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EL 1303, EL 1304 AND EL 1305; MC 2049 THROUGH MC 2060

LAKE MALATA

FINAL REPORT FOR THE PERIOD 6/9/85 TO JULY 1987

Submitted by

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1987

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REPORT ON FINAL STAGE OF EXPLORATION

at

LAKE MALATA, EYRE PENINSULA, SOUTH AUSTRALIA

(Mineral Claims 2049 to 2060)

J.H.F.
① Have skimmed through the final report, paying most attention to mining proposals (p 16 onwards).
② Basis of mining appears sound.
③ No client programme as such is included - to me it appears premature to submit one now for an area to be held under retention lease.
H.F. 14.10.87.

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REPORT ON FINAL STAGE OF EXPLORATION AT LAKE MALATA EYRE PENINSULA, SOUTH AUSTRALIA

1.Ø INTRODUCTION

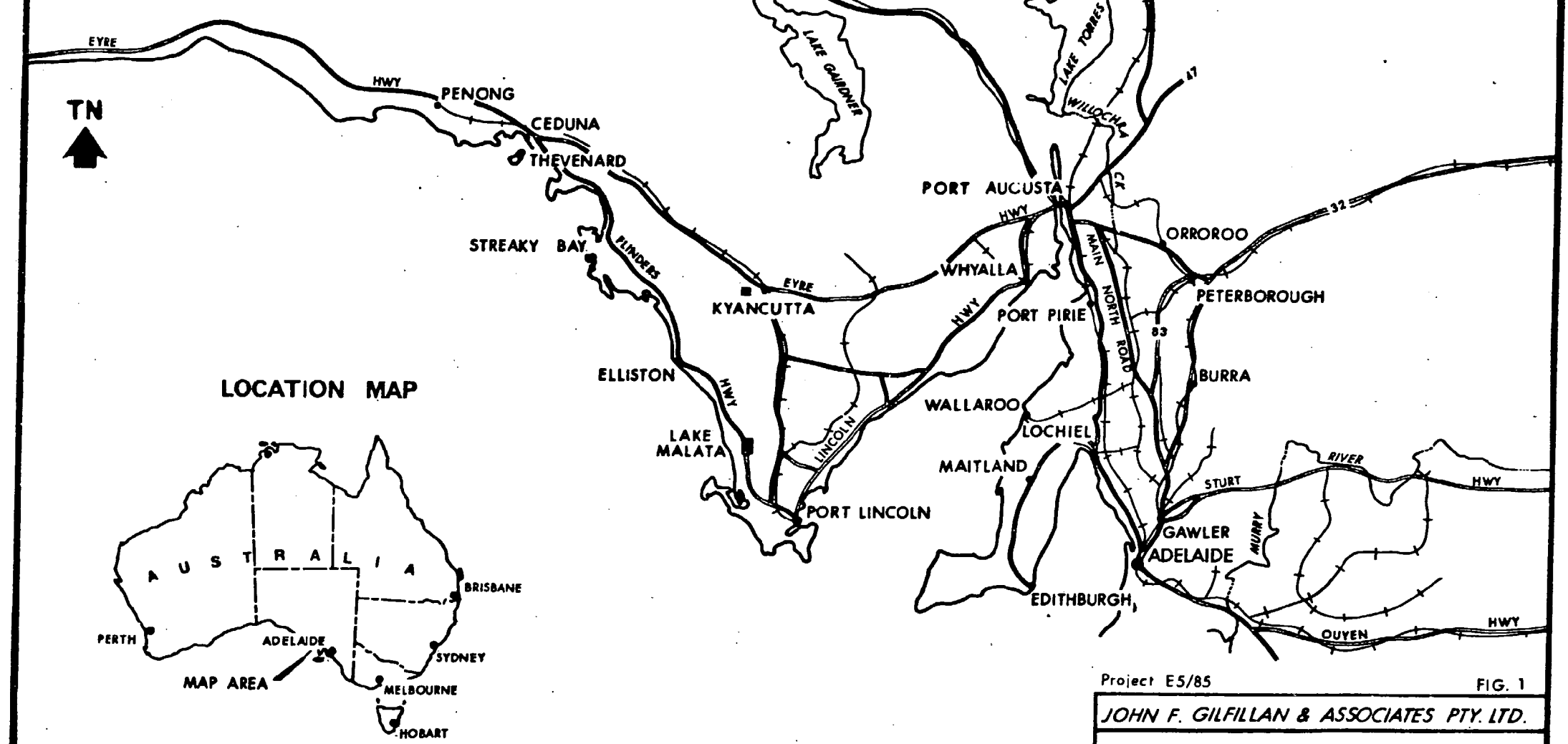
The exploration for gypsum at Lake Malata was initiated through Exploration Licence No. 13Ø4, Lake Greenly and Malata which was granted to John F. Gilfillan & Associates Pty. Limited on 6th September 1985. The selection of this licence area, together with two other areas was made after consultation with the South Australian Department of Mines and Energy, a literature survey of all gypsum producing areas and occurrences in New South Wales, Queensland, Victoria and South Australia and a reconnaissance survey of the Eyre Peninsula. The results of the exploration on all three exploration licences, No. 13Ø3, Chadee Curra Plains, No. 13Ø4 Lake Greenly and Malata and No. 13Ø5, Kyancutta are included in the four quarterly reports submitted to the Department of Mines & Energy on all three areas. (See Appendix I).

Where relevant, information in the Lakes Greenly and Malata quarterly reports is incorporated in this report. Other information, where it does not pertain to reserve estimation, most notably laboratory test results, is not presented and interested persons should refer directly to the quarterly reports. Some of the figures from the quarterly reports have been included with suitable modification to fit the context of this report.

Exploration Licence 13Ø4 was relinquished in September 1986 and exploration was continued under twelve Mineral Claims.

The purpose of the investigation was to locate and prove a deposit of approximately 2 million tonnes of gypsum suitable for use in plaster manufacture. Lake Malata represents one such deposit although the gypsum requires preparation before calcining in order to conform with specifications.

The exploration concentrated on the gypsum dune deposits but was extended on a reconnaissance scale to the sediments beneath Lake Malata.



Project E5/85

FIG. 1

JOHN F. GILFILLAN & ASSOCIATES PTY. LTD.

LAKE MALATA AND KYANCUTTA LOCATION

EYRE PENINSULA SOUTH AUSTRALIA

Scale: 1:4,000,000	Date: MAY 1987
Drawn: CARTOSCOPE	Data: B. BUTT

2.Ø LOCATION

Lake Malata is located on the Eyre Peninsula, South Australia and is centred at latitude 34 12' S and longitude 135 3Ø' E. The area can be accessed via the Mt. Hope Road from the town of Cummins, 63 kms north of Port Lincoln or via the Flinders Highway (see Fig 2). Cummins is serviced by road and rail from Port Lincoln and has a light aircraft landing strip.

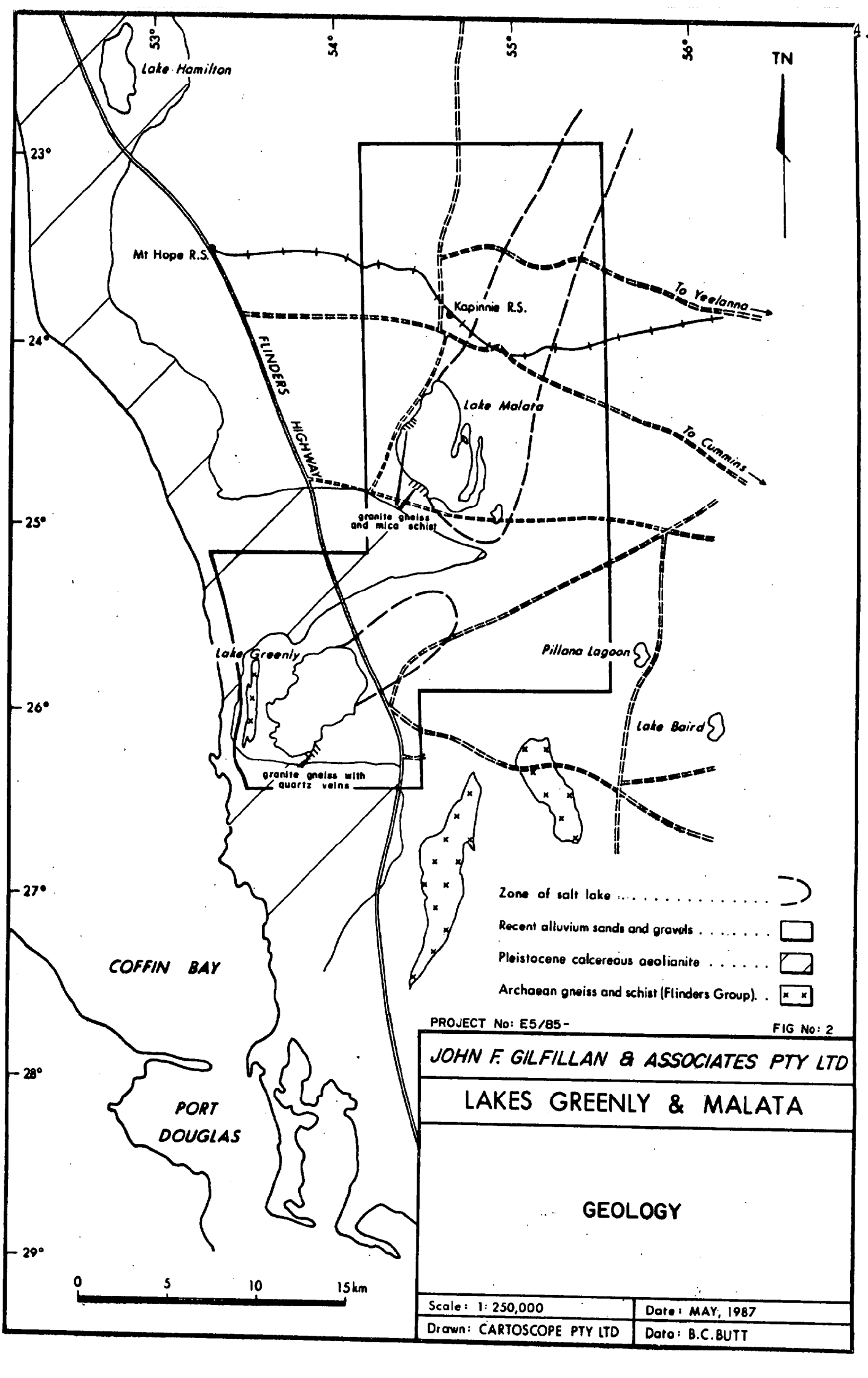
The gypsum deposits of principal interest are located in dunes along the shoreline and protruding into Lake Malata and the smaller lakes to the east and northeast.

These areas are accessible by all weather gravel road but access to individual dunes is by unformed dirt tracks and is best achieved by four wheel drive vehicles. Many low lying areas support only a thin crust of salty clay over a heavy grey mud and are traversable only when completely dry. Access onto dunes during wet weather is difficult but possible.

The country is gently undulating with elevations ranging between 35m and 8Ømabove sea level. The most prominent topographic feature is Mount Greenly, 27Ømhigh, west of Lake Greenly. Numerous salt lakes and ponds occupy a northeast-southwest trending zone 45kms long and an average 5kms wide. These lakes are devoid of vegetation, dry out in summer and carry about 5Ø cms of water depth in winter. The lake beds are not traversable by conventional vehicle at any time but can be walked over when dry.

3.Ø PROPERTY

Exploration licence No. 13Ø4 was allowed to lapse in September 1986 and 12 mineral claims were pegged over the whole of Lake Malata and a smaller extension to the east. These claims cover an area of 28 sq kms and were granted on 6th October 1986 for 12 months. A schedule of these claims, numbered 2Ø49-2Ø6Ø incl., is presented in Appendix II.


53°
54°
55°
56°
TN
Lake Hamilton
23°
Mt Hope R.S.
To Yeelanna
Kapinnie R.S.
24°
FLINDERS HIGHWAY
Lake Malata
To Cummins
granite gneiss and mica schist
25°
Lake Greenly
Pillana Lagoon
26°
Lake Baird
granite gneiss with quartz veins
27°
COFFIN BAY
28°
PORT DOUGLAS
29°
0
5
10
15km
Zone of salt lake
Recent alluvium sands and gravels
Pleistocene calcereous aeolianite
Archaean gneiss and schist (Flinders Group).
PROJECT No: E5/85-
FIG No: 2
JOHN F. GILFILLAN & ASSOCIATES PTY LTD
LAKES GREENLY & MALATA
GEOLOGY
Scale: 1: 250,000
Date: MAY, 1987
Drawn: CARTOSCOPE PTY LTD
Data: B.C.BUTT

4.Ø GEOLOGY

Exploration has been confined exclusively to the region containing the salt lakes which is characterised by the almost complete absence of outcrop. Generally the area is underlain by Pleistocene calcereous aeolianite and recent alluvium, sand, gravel and swamp deposits. Calcrete is present just below the surface over much of the area and outcrops at the base of the gypsum dunes that protrude into Lake Malata.

Along the south shoreline of Lake Malata, very coarse grained granitic gneisses and mica schists are exposed beneath a cover of fine red sand (see Fig 2). The gneisses are feldspar rich and carry large, 5cm across, books of biotite crystals. Some zones are pegmatitic. Quartz veins are prevalent and crystals of quartz released during weathering are accumulating along the southeast shoreline. A limonite haematite rich zone outcrops over 15m a few metres west of the gneisses but on initial perusal did not exhibit a sulphide boxwork.

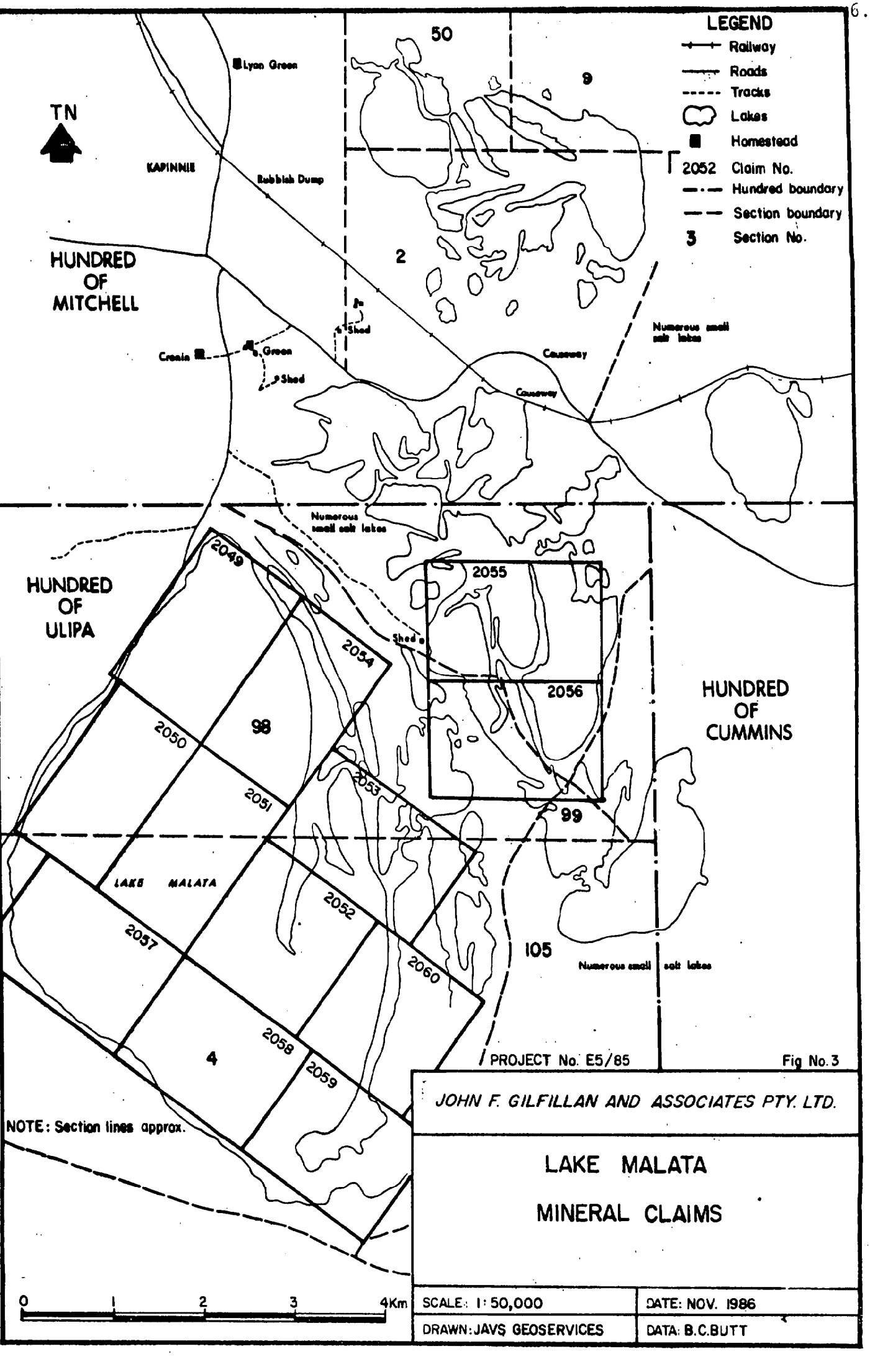
Along the southeast shoreline of Lake Greenly similar granitoid gneisses outcrop beneath a cover of gyps/-arenite and gypsite. These rocks are traversed by substantial veins of quartz and feldspar.

Both these occurrences are probably part of the Archaean Flinders Group of metasediments, gneisses and schists that contribute to the more prominent features of an otherwise subdued landscape.

The region is typified by a southwest to northeast trending zone of salt lakes and ponds that is continuous except for a 4km wide rise between Lakes Greenly and Malata (Fig. 2). The lakes stand at a constant elevation of 34m above sea level confirming the interconnection through the porous sand deposits that separate them. This zone extends for 45kms with a maximum width of 9km and an average width of 5km.

4.1 Dunes

A number of long narrow and sometimes sinuous features within the zone occupied by the salt lakes are composed of aeolian sand and/or gypsum. The individual gypsum occurrences do not follow a consistent directional trend, but all exhibit the same profile of a surface layer of gypsite underlain by gyps/arenite sustained on a platform of damp gypsite or gypsiferous mud. The platforms support only a low salt bush while the dunes frequently carry fairly large trees.


LEGEND
Railway
Roads
Tracks
Lakes
Homestead
2052 Claim No.
Hundred boundary
Section boundary
3 Section No.
TN
KAPINNIE
Lyon Green
Rubbish Dump
HUNDRED OF MITCHELL
HUNDRED OF ULIPA
HUNDRED OF CUMMINS
Cronin
Shed
Causeway
Numerous small salt lakes
LAKE MALATA
2049
2054
2055
2056
2050
2051
2053
2052
2057
2060
2058
2059
98
99
105
4
50
9
2
PROJECT No. E5/85
Fig No. 3
JOHN F. GILFILLAN AND ASSOCIATES PTY. LTD.
LAKE MALATA
MINERAL CLAIMS
NOTE: Section lines approx.
0 1 2 3 4Km
SCALE: 1:50,000
DATE: NOV. 1986
DRAWN: JAVS GEOSERVICES
DATA: B.C.BUTT

The dunes attain a length of 3kms but are rarely more than 100 metres wide and the maximum height recorded is 9 metres. The platforms are seldom more than 2 metre above the level of the lakes. The most prominent and substantial gypsum occurences extend from a shoreline into a lake. The infrequent deposits along a shoreline do not achieve the same purity as the inter lake deposits.

The dunes display, in section, a surface layer of gypsite followed by pale brown or pale yellow gyps/-arenite which grades into sandy gypsiferous clay. A few holes intersected bedrock (calcrete ?) but the majority terminated in red brown muds or clay. The platforms consist mainly of a surface layer of damp impure gypsite underlain by gyps/arenite or gypsiferous mud. Although some samples from the platforms returned over 90% gypsum the average grade would be below economic requirements. A limited tonnage of economic gypsum may be defined with further drilling but this volume may well be beneath the lake water level and difficult to extract.

The dunes do not reflect the typical arcuate or barchan configuration of inland desert dunes as they are straight and both sides stand at roughly the same angle. Also, why they should protrude into the lakes on bearings ranging from north-south to east-west which do not conform with the (present day) prevailing wind patterns is not understood. The platform deposits probably represent the remnants of an old lake bed exposed because of falling water levels with gypsite forming by the disintegration of gyps/arenite crystals.

4.2 Lake Sediments

The lake beds consist of a surface salt crust rarely more than 5cms thick which overlies a dark grey to black mud. Diamond drilling indicates that for its areal extent the lake is very shallow. A hole drilled in the centre of the lake (which need not necessarily be over the deepest part) intersected very decomposed mica schist at 17m (see Fig 24 and 26). Recovery of this material was poor but a petrological study of two samples identified the core as a well foliated quartz - biotite - muscovite schist produced by strong regional metamorphism of pelitic sedimentary material (Appendix III). These intersections may be correlated with the mica schists that outcrop along part of the west and south shorelines of the main lake (see fig 2) and, possibly, are related to the Archaean metasediments of the Flinders Group.

The lake sediments progress from the salt crust into a gyps/arenite (seed gypsum) that appears to achieve over 90% purity over 0.5m depth just below the salt crust but which may be confined to the centre of the lake (Layer 1). Beneath this layer the gyps/arenite is interspersed with mud or stiff green clay but with an average gypsum content of over 80% (Layer 2). Figure 26 depicts the possible profile to these zones which indicates a maximum depth at the centre of the lake. Below the gyps/arenite the sediment grades into a gypsiferous clay averaging over 60% gypsum and thence to a mud/clay with minor gypsum overlaying the decomposed bedrock (Layer 3).

It should be noted that if the material cored was soft and fluid it was termed mud - if stiff and competent it was called clay. It was not certain what affect the water in the hole, and that used while drilling, had on the mud/clay consistency.

Although the various layers intersected varied in thickness it appears they follow the same sequence and can be correlated between holes (see Fig 24). The following features were noted in the layers that may aid in any future correlations:

a) Layer 1 is a granular, pale yellow gyps/arenite with very occasional mud/clay bands.

b) Layer 2 is a granular gyps/arenite with a stiff green clay layer and black banding which may be carbon bearing mud/clay.

c) Layer 3 contains an irregular distribution of calcrete nodules or bands, some fairly pure layers of seed gypsum and a white mineral present as very fine and very small needle like crystals or gel. Hole DH 5 recovered large partly rounded white quartz pebbles at the base of this layer.

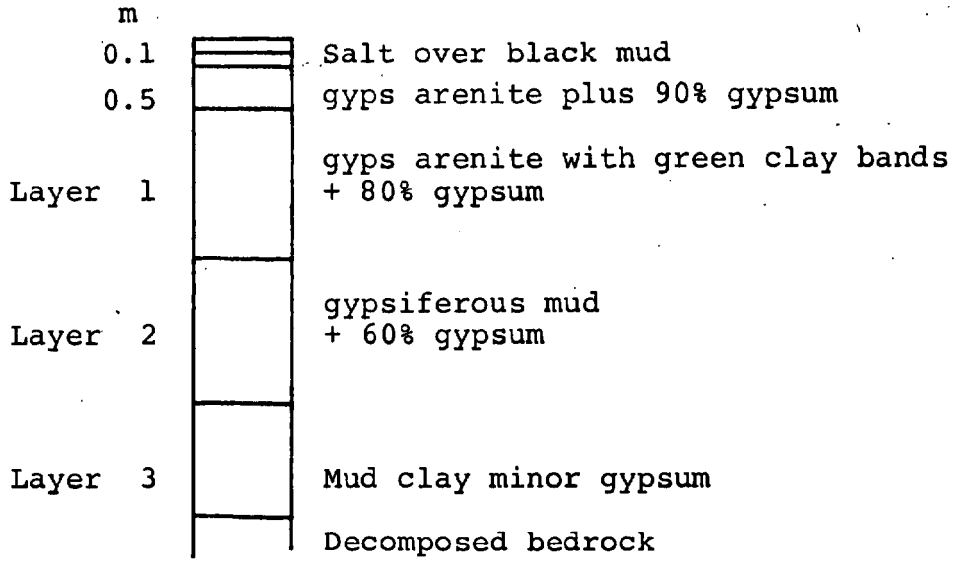
A petrological study of a sample from layer 3 classified it as an evaporite or salt lake assemblage of gypsum, dolomite, celestite, halite with quartz and carbonaceous material, (Appendix III). The celestite and halite were identified by X-Ray diffraction only.

It is of interest to note that the X-Ray diffraction analysis gave the following content limits to the sample.

Gypsum	<60%	(Laboratory assay is 68.4%)
Quartz	20% - 5%	
Dolomite	40% - 20%	
Celestite	20% - 5%	

Bessanite <5%
Halite 20% - 5%

The following profile depicts the layering of the Lake Malata sediments.



It appears that the gypsum rich layers 1 and 2 thin out and disappear eastwards (see fig 27) but information in this area is limited.

4.3 Mechanism of Gypsum Formation.

It is apparent from the relatively limited amount of investigation completed that the present lake floor level is at least 17m above sea level, and therefore, Lake Malata is not being replenished with sea water.

This may not have always been the case but it is postulated that the following processes are active at present. These comments are based on observation only and are not supported by literature research or reference to other deposits.

1. Gypsum with sand, clay and carbonate is introduced by surface drainage into the lakes or by previous inundation by sea water.

2. Water dissolves gypsum, salt and carbonates in the clays and transports these minerals towards the lake surface by capilliary action and evaporation during summer months. Total evaporation deposits gypsum, salt and calcite.

3. Rain and run off during the wet season redissolves the salt and carbonate but little gypsum because of

the relatively short time water is in contact with gypsum in this zone. Also, fine silt is transmitted downward by mechanical movement.

This mechanism would slowly concentrate and purify the gypsum in the upper layers as is suggested by the assays results from the drilling. The mechanism also suggests there is little chance for the development of selenite at depth. More investigation into relative solublities, pH of fresh and pore water etc. are required to confirm the correct mechanism.

5.Ø DRILLING

Two stages of drilling were conducted over the mineral claims - auger drilling of the dunes and diamond drilling of the lake sediments.

5.1 Auger Drilling

This programme was designed to fill in the areas not tested during the initial programme conducted in November 1985. The drill techniques and problems encountered are described in the six month report to the Department of Mines and Energy (Appendix I).

The auger drilling on the mineral claims totaled 258.2 m in 62 holes to give an exploration drilling total of:

November 1985	37 holes	212.2 m
October 1986	62 holes	258.2 m
	69 holes	470.4 m

32

Holes were drilled across the dunes on lines approximately 200 m apart. Position control was by tape and compass across the dunes and aerial photographs along the dunes. (Figs. 5, 11, 20).

The results of the 1986 auger drilling and sampling are included in the drill logs (Appendix IV) and sample data sheets (Appendix V).

5.2 Diamond Drilling

It was decided to test the lake sediments by using a light diamond drill modified for positioning on the dry but unstable lake surface. The modifications were totally successful (Photograph 1.) but the drilling encountered recovery problems in the soft sediments. All types of bit, lifter and inner tubes were tried but the fluctuating consistency of the mud, clay and sandy sediments and the variation in water saturation prevented any attempt at penetration control. An endeavour to push tube achieved a penetration of only 1.5m maximum. Nevertheless, although an average recovery of only 50% was achieved it is considered that the results represent with a reasonable degree of accuracy the composition of the lake sediments. This observation is supported by the core against sludge sampling conducted on hole DH-1. (The drill was fitted with a sludge collection box).

TABLE I

CORE VS SLUDGE ASSAYS

	Length	$CaSO_4.2H_2O$	$CaCO_3$	NaCl	Acid Insol.
Core	-	-	-	-	-
Sludge	0.0 - 1.5	80.3	5.70	2.95	7.75
Core	1.5 - 3.6	83.1	4.95	3.90	5.90
Sludge	1.5 - 3.0	84.6	4.65	1.95	5.85
Core	3.6 - 4.8	87.5	2.70	2.95	4.10
Sludge	3.0 - 4.5	83.3	5.85	1.65	6.30
Core	4.8 - 7.5	71.4	10.35	4.55	7.60
Sludge	4.5 - 6.0	77.2	9.85	1.40	7.95
Core					
Sludge	6.0 - 7.5	78.3	8.75	2.25	7.85
Core	7.5 - 8.2	80.6	5.30	2.60	5.05
Sludge	7.5 - 9.0	76.4	9.05	3.00	8.50
Core	8.2 - 11.1	79.5	7.15	4.20	5.00
Sludge	9.0 - 11.1	69.6	11.45	3.25	12.50

5 holes were drilled in the main lake area for a total of 87.3m and three intersected highly decomposed bedrock. The results of the drilling and sampling are presented in drill logs (Appendix VI) and sample assay sheets (Appendix VII).

6.Ø TONNAGE AND GRADE

The parameters that govern the calculation of tonnage and grade have been detailed in full in the six monthly report on exploration but as there have been a number of variations for the present calculations these parameters are repeated.

1. The cross sectional area of gypsite and gyps/arenite through a line of drill holes was measured from the dune profiles depicted in figures 6 to 12, 12 to 19 and 21 to 22. The influence of each hole extended both sides of the hole to a line midway to the adjacent hole, or the edge of the dune. The assays of the samples that are present in any hole were weight averaged according to sample length (again treating gypsite and gyps/arenite separately). This average value was ascribed to the cross sectional area represented by that hole.

2. The influence of the cross sectional area was assumed to extend both sides of the section to a point midway to the next cross section, or line of drill holes (Figures 5, 11 and 2Ø) and the volume calculated.

3. The tonnes were calculated from the volumes using a tonnage factor of Ø.6t/m^3 for gypsite and 1.3 t/m^3 for gyps/arenite (see 1986 report P 1Ø).

4. The cross section tonnes for each hole were weight averaged against tonnes to provide the total tonnes and grade represented by each line of holes.
An example of the calculation worksheet is presented in Appendix VIII.

5. Only the material above dry lake level and above 8Ø% gypsum was included in the calculation. Any gypsum in clay, even if over 8Ø%, was not included.

The results of these calculations are presented in Tables 2, 3 and 4 but they may be summarised as:

	Tonnes	$CaSO_4 \cdot 2H_2O$ %	$CaCO_3$ %	NaCl %	Acid Insol %
Gypsite	1Ø2ØØØ	93.3	3.69	1.Ø4	2.11
Gyps/ arenite	111Ø5ØØ	92.2	3.37	2.Ø2	3.Ø3
Total	1212ØØ	92.3	3.4Ø	1.94	2.95

TABLE 2

GYPSUM RESERVES - DUNE A

LINE	GYPSITE					GYPS ARENITE				
	TONNES	$CaSO_4.2H_2O$	$CaCO_3$	NaCl	Acid Insol.	TONNES	$CaSO_4.2H_2O$	$CaCO_3$	NaCl	Insol.
1	4200	93.6	1.98	0.17	1.27	4800	92.2	2.09	1.39	3.63
2	-	-	-	-	-	63300	93.8	2.30	1.00	2.60
3	8600	96.8	4.2	1.5	0.94	70200	92.3	4.30	1.30	3.20
3A	5200	90.7	7.91	1.03	3.02	105300	94.4	2.74	0.85	1.17
4	16300	94.3	2.9	1.13	1.27	115600	95.4	2.24	1.02	1.07
5	3200	90.6	3.05	1.06	3.6	16800	94.1	3.10	0.50	2.50
21	7700	92.45	2.76	0.17	3.67	100500	92.7	2.75	0.52	3.40
	45200	93.7	3.62	0.93	1.98	476500	93.9	2.80	0.90	2.18

Note: Totals are weight averaged against tonnes.
All assays expressed as a percentage

TABLE 3

GYPSUM RESERVES - DUNE B

LINE	GYPSITE					GYPS ARENITE				
	TONNES	$CaSO_4.2H_2O$	$CaCO_3$	NaCl	Acid Insol.	TONNES	$CaSO_4.2H_2O$	$CaCO_3$	NaCl	Insol.
6	12800	94.8	3.70	1.14	1.55	57500	87.1	7.62	1.35	4.04
7	3300	92.9	4.77	1.11	2.25	76600	90.3	9.03	0.90	3.57
8	5300	95.1	5.17	0.41	1.27	47700	92.0	13.0	0.77	2.76
9	3000	89.4	6.79	1.59	2.43	30100	85.7	9.37	0.83	3.61
10	-	-	-	-	-	22200	93.1	4.05	0.80	1.95
11	-	-	-	-	-	15400	88.2	5.60	0.23	2.95
12	2200	90.6	5.88	0.14	2.11	7500	96.3	3.85	0.52	1.40
13	7900	96.1	2.36	0.15	1.92	68100	96.9	3.57	0.15	1.30
14	-	-	-	-	-	11700	90.0	6.24	0.92	3.57
16	4000	94.5	3.50	0.17	1.60	63500	94.3	3.55	0.14	1.25
17	-	-	-	-	-	49900	83.9	10.5	0.55	5.30
18	3200	92.6	3.20	0.35	2.50	58500	94.2	3.82	0.29	1.71
19	-	-	-	-	-	15300	86.3	9.55	0.23	3.55
	41700	94.1	4.00	0.68	1.81	524000	91.0	7.01	0.69	2.81

Note: Totals are weight averaged against tonnes.
All assays expressed as a percentage

TABLE 4

GYPSUM RESERVES - DUNE J

LINE	GYPSITE					GYPS ARENITE				
	TONNES	$CaSO_4.2H_2O$	$CaCO_3$	NaCl	Acid Insol.	TONNES	$CaSO_4.2H_2O$	$CaCO_3$	NaCl	Insol.
15A	2100	83.5	4.00	3.05	6.40	13700	92.8	2.13	2.00	3.62
15B	-	-	-	-	-	14700	84.8	4.75	2.65	4.80
15C	6700	91.1	1.93	2.45	3.60	18500	93.5	1.82	2.20	3.25
15D	2000	85.4	5.25	2.04	4.30	8400	91.1	3.05	0.82	4.60
15G/H	4300	93.6	3.40	2.02	1.02	11600	93.8	3.18	2.10	0.98
15I	-	-	-	-	-	15900	95.2	3.44	1.66	0.50
15J	-	-	-	-	-	4600	96.5	2.58	1.60	0.35
15L	-	-	-	-	-	2500	94.4	4.05	1.43	0.53
15N	-	-	-	-	-	20100	85.8	4.90	2.36	4.60
	15100	90.0	3.08	2.35	3.34	110000	91.0	3.37	2.02	3.03

Note: Totals are weight averaged against tonnes.
All assays expressed as a percentage

6.1 Losses and Dilution

The sampling has indicated there is no significant grade variation in the dunes, and therefore, dilution should be minimal. If the gypsite and gyps/arenite are mined and mixed together, and screening facilities are available to take out vegetation, losses should also be a minimum. It is considered that not more than 5% of the total tonnages calculated would be lost or unavailable especially as only the material above lake level has been included in the reserves calculation.

6.2 Additional Deposits

A, B, J

During the initial exploration 10 dune deposits were tested and 8 of these contained recoverable gypsum assaying greater than 80% $CaSO_4.2H_2O$. Mineral claims were pegged over three of these dunes, the two largest and the next adjacent, so that the remaining dunes would constitute future potential reserves of approximately 677,000 tonnes (Butt 1986, p13).

The reconnaissance drilling of the lake sediments has indicated a layer of gyps/arenite immediately beneath the salt crust that averages over 80% gypsum with portions averaging over 90%. The area represented by this drilling would be a minimum of 8 sq km (see fig 23) and the average depth would be a minimum of 3 metres (see fig 26). Therefore, the potential volume of gyps/arenite would be in excess of 30 million tonnes.

7.0 EXTRACTION

The methods used for the extraction of gypsum are dictated by the annual volume required and, in the case of Lake Malata, the frequency of shipments.

At this point it is assumed that the annual tonnage will be 60,000 tonnes per year to be shipped in five shipments of 24,000 tonnes every two years.

After discussions with the Australian National Rail and the Port Lincoln Department of Marine and Harbours the most logical and economic, shipping point is that of BHP at Proper Bay. This choice is dictated largely because of the extra handling required at Port Lincoln if rail facilities are used and the lack of an alternative bulk loading facility to the grain terminal. The small annual tonnage precludes the use of the grain terminal loading system because of the costs of cleaning down

before and after each shipment. In addition there is no space for storage of bulk gypsum that does not require two stages of handling - from rail car to storage and storage to wharf.

The material flow envisaged is

1. Preparation of working platforms and loading faces by bulldozer and front end loader.

2. Loading by front end loader to a mobile screen to aid mixing of gypsite/gypsarenite and the removal of vegetation in the form of leaves, roots etc. The screen would be used in conjunction with a stacking conveyor with room for a minimum 1,500 tonne storage.

3. Loading by front end loader to trucks of the maximum capacity dictated by axle loading and Department of Main Roads regulations.

4. Haulage to the Coffin Bay railhead and stockpiling.

5. Retrieval from stockpile to rail car loading facility and loading.

6. Rail haulage from Coffin Bay to Proper Bay bulk storage facility.

7. Ship loading.

Stages 4, 5 and 6 could be replaced by road haulage direct from Lake Malata to Proper Bay but this would require the construction of a new road (approx. 2.5kms) to the terminal as the present access is through a marina and proposed residential development which would be closed to heavy trucking.

7.1 Preparation, Mining, Screening and Loading

It is planned to conduct this stage with the full time use of a front end loader and screening facility and the part time use of a bulldozer and grader. An annual production of 60,000 tonnes at 5.5 days per week and 44 operating weeks per year will require 248, say 250, tonnes per day. This rate will be achieved by:

A Caterpillar 950 front end loader or equivalent - full time. The capacity of this machine is larger than required but with a suitable bucket is can double as a 'dozer and build stockpiles for drying and salt removal.

A Caterpilar D7 bulldozer or equivalent for 200 hours per year from scrub clearing, pad preparation and road maintenance.

A 40/30 Hydroscreen or equivalent with grizzly, reciprocating feeder and pneumatically adjustable screen in conjunction with a Finlay 40 foot stacker. This combination could handle 60-70 tonnes/hour so would operate for 5 hours/day.

A road grader for road maintenance at 12 hours per week.

The manpower required would include a loader operator responsible for digging, screening and loading of trucks and a supervisor/operator to act as backup operator and be responsible for record keeping. Allowance has been made for a machine maintenance/logistic support man though this may only be a part time requirement. The maximum labour requirement would be for 3 men.

7.2 Road Transport

The minimum haulage to permit the shipment of 60,000 tonnes/year is 250 tonnes/day over 242 operating days-/year. Using 20 tonne road haulage units would require 12.5 loads. The cycle time Lake Malata - Coffin Bay - Lake Malata is estimated to be 2.5 hours requiring a fleet of 5 trucks plus one standby.

The labour requirement would be 5 drivers, a fueler, maintenance man and a helper who could double as record-/time keeper. Depending on the stockpiling arrangement at the off load point one man may be required to operate a stacker. The labour complement for this stage would be 8 men.

7.3 Rail Transport and Ship Loading

This stage of the operation would be handled by BHP personnel under a cost per tonne contract. The responsibility would be loading from stockpile to the railhead holding bins, 3 of 1,000 tonnes capacity each; loading of rail cars and transport to Proper Bay at 900 tonnes per day two days per week; loading to bulk storage via a tipper and 42 inch belt conveyor; reclaiming from bulk storage via bottom draw points to 42 inch belt conveyors and ship loader. The ship loader is 38 feet above water level at low tide.

The bulk storage would hold 10,000 tonnes on a continuous basis and could be scheduled to hold 25,000 tonnes prior to loading.

The schedule is calculated as:

Requirement	60,000 tonnes/yr
Shipments 24,000 tonnes/ship	= 2.5 ships/yr
	= 5 ships/2 yrs
	= 1 ship every 21 weeks
Rail haulage at 1,800 tonnes/week	= 14 weeks
Road haulage at 25,000 tonnes in 21 weeks	= 1,190tonnes/week.

By maintaining a 3-5,000 tonne stockpile at the railhead there should be no interruption to either the rail or truck haulage.

The limiting factor in this arrangement is the capacity of the bulk storage which places a maximum of 25,000 tonnes on each shipload. It may be possible, however, by scheduling 24 hour train haulage during loading and maintaining an outside stockpile at Proper Bay to increase the capability to 30,000 tonnes.

All other areas have the ability to increase capacity by increasing the number of operating units. The limit therefore would be dictated by the economics.

8.0 PROPERTY ACQUISITION:

At the present time the dune areas are covered by mineral claims. A mineral claim, however, is valid for only 12 months and does not bestow the right to mine. A mining lease when granted gives the full right to mine and dispose of material subject to stipulated conditions. There are general conditions that relate to all leases and specific conditions that relate to special circumstances that pertain to individual leases. The two prime conditions are:

1) An annual rental of $15/ha paid in advance.

2) A labour condition where the lease is to be worked by not less than one man for not less than 100 hours per calendar month.

Where the lease is on private land 19/20ths of the annual rental is paid to the landowner.

It is recommended that Dune A be covered by a Mining Lease Application and Dune B and part of the Lake Malata be covered by a Retention Lease. (A retention lease permits the ground to be held without labour conditions up to five years. Applications for renewal may or may not be granted.) The area under the Mining Lease would be 88ha and the area under Retention Lease would be 680ha on which an annual rental of $3.00/ha is payable in advance.

The reason for selecting Dune A for mining leases is that it is the more easily accessible. Two landowners would have to be approached for consent to mine and compensation negotiations.

An estimate of the cost of applying for the lease is

Application	
Submission of notices of entry	700
Preparation of mining and rehabilitation plans and submission of application	2,800
Application fee	300
Rental	3,360
Boundary peg marking	2,500
Possible compensation negotiations	3,000
	12,660
Maintaining	
Annual rental	3,500
Administration (assuming one inspection of properties/year, submission of annual returns etc.)	4,000
	7,500

B.C. Butt,
Senior Associate.

1. Diamond Drill modified for transport over salt lake.

2. Dune gypsum. Vehicle is standing on gyprite. White material is gyps/arenite or seed gypsum.

3. Surface of gypsum dune indicating types of vegetation cover.

4. Platform gypsite deposition.

APPENDIX I

References

APPENDIX I

References

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APPENDIX II

Schedule of Malata Properties

SCHEDULE OF MALATA PROPERTIES

MINERAL CLAIM	DATE OF PEGGING	DATE OF APPLICATION	HUNDRED	SECTION	DATE GRANTED FROM	DATE GRANTED TO	AREA	OWNERS AND ADDRESS
2049	24.9.86	26.9.86	Ulipa	98	6.10.86	5.10.87	2.2425km^2	Mrs. R.N. Cronin, P.O. Box, Kapinnie S.A. 5632
2050	24.9.86	26.9.96	Ulipa	98 and 4	6.10.86	5.10.87	2.2km^2	Messrs. P.F. and M. Minhard, P.O. Box 1, Mrs. R.N. Cronin, P.O. Box, Kapinnie S.A. 5632
2051	24.9.86	26.9.96	Ulipa	98 and 4	6.10.86	5.10.87	2.4km^2	Mrs. R.N. Cronin, P.O. Box, Kapinnie S.A. 5632 Messrs. P.F. and M. Minhard, P.O. Box 1, Cummins S.A. 5631
2052	24.9.86	26.9.86	Ulipa	4	6.10.86	5.10.87	2.4025km^2	Messrs. P.F. and M. Minhard, P.O. Box 1, Cummins S.A. 5631

SCHEDULE OF MALATA PROPERTIES

MINERAL CLAIM	DATE OF PEGGING	DATE OF APPLICATION	HUNDRED	SECTION	DATE GRANTED FROM	DATE GRANTED TO	AREA	OWNERS AND ADDRESS
2053	24.9.86	26.9.96	Ulipa	98 and 4	6.10.86	5.10.87	2.475km^2	Mrs. R.N. Cronin, P.O. Box, Kapinnie S.A. 5632 Messrs. P.F. and M. Minhard P.O. Box 1, Cummins S.A. 5631
2054	25.9.86	26.9.86	Ulipa	98	6.10.86	5.10.87	2.34km^2	Mrs. R.N. Cronin, P.O. Box, Kapinnie S.A. 5632
2055	25.9.86	26.9.86	Ulipa	98 and 100	6.10.86	5.10.87	2.275km^2	Mr. J. Green, P.O. Box 181, Cummins S.A. 5631 Mrs. R.N. Cronin, P.O. Box, Kapinnie S.A. 5632
2056	25.9.86	26.9.86	Ulipa	98, 99, and 101	6.10.86	5.10.87	2.275km^2	Mr. J. Green, 100 P.O. Box 181, Cummins S.A. 5631 Mrs. R.N. Cronin, P.O. Box, Kapinnie S.A. 5632

SCHEDULE OF MALATA PROPERTIES

MINERAL CLAIM	DATE OF PEGGING	DATE OF APPLICATION	HUNDRED	SECTION	DATE GRANTED FROM	DATE GRANTED TO	AREA	OWNERS AND ADDRESS
2057	25.9.86	26.9.86	Ulipa	4	6.10.86	5.10.87	2.4975km^2	Messrs. P.F. and M. Minhard, P.O. Box 1, Cummins S.A. 5631
2058	25.9.86	26.9.86	Ulipa	4	6.10.86	5.10.87	2.3625km^2	Messrs. P.F. and M. Minhard, P.O. Box 1 , Cummins S.A. 5631
2059	25.9.86	26.9.86	Ulipa	4	6.10.86	5.10.87	2.295km^2	Messrs. P.F. and M. Minhard, P.O. Box 1, Cummins S.A. 5631
2060	25.9.86	26.9.86	Ulipa	4	6.10.86	5.10.87	2.2475km^2	Messrs. P.F. and M. Minhard, P.O. Box 1, Cummins S.A. 5631

APPENDIX III

Petrological Examination of Three Decomposed Drill Core Samples

JOHN F. GILFILLAN & ASSOCIATES PTY. LIMITED

MINERAL EXPLORATION AND GEOLOGICAL CONSULTANTS
PETROLOGY IN ASSOCIATION WITH Dr. B.J. BARRON

Commodity Studies
Regional Assessments
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Our Ref: E5/85/303

Your Ref:

PETROLOGICAL EXAMINATION OF THREE DECOMPOSED DRILL CORE SAMPLES

Report No: E5/85/303 5th May, 1987.

FOR: John F. Gilfillan & Associates Pty Limited.

J. Barron

Dr. B.J. Barron,
Petrologist.

7TH FLOOR, 77 PACIFIC HIGHWAY, NORTH SYDNEY, N.S.W. 2060 AUSTRALIA
8TH FL. 275 ALFRED ST

Sample No. DH3-01

Rock Type. Patchy and irregularly banded gypsum-dolomite-(celestite-halite) rock (evaporite deposit), with sparse detrital chips of quartz and carbonaceous material.

Hand Specimen A friable patchy pale grey to white very fine grained drill core sample with distinct salty taste.

Thin Section. This sample has a distinctly patchy texture with sparse small angular chips of quartz and degraded carbonaceous material suggesting a partly detrital origin. These recognisable detrital grains account for less than 5% of the total thin section area and tend to be concentrated in poorly defined wavy bands. Individual grains of quartz have angular shapes, and there is a variation in grain size up to 0.5 mm (medium sand size). The degraded carbonaceous particles lack recognisable internal structures and reach a similar size, while accessory detrital grains include pale yellow brown clay altered clasts, and rare small crystals of zircon.

Abundant euhedral to subhedral rhombic shaped crystal sites, mostly within the size range 0.1 mm up to 0.3 mm are concentrated in irregular shaped masses (generally more than 5 mm across), as well as dense wavy bands (up to 5 mm wide). The crystal sites have shapes that resemble gypsum, but are now filled with a uniaxial positive fibrous phase with second order birefringence, which is also identified as gypsum (see accompanying X-ray diffraction chart). This phase may be explained by dehydration and recrystallisation of the natural gypsum forming β gypsum which could have formed by heating due to thin section making. These groups of crystals and sparse individual crystals are "suspended" in a matrix of exceptionally fine grained pale brown carbonate identified as dolomite in the X-ray diffraction analysis. Grain size of this phase is not variable. Accessory phases identified by X-ray diffraction only, include celestite, halite, and bessanite.

The sample may be classed as an evaporite or salt lake deposit and may be described only in terms of its present

assemblage as a patchy and irregularly banded gypsum-dolomite-(celestite-halite) rock, with sparse detrital chips of quartz and carbonaceous material.

Sample No. DH3-02

Rock Type. Partly degraded (weathered and clay-altered) well foliated quartz-biotite-muscovite-(?sillimanite) schist.

Hand Specimen An intensely friable mid grey micaceous sample that appears to be well foliated. Although the rock is argillically altered several grains may have accepted a positive stain for K-feldspar.

Thin Section. This is a disaggregated and degraded sample containing substantial low birefringent clay (?kaolinite) due to near surface weathering. Nevertheless a well foliated deformed and recrystallised metamorphic texture can be identified with wavy bands in which ragged flakes of biotite and muscovite define the foliation. Individual flakes commonly reach nearly 1 mm long and show development of low birefringent clay along cleavage surfaces and in interstitial spaces. There are flakes that once may have enclosed fibrolitic sillimanite. The abundant mica bands enclose discontinuous layers and elongate patches of granular quartz with anhedral grain shapes and development of strain shadows. Certain individual quartz grains reach almost 2 mm across.

The sample may be simply identified as a partly degraded (weathered and clay-altered) well foliated quartz-biotite-muscovite-(?sillimanite) schist produced by strong regional metamorphism of pelitic sedimentary material.

Sample No. DH2-01

Rock Type. Partly degraded (weathered), strongly foliated and deformed (kinked) quartz-biotite-sillimanite schist.

Hand Specimen A mid brown-grey intensely friable strongly foliated micaceous sample with minor irregular to elongate lensed and even kinked white bands. No K-feldspar was detected by staining.

Thin Section. The present rock is closely related to the previous sample DH3-02, both texturally and mineralogically. It retains a strongly foliated fine grained fibrous and partly granular texture with kinks defined by the folded foliation. The abundant well oriented red-brown biotite flakes are intergrown with lenses and discontinuous trails of very fine grained fibrous sillimanite and intergrown low birefringent fibrous clay in sites that once may have contained granular feldspars. Granular quartz occurs in narrow lenses and discontinuous bands, and this phase has a grain size that is mostly less than 0.4 mm. Elsewhere are sparse sites of equant subhedral or deformed porphyroblasts that are now converted to opaque oxides and clay, that once may have comprised a garnet. Opaque oxide dust and small zircon crystals are minor accessory phases.

Well preserved textures and mineralogy in this friable and partly degraded (weathered) sample indicate a high grade metamorphic origin for this well foliated and deformed sample. The present mineralogy indicates a parent type of strongly foliated, deformed (kinked) quartz-biotite-sillimanite schist, that has undergone partial weathering and degradation with abundant low birefringent clay (?kaolinite) in previous sites of feldspars and ?garnet.

APPENDIX IV

Auger Drill Logs

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: A LINE 1

HOLE NO: 1-A
DEPTH : 6.Ø m

PROFILE

Sample No		Geology
1A-1	Ø.Ø	Gypsite.
	1.Ø	
1A-2	1.Ø	Brown seed gyps/arenite
	3.2	in clay.
1A-3	3.2	Brown to green sandy clay
	6.Ø	

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
1A-1	Ø.Ø-1.Ø	1.Ø	93.6	1.98	Ø.17	1.27	97.Ø2
1A-2	1.Ø-3.2	2.2	91.7	7.43	1.Ø2	4.34	1Ø4.49
1A-3	3.2-6.Ø	2.8	86.9	1.46	2.24	6.26	96.86

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: Increasing salt and acid insoluble with depth.
High $CaCO_3$ in 1A-2.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: A LINE 1

HOLE NO: 1-B
DEPTH : 6.Ø m

PROFILE			DUNE CROSS SECTION		
Sample No		Geology			
	Ø.Ø	Gypsite.	Height	:	m
	|		Width Crest	:	m
	1.2		Profile	:	m
1B-2	1.2	Brown to yellow	Area gypsite	:	m^2
	|	gyps/arenite			
	4.3		Area g/arenite	:	m^2
	4.3	Brown to green			
	|	sandy clay as	Vol. gypsite	:	m^3
	6.Ø	in hole 1.			
			Vol. g/arenite	:	m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
1B-2	1.2-4.3	3.1	93.Ø	2.29	1.57	2.97	99.83

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: Sample 1B-2 damp.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: A LINE 1

HOLE NO: 1-C
DEPTH : 3.Ø m

PROFILE			DUNE CROSS SECTION			
Sample No		Geology				
1C-1	Ø.Ø	Pale grey wet	Height		:	m
	|	semi liquid gyps/	Width	Crest	:	m
	1.7	arenite and		Profile	:	m
		maybe clay.				
1C-2	1.7	As above but				
	|	brown colour.	Area g/arenite		:	m^2
	2.7	Mainly clay.				
	2.7	Grey green clay.	Vol. gypsite		:	m^3
	|					
	3.Ø		Vol. g/arenite		:	m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
1C-1	Ø.Ø-1.7	1.7	83.2	6.84	1.92	6.28	98.24
1C-2	1.7-2.7	1.Ø	77.3	7.31	2.41	9.9Ø	96.92

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT:

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: A LINE 1

HOLE NO: 1-D
DEPTH : 4.5 m

PROFILE			DUNE CROSS SECTION		
Sample No		Geology			
1D-1	Ø.Ø	Clean white gyps/	Height	:	m
	|	arenite.	Width Crest	:	m
	Ø.3		Profile	:	m
1D-2	Ø.3	Brown gyps/	Area gypsite	:	m^2
	|	arenite.			
	Ø.9		Area g/arenite	:	m^2
1D-3	Ø.9	Damp pale grey			
	|	fairly coarse	Vol. gypsite	:	m^3
	2.7	gyps/arenite.			
			Vol. g/arenite	:	m^3
1D-4	2.7	Green grey sandy			
	|	gyps/arenite.			
	4.5	Clay.			

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
1D-1	Ø.Ø-Ø.3	Ø.3	98.9	1.79	Ø.21	Ø.47	1Ø1.37
1D-2	Ø.3-Ø.9	Ø.6	96.4	1.91	Ø.7Ø	Ø.72	99.73
1D-3	Ø.9-2.7	1.8	97.2	2.Ø5	1.19	Ø.68	1Ø1.12
1D-4	2.7-4.5	1.8	88.4	1.86	1.99	4.57	96.82

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT:

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: A LINE 2

HOLE NO: 2-A
DEPTH : 3.0 m

PROFILE			DUNE CROSS SECTION		
Sample No		Geology			
2A-1	Ø.Ø | Ø.7	Dirty brown grey sandy gypsite.	Height	:	m
			Width Crest	:	m
			Profile	:	m
	Ø.7 | 3.Ø	Brown sandy clay progressing to wet sandy mud.	Area gypsite	:	m^2
			Area g/arenite	:	m^2
			Vol. gypsite	:	m^3
			Vol. g/arenite	:	m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
2A-1	Ø.Ø-Ø.7	Ø.7	79.1	6.39	2.48	5.88	93.85

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT:

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: A LINE 2

HOLE NO: 2-B
DEPTH : 4.5 m

PROFILE			DUNE CROSS SECTION		
Sample No		Geology			
	Ø.Ø	Dirty brown contaminated gypsite.	Height	:	m
	Ø.2		Width Crest	:	m
			Profile	:	m
2B-1	Ø.2	Brown gyps/arenite. First 10cm very wet.	Area gypsite	:	m^2
	1.Ø		Area g/arenite	:	m^2
2B-2	1.Ø	Pale yellow fine to medium grained gyps/arenite. Good quality.	Vol. gypsite	:	m^3
	2.5		Vol. g/arenite	:	m^3
2B-3	2.5	Very soft, wet sandy clay primarily gyps/arenite.			
	4.Ø				
	4.Ø	Stiff grey green clay.			
	4.5				

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
2B-1	Ø.2-1.Ø	Ø.8	97.1	1.1Ø	Ø.57	Ø.75	99.52
2B-2	1.Ø-2.5	1.5	94.4	1.52	Ø.66	3.21	99.79
2B-3	2.5-4.Ø	1.5	64.1	16.9	2.46	15.4	98.86

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: Main dune. Note increase in $CaCO_3$ and NaCl at bottom of hole.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: A LINE 2

HOLE NO: 2-C
DEPTH : 3.Ø m

PROFILE			DUNE CROSS SECTION		
Sample No		Geology			
2C-1	Ø.Ø | 1.2	Grey gritty gyps/arenite going to very soft and watery gyps/arenite.	Height	:	m
			Width Crest	:	m
			Profile	:	m
			Area gypsite	:	m^2
	1.2 | 1.8	Hard layer.	Area g/arenite	:	m^2
			Vol. gypsite	:	m^3
2C-2	1.8 | 2.6	Very soft, water-logged gritty brown (light) mud.	Vol. g/arenite	:	m^3
2C-3	2.6 | 3.Ø	Grey green mud.			

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
2C-1	Ø.Ø-1.2	1.2	86.8	6.48	2.67	3.75	99.7Ø
2C-2	1.8-2.6	Ø.8	52.7	12.Ø	5.96	2Ø.Ø	9Ø.66
2C-3	2.6-3.Ø	Ø.4	56.9	1Ø.4	5.66	17.2	9Ø.16

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: West shoreline not in gyps/arenite on surface.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: A LINE 3

HOLE NO: 3-A
DEPTH : 4.5 m

PROFILE			DUNE CROSS SECTION		
Sample No		Geology			
3A-1	Ø.Ø | Ø.8	Impure gypsite.	Height Width Crest Profile	: : :	m m m
3A-2	Ø.8 | 1.5	Brown impure gyps/arenite.	Area gypsite	:	m^2
			Area g/arenite	:	m^2
3A-3	1.5 | 3.3	Fine grained pale yellow gyps/ arenite.	Vol. gypsite	:	m^3
			Vol. g/arenite	:	m^3
3A-4	3.3 | 4.5	Pale yellow clay but may be gyps/ iferous.			

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
90 - 100%		
80 - 90 %		
70 - 80 %		

COMMENT: On subsidiary dune along east shore line surface is gypsite.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: A LINE 3

HOLE NO: 3-B
DEPTH : 4.5 m

PROFILE

Sample No		Geology
3B-1	Ø.Ø	Dirty brown impure gypsite.
	Ø.7	
3B-2	Ø.7	Brown to yellow gyps/arenite.
	2.5	
	2.5	Heavy red mud. Gritty appear-
	4.2	ance.
	4.2	Green gyps/ arenite.
	4.5	

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: Near crest of dune on gypsite.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: A LINE 3

HOLE NO: 3-C
DEPTH : 4.5 m

PROFILE			DUNE CROSS SECTION		
Sample No		Geology			
3C-1	Ø.Ø | 1.5	Grey gritty gyps/arenite. Dry to 1.5.	Height	:	m
			Width Crest	:	m
			Profile	:	m
3C-2	1.5 | 3.9	As above but wet and progressing to a smooth water logged clay? with apparent grains and green grey colour.	Area gypsite	:	m^2
			Area g/arenite	:	m^2
			Vol. gypsite	:	m^3
	3.9 | 4.5	Green grey clay.	Vol. g/arenite	:	m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
3C-1	Ø.Ø-1.5	1.5	9Ø.6	2.83	2.4Ø	3.27	99.1Ø
3C-2	1.5-3.9	2.4	83.1	1.59	3.36	12.1	1ØØ.15

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: West shoreline in small bank of gyps/arenite.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: A LINE 3

HOLE NO: 3-D
DEPTH : 1.Ø m

PROFILE		DUNE CROSS SECTION	
Sample No	Geology		
Ø.Ø	Test hole. About Ø.5 of brown gyps/arenite then yellow. No sample.	Height :	m
1.Ø		Width Crest :	m
		Profile :	m
		Area gypsite :	m^2
		Area g/arenite :	m^2
		Vol. gypsite :	m^3
		Vol. g/arenite :	m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On dune with gyps/arenite on surface.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: A LINE 3A

HOLE NO: 3A-A
DEPTH : 3.0 m

PROFILE

Sample No		Geology
3A-1	Ø.Ø	Dark grey to black soil clayey
	Ø.7	at end.
	Ø.7	Hard layer possibly
	1.Ø	calcrete.
	1.Ø	Very light brown to grey water-
	3.Ø	logged clay, gets stiffer with green colouration at depth.

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
3A-1	Ø.Ø-Ø.7	Ø.7	23.2	36.83	7.26	24.32	91.61

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: Hole on flat, east of dunes.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: A LINE 3A

HOLE NO: 3A-B
DEPTH : 7.5 m

PROFILE

Sample No		Geology
3AB-1	Ø.Ø	White gypsite.
	Ø.8	
	Ø.8	Gypsite and fine silica. Dry,
	1.5	contaminated.
3AB-2	1.5	Pale yellow fine grained gyps/
	5.8	arenite.
	5.8	Heavy green grey gypsiferous clay.
	7.5	

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
3AB-1	Ø.Ø-1.5	1.5	9Ø.7	7.91	1.Ø3	3.Ø2	1Ø2.66
3AB-2	1.5-5.8	4.3	92.6	3.21	1.25	1.57	98.63

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On west side of dune ± south of line.
High $CaCO_3$ content.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: A LINE 3A

HOLE NO: 3A-C
DEPTH : 7.5 m

PROFILE			DUNE CROSS SECTION		
Sample No		Geology			
3AC-1	Ø.Ø	Brown contaminated gyps/	Height	:	m
	1.5	arenite.	Width Crest	:	m
			Profile	:	m
3AC-2	1.5	Very white to pale yellow gyps/	Area gypsite	:	m^2
	2.5	arenite.	Area g/arenite	:	m^2
3AC-3	2.5	Brown gyps/ arenite progressing to stiff dry	Vol. gypsite	:	m^3
	5.5	gypsiferous clay.	Vol. g/arenite	:	m^3
3AC-4	5.5	Pale brown slightly clayey			
	7.Ø	gyps/arenite.			
	7.Ø	Stiff grey green to brown clay			
	7.5				

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
3AC-1	Ø.Ø-1.5	1.5	92.Ø	1.95	Ø.69	Ø.67	95.31
3AC-2	1.5-2.5	1.Ø	99.5	1.94	Ø.25	Ø.36	1Ø2.Ø5
3AC-3	2.5-5.5	3.Ø	95.2	2.73	Ø.79	1.35	1ØØ.Ø7
3AC-4	5.5-7.Ø	1.5	96.2	2.48	Ø.71	Ø.84	1ØØ.23

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On top of west dune 16m south of line.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: D LINE 3A

HOLE NO: 3A-D
DEPTH : 3.Ø m

PROFILE

Sample No		Geology
3AD-1	Ø.Ø | Ø.6	Dry clean gyps/ arenite.
	Ø.6 | 3.Ø	Pale kakhi to grey green clay with gypsum. Has a gritty look. Progress into a heavy clay.

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
3AD-1	Ø.Ø-Ø.6	Ø.6	96.4	3.86	Ø.35	1.21	1Ø1.82

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On western shore line on gyps/arenite.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: A LINE 4

HOLE NO: 4-A
DEPTH : 3.Ø m

PROFILE			DUNE CROSS SECTION		
Sample No		Geology			
4A-1	Ø.Ø | Ø.5	Grey gypsiferous soil.	Height	:	m
			Width Crest	:	m
			Profile	:	m
	Ø.5 | 2.6	Pale grey highly liquid gypsite, mud slight grittyness.	Area gypsite	:	m^2
			Area g/arenite	:	m^2
	2.6 | 3.Ø	As above but mud stiffer and has grey green colour.	Vol. gypsite	:	m^3
			Vol. g/arenite	:	m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
4A-1	Ø.Ø-Ø.5	Ø.5	51.3	15.9	5.58	16.Ø	88.78

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On flat, east of dune.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: A LINE 4

HOLE NO: 4-B
DEPTH : 6.Ø m

PROFILE

Sample No		Geology
	Ø.Ø	Dark brown gyps/
	|	iferous soil.
	Ø.5	
4B-1	Ø.5	Cream and brown
	|	impure gypsite.
	Ø.9	
4B-2	Ø.9	Pale yellow
	|	gyps/arenite.
	4.Ø	
4B-3	4.Ø	As above but
	|	damp.
	4.7	
4B-4	4.7	Pale yellow gyps/
	|	iferous clay.
	6.Ø	

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: Hole B on eastern gypsite dune.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: A LINE 4

HOLE NO: 4-C
DEPTH : 4.5 m

PROFILE		DUNE CROSS SECTION	
Sample No	Geology		
Ø.Ø | Ø.9	Dark brown soil to brown clayey soil.	Height : Width Crest : Profile :	m m m
Ø.9 | 1.3	Pale brown calcrete (decomposed) maybe minor gypsum. Hard layer at 1.3.	Area gypsite : Area g/arenite :	m^2 m^2
1.3 | 1.7	Red brown heavy clay.	Vol. gypsite : Vol. g/arenite :	m^3 m^3
4C-1 1.7 | 3.7	Pale yellow gyps/arenite in clay.		
3.7 | 4.4	Pale green grey gypsiferous clay as in hole B.		
4.4 | 4.5	Heavy brown clay.		

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: Between dunes starting in soil.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: D LINE 4

HOLE NO: 4-D
DEPTH : 9.Ø m

PROFILE			DUNE CROSS SECTION			
Sample No		Geology				
4D-1	Ø.Ø | 2.5	Brown white contaminated gyps/arenite.	Height	:		m
			Width Crest	:		m
			Profile	:		m
4D-2	2.5 | 5.2	White compacted gypsite. Sample contaminated by brown material from sides of hole.	Area gypsite	:		m^2
			Area g/arenite	:		m^2
			Vol. gypsite	:		m^3
4D-3	5.2 | 6.8	Brown yellow contaminated gyps/ arenite	Vol. g/arenite	:		m^3
4D-4	6.8 | 9.Ø	Wet clayey green gyps/arenite. Getting progressively more clay.				

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
4D-1	Ø.Ø-2.5	2.5	94.6	1.49	Ø.58	1.Ø6	97.73
4D-2	2.5-5.2	2.7	94.2	2.3Ø	1.1Ø	1.19	98.79
4D-3	5.2-6.8	1.6	97.1	1.13	Ø.9Ø	1.33	1ØØ.46
4D-4	6.8-8.2	1.4	95.Ø	1.84	2.28	1.29	1ØØ.41

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On top of western dune ±15m north of line.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: A LINE 5

HOLE NO: 5-A
DEPTH : 3.Ø m

PROFILE			DUNE CROSS SECTION		
Sample No		Geology			
	Ø.Ø | Ø.4	Dirty comtanim-ated gypsite.	Height Width Crest Profile	: : :	m m m
5A-1	Ø.4 | 1.2	Pale to dark yellow gyps/arenite.	Area gypsite	:	m^2
			Area g/arenite	:	m^2
	1.2 | 1.5	Dark brown mud with sand (silica).	Vol. gypsite	:	m^3
			Vol. g/arenite	:	m^3
	1.5 | 3.Ø	Pale green grey clay. Heavy and sticky.			

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
5A-1	Ø.4-1.2	Ø.8	94.6	3.26	Ø.77	3.ØØ	1Ø1.63

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT:

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: A LINE 5

HOLE NO: 5-B
DEPTH : 1.5 m

PROFILE

Sample No		Geology
	Ø.Ø	Dirty gypsite.
	Ø.2	
5B-1	Ø.2	Brown gyps/ arenite.
	1.Ø	
	1.Ø	Heavy brown silica clay.
	1.5	

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
5B-1	0.2-1.0	0.8	97.Ø	2.11	Ø.52	1.ØØ	1ØØ.63

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On western shore line in small dune on gypsite.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: A LINE 5

HOLE NO: 5-C
DEPTH : 3.0 m

PROFILE			DUNE CROSS SECTION			
Sample No		Geology				
5C-1	Ø.Ø | Ø.5	Pale cream to yellow gyps/ arenite.	Height	:		m
			Width	Crest :		m
				Profile :		m
5C-2	Ø.5 | 3.Ø	Heavy brown mud turning green at ±1.8-3.Ø.	Area gypsite	:		m^2
			Area g/arenite	:		m^2
			Vol. gypsite	:		m^3
			Vol. g/arenite	:		m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
5C-1	Ø.Ø-Ø.5	Ø.5	83.Ø	8.54	1.89	2.83	96.26
5C-2	Ø.5-1.2	Ø.7	69.4	7.83	3.92	14.59	95.74

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On western shore line.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: B LINE 6

HOLE NO: 6-A
DEPTH : 1.5 m

PROFILE

Sample No	Geology
Ø.Ø | 1.5	Dry black clay on surface to heavy grey black clay.

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On flat east of dune.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: B LINE 6

HOLE NO: 6-B
DEPTH : 7.5 m

PROFILE

Sample No		Geology
6B-1	Ø.Ø | Ø.6	Cream gypsite.
6B-2	Ø.6 | 3.Ø	Fine to medium grained gyps/arenite. Change in colour to pale brown at ±2.5m. May be gyps/arenite or due to dampness.
6B-3	3.Ø | 5.Ø	Pale yellow brown gyps/arenite slightly sticky and wet.
6B-4	5.Ø | 7.5	Heavy sticky clay Very wet below 6m. Carries high percentage carbonate. Karkhi coloured.

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
6B-1	Ø.Ø-Ø.6	Ø.6	95.4	3.24	1.Ø9	1.22	1ØØ.95
6B-2	Ø.6-3.Ø	2.4	87.1	6.62	Ø.66	4.48	98.86
6B-3	3.Ø-5.Ø	2.Ø	83.6	9.93	1.88	4.67	1ØØ.Ø8
6B-4	5.Ø-7.5	2.5	69.2	11.Ø8	3.16	12.28	95.72

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On top of east dune 8m south of line. On gypsite.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: B LINE 6

HOLE NO: 6-C
DEPTH : 4.5 m

PROFILE		DUNE CROSS SECTION		
Sample No	Geology			
Ø.Ø | Ø.7	Dark red brown soil.	Height Width Crest Profile	: : :	m m m
Ø.7 | 3.4	Red brown clay with grains of silica, carbonate and minor gypsum.	Area gypsite Area g/arenite	: :	m^2 m^2
3.4 | 3.7	Layer of grey gyps/arenite.	Vol. gypsite Vol. g/arenite	: :	m^3 m^3
3.7 | 4.5	Heavy kakhi clay.			

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: Between east and wets dunes. Next to trench. Slightly downer elevation. On gyps/arenite.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: B LINE 6

HOLE NO: 6-D
DEPTH : 6.Ø m

PROFILE			DUNE CROSS SECTION
Sample No		Geology	
6D-1	Ø.Ø	Impure mixture	Height : m
	|	of gypsite and	Width Crest : m
	Ø.9	gyps/arenite.	Profile : m
	Ø.9	Pale, cream	Area gypsite : m^2
	|	gypsite, sightly	
	1.5	damp.	Area g/arenite : m^2
	1.5	Layer of gypsif-	
	|	erous clay.	Vol. gypsite : m^3
	1.8		
			Vol. g/arenite : m^3
6D-2	1.8	Fine grained pale	
	|	yellow gyps/	
	4.5	arenite.	
6D-5	4.5	Green kakhi	
	|	gypsiferous clay.	
	5.8		
6D-6	5.8	Suggestion of	
	|	gyps/arenite.	
	6.Ø	Slightly clayey.	

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
6D-1	Ø.Ø-Ø.9	Ø.9	93.Ø	5.16	1.29	2.59	1Ø2.Ø4
6D-2	Ø.9-1.5	Ø.6	93.4	5.73	1.87	2.Ø4	1Ø3.Ø4

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On east dune on gypsite.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: B LINE 6

HOLE NO: 6-E
DEPTH : 3.Ø m

PROFILE

Sample No		Geology
6E-1	Ø.Ø | Ø.6	Grey damp gyps/ arenite.
6E-2	Ø.6 | 1.7	Pale brown gyps/ arenite.
	1.7 | 3.0	Green kakhi gypsiferous clay.

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
6E-1	Ø.Ø-Ø.6	Ø.6	61.7	22.52	2.2Ø	11.76	98.18
6E-2	Ø.6-1.7	1.1	66.Ø	15.45	2.67	13.26	97.38

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On shoreline west of dunes.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: B LINE 7

HOLE NO: 7-A
DEPTH : 4.5 m

PROFILE			DUNE CROSS SECTION			
Sample No		Geology				
7A-1	0.0	Pale yellow gyps/	Height	:		m
	|	arenite and	Width Crest	:		m
	1.5	gypsite.	Profile	:		m
7A-2	1.5	Pale yellow gyps/	Area gypsite	:		m^2
	|	arenite slightly				
	3.0	damp.	Area g/arenite	:		m^2
7A-3	3.0	Grey gyps/arenite				
	|	with some clay.	Vol. gypsite	:		m^3
	3.7					
			Vol. g/arenite	:		m^3
	3.7	Heavy brown to				
	|	grey clay.				
	4.5					

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
7A-1	0.0-1.5	1.5	91.6	5.34	0.45	2.90	100.29
7A-2	1.5-3.0	1.5	84.9	10.67	0.90	5.34	101.81
7A-3	3.0-3.7	0.7	70.4	15.66	2.53	8.70	97.29

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
90 - 100%		
80 - 90 %		
70 - 80 %		

COMMENT: On east side of dune small platform above low platform. On gypsite.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: B LINE 7

HOLE NO: 7-B
DEPTH : 7.5 m

PROFILE

Sample No		Geology
7B-1	Ø.Ø	Brown gypsite
	|	and soil.
	1.1	
7B-2	1.1	Fine grained pale
	|	yellow gyps/
	1.6	arenite.
7B-3	1.6	Contaminated
	|	brown to pink
	3.6	gypsite.
7B-4	3.6	Medium grained
	|	gyps/arenite.
	4.8	Dark brown colour
	4.8	Heavy clay
	|	
	7.5	

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
7B-1	Ø.Ø-1.1	1.1	95.Ø	4.51	Ø.85	1.61	1Ø1.97
7B-2	1.1-1.6	Ø.5	97.9	2.65	Ø.42	1.Ø3	1Ø2.ØØ
7B-3	1.6-3.6	2.Ø	91.7	4.92	1.26	2.6Ø	1ØØ.48
7B-4	3.6-4.8	1.2	92.Ø	14.Ø8	1.64	3.36	111.Ø8

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On top of west side of dune. On gypsite.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: B LINE 7

HOLE NO: 7-C
DEPTH : 3.Ø m

PROFILE			DUNE CROSS SECTION		
Sample No		Geology			
	Ø.Ø | Ø.3	Brown contaminated gyps/ arenite.	Height Width Crest Profile	: : :	m m m
7C-1	Ø.3 | 1.6	Pale grey to yellow gyps/ arenite.	Area gypsite Area g/arenite	: :	m^2 m^2
7C-2	1.6 | 3.Ø	Kakhi gypsiferous clay.	Vol. gypsite Vol. g/arenite	: :	m^3 m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
7C-1	Ø.3-1.6	1.3	75.Ø	8.25	1.92	1Ø.Ø5	95.22
7C-2	1.6-3.Ø	1.4	72.4	8.49	4.23	11.Ø	96.12

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On shoreline west of dunes.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: B LINE 8

HOLE NO: 8-A
DEPTH : 4.5 m

PROFILE

Sample No		Geology
8A-1	Ø.Ø | 1.6	Pale yellow gyps/arenite. Has gypsite mixed with it from 1.Øm
8A-2	1.6 | 3.1	Damp clayey gyps/arenite. Water at 3.Øm.
	3.1 | 4.5	Heavy kakhi green clay. Has carbonate.

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
8A-1	Ø.Ø-1.6	1.6	89.4	14.1	Ø.72	3.Ø9	1Ø7.31
8A-2	1.6-3.1	1.5	72.Ø	13.4	2.Ø4	7.5Ø	94.94

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On low platform dune.
Poor assay balance for sample 8A-1.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: B LINE 8

HOLE NO: 8-B
DEPTH : 6.Ø m

PROFILE

Sample No		Geology
8B-1	Ø.Ø | 1.2	Pale yellow gyps/arenite with brown contamination over last 3Øcm.
8B-2	1.2 | 3.3	Pale pink gypsite Gets progressively damp. Red clay layer 3Øcm mud from 2.1 to 2.4.
8B-3	3.3 | 4.8	Pale yellow medium grained gyps/arenite.
	4.8 | 6.Ø	Heavy kakhi green clay.

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
8B-1	Ø.Ø-1.2	1.2	96.8	3.11	Ø.41	1.39	1Ø1.71
8B-2	1.2-3.3	2.1	95.1	5.17	Ø.41	1.27	1Ø1.95
8B-3	3.3-4.8	1.5	95.1	2.44	Ø.62	1.87	1ØØ.Ø3

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On west dune just below crest.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: B LINE 8

HOLE NO: 8-C
DEPTH : 4.5 m

PROFILE			DUNE CROSS SECTION		
Sample No		Geology			
8C-1	Ø.Ø | 1.7	Pale grey gyps/ arenite. Wet from Ø.7m.	Height	:	m
			Width Crest	:	m
			Profile	:	m
8C-2	1.7 | 4.3	Green kakhi gypsiferous clay.	Area gypsite	:	m^2
			Area g/arenite	:	m^2
8C-3	4.3 | 4.5	Sandy clay possibly with gyps/arenite.	Vol. gypsite	:	m^3
			Vol. g/arenite	:	m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
8C-1	Ø.Ø-1.7	1.7	89.9	26.79	1.47	4.3Ø	122.46
8C-2	1.7-4.3	2.6	48.1	1.81	5.18	16.2	71.29
8C-3	4.3-4.5	Ø.2	27.2	53.9	4.52	1Ø.3	95.92

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On shoreline west of dunes. Note poor assay balance for samples 8C-1 and 8C-2.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: B LINE 9

HOLE NO: 9-A
DEPTH : 4.2 m

PROFILE

Sample No		Geology
9A-1	Ø.Ø | Ø.5	Cream gypsite.
9A-2	Ø.5 | 1.7	Medium to fine grained pale yellow gyps/ arenite.
9A-3	1.7 | 2.5	Wet gypsite and gyps/arenite. Some clay
	2.5 | 4.2	Green kakhi clay Heavy.
	4.2	Green clayey material but appears to have high gyps/arenite content.

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
9A-1	Ø.Ø-Ø.5	Ø.5	89.4	6.79	1.59	2.43	1ØØ.21
9A-2	Ø.5-1.7	1.2	82.5	11.76	Ø.57	4.38	99.21
9A-3	1.7-2.5	Ø.8	74.9	17.6	1.Ø4	5.58	99.12

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On east side of dune. Not platform area.
On gypsite.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: B LINE 9

HOLE NO: 9-B
DEPTH : 6.Ø m

PROFILE			DUNE CROSS SECTION
Sample No		Geology	
	Ø.Ø	Soil and gyps/	Height : m
	|	arenite. Clean	Width Crest : m
	Ø.4	gyps/arenite is	Profile : m
		only 15cm thick.	
		Then soil.	Area gypsite : m^2
9B-1	Ø.4	Gypsite and gyps/	Area g/arenite : m^2
	|	arenite. Pale	
	1.5	yellow.	Vol. gypsite : m^3
	1.5	Layer of brown	
	|	clay.	Vol. g/arenite : m^3
	2.1		
	2.1	Fine grained	
	|	pale yellow	
	4.Ø	gyps/arenite.	
	4.Ø	Heavy green clay.	
	|		
	6.Ø		

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
9B-1	Ø.4-1.5	1.1	98.9	2.74	Ø.27	Ø.73	1Ø2.64
9B-2	2.1-4.Ø	1.9	85.1	7.73	1.9Ø	3.58	98.31

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: Top of west side of dune. On clean gyps/arenite.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: B LINE 10

HOLE NO: 10-A
DEPTH : 3.6 m

PROFILE			DUNE CROSS SECTION		
Sample No		Geology			
10A-1	0.0	Very pale yellow	Height	:	m
	|	to white, very	Width Crest	:	m
	2.0	fine grained	Profile	:	m
		gyps/arenite			
			Area gypsite	:	m^2
10A-2	2.0	Dark brown			
	|	gypsum and	Area g/arenite	:	m^2
	3.6	silica sand.			
		Increasing clay			
		from 2.6m.	Vol. gypsite	:	m^3
	3.6	Could not pene-	Vol. g/arenite	:	m^3
		trate. Probably			
		calcrete.			

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
10A-1	0.0-2.0	2.0	98.0	1.02	0.15	0.64	99.81
10A-2	2.0-3.6	1.6	71.1	9.78	0.35	17.0	98.23

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
90 - 100%		
80 - 90 %		
70 - 80 %		

COMMENT: On top of east dunes, W end at S end of Dune B.
On gypsite.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: B LINE 10

HOLE NO: 10-B
DEPTH : 3.0 m

PROFILE

Sample No		Geology
10B-1	0.0	Clean red to fine grained gyps/arenite with thin layer of gypsum at base.
	0.6	
	0.6	Heavy red brown clay. Changing to grey towards bottom of hole.
	3.0	

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
10B-1	0.0-0.6	0.6	71.7	4.89	0.42	3.45	80.46

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
90 - 100%		
80 - 90 %		
70 - 80 %		

COMMENT: On flat next to channel along high dune. Low assay balance.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: B LINE 10

HOLE NO: 10-C
DEPTH : 4.5 m

PROFILE			DUNE CROSS SECTION		
Sample No		Geology			
10C-1	0.0	Brown gyps/	Height	:	m
	|	arenite	Width Crest	:	m
	0.8		Profile	:	m
	0.8	Brown soil and	Area gypsite	:	m^2
	|	some clay.			
	1.3		Area g/arenite	:	m^2
10C-2	1.3	Brown gyps/			
	|	arenite getting	Vol. gypsite	:	m^3
	3.3	progressively			
		wet.	Vol. g/arenite	:	m^3
	3.3	Hard drilling.			
	|	Little return on			
	4.5	rods except for			
		two patches of			
		very hard lay-			
		ered green and			
		brown clay. May			
		be decaying			
		bedrock but			
		unlikely			

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
10C-1	0.0-0.8	0.8	88.8	6.30	0.72	3.24	99.06
10C-2	1.3-3.3	2.0	93.4	4.40	1.46	1.74	101.0

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
90 - 100%		
80 - 90 %		
70 - 80 %		

COMMENT: On west side of main dune system.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: B LINE 11

HOLE NO: 11A
DEPTH : 2.5 m

PROFILE

Sample No		Geology
11A-1	Ø.Ø	20cm of white gypsite then
	1.5	very fine grained pale yellow gyps/arenite as in 1ØC-1.
	1.5	Dark brown gypsum and silica with
	2.2	increasing clay.
	2.2	Heavy red clay.
	2.5	

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
11A-1	Ø.Ø-1.5	1.5	92.9	5.ØØ	Ø.22	2.37	1ØØ.49

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: Bearing of line 1ØØ°M Zero point ±18Øm on bearing 215°M from hole 1ØC.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: B LINE 11

HOLE NO: 11B
DEPTH : 4.5 m

PROFILE

Sample No		Geology
	Ø.Ø	Soil and gypsum.
	Ø.8	
	(Ø.8	Pale yellow gyps/
	(|	arenite. Impure
	(3.Ø	bank of 2Øcm at
	(	1.1m. Purer with
	(	depth.
	(	
11B-1	(3.Ø	Compacted and
	(|	damp contaminated
	(4.Ø	gyps/arenite with
	(	increasing clay
	(	content.
	4.Ø	Heavy red clay
	4.5	

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
11B-1	Ø.8-4.Ø	3.2	86.7	5.8Ø	Ø.23	3.14	95.87

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On top of west dune.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: B LINE 12

HOLE NO: 12A
DEPTH : 5.5 m

PROFILE

Sample No		Geology
	Ø.Ø	Contaminated gypsite. Soil and flour gypsum.
	Ø.6	
12A-1	Ø.6	White gypsite.
	1.7	
	(1.7	Yellow seed gyps/ arenite.
	(2.1	
12A-2	(2.1	As above but mixed with damp gypsite. From 3.Ø good clean yellow gyps/ arenite.
	(4.5	
	4.5	Heavy grey clay
	5.5	
	5.5	Could not penetrate. Probably calcrete. Calcrete on shoreline ±3ØmN

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
12A-1	Ø.6-1.7	1.1	9Ø.6	5.88	Ø.14	2.11	98.73
12A-2	2.1-4.5	2.4	96.3	3.85	Ø.52	1.4Ø	1Ø2.Ø7

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: 2ØØm along dune from 11A. Bearing approx. 45°. On top of dune on gypsite. Continuation of dune with base station of line 11.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: B LINE 13

HOLE NO: 13A
DEPTH : 1.5 m

PROFILE

Sample No		Geology
13A-1	Ø.Ø	Clean pale yellow gyps/ arenite.
	Ø.3	
	Ø.3	Contaminated soil/gypsite.
	Ø.9	
13A-2	Ø.9	Damp pale pink gypsite.
	1.2	
	1.2	Very stiff pale red to orange clay.
	1.5	

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
13A-1	Ø.Ø-Ø.3	Ø.3	76.4	1Ø.4	Ø.72	1Ø.61	98.13
13A-2	Ø.9-1.2	Ø.3	81.6	1Ø.77	Ø.24	4.89	97.5Ø

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On top of dune on gyps/arenite. Dune located at southern end of Dune B. Note high $CaCO_3$.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: B LINE 13

HOLE NO: 13B
DEPTH : 7.5 m

PROFILE			DUNE CROSS SECTION		
Sample No		Geology			
13B-1	Ø.Ø | 1.1	White gypsite.	Height Width Crest Profile	: : :	m m m
13B-2	1.1 | 5.7	Pale brown gyps/arenite progressing to pale yellow at ±2.5m	Area gypsite Area g/arenite	: :	m^2 m^2
13B-3	5.7 | 7.Ø	Brown gypsum and silica with some clay.	Vol. gypsite Vol. g/arenite	: :	m^3 m^3
	7.Ø | 7.5	Heavy red mud. Dry.			

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
13B-1	Ø.Ø-1.1	1.1	95.5	3.Ø6	Ø.26	1.45	1ØØ.27
13B-2	1.1-5.7	4.6	95.7	14.51	Ø.34	2.18	112.73
13B-3	5.7-7.Ø	1.3	7Ø.9	12.54	Ø.7Ø	9.78	93.92

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On same dune ±65Øm from 13A near N end. Poor assay balance. Note high $CaCO_3$ below 5.7m.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: B LINE 13

HOLE NO: 13C
DEPTH : 7.Ø m

PROFILE			DUNE CROSS SECTION		
Sample No		Geology			
13C-1	Ø.Ø | 2.6	White to pale pink gypsite.	Height	:	m
			Width Crest	:	m
			Profile	:	m
13C-2	2.6 | 4.8	Pale brown gyps/arenite. Grain size various from fine to medium Ø.3m secton fairly hard vein-cemented.	Area gypsite	:	m^2
			Area g/arenite	:	m^2
			Vol. gypsite	:	m^3
			Vol. g/arenite	:	m^3
13C-3	4.8 | 7.Ø	Compacted pale pink gypsite with some gyps/arenite			
	7.Ø	Scree.			

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
13C-1	Ø.Ø-2.6	2.6	96.Ø	2.22	Ø.14	2.56	1ØØ.92
13C-2	2.6.4.8	2.2	97.7	1.71	Ø.13	1.52	1Ø1.Ø6
13C-3	4.8-7.Ø	2.2	96.2	2.51	Ø.21	1.49	1ØØ.41

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: Channel down face.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: B LINE 14

HOLE NO: 14A
DEPTH : 3.Ø m

PROFILE			DUNE CROSS SECTION		
Sample No		Geology			
14A-1	Ø.Ø | Ø.8	Fine grained yellow gyps/ arenite.	Height Width Crest Profile	: : :	m m m
	Ø.8 | 1.7	As above but damp and sightly clayey.	Area gypsite Area g/arenite	: :	m^2 m^2
	1.7 | 3.Ø	Soft water logged light brown clay.	Vol. gypsite Vol. g/arenite	: :	m^3 m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
14A-1	Ø.Ø-Ø.8	Ø.8	88.4	6.Ø8	1.Ø4	4.26	99.78

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On N continuaton of dune which ends 1ØØm south. Dune is where hole 6A is. High $CaCO_3$.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: B LINE 14

HOLE NO: 14B
DEPTH : 3.Ø m

PROFILE			DUNE CROSS SECTION	
Sample No		Geology		
	Ø.Ø	Soil.		
	Ø.1		Profile :	m
14B-1	Ø.1	Pale yellow almost white	Area gypsite :	m^2
	1.6	gyps/arenite 20cm contaminated band at 3Øcm. Damp at 1.3m.	Area g/arenite :	m^2
			Vol. gypsite :	m^3
14B-2	1.6	Soft clayey gypsiferous mud.	Vol. g/arenite :	m^3
	3.Ø			

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
14B-1	Ø.1-1.6	1.5	95.9	6.84	Ø.47	Ø.99	1Ø4.2Ø
14B-2	1.6-3.Ø	1.4	51.8	21.5	4.39	16.1	93.79

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On west dune. Low and on gyps/arenite. High $CaCO_3$ and NaCl.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: B LINE 14

HOLE NO: 14C
DEPTH : 3.Ø m

PROFILE

Sample No		Geology
14C-1	Ø.Ø | Ø.3	Slightly damp fairly coarse grained gyps/ arenite. Pale grey.
	Ø.3 | Ø.8	As above but wet.
	Ø.8 | 1.3	Gyps/arenite pale brown colour.
14C-2	1.3 | 3.Ø	Pale grey gypsiferous mud. Soft clayey as in 14B-2.

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
14C-1	Ø.Ø-Ø.3	Ø.3	71.7	7.81	2.33	1Ø.19	92.Ø3
14C-2	1.3-3.Ø	1.7	76.1	6.78	2.88	9.27	95.Ø3

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On lake shore west of dune. Surface gyps/arenite. High $CaCO_3$ and NaCl.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: I LINE 15

HOLE NO: 15A
DEPTH : 2.3 m

PROFILE

Sample No		Geology
15A-1	Ø.Ø	Thin surface layer of impure gypsum over gyps/arenite. Dark brown colour
	1.1	
15A-2	1.1	Pale yellow gyps/arenite.
	2.1	
	2.1	Gyps/arenite with clay.
	2.3	

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
15A-1	Ø.Ø-1.1	1.1	9Ø.5	2.23	3.15	4.4Ø	1ØØ.28
15A-2	1.1-2.1	1.Ø	95.Ø	2.Ø3	Ø.94	2.9Ø	1ØØ.87

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: Channel sample.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: I LINE 15

HOLE NO: 15B
DEPTH : 4.5 m

PROFILE

Sample No		Geology
15B-1	Ø.Ø	Brown damp
	|	contaminated
	1.5	gypsite.
15B-2	1.5	Brown wet gyps/
	|	arenite tending
	4.Ø	to grey with clay.
	4.Ø	Heavy grey clay.
	|	
	4.5	

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
15B-1	Ø.Ø.1.5	1.5	83.5	4.ØØ	3.Ø5	6.4Ø	96.95
15B-2	1.5-4.Ø	2.5	84.8	4.75	2.65	4.8Ø	97.ØØ

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On gypsite.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: I LINE 15

HOLE NO: 15C
DEPTH : 6.Ø m

PROFILE

Sample No		Geology
15C-1	Ø.Ø	Impure gypsite.
	|	Pale brown and
	1.3	damp.
15C-2	1.3	Small patch of
	|	yellow gyps/
	4.2	arenite then dark brown very wet gyps/arenite. Some gypsite interspersed.
15C-3	4.2	Dark grey gyps/
	|	iferous clay.
	4.9	Appears to have high % of gypsum. Fairly soft and water logged.
	4.9	Heavy grey clay,
	|	slow drilling.
	5.5	
	5.5	Grey green clay
	|	with small
	6.Ø	crystals of gypsum. Dark grey translucent up to 7cm long and tabular in habit.

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
15C-1	Ø.Ø.1.5	1.5	91.1	1.93	2.45	3.6Ø	99.Ø8
15C-2	1.5-4.2	2.7	93.5	1.82	2.2Ø	3.25	1ØØ.77
15C-3	4.2-4.9	Ø.7	74.2	4.1Ø	4.Ø5	13.3	95.65

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On gypsite.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: I LINE 15

HOLE NO: 15D
DEPTH : 3.1 m

PROFILE			DUNE CROSS SECTION		
Sample No		Geology			
15D-1	Ø.Ø	White to cream gypsite.	Height	:	m
	Ø.8		Width Crest	:	m
			Profile	:	m
15D-2	Ø.8	Red brown gyps/arenite proceeding to yellow after 2Øcms and then to red brown for last 25cm.	Area gypsite	:	m^2
	2.6		Area g/arenite	:	m^2
			Vol. gypsite	:	m^3
	2.6	Heavy red mud. Stiff.	Vol. g/arenite	:	m^3
	3.Ø				
	3.1	Calcrete could not penetrate.			

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
15D-1	Ø.Ø.Ø.8	Ø.8	85.4	5.25	2.Ø4	4.3Ø	96.99
15D-2	Ø.8-2.6	1.8	91.1	3.Ø5	Ø.82	4.6Ø	99.57

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On gypsite N end of bulge in dunes. Calcrete on shore line.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: I LINE 15

HOLE NO: 15E
DEPTH : 4.5 m

PROFILE			DUNE CROSS SECTION		
Sample No		Geology			
	Ø.Ø	Contaminated gypsite and red mud.	Height	:	m
	1.3		Width Crest	:	m
			Profile	:	m
15E-1	1.3	Pale yellow brown medium grained gyps/ arenite.	Area gypsite	:	m^2
	3.5		Area g/arenite	:	m^2
	3.5	Heavy green grey clay.	Vol. gypsite	:	m^3
	4.5		Vol. g/arenite	:	m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
15E-1	1.1-3.5	2.4	90.4	3.5Ø	1.89	3.55	99.34

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: 2ØØm along low east dune (platform) north of 15D.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: I LINE 15

HOLE NO: 15F
DEPTH : 3.Ø m

PROFILE

Sample No		Geology
	Ø.Ø	Impure gypsite.
	Ø.4	
	Ø.4	Dark grey brown gyps/arenite.
	1.Ø	
	1.Ø	Red clay.
	1.5	
15F-1	1.5	Red to grey gyps/arenite.
	2.Ø	
	2.Ø	Dark grey gyps/ iferous clay.
	2.6	
	2.6	Heavy grey clay.
	3.Ø	

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
15F-1	1.5-2.Ø	Ø.5	85.8	4.1Ø	2.24	5.85	97.99

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: 2ØØm N of 15D.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: I LINE 15

HOLE NO: 15G
DEPTH : 3.1 m

PROFILE			DUNE CROSS SECTION		
Sample No		Geology			
15G-1	Ø.Ø | 1.1	Grey impure gypsite.	Height	:	m
			Width Crest	:	m
			Profile	:	m
15G-2	1.1 | 2.2	Pale yellow to grey gyps/arenite increase in clay from 1.9.	Area gypsite	:	m^2
			Area g/arenite	:	m^2
	2.2 | 3.1	Red gypsiferous clay.	Vol. gypsite	:	m^3
			Vol. g/arenite	:	m^3
	3.1	Could not penetrate. Calcrete. None outcropping.			

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
15G-1	Ø.Ø-1.1	1.1	93.6	3.4Ø	2.Ø2	1.Ø2	1ØØ.Ø4
15G-2	1.1-2.2	1.1	94.1	3.4Ø	1.95	Ø.72	1ØØ.17

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On top of western most dune on bearing of 53° from 15G and opposite embayment between two main dunes.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: I LINE 15

HOLE NO: 15H
DEPTH : 2.9 m

PROFILE

Sample No		Geology
15H-1	Ø.Ø	Pale to dark brown gyps/
	1.5	arenite progressing to white and grey slightly clayey.
	1.5	Heavy grey green clay last Ø.5m
	2.9	has fragments and pebbles of calcrete.
		Could not penetrate beyond 2.9m Maybe calcrete but none outcropping.

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
15H-1	Ø.Ø-1.5	1.5	93.2	2.73	2.4Ø	1.51	99.84

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On platform east of westernmost dune at end of embayment.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: I LINE 15

HOLE NO: 15I
DEPTH : 4.5 m

PROFILE

Sample No		Geology
15I-1	Ø.Ø | Ø.9	Brown contaminated gypsite. Damp.
15I-2	Ø.9 | 1.5	Fine grain, very pale yellow, dry gyps/arenite.
15I-3	1.5 | 3.2	Compacted damp yellow gyps/arenite last 2Ø very wet.
	3.2 | 4.5	Green stiff clay. Evidence of black carbonaceous layers.

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
15I-1	Ø.Ø-Ø.9	Ø.9	79.3	8.4Ø	2.27	5.7Ø	95.67
15I-2	Ø.9-1.5	Ø.6	97.3	1.91	Ø.81	Ø.37	1ØØ.39
15I-3	1.5-3.2	1.7	94.3	4.Ø5	2.ØØ	Ø.55	1ØØ.9Ø

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: 43Øm from 15H.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: I LINE 15

HOLE NO: 15J
DEPTH : 4.5 m

PROFILE

Sample No		Geology
15J-1	Ø.Ø | 3.5	Pale brown progressing to pale yellow fine grained gyps/ arenite.
	3.5 | 4.5	Gyps/arenite in green clay progressing to a heavy greey clay.

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
15J-1	Ø.Ø-3.5	3.5	96.5	2.58	1.6Ø	Ø.35	1Ø1.Ø3

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: At end of trees on dune just S of final bay.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: I LINE 15

HOLE NO: 15K
DEPTH : 3.Ø m

PROFILE

Sample No		Geology
	Ø.Ø | Ø.4	Dark red gyps/ arenite.
15K-1	Ø.4 | 1.7	Pale grey to white gyps/ arenite.
	1.7 | 3.Ø	Green grey clay fairly soft and progressing to stiff.

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
15K-1	Ø.4-1.7	1.3	95.4	2.3Ø	2.35	Ø.95	1Ø1.ØØ

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: On west shore line 2Øm from 15J.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: I LINE 15

HOLE NO: 15L
DEPTH : 4.Ø m

PROFILE

Sample No		Geology
15L-1	Ø.Ø | 1.3	Brown coloured gyps/arenite.
15L-2	1.3 | 2.6	Light grey wet and slightly clayey gyps/ arenite.
	2.6 | 4.Ø	Clay content increasing and going in heavy green grey clay.
	4.Ø	Hit obstruction could not penetrate.

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
15L-1	Ø.Ø-1.3	1.3	94.4	4.Ø5	1.43	Ø.53	1ØØ.41
15L-2	1.3-2.6	1.3	77.3	7.3Ø	3.12	9.2Ø	96.92

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: 2ØØm along westernmost dune from where it takes off from other dunes.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: I LINE 15

HOLE NO: 15M
DEPTH : 3.0 m

PROFILE

Sample No		Geology
15M-1	0.0	Very pale grey
	|	gyps/arenite.
	1.3	Tends to be clayey where wet.
	1.3	Increasing clay
	|	to heavy green
	2.9	grey clay.
15M-2	2.9	Last part a
	|	little sandy.
	3.0	May be compressed gyps/arenite.

DUNE CROSS SECTION

Height : m
Width Crest : m
Profile : m

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
15M-1	0.0-1.3	1.3	92.2	4.00	2.08	1.72	100.00
15M-2	2.9-3.0	0.1	62.2	8.05	3.64	18.1	91.99

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
90 - 100%		
80 - 90 %		
70 - 80 %		

COMMENT: Right on western shoreline 400m North of 15L.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: I LINE 15

HOLE NO: 15N
DEPTH : 3.Ø m

PROFILE

Sample No		Geology
	(Ø.Ø	Compressed damp
	(|	dirty gypsite.
	(Ø.4	
15N-1	(	
	(Ø.4	Pale yellow
	(|	brown gyps/
	(1.9	arenite.
	1.9	Green grey clay
	|	with fragments
	3.Ø	of calcite.

DUNE CROSS SECTION

Height
Width Crest :
Profile :

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
15N-1	Ø.Ø-1.9	1.9	85.8	4.9Ø	2.36	4.6Ø	97.66

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: Across dune from 15M. On gypsite. Platform type depositon.

JOHN F. GILFILLAN & ASSOCIATES PTY LIMITED

AUGER DRILL LOG

AREA: Lake Malata
DUNE: I LINE 15

HOLE NO: 150
DEPTH : 2.5 m

PROFILE

Sample No		Geology
	Ø.Ø	Dirty red brown
	|	gyps/arenite.
	Ø.6	
15Ø-1	Ø.6	Pale grey to
	|	white gyps/
	1.5	arenite. Some clay and increasing with depth.
	1.5	Soft green grey
	|	clay.
	2.2	
15Ø-2	2.2	Green sandy clay
	|	May be gypsum.
	2.5	
	2.5	Obstruction could not penetrate.

DUNE CROSS SECTION

Height
Width Crest :
Profile :

Area gypsite : m^2

Area g/arenite : m^2

Vol. gypsite : m^3

Vol. g/arenite : m^3

ANALYSIS:

Sample	Interval (m)	Length (m)	Gypsum %	$CaCO_3$ %	NaCl %	Acid insol%	Total %
15Ø-1	Ø.6-1.5	Ø.9	96.1	2.ØØ	1.82	Ø.85	1ØØ.77
15Ø-2	2.2-2.5	Ø.3	78.5	5.25	3.5Ø	7.55	94.8Ø

SAMPLE INFLUENCE : (see fig.) m

TONNAGE:

	gypsite	g/arenite & seed gypsum
9Ø - 1ØØ%		
8Ø - 9Ø %		
7Ø - 8Ø %		

COMMENT: 41Øm North of 15M 18m from shore line.

APPENDIX V

Sample Assay Reports
Auger Drilling

COMLABS SERVICES PTY. LTD.

ANALYTICAL REPORT

JOB COM861920 O/N : E5/85

Results in %

	SAMPLE	CaSO4 2H2O	CaCO3	NaCl	Acid Insol.
DUNE A	1A 1	93.6	1.98	0.17	1.27
	1A 2	91.7	7.43	1.02	4.34
	1A 3	86.9	1.46	2.24	6.26
	1B 2	93.0	2.29	1.57	2.97
	1C 1	83.2	6.84	1.92	6.28
	1C 2	77.3	7.31	2.41	9.90
	1D 1	98.9	1.79	0.21	0.47
	1D 2	96.4	1.91	0.70	0.72
	1D 3	97.2	2.05	1.19	0.68
	1D 4	88.4	1.86	1.99	4.57
	2A 1	79.1	6.39	2.48	5.88
	2B 1	97.1	1.10	0.57	0.75
	2B 2	94.4	1.52	0.66	3.21
	2B 3	64.1	16.9	2.46	15.4
	2C 1	86.8	6.48	2.67	3.75
	2C 2	52.7	12.0	5.96	20.0
	2C 3	56.9	10.4	5.66	17.2
	3C 1	90.6	2.83	2.40	3.27
	3C 2	83.1	1.59	3.36	12.1
	3B 1	97.7	4.53	1.33	0.63
	3B 2	92.35	5.15	0.88	3.42
	3A 1	94.1	3.15	1.98	1.89
	3A 2	90.4	3.33	1.64	3.95
	3A 3	95.4	2.89	1.97	1.34
	3A 4	61.75	13.73	4.31	12.28

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COMLABS SERVICES PTY. LTD.

ANALYTICAL REPORT

JOB COM861920 O/N : E5/85

Results in %

	SAMPLE	CaSO4 2H2O	CaCO3	NaCl	Acid Insol.
DUNE A	4B 1	94.4	3.34	1.15	1.34
	4B 2	96.4	3.14	0.35	0.63
	4B 3	96.5	2.42	2.00	0.73
	4B 4	91.5	1.41	2.03	3.41
	4C 1	94.5	2.25	1.37	1.30
	4D 1	94.6	1.49	0.58	1.06
	4D 2	94.2	2.30	1.10	1.19
	4D 3	97.1	1.13	0.90	1.33
	4D 4	95.0	1.84	2.28	1.29
	4A 1	51.3	15.9	5.58	16.0
	3A A 1	23.2	36.83	7.26	24.32
	3A B 1	90.7	7.91	1.03	3.02
	3A B 2	92.6	3.21	1.25	1.57
	3A C 1	92.0	1.95	0.69	0.67
	3A C 2	99.5	1.94	0.25	0.36
	3A C 3	95.2	2.73	0.79	1.35
	3A C 4	96.2	2.48	0.71	0.84
	3A D 1	96.4	3.86	0.35	1.21
	5A 1	94.6	3.26	0.77	3.00
	5B 1	97.0	2.11	0.52	1.00
	5C 1	83.0	8.54	1.89	2.83
	5C 2	69.4	7.83	3.92	14.59
DUNE B	6B 1	95.4	3.24	1.09	1.22
	6B 2	87.1	6.62	0.66	4.48
	6B 3	83.6	9.93	1.88	4.67

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ANALYTICAL REPORT

JOB COM861920 O/N : E5/85

Results in %

	SAMPLE	CaSO4 2H2O	CaCO3	NaCl	Acid Insol.
DUNE B	6B 4	69.2	11.08	3.16	12.28
	6D 1	93.0	5.16	1.29	2.59
	6D 2	93.4	5.73	1.87	2.04
	6E 1	61.7	22.52	2.20	11.76
	6E 2	66.0	15.45	2.67	13.26
	7A 1	91.6	5.34	0.45	2.90
	7A 2	84.9	10.67	0.90	5.34
	7A 3	70.4	15.66	2.53	8.70
	7B 1	95.0	4.51	0.85	1.61
	7B 2	97.9	2.65	0.42	1.03
	7B 3	91.7	4.92	1.26	2.60
	7B 4	92.0	14.08	1.64	3.36
	7C 1	75.0	8.25	1.92	10.05
	7C 2	72.4	8.49	4.23	11.0
	8A 1	89.4	14.1	0.72	3.09
	8A 2	72.0	13.4	2.04	7.50
	8B 1	96.8	3.11	0.41	1.39
	8B 2	95.1	5.17	0.41	1.27
	8B 3	95.1	2.44	0.62	1.87
	8C 1	89.9	26.79	1.47	4.30
	8C 2	48.1	1.81	5.18	16.2
	8C 3	27.2	53.9	4.52	10.3
	9A 1	89.4	6.79	1.59	2.43
	9A 2	82.5	11.76	0.57	4.38
	9A 3	74.9	17.6	1.04	5.58

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COMLABS SERVICES PTY. LTD.

ANALYTICAL REPORT

JOB COM861920 O/N : E5/85

Results in %

	SAMPLE	CaSO4 2H2O	CaCO3	NaCl	Acid Insol.
DUNE B	9B 1	98.9	2.74	0.27	0.73
	9B 2	85.1	7.73	1.90	3.58
	10A 1	98.0	1.02	0.15	0.64
	10A 2	71.1	9.78	0.35	17.0
	10B 1	71.7	4.89	0.42	3.45
	10C 1	88.8	6.30	0.72	3.24
	10C 2	93.4	4.40	1.46	1.74
	11A 1	92.9	5.00	0.22	2.37
	11B 1	86.7	5.80	0.23	3.14
	12A 1	90.6	5.88	0.14	2.11
	12A 2	96.3	3.85	0.52	1.40
	13A 1	76.4	10.4	0.72	10.61
	13A 2	81.6	10.77	0.24	4.89
	13B 1	95.5	3.06	0.26	1.45
	13B 2	95.7	14.51	0.34	2.18
	13B 3	70.9	12.54	0.70	9.78
	13C 1	96.0	2.22	0.14	2.56
	13C 2	97.7	1.71	0.13	1.52
	13C 3	96.2	2.51	0.21	1.49
	14A 1	88.4	6.08	1.04	4.26
	14B 1	95.9	6.84	0.47	0.99
	14B 2	51.8	21.5	4.39	16.1
	14C 1	71.7	7.81	2.33	10.19
	14C 2	76.1	6.78	2.88	9.27

Method of Analysis : Acid Insol. : GRAV5
Ca : VOL1
SO4 : GRAV6
CO2 : GRAV3
Na : AAS6

COMLABS SERVICES PTY. LTD.

ANALYTICAL REPORT

JOB COM861942 O/N : E5/85

Results in %

	SAMPLE	CaSO4 2H2O	CaCO3	NaCl	Acid Insol.
DUNE J	150 2	78.5	5.25	3.50	7.55
	L 1	92.8	1.25	0.22	5.25
	L 2	92.2	3.75	0.29	2.72
	L 3	89.1	0.77	0.25	8.95
	L 4	92.9	1.12	0.23	5.80
	L 5	88.8	0.45	0.40	11.3
	DP 1	98.0	1.54	0.16	14.9
	DP 2	1.56	1.02	1.27	92.4

Method of Analysis : Acid In : GRAV5
Ca : VOL1
SO4 : GRAV6
CO2 : GRAV3
Na : AAS6

NB : Some samples may total in excess of 100% as they may contain Calcium Sulphate that is not fully hydrated.

COMLABS SERVICES PTY. LTD.

ANALYTICAL REPORT

JOB COM861942 O/N : E5/85

Results in %

DUNE J

SAMPLE	CaSO4 2H2O	CaCO3	NaCl	Acid Insol.
15A 1	90.5	2.23	3.15	4.40
15A 2	95.0	2.03	0.94	2.90
15B 1	83.5	4.00	3.05	6.40
15B 2	84.8	4.75	2.65	4.80
15C 1	91.1	1.93	2.45	3.60
15C 2	93.5	1.82	2.20	3.25
15C 3	74.2	4.10	4.05	13.3
15D 1	85.4	5.25	2.04	4.30
15D 2	91.1	3.05	0.82	4.60
15E 1	90.4	3.50	1.89	3.55
15F 1	85.8	4.10	2.24	5.85
15G 1	93.6	3.40	2.02	1.02
15G 2	94.1	3.40	1.95	0.72
15H 1	93.2	2.73	2.40	1.51
15I 1	79.3	8.40	2.27	5.70
15I 2	97.3	1.91	0.81	0.37
15I 3	94.3	4.05	2.00	0.55
15J 1	96.5	2.58	1.60	0.35
15K 1	95.4	2.30	2.35	0.95
15L 1	94.4	4.05	1.43	0.53
15L 2	77.3	7.30	3.12	9.20
15M 1	92.2	4.00	2.08	1.72
15M 2	62.2	8.05	3.64	18.1
15N 1	85.8	4.90	2.36	4.60
15O 1	96.1	2.00	1.82	0.85

.../2

APPENDIX VI

Diamond Drill Logs

JOHN F. GILFILLAN & ASSOCIATES PTY. LTD.

DRILL LOG

AREA: Lake Malata
HOLE NO: DH-1
CO-ORDINATES: SE corner of M.C. 2049
COLLAR R.L.: 33m a.s.l.
GRID:
AZIMUTH:
DIP: 90°
TOTAL DEPTH: 13.8m
COMMENCED: 21.3.87
COMPLETED: 22.3.87
CORE RECOVERY: 56.5%
LOGGED BY: B. Butt
ANALYSED BY: Comlabs
ANALYSES CHECKED BY:
DRILL RIG: Jacro
DRILL CONTRACTOR: Thompson Drilling
DRILLING PROGRAMME FOR: John F. Gilfillan & Associates Pty. Ltd.

From	To	Inter-val	Core recovery	Description	Sample No.	$CaSO_4.2H_2O$	$CaCO_3$	NaCl	Acid Insol.	Total
0.0	1.5	1.5	0.4	Fine grained pale yellow gyps/arenite and calcite mixed with black carbonaceous mud.						
1.5	3.6	2.1	1.4	Very fine grained to fine grained yellow gyps/arenite and calcite.	DH1-1	83.1	4.95	3.90	5.90	97.9
3.6	4.8	1.2	0.7	Grey fine grained gyps/arenite and calcite.	DH1-2	87.5	2.70	2.95	4.10	97.2
4.8	7.5	2.7	1.1	Very fine grained pale yellow to grey gypsiferous mud with dark grey to black layering.	DH1-3	71.4	10.35	4.55	7.60	93.4
7.5	8.2	0.7	0.7	Fine grained pale grey gyps/arenite.	DH1-4	80.6	5.30	2.60	5.05	93.5

From	To	Interval	Core recovery	Description	Sample No.	$CaSO_4.2H_2O$	$CaCO_3$	NaCl	Acid Insol.	Total
8.2	11.1	2.9	1.3	Dark grey mud with white silica? mottling. Fine grained gyps/arenite layers.	*DH1-5	79.5	7.15	4.20	5.00	95.9
11.1	12.6	1.5	1.08	Dark grey sandy mud.	DH1-6	69.8	9.15	5.15	6.55	90.7
12.6	13.8	1.2	1.1	Hard grey compacted gypsiferous mud with fragments of a white selenite? with shards of quartz.	*DH1-7	56.6	30.0	1.40	5.90	93.9
				Appears to be layers in compacted mud. Also carbonate as hard fragments of calcrete.						

JOHN F. GILFILLAN & ASSOCIATES PTY. LTD.

DRILL LOG

AREA: Lake Malata
GRID:
COMMENCED: 23.3.87
ANALYSED BY: Comlabs
DRILL CONTRACTOR: Thompson Drilling

HOLE NO: DH-2
AZIMUTH:
COMPLETED: 24.3.87
ANALYSES CHECKED BY:

CO-ORDINATES: SE corner of M.C. 2049
DIP: 90°
CORE RECOVERY: 66.9%

COLLAR R.L.: 33m a.s.l.
TOTAL DEPTH: 13.0m
LOGGED BY: B. Butt
DRILL RIG: Jacro

DRILLING PROGRAMME FOR: John F. Gilfillan & Associates Pty. Ltd.

From	To	Interval	Core recovery	Description	Sample No.	$CaSO_4.2H_2O$	$CaCO_3$	NaCl	Acid. Insol.	Total
0.0	1.1	1.1	1.0	Fine to medium grained pale yellow to black gyps/arenite and black mud with an indistinct horizontal layering. Salt layer 20mm.	DH2-1	85.7	2.95	5.75	2.30	96.7
1.1	4.5	3.4	2.0	Pale yellow seed gypsum. First 25cm very wet and then a hard dry layer. 80cm pale brown mud layer (like wet gypsite at 2.9m. Moisture increase from 3.7.	DH2-2	80.8	6.45	3.50	5.80	96.6

DRILL LOG

From	To	Interval	Core recovery	Description	Sample No.	$CaSO_4 \cdot 2H_2O$	$CaCO_3$	NaCl	Acid Insol.	Total
4.5	11.6	7.1	4.8	Green grey gypsiferous mud. Irregular horizontal layering of very fine grained compact mud with crystaline yellow brown gyps/arenite. At 9.7 a white gypsum gel is present in black mud. (c.f. quarts in DH-1).	DH2-3 (4.5-7.5 = 3.Ø)	77.2	11.10	4.50	11.0	103.8
					*DH2-4 (7.5-11.6 = 4.1)	75.4	6.20	4.35	7.35	93.3
11.6	12.6	1.Ø	Ø.7	Grey hard calcrete with crystals and bands of gypsum. Fine grained equigranular.	DH2-5	37.7	37.9	2.60	13.2	91.4
12.6	13.Ø	Ø.4	Ø.2	Highly decomposed soft mica gneiss with crystals of quartz. Predominantly white feldspar.	DH2-6	Ø.75	0.45	4.00	73.3	78.5

JOHN F. GILFILLAN & ASSOCIATES PTY. LTD.

DRILL LOG

AREA: Lake Malata
GRID:
COMMENCED: 24.3.87
ANALYSED BY: Comlabs
DRILL CONTRACTOR: Thompson Drilling

HOLE NO: DH-3
AZIMUTH:
COMPLETED: 25.7.87
ANALYSES CHECKED BY:

CO-ORDINATES: 1km from NE corner of M.C. 2050 along east boundary
DIP: 90°
CORE RECOVERY: +56.5%

COLLAR R.L.: 33m a.s.l.
TOTAL DEPTH: 24.5m
LOGGED BY: B. Butt
DRILL RIG: Jacro

DRILLING PROGRAMME FOR: John F. Gilfillan & Associates Pty. Ltd.

From	To	Interval	Core Recovery	Description	Sample No.	$CaSO_4.2H_2O$	$CaCO_3$	NaCl	Acid Insol.	Total
0.0	0.1	0.1	0.1	Soft mud.						
0.1	0.3	0.2	0.2	Medium grained gyps/arenite and dark carbonaceous material.						
0.3	1.9	1.6	1.6	As for 1.9-3.0m.	DH3-7 (0.1-1.9 = 1.8)	78.2	3.95	5.70	11.0	98.9
1.9	3.0	1.1	1.0	Pale cream fine grained gyps/arenite with banded stiff green clay 5cm at 2.5m. Core appears compacted. Generally equigranular.	DH3-1	90.0	1.30	4.15	5.75	101.2
3.0	5.3	2.3	1.3	As above but slightly coarser grained and with light grey horizontal banding.	DH3-2	83.7	5.10	3.80	4.85	97.5
5.3	14.0	8.7	4.6	Alternating medium grained carbonaceous gyps/arenite with fine black and grey clay. Some very dark sections around 11.8m.	DH3-3 (5.3-9.0 = 3.7)	81.7	5.75	4.40	5.30	97.2
					*DH3-4 (9.0-14.0 = 5.0)	68.4	7.40	5.00	15.4	96.2

From	To	Interval	Core recovery	Description	Sample No	$CaSO_4.2H_2O$	$CaCO_3$	NaCl	Acid Insol.	Total
				carries pockets of very fine crystals of a pure white mineral. Crystals are rounded and translucent. Small fragments of calcrete at 11.2.						
14.Ø	17.Ø	3.Ø	2.7	Brown black mottled sandy clay grading to a stiff clay. No carbonate. May be gypsiferous.	DH3-5	1.5Ø	0.95	8.30	76.9	87.7
17.Ø	24.5	7.5	?	Dark grey with white mottled texture of rock composed of very fine grained crystals of gypsum or talc or sericite white in colour. These are mixed with a darker platey mineral but this colour may be only apparent. Rock is very soft with a talc like feel when rubbed between fingers. No preferred orientation or layering to crystals.	DH3-6	1.45	0.40	6.40	79.9	88.2

JOHN F. GILFILLAN & ASSOCIATES PTY. LTD.

DRILL LOG

AREA: Lake Malata
GRID:
COMMENCED: 24.3.87
ANALYSED BY:
DRILL CONTRACTOR: Thompson Drilling

HOLE NO: DH-4
AZIMUTH:
COMPLETED: 24.3.87
ANALYSES CHECKED BY:

CO-ORDINATES: SE corner of M.C. 2050 COLLAR R.L.: 33m a.s.l.
DIP: 90° TOTAL DEPTH: 16.5m
CORE RECOVERY: 53.9% LOGGED BY: B. Butt
DRILL RIG: Jacro
DRILLING PROGRAMME FOR: John F. Gilfillan & Associates Pty. Ltd.

From	To	Interval	Core Recovery	Description	Sample No.	$CaSO_4.2H_2O$	$CaCO_3$	NaCl	Acid Insol.	Total
0.0	0.3	0.03	0.03	Salt.						
0.03	0.5	0.47	0.47	Coarse gained gyps/arenite layered pale yellow to grey. 15cm section very pure.	DH4-8	93.7	0.60	5.20	1.10	100.6
0.5	3.7	3.2	1.5	Pale yellow to cream to grey gyps/arenite with layers of compact clay rarely more than 5cms thick. Medium to fine grained loosely compacted. Heavy green clay layer at 2.9m.	DH4-1	86.2	3.35	4.05	6.55	100.2
3.7	5.9	2.2	1.2	As above but finer grained with higher clay content. Some very compact bands of high grade fine grained gypsum. At 4.6m 8cm band of compact green mud with selenite crystals. Also hard incipient selenite patches and calcrete modules.	DH4-2	69.1	7.10	5.95	12.8	95.0
5.9	9.1	3.2	2.1	Alternating bands of gyps/arenite and stiff clay. Very dark indicating high carbon content. Pebbles or bands of calcrete scattered.	DH4-3	76.4	8.75	5.20	6.05	96.4

From	To	Interval	Core recovery	Description	Sample No.	$CaSO_4 \cdot 2H_2O$	$CaCO_3$	NaCl	Acid Insol.	Total
9.1	10.4	1.3	0.7	Grey medium grained hard, well cored calcrete. Even texture and even grained.	DH4-4	45.0	43.8	2.45	4.00	95.3
10.4	11.1	0.7	0.8	Compact dark to pale grey gypsiferous mud with calcite. Calcite and gyps/ arenite as fine grained rounded and flat crystals. Numerous nodules of calcrete.	*DH4-5	85.0	9.80	4.10	3.30	102.2
11.1	12.6	1.5	1.1	Pale grey medium grained calcrete.						
12.6	13.5	0.9	0.7	Hard compact gypsiferous clay.	DH4-6	74.2	13.4	3.10	7.45	98.2
13.5	16.5	3.0	0.3	Very soft highly decomposed sericite talc schist with large nodules of clear quartz. Maybe gneiss.	DH4-7	1.05	0.30	4.40	89.2	95.0

JOHN F. GILFILLAN & ASSOCIATES PTY. LTD.

DRILL LOG

AREA: Lake Malata
HOLE NO: DH-5
CO-ORDINATES: SE corner of M.C. 2051
COLLAR R.L.: 33m a.s.l.
GRID:
AZIMUTH:
DIP: 90°
TOTAL DEPTH: 19.5m
COMMENCED: 27.3.87
COMPLETED: 27.3.87
CORE RECOVERY: 55.9%
LOGGED BY: B. Butt
ANALYSED BY: Comlabs
ANALYSES CHECKED BY:
DRILL RIG: Jacro
DRILL CONTRACTOR: Thompson Drilling
DRILLING PROGRAMME FOR: John F. Gilfillan & Associates Pty. Ltd.

From	To	Interval	Core Recovery	Description	Sample No.	$CaSO_4.2H_2O$	$CaCO_3$	NaCl	Acid Insol.	Total
0.0	0.3	0.3	0.3	Dark grey coarse gained gyps/arenite layered.	DH5-6	86.7	1.65	6.60	2.80	97.8
0.3	0.6	0.3	0.3	Dark grey to black stiff mud clay.						
0.6	1.4	0.8	0.8	Same as next section from 1.4m.	DH5-1	76.6	7.65	4.55	7.40	96.2
1.4	4.5	3.1	1.6	Pale yellow to pale green gyps/arenite, medium to fine grained with bands of compact green grey clay.	DH5-1	76.6	7.65	4.55	7.40	96.2
4.5	6.0	1.5	1.0	Dull green banded gypsiferous clay with narrow and distinct banding of carbonate and quartz of 5.95m. Small 0.5cm band of well formed gypsum crystals.	DH5-2	61.0	6.75	5.65	18.7	92.1
6.0	14.1	8.1	5.3	Heavy compact black to green mud clay with bands (layers) of calcrete at wide intervals and 5cm thick. Layers of sandy appearance are probably gypsiferous.						

From	To	Inter-val	Core recovery	Description	Sample No.	$CaSO_4 \cdot 2H_2O$	$CaCO_3$	NaCl	Acid Insol.	Total
				10.4 Patches of very fine grained translucent quartz max 5m wide.						
				11.0-12.2 Only 40cm recovered but more sandy (gypsum) content.	DH5-3	79.2	13.6	3.80	4.10	100.7
				12.2 20cms of fine grained calcrete.						
				13.7 40cms heavy very dense green clay.						
				19.0 Quartz pebble 35mm long.						
14.1	16.2	2.1	1.7	Grey to pale cream sandy clay with small crystals of translucent quartz gradually decreasing clay content with depth. May contain minor proportion of sericite.	*DH5-4	1.25	0.25	6.05	83.7	91.3
16.2	19.5	3.3	1.0	Pale cream medium grained quartz and with possible gypsum. Large quartz pebbles from area of last core. Unable to recover core from 16.5 except for clear quartz pebbles. Sludge was very dark with quartz and possible sericite.	*DH5-5	1.20	0.25	5.30	86.6	93.4
				END OF HOLE						

APPENDIX VII

Sample Assay Reports
Diamond Drilling

COMLABS SERVICES PTY. LTD.

ANALYTICAL REPORT

JOB COM870634

Results in %

	SAMPLE		$CaSO_4 2H_2O$	$CaCO_3$	NaCl	Acid Insol.	Total
HOLE DH-3 CORE SAMPLES	DH3	6	1.45	0.40	6.40	79.9	88.2
	DH3	7	78.2	3.95	5.70	11.0	98.9
HOLE DH-4 CORE SAMPLES	DH4	1	86.2	3.35	4.05	6.55	100.2
	DH4	2	69.1	7.10	5.95	12.8	95.0
	DH4	3	76.4	8.75	5.20	6.05	96.4
	DH4	4	45.0	43.8	2.45	4.00	95.3
	DH4	5	85.0	9.80	4.10	3.30	102.2
	DH4	6	74.2	13.4	3.10	7.45	98.2
	DH4	7	1.05	0.30	4.40	89.2	95.0
HOLE DH-5 CORE SAMPLES	DH5	1	76.6	7.65	4.55	7.40	96.2
	DH5	2	61.0	6.75	5.65	18.7	92.1
	DH5	3	79.2	13.6	3.80	4.10	100.7
	DH5	4	1.25	0.25	6.05	83.7	91.3
	DH5	5	1.20	0.25	5.30	86.6	93.4
	DH5	6	86.7	1.65	6.60	2.80	97.8
HOLE DH-4 CORE SAMPLE	DH4	8	93.7	0.60	5.20	1.10	100.6

.../ 3

COMLABS SERVICES PTY. LTD.

ANALYTICAL REPORT

JOB COM870634

Results in %

	SAMPLE	CaSO4 2H2O	CaCO3	NaCl	Acid Insol.	Total
HOLE DH-1 SLUDGE SAMPLES	DH 15	80.3	5.70	2.95	7.75	96.7
	DH 25	84.6	4.65	1.95	5.85	97.0
	DH 35	83.3	5.85	1.65	6.30	97.1
	DH 45	77.2	9.85	1.40	7.95	96.4
	DH 55	78.3	8.75	2.25	7.85	97.2
	DH 65	76.4	9.05	3.00	8.50	97.0
	DH 75	69.6	11.45	3.25	12.5	96.8
HOLE DH-1 CORE SAMPLES	DH1 1	83.1	4.95	3.90	5.90	97.9
	DH1 2	87.5	2.70	2.95	4.10	97.2
	DH1 3	71.4	10.35	4.55	7.60	93.4
	DH1 4	80.6	5.30	2.60	5.05	93.5
	DH1 5	79.5	7.15	4.20	5.00	95.9
	DH1 6	69.8	9.15	5.15	6.55	90.7
	DH1 7	56.6	30.0	1.40	5.90	93.9
HOLE DH-2 CORE SAMPLES	DH2 1	85.7	2.95	5.75	2.30	96.7
	DH2 2	80.8	6.45	3.50	5.80	96.6
	DH2 3	77.2	11.10	4.50	11.0	103.8
	DH2 4	75.4	6.20	4.35	7.35	93.3
	DH2 5	37.7	37.9	2.60	13.2	91.4
	DH2 6	0.75	0.45	4.00	73.3	78.5
HOLE DH-3 CORE SAMPLES	DH3 1	90.0	1.30	4.15	5.75	101.2
	DH3 2	83.7	5.10	3.80	4.85	97.5
	DH3 3	81.7	5.75	4.40	5.30	97.2
	DH3 4	68.4	7.40	5.00	15.4	96.2
	DH3 5	1.50	0.95	8.30	76.9	87.7

.../ 2

COMLABS SERVICES PTY. LTD.

ANALYTICAL REPORT

JOB COM870634

Results in ppm

SAMPLE	%Mg	Sr
DH1-5	1.10	2100
DH1-7	3.65	3150
DH2-4	1.25	3750
DH3-4	1.20	1900
DH4-2	1.30	2650
DH4-5	1.35	2300
DH5-4	0.24	36
DH5-5	0.14	65

Method of Analysis : Mg : AAS6
Sr : XRF1

APPENDIX VIII

Tonnage Calculation Worksheet

TONNAGE CALCULATION

DUNE A
LINE NO. 5A

Information derived from section profiles and log sheets (gp = gypsite; ga = gyps/arenite)

Sample weight average

Hole No.	Sample No.	gp	ga	Length	$CaSO_4 \cdot 2H_2O$	$CaCO_3$	NaCl	Acid Insol.	Tonnage gp	Tonnage ga
3AB	3AB-1	✓		1.5	90.7	7.91	1.03	3.02		
Average					90.7	7.91	1.03	3.02		
Area				32 m^2						
Length				270 m_3						
Volume				8640 m^3						
Tonnage									5184	
Hole No.	Sample No.	gp	ga	Length						
3AB	3AB-2		✓	3.0	92.6	3.21	1.25	1.57		
Average					92.6	3.21	1.25	1.57		
Area				101 m^2						
Length				270 m_3						
Volume				27270 m^3						
Tonnage										35451
Hole No.	Sample No.	gp	ga	Length						
3AC	3AC-1		✓	1.5	92.0	1.95	0.69	0.67		
	3AC-2			1.0	99.5	1.94	0.25	0.36		
	3AC-3			5.0	95.1	2.73	0.79	1.35		
	3AC-4			1.5	96.2	2.98	0.71	0.84		
Average				7.0	95.3	2.40	0.67	0.95		
Area				186 m^2						
Length				270 m_3						
Volume				50220 m^3						
Tonnage										65286

Total tonnes gypsite:

Total tonnes gyps/arenite: CARRIED FORWARD

Comments:

DUNE A
LINE NO. 3A

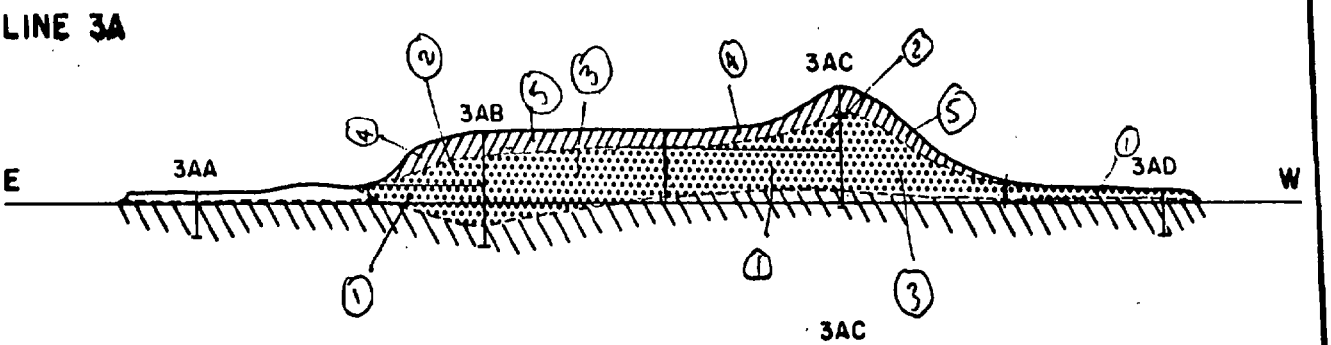
TONNAGE CALCULATION

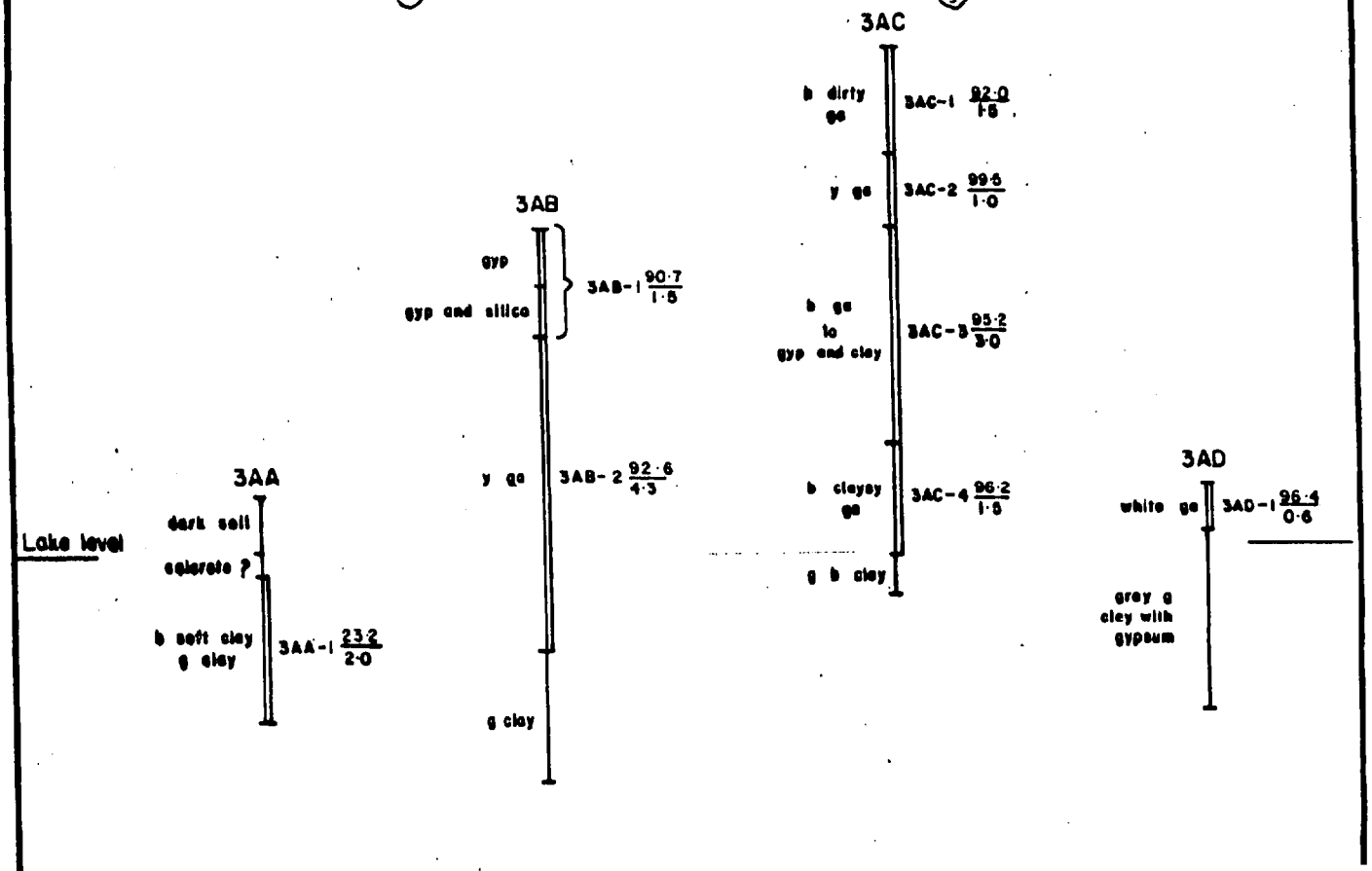
Information derived from section profiles and log sheets (gp = gypsite; ga = gyps/arenite)

Sample weight average

Hole No.	Sample No.	gp ga	Length	$CaSO_4 \cdot 2H_2O$	$CaCO_3$	NaCl	Acid Insol.	Tonnage gp	Tonnage ga
3AD	3AD-1	✓	0.6	96.4	3.86	0.35	1.21		
Average				96.4	3.86	0.35	1.21		
Area 13 m^2 Length 270 m Volume 3510 m^3 Tonnage									4563
Hole No.	Sample No.	gp ga	Length						
Average									
Area m^2 Length m Volume m^3 Tonnage									
Hole No.	Sample No.	gp ga	Length						
Average									
Area m^2 Length m Volume m^3 Tonnage									
Total tonnes gypsite:				90.7	7.91	1.03	3.02	5184	
Total tonnes gyps/arenite:				94.4	2.74	0.85	1.17		105300

Comments:





LEGEND

- gs gypsite
- gs gys/arenite
- } +80% $CaSO_4 2H_2O$
- b,g,y brown, green, yellow
- 3AA Hole No.
- 3AA-1 Sample No.
- 64·0 / 1·7 — % gypsum / length
- b,g khaki clay at times gypsiferous.

PROJECT No. E5/85 — Fig No. 15

JOHN F. GILFILLAN AND ASSOCIATES PTY. LTD.

LAKE MALATA
AUGER DRILLING
DUNE A

SCALE: SECTION H 1:1000, V 1:500 HOLE 1:100	DATE: NOV. 1986
DRAWN: JAVS GEOSERVICES	DATA: B.C.B

LINE 3A

HOLE 3AB.

·1	ga	L×6	= 32 × 1	= 32	
·2	ga	½ L×6	= ½ × 30 × 2	= 30	
·3	ga	L×6	= 50 × 3	= 150	
				212	[101]
·4	gp	L×6	= 20 × 1.2	= 24	
·5	gp	L×6	= 50 × 1.25	= 62.5	
				64.9 (65)	[32]

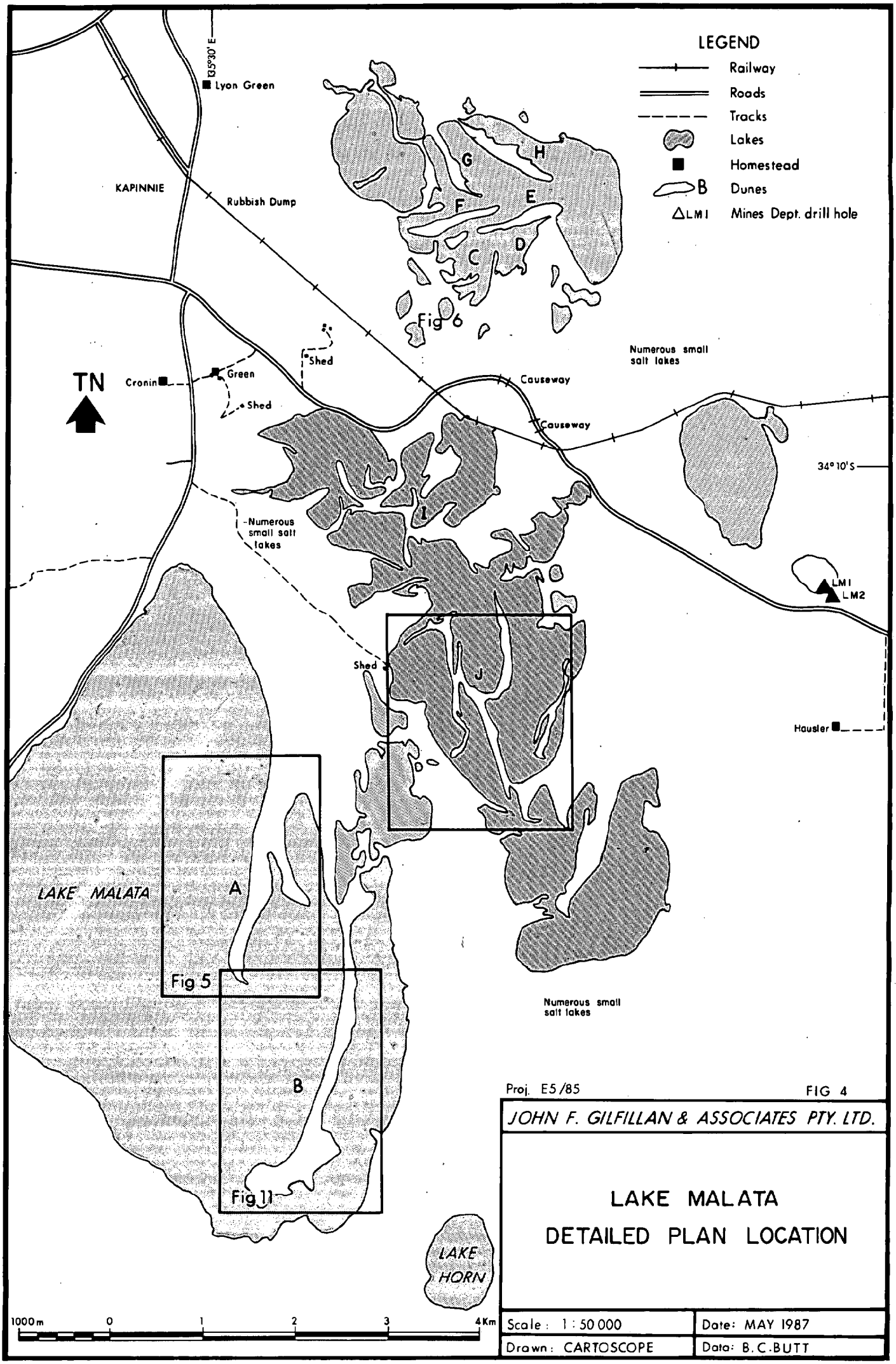
HOLE 3AC

·1	ga	L×6	= 49 × 2.5	= 122.5	
·2	ga	½ L×6	= ½ × 38 × 2	= 38	
·3	ga	½ L×6	= ½ × 45 × 5	= 112.5	
·4	gp ga	L×6	= 49 × 1.25	= 61.25	
·5	gp ga	½ L×6	= ½ × 50 × 1.5	= 37.5	
				371.7 (372)	[186]

HOLE 3AD

·1	ga	L×6	= 52 × 0.5	= 26	[13]

Note: Horizontal scale on section is 1:1000 and not 1:2000 as on other sections.



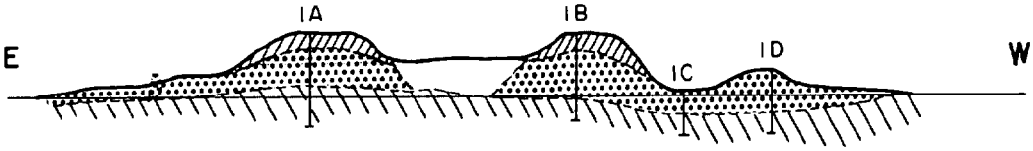
Proj. E5/85 FIG 4

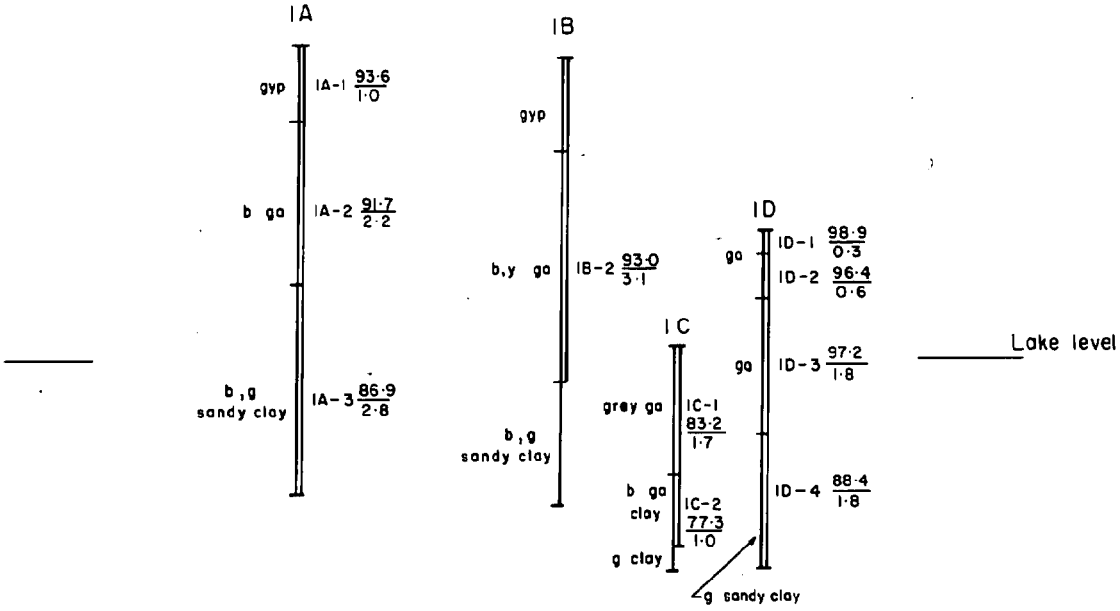
JOHN F. GILFILLAN & ASSOCIATES PTY. LTD.

LAKE MALATA
DETAILED PLAN LOCATION

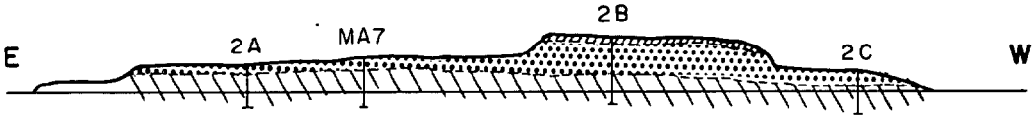
Scale : 1 : 50 000	Date: MAY 1987
Drawn : CARTOSCOPE	Data: B.C.BUTT

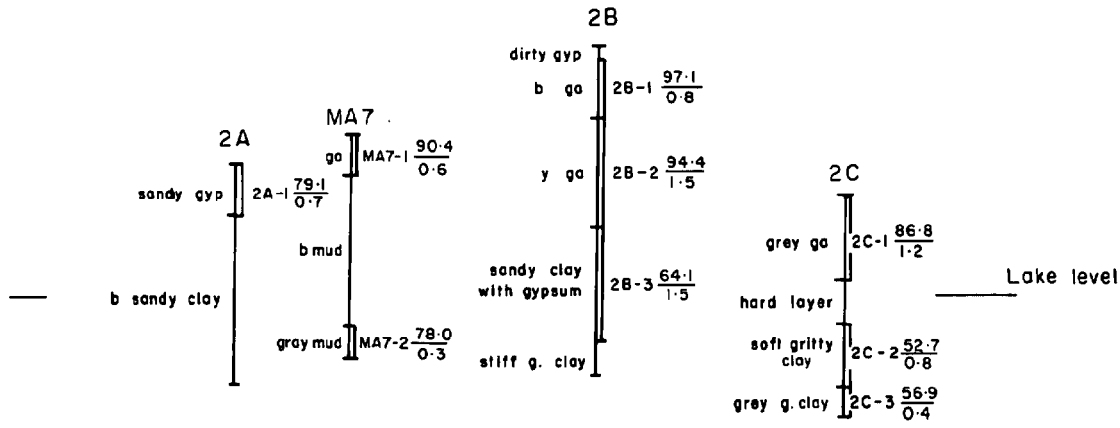
LINE 1





LINE 2





LEGEND

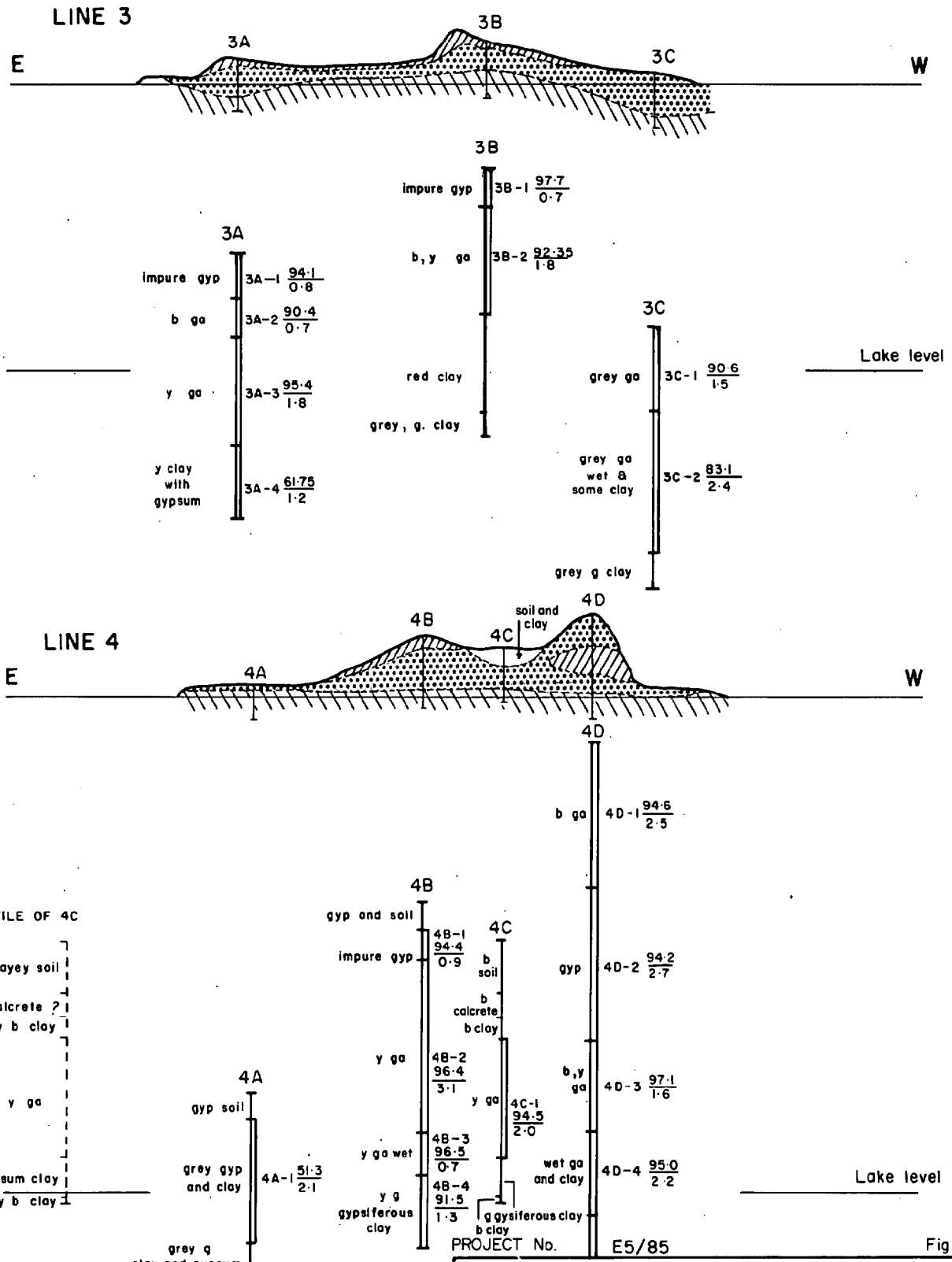
- gp gypsite
- ga gys/arenite
- } +80% $CaSO_4\,2H_2O$
- b,g,y brown, green, yellow
- 1A Hole No.
- 1B-1 Sample No.
- 64·0 / 1·7 — % gypsum / length
- b,g khaki clay at times gypsiferous.

PROJECT No. E5/85 Fig No. 6

JOHN F. GILFILLAN AND ASSOCIATES PTY. LTD.

LAKE MALATA
AUGER DRILLING
DUNE A
LINE 1 AND 2

SCALE: SECTION H 1:2000 V 1:500, HOLE 1:100	DATE: NOV. 1986
DRAWN: JAVS GEOSERVICES	DATA: B.C. BUTT



PROJECT No. E5/85

Fig No: 7

LEGEND

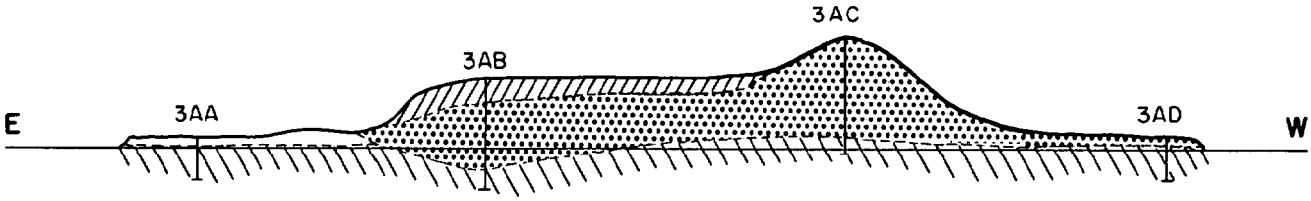
- gp gypsite
- ga gys/arenite
- } +80% $CaSO_4.2H_2O$
- b,g,y brown, green, yellow
- 3A Hole No.
- 3C-1 Sample No.
- 64·0 / 1·7 — % gypsum / length
- b,g khaki clay at times gypsiferous.

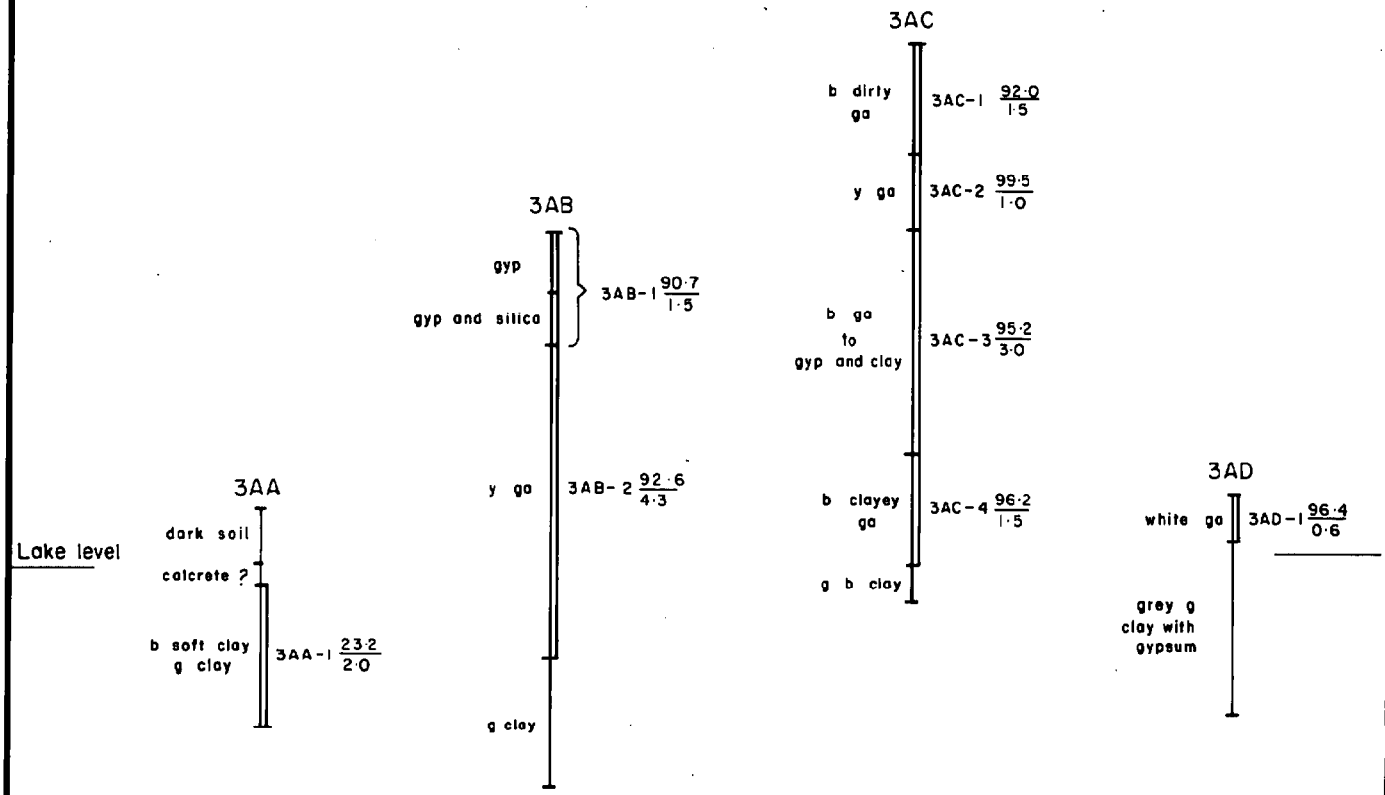
JOHN F. GILFILLAN AND ASSOCIATES PTY. LTD.

LAKE MALATA
AUGER DRILLING
DUNE A
LINE 3 AND 4

SCALE: SECTION, H1:2000 V1:500 HOLE 1:100	DATE: NOV. 1986
DRAWN: JAVS GEOSERVICES	DATA: B.C.B.

LINE 3A





LEGEND

- gp, ga — gypsite, gys/arenite } +80% $CaSO_4.2H_2O$
- b, g, y — brown, green, yellow
- 3AA — Hole No.
- 3AA-1 — Sample No.
- 64·0 / 1·7 — % gypsum / length
- b, g khaki clay at times gypsiferous.

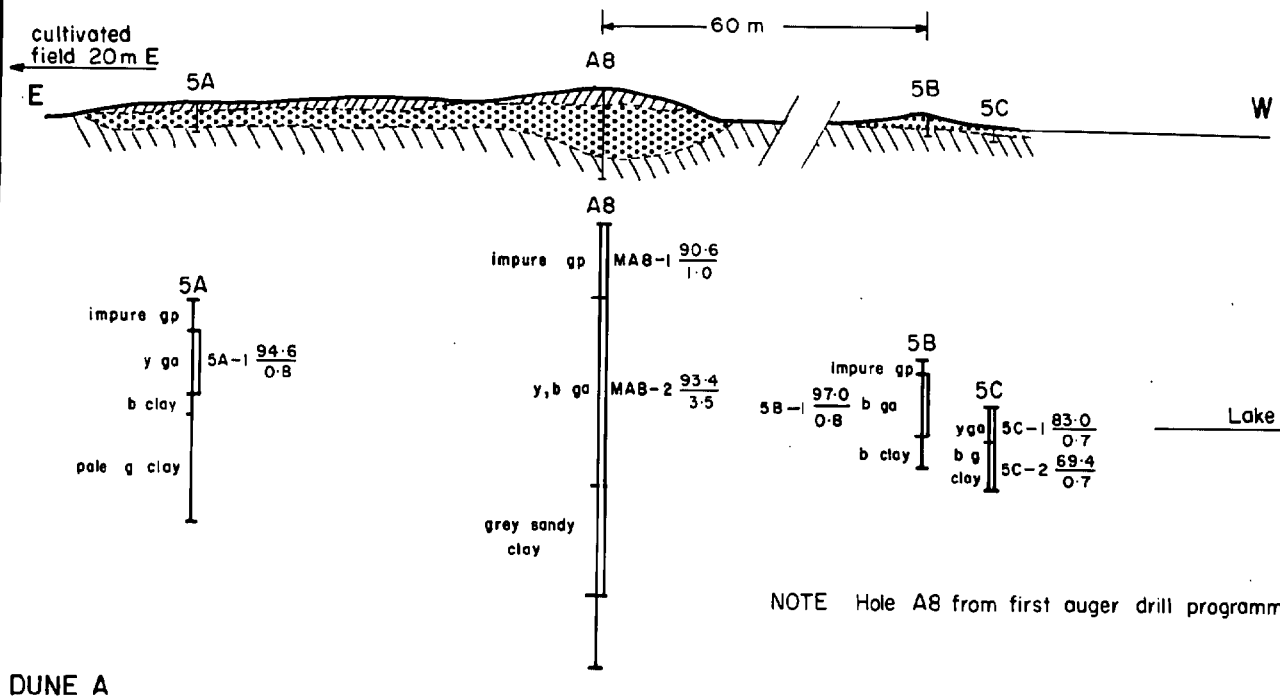
PROJECT No. E5/85 Fig No: 8

JOHN F. GILFILLAN AND ASSOCIATES PTY. LTD.

LAKE MALATA
AUGER DRILLING
DUNE A
LINE 3A

SCALE: SECTION H 1:1000, V 1:500 HOLE 1:100	DATE: NOV. 1986
DRAWN: JAVS GEOSERVICES	DATA: B.C.B

LINE 5

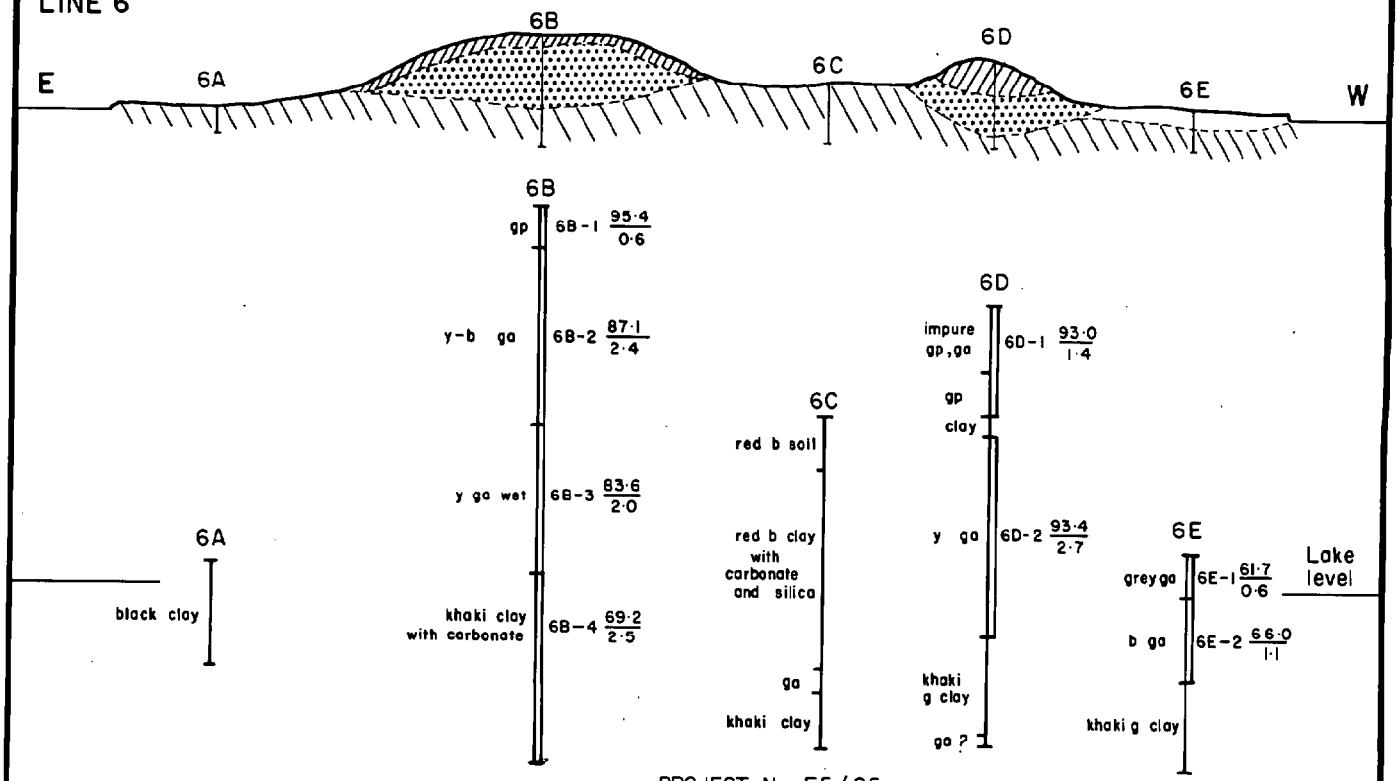


NOTE Hole A8 from first auger drill programme.

DUNE A

DUNE B

LINE 6



PROJECT No. E5/85

Fig No: 9

LEGEND

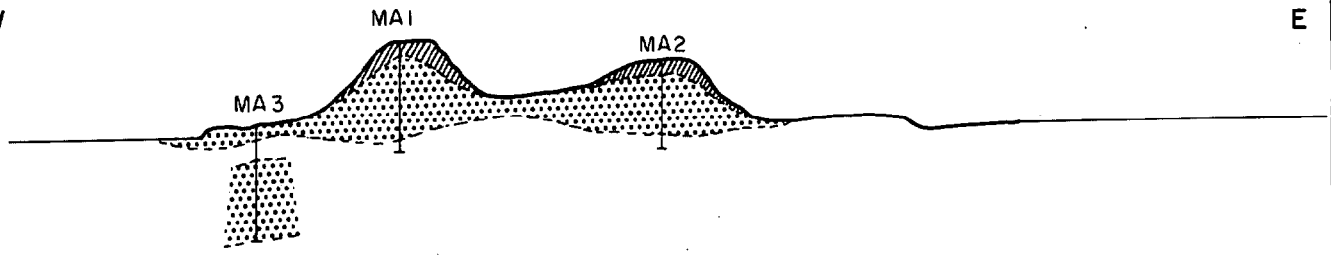
- gp gypsite
- ga gys/arenite
- } +80% $CaSO_4 2H_2O$
- b,g,y brown, green, yellow
- 6A Hole No.
- 6B-1 Sample No.
- 95·4 / 0·6 % gypsum / length
- b,g khaki clay at times gypsiferous

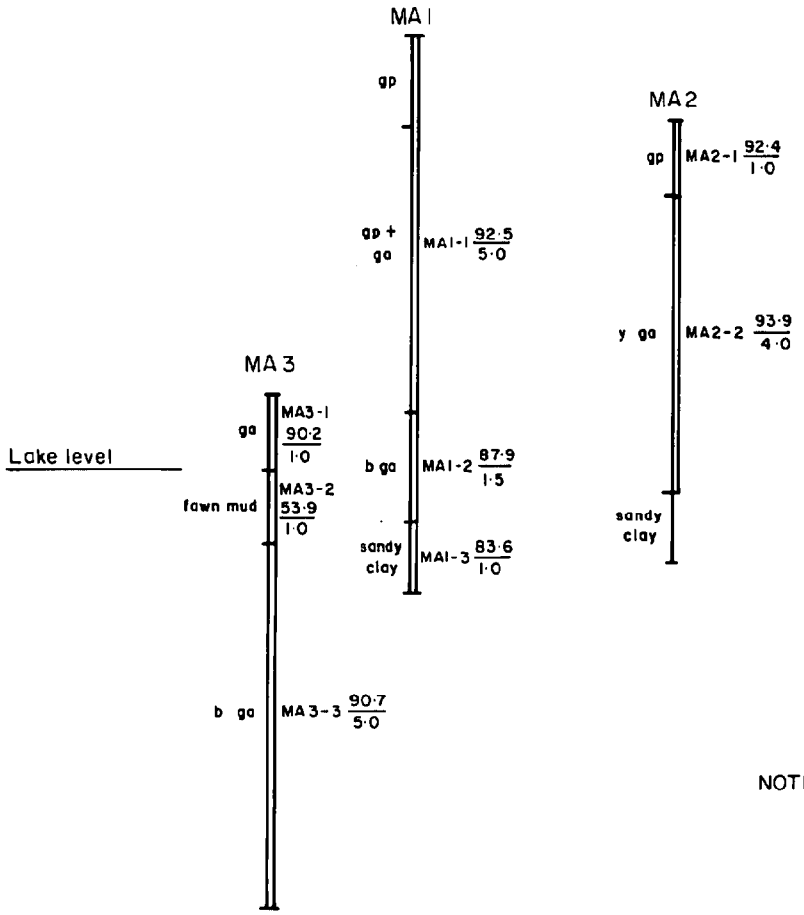
JOHN F. GILFILLAN AND ASSOCIATES PTY. LTD.

LAKE MALATA
AUGER DRILLING
DUNE A AND B
LINE 5 AND 6

SCALE: SECTION H 1:1000 V 1:500 HOLE 1:100	DATE: NOV. 1986
DRAWN: JAVS GEOSERVICES	DATA: B.C.B.

LINE 21





NOTE: This section is looking north.

LEGEND

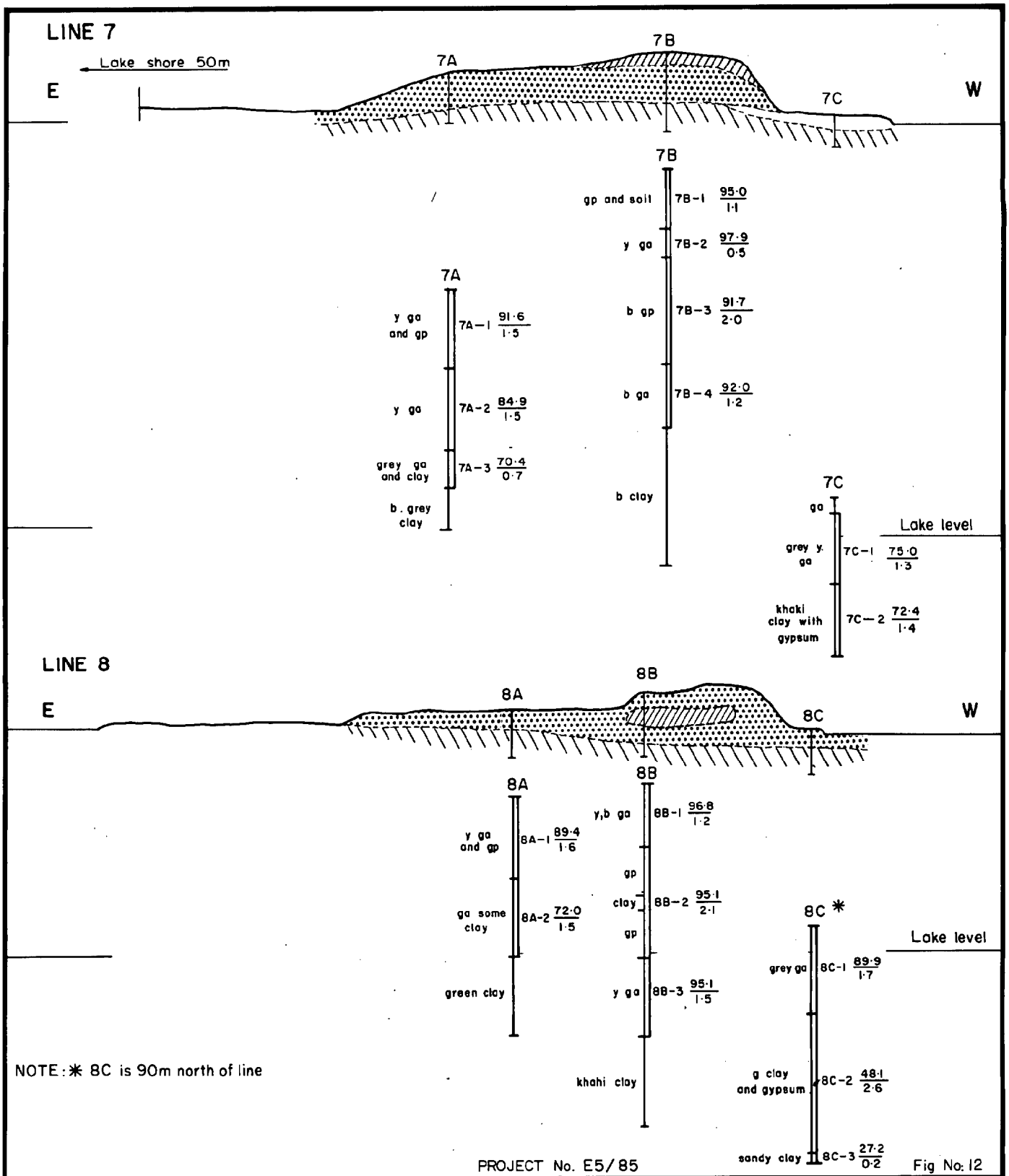
- gp — gypsite
- ga — gys/arenite
- } +80% $CaSO_4 \cdot 2H_2O$
- b,g,y — brown, green, yellow
- MA1 — Hole No.
- MA1-1 — Sample No.
- 92·5 / 5·0 — % gypsum / length
- b,g khaki clay at times gypsiferous

PROJECT No. E5/85 Fig No: 10

JOHN F. GILFILLAN AND ASSOCIATES PTY. LTD.

LAKE MALATA
AUGER DRILLING
DUNE A
LINE 21

SCALE: SECTION H 1:2000 V 1:500 HOLE 1:100	DATE: APRIL 1987
DRAWN: JAVS GEOSERVICES	DATA: B.C.B.



NOTE: * 8C is 90m north of line

LEGEND

- gp gypsite, ga gys/arenite } +80% $CaSO_4.2H_2O$
- b,g,y brown, green, yellow
- 7A Hole No.
- 7A-1 Sample No.
- 70·4 / 0·7 % gypsum / length
- b,g khaki clay at times gypsiferous

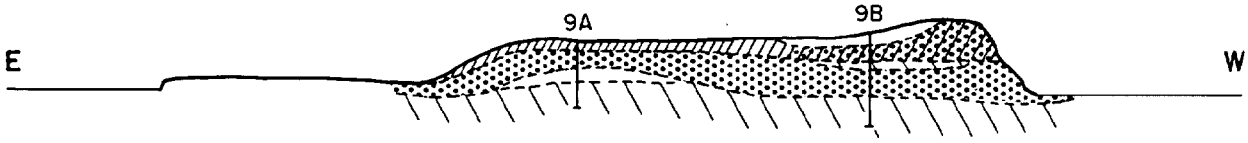
PROJECT No. E5/85 Fig No: 12

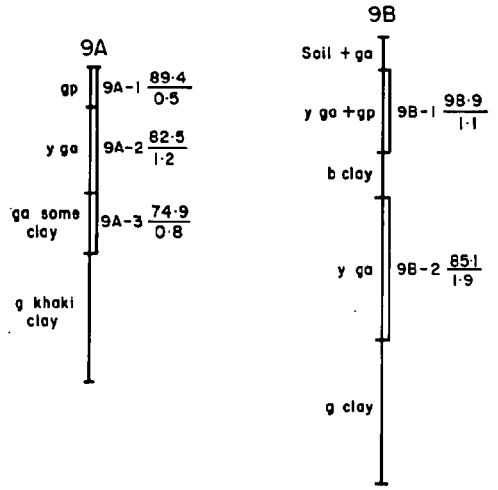
JOHN F. GILFILLAN AND ASSOCIATES PTY. LTD.

LAKE MALATA
AUGER DRILLING
DUNE B
LINE 7 AND 8

SCALE: SECTION H 1:1000 V 1:500 HOLE 1:100	DATE: NOV. 1986
DRAWN: JAVS GEOSERVICES	DATA: B.C.B.

LINE 9





LEGEND

- gp — gypsite
- ga — gys/arenite
- } +80% $CaSO_4.2H_2O$
- b,g,y — brown, green, yellow
- 9A — Hole No.
- 9A-1 — Sample No.
- 95·4 / 2·0 — % gypsum / length
- b,g khaki clay at times gypsiferous.

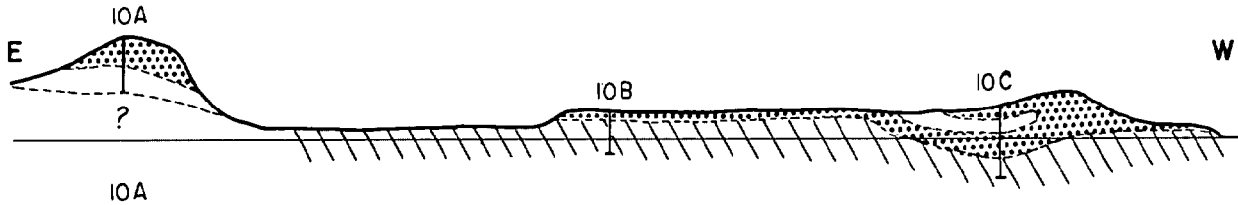
PROJECT No. E5/85 Fig No: 13

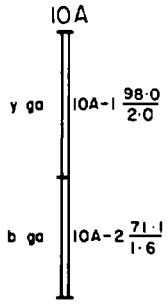
JOHN F. GILFILLAN AND ASSOCIATES PTY. LTD.

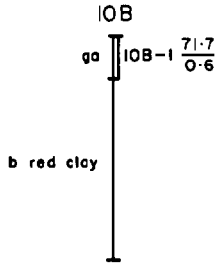
LAKE MALATA
AUGER DRILLING
DUNE B
LINE 9

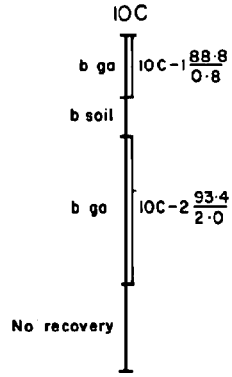
SCALE: SECTION. H 1:1000 V 1:500 HOLE 1:100	DATE: JAN. 1987
DRAWN: JAVS GEOSERVICES	DATA: B.C.B.

LINE 10



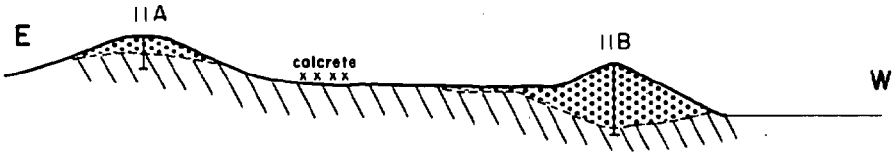


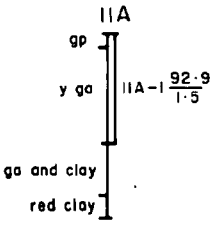


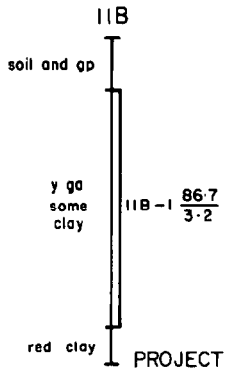


Lake level

LINE 11







Lake level

PROJECT No. E5/85

Fig No: 14

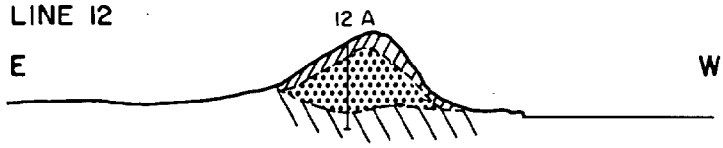
LEGEND

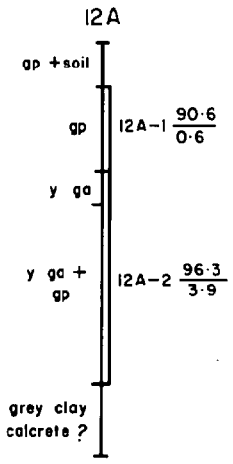
- gp gypsite, ga gys/arenite } +80% $CaSO_4.2H_2O$
- b,g,y brown, green, yellow
- 10A Hole No.
- 10A-1 Sample No.
- 95·4 / 2·0 % gypsum / length
- b,g khaki clay at times gypsiferous.

JOHN F. GILFILLAN AND ASSOCIATES PTY. LTD.

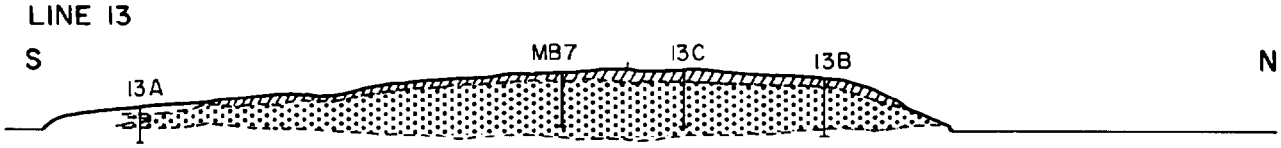
LAKE MALATA
AUGER DRILLING
DUNE B
LINE 10 AND 11

SCALE: SECTION, H 1:1000 V 1:500 HOLE 1:100	DATE: NOV. 1986
DRAWN: JAVS GEOSERVICES	DATA: B.C.B.

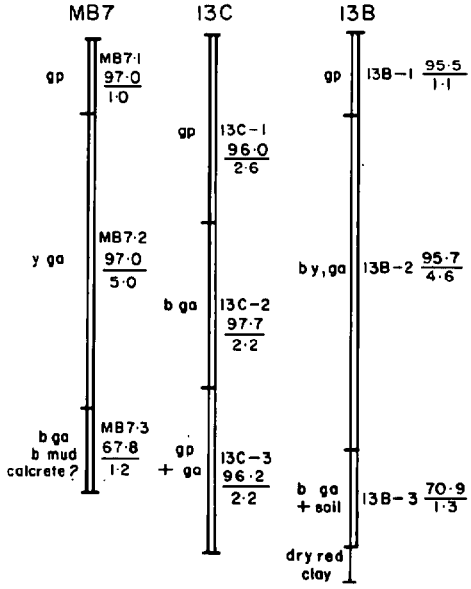


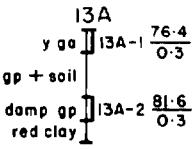


Lake level



NOTE : 1. Scale H 1:4000 , V 1:1000
2. Longitudinal section.
3. 13C is a channel sample down face of dune.





Lake level

LEGEND

- gp gypsite
- ga gys/arenite
- } +80% $CaSO_4\ 2H_2O$
- b,g,y brown, green, yellow
- 12A Hole No.
- 12A–1 Sample No.
- 64·0 / 1·7 % gypsum / length
- b,g khaki clay at times gypsiferous.

PROJECT No. E5/85 Fig No: 15

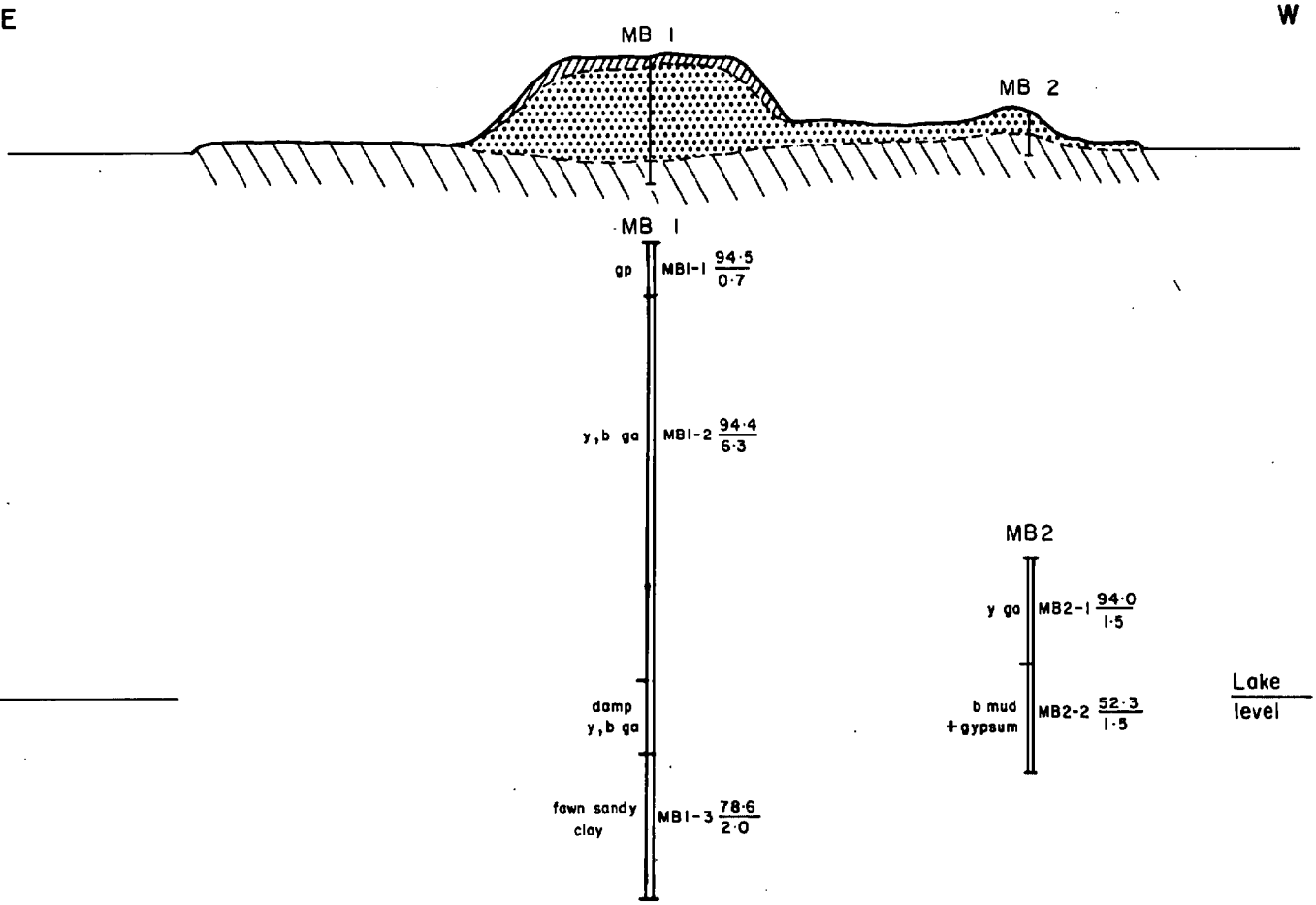
JOHN F. GILFILLAN AND ASSOCIATES PTY. LTD.

LAKE MALATA
AUGER DRILLING
DUNE B
LINE 12 AND 13

SCALE: SECTION H 1:1000 V 1:500 HOLE 1:100	DATE: JAN. 1987
DRAWN: JAVS GEOSERVICES	DATA: B.C.B.

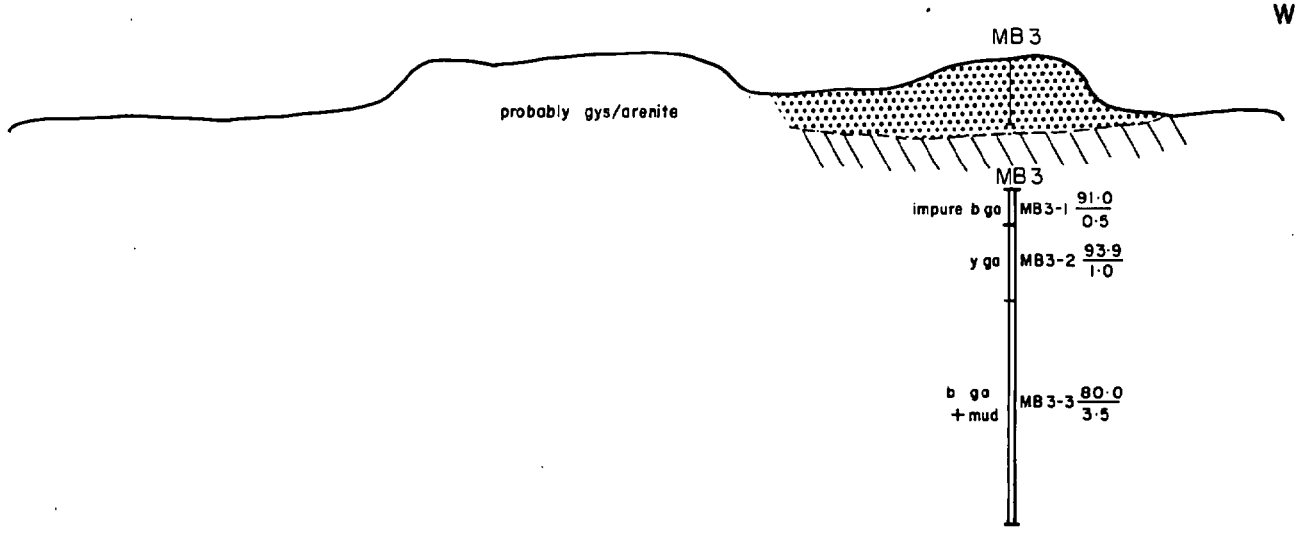
LINE 16

E W



LINE 17

E W



LEGEND

- gp gypsite
- ga gys/arenite
- } +80% $CaSO_4\ 2H_2O$
- b,g,y brown, green, yellow
- MB1 Hole No.
- MB1-1 Sample No.
- 94·5 / 0·7 % gypsum / length
- b,g khaki clay at times gypsiferous

PROJECT No. E5/85 Fig No: 16

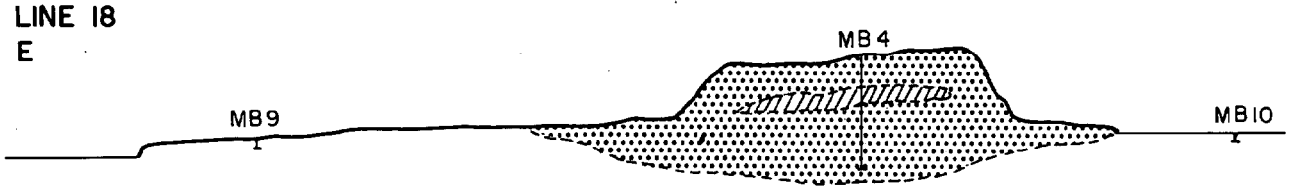
JOHN F. GILFILLAN AND ASSOCIATES PTY. LTD.

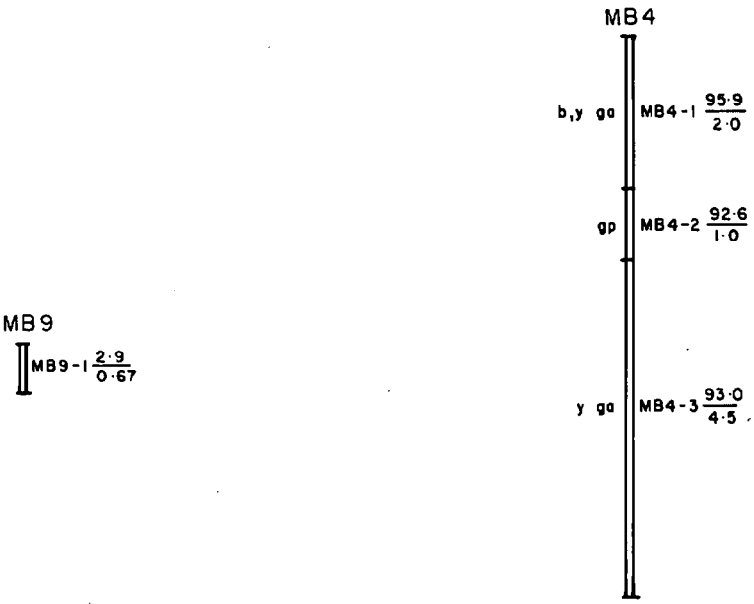
LAKE MALATA
AUGER DRILLING
DUNE B
LINE 16 AND 17

SCALE: SECTION H 1:1000 V 1:500 HOLE 1:100	DATE: APRIL 1987
DRAWN: JAVS GEOSERVICES	DATA: B.C.B.

LINE 18

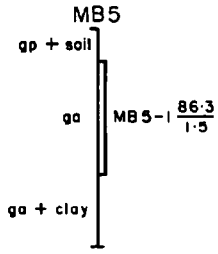
E W





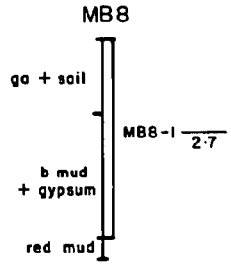
LINE 19

E W



LINE 20

E W



LEGEND

gp	gypsite	+ 80% $CaSO_4 2H_2O$
ga	gys/arenite	
b,g,y	brown, green, yellow	
MB4	Hole No.	
MB4-1	Sample No.	
95.9 / 2.0	% gypsum / length	
	b,g khaki clay at times gypsiferous	

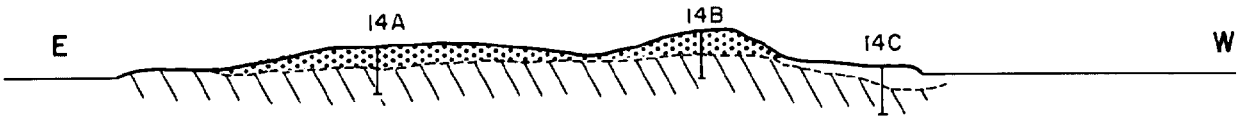
PROJECT No. E5/85 Fig No: 17

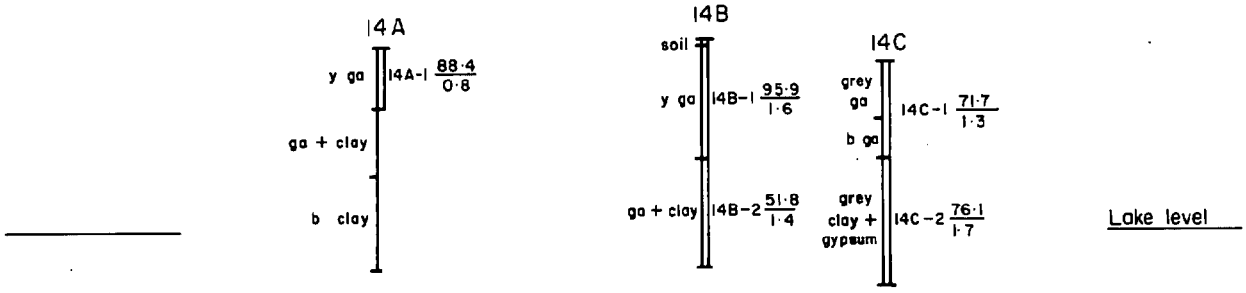
JOHN F. GILFILLAN AND ASSOCIATES PTY. LTD.

LAKE MALATA
AUGER DRILLING
DUNE B
LINE 18, 19 AND 20

SCALE: SECTION H 1:1000 V 1:500 HOLE 1:100	DATE: APRIL 1987
DRAWN: JAVS GEOSERVICES	DATA: B.C.B.

LINE 14

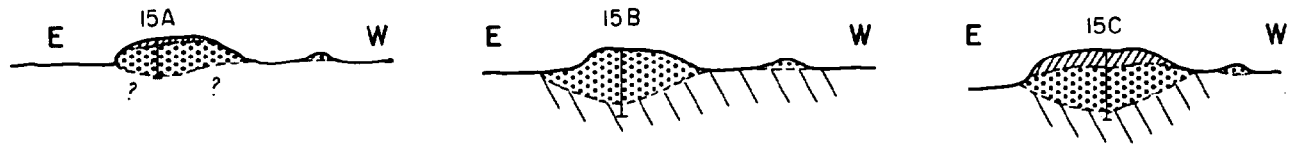


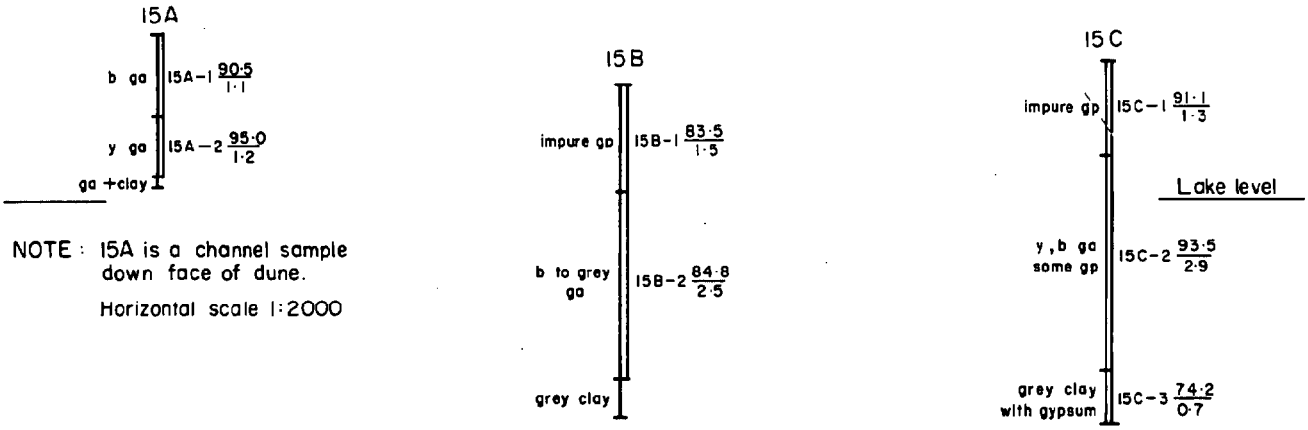


DUNE B

DUNE J

LINE 15





NOTE: 15A is a channel sample down face of dune.

Horizontal scale 1:2000

LEGEND

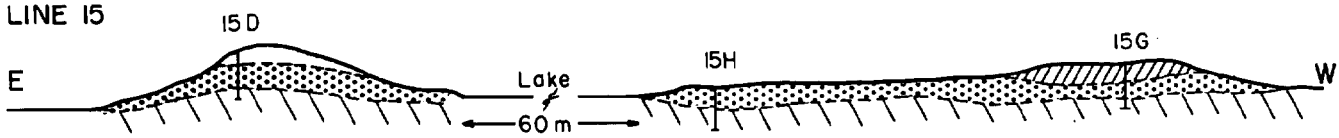
- gp — gypsite
- ga — gys/arenite
- } +80% $CaSO_4\ 2H_2O$
- b, g, y — brown, green, yellow
- 15A — Hole No.
- 15A-1 — Sample No.
- 64·0 / 1·7 — % gypsum · / length
- b, g khaki clay at times gypsiferous.

PROJECT No. E5/85 Fig No: 18

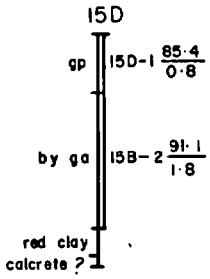
JOHN F. GILFILLAN AND ASSOCIATES PTY. LTD.

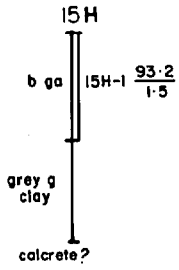
LAKE MALATA
AUGER DRILLING
DUNE B AND J
LINE 14 AND 15

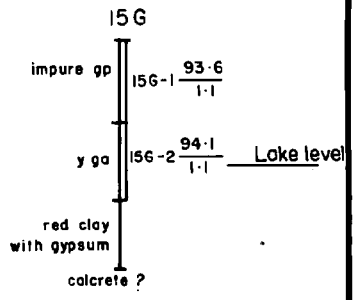
SCALE: SECTION H1:1000 V1:500 HOLE 1:100	DATE: JAN. 1987
DRAWN: JAVS GEOSERVICES	DATA: B.C.B.

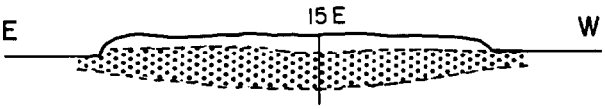


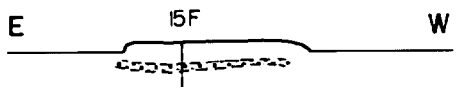
possible calcrete at end of each hole.

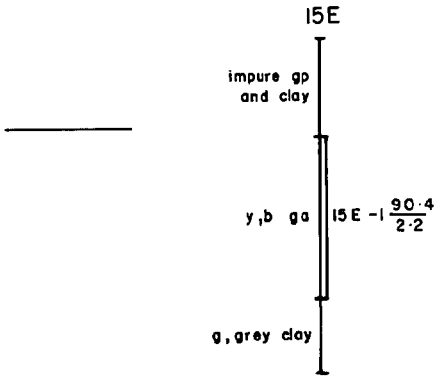


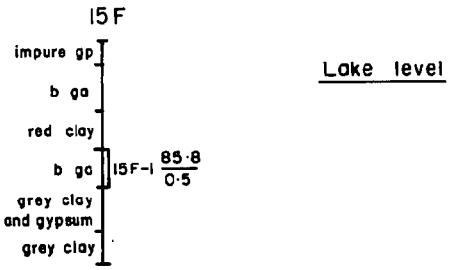












LEGEND

- gp — gypsite
- ga — gys/arenite
- } +80% $CaSO_4 2H_2O$
- b,g,y — brown, green, yellow
- 15D — Hole No.
- 15D–1 — Sample No.
- 64·0 / 1·7 — % gypsum / length
- b,g khaki clay at times gypsiferous

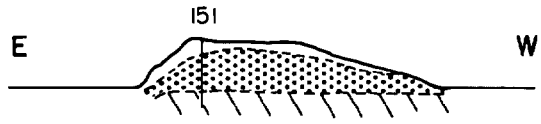
PROJECT No. E5/85 Fig No: 19

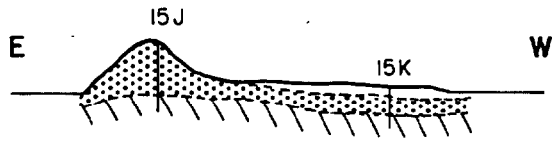
JOHN F. GILFILLAN AND ASSOCIATES PTY. LTD.

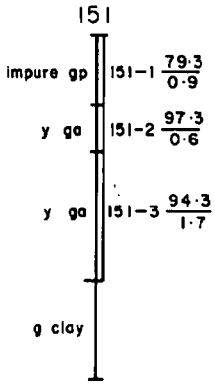
LAKE MALATA
AUGER DRILLING
DUNE J
LINE 15 - HOLES D,E,F,G,H

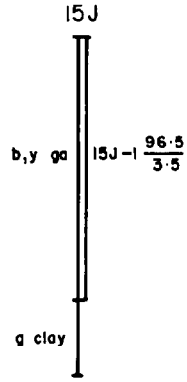
SCALE: SECTION H1:1000 V1:500 HOLE 1:100	DATE: JAN. 1987
DRAWN: JAVS GEOSERVICES	DATA: B.C.B.

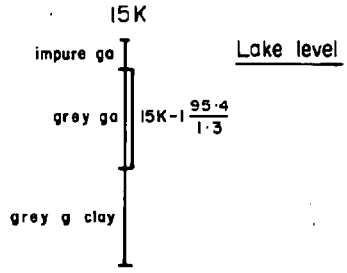
LINE 15

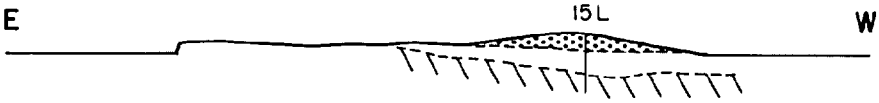


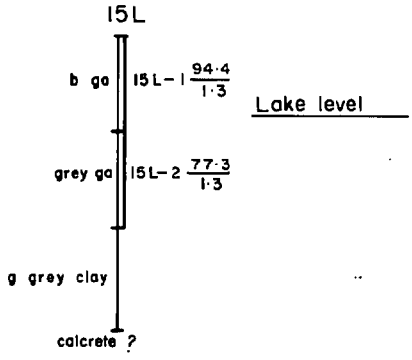












LEGEND

- gp — gypsite
- ga — gys/arenite
- } +80% $CaSO_4\ 2H_2O$
- b,g,y — brown, green, yellow
- 15J — Hole No.
- 15J-1 — Sample No.
- 64·0 / 1·7 — % gypsum / length
- b,g khaki clay at times gypsiferous

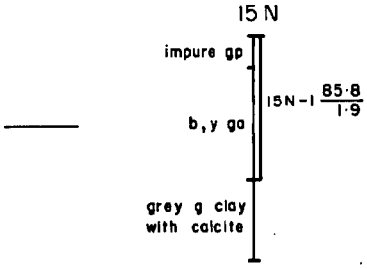
PROJECT No. E5/85 Fig No: 21

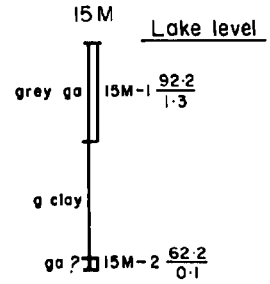
JOHN F. GILFILLAN AND ASSOCIATES PTY. LTD.

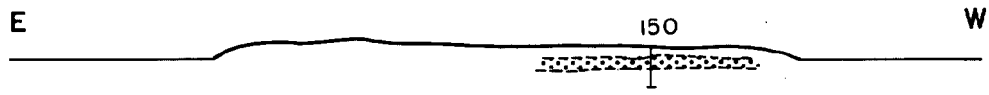
LAKE MALATA
AUGER DRILLING
DUNE J
LINE 15 - HOLES I, J, K, L

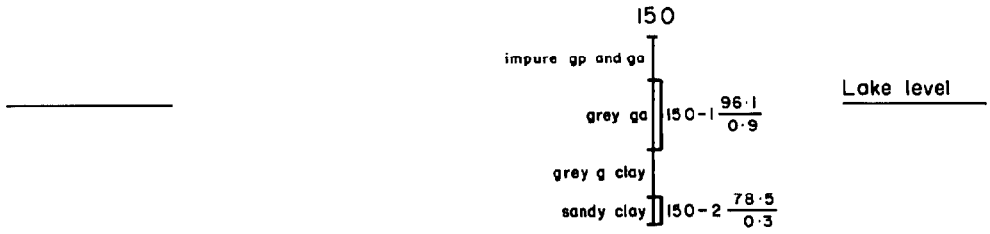
SCALE: SECTION H 1:1000 V 1:500 HOLE 1:100	DATE: JAN. 1987
DRAWN: JAVS GEOSERVICES	DATA: B.C.B.

LINE 15









LEGEND

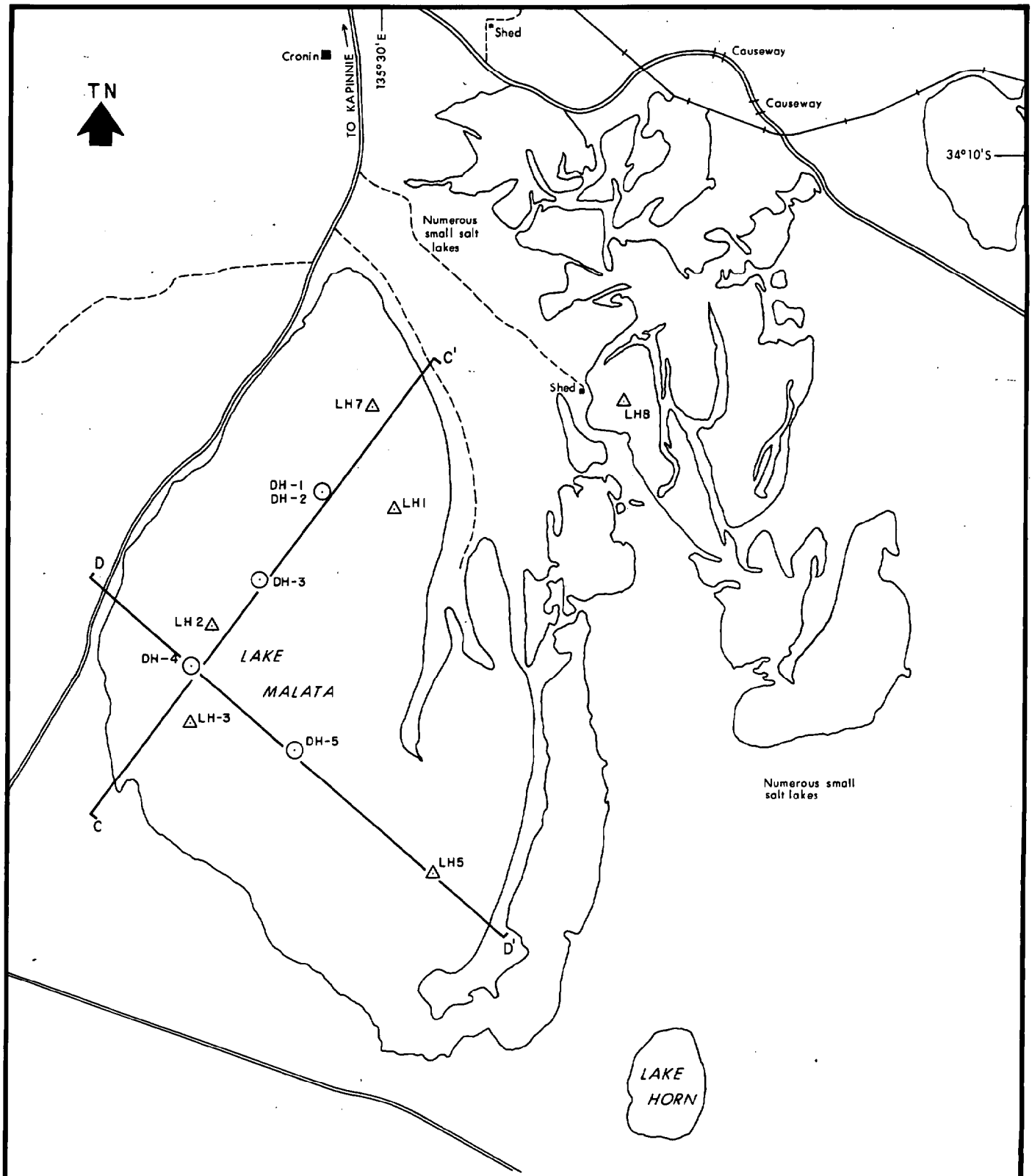
- gp — gypsite
- ga — gys/arenite
- } +80% $CaSO_4 2H_2O$
- b,g,y — brown, green, yellow
- 15N — Hole No.
- 15N-1 — Sample No.
- 64·0 / 1·7 — % gypsum / length
- b,g khaki clay at times gypsiferous

PROJECT No. E5/85 Fig No: 22

JOHN F. GILFILLAN AND ASSOCIATES PTY. LTD.

LAKE MALATA
AUGER DRILLING
DUNE J
LINE 15 HOLES N,M,O

SCALE: SECTION H 1:1000 , V 1:500 HOLE 1:100	DATE: JAN. 1987
DRAWN: JAVS GEOSERVICES	DATA: B.C.B.

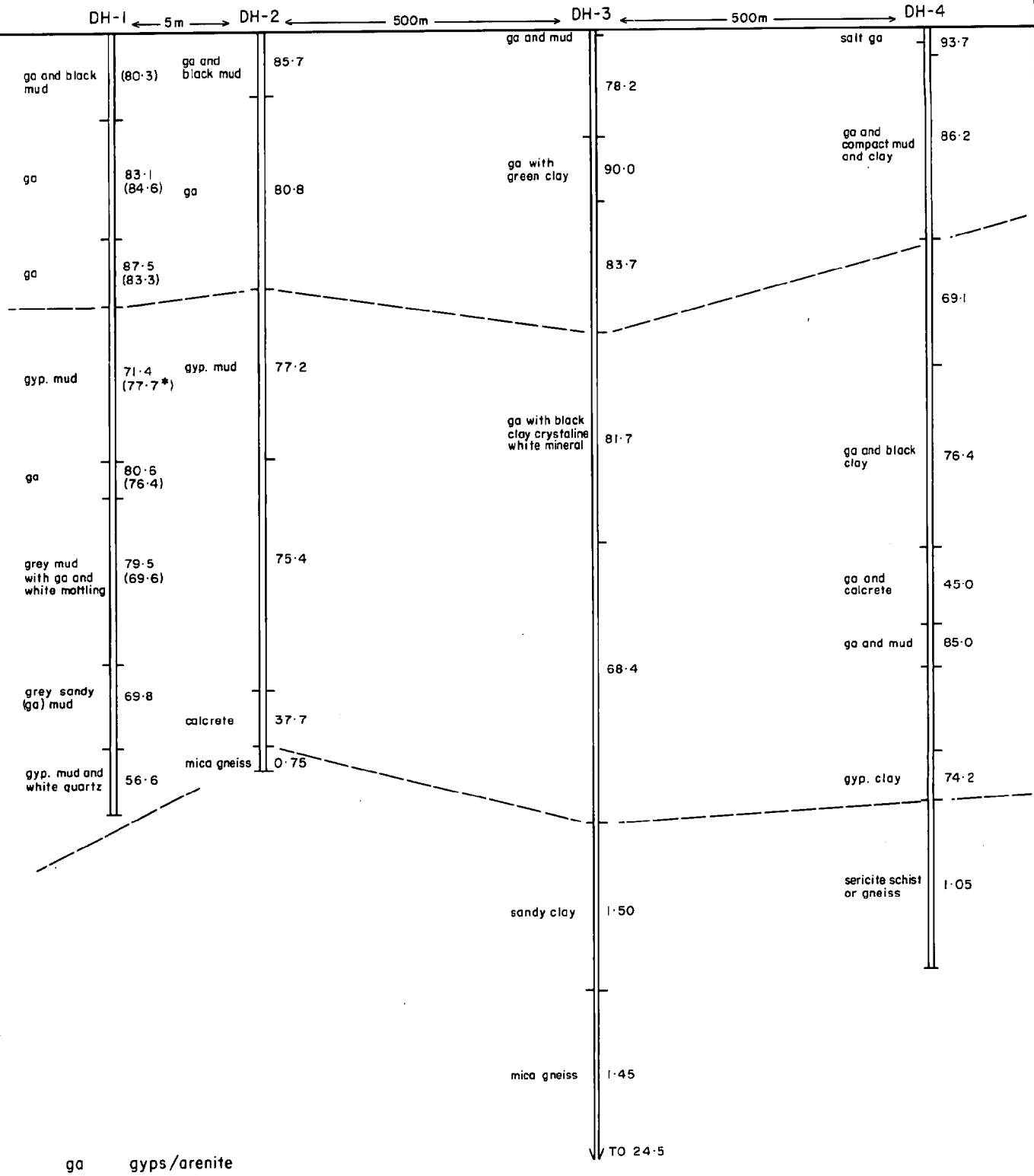


PROJECT No. E5/85 Fig No: 23

JOHN F. GILFILLAN AND ASSOCIATES PTY. LTD.

LAKE MALATA
LAKE SEDIMENT DRILLING

SCALE: 1:50000	DATE: MAY 1987
DRAWN: R. FERGUSON	DATA: B. BUTT



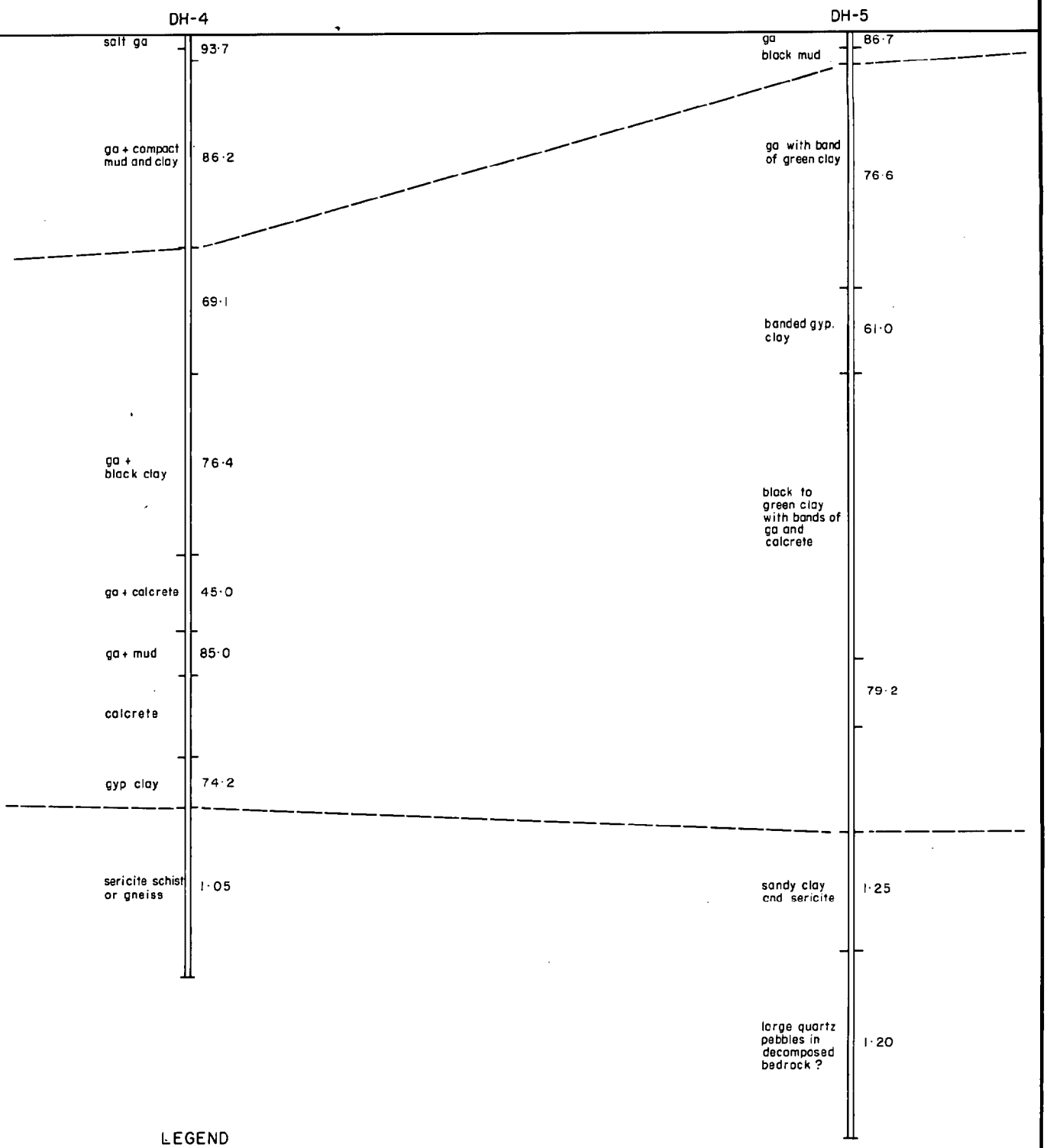
ga	gyps/arenite
gyp	gypsiferous
85·7	percent $CaSO_4 2H_2O$
(80·3)	sludge sample $\%CaSO_4 2H_2O$
*	average of two samples

PROJECT No. E5/85 Fig No. 24

JOHN F. GILFILLAN & ASSOCIATES PTY. LTD.

LAKE MALATA DRILLING HOLES 1, 2, 3, 4

Scale: V:1:100	Date: MAY 1987
Drawn: R. FERGUSON	Data: B.BUTT



LEGEND

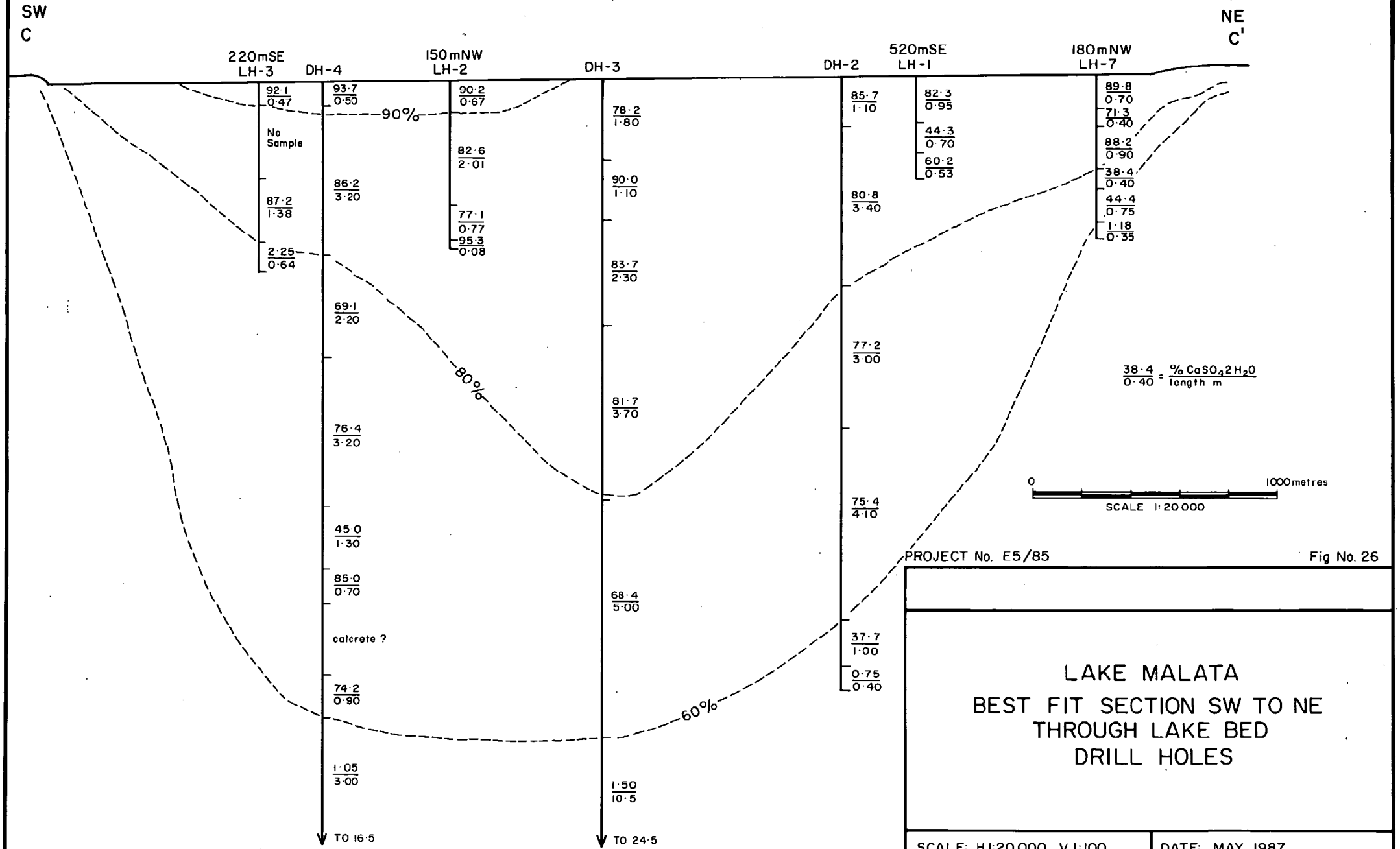
ga	gyps/arenite
gyp	gypsiferous
85·7	percent $CaSO_4 2H_2O$

PROJECT No. E5/85 Fig No. 25

JOHN F. GILFILLAN & ASSOCIATES PTY. LTD.

LAKE MALATA DRILLING HOLES 4 AND 5

Scale: H 1:10 000 V 1:100	Date: MAY 1987
Drawn: R. FERGUSON	Data: B. BUTT



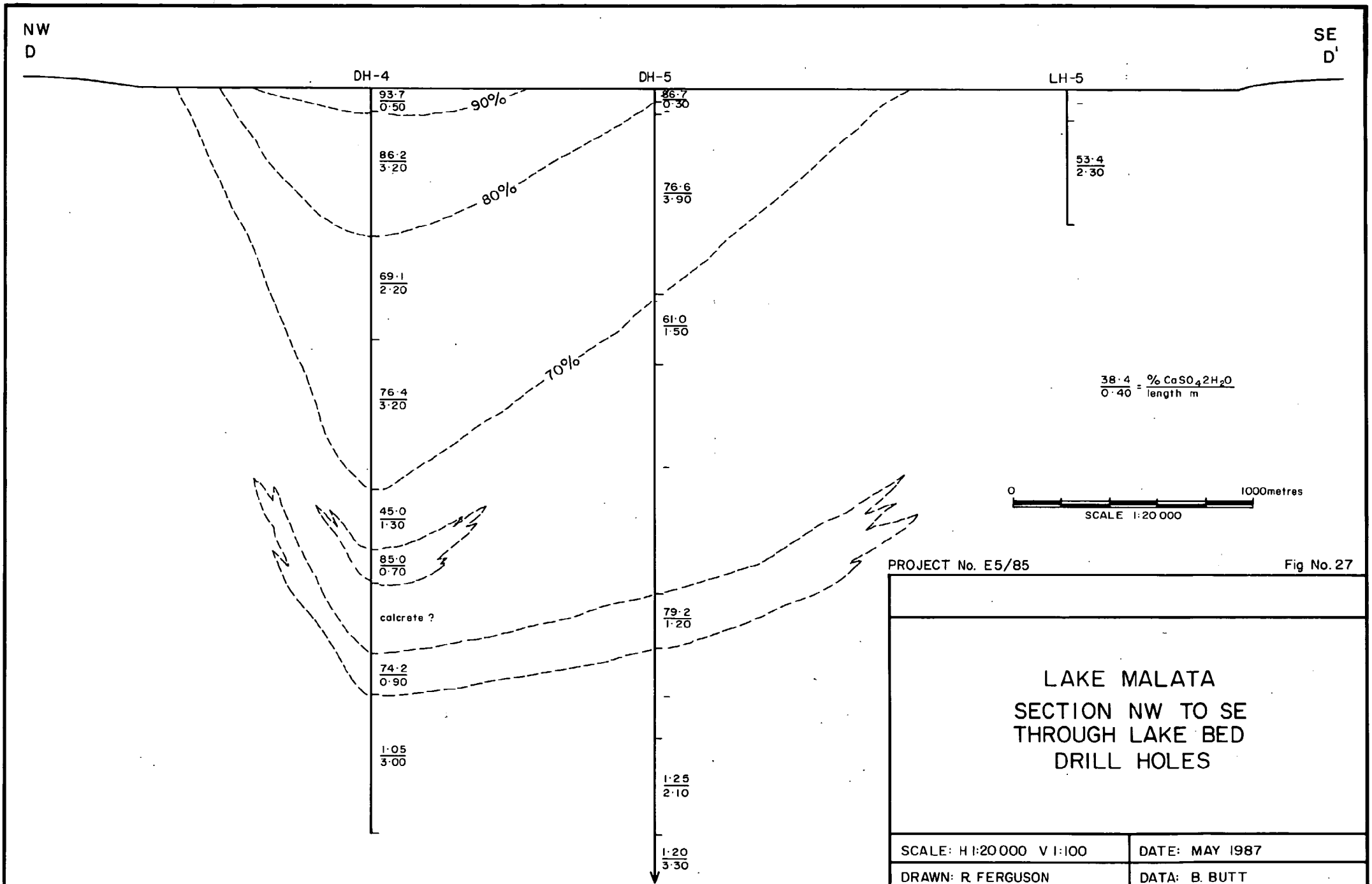
PROJECT No. E5/85

Fig No. 26

LAKE MALATA

BEST FIT SECTION SW TO NE THROUGH LAKE BED DRILL HOLES

SCALE: H 1:20 000 V 1:100	DATE: MAY 1987
DRAWN: R. FERGUSON	DATA: B. BUTT

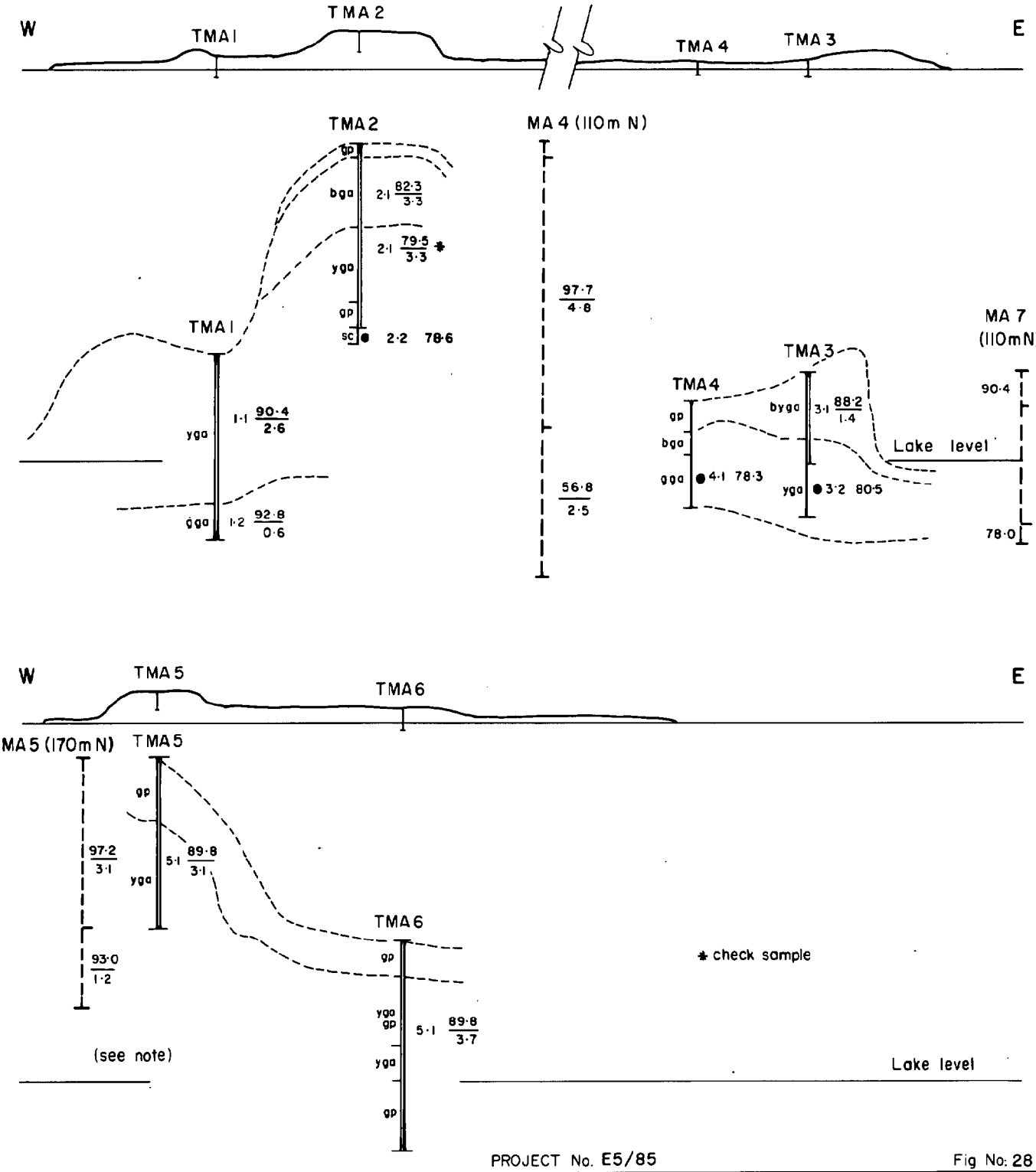


PROJECT No. E5/85

Fig No. 27

LAKE MALATA
SECTION NW TO SE THROUGH LAKE BED DRILL HOLES

SCALE: H 1:20 000 V 1:100	DATE: MAY 1987
DRAWN: R. FERGUSON	DATA: B. BUTT



PROJECT No. E5/85 Fig No: 28

LEGEND

gp	gypsite
ga	gyps/arenite
sc	sandy clay
g,b,y	grey, brown, yellow
	auger
	bulk sample
	grab sample
1·1 90·4/2·6	sample no / % gypsum / sample length m

NOTE : Sample from each trench combined for test.

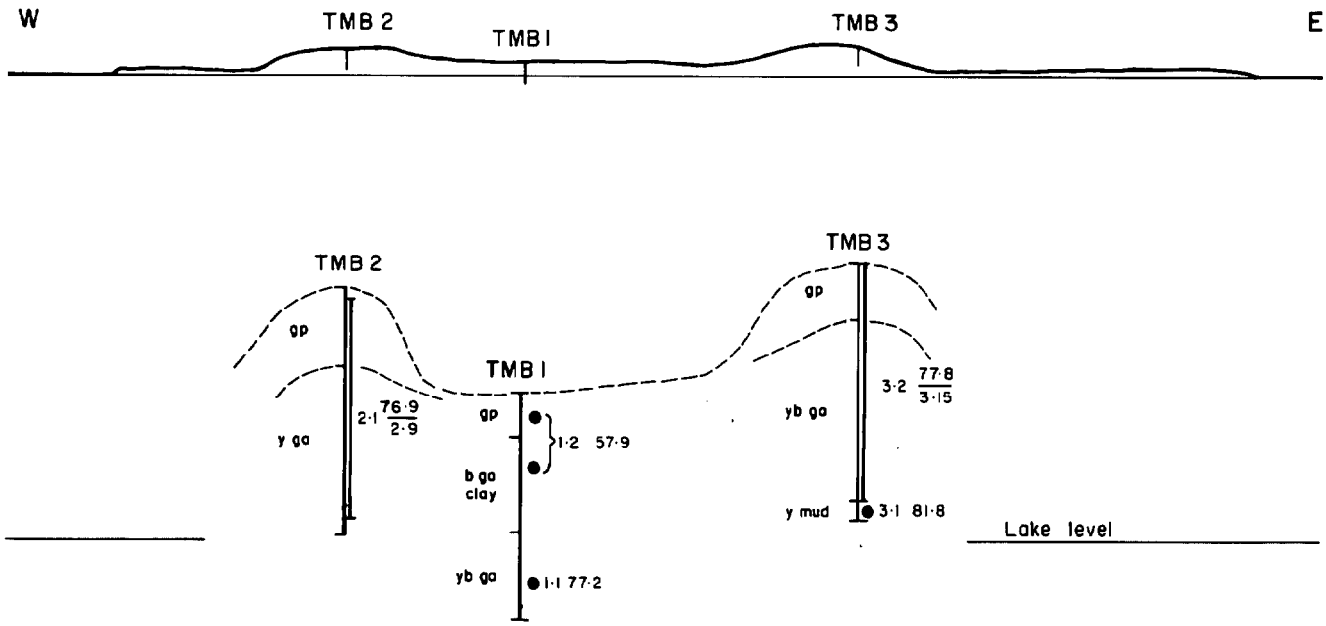
JOHN F. GILFILLAN AND ASSOCIATES PTY. LTD.

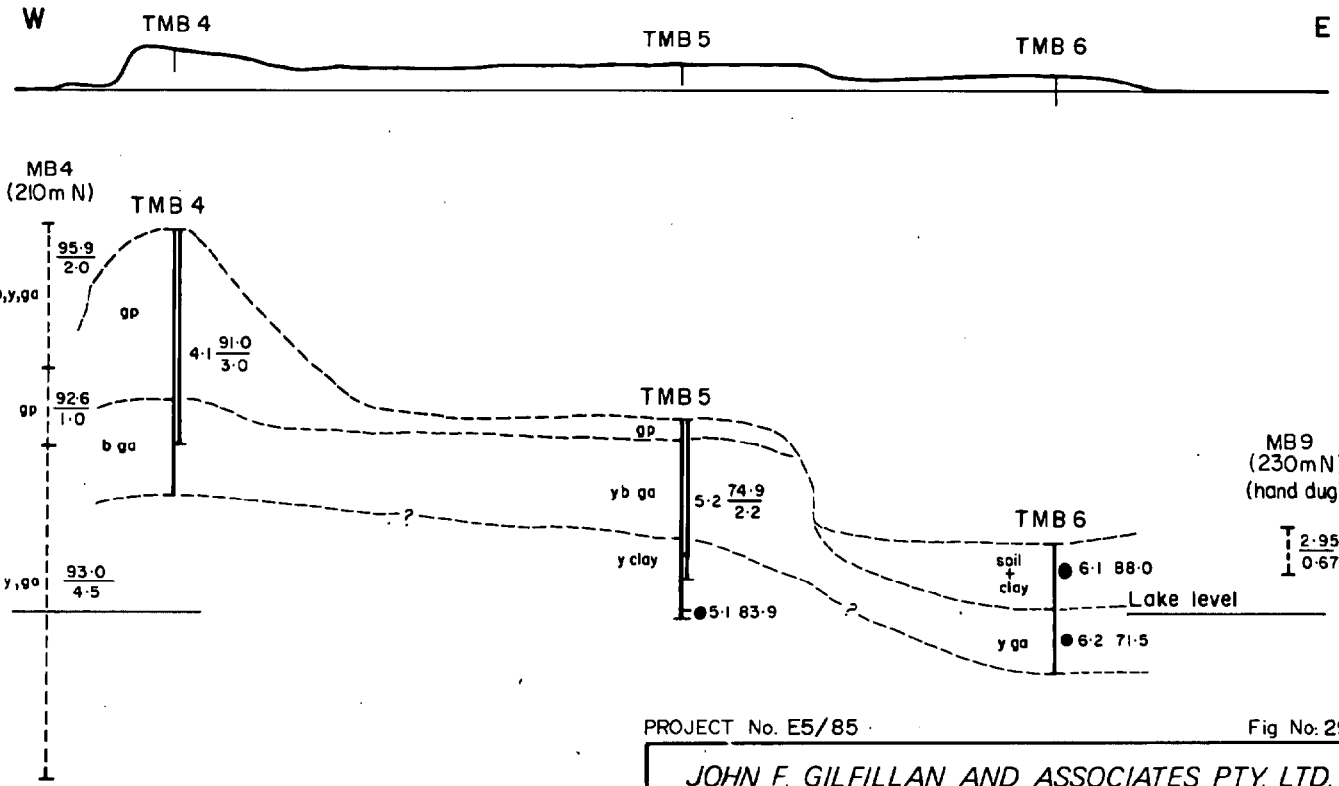
EXPLORATION LICENCE 1304

LAKE MALATA

BULK SAMPLE TRENCH PROFILE DUNE MA

SCALE: H 1:1000 , V 1:100	DATE: MAR. 1986
DRAWN: JAVS GEOSERVICES	DATA: B.C.B.





PROJECT No. E5/85

Fig No: 29

JOHN F. GILFILLAN AND ASSOCIATES PTY. LTD.

LEGEND

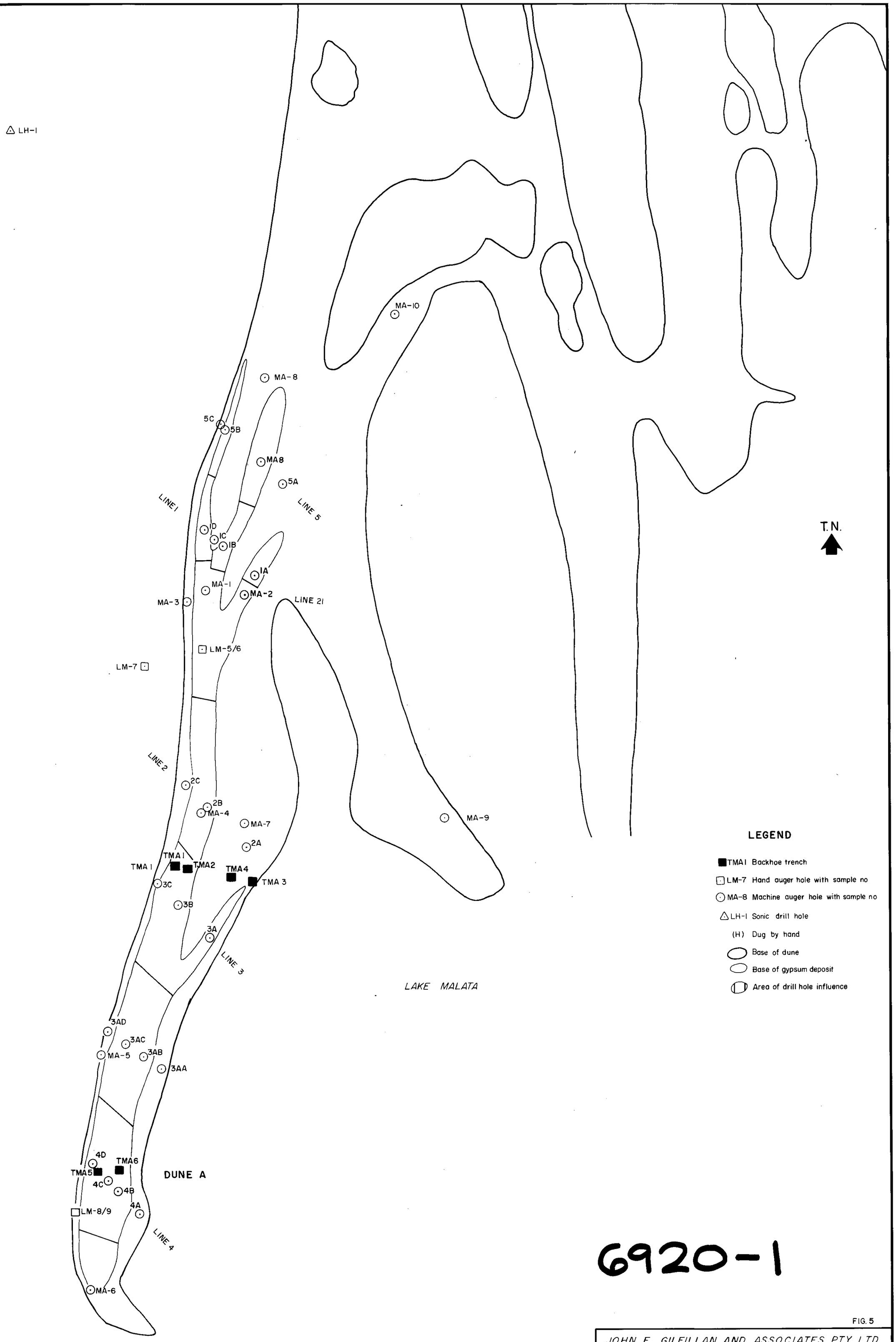
gp	gypsite
ga	gyps/arenite
g,b,y	grey, brown, yellow
	auger
	bulk sample
	grab sample
2·1 16·9/2·9	sample no % gypsum / sample length m

EXPLORATION LICENCE 1304

LAKE MALATA

BULK SAMPLE TRENCH PROFILE DUNE MB

SCALE: H 1:1000 , V 1:100	DATE: MAR. 1986
DRAWN: JAVS GEOSERVICES	DATA: B.C.B.



6920-1

FIG. 5

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LAKE MALATA

AUGER DRILL HOLE LOCATION MAP

DUNE A

SCALE: 1:5000	DATE: FEB. 1987
DRAWN: JAVS GEOSERVICES	DATA: B.C.B.
PROJECT: E5/85	PLAN:

DUNE A

LAKE MALATA

LINE 14
14A
14C
14B
MB-2
MB-1
LINE 16
TMB2
TMB1
TMB3
6A
LINE 6
6E
6D
6C
6B
T.N.
MB-3
LINE 17
7C
7B
7A
LINE 7
MB-11 (H)
MB10
MB4
MB9
LINE 18
8C
LH-5
8B
8A
LINE 8
LM 3/4
TMB4
TMB5
TMB6
9B
9A
LINE 8
MB-5
LINE 19
DUNE B
10C
10B
10A
LINE 10
MA6
11B
11A
LINE 11
12A
LINE 12
MB-8
LINE 20
MB-6
LM 10/11/12
13B
13C
MB-7
13A
LINE 13

0 100 200 300 400 500 metres

LEGEND

- TMB1 Backhoe trench
- LM3/4 Hand auger hole with sample no
- MB-7 Machine auger hole with sample no
- LH-5 Sonic drill hole
- (H) Dug by hand
- Base of dune
- Calcrete
- Base of gypsum deposit
- Area of drill hole influence.

6920-2

FIG. 11

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LAKE MALATA

AUGER DRILL HOLE LOCATION MAP

DUNE B

SCALE: 1:5,000	DATE: FEB. 1987
DRAWN: JAVS GEOSERVICES	DATA: B.C.B.
PROJECT: E5/85	PLAN:

Drill hole 150 90m north

T.N.

15J
15K
15I
15F
15E
15G
MJ-5
15H
LH-9
15N
15M
15L
15D
MJ-3
MJ-4
15C
MJ-2
15B
15A
MJ-1

DUNE J

LEGEND

- MJ-1 Machine auger hole
- LH-9 Sonic drill hole
- Base of dune
- Base of gypsum deposit
- Area of drill hole ifluence

0 100 200 300 400 500 metres

6920-3

FIG. 20

JOHN F. GILFILLAN AND ASSOCIATES PTY LTD

LAKE MALATA

AUGER DRILL HOLE LOCATION MAP

DUNE J

SCALE: 1:5000	DATE: FEB. 1987
DRAWN: JAVS GEOSERVICES	DATA: B.C.B.
PROJECT: E5/85	PLAN :