Physical Setting

The Town of New Lebanon is a rural town of approximately 36 square miles (Figure 2) in the northeast corner of Columbia County, New York, bordered on the north by the Rensselaer County Town of Stephentown, on the west and south by the Columbia County towns of Chatham and Canaan, and on the east by the Berkshire County Town of Hancock, Massachusetts.

The New Lebanon population was 2305 at the time of the 2010 US Census, not including part-time and weekend residents. Residences are somewhat clustered in the four hamlets—West Lebanon, New Lebanon Center, New Lebanon, and Lebanon Springs—and are also widely distributed along roads throughout the town. The overall population density is approximately 36 people per square mile.

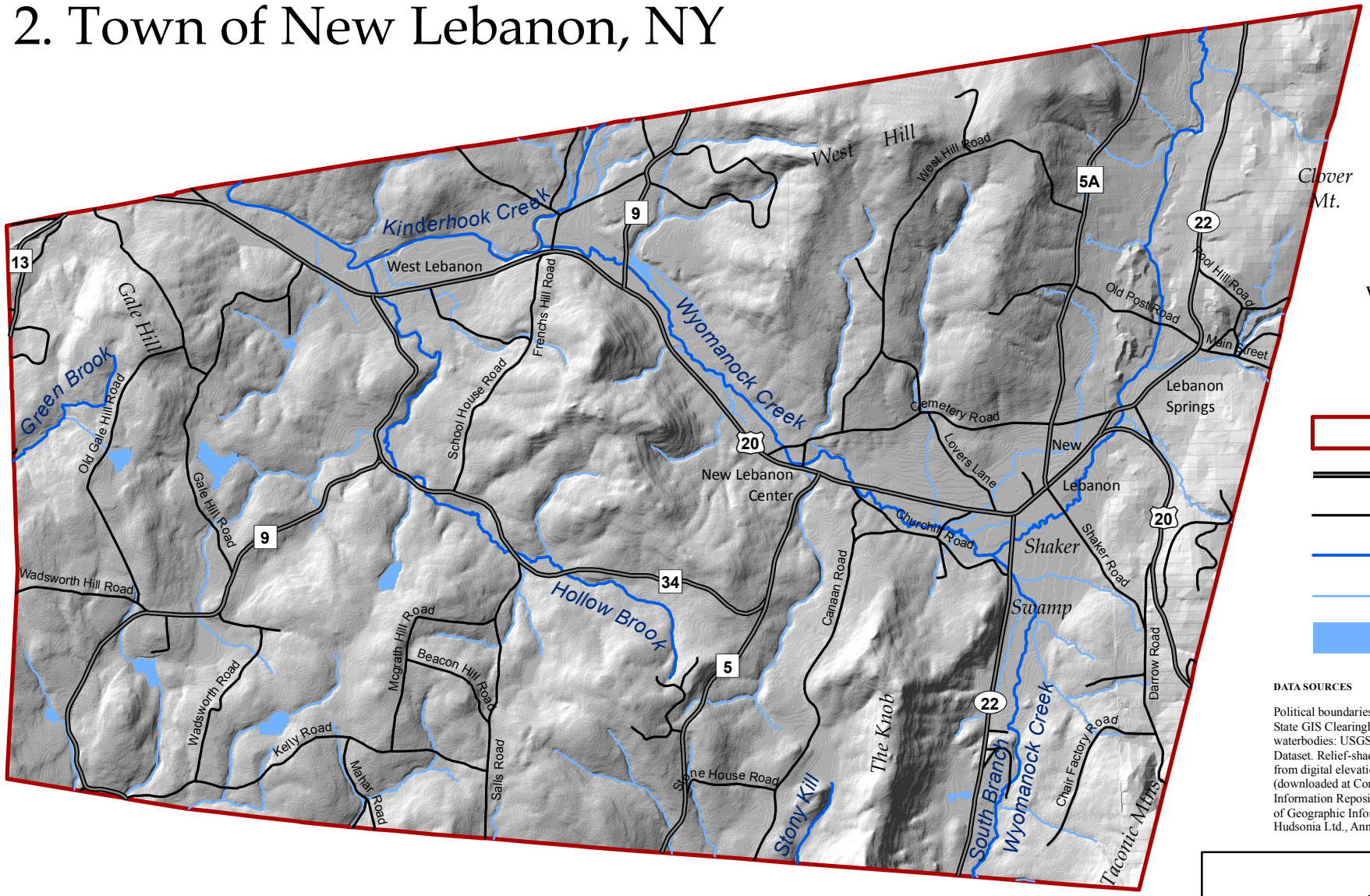
Much of New Lebanon is within the Taconic Mountains and foothills (figures 3 and 4), a range of hills straddling the eastern New York State boundary with Connecticut, Massachusetts, and Vermont, and stretching from the Hudson Highlands in southern Dutchess County, NY, to the Green Mountains in west-central Vermont. The Taconics are in the "New England Province" physiographic region and are part of the Appalachian Mountain range.

The Nature Conservancy considers the Berkshire-Taconic region to be one of the "Last Great Places" in the world, and describes it as "more than 155,000 acres [that] contains one of the most spectacular, healthiest, and most diverse blocks of intact forest in southern New England. It is home to more than 150 rare and endangered species, and its globally rare calcareous wetlands provide clean drinking water for thousands of citizens" (The Nature Conservancy 2017).

The New Lebanon landscape is dominated by high hills interspersed with lower rolling hills and the broad valleys of the Wyomanock and Kinderhook creeks. Elevations range from ca. 590 ft above sea level (asl) where Kinderhook Creek crosses the boundary with Stephentown, up to ca. 1771 ft asl at the extreme southeast corner of town. Other high elevations are on The Knob (1614 ft), West Hill (1594 ft), and Clover Mountain (1457 ft) (Figure 4).

The bedrock was mapped by Fisher (1970) as largely **phyllite** in some of the high eastern hills, **marble** in the Wyomanock and Stony Kill valleys, a combination of phyllite, **schist**, and **limestone** throughout much of the town, and **shale**, **argillite**, **quartzite**, and **graywacke** in the northwestern corner (Figure 5). The **surficial geology** is dominated by glacial **till** throughout much of the town, but with **outwash** and **kame** deposits in the major valleys, and large areas of recent **alluvium** along parts of Wyomanock and Kinderhook creeks (Cadwell et al. 1986) (Figure 6).

2. Town of New Lebanon, NY



N
W E
S

New Lebanon
Main road
Local road
Named stream
Other stream
Waterbody

DATA SOURCES

Political boundaries and roads: New York State GIS Clearinghouse. Streams and waterbodies: USGS National Hydrography Dataset. Relief-shaded topography generated from digital elevation models by the USGS (downloaded at Cornell University Geospatial Information Repository) and by the MA Office of Geographic Information. Map created by Hudsonia Ltd., Annandale, NY.

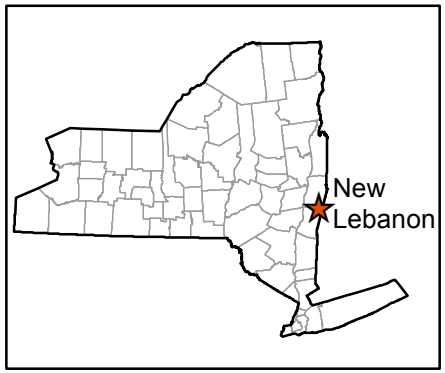


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Figure 2. Town of New Lebanon, Columbia County, New York. New Lebanon Natural Resource Conservation Plan, 2017.

0 0.5 1 2 Miles

3. Topography

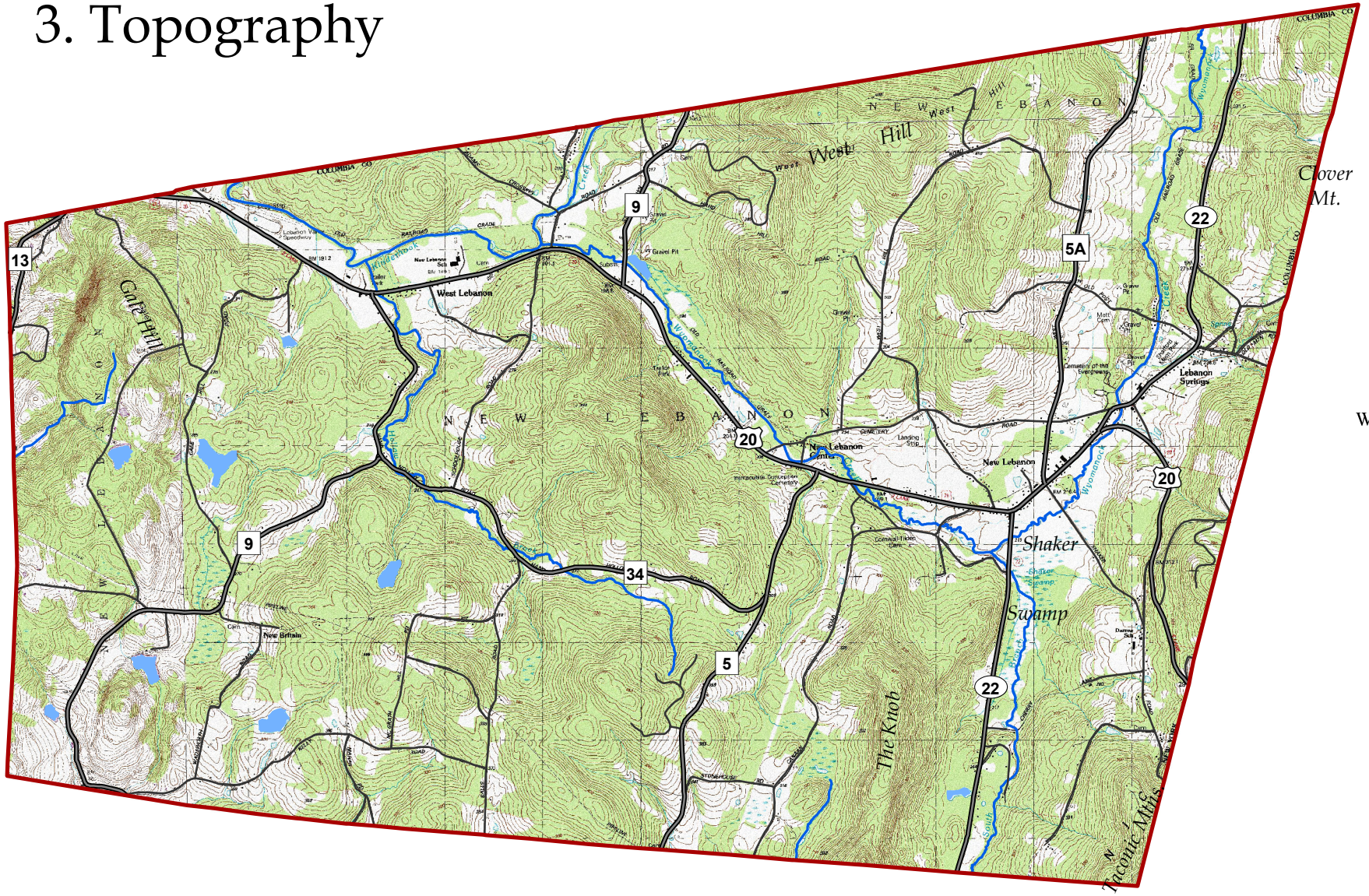

Figure 3. USGS 7.5-minute topographic maps in the Town of New Lebanon, Columbia County, New York, overlain with roads, streams, and waterbodies. New Lebanon Natural Resource Conservation Plan, 2017.

DATA SOURCE

USGS 7.5-minute topographic maps (Stephentown Center, Hancock MA-NY, East Chatham, Canaan, and Pittsfield West quadrangles) obtained from Cornell University Geospatial Information Repository (http://cugir.mannlib.cornell.edu). See Figure 2 for roads, streams, and waterbodies. Map created by Hudsonia Ltd., Annandale, NY.

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4. Elevation Zones

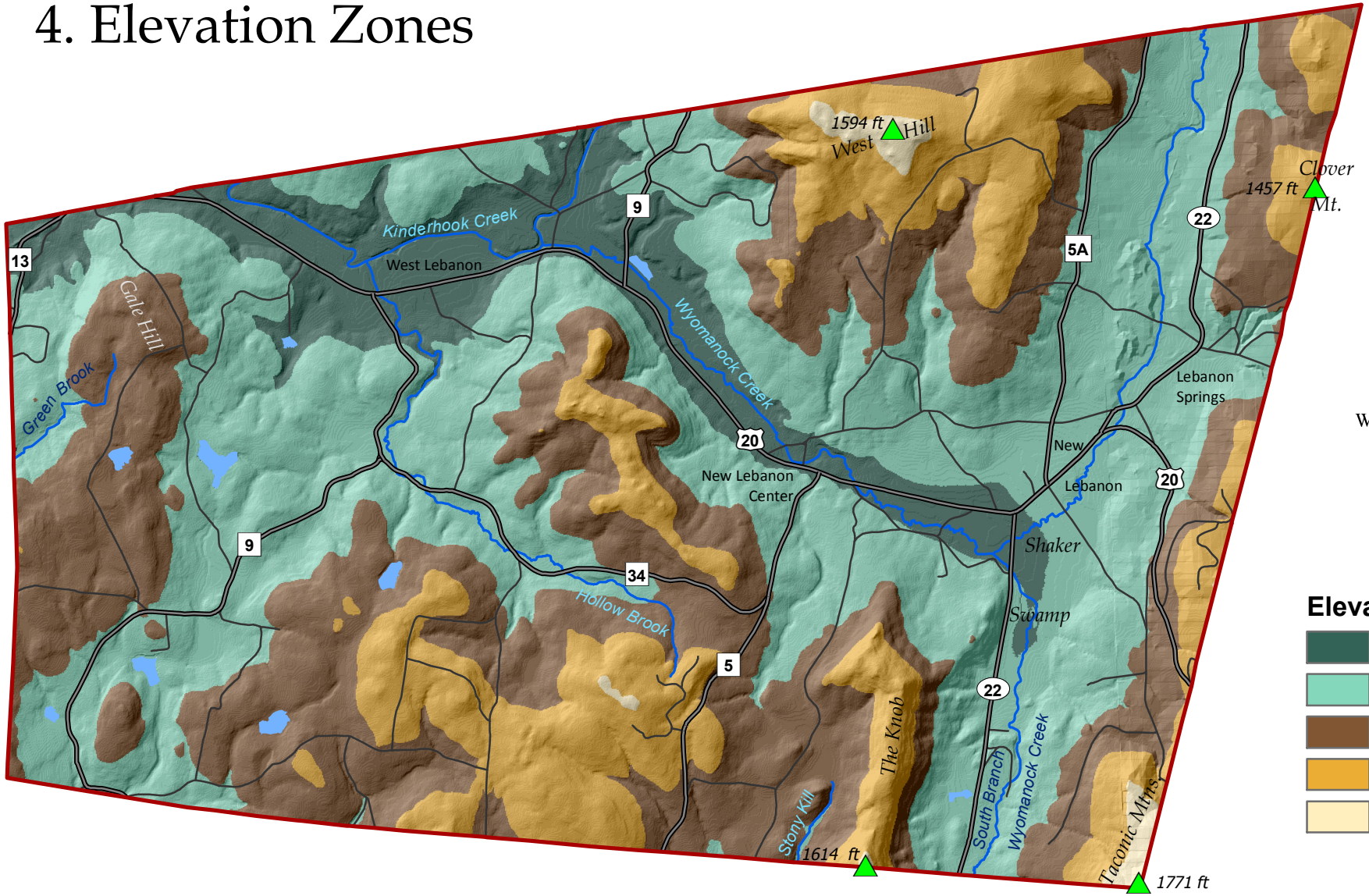

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Figure 4. Relief-shaded elevation zones in the Town of New Lebanon, Columbia County, New York. New Lebanon Natural Resource Conservation Plan, 2017.

0 0.5 1 2 Miles

DATA SOURCES

See Figure 2 for relief-shading, roads, streams, and waterbodies. Map created by Hudsonia Ltd., Annandale, NY.

5. Bedrock Geology

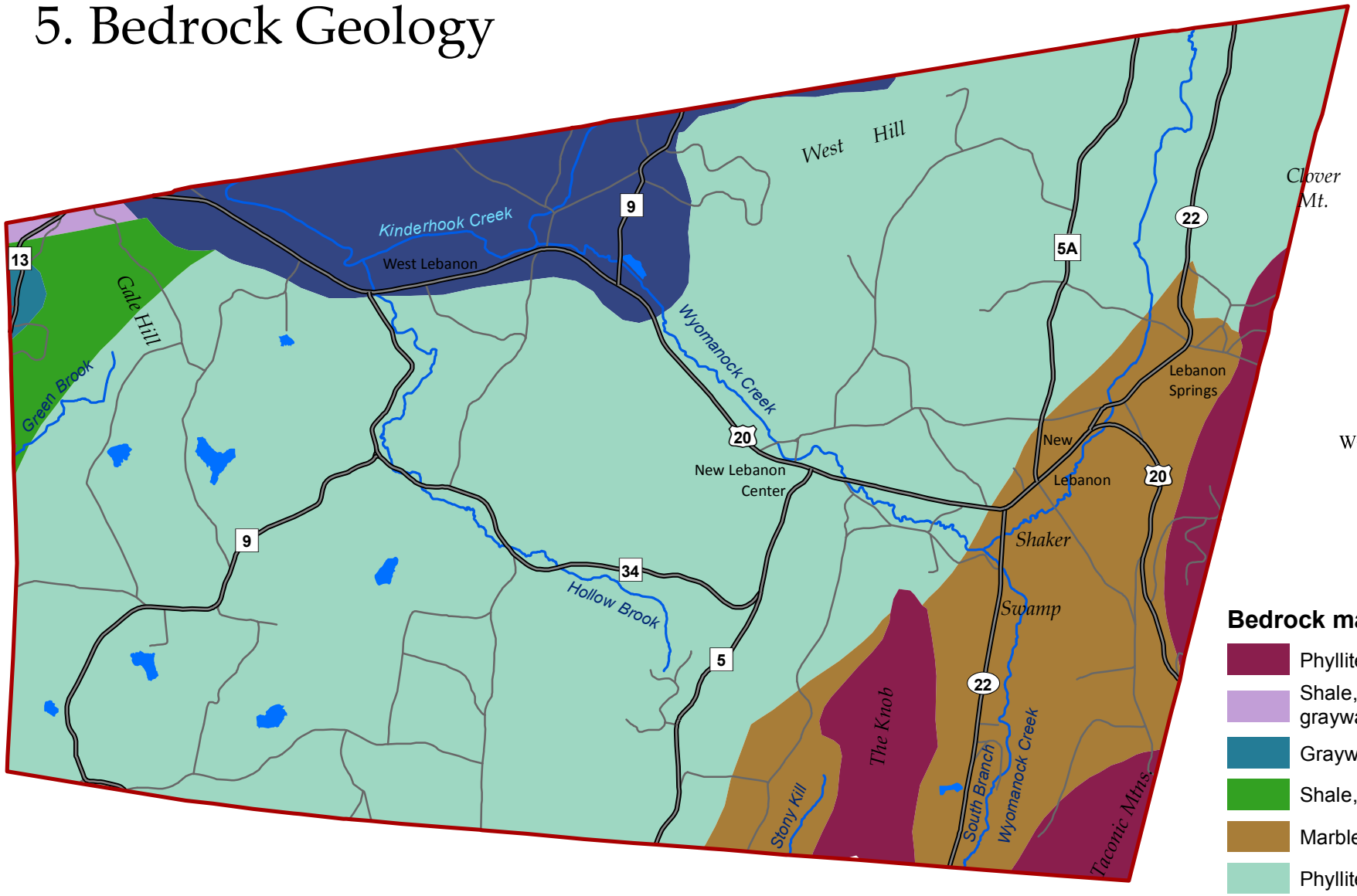

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Figure 5. Generalized bedrock geology of the Town of New Lebanon, Columbia County, New York. New Lebanon Natural Resource Conservation Plan, 2017.

0 0.5 1 2 Miles

DATA SOURCES

Bedrock geology from Fisher et al. (1970). GIS data modified in 1999; obtained from New York State Museum (http://www.nysm.nysed.gov/gis/). Map created by Hudsonia Ltd., Annandale, NY.

6. Surficial Geology

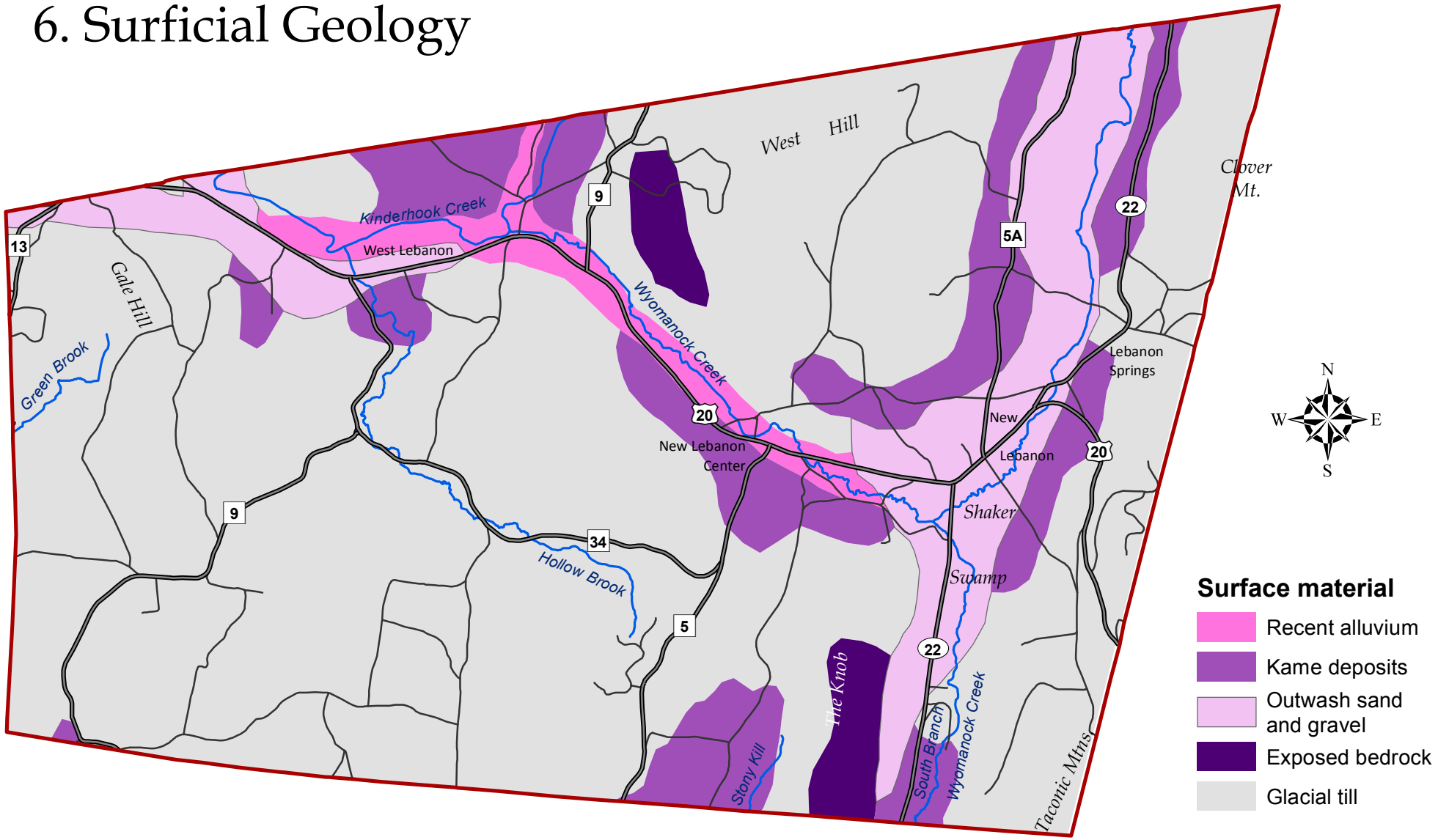

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Figure 6. Surficial geology of the Town of New Lebanon, Columbia County, New York. New Lebanon Natural Resource Conservation Plan, 2017.

0 0.5 1 2 Miles

DATA SOURCES

Surficial geology from Cadwell et al. (1986). GIS data modified in 2000; obtained from New York State Museum (http://www.nysm.nysed.gov/gis/). Map created by Hudsonia Ltd., Annandale, NY.

Due to the limestone and marble bedrock underlying large areas, many of the soils in New Lebanon are **calcareous** (calcium-rich) (Figure 7), and this helps to explain the presence of some of the distinctive habitats in the town. The soils on all but the lowest elevations tend to be shallow (less than 20 inches depth over bedrock), and some of the hill summits and steep slopes have exposed bedrock ledges (Figure 8).

The calcium-rich bedrock and soils explain the presence of some of New Lebanon's unusual habitats.

The entire town is in the **watershed** of Kinderhook Creek, which rises in Hancock, Massachusetts, flows generally west and southwest through Stephentown, dips briefly into New Lebanon and runs southwesterly through Columbia County, ultimately reaching the Hudson River via Stockport Creek north of the City of Hudson, New York. The major New Lebanon tributaries to the Kinderhook are Wyomanock Creek, which drains most of the eastern half of town, and Hollow Brook the center west. Smaller basins include the Stony Kill along the southern edge of town, Green Brook at the western edge, and Black River at the northern edge (Figure 9).

The broad valleys of the Wyomanock and Kinderhook creeks hold several large **wetlands** (Figure 10), and other wetlands, large and small, are distributed throughout the town, including many not shown in Figure 10.

Agriculture was prominent in New Lebanon's economic and cultural history since European settlement, but declined precipitously in the latter half of the 20th century. Today over 70% of the land area is forested (Vispo 2014) (figures 11 and 12), but a resurgence of small farm enterprises is helping to carry on the agricultural tradition in ways that fit the local and regional markets of the early 21st century.

Hayfield, oldfield, and shrubland. Claudia Knab-Vispo © 2017

Summer daytime temperatures usually range from the upper 70s to mid-80s °F in Columbia County (NCEI 2017). On a few days from late May to mid-September, highs are only in the 60s °F or reach into the 90s °F. The average length of the frost-free season in New York State is approximately 145 days in New Lebanon, with the first frost typically in early October and the last frost in mid-May (NRCC 2017).

Precipitation in Columbia County is fairly uniformly distributed throughout the year—there are no distinctly dry or wet seasons on a regular annual basis. The least precipitation is typically in winter, but any month has the potential for the lightest or heaviest monthly precipitation within a calendar year at a given location (NCDC 2017). Average monthly precipitation in summer is approximately four inches in Columbia County, but the amount can vary widely from one place to another. Table 1 gives the normal monthly precipitation and temperatures for a weather station in the Village of Valatie, the nearest NOAA station to the Town of New Lebanon.

Table 1. Approximate climate normals (30-year averages) for the Town of New Lebanon, 1981-2010. Data are from the NOAA National Centers for Environmental Information weather station at the Village of Valatie, Columbia County, NY, the closest NCEI station to the Town of New Lebanon.

Month	Precipitation (in)	Minimum Temperature (°F)	Average Temperature (°F)	Maximum Temperature (°F)
Jan	2.10	14.6	23.8	33.1
Feb	1.88	17.4	27.2	36.9
Mar	2.90	25.8	35.8	45.7
Apr	3.63	37.0	48.0	59.0
May	3.95	47.2	58.9	70.5
Jun	4.35	56.7	67.8	78.8
Jul	3.95	61.0	72.3	83.5
Aug	4.13	59.6	70.7	81.8
Sep	3.88	51.3	62.7	74.2
Oct	4.05	39.5	50.9	62.2
Nov	3.26	32.2	41.4	50.6
Dec	2.55	21.6	30.1	38.6

Rainfall is usually adequate during the growing season for commercial crops, lawns, gardens, and natural habitats. Severe droughts are rare, but minor droughts are not uncommon, and can deplete well water supplies, cause moisture stress for crops and natural vegetation, and increase the possibility of wildfires.

In the past, New York State and Columbia County have had abundant snowfall, with more-or-less continuous snow cover from about mid-December to mid-March, and maximum depths usually occurring in February. Nor'easter storms occur in most winters, and snow yields of 12-24 inches or more from such storms are not uncommon (NCDC 2017). Snowfall patterns have been changing noticeably over the last 20 years, however, when many winters have seen limited snow cover and prolonged periods of bare ground.

Major floods can happen in any season and, although they have been relatively infrequent in the past, we have seen several in the last decade associated with large storms. The greatest potential and frequency for floods is typically in the early spring when substantial rains combine with rapid snowmelt to produce large volumes of runoff. Recent hurricanes and tropical storms (Irene, Lee, and Sandy), however, have produced record-making floods in the late summer and fall.

Small stream in a forested wetland, DeLano property. Peg Munves © 2017

7. Potentially Calcareous Soils

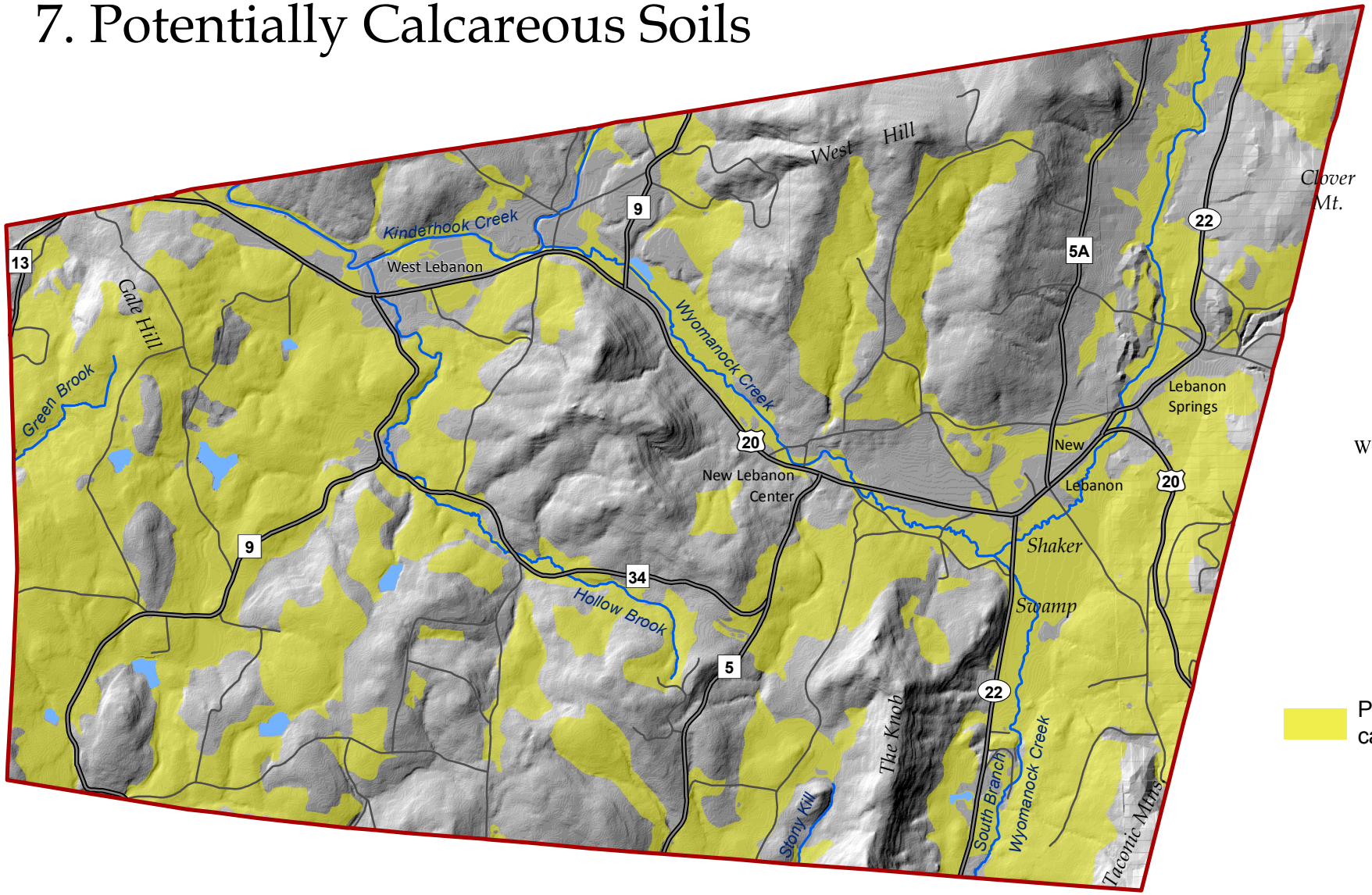

Figure 7. Potentially calcareous soils in the Town of New Lebanon, Columbia County, New York. New Lebanon Natural Resource Conservation Plan, 2017.

0 0.5 1 2 Miles

DATA SOURCES

Soils data acquired from USDA Natural Resources Conservation Service and categorized as potentially calcareous (soil units with reaction [pH] of greater than 6.5 in the surface, topsoil, or substratum layers) by Nava Tabak (Scenic Hudson). See Figure 2 for relief-shading, roads, streams, and waterbodies. Map created by Hudsonia Ltd., Annandale, NY.

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8. Areas of Potential Bedrock Outcrops

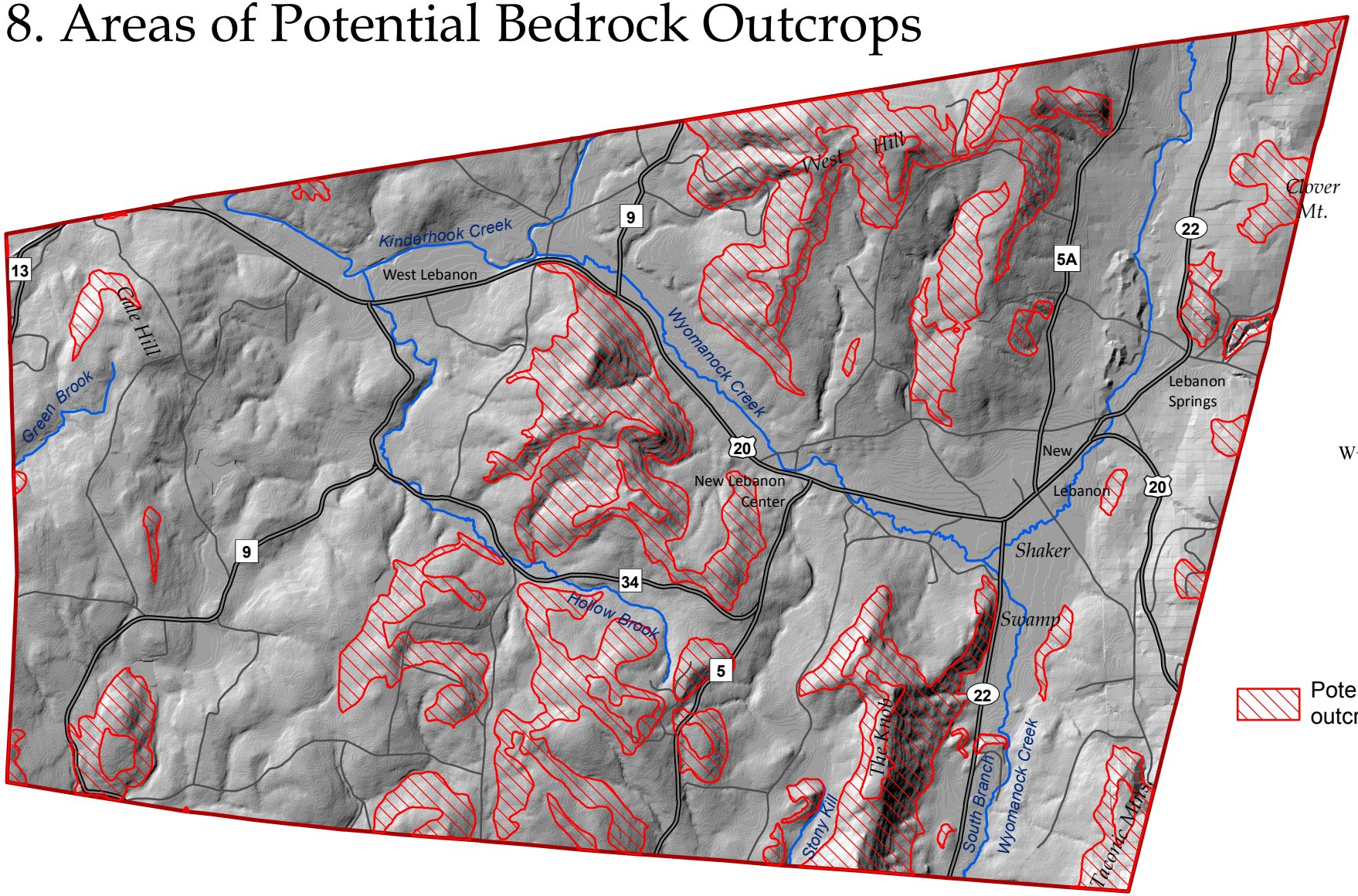

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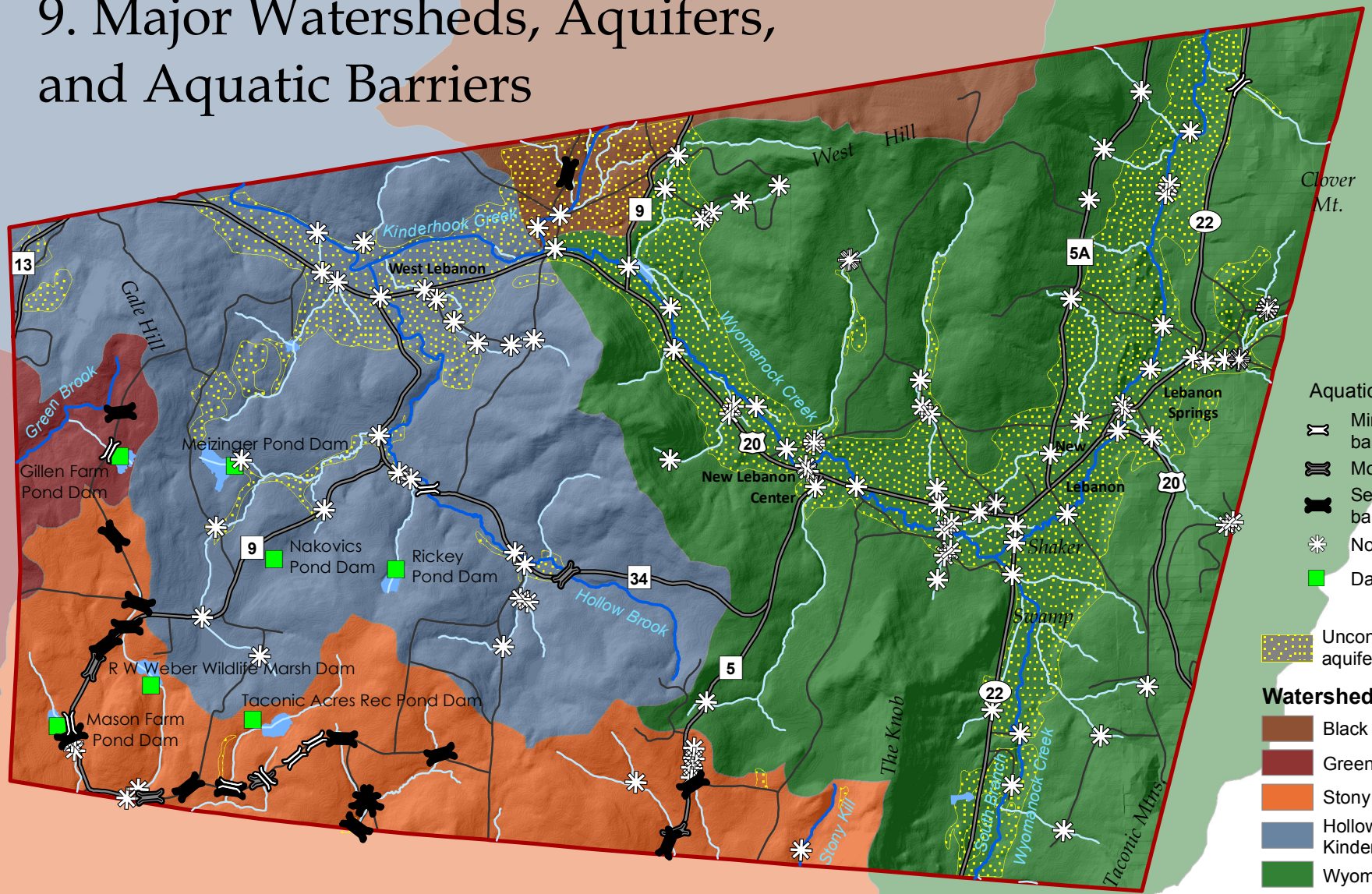
Figure 8. Areas of both steep slopes and shallow soils in the Town of New Lebanon, Columbia County, New York. These are the places most likely to have areas of exposed bedrock. New Lebanon Natural Resource Conservation Plan, 2017.

DATA SOURCES

Soils data acquired from USDA Natural Resources Conservation Service; categorized as steep (soil units with suffixes of D, E, or F: slopes greater than [10-]15%) and shallow (depth to bedrock of ≤ 20 inches) by Nava Tabak (Scenic Hudson). See Figure 2 for relief-shading, roads, streams, and waterbodies. Map created by Hudsonia Ltd., Annandale, NY.

9. Major Watersheds, Aquifers, and Aquatic Barriers



Aquatic barriers
- Minor or insignificant barrier
- Moderate barrier
- Severe or significant barrier
- Not yet evaluated
- Dam

Unconsolidated aquifer

Watersheds
- Black River
- Green Brook
- Stony Kill
- Hollow Brook-Kinderhook Creek
- Wyomanock Creek

0 0.5 1 2 Miles

Figure 9. Major watersheds, unconsolidated aquifers, and aquatic barriers in the Town of New Lebanon, Columbia County, New York. New Lebanon Natural Resource Conservation Plan, 2017.

DATA SOURCES

Watersheds from the USGS National Hydrography Dataset. Unconsolidated aquifers from LaFleur and DeSimone (1991). Aquatic barriers from the North Atlantic Aquatic Connectivity Collaborative (NAACC) and the UMass Stream Continuity Project; acquired from NAACC. See Figure 2 for relief-shading, roads, streams, and waterbodies. Map created by Hudsonia Ltd., Annandale, NY.

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Land Use History

The Mahican people had a village in the area that is now West Lebanon and other small villages in nearby areas of today's Columbia and Rensselaer counties (Kevin Fuerst, pers. comm.). They roamed widely over the land, hunting and foraging for food and fiber, for materials for tool-making and construction, and for other resources that supported their communities: ash trees for basket weaving; dogbane, stinging nettle, milkweeds for making twine, rope, and nets; tendons for bow strings; rawhide for lacing and burden straps; sinew for sewing and beading; bone for fish hooks, awls, knife handles, and dart heads; deer hide for clothing and shelter; and stone for a variety of tools (Kevin Fuerst, pers. comm.). Although the Mahicans were not primarily farmers, they occasionally cleared forests by fire to attract deer and other game to the openings, and perhaps for small-scale agriculture, but widespread clearing of large areas did not occur here until European settlers began clearing for agriculture.

A Mahican is said to have introduced Europeans to the warm spring in the mid-1700s (Ellis 1878). The first Europeans settled in New Lebanon in the mid-1700s, and initially occupied the hills which were "originally covered with a light growth of the common hard timber, birch, and occasional evergreens…[T]he valleys, and especially along the streams, were more densely wooded, there being in some localities heavy forests of pine" (Ellis 1878). Subsistence and commercial production from the land soon included timber, grains, vegetables, fruits, and livestock. Water-powered grist mills and saw mills were established on streams throughout the area to turn the timber and grains into lumber, meal, and flour for local use and for export to other regions. The Shakers arrived in the late 1700s and established a community on Mount Lebanon where they engaged in furniture-making and agriculture, producing milk, meat, and wool from domestic livestock, and fruits, vegetables, herbs, grains, and seeds (NLCAC 2014). At its height, the Shaker community had 550 members (Stott 2007), employed many non-Shaker workers, and worked 2000 acres of field and forest.

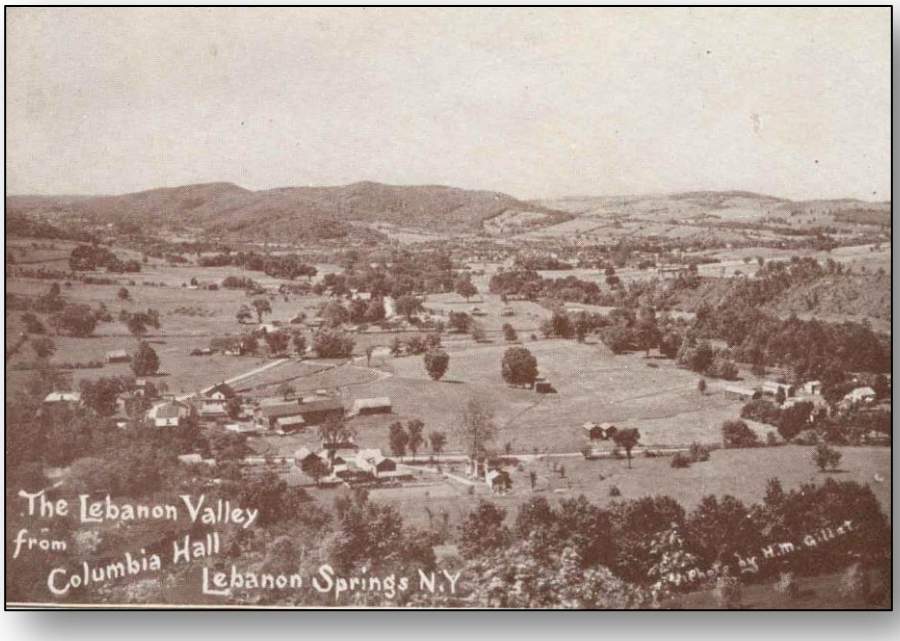
MAHICAN VS. MOHICAN

"Mahican" and "Mohican" are interchangeable anglicized names for the Eastern Algonquian Native American tribe that occupied the northern Hudson Valley, western Massachusetts and southern Vermont prior to European settlement of the region. The Mahicans called themselves *Muheconneok*, their name for the Hudson River. They co-existed here with Europeans for many decades, but were forcibly relocated to reservations in Wisconsin in the early 19th century. The Mahicans/Mohicans are distinct from the Mohegans, an Eastern Algonquian tribe of Connecticut.

Sources: http://www.native-languages.org/mohicans_words.htm; https://en.wikipedia.org/wiki/Mahican; http://pequotmuseumlibrary.blogspot.com/2009/06/frequently-confused-tribal-designations.html

In 1818 the town was split off from Canaan and officially established as New Lebanon (Ellis 1878). In 1823 John Gilbert, who had learned to prepare medicinal extracts while working with the Shakers, partnered with Elam Tilden to establish the Tilden Pharmaceutical Company. The company initially purchased medicinal herbs grown or gathered by the Shaker community (Ellis 1878), but they also grew herbs on their own land, and reportedly employed local farmers and other residents to gather material from the New Lebanon landscape. "All the herbs, barks, and roots of indigenous growth are gathered by those who have experience and each and every article is brought into the laboratory at the season when it contains most of medicinal value. A large amount of these materials are gathered by the farmers and others over a large section of country around the laboratory, and, in addition to such supplies, the Messrs. Tilden have under cultivation some 40 acres near their premises" (source unknown; quoted in Ellis [1878]). The company reduced its use of local and "indigenous growth" over time, but continued operating until 1961 (Stott 2007).

By 1826 the Mahicans had left the region (Kevin Fuerst, pers. comm.), and by 1835 much of the forested land had been cleared for agriculture, including large areas for sheep pasture which could exploit the steeper terrain and higher elevations that were impractical for other uses. In 1878 Franklin Ellis wrote "The hills are generally cultivated to the summit, and those having a southern exposure are very fertile." Beef, dairy, sheep, fruit, and vegetable farming and associated businesses were prominent through the mid-20th century (NLCAC 2014), keeping the landscape largely open—in pasture, hayfield, cropfield, or orchard—but the sharp decline in local agriculture since then has led to gradual reversion to forest, and some former farmland has been converted to residential or other human uses.



Former open landscape of Lebanon Valley, early 1900s. Photo courtesy of Lebanon Valley Historical Society.

The former stage route between Albany and Boston passed through the town, generally following the Wyomanock Creek (Ellis 1878), but long-distance travel and commerce were much expanded by the railroad which began operating through New Lebanon in 1852, initially connecting westward to the Hudson port via Chatham, and by 1901 extending east to Bennington, Vermont. The winding route was the source of the local name for this line—the Corkscrew Division of the Rutland Railroad (Flansburg 2002).

There are many farms operating in the town today, but the kinds and scale of farming have changed much over the last 2.5 centuries. Dairy farming was prominent in the late 19th and 20th centuries, but today no commercial dairy farms remain. Commercial livestock farms include beef cattle, dairy heifers (raised for a Copake farm), sheep, pigs, and poultry. Pastures and cropfields of hay, corn, and soybeans feed those livestock and out-of-town farms. A number of small vegetable farms serve local and distant farm markets, restaurants, and other outlets, as well as on-farm vegetable stands and Community Supported Agriculture members (see below).

Open landscape, 1942 (top) and same area largely forested in 2010 (bottom) in the McGrath Hill-Beacon Hill Road vicinity.