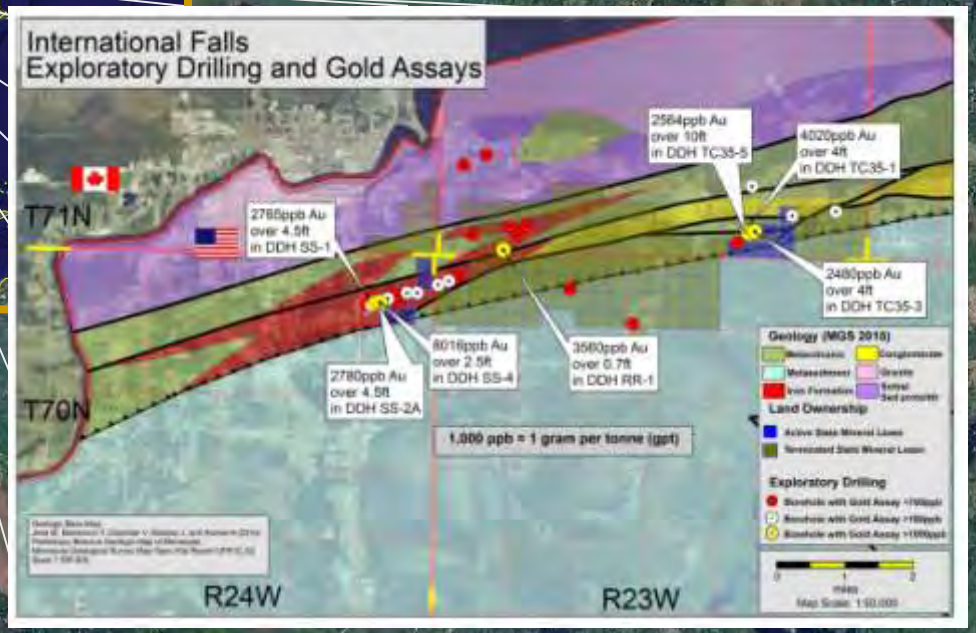
Gold Mineralization Potential in a Wabigoon Subprovince Granite-Greenstone Terrane, International Falls Area, Minnesota



Minnesota
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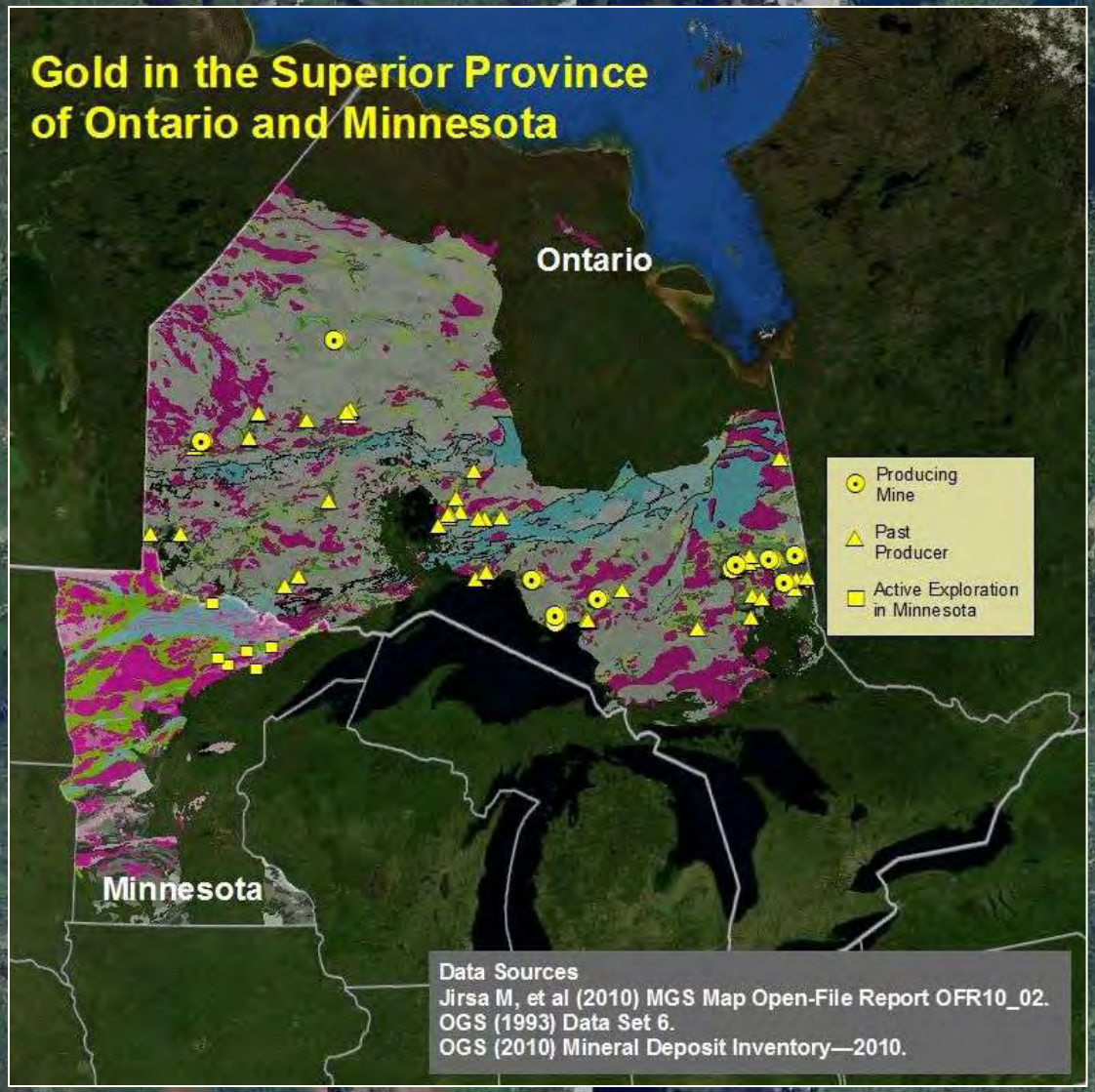
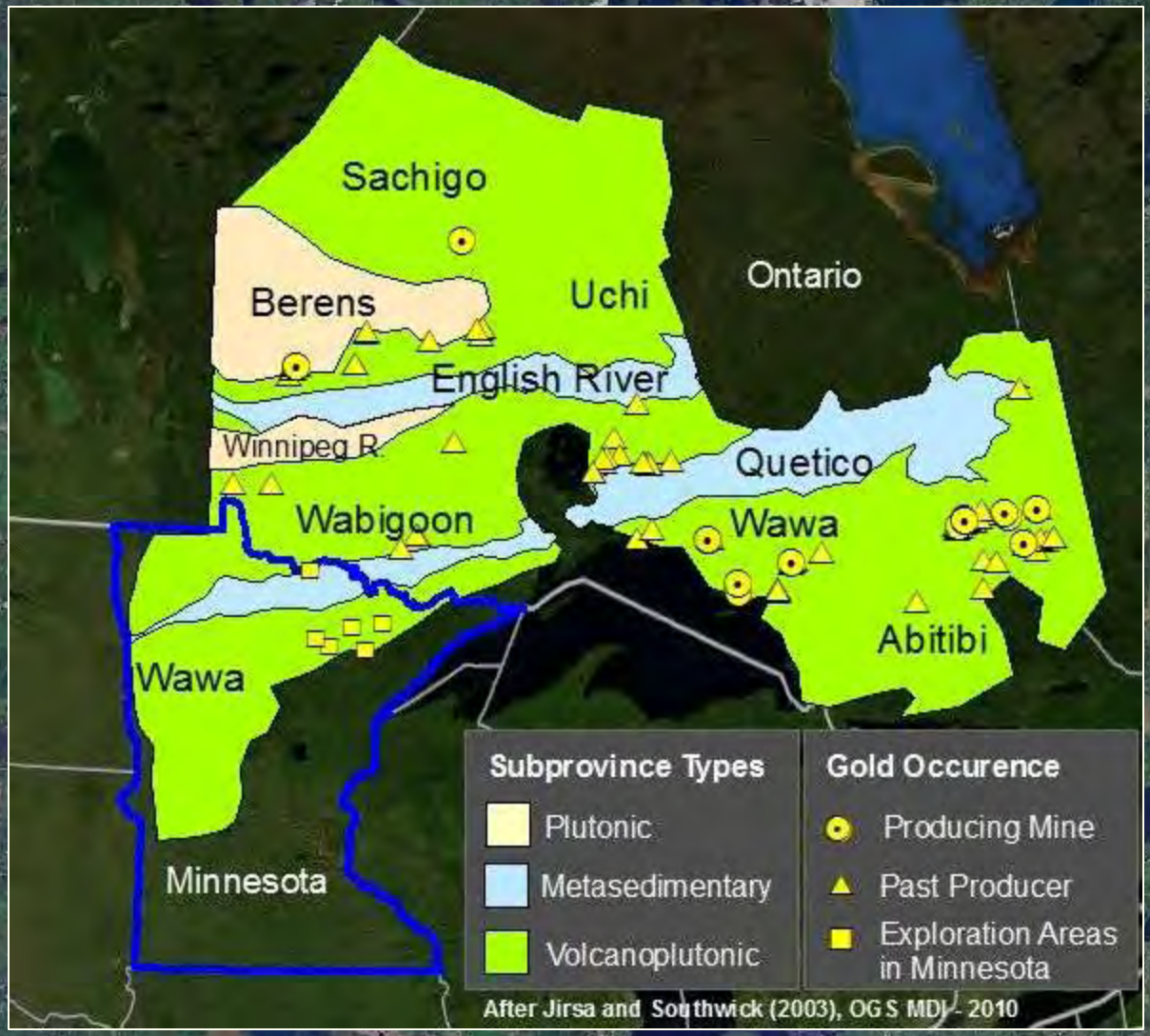
The State of Minnesota is located in the north-central portion of the United States, along the Canadian border. Most of Minnesota's northern border is shared with Northwest Ontario.

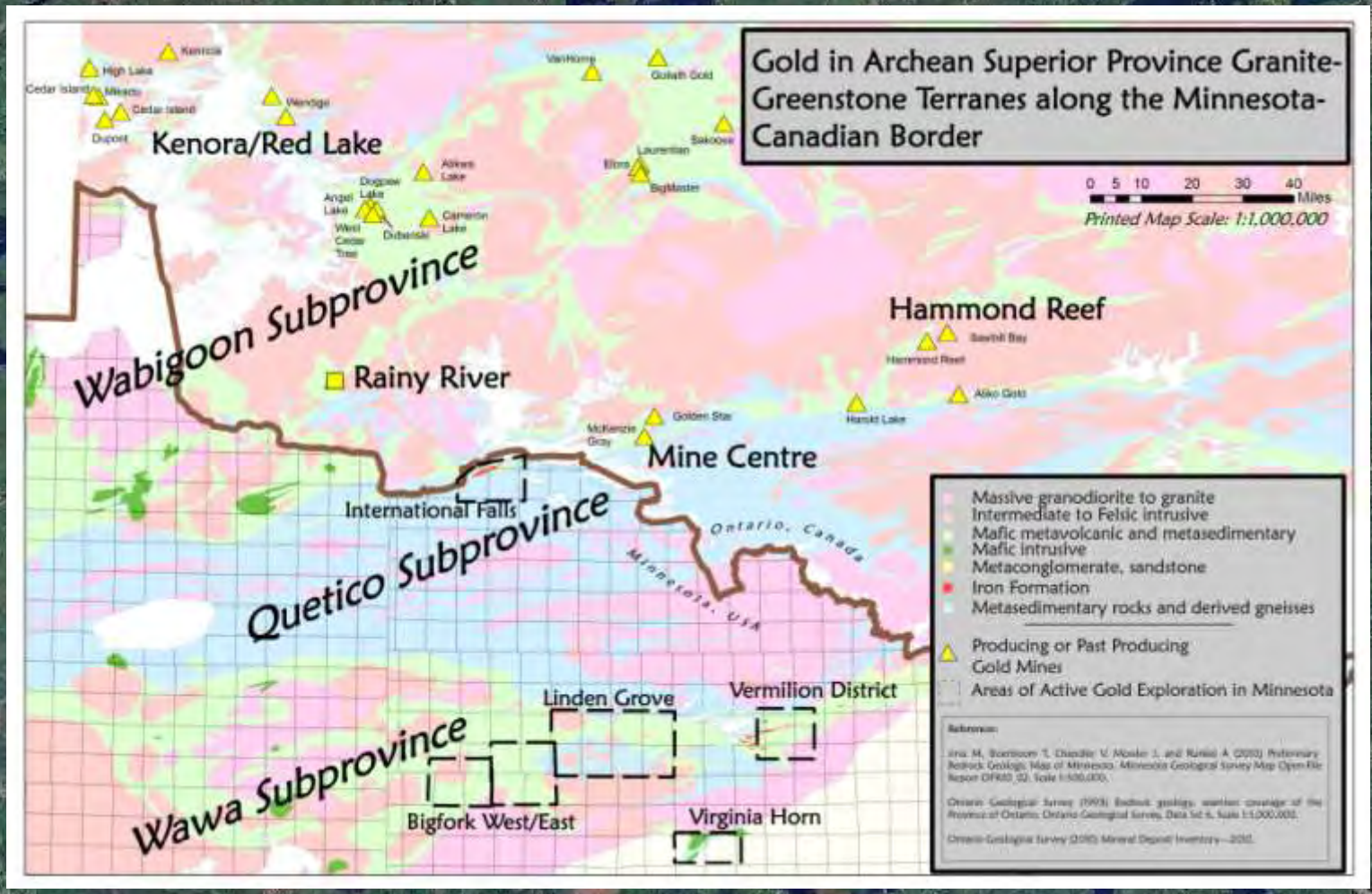


The Archean Superior Province granite-greenstone terranes that host world-class gold mines and camps in Ontario extend along strike into Northern Minnesota.



The Superior Province, broadly speaking, consists of alternating belts of greenstone (green) and plutonic (tan) subprovinces. Two granite-greenstone provinces (Wawa and Wabigoon) are found in Northern Minnesota.

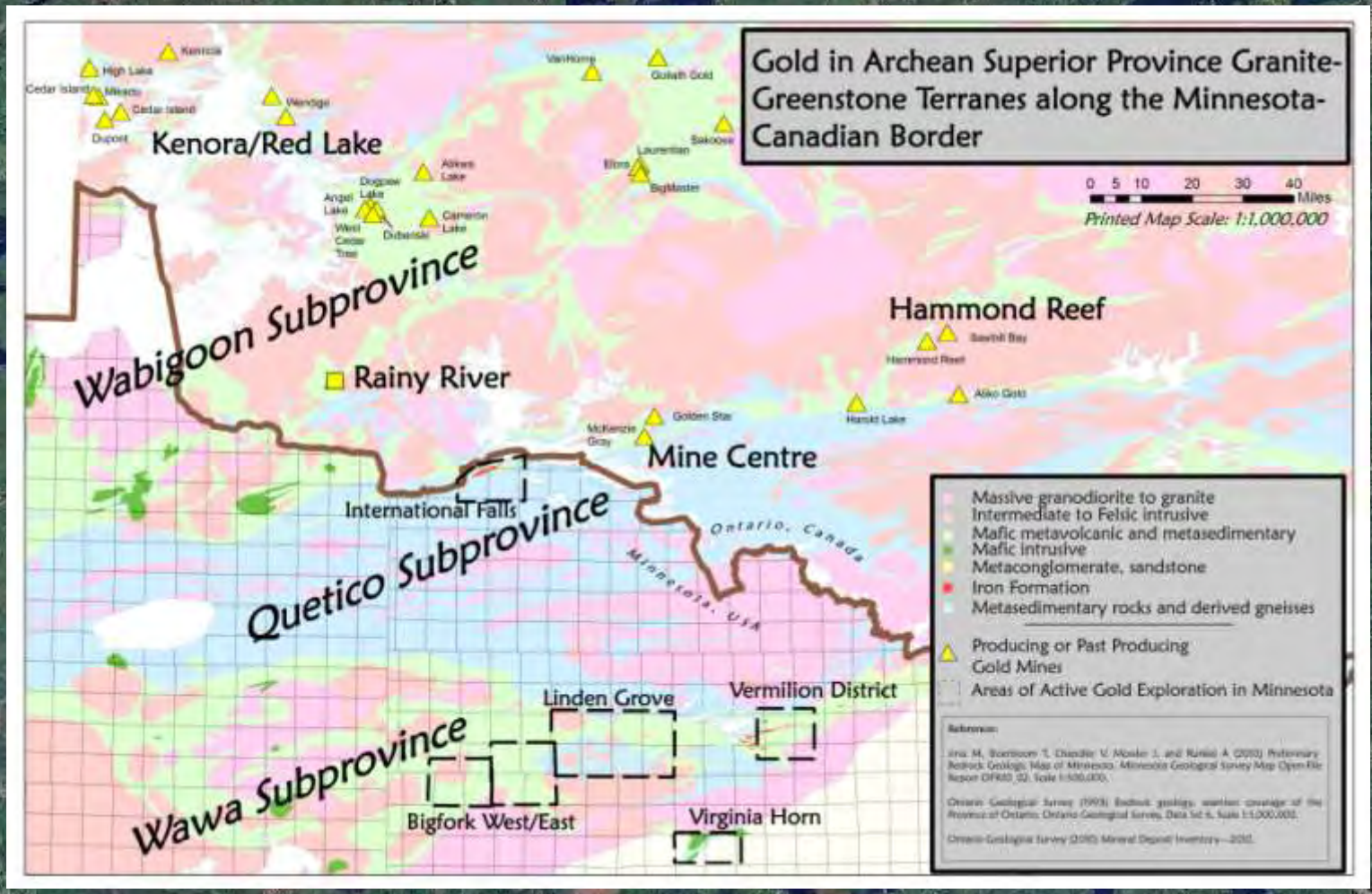
Mining in the Superior Province



The Superior Province hosts many of the world's richest mineral deposits. The Wabigoon and Wawa Subprovinces, in particular, are mineral rich, and these geologic terranes are found in Minnesota.

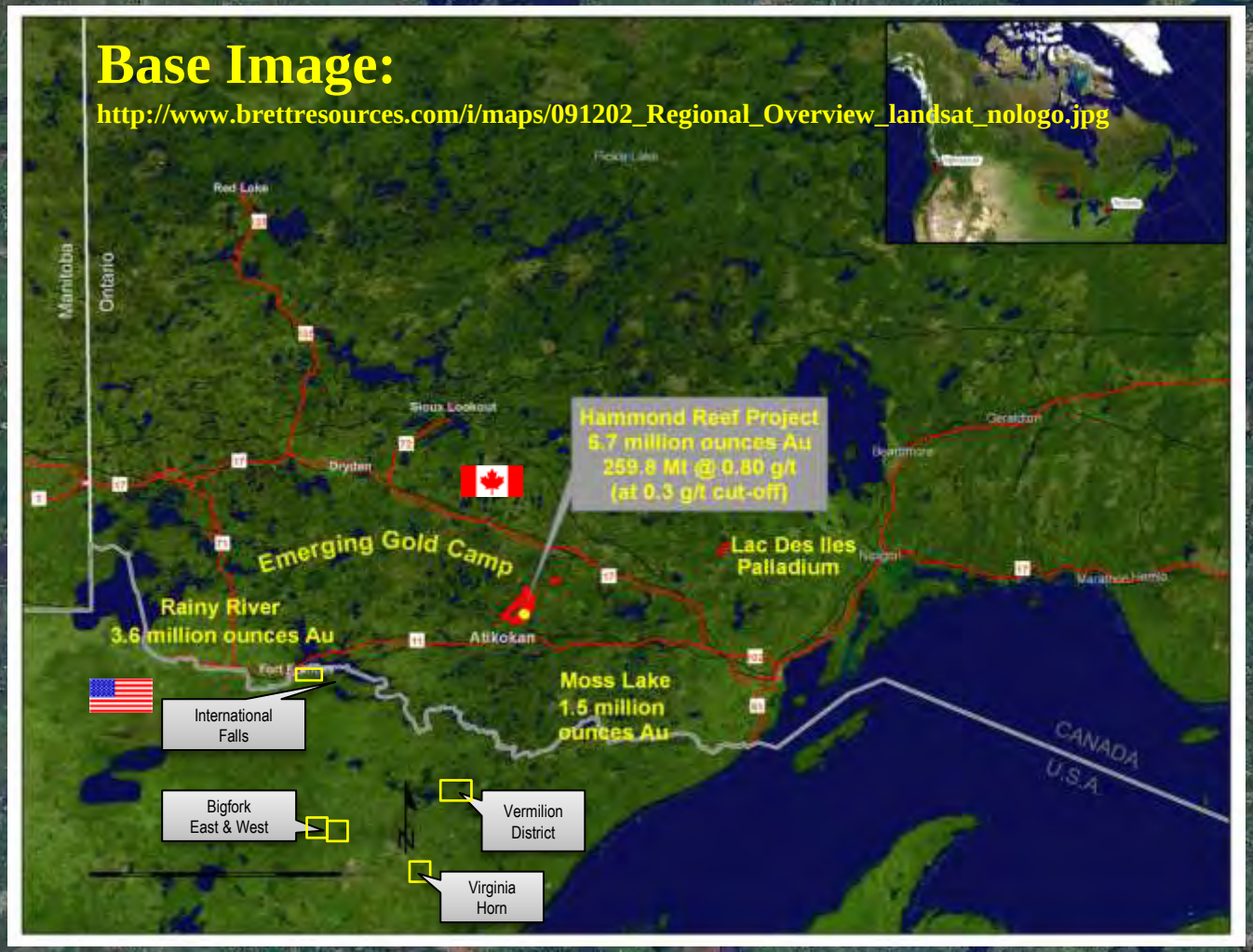
Minnesota Department of Natural Resources

Geology Along the Border



This simplified geologic map of Northern Minnesota and Northwestern Ontario shows the geologic continuity of granite greenstone belts along the U.S./Canadian border, and the proximity of Minnesota gold prospects and Canadian gold properties.

Gold Exploration in Minnesota?



This map was prepared by Brett Resources (see link) to show the proximity of the Hammond Reef gold project and two other major gold resources in Northwestern Ontario, Canada. Gold prospects on the Minnesota side of the U.S./Canadian border are also close to what Brett calls an "Emerging Gold Camp."

Minnesota
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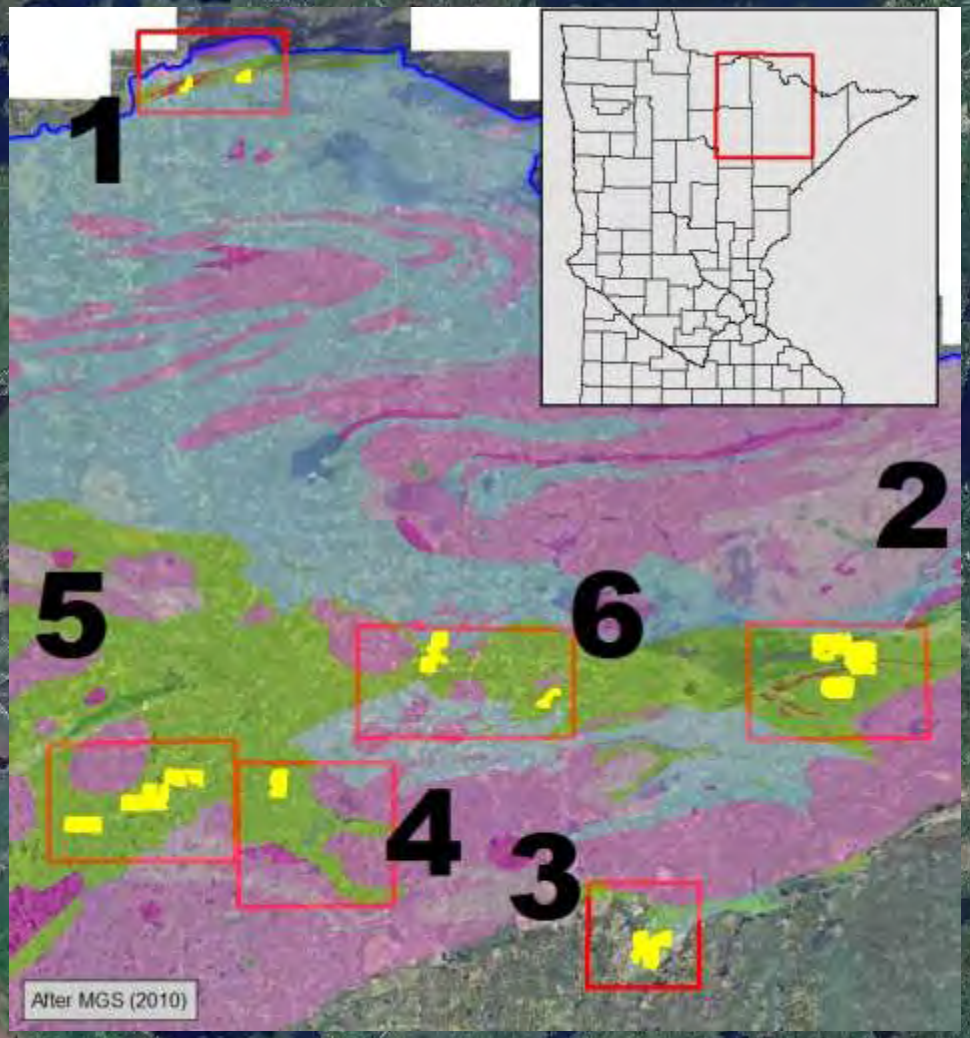
Gold in Minnesota: Areas of Interest

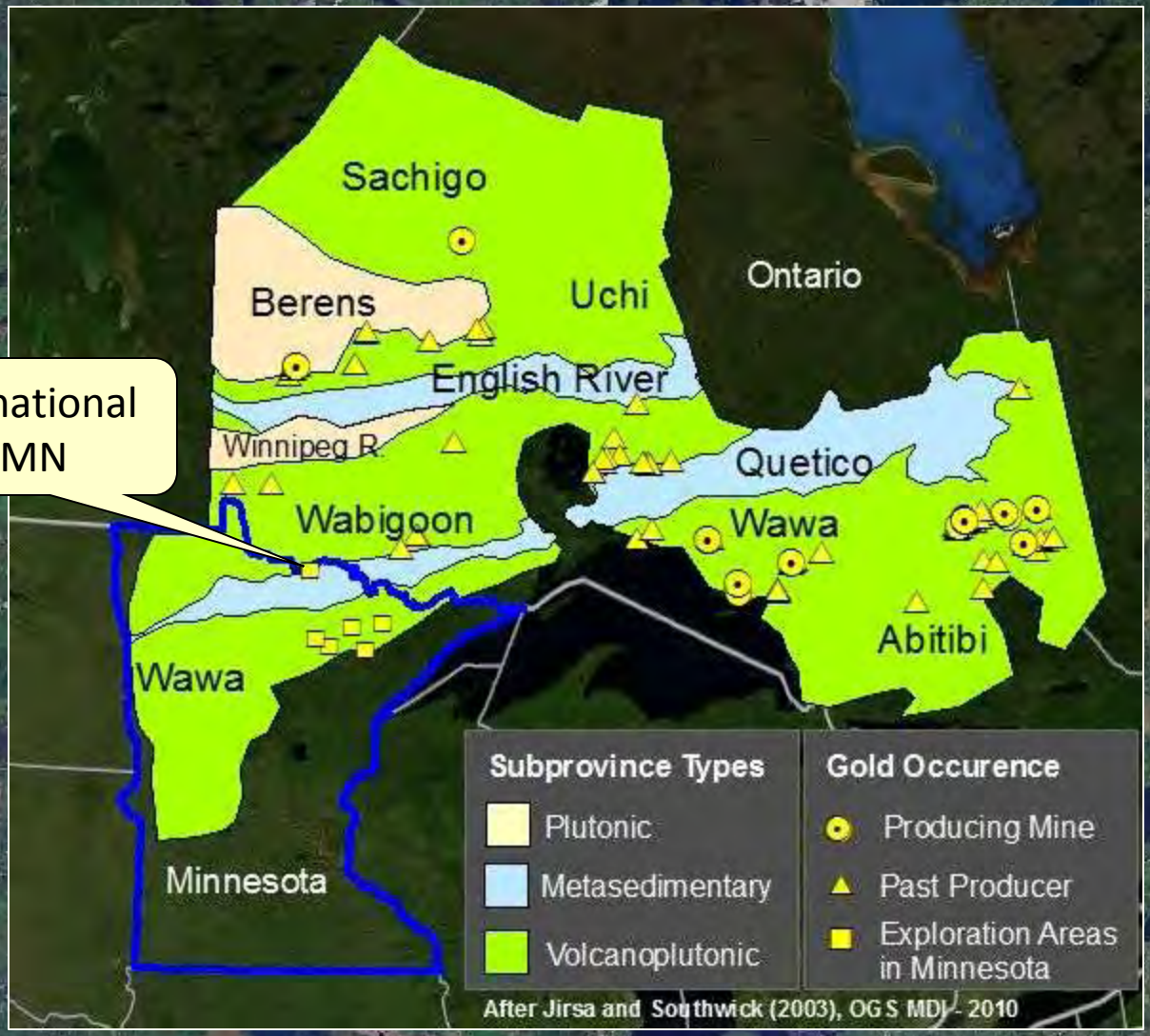
1. International Falls
2. Vermilion District
3. Virginia Horn
4. Bigfork East
5. Bigfork West
6. Linden Grove



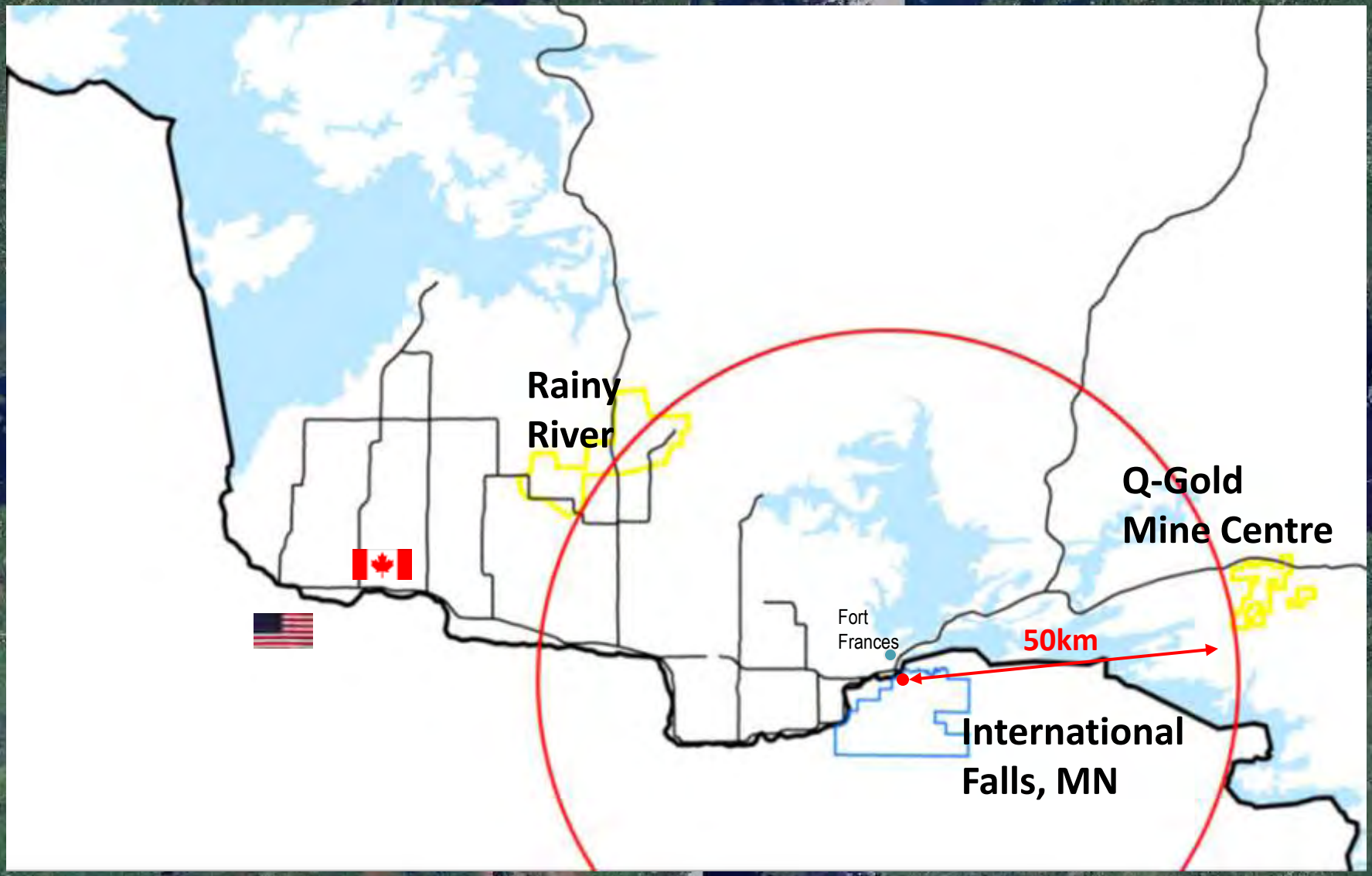
Geology after MGS (OFR 10_02, 2010)

There are currently six separate areas of active gold exploration in Northern Minnesota. The State offers mineral leases, including areas where gold prospects have been identified, either by historical mineral exploration, subsequent geologic mapping, and/or new gold in till sampling programs.

Minnesota DEPARTMENT OF NATURAL RESOURCES



The granite-greenstone terrane in the International Falls area is part of the Wabigoon Subprovice of the Archean Superior Province.



International Falls, Minnesota is located within 50 kilometers of the Rainy River and Q-Gold (Mine Centre) Gold Properties just over the border in Northwestern Ontario. The Mine Centre Area is along strike.

Simplified geology after OGS (2003) and MGS (OFR 10_02, 2010)

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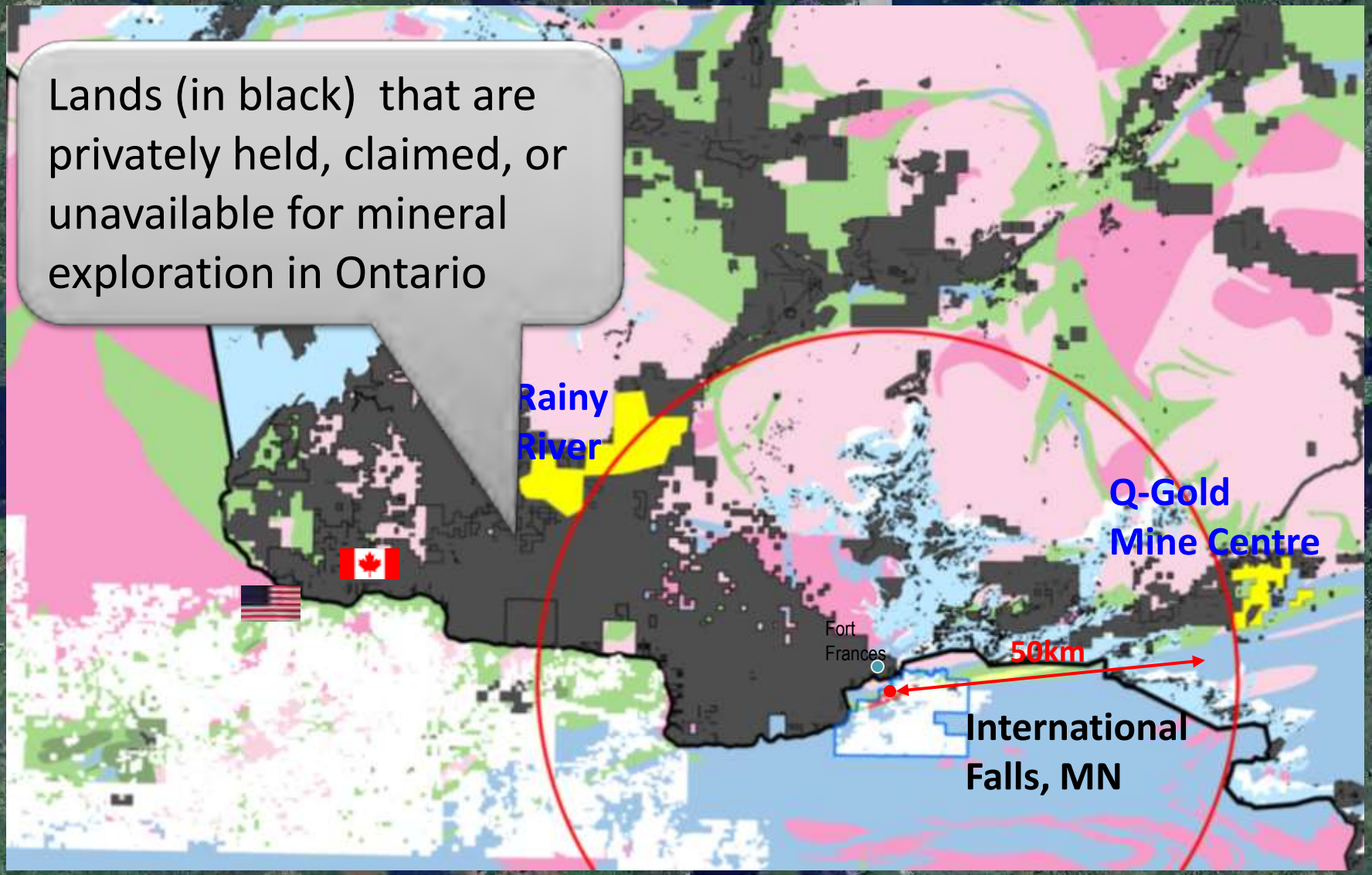

Simplified geology after OGS (2003) and MGS (OFR 10_02, 2010)

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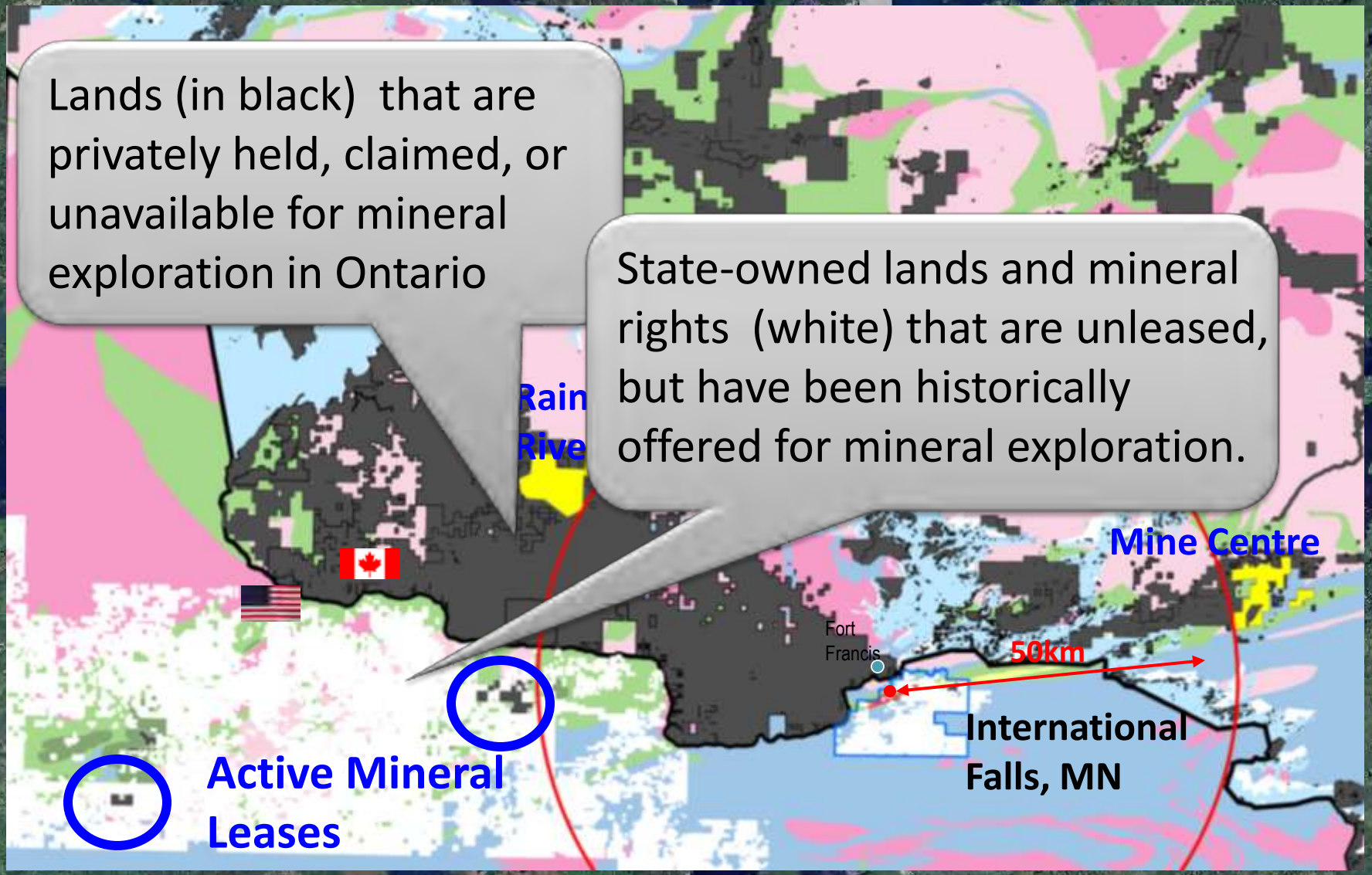
Significant portions of the Wabigoon granite-greenstone terrane on the Canadian side of the border are stake claimed, excluded from exploration, or privately held. The amount of comparable State-held lands and mineral rights that are not leased but have been offered for lease in the past is noteworthy (white).



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Minnesota
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International Falls Area
State Metallic Mineral Lease Sale

Minnesota
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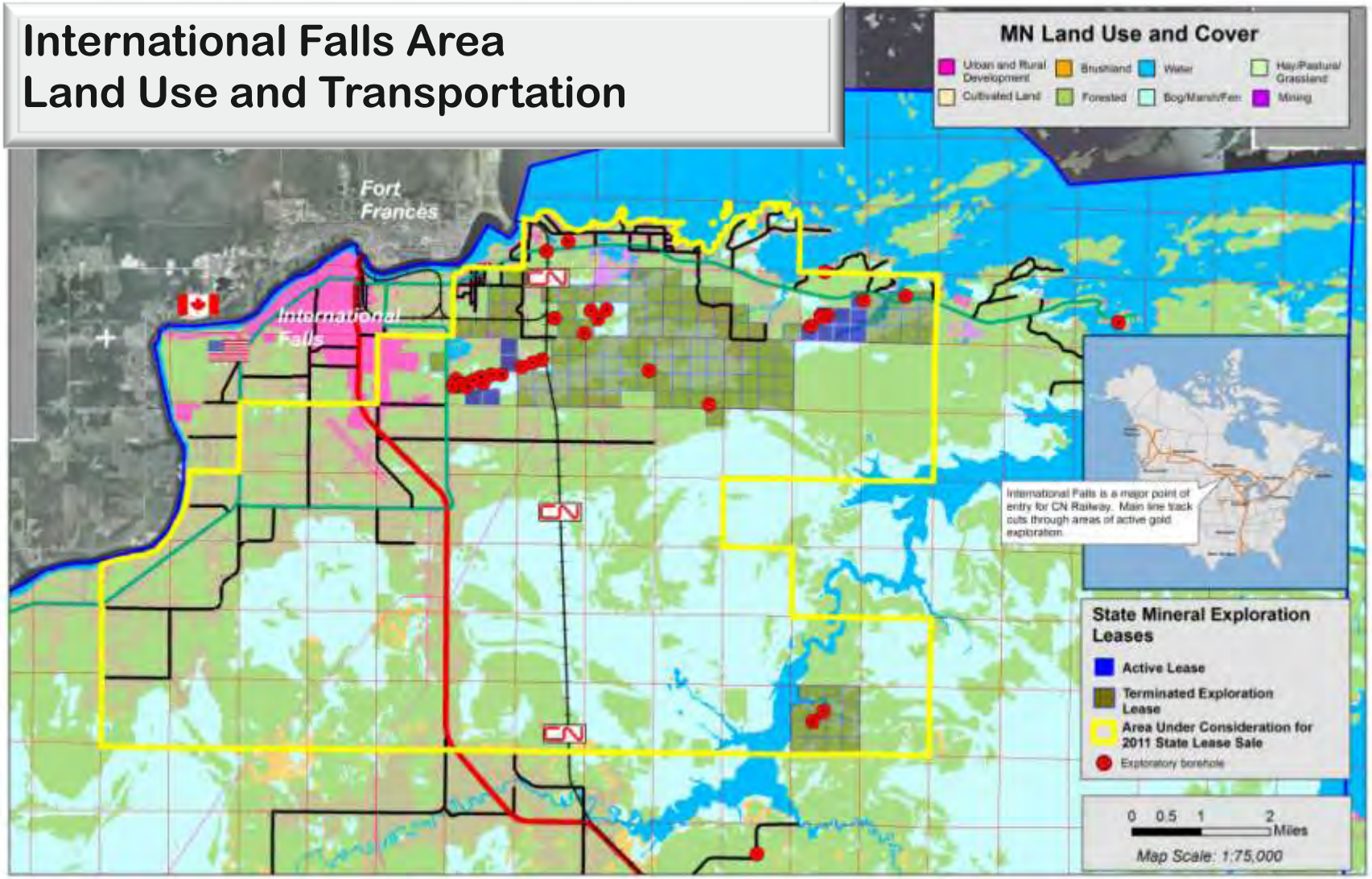
The Area Under Consideration for the April 28, 2011 Minnesota State Metallic Mineral Lease Sale is located just outside of the city, and just south of the U.S. – Canadian border. For specific areas offered, see http://files.dnr.state.mn.us/lands_minerals/leasesale/m_u_b_36-5_2011.pdf

International Falls Area
Land Use and Transportation



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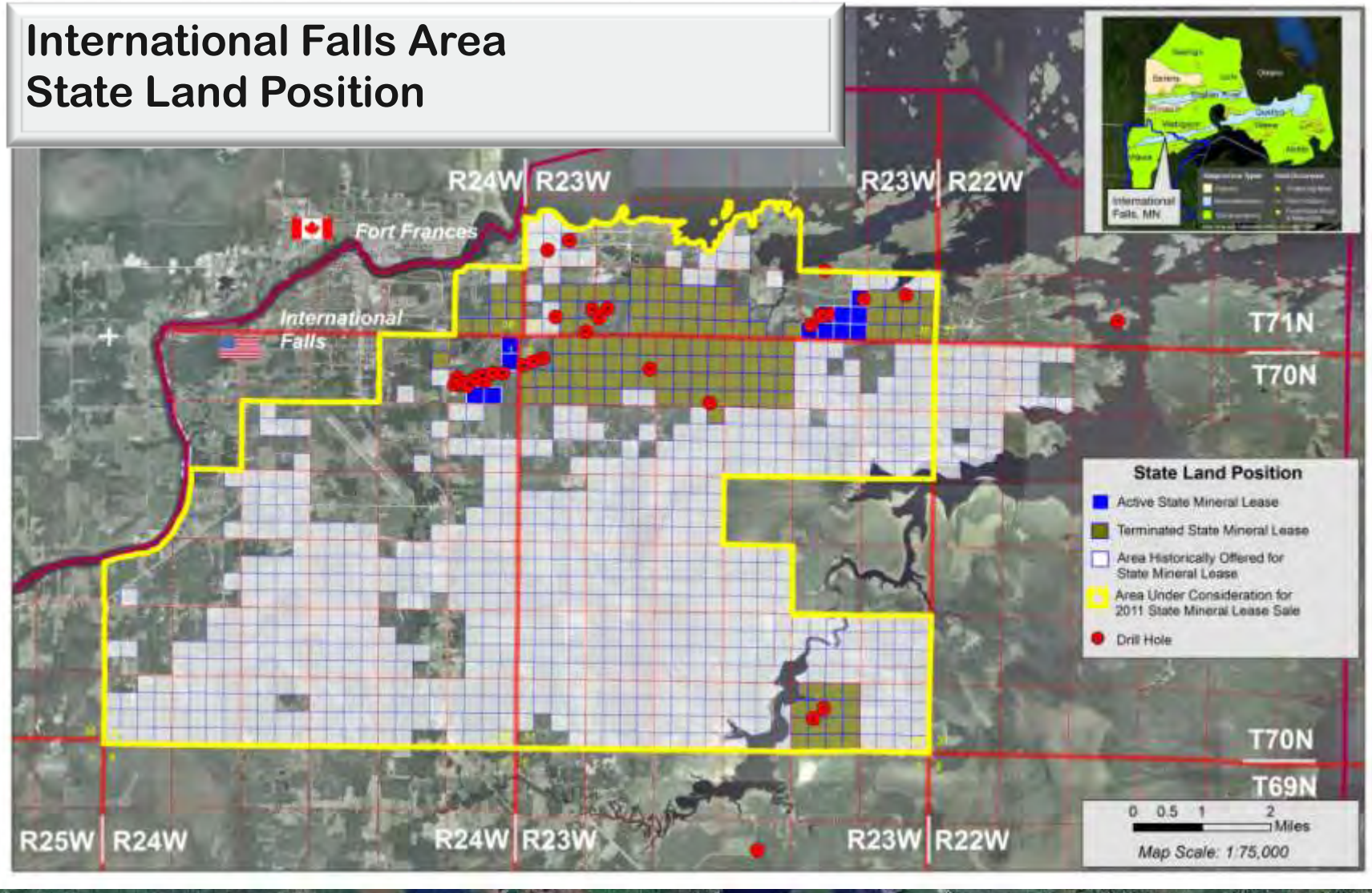
The International Falls area is largely undeveloped wetlands and forested areas. There is excellent road access, and CN's mainline track cuts straight through the Area Under Consideration for the 2011 State Mineral Lease Sale.

International Falls Area
State Land Position



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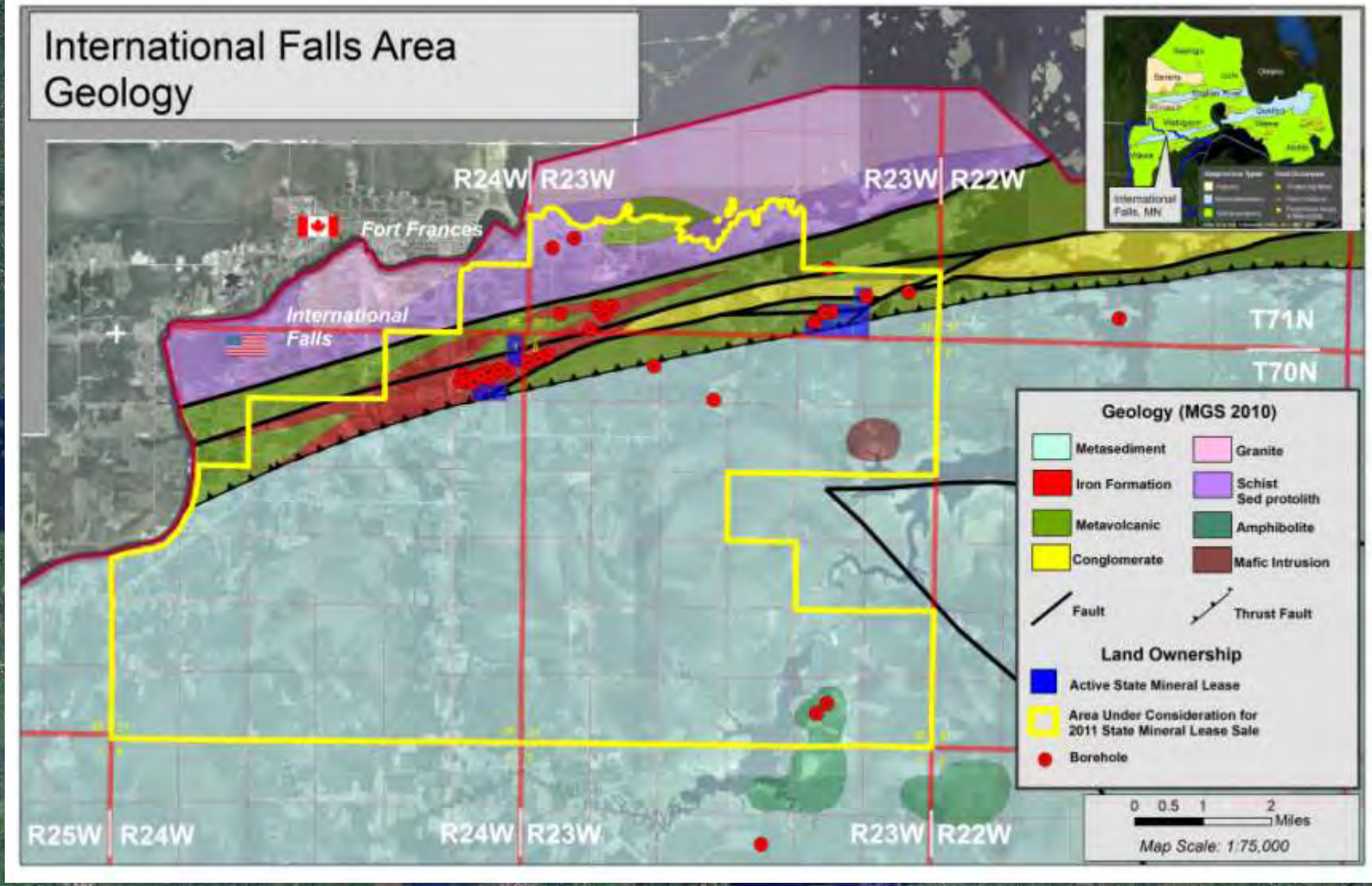
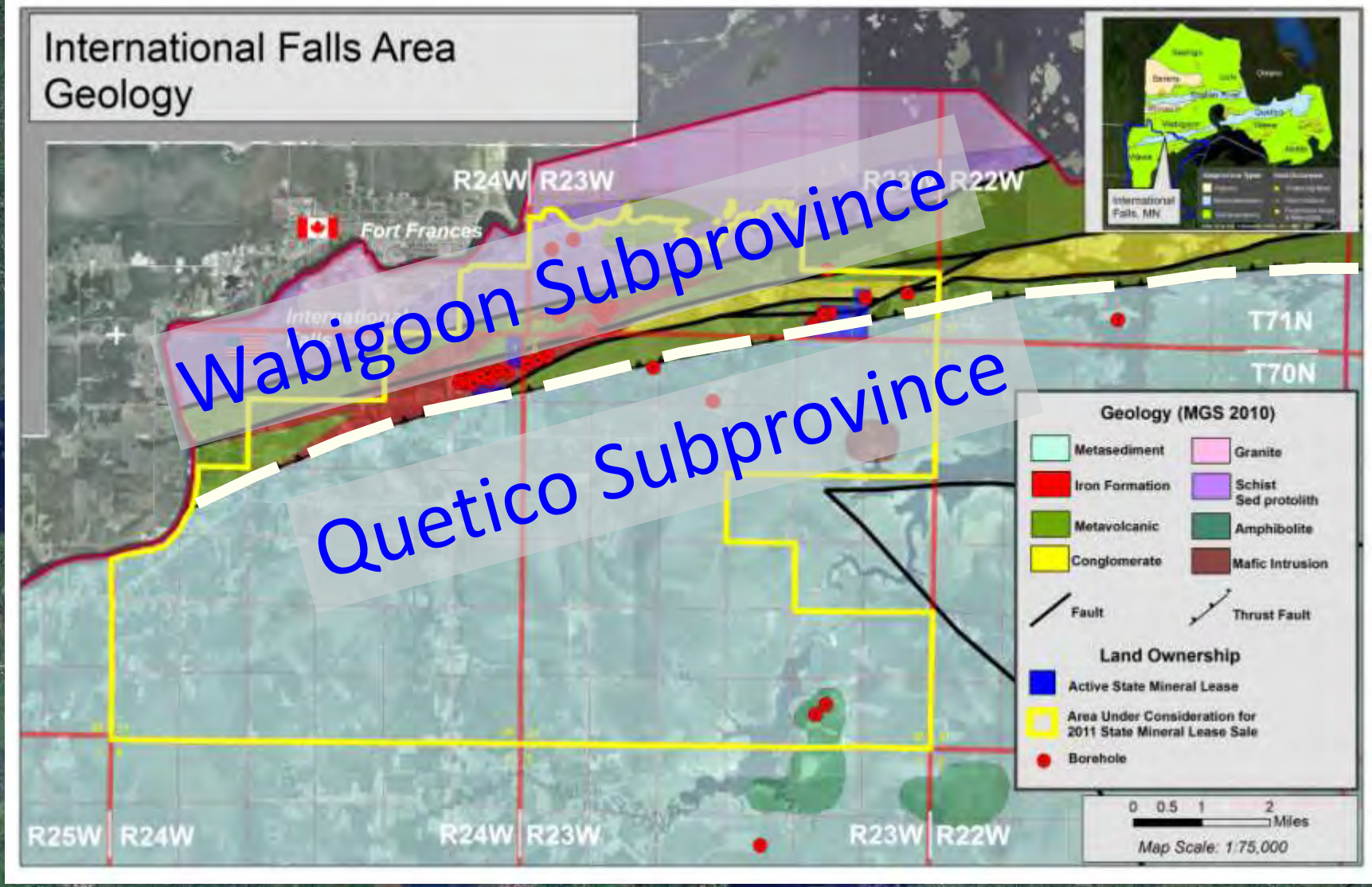
DEPARTMENT OF NATURAL RESOURCES

The State of Minnesota holds a dominant position of surface and mineral rights within the Area Under Consideration. There are two parcels that are actively leased for mineral exploration, separated by an area of historic mineral exploration.



Geology after MGS (OFR 10_02, 2010)

A major thrust fault bisects the International Falls Area, separating Quetico Subprovince metasedimentary units to the South from Wabigoon Subprovince granite-greenstone that includes an Algoma-type iron formation and fault bound metavolcanics.



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Minnesota Department of Natural Resources

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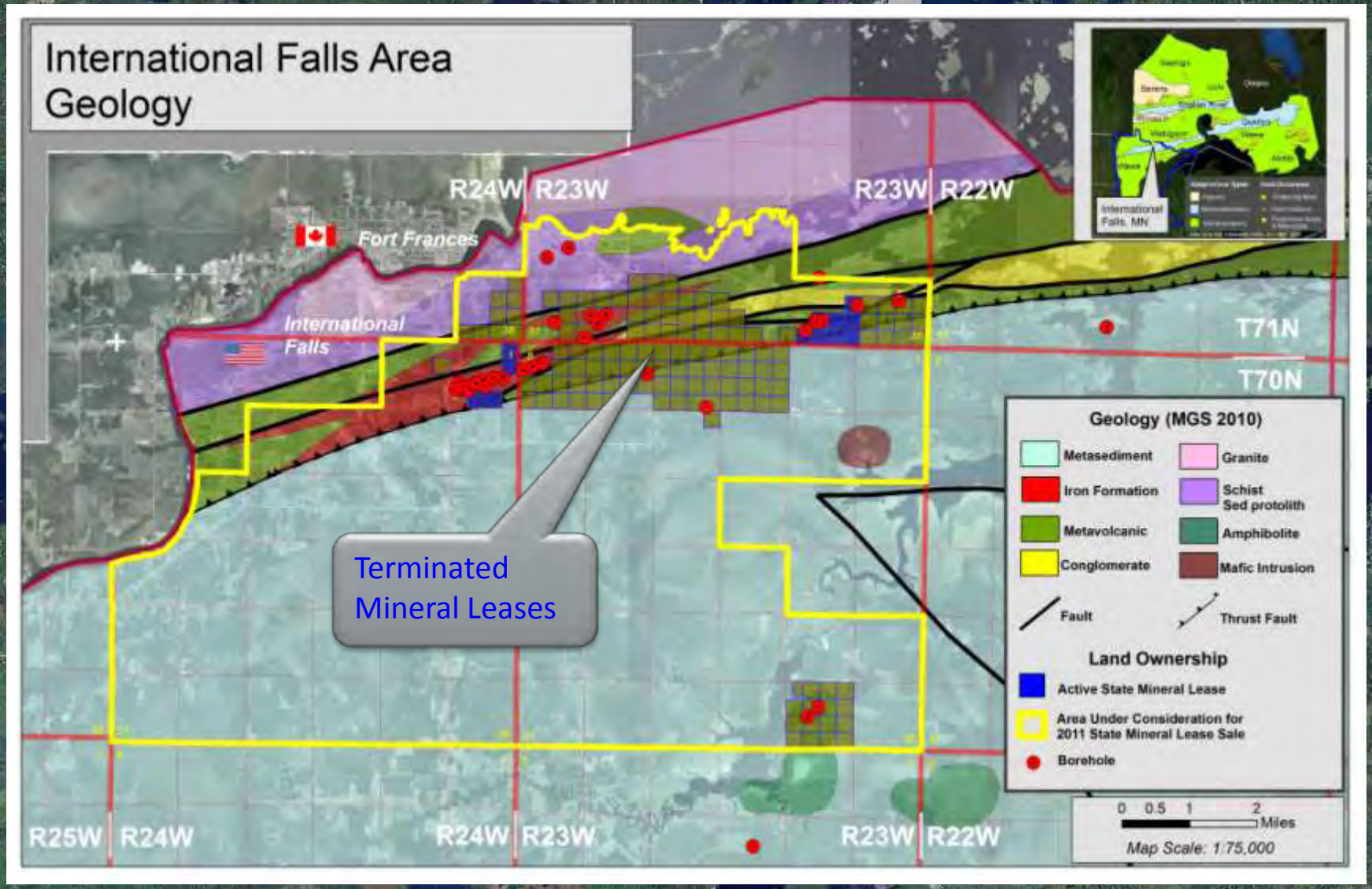
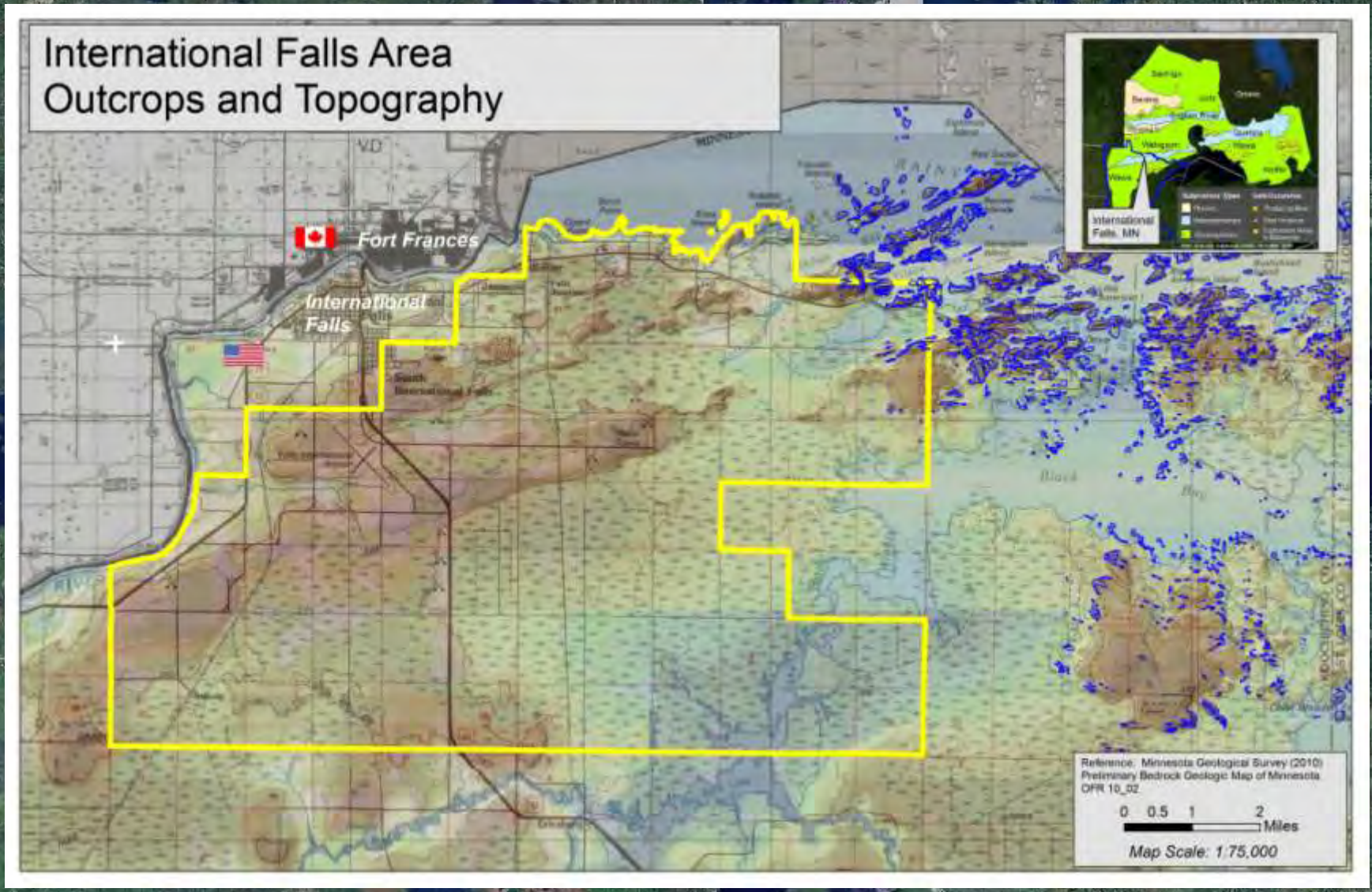


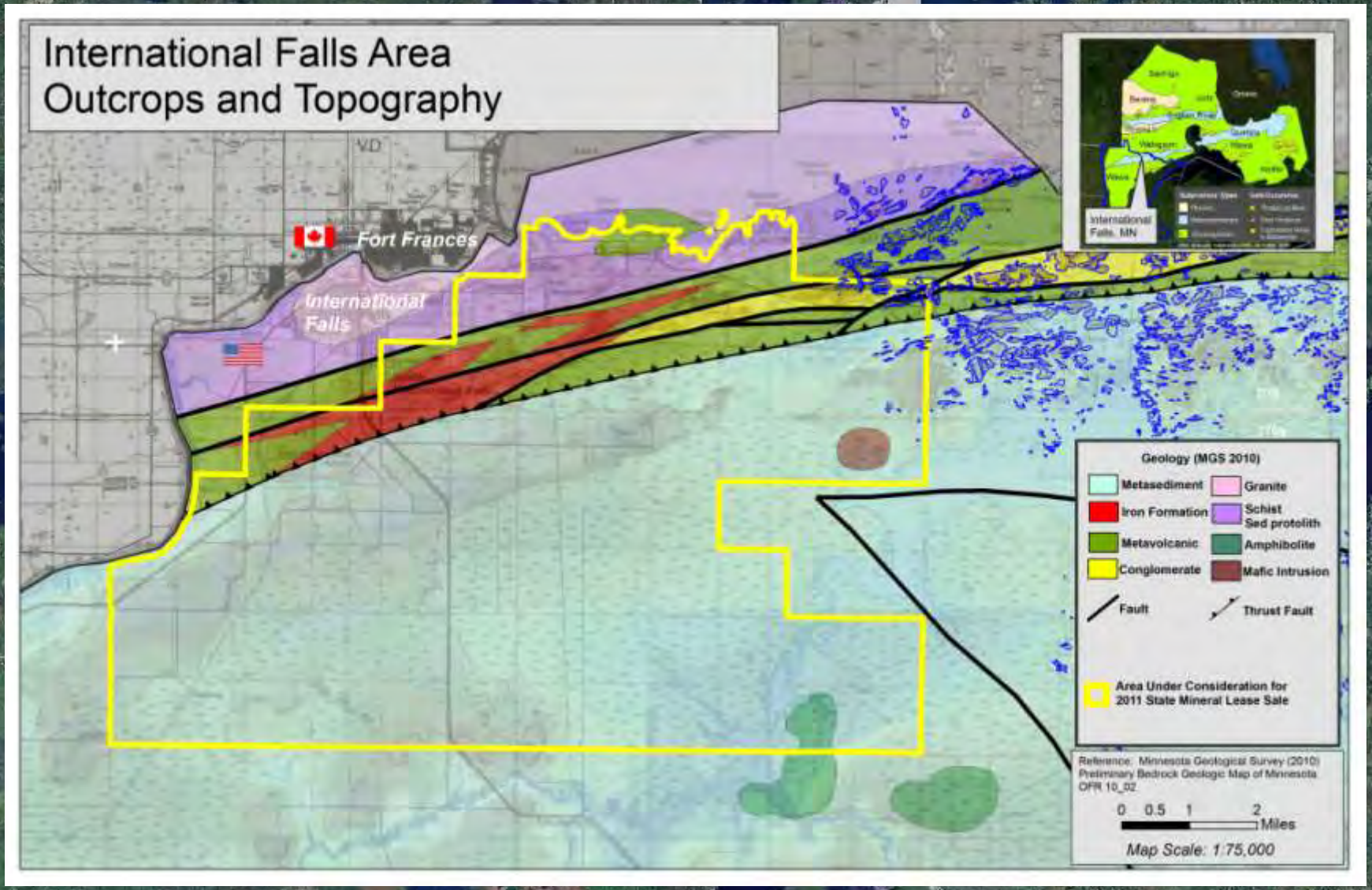
Geology after MGS (OFR 10_02, 2010)

The Active and Terminated State Mineral Leases in the International Falls Area are concentrated along the structural boundary between the Wabigoon and Quetico Subprovinces.



Outcrops from MGS (OFR 10_02, 2010)

The International Falls Area has relatively low topographic relief. Bedrock outcrop exposures are limited to the northeastern portion of the area.



Geology after MGS (OFR 10_02, 2010)

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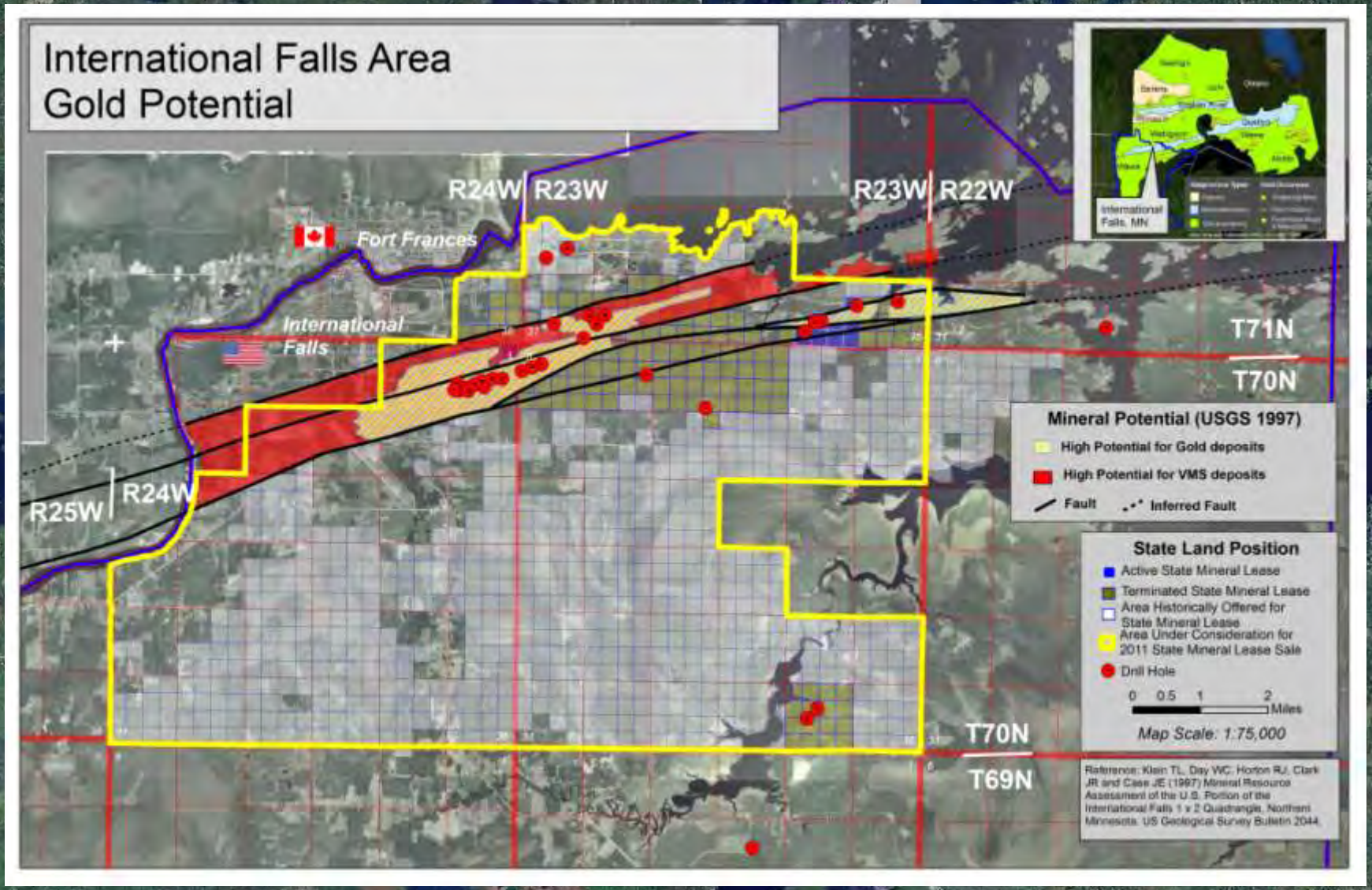
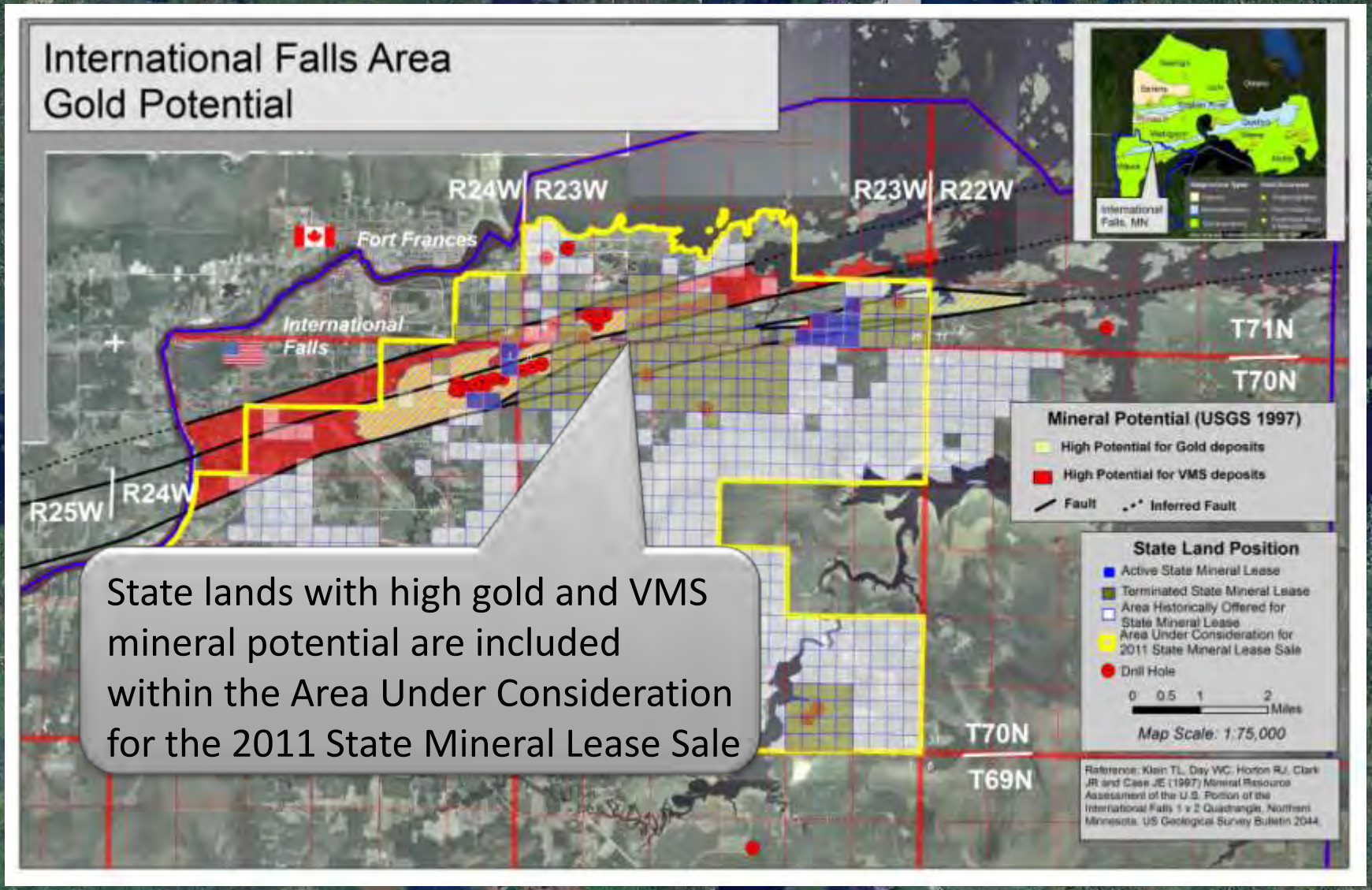
The areal distribution of bedrock outcrops is not lithologically controlled. Surface exposures of Wabigoon Subprovince metavolcanics and Quetico Subprovince metasediments are found in the northeastern part of the Area Under Consideration for the April 28,2011 State Mineral Lease Sale.



In 1997, the US Geological Survey published a Mineral Resource Assessment for the U.S. Portion of the International Falls 1 x 2 Quadrangle. Their maps show areas with high potential for gold and volcanogenic massive sulfide deposits.



Minnesota
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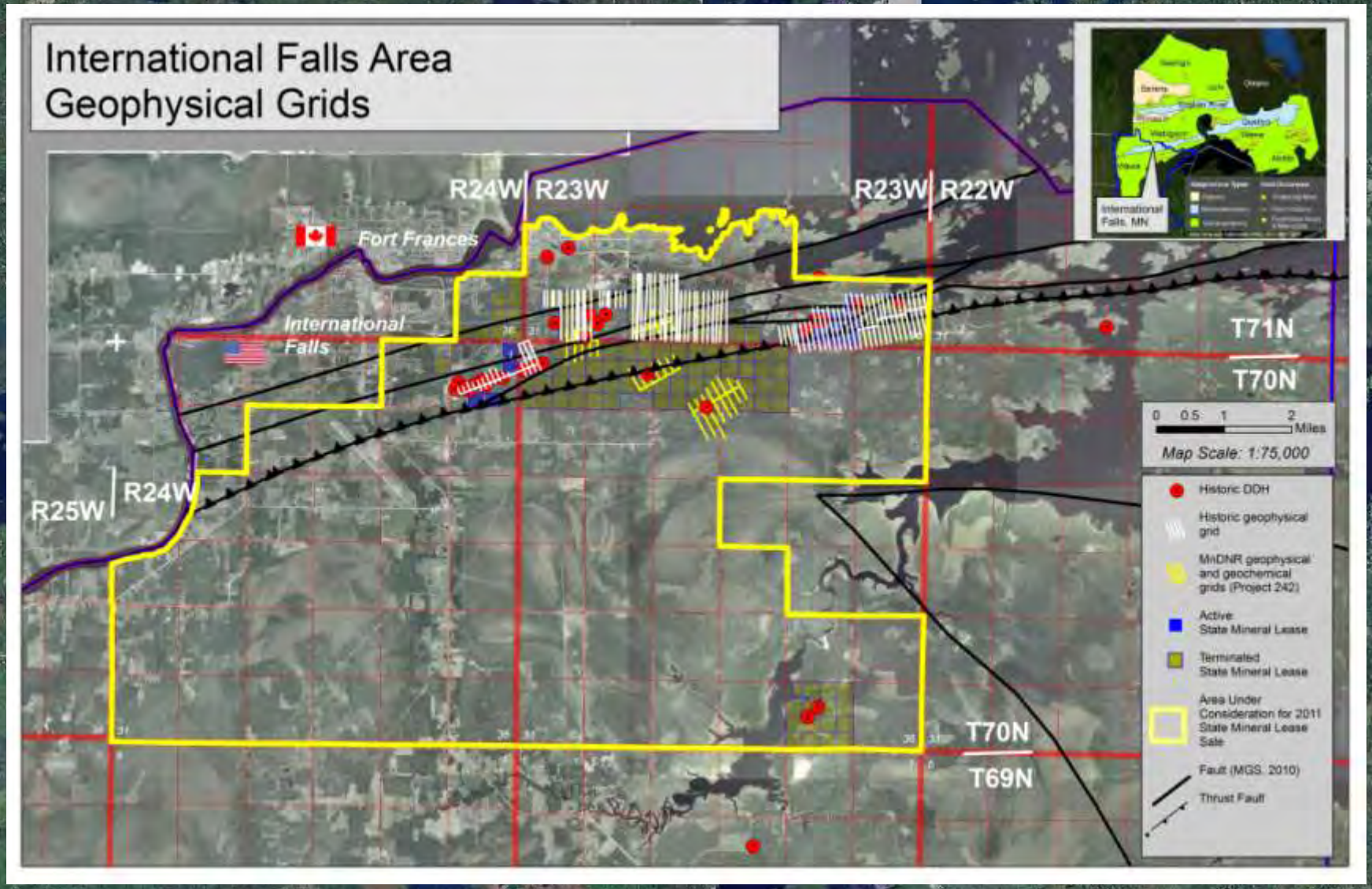
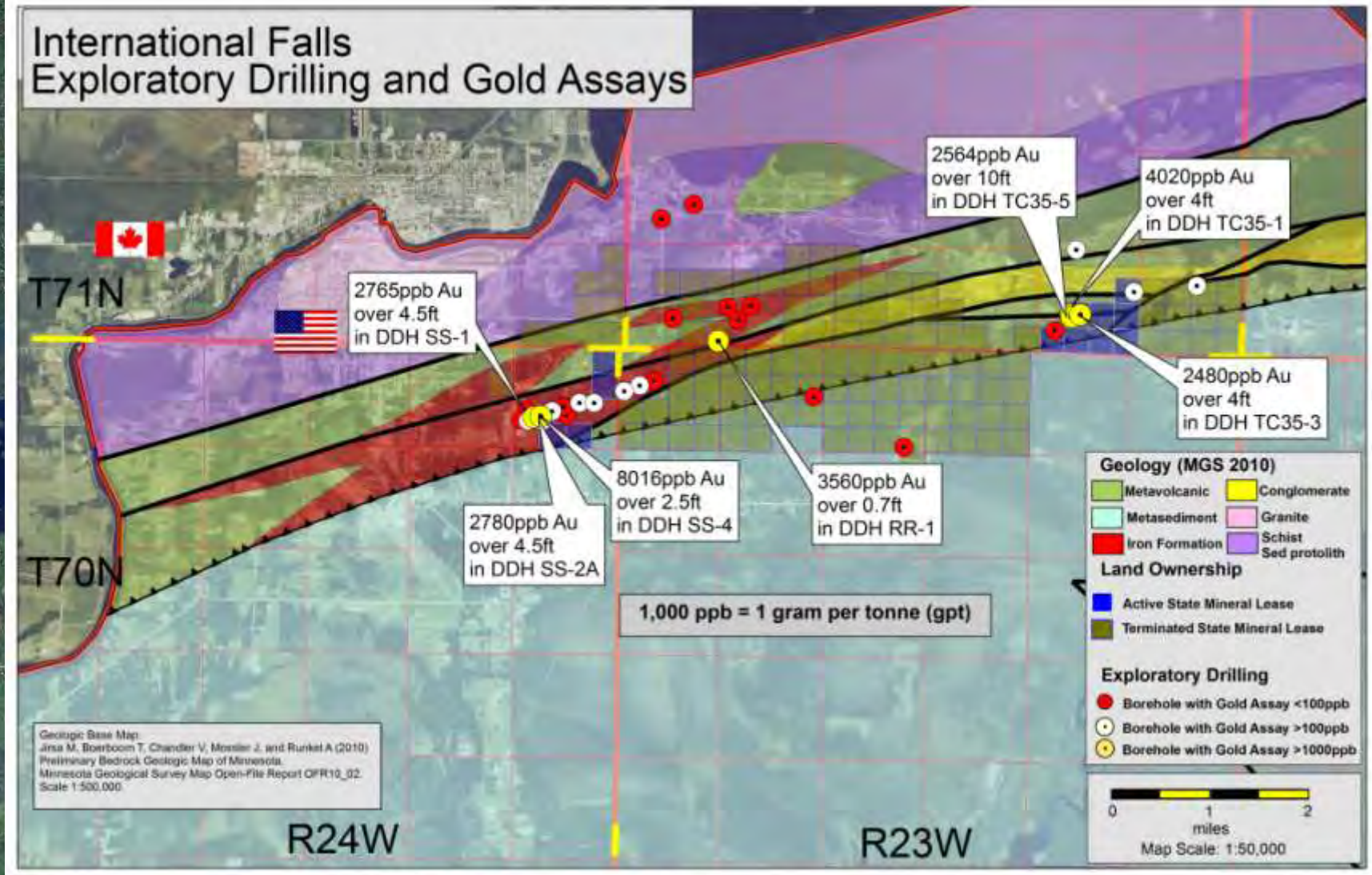
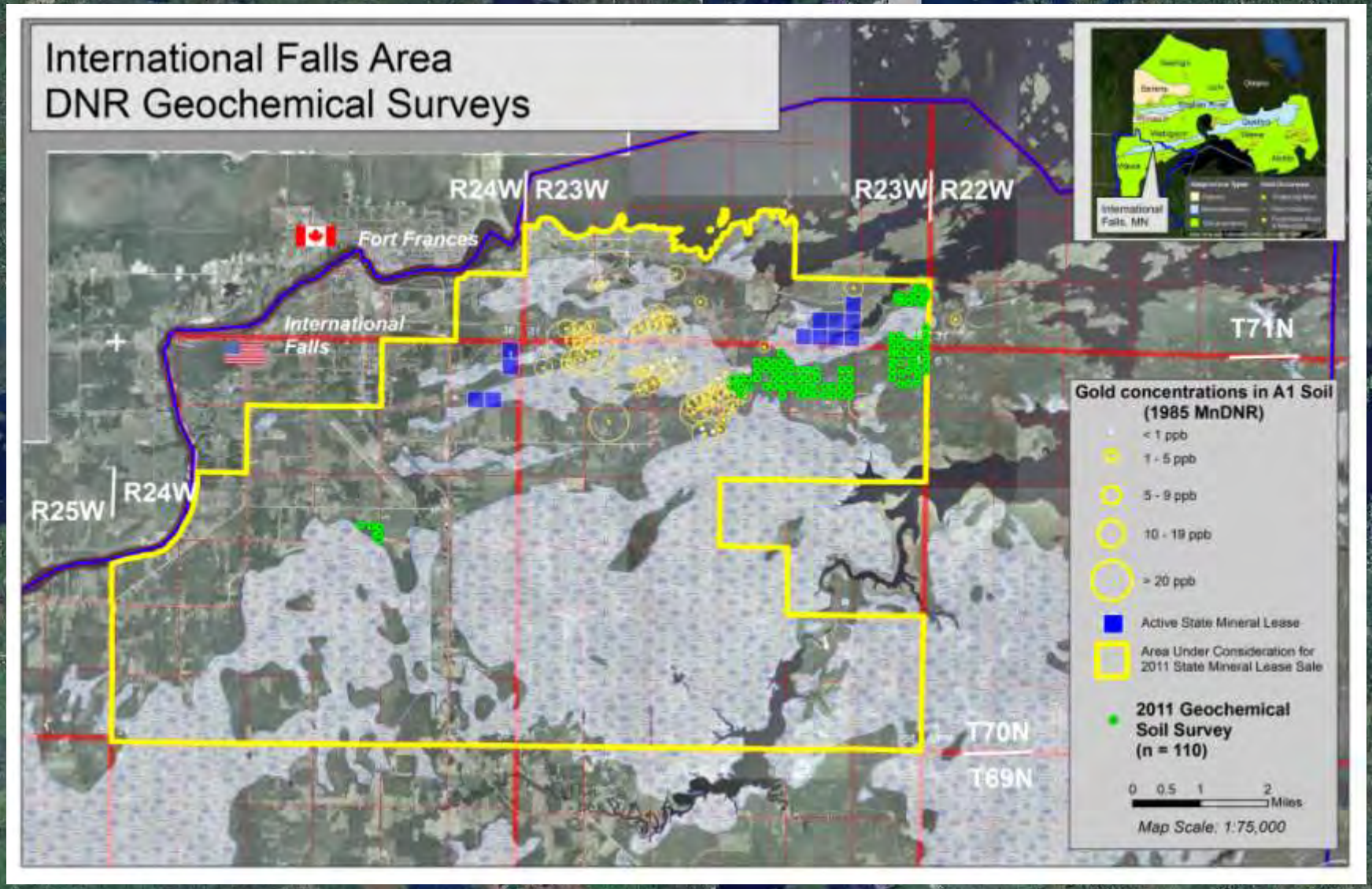


A number of geophysical surveys were completed during historic exploration under terminated State mineral leases. The DNR also completed a geophysical survey in 1984. The results of these geophysical investigations are available for review in the MnDNR's archive of lease documents and data in Hibbing.



Geology after MGS (OFR 10_02, 2010)

Several drill holes were completed in the International Falls Area during a period of active exploration in the 1980's and 1990's. Assays from some of these drill holes returned high gold concentrations over core intervals of up to ten feet in length.



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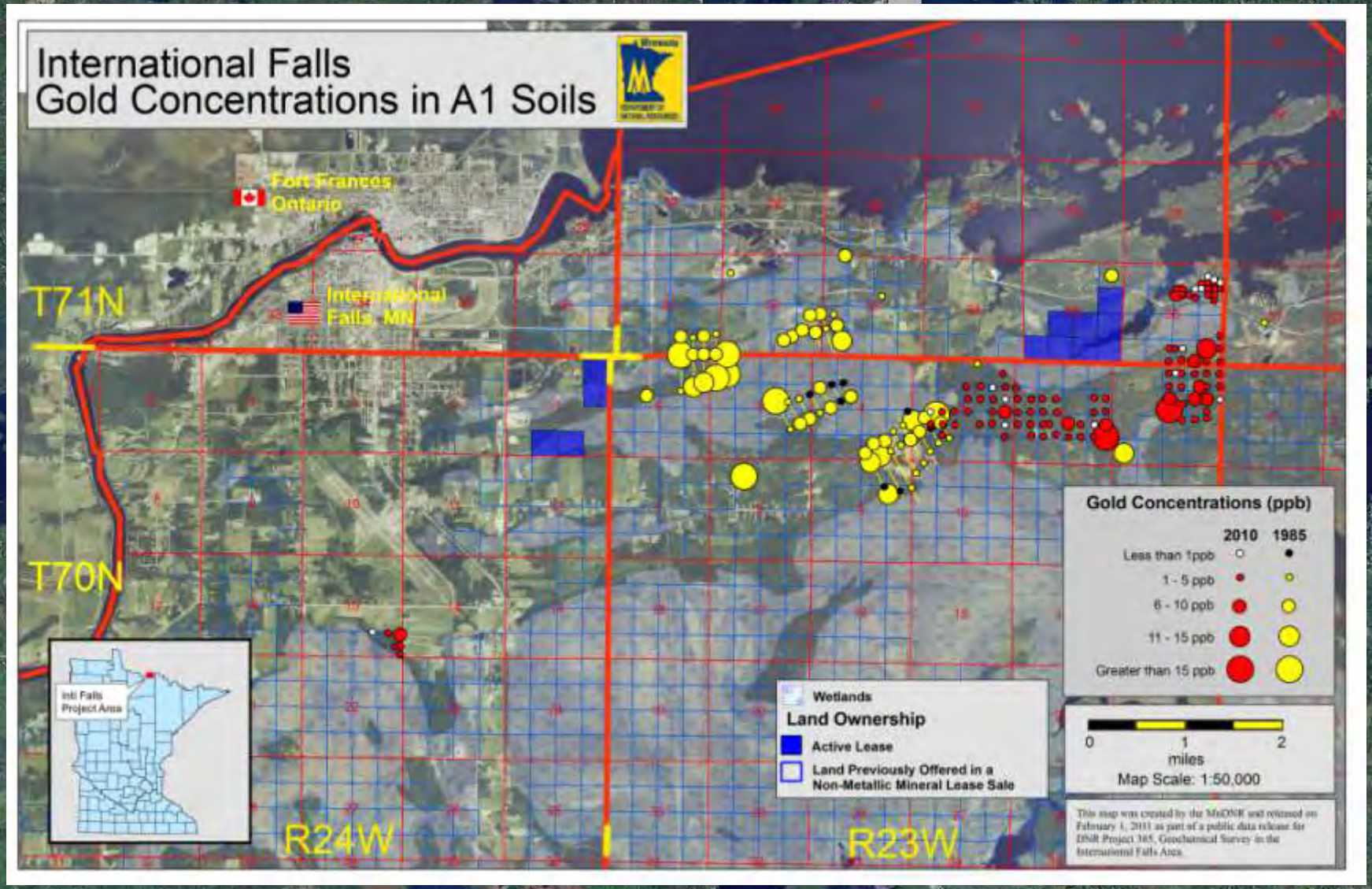
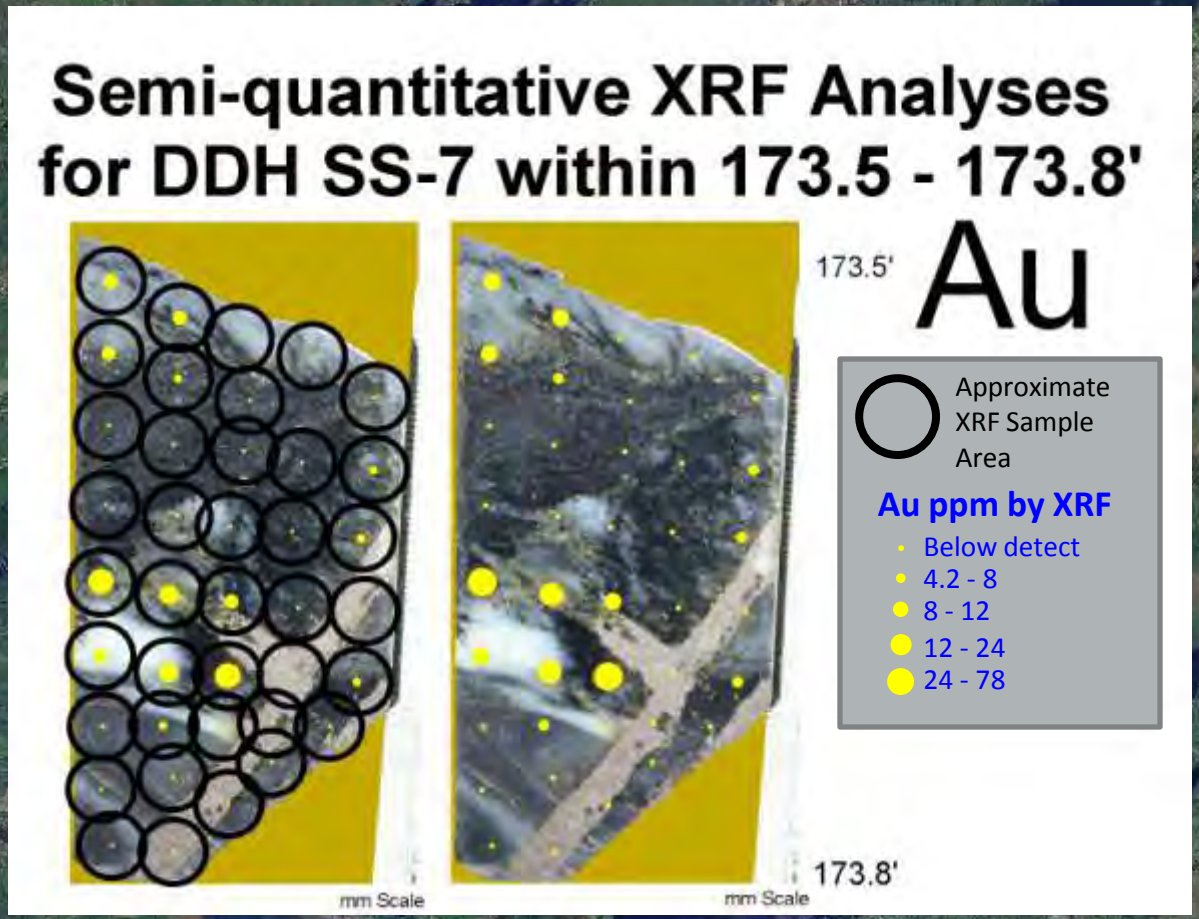
The MnDNR collected 110 new shallow soil samples in 2010. Most of the samples were collected on a 200m grid, and all samples were in areas with State-controlled surface and mineral rights. Samples were not collected where there were active mineral leases and/or wetlands.



Minnesota
DEPARTMENT OF
NATURAL RESOURCES

Gold concentrations in the 110 A1 soil samples collected by the MnDNR in 2010 are comparable to those documented in a 1985 Mn DNR geochemical survey in the International Falls Area (Report 242).

New drill core geochemistry

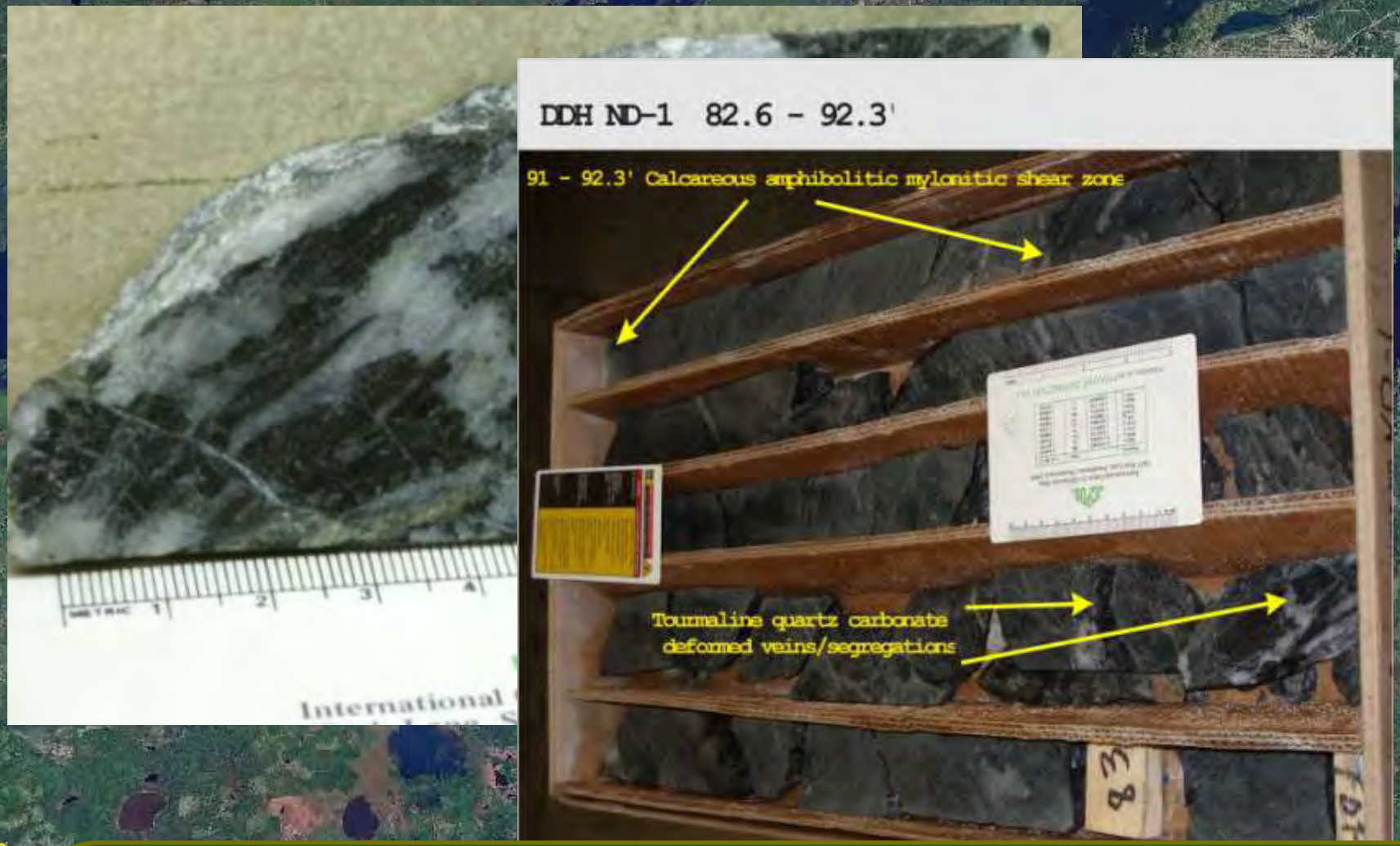


New semi-quantitative X-ray fluorescence spectrometer data collected by the MnDNR on drill core from the International Falls Area. Gold mineralization Is associated with Rb (potassium analog?), Cu, and Mn; along with quartz veining, sulfides, and local tourmaline in metamorphosed iron formation.

Gold association with local tourmaline

Drill core from the International Falls Area. Large tourmaline masses associated with deformed quartz-carbonate veins and segregations.

Gold association with local tourmaline

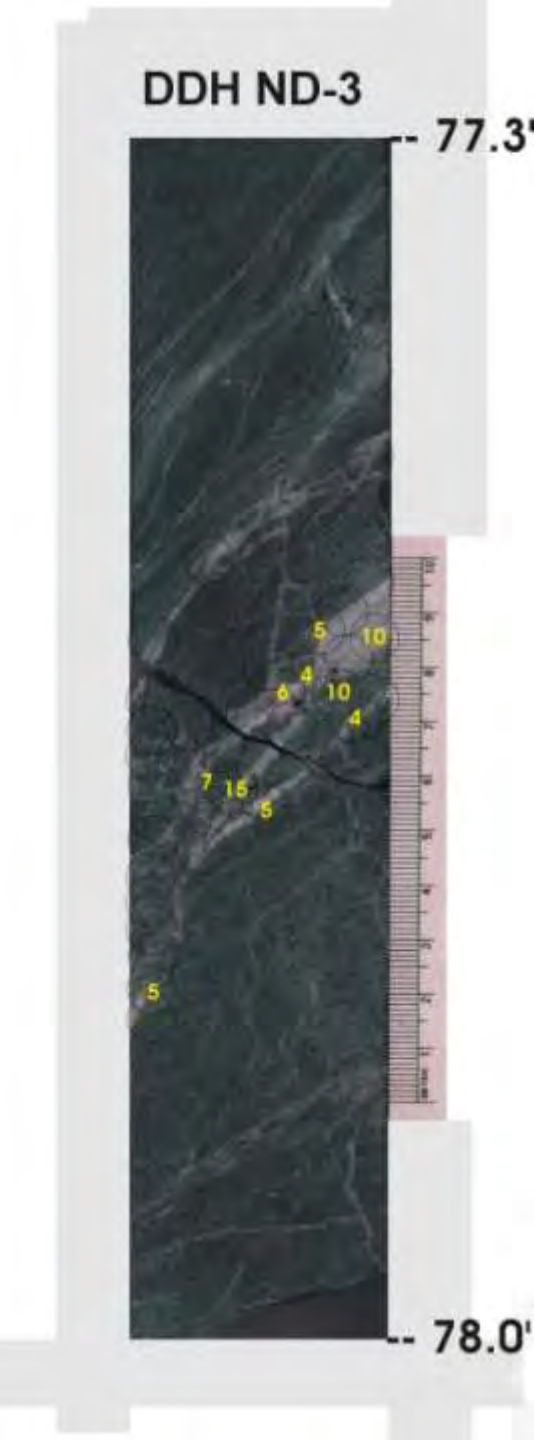


Section of tourmaline-quartz-carbonate drill core within its archived 10-foot core box. Drill core from the International Falls Area is available to the public in the MnDNR's Drill Core Library in Hibbing, MN, a state-wide repository that holds more than 3 million feet of core from more than 12,000 drill holes.

New drill core geochemistry

Spot gold concentrations (ppm) in drill core from a greenstone belt near International Falls, Minnesota. New semi-quantitative XRF analyses by MnDNR.

This is an example of the drill core accessible to the public as part of the Drill Core Library's collection of archived materials. This specific section of core was submitted by an exploration company that was focused on a different interval of core.



U. S. Geological Survey: Criteria for Lode Gold Deposits

Reference: USGS Bulletin 2044 (1997)

Diagnostic criteria

1. Presence of anomalous gold in bedrock or soils.
2. Proximity to shear zones (less than 2 km).
3. Evidence of appropriate hydrothermal alteration:
   - Vein and (or) ribbon quartz
   - Carbonate alteration minerals (ankerite, siderite, dolomite)
   - Potassic alteration (sericite)
   - Boron anomalies (tourmaline)
   - Metal pathfinder element anomalies (As, Se, Cu, Zn, Bi, Mo, Sb, etc.)
   - Disseminated or vein-filling arsenopyrite or pyrite

Permissive criteria

1. Presence of chemically favorable host rock, such as iron formation or iron-rich mafic rocks.
2. Presence of fuchsite or scheelite

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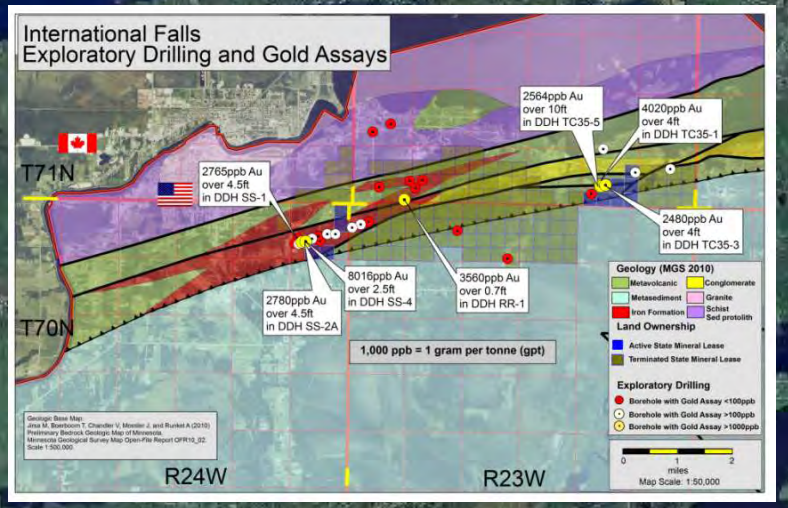

In this slide and those following, the USGS's criteria for high potential for lode gold deposits is matched against the geology , mineralogy, and mineralization of the International Falls Area. **The International Falls Area has all of the diagnostic criteria for lode gold deposits.**

Minnesota DEPARTMENT OF NATURAL RESOURCES

U. S. Geological Survey: Criteria for Lode Gold Deposits

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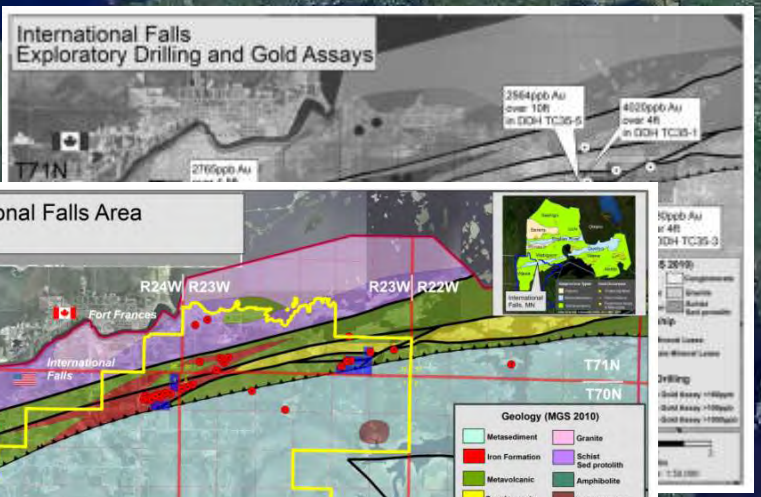

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   - Potassic alteration (se…
   - Boron anomalies (tour…
   - Metal pathfinder eleme… Zn, Bi, Mo, Sb, etc.)
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Permissive criteria

1. Presence of chemically fav… as iron formation or iron-rich …
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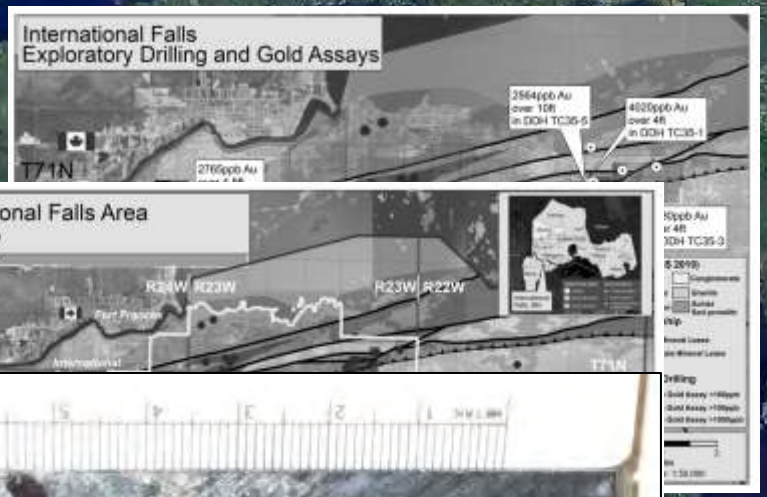

Deformed quartz-carbonate-sulfide vein or segregation in a silicate-oxide-sulfide-chert(?) iron formation, with porphyroblastic garnet in chlorite-amphibole groundmass.

DDH SS-7, 265.8 -266.2ft

U. S. Geological Survey: Criteria for Lode Gold Deposits

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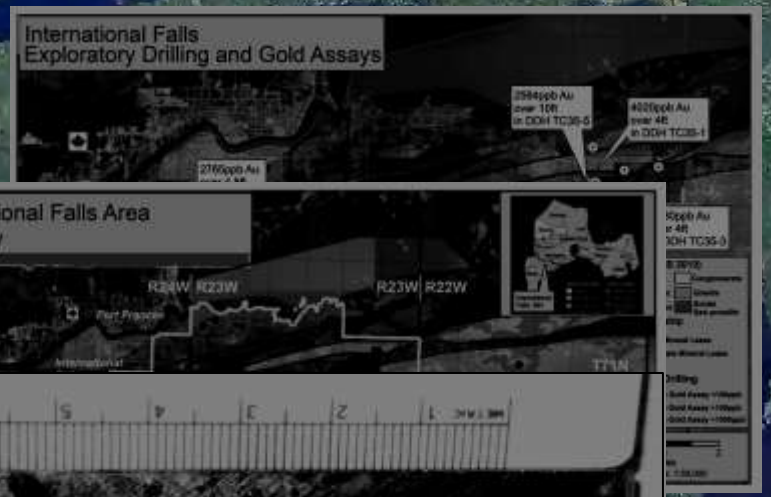
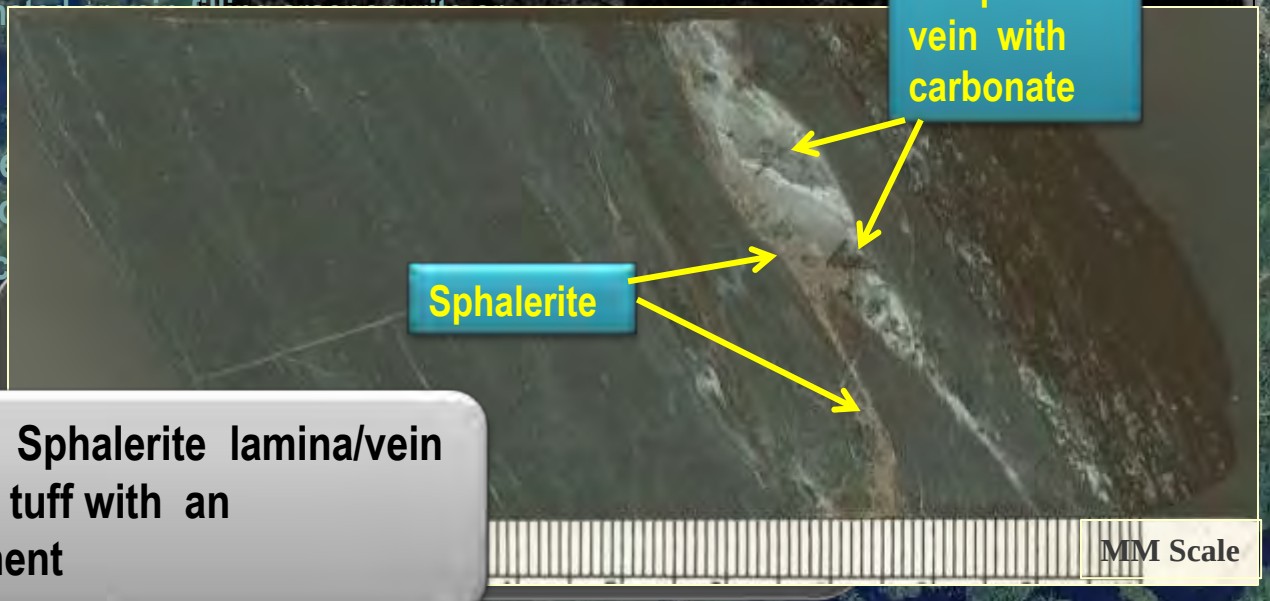
   - Boron anomalies (tourmaline)
   - Metal pathfinder element anomalies (As, Se, Cu, Zn, Bi, Mo, Sb, etc.)
   - Disseminated [illegible] pyrite

Permissive criteria

1. Presence of che[illegible] as iron formation
2. Presence of fuc[illegible]





DDH ND-3 @ 340' Sphalerite lamina/vein in siliceous lapilli tuff with an exhalative component

U. S. Geological Survey: Criteria for Lode Gold Deposits

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   - Disseminated or vein-filling arsenop pyrite

Permissive criteria

1. Presence of chemically favorable host as iron formation or iron-rich mafic rocks
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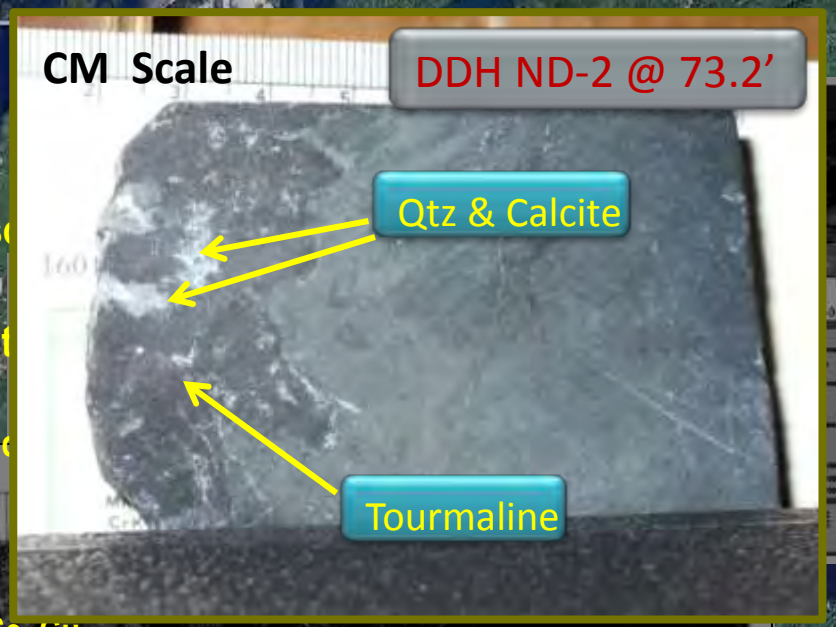
DDH ND-3 @ 340' Sphalerite lamina/v in siliceous lapilli tuff(?) with an exhalative component



U. S. Geological Survey: Criteria for Lode Gold Deposits

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   - Disseminated or vein-filling arsenopyrite or pyrite

Permissive criteria

1. Presence of chemically favorable host rock, such as iron formation or iron-rich mafic rocks.
2. Presence of fuchsite or scheelite

DDH SS-9 @ 222.1' Deformed chert-silicate-oxide-sulfide iron formation with garnet porphyroblasts that have calcite and sulfide strain shadows.

U. S. Geological Survey:

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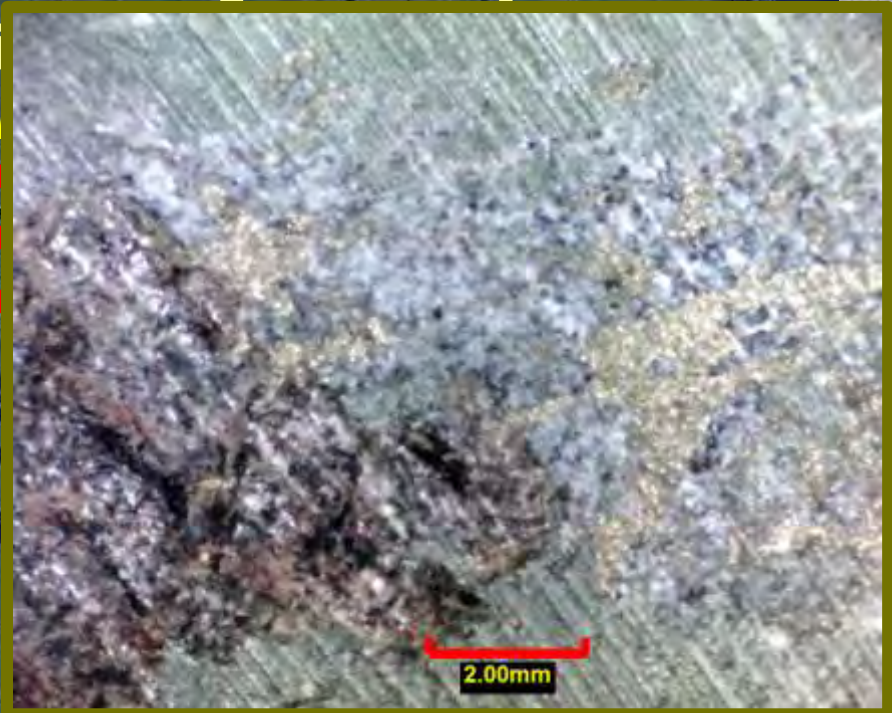

Permissive criteria

1. Presence of chemically favorable host rock, such as iron formation or iron-rich mafic rocks.
2. Presence of fuchsite or scheelite

DDH SS-9 @ 222.1' Deformed chert-silicate-oxide-sulfide iron formation with garnet porphyroblasts that have calcite and sulfide strain shadows.

U. S. Geological Survey: Criteria for Lode Gold Deposits

Diagnostic criteria

1. Presence of anomalous gold in bedrock or soils.
2. Proximity to shear zones (less than 2 km).
3. Evidence of appropriate hydrothermal alteration:
   - Vein and (or) ribbon quartz
   - Carbonate alteration minerals (ankerite, siderite, dolomite)
   - Potassic alteration (sericite)
   - Boron anomalies (tourmaline)
   - Metal pathfinder element anomalies (As, Se, Cu, Zn, Bi, Mo, Sb, etc.)
   - Disseminated or vein-filling arsenopyrite or pyrite

Permissive criteria

1. Presence of chemically favorable host rock, such as iron formation or iron-rich mafic rocks.
2. Presence of fuchsite or scheelite

Fuchsite in drill core

SS-9 @ 191’
TC36-1 @ 354’
ND-2 @ 496-499’
S-2 @ 66’and 189’

DDH SS-9 @ 222.1’ Deformed chert-silicate-oxide-sulfide iron formation with garnet porphyroblasts that have calcite and sulfide strain shadows.

U. S. Geological Survey: Criteria for Lode Gold Deposits

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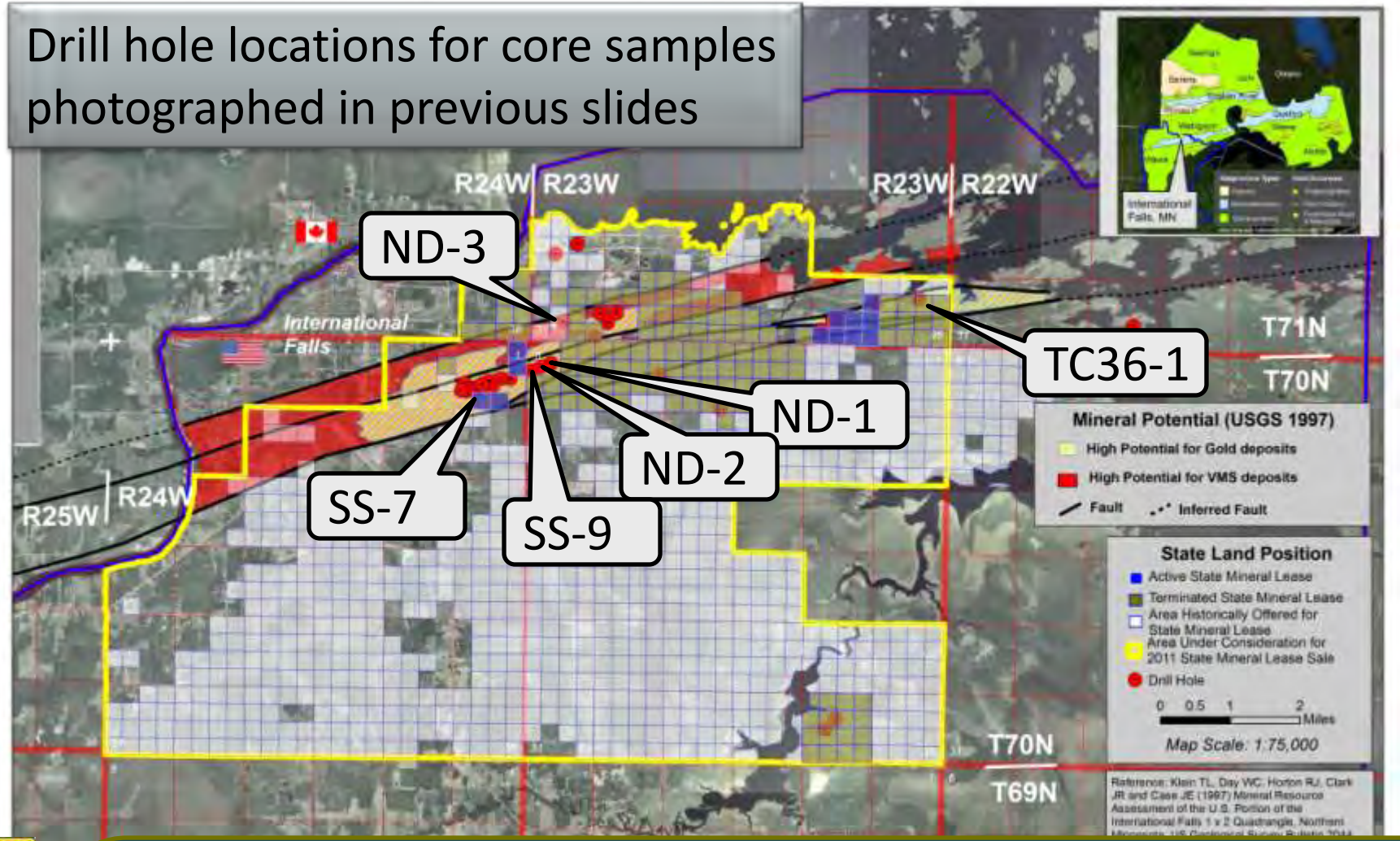
Drill hole locations for core samples photographed in previous slides



This map shows the locations of the drill cores identified in the previous slides as having geological and mineralogical conditions that meet the USGS's criteria for high potential for lode gold deposits.

Minnesota DEPARTMENT OF NATURAL RESOURCES

State Metallic Mineral Lease Sale

April 28, 2011

Minnesota Department of Natural Resources

Recreation | Destinations | Nature | Education / safety | Licenses / permits / regs.

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Metallic Minerals Lease Sale

Notice of Sale of State Metallic Minerals Leases

Notice is hereby given that a sale of leases to explore for, mine and remove metallic minerals in trust fund lands, lands and minerals forfeited for non-payment of taxes, lands and minerals otherwise acquired, and other state-owned land under the jurisdiction of the Commissioner of Natural Resources, and located in portions of Itasca, Koochiching, Lake and Saint Louis Counties, is scheduled to be held on Thursday, April 28, 2011, at 9:00 a.m. The sale will take place at the Central Offices of the Division of Lands and Minerals, 4th Floor, East-West Conference Room DNR Building, 500 Lafayette Road, Saint Paul, Minnesota. No land or water areas within the Boundary Water Canoe Area Wilderness or Voyageurs National Park are included in this or any State mineral lease sale.

The Commissioner will receive sealed bids and applications for leases covering minerals in state lands, in accordance with Minnesota Rules, parts 6125.0100 through 6125.0700 ? the metallic mineral rules issued under the authority of Minnesota Statutes, Chapter 93. Each bid must be submitted on a form obtained from the Commissioner. Each bid form must be accompanied by a certified check, cashier's check, or bank money order, payable to the Department of Natural Resources in the sum of the following amounts: a) an application fee of $100.00 for each mining unit bid upon; and b) rental for one full calendar year for each mining unit bid upon. All bids must be received by the Commissioner at the office of the Division of Lands and Minerals, Fourth

http://www.dnr.state.mn.us/lands_minerals/leasesale/index.html

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State of Minnesota Metallic Mineral Lease Sale

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