

SUMMARY REPORT

FIRESAND PROPERTY

McMurray and Lastheels Townships, Ontario, Canada



ESSAR STEEL ALGOMA INC. 105 West Street, Sault Ste. Marie, Ontario, Canada P6A 7B4

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Prepared By:

CARACLE CREEK INTERNATIONAL CONSULTING INC.
Zsuzsanna Magyarosi, Ph.D., P.Geo.



1.0 HIGHLIGHTS

- Essar's Firesand Property is a ~504 ha property covering almost all of the Firesand River Carbonatite Complex.
- Located within 11 km of Wawa, Ontario and 3 km south of Highway 101.
- Explored for iron until 1952 and for niobium, phosphorus (apatite), calcite and uranium between 1953 and 1976.
- 1117 m of drilling focused toward Nb, P and U with up to 0.3% Nb₂O₅ over 11 m.
- Grab samples up to 1.32% Nb₂O₅.
- No modern exploration.
- Has not been explored for tantalum, zirconium and rare earth element mineralization, which are typically associated with carbonatite intrusions.

2.0 LOCATION AND TENURE

The Firesand Property is located approximately 5.5 km east of Wawa, northeastern Ontario, in McMurray and Lastheels Twps. The approximate center of the Property in UTM coordinates is: 673628 E, 5318087 N, Zone 16, NAD 83 and in geographic coordinates: 84°41'24.27"W and 47°58'26.50"N.

The Firesand Property consists of thirty-three (33) freehold patents totaling 504.069 ha (Table 2-1, Figure 2-1). Essar holds 100% of both surface and mining rights on twenty-five (25) patents and mining rights only on the other eight (8) patents. The patents have no expiry date and the only obligation is to pay land tax on them. All patents are subject to reservations in Crown Grant.

Table 2-1 Essar's tenure for the Firesand Property

MNDMF patent number	Land Registry Pin No.	MPAC Roll Number	Township	Area (ha)	Name	Rights
SSM21690	31168-0004 LT	577600001617800	Lastheels	16.398	Firesand	both*
SSM21691	31168-0005 LT	579916200000800	Lastheels	26.734	Firesand	both
SSM21694	31168-0006 LT	579916200001000	Lastheels	7.891	Firesand	both
SSM21695 PT	31168-0007 LT	NA	Lastheels	4.087	Firesand	both
SSM31209	31168-0008 LT	579916200000900	Lastheels	21.428	Firesand	MRO**
SSM31204	31168-0009 LT	NA	Lastheels	18.239	Firesand	MRO
SSM21659	31169-1260 LT	577600001619500	McMurray	9.603	Firesand	both
SSM21660	31169-1261 LT	577600001620400	McMurray	13.569	Firesand	both
SSM21664	31169-1262 LT	577600001617400	McMurray	15.342	Firesand	both
SSM21668	31169-1263 LT	577600001616100	McMurray	22.699	Firesand	both
SSM21667	31169-1264 LT	577600001616200	McMurray	11.315	Firesand	both



MNDMF patent number	Land Registry Pin No.	MPAC Roll Number	Township	Area (ha)	Name	Rights
SSM21670	31169-1265 LT	577600001617700	McMurray	11.388	Firesand	both
SSM21671	31169-1266 LT	577600001617000	McMurray	11.914	Firesand	both
SSM21672	31169-1267 LT	577600001616900	McMurray	16.276	Firesand	both
SSM21673	31169-1268 LT	577600001619400	McMurray	11.546	Firesand	both
SSM21685	31169-1269 LT	577600001617300	McMurray	17.013	Firesand	both
SSM21675	31169-1303 LT	NA	McMurray	14.172	Firesand	MRO
SSM21674	31169-1304 LT	NA	McMurray	10.461	Firesand	MRO
SSM21662	31169-1305 LT	577600001617100	McMurray	13.711	Firesand	both
SSM21661	31169-1306 LT	NA	McMurray	15.406	Firesand	MRO
SSM21676	31169-1307 LT	NA	McMurray	14.043	Firesand	MRO
SSM21677	31169-1308 LT	NA	McMurray	13.395	Firesand	MRO
SSM21652	31169-1309 LT	577600001618700	McMurray	18.158	Firesand	both
SSM21654	31169-1310 LT	577600001619300	McMurray	14.682	Firesand	both
SSM21678	31169-1311 LT	577600001618600	McMurray	19.502	Firesand	both
SSM21655	31169-1312 LT	577600001619600	McMurray	14.067	Firesand	both
SSM21656	31169-1313 LT	577600001619700	McMurray	19.49	Firesand	both
SSM21665	31169-1314 LT	577600001616800	McMurray	19.469	Firesand	both
SSM31208	31169-1315 LT	577600001616700	McMurray	14.52	Firesand	both
SSM31205	31169-1316 LT	577600001616600	McMurray	20.275	Firesand	both
SSM31203	31169-1317 LT	NA	McMurray	15.512	Firesand	MRO
SSM31206	31169-1318 LT	577600001617200	McMurray	16.41	Firesand	both
SSM21653	31169-1320 LT	577600001619200	McMurray	15.354	Firesand	both
			Total area	504.069		

^{*}both=surface and mining rights

^{**}MRO=mining rights only

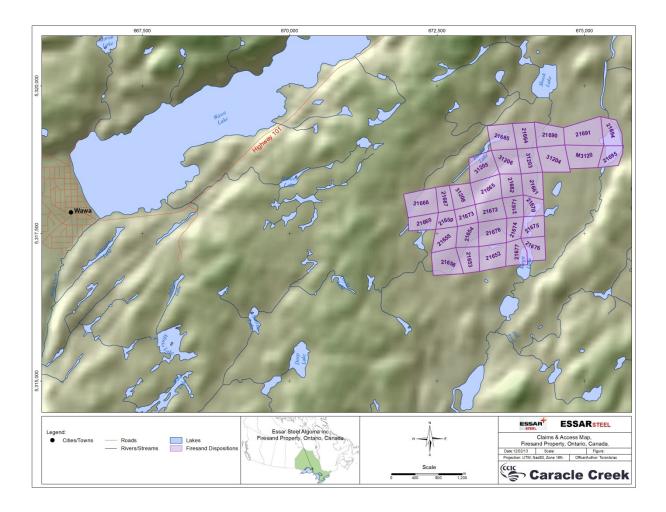


Figure 2-1 Tenure map for Firesand Property

3.0 ACCESS AND INFRASTRUCTURE

The Firesand Property can be easily accessed following Hwy 101 east from Wawa for approximately 11 km to the start of a road that crosses the Firesand Property, which is located approximately 3 km south of Hwy 101. The nearest airport and the nearest railway tracks to the Property are in Wawa. The closest powerline is located approximately 3 km southeast of the Property.

The town of Wawa has restaurants, hotels, hospital, and Ontario Provincial Police Station. The town of Wawa could supply most of the needs of an exploration program at Firesand. Wawa has an urban



population of 2,634 people in 2011 (Statistics Canada: http://www.citypopulation.de/php/canada-ua-ontario.php?cityid=394).

4.0 EXPLORATION HISTORY

The focus of exploration on the Firesand Property was iron in the 1920's and early 1950's, but it changed to Nb, carbonate, and then P (apatite) as Algoma realized the potential of the Property. Table 4-1 summarizes the exploration history on the Firesand Property.

Table 4-1 Summary of exploration on the Firesand Property

Year	Company	Type of exploration	Results	Reference/Assessment file number
1922- 1925	Algoma	hematite showing, 300 m trenching, drilling 3 holes totaling at least 55 m	Fe up to 55.5 %, but work unsuccessful delineating economic Fe	Sage (1988), 42C02SE0205
1950	Algoma	staking to check iron potential, geological and dip needle survey		42C02SE1039, 42E01SE0005
1951	Algoma	drilling 16 drill holes totaling 2531 m and trenching		42C02SE0605, 42C02SE1039
1952	Algoma	pack sack drilling, 6 holes totaling 67.5 m		Sage (1988)
1953	Algoma	checking Nb potential, drilling 6 holes totaling 1117.5 m, assaying previous and current drill core for Nb	presence of erratic Nb mineralization, best assay 0.3% Nb ₂ O ₅ over 15 m in hole 11	Sage (1988)
1970	Algoma	checking carbonate potential in calcite- bearing rim of complex, surface sampling, magnetometer survey		Sage (1988)
1972	Algoma	drilling 8 holes totaling 717 m	carbonate too high in P, Si and Mg	42C02SE0205
1976	International Mineral and Chemical Corp.	114 m reverse circulation (RC) holes and surface sampling testing for apatite	P content in surface samples ranged between 0.23 and 4.95%	42C02SE0202

5.0 GEOLOGY

The Firesand Property is underlain by the Firesand River Carbonatite Complex (1008 to 1087 Ma), which intrudes rocks of the Wawa assemblage (2.75 Ga) and the Hawk assemblage (2.89 Ga), of the Michipicoten greenstone belt, along faults associated with the Kapuskasing Structural Zone (Gittins et al., 1967, Sage, 1988, Sage, 1991, Williams et al., 1991).



The Firesand River Carbonatite Complex covers a surface area of approximately 4.5 km² and consists of a dolomite-rich core and a calcite-rich rim (Sage, 1988). Rocks in the calcite rim include sovite, silicocarbonatite and ijolite enclosing fragments of older rocks (Figure 2). The dolomite core consists of ferruginous rauhaugite (fine-grained carbonatite) with a thick hematite and/or goethite coating. The rocks around the complex are brecciated and fenitized, indicated by the presence of blue-green amphibole replacing quartz (Sage, 1991).

Minerals in the calcite-rim include carbonate, biotite, clinopyroxene, magnetite, apatite, amphibole, olivine, garnet, perovskite, plagioclase and nepheline (Sage, 1988). Minerals in the dolomite core include mostly carbonate, lesser magnetite, apatite, and traces of biotite and barite.

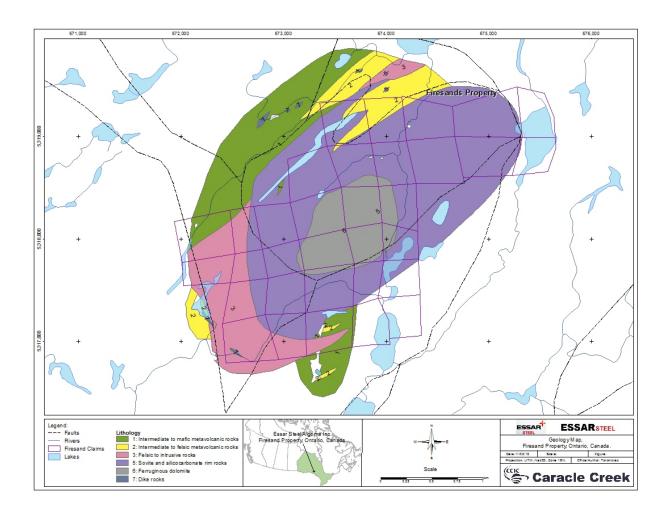


Figure 5-1 Local geology map for the Firesand Property (modified from Sage, 1988)



6.0 MINERALIZATION

The Firesand River Carbonatite Complex contains widespread low-grade niobium and uranium mineralization (Sage, 1988). It has been explored for phosphorus (hosted in apatite) potential by International Minerals and Chemical Corp., but no significant accumulation of apatite was found. Algoma also explored the Property for iron and calcite, but was unsuccessful delineating economic amounts of either.

Parsons (1961) described two locations containing niobium mineralization on the Property. At Zone C occurrence pyrochlore (Nb-bearing mineral) occurs in calcite carbonatite with magnetite, apatite and biotite. Surface sampling returned values up to 0.52% Nb₂O₅. Surface sampling by Algoma at Zone D occurrence returned values up to 1.32% Nb₂O₅.

According to Sage (1993), the Firesand River Carbonatite Complex is favorable for rare earth element (REE) mineralization and should be tested for REE concentrations.

7.0 ADJACENT PROPERTIES

The rest of the Firesand River Carbonatite Complex is staked by individuals and there is no public exploration data available on them. Augustine Ventures Inc. holds the claims to the west of Essar's Firesand Property, but the focus of their exploration is gold that occurs in Archean age rocks (see report on Grace Mine Property).

8.0 REFERENCES

- Parsons, G.E. (1961): Niobium-bearing complexes east of Lake Superior, Ontario Department Mines, Geological Report 3, 73p.
- Sage, R.P. (1988): Geology of Carbonatite Alkalic Rock Complexes in Ontario: Firesand River Carbonatite Complex, District of Algoma; Ontario Geological Survey, Study 47, 82p.
- Sage, R.P. (1991): Alkalic rock, carbonatite and kimberlite complexes of Ontario, Superior Province, Chapter 18, *in* Geology of Ontario, Ontario Geological Survey, Special Volume 4, Part 1, p. 683-709.
- Sage, R.P. (1993): Geology of Chabanel, Esquega, Lastheels and McMurray Townships, District of Algoma, Ontario Geological Survey, Open File Report 5586, 462p.



Williams, H.R., Stott, G.M., Heather, T.L., Muir, T.L. and Sage, R.P. (1991): Wawa Subprovince, Chapter 12, *in* Geology of Ontario, Ontario Geological Survey, Special Volume 4, Part 1, p. 485-542.