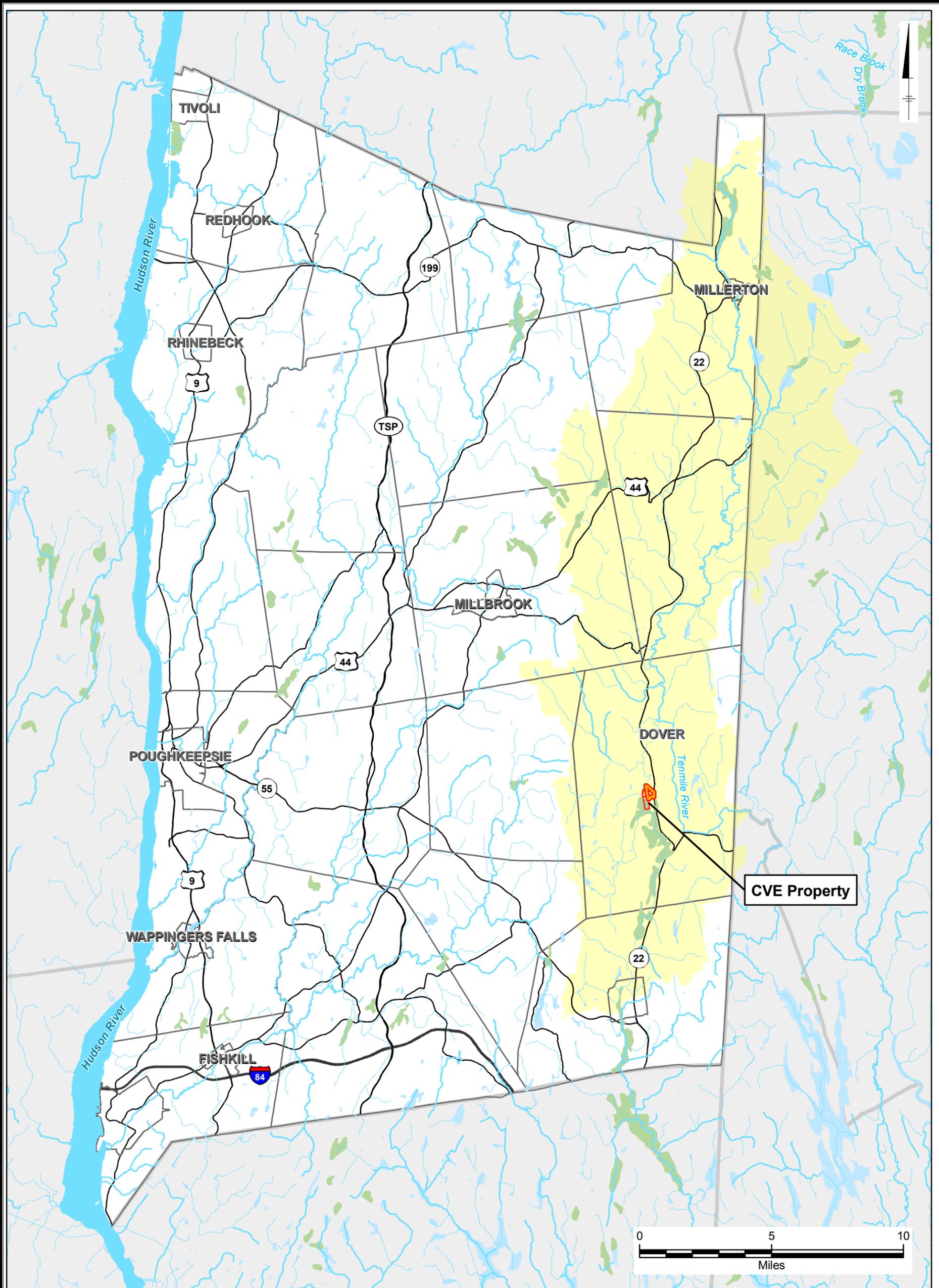


## **Section 5 – Figures**

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G:\projects\GIS\Projects\PP\_Misc\20090511\_CricketValley\FIGURES\MXD\20110120\_Wetlands\CV\EC\_Watershed.mxd - 2/9/2011 @ 12:45:32 PM

**Legend**

- Property
- Project Development Area
- Ten Mile River Watershed
- Stream or River
- Lake or Pond
- Swamp or Marsh
- Interstate
- US/State Route
- Municipal Boundary

**DATA SOURCES:**  
 -Watershed: USGS New York Water Science Center and U.S Department of Agriculture  
 -River/Waterbody/County: ESRI Streetmap  
 -Municipal Boundaries: Real Property Tax Service Agency  
 -Roads: Census 2009 Tiger/Line File





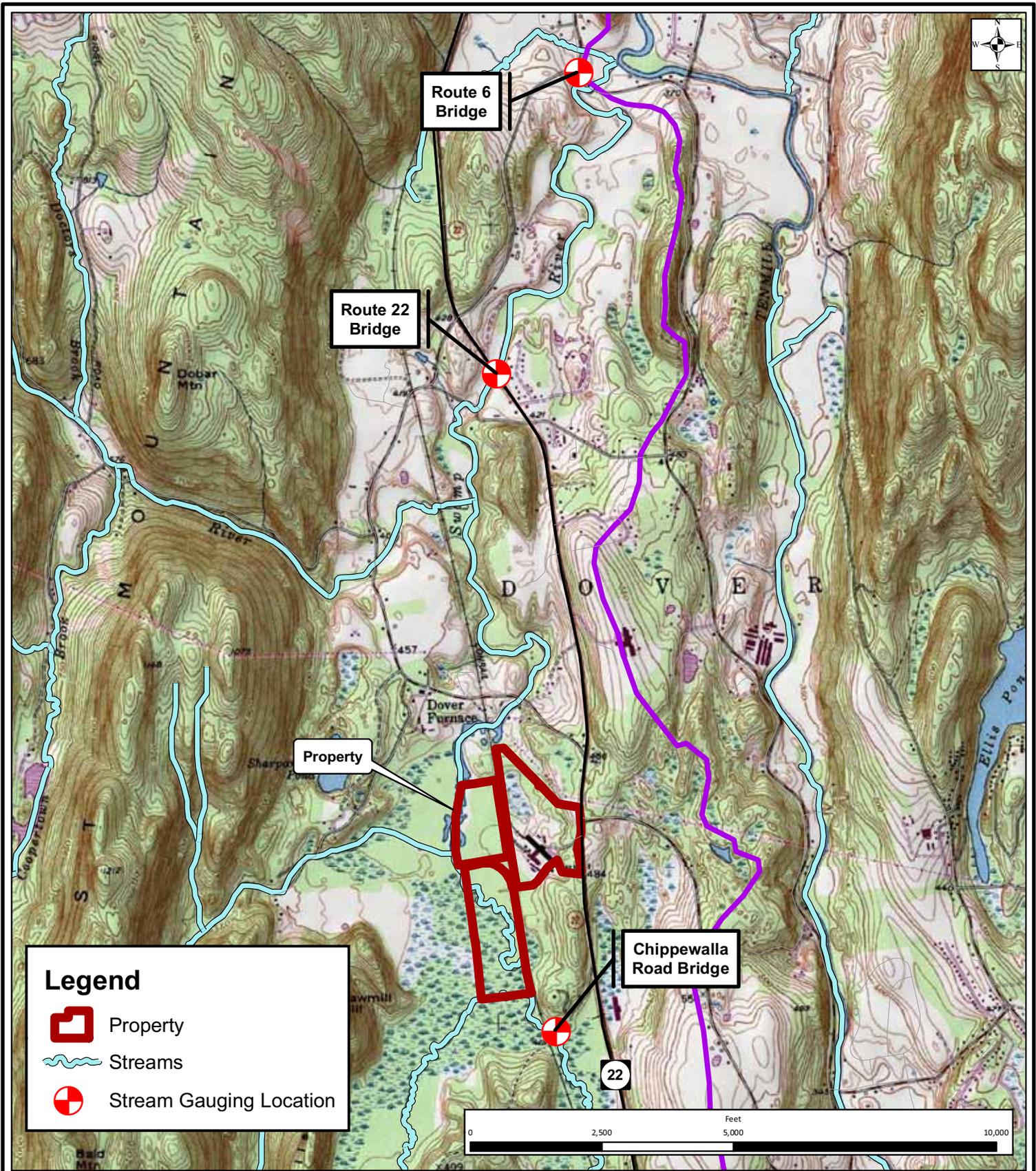
**ARCADIS**

**CRICKET VALLEY ENERGY**

**FIGURE 5-1**

**TEN MILE RIVER WATERSHED**

**Town of Dover, Dutchess County, New York**



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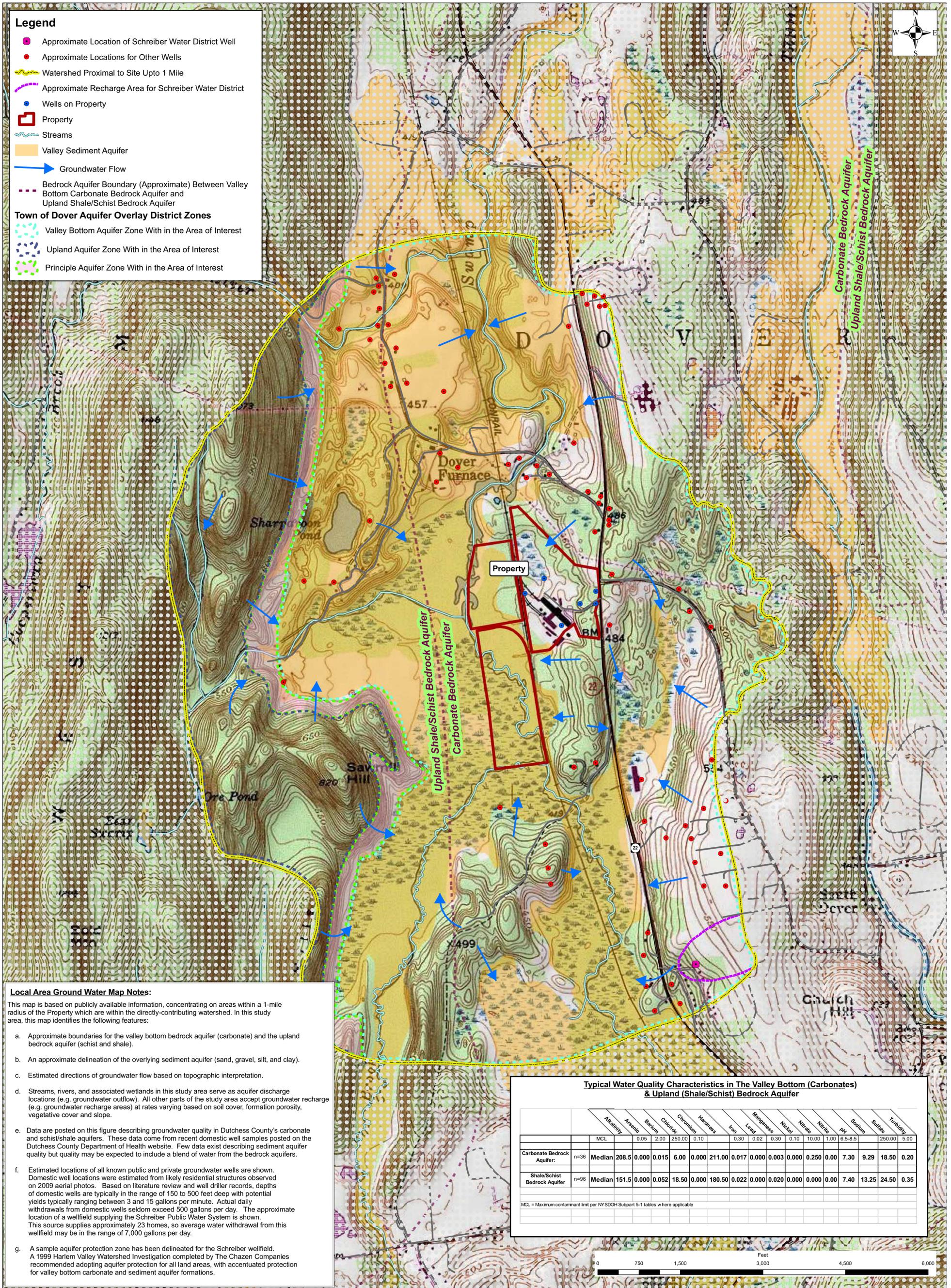
**Cricket Valley Energy**

**Figure 5-2**  
**Swamp River Stream Gauging Locations**

Town of Dover, Dutchess County, New York

Drawn:	SCP
Date:	10/06/2010
Scale:	1 inch = 2,500 feet
Project:	81001.00
Figure:	5-2

- Legend**
- Approximate Location of Schreiber Water District Well
  - Approximate Locations for Other Wells
  - Watershed Proximal to Site Upto 1 Mile
  - Approximate Recharge Area for Schreiber Water District
  - Wells on Property
  - Property
  - Streams
  - Valley Sediment Aquifer
  - Groundwater Flow
  - Bedrock Aquifer Boundary (Approximate) Between Valley Bottom Carbonate Bedrock Aquifer and Upland Shale/Schist Bedrock Aquifer
- Town of Dover Aquifer Overlay District Zones**
- Valley Bottom Aquifer Zone With in the Area of Interest
  - Upland Aquifer Zone With in the Area of Interest
  - Principle Aquifer Zone With in the Area of Interest



**Local Area Ground Water Map Notes:**

- This map is based on publicly available information, concentrating on areas within a 1-mile radius of the Property which are within the directly-contributing watershed. In this study area, this map identifies the following features:
- Approximate boundaries for the valley bottom bedrock aquifer (carbonate) and the upland bedrock aquifer (schist and shale).
  - An approximate delineation of the overlying sediment aquifer (sand, gravel, silt, and clay).
  - Estimated directions of groundwater flow based on topographic interpretation.
  - Streams, rivers, and associated wetlands in this study area serve as aquifer discharge locations (e.g. groundwater outflow). All other parts of the study area accept groundwater recharge (e.g. groundwater recharge areas) at rates varying based on soil cover, formation porosity, vegetative cover and slope.
  - Data are posted on this figure describing groundwater quality in Dutchess County's carbonate and schist/shale aquifers. These data come from recent domestic well samples posted on the Dutchess County Department of Health website. Few data exist describing sediment aquifer quality but quality may be expected to include a blend of water from the bedrock aquifers.
  - Estimated locations of all known public and private groundwater wells are shown. Domestic well locations were estimated from likely residential structures observed on 2009 aerial photos. Based on literature review and well driller records, depths of domestic wells are typically in the range of 150 to 500 feet deep with potential yields typically ranging between 3 and 15 gallons per minute. Actual daily withdrawals from domestic wells seldom exceed 500 gallons per day. The approximate location of a wellfield supplying the Schreiber Public Water System is shown. This source supplies approximately 23 homes, so average water withdrawal from this wellfield may be in the range of 7,000 gallons per day.
  - A sample aquifer protection zone has been delineated for the Schreiber wellfield. A 1999 Harlem Valley Watershed Investigation completed by The Chazen Companies recommended adopting aquifer protection for all land areas, with accentuated protection for valley bottom carbonate and sediment aquifer formations.

**Typical Water Quality Characteristics in The Valley Bottom (Carbonates) & Upland (Shale/Schist) Bedrock Aquifer**

		Alkalinity	Arsenic	Barium	Chloride	Chromium	Hardness	Iron	Lead	Manganese	Nickel	Nitrate	Nitrite	pH	Sodium	Sulfate	Turbidity	
		MCL	0.05	2.00	250.00	0.10		0.30	0.02	0.30	0.10	10.00	1.00	6.5-8.5		250.00	5.00	
Carbonate Bedrock Aquifer:	n=36	Median	208.5	0.000	0.015	6.00	0.000	211.00	0.017	0.000	0.003	0.000	0.250	0.00	7.30	9.29	18.50	0.20
Shale/Schist Bedrock Aquifer	n=96	Median	151.5	0.000	0.052	18.50	0.000	180.50	0.022	0.000	0.020	0.000	0.000	0.00	7.40	13.25	24.50	0.35

MCL = Maximum contaminant limit per NY SDOH Subpart 5-1 tables w here applicable



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**Cricket Valley Energy**  
**Figure 5-3**  
**Project Area Hydrogeologic Features Map**  
Town of Dover, Dutchess County, New York

Sources: Dutchess County 2010 Parcel Data, Lower Hudson Region Bedrock Geology Data, Dutchess County 2004 Soil Survey Data, Approximate Locations for Existing Public Water Wells in the Area, State of New York DOT 2008 Roads dataset

Drawn:	SCP
Date:	10/15/10
Scale:	1 inch = 750 feet
Project:	81001.00
Figure:	5-3

### Legend



Property



Other Parcels



Monitoring Wells

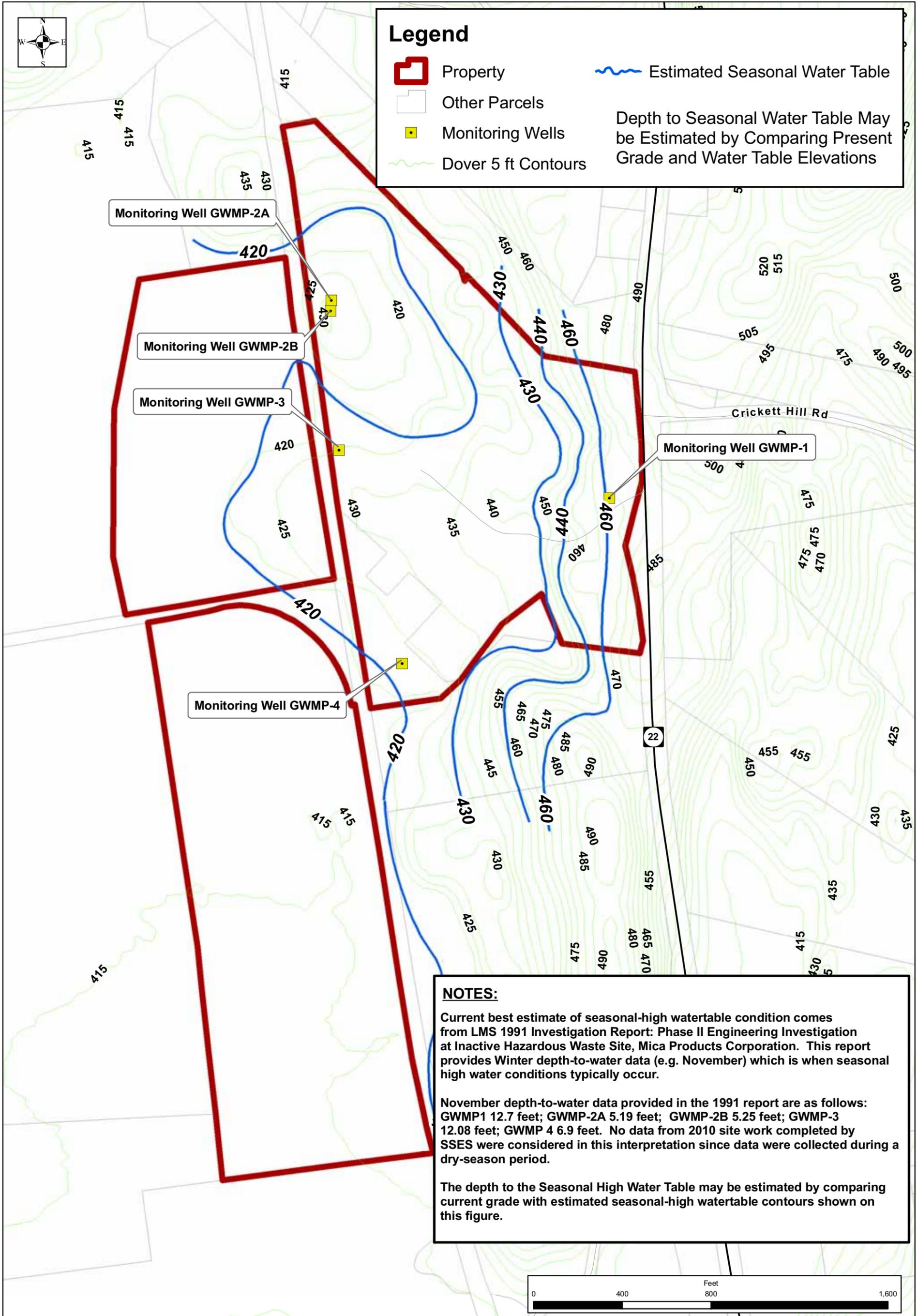


Dover 5 ft Contours



Estimated Seasonal Water Table

Depth to Seasonal Water Table May be Estimated by Comparing Present Grade and Water Table Elevations

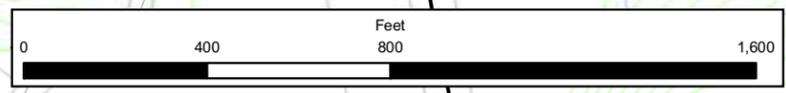


**NOTES:**

Current best estimate of seasonal-high watertable condition comes from LMS 1991 Investigation Report: Phase II Engineering Investigation at Inactive Hazardous Waste Site, Mica Products Corporation. This report provides Winter depth-to-water data (e.g. November) which is when seasonal high water conditions typically occur.

November depth-to-water data provided in the 1991 report are as follows: GWMP1 12.7 feet; GWMP-2A 5.19 feet; GWMP-2B 5.25 feet; GWMP-3 12.08 feet; GWMP 4 6.9 feet. No data from 2010 site work completed by SSES were considered in this interpretation since data were collected during a dry-season period.

The depth to the Seasonal High Water Table may be estimated by comparing current grade with estimated seasonal-high watertable contours shown on this figure.



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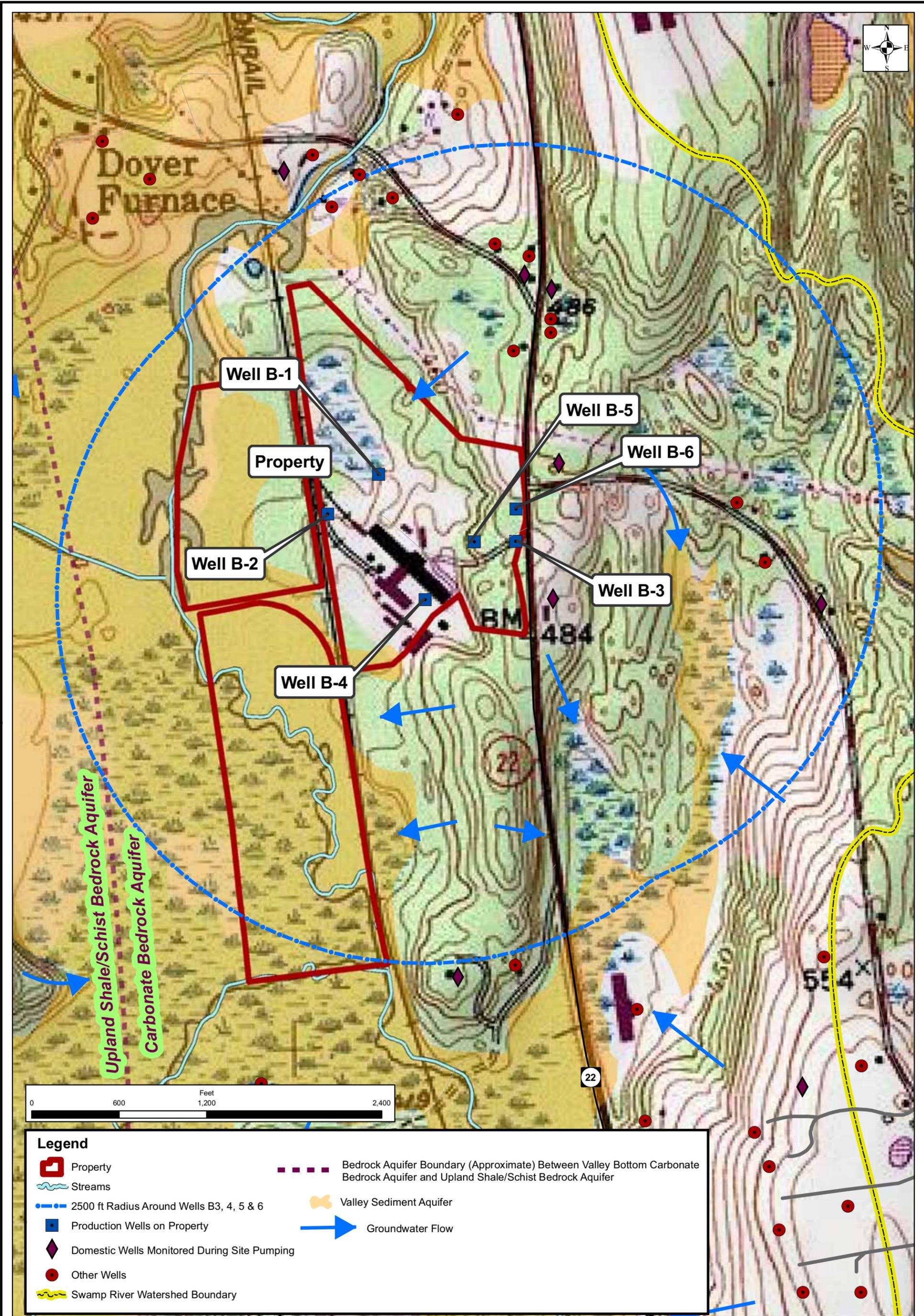
*Cricket Valley Energy*

**Figure 5-4 - Seasonal High Groundwater Table**

Town of Dover, Dutchess County, New York

Source: Dutchess County 2010 Parcel Data, 5' Contours Created from Dutchess County DEM Data, State of New York DOT 2008 Roads dataset

Drawn:	SCP
Date:	10/04/2010
Scale:	1 inch = 400 feet
Project:	81001.00
Figure:	5-4



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**Cricket Valley Energy**

**Figure 5-5 – Well locations (2,500 ft Radius)**

Town of Dover, Dutchess County, New York

Sources: Dutchess County 2010 Parcel Data, Lower Hudson Region Bedrock Geology Data, Dutchess County 2004 Soil Survey Data, Approximate Locations for Existing Public Water Wells in the Area, State of New York DOT 2008 Roads dataset

Drawn:	SCP
Date:	10/06/2010
Scale:	1 inch = 600 feet
Project:	81001.00
Figure:	5-5

