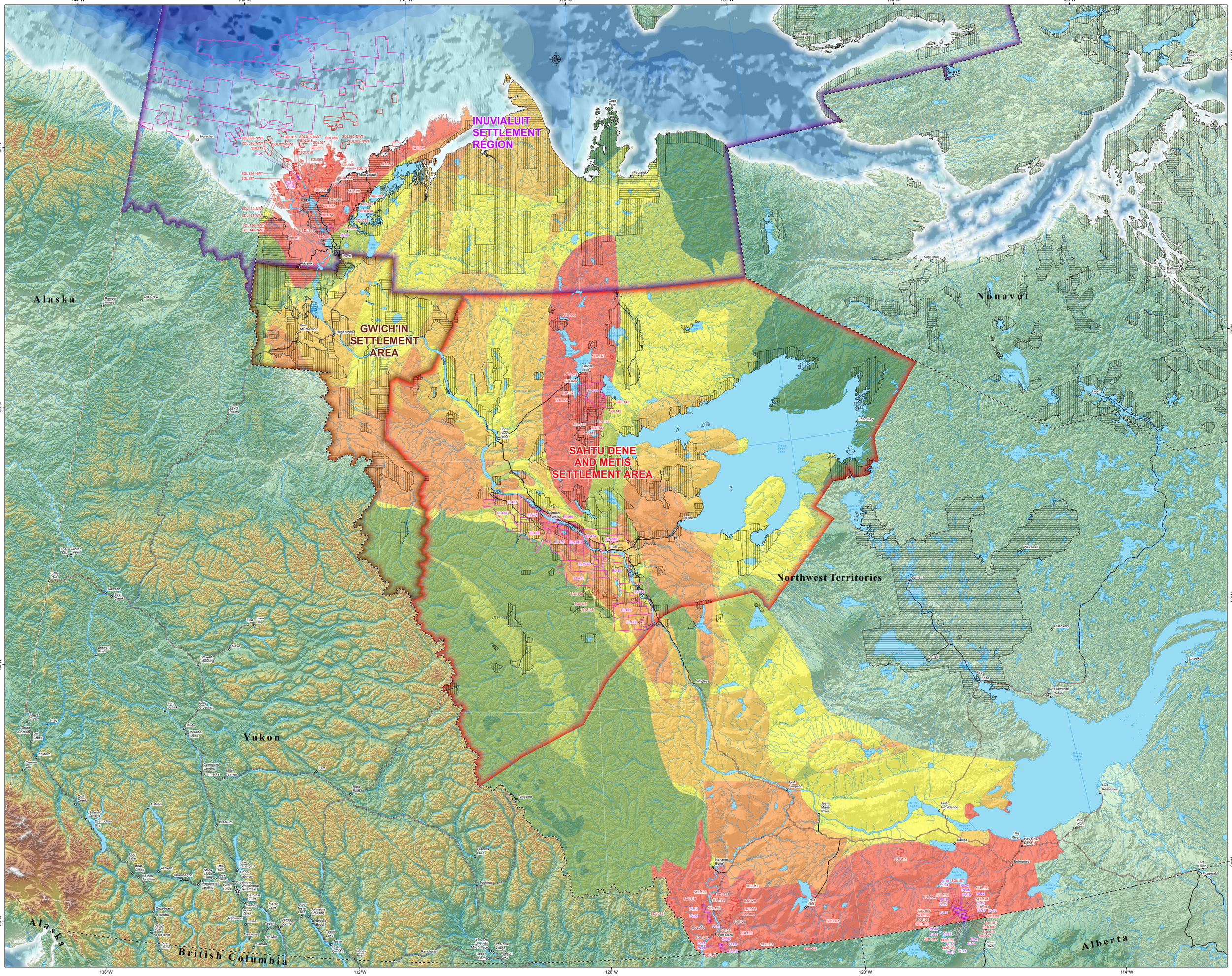

Natural Resources Canada
1:1,000,000 Atlas Basemap

- Provincial or Territorial Capital
- Communities
- Expressway / Highway
- Freeway
- Other
- Winter
- Inuvik to Tuktoyaktuk Highway
- River
- EEZ - 200
- EEZ - BB
- EEZ - BBD
- International
- Line extending to the North Pole
- Provincial or Territorial
- Lakes

Aboriginal Owned Lands - Property Rights

- Surface/Subsurface
- Surface

Aboriginal Affairs and Northern Development Canada
Offshore Oil & Gas Rights

- Exploration Licence
- Significant Discovery Licence

Northwest Territories
Onshore Oil and Gas Rights

- Exploration Licence
- Production Licence
- Significant Discovery Licence
- Inuvialuit Settlement Lands
- Gwich'in Settlement Area
- Sahtu, Dene and Metis Settlement Area

NWT Hydrocarbon Potential
NTGO: NWT Open File Report 2005 - 004

- Very High
- High
- Moderate to High
- Moderate
- Low to Moderate
- Low
- Very Low

Elevation in Metres

6,894 · 6,500 · 6,000 · 5,500 · 5,000 · 4,500 · 4,000 · 3,500 · 3,000 · 2,500 · 2,000 · 1,500 · 1,000 · 500 · 0

Depth in Metres

-50 - 0 · -200 - -50 · -500 - -200 · -750 - -500 · -1000 - -750 · -1500 - -1,000 · -2000 - -1,500 · -2500 - -2,000 · -3500 - -2,500 · -5000 - -3,500

0 50 100 200 Km

Northwest Territories Hydrocarbon Potential

The following introduction and methodology are taken directly from the NTGO: NWT Open File Report 2005 - 004, for the purposes of clarity and preservation of the contextual material. Hydrocarbon potential map citations are also directly taken from the original publication.

Introduction

This is a qualitative map of comparative hydrocarbon potential in the Northwest Territories. It is not meant to be, nor should it be interpreted as, a rigorous, detailed, or quantitative resource assessment of hydrocarbon potential. The main purpose of this map is to complement ecological-themed maps in broad scale planning for, and identification of, potential protected areas (Northwest Territories Protected Areas Strategy, 2003). Industry users and community groups may also find it generally informative.

Methodology

The basic methodology used in this study is similar to Gal and Jones (2003). It is entirely qualitative and, because it is knowledge-based, is somewhat subjective in nature. Established and conceptual hydrocarbon plays were identified primarily from existing literature. A hydrocarbon play is defined as a family of hydrocarbon pools and/or prospects that share common geological characteristics and history of hydrocarbon generation, migration, reservoir development, and trap configuration (Reinson et al., 1993). Established plays are demonstrated to exist by virtue of discovered pools with established reserves. Conceptual plays do not yet have any associated discoveries, but geological analyses indicate the possibility of their existence (Reinson et al., 1993).

In this study, the identified plays are represented by and mapped according to the subsurface extent of possible reservoir rock. The reservoir rock is thus a proxy for the entire petroleum system. It is recognized that this is an oversimplification. However, mapping possible reservoir strata allows for a quick regional reconnaissance, using a relatively reliable dataset in a region that is largely under-explored, and in which few petroleum systems are fully understood or defined. The play areas are bounded by (near) horizontal planes (generally coincident with stratigraphic boundaries) and vertical boundaries are defined at faults, facies changes, erosional, or depositional subcrop limits. In map space, the plays are two-dimensional polygons. Individual play polygons are likely to overlap, as several possible reservoir formations may be layered within the sedimentary rock succession at a particular location. The overlaps and intersections of play polygons are then used to define smaller polygons. Each of these will include a number of (overlapped) plays. The number of plays and the play type (established or conceptual) included in a given polygon area is at the core of this assessment methodology. Simply put, if all other factors are equal, an area with three conceptual plays has more potential than an area with only one conceptual play. Established plays are given a higher weighting than conceptual plays.

The assessment criteria partly follow those of the Mineral and Energy Resource Assessment (MERA) process used by the Geological Survey of Canada (Scoates et al., 1986; Jones et al., 1992). These criteria are based on the overall geological favourability for the presence of oil and / or natural gas; the occurrence of established and conceptual hydrocarbon plays, indications of hydrocarbons (shows), and known accumulations. The presence or probability of mapped structural closures or other trapping features is accounted for, but only in a general sense in this broad based study. Equal weighting is given to both oil and gas. For a reconnaissance-scale study such as this, it is the number and type of plays present that dominantly contribute to the assignment of hydrocarbon potential. The criteria for rankings of very low to very high potential (Table 1) follow Gal and Jones (2003) and Gal and Lariviere (2004).

Table 1. Potential Ranking Criteria

Very High	Geological environment is favourable for oil and/or gas. Multiple plays, at least one is established. Closures identified and mapped. Significant accumulations are known.
High	Geological environment is favourable for oil and / or gas. Multiple plays. Closures identified and mapped. Known hydrocarbon occurrences.
Moderate to High	Geological environment is favourable for oil and/or gas. At least three plays. Closures identified and mapped for at least one play.
Moderate	Geological environment is favourable for oil and/or gas. One or two plays. High probability of blind structural / stratigraphic closures.
Low to Moderate	Geological environment is mainly favourable for oil and / or gas. At least one conceptual play. High probability of blind structural / stratigraphic closures.
Low	Some aspects of geological environment are favourable for oil and / or gas. Significant probability of blind structural / stratigraphic closures.
Very Low	Unfavourable geological environment.

The Map

The polygons representing hydrocarbon potential are thematically coloured to reflect comparative hydrocarbon potential from very high to very low. Oil and gas land parcels administered by both the Government of the Northwest Territories (GNWT) and Federal Government (Aboriginal Affairs and Northern Development Canada - AANDC) are thematically symbolized into categories for exploration, significant discovery and production licences. The settled land claim areas for the Inuvialuit, Sahtu and G'wichin are indicated with gradational boundary shading. Polygons indicated by a line pattern fill boundary depict the locations where first nations surface and surface / sub-surface rights are located. The shaded relief component of the map utilizes the Global Multi-resolution Terrain Elevation Data 2010 (GMTED2010) product with a spatial resolution of 7.5-arc-seconds.

Hydrocarbon Potential Map Citation:

Gal, L.P., 2005. Hydrocarbon Potential Ranking Map of the Sahtu and Gwich'in Settlement Areas, Map 1 of 2; Northwest Territories Geoscience Office, NWT Open File 2005-04, 2 maps, scale 1:1,000,000.

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