Water Information, Drought, and Lidar

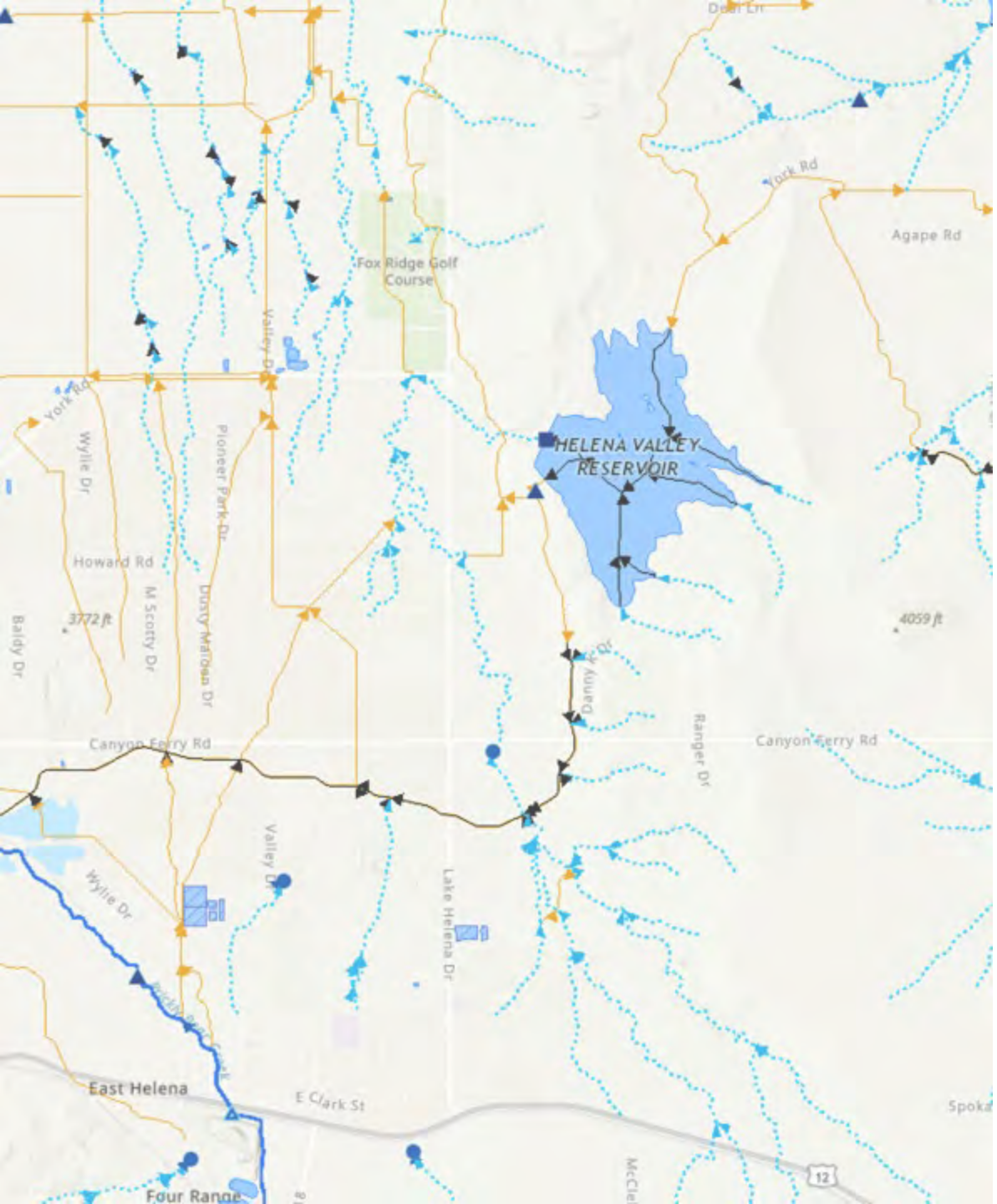
Dec. 15, 2022

MONTANA STATE LIBRARY

Natural Resource Information System (NRIS)

Natural Heritage Program (NHP)

Water Information System (WIS)



Outline

- Water Information System
  - NHD to 3DHP
- Drought
  - Drought monitoring process
- Lidar
  - Collection status
  - What products are available
  - What's new in 2022

For more, please join the lidar and hydro breakout session this afternoon!

Water Information

Montana Water Information System

- Coordinate with water data providers and facilitate water data discovery and access
- Update and maintain the Montana Hydrography Dataset

TITLE 90. PLANNING, RESEARCH, AND DEVELOPMENT
CHAPTER 15. NATURAL RESOURCE INFORMATION SYSTEM
Part 3. Information System

Water Information System

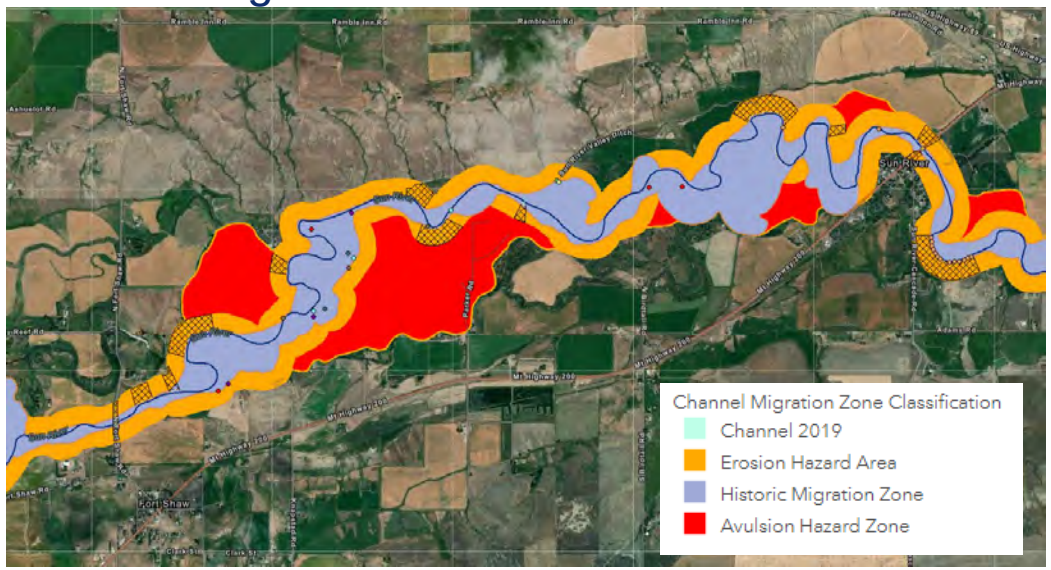
90-15-305. Water information system. (1) There is a Montana water information system, to be operated within the natural resource information system referred to in **90-15-301** and that is to be considered a part of the system.

(2) The Montana water information system shall make available and readily accessible, in a usable format, to state agencies and other interested persons, information on the state's water resources, out-of-state water resources that affect the state, existing and potential uses, and the existing and potential demand.

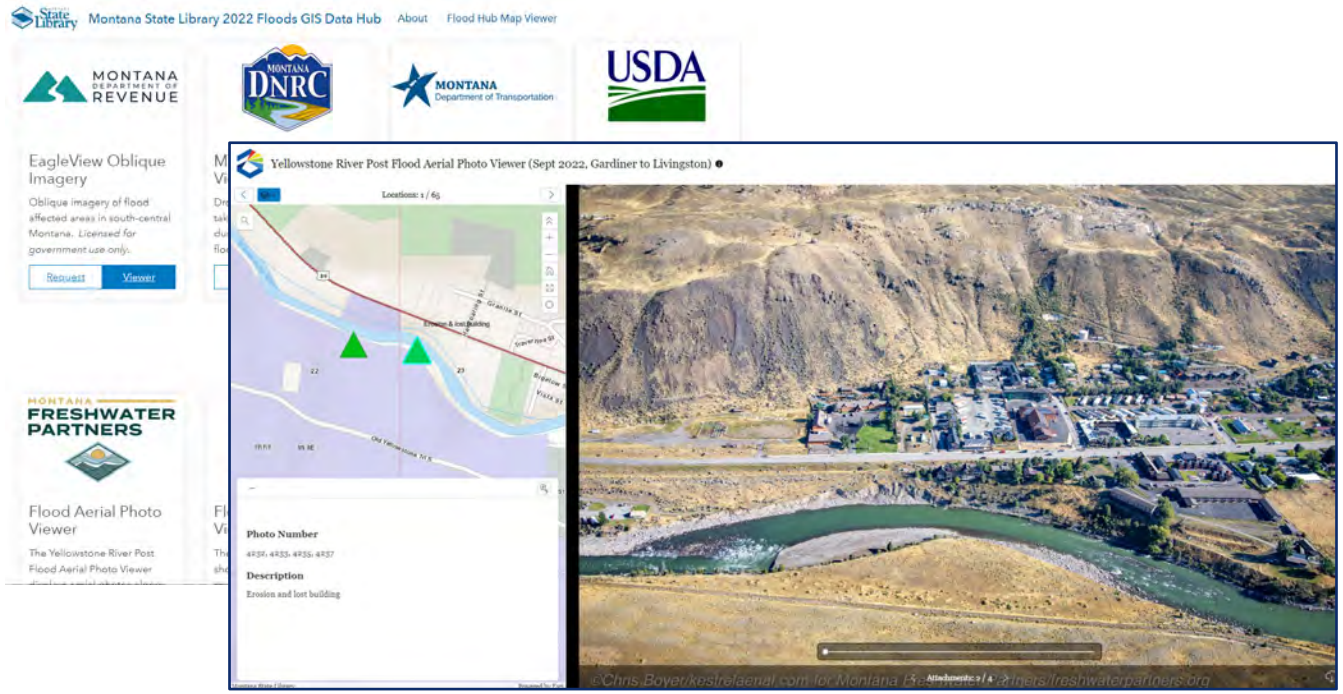
Water data discovery and access

- Refer people to the best sources – curate
- House and disseminate water-related data that's otherwise challenging to obtain

Channel Migration Zones



2022 Floods GIS Data Hub



Montana Spatial Data Infrastructure - Hydrography

What is it?

Networked geometry and attributes representing surface water (lakes, ponds, streams, rivers, canals, ditches, etc.). Provides a system for indexing (addressing) water-relevant data.

Status

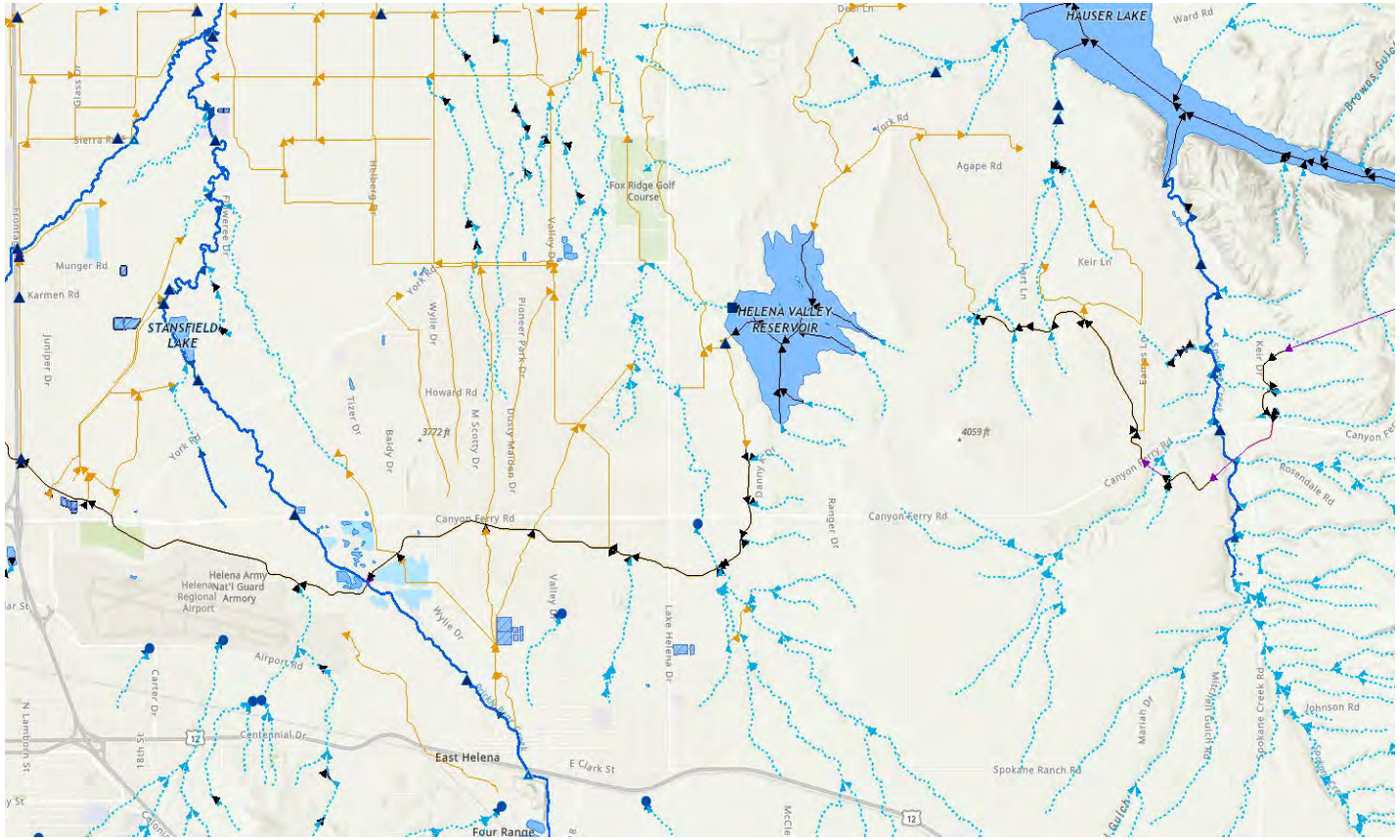
Transitioning to new model (3DHP) over next 5-10 years

Used for:

State water planning, water quality reporting, water quality monitoring locations, permitting, floodplain mapping, fisheries/wildlife, navigable waters, water rights, dam safety, streamside management.

Data Access:

Web services, downloadable data, online viewer, printed maps (PDF), Digital Atlas, Digital Bundler

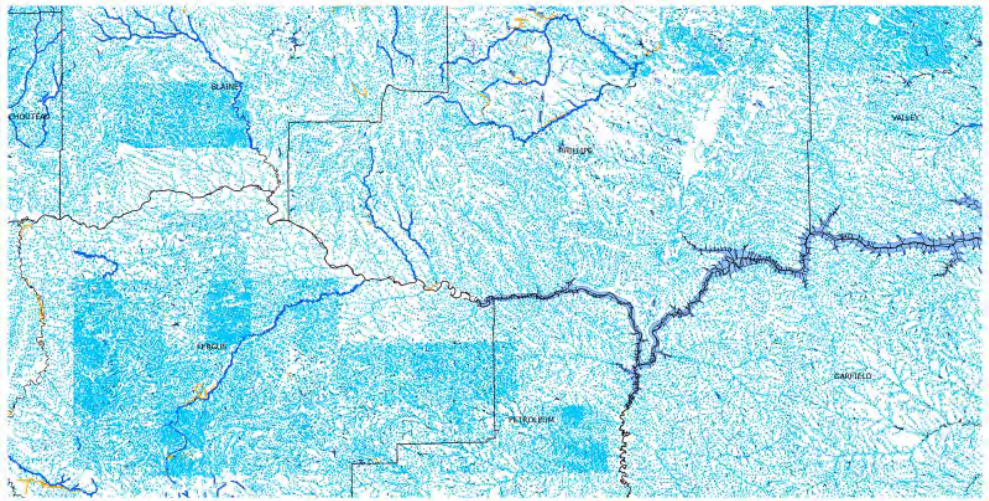


Cessation of NHD and WBD editing

- The USGS is transitioning from the NHD to the 3D Hydrography Program (3DHP)
  - "Given resource constraints, the transition to the 3DHP database and tools requires us to close Steward and internal editing of the NHD database."
  - Editing checkins must be completed by **Dec. 31, 2022** for NHD and June 30, 2023 for Watershed Boundaries.
- This is not a temporary stoppage of editing, but a permanent end to maintenance of the NHD in its current form. Going forward, **static** versions of the NHD and WBD will be available.
  - The NHD will be replaced by 3DHP

USGS 3D Hydrography Program (3DHP)

- Elevation (lidar) – derived hydrography data
  - Terrain and water influence and shape one another, interdependent relationship
  - New hydrography that aligns with the real-world topo landscape
    - Vertical, horizontal, and temporal alignment with high-resolution elevation data
- More current
  - More frequent refresh possible (5-8 years), or as new lidar becomes available
- Improved detail (~1:5,000 scale)
- Statewide, nationwide consistency
- Primary access through web services
- Simplified model
  - Geometry, network, and flow logic are the primary focus of 3DHP; many attributes will be addressed, linked data, as opposed to distinct features



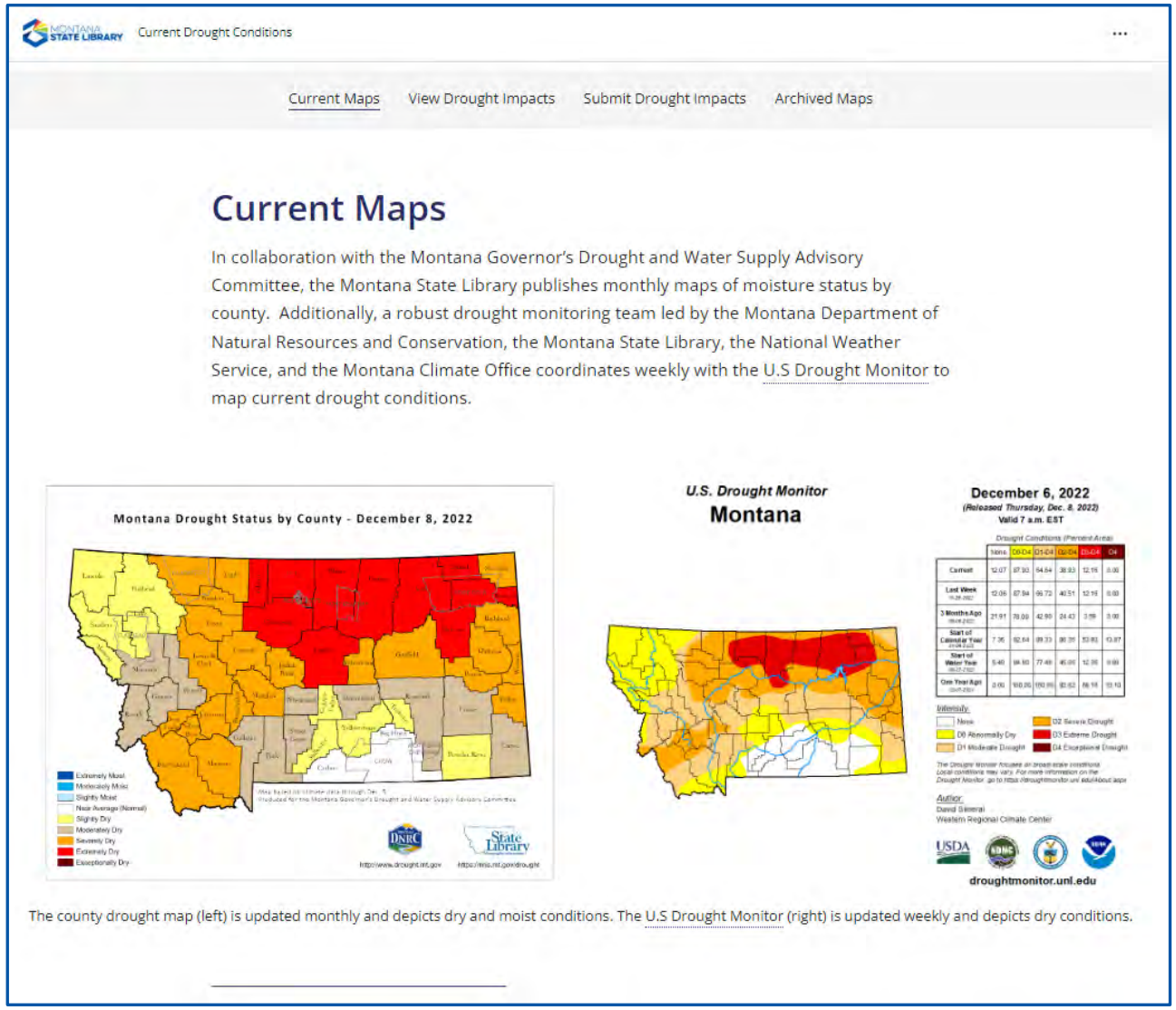
3DHP Timeline

- 2023 – 2031 (9-year) investment
  - 1-year preparation
  - 6-years of delineating hydrography data from high-resolution (1-meter) elevation data
  - 2-years inspection, processing, and publication

- As proposed, the 3DHP effort would begin providing products and services to partners and the public by the end of 2025.

Drought

Drought Monitoring

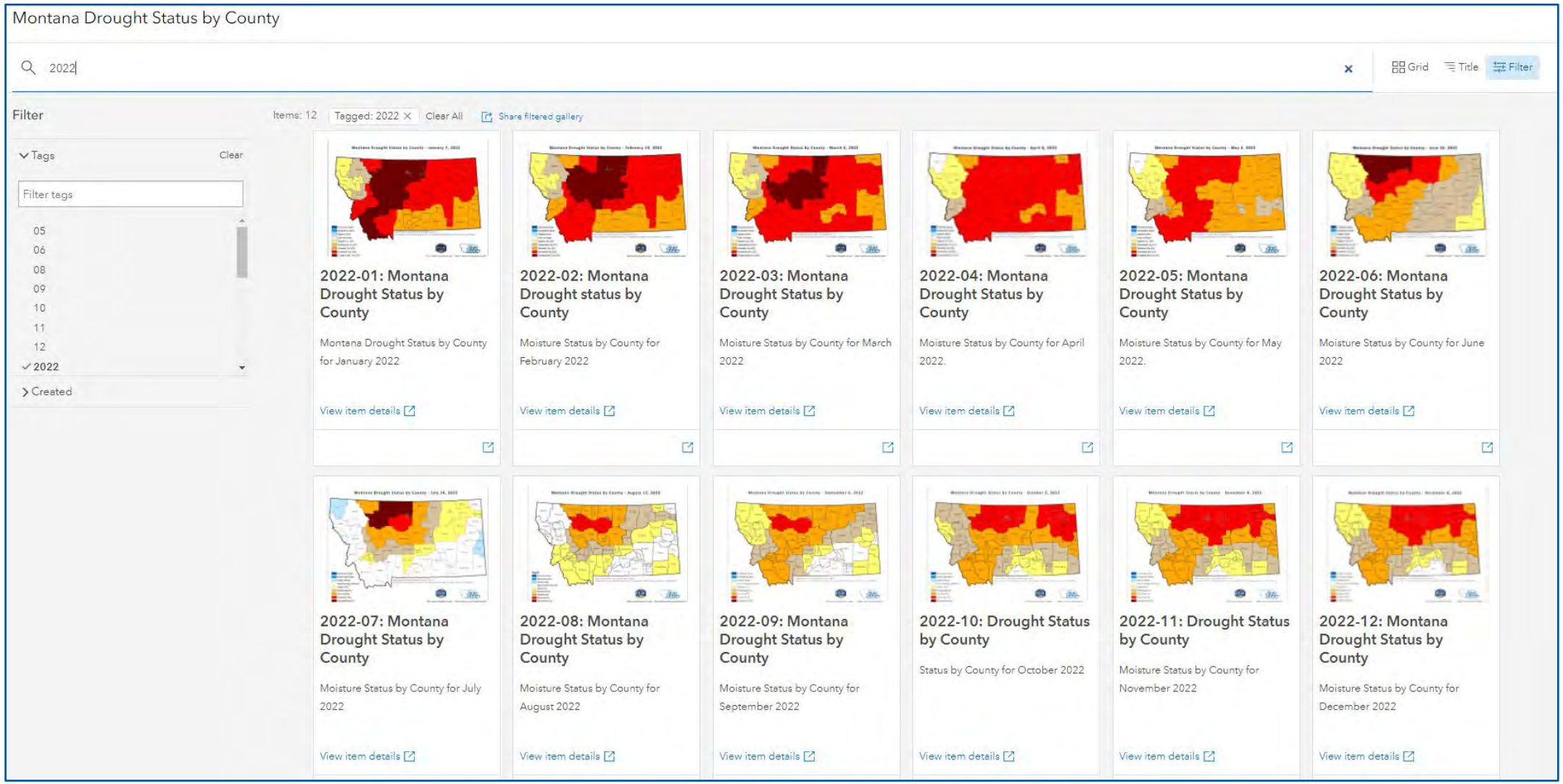


https://nris.mt.gov/drought

MT DNRC - Drought Management Plan 2023

https://mtdroughtinfo.org

Archive of drought maps



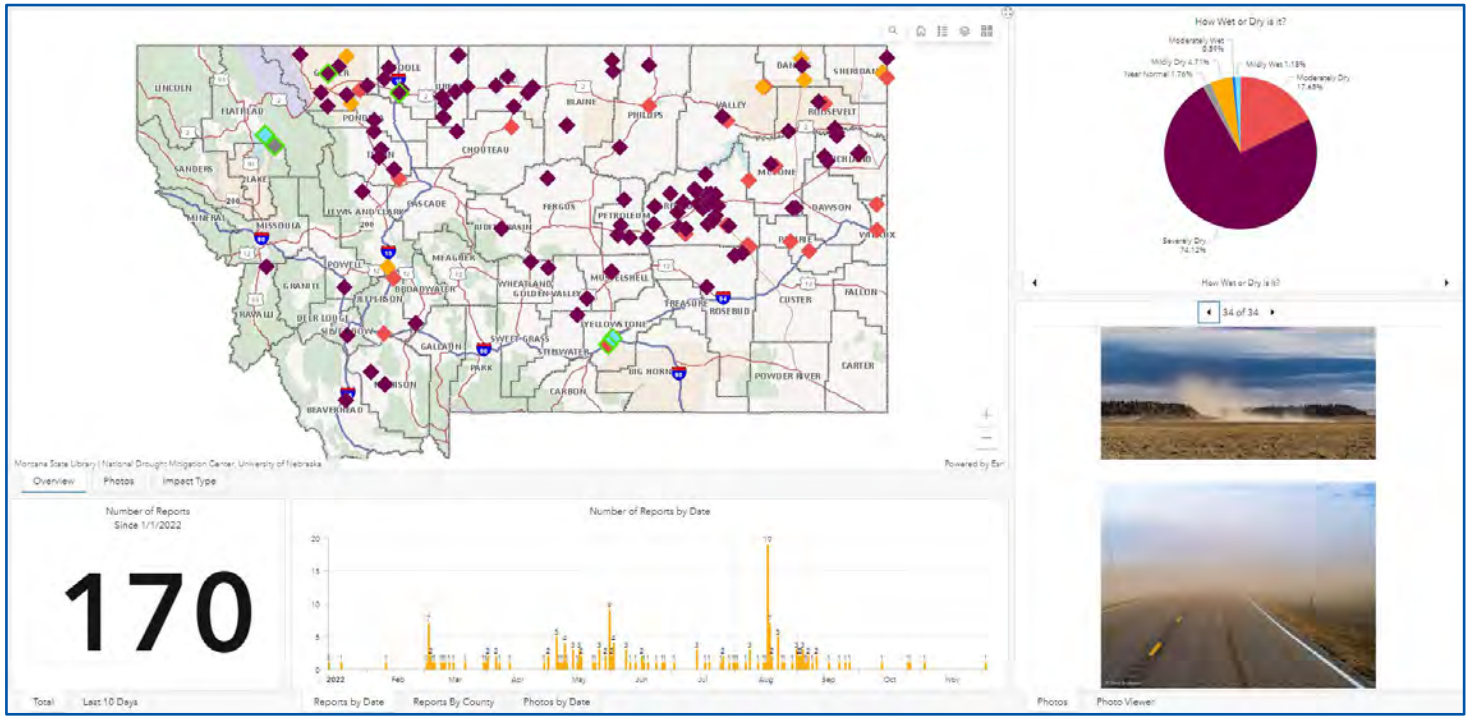
Drought Monitoring Process

- **Governor's Drought and Water Supply Advisory Committee led by Dept. of Natural Resources and Conservation (DNRC)**
- **Weekly coordination** with the U.S Drought Monitor
  - MT Drought Liaisons
    - DNRC, Michael Downey
    - State Library, Troy Blandford
    - Montana Climate Office, Zach Hoylman
    - Montana Climate Office, Kelsey Jensco
    - NOAA NWS, Arin Peters
  - MT recommendation for changes to the drought map are drafted Monday morning > general agreement is reached > recommendation is sent to USDM Author by Tuesday afternoon > new USDM map is published Thursday morning.
  - 40-50 people on listserv. Would like to have more eyes! Email one of the contacts above to be added to the listserv.
- **Monthly meetings** (Apr – Sept) to gather local input on drought impacts
- **Montana Drought Impact Reporter** – live, ongoing survey for reporting moisture conditions. Producers, field staff, Extension, Farms Service Agency, …open to anyone.

MT Drought Impact Reporter

- Report on moisture conditions
  - Anyone can submit a report
- Released July 2017
  - Live/ongoing, retake as conditions change, good or bad
- 170 reports received in 2022
- **Submit reports:**

https://nris.mt.gov/droughtsurvey



Lidar

MSDI Elevation
(Lidar-derived)

What is it?

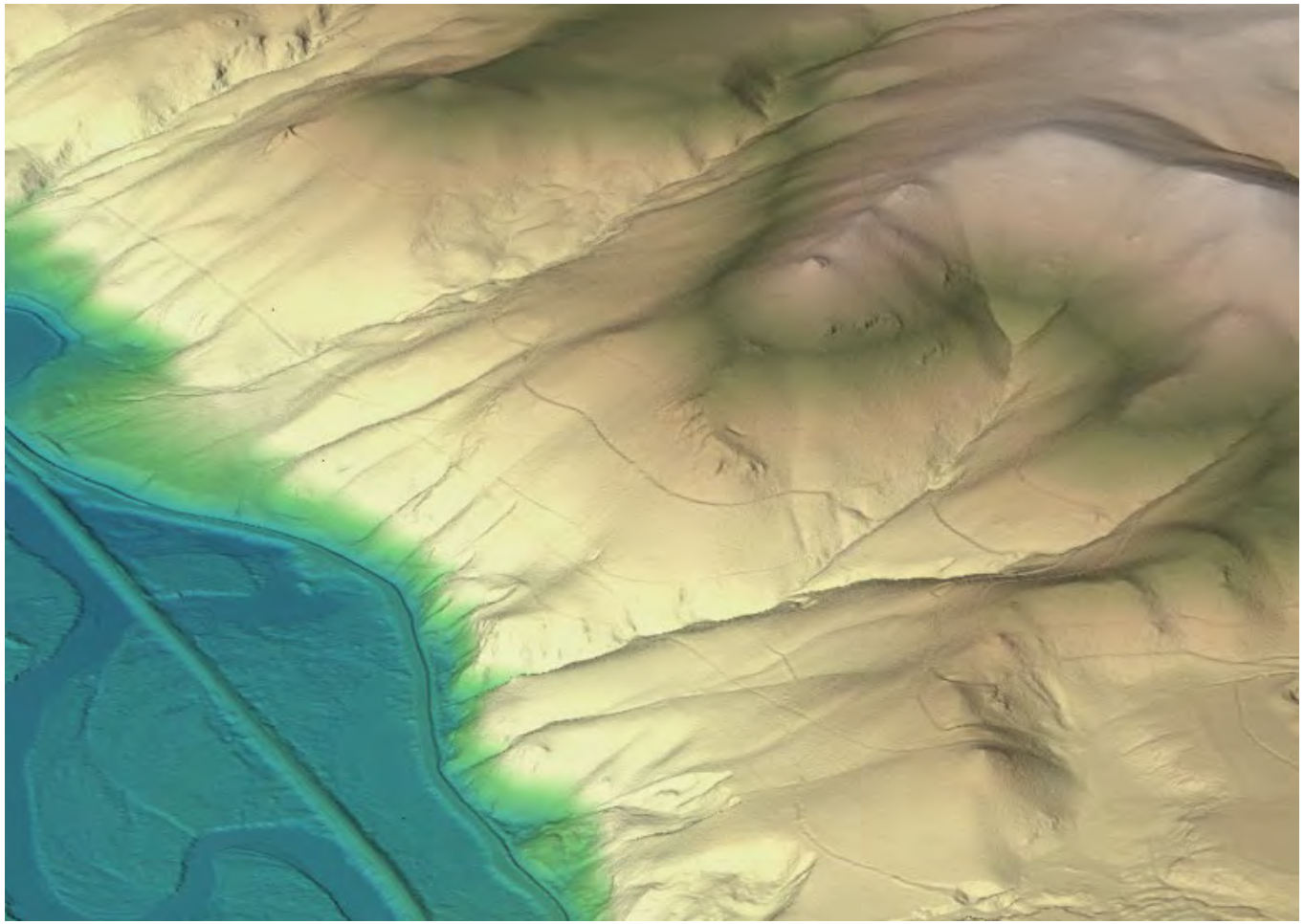
Statewide high-resolution (1-meter), high accuracy (<1 foot) elevation model derived from lidar

Status

In development, acquiring data (5-year plan began 2019)

Data Access:

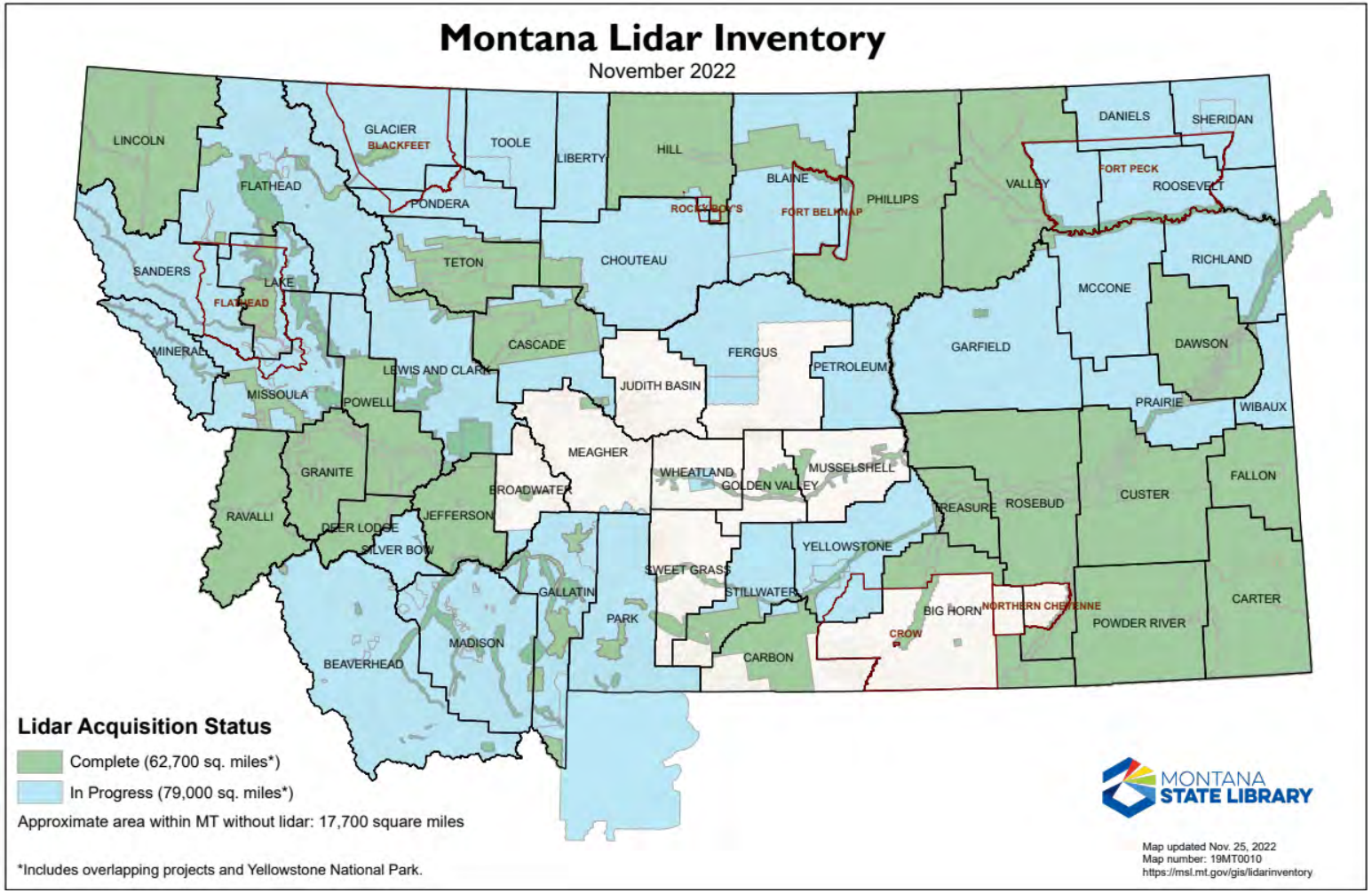
Montana Lidar Inventory
https://msl.mt.gov/gis/lidarinventory



Lidar Acquisition Status

Thanks to lidar funding partners!

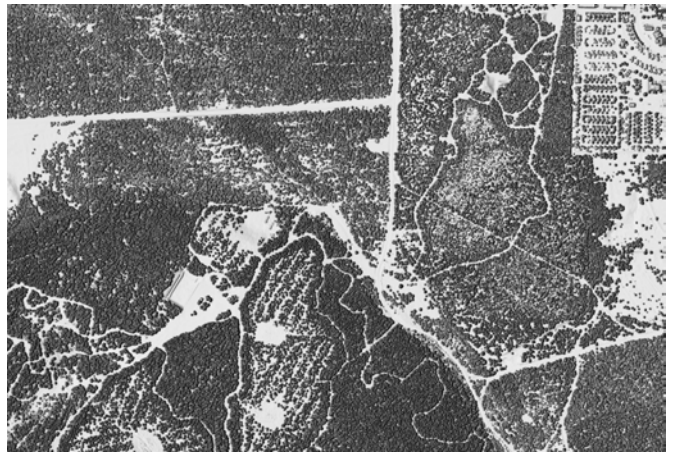
- Natural Resources Conservation Service
- United States Forest Service
- Bureau of Land Management
- United States Fish and Wildlife Service
- Confederated Salish and Kootenai
- Montana DNRC
- Blackfeet Nation
- Fort Belknap Indian Community
- Fort Peck Tribes
- Glacier National Park
- USGS Northern Rocky Mountain Science Center
- Bureau of Indian Affairs
- USGS 3DEP
- FEMA

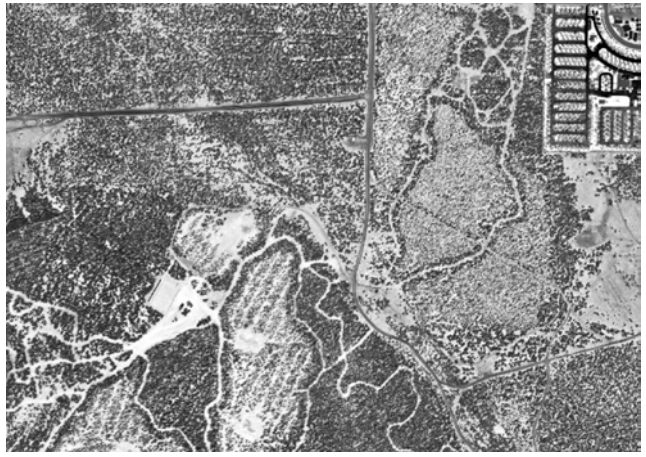


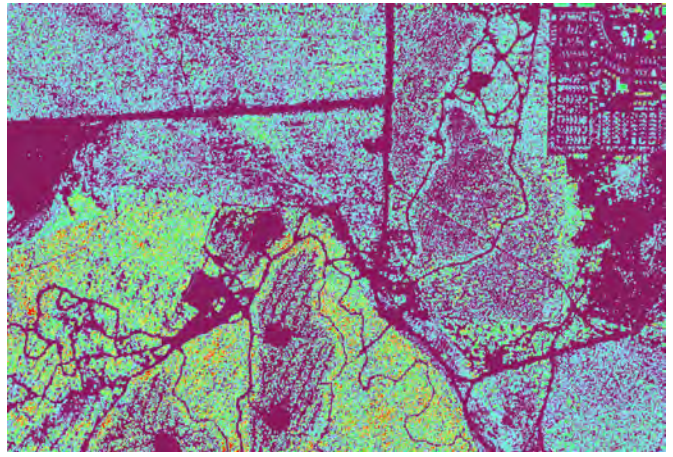
Core lidar-derived products available:

- Bare-earth Digital Elevation Model
- Hillshade
- Digital Surface Model
- Intensity
- Canopy Height Model (new in 2022)

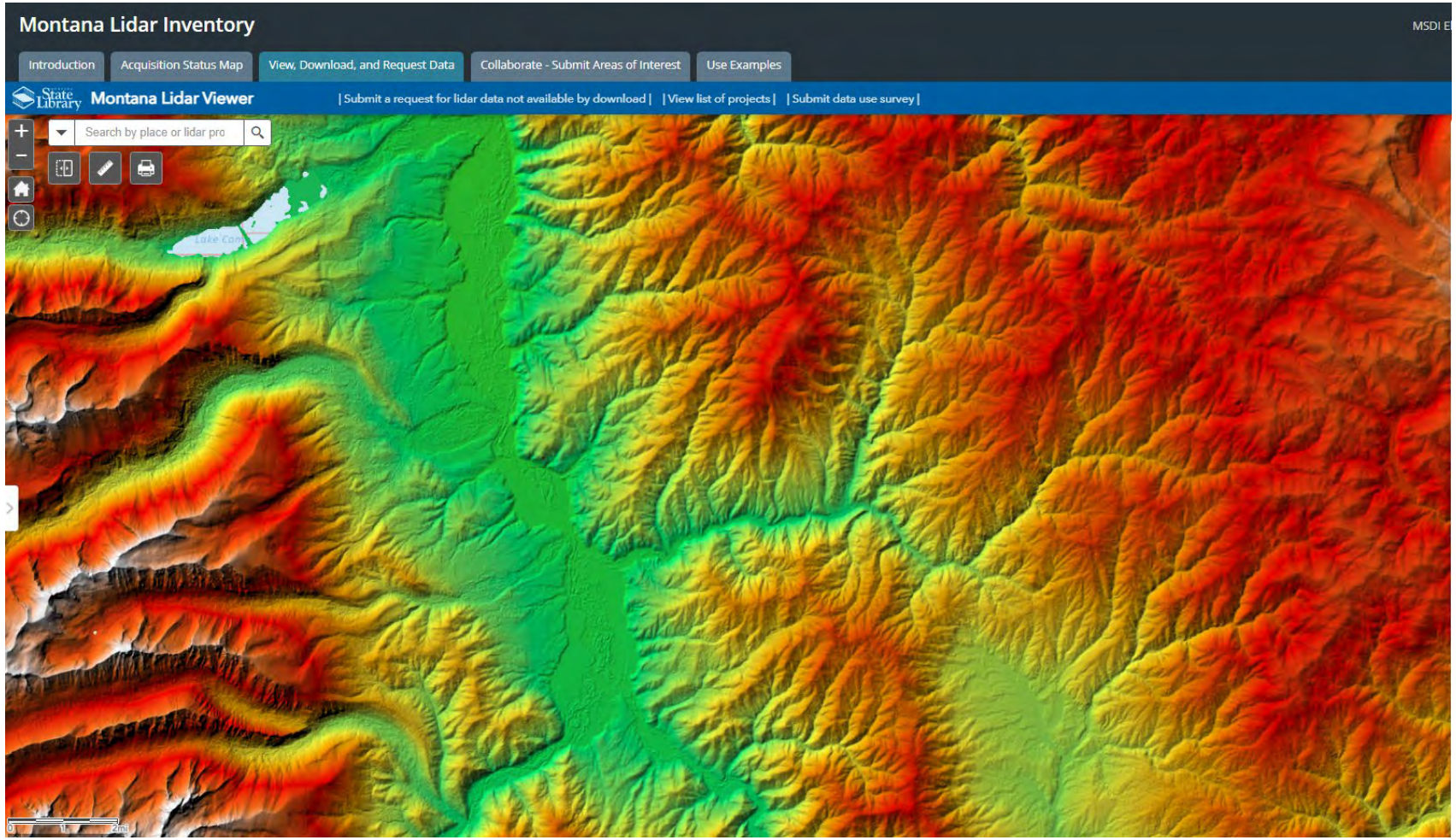
- LAS point cloud readily available by request
- 1-foot contours and building footprints available for some projects







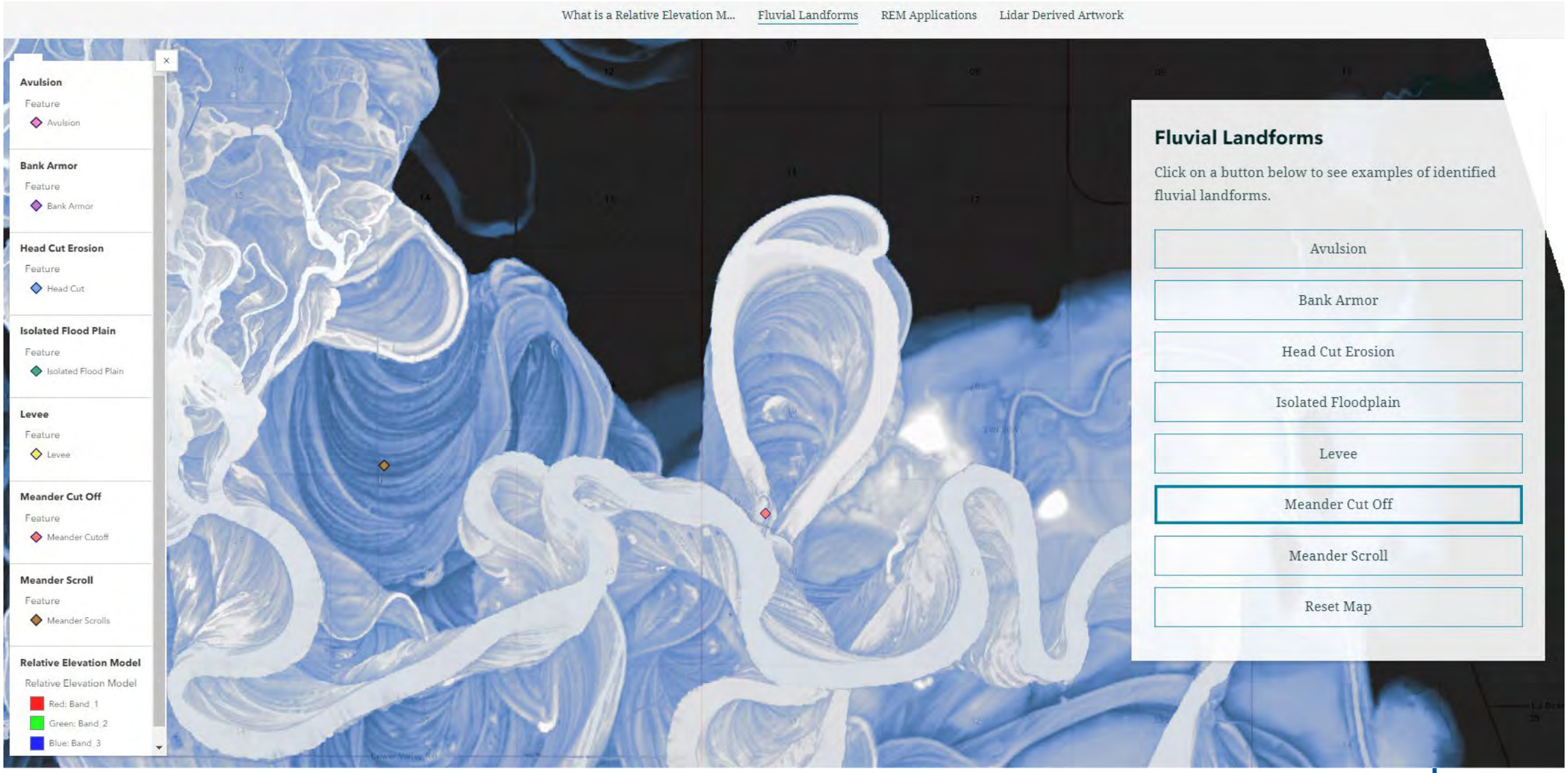
Montana Lidar Inventory



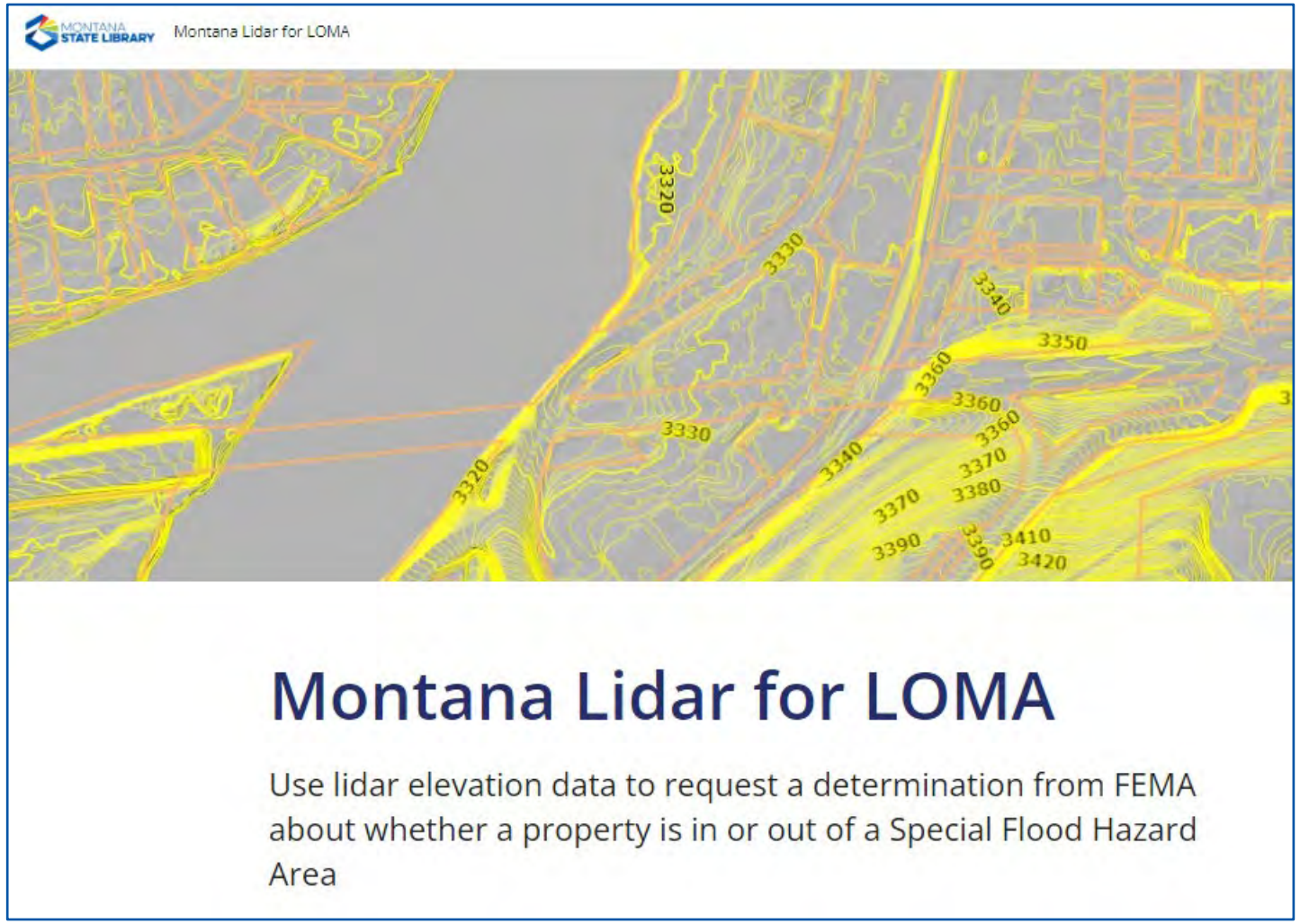
The Montana State Library has a long-standing partnership with the USDA-NRCS (MT office). **Thanks to the MT NRCS.** They have supported lidar acquisition, processing, and dissemination in Montana from the beginning.

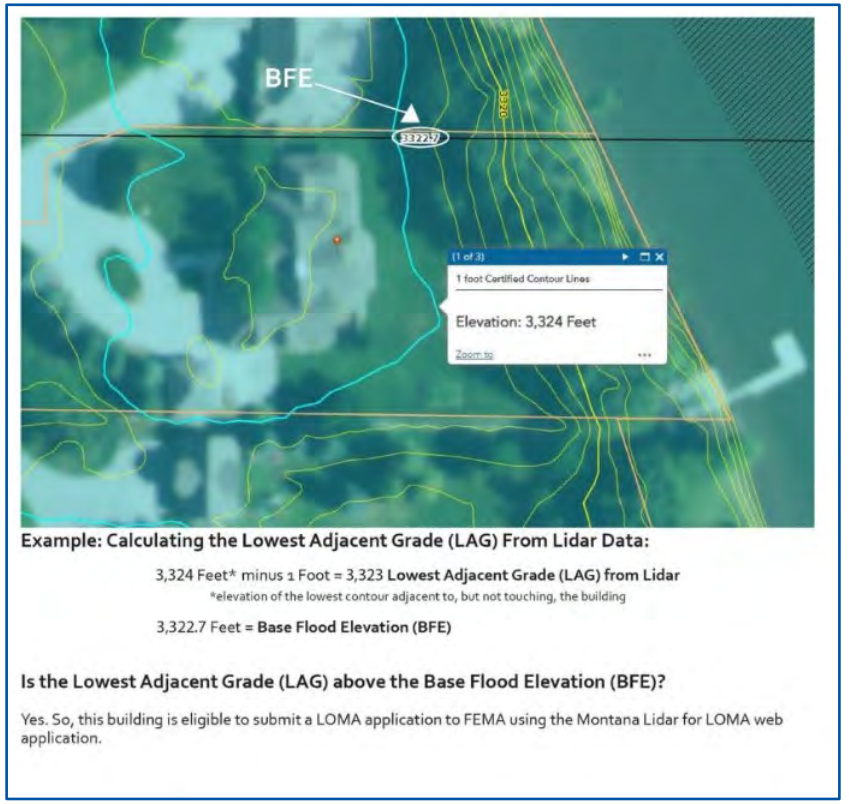
https://msl.mt.gov/gis/lidarinventory

Relative Elevation Models



Lidar for LOMA





Thank you

Troy Blandford
tblandford@mt.gov

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