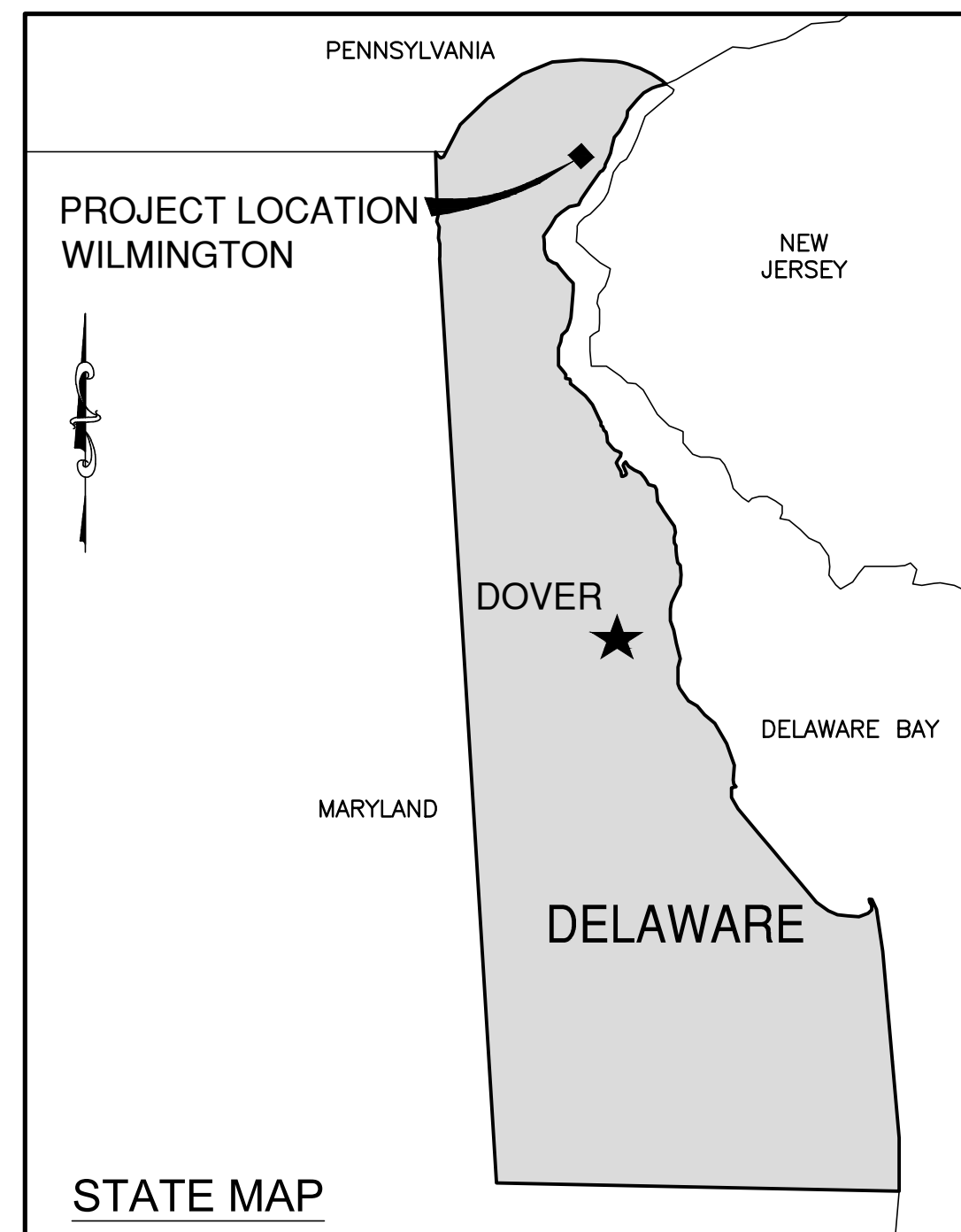


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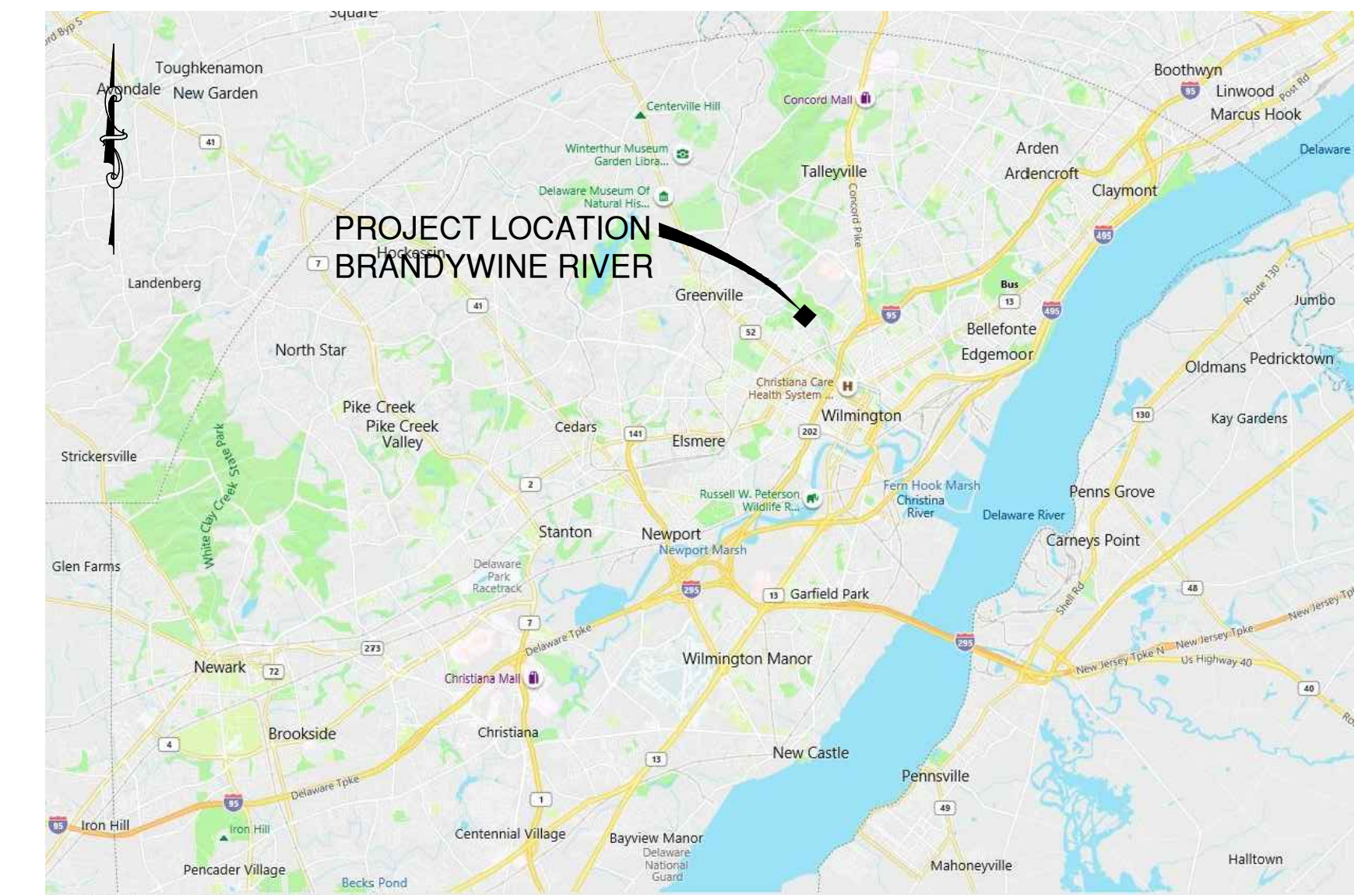
BRANDYWINE SHAD 2020

WILMINGTON, DE.

DAMS 3, 4, AND 6 REMOVAL



DRAWING LIST				
SHEET NO.	SHEET DESCRIPTION	DATE	REVISION	STATUS
D3-01	DAM #3, OVERALL EXISTING CONDITIONS	5-26-20	-	CLIENT REVIEW
D3-02	DAM #3, OVERALL PROPOSED CONDITIONS	5-26-20	-	CLIENT REVIEW
D3-03	DAM #3, PROFILES AND SECTIONS	5-26-20	-	CLIENT REVIEW
D4-01	DAM #4, OVERALL EXISTING CONDITIONS	5-26-20	-	CLIENT REVIEW
D4-02	DAM #4, OVERALL PROPOSED CONDITIONS	5-26-20	-	CLIENT REVIEW
D4-03	DAM #4, PROFILES AND SECTIONS	5-26-20	-	CLIENT REVIEW
D6-01	DAM #6, OVERALL EXISTING CONDITIONS	5-26-20	-	CLIENT REVIEW
D6-02	DAM #6, OVERALL PROPOSED CONDITIONS	5-26-20	-	CLIENT REVIEW
D6-03	DAM #6, PROFILES AND SECTIONS	5-26-20	-	CLIENT REVIEW



CLIENT REVIEW
 NOT FOR CONSTRUCTION
 5-26-20

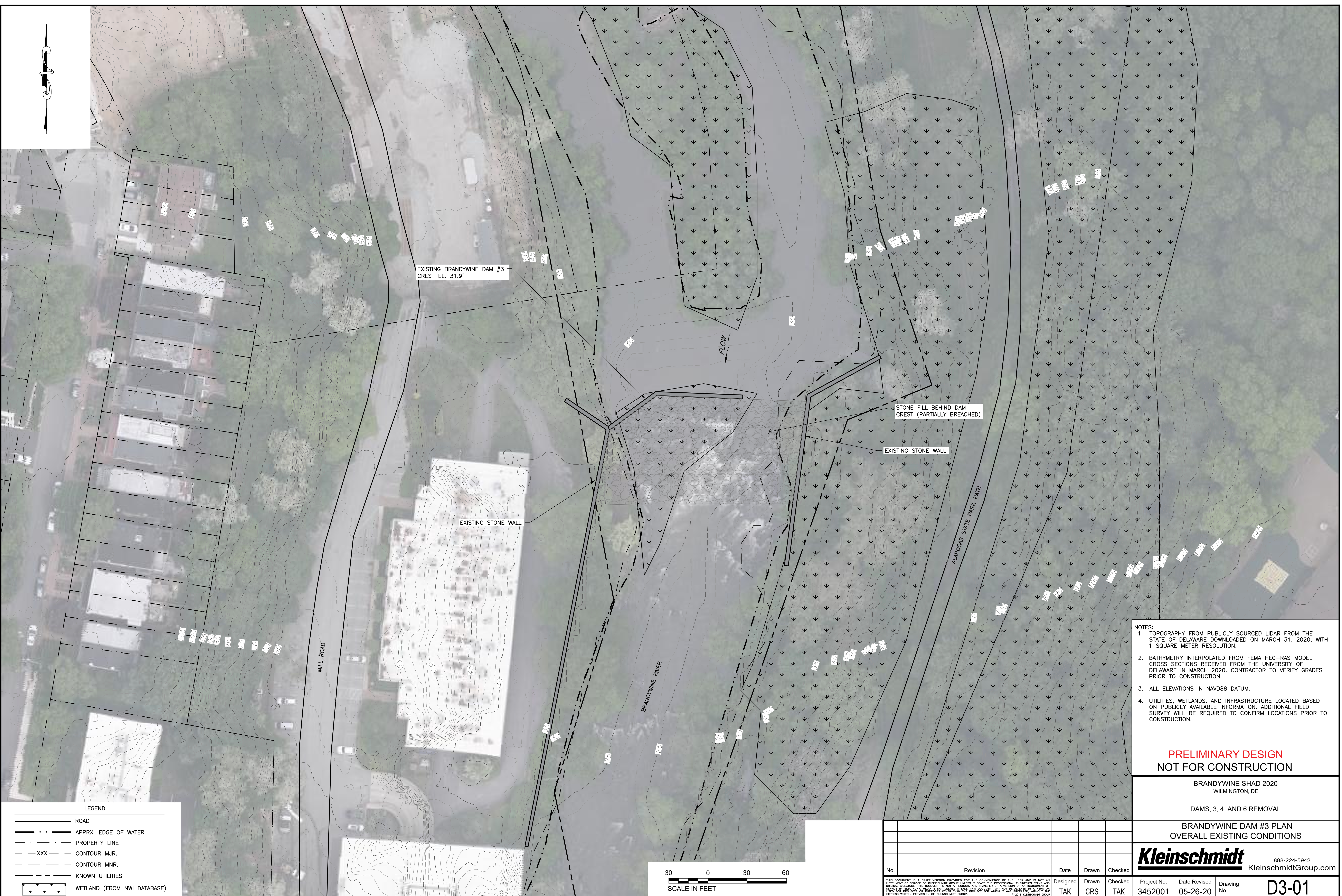


24x36 = FULL SCALE

0 1" 2" 3"



PRINTED: May 26, 2020 - 8:38 PM J:\3452\001\Drawings\CAD\3452001 DAM #3 SHT 01.dwg



EXISTING BRANDYWINE DAM #3
CREST EL. 31.9'

STONE FILL BEHIND DAM
CREST (PARTIALLY BREACHED)

EXISTING STONE WALL

EXISTING STONE WALL

ALAPOCAS STATE PARK PATH

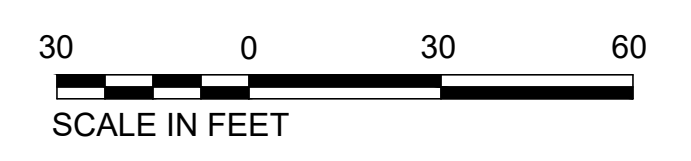
MILL ROAD

BRANDYWINE RIVER

FLOW

LEGEND

	ROAD
	APPRX. EDGE OF WATER
	PROPERTY LINE
	CONTOUR M.J.R.
	CONTOUR M.N.R.
	KNOWN UTILITIES
	WETLAND (FROM NWI DATABASE)



- NOTES:**
1. TOPOGRAPHY FROM PUBLICLY SOURCED LIDAR FROM THE STATE OF DELAWARE DOWNLOADED ON MARCH 31, 2020, WITH 1 SQUARE METER RESOLUTION.
 2. BATHYMETRY INTERPOLATED FROM FEMA HEC-RAS MODEL CROSS SECTIONS RECEIVED FROM THE UNIVERSITY OF DELAWARE IN MARCH 2020. CONTRACTOR TO VERIFY GRADES PRIOR TO CONSTRUCTION.
 3. ALL ELEVATIONS IN NAVD88 DATUM.
 4. UTILITIES, WETLANDS, AND INFRASTRUCTURE LOCATED BASED ON PUBLICLY AVAILABLE INFORMATION. ADDITIONAL FIELD SURVEY WILL BE REQUIRED TO CONFIRM LOCATIONS PRIOR TO CONSTRUCTION.

**PRELIMINARY DESIGN
NOT FOR CONSTRUCTION**

BRANDYWINE SHAD 2020
WILMINGTON, DE

DAMS, 3, 4, AND 6 REMOVAL

BRANDYWINE DAM #3 PLAN
OVERALL EXISTING CONDITIONS

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KleinschmidtGroup.com

No.	Revision	Date	Drawn	Checked

Designed TAK	Drawn CRS	Checked TAK	Project No. 3452001	Date Revised 05-26-20	Drawing No. D3-01
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24x36 = FULL SCALE

0 1" 2" 3"

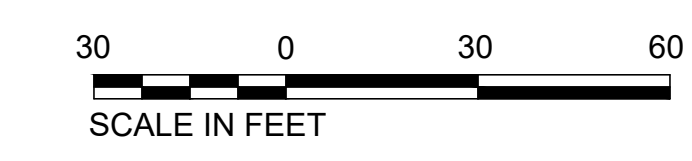


PRINTED: May 26, 2020 - 9:21 PM J:\3452\001\Drawings\CAD\3452001 DAM #3 SH1 02.dwg



LEGEND

	ROAD
	APPRX. EDGE OF WATER
	PROPERTY LINE
	CONTOUR M.J.R.
	CONTOUR M.N.R.
	KNOWN UTILITIES
	WETLAND (FROM NWI DATABASE)



No.	Revision	Date	Drawn	Checked

- NOTES:**
1. TOPOGRAPHY FROM PUBLICLY SOURCED LIDAR FROM THE STATE OF DELAWARE DOWNLOADED ON MARCH 31, 2020, WITH 1 SQUARE METER RESOLUTION.
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 5. EXTRA RUBBLE NOT PLACED IN ON-SITE FILL AREAS SHALL BE DISPOSED OF AT AN APPROVED OFF-SITE LOCATION.

**PRELIMINARY DESIGN
NOT FOR CONSTRUCTION**

BRANDYWINE SHAD 2020
WILMINGTON, DE

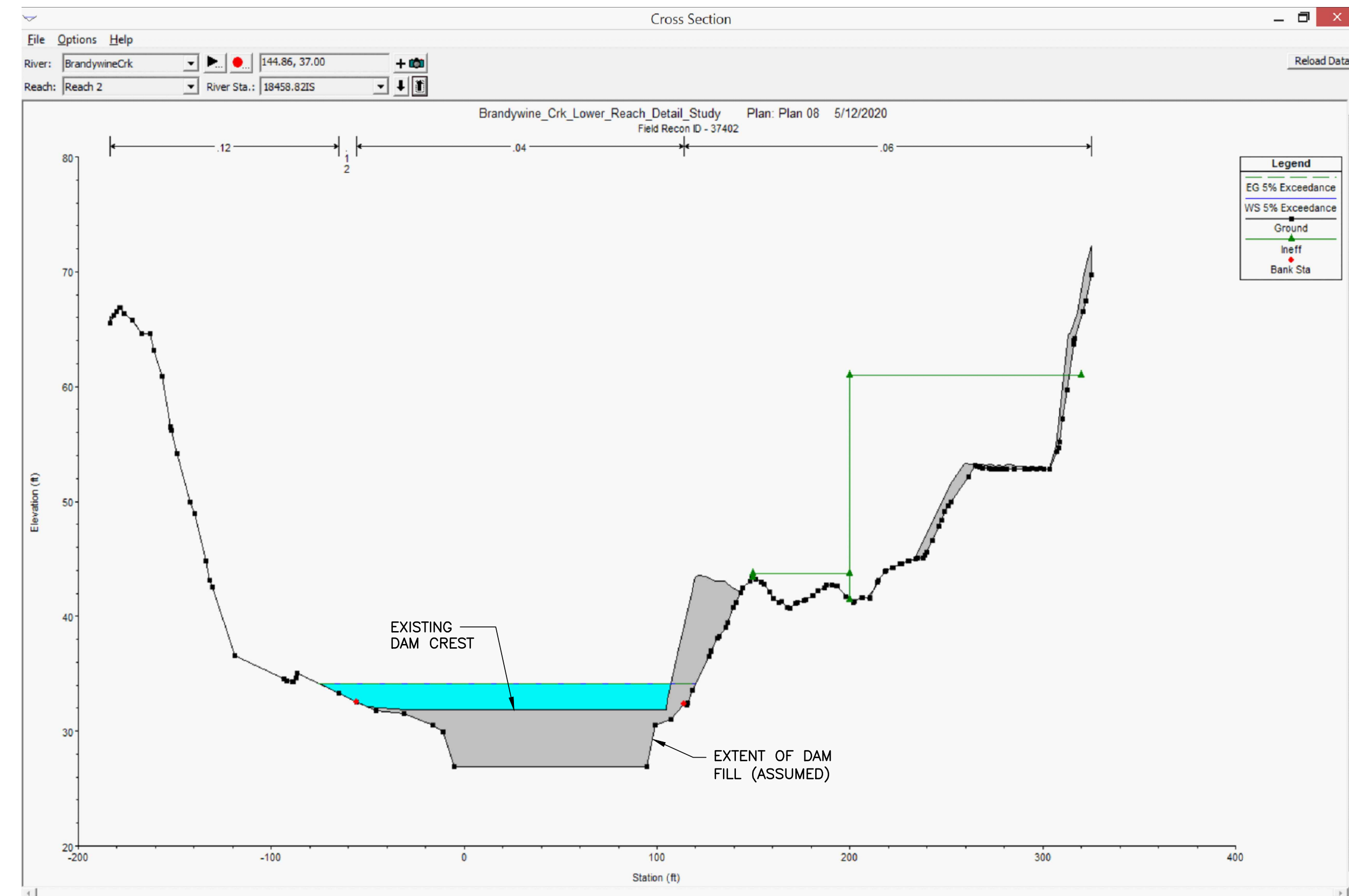
DAMS, 3, 4, AND 6 REMOVAL

BRANDYWINE DAM #3 PLAN
OVERALL PROPOSED CONDITIONS

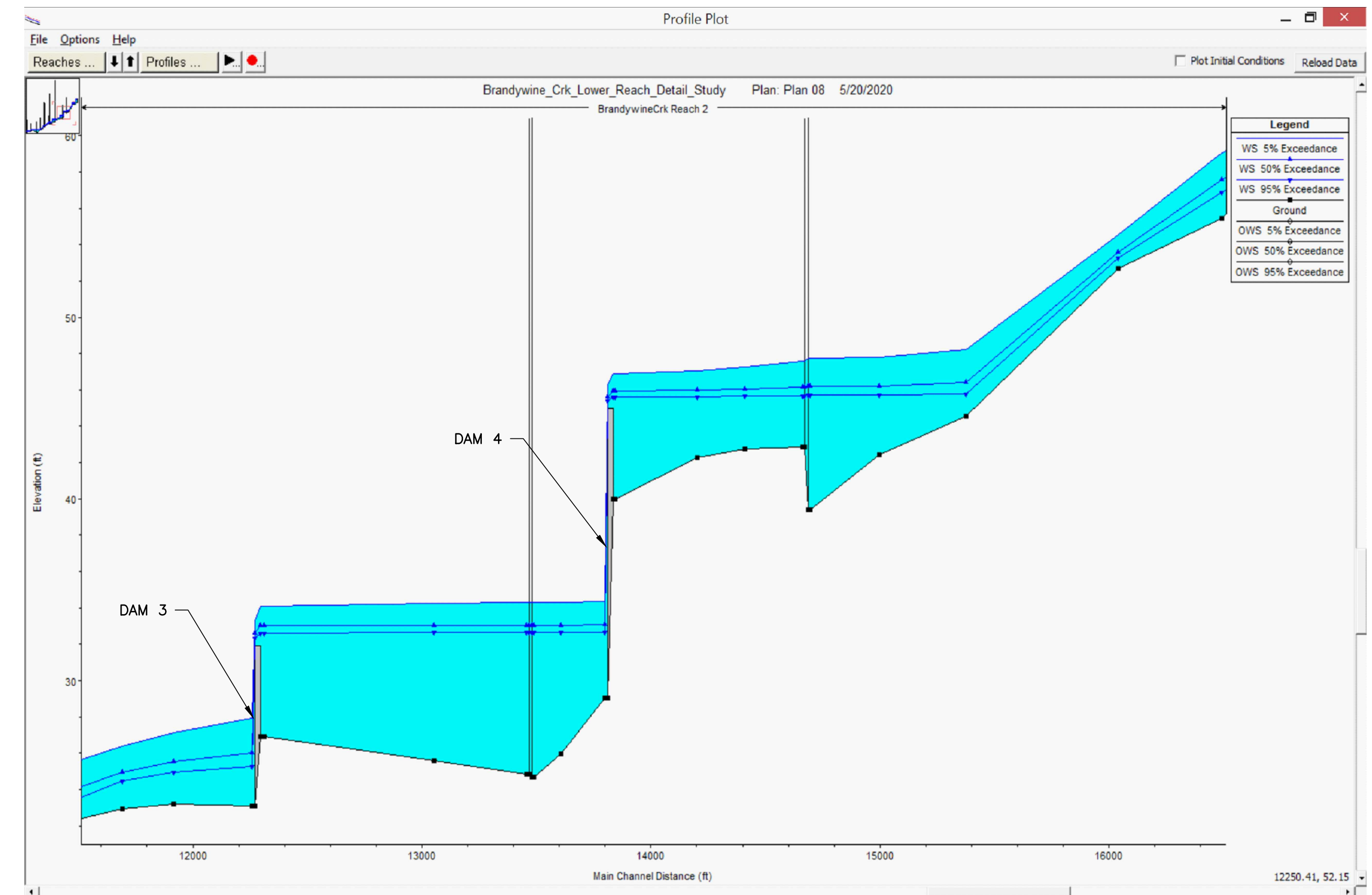
Kleinschmidt 888-224-5942
KleinschmidtGroup.com

Project No.	Date Revised	Drawing No.
3452001	05-26-20	D3-02

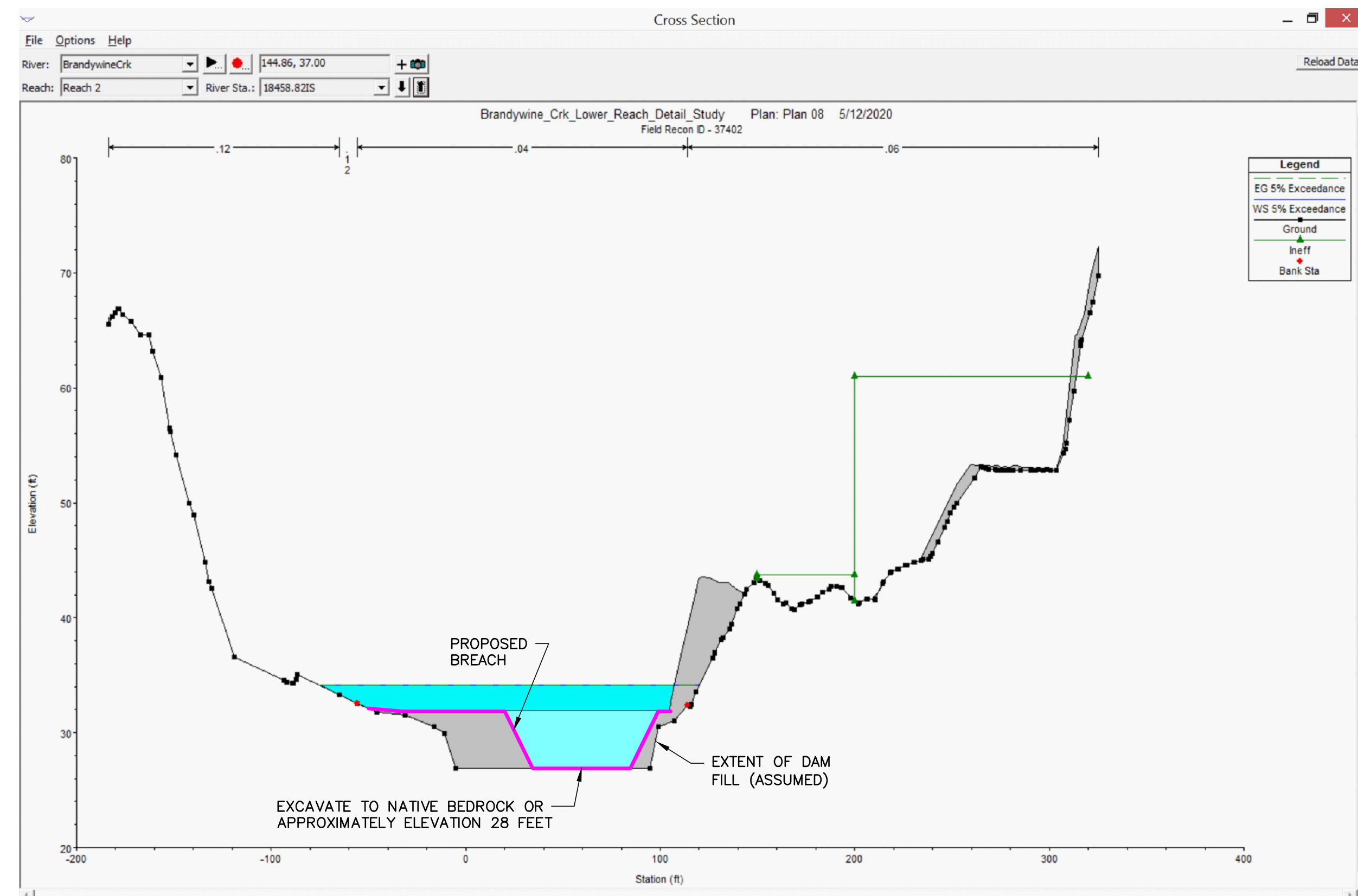
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EXISTING DAM 3 CROSS SECTION

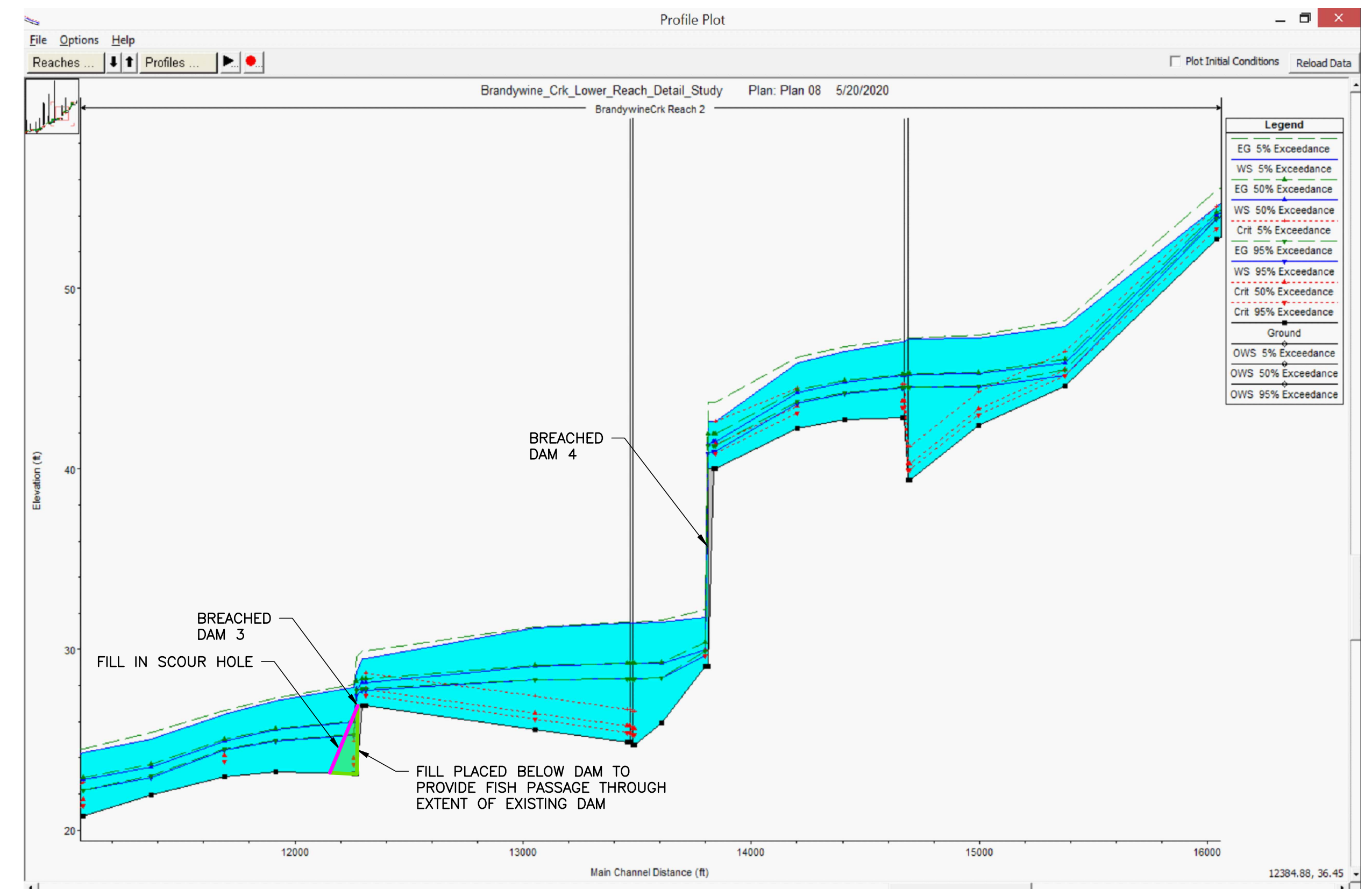


EXISTING DAM 3 & 4 PROFILE



PROPOSED DAM 3 CROSS SECTION

- NOTES:
 1. BREACH SIDE SLOPES TO BE 3:1 OR PER ENGINEER FIELD DIRECTION.
 2. ESTIMATED MINIMUM BREACH WIDTH AT BREACH INVERT: 51 FEET



PROPOSED DAM 3 & 4 PROFILE

PRELIMINARY DESIGN
NOT FOR CONSTRUCTION

No.	Revision	Date	Drawn	Checked
-	-	-	-	-
-	-	-	-	-

BRANDYWINE SHAD 2020
 WILMINGTON, DE

DAM 3, 4, AND 6 REMOVAL

BRANDYWINE DAM #3
 PROFILES AND SECTIONS

Kleinschmidt
 KleinschmidtGroup.com

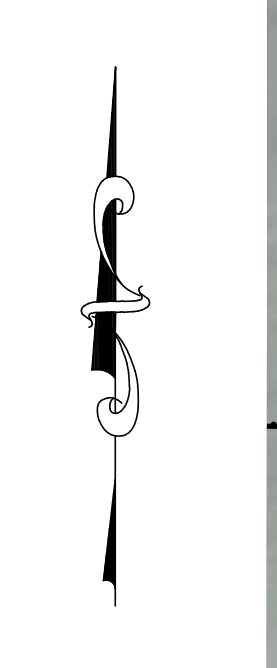
888-224-5942

Project No. 3452001
 Date Revised 05-26-20
 Drawing No. D3-03



NOTES:
 1. CROSS SECTION AND PROFILE IMAGES WERE PROVIDED BY THE UNIVERSITY OF DELAWARE.

3"
2"
1"
0
24x36 = FULL SCALE



- NOTES:
1. TOPOGRAPHY FROM PUBLICLY SOURCED LIDAR FROM THE STATE OF DELAWARE DOWNLOADED ON MARCH 31, 2020, WITH 1 SQUARE METER RESOLUTION.
 2. BATHYMETRY INTERPOLATED FROM FEMA HEC-RAS MODEL CROSS SECTIONS RECEIVED FROM THE UNIVERSITY OF DELAWARE IN MARCH 2020. CONTRACTOR TO VERIFY GRADES PRIOR TO CONSTRUCTION.
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PRELIMINARY DESIGN
NOT FOR CONSTRUCTION

BRANDYWINE SHAD 2020
WILMINGTON, DE

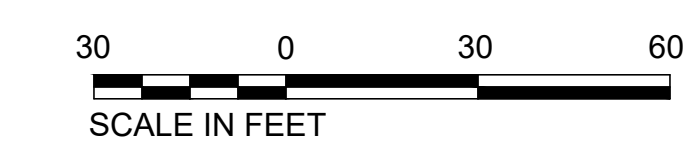
DAMS, 3, 4, AND 6 REMOVAL

BRANDYWINE DAM #4 PLAN
OVERALL EXISTING CONDITIONS

Kleinschmidt 888-224-5942
KleinschmidtGroup.com

LEGEND

	ROAD
	APPRX. EDGE OF WATER
	PROPERTY LINE
	CONTOUR M.J.R.
	CONTOUR M.N.R.
	KNOWN UTILITIES
	WETLAND (FROM NWI DATABASE)



No.	Revision	Date	Drawn	Checked

Designed TAK	Drawn CRS	Checked TAK	Project No. 3452001	Date Revised 05-26-20	Drawing No. D4-01
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24x36 = FULL SCALE

0 1" 2" 3"



LEGEND

- ROAD
- - - APPRX. EDGE OF WATER
- - - PROPERTY LINE
- - - XXX - - - CONTOUR M.J.R.
- - - CONTOUR M.N.R.
- - - KNOWN UTILITIES
- WETLAND (FROM NWI DATABASE)

- NOTES:**
1. TOPOGRAPHY FROM PUBLICLY SOURCED LIDAR FROM THE STATE OF DELAWARE DOWNLOADED ON MARCH 31, 2020, WITH 1 SQUARE METER RESOLUTION.
 2. BATHYMETRY INTERPOLATED FROM FEMA HEC-RAS MODEL CROSS SECTIONS RECEIVED FROM THE UNIVERSITY OF DELAWARE IN MARCH 2020. CONTRACTOR TO VERIFY GRADES PRIOR TO CONSTRUCTION.
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PRELIMINARY DESIGN
NOT FOR CONSTRUCTION

BRANDYWINE SHAD 2020
WILMINGTON, DE

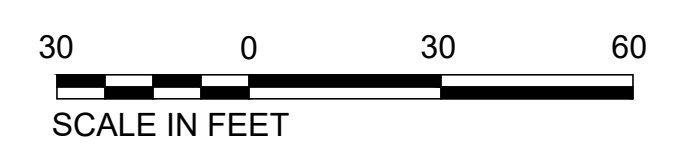
DAMS, 3, 4, AND 6 REMOVAL

BRANDYWINE DAM #4 PLAN
OVERALL PROPOSED CONDITIONS

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888-224-5942
KleinschmidtGroup.com

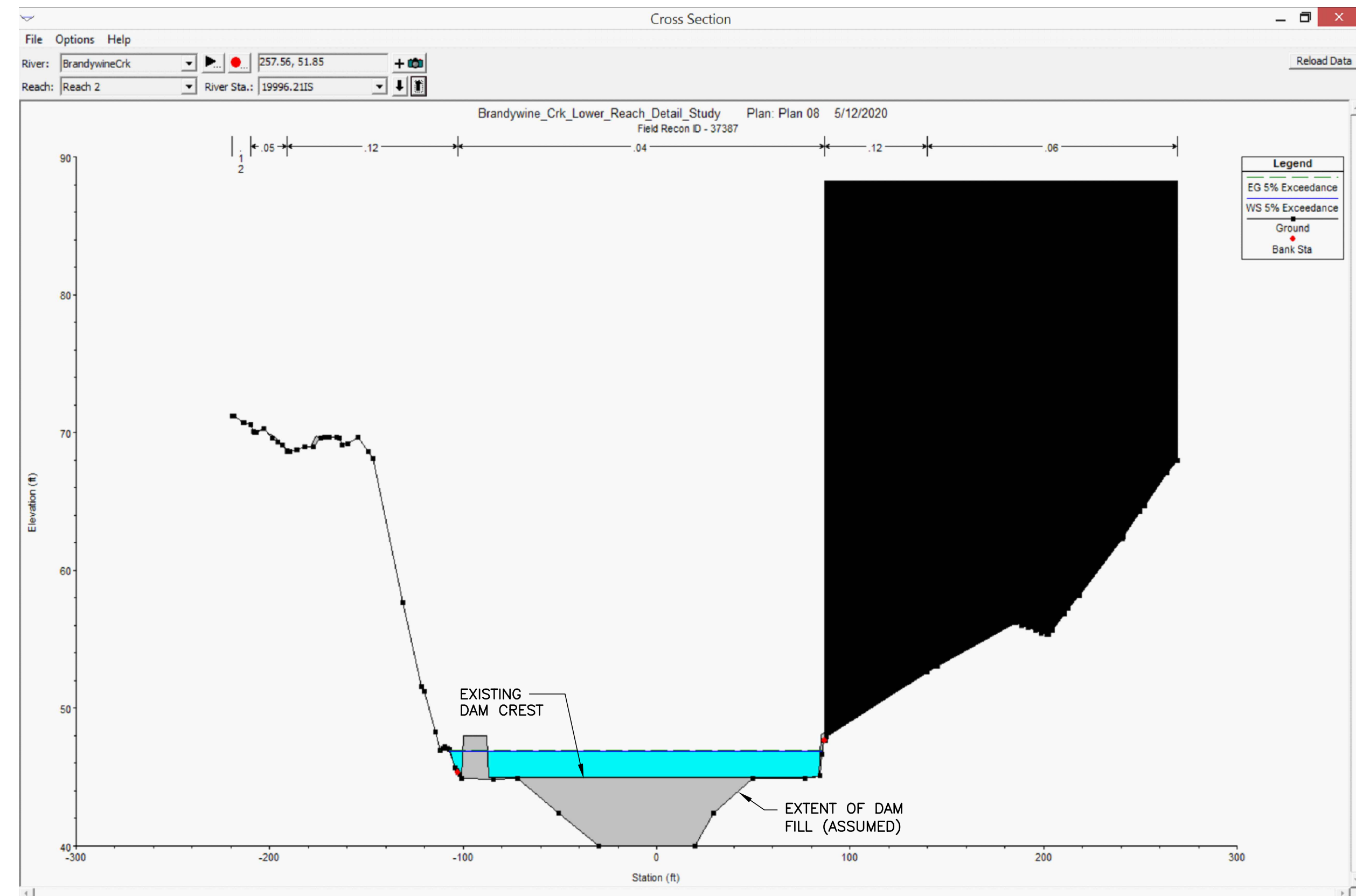
No.	Revision	Date	Drawn	Checked

Project No.	Date Revised	Drawing No.	
3452001	05-26-20	D4-02	

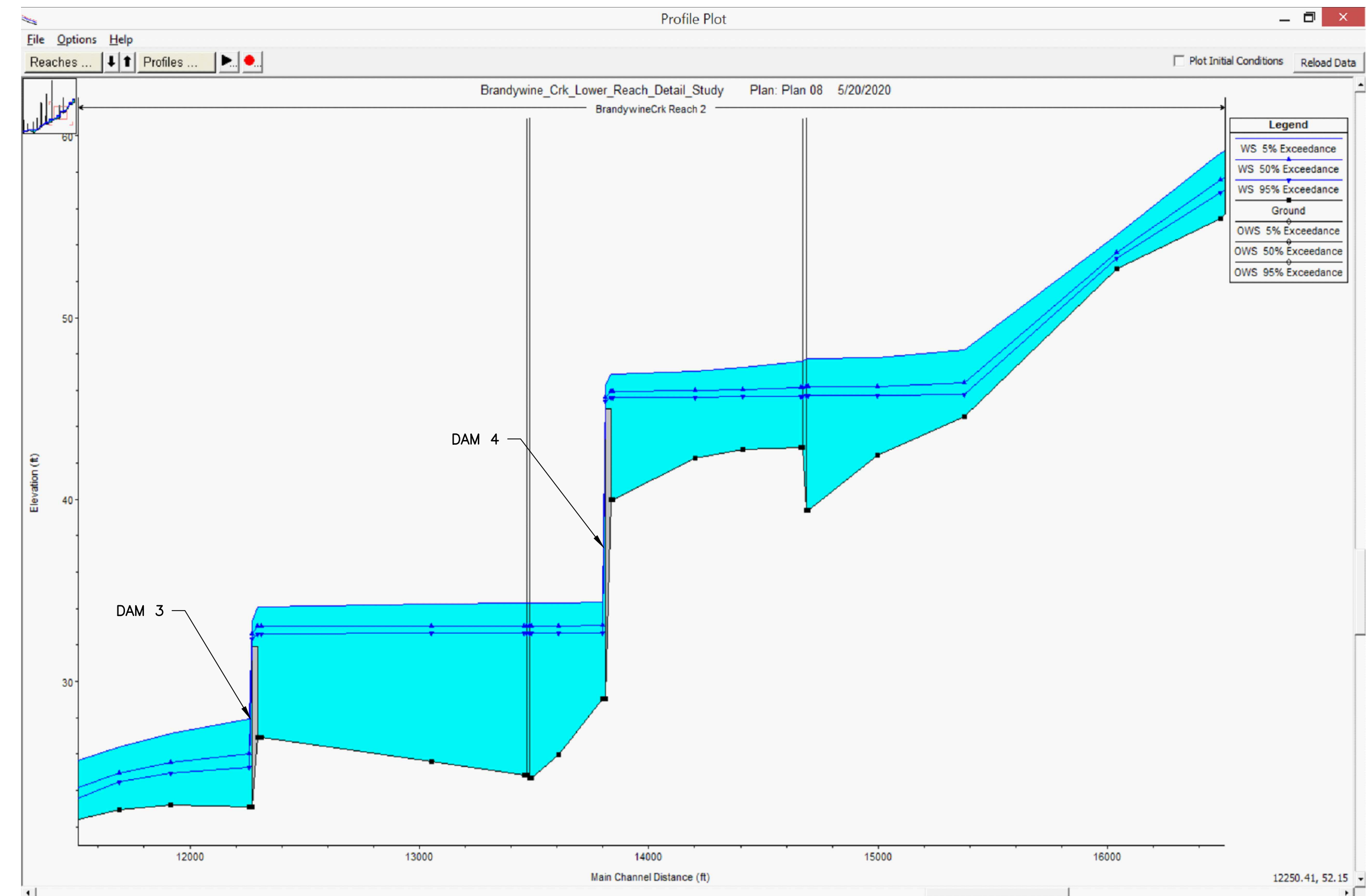


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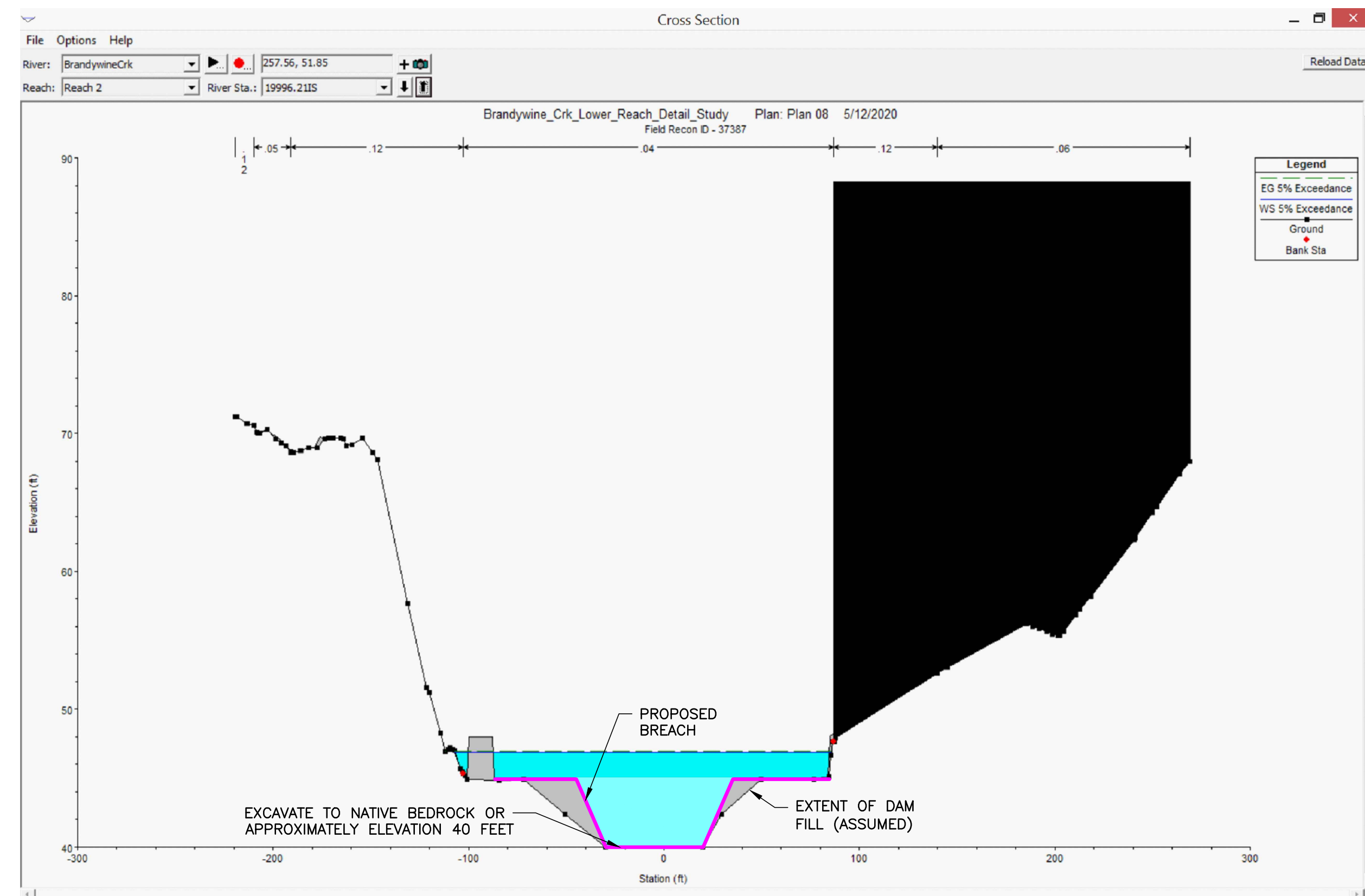
24x36 = FULL SCALE



EXISTING DAM 4 CROSS SECTION

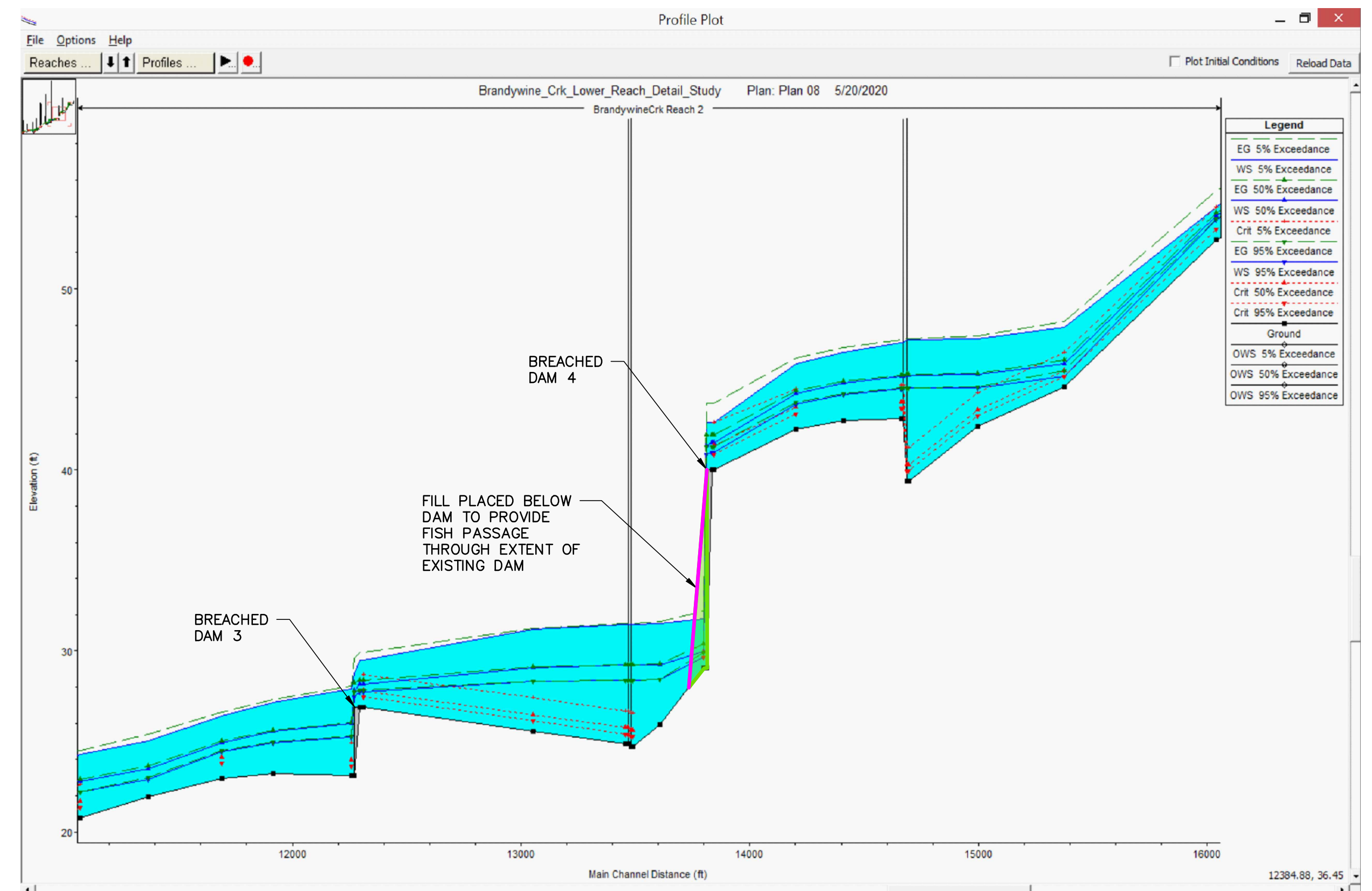


EXISTING DAM 3 & 4 PROFILE



PROPOSED DAM 4 CROSS SECTION

- NOTES:
1. BREACH SIDE SLOPES TO BE 3:1 OR PER ENGINEER FIELD DIRECTION.
 2. ESTIMATED MINIMUM BREACH WIDTH AT BREACH INVERT: 50 FEET



PROPOSED DAM 3 & 4 PROFILE

NOTES:
1. CROSS SECTION AND PROFILE IMAGES WERE PROVIDED BY THE UNIVERSITY OF DELAWARE.



PRELIMINARY DESIGN
NOT FOR CONSTRUCTION

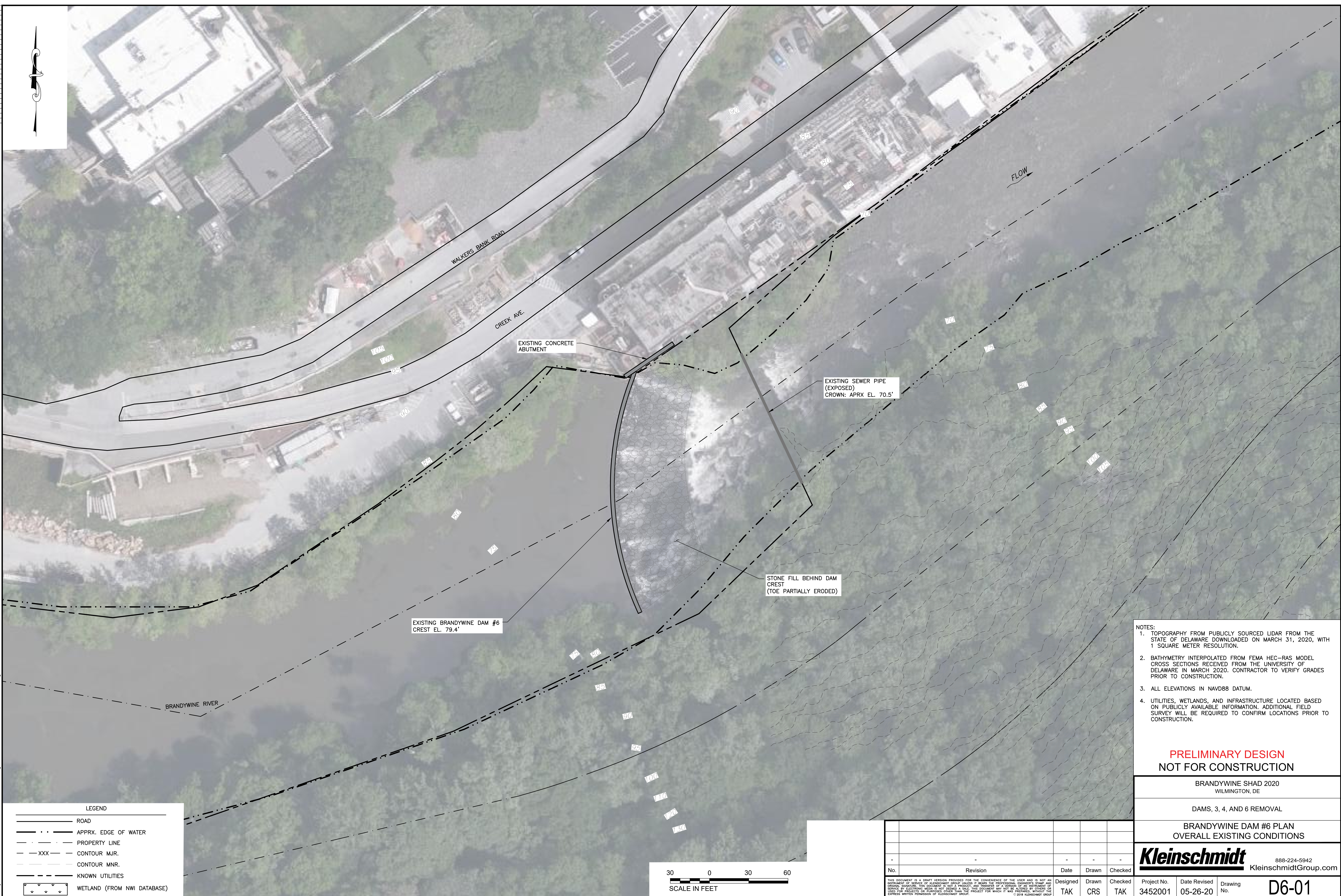
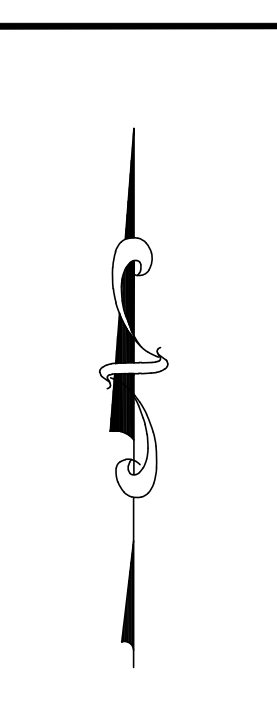
No.	Revision	Date	Drawn	Checked
-	-	-	-	-
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BRANDYWINE SHAD 2020 WILMINGTON, DE		
DAMS 3, 4, AND 6 REMOVAL		
BRANDYWINE DAM #4 PROFILES AND SECTIONS		
Kleinschmidt		888-224-5942 KleinschmidtGroup.com
Designed TAK	Drawn CRS	Checked TAK
Project No. 3452001	Date Revised 05-26-20	Drawing No. D4-03

PRINTED: May 26, 2020 - 9:15 PM J:\3452001\Drawings\CAD\3452001 DAM 4_SHT 03.dwg

24x36 = FULL SCALE

0 1" 2" 3"



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LEGEND	
	ROAD
	APPRX. EDGE OF WATER
	PROPERTY LINE
	CONTOUR M.J.R.
	CONTOUR M.N.R.
	KNOWN UTILITIES
	WETLAND (FROM NWI DATABASE)

EXISTING CONCRETE ABUTMENT

EXISTING SEWER PIPE (EXPOSED)
CROWN: APRX EL. 70.5'

STONE FILL BEHIND DAM CREST
(TOE PARTIALLY ERODED)

EXISTING BRANDYWINE DAM #6
CREST EL. 79.4'

FLOW

- NOTES:
1. TOPOGRAPHY FROM PUBLICLY SOURCED LIDAR FROM THE STATE OF DELAWARE DOWNLOADED ON MARCH 31, 2020, WITH 1 SQUARE METER RESOLUTION.
 2. BATHYMETRY INTERPOLATED FROM FEMA HEC-RAS MODEL CROSS SECTIONS RECEIVED FROM THE UNIVERSITY OF DELAWARE IN MARCH 2020. CONTRACTOR TO VERIFY GRADES PRIOR TO CONSTRUCTION.
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PRELIMINARY DESIGN
NOT FOR CONSTRUCTION

BRANDYWINE SHAD 2020
WILMINGTON, DE

DAMS, 3, 4, AND 6 REMOVAL

BRANDYWINE DAM #6 PLAN
OVERALL EXISTING CONDITIONS

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KleinschmidtGroup.com

No.	Revision	Date	Drawn	Checked
-	-	-	-	-
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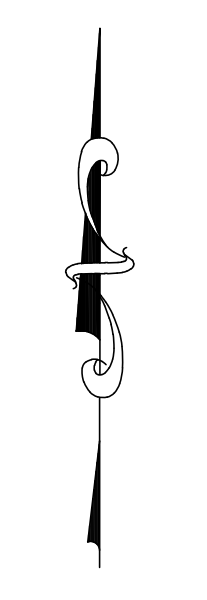
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SCALE IN FEET

Designed	Drawn	Checked
TAK	CRS	TAK

Project No.	Date Revised	Drawing No.
3452001	05-26-20	D6-01

24x36 = FULL SCALE

0 1" 2" 3"



DEMOLISH DAM CREST TO APPRX. EL. 72, SLOPING FROM DOWNSTREAM INVERT TO DECOMMISSIONED DAM INVERT UPSTREAM IN CONTINUOUS SLOPE WITH PASSAGE FOR TARGET SPECIES PER ENGINEER FIELD DIRECTION

PLACE BOULDERS/FILL TO PROTECT ABUTMENT AND TOE OF EXISTING STRUCTURES

FILL AREA BELOW DAM WITH DAM RUBBLE IN SMOOTH SLOPE FROM DOWNSTREAM NATIVE GRADE (~EL. 68') THROUGH THE EXISTING DAM BREACH INVERT

EXISTING BRANDYWINE DAM #6 CREST EL. 79.4'

EXISTING SEWER PIPE (EXPOSED)

- NOTES:
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**PRELIMINARY DESIGN
NOT FOR CONSTRUCTION**

BRANDYWINE SHAD 2020
WILMINGTON, DE

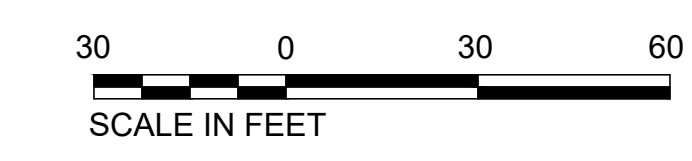
DAMS, 3, 4, AND 6 REMOVAL

BRANDYWINE DAM #6 PLAN
OVERALL PROPOSED CONDITIONS

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KleinschmidtGroup.com

LEGEND

- ROAD
- APPRX. EDGE OF WATER
- PROPERTY LINE
- CONTOUR M.J.R.
- CONTOUR M.N.R.
- KNOWN UTILITIES
- WETLAND (FROM NWI DATABASE)



No.	Revision	Date	Drawn	Checked

Project No.	Date Revised	Drawing No.
3452001	05-26-20	D6-02

PRINTED: May 26, 2020 - 9:11 PM J:\3452001\Drawings\CAD\3452001 DAM #6 SHT 02.dwg

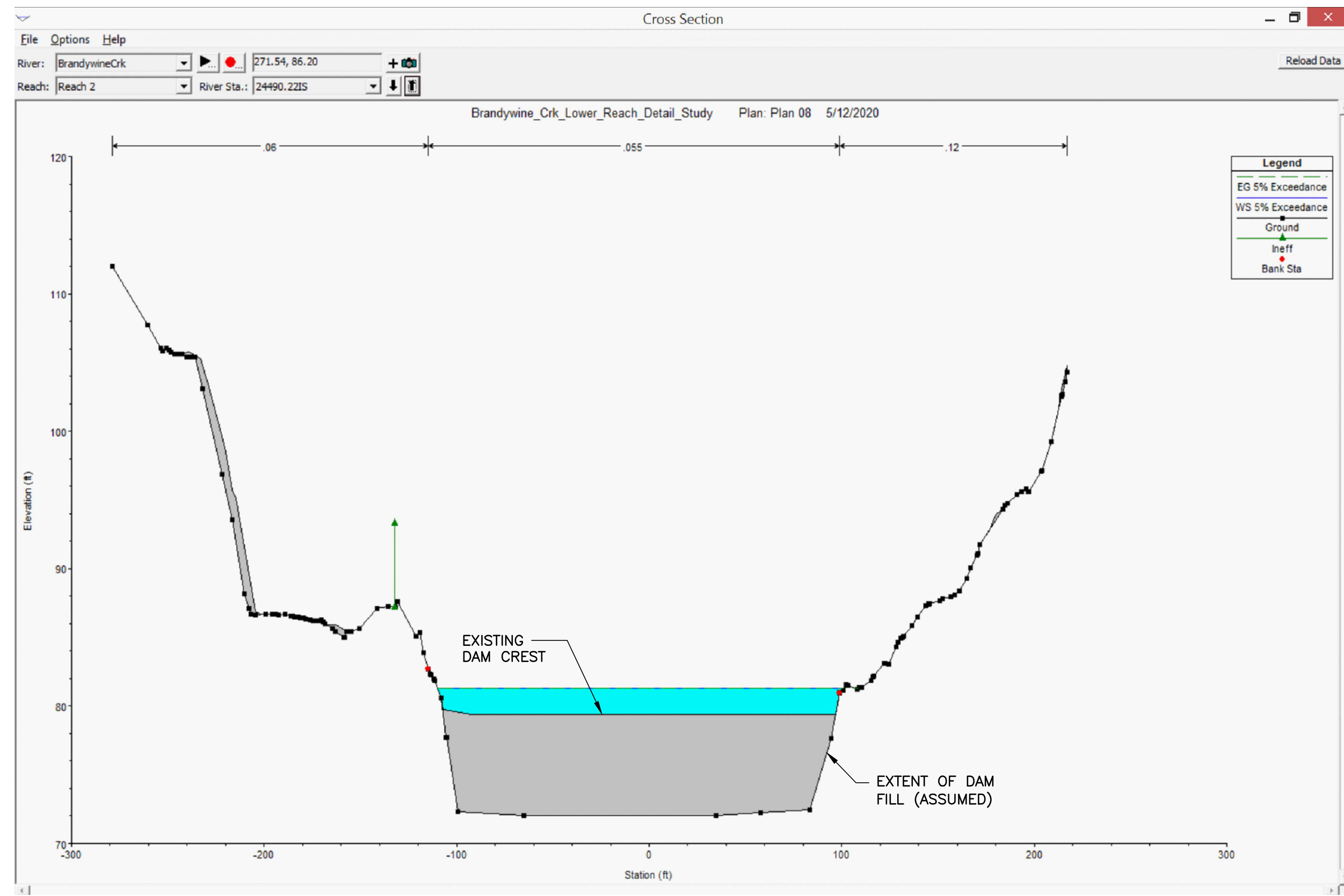
THIS DOCUMENT IS A DRAFT VERSION PROVIDED FOR THE CONVENIENCE OF THE USER AND IS NOT AN INSTRUMENT OF SERVICE OR A REPRESENTATION OF THE PROFESSIONAL ENGINEER'S STAMP AND ORIGINAL SIGNATURE. THIS DOCUMENT IS NOT A PRODUCT AND TRANSPORT OF A VERSION OF AN INSTRUMENT OF SERVICE BY ELECTRONIC MEANS IS NOT CREATING A SALE. THIS DOCUMENT MAY NOT BE ALTERED BY OTHERS OR USED FOR PROJECTS OR PURPOSES OTHER THAN THE PROJECT FOR WHICH IT WAS CREATED WITHOUT THE EXPRESS WRITTEN PERMISSION OF KLEINSCHMIDT GROUP.

Designed
TAK

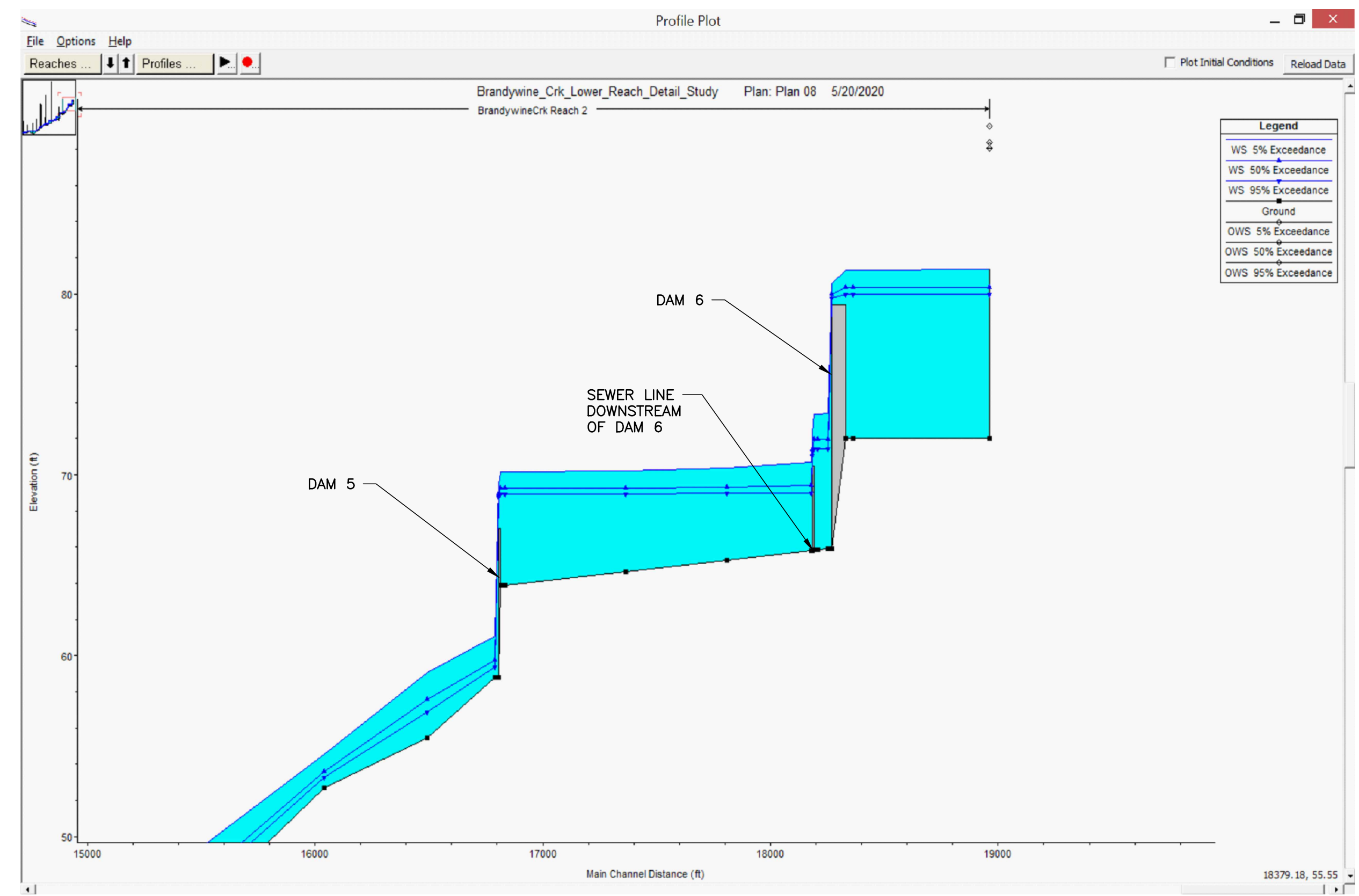
Drawn
CRS

Checked
TAK

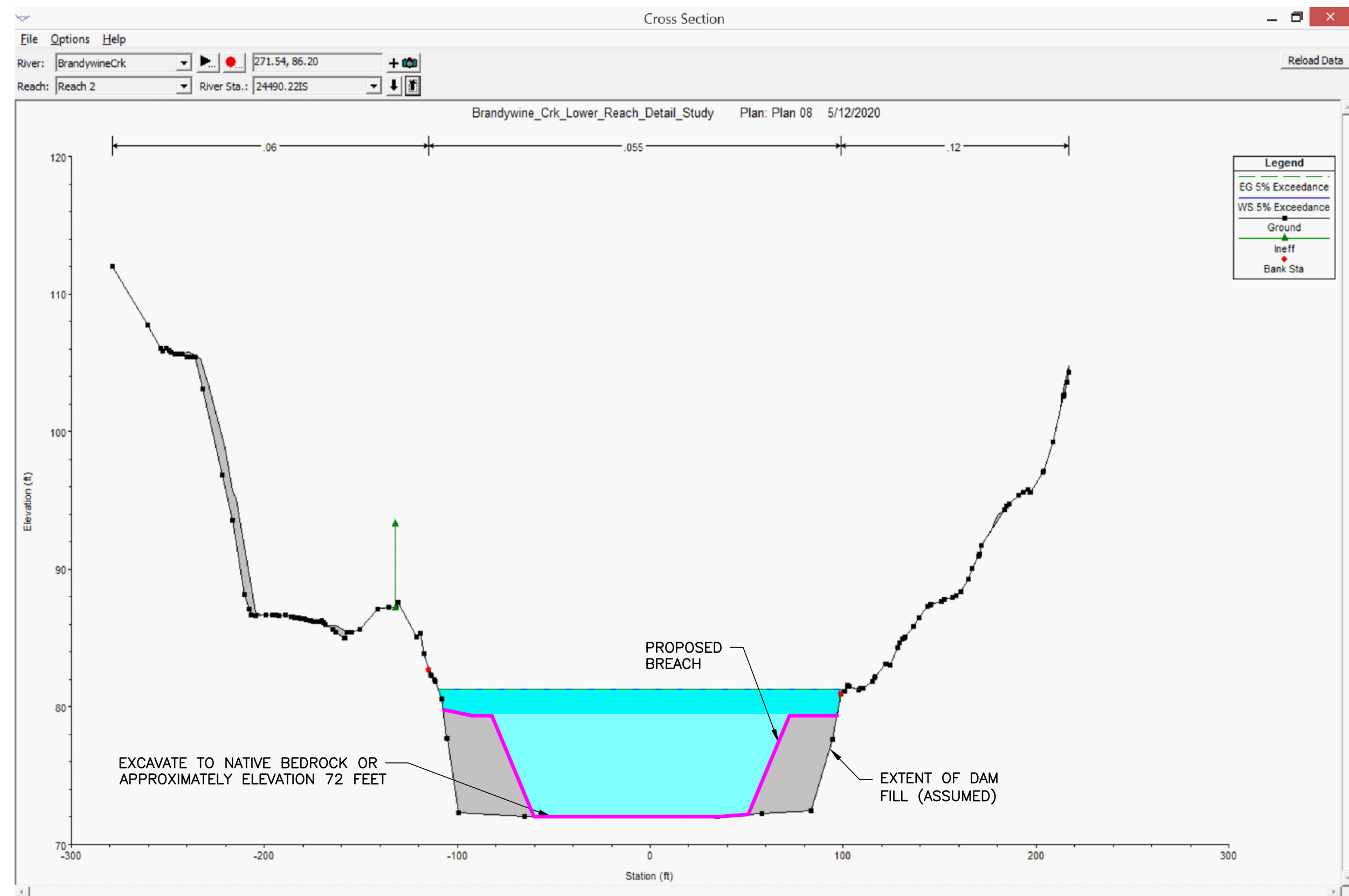
24x36 = FULL SCALE



EXISTING DAM 6 CROSS SECTION

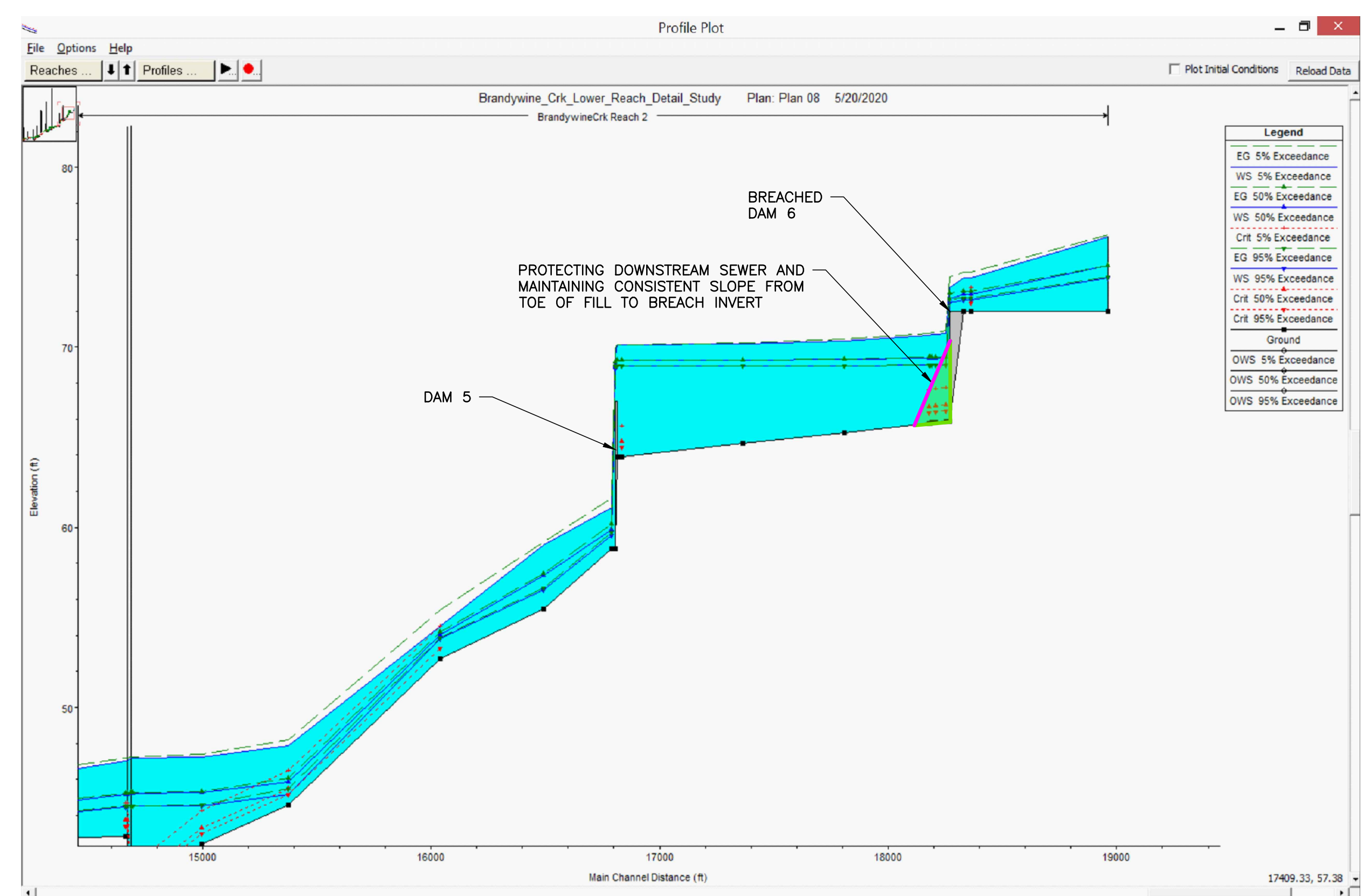


EXISTING DAM 6 PROFILE



PROPOSED DAM 6 CROSS SECTION

- NOTES:
1. BREACH SIDE SLOPES TO BE 3:1 OR PER ENGINEER FIELD DIRECTION.
 2. ESTIMATED MINIMUM BREACH WIDTH AT BREACH INVERT: 96 FEET



PROPOSED DAM 6 PROFILE

**PRELIMINARY DESIGN
NOT FOR CONSTRUCTION**

No.	Revision	Date	Drawn	Checked
-	-	-	-	-
-	-	-	-	-

BRANDYWINE SHAD 2020 WILMINGTON, DE		
DAMS 3, 4, AND 6 REMOVAL		
BRANDYWINE DAM #6 PROFILES AND SECTIONS		
Kleinschmidt		888-224-5942 KleinschmidtGroup.com
Project No.	Date Revised	Drawing No.
3452001	05-26-20	D6-03



PRINTED: May 26, 2020 - 9:23 PM J:\3452001\Drawings\CAD\3452001 DAM 6 SHT 03.dwg

NOTES:
1. CROSS SECTION AND PROFILE IMAGES WERE PROVIDED BY THE UNIVERSITY OF DELAWARE.

Designed	Drawn	Checked	Project No.	Date Revised	Drawing No.
TAK	CRS	TAK	3452001	05-26-20	D6-03