

Trinidad and Tobago Tar Sands.



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Introduction

What is Tar Sand?



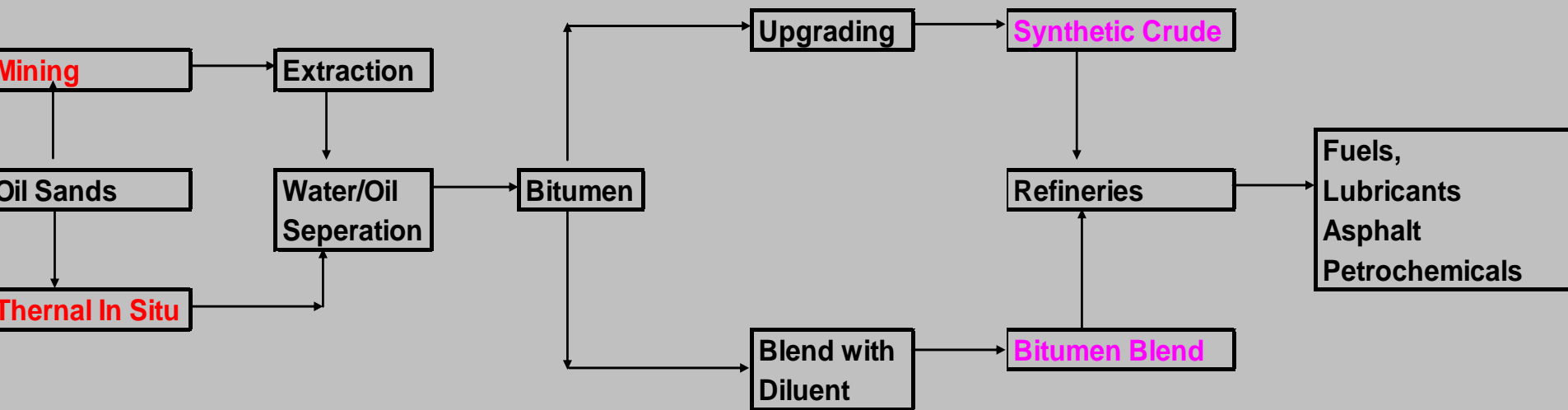
- Tar Sand or Bituminous Sand is a loose to consolidated sandstone or a porous carbonate rock, impregnated with a heavy asphaltic crude oil.
- It is a mixture of primarily sand, bitumen and water.

Global Scenario

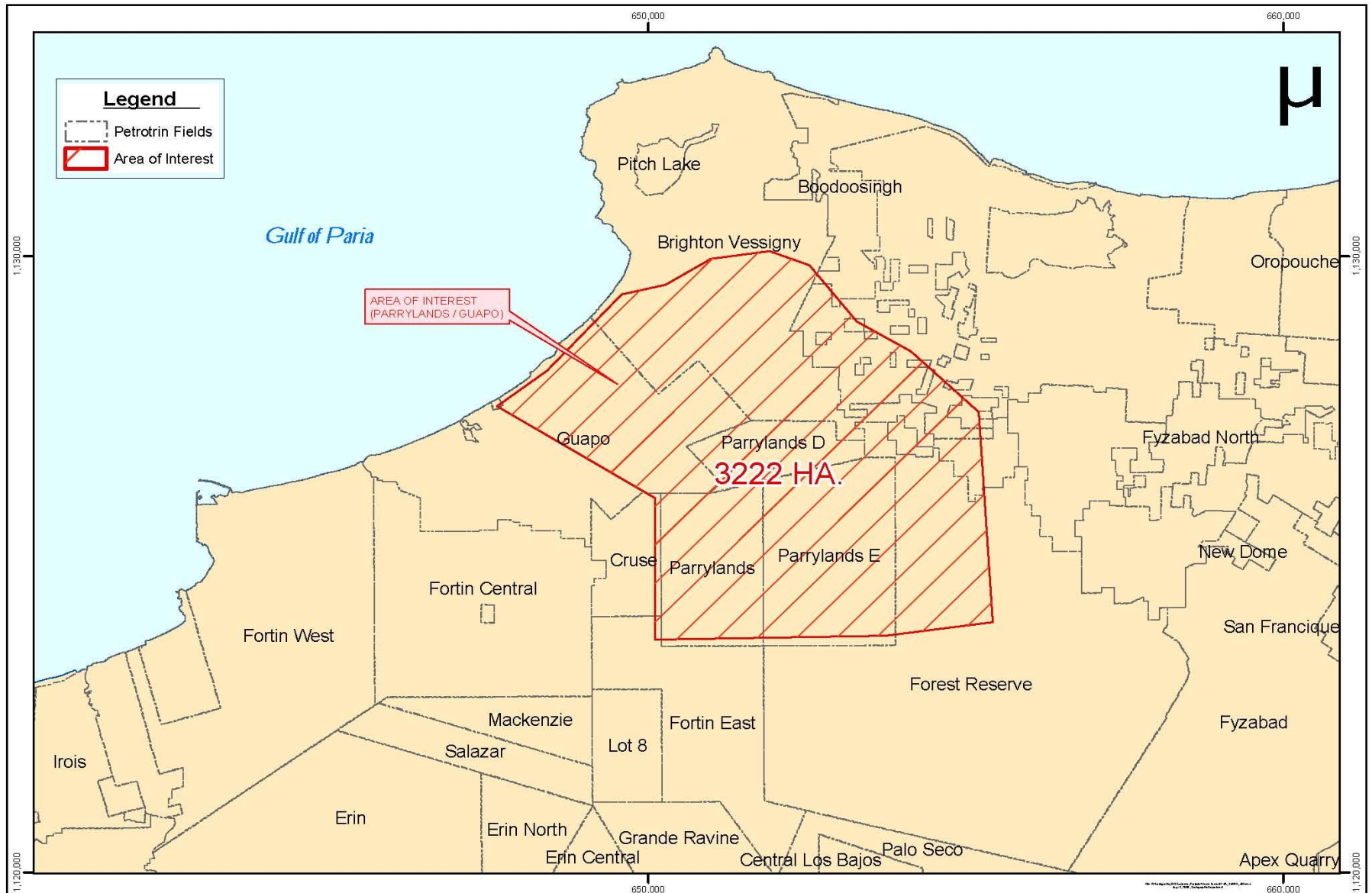
- Tar sand deposits are found in over 70 countries in the world.
- $\frac{3}{4}$ of the world's tar sand reserves are found in 2 countries.(Canada & Venezuela)
- Tar sands represents $\frac{2}{3}$ of the world's total petroleum reserves.
- The single largest deposit is the Athabasca Oil Sands in Canada. Estimated reserves are approx. 1.5 trillion bbls
- Commercial production began in 1967 (30,000 bopd).
- Current production levels from Canada is approx.1.1 million bopd. Expected to increase to 4 million bopd by 2020.

Oil Sand Processing Chain

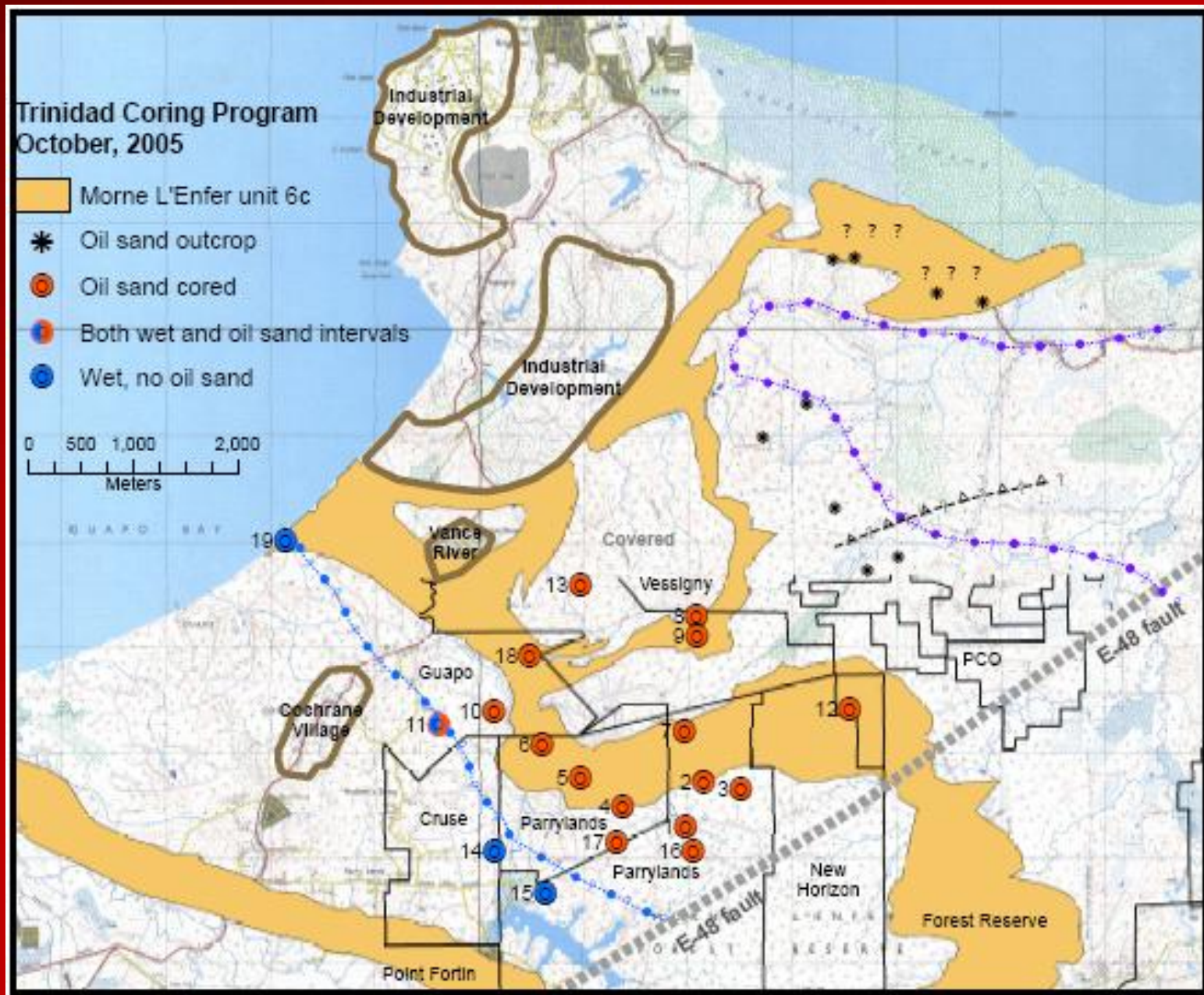
Oil Sands Processing Chain



Map Showing Area of Interest

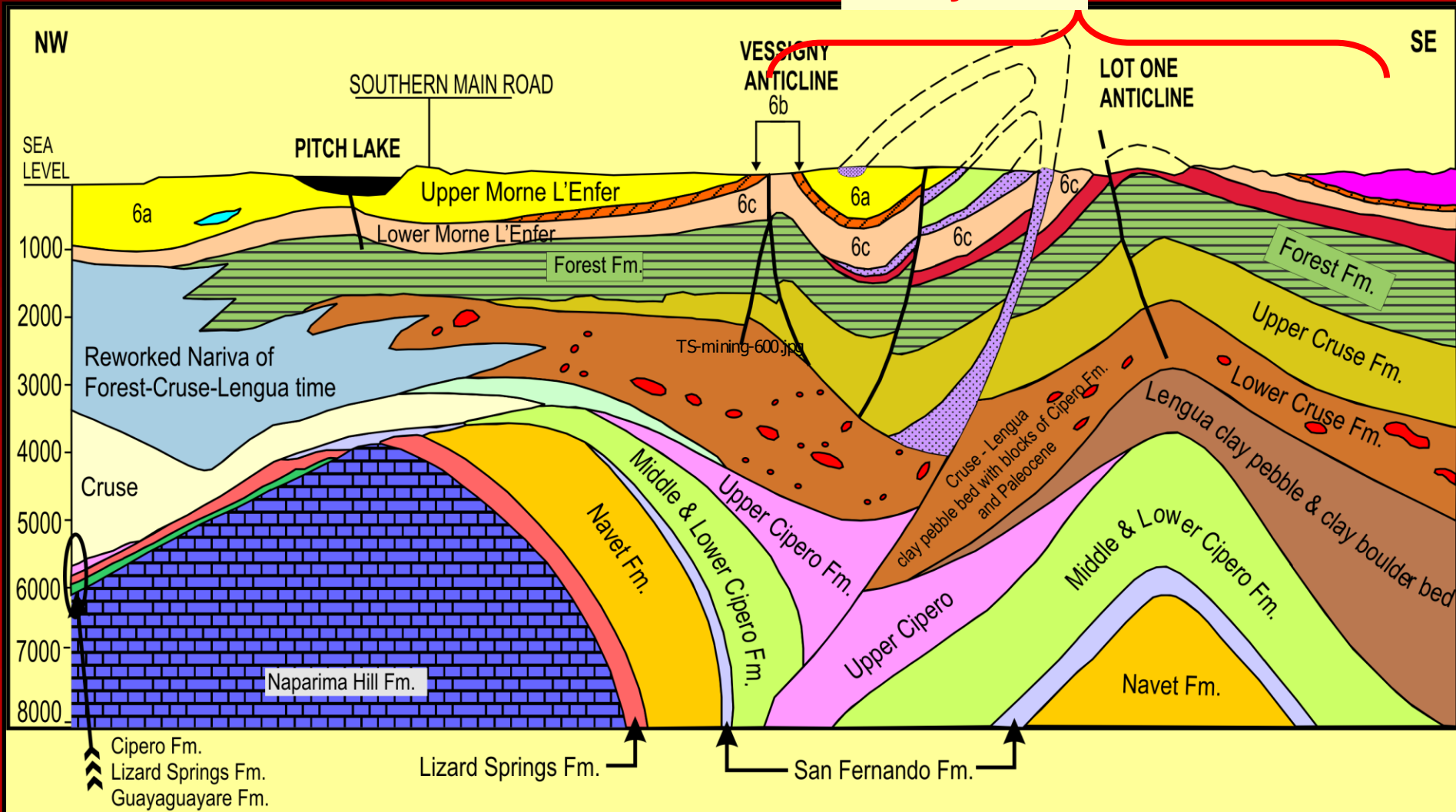


Tar Sand Distribution in SW Trinidad



NW – SE Cross Section showing Parrylands Tar Sand Resource

Study Area



Work done in Trinidad to date

- **Pre 1985:** Conducted outcrop reconnaissance and drilling of shallow boreholes by Trintoc
- **1985 to 1989 :** Geological mapping, reserve estimates, lab testing to achieve effective extraction process. Ore reserve study of area provide preliminary estimates of 1.5 billion barrels with a bitumen grade of 10 – 12%.
- **1989 to 1995 :** Joint feasibility assessment of resource with Athabasca Oilsands Research Authority (AOSTRA) in Canada and application of Taciuk process to Trinidad deposit.
- **1995 -2000 :** Discussions with external parties concerning joint venture arrangements.

Work done in Trinidad to date (Cont'd)

- **2000** : MOU signed with Canadian based company, Western Oil Sands for oil sand sampling and extraction testing.
- **2002** : MOU further extended to enable continuation of work.
- **2002 – 2007** : Conducted a preliminary environmental review and the coring of 19 boreholes ranging from 200 to 650 feet. Further assessment of resource.
- **2007-2008** : Western Oil Sands bought out by Marathon Oil. MOU terminated on August 2008.
- **2009 to Present** : MEEA proposed that a license be awarded to Petrotrin for the exploration of tar sand deposits. License to be granted outside the competitive bidding process to undertake a specific scope of works.

Project Deliverables for granting of License

- Prepare final survey plans for the Parrylands and Guapo Licensed Acreage.
- Quantify the reserves of bitumen in place.
- Quantify the recoverable reserves of bitumen based on the recommended technology.
- Identify an appropriate proven conventional process plant technology for the extraction of bitumen and production of synthetic crude.

Project Deliverables for granting of License (cont'd)

- Research the potential risks associated with tar sands mining to a depth of 600 feet on ground water aquifers, saline intrusion and regional subsidence.
- Research the use of an emulsifier for the extraction of bitumen from tar sands and related process technology to produce synthetic crude, as an alternative to conventional methods.
- Determine project feasibility based on investment capital, operational expenses, rehabilitation costs and price.
- Advise of possible fiscal regime for oil sands exploitation.

Way Forward

- Complete Feasibility Study for Granting of License
- Develop a Business Model
- Select JV partner
- Negotiate Heads of Agreement
 - - Taxes
 - - Royalties
 - - Work Program
 - - Production Contract

