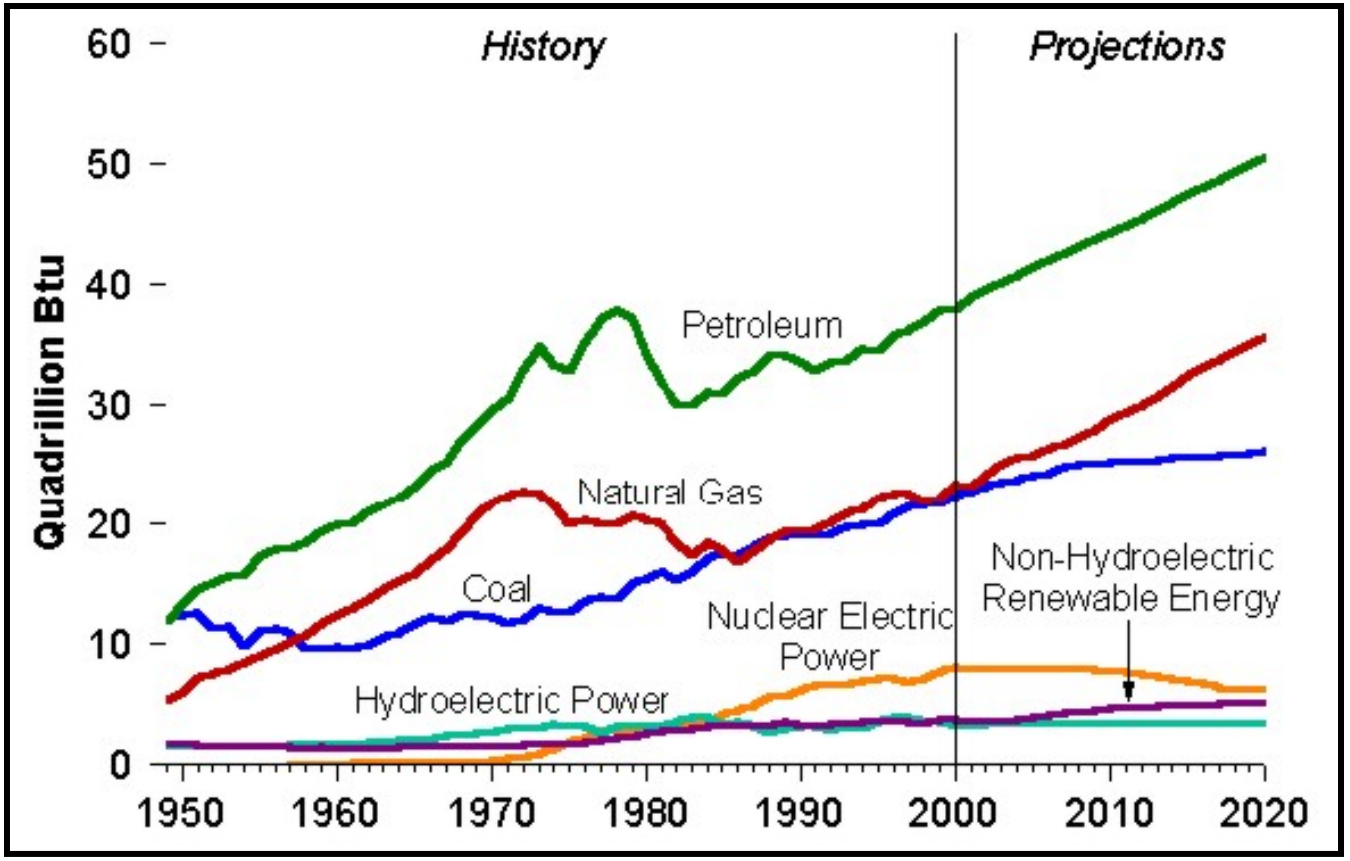
REDleaf RESOURCES

RedLeaf Resources Ecoshale Project
Overview
DEER 2008

Energy demand is exploding but “renewable energy” can’t fill gap.



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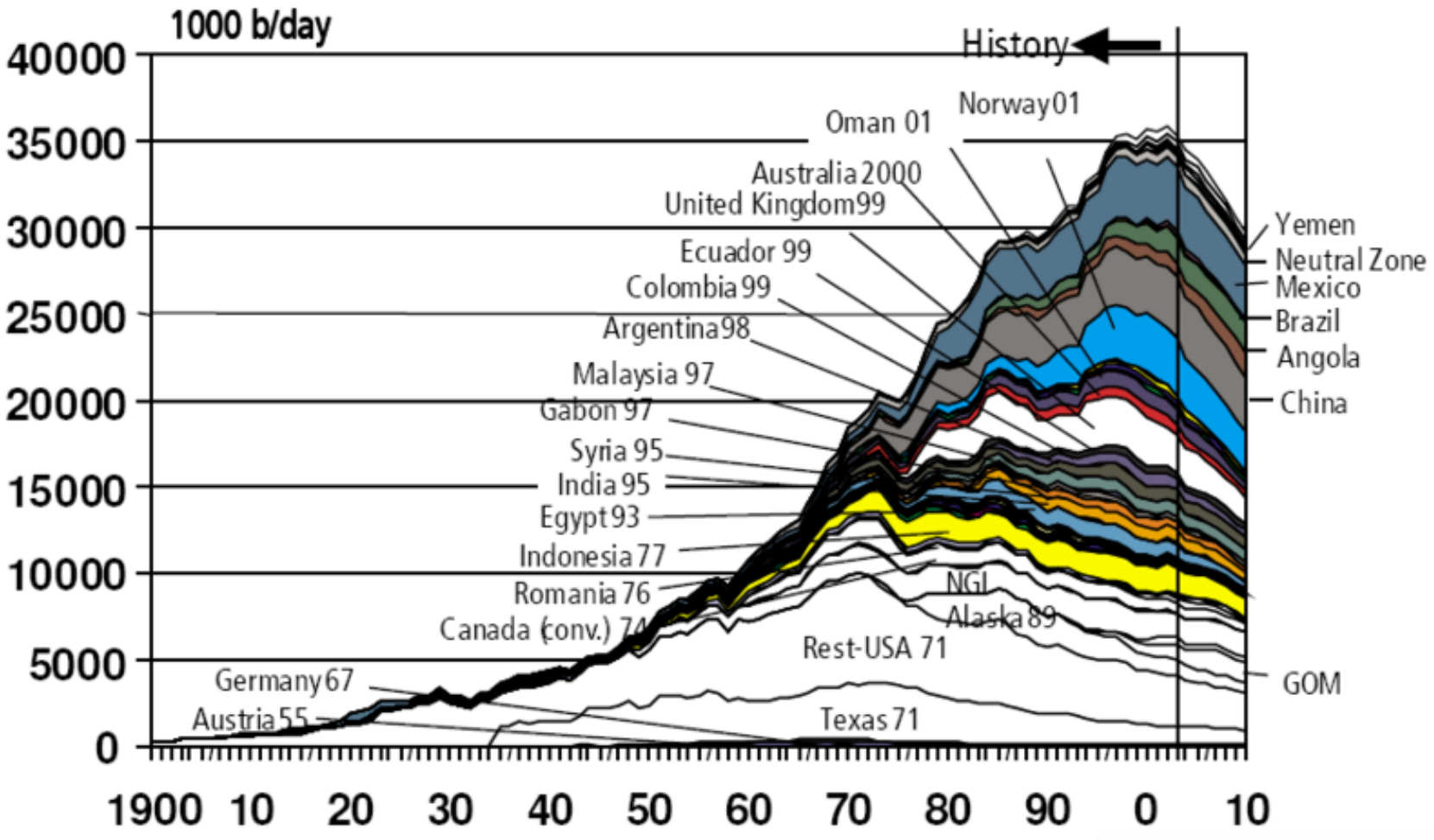
Existing conventional oil production is "peaking"



Source: Industry database, 2003 (IHS 2003)
OGJ, 9 Feb 2004 (Jan-Nov 2003)

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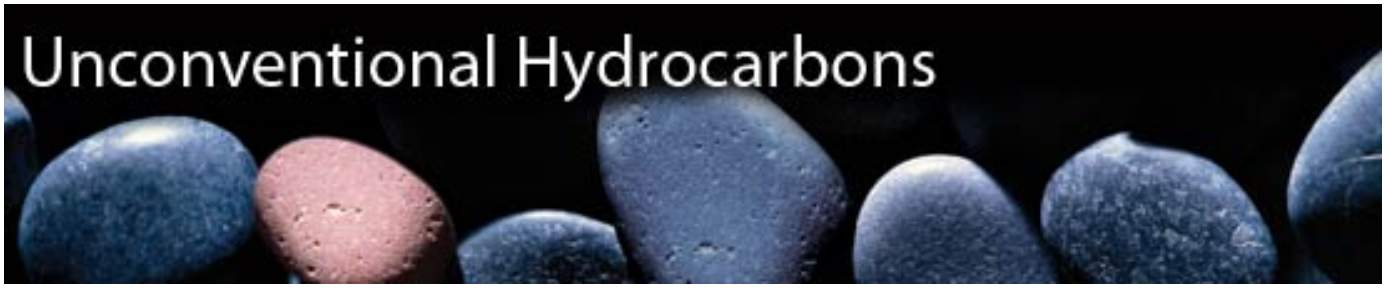
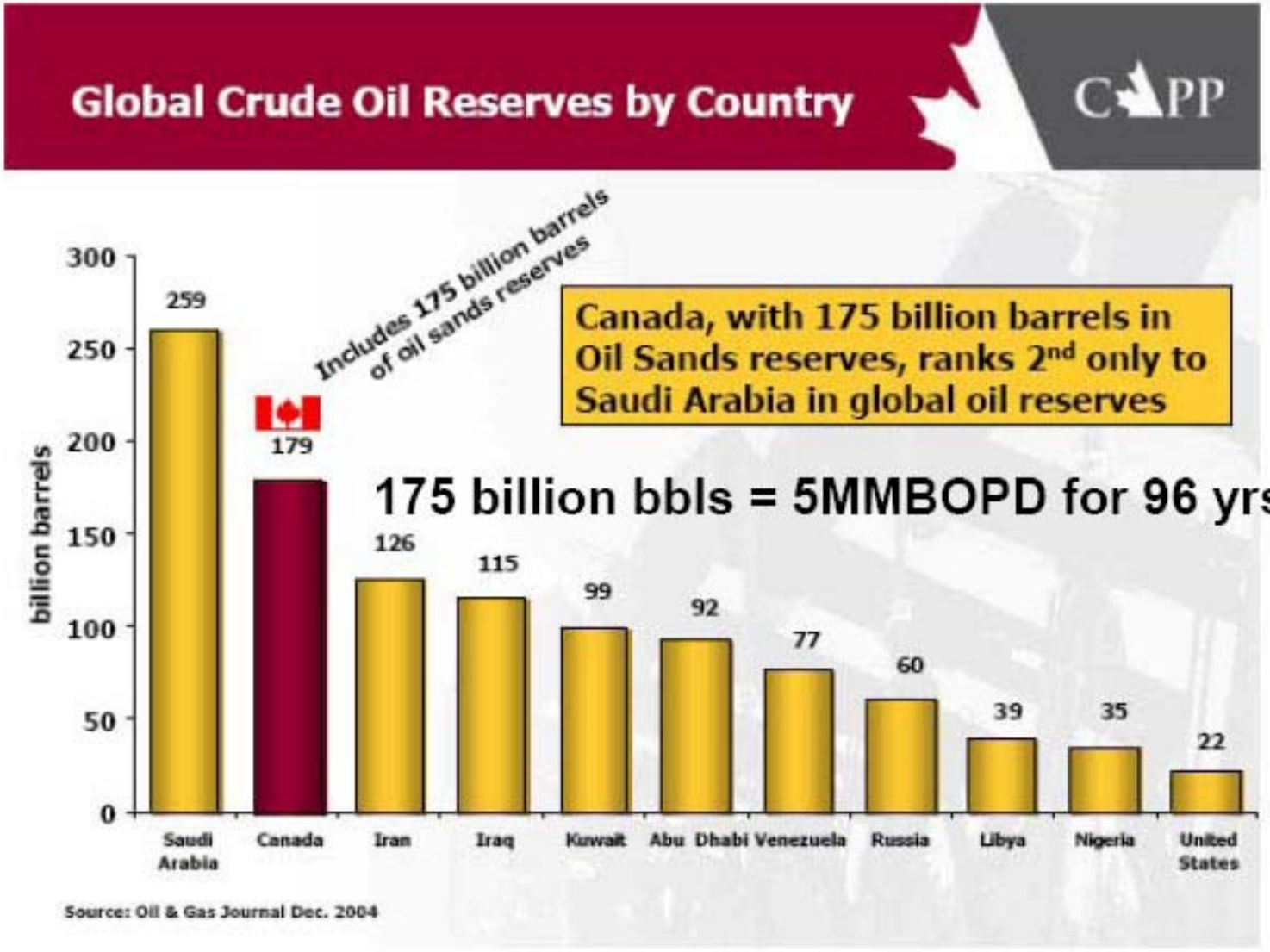
Lower extraction costs and demand have accelerated unconventional oil sands.



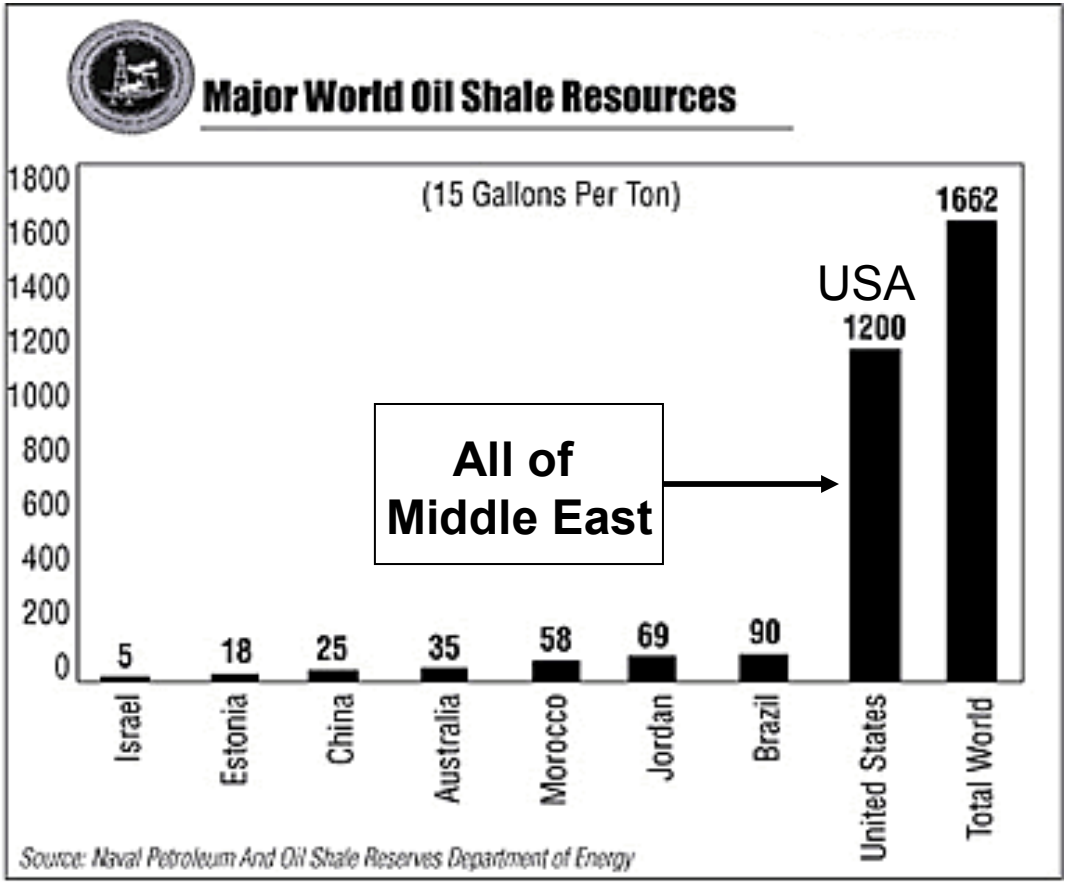
- ***Unconventional Hydrocarbons - The hidden opportunity,*** oil industry consultancy Wood Mackenzie:

> "*by 2025* ***unconventional oil*** *is expected to supply more than 20% of global demand*.

Canada's **UNCONVENTIONAL** climb to the top of world oil reserves.



American oil shale **dwarfs** all other oil shale reserves – worldwide.



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Quality of USA Oil Shale is superior to Canadian oil sands crude.

ECONOMICS OF TAR SAND VS. OIL SHALE

Table 1

Characteristic	Athabasca tar sand	Green River oil shale
Grade (richness)	25 gal bitumen/ton	30 gal kerogen oil/ton
Hydrogen content (tar sand bitumen/kerogen oil)	10.5 wt %	11.8 wt %
Nitrogen and sulfur requiring removal	6.2 wt % (mostly sulfur)	4.0 wt % (mostly nitrogen)
Loss of liquids to coke and gas	40 lb/ton-ore	11.6 lb/ton-ore
Net yield of oil	0.53 bbl/ton processed	0.73 bbl/ton processed
Quality of oil	34° API	38° API

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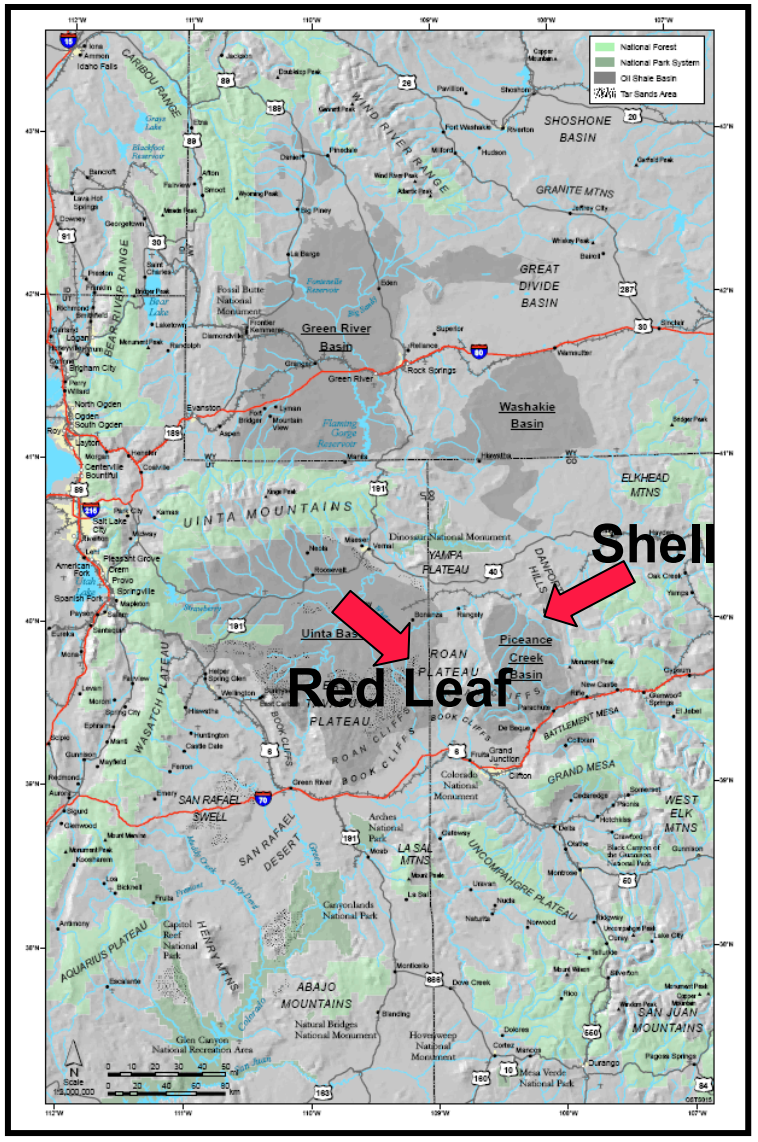
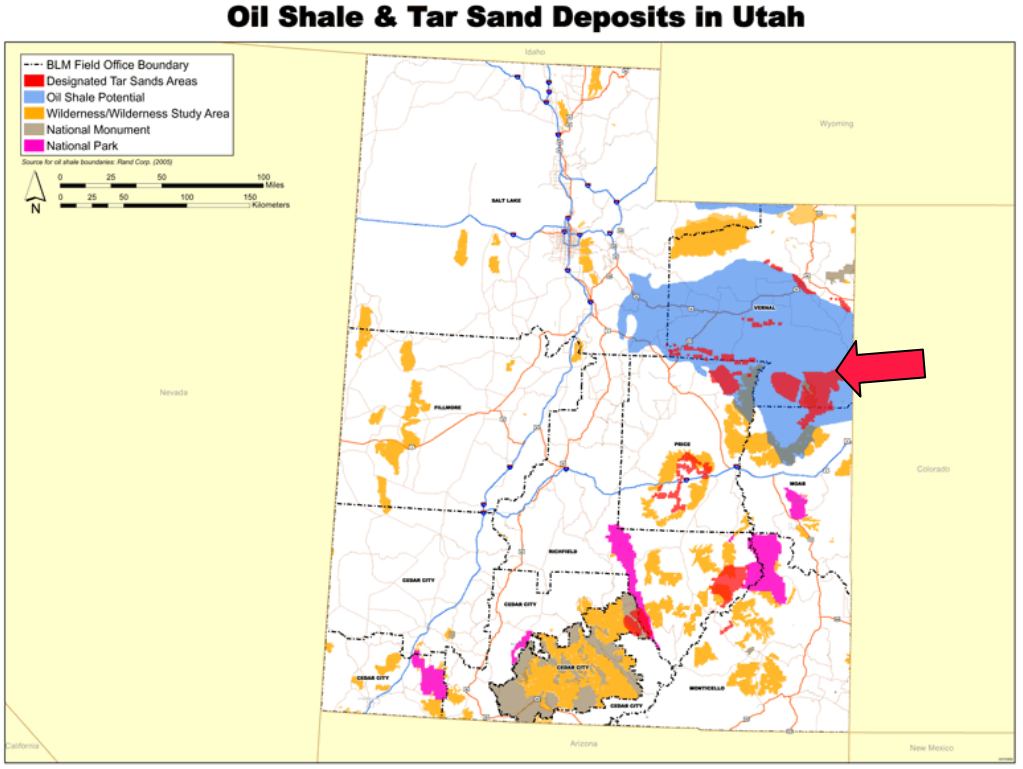
BLM: 800 billion barrels recoverable oil in Utah, Colorado & Wyoming.





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Red Leaf controls oil shale leases containing approximately **800 Million to 1.5 billion barrels of oil** on Utah state lands – about 16,500 acres.

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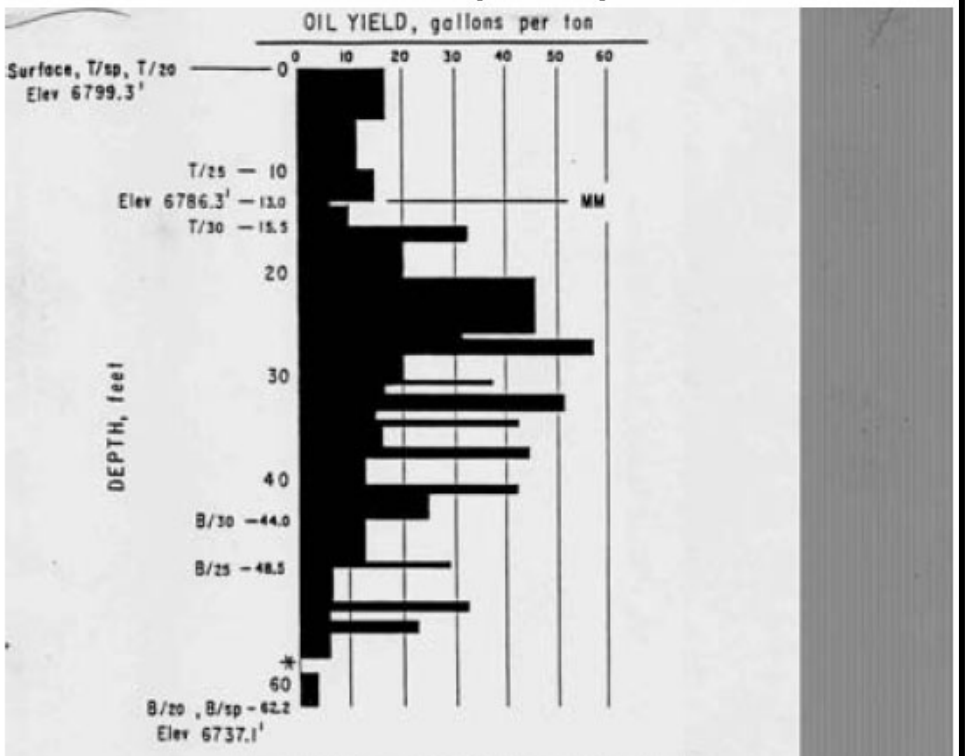
First 60 feet down average: 20 gpt

Figure 7. Histogram from Utah Sec. 29, T 12 S, R 25 E (Ref. 9)



Total length of sampled section — 62.2 feet

SELECTED SECTIONS

Oil yield, gal/ton	Length, feet	Depth, feet From	Depth, feet To	Shale in place, tons/sq mile	Oil in place, bbl/sq mile
30.21	28.5	15.5	44.0	53,010,000	38,130,000
25.41	38.5	10.0	48.5	73,950,000	44,740,000
19.91	62.2	0	62.2	124,100,000	58,830,000

Core samples of the Green River formation from corehole drilled in 1957 in SE¼NE¼NW¼ sec 29, T 12 S, R 25 E, S.L.M. (799 feet S and 146 feet W of N ¼ corner).

FIGURE 55. - Corehole 42-29, General Petroleum Corp., Uintah County (Table B-37).

- Down to 63' feet there are an average of 58,830,000 million barrels of oil per square mile.
- $3.529 billion per square mile at $60 average oil price.
- 19.91 GPT / Ton

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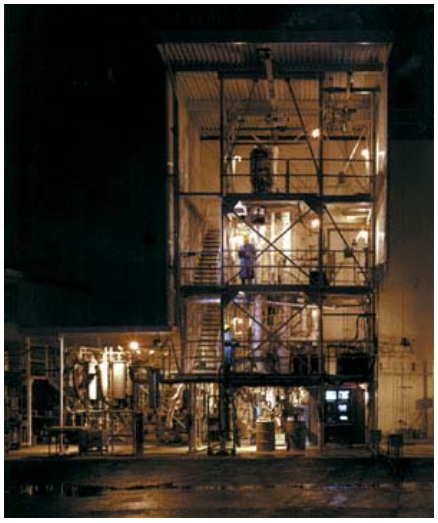
Surface Retorts



Lawrence Livermore Laboratory Retort

Parahoe Retort

Oil Tech Retort

Retort Problems

- **High co2** output
- **Costly steel** fabrication
- **Clogging** of retort
- **Handling shale** twice
- Spent shale **tailings**
- Low scalability **-- “pin hole” capacity**
- High **CAPEX**

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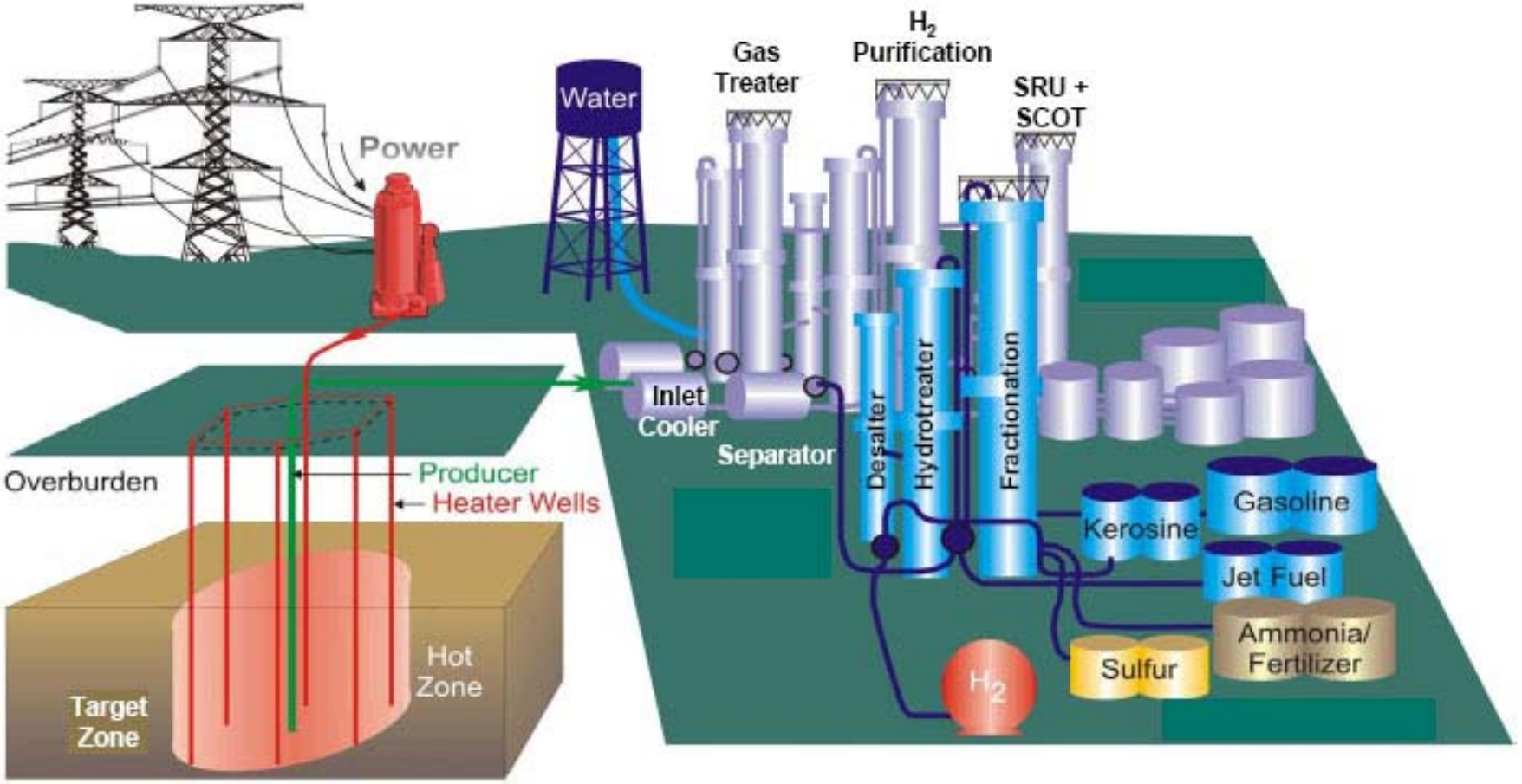
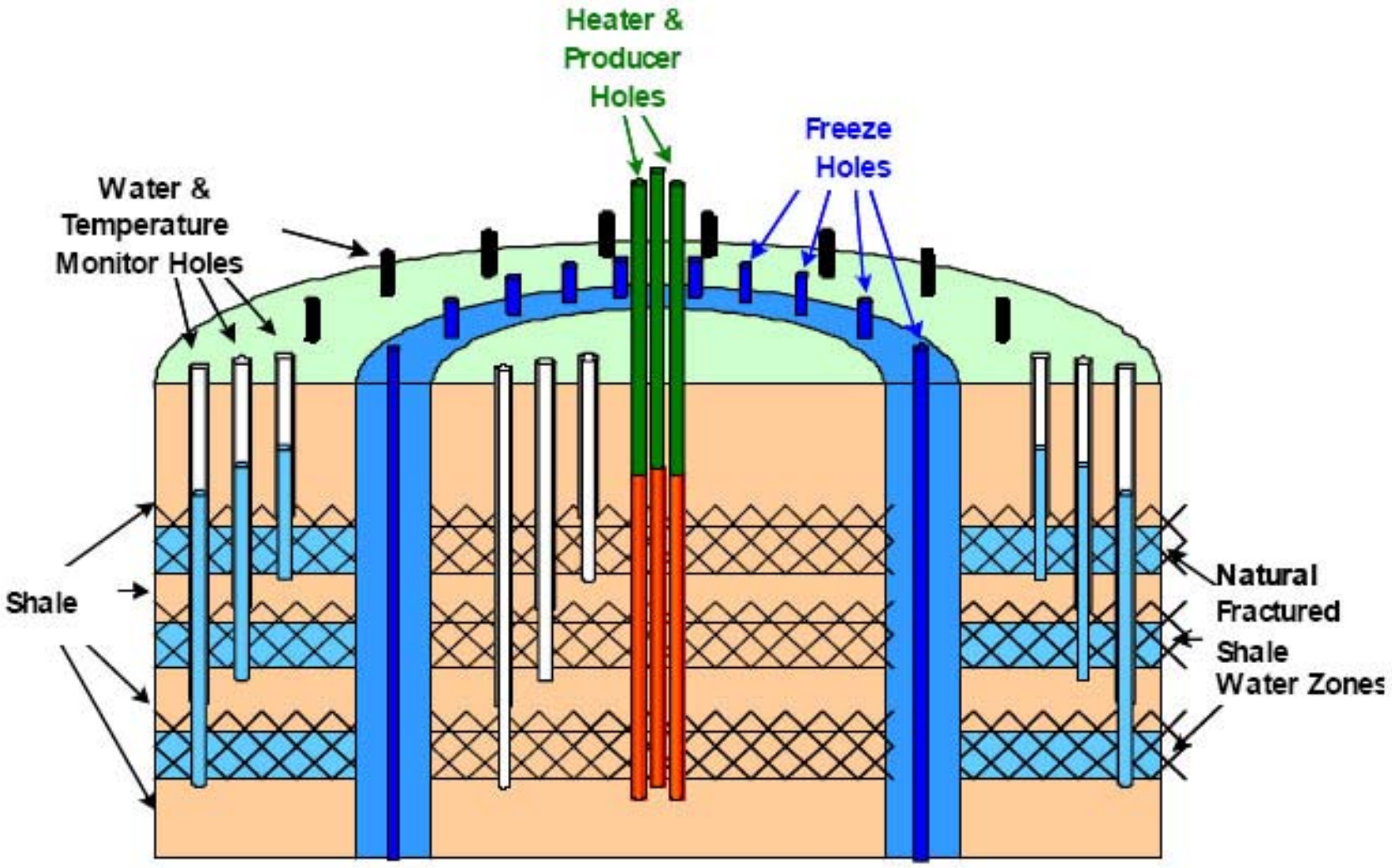
Shell's New ICP Process

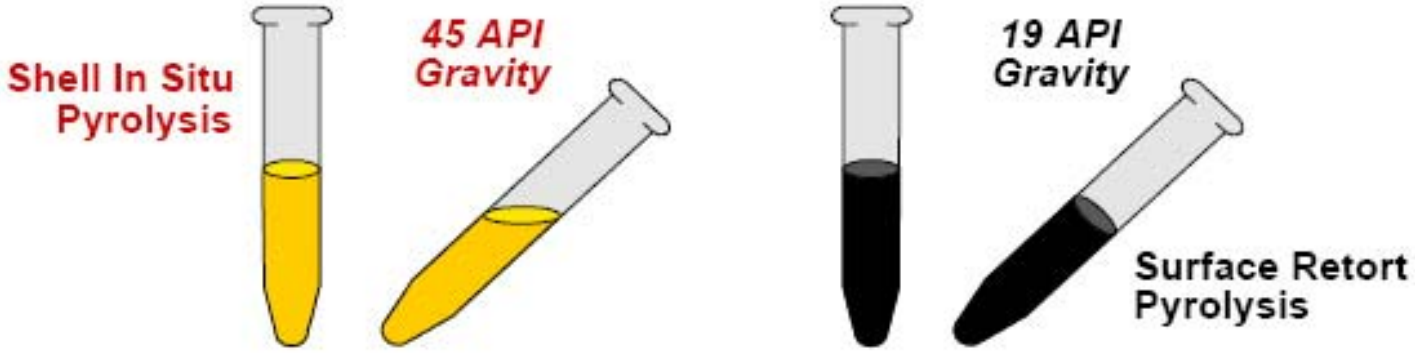
Oil Shale Development Concept

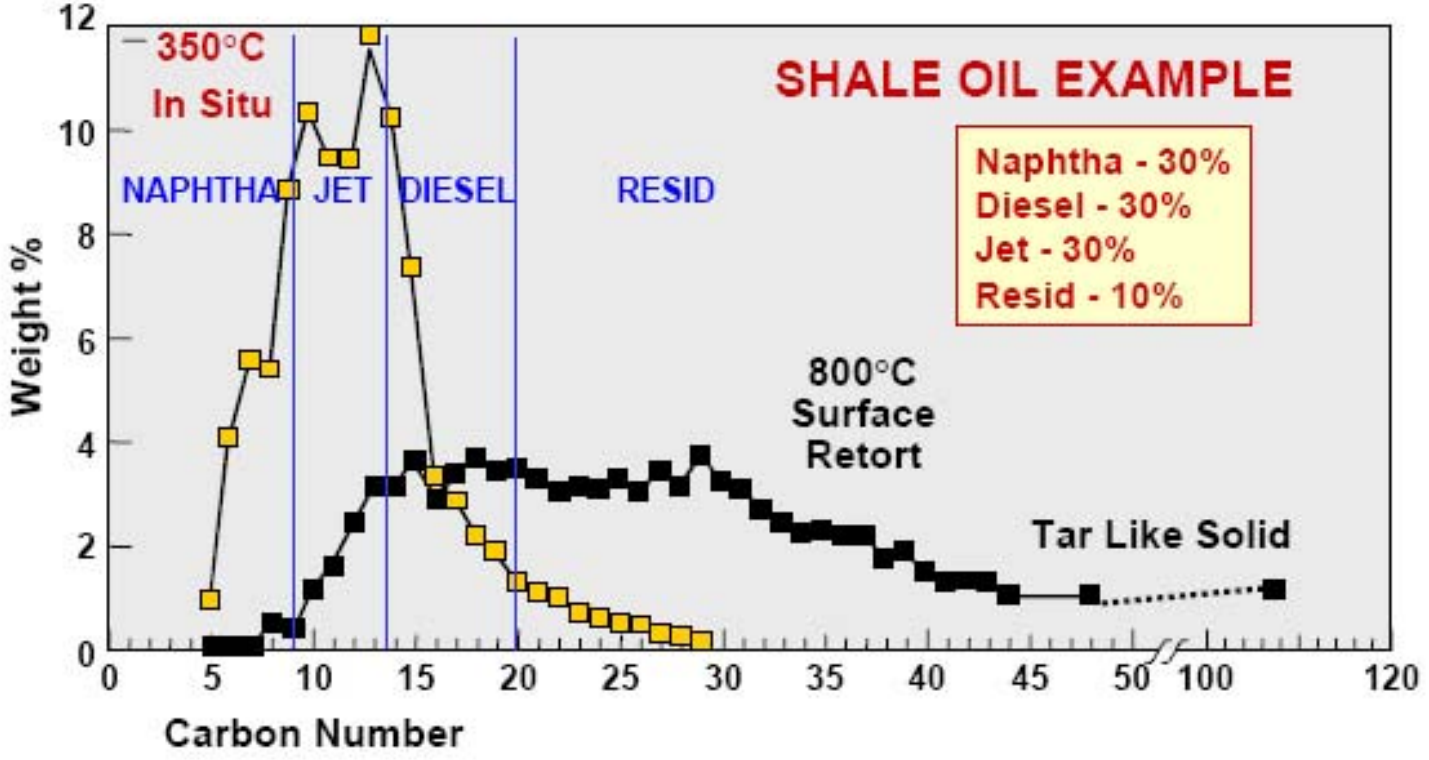


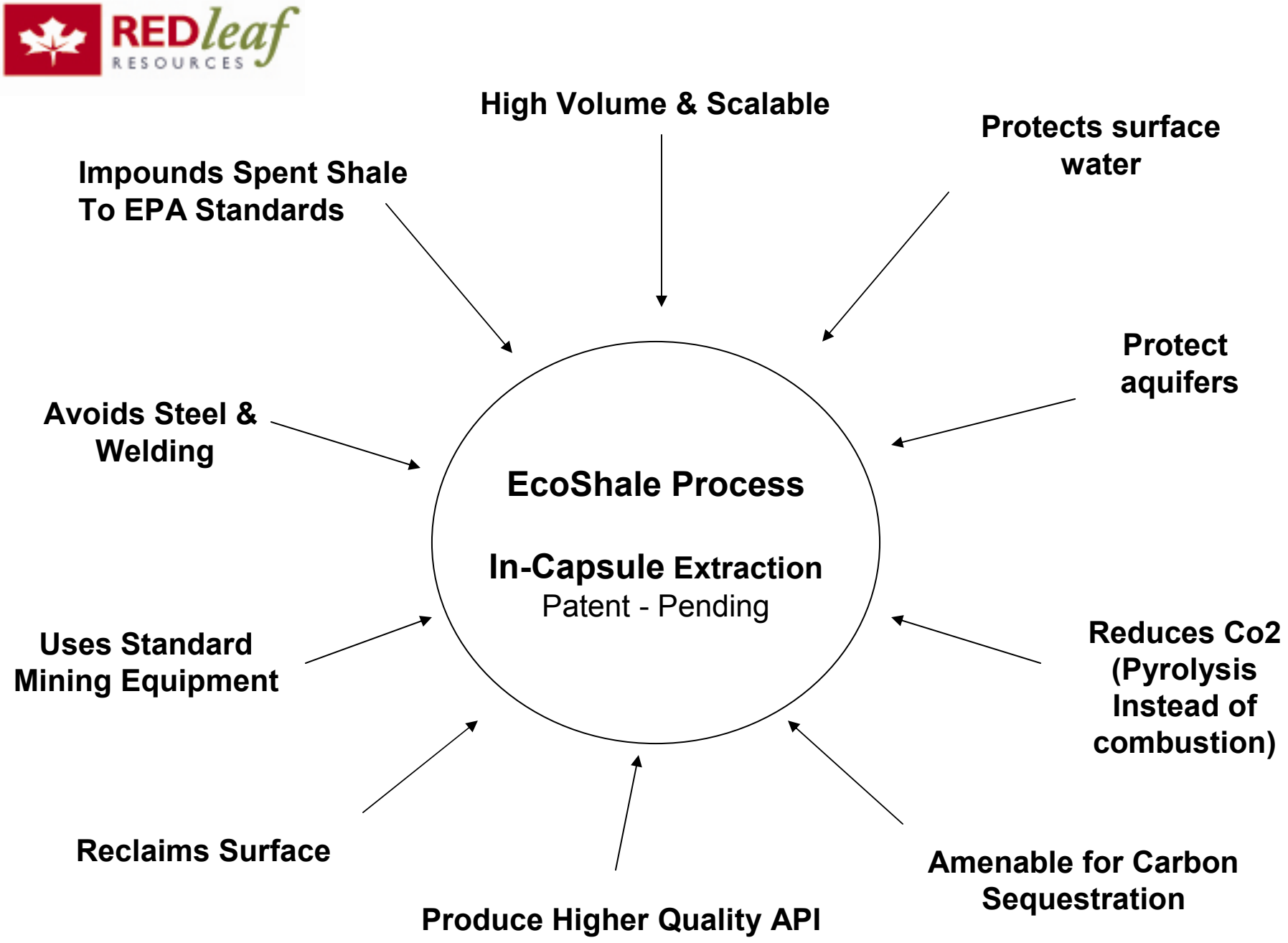
Freeze Wall Concept



Better Feedstock For Upgrading






REDleaf RESOURCES
High Volume & Scalable
Protects surface water
Impounds Spent Shale To EPA Standards
Protect aquifers
Avoids Steel & Welding
EcoShale Process
In-Capsule Extraction
Patent - Pending
Uses Standard Mining Equipment
Reduces Co2 (Pyrolysis Instead of combustion)
Reclaims Surface
Amenable for Carbon Sequestration
Produce Higher Quality API

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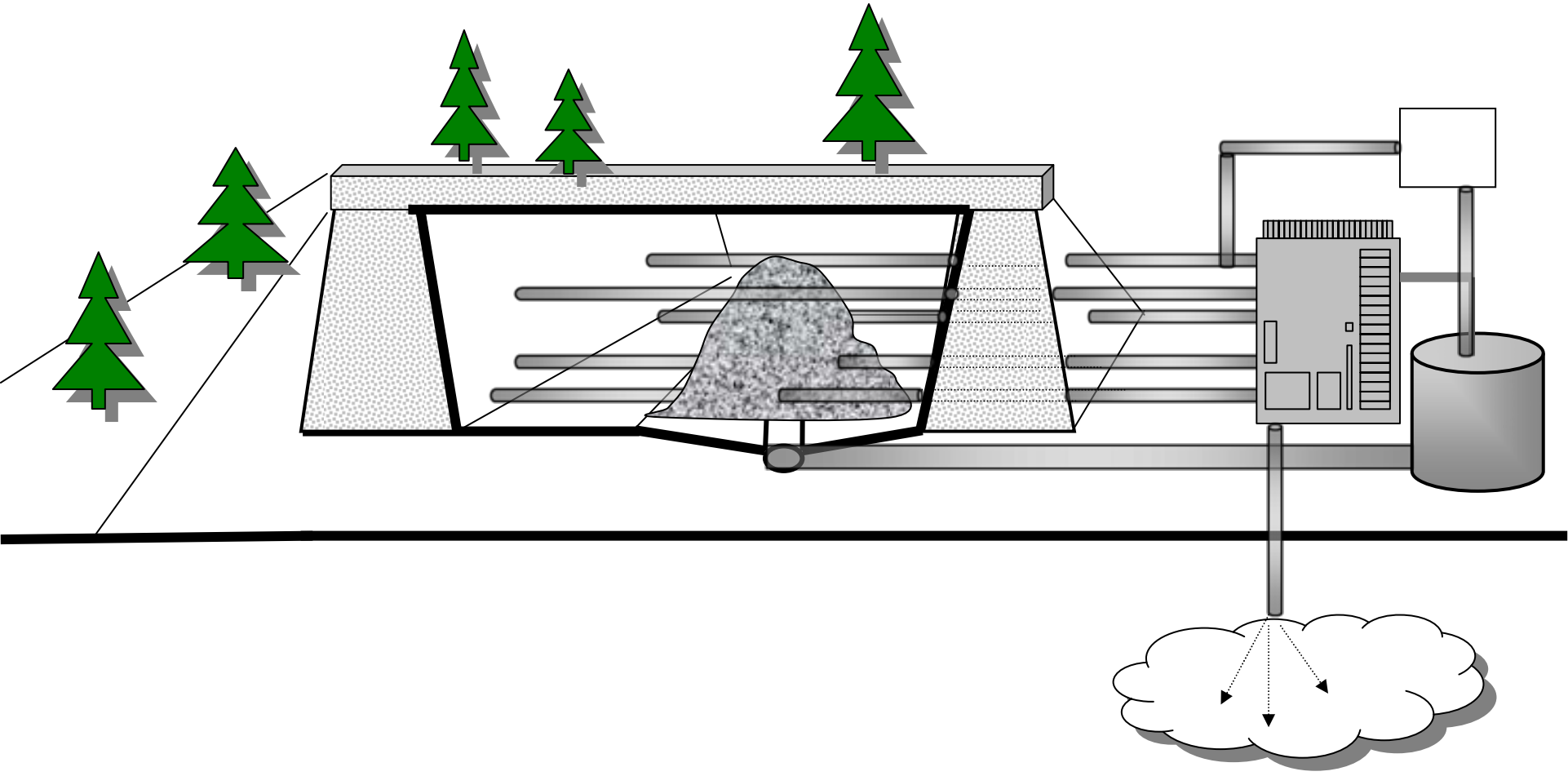
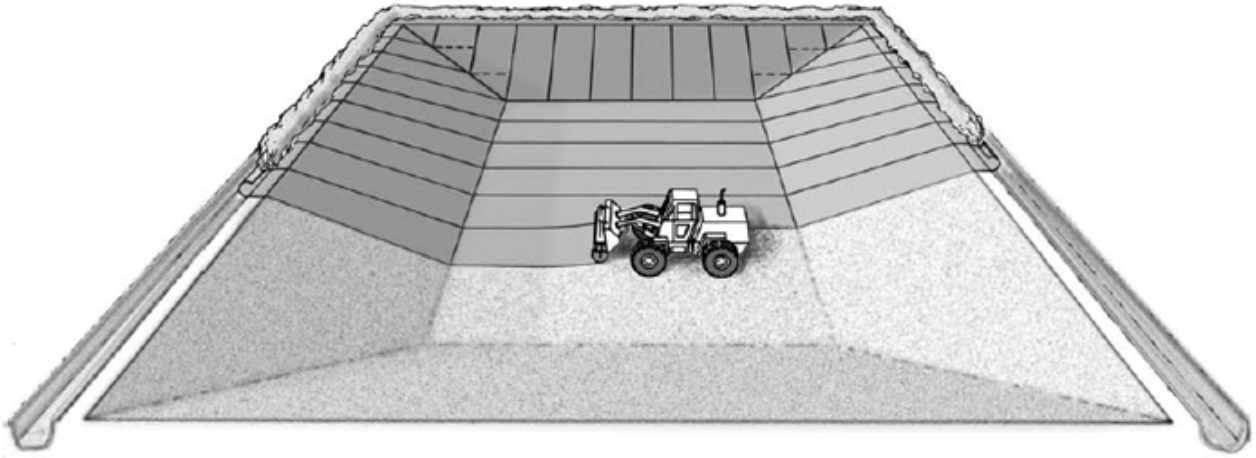
EcoShale Process

In-Capsule Recovery & Reclamation



Step 1. Prepare the Capsule in quarry and add Bentonite permeability barrier



Step 4. Pipes to distribute gas heat are placed in-capsule

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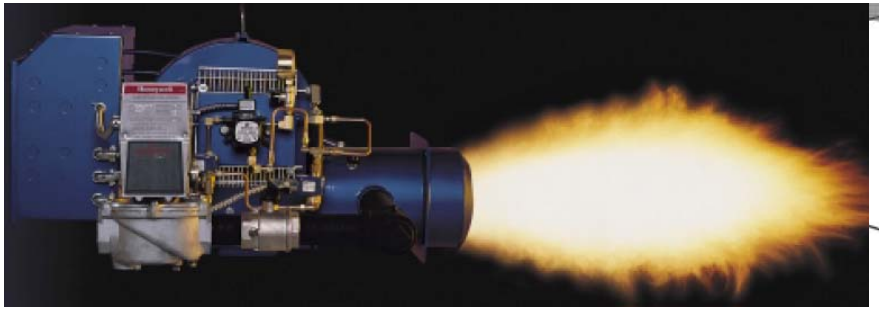
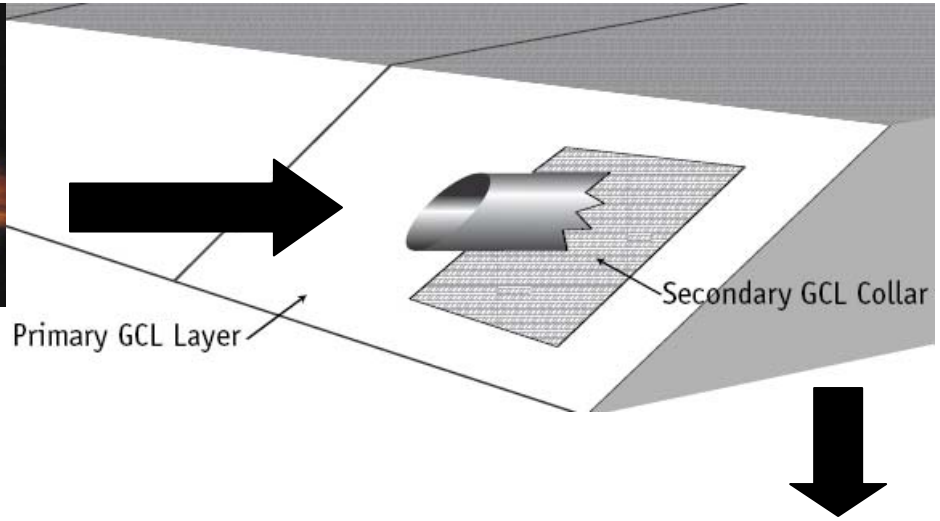
Natural gas or propane fires a burner to heat CSP Embedded in the capsule. Oil shale is produced.





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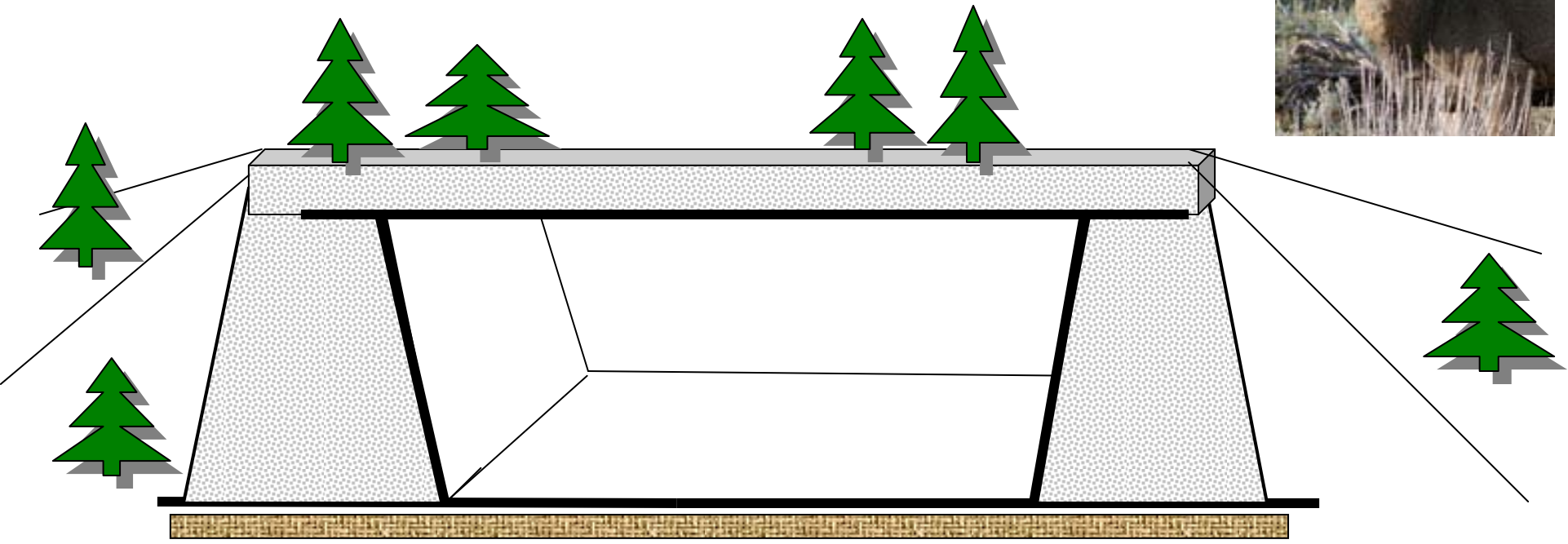
EcoShale Process

In-Capsule Hydrocarbon Recovery



- Continuous mining reclamation
- Ground water protection
- Surface water protection
- Approximate topography restoration


GEARS


United Rentals
S-60
4x4

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