

# The Application of LiDAR to Watershed Management on the White Mountain National Forest

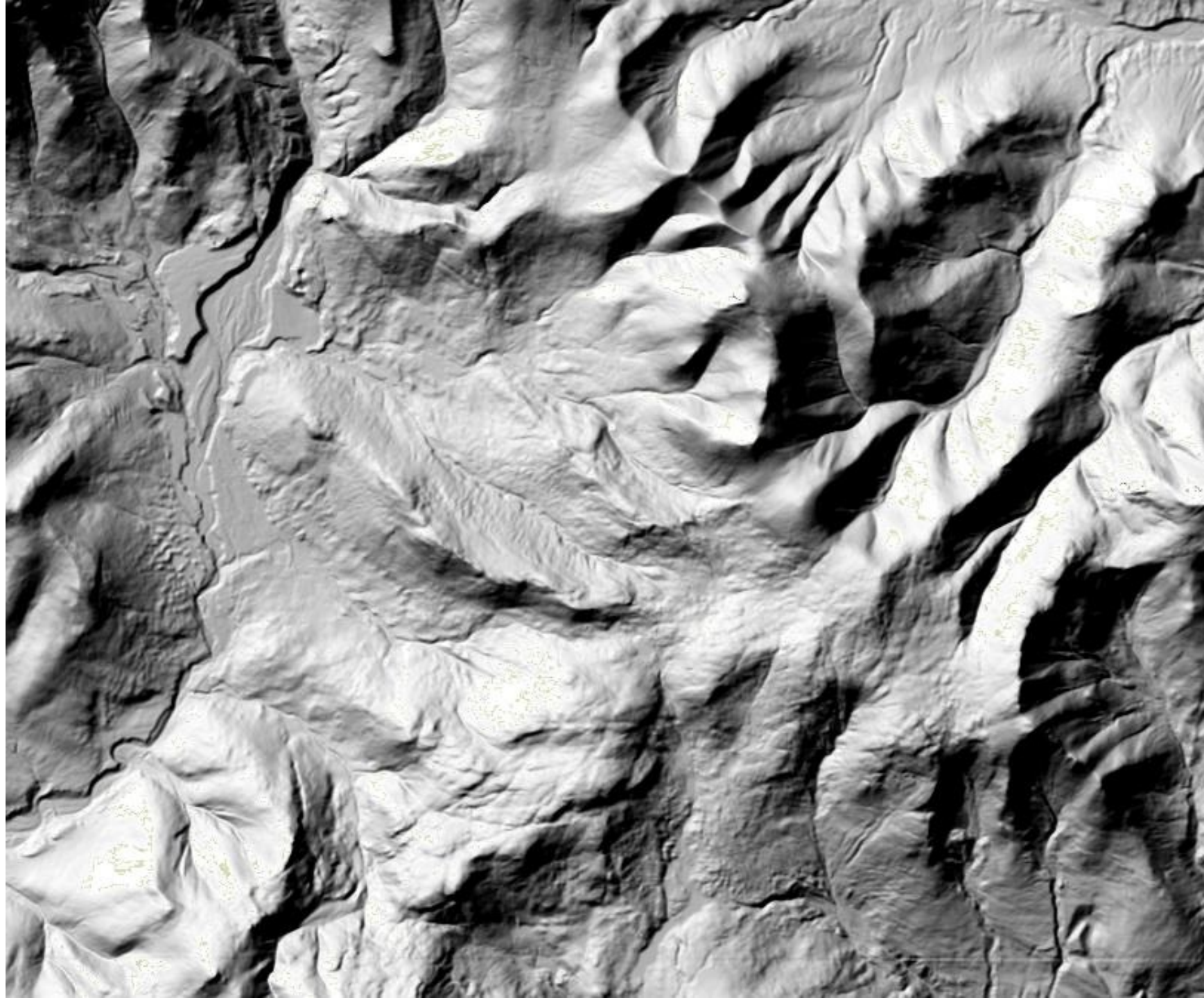


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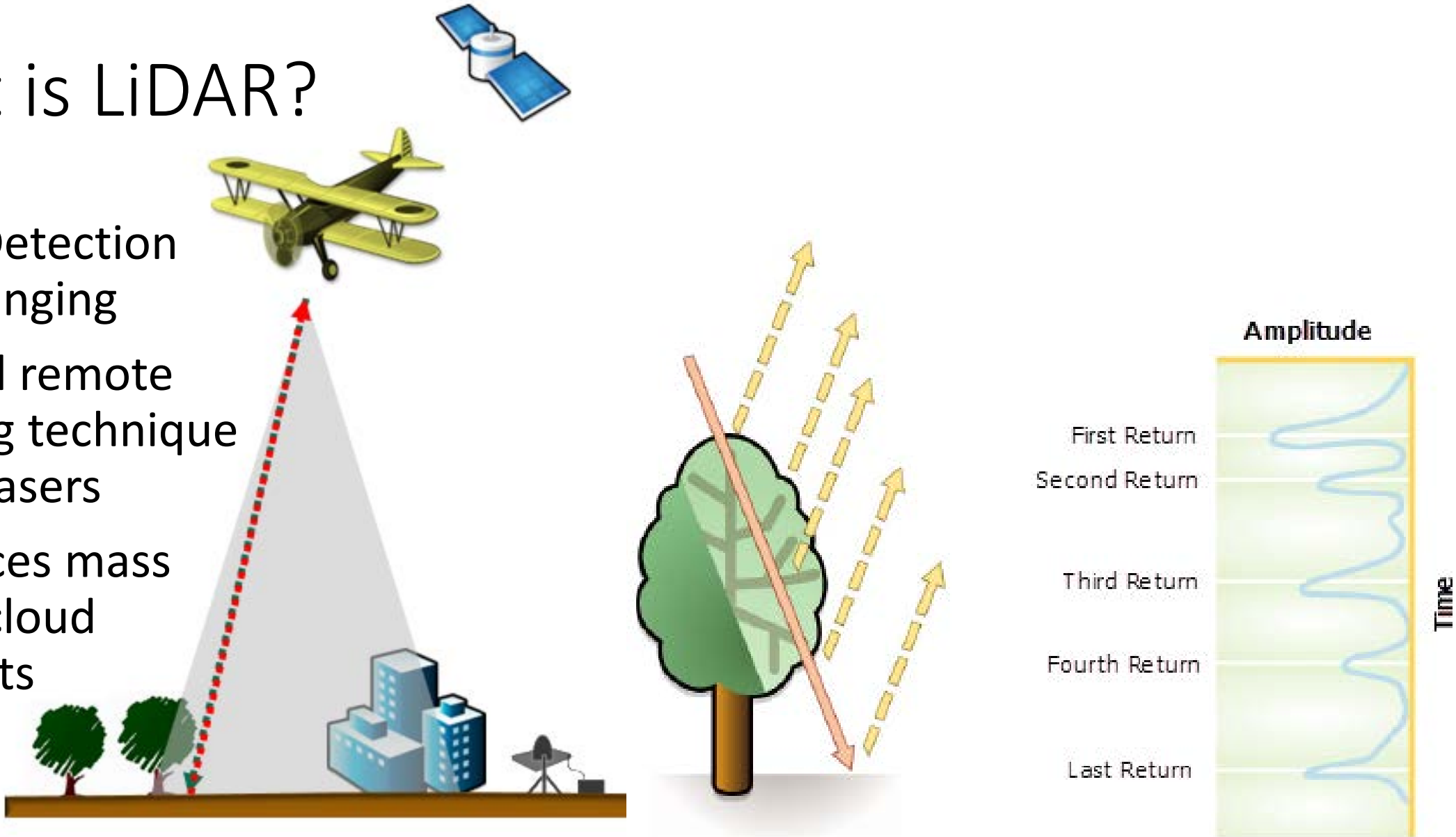
# Overview

- What is LiDAR and why is it so cool?
- LiDAR status in NH
- Current applications
- Planned, near-future applications
- Future applications



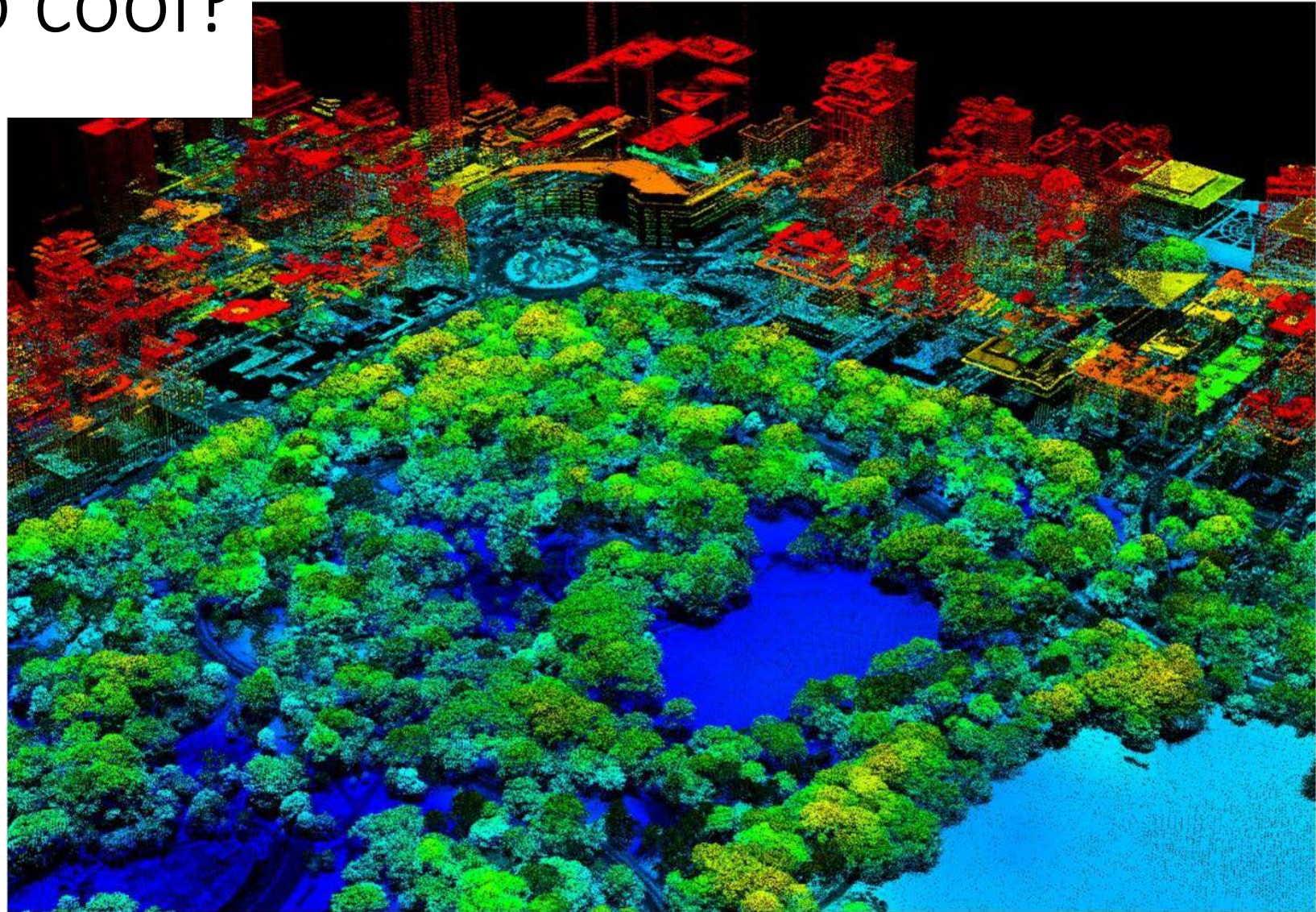
# What is LiDAR?

- Light Detection and Ranging
- Optical remote sensing technique using lasers
- Produces mass point cloud datasets

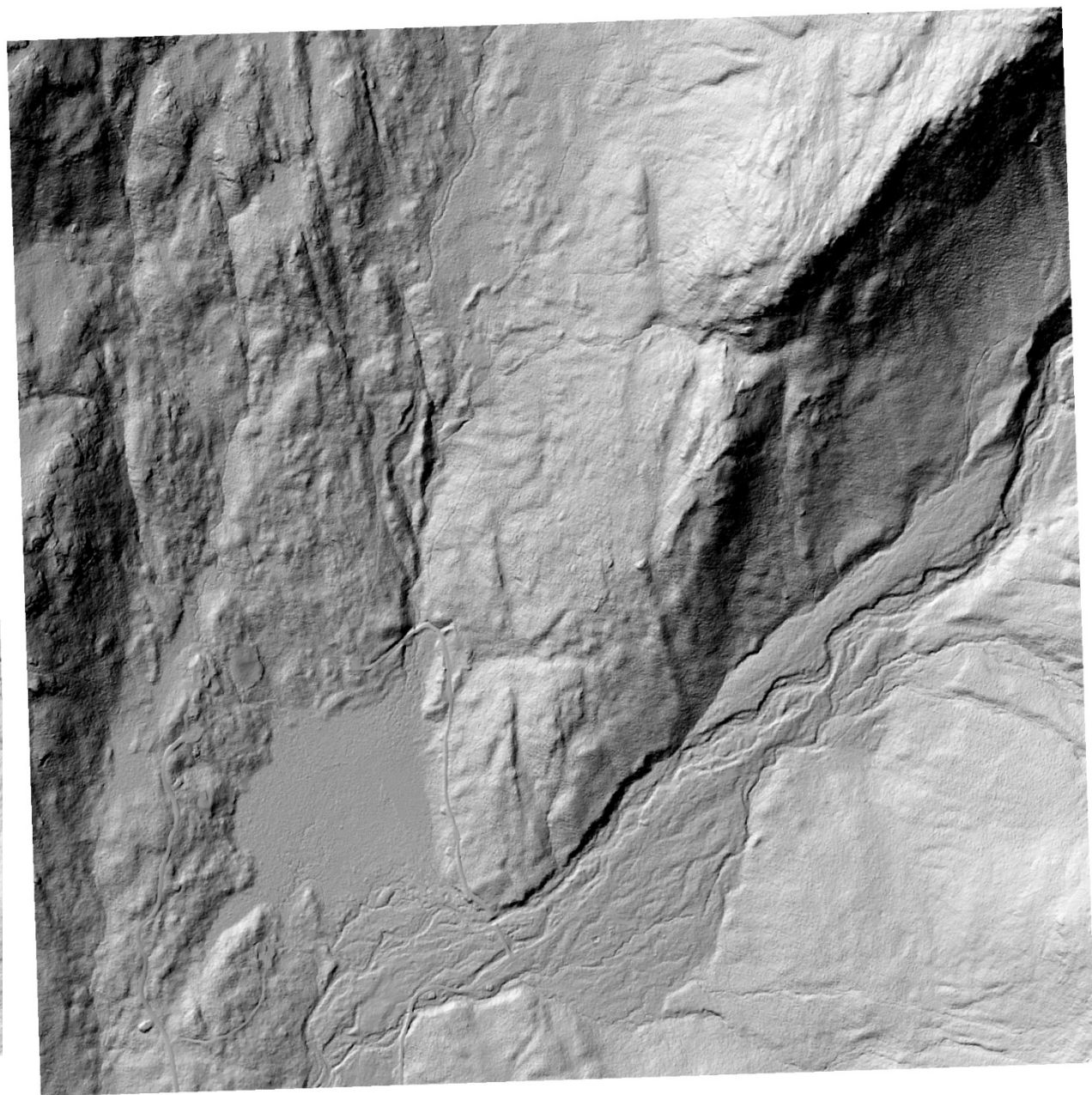
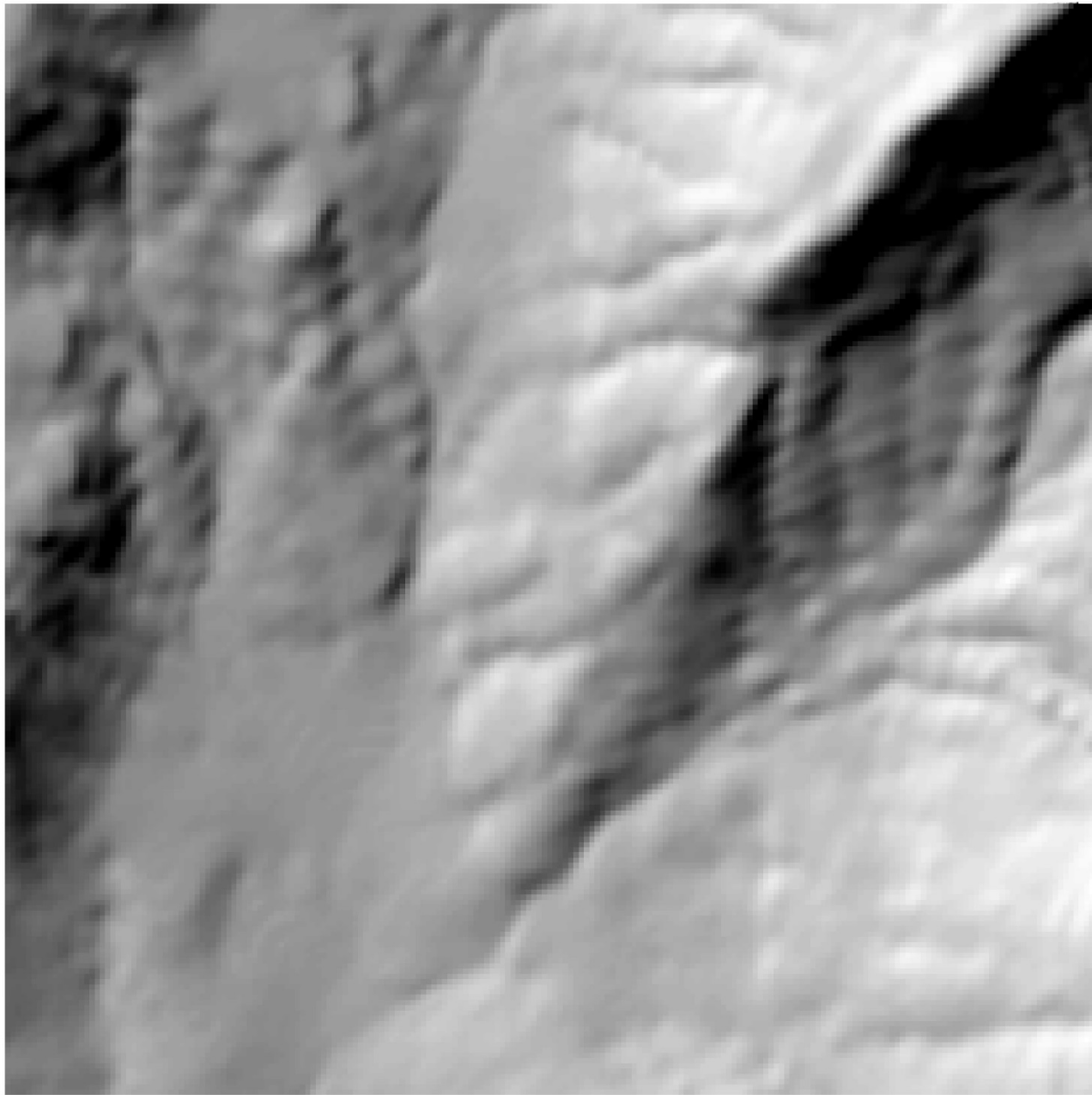


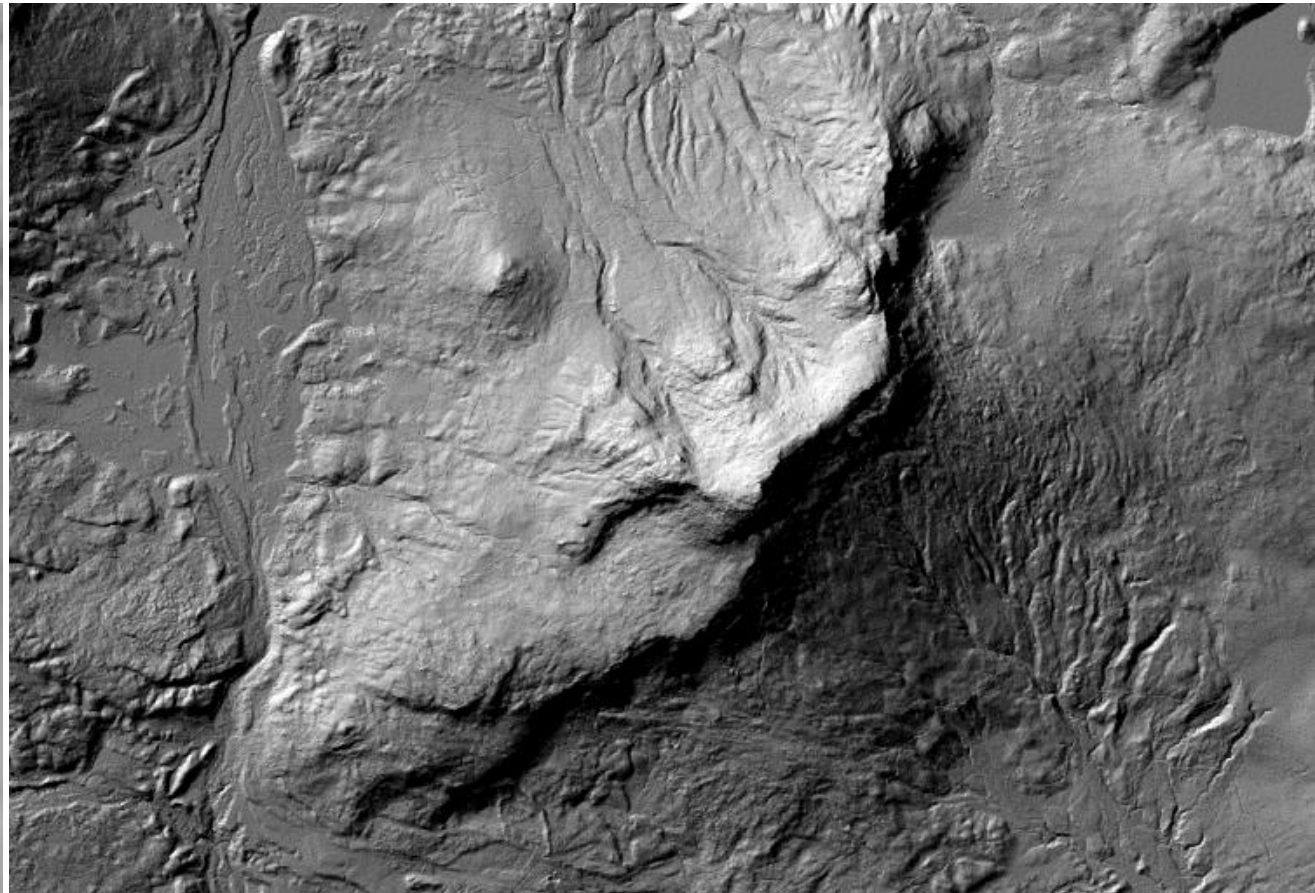
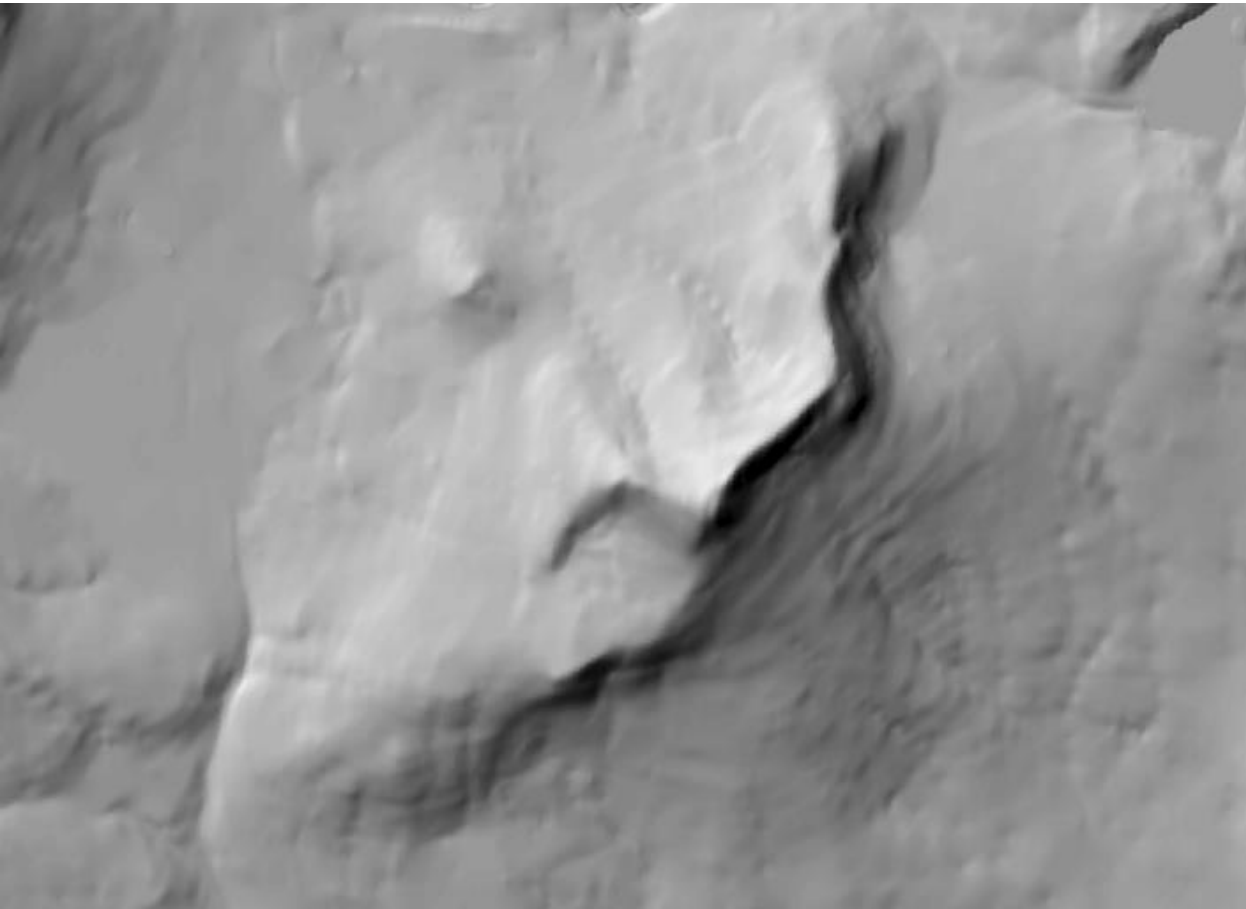
# Why is LiDAR so cool?

- Map top of tree canopy
- Map ground surface elevation
- Actual measurements of ground surface
- High resolution
- Repeated measurements



NYC point cloud. Credit: Jarlath O'Neil-Dunne; UVM-SAL



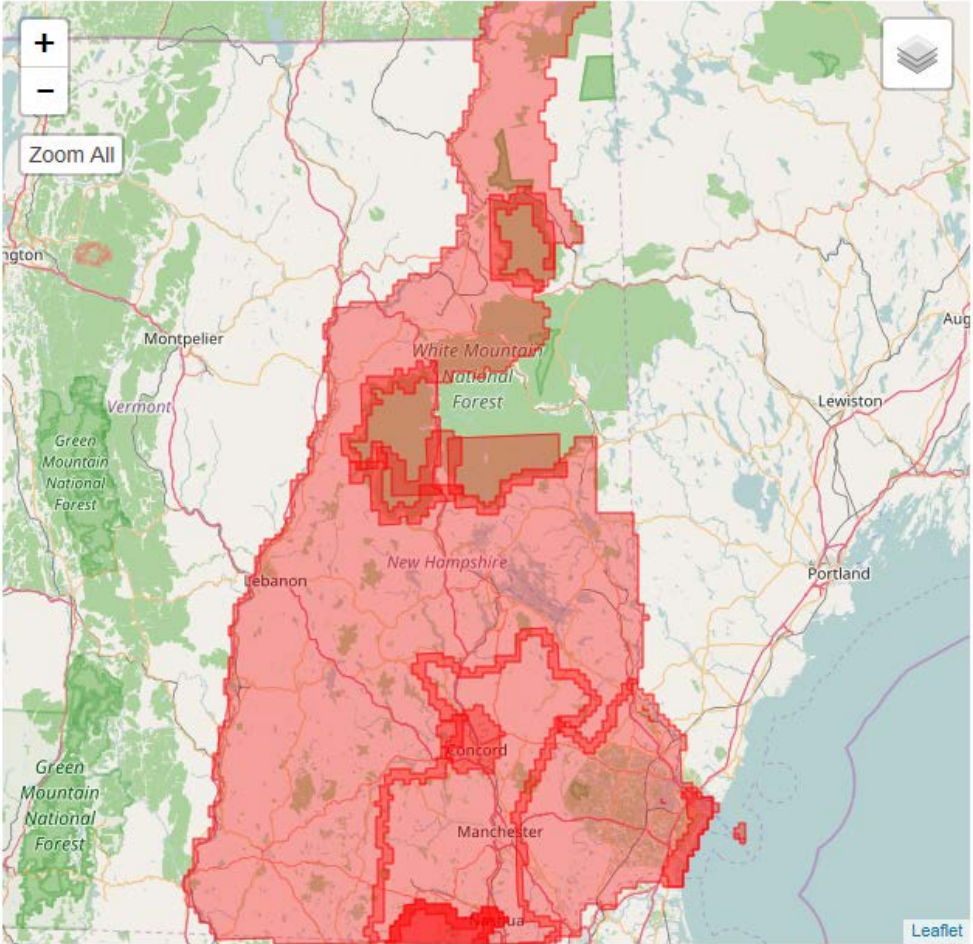


# LiDAR Status in NH

- <http://lidar.unh.edu/map/>

**Welcome to the GRANIT LiDAR Distribution Site**  
This site provides access to LiDAR datasets and derived products archived within the GRANIT database. It is intended to serve the needs of users requiring access to relatively small data sets, e.g. data for a town or watershed. For users interested in accessing entire collections of LiDAR, we recommend that you contact GRANIT directly and arrange for data transfer via external drive. **Web browsers supported by this site are Chrome and Firefox.** Please direct comments and questions to [granit@unh.edu](mailto:granit@unh.edu)

Filter By County  Filter By Town  Select HUC Level  Filter by HUC  Custom Selection



**Data Collections**

- Coastal New Hampshire (2011, 2012)
- Concord Municipal (2011) ⓘ
- Connecticut River Watershed (2011)
- Merrimack River Watershed (2011)
- Nashua River Watershed (2011) ⓘ
- White Mountain National Forest (2011)
- Reference Layers

Hide All Data Footprints

**Data Inspector**  
Hover over map data layers to see collection names and/or individual filenames.

**To Get Started**

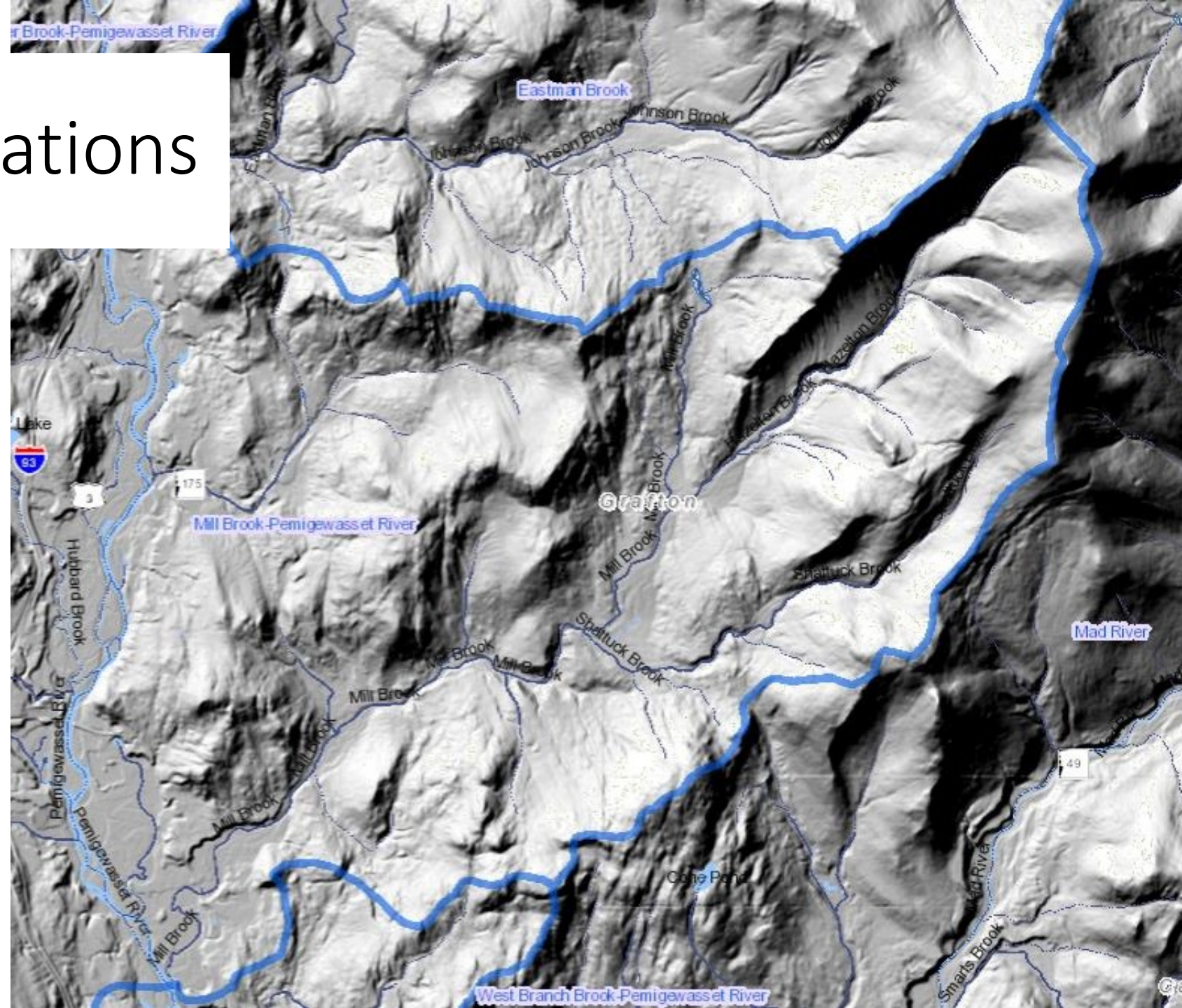
1. Select data layers of interest from the data collections above.
2. Choose the area of interest by using our filters or the "Custom Selection" tool.
3. Click on the green results button above.

Leaflet

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# Current Applications

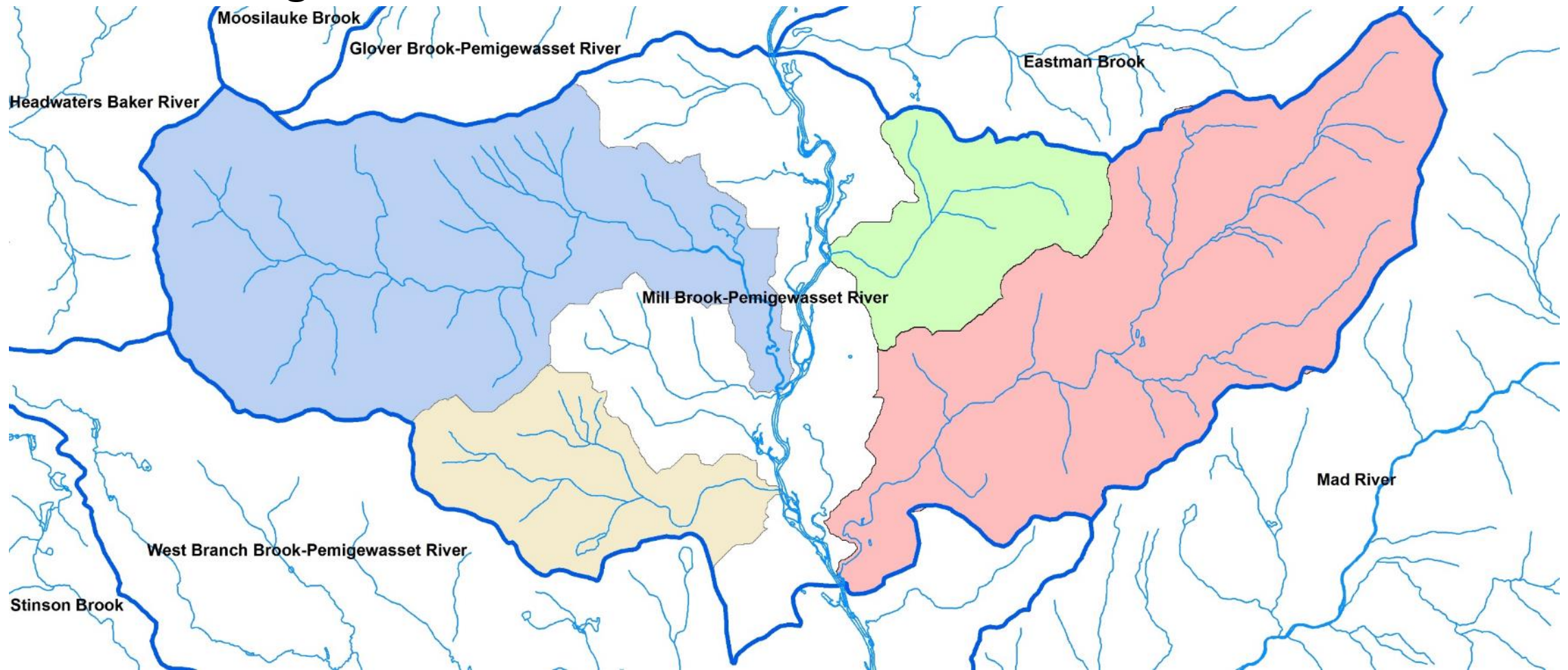
- Updating the Watershed Boundary Dataset (WBD)





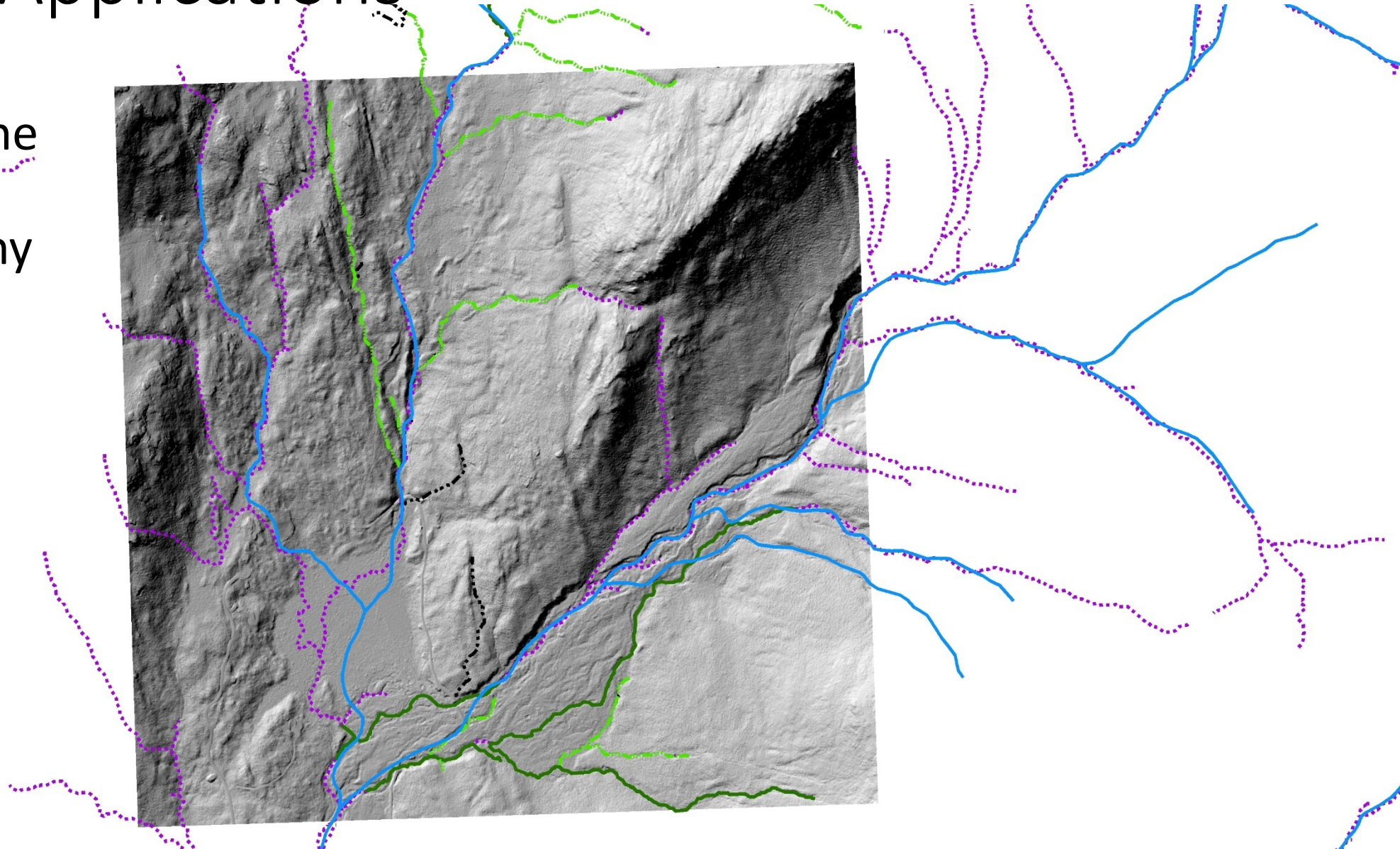
# Current Applications

- Delineating HUC-14 and HUC-16 watersheds



# Current Applications

- Updating the National Hydrography Dataset (NHD) flowlines



# Current Applications

- Forest-wide soil mapping and Terrestrial Ecological Unit (TEU) mapping



# Planned Applications

- Mapping potential vernal pools



A flooded vernal pool

Photos: UNH Cooperative Extension

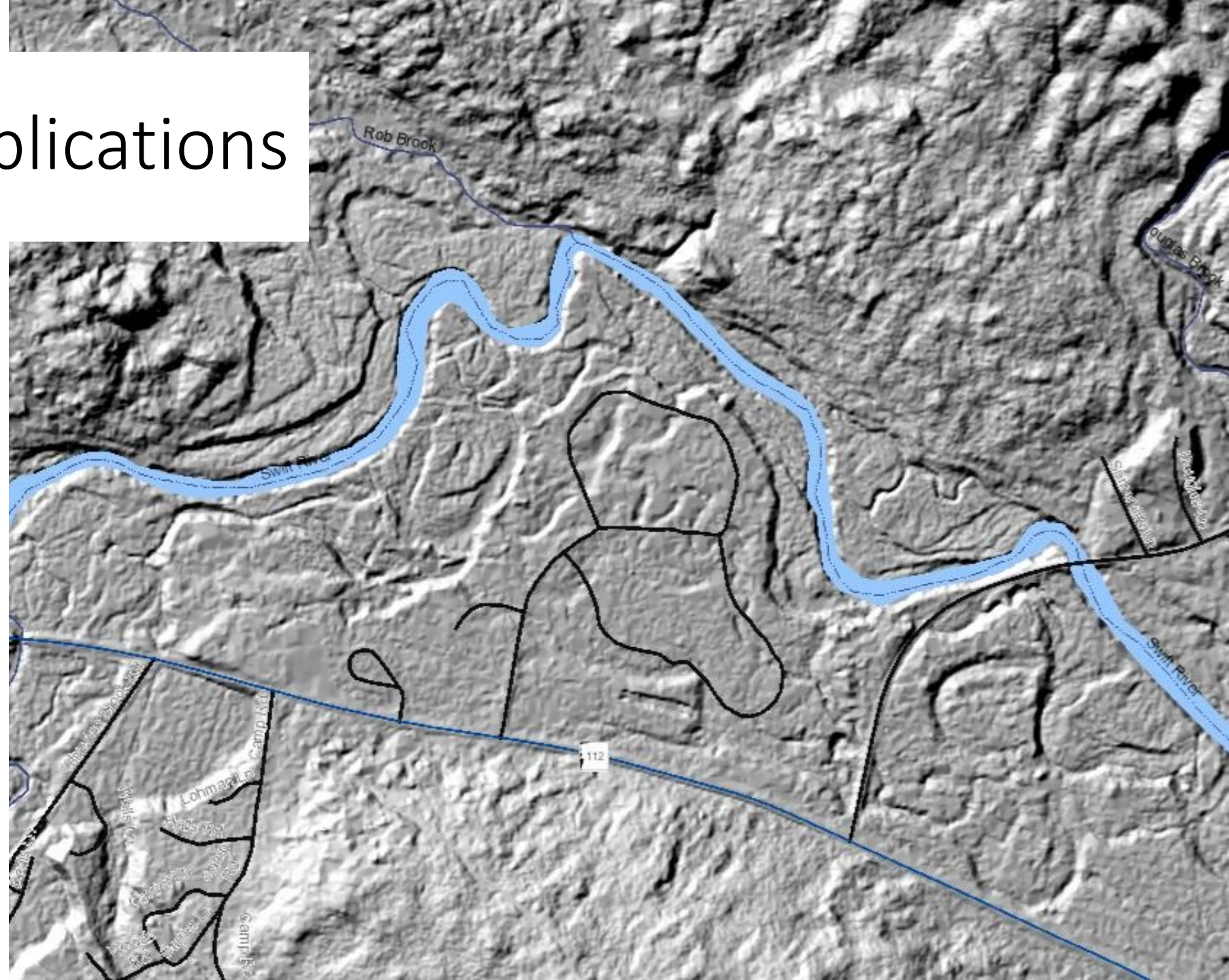


A dry vernal pool



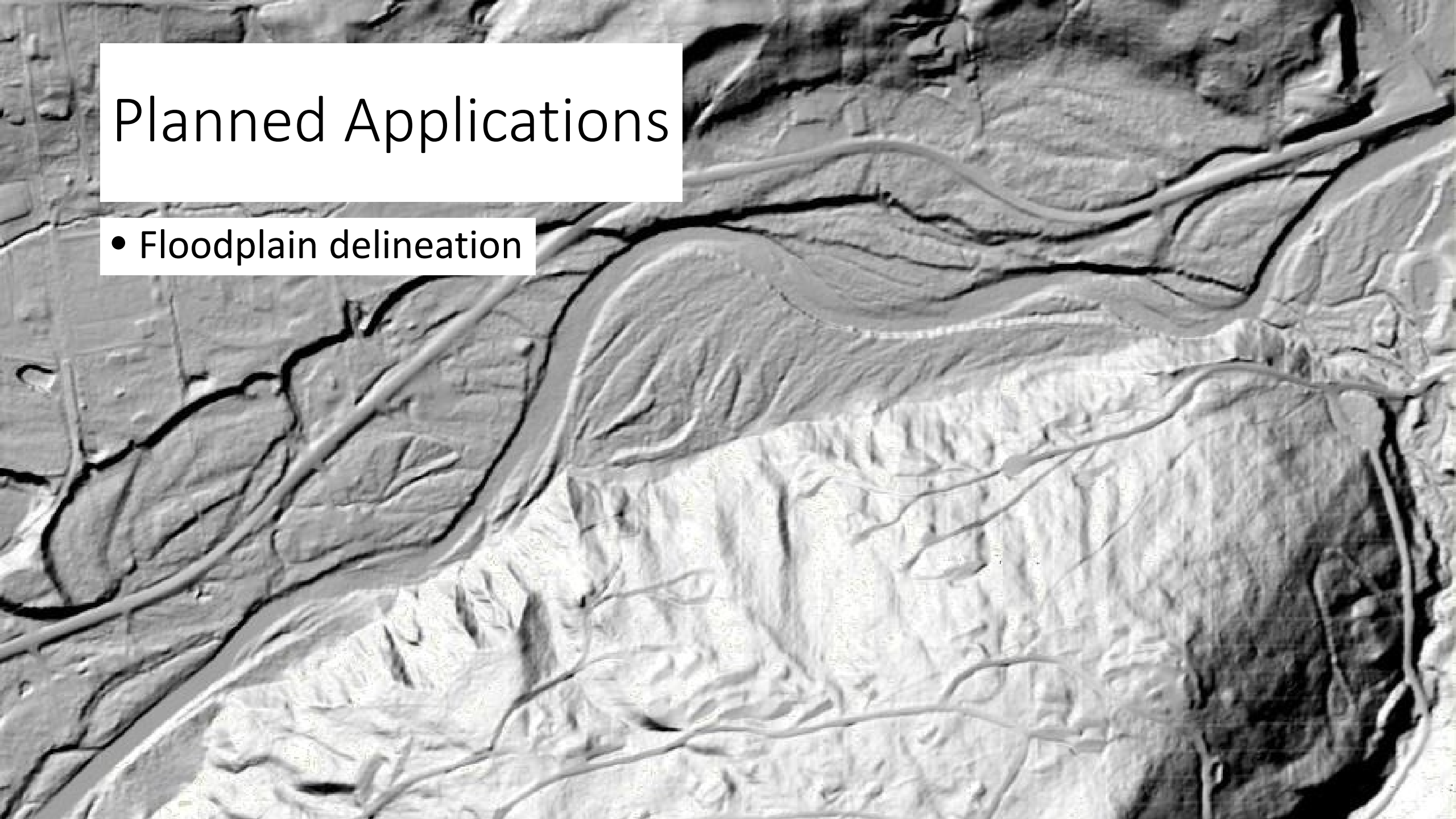
# Planned Applications

- Flood hazard analysis at campgrounds near rivers



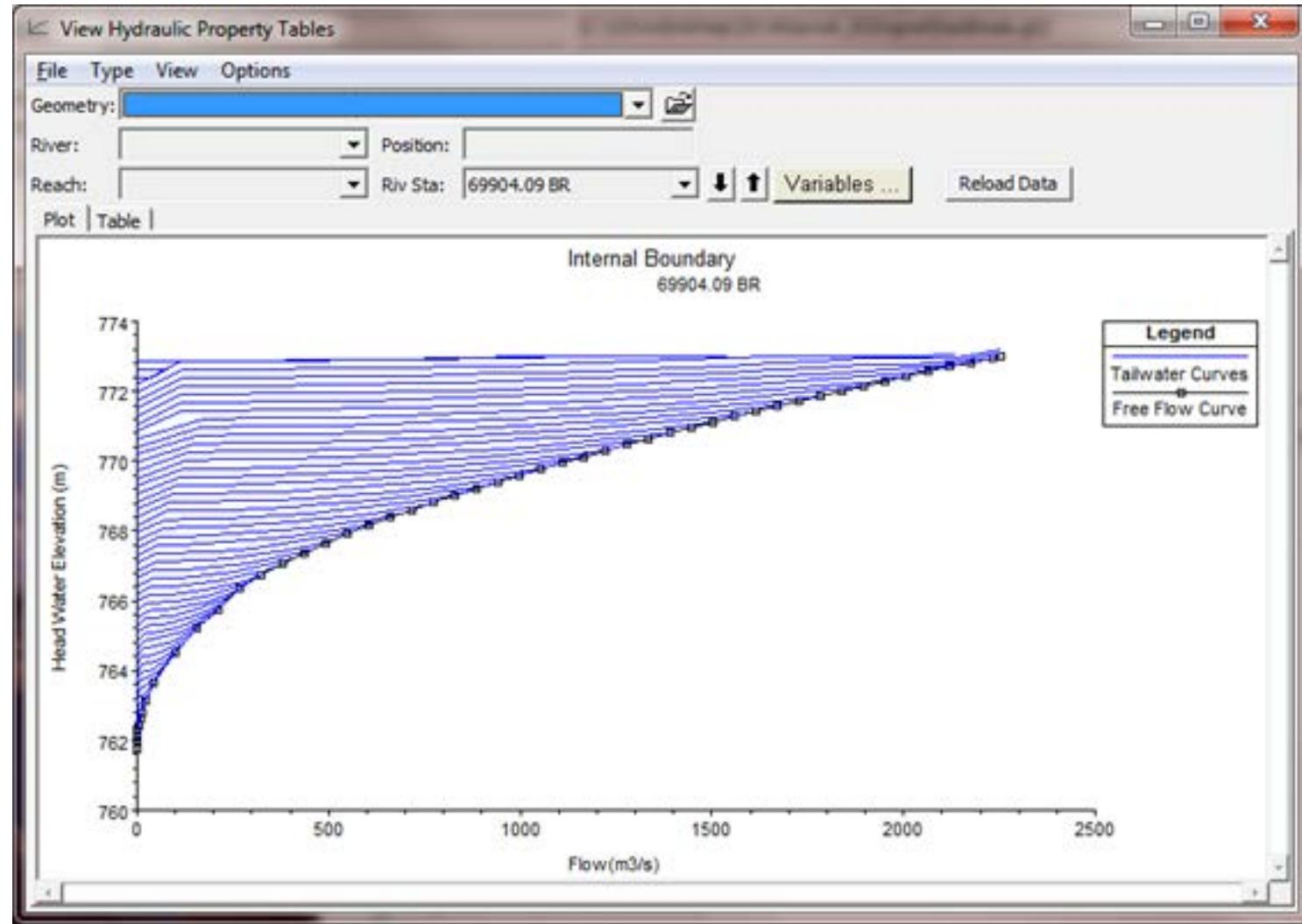
# Planned Applications

- Floodplain delineation



# Planned Applications

- Rating curve generation at new streamflow gaging stations

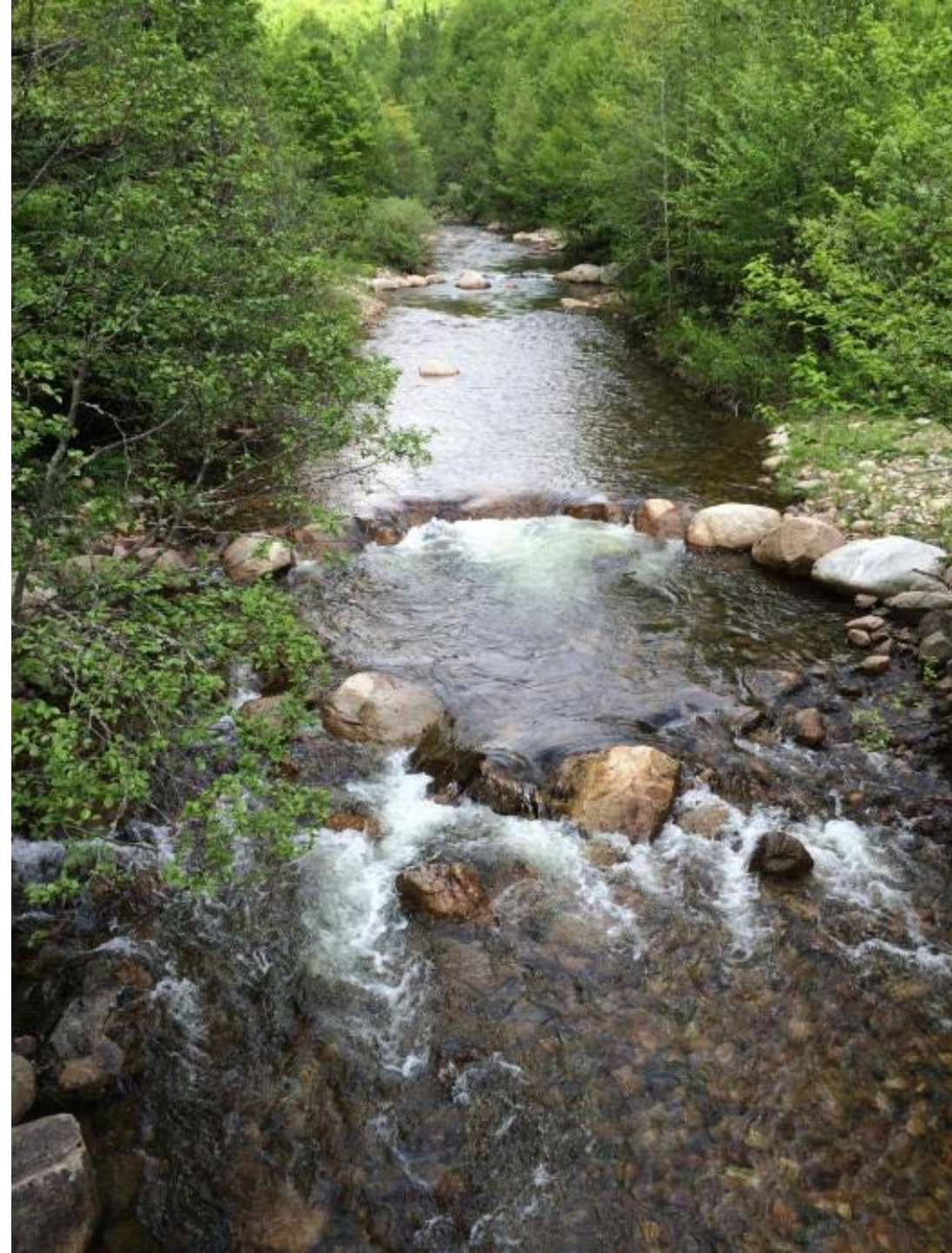


Credit: Christopher Goodell, WEST Consultants

# Planned Applications

- Identifying straightened stream reaches

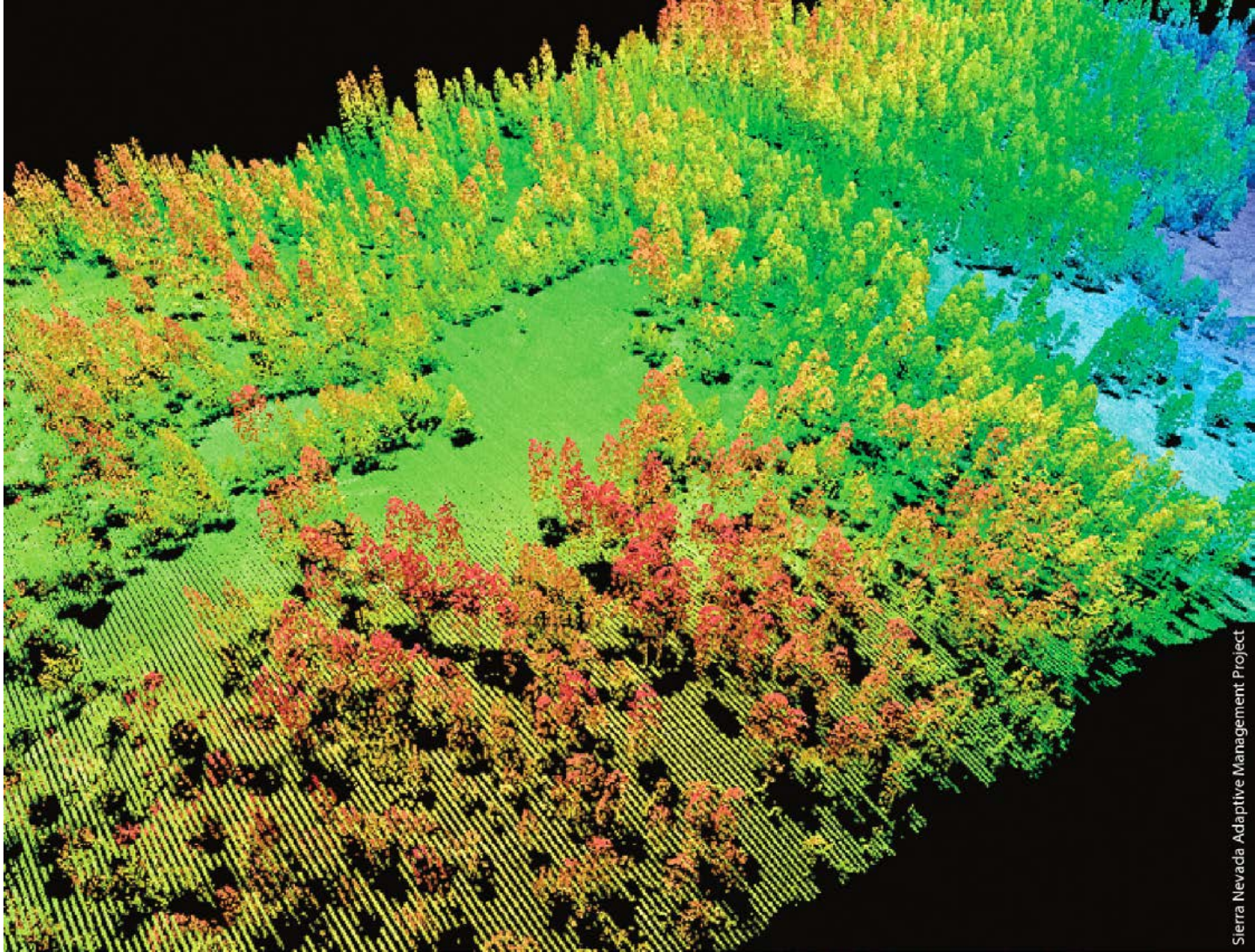
Photo: Nash Stream, Coos County, NH.  
Credit: Trout Unlimited,  
<http://www.tu.org/tu-projects/nash-stream>





# Future Applications

- Stream and riparian characterization
- Advanced vegetation analysis
- Pair with multi- and/or hyper-spectral imagery to map to species
- Quantify landscape changes over time
- Disturbance mapping
- ???



Kelly M, Di Tommaso S. 2015. Mapping forests with Lidar provides flexible, accurate data with many uses. Calif Agr 69(1):14-20. DOI: 10.3733/ca.v069n01p14



Questions?

Photo credit: John Anderson, 2013 WMNF Artist-in-Residence Program

*John Anderson*