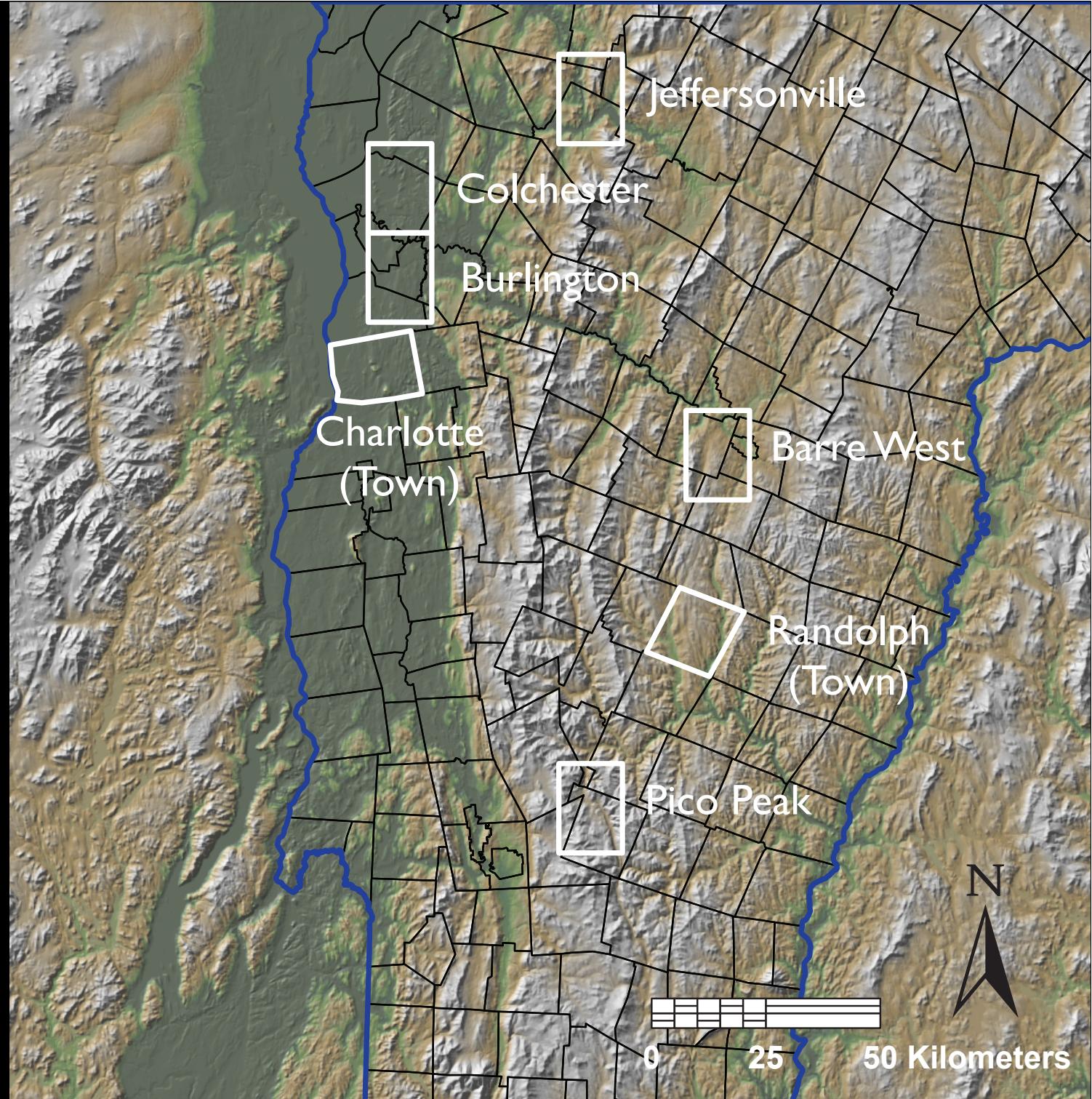
A scenic view of a green hillside with a forested background under a blue sky. The foreground is a grassy slope, and the background shows rolling hills and a dense forest. The sky is clear with a few wispy clouds.

Surficial Geology and Land Use in Vermont

Stephen Wright
Department of Geology
University of Vermont

Channel eroded into fine Glacial Lake Hitchcock sediments,
North Randolph, Vermont

Surficial
mapping
projects
undertaken
under the
auspices of the
Vermont
Geological
Survey



Fred Larsen's generalized fining- upwards stratigraphic section for glacial deposits in the river valleys of central Vermont

Larsen, 1987

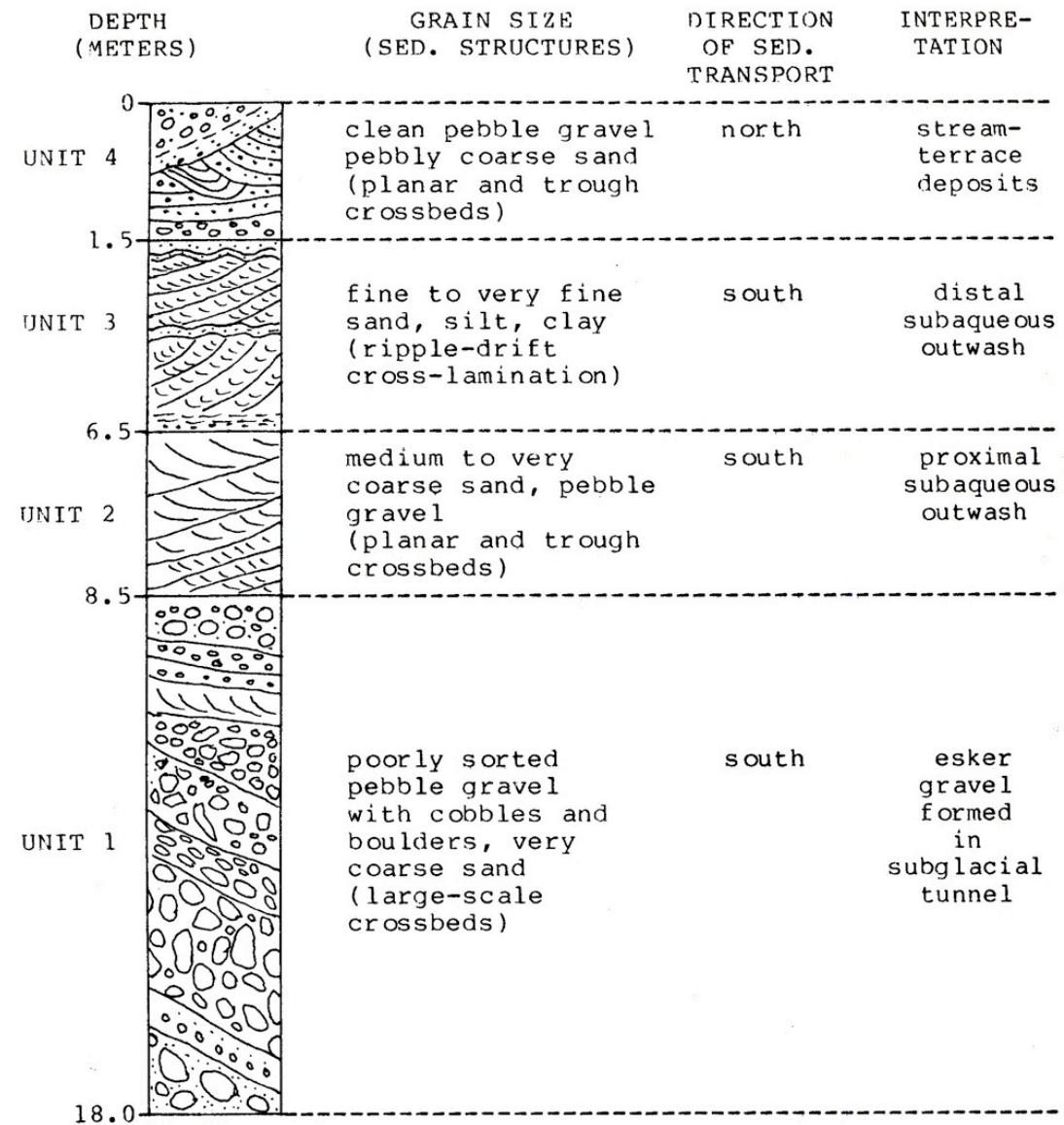
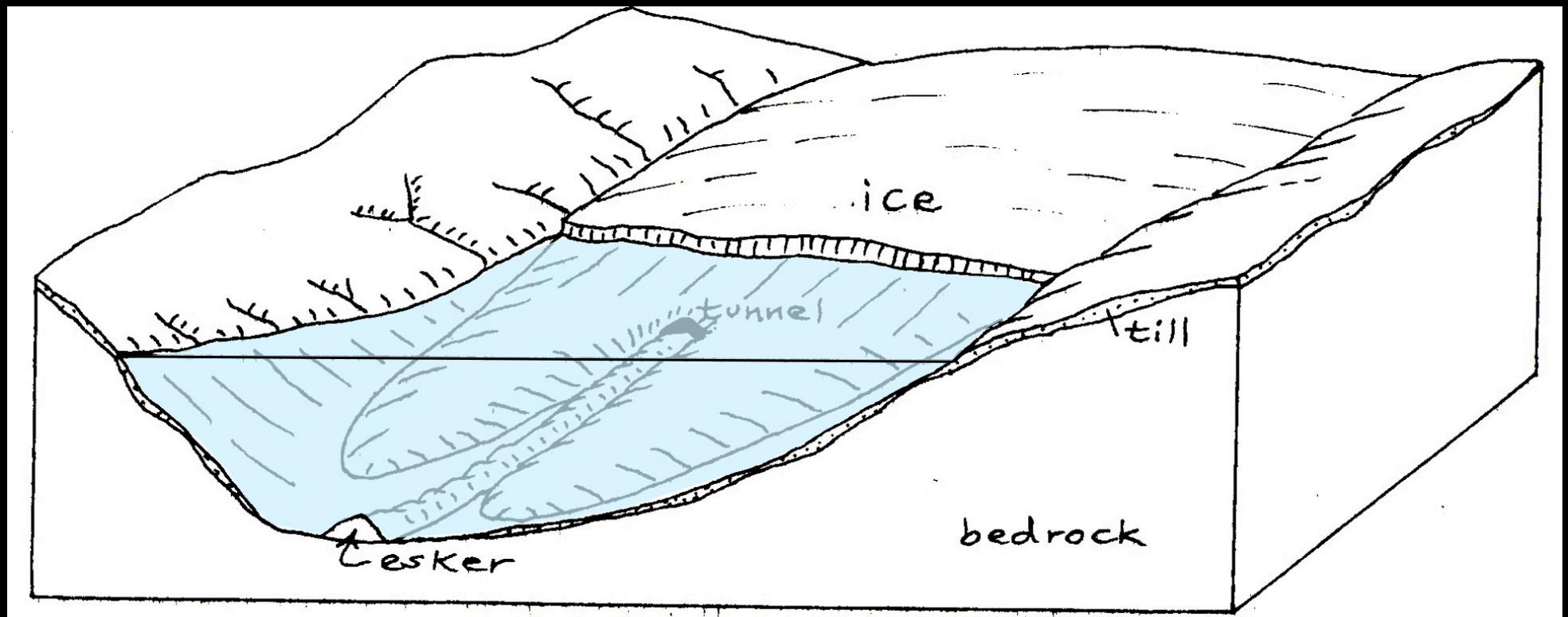


Figure 8. Generalized stratigraphic section for gravel pits in the Dog River valley. Units 1, 2 and 3 constitute a fining-upward sequence produced by northward retreat of an ice margin in a lake. Sediment is delivered to the lake floor by south-flowing turbidity currents issuing from a subglacial tunnel. Unit 4 was formed after the lake drained (Compare with Rust and Romanelli, 1975; depth scale is not linear).

Fred Larsen's model for ice retreat down northward-draining valleys



Larsen, 1987

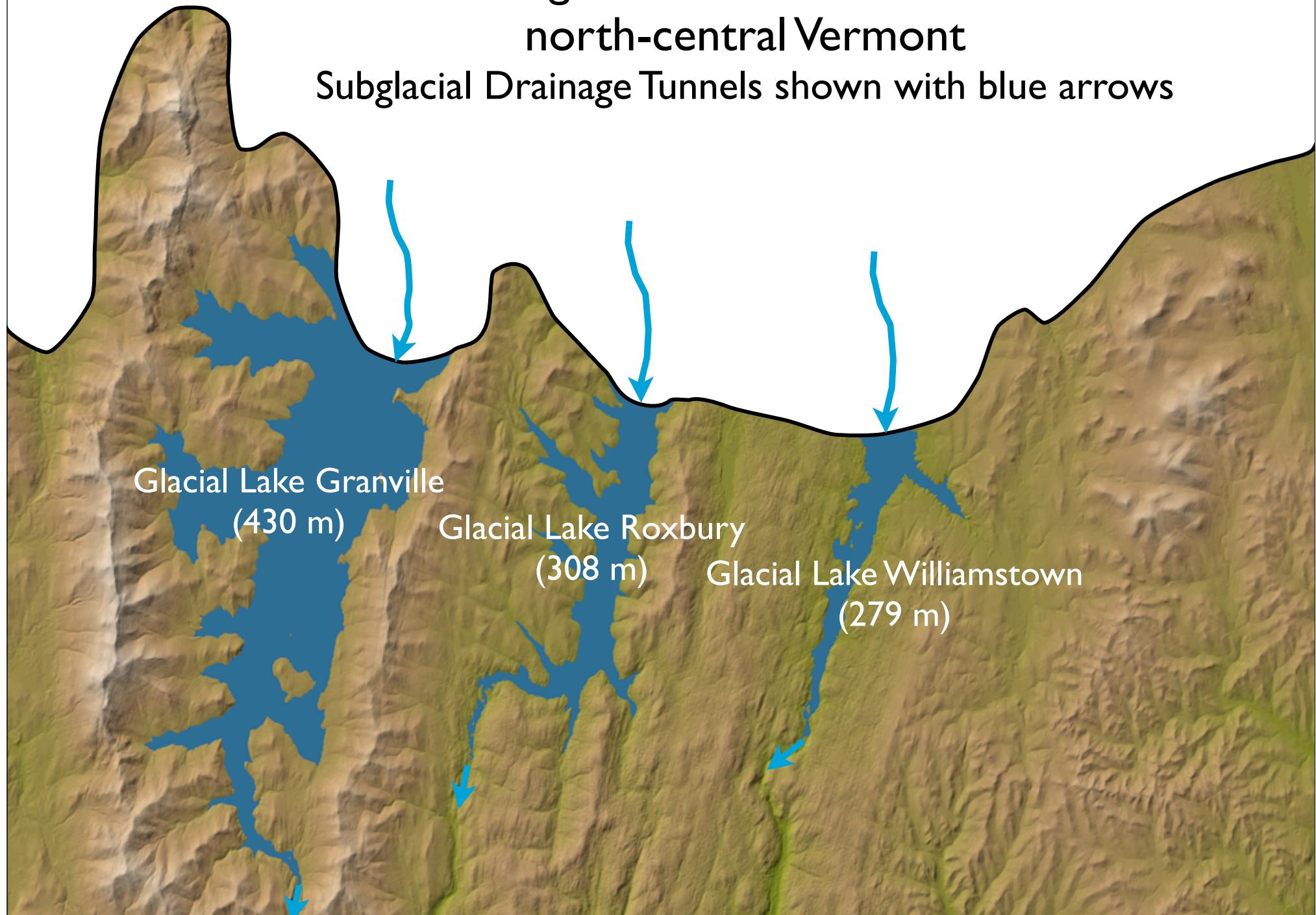
Retreating Laurentide Ice Sheet across north-central Vermont

Subglacial Drainage Tunnels shown with blue arrows

Glacial Lake Granville
(430 m)

Glacial Lake Roxbury
(308 m)

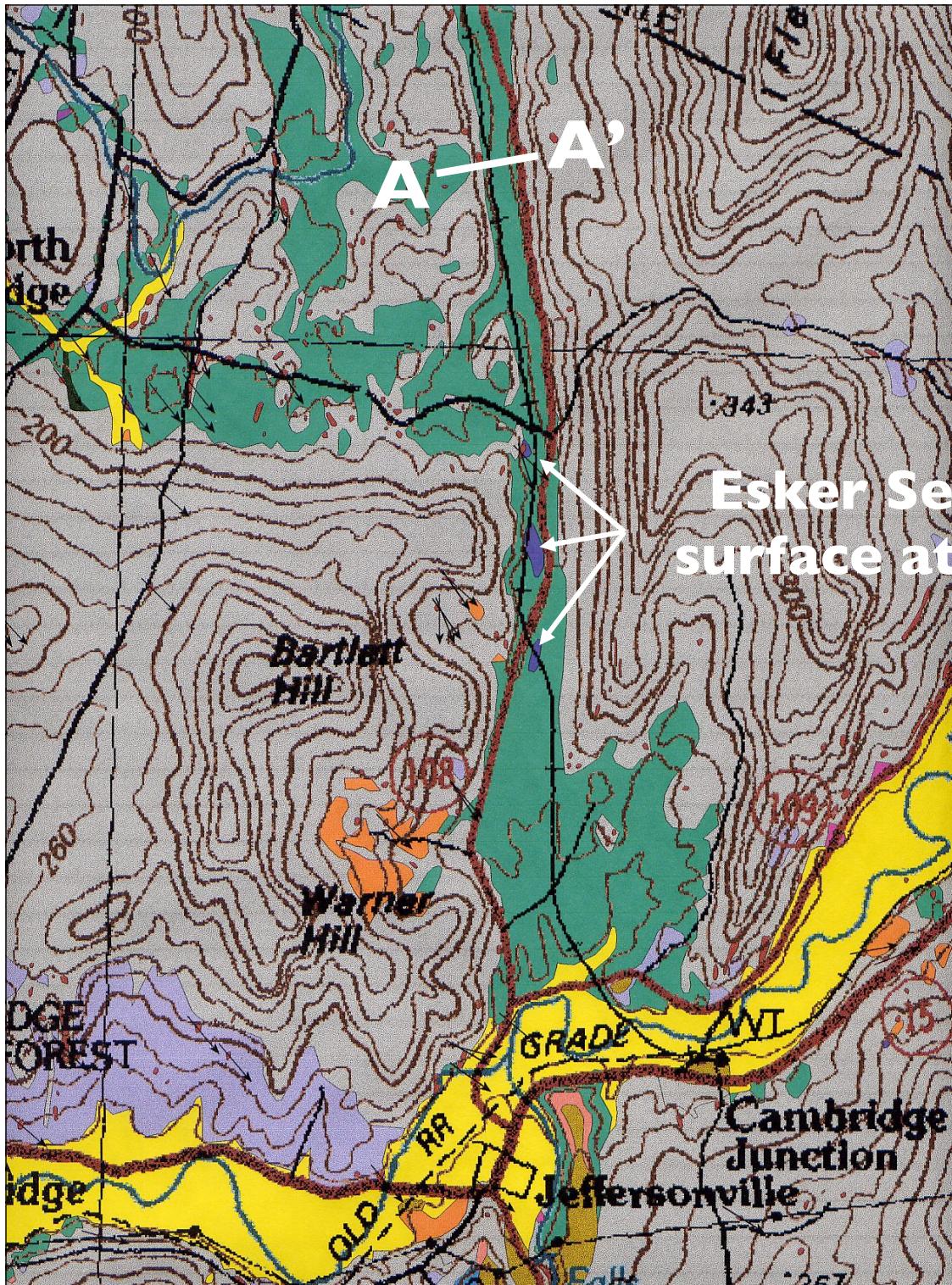
Glacial Lake Williamstown
(279 m)

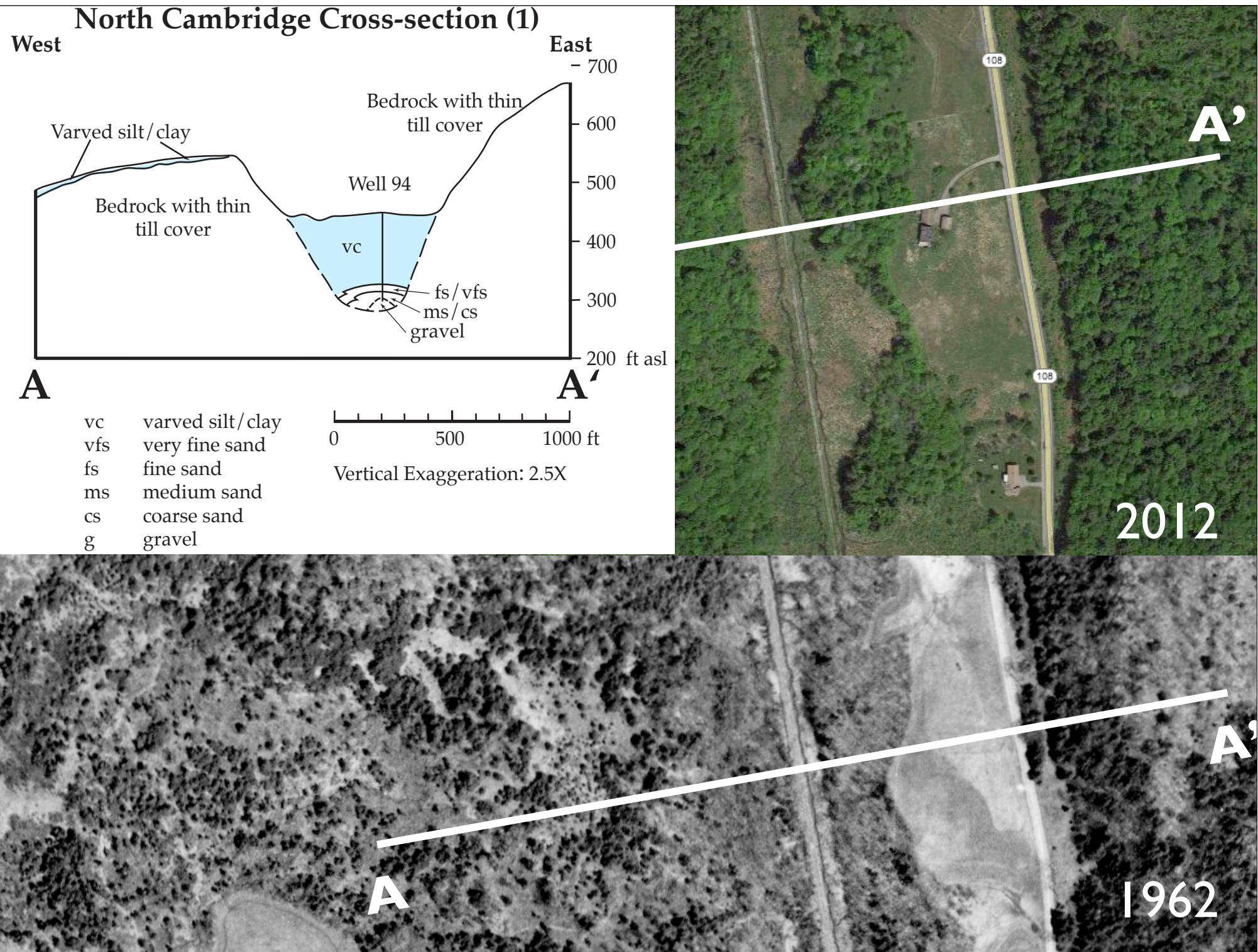


Jeffersonville Quadrangle

Esker Sediments exposed at the surface at bedrock drainage divide

- Alluvium
- Varved Silt and “Clay”
- Fine and Very fine sand
- Fine Sand
- Ice-contact Coarse Sand and Gravel





**Second Branch of
the White River
Valley Esker
Randolph, Vermont**



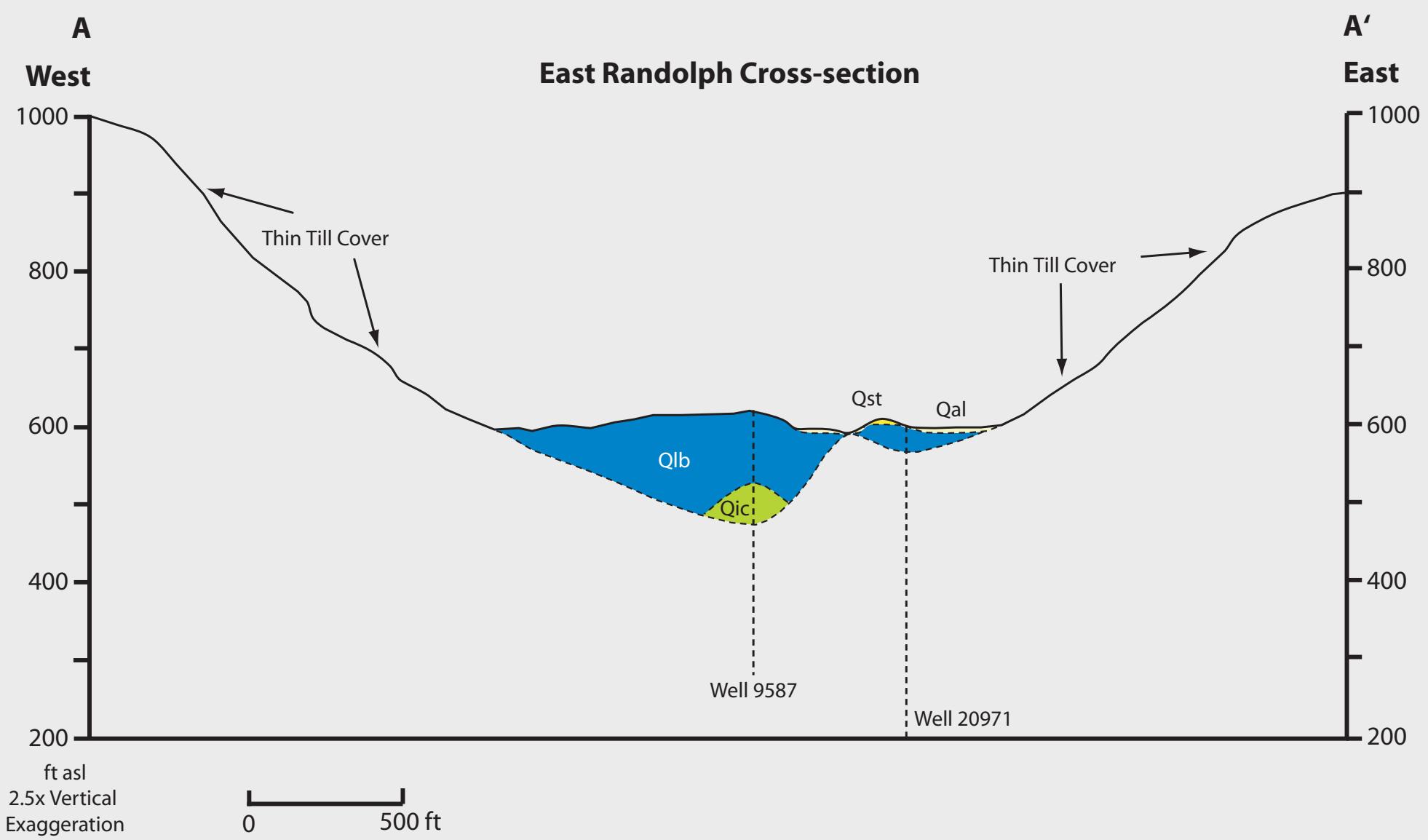
0 1 2 Kilometers

Esker

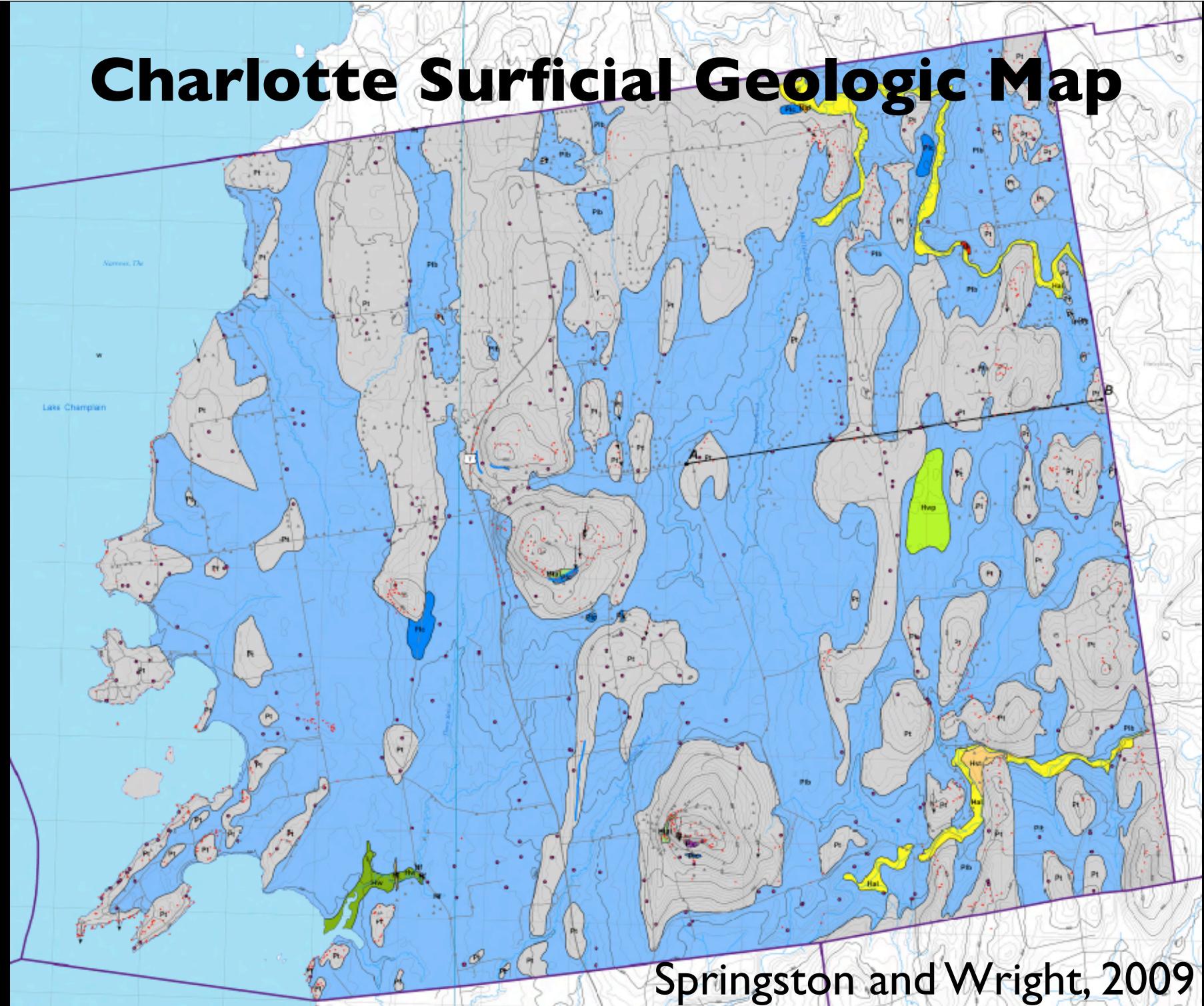


Top of esker overlain by fine lacustrine sand/silt
East Randolph

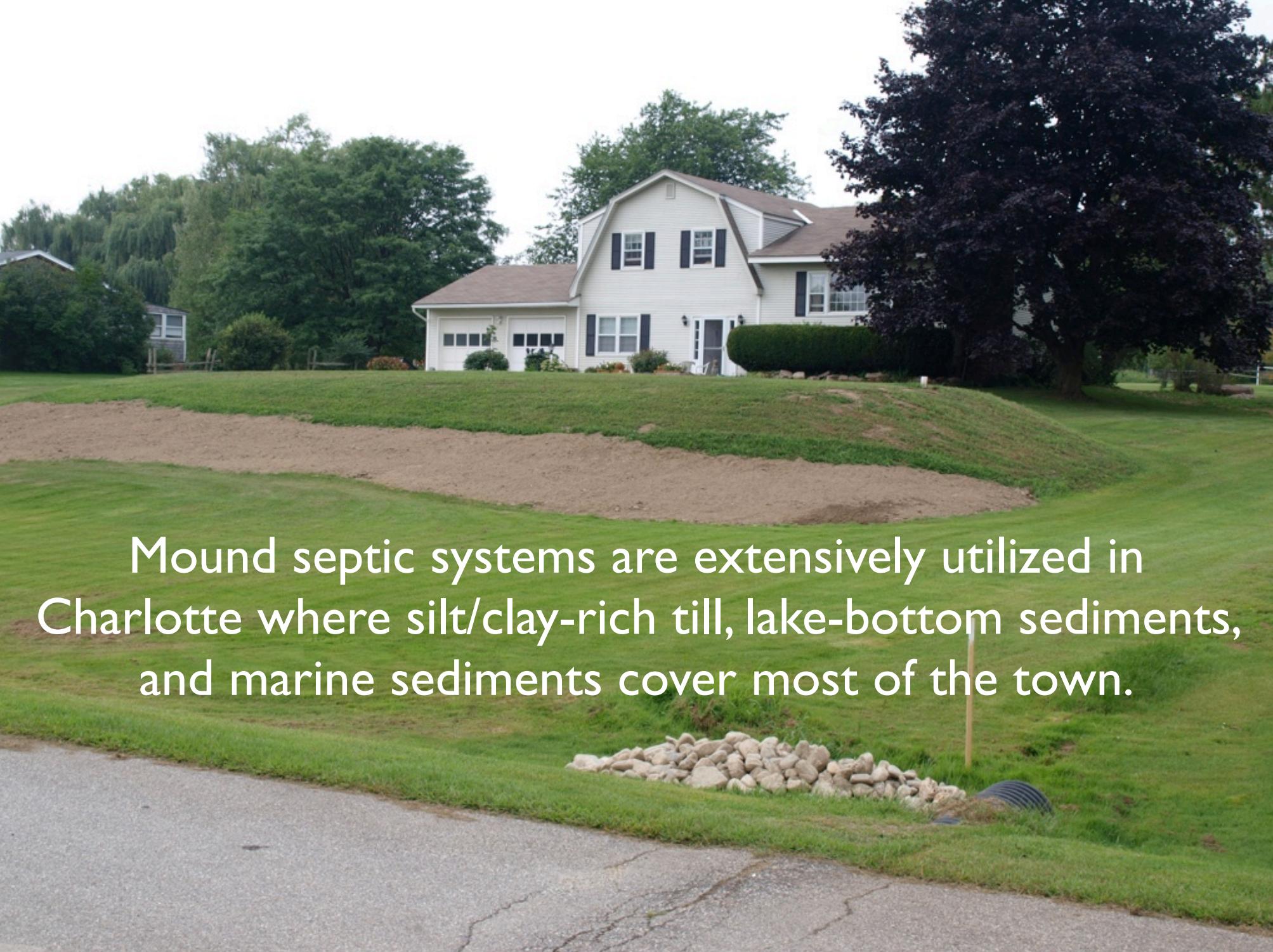
Esker and Ice-proximal subaqueous fan sediments (Q_{ic}) are overlain and confined by Lake Bottom sediments (Q_{lb}).



Charlotte Surficial Geologic Map



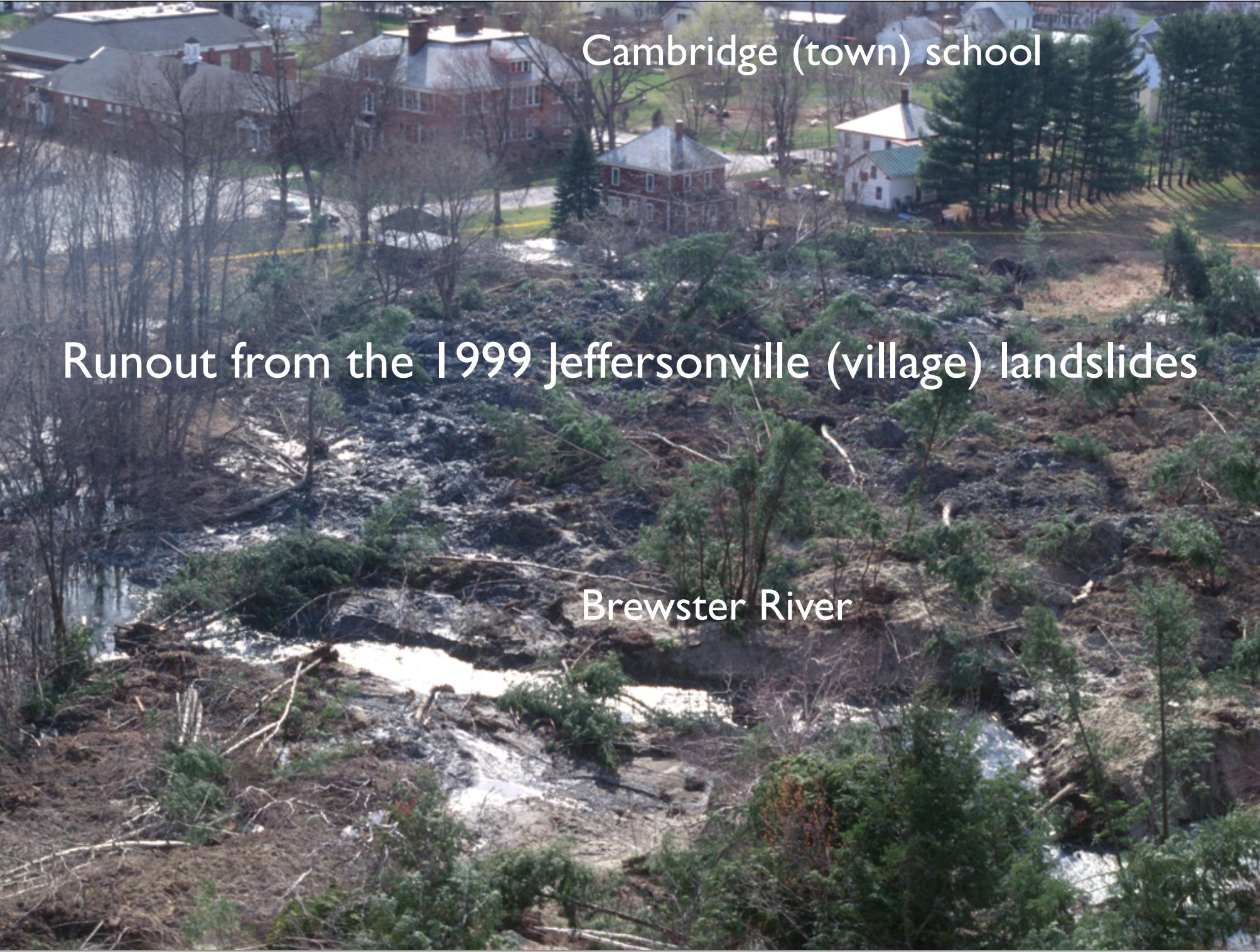
Springston and Wright, 2009



Mound septic systems are extensively utilized in Charlotte where silt/clay-rich till, lake-bottom sediments, and marine sediments cover most of the town.



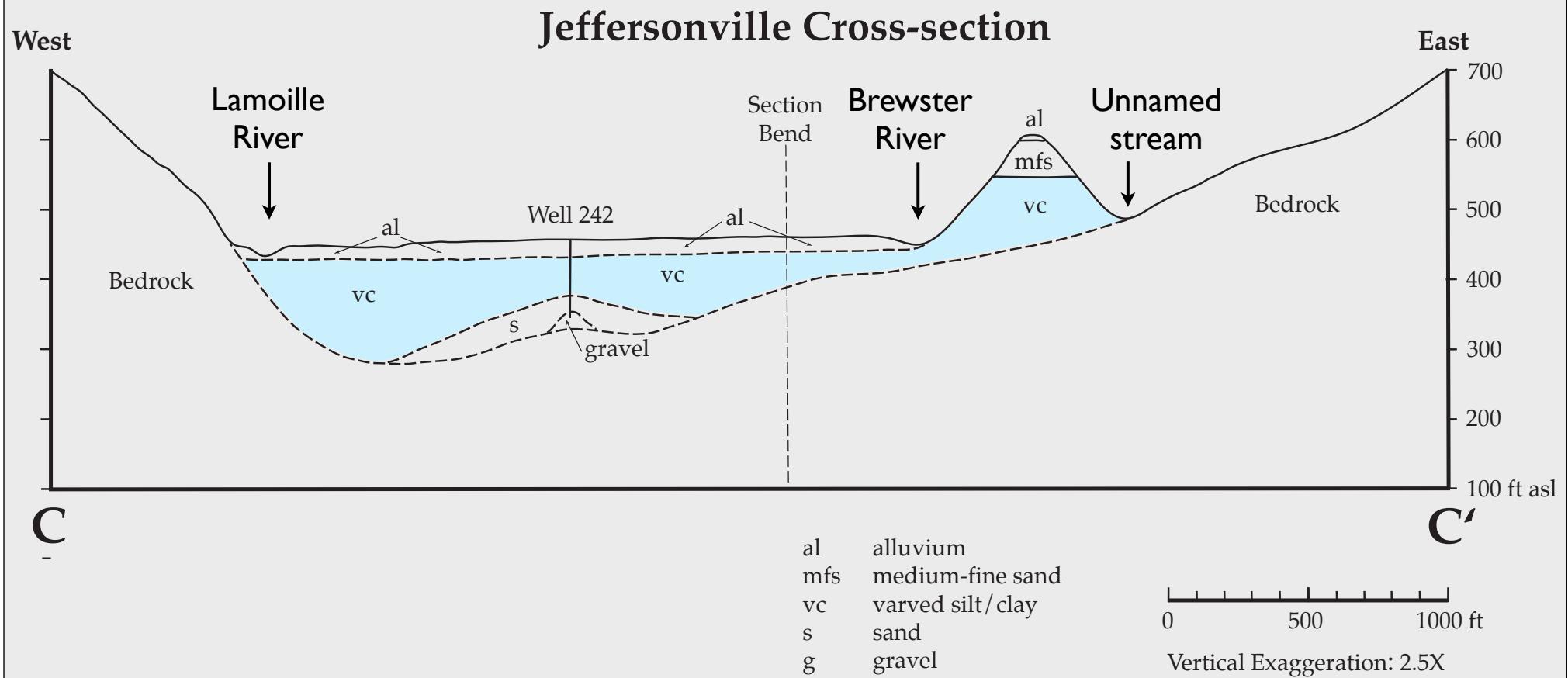
Glacial Lake Vermont Beach ridge (sand) hosts
land owner's septic system in Charlotte.

An aerial photograph showing the aftermath of landslides. In the upper left, a large, multi-story brick building is visible, identified as the Cambridge (town) school. To its right, a white building with a green roof stands near a cluster of fallen trees. The middle ground is dominated by a large area of ground covered in debris, fallen trees, and exposed earth, representing the runout of landslides. In the lower center, the Brewster River is visible, showing a mix of debris and clearer water. The surrounding terrain is a mix of intact forest and areas where vegetation has been severely disrupted by the slides.

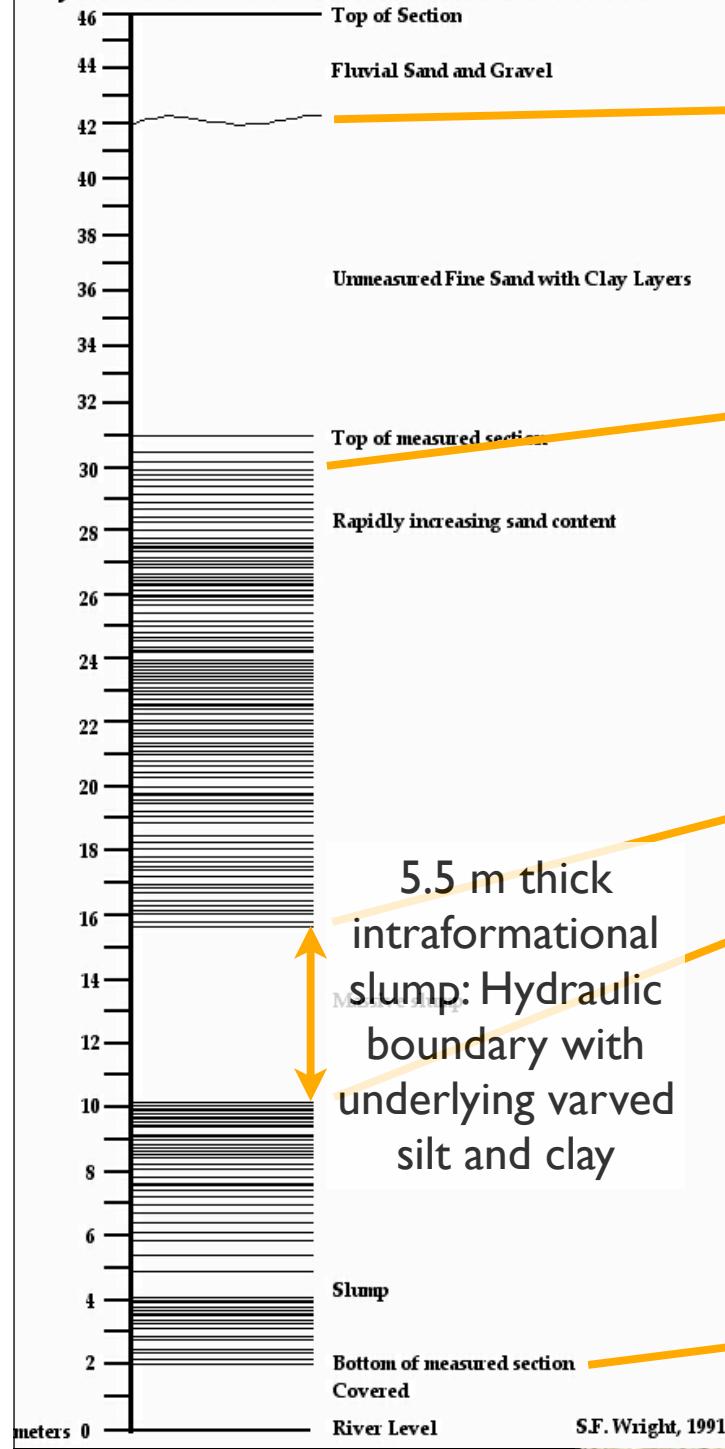
Cambridge (town) school

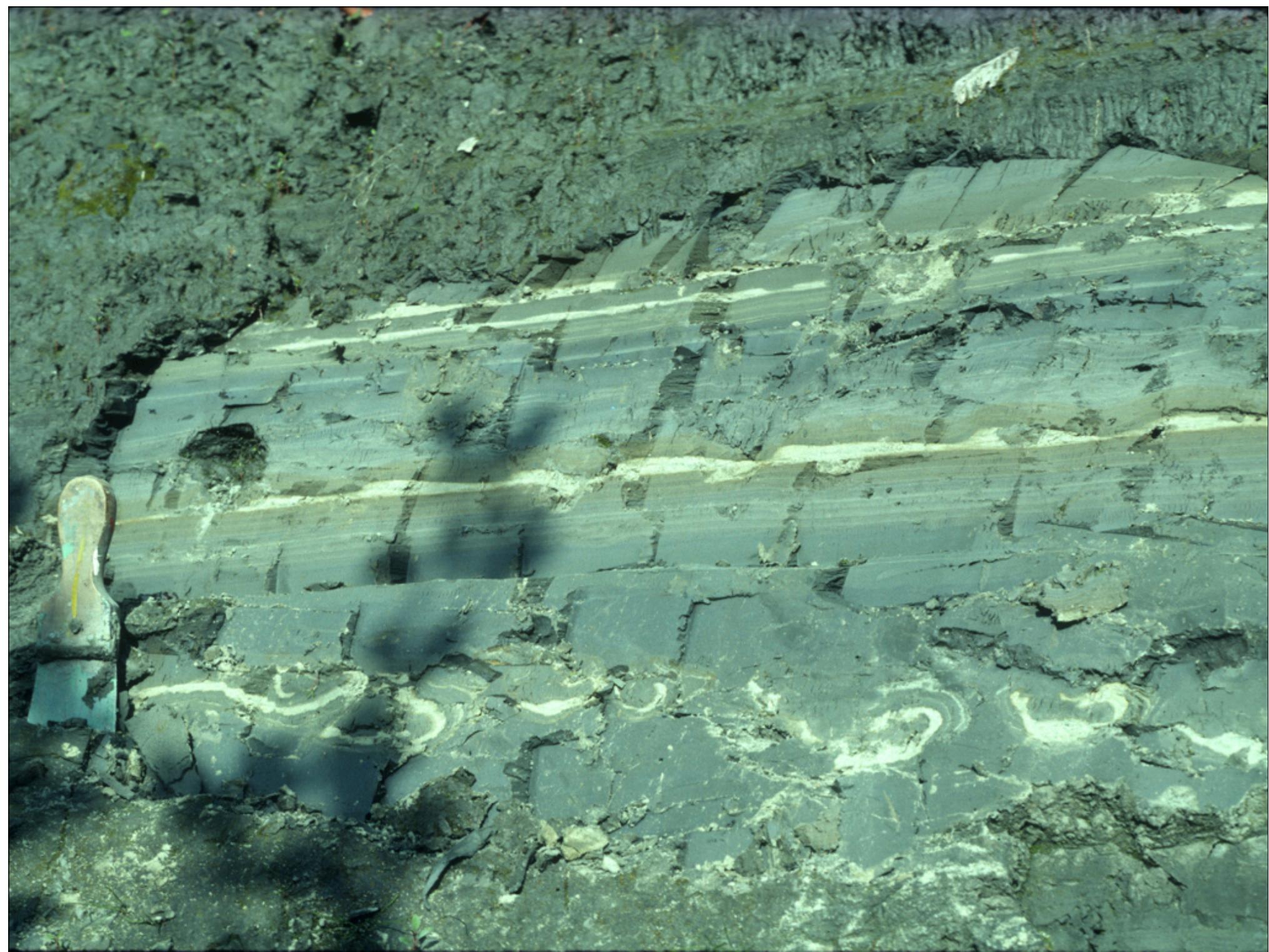
Runout from the 1999 Jeffersonville (village) landslides

Brewster River



JEFFERSONVILLE CLAY BANK





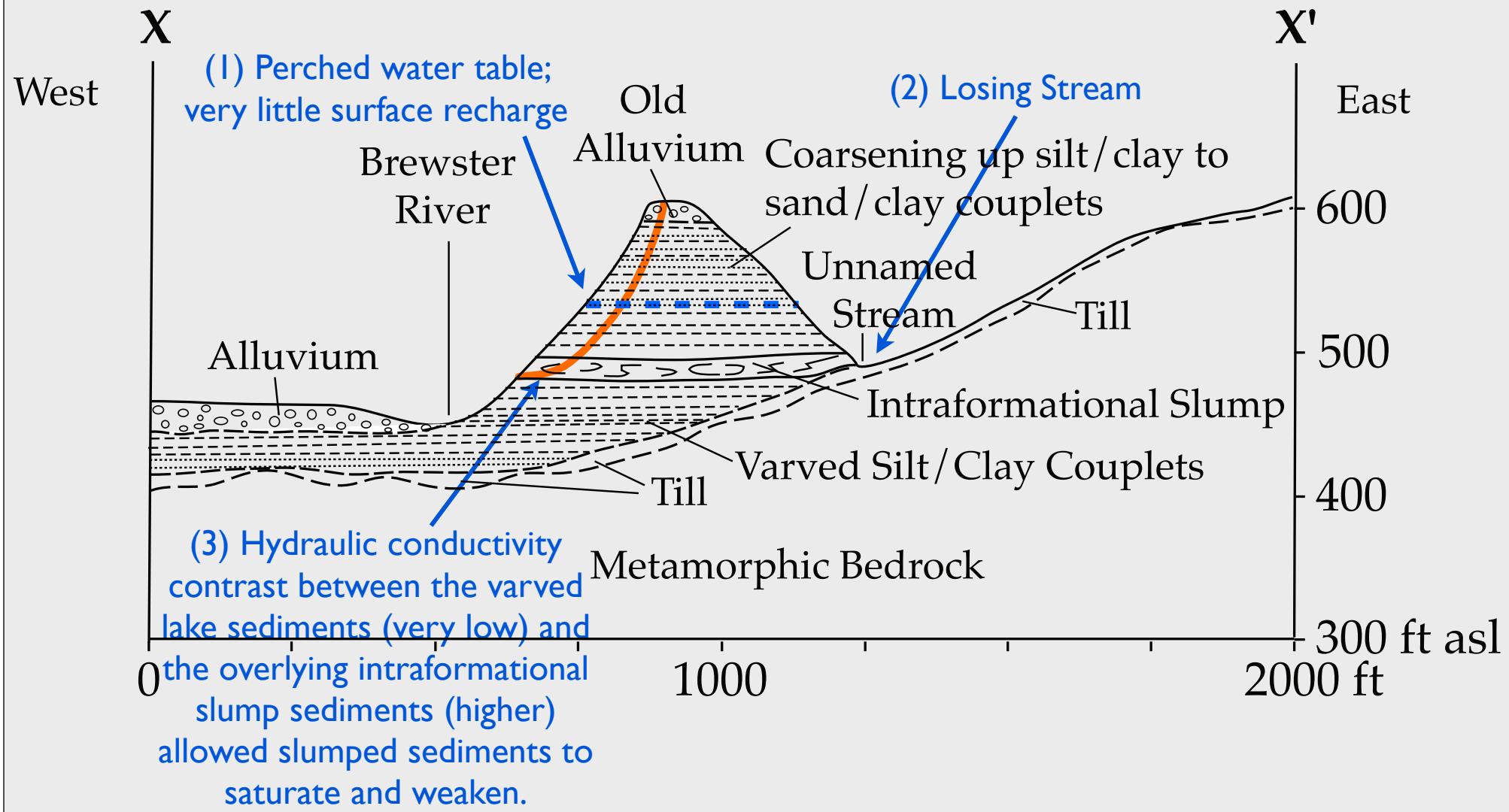


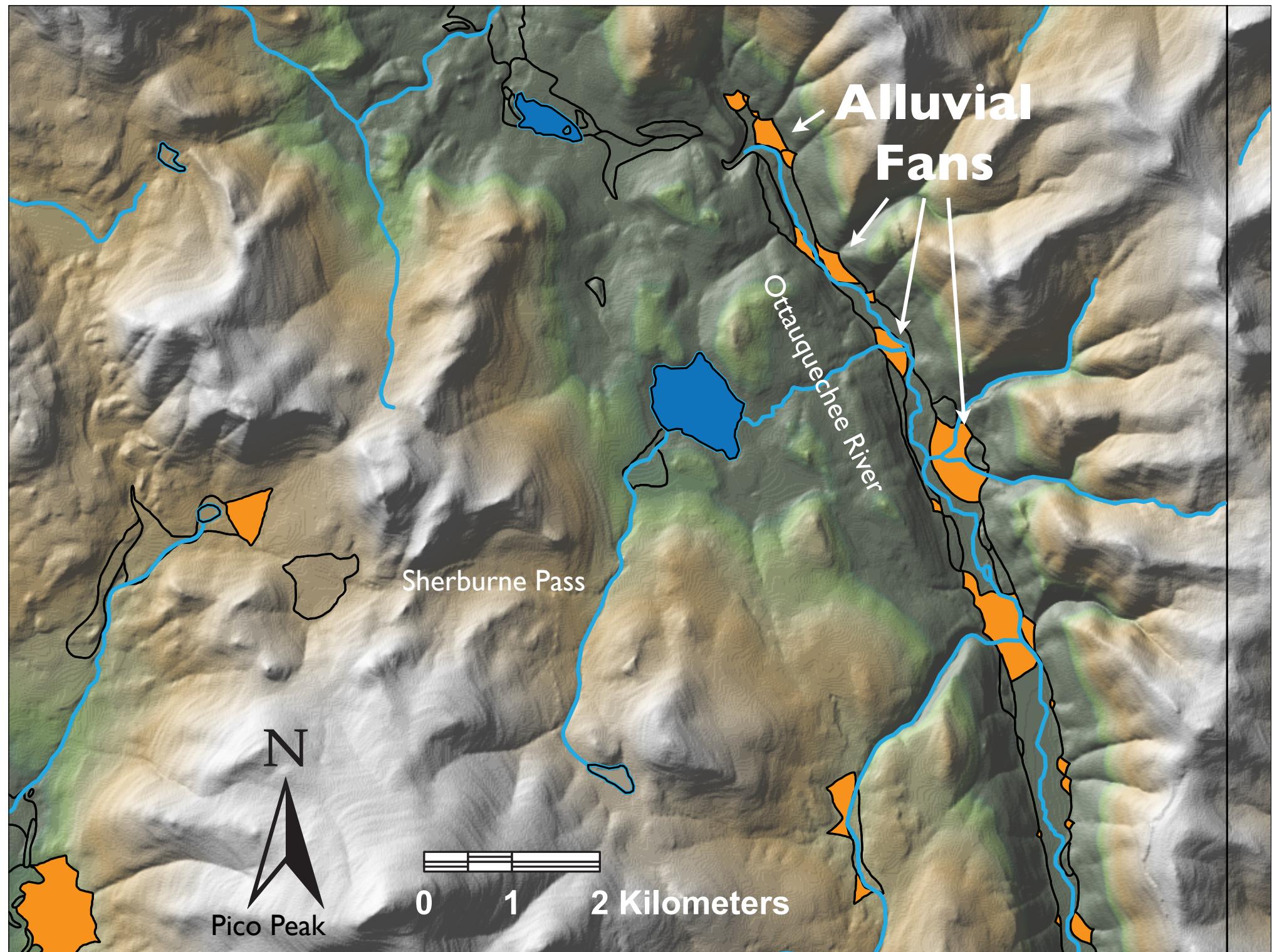


Failure plane (base of the rotational slide) occurred within the intraformational slump layer, ~10 m above river level.



Hydrologic setting of the Jeffersonville Landslides







Alluvial Fans in the Ottauquechee River Valley

- Guide the path of the Ottauquechee River
- Valley is largely filled with outwash sand and gravel
- Water table is very close to the surface
- Alluvial fans provide the largest areas of well-drained soils for historical development in the valley.
- Many of the streams feeding these fans deposited new aprons of sediment during Tropical Storm Irene.

AT Boardwalk was
largely destroyed during
Tropical Storm Irene

Kent Brook

Till

Alluvium

Alluvial Fan

Appalachian
Trail Boardwalk

Till







Acknowledgements

- Larry Becker & Marjie Gale:
Vermont Geological Survey
- Fred Larsen, George
Springston, Rick Dunn
- UVM Students
- Megan McGee, Andy Bosley,
Matt Guerino (Jeffersonville
Quad)
- Seth Jones, Sarah Fuller,
Simon Rupard, Andrew
McKinney (Burlington &
Colchester Quads)

