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D.M. 421/53

DEPARTMENT OF MINES
SOUTH AUSTRALIA

NOTES ON A CLAY DEPOSIT AT SIMMONSTON.

INTRODUCTION

Following recommendations from the Consulting Engineer, Department of Industry, Industries Assistance Branch, an inspection was made of a clay deposit which outcrops on the banks of Willochra Creek immediately NW of the town site of Simmonston in the hundred of Kanyaka, some 20 miles NNE of Quorn.

The clay was reported by Mr. A.J. Nicholls of Belair to occur on Sections 100, 508 and 509 Hd. Kanyaka. The exposures visited during the recent inspection lie on the eastern bank of Willochra Creek and within portion of a stock route reserve flanking the eastern boundary of Section 507 and the southern boundary of Section 80, Hd. Kanyaka, about 1 mile north of the centre of the deserted town site. Nearest railway siding is Gordon, 8 miles to the S.E., claimed to be accessible by rough track.

PREVIOUS HISTORY

According to Government Gazette dated 9/3/33, a portion of the stock route north of Simmonston town site and adjoining Section 80 Hd. Kanyaka, was declared available for mining. It appears that this concession still applies, and that claims may be pegged and registered in this area.

A cancelled mineral claim No. 14038 of 40 acres held by Alfred Hansen in 1933 adjoins Willochra Creek on the northern side of this concession area. There is a record (31/12/53) of 10 tons of clay mined from here and sold to Minerals Pty. Ltd. Apparently the clay realised £12/10/- but was found to be unsatisfactory, and operations on the claim were discontinued. Two men had been employed on the claim, the maximum depth of

diggings being 4 ft.

PRESENT INSPECTION.

During the recent inspection, clay was seen to extend along the eastern bank of the Willochra Creek for a distance of more than ¼ mile. It is plastic, greyish white in colour, somewhat silicified in places, overlying decomposed shale which is now a pale green grey plastic clay locally discolored by iron staining. Within the upper clay is a siliceous or silicified hard bar which lies almost horizontally, and is overlain by yellowish-white to brown clay sediment, and above this 3-5 ft. of red brown soil and rubble. The lower decomposed shale bed rock is apparently more uniform in composition. The bedrock trends NNE and dips steeply westerly. Local thickness of this clay shale zone may be 20 ft. or more. Exposures of clay and clay shale above the Willochra Creek bed reach a maximum height of about 25 ft. - 30 ft. along the bank. How far this clay and decomposed shale zone extends back from the Creek is not known and was not tested, but should be several hundred yards at least.

SAMPLING.

Two groups of samples were obtained during the visit- the first by means of a post hole digging to a depth of 4 feet in decomposed shale at the foot of a steep bank of clay and a second group of samples wer cut over a vertical length of 18 ft., chipped from the surface of decomposed shale on a cliff face about 150 yards north of the first samples.

The clay of the first group was fairly unifform in colour and texture - pale greenish with occasional iron staining along fractures. The second group was generally paler in colour occasionally stained in some samples, and generally contained some efflorescent salts on exposed surfaces. The upper sections of the cliff face had local hardened silicified skins and much of the clay exposed throughout the cliff face contained a

notable proportion of fine sand or silt.

FIRING TESTS.

The samples were submitted to the Metallurgical Branch for investigation of plasticity and firing properties and a report was received from the Chief Metallurgical Engineer.

Sample No. 1 from the post hole digging was the subject of the following comments:-

> "Off white in colour, slight greasy feel, some iron staining. Slakes well on soaking. Fairly plastic, moulds well.
> Fired hard at 1000°C little shrinkage and no cracking. White inside, but discoloured surface, probably from contamination with other samples."

Sample No. 2 proved far less satisfactory.

> "Pale green in colour, slight iron staining. Fine sandstone through clay. Slakes slowly in water. Sticky to mould. out
> On firing to 1200°C, SO_2 fumes evolved, clay spalled and discoloured pink and brown."

CONCLUSIONS

Exposed on the banks of Willochra Creek are what appears to be large reserves of plastic clay extending over a length of more than 400 yards. The deposit would probably be capable of large scale development following removal of some 5 to 8 feet of soft or unconsolidated overburden.

The clay is likely to prove rather variable in quality as indicated by the small amount of testing already carried out on two more or less random samples. This variability is demonstrated in discoloration during firing and in plasticity, shrinkage, etc. Clay at present exposed at the surface tends to carry a significant proportion of sodium, magnesium and calcium salts, especially gypsum.

Samples showing good colour, low shrinkage and fair plasticity might prove suitable for sanitary ware and similar pottery manufacture.

The deposit is of sufficient size to warrant further investigation. This should take the form of drilling either by

hand or machine to determine the extent and condition of the clay and thickness of over burden to the east of Willochra Creek, and some systematic sampling both of surface exposures and of the deposit in depth to check the quality of the clay within the area. The scale of any such sampling and testing programme undertaken would naturally depend on the response of manufacturers to properly selected and truly representative trial samples.

The area is not held under mineral claim at present and contrary to previous belief, despite being on a stock route, is available for pegging.

A major problem in the exploitation of this clay deposit is likely to be the difficulty and cost of transporting the clay to Adelaide.

(K.R. MILES)
SENIOR GEOLOGIST

ENGINEERING GEOLOGY & MINERAL RESOURCES SECTION

KRM:AGK
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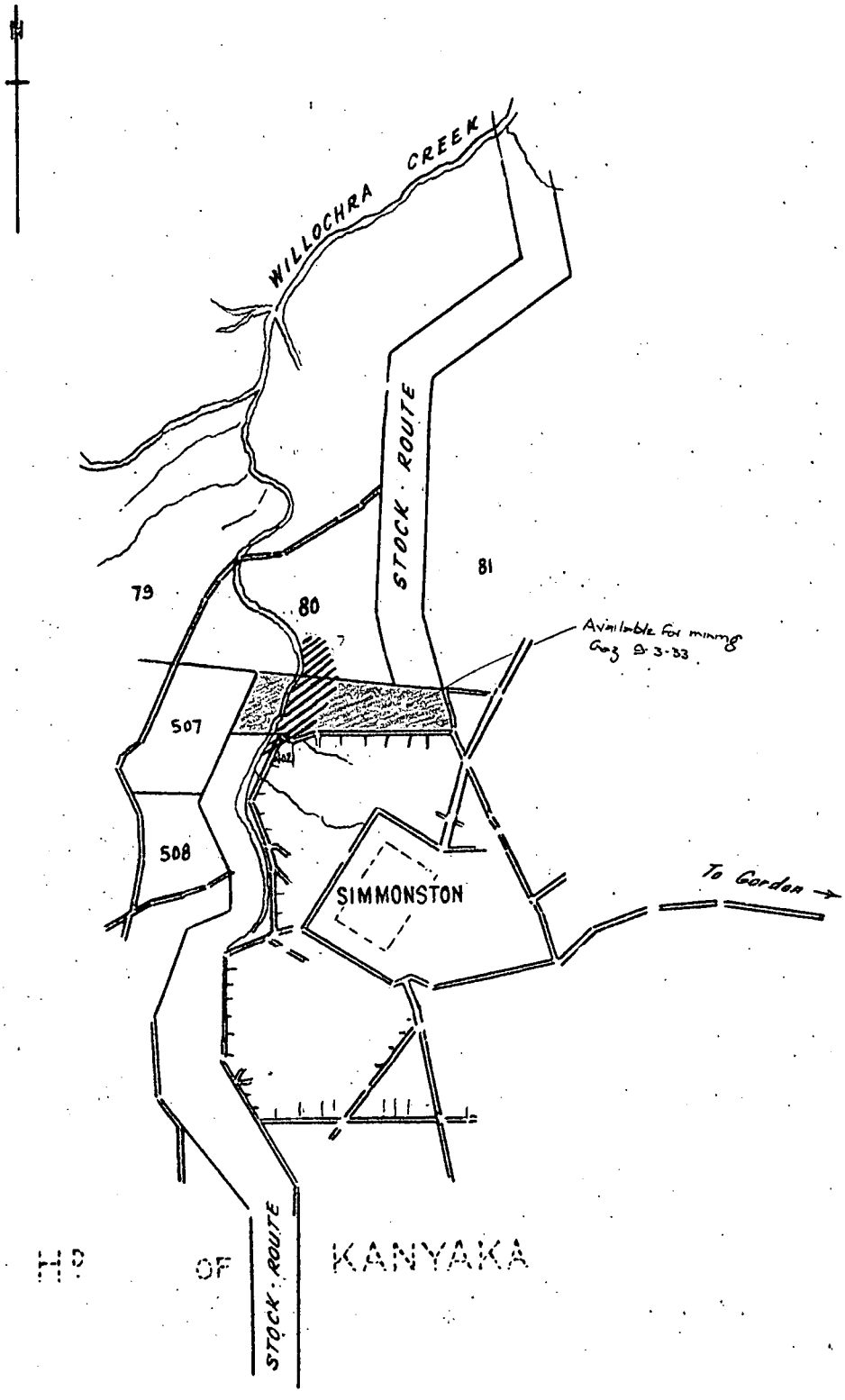

Clay deposit.--------

To accompany report by K.R. Miles
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S.A. DEPARTMENT OF MINES

oved	Passed	Drn.	SIMMONSTON CLAY DEPOSIT.	D.M.	Scale: 1 MILE to 1 IN.
		Tcd.		Reg.	S·869 Fe 2
	A.D.	Ckd.	LOCALITY PLAN		
ector		Ex'd.			Date 18·2·54