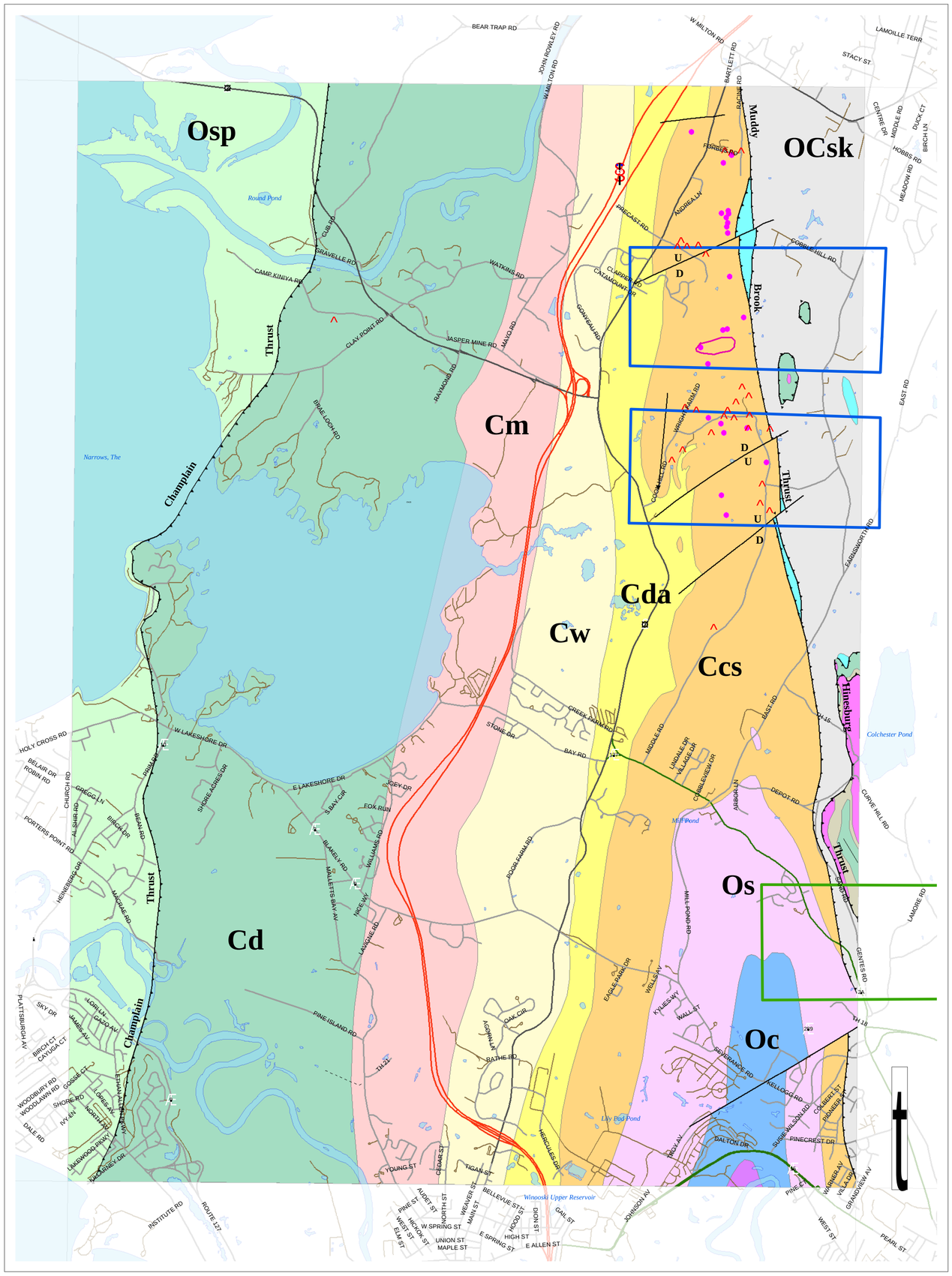


Compilation of Radioactivity Data for the Colchester Quadrangle

Authors: Jonathan Kim and Peter Thompson (2001)

Radioactivity Data

^	Gross Alpha Level in Bedrock Well >/= 15 pCi/liter (EPA MCL)(Vermont Dept. of Health data archives)
	N.U.R.E. "Preferred" airborne Uranium anomaly (Texas Instruments, 1975)
	N.U.R.E."Secondary" airborne Uranium anomaly (Texas Instruments, 1975)
	Ground-based radiometric anomaly area (Vanacek and Dorsey, 1983; McKeown, 1951))
#	Ground-based radioactivity reading > 100 total counts/second (Kim and Thompson, 2002)

References:

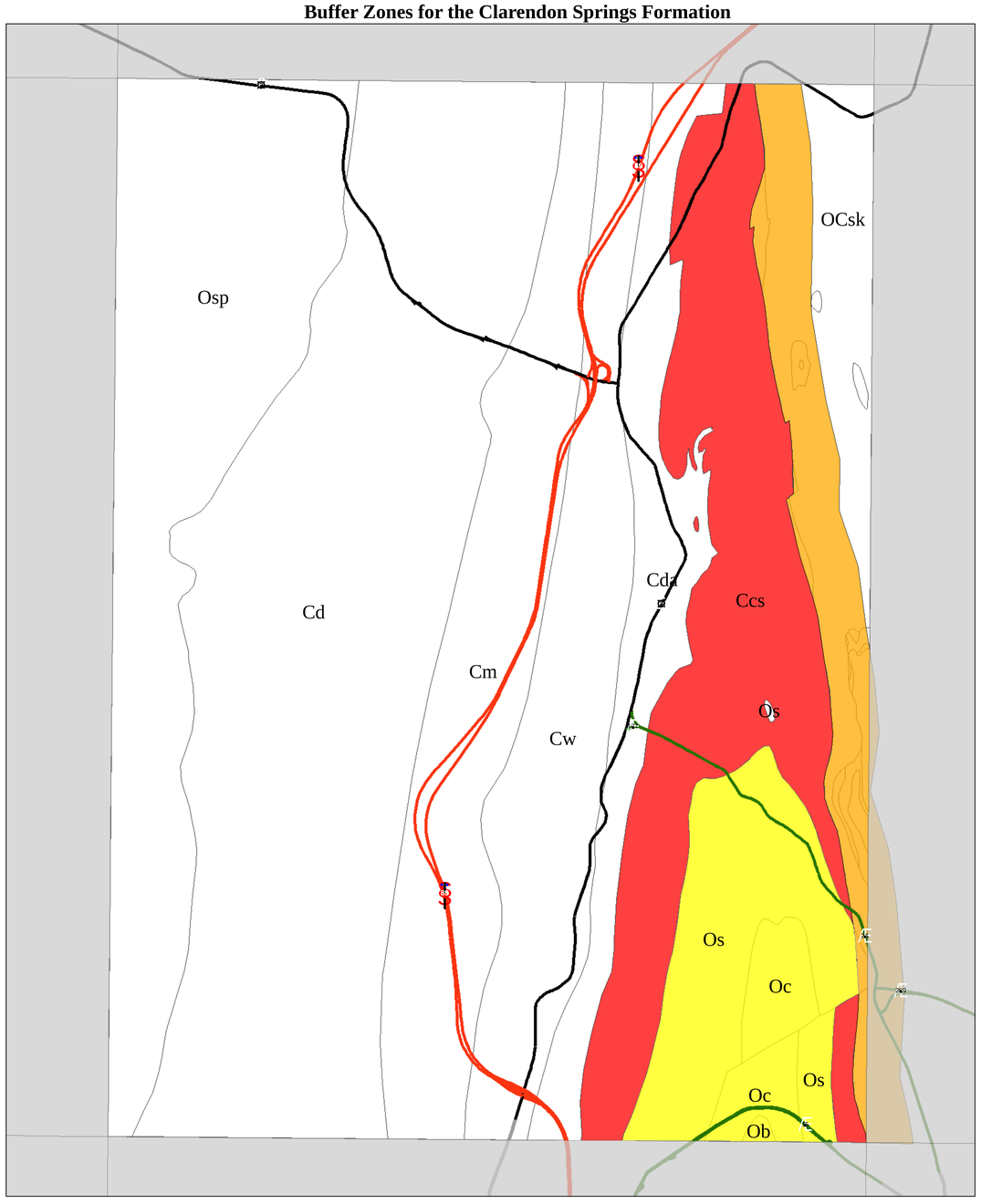
Kim, J. and Thompson, P., 2002, Bedrock and Radionuclide Mapping in the Colchester Quadrangle, Vermont: Geological Society of America Abstracts with Programs, v. 34 #1, p. A17.

McKeown, F.A., 1951, Reconnaissance of radioactive rocks of Vermont, New Hampshire, Connecticut, Rhode Island, and southeastern New York, U.S. Geological Survey Report TEI-67, for U.S.A.E.C., Oak Ridge, TN, 48 p.

Texas Instruments Inc., 1976, Airborne geophysical survey of a portion of New England: Prepared for U.S. Energy Research and Development Administration, Grand Junction Office, Contract Nos. E(05-1)-1666 and E(05-1)-1667.

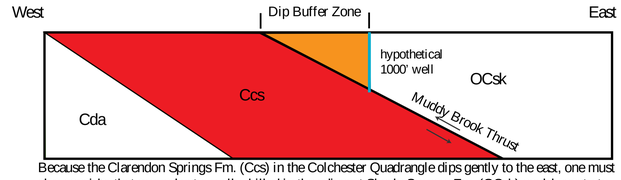
Vanacek, D.M. and Dorsey, R.J, 1983, Geologic and Radiometric Survey of the Sweeney Farm: Milton, Vermont, Vermont Geological Survey Open File Report 1983-2.

Buffer Zones for the Clarendon Springs Formation



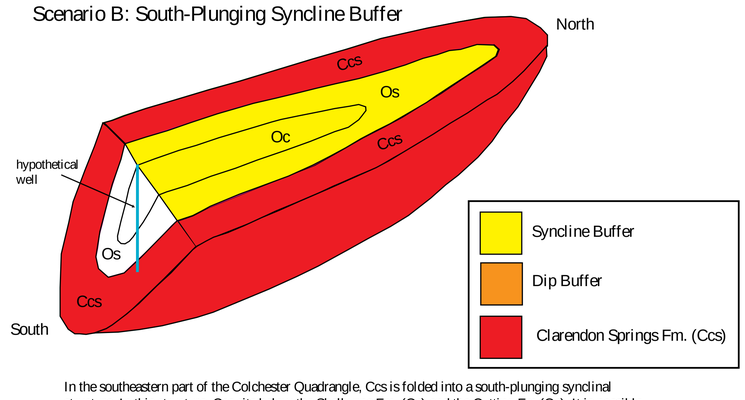
Approximately 30 % of bedrock wells tested in the Clarendon Springs Formation (Ccs) have groundwater with elevated naturally-occurring radioactivity. In addition to drilling directly in Ccsthere are two other scenarios shown below and on the map where Ccs could be penetrated even though it was not on the ground surface.

Scenario A: Eastward Dip Buffer



Because the Clarendon Springs Fm. (Ccs) in the Colchester Quadrangle dips gently to the east, one must also consider that groundwater wells drilled in the adjacent Skeels Corners Fm. (OCsk) could penetrate Ccs if the well is attempted too close to the Muddy Brook Thrust. Based on the dip of this thrust, a buffer zone was drawn (orange) that delineates the approximate area of OCsk where a well <1000 ' depth could hit Ccs.

Scenario B: South-Plunging Syncline Buffer



In the southeastern part of the Colchester Quadrangle, Ccs is folded into a south-plunging synclinal structure. In this structure, Ccs sits below the Shelburne Fm. (Os) and the Cutting Fm (Oc). It is possible that wells sited in OC and Os in the yellow buffer zone could unknowingly be drilled into Ccs.

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