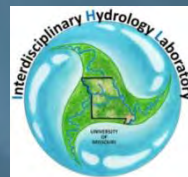
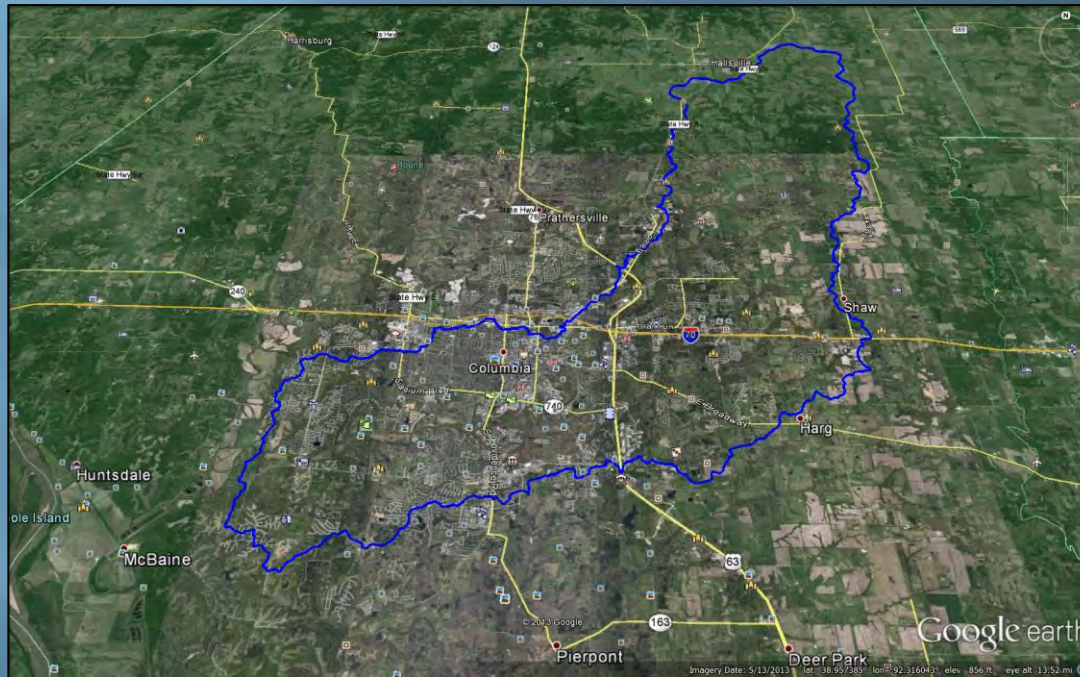


Interim report on the status of Physical Habitat Assessment of Hinkson Creek, Boone County, Missouri



Lynne W. Hooper
Jason A. Hubbart

Hinkson Creek is not fully supporting of aquatic life. Why are we conducting a physical habitat assessment?

Physical processes govern biological systems.

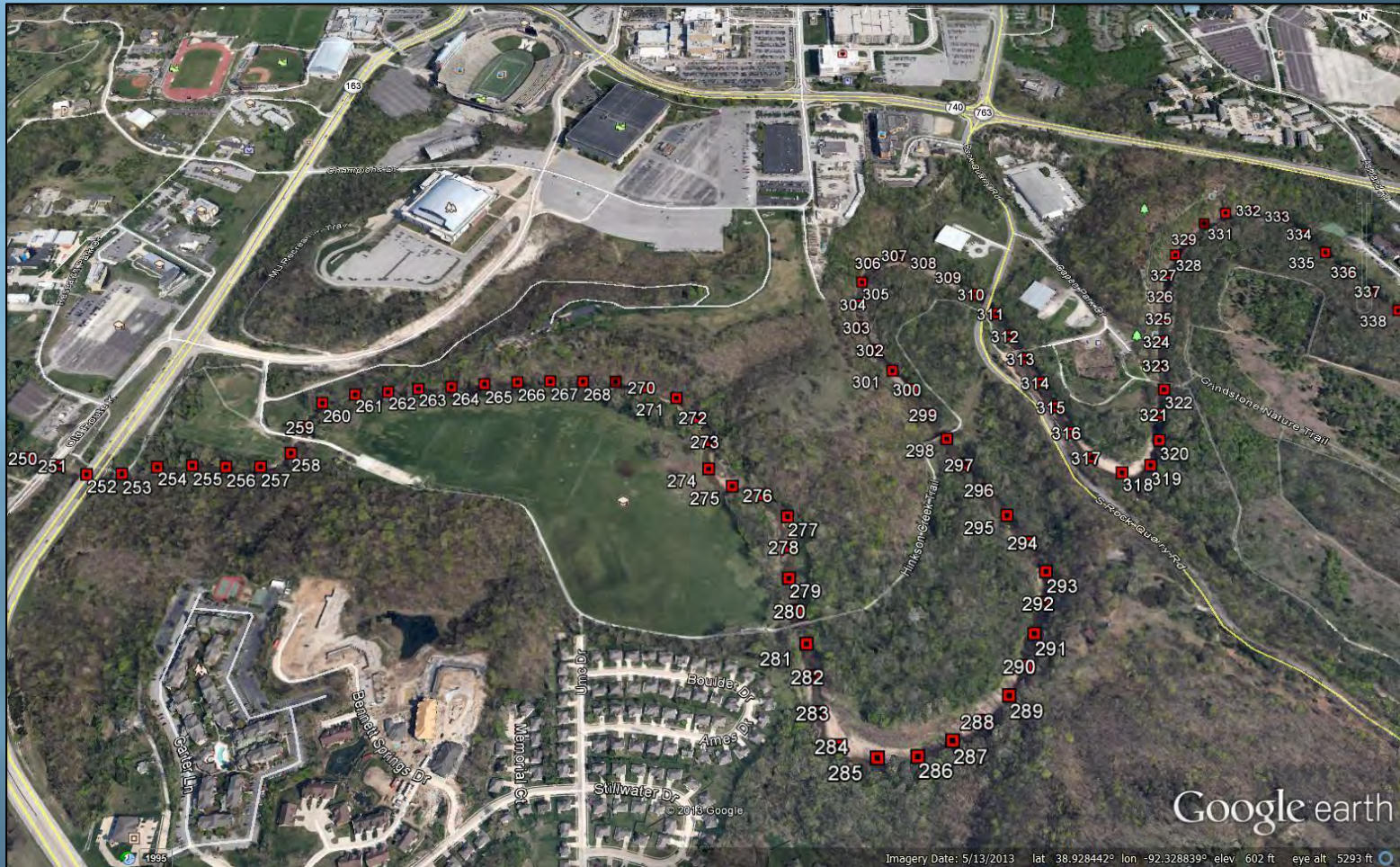
Physical Processes

1. Geology
2. Morphology
3. Hydrology

Physical processes govern biological systems.

Components of Hinkson Creek Physical Habitat Assessment

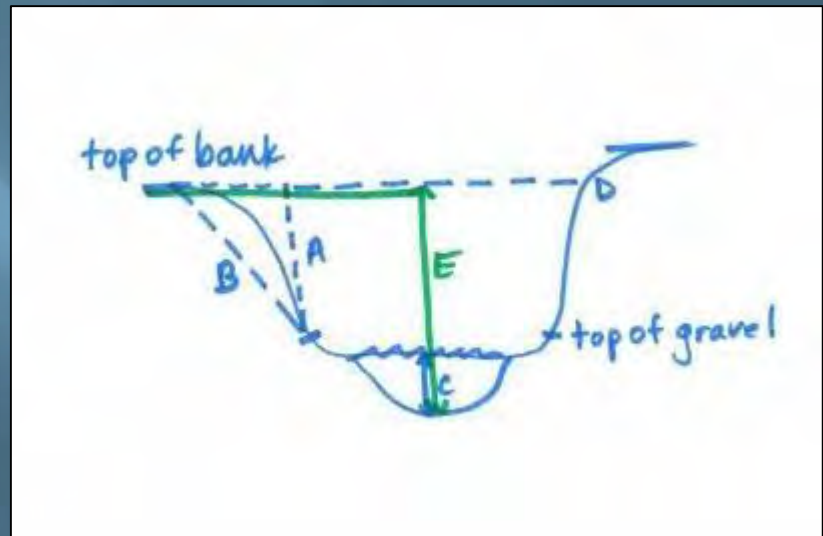
Survey points provided by MoRAP



Components of Hinkson Creek Physical Habitat Assessment

❖ Measurement of physical parameters:

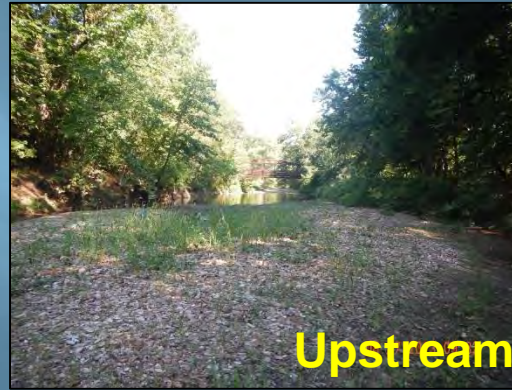
- A. Bank height
- B. Bank slope
- C. Thalweg depth
- D. Bankfull width
- E. Horizontal Thalweg position



Components of Hinkson Creek Physical Habitat Assessment?

- ❖ Measure and characterize streambed
 - Pebble count
 - Particle size class
 - Embeddedness
 - 10-meter transects
 - Thalweg depth
 - Particle size class
 - Presence of periphyton

Photographic journal

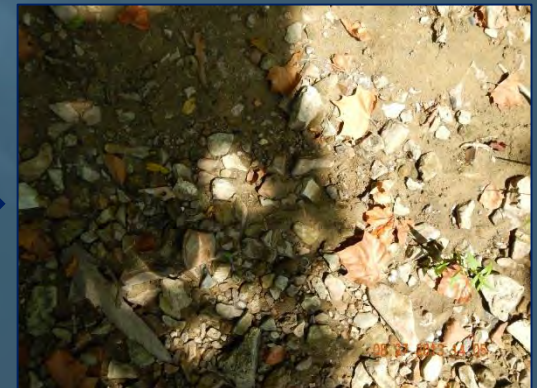


Cardinal
directions



Photographic journal

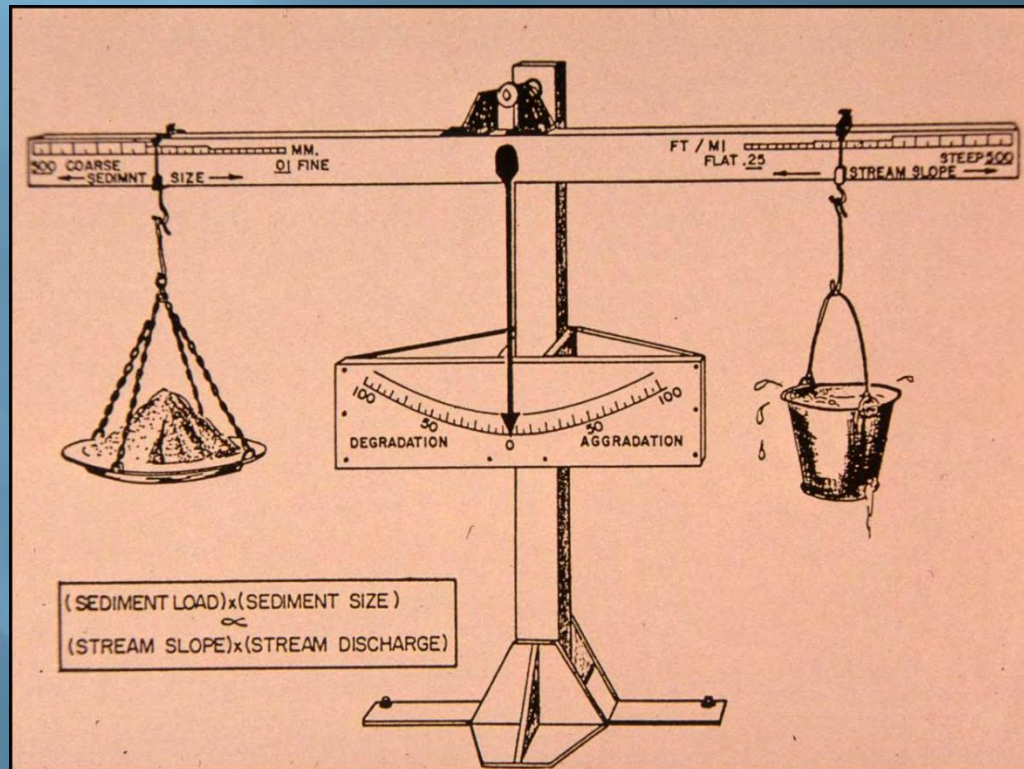
10-meter transects begin at right bank, and continue across stream to left bank:



Photographic journal



What do the PHA measurements tell us about stream conditions?



Lane's balance at stream equilibrium (1954)

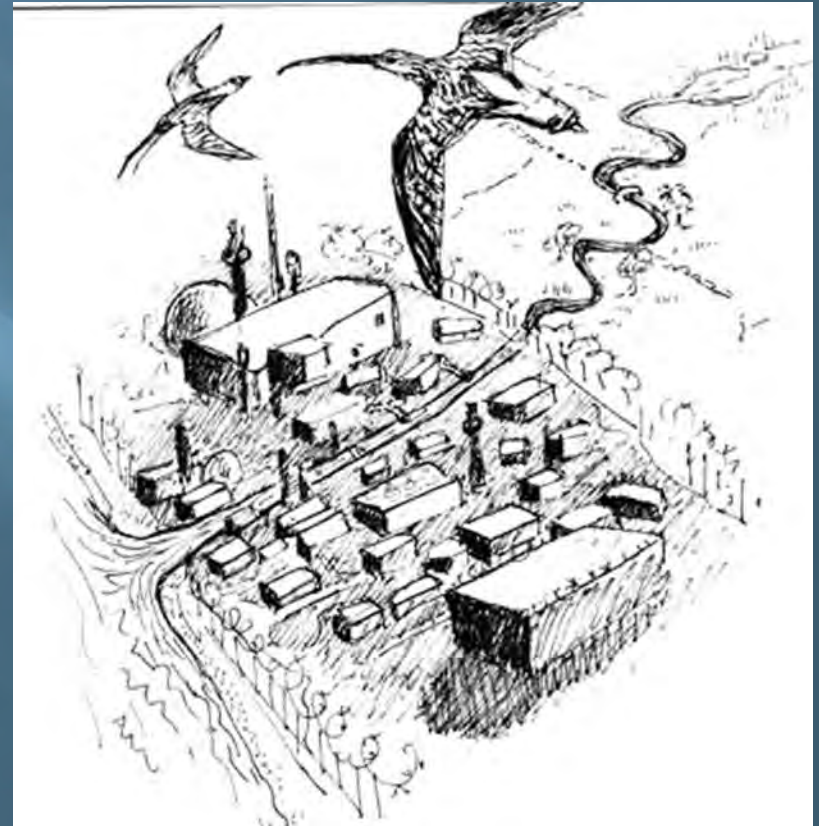
Significance of PHA data

- ❖ Education
 - Boone County interactive website
- ❖ Identify potential sites for restoration
- ❖ Update best management practices



Land use effects

- ❖ Natural channels
 - Meandering
 - Hydrologic connectivity
- ❖ Disturbed channels
 - Straightened
 - Loss of connectivity
- ❖ Impervious Surfaces
 - Increased runoff



Land use effects

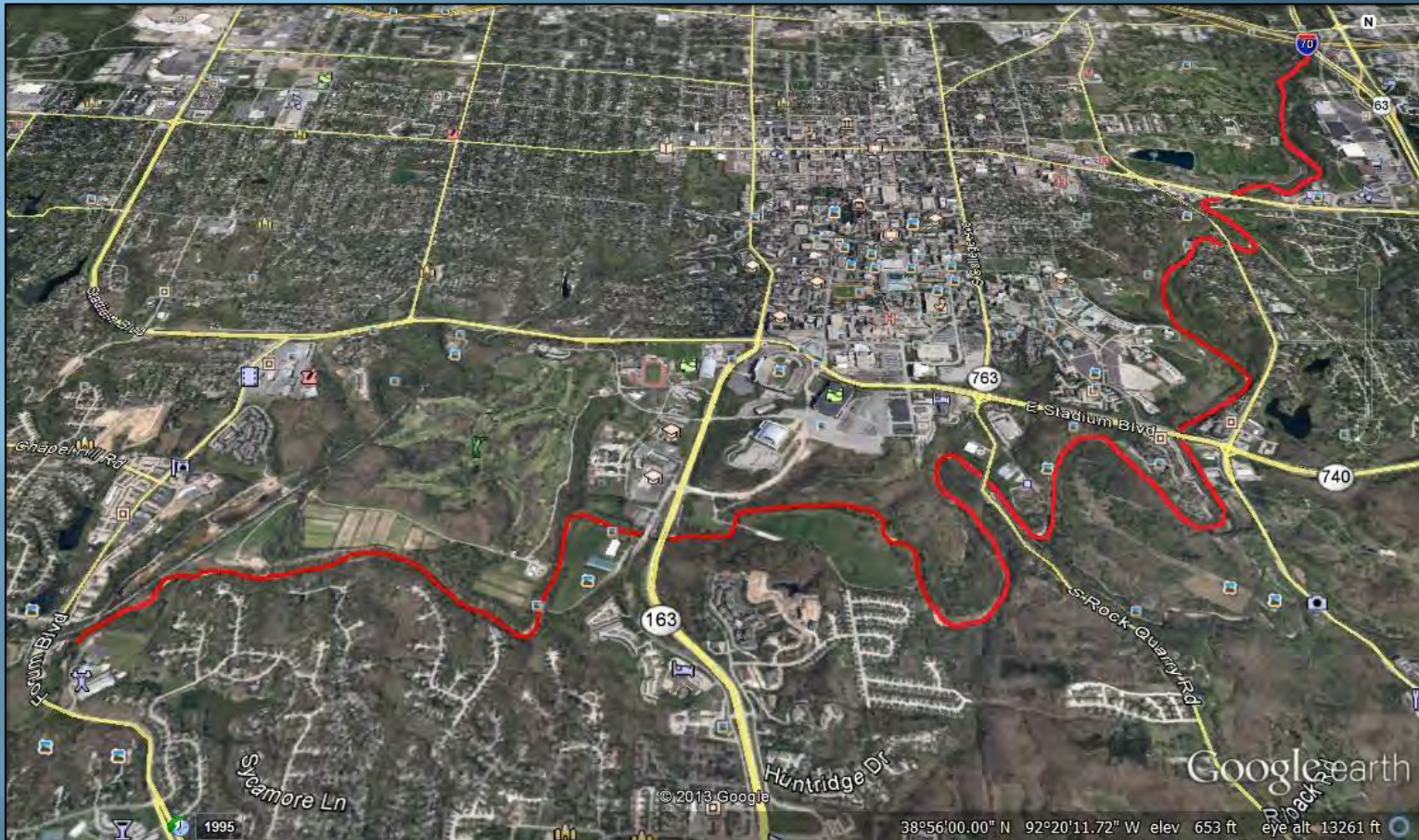


Land use effects



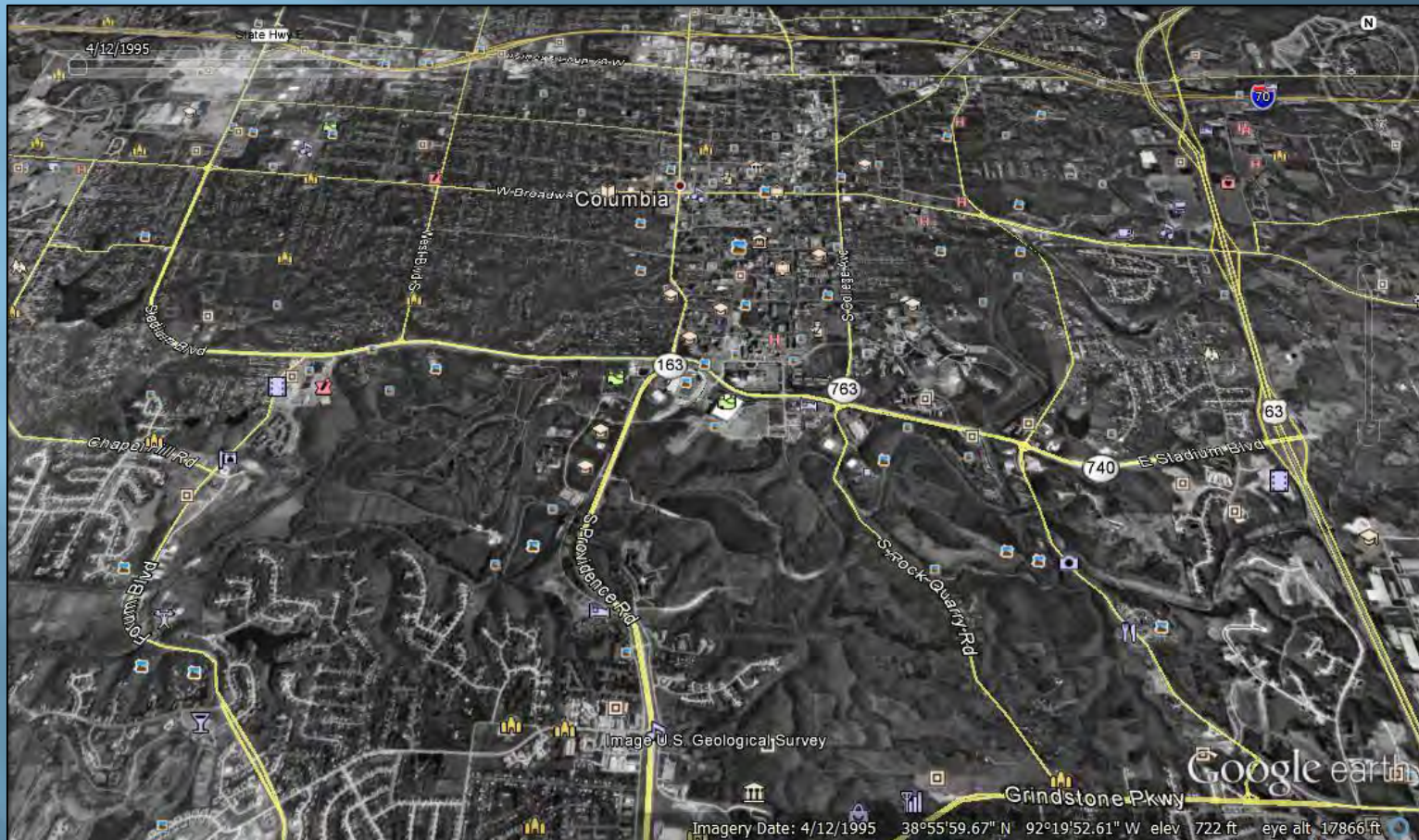
Interim results

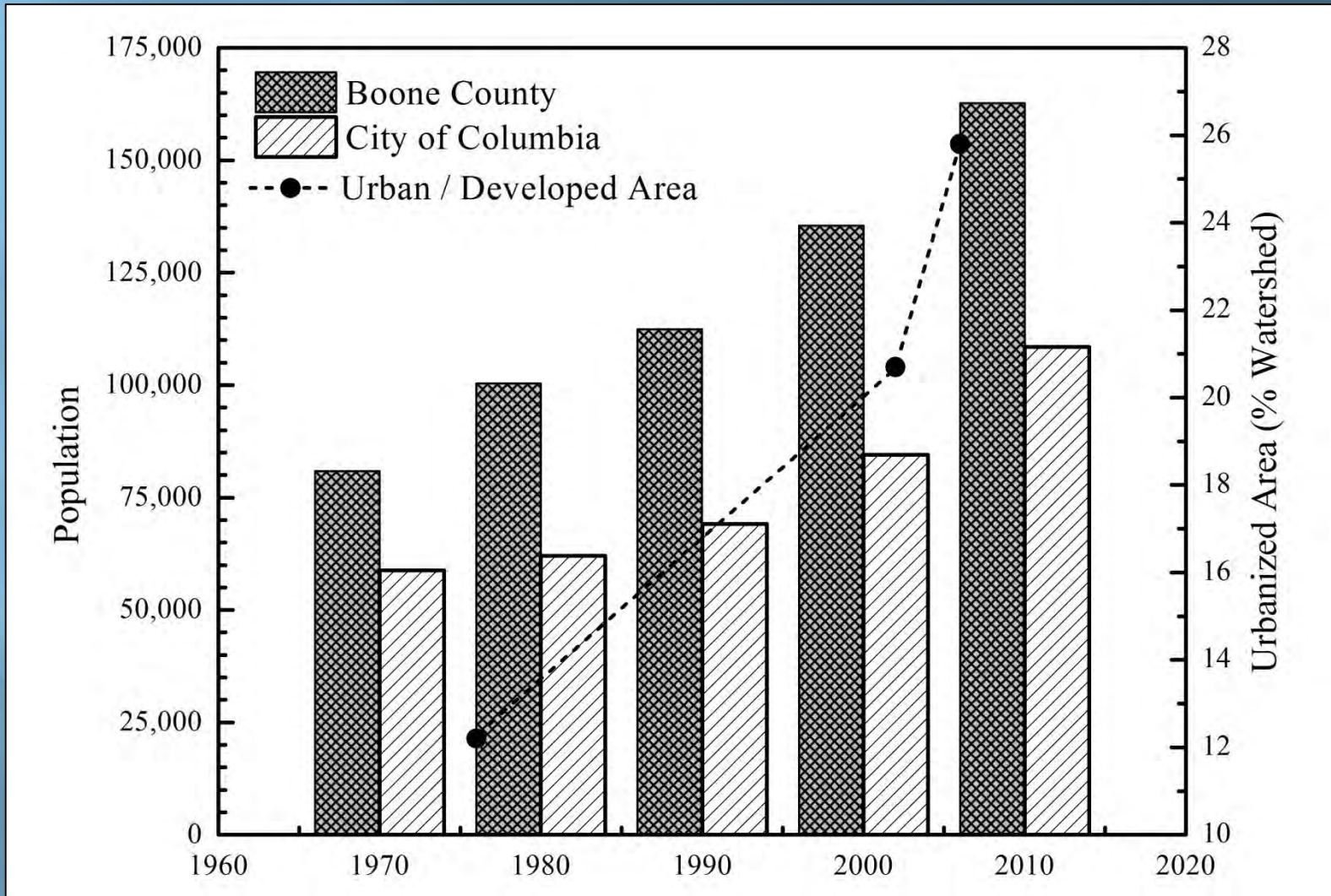
I-70 to Forum Boulevard



Interim results

Same area in 1995





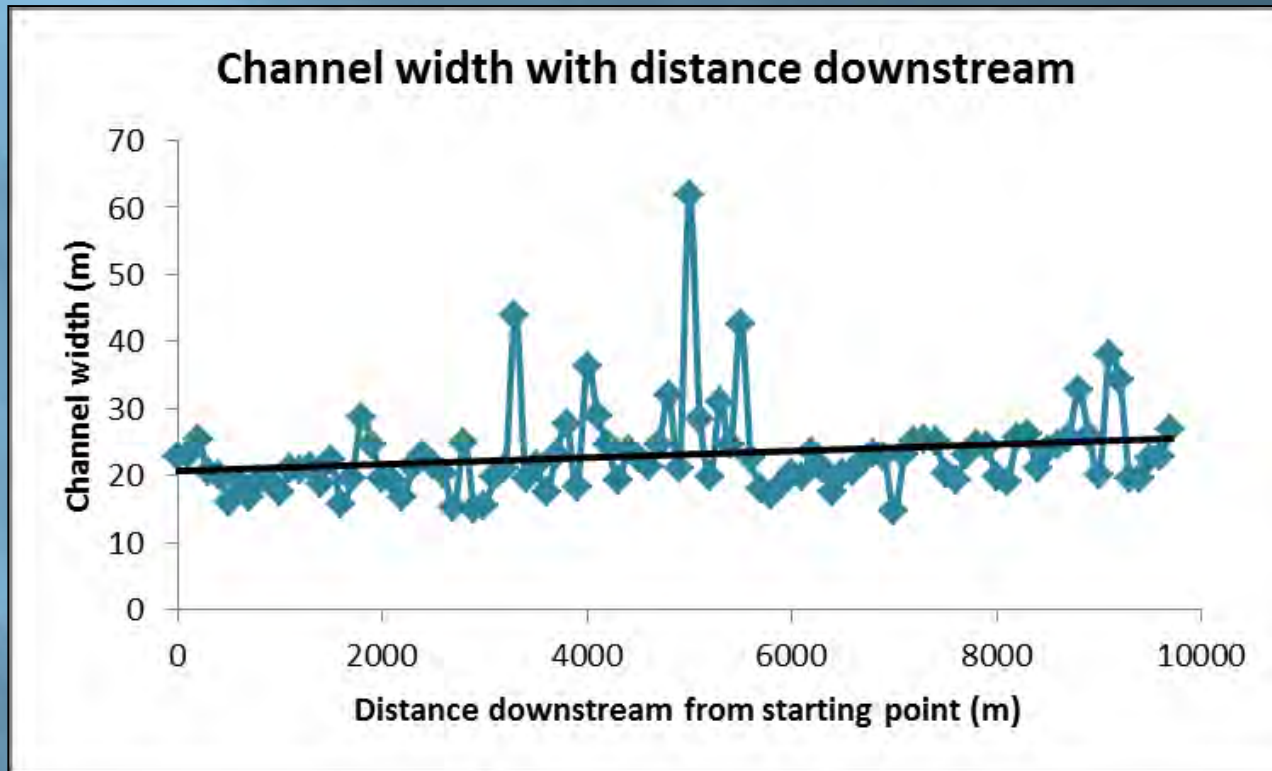
Population and Urbanized Area increase in City of Columbia and Boone County, 1970 to 2010 (Hubbart et al. 2014).

Interim results

Descriptive statistics

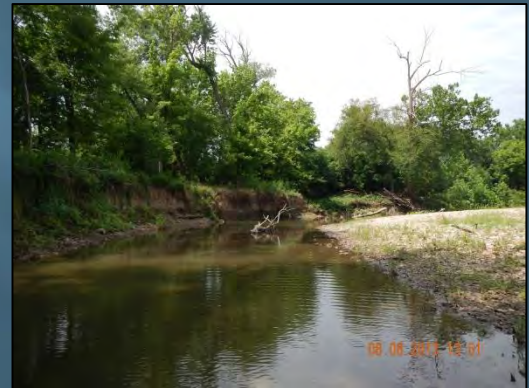
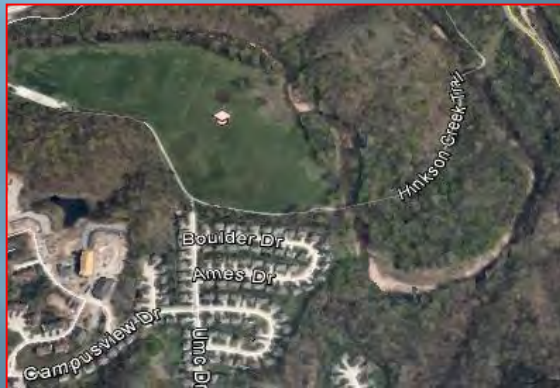
Metric	Maximum	Minimum	Mean	Standard Dev.
Channel width	62m	14.7m	23.08m	6.63m
Bankfull width	64m	16.9m	30.17m	6.82m
Bank height	4.4m	1.0m	2.71m	0.83m

Interim results

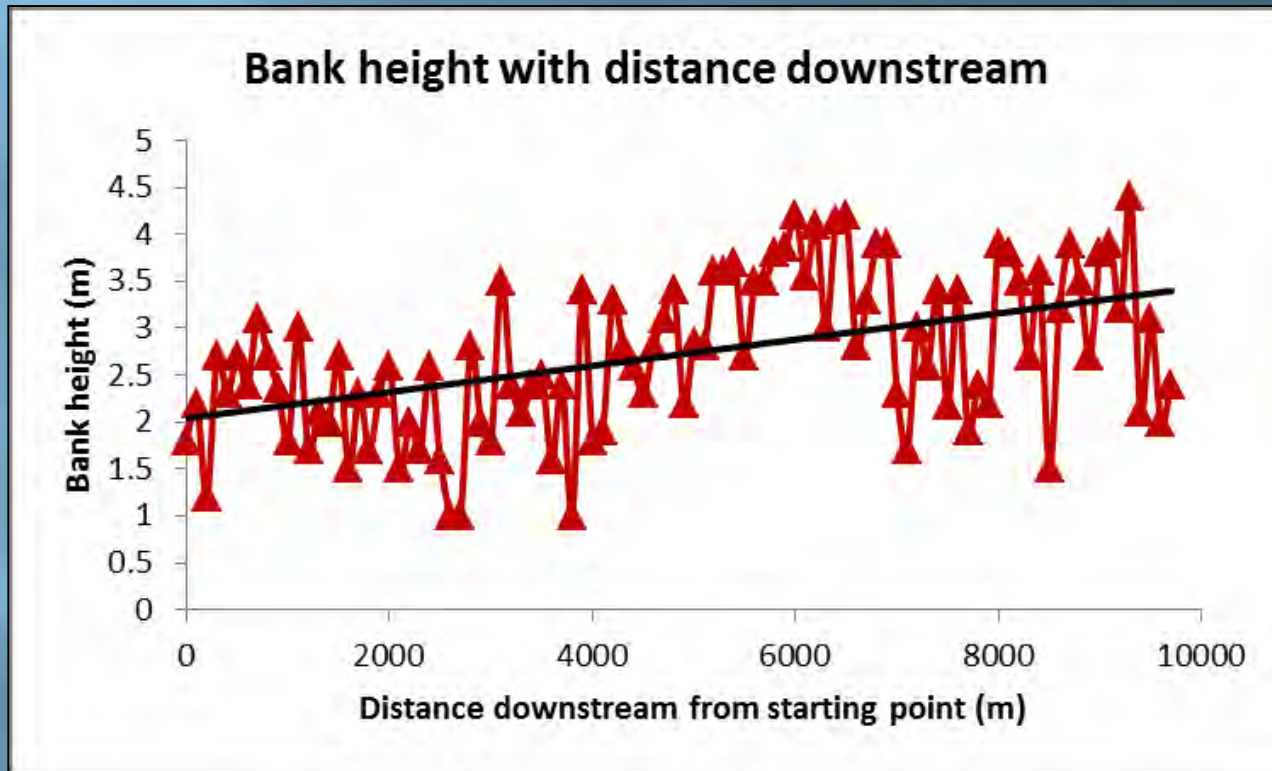


Channel width increases very gradually with distance downstream.

Interim results

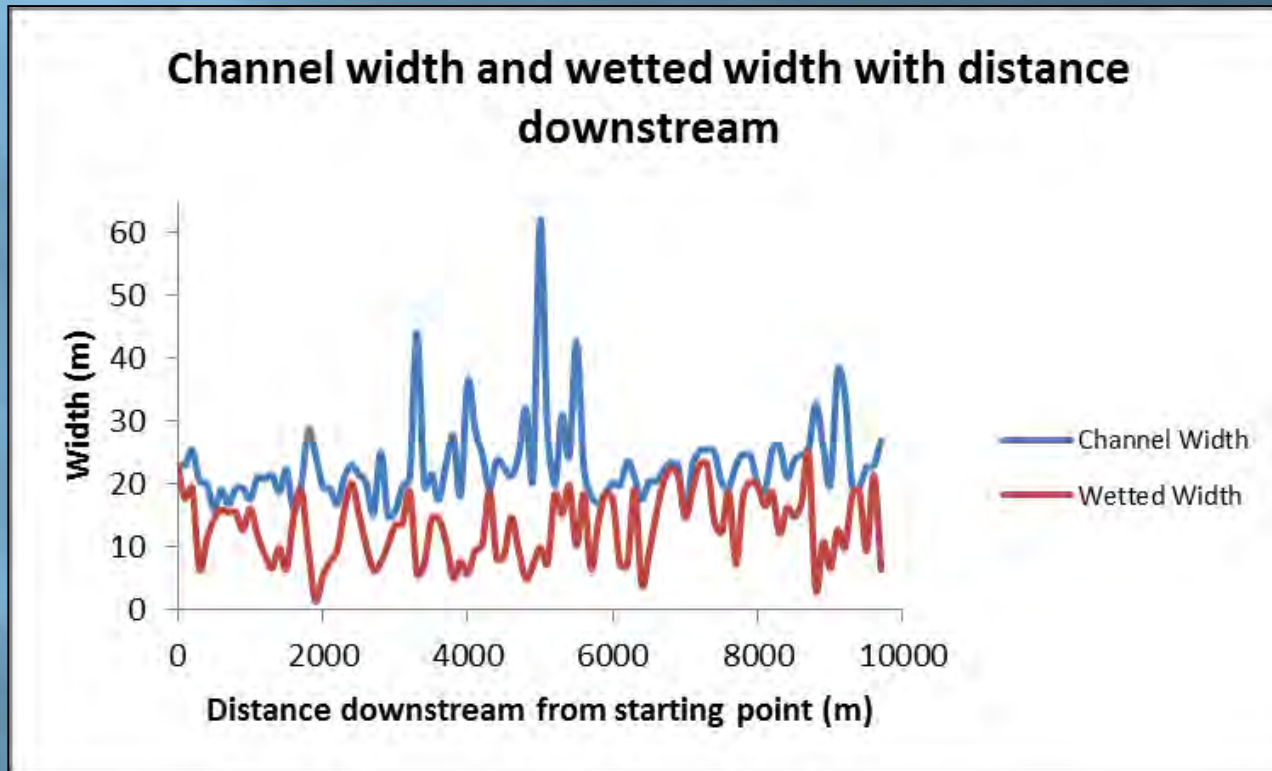


Interim results



Bank height increases more dramatically than channel width with distance downstream.

Interim results



Illustrating the relationship between channel width and wetted width moving downstream.

Physical Habitat Assessment

A virtual tour.





12.03.2013 12:17



12.03.2013 12:08





12.03.2013 10:40





12.04.2013 14:58



12.04.2013 14:41



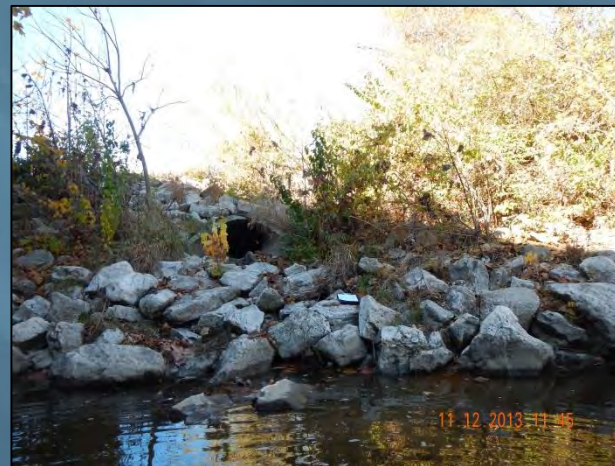
11.24.2013 14:06

A few words about

Erosion Control Structures

Erosion control structures

Riprap



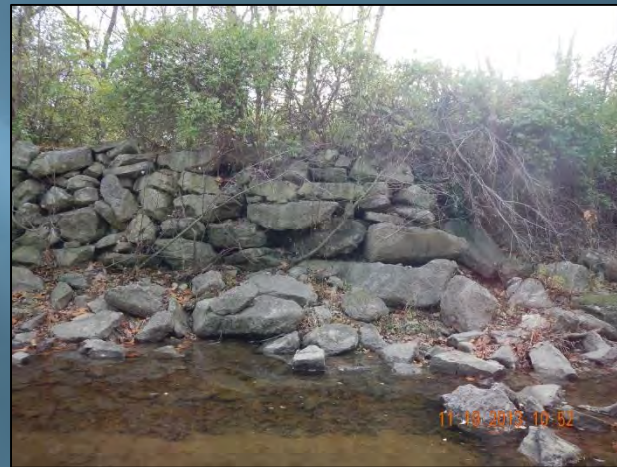
Erosion control structures

Gabion baskets



Erosion control structures

Other measures



Use of these large boulders seems as though it has stabilized the bank, but just downstream...

Erosion control structures



The energy of the stream flow is focused on the bank just downstream of the rock wall.

Continuing on our virtual journey

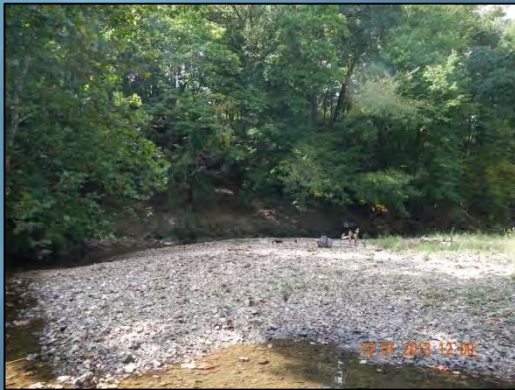




Grindstone Confluence



Confluence with Flatbranch Creek





10.01.2013 12:01



09.29.2013 15:02



And on to the mouth of the stream!

Looking out from the mouth



Perspective of scale



Questions?

