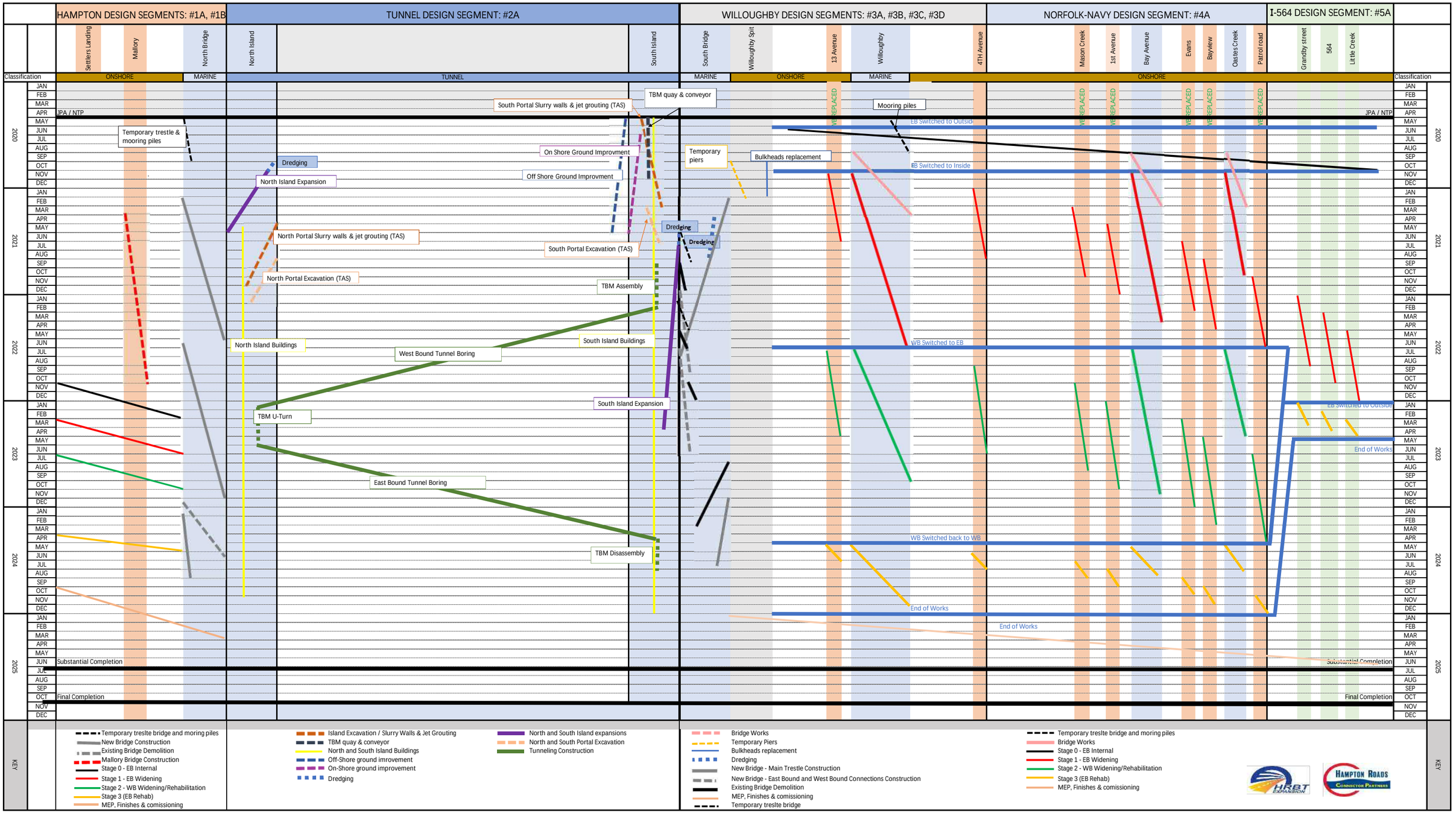
ATTACHMENT L-1: PROJECT SCHEDULE

Figure N-2 HRBT Linear Construction Schedule

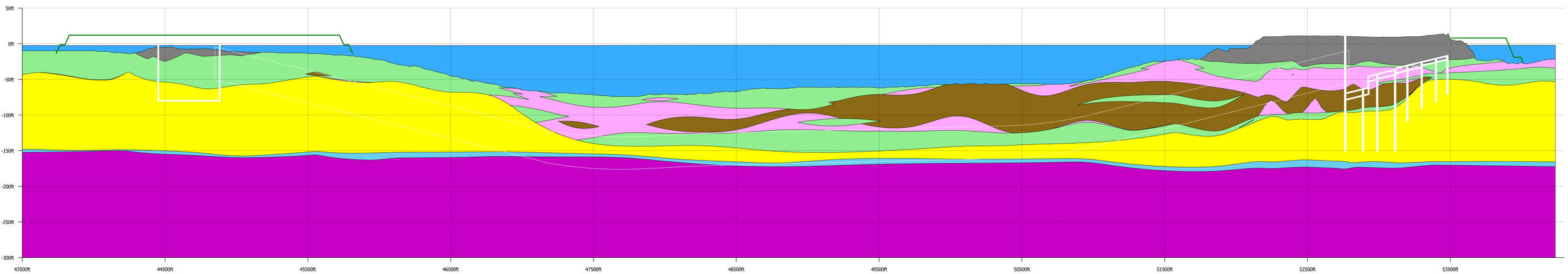


ATTACHMENT L-2: CROSS-SECTION OF TUNNEL BORE MATERIAL TYPES

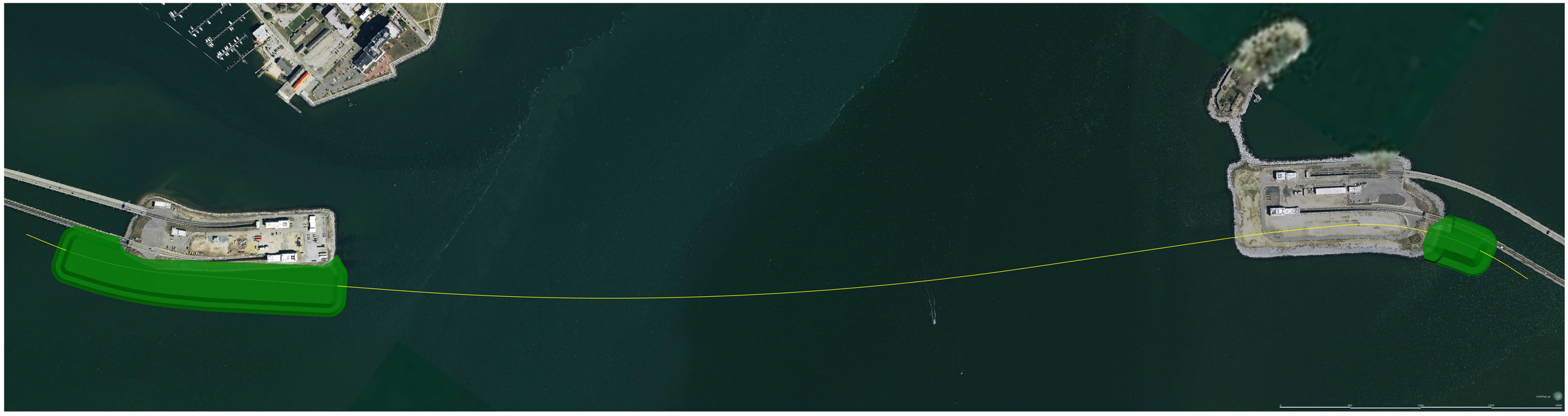
HT 435+00 to 543+00

Location

A: 12119080, 3532578
B: 12125009, 3523741



Scale: 1:3,000
Vertical exaggeration: 5x
0ft 1000ft



Legend

Surfaces

TAS_SI 2019 06 17: TAS_Slab(3D) 3Bv2b : TAS (3D) north TAS_SI 2019 06 17: TAS_SlurryWall (3D) 3Bv2b - HT (3D Excavated 45.8 ft) Island Expansion Surfaces exp June 2019: C-TOPO

Refined GM HRBT DESIGN Mats 2019-07-17 out

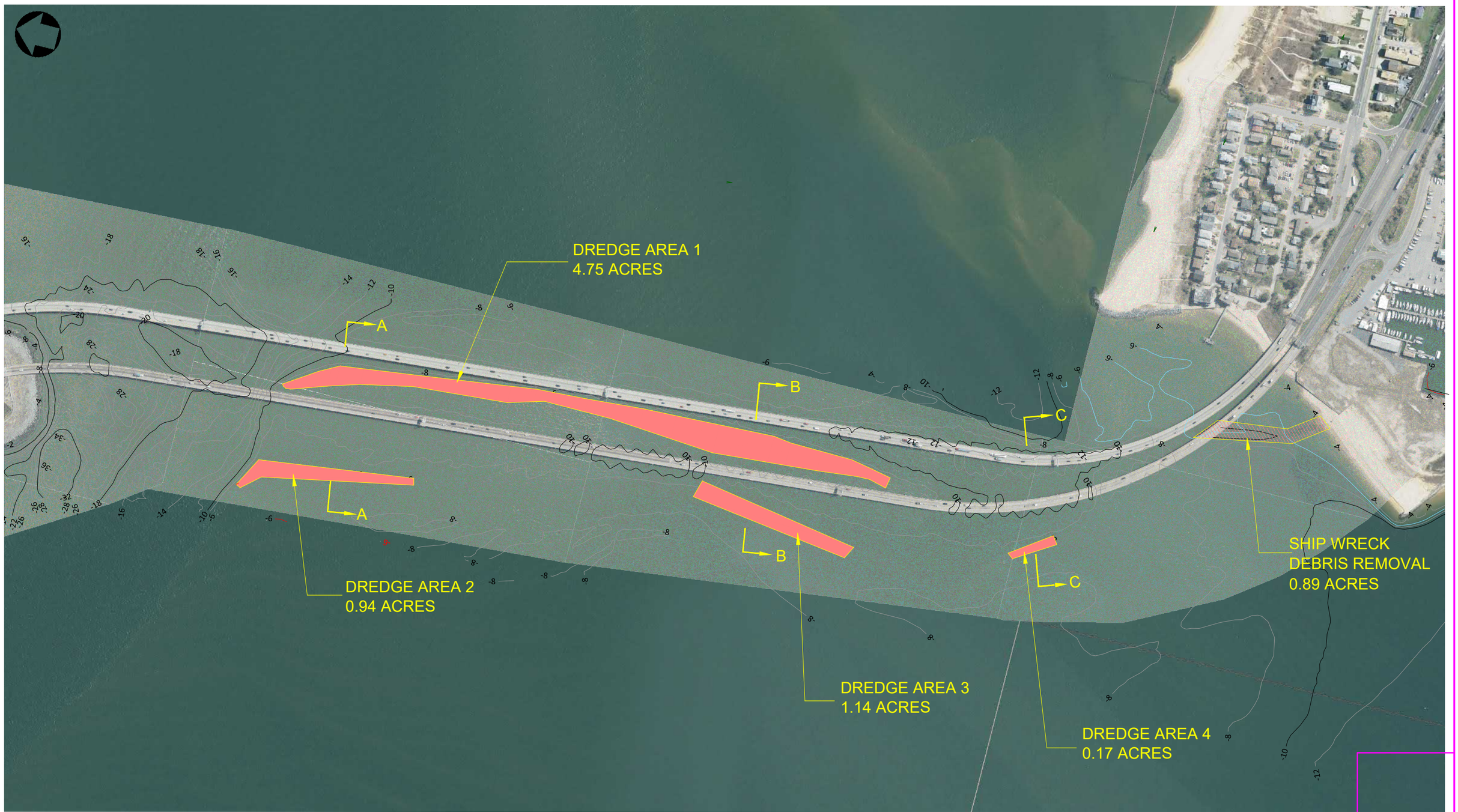
- Af Fill
- Qc Alluvial Marine Coarse
- Qf Alluvial Marine Fine
- Qo Alluvial Marine Organics and Plastic
- Tye Eastover
- Tyf Yorktown Fine
- Tys Yorktown Coarse
- WATER

Lines

HT 400+00 GP 400+00

Responsible dept. Geotech	Technical reference Geo. Long Section.	Creator DC	Approved by Draft	
Legal owner MM		Document type Internal Draft	Document status Draft	
		Title Geological Long section. HT.	Identification number	
			Rev.	Date of issue 2019-07-18 / Sheet

ATTACHMENT L-3: SOUTH TRESTLE BRIDGE AREA DREDGING PLAN



LEGEND:

- DREDGE AREA
- SHIP WRECK REMOVAL AREA

NOTES:

1. FOR COORDINATES OF EACH DREDGE AREA SEE SKETCH SHEET SK–04.
2. FOR DREDGING CROSS SECTIONS SEE SHEETS SK–02 & SK–03.

SOUTH TRESTLE – DREDGE PLAN

Scale: 1" = 200'

PRELIMINARY PLANS
THESE PLANS NOT TO BE
USED FOR CONSTRUCTION

-- RESTRICTED --
CRITICAL INFRASTRUCTURE INFORMATION
Sensitive Security Information

Scale:

FINAL PLAN REVISIONS SUBMITTAL DATE:							
NO.	DATE	AUTH.	DESCRIPTION	NO.	DATE	AUTH.	DESCRIPTION

Hampton Roads Bridge-Tunnel
VDOT
Hampton Roads Connector Partners
64 HDR | MOTT MACDONALD
Design Joint Venture
M M

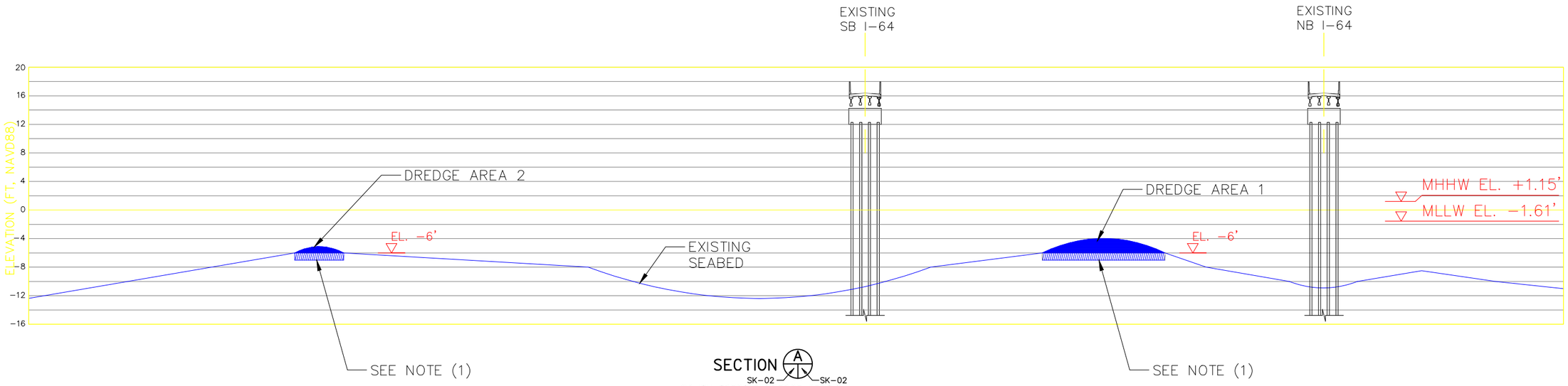
Designed: ...DG.
Drawn: .....SW.
Checked: ....NW.

STRUCTURE AND BRIDGE DIVISION
DATE: August 16, 2019

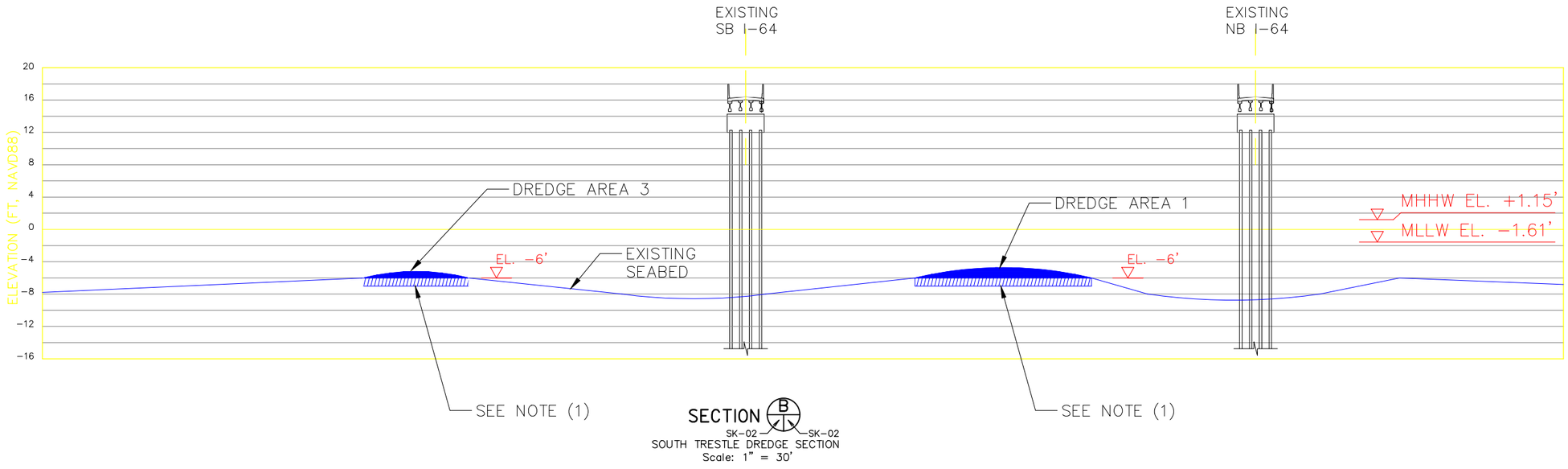
SOUTH TRESTLE
DREDGE PLAN

Plan No.	Sheet No.
SK–01	1 of 3

TN110577_MM_SOUTH DREDGE PLAN.dwg



SECTION A
SK–02 — SK–02
SOUTH TRESTLE DREDGE SECTION
Scale: 1" = 30'



SECTION B
SK–02 — SK–02
SOUTH TRESTLE DREDGE SECTION
Scale: 1" = 30'

NOTE:
(1) 1 FT OVERDREDGE ALLOWANCE

PRELIMINARY PLANS
THESE PLANS NOT TO BE
USED FOR CONSTRUCTION

-- RESTRICTED --
CRITICAL INFRASTRUCTURE INFORMATION
Sensitive Security Information

TN110577_MM_SOUTH DREDGE PLAN.dwg

FINAL PLAN REVISIONS SUBMITTAL DATE:							
NO.	DATE	AUTH.	DESCRIPTION	NO.	DATE	AUTH.	DESCRIPTION

Hampton Roads Bridge-Tunnel
VDOT
Hampton Roads Connector Partners
HDR | MOTT MACDONALD
Design Joint Venture

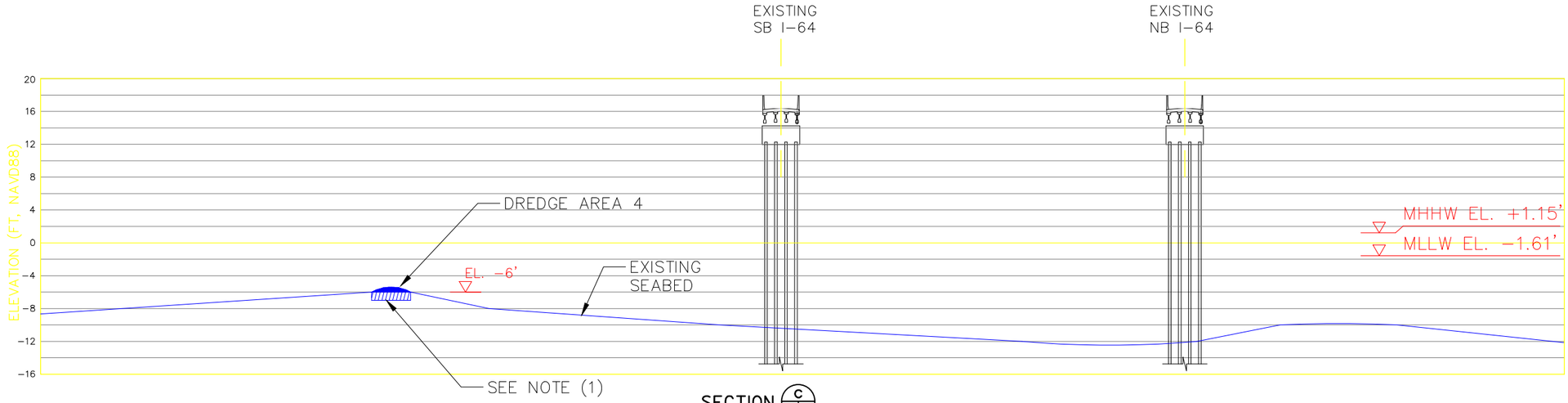
Scale:

Designed: ...DC.
Drawn: .....SW.
Checked: ....NW.

STRUCTURE AND BRIDGE DIVISION
DATE: August 16, 2019

SOUTH TRESTLE
DREDGE PLAN

Plan No.	Sheet No.
SK–02	2 of 3



NOTE:
(1) 1 FT OVERDREDGE ALLOWANCE

SECTION C
SK–03 — SK–03
SOUTH TRESTLE DREDGE SECTION
Scale: 1" = 30'

Exisiting
SB I–64

Exisiting
NB I–64

DREDGE AREA 1		
Location	Northing	Easting
DA1-01	3253397.12	12125199.91
DA1-02	3523170.17	12125339.41
DA1-03	3522306.22	12125453.22
DA1-04	3521246.02	12125509.21
DA1-05	3520888.93	12125493.55
DA1-06	3520706.82	12125457.96
DA1-07	3520715.36	12125409.56
DA1-08	3520793.60	12125429.49
DA1-09	3521490.13	12125372.66
DA1-10	3522262.37	12125409.86
DA1-11	3522418.70	12125363.93
DA1-12	3523065.84	12125282.14
DA1-13	3523377.18	12125184.74
Area (sf):	204290.10	
Area (acres):	4.6899	

DREDGE AREA 2		
Location	Northing	Easting
DA2-01	3523438.86	12124722.37
DA2-02	3523415.79	12124851.88
DA2-03	3522735.31	12124940.38
DA2-04	3522727.96	12124910.88
DA2-05	3523385.39	12124781.14
DA2-06	3523464.68	12124712.27
Area (sf):	41062.94	
Area (acres):	0.9427	

DREDGE AREA 3		
Location	Northing	Easting
DA3-01	3521503.62	12125421.63
DA3-02	3520787.14	12125122.58
DA3-03	3520815.36	12125067.76
DA3-04	3521525.56	12125164.88
Area (sf):	49643.33	
Area (acres):	1.1397	

DREDGE AREA 4		
Location	Northing	Easting
DA4-01	3520123.83	12125264.81
DA4-02	3519949.13	12125388.34
DA4-03	3519925.16	12125354.43
DA4-04	3520098.75	12125246.01
Area (sf):	7433.59	
Area (acres):	0.1707	

TN110577_MM_SOUTH DREDGE PLAN.dwg

PRELIMINARY PLANS
THESE PLANS NOT TO BE
USED FOR CONSTRUCTION

-- RESTRICTED --
CRITICAL INFRASTRUCTURE INFORMATION
Sensitive Security Information

FINAL PLAN REVISIONS SUBMITTAL DATE:							
NO.	DATE	AUTH.	DESCRIPTION	NO.	DATE	AUTH.	DESCRIPTION

Hampton Roads Bridge-Tunnel
VDOT
Hampton Roads Connector Partners
64 HDR | MOTT MACDONALD Design Joint Venture
M M

Scale:

Designed: DG
Drawn: SW
Checked: NW

STRUCTURE AND BRIDGE DIVISION
DATE: August 19, 2019

SOUTH TRESTLE
DREDGE PLAN

Plan No.	Sheet No.
SK–03	2 of 3

ATTACHMENT L-4: SHIRLEY PLANTATION DISPOSAL REQUIREMENTS

Attachment L-4

Material Criteria for Disposal at Shirley Plantation - Sediment

PARAMETER	Dredge Sediment Criteria								
	NJDEP (1997) Residential Soil Cleanup Criteria[3]	EPA Region 3 Screening Levels (EPA, 2014)[4]		EPA Part 503 Biosolids	USGS soil background metals[5]	Exclusion Criteria[6]	Clean Upland Fill Criteria[7]	VA DEQ 305 (b) Screening Criteria	More stringent of preceding two columns[8]
		Industrial Soil	Residential Soil	Exceptional Quality	VA background metal levels				
Metals (mg kg^{-1})									
Aluminum	NA	110,000	7,700			NA	NA		
Antimony	14	47	3.1			410	14		14
Arsenic	20	3.0	0.67	41	5	41	20	33	20
Barium	700	22,000	1,500		244	19,000	700		700
Beryllium	1	230	16		<1	2,000	160		160
Cadmium	39	98	7	39	<0.1	810	39	4.98	4.98
Calcium	NA	NA	NA			NA	NA		
Chromium	NA	NA	NA	0.3	23	1,200	200	111	111
Cobalt	NA	35	2.3			300	NA		
Copper	600	4,700	310	1,500	9	4,300	1,500	149	149
Iron	NA	82,000	5,500			150,000	150,000		150,000
Lead	400	800	400	300	26	800	300	128	128
Magnesium	NA	NA	NA			NA	NA		
Manganese	NA	NA	NA		295	NA	NA		
Mercury	14	12	0.78	17	0.06	100	14	1.06	1.06
Nickel	250	1,100	82	420	9	1,000	250.0	48.6	48.6
Potassium	NA	NA	NA			NA	NA		
Selenium	63	580	39	100		5,100	63		63
Silver	110	580	39			5,100	110	NA	110
Sodium	NA	NA	NA			NA	NA		
Thallium	2	NA	NA		0.5	5	1		1
Vanadium	370	580	39			5,200	370		370
Zinc	1,500	35,000	2,300	2,800	41	7,500	1,500	459	459
PCBS (mg kg^{-1})									
Aroclor 1016	NA	5.2	0.4			21	NA		
Aroclor 1221	NA	0.66	0.15			0.62	NA		
Aroclor 1232	NA	0.66	0.15			0.62	NA		
Aroclor 1242	NA	1.0	0.24			0.74	NA		
Aroclor 1248	NA	1.0	0.24			0.74	NA		
Aroclor 1254	NA	1.0	0.11			0.74	NA		
Aroclor 1260	NA	1.0	0.24			0.74	NA		
Total Aroclor[9]	0	10.5	1.50			25.2	0.49		0.49
Total PCBs, all cogeners	0.49					NA	0.676	0.676	0.676
Pesticides (mg kg^{-1})									
4,4'-DDD	3	9.6	2.2			7.2	3	0.028	0.028
4,4'-DDE	2	6.8	1.6			5.1	2	0.0313	0.0313
4,4'-DDT	2	8.6	1.9			7	2	0.0629	0.0629
DDT, Total								0.5720	*
Aldrin	0.04	0.14	0.031			0.11	0.04		0.04
alpha-Chlordane	NA	NA	NA			NA	NA		
gamma-Chlordane	NA	NA	NA			NA	NA		
Chlordane	NA	8.0	1.8					0.0176	0.0176
Chloropyrifos	NA	82.0	6.2						
delta-BHC	NA	NA	NA			NA	NA		
Diazinon	NA	58	4						
Dieldrin	0.042	0.14	0.03			0.11	0.042	0.0618	0.042
Endosulfan	NA	490	37			3,700	NA		
alpha-Endosulfan	NA	NA	NA			NA	NA		
beta-Endosulfan	NA	NA	NA			NA	NA		
Endosulfan sulfate	NA	NA	NA			NA	NA		
Endrin	17	25	1.8			180	17	0.207	0.207
Endrin aldehyde	NA	NA	NA			NA	NA		
Guthion		250	18						
Endrin ketone	NA	NA	NA			NA	NA		
Heptachlor	0.15	0.51	0.12			0.38	0.15		0.15
Heptachlor epoxide	NA	0.25	0.059			0.19	NA	0.016	0.016
alpha-BHC (Hexachlorocyclhexane)	NA	NA	NA						
beta-BHC (Hexachlorocyclhexane)	NA	NA	NA						
gamma-BHC (Lindane, Hexachlorocyclhexane)	0.52	NA	NA			0.52	0.52	0.00499	0.00499
Kepone	NA	0.23	0.053						
Malathion		1300	120						
Methoxychlor	280	410	31			3,100	280		280
Mirex	NA	0.13	0.03						
Parathion	NA	490	37						
Toxaphene	0.1	2.1	0.48			1.6	0.1		0.1

Attachment L-4

Material Criteria for Disposal at Shirley Plantation - Sediment

PARAMETER	Dredge Sediment Criteria								
	NJDEP (1997) Residential Soil Cleanup Criteria[3]	EPA Region 3 Screening Levels (EPA, 2014)[4]		EPA Part 503 Biosolids	USGS soil background metals[5]	Exclusion Criteria[6]	Clean Upland Fill Criteria[7]	VA DEQ 305 (b) Screening Criteria	More stringent of preceding two columns[8]
		Industrial Soil	Residential Soil	Exceptional Quality	VA background metal levels				
Base Neutral Extractables (mg kg^{-1})									
Acenaphthene	3,400	4,500	350			33,000	3,400	NA	3,400
Acenaphthylene	NA	NA	NA			NA	NA	NA	
Anthracene	10,000	23,000	1,700			170,000	10,000	0.845	0.845
Benzidine	NA	0.01	0.00052			NA	NA		
Benzo(a)anthracene	0.9	2.9	0.15			2.1	0.9	1.05	0.9
Benzo(b)fluoranthene	0.9	2.9	0.15			2.1	0.9		0.9
Benzo(k)fluoranthene	0.9	29	1.5			21	0.9		0.9
Benzo(ghi)perylene	NA	NA	NA			NA	NA		
Benzo(a)pyrene	0.66	0.29	0.015			0.66	0.21	1.45	0.21
bis(2-Chloroethoxy)methane	NA	250	18			1,800	NA		
bis(2-Chloroethyl) ether	0.66	1.0	0.23			0.9	0.66		0.66
2,2'-oxybis(1-Chloropropane) (Bis-2-Chloroisopropyl eth	2,300	NA	NA			2,300	2,300		2,300
bis(2-Ethylhexyl) phthalate	49	160	38			120	49		49
4-Bromophenyl phenyl ether	NA	NA	NA			NA	NA		
Butyl benzyl phthalate	1,100	1,200	280			1,100	910		910
Carbazole	NA	NA	NA			NA	NA		
4-Chloroaniline	230	NA	NA			230	230		230
2-Chloronaphthalene	NA	NA	NA			NA	NA		
4-Chlorophenyl phenyl ether	NA	NA	NA			NA	NA		
Chrysene	9	290	15			210	9	1.29	1.29
Dibenz(a,h)anthracene	0.66	0.29	0.015			0.66	0.21	NA	0.21
Dibenzofuran	NA	100	7.2			NA	NA		
Di-n-butyl phthalate (dibutyl phthalate)	5,700	NA	NA			5,700	5,700		5,700
1,2-Dichlorobenzene	5,100	930	180			10,000	5,100		5,100
1,3-Dichlorobenzene	5,100	NA	NA			5,100	5,100		5,100
1,4-Dichlorobenzene	570	820	62.0			570	13		13
3,3'-Dichlorobenzidine	2	5.1	1.2			3.8	2		2
Diethyl phthalate	10,000	66,000	4,900			490,000	10,000		10,000
Dimethyl phthalate	10,000	NA	NA			10,000	10,000		10,000
Di-n-octyl phthalate	1,100	820	62			1,100	1,100		1,100
2,4-Dinitrotoluene	NA	7.4	1.7			1,200	NA		
2,6-Dinitrotoluene	1	1.5	0.36			620	61		61
1,2-Diphenylhydrazine	NA	2.9	0.67						
Fluoranthene	2,300	3,000	230			22,000	2,300	2.23	2.23
Fluorene	2,300	3,000	230			22,000	2,300	0.536	0.536
Hexachlorobenzene	0.66	1.4	0.33			1.1	0.66		0.66
Hexachlorobutadiene	1	30	6.2			22	1		1
Hexachlorocyclopentadiene	400	490	37			3,700	400		400
Hexachloroethane	6	58	4.3			120	6		6
Indeno(1,2,3-cd)pyrene	0.9	2.9	0.15			2.1	0.9		0.9
Isophorone	1,100	2,400	560			1,800	1,100		1,100
2-Methylnaphthalene	NA	300	23			4,100	NA	NA	
Naphthalene	230	17	3.8			230	20	0.561	0.561
2-Nitroaniline	NA	NA	NA			NA	NA		
3-Nitroaniline	NA	82	18			82	NA		
4-Nitroaniline	NA	120	25			82	NA		
Nitrobenzene	28	22	5.1			280	28		
2-Nitrophenol	NA	NA	NA						
4-Nitrophenol	NA	NA	NA						
N-Nitroso-dimethylamine	NA	0.045	0.0023						
N-Nitroso-di-N-propylamine	0.66	0.33	0.076			0.66	0.25		0.25
N-Nitrosodiphenylamine	140	470	110			350	140		140
Phenanthrene	NA	NA	NA			NA	NA	1.17	1.17
Pyrene	1,700	2,300	170			17,000	1,700	1.52	1.52
1,2,4-Trichlorobenzene	68	26	5.8			400	68		68
Acid Extractables (mg kg^{-1})									
4-Chloro-3-methylphenol	10,000	NA	NA			10,000	10,000		10,000
2-Chlorophenol	280	580	39			5,100	280		280
2,4-Dichlorophenol	170	250	18			1,800	170		170
2,4-Dimethylphenol	1,100	1,600	120			12,000	1,100		1,100
2,4-Dinitrophenol	110	160	12			1,200	110		110
4,6-Dinitro-2-methylphenol	NA	NA	NA			NA	NA		
2-Methylphenol	2,800	NA	NA			2,800	2,800		2,800
4-Methylphenol	2,800	NA	NA			2,800	2,800		2,800
Nonylphenol	NA	NA	NA						
Pentachlorophenol	6	4.0	0.99			9	6		6
Phenol	10,000	25,000	1,800			180,000	10,000		10,000
2,4,5-Trichlorophenol	5,600	8,200	620			62,000	5,600		5,600
2,4,6-Trichlorophenol	62	82	6.2			160	62		62

Attachment L-4

Material Criteria for Disposal at Shirley Plantation - Sediment

PARAMETER	Dredge Sediment Criteria								
	NJDEP (1997) Residential Soil Cleanup Criteria[3]	EPA Region 3 Screening Levels (EPA, 2014)[4]		EPA Part 503 Biosolids	USGS soil background metals[5]	Exclusion Criteria[6]	Clean Upland Fill Criteria[7]	VA DEQ 305 (b) Screening Criteria	More stringent of preceding two columns[8]
		Industrial Soil	Residential Soil	Exceptional Quality	VA background metal levels				
Miscellaneous (mg kg^{-1})									
Ammonia as NH_3-N	NA	NA	NA						
Chloride	NA	NA	NA						
Cyanide, Free									
Cyanide, Total	1,100	20,000	1,600			20,000	1,100		1,100
2,4-Dichlorophenoxy Acetic Acid (2,4-D)	NA	970	69.0						
Fluoride	NA	4,700	310						
Hydrogen sulfide		1,200,000	280,000						
Nitrate (as N)	NA	190,000	13,000						
Nitrite (as N)	NA	12,000	780						
Total PAHs	NA	NA	NA			NA	23		
Total phenols (phenolic compounds)	NA	NA	NA			NA			
Low molecular weight PAHs	NA	NA	NA			NA			
High molecular weight PAHs	NA	NA	NA			NA			
Total PAHS	NA	NA	NA					22.8	22.8
Sulfate	NA	NA	NA						
2-(2,4,5 Trichlorophenoxy) Proprionic acid (Silvex)	NA	660	49			NA	NA		
Dioxin and Furans (ng kg^{-1})									
2,3,7,8-TCDD	NA	22	4.9			18	4.3		4
Tributyltin (mg kg^{-1})									
Tributyltin Compounds	N	25	1.8						
Petroleum (mg kg^{-1})									
Total petroleum hydrocarbons (TPH)									
TPH-DRO									

Attachment L-4

Material Criteria for Disposal at Shirley Plantation - Sediment

PARAMETER	Dredge Sediment Criteria								
	NJDEP (1997) Residential Soil Cleanup Criteria[3]	EPA Region 3 Screening Levels (EPA, 2014)[4]		EPA Part 503 Biosolids	USGS soil background metals[5]	Exclusion Criteria[6]	Clean Upland Fill Criteria[7]	VA DEQ 305 (b) Screening Criteria	More stringent of preceding two columns[8]
		Industrial Soil	Residential Soil	Exceptional Quality	VA background metal levels				

Additional Analyses[10]		Units and Reporting convention	Method	Exclusion Criteria[6]	Clean Fill Criteria[7]
Acid-Base Accounting (ABA) (all samples > 0.25% total S) or H_2O_2 Potential Acidity (PPA)[12] for samples < 5% total-C		Tons CCE acid demand per 1000 Tons Material	EPA 600-2-78-054 or Orndorff et al. (2008)	-10 unless under water table	-5
Pyritic S	Optional; may be substituted for Total-S for ABA	%	EPA 600-2-78-054	2.00	< 0.25
Calcium Carbonate Equivalence		% CCE	AOAC 955.01	NA	NA
Soluble Salts		mmhos cm^{-1} or dS m^{-1}	Saturated paste extract	NA	4 for freshwater sediments. NA for saltwater seds.
Total Organic Carbon		%		NA	≤ 5%
Particle Size Analysis (<2 mm)		%Sand	<2 mm samples	NA	NA
		% Silt		NA	NA
		% Clay		NA	NA
Coarse fragments (>2 mm)			>2 mm samples	NA	

Attachment L-4

Material Criteria for Disposal at Shirley Plantation - Sediment

	Dredge Sediment Criteria								
PARAMETER	**NJDEP (1997) Residential Soil Cleanup Criteria[3]**	**EPA Region 3 Screening Levels (EPA, 2014)[4]**		**EPA Part 503 Biosolids**	**USGS soil background metals[5]**	**Exclusion Criteria[6]**	**Clean Upland Fill Criteria[7]**	**VA DEQ 305 (b) Screening Criteria**	**More stringent of preceding two columns[8]**
		Industrial Soil	**Residential Soil**	**Exceptional Quality**	**VA background metal levels**				

NA= Indicates that criteria are not available.

1. Enter values for **each discrete or composite sample into a separate column**. Also provide an overall average for all samples in the right-hand data column. For samples <RL, use 50% of RL for data entry column. One-half the RL is assumed for chemicals reported as non-detect or < RL; however, these values will **not** be used for exclusionary purposes unless other evidence indicates such. Values in *italics* are not "real" values, but an arbitrary entry.

2. Use **bold highlight** for all individual samples entered in working area and average sample values that exceed the "proposed VA upland fill criteria" in far right column. Highlight all values exceeding proposed VA exclusion criteria in **bold highlight red**. Put arbitrary values calculated as 50% the RL in *italics* . Tip: when copying numbers from your lab analytical results spreadsheets to this spreadsheet, samples with a "<" in front of them are typically at the RL and should reported as 50% RL and put in *italics* .

3. New Jersey Department of Environmental Protection, The Management and Regulation of Dredging Activities and Dredged Material in New Jersey's Tidal Waters. 1997. http://www.njstatelib.org/digit/r588/r5881997.html

4. EPA Region 3 SSLs have been merged into a regional document developed with input from Regions III, VI, and IX. Values from May 2014 version. Values listed for: antimony (metallic), arsenic (inorganic), chromium VI (particulates), lead and compounds, manganese and cadmium values are for diet, methyl mercury, nickel refinery dust, vanadium and compounds. Website: http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm

5. Background metal levels specific to the state of Virginia based on Smith, D.B. et al. 2005. Major- and Trace-Element Concentrations in Soils from Two Continental-Scale Transects of the United States and Canada. USGS Open File Report 2005-1253.http://pubs.usgs.gov/of/2005/1253/pdf/OFR1253.pdf

6. The exclusion standards generally represent the higher of EPA RBC Industrial, NJDEP or EPA 503 EQ levels for a given parameter. Values exceeding these limits are questionable for acceptance. Values proposed by Virginia Tech.

7. Clean fill criteria are based primarily on NJDEP residential cleanup criteria and manually adjusted for known issues with agricultural production/bioavailability. Values between the clean fill and exclusion criteria require a variation of the current management strategy. Values proposed by Virginia Tech.

8.More stringent of VA DEQ and clean fill criteria. These values carried forward to Part I.A of draft 2012 permit.

9. Total Aroclor concentrations are reported as sum of seven individual aroclors.

10. Additional analyses for these basic properties are essential for determining the management or acceptance of dredge materia

11.Not needed, give screening levels for DDD, DDE, DDT

12. PPA method is Orndorff Z. W., W. L. Daniels and D. Fanning. 2008. Reclamation of Disturbed Sulfidic Coastal Plain Sediments Using Lime-Stabilized Biosolids Journal of Environmental Quality 37:1447-1455. PPA analysis also available from Univ. of KY Extension Soil Testing Lab.

Note: Minimum sampling is one composite sample per 50,000 yards of material in situ. A minimum of three samples per material is required regardless of volume. Specific information on sampling procedures should go into the brief descriptions box at the top of the spreadsheet.

ATTACHMENT L-5: DISPOSAL SITE INFORMATION AND MATERIAL ACCEPTANCE LETTERS

Dominion Recycling Center, LLC

November 29, 2018

Mr. Igor Zikus
Project Manager
Hampton Roads Connector Partners
5701 Thurston Avenue, Suite 100
Virginia Beach, Virginia 23455

Re: Materials Management Proposal – Hampton Roads Bridge Tunnel Expansion Project

Dear Mr. Zikus:

Dominion Recycling Center, LLC (DRC) is pleased to provide this Materials Management Proposal associated with the upcoming Hampton Roads Bridge Tunnel (HRBT) Expansion Project. It is our understanding that upwards of 2.8 million cubic yards of excess excavation materials will be generated on the project that will require disposal at an approved facility. These materials may include general excavation spoils, dredge spoils, slurry wall material, jet grout material, and tunnel boring material, some of which may be mixed with or amended with various nonhazardous treatments or conditioners. Our facility is currently equipped to receive and handle this entire volume of material. All materials would be accepted at our facility that is located at 5444 Bainbridge Boulevard in Chesapeake, Virginia. The following is included with our proposal:

1. **Permits**

   There are various operations that are currently performed at our facility, but the primary operations that are applicable to the HRBT expansion project consist of our landfill and borrow pit operations. The landfill is permitted by the Virginia Department of Environmental Quality (VDEQ) as a construction, demolition and debris (CDD) landfill under VDEQ Permit Number 493. Based on the most recent Solid Waste Information and Assessment report that was submitted to VDEQ, the facility has a remaining airspace capacity of 2,300,000 cubic yards. This capacity consists of approximately 300,000 cubic yards of airspace in the existing cell and approximately 2,000,000 cubic yards airspace in the five lined cells that are permitted to be constructed within the existing 45-acre landfill footprint.

   The borrow pit operations are permitted by the Virginia Department of Mines, Minerals and Energy (DMME) under Permit Number 06183AA and encompass approximately 26.2 acres of active sand mining and reclamation on the 43-acre parcel. The DMME permit was amended in February 2018 to allow for acceptance of slurry wall spoils, jet grout spoils, and excavated sand from the Chesapeake Bay Bridge Tunnel Parallel Thimble Shoals Tunnel Project as reclamation fill materials in the borrow pit. The permit amendment allowed for these materials to be conditioned with various polymers and bentonite products

on the project prior to being accepted at our facility as reclamation fill materials. We are currently accepting each material type at our facility. Once the project provides us with additional chemical test data on the tunnel boring material, we will submit an additional amendment to the DMME permit to allow us to accept those materials. The additional amendment will allow us to dispose of the tunnel boring materials as reclamation fill in the borrow pit and prevent unnecessary filling of the landfill airspace, however, the tunnel boring materials would be acceptable for disposal in the landfill without requiring any permit amendments should this be required.

2. Acceptance Criteria

The acceptance criteria at our facility is dependent on the location in which the material will be disposed of. In general, all materials that are accepted for disposal at our facility must be characterized as nonhazardous waste materials. The Management and Reuse of Contaminated Media guidance that has been provided by the VDEQ provides the general acceptance criteria for materials that are permitted for use as reclamation fill in the borrow pit. The Beneficial Fill Industrial Screening Levels would be most applicable to our facility. The concentration of Total Petroleum Hydrocarbons (TPH) must be less than 50 mg/kg to be accepted in the borrow pit and less than 500 mg/kg to be accepted in the lined landfill cells (although VDEQ will typically permit the disposal of soils containing up to 3,000 mg/kg of TPH in lined landfill cells upon submittal of a special waste application). The pH of all materials must demonstrate that the material is not a hazardous waste. The moisture content of all materials entering the borrow pit is not regulated, but all materials that are disposed of in the landfill must not contain any free liquid and must pass the paint filter test. We do not currently have any acceptance limits on salinity.

We have reviewed the Preliminary Sediment Study prepared by Cardno dated July 23, 2018 and have determined that all materials that were tested in the study would be acceptable for disposal as reclamation fill in our borrow pit except for material that is located in the vicinity of boring B-001 since it contained TPH at a concentration of 62 mg/kg. That material would need to be disposed of in one of our lined landfill cells. The only constituent that was detected at concentrations above the Beneficial Fill limits was arsenic, but that constituent is known to be a naturally occurring material in the local soils at concentrations similar to those that were reported by Cardno.

Our facility is generally open from Monday through Friday from 7:00 a.m. to 4:00 p.m. and Saturday from 7:00 a.m. to 12:00 p.m., although alternate work hours may be arranged upon prior agreement. It is anticipated that we will be able to accept up to 5,000 cubic yards of material per day although there are no permit restrictions on the daily volume of reclamation fill that can be received.

3. Material Management Plan

Material from the HRBT project would primarily be managed as reclamation fill in the borrow pit under the assumption that all material will be classified as noncontaminated and nonhazardous. Our plan would be to construct a minimum

of five drying cells within the borrow pit to manage materials that contain excess moisture such as the tunnel boring material. Each drying cell would have a capacity of 5,000 to 10,000 cubic yards. Material would be directly dumped into each drying cell until the capacity was reached. Material would be allowed to drain and dry in each drying cell for approximately one to two weeks and would then be removed and stockpiled for final disposition. Material that does not contain excess moisture would be placed directly into stockpiles. We estimate that the borrow pit property contains approximately 30 acres of land that will be available to perform this task. The landfill property will have approximately 10 acres of land that will be available to perform drying and stockpiling if necessary.

Materials from the HRBT project that can be reused or recycled will be set aside on the property for such purposes. Materials that may fall under this item will include concrete, asphalt pavement and clean sand. We also estimate that upwards of 100,000 cubic yards of silt/clay can be used for construction of our final cap system over the landfill once it reaches capacity.

We look forward to working with you on the project. Please do not hesitate to contact me at (757) 284-9975 or bconley@conleyenvironmental.com if you have any questions or comments or require any additional information.

Sincerely,

Bryan Conley
Managing Member

Via email to mkremen@Dragados-USA.com Tuesday, November 6, 2018

Maksim Kremenchugskiy
Senior Project Engineer – HRBT
Dragados USA, Inc.
5701 Thurston Ave. Suite 100
Virginia Beach, Virginia 23455

Re: Preliminary Estimate, Responses and Scope/Exclusions

Dear Sir,

Below are the requested preliminary estimate, responses and scope/exclusions. Should you have questions, contact me by phone at 804-357-3913 or email at charles@remadeland.com

Very truly,

Charles H. Carter, III

HRBT Spoil Disposal for Dragados ON-SITE DISPOSAL ON WEANACK/SHIRLEY

PRELIMINARY ESTIMATE

Item Description	Quantity	Units	Unit Price	Item Total
MOBILIZATION	1.000	LS	$4,463,135.47	$4,463,135.47
HYDRAULIC UNLOAD	2,800,000.000	CY	$19.91	$55,748,000.00
TREAT AT UNLOADING	2,800,000.000	CY	$2.20	$6,160,000.00

Total ==========> $66,371,135.47

HRBT Tunnel Spoils for Dragados ON-SITE DISPOSAL ON WEANACK/SHIRLEY

Scope Clarifications:

For Hydraulic Unloaded material, production is based on unloading at a rate of 2400 CY per 12-hour shift. We have assumed a conversion rate of 1.4 TN/CY, or 3,920,000 tons. We assume a 30% dry weight of total wet weight of material. We will treat the dry weight basis with agricultural lime at a rate of 0.015 of dry weight, requiring 17,640 tons of ag lime during the process of unloading and placement on-site.

Exclusions:
Additional lime, additives or binders and treatment
Contaminated materials or materials not meeting permit acceptance
Offsite disposal

HRBT Spoil Disposal for Dragados OFF-SITE DISPOSAL AT LANDFILL

Item Description	Quantity	Units	Unit Price	Item Total
MOBILIZATION	1.000	LS	$5,292,623.03	$5,292,623.03
HYDRAULIC UNLOAD ON SITE DISPOSAL	400,000.000	CY	$34.67	$13,868,000.00
MECHANICALLY UNLOAD	2,400,000.000	CY	$79.88	$191,712,000.00
TREAT AT UNLOADING	2,800,000.000	CY	$42.00	$117,600,000.00

Total ==========> $328,472,623.03

HRBT Tunnel Spoils for Dragados OFF-SITE DISPOSAL AT LANDFILL

Scope Clarifications:

400,000 CY dredge material will be hydraulically unloaded and disposed on site at Weanack/Shirley Plantation

2,400,000 CY dredge material will be mechanically unloaded and transported to a laydown area at Shirley Plantation.

For Mechanical Unloaded material, production is based on unloading at a rate of 2400 CY per 12-hour shift. We have assumed a conversion rate of 1.4 TN/CY, or 3,360,000 tons. We will treat the material with cement at a rate of 15% of total wet weight, requiring 504,000 tons of cement. Once the material has been mixed and dried, it will be reloaded into on road trucks for disposal at a landfill.

For Hydraulic Unloaded material, production is based on unloading at a rate of 2400 CY per 12-hour shift. We have assumed a conversion rate of 1.4 TN/CY, or 560,000 tons. We assume a 30% dry weight of total wet weight of material. We will treat the dry weight basis with agricultural lime at a rate of 0.015 of dry weight, requiring 8,400 tons of ag lime during the process of unloading and placement on-site.

Exclusions:
Additional lime, additives or binders and treatment
Contaminated materials or materials not meeting permit acceptance

Responses to Questions for HRBT Spoil Disposal for Dragados ON-SITE DISPOSAL ON WEANACK/SHIRLEY

Question #1: Confirming today able to receive, handle, and take up to 2.8 MCY.
Answer #1: There are no limits on receiving, handling and taking up to 2.8 MCY of acceptable material at 2,500 cy/day for placement here.

Question #2: Permits currently held to allow to take this material
Answer #2: Permits for handling dredged material for on-site disposal:

DEQ VPA 00579 permit for placement of dredged materials
DEQ VWP 11-0942 permit for dock construction, operation, & maintenance
(with corollary Corps permit 11-V0942 & VMRC #11-0942 permit for same)
DEQ VAR 052417 permit for industrial stormwater management at the dock

Question #3: Limits on material handling by category:
Answer #3:

- TPH — No limit on TPH, limits on TPH parameters in VPA 00579 permit
- pH — pH & Acid-Base Accounting to meet VPA 00579 permit
- moisture content — No limit
- salinity, and — No limit for Sodium or Chloride
- volume (weight) per day — No limit
- DDE and DDT — No limit other than VPA 00579 permit and:

Parameter	SSL
4,4'-DDD	7.2 mg/kg
4,4'-DDE	5.1 mg/kg
4,4'-DDT	7.0 mg/kg
DDT, Total	N/A

Question #4: Advise that you have received dredged material:
Answer #4: Weanack has handled dredged materials for on-site and off-site disposal for over 20 years. Weanack can accept non-hazardous material the landfill can accept to transport to landfill, and, can accept material meeting the VPA 00579 permit for placement on site.

Question #5: Exact language to address from VDOT: "The Offeror demonstrates it has identified and secured commitments from one or more disposal sites to accept the full quantity of excavated tunnel material and this material, inclusive of any added conditioners or treatments, will be eligible for disposal at such location(s)".
Answer #5: Dragados can bring up to 2.8 MCY from the HRBT project to the facility meeting Weanack's DEQ VPA 00579 permit acceptance criteria to be received, offloaded, transported to, and placed in, on-site basins, assuming reasonable business terms and conditions.

Question #6: State "we have at our facility approximately X acres that allows for handling and drying of materials before final placement…"
Answer #6: The Weanack facility has more than 10 acres for handling and drying of materials before final placement or disposal. Weanack has additional land, which should it be needed, can be employed in the drying of materials.

Responses to Questions for HRBT Spoil Disposal for Dragados OFF-SITE DISPOSAL AT LANDFILL

Question #1: Confirming today able to receive, handle, and take up to 2.8 MCY.
Answer #1: There are no limits on receiving, handling or taking up to 2.8 MCY of acceptable material at 2,500 cy/day for disposal off-site at landfill.

Question #2: Permits currently held to allow to take this material
Answer #2: Permits for handling dredged material for on-site disposal:
DEQ VWP 11-0942 permit for dock construction, operation, & maintenance
(with corollary Corps permit 11-V0942 & VMRC #11-0942 permit for same)
DEQ VAR 052417 permit for industrial stormwater management at the dock

Question #3: Limits on material handling by category:
Answer #3: Can accept materials meeting landfill acceptance levels for TPH, pH, salinity, moisture content, volume (weight) per day, DDE, and DDT. Regarding moisture content limits of landfill acceptance, addition of binders and drying on site here can bring material in excess of landfill moisture limits to landfill acceptance levels.

Question #4: Advise that you have received dredged material:
Answer #4: Weanack has handled dredged materials for on-site and off-site disposal for over 20 years. Weanack can accept non-hazardous material the landfill can accept to transport to landfill, and, can accept material meeting the VPA 00579 permit for placement on site.

Question #5: Exact language to address from VDOT: "The Offeror demonstrates it has identified and secured commitments from one or more disposal sites to accept the full quantity of excavated tunnel material and this material, inclusive of any added conditioners or treatments, will be eligible for disposal at such location(s)".
Answer #5: Dragados can bring up to 2.8 MCY from the HRBT project to the facility meeting landfill acceptance criteria to be received, offloaded, solidified, dried, transported to, and placed in, landfill, assuming reasonable business terms and conditions. Regarding moisture content limits of landfill acceptance, addition of binders and drying on site here can bring material in excess of landfill moisture limits to landfill acceptance levels.

Question #6: State "we have at our facility approximately X acres that allows for handling and drying of materials before final placement…"
Answer #6: The Weanack facility has more than 10 acres for handling and drying of materials before final placement or disposal. Weanack has additional land, which should it be needed, can be employed in the drying of materials.

####

Via email to mkremen@Dragados-USA.com Tuesday, November 20, 2018

Maksim Kremenchugskiy
Senior Project Engineer – HRBT
Dragados USA, Inc.
5701 Thurston Ave. Suite 100
Virginia Beach, Virginia 23455

Re: Addendum to Preliminary Estimate, Responses and Scope/Exclusions of Nov 6

Dear Sir,

Below is addendum to the requested preliminary estimate, responses and scope/exclusions. Should you have questions, contact me by phone at 804-357-3913 or email at charles@remadeland.com

Very truly,

Charles H. Carter, III

HRBT Spoil Disposal for Dragados at WEANACK/SHIRLEY

PRELIMINARY ESTIMATE

Item Description	Quantity	Units	Unit Price	Item Total
MOBILIZATION	1.00	LS	$4,800,000	$4,800,000
HYDRAULIC UNLOAD & ON-SITE DISPOSAL	600,000	CY	$31.50	$18,900,000
MECHANICAL UNLOAD & OFF-SITE DISPOSAL	1,000,000	CY	$104.00	$104,000,000
TREAT AT UNLOADING	1,600,000	CY	$51.00	$81,600,000

Total ==========> $209,300,000

HRBT Tunnel Spoils for Dragados at WEANACK/SHIRLEY

Scope Clarifications:

600,000 CY dredge material will be hydraulically unloaded and disposed on site at Weanack/Shirley Plantation

1,000,000 CY dredge material will be mechanically unloaded and transported to a laydown area at Shirley Plantation for disposal off-site at Subtitle D landfill

For Hydraulic Unloaded material, production is based on unloading at a rate of 2400 CY per 12-hour shift. We have assumed a conversion rate of 1.4 TN/CY, or 840,000 tons. We assume a 30% dry weight of total wet weight of material. We will treat the dry weight basis with agricultural lime at a rate of 0.015 of dry weight, and 25% safety margin requiring 4,725 tons of ag lime during the process of unloading and placement on-site.

For Mechanical Unloaded material, production is based on unloading at a rate of 2400 CY per 12-hour shift. We have assumed a conversion rate of 1.4 TN/CY, or 1,400,000 tons. We will treat the material with cement at a rate of 15% of total wet weight, requiring 210,000 tons of cement. Once the material has been mixed and dried, it will be reloaded into on road trucks for disposal at a landfill.

Exclusions:
Additional lime, additives or binders and treatment
Contaminated materials or materials not meeting permit acceptance

Responses to Questions for HRBT Spoil Disposal for Dragados

Question #1: The quantities have gone down as a result of VDOT updates to our design. Please update your pricing to show 1.6 MCY of material. 600,000 coming from the Portal Excavation. These quantities do not account for bulking.

Answer #1: See answers above

Question #2: Please provide a price for Mechanical unloading and storage at your facility. We are anticipating that this is a possibility.

Answer #2: See answers above

Question #3: Can you please provide an explanation for the large variance in treatment of the material between onsite and offsite disposal?

Answer #3: On-site disposal is for "cleaner" material while off-site disposal is for material requiring Subtitle D (modern sanitary) landfill disposal. The on-site disposal site requires a lower cost of capital, lower operational costs, lower cost binders, lower cost treatment protocols, lower transportation costs, less man power, and less equipment than an off-site disposal site. Off-site disposal is more expensive than on-site disposal of "cleaner" material at every turn, often by significant amounts.

Question #4: Would you entertain us self-performing the unloading at your facility? IF yes please provide a separated price for just disposal at your facility.

Answer #4: The dock facility is currently under exclusive lease for the next 5 years and those costs are incorporated into the *Preliminary Estimate, Responses and Scope/Exclusions of Nov 6* and this *Addendum of Nov 20* to it.

###

PRECON
MARINE, INC.

Heavy Marine Construction, Underwater Construction,
Structural Repairs, Inspections and Call Out Services

December 05, 2018

Dragados USA
Mr. Max Kremenchugskiy
Senior Project Engineer-HRBT
5701 Thurston Rd.
Virginia Beach, VA
23455

RE: HRBT Spoils Transporting & Unloading

Mr. Max Kremenchugskiy

This letter is to confirm that Precon Marine, Inc. (PMI) will be working hand-in-hand with Conley Environmental on the HRBT project and will be providing a turn key solution for handling ALL of the Non Hazardous spoils from this project.

PMI owns and operates it's own Tug Boats and Barges and will utilize 265' "Hopper Barges" to carry spoils from the HRBT Project Site to 1401 Precon Drive. PMI operates 1200 feet of bulk headed riverfront property and plan to unload all materials directly on to dump trucks. If those dump trucks cannot go directly to Dominion Recycling PMI will have a 4 acre site set up with containment to receive the spoils for "Drying" prior to reloading on dump trucks.

PMI will be sending pricing over in the near future for those services.

Thank you for this opportunity, should you have any questions please do not hesitate to call or email me at any time.

Sincerely,

Matthew Miller
President
Precon Marine, Inc.

Cc: Pete Gibbs
Precon Marine, Inc.