BSDMS Summary Report

38 Susquehanna River at C.R. 314 at Conklin, NY

Site Location:

Site ID: 38

Site Name: Susquehanna River at C.R. 314 at Conklin, NY

County: Broome

Nearest City: Conklin

State: NY

Contact:
Mike Ferrel, NYSDOT Region 9, (607) 771-5467.

Latitude: 420212

Longitude: 754812

USGS Station ID: 1503000

Route Number: 314

Route Class: County

Publication:

Service Level: Business

Route Direction: NA

Highway Mile Point: 8

Stream Name: Susquehanna River

River Mile:

Site Description:

The site is located at the County Road 314 bridge crossing the Susquehanna River at Conklin, New York. The bridge, 642 ft long and 34 ft wide with four piers, is 500 ft downstream from a USGS streamflow gage. Piers 3 and 4 (center and right) have footings exposed. The footing at pier 4 is exposed by 3 ft--however, it was constructed at an elevation 3 ft higher than pier 3. The footing at pier 2 is not exposed, but it is at an elevation 1.5 ft lower than pier 3.

High flows in 1977, 1979, 1983, 1986 may have added to the local scour measured at piers 2-4 in 1989-92. It is unknown at this time why the greatest local scour is measured at pier 4 where flows are slower and shallower than at piers 2-3. Perhaps the bed material is coarser at piers 2-3 than at pier 4.

The streambed is armored by gravel. Clear-water scour is common at this site. Multiple high flows may have progressively deepened the local-scour hole, but hydraulic data for the highest flow is analyzed because the amount of scour caused by each flow is unknown. The local-scour depth is based on the ambient bed and changes in elevation of the scour hole. Contraction and general scour are insignificant.

Bed-material samples were collected in a shallow area of the channel near the bridge. The D16, D50, and D84 were analyzed. The D90 or D95 were not analyzed because of the accuracy of the limited data.

Local-scour holes do not refill after each high flow. A minor debris pile may be "armoring" the scour hole at pier 4 in 1993.

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Elevation Reference

Datum: MSL

MSL (ft):

Description of Reference Elevation:

USSB: RM = Tablet set in left abutment. ELEVATION = 900.92 ft
RP = Wire-weight gage at station 294. ELEVATION = 893.57 ft
Right abutment = station 634 RE pier = station 246
RE pier = station 507 LE pier = station 241
LE pier = station 502 RE pier = station 116
RE pier = station 377 LE pier = station 112
LE pier = station 372 Left abutment = station 0
RP = station 294
DSSB: RP = Chiseled square on downstream right corner of guardrail-support foot plate at station 276, across from WWG. ELEVATION = 891.83 ft
APPR: RP = Lag bolt in downstream side of maple tree 650 ft upstream, 160 ft upstream of gage, 1.5 ft LSD, left bank. Tree is fourth cluster of trees upstream of gage. ELEVATION = 11.79 ft (gage datum).
EXIT: RP = Lagbolt in streamward side of upstream-most 3-ft maple tree in cluster of three trees, 1 ft LSD, left bank. Bolt approx. 700 ft downstream of bridge and 30 ft upstream of culvert under railroad tracks. ELEVATION = 11.63 ft (gage datum).
RP = Lag bolt on upstream side of 1.5 ft maple tree, 5 ft landward and 5 ft downstream of first RP. Bolt in cluster of two trees, 3 ft LSD. ELEVATION = 14.90 ft (gage datum).

Stream Data

Drainage Area (sq mi):	2232	**Floodplain Width:**	Little
Slope in Vicinity(ft/ft):	0.00057	**Natural Levees:**	Little
Flow Impact:	Straight	**Apparent Incision:**	Apparent
Channel Evolution	Premodified	**Channel Boundary:**	Alluvial
Armoring:	High	**Banks Tree Cover:**	Medium
Debris Frequency:	Occasional	**Sinuosity:**	Sinuous
Debris Effect:	Unknown	**Braiding:**	None
Stream Size:	Medium	**Anabranching:**	None
Flow Habit:	Flashy	**Bars:**	Narrow
Bed Material:	Gravel	**Stream Width Variability:**	Equiwidth
Valley Setting:	Moderate		

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Roughness Data

Manning's n Values

	Left Overbank	Channel	Right Overbank
High:			
Typical		0.034	
Low:			

Bed Material

Measurement Number	Yr	Mo	Dy	Sampler	D95 (mm)	D84 (mm)	D50 (mm)	D16 (mm)	SP	Shape	Cohesion
1	1990	8	21	GRID	65	53	28	14	2.65		Alluvial_Over
2	1990	8	21	SHOVEL		27	12	1.2	2.65		Alluvial_Over

Bed Material Comments

Measurement No: 1

Bed-material samples were collected in a shallow area of the channel near the bridge. Sizes based on 100 samples using the grid-sampling technique.

Measurement No: 2

Bed-material samples were collected in a shallow area of the channel near the bridge. The D16, D50, and D84 were analyzed. The D90 or D95 were not analyzed because of the accuracy of the limited data.

Bridge Data

Structure No: 3349250

Length(ft): 642

Width(ft): 34

Number of Spans: 5

Vertical Configuration: Sloping

Low Chord Elev (ft): 874

Upper Chord Elev (ft): 893

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Overtopping Elev (ft): 870

Skew (degrees): 0

Guide Banks: None

Waterway Classification: Main

Year Built: 1966

Avg Daily Traffic: 4103

Plans on File: Yes

Parallel Bridges No

Upstream/Downstream: N/A

Continuous Abutment: No

Distance Between Centerlines:

Distance Between Pier Faces:

Bridge Description:

Abutment Data

Left Station: 0

Right Station: 634

Left Skew (deg): 0

Right Skew (deg) 0

Left Abutment Length (ft): 34

Right Abutment Length (ft) 34

Left Abutment to Channel Bank (ft): 150

Right Abutment to Channel Bank (ft): 50

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	114	0	114	Single	0	
2	243	0	243	Single	0	
3	375	0	375	Single	0	
4	504	0	504	Single	0	

Pier ID	Pier Width(ft)	Pier Shape	Shape Factor	Length(ft)	Protection	Foundation
1	4	Round		40	None	Piles
2	5	Round		40	None	Piles
3	5	Round		40	None	Piles
4	5	Round		40	None	Piles

Pier ID	Top Elevation(ft)	Bottom Elevation(ft)	Foot or Pile Cap Width(ft)	Cap Shape	Pile Tip Elevation(ft)
1	858			Unknown	
2	834.5			Unknown	
3	836			Unknown	
4	841			Unknown	

Pier Description

Pier ID 1

The pier is out of water except during extreme high flow.

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Pier ID 2

Pier ID 3

Pier ID 4

The deepest scour is at this pier, despite having shallower and slower flow than at piers 2-3. The bed material may not be consistent at piers. Debris at this pier has wedged into the scour hole, and it may be "armoring" the hole.

Pier Scour Data

Pier ID	Date	Time	USOrDS
2	8/27/91	0:00	Upstream
3	8/27/91	0:00	Upstream
4	8/27/91	0:00	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)
2	1.1	0.2			8.3	18.1	5	0
3	0.9	0.2			9	18.3	5	0
4	3.2	0.2			7.3	16.8	5	0

PierID	Sediment Transport	Bed Material	BedForm	Trough (ft)	Crest (ft)	Sigma	Debris Effects
2	Clear-water	Non-cohesive	Unknown			1.9	Unknown
3	Clear-water	Non-cohesive	Unknown			1.9	Unknown
4	Clear-water	Non-cohesive	Unknown			1.9	Moderate

PierID	D95 (mm)	D84 (mm)	D50 (mm)	D16 (mm)
2	65	53	28	14
3	65	53	28	14

4	65	53	28	14

Pier Scour Comments

Pier ID 2 **Time:** 0:00 **US/DS:** Upstream

Scour depth is based on the ambient bed from station 234-250. It is assumed that the highest previous flow in 1979 produced the scour. However, high flows in 1977, 1984, and 1986 may have contributed to the scour.

Pier ID 3 **Time:** 0:00 **US/DS:** Upstream

Same as pier 2 except ambient bed is station 367-384.

Pier ID 4 **Time:** 0:00 **US/DS:** Upstream

Same as pier 2 except ambient bed is station 484-524.
Scour is deeper at pier 4 than at piers 2 and 3 despite lower velocities. The precise cause in unknown, but it could be related to possible differences in bed material or the presence of debris at pier 4.

Abutment Scour

ContractionScour

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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)
1979	3	7		0	45200	95	1979	3	7		0	858.29		8
1984	12	14		0	44700	95	1984	12	14		0	858.21		8
1986	3	15		0	44400	95	1986	3	15		0	858.14		8
1977	3	16		0	43400	95	1977	3	16		0	857.94		7

Hydrograph

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

Supporting Files