1-12-9

[L. & M. / 990—1-3-98.]

Local & Munl. (1898) Department.

MISCELLANEOUS.

G.O., No. 546 M

DATED 10. 3 98.

INDEXED.

DESPATCHED

[Despatch Abstract.]

Dindigul Waterworks

Recording Proceedings of the Sanitary Bd, submitting papers from the Sanitary Engineer regarding the proposed extension of the tunnel at the —

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

1

Local & Munl. (1898.) Department.

CURRENT No. 759/M

UNDER SECY. TO GOVT.
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Order. No. 546 M mis
dt 10-3-98.

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V.R.
3/3/98

From
The Secretary, Sanitary Board.

No. 86/s

Dated 10th February 1898.
Received 11-2-98.
Registered
Enclosures 5.
Spare copies

SUBJECT.

Extension of the tunnel at the Dindigul Water Works:– Submitting in continuation of Sanitary Board's Proceedings No. 881/s, dated 8th Decbr. 97, papers from the Sanitary Engineer regarding the proposed ——.

To
The Chairman, Mc Dindigul
" San.y Board
" " Engineer

1-12-9

BACK PAPERS.

G.O.	No.	Department.	Date.
Gp	6	Mun	4-1-98
"	14	Do	8-7-97
Circ	332	9 M/97	Lodged
"	1992	Mu	14-12-94
"	911	Mun	14-7-93

FURTHER PAPERS.

G.O.	No.	Department.	Date.

S. E. / 6. 1,000—6-12-97.

No. 110

GOVERNMENT OF MADRAS.

OFFICE OF SANITARY ENGINEER,

Fort St. George, 25 January 1898.

From

A.S.Russell Esq.,
~~J. A. JONES, Esq., MEM. INST. C.E., F.R.S.E.,~~
Ag: SANITARY ENGINEER TO GOVERNMENT,

To

The Secretary,
Sanitary Board,
Madras.

SIR,

In continuation of this office letter No.1813 dated 26th. November 1897, and with reference to the Board's Proceedings noted in the margin, I have the honor to report that the proposed extension of the tunnel at the Dindigul Water Works can be definitely abandoned, since there are no valid reasons for anticipating that the supply necessary for the wants of the town can be obtained by extending the tunnel to double or treble its present length. I have accordingly surrendered the grant of Rs 22,500 made for execution of the work in this official year, and submit a full report on the subject of the Dindigul Water Works to the Board.

× No. 37/S, dated 14-1-97.
No. 470/S, dated 17-6-97.

2. I inspected the works last week. They consist of a deep level tunnel of very irregular section, taken through rock, 540' in length and about 6' in height. This tunnel communicates with a well shaft, over which is erected the Engine house, and water is pumped from this well to a service reservoir adjacent. The floor of the tunnel has no fall to the well shaft, and, when the existing water level has sunk

slightly

slightly ,the pumps (judging from the longitudinal section of the tunnel in this office) will be unable to draw water from about 1/3rd. of the length of the tunnel. I am therefore of opinion that the present water supply will be seriously reduced before the dry season is over.

3. According to the Pumping Statements daily submitted by the Dindigul Municipality ,22,000 gallons per day have been supplied to the town for some time past. I send up the most recent of these statements ,viz,that of 16th. instant. From ~~their~~ three tests just carried out at Dindigul under my instructions ,I find, however,that this statement is altogether wrong, and that only 9,000 gallons per day are in reality supplied to the town. I have noted on the back of the Pumping Statement the reason why it is so incorrect ,& have taken the necessary steps to ensure that such misleading returns are not in future supplied to this office. I also forward Table No.1 giving the result of the three simple tests carried out by me. Issues to the town were stopped while pumping was in progress . Previous to the pumping on 19th. instant,no pumping had been done for 24 hours,and yet the tunnel was pumped quite dry in less than two hours. On 20th.instant,the tunnel was twice pumped dry after intervals of 12 hours, in order to ascertain whether more water could be obtained by pumping twice ,instead of only once, in the 24 hours and the result was as given in Table No.1. The available supply to the town is thus only about 9,000 gallons per day,and this may be much reduced before July or August next.

4. About 15 months back the yield of the tunnel was tested ~~by Mr. Jones~~ and the results were reported in this Office Note No. 19 ,dated 2nd.November 1896. The Board,in their Proceedings No.2445, dated 14th.November, 1896, were evidently under the impression that the estimate of 64,000 gallons ~~[illegible]~~ per day was the "actual yield" . This is not so. The estimate of 64,000 gallons was based partly ~~from~~ on an actual test,and partly on an assumption ,and the assumption is altogether fallacious. I append Forms A and B upon which Mr. Jones based his estimate of 64,000 gallons .From these Forms, it will be apparent that

Ingo 14 M
8.1.97

the

4

the tunnel was ,on 27th.October 1896,pumped absolutely dry in 4¼ hours;that,after 24 hours, ~~it~~ the water level in the tunnel had only risen very slightly (1½") above the level at which it was standing before pumping was begun;and that ~~it~~ the tunnel was then again pumped ,& was in 5 hours pumped dry. It is thus plain that 5 hours pumping at most exhausted the water in the tunnel ,and that a supply in excess of 33,000 gallons per day was not to be expected from the tunnel. The deduction that ,because 33000 gallons was actually pumped in 5 hours,64,000 gallons might be looked for in 24 hours is wholly unwarranted .Putting aside the erroneous deduction ,it may be said that, on the whole, ~~nothing whatever~~ little is to be learned from the test,since it was carried out at a time of the year when,as shewn by the connected records ,there had been heavy rains in the neighbourhood.

5. Going back to June, 1894,I find that a preliminary test was then made,at a period of the year when there is stated to have been no rain for 7 months .The result ,as stated in the papers printed with G.O.1942.M ,dated 14th. December 1894,is an estimate ,(based as in the case of the second test,partly on actual yield & partly on an assumption therefrom)of 84,000 gallons in 24 hours .Without going into the question of the accuracy of this estimate ,which can only be done at considerable length, I may point out tha if the water level in the tunnel only fell 8" when 40,000 gallons had been pumped out of it,an enormously rapid rate of percolation is then indicated ,(quite unlike the experi of the subsequent two tests,one of which was after heavy rains) and the subterranean supply to the tunnel has most certainly been steadily drying up since the original test made. This is quite possible.

Vide page 2 of G.O.
1942 M B
14.12.94

6. Taking all the above reported circumstanc into consideration ,it is clearly not worth while to spen more money in the tunnel .There is no direct relation wha ever between the surface area of the tunnel & the water s ply to be expected from it. The supply is dependent on th springs & fissures in the rock, and these a w & very irr larly distributed ,the character of the rock varying considerabl

considerably. It is mere guess work to calculate in what direction & at what level to continue the tunnel, & there is nothing that can really guide one to form a sound judgment. Though it was at first assumed that there was a relation between the surface area of the tunnel & the amount of water to be expected from it, and though it was thought that a tunnel 400 or 500 ft long would be big enough to yield a supply approximating to 19,200 gallons per hour, (320 gallons per minute) it seems to have been admitted that the tunnel was a pure experiment & it was sanctioned as such in G.O.911.M.Mis, dated 14th, July 1893. The "experiment" has not been successful & should be dropped.

7. There are two other sources of supply available for increasing the water supply to the town (1) Wells below the Chettikulam (2) Wells in the Uddakkam valley. The latter is a very promising scheme. Both schemes consist of a line of wells joined together by a trench, from which water will be pumped into the existing Service Reservoir. Such a source is infinitely preferable to a deep level tunnel because (1) the amount of water available can be thoroughly tested before the scheme is executed and (2) can, at any time, be supplemented by sinking additional wells. The necessary steps are being taken to investigate both schemes. Such investigation should not be hurried. The one thing that should be most thoroughly done, in all schemes for water supply, is a very complete and careful test of the amount of water available, and this test must necessarily be undertaken in the middle or end of the dry season.

I have the honor to be,
Sir,
Your Most Obedient Servant,

A. L. Russell

Ag. Sanitary Engineer to Government.

1/759 M of 1898

Month

Remarks

...copied from ...some months old. It is worse than useless for the Engine driver to enter such misleading figures. The Service reservoir is a regular polygon and its area × depth of water pumped up × 6 1/4 gives number of gallons actually pumped into reservoir, without the necessity of resorting to the formula

$$D = \sqrt{\frac{6}{\cdot 034 \times LN}}$$

which is only applicable where an engine runs continuously and at uniform speed – a thing which the Dindigul Engines do not do.

A L Russell

Ag. Sanitary Engineer to Govt.

15-1-98

Mis No. 987
18.1.98

Forwarded to the Sanitary Engineer to Gov... Fort Saint George.

/sd/ G. Mengel
for Chairman

1/S.C. No. 48 of 98

nt direc-
othing
it was
e

…Municipality.

…y for the week ending 16th. Jany '98

…servoir		No. of hours water supplied to town				Average No. of single strokes made per hour or minute by 1 or 2 pumps	Amount of water pumped as calculated from the length of stroke & bore of pumps	Weight of fuel consumed by the Engine	
After pumping		A . M		P . M					
Ft	In	H	M	H	M	X	X		
1	3	6	.	10	.	42 strokes per minute 2520 strokes per hour	3/8 bore 22000 gallons of water	4 cwts of wood per day	Working with No. 1 & No. 2 Engines washing cleaning and making joints The Boiler steam power between 60 & 70
1	3	6	.	10	.				
1	3	6	.	10	.				
1	3	6	.	10	.				
1	3	6	.	10	.				
1	3	6	.	10	.				
	3	6	.	10	.				

/sd/ P. Cunniah Naidu

Driver in Charge

Head Works

6

Dindigul

Pumping statement and water supp…

Month	Date	Pumping done						Water in well				Water in…	
		From		To		No of hours		Before pumping		After pumping		Before pumping	
		H	M	H	M	H	M	Ft	In	Ft	In	Ft	In
Monday	10	3	.	5	.	2	.	.	9	.	.	.	6
Tuesday	11	3	.	5	.	2	.	.	9	.	.	.	6
Wednesday	12	3	.	5	.	2	.	.	9	.	.	.	6
Thursday	13	3	.	5	.	2	.	.	9	.	.	.	6
Friday	14	3	.	5	.	2	.	.	9	.	.	.	6
Saturday	15	3	.	5	.	2	.	.	9	.	.	.	6
Sunday	16	3	.	5	.	2	.	.	9	.	.	.	6

Dated 17. 1. 98

Table I

	Time when pumping was started	Time when pumping was stopped	Water level in tunnel before pumping	Water level in tunnel after pumping	Depth of water in service reservoir before pumping	Depth of water in service reservoir after pumping	Quantity of gallons of water pumped up	Remarks.
ary 1898	3.25. P.M	5.0 P.M	12 inches	Dry; no water	7 inches	13½ inches	※ 8978 gals:	※ Area of the reservoir × the diff: of level of water in reservoir before & after pumping × 6.25 = 8978 gallons
D°.	5.0. Am.	5.48. Am	7½ inches	D°. D°.	13½ inches	16¾ inches	# 4,489 "	# D°. D°. 4,489 gals:
D°.	5.48. P.M	6.32 P.M	7½ inches	D°. D°.	9¼ inches	12¾ inches	⊙ 4,739 "	⊙ D° D°. 4,739 gal:

ffice of Sanitary Engineer to Govt.
rt. St. George. 25 January 1898

A. Russell
Ag: Sanitary Engineer to Govt.

2/159 No of 1898

Form A

Date	Hours of Pumping		Level of water above floor of tunnel		Level of water in Reservoir		Number of single pump strokes per minute (N)	Length of Stroke L	Diameter of Pump Barrel D
	From	To	At starting	At completion of pumping	At starting	At completion of pumping			
October 27th	3-30 P.M	7.45 P.M	1 ft 4½"	Nil	Nil	1 ft 10¾"	67 at 80 lbs steam and 64 at 70 lbs steam	11	8"

/ True copy /

Municipal Office }
Dindigul, 31.10.96 }

Sd/ T. Rajagopaul
Chairman

A S Russell.
Ag. Sanitary Engineer to Govt. 25-1-98

2
S.E. No. 48 of 98.

3/149 W of 1898.

Form B

ate	Hours of Pumping		Level of water in tunnel		Depth of water in the Reservoir		Number of single strokes per minute (N)	Remarks
	From	To	At starting	At completion of Pumping	At starting	At completion of Pumping		
ctober 28th	7-45 P.M	12-45 mid night	1 ft 6"	Nil	6"	2 ft 6"	67 at 80 lbs steam 64 at 70 lbs steam	One pump worked

/ True Copy /

7

Municipal office }
ligul 31.10.96 }

A S Russell.
Ag. Sanitary Engineer to Govt.
25-1-98

/sd/ T. Rajagopaul
Chairman

3
S.C. No. 48 of 98.

4
17 Mar of 18[illegible]

4
S. C. No. 480/98.

5
759 M of 98.

Government of Madras.

LOCAL & MUNICIPAL DEPT.
CURRENT No. 759 M

SANITARY BOARD OFFICE.

Proceedings of the Sanitary Board, No. , dated

Read the following :—

From the Ag. Sanitary Engineer, No. 110, dated 25th January 98.

Dindigul Water Works — Extension Project.

Resolution.

The Municipal Council, Dindigul, having asked for an extension of their water works, the Government, in G.O. No. 14 M. Mis, dated 8th January 1897, approved a project which was roughly estimated by the Sanitary Engineer to cost Rs 22,500.

The Ag. Sanitary Engineer, Mr. Russell, now reports that there is no valid reason for supposing that the supply necessary for the wants of the town can, as previously anticipated, be obtained by means of the proposed extension of the tunnel. He accordingly recommends that this project be definitely abandoned.

The reasons which have led him to arrive at this conclusion are stated in detail in his present report, and are concurred in by the Sanitary Board. The papers are submitted to Government in continuation of Sanitary Board's Proceedings, No. 881/S, dated 8th December 1897.

6 M
4-1-98

It would appear from para 4 of the Sanitary Engineer's report that there are two other sources of supply which are engaging his attention.

The

The result of his investigations will be awaited.

(True Extract)

Secretary, Sanitary Board

Fd.

To.

The Secretary to Government, Local and Municipal Deptt. ✓
with papers in original.

" " Sanitary Commissioner.

" " Sanitary Engineer.

---

ocal & Munl. (1898) Department.

CURRENT No. 415M

To lie over pending receipt the report referred to in para 3 the Sanitary Engineer's letter.

V.R.
4/2/98

4/2/98

Order

From

The Ag: Sanitary Engineer
to Government.

SECRETARY TO GOVERNMENT
25 JAN 1898
No. 161
LOCAL & MUNICIPAL DEPARTMENT

Dated 24th. January 1898.

Received 25-1-98

Registered

Enclosures nil.

Spare copies

SUBJECT.

Dindigul Water Supply.

Stating that it is useless to extend the tunnel sanctioned in G.O.No. 14 M dated 8-1-97 for reasons stated & that a full report will be submitted through the Sanitary Board.

25-1-98

3/2

a/3/2

Th

BACK PAPERS.

G.O.	No.	Department.	Date.
Mo	2832	Do	18-12-97
„	14	Do	8-1-97

FURTHER PAPERS.

G.O.	No.	Department.	Date.

S. E./6. 1,000—6-12-97.

No. 101

12

GOVERNMENT OF MADRAS.

OFFICE OF SANITARY ENGINEER,

Fort St. George, 24th January 1898.

LOCAL & MUNICIPAL
CURRENT
415 M

From

A.S.Russell Esq ,
~~J. A. JONES, Esq., MEM. INST. C.E., F.R.S.E.,~~
Ag: SANITARY ENGINEER TO GOVERNMENT,

To

The Secretary to Government,
Local and Municipal Department.

SIR,

With reference to G.O.No.2832.M.Mis, dated 18th December 1897, I have the honor to state that I have ascertained, by two careful tests carried out under my personal instructions, that the quantity of water actually supplied to Dindigul town is only 9,000 gallons per day, and that the water works cannot supply more.

2. I am also of opinion that this small amount will be seriously reduced before the dry season is over, and that it is useless to carry out the work of extending the tunnel, as sanctioned in G.O.No.14.M, dated 8th. January 1897. The allotment made of Rs 22,500 for expenditure on this account, in the current official year, is therefore now surrendered, and can be re-allotted next year, by which time a scheme will have been worked out for obtaining, from a new source of supply, an adequate supply of water for the requirements of the town.

3. A full report on the whole subject, which has been carefully investigated by me on the spot, will be

submitted

submitted to-day through the Sanitary Board.

I have the honor to be,

Sir,

Your most obedient servant,

101

A. S. Russell

Ag: Sanitary Engineer to Govt.

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hen signed 21/3
189 .

EAD AGAIN G.O., No. DATED 189 ,

CURRENT No.

ENCLOSURES TO C. No.

ORDER OF GOVERNMENT	A	A	A	A	A	A	A
LETTER OF GOVERNMENT.							
STATEMENT WITH DITTO.							
PAPERS NOT FILED UP, BEING MEANT FOR DESPATCH IN ORIGINAL.							

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