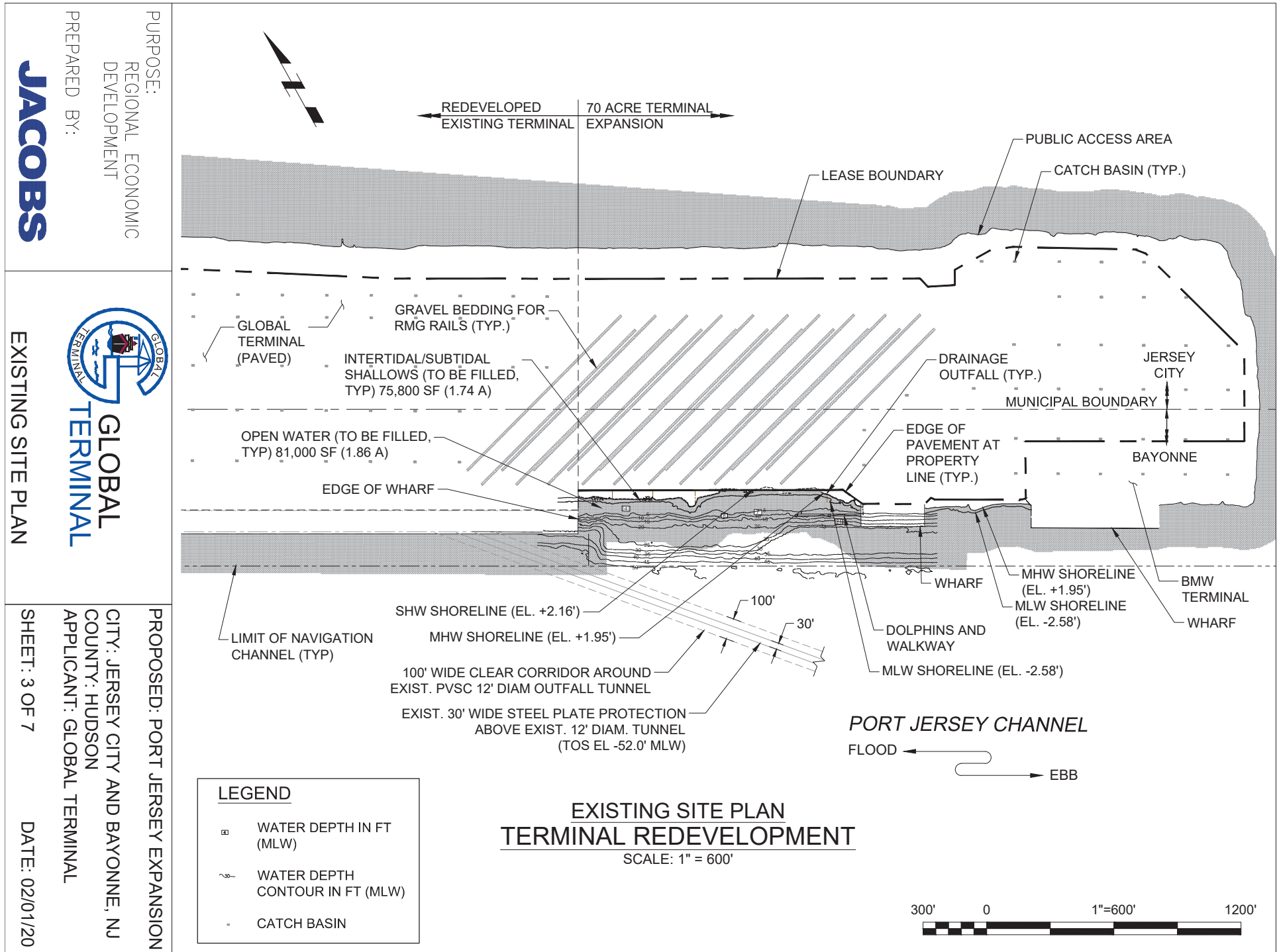
SHEET: 1 OF 7

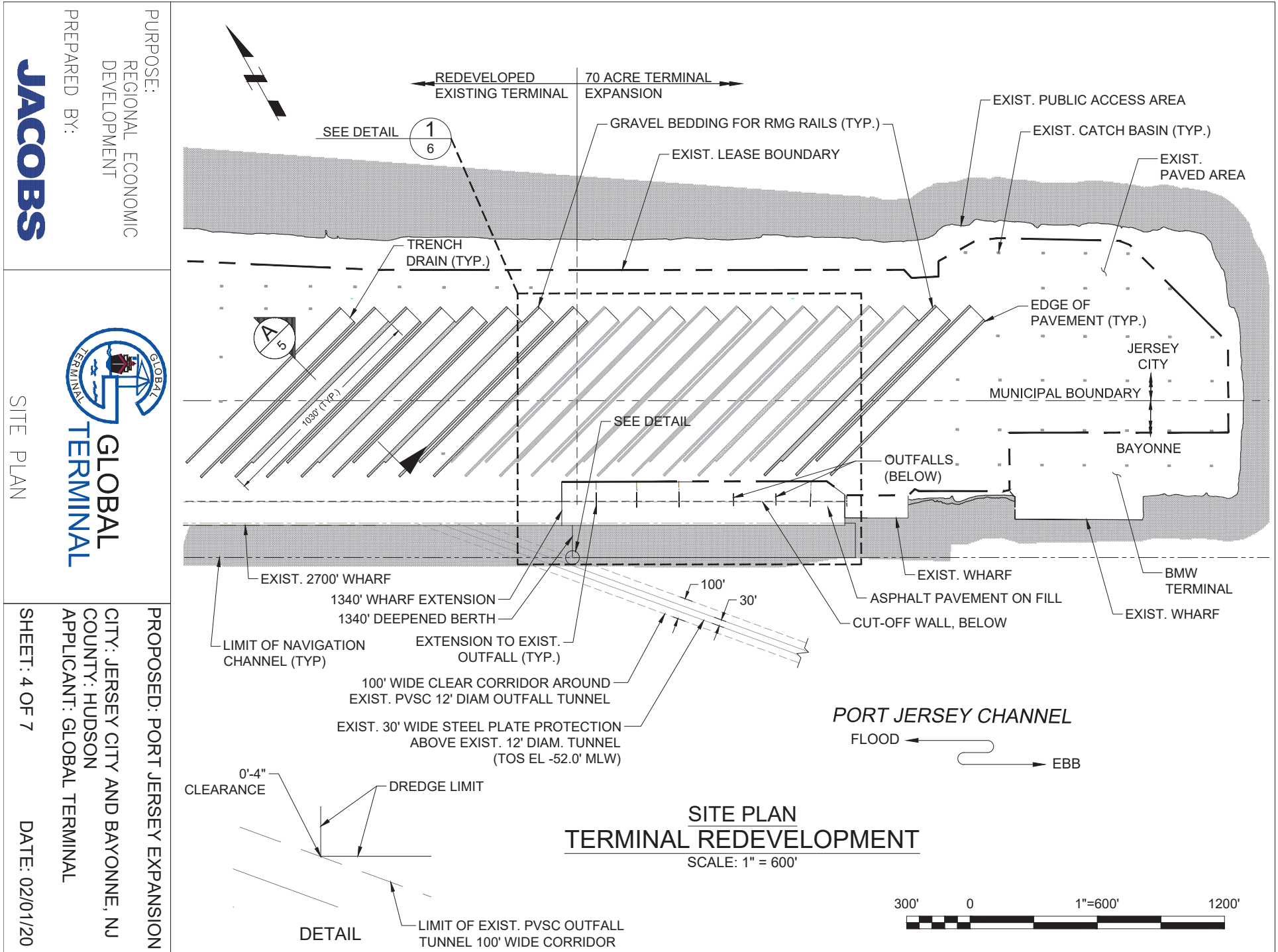
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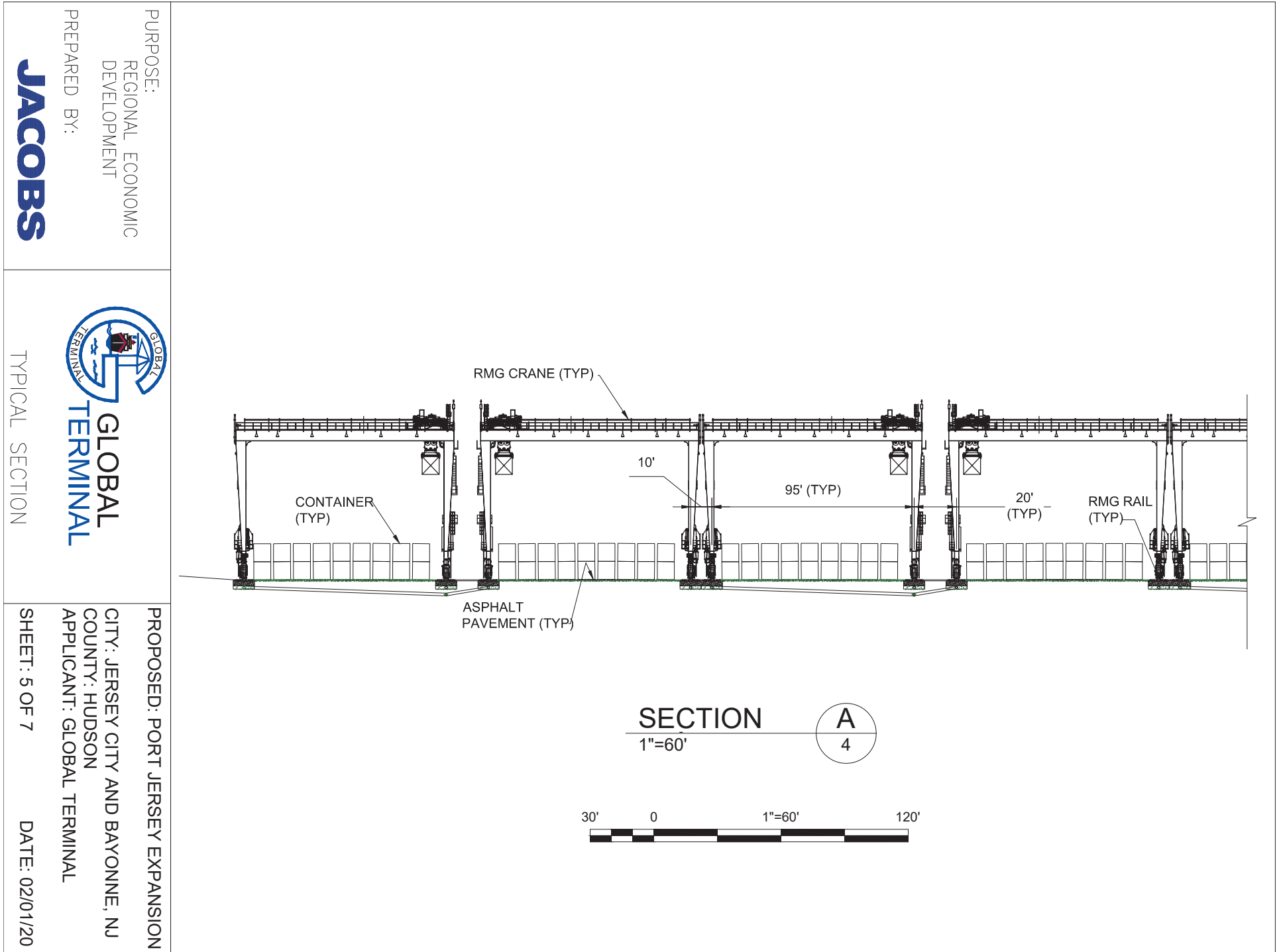






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PURPOSE:
REGIONAL ECONOMIC
DEVELOPMENT

PREPARED BY:
JACOBS



**GLOBAL
TERMINAL**

PROPOSED: PORT JERSEY EXPANSION

CITY: JERSEY CITY AND BAYONNE, NJ

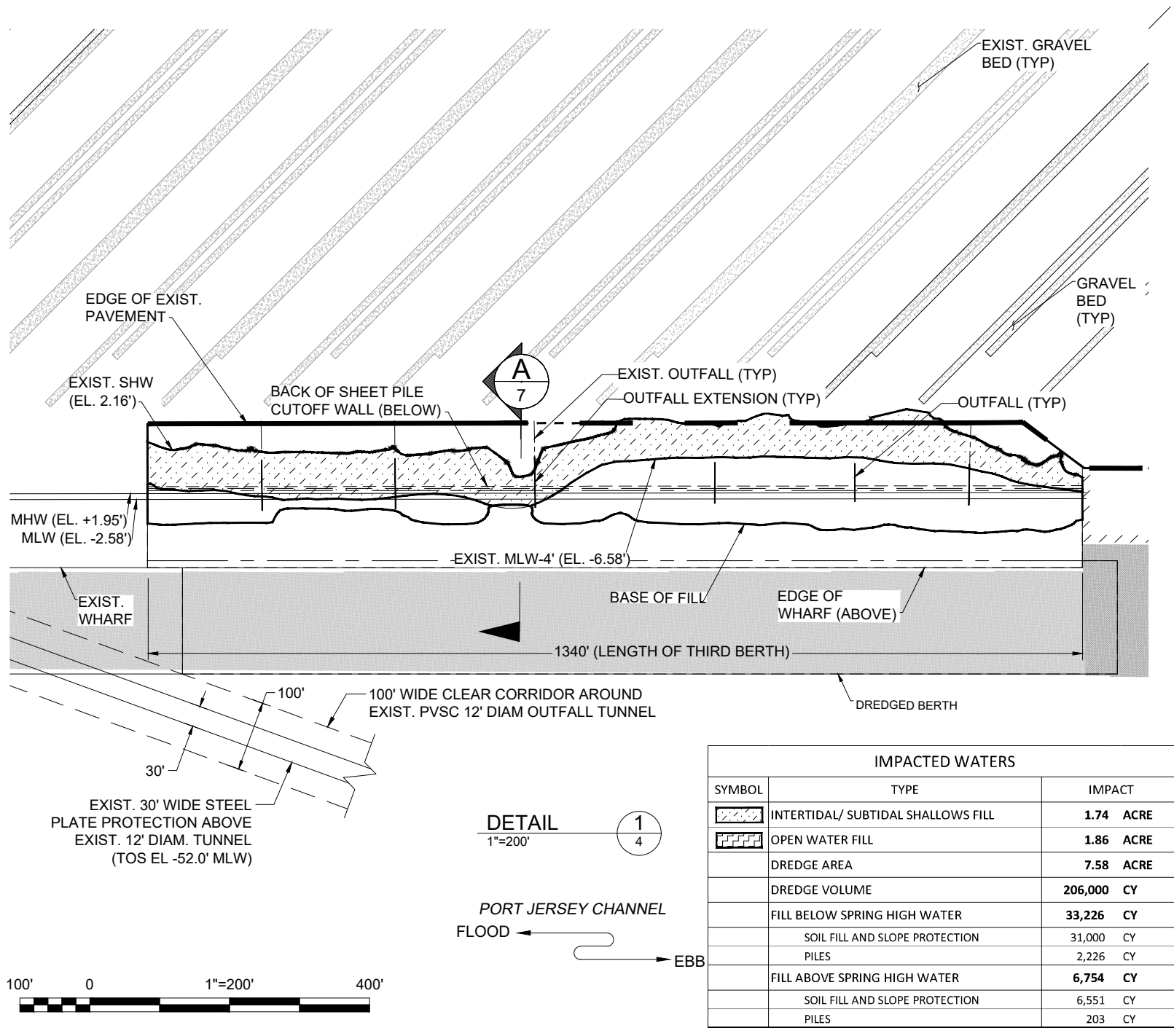
COUNTY: HUDSON



APPLICANT: GLOBAL TERMINAL

DETAIL

SHEET: 6 OF 7

REV DATE: 10/21/20



IMPACTED WATERS		
SYMBOL	TYPE	IMPACT
	INTERTIDAL/ SUBTIDAL SHALLOWS FILL	1.74 ACRE
	OPEN WATER FILL	1.86 ACRE
	DREDGE AREA	7.58 ACRE
	DREDGE VOLUME	206,000 CY
	FILL BELOW SPRING HIGH WATER	33,226 CY
	SOIL FILL AND SLOPE PROTECTION	31,000 CY
	PILES	2,226 CY
	FILL ABOVE SPRING HIGH WATER	6,754 CY
	SOIL FILL AND SLOPE PROTECTION	6,551 CY
	PILES	203 CY

PURPOSE:
REGIONAL ECONOMIC
DEVELOPMENT
PREPARED BY:

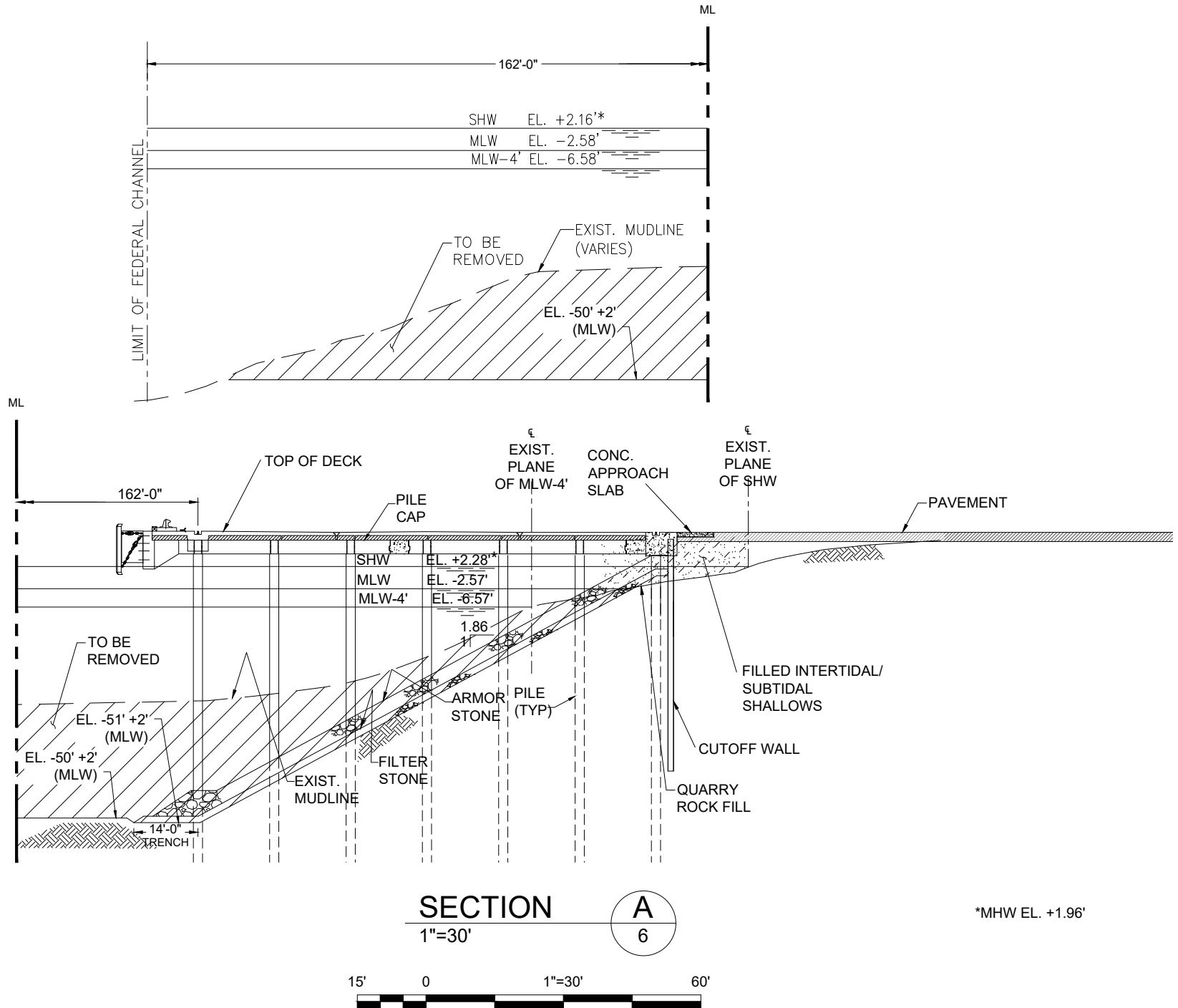
JACOBS

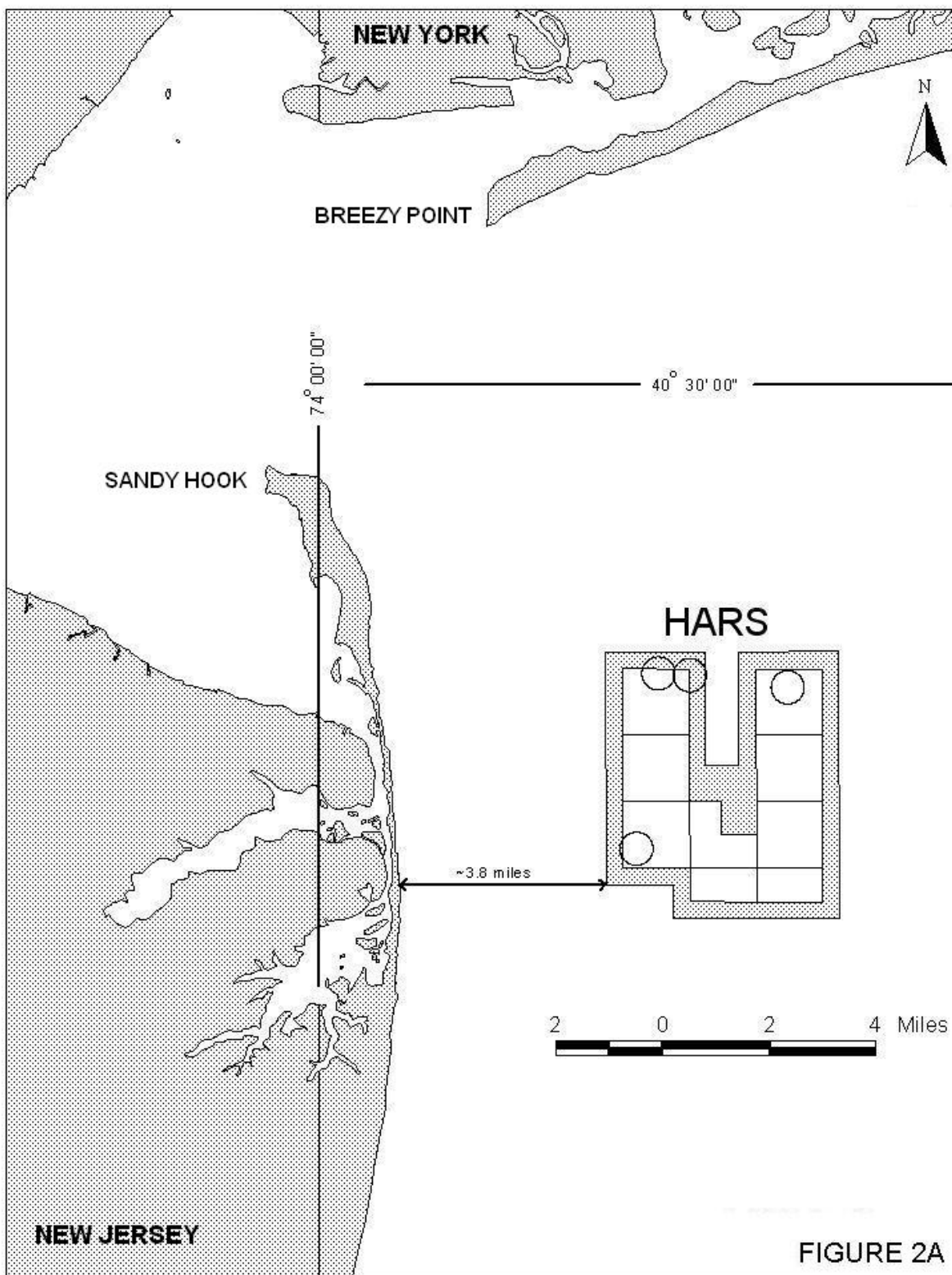


SECTION A

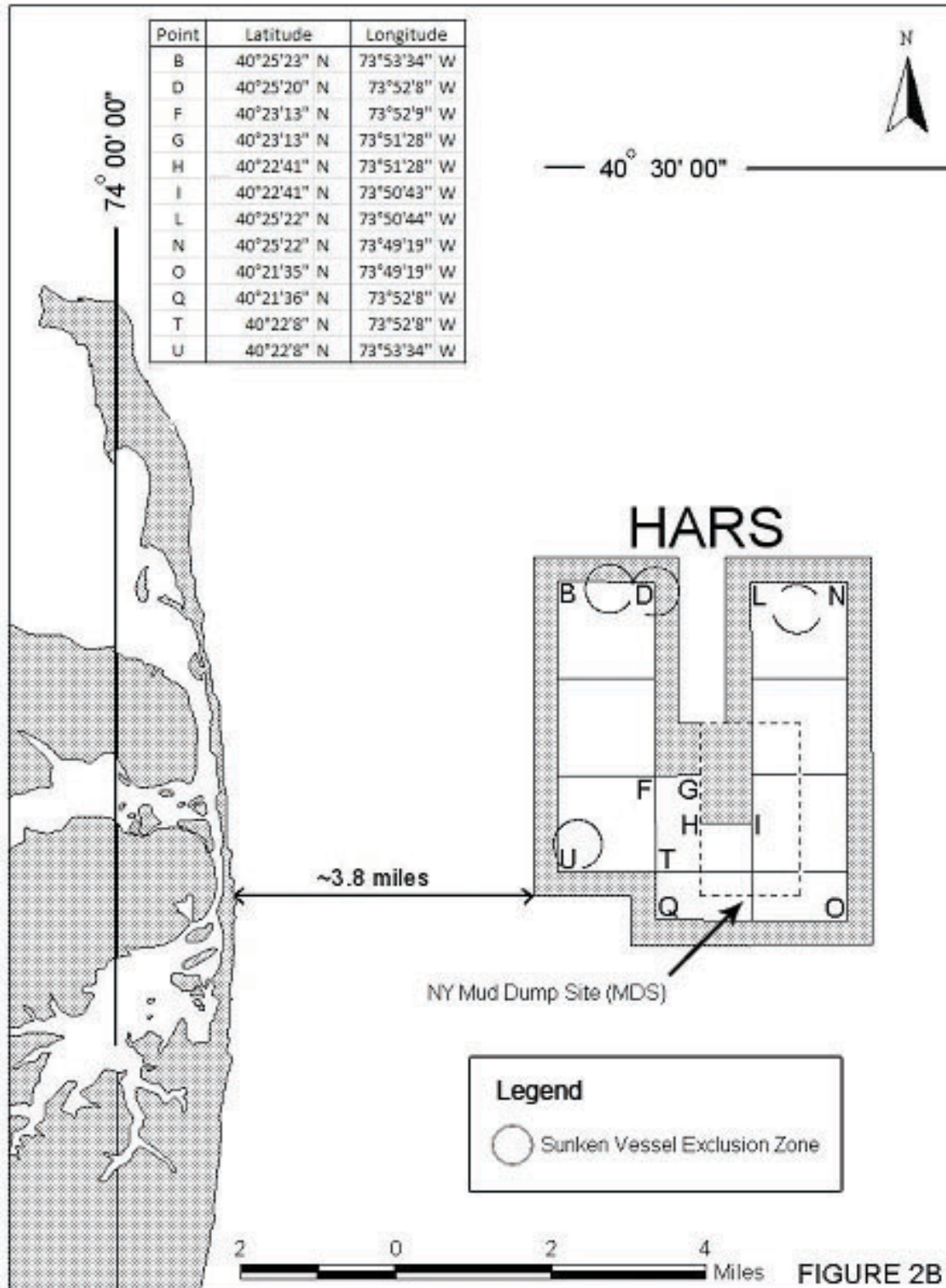
PROPOSED: PORT JERSEY EXPANSION
CITY: JERSEY CITY AND BAYONNE, NJ
COUNTY: HUDSON
APPLICANT: GLOBAL TERMINAL

SHEET: 7 OF 7 REV DATE: 10/21/20





HARS Location Map 1



HARS Location Map

**TABLE 1. NEWARK BAY/STATEN ISLAND KILLS COMPLEX - NATURAL CLAYS
RESULTS OF CHEMICAL ANALYSIS OF SITE WATER AND ELUTRIATE**

CONSTITUENTS	SITE WATER		ELUTRIATE	
	DETECTION LIMITS	CONCENTRATION	DETECTION LIMITS	CONCENTRATION
Metals	ppb (ug/L)	ppb (ug/L)	ppb (ug/L)	ppb (ug/L)
Cadmium		0.093		0.267
Chromium		1.42		1.11
Copper		2.45		6.42
Lead		1.46		0.259
Mercury		0.011		0.002
Nickel		1.58		1.70
Silver		0.054		0.016
Zinc		11.7		3.56
Pesticides	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)
Aldrin	0.8	ND	0.8	ND
alpha-Chlordane		1.9		1.1
trans-Nonachlor		3.7		1.8
Dieldrin	0.3	ND		3.1
4,4'-DDT		4.6		3.1
2,4'-DDT	0.7	ND	0.7	ND
4,4'-DDD		2.5		5.0
2,4'-DDD		1.7		1.0
4,4'-DDE		4.6		6.0
2,4'-DDE	1.4	ND	1.4	ND
Total DDT		14.45		16.15
Endosulfan I		2.0		1.2
Endosulfan II	0.5	ND		1.8
Endosulfan sulfate	2.4	ND		2.7
Heptachlor		3.3		4.0
Heptachlor epoxide		11		5.3
Industrial Chemicals	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)
PCB BZ-8		0.9	0.2	ND
PCB BZ-18		7.6	0.1	ND
PCB BZ-28	0.1	ND	0.1	ND
PCB BZ-44	0.1	ND	0.1	ND
PCB BZ-49	0.1	ND	0.1	ND
PCB BZ-52	0.1	ND	0.1	ND
PCB BZ-66		0.6	0.1	ND
PCB BZ-87	0.1	ND	0.1	ND
PCB BZ-101		0.7	0.1	ND
PCB BZ-105	0.1	ND	0.1	ND
PCB BZ-118	0.1	ND	0.1	ND
PCB BZ-128	0.1	ND	0.1	ND
PCB BZ-138	0.1	ND	0.1	ND
PCB BZ-153	0.1	ND	0.1	ND
PCB BZ-170	0.1	ND	0.1	ND
PCB BZ-180	0.1	ND	0.1	ND
PCB BZ-183	0.1	ND	0.1	ND
PCB BZ-184	0.1	ND	0.1	ND
PCB BZ-187	0.1	ND	0.1	ND
PCB BZ-195	0.2	ND	0.2	ND
PCB BZ-206	0.2	ND		0.5
PCB BZ-209	0.1	ND	0.1	ND
Total PCB		21.6		3.3
ND = Not detected Total PCB = sum of all congeners * 2. Total DDT = sum of 2,4' and 4,4' DDD, DDE, and DDT.				

NEWARK BAY/STATEN ISLAND KILLS COMPLEX - NATURAL CLAYS

TABLE 2. TOXICITY TEST RESULTS

Suspended Particulate Phase - Raw Clay

Test Species	Test Duration	LC50/EC50	LPC (a)
<i>Menidia beryllina</i>	96 hours	>100% (b)	> 1
<i>Mysidopsis bahia</i>	96 hours	>100% (b)	> 1
<i>Mytilus sp.</i> (larval survival)	48 hours	>100% (b)	> 1
<i>Mytilus sp.</i> (larval normal development)	48 hours	>100% (c)	> 1

(a) Limiting Permissible Concentration (LPC) is the LC50 or EC50 times 0.01.

(b) Median Lethal Concentration (LC50) resulting in 50% mortality at test termination.

(c) Median Effective Concentration (EC50) based on normal development to the D-cell, prodissoconch 1 stage.

Whole Sediment (10 days) - Raw Clay

Test Species	% Survival in Reference	% Survival in Test	% Difference Reference -Test	Is Difference statistically significant? (a=0.05)
<i>Ampelisca abdita</i>	89%	86%	3%	No
<i>Mysidopsis bahia</i>	93%	95%	0% ^(a)	No

(a) Survival in the test material was greater than in the Reference.

TABLE 3. NEWARK BAY / STATEN ISLAND KILLS COMPLEX - NATURAL CLAYS
28-DAY BIOACCUMULATION TEST RESULTS: CHEMICAL ANALYSIS OF TISSUE (in wet weight concentration)

Constituents	<i>Macoma nasuta</i>				<i>Nereis virens</i>			
	REFERENCE		TEST		REFERENCE		TEST	
	Detection Limits	Mean Concentration	Detection Limits	Mean Concentration	Detection Limits	Mean Concentration	Detection Limits	Mean Concentration
Metals	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g
Arsenic		3.5		3.36		3.26		3.2
Cadmium		0.05		0.048		0.068		0.064
Chromium		0.948		0.768		0.338		0.328
Copper		8.84		10.18		2.32		2.14
Lead		0.536		0.47		0.704		0.558
Mercury		0.16		0.088		0.13		0.138
Nickel		1.18		1.176		0.648		0.666
Silver		0.08		0.072		0.036	0.04	ND
Zinc		23.68		22.52		24		14.56
Pesticides	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g
Aldrin		1.793	0.164	ND		4.36		5
alpha-Chlordane		0.601		0.16		0.2		0.625
trans-Nonachlor		0.469		0.445	0.18	ND	0.182	ND
Dieldrin		1.234		1.314		1.814		1.278
4,4'-DDT		0.185		0.27		1.108		0.521
2,4'-DDT		1.224		0.634	0.532	ND		* 0.908
4,4'-DDD		2.82		2.52		3.88		5.92
2,4'-DDD		0.738		0.493		0.67		0.616
4,4'-DDE		3.98		4.66		1.505		0.589
2,4'-DDE	0.14	ND	0.138	ND		0.762		0.77
Total DDT		9.152		8.646		7.925		9.324
Endosulfan I		1.96		1.6		1.88		2.08
Endosulfan II		0.175		0.127	0.216	ND		0.196
Endosulfan sulfate		0.36	1.106	* ND	1.16	ND	1.16	* ND
Heptachlor	0.252	ND		0.157	0.258	ND		* 0.582
Heptachlor epoxide		1.62		1.92		1.128		1.04
Industrial Chemicals	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g
PCB BZ-08		1.542		0.976		1.235		1.563
PCB BZ-18		1.404		0.902		0.62		0.798
PCB BZ-28	0.54	ND	0.508	* ND		0.22		* 0.738
PCB BZ-44		0.738		0.498		0.486		0.397
PCB BZ-49		0.959	0.36	ND		0.974	0.36	ND
PCB BZ-52		0.134	0.47	* ND	0.486	ND		* 0.628
PCB BZ-66		1.04	1.008	ND	1.06	ND	1.012	* ND
PCB BZ-101		1		0.798		0.906		0.614
PCB BZ-105	0.394	ND	0.37	ND		0.363		0.324
PCB BZ-118	0.578	ND	0.544	* ND		0.812		0.604
PCB BZ-87		0.138	0.46	* ND	0.476	ND	0.46	* ND
PCB BZ-128	0.658	ND	0.618	* ND	0.642	ND	0.616	* ND
PCB BZ-138	0.412	ND	0.386	* ND		1.144		0.848
PCB BZ-153	0.384	ND	0.36	ND		1.94		1.634
PCB BZ-170	0.354	ND	0.334	ND	0.346	ND	0.332	ND
PCB BZ-180	0.344	ND	0.324	ND		0.382		0.244
PCB BZ-183	0.422	ND	0.376	* ND	0.412	ND	0.396	ND
PCB BZ-184	0.568	ND	0.534	* ND		1.2		0.928
PCB BZ-187	0.304	ND	0.286	ND	0.296	ND		0.239
PCB BZ-195	0.254	ND	0.238	ND		0.306		0.298
PCB BZ-206	0.254	ND	0.238	ND	0.248	ND	0.238	ND
PCB BZ-209	0.206	ND	0.194	ND	0.2	ND	0.194	ND
Total PCB		16.562		20.536		22.424		25.58
1,4-Dichlorobenzene	0.2	ND	0.2	ND	0.2	ND	0.2	ND

TABLE 3. NEWARK BAY / STATEN ISLAND KILLS COMPLEX - NATURAL CLAYS
28-DAY BIOACCUMULATION TEST RESULTS: CHEMICAL ANALYSIS OF TISSUE (in wet weight concentration)

Dioxins and Furans	pg/g	pg/g	pg/g	pg/g	pg/g	pg/g	pg/g	pg/g
2378-TCDD	0.115	ND	0.105	ND		0.237		0.177
12378-PeCDD	0.172	ND	0.134	ND		0.431		0.252
123478-HxCDD		0.197	0.177	ND		0.296		0.172
123678-HxCDD		3.250		1.632		3.230		1.580
123789-HxCDD		1.410		0.665		1.423		0.661
1234678-HpCDD		16.250		7.424		10.308		5.255
OCDD		12.441		7.929		11.220		6.714
2378-TCDF	0.239	ND	0.145	ND		1.001		0.691
12378-PeCDF		0.650		0.317		1.130		0.442
23478-PeCDF	0.874	ND		0.336		0.713		0.259
123478-HxCDF		0.410		0.282		0.631	0.347	ND
123678-HxCDF		0.689		0.348		0.919		0.384
123789-HxCDF	0.668	ND	0.310	ND	0.155	ND	0.407	* ND
234678-HxCDF		0.900		0.476		1.145		0.279
1234678-HpCDF		4.140		2.194		2.473		1.515
1234789-HpCDF		0.276	0.273	ND	0.347	ND	0.446	ND
OCDF		2.022		2.355		0.809		0.731
PAHs	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g
Acenaphthene		4.29		3.84	3.75	ND	3.78	ND
Acenaphthylene	56.4	ND	56.2	* ND	56.5	ND	56.4	* ND
Anthracene	1.98	ND	2.0	ND	2.0	ND	2.0	ND
Fluorene	3.56	ND	3.6	ND	3.55	ND	3.58	ND
Naphthalene	1.7	ND	1.7	ND	1.7	ND	1.7	ND
Phenanthrene		0.78	1.3	ND	1.3	ND	1.3	ND
Benzo[a]anthracene	1.6	ND	1.6	ND	1.6	ND	1.6	ND
Benzo[a]pyrene		0.8	1.3	ND	1.3	ND	1.3	ND
Benzo[g,h,i]perylene	1.4	ND	1.4	ND	1.4	ND	1.4	ND
Benzo[b]fluoranthene	1.4	ND	1.4	ND	1.4	ND	1.4	ND
Benzo[k]fluoranthene	1.2	ND	1.2	ND	1.2	ND	1.2	ND
Chrysene		2.44	2	ND	2	ND	2	ND
Dibenz[a,h]anthracene	1.6	ND	1.6	ND	1.6	ND	1.6	ND
Fluoranthene	3.16	ND	3.2	ND	3.15	ND	3.18	ND
Indeno[1,2,3-cd]pyrene	0.822	ND	0.822	ND	0.812	ND	0.822	ND
Pyrene		2.12		1.68		1.263		1.1
Total PAHs		19.64		* 73.281		11.72		* 70.931

Concentrations shown are the mean of 5 replicate analyses in wet weight with the following exceptions:

PAH concentrations for *Nereis virens* Reference tissue are the mean of 4 replicate analyses;

1,4 dichlorobenzene concentration for *Nereis virens* Test tissue is the mean of 4 replicate analyses due to limited tissue volume;

1,4 dichlorobenzene concentration for *Nereis virens* Reference tissue is the result of one set of analyses due to limited tissue volume.

*** Significantly higher than reference at 95% confidence.**

ND = Not Detected

Total PAHs = sum of all PAHs

Total PCB = sum of congeners reported * 2

Total DDT = sum of 2,4'- and 4,4'-DDD, DDE, and DDT

Means and statistical comparisons were determined using conservative estimates of concentrations of constituents that were at concentrations below the detection limit.

**TABLE 1. RESULTS OF CHEMICAL ANALYSIS OF SITE WATER AND ELUTRIATE
PORT JERSEY - CONTRACT AREA 1**

CONSTITUENTS	SITE WATER		ELUTRIATE	
	DETECTION LIMITS	CONCENTRATION	DETECTION LIMITS	CONCENTRATION
Metals	ppb	ppb	ppb	ppb
Ag		0.032		0.016
Cd		0.068		0.084
Cr		0.522		0.918
Cu		2.10		2.070
Hg		0.005		0.001
Ni		1.30		2.94
Pb		0.69		0.39
Zn		5.45		3.98
Pesticides	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)
Aldrin	2.83	ND	2.83	ND
a-Chlordane	1.08	ND	1.08	ND
trans Nonachlor	1.01	ND	1.01	ND
Dieldrin	0.98	ND	0.98	ND
4,4'-DDT	0.56	ND	0.56	ND
2,4'-DDT	1.99	ND	1.99	ND
4,4'-DDD	0.60	ND	0.60	ND
2,4'-DDD	0.75	ND	0.75	ND
4,4'-DDE	0.84	ND	0.84	ND
2,4'-DDE	1.71	ND	1.71	ND
Total DDT		3.2		3.2
Endosulfan I	1.11	ND	1.11	ND
Endosulfan II	0.51	ND	0.51	ND
Endosulfan sulfate	0.57	ND	0.57	ND
Heptachlor	1.17	ND	1.17	ND
Heptachlor epoxide	0.95	ND	0.95	ND
Industrial Chemicals	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)
PCB 8	16.00	ND	16.00	ND
PCB 18	1.39	ND	1.39	ND
PCB 28	1.73	ND	1.73	ND
PCB 44	1.45	ND	1.45	ND
PCB 49	1.49	ND	1.49	ND
PCB 52	1.44	ND	1.44	ND
PCB 66	1.49	ND	1.49	ND
PCB 87	1.13	ND	1.13	ND
PCB 101	1.15	ND	1.15	ND
PCB 105	0.58	ND	0.58	ND
PCB 118	0.87	ND	0.87	ND
PCB 128	1.40	ND	1.40	ND
PCB 138	1.33	ND	1.33	ND
PCB 153	1.07	ND	1.07	ND
PCB 170	1.02	ND	1.02	ND
PCB 180	0.96	ND	0.96	ND
PCB 183	0.93	ND	0.93	ND
PCB 184	0.92	ND	0.92	ND
PCB 187	0.86	ND	0.86	ND
PCB 195	1.09	ND	1.09	ND
PCB 206	1.22	ND	1.22	ND
PCB 209	1.27	ND	1.27	ND
Total PCB		81.5		81.5

ND = Not detected

Total DDT = sum of 2,4'- and 4,4'-DDD, DDE, and DDT

Total PCB = sum of congeners reported x 2

Concentrations shown are the mean of three replicate analyses.

Means were determined using conservative estimates of concentrations of constituents that were at concentrations below the detection limit.

TABLE 2.

PORT JERSEY - CONTRACT AREA 1

TOXICITY TEST RESULTS

Suspended Particulate Phase

Test Species	Test Duration	LC50/EC50	LPC (a)
<i>Menidia beryllina</i>	96 hours	(b) >100%	1.00
<i>Mysidopsis bahia</i>	96 hours	(b) >100%	1.00
<i>Mytilus edulis</i> (larval survival)	48 hours	(b) >100%	1.00
<i>Mytilus edulis</i> (larval normal development)	48 hours	(c) >100%	1.00

(a) Limiting Permissible Concentration (LPC) is the LC 50 or EC 50 times 0.01.

(b) Median Lethal Concentration (LC50) resulting in 50% mortality at test termination.

(c) Median Effective Concentration (EC50) based on normal development to the D-cell, prodissoconch 1 stage.

Whole Sediment (10 days)

Test Species	% Survival in Reference	% Survival	% Difference Reference - Test	Is difference statistically significant? ($\alpha=0.05$)
<i>Ampelisca abdita</i>	99%	100%	1%	No
<i>Mysidopsis bahia</i>	95%	99%	4%	No

PORT JERSEY- CONTRACT AREA 1
TABLE 3. 28 DAY BIOACCUMULATION TEST RESULTS: CHEMICAL ANALYSIS OF TISSUE
Wet weight concentrations

CONSTITUENTS	<i>Tapes japonica</i>				<i>Nereis virens</i>			
	REFERENCE		TEST		REFERENCE		TEST	
	DETECTION	CONCEN	DETECTION	CONCEN	DETECTION	CONCEN	DETECTION	CONCEN
	LIMITS	TRATION	LIMITS	TRATION	LIMITS	TRATION	LIMITS	TRATION
Metals	ppm (mg/kg)	ppm (mg/kg)	ppm (mg/kg)	ppm (mg/kg)	ppm (mg/kg)	ppm (mg/kg)	ppm (mg/kg)	ppm (mg/kg)
Ag		0.11		0.09		0.01		0.01
As		1.92		1.80		3.43		3.01
Cd		0.22		0.21		0.04		0.05
Cr		0.27		0.62		0.50		0.52
Cu		1.09		1.21		1.75	*	2.46
Hg		0.01		0.01		0.04		0.04
Ni		0.68		0.73		0.25		0.30
Pb		0.02		0.02		0.12		0.10
Zn		8.33		7.99		19.38		21.53
Pesticides	ppb (ug/kg)	ppb (ug/kg)	ppb (ug/kg)	ppb (ug/kg)	ppb (ug/kg)	ppb (ug/kg)	ppb (ug/kg)	ppb (ug/kg)
Aldrin	0.02	ND	0.02	ND	0.02	ND	0.03	ND
a-Chlordane		0.03		0.02		0.12		0.12
trans Nonachlor		0.03		0.02		0.29		0.29
Dieldrin		0.04		0.04		0.12		0.16
4,4'-DDT		0.03		0.03		0.03		0.03
2,4'-DDT	0.03	ND	0.03	ND	0.04	ND	0.04	ND
4,4'-DDD		0.04		0.04		0.15		0.13
2,4'-DDD		0.04		0.06		0.14		0.13
4,4'-DDE		0.03		0.04		0.06		0.05
2,4'-DDE	0.09	ND	0.09	ND	0.10	ND	0.10	ND
Total DDT		0.20		0.23		0.44		0.42
Endosulfan I	0.03	ND	0.03	ND	0.04	ND	0.04	ND
Endosulfan II	0.05	ND	0.05	ND	0.05	ND	0.05	ND
Endosulfan sulfate	0.05	ND	0.05	ND	0.06	ND	0.06	ND
Heptachlor	0.03	ND	0.03	ND	0.03	ND	0.03	ND
Heptachlor epoxide		0.02		0.02		0.06		0.05
Industrial Chemicals	ppb (ug/kg)	ppb (ug/kg)	ppb (ug/kg)	ppb (ug/kg)	ppb (ug/kg)	ppb (ug/kg)	ppb (ug/kg)	ppb (ug/kg)
PCB 8		0.41		0.42		0.88		0.81
PCB 18		0.04		0.05		0.03	*	0.08
PCB 28		0.15		0.19		0.20		0.13
PCB 44	0.03	ND	0.03	ND	0.03	ND	0.03	ND
PCB 49		0.02		* 0.04		0.06		* 0.08
PCB 52		0.05		* 0.09		0.14		* 0.24
PCB 66	0.03	ND	0.03	ND		0.05		0.04
PCB 87		0.03		0.04		0.04		0.05
PCB 101		0.11		0.13		0.48		0.49
PCB 105		0.04		0.04		0.20		0.19
PCB 118		0.05		0.04		0.21		0.20
PCB 128		0.09		0.08		0.30		0.25
PCB 138		0.17		0.36		1.48		1.35
PCB 153		0.11		0.11		2.18		1.99
PCB 170		0.04		* 0.08		0.43		0.41
PCB 180		0.04		* 0.05		0.93		0.86
PCB 183		0.02		0.02		0.38		0.35
PCB 184	0.05	ND	0.05	ND	0.05	ND	0.05	ND
PCB 187		0.03		* 0.14		0.79		0.79
PCB 195		0.02		0.01		0.16		0.16
PCB 206		0.03		0.04		0.30		0.30
PCB 209		0.04		0.04		0.37		0.33
Total PCB		3.09		* 4.00		19.31		18.25
1,4-Dichlorobenzene		0.39		0.37		0.33		0.28

TABLE 3. (Continued)

PORT JERSEY - CONTRACT AREA 1

CONSTITUENTS	<i>Tapes japonica</i>				<i>Nereis virens</i>			
	REFERENCE		TEST		REFERENCE		TEST	
	DETECTION	CONCEN	DETECTION	CONCEN	DETECTION	CONCEN	DETECTION	CONCEN
	LIMITS	TRATION	LIMITS	TRATION	LIMITS	TRATION	LIMITS	TRATION
PAH's	ppb (ug/kg)	ppb (ug/kg)	ppb (ug/kg)	ppb (ug/kg)	ppb (ug/kg)	ppb (ug/kg)	ppb (ug/kg)	ppb (ug/kg)
Naphthalene		0.72		0.71		2.49		2.77
Acenaphthylene		0.05		0.04		0.14		0.13
Acenaphthene		0.11		0.11		0.42		0.45
Fluorene		0.18		0.16		0.09		0.11
Phenanthrene		0.80		0.80		0.29		0.31
Anthracene		0.07		0.08		0.05		0.06
Fluoranthene		0.77		0.75		0.26		0.22
Pyrene		0.40	*	0.51		0.22	*	0.27
Benzo(a)anthracene		0.44		0.39		0.05		0.05
Chrysene		0.53		0.48		0.15		0.14
Benzo(b)fluoranthene		0.12		0.01		0.03		0.03
Benzo(k)fluoranthene		0.08	0.02	ND		0.03		0.03
Benzo(a)pyrene	0.02	ND	0.02	ND		0.17		0.02
Indeno(1,2,3-cd)pyrene	0.01	ND		0.01	0.01	ND		0.01
Dibenzo(a,h)anthracene	0.02	ND	0.02	ND	0.02	ND		0.01
Benzo(g,h,i)perylene	0.01	ND		0.01		0.04		0.01
Total PAH's		4.29		4.09		4.45		4.62
Dioxins	pptr(ng/kg)	pptr(ng/kg)	pptr(ng/kg)	pptr(ng/kg)	pptr(ng/kg)	pptr(ng/kg)	pptr(ng/kg)	pptr(ng/kg)
2378 TCDD		0.42	0.98	ND		0.28		0.20
12378 PeCDD		0.95		* 2.41		0.14		0.12
123478 HxCDD		0.03		* 5.10		0.08		0.05
123678 HxCDD		0.06		* 1.33		0.27		0.19
123789 HxCDD		0.05		* 1.79		0.17		0.13
1234678 HpCDD		0.18		0.21		1.47		1.03
1234789 OCDD		1.41		1.34		8.28		6.02
2378 TCDF		0.14		0.10		1.66		1.41
12378 PeCDF		0.08		* 1.45		0.19		0.18
23478 PeCDF		0.08		* 1.40		0.31		0.27
123478 HxCDF		0.11		0.55		0.17		0.14
123678 HxCDF		0.05		0.92		0.09		0.08
234678 HxCDF		0.41		* 1.84		0.80		1.19
123789 HxCDF		0.52		* 1.81		0.08		0.06
1234678 HpCDF		0.08		0.47		0.59		0.41
1234789 HpCDF		0.04		* 1.20		0.06		1.50
12346789 OCDF		0.17		0.17		0.60		0.38

ND = Not detected

Total PAH = Sum of all PAHs

Total DDT = sum of 2,4'- and 4,4'-DDD, DDE, and DDT

Total PCB = 2(x), where x = sum of PCB congeners

Concentrations shown are the mean of 5 replicate analyses in wet weight.

Means were determined using conservative estimates of concentrations of constituents that were at concentrations below the detection limit.

* = Statistically significant at the 95% confidence level