

Low-Cost Streambank Restoration and Watershed Education

ANJEC Environmental Congress 9/25/26



Problem



Problem



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Problem



Causes



Poor soil controls during development

Increased precipitation due to climate change

Increased impervious surface due to development

More grey versus green infrastructure

Channelization of streams

Loss of Trees and vegetation

Erosion is **not just a bank problem** — it's a **watershed hydrology problem**.

Live Staking

Branch = Stake

Stabilizes banks

Restores riparian vegetation

Enhances wildlife

Scalable

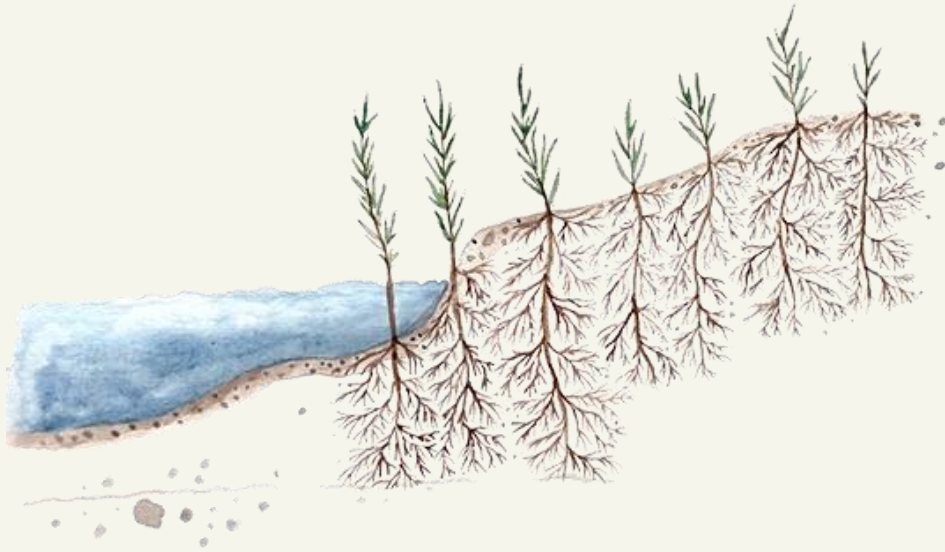
Low cost

Community based

Minimal equipment required



Why Nature-Based Infrastructure Matters



- Reduces erosion and sediment loading
- Helps slow and infiltrate stormwater
- Improves riparian habitat
- Lowers long-term maintenance costs
- Builds climate resilience
- Engages the community directly
- **Healthy riparian systems ARE stormwater infrastructure.**

Before

- Accessible
- Visible
- Not too unstable
- Moderate flow velocity
- Moist/wet soil



After



Materials



Dormant live stakes

Seeds (riparian native fast-blooming for visual impact, additional biodiversity)

Rebar for pilot holes

Mallets

Boots, gloves

Rakes/hoe/clippers

Volunteer Coordination

Stakes



Dormant Nov 1-April 30

Woody

Wet tolerant

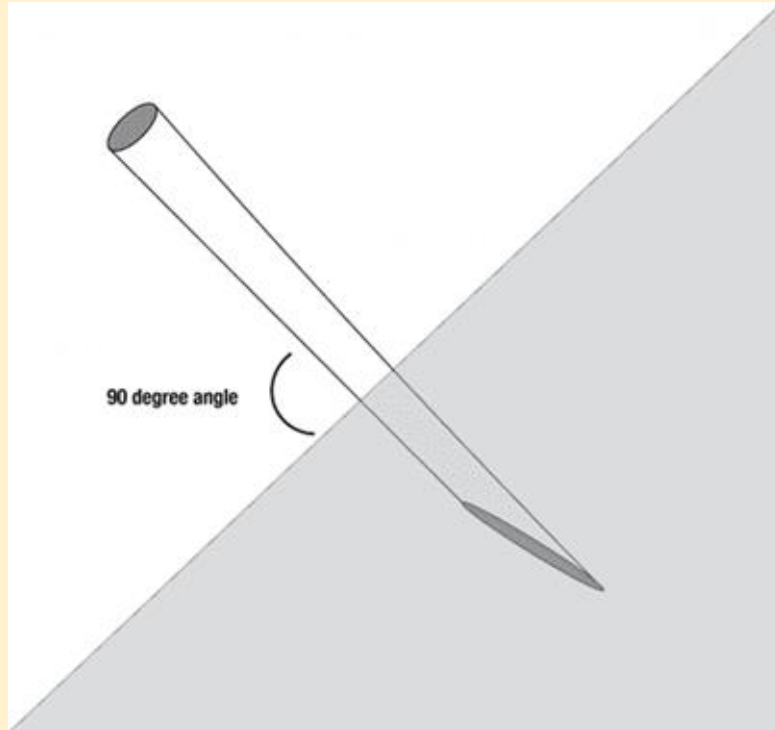
Adventitious rooting

Native Pioneer Species (Willows, shrubby dogwoods, alder, sycamore, spicebush, elderberry, buttonbush)

2-3 feet

5-7 nodes

Do It



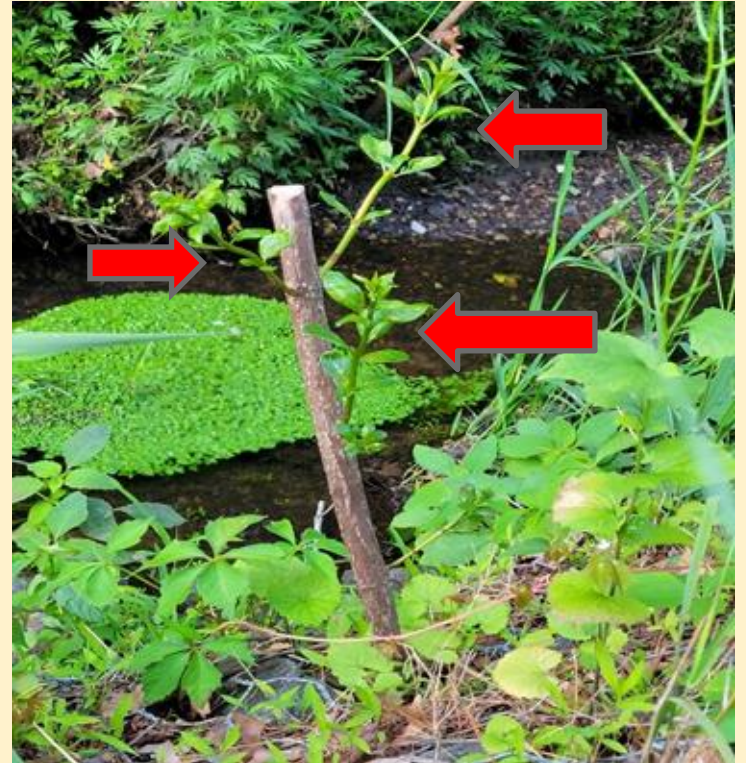
Instruction and Education



6 months Later...



6 months -- Rooting established



One Year Later, Glenn Ave....



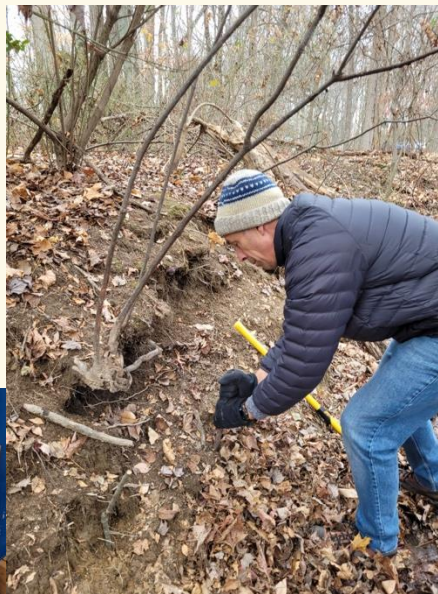
elderberry

Silky dogwood

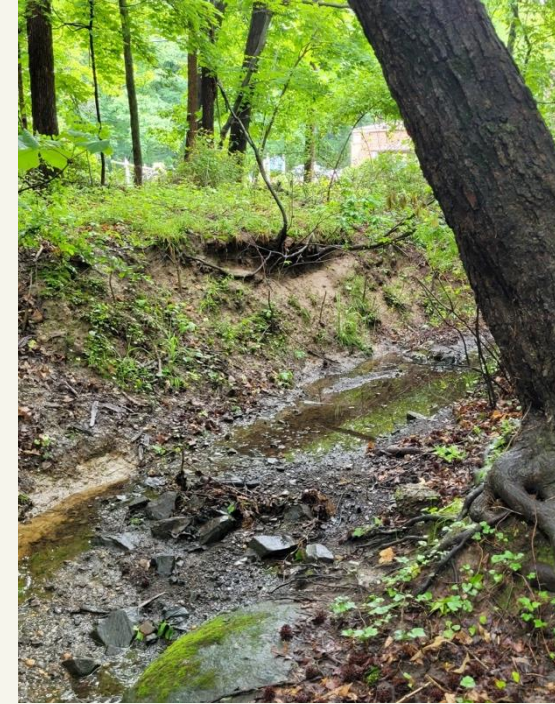


elderberry

December, new site...



6 months later, new site....



What Next



- Harvest our own stakes
- Volunteer training
- Environmental Commission toolkit
- Continued monitoring
- Integrate live staking into annual stewardship calendar

What can your commission do?



- Choose a visible demonstration site
- Coordinate early with DPW and the municipal engineer
- Engage residents and local groups
- Document the project and share widely
- Use the site to teach runoff, erosion, and nature-based solutions
- Review your municipality's stormwater policies

Plant our way out of our erosion issues?



Live staking treats a localized symptom, while effective watershed protection also requires runoff-volume management; protection of riparian buffers, trees, and soils; and ongoing maintenance. For ECs, live staking can be a tool for watershed education, as well as a solution for a localized restoration.

Open Space Stewardship Grant

- Cost of the materials provided by ANJEC supporters and the Candace McKee Ashum Memorial Fund.
- Technical and education provided by Rutgers Green Infrastructure Program.



Resources

<https://www.ernstseed.com/>

<https://directives.nrcs.usda.gov/sites/default/files2/1712930924/31800.pdf>

<https://extension.psu.edu/live-staking-for-stream-restoration>

<https://www.allianceforthebay.org/2019/03/live-staking-a-trusty-technique-for-planting-trees-and-shrubs-on-the-cheap/>

<http://water.rutgers.edu/>

(Microsoft Word - EPD Web Version Streambank and Shoreline Stabilization Docu\205)

<https://dep.nj.gov/stormwater/>

Live Staking Student Interview:

<https://www.youtube.com/watch?v=raRvzSmYylc>

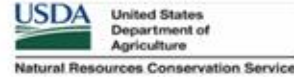
A River Runs Through It:

<https://www.youtube.com/watch?v=ELS3ez7rb4s&t=162s>

Watershed Institute Stream Restoration:

<https://www.youtube.com/watch?v=xLLkVUp5hJM&t=7s>

Title 210 - National Engineering Handbook



Part 650 Hydrology National Engineering Handbook

Chapter 16 Soil Bioengineering for Streambank and Shoreline Protection



(210-650-14, 2nd Ed., Feb 2021)



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