

## MAINTENANCE

Streambanks are always vulnerable to new damage. Repairs are needed periodically. Banks should be checked after every high-water event is over. Gaps in the vegetative cover should be fixed at once with new plants, and mulched if necessary. Fresh cuttings from other healthy plants on the bank can be used or they can be taken from mother-stocked plantings if they are available.

# 4 STREAMBANK STABILIZATION WITH VEGETATION



PRODUCED BY:  
Cumberland County SWCD  
Portland Water District

# VEGETATIVE STREAMBANK STABILIZATION

## WHAT IS IT?

The use of vegetation to stabilize and protect streambanks from erosion.

Stands of full-grown trees are of little use for protecting streambanks apart from the binding of soil with their roots. Shrubs provide much better protection. These plants hold the soil with their root systems and reduce water velocities. They also protect tree trunks from damage caused by breaking ice and help to prevent the formation of strong eddies around large trees during flood flows. The following plants are considered excellent for streambank stabilization projects:

- Willows (*Streamco' purpleosier willow*, *'Bankers' dwarf willow*)
- Dogwoods (*"Ruby' redosier dogwood*)
- Poplars
- Alders
- Evergreen ground covers are also useful

Plants should be used that are well adapted to the stream and site conditions.

## ENVIRONMENTAL CONSIDERATIONS

Stabilizing streambanks with shrub and tree vegetation provides excellent habitat for fish and wildlife species. Maine's fisheries rely on a combination of shading and leaf drop provided by the plants. Shading protects fish species from "thermal pollution" – when the water heats up too much for life to thrive. Leaf litter provides the first link in the food chain – a food source for the insects that young fish feed on. Avoid at all costs using riprap if vegetation can solve your erosion problem. If riprap is unavoidable, use a combination of riprap and plantings to provide the vegetated cover needed.

You should contact the DEP about any projects that involve regrading along a streambank. Soil disturbance along a stream requires a permit under the Natural Resources Protection Act. Contact the DEP Portland Office, 315 Canco Rd, Portland, ME 04103, 879-6300, for information.

If replanting will not involve any regrading, no DEP permits will be required. However, be aware that if any erosion is detected as a result of your activities, you can be fined!

Generally, streambank areas are also subject to the Shoreland Zoning Regulations that have been adopted by your town. Contact your local Code Enforcement Officer for details about what restrictions apply to your streambank property.

## CHANNEL CLEARING

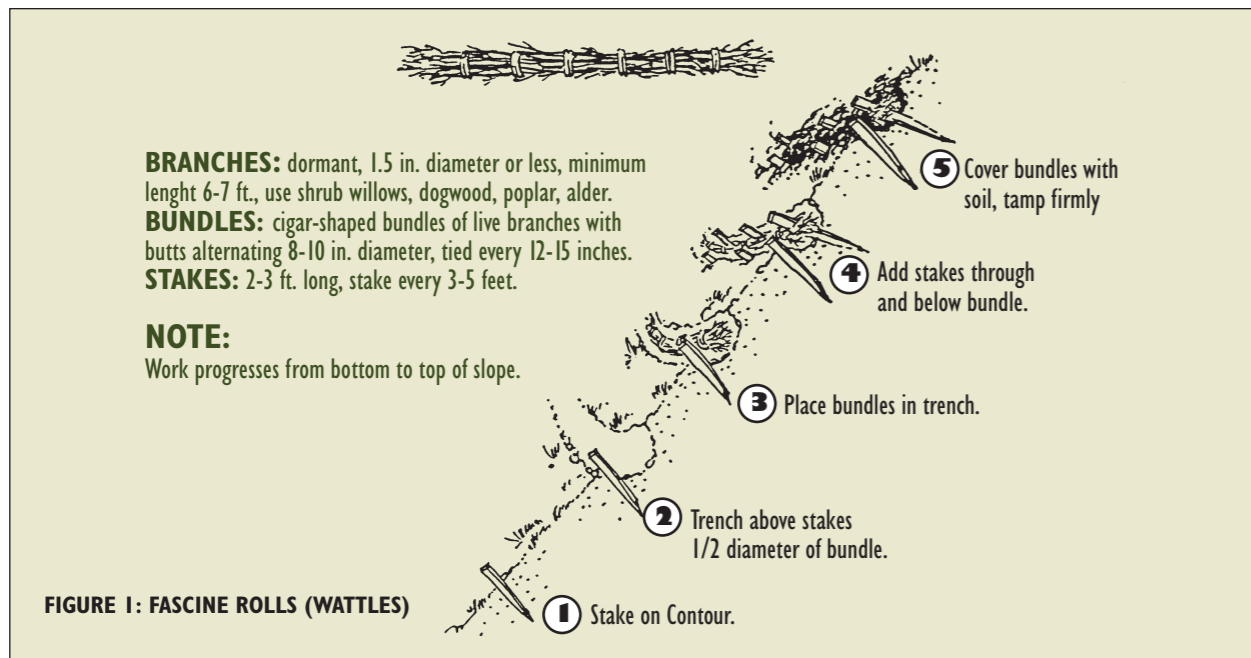
Check to see if there are stumps, fallen trees, or debris that force the stream flow into the streambank and promote an erosion problem. Only debris that is destabilizing the slope should be removed. Logs and branches provide excellent fish habitat and should be left in the channel whenever possible. Remove only those pieces that are contributing to the erosion problem.

## PRESERVING NATURAL VEGETATION

Existing natural vegetation should be protected on the undisturbed portions of banks, especially those areas subject to flooding. Overhanging trees that are being undercut need to be removed (leave roots and stump intact) and replaced (plant a new tree for the future). Alternately, the undercut zone around their base needs to be refilled and stabilized with riprap.



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## GRADING

Generally vegetation is successful at stabilizing slopes 2:1 or flatter. In some cases prior to planting you may need to grade eroded or steeper streambanks to a maximum slope of 2:1 (3:1 preferred).

## ESTABLISHING SHRUB VEGETATION PLANTING INDIVIDUAL SHRUBS

Shrub willows, shrub dogwoods and other shrubs can be put into the soil as cuttings, slips or stems.

Willows can be planted as 1-year-old nursery-grown rooted cuttings or as fresh hardwood cuttings purchased or gathered from local established stock plantings. Fresh cuttings should be 3/8 to 1/2 inch thick and 12 to 18 inches long. They should be kept moist. If not used at once, they should be stored in cool moist sand.

Rooted cuttings should be planted vertically in the bank with 1 or 2 inches of wood protruding

above the ground surface. They should be planted in a hole large enough to accommodate the root system when well spread. The plant root must be maneuvered into the bottom of the hole so they will grow down instead of up. The roots should not be twisted, nor should they be exposed above the ground surface. After the plant is placed, close the hole. Compost or well-rotted manure can be placed in the hole as fertilizer. Slow release or liquid fertilizer can be applied on the surface (not in the hole) but must be applied with great care to avoid impacting water quality. The soil should be tamped adequately to provide complete contact between the soil and the cutting. Cuttings should be planted six to eight feet on center on at least two rows, at the middle and bottom of the streambank. Plantings should be made early in the spring to ensure adequate moisture for growth. If irrigation is provided, they can be planted later in the year.

Evergreen ground covers should be nursery

**For additional information on planting, consult the Fact Sheet Number 6: Trees, Shrubs, Vines and Ground Covers.**

grown plants. Since shrubs are generally not effective for the first two years, grasses should be seeded immediately following shrub planting to provide initial streambank protection. Annual ryegrass can be immediately seeded and will sprout up within days. Apply rye seed at a rate of 1-2 lbs per 1000 square feet. After seeding, apply mulch and anchor it with some type of jute netting or erosion control blanket, installed according to the manufacturer's instructions.

Willows and other softwoods can also be bound together in various ways in order to insure immediate protection of the streambank.

## FASCINE ROLLS (WATTLES)

Fascine rolls (also known as wattles) are bundles of willow, dogwood or poplar whips that are placed across the slopes on the contours. They are set against the bank. The parts that are to take root touch the ground above the water level and are able to get sufficient moisture. Covering them with earth improves the contact with the ground and retards the loss of moisture from the wood.

## BRUSH LAYERING

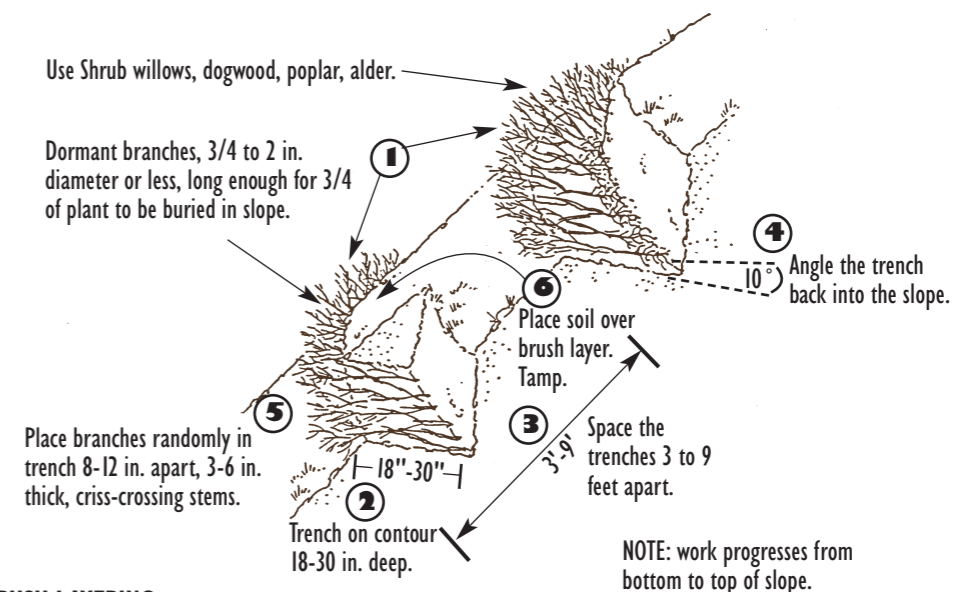
Brush layering uses the same planting materials as fascine rolls however they are not tied together in bundles. They consist of layers of loose branches interlayered with soil. Generally, longer branches are used and greater volume of planting material is required.

Either fascine rolls or brush layering can be installed to deflect water away from eroding banks. The branches are set parallel to the direction of the current or at an angle of 30 degrees.

**For structural protection measures refer to FactSheet Number 8: Rirap for Streambank Protection**

## COMBINATION WITH STONE (RIPRAP) FACING

In many places, the bank is not adequately protected by vegetation until the roots are fully developed, and temporary protection must be provided by inanimate materials. There is a wide choice of methods, including the planting of woody plants in the crevices of stone facing.



**FIGURE 2: BRUSH LAYERING**