The Navigable Waters Protection Rule: Definition of "Waters of the United States"

TRAINING ON TRIBUTARIES AND DITCHES FOR STATES AND TRIBES

JUNE 23, 2020

Today's Presentation

- Tributaries & Flow Duration Classifications
- Jurisdictional Ditches
- Tools and Resources
- Questions and Answers

Upcoming Presentations in State and Tribal Series

June 30: Adjacent Wetlands, Lakes, Ponds, and Impoundments

July 7: Exclusions and More

The webinars will be available on EPA's website at:

https://www.epa.gov/nwpr

(a)(2) Tributaries:

"Tributary" means a river, stream, or similar naturally occurring surface water channel that contributes surface water flow to a paragraph (a)(1) water in a typical year, either directly or through one or more paragraph (a)(2)-(4) waters. A tributary must be **perennial or intermittent** in a typical year.

- A tributary does not lose its jurisdictional status if it **contributes surface water flow** to a downstream jurisdictional water in a typical year through a channelized non-jurisdictional surface water feature, through a subterranean river, through a culvert, dam, tunnel, or similar artificial feature, or through a debris pile, boulder field, or similar natural feature.
- The alteration or relocation of a tributary does not modify its jurisdictional status as long as it continues to satisfy the flow conditions of the definition. The term *tributary* includes a ditch that either relocates a tributary, is constructed in a tributary, or is constructed in an adjacent wetland as long as the ditch satisfies the flow conditions of this definition.

Key Definitions

Perennial:

- The term *perennial* means surface water flowing **continuously year-round**.

Intermittent:

- The term *intermittent* means surface water flowing **continuously during certain times of the year** and **more than in direct response to precipitation** (*e.g.*, seasonally when the groundwater table is elevated or when snowpack melts).

Ephemeral:

- The term *ephemeral* means surface water flowing or pooling **only in direct response to precipitation** (*e.g.*, rain or snow fall).

Typical Year:

- When precipitation and other climatic variables are within the normal periodic range (e.g., seasonally, annually) for the geographic area of the applicable aquatic resource based on a rolling thirty-year period.

(a)(2) Tributaries: Perennial or Intermittent Flow Classification

The term *tributary* means a river, stream, or similar naturally occurring surface water channel that contributes surface water flow to a water identified in paragraph (a)(1) of this definition in a typical year either directly or through one or more waters identified in paragraph (a)(2)-(a)(4) of this definition. A tributary must be **perennial or intermittent** in a typical year.

- The final rule does not specify certain flow volumes or flow duration metrics, as the time period that encompasses intermittent flow can vary widely across the country based upon climate, hydrology, topography, soils, and other conditions.

Intermittent Flow

- Intermittent flows may occur seasonally such as in the spring when evapotranspiration is low and the groundwater table is elevated. Under these conditions, the groundwater table intersects the channel bed and groundwater provides continuous base flow for weeks or months at a time even when it is not raining or has not very recently rained.

- Note that groundwater input is not a requirement in the Rule's definition of "intermittent".

- Snowpack melt and artificial sources such as effluent can also be sources of intermittent flows.

Snowpack

- The term “snowpack” is defined as “layers of snow that accumulate over extended periods of time in certain geographic regions or at high elevation (e.g., in northern climes or mountainous regions).”

- “Extended periods of time” refers to more than merely a single snowfall event or periodic events with repeated snowmelts after each occurrence, but rather recurring snow events which result in an accumulation of multiple layers of snow in certain geographic regions, or at high elevations.

Ephemeral vs. Intermittent Flow

More than direct response to precipitation?

- Use of the term ‘‘direct’’ in the rule is intended to distinguish between flow solely caused by individual precipitation events (including multiple, individual back-to-back storms), and continuous flow resulting, for example, from weeks- or months-long accumulation of precipitation in the form of snowpack that melts slowly over time or an elevated groundwater table that provides baseflow to the channel bed.

- Ephemeral flow may occur simply because it is raining or has very recently rained or it has recently snowed and the snow has melted. For example, ephemeral flow could be the result of a small, brief storm event, one long storm event producing rainfall for several days without pause, or several back-to-back storms.

- Continuous flow occurring more than in direct response to precipitation could include ‘‘seasonal’’ flow, such as when snowpack melts or when groundwater is elevated and provides baseflow to the channel bed.

- Streamflow that occurs during the monsoon season in certain parts of the country may be ephemeral or intermittent, with the distinction made according to the definition of each term in the final rule.

  - For example, a stream in the arid West is ephemeral if it flows only in direct response to rainfall, even if the flow may appear relatively continuous as a result of multiple, individual storms during the monsoon season.

  - On the other hand, when monsoon floodwaters locally recharge the riparian aquifer through bank infiltration and supply sustained baseflow to streams in the arid West when it is not raining or has not recently rained, such streams meet the rule’s definition of ‘‘intermittent’’ if they flow seasonally, for example.

Determining Flow Classification

- Observations of persistent flows during dry times of the year could be a strong indicator of perennial or intermittent flows.
- Persistent flows at any time throughout the year may indicate flow that is intermittent or perennial, so long as it hasn't rained very recently.
- Observations should be interpreted in the context of a typical year (i.e., representative of normal climate conditions). The **Antecedent Precipitation Tool** is one tool that can be used to inform whether observations of flow are representative of normal conditions.
- Distinguishing between intermittent and ephemeral flows may require a combination of onsite observations, physical and biological indicators of sustained flow durations, and remote evidence.

Contribution of Surface Water Flow in a Typical Year

- Perennial or intermittent streams that contribute surface water flow to an (a)(1) water in a typical year either directly or through one or more
  - (a)(2) tributaries
  - (a)(3) lakes, ponds or impoundments of a jurisdictional water
  - (a)(4) adjacent wetlands

Contribution of Surface Water Flow: Natural and Artificial Features

- A tributary does not lose its jurisdictional status if it contributes surface water flow to a downstream jurisdictional water in a typical year through the following features:
  - A channelized non-jurisdictional surface water feature (e.g., ephemeral stream, non-jurisdictional ditch)
  - A subterranean river
  - A culvert, dam, tunnel, or similar artificial feature
  - A debris pile, boulder field, or similar natural feature

Channelized Non-Jurisdictional Surface Water Feature

This type of feature includes non-jurisdictional ditches or ephemeral streams which are not themselves jurisdictional but may provide a channelized surface water connection for upstream perennial or intermittent waters in a typical year.

Subterranean River

A subterranean river is a natural channel that temporarily flows underground as a channelized river or stream, maintaining the same or very nearly the same flow volume underground and at the downstream point where it returns to the surface. Similarly, urban areas can have artificial buried underground tunnel systems that act in the same way.

Culvert, Dam, Tunnel, or Similar Artificial Feature

A culvert, dam, tunnel, or other similar artificial feature can convey surface water flows from upstream jurisdictional waters to downstream jurisdictional waters. If those surface water flows are conveyed in a typical year, jurisdiction of the upstream waters is not severed.

Debris Pile, Boulder Field, or Similar Natural Features

Natural features can also convey surface water flows from upstream jurisdictional waters to downstream jurisdictional waters. If those flows are conveyed in a typical year, jurisdiction of the upstream waters is not severed.

Photo: Stream with debris pile.

Connections that Sever Jurisdiction

The following connections sever jurisdiction upstream:

- Stream channel breaks that do not contribute surface water flows to downstream jurisdictional waters in a typical year.
  - These stream breaks may only convey surface water flows during precipitation events that generally do not occur in a typical year (e.g., 10-, 25-, 50-, 100- or 500-year storms or floods).
- Surface stream channels that disappear underground and become part of the ground water aquifer.
  - They never reconnect with the downstream tributary system (other than possibly via groundwater) and as such are not jurisdictional.

(a)(2) Tributaries: Altered and Relocated Tributaries

- "Tributary" means a river, stream, or similar naturally occurring surface water channel that contributes surface water flow to a paragraph (a)(1) water in a typical year either directly or through one or more paragraph (a)(2)-(4) waters. A tributary must be perennial or intermittent in a typical year.

- A tributary does not lose its jurisdictional status if it contributes surface water flow to a downstream jurisdictional water in a typical year through a channelized non-jurisdictional surface water feature, through a subterranean river, through a culvert, dam, tunnel, or similar artificial feature, or through a debris pile, boulder field, or similar natural feature.

The alteration or relocation of a tributary does not modify its jurisdictional status as long as it **continues to satisfy the flow conditions** of the definition. The term *tributary* includes a ditch that either relocates a tributary, is constructed in a tributary, or is constructed in an adjacent wetland as long as the ditch **satisfies the flow conditions** of this definition.

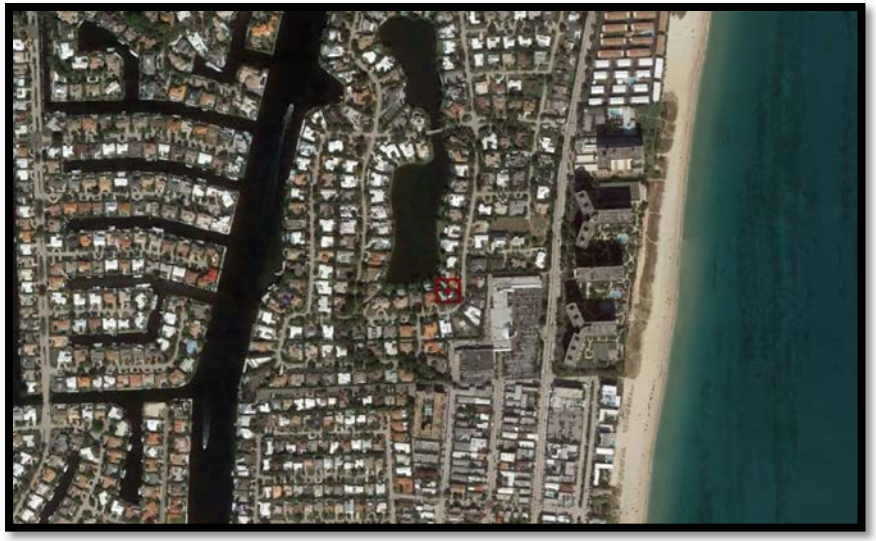
What Is a Ditch?

- A constructed or excavated channel used to convey water.
- Ditches are not a standalone category.
- Ditches are jurisdictional where they are:
  - TNWs, including those subject to the ebb and flow of the tide (*i.e.,* are (a)(1) waters);
  - Either **constructed in or relocate a tributary**, or are constructed in an adjacent wetland, and satisfy the flow conditions of the tributary definition (*i.e.,* are (a)(2) waters); or
  - Constructed in an adjacent wetland and develop **wetland characteristics** (*i.e.,* are (a)(4) waters).

When Is a Ditch a Water of the US?

When the ditch meets the conditions of an (a)(1) water

- Territorial sea
- Traditional Navigable Water (TNW)
  - Waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including waters which are subject to the ebb and flow of the tide.



When Is a Ditch a Water of the US?

When the ditch meets the flow conditions of an (a)(2) water - has perennial or intermittent surface water flow in a typical year **AND** contributes surface water flow to a jurisdictional water in a typical year, **AND**

- Relocates a tributary,
- Was constructed in a tributary, or
- Was constructed in an adjacent wetland

Construction in progress. Natural tributary on the left. Relocated ditch on the right. Natural tributary to be filled in after construction.

When Is a Ditch a Water of the US?

Constructed in an adjacent wetland

- A ditch originating in or constructed entirely within an adjacent wetland.
- A ditch constructed in an adjacent wetland that contributes less than perennial or intermittent flow to a paragraph (a)(1) water in a typical year and meets the definition of both “wetlands” under paragraph (c)(16) and “adjacent wetlands” under paragraph (c)(1).
- Only the portion or portions of the ditch that meets the definition of “adjacent wetland” are jurisdictional.
  - Downstream portion could also be jurisdictional as a tributary as long as it contributes flow to another downstream WOTUS in a typical year and meets the flow conditions of the tributary definition.

(a)(4) Adjacent Wetlands:

Wetlands that:

i. abut, meaning that touch at least at one point or side of, an (a)(1)-(a)(3) water;

ii. are inundated by flooding from an (a)(1)-(a)(3) water in a typical year;

iii. are physically separated from an (a)(1)-(a)(3) water only by a natural berm, bank, dune, or similar natural feature; or

iv. are physically separated from an (a)(1)-(a)(3) water only by an artificial dike, barrier, or similar artificial structure so long as that structure allows for a direct hydrologic surface connection between the wetlands and the (a)(1)-(a)(3) water in a typical year, such as through a culvert, flood or tide gate, pump, or similar artificial feature.

Determining Whether a Ditch Is a Water of the US

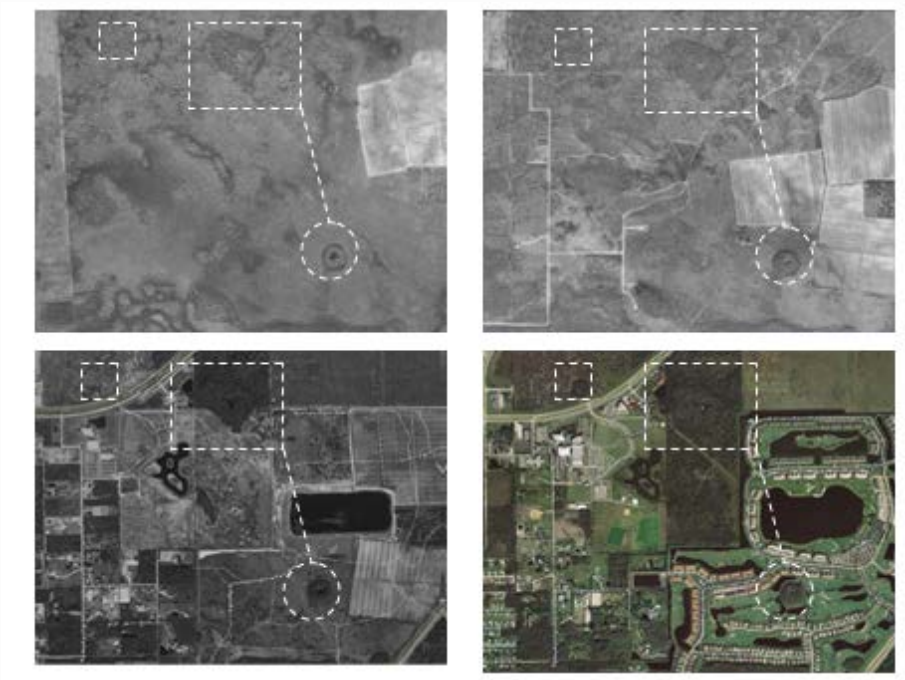
- Burden of proof lies with the agencies
- Absent evidence, the agencies will determine the ditch is non-jurisdictional
- Potential resources to use when determining whether a ditch was constructed in or relocated a tributary or was constructed in an adjacent wetland:
  - Historic aerials
  - Quadrangle topographic maps (topography may show crenulations and contours)
  - Certain hydrogeomorphological or soil indicators
  - Surface water management plans
  - National Hydrography Datasets (NHD)
  - National Wetland Inventory (NWI)

Implementation Tools & Resources for Tributaries

- Point-in-time data sources
  - Aerial photographs (current and historic)
- Physical and biological indicators
- LIDAR/Digital Elevation Model (DEM) data
- USGS topographic maps
- NHD
- NWI
- Soil surveys (current and historic)
- Stream gage data
- Other data

Aerial Photographs (Current & Historic)

- Aerial photographs can be examined to identify whether there are visible signatures that indicate the presence of a potential tributary and may provide evidence of a feature's flow classification.
- Observations of flow from photos should be coupled with typical year determinations to put the observations in context.
- High resolution photography captured during leaf off is generally more accurate when used for the identification of a tributary, ditch, or flow classification.



Physical and Biological Indicators

- Certain wetland hydrology indicators can help clarify whether water is present in the area only immediately following precipitation events, or whether longer-term saturation has likely occurred.
- Other indicators may include biological markers such as the presence of macroinvertebrates or riparian vegetation.
- Where available, streamflow duration assessment methods (SDAMs) that use physical and biological indicators suggestive of typical flow conditions, to determine the flow duration class of a stream reach in a single site visit may be used.

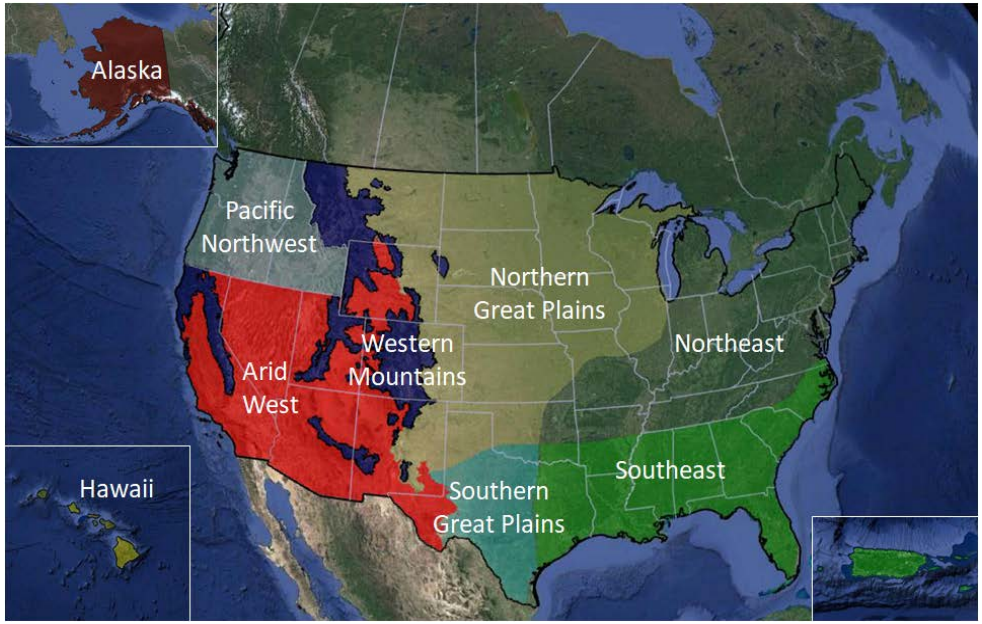
Development of Streamflow Duration Assessment Methods (SDAMs)

Pacific Northwest
Validated method has been available for use throughout the region since 2015

Arid Southwest
Data collection began in Spring 2018. Data analysis and development of a beta-method is underway.

Western Mountains & Great Plains
Baseline data collection began in Summer-Fall 2019 and will continue through Fall 2020.

Northeast & Southeast, Alaska, Hawaii, & the U.S. Territories
Groundwork to identify and evaluate potential data sources and study sites is underway.



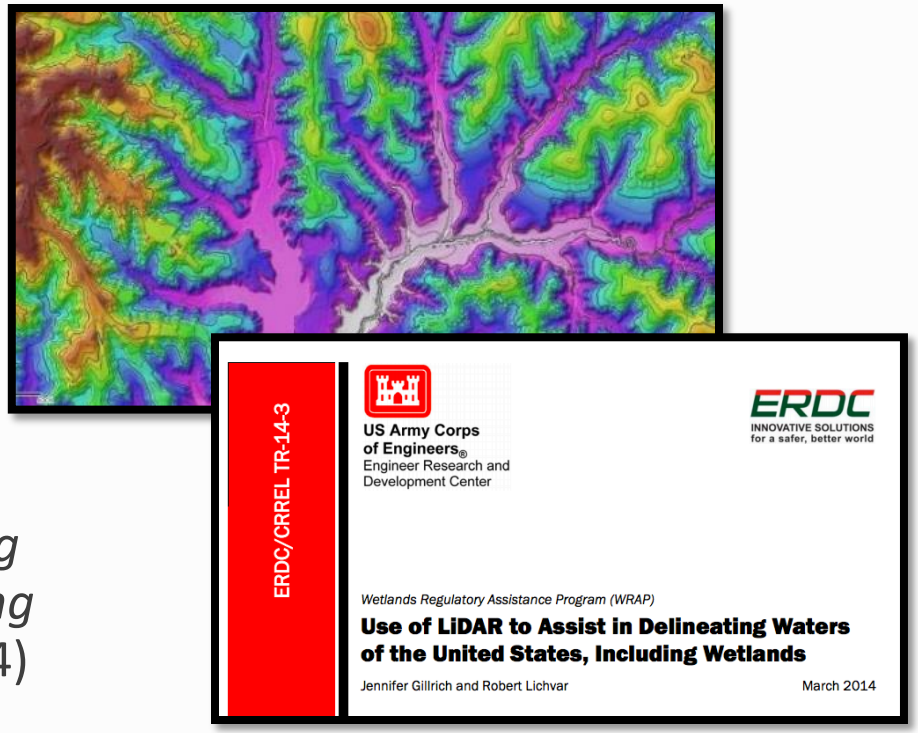
Map of SDAM study regions, based on regions identified in the U.S. Army Corps of Engineers Ordinary High Water Mark (OHWM) Scientific Support Document (figure modified from Wohl et al. 2016).

The agencies are currently working to develop regionally-specific SDAMs for nationwide coverage, which will promote consistent implementation of the tributary definition across the United States.

Additional information on the agencies' efforts to develop regionally-specific SDAMs is available at: https://epa.gov/streamflow-duration-assessment

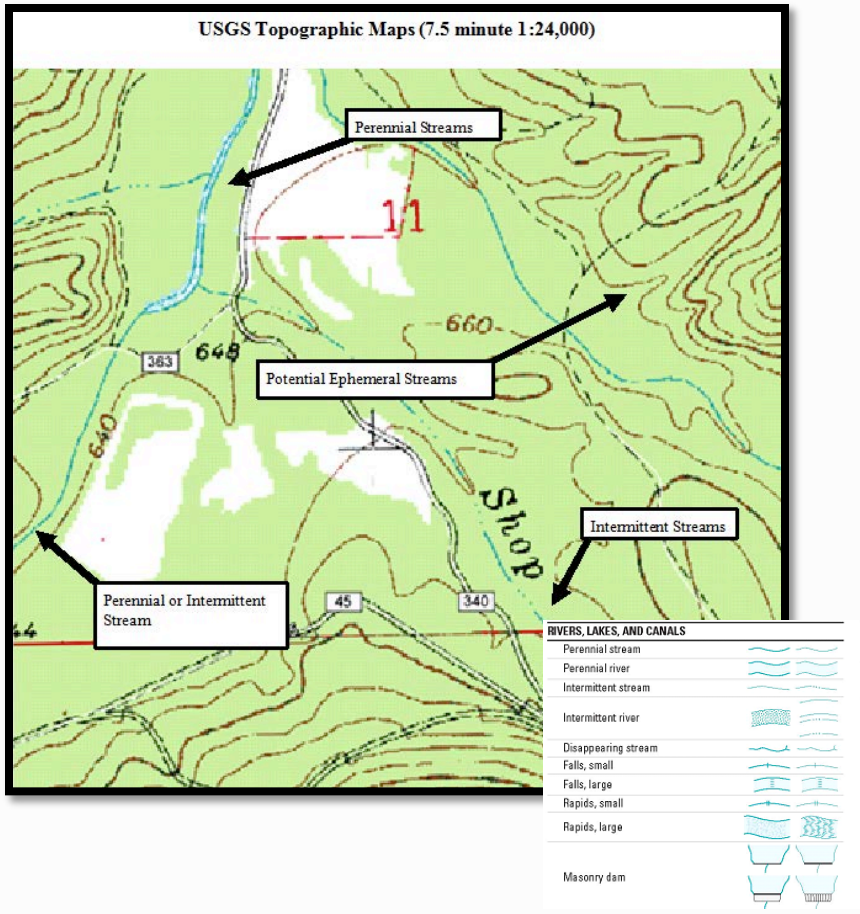
LiDAR and DEM Data

- LiDAR and DEM data, when combined with other appropriate remote sensing tools, are generally good sources for identifying:
  - Presence of a channel
  - Drainage area
  - Slope of the drainage area
  - Presence of head-cuts
  - Sinuosity
  - Dams or other obstructions
  - Elevation changes



- *"Use of LiDAR to Assist in Delineating Waters of the United States, Including Wetlands"* (Gillrich and Lichvar, 2014)

Topographic Maps



- Where a USGS topographic map has indicated a 'blue-line' stream, there is an indication that the feature may be a tributary
- Many intermittent and ephemeral streams are absent from topographic maps
- Contours may provide evidence of additional tributaries not depicted on topographic maps, NHD, or other resources
- Downloadable from the USGS National Map Viewer

National Hydrography Dataset (NHD)

- Indicates features within a drainage network including Hydrologic Unit Codes (HUC), rivers, streams, ponds, dams, and similar features.
- Information such as waterbody presence, waterbody type, tributary type, stream flow duration and flow direction.
- Does not identify all streams, and many streams, particularly small headwater streams, may be absent from the dataset.
- The NHD maps should be used in conjunction with other remote tools and on-site assessments to confirm flow duration class.

* The NHD is not a regulatory dataset. For a discussion of the limitations of the NHD, including that the NHD at High Resolution does not distinguish intermittent from ephemeral features in most parts of the country and may not accurately identify on-the-ground flow conditions, see the Resource and Programmatic Assessment supporting the Rule.

National Wetland Inventory (NWI)

- Provides detailed information on the abundance, characteristics, and distribution of US wetlands.
- Geospatially referenced information on the status, extent, characteristics and functions of wetlands, riparian, deepwater, and related aquatic habitats.
- Wetland classification codes can provide information on flow classification.

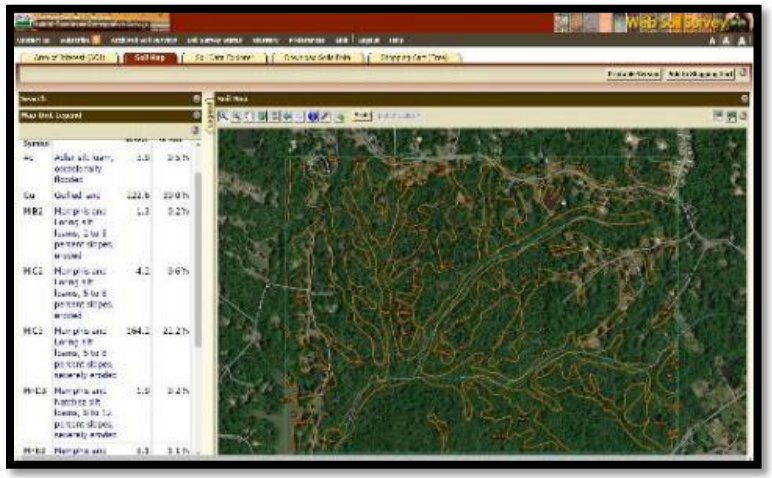
R2UBHx Description:

- **(R)** – Riverine system
- **(2)** – Low gradient perennial, no tidal influence with some water flows all year, except during years of extreme drought.
- **(UB)** – Unconsolidated bottom
- **(H)** – Permanently flooded, water covers the substrate throughout the year in all years.
- **(x)** – Channels that were excavated by humans

* The NWI is not a regulatory dataset. For a discussion of the limitations of the NWI, including that the NWI uses a different definition of "wetlands" than the agencies' regulatory definition of "wetlands" and may not accurately identify on-the-ground conditions, see the Resource and Programmatic Assessment supporting the Rule.

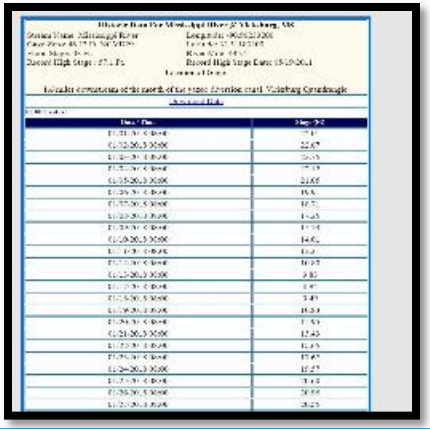
Current and Historic Soil Surveys

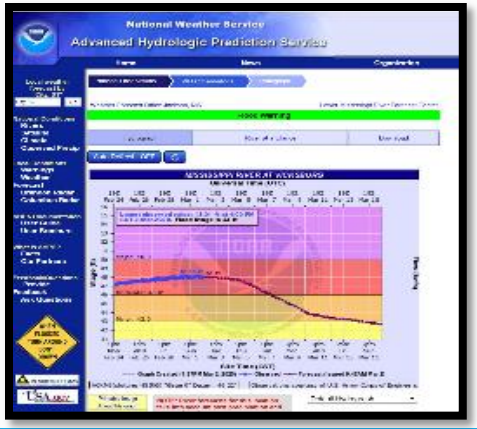
- Current and historic evidence of drainage patterns.
- May help inform some existing and historic flow duration classes (intermittent and perennial).
- Soil type in and around drainages may provide evidence that a channel exists.
- Soil Survey maps are often overlaid on more historic aerial images, providing insight as to the past conditions of an area.



Stream Gage Data

- Stream gage data can provide information on the magnitude, duration, and frequency of flow along a given stream.
- The availability of stream gage data is highly variable, particularly for intermittent and ephemeral streams. However, nearby stream gages may be helpful for understanding the timing and frequency of flow events for a given stream.
- Long-term records may already account for temporal variability and represent typical conditions, however, care should be taken to ensure that data is reflective of the current hydrologic regime and typical precipitation periods.





Other Data

Other information not specifically addressed here may be available to assist in remote identification of tributaries, ditches, and flow classification:

- flood predictions (e.g., from StreamStats),
- regional regression equations for streamflow and/or channel dimensions (e.g., bankfull regional curves), and
- hydrologic and hydraulic models (e.g., the Hydraulic Engineering Center Hydrologic Modeling System (HEC-HMS) or River Analysis System (HEC-RAS)).

For Further Information

Visit https://www.epa.gov/nwpr for more information about the final rule, including the *Federal Register* notice of the final rule, supporting analyses, and fact sheets.

View the public webcast at - https://www.youtube.com/watch?v=dt_OoxYU0-M&feature=youtu.be

Additional questions may be directed to the EPA at: CWAwotus@epa.gov or to the Corps at: USACE_CWA_Rule@usace.army.mil.

Thank You