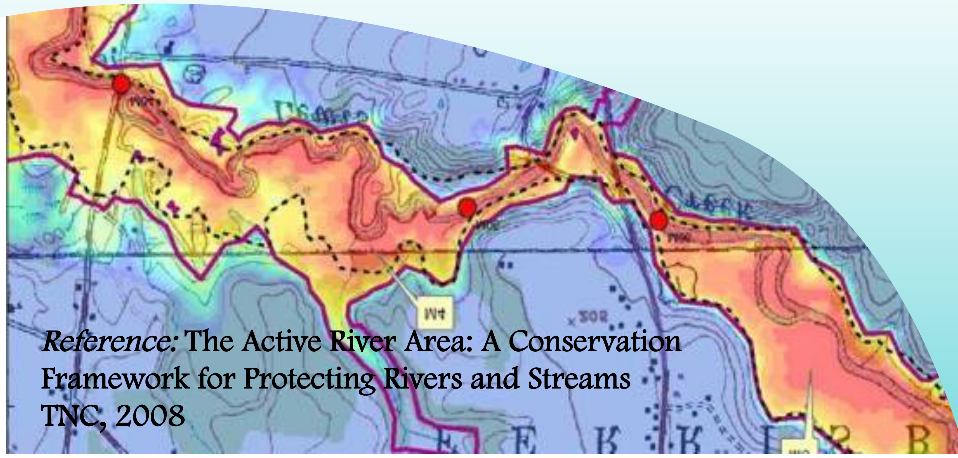
The Active River Area (Corridor)

The "Active River Area," is defined as the place where:
- hydrologic connectivity
- floodplain hydrology, and
- sediment movement

occur along the river corridor.



Reference: The Active River Area: A Conservation Framework for Protecting Rivers and Streams TNC, 2008

River health depends on a wide array of processes that require dynamic interaction between the water and land through which it flows. Areas of dynamic connection and interaction provide a frame of reference for conservation, restoration and river management. The Active River Areas framework offers a more holistic vision of a river than solely considering the river channel as it exists in one place at one particular point in time. Rather, the river becomes those lands within which the river interacts both frequently and occasionally. Identifying the entire Active River Area (or ***river corridor***, e.g. Vermont Rivers Program, ANR) allows to manage it with the goal of preventing future catastrophic floods and erosion and protecting valuable wildlife habitat.

Five primary components constitute the Active River Area:
- **Materials contribution areas (source areas for sediment or LWD)**
- **Meander belts**
- **Floodplains**
- **Terraces, and**
- **Riparian wetlands**

<u>Delineating this Active River Area uses three GIS techniques</u> (which together map much of the valley bottom):

(1) A modified version of a ***riparian habitat modeling approach*** collectively identifyies the meander belt, floodplains, and terraces. This approach uses a 30-m resolution digital elevation models (DEM) and the PATHDISTANCE method (ESRI, 2006) to create a surface of the relative costs of traveling upslope from the stream. Cost is a computation of elevation and distance from the channel, with higher costs for greater elevations and distances.

(2) To refine the extent of the Active River Area beyond those influenced by out-of-bank flows, an additional technique is used to identify riparian areas likely to be 'wet' as a result of high groundwater and overland runoff form adjacent uplands. This is done using a ***flow accumulation model*** with the 30-m DEM to identify locations that are permanently wet based on a high flow moisture index and a low (i.e. <2%) slope. These areas are combined with known wetland occurrences from the National Wetland Inventory and National Land Cover Data.

(3) Finally the ***materials contribution areas*** are added – both headwater areas at the top of the watershed and areas 30-60m along each side of stream channels that are not otherwise captured by steps 1 and 2. The SLICE method (ESRI, 2006) is used to divide the 30-m DEM into 10 equal elevation groups. Through this method pixels are grouped according to relative elevation, and thus identification of 10%-relative elevation increments are determined for the entire watershed. Headwater catchments of appropriate size (relative to the watershed) can be defined based on their inclusion within the appropriate elevation increment. For the stream side material contribution areas, a 30m width is selected because several studies suggest that most organic material and large woody debris (LWD) within a stream originates from within 30-50 m of the edge of the channel.

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