



Missouri Streams Fact Sheet



MONITORING STREAM CONDITIONS



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A *visual survey* of the monitored stream reach is very important. The purpose of the visual survey is to determine if there are observable problems on the stream and to characterize the environment the stream flows through. After the stream segment to be monitored has been chosen and the watershed mapping has been completed, a visual survey of the stream segment should be made. The visual survey will help pinpoint any area that may be the source of water quality problems and make the monitor more familiar with the overall condition of the stream.

Since water quality is very dependent on local conditions of the stream, the visual survey should be completed in the immediate vicinity of each monitoring site that will be used for sampling. The site is generally a 300-foot section of stream that contains at least one *riffle* area. An important criteria for selecting sites is adequate access; this should be typical of the entire stream reach being monitored. The locations of these sites should be considered permanent to allow for the collection of data for several years at the same location. The visual survey for monitoring sites should be conducted twice per year, once with foliage present and once with the foliage absent.

During the visual survey the following conditions should be evaluated:

Floodplain land use - What percent is forested, grasslands, row crops, residential, commercial or industrial? A well-managed floodplain shows no evidence of significant soil erosion, is not leveed



Figure 1

and has no structures or buildings in it. The river has unrestricted access to the floodplain. A poorly managed floodplain has serious soil erosion, has levees and/or has buildings in it. In an altered floodplain, the river or stream does not have access to its surrounding land during high flow events (Figure 1).

Riparian corridor - What percent of the 100' strips of land on either side of the stream are forested, grasses, bare ground, row crops, parking lots and streets or buildings? A well-managed riparian zone has streamside vegetation comprised of mixed ages and species of trees (Figure 2). *Understory vegetation* covers about 90% of the area. A poorly managed riparian zone has few trees. Bare soil, crop fields or grazed pasture dominate the riparian zone. Livestock have unrestricted access and trampling damage is severe.



Figure 2

Streambank conditions - What percent has trees, grasses, bare ground, bedrock or pavement/rip-rap? Well-managed stream banks show no erosion or bank caving. Banks are often sloped and stable. A poorly managed stream bank has eroding banks with significant slumping and caving (Figure 3). The bank's slope is often near vertical.



Figure 3

Stream bed composition in riffles - What percent is bedrock, boulders (>10"), cobble (2-10"), gravel, sand or mud/silt?

Embeddedness - What is the percent embeddedness of the cobble substrate? This refers to how much of the surface area of large stones in the streambed is surrounded by finer sediment. Greater than 50% embeddedness will impact most pollution-sensitive species and degrade their habitat.

Presence of bottom deposits – What percent of the stream bottom is covered by sewage sludge, lime sludge, iron precipitate or trash?

Presence of excessive algal growths – What percent of bottom is covered by algae (Figure 4)?



Figure 4

Water color and odor –What color is the water? Does it have an odor?