Weston Solutions, Inc.
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15 April 2024

Ms. Katie Esposito
Delaware Department of Natural Resources and Environmental Control
Division of Water Resources
Wetlands and Subaqueous Lands Section
89 Kings Highway
Dover, DE 19901

Re: Revised Permit Application for Water Quality Certificate and Subaqueous Lands Permit Renewal
Maintenance Dredging of Dock 3C, RW-7 Intake
Energy Transfer - Marcus Hook Terminal

Dear Ms. Esposito:

On behalf of Energy Transfer, Weston Solutions, Inc. (Weston) is submitting this revised Permit Application to request a renewal of existing Water Quality Certification and Subaqueous Lands Permit to continue maintenance dredging activities at the portions of the Marcus Hook Terminal berthing areas that fall within the state of Delaware. The most recent permit was received by Energy Transfer on August 27, 2018 (Permit No. SP-01/18 and Water Quality Certification No. WQ-201/18). This permit allowed maintenance dredging from the area of Berth 3C and the RW-7 intake area which are located in the State of Delaware, immediately south of the Delaware/Pennsylvania border (see attached Figures 1 and 2). Energy Transfer requests a 5-year permit renewal of this permit. Weston is currently under contract to Energy Transfer to assist with their maintenance dredging requirements.

The proposed project includes annual or biannual maintenance dredging efforts involving the removal of up to an estimated 10,000 cubic yards (cy) of material annually from the area of Berth 3C and RW-7 intake. The Berth 3C area will be dredged to –40’ +2’ of overdredge. The RW-7 intake area will be dredged to –20’+2’ of overdredge.

Energy Transfer is proposing that dredge material will continue to be removed by mechanical clamshell dredge, the primary dredge methodology to date at the site, and will be loaded onto watertight barges for off site disposal at Weeks White’s Basin located in Logan Township, Gloucester County, New Jersey. Alternatively, dredged material may be disposed of at Waste Management’s Biles Island located in Falls Township, Bucks County, PA, on the Delaware River. For disposal at the Biles Island site, sediment material would be dredged via mechanical dredge, barged upriver to Biles Island, then pumped upland via a hydraulic unloader directly into the upland CDF.

There are no anticipated discharges or fill that may result from or are related to the proposed continuation of maintenance dredging at Energy Transfer's Marcus Hook Terminal. Any potential discharges related to the proposed continuation of maintenance dredging activities would be at the respective disposal facilities of White's Basin (NJ) or Biles Island (PA), each of which maintain their own Water Quality Certification for these activities.

A location map of the proposed site activity as well as site survey plans and a cross-section view are provided in the attachments. The site itself is an operating petroleum product terminal for Energy Transfer. Relevant site photographs as well as recent site data is included in the attachments. See the Environmental Questionnaire and Habitat Description and Impacts attachment for a full evaluation of potential water quality impacts due to dredging activities as has been discussed with USACE and NJDEP.

With respect to dredging operations themselves, Energy Transfer's contractors will use environmental buckets when clamshell dredges are used. Energy Transfer and Weeks have evaluated the possibility of using silt curtains to minimize suspended sediments during dredging. Unfortunately, the high flow rates in the Delaware River preclude the use of this technique. Silt curtains are better suited for lower energy waterways. Weeks' experience is confirmed by technical literature issued by the U.S. Army Engineering Research and Development Center (ERDC):

"Silt curtains should not be considered a "one solution fits all" type of best management practice. They are highly specialized, temporary-use devices that should be selected only after careful evaluation of the intended function and designed based on a detailed knowledge of the site where they will be used." (Francingues, Palermo, Engler, 2005)([1])

Contract Specifications section 618.01.03, SEDIMENT RESUSPENSION CONTROL correctly cites the findings of ERDC when it states that 1.5 knots (2.5 ft/s) "…is deemed the maximum velocity at which the use of turbidity curtains is considered effective". As such, its use as a permit requirement for this project is troubling. Tidal flows on the lower Delaware River (below Trenton) are at and/or exceed the maximum velocity to allow for the effective use of a floating turbidity barrier (Miller, 1957) ([2]).

The USEPA (1994) ([3]) concluded, "As a generalization, silt curtains and screens are most effective in relatively shallow quiescent water. As the water depth increases and turbulence caused by currents and waves increases, it becomes increasingly difficult to effectively isolate the dredging operation from the ambient water. The St. Lawrence Centere (1993) advises against the use of silt curtains in water deeper than 6.5 m [21.33 feet] or in currents greater than 50 cm/sec [0.97 knots] (USEPA 1994)"1. The parameters of the PMT project greatly exceed these limits.

Because the Marcus Hook Terminal is located directly adjacent to the Federal Navigation Channel, vessel traffic should be a serious consideration when deploying a floating turbidity barrier. Especially when deploying this device in tidal flows well above their recommended use. "The USEPA also highlighted the fact that curtains should not impede navigation traffic, an important consideration during their deployment"(1). Energy Transfer and Weeks both have serious concerns of the turbidity curtain breaking free, becoming entangled in tug and ship propellers, disabling steering, and causing a minor or serious incident.

The proposed maintenance dredging activities will be a continuation of annual and occasional biannual maintenance dredging activities that occur outside of the prohibited window of March 15 to June 30, and as approved annually by USACE and NJDEP or PADEP under their Water Quality Certificate approval/renewal process. Typically, the maintenance dredging activities occur in the fall and winter months.

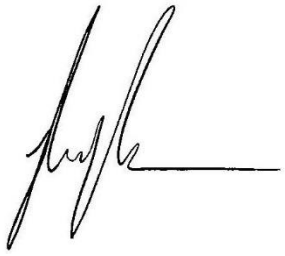
The maintenance dredging activities are currently authorized under Corps permit CENAP-OP-R-2013-00696-46 (which expires in 2032), NJDEP permits (WQC 0809-01 1001.14, CDT 230001), and PADEP permit E23-205.

As relayed by Katie Esposito via email on April 1, 2024, the requirement for a pre-filing meeting has been waived due to the previous discussions and communications regarding this renewal request.

Please feel free to call me at (908) 565-0888 with any questions concerning this submittal, or to request any additional information for your review.

Very truly yours,

WESTON SOLUTIONS, INC.



Ryan Brown
Project Manager

cc: David Monk (Energy Transfer)

Enclosures:
Permit Application Form
USACE Permit # (CENAP–OP-R-2011-0760-46)
History of Previous Dredging and Permitting Activity
Environmental Questionnaire and Description of Action Area and Habitats
Sediment Characterization Report

References:

[1]*Francingues, Palermo, Engler, 2005, Silt Curtains as a Dredging Project Management Practice, ERDC TN-DOER-E21*
[2]*Miller, C. 1957, Observations of Tidal Flow in the Delaware River, Geological Survey Water-supply Paper 1586-C*
[3]*United States Environmental Protection Agency. 1994. "ARCS Remediation Guidance Document." EPA 905-B94-003. Great Lakes National Program Office, Chicago, IL.*

WETLANDS AND SUBAQUEOUS LANDS SECTION PERMIT APPLICATION FORM

For Subaqueous Lands, Wetlands, Marina and 401 Water Quality Certification Projects

State of Delaware
Department of Natural Resources and Environmental Control
Division of Water

Wetlands and Subaqueous Lands Section

APPLICATION FOR APPROVAL OF
SUBAQUEOUS LANDS, WETLANDS, MARINA
AND WATER QUALITY CERTIFICATION PROJECTS

Last Revised on: March 28, 2017

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

Application Instructions:

1. Complete each section of this basic application and appropriate appendices as thoroughly and accurately as possible. Incomplete or inaccurate applications will be returned.

2. All applications must be accompanied by a scaled plan view and cross-section view plans that show the location and design details for the proposed project. Full construction plans must be submitted for major projects.

3. All applications must have an original signature page and proof of ownership or permitted land use agreement.

4. Submit an original and two (2) additional copies of the application (total of 3) with the appropriate application fee and public notice fee* (prepared in separate checks) to:

Department of Natural Resources and Environmental Control
Wetlands and Subaqueous Lands Section
89 Kings Highway
Dover, Delaware 19901

*Application and public notice fees are non-refundable regardless of the Permit decision or application status.

5. No construction may begin at the project site before written approval has been received from this office.

Helpful Information:

1.	Tax Parcel Information:	New Castle County	(302) 395-5400
		Kent County	(302) 736-2010
		Sussex County	(302) 855-7878
2.	Recorder of Deeds:	New Castle County	(302) 571-7550
		Kent County	(302) 744-2314
		Sussex County	(302) 855-7785

3. A separate application and/or approval may be required through the Army Corps of Engineers. Applicants are strongly encouraged to contact the Corps for a determination of their permitting requirements. For more information, contact the Philadelphia District Regulator of the Day at (215) 656-6728 or visit their website at: http://www.nap.usace.army.mil/Missions/Regulatory.aspx.

4. For questions about this application or the Wetlands and Subaqueous Lands Section, contact us at (302) 739-9943 or visit our website at: http://www.dnrec.delaware.gov/wr/Services/Pages/WetlandsAndSubaqueousLands.aspx. Office hours are Monday through Friday 8:00 AM to 4:30 PM, except on State Holidays.

APPLICANT'S REVIEW BEFORE MAILING

DID YOU COMPLETE THE FOLLOWING?

_____ Yes BASIC APPLICATION

_____ Yes SIGNATURE PAGE (Page 3)

_____ Yes APPLICABLE APPENDICES

_____ Yes SCALED PLAN VIEW

_____ Yes SCALED CROSS-SECTION OR ELEVATION VIEW PLANS

_____ Yes VICINITY MAP

_____ Yes COPY OF THE PROPERTY DEED & SURVEY

_____ Yes THREE (3) COMPLETE COPIES OF THE APPLICATION PACKET

_____ Yes APPROPRIATE APPLICATION FEE & PUBLIC NOTICE FEE
(Separate checks made payable to the State of Delaware)

Submit 3 complete copies of the application packet to:

Department of Natural Resources and Environmental Control
Wetlands and Subaqueous Lands Section
89 Kings Highway
Dover, Delaware 19901

Before signing and mailing your application packet, please read the following:

The Department requests that the contractor or party who will perform the construction of your proposed project, if other than the applicant, sign the application signature page along with the applicant in the spaces provided. When the application is signed by the contractor as well as the applicant, the Department will issue the Permit to both parties. For Leases, the contractor will receive a separate construction authorization that will make them subject to all of the terms and conditions of the Lease relating to the construction

Section 1: Applicant Identification

1. Applicant's Name: _David Monk_____ Telephone #: ___(610) 589-1101_____
Mailing Address: __Energy Transfer_____ Fax #: _____
_____1240 Crown Point Road_____ E-mail:__David.Monk@EnergyTransfer.com_
_____Westville, NJ 08093_____

2. Consultant's Name: __Ryan Brown_____ Company Name: __Weston Solutions, Inc._____
Mailing Address: ____Weston Solutions, Inc._____ Telephone #:__(908) 565-0888___._____
_____205 Campus Drive_____ Fax #:_____
_____Edison, NJ 08837_____ E-mail:_Ryan.Brown@WestonSolutions.com_

3. Contractor's Name: ___Eric Dickerson_____ Company Name: ___Weeks Marine___._____
Mailing Address: _____Weeks Marine_____ Telephone #:___(856) 963-0963 x 2309_____
_____901 Beach Street_____ Fax #: _____
_____Camden, NJ 08102_____ E-mail:__EDDickerson@WeeksMarine.Com

Section 2: Project Description

4. Check those that apply:
☐ New Project/addition to existing project? ☐ Repair/Replace existing structure? (If checked, must answer #16)

5. Project Purpose (attach additional sheets as necessary):
See Attached

6. Check each Appendix that is enclosed with this application:

	A. Boat Docking Facilities		G. Bulkheads		N. Preliminary Marina Checklist
	B. Boat Ramps		H. Fill		O. Marinas
	C. Road Crossings		I. Rip-Rap Sills and Revetments		P. Stormwater Management
	D. Channel Modifications/Dams		J. Vegetative Stabilization		Q. Ponds and Impoundments
	E. Utility Crossings		K. Jetties, Groins, Breakwaters	X	R. Maintenance Dredging
	F. Intake or Outfall Structures		M. Activities in State Wetlands		S. New Dredging

Section 3: Project Location

7. Project Site Address: Delaware Ave / Green St
____PO Box 426_____
____Marcus Hook, PA 19061-0426_____

County: ☐ N.C. ☐ Kent ☐ Sussex
Site owner name (if different from applicant): ____N/A_____
Address of site owner: _____
_____

8. Driving Directions:_I-95 to Exit 2 South (Route 452). Take Route 452 South (aka, Market St.). Make right onto 12th St. After 1 block, make left onto Green St. Go 1 mile and Marcus Hook Refinery is on the right. Entrance is located at intersection of Green St. and Delaware Ave.
(Attach a vicinity map identifying road names and the project location)

9. Tax Parcel ID Number: ___N/A - located in PA___ Subdivision Name: _____

WSLS Use Only: **Permit #s:** _____ _____ _____ _____

Type **SP** ☐ **SL** ☐ **SU** ☐ **WE** ☐ **WQ** ☐ **LA** ☐ **SA** ☐ **MP** ☐ **WA** ☐

Corps Permit: SPGP 18 ☐ **20** ☐ **Nationwide Permit #:** _____ **Individual Permit #**_____
Received Date: _____ **Project Scientist:** _____
Fee Received? Yes ☐ **No** ☐ **Amt: $**_____ **Receipt #:** _____
Public Notice #: _____ **Public Notice Dates: ON** _____ **OFF**_____

Section 3: Project Location (Continued)

10. Name of waterbody at Project Location: ___Delaware River___ waterbody is a tributary to: _____Delaware Bay_____

11. Is the waterbody: X Tidal ☐ Non-tidal Waterbody width at mean low or ordinary high water ___1.06 miles__

12. Is the project: ☐ On public subaqueous lands? X On private subaqueous lands?*
☐ In State-regulated wetlands? ☐ In Federally-regulated wetlands?

*If the project is on private subaqueous lands, provide the name of the subaqueous lands owner: ____Energy Transfer (applicant is also land owner)_____
(Written permission from the private subaqueous lands owner must be included with this application)

13. Present Zoning: ☐ Agricultural ☐ Residential ☐ Commercial X Industrial ☐ Other

Section 4: Miscellaneous

14. A. List the names and complete mailing addresses of the immediately adjoining property owners on all sides of the project (attach additional sheets as necessary):
Downstream Neighbor: General Chemical Corp., Delaware Valley Works, 6300 Claymont Pike, Claymont, DE 19703
Upstream Neighbor: Dept. of the Army, AMSA #83-1, 7 West Delaware Ave., Marcus Hook, PA 19061
Upstream Neighbor: Monroe Energy, LLC, Trainer Refinery, 4101 Post Road, Trainer, PA 19061

B. For wetlands and marina projects, list the names and complete mailing addresses of property owners within a 1,000 foot radius of the project (attach additional sheets as necessary):
N/A

15. Provide the names of DNREC and/or Army Corps of Engineers representatives whom you have discussed the project with:
__David Caplan - USACE_____ ___Katie Esposito - DNREC_____ ____Matthew Jones - DNREC_____

A. Have you had a State Jurisdictional Determination performed on the property? ☐ Yes X No
B. Has the project been reviewed in a monthly Joint Permit Processing Meeting? ☐ Yes X No
*If yes, what was the date of the meeting? _____

16. Are there existing structures or fill at the project site in subaqueous lands? X Yes ☐ No
*If yes, provide the permit and/or lease number(s):
____SP-201/18_____ _____WQ-201/18_____

*If no, were structures and/or fill in place prior to 1969? ☐ Yes X No

17. Have you applied for or obtained a Federal permit from the Army Corps of Engineers?
☐ No ☐ Pending X Issued ☐ Denied Date: _____9/20/2022_____

Type of Permit: __Section 10_____ Federal Permit or ID #: CENAP_OP_R-2011-0760-46

18. Have you applied for permits from other Sections within DNREC?
X No ☐ Pending ☐ Issued ☐ Denied Date: _____ Permit or ID #: _____

Type of permit (circle all that apply): Septic Well NPDES Storm Water

Other: _____

Section 5: Signature Page

19. Agent Authorization:

If you choose to complete this section, all future correspondence to the Department may be signed by the duly authorized agent. In addition, the agent will become the primary point of contact for all correspondence from the Department.

I do not wish to authorize an agent to act on my behalf ☐

I wish to authorize an agent as indicated below ☐

I, David Monk (Name of Applicant), hereby designate and authorize Ryan Brown (Name of Agent) to act on my behalf in the processing of this application and to furnish any additional information requested by the Department.

Authorized Agent's Name: Ryan Brown
Mailing Address: Weston Solutions, Inc.
205 Campus Drive
Edison, NJ 08837

Telephone #: (908) 565-0888
Fax #:
E-mail: Ryan.Brown@WestonSolutions.com

20. Agent's Signature:

I hereby certify that the information on this form and on the attached plans are true and accurate to the best of my knowledge. I further understand that the Department may request information in addition to that set forth herein if deemed necessary to appropriately consider this application.

Agent's Signature _____ Date _____

21. Applicant's Signature:

I hereby certify that the information on this form and on the attached plans are true and accurate to the best of my knowledge and that I am required to inform the Department of any changes or updates to the information provided in this application. I further understand that the Department may request information in addition to that set forth herein if deemed necessary to appropriately consider this application. I grant permission to authorized Department representatives to enter upon the premises for inspection purposes during working hours.

Applicant's Signature _____ Date 25 SEPTEMBER 2023

Print Name DAVID MONK

22. Contractor's Signature:

I hereby certify that the information on this form and on the attached plans are true and accurate to the best of my knowledge, and that I am required to inform the Department of any changes or updates to the information provided in this application. I further understand that the Department may request information in addition to that set forth herein if deemed necessary to appropriately consider this application.

Contractor's Name _____ Date 9/25/23

Print Name ERIC DICKERSON, WEEKS MARINE, INC.

MAINTENANCE DREDGING OR EXCAVATING

- If dredged material is to be placed in a disposal site, a separate map showing the location of the disposal site should be attached. This drawing must indicate the proposed retention levees, weirs, spillways, and/or devices for retaining the materials.

- Bottom samples to determine heavy metals or other toxic materials must be taken and analyzed if deemed necessary by the DNREC staff. The responsibility, as well as the expense incurred for obtaining and analyzing these samples, must be borne by the applicant.

- If maintenance dredging is to be done, evidence of previous dredging must be provided. Any previously issued permit with drawings which indicates the date the dredging occurred, the area involved, and dredging depth constitutes acceptable proof.

- Please make sure answers to all of the questions in this appendix correspond to information on the application drawings.

1. How many cubic yards of material will be MAINTENANCE DREDGED or excavated channelward of the:

   a. Tidal waters: mean high water line? 0 cu. yds.
   mean low water line? ~ 50,000 cu. yds.
   (estimated 10,000 cu. yds. per year)
   b. Non-tidal waters: ordinary high water line? 0 cu. yds.

Does this account for the total volume of proposed dredging for the project? _____Yes ____X__No
If there is new dredging associated with this project (dredging beyond previously authorized dimensions) please fill out appendix S for new dredging. – No New Dredging, only Maintenance

2. What will be the dimensions of the dredged or excavated area relative to mean low water (for tidal areas only) or ordinary water level (for non-tidal areas only)?
   *_____length *_____depth *_____base width *_____top width

   ** - See attached supplemental information sheet.*

3. What are average existing depths in area of proposed dredging? **_____ft. (mlw/ohw)
   Include a survey of proposed and existing depths on application drawings.

   *** - See attached supplemental information sheet.*

4. What is the proposed dredging depth in relation to surrounding bathymetry? ***_____ft.(mlw/ohw)
   Indicate both proposed depths and surrounding depths on attached drawings.

   **** - See attached supplemental information sheet.*

5. By what method(s) (hydraulic, clamshell or other) will the dredging be done? If other, explain:

   Environmental clamshell preferred, hydraulic as a backup only – See attached supplemental information sheet.

6. What is proximity of the dredging project to the nearest creek bank or banks? _____ft.
   What are existing land uses along this bank(s)?

   See attached supplemental information sheet.

   Describe the existing shoreline along this bank (vegetation, rip-rap, bulkhead, etc.).

   See attached supplemental information sheet.

7. Describe characteristics of the material to be disposed including:
   a. Physical nature of material (i.e. sand, silt, clay, etc.). Give percentages of various fractions if available.

      See attached supplemental information sheet.

   b. Chemical composition of material - Many areas have sediments with high concentration of pollutants (chemicals, organics etc.) which may be re-suspended or reintroduced into the water. For heavily industrialized sites, a chemical analysis of this material should be provided (if applicable).

      See attached supplemental information sheet.

   c. What are the dewatering properties of material to be disposal of?

      See attached supplemental information sheet.

8. How will the dredged or excavated material be transported to its disposal area?

   Dredged material will be transported by watertight barges for off-site disposal at White's Basin.

9. Land Disposal Areas.

   a. Describe dimensions, characteristics and exact locations of the proposed dredged material disposal site (provide photographs, directions to, and complete plans of disposal site).

      See attached supplemental information sheet.

   b. Describe method of dredged material containment (embarkment, behind bulkhead, etc.)

      If Weeks White's Basin is used for disposal, the dredge material will be deposited in a designated lagoon area, then pumped into an upland disposal facility.

      If on-site disposal is used, the dredge material will be stored in geotubes or above-ground tanks. Another alternative for on-site disposal would be that the dredged material would go to the USACE CDF (with permission) and ultimately be contained in a diked area with the CDF.

   c. What type of leachates will be produced by the spoil material and what is planned for the protection of groundwater? *N/A – no leachates will be produced.*

   d. Disposal site coordinates ~ 39° 48' 23" latitude ~ 75° 25' 08" longitude

e. What methods will be used to ensure that spoil water does not adversely affect water quality both during construction and after completion of the project?

During clamshell dredge use, measures will be taken to minimize negative impacts on water quality. Smaller buckets and slower cycle times have been used on past, similar projects and will continue to be employed to the greatest extent possible in the future. In all cases when clamshell dredging is used, an environmental bucket will be used and dredged material will be loaded onto watertight barges and shipped off-site.

f. Describe present land use of the disposal site.

White's Basin is a dredged material placement facilities.

10. Water Disposal Areas/ Beneficial Use Projects
Describe methods to be used for water disposal including volumes and site selection, and containment (if applicable). Include Fill or Wetland Appendix if applicable.

N/A – No water disposal is proposed.

11. Describe the existing water characteristics at the site, including chemical analysis for water quality.

N/A – No existing water chemical analysis results are available as no water disposal is proposed.

12. Identify the dredging and disposal schedule to ensure that operations do not degrade water quality during times of anadromous fish migration.

The area will be dredged in summer/fall of 2024, following the no-dredging window, which is March 15 – June 30 for clamshell dredging. Subsequent dredging events will occur approximately every 6 to 12 months.

13. Has an Erosion and Sediment Control Plan been approved by the designated plan approval agency for the project? An Erosion and Sediment Control Plan is required for any project disturbing more than 5,000 square feet of uplands. Final approved plans must be received by this office prior to permit issuance.
____ Yes __X__ No __X__ Not required

No upland placement of sediment.

Important time of year restriction information:
Please be advised that all dredging in the Inland Bays must be undertaken between September 1 and December 31 in order to protect summer and winter flounder and other aquatic species. Dredging in other Delaware waters may also be subject to certain time of year restrictions in order to protect fish and wildlife. Contact DNREC for more specific information regarding the restrictions that may apply within your project area.

ADDITIONAL INFORMATION FOR PERMIT APPLICATION FORM
Subaqueous Lands and 401 Water Quality Certification Projects

Basic Application Form

5. Provide a brief description of the project:

The proposed project is the maintenance dredging of up to approximately 10,000 cubic yards (cy) of sediment material to be removed annually from Berth 3C, the area surrounding the RW-7 water intake structure of the Marcus Hook Terminal, and a small area immediately adjacent to the currently permitted area to facilitate the maintenance of fish exclusion screens installed under other permits. Up to 25,000 square feet of area will be dredged at an anticipated frequency of once every year. It should be noted that during years of unusual high deposition, a second maintenance dredging event may be required. Utilizing either a hydraulic or most likely a mechanical dredge, Berth 3C will be dredged to its design depth of –40-feet MLW +2-feet overdredge and the area surrounding the RW-7 intake margin area will be dredged to –20-feet MLW +2-feet overdredge. The RW-7 fish screen maintenance area (75'x75') will be dredged to –17-feet MLW +2-feet overdredge to accommodate the maintenance of the fish exclusion screens around the RW-7 intake structure installed in March 2007 per the request of the Delaware River Basin Commission (DRBC).

The standard dredging option is by an environmental mechanical clamshell dredge, loading the sediments onto watertight barges, and then shipping the materials off-site for disposal at Weeks White's Basin, Logan Township, Gloucester County, New Jersey. Alternatively, dredged material may be disposed of at Waste Management's Biles Island located in Falls Township, Bucks County, PA, on the Delaware River. For disposal at the Biles Island site, sediment material would be dredged via mechanical dredge, barged upriver to Biles Island, then pumped upland via a hydraulic unloader directly into the upland CDF.

For disposal in either New Jersey (White's Basin) or Pennsylvania (Biles Island), Energy Transfer will conduct pre-dredge sediment sampling in accordance with an approved NJDEP or PADEP sampling and analysis plan. Sediment data will be sent to either NJDEP or PADEP (depending on which state will receive the material) for review and approval. The receiving disposal facility (White's Basin or Biles Island) will also review and approve the material to be disposed of for each maintenance dredging event.

Note that this maintenance dredging project will occur in the waters of the State of Delaware.

HISTORY OF PREVIOUS DREDGING AND PRERMITTING ACTIVITY

The following items have been provided:

- Copy of USACE Permit 2022
- Copy of DNREC Water Quality Certification 2018 and Subaqueous Lands Permit from 2018.
- Copy of NJDEP Water Quality Certificate Approval from 2023.
- Copy of PADEP Permit Approval E23-205.
- Copy of 2023 Sediment Characterization Report
- Copy of 2023 Material Acceptance Letter – Weeks Marine, White's Basin

APPENDIX R

MAINTENANCE DREDGING OR EXCAVATING

Supplemental Information

2. What will be the dimensions of the dredged excavated area relative to MLW (tidal areas)?

Berth 3C
Length: 800-feet (North face, measured parallel to the shoreline)
Length: 1600-feet (South face, measured parallel to the shoreline)
Depth: Berth 3C will be dredged to –40-feet MLW +2-feet overdredge
Width: 20-feet

RW-7 Intake Margin Area
Length: 150-feet (measured parallel to the shoreline)
Depth: Intake structure will be dredged to –20-feet MLW +2-feet overdredge
Width: 40-feet

RW-7 Fish Maintenance Screen Area
Length: 75-feet (measured parallel to the shoreline)
Depth: RW-7 Fish Maintenance area will be dredged to –17-feet MLW +2-feet overdredge
Width: 25-feet

3. What are the average depths in area of proposed dredging?

Berth 3C
Existing average depth: –38-feet MLW
Proposed depth: –40-feet MLW (+2-feet overdredge)

RW-7 Intake Area
Existing average depth: –16-feet MLW
Proposed depth: –20-feet MLW (+2-feet overdredge)

RW-7 Fish Maintenance Screen Area
Existing average depth: –8-feet MLW
Proposed depth: –17-feet MLW (+2-feet overdredge)

a. What is the proposed dredging in relation to the surrounding bathymetry?

Berth 3C
Existing depth of surrounding area: –38-feet MLW to –40+-feet MLW

RW-7 Intake Area
Existing depth of surrounding area: –14-feet MLW to –19-feet MLW

RW-7 Fish Maintenance Screen Area
Existing depth of surrounding area: –7-feet MLW to –9-feet MLW

b. By what method (s) (hydraulic, clamshell or other) will the dredging be done?

The material will be dredged mechanically with an environmental clamshell bucket and will be loaded onto watertight barges and then shipped to Weeks White's Basin, New Jersey for disposal.

c. What is the proximity of the dredging project to the nearest creek bank or banks? What are the existing land uses along the banks? Describe the existing land uses along this bank(s).

As indicated on the attached drawings, the area to be dredged is located approximately 550-feet from the Delaware Riverbank. Land uses along the bank are exclusively industrial (Marcus Hook Terminal). Little vegetation is present in this area because the area is mostly covered with impervious surfaces. However, there is a narrow strip of shrubbery growing among the rocks along the edge of the bank.

d. Describe the characteristics of the material to be disposed including:

The description of the sediments given below was derived from the Sediment Characterization Report that was written in October 2023. It has been observed during numerous previous sampling events that the nature of the sediments in this area have had consistent properties from one sampling event to the next; therefore, it is likely that the following results will continue to be present moving forward.

a. Physical nature of the material (i.e., sand, silt, clay, etc.). Give percentages of various fractions if available.

As shown in Table 4 of the Sediment Characterization Report (2023), the physical properties are as follows:

Client ID		MHT-RW7-SAMPLE A	MHT-3C-COMP B	MHT-3A-COMP C	MHT-3B-SAMPLE D	MHT-2A-COMP E	MHT-2B-COMP F	MHT-1A-COMP G	MHT-1A-COMP H
Lab Sample ID		180-161013-2	180-160903-3	180-160903-1	180-161013-1	180-160903-5	180-160903-4	180-161013-4	180-161013-3
Sampling Date		8/16/2023	8/15/2023	8/15/2023	8/16/2023	8/15/2023	8/15/2023	8/16/2023	8/16/2023
GRAIN SIZE AND TOTAL ORGANIC CARBON									
Gravel	%	0	0	0	0	0	0	8.6	0
Coarse Sand	%	0	0	0	0	0	0	2.3	0
Medium Sand	%	0.7	0.9	1	0.7	0.9	0.6	3.7	1.3
Fine Sand	%	4.3	5.2	6.2	4.6	5.3	4.7	6.6	5.1
Silt	%	56.9	51.9	49.7	61.1	53	52.9	44.7	52.3
Clay	%	38.1	42	43.1	33.6	40.8	41.8	34.1	41.3
Total Organic Carb	PPM	32,000	35,000	34,000	43,000	30,000	38,000	34,000	33,000

b. Chemical composition of material:

A detailed chemical analysis of core samples collected in the proposed dredge area of Berth 3C and RW7 was conducted in October 2023. Thirteen (13) sediment cores were collected to characterize the approximately 26,825 cy of sediments currently within the dredge templates. The thirteen cores collected from MHT were collected by Weston from a motorized sampling platform operated by Aqua Survey Inc. using a modified sediment coring device (Vibracore).

All thirteen initial cores collected were processed into 3 discrete samples and 5 composite samples according to the approved SSAP. This sampling strategy resulted in a total of 8 analytical samples plus a duplicate, matrix spike (MS), and matrix spike duplicate (MSD) samples. Each core was collected to the design depth of the area to be dredged plus 2 feet of allowable over dredge depth (see Table 1).

Core logs were prepared by Weston of each sediment core collected. The core logs list the precise collection coordinates as recorded by global positioning system (GPS), the depth of each core, and a physical description of the core. The physical description of each core is provided in Table 2. No distinct strata were observed in any cores and hence none were sub-sampled. Photographs of the individual cores can be found in Attachment 3.

After core collection and logging, each core was homogenized and composited, as applicable, into samples per the sampling plan (see Table 1) and stored in sealed glass jars by Weston field personnel. Samples were stored at 4°C and transported to Test America Laboratories for analysis. Samples were analyzed for the NJDEP required physical and chemical parameters. A field duplicate, matrix spike and matrix spike duplicate were also prepared and analyzed.

Table 1. Sediment Sampling Summary at MHT

Core #	Core Location	Sample Type	Sample to Depth*	Existing Depth	Target Core Length	Collected Core Length	Analytes**
1	Intake RW7	Sample A	20’ + 2’	19.2’	2.8’	2.8’	Reduced List
2	Berth 3C	Composite B	40’ + 2’	39.4’	2.6’	2.6’	Reduced List
3	Berth 3C	Composite B	40’ + 2’	39.1’	2.9’	2.9’	Reduced List
4	Berth 3A	Composite C	40’ + 2’	39.2’	2.8’	2.8’	Reduced List
5	Berth 3A	Composite C	40’ + 2’	39.2’	2.8’	2.8’	Reduced List
6	Berth 3B	Sample D	13’ + 2’	11.3’	3.7’	3.7’	Reduced List
7	Berth 2A	Composite E	36’ + 2’	35.0’	3.0’	3.0’	Reduced List
8	Berth 2A	Composite E	36’ + 2’	34.7’	3.3’	3.3’	Reduced List
9	Berth 2B	Sample F	15’ + 2’	13.5’	3.5’	3.5’	Reduced List
10	Berth 1A	Composite G	42’ + 2’	39.0’	3.0’	3.0’	Reduced List
11	Berth 1A	Composite G	42’ + 2’	39.3’	2.7’	2.7	Reduced List
12	Berth 1A	Composite H	42’ + 2’	39.4’	2.6’	2.6’	Reduced List
13	Berth 1A	Composite H	42’ + 2’	38.4’	3.6’	3.6’	Reduced List

*Includes 2’ overdredge, as requested by NJDEP.
** Samples analyzed for SVOCs, metals, hexavalent chromium, cyanide, percent moisture, sulfide, grain size, TOC and % moisture.

The sediment sampling procedures were conducted in accordance with *The Management and Regulation of Dredging Activities and Dredged Material in New Jersey’s Tidal Waters* (NJDEP, 1997), the *Field Sampling Procedures Manual* (NJDEP, 2005), and the approved *Sediment Sampling and Analysis Plan (SSAP) Template (Version 4.0)* as updated by the NJDEP Office of Dredging and Sediment Technology in September 2020.

Analytical Results and Screening of Sediment Samples

Test America analyzed the samples submitted for the applicable NJDEP chemical and physical parameters. All three discrete samples and five composite samples plus the duplicate sample were analyzed for the approved list of parameters (semi volatile organic compounds [SVOCs], target analyte [TAL] metals, trivalent and hexavalent chromium, cyanide, and percent solids and grain size). All three discrete samples and five composite samples were also analyzed for grain size, total organic compounds (TOC) and percent moisture. The method for each parameter is outlined in Table 3.

Table 2. Physical Descriptions of Sediment Cores

Core ID	Physical Description
1	Very loose, dark greyish-brown silt, trace fine sand, trace organics, firmer w/ depth.
2	Very loose, dark greyish-brown silt, trace clay, firmer w/ depth.
3	Very loose, dark greyish silt, fine sand, firmer w/ depth.
4	Very loose, dark greyish-brown silt, trace clay, firmer w/ depth.
5	Dark greyish-brown silt, trace fine sand, firmer w/ depth.
6	Greyish-brown silt, trace fine sand, trace organics, firmer w/ depth.
7	Loose, dark grey silt, trace clay, firmer w/ depth.
8	Dark greyish-brown silt, little fine sand, trace organics, firmer w/ depth.
9	Loose, dark grey silt, some clay, firmer w/ depth.
10	Very loose, dark greyish-brown silt, firmer w/ depth.
11	Very loose, dark greyish-brown silt, some clay, trace gravel, firmer w/ depth.
12	Loose dark greyish-brown silt, some clay, firmer w/ depth.
13	Very loose, dark greyish-brown silt, trace organics, firmer w/ depth.

Table 3. Analytical Parameters and Methods

Test Parameter	Analytical Method
Grain Size	ASTM D422
TCL SVOCs	8270E
TAL Metals/Mercury	6020B/7471B
Hexavalent/Trivalent Chromium	7196A
Cyanide, total	9014
TOC	Lloyd Kahn
Percent Moisture	ASTM D2216
Sulfide	9034

TCL = Target Compound List
TAL = Target Analyte List
TOC = Total Organic Compound
ASTM = American Society for Testing and Materials
EPA = U.S. Environmental Protection Agency
SVOCs = Semivolatile Organic Compounds

Overall, the sediments that were dredged from Delaware do not present a concern for disposal. No SVOCs, or metals were detected in bulk sediments in concentrations higher than New Jersey Non-Residential Ingestion-Dermal and Non-Residential Inhalation standards (May 2021) and were disposed of at White's Rehandling Basin.

e. Dewatering properties of the material to be disposed of?

The dewatering properties of the material to be dredged from the Delaware River are similar to material currently being placed into Weeks White's basin by Energy Transfer as well as material dredged by the USACE from shipping channel maintenance in the Delaware River.

MARCUS HOOK TERMINAL
ENVIRONMENTAL QUESTIONNAIRE

I. Project Description.

The applicant, Energy Transfer, is seeking a renewal of the existing Water Quality Certificate and Submerged Land Lease to continue previously authorized maintenance dredging activities at the Marcus Hook Terminal (MHT) in Tinicum Township, Philadelphia, Pennsylvania and Brandywine Hundred, New Castle County, Delaware. The MHT is located at 100 Green Street at coordinates 39.809106° North: 75.415767° West.

A. General Site Location: Accurately locate the project site with respect to State, county or other subdivision and in relation to streams and rivers.

The proposed dredging project will occur at Energy Transfer's MHT located on the western shore of the Delaware River (River Mile 79.2). The MHT is situated along the Delaware River and is located 100 Green Street, Marcus Hook, PA, within the Delaware River at River Mile 79.2, in Tinicum Township, Delaware County, Pennsylvania and Brandywine Hundred, New Castle County, Delaware.

B. Specific Site Location: Completely locate the project site with respect to cove, creek, property owner, plot number, etc.

Latitude and Longitude: 39°48' 32.796"N and 75°24' 56.88"W
Decimal Latitude and Longitude – 39.809106° North; 75.415767° West.

C. Description of proposed action: Carefully describe the action proposed, including the method of construction and equipment and materials to be used. Detail in your description is important.

The proposed project is the maintenance dredging of approximately 10,000 cubic yards (cy) of material per event approximately every 6 to 12 months, from the berthing areas at the MHT on the Delaware River. This may result in up to total of fifteen (15) events, with a maximum volume of 100,000 cy. The berthing area and raw water intakes will be dredged to their respective design depths of 20' + 2' to 42'+2' overdredge. Specifically, the berths and intake areas will be dredged to the following specifications:

Table 1. Dredged Areas at Marcus Hook Terminal

Berth	Design Depth	Over Dredge
Berth 3C	40.0'	2.0'
RW7	20.0'	2.0'

The water quality and sediment material at the site are anticipated to be consistent with those of previous maintenance dredging efforts based on the high level of consistency in the physical and chemical characteristics of dredged material from this location that has been characterized previously.

Dredging will be conducted by mechanical dredge, with disposal pending on which certified disposal facility is available at the time of the dredging event. No hydraulic dredging is proposed. Proposed dredging methods and disposal locations are as follows:

Clamshell Dredging: Two disposal facilities are proposed for disposal of sediment material dredged via mechanical (clamshell) dredge. Both facilities are permitted and authorized for the disposal of dredged sediment material. The preferred disposal location is White's Basin and associated upland disposal facility located in Logan Township, New Jersey. At White's Rehandling Basin, sediment material would be removed via mechanical dredge, transported via watertight barge to White's Rehandling Basin, bottom-dumped into White's Basin subaqueous disposal pit. When the basin is pumped out, sediments will ultimately be hydraulically pumped into an upland CDF. The alternate dredged material disposal location is Bile's Island, located in Falls Township, Bucks County, PA, at

approximately River Mile 128 on the Delaware River. At the Biles Island site, sediment material would be dredged via mechanical dredge, barged approximately 52 miles upriver to Biles Island, then pumped upland via a hydraulic unloader directly into the upland CDF. Figures of each of these confined disposal facilities are attached to this permit renewal application.

D. Purpose of Proposed Action: Define the purpose of the proposed structure or work.

The purpose of the proposed action is to maintain safe berthing areas at MHT.

E. Submit color photographs of the site, with explanations of the views shown (prints only).

See enclosed site photographs.

PART II - ENVIRONMENTAL IMPACT CHECKLIST			
ENVIRONMENTAL IMPACT	YES	NO	QUALIFYING REMARKS
A. PHYSICAL			
1. TOPOGRAPHY	X		The proposed project is maintenance dredging of existing berths. All dock areas have previously been dredged to their maximum permitted depth plus two foot overdredge.
2. GEOLOGICAL ELEMENTS AND LEACHING		X	Sediments are characterized through cores collected and analyzed prior to dredging. Results are evaluated through the state's 401 water quality certificate application process.
3. AIR		X	
4. TRANSPORTATION		X	Sediments are transported via barge for clamshell dredging events.
5. HANDLING OF HAZARDOUS MATERIALS		X	Historical and recent sampling at Energy Transfer's MHT indicates material is non-hazardous. Chemical and physical sampling is required as part of all 401 WQC applications.
6. SPOIL DISPOSAL	X		All disposal of dredged material spoils will occur in Confined Disposal Facilities (CDF) specifically designed to dewater and store sediments. Disposal location for each event is permitted via appropriate Water Quality Certificates. Each CDF has additional permits for operation, protection of water quality, and protection of groundwater.
7. SEWAGE AND SOLID WASTES		X	
8. WATER RESOURCES			
a. WATER QUALITY	X		Turbidity and suspended sediment levels do temporarily increase in the immediate vicinity of the dredging template during dredging event. However, dredging events will only occur during the allowable dredging windows to minimize the effects to spawning and migrating fish in the Delaware River.
b. HYDROGRAPHY, CIRCULATION, LITTORAL DRIFT		X	The proposed dredging projects will not impact the hydrography, circulation, and littoral drift for several reasons. The same dredging area and depths (template) will be maintained as the previous 50+ years. These dredging projects are short-term, on the order of weeks, and no equipment is permanently placed in the river. The zone of dredging is narrow relative to the wide width of the Delaware River at RM 79.
c. GROUND WATER		X	Groundwater monitoring wells have been installed and are monitored at the upland CDF associated with White's Basin and Biles Island.
B. BIOLOGICAL			
1. VEGETATION			
a. TERRESTRIAL		X	N/A
b. AQUATIC		X	No aquatic vegetation exists in the area to be dredged. The dredged areas are all below the photic zone.
2. FISH AND WILDLIFE			
a. MAMMALS		X	No significant impacts are expected. Areas to be dredged are not known to be utilized by mammals.
b. BIRDS		X	No significant impacts are expected. The areas to be dredged are not foraging areas for birds.

c. AMPHIBIANS		X	N/A
d. REPTILES		X	N/A
e. FISH		X	Dredging restrictions during the spawning and migrating period of anadromous fish will be followed. Previously, different environmental windows were used for clamshell dredging. These windows are currently under review by regulatory agencies. Energy Transfer and its dredging contractors will adhere to the latest promulgated dredging windows in its dredging permit.
f. SHELLFISH		X	No significant impacts expected. There are no shellfish beds in the areas to be dredged.
g. INVERTEBRATES		X	No significant impacts expected.
3. RARE OR ENDANGERED SPECIES		X	Two species of special concern are potentially located in the project area: 1) Shortnose sturgeon (*Acipenser brevirostrum)* and 2) Atlantic sturgeon *(Acipenser oxyrinchus)*. Energy Transfer will adhere to the specified environmental dredging windows to minimize impacts to these species during spawning and migration. These species utilize shallow mud flats with aquatic vegetation and lower flow rates for spawning further upriver (Philadelphia to Trenton). The proposed project area does not contain suitable spawning habitat for sturgeon. Other NOAA species of special concern in the Delaware River are also known to utilize shallow waters for spawning. This type of habitat does not occur within the dredging template.

ENVIRONMENTAL IMPACT	YES	NO	QUALIFYING REMARKS
C. CULTURAL			
1. LAND USE		X	Both proposed sediment disposal locations (Biles Island, and White's Basin) are currently used as dredged sediment disposal facilities. White's Basin Subaqueous Disposal Facility is also currently used for dredged sediment disposal. Additionally, all areas to be dredged have been historically dredged and permitted for such activity. No changes in land use will occur.
2. POPULATION DENSITY AND TRENDS		X	N/A
3. REGIONAL DEVELOPMENT		X	N/A
4. HISTORIC PLACES		X	N/A
5. ARCHAEOLOGICAL SITES		X	No archaeological sites are located within the dredging or disposal areas. Further, all sites have been used for industrial use for over 50 years.
6. AESTHETICS		X	No residential areas are located in close proximity to either the dredging or disposal sites.
7. UTILITIES		X	N/A
8. TRANSPORTATION SYSTEMS		X	N/A
9. RECREATION		X	N/A
10. PUBLIC HEALTH		X	Dredged material is non-hazardous material. Sediments are characterized prior to each removal to verify composition. Sediments are disposed in designated CDFs and do not pose any threat to public health.
D. OTHER FACTORS			
1. SECONDARY EFFECTS		X	
2. CONTROVERSIALITY		X	This application is for an activity that has been previously authorized.
3. IS SIGNIFICANT DREDGING INVOLVED?	X		Maintenance dredging is performed as needed, approximately every 6 to 12 months. Dredging volumes have historically varied per event, depending on sedimentation rates in the Delaware River. The previous maximum dredging event volume was approximately 5,000 cy. Dredge volumes in the past five years have been lower. This project involves no new dredging areas or new depths. Total amount of material to be dredged over the next 10 years is not expected to exceed 100,000 cy.
4. IS SIGNIFICANT FILLING INVOLVED?		X	No filling is involved.

PART III

CONSIDERATIONS OF A DREDGING PROPOSAL

A. Describe characteristics and locations of the proposed dredged material disposal site.

The proposed dredge disposal sites are the White's Basin and upland CDF, Bile's Island. Both proposed locations have been historically used as and are used currently as dredged materials management areas. Weeks Marine operates White's Basin. Waste Management owns and operates Bile's Island. Upland sites are large open areas enclosed by earthen berms. Dredged material placed into the sites dewaters by decanting and evaporation. In addition, sediments placed in the upland CDF associated with White's Basin is dewatered by decanting, the discharge of which is regulated through a New Jersey 401 WQC issued to the USACE which contains limits for TSS and certain metals.

B. Is there a comprehensive plan for disposal sites which take into account the accumulative effect over time and the decreasing amount of suitable sites for disposal?

At this time, a comprehensive regional plan evaluating anticipated dredging frequency and volumes relative to available confined disposal capacity has not been created for the Delaware River Basin. However, regional long-term dredging needs and available CDF capacity were evaluated throughout the permitting and review process associated with the Delaware River Channel Deepening Project. Energy Transfer also regularly attends the Maritime Exchange Private Berth Dredging Committee meetings in order to stay informed on regional dredging issues. These meetings are attended by all dredging-related stakeholders, including representatives from state regulatory agencies, private and public entities that need to perform dredging, USACE, and others.

Also, due to economic and operational considerations, Energy Transfer limits maintenance dredging to where and when it is necessary in order to provide safe berthing depths at the refinery and to those berthing areas that are required for the needs of the business.

C. Describe the present land use of the disposal site.

The proposed disposal locations are currently confined disposal facilities, specifically designed to store and dewater dredged material.

D. Describe characteristics of the material to be disposed including:

1. Physical nature of material (i.e. sand, silt, clay, etc.). Give percentages of the various fractions if available.

Based on historical and recent sampling results at Energy Transfer MHT, the material is expected to be primarily fine-grained material (silt and clay with some fine sands and trace gravels).

2. Chemical Composition of Material: Many areas, especially marinas, highly industrialized areas, etc., have sediments with high concentrations of pollutants (chemicals, organic material, etc.). These materials may be re-suspended or reintroduced into the water and result in serious environmental damage. If your proposed dredging is in an area such as described above, a chemical analysis of the material to be dredged should be provided.

Approximately 3 to 5 sediment cores are proposed for collection within the dredging template at MHT as part of sediment characterization efforts each year. These sediments are collected as part of Sediment Characterization Reports and submitted to NJDEP and/or PADEP as part of 401 Water Quality Certificate (WQC) applications for dredging.

Sediments will be tested for grain size distribution, metals, semivolatiles, PCBs, pesticides, and cyanide. The sediment sample results will be compared with New Jersey Non-residential Soil Cleanup Ingestion/Dermal and Inhalation Standards as part of NJDEP 401 WQC applications.

3. Dewatering properties of material to be disposed.

The dewatering properties of the material will be similar to the material currently being placed into the proposed disposal locations by USACE from shipping channel maintenance dredging, as well as the prior maintenance dredging operations at the MHT site over the past 10+ years in the Delaware River.

4 Compatibility of material settling rates of material to be disposed.

All characteristics, including settling rates, of dredged sediments from MHT are compatible with dredged material currently being placed at the site by USACE during the shipping channel maintenance dredging, as well as the prior maintenance dredging operations at the MHT site over the past 10+ years in the Delaware River. MHT berthing areas are adjacent to the federal navigation channel.

5. Dredging and disposal schedule to insure that operations do not degrade water quality during times of anadromous fish migration.

Energy Transfer will comply with the dredging restrictions imposed by USACE in order to protect aquatic life.

E. When the project involves land disposal discuss the following:

1. Method of disposal to be utilized, i.e., pipeline discharge, barge, hopper (underway or stationary)

Please see description provided in Question 1.C.

2. Describe method of dredged material containment (i.e., embankment, behind bulkhead, etc.).

The upland CDF adjacent to White's Basin uses a stone and earthen dike revetment as the method of containment. Bile's Island uses earthen embankments as the method of containment.

3. What type of leachates will be produced from the spoil material and what is planned for protection of the groundwater?

The leachates would be expected to be very similar to those at White's Basin from current maintenance dredging materials removed from USACE shipping channel dredging, as well as the prior maintenance dredging operations at the MHT site over the

past 10+ years on the Delaware River. Bulk sediment characterization efforts described above have verified that the dredged sediments are not hazardous.

4. Methods to insure that spoil water does not adversely affect water quality both during construction and after completion of the project.

Normal dredging restrictions and precautions would apply. No clamshell dredging will occur during the most recently promulgated dredging windows to minimize impacts aquatic life during their spawning period.

5. Provisions for monitoring during discharge – water quality, sediment transport, precautions to prevent "short" circuiting dumping.

Normal maintenance dredging precautions and disposal site inflow procedures would apply. The CDF operators are required to monitor discharge and report results to USACE and NJDEP (White's Basin) or PADEP (Biles Island) as part of the 401 WQC for each facility. Discharge Water Quality has historically been well within the limits established by the WQC.

F. Consider and discuss the following for water disposal:

1. Describe methods to be used for water disposal, including volumes and site selection.

No permanent aqueous disposal is proposed as part of this application.

Temporary aqueous disposal occurs in one of the two proposed scenarios, environmental clamshell dredging with disposal at White's Basin. In this case only, dredged material will be transported to White's Basin via watertight barge and bottom-dumped into the subaqueous disposal pit in the Delaware River. The material will then be re-handled and moved to an upland CDF. NJDEP requires the operator of White's Basin to monitor surface water and groundwater at the CDF. The surface water discharge is monitored via a 401 WQC; groundwater is monitored via monitoring wells. The volume of material and associated water varies by event.

2. Describe the existing water characteristics at the site, including chemical analysis for water quality

Water quality at the docks (dredging sites) is consistent with water quality in the Delaware River since the docks are hydraulically connected to the river. Water quality at White's Basin (disposal site) is conducted by the operator of White's Basin as a condition of their WQC.

G. Discuss the frequency and amount of maintenance dredging which will be required; discuss the resulting impacts.

The frequency of the maintenance dredging is anticipated to be once every 6 to 12 months with volumes of up to 10,000 cubic yards per event. Maintenance dredging is strictly performed on an "as-needed" basis.

H. Alternatives

1. Discuss all alternatives to the project including the no action alternative.

"No Action" is not a feasible alternative. Maintenance dredging is critical to providing safe berthing depths and continued operations. Alternate site locations for the berthing areas are also not feasible since the proposed project is maintenance dredging of existing berthing areas. If dredging does not occur, the berthing areas would eventually fill with sediment material.

2. Discuss alternative types and methods of dredging and disposal, such as pipeline discharge, barging, or hopper method.

Two types of dredging have been proposed in this application, 1) clamshell dredging with barge transport (White's Basin disposal); and 2) clamshell dredging with sealed scow transport (Bile's Island).

3. Discuss alternatives to dredging.

   There are no alternatives to dredging since sediments must be removed from the berthing areas.

4. Discuss alternative areas of sites for spoil disposal.

   Two alternative sites have been proposed for soil disposal in this application: White's Basin and Biles Island. In addition to these locations, opportunities for beneficial use of sediments will continue to be pursued. Several beneficial use options were evaluated in Energy Transfer' Dredged Material Management Plan.

5. Discuss impact of port docking patterns upon the demand for dredging. Can alternative patterns reduce the amount of dredging required to support port operations?

   Energy Transfer has examined its dock patterns in conjunction with the needs of the business for the MHT and at this time needs access to all berthing areas. As part of the long-term dredging plan, Energy Transfer will continue to periodically review alternative docking patterns in order to further minimize the amount of dredging required.

6. Suggest alternative means of construction which would prevent or minimize water quality degradation using EPA standards for guidance.

   Not applicable to maintenance dredging activities since there is no construction as part of the proposed project. Regarding the dredging, Energy Transfer' contractors will use environmental buckets when clamshell dredges are used, if feasible. Energy Transfer evaluated the possibility of using silt curtains to minimize suspended sediments during dredging. Unfortunately, the high flow rates in the Delaware River preclude the use of this technique. Silt curtains are better suited for lower energy waterways.

7. State in detail impacts resulting in alternative locations for the proposed project.

   Alternative locations are not practical to these maintenance dredging activities.

Description of the Action Area and Its Habitat:

The action area is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR § 402.02). For this project, the action area includes the proposed dredging area and the underwater area where effects of dredging will occur due to habitat alteration and an increase in suspended sediment; the transportation route of the dredged material within the Delaware River; and the existing rehandling basin at Whites Basin or Biles Island is an upland, confined disposal facility.

Project activities used to define the action area include dredging, transport of sediment, and disposal of sediment. The proposed dredge areas are situated along one berth and 1 water intake area and are used by vessels to access Delaware portion of the Marcus Hook Terminal. The areas will be modified to allow for safe berthing. Analyses of conventional mechanical clamshell bucket dredging operations have shown elevated suspended sediment levels may be present in the immediate vicinity of the clamshell bucket, and within a 2,000 foot radius from the location of the clamshell dredge (USACE 2001, Burton, 1993). As such, the action area includes the waters of the Delaware River, within the proposed dredging area and up to 2,000 feet away (subject to the ebb and flow of the tide), where turbidity impacts are expected to occur.

The dredged material will be transported by barges to the Weeks Marine Whites Basin for rehandling and upland disposal or to Biles Island for upland disposal. Transport and docking of the scows/barges could result in vessel strikes of sturgeon fish. Thus, in addition to the dredging area and additional potential turbidity area, the action area includes the navigation or ship channel from the dredge site up-river 3 miles to, and including, the Weeks Marine Whites Basin, or from the dredge site up-river 52 miles to, and including, Biles Island. These areas together are expected to encompass all of the direct and indirect effects of the proposed action.

The discharge of dredged material into Whites Basin, and the subsequent pumping of the material to the upland disposal site, has been separately reviewed and approved previously (see Department of the Army individual permit CENAP-OP-R-2011-0760-46). That permit authorizes rehandling and disposal operations for any and all dredged material generated within the Delaware and Schuylkill Rivers. It is not exclusively authorized only for the Weeks Marine "blanket" dredging permit sites (see CENAP-OP-R-2013-00695-46). Since sediment disposal enters into determination of action area, and the vessels need to enter the Whites Basin as part of the transport, that area was included in the action area in order to account for potential vessel impacts. While the actual disposal operations have been specifically reviewed and approved separately, further review and consideration of that activity is included herein. We note that this permit application is for dredging only, pursuant to Section 10 of the Rivers and Harbors Act. There is no review or authority under Section 404 of the Clean Water Act (CWA) for this application, as the applicant has no control over those operations, which are separately approved and carried out by Weeks Marine in combination with their handling of dredged material from other sites, and it is not possible to separate out this material for this analysis. All material re-handled in the basin is subject to testing requirements by the State of New Jersey (or Pennsylvania for Biles Island disposal) and must receive an individual Section 401 (CWA) Water Quality Certificate prior to such rehandling.

The proposed dredging project and action area are located within the tidal portion of the Delaware River, in an area of active port facilities and an adjacent maintained major federal navigation channel, which is currently being deepened to 45 feet. Habitat in the dredging area can be described as estuarine freshwater subtidal with water depths ranging from -20 MLW to -40 MLW. The mean tidal range at this location is approximately 6.25 feet (MHW to MLW). The site has dredged at least annually over the past 10 years. The dredge area has been

the access area to the docks since at least the 1960s. The applicant has determined that the sediment can be characterized as mostly silt and clay material with some sand.

Vessel use would be limited to the barges (including scows) and tugs identified above, both working in and around the dredging area as well as transiting the federal navigation channel of the Delaware River to and from the disposal site. For the transportation of the dredged material to the disposal site, the portion of river being traversed is heavily and constantly used by large commercial vessels (e.g. tug boats, freight barges, container ships, and oil tankers) as well as recreation vessels of varying sizes. The river is surrounded by large port facilities of Philadelphia and Camden as well as large petroleum refineries in Camden and Gloucester Counties (New Jersey) and Delaware County (Pennsylvania).

The Delaware River is approximately ¾ of a mile to 1 mile wide from the dredging site down-river to the disposal site. In all, the action area includes approximately 3 river miles (Whites Basin) or 52 river miles (Biles Island) of the Delaware River channel within the federal navigation channel (or ship channel, 800 feet wide in this reach, not counting various designated anchorages) for a navigable impact area within the ship channel of approximately 0.54 square miles (roughly 350 acres for Whites Basin) or 7.9 square miles (roughly 5,000 acres for Biles Island) for transport, plus 47 acres of open waters at the dredge site for actual dredging and equipment movement, the 80-acre Whites Basin (Biles Island is an upland, confined disposal facility), and approximately 200 acres of open water for potential turbidity plume (based on a 2000' radius as described in "Water Quality Effects").

As noted above, the Delaware River at the project area is primarily used for heavy commercial ship navigation to facilities upstream and downstream. No floodplain access, important to supporting forage for young of the year sturgeon, is available to the sturgeon due to large riprap and elevation change between the river and the adjacent uplands along the river between dredging and disposal sites. There are no known shellfish beds or submerged aquatic vegetation areas.

NMFS Listed Species and Critical Habitat in the Action Area:

Shortnose Sturgeon

The Federally endangered shortnose sturgeon (*Acipenser brevirostrum*) occurs in the Delaware River from the lower Bay upstream to at least Lambertville, New Jersey (RM 148). In the Delaware River, movement to the spawning grounds occurs in early spring, typically in late March, with spawning occurring through early May. The concentrated use of the Scudders Falls region (RM 133) in the spring by large numbers of mature male and female shortnose sturgeon indicates that the area between Scudders Falls and the Trenton rapids (RM 133-139) is where spawning occurs.

Limited studies have been conducted on juveniles in the Delaware River. As shortnose sturgeon demonstrate nearly identical migration patterns in all rivers, it is likely that juveniles in the Delaware River exhibit similar migration patterns to sturgeon in other river systems. In these systems, juveniles moved back and forth in the low salinity portion of the salt wedge during summer. In the Delaware River, the oligohaline/freshwater interface can range from as far south as Wilmington, Delaware, north to Philadelphia, Pennsylvania, depending upon meteorological conditions such as excessive rainfall or drought. As a result, it is possible that in the Delaware River, juveniles could range from Artificial Island (RM 54) to the Schuylkill River (RM 92)

(O'Herron 2000, pers. comm.). Research in other river systems indicates that juveniles are typically found over silt and sand/mud substrates in deep water of 10-20 meters (33-66 feet).

After spawning, adult shortnose sturgeon migrate rapidly downstream to the Philadelphia area (RM 100). Within a few weeks of migrating to this area, many adult sturgeon return upriver between RM 127 and 134, while others gradually move to the same area over the course of the summer (O'Herron et al. 1993). By the time water temperatures have reached 10°C, typically by mid-November, most adult sturgeon have returned to the overwintering grounds in the Roebling (RM 124), Bordentown (RM 129), or Trenton reaches (RM 133). However, unlike sturgeon in other river systems, shortnose sturgeon in the Delaware do not appear to remain as stationary during overwintering periods. Overwintering fish have been found to be generally active, appearing at the surface and even breaching through the skim ice (O'Herron et al., 1993). Due to the relatively active nature of these fish, the use of the river during the winter is difficult to predict. There is also evidence that, unlike adults, juveniles do not form dense aggregations and instead are more dispersed in overwintering areas (ERC, 2007). Studies tracking the movements of juvenile sturgeon in the Delaware River indicate that individual behavior is diverse, with some individuals establishing a relatively small "home range" (Fisher, 2011) during the winter months and others exhibiting extensive movements. No information on what factors contribute to different behaviors is available; these differences are seen in fish of the same year class making it difficult to determine if there are environmental or developmental factors at play or if it is merely natural variability.

Additionally, preliminary tracking studies of juveniles indicate that the entire lower Delaware River from Philadelphia (approximately RM 100) to below Artificial Island (RM 49) may be used as an overwintering area by juvenile shortnose sturgeon (ERC, 2007).

Based on the best available scientific information, adult and juvenile shortnose sturgeon are likely to be using the action area as a migratory pathway to and from overwintering, spawning, and foraging grounds. The action area (i.e., RM 79-82 for Whites Basin and RM 79-131 for Biles Island) is also within the area believed to be used by overwintering juvenile shortnose sturgeon (i.e., RM 49-100). While the project site is a maintained port facility, and is surrounded by such facilities, the area may support benthic invertebrates for opportunistic foraging. Due to the distance from the spawning grounds, which are up-river from the action area, shortnose sturgeon eggs or larvae, whose occurrence is limited to the waters near the spawning grounds, will not occur in the action area. Therefore, based on the best available scientific information, adult and juvenile (including overwintering juveniles and young of the year (YOY)[1]) shortnose sturgeon may occur in the action area year-round in the action area, including movement to and from overwintering, spawning, and foraging grounds.

Atlantic Sturgeon

Atlantic sturgeon (*Acipenser oxyrinchus*) originating from the New York Bight, Chesapeake Bay, South Atlantic, and Carolina Distinct Population Segments (DPS) are listed as endangered, while the Gulf of Maine DPS is listed as threatened. The marine range of all five DPSs extends along the Atlantic coast from Canada to Cape Canaveral, Florida; therefore, Atlantic sturgeon originating from any of the five DPSs may be present in the Delaware Bay.

Atlantic sturgeon are omnivorous benthic feeders that draw food into a ventrally located protrusible mouth (Bigelow and Schroeder, 1953). The diet of adult and subadult Atlantic sturgeon includes benthic invertebrates

[1] YOY fish are less than one year old, but are no longer larvae.

such as mollusks, crustaceans (incl. amphipods, decapods and isopods), worms (Oligo- and Polychaeta), gastropods and occasionally fish (ASSRT, 2007; Guilbard et al., 2007; Savoy, 2007). Juveniles also feed on aquatic insects. (ASSRT, 2007). Soft substrates, such as sand and mud, constitute ideal forage conditions for Atlantic sturgeon. Atlantic sturgeon presence is strongly associated with the availability, of prey, and as a result sturgeon may occur in any marine, estuarine or riverine location where suitable forage and habitat are available.

Atlantic spawning migration and spawning is believed to occur from April through June (Fox and Breece, 2010). In the Delaware River, likely spawning locations have been identified to exist at RM 75-93 and RM 106-118 (Breece et al., 2011, Fox and Breece, 2010). Tracking of adults showed that they spent relatively little time in the river each year, generally about 4 weeks (Fox and Breece, 2010).

Sturgeon eggs are deposited on hard bottom substrate such as coarse sand, cobble, gravel, bedrock, etc. (ASMFC, 2009), and the negative buoyant and adhesive eggs attach to the bottom substrate at the spawning site. After hatching, larvae move downstream to rearing grounds above the tidal saltwater edge in the upper estuary (Kynard and Horgan, 2002). In the Delaware River, YOY use several areas from Deepwater (RM 65) to Roebling (RM 123) during late fall to early spring with some remaining in the Marcus Hook area while others move upstream (Calvo et al., 2010; Fisher, 2009). Larvae do not tolerate saline water, age-0 (i.e., YOY) have low survival at salinities greater than 8 ppt, and juveniles may occupy freshwater for more than two years (age-1 and -2) though some may move down in brackish water when temperature drops (Lazzari et al., 1986, Haley 1999; Hatin et al., 2007; McCord et al., 2007; Munro et al., 2007).

Older fish are more salt tolerant and occur in higher salinity waters as well as low salinity waters but remain in the natal estuary for months to years before emigrating to open ocean (ASSRT 2007; Dadswell, 2006; Collins et al., 2000). In the Delaware River, juvenile Atlantic sturgeon are believed to overwinter in the deeper waters of the lower estuary. At age two years or older, juveniles may leave the estuary and enter the bay and coastal areas as subadults.

Subadults (as well as adults) from multiple DPSs are found migrating along the coast and may enter the Delaware Bay. Generally, subadults, including non-natal sturgeon, immigrate into the bay and estuary as early as mid-March but more typically from mid-April through May. They then move upstream and establish home range in the summer months in the river (Fisher, 2011, Simpson, 2008). In late fall (about November), subadults depart the river to overwintering areas in the lower estuary, Delaware Bay, or nearshore ocean (Brundage and Meadows, 1982; Lazzari et al., 1986; Shirey et al., 1997; 1999; Brundage and O'Herron, 2009; Brundage and O'Herron in Calvo et al., 2010).

Based on the best available scientific information, adult, subadult, juvenile and YOY Atlantic sturgeon are likely to be present in the action area (RM 79-82 for Whites Basin or 79-131 for Biles Island), including movement to and from overwintering, spawning, and foraging grounds. The action area may be suitable for sturgeon foraging. The proposed dredging area is located within the upper reaches of what is considered suitable for spawning Atlantic sturgeon. However, the habitat characteristics of the portions of the action area located within, and near, the proposed dredging area (maintained port facility, muddy substrate and frequent vessel disturbances) make actual spawning within the dredging area unlikely. In addition, due to the timeframe of work (i.e., July through mid-March due to seasonal restriction), eggs or larvae are not expected to be present in the vicinity of the action area and thus, will not be exposed to the direct and indirect effects of the proposed action.

Further information concerning the location and distribution for each DPS of Atlantic sturgeon can be found on NOAA's webpage at http://www.nmfs.noaa.gov/pr/species/fish/atlantic-sturgeon.html and is incorporated here by reference.

Effects of the Action:

Habitat Modification

Effects to listed species can be caused by disturbance to the river bottom that reduces the availability of prey species or alters the composition of forage. Activities that may alter the river bottom, reduce availability of prey species, or alter the composition of forage include the dredging of the Delaware River (47 acres). The action area has been shown to support habitat for small benthic organisms. Sturgeon could utilize the area opportunistically for foraging based on current conditions.

The navigation channel (below the mean low water line to a depth of 45'), as part of the action area, is approximately 800 feet wide from the subject site up-river 3 miles to the disposal site at Whites Basin or up-river 52 miles to the disposal site at Biles Island. With the inclusion of the entire ship channel width from the dredge site to the disposal sites, the action area includes approximately 3 or 52 river miles of the Delaware River channel for Whites Basin or Biles Island, respectively, or a navigable impact area of approximately 350 or 5,000 acres (0.5 or 7.9 square miles) for Whites Basin or Biles Island, respectively, for transport (plus the 80-acre Whites Basin) and approximately 47 acres of open waters at the dredge site for actual dredging and equipment movement. The 47-acre dredging area has been dredged at least annually for the past 10 years, and dredging has occurred from the 1960s. Aside from any maintenance work on the docks, we do not expect any other impacts or removal of bottom substrate within the action area that will not require consultation with NMFS. Minimal, recurring temporary impacts (47 acres) will result from the dredging at the project site. The rest of the action area is taken up by shallow barge movement in 20' to 42' deep waters. Sediment plumes from the work zone would have only a minimal effect on the surrounding habitat. Further, studies done by Wilbur and Clarke (2007) demonstrate that benthic communities in temperate regions occupying shallow waters with substrate of sand, silt, or clay reported recovery times between 1 and 11 months after dredging. It can be expected that benthic communities within the action area will recover within a year of dredging.

The area of proposed dredging is relatively small compared to the overall foraging habitat available in this reach of the river. For instance, there are less developed shoreline areas directly across the river in New Jersey. In addition, except for modified depths, the dredging area is expected to recover to pre-project conditions following completion of the proposed project in terms of benthic communities. As such, the recurring temporary loss of available foraging habitat within the action area is not expected to reduce availability of forage to sturgeon to a point where any reduction in growth, survival, or reproduction could be meaningfully measured of detected. Thus, the Corps has determined that habitat modification is expected to have insignificant effects on federally listed shortnose and Atlantic sturgeon.

Water Quality Effects

The proposed project involves the mechanical or bucket dredging of sediments from the river bottom. The primary water quality effect that such dredging may have on fishery species would largely be associated with turbidity and resulting elevation of total suspended solids (TSS). Suspended sediment levels from conventional

mechanical clamshell bucket dredging operations have been shown to range from 105 mg/L in the middle of the water column to 445 mg/L near the bottom (210 mg/L, depth-averaged) (ACOE, 2001). Furthermore, a study by Burton (1993) measured turbidity levels 500, 1,000, 2,000 and 3,300 feet from dredge sites in the Delaware River, and turbidity levels were detected between 15 mg/L and 191 mg/L up to 2,000 feet from the dredge site. Based on these analyses, elevated suspended sediment levels of up to 445 mg/L may be present in the immediate vicinity of the clamshell or bucket, and suspended sediment levels of up to 191 mg/L could be present within a 2,000 foot radius from the location of the clamshell or bucket dredge.

A literature review by Burton (1993) demonstrated that lethal effects on fish due to turbid waters can occur at levels between 580 mg/L to 700,000 mg/L, depending on the species. Studies on striped bass (an anadromous species) showed that pre-spawners did not avoid concentrations of 954 to 1920 mg/L to reach spawning sites (Summerfelt and Moiser, 1976 and Combs, 1979 in Burton, 1993). Both shortnose and Atlantic sturgeon are thought to be at least as tolerant of elevated turbidity as other anadromous fish. The TSS levels expected for mechanical dredging (i.e., up to 445 mg/L) are below those shown to have an adverse effect on fish (580.0 mg/L for the most sensitive species, with approximately 1,000-2,000 mg/L more typical for anadromous fish; see summary of scientific literature in Burton, 1993). Further, TSS levels at or above 390 mg/L may negatively impact benthic communities (EPA, 1986). Loss or reduction of benthic organisms may indirectly adversely affect sturgeon because they forage on such organisms. Since TSS levels during mechanical dredging have been shown to range from 105 mg/L to 445 mg/L, benthic communities could be adversely impacted if the higher TSS levels occur. However, any turbidity over 390 mg/L will be quickly diluted as the suspended sediment is transported and spread by water currents and therefore limited to the immediate areas surrounding the dredge and of short term. Consequently, any sediment plume with TSS levels over 390 mg/L will occur over a small area and mostly be limited to the dredged area. As such, any turbidity impacts on the benthic community would not be expected to limit forage available for sturgeon as discussed above for effects from dredging (Habitat Modification).

Elevated TSS levels could affect sturgeon if a plume causes a barrier to normal behaviors, but effects to sturgeon from exposure to the sediment plume are expected to be limited to behavioral responses. Sturgeon are highly mobile, and they could avoid the sediment plume with minor movements to alter course out of the sediment plume. Such movement could result in increased energy expenditure and reduced energy intake due to reduced foraging time. Given the species' tolerance to elevated turbidity (see above), any such movements are expected to be minimal. The river in the vicinity of the project area is approximately 1 mile wide, and any minor movements due to sediment plumes in the immediate vicinity of the dredging would be within normal activity patterns. Given the river width, foraging in adjacent areas (outside the sediment plume) are unlikely to be affected. Based on this information, any effects of suspended sediment resulting from proposed dredging activities on the sturgeon, including behavioral responses/ movements, would be too small to be meaningfully measured or detected, and are insignificant.

Disposal of Dredge Material

As described above, dredge material will be deposited in a semi-enclosed basin in the Delaware River (Whites Basin) or an upland, confined disposal facility at Biles Island. As disposal operations at Whites Basin will involve the placement of material within the Delaware River, disposal may affect benthic habitat and water quality.

Whites Basin: Material Disposal and Effects to Benthic Habitat

To date, no sturgeon have been documented within Whites Basin. This may be due to the semi-enclosure of the disposal site and unsuitable habitat within the basin. As the basin is used frequently to deposit dredged material and this material is being dredged for disposal at upland sites, the benthos of this area is continually disturbed, resulting in limited benthic resources. With limited benthic resources, and thus, a lack of suitable forage, combined with frequent disturbances within the basin, shortnose and Atlantic sturgeon are extremely unlikely to occur within the basin. Instead, shortnose or Atlantic sturgeon are likely to bypass the opening of the semi-enclosed basin while migrating to other areas of the Delaware River that are more suitable for foraging, spawning, or other essential behaviors. Based on this and the best available information, effects of disposal activities on Atlantic and shortnose sturgeon are discountable.

Whites Basin: Water Quality Effects of Material Disposal

The proposed disposal of material at Whites Basin will cause a recurring temporary increase in the amount of turbidity in the semi-enclosed basin to slightly above background levels (average range of 10.0 to 120.0 mg/l); however, suspended sediment is expected to settle out of the water column within a few hours and any increase in turbidity will be short term. Turbidity levels associated with the placement of material within the basin are likely to remain primarily within the basin, though a small plume may extend into the Delaware River if sediment is placed near the confluence of the basin mouth and the Delaware River.

As described above, studies of the effects of turbid waters on fish suggest that concentrations of suspended solids can reach thousands of milligrams per liter before an acute toxic reaction is expected (Burton, 1993). TSS levels expected for material disposal (10.0 to 120.0 mg/l) are below those shown to have an adverse effect on fish (580.0 mg/L for the most sensitive species, with 1,000.0 mg/L more typical; see summary of scientific literature in Burton 1993). While the increase in suspended sediments in Delaware River may cause Atlantic or shortnose sturgeon to alter their movements, any change in behavior will only involve movements to alter course out of the sediment plume and would not amount to a measurable or detectable change in normal activity patterns. Any course modifications would not affect the migration ability or energy use of sturgeon. Based on the above information, the effect of suspended sediment resulting from disposal activities at Whites Basin on Atlantic or shortnose sturgeon will be insignificant.

Conclusions:

Based on the analysis that any effects to listed species of sturgeon and critical habitat will be insignificant and/or discountable, we have determined that the proposed project is not likely to adversely affect any listed species or critical habitat under NMFS jurisdiction, provided that any permit issued by this office includes a seasonal restriction prohibiting mechanical dredging from March 15 through June 30, inclusive, of any year. This determination is based on the best scientific and commercial data available to complete this analysis. Pursuant to Section 7 of the ESA, we request NMFS concurrence with this determination.

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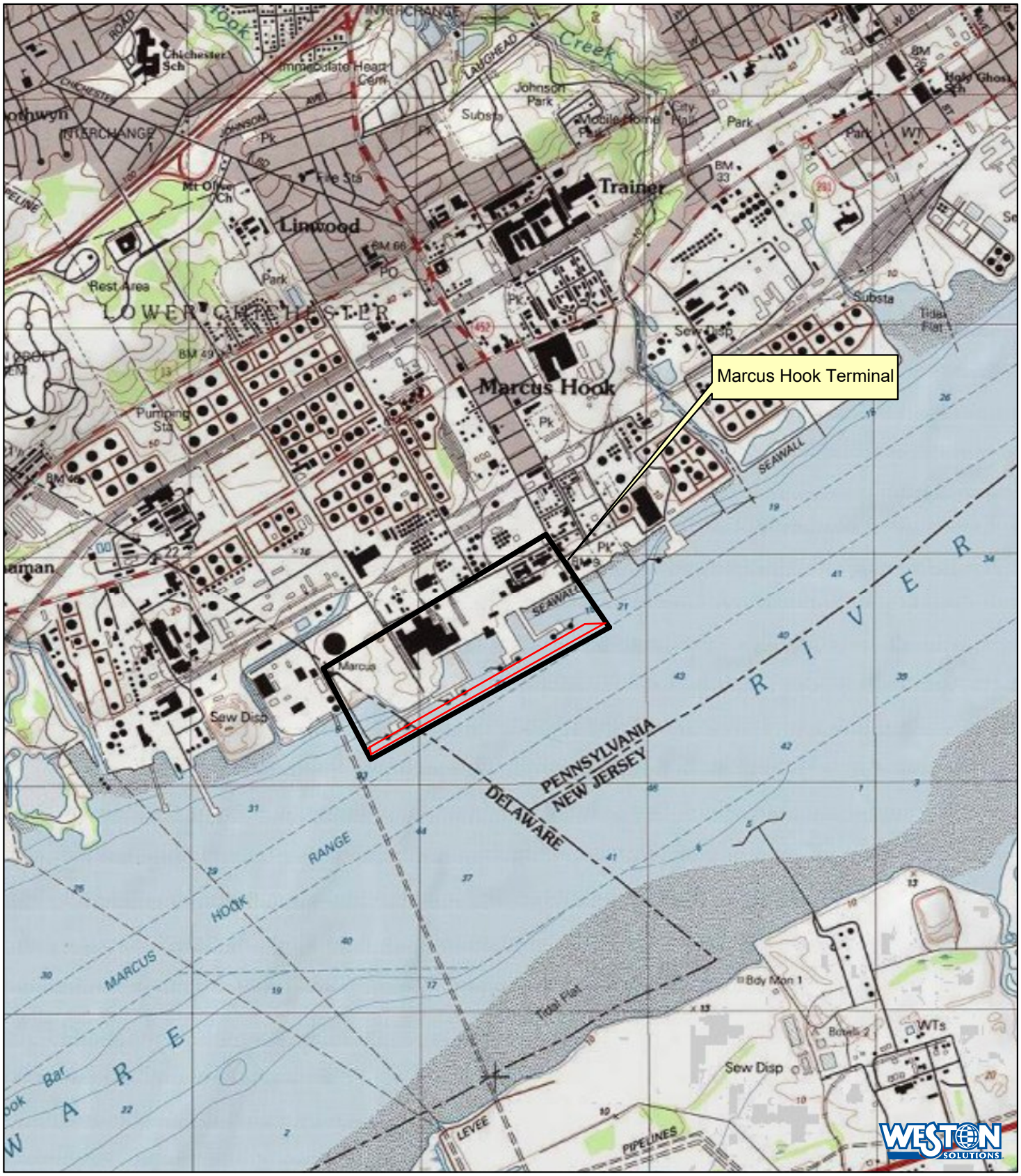

Quad Source: ESRI, Mapping Service
USGS 2013. Marcus Hook PA, NJ, Del
USGS Quad, 1967. Revised 1970

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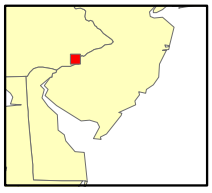

Quadrangle Location

Figure 1
Site Location Map -
Energy Transfer
Marcus Hook Terminal
Delaware River
Marcus Hook, Pennsylvania

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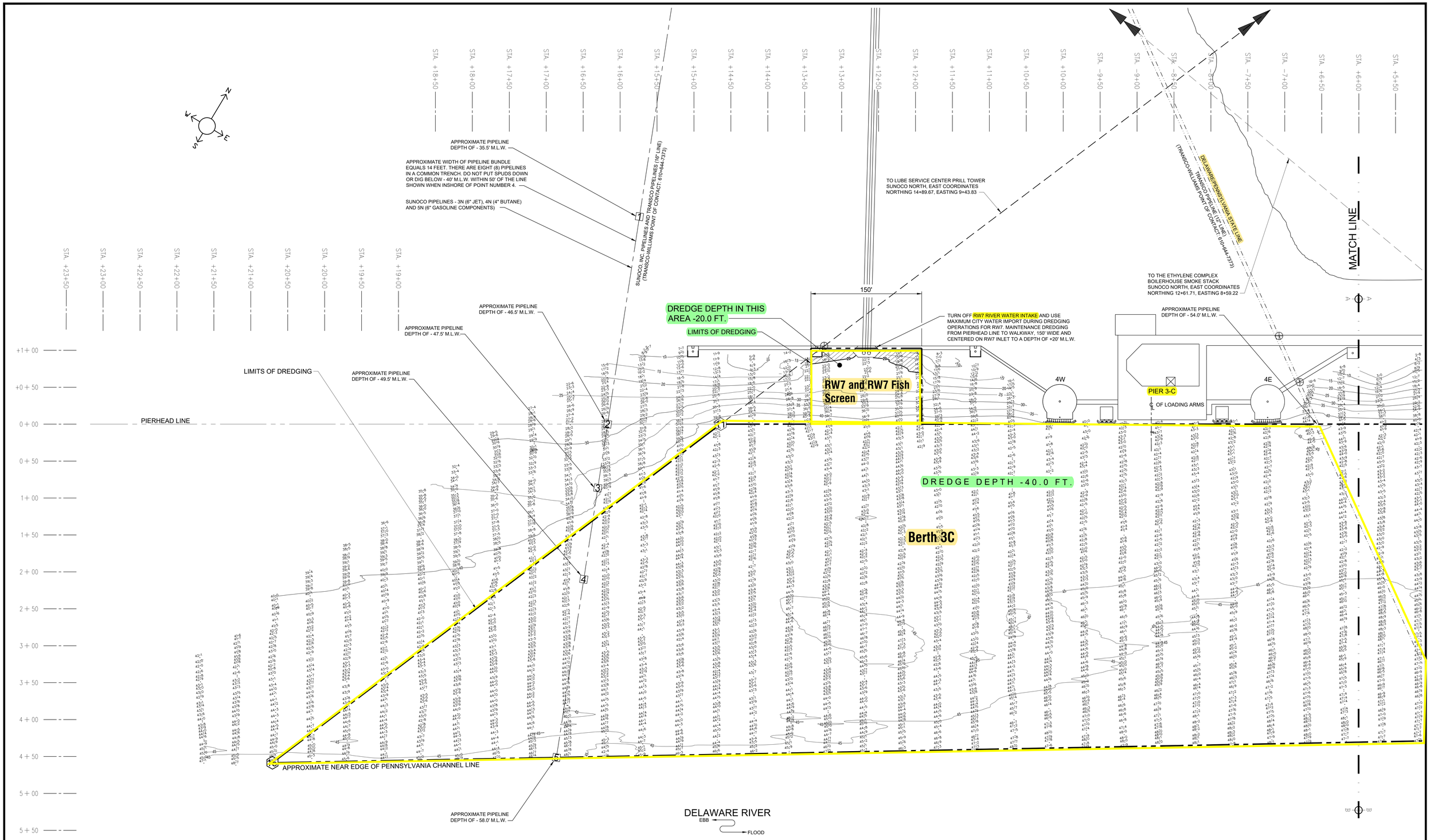

SITE PLAN

SCALE: 1" = 50.0'

0 50 100 150

NOTES

1. HORIZONTAL CONTROL IS BASED ON NEW JERSEY 2900 STATE PLANE COORDINATES, NAD83, AS ESTABLISHED IN THE FIELD AND SOLELY FOR THE USE OF THIS HYDROGRAPHIC SURVEY.
2. ALL SOUNDINGS WERE TAKEN USING A TRIMBLE SPS 866 WITH RTK, HYPACK 16A SOFTWARE, A TELEDYNE ODOM HYDROTRAC CONTINUOUS RECORDING SURVEY FATHOMETER.
3. VERTICAL CONTROL WAS OBTAINED FROM KEYNET GPS (TRIMBLE VIRTUAL REFERENCE STATION [VRS] NETWORK) REAL-TIME KINEMATIC (RTK) CORRECTIONS TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), AND CONVERTED TO MEAN LOWER LOW WATER (M.L.L.W.) WHICH IS 3.00' BELOW NAVD88. NAVD88 CONVERSION OF 3.00' OBTAINED FROM THE ARMY CORP OF ENGINEERS.
4. SOUNDINGS WERE TAKEN ON TUESDAY, JANUARY 23, 2024 AND THURSDAY, JANUARY 25, 2024.
5. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS CONDUCTED ON THE DATES INDICATED, AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.
6. THE DECIMAL POINT (.) DENOTES THE SOUNDING LOCATION.
7. SOUNDINGS ARE REFERENCED TO MEAN LOWER LOW WATER (M.L.L.W.) AND ARE EXPRESSED IN FEET AND TENTHS OF A FOOT.
8. CONTOURS WERE INTERPOLATED WITH TRIMBLE NAVIGATION LIMITED SOFTWARE, TERRAMODEL VERSION 10.11.
9. CROSS HATCHING INDICATES AREAS THAT ARE ABOVE THE SPECIFIED MINIMUM DREDGE DEPTH.
10. DREDGE LIMITS WERE PROVIDED BY SUNOCO LOGISTICS' DRAWING "E_MHRF_C580001R00".
11. CHANNEL LOCATIONS WERE PROVIDED BY THE UNITED STATES ARMY CORPS OF ENGINEERS' DRAWINGS, "AAOA11PS.dwg" & "AAOA12PS.dwg".

DATUM CHART

LOCAL BENCHMARK – BRASS DISK AT MOORING CELL 3W +12.07 (M.L.L.W.)

NAVD 88	+3.0 (M.L.L.W.)	12.07'
MEAN LOWER LOW WATER	0.0	

LEGEND

LIMITS OF DREDGING

seal

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900 Dudley Avenue
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Phone 856-342-6600
Fax No. 856-342-8323

drawn	DJD	date	1/30/2024
checked	SD	FILE	E-1218
drftg. approval	TK	contract	24-008

MARCUS HOOK INDUSTRIAL COMPLEX
POST-DREDGE HYDROGRAPHIC SURVEY

dwg. no. 2of4 | rev. 0

OLD DRAWING NO.

REV.	DATE	APP#	DESCRIPTION	APPROVAL

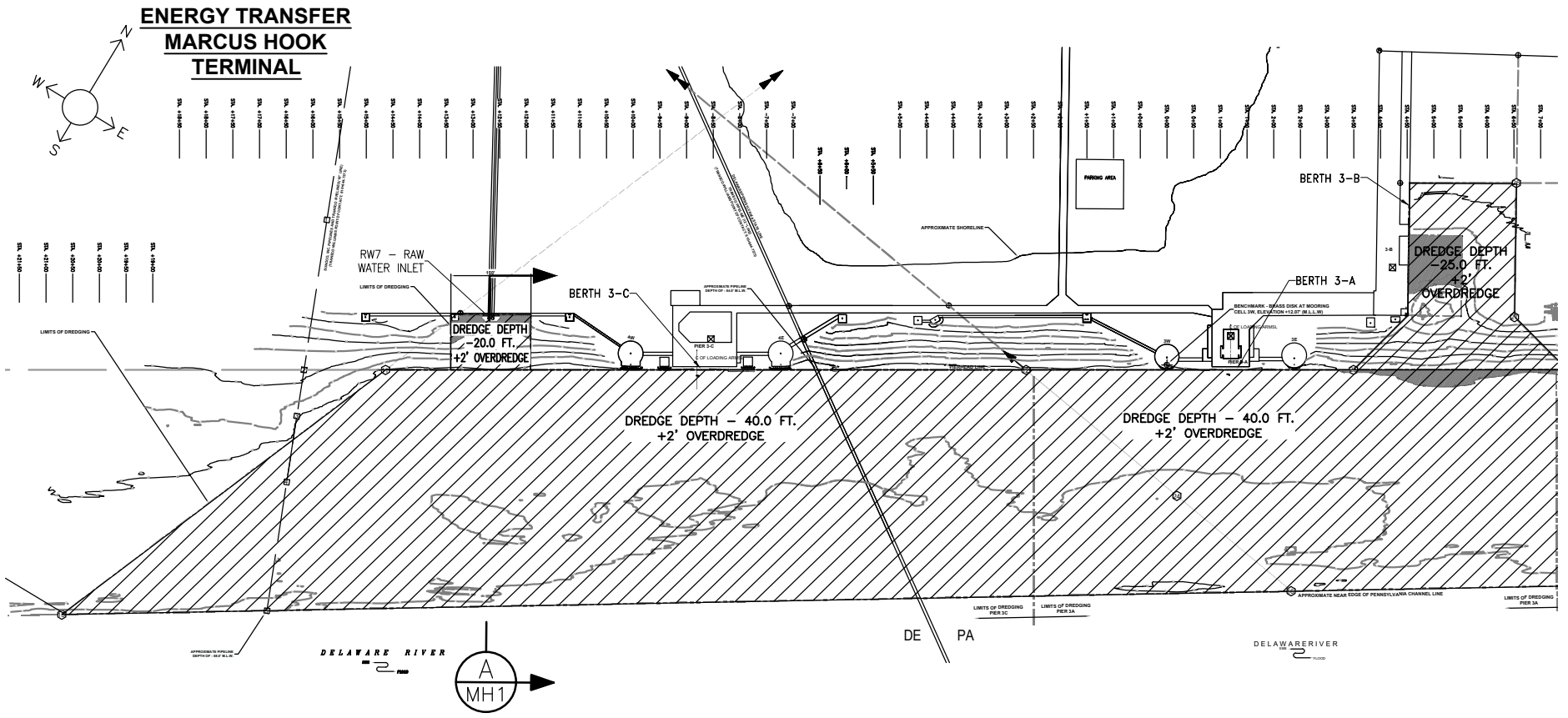
ENGINEERING RECORD

DRAWN BY	GMN
CHECKED BY	
APPROVED BY	
DATE	9/12/01
SCALE	1" = 50'-0"

ENERGY TRANSFER PARTNERS

MARCUS HOOK INDUSTRIAL COMPLEX
SURVEY TEMPLATE
SHEET 2
TOWNSHIP OF MARCUS HOOK

DWG. NO.

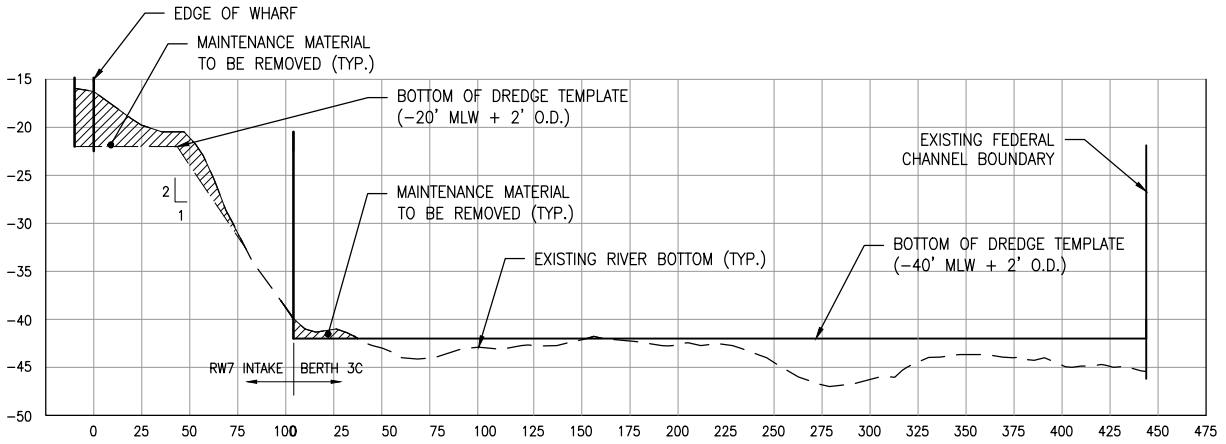


DREDGING PLAN
(WEST SIDE)
MARCUS HOOK TERMINAL

MARCUS HOOK PENNSYLVANIA

WESTON SOLUTIONS

DRAWN	E.S.	DATE	3/13/24	DES. ENG.	R.B.	DATE	3/13/24	W. O. NO.	15077.003.016
CHECKED	D.P.	DATE	3/13/24	APPROVED	R.B.	DATE	3/13/24	DWG. NO.	MH-1



RW7 INTAKE AND BERTH 3C

TYPICAL DREDGING SECTION A

MH-1

HORIZONTAL SCALE = 1"= 100'

VERTICAL SCALE = 1"=20'

WATER LEVEL DATA

THE EXTENT OF TIDAL JURISDICTION IS BASED UPON TIDAL DATA AS FOLLOWS:

SECTION 10 -- MEAN HIGH WATER -- 3.04' NAVD 1988
SECTION 404 – SPRING HIGH WATER – 4.48' NAVD 1988

NATIONAL OCEANOGRAPHIC AND ATMOSPHERIC ADMINISTRATION TIDE DATA FOR THE REPORTING STATION CLOSEST TO THE SITE, STATION 8545240, PHILADELPHIA (USCG STATION), DELAWARE RIVER, PA, BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 IS AS FOLLOWS:

HIGHEST RECORDED TIDE 7.34' (NOV 1950)
MEAN HIGHER HIGH TIDE 3.46'
MEAN HIGH TIDE 3.04'
MEAN TIDE LEVEL 0.04'
MEAN LOW TIDE -2.96'
MEAN LOWER TIDE -3.15'
LOWEST RECORDED TIDE -9.96' (DEC 1962)
100 YEAR FLOOD ELEVATION 9.00' (NAVD 88)

CONVERSION OF THE NAVD 1988 GROUND ELEVATIONS TO NGVD 1929 IS +0.98'

CONVERSION OF THE NAVD 1988 TIDAL DATA TO NGVD 1929 IS +1.32'

CROSS SECTION
MARCUS HOOK TERMINAL
RW7 INTAKE AND BERTH 3C

MARCUS HOOK PENNSYLVANIA

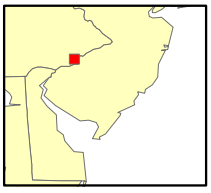
WESTON SOLUTIONS

DRAWN	E.S.	DATE	3/13/24	DES. ENG.	R.B.	DATE	3/13/24	W. O. NO.	15077.003.016
CHECKED	D.P.	DATE	3/13/24	APPROVED	R.B.	DATE	3/13/24	DWG. NO.	MH-3

Quad Source: ESRI, Mapping Service
USGS 2013. Marcus Hook PA, NJ, Del
USGS Quad, 1967. Revised 1970

N
W E
S

0 2,500 5,000 Feet



Quadrangle Location

Figure 1
Site Location Map -
Energy Transfer
Marcus Hook Terminal
Delaware River
Marcus Hook, Pennsylvania

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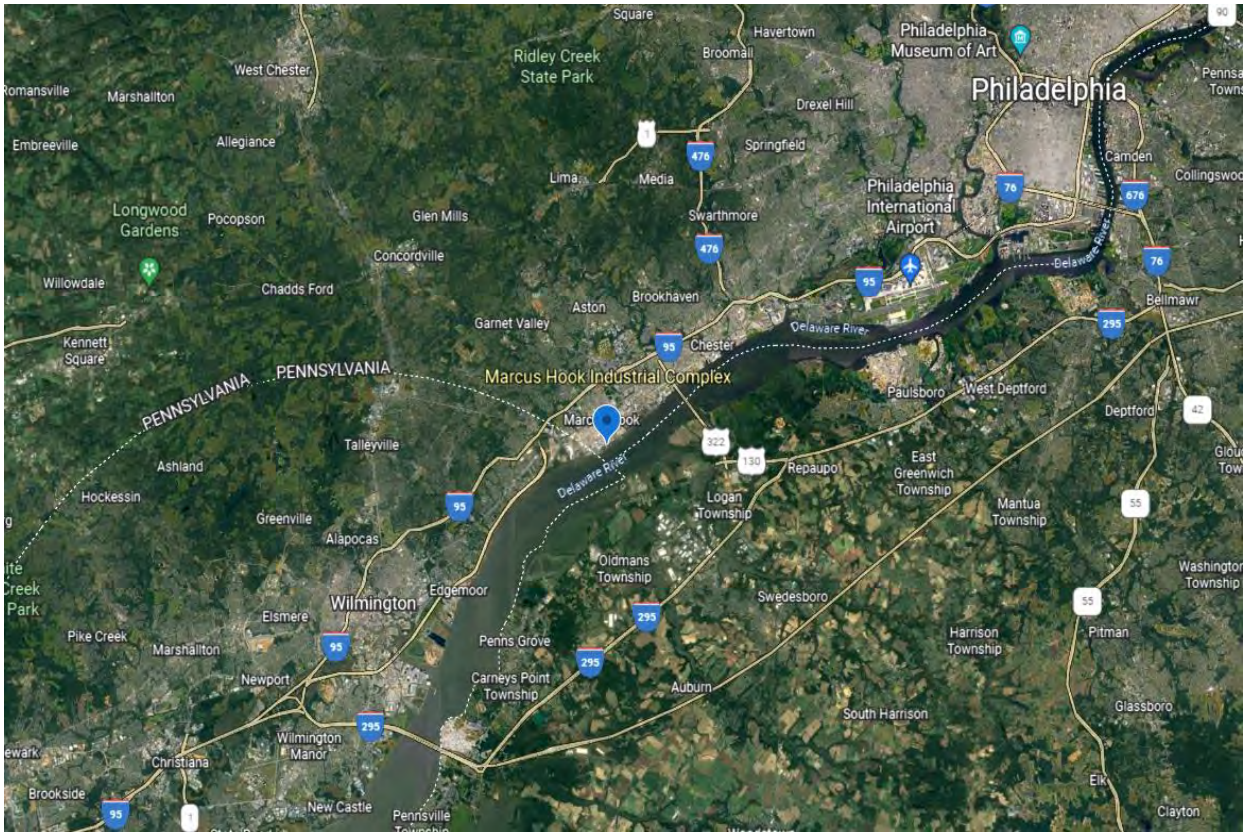


Figure 1: Aerial Photo of Marcus Hook Terminal (formerly Marcus Hook Industrial Complex) (Photo Courtesy Google Earth).

Figure 2: Aerial Photo of Marcus Hook Terminal (formerly Marcus Hook Industrial Complex) (Photo Courtesy Google Earth).

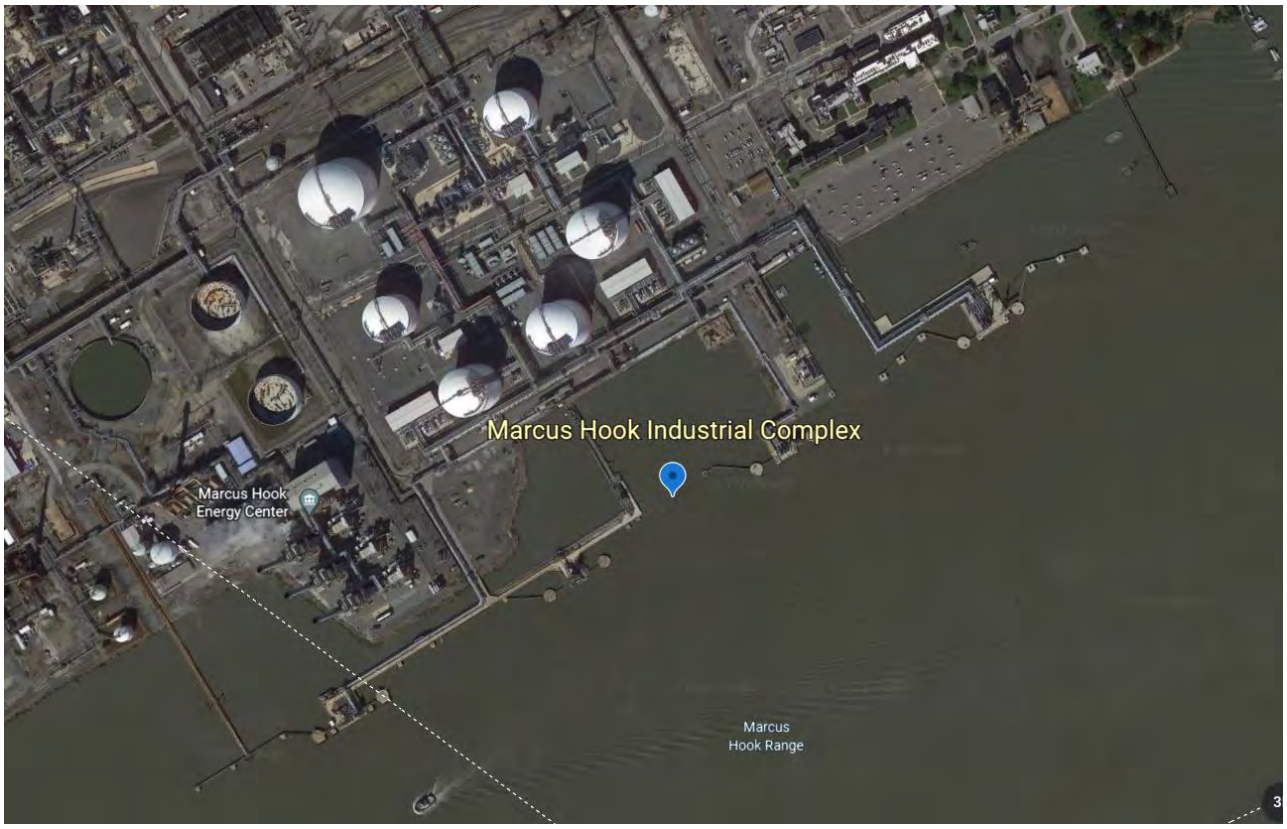


Figure 3: Aerial Photo of Marcus Hook Terminal (formerly Marcus Hook Industrial Complex) (Photo Courtesy Google Earth).

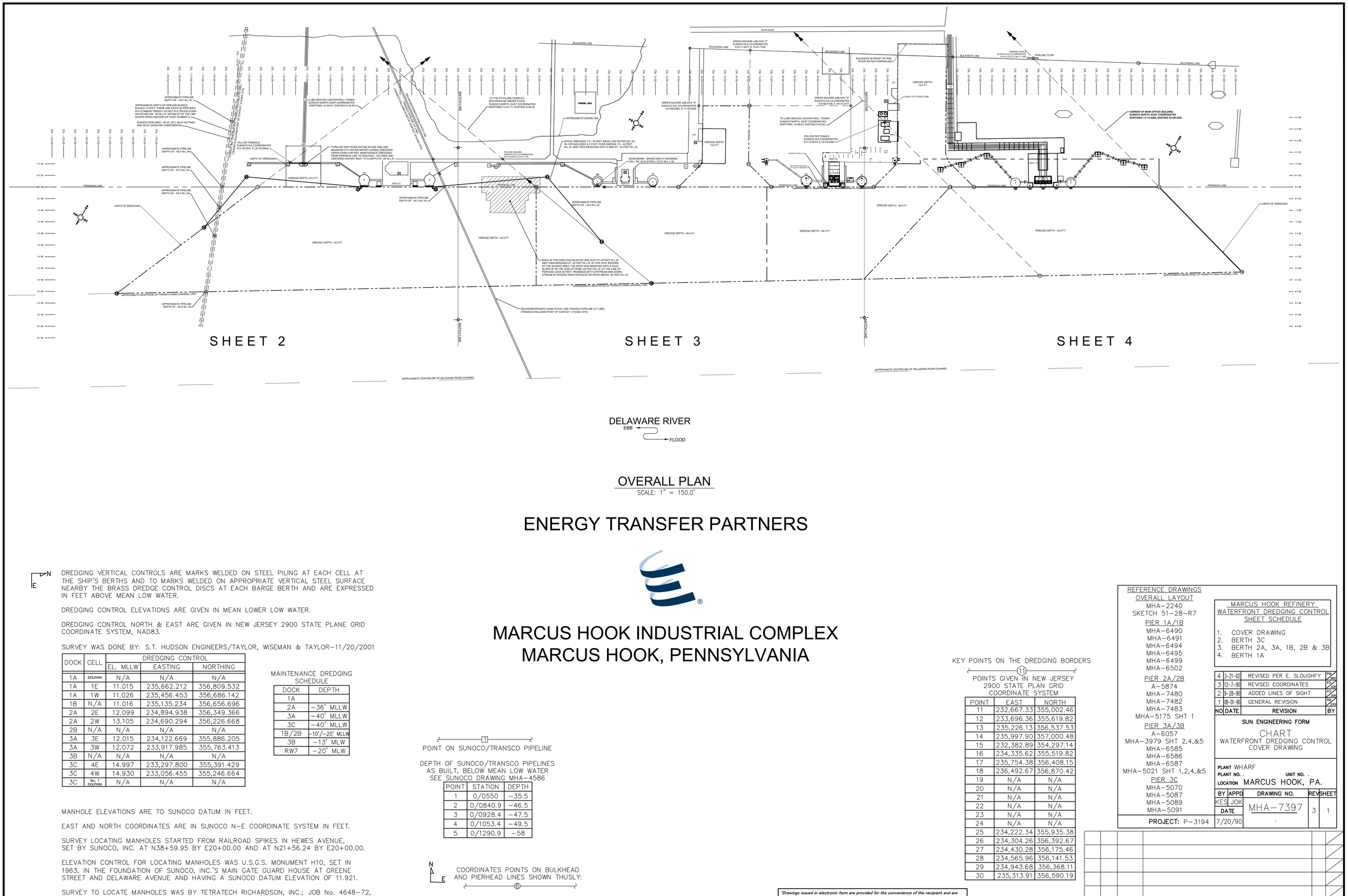
Figure 4: View of Marcus Hook Terminal Berths 2B, RW5, and 1B (looking west from in front of Berth 2A).

Figure 5: View of Marcus Hook Terminal Berths 3A (left), 3B (center) and 2A (right) (looking west).

Figure 6: View of Marcus Hook Terminal Inner Barge Dock Berth 1B (looking west).

Figure 7: View of Marcus Hook Terminal Outer Berth 2A (looking downriver from Berth 1A).

Figure 8: View of Marcus Hook Terminal Outer Berth 3A (looking downriver).



OVERALL PLAN
SCALE: 1" = 150.0'

ENERGY TRANSFER PARTNERS

MARCUS HOOK INDUSTRIAL COMPLEX
MARCUS HOOK, PENNSYLVANIA

DREDGING VERTICAL CONTROLS ARE MARKS WELDED ON STEEL PILING AT EACH CELL AT THE SHIP'S BERTHS AND TO MARKS WELDED ON APPROPRIATE VERTICAL STEEL SURFACE NEARBY THE BRASS DREDGE CONTROL DISCS AT EACH BARGE BERTH AND ARE EXPRESSED IN FEET ABOVE MEAN LOW WATER.

DREDGING CONTROL ELEVATIONS ARE GIVEN IN MEAN LOWER LOW WATER.

DREDGING CONTROL NORTH & EAST ARE GIVEN IN NEW JERSEY 2900 STATE PLANE GRID COORDINATE SYSTEM, NAD83.

SURVEY WAS DONE BY: S.T. HUDSON ENGINEERS/TAYLOR, WISEMAN & TAYLOR–11/20/2001

DOCK	CELL	DREDGING CONTROL		
		EL. MLLW	EASTING	NORTHING
1A	DOLPHIN	N/A	N/A	N/A
1A	1E	11.015	235,662.212	356,809.532
1A	1W	11.026	235,456.453	356,686.142
1B	N/A	11.016	235,135.234	356,656.696
2A	2E	12.099	234,894.938	356,349.366
2A	2W	13.105	234,690.294	356,226.668
2B	N/A	N/A	N/A	N/A
3A	3E	12.015	234,122.669	355,886.205
3A	3W	12.072	233,917.985	355,763.413
3B	N/A	N/A	N/A	N/A
3C	4E	14.997	233,297.800	355,391.429
3C	4W	14.930	233,056.455	355,246.664
3C	No. 1 DOLPHIN	N/A	N/A	N/A

MAINTENANCE DREDGING SCHEDULE

DOCK	DEPTH
1A	
2A	–36' MLLW
3A	–40' MLLW
3C	–40' MLLW
1B/2B	–10'/–20' MLLW
3B	–13' MLW
RW7	–20' MLW

MANHOLE ELEVATIONS ARE TO SUNOCO DATUM IN FEET.

EAST AND NORTH COORDINATES ARE IN SUNOCO N–E COORDINATE SYSTEM IN FEET.

SURVEY LOCATING MANHOLES STARTED FROM RAILROAD SPIKES IN HEWES AVENUE, SET BY SUNOCO, INC. AT N38+59.95 BY E20+00.00 AND AT N21+56.24 BY E20+00.00.

ELEVATION CONTROL FOR LOCATING MANHOLES WAS U.S.G.S. MONUMENT H10, SET IN 1963, IN THE FOUNDATION OF SUNOCO, INC.'S MAIN GATE GUARD HOUSE AT GREENE STREET AND DELAWARE AVENUE AND HAVING A SUNOCO DATUM ELEVATION OF 11.921.

SURVEY TO LOCATE MANHOLES WAS BY TETRATECH RICHARDSON, INC.; JOB No. 4648–72, REPORTED ON MAY 3, 1990.

DOCK	CELL	MANHOLE		
		RIM ELEV.	℄ EAST	℄ NORTH
1A	1E	11.9500	27+87.7808	2+77.8601
1A	1W	11.9500	25+47.8986	2+71.2089
2A	2E	11.8440	18+87.3647	2+57.3327
2A	2W	12.8740	16+48.8167	2+51.8402
3A	3E	13.0210	9+87.1422	2+32.8284
3A	3W	13.0780	7+48.4515	2+28.2675
3C	4E	16.1190	0+25.3045	2+16.6753
3C	4W	16.0810	–(2+56.0612)	2+09.4790

POINT ON SUNOCO/TRANSCO PIPELINE

DEPTH OF SUNOCO/TRANSCO PIPELINES AS BUILT, BELOW MEAN LOW WATER SEE SUNOCO DRAWING MHA–4586

POINT	STATION	DEPTH
1	0/0550	–35.5
2	0/0840.9	–46.5
3	0/0928.4	–47.5
4	0/1053.4	–49.5
5	0/1290.9	–58

COORDINATES POINTS ON BULKHEAD AND PIERHEAD LINES SHOWN THUSLY:

POINT COORDINATES ARE IN SUNOCO N–E SYSTEM

POINT	NORTH	EAST	LOCATION
6	206.05	779.07	PHL – PIER 3–A
NOT SHOWN	245.21	2264.97	PHL – WHARF 1
7	293.02	4078.50	PHL – CONTROL
8	813.34	1131.57	BHL – WHARF 3
9	925.51	2264.97	BHL – WHARF 1
10	800.36	3064.95	BHL – E OF 1–A

SYMBOLS:

☒ = HOSE WATCHER'S HOUSE

KEY POINTS ON THE DREDGING BORDERS

POINTS GIVEN IN NEW JERSEY 2900 STATE PLAN GRID COORDINATE SYSTEM

POINT	EAST	NORTH
11	232,667.33	355,002.46
12	233,696.36	355,619.82
13	235,226.13	356,537.53
14	235,997.90	357,000.48
15	232,382.89	354,297.14
16	234,335.62	355,519.82
17	235,754.38	356,408.15
18	236,492.67	356,870.42
19	N/A	N/A
20	N/A	N/A
21	N/A	N/A
22	N/A	N/A
23	N/A	N/A
24	N/A	N/A
25	234,222.34	355,935.38
26	234,304.26	356,392.67
27	234,430.28	356,175.46
28	234,565.96	356,141.53
29	234,943.68	356,368.11
30	235,313.91	356,590.19

REFERENCE DRAWINGS

OVERALL LAYOUT
MHA–2240
SKETCH 51–28–R7

PIER 1A/1B
MHA–6490
MHA–6491
MHA–6494
MHA–6495
MHA–6499
MHA–6502

PIER 2A/2B
A–5874
MHA–7480
MHA–7482
MHA–7483
MHA–5175 SHT 1

PIER 3A/3B
A–6057
MHA–3979 SHT 2,4,&5
MHA–6585
MHA–6586
MHA–6587
MHA–5021 SHT 1,2,4,&5

PIER 3C
MHA–5070
MHA–5087
MHA–5089
MHA–5091

PROJECT: P–3194

MARCUS HOOK REFINERY WATERFRONT DREDGING CONTROL SHEET SCHEDULE

1. COVER DRAWING
2. BERTH 3C
3. BERTH 2A, 3A, 1B, 2B & 3B
4. BERTH 1A

NO	DATE	REVISION	BY
4	3-21-02	REVISED PER E. SLOUGHFY	PM RM
3	12-7-90	REVISED COORDINATES	RS JDK
2	9-28-90	ADDED LINES OF SIGHT	RS JDK
1	08-01-90	GENERAL REVISION	RB JDK

SUN ENGINEERING FORM
CHART
WATERFRONT DREDGING CONTROL COVER DRAWING

PLANT WHARF
PLANT NO. . UNIT NO. .
LOCATION MARCUS HOOK, PA.

BY	APPD	DRAWING NO.	REV	SHEET
KES	JOK	MHA–7397	3	1
DATE				
7/20/90		.		

REV.	DATE	APP#	DESCRIPTION	APPROVAL

seal

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900 Dudley Avenue
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Phone 856–342–6600
Fax No. 856–342–8323

drawn	DJD	date 7/13/2023	contract
checked	SD	FILE E-1209	23-019-05
drftg. approval	TK		

MARCUS HOOK INDUSTRIAL COMPLEX
CONDITION HYDROGRAPHIC SURVEY
dwg. no. 1of4 rev. 0

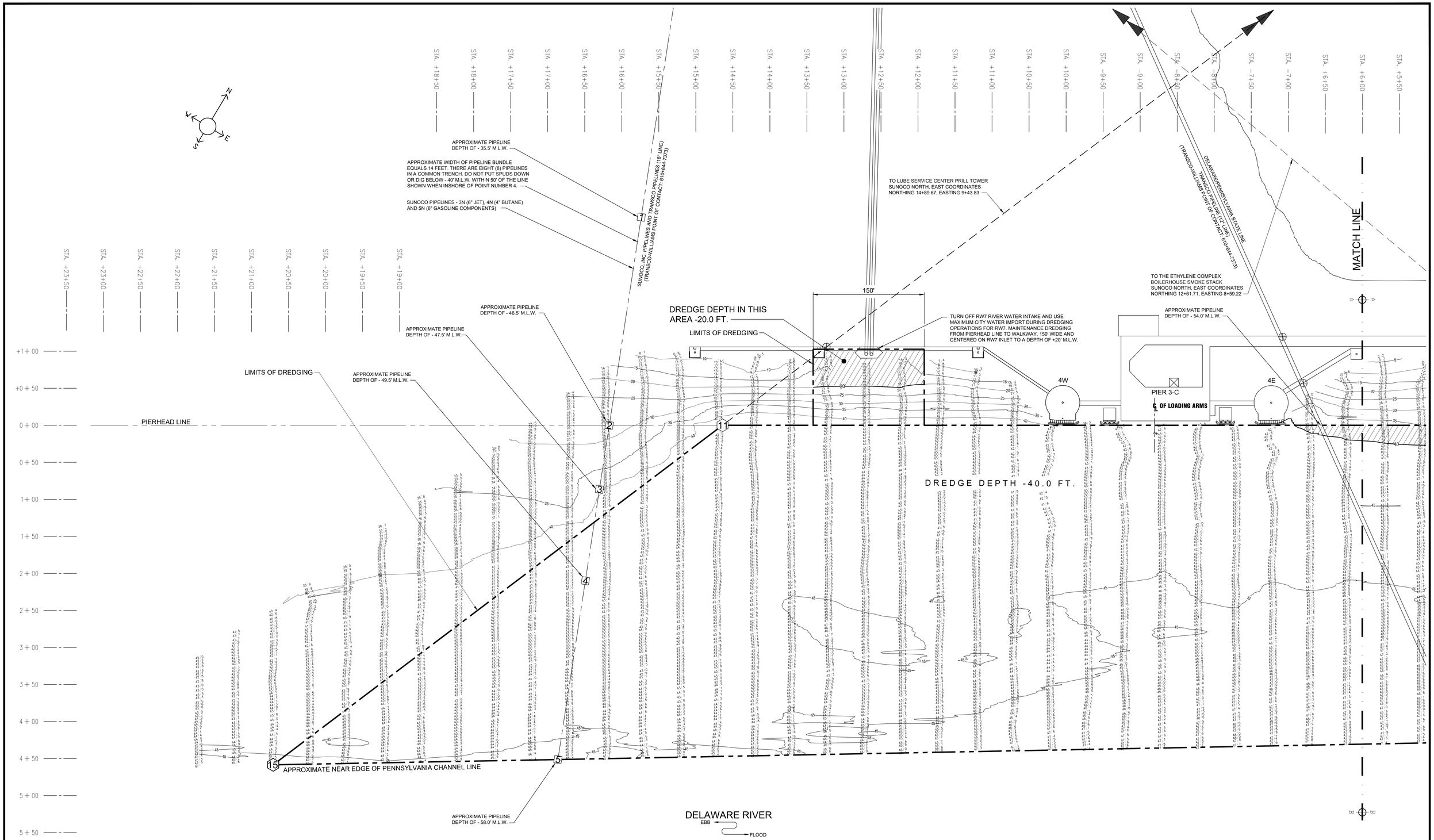
ENGINEERING RECORD

DRAWN BY	GMN	
CHECKED BY		
APPROVED BY		
DATE	9/12/01	
SCALE	1" = 150'-0"	

OLD DRAWING NO.

DWG. NO.

MARCUS HOOK INDUSTRIAL COMPLEX
SURVEY TEMPLATE
SHEET 1
TOWNSHIP OF MARCUS HOOK



DELAWARE RIVER
EBB
FLOOD

SITE PLAN

SCALE: 1" = 50.0'

0 50 100 150

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LEGEND

LIMITS OF DREDGING

DATUM CHART

LOCAL BENCHMARK – BRASS DISK AT MOORING CELL 3W +12.07 (M.L.L.W.)

NAVD 88	+3.0 (M.L.L.W.)	12.07'
MEAN LOWER LOW WATER	0.0	

seal

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drawn	DJD	date	7/13/2023
checked	SD	FILE	E-1209
drftg. approval	TK	contract	23-019-05

MARCUS HOOK INDUSTRIAL COMPLEX — dwg. no. 2of4 — rev. 0

CONDITION HYDROGRAPHIC SURVEY

OLD DRAWING NO.

DWG. NO.

ENGINEERING RECORD

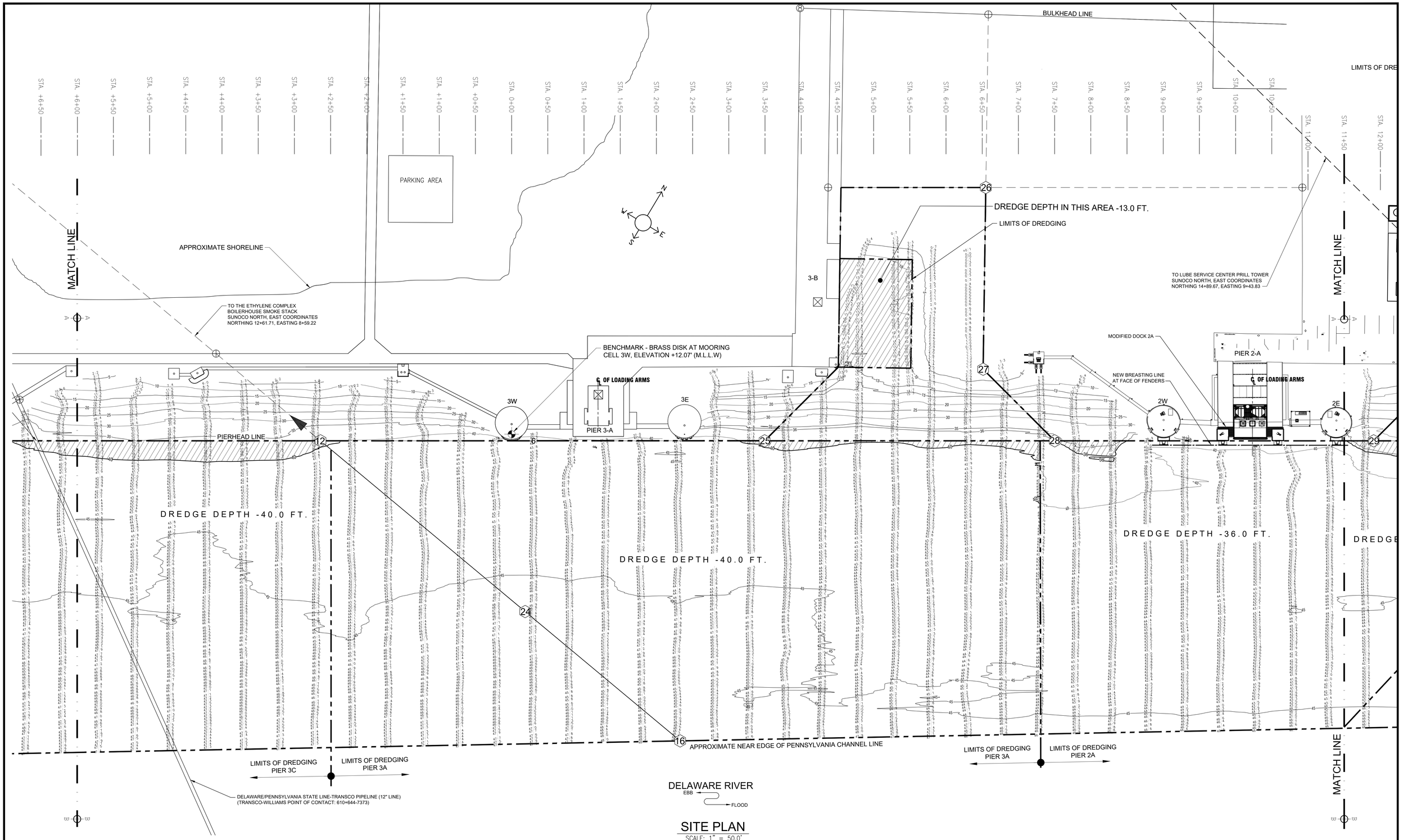
DRAWN BY	GMN
CHECKED BY	
APPROVED BY	
DATE	9/12/01
SCALE	1" = 50'+0'

REV.	DATE	APP#	DESCRIPTION	APPROVAL

ENERGY TRANSFER PARTNERS

MARCUS HOOK INDUSTRIAL COMPLEX
SURVEY TEMPLATE
SHEET 2

TOWNSHIP OF MARCUS HOOK



SITE PLAN

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0 50 100 150

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DATUM CHART

LOCAL BENCHMARK – BRASS DISK AT MOORING CELL 3W +12.07 (M.L.L.W.)

NAVD 88 +3.0 (M.L.L.W.)

MEAN LOWER LOW WATER 0.0

12.07'

LEGEND

LIMITS OF DREDGING

seal

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MARCUS HOOK INDUSTRIAL COMPLEX
CONDITION HYDROGRAPHIC SURVEY

dwg. no. 3of4 rev. 0

OLD DRAWING NO.

DWG. NO.

REV.	DATE	APP#	DESCRIPTION	APPROVAL

ENGINEERING RECORD

DRAWN BY	GMN
CHECKED BY	
APPROVED BY	
DATE	9/12/01
SCALE	1" = 50'+0"

MARCUS HOOK INDUSTRIAL COMPLEX
SURVEY TEMPLATE
SHEET 3

ENERGY TRANSFER PARTNERS

TOWNSHIP OF MARCUS HOOK

DREDGE DEPTH -15.0 FT.

LIMITS OF DREDGING

RW5 RIVER WATER INTAKE STRUCTURE

BULKHEAD LINE

BULKHEAD LINE

STA. 11+50 STA. 12+00 STA. 12+50 STA. 15+50 STA. 16+00 STA. 16+50 STA. 17+00 STA. 17+50 STA. 18+00 STA. 18+50 STA. 19+00 STA. 19+50 STA. 20+00 STA. 20+50 STA. 21+00 STA. 21+50 STA. 22+00 STA. 22+50 STA. 23+00 STA. 23+50 STA. 24+00 STA. 24+50 STA. 25+00 STA. 25+50 STA. 26+00 STA. 26+50 STA. 27+00 STA. 27+50 STA. 28+00 STA. 28+50 STA. 29+00 STA. 29+50

BOAT LIFT STRUCTURE

DOCK 2-B

DOCK 1-B

TO LUBE SERVICE CENTER PRILL TOWER
SUNOCO NORTH, EAST COORDINATES
NORTHING 14+89.67, EASTING 9+43.83

CORNER OF MAIN OFFICE BUILDING
SUNOCO NORTH, EAST COORDINATES
NORTHING 11+14.5285, EASTING 22+98.3552

MATCH LINE

RW6

PIER 1-A

2E 1W 1E

29 13 14 10 17 18

LIMITS OF DREDGING

PIERHEAD LINE

DREDGE DEPTH-36.0FT.

DREDGE DEPTH -42.0 FT.

APPROXIMATE NEAR EDGE OF PENNSYLVANIA CHANNEL LINE

+4+00 +3+50 +3+00 +2+50 +2+00 +1+50 +1+00 +0+50 0+00 0+50 1+00 1+50 2+00 2+50 3+00 3+50 4+00 4+50 5+00

MATCH LINE

REVISED DREDGE LIMITS JAN. 2018

DELAWARE RIVER
EBB
FLOOD

SITE PLAN
SCALE: 1" = 50.0'
0 50 100 150

NOTES

1. HORIZONTAL CONTROL IS BASED ON NEW JERSEY 2900 STATE PLANE COORDINATES, NAD83, AS ESTABLISHED IN THE FIELD AND SOLELY FOR THE USE OF THIS HYDROGRAPHIC SURVEY.
2. ALL SOUNDINGS WERE TAKEN USING A TRIMBLE SPS 855 WITH RTK, HYPACK 16A SOFTWARE, A TELEDYNE ODOM HYDROTRAC CONTINUOUS RECORDING SURVEY FATHOMETER.
3. VERTICAL CONTROL WAS OBTAINED FROM KEYNET GPS (TRIMBLE VIRTUAL REFERENCE STATION [VRS] NETWORK) REAL-TIME KINEMATIC (RTK) CORRECTIONS TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), AND CONVERTED TO MEAN LOWER LOW WATER (M.L.L.W.) WHICH IS 3.00' BELOW NAVD88. NAVD88 CONVERSION OF 3.00' OBTAINED FROM THE ARMY CORP OF ENGINEERS.
4. SOUNDINGS WERE TAKEN ON MONDAY JULY 10, 2023.
5. THE INFORMATION DEPICED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS CONDUCTED ON THE DATES INDICATED, AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.
6. THE DECIMAL POINT (.) DENOTES THE SOUNDING LOCATION.
7. SOUNDINGS ARE REFERENCED TO MEAN LOWER LOW WATER (M.L.L.W.) AND ARE EXPRESSED IN FEET AND TENTHS OF A FOOT.
8. CONTOURS WERE INTERPOLATED WITH TRIMBLE NAVIGATION LIMITED SOFTWARE, TERRAMODEL VERSION 10.11.
9. CROSS HATCHING INDICATES AREAS THAT ARE ABOVE THE SPECIFIED MINIMUM DREDGE DEPTH.
10. DREDGE LIMITS WERE PROVIDED BY SUNOCO LOGISTICS' DRAWING "E_MHRF_C580001R00".
11. CHANNEL LOCATIONS WERE PROVIDED BY THE UNITED STATES ARMY CORPS OF ENGINEERS' DRAWINGS, "AAOA11PS.dwg" & "AAOA12PS.dwg".

LEGEND
LIMITS OF DREDGING

DATUM CHART
LOCAL BENCHMARK – BRASS DISK AT MOORING CELL 3W +12.07 (M.L.L.W.)

NAVD 88 +3.0 (M.L.L.W.)

MEAN LOWER LOW WATER 0.0

12.07'

seal

"Drawings issued in electronic form are provided for the convenience of the recipient and are used at the sole risk of the user. Reliance may be placed only on hard copies of drawings issued by S.T. Hudson Engineers. In the event of any discrepancy, the hard copy will govern."

S.T. HUDSON ENGINEERS, INC.
PROFESSIONAL ENGINEERS & CONSULTANTS
900 Dudley Avenue
Cherry Hill, N.J. 08002
Phone 856-342-6600
Fax No. 856-342-8323

drawn	DJD	date	7/13/2023
checked	SD	FILE	E-1209
drftg. approval	TK	contract	23-019-05

MARCUS HOOK INDUSTRIAL COMPLEX
CONDITION HYDROGRAPHIC SURVEY

dwg. no. 4of4 rev. 0

OLD DRAWING NO.

ENGINEERING RECORD

DRAWN BY	GMN
CHECKED BY	
APPROVED BY	
DATE	9/12/01
SCALE	1" = 50'-0"

REV.	DATE	APP#	DESCRIPTION	APPROVAL

ENERGY TRANSFER PARTNERS

MARCUS HOOK INDUSTRIAL COMPLEX
SURVEY TEMPLATE
SHEET 4
TOWNSHIP OF MARCUS HOOK

DWG. NO.

WATER QUALITY CERTIFICATION

Applicants must complete this appendix in addition to the basic application when submitting a water quality certification request in accordance with the Clean Water Act Section 401 Certification Rule. Please note, this water quality certification request must be simultaneously submitted to the U. S. Army Corps of Engineers at the time of submittal of this application.

Please make sure answers to all of the questions in this appendix and that the information corresponds to information on the application drawings.

Project Applicant and Point of Contact:

Weston Solutions, Inc. (Ryan Brown) on behalf of Energy Transfer

Proposed Project:

Permit Application for Subaqueous Lands Permit and Water Quality Certificate Renewal

Maintenance Dredging of Dock 3C, RW-7 Intake

Energy Transfer - Marcus Hook Terminal

1. Include a list of all other federal, interstate, tribe, state, territorial, or local agency authorizations required for the proposed project (in addition to those already provided on the basic application). Attach all approvals or denials already received.

   In addition to the authorizations provided in the basic application, included are the last five Water Quality Certificates (pairwise NJDEP and USACE) for the last five maintenance dredging events at Energy Transfer's Marcus Hook Terminal. NJDEP issues the WQC in these instances as the material is disposed of in New Jersey. No denials have been received on this project site.

2. Identify the location and nature of any potential discharge or fill that may result from the proposed project and the location of receiving waters. Attach additional sheets as necessary. Complete additional appendices that relate to this project e.g. H. Fill, S. New Dredging, etc.

   There are no anticipated discharges or fill that may result from or are related to the proposed continuation of maintenance dredging at Energy Transfer's Marcus Hook Terminal.

3. Is the project located with waters of exceptional recreational or ecological significance (ERES) as designated by the 7 Del. Admin. Code §7401 Surface Water Quality Standards?

   ( ) Yes (X) No

4. Include a description of any methods and means proposed to monitor the discharge or fill and the equipment or measures planned to treat, control, or manage the discharge or fill. Attach additional sheets as necessary.

   There are no anticipated discharges or fill that may result from or are related to the proposed continuation of maintenance dredging at Energy Transfer's Marcus Hook Terminal.

5. Please provide information demonstrating that the proposed discharge of dredge or fill material will not result in a statistically significant reduction, accounting for natural variations, in biological, chemical, or habitat quality as measured or predicted using appropriate assessment protocols. Attach additional sheets as necessary.

   There are no anticipated discharges or fill that may result from or are related to the proposed continuation of maintenance dredging at Energy Transfer's Marcus Hook Terminal. Any discharges would be to Weeks' White's Basin or Waste Management's Biles Island CDF, each of which has their own permit requirements and procedures for accepting dredge material. Normal maintenance dredging precautions and disposal site inflow procedures would apply. The CDF operators are required to monitor discharge and report results to USACE and NJDEP (White's Basin) or PADEP (Biles Island) as part of the 401 WQC for each facility. Discharge Water Quality has historically been well within the limits established by the WQC. The upland CDF adjacent to White's Basin uses a stone and earthen dike revetment as the method of containment. Bile's Island uses earthen embankments as the method of containment. There is no direct connection to open waters at either facility.

   With respect to dredging operations themselves, Energy Transfer' contractors will use environmental buckets when clamshell dredges are used. Energy Transfer and Weeks have evaluated the possibility of using silt curtains to minimize suspended sediments during dredging. Unfortunately, the high flow rates in the Delaware River preclude the use of this technique. Silt curtains are better suited for lower energy waterways. Weeks' experience is confirmed by technical literature issued by the U.S. Army Engineering Research and Development Center (ERDC):

   "Silt curtains should not be considered a "one solution fits all" type of best management practice. They are highly specialized, temporary-use devices that should be selected only after careful evaluation of the intended function and designed based on a detailed knowledge of the site where they will be used."(1)

   Contract Specifications section 618.01.03, SEDIMENT RESUSPENSION CONTROL correctly cites the findings of ERDC when it states that 1.5 knots (2.5 ft/s) "…is deemed the maximum velocity at which the use of turbidity curtains is considered effective". As such, its use as a permit requirement for this project is troubling. Tidal flows on the lower Delaware River (below Trenton) are at and/or exceed the maximum velocity to allow for the effective use of a floating turbidity barrier (2).

   The USEPA (1993) ([3]) concluded, "As a generalization, silt curtains and screens are most effective in relatively shallow quiescent water. As the water depth increases and turbulence caused by currents and waves increases, it becomes increasingly difficult to effectively isolate the dredging operation from the ambient water. The St. Lawrence Centere (1993) advises against the use of silt curtains in water deeper than 6.5 m [21.33 feet] or in currents greater than 50 cm/sec [0.97 knots] (USEPA 1994)"1. The parameters of the PMT project greatly exceed these limits.

   Because the Marcus Hook Terminal is located directly adjacent to the Federal Navigation Channel, vessel traffic should be a serious consideration when deploying a floating turbidity barrier. Especially when deploying this device in tidal flows well above their recommended use. "The USEPA also highlighted the fact that curtains should not impede navigation traffic, an important consideration during their deployment"(1). Energy Transfer and Weeks both have serious concerns of the turbidity curtain breaking free, becoming entangled in tug and ship propellers,

disabling steering, and causing a minor or serious incident.

References:

[1]*Francingues, Palermo, Engler, 2005, Silt Curtains as a Dredging Project Management Practice, ERDC TN-DOER-E21*

[2]*Miller, C. 1957, Observations of Tidal Flow in the Delaware River, Geological Survey Water-supply Paper 1586-C*

[3]*United States Environmental Protection Agency. 1994. "ARCS Remediation Guidance Document." EPA 905-B94-003. Great Lakes National Program Office, Chicago, IL.*

By signing below, you hereby agree to the following statements as the applicant or on behalf of the applicant:

The project proponent hereby certifies that all information contained herein is true, accurate, and complete to the best of my knowledge and belief; and

The project proponent hereby requests that the certifying authority hereby review and take action on this Clean Water Act 401 certification within the applicable reasonable period of time.

Signature:

Date: April 15, 2024

Printed Name: Ryan Brown

Relation to applicant: Consultant