



Management Practices and Local Resources

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Texas Water Resources Institute


<http://texasriparian.org> and
<http://www.facebook.com/TexasRiparianAssociation>

Hindrances to Healthy / Functional Riparian Areas:

- Farming too close to the bank
- Mowing, spraying close to the creek
- Manicured landscapes next to the creek
- Chronic grazing concentrations in creek areas
- Excessive deer, exotics, hogs in creek
- Burning in riparian area
- Removal of large dead wood
- Artificial manipulation of banks / sediment
- Excessive vehicle traffic in creek area
- Poorly designed road crossings / bridges
- Excessive recreational foot traffic
- Excessive alluvial pumping or other withdrawals



Visual Indicators of Stream Health Include:

- Channel Condition
 - Access to Floodplain and Hydrologic Alteration
 - Riparian Zone
 - Bank Stability
 - Water Appearance
 - Nutrient Enrichment
 - Barriers to Fish Movement
 - Instream Fish Cover
 - Pools
 - Invertebrate Habitat
- 

Other factors if applicable include:

- Canopy Cover
- Manure Presence
- Salinity
- Riffle Embeddedness
- Macroinvertebrates Observed
- Fish Species Observed

Management and Stewardship

- The impacts of stream flow and water quality are cumulative as the water moves down the system.
- Management upstream can lead to positive or negative impacts downstream.
- As you assess the stream and riparian ecosystem think about what may be hindering it.
- Has something caused a change in the water, sediment or vegetation?
- Management activities should protect healthy systems or allow recovery to return to a healthy functioning system.
- Land and Water Stewardship!

What You Can Do

- Properly Manage:
 - Lawn and garden
 - Fertilizer and Pesticides
 - Household chemicals
 - Water use and conservation
 - Reduce bare ground/erosion



The Role of Management Practices

- Control surface runoff
- Minimize pollutants
- Ensure sound pest and nutrient management
- Optimize production
- Reduce Flows/Erosion
- Water Quality
- Improve Soil Health

Urban/Suburban/Home

Activities

- Construction/paving
- Wastewater disposal
- Improper fertilizer and pesticide use
- Over-irrigation
- Bare Ground

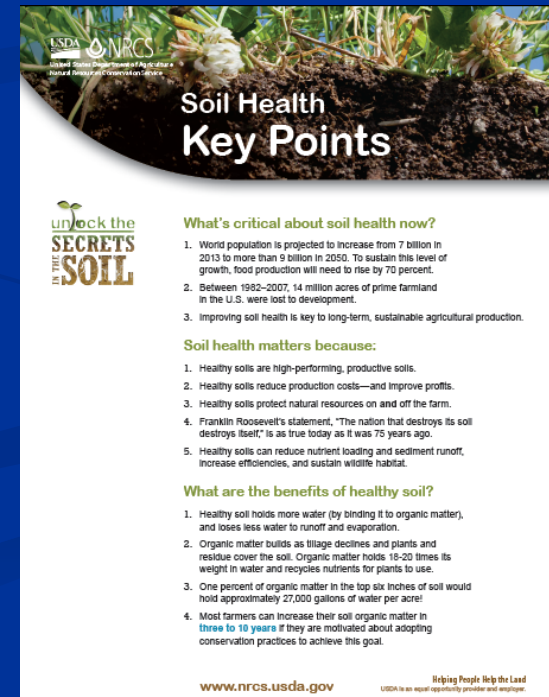
BMPs

- Minimize Impervious Surfaces to reduce runoff
- Infiltration Systems
- Detention Systems
- Retention Systems
- Constructed Wetlands systems
- Filtration Systems
- Vegetated Systems

Manage for Soil Health

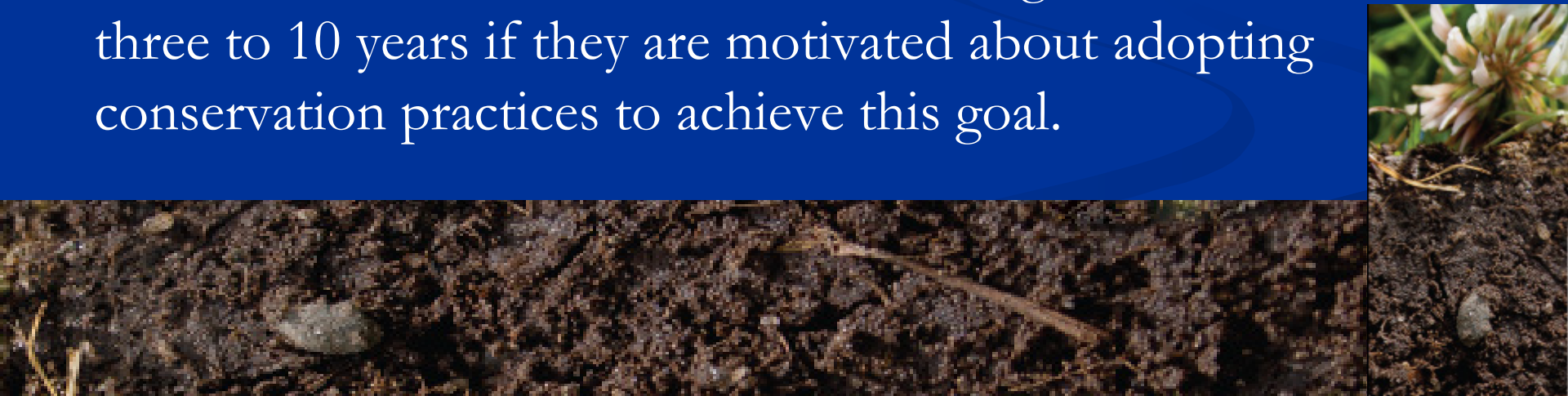
Follow four basic soil health principles to improve soil health and sustainability:

1. Use plant diversity to increase diversity in the soil.
2. Manage soils more by disturbing them less.
3. Keep plants growing throughout the year to feed the soil.
4. Keep the soil covered as much as possible.



What are the benefits of healthy soil?

1. Healthy soil holds more water (by binding it to organic matter), and loses less water to runoff and evaporation.
2. Organic matter builds as tillage declines and plants and residue cover the soil. Organic matter holds 18-20 times its weight in water and recycles nutrients for plants to use.
3. One percent of organic matter in the top six inches of soil would hold approximately 27,000 gallons of water per acre!
4. Most farmers can increase their soil organic matter in three to 10 years if they are motivated about adopting conservation practices to achieve this goal.



Austin Grow Zone

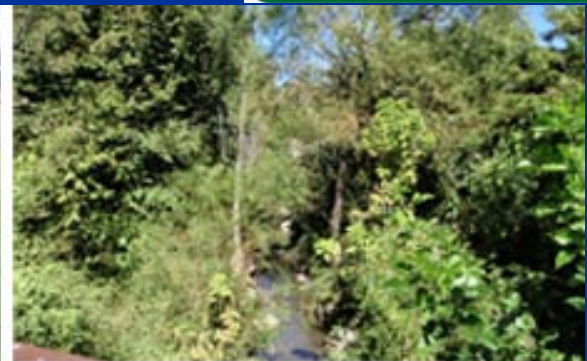
- Establish a “Grow Zone” along both banks of the creek, approximately 25 ft.
- Allow for passive/natural plant growth in entire buffer area.
- Monitor for changes over time and apply adaptive management approaches where necessary.
- Coordinate periodic trash removal, weed/invasive vegetation management, and native seeding/planting.
- Install educational and demarcation signage where appropriate



Mowed



First Year Growth



5 to 10 Years

Pesticides

- Whether in agricultural operations or in urban environments, the improper application, handling or disposal of pesticides can lead to water pollution.
- AgriLife Brush Busters Website:
[Http://texnat.tamu.edu/about/brushbusters/](http://texnat.tamu.edu/about/brushbusters/)
- Spray formulations can drift with the wind or vaporize into the air.
- Other formulations can leach into ground water or be carried into surface water by rainfall or irrigation runoff.
- Even pesticides in formulations that bind them to soil particles can find their way into surface waters if soil is eroded by wind or water.

B:6050 Pesticide Properties that Affect Water Quality. By: Paul A. Baumann, John A. Jackman, Douglas Stevenson

Managing Your Landscape and Garden

- Properly Design Home Landscape
- Minimize impervious surfaces
- Use grasses, trees, and natural landscaping features
- Select native plants adapted to region and climate
- Mulch bare soil or plant with vegetation
- Properly Manage Weeds
- Cut or pull weeds before they go to seed to keep them from spreading
- Minimize areas of disturbance (bare ground) to prevent weeds from establishing
- Select the correct herbicide, follow label and use only as needed

Agricultural BMPs

- Nutrient management
- Pest management
- Irrigation water management
- Grazing Management
- Conservation tillage
- Contour farming
- Buffer/filter strips
(Protect Riparian Areas)
- Cover /green manure crops
- Sediment control basins
- Terrace
- Grassed Waterways
- Drop Structure
- Livestock manure and wastewater management

Managing Invasive Species

- Invasive species are affecting aquatic, riparian and upland areas throughout the state, and critical habitats are at risk in many locations.
- The Texas Department of Agriculture currently lists 32 noxious weeds proliferating in Texas: giant salvinia, giant cane (*Arundo donax*), field bindweed, Chinese tallow and saltcedar (*Tamarisk* spp.) are some of the most potent invaders.
- Feral Hogs are estimated to cause an estimated \$52 Million in damage annually in Texas and are increasing in numbers.
- Manage to reduce invasive species.

Use of Pesticides and Fertilizers

Pesticides

- Apply carefully and ONLY the amount needed
- Consult qualified pest professional
- Never discard leftover product down household drains or toilets
- Dispose old or unused products at local hazardous material collection events

Fertilizers

- Test your soil!
- Use ONLY the amount needed
- Apply when plants are actively growing, not when they are dormant
- Calibrate spreaders to obtain proper rate
- Sweep up excess off sidewalks/driveways

Local Resources

- TSSWCB / Districts
- USDA NRCS
- AgriLife Extension
- TPWD
- Texas A&M Forest Service
- Cedar Bayou Watershed Partnership
- Feral Hog Resources

Texas State Soil and Water Conservation Board

- Headquarters in Temple, Texas
- Nonpoint source Program:
<http://www.tsswcb.texas.gov/managementprogram>
- Contact: Mitch Conine, Riparian Project Manager
mconine@tsswcb.texas.gov, 254-773-2250 ext. 233
- Website: <http://www.tsswcb.texas.gov/>
- TSSWCB Field Representative
Trey Watson
twatson@tsswcb.texas.gov

Local Soil and Water Conservation District

■ Trinity Bay SWCD

- P O Box 1366, Anahuac, TX 77514-1366
- trinitybayswcd@tx.nacdnet.org

■ Lower Trinity SWCD

- P O Box 406, Liberty, TX 77575
- lowertrintyswcd@tx.nacdnet.org

Example: Plum Creek Agriculture Conservation Practices

1. Watering Facility
2. Water Well
3. Pumping Plant
4. Pipeline
5. Cross Fencing
6. Riparian Herbaceous Buffer
7. Riparian Forest Buffer
8. Rangeland Planting
9. Pasture and Hayland Planting
10. Grassed Waterways
11. Field Borders
12. Filter Strips
13. Critical Area Planting

USDA Natural Resources Conservation Service Programs

- Technical Assistance Programs
 - Conservation Technical Assistance (CTA)
- Financial Assistance Programs
 - Environmental Quality Incentive Program (EQIP)
 - Conservation Stewardship Program (CSP)
 - Agricultural Management Assistance Program (AMA)
- Easement Programs
 - Agricultural Conservation Easement Program (ACEP)
 - Healthy Forests Reserve Program (HFRP)
- Partnership Programs
 - Regional Conservation Partnership Program (RCPP)

USDA Natural Resources Conservation Service Programs

- The web link for this information can be found at:
<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/farmbill/>
- http://efotg.sc.egov.usda.gov//efotg_locator.aspx
(Field Guide)
- <http://plants.usda.gov/java/> (Plants Database)
- <http://websoilsurvey.nrcs.usda.gov/app/> (Soil Survey)

USDA Natural Resources Conservation Service

■ ANAHUAC SERVICE CENTER

1751 S MAIN,
ANAHUAC, TX 77514

■ LIBERTY SERVICE CENTER

1351 HIGHWAY 146 BYP,
LIBERTY, TX 77575-9201

■ HOUSTON SERVICE CENTER

10808 HUFFMEISTER RD,
HOUSTON, TX 77065

Double Bayou Watershed Partnership

- Linda Shead, Double Bayou Watershed
Coordinator

Linda.shead@sheadconservation.com

713-703-1123

- Website: www.doublebayou.org

Texas AgriLife Extension Service

AgriLife Extension provides research-based information, educational programs, and technical assistance in the following core service areas:

- Agriculture
- Health and Family Development
- Community & Economic Development
- Environmental Stewardship
- Youth Development

AgriLife Extension Website:

<http://agrilifeextension.tamu.edu/>

Texas AgriLife Extension Service

Chambers County

295 Whites Memorial Park Drive

Anahuac, TX, 77514

409-374-2123

Liberty County

501 Palmer Street

Liberty, TX, 77575

936-334-3230

Texas Parks and Wildlife Department

- Bobby Eichler, Technical Guidance Biologist, (979)968-9942
- Brent Ortego, Wildlife Diversity Biologist, (361)576-0022
- David Forrester, District Leader, (979)968-3501
- Melissa Parker, Conservation Ecologist
 - Melissa.Parker@tpwd.texas.gov / 512-754-6844 e. 235
- Ryan McGillicuddy, Conservation Ecologist
 - ryan.mcgillicuddy@tpwd.texas.gov / (512) 389-8622
- http://www.tpwd.state.tx.us/landwater/land/technical_guidance/biologists/
- Watershed BMPs: <http://watershedbmps.com/>



Best Management Practices
for the conservation of Texas watersheds

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Texas Watersheds

Conservation news from headwaters to coast.

FALL 2011 NEWSLETTER



Texas Watersheds Newsletter

Texas Watersheds: Conservation News from Headwaters to Coast Newsletter (formerly Texas Wetland News) Texas Wetland News recently underwent a renovation into Texas Watersheds: Conservation News from Headwaters to Coast with expanded coverage of watershed and aquatic conservation activities.

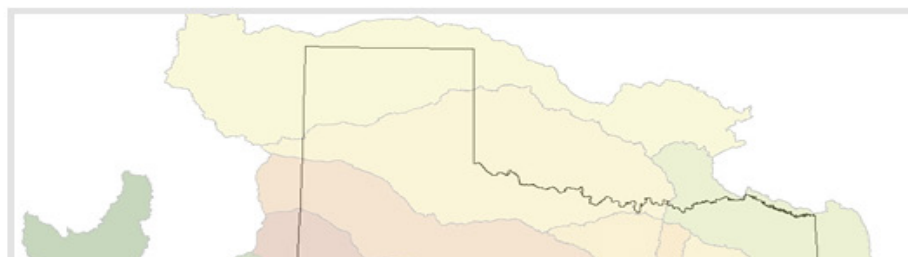
In order to conserve resources and in light of state budget constraints, the newsletter will now only be available in an online ...

[View full post](#)

Conservation Best Management Practices

Conservation best management practices (BMPs) are methods or actions that promote the conservation, protection, and/or restoration of our natural resources.

Conservation BMPs are an important tool for implementing plans and actions necessary to conserve, protect, and/or restore natural resources. This project was developed in Texas to identify BMPs to address landscape factors, land use practices, and impairments affecting the health of freshwater watershed habitats and ecosystems. To date, over 2000 BMPs from more than 150 local, state, national, and international organizations and agencies have been collected to address these threats. Scientific literature, species lists, critical habitats, and conservation priorities were also compiled to more effectively facilitate conservation planning and habitat restoration.



Texas A&M Forest Service

- Contact Texas A&M Forest Service Programs:

<http://texasforests-service.tamu.edu/main/article.aspx?ctrl=13>

- Contact: Hughes Simpson, Coordinator Water Resources
 - Email: hsimpson@tfs.tamu.edu /936-639-8180
- Lori Hazel, Water Resources Staff Forester II
 - Email: lhazel@tfs.tamu.edu /254-773-8481

Texas A&M Forest Service

- Texas Forest Service Best Management Practices Website:

<http://texasforestsERVICE.tamu.edu/main/article.aspx?id=15307>

- Texas Forest Service: Forests and Water:

<http://texasforestsERVICE.tamu.edu/main/article.aspx?id=15306>

- [Texas A&M Forest Service: Water Resources Blog](#)

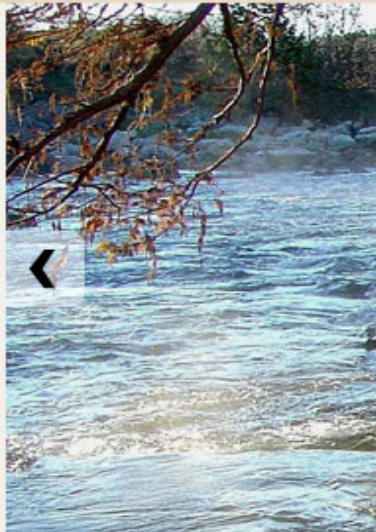
- Texas Forest Information:

<http://www.texasforestinfo.com/>



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ECOSYSTEM SERVICES

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We all know that trees and forests are important. Trees give us shade and a place to relax on a sunny day. Their wood helps make products ranging from the homes in which we live to certain medications we take when we're sick.

But did you know that trees benefit society as whole, just by being there? **Forests store carbon in their trunks, they clean the air and water, they provide a diverse habitat for plants and animals, and they even give people a place to relax and play.**

Historically, these societal benefits have been taken for granted with no financial value attributed to them. But

monetizing these benefits through private forest landowner participation in environmental credit markets provides the opportunity to reward landowners who provide a public benefit.

Traditionally, forests have provided income to landowners through the sale of raw material for forest products, such as saw logs that are sawn into lumber and wood fiber that is pulped and made into paper. **The Ecosystems Services Program aims to help develop ecosystem services markets in Texas and, thus, provide an additional source of forest income for Texas landowners who maintain their forests.**

Texas Statewide Assessment of Forest Ecosystem Services

Texas A&M Forest Service quantified and assessed the value of ecosystem services, or environmental benefits, provided by the state's forestlands. To find out the results of this assessment, read the agency's *Texas Statewide Assessment of Forest Ecosystem Services Highlights*, Executive Summary, and Report.

- Highlights
- Executive Summary
- Full Report

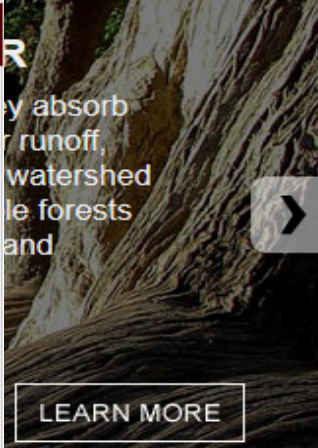
Environmental Credit Marketing Survey

Texas A&M Forest Service launched an extensive survey to learn more about landowners' interest in ecosystem services markets. To find out more about what the agency learned, read the agency's *Environmental Credit Marketing Survey* Executive Summary and Report.

DIVISIONS

Big Tree Registry

Directory of Forest



Ry absorb
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a variety of forest interests

Item Values

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Feral Hogs

- <http://pcwp.tamu.edu/FeralHogs/>
- <http://feralhogs.tamu.edu/>
- <http://feralhogreports.tamu.edu/>
- Publication links
- Site visits for landowners
- Presentations for groups

Mark Tyson

979-845-4698

mark.tyson@ag.tamu.edu



Texas Stream Team

- Travis Tidwell, Monitoring Program Coordinator
 - 512-245-9148 / travistidwell@txstate.edu
- Website: <http://txstreamteam.meadowscenter.txstate.edu/>
- Texas Stream Team works with partners to train citizens as certified water quality monitors.
- Texas Stream Team provides education to the public and at schools about nonpoint source pollution that harms water quality.
- Environmental data is made available to the public our online Dataviewer -
<https://aqua.meadowscenter.txstate.edu/>



Photo Monitoring

- Repeating photographs at set locations will allow better assessment of current conditions and changes over time.
- Location selection: critical sites along the stream where the force of moving water has the potential for detrimental impacts
 - A tributary or high runoff location
 - Where the stream changes course – point bar or bend
 - Sites that are easily accessible and representative



12-2-07



10-2-08



5-2-09



-10-10



9-2-12



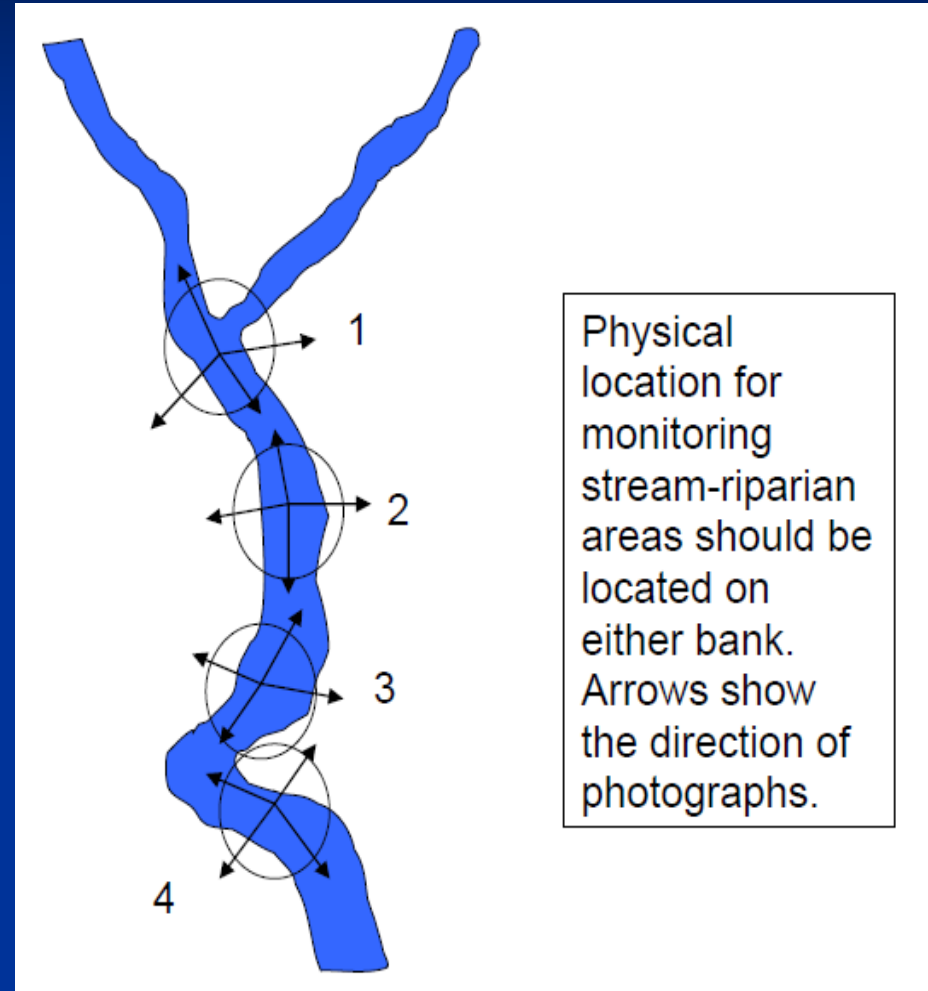
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Permanent Photo Point Method

- Four photographs should be taken at each observation site:
 - 1) upstream showing the nearest bank , stream channel and opposite bank if possible,
 - 2) perpendicular to the stream of the opposite bank,
 - 3) perpendicular to the stream away on the bank where the observer is standing, and
 - 4) downstream showing the channel and both banks if possible.
- With a felt pen and a yellow paper pad (white is too bright), make a sign to include in the photo scene.
- Include some identification (stream name, range site, etc.) concerning the specific scene being photographed and the date.

Key Locations to Monitor

- Each location should be permanently marked for future evaluations using a steel stake or on-the-ground reference plus GPS coordinates if possible.
- locate the permanent reference point a “safe” distance inland
- Make a map of the stream showing the location of each permanent marker and the monitoring point.



A healthy riparian vegetation zone is one of the most important elements for a healthy stream ecosystem. The quality of the riparian zone increases with the width and the complexity of the vegetation within it. Understanding Creeks and Rivers will lead to better land and water stewardship!

