



STAR-ORION SOUTH DIAMOND PROJECT  
ENVIRONMENTAL IMPACT STATEMENT

**APPENDIX 5.2.2-B1**

**Tables**

Table 1: Soil Profile and Chemistry Descriptions of Representative Soil Profiles from the Star-Orion Diamond Project LSA

Soil Type	Plot ID	Easting <sup>2</sup> (m)	Northing <sup>2</sup> (m)	Drainage	Depth to water	Horizon <sup>y</sup>	Upper Horizon Depth (cm) <sup>x</sup>	Colour <sup>x</sup>	Texture	Coarse Fragments (%)	Calc Class	Sample ID	TOC (%)	Total N (%)	Ca (mg/L)	K (mg/L)	Mg (mg/L)	Na (mg/L)	SAR	Sat'n (%)	pH	EC (dS/m)	CEC (cM/kg)	Texture	Sand (%)	Silt (%)	Clay (%)		
Porcupine (Pp) O.GL	TEP93	515430	5897271	MW	NA	L	10-8	NR	NA	0		<sup>w</sup>																	
	TEP93	515430	5897271	MW	NA	F	8-2	NR	NA	0																			
	TEP93	515430	5897271	MW	NA	H	2-0	NR	NA	0																			
	TEP93	515430	5897271	MW	NA	Ae	0-4	10YR 4/2 - 5/2	LS-SL	2	N																		
	TEP93	515430	5897271	MW	NA	BA	4-12	10YR 4/4	SL	2	N																		
	TEP93	515430	5897271	MW	NA	Bt	12-20	10YR 4/3	SC	2	N																		
	TEP93	515430	5897271	MW	NA	IIBCk	20-29	10YR 4/3 - 2.5YR 4/4	SiC	2	M																		
	TEP93	515430	5897271	MW	NA	IICk	29-43	2.5YR 4/4	SiCL	2	M																		
	TEP93	515430	5897271	MW	NA	IIIC	43-56	2.5YR 4/3 - 7/2	CL	10	S-VS	TEP93 IIIcK1,2,3	0.22		47.8	4.6	12.9	22.2	0.7	26	7.8	0.4			Sandy loam	67	17	16	
	TEP93	515430	5897271	MW	NA	IIIC	56-70	2.5YR 4/3	CL	10	M																		
	TEP93	515430	5897271	MW	NA	IIIC	70-80	2.4YR 4/3	SCL	10	M																		
Porcupine (Pp) D.GL	TEP95	515188	5898119	MW	NA	L	8-6	NR	NA	0		TEP95 LFH	30.40	1.98	216	98.1	57	<4.0	<0.1	526	6.3	1.8							
	TEP95	515188	5898119	MW	NA	F	6-3	NR	NA	0																			
	TEP95	515188	5898119	MW	NA	H	3-0	NR	NA	0																			
	TEP95	515188	5898119	MW	NA	Ahe	0-10	NR	SiL-SiCL	0	N	TEP95 Ahe	2.71	0.23	79.5	17.5	23.5	<4.0	<0.1	59	6.3	0.6	21.9		Silt loam / Loam	30	49	21	
	TEP95	515188	5898119	MW	NA	Ae	10-22	NR	SiL-SiCL	0	N	TEP95 Ae			93.1	11.5	24	<4.0	<0.1	46	7.1	0.6							
	TEP95	515188	5898119	MW	NA	Bt	22-35	NR	SiC	0	N	TEP95 Bt			43.9	7.7	13.2	<4.0	<0.1	49	6.7	0.3			Silty clay loam	15	55	30	
	TEP95	515188	5898119	MW	NA	BC	35-55	NR	SiCL	0	N	TEP95 BC			43.1	3.6	13.6	5.4	0.2	49	7.0	0.3							
TEP95	515188	5898119	MW	NA	Ck	55-65	NR	SiCL	0	S-VS	TEP95 Ck	0.77		59.7	5	30.4	6.1	0.2	57	7.6	0.5			Silt loam	19	62	20		
Pine (Pn) GLE.EB	TEP114	512999	5901421	I	NA	L	4-2	NR	NA	0		TEP114 LF	20.30	1.08	94.8	88.4	21.8	<4.0	<0.1	289	6.2	1.0							
	TEP114	512999	5901421	I	NA	F	2-0	NR	NA	0																			
	TEP114	512999	5901421	I	NA	Ahjej	0-10	NR	S	0	N	TEP114 Ahjej	0.72	0.073	12.8	7	3.3	<4.0	<0.3	33	5.3	0.1	5.5		Sandy loam	77	14	9	
	TEP114	512999	5901421	I	NA	Ae	10-37	NR	S	0	N	TEP114 Ae			4.2	2.2	1.2	<4.0	<0.4	30	5.5	<0.1							
	TEP114	512999	5901421	I	NA	Bmgj	37-76	NR	LS	0	N	TEP114 Bmgj			6	2	1.5	6.1	0.6	31	5.8	<0.1							
	TEP114	512999	5901421	I	NA	BCgj	76-95	NR	LS	0	N	TEP114 BCgj			6.7	<2.0	1.8	5	0.5	30	6.1	<0.1							
	TEP114	512999	5901421	I	NA	Cgj	95-120	NR	LS	0	N	TEP114 Cgj			5.3	<2.0	1.5	4	0.4	30	6.4	<0.1							
	TEP114	512999	5901421	I	NA	Cg	120-130	NR	LS	0	N	TEP114 Cg	0.11		25.4	2.7	5.2	6.8	0.3	30	6.0	0.3			Loamy sand	84	8	7	
Bog-Fen (B-F) TFI.M	TEP116	511696	5898131	VP	100	Of	0-10	NR	NA	0	N	TEB116 Of1/Of2/Of3	41.6	1.46	47.1	16.8	9.7	6.4	0.2	97	7.0	0.4							
	TEP116	511696	5898131	VP	100	Of	10-17	NR	NA	0	N																		
	TEP116	511696	5898131	VP	100	Of	17-28	NR	NA	0	N																		

Soil Type	Plot ID	Easting <sup>z</sup> (m)	Northing <sup>z</sup> (m)	Drainage	Depth to water	Horizon <sup>y</sup>	Upper Horizon Depth (cm) <sup>x</sup>	Colour <sup>x</sup>	Texture	Coarse Fragments (%)	Calc Class	Sample ID	TOC (%)	Total N (%)	Ca (mg/L)	K (mg/L)	Mg (mg/L)	Na (mg/L)	SAR	Sat'n (%)	pH	EC (dS/m)	CEC (cM/kg)	Texture	Sand (%)	Silt (%)	Clay (%)		
	TEP116	511696	5898131	VP	100	Om	28-38	NR	NA	0	N	TEB116 Om1/Om2	39.9	1.55	75.1	<2.0	14.5	5.4	0.2	559	6.3	0.5							
	TEP116	511696	5898131	VP	100	Om	38-45	NR	NA	0	N																		
	TEP116	511696	5898131	VP	100	Om	45-85	NR	NA	0	N																		
	TEP116	511696	5898131	VP	100	Oh	85-105	NR	NA	0	N																		
	TEP116	511696	5898131	VP	100	Cg	105-110	NR	S	0	N																		
La Corne- Porcupine (Lc- Pp)O.GL	S84	514780	5897431	MW	NA	L	7-5	NR	NA	0	S	S84 LFH	29.6	1.94	163	66.7	28.9	<4.0	<0.1	444	6.8	1.3							
	S84	514780	5897431	MW	NA	F	5-4	NR	NA	0	S																		
	S84	514780	5897431	MW	NA	H	4-0	NR	NA	0	S																		
	S84	514780	5897431	MW	NA	Ahe	0-10	10 YR3/2	SL	0	S	S84 Ahe	1.93	0.15	119	11.2	23.2	<4.0	<0.1	52	6.5	0.8	16	Sandy loam	55	32	13		
	S84	514780	5897431	MW	NA	Ae	10-26	10YR 4/2-4/3	LS-SL	0	S	S84 Ae			43.8	6.4	8.5	<4.0	<0.1	34	6.6	0.3							
	S84	514780	5897431	MW	NA	Bt	26-40	10YR 4/4	SL-SCL	0	S	S84 Bt			55.2	4.1	12.3	6.1	0.2	37	7.3	0.4		Loam	49	36	15		
	S84	514780	5897431	MW	NA	Bck	40-48	10YR 5/4	SL	0	S	S84 Bck	0.43		56.9	3.5	12.9	9.8	0.3	41	7.6	0.4							
	S84	514780	5897431	MW	NA	IICk	48-60	2.5YR 5/4	SCL	0	S	S84 11Ck	0.59		70.6	3.8	18.7	10.6	0.3	54	7.6	0.5							
Pine (Pn) E.EB	S84	514780	5897431	MW	NA	IICk <sub>g</sub> j	60-70	2.5 YR 5/4	SCL	0	S	S84 IICk <sub>g</sub> j	0.73		60.6	3.5	17.3	9.5	0.3	60	7.6	0.5		Silty clay loam	5	62	33		
	S92	511659	5895481	R	NA	L	1-0	NR	NA	NR	N																		
	S92	511659	5895481	R	NA	Ah <sub>h</sub> ej	0-4	10YR 3/3-3/2m	S	0	N	S92 Ah <sub>h</sub> ej	0.67	0.07	15.5	6.3	4.8	<4.0	<0.2	36	6.0	0.2	4.4	Loamy sand	89	4	7		
	S92	511659	5895481	R	NA	B <sub>m</sub>	4-17	10YR 4/6m	S	0	N	S92 B <sub>m</sub>			7.2	3.8	2.5	5	0.4	31	6.0	0.1							
	S92	511659	5895481	R	NA	B <sub>C</sub>	17-38	10YR 5/6-2.5YR 5/6m	S	0	N	S92 B <sub>C</sub>			4.4	2.3	1.9	4.3	0.4	28	6.0	<0.1							
Pine (Pn) O.R	S92	511659	5895481	R	NA	C	38-50	2.5YR 5/6m	S	0	N	S92 C	<0.10		2.9	2.1	1.7	6.3	0.7	29	6.2	<0.1		Sand	91	3	6		
	S101	514276	5897964	R	NA	L	2-1	NR	NA	NR	N	S101 LH	4.43	0.23	63.5	31.6	18	<4.0	<0.1	75	6.2	0.7							
	S101	514276	5897964	R	NA	H	1-0	NR	NA	NR	N																		
	S101	514276	5897964	R	NA	Ae <sub>j</sub>	0-15	NR	S	0	N	S101 Ae <sub>j</sub>	0.47	0.06	27.8	10.9	7.2	<4.0	<0.2	34	5.9	0.3	3.5	Loamy sand	84	9	8		
	S101	514276	5897964	R	NA	B <sub>C</sub>	15-48	NR	S	0	N	S101 B <sub>C</sub>			15.6	3.6	4.2	5.4	0.3	29	6.2	0.2							
Meadow (Mw)	S101	514276	5897964	R	NA	C	48-90	10YR 5-5/6	S	0	N	S101 C	0.10		5.5	2.1	2.2	5.6	0.5	30	6.3	<0.10		Loamy sand	83	7	10		
	S101	514276	5897964	R	NA	IIC	90-100	10YR 5/6	S	0	N																		
	S104	NA	NA		NR	Oh	NR					S104 Oh	39.70	2.11	108	2	21.6	8	0.2	473	6.8	0.7							
Arbow (Aw)	S104	NA	NA		NR	Ah <sub>g</sub>	NR					S104 Ah <sub>g</sub>	1.40	0.11	71.9	<2.0	14.2	7.3	0.2	25	7.1	0.5	8.4	Loamy sand	84	8	7		
	S104	NA	NA		NR	C <sub>g</sub>	NR					S104 C <sub>g</sub>	0.30		50.6	2.1	10.6	10.2	0.3	27	7.6	0.4		Sand	93	1	6		
	S106	515141	5857952	P	NR	LF	35-28	NR	NA	NR	W	S106 LF-Of	36.40	1.16	116	23.4	30.6	12.8	0.3	734	7.4	0.8							
	S106	515141	5857952	P	NR	Of <sub>1</sub>	28-21	NR	NA	NR	W																		
Arbow (Aw)	S106	515141	5857952	P	NR	Of <sub>2</sub>	21-13	NR	NA	NR	W																		
	S106	515141	5857952	P	NR	Oh	13-0	NR	NA	NR	W	S106 Oh	33.50	1.20	142	4.9	23.4	15.1	0.3	394	7.4	0.9							

Soil Type	Plot ID	Easting <sup>z</sup> (m)	Northing <sup>z</sup> (m)	Drainage	Depth to water	Horizon <sup>y</sup>	Upper Horizon Depth (cm) <sup>x</sup>	Colour <sup>x</sup>	Texture	Coarse Fragments (%)	Calc Class	Sample ID	TOC (%)	Total N (%)	Ca (mg/L)	K (mg/L)	Mg (mg/L)	Na (mg/L)	SAR	Sat'n (%)	pH	EC (dS/m)	CEC (cM/kg)	Texture	Sand (%)	Silt (%)	Clay (%)
	S106	515141	5857952	P	NR	Cgk1	0-30	N-W calc	SiCL	0	W	S106 Ckg1,2,3	1.69		83	6.0	15.3	18.9	0.5	43	7.4	0.6		Silt loam / Loam	31	49	20
	S106	515141	5857952	P	NR	Cgk2	30-46	W calc	L-SL	0	W																
	S106	515141	5857952	P	NR	Cgk3	46-60	W calc	SiCL	0	W																
	S106	515141	5857952	P	NR	Cgk4	60-70	N-W calc	SiCL	0	W	S106 Ckg4	1.36		508	28	105	29.3	0.3	76	7.4	2.7		Silty clay	8	44	48

**Notes:** z - GPS coordinates - UTM Zone 13

y - Soil horizon designation according to the Canadian System of Soil Classification, 3rd Edition, 1998

x - Soil colors based on Munsell Colour Charts

w - Blank cell indicates sample not taken and/or analysis not conducted

**Abbreviations:** NR - not recorded; NA - not applicable; TOC - total organic carbon; Calc - calcareousness (lime content); Sat'n - H<sub>2</sub>O % of saturated paste;

EC - electrical conductivity; CEC - cation exchange capacity; SAR - sodium adsorption ratio

Drainage: VP - very poor; P - Poor; I - imperfect; MW - moderate well; W - well; R - rapid; VR - very rapid

Soil Texture: S - Sand; LS - loamy sand; SL - sandy loam; fS - fine sand; Si - Silt; SiL - silt loam; SiC- Silty Clay; SiCL - silty clay loam; CL - clay loam; L - loam; C - clay

Calcareous Class: N - non calcareous; W - weakly; M - moderately; S - strongly; VS - very strongly

Units: mg/L - milligrams/litre; dS/m - deciSiemens/metre; cM/kg - centimoles/kilogram