

# Archival HDSO Document

## August 1995 Flood

Contents:

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# United States Department of the Interior

U.S. GEOLOGICAL SURVEY  
Water Resources Division  
Stephenson Center, Suite 129  
720 Gracern Road  
Columbia, SC 29210-7651

September 5, 1995

William H. Hulbert, P.E.  
Hydraulic Engineer  
South Carolina Department of Transportation  
955 Park Street  
Columbia, South Carolina 29202

Dear Mr. Hulbert:

Intense rainfall from Tropical Storm Jerry caused flooding throughout South Carolina and particularly in the Piedmont from August 26-29, 1995. Preliminary flood-frequency recurrence intervals for the flood have been determined for U.S. Geological Survey (USGS) gaging stations in the Piedmont. The following table lists the USGS gaging station numbers and locations, drainage areas, peak flows, and flow recurrence intervals.

Station number	Station name and location	Drainage area, mi <sup>2</sup>	Peak flow, ft <sup>3</sup> /s	Recurrence interval, years
02154500	North Pacolet River at Fingerville	116	8,160	25
02160105	Tyger River near Delta	759	26,400	>100
02160700	Enoree River at Whitmire	444	32,000	>100
02162500	Saluda River near Greenville	295	8,550	12
02163500	Saluda River near Ware Shoals	581	21,100	36
02164000	Reedy River near Greenville	48.6	5,400	1
02164110	Reedy River near Fork Shoals	104	8,200	1
02165000	Reedy River near Ware Shoals	236	9,880 <sup>2</sup>	17
02165200	South Rabon Creek near Gray Court	29.5	2,900	21

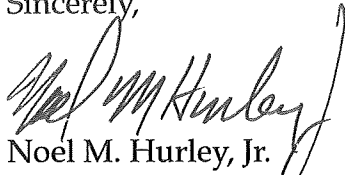
Station number	Station name and location	Drainage area, mi <sup>2</sup>	Peak flow, ft <sup>3</sup> /s	Recurrence interval, years
02167000	Saluda River at Chappells	1,360	38,100	regulated
02173500	North Fork Edisto River at Orangeburg	683	5,380	12
02186000	Twelvemile Creek near Liberty	106	4,810	9
02187910	Rocky River near Starr	111	5,100	8
02192500	Little River near Mount Carmel	217	14,800	53

<sup>1</sup>Urban site, the recurrence interval has not been adjusted for urbanization.

<sup>2</sup> Peak of record, the period of record is 1939-95.

If you have any questions or we may be of further assistance, please contact either Lamar Sanders at 750-6118 or me at 750-6126.

Sincerely,



Noel M. Hurley, Jr.  
Supervisory Hydrologist



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September 5, 1995

William H. Hulbert, P.E.  
Hydraulic Engineer  
South Carolina Department of Transportation  
955 Park Street  
Columbia, South Carolina 29202

Dear Mr. Hulbert:

Enclosed is a Joint Funding Agreement between the South Carolina Department of Transportation (SCDOT) and the U.S. Geological Survey (USGS) for determination of the high-water marks caused by the August 26-29, 1995 flood along the Enoree, Pacolet, Reedy, Saluda, and Tyger Rivers and selected tributaries. This area includes all or parts of Abbeville, Anderson, Cherokee, Greenville, Greenwood, Laurens, Newberry, Pickens, Saluda, Spartanburg, and Union Counties. High-water mark data will be collected at all S.C. primary and secondary, U.S., and Interstate routes in the study area. Data will be collected at 188 sites. The study area of each river includes:

1. Enoree River: Thirty-one sites from U.S. Route 25 crossing near Travelers Rest to Road S-36-45, which is the crossing closest to the confluence of the Enoree and Broad Rivers.
2. North Pacolet River: Four sites from Road S-42-956 near Landrum to Road S-42-42 near Fingerville.
3. Pacolet River: Thirteen sites from Road S-42-55 near Fingerville to Route S.C. 105 near Saratt.
4. Reedy River: Thirty-seven sites from Road S-23-103 near Travelers Rest to Road S-30-29 near Waterloo.
5. Saluda River: Twenty-four sites from Road S-23-88 near Travelers Rest to Route S.C. 395 near Silverstreet.
6. Middle Tyger River: Eleven sites from Route S.C. 357 near Greer to Road S-42-64 near Fairmont.
7. North Tyger River: Twelve sites from Route S.C. 292 near Wellford to Road S-42-231 near Moore.
8. South Tyger River: Twenty-one sites from Road S-23-114 near Tigerville to Interstate 26 near Woodruff.
9. Tyger River: Eight sites from Road S-42-50 near Woodruff to Road S-44-35 near Carlisle.

10. Little Durbin Creek: Three sites from Road S-23-191 near Fountain Inn to Road S-30-704 near Fountain Inn.
11. Big Durbin Creek: Five sites from Road S- 23-160 near Simpsonville to Route S.C. 101 near Woodruff.
12. North Rabon Creek: Five sites from Road S-30-745 near Fountain Inn to Route U.S. 76 near Laurens.
13. South Rabon Creek: Fourteen sites from Route SC 418 near Fountain Inn to Road S-30-307 near Waterloo.

High-water marks will be flagged upstream and downstream of the crossings. The elevation of these marks will be surveyed and referenced to the bridge or culvert crossing. The high-water mark data will be compiled and submitted to the SCDOT in a report under cover of letter.

Once the high-water marks are flagged, USGS and SCDOT personnel will decide which sites will be used to compute peak flow by indirect methods. The funding for this work will be addressed in a separate Joint Funding Agreement.

The total cost of this project is \$158,000. Under provisions of the Federal-State Cooperative Program, the USGS will pay \$79,000 and the SCDOT will pay \$79,000.

If this is acceptable to you, please sign both copies of the agreement and return them to this office. A fully executed copy will be forwarded to you.

If additional information is needed or there are any questions, please contact Noel Hurley at (803) 750-6126.

Sincerely,



Glenn G. Patterson  
District Chief

Enclosures

cc: Noel M. Hurley, Jr. USGS, Columbia, S.C.

ER  
Design B.

BRIDGE REPLACEMENT SITE INFORMATION

DATE 9-26-95

TRACK: FAST   
FEMA \_\_\_\_\_  
NORMAL \_\_\_\_\_

COUNTY GREENVILLE STRUCTURE NO. 237031600300  
ROUTE S-316 LOCAL NAME Log Shoal Rd  
CROSSING Reedy River  
LOCATION 6.4 Km West of Simpsonville  
PS&E PARTY East H. ...

EXISTING BRIDGE

LENGTH 73.2m (240') WIDTH 7.98m (26.2') SPANS \_\_\_\_\_  
POSTED WT LIMIT CLOSED TON/AXLE \_\_\_\_\_ TONS GROSS \_\_\_\_\_  
SUPERSTR TYPE None  
SUBSTR TYPE Timber  
DISTANCE FROM F.G. TO EXISTING GROUND 7.0m

UTILITIES

ATTACHED \_\_\_\_\_  
OVERHEAD Back  
UNDERGROUND \_\_\_\_\_

HYDRAULICS

FG TO WATER 7.0m WATER DEPTH 0.5m HIGH WATER \_\_\_\_\_  
OBSERVED SCOUR \_\_\_\_\_  
EXPOSED ROCK None IN STREAM BED None IN BANKS None

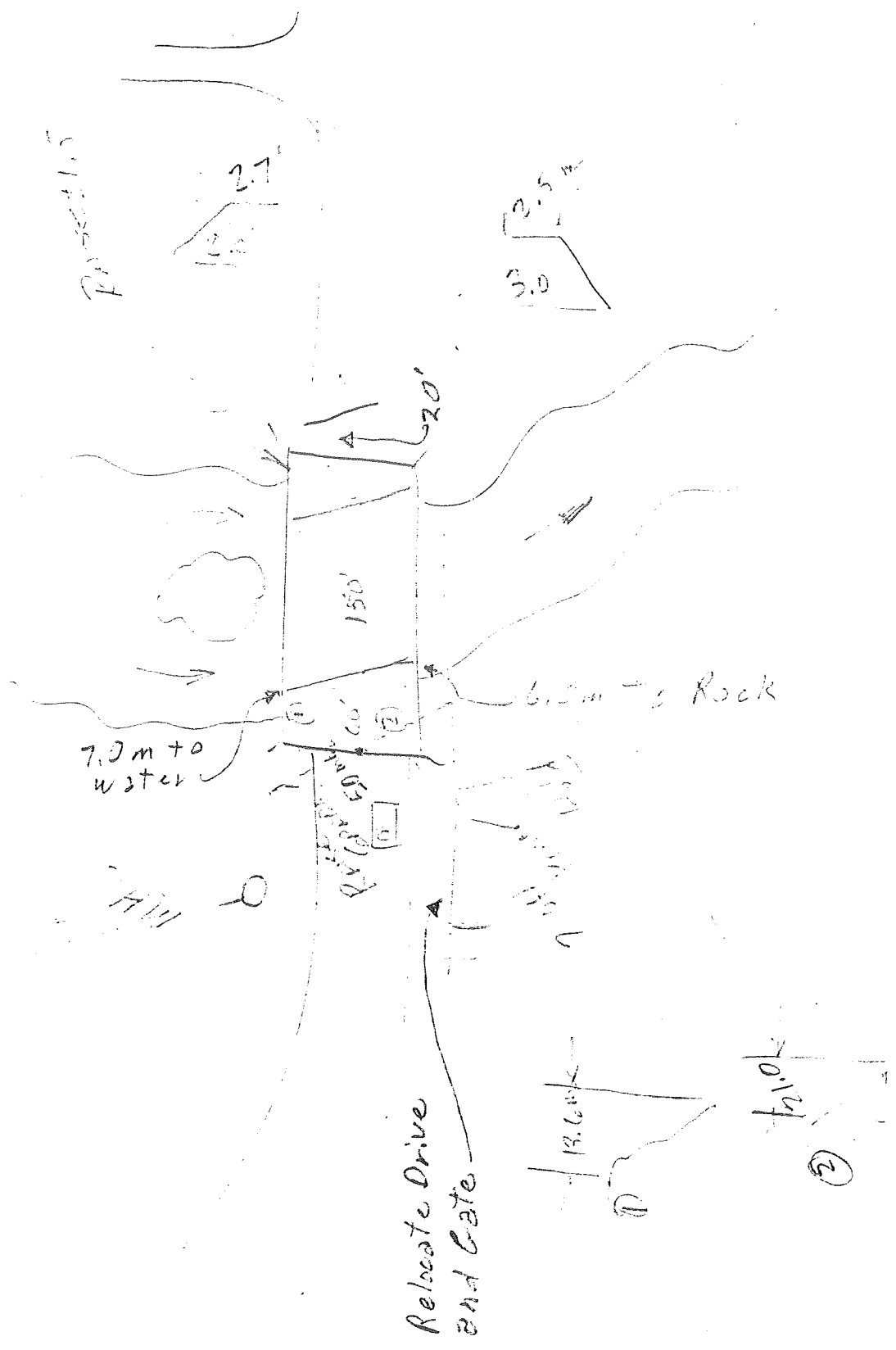
RECOMMENDATION

TYPE OF STRUCTURE Prestress Bm APPROACH SLABS None  
PERMITS REQUIRED None SKEW ~~49/99~~ 20° Skew  
OPPORTUNITY FOR PUBLIC HEARING YES  NO   
PAVEMENT WITH None SHOULDER WIDTH 1.8m DESIGN SPEED 45m/h  
BRIDGE LENGTH 60-79m BRIDGE WIDTH 10.2m SPANS ~~60-75-75-50~~  
RAISE GRADE See Back 0.9m ~~1.8m~~ ~~4.6m~~  
PRES R/W Needed for Permiss OBTAIN NEW R/W \_\_\_\_\_  
OBTAIN PERMISSION FOR Relocate Gate & Drive \_\_\_\_\_

COMMENTS:	18- <del>60</del> -28-25-18	164	79	46
	60-82-82-60	120		23
		284		72
	18-24-24-18			
	60-78-78-60	156		
		120		
		276		

(SKETCH ON BACK)

1007 1/2 S. 2nd Ave  
1000 ft  
20°



JMS  
8-30-95

LAURENS RAINFALL INFO

WARE SHOALS STATE CLIMATOLOGIST 737-0800

SIMPSONVILLE 24-HR RAINFALL

MAULDIN

GREENVILLE LAURENS

BREWERTON GREENVILLE - SPARTANBURG

25<sup>th</sup> MON 8a.m. - 1:48"

27<sup>th</sup> SUN 11.75"

26<sup>th</sup> SAT 1.24"

NATIONAL WEATHER SERVICE 822-8135

BROAD RIVER @ SC-34 IN FAIRFIELD CO.

@ BLAIR 26.5 FT (THIS MORNING)

251.0 FT

Elevation on topdown equals  
MSL elevation of 251.0 ft.

JMS  
8-30-95  
8:55 a.m.

3:15 PM

8/29/95

E/56.0

SC-34

Reading 27.8

BROAD RIVER

# ENOREE RIVER @ SC 418

D.A. = 177 SQUARE MILES

100-YEAR Q = 12,400 CFS (REGRESSION ON)

UNIT Q = 367 CFS/S.M.

DATA OBTAINED FROM NOEL HURLEY WITH THE USGS  
ON 11-22-95.



WEIGHT LIMIT  
5 TONS PER AXLE  
8 TONS GROSS

**Historical Crests**

- (1) 40.00 ft on 08/17/1928
- (2) 37.00 ft on 10/10/1976
- (3) 31.10 ft on 10/18/1964
- (4) 30.40 ft on 03/15/1975
- (5) 30.00 ft on 03/03/1987
- (6) 27.95 ft on 09/10/2004
- (7) 27.80 ft on 03/22/2003
- (8) 27.70 ft on 03/08/1963
- (9) 27.40 ft on 02/03/1973
- (10) 27.00 ft on 10/14/1990

Glenn G. Patterson  
District Chief  
U.S. Geological Survey  
Water Resources Division  
Stephenson Center, Suite 129  
720 Gracern Road  
Columbia, SC 29210-7651

Dear Mr. Patterson:

On September 8, 1995, our Hydraulic Engineer, Mr. Bill Hulbert, met with Mr. Noel Hurley of your Agency to discuss the recent flooding caused by intense rainfall from Tropical Storm Jerry from August 26-29, 1995. Fifty-seven sites in the upstate counties of Greenville, Laurens, Newberry, Spartanburg and Union ~~South Carolina~~ were selected. <sup>Most of</sup> These sites were made up of locations that lacked a gaging station and/or sufficient historical records. Of these fifty-seven sites some will be selected for indirect measurement <sup>of peak flows</sup> given sufficient high water marks. If you have any questions please feel free to contact Mr. Bill Hulbert at 737-0564

Sincerely,

William A. Keller, III  
Deputy Director of Construction,  
Engineering and Planning.

Apr. 8, 1995

Delete

↳ S-30-307 Rabon Creek

Add SC 101 Big Durbin Creek

Add SC 418 Big Durbin Creek

~~Add SC 14 Enoree River~~

~~Add SC 418 Enoree River~~

Add SC 49 Enoree River

Add SC 56 Enoree River

Delete US 176 Enoree River

Delete SC 72/171 Tyger River

Add SC 56 & SC 49 Tyger River

Add I-85 Middle Tyger River

Delete S-55 Pacolet River

Delete US 76 S. Rabon Creek

Delete S-263 Enoree River

Sites with Level II analysis that have been suggested by the USGS for determination of high water marks.

Greenville County

#	Rt./Rd.	Stream Name
1.	SC 101	South Tyger River
2.	S-455	Reedy River
3.	S-68	Reedy River
4.	SC 296	Enoree River
5.	SC 146/417	Enoree River
6.	S-67	Saluda River

Laurens County

#	Rt.-Rd.	Stream Name
7.	S-67	Enoree River
8.	S-263	Enoree River
9.	S-112	Enoree River (S-116 in Spartanburg County)
10.	SC 101	North Rabon Creek
11.	US 76	South Rabon Creek
12.	S-6	Rabon Creek
13.	SC 418	Little Durbin Creek

Spartanburg County

#	Rt./Rd.	Stream Name
14.	US 29	North Tyger River
15.	SC 296	North Tyger River
16.	SC 357	Middle Tyger River
17.	S-591	Middle Tyger River
18.	I-26	North Tyger River
19.	SC 11	Pacolet River
20.	S-55	Pacolet River
21.	S-59	Pacolet River
22.	US 176	South Pacolet River
23.	S-62	South Tyger River
24.	S-242	South Tyger River
25.	I-85	South Tyger River
26.	SC 417	South Tyger River

## Union County sites for High Water Marks

#	Rt./Rd.	Stream Name
* 1.	SC 18	Pacolet River
* 2.	SC 105	" "
<del>GAGE 3.</del>	<del>SC 49</del>	<del>Tyger River</del>
* 4.	S-16	" "
* 5.	US 176	" "
* 6.	SC 72/121	" "
* 7.	S-35	" "

## Newberry County sites for High Water Marks

#	Rt./Rd.	Stream Name
* 1.	US 176	Enoree River
* 2.	S-81	" "
* 3.	S-45	" "
<del>4.</del>	<del>SC 34</del>	<del>Saluda River</del> Covered under sep. agreement.
Gage ? 5.	<del>SC 39</del>	<del>" "</del>
Gage ? * 6.	SC 121	" "
Lake Murray ? 7.	<del>SC 395</del>	<del>" "</del>

# South Tyger and Reedy Rivers

Greenville County sites for High Water marks

#	Rt./Rd.	Stream Name		
1.	SC 414	South Tyger River		
2.	S- 569	" "	"	"
3.	Country Road D/S of S-569	" "	"	"
4.	S- 114	" "	"	"
5.	S- 113	" "	"	"
6.	S- 992	" "	"	"
★ 7.	SC 101	" "	"	"
8.	SC 14	" "	"	"
9.	S- 137	" "	"	"
10.	S- 103	Reedy River		
11.	S- 88	" "	"	"
12.	US 25	" "	"	"
13.	S- 506	" "	"	"
14.	S- 133	" "	"	"
15.	S- 87	" "	"	"
16.	SC 253	" "	"	"
17.	I- 85	" "	"	"
18.	S- 107	" "	"	"
19.	S- 221	" "	"	"
★ 20.	S- 448	" "	"	"
21.	S- 316	" "	"	"
22.	S- 272	" "	"	"
23.	S- 542	" "	"	"
24.	SC 418	" "	★ 29. S-80	Reedy River
25.	S- 154	" "	"	"
26.	S- 985	" "	"	"
★ 27.	S- 455	" "	"	"
★ 28.	S- 68	" "	"	"

Little & Big Durbin and S. Rabon Creeks, Enoree River

Greenville County sites for High Water marks

#	Rt./Rd.	Stream Name
1.	US 25	Enoree River
2.	S- 173	" "
3.	S- 342	" "
4.	SC 253	" "
5.	S- 156	" "
6.	S- 562	" "
7.	S- 920	" "
8.	US 29	" "
9.	S- 38	" "
★ 10.	S- 166	" "
11.	S- 94	" "
★ 12.	S- 164	" "
13.	I- 85	" "
14.	SC 14	" "
★ 15.	SC 296	" "
★ 16.	SC 146/417	" "
17.	S- 191	Little Durbin Creek
18.	S- 160	Big Durbin Creek
19.	S- 191	" " "
20.	SC 418	South Rabon Creek
21.	S- 154	" " "
22.	S- 451	" " "

# Saluda River

## Greenville County sites for High Waters marks

#	Rt./Rd.	Stream Name
1.	S-88	Saluda River
2.	SC 183	" "
3.	S-63	" "
4.	SC 124	" "
5.	US 123	" "
6.	S-85	" "
7.	SC 81	" "
8.	I-85	" "
9.	SC 86	" "
10.	SC 20	" "
11.	SC 8	" "
★ 12.	S-67	" "
13.	SC 247	" "
★ 14.	S-51	" "
15.	US 76	" "

Laurens County sites for High Water marks

#	Rt./Rd.	Stream Name
1.	S- 269	Enoree River
Already gone 2.	SC 418	" "
★ 3.	S- 67	" "
4.	SC 101	" "
★ 5.	S- 263	" "
★ 6.	S- 112	" " - S-116 Spartanburg
<del>★ 7.</del>	<del>S- 112</del>	<del>" "</del> Already assigned as S-893 in Spart.
8.	US 221	" "
Gage 9.	SC 49	" "
10.	I-26	" "
11.	SC 56	" "
12.	S- 98	" "
13.	S- 745	North Rabon Creek
14.	S- 259	" " "
★ 15.	SC 101	" " "
★ 16.	S- 78	" " "
17.	US 76	" " "
18.	S- 308	South Rabon Creek
19.	S- 377	" " "
20.	SC 101	" " "
21.	S- 77	" " "
★ 22.	US 76	" " "
23.	S- 312	" " "
24.	SC 252	Rabon Creek
★ 25.	S- 36	" "
★ 26.	S- 6	" "
★ 27.	S- 54	" "
★ 28.	S- 307	Rabon Creek
<del>★ 29.</del>	<del>S- 78</del>	<del>Rabon Creek</del>

# Reedy and Saluda Rivers

## Laurens County sites for High Water marks

#	Rt./Rd.	Stream Name
1.	US 76	Reedy River
2.	US 252	" "
3.	S-36	" "
★ 4.	S-6	Reedy River
5.	S-48	Saluda River
6.	S-63	" "
★ 7.	US 25 Bus./SC 252	" "
8.	US 25	" "
★ 9.	SC 418	Little Durbin Creek
10.	S-704	" " "
11.	SC 418	Big Durbin Creek
12.	S-67	" " "
13.	SC 101	" " "

# North Tyger, Middle Tyger and Tyger Rivers

## Spartanburg County sites for High Water marks

#	Rt./Rd.	Stream Name	
1.	SC 292	N. Tyger River	
* 2.	S-736	" " "	
3.	SC 129	" " "	
* 4.	S-60	" " "	* 26. S-317 N. Tyger River
5.	I-85	" " "	* 27. S-85 Enoree River
* 6.	US 29	" " "	
* 7.	SC 296	" " "	
* 8.	S-64	" " "	
* 9.	SC 357	Middle Tyger River	
10.	Country Road D/S of SC 357	" " "	
11.	US 29	" " "	
12.	S-77	" " "	
13.	S-242	" " "	
14.	S-63	" " "	
15.	I-85	" " "	
16.	S-222	" " "	
* 17.	S-591	" " "	
18.	SC 296	" " "	
19.	S-64	" " "	
20.	US 221	Tyger River	
* 21.	I-26	N. " "	
22.	S-231	" "	
23.	S-50	" "	
24.	S-113	" "	
25.	SC 56	" "	

# North Pacolet & Pacolet Rivers

## Spartanburg County Sites for High-water marks

# Rt./Rd. Stream Name

1. S-956 N. Pacolet River

2. SC 9 " " "

\* 3. SC 11 Pacolet River

4. County Road  
D/S of SC 11 " "

\* ~~4~~ 5. S-978 " "

\* 6. S-55 " "

7. S-43 " "

8. S-189 " "

9. US 221 " "

\* 10. I-85 " "

11. S-737 " "

\* 12. S-31 " "

13. US 29 " "

14. S-30 " "

\* 15. S-59 " "

16. SC 150 " "

\* 17. US 176 S. Pacolet River

# South Tyger River

Spartanburg County sites for High Water marks

#	Rt./Rd.	Stream Name
1.	SC 357	South Tyger River
2.	US 29	" " "
3.	SC 290	" " "
4.	S- 221	" " "
★ 5.	S- 62	" " "
★ 6.	S- 242	" " "
★ 7.	I-85	" " "
8.	S-63	" " "
9.	S-82	" " "
GAGE 10.	SC 296	" " "
★ 11.	SC 417	" " "
12.	Country Road D/S of SC417	" " "
13.	S- 197	" " "
14.	US 221	" " "
Floodway (FEMA) ★ 15.	S- 86	" " "
16.	I-26	" " "
★ 17.	S-893	Enoree River

Sites with Level II analysis that have been suggested by the USGS for determination of high water marks.

Greenville County

#	Rt./Rd.	Stream Name
1.	SC 101	South Tyger River
2.	S-455	Reedy River
3.	S-68	Reedy River
4.	SC 296	Enoree River
5.	SC 146/417	Enoree River
6.	S-67	Saluda River

Laurens County

#	Rt.-Rd.	Stream Name
7.	S-67	Enoree River
8.	S-263	Enoree River
9.	S-112	Enoree River (S-116 in Spartanburg County)
10.	SC 101	North Rabon Creek
11.	US 76	South Rabon Creek
12.	S-6	Rabon Creek
13.	SC 418	Little Durbin Creek

Spartanurg County

#	Rt./Rd.	Stream Name
14.	US 29	North Tyger River
15.	SC 296	North Tyger River
16.	SC 357	Middle Tyger River
17.	S-591	Middle Tyger River
18.	I-26	North Tyger River
19.	SC 11	Pacolet River
20.	S-55	Pacolet River
21.	S-59	Pacolet River
22.	US 176	South Pacolet River
23.	S-62	South Tyger River
24.	S-242	South Tyger River
25.	I-85	South Tyger River
26.	SC 417	South Tyger River

Sites with Level II analysis that have been suggested by the USGS for determination of high water marks.

#### Greenville County

#	Rt./Rd.	Stream Name
1.	SC 101	South Tyger River
2.	S-455	Reedy River
3.	S-68	Reedy River
4.	SC 296	Enoree River
5.	SC 146/417	Enoree River
6.	S-67	Saluda River

#### Laurens County

#	Rt.-Rd.	Stream Name
7.	S-67	Enoree River
8.	S-263	Enoree River
9.	S-112	Enoree River (S-116 in Spartanburg County)
10.	SC 101	North Rabon Creek
11.	US 76	South Rabon Creek
12.	S-6	Rabon Creek
13.	SC 418	Little Durbin Creek

#### Spartanurg County

#	Rt./Rd.	Stream Name
14.	US 29	North Tyger River
15.	SC 296	North Tyger River
16.	SC 357	Middle Tyger River
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20.	S-55	Pacolet River
21.	S-59	Pacolet River
22.	US 176	South Pacolet River
23.	S-62	South Tyger River
24.	S-242	South Tyger River
25.	I-85	South Tyger River
26.	SC 417	South Tyger River