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DEPARTMENT OF NATIONAL DEVELOPMENT.  
BUREAU OF MINERAL RESOURCES  
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1962/155



WATER SUPPLY INVESTIGATIONS  
IN THE FLATS EAST OF TENNANT CREEK. N.T.

by

J. Barclay

The information contained in this report has been obtained by the Department of National Development, as part of the policy of the Commonwealth Government, to assist in the exploration and development of mineral resources. It may not be published in any form or used in a company prospectus without the permission in writing of the Director, Bureau of Mineral Resources, Geology and Geophysics.

WATER SUPPLY INVEETIGATIONS  
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NORTHERN TERRITORY

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## WATER SUPPLY INVESTIGATIONS IN THE FLATS EAST OF TENNANT CREEK

### SUMMARY

Eight test bores have been drilled in the bulldust\* flats east of Tennant Creek by the Mines Branch, Northern Territory Administration, to investigate ground water potentiality for industrial purposes. Two of these, (No's 6 and 7), have encountered supplies which warrant the construction of fully equipped bores.

Since the completion of this programme, Peko Mines No Liability have drilled a 6 inch percussion bore to a depth of 440 feet at a distance of a few feet from No. 7 hole, and have obtained a steady supply of 950 gallons/hour. The bore has been pumped for short periods at 1,150 gallons/hour, to the capacity of the pump, without signs of forking.

A valuable addition, therefore, has been made to the water supply of Peko Mines, at a time when drought conditions were rapidly depleting previously available supplies and when it was known that extra water would be needed in the milling treatment of ore from Orlando Mine.

A fully equipped bore to utilise the supply encountered in No. 8 bore has not yet been constructed.

The water supplies are not suitable for human consumption and it has been noted that cattle have a marked dislike for the water of No. 7 bore, although they appear to tolerate the water of the other bores.

### INTRODUCTION

The area investigated lies to the east of the township, and is bounded to the north by the Honeymoon Range, which trends in an east-west direction. To the south, the flats are limited by a low range of hills, of east-north-east trend, which lie astride the Peko road for a distance of four miles eastwards from Tennant Creek.

From north to south, the flats are one mile wide near the township, but are four miles wide near Peko Mine.

The reduced level of Tennant Creek is 1,220 feet above sea level, and the flats slope gradually to a height of 1,078 feet at Peko Mine.

During the latter half of 1961, in a period of prolonged drought conditions, water supplies available from bores of the Central Government Battery, and from bores and dams of Peko Mines declined, and it was known that Peko Mines would need additional quantities of water for treatment of ore, from Orlando Mine, which was to be carted to Peko for treatment.

\* "Bulldust" is the name given in inland Australia to extensive sheets of unconsolidated and commonly incoherent, wind and water-deposited fine sand, silt and dust.

For these reasons, a water supply investigation was undertaken by the Mines, Branch, N.T. Administration, and the Resident Geological Section; eight diamond drill holes were put down to test ground water conditions in the flats. All bores were drilled using NX bits, which give a hole diameter of  $3\frac{1}{2}$  inches diameter. Cores were recovered and logged, and in each case the holes were bailer-tested to obtain a conservative estimate of supply. Where bailer-testing could not lower the standing water level, recommendations for testing by a fully equipped bore were made.

Accompanying this report are a sketch plan of the area, geological logs of the holes drilled during the investigation, and a table containing data on all known bores in the area.

The Central Government Battery, formerly operating on a three-shift basis, reverted to a single shift footing during the investigations. The demand for water is therefore now adequately met by the No. 1 Battery bore situated half a mile to the north-east of the Battery.

#### GEOLOGY

The flats are mainly covered by bulldust up to 12 feet thick and, apart from three low and rocky hills, contain few outcrops.

A small porphyry body, whose western margin has not been delineated, occurs to the south of the Kathleen Mine. Several small east-west trending quartz and quartz-hematite blows and a few scattered sediments of the Warramunga Group have also been noted.

The hills bounding the flats are composed of interbedded greywacke and mudstone beds of the Warramunga Group. In the northern hills the bedding strikes east-west and dips are generally southerly at angles of about  $60^{\circ}$ . The sediments on the hills just south of the flats strike west-north-west and dip at about  $45^{\circ}$  to the north.

From these observations it is inferred that the flats are underlain by an east-pitching syncline which is intruded by at least one porphyry body and a number of quartz and quartz-hematite bodies.

#### WATER SUPPLY SOURCES

At an early stage in the investigations, it was concluded that bores sunk at random in the Warramunga sediments would be unlikely to yield worthwhile supplies of water as the sediments, which are mainly interbedded clayey greywacke and mudstone are all of low permeability. An example of this type of random hole is the No. 1 Battery Test Bore which was sited close to the main power line from Peko to Tennant Creek. This bore was sunk to 300 feet in sediments in which dips of  $65^{\circ}$  were noted, and which showed only very minor faulting and shearing. Bailer testing revealed only traces of water in this hole; it was not possible to measure the depth to the water table as the hole collapsed shortly after testing.

Two attempts were then made to intersect the structure responsible for the major north-east trending photo-lineament in the eastern part of the area (holes PN1 and PN2\*), but both of these missed the structure and only traces of water were obtained from them. It was then decided to investigate the contact zone between the Warramunga sediments and the porphyry body which lies to the south of the Kathleen Mine. Three holes were drilled in this area, but none of them succeeded in locating the contact zone. The possibility of the existence of worthwhile water supplies in the contact zone therefore still remains to be tested.

Bore No. PN6 was then sited at the eastern end of a small east-west trending quartz body. The hole was drilled to 311 feet and bailer testing failed to lower the standing water level from 211 feet.

Bore No. PN7 was sited where the strong north-east trending photo-linear feature, which Bores PN1 and PN2 had been meant to intersect, is crossed by a weaker east-west trending feature. The hole was drilled to 302 feet, and bailer testing failed to lower the standing water level from 161 feet. As mentioned above, Peko Mines have subsequently drilled a production hole at this locality and are using the supply at a steady yield of 950 gallons/hour.

It will be seen from the plan that two previously established successful bores near Peko Mine also lie on this strong north-east trending photo-lineament.

An examination of core from Bores No. 6 and 7 show that the sediments of the quartz-filled shear zone and those underlying the lineament are the usual interbedded greywacke and mudstone beds of this area, but they have been affected by moderate faulting and shearing with some intra-formational contortion. The water-bearing characteristics of these sediments are evidently due to the structural deformations.

#### CONCLUSIONS

It is concluded that drilling at random in the Warramunga sediments is unlikely to locate worthwhile water supplies owing to the generally low permeability of the sediments.

A good yield can be expected, however, (a) along or at the intersection of photo-lineaments, which apparently represented faulted and sheared zones, and (b) at the extremities of quartz blows which are also emplaced in faulted and sheared zones. A third possible source is along the contacts between porphyry and sedimentary rocks, although this possibility has still to be proved.

No investigation was carried out on recharge factors of the area, but it is believed that storage is recharged by infiltration and run-off during the rainy season into the shear and fault zones. Negligible recharge will occur by downwards percolation through normal unsheared and unfaulted sediments because of their low permeability.

It has been reported that some of the previously established bores in this area will pump at about 500 gallons/hour for two weeks or so, after which the capacity falls to about 200 gallons/hour. If the bores are then rested for a short period, the cycle may be resumed.

\* Shown on Plate 1 as 1, 2, etc.

APPENDIX 1

GEOLOGICAL LOGS OF DIAMOND DRILL HOLES - GOVERNMENT BATTERY  
NO. 1 - IN THE TERNANT CREEK-PEKO BULLDUST PLAIN

Drill Run	Core Recovery	Description of Core
0' - 6'	-	Bulldust
6' - 20'	-	Mudstone (Warramunga sediments), in zone of oxidation.
20' - 29'	7'	Mudstone, as above.
29' - 35'	5'	Fine-grained sandstone (Warramunga sediments).
35' - 45'	1'	Sandstone, as above.
45' - 55'	1'	Fine-grained, cleaved sandstone.
55' - 65'	6'	Mainly mudstone, some fine-grained sandstone.
65' - 75'	7'	Mudstone transitional to fine sandstone, bedding to core axis angle 35°.
75' - 80'	4'	Fine sandstone.
80' - 90'	6'	Mudstone grading to siltstone, bedding to core angle 25°.
90' - 100'	5'	Mudstone.
100' - 110'	1'	Fine sandstone.
110' - 121'	4'	Fine sandstone with manganese in thin partings.
121' - 131'	6'	Sandstone as above, with graded bedding.
131' - 141'	2'	Mudstone.
141' - 151'	6'	Mainly fine sandstone.
151' - 161'	8'	Mainly mudstone, bedding to core angle 55°.
161' - 166'	2½'	Mudstone grading to fine sandstone at 163'.
166' - 181'	8'	Mudstone grading to fine sandstone at 178'.
181' - 191'	9'	Shale at 181'; then mudstone, bedding to core angle 50°.
191' - 201'	8'	Fine sandstone.
201' - 211'	4'	Fine sandstone to 203'. Slight faulting of mudstone against sandstone and thin quartz veins at 205'. Sandstone to 211'.
211' - 231'	18.5'	Alternating fine sandstone and mudstone. Bedding/core angle 50° - 65°.
231' - 256'	21'	As above, with fairly fresh rock from 231'-233'; 240'-247'; 253'-254'.
256' - 266'	10'	Fairly fresh, fine grey sandstone.
266' - 276'	9'	Alternating mudstone and sandstone grey from 267-276. Bedding core/angle 50°-60°.
276' - 300'	20.5'	Fresh, fine grey sandstone.
END OF HOLE		NO WATER SUPPLY ENCOUNTERED.

DRILL HOLE PN 1 (PEKO NORTH)

Drill Run	Core Recovery	Description of Core
0' - 6'	-	Bulldust, lateritic and quartz gravel.
6' - 41'	7½'	Mainly mudstone with thin interbedded siltstone and occasional fine greywacke. Bedding/core angle 65°. Cleavage/core angles 0° and 35°.
41' - 54'	2'	Mudstone as above.
54' - 136'	-	Non-coring bit used due to soft nature of ground. Cuttings indicate sediments.
136' - 154'	5'3"	Mainly mudstone, some interbedded siltstone and occasionally fine greywacke. Bedding/core angle 40°.
154' - 187'	-	Non-coring bit. Cuttings indicate sediments.
187' - 196'	9'	Mainly interbedded mudstone and thin siltstone. Bedding/core angle 25°. Cleavage parallel to bedding. Reverse fault parallel to core length.
196' - 197'	1'	Very contorted mudstone, some sandstone.
197' - 216'	17'	197' - 200' : Very contorted mudstone, some faulting parallel to core length. 200' - 216' : Mainly mudstone, with interbedded siltstone, faulting as above. Bedding/core angle 25°.
216' - 257'	41'	Mainly mudstone with beds up to 1' thick, interbedded with siltstone bands up to 6" thick. Bedding/core angle 50°. Cleavage/core angle 30°, same sense as bedding. Reverse fault at 10° to core length.
257' - 269'	12'	Mudstone and siltstone as above. Bedding/core angle 5°. Faulting and shearing between 267' - 269'. Cleavage/core angle 0°.
269' - 286'	17'	Mainly fine greywacke, some mudstone. Sediments contorted, faulting at 5° to core length. Bedding/core angle 10°.
286' - 295'	9'	Mudstone, some fine greywacke. Sediments contorted and faulted. Cleavage/core angle 15°. Bedding/core angle occasionally recognised as 40°.
END OF HOLE		STANDING WATER LEVEL AT 156 feet.  Sediments highly oxidised to 188', partly oxidised to 295'.

DRILL HOLE PN 2 (PEKO NORTH)

Drill Run	Recovery	Description of Core
0' - 12'	No core	Unconsolidated sand with occasional fragments to 1/4" size.
12' - 20'	-	Fragmentary core of soft light coloured shale, vertical dip.
20' - 103'	No core	Sludge of clay and fine sandy material with fine black (magnetite ?) grains.
103' - 117'	9'	Alternating shale, mudstone and fine greywacke, the latter up to 6" thick. Graded bedding evident, beds occasionally contorted but bedding/core angle generally 15°.
117' - 126'	9'	Warramunga sediments as above. Bedding/core angle 25°.
126' - 135'	9'	As above. Vertical cleavage from 115' - 135'.
135' - 142'	6'	As above. Bedding/core angle 15°.
142' - 158'	12'	As above. Bedding/core angle 20°.
158' - 167'	8'	As above. Bedding/core angle 20°. Cleavage/core angle 25° in opposite sense.
167' - 177'	10'	As above. Bedding/core angle 20°, cleavage/core angle 10° in same sense. One greywacke bed 1' thick.
177' - 186'	9'	As above. Reverse displacement of 1/2" along vertical tight fault at 185'.
186' - 192'	6'	As above. Minor displacements on faults - up to 2" of movement.
192' - 202'	10'	As above, with minor faulting. Bedding/core angle 20°.
202' - 221'	18'	As above. Minor tight vertical faulting, thin quartz infilling of one vertical fault, also minor cross fault at 75° to core length.
221' - 225'	4'	As above with minor tight vertical shears.
225' - 231'	1 1/2'	As above, with minor tight vertical shears and thin quartz infillings.
231' - 237'	1'	As above.
237' - 269'	No core	Sludge indicates Warramunga sediments.
269' - 277'	5'	Warramunga sediments, tightly sheared vertically with some minor quartz infillings.
277' - 287'	10'	As above but minor shearing fades out at 282'. Bedding/core angle 30°.
END OF HOLE		STANDING WATER LEVEL AT 156 1/2 FEET.



DRILL HOLE PN 3 (KATHLEEN PORPHYRY)  
IN THE TENNANT CREEK - PIKO VALLEY

Drill Run	Recovery	Description of Core
0' - 6'	-	Bulldust
6' - 16'	1'	Stream gravel
16' - 45'	10'	Strongly weathered porphyry
45' - 50'	-	Cuttings indicate igneous material
50' - 99'	20'	Strongly weathered porphyry
99' - 123'	-	Cuttings indicate igneous material
123' - 132'	6'	Strongly weathered porphyry
132' - 142'	3'	As above. Slight shearing evident.
142' - 169'	21'	As above.
169' - 180'	4'	As above but more weathered.
180' - 183'	3'	As above.
183' - 189'	3'	Medium weathered porphyry.
189' - 193'	3'	As above.
193' - 196'	2'	As above with thin, irregular quartz veins up to 2" thick and associated chloritic patches. Also talc (?) in slight shear zones.
196' - 204'	7'	Medium weathered porphyry, with thin quartz veins to 2" thick.
204' - 211'	5'	As above. Talc (?) in slight shear at 204'.
211' - 213'	2'	Medium weathered porphyry.
213' - 220'	4'	As above.
220' - 225'	5'	Fairly fresh quartz-feldspar porphyry with very dark groundmass. Extremely hard.
END OF HOLE		NO WATER ENCOUNTERED.

DRILL HOLE PN 4 (KATHLEEN PORPHYRY)  
IN THE TENNANT CREEK - PEKO VALLEY

Drill Run	Core Recovery	Description of Core
0' - 11'	No Core	Cuttings indicate igneous material.
11' - 15'	3.5'	Pale, very weathered porphyry
15' - 31'	11.5'	Red, very weathered porphyry
31' - 41'	3.6'	Porphyry, as above.
41' - 46'	5'	Porphyry, as above.
46' - 71'	19'	Medium weathered porphyry, slightly sheared.
71' - 80'	4'	Slightly more weathered porphyry, shearing somewhat more intense.
80' - 86'	1.5'	Porphyry, as above.
86' - 91'	1.5'	Porphyry, as above.
91' - 96'	5'	Medium weathered porphyry, somewhat fresher than 46' - 71'. Slight shearing, few fractures.
96' - 103'	7'	Porphyry, as above.
103' - 107'	4'	Porphyry, as above.
107' - 112'	4'	Porphyry, as above.
112' - 115'	3'	Porphyry, as above.
115' - 122'	5.75'	Porphyry, as above.
122' - 123'	1'	Porphyry, as above.
123' - 132'	1.75'	Porphyry, as above, slightly more sheared.
132' - 135'	3'	Medium weathered porphyry, becoming darker.
135' - 141'	5'	Fairly fresh quartz-feldspar porphyry. Extremely hard. Few thin quartz-chlorite veins along faint shears at 30° to core length.
END OF HOLE		Rough, indistinct cleavage at 50° to core length, in opposite sense to faint shearing.
		NO WATER ENCOUNTERED.

HOLE PN 5 (KATHLEEN PORPHYRY)  
IN THE TENNANT CREEK - PEKO BULLDUST PLAIN

Drill Run	Core Recovery	Description of Core
0' - 5'	-	Bulldust and decomposed porphyry
5' - 13'	8'	Brick-red, weathered porphyry.
13' - 21'	3.5'	Weathered porphyry, as above.
21' - 28'	5.5'	Weathered porphyry, paler than above. Rounded quartz grains, faint shearing; angle of shears to core 30°. Thin pug seams of various attitudes.
28' - 37'	7'	Weathered porphyry, as above; more weathered from 35'.
37' - 47'	1.5'	Weathered porphyry as above.
47' - 72'	17'	Weathered porphyry as above.
72' - 87'	14'	Weathered porphyry, feldspar more obvious from 76'. Shearing/core angle 50°; fracture/core angle 40° in opposite sense. Slight segregation into lighter and darker patches noticeable from 80'.
87' - 94'	4.8'	Weathered porphyry as above.
94' - 110'	16'	Weathered porphyry as above, more pink coloured. Shearing/core angle 40°. Thin vertical quartz vein from 101'-102'; many pug seams.
110' - 117'	6'	Weathered porphyry, showing segregation.
117' - 136'	17'	Red weathered porphyry as above.
136' - 144'	1.8'	Weathered porphyry as above.
144' - 146'	2'	Weathered porphyry as above.
146' - 159'	13'	Weathered porphyry as above, becoming darker and harder from 147'. Minor lenticular quartz veins following shear direction at 50° to core length.
159' - 162'	3'	Fairly fresh, hard, dark porphyry.
162' - 188'	24.5'	Fresh porphyry as above; the faint shearing, mentioned above, becomes even less noticeable. Many minor quartz veins at 50° to core length.
188' - 206'	17.3'	Fresh porphyry as above. Segregation still present in places.
END OF HOLE		NO WATER ENCOUNTERED.

HOLE PN 6 IN THE PEKO - TENNANT CREEK

BULLDUST FLAT

Drill Run	Recovery	Description of Core
0' - 1'	-	Bulldust and quartz fragments.
1' - 11'	-	Quartz fragments and soft mudstone.
11' - 15'	4'	Quartz fragments, mudstone with bedding/ core angle $50^{\circ}$ , cleavage/core angle $50^{\circ}$ in opposite sense.
15' - 22'	-	Quartz fragments, mudstone.
22' - 23'	0.5'	Quartz fragments.
23' - 28'	5'	Quartz fragments and strongly cleaved mudstone; cleavage/core angle $0^{\circ} - 30^{\circ}$
28' - 32'	4'	Mudstone; cleavage/core angle $25^{\circ}$ .
32' - 42'	10'	Mudstone; bedding/core angle $20^{\circ}$ , cleavage/core angle $40^{\circ}$ in opposite sense.
42' - 56'	14'	Mainly mudstone as above, some fine-grained sandstone.
56' - 65'	9'	Interbedded fine sandstone and massive mudstone.
65' - 75'	10'	Mudstone, some fine sandstone, occasional flow casts.
75' - 97'	22'	Interbedded fine sandstone and massive mudstone; bedding/core angle $30^{\circ}$ , cleavage/core angle $0^{\circ} - 20^{\circ}$ .
97' - 122'	25'	Mainly fine clayey sandstone interbedded with mudstone; bedding/core angle $30^{\circ}$ .
122' - 140'	18'	Mainly mudstone interbedded with fine grained sandstone; bedding/core angle $30^{\circ}$ .
140' - 192'	44.5'	Intebbeded mudstone and fine-grained sandstone; bedding/core angle $30^{\circ} - 40^{\circ}$ , cleavage/core angle $0^{\circ}$ in mudstone $25^{\circ} - 45^{\circ}$ in sandstone.
192' - 252'	57.5'	End of oxidised zone. Fresh, interbedded greywacke and mudstone. Bedding/core angle $30^{\circ}$ , cleavage/core angle $30^{\circ}$ in opposite sense occasional clay pellets in greywacke, slump structures and graded bedding.
252' - 261'	9'	Fine-grained greywacke, cleavage/core angle $40^{\circ}$ .
261' - 276'	15'	Massive, interbedded greywacke and mudstone.
276' - 309'	33'	Mainly fine-medium grained greywacke, some mudstone, clay pellets, slump structures; bedding/core angle $40^{\circ}$ .
309' - 311'	2'	Coarse greywacke and mudstone, well developed slump structures.

END OF HOLE

STANDING WATER LEVEL AT 211 FEET.

AIRLIFT TEST YIELDED 75 GALLONS/HR.

HOLE PN 7 IN THE BULLDUST FLAT ONE MILE

NORTH-EAST OF PEKO MINES

Drill Run	Recovery	Description of Core
0' - 10'	-	Bulldust
10' - 17'	7'	Fine greywacke with cleavage/core angle $30^{\circ}$ , interbedded mudstone and siltstone with bedding/core angle $40^{\circ}$ .
17' - 22'	5'	Interbedded mudstone and fine greywacke.
22' - 27'	5'	Mainly fine greywacke, cleavage/core angle $40^{\circ}$ . Some mudstone, bedding/core angle $40^{\circ}$ , cleavage/core angle $10^{\circ}$ .
27' - 102'	67'	Mainly mudstone with interbedded siltstone, occasional fine greywacke; bedding/core angle $40^{\circ}$ - $45^{\circ}$ ; commonly strongly fractured and cleaved, slight faulting, depositional features; strongly oxidised to 101'.
102' - 131'	28'	Mainly fine greywacke, some interbedded mudstone and siltstone, bedding/core angle $40^{\circ}$ - $45^{\circ}$ , slight faulting, depositional features.
131' - 141'	9'	Fine greywacke with cleavage/core angle $25^{\circ}$ ; fine grit band from 136'-137',
141' - 157'	15.5'	Dominantly fine greywacke, some mudstone with interbedded siltstone. Bedding/core angle $35^{\circ}$ - $40^{\circ}$ , cleavage/core angles $0^{\circ}$ and $35^{\circ}$ . Graded bedding, load casts, slumping and minor faulting with faulting/core angles $10^{\circ}$ and $30^{\circ}$ .
157' - 201'	42.5'	Mainly interbedded mudstone and siltstone, some fine greywacke; strong vertical shears from 157'-166', slight faulting from 182'-192' with angles of $10^{\circ}$ and $20^{\circ}$ to core length. Bedding/core angle $45^{\circ}$ - $55^{\circ}$ , slumping and other depositional features.
201' - 252'	49'	Interbedded mudstone, siltstone and fine greywacke; bedding/core angle $50^{\circ}$ - $60^{\circ}$ , faulting between 201'-211', 217'-252'; depositional features including flame structures, grit pellets in mudstone etc.
252' - 302'	47.5'	Mainly fine greywacke in beds up to 6' thick, with interbedded mudstone and siltstone, bedding/core angle $55^{\circ}$ ; some shearing and faulting at $20^{\circ}$ to core length; depositional features.
END OF HOLE		STANDING WATER LEVEL AT 161 FEET.

APPENDIX 2 - DATA ON SOME WATER BORES EAST OF TENNANT CREEK

<u>LOCATION OR NAME</u>	<u>DEPTH OF BORE</u>	<u>DEPTH TO WATER TABLE</u>	<u>YIELD</u>
<u>Bores Existing before the current investigation</u>			
Cemetery Bore, 1 mile south of township.	446'	330'	600 galls/hr.
Battery Bore, 1/2 mile north-west of Government Battery.	400'	237'	500 galls/hr.
*Peko West Bore	400'	170'	600 galls/hr.
Peko North Bore	400'	170'	800 galls/hr.
*Noble's Nob 1 (S. Bore)	300'	284'	540 galls/hr.
Noble's Nob 2 (SE. Bore)	376'	296'	720 galls/hr.
Noble's Nob 3 (E. Bore)	364'	247'	720 galls/hr.
(Bores are close to Mine)			
Kia Ora Bore	314'	170'	800 galls/hr.
Old Battery and Stock Bore 3 1/2 miles N.E. of Peko	272'	200'	?
<u>Bores drilled during the current investigation</u>			
Battery No. 1 Test Bore Bulldust Flats.	300'	Collapsed at 147'	Dry Hole
Porphyry Bores - PN3	225'	-	Dry holes
Porphyry Bores - PN4	141'	-	Dry holes
Porphyry Bores - PN5	206'	-	Dry holes
(South of Kathleen Mine)			
PN6 - Bulldust Flats	311'	211'	Recommended but not yet tested.
PN 1, 2 and 7	PN1 295'	156'	No supply
Bulldust Flats	PN2 287'	-	No supply
	PN7 302'	161'	Not fully tested.
Peko Bore adjacent PN7	447'	161'	950 galls/hr.

\* It has been reported that these bores decrease their supplies considerably after continuous pumping of 2 weeks or so. After a short period of non-pumping, they recover to their initial capacities.

