

# SUMMARY REPORT

EAGLE ISLAND PROPERTY

Lake St. Joseph, Ontario, Canada



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

Date: May 13, 2013

Prepared By:

CARACLE CREEK INTERNATIONAL CONSULTING INC.
Julie Selway, Ph.D., P.Geo.



### 1.0 HIGHLIGHTS

- Essar's Eagle Island Property is located on three islands in the western part of Lake St. Joseph, northwestern Ontario, approximately 108 km northeast of Sioux Lookout.
- The Property consists of three (3) freehold patents with a total area of 23.901 ha
- Algoma Steel Inc. has mining rights only on the Property
- Lake St. Joseph Iron Limited completed two drill holes claim PA17195: J-19 completed in 1958 and J-33 completed in 1959 for a total of 390.14 m. Both holes intersected magnetite and hematite banded beds.
- To the best of Caracle Creek's knowledge, no exploration has been completed on Essar's Eagle Island Property since 1959.
- Essar's Eagle Island is immediately adjacent to Rockex's iron ore property which is at the
  preliminary economic assessment stage. It is assumed that the iron formation on Rockex's
  Property extends westward onto Essar's Property, but due diligence geological mapping is
  required to confirm this.

### 2.0 LOCATION AND TENURE

Essar's Eagle Island Property is located on three islands (Islands 371, 334 and 183) in the western part of Lake St. Joseph, northwestern Ontario, approximately 108 km northeast of Sioux Lookout and 80 km south of Pickle Lake in Trist Lake Area Township. The approximate center of the Property is in UTM coordinates is: 627477 E, 5646923 N, Zone 15, NAD 83 and in geographic coordinates: 91°11'5"W and 50°57'35"N.

The Eagle Island Property consists of three (3) freehold patents which are merged into two (2) Land Registry Property Identification Numbers ("PIN's") with a total area of 23.901 ha (Table 2-1). Algoma Steel Inc. has mining rights only on all of the patents and all of the PIN's are owned 100% by Algoma Steel Inc. The patents have no expiry date and the only obligation is to pay land tax on them. The amount of mining land tax in 2012 was \$ 95.59 CDN. The patents are subject to reservations in Crown Grant. Private individuals have the surface rights on Essar's Eagle Island Property (Table 2-2).



Table 2-1. Tenure table for Essar's Eagle Island Property

MNDMF patent number	Land Registry Pin No.	Township	Area (ha)	Owner Name	Rights
PA17192 PT	42034-0689 LT	Trist Lake	9.887	Algoma Steel Inc.	MRO*
PA17193 PT	42034-0689 LT	Trist Lake	8.146	Algoma Steel Inc.	MRO
PA17195 PT	42034-0690 LT	Trist Lake	5.868	Algoma Steel Inc.	MRO
		Total	23.901		
_					

<sup>\*</sup>MRO = mining rights only

*Table 2-2 Tenure table for the surface rights on the same PIN's as in Table 2-1.* 

MNDMF patent number	Land Registry Pin No.	Part of PIN	Township	Owner Name	Rights
PA17192 PT	42034-1634	Part 1	Trist Lake	Scot Gerald Davidson, Marvin Mervyn Shepard, Timothy Andrew Davidson, Robert Allen Richardson	SRO*
PA17192 PT	42034-1635	Part 2	Trist Lake	Michael Robert Jackson	SRO
PA17192 PT	42034-1636	except Part 1 & 2	Trist Lake	Michael Robert Jackson	SRO
PA17193 PT	42034-0684	NA	Trist Lake	Michael Robert Jackson	SRO
PA17195 PT	42034-0685	NA	Trist Lake	Lake St. Joseph Iron Inc.	SRO

<sup>\*</sup>SRO = surface rights only



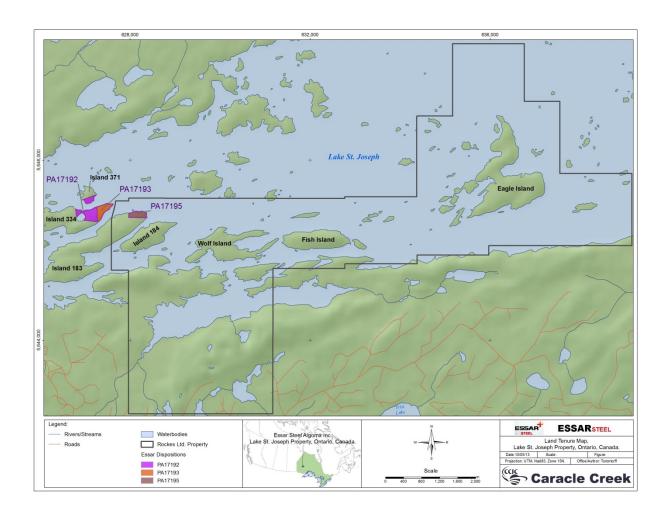


Figure 2-1 Tenure map for Eagle Island Property

### 3.0 ACCESS AND INFRASTRUCTURE

Essar's Eagle Island Property is located on three islands in the western part of Lake St. Joseph, northwestern Ontario, approximately 108 km northeast of Sioux Lookout and 80 km southwest of Pickle Lake in Trist Lake Area Township. The Eagle Island Property is about 51 km west of Highway 559 and has boat access or float plane access via Sioux Lookout or Pickle Lake. The nearest international airport is in Thunder Bay, Ontario, which is approximately 330 km south of the Property. There are no powerlines or railway on the Property.



Sioux and Lookout is located halfway between Thunder Bay Winnipeg (http://www.siouxlookout.ca/community/profile). The Town has over 5,500 residents and is called the "Hub of the North" as it provides essential services to 30,000 people in 29 remote First Nation communities. It has a new Hospital and MNR Fire Management Center. Sioux Lookout is connected to other urban centers by Highway 72 and 642 which link to Highway 599; Canadian National Railway; float plane air charter services and Sioux Lookout Municipal Airport which is serviced by Bearskin Airlines and Wasaya Airways. Sioux Lookout also has hotels and restaurants.

#### 4.0 EXPLORATION HISTORY

Iron formation has been known to exist in the Lake St. Joseph area since the early 1900's, although little serious exploration took place until the late 1950's (Breaks et al., 1979). At that time, the magnetite-hematite iron formation was outlined on Eagle, Wolf and Fish Islands (to the east of Essar's current property).

The Lake St. Joseph deposit was staked in 1955 by Lake St. Joseph Iron Limited and at that time consisted of 26 patents. Development work consisted of trenching, diamond drilling and benefication testing. Lake St. Joseph Iron Limited completed two drill holes claim PA17195: J-19 completed in 1958 and J-33 completed in 1959 for a total of 390.14 m (MNDMF assessment file: 52J14NE0013). Both holes intersected magnetite and hematite banded beds which were hosted by green schist in J-19 and tuff and slaty sediments in J-33.

Table 4-1 Summary of historic drilling on Essar's Eagle Island Property.

drill hole					length	date	
number	location	claim	azimuth (°)	dip (°)	( <b>m</b> )	completed	mineralization
J-19	about 121.92 m NW of witness post No. 1	PA17195	60 SW	45 S	195.07	15-Mar-58	magnetite, hematite
J-33	lake shore, NE end of mainland	PA17195	N 95 E	30 N	195.07	25-Mar-59	magnetite, hematite
				total	390.14		

In September 1962, Lake St. Joseph Iron Limited owned 84 claims from Island 17 in the east to Island 334 in the west for an approximate length of 13 km (Clifford 1969). Lake St. Joseph's Property included Wolf, Fish and Eagle Islands.



Algoma signed an agreement to lease 73 mining claims from Lake St. Joseph Iron Limited. Algoma agreed to expend not less than \$500,000 by the end of the 5-year option extending from November 1, 1973 to October 31, 1978 (Kociumbas et al., 2011). In 1974-1975, Algoma carried out diamond drilling and pilot plant test work focusing on Eagle Fish Island (Kociumbas et al., 2011). Algoma estimated a historic resource on Eagle, Fish and a west extension. On November 1, 1978, Algoma exercised its option and leased the property. In 1978-1979, Algoma focused its exploration on Fish Island with two drill holes and geological mapping.

Claims were dropped by Algoma in 2006, 2007 and 2008 and new claims encompassing Eagle, Fish and Wolf Islands were staked on behalf of Pierre Gagné and are now owned by Rockex Limited ("Rockex") (Kociumbas et al., 2011).

Late in 2009, Rockex acquired Algoma's 1974 and 1975 archived drill core and project files from Essar (Kociumbas et al., 2011). Full-scale hand-coloured geological maps for the Property completed by Algoma were also obtained by Rockex from Essar. The drill core and files were transported to Rockex's storage area and offices in Thunder Bay for inventory. In early 2010, Rockex contracted a geologist to relog and sample selected drillholes to validate Algoma's work as due diligence for Rockex's mineral resource estimate. Caracle Creek does not know if Essar had files on Island 371, 334 and 183 and if the files existed, were they given to Rockex at this time.

### 5.0 GEOLOGY OF WESTERN LAKE ST. JOSEPH

### 5.1 Regional geology

The Uchi Subprovince is a tabular, eastward-trending region of metavolcanic and lesser metasedimentary rocks forming a semicontinuous supracrustal network interweaving around granitoid batholiths and plutons (Stott and Corfu, 1991). The collage of assemblages in the subprovince shows a general southward younging. The southern half of the Uchi Subprovince consists of episodic crustal additions to a microcontinent along its leading edge in the form of arc and marginal basin complexes and associated plutons. The southern boundary with the metasedimentary-plutonic English River Subprovince is the Sydney Lake – Lake St. Joseph Fault (Figure 5-1).



#### 5.2 Local geology

The stratigraphy of the western part of Lake St. Joseph greenstone belt has been subdivided into four volcanic cycles: Blackstone Cycle 1, Western Lake St. Joseph Cycle 2, Carling Cycle 3 and Brodribb Cycle 4 (Figure 5-1) (Stott et al., 1987). The first three volcanic cycles are folded about a major east trending anticline that faces eastward away from the Bamaji-Blackstone granite batholith. The thickest portion of each cycle and the most intense carbonization occurs in the vicinity of this fold hinge (near Eagle Island). Each of the first three cycles comprises a bimodal suite of lower basaltic flows and upper dacite-rhyolitic pyroclastic deposits. In western Lake St. Joseph, a folded sequence of magnetite ironstone and clastic metasediments infills a major basin along the southern margin of the volcanic belt. These metasediments are exposed on Eagle Island and the chain of islands to the west. The metasediments were deposited uncomformably within a basin that was carved out subsequent to both the deposition of the first three volcanic cycles and an eastward tilting of the volcanic stratigraphy. The sediments form a basal suite of volcaniclastic material derived mainly from the felsic volcanics of the upper Western Lake St. Joseph Cycle 2. This was followed by a largely quiescent period during which much of the ironstone was deposited with intervening wacke beds. This stage was blanketed by the development of a major submarine fan deposit that prograded southward away from the volcanic pile. The late Bamaji-Blackstone batholith is typically composed of quartz-phyric granodiorite to monzogranite. The large Bamaji-Blackstone batholith imposed a 1.5 km wide contract strain aureole upon the Blackstone basalts along its eastern margin.

The overall tectonic history involves the general sequence:

- 1. Deposition of volcanic cycles
- 2. Regional eastward tilting of the volcanic stratigraphy in western Lake St. Joseph
- 3. Erosion of volcanic pile to produce Eagle Island ironstone-lined basin and submarine fan deposits
- 4. Regional north-south compression that produced the major folds and the penetrative foliation.
- 5. Emplacement of Bamaji-Blackstone granitic batholith
- 6. Regional oblique compression along northwest-southeast axis to produce a major dextral transcurrent shear zone (i.e., Lake St. Joseph fault) along the southern margin of the greenstone belt and into the English River subprovince.



North of the Lake St. Joseph fault zone, clastic metasediments typically contain chlorite-muscovite-biotite-quartz-albite and south of the fault the assemblage of garnet-staurolite-sillimanite occurs locally in the metasediments (Stott et al., 1987).

#### 5.3 Property Geology

According to Ontario Geological Survey's map M2158, Essar's Property on Island 371 consists of silicic tuffs and cherty iron formation (mostly magnetite) (Clifford, 1968).

Essar's Property on Island 334 consists of basaltic to andesitic flows, lapilli tuff, arkosic-greywacke-argillite metasediments and cherty iron formation (mostly magnetite) (Clifford, 1968). Clifford (1969) describes the geology of Island 334 as mafic and felsic volcanic rocks are interlayered with volcaniclastic rocks. Also present is iron oxide-bearing beds and conglomerates with are later that the volcanic and volcaniclastic rocks.

Essar's Property on Island 183 consists of arkosic-greywacke-argillite metasediments and cherty iron formation (mostly magnetite) (Clifford, 1968).

#### 5.4 Mineralization

Very little is mentioned in literature about the iron mineralization on Essar's three islands. It is assumed that mineralization on Essar's Property is similar to that on Rockex's adjacent Property, but due diligence geological mapping is required to confirm if this is true.

According to Shklanka (1968), mineralization on Eagle and Fish Islands on Rockex's Property consists of magnetite-hematite-quartz Algoma type iron formation up to 500 ft wide with a broad easterly trend for 6.5 miles hosted by Archean sediments. Minor amounts of siderite and pyrite are present.

Iron-carbonate ± quartz pods, veins and veinlets characterize the mafic metavolcanics east of the Bamaji-Blackstone batholith (Stott and Sanborn, 1987). The carbonate contains local stringers of pyrite. The veins are notably abundant on the islands west of Eagle Island.

The magnetite to hematite ratio is 1:1 at Eagle Island on Rockex's property according to Watts, Griffs and McOuat's ("WGM") observation of Algoma historic drill core and Rockex's 2008 drill core and assays from 5 drill holes (Kociumbas et al., 2011). Most of the mineralization observed by WGM consists, on a



macro scale, of a near massive and intimate mixture of hematite and magnetite. In historic reports, gangue is described as consisting of silica, sericite, mica, carbonate, chlorite with some hornblende and apatite.

WGM noted that the Eagle Island deposit (on Rockex's property) is essentially in the form of an east to northeast-trending, steeply plunging syncline with superimposed, less extensively developed, coaxial anticlines. The iron formation is repeated by folding. West of Eagle Island, the steeply dipping north and south limbs of the iron formation sequence have been traced for over 10 km. The south limb extends through Fish and Wolf Islands and still further west (i.e., extends onto Essar property).

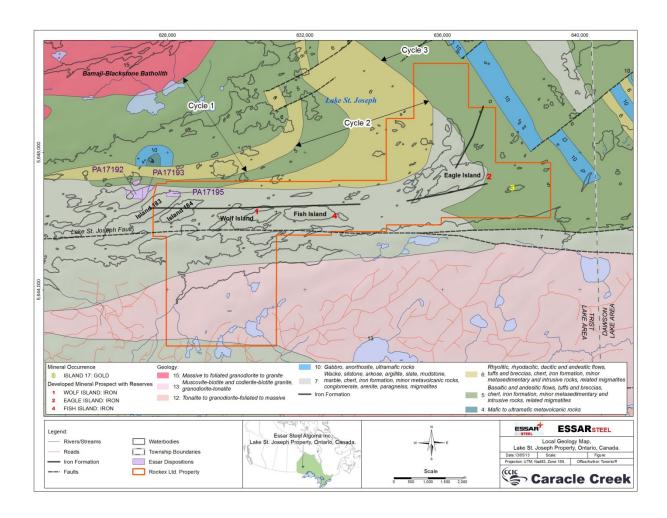


Figure 5-1 Local geology map for Western Lake St. Joseph



#### **6.0** ADJACENT PROPERTIES

## 6.1 Rockex's Eagle Island Property

Rockex's Eagle Island property is 100% owned by Rockex Mining Corporation ("Rockex"). Rockex's Property is immediately adjacent to Essar's Eagle Island Property (Figure 2-1) (Rockex's website: http://www.rockexmining.com/s/Home.asp). The actual Eagle Island belongs to Rockex and Essar's Property consists of Islands 334, 371 and 183. Rockex has a NI 43-101 compliant iron resource on Eagle Island of: 590,847,000 tonnes at 28.8 % soluble Fe indicated and 415,757,000 tonnes at 29.5 % soluble Fe inferred both to a depth of 300 m (Rockex's website: http://www.rockexmining.com/s/Home.asp). They also have historic non-compliant iron resources on Fish Island, Doran Lake and Soule's Bay. Rockex is planning to complete a Preliminary Economic Assessment on Eagle Island in 2013.

### 7.0 REFERENCES

- Breaks, F.W., Bond, W.D., Stone, D. and Desnoyers, D.W. (1979): Operation Miniss-Tully Lakes, Lake St. Joseph-Miniss Lake Sheet, Districts of Kenora and Thunder Bay; Ontario Geological Survey, Preliminary Map P.2216, Geological Series, Scale 1:63,360 or 1 inch to 1 mile, Geology 1976.
- Clifford, P.M. (1968): Blackstone Lake Sheet, Kenora District; Ontario Geological Survey, Map 2158, scale 1:31,680, Geology 1963-1964.
- Clifford, P.M. (1969): Geology of the Western Lake St. Joseph Area Kenora and Thunder Bay Districts, Geological Report 70, Ontario Department of Mines, 61 pp.
- Kociumbas, M., Risto, R. and MacFarlane, G.R. (2011): Technical Report and Mineral Resource Estimate on the Western Lake St. Joseph Iron Ore Project, Ontario, Canada, prepared by Watts, Griffs and McOuat for Rockex Limited and Rockex Mining Corporation, dated January 28, 2011.
- Shklanka, R. (1968): Iron Deposits of Ontario, Ontario Department of Mines, Mineral Resources Circular No. 11, 489pp.
- Stott, G.M. and Corfu, F. (1991): Uchi Subprovince; *in* Geology of Ontario, Ontario Geological Survey, Special Volume 4, Part 1, p. 145-238.
- Stott, G.M., Kay, S.V. and Sanborn, M.M (1987): Precambrian Geology of the Lake St. Joseph Area, West Half, Districts of Thunder Bay and Kenora (Patricia Portion); Ontario Geological Survey, Map P.3050, Geological Series Preliminary Map, scale 1:50,000, Geology, 1985.