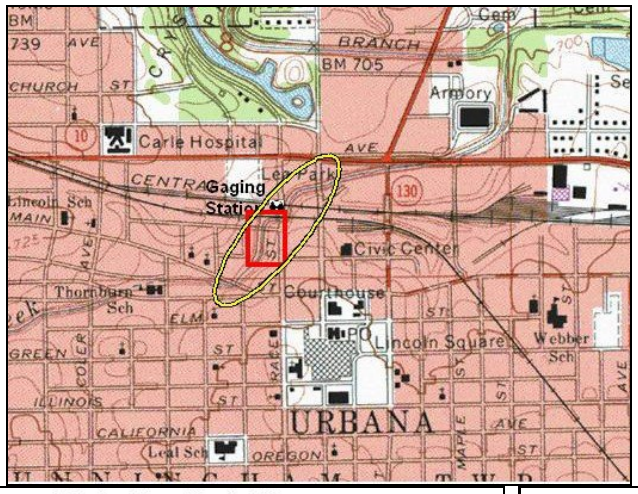
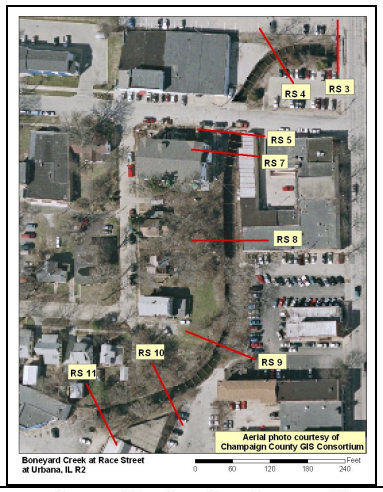
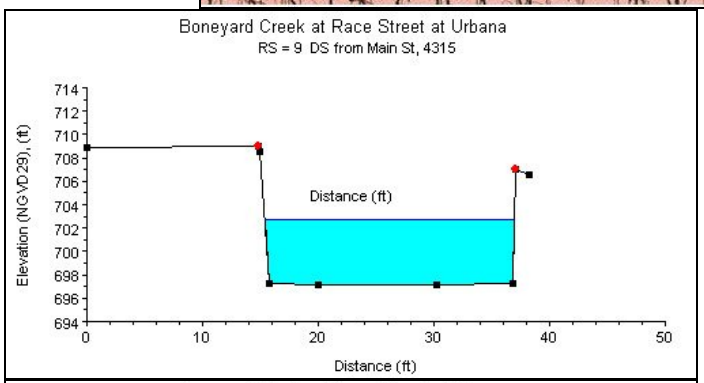
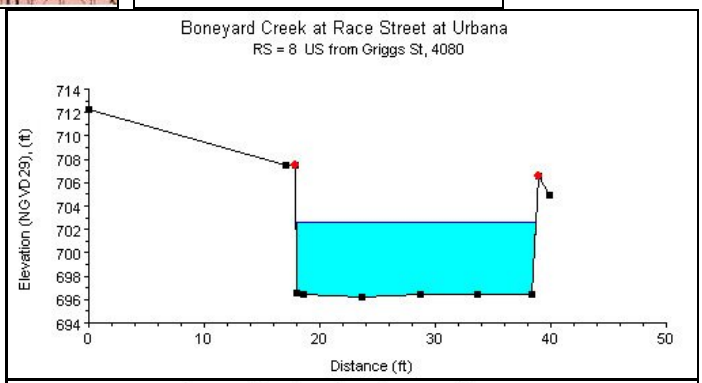
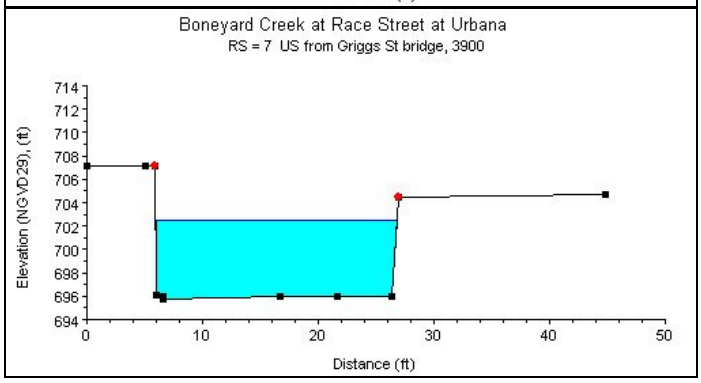
Boneyard Creek at Race Street at Urbana, IL Reach 2

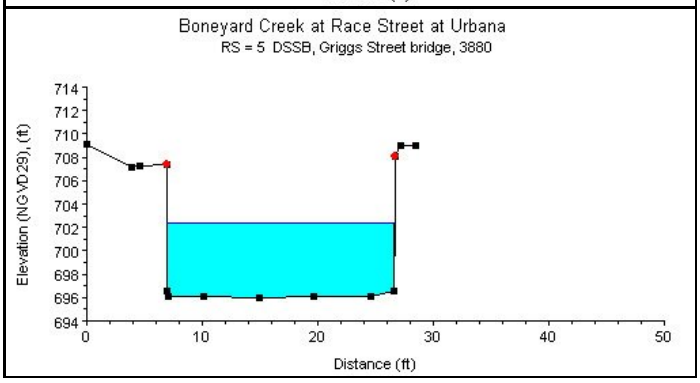












Study Reach.--The channel reach is constructed in an urban setting, as shown in quadrangle map on the top left. The study reach, approximately 855 ft long, is between Main Street and Race Street bridges. Ten cross sections (surveyed by Berns, Clancy, and Associates, in June 1997) are available for describing the channel geometries in the study reach. The channel alignment, approximate variations in channel width and bank conditions, and locations of cross sections are shown in the aerial photo on the top right. Because of the similarities in cross sectional geometries, cross sectional plots at river stations (RS) 8, 7, 5, and 4, as plotted above, are selected as representative cross sections.

Gage Location.--Lat 40°06'53", long 88°12'33", in SW1/4 SE1/4 sec.08, T.19N., R.9E., Champaign County, Hydrologic Unit 05120109, on left bank at upstream side of Race Street bridge in Urbana, 0.7 mi upstream from Saline Branch, at river mi 0.1. The USGS streamgage station number is 03337250.

Drainage Area.--6.86 sq mi.

Gage Datum and Elevations of Reference Points.--Datum of the gage is 694.00 ft. A reference point for n-value study, RP-N1, is two file marks on the middle fence post on the upstream side of Griggs Street bridge, elevation = 711.811 ft. A wire-weight gage (WWG) is located at downstream end of the study reach attached to the upstream side of Race Street sidewalk bridge. All elevations are in NGVD 1929 convention.

Stage, Discharge Measurements, and Computed n-Values.--Water-surface elevations were measured from RP-N1 and the WWG before, during, and after each discharge measurement. Discharge measurements were made using the conventional current-meter method. Because the stage rises and falls quickly, measurements were made using quarter counts and recording the time for each section to the nearest minute. When possible, multiple discharge measurements were made during a rise and recession to provide data for calculating n-values over a range in stage. 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-value 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 *n*
8/29/2003	199.0	56.7	2.19	3.61	0.000560	0.021
8/29/2003	262.0	66.9	2.49	4.01	0.000560	0.021
10/24/2001	285.0	71.8	2.63	4.02	0.001140	0.026
10/24/2001	322.0	75.0	2.72	4.34	0.001060	0.024
8/29/2003	340.0	76.1	2.74	4.55	0.000720	0.021
8/29/2003	390.0	87.5	3.04	4.52	0.000720	0.023
8/29/2003	542.0	103.3	3.41	5.30	0.001000	0.024
8/29/2003	542.0	104.6	3.43	5.24	0.001000	0.024
8/29/2003	563.0	108.9	3.53	5.24	0.000720	0.023

03337250 Boneyard Creek at Race Street at Urbana, IL Reach 2 09/24/03
Base conditions, looking upstream from Race St bridge

03337250 Boneyard Creek at Race Street at Urbana, IL Reach 2 08/03
From Race St, looking Upstream

03337250 Boneyard Creek at Race St at Urbana, IL Reach 2 08/03
From Griggs St, looking Upstream

03337250 Boneyard Creek at Race St at Urbana, IL 08/03
From Griggs St, looking Downstream

03337250 Boneyard Creek at Race St at Urbana, IL 08.28.03
Looking Upstream from Race St bridge

03337250 Boneyard Creek at Race Street at Urbana, IL Reach 2 08/29/03
Upstream of Race St bridge

03337250 Boneyard Creek at Race St at Urbana, IL Reach 2 08/29/03
Looking Upstream from Griggs St bridge n = 0.022 - 0.026

03337250 Boneyard Creek at Race St at Urbana, IL Reach 2 08/29/03
Looking Upstream from Griggs St bridge *n* = 0.022 - 0.026

03337250 Boneyard Creek at Race St at Urbana, IL Reach 2 08/29/03
Looking Upstream from Griggs St bridge *n* = 0.022 - 0.026

Description of Channel.--This channel is constructed with steel sheet-piling as sidewalls. The vertical steel pilings are about 16 ft high; concrete sills about 2 ft high support the bottom of the pilings. The bed material consists of concrete with sand-and-silt deposits. The width of the bed is about 20 ft. The reach has a rectangular cross-sectional geometry. The channel is subject to the accumulation and dissipation of urban debris, such as bicycles, shopping carts, and assorted garbage. The study reach contains a straight reach followed by a 90 degree bend at the downstream end.

Floods.--Maximum gage height, 10.72 ft., Aug. 19, 2002.

Estimated n-Values using Cowan s Approach.--0.021 - 0.026