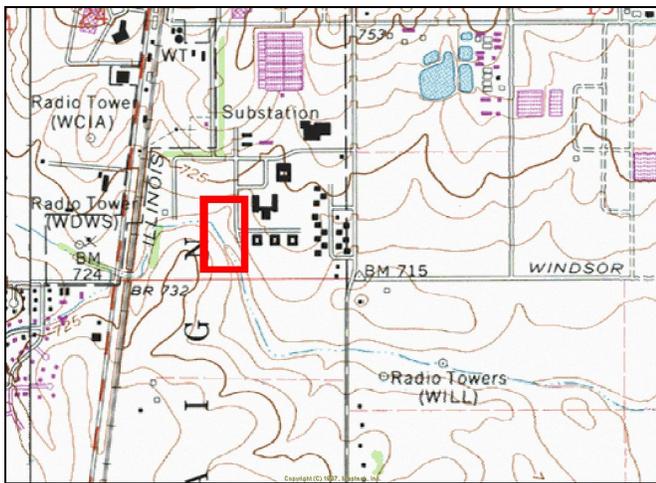
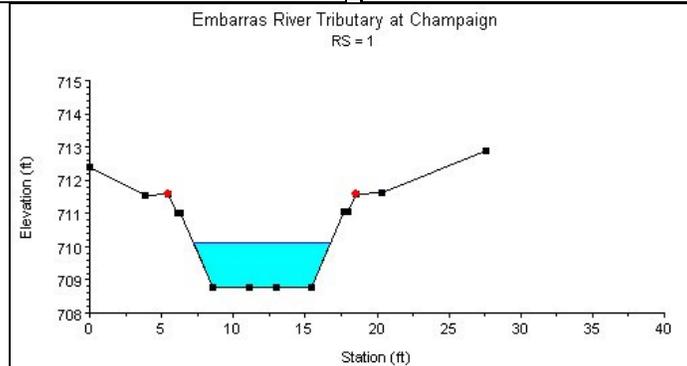
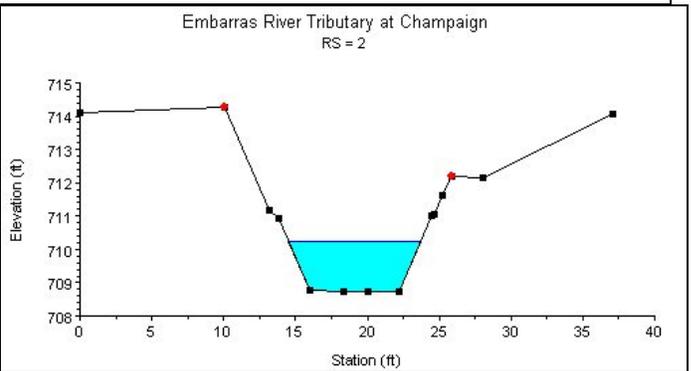
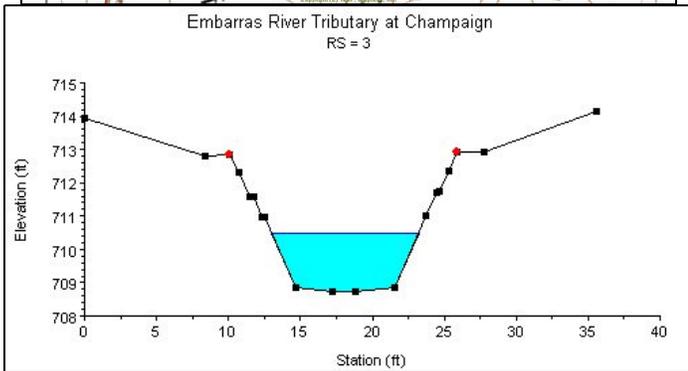
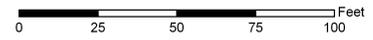


# Embarras River Tributary at Champaign, IL



Embarras Tributary at Champaign, IL



**Study Reach.**--The reach under consideration is a rectangular concrete drainage channel in an urban setting, as shown in quadrangle map on the top left. The study reach, about 200 ft long, is located south of Gerty St., to the west and parallel to Griffith Drive. Three cross sections (surveyed by USGS, in February 2006) are available for describing the channel geometries considered in the study, 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) 1, 2, and 3, as plotted above, are selected as representative cross sections.

**Gage Location.**--Lat 40°05'09"N, long 88°14'36"W (NAD of 1983), in NW1/4 SW1/4 SE1/4 sec.24, T.9N, R.8E, M.3, Champaign County, Hydrologic Unit 05120112, chiseled square on top left side of concrete wing-wall, abt.200 ft. south of Gerty St., and south-west of the intersection of Gerty St. and Griffith Drive. Enters the Embarrass River at mile 192.8. The USGS streamgage-station number is 03343200.

**Drainage Area.**--undetermined (due to subsurface tiles)

**Gage Datum and Elevations of Reference Points.**--No gage is established at this site. A reference point, RM-1, about 200ft south of Gerty St., is a chiseled square on the top left side of the concrete wing-wall, above the main pipe outfall, elevation = 719.875 ft. RP-N2 is a bolt on the left-inside wall of the concrete channel, located about 10 ft. upstream from the end of the reach, elevation = 710.928 ft. RP-N3 is a bolt on the left-inside wall of the concrete channel, located about 20 ft. downstream from the beginning of the channel, elevation = 710.901 ft. All elevations are in NGVD 1929 convention.

**Stage, Discharge Measurements and Computed n-Values.**--Water levels are read with an engineered-rule at both bolts. Flows are measured by wading in the concrete channel, downstream of the RP-N2 bolt at near the end of the channel. 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-values at a particular stage.

Date of Observation	Discharge (ft <sup>3</sup> /s)	Average Cross Section Area (ft <sup>2</sup> )	Hydraulic Radius (ft)	Mean Velocity (ft/s)	Slope	Coefficient of Roughness <i>n</i>
3/8/2006	3.5	2.7	0.35	1.39	0.001316	0.019
3/8/2006	3.8	2.9	0.37	1.38	0.001422	0.021
3/8/2006	5.0	3.1	0.40	1.69	0.001525	0.018
7/20/2006	8.2	3.8	0.47	2.23	0.001417	0.014
7/20/2006	8.2	3.8	0.47	2.23	0.001417	0.014
7/20/2006	11.7	4.8	0.57	2.53	0.001863	0.015
4/6/2006	37.7	10.8	1.04	3.56	0.002698	0.019
4/6/2006	41.1	11.3	1.07	3.69	0.002512	0.018
4/6/2006	43.4	11.8	1.10	3.75	0.002698	0.018
4/6/2006	45.3	12.1	1.12	3.81	0.002389	0.018
4/6/2006	45.3	12.3	1.13	3.74	0.002420	0.018
4/6/2006	45.4	12.3	1.13	3.75	0.002409	0.018



03343200 Embarras Tributary at Champaign, IL  
Looking upstream from downstream end 03/08/06



03343200 Embarras Tributary at Champaign, IL  
Looking downstream from upstream end 03/08/06



03343200 Embarras Tributary at Champaign, IL  
Looking Downstream 06/26/2007



03343200 Embarras Tributary at Champaign, IL  
Looking Downstream 06/26/2007



03343200 Embarras Tributary at Champaign, IL  
Looking Upstream 06/26/2007

**Description of Channel.**--This channel is located downstream of a six foot diameter culvert pipe, which collects run-off from portions of the University of Illinois campus and Research Park. The study reach begins after a stilling basin, approximately 20 ft downstream of the pipe outlet. The stilling basin is concrete-padded, with a broad-crested weir at downstream end. There is a second culvert-pipe outfall on the left-side, approximately 110 ft downstream of the total channel length. The flow contributions from this pipe may necessitate moving the study reach upstream within the channel to exclude its effects. The bed material consists of depositional silt, sand, and muck with algal and light grass growth; the upstream end has some flag-stones layers, with each successive layer set-back a few inches from the one below. The study reach has a rectangular cross-sectional geometry. Bed and lower banks are concrete-lined with flag-stone layered on the upper banks of both sides. Occasional bed depositions consist of silt and fine sand and algal

growth occurs during warm seasons.

**Floods.--**

**Estimated n-Values Using Cowan's Approach.--**