

M&R Guidelines

**GUJARAT WATER SUPPLY & SEWERAGE BOARD
GANDHINAGAR**

**A note on Operation, Maintenance & Repairs Norms
for Rural Water Supply Schemes**

Preamble:- It had been the experience that large number of regional piped water supply schemes in "No-Source" villages maintained and operated by the Panchayats, become defunct due to paucity of funds and lack of technical expertise with panchayats. As a result these water supply schemes individual as well as Regional were not maintained by Panchayats and people did not get benefit of drinking water, even though water supply schemes were constructed for them. Many representations had been received requesting State Governments to take over water supply schemes for operation and maintenance by the Government from State funds.

Government of Gujarat had decided to take over 151 number of Rural Regional Water Supply Schemes for Operation and Maintenance vide H&F.W. Deptt. Resolution No.NWS-5481/1977/N dated 17/5/1983. It was decided to recover Rs.5/capita/annum from the grants payable to District/Talukas/village Panchayats and the amount thus deducted shall be placed at the disposal of Water Supply Deptt. This rate is now raised up to Rs.14/capita/annum.

As per the latest information, 438 RRWS Schemes are being operated, Maintained & Repaired by the GWSSB in 25 Districts covering total 5397 villages/hamlets, having population of 54,40,559 souls. M&R works are carried out from the State Budget allocation on head of M&R to RRWS Schemes.

**Norms for Operation & Maintenance of RRWS
Schemes as specified by GOI:**

The working group for formulating Operation & Maintenance Norms for Rural Water Supply Scheme under Ministry of Agriculture, Department of Rural Development, Government

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of India had circulated guidelines/Norms in April 1987 which are as under:

A. Staffing Pattern

1. **Operator:** A part time operator can be appointed to look after the proper operation of the pumping machinery including the operation of valve in smaller villages with lesser distribution lines and stand posts. A regular operator could be appointed only if the working hours are more than 8 hours a day.
2. **Lineman/Valveman:** If rising main and Distribution system is for over 2 Kms. involving handling of a number of valves a Lineman/Valveman may be appointed, in addition to an operator. In some hilly or desert areas, One lineman per 2 Km. To 5 Km. Length of pipeline may be provided. For every additional 5Km. Or part thereof one additional lineman/valveman may be provided.

B. Operation and Maintenance Cost Norms

The Operation & Maintenance cost of the piped water supply scheme may be limited to 5% of the cost of the scheme excluding energy charges. For hilly areas, it may be taken at 7.5% and for desert areas at 8 to 9% of the cost of the scheme. Moreover the schemes which are 5 to 15 years old, the percentage on the capital cost may be raised by 2% and for the schemes which have been installed earlier than this period, an additional percentage of 4% may be considered on the norms initially fixed as 5%, 7.5 and 8 to 9% respectively.

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C. Chemicals

(1) Alum

In case where Treatment Plants are provided to use surface water like dam, pond and canal, the cost will naturally increase due to purchase of Alum etc. The doze of Alum may be fixed as per the Turbidity of surface water.

(2) Chlorine for disinfection of Well/Tubewells:

New wells as well as those after repairs have to be disinfected by heavy doses of chlorine. The doses applied are generally of the order of 40 to 50 mg/l. Of available chlorine and bleaching powder is usually employed.

(3) Chlorine for disinfection of pipelines.

- (i) Packing & jointing materials should be cleaned and disinfected immediately before use by immersion in a 50 mg/l of Chlorine solution for at least 30 minutes to obtain good results and to avoid the health hazards during repairing of water mains.
- (ii) Under normal conditions a strength of 10 mg/l chlorine is recommended for a contact period of 12-24 hours.
- (iii) The amount of disinfectants required for pipe of various diameters in order to

provide a Chlorine concentration of about 20 mg/l shall be as under:

The volume in liters of the disinfecting solution required for 100m. of pipe can be expressed $V=0.08d^2$ where 'd' is diameter of pipe in mm.

ANNUAL BURDEN OF SCHEMES:-

Standard method for working out annual burden of Public Health Scheme was decided by the Public Works Deptt., of Government of Bombay vide their Circular No.WST-1059-11 dated 28/12/1959. The percentage of Annual M&R, life of the component and Rate of Depreciation to be adopted for various types of sub works in Public Health Scheme were decided in this circular. Norms are shown in statement vide Appendix-I.

APPENDIX - I

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Statement showing percentages for annual M&R, life and rate of depreciation to be adopted for various types of Sub-Works of: Water Supply Scheme

Sr. No.	Name and Types of work in brief	%age for annual M & R	Probable life in years	%age for annual depreciation	Remarks
1	2	3	4	5	6
1.	Preliminary Survey and preparation of projects	-	-	-	The percentages are for the gross cost of the scheme is inclusive of E.T.P.
2.	Lands	-	Perpetual	-	
3.	Earthen dams and embankments	0.75	67	1.50	For Govt. schemes the gross cost to be arrived at by adding E.T.P. charges to the net cost as per Govt. orders from time to time at present these charges are 17.85%.
4.	Acqueducts in masonry or R.C.C.	0.50	67	1.50	
5.	Water courses on earth cutting	0.75	50	2	
6.	Masonry works for intakes, outlets, etc.	0.50	50	2	

7.	Masonry dams	0.50	100	1	For municipal schemes the gross cost is to be arrived at by adding 17.85% E.T.P. charges. For calculating the grant in aid, the gross cost should be arrived at by adding 17.95% ETP.
8.	Open wells	1	50	2	
9.	Bore Wells	2	20	5	
10.	Infiltration galleries & infiltration wells	3	50	2	
B. PUMPS					
11.	Oil engines and oil engine driven pumps	2.50	15	6.66	
12.	Electrical pumps	2.5	20	5	
13.	Compressed air pumps with compressor	3	15	6.66	
14.	Steam engine driven pumps	3	25	4	
C. PUMPING, DISTRIBUTIONS, SUPPLY AND CARRIER MAINS (WITH ACCESSORIES)					
15.	Cast Iron and hume steel main	0.25	50	2	
16.	Asbestos cement, prestressed and hume pipes	0.50	33	3	
17.	Unprotected steel pipes	0.50	50	2	
18.	Galvanised Iron pipes	1	28	5	
D. TREATMENT WORKS (WITH ACCESSORIES)					
19.	Rapid gravity sand filters	2	25	4	
20.	Rapid pressure filters	2.50	20	5	

21.	Gimelicity or Semi-rapid filters	1.50	33	5	
22.	Sewage treatment plant equipment	2	20	5	
E. BUILDINGS:					
23.	Temporary Structures				
24.	Permanent structures	2.50	15	6.66	
F. SERVICE OF BALANCING RESERVOIRS:					
25.	R.C.C. elevated tanks	0.50	67	1.50	
26.	R.C.C. underground tanks	0.75	67	1.50	
27.	Prestressed steel elevated tank	1.50	25	4	
28.	Under ground masonry reservoirs	1	50	2	
G. MISCELLANEOUS					
29.	Approach and inspections roads	3	33	3	
30.	Wire fencing	3	25	4	
31.	Telephones lines	5	25	4	
32.	Transmission mains	4	25	4	
33.	Water ineters and meter boxes	5	10	10	
34.	Transfcrmers	5	25	4	

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