

**Road Stream Crossing Inventory
Scoring for Erosion Quantification**

SITE NUMBER _____

scores indicated in parenthesis

Stream Flow Type (check one)

_____ ephemeral/dry (2) _____ stagnant (2) _____ slow/medium (1) _____ high/scouring (3)

Average Stream Depth (check one)

_____ <3' (1) _____ >3' (2)

Sedimentation Observed Downstream (check one)

_____ no (0) _____ present (1) _____ abundant (2)

Highest Water Mark over Current Water Level (check one)

_____ <1' (0) _____ 1-3' (1) _____ 3-10' (2) _____ >10' (3)

Adjacent Road Surface (check one)

_____ paved (0) _____ gravel (1)

Gully/erosion observed from road?

_____ no (0) _____ yes (2)

Riparian Vegetation Width Downstream (L) (check one)

_____ >100 (0) _____ 30-100 (1) _____ 10-30 (2) _____ <10 (3)

Riparian Vegetation Width Downstream (R) (check one)

_____ >100 (0) _____ 30-100 (1) _____ 10-30 (2) _____ <10 (3)

Riparian Vegetation Width Upstream (L) (check one)

_____ >100 (0) _____ 30-100 (1) _____ 10-30 (2) _____ <10 (3)

Riparian Vegetation Width Upstream (R) (check one)

_____ >100 (0) _____ 30-100 (1) _____ 10-30 (2) _____ <10 (3)

Stream Bank Slope (check one)

_____ 1:1 or steeper (3) _____ 2:1 (2) _____ 3:1 (1) _____ 4:1 or flatter (0)

Soil Texture (stratified?, indicate approximate percentage of each soil type)*

_____ sand (3) _____ gravel (2) _____ silt (1) _____ clay (0)

SITE OF EROSION NOTED?

if yes, proceed with following observations; if no, proceed to total score

height of erosion site*

_____ <10' (1) _____ 10-20' (2) _____ >20' (3) if measured, please include height _____ feet

length of erosion site*

_____ <10' (1) _____ 10-50' (2) _____ >50' (3) if measured, please include length _____ feet

vegetation density on erosion site

_____ 50-100% (1) _____ 25-50% (2) _____ <25% (3) _____ none (4)

condition of erosion site

_____ toe and upper edge eroding (3) _____ toe eroding (2) _____ toe stable, upper edge eroding (1)

stability

_____ increasing (2) _____ stable (0)

erosion severity*

_____ very severe (4) _____ severe (3) _____ moderate (2) _____ slight (1)

TOTAL SCORE (max score of 50): _____

***Erosion Scoring Form Instructions**

Soil texture

If the bank is stratified, please estimate the percentage of each soil type observed. Estimate soil type visually. However, if you can determine a more specific soil type by touching the soils, record this observation. You can use this more specific classification to determine a dry density (for calculation of annual loading. See below.)

Height of erosion site

Determine the height of the eroding bank from the water line to the top of the bank. If you cannot reach the bank to measure it, estimate the height by checking a category.

Length of erosion site

If you cannot reach the bank to measure the length of the site, estimate the length by checking a category.

Erosion Severity

Estimate the severity of erosion using the following descriptions. This estimation can be used to approximate the lateral recession rate.

Category	Description	Lateral Recission Rate (feet/year)
Slight	Some bare bank, but active erosion not readily apparent. Some rills but not vegetative overhang. No exposed tree roots.	0.01-0.05
Moderate	Bank is predominantly bare with some rills and some vegetative overhang.	0.06-0.2
Severe	Bank is bare with rills and severe vegetative overhang. Many exposed tree roots and some fallen trees and slumps or slips. Some changes in cultural features such as fence corners missing and realignment of roads or trails. Channel cross-section becomes more U-shaped as opposed to V-shaped.	0.3-0.5
Very Severe	Bank is bare with gullies and severe vegetative overhang. Many fallen trees, drains and culverts eroding out and changes in cultural features as above. Massive slips or washouts common. Channel cross-section is U-shaped and stream course or gully may be meandering.	0.5+

Calculating Sediment Loading

Sites can be scored relative to one another and targeted for improvement projects using the scoring system indicated in parentheses. A maximum score of 50 can be obtained. A higher score indicates greater erosion. Sediment loading from each site can also be estimated based upon the geometry of the site and an estimation of the lateral recession rate. The lateral recession rate is the thickness of soil eroded from a bank surface perpendicular to its face in an average year. It can be estimated by using the above table, by reviewing aerial photographs (in which a change in the bank location can be measured over time) or by observing the bank's position relative to a stationary object (such as a utility pole or culvert) over time. Use the following equations to calculate the volume and weight of sediment loss in an average year.

Volume of annual soil loss (cubic feet/year) = length of eroding bank (feet) * height of eroding bank (feet) * lateral recession rate (feet/year).

Weight of annual soil loss (tons/year) = volume of annual soil loss (cubic feet/year) * dry density (tons/cubic foot).

Use your estimation of soil type to determine dry density. If the soils are stratified or mixed, determine the average density by multiplying the percentages of each soil type by their respective densities and adding. For example, for an eroding bank composed of 40% clay and 60% silt, use the following equation:

$$0.4 * 0.035 + 0.6 * 0.0425 = 0.0395$$

Use the following dry density soil weights to determine the weight of annual soil loss. If you were able to determine a more specific soil textural class, use that determination to estimate a dry density from a source on soil physical properties. For example, sandy clay loam has a density of 0.045 tons/cubic foot.

Soil textural class	Dry density (tons/cubic foot)
sand	0.055
silt	0.0425
clay	0.035

Source

MDEQ Surface Water Quality Division. Pollutants Controlled Calculation and Documentation for Section 319 Watersheds Training Manual. Revised June 1999.