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TENEMENT HOLDER: CSR Limited.

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ENVELOPE 4660

E.L. 969 Lake MacDonnell. Progress reports from 8/6/82 to 8/12/83 (C.S.R. Ltd). 26 pages, 2 maps.

Authors: CSR Ltd., Adamson, C.L.

Map area: NUYTS (SI53-1 5533-4).

129 test pits were sampled and analysed using the water of crystallization method to identify economic deposits of gypsum above the water table.

Keywords: Industrial materials/Mineral exploration - SA/ Industrial minerals/Gypsum deposits/Geochemical exploration/. Pits/Bottom sampling/Chemical analysis/Kevin/Lake MacDonnell.

EXPLORATION LICENCE 969

Report for 3 Months Period Ending June 8, 1982

After research of all the available data relating to previous investigations in the area, the general site for a programme of test pit excavation and sampling was chosen.

At this stage the prime objective was to identify economic deposits of gypsum situated above the water table and on top of the bed of rock gypsum which occupies much of the area of interest.

Due to the soft nature and shallow depths of these gypsum beds, a rubber tyred excavator was used to dig pits.

Samples were collected from the top of the soft ore bed to the top of the rock gypsum or to about 100mm above the water level in the pit.

Attached is a schedule of samples taken from test pits and a plan showing pit locations. The number of pits dug was 53 and 48 were sampled for analysis which has not yet been completed.

Logs of the pits and results of the analyses will be included in a later report.

PL Fid ember

RECEIVED

6 JUL 1982

13

4660

SCHEDULE OF TEST PITS AND SAMPLES

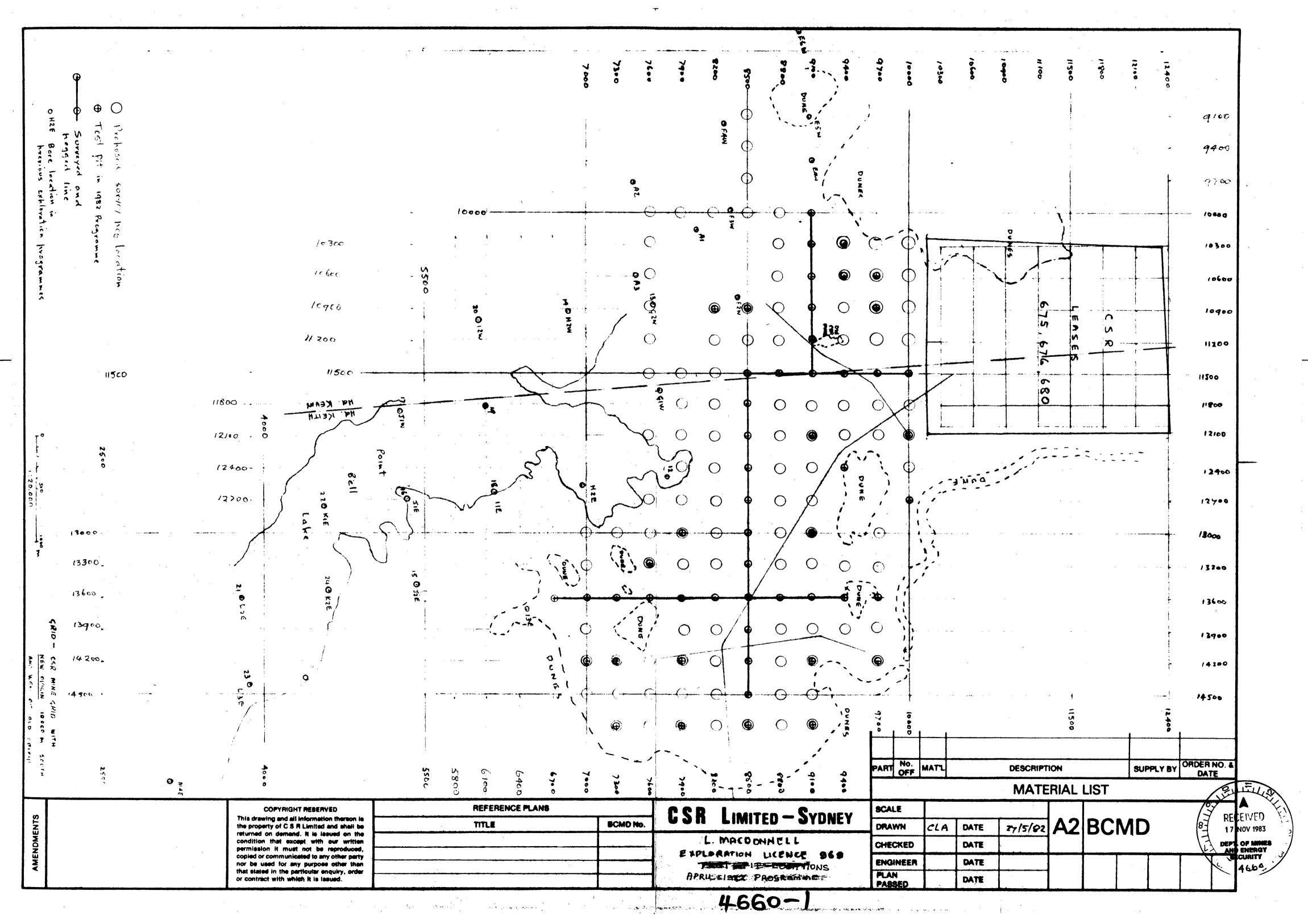
EXPLORATION LICENCE 969

Held by CSR Limited at Lake Macdonnell

Locations of pits dug and sampled are shown on the accompanying plan and samples are identified by the grid references (CSR mine grid) with the easterly grid measurement listed first, eg. $10000 \, \text{E}$, $9100 \, \text{N}$ is shown as $10000 \, \text{-} \, 9100$.

Test Pit	Sample Interval - Depth from Surface
10000 - 9100	0.35 - 1.00
10300 - 9100	0.20 - 0.90
10300 - 9400	0.20 - 0.80
10600 - 9100	0.15 - 1.05
10600 - 9400	0.20 - 0.85
10600 - 9700	0.05 - 0.50
10900 - 8200	Not sampled
10900 - 8500	0.05 - 1.10
10900 - 9100	0.15 - 0.85
10900 - 9700	0.30 - 1.15
11200 - 9100	0.20 - 0.90
11500 - 8500	0.15 - 1.00
11500 - 8800	0.15 - 1.00
11500 - 9100	0.40 - 1.20
11500 - 9400	0.35 - 1.20
11500 - 9700	0.35 - 1.00
11500 - 10000	0.25 - 1.10
11800 - 8500	0.30 - 1.15
12100 - 8500	0.15 - 0.95
12100 - 9100	0.20 - 1.00
12100 - 10000	0.30 - 1.20
12400 - 8500	0.25 - 1.00
12400 - 9400	0.30 - 1.30
12700 - 8500	0.25 - 1.15
12700 - 10000	Not sampled
13000 - 7900	0.40 - 0.75
13000 - 8500	0.35 - 1.10
13000 - 9100	0.325- 0.90
13300 - 7600	0.075- 1.15
13300 - 8500	0.25 - 1.05
13600 - 6700	Not sampled 0.25 - 1.10
13600 - 7000	0.25 - 1.10
13600 - 7300	0.45 - 1.05
13600 - 7600	0.25 - 1.45 $0.40 - 1.20$
13600 - 7900	
13600 - 8200	0.35 - 1.20

Test Pit	Sample Interval - Depth from Surface
13600 - 8500	0.30 - 1.20
13600 - 8800	0.30 - 0.90
13600 - 9100	0.40 - 1.20
13600 - 9400	Not sampled
13600 - 9700	Not sampled
13900 - 8500	0.30 - 1.30
14200 - 7000	0.15 - 1.05
14200 - 7300	0.20 - 1.30
14200 - 7900	0.25 - 1.20
14200 - 8500	0.40 - 1.30
14200 - 9100	0.45 - 1.30
14200 - 9700	0.45 - 1.20
14500 - 8500	0.15 - 1.15
14800 - 7300	0.50 - 1.20
14800 - 7900	0.15 - 1.20
14800 - 8500	0.50 - 1.20
14800 - 8500	0.15 - 1.40
14800 - 9100	0.50 - 1.25



CSR LIMITED

GYPSUM PRODUCTS GROUP

EXPLORATION LICENCE 969

REPORT FOR THREE MONTHS PERIOD ENDING SEPTEMBER 8, 1982

This report records the results of the test pit excavation programme during April 1982.

The gypsum analyses were carried out using the water of crystallisation method.

Future survey work and sampling is proposed for the next period.

C.L. Adamson

Plan - Test Pit Locations April 1982 Programme

LAKE MACDONNELL TEST PIT PROGRAMME

SUMMARY OF RESULTS

27/7/82

				:		
Pit No.	Depth m	O'burd. thick m	Ore bed thick m	0'burd. ratio	Ore bed gypsum %	Remarks
10000	1.20	0.35	0.65	0.54	93.71	
10300	1.10	0.20	0.60	0.33	94.39	
10300 9400	0.85	0.20	0.60	0.33	93.04	
10600 9100	1.05	0.15	0.90	0.17	793.47	
10600 9400	0.95	0.20	0.60	0.33	96.00	
10600 9700	0.50	0.05	0.45	0.11	96.42	
10900 8200	1.30	0.45	0.75	0.60	Not sam Unconso sand, heavy p contami	lidated gypsum too soft for lant. No obvious
10900 8500	1.35	0.05	1.05	0.04	92.66	
10900 9100	0.85	0.15	0.70	0.21	94.28	
10900 9700	1.25	0.30	0.85	0.35	96.24	
11200 9100	0.90	0.20	0.70	0.29	94.66	
11500 8500	1.20	0.15	0.85	0.18	94.52	
11500 8800	1.10	0.15	0.85	0.18	94.71	
11500 9100	L Company	0.40	0.80	0.50	95.36	

Pit No.	Depth m	O'burd. thick m	Ore bed thick	O'burd. ratio	Ore bed gypsum %	Remarks
11500 9400	1.30	0.35	0.80	0.43	95.28	
11500 9700	1.10	0.35	0.65	0.54	93.90	
11500 10000	1.15	0.25	0.85	0.29	94.26	
11800 8500	1.25	0.30	0.80	0.36	95.66	
12100 8500	1.10	0.15	0.80	0.19	_95.43	
12100 9100	1.05	0.20	0.75	0.27	94.82	
12100 10000	1.30	0.30	0.75	0.40	93.90	
12400 8500	1.20	0.25	0.75	0.33	95.19	
12400 9400	1.50	0.30	1.00	0.30	89.90	Gypsum crystals cemented with carbonate in bottom.
12700 8500	1.25	0.25	0.85	0.29	95.95	
12700 10000	1.20	0.35	Not sar	npled due ination i	to obvi in gypsum	ous carbonate bed.
13000 7900	1.25	0.40	0.35	1.14	94.52	
13000 8500	1.15	0.35	0.75	0.47	95.28	
13000 9100	1.15	0.325	0.575	0.57	94.14	
13300 7600	1.40	0.075	1.075	0.07	91.08	
13300 8500	1.15	0.25	0.80	0.31	91.17	Carbonate band at 0.95-1.00m

Pit No.	Depth m	O'burd. thick m	Ore bed thick	O'burd. ratio	Ore bed gypsum %	Remarks
13600 6700	1.30	0.35	0.45	0.78	ore be	pled due to thin ed and obvious te at 0.80m.
13600 7000	1.30	0.25	0.85	0.29	92.46	
13600 7300	1.30	0.45	0.65	0.69	94.14	
13600 7600	1.60	0.25	1.20	0.21	90.22	Carbonate band at 1.13-1.20m.
13600 7900	1.40	0.40	0.80	0.50	94.52	
13600 8200	1.20	0.35	0.85	0.41	93.02	
13600 8500	1.40	0.30	0.90	0.33	95.33	
13600 8800	1.10	0.30	0.60	0.50	95.19	
13600 9100	1.30	0.40	0.80	0.50	87.97	
13600 9400	1.10	0.60	0.30	2.00	At edge	of dune. Not
13600 9700	1.20	Not sam	npled due ination.	to obvi	lous cark	oonate
13900 8500	1.40	0.30	0.95	0.32	96.19	
14200 7000	1.20	0.15	0.90	0.17	91.46	
14200 7300	1.45	0.20	1.00	0.20	92.87	
14200 7900	1.45	0.45	0.75	0.60	93.18	
14200 8500	1.40	0.40	0.90	0.44	95.81	

Pit No.	Depth m	O'burd. thick m	Ore bed thick	O'burd. ratio	Ore bed gypsum %	Remarks
14200 9100	1.45	0.45	0.85	0.53	92.73	
14200 9700	1.30	0.25	0.95	0.26	91.65	
14500 8500	1.25	0.15	0.95	0.16	95.47	
14800 7300	1.40	0.50	0.70	0.71	91.79	
14800 7900	1.40	0.50	0.70	0.71	92.99	
14800 8500	1.55	0.15	1.25	0.12	94.33	
14800 9100	1.35	0.15	0.75	0.20	89.12	

Notes:

- The base of the ore bed has been determined by one of 1. three criteria:
 - 0.1m above any severe carbonate contamination. (a)
 - 0.lm above water level, if encountered. (b)
 - The level of rock or crystal gypsum which the excavator could not penetrate with reasonable ease, provided that this level was 0.1m above water level. (C)
- Overburden ratio: 2.

This figure is obtained by dividing the overburden thickness by the ore bed thickness.

EL 969

EXPENDITURE

THREE MONTHS ENDING 9TH SEPT 1982

	\$
Consultants fees:	v - *
Evaluation of analyses results etc:	1421
CSR personnel:	
Evaluation of geologists report and, planning next stage of exploration.	1100
Cost of sample analyses (not received) to be included in report for 3ME 7.12.82	
Total 3ME 7.9.12	\$ 2521
Estimated Expenditure 3ME 7.12.82	12000





CSR Building Materials

№ DE/LH

CSR LIMITED

GYPSUM PRODUCTS GROUP SOUTH AUSTRALIA STATE OFFICE 37 PLYMOUTH ROAD WINGFIELD SOUTH AUSTRALIA BOX 58 PO ROSEWATER EAST SOUTH AUSTRALIA 5013 TELEPHONE (08) 268 7855 TELEX AA82112

7th January, 1983.

The Director General, Department Mines & Energy, P.O. Box 151, EASTWOOD S.A. 5063

Dear Sir,

Re: EL 969 Lake MacDonnell - DME 466/81.

Please find enclosed our report relating to EL 969 for the three month period ending 8th December, 1982.

The prospective area defined by the investigation reported in the previous 3 monthly report was pegged and levelling by the surveyor with pegs located at 300m intervals as an extension of the existing CSR mine grid.

A programme of test pit excavations using a backhoe and a front end loader has been completed with pits located at all peg locations except one. The samples thus collected are waiting analysis and when these are complete a schedule of logs and analysis will be submitted.

The attached schedule lists the samples collected during this second programme which was completed on the 8th December, 1982. The pits dug during this programme were located within several metres of the grid pegs, however the pits dug during the first programme (report for 3ME 8th June, 1982) were, in many cases, located approximately owing to the lack of survey pegs.

and energy

SECURITY

Yours faithfully,

R.E.S. Layton State Manager.

© Plasterboard

EXPLORATION LICENCE NO 969

EXPENDITURE: 3 MTH ENDING 8TH DECEMBER, 1982.

G.J. Gibson, Surveyor.

To survey and pegrout 7km of grid lines with levels, including draughting and prints, car milage and travelling time, accommodation and materials used.

\$8175.00

Brambles Industrial Services

Machine hire to dig and backfill test pits (some backfilling was done after the 8th December, 1982), and hire 4 WD vehicle.

\$1438.50

Commercial Motors

Hire	4	WD	vehicle.
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\$ 742.55

C.L. Adamson, Geologist

Office work	\$ 405.30
Field work	\$2161.60
Air fares and miscellaneous expenses.	\$ 468.60

CSR Limited

Office work, preparation for exploration	\$3000.00
Field work, salary	\$1500.00
Administration costs, office staff	\$ 500.00

Miscellaneous

Accommodation and meals at Ceduna	\$1316.99
Tools etc	\$ 380.00
Plastic bags	\$ 12.00
Petrol	\$ 321.36
Air fares, Adelaide Ceduna return	\$ 203.40
Total 3M.E. 8/12/82	\$20625.30

Estimated expenditure 3 M.E. $8\sqrt{3/83}$

\$ 2500.00

Schedule of Test Pits and Samples

The accompanying survey plan shows pegged grid locations which have been sampled during the two programmes of pit excavation during 1982.

The following schedule lists pits excavated and sampled during December, 1982.

1 2

-0015

E	Test Pit	N		e Inter	Surface
10900	; -	9400	0.12		0.71
10900	,	10000	0.20	-	0.95
11200		7600	0.50	. -	1.25
11200	9 	8200	0.25	· 	1.00
11200	-	8500	0.25	-	1.10
11200	-	8800	0.50		1.30
11200	-	9400	0.02	-	0.94
11200	-	9700	0.20	-	1.06
11200	-	10000	0.30 1.65	- -	1.65 Sample 1 2.00 Sample 2
11500	. 	7600	0.50		1.65
11500	-	7900	0.40	. -	1.20
11500	-	8200	0.50 1.30	-	1.30 Sample 1 1.45 Sample 2
11800	-	7900	0.40	-	1.25
11800	· -	8200	0.05		0.90
11800	-	8800	0.50		1.40
11800	-	9100	0.48		1.07
11800	-	9400	0.28		1.04
11800	-	9700	0.37	· -	1.20
11800	-	10000	0.30 1.30	, page	1.30 Sample 1 1.70 Sample 2
12100	-	7900	0.20		1.10
12100	den	8200	0.40	-	1.25
12100	ao	8800	0.35	-	1.26
12100	ains	9400	0.42		1.32
12100	wine	9700	0.45	'anti-	1.45

E	Test Pit	N		-	e Interv from Su metres			
12400	_	8200		0.30	-	1.15		
12400	-	8800		0.30	-	1.26		
12400		9100		0.32	<u>.=</u>	1.13		
12400	-	10000		No	o Sample	:		
12700		7600		0.15	-	0.85		
12700	÷	7900		0.08		0.70		
12700	-	8200	ø	0.40 1.45	- -		Sample Sample	
12700	-	8800		0.37	.—	1.14		
12700	_	9100		0.20	-	1.19		
13000	-	7000		0.40	-	1.05		
13000	-	7300		0.25	-	1.50		
13000	-	7600		0.20 1.50	-		Sample Sample	
.13000	· <u>-</u>	8200		0.30 1.00	-		Sample Sample	
13000	-	8800		0.18	-	1.02		
13000	-	9700		N	o Sample	>		
13300	-	7000		0.10 1.20	-		Sample Sample	
13300	-	7900		0.45 1.00	-		Sample Sample	
13300	-	8200		0.40	-	1.15	•	
13300		8800		0.18	-	1.02		
13300	-	9100		0.32		1.27		
13300	-	9400		0.43 1.12			Sample Sample	
13300		9700		N	o Sample	9		

E	Test Pit	N	Sample Intervals Depths from Surface metres
13900	. -	7000	0.40 - 1.35 Sample 1 1.35 - 1.90 Sample 2
13900	-	7900	0.35 - 1.50
13900		8200	0.10 - 1.15
13900		8800	0.36 - 1.24
13900	. =	9100	0.40 - 1.30
13900		9400	0.76 - 0.98
13900	-	9700	0.31 - 1.31
14200	-	7600	0.30 - 2.00
14200		8200	0.15 - 1.20
14200	. 	8800	0.32 - 1.30
14500		7000	0.45 - 1.30
14500		7300	0.45 - 1.40
14500	-	7600	0.35 - 1.40
14500	-	7900	0.35 - 1.60
14500	-	8200	0.08 - 1.25
14500		8800	0.40 - 1.34
14500	-	9100	0.28 - 1.33
14800	. 	7300	No Sample
14800		7600	0.50 - 1.20
14800	-	8200	0.35 - 1.40
14800		8800	0.60 - 1.49



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GYPSUM PRODUCTS GROUP SA STATE OFFICE

37 PLYMOUTH ROAD WINGFIELD SOUTH AUSTRALIA BOX 58 PO ROSEWATER EAST SOUTH AUSTRALIA 5013 TELEPHONE (08) 268 7855 ORDER DEPT (08) 45 4751 TELEX AA82112

DME/eq

19th April, 1983

The Director General, Department of Mines & Energy S.A., P.O. Box 151, EASTWOOD S.A. 5063

Dear Sir,

RE: EL 969 Lake MacDonnell - Report for 3 months ending 8th March, 1983

As requested please find enclosed a further copy of our report relating to EL 969 for the three months ending 8th March, 1983.

Attached are the results of the first thirty samples to be analysed. Results of the outstanding forty six samples will be submitted in our next report.

Yours faithfully,

R.E.S. Layton STATE MANAGER

Encl.



EXPLORATION LICENCE NO 969

EXPENDITURE: 3 MONTHS ENDING 8TH MARCH, 1983

C.L. Adamson, Geologist	
Office work, geological consulting	\$800.95
CSR Limited	
Administration costs, office staff	500.00
Analytical Costs	600.00
TOTAL 3 M.E. 8/3/83	\$1900 . 95
Estimated expenditure 3 M.E. 8/6/83	\$2500.00

96.0

96.5

94.9

95.7

94.8

96.7

95.0

95.2

95.0

COMBINED WATERS OF SPECIAL LAKE McDONNELL

SAMPLES SUBMITTED JANUARY 1983

Carloy. 840 Purity Combined Water of Dried Samples Sample Sample Co-ordinates No. (%) Average (%) Results (%) 85.6 17.92 8500 17.97 17.86 9100 1 19.22 19.17 91.6 19.12 2 8500 * 9400 7.73 36.9 7.89 7.56 # 9400 8500 18.31 87.5 18.34 18.27 4 8500 10000 87.4 18.30 8800 18.48 18.12 5 10000 19.10 90.8 18.90 19.00 6 8800 10300 20.04 95.7 19.84 20.24 7 10300 10000 92.0 19.05 19.25 19.45 8 10600 8800 96.0 20.10 20.10 20.09 10000 9 10600 87.2 18.23 18.26 18.29 7600 10 10900 95.2 19.92 19.92 19.92 11 10900 8800 19.96 19.98 95.5 12 9400 20.00 10900 97.3 20.42 20.30 20.36 10900 10000 13 94.0 19.72 19.68 19.64 14 11200 8200 19.86 94.9 19.81 19.91 15 11200 8500 20.07 95.9 20.10 9400 20.03 11200 16 93.0 19.48 19.47 19.46 17 11200 9700 20.02 95.7 20.03 20.01 18 11200 10000 90.6 18.96 18.97 18.97 11500 7600 19 20.05 95.8 20.07 20.03 11500 8200 20 . 19.93 19.89 19.91 95.1 7900 21 11800

20.14

20.23

19.98

20.07

19.92

20.25

20.12

20.00

19.92

20.05

20.16

19.76

20.00

19.76

20.19

20.06

19.83

19.85

20.10

20.20

19.87

20.04

19.84

20.22

20.09

19.92

19.89

22.

23

24

25

26

27

28

30

29 .

11800

11800

11800

11800

11800

11800

12100

12100

12100

8200

8800

9100

9400

9700

8800

9400

9700

10000

^{* 1}st Sample

^{# 2}nd Sample

COMBINED WATERS OF GYPSUM SAMPLES

FROM THE LAKE McDONNELL EXPLORATION LICENCE MARCH 1983

Sample Co-ordinates		Core Depth	Combined Water of Dried Samples		Purity	Comments
		(m)	Results (%)	Average (%)	(%)	No:
11200 11500 12100 12100 12400 12400 12400 12700	7600 7900 7900 8200 8200 8800 9100 7600	-	18.91, 18.92 19.67, 19.72 20.19, 20.20 20.09, 20.07 19.97, 20.00 19.81, 19.82 19.77, 19.84 19.90, 20.03	18.92 19.70 20.20 20.08 19.99 19.82 19.80 19.97	90.5 94.3 96.7 96.1 95.6 94.8 94.7	1 1 1 1 1 1 1
12700 12700 12700 12700 12700 13000 13000 13000	7900 8200 8200 8800 9100 7000 7300 7600	- 1.45-1.7 - - - -	19.95, 19.92 19.64, 19.63 20.12, 20.10 19.78, 19.75 19.55, 19.62 19.51, 19.50 18.49, 18.61 19.52, 19.55	19.94 19.64 20.11 19.77 19.59 19.51 18.55 19.54	95.4 94.0 96.2 94.6 93.7 93.3 88.8 93.5	1 3,7 1 1 1 5,8 5
13000 13000 13000 13000 13300 13300 13300 13300	7600 8200 8200 8800 7000 7900 8200 8800	1.5-2.6 - 1.0-1.4 - 1.2-1.7	19.82, 19.78 20.22, 20.23 19.53, 19.23 20.02, 19.81 18.59, 18.74 19.65, 19.78 19.62, 19.65 19.93, 19.66	19.80 20.23 19.38 19.92 18.67 19.72 19.64 19.80	94.7 96.8 92.7 95.3 89.3 94.4 94.0	4,7 1 2,7 2,7 1,7 1
13300 13300 13900 13900 13900 13900 13900	9100 9400 7000 7000 7900 8200 8800 9100	1.35-1.4	19.04, 19.23 16.97, 17.03 19.59, 19.75 18.61, 18.84 20.23, 20.11 20.05, 20.15 19.86, 19.82 19.15, 19.09	19.14 17.00 19.67 18.73 20.17 20.10 19.84 19.12	91.6 81.3 94.1 89.6 96.5 96.2 94.9	2 2,9 2 3 4,8 1 1

Sample Co-ordinates		Core Depth	Combined Wa Dried San	Purity	Comments	
		(mm)	Results (%)	Average (%)	(%)	No:
13900 14200 14200 14200 14500 14500 14500 14500	9700 7600 8200 8800 7000 7300 7600 7900	- - - - - -	18.63, 18.64 19.59, 19.72 19.84, 19.98 19.81, 20.05 19.32, 19.31 20.05, 20.22 20.18, 20.20 20.07, 20.04	18.64 19.66 19.91 19.93 19.32 20.14 20.19 20.06	89.2 94.1 95.3 95.4 92.4 96.4 96.6 96.0	4 2,7 1 1 4 4 4,7
14500 14500 14500 14800 14800 14800	8200 8800 9100 7600 8200 8800	-	20.23, 20.23 20.09, 20.15 12.59, 12.00 19.76, 19.81 20.30, 20.26 20.38, 20.28	20.23 20.12 12.30 19.79 20.28 20.33	96.8 96.3 58.9 94.7 97.0 97.3	1 1 6,10 4 4

COMMENT CODE:

1	Sample colour is off-white
2	" " light grey
3	" " grey
4	" " light orange
5	" " light caramel
6	" " " light brown
7	Large Gypsum crystals present in the sample
8	All very fine material - less than 5mm
9	All very small crystals and lumps of small crystals
10	All small granules. Suspected high acid-insoluble

EXPLORATION LICENCE 969

EXPENDITURE: 3 MONTHS ENDING 8TH JUNE, 1983.

DAT BADETOND	
C.L. Adamson, Geologist	
Office work, geological consulting	\$1215.90
CSR Limited	
Administration costs, office staff	\$ 500.00
Analytical costs	\$1000.00
Total 3 M.E. 8/6/83	\$2715.90
Estimated expenditure 3 M.E. 8/9/83	\$1000.00





CSR Building Materials

DE/eq

CSR LIMITED

GYPSUM PRODUCTS GROUP SA STATE OFFICE

37 PLYMOUTH ROAD WINGFIELD SOUTH AUSTRALIA BOX 58 PO ROSEWATER EAST SOUTH AUSTRALIA 5013 TELEPHONE (08) 268 7855 ORDER DEPT (08) 45 4751 TELEX AA82112

13 October 1983

The Director General,
Department of Mines and Energy S.A.,
P.O. Box 151,
EASTWOOD S.A. 5063

Dear Sir,

RE: EL 969 LAKE MACDONNELL - REPORT FOR THREE MONTHS ENDING 7TH SEPTEMBER, 1983

Please find enclosed our report relating to EL 969 for the three months ending 7th September, 1983.

The samples obtained during our December 1982 exploration programme, were despatched to the Core Library on the 7th October, 1983. For your convenience we have enclosed a sample receipt sheet and a complete list of three samples.

A further field trip was conducted by CSR staff and our consultant geologist, Mr. C. Adamson. Twenty one pits were dug and samples taken. The preliminary results of these samples are attached.

Yours failthfully,

R.E.S. Layton STATE MANAGER

Encl.



EXPLORATION LICENCE 969

EXPENDITURE : 3 MONTHS ENDING 7TH SEPTEMBER 1983

C.L. Adamson, Consultant Geologist	
Office work, geological consulting Field work, geological consulting	\$ 772 1290
CSR Limited	
Administration costs, office work Field trip, expenditure Sundry equipment, hand anger	500 4189 174
<u>Amdel</u>	
Analytical costs	670 ·
Finlayson & Co., Solicitors	
Search of owners, Notice of Entry	5.00
Total 3ME 7/9/83	\$8045
Estimated expenditure 3 ME 7/12/83	\$5000

EXPLORATION LICENCE 969

SAMPLE RESULTS: 3 MONTHS ENDING 7th SEPTEMBER 1983

COMBINED WATER AS GYPSUM CaSO ₄ 2H ₂ 0
94.0
93.2
95.8
96.6
94.0
93.2
91.2
94.3
96.0
93.5
95.4
94.2
94.0
92.6
93.4
93.8
94.5
94.0

EXPLORATION LICENCE 969

EXPENDITURE: 3 MONTHS ENDING 8TH DECEMBER, 1983.

C.L. ADAMSON, CONSULTANT GEOLOGIST	
Office work, geological consulting Field work, geological consulting	\$2,111 NIL
CSR LIMITED	
Office work, administration costs Field work, expenditure	1,200 1,200
AMDEL	
Analytical costs	480
FINLAYSON & CO. SOLICITORS	
Mineral Claim preparations	200
TOTAL 3 ME 8/12/83	\$5,191
Estimated expenditure 3 ME 8/3/84	\$6,000
Total expenditure to-date	\$58,311

No further work or results.

Final rept. not required

Expenditure for 3 M.E. 7/3/84 ~ \$6,000

(Advised by I. Downie 12/2/84

On 2/2/84

RECEIVED EN

21 FER 100.

LAKE MACDONNELL S A GYPSUM A DIVISION OF CSR LIMITED GRID SYSTEM AND LEVELS SCALE 1: 10 000 4660-2 10 300 10000 9 700 9 400 8 800 8 500 7900 7600 7300 7 000 Certified Correct





CSR LIMITED

GYPSUM PRODUCTS GROUP SOUTH AUSTRALIA STATE OFFICE 37 PLYMOUTH ROAD WINGFIELD SOUTH AUSTRALIA BOX 58 PO ROSEWATER EAST SOUTH AUSTRALIA 5013 TELEPHONE (08) 268 7855 TELEX AA82112

3 January 1985

The Director General,
Department of Mines & Energy S.A.,
P.O. Box 151,
EASTWOOD S.A. 5063

Dear Sir,

RE: EL 969 LAKE MACDONNELL (NOW EXPIRED)
FINAL REPORT

Please find enclosed our final report relating to EL 969. As you would be aware this EL has lapsed and parts of it have been converted into Mineral Claims.

Yours faithfully,

R.E.S. LAYTON State Manager

ATTACH.

to.



EXPLORATION LICENCE 969

EXPENDITURE: 3 MONTHS ENDING 8TH MARCH 1984 & BEYOND

C.L. Adamson, Consultant Geologist, Sydney

Office work 8.12.83 to 8.3.84 After 8.3.84	\$ \$ 	2190.00 2702.35
	\$	4892.25
CSR Limited, Adelaide		
Office work	\$	1200.00
Expenditure for Period	\$	6092.25
	-=	
TOTAL EXPENDITURE:	\$	64403.25

CSR LIMITED BUILDING MATERIALS DIVISION GYPSUM PRODUCTS GROUP

EXPLORATION LICENCE 969 LAKE MACDONNELL . COMPLETION REPORT

To be submitted to South Australia Department of Minerals and Energy

CONTENTS

1.	SUMMARY
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- 2. INTRODUCTION
- 3. INVESTIGATION
- 4. RESULTS OF INVESTIGATION
- 5. QUALITY
- 6. REFERENCE

APPENDIX

SUMMARY OF TEST PIT DATA

PLANS

Map of Exploration Licence area
 Location of test pits
 1:100,000
 1: 10,000

1. SUMMARY

1.1 Location

Charra 1:100,000 Map Sheet 5533 See Plan 1 of this report

1.2 Keywords

Gypsum, exploration, test pits, analyses

2. INTRODUCTION

The CSR mining operations on Mining Leases 675, 676 and 680 have been confined to mining the surface gypsum which overlies the main ore body of massive selenite (rock gypsum).

From previous minor mining operations and the evidence of numerous drill holes from past investigations it was obvious that area south of the existing Mining Leases most probably contained large reserves of surface gypsum.

In order to investigate this resource CSR was granted Exploration Licence 969 on 8 March 1982.

See Plan 1 for the limits of the area.

The whole of the programme was confined to establishing reserves of surface gypsum. No investigation of underlying rock gypsum was undertaken. This report consolidates information contained in various reports written during the term of the Exploration Licence.

3. INVESTIGATION

3.1 Selection of area for detailed sampling

From a study of the literature on previous exploration (see Reference) the most promising areas were identified. With this data and a study of the aerial photographs the 300m mine grid was extended and selected grid lines surveyed and pegged. This provided the basis for first pit excavation programme during April 1982 which established that a full exploration programme could be justified.

With the data acquired during the preliminary investigation the areas of prime interest were fairly well established and the area was surveyed and pegged on the 300m grid. During December 1982 the pit excavation programme was completed.

See Plan 2.

3.2 Collection of samples

A front-end loader from the CSR mine contractors, Brambles and a smaller back-hoe were used for excavation of pits. As the rock gypsum surface is, in summer, just above the water table the pits were excavated to rock gypsum or to the water table.

Channel samples were collected to represent the whole of the surface gypsum bed which is overlain by a layer of kopi forming the ground surface.

Mostly pit locations are within 2-3m of a grid peg, but in the first sampling programme, prior to the complete grid pegging some pits were located approximately. As a result some pits might be located up to 20-30m from the grid location, which was located and pegged during the final survey. No attempt was made to allocate the accurate grid references to these pits which have retained the original numbers based on the 300m grid.

4. RESULTS OF INVESTIGATION

4.1 General features of the area

The present Lake MacDonnell and Point Bell Lake saline lakes are the remnants of a very much larger saline lake formed in an irregular depression in ancient calcareous sand dunes. This depression became inundated when the sea level rose to its present position at the end of the last ice age.

Very pure rock gypsum (massive selenite) formed in the deeper parts of the lake system where contamination from the surrounding land was restricted. In shallower parts of the system and in the shallower margins of the deeper areas contamination by calcium carbonate was common and less pure gypsum occurs in these areas.

In the latter stages of gypsum formation small crystals (seed gypsum) formed at the lake surface. Climatic variations produced numerous successive shorelines and associated dune systems.

At the present, most of the old lake surface is composed of a fairly flat kopi surface (now vegetated) with dunes of seed gypsum and kopi distributed irregularly on the perimeter of the plain, and to some extent on the plain.

4.2 The gypsum deposit

Table 1 summarises the sequence of beds in the deposit.

TABLE 1

BED	THICKNESS m	MATERIAL	REMARKS
Over- burden	0.05 to 0.76	Gypseous soil, kopi (gypsite)	Very loosely compacted, generally light brown
Surface gypsum	0.22 to 1.25	Sand sized gypsum (gypsarenite) with some larger crystals	Mostly sand sized with crystals to 25mm and above not uncommon but forming a minor percentage. Generally well compacted, but not well cemented. Generally cream to light grey.
Rock gypsum	0.00 to 4.9*	Massive selenite	Not sampled during this investigation. Top close to water table and must be ripped or blasted to excavate.

^{*} Not determined in this investigation, but this thickness recorded in the south end of ML 675 adjacent to the investigation area.

The overburden over the surface gypsum bed is mostly gypsite (kopi) with varying amounts of vegetable matter from the low, salt tolerant shrubs. Mostly the gypsite layer is light brown in colour and generally has a fairly distinct interface with the gypsum ore bed which is light cream to various shades of grey.

The surface gypsum bed, which in the past has been referred to as seed gypsum, is in reality a variable deposit with generally sand sized gypsum with few larger crystals in its upper zones and increasing amounts of larger crystals in the lower zones.

Where solid rock gypsum underlies the fairly loose surface gypsum the interface is distinct and sharp. Towards the margins of the thick rock gypsum its character changes and it becomes less massive and composed of a less coherent deposit of large crystals which can be dug by the front-end loader. In some such areas masses of crystals locally termed "cabbage gypsum" are present.

In the shallower parts of the deposit the surface gypsum is underlain by less consolidated selenite crystals, in places fairly loose, while at other locations the crystals may be cemented by a secondary calcium carbonate cement deposited in the crystal interstices. In some marginal areas calcareous sand and cemented calcareous sand (calcarenite) underlie the surface gypsum bed.

5. QUALITY

5.1 Gypsum content

The range of gypsum purities of the surface gypsum (see Appendix) is similar to that encountered in the present mining area in ML's 675, 767 and 680. All the figures for gypsum purity in this report are based on samples which contain original salt contents and thus are not directly comparable to purities of gypsum shipments which are leached gypsum with low salt contents.

All samples were analysed for gypsum contents which are recorded in the Appendix. A group of selected samples were more fully analysed with the results shown in Table 2. These results show an appreciable salt content and confirm that calcium carbonate is the principal impurity. In the exploration area pits with low gypsum quality were quite visibly contaminated by calcium carbonate.

TABLE 2

ANALYSES OF SELECTED SAMPLES

			·				
SAMPLE E,	CO-ORDS N	GYPSUM PURITY %	ACID INSOL. (%)	CHLORIDE (% AS NaCl)	CARB (%, AS CaCO ₃)	MgCO ₃	NOTES
9700 10000 10000 10000 10300	8500 7600 7900 8200 7600	91.4 92.5 86.4 83.8 87.5	- - - -	0.81 2.54 2.10 1.35 2.61	- - -		1 1 1 1
10300 10600 10900 11200 11500 12100 12400 12700 13000 13000 13000 13900 14200 14200 14800	9400 10000 8800 7600 8500 9400 8200 9100 7000 8800 9100 7600 7900 7600 8200 8500	93.0 96.0 95.2 90.5 94.5 95.2 95.6 93.7 93.3 94.1 91.1 96.5 94.1 95.3 94.3	0.53 0.14 0.22 0.12 0.42 0.31 0.26 0.38 0.53 1.87 0.41 0.25 2.0 0.32 0.44 0.48	0.34 0.44 1.0 - 1.1 1.2 0.63 1.4 0.58 - 0.85 1.2 0.95	5.0 3.1 4.7 9.1 4.7 2.1 2.8 5.2 3.6 3.2 6.1 5.7 1.7 3.4 1.9 3.6	0.30 - - 0.25 - - 0.20 0.25 - - 0.38	2 3 3 3 2 3 3 3 3 2 2 3 3 3 2 2 3 3 2 2 2 3 3 2 2 2 2 3 3 2 2 2 2 3 3 2 2 2 2 3 3 2 2 2 2 3 3 3 2 2 2 3 3 3 2 2 2 3 3 3 3 2 2 3 3 3 2 2 2 3 3 3 2 2 3 3 3 3 2 2 2 3 3 3 2 2 3 3 3 2 2 3
Av of all below dash		94.2	0.43	0.88	4.1	0.28	
Av of samp 92.6% gyps		94.7			3.7		

Notes

- Samples analysed by AMDEL July-August 1983. Methods ASTM. CW for gypsum. Not included in averages, as these samples were collected in a marginal zone of the deposit.
- Samples analysed by Central Laboratory, CSR Ref. 465/4528 11 June 1982. Gypsum by CW at 300°C.

CO₂ by gas absorption and CaCO₃ by calculation

 ${\rm Mg}$ by ${\rm Atomic}$ ${\rm Absorption}$ and then ${\rm MgCO_3}$ by calculation

Acid insol. by Concord Plaster Gravimetric Method V

3. Samples analysed by Concord Laboratory Ref GP 807 11 August 1983 Gypsum by CW at 300°C

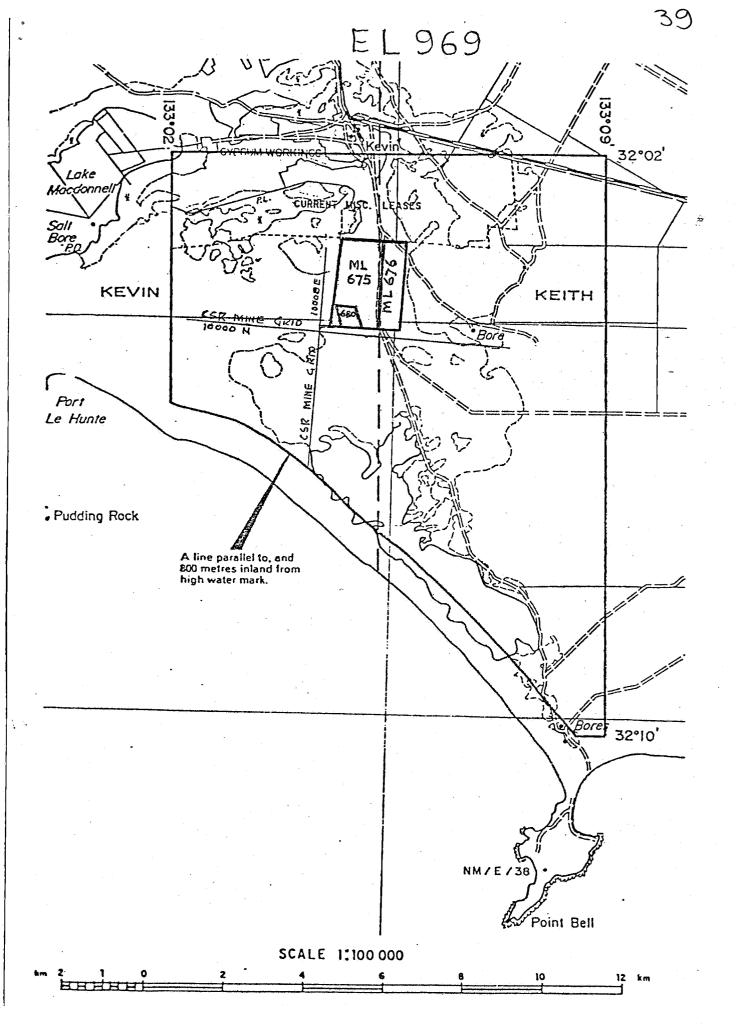
NaCl calculated from Cl

CaCO3 calculated from CO2

6. REFERENCE

Warren, JK 1980

Reappraisal of gypsum reserves, Lake MacDonnell,
Hundreds Keith and Kevin, County Kintore
Department of Mines and Energy South Australia
Unpub, report (open file) DM No 76/80 Dept. Bk. No. 80/88
Published as a review of gypsum reserves, Lake MacDonnell, Eyre Peninsula. Mineral Resources Review No. 152, 1980 Department of Mines and Energy.
Note: This paper contains a full list of references to published and unpublished reports.



APPENDIX

SUMMARY OF TEST PIT LOGS

AND SAMPLE ANALYSES

Exploration Licence 969

As dictated by the practicality of mining, the base of the ore bed was accepted as 100mm above ground water level even though economic gypsum was proven below the ground water level. This programme was designed to evaluate the surface gypsum which could be mined by dry earth moving methods.

PIT NO	DEPTH	O'BURDEN THICK. m	ORE BED THICK. m	O'BURDEN RATIO	ORE BED GYPSUM %	REMARKS
9100-8500 9400-8500 9700-8500 10000-7600 10000-8200 10000-8500 10000-8800 10000-9100 10300-7600 10300-8800 10300-9100 10300-9400 10300-9700	1.17 1.20 1.60 0.95 1.50 1.25 1.20 1.20 1.20 1.20 1.20 1.45	0.20 0.14 0.22 0.30 0.40 0.35 0.20 0.25 0.35 0.25 0.30 0.20 0.37	0.73 0.44 0.31 0.40 0.50 0.55 0.65 0.65 0.65 0.75 0.60	0.27 0.32 0.71 0.75 0.80 0.64 0.40 0.38 0.54 0.45 0.40 0.33 0.33	85.6 91.6 91.4 92.5 86.8 83.4 87.5 87.4 93.71 87.5 90.8 94.39 93.04	Not sampled
10300-9700 10300-10000 10600-7600 10600-9100 10600-9400 10600-9700 10600-10000 10900-7600 10900-8200	1.58 1.70 1.35 1.05 0.95 0.50 1.10 1.80 1.30	0.60 0.60 0.35 0.15 0.20 0.05 0.35 0.70 0.45	0.80 0.10 0.60 0.90 0.65 0.45 0.65 0.35 0.65	0.75 6.00 0.58 0.17 0.31 0.11 0.54 2.00 0.70	95.7 92.0 93.47 96.00 96.42 96.0 87.2	Not sampled due to obvious carbonate contamination Sampled but missing Not sampled unconsolidated
10900-8500 10900-8800 10900-9100 10900-9400 10900-10000 11200-7600 11200-8200 11200-8500 11200-8800	1.35 1.50 0.85 0.80 1.25 1.07 1.45 1.80 2.00 1.40	0.05 0.35 0.15 0.12 0.30 0.20 0.50 0.25 0.25 0.50	1.05 1.03 0.70 0.59 0.85 0.65 0.55 0.70 0.75 0.80	0.05 0.34 0.21 0.20 0.35 0.31 0.91 0.36 0.33 0.63	92.66 95.2 94.28 95.5 96.24 97.3 90.5 94.0	Sampled but missing
11200-9400 11200-9700 11200-10000 11500-7600 11500-8200 11500-8500	1.05 1.16 2.30 1.90 2.50 1.45 1.20	0.20 0.20 0.30 0.50 0.40 0.50 0.15	0.92 0.86 1.25 0.75 0.75 0.70	0.02 0.23 0.24 0.67 0.53 0.71 0.18	95.9 93.0 95.7 90.6 94.3 95.8 94.52	

						42
					••	A3
PIT NO	DEPTH	O'BURDEN THICK.	ORE BED	O'BURDEN RATIO	ORE BED GYPSUM	
	m 	m	m		8	
11500-8800	1.10	0.15	0.85	0.18	94.71	
11500-9100 11500-9400	1.30 1.30	0.40 0.35	0.80 0.80	0.50	95.36	
11500-9700	1.10	0.35	0.65	0.44 0.54	95.28 93.90	
11500-10000	1.15	0.25	0.85	0.29	94.26	
11800-7900	1.75	0.40	0.80	0.50	95.1	
11800-8200	1.00	0.05	0.70	0.07	96.0	
11800-8500	1.25	0.30	0.80	0.37	95.66	
11800-8800 11800-9100	$1.50 \\ 1.20$	0.50 0.48	0.90 0.59	0.56 0.81	96.5 94.9	
11800-9400	1.04	0.28	0.76	0.37	95.7	
11800-9700	1.40	0.37	0.81	0.46	94.8	
11800-10000	2.90	0.30	0.90	0.33	96.7	
12100-7900	1.20	0.20	0.80	0.25	96.7	
12100-8200 12100-8500	1.40 1.00	0.40 0.15	0.75 0.80	0.53 0.19	96.1 95.43	
12100-8800	1.35	0.35	0.91	0.19	96.0	
12100-9100	1.05	0.20	0.75	0.27	94.82	
12100-9400	1.45	0.42	0.90	0.47	95.2	
12100-9700 12100-10000	1.90 1.30	0.45	0.90	0.50	95.0	
12400-7900	1.30	0.30	0.80	0.38	93.90	Pit not dug
						too swampy
12400-8200	2.50	0.30	0.80	0.38	95.6	* *
12400-8500	1.20	0.25	0.75	0.33	95.19	•
12400-8800 12400-9100	1.26 1.28	0.30 0.32	0.96 0.78	0.31 0.41	94.8 94.7	•
12400-9400	1.50	0.30	1.00	0.30	89.90	Gypsum
						crystals
						cemented with
					•	carbonate at
						bottom
12400-10000	1.40	0.40				Not sampled
						due to obvious
						carbonate
12700-7600	0.85	0.15	0.60	0.25	95.6	contamination
12700-7900	1.30	0.08	0.53	0.15	95.4	
12700-8200	2.60	0.40	0.95	0.42	94.0	
12700-8500	1.25	0.25	0.85	0.29	95.95	
12700-8800 12700-9100	1.26 1.35	0.37 0.20	0.77 0.99	0.48	94.6	
12700-3100	1.33	0.20	∪●フフ⊸	0.20	93.7	Not sampled
,, _0000		0.00				due to obvious
						carbonate
						contamination

PIT NO	DEPTH m	O'BURDEN THICK. m	ORE BED THICK. m	O'BURDEN RATIO	ORE BED GYPSUM %	REMARKS
13000-7000 13000-7300 13000-7600 13000-7900 13000-8200 13000-8500 13000-8800 13000-9700	1.25 2.10 2.60 1.25 1.65 1.15 1.02 1.15	0.40 0.25 0.20 0.40 0.30 0.35 0.18 0.33 0.32	0.55 1.15 1.10 0.75 0.70 0.70 0.81 0.57 0.77	0.73 0.22 0.28 0.53 0.43 0.50 0.22	93.3 88.8 93.5 94.52 96.8 95.28 95.3 94.14	Not sampled dozer bogged in clay under
13300-7000 13300-7600 13300-7900 13300-8200 13300-8500 13300-8800 13300-9100 13300-9400 13300-9700	2.00 1.40 1.30 2.00 1.15 1.45 1.40 1.30	0.10 0.08 0.45 0.40 0.25 0.45 0.32 0.43	1.10 1.07 0.45 0.65 0.80 0.50 0.85 0.69	0.09 0.07 1.00 0.62 0.31 0.90 0.38 0.62	X 91.08 94.4 94.0 91.17 94.7 91.6 81.3	Sample missing Not ore Not sampled due to obvious carbonate contamination
13600-6700	1.30	0.35	0.35	1.00		Not sampled due to thin ore bed and obvious carbonate at 0.8m
13600-7000 13600-7300 13600-7600	1.30 1.30 1.60	0.25 0.45 0.25	0.85 0.60 1.20	0.29 0.75 0.21	92.46 94.14 90.22	Includes sandy carbonate band
13600-7900 13600-8200 13600-8500 13600-8800 13600-9100 13600-9400	1.40 1.35 1.40 1.10 1.30 1.10	0.40 0.35 0.30 0.30 0.40 0.60	0.80 0.85 0.90 0.60 0.80 0.30	0.50 0.41 0.33 0.50 0.50 2.00	94.52 93.02 95.33 95.19 87.97	70mm thick At edge of dune, not sampled.
13600-9700	1.20					Not sampled due to obvious carbonate contamination

X Sample 0.10 - 1.20 lost Sample 1.20 - 1.70 89.3%

PIT NO	DEPTH m	O'BURDEN THICK. m	ORE BED THICK.	O'BURDEN RATIO	ORE BED GYPSUM %	REMARKŚ
13900-7000 13900-7900 13900-8200 13900-8500 13900-8800 13900-9100 13900-9400	2.20 1.60 1.40 1.40 1.50 1.40	0.40 0.35 0.10 0.30 0.36 0.40 0.76	0.85 1.00 1.00 0.95 0.88 0.85 0.22	0.47 0.35 0.10 0.32 0.41 0.47 3.45	94.1 96.5 96.2 96.19 94.9 91.5	Not sampled due to thin bed
13900-9700 14200-7000 14200-7300 14200-7600 14200-8200 14200-8500 14200-9100 14200-9700 14200-9700 14500-7000 14500-7600 14500-8200 14500-8500 14500-8500 14500-9100 14800-7600 14800-7900 14800-8200 14800-8500 14800-8500 14800-8500 14800-8500 14800-8500 14800-8500 14800-8500	1.50 1.20 1.45 2.30 1.45 1.40 1.50 1.45 1.30 2.10 1.90 1.60 1.85 1.75 1.25 1.40 1.80 1.80 1.55 1.80 1.35	0.31 0.15 0.20 0.30 0.45 0.45 0.45 0.45 0.45 0.45 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.15 0.40 0.15	1.00 0.90 1.00 1.20 0.75 0.95 0.98 0.85 0.95 0.85 1.15 1.07 0.95 0.95 0.95 0.95 0.70 0.96 0.70 0.95 0.70	0.31 0.17 0.20 0.25 0.60 0.16 0.44 0.33 0.53 0.26 0.60 0.53 0.41 0.30 0.07 0.16 0.43 0.27 0.71 0.83 0.71 0.83 0.71 0.83 0.71 0.37 0.12 0.67 0.20	89.2 91.46 92.87 94.1 93.18 95.3 95.4 92.73 91.65 92.4 96.6 96.0 96.8 95.47 96.3 58.9 91.79 94.7 92.99 97.0 94.33 97.3 89.12	Deu

