EPA Report on Stream Connectivity

U.S. EPA. *Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence (Final Report)*. U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-14/475F, 2015.

http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=296414

The objective of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. The U.S. Environmental Protection Agency's (U.S. EPA's) Office of Research and Development developed this report to inform rulemaking by the U.S. EPA and U.S. Army Corps of Engineers (U.S. ACE) on the definition of "waters of the United States" under the Clean Water Act (CWA). Its purpose is to summarize current scientific understanding about the connectivity and mechanisms by which streams and wetlands, singly or in aggregate, affect the physical, chemical, and biological integrity of downstream waters. The focus of the review is on surface and shallow subsurface connections of small or temporary streams, nontidal wetlands, and certain open waters. Because this report is a technical review of peer-reviewed scientific literature, it neither considers nor sets forth legal standards for CWA jurisdiction, nor does it establish EPA policy.

EPA identified five categories of functions by which streams, wetlands, and open waters influence the timing, quantity, and quality of resources available to downstream waters:

• Source: the net export of materials, such as water and food resources;
• Sink: the net removal or storage of materials, such as sediment and contaminants;
• Refuge: the protection of materials, especially organisms;
• Transformation: the transformation of materials, especially nutrients and chemical contaminants, into different physical or chemical forms; and
• Lag: the delayed or regulated release of materials, such as storm water.

These functions are not mutually exclusive; for example, the same stream or wetland can be both a source of organic matter and a sink for nitrogen.