

TIMELY INFORMATION

Agriculture & Natural Resources

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WQ-02-11

January 2011

Urban Stream Enhancement

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Streambank erosion and the accompanying loss of land along streams is a common problem in Alabama, especially in urban areas. Techniques to address erosion depend on the severity of the problem and may range from simple and low-cost to technical and expensive. Slight to moderate erosion along a stream may be improved through replanting native vegetation along the corridor (see Timely Information articles “Backyard Stream Protection” and “Live Staking”).

Specialized technical assistance is required when stream instability is so severe that native vegetation alone cannot assist in stream improvement to slow erosion. These stream enhancement projects use practices that balance the reconnection of a stream to a floodplain, in-stream structures, and native vegetation.

Below is an overview of [the](#) urban stream enhancement process:

- 1) Identify areas of stream erosion.
- 2) Conduct stakeholder involvement meetings. Invite and include input from people who may be directly or indirectly impacted by the project.
- 3) Prepare stream design alternatives. Determine the amount of streamside area that is available to serve as a newly constructed floodplain. Calculate the number, type, and location of in-stream structures and obtain required permits. A professional engineer usually completes this step.



Talking with community members to identify goals and concerns is critical.

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4) Assess the existing vegetation. Identify transplants that can be used later and plants that may be harvested for live stakes. Remove vegetation along stream where work will occur and, if possible, mechanically remove non-native, invasive species with equipment on site.

5) Construction of floodplain and in-stream structures. Track equipment should be used to construct properly designed structures that tie into a floodplain bench that has been designed at the correct elevation (bankfull). In-stream structures direct water at high flows toward the center of the stream channel, minimizing the stress and potential erosion of the streambank. Constructing a floodplain also relieves the stress of high stream flows by allowing floodwaters to spread out and dissipate energy.



In-stream structures direct flows away from the streambanks to the center of the channel.

6) Placement of erosion and sediment control measures. After construction is completed along sections of the stream, proper erosion and sediment control measures should be implemented such as temporary and permanent seeding, mulch, and installation of erosion blankets (coir matting is used along the stream toe and excelsior matting is used along the upper floodplain).

7) Native vegetation planting. Long-term health and stability of the stream will depend upon the success of the streamside forest. Planting native vegetation helps with the long-term stabilization of the stream. Roots hold the streambank in place, leaves shade the stream moderating water temperatures, and plants take up nutrients that may otherwise pollute waters. Native plant species should be planted during the dormant season. Bareroot seedlings and live stakes survive the flashy urban flows experienced frequently along the toe of the streambank and in the newly created floodplain bench. Container plants are suggested for planting along upper slopes that don't experience frequent flooding.

8) Monitoring and maintenance. In-stream structures and erosion and sediment control practices should be monitored after large storm events, especially on new projects where vegetation is not yet fully established. Long-term monitoring of structures, vegetation, and stream stability should be a component of each project to establish what worked well and where improvements may be made. Inspections for invasive, nonnative plants should be conducted annually or more often to manage infestations and promote a healthy, native streamside forest.



Little Shades Creek, Vestavia Hills, Alabama, 9 months after construction.

For more information on stream enhancement visit

www.aces.edu/waterquality/streams/general.htm