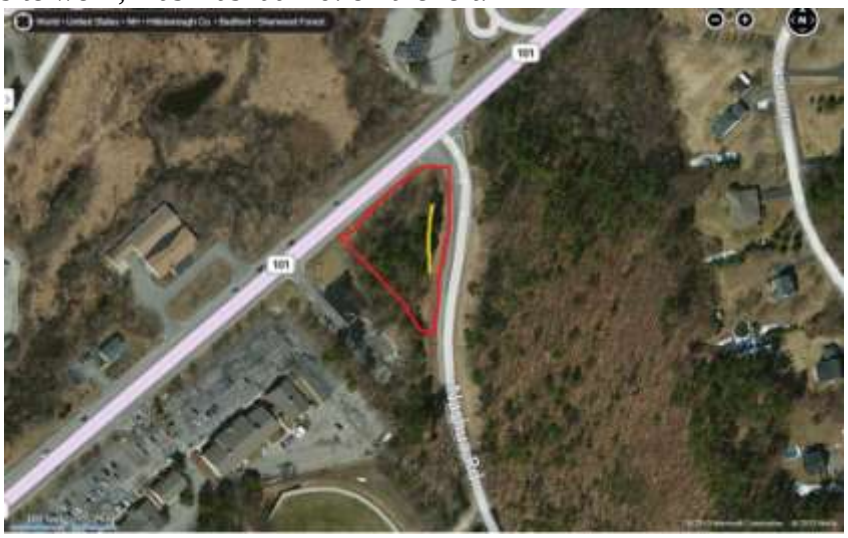
Green Hyalite Opal from Bedford, NH - Tom Mortimer

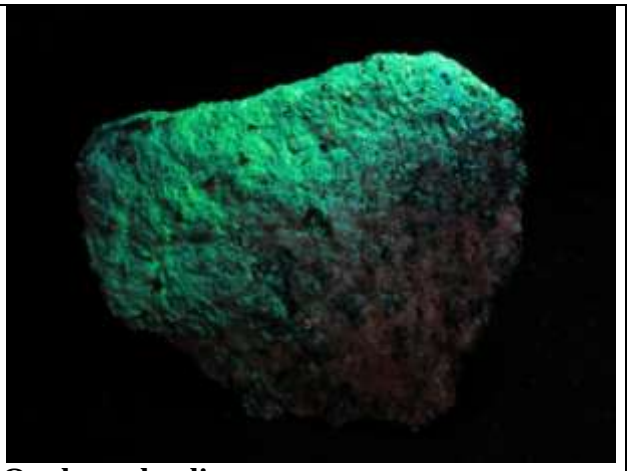
Brightly colored opal var. hyalite is moderately uncommon in New England. In August of this year (2013) I made a find of hyalite opal from a small construction site in Bedford, NH. The blasted ledge area is less than one acre. The country rock is a coarse biotite gneiss. A mostly-buried narrow pegmatite extends along one side of the site for a distance of 30 to 50 feet. The first site photo below (from BING maps) shows the location prior to the site work, (Rt. 101diagonal from lower right, Nashua Rd. entering from mid-bottom). Second site photo, after site work, has Nashua Rd. on the left.



Occasional surface rocks near this pegmatite zone have an earthy mineral coating that varies from pale to bright green. My thought on first finding it was a copper carbonate or sulfate mineral. It is not soluble in water and no "fizz" was seen when muriatic acid was applied. A treatment with bleach in my ultrasonic cleaner did not remove the coating or alter its color (this

is quite effective in exposing and removing organics). My surprise came with UV light….it fluoresced a bright green, not unlike autunite. However it lacks the luster and scaly-platy nature of autunite. Consulting several fellow collectors, we reached the consensus that the mineral coating is opal var. hyalite. Although I have collected hyalite opal from a number of New Hampshire localities, my specimens have always been of the milky, opalescent variety, or the white crusty variety. I have examined the coating under 40 x stereo magnification and am convinced that the coating is not paint, but a substance deposited from solution. A night-time collecting visit with a UV lamp turned up more specimens, a few that are classic, milky, opalescent, hyalite, (second photo pair below, 3.3 cm specimen). Reviewing hyalite opal photos on mindat, I see examples from Glastonbury, CT (http://www.mindat.org/photo-419463.html) that are similar to my find at Bedford.

Opal var. hyalite on iron-stained granite
Rt. 101 – Nashua Rd., Bedford, NH
6 cm specimen. Daylight lighting



Opal var. hyalite
Rt. 101 – Nashua Rd., Bedford, NH
6 cm specimen. SW UV lighting

Opal var. hyalite on quartz
Rt. 101 – Nashua Rd., Bedford, NH
3.3 cm specimen. Daylight lighting

Opal var. hyalite on quartz
Rt. 101 – Nashua Rd., Bedford, NH
3.3 cm specimen. SW UV lighting

All the specimens I found were right on the surface of freshly disturbed ground. Digging below the surface where the specimens were found yielded no blue-green crusted rocks. The fluorescent blue-green coating was found equally on fresh broken gneiss rocks AND obvious glacier origin

pebbles. The coating is only seen on the surface side of specimens when collected, never on the dirt-side-down. The green crust is not seen in the interior of specimens with the crust on the exterior. At Gene Bearss suggestion, I tried dissolving the crust with acetone to negate the possibility that the coating was paint. Acetone did not affect the crust.

So the questions that come to mind are:

Can hyalite opal deposit quickly at surface conditions? (I estimate the elapsed time from tree covered lot to dirt and boulder construction site to be no longer than six weeks. There have been several periods of rain in that time. This site is still in the leveling and pre-build phase. No signs of any seeding, landscaping, or even erosion control hay bales when my specimens were collected. Additional fact: the uranium level in the immediate area water wells is quite high – uranium is a possible UV activator.)

Canadian mineral collector Reiner Mielke informed me via mindat.org that "Uranyl ions can cause … silica to fluoresce strongly green. It doesn't take much uranyl ion to cause this **and silica crusts can form overnight from silica saturated water at surface.**"

Finally, the possibility that this mineral may be allophane cannot be ruled out. Allophane also forms as surface crusts and frequently has a blue-green color. Webmineral.com indicates that it is fluorescent in short wave UV. Both hyalite opal and allophone are hydrated silicate minerals, but allophone has aluminum as an essential element while opal does not. A qualitative EDS test will resolve this. To my knowledge, allophane has not appeared on previous New Hampshire mineral species lists. Stay tuned!