DCR
Virginia Department of Conservation & Recreation

*State Parks * Soil and Water Conservation * Outdoor Recreation Planning*
*Natural Heritage * Dam Safety and Floodplain Management * Land Conservation*

# *Webinar on Draft Perennial Stream Guidance Document*

## *November 5, 2020*

# Ground Rules for Webinar

- This is an informational webinar. The official comment period for this guidance begins on November 9 and comments will be accepted beginning that day. Information on the comment period will be provided during this presentation.
- All microphones should remain muted for the duration of the call
- Questions requesting clarification may be entered into the chat box
  - We will address all questions in chat box; please be patient

# Chapters 1185 and 1186 of the 2020 Acts of Assembly

## § 62.1-44.123. Bovine livestock stream exclusion

- Any person who owns property in the Chesapeake Bay watershed on which 20 or more bovines are pastured shall install and maintain stream exclusion practices sufficient to exclude all such bovines from any perennial stream in the watershed.

## § 62.1-44.122. Definitions

- Perennial stream "means a body of water depicted as perennial on the most recent U.S. Geological Survey 7-1/2-minute topographic quadrangle map (scale 1:24,000) or identified by a method, established in guidelines approved by the Department, that does not require field verification."

# Chapters 1185 and 1186 of the 2020 Acts of Assembly

Enactment Clause #5

That the Virginia Soil and Water Conservation Board, as established pursuant to § 10.1-502 of the Code of Virginia, shall establish, no later than December 31, 2020, the methodology for identifying perennial streams, as defined in § 62.1-44.122 of the Code of Virginia, as created by this act.

# Definitions Used in Draft Guidance Document

- **Perennial stream** means a body of water that flows in a natural or manmade channel year-round during a year of normal precipitation.

- **Intermittent stream** means a body of water flowing in a natural or manmade channel that contains water for only part of the year. During the dry season and periods of drought, these streams will not exhibit flow.

- Definitions only used to determine compliance with § 62.1-44.123 and only within Virginia's Chesapeake Bay Watershed

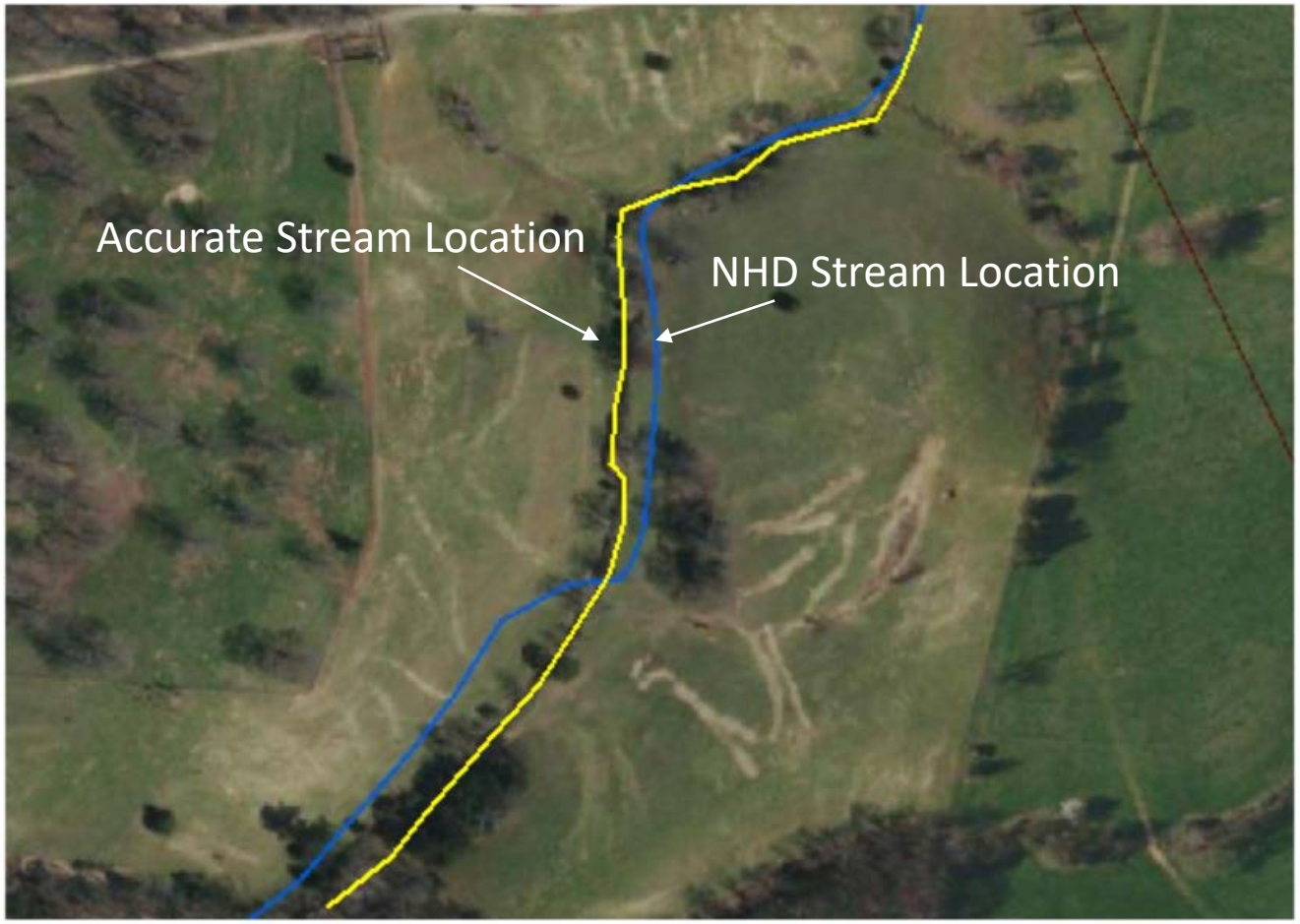
# Perennial Stream Identification Overview

A dataset identifying perennial stream segments will be developed using :

- **Virginia LiDAR Dataset** – Available from VITA for the entire watershed and, in many instances, available for multiple years
- **SSURGO Soils** – Available from USDA-NRCS and includes information about soils as collected by the National Cooperative Soil Survey over the course of a century.
- **2002 VGIN Stream Network** – Derived from digital elevation models and aerial photography during a significant statewide drought.
- **National Hydrography Dataset (NHD)** – Nationwide water drainage network provided by USGS.

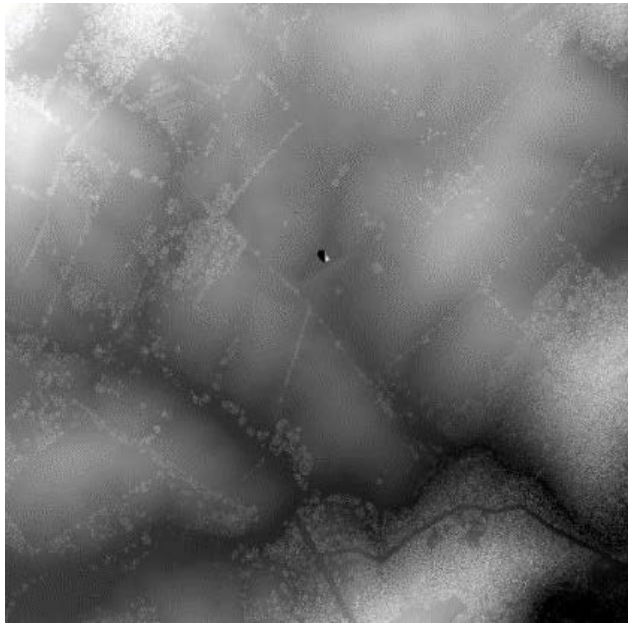
# Methodology – Creation of Base Dataset of Stream Segments

Due to inaccuracy of existing spatial datasets representing streams (NHD), new lines need to be created that represent the center of stream channels.



# Methodology – Creation of Base Dataset of Stream Segments

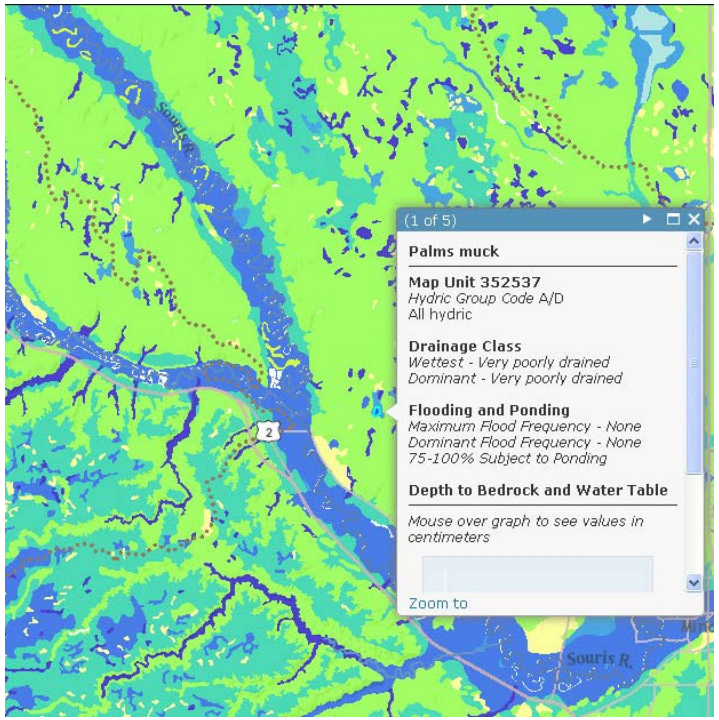
- VITA's Virginia LiDAR Dataset is primary data layer used to create the stream segments
  - o LiDAR datasets contain points with accurate elevations
  - o Precise Digital Elevation Models (DEMs) created from the LiDAR dataset
  - o DEMs then used to create stream features
  - o Stream features refined using the DEMs to model hydrologic processes including the accumulation of water and direction of the flow of water
  - o Stream features then divided into smaller segments that will be reviewed for perennial identification



**Elevation Model Created from LiDAR**

# Methodology – Perennial Stream Segment Identification (SSURGO Soils Data)

- The SSURGO individual soil classifications used to examine whether wet or flooded soils are present in a certain stream segment.
- Individual classifications for wet or flooded soils extracted from the SSURGO data and overlaid with base stream segment vertices at a specified threshold to flag that segment as potentially perennial.

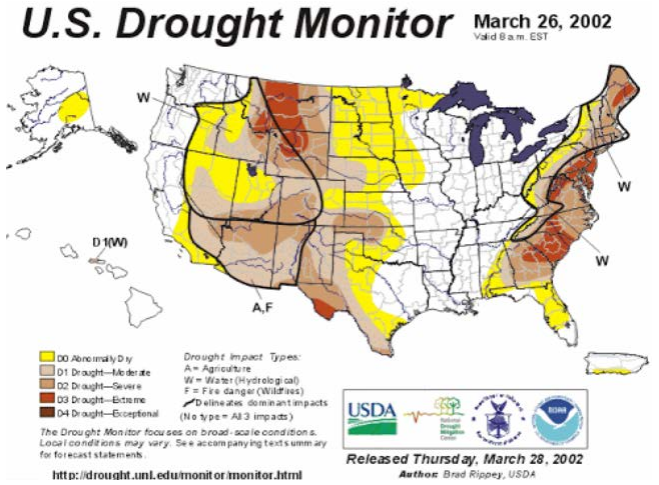



**SSURGO Soils Map**

# Methodology – Perennial Stream Segment Identification (2002 VGIN Stream Network)

- Stream network developed from data collected during 2002 while a statewide drought was occurring
- Stream segments included have a higher likelihood of being perennial.
- Features buffered and overlaid with base stream segment vertices at a specified threshold to classify that segment as potentially perennial.

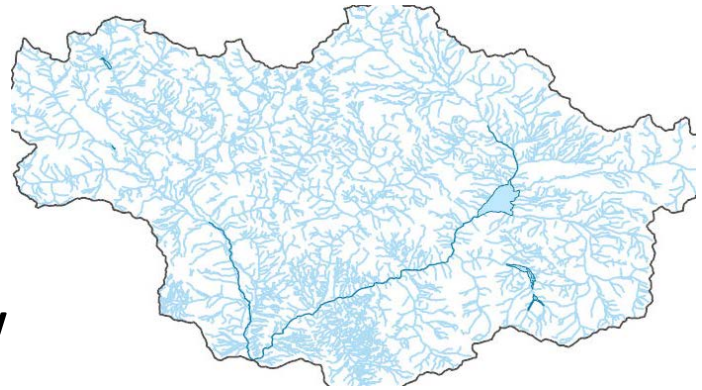
**Perennial Stream During Drought Conditions**




**March 2002 Drought Monitor Graphic**

# Methodology – Perennial Stream Segment Identification (National Hydrography Dataset (NHD))

- Dataset contains information indicating potential water flow through stream segments.
- Information assists with the identification of segments in the new base datasets that are likely to be perennial.
- Dataset's resolution not the same scale as the new base stream segment dataset
  - Larger search threshold is used for comparison of NHD features with the new base dataset to determine potential of perennial classification.

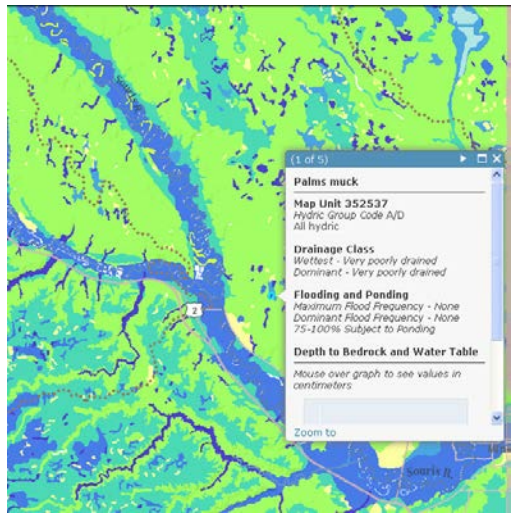


**Watershed with NHD Stream Segments**

# Methodology – Perennial Stream Segment Identification (Final Determination)

- Each of the reference datasets contain different characteristics of a perennial stream segment
- Segment will only be identified as perennial when **<u>two of the three</u>** reference datasets contain perennial characteristics for that segment.

1

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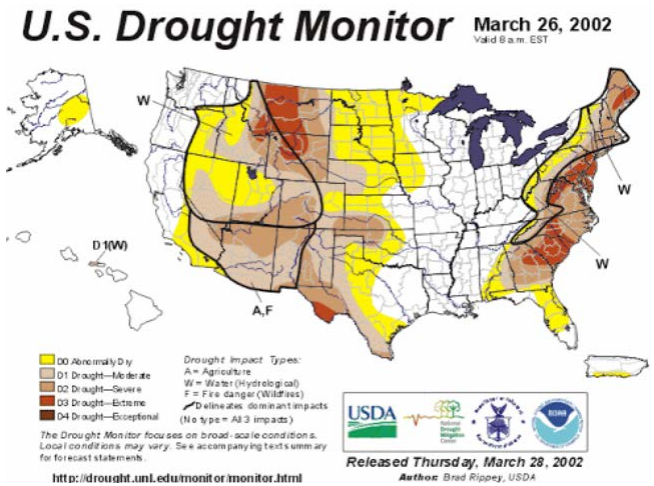


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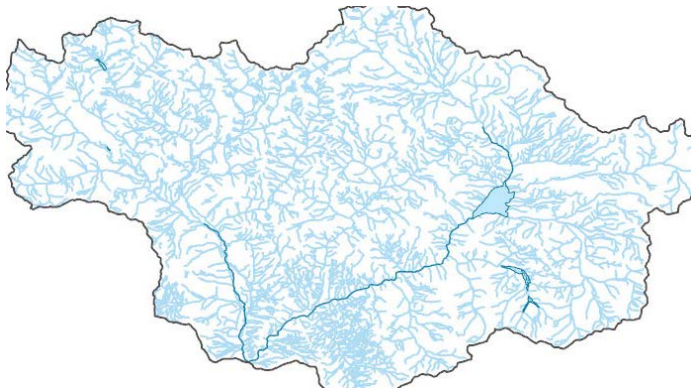

# Quality Control

- After segment classifications are complete, several quality control process undertaken including:
  - Ensure all segments upstream from an intermittent feature are similarly identified as intermittent
  - Sample segments randomly chosen for detailed review against reference dataset and also examined for other perennial characteristics using aerial photography
    - Bed and Bank Presence – Indicative of perennial stream flow
    - Sinuosity - Areas with low channel slope gradients typically show high sinuosity if perennial
    - Riffle/Pool Appearances – Repeating sequences can easily be observed in perennial streams

# Access to Final Dataset

- After dataset developed, including completion of necessary quality control checks, public access to dataset will be provided through the Department's website.

# Previous Regulatory Determination of Stream Segments

- If a previous regulatory determination has been made regarding the perenniality of a stream segment (such as a perennial stream determination made by a locality under the authority provided by the Chesapeake Bay Preservation Act) and the determination conflicts with the identification made by the Department, the Department will recognize the previous regulatory determination, provided proof of the determination is available.

# Next Steps

- Public comment period
  - Opens Monday, November 9, 2020; closes Wednesday, December 9, 2020
- Virginia Soil and Water Conservation Board meeting
  - Wednesday, December 16, 2020
- **Please comment early**
  - Comment directly on Virginia Regulatory Town Hall (townhall.virginia.gov)
    - On left-hand column, click on Comment Forums
    - Click on Guidance Document Forums
    - Listed under Department of Conservation and Recreation
  - Provide comments and questions to Christine Watlington
    - christine.watlington@dcr.virginia.gov