707 8th Avenue S.W.
Box 6525, Station D
Calgary, Alberta, Canada
T2P 3G7

Bus: (403) 298-6111
Fax: (403) 750-1722

July 16, 2013

Sahtu Land and Water Board
P.O. Box 1
Fort Good Hope, NT
X0E 0H0

Via email: angela.love@slwb.com / tony.morris@slwb.com

Attention: Angela Love/Tony Morris

Dear Angela and Tony

Re: Husky Oil Land Use Permit S13A-002 and Water License S13L1-005 Applications – Analytical Parameters for Freshwater Drilling Waste Management

Please find attached, two tables that outline the proposed analytical parameters that will be applied in assessing the suitability of the freshwater drilling waste for disposal on-site. Table 1 outlines the tests to be conducted on both liquids and solids for salinity and hydrocarbon end points. Table 2 outlines the proposed end points for trace elements. A combination of Alberta (ERCB) and Canadian Federal (CCME) guidelines are used. Alberta guidelines have been developed to manage specific oilfield applications that are not fully addressed in the CCME guidelines.

Regards,

Husky Oil Operations Limited

R.M. (Bob) Raina, P.Geo.
Operations Environmental Advisor
Canol Shale Project

Attach: 2 tables

cc. Ken Hansen – Project Manager, Canol Shale Project
Jenica von Kuster – Environmental Advisor
Darren Heck - MWH

Table 1: Residual Solids and Waters Testing Parameters and Soil Endpoints

Sampling Location, Depth, Laboratory ID, and Date				Salinity & Toxicity Assessment										Hydrocarbons								
Sampling Location	Sample Depth	Laboratory ID	Date	EC	SAR	pH	Sodium	Calcium	Magnesium	Chloride	Potassium	Sulphate	Luminescent Bacteria Toxicity Test	Benzene	Toloune	Ethylbenzene	Xylenes	F1-BTEX (C6-C10)	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50+)	Reached Baseline at C50
	(m)		(dd-mon-yyyy)	(dS/m)			(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)		(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(Yes/No)
ERCB, Fine Subsoil [5]				**SCARG,** [5, 6, 7]	**SCARG,** [5, 6, 7]	**6 - 8.5**	**---** [1]	**---** [1]	**---** [1]	**---** [1]	**---** [1]	**---** [1]	**>75% Pass**	**0.046**	**0.52**	**0.11**	**15**	**210**	**150**	**1300**	**5600**	**---** [1]
ERCB, Coarse Subsoil [5]														**0.073**	**0.49**	**0.21**	**12**	**24**	**130**	**300**	**2800**	**---** [1]
Background																						
Soil Sample													N/A									
Waste Sample - Parameters to Test																						
Waste Sample Pump-Off				Cannot exceed 10 dS/m									**Pass**									
Waste Sample Solids or Total Waste													**Pass**									
Predictive Lab Blends																						
3:1 (subsoil:waste)																						
5:1 (subsoil:waste)																						
7:1 (subsoil:waste)																						

NOTES:

Superscript 1: The dotted line (---) denotes no value available.

Superscript 2: EC or SAR values rated Good by Salt Contamination Assessment & Remediation Guidelines (SCARG)

Superscript 3: EC or SAR values rated Fair by Salt Contamination Assessment & Remediation Guidelines (SCARG)

Superscript 4: EC or SAR values rated Poor by Salt Contamination Assessment & Remediation Guidelines (SCARG)

Superscript 5: *Directive 50 - Drilling Waste Management* (May 2012, Alberta Energy Resources Conservation Board)

Superscript 6: Receiving soil horizon category, and limiting initial salinity criteria (As set out in Table 3.1, Soil salinity endpoints, *Directive 50 - Drilling Waste Management* (May 2012, Alberta Energy Resources Conservation Board); Pump-off - Good category, EC < 2 dS/m, SAR < 4; Mix-Bury-Cover - Subsoil between 1 and 1.5m, Good or fair category, EC ≤ 5 dS/m, SAR ≤ 8; Mix-Bury-Cover - Subsoil 1.5m and deeper, Good, fair, poor, or unsuitable category

Superscript 7: Soil/waste electrical conductivity (EC dS/m) and sodium adsorption ratio (SAR) changes from background soil conditions (As set out in Table 3.1, Soil salinity endpoints, *Directive 50 - Drilling Waste Management* (May 2012, Alberta Energy Resources Conservation Board); Pump-off - Maximum increase of 1 unit beyond background soil EC, Maximum increase of 1 unit beyond background soil SAR; Land Application - Material to be used for road / lease / pad building material or Quarry Recontouring Materials - Maximum increase of 2 units beyond background soil EC, Maximum increase of 4 units beyond background soil SAR;

Table 2: Residual Solids and Waters Testing Parameters and Soil Endpoints - Trace Elements Analysis

Sampling Location, Depth, Laboratory ID, and Date				Metals																			
Sampling Location	Sample Depth	Laboratory ID	Date	Antimony	Arsenic	Barium (non-barite)	Beryllium	Boron (hot water soluble)	Cadmium	Chromium (hexavalent)	Chromium (total)	Cobalt	Copper	Lead	Mercury (inorganic)	Molybdenum	Nickel	Selenium	Silver	Thallium	Tin	Uranium	Vanadium	Zinc
	(m)		(dd-mon-yyyy)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
CCME, Agricultural Land Use; *Soill Quality Guidelines for Protection of Environmental and Human Health*				**20**	**12**	**750**	**4**	**2**	**1.4**	**0.4**	**64**	**40**	**63**	**70**	**6.6**	**5**	**50**	**1**	**20**	**1**	**5**	**23**	**130**	**200**
Background																								
Soil Sample																								
Waste Sample																								
Waste Sample																								
Predictive Lab Blends																								
3:1 (subsoil:waste)																								
5:1 (subsoil:waste)																								
7:1 (subsoil:waste)																								