Recovery Potential Metrics
Summary Form

Indicator Name: WATERSHED PERCENT WOODY VEGETATION

Type: Ecological Capacity

Rationale/Relevance to Recovery Potential: This metric is relevant for reasons similar to watershed forest and watershed natural cover, and provides a more appropriate indicator choice in regions that are not naturally forested. More watershed forest and shrub cover reduces risk of numerous impairment types, thus lessening the relative complexity of restoration. Mollifying effects on runoff and recharge, temperature, and overland pollutant transport are associated with more naturally vegetated watersheds and help ensure that several primary natural processes are or can become functional once stresses are removed. Broad array of influences on capacity to recover including intercepting and moderating the timing of runoff, buffering temperature extremes (which can also reduce certain toxicities), filtering pollutants in surface or subsurface runoff, providing woody debris to stream channels that enhances aquatic food webs, and stabilizing excessive erosion.

How Measured: Land cover mapping typically contains forested and shrub categories, which are added to calculate this metric.

Data Source: For land cover data, the National Land Cover Database (NLCD) for 2006, 2001 and 1992 is accessible at http://www.mrlc.gov/finddata.php; numerous statewide land cover mapping datasets are also available from state-specific sources. For watershed boundaries, numerous watershed scales have been delineated nationally as part of the Watershed Boundary Dataset (WBD) (see: http://datagateway.nrcs.usda.gov). Custom watershed boundary delineation can be done by aggregating NHDplus catchments (see: http://www.horizon-systems.com/nhdplus/) or WBD HUC12 watersheds.

Indicator Status (check one or more)

___x__ Developmental concept.
_____ Plausible relationship to recovery.
_____ Single documentation in literature or practice.
___x__ Multiple documentation in literature or practice.
_____ Quantification.

Supporting Literature (abbrev. citations and points made):

- (Potter et al 2004) Regression analyses revealed that landscape variables explained up to 56% of the variance in measures of water quality condition.
- (Roy et al., 2007) Fish assemblages were correlated with urban, forest, and agriculture land cover variables, with the greatest number of strong relations with % forest and % urban in the catchment (eight strong models), and % forest and % agriculture in the 1-km riparian network (four strong models; Table 4). Cosmopolitan and lentic tolerant species were the only groups correlated with agriculture, with increased richness and abundance associated with agriculture at some spatial extents. For all except cosmopolitan species, the strongest relationships were with the largest spatial extents of land cover (catchment), followed by riparian land cover in the 1-km and 200-m reach, respectively. Endemic richness, endemic:cosmopolitan richness and abundance, insectivorous cyprinid richness and abundance, and fluvial specialist richness were all negatively

correlated with % urban cover and positively correlated with % forest cover in the catchment (Table 4) (391-392).

- (Ekness and Randhir 2007) Species richness has been shown to increase as vegetative density increases and with distance from developed areas (1470).
- (Palmer et al., 2005) Different restoration activities should be selected based on the extent and type of damage, land-use attributes of the catchment, the size and position of the river within the catchment, and stakeholder needs and goals. Even when constraints are significant, there are almost always choices that are more or less ecologically sound, as illustrated by the following four examples (212).