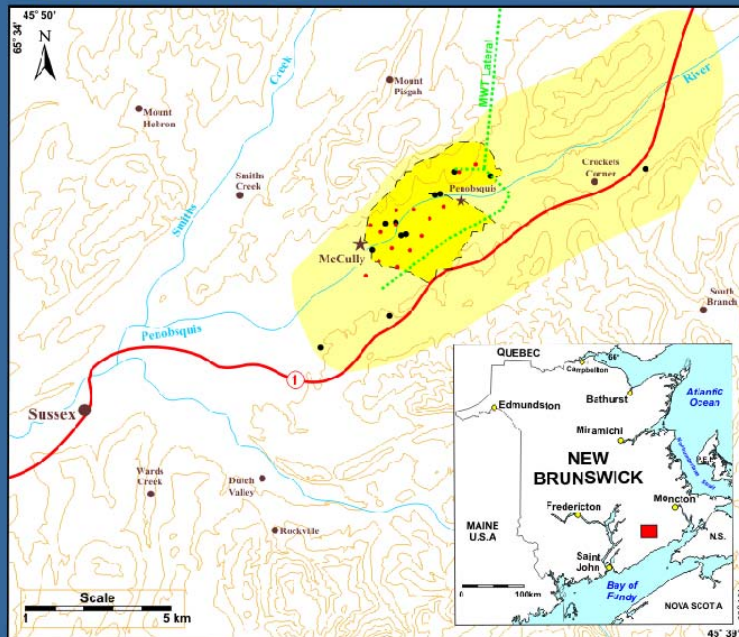


## Location and Introduction



### McCULLY FIELD

Discovered in 2000  
Corridor Resources / PCS

#### Producing Reservoir:

Hiram Bk Mbr, Albert Fm  
(Early Tournasian)

#### Potential Reservoir:

Dawson Settlement Mbr

#### Potential Area:

1 trillion cf in place

#### Appraised Area:

252 bcf in place

121 bcf recoverable

#### Presently Drilling

Construction begins on  
Lateral Pipeline to  
Maritimes and  
Northeast Pipeline

#### more info:

Corridor Resources Inc.  
Web: [www.corridor.ns.ca](http://www.corridor.ns.ca)

The McCully gas field in southern New Brunswick was discovered in the year 2000 on a joint drilling exploration venture by Corridor Resources Inc. and Potash Corporation of Saskatchewan. Located about 10 km east of Sussex, the potential field (light yellow) measures about 15 km long by about 5 km wide and is estimated to contain 1 trillion cubic feet of gas in place. The darker yellow area has been appraised by APA Petroleum Engineering based in Calgary and is estimated to have 121 billion cubic feet recoverable. The reservoir sandstones are from the Tournasian aged (Carboniferous) Hiram Brook Member of the Albert Formation. A larger potential reservoir could be the sandstones of the deeper Dawson Settlement Member.

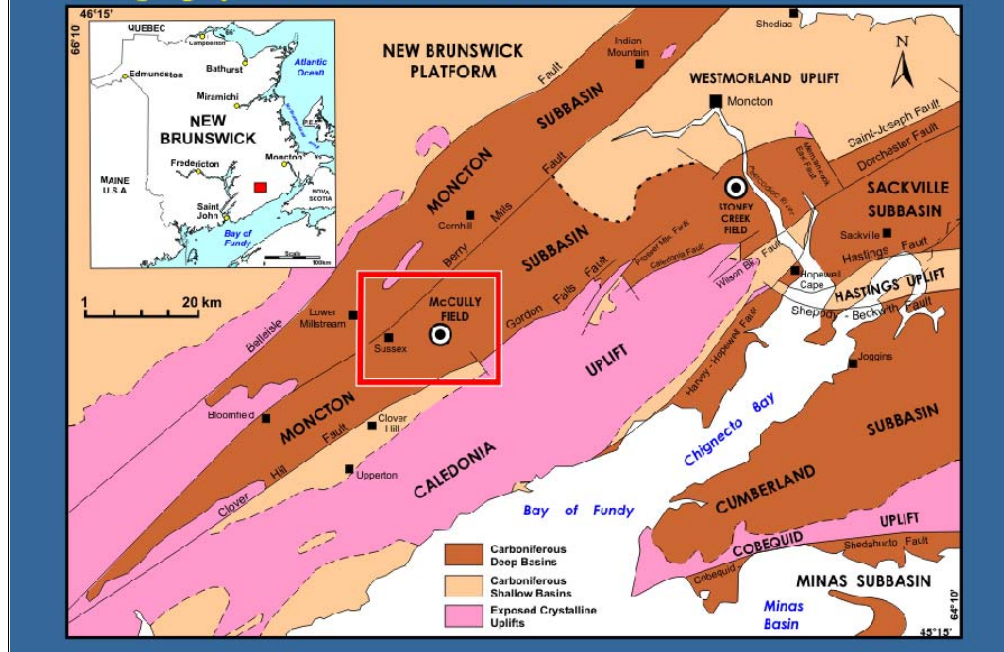
## **Purpose of Study**

- 1) Identify stratigraphic/tectonic structure controls on Albert sands
- 2) ID fault styles and timing
- 3) Describe internal stratigraphy of the Albert Fm - well-logs, seismic
- 4) Determine the mineralogy/petrophysics on the reservoir - XRD, SEM, core porosity and permeability

## **OUTPUT:**

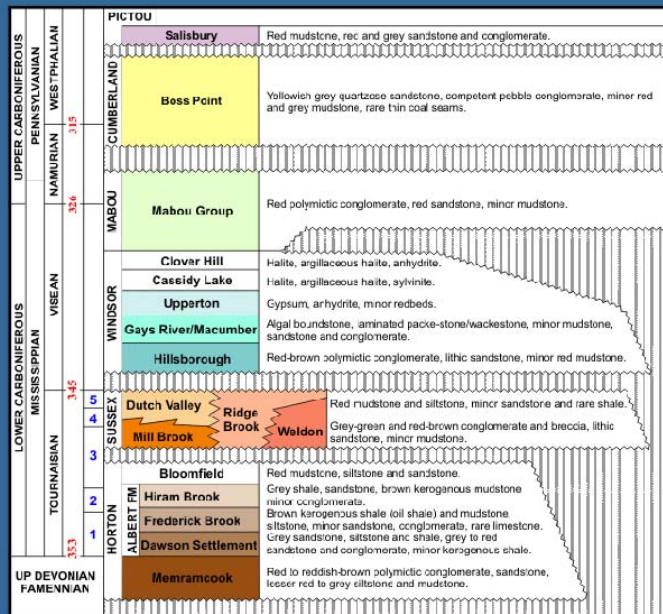
- 1) Revised surface geologic maps - DNR Plates
- 2) DNR Mineral Report - Full data disclosure
- 3) CSPG or AAPG (preferred) journal article to better advertise McCully Field feature

## Stratigraphy - Tectonic Framework



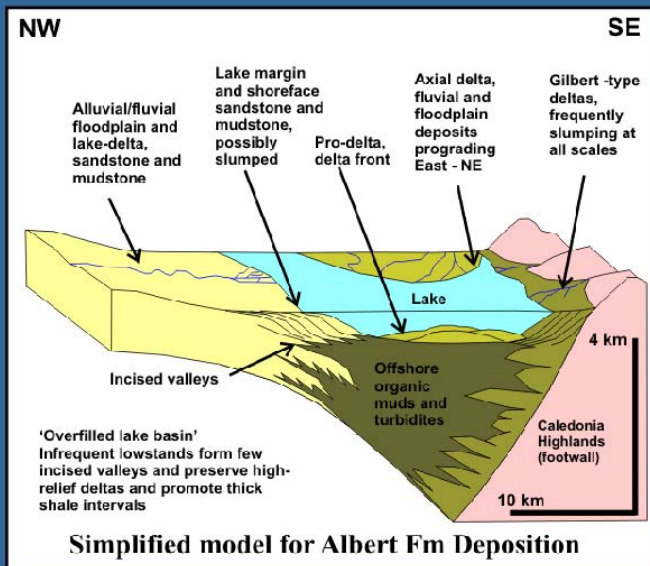
During the Carboniferous period, sediments of the Moncton Sub basin were intermittently sourced from the southern Caledonia uplift and the northern New Brunswick Platform. All areas colored in dark brown represent the interpreted deep Carboniferous sediment basins. Within the extensive Moncton sub basin are the McCully gas field and the older Stoney Creek oil and gas field.

## Stratigraphy - Carboniferous



The Carboniferous stratigraphy of the McCully area is represented by six major depositional cycles, each separated by an unconformity except for the Mabou-Windsor group which becomes conformable in the deeper portions of the basin. The oldest Horton Group cycle contains the McCully Field source (Frederick Brook Member) and reservoir rocks (Hiram Brook Member) of the Albert Formation. The Horton and Sussex groups were deposited in a proximal continental lacustrine setting. The Gays River/Macumber limestones of the Windsor Group represent the initiation of marine deposition until the Mabou Group continental sediments. The Cumberland and Pictou groups have a more distal sediment source. Each unconformity represents a phase of tectonism which interrupts sediment deposition.

## Stratigraphy - Depositional Model



(From Dave Keighley GAC/MAC Fieldtrip A5)

**Lacustrine Depositional Environment through Early Carboniferous**

**Complicated continental clastics-lacustrine strata**

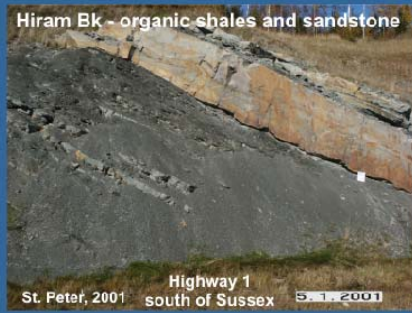
**Caledonian source throughout**

**Difficult to differentiate units**

**Basin shape influences structural geology**

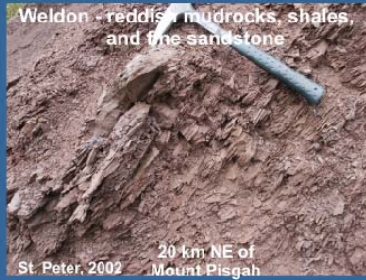
This diagram outlines the continental lacustrine depositional environment of the Horton Group in southern New Brunswick during the Tournaisian Stage of the Carboniferous. The organic rich shales of the Frederick Brook Member were deposited in the deepest parts of the lake (deep brown) while the yellow lake margin facies represents the sandstones and organic shales of the Hiram Brook Member (and possible Dawson Settlement Member). On the diagram, the lighter brown "Gilbert delta" next to the pink highlands represents the coarser grained facies of the basal Memramcook Formation and Dawson Settlement Member.

## Stratigraphy - Horton Group

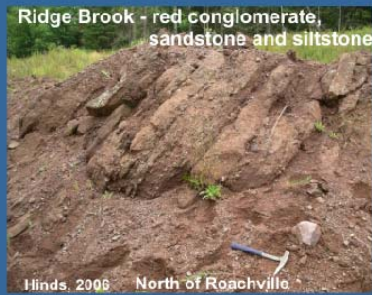


## Stratigraphy - Sussex Group

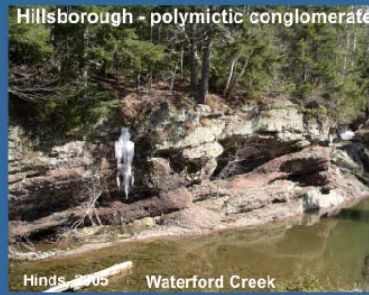
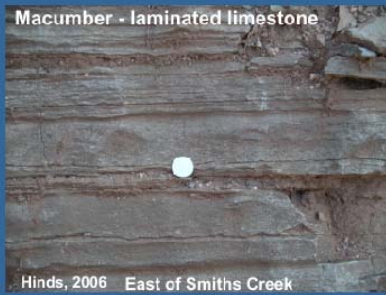
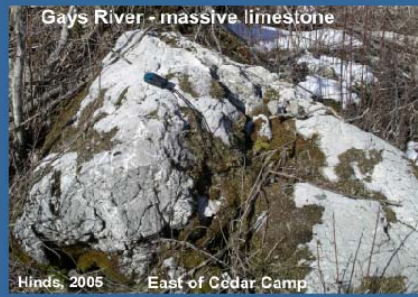
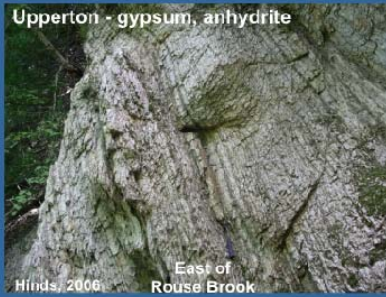
### North Facies



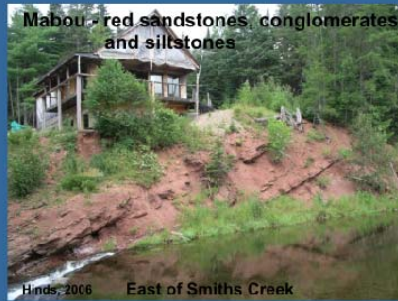
### South Facies



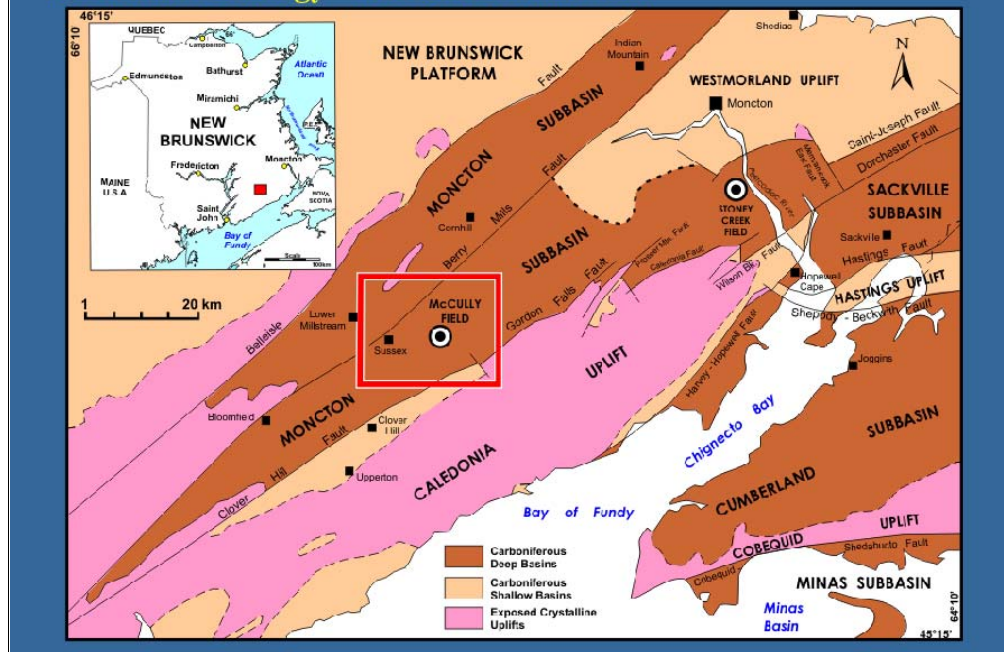
## Stratigraphy - Windsor Group



## Stratigraphy - Mabou and Cumberland Groups

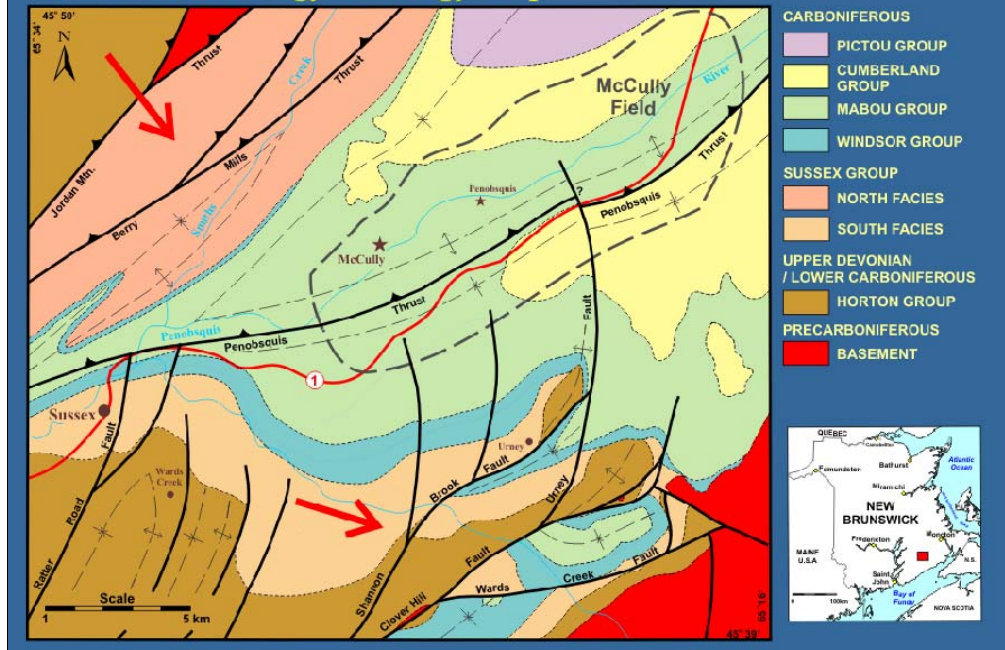


## Structural Geology - Tectonic Framework



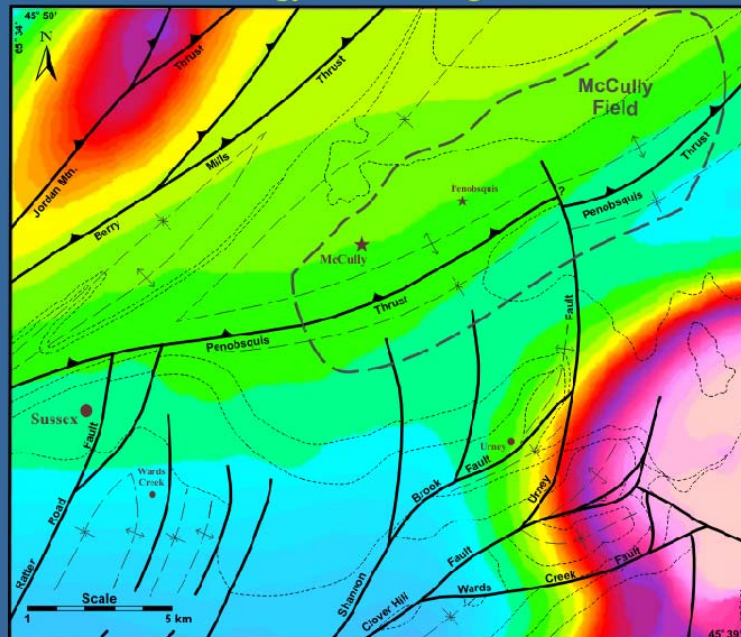
The Moncton Sub basin is fault-bounded with the surrounding sub basins and uplifts. The faults off the Moncton Sub basin were periodically re-activated throughout the Carboniferous resulting in complex sedimentary and tectonic relationships.

## Structural Geology - Geology Map



Post-Mabou Group compressional tectonics strongly dominates the McCully area and overprint previous tectonic events. Overall, the surface tectonic environment is compressional to the northwest (northeasterly fault patterns) and oblique compressional (more northerly fault patterns) in the southern map area. In cross-section, the northwest area is comprised of older, steeply dipping imbricate thrust faults such as the Jordan Mountain and Berry Mills faults which shallow to the south at McCully with the younger Penobscuit Fault. The Ratter Road, Clover Hill, and Urney systems could be older extensional faults that were re-activated by the compression. In the southern map area, the fault orientations are also affected by the basement surface with a strong deflection of the Clover Hill and Urney faults against an interpreted basement high.

## Structural Geology - Total Magnetic



Magnetic in nTes

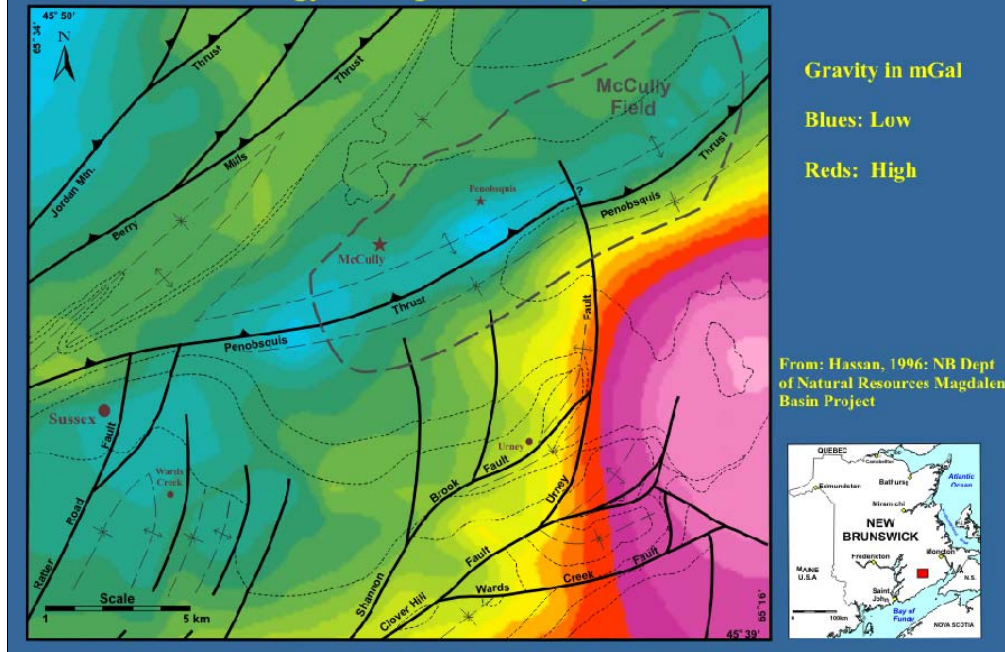
Blues: Low

Reds: High

From: Kiss et al., 2004. GSC  
Marrtown Magnetic Survey  
(regridded digital data)

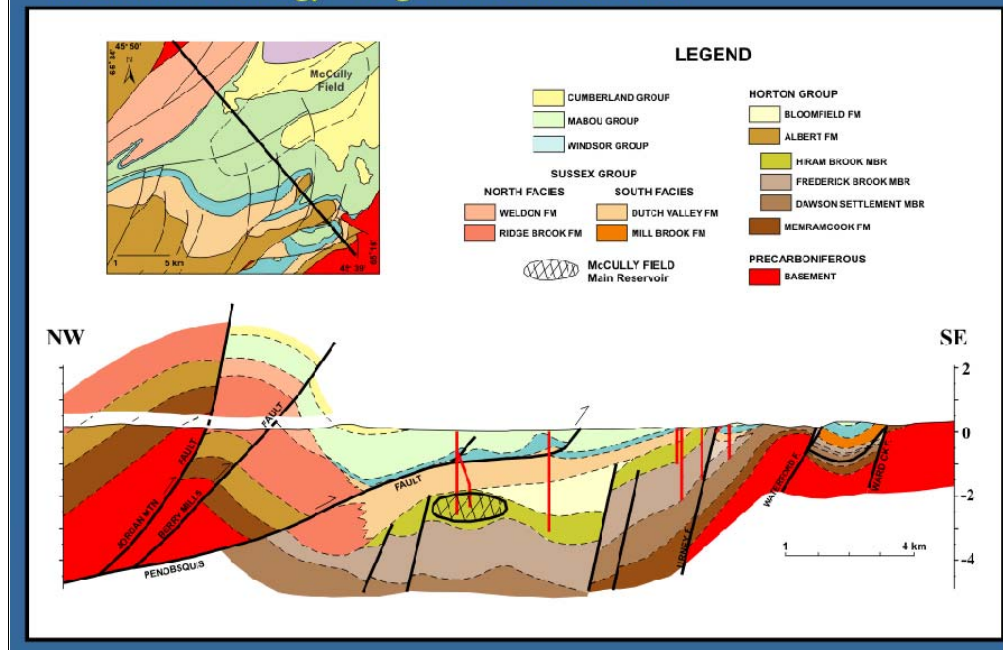
The magnetic anomaly map clearly outlines the basement rocks (red and pink colors) in the McCully area from the northern thrust exposed Silurian system to the southeastern exposed and subsurface Precambrian strata. The fault deflection against the basement is clearly seen in the southern map area. In the northern portion of the map, a northeasterly magnetic pattern follows the interpreted imbricate thrust system.

## Structural Geology - Bouguer Gravity



The Bouguer Gravity map shows the different fault and folding relationships more clearly with a northeasterly pattern to the north and northerly fault patterns to the south. Again the deflection of the Clover Hill and Urney fault systems against the basement (red and pink colors) is easily seen.

## Structural Geology - Regional Cross Section

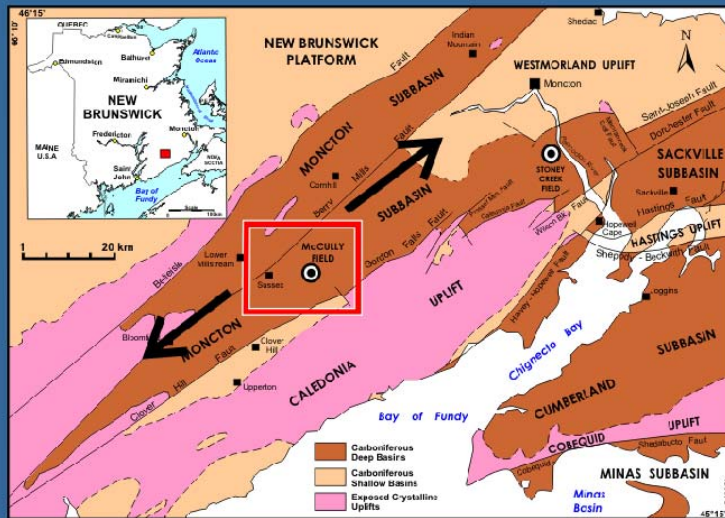


This simplified cross-section outlines the different tectonic styles between the north and south map areas. The leading edge of the northern imbricate fault system is the shallow Penobsquis Fault, which extends above the McCully Field. The Clover Hill-Urney fault system is interpreted to be re-activated extensional faults. The steeply dipping faults in the central portion of the cross-section are interpreted to be older extensional fault systems as the Albert Formation stratigraphy thickens north of these faults. The amount of re-activation of these older, central faults is unknown at present.

## Conclusions

- 1) The Horton/Sussex Group stratigraphic relationships (unconformities) established elsewhere in the Moncton Subbasin are observed in the Urney-Waterford area
- 2) The unconformities in this area reflect the timing of the tectonic events
- 3) Two late Carboniferous tectonic domains exist in the map area; a northern imbricate fault zone and an oblique reverse environment to the south
- 4) The orientation of the southern oblique compressional zone is controlled by a basement high to the east
- 5) This post-Mabou event strongly overprints all previous tectonic events

## Project Completion and Future Work



To continue the new stratigraphic and structural interpretations to the east and west and develop a 3D model of the southern New Brunswick Carboniferous basin.