



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

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April 11, 2018

Mr. Michael Liberati
DuPont Corporate Remediation Group
Chestnut Run Plaza 715-236
Wilmington, DE 19805

VIA ELECTRONIC MAIL

**Re: Fall 2017 Constitution Park Maintenance Inspection Memorandum
Former DuPont Waynesboro Plant, On-Site
Waynesboro, Virginia
EPA ID# VAD003114832**

Dear Mr. Liberati:

This letter acknowledges the receipt and review of the Fall 2017 Constitution Park Maintenance Inspection Memorandum, submitted to the Virginia Department of Environmental Quality, Office of Remediation Programs (Department) by AECOM on behalf of the E.I du Pont Nemours and Company (DuPont) on February 1, 2018.

The Department has no comments on the submittal.

If you have any additional technical questions, you may contact me at 703-583-3825 or by email at Kurt.Kochan@deq.virginia.gov.

Sincerely,

A handwritten signature in cursive script, appearing to read "Kurt W. Kochan".

Kurt W. Kochan
Corrective Action Project Manager
Office of Remediation Programs

cc: DuPont Waynesboro Correspondence File
Bill Reese, Josh Collins, AECOM

Memorandum

To	Michael Liberati, DuPont CRG Ralph Stahl, DuPont CRG	Page	1 of 2
CC	Nancy Grosso, DuPont CRG Ceil Mancini, AECOM		
Subject	Fall 2017 Constitution Park BMA Maintenance Inspection Former DuPont Waynesboro Site, Area of Concern 4		
From	Bill Reese, AECOM Joshua Collins, AECOM		
Date	February 1, 2018		

This memorandum summarizes the Fall 2017 Maintenance Inspection for the Constitution Park Bank Management Area (BMA); the second post-construction inspection following completion of construction in February 2017. The maintenance inspection was conducted December 6th 2017, as described in the Maintenance Plan included as Appendix M of the Basis of Design Report, Phase 1A BMAs, South River AOC 4 (Anchor QEA et al., 2016). The purpose of the post-construction inspection was to identify potential BMA maintenance needs, focusing on vegetative development, bank stability, and the integrity of the installed bank remediation features. Additional attachments to this memorandum include:

- Table 1 – Maintenance inspection log
- Appendix A - Photographic log

Findings

The results of the post-construction inspection were generally consistent with the Spring maintenance inspection, with the exception of increased cover by the invasive plant, Japanese knotweed. A brief summary of findings is provided below; complete details of the maintenance inspection are included in Table 1.

Vegetation

- While some areas exhibited healthy growth of planted vegetation, most areas were dominated by invasive plant growth and incidental loss of planted species as a result of invasive species herbicide treatments.
- Planted shrubs and trees that did not survive the summer were removed. Replacement plantings will be installed upon successful control of invasive species.

Stability

- River banks generally maintained a consistent bank angle throughout the BMA as designed, unchanged since construction;
- There was no evidence of recent erosion or at risk trees;

Installed Features

- Rock toe features were intact with on-going, increased sediment deposition, filling in the interstices;
- LWD features were stable and anchor chains were intact;
- Coir logs were intact, however, there were a few areas of wear associated with foot traffic along the toe of the slope;
- Geocell and erosion control fabric were intact; however, exposed geocell and erosion control fabric were documented in several areas associated with increased foot traffic and dead vegetation due to invasive species control measures;
- There was no evidence of local scour at the toe of slope.

The Fall 2017 maintenance inspection conducted at the Constitution Park BMA confirmed the integrity of the installed bank stabilization. Extensive vegetative colonization by the invasive Japanese knotweed and subsequent herbicide treatments have impacted planted vegetation to some degree. Vegetative growth will be re-evaluated during the Spring 2018 post-construction inspection.

PATH FORWARD

The following maintenance activities are planned for the stabilized Constitution Park BMA as a result of the observations made during the inspection:

- Reassess the approach to invasive species management at the Constitution Park BMA. DuPont will develop the revised approach during the winter/spring 2018 and implement it at the Constitution Park BMA in coordination with the City of Waynesboro as part of a broader invasive species management program for the South River;
- Replant dead shrubs and trees; and
- Continue observation of exposed geocell and erosion control fabric.

REFERENCES

Anchor QEA, AECOM, and E.I. du Pont de Nemours and Company. 2016. Basis of Design Report, Phase 1A Bank Management Areas, South River Area of Concern 4. September 2016.

Tables

Table 1
BMA Inspection Log
Fall 2017 Constitution Park BMA Maintenance Inspection Memorandum
Former DuPont Waynesboro Site, Area of Concern 4

Station (ft) ¹	Undercutting				Exposed Roots			At Risk Trees			Installed Stabilization Features Intact					Local Scour			Overall Change Since Previous Inspection (Y/N)
	Approximate Bank Angle (Degrees)	Consistent Grade (Y/N) ²	Notes	Photo # (Appendix A)	Exposed Roots (L/M/H) ³	Notes	Photo # (Appendix A)	At Risk Trees Present (Y/N + #) ⁴	Notes	Photo # (Appendix A)	Rock Toe/ LWD (Y/N) ⁵	Geocell (Y/N) ⁶	Erosion Control Fabric (Y/N) ⁷	Notes	Photo # (Appendix A)	Scour Present (Y/N) ⁷	Notes	Photo # (Appendix A)	
00 + 25	30	N (see notes)	Lower bank ~30 degrees; Upper bank ~55 degrees	1	NA	No woody plants adjacent to edge of water	2	N	No woody plants adjacent to edge of water	1	NA	NA	NA		1,2	Y	Low presence of scour 5' upstream of 00 - 25	3	N
00 + 00	40	N (see notes)	Lower bank ~30 degrees; Upper bank ~55 degrees	4	NA	No woody plants adjacent to edge of water; minimal vegetation present on bank	4,5,6	N	No woody plants adjacent to edge of water	4,5	NA	Y	Y	Coir logs intact, some erosion control fabric is visible	4,5,7	N	Potential river access point observed; evidence of foot traffic along the toe of slope, along coir logs	4,7	N
00 + 50	45	Y		8	NA	No woody plants adjacent to edge of water; evidence of invasive vegetation maintenance	8	N	No woody plants adjacent to edge of water	8	NA	Y (beginning to be exposed at toe of slope)	Y (exposed throughout)	Geocell intact, but beginning to be exposed near the toe of the slope between 00 + 00 and 00 + 50	7,8	N	Evidence of foot traffic along the toe of slope, along coir logs	7,8	N
00 + 100	40	N (see notes)	Lower bank ~10 degrees (rock toe); Upper bank ~45 degrees	9	NA	No woody plants adjacent to edge of water; evidence of recent invasive vegetation maintenance on slope	9,10,11	N	No at-risk trees present; no exposed roots	10	Y (rock toe)	Y	Y	Rock toe along bank and constructed river access steps intact	9,10,11	N	Depression adjacent to boulders	11	N
00 + 150	45	N (see notes)	Lower bank <5 degrees (rock toe); Upper bank ~45 degrees	12	NA	Boulders with silt and LWD at toe of slope; evidence of invasive vegetative maintenance	13	N	No woody plants adjacent to edge of water	12	Y (LWD and Rock toe)	Y	Y	Installed geocell and erosion control fabric intact	12	N	Silt filling in behind LWD and in boulders	12,13	N
00 + 200	55	Y		14	NA	Evidence of recent invasive vegetation maintenance	14	N	No woody plants adjacent to edge of water	14	NA	Y	Y (edge exposed along entire bank)	Installed coir logs, geocell and erosion fabric intact	14	N	Potential river access point observed; evidence of foot traffic along the toe of slope, along coir logs	14	N
00 + 250	55	Y		15	NA	Evidence of recent vegetation maintenance, including removal of deceased shrub	15	N	No woody plants adjacent to edge of water	15,16	NA	Y	Y (edge exposed along toe of slope)	Geocell intact; edge of erosion control fabric exposed near toe of slope	15	N		15	N
00 + 300	70	Y		17	NA	Minimal vegetation present	17	N	No exposed roots; no at-risk trees	17	NA	Y	Y (exposed near toe of slope)	Erosion control fabric exposed throughout; geocells and installed coir logs intact.	17	N		17	N
00 + 350	70	Y		18	NA	Evidence of recent invasive vegetation maintenance	18	N	No woody plants adjacent to edge of water	18,19	NA	Y (some geocell exposed below observation platform)	Y (exposed throughout)	Coir log 5' downstream slightly loose and appears to have shifted towards the stream;	18,20	N	Installed coir logs intact, but showing signs of wear and potential for scour	18,20	N
00 + 400	60	Y		21	NA	Minimal vegetation present	21	N	No exposed roots; no at-risk trees	21,22,23	NA	Y (small amount exposed upstream around black walnut)	Y (exposed near bottom of bank)	limited geocell exposed around base of black walnut tree; erosion control fabric exposed throughout, particularly near bottom of bank	21,22	N		21,22,23	N
00 + 450	50	Y		24	NA	Established herbaceous vegetation at top of bank	24	N	No exposed roots; no at-risk trees;	24	NA	Y	Y (40% exposed)	Erosion control fabric exposed near bottom of bank	24	N		24	N
00 + 500	40	Y	Decreased vertical bank height (~6')	25	NA	Evidence of vegetative maintenance including removal of a small dead planted tree	25	N	No woody plants adjacent to edge of water	25	NA	Y	Y (70% exposed)	Erosion fabric exposed near toe of bank	25	N		25	N
00 + 525	15	Y		26	NA	Minimal native vegetation present with limited areas of invasive knotweed	27	N	No woody plants adjacent to edge of water	26,28	NA	Y (small amount exposed along coir log and edge of remediation)	Y (85% exposed)	Majority of erosion control fabric exposed and not vegetated	26,28	N		26,27,28	N

Notes:

1. Inspection station is described as the distance (feet) upstream (-) or downstream (+) from the start of the BMA (00); example, Station 00 + 50' is 50 feet downstream from the start of the BMA
2. A significant deviation from continuous bank slope or break in grade may be used as an indicator of undercutting; consistent bank grade is evaluated as Y (yes) or N (no)
3. The extent to which roots are exposed may provide a relative measure of the magnitude of apparent erosion; extent of exposed roots is evaluated as L (low), M (moderate), H (high), or NA (not applicable- no exposed roots)
4. At-risk trees (i.e., trees that lean towards the river) typically have a greater potential to fall into the river dislodge the bank soil and erosion-control products immediately around and above the tree; presence of at-risk trees is evaluated as Y (yes, plus number of at-risk trees) or N (no)
5. Installed rock toe and large woody debris (LWD) features are monitored to ensure that they are anchored and determine whether material has dislodged, or been eroded, or moved downstream; these installed features are evaluated as Y (yes, intact), N (no, not intact), or NA (not applicable- no installed features to monitor)
6. Installed geocell and erosion control fabric are monitored to ensure that they are intact and determine whether material is exposed or visible; these installed features are evaluated as Y (yes, intact), N (no, not intact), or NA (not applicable- no installed features to monitor)
7. The presence of local scour is assessed at the toe and center of the bank, per inspection station, as well as approximately 25 feet upstream and downstream of the start and end of the BMA; the presence of scour is evaluated as Y (yes) or N (no)

Appendix A

Client Name: DuPont		Site Location: STM-01 (Constitution Park)	Project No. 60532579
Photo No. 1	Date: 12/6/2017		
Direction Photo Taken: West			
Description: Station 00 – 25' ~30 degree bank angle; no at-risk trees present; both native and invasive vegetation present.			

Photo No. 2	Date: 12/6/2017	
Direction Photo Taken: Northwest		
Description: Station 00 – 25' No woody plants adjacent to river with exposed roots observed; however, invasive vegetation is present.		

Client Name: DuPont		Site Location: STM-01 (Constitution Park)	Project No. 60532579
Photo No. 3	Date: 12/6/2017		
Direction Photo Taken: Southwest			
Description: Station 00 – 25' Low presence of scour ~5' upstream of inspection point.			

Photo No. 4	Date: 12/6/2017	
Direction Photo Taken: West		
Description: Station 00 + 00' ~40 degree bank angle; patches of invasive vegetation present; coir logs intact; no scour present; heavy foot traffic down the bank and along coir logs.		

Client Name: DuPont	Site Location: STM-01 (Constitution Park)	Project No. 60532579
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Photo No. 5	Date: 12/6/2017
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Direction Photo Taken: Northwest
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Description: Station 00 + 00' No at-risk trees present; limited native vegetation present with patches of invasive vegetation; coir logs intact; minimal scour present; foot traffic along toe of slope evident; edge of erosion control fabric is exposed along toe of slope.



Photo No. 6	Date: 12/6/2017
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Direction Photo Taken: Southwest
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Description: Station 00 + 00' Invasive vegetation present with limited patches of native vegetation; minimal foot traffic along toe of slope; minimal scour present.



Client Name: DuPont		Site Location: STM-01 (Constitution Park)	Project No. 60532579
Photo No. 7	Date: 12/6/2017		
Direction Photo Taken: Southwest			
Description: Between station 00 + 00' and 00 + 50' Installed erosion control fabric intact, but some exposed; heavy foot traffic along toe of slope; evidence of knotweed vegetation maintenance along bank; geocell intact, but beginning to be exposed near the toe of the slope.			

Photo No. 8	Date: 12/6/2017	
Direction Photo Taken: West		
Description: Station 00 + 50' ~45 degree consistent bank angle; no at-risk trees present; no exposed roots; coir logs intact; no scour present; evidence of foot traffic along toe of slope, along coir logs; evidence of recent invasive vegetation maintenance.		

Client Name:

DuPont

Site Location:

STM-01 (Constitution Park)

Project No.

60532579

Photo No.
9**Date:**
12/6/2017**Direction Photo
Taken:**

West

Description:

Station 00 + 100'

~40 degree bank angle;
no at-risk trees present;
no exposed roots; no
scour present; installed
rock toe intact with
evidence of sediment
deposition; installed
river access steps
intact.

**Photo No.**
10**Date:**
12/6/2017**Direction Photo
Taken:**

Southwest

Description:

Station 00 + 100'

No at-risk trees
present; no exposed
roots; no scour present;
installed rock toe intact
with evidence of
sediment deposition;
evidence
of foot traffic along toe
of slope, along coir
logs.



Client Name: DuPont		Site Location: STM-01 (Constitution Park)	Project No. 60532579
Photo No. 11	Date: 12/6/2017		
Direction Photo Taken: West			
Description: Station 00 + 100' Sediment deposition adjacent to rock toe boulders; evidence of recent invasive vegetation maintenance on slope.			

Photo No. 12	Date: 12/6/2017	
Direction Photo Taken: West		
Description: Station 00 + 150' ~45 degree bank angle; no at-risk trees present; no exposed roots; no scour present; installed rock toe and large woody debris (LWD) intact; installed geocell and erosion control fabric intact; evidence of sediment deposition.		

Client Name: DuPont		Site Location: STM-01 (Constitution Park)	Project No. 60532579
Photo No. 13	Date: 12/6/2017	 A photograph showing a rocky shoreline next to a body of water. A large log is partially submerged, secured with a metal chain. The rocks are grey and jagged. The background shows a steep bank covered in dry, brown vegetation and trees with bare branches.	
Direction Photo Taken: Northwest			
Description: Station 00 + 150' Installed rock toe intact with evidence of sediment deposition; evidence of invasive vegetative maintenance.			

Photo No. 14	Date: 12/6/2017	 A photograph of a steep bank covered in dry, brown vegetation. A mesh fabric, likely erosion control, is visible on the bank. A foot path is present down the bank. The bank is adjacent to a body of water.
Direction Photo Taken: West		
Description: Station 00 + 200' ~55 degree consistent bank angle; no exposed roots; no scour present; exposed erosion control fabric; foot path present down bank and along coir logs; evidence of recent invasive vegetation maintenance; installed coir logs, geocell and erosion fabric intact.		

Client Name: DuPont		Site Location: STM-01 (Constitution Park)	Project No. 60532579
Photo No. 15	Date: 12/6/2017		
Direction Photo Taken: West			
Description: Station 00 + 250' ~55 degree consistent bank angle; no exposed roots; no scour present; evidence of recent vegetation maintenance, including removal of deceased shrub; installed coir logs and geocell intact; edge of erosion control fabric exposed near toe of slope.			

Photo No. 16	Date: 12/6/2017	
Direction Photo Taken: southwest		
Description: Station 00 + 250' Evidence of recent vegetative maintenance; evidence of foot traffic along coir logs; geocells and installed coir logs intact.		

Client Name: DuPont		Site Location: STM-01 (Constitution Park)	Project No. 60532579
Photo No. 17	Date: 12/6/2017		
Direction Photo Taken: West			
Description: Station 00 + 300' ~70 degree consistent bank angle; no exposed roots; no at-risk trees; no scour present;; minimal vegetation present; erosion control fabric exposed near toe of slope; geocell and installed coir logs intact.			

Photo No. 18	Date: 12/6/2017	
Direction Photo Taken: West		
Description: Station 00 + 350' ~70 degree consistent bank angle; no exposed roots; no at-risk trees; recent vegetative maintenance, exposed erosion control fabric throughout; installed coir logs intact, but showing signs of wear and potential for scour.		

Client Name: DuPont		Site Location: STM-01 (Constitution Park)	Project No. 60532579
Photo No. 19	Date: 12/6/2017		
Direction Photo Taken: Southwest			
Description: Station 00 + 350' Edge of installed erosion control fabric exposed; installed coir logs intact.			

Photo No. 20	Date: 12/6/2017	
Direction Photo Taken: Northwest		
Description: Station 00 + 350' Edge of installed erosion control fabric exposed along toe of slope; installed coir logs intact, but showing signs of wear and potential for scour.		

Client Name: DuPont		Site Location: STM-01 (Constitution Park)	Project No. 60532579
Photo No. 21	Date: 12/6/2017		
Direction Photo Taken: West			
Description: Station 00 + 400' ~60 degree consistent bank angle; no exposed roots; no at-risk trees; no scour present; minimal vegetation present; erosion control fabric exposed near toe of slope.			

Photo No. 22	Date: 12/6/2017	
Direction Photo Taken: Southwest		
Description: Station 00 + 400' Installed coir logs intact; erosion control fabric exposed near bottom of bank; some geocell and erosion control fabric exposed around base of black walnut tree.		

Client Name: DuPont		Site Location: STM-01 (Constitution Park)	Project No. 60532579
Photo No. 23	Date: 12/6/2017		
Direction Photo Taken: Northwest			
Description: Station 00 + 400' Installed coir logs intact; erosion control fabric exposed throughout, particularly near bottom of bank.			

Photo No. 24	Date: 12/6/2017	
Direction Photo Taken: West		
Description: Station 00 + 450' ~50 degree consistent bank angle; no exposed roots; no at-risk trees; no scour present; established herbaceous vegetation at top of bank; erosion control fabric exposed near bottom of bank.		

Client Name: DuPont		Site Location: STM-01 (Constitution Park)	Project No. 60532579
Photo No. 25	Date: 12/6/2017		
Direction Photo Taken: West			
Description: Station 00 + 500' ~40 degree consistent bank angle; no exposed roots; no at-risk trees; no scour present; evidence of vegetative maintenance including removal of a small dead planted tree; invasive knotweed present; erosion fabric exposed near toe of bank.			

Photo No. 26	Date: 12/6/2017	
Direction Photo Taken: West		
Description: Station 00 + 525' ~15 degree consistent bank angle; no exposed roots; no at-risk trees; no scour present; majority of erosion control fabric exposed and not vegetated.		

Client Name: DuPont		Site Location: STM-01 (Constitution Park)	Project No. 60532579
Photo No. 27	Date: 12/6/2017		
Direction Photo Taken: South			
Description: Station 00 + 525' No exposed roots; no at-risk trees; no scour present; previously repaired stabilization features intact; limited areas of invasive vegetation present; majority of erosion control fabric is not vegetated.			

Photo No. 28	Date: 12/6/2017	
Direction Photo Taken: South		
Description: Station 00 + 525' No exposed roots; no at-risk trees; no scour present; majority of erosion control fabric exposed and not vegetated.		