



Vermont's GIS

Overview

John E. Adams

Vermont Center for Geographic Information (VCGI)

House Committee on Agriculture, Food Resiliency, and Forestry

3/13/2025



VERMONT

AGENCY OF DIGITAL SERVICES

What VCGI Does



BUILD

Foundational
Datasets
(Spatial Data
Infrastructure)



LEAD

Development and
use of Statewide
Geographic Information
System (GIS) and the
Coordination it requires



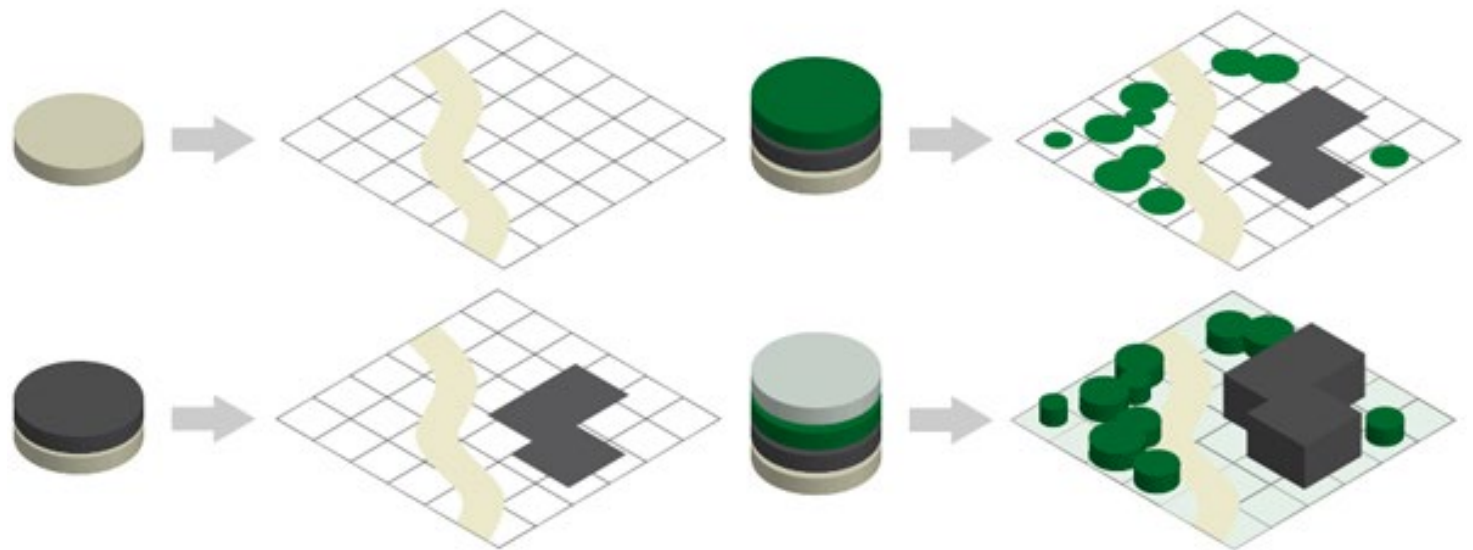
EMPOWER

Data access,
visualization and use



What is GIS?

A geographic information system (GIS) combines data with its location, allowing people to visualize, study, analyze, question and interpret this spatial information to understand patterns, relationships, and trends.

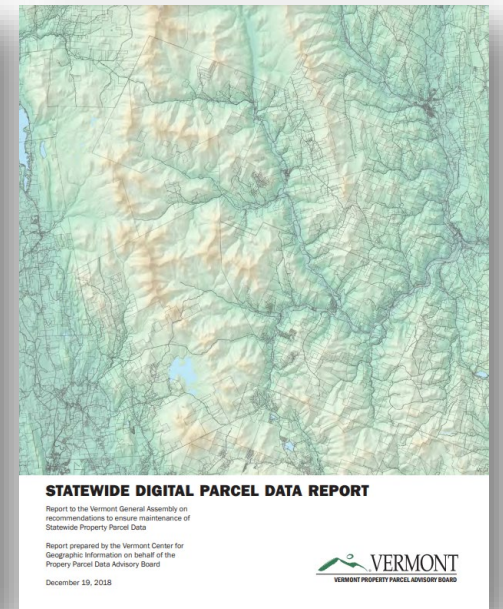
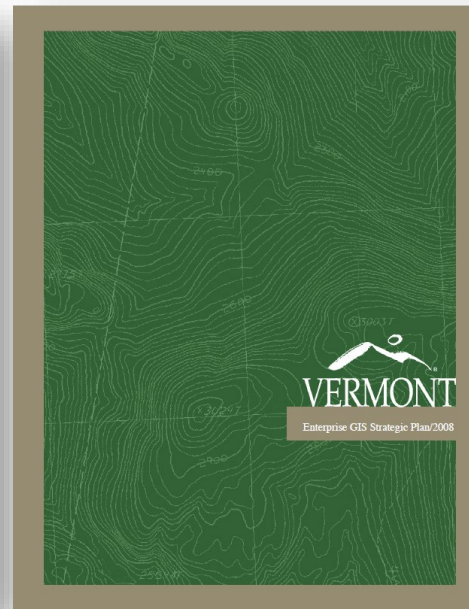
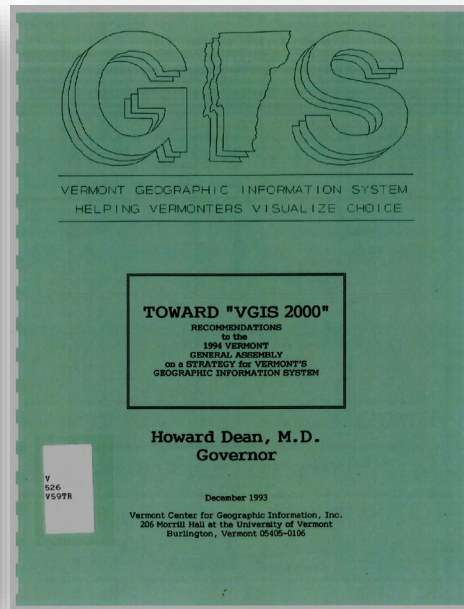
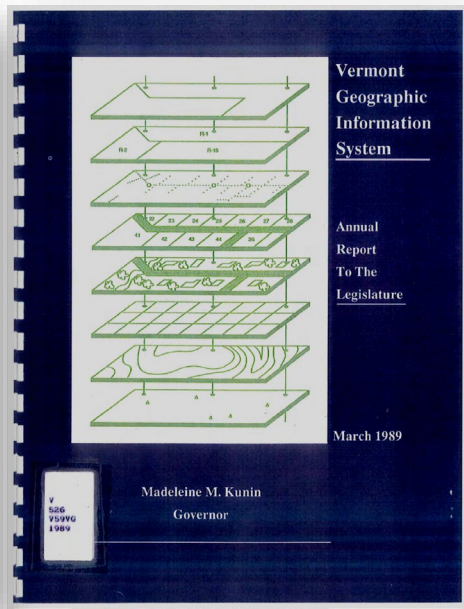
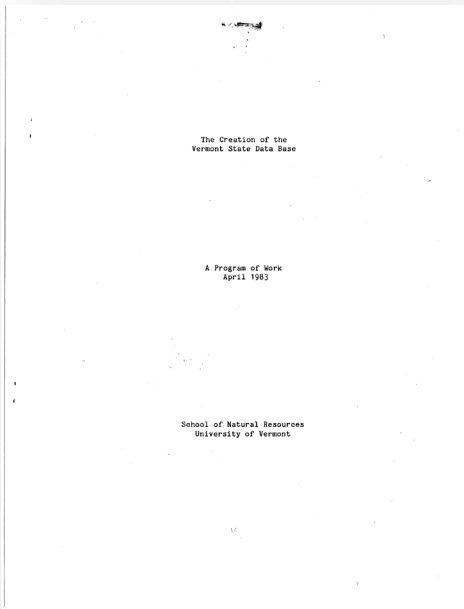


Example Uses

- Agriculture
- Archeology & Historic Preservation
- Construction
- Dam Management
- Design
- Emergency Planning
- Energy/Communications Planning
- Erosion Assessment and Mitigation
- Evacuation Planning
- Farm-to-Plate Initiative
- Fire Fuel Models
- Flood plain Mapping
- Flow Analysis
- Forestry, Biomass, & Vegetation Management
- Gully Detection
- Habitat Analysis
- Hazardous Spill Analysis
- Ice Jam Potential
- Land Cover Mapping
- Landslide Potential
- Line of Sight and Viewshed Analysis
- Riparian Buffer Mapping and Protection
- Shoreline Erosion
- Soils Mapping
- Solar and Wind Energy Suitability
- Stormwater analysis and design
- Timber Volume
- Town Planning
- Transportation Infrastructure
- Updating FIRM to DFIRM
- ...and more



Learn more and see examples: [2024 Year in Review](#)



1968
Vermont Mapping Program
(Tax Dept)



1989
Office of GIS
(Agency of Admin)



1992
Vermont Center for
Geographic
Information
(17mb of data!)



1997
1st VCGI Website



2015
VCGI becomes
Part of
State Government



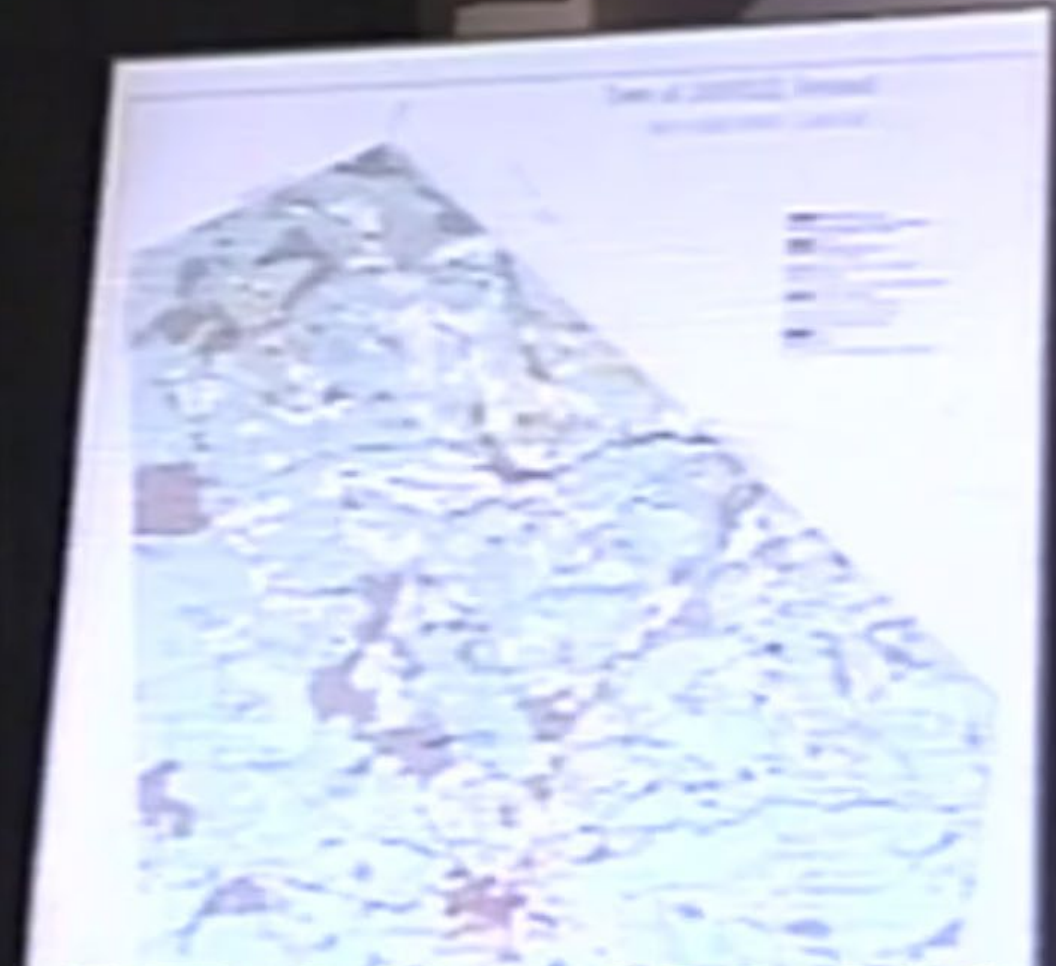
2020
Statewide
Parcel Data





17 MB

5/26/92



CHANNEL 17 LIVE CALL 862-3966
VT Center for Geographic Information



Total Users in 1992: **107**

TODAY



APPS

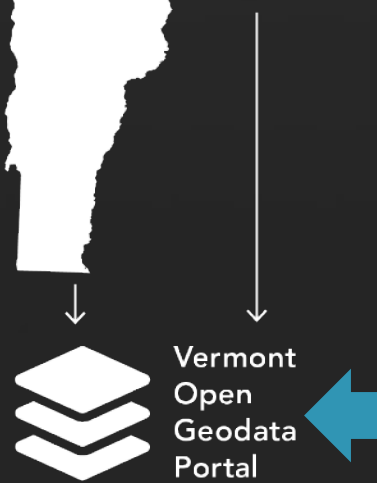
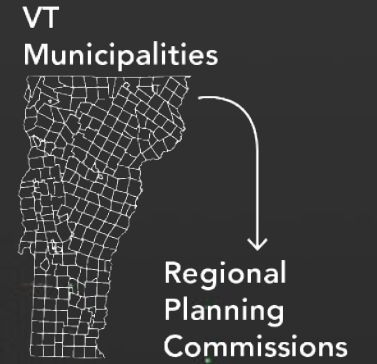


DATA DOWNLOAD



SERVICES

Photo Credit: Taylor Vick



In 2024:
23 partners published **1108**
open datasets generating an
astounding **791,816,574**
map server requests.

Total Estimated Users in 2024: **250,000**

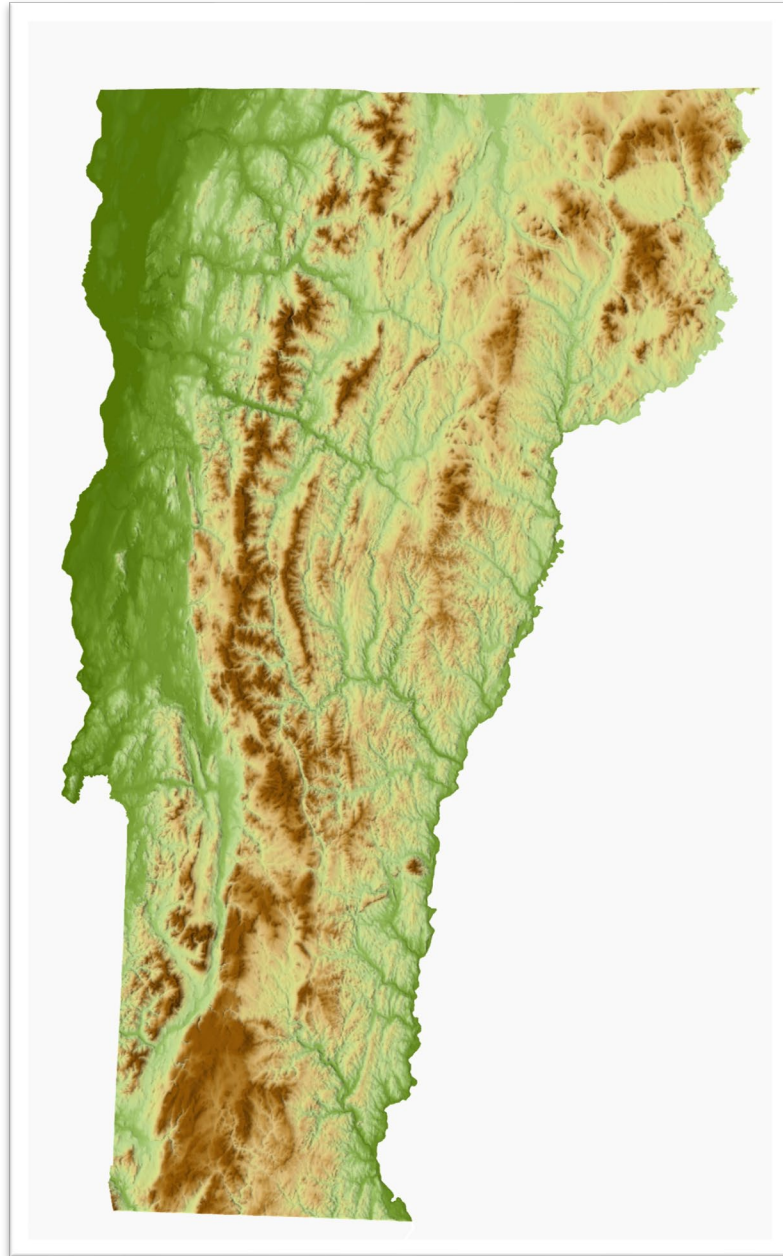
Spatial Data Infrastructure



Digital Orthoimagery
Elevation
Governmental Units
Cadastral (Parcels)
Land Cover
E911 Addresses
Transportation
Hydrography

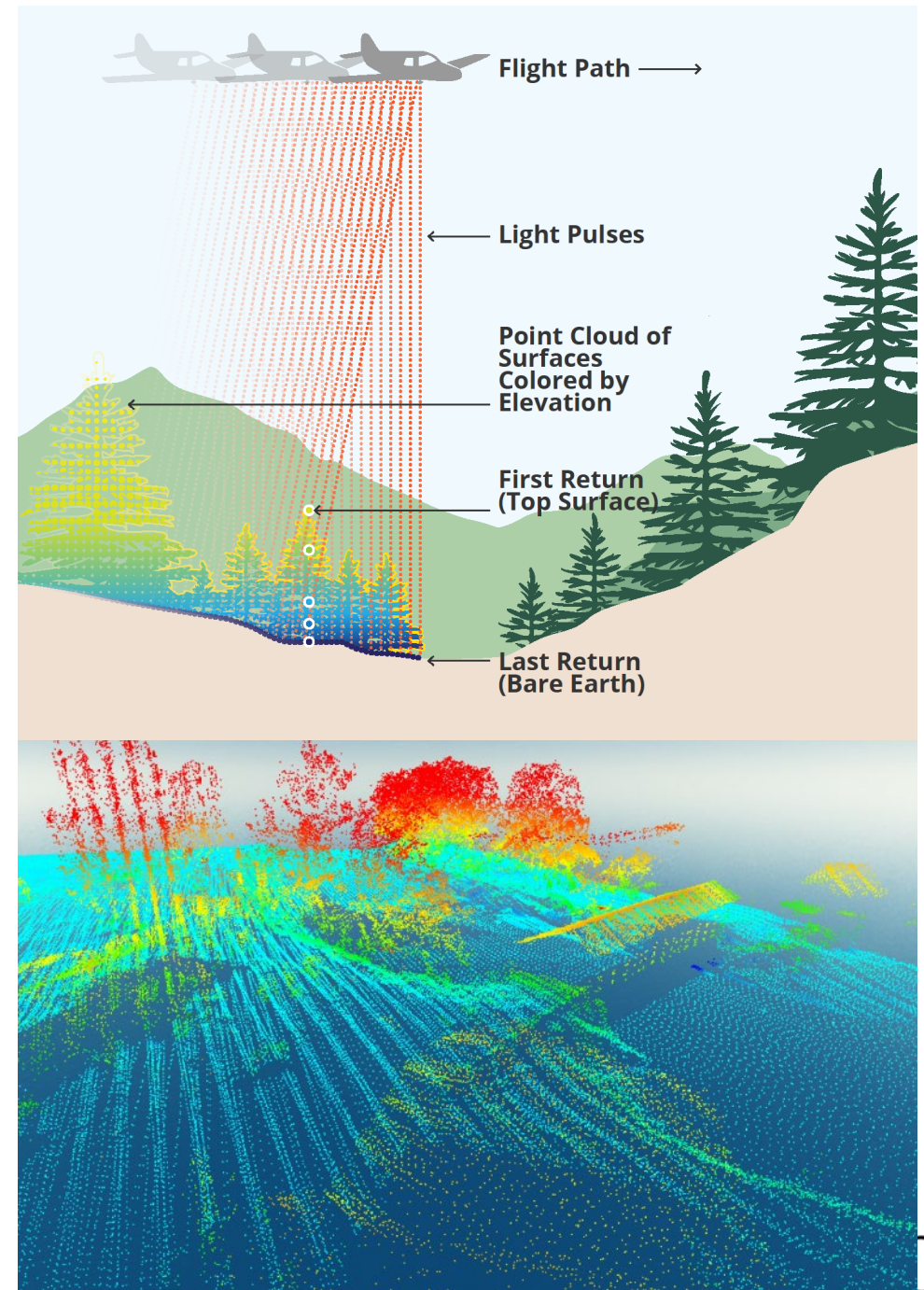


Elevation

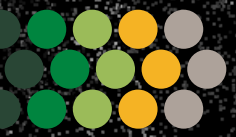


What is lidar?

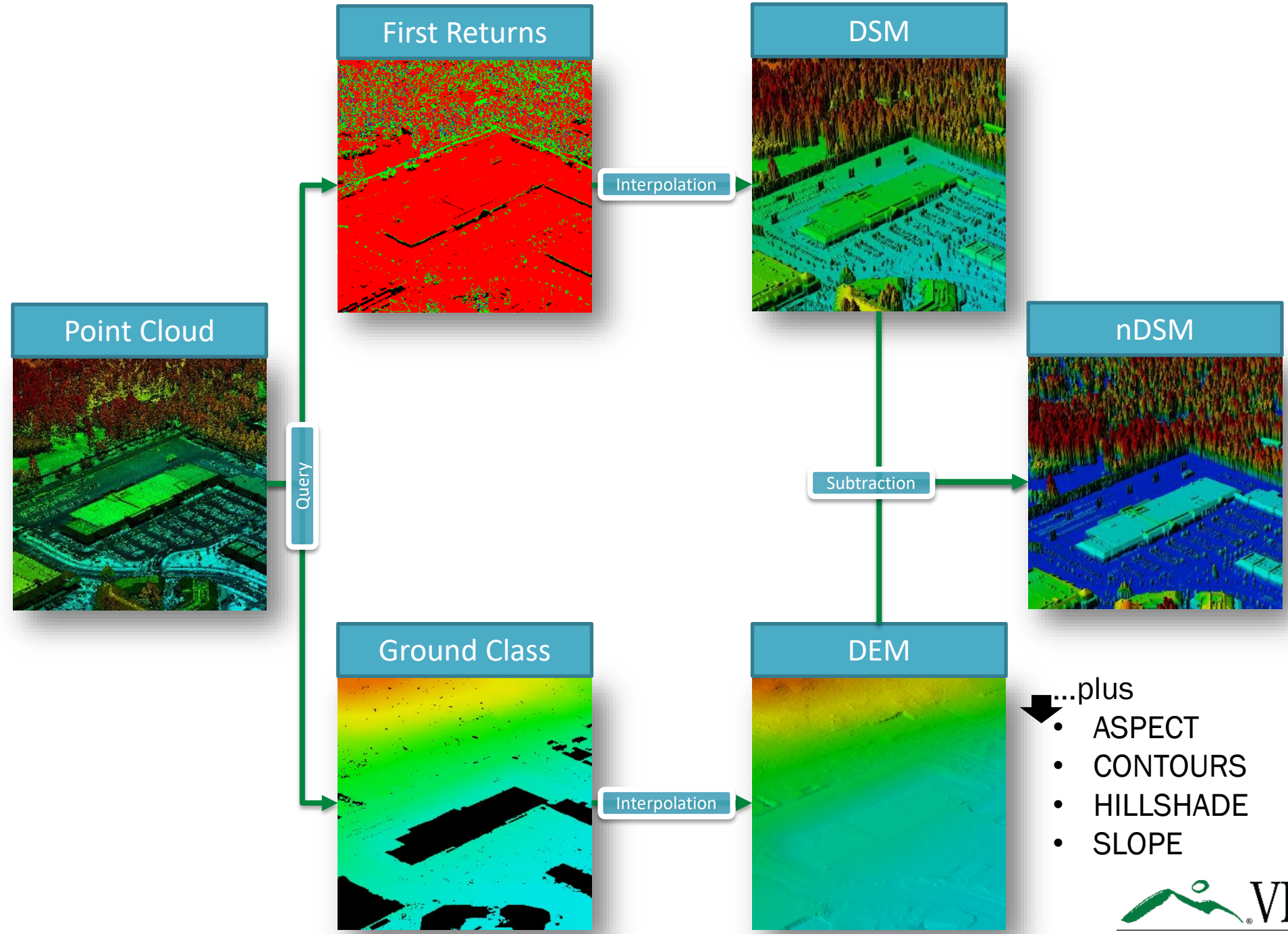
Light Detection and Ranging (lidar) is a technology used to create high-resolution models of ground and surface elevation. Lidar data are collected from aircraft using sensors that detect the reflections of a pulsed laser beam. The reflections are recorded as billions of individual points, which are processed into digital three-dimensional models of Vermont in formats readily accessible for use by state agencies, partners, and the public.



Point Clouds

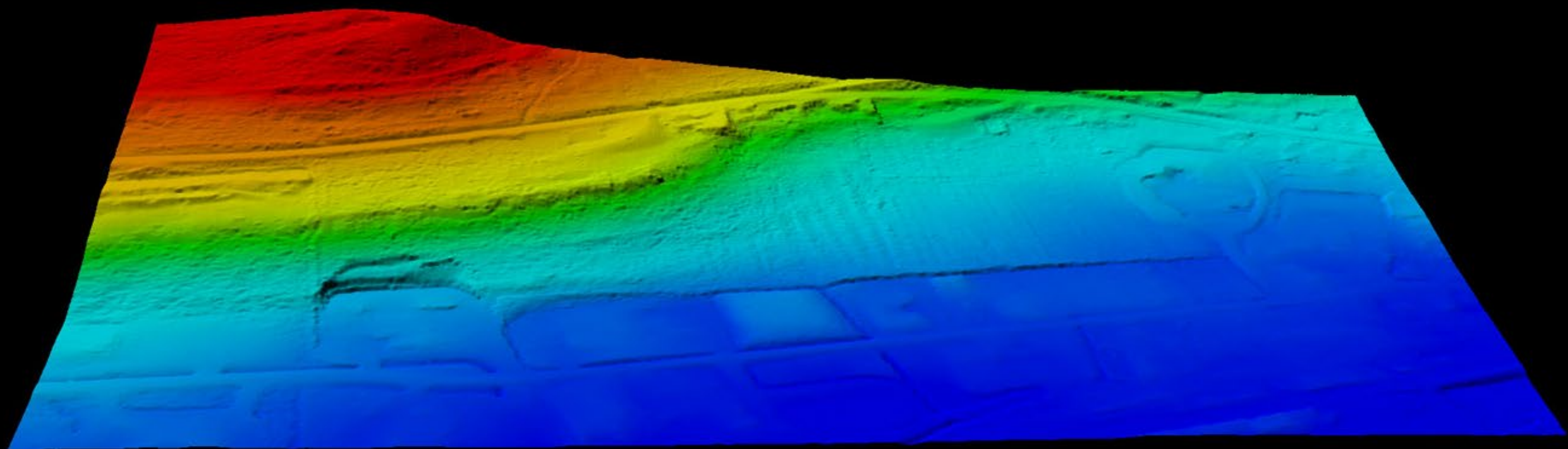
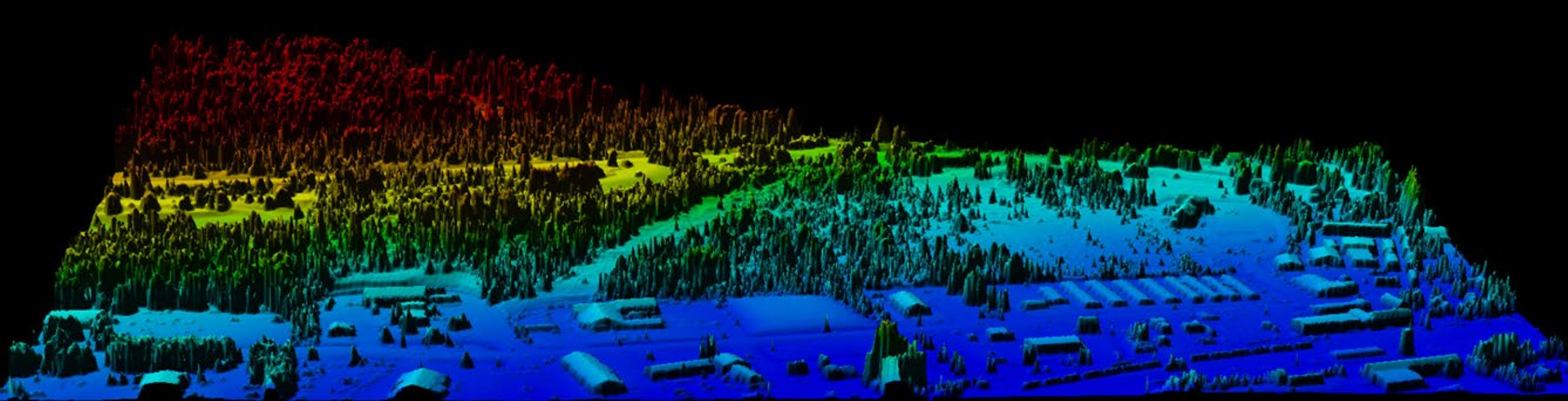


Lidar Derivatives



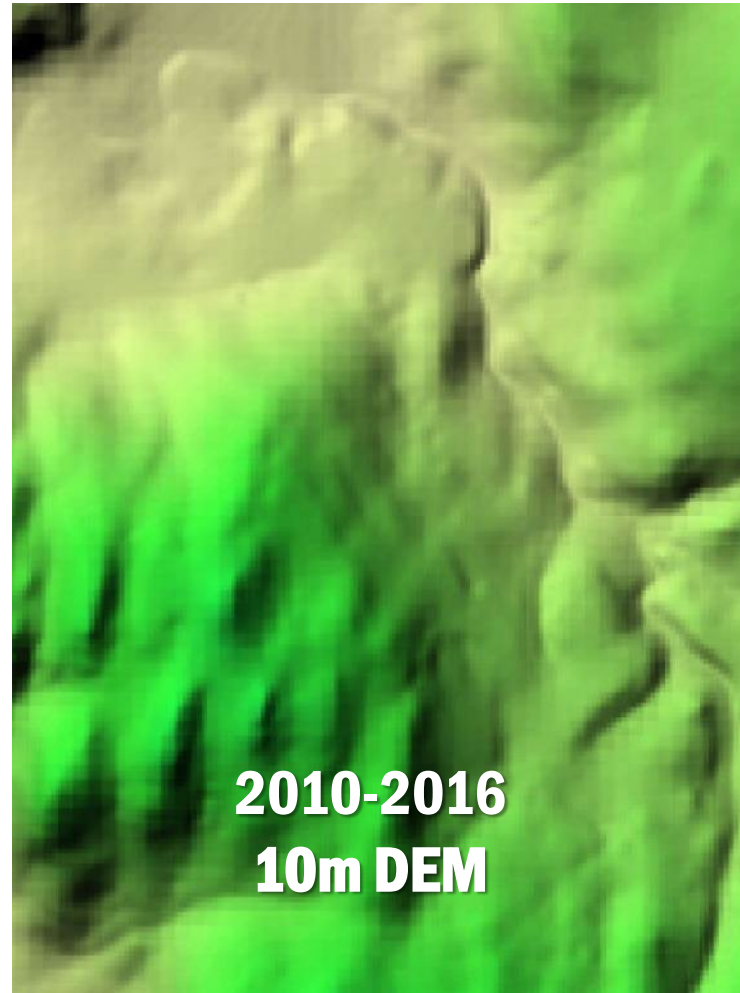
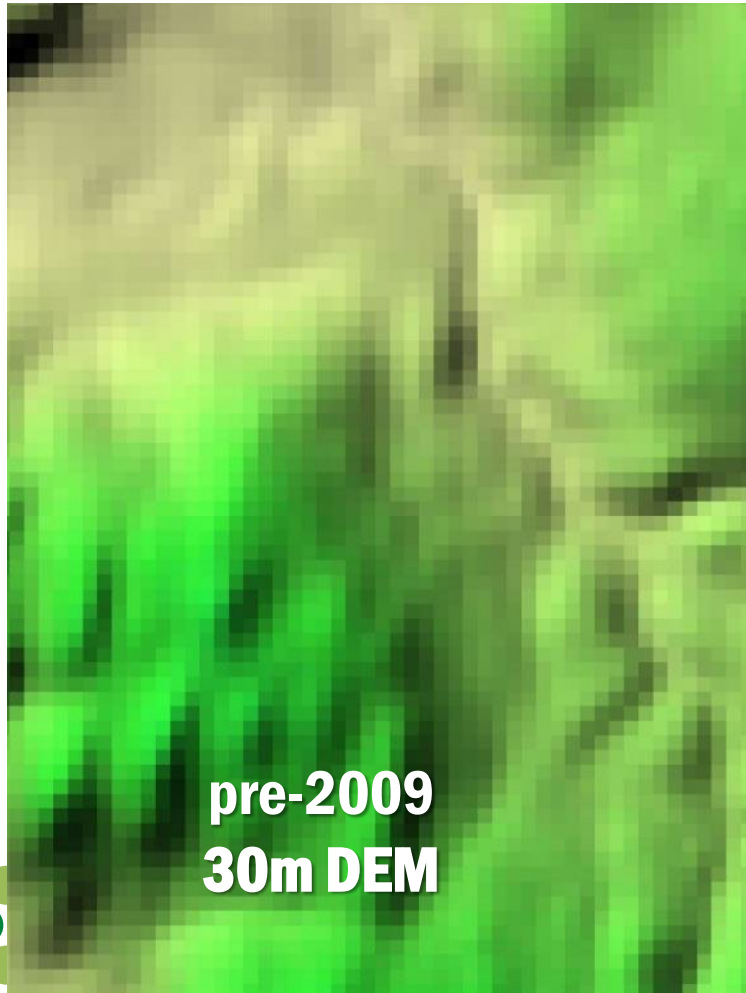
Credit: UVM Spatial Analysis Lab



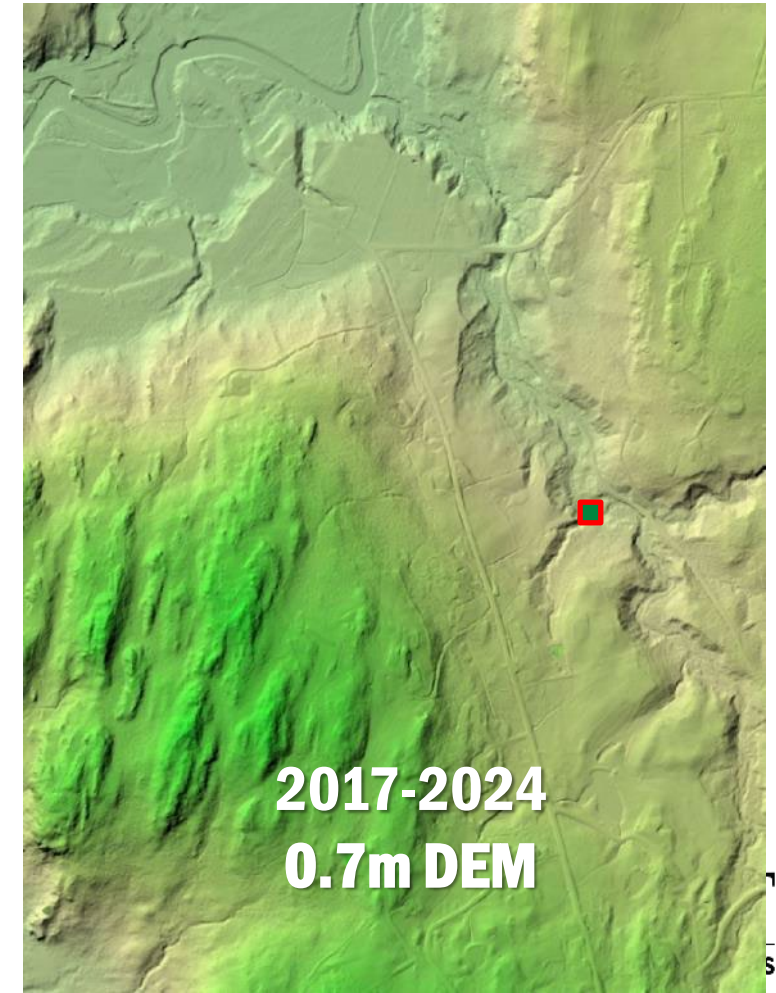


Lidar Resolution

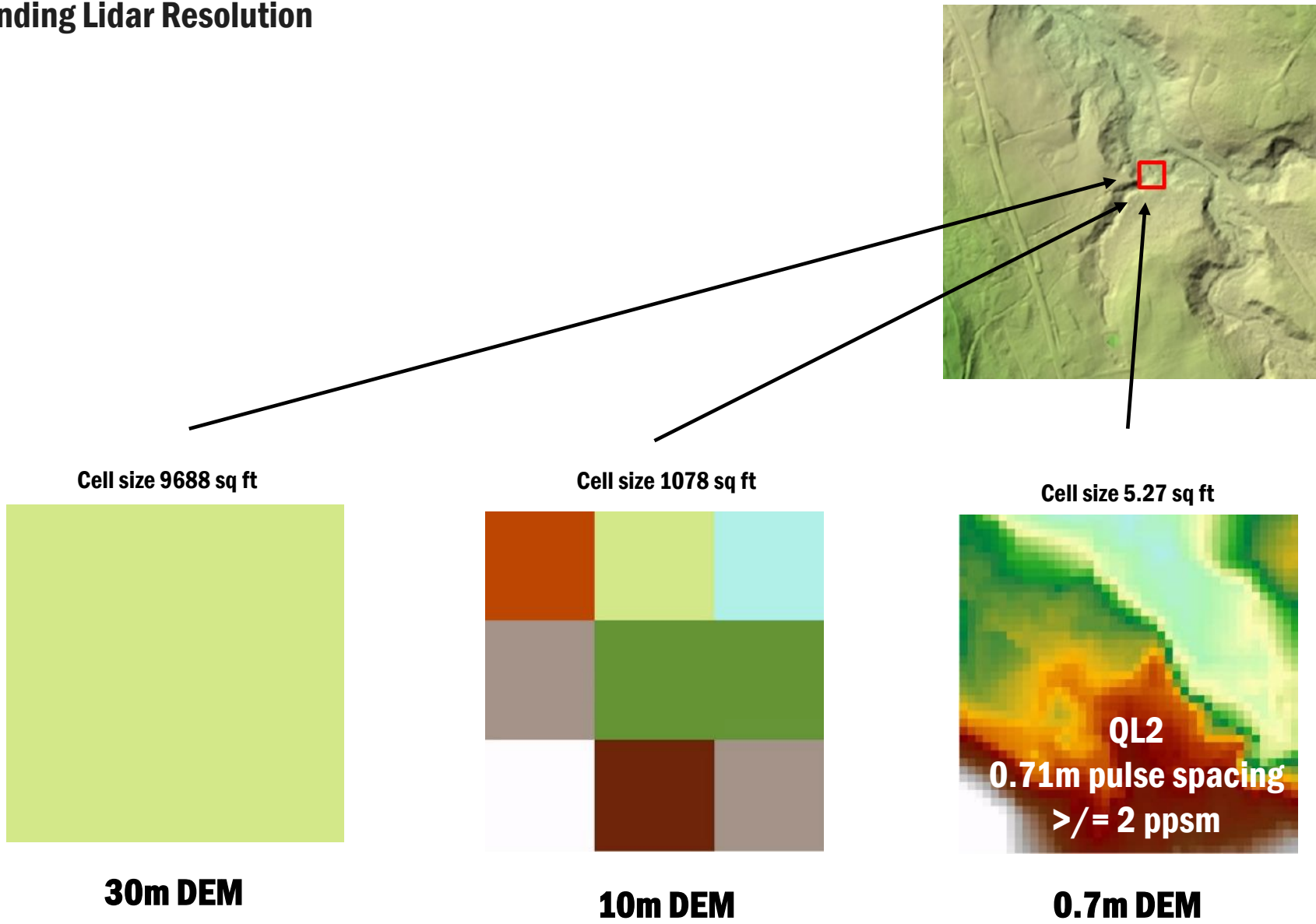
National Elevation Dataset: Reported vertical accuracy= 8 ft.



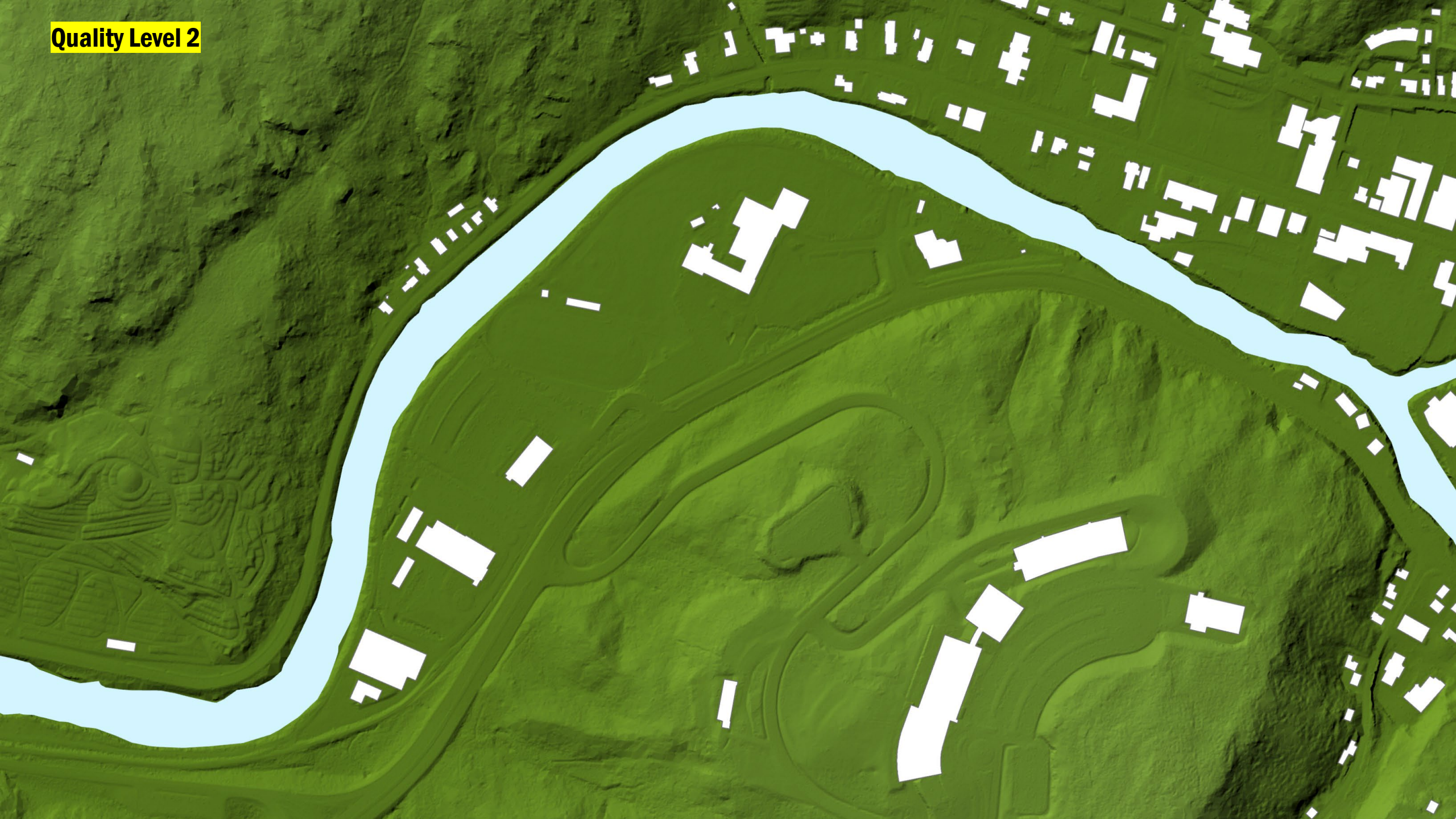
LIDAR: Vertical accuracy= 3.6 in.



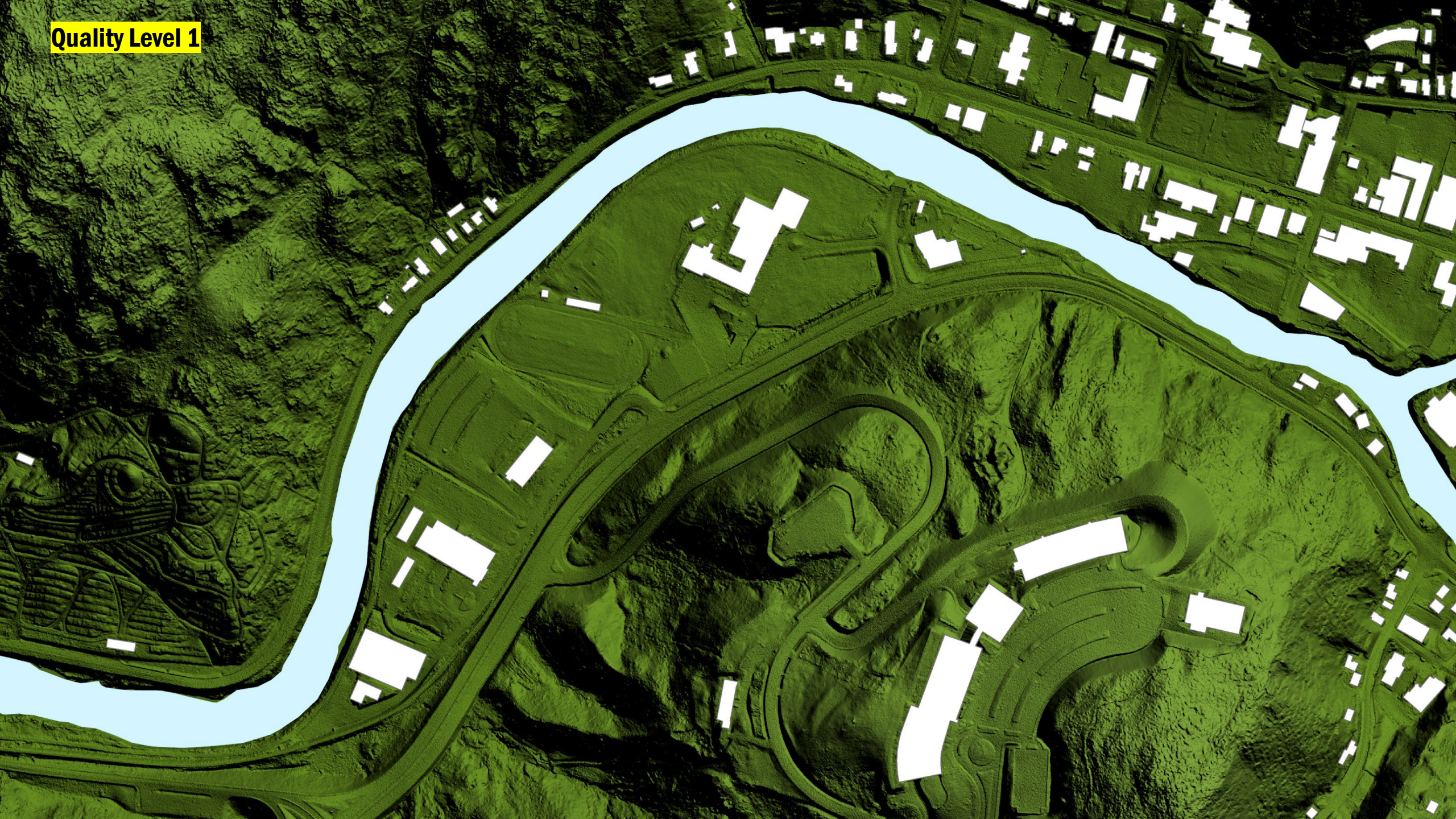
Understanding Lidar Resolution

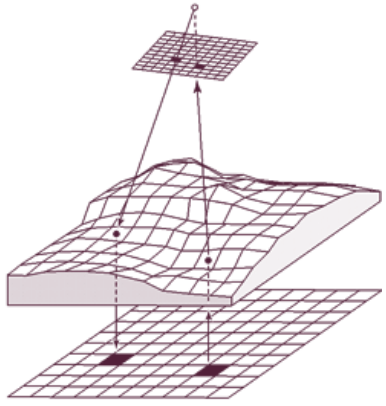


Quality Level 2

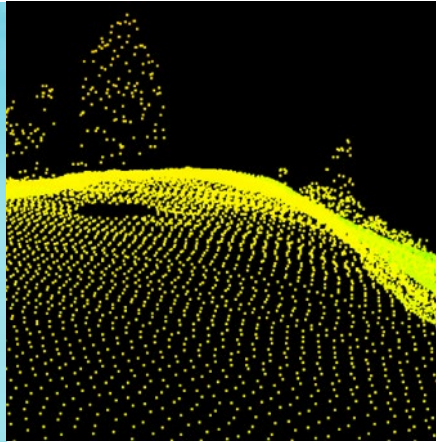
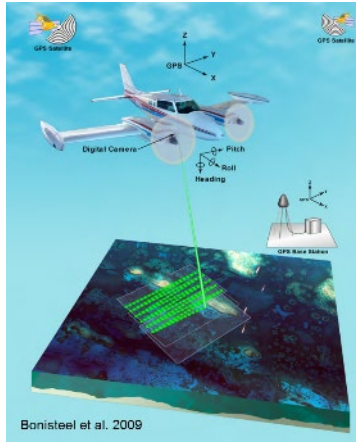


Quality Level 1



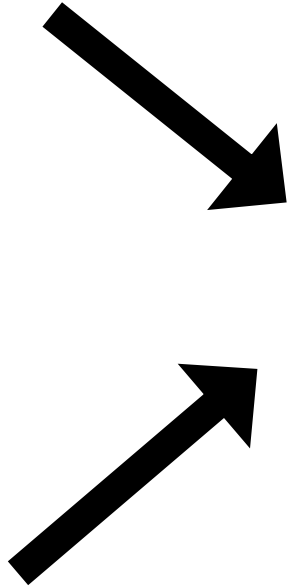


ORTHOIMAGERY
(not ornitho-imagery)



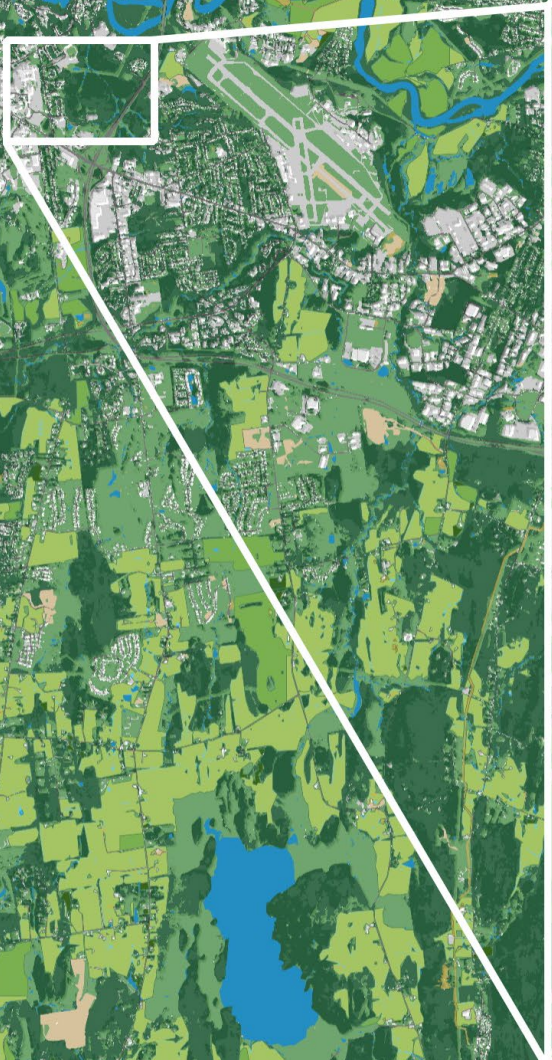
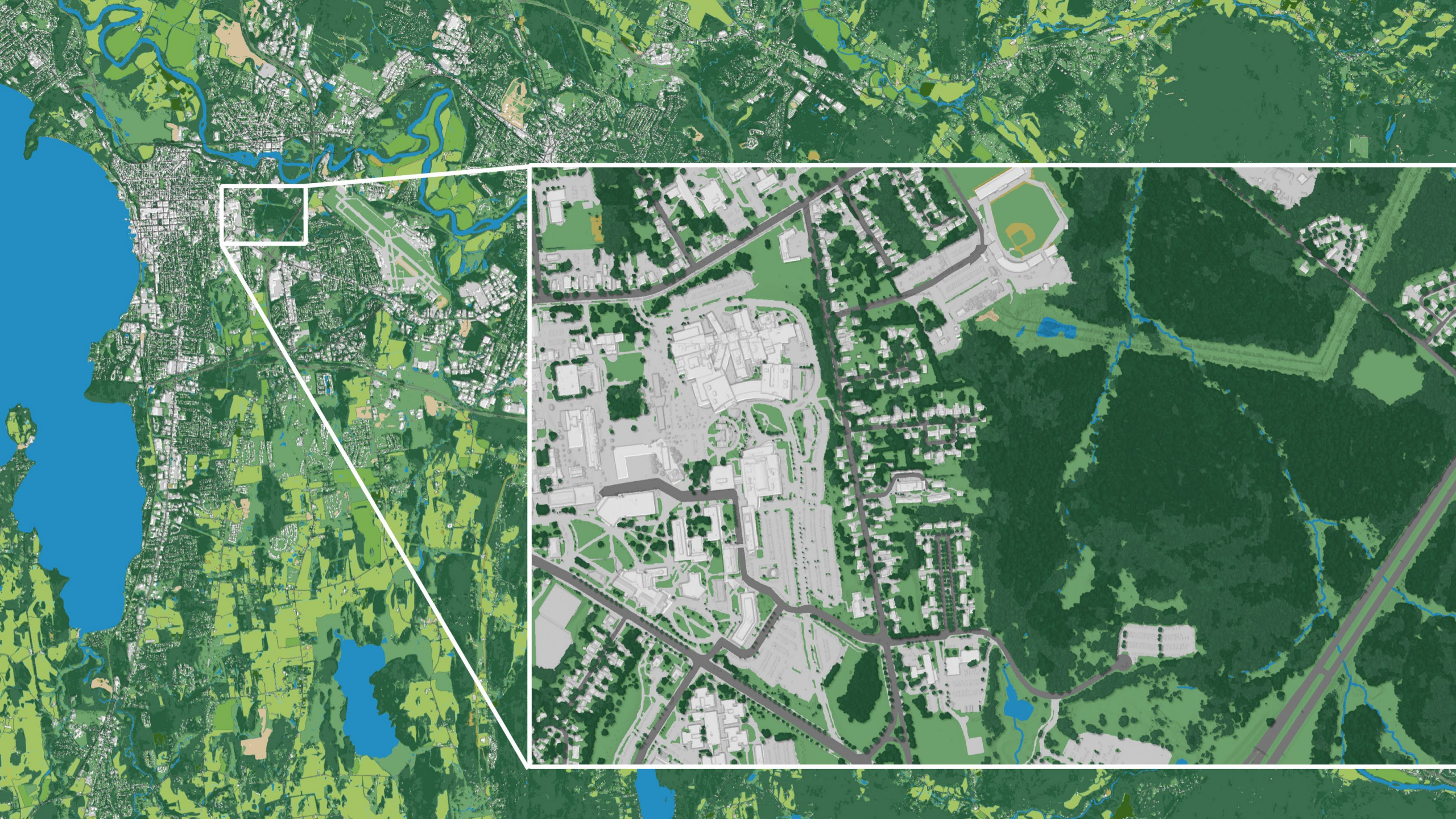
Bonisteel et al. 2009

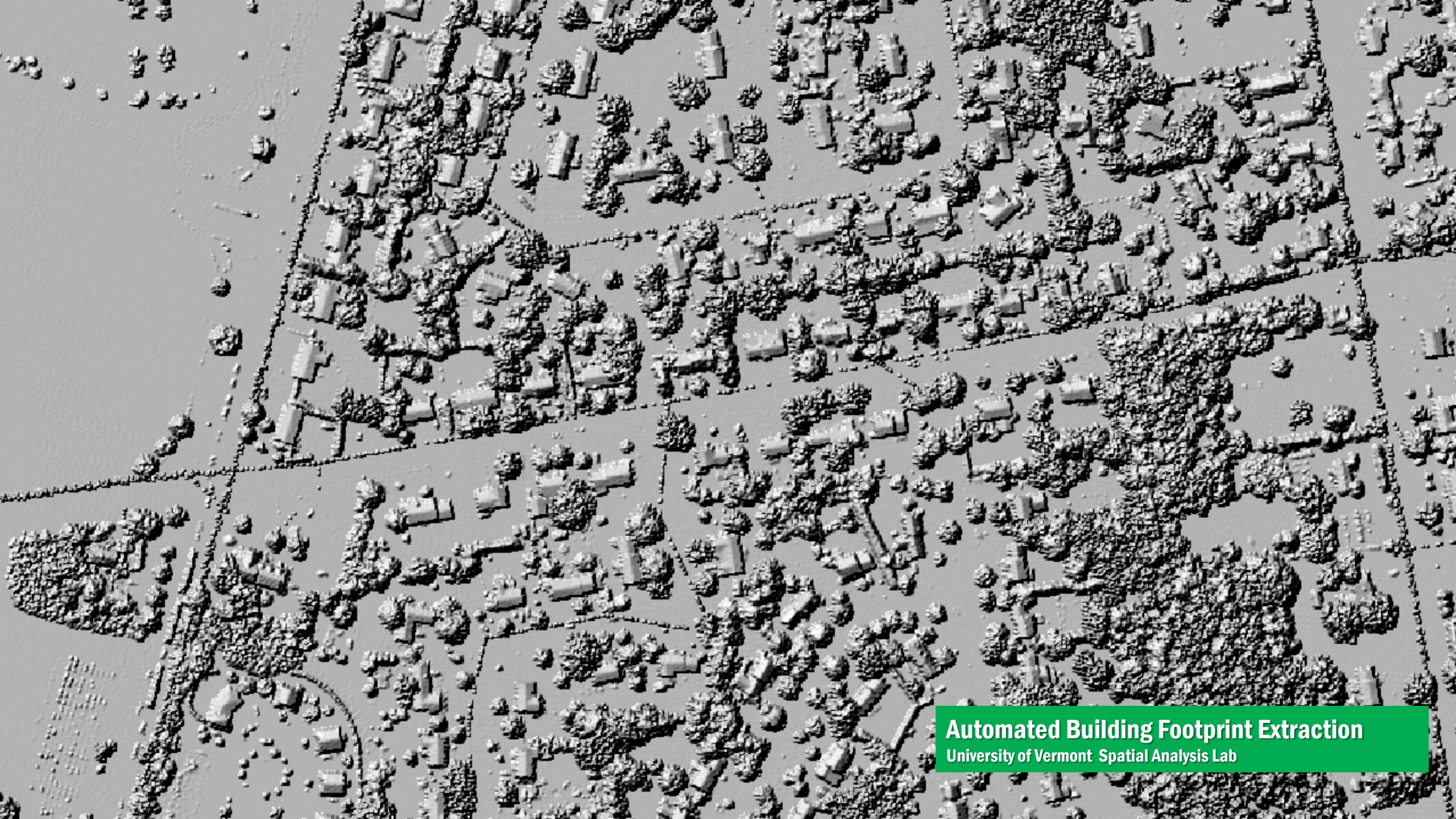
LIDAR



Land Cover







Automated Building Footprint Extraction
University of Vermont Spatial Analysis Lab



Lidar derived rivers and streams



Flowlines

- Elevation Derived Flowline
- NHDFlowline

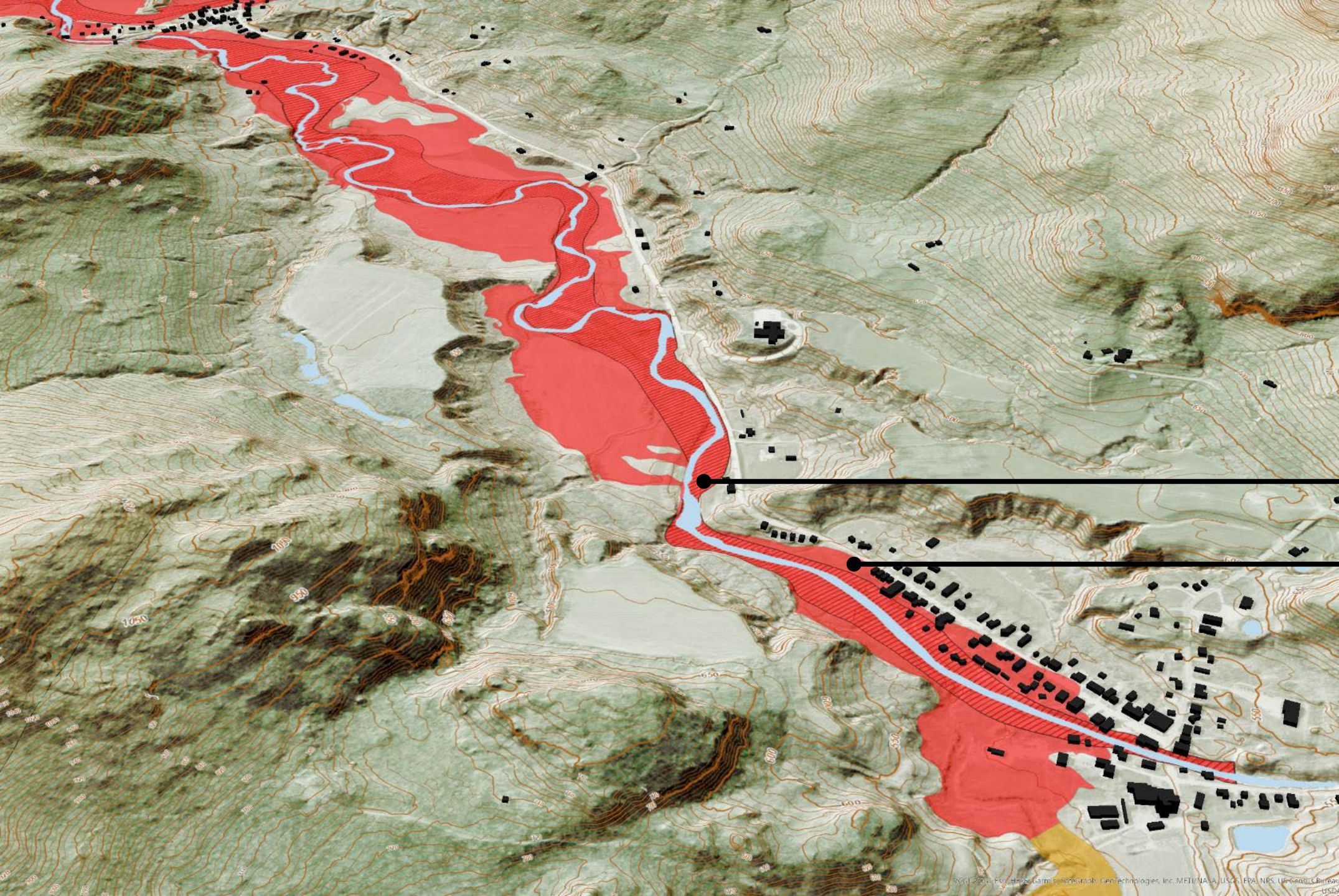
FLOODING:
Managing Risk
Exposure



Montgomery

Trout River

Montgomery
Center



FLOODING:
Managing Risk
Exposure

FEMA's
NFHL (DFIRM's)

Regulatory
Floodway Zone AE

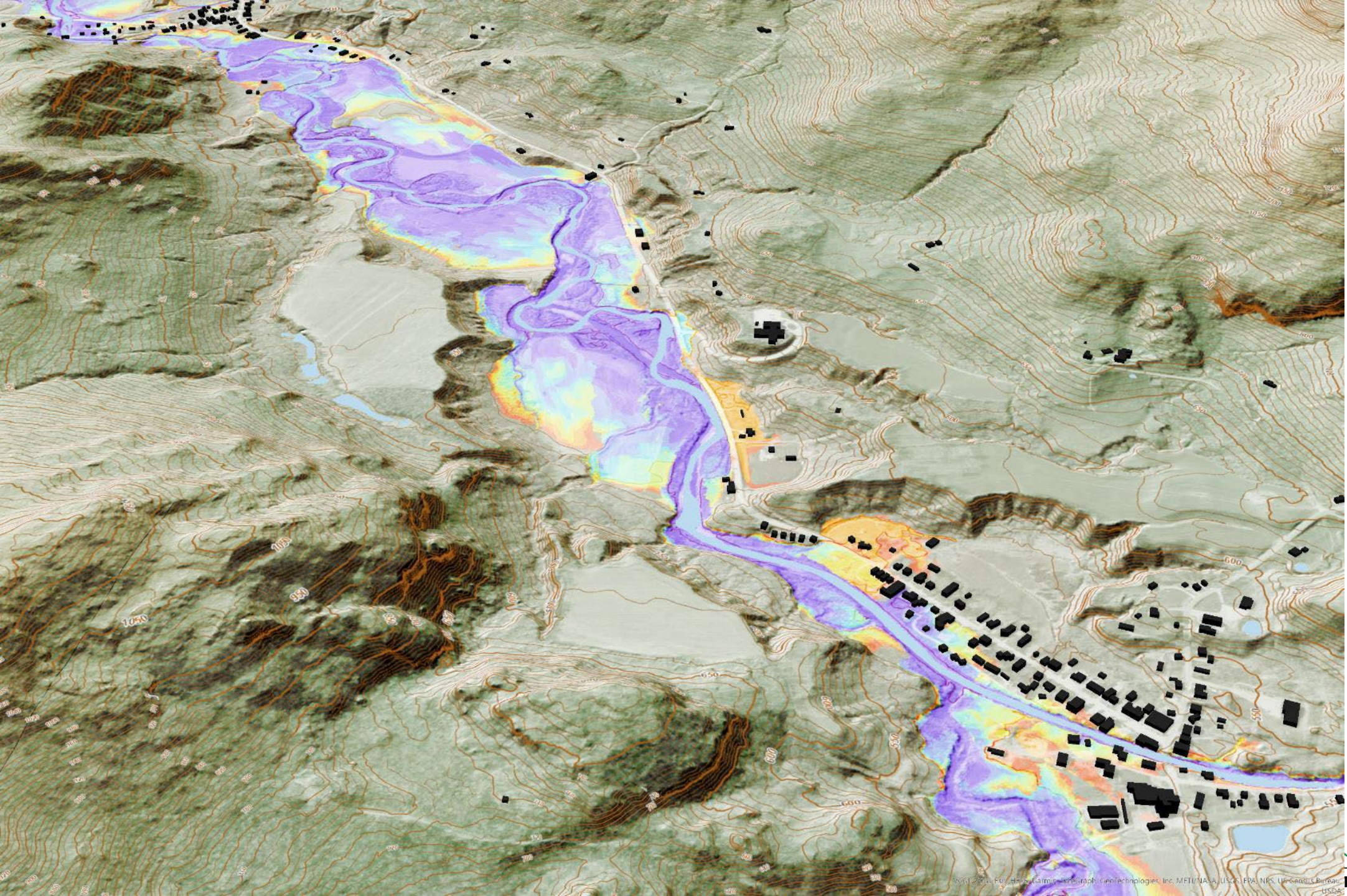
1% Annual Chance
Flood - Zone AE

0.2% Annual
Chance Flood -
Zone X
(not shown)

FLOODING: Managing Risk Exposure

UVM's Lidar-aided Flood Inundation Layer (2022)

- 2-year flood zone (50% annual exceedance)
- 5-year flood zone (20% annual exceedance)
- 10-year flood zone (10% annual exceedance)
- 25-year flood zone (4% annual exceedance)
- 50-year flood zone (2% annual exceedance)
- 100-year flood zone (1% annual exceedance)
- 200-year flood zone (.05% annual exceedance)
- 500-year flood zone (.02% annual exceedance)

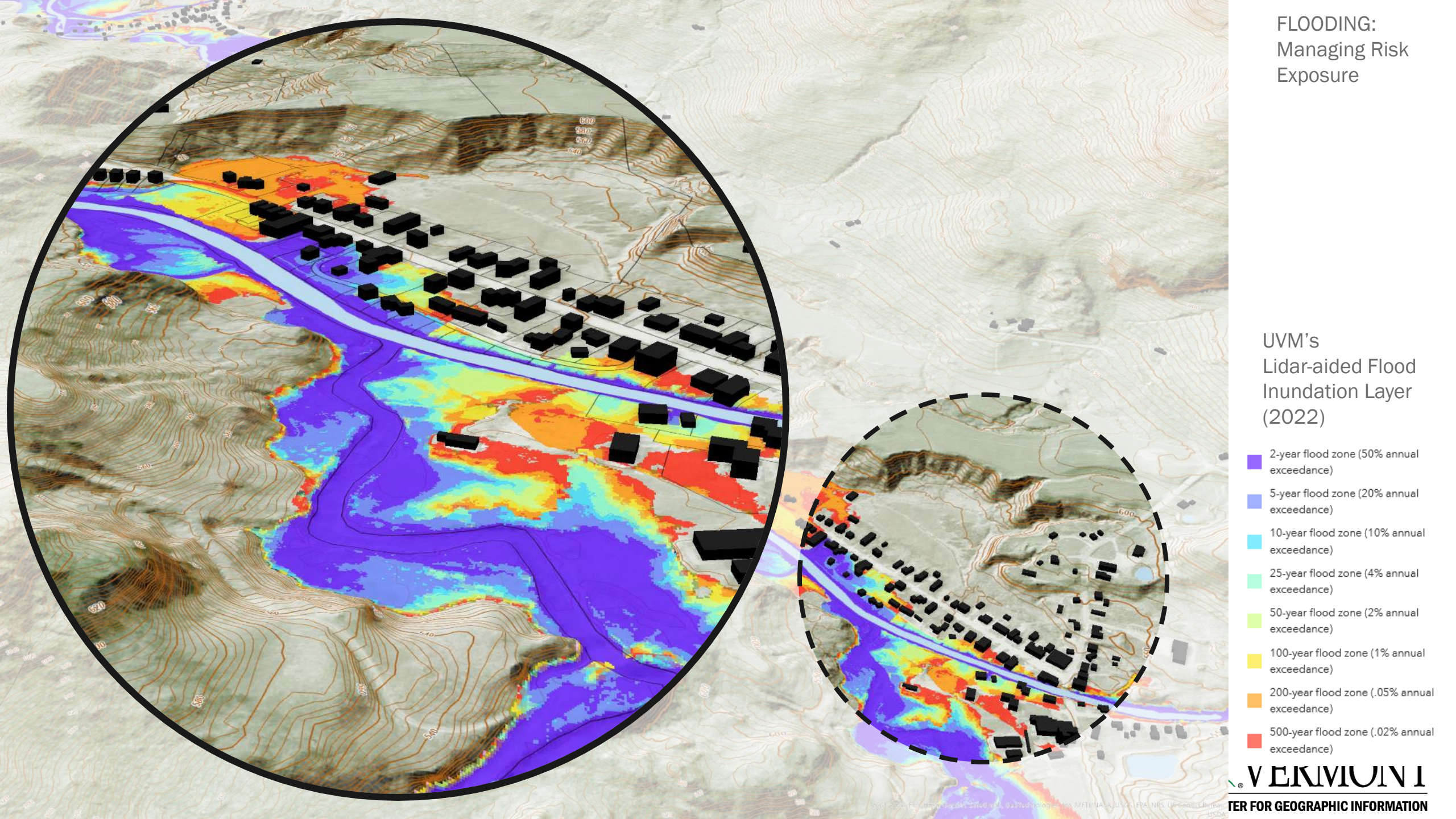


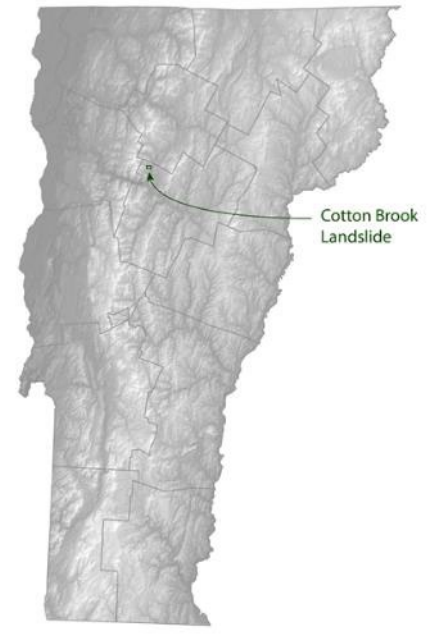
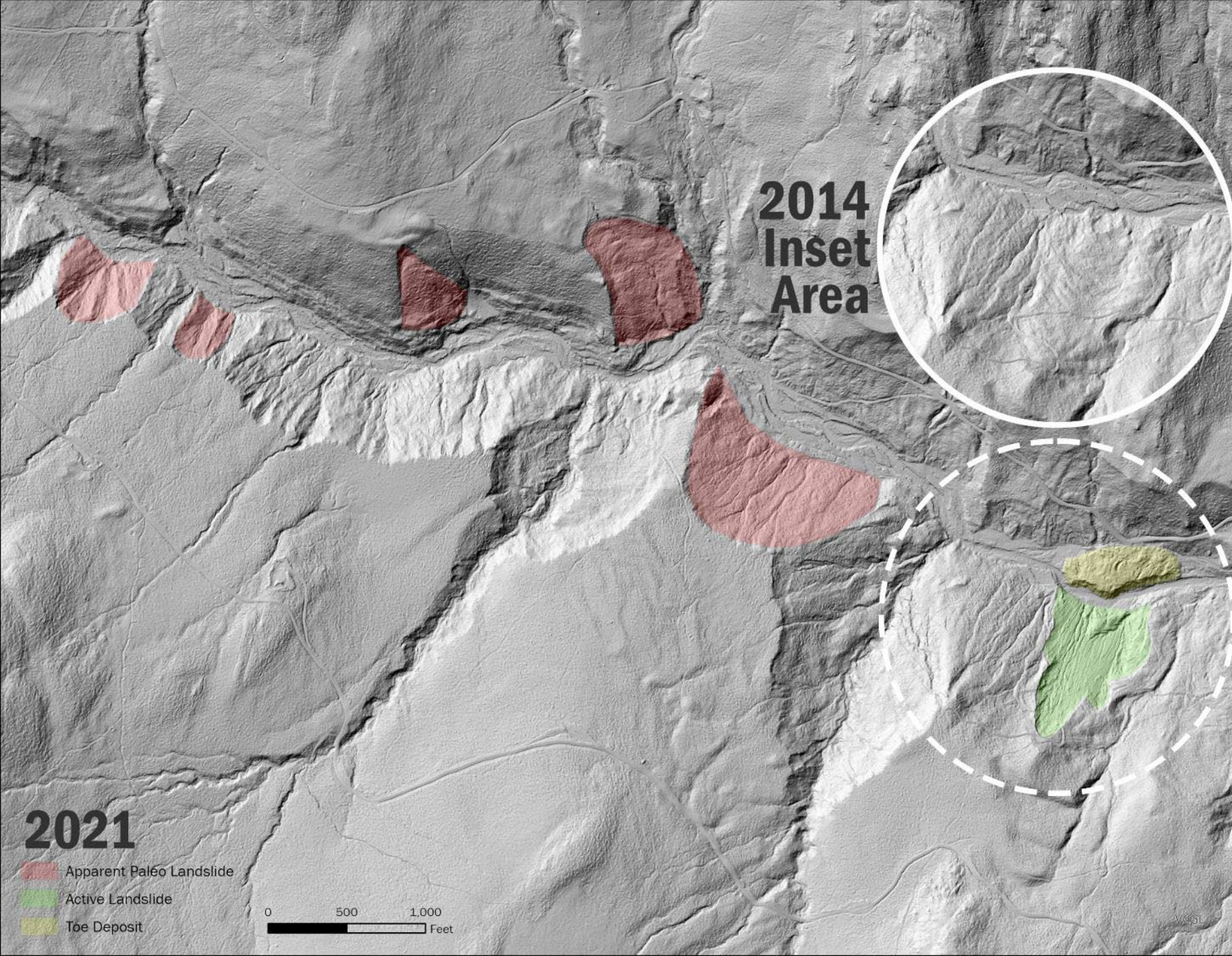
© 2022 UVM. For more information, contact: Geotechnology, Inc. MET/NA-A, USGS, EPA, NPS, US Census Bureau, USDA

FLOODING: Managing Risk Exposure

UVM's Lidar-aided Flood Inundation Layer (2022)

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Use your mouse and scrollwheel to tilt, zoom, pan, and rotate the 3D map, or select a bookmarked location:



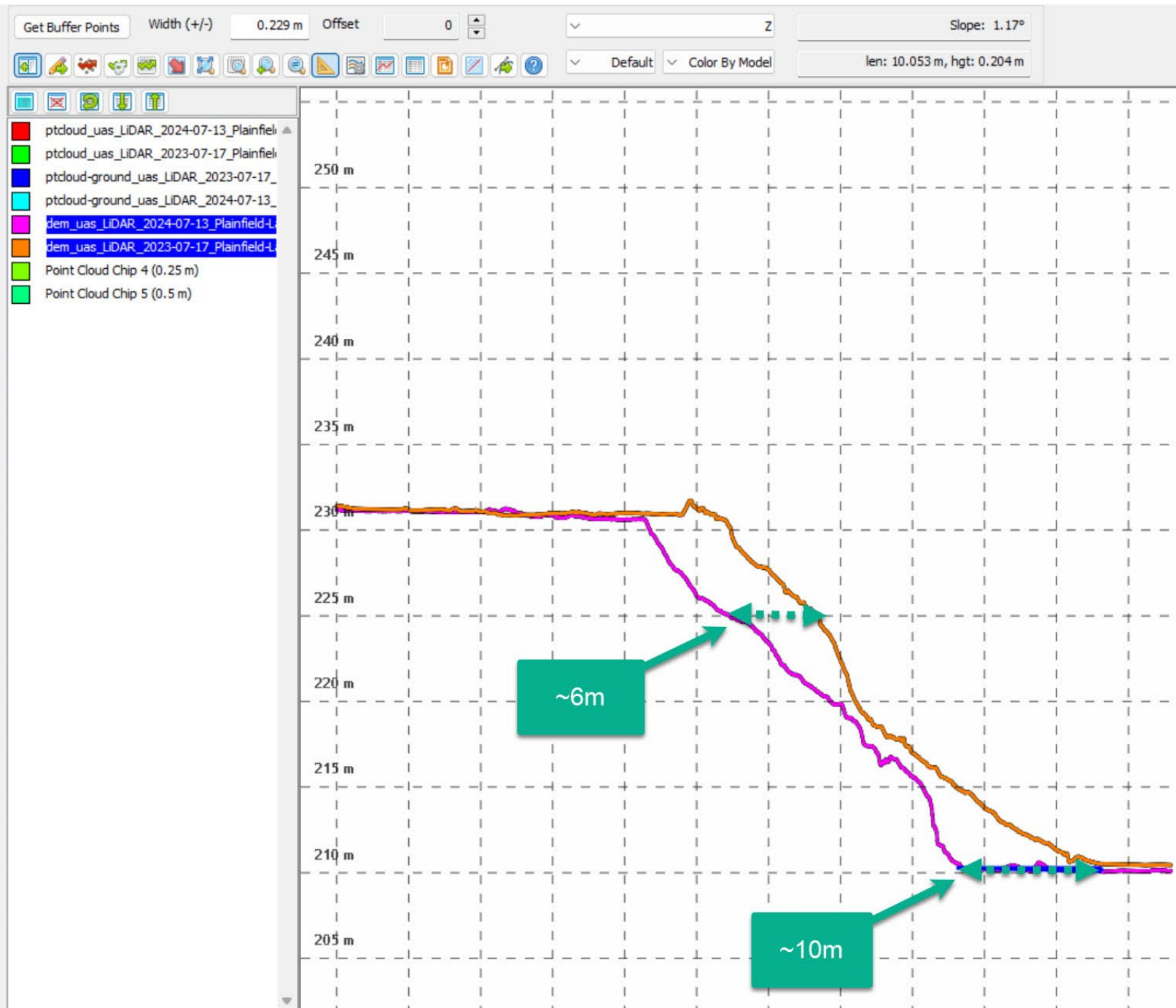
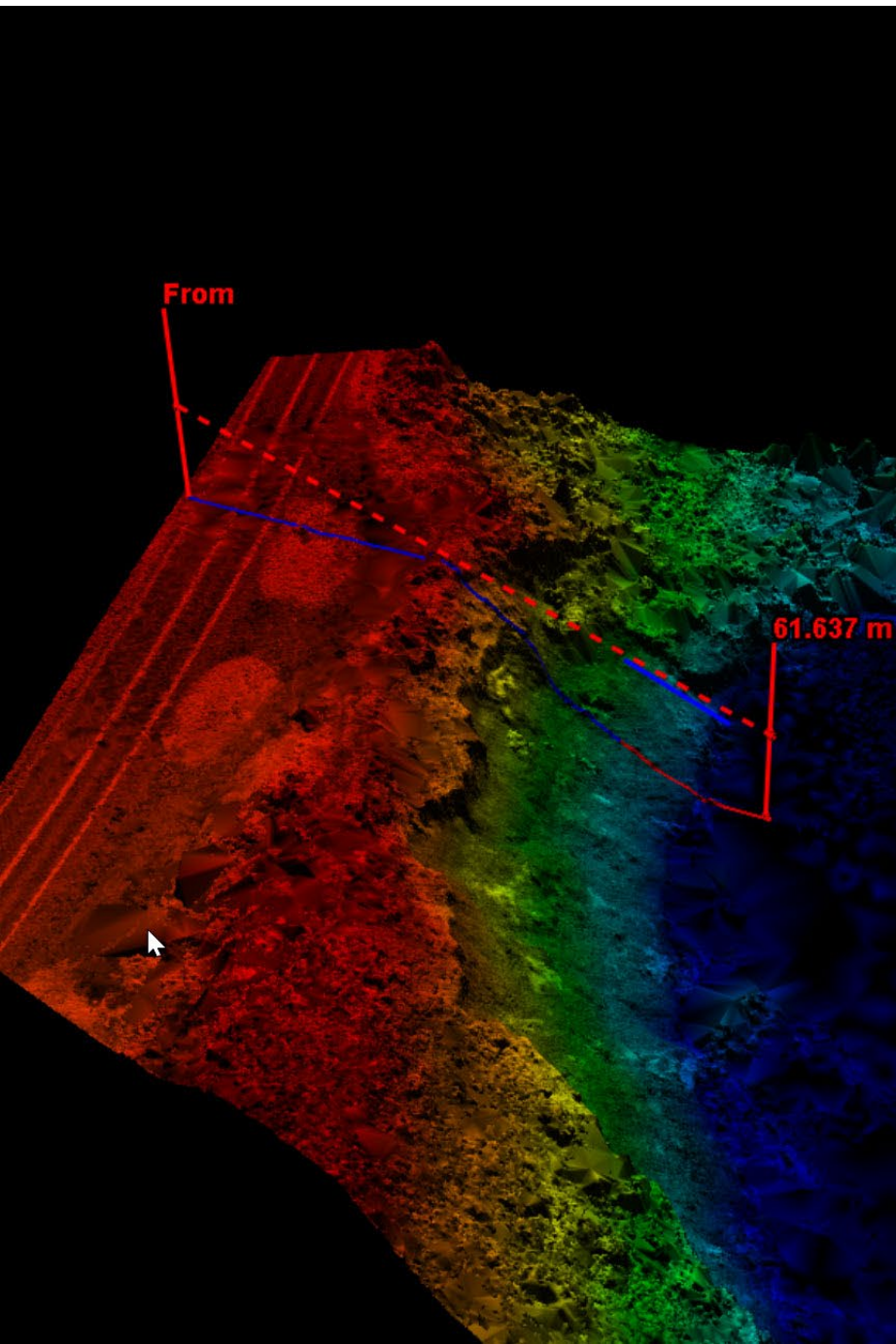
- Barnet Bridge St. 7/12/24
- Barre City Overview 7/11/24
- Barre City North End 7/12/24
- Barre City Rt. 62 and Main St. 7/1...
- Barre City Gunners Brook 7/12/24
- Berlin Mobile Home Park 7/12/24
- Charlotte Spear St. 7/12/24
- East Barre and Orange Reservoirs...
- Groton 7/19/24
- Hardwick Downtown 7/19/24
- Hardwick Haynesville Brook 7/19/...
- Hardwick Stannard Brook 7/19/24
- Johnson 7/11/24
- Lyndon Brook Rd. 8/1/24
- Lyndon Red Village Rd. Corridor ...
- Lyndon Rt. 114 7/30/24
- Peacham 7/13/24

PLAINFIELD, VT

Zoom to

07/14/2024
Source: AOT





What are parcel data?

PARCEL ID	TOWN	SPAN	MAPID	OWNER	ADDRESS	AREA	PERMITS
00000001	WATERBURY	01	001	STATE OF VERMONT	01111 LOT 4 HOUSE	20000	
00000002	WATERBURY	01	001	STATE OF VERMONT	01111 LOT 4 HOUSE	20000	
00000003	WATERBURY	01	001	STATE OF VERMONT	01111 LOT 4 HOUSE	20000	
00000004	WATERBURY	01	001	STATE OF VERMONT	01111 LOT 4 HOUSE	20000	
00000005	WATERBURY	01	001	STATE OF VERMONT	01111 LOT 4 HOUSE	20000	
00000006	WATERBURY	01	001	STATE OF VERMONT	01111 LOT 4 HOUSE	20000	
00000007	WATERBURY	01	001	STATE OF VERMONT	01111 LOT 4 HOUSE	20000	
00000008	WATERBURY	01	001	STATE OF VERMONT	01111 LOT 4 HOUSE	20000	
00000009	WATERBURY	01	001	STATE OF VERMONT	01111 LOT 4 HOUSE	20000	
00000010	WATERBURY	01	001	STATE OF VERMONT	01111 LOT 4 HOUSE	20000	

Ownership Information

Parcel Data

Property Boundaries

(parcel data ≠ survey)

Vermont Parcel Viewer

The Vermont Parcel Viewer is maintained by the Vermont Center for Geographic Information (VCGI) as part of the Parcel Program. VCGI coordinates the collection of the best available digital parcel data from municipalities and publishes them in a uniform GIS format joined with the annual Grand List from the Vermont Department of Taxes.

Find Address, SPAN, Parcel ID, Town

Grand List Table

GIS SPAN	SPAN	MAPID	Parcel ID
018-006-10001	018-006-10001	3294	329
018-006-10002	018-006-10002	3146	314
018-006-10003	018-006-10003	2011	201
018-006-10004	018-006-10004	5059	505
018-006-10006	018-006-10006	3232	323
018-006-10008	018-006-10008	3248	324
018-006-10009	018-006-10009	5076	507
018-006-10010	018-006-10010	3261	326
018-006-10011	018-006-10011	5023.2	502

Parcels - Active

Release Notes | U

5,000 ft

VCGI, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc., METI/NASA, USGS, EPA, NPS, USDA, USFWS | VCGI. Powered by Esri



Agency of Digital Services

Vermont Center for Geographic Information **Data and Programs****Parcel Program**

Parcel Advisory Board

Lidar Program

Imagery Program

Data Status

Share Map Data

Resources

Maps

Partners

About VCGI



PARCEL PROGRAM FAQ

VIEW PARCEL DATA

ACCESS PARCEL DATA

EXAMPLE USES

TOWN DATA STATUS

PARCEL GUIDELINES

Parcel Program

Parcel mapping in Vermont is undertaken and overseen by each municipality, who may perform annual map updates on their own or hire vendors to maintain. As part of the Parcel Program, VCGI coordinates the collection of the best available digital parcel data from municipalities and publishes them in a uniform GIS format joined with the Tax Department's [annual grand list](#). VCGI also develops the [data standards](#), [templates](#), [digital parcel mapping guidelines](#), and guidance resources by which Vermont digital GIS parcel data are organized and made publicly available.

The Parcel Program is an outgrowth of the [Statewide Property Mapping Project](#) which included a three-year (2017-2019) funded effort to create or update digital GIS parcel data for all of Vermont's municipalities. The Project successfully completed that work in December 2019, resulting in a freely available GIS layer for all Vermont municipalities joined with their [annual grand list](#) via a parcel's unique [School Property Account Number \(SPAN\)](#). The parcel Program now supports the ongoing collection and publishing of municipal parcel data in GIS format statewide, continuing to use the SPAN number as a unique parcel identifier.

What is the Statewide Property Parcel Mapping Program?

- The ongoing effort for the publishing of annual grand list-joined digital municipal parcel data throughout Vermont in GIS format that are freely available and useful
- The Program is overseen by VCGI, yet relies on cooperation among towns officials who oversee their grand list and map maintenance and their [map vendors in](#)



Statewide Property Parcel Mapping Program

<https://vcgi.vermont.gov/data-and-programs/parcel-program>

As of May 15, 2024:

339,208

Active Parcels

40,527

Inactive Parcels

7,487

Unmatched Parcels (2.2%)

209

Towns With GIS Vendors (82%)

~5

Vendors Voluntarily Submitting Updates

Atlas, CAI, Christine Chamberlain, CTI, NEMRC

1.1 Million

Unique Views/Sessions in 2023

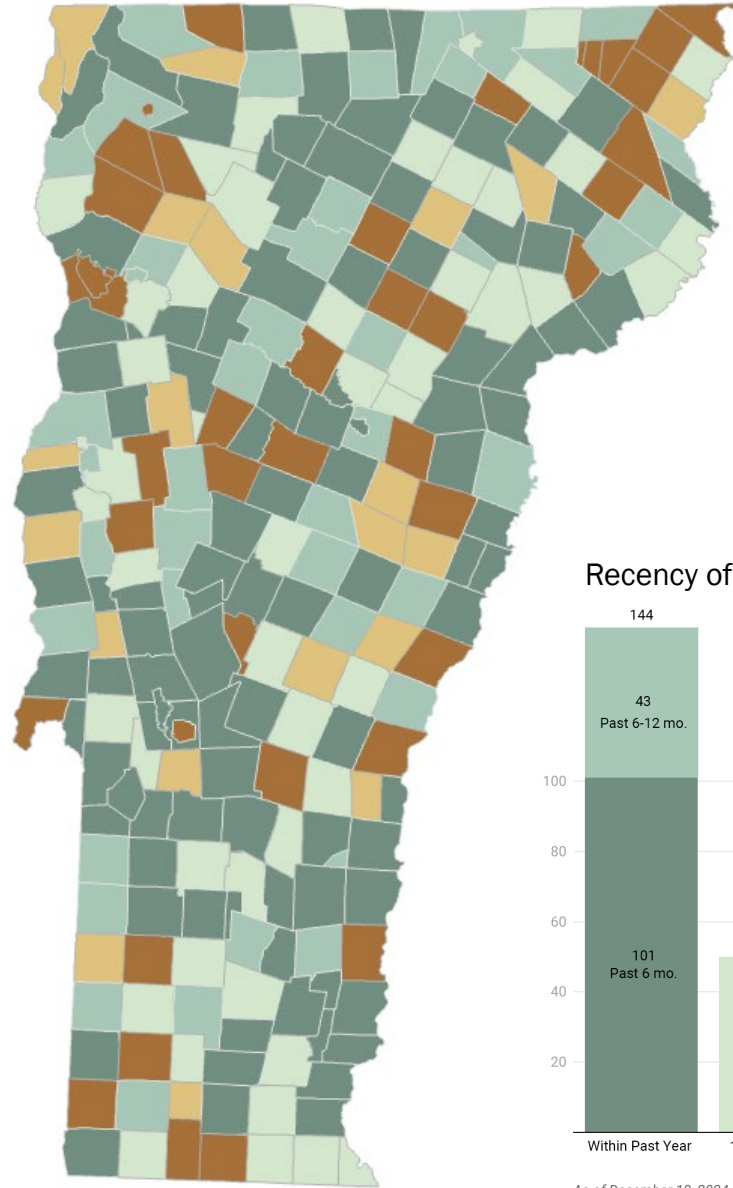




$-73.186\ 43.272$ Degrees
100m
0m

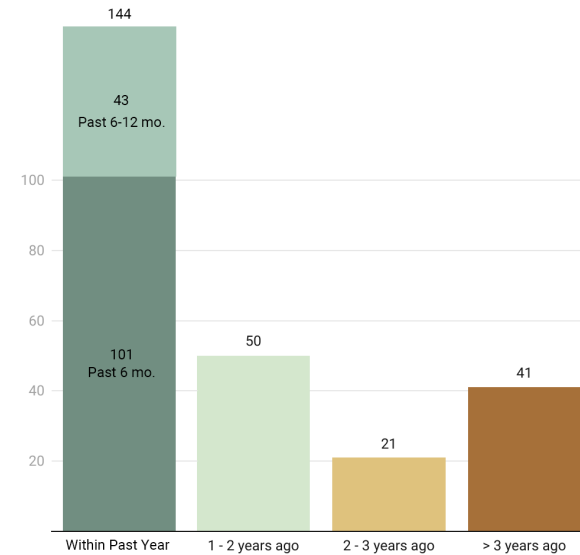


**~90% of towns now maintain parcel data.
But...**



...frequency and quality varies widely.

Recency of Geometry by Count of Towns



As of December 18, 2024



Vermont Land Survey Library

Search, View and Add Vermont Land Surveys

A Public Library for Vermont's Land Survey Records

The library hosts copies of land surveys of boundary line adjustments and subdivisions as prepared by Vermont licensed land surveyors.

[Enter the Land Survey Library](#)

Digital Survey Plats

Effective January 1, 2020 and as stated in [27 V.S.A. § 341](#), surveys are required for property line changes in Vermont. Licensed land surveyors who produce the surveys are to submit a digital copy of them to the library in [.pdf format](#) (see [27 V.S.A. §1401](#) and [27 V.S.A. §1403](#)).

The copies of surveys are for public reference only, with the originals that most often reside with the Municipality remaining the official documents. The purpose of the land survey library is to improve knowledge of who owns

What is it?

The library consists of a web map that displays the general locations of .pdf copies of surveys produced by Vermont licensed land surveyors. For new surveys produced from January 1, 2020 onward, surveyors upload the .pdf copies to the map when the surveys are to be filed with the Town Clerk. The library's content is open to the public for viewing and reference.

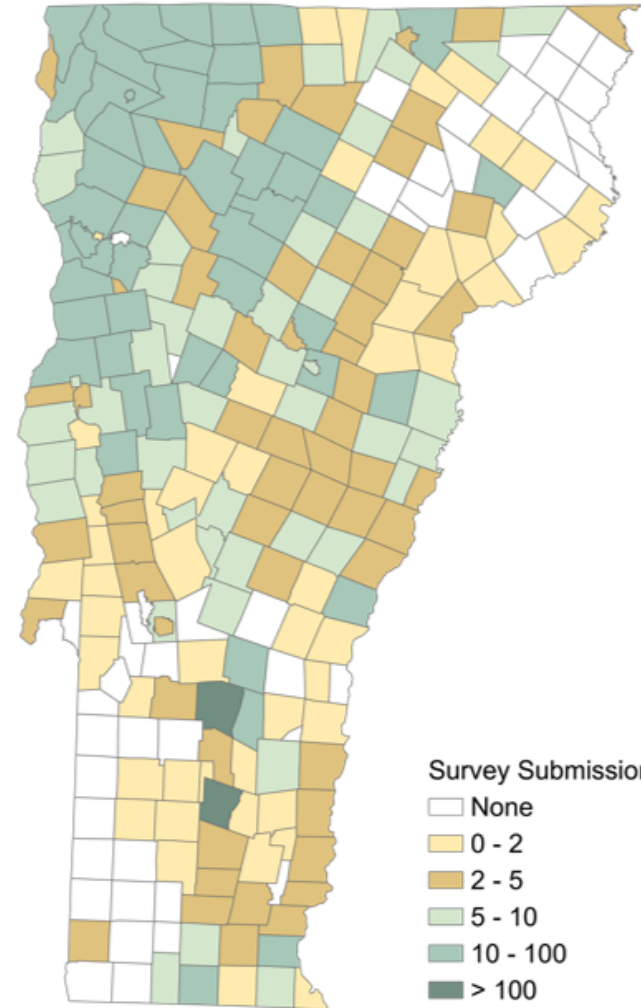
[Learn More Here](#)

Submit a Survey

Are you a Vermont licensed land surveyor completing a survey of a property line change on land in Vermont? Are you a town official with recorded surveys that you'd like to make available on a map? If yes to either, then use the survey library application linked from this page to submit a .pdf copy of these documents. Learn more about how and when to use the library in the [How It Works](#) section, and read answers to frequently asked questions under [FAQ's](#).

The Vermont Land Survey Library: Status

2,272 surveys have been submitted since January 2020. Most were performed in or after 2020, but some have been uploaded retroactively.



Boundaries: Land Surveys | [Library](#), [Data Layer](#)

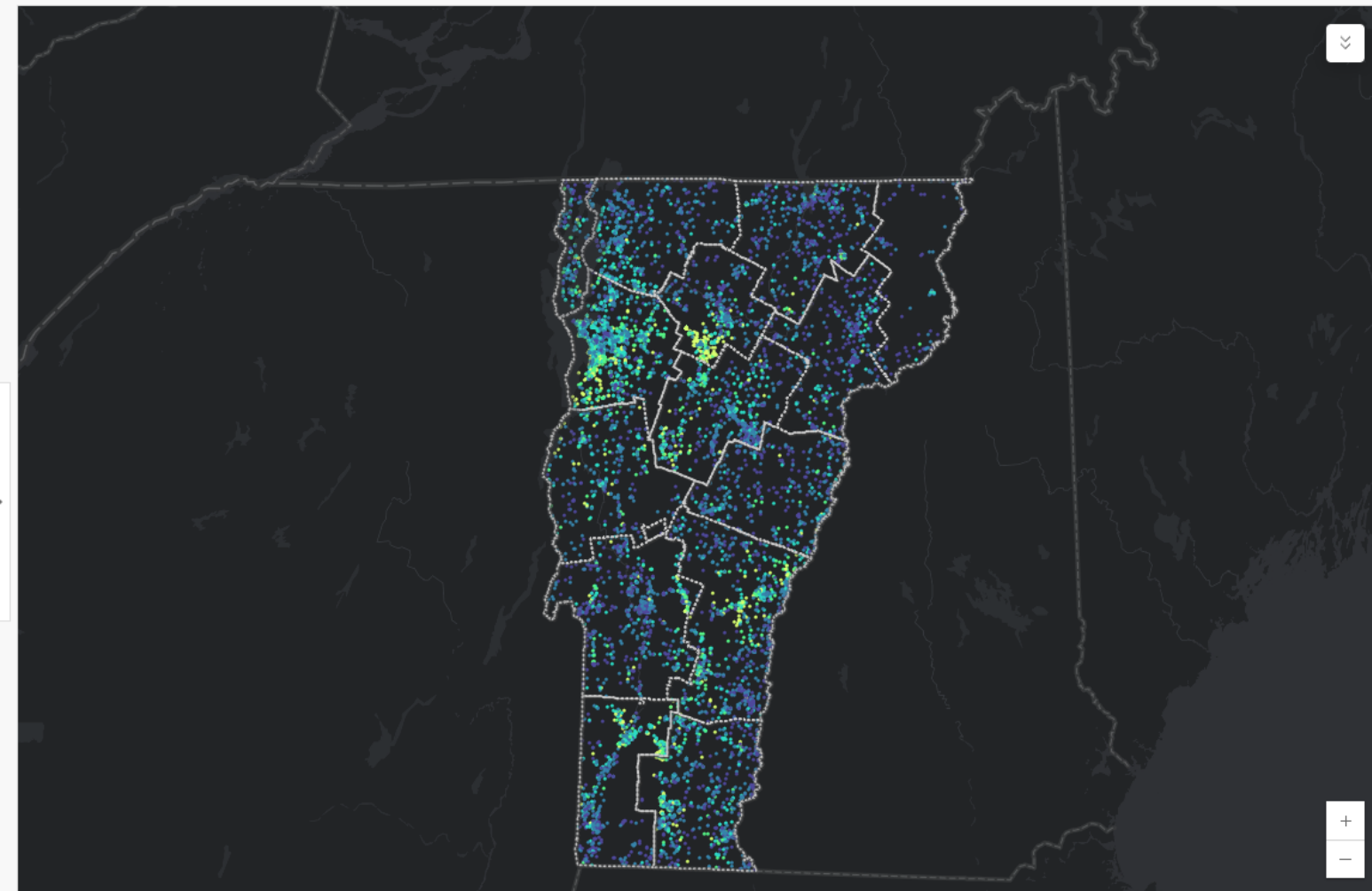
Submitted by Licensed VT Land Surveyors (primary), Town Officials (secondary)

Filter by County
No category selected

Filter by Town(s)
No category selected

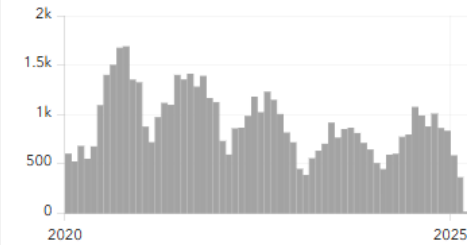
Sales Price
\$30k - \$15M

Closing Date
01/01/2024 and after

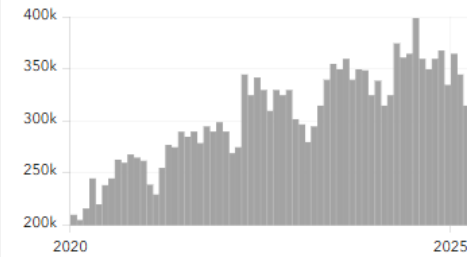


Residential Property Transfers

Monthly Sales



Median Price by Month



10.4k

Total Sales

7.2k

Primary Residence

3.2k

Secondary Residence

\$230k

25th Percentile

\$356.4k

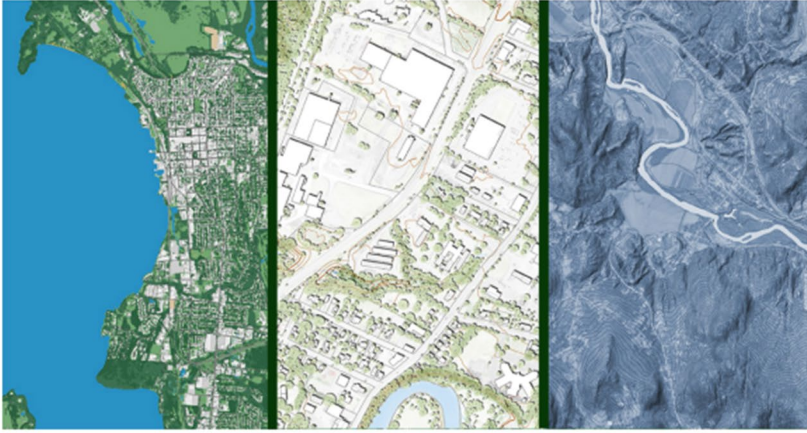
Median

\$549k

75th Percentile

Town	Median \$	Sales
Addison	\$330,000	17
Albany	\$215,750	8
Alburgh	\$220,500	52
Andover	\$485,500	15
Arlington	\$402,000	37
Athens	\$275,000	7
Averill	\$100,000	2
Bakersfield	\$282,500	19
Baltimore	\$230,000	3
Barnard	\$500,000	19
Barnet	\$277,000	27
Barre City	\$265,000	120
Barre Town	\$327,000	151
Barton	\$216,000	46
Belvidere	\$121,250	6
Bennington	\$250,000	173
Benson	\$160,107	14
Berkshire	\$258,000	22
Berlin	\$321,000	37
Bethel	\$250,000	29





VERMONT DEPARTMENT OF TAXES
FINAL REPORT PURSUANT TO ACT 68 OF 2023:
STATEWIDE REAPPRAISALS AND PROPERTY DATA

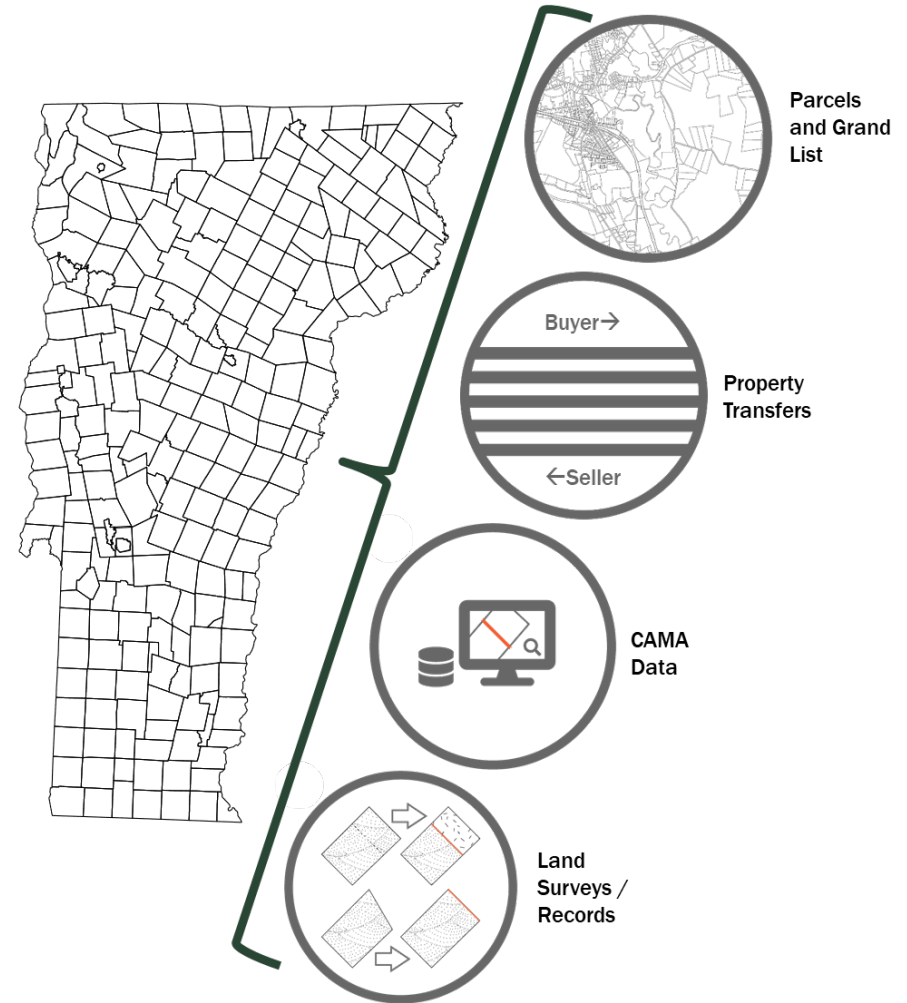
Submitted December 16, 2024

Submitted by
 Office of the Commissioner
 and Division of Property Valuation and Review
 Vermont Department of Taxes

Submitted to
 House Committee on Government Operations and Military Affairs
 House Committee on Ways and Means
 Senate Committee on Finance
 Senate Committee on Government Operations

133 State Street
 Montpelier, VT 05633
 (802) 828-2505
 tax.vermont.gov

Pub. RP-1348



Act 68 Statewide Reappraisals – Long & Short Term Recommendations

<https://tax.vermont.gov/sites/tax/files/documents/RP-1348.pdf>



2024 Lands in Current Use and Designated Areas

This application depicts lands enrolled in current use and their relation with designated areas per the Agency of Commerce and Community Development's State Designation Programs as of January 23, 2025.

Data are for references purposes only.

Enrolled acreage of current use-enrolled parcels is summed in indicator, however, entire parcel extent is mapped.

Current Use Enrolled Parcels Intersecting 3 Mile Buffer

14,717
1,793,635.9 ac



VC.GI, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, USFWS

Powered by Esri

State Designated Areas

Downtown District Boundaries

New Town Center Boundaries

Village Boundaries

Neighborhood Development Area

Growth Center Boundaries

Designated Areas Buffer: 3 Miles

BUFFER

3 Miles

2024 Current Use Parcels Intersecting 3 Mile Buffer

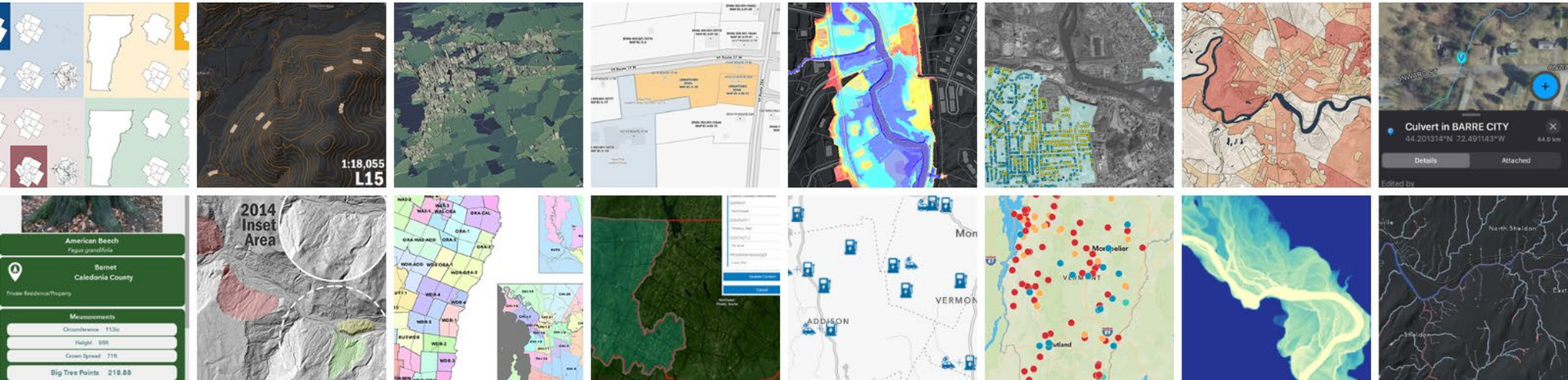
2024 Current Use Parcels (All)



Current Use Mapping and Access

[LINK TO APP](#)

Learn More: [2024 Year in Review](https://2024.mapvt.com/)



<https://2024.mapvt.com/>

John.E.Adams@vermont.gov

