June 4, 1974

Mr. J. M. Raisbeck, P. Eng.
Home Oil Company
304 - 6th Ave. S.W.
Calgary, Alberta
T2P OR4

Dear Sir:

Please find enclosed a copy of the report "Some Chemical and Physical Properties of Soil Materials Associated with the Reclamation of Mined Tar Sands Areas", as requested.

I trust this information is sufficient for your use.

Yours truly,

D. N. Graveland, P. Ag.
Branch Head

DNG:a

Encl.

c.c. J. Will
Information Officer
Alberta Environment

SOME CHEMICAL AND PHYSICAL PROPERTIES OF SOIL MATERIALS ASSOCIATED WITH THE RECLAMATION OF MINED TAR SANDS AREAS

Table 1. Some Chemical Properties

Table 2. Some Physical Properties

D. N. Graveland, P. Ag.
Branch Head
Earth Sciences & Licensing Division
Lethbridge, Alberta

Table 1. Some Chemical Properties

Material	pH	E.C.	SAR	p.p.m. Ca	Mg	Na	SO_4	Cl	HCO_3	Total N	NO_3-N	P	K
Soil Ae	6.0	0.17	0.2	10	4.5	3.0	3.4	-	36.6	400	1.5	16.0	5.9
Bf(h)	6.4	0.10	0.4	4	2	3.9		-	36.6	200	1.5	7.5	1.2
C	6.6	0.10	0.5	4	1.5	4.6		-		100	1.5	3.5	2.6
Peat GCOS	6.3	0.48	0.6	59	7	18.4	57.6	-	189.1	9600	3.0	0.6	1.9
Syncrude	6.3	0.25	0.2	38	6	5.3	57.6	-	85.4	11400	3.5	0.6	1.1
Raw Sedge	6.0	0.56	0.2	71	16	8.5	67.2	7.1	219.6	19700	13.7	36.0	27.0
Raw Sphagnum	4.1	0.40	0.9	5	25	9.2		12.4		7900	13.0	41.0	46.9
Overburden GCOS Waste Dump #5	6.3	5.06	7.0	266	164	591.1		3.5		600	4.8	4.8	43.0
Overburden GCOS Waste Dump #7	6.3	3.14	1.3	273	145	103.5				500	1.3	1.4	27.0
Overburden Syncrude Till #1	6.4	0.17	0.6	8	4	7.8		5.3		300	1.8	2.3	3.1
Overburden Syncrude Till #2	6.2	0.30	0.5	18	8	9.2		1.8		300	1.5	13.4	3.5
Spent sand GCOS	6.6	0.70	0.9	47	27	32.2	177.6	-	134.2	100	1.0	0.8	9.0
Spent sand Pilot	5.8	0.27	0.1	15	6	2.5	67.2	-	85.4	100	1.1	8.5	1.9
Lean tar sand	6.4	1.01	2.2	52	28	80.5	331.2	21.3	54.9	600	1.8	11.0	7.0

Note: Lack of numerical value or dash refers to insufficient sample.

Table 2. Some physical properties

Material	Texture (hydrometer) % Sand	% Clay	% Silt		Density (Disturbed sample)	Permeability (cm/hr.)	Field Capacity*	Moisture content - percent dry weight 1/10 atm.	1/3 atm.	15 atm.
Soil Ae	97.8	0.2	2.0	S	1.5	80	12.5		4.0	2.0
Bf(h)	98.0	1.2	0.8	S		250	10.0		1.6	0.7
C	99.4	0	0.6	S		280	8.5		0.7	0.4
Peat GCOS					0.25		130		90	55
Syncrude							250		150	70
Raw Sedge					0.1		310		160	280
Raw Sphagnum					0.05		570		360	250
Overburden GCOS Waste Dump #5	70.2	13.8	16.0	SL	1.3	30	30.0		13	6.7
GCOS Waste Dump #7	59.0	15.8	25.2	SL	1.4	13	25.0		15	7.9
Syncrude Till #1	62.2	16.0	21.8	SL		8	16.0		16	6.9
Syncrude Till #2	61.5	16.4	22.2	SL	1.5	6	19.5		14	6.4
Spent sand GCOS	99.2	0	0.8	S	1.4	100	25.5	3.8	1.8	0.5
Pilot	97.2	0.6	2.2	S		150			0.7	0.3
Lean tar sand						250	1.0			

* Gravimetric method