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BEACH SANDS INVESTIGATION - NORTH BURLEIGH.

by

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DEPARTMENT OF SUPPLY AND DEVELOPMENT.

Bureau of Mineral Resources, Geology and Geophysics.

Report No. 1949/68 -
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Plan No. Q25-10C-8.

BEACH SANDS INVESTIGATION.

THE NORTH BURLEIGH AREA, FROM SEASHELL AVENUE TO WAVE STREET (BOUNDED ON THE EAST BY THE NORTHERN PART OF THE AREA COVERED IN REPORT NO. 1948/61 (GEOL. SER. 24)).

Plans and sections of the area are included at the back of this report.

INTRODUCTION.

This area forms portion of a coastal sandy belt 1,500 to 2,000 feet wide, which extends from Main Beach, Southport, to South Nobby, North Burleigh; and is about 5 to 15 feet higher than the low-lying, in part swampy, coastal plain adjoining it on the west. The Pacific Highway runs close to the western edge of the sandy belt. The known deposits, and probably all of the deposits of heavy minerals between Southport and North Burleigh occur either in the present sea beaches or in the eastern half of the narrow sandy belt.

The deposits of heavy minerals in portions of the sandy belt have been covered in the following Reports :-

Report Nos. 1948/35.
1948/52 (Geol. Ser. 19).
1948/61 (Geol. Ser. 24).
1949/71 (Geol.Ser. 52).
1949/66 (Geol. Ser. 47).
1949/67 (Geol. Ser. 48).

The area dealt with in this report adjoins on the north the area of Report No. 1948/67 (Geol. Ser. 48), and on the east the area of Report No. 1948/61 (Geol. Ser. 24).

LOCALITY.

The area is six to six and a half miles south of Southport, 200 to 1,800 feet west of the beach, is bounded on the west by the Pacific Highway and on the east by the easternmost fence line of the residential allotments.

FIELD WORK.

Boring and Sampling. Preliminary boring and sampling of the area was carried out early in 1948, and the work was completed in December, 1948. Bores were put down to water level using a post hole auger. When the sand brought up from a bore-hole appeared to contain appreciable quantities of heavy mineral it was sampled by quartering. Details of samples are given in Table A at the end of this report.

LABORATORY WORK.

Samples were dried and their weights and volumes were determined. The samples were then concentrated by means of a laboratory Wilfley Table, and the weights and volumes of the dry concentrates were determined. The percentage composition of a composite sample of the concentrates from each bore line was determined by grain counting. The quantities of heavy minerals in the samples, expressed as weight per cent and as "Lbs./Cu. Yd." (pounds weight of heavy mineral concentrate per cubic yard of sand) are given in Table A at the end of this report. The average percentage composition of the heavy mineral concentrate in the area, obtained from the percentage composition at each bore line, weighted for the quantity of mineral at the line, is given in Table 2.

RESULTS.

Distribution of Heavy Mineral. The plan accompanying this report shows that heavy mineral-bearing sand occurs from the eastern boundary of the area to approximately 800 feet west of the boundary (Blocks I & II). A small quantity of heavy mineral occurs at approximately 1,000 feet west (Block III). Tables 1/300 and 1/120 show that the thickness and grade of the mineral-bearing sand is greatest in the eastern part of the area, and decreases towards the west. The overburden increases towards the west.

Quantities. Two separate estimates have been made (Tables 1 and 2) of the tonnages of heavy minerals, volumes and average thicknesses of mineral-bearing sands and of overburden, average grade of mineral-bearing sands and tonnages of each of the heavy minerals. The figures of Table 1/300 are based on a thickness of mineral-bearing sand in each borehole which has a minimum average grade of 300 lbs. of heavy mineral per cubic yard, while the figures of Table 1/120 are based on a minimum average grade of 120 lbs. per cubic yard. Quantities of overburden have been included with the mineral-bearing sands to obtain a maximum thickness of "working face" and a minimum thickness of overburden while still maintaining the desired grade. In the former case (300 lbs. per Cu. Yd.) the total thickness given for a small number of the bores does not represent a continuous working face but is made up of two portions separated by barren sand. In the latter case (120 lbs. per Cu. Yd.) the thickness of mineral-bearing sand given for each bore represents a continuous or unbroken working face.

Tonnages Available for Mining. The plan accompanying this report shows that only a small part of the area is as yet built upon. However, all of the allotments into which the area has been sub-divided have been taken up for residential purposes. Mining companies do not seem to have succeeded in reaching agreements with the owners to work any of the allotments, and hence it is unlikely that any appreciable tonnage of heavy minerals will be obtained from the area.

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SOUTHPORT, QUEENSLAND.

Minimum Grade 300 lbs/cu.yd.

LINES 10,100 to 12,264.

TABLE 1. /300. TONNAGES, VOLUMES, AVERAGE THICKNESSES AND AVERAGE GRADES.

BLOCK	AREA	WEIGHT OF HEAVY MINERAL CONCENTRATE.	VOLUME		AVERAGE THICKNESS		AVERAGE GRADE OF MINERAL BEARING SANDS.
			MINERAL-BEARING SANDS	OVER-BURDEN.	MINERAL-BEARING SANDS	OVER-BURDEN	
	SQ.YDS.	TONS.	CUBIC YDS.	CUBIC YDS	FEET	FEET	LBS. OF HEAVY MINERAL CONCENTRATE PER CUB.YD.
Block I.	80,264	17,266	125,409	182,995	1' 5"	2' 3"	308.39
Block II.	75,022	4,787	35,290.5	149,007	1' 4.9"	5' 11.5"	303.81
Block III.	14,200	169	1,136.3	51,316	0' 1.9"	10' 10.1"	386.94
Total for Blocks I, II, and III.	169,486	22,222	161,835.8	383,318	2' 10.3"	6' 9.4"	307.57

Minimum Grade 120 lbs./cu.yd.

TABLE 1. /~~102~~. 120. TONNAGES, VOLUMES, AVERAGE THICKNESSES AND AVERAGE GRADES.

Lines :- 10,100S to 12,264S.

BLOCK	AREA	WEIGHT OF HEAVY MINERAL CONCENTRATE.	VOLUME		AVERAGE THICKNESS		AVERAGE GRADE OF MINERAL BEARING SANDS.
			MINERAL-BEARING SANDS	OVER-BURDEN.	MINERAL-BEARING SANDS	OVER-BURDEN	
	SQ.YDS.	TONS.	CUBIC YDS.	CUBIC YDS	FEET	FEET	LBS. OF HEAVY MINERAL CONCENTRATE PER CUB.YD.
Block I.		18,697	219,032	127,188	6' 11.8"	4' 0.7"	191.21
Block II.		4,328	76,195	178,060	2' 10.9"	6' 9.1"	127.1
Block III.		344	5,962	66,851	0' 7.1"	6' 8.5"	129.2
Total for Blocks I, II and III.		23,369	301,169	372,099			173.8

TABLE No. 2.

TONNAGES OF EACH OF THE HEAVY MINERALS

ESTIMATED FROM PERCENTAGE COMPOSITIONS DETERMINED BY GRAIN COUNTING

AREA BETWEEN BORE LINES.	TONNAGES OF HEAVY MINERAL CONCENTRATES.	PERCENTAGE COMPOSITIONS & TONNAGES OF HEAVY MINERALS											
		MONAZITE		ZIRCON		RUTILE		ILMENITE		GARNET		OTHER MINERALS	
		%	TONS	%	TONS	%	TONS	%	TONS	%	TONS	%	TONS
Average Composition		0.45		37.44		32.55		26.04		0.86		2.65	
Tonnages for Minimum Grade of :-													
300 lb/cu.yd.	22,222		100.0		8,320		7,233		5,787		191.1		588.9
120 lb/cu.yd.	23,369		105.2		8,749		7,607		6,085		201.0		619.3

TABLE 1./300.(Detailed). TONNAGES, VOLUMES, AVERAGE THICKNESSES AND AVERAGE GRADES.

BLOCK	AREA	WEIGHT OF HEAVY MINERAL CONCENTRATE	VOLUME		AVERAGE THICKNESS		AVERAGE GRADE OF MINERAL BEARING SANDS.
			MINERAL-BEARING SANDS	OVER-BURDEN.	MINERAL-BEARING SANDS	OVER-BURDEN	
	SQ.YDS.	TONS.	CUBIC YDS.	CUBIC YDS	FEET	FEET	LBS.OF HEAVY MINERAL CONCENTRATE PER CUB.YD.
Line 10,100S. to Line 10,900S.							
Block I(a)	7,908	2,080	15,375	17,442	5.8	6.6	303.0
(b)	17,295	4,343	29,817	48,299	5.2	8.4	326.3
Block II (a)	15,682	751	5,414	29,817	1.0	5.7	310.7
(b)	14,935	651	4,753	28,457	0.9	5.7	306.7
Block III.	4,841	73	520	12,961	0.3	8.0	325.0
Line 10,900S to Line 11,492S.							
Block I(a)	12,499	4,099	30,572	21,654	7.3	5.2	300.3
(b)	11,808	1,203	7,724	23,903	1.9	6.1	349.0
Block II(a)	11,996	992	7,310	26,044	1.8	6.5	303.9
(b)	10,358	661	5,090	24,820	1.5	7.2	291.0
Block III.	3,581	54	385	9,589	0.3	8.0	314.2

TABLE 1. /300(Detailed) Continued. TONNAGES, VOLUMES, AVERAGE THICKNESSES AND AVERAGE GRADES.

BLOCK	AREA	WEIGHT OF HEAVY MINERAL CONCENTRATE.	V O L U M E		AVERAGE THICKNESS		AVERAGE GRADE OF MINERAL BEARING SANDS.
			MINERAL-BEARING SANDS	OVER-BURDEN.	MINERAL-BEARING SANDS	OVER-BURDEN	
	SQ.YDS.	TONS.	CUBIC YDS.	CUBIC YDS	FEET	FEET	LBS.OF HEAVY MINERAL CONCENTRATE PER CUB.YD.
Line 11,492S to Line 12,264S.							
Block I.	30,953	5,541	41,921	71,697	4.0	6.9	296.0
Block II.	22,051	1,732	12,723	39,869	1.7	5.4	304.9
Block III.	5,776	42	232	28,766	0.12	14.9	405.5

TABLE I./120.(Detailed). TONNAGES, VOLUMES, AVERAGE THICKNESSES AND AVERAGE GRADES.

BLOCK	AREA	WEIGHT OF HEAVY MINERAL CONCEN-TRATE.	VOLUME		AVERAGE THICKNESS		AVERAGE GRADE OF MINERAL BEARING SANDS.
			MINERAL-BEARING SANDS	OVER-BURDEN.	MINERAL-BEARING SANDS	OVER-BURDEN	
	SQ.YDS.	TONS.	CUBIC YDS.	CUBIC YDS	FEET	FEET	LBS.OF HEAVY MINERAL CONCENTRATE PER CUB.YD.
Line 10,100S to Line 10,900S.							
Block I(a)	8,348	2,194	29,284	7,788	10.5	2.8	167.9
(b)	24,403	7,659	50,380	40,352	6.2	4.9	134.0
" II	35,604	1,590	25,950	84,350	2.2	7.1	137.3
" III	9,961	158	2,747	20,723	0.8	6.2	128.6
Line 10,900S to Line 11,492S.							
Block I	27,681	4,780	63,964	35,770	6.9	4.2	167.4
" II	23,449	1,387	25,570	55,165	3.3	7.0	121.5
" III	7,369	117	2,032	15,330	0.8	6.2	128.6
Line 11,492S to Line 12,264S.							
Block I	33,655	4,064	75,414	43,278	6.7	3.8	120.7
" II	19,349	1,351.3	24,675	38,569	3.8	6.0	122.7
" III	12,556	70	1,183	30,798	0.3	7.4	131.8

APPENDIX. TABLE A.

QUANTITIES OF HEAVY MINERALS INTERSECTED IN BORES.

LINE 10900S.

BORE NO. & R.L.	CO-ORDINATES FROM	SAMPLE NO. FIELD	SAMPLE NO. LABORATORY	DEPTH FROM	DEPTH TO	QUANTITY OF HEAVY MINERALS LBS PER CU.YD.	QUANTITY OF HEAVY MINERALS WT.PER CENT	PRODUCT THICKNESS OF SAMPLE (FT.) X (LBS.PER CU.YD. 300.	PRODUCT THICKNESS OF SAMPLE (FT.) X (LBS.PER CU.YD. 120.	OVERBURDEN FT. 300.	OVERBURDEN FT. 120.
00W.	N. W. CORNER OF D.C.22. EASTERN FENCE LINE IS ADOPTED MERIDIAN.	1	L6095	14'0"	14'6"	524.2	17.4	262.1	262.1	13'8"	12'4"
			Thickness		0'10"	314.5					
					2'2"	121.5					
24W..		1	L6093	12'0"	12'4"	2158	56.5	719.0	719.3		
		2	L6094	13'6"	14'0"	2156	65.8	1078.0	1078		
			Thickness		6'0"	299.5		1797.0		8'0"	Nil.
					14'0"	141.2			1797.3		
48W.		1	L6088	8'3"	8'9"	205.9	7.5	102.9	102.9		
		2	L6089	9'10"	10'	539.2	18.0	89.9	89.9		
		3	L6090	11'	11'9"	2570.0	65.5	1927.5	1927.5		
		4	L6091	12'	12'7"	2217.0	61.0	1293.3	1124.4		
		5	L6092	14'	14'6"	1635.0	49.0	817.5	817.5		
			Thickness		13'6"	306.0		4131.1		1'0"	Nil.
					14'6"	300.2			4131.1		
81W.		1	L6087	5'8"	9'	296.3	11.0	1047.0			
			Thickness		3'4"	296.3		1047.0		5'8"	0'6"
					8'6"	120.9					
114W.		1	L6086	22'	22'3"	250.2	7.7	-	62.5		21'9"
			Thickness		0'6"	125.1					
154W.		1	L2607	1'10"	2'7"	220.8	9.1	-	165.6		
		2	L2608	17'6"	17'9"	158.8	5.5	-			1'3"
			Thickness		1'4"	124.2			165.6		

APPENDIX. TABLE A.

QUANTITIES OF HEAVY MINERALS INTERSECTED IN BORES.

LINE 10900S. (Continued).

BORE NO. & R.L.	CO-ORDINATES FROM	SAMPLE NO. FIELD	SAMPLE NO. LABORATORY	DEPTH FROM	DEPTH TO	QUANTITY OF HEAVY MINERALS LBS PER CU.YD.	QUANTITY OF HEAVY MINERALS WT.PER CENT	PRODUCT THICKNESS OF SAMPLE (FT.) X (LBS.PER CU.YD. 300.	PRODUCT THICKNESS OF SAMPLE (FT.) X (LBS.PER CU.YD. 120.	OVERBURDEN FT. 300.	OVERBURDEN FT. 120.
193W.	N.W. CORNER	1	L6266	8'6"	8'9"	307.1	10.4	76.8			
	OF	2	L6267	9' 6"	10'2"	2313.0	58.2	1542.0			
	D.C.22.	3	L6268	10'6"	10'10"	1257.0	39.0	419.0			
	EASTERN	4	L6269	11'9"	12'1"	560.8	32.7	186.9			
			Thickness		7'4"	303.4		2224.7		4'9"	Nil.
	FENCE				12'1"	175.6			2224.7		
220W.	LINE	1	L6270	9'9"	10'3"	565.9	19.2	282.5			
	IS	2	L6271	11'8"	12'2"	1227.0	35.5	613.5			
	ADOPTED	3	L6272	13'2"	13'9"	2531.0	63.0	1477.0			
			Thickness		7'11"	299.8		2373.0		5'10"	Nil.
	MERIDIAN.				13'9"	172.5			2373.0		
259W.		1	L2609	5'2"	5'4"	217.1	7.7	-	36.2		
		2	L2610	7'	7'5"	1086.0	33.4	452.5	452.5		
		3	L2611	8'	8'6"	675.1	22.3	337.6	337.5		
			Thickness		2'5"	316.0		790.1		6'	2'8"
					6'10"	120.9			826.2		
289W.		1	L6273	6'9"	7'3"	617.9	20.5	209.0	308.9		
		2	L6274	7'6"	7'9"	394.5	13.5	98.6	98.6		
		3	L6275	9'9"	9'11"	894.8	28.0	149.1	149.1		
			Thickness		1'5"	322.4		556.7		8'6"	5'4"
					4'7"	120.1			556.6		

APPENDIX. TABLE A. QUANTITIES OF HEAVY MINERALS INTERSECTED IN BORES.

LINE 10900S. (Continued).

BORE NO. & R.L.	CO-ORDINATES FROM	SAMPLE NO. FIELD	SAMPLE NO. LABORATORY	DEPTH FROM	DEPTH TO	QUANTITY OF HEAVY MINERALS LBS PER CU.YD.	QUANTITY OF HEAVY MINERALS WT.PER CENT	PRODUCT THICKNESS OF SAMPLE (FT.) X (LBS.PER CU.YD. 300.	PRODUCT THICKNESS OF SAMPLE (FT.) X (LBS.PER CU.YD. 120.	OVERBURDEN FT. 300.	OVERBURDEN FT. 120.
333W.	N.W. CORNER OF D.C.22. EASTERN	1	L2612	0'0"	8'	Trace	-	-			
		2	L2613	9'6"	9'8"	197.0	6.6	-	32.8		
		3	L2614	13'	?	276.2	9.6	-	~~32.8~~	-	9'5"
			Thickness		0'3"	131.2			32.8		
380W.	FENCE LINE IS ADOPTED MERIDIAN.	1	L6110	4'6"	5'	253.2	9.8	-	126.6		
		2	L6111	5'9"	6'2"	25.64	1.01	5'9-6'2 6.4	10.7		
		3	L6112	6'2"	6'5"	578.5	19.8	144.7	144.6		
		4	L6113	9'3"	9'6"	517.6	17.6	-			
			Thickness		0'6"	302.2		151.1		5'11	4'1"
					2'4"	120.7			281.7		
433W.		1	L2615	7'6"	8'6"	108.7	4.0	108.7			
			Thickness		1'0"	108.7				-	7'6"
498W.		1	L6114	7'	7'4"	561.0	24.0	187.0	187		
		2	L6115	8'6"	8'8"	455.8	16.0	-	91		
			Thickness		0'7"	320.6		187.0		6'9"	6'5"
					2'3"	123.6			278		
528W.		1	L6276	7'2"	7'6"	1652.0	42.4	550.7	550.7		
		2	L6277	8'10"	8'11"	692.0	22.25	57.7	57.7	6'11"	5'7"
			Thickness		2'0"	304.2		608.4			
					3'4"	122.4			608.4		

APPENDIX. TABLE A. QUANTITIES OF HEAVY MINERALS INTERSECTED IN BORES.

LINE 10900S. (Continued).

BORE NO. & R.L.	CO-ORDINATES FROM	SAMPLE NO. FIELD	SAMPLE NO. LABORATORY	DEPTH FROM	DEPTH TO	QUANTITY OF HEAVY MINERALS LBS PER CU.YD.	QUANTITY OF HEAVY MINERALS WT.PER CENT	PRODUCT THICKNESS OF SAMPLE (FT.) X (LBS.PER CU.YD.		OVERBURDEN FT.	
								300.	120.	300.	120.
569W.	N. W. CORNER	1	L2616	7'9"	8'	190	6.8	47.5			
	OF	2	L2617	9'6"	9'8"	171.5	6.0	-			
	D.C.22.	3	L2617 A.	10'4"	10'8"	290.0	10.0	-	96.6	-	9'11"
	EASTERN		Thickness		0'9"	128.8			96.6		
625W.	FENCE		NO SAMPLE.								
681W.	LINE	1	L2618	0'	7'9"	7.0	0.2	-			
	IS	2	L2619	7'9"	8'6"	622.2	20.7	466.7	466.7		
	ADOPTED	3	L2620	10'6"	10'9"	1302.0	38.0	325.5	325.5		
	MERIDIAN.	4	L2621	11'	?	-	-				
			Thickness		2'6"	316.9		792.2		8'3"	6'9"
					4'0"	120.2			792.2		
729W.		1	L6116	9'9"	10'	645.7	21.5	161.4			
		2	L6117	10'8"	11'	994.7	33.5	331.6			
			Thickness		1'7"	311.4		493.0			
					4'1"	120.7			493	9'5"	6'11"
777W.		1	L2622	12'6"	12'8"	246.8	8.2	-	41.1		
			Thickness		0'4"	123.3				-	12'4".
817W.			NO SAMPLE.			Grade too low.					
860W.			NO SAMPLE			Grade too low.					

APPENDIX. TABLE A. QUANTITIES OF HEAVY MINERALS INTERSECTED IN BORES.

LINE 10900S. (Continued).

BORE NO. & R. L.	CO-ORDINATES FROM	SAMPLE NO. FIELD	SAMPLE NO. LABORATORY	DEPTH FROM	DEPTH TO	QUANTITY OF HEAVY MINERALS LBS. PER CU.YD.	QUANTITY OF HEAVY MINERALS WT.PER CENT	THICKNESS OF SAMPLE (FT.) X(LBS. PER CU. YD). 300	THICKNESS OF SAMPLE (FT.) X(LBS. PER CU. YD). 120	OVERBURDEN 300	OVERBURDEN 120
936W.	N. W. CORNER	1	L2623	0'	9'9"	15.24	0.57	-			
	OF	2	L2624	9'9"	9'11"	31.46	1.2	-			
	D.C.22.	3	L2625	12'10"	13'	42.89	1.3	-		-	
	EASTERN			Grade	too	low.					
970W.	FENCE	1	L6118	8'3"	8'7"	158.8	5.8	-	52.9		
	LINE	2	L6119	10'	10'3"	228.1	8.1	-	-	-	8'2"
			Thickness		0'5"	127.2			52.9		
1004W.	IS	1	L2626	5'10"	6'2"	561	19.6	186.8			
	ADOPTED		Thickness		0'7"	320.2		186.8			
					1'6"	124.8			186.8	5'7"	4'8"
1041W.	MERIDIAN.	1	L6120	10'	10'3"	464.5	15.6	116.1			
			Thickness		0'4"	348.3		116.1			
					0'11"	126.6			116.1	9'11"	9'4"
1079W.		1	L2627	5'10"	6'2"	561	19.6	-	186.8		
			Thickness		1'6"	124.8				-	4'8"
1160W.		1	L2628	0'	9'10"	4	0.16				
		2	L2629	9'	10'10"	47.99	1.8				
		3	L2630	10'10"	12'	37	1.3			-	
				Grade	too	low.					
1212W.		1	L2631	11'10"	13'2"	60.98	2.3	$\frac{3}{8}$ -			
				Grade	too	low.				-	

APPENDIX. TABLE A. QUANTITIES OF HEAVY MINERALS INTERSECTED IN BORES.

LINE 10900S. (Continued).

BORE NO. & R. L.	CO-ORDINATES FROM	SAMPLE NO. FIELD	SAMPLE NO. LABORATORY	DEPTH FROM	DEPTH TO	QUANTITY OF HEAVY MINERALS LBS. PER CU. YD.	QUANTITY OF HEAVY MINERALS WT. PER CENT	THICKNESS OF SAMPLE (FT.) X (LBS. PER CU. YD.) 300	THICKNESS OF SAMPLE (FT.) X (LBS. PER CU. YD.) 120	OVERBURDEN 300	OVERBURDEN 120
1389W.	N. W. CORNER		NO	SAMPLE.							
1532W.	OF	1	L2632	0'	9'6"	4.7	.16	-		-	
	D. C. 22.			TRACE							
1655W.	EASTERN		NO	MINERAL.							
1740W.	FENCE		NO	MINERAL.							
	LINE										
1905W.	IS	1	L2633	0'	4'	7.4	0.27	-			
	ADOPTED	2	L2634	4'	5'	18.59	0.7	-		-	
	MERIDIAN.										

APPENDIX. TABLE A. QUANTITIES OF HEAVY MINERALS INTERSECTED IN BORES.

LINE 11,492S.

BORE NO. & R.L.	CO-ORDINATES FROM	SAMPLE NO. FIELD	SAMPLE NO. LABORATORY	DEPTH FROM	DEPTH TO	QUANTITY OF HEAVY MINERALS LBS PER CU.YD.	QUANTITY OF HEAVY MINERALS WT.PER CENT	THICKNESS OF SAMPLE (FT.) X (LBS. PER CU. YD). 300	THICKNESS OF SAMPLE (FT.) X (LBS. PER CU. YD). 120	OVERBURDEN 300	OVERBURDEN 120
00	N. W. CORNER	1	L6142	2'0"	2'9"	63.1	2.4	-	47.3		
	of	2	L6143	5' 6"	6'3"	112.5	4.2	84.4	84.4		
	D.C.22.	3	L6144	6' 6"	7'0"	90.4	3.5	45.2	45.2	5'5 + 1'7	
	EASTERN	4	L6145	7' 0"	8'2"	600.2	20.0	700.2	700.2	= 7'0"	2'0"
	FENCE	5	L6146	9'9"	10'0"	333.2	12.1	83.3	83.3		
	LINE		Thickness		3'0"	304.3		913.1			
					8'0"	120.1			960.4		
25W.	IS	1	L6147	2'9"	3'3"	49.5	1.9	24.8			
	ADOPTED	2	L6148	8'6"	9'0"	429.2	15.2	214.6			
	MERIDIAN.	3	L6149	9'6"	10'9"	2583.0	65.5	3228.7			
		4	L6150	11'0"	11'4"	2190.0	58.0	730.0			
		5	L6151	11'4"	11'6"	767.8	24.3	111.3		Nil	Nil.
			Thickness		11'6	374.7		4309.4	4309.4		
82W.		1	L6152	9'9"	10'6"	204.3	7.3	153.2			
		2	L6153	10'6"	12'2"	1314.0	39.5	2190.0			
			Thickness		7'9"	302.3		2343.2			
					12'2"	180.0			2343.2	4'5"	Nil.
135W.		1	L6154	12'6"	14'5"	598.5	20.4	897.8			
			Thickness		2'11"	307.2		897.8			
					7'5"				897.8	11'1"	6'7"

APPENDIX. TABLE A. QUANTITIES OF HEAVY MINERALS INTERSECTED IN BORES.

LINE 11492S. (Continued).

BORE NO. & R. L.	CO-ORDINATES FROM	SAMPLE NO. FIELD	SAMPLE NO. LABORATORY	DEPTH FROM	DEPTH TO	QUANTITY OF HEAVY MINERALS LBS PER CU.YD.	QUANTITY OF HEAVY MINERALS WT.PER CENT	THICKNESS OF SAMPLE (FT.) X (LBS. PER CU. YD). 300	THICKNESS OF SAMPLE (FT.) X (LBS. PER CU. YD). 120	OVERBURDEN 300	OVERBURDEN 120
177W.	N.W. CORNER	1	L6155	10'0"	10'9"	842.8	27	632.1			
	OF	2	L6156	12'0"	13'6"	1670.0	53	2505.0			
	D.C.22.	3	L6157	14'1"	14'6"	1545.0	43	643.8			
	EASTERN		Thickness		12'7"	300.5		3780.9		1'11	Nil.
					14'6"	260.7			3780.9		
220W.	FENCE	1	L6158	12'0"	12'5"	2643.0	66.5	1101.2			
	LINE	2	L6159	12'8"	13'10"	2182.0	58.0	2545.7			
	IS		Thickness		12'2"	299.7		3646.9		1'8"	Nil.
					13'10"	263.4					
241W.	ADOPTED	1	L6340	6'3"	7'9"	100.2	4	-	150.3		
	MERIDIAN.	2	L6341	13'6"	13'8"	672.0	23	112.0	-	13'4"	6'3"
			Thickness		0'4"	336		112.0			
					1'6"	100.2			150.3		
266W.			NO	SAMPLE.							
288W.		1	L6342	8'6"	8'8"	1148.0	35.2	191.3			
		2	L6343	9'10"	10'1"	596.1	20.8	149.0		8'6"+	
			Thickness		1'1"	314.1		340.3		6"	
					2'10"	120			340.3	= 9'0"	-

APPENDIX. TABLE A. QUANTITIES OF HEAVY MINERALS INTERSECTED IN BORES.

LINE 11492S. (Continued).

BORE NO. & R.L.	CO-ORDINATES FROM	SAMPLE NO. FIELD	SAMPLE NO. LABORATORY	DEPTH FROM	DEPTH TO	QUANTITY OF HEAVY MINERALS LBS PER CU.YD.	QUANTITY OF HEAVY MINERALS WT.PER CENT	THICKNESS OF SAMPLE (FT.) X (LBS.PER CU.YD.) 300	THICKNESS OF SAMPLE (FT.) X (LBS.PER CU.YD.) 120	OVERBURDEN 300	OVERBURDEN 120
309W.	N. W. CORNER	1	L6160	6'0"	6'2"	127.3	3.9				
	OF	2	L6161	7'4"	7'6"	746.1	23.5	124.3	124.3		
			Thickness		0'4"	372.9				7'4"	6'6"
	D.C.22.				1'0"	124.3					
327W.	EASTERN	1	L6344	5'8"	6'0"	405.2	15	135.1	135.1		
	FENCE	2	L6345	7'0"	7'1"	400.2	12.8	-	33.4		
			Thickness		0'5"	324.2		135.1		5'7"	5'8"
	LINE				1'5"	118.9			168.5		
346W.	IS		NO	SAMPLE.							
379W.	ADOPTED	1	L6346	9'0"	9'5"	604.6	21.3	302.3			
		2	L6347	9'6"	10'3"	1842.0	55.0	1381.5			
	MERIDIAN.		Thickness		5'7"	301.5		1683.8		4'8"	Nil.
					10'3"	164.3			1683.8		
409W.		1	L6162	7'6"	8'9"	427.3	14.9	534.0		0'-7'6	
		2	L6163	10'9"	11'2"	1099.0	36.5	458.0		+ 8'9-9'2	
			Thickness		3'3"	305.2		992.0		= 7'11"	2'11"
					8'3"	120.3			992.0		
439W.		1	L6348	9'5"	9'11"	257.2	9.7	128.6			
		2	L6349	11'0"	12'1"	1496.0	40.8	1620.7			
			Thickness		5'9"	304.2		1749.3		6'4"	Nil.
					12'1"	144.7			1749.3		

APPENDIX. TABLE A. QUANTITIES OF HEAVY MINERALS INTERSECTED IN BORES.

LINE 11492S. (Continued).

BORE NO. & R.L.	CO-ORDINATES FROM	SAMPLE NO. FIELD	SAMPLE NO. LABORATORY	DEPTH FROM	DEPTH TO	QUANTITY OF HEAVY MINERALS LBS PER CU.YD.	QUANTITY OF HEAVY MINERALS WT. PER CENT	THICKNESS OF SAMPLE (FT.) X (LBS.PER CU.YD.) 300	THICKNESS OF SAMPLE (FT.) X (LBS.PER CU.YD.) 120	OVERBURDEN 300	OVERBURDEN 120
475W.	N.W. CORNER	1	L6164	12'2"	12'10"	137.9	4.9		91.8		
	OF		Thickness		0'9"	122.4					12'1"
525W.	D.C.22.	1	L6350	9'0"	9'6"	1268.0	37	634			
	EASTERN		Thickness		2'1"	304.3		634		7'5"	4'3"
					5'3"	120.8			634		
	FENCE										
575W.		1	L6172	12'3"	12'7"	204.6	7.8		68.2		
	LINE		Thickness		0'6"	136.4			68.2		12'1"
605W.	IS	1	L6351	8'3"	8'5"	344.2	12.2	57.4			
			Thickness		0'2"	344.2					
	ADOPTED				0'5"	137.7				8'3"	8'0"
638W.	MERIDIAN.		NO	SAMPLE.							
688W.				6'4"	9'5"	Nil	Nil	Nil.			
		1	L6352	9'5"	10'2"	1772.0	52.4	1329			
		2	L6353	10'9"	10'10"	460.6	14.7	38.4			
			Thickness		4'6"	125.9		1367.4		6'4"	Nil.
					10'10"						
738W.		1	L6165	0'0"	11'0"	13.3	.52	GRADE			
		2	L6166	11'0"	11'4"	70.1	2.8	TOO			
		3	L6167	12'6"	12'10"	83.7	3.0	LOW.			

APPENDIX. TABLE A. QUANTITIES OF HEAVY MINERALS INTERSECTED IN BORES.

LINE 11492S. (Continued).

BORE NO. & R.L.	CO-ORDINATES FROM	SAMPLE NO.		DEPTH		QUANTITY OF HEAVY MINERALS		THICKNESS OF SAMPLE (FT.) X (LBS. PER CU. YD).		OVERBURDEN	
		FIELD	LABOR-ATORY	FROM	TO	LBS.PER CU.YD.	WT.PER CENT	300	120	300	120
768W.	N. W. CORNER	1	L6354	0'0"	16'0"	52.36	2				
827W.	OF	1	L6168	0'0"	13'0"	Trace		Trace			
877W.	D.C. 22.	1	L6169	0'0"	9'0"	Trace		Trace			
942W.	EASTERN	1	L6170	0'0"	14'9"	50.3	1.9	Grade	too low.		
1000W.	FENCE	1	L6171	0'0"	10'11"	56.9	2.2	Grade	too low.		
	LINE										
	IS										
	ADOPTED										
	MERIDIAN.										

APPENDIX. TABLE.A. QUANTITIES OF HEAVY MINERALS INTERSECTED IN BORES.

LINE 12264S.

BORE NO. & R. L.	CO-ORDINATES FROM	SAMPLE NO. FIELD	SAMPLE NO. LABORATORY	DEPTH FROM	DEPTH TO	QUANTITY OF HEAVY MINERALS LBS.PER CU.YD.	QUANTITY OF HEAVY MINERALS WT.PER CENT	THICKNESS OF SAMPLE (FT.) X (LBS.PER CU.YD.) 300	THICKNESS OF SAMPLE (FT.) X (LBS.PER CU.YD.) 120	OVERBURDEN 300	OVERBURDEN 120
00	N. W. CORNER	1	L5865	0'0"	9'6"	28.7	1.1	14'-15'	545.3		
	OF	2	L5866	9'6"	15'0"	22.0	0.8	22.0	121.0		
	D.C.22.	3	L5867	15'0"	15'2"	747.0	12.2	57.8	57.8		
	EASTERN	4	L5868	15'6"	15'10"	825.9	33.1	275.3	275.3	14'0"	N11.
	FENCE	5	L5869	15'10"	16'8"	1360.3	41.8	1133.6	1133.6		
	LINE		Thickness		4'8"	308.3		1438.7			
					16'8"	128.1			2133.0		
41W.	IS	1	L5870	0'6"	2'6"	19.0	0.7				
	ADOPTED	2	L5871	3'0"	3'8"	54.6	2.0				
	MERIDIAN.	3	L5872	9'3"	9'5"	684.7	22.5	114.1			
		4	L5873	16'9"	17'0"	216.7	7.4			9'1"	8'6"
		5	L5874	17'3"	17'4"	143.2	5.1				
			Thickness		0'4"	342.3		114.1			
					0'11"	124.5			114.1		
74W.		1	L6399	0'0"	10'6"	Trace					
104W.		1	L5875	11'0"	11'2"	394.8	13.0	65.8		0- 11' + 11'2-11'6 =11'4"	6'5"
		2	L5876	13'0"	13'2"	202.2	6.8	33.7			
		3	L5877	14'1"	14'7"	1776.0	48.3	888.0			
			Thickness		3'3"	303.6		987.5			
					8'2"	120.9			987.5		

APPENDIX. TABLE A. QUANTITIES OF HEAVY MINERALS INTERSECTED IN BORES.

LINE 12264S. (Continued).

BORE NO. & R. L.	CO-ORDINATES FROM	SAMPLE NO. FIELD	SAMPLE NO. LABORATORY	DEPTH FROM	DEPTH TO	QUANTITY OF HEAVY MINERALS LBS.PER CU.YD.	QUANTITY OF HEAVY MINERALS WT.PER CENT	THICKNESS OF SAMPLE (FT.) X (LBS.PER CU.YD.) 300	THICKNESS OF SAMPLE (FT.) X (LBS.PER CU.YD.) 120	OVERBURDEN. 300	OVERBURDEN. 120
154W.	N. W. CORNER	1	L5878	0'0"	9'0"	51.6	2.0	8'-9' 51.6	464.4		
	OF	2	L5879	9'0"	9'9"	1206.0	35.9	904.5	904.5		
	D.C.22.	3	L5880	11'0"	11'2"	740.4	22.9	123.4	123.4		
	EASTERN	4	L5881	11'6"	11'8"	403.5	73.2	67.2	67.2		
			Thickness		3'8"	312.7		1146.7		8'6"	Nil.
	FENCE				11'8"	133.7			1559.5		
214W.	LINE	1	L5882	7'6"	8'3"	909.0	36.8	681.7	681.7	6'0"	2'7"
			Thickness		2'3"	303.0					
	IS				5'8"	120.3					
238W.	ADOPTED	1	L5883	0'0"	10'9"	Trace					
	MERIDIAN.	2	L5884	11'0"	11'6"	310	10.4	155		11'0"	10'3"
			Thickness		0'6"	310		155			
					1'3"	155			155		
300W.		1	L5885	0'0"	9'1"		Trace				
		2	L5886	10'0"	10'2"	168.6	5.9	28.1		8'7"	3'8"
		3	L5887	10'4"	10'10"	1865.0	52.2	832.5			
		4	L5888	11'6"	11'9"	442.4	15.5	110.6			
			Thickness		3'2"	306.7		971.2			
					8'1"	121					
330W.		1	L6400	6'3"	6'5"	334.4	11.8	55.7			
		2	L6401	9'9"	10'1"	117.5	4.4			6'3"	6'0"
			Thickness		0'2"	133.7		55.7	55.7		
					0'5"						

APPENDIX. TABLE A. QUANTITIES OF HEAVY MINERALS INTERSECTED IN BORES.

LINE 12264S. (Continued).

BORE NO. & R. L.	CO-ORDINATES FROM	SAMPLE NO. FIELD	SAMPLE NO. LABORATORY	DEPTH FROM	DEPTH TO	QUANTITY OF HEAVY MINERALS LBS.PER CU.YD.	QUANTITY OF HEAVY MINERALS WT.PER CENT	THICKNESS OF SAMPLE (FT.) X (LBS.PER CU.YD.) 300	THICKNESS OF SAMPLE (FT.) X (LBS.PER CU.YD.) 120	OVERBURDEN 300	OVERBURDEN 120
376W.	N. W. CORNER			0'0"	14'0"	NO SAMPLE.					
409W.	OF	1	L6402	11'0"	11'2"	110.3	3.9				
446W.	D.C.22.	1	L5889	6'0"	9'3"	17.8	0.67				
	EASTERN	2	L5890	9'3"	10'0"	611.0	19.2	458.2	458.2		
	FENCE	3	L5891	11'0"	11'3"	138.7	5.05		34.7	8'6"	7'2"
	LINE		Thickness		1'6"	305.4		458.2			
					4'1"	120.7			492.9		
	IS										
470W.	ADOPTED	1	L6403	4'0"	4'2"	T R A C E					
	MERIDIAN.	2	L6404	7'3"	8'0"	333.4	11.8	250.5	250.5		
		3	L6405	9'0"	9'2"	176.1	6.1		44.1		
		4	L6406	11'3"	11'5"	137.4	4.9		-	7'2"	6'10"
		5	L6407	11'6"	11'8"	511.3	15.4		-		
			Thickness		0'10"	300.6		250.5			
					2' 5"	123.3			294.5		
494W.		1	L6408	4'9"	5'4"	494.4	17.7	288.4			
		2	L6409	6'6"	8'10"	267.8	8.8			4'5"	3'0"
		3	L6410	9'6"	9'8"	277.4	8.8				
		4	L6411	11'3"	11'5"	56.1	7.9				
			Thickness		0'11"	314.5		288.4			
					2'4"	123.6			288.4		

APPENDIX. TABLE A. QUANTITIES OF HEAVY MINERALS INTERSECTED IN BORES.

LINE 12264S. (Continued).

BORE NO. & R. L.	CO-ORDINATES FROM	SAMPLE NO. FIELD	SAMPLE NO. LABORATORY	DEPTH FROM	DEPTH TO	QUANTITY OF HEAVY MINERALS LBS.PER CU.YD.	QUANTITY OF HEAVY MINERALS WT.PER CENT	THICKNESS OF SAMPLE (FT.) X (LBS. PER CU.YD.) 300	THICKNESS OF SAMPLE (FT.) X (LBS. PER CU.YD.) 120	OVERBURDEN 300	OVERBURDEN 120
531W	N. W. CORNER			0'0"	10'6"		NO SAMPLE.				
628W	OF	1	L5892	0'6"	12'6"		T R A C E.				
	D.C.22.										
684W.	EASTERN	1	L5893	0'0"	13'0"		T R A C E.				
777W.	FENCE			0'0"	9'0"		NO SAMPLE.				
877W.	LINE			0'0"	12'0"		SAMPLE MISSING.				
922W.	IS	1	L5895	2'0"	6'6"		T R A C E.				
	ADOPTED	2	L5896	6'10"	7'0"	208.7	7.8	-	34.8		
	MERIDIAN.	3	L5897	7'6"	7'8"	586.5	19.2	97.8	97.8	7'5"	
			Thickness		0'3"	391.2		97.8			
					1'1"	122.4			132.6		
1013W.				0'0"	15'0"		NO SAMPLE.				
1081W.		1	L5898	8'0"	8'2"	175.8	6.3		29.3		
			Thickness		0'2"	175.8					
1170W.				0'0"	15'0"		NO SAMPLE.				

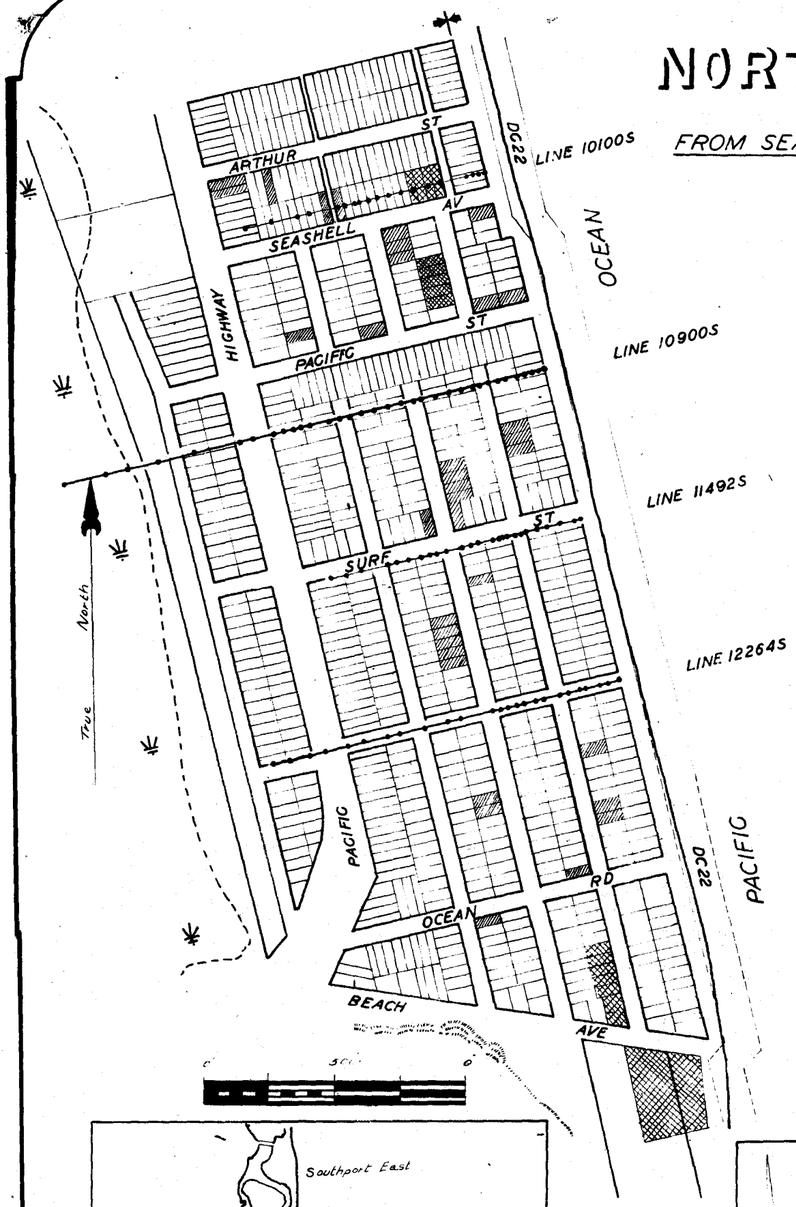
APPENDIX. TABLE A. QUANTITIES OF HEAVY MINERALS INTERSECTED IN BORES.

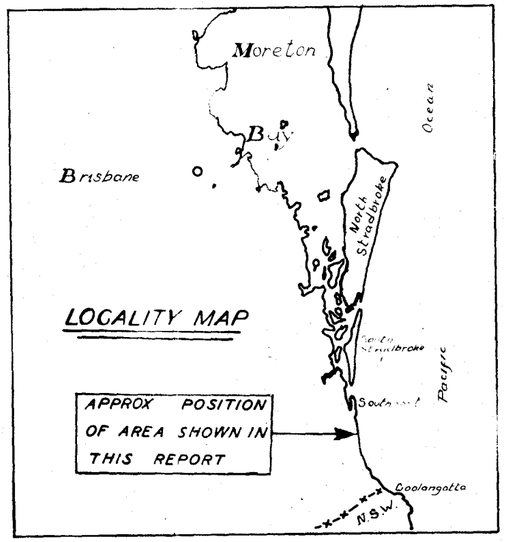
LINE 12264S. (Continued).

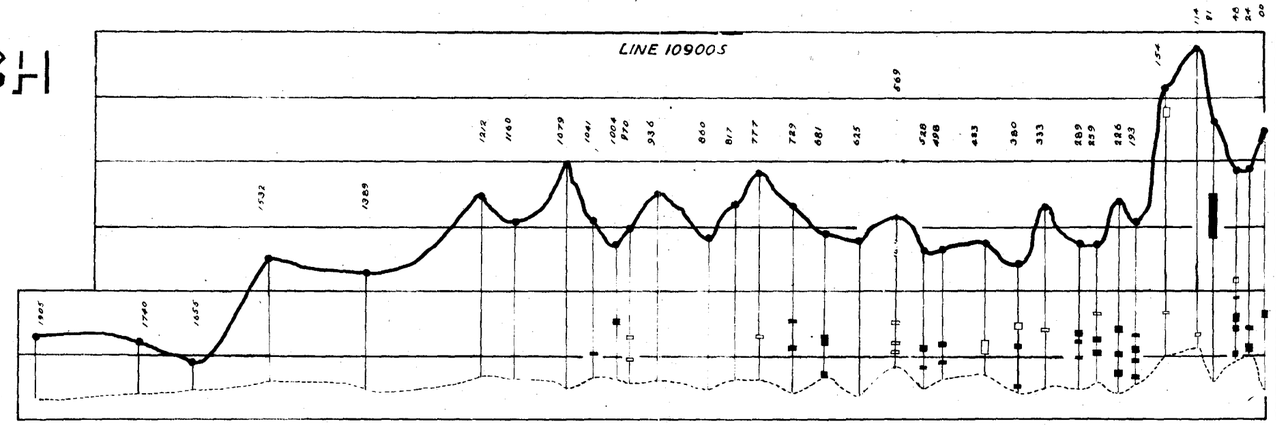
BORE NO. & R.L.	CO-ORDINATES FROM	SAMPLE NO.		DEPTH		QUANTITY OF HEAVY MINERALS		THICKNESS OF SAMPLE (FT.) X (LBS.PER CU.YD.)		OVERBURDEN	
		FIELD	LABORATORY	FROM	TO	LBS.PER CU.YD.	WT.PER CENT	300	120	300	120
1238W.	N..W. CORNER			0'0"	10'0"	NO	SAMPLE.				
	OF										
1312W.	D.C.22.	1	L5899	0'0"	9'6"	T R A C E.					
	EASTERN										
1380W.	FENCE			0'0"	3'0"	NO	SAMPLE				
	LINE										
	IS										
	ADOPTED										
	MERIDIAN.										

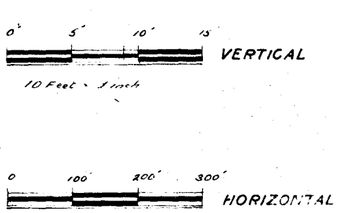
NORTH BURLEIGH

FROM SEASHELL TO WAVE ST

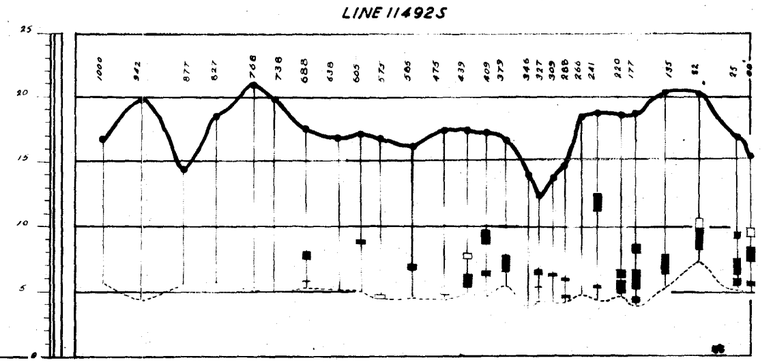


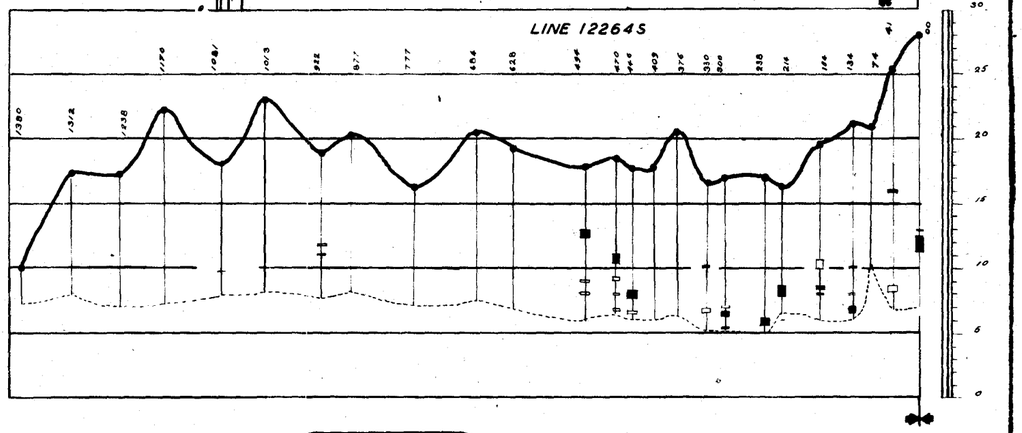


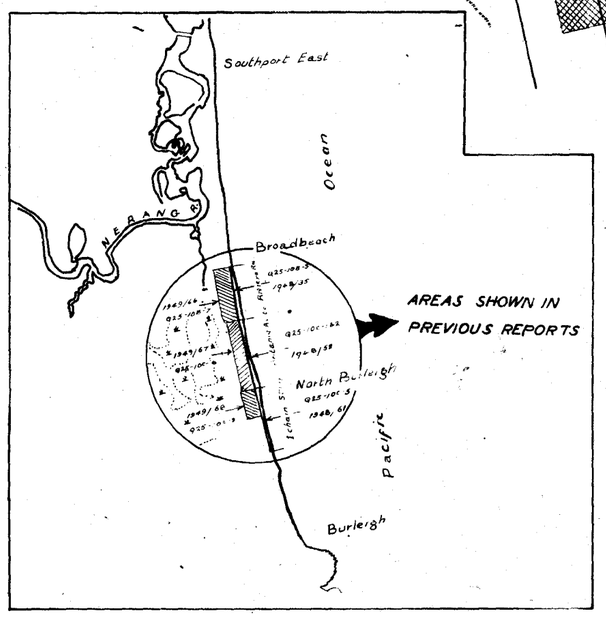




DATUM FOR LEVELS MEAN LOW WATER

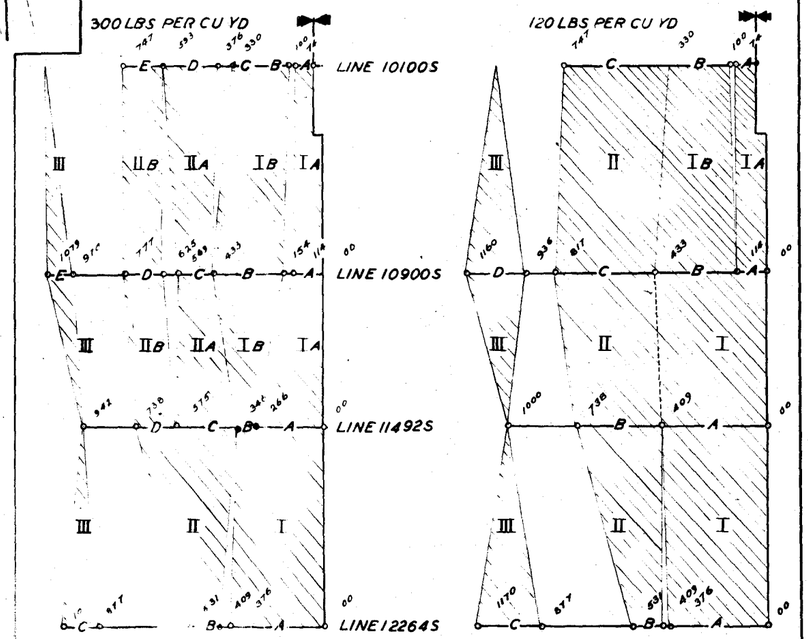






PLAN OF MINERAL BEARING SAND

(BETWEEN LINES 10100S & 12264S)



LEGEND

PLANS	SECTIONS
MINERAL BEARING SAND	605 — PROFILE SHOWING BORE 605 FEET WEST
BUILT UP AREAS	WATER TABLE
WORKED AREAS	4 % TO 10 % MINERAL; OVER 10 % MINERAL
ADOPTED MERIDIAN	ADOPTED MERIDIAN

BUREAU OF MINERAL RESOURCES SOUTHPORT QLD MAY 1949

Q25-10C-8