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GROUND WATER RECHARGE BY LAVATORY WATER

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Abstract - Most of the area in Rajasthan gets scanty rainfall, over exploitation of ground water for irrigation and industrial use hence more than 33% areas have been declared dark zones. The condition is near about same regarding India and even the world. As per Public Health Engineering Department Per capita consumption for designing the projects is 135LTRS/Day. 20LTRS/day are losses and 45LTRS/Day water for flushing, net quantity of water available for Lavatory (bathing, washing and kitchen) is 70Ltrs/day .This is a very big amount of water going waste and is either thrown out creating environmental problems or added to sewerage system overburdening the designed capacity. In present research the consumed lavatory water is not allowed to go waste but utilized. This water is first treated in floatation and settling chamber before entering suitably designed filter. After filtration water percolates into sub surface and recharges water table. Thus lavatory water saves the environment and mosquito nuisance, helps increasing water table for future use and avoids unnecessary over burden on sewerage system and its above capacity designing.

Keywords – Ground Water, Water Recharge, Lavatory Water, Recharge by Lavatory Water, Rainfall.

INTRODUCTION

Regarding the dark zones if recharging this amount of lavatory waste water to ground then definitely certain amount of water shall beaded to underground reservoirs. If water is not potable even then water will be available for Irrigation, Industrial and commercial purpose.

Regarding the sewerage system, when load is reduced to 1/3rd., Project cost of sewerage system along with treatment plant will also be reduced to 1/3rd. Consequently operational charges will also be reduced. Sewage can be treated in more purified manner and rivers which are getting severely polluted can be saved.

Effective infection and contamination control of Bathing and washing waste water

- Fabrics contaminated with micro organisms are most effectively decontaminated using soap/detergent and hot water washing.
- During laundering, the use of modern cleaning products effectively removes substrates from soiled fabrics which may support the growth of microorganisms.
- If lower temperature washes are used, the addition of hypochlorite bleach is necessary for effective decontamination.
- Laundering of cloths, towels etc. which are used in association with food preparation should be done separately from laundering of clothes & bed linens.
- Hand washing after contact with soiled laundry.

It is important to remember that relying on water temperatures to achieve bacterial and viral reductions may be impractical in the U.S. since water heaters are usually not set as high as the recommended temperature for effective sanitizing. Use of bleach or other targeted disinfectants/sanitizers, such as silver ions, is necessary to reduce contamination of washing machines. Even when used as a weekly "mouthwash" for

the washing machine, bleach will help to keep the germ count down.

Table 1. Flotation

Flotation	Oil and grease
Settling	Foam, Food particles, Hot water, Organic matter, Oxygen demand, & Suspended solids
Filtration	Food particles, Oil & grease, Organic matter, Soaps, Suspended solids, & Turbidity
Soil filtration	Bacteria, Bleach, Chlorine, Foam, Food particles, Organic matter, Oxygen demand, Suspended solids, Turbidity Nitrate, Phosphate, Soaps, & Sodium.

Households per capita water demand 135Ltrs/day. Deducting 45Ltrs for flushing and 20Ltrs as losses. Net water available for ground recharge 70 ltrs.

Daily	1000 x 70	=70000Ltrs.
Monthly	70000 x 30	=2100000Ltrs.
Yearly	2100000 x 12	=25200000Ltrs.

This much quantity, if recharged, will definitely help in fighting the water problem. Water table will go up.

ANALYSIS

FINANCIAL ASPECTS

1. Drilling borehole upto first sandy layer (10'-20'depth) @ Rs125/ft x 20' = 2500.00
2. P.V.C. PIPE 2"(5' length) @ Rs30/ft X 5' = 150.00
3. P.V.C. Filter PIPE 4"(20' length) @ Rs50/ft X 20' = 1000.00
4. Gravel packing (π*12x12/4 - π*4x4/4)*20= 100.531 cuft @ Rs 25/cuft x 100cuft = 2500.00
5. Sponge sheets 2nos.3.5' x 3.5', 2" thickness @ Rs 50/each x 2 = 100.00
6. 4"Un plastered brick masonary filter pit 4'x4'x2'+4'x2'x2'=48sqft 48*144/40= 173 nos of bricks @ Rs 2/no. X 173 = 346.00

Total = 6596.00
= 6600.00

(Say rupees six thousand six hundred only)

CONCLUSION

It is strictly recommended that the waste water harvesting structure to be constructed with each and every house. Each and every family can afford the expenses on waste water harvesting and it may be included in building bye laws of development authorities. For BPL family it can be attached with Indira Awas Yojana.

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