



American Rivers
Rivers Connect Us

Hydrologic Alteration and the Clean Water Act: Part I

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Addressing Hydrologic Alteration through the Clean Water Act

- 💧 CWA as a flow protection tool
- 💧 What is hydrologic alteration
- 💧 EPA guidance on hydrologic alteration

Clean Water Act goal

Restoration and Maintenance of the

- 💧 Physical
- 💧 Chemical
- 💧 Biological

quality of the Nation's waters.

Water Quality Standards

- 💧 Designated Uses
- 💧 Water Quality Criteria
- 💧 Antidegradation

Designated Uses

- ◆ Examples:

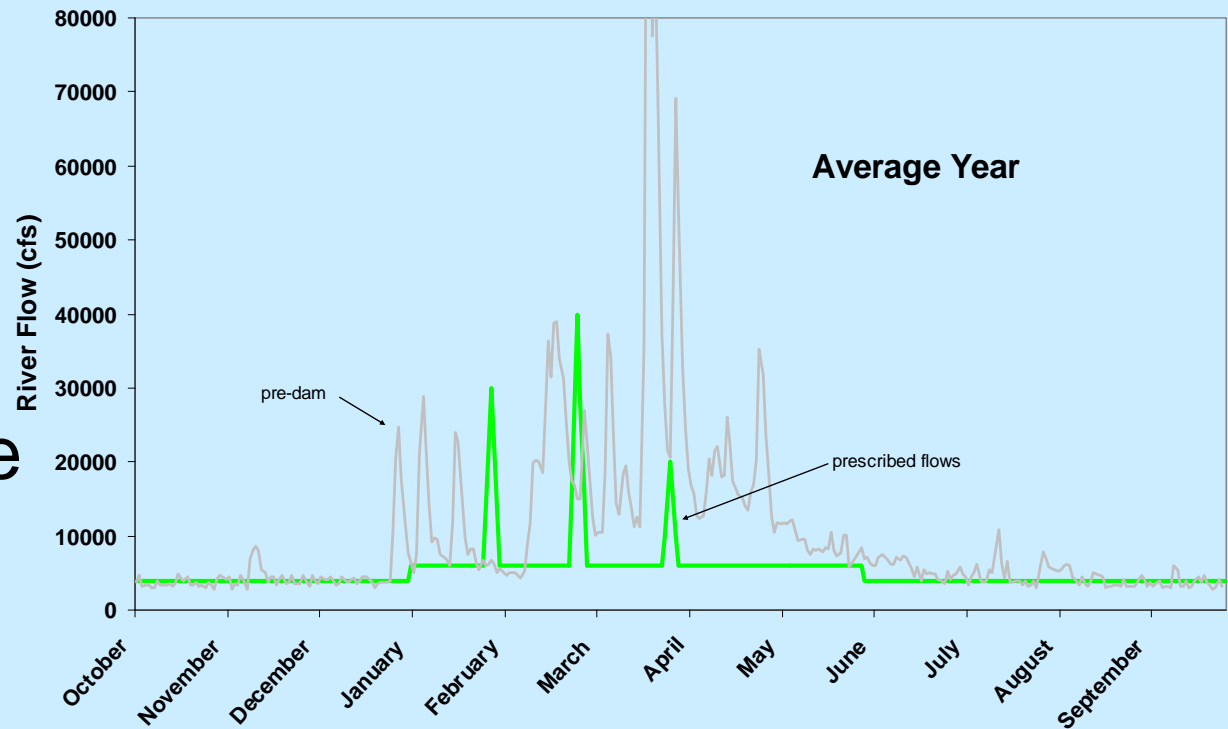
- ◆ Aquatic Life
- ◆ Primary and Secondary Recreation
- ◆ Drinking Water Supply
- ◆ Trout, Outstanding National Resource Waters, Unique Wetlands, High Quality Waters, etc.

WQS: Criteria to Protect Designated Uses

- ◆ Water Quality Standards, expressed as constituent concentrations, levels, or narrative statements, representing a quality of water that supports a particular use.
- ◆ When criteria are met, water quality will protect the designated use.
- ◆ Narrative and numeric standards for flow

Natural Flow Regimen

- Magnitude
- Duration
- Frequency
- Timing
- Rate of change



The greater the departure from the natural flow regimen, the greater the impact to the river and its values.

Common Causes of Hydrologic Alteration

- ◆ Surface and ground water withdrawals
- ◆ Hydropower dams and operations
- ◆ Diversions/Interbasin transfers
- ◆ Water storage reservoirs
- ◆ Impervious surfaces and stormwater
- ◆ Low head dams

Impairment caused by Hydrologic Alteration

- 💧 Designated Uses impaired
- 💧 Water Quality Criteria not met
- 💧 Antidegradation

EPA Guidance on Hydrologic Alteration

- ◆ EPA clarified in August 2015 IRG clarified how states and tribes should address *waters impaired due to pollution not caused by a pollutant*
- ◆ If agency has data or information of impairment, list under Category 4C and include in biennial reports
- ◆ Category 4C is different than Section 303(d) which is for waters impaired due to a pollutant

EPA Guidance on Hydrologic Alteration

- ◆ EPA's guidance can be found at:
http://www.epa.gov/sites/production/files/2015-10/documents/2016-ir-memo-and-cover-memo-8_13_2015.pdf (4C discussion begins on page 13)
- ◆ EPA USGS technical report on aquatic life and hydrologic alteration can be found at:
<https://www.epa.gov/sites/production/files/2016-12/documents/final-aquatic-life-hydrologic-alteration-report.pdf>

EPA Guidance on Hydrologic Alteration

Examples of hydrologic alteration include

- ◆ a perennial water is dry; no longer has flow; has low flow; has stand-alone pools
- ◆ extreme high flows
- ◆ significant alteration of the frequency, magnitude, duration or rate-of-change of natural flows

Documenting Impairment due to Hydrologic Alteration

- ◆ If agency has data or information
- ◆ Physical: channel incision, narrowing or widening; sedimentation or armoring; depth, velocity or floodplain connectivity.
- ◆ Chemical: water quality criteria not met, DO concentrations, nutrient levels, temperature
- ◆ Biological: aquatic community - macroinvertebrates, fish, specific species absent.

Determining Impairment due to Hydrologic Alteration

- ◆ Water Quality Criteria not met
 - ◆ Narrative flow criteria
 - ◆ Numeric flow criteria
- ◆ Designated Uses impaired
 - ◆ Aquatic life
 - ◆ Recreation
 - ◆ Water supply



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