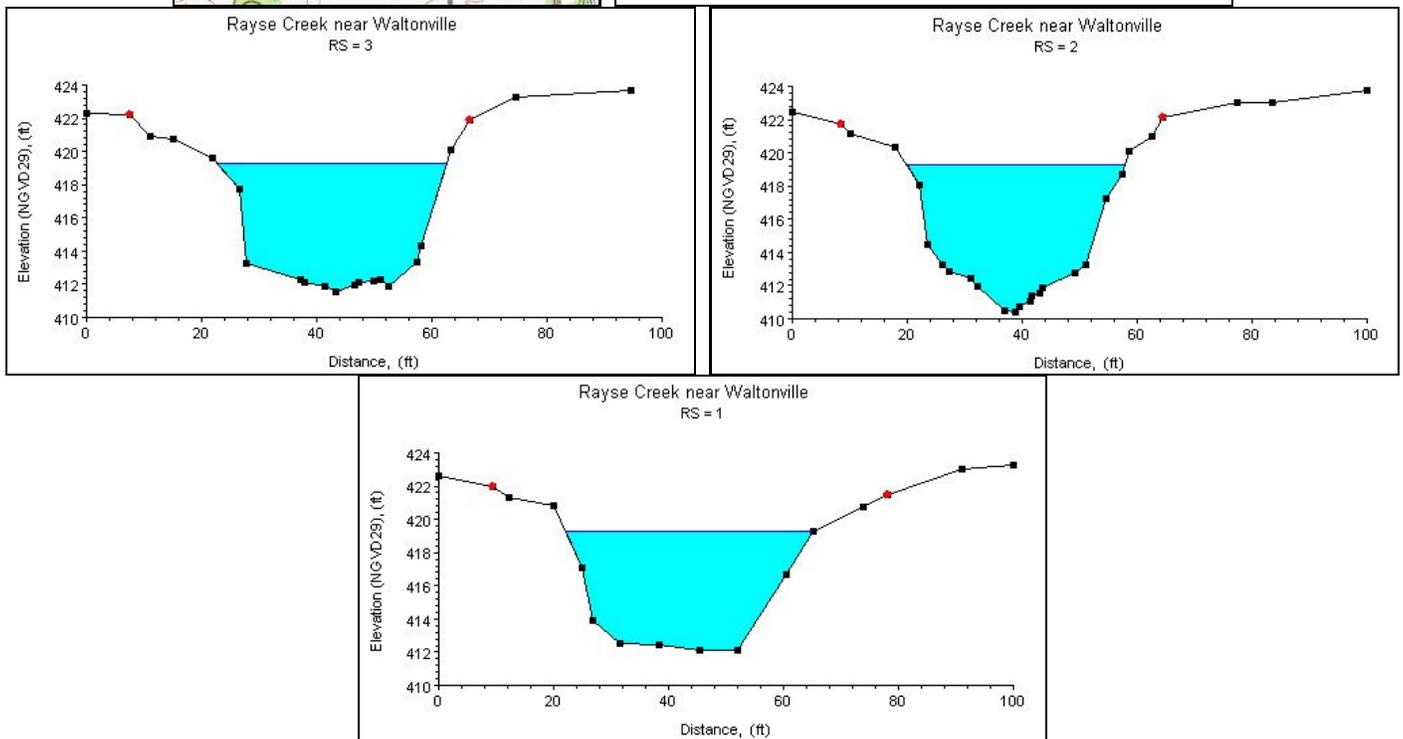
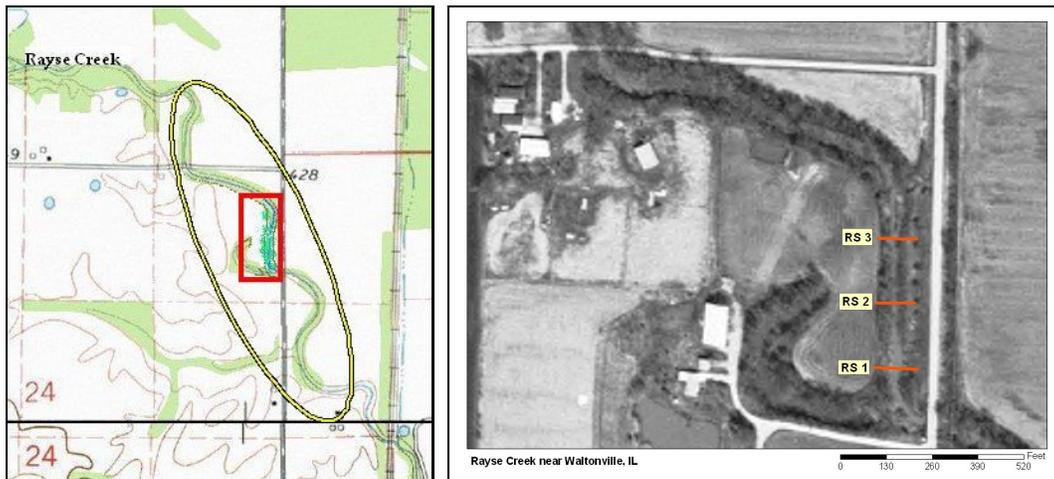


Rayse Creek near Waltonville, IL



Study Reach.--The channel under consideration is a meandering reach of a natural channel, as shown in the quadrangle map on the top left. The study reach is 310 ft long and extends about 400 ft upstream from the bridge on County Road 600E. Three surveyed cross sections (surveyed by the U.S. Geological in April of 2003) are available for characterizing the channel geometry in the study reach (see plots above). The alignment of the study reach, approximate variations in channel width and bank conditions, and locations of the surveyed cross sections are shown in the aerial photo on the top right.

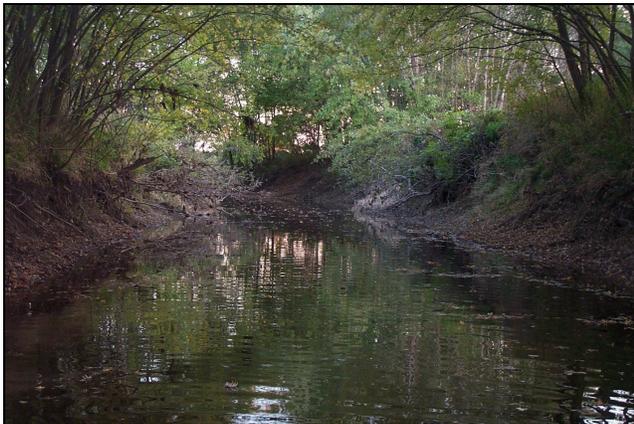
Gage Location.--Lat $38^{\circ}15'14''$, long $89^{\circ}02'23''$, in NE1/4 NE1/4 sec.24, T.3S., R.1E., on right bank at upstream side of bridge on County Road 600E, 1.2 mi. downstream from Knob Creek, 2.4 mi downstream from Novak Creek, 3.0 mi north of Waltonville, Jefferson County, and at mile 6.7. The USGS streamgage-station number is 05595730.

Drainage Area.--88.0 sq mi.

Gage Datum and Elevations of Reference Points.--Datum of gage is 412.00 ft. Staff gage 1 is located 400 ft upstream of the gage house, elevation of brass screw = 416.838 ft. Staff gage 2 is located about 180 ft upstream of the gage house, elevation of brass screw = 416.977 ft. A wire-weight gage (WWG) is attached to the upstream side of the bridge on 600E. All elevations are in NGVD 1929 convention.

Stage, Discharge Measurements, and Computed n-Values.--Water-surface elevations were measured from the staff gages and the WWG before and after each discharge measurement. Discharge measurements were made using the conventional current-meter method. Discharges at very high stages were not used for n-values studies because of a flow diversion 0.5 mi upstream of the gage and flow over the road. The computed n-values are listed in the following table. Whenever possible, the computed n-values are associated with a photo taken at the time of the measurement. The photos are arranged from low stage to high stage in order to illustrate contributing factors of n-values at a particular stage.

Date of Observation	Discharge (ft ³ /s)	Average Cross Section Area (ft ²)	Hydraulic Radius (ft)	Mean Velocity (ft/s)	Slope	Coefficient of Roughness <i>n</i>
1/25/1999	82.4	85.9	2.57	0.97	0.000438	0.053
5/8/2003	315.0	174.8	4.27	1.80	0.000173	0.028
5/8/2003	561.0	250.3	5.07	2.24	0.000173	0.027
5/9/2003	846.0	345.9	5.15	2.45	0.000500	0.041
4/7/2006	908.0	343.7	5.13	2.64	0.000438	0.035



05595730 Rayse Creek near Waltonville, IL
Looking Downstream from the first staff gage



05595730 Rayse Creek near Waltonville, IL
Looking Downstream from second staff gage



05595730 Rayse Creek near Waltonville, IL
Looking Downstream from Upstream of first staff gage



05595730 Rayse Creek near Waltonville, IL
Looking Downstream from Upstream of second staff gage



05595730 Rayse Creek near Waltonville, IL
Looking Upstream from right bank

01/25/99

Description of Channel.--The channel is a straightened reach of a natural channel. Streambed consists of silt, clay, and gravel mixtures. The streambed is subject to growth of aquatic vegetation during the spring through fall months. Bank material consists of bare earth with tree roots. Cross sections are generally in trapezoidal shape with encroachment occurring at the center of the channel. Bottom width is approximately 25 ft; banks are about 10 ft high and have a top width of about 60 ft. Both banks are fairly steep. Canopy cover overhangs the channel. Channel is subject to log and debris jams throughout the year.

Floods.--Nov. 14, 1993; gage height 17.73 ft; discharge 21,200 ft³/s, based on indirect measurement of contracted openings on Nov. 22-23, 1993.

Estimated n-Values using Cowan's Approach.--0.031 ~ 0.054