Bedrock Geologic Map of Woodstock, VT by P.J. Thompson

Description of Map Units

Intrusive Igneous Rocks

- mb — Basalt dikes (Mesozoic): tan-weathering, dark gray basalt, with feldspar phenocrysts.
- Dbg — Granite (Devonian) sills: light-colored two-mica granite.

Gile Mountain Formation (Devonian)

- Dg — Garnet schist with quartzite beds up to more than a meter thick; rare calc-silicate (Dg_c/s) and hornblende-fascicle schist (Dg_hb) horizons. Staurolite and kyanite occur locally.
- Dg_c/s — Calc-silicate.
- Dg_hb — Hornblende-fascicle schist horizons.

Standing Pond Volcanics (Silurian)

- Ssp — Dark blackish green amphibolite, feldspar-amphibole gneiss, quartzose granofels, local calc-silicate (Ssp_c/s) horizons and schist with giant amphibole fascicles and garnets up to 5cm across (garbenschiefer).
- Ssp_c/s — Calc-silicate.

Waits River Formation (Silurian)

- Sw — Interlayered garnet-bearing schist and >50% punky brown-weathering calc-silicate (sandy marble); Staurolite and kyanite occur locally in the northern part of town.
- Swmt — Schist with less than 10% calc-silicates, except as indicated by Swmt c/s. Graded beds are common near the top of the Waits River Formation.
- Swmt_c/s — Punky brown weathering, blue gray calc-silicate.
- Sws — Schist with less than 50% calc-silicates.
- Swsr — Rusty-weathering, fine-grained schist, found only in southeast.

Northfield Formation (Silurian)

- Sn — Dark gray to black, garnet-bearing phyllite and schist with rare, thin quartzite and calc-silicate beds (Sn c/s). Contains variable amounts of quartz, sericite (fine-grained white mica), biotite and garnet, with minor graphite and iron sulfides. Biotite typically occurs as tiny flakes lying across the foliation, and garnet forms porphyroblasts about one to three millimeters across.
- Sn_c/s — Calc-silicate: sandy calc-silicate blue-gray marble with distinctive garnet "carbuncles" in punky, brown-weathered outcrops.

Shaw Mountain Conglomerate

- Ss — Isolated outcrops of quartz conglomerate on west slopes of Long Hill.

Barnard Gneiss (Ordovician)

- Ob — Felsic gneiss interlayered with dark amphibole and biotite gneiss.

- Field Stations
- Strike and dip of bedding
- Strike and dip of graded bedding
- Strike and dip of overturned bedding
- Strike and dip of S2 foliation
- Strike and dip of S3 foliation
- qv — Thick quartz vein
- Cross Section Line
- VT Town Boundaries
- USGS 24K Quadrangle Boundaries

1:24,000

0 0.5 1 Miles

0 0.5 1 Kilometers

Contour Interval 20 Feet

Base map from U.S. Geological Survey.
Quadrangle names printed in blue.
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Grid overlay on map is Universal Transverse Mercator,
Zone 18N, NAD 27.
Date: September 2006

Magnetic declination
15.5 degrees west, 1968

BEDROCK GEOLOGIC MAP OF WOODSTOCK, VERMONT

by
Peter J. Thompson

Digitization and cartography by M. Gale and G. Farugia

2006

Calc-silicate overlying schist, Waits River Formation at Meetinghouse Hill.

Location Map

Research suppported by the Vermont Geological Survey, Dept. of Environmental Conservation, VT ANR.
This geologic map was funded in part by the USGS National Cooperative Mapping Program.
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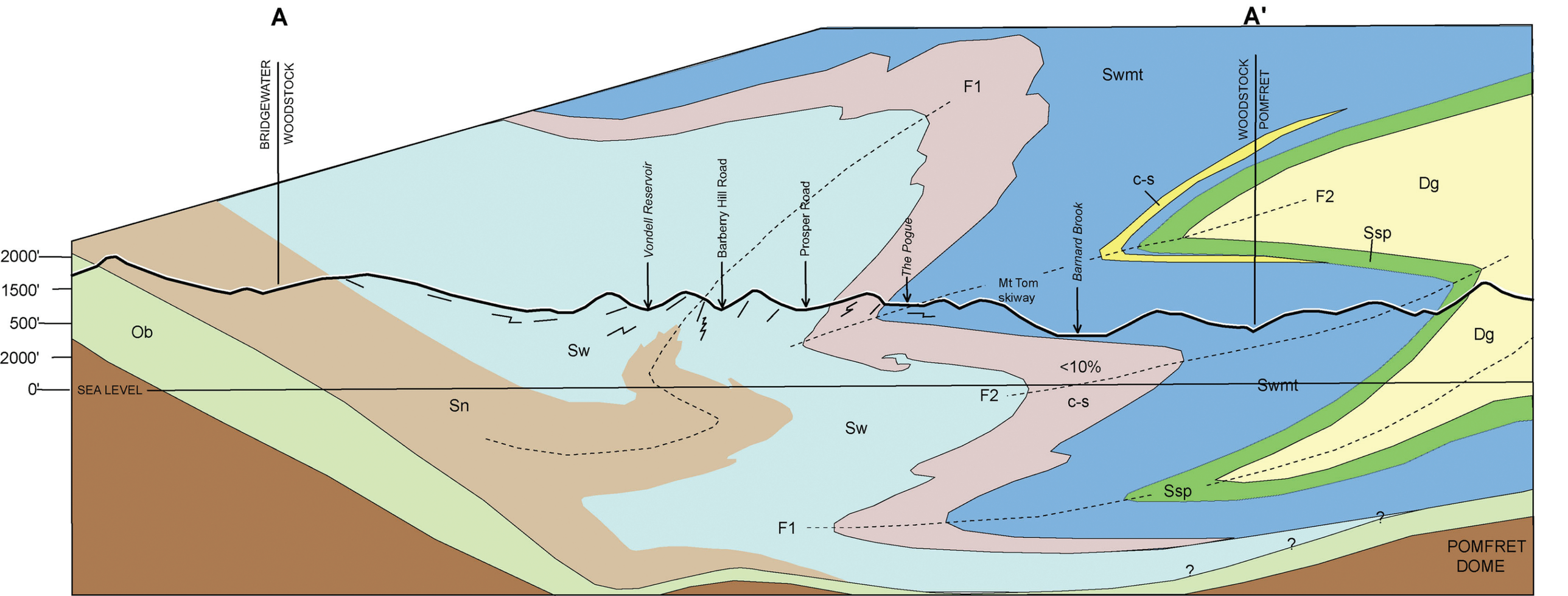
A
A'
BRIDGEWATER
WOODSTOCK
WOODSTOCK
POMFRET
Vondell Reservoir
Barberry Hill Road
Prosper Road
The Pogue
Barnard Brook
Mt Tom
skiway
2000'
1500'
500'
2000'
0'
SEA LEVEL
Ob
Sn
Sw
Sw
Sw
F1
F1
F2
F2
Swmt
Swmt
c-s
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Dg
Dg
Ssp
Ssp
POMFRET
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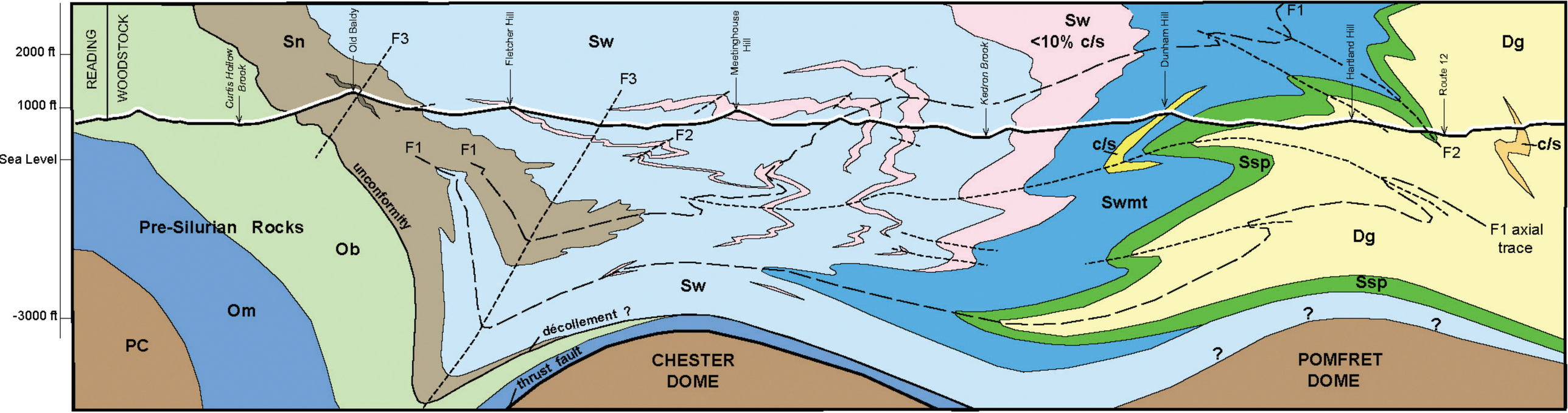
2000 ft
1000 ft
Sea Level
-3000 ft
READING
WOODSTOCK
Curtis Hollow Brook
Old Baldy
Fletcher Hill
Meetinghouse Hill
Kedron Brook
Dunham Hill
Hartland Hill
Route 12
Sn
Sw
Sw
<10% c/s
Dg
F1
F2
F3
F1
F1
F2
F3
c/s
c/s
Ssp
Swmt
Dg
Ssp
F1 axial trace
unconformity
Pre-Silurian Rocks
Ob
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thrust fault
CHESTER DOME
POMFRET DOME
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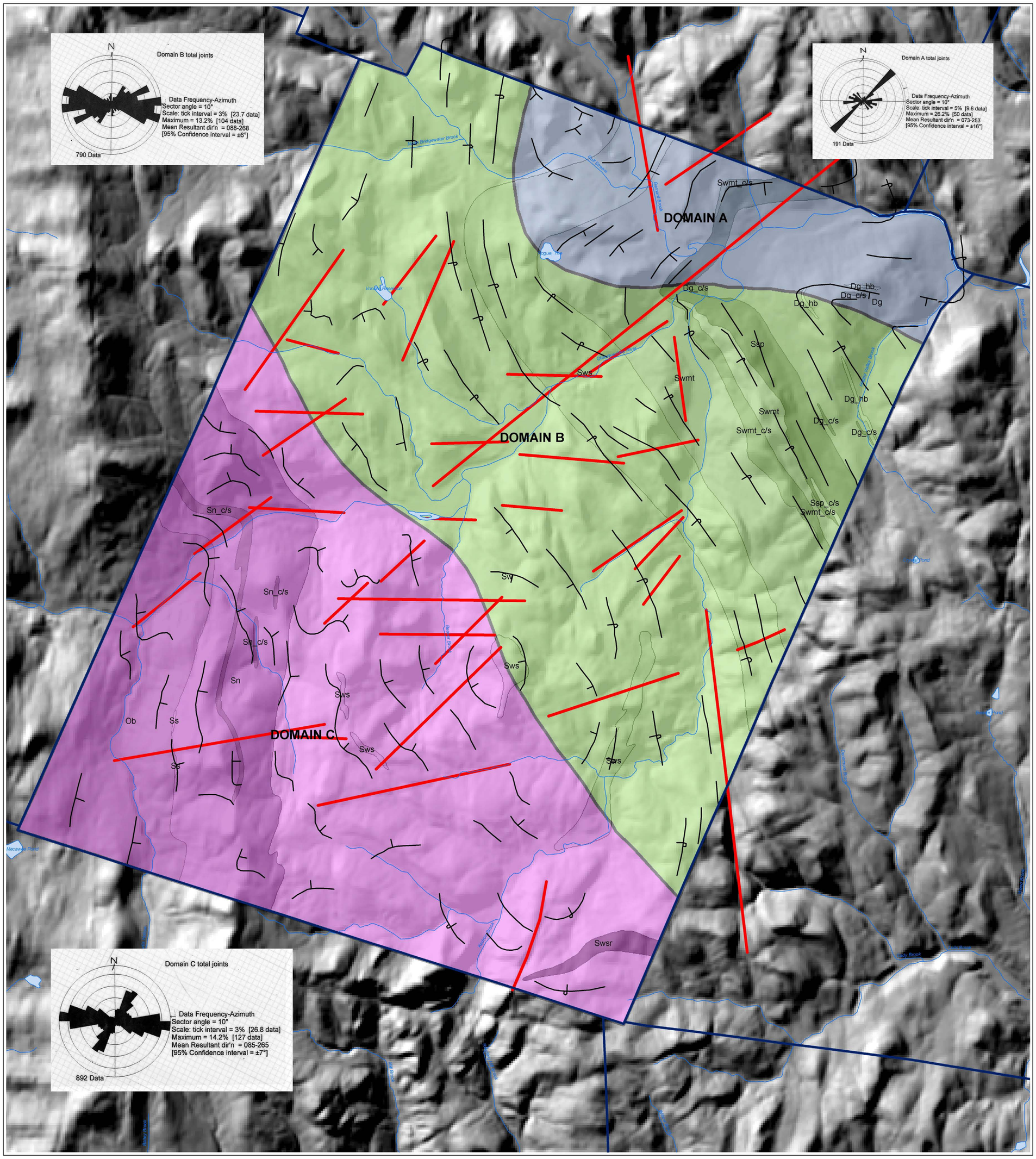

Legend

Lineaments (from DEM & DOQ): These are linear features which may or may not represent zones of closely-spaced joints. Those that are likely due to glacial flow are omitted.

Structural Domain

Three structural domains are defined based on the the F2 and F1 fold structures.

DOMAIN A: short limb of F2 fold, in which strikes are mostly towards the NE and dips are moderate to the SE. F2 inverts the overturned F1 limb such that bedding is upright (see plate 2). Folds and lineations plunge south.

DOMAIN B: This is the long limb of an F2 fold and an overturned F1 limb. Strikes are mostly NW and dips are variable, but Domain B includes the zone of steep dips (Plate 4) in the overturned F1 anticline axial region. Folds and lineations plunge south.

DOMAIN C: Mostly upright F1 limb. Strikes are variable; dips to the NW, N and E. Folds and lineations plunge north.

Bedding Form Lines: These lines depict the general orientation (Strike and dip) of bedding.

Bedrock Contacts

Rivers and Streams

Explanation

Geologists refer to cracks in rocks, many of which may be conduits fro water, as joints. The most interesting ones for water transmission are the long through-going joints and the shorter joints that abut or cross bedding planes. Some joints measured in rock outcrops are aligned with lineaments visible on air photographs. The strikes of total joints measured arre plotted on three rose diagrams corresponding to the structural domains.

Many joints strike perpendicular to bedding and S1 foliation and therefore parallel to the maximum dip direction, as seen in the rose diagrams.The flow direction would be toward lower hydraulic head, which might be either in the down-dip or up-dip directions (generally east-west).

Intersecting joints in the Barnard Gneiss result in rectangular blocks that break away from the outcrop. The joints seem to be widely spaced but through-going. Some of the highest yielding bedrock wells in Woodstock are found in areas underlain by the gneiss (SW area of Town).

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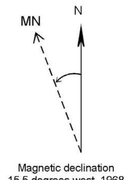
0 0.5 1 2 Miles

Contour Interval 20 Feet



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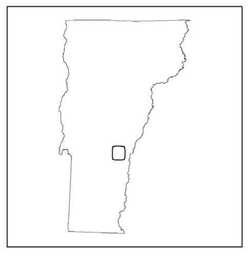

Location Map

STRUCTURAL DOMAINS, WOODSTOCK, VERMONT

by
Peter J. Thompson

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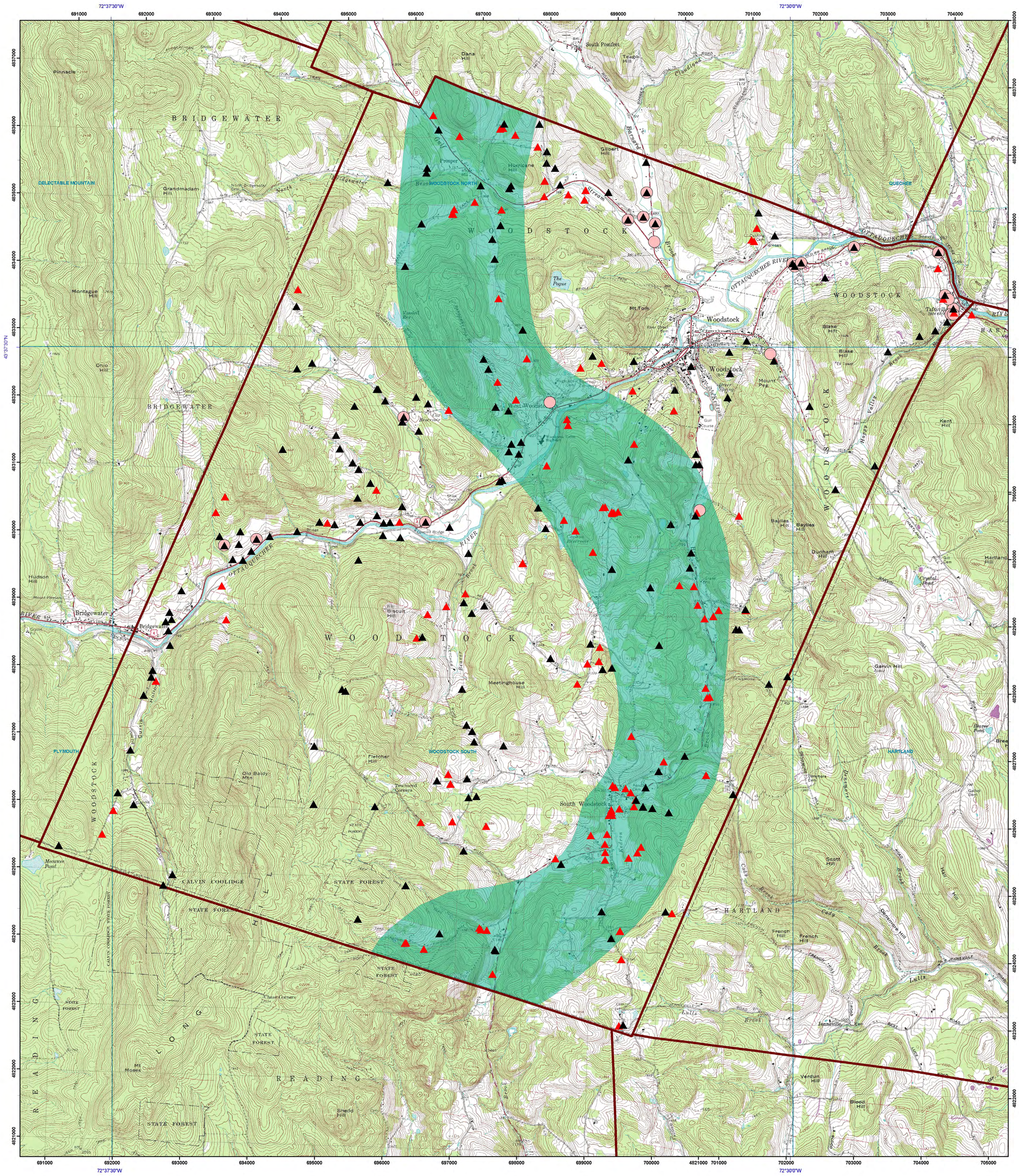

Legend

- High Yield Wells: Yield greater than 20 gpm
- Low Yield Wells; Yield less than 2 gpm
- Sand and Gravel Wells
- Zone of steeply dipping rock layers

Roads
- Interstate
- US Highway
- Vermont State Highway

- Town Boundary
- USGS 24K Quadrangle Boundaries

Explanation

This map shows high yield wells, low yield wells, and wells in sand and gravel. Where the stratigraphy is nearly vertical (highlighted in teal), wells drilled in bedrock may provide either exceptionally low or high yields depending on whether the wells are in sandy marble or schist. Where the stratigraphy is more nearly horizontal or inclined at moderate angles, bedrock wells will penetrate alternating layers of schist and calc-silicate* and thus be less likely to have low yields.

*A calc-silicate is a metamorphic rock containing mainly calcium-bearing silicate minerals such as diopside. It is formed by metamorphism of an impure limestone or dolostone.

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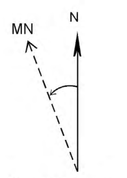

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Steeply Dipping Bedrock Zone and Well Yields, Woodstock, Vermont

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Digitization and cartography by Marjorie Gale

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