

# BSDMS Summary Report

50 Nottoway River at S.R. 653 near Sebrell, VA

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## Site Location:

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**Site ID:** 50

**Site Name:** Nottoway River at S.R. 653 near Sebrell, VA

**County:** Southampton

**Nearest City:** Sebrell

**State:** VA

**Latitude:** 364613

**Longitude:** 770959

**USGS Station ID:** 2047000

**Route Number:** 653

**Route Class:** State

**Service Level:** Mainline

**Route Direction:** NA

**Highway Mile Point:**

**Stream Name:** Nottoway River

**River Mile:**

**Contact:**  
USGS  
3600 West Broad Street Suite 606  
Richmond, VA 23230  
(804) 771-2427

**Publication:**  
Hayes, Donald C., 1993, Site  
Selection and Collection of Bridge-  
Scour Data in Delaware, Maryland,  
and Virginia:  
U.S. Geological Survey  
Water-Resources Investigations  
Report 93-4017, 23 p.

## Site Description:

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The site is located 2.5 mi southwest of Sebrell, Virginia and 5.5 mi upstream from Assamoosick Swamp at the State Highway 653 bridge crossing the Nottoway River. The bridge is 250 ft long and has three 2.9-ft-wide by 32-ft-long piers on wooden-pile foundations spaced 62 ft apart. The piers are slightly skewed to high flows (moving left to right), which causes greater scour on the right side of the pier than on the left side. There is a sand channel bed at the site, which has been scoured out around the pile cap of the right pier. One or two large logs have lodged against the piles on the right pier and have limited the depth of the scour hole. There is a buried log at the face of the right pier that had an unknown effect on the scour. The piles remain submerged in water year-round. Flow at high stages will be around the bridge on the roadway. The streambed profile at this site is probably controlled more by the bed shear in a channel bend rather than by local-scour forces. There is light two-way traffic on the bridge, primarily farming and logging vehicles.

## Elevation Reference

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**Datum:** MSL

**MSL (ft):**

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### Description of Reference Elevation:

The streamflow gage datum is 5.94 ft. A wire weight is located on the downstream side of the bridge, with gage datum at elevation 25.552 ft.

### Stream Data

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Drainage Area (sq mi):	1421	Floodplain Width:	Narrow
Slope in Vicinity(ft/ft):	0.00016	Natural Levees:	Little
Flow Impact:	Right	Apparent Incision:	None
Channel Evolution	Unknown	Channel Boundary:	Alluvial
Armoring:	None	Banks Tree Cover:	Medium
Debris Frequency:	Occasional	Sinuosity:	Meandering
Debris Effect:	Local	Braiding:	None
Stream Size:	Medium	Anabranching:	None
Flow Habit:	Perennial	Bars:	Narrow
Bed Material:	Sand	Stream Width Variability:	Equiwidth
Valley Setting:	Low		

### Roughness Data

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#### Manning's n Values

	Left Overbank	Channel	Right Overbank
High:	0.08	0.03	0.08
Typical		0.035	
Low:		0.035	

### Bed Material

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Measurement Number	Yr	Mo	Dy	Sampler	D95 (mm)	D84 (mm)	D50 (mm)	D16 (mm)	SP	Shape	Cohesion
1	1991	6	5	BMH-60	4	2	0.74	0.35	2.65		Non-Cohesive

### Bed Material Comments

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Measurement No: 1

### Bridge Data

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Structure No: 6111  
Length(ft): 250  
Width(ft): 22  
Number of Spans: 4  
Vertical Configuration: Unknown  
Low Chord Elev (ft): 26.6  
Upper Chord Elev (ft): 26.6  
Overtopping Elev (ft): 30  
Skew (degrees): 30  
Guide Banks: None  
Waterway Classification: Main  
Year Built: 1954  
Avg Daily Traffic:  
Plans on File: Yes  
Parallel Bridges No  
Upstream/Downstream: Unknown  
Continuous Abutment: No  
Distance Between Centerlines:  
Distance Between Pier Faces:

### Bridge Description:

The bridge is 250 ft long and has three 2.9-ft-wide, 32-ft-long piers on wooden-pile foundations spaced 62 ft apart. The piers are skewed 30 degrees to the bridge. The piers are slightly skewed to high flows (moving left to right), which causes greater scour on the right side of the pier than on the left side.

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### Abutment Data

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Left Station: 0  
 Right Station: 244  
 Left Skew (deg): 0  
 Right Skew (deg) 0  
 Left Abutment Length (ft): 25  
 Right Abutment Length (ft) 25  
 Left Abutment to Channel Bank (ft): 30  
 Right Abutment to Channel Bank (ft): 10  
 Left Abutment Protection:  
 Right Abutment Protection  
 Contracted Opening Type: II  
 Embankment Skew (deg): 0  
 Embankment Slope (ft/ft): 1  
 Abutment Slope (ft/ft)  
 Wingwalls: No  
 Wingwall Angle (deg): 0

### Pier Data

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Pier ID	Bridge			PierType	# Of Piles	Pile Spacing(ft)
	Station(ft)	Alignment	Highway Station			
CNTR	122	30	51.07	Single	18	3.6
LEFT	60	30	51.69	Single	18	3.6
RT	184	30	50.45	Single	18	3.6

  

Pier ID	Pier		Shape Factor	Length(ft)	Protection	Foundation
	Width(ft)	Pier Shape				
CNTR	2.9	Round		32	None	Piles
LEFT	2.9	Round		32	None	Piles



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CNTR	4/1/93	10:00	Upstream
LEFT	1/16/91	10:30	Upstream
LEFT	1/18/91	10:30	Upstream
LEFT	4/4/91	14:30	Upstream
LEFT	4/5/91	12:00	Upstream
LEFT	3/12/92	11:30	Upstream
LEFT	3/11/93	9:30	Upstream
LEFT	3/17/93	9:30	Upstream
LEFT	3/18/93	12:00	Upstream
LEFT	3/19/93	11:00	Upstream
LEFT	4/1/93	10:00	Upstream

Pier ID	Scour Depth	Accuracy (ft)	Side Slope (ft/ft)	TopWidth (ft)	Apprch Vel (ft/s)	Apprch Depth(ft)	Effective Pier Width	Skew to Flow(deg)
CNTR	1.1	1	22	50	2.97	15.5	2.9	0
CNTR	1.5	1	14	44	2.62	16	2.9	0
CNTR	1.2	1	19	46	3.26	16.5	2.9	0
CNTR	1.2	1	22	54	3.42	15.7	2.9	0
CNTR	1.2	1	19	44	3.03	14.7	2.9	0
CNTR	1.3	1	23	60	3.69	16.5	2.9	0
CNTR	1.8	1	17	62	3.28	16.7	2.9	0
CNTR	2	1	15	62	3.66	15.9	2.9	0
CNTR	2	1	19	75	3.45	16.9	2.9	0
CNTR	2	1	17	70	3.56	15.4	2.9	0
LEFT	0.9	1	30	55	2.8	14	2.9	0
LEFT	0.8	1	25	40	2.56	14.4	2.9	0
LEFT	0.9	1	25	46	3.03	14.8	2.9	0
LEFT	1.1	1	15	33	2.81	14	2.9	0
LEFT	1.6	1	14	46	2.82	14.4	2.9	0
LEFT	1.4	1	16	60	3.32	15.2	2.9	0
LEFT	1.4	1	20	56	3.14	14.3	2.9	0
LEFT	1.8	1	10	34	3.35	15.2	2.9	0
LEFT	1.5	1	7.5	23	3.13	15.2	2.9	0
LEFT	1.3	1	9	24	3.24	15.4	2.9	0

PierID	Sediment Transport	Bed Material	BedForm	Trough (ft)	Crest (ft)	Sigma	Debris Effects
CNTR	Unknown	Unknown	Unknown			2.4	Unknown
CNTR	Unknown	Unknown	Unknown			2.4	Unknown
CNTR	Unknown	Unknown	Unknown			2.4	Unknown

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CNTR	Unknown	Unknown	Unknown	2.4	Unknown
CNTR	Unknown	Unknown	Unknown	2.4	Unknown
CNTR	Unknown	Unknown	Unknown	2.4	Unknown
CNTR	Unknown	Unknown	Unknown	2.4	Unknown
CNTR	Unknown	Unknown	Unknown	2.4	Unknown
CNTR	Unknown	Unknown	Unknown	2.4	Unknown
CNTR	Unknown	Unknown	Unknown	2.4	Unknown
LEFT	Unknown	Unknown	Unknown	2.4	Unknown
LEFT	Unknown	Unknown	Unknown	2.4	Unknown
LEFT	Unknown	Unknown	Unknown	2.4	Unknown
LEFT	Unknown	Unknown	Unknown	2.4	Unknown
LEFT	Unknown	Unknown	Unknown	2.4	Unknown
LEFT	Unknown	Unknown	Unknown	2.4	Unknown
LEFT	Unknown	Unknown	Unknown	2.4	Unknown
LEFT	Unknown	Unknown	Unknown	2.4	Unknown
LEFT	Unknown	Unknown	Unknown	2.4	Unknown
LEFT	Unknown	Unknown	Unknown	2.4	Unknown
LEFT	Unknown	Unknown	Unknown	2.4	Unknown

PierID	D95 (mm)	D84 (mm)	D50 (mm)	D16 (mm)
CNTR	4	2	0.74	0.35
CNTR	4	2	0.74	0.35
CNTR	4	2	0.74	0.35
CNTR	4	2	0.74	0.35
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LEFT	4	2	0.74	0.35
LEFT	4	2	0.74	0.35
LEFT	4	2	0.74	0.35
LEFT	4	2	0.74	0.35
LEFT	4	2	0.74	0.35
LEFT	4	2	0.74	0.35
LEFT	4	2	0.74	0.35
LEFT	4	2	0.74	0.35
LEFT	4	2	0.74	0.35
LEFT	4	2	0.74	0.35

### Pier Scour Comments

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**Pier ID** CNTR                      **Time:** 10:30                      **US/DS:** Upstream

Accuracy of local scour estimate is probably 1 foot. Estimate is maximum scour for this cross section only and may not represent the maximum local scour at the pier.

**Pier ID** CNTR                      **Time:** 10:30                      **US/DS:** Upstream

**Pier ID** CNTR                      **Time:** 14:30                      **US/DS:** Upstream

**Pier ID** CNTR                      **Time:** 12:00                      **US/DS:** Upstream

**Pier ID** CNTR                      **Time:** 11:30                      **US/DS:** Upstream

**Pier ID** CNTR                      **Time:** 9:30                      **US/DS:** Upstream

**Pier ID** CNTR                      **Time:** 9:30                      **US/DS:** Upstream



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Pier ID	CNTR	Time:	12:00	US/DS:	Upstream
Pier ID	CNTR	Time:	11:00	US/DS:	Upstream
Pier ID	CNTR	Time:	10:00	US/DS:	Upstream
Pier ID	LEFT	Time:	10:30	US/DS:	Upstream
Pier ID	LEFT	Time:	10:30	US/DS:	Upstream
Pier ID	LEFT	Time:	14:30	US/DS:	Upstream
Pier ID	LEFT	Time:	12:00	US/DS:	Upstream
Pier ID	LEFT	Time:	11:30	US/DS:	Upstream
Pier ID	LEFT	Time:	9:30	US/DS:	Upstream
Pier ID	LEFT	Time:	9:30	US/DS:	Upstream
Pier ID	LEFT	Time:	12:00	US/DS:	Upstream
Pier ID	LEFT	Time:	11:00	US/DS:	Upstream
Pier ID	LEFT	Time:	10:00	US/DS:	Upstream

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## Abutment Scour

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## Contraction Scour

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## Stage and Discharge Data

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Peak Discharge					Flow (cfs)	Qacc	Peak Stage					Stage (ft)	Water Temp (C)	Return Period(yr)
year	mo	dy	hr	mi			year	mo	dy	hr	mi			

## Hydrograph

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Hydrograph Number	Year	Month	Day	Hr	Min	Sec	Stage(ft)	Discharge (cfs)
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## Supporting Files

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