

THE AGS FLUORITE DEPOSIT, ST. LAWRENCE

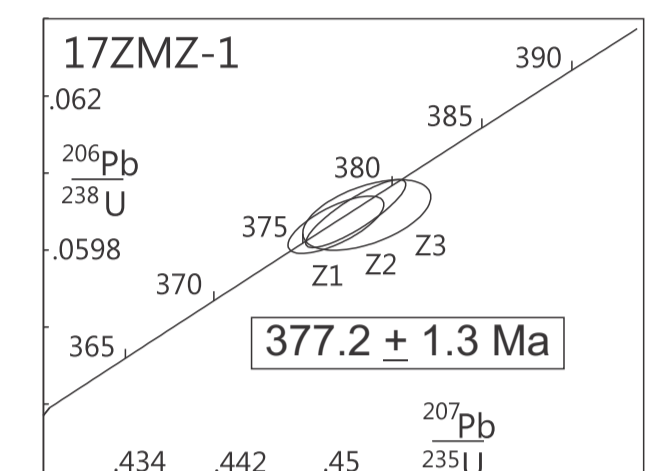
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The AGS Deposit is the only economic fluorite deposit in the St. Lawrence area not hosted entirely within the main phase of the St. Lawrence granite (SLG). Mineralization is hosted by sedimentary rocks and rhyolite sills that intrude them, as well as the SLG in deeper levels. The deposit was discovered, and is owned and operated, by Canada Fluorspar Inc. (CFI).

In 2018, work on the deposit included geochronology of the rhyolite sills, fluid inclusion analysis, detailed mapping of sections of the deposit and updating the paragenetic sequence of fluorite mineralization.

Geochemistry and mineralogy of the rhyolite suggest that it is a phase of the SLG. Recent dating of the rhyolite sill yielded 377.2 ± 1.3 Ma (U/Pb zircon geochronology), indicating that it is slightly older than the main SLG, which was dated at 374 ± 2 Ma.



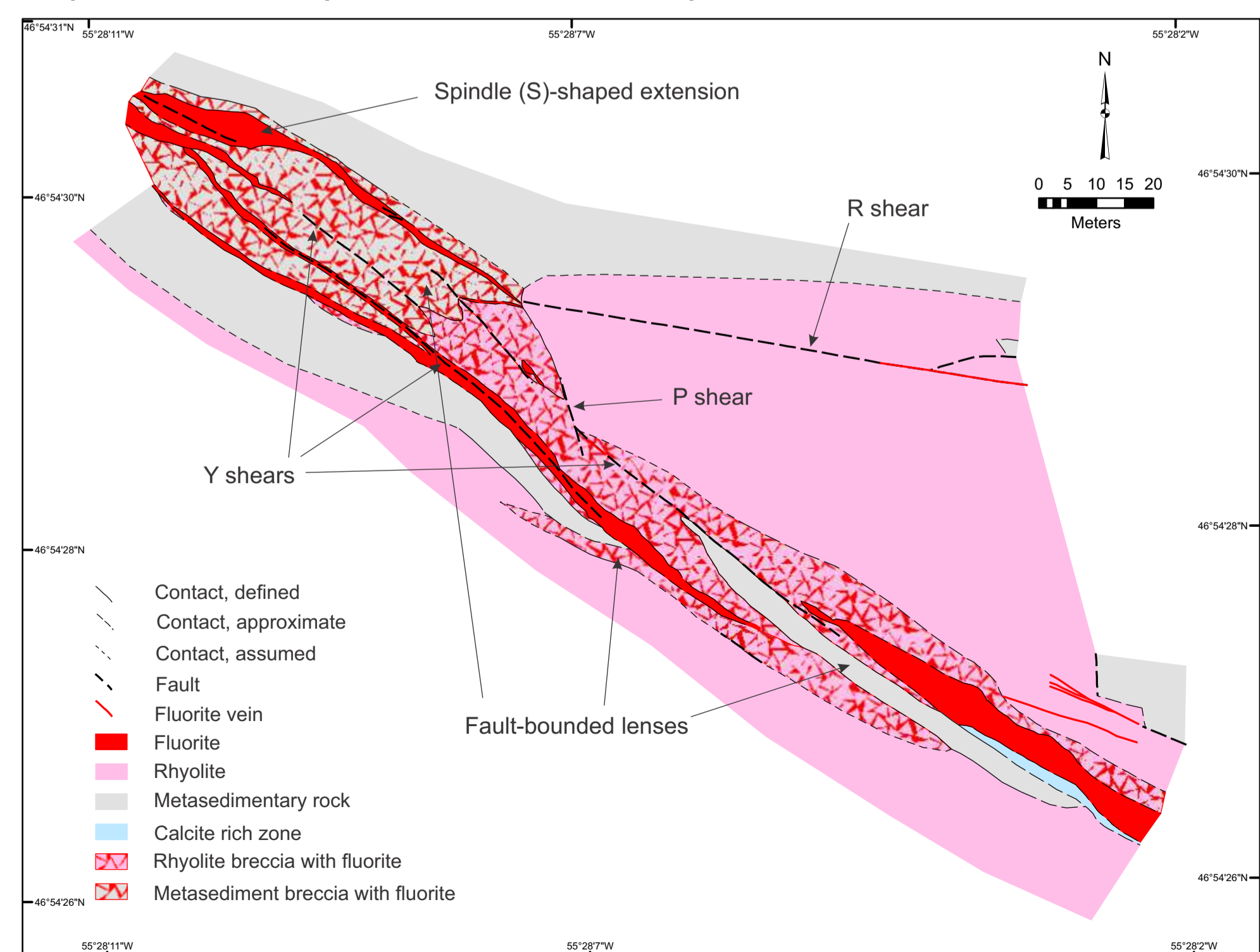
Fluid inclusion work was completed on purple, yellow, green and blue fluorite crystals. The fluid inclusions are all two-phase liquid and vapor inclusions with the homogenization temperature between 89.3 and 163.9°C and the salinity between 9.47 and 27.54 weight percent NaCl equivalent.

Paragenetic sequence of hydrothermal events in the AGS area

1	Brecciation of host rocks	Brecciated, weakly- to strongly-altered sedimentary rocks and rhyolite in a quartz-rich matrix.
2	Purple fluorite stockwork and/or hydrothermal breccia	Purple fluorite and quartz forming stockwork veins and hydrothermal breccia with clasts of host rocks.*
3a	Banded, fine-grained fluorite and/or coarse-grained yellow fluorite	Finely banded, fine-grained fluorite and/or coarse-grained yellow fluorite.
3b	Hematite-fluorite-quartz	Hematite with quartz and fluorite.
4	Reddish grey fluorite	Massive, coarse-grained, grey, transparent fluorite, locally slightly reddish or pink.
5	Fine-grained banded sulphides	Composed of sphalerite and galena
6	Grey elongated fluorite	Massive, grey fluorite with elongated crystals up to 20 cm in length.
7	Green, blue and white, coarse-grained fluorite	Alternating layers of coarse-grained green, blue and white fluorite with disseminated sphalerite and galena.
8	Clear or blue, cubic fluorite	Clear or blue cubic fluorite occurs filling vugs.
9a	Blastonite	Breccia composed of fragments of previous phases in a matrix composed of quartz and fine-grained fluorite.
9b	Late quartz	Quartz vein stockwork, breccia and vug filling.
10	Pyrite and chalcopyrite	Pyrite and chalcopyrite crystals in quartz lined vugs.

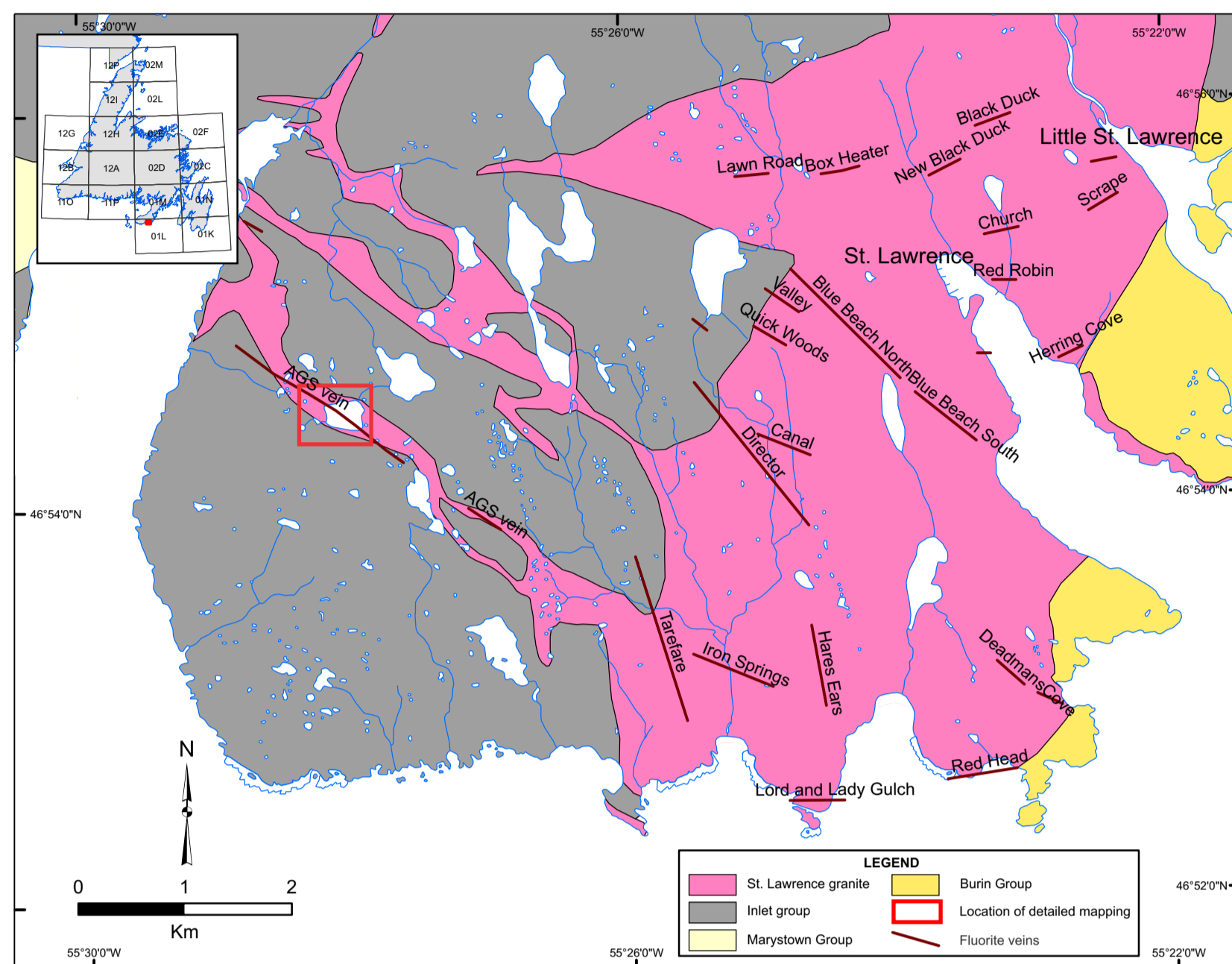
*Variable amounts of calcite occur locally with fluorite in all phases.

Detailed mapping of exposed sections of the AGS vein system revealed that the fluorite is controlled by a well-developed sinistral strike-slip fault.



Detailed map of the fluorite vein in the Grebes Nest Pit showing features indicative of a well developed strike-slip fault with sinistral movement.

The first author would like to thank the staff at CFI for all of their help and support with this project.



Reddish grey fluorite with fine-grained, banded fluorite.



Elongated grey fluorite and fine-grained sulphides.



Green fluorite with blue, cubic fluorite.



Purple fluorite breccia cut by grey fluorite, both cut by green and blue fluorite.



Faulted contact of the sediment and rhyolite with fluorite in both units.



Horizontal slickensides on fault surface indicating strike-slip faulting.



Sinistral movement indicated by left lateral displacement of earlier veins and tension gashes filled with purple fluorite in rhyolite.

