Kame. Stratified and unstratified sand, gravel and boulders with variable silt.

Fluvial Terrace. Fine sand, silt and gravel generally less than 5 meters thick

Till. Ice-derived, unsorted, and unstratified hardpan silt, boulders, gravel and

Saprolite. Deeply, thoroughly weathered bedrock altered under climatic

Outwash. Well sorted gravel and sand typically greater than 5 meters thick.

Kame Terrace. Stratified and unstratified gravel, sand, boulders and some

Holecene/Pleistocene

Fluvial Terrace. Fine sand, silt and gravel generally less than 5 meters thick

Lake Clay. Fine grained sand on fluvially deposited deposits of till.

Pleistocene

Lake Clay. Fine grained sand on fluvially deposited deposits of till.

Pleistocene

Lake Clay. Fine grained sand on fluvially deposited deposits of till.

Pleistocene

Lake Clay. Fine grained sand on fluvially deposited deposits of till.
Recharge Potential

Areas of highly permeable overburden that are believed to be comparatively thick and persistent based upon well logs and the character of the deposits. The extensive kame moraine and outwash with adjacent kamic areas have the highest potential to recharge the bedrock aquifer. A kame moraine consists of predominantly fluvial sediment that may have lenses and interbeds of low permeability till that are typically not laterally extensive. Outwash is a highly permeable fluvial deposit of gravel and sand with little or no impermeable sediment. Adjacent kamic deposits may have both permeable and impermeable interbedded sediments.

Areas of intermediately permeable materials including kamic sediment, outwash, moraine, eroded till, fluvial terraces and alluvium. The kamic areas are likely the most permeable sediment of this category and consist largely of gravel and sand. The area of outwash included in this group has an unknown thickness and may overlie bedrock or till. The small morainal feature is not well expressed and may be more kame moraine in sediment texture. Eroded till punctuated by several bedrock exposures suggests comparatively easy recharge to the bedrock aquifer. Fluvial terraces and alluvium consist of gravel, sand and silt in variable proportions with highly variable surface layer permeability.

Areas of thin till overlying bedrock. The upper meter or so of the till is typically weathered to a more permeable texture than the underlying till. Weathered till should allow water infiltration to bedrock more easily than unweathered till. The process of soil formation oxidizes and alters the upper meter or so of the sediment and thinner areas of till may be weathered throughout the sediment profile. In addition, this group includes small rock outcrops within areas of till.

Areas of thick impermeable till. Thick till has a thicker profile of unweathered till beneath the soil zone than weathered till. Unweathered till has an extremely low permeability and low recharge potential. A small area of exposed glacial lake clay-silt is also assigned to this category as clay-silt has a very low permeability.

Aquifer Recharge Potential as a Function of Surficial Materials in the Bennington Area, Vermont

Vermont Geological Survey Open File Report VG2017-1: Plate 2

David J. DeSimone, PhD 2017

Scale 1:12,000
Contour Interval = 20 ft

Vermont Geological Survey

Digital Cartography by Colin Chewy

DRAFT Fence Diagram Correlating Surficial Materials Between Cores on the Chemfab Property

**KEY TO STRATIGRAPHIC SYMBOLS**
- **F**: Artificial fill (F-4:00pm thick, Variable composition with soil, ash, brick, concrete & angular rock fragments).
- **B**: Vertical fill. Backfill (B-7:00am thick, Contains forest debris & rock fragments).
- **C**: Core 1 fill (C-4:30pm thick, Contains forest debris & rock fragments).
- **ST**: Stabilized topsoil (ST-2:00pm thick, Contains forest debris & rock fragments).
- **PG**: Rock fragments (PG-1:00pm thick, Contains forest debris & rock fragments).
- **CG**: Rock fragments (CG-1:30pm thick, Contains forest debris & rock fragments).
- **MS**: Rock fragments (MS-1:00pm thick, Contains forest debris & rock fragments).
- **1**: Core 1 (1-0:00pm thick, Contains forest debris & rock fragments).
- **2**: Core 2 (2-0:00pm thick, Contains forest debris & rock fragments).
- **3**: Core 3 (3-0:00pm thick, Contains forest debris & rock fragments).
- **4**: Core 4 (4-00pm thick, Contains forest debris & rock fragments).
- **5**: Core 5 (5-00pm thick, Contains forest debris & rock fragments).
- **6**: Core 6 (6-00pm thick, Contains forest debris & rock fragments).
- **7**: Core 7 (7-00pm thick, Contains forest debris & rock fragments).

**INTERPRETATION**

**Bedrock surface:** The bedrock surface is generally gently sloping northeast and southeast toward the creek. A steep slope in the bedrock profile occurs between Core 3 and Core 7, which is a fault, along the junction of the Walloomsac and Paran channels. It is not known if this slope is a natural or a structure that has been buried by fill.

**Late Pleistocene events:** The North Bennington and Walloomsac valleys experienced fluvial discharges similar to glacial lake flooding and near small lake flooding. The mapped and rapid rising of Glacial Lake Bascom from the 9000 Foot Hill level through brief channelization centers at 7000, 6500, 6200, and finally and ice-controlled lower levels which resulted in the formation of the Walloomsac and Paran Creek channels. Additionally, Paran Creek received fill from breaching of a small glacial lake in the north. These events create channels in the earlier colonization areas of any Pleistocene sediment deposits in the bedrock profile. The bedrock surface indicates a rapid uplift through increased ice. The top of Unit 3 is a 7000 to 8000 years, which has been dated to be buried by fill.

**Holocene events:** The Holocene transition was marked by rapid sea level rise from early through mid Holocene. During the last 7000 years, fill has been deposited that has been buried by fill. The same was very likely a time of valley aggradation and deposition of fluvial sediments adjacent to the areas of the creek. Unit 1 and Unit 2 were likely deposited in the deeper Walloomsac channel during these times. The presence of an undisturbed fill sequence of flood near the base of Unit 3, the oldest alluvial sequence, suggests a Holocene age. The Holocene event was from glacial erosion resulting in the deposition of fluvial sediments adjacent to the areas of the creek. The Holocene event was from glacial erosion resulting in the deposition of fluvial sediments adjacent to the areas of the creek.

**Horizontal Scale:** Horizontal scale is based on an approximate static water level obtained in the field from C.T. Male (June 14-16, 2016) at the Chemfab property in North Bennington and on July 6, 2016 at the St. Gobain Warehouse in Hoosick Falls, New York. Approximate static water levels were obtained in the field from C.T. Male (June 14-16, 2016).