BSDMS Summary Report

63 Massies Creek at U.S. 68 at Oldtown, OH

Site Location:

Site ID: 63

Site Name: Massies Creek at U.S. 68 at Oldtown, OH

County: Greene

Nearest City: Oldtown

State: OH

Latitude: 394410

Longitude: 835610

USGS Station ID:

Route Number: 68

Route Class: US

Service Level: Mainline

Route Direction: North

Highway Mile Point: 13.4

Stream Name: Massies Creek

River Mile:

Contact:

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Publication:

Jackson, K.S., 1996, Evaluation of bridge-scour data at selected sites in Ohio: U.S. Geological Survey Water-Resources Investigations Report 97-4182.

Site Description:

This site is located at the SR 68 bridge crossing Massies Creek at Greene County, Ohio. Site is located downstream of USGS streamgage Massies Creek at Wilberforce (03241500, Drainage area = 63.2 sq. mi. at gage). ODOT ID of US68 bridge is GRE-68-1340. Scour site is located roughly 500 ft. downstream of the confluence of Massies Creek and Oldtown Creek.
Bed-material samples were collected during an annual low-flow survey.
Notes: All piers are referenced numerically, increasing from left to right, when viewing the upstream face of the bridge, while facing in the downstream direction.
Slope in Vicinity (reported in Stream Site Data) is estimated from USGS 7.5-minute quadrangle topographic maps.
Water-surface slope (if reported in Pier Scour Data comments section) is the measured slope between water surfaces at the approach and bridge sections during the scour measurement.

Elevation Reference

Datum: MSL

MSL (ft): 0

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Description of Reference Elevation:

RM1 = Chiseled square on landward side of south upstream abutment.
MSL elevation = 827.16 ft

Stream Data

Drainage Area (sq mi):	84.4	**Floodplain Width:**	Little
Slope in Vicinity(ft/ft):	0.00357	**Natural Levees:**	Unknown
Flow Impact:	Straight	**Apparent Incision:**	None
Channel Evolution	Premodified	**Channel Boundary:**	Non-alluvial
Armoring:	None	**Banks Tree Cover:**	Medium
Debris Frequency:	Occasional	**Sinuosity:**	Straight
Debris Effect:	Local	**Braiding:**	Locally
Stream Size:	Small	**Anabranching:**	Locally
Flow Habit:	Perennial	**Bars:**	Narrow
Bed Material:	Gravel	**Stream Width Variability:**	Equiwidth
Valley Setting:	Low		

Roughness Data

Manning's n Values

	Left Overbank	Channel	Right Overbank
High:	0.075	0.042	0.065
Typical	0.07	0.04	0.06
Low:	0.07	0.038	0.055

Bed Material

Measurement Number	Yr	Mo	Dy	Sampler	D95 (mm)	D84 (mm)	D50 (mm)	D16 (mm)	SP	Shape	Cohesion
AP1	1992	11	24		32.5	22	6.9	1.05	2.65		Unknown
AP2	1993	7	1		68	56	32	5	2.65		Unknown

AP3	1994	6	16	56	35	12.5	1.4	2.65	Unknown
BR1	1992	11	24	32	23	4.2	1.65	2.65	Unknown
BR2	1993	7	1	54	33	17	3.6	2.65	Unknown
BR3	1994	6	16	54	24	3.5	0.23	2.65	Unknown
P1-1	1992	11	24	18	8.4	1.45	0.61	2.65	Unknown
P1-2	1993	7	1	1.8	1.2	0.46	0.12	2.65	Unknown
P1-3	1994	6	16	0.35	0.2	0.03	0.007	2.65	Unknown
P2-1	1992	11	24	30	21	9.3	2.6	2.65	Unknown
P2-2	1993	7	1	22	19	9.6	1.6	2.65	Unknown
P2-3	1994	6	16	33	23	3.9	0.85	2.65	Unknown

Bed Material Comments

Measurement No: AP1

Approach-section composite sample

Measurement No: AP2

Approach-section composite sample

Measurement No: AP3

Approach-section composite sample

Measurement No: BR1

Bridge-section composite sample, collected along the upstream bridge face.

Measurement No: BR2

Bridge-section composite sample, collected along the upstream bridge face.

Measurement No: BR3

Bridge-section composite sample, collected along the upstream bridge face.

Measurement No: P1-1

Sample collected at the upstream face of pier 1

Measurement No: P1-2

Sample collected at the upstream face of pier 1

Measurement No: P1-3

Sample collected at the upstream face of pier 1

Measurement No: P2-1

Sample collected at the upstream face of pier 2

Measurement No: P2-2

Sample collected at the upstream face of pier 2

Measurement No: P2-3

Sample collected at the upstream face of pier 2

Bridge Data

Structure No: GRE-68-1340

Length(ft): 139.16

Width(ft): 44

Number of Spans: 3

Vertical Configuration: Horizontal

Low Chord Elev (ft): 825.5

Upper Chord Elev (ft): 826.9

Overtopping Elev (ft): 826.9

Skew (degrees): 20

Guide Banks: None

Waterway Classification: Main

Year Built: 1982

Avg Daily Traffic: 8705

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 constructed of concrete and steel I-beams. The bridge rests on capped driven piles. The site plans are not dated. The piers are referenced from the left to right abutments when looking downstream.

Abutment Data

Left Station: 123.1816

Right Station: 124.5732

Left Skew (deg): 0

Right Skew (deg) 0

Left Abutment Length (ft): 57.1

Right Abutment Length (ft) 53.8

Left Abutment to Channel Bank (ft): 10

Right Abutment to Channel Bank (ft): 25

Left Abutment Protection:

Right Abutment Protection

Contracted Opening Type: III

Embankment Skew (deg): 0

Embankment Slope (ft/ft): 2

Abutment Slope (ft/ft) 2

Wingwalls: No

Wingwall Angle (deg): 0

Pier Data

Pier ID	Bridge Station(ft)	Alignment	Highway Station	PierType	# Of Piles	Pile Spacing(ft)

1	42	-20	123.6151	Group	11	4.3
2	94.5	-20	124.1401	Group	11	4.3

Pier ID	Pier Width(ft)	Pier Shape	Shape Factor	Length(ft)	Protection	Foundation
1	1	Square		47.3	None	Piles
2	1	Square		47.3	None	Piles

Pier ID	Top Elevation(ft)	Bottom Elevation(ft)	Foot or Pile Cap Width(ft)	Cap Shape	Pile Tip Elevation(ft)
1			1	Square	
2			1	Square	

Pier Description

Pier ID 1

Steel I-beam (1 foot estimated width) concrete capped piles
Spacing estimated to 4 feet wide.

Pier ID 2

Steel I-beam (estimated width 1 foot) concrete capped piles
Spacing estimated 4 feet.

Pier Scour Data

Pier ID	Date	Time	USOrDS
1	1/28/94	10:50	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)
1	0.8	0.5	3.4	5	1.1	5.9	1	14.1

PierID	Sediment Transport	Bed Material	BedForm	Trough (ft)	Crest (ft)	Sigma	Debris Effects
1	Clear-water	Non-cohesive	Unknown			3.16	Unknown

PierID	D95 (mm)	D84 (mm)	D50 (mm)	D16 (mm)
1	1.8	1.2	0.46	0.12

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Pier Scour Comments

Pier ID 1 **Time:** 10:50 **US/DS:** Upstream

Abutment Scour

ContractionScour

Measurement Number	Contracted Date	Contracted Time	Uncontracted Date	Uncontracted Time	US/DS	Scour Depth(ft)
1	1/28/94	10:00	6/16/94			0.9

Measurement Number	Accuracy	Contracted Avg Vel(ft/s)	Contracted Discharge(cfs)	Contracted Depth(ft)	Contracted Width(ft)
1	0.5	2.87	1010	7.1	43

Measurement Number	Uncontracted Avg Vel(ft/s)	Uncontracted Discharge(cfs)	Uncontracted Depth(ft)	Uncontracted Width(ft)	Channel Contraction Ratio
1	2.32	1330	6.3	65	0.086

Measurement Number	Pier Contraction Ratio	Scour Location	Eccent-ricity	Sediment Transport	Bed Form	Debris Effects
1	0.022	Floodplain	0.009	Clear-water	Unknown	Unknown

Measurement Number	D95 (mm)	D84 (mm)	D50 (mm)	D16 (mm)	Sigma Bed Material	Bed Material
1	54	33	17	3.6	3.02	Non-cohesive

Contraction Scour Comments

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Measurement No. 1

The data for the contracted section were measured from the bridge deck during the flood event on the specified date. The geometry of the reference uncontracted section was measured during low flow. The hydraulic data for the uncontracted section were estimated using WSPRO to estimate the approach hydraulics for the reference channel geometry and the flood discharge observed on the date of the contracted section measurement.

Stage and Discharge Data

Peak Discharge					Flow		Peak Stage					Stage	Water	Return
year	mo	dy	hr	mi	(cfs)	Qacc	year	mo	dy	hr	mi	(ft)	Temp (C)	Period(yr)
1994	1	28	10:50		1760								4	2

Hydrograph

Supporting Files