3/24 -NTW

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JOINT FEDERAL/STATE APPLICATION FOR THE ALTERATION OF ANY FLOODPLAIN, WATERWAY, TIDAL OR NONTIDAL WETLAND IN MARYLAND

FOR AGENCY USE ONLY

Application Number _____
Date Received by State _____
Date Received by Corps _____
Type of State permit needed _____
Type of Corps permit needed _____

Date Determined Complete _____
Date(s) Returned _____
Date of Field Review _____
Agency Performed Field Review _____

RECEIVED
OCT 02 2019
Non-Tidal Wetlands Division
Wetlands and Waterways Program

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- Please submit 1 original and 6 copies of this form, required maps and plans to the Wetlands and Waterways Program as noted on the last page of this form.
- Any application which is not completed in full or is accompanied by poor quality drawings may be considered incomplete and result in a time delay to the applicant.

Please check one of the following:

RESUBMITTAL: ____ **APPLICATION AMENDMENT:** ____ **MODIFICATION TO AN EXISTING PERMIT:** ____
JURISDICTIONAL DETERMINATION ONLY ____ **APPLYING FOR AUTHORIZATION** X
PREVIOUSLY ASSIGNED NUMBER (RESUBMITTALS AND AMENDMENTS) _____
DATE 09/19/19

AI: 143893, 201961652

L9-NT-0835
Day 45: 11/8/19

1. APPLICANT INFORMATION:

APPLICANT NAME: MES - Conowingo Dam - Dredging

A. Name: Roy McGrath B. Daytime Telephone: 410-729-8201
C. Company: Maryland Environmental Service D. Email Address: rmcgrath@menv.com
E. Address: 259 Najoles Road
F. City: Millersville State: MD Zip: 21108

AGENT/ENGINEER INFORMATION:

A. Name: Walter Dinicola B. Daytime Telephone: 410-794-7783
C. Company: Anchor QEA, LLC D. Email Address: wdinicola@anchorqea.com
E. Address: 10320 Little Patuxent Parkway, Suite 1140
F. City: Columbia State: MD Zip: 21044

ENVIRONMENTAL CONSULTANT:

A. Name: Karin Olsen, P.G. B. Daytime Telephone: 410-794-7779
C. Company: Anchor QEA, LLC D. Email Address: kolsen@anchorqea.com
E. Address: 10320 Little Patuxent Parkway, Suite 1140
F. City: Columbia State: MD Zip: 21044

RECEIVED
SEP 24 2019
WATER AND SCIENCE ADMIN.
REGULATORY SERVICES COORD.

CONTRACTOR (If known):

A. Name: _____ B. Daytime Telephone: _____
C. Company: _____ D. Email Address: _____
E. Address: _____
F. City: _____ State: _____ Zip: _____

PRINCIPAL CONTACT:

A. Name: Melissa Slatnick B. Daytime Telephone: 410-729-8342
C. Company: Maryland Environmental Service D. Email Address: mslat@menv.com
E. Address: 259 Najoles Road
F. City: Millersville State: MD Zip: 21108

DNR

2. PROJECT DESCRIPTION

a. GIVE WRITTEN DESCRIPTION OF PROJECT:

This Joint Permit Application is being submitted for the purpose of obtaining Federal and State authorizations. The project includes dredging approximately 1,000 cubic yards of sediment from the Maryland portion of the Susquehanna River, ~5 miles upstream of the Conowingo Dam. Sediment will be mechanically dredged and transported and dewatered utilizing a barge. The dredged area will be approximately 160 feet by 160 feet with a depth of 1 foot (25,600 sq ft.). Dredged material will be offloaded and temporarily stockpiled before transport within a 90 by 30 foot staging area in Peach Bottom, PA for one month (staging area will be permitted by Pennsylvania Department of Environmental Protection). Dredged material will be transported from the staging area to an interim holding area located at Stancills in Perryville, MD where it will be held until used at an approved innovative reuse and beneficial use project within the State of Maryland. The selected construction contractor will be responsible for adhering to all guidelines specified in Maryland Department of the Environment's *Innovative Reuse and Beneficial Use of Dredged Material Guidance Document*. See **Attachments 1 and 2** for project related drawings and additional project information.

Has any portion of the project been completed? _____ Yes __X__ No If yes, explain _____

Is this a residential subdivision or commercial development? _____ Yes __X__ No
If yes, total number of acres on property _____ acres

b. ACTIVITY: Check all activities that are proposed in the wetland, waterway, floodplain, and nontidal wetland buffer as appropriate.

A. _____ filling
B. __X__ dredging
C. _____ excavating
D. _____ flooding or impounding water
E. _____ draining
F. _____ grading
G. _____ removing or destroying vegetation
H. _____ building structures

Area for item(s) checked: Wetland N/A (sq. ft.) Buffer (Nontidal Wetland Only) N/A (sq. ft.)

Expanded Buffer (Nontidal Wetland Only) N/A (sq. ft.)

Area of stream impact (sq. ft.) -

Length of stream affected (LF) -

c. TYPE OF PROJECTS: Project Dimensions

For each activity, give overall length and width (in feet), in columns 1 and 2. For multiple activities, give total area of disturbance in square feet in column 3. For activities in tidal waters, give maximum distance channelward (in feet) in column 4. For dam or small ponds, give average depth (in feet) for the completed project in column 5. Give the volume of fill or dredged material in column 6.

		Length (Ft.) 1	Width (Ft.) 2	Area Sq. Ft. 3	Maximum/Average Channelward Encroachment 4		Pond Depth 5	Volume of fill/dredge material (cubic yards) below MHW or OHW 6
A.	Bulkhead							
B.	Revetment							
C.	Vegetative Stabilization							
D.	Gabions							
E.	Groins							
F.	Jetties							
G.	Boat Ramp							
H.	Pier							
I.	Breakwater							
J.	Repair & Maintenance							
K.	Road Crossing							
L.	Utility Line							
M.	Outfall Construction							
N.	Small Pond							
O.	Dam							
P.	Lot Fill							

Q. ____ Building Structures							
R. ____ Culvert							
S. ____ Bridge							
T. ____ Stream Channelization							
U. ____ Parking Area							
V. X Dredging	160	160	25,600				1,000

1. X New 2. ____ Maintenance 3. ____ Hydraulic 4. X Mechanical

W. ____ Other (explain) ____

d. PROJECT PURPOSE: Give brief written description of the project purpose:

The purpose of the Conowingo Pilot Project is to dredge and propose solutions for reducing the nitrogen, phosphorus and sediment inputs to the Chesapeake Bay with viable innovative reuses or beneficial uses (IRBU) of the accumulated sediments within the Maryland portion of the Susquehanna River upstream of the Conowingo Dam (Conowingo Pond). The end IRBU application(s) must be performed in the State of Maryland and adhere to the guidelines described in the most recent version of the Maryland Department of the Environment (MDE) *Innovative Reuse and Beneficial Use of Dredged Material Guidance Document* (see **A6-Attachment 1**).

3. PROJECT LOCATION:

a. LOCATION INFORMATION:

A. County: Cecil B. City: N/A C. Name of waterway or closest waterway: Susquehanna River

D. State stream use class designation: Class I-P: Water Contact Recreation, Protection of Aquatic Life, and Public Water Supply

E. Site Address or Location: Dredging: Approximately 5 miles north of the Conowingo Dam in the lower Susquehanna River Staging Area: Peach Bottom, PA (being permitting under PA DEP)

F. Directions from nearest intersection of two state roads: N/A. See **Attachment 1** for dredging location.

G. Is your project located in the Chesapeake Bay Critical Area (generally within 1,000 feet of tidal waters or tidal wetlands)?
____ Yes X No

H. County Book Map Coordinates (Alexandria Drafting Co.); Excluding Garrett and Somerset Counties:
Map: 6 Letter: C Number: 1 (see **Att. 1**)

I. FEMA Floodplain Map Panel Number (if known): 24015C0025D

J. 1. 39.718669 latitude 2. - 76.23046 longitude (Dredging Area)

b. ACTIVITY LOCATION: Check one or more of the following as appropriate for the type of wetland/waterway where you are proposing an activity:

A. ____ Tidal Waters
B. ____ Tidal Wetlands
C. ____ Special Aquatic Site (e.g., mudflat, vegetated shallows)
D. ____ Nontidal Wetland
E. ____ 25-foot buffer (nontidal wetlands only)
F. ____ 100-foot buffer (nontidal wetland of special State concern)
G. ____ In stream channel
1. ____ Tidal 2. ____ Nontidal
H. ____ 100-year floodplain (outside stream channel)
I. X River, lake, pond
J. ____ Other (Explain)

c. LAND USE:

A. Current Use of Parcel Is: 1. ____ Agriculture: Has SCS designated project site as a prior converted cropland?
____ Yes ____ No 2. ____ Wooded 3. ____ Marsh/Swamp 4. ____ Developed
5. X Other River (staging area is located in Pennsylvania within a low volume gravel parking lot)

B. Present Zoning Is: 1. ____ Residential 2. ____ Commercial/Industrial 3. ____ Agriculture 4. ____ Marina 5. x Other

C. Project complies with current zoning X Yes ____ No

THE FOLLOWING INFORMATION IS REQUIRED BY THE STATE (blocks 4-7):

4. REDUCTION OF IMPACTS: Explain measures taken or considered to avoid or minimize wetland losses in F. Also check Items A-E if any of these apply to your project.

A. _____ Reduced the area of disturbance
B. _____ Reduced size/scope of project
C. _____ Relocated structures
D. _____ Redesigned project
E. _____ Other _____
F. Explanation This project area does not contain wetlands.

Describe reasons why impacts were not avoided or reduced in Q. Also check Items G-P that apply to your project.

G. _____ Cost
H. _____ Extensive wetlands on site
I. X Engineering/design constraints
J. X Other natural features
K. _____ Parcel size
L. _____ Other regulatory requirement
M. _____ Failure to accomplish project purpose
N. _____ Safety/public welfare issue
O. _____ Inadequate zoning
P. _____ Other _____

Q. Description See **Attachment 3.**

5. LETTER OF EXEMPTION: If you are applying for a letter of exemption for activities in nontidal wetlands and/or their buffers, explain why the project qualifies:

A. _____ No significant plant or wildlife value and wetland impact
1. _____ Less than 5,000 square feet
2. _____ In an isolated nontidal wetland less than 1 acre in size
B. _____ Repair existing structure/fill
C. _____ Mitigation Project
D. _____ Utility Line
1. _____ Overhead
2. _____ Underground
E. Other (explain) _____

F. X Check here if you are **not** applying for a letter of exemption.

IF YOU ARE APPLYING FOR A LETTER OF EXEMPTION, PROCEED TO BLOCK 11

6. ALTERNATIVE SITE ANALYSIS: Explain why other sites that were considered for this project were rejected in M. Also check any items in D-L if they apply to your project. **(If you are applying for a letter of exemption, do not complete this block):**

A. _____ 1 site
B. _____ 2 - 4 sites
C. X 5 or more sites

Alternative sites were rejected/not considered for the following reason(s):

D. _____ Cost
E. X Lack of availability
F. X Failure to meet project purpose
G. _____ Located outside general/market area
H. _____ Greater wetlands impact
I. X Water dependency
J. _____ Inadequate zoning
K. X Engineering/design constraints
L. _____ Other _____

M. Explanation: See **Attachment 3** for information regarding the alternative site analysis.

7. PUBLIC NEED: Describe the public need or benefits that the project will provide in F. Also check Items in A-E that apply to your project. **(If you are applying for a letter of exemption, do not complete this block):**

A. _____ Economic
B. _____ Safety
C. _____ Health/welfare
D. _____ Does not provide public benefits
E. X Other _____

F. Description The Conowingo Pilot Project will propose solutions for reducing the nitrogen, phosphorus, and sediment inputs to the Chesapeake Bay. This could have a lasting beneficial effect on water quality.

8. OTHER APPROVALS NEEDED/GRANTED:

A. Agency	B. Date Sought	C. Decision 1. Granted	2. Denied	D. Decision Date	E. Other Status
Federal Energy Regulatory Commission (FERC)					
US Fish and Wildlife Service	5/20/19	X			
Maryland Historic Trust	7/3/19	X			
MD Department of Natural Resources (currently reviewing additional information)	7/5/19	X			
(See Attachment 4)					

9. MITIGATION PLAN: Please provide the following information:

a. Description of a monetary compensation proposal, if applicable (for **state requirements** only). Attach another sheet if necessary. _____

b. Give a brief description of the proposed mitigation project. _____

c. Describe why you selected your proposed mitigation site, including what other areas were considered and why they were rejected. _____

d. Describe how the mitigation site will be protected in the future. _____

10. HAVE ADJACENT PROPERTY OWNERS BEEN NOTIFIED?: A. X Yes B. _____ No

Provide names and mailing addresses below :

a. See **Attachment 5**
b. _____
c. _____

11. **HISTORIC PROPERTIES:** Is your project located in the vicinity of historic properties? (For example: structures over 50 years old, archeological sites, shell mounds, Indian or Colonial artifacts). Provide any supplemental information in Section 13.

A. _____ Yes B. __X__ No C. _____ Unknown

12. **ADDITIONAL INFORMATION:** Use this space for detailed responses to any of the previous items. Attach another sheet if a necessary:

See **A6-Attachment 2** for a letter of acceptance of activities from Exelon Corporation LLC. An access agreement with Exelon will be required before dredging activities and use of the staging area occur.

Check box if data is enclosed for any one or more of the following (see checklist for required information):

A. __X__ Soil borings (See **Att. 7**)	D. _____ Field surveys	G. __X__ Site plan
B. _____ Wetland data sheets	E. __X__ Alternate site analysis	H. _____ Avoidance and minimization analysis
C. _____ Photographs	F. _____ Market analysis	

I. _____ Other (explain) _____

CERTIFICATION:

I hereby designate and authorize the agent named above to act on my behalf in the processing of this application and to furnish any information that is requested. I certify that the information on this form and on the attached plans and specifications is true and accurate to the best of my knowledge and belief. I understand that any of the agencies involved in authorizing the proposed works may request information in addition to that set forth herein as may be deemed appropriate in considering this proposal. I certify that all Waters of the United States have been identified and delineated on site, and that all jurisdictional wetlands have been delineated in accordance with the Corps of Engineers Wetlands Delineation Manual (Wetlands Research Program Technical Report Y-87-1). I grant permission to the agencies responsible for authorization of this work, or their duly authorized representative, to enter the project site for inspection purposes during working hours. I will abide by the conditions of the permit or license if issued and will not begin work without the appropriate authorization. I also certify that the proposed works are consistent with Maryland's Coastal Zone Management Plan. I understand that none of the information contained in the application form is confidential and that I may request that additional required information be considered confidential under applicable laws. I further understand that failure of the landowner to sign the application will result in the application being deemed incomplete.

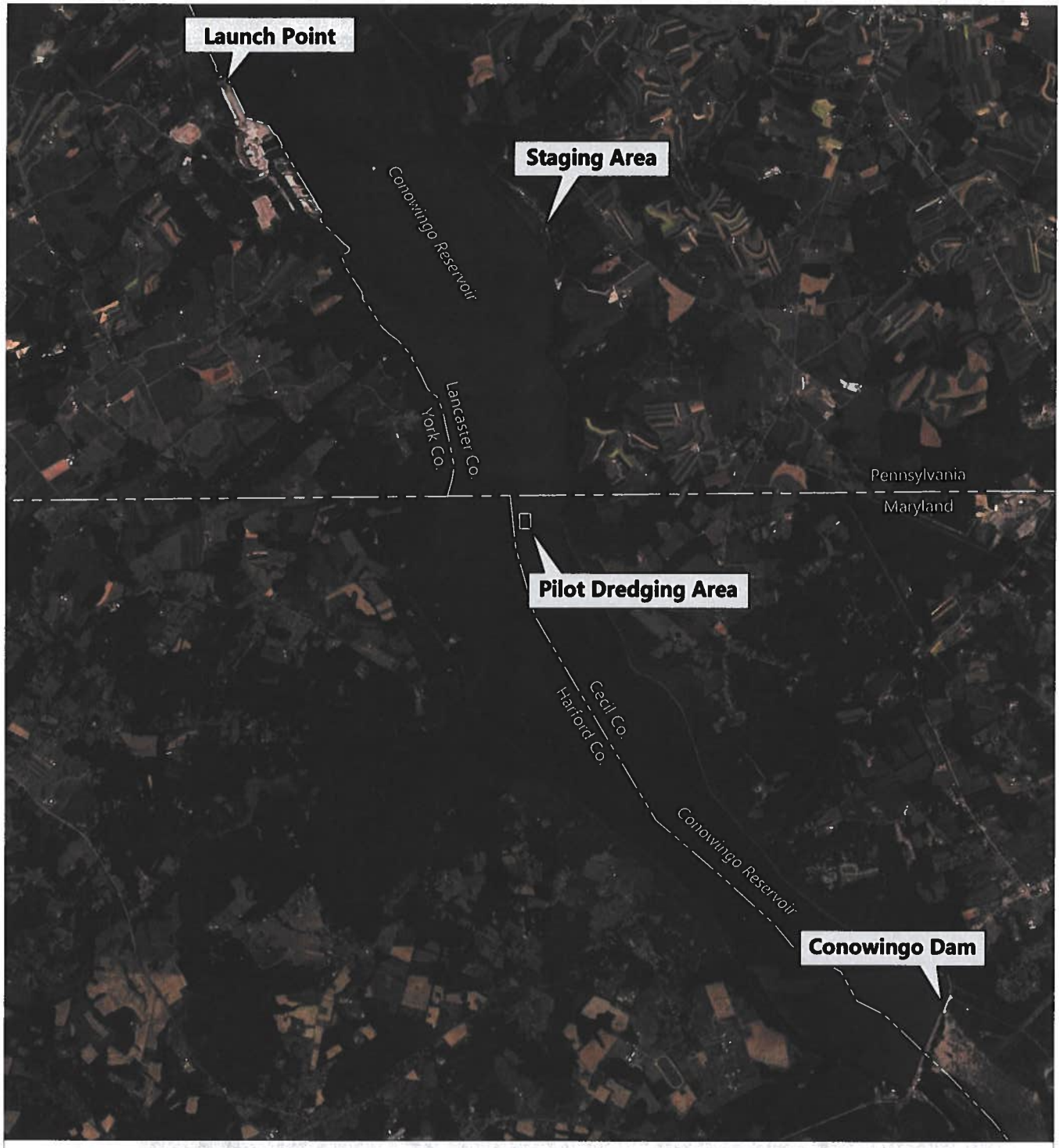
LANDOWNER MUST SIGN: _____ DATE: 9/16/10

WHERE TO MAIL APPLICATION

Maryland Department of the Environment
Water Management Administration
Regulatory Services Coordination Office
1800 Washington Boulevard, Suite 430
Baltimore, Maryland 21230
Telephone: (410) 537-3762
1-800-876-0200

Attachment 1:

Location and Plans



SOURCE: ©2017 Google Earth Pro.
HORIZONTAL DATUM: Maryland State Plane, NAD83, U.S. Feet.

Figure 1
Vicinity Map

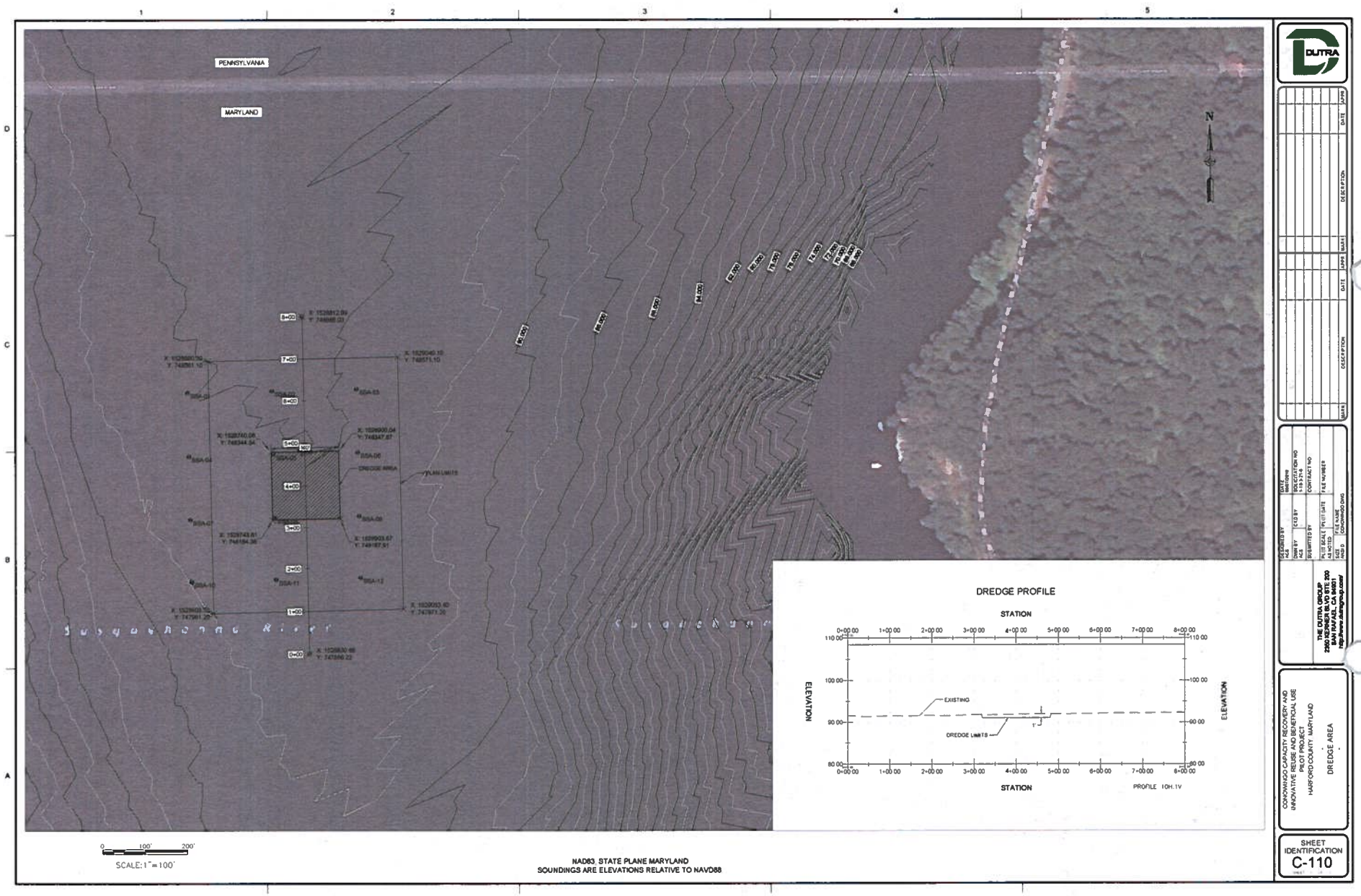


Figure 2 - Dredge Area

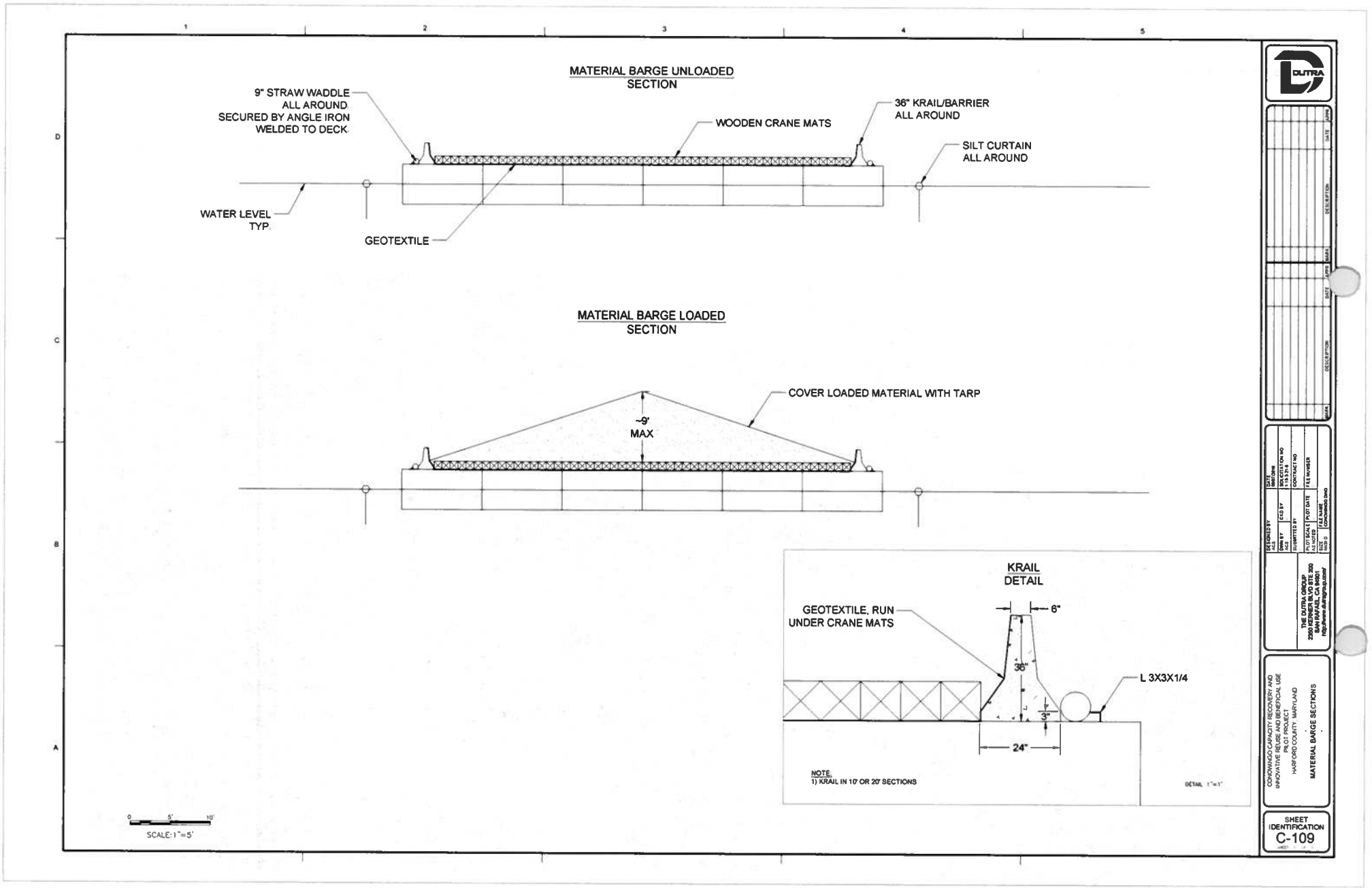


Figure 3 - Dewatering and Transport Barge

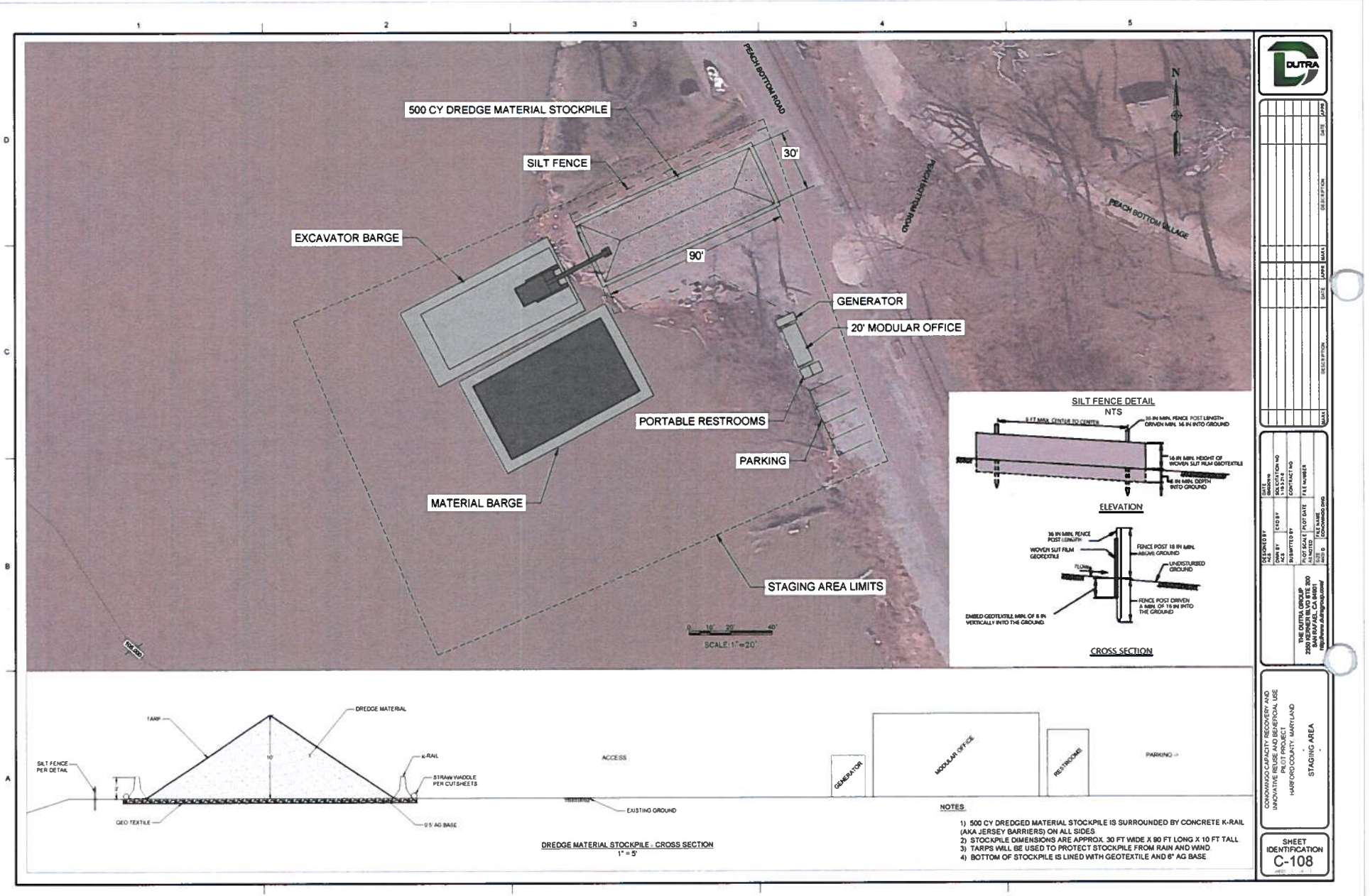
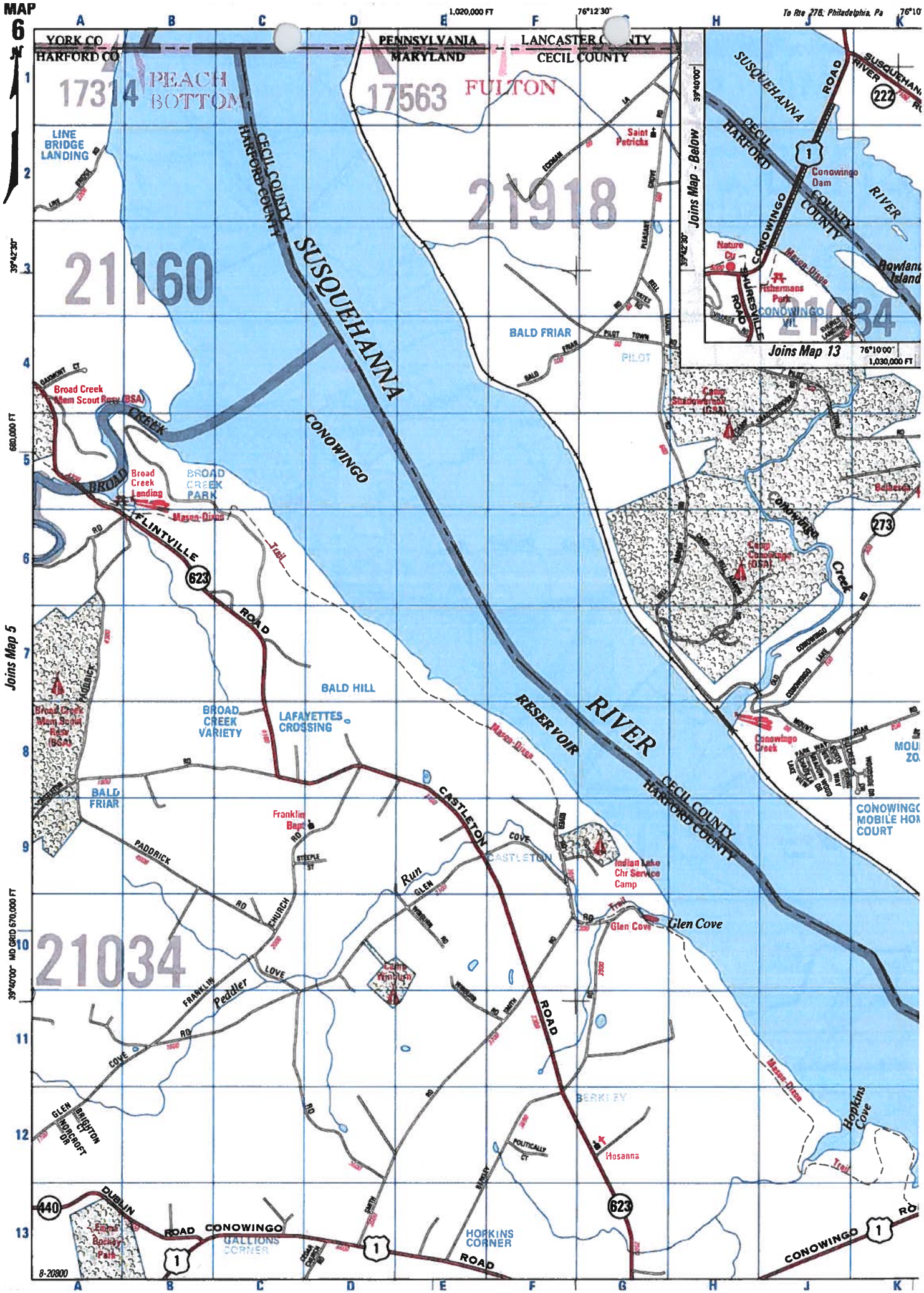


Figure 4 - Staging Area


MAP 6
1,020,000 FT
76°12'30"
To Rte 276, Philadelphia, Pa
76°10'
YORK CO
HARFORD CO
PENNSYLVANIA
MARYLAND
LANCASTER COUNTY
CECIL COUNTY
17314
PEACH BOTTOM
17563
FULTON
21918
21160
21034
LINE BRIDGE LANDING
Saint Patricks
CECIL COUNTY
HARFORD COUNTY
SUSQUEHANNA
CONOWINGO
RIVER
RESERVOIR
BALD FRIAR
PILOT
Broad Creek Mem Scout Resv (BSA)
BROAD CREEK
Broad Creek Landing
BROAD CREEK PARK
Mason-Dixon Trail
FLINTVILLE ROAD
623
BALD HILL
BROAD CREEK VARIETY
LAFAYETTES CROSSING
Franklin Bapt
CASTLETON
PADDRICK RD
CHURCH
STEEPLE ST
COVE
CASTLETON
Indian Lake Chr Service Camp
Glen Cove
Glen Cove Run
Camp Pemblum
Peddler
FRANKLIN
LOVE
COVE
GLEN
BRIGHTON
MONCROFT
DR
BERKLEY
POLITICALLY CT
Hosanna
Hopkins Cove
HOPKINS CORNER
DUBLIN ROAD
440
CONOWINGO GALLIONS CORNER
CONOWINGO ROAD
1
Joins Map 5
Joins Map - Below
Joins Map 13
1,030,000 FT
39°42'30"
39°40'00"
680,000 FT
670,000 FT
MD GRID
8-20800
SUSQUEHANNA ROAD
222
CECIL
HARFORD
Conowingo Dam
COUNTY
Nature Ctr
Fishermans Park
CONOWINGO VIL
HURSVILLE ROAD
Howland Island
Bellevue
273
Conowingo Creek
Camp Conowingo (BSA)
Camp Shadowlands (GSA)
CONOWINGO MOBILE HOME COURT

Attachment 2:

Mechanical Dredging and Material Transport and Handling Summary

Mechanical Dredging and Material Transport and Handling Summary

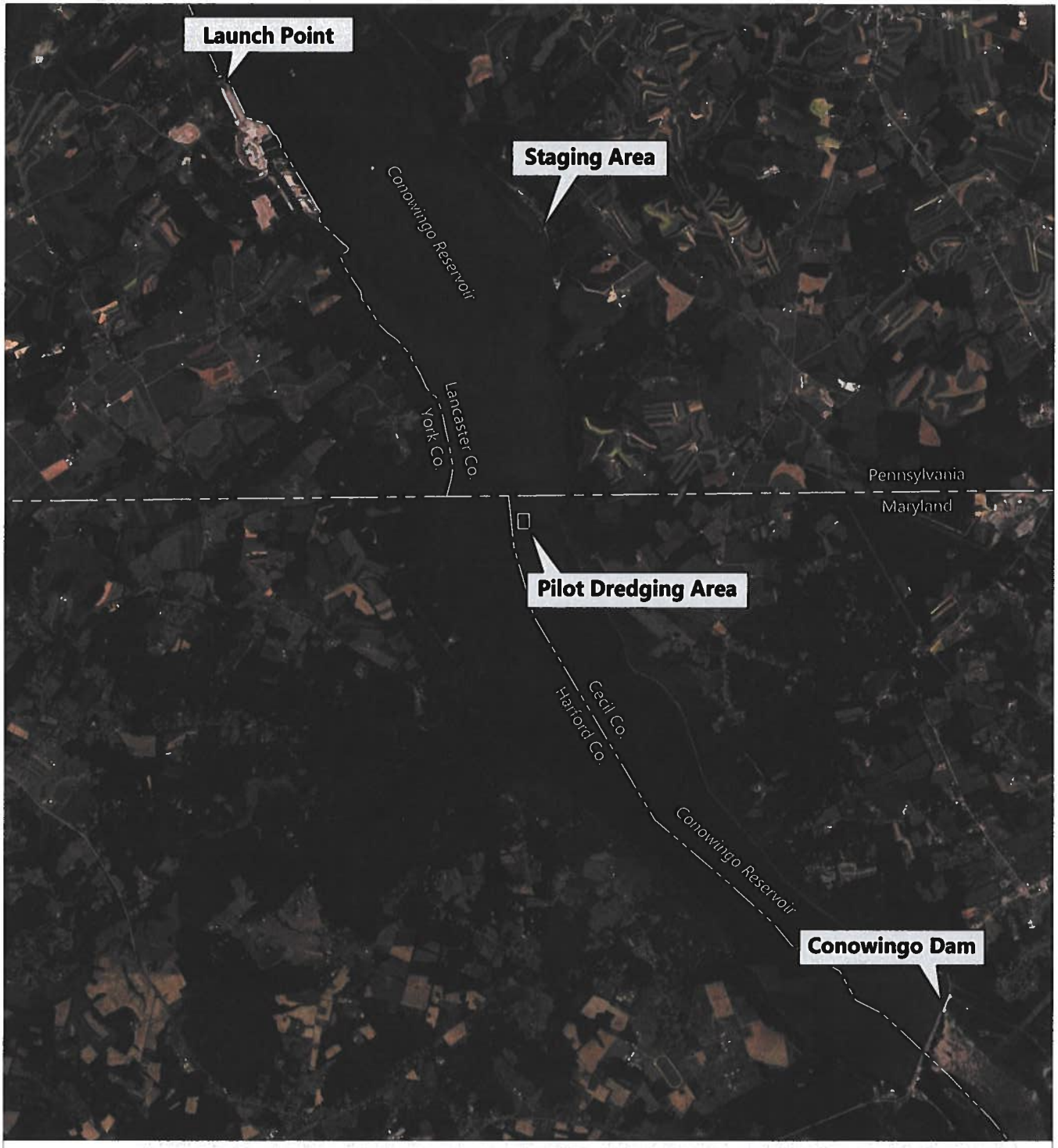
For the proposed Pilot Project, mechanical dredging will be conducted in the Susquehanna River within the dredge area (Figures 1 and 2). Mechanical dredging will be performed using a hydraulic excavator mounted on a floating barge system. Dredged material will be loaded onto a material transport barge, staged temporarily in river to allow filtered drainage of water released from the sediment, then transported to an offloading area where material will be temporarily staged landside prior to transport offsite by truck.

Mechanical dredging was selected as the method for sediment removal to simplify operations for the limited quantity of sediment that will be used for evaluation of potential innovative reuse or beneficial use options. The proposed dredge area is in water ranging from 18 feet to 20 feet deep and is subject to downstream currents from the river. The combination of deep water and river currents, plus short duration of removal operations will minimize the likelihood of generating turbidity. It is anticipated that potential increases in turbidity will be minor, temporary, and localized at the point of dredging. To help manage turbidity at the dredge and during the short duration on-barge dewatering, turbidity curtains will be used during dredging operations. Curtains will fully enclose the material barge and the active dredging area to limit release of turbidity from the limited project area. Daily monitoring of turbidity in the work area and downstream will occur in accordance with Maryland Department of the Environment requested details.

To transport the dredged sediment from the target dredge area, the dredged material will be loaded onto a material transport barge where it will be temporarily staged within the dredge area and silt curtain enclosure to allow release of free water from the dredge material through perimeter filtration (filter fabric and erosion control booms). Following a temporary hold and after any remaining turbidity dissipates within the curtain, the material barge will be transported by a small work vessel or tug to the temporary staging and offloading area located at Peach Bottom Landing (Figures 3 and 4). The dredge will travel with the material barge and be used to offload the sediment to a temporary stockpile prior to transport off site. It is anticipated that the dredge and material barge will travel to the dredge area and return to the staging area each day, equipment will be moored at the shoreline adjacent to the staging overnight. All in-water equipment, including the dredge, material barge, and support vessels, will be marked and lighted at night according to US Coast Guard regulations.

Due to the high sand content of the targeted material and temporarily holding at the dredging location, the majority of free water within the sediment is anticipated to be released directly into the reservoir prior to offloading. At the staging area, a stockpile area will be constructed using geotextile and aggregate base material, with perimeter jersey barrier protection, and straw bale and silt fence erosion protection. Material will be offloaded and stockpiled temporarily to allow any remaining free water to drain within the stockpile area. The remaining water will be filtered by the straw bale and silt fence protection and allowed to drain by surface flow returning to the reservoir. After a short

additional waiting period, the material will be tested by paint filter testing to verify the material is suitable for transport. A frontend loader will be used to load transport trucks to relocate the dredged material to a facility located at Stancils Inc. property in Perryville, Maryland, where material will be staged temporarily until evaluated for innovative reuse or beneficial use options (Attachment 1).



SOURCE: ©2017 Google Earth Pro.
HORIZONTAL DATUM: Maryland State Plane, NAD83, U.S. Feet.

0 6000
Feet

Figure 1
Vicinity Map

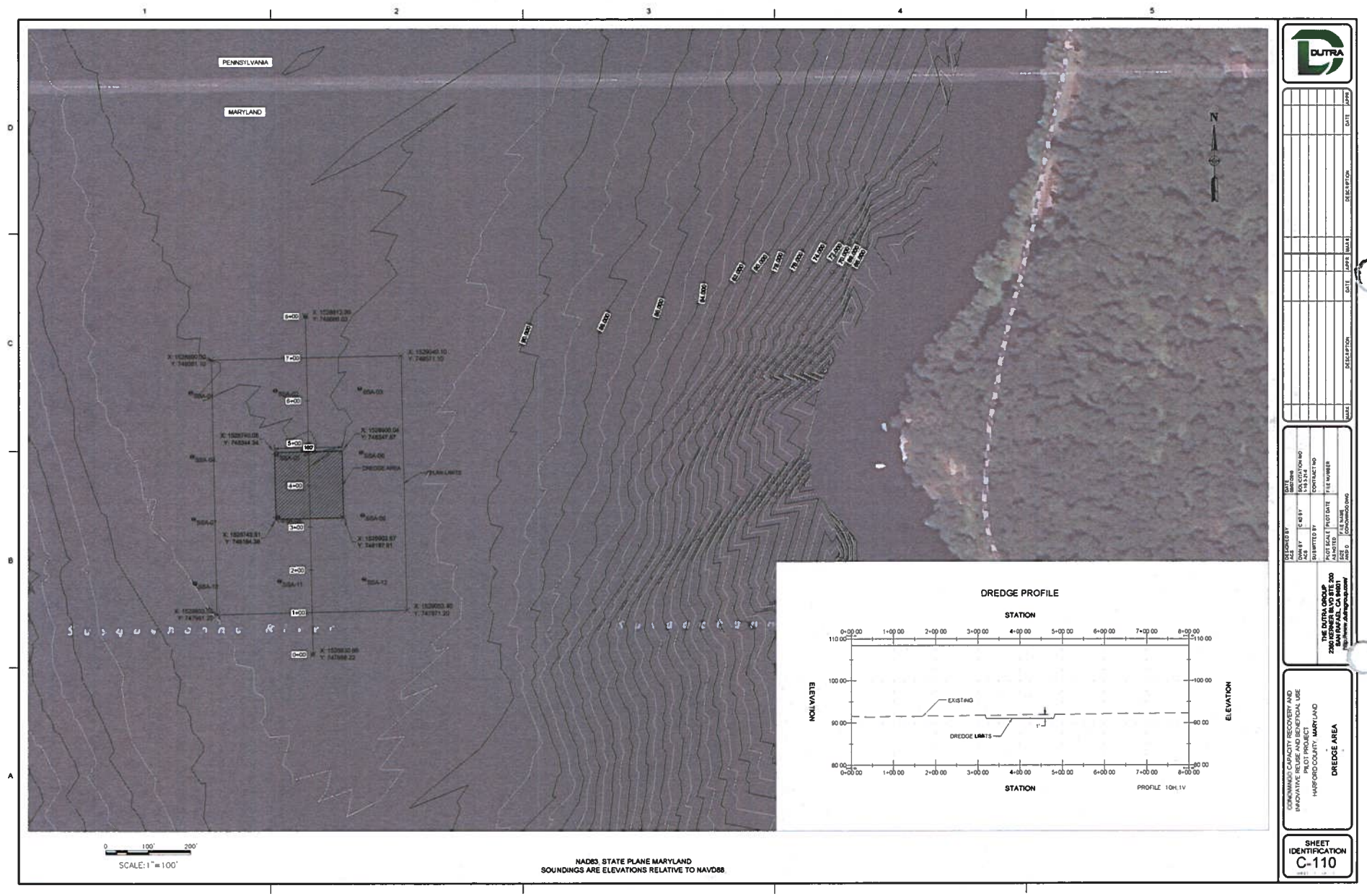


Figure 2 - Dredge Area

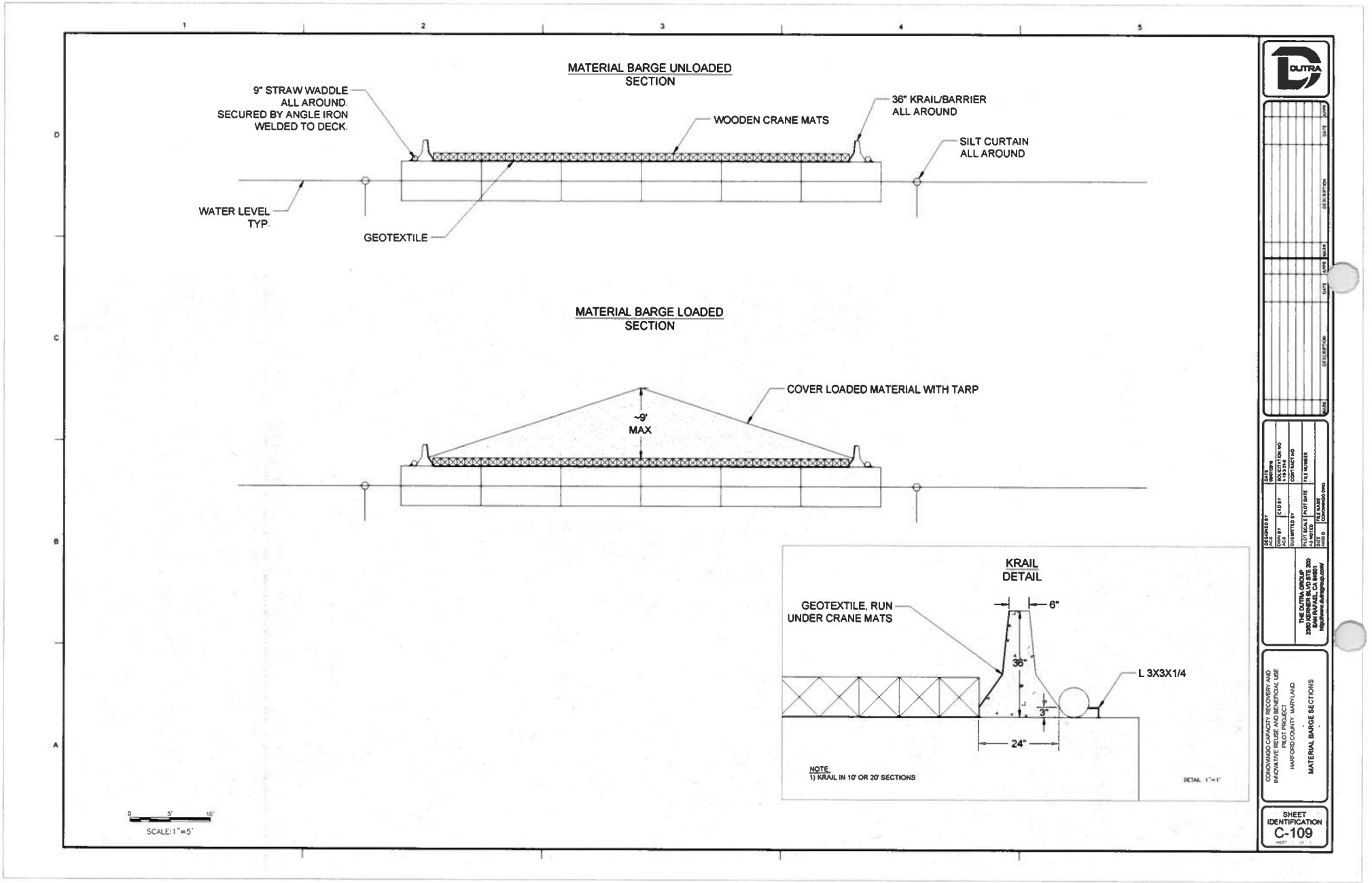


Figure 3 - Dewatering and Transport Barge

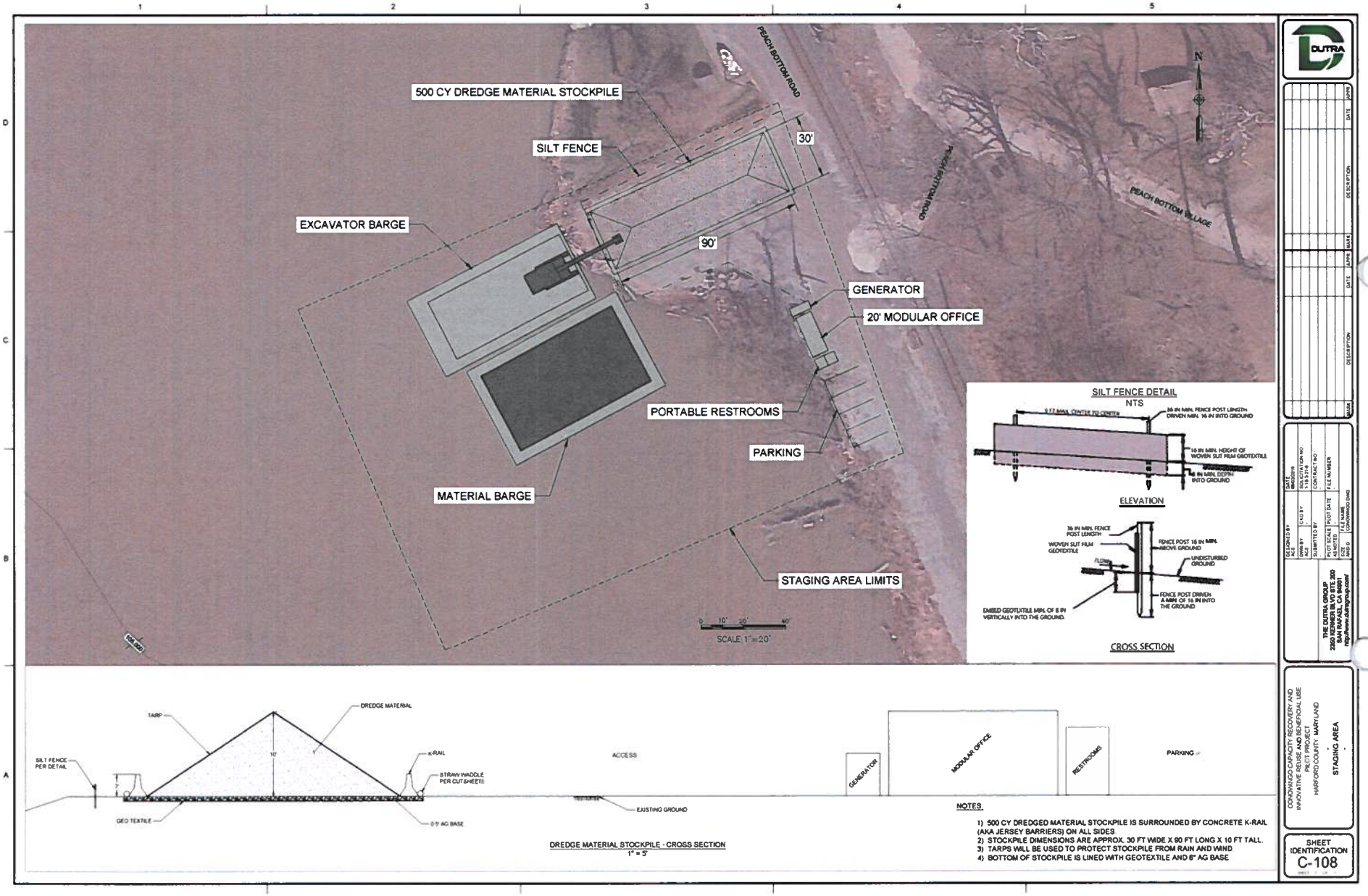


Figure 4 - Staging Area

northgate
environmental management, inc.

TECHNICAL MEMORANDUM

From: Deni Chambers, Principal-in-Charge
Northgate Environmental Management

Date: July 2, 2019

To: Bill Buszinski, Project Engineer
Maryland Environmental Services

RE: Summary of Proposed Innovative Reuse Demonstration Testing

Conowingo Sediment Characterization and
Innovative Reuse and Beneficial Use Pilot Project
Project ID No. 1-18-3-21-8R

The Conowingo Pilot Project will include 1,000 cubic yards (cy) of dredged material that will be removed from the designated dredging area. The dewatered dredge material will be transported to Stancills, Inc. (Stancills) in Perryville, Maryland. The material will then be processed at Stancills for two stages of testing:

Stage 1: Bench Scale Testing

Five-gallon bucket-sized samples of material will be shipped to our teaming partners for bench scale testing. The goal of the bench scale testing will be to determine the suitability of the material for proposed end uses including:

- aggregate for concrete and asphalt
- source material for cement clinker
- source material for manufacturing supplemental cementitious material
- soil blending for horticultural and sporting field products
- amended grading material for construction applications

Note: This Pilot Project will only utilize the end uses listed above.

Stage 2: Demonstration Testing

End uses that pass the bench scale testing will advance to full scale demonstration testing. Larger volumes (100-400 cy) of material will be transported to potential end users to be incorporated into their manufacturing process. In accordance with the Maryland Department of the Environment (MDE) Innovative Reuse and Beneficial Use Guidance Document, material will be tested before and after processing according to an IR/BU Materials Management Plan previously approved the MDE.

---

47 East All Saints Street
Frederick, Maryland 21701
tel 240.285.1502

www.ngem.com

Manufactured products will be sold to customers and an economic analysis will be performed to assess life cycle cost, as well as regional market appetite for the manufactured products.

Attachment 3:

Alternative Site Analysis

Alternative Site Analysis

Dredging Area

Initial site selection for the dredging area focused on identifying a site within the State of Maryland with predominantly sandy dredged material that could be readily dewatered and processed for innovative reuse and/or beneficial use. The entire extent of the Reservoir located within the State of Maryland was initially reviewed for identification of potential dredging areas. Maryland Geological Survey (MGS) reviewed the results of a bathymetric survey of the Conowingo Reservoir to identify areas with appropriate water depths and surface conditions that indicated the potential for sandy surface materials. Several areas within the northern area of the Reservoir were identified, and MGS conducted field surveys that included hand probing and sediment coring to determine bottom conditions. Once preliminary field investigations indicated a target area that met the project criteria, sediment sampling was conducted in the area that had the greatest proportion of sandy material. Sediment samples were collected from a total of nine locations and submitted for physical and chemical characterization.

The dredging area selected for the project is approximately 0.6 acres in size and located approximately five miles north of the Conowingo Dam, in the eastern portion of the Conowingo Reservoir (Figure 1).

Staging Area Location

Due to the short duration of dredging operations and need for offloading and storage capability in the nearshore area, existing facilities along the shoreline of the Susquehanna River were evaluated for use as temporary staging for dredging equipment and material handling operations. By limiting staging considerations to existing cleared sites with water access, impacts associated with the development of temporary staging were limited and project mobilization, set up, and restoration costs were reduced. Aerial imagery and Geographic Information Systems (GIS) data analysis was completed to identify potential options for dredged material staging areas. Due to the limited number of locations within the Maryland portion of the Conowingo Reservoir, areas within Pennsylvania portions of the waterbody were also included in the search. Staging options were generally limited to existing marinas, boat launches, parks, or other properties with water access, cleared space, sufficient operational draft, and access for trucking and delivery necessary for mobilization. Following review of imagery and GIS data, eight potential locations were identified as options to consider for staging.

Eastern Shoreline

Review of the land use data for the western and eastern shorelines of the Reservoir indicated that a railroad line runs along the entire eastern shoreline. The proximity to shore and low elevation of the rail limits access to the majority of the eastern shore and presents difficulty for clearance of equipment. Three potential locations were identified along the eastern shoreline: Conowingo Creek Landing, Peach Bottom Marina, and a former staging area at Peach Bottom Landing. Of these existing facilities, both Conowingo Creek Landing and Peach Bottom Marina have restricted access to the open Reservoir

because of low-clearance rail bridges across shallow creeks. Although some open parking lot areas could be utilized for operations, the shallow draft within the waterways and restricted bridge clearance needed to access them removed Conowingo Creek Landing and Peach Bottom Marina from consideration. Peach Bottom Landing is a small footprint of land located between the reservoir and the rail line with an access rail crossing. Previously used as staging by construction activities by Exelon, this location provides a flat, gravel footprint immediately along the shoreline.

Western Shoreline

The western shoreline is a generally steep, forested shoreline which limits options for existing staging. Review of the western shoreline identified five potential staging area locations: Conowingo Dam Operations Facility, Glen Cove Marina, Broad Creek Public Landing, Peach Bottom Power Station, and Dorsey Park Boat Launch. Due to existing operational needs by the property owners, safety concerns working in the vicinity of the dam and power station, as well as added security requirements for either facility, both the Operations Facility and Power Station were removed from consideration. Review of Glen Cove Marina's property identified potential sufficient operational draft but limited space for storage and operations and a large impact to the use of the facilities would be required. Broad Creek Public Landing has an extremely steep and winding entrance that would prohibit most large equipment mobilization and lacks necessary draft and operational space. Dorsey Park Boat Launch has necessary draft allowance and includes good road access and a large open parking lot and operational space. Public access would not be as limited compared to other marinas because Dorsey Park Boat Launch has two launch ramps.

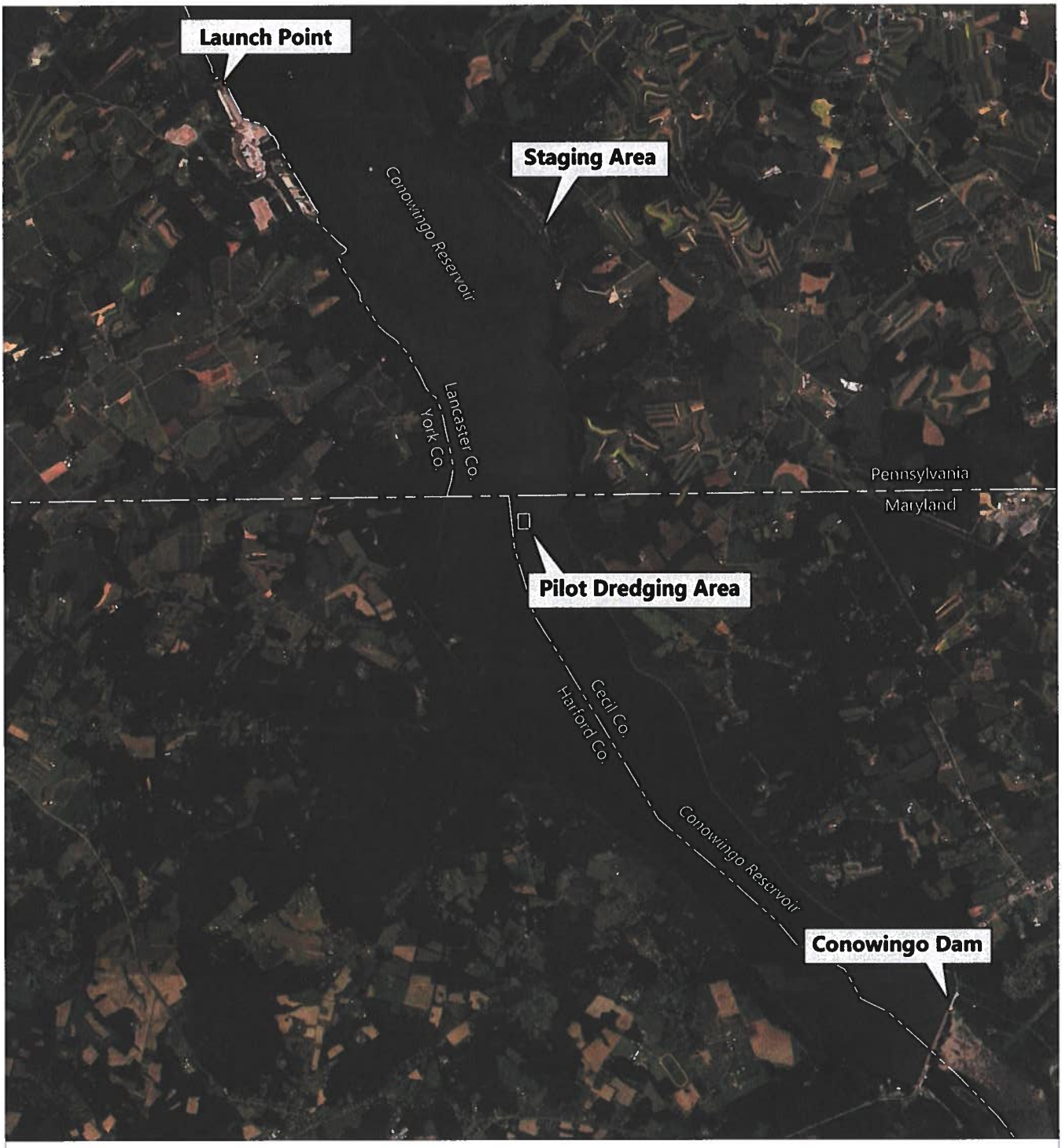
Final Staging Area Site Options

After review of available facilities and considering access requirements, distance from the dredging area, access agreements necessary, and public and private impacts from the work, two staging areas were selection for further consideration. Dorsey Park Boat Launch could be used for initial mobilization, including deploying the dredge, material barge, push boat, and other in-water equipment. and temporary staging could be set up for crane use to offload floats and equipment mobilized to the site, along with temporary assembly. Operations could be configured such that the public would still be able to utilize one of the two launch ramps, and parking loss will be minimized during the short duration of mobilization.

After assembly, in-water equipment could be pushed across the Reservoir to a Staging Area that would be located at Peach Bottom Landing (this area is currently being permitted through the US Army Corps of Engineers and Pennsylvania Department of Environmental Protection). This location could house the temporary material stockpile, trailers, general equipment storage, and the main operations during offloading, stockpiling, and material load out. This site was utilized previously be a private contractor

so limited environmental impacts are anticipated and restrictions on public access would be minimized during the work.

A combination of Dorsey Park Boat Launch and Peach Bottom Landing were identified as the most feasible options for equipment staging and operations for the Conowingo Pilot Project.



SOURCE: ©2017 Google Earth Pro.
HORIZONTAL DATUM: Maryland State Plane, NAD83, U.S. Feet.

0 6000
Feet

Figure 1
Vicinity Map

Attachment 4:

Approvals Needed-Granted

Other Approvals Needed/Granted

Federal Energy Regulatory Commission (FERC) and Exelon:

Coordination with Exelon has been performed throughout the project planning process. In order to perform the Conowingo Dredging Pilot Project, Exelon's FERC license must be modified for a non-project specific use. MES is still seeking approval for the proposed activities presented in this permit in coordination with Exelon.

A separate authorization that allows submittal of the Joint Application Permit was received from Exelon on September 17, 2019 and is included in A6-Attachment 2.

State and Federal Rare, Threatened, and Endangered Species Coordination:

A formal request for consultation with Maryland Department of Natural Resources (MD DNR) and US Fish and Wildlife Service (USFWS) for potential impacts to federal and state rare, threatened, and endangered species was initiated between May-July 2019. It was determined that proposed project activities were not likely to adversely affect listed species; however, MD DNR will be reviewing new information received on northern map turtle distribution and comment as necessary. MD DNR and USFWS responses are included in A4-Attachment 1 and A-4 Attachment 2, respectively.

A letter was received on February 5, 2018 from the Susquehanna River Anadromous Fish Restoration Cooperative (members include representatives from USFWS, MD DNR, the Pennsylvania Fish and Boat Commission, the New York Department of Environmental Conservation, and the Susquehanna River Basin Commission) regarding project pilot activities. They voiced support to the proposed timeframe of the project, stating that the project should have minimal impacts to current fish passage studies. They did request to keep the schedule, and not begin dredging before June 4, 2018 in order to avoid impacts to Exelon's and Brookfield's FERC required fish studies. Susquehanna River Anadromous Fish Restoration Cooperative's response is included in A4-Attachment 4.

Historical Properties Coordination:

A formal project review was requested from Maryland Historical Trust (MHT) in July 2019 to assess potential effects on historic properties in the vicinity of the Conowingo Pilot Project. It was determined that the proposed project activities will have no adverse effect on historic properties (see A4-Attachment 3).

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Larry Hogan, Governor
Boyd Rutherford, Lt. Governor
Jeannie Haddaway-Riccio, Secretary

August 14, 2019

Ms. Maura Morris
Maryland Environmental Service
259 Najoles Road
Millersville, MD 21108

RE: Environmental Review for Conowingo Sediment Characterization and Innovative Reuse and Beneficial Use Pilot Project, Harford and Cecil Counties, Maryland.

Dear Ms. Morris:

Thank you for providing us with the latest update on this project. Our previous concerns for Bog Turtles (*Glyptemys muhlenbergii* – state and federally listed as threatened) were associated with the proposed staging area located in Harford County, Maryland. Given that this staging area has been relocated to Pennsylvania, Maryland's Wildlife and Heritage Service has no comments regarding Bog Turtles (unless there are other Maryland staging or access areas proposed as this project evolves).

We acknowledge the reduction in scope of the pilot dredging site in the Maryland portion of the Conowingo Pond, although we still have potential concerns for the state-listed endangered Northern Map Turtle (*Graptemys geographica*), regarding both the actual pilot dredging and the proposed 28 sediment borings. Recent coordination in July 2018 with Dr. Rich Seigel of Towson University (who is leading research related to this species' use of the project area) alerted us to additional data that needs to be considered. We expect to use these data to identify more specific concerns and develop any necessary permit conditions to address them.

A review of the overall Conowingo Pond - as requested – includes the Historic Waterfowl Concentration and Staging Area that overlays the entire northern half of the pool. Such areas are generally protected from disturbance during the winter months with a time-of-year restriction on projects of a certain scope. The Wildlife and Heritage Service has no concerns for this Historic Waterfowl Concentration and Staging Area in regard to the current dredging proposal, but may have concerns for any changes in scope or other proposals involving water dependent facilities. There are also records for the state-listed threatened Chesapeake Logperch (*Percina bimaculata*) in this portion of the Susquehanna, and while we do not have concerns for impacts to this species from this pilot project, future expansion of these efforts may warrant a closer evaluation of impacts to the Logperch.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

Lori A. Byrne

Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER# 2019.1148.ceha
Cc: Scott Smith, DNR
R. Limpert, DNR

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, Maryland 21401
http://www.fws.gov/chesapeakebay

July 15, 2019

Maura Morris
259 Najoles Road
Millersville, MD 21108

Re: "No Effect" determination for Conowingo sediment characterization and innovative reuse pilot project in Cecil and Harford Counties, MD

Dear Ms. Morris:

The U.S. Fish and Wildlife Service (Service) has reviewed your project information from the Service's Information for Planning and Consultation (IPaC) online system and your email messages from July 3, 2019. The comments provided below are in accordance with Section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

The purpose of this proposed project is to remove dredge material from the Susquehanna River that will be dewatered and stored at a small staging facility in Pennsylvania. The material will then be used for innovative reuse projects, following Maryland Department of the Environment guidelines for material testing and processing. A number of federally listed species may be present in the area, including northern long-eared bat (*Myotis septentrionalis*), bog turtle (*Glyptemys muhlenbergii*), and Maryland darter (*Etheostoma sellare*).

Since this project is taking place in the channel of the river, it is not expected to overlap with the habitats for these species. While surveys have been conducted for Maryland darter in the mainstem of the river, it has never been detected there. Therefore, this project will have "no effect" on northern long-eared bat, bog turtle, and Maryland darter.

Except for occasional transient individuals, no other federally proposed or listed threatened or endangered species are known to exist within the project area. Should project plans change or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

We appreciate the opportunity to provide information relative to fish and wildlife issues. Thank you for your interest in these resources. If you have any questions or need further assistance, please contact Kathleen Cullen of my staff at 410/573-4579 or kathleen_cullen@fws.gov.

Sincerely,

Genevieve LaRouche
Field Supervisor

MARYLAND HISTORICAL TRUST

PROJECT REVIEW FORM

Request for Comments from the Maryland Historical Trust/ MDSHPO on State and Federal Undertakings

MHT USE ONLY
Date Received: 7/9/19 Log Number: 2019 03438

Project Name	Conowingo Sed. Characterization and Inno. Reuse and Benef. Use Pilot Project			County	Cecil, Harford

Primary Contact:

Contact Name	Maura Morris			Company/Agency	Maryland Environmental Service
Mailing Address	259 Najoles Road				
City	Millersville	State	Maryland	Zip	21108
Email	mmorr@menv.com	Phone Number	+1 (410) 729-8369	Ext.	

Project Location:

Address	Maryland portion of the Conowingo Pond			City/Vicinity	
Coordinates (if known): Latitude		Longitude		Waterway	Susquehanna River

Project Description:

List federal and state sources of funding, permits, or other assistance (e.g. Bond Bill Loan of 2013, Chapter #; HUD/ CDBG; MDE/COE permit; etc.).	Agency Type	Agency/Program/Permit Name	Project/Permit/Tracking Number (if applicable)
	Federal	USACE 404 Permit	
	State	MDE Wetland License	

This project includes (check all applicable): ☐ New Construction ☐ Demolition ☐ Remodeling/Rehabilitation
☐ State or Federal Rehabilitation Tax Credits ☒ Excavation/Ground Disturbance ☒ Shoreline/Waterways/Wetlands
Other\Additional Description: Dredging and sediment borings within the Susquehanna River

Known Historic Properties:

This project involves properties (check all applicable): ☐ Listed in the National Register ☐ Subject to an easement held by MHT
☐ Included in the Maryland Inventory of Historic Properties ☐ Designated historic by a local government
☐ Previously subject to archeological investigations
Property\District\Report Name: N/A

Attachments:

All attachments are required. Incomplete submittals may result in delays or be returned without comment.
☒ Aerial photograph or USGS Quad Map section with location and boundaries of project clearly marked.
☒ Project Description, Scope of Work, Site Plan, and\or Construction Drawings.
☒ Photographs (print or digital) showing the project site including images of all buildings and structures.
☒ Description of past and present land uses in project area (wooded, mined, developed, agricultural uses, etc).

MHT Determination:

☐ There are **NO HISTORIC PROPERTIES** in the area of potential effect
☐ The project will have **NO EFFECT** on historic properties
☒ The project will have **NO ADVERSE EFFECT** on historic properties
☐ The project will have **NO ADVERSE EFFECT WITH CONDITIONS**
☐ The project will have **ADVERSE EFFECTS** on historic properties
☐ **MHT REQUESTS ADDITIONAL INFORMATION**

MHT Reviewer: [signature] Date: 7/29/2019

Submit printed copy of form and all attachments by mail to: Beth Cole, MHT, 100 Community Place, Crownsville, MD 21032

The specific activities outlined in the attached letter will have no adverse effect on historic properties.

Revised 6/21/2013

MARYLAND ENVIRONMENTAL SERVICE

Larry Hogan GOVERNOR
Boyd K. Rutherford LT. GOVERNOR
Roy McGrath DIRECTOR/CEO

July 3, 2019

Maryland Historical Trust
Project Review and Compliance
100 Community Place
Crownsville, MD 21032

Subject: Maryland Historical Trust Review

Reference: Conowingo Sediment Characterization and Innovative Reuse and Beneficial Use Pilot Project

To Whom It May Concern:

In August 2017, the Maryland Environmental Service (MES) submitted a Project Review Form (MHT Log Number 201704874) requesting Maryland Historical Trust (MHT) assess potential effects on historic properties present at 2213 Line Bridge Road, Whiteford, MD and a specified area in the Susquehanna River. These properties were related to the potential staging and dredging areas, respectively, for the Conowingo Capacity Recovery and Innovative Reuse and Beneficial Use Pilot Project. On December 14, 2017, MES provided revisions to the original project staging and dredging areas to give MHT an opportunity to assess the final project areas.

Since the December 2017 revision submittal, the project, including the potential staging and dredging area, has changed. In an effort to comply with Section 106 of the National Historic Preservation Act and the Maryland Historical Trust Act, MES is submitting the revised project (Conowingo Sediment Characterization and Innovative Reuse and Beneficial Use Pilot Project) to assess potential effects on historic properties within the Maryland portion of the Susquehanna River upstream of the Conowingo Dam (Conowingo Pond). The revised project will involve a reduced volume of dredging (25,000 cubic yards to 1,000 cubic yards) in the same location of the Susquehanna River previously authorized by MHT, an additional sediment characterization study that will include 28 sediment borings within the Maryland portion of the Conowingo Pond, and creation and utilization of a staging area located in Lancaster County, Pennsylvania. The potential staging area has been submitted to and is currently being reviewed by Pennsylvania Historical and Museum Commission. The project will include the following actions:

1. Preparation of a 90 ft x 30 ft staging area in Pennsylvania[1];
2. Mechanically dredging approximately 1,000 cubic yards (or less) of material;
3. Dewatering the material via barge;
4. Handling and stockpiling the material at the staging area in Pennsylvania[1];
5. Transporting the material to an established facility where it can be tested and processed, if needed;

6. Beneficially using and or innovatively reusing all the dredged material in Maryland in accordance with the Maryland Department of the Environment Innovative Reuse and Beneficial Use of Dredged Material Guidance Document; and
7. Performing a sediment characterization study, which includes collection of 28 sediment borings (approximately 1,000 linear feet of sediment) in the Maryland Conowingo Pond utilizing a hollow stem auger and split spoon sampler[2].

1-Formal State Historic Preservation Office consultation was requested from the Pennsylvania Historical and Museum Commission.

2-Please note that a review of the entire Maryland portion of the Conowingo Pond is requested. Although draft sampling locations are provided, they may change due to access restrictions and regulatory coordination.

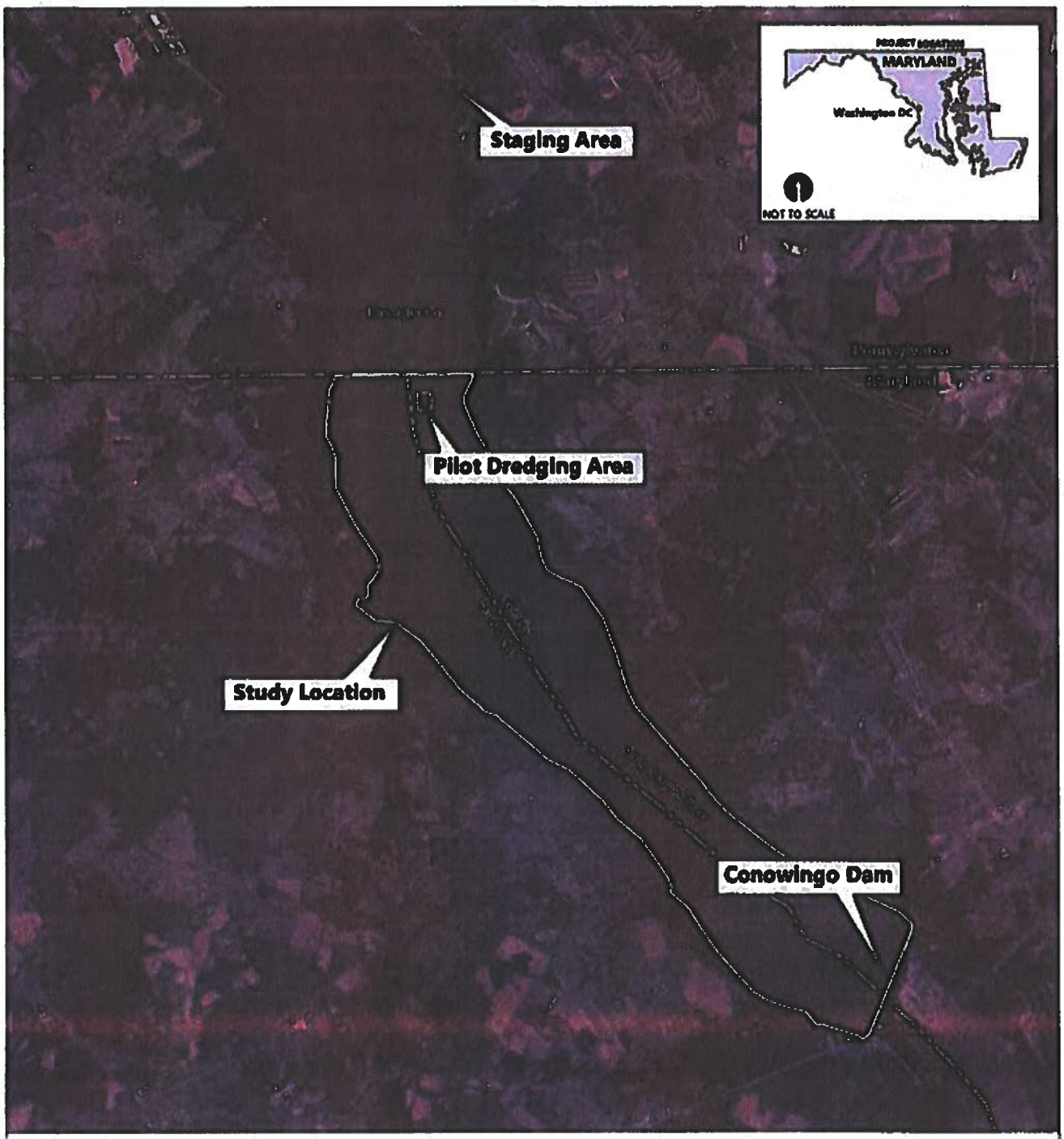
Attached for your reference are: 1) An updated project site map (Figure 1), 2) Related site drawings (Figure 2 & 3), 3) Draft plan for the proposed sediment boring sampling locations (Figure 4), 4) ADC reference maps (Map 6 Cell C1 for the approximate dredging area; Map 4015 Cell D1 and Map 303 Cell D10 for the staging area), 5) USGS Topographic maps (staging area), 6) Staging area photos and the corresponding map, and 7) Project description.

Should you have any questions please feel free to contact me at 410-729-8369 or mmorr@menv.com.

Sincerely,

Maura Morris
Lead Environmental Specialist
Environmental Dredging and Restoration Division

Enclosures: Project Site Map and Related Site Drawings
Draft Proposed Sediment Boring Sampling Locations
ADC and USGS Topographic Maps
Staging Area Photos and Corresponding Map
Project Description



Publish Date: 2019/05/22 5:11 PM | User: mreents
Filepath: M:\0Projects\MES Projects\000000-000 Conowingo Dam\170530.0101 Pilot Project\CAD\Vicinity Map\0530-RP-001 (Vicinity Map) rev3.dwg Vicinity Map

ANCHOR QEA

Figure 1
Vicinity Map

Conowingo Sediment Characterization and Innovative Reuse and Beneficial Use Pilot Project
Harford and Cecil Counties, Maryland

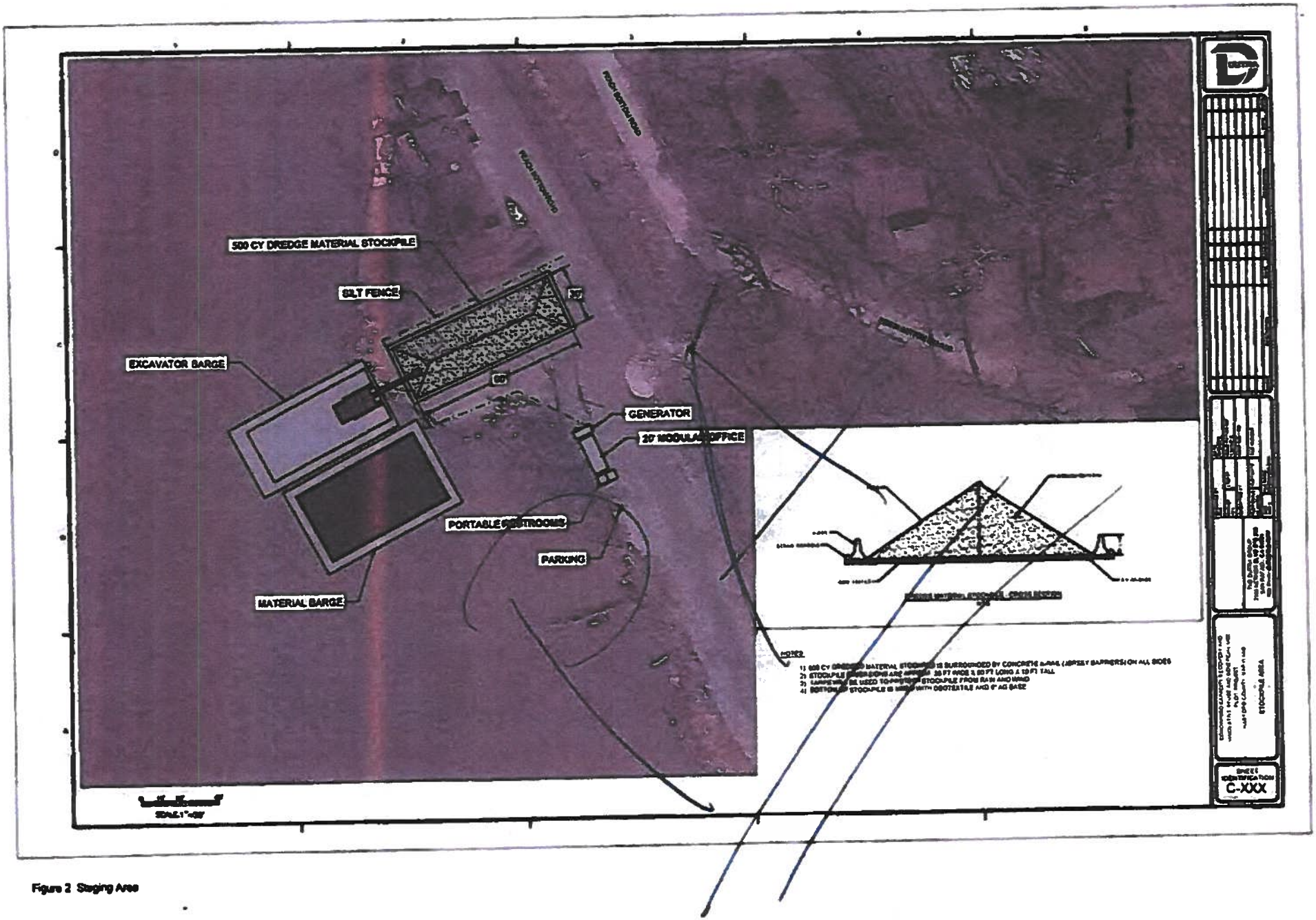


Figure 2 Staging Area

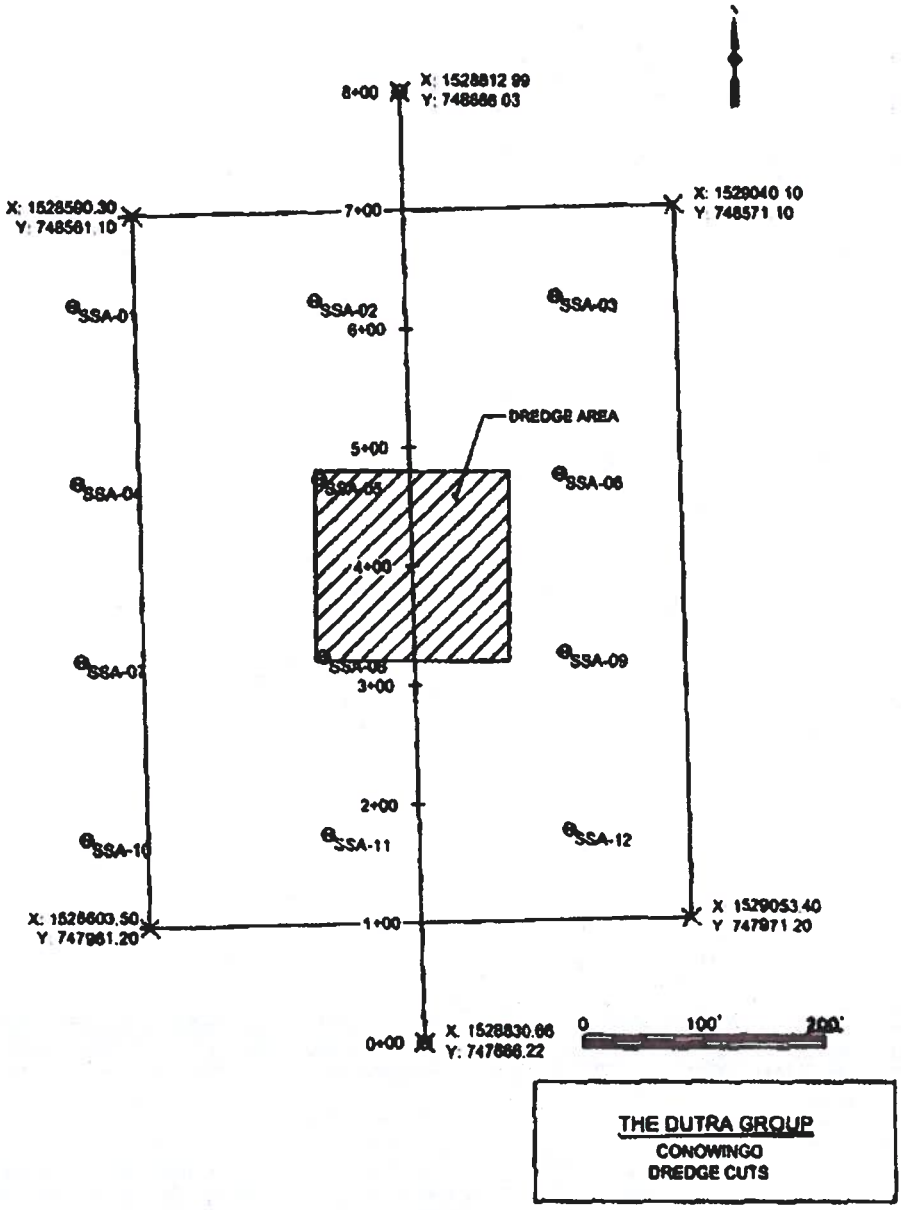


Figure 3– Dredging Area


Draft
For Review Only
N
Legend
Proposed Core Locations
Depth of Water (ft)
Est. Sediment Thickness (ft)
No Drill Zone (Water Depth >=50')
Avoidance Zone (Mapped)
Avoidance Zone (Approximate)
Baltimore City Water Intake
Hopkins Cove w 100' Buffer
Ground Surface Contour (20 ft)
County Boundaries
Reservoir Bottom (2015)
High 105 ft
Low 41 3284
There are 28 porposed core locations. Coring depths will be determined based on field observations and drilling conditions.
Figure 4
Proposed Core Locations
Draft Sampling Plan
Conowingo Reservoir
Maryland
DATE
PROJECT NUMBER
9/14/2016
northgate

PROJECT DESCIPTION

Conowingo Sediment Characterization and Innovative Reuse and Beneficial Use Pilot Project

PROJECT DESCRIPTION

The Conowingo Dam was constructed in 1928 and the associated reservoir serves as a source of drinking water for Baltimore City, Harford County, and the Chester Water Authority. In addition to the critical function of water storage, the reservoir also serves as a significant trap for sediment and nutrients (nitrogen and phosphorus), which is an important aspect of the Chesapeake Bay Total Maximum Daily Load. The Conowingo Reservoir is 14-miles long (6 miles in Maryland) and encompasses a total of 9,000 acres. The reservoir has never been dredged and it is estimated that it contains approximately 31 million cubic yards (mcy) of sediment, which impacts the management of sediment and nutrient inputs to the Chesapeake Bay.

The purpose of this pilot project is to propose solutions for reducing the nitrogen, phosphorus and sediment inputs to the Chesapeake Bay with viable innovative reuses or beneficial uses (IRBU) of the accumulated sediments within the Maryland portion of the Susquehanna River upstream of the Conowingo Dam. The proposed solutions will be demonstrated through a sediment characterization study and a demonstration pilot project (Figure 1). The pilot project involves the following components: 1) Preparation of a small staging area approximately 90 feet (ft) x 30 ft in Peach Bottom, Pennsylvania (Figure 2); 2) Mechanically dredging approximately 1,000 cubic yards (or less) of material from 160 ft x 160 ft x 1 ft (depth) area (Figure 3); 3) Dewatering the material via barge; 4) Handling and stockpiling the material at the staging area; 5) Processing the material, if needed, at an interim staging location; 6) Beneficially using and or innovatively reusing all the dredged material in Maryland in accordance with the Maryland Department of the Environment Innovative Reuse and Beneficial Use of Dredged Material Guidance Document; and 7) Performing a sediment characterization study (figure 4), which includes collection of approximately 1,000 linear feet of sediment borings at various depths in the Maryland Conowingo Pond utilizing a 8-inch hollow stem auger and 2-inch split spoon sampler to close data gaps in the project area for the purpose of understanding how to mitigate downstream water quality impacts.

The pilot dredging study area (Figure 3) is approximately five acres in size in a location about five miles north of the Conowingo Dam. The study area was selected due to the presence of sandy material that will be slated for a subsequent project based on the Maryland Department of the Environment Innovative Reuse and Beneficial Use of Dredged Material Draft Guidance Document.

Preparation of the Pennsylvania staging area (Figure 2) will include laying fabric and base rock and installing stormwater measures prior to placement of the dredged material. Once the dredged material is loaded into trucks and transported to a firm to be innovatively reused, the staging area will be restored to its original condition.

PROJECT DESCIPTION

Conowingo Sediment Characterization and Innovative Reuse and Beneficial Use Pilot Project

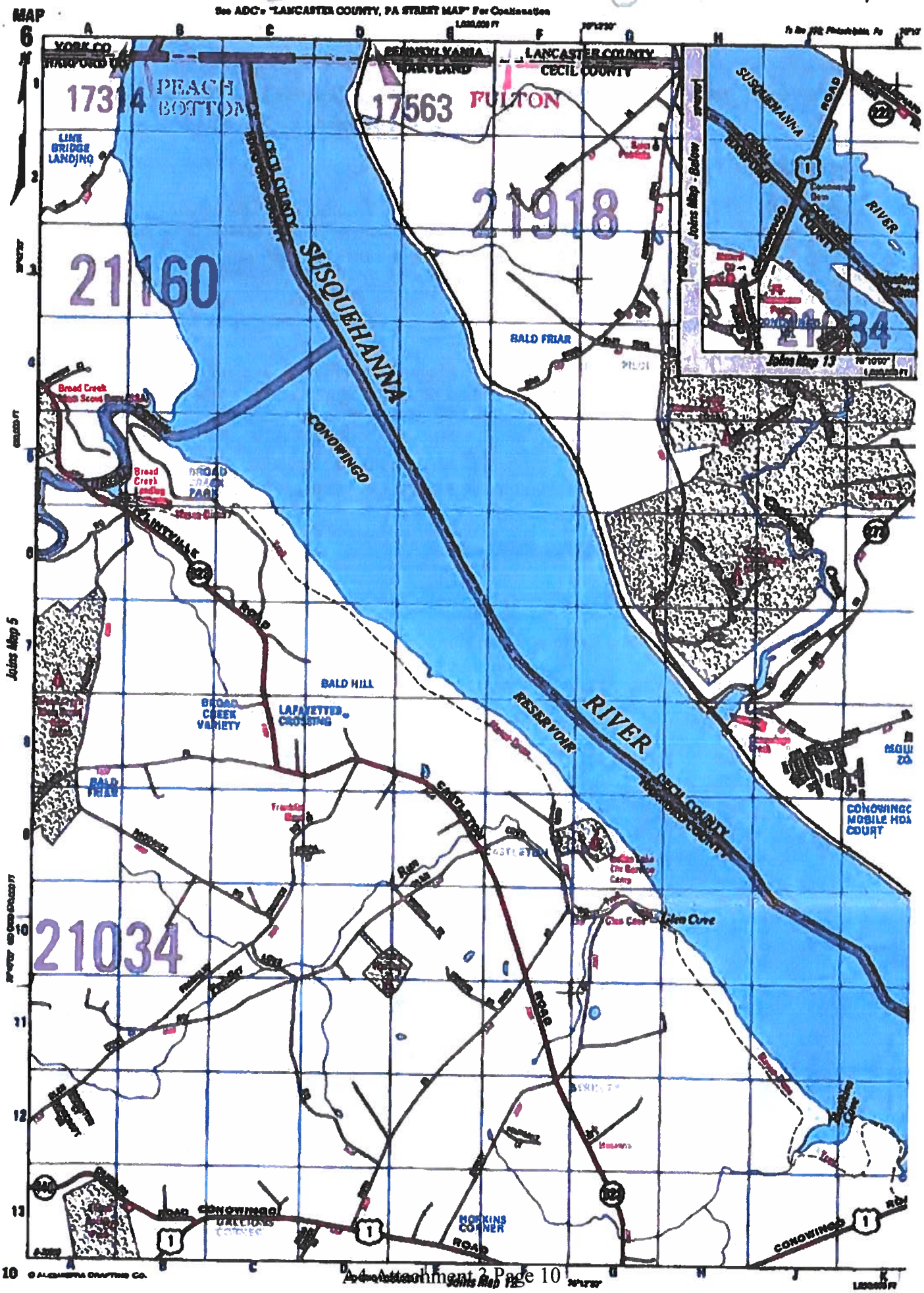
DESCRIPTION OF PAST AND PRESENT LAND USES

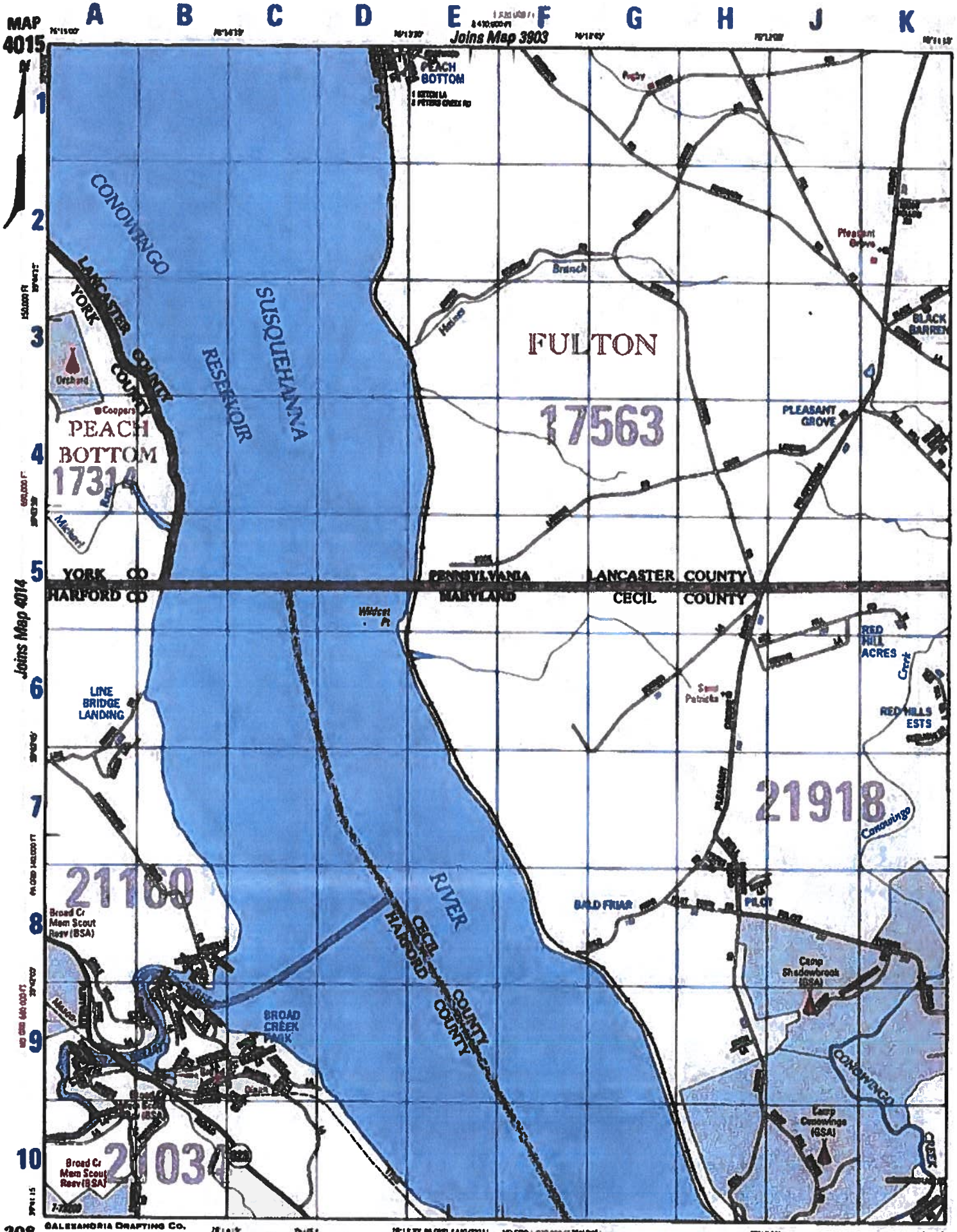
The past land use in the nearshore parcels located behind the Conowingo Dam mainly consisted of forested and agricultural uses. Currently, the land hosting the Pennsylvania staging area (Figure 2) is a gravel lot void of buildings that is used as a parking area for a low volume boat ramp. The Pennsylvania's Cultural Resources Geographic Information System did not identify properties of concern within the staging area. Please note that the adjacent railroad will not be disturbed.

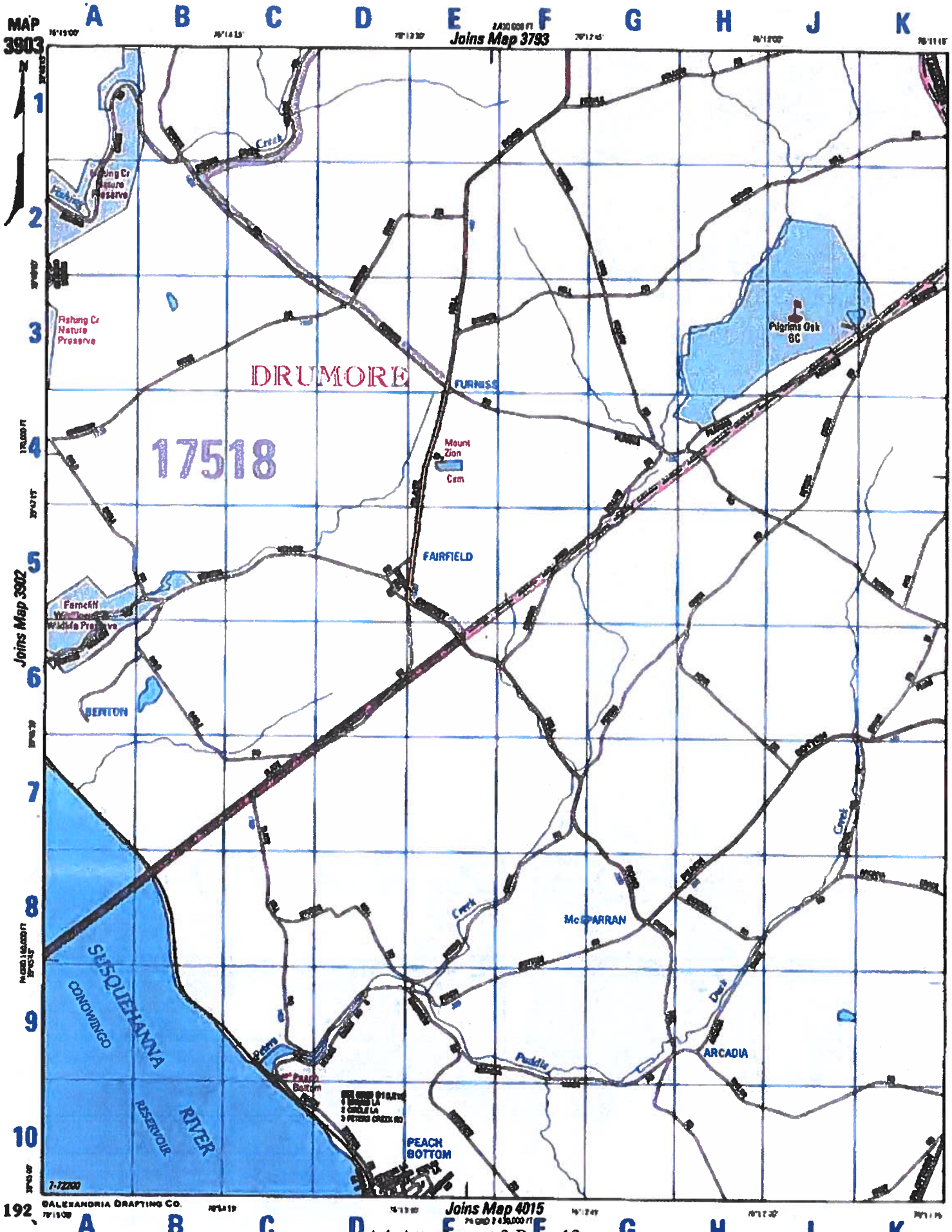
The pilot dredging (Figure 3), which will take place approximately five miles north of the Conowingo Dam, and the sediment characterization borings (Figure 4), which will be taken from the bottom of the Susquehanna River between the dam to the Maryland state line does not contain any buildings or structures at this time. Additionally, the Maryland's Cultural Resources Information System did not identify properties of concern (preservation easements, historic places or properties, or heritage areas) within the sediment characterization project area (Figure 1).

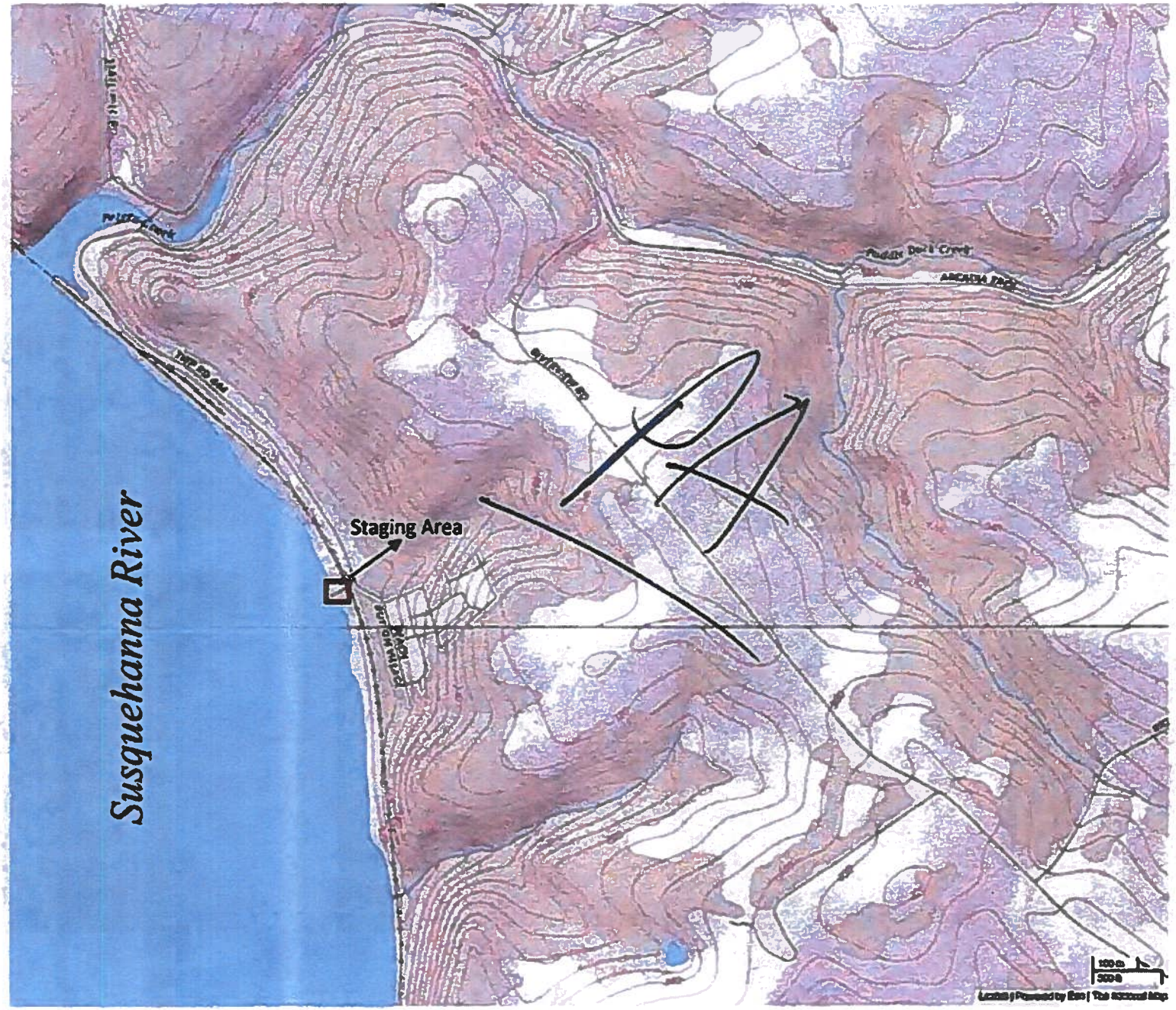
ADDITIONAL MATERIALS INCLUDED

- USGS Topographic Map
- ADC Maps
- Staging Area Photos and Corresponding Map


MAP 6
See ADC's "LANCASTER COUNTY, PA STREET MAP" For Continuation
YORK CO
PENNSYLVANIA
MARYLAND
LANCASTER COUNTY
CECIL COUNTY
17314
PEACH BOTTOM
17563
FULTON
21918
21160
21034
LINE BRIDGE LANDING
SUSQUEHANNA
CONOWINGO
RIVER
RESERVOIR
BALD FRIAR
BALD HILL
BROAD CREEK VARIETY
LAFAYETTER CROSSING
Broad Creek Landing
BROAD CREEK PARK
CONOWINGO MOBILE HOME COURT
HOPKINS CORNER
CONOWINGO
John Map 5
John Map 13
John Map 12


MAP 4015
A B C D E F G H J K
Joins Map 3903
PEACH BOTTOM
CONOWINGO
SUSQUEHANNA RIVER RESERVOIR
LANCASTER COUNTY
YORK COUNTY
FULTON
17563
PEACH BOTTOM
17314
PLEASANT GROVE
BLACK BARREN
YORK CO
HARFORD CO
PENNSYLVANIA
MARYLAND
LANCASTER COUNTY
CECIL COUNTY
Joins Map 4014
LINE BRIDGE LANDING
RED HILL ACRES
RED HILLS ESTS
21918
21160
BALD FRIAR
PILOT
CECIL
HARFORD
COUNTY
COUNTY
BROAD CREEK PARK
Broad Cr Mem Scout Resv (BSA)
Camp Shadowbrook (BSA)
Camp Conowingo (BSA)
CONOWINGO CREEK
21037
208
GALLEANDRIA DRAFTING CO.


MAP 3903
A B C D E F G H J K
Joins Map 3793
1 2 3 4 5 6 7 8 9 10
Joins Map 3902
Joins Map 4015
DRUMORE
17518
FURNISS
Mount Zion Cem
FAIRFIELD
BERTON
Pilgrims Oak GC
Fishing Cr Nature Preserve
Farmstt Wildlife Preserve
McSPARRAN
ARCADIA
SUSQUEHANNA RIVER
CONOWINGO RESERVOIR
PEACH BOTTOM
Creek
Puddle
192
GALEXANDRIA DRAFTING CO.



USGS Topographic Map with Staging Area

Site Photos for the Conowingo Sediment Characterization and Innovative Reuse and Beneficial Use Pilot Project

Location 1-A: Adjacent property

Location 1-B: Staging area

Location 1-C: Railroad crossing, equipment area, staging area

Location 2-A: Railroad crossing and equipment area

Location 2-B: Equipment area and staging area

Location 2-C: Staging area

Location 2-D: Staging area

Location 3-A: Staging area

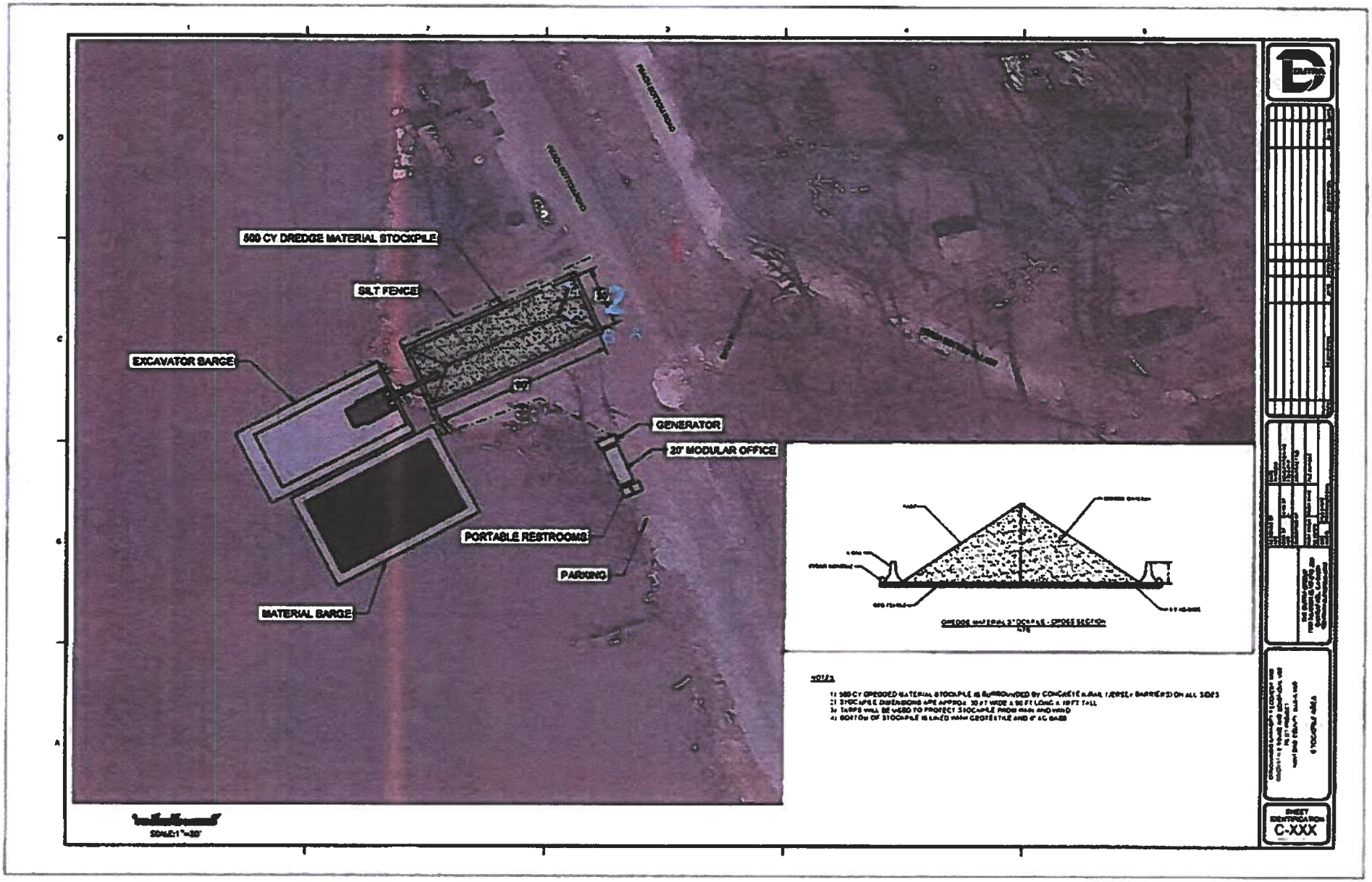


Figure 2: Staging Area Photo Locations

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Mid-Atlantic Fish and Wildlife Conservation Office
177 Admiral Cochrane Drive
Annapolis, MD 21401

February 5, 2018

Melissa Slatnick
Maryland Environmental Service
mslat@menv.com

RE: Timing of 2018 Pilot Dredging Project in Conowingo Pond

Ms. Slatnick,

On behalf of the Susquehanna River Anadromous Fish Restoration Cooperative, we would like to submit a comment with respect to the upcoming pilot dredging project in Conowingo Pond. The Susquehanna River Anadromous Fish Restoration Cooperative consists of state and federal fishery management agencies working to restore migratory fish to the Susquehanna River since the 1970s. The Cooperative consists of representatives from the U.S. Fish and Wildlife Service, the Maryland Department of Natural Resources, the Pennsylvania Fish and Boat Commission, the New York Department of Environmental Conservation, and the Susquehanna River Basin Commission.

Our agencies have been working closely with the hydroelectric company owners through the Federal Energy Regulatory Commission's (FERC) relicensing process to ensure that adequate fish passage is provided at the main stem dams for both upstream and downstream migration through the lower Susquehanna River. As part of the efforts to improve fish passage, we (through our respective agency authorities) require the hydroelectric companies to conduct evaluations of their fish passage projects and these studies are also included in their FERC license conditions. Several studies evaluating upstream and downstream fish passage are scheduled to occur during 2018 at both the Holtwood Dam and Muddy Run Pumped Storage Facility.

It is our understanding that the pilot dredging work will commence in June or July of 2018 and continue for about 100 days. We support this time frame, which should have minimal impact on currently scheduled studies. However, two studies in particular could be directly impacted by dredging in Conowingo Pond if the commencement of in-water work occurs earlier in 2018. The two studies will evaluate upstream American shad passage at the Muddy Run Pumped Storage Facility and the Holtwood Dam. Fish for the studies will be released from Conowingo Dam in

April and May 2018, and they will need to swim freely past the proposed dredging area to reach the upstream projects. For the success of the upstream radio telemetry studies, it is critical that the dredging work not commence before June 4, 2018.

We request that if the timeframe for dredging should occur in April or May 2018 that you immediately notify the agencies in the Susquehanna River Anadromous Fish Restoration Cooperative as well as Exelon and Brookfield, whose FERC required studies could be impacted by dredging activities.

Thank you for your consideration,

Sheila Eyler
Secretary,
Susquehanna River Anadromous Fish Restoration Cooperative

cc:
Joshua Tryninewski, Pennsylvania Fish and Boat Commission
David Lemon, New York Department of Environmental Protection
Genine McClair, Maryland Department of Natural Resources
Aaron Henning, Susquehanna River Basin Commission
Andrea Danucalov, Exelon
Kathleen Lester, Brookfield
Jeremy Miller, Pennsylvania Department of Environmental Protection
Scott Williamson, Pennsylvania Department of Environmental Protection
Richard McCorkle, U.S. Fish and Wildlife Service

Attachment 5:

Adjacent Property Owners Notification

CERTIFICATION OF NOTIFICATION

ATTENTION APPLICANT:
Please complete this form and return to Wetlands and Waterways Program, Water Management Administration, 1800 Washington Boulevard, Baltimore, MD 21230. Be sure to include the Division number, a copy of the tax map and your notification letter, and sign the form. Please include complete names and complete addresses, including zip codes. Your application is incomplete until this certification is received.

Tracking No: TBD Division No: TBD
Assigned Staff: William Seiger

Description of the project:

The project includes dredging approximately 1,000 cubic yards of sediment from the Maryland portion of the Susquehanna River, approximately 5 miles upstream of the Conowingo Dam. Sediment will be mechanically dredged from an area 160 feet by 160 feet with a depth of 1 foot and transported and dewatered utilizing a barge. Dredged material will be temporarily stockpiled within a 90 by 30 foot staging area in Peach Bottom, PA for one month (the staging area will be permitted through Pennsylvania Department of Environmental Protection). Dredged material will be transported from the staging area to an approved innovative reuse and beneficial use project within the State of Maryland. The selected construction contractor will be responsible for adhering to all guidelines specified in *Maryland Department of the Environment's Innovative Reuse and Beneficial Use of Dredged Material Guidance Document.*

Please list all persons notified below: (continue on reverse side or attach additional sheets if necessary)

NAME	ADDRESS
Eckman Jeffrey A & Eckman Annette E	280 Eckman Ln Conowingo MD 21918
Exelon Generation Company LLC ATTN Real Estate Tax Dept	PO Box 340014 Nashville, TN 37023
PECO Energy Power Company C/O Fred Schwer	3 Lincoln Ctr 4th Floor Oakbrook Terrace, IL 60181
Pennsylvania Lines LLC	110 Franklin RD SE Roanoke, VA 24042

Harford County Commissioners	220 South Main Street Bel Air MD 21014
Plank Robert E Jr - Trustee & Haas Debra F - Trustee	PO Box 5346 Lancaster PA 17606
Wetzler Catherine E Wetzler David A	PO Box 371 Conowingo MD 21918

I hereby certify that I have notified all persons who own properties which have a common boundary with my property. The appropriate local officials have been notified. I have notified them by certified mail or in person.

Signature of Applicant for Melissa Slaenick

9/19/19
Date

Maura Morris
Please Print Name

410-729-8369
Telephone Number

LETTER TO
CONTIGUOUS PROPERTY OWNERS AND
APPROPRIATE LOCAL OFFICIALS

Tracking No: TBD
Division No: TBD
Project: Conowingo Capacity Recovery and Innovative and Beneficial Reuse Pilot Project

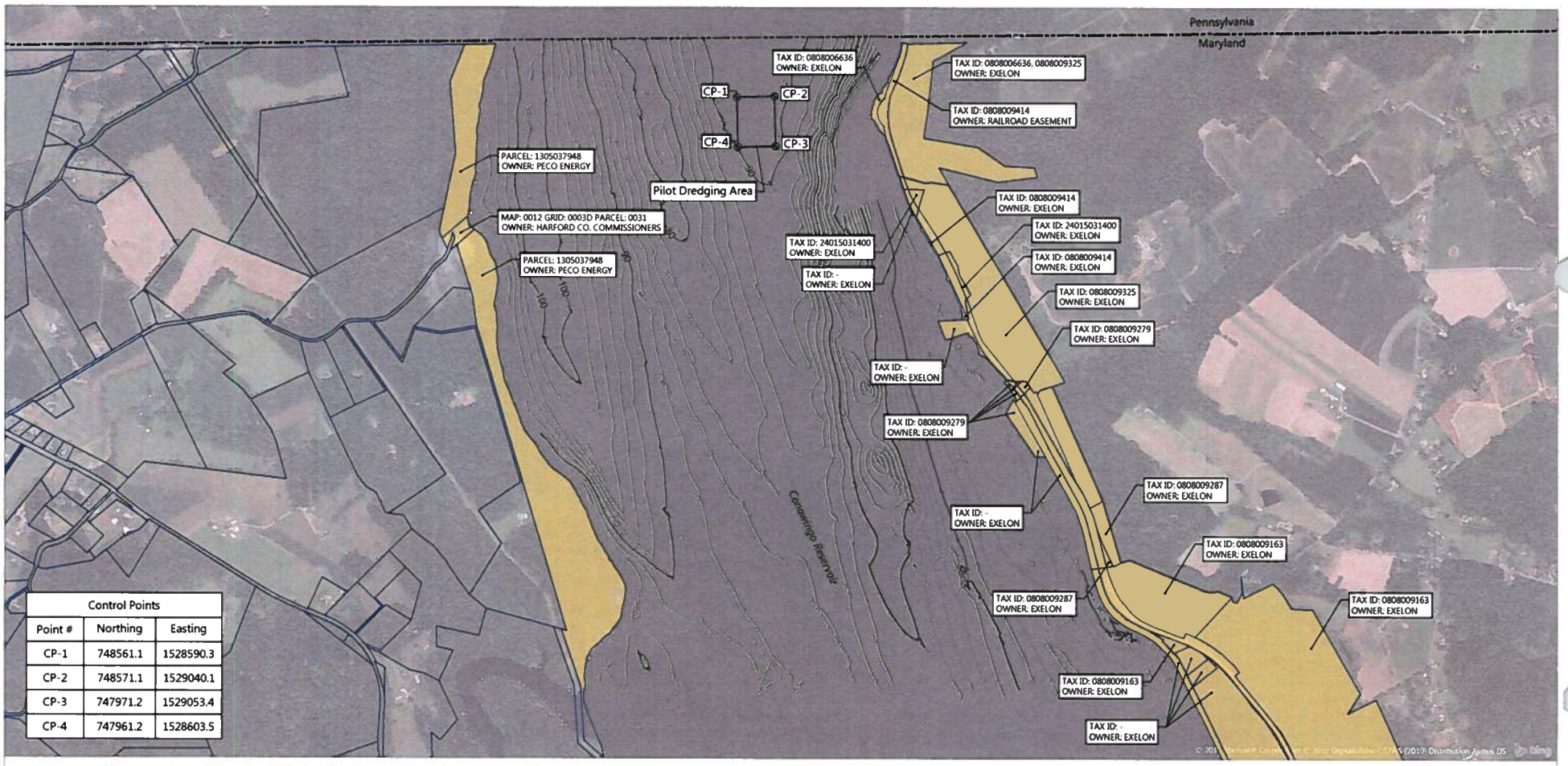
Dear [Property Owner/Appropriate Official]:

Maryland Environmental Service has submitted an application to the Wetlands and Waterways Program of the Water Management Administration (WMA) for a permit to dredge approximately 1,000 cubic yards of sediment from the Maryland portion of the Susquehanna River approximately 5 miles north of the Conowingo Dam. Sediment will be mechanically dredged from an area 160 feet by 160 feet with a depth of 1 foot and transported and dewatered utilizing a barge. Dredged material will be temporarily stockpiled within a 90 by 30 foot staging area in Peach Bottom, PA for one month (the staging area will be permitted through Pennsylvania Department of Environmental Protection). Dredged material will be transported from the staging area to an approved innovative reuse and beneficial use project within the State of Maryland. The selected construction contractor will be responsible for adhering to all guidelines specified in *Maryland Department of the Environment's Innovative Reuse and Beneficial Use of Dredged Material Guidance Document.*

Since you are a contiguous property owner or an appropriate local official, you are being notified of the proposed project. Persons wishing to review the plans for this project may contact me at the address listed below. If you have any questions concerning the application, please call me at (410) 729- 8342.

Sincerely,

Melissa Slatnick
Maryland Environmental Service
259 Najoles Road
Millersville, MD 21108



Control Points		
Point #	Northing	Easting
CP-1	748561.1	1528590.3
CP-2	748571.1	1529040.1
CP-3	747971.2	1529053.4
CP-4	747961.2	1528603.5

AERIAL SOURCE: ©2017 DigitalGlobe ©CNES (2017) Distribution Airbus DS ©2017 Microsoft Corporation.
HORIZONTAL DATUM: Maryland State Plane, NAD83, U.S. Feet.
VERTICAL DATUM: North American Vertical Datum of 1988 (NAVD88).

NOTE:
Property identifiers reference Maryland State Department of Assessment and Taxation (SDAT) data.

LEGEND:

- Dredge Area Control Point
- Parcel Boundary
- TAX ID: 0808009163 OWNER: EXELON — Parcel Information
- Project Limits

0 1200
Feet

Pilot Dredging Parcel Map

Attachment 6:

Additional Letters

Maryland
Department of
the Environment

MEMO

To: Melissa Slatnick

From: Matthew Rowe M.C.L.

CC: Heather Nelson

Date: August 1, 2019

Re: Conowingo Pilot Project Sampling and Analysis Plan

The Conowingo Sediment Characterization component of the Innovative Reuse and erBeneficial Use pilot project will provide Maryland with better information on sediment quality behind the dam and the potential to use those sediments for different end uses, determine the scalability of those uses, and assess the overall feasibility of dredged material reuse as a solution for addressing Conowingo's Dam's water quality impacts to Chesapeake Bay. The sediment characterization began with a literature and data review of existing sediment and bathymetric data behind Conowingo Dam that identified multiple data gaps. A sampling and analysis plan is under development to address those data gaps and use consistent methods to better characterize the chemical and physical properties of Conowingo sediments. Once collected and analyzed, the chemical and physical data for in-situ sediments will be compared to MDE's Innovative and Beneficial Reuse guidance to help determine environmentally safe dredged material reuse options that meet Maryland's regulatory requirements.

Exelon Generation

September 17, 2019

Roy McGrath, Director/CEO
Maryland Environmental Service
250 Najoles Road
Millersville, MD 21108

Re: MES' Application for Permit/Pilot Dredging Project and Sediment Sampling Project

Dear Mr. McGrath:

Exelon Generation Company, LLC (Exelon) is the Licensee of the Conowingo Hydroelectric Project, which includes portions of the Susquehanna River north of the Conowingo Dam and adjacent shoreline areas. Exelon is familiar with the Maryland Environmental Service's Joint Federal/State Application for the Alteration of Any Floodplain, Waterway, Tidal or Nontidal Wetland In Maryland related to a proposed pilot dredging project and sediment sampling project, which involves portions of the Susquehanna River north of the Conowingo Dam and adjacent shoreline areas for which Exelon is the Licensee.

The Licensee does not object to the work described in the Joint Federal/State Application of Maryland Environmental Service to the Army Corps of Engineers and the Maryland Department of the Environment. If you have any questions regarding this submittal, please contact Andrea Danucalov at (267) 533-1125 or by email at andrea.danucalov@exeloncorp.com.

Sincerely,

Colleen E. Hicks

Colleen E. Hicks
Manager Regulatory and Licensing, Hydro
Exelon Power
300 Exelon Way
Kennett Square, PA 19348
Tel: (610)765-6791
Email: colleen.hicks@exeloncorp.com

Attachment 7:

Sediment Core Analysis

Department of Natural Resources
Resource Assessment Service
MARYLAND GEOLOGICAL SURVEY
Richard A. Ortt, Jr., Director

COASTAL AND ENVIRONMENTAL GEOLOGY

FILE REPORT NO. 17-13

Conowingo Pond Dredging Secondary Site A Project: Coring Methodology and Results

By

Stephen Van Ryswick, Elizabeth Sylvia, and Anna Gillmor

October 2017

Lawrence J. Hogan, Jr.
Governor

Boyd K. Rutherford
Lieutenant Governor

Mark J. Belton
Secretary

MARYLAND DEPARTMENT OF NATURAL RESOURCES
Resource Assessment Service
Tawes State Office Building
580 Taylor Avenue
Annapolis, MD 21401
Toll Free Number: 1-(877) 620-8DNR
Out of State call: (410) 260-8021
www.dnr.state.md.us

MARYLAND GEOLOGICAL SURVEY
2300 Saint Paul Street
Baltimore, Maryland 21218
410-554-5500
www.mgs.md.gov
Richard A. Ortt, Jr., Director

Executive Summary

The Maryland Geological Survey (MGS) was asked to collect an additional twelve cores in a 600-foot by 600-foot square (8.26 acres) within Maryland's limits of the Susquehanna River, above Conowingo Dam, after determining the original 475-foot by 475-foot square (5.12 acres) was unsuitable for dredging.

Sediment cores were collected, extruded, homogenized, sampled, and sent to laboratories for testing and physical and chemical analysis.

The cores were collected in September 2017. They ranged in thickness from 49 cm (1.6 ft) to 96 cm (3.1 ft). In order for an adequate amount of sediment to be collected for chemical analysis, two cores were collected at each of the twelve sites, for a total of 24 cores, ensuring enough volume of sample would be collected at each site.

Sediment samples were collected from the cores so that these sediments could be characterized via a broad suite of physical, chemical and nutrient analyses. These analyses correspond to those listed in Appendix A2 (Tables 1, 2 and 3) of the *Innovative Reuse and Beneficial Use Dredged Material Draft Guidance Document* prepared by Maryland Department of the Environment (MDE) in March 2017.

Methodology

Core Collection

Due to unforeseen circumstances, the original pilot study location was determined to be unsuitable to dredge for sediment reuse purposes (Figure 1). Therefore sediments were collected from an alternative location; Secondary Site A, the results of which are detailed in this report. Utilizing the location of the test cores taken during the initial pilot study, MGS collected cores from a 600-by-600 foot square within the State of Maryland, where the depth of the water is no less than 10 feet and where the sediment is sandy in texture. Utilizing bathymetry and side-scan sonar data previously collected in October 2014 by MGS for the Conowingo Pond, MGS located areas of interest that would be more suitable for sampling. Bathymetry, side-scan sonar data and evaluation of earlier test cores were used during the planning and placement of the Secondary Site A (Figure 2). These locations are in agreement with those provided in the *Conowingo Capacity Recovery and Innovative Reuse and Beneficial Use Pilot Project - Sampling Recommendations* memo provided from Anchor QEA to MES and MGS dated September 20, 2017.

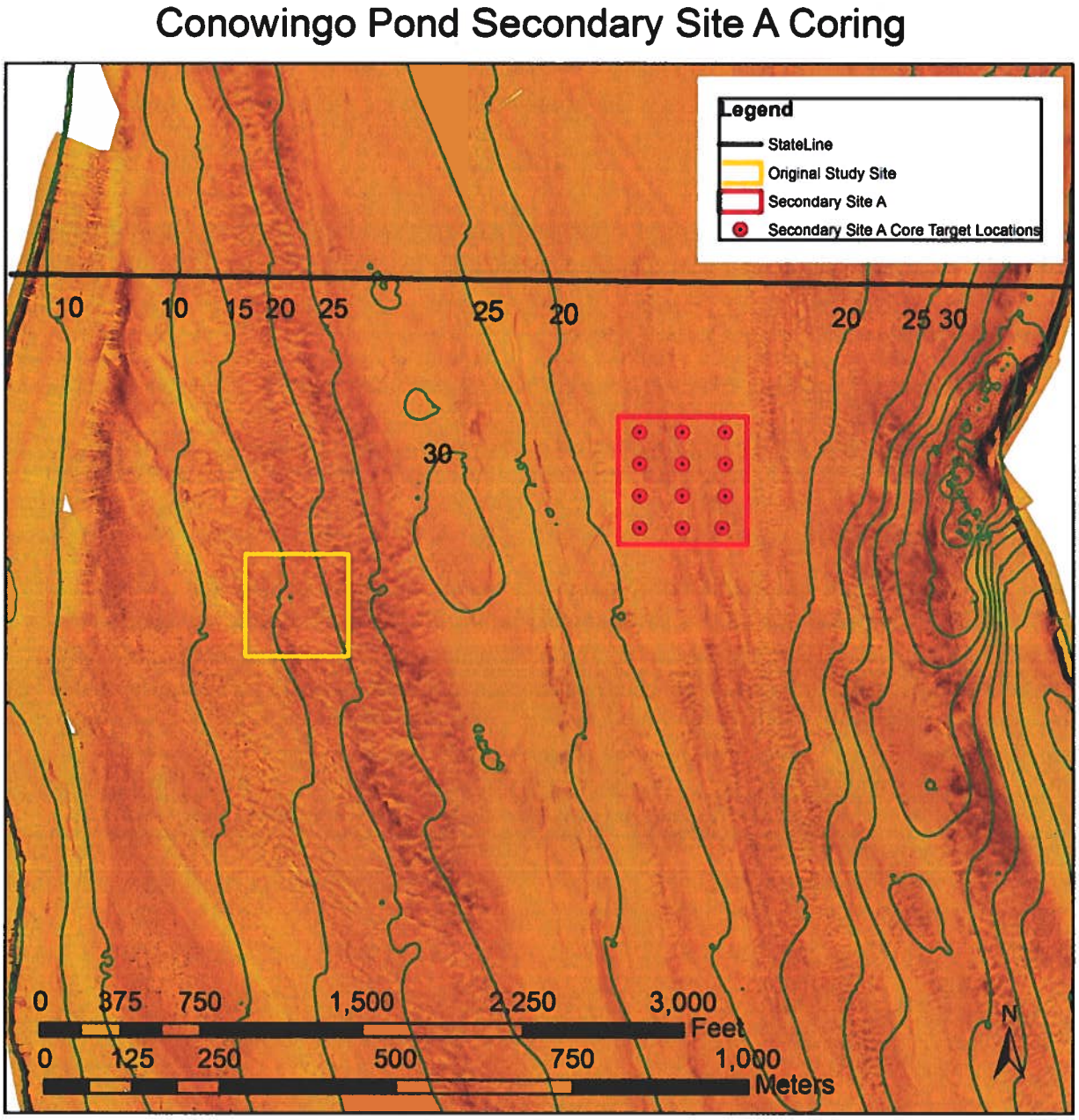


Figure 1. Conowingo Pond 475-foot pilot project study box (yellow) and the secondary study site box (red) with core locations. Imagery from 2014 side-scan sonar data with bathymetric contours labeled in feet.

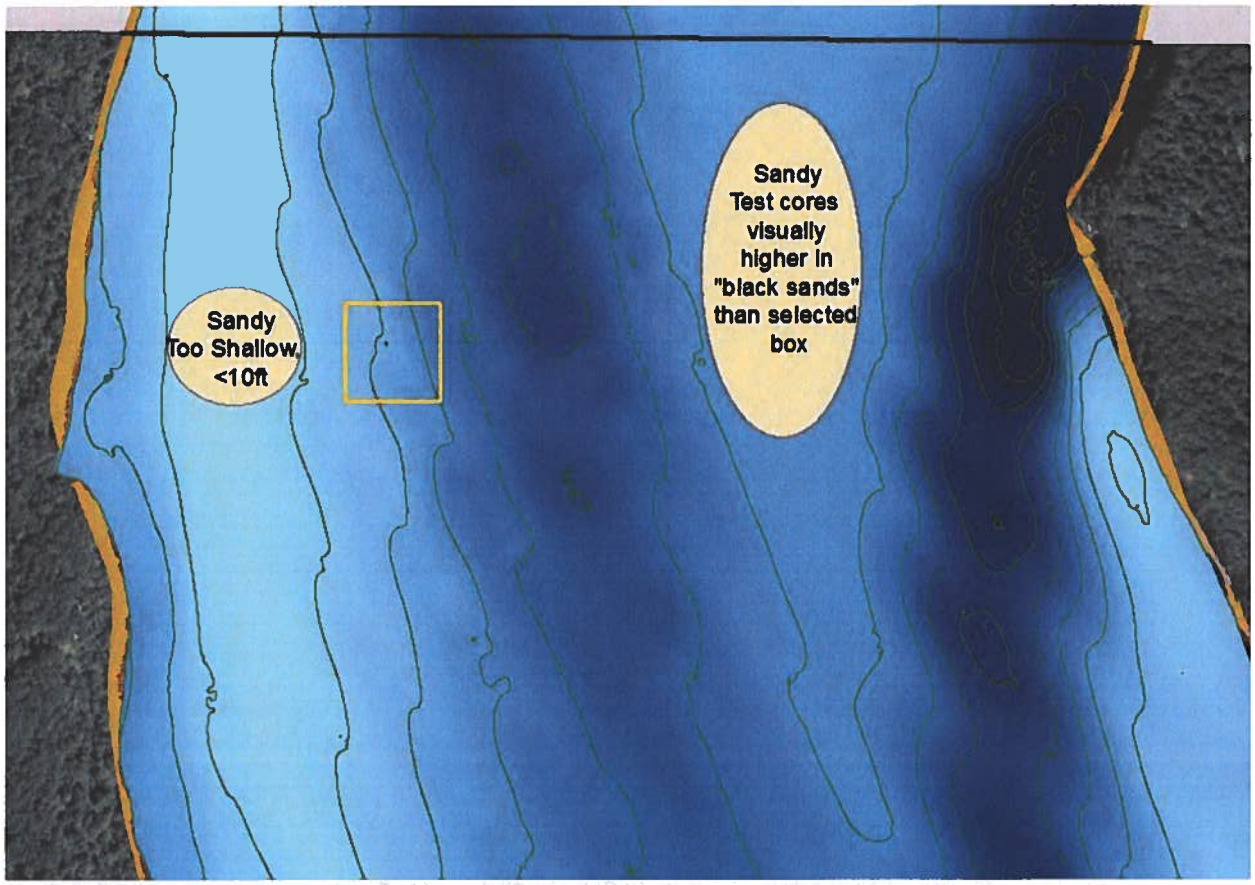


Figure 2. Summary of knowledge gained during test core collection. The yellow box indicates the original study site. The black line denotes the Maryland-Pennsylvania border.

Grain-size and visual observations gained by advancing test cores aided in preparation with selecting Secondary Site A. Using the test core sites and the Side Scan Sonar imagery, a 600-by-600 foot box was placed in a location that showed to have a high sand content relative to finer sediments accumulated in areas with greater water depth. Once an appropriate area was determined (Figure 3), coordinates for the corners of the square were noted and each of the twelve site locations for the cores were calculated based on equal spaced intervals within the square box (Figure 4). Coordinates for the corners and each of the collected cores were calculated with ArcGIS. The projected coordinate system is UTM-NAD 83 Zone 18 in meters. Target locations were input into the Carlson SurvPC software to get all cores spaced out evenly over the study box (Figure 4). The outer core locations were placed about 100 feet inside of the study box extents. Due to sample volume concerns for lab analysis, two cores were collected at each site which were differentiated by 'A' and 'B' after the core number. Separate coordinates were recorded for both 'A' and 'B' cores, as close to the target locations as possible.

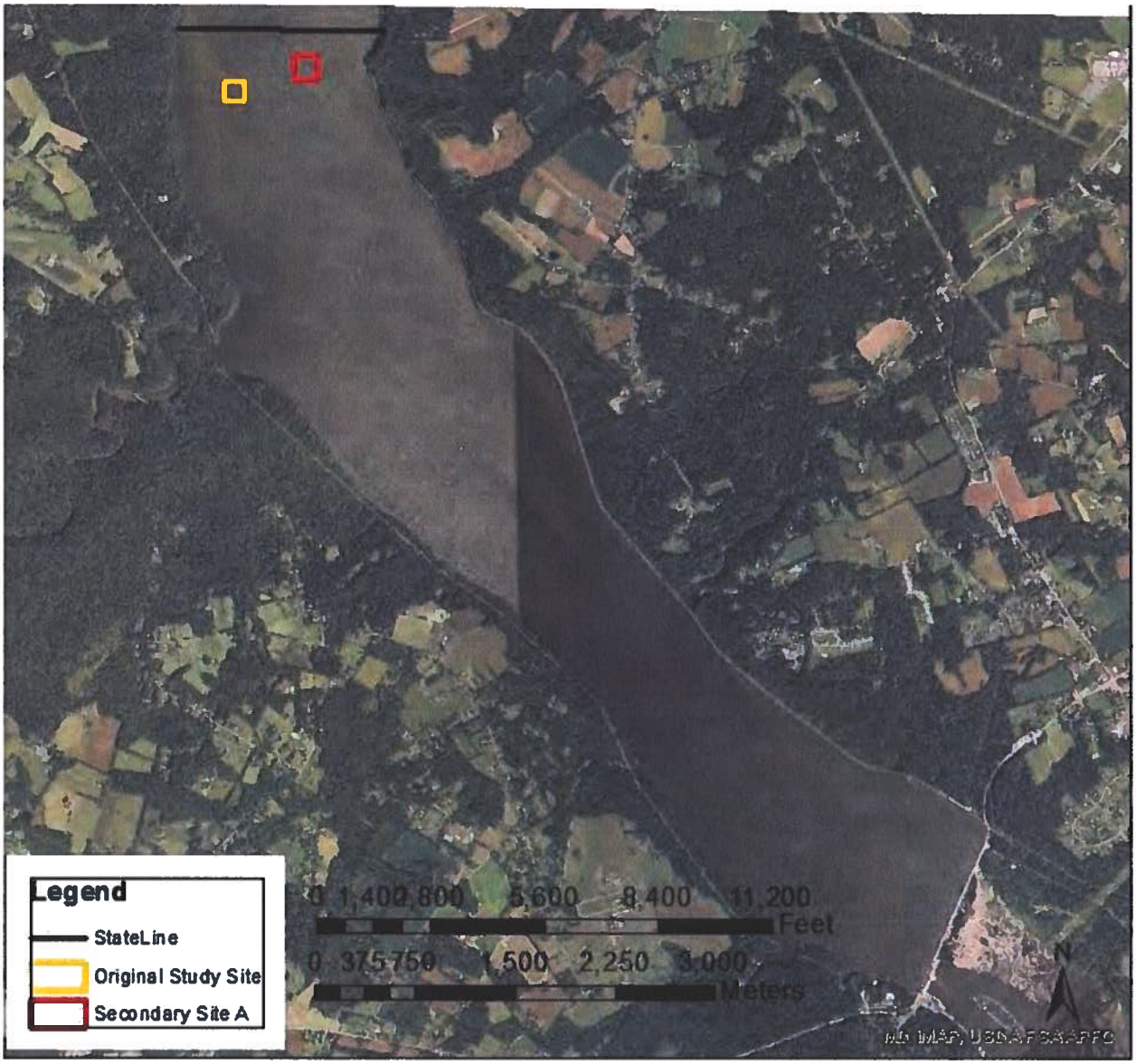


Figure 3. Maryland's portion of the Susquehanna River, above Conowingo Dam. The yellow box outlines the area of the original study stie. The red box illustrates the 600-foot square box used for Secondary Site A.

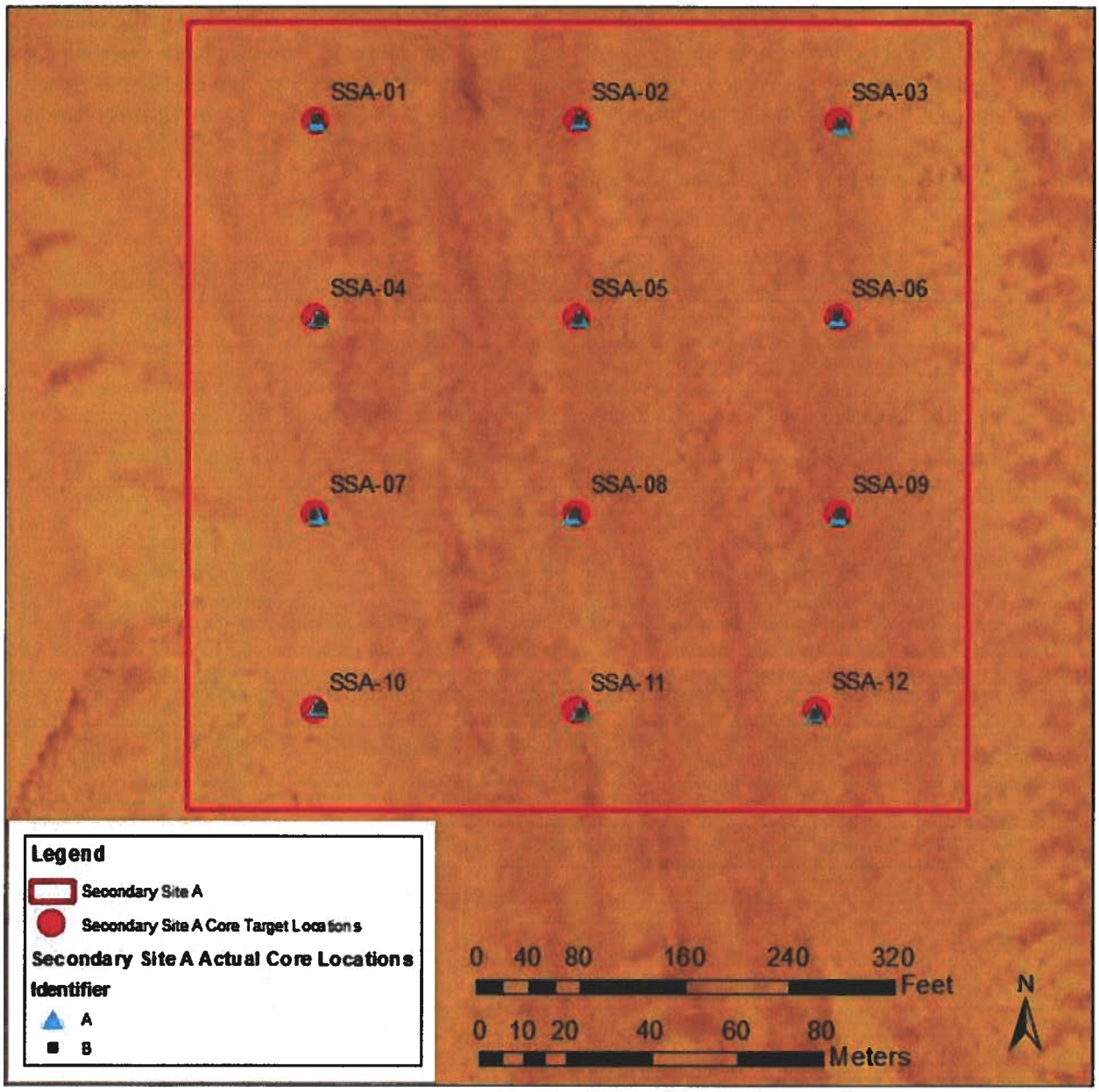


Figure 4. Target core locations mapped within the secondary study box, with 'A' and 'B' variations for each core site mapped at their extraction location. Background is 2014 side-scan imagery.

Sediment cores were collected in cellulose acetate butyrate (CAB) liners with a Benthos gravity corer with 60 kg (132 lbs) of lead weights to collect as much core as possible. Using the gravity corer system, the recovery thickness is determined by the coarseness and density of the accumulated sediments. Coarser, denser, sandy sediments limit the recovery thickness due to the internal friction within the core tube. The coarser surficial sediments are denoted in the side scan imagery as darker shades of yellow/brown (higher acoustic reflectivity) and finer surficial sediments are denoted as brighter shades of yellow (lower acoustic reflectivity) (Figures 1 and 4). The side scan imagery shows the surficial sediment characteristics at the time of acoustic data collection in October 2014. The accumulation 8-12 cm of finer silty sediments on the surface of all cores is indicative of a lower energy depositional environment during the period leading up to the coring dates. This can also been seen in the many alternating episodic layers

throughout all cores whereas the fines are winnowed out and coarser sands deposited during high flow events versus the deposition of fines during low flow periods (Appendix A). The secondary site study box was placed on a relatively flat, predominately sandy bar deposit that extends beyond the box to the south towards the dam. In addition to core locations, water depth below the vessel transducer was also recorded (Table 1). The transducer was approximately 1 foot below the water surface. Cores were capped onsite and stored on ice to be transported to the laboratory.

Table 1. Target coordinates for each core.

Core ID	Target Northing (UTM)	Target Easting (UTM)
SSA Core 1	4397325.2	394453.1
SSA Core 2	4397325.2	394514.1
SSA Core 3	4397325.2	394575.0
SSA Core 4	4397279.5	394453.1
SSA Core 5	4397279.5	394514.1
SSA Core 6	4397279.5	394575.0
SSA Core 7	4397233.8	394453.1
SSA Core 8	4397233.8	394511.0
SSA Core 9	4397233.8	394575.0
SSA Core 10	4397188.1	394453.1
SSA Core 11	4397188.1	394514.1
SSA Core 12	4397188.2	394570.5

Table 2. Actual collection coordinates for each core. Water depth is depth below transducer. Time is in DST.

Core ID	Actual Northing (UTM)	Actual Easting (UTM)	Water Depth (ft)	Collection Date	Collection Time
SSA Core 1A	4397324.9	394453.1	15	9/25/17	11:19 AM
SSA Core 1B	4397325.3	394452.6			11:42 AM
SSA Core 2A	4397325.4	394514.3	15	9/25/17	11:51 AM
SSA Core 2B	4397325.3	394514.3			12:15 AM
SSA Core 3A	4397324.3	394575.4	15	9/25/17	12:45 PM
SSA Core 3B	4397324.2	394575.2			12:43 PM
SSA Core 4A	4397279.3	394453.3	16.5	9/25/17	2:49 PM
SSA Core 4B	4397278.7	394453.9			3:03 PM
SSA Core 5A	4397279.5	394514.5	15.5	9/25/17	1:31 PM
SSA Core 5B	4397279.2	394514.1			1:42 PM
SSA Core 6A	4397279.5	394574.9	15.8	9/25/17	1:02 PM
SSA Core 6B	4397279.6	394574.4			1:08 PM
SSA Core 7A	4397233.6	394453.5	16.6	9/25/17	3:18 PM
SSA Core 7B	4397233.2	394452.3			3:33 PM
SSA Core 8A	4397233.3	394512.9	16.5	9/25/17	3:44 PM
SSA Core 8B	4397233.7	394513.2			3:57 PM
SSA Core 9A	4397233.5	394575.2	16.8	9/25/17	4:20 PM
SSA Core 9B	4397233.9	394575.1			4:29 PM
SSA Core 10A	4397189.0	394453.5	16	9/26/17	8:44 AM
SSA Core 10B	4397188.7	394453.9			8:59 AM
SSA Core 11A	4397188.1	394514.9	15.8	9/26/17	9:07 AM
SSA Core 11B	4397187.4	394514.7			9:15 AM
SSA Core 12A	4397187.6	394569.5	16.1	9/26/17	10:45 AM
SSA Core 12B	4397187.4	394569.6			11:30 AM

Core Processing Methodology

Cores were taken back to the laboratory and placed in a refrigerator at 4°C until they were opened. One site at time, the longer of the two cores was removed from the fridge, cut open using a circular saw and laid on the lab bench. If necessary for sampling volume for the shorter cores (Cores 2, 5 and 8), the second of the two cores was also opened and the two cores laid side by side for processing. Pictures and sediment description logs were recorded to document pertinent observations regarding each core (Appendix A).

The longer of the two cores were placed on the lab bench to be sampled, while both 'A' and 'B' cores for Cores 2, 5 and 8 were placed next to each other to be sampled due to their shorter length. For Secondary Site A, Maryland Environmental Service and Maryland Department of the Environment chose to have MGS composite sample each of the cores over its length, and for Cores 2, 5, and 8, to composite sample the pair. The core sediments were homogenized, representatively sampled and placed into labeled glass jars.

Prior to sampling processes, the performance of a screening tool photo-ionization detector (PID) was evaluated via a bump-test. The PID detected 103.6 ppmv (parts per million by volume) in a 100 ppmv isobutylene standard gas, and detected 25% of the lower explosive limit (LEL) in a 25% LEL standard gas, indicating satisfactory performance. PID screening values ranged from 0.0 to 1.7 parts ppmv, only trace amounts, and no strong odors were observed. The sample for volatiles analysis was collected prior to homogenization from the approximate mid-point of length using a Terracore sampler and placed into vials with deionized (DI) water and/or methanol (MeOH) preservation. All remaining analytical samples were collected from a composite of the entire 30-36" length of the core. Composites were obtained by collecting sample mass distributed representatively from the entire 30-36" length of recovered core and homogenizing. Sample mass was placed into pre-labelled containers using clean, dedicated plastic scoops. Samples for acid volatile sulfide/simultaneously extracted materials (AVS/SEM) and total petroleum hydrocarbons – gasoline range organics (TPH-GRO) were sampled as completely filled containers with zero head space in accordance with the preservation requirements of their respective methods.

A broad suite of various geotechnical, environmental and agricultural analyses were performed on the sediment samples. An index file listing which sediment samples were submitted for which analysis is provided in Table 3.

In broadest overview, most samples were submitted for every analysis.

Additional specifics regarding the samples selected to complete the scope of work are as follows:

- Four out of 12 sediment samples (*i.e.* 33%) were analyzed for Dioxins. Dioxins were analyzed for in the sediments collected from Cores 3, 4, 9 and 11.
- Two out of 12 sediment samples (*i.e.* 16%) were analyzed for Volatiles. Volatiles were analyzed for in the sediments collected from Cores 4 and 11.
- All sediment samples were submitted as "extract and hold" for Toxicity Characteristic Leaching Potential Analysis (TCLP) in order to facilitate later selection of full list analysis on a subset of these samples. Following receipt and evaluation of the total concentrations data and spatial coverage, a subset of three samples were then chosen for full TCLP. These were Cores 3, 5 and 9.
- In exception, all sediment samples were analyzed for TCLP volatiles since no extract and hold option is feasible for this analysis.
- All remaining samples were submitted for all remaining analyses.

Sediment samples were shipped overnight air to TestAmerica (Pittsburgh PA) where they were received at proper temperature the following morning. Some analyses were performed at sister TestAmerica facilities (*e.g.* TestAmerica Burlington VT, Edison NJ, Knoxville TN and Canton OH). Sediment samples for agricultural analyses were sent to Agro Lab (Harrington DE) via coordination with MES.

Analytical results from the sediment samples are provided in table form (Appendix B). Analytical results are grouped by compound class and are divided into fifteen tables.

Table 3. List of analyses performed on each core.

Index Conowingo SSA Sediments September 2017		Physical Geotech	TCLP	Metals and Inorganics							Organics							Nutrients and Agricultural		
		ASTMs: 422, 854, 2216, 4318 and 2487	Full TCLP Metals, SVOCs, VOCs, Pest, Herb + PCB	PPL Metals inc. Hg + P, K, Mg, Ca	Hexavalent Chromium	AVS /SEM	Total Sulfides	Total Sulfates	Cyanide, Total and Free	pH	Total Organic Carbon (Lloyd Kahn)	VOCs - Select List	SVOCs -TCL inc. PAHs	Organochlorine Pesticides	PCBs inc. Arochlors	Dioxins / Furans	TPH-DRO and GRO	Nutrients: P, NH3-N and TKN	Nutrients: P, K, Mg and Ca	Soluble Salts (Electrical Cond. 1:2, V:V)
CONOWINGO SSA-1	9/27/2017	X		X	X	X	X	X	X	X	X		X	X	X		X	X	X	X
CONOWINGO SSA-2	9/28/2017	X		X	X	X	X	X	X	X	X		X	X	X		X	X	X	X
CONOWINGO SSA-3	9/27/2017	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X
CONOWINGO SSA-4	9/27/2017	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CONOWINGO SSA-5	9/28/2017	X	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X
CONOWINGO SSA-6	9/27/2017	X		X	X	X	X	X	X	X	X		X	X	X		X	X	X	X
CONOWINGO SSA-7	9/27/2017	X		X	X	X	X	X	X	X	X		X	X	X		X	X	X	X
CONOWINGO SSA-8	9/28/2017	X		X	X	X	X	X	X	X	X		X	X	X		X	X	X	X
CONOWINGO SSA-9	9/27/2017	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X
CONOWINGO SSA-10	9/27/2017	X		X	X	X	X	X	X	X	X		X	X	X		X	X	X	X
CONOWINGO SSA-11	9/27/2017	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CONOWINGO SSA-12	9/27/2017	X		X	X	X	X	X	X	X	X		X	X	X		X	X	X	X

Appendix A

Core Logs

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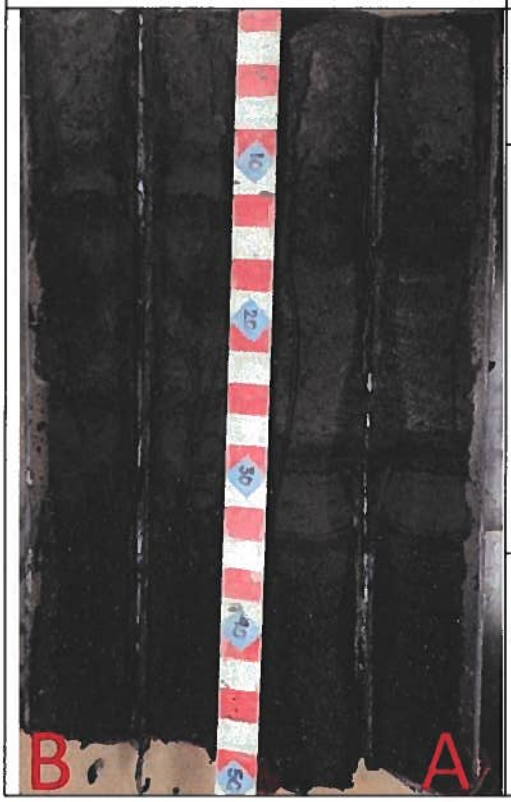
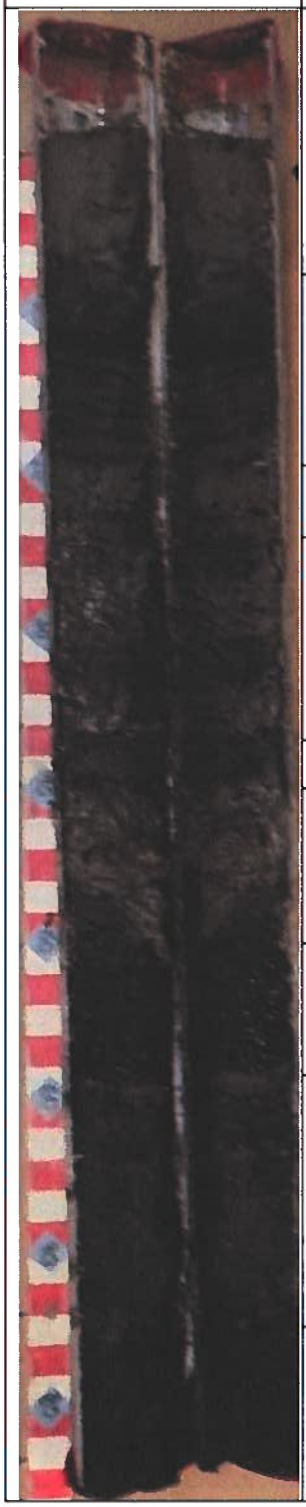
Conowingo SSA Core #1A **Total length of A – 89 cm**
Water Depth – 15 ft
Date collected – 9/25/17, Date opened – 9/27/17, PID = 1.3 ppmv

Photograph	Interval (cm)	Description
	0-8	5Y 4/1 Olive Gray, soft, soupy, watery mud
	8-13	Firm, gritty, silty black sand
	13-23	5Y 4/1 Olive Gray, soft, soupy, watery silty mud
	23-28	Firmer than above section, silty sand
	28-36	5Y 4/1 Olive Gray, soft, soupy, watery, silty mud
	36-42	Firm, silty sand
	42-50	5Y 4/1 Olive Gray, soft, silty mud
	50-76	Very firm, laminated, slightly silty black sand (suspected coal)
	76-89	Very firm, slightly silty, fine sand with a lower black sand percentage than above section

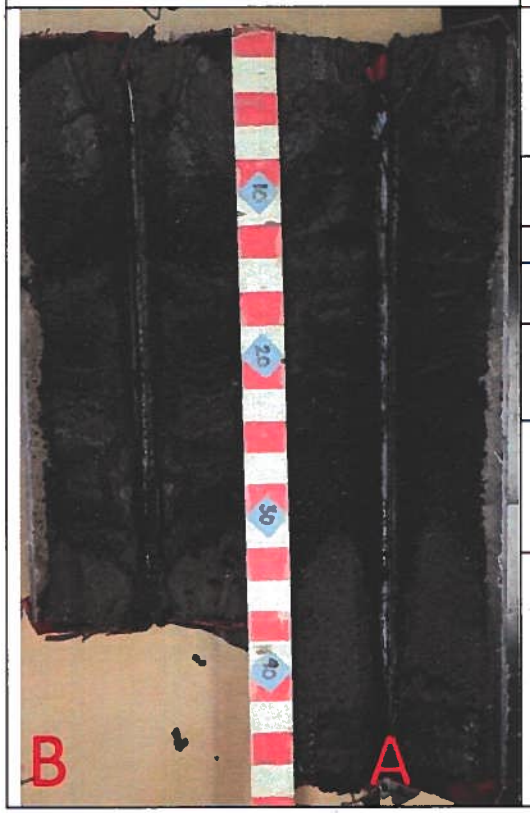
Conowingo SSA Core #2A Total length of A – 51 cm Total length of B – 47 cm Water Depth – 15 ft Date collected – 9/25/17, Date opened – 9/28/17, PID = 1.3 ppmv		
Photograph	**Interval (cm)**	**Description**
	0-8	Soft, soupy silty mud
	8-34	Soft, muddy fine sand with 2cm thick laminations of black sand; firmer with depth starting at 26cm; less silty and more sandy with depth
	34-51	Medium to coarse grained black, angular, shiny sand (suspected coal)

Conowingo SSA Core #3A Total length of A – 83.5 cm Water Depth – 15.0 ft Date collected – 9/25/17, Date opened – 9/27/17, PID = 1.7 ppmv		
Photograph	**Interval (cm)**	**Description**
	0-8	5Y 4/1 Olive Gray, soft, not gritty, silty mud
	8-20	Firm, silty, muddy sand; laminations of black (N1-N2) sand (suspected coal) between 12-14cm
	20-24	Soft, silty mud
	24-38	Gritty, silty, muddy sand
	38-40	Silty, muddy, firm sand (suspected coal)
	40-50	5Y 4/1 Olive Gray, soft, silty, not gritty mud
	50-58	Mostly coarse, firm black (N1-N2) sand (suspected coal)
	58-74	Gritty, silty, muddy, sand (suspected coal- less abundant)
	74-83.5	Firm, gritty, coarse black (N1-N2) sand (suspected coal)

Conowingo SSA Core #4A **Total length of A – 85 cm**
Water Depth – 16.5 ft
Date collected – 9/25/17, Date opened – 9/27/17, PID = 1.1 ppmv

Photograph	Interval (cm)	Description
	0-10	5Y 4/1 Olive Gray, soft, soupy, not gritty, silty mud
	10-12	Firm, coarse angular grained black sand
	12-18	Smooth, soft, watery, jiggly, silty mud
	18-25	Some black angular sand, increasing with depth; sandier, firmer, gritty, sandy mud with depth; gradational contact
	25-48	Silty, muddy sand
	48-52	< 2cm thick alternating laminations of 5Y 4/1 Olive Gray fine sand and coarse, angular, black sand (suspected coal)
	52-58	Weakly laminated, firm, mostly coarse black sand
	58-62	Finely laminated 5Y 4/1 Olive Gray sand and black sand
	62-72	Coarse, angular, black sand (suspected coal)
	72-74	5Y 4/1 Olive Gray, firm, fine sand
	74-85	Firm, weakly laminated sands (black sands)

Conowingo SSA Core #5A **Total length of A – 49 cm** **Total length of B – 37 cm**
Water Depth – 15.8 ft
Date collected – 9/25/17, Date opened – 9/28/17, PID = 1.3 ppmv

Photograph	Interval (cm)	Description
	0-8	Soft, soupy, silty mud
	8-12	Slightly firm, medium black, coarse, angular sand with 5Y 4/1 Olive Gray mixed
	12-14	Medium black angular sand
	14-18	Mix of some black angular sand with 5Y 4/1 Olive Gray silt; medium firm
	18-24	Alternating laminations of 5Y 4/1 Olive Gray silt and black sand
	24-32	Medium black (N1-N2), angular sand (suspected coal)
	32-49	5Y 4/1 Olive Gray, fine quartz sand

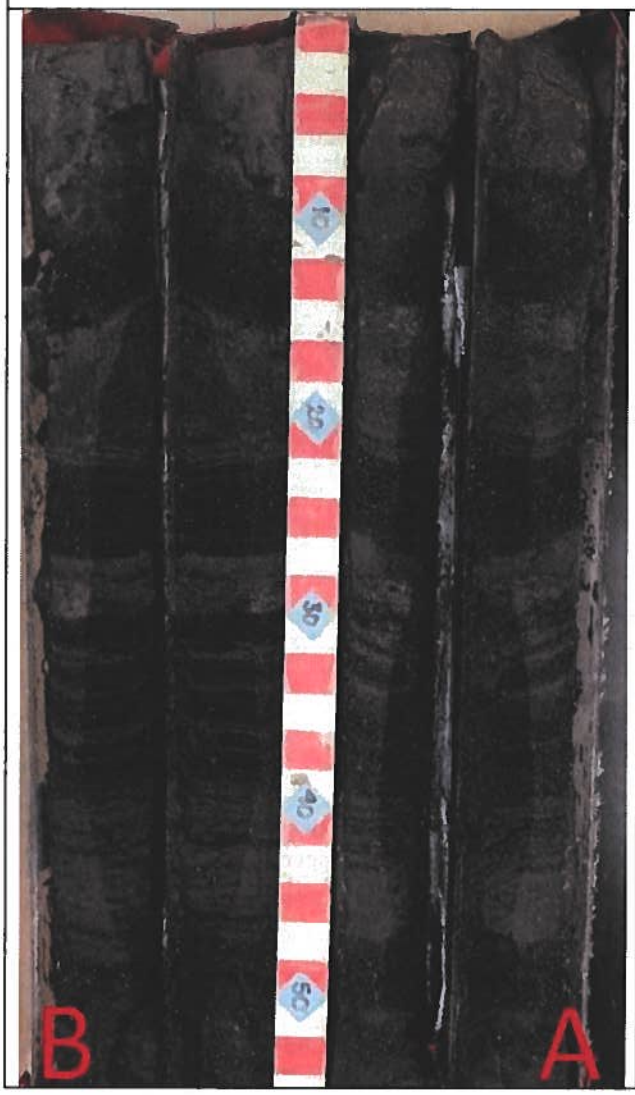
Conowingo SSA Core #6A **Total length of A – 94 cm**
Water Depth – 15.8 ft
Date collected – 9/25/17, Date opened – 9/27/17

Photograph	Interval (cm)	Description
	0-8	5Y 4/1 Olive Gray, medium firm silty mud
	8-18	Medium firm muddy sand; ½cm thick band of coarse black angular sand at 18cm
	18-26	Soft, muddy sand with gas pockets. No odor.
	26-30	Softer than above layer, silty muddy sand
	30-32	Sandier than above; medium firm, fine silty sand
	32-42	Soft, smooth, silty mud with gas pockets; finer with depth
	42-94	Alternating laminations of fine 5Y 4/1 Olive Gray sand and black (N1-N2) coarse angular sand (suspected coal); laminations up to 1cm in thickness and grading to a majority of black angular sand at depth

Conowingo SSA Core #7A **Total length of A – 93 cm**
Water Depth – 16.6 ft
Date collected – 9/25/17, Date opened – 9/27/17, PID = 1.7 ppmv

Photograph	Interval (cm)	Description
	0-12	5Y 4/1 Olive Gray, soft, soupy, watery silty mud with a clam at 6cm
	12-14	Soft, fine sand, some black (N2) sand with silty mud
	14-26	5Y 4/1 Olive Gray, soft, soupy, silty mud
	26-32	Medium firm, medium black (N2) sand
	32-46	5Y 4/1 Olive Gray, soft, soupy, watery mud
	46-52	Medium firm, fine-medium grained black sand
	52-60	Soft, soupy, watery mud
	60-76	Many alternating laminations of coarse, angular black sand (suspected coal) and fine quartz sand
	76-93	Coarse black, angular sand (suspected coal)

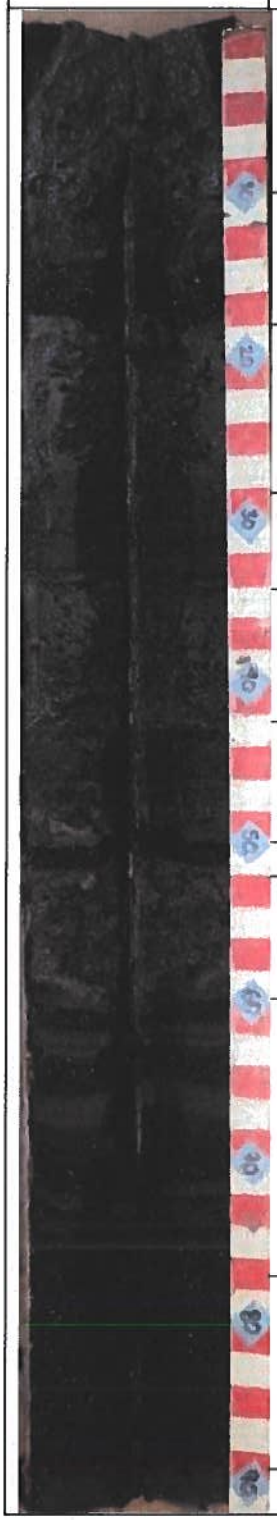
Conowingo SSA Core #8 **Total length of A – 56 cm** **Total length of B – 56 cm**
Water Depth – 16.5 ft
Date collected – 9/25/17, Date opened – 9/28/17

Photograph	Interval (cm)	Description
	0-8	5Y 4/1 Olive Gray, soft, soupy, watery, silty mud
	8-15	Black (N1) slightly silty, slightly firm black sand (suspected coal)
	15-22	5Y 4/1 Olive Gray, very fine, silty sand
	22-27	Very firm, fine to medium grained black sands (suspected coal)
	27-30	5Y 4/1 Olive Gray, very fine, silty sand
	30-56	Very firm, fine, very silty sand with many alternating laminations of coal and quartz sands with a thick banding of black sand (suspected coal) from 42-46cm

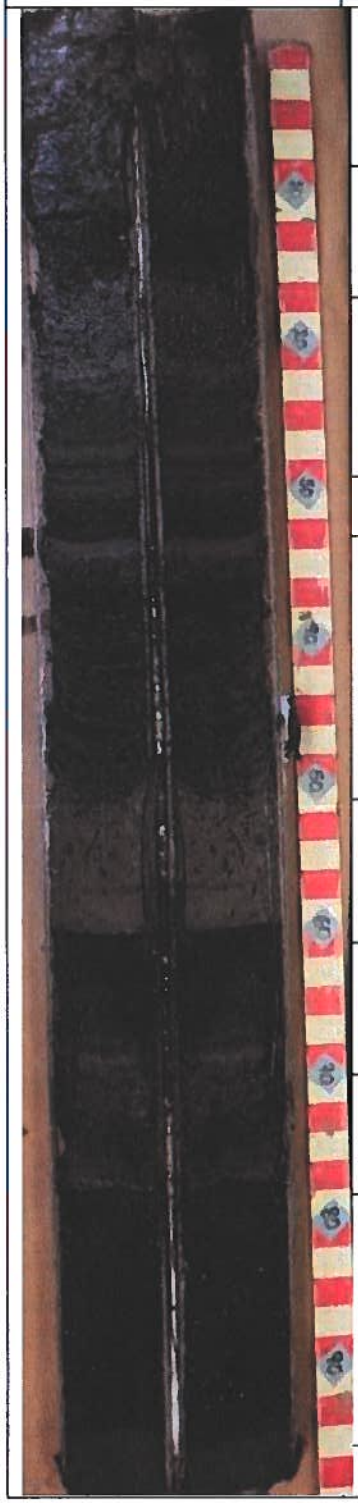
Conowingo SSA Core #9B **Total length of B – 96 cm**
Water Depth – 16.8 ft
Date collected – 9/25/17, Date opened – 9/27/17, PID = 1.3 ppmv

Photograph	Interval (cm)	Description
	0-16	5Y 4/1 Olive Gray, soft, soupy, watery mud
	16-28	Medium grained, angular, black sand (suspected coal) with some silty mud; two lamina of medium black angular sand from 36-38cm
	38-42	Soft, soupy, silty mud with gas pockets
	42-48	Fine to medium grained sand
	48-64	Alternating laminations of 5Y 4/1 Olive Gray, fine to medium grained sand with coarse, angular, black sand (suspected coal), which is increasing with depth
	64-73	Coarse, angular, black, shiny sand (suspected coal)
	73-96	5Y 4/1 Olive Gray, very firm, fine silty quartz sand

Conowingo SSA Core #10A **Total length of A – 91.5 cm**
Water Depth – 16 ft
Date collected – 9/26/17, Date opened – 9/27/17, PID = 0.7 ppmv

Photograph	Interval (cm)	Description
	0-10	5Y 4/1 Olive Gray, soft, soupy, sandy mud
	10-18	Silty mud coarsening with depth from fine grained to coarse grained with angular sand at bottom
	18-28	Soft, soupy, watery mud
	28-34	Firm, fine to medium grained quartz sand and black, angular sand
	34-42	5Y 4/1 Olive Gray, soft, silty, watery mud with gas pockets
	42-50	Fine to medium grained sand
	50-52	Medium to coarse grained, black, angular sand (suspected coal)
	52-58	Soft, soupy, watery, silty mud
	58-74	Alternating laminations of angular, black, coarse sand (suspected coal) and fine quartz sand (thickness of 1-2cm)
	74-90	Angular, black sand fragments (suspected coal)
	90-91.5	Firm, fine to medium quartz sand

Conowingo SSA Core #11A **Total length of B – 96 cm**
Water Depth – 15.8 ft
Date collected – 9/26/17, Date opened – 9/27/17, PID = 0.7 ppmv

Photograph	Interval (cm)	Description
	0-8	Soft, soupy, watery, silty mud
	8-18	Medium to coarse sand with many angular, black grains (suspected coal)
	18-30	Soft to firmer muddy sand with fine to medium, black, angular sand grains
	30-34	Abundant black angular sand (suspected coal)
	34-52	Fine sand with many thin laminations of medium grained, coarse, angular sand with 5Y 4/1 Olive Gray, fine grained silty quartz sand
	52-60	Firm, not gritty silty mud with gas pockets
	60-68	Firm, medium to coarse grained, black, angular sand (suspected coal)
	68-76	Quartz sand and black sand mixture
	76-92.5	Medium to fine grained gravel, angular, black sand (suspected coal)
	92.5-96	5Y 4/1 Olive Gray, firm, fine sand

Conowingo SSA Core #12A **Total length of A – 88 cm**
Water Depth – 16.1 ft
Date collected – 9/26/17, Date opened – 9/27/17, PID = 0.6 ppmv

Photograph	Interval (cm)	Description
	0-10	5Y 4/1 Olive Gray, very soft, soupy, watery, silty mud
	10-28	Medium firm, medium black, angular sand with silt mixed
	28-32	Black (N1-N2) angular sand (suspected coal)
	32-38	Very soft, watery, silty mud with trace sand
	38-46	Soft, silty sand
	46-60	5Y 4/1 Olive Gray, silty mud
	60-62	5Y 4/1 Olive Gray, soft, fine, silty sand
	62-72	Angular, coarse, black, shiny sand (suspected coal); no laminations
	72-84	5Y 4/1 Olive Gray, firm, fine to medium sand with angular, black sand
	84-88	Fine to medium sand

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Appendix B

Core Physical and Chemical Characterization Results

Conowingo SSA Sediments September 2017		Physical / Geotech															
		ASTM: 422 Grain Size (%)							ASTM: 854 Specific Gravity	ASTM: 2216 Percent Moisture	ASTM: 4318 Atterberg Limits			ASTM: 2487 Unified Soil Classification System (USCS)		ASTM: 2937 In Place Density
		clay	silt	f sand	m sand	c sand	all sand	gravel		%	LL	PL	PI	Name	Symbol	g/cc
CONOWINGO SSA-1	9/27/2017	5	11.1	66	17.7	0.2	83.9	0	2.14	43	0	0	NP	SI-SAND	SM	1.01
CONOWINGO SSA-2	9/28/2017	5.2	10.8	62.2	20.4	0.2	82.8	1.3	2.17	33.2	0	0	NP	SI-SAND	SM	1.12
CONOWINGO SSA-3	9/27/2017	5	10.5	65.5	18.6	0.5	84.6	0	2.29	41.7	0	0	NP	SI-SAND	SM	1.14
CONOWINGO SSA-4	9/27/2017	6.5	19.2	57.5	16.6	0.2	74.3	0	2.27	47.6	0	0	NP	SI-SAND	SM	1.07
CONOWINGO SSA-5	9/28/2017	4.5	10.1	63.2	21.7	0.4	85.3	0.1	2.19	35.2	0	0	NP	SI-SAND	SM	1.12
CONOWINGO SSA-6	9/27/2017	4.4	16	63.7	15.7	0.2	79.6	0	2.07	37.1	0	0	NP	SI-SAND	SM	1.08
CONOWINGO SSA-7	9/27/2017	7	19.4	56	17.4	0.2	73.6	0	2.08	49.6	0	0	NP	SI-SAND	SM	1.03
CONOWINGO SSA-8	9/28/2017	4.1	5.7	70.3	19.8	0.1	90.2	0	2.25	42.2	0	0	NP	PG-SAND-W-SILT	SP-SM	1.15
CONOWINGO SSA-9	9/27/2017	1.4	4.3	60.3	31.6	2.3	94.2	0.1	2.06	37.9	0	0	NP	SI-SAND	SM	1.10
CONOWINGO SSA-10	9/27/2017	8	9.7	61.3	20.6	0.4	82.3	0	2.26	62.8	0	0	NP	SI-SAND	SM	0.921
CONOWINGO SSA-11	9/27/2017	4.8	11.5	57	26.3	0.3	83.6	0.1	2.06	44.6	36	30	6	SI-SAND	SM	1.04
CONOWINGO SSA-12	9/27/2017	4.8	15.5	53.8	24.3	1.6	79.7	0	2.08	47	0	0	NP	SI-SAND	SM	1.06

LL = LIQUID LIMIT
PL = LASTIC LIMIT
PI = PLASTICITY INDEX
USCS CLASSES
SI-SAND = SILTY SAND
PG-SAND WITH SILT = POORLY GRADED SAND WITH SILT
SM = SAND, SILTY
SP = SAND, POORLY GRADED

Conowingo SSA Sediments September 2017		Priority Pollutant List Metals Inc. Mercury and Hexavalent Chromium														Total Nutrients			
		Silver (Ag)	Arsenic (As)	Beryllium (Be)	Cadmium (Cd)	Total Chromium (Cr)	Hexavalent Chromium	Copper (Cu)	Mercury (Hg)	Nickel (Ni)	Lead (Pb)	Antimony (Sb)	Selenium (Se)	Thallium (Tl)	Zinc (Zn)	Total Potassium (K)	Total Magnesium (Mg)	Total Calcium (Ca)	Total Organic Carbon (C)
Category 1 (HQ 0.1, risk 10E-06 Residential		39	0.68	16	7.1		0.3	310	1.1	82	400		39	0.078	2,300				
Category 2 (HQ 0.1, risk 10E-06) Industrial		580	3	230	98		6.3	4,700	4.6	1,100	800		580	1.2	35,000				
Category 3 (HQ 1.0, risk 10E-05) Construction		1,700	142	613	275		420	13,600	8.1	2,020	800		1,700	3.4	102,000				
Category 3 (HQ 1.0, risk 10E-05) Composite		5,840	30	2,290	982		63	46,700	36.7	11,100	3,850		5,840	11.7	350,000				
		mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg	mg/kg	mg/kg	wt%
CONOWINGO SSA-1	9/27/2017	0.13	4.7	0.79	0.27	6.0 B	0.16 U	21	0.038	25	17	0.27	1.4	0.094	91	430	820	690	25
CONOWINGO SSA-2	9/28/2017	0.20	5.5	0.95	0.37	8.3 B	0.16 U	26	0.035	32	19	0.24	1.6	0.11	110	500	1300	990	24
CONOWINGO SSA-3	9/27/2017	0.30	6.1	1.1	0.52	9.3 B	0.17 U	26	0.033	34	22	0.25	1.4	0.12	130	510	1300	950	40
CONOWINGO SSA-4	9/27/2017	0.30	6.0	1.1	0.53	9.9 B	0.17 U	28	0.057	36	23	0.28	1.5	0.13	130	590	1400	1100	49
CONOWINGO SSA-5	9/28/2017	0.15	5.7	1.0	0.32	7.2 B	0.16 U	23	0.044	32	17	0.25	1.3	0.11	110	510	1100	820	28
CONOWINGO SSA-6	9/27/2017	0.18	5.3	1.1	0.41	11 B	0.15 U	23	0.062	35	22	0.24	1.1	0.12	120	650	1900	1300	20
CONOWINGO SSA-7	9/27/2017	0.23	6.2	1.1	0.46	8.4 B	0.18 U	28	0.038	35	22	0.30	1.8	0.13	120	520	1100	910	38
CONOWINGO SSA-8	9/28/2017	0.13	5.7	1.1	0.29	6.9 B	0.17 U	25	0.039	32	18	0.28	1.6	0.11	110	550	1100	940	18
CONOWINGO SSA-9	9/27/2017	0.26	5.7	1.1	0.45	8.9 B	0.16 U	24	0.035	38	20	0.33	1.4	0.12	130	560	1200	890	26
CONOWINGO SSA-10	9/27/2017	0.39	5.7	1.2	0.58	10 B	0.17 U	28	0.062	32	24	0.27	1.5	0.12	130	600	1400	1100	53
CONOWINGO SSA-11	9/27/2017	0.29	6.3	1.3	0.51	10 B	0.17 U	29	0.042	36	24	0.30	1.6	0.12	140	630	1400	1200	44
CONOWINGO SSA-12	9/27/2017	0.19	5.2	1.1	0.36	7.4 B	0.18 U	24	0.061	31	18	0.28	1.4	0.11	110	510	1100	910	21

mg/kg = milligram per kilogram (part per million)
Q = Data Qualifier, if applicable
U = Undetected at the indicated reporting limit
J = Trace detection below the reporting limit, but above the method detection limit, and is an estimated value

Conowingo SSA Sediments September 2017		Acid-Volatile Sulfide and Simultaneously Extracted Material, Total Sulfide, Sulfate, Cyanide and pH												
		Cadmium as SEM	Copper as SEM	Lead as SEM	Mercury as SEM	Nickel as SEM	Zinc as SEM	Acid Volatile Sulfide (AVS)	SEM/AVS Ratio	Total Sulfides	Total Sulfates (deionized water leach)	Total Cyanide	Free Cyanide	pH
Category 1 (HQ 0.1, risk 10E-06 Residential												2.3		
Category 2 (HQ 0.1, risk 10E-06) Industrial												15		
Category 3 (HQ 1.0, risk 10E-05) Construction												32.6		
Category 3 (HQ 1.0, risk 10E-05) Composite												147		
		mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	molar	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	s.u. Q
CONOWINGO SSA-1	9/27/2017	0.17 B	5.7 B	12 B	0.0023 U	15	70 B	17 J	2.8	22 J	30	0.11 U	0.61 J	6.9 HF
CONOWINGO SSA-2	9/28/2017	0.23 B	5.5 B	14 B	0.0023 U	19	79 B	43	1.3	45	40	0.10 U	0.42 U	6.8 HF
CONOWINGO SSA-3	9/27/2017	0.36 B	8.4 B	18 B	0.0024 U	24	100 B	28	2.5	47	78	0.10 U	0.42 U	6.7 HF
CONOWINGO SSA-4	9/27/2017	0.33 B	7.3 B	18 B	0.0025 U	24	100 B	25	2.7	24 J	88	0.12 U	0.47 U	6.7 HF
CONOWINGO SSA-5	9/28/2017	0.23	3.7	13	0.0023 U	16	67	18 JB	2.5	21 U	30	0.11 U	0.43 U	6.9 HF
CONOWINGO SSA-6	9/27/2017	0.18 B	7.8 B	12 B	0.0023 U	18	71 B	10 J	4.9	45	23	0.10 U	0.46 J	6.9 HF
CONOWINGO SSA-7	9/27/2017	0.30 B	4.8 B	19 B	0.0026 U	24	100 B	37	1.8	63	72	0.12 U	0.51 J	6.8 HF
CONOWINGO SSA-8	9/28/2017	0.18 B	5.5 BF1	14 B	0.0024 U	19	91 B	32 F1F2	1.9	63	54	0.11 U	0.48 J	6.8 HF
CONOWINGO SSA-9	9/27/2017	0.22 B	5.8 B	13 B	0.0024 U	21	82 B	24	2.3	47	79	0.10 U	0.49 J	6.8 HF
CONOWINGO SSA-10	9/27/2017	0.35 B	7.1 B	18 B	0.0025 U	23	100 B	44	1.6	50	72	0.11 U	0.48 J	6.8 HF
CONOWINGO SSA-11	9/27/2017	0.32 B	7.7 B	18 B	0.0025 U	20	95 B	ND	--	24 J	30	0.11 U	0.44 U	6.8 HF
CONOWINGO SSA-12	9/27/2017	0.31 B	7.6 B	18 B	0.0025 U	23	98 B	17 J	4.0	23 U	42	0.11 U	0.44 U	6.7 HF

mg/kg = milligram per kilogram (part per million)
Q = Data Qualifier, if applicable
HF = Hold time field (measurement is recommended as soon as possible after collection)
B = Substance also detected in the Blank
U = Undetected at the indicated method detection limit
J = Trace detection below the reporting limit, but above the method detection limit, and is an estimated value
F1 = Matrix Spike / Matrix Spike Duplicate were outside acceptance limits
F2 = Matrix Spike / Matrix Spike Duplicate relative percent difference exceeds control limits

Conowingo SSA Sediments September 2017		Volatile Organic Compounds									
		Benzene	Toluene	Ethylbenzene	Xylenes	Methyl *tert*- butyl Ether (MTBE)	Tetra-chloroethylene (PCE)	Tri-Chloroethylene (TCE)	Carbon Tetrachloride	Vinyl Chloride	Methylene Chloride
Category 1 (HQ 0.1, risk 10E-06 Residential		1.2	490	5.8	58	47	8.1	0.41	0.65	0.059	35
Category 2 (HQ 0.1, risk 10E-06) Industrial		5.1	4,700	25	250	210	39	1.9	2.9	1.7	320
Category 3 (HQ 1.0, risk 10E-05) Construction		90.2	11,400	1,410	519	11,500	82.1	3.9	124	80.2	754
Category 3 (HQ 1.0, risk 10E-05) Composite		50.8	46,800	254	2,490	2,050	389	18.7	28.7	16.8	3,160
		mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q
CONOWINGO SSA-4	9/27/2017	0.0028 U	0.0024 U	0.0031 U	0.0062 U	0.0053 U	0.0029 U	0.0022 U	0.0048 U	0.0053 U	0.0034 U
CONOWINGO SSA-11	9/28/2017	0.0032 U	0.0027 U	0.0035 U	0.0069 U	0.0059 U	0.0032 U	0.0024 U	0.0053 U	0.0059 U	0.0038 U

mg/kg = milligram per kilogram (part per million)
Q = Data Qualifier, if applicable
U = Undetected at the indicated method detection limit

Conowingo SSA Sediments September 2017 *detects only reported see lab package for full compound list		Semi-Volatile Organic Compounds												
		1,1'-BIPHENYL	2-METHYL-NAPHTHALENE	ACENAPHTHENE	ACENAPHTHYLENE	ACETOPHENONE	ANTHRACENE	BENZO[A] ANTHRACENE	BENZO[A]PYRENE	BENZO[B] FLUORANTHENE	BENZO[G,H,I] PERYLENE	BENZO[K] FLUORANTHENE	BIS(2-ETHYLHEXYL) PHTHALATE	CARBAZOLE
Category 1 (HQ 0.1, risk 10E-06 Residential		4.7	24	360		780	1,800	0.16	0.016	0.16		1.6	39	
Category 2 (HQ 0.1, risk 10E-06) Industrial		20	300	4,500		12,000	23,000	2.9	0.29	2.9		29	160	
Category 3 (HQ 1.0, risk 10E-05) Construction		41.5	958	14,400		33,900	71,900	237	24	240		2,390	5,140	9,380
Category 3 (HQ 1.0, risk 10E-05) Composite		200	3,010	45,200		11,700	226,000	28.7	2.9	28.9		289	1,640	1,150
		mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q
CONOWINGO SSA-1	9/27/2017	0.022 J	0.092	0.012	0.03	0.0059 J	0.038	0.042	0.037	0.044	0.031	0.016	1.4	0.0075
CONOWINGO SSA-2	9/28/2017	0.029	0.12	0.016	0.041	0.006 J	0.054	0.061	0.053	0.064	0.043	0.022	0.063	0.0099
CONOWINGO SSA-3	9/27/2017	0.027	0.11	0.023	0.045	0.0062 J	0.071	0.19	0.15	0.18	0.11	0.08	0.053	0.029
CONOWINGO SSA-4	9/27/2017	0.024 J	0.1	0.015	0.038	0.0056 J	0.053	0.081	0.069	0.089	0.061	0.029	0.093	0.013
CONOWINGO SSA-5	9/28/2017	0.023 J	0.091	0.012	0.041	0.0047 J	0.074	0.11	0.095	0.11	0.076	0.033	0.051	0.0073
CONOWINGO SSA-6	9/27/2017	0.022 J	0.086	0.013	0.036	0.0059 J	0.047	0.063	0.06	0.072	0.056	0.026	0.05	0.0086
CONOWINGO SSA-7	9/27/2017	0.026	0.11	0.019	0.085	0.0062 J	0.11	0.19	0.15	0.18	0.11	0.061	0.08	0.01
CONOWINGO SSA-8	9/28/2017	0.023	0.095	0.013	0.034	0.0052 J	0.048	0.058	0.048	0.056	0.042	0.019	0.05	0.0078
CONOWINGO SSA-9	9/27/2017	0.27	1	0.14	0.37	0.062 J	0.59	0.72	0.55	0.66	0.5	0.26	0.82	0.08
CONOWINGO SSA-10	9/27/2017	1.8 J	7.6	1.2	4.4	0.5 J	5.3	5.8	5.7	6.8	5.4	1.7	6.9	0.75
CONOWINGO SSA-11	9/27/2017	0.034	0.14	0.022	0.082	0.0095 J	0.093	0.14	0.12	0.13	0.1	0.053	0.097	0.013
CONOWINGO SSA-12	9/27/2017	0.025	0.091	0.014	0.037	0.0045 J	0.057	0.08	0.069	0.078	0.064	0.025	0.2	0.0084

mg/kg = milligram per kilogram (part per million)
Q = Data Qualifier, if applicable
J = Trace detection below the reporting limit, but above the method detection limit, and is an estimated value

	Semi-Volatile Organic Compounds												
	CHRYSENE	DIBENZ(A,H) ANTHRACENE	DIBENZOFURAN	DIETHYL PHTHALATE	DI-N-BUTYL PHTHALATE	FLUORANTHENE	FLUORENE	INDENO[1,2,3-CD] PYRENE	METHYLPHENOL, 3 & 4	NAPHTHALENE	PHENANTHRENE	PHENOL	PYRENE
Category 1 (HQ 0.1, risk 10E-06 Residential	16	0.016	7.3	5,100	630	240	240	0.16		3.8		1,900	180
Category 2 (HQ 0.1, risk 10E-06) Industrial	290	0.29	100	66,000	8,200	3,000	3,000	2.9		17		25,000	2,300
Category 3 (HQ 1.0, risk 10E-05) Construction	23,900	24	310	206,000	25,700	9,580	9,580	240	257	123		77,000	22,600
Category 3 (HQ 1.0, risk 10E-05) Composite	2,890	2.9	1,040	657,000	82,100	30,100	30,100	28.9	821	167		246,000	7,190
	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q
CONOWINGO SSA-1	0.055	0.0077	0.017 J	0.01 J	0.0075 J	0.11	0.031	0.024	0.019 J	0.14	0.12	0.015 J	0.11
CONOWINGO SSA-2	0.073	0.0096	0.02 J	0.0067 J	0.0052 J	0.15	0.042	0.037	0.02 J	0.19	0.16	0.0066 J	0.14
CONOWINGO SSA-3	0.21	0.028	0.025	0.013 J	0.0065 J	0.45	0.05	0.1	0.017 J	0.18	0.29	0.021 J	0.34
CONOWINGO SSA-4	0.093	0.017	0.019 J	0.0088 J	0.0051 J	0.18	0.037	0.053	0.024 J	0.15	0.16	0.024 J	0.16
CONOWINGO SSA-5	0.12	0.021	0.017 J	0.0064 J	0.0062 J	0.22	0.032	0.066	0.011 J	0.14	0.15	0.0097 J	0.18
CONOWINGO SSA-6	0.076	0.015	0.018 J	0.012 J	0.0096 J	0.16	0.035	0.046	0.021 J	0.13	0.14	0.0089 J	0.14
CONOWINGO SSA-7	0.19	0.037	0.021 J	0.011 J	0.0075 J	0.43	0.053	0.1	0.021 J	0.17	0.29	0.016 J	0.29
CONOWINGO SSA-8	0.067	0.011	0.017 J	0.0083 J	0.0055 J	0.14	0.032	0.033	0.013 J	0.16	0.13	0.0067 J	0.12
CONOWINGO SSA-9	0.78	0.12	0.25	0.096 J	0.067 J	1.7	0.4	0.42	0.14 J	1.7	1.7	0.14 J	1.4
CONOWINGO SSA-10	7.3	1.3	1.4 J	0.51 J	1.2 J	14	2.9	4.3	2.5	11	12	2.7	12
CONOWINGO SSA-11	0.15	0.031	0.028	0.011 J	0.0082 J	0.32	0.055	0.087	0.045	0.23	0.25	0.012 J	0.24
CONOWINGO SSA-12	0.09	0.015	0.02 J	0.0068 J	0.005 J	0.15	0.036	0.051	0.016 J	0.15	0.16	0.0081 J	0.16

mg/kg = milligram per kilogram (part per million)
Q = Data Qualifier, if applicable
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Conowingo SSA Sediments September 2017		Organo-Chlorine Pesticides																												
		4,4'-DDD		4,4'-DDE		4,4'-DDT		ALDRIN		ALPHA-BHC		BETA-BHC		CHLORDANE (TECHNICAL)		CHLORO-BENSIDE		DCPA		DELTA-BHC		DIELDRIN		ENDOSULFAN I		ENDOSULFAN II		ENDOSULFAN SULFATE		ENDRIN		ENDRIN ALDEHYDE		GAMMA-BHC (LINDANE)		HEPTACHLOR		HEPTACHLOR EPOXIDE		METHOXY-CHLOR		MIREX		TOXAPHENE	
Category 1 (HQ 0.1, risk 10E-06 Residential)		2.3		2		1.9		0.039		0.086		0.3		1.7								0.034		47		47				1.9				0.57		0.13		0.07		32		0.036		0.49	
Category 2 (HQ 0.1, risk 10E-06) Industrial		9.6		9.3		8.5		0.18		0.36		1.3		7.7								0.14		700		700				25				2.5		0.63		0.33		410		0.17		2.1	
Category 3 (HQ 1.0, risk 10E-05) Construction		514		693		155		10		29.8		104		130								11.7		2040		2040				77.1				90.2		44.9		4.4		1,280		12.3		171	
Category 3 (HQ 1.0, risk 10E-05) Composite		95.7		92.8		85.3		1.8		3.7		12.8		76.6								1.4		7010		7010				246				25.4		6.3		3.3		4,100		1.7		20.9	
		mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q
CONOWINGO SSA-1	9/27/2017	0.0012		0.0011		0.66	p	0.0001	U	0.0001	U	0.0001	U	0.0012	U	0.0001	U	0.0001	U	0.0001	JP	0.00007	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.00014	Jp	0.0001	U	0.0001	U	0.0078	U
CONOWINGO SSA-2	9/28/2017	0.0012		0.001		0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0012	U	0.0001	U	0.0001	U	0.0001	U	0.00007	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.000073		0.0001	U	0.0001	U	0.0078	U
CONOWINGO SSA-3	9/27/2017	0.0017		0.0014		0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0013	U	0.0001	U	0.0001	U	0.0001	U	0.00008	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.000078		0.0001	U	0.0001	U	0.0083	U
CONOWINGO SSA-4	9/27/2017	0.0011		0.0014		0.60	p	0.0001	U	0.0001	U	0.0001	U	0.0014	U	0.0001	U	0.0001	U	0.0001	U	0.00008	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.00011	Jp	0.0001	U	0.0001	U	0.0086	U
CONOWINGO SSA-5	9/28/2017	0.001		0.0007		0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0013	U	0.0001	U	0.0001	U	0.0001	U	0.00008	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.000076		0.0001	U	0.0001	U	0.0081	U
CONOWINGO SSA-6	9/27/2017	0.0013		0.0011		0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0012	U	0.0001	U	0.0001	U	0.0001	U	0.00007	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.000074		0.0001	U	0.0001	U	0.0078	U
CONOWINGO SSA-7	9/27/2017	0.0013		0.0014		0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0014	U	0.0001	U	0.0001	U	0.0001	U	0.00008	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.000083		0.0001	U	0.0001	U	0.0088	U
CONOWINGO SSA-8	9/28/2017	0.0011		0.0008		0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0013	U	0.0001	U	0.0001	U	0.0001	U	0.00008	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.000083	Jp	0.0001	U	0.0001	U	0.0081	U
CONOWINGO SSA-9	9/27/2017	0.0012		0.001		0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0013	U	0.0001	U	0.0001	U	0.0001	U	0.00008	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.000091	Jp	0.0001	U	0.0001	U	0.0082	U
CONOWINGO SSA-10	9/27/2017	0.0016		0.0017		0.0001	U	0.00012	Jp	0.0001	U	0.0001	U	0.0014	U	0.0001	U	0.0001	U	0.0001	U	0.00008	U	0.0001	J	0.0001		0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.000099	Jp	0.0001	U	0.0001	U	0.0087	U
CONOWINGO SSA-11	9/27/2017	0.0014		0.0014		0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0013	U	0.0001	U	0.0001	U	0.0001	U	0.00008	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.000093	Jp	0.0001	U	0.0001	U	0.0085	U
CONOWINGO SSA-12	9/27/2017	0.002		0.0017		0.0001	U	0.00011	Jp	0.0001	U	0.0001	U	0.0014	U	0.0001	U	0.0001	U	0.0001	U	0.00008	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.00011	Jp	0.0001	U	0.0001	U	0.0087	U

mg/kg = milligram per kilogram (part per million)
Q = Data Qualifier, if applicable
U = Undetected at the indicated reporting limit
J = Trace detection below the reporting limit, but above the method detection limit, and is an estimated value
p = The relative percent difference between the primary and confirmation column/detector is >40%. The lower value has been reported.

Conowingo SSA Sediments September 2017		Poly Chlorinated BiPhenyls (PCBs)						
		Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260
Category 1 (HQ 0.1, risk 10E-06 Residential		0.41	0.2	0.17	0.23	0.23	0.12	0.24
Category 2 (HQ 0.1, risk 10E-06) Industrial		5.1	0.83	0.72	0.95	0.95	0.97	0.99
Category 3 (HQ 1.0, risk 10E-05) Construction		16.4	62.8	51.6	76	76.5	4.7	81
Category 3 (HQ 1.0, risk 10E-05) Composite		51.3	8.3	7.2	9.5	9.5	9.7	9.9
		mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q
CONOWINGO SSA-1	9/27/2017	0.00030 U	0.00030 U	0.00023 U	0.00046 U	0.00027 U	0.0071	0.0045
CONOWINGO SSA-2	9/28/2017	0.00031 U	0.00030 U	0.00023 U	0.00046 U	0.00028 U	0.0048	0.0032
CONOWINGO SSA-3	9/27/2017	0.00032 U	0.00032 U	0.00024 U	0.00048 U	0.00029 U	0.0053	0.0036
CONOWINGO SSA-4	9/27/2017	0.00034 U	0.00033 U	0.00025 U	0.00051 U	0.00030 U	0.0065	0.0046
CONOWINGO SSA-5	9/28/2017	0.00032 U	0.00031 U	0.00024 U	0.00048 U	0.00029 U	0.0029	0.0019
CONOWINGO SSA-6	9/27/2017	0.00030 U	0.00030 U	0.00023 U	0.00046 U	0.00027 U	0.0041	0.0029
CONOWINGO SSA-7	9/27/2017	0.00035 U	0.00034 U	0.00026 U	0.00052 U	0.00031 U	0.0053	0.0034
CONOWINGO SSA-8	9/28/2017	0.00032 U	0.00031 U	0.00024 U	0.00048 U	0.00029 U	0.0043	0.0022
CONOWINGO SSA-9	9/27/2017	0.00032 U	0.00031 U	0.00024 U	0.00048 U	0.00029 U	0.0023	0.0015
CONOWINGO SSA-10	9/27/2017	0.00034 U	0.00033 U	0.00025 U	0.00051 U	0.00031 U	0.0055	0.0040
CONOWINGO SSA-11	9/27/2017	0.00033 U	0.00032 U	0.00025 U	0.00049 U	0.00030 U	0.0050	0.0042
CONOWINGO SSA-12	9/27/2017	0.00034 U	0.00033 U	0.00025 U	0.00051 U	0.00030 U	0.0048	0.0032

mg/kg = milligram per kilogram (part per million)
Q = Data Qualifier, if applicable
U = Undetected at the indicated reporting limit

Conowingo SSA Sediments September 2017		Dioxins and Furans																
		1,2,3,4,6,7,8-HpCDD (Heptachlorodibenzo-*p*-dioxin)	1,2,3,4,6,7,8-HpCDF (Heptachlorodibenzo-furan)	1,2,3,4,7,8,9-HpCDF (Heptachlorodibenzo-furan)	1,2,3,4,7,8-HxCDD (Hexachlorodibenzo-*p*-dioxin)	1,2,3,4,7,8-HxCDF (Hexachlorodibenzo-furan)	1,2,3,6,7,8-HxCDD (Hexachlorodibenzo-*p*-dioxin)	1,2,3,6,7,8-HxCDF (Hexachlorodibenzo-furan)	1,2,3,7,8,9-HxCDD (Hexachlorodibenzo-*p*-dioxin	1,2,3,7,8,9-HxCDF (Hexachlorodibenzo-furan)	2,3,4,6,7,8-HxCDF (Hexachlorodibenzo-furan)	1,2,3,7,8-PeCDD (Pentachlorodibenzo-*p*-dioxin)	1,2,3,7,8-PeCDF (Pentachlorodibenzo-*p*-dioxin)	2,3,4,7,8-PeCDF (Pentachlorodibenzo-furan)	2,3,7,8-TCDD (Tetrachlorodibenzo-*p*-dioxin)	2,3,7,8-TCDF (Tetrachlorodibenzo-furan)	OCDD (Octachlorodibenzo-*p*-dioxin)	OCDF (Octachlorodibenzo-furan)
Category 1 (HQ 0.1, risk 10E-06 Residential		–	7.3	7.3	0.0001	7.3	0.0001	7.3	0.0001	7.3	7.3	–	–	–	4.6E-06	–	–	–
Category 2 (HQ 0.1, risk 10E-06) Industrial		–	100	100	0.00047	100	0.00047	100	0.00047	100	100	–	–	–	0.000022	–	–	–
Category 3 (HQ 1.0, risk 10E-05) Construction		0.022	0.022	0.022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.00022	0.00740	0.00074	0.00022	0.0022	0.74	0.74
Category 3 (HQ 1.0, risk 10E-05) Composite		0.022	0.022	0.022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.00022	0.00720	0.00072	0.00022	0.0022	0.72	0.72
		mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q	mg/kg Q
CONOWINGO SSA-3	9/27/2017	3.10E-05	6.30E-06	4.40E-07 J	3.80E-07 J	1.30E-06 J	1.40E-06 J	1.00E-06 JI	1.20E-06 J	4.90E-06 U	3.70E-07 Jq	4.90E-06 U	5.70E-07 J	6.50E-07 Jq	2.30E-07 Jq	2.30E-06	9.30E-04 B	9.20E-06 JB
CONOWINGO SSA-4	9/27/2017	4.40E-05	7.30E-06	7.10E-07 J	7.30E-07 J	1.30E-06 Jq	2.00E-06 J	1.30E-06 JI	1.60E-06 Jq	1.80E-07 Jq	5.20E-07 J	6.30E-07 Jq	5.60E-07 J	9.00E-07 Jq	2.10E-07 Jq	3.10E-06	1.40E-03 B	1.10E-05 B
CONOWINGO SSA-9	9/27/2017	3.00E-05	6.10E-06	3.20E-07 Jq	4.10E-07 Jq	1.10E-06 J	1.60E-06 J	7.80E-07 Jq	1.30E-06 J	5.00E-06 U	4.40E-07 Jq	4.80E-07 Jq	4.70E-07 Jq	6.50E-07 J	3.70E-07 Jq	2.50E-06	1.00E-03 B	8.70E-06 JB
CONOWINGO SSA-11	9/27/2017	3.80E-05	9.00E-06	7.10E-07 J	4.10E-07 Jq	1.60E-06 J	1.70E-06 J	1.50E-06 JI	1.30E-06 Jq	4.80E-06	5.80E-07 J	4.40E-07 Jq	5.80E-07 Jq	3.20E-07 J	3.20E-07 J	3.30E-06	1.10E-03 B	1.10E-05 B

mg/kg = milligram per kilogram (part per million)
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U = Undetected at the indicated reporting limit
J = Trace detection below the reporting limit, but above the method detection limit, and is an estimated value
q = The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio
The measured ion ratio does not meet qualitative identification criteria and indicated a possible interference
I = Value is the estimated maximum possible concentration
B = Compound also detected in the Blank.

Conowingo SSA Sediments September 2017		Total Petroleum Hydrocarbons	
		TPH - GRO (C6-C10)	TPH - DRO (C10-C28)
Category 1 (HQ 0.1, risk 10E-06 Residential		230	230
Category 2 (HQ 0.1, risk 10E-06) Industrial		620	620
Category 3 (HQ 1.0, risk 10E-05) Construction		620	620
Category 3 (HQ 1.0, risk 10E-05) Composite		620	620
		mg/kg Q	mg/kg Q
CONOWINGO SSA-1	9/27/2017	0.089 U	41
CONOWINGO SSA-2	9/28/2017	0.09 U	250
CONOWINGO SSA-3	9/27/2017	0.095 U	65
CONOWINGO SSA-4	9/27/2017	0.096 U	48
CONOWINGO SSA-5	9/28/2017	0.091 U	26
CONOWINGO SSA-6	9/27/2017	0.091 U	80
CONOWINGO SSA-7	9/27/2017	0.1 U	47
CONOWINGO SSA-8	9/28/2017	0.091 U	24
CONOWINGO SSA-9	9/27/2017	0.093 U	27
CONOWINGO SSA-10	9/27/2017	0.1 U	31
CONOWINGO SSA-11	9/27/2017	0.094 U	92
CONOWINGO SSA-12	9/27/2017	0.1 U	58

mg/kg = milligram per kilogram (part per million)
Q = Data Qualifier, if applicable
U = Undetected at the indicated reporting limit

Conowingo SSA Sediments September 2017		Total Nutrients								Exchangeable Nutrients (Mehlich-3 Extraction)							Salts	CEC
		Total Organic Carbon (mg/kg)	Total Organic Carbon wt %	Total Phosphorus (P)	Nitrogen from Ammonia	Total Kjedahl Nitrogen (Organic Nitrogen + Ammonia + Ammonium)	Total Potassium (K)	Total Magnesium (Mg)	Total Calcium (Ca)	Organic Matter	Exchangeable Phosphorus (P)	Exchangeable Nitrogen from Nitrate	Exchangeable Nitrogen from Ammonium	Exchangeable Potassium (K)	Exchangeable Magnesium (Mg)	Exchangeable Calcium (Ca)	Soluble Salts, as Electrical Conductivity	Cation Exchange Capacity
Category 1 (HQ 0.1, risk 10E-06 Residential																		
Category 2 (HQ 0.1, risk 10E-06) Industrial																		
Category 3 (HQ 1.0, risk 10E-05) Construction																		
Category 3 (HQ 1.0, risk 10E-05) Composite																		
		mg/kg	wt% Q	mg/kg Q	mg/kg Q	mg/kg	mg/kg	mg/kg	mg/kg	wt%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mmhos/cm	meq/100g
CONOWINGO SSA-1	9/27/2017	250,000	25	230	91	1,800	430	820	690	1.3	25	0.3	38.0	22	46	280	0.15	2.0
CONOWINGO SSA-2	9/28/2017	240,000	24	150	73	1,700	500	1,300	990	1.6	24	0.3	29.1	22	62	420	0.15	2.8
CONOWINGO SSA-3	9/27/2017	400,000	40	290	72	2,100	510	1,300	950	1.3	33	0.3	29.7	21	50	320	0.13	2.2
CONOWINGO SSA-4	9/27/2017	490,000	49	400	88	1,500 B	590	1,400	1,100	0.9	28	0.3	42.8	23	43	280	0.12	1.8
CONOWINGO SSA-5	9/28/2017	280,000	28	200	46	1,800	510	1,100	820	1.0	19	0.3	22.7	20	44	280	0.13	2.0
CONOWINGO SSA-6	9/27/2017	200,000	20	300	69	2,000 B	650	1,900	1,300	1.0	32	0.3	40.8	23	47	320	0.13	2.2
CONOWINGO SSA-7	9/27/2017	380,000	38	290	140	1,300 B	520	1,100	910	1.0	31	0.3	45.4	20	47	300	0.12	2.1
CONOWINGO SSA-8	9/28/2017	180,000	18	190	68	1,500	550	1,100	940	1.1	23	0.3	30.8	26	60	350	0.13	2.5
CONOWINGO SSA-9	9/27/2017	260,000	26	280	63	2,300	560	1,200	890	1.2	24	0.3	33.5	20	46	270	0.12	1.9
CONOWINGO SSA-10	9/27/2017	530,000	53	250	140	2,100	600	1,400	1,100	1.1	30	0.3	44.5	20	51	330	0.10	2.3
CONOWINGO SSA-11	9/27/2017	440,000	44	230	130	2,100	630	1,400	1,200	1.0	28	0.3	48.6	24	50	310	0.11	2.2
CONOWINGO SSA-12	9/27/2017	210,000	21	250 F1	100	1,900	510	1,100	910	0.9	28	0.3	42.2	20	42	270	0.10	1.9

mg/kg = milligram per kilogram (part per million), wt% = weight percent, mmhos/com = millimhos per centimeter, meq/100g = milliequivalents per 100 grams
Q = Data Qualifier, if applicable
B = Substance also detected in the Blank.

Conowingo SSA Sediments September 2017		Metals - Toxicity Characteristic Leaching Potential							
		Silver (Ag)	Arsenic (As)	Barium (Ba)	Cadmium (Cd)	Total Chromium (Cr)	Mercury (Hg)	Lead (Pb)	Selenium (Se)
RCRA Toxicity Threshold		5	5	100	1	5	0.2	5	1
		mg/L Q	mg/L Q	mg/L Q	mg/L Q	mg/L Q	mg/L Q	mg/L Q	mg/L Q
CONOWINGO SSA-3	9/27/2017	0.5 U	0.5 U	0.40 J	0.0057 J	0.5 U	0.0002 U	0.5 U	0.5 U
CONOWINGO SSA-5	9/28/2017	0.5 U	0.5 U	0.36 J	0.0049 J	0.5 U	0.0002 U	0.5 U	0.5 U
CONOWINGO SSA-9	9/27/2017	0.5 U	0.5 U	0.32 J	0.0049 J	0.5 U	0.0002 U	0.5 U	0.5 U

mg/L = milligram per liter (part per million)
Q = Data Qualifier, if applicable
U = Undetected at the indicated reporting limit
J = Trace detection below the reporting limit, but above the method detection limit, and is an estimated value
RCRA = Resource Conservation and Recovery Act Toxicity Threshold specified at 40th CFR, § 261.24

Conowingo SSA Sediments September 2017		Semi Volatile Organic Compounds - Toxicity Characteristic Leaching Potential											
		1,4-DICHLOROBENZENE	2,4,5-TRICHLOROPHENOL	2,4,6-TRICHLOROPHENOL	2,4-DINITROTOLUENE	2-METHYLPHENOL	HEXACHLORO- BENZENE	HEXACHLORO-BUTADIENE	HEXACHLORO- ETHANE	3 & 4 METHYLPHENOL	NITROBENZENE	PENTA-CHLOROPHENOL	PYRIDINE
RCRA Toxicity Threshold		7.5	400	2	0.13		0.13	0.5	3		2	100	5
		mg/L Q	mg/L Q	mg/L Q	mg/L Q	mg/L Q	mg/L Q	mg/L Q	mg/L Q	mg/L Q	mg/L Q	mg/L Q	mg/L Q
CONOWINGO SSA-3	9/27/2017	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.25 U	0.1 U
CONOWINGO SSA-5	9/28/2017	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.25 U	0.1 U
CONOWINGO SSA-9	9/27/2017	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.25 U	0.1 U

mg/L = milligram per liter (part per million)
Q = Data Qualifier, if applicable
U = Undetected at the indicated reporting limit
RCRA = Resource Conservation and Recovery Act Toxicity Threshold specified at 40th CFR, § 261.24

Conowingo SSA Sediments September 2017		Pesticides - Toxicity Characteristic Leaching Potential						
		CHLORDANE	ENDRIN	GAMMA-BHC (LINDANE)	HEPTACHLOR	HEPTACHLOR EPOXIDE	METHOXYCHLOR	TOXAPHENE
RCRA Toxicity Threshold		0.03	0.02	0.4	0.008	0.008	10	0.5
		mg/L Q	mg/L Q	mg/L Q	mg/L Q	mg/L Q	mg/L Q	mg/L Q
CONOWINGO SSA-3	9/27/2017	0.005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.04 U
CONOWINGO SSA-5	9/28/2017	0.005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.04 U
CONOWINGO SSA-9	9/27/2017	0.005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.04 U

mg/L = milligram per liter (part per million)
Q = Data Qualifier, if applicable
U = Undetected at the indicated reporting limit
RCRA = Resource Conservation and Recovery Act Toxicity Threshold specified at 40th CFR, § 261.24

Conowingo SSA Sediments September 2017		Herbicides - Toxicity Characteristic Leaching Potential			
		2,4-D		SILVEX (2,4,5-TP)	
RCRA Toxicity Threshold		10		1	
		mg/L	Q	mg/L	Q
CONOWINGO SSA-3	9/27/2017	0.040	U	0.010	U
CONOWINGO SSA-5	9/28/2017	0.040	U	0.010	U
CONOWINGO SSA-9	9/27/2017	0.040	U	0.010	U

mg/L = milligram per liter (part per million)
Q = Data Qualifier, if applicable
U = Undetected at the indicated reporting limit
RCRA = Resource Conservation and Recovery Act Toxicity Threshold specified at 40th CFR, § 261.24

Conowingo SSA Sediments September 2017		Volatile Organic Compounds - Toxicity Characteristic Leaching Potential									
		1,1-Dichloroethene	1,2-Dichloroethane	2-Butanone (MEK)	Benzene	Tetra-chloroethylene (PCE)	Tri-Chloroethylene (TCE)	Carbon Tetrachloride	Chlorobenzene	Chloroform	Vinyl Chloride
RCRA Toxicity Threshold		0.7	0.5	200	0.5	0.7	0.5	0.5	100	6	0.2
		mg/L Q	mg/L Q	mg/L Q	mg/L Q	mg/L Q	mg/L Q	mg/L Q			mg/L Q
CONOWINGO SSA-1	9/27/2017	0.11 U	0.058 U	0.12 U	0.079 U	0.080 U*	0.060 U	0.13 U	0.063 U	0.085 U	0.15 U
CONOWINGO SSA-2	9/28/2017	0.11 U	0.058 U	0.12 U	0.079 U	0.080 U*	0.060 U	0.13 U	0.063 U	0.085 U	0.15 U
CONOWINGO SSA-3	9/27/2017	0.11 U	0.058 U	0.12 U	0.079 U	0.080 U*	0.060 U	0.13 U	0.063 U	0.085 U	0.15 U
CONOWINGO SSA-4	9/27/2017	0.11 U	0.058 U	0.12 U	0.079 U	0.080 U*	0.060 U	0.13 U	0.063 U	0.085 U	0.15 U
CONOWINGO SSA-5	9/28/2017	0.11 U	0.058 U	0.12 U	0.079 U	0.080 U*	0.060 U	0.13 U	0.063 U	0.085 U	0.15 U
CONOWINGO SSA-6	9/27/2017	0.11 U	0.058 U	0.12 U	0.079 U	0.080 U*	0.060 U	0.13 U	0.063 U	0.085 U	0.15 U
CONOWINGO SSA-7	9/27/2017	0.11 U	0.058 U	0.12 U	0.079 U	0.080 U*	0.060 U	0.13 U	0.063 U	0.085 U	0.15 U
CONOWINGO SSA-8	9/28/2017	0.11 U	0.058 U	0.12 U	0.079 U	0.080 U*	0.060 U	0.13 U	0.063 U	0.085 U	0.15 U
CONOWINGO SSA-9	9/27/2017	0.11 U	0.058 U	0.12 U	0.079 U	0.080 U*	0.060 U	0.13 U	0.063 U	0.085 U	0.15 U
CONOWINGO SSA-10	9/27/2017	0.11 U	0.058 U	0.12 U	0.079 U	0.080 U*	0.060 U	0.13 U	0.063 U	0.085 U	0.15 U
CONOWINGO SSA-11	9/27/2017	0.11 U	0.058 U	0.12 U	0.079 U	0.080 U*	0.060 U	0.13 U	0.063 U	0.085 U	0.15 U
CONOWINGO SSA-12	9/27/2017	0.11 U	0.058 U	0.12 U	0.079 U	0.080 U*	0.060 U	0.13 U	0.063 U	0.085 U	0.15 U

mg/kg = milligram per kilogram (part per million)
Q = Data Qualifier, if applicable
U = Undetected at the indicated method detection limit
* = Laboratory Control Sample / Laboratory Control Sample Duplicate is outside acceptance limits

Permit Application Screening Form

Tracking No:	201961656				
Applicant:	MES - Conowingo Dam - Dredging				
County:	Cecil	ADC Map:	6 C 1	Ed:	11
Project Type:	Dredging				
Waterbody:	Susquehanna River				
Stream Use:	I	Fed. Nav. Channel?	No		
100 Year Floodplain:	Yes	Within 150' of channel?	No		
Critical Area/1000' Buffer:	No	FEMA FIRM Index:	24015C0025D		
Floodway?	No	Floodplain Description:	A		

Location

State Plane 83 Meters:	N 228073	E 465989	MD Watershed (8 Digit):	02120204
Latitude/Longitude 83:	N 39° 43'7"	W -76° 13'50"	HUC Basin:	020503
DOQQ:	CONOWINGO DAM NW		HUC Watershed:	02050306

Tidal Wetland Boundary #:
Aerial Photo #:
6" Statewide Photo Grid #: F314
Taxmap: CECI001

Reference Information

Tier II Streams	No		Polygon ID:	
Tier II Catchments	No		N/A	
Stronghold Watershed	No		Has Interest Points?	N/A
MBSS	No		Has Records?	N/A
TMDL	Yes	Nutrients, Phosphorus, Sediments, Toxics	Has Attachments?	N/A
NWI Wetlands:	Yes	Types (if any): L1UBHh		
DNR Wetlands:	Yes	Types (if any): L1UBHh		
MHT:	No			
Sens/Endg Species:	**Yes**	**Waterfowl**		
NOB:	No			
WSSC:	No	SAV: No		

Screened By: KS Date Screened: 9/25/2019

Comments: **Stream Use Cont: I-P**
DNR: Trout - Conowingo Dam Susq R - Unsampled