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Jharkhand Waste Water Policy, 2017

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Government of Jharkhand
Urban Development & Housing Department
Resolution

No.- Suda/Amrut/Wastewater Policy/38/2017

Ranchi, Dated

Subject:- Jharkhand Waste Water policy, 2017

1. BACKGROUND

Water recycling is reusing treated wastewater for beneficial purposes such as agricultural and landscape irrigation, industrial processes, toilet flushing, and replenishing a ground water basin (referred to as ground water recharge). Water recycling offers resource and financial savings. Wastewater treatment can be tailored to meet the water quality requirements of a planned reuse. Recycled water for landscape irrigation requires less treatment than recycled water for drinking water. A common type of recycled water is water that has been reclaimed from municipal wastewater, or sewage. The term water recycling is generally used synonymously with water reclamation and water reuse. Gray water is reusable wastewater from residential, commercial and industrial bathroom sinks, bath tub shower drains, and clothes washing equipment drains. Gray water is reused onsite, typically for landscape irrigation.

Through the natural water cycle, the earth has recycled and reused water for millions of years. Water recycling, though, generally refers to projects that use technology to speed up these natural processes. Water recycling is often characterized as "unplanned" or "planned."

2. WHY WATER RECYCLING

Recycled water can satisfy most water demands, as long as it is adequately treated to ensure water quality appropriate for the use. Recycled water can satisfy most water demands, as long as it is adequately treated to ensure water quality appropriate for the use.

2.1 Uses for Recycled Water

- 2.1.1 Landscaping
- 2.1.2 public parks
- 2.1.3 cooling water for power plants and oil refineries
- 2.1.4 processing water for mills, plants
- 2.1.5 toilet flushing

- 2.1.6 dust control
- 2.1.7 construction activities
- 2.1.8 concrete mixing
- 2.1.9 artificial lakes
- 2.1.10 Car, Cloth & floor washing
- 2.1.11 Garden and irrigation using a hose spray or drip irrigation.
- 2.1.12 Construction.
- 2.1.13 Artificial lakes

Although most water recycling projects have been developed to meet non potable water demands, a number of projects use recycled water indirectly for potable purposes. These projects include recharging ground water aquifers and augmenting surface water reservoirs with recycled water. In ground water recharge projects, recycled water can be spread or injected into ground water aquifers to augment ground water supplies, and to prevent salt water intrusion.

2.2 What are the Environmental Benefits of Water Recycling?

In addition to providing a dependable, locally-controlled water supply, water recycling provides tremendous environmental benefits. By providing an additional source of water, water recycling can help us find ways to decrease the diversion of water from sensitive ecosystems. Other benefits include decreasing wastewater discharges and reducing and preventing pollution. Recycled water can also be used to create or enhance wetlands and riparian habitats.

2.3 Recycling Water Can Save Energy

As the demand for water grows, more water is extracted, treated, and transported sometimes over great distances which can require a lot of energy. If the local source of water is ground water, the level of ground water becomes lower as more water is removed and this increases the energy required to pump the water to the surface. Recycling water on site or nearby reduces the energy needed to move water longer distances or pump water from deep within an aquifer. Tailoring water quality to a specific water use also reduces the energy needed to treat water. The water quality required to flush a toilet is less stringent than the water quality needed for drinking water and requires less energy to achieve. Using recycled water that is of lower quality for uses that don't require high quality water saves energy and money by reducing treatment requirements.

3 TITLE- This policy shall be called as **Jharkhand Waste Water Policy, 2017**

4 VISION

"All Jharkhand cities and towns achieve the water recycling capability from STPs, household, commercial and industrial areas in a sustainable manner and reduce the fresh water demand to a sizeable extent".

5 GOAL

Jharkhand Waste Water Policy, 2017 is to ensure increase use of recycled water for other purposes apart from drinking, through the provision of appropriate technologies for water recycling and protection of environment.

The policy specifically endorses the following core principles:

- 5.1 To protect the environment and the State's water resources.
- 5.2 To promote proper functioning of network based sewerage systems and ensure connections of household so as to prevent dry weather flow in drains & streets.
- 5.3 Treatment of sewage, sludge and grey water and recycle it for other uses.
- 5.4 Promoting recycle & reuse of household, commercial and industrial grey water
- 5.5 To make waste water project economical and environmentally sustainable.
- 5.6 Inclusive and participatory decision making in waste water recycling.
- 5.7 Transparent decision making processes to achieve socio-environmental as well as economic financial objectives.
- 5.8 Capacity building for enhanced institutional ability to govern the sector effectively.
- 5.9 Ensuring, protecting and optimizing investments.
- 5.10 Public Private Partnership (PPP) in the most appropriate manner.
- 5.11 Public outreach for environmental and health related outcomes.
- 5.12 Establishment of an efficient, effective, affordable and accountable system for managing the water recycling form urban sewerage and septage management

6 OBJECTIVES

To overcome the shortage of water by recycling it and putting them for different purpose, so that the use of potable water should mostly be for drinking purposes. The re-use of water in a sizeable quantity up to a certain quality after proper treatment of water for non-drinking purpose and last but not the least scientifically disposal of the remaining waste is the object behind formulating this policy.

- 6.1 To ensure 100 percent wastewater recycling in cities/towns
- 6.2 To improve waste water supply service focusing on customer satisfaction, coverage, frequency and reliability
- 6.3 Supply of potable water that incurs large amount of money to be reduced and waste water to be used in non-drinking purposes.
- 6.4 Promoting and augmenting wastewater reuse for ensuring environmental sustainability by reducing burden on already stressed basin and aquifers and preventing their depletion.

- 6.5 Promoting wastewater reuse from sewage discharge leading to reduction in environmental costs and health hazards.
- 6.6 Wastewater reuse by ensuring resource conservation & preservation of sensitive eco-system and reducing pollutant loading.

All cities and towns of Jharkhand become totally sanitized, healthy and liveable and ensure sustain good public health and environmental outcomes for all their citizens with a special focus on hygienic and affordable sewerage facilities for the urban poor and women. All urban dwellers will have access to and use safe and hygienic sewerage or sludge facilities and arrangements.

7 COMPOSITION OF GREYWATER

7.1 Greywater from Bathroom

Water used in hand washing and bathing generates around 50-60% of total greywater and is considered to be the least contaminated type of greywater. Common chemical contaminants include soap, shampoo, hair dye, toothpaste and cleaning products.

7.2 Greywater from Cloth Washing Water

It is used in cloth washing generates around 25 - 35% of total greywater. Wastewater from the cloth washing varies in quality from wash water to rinse water to second rinse water. Greywater generated due to cloth washing can have faecal contamination with the associated pathogens and parasites such as bacteria.

7.3 Greywater from Kitchen

Kitchen greywater contributes about 10% of the total greywater volume. It is contaminated with food particles, oils, fats and other wastes. It readily promotes and supports the growth of microorganisms. Kitchen greywater also contains chemical pollutants such as detergents and cleaning agents which are alkaline in nature and contain various chemicals. Therefore kitchen wastewater may not be well suited for reuse in all types of greywater systems.

8 LEGISLATION AND GUIDANCE DOCUMENTS

The Waste water Policy should be read in accordance with the most current versions of the following: Legislation and document

- 8.1 Environmental (Protection) Act, 1986
- 8.2 The Environment (Protection) rules, 1986
- 8.3 The water (Prevention and control of pollution) Act, 1974

- 8.4 The water (Prevention and control of pollution) cess, Act, 1974
- 8.5 The water (Prevention and control of pollution) Amended rules, 2011
- 8.6 The water (Prevention and control of pollution) Cess rules, 1978
- 8.7 The water (Prevention and control of pollution) Rules, 1975
- 8.8 National Urban sanitation Policy 2008
- 8.9 National water policy 2012
- 8.10 Quality standards suggested by Central Pollution Control Board and Jharkhand State Pollution Control Board.
- 8.11 Standards set by Bureau of Indian Standards (BIS)

9 WHAT NEEDS TO BE DONE

- 9.1 A Separate System: STPs water reuse and grey water reuse to encourage.
- 9.2 Water reclamation centers to reclaim water after treatment of domestic sewage and grey water.
- 9.3 Where water Reclamation centers are situated in the midst of residential area, these can be built under ground to avoid the problem odour and parks can be maintained on the roof of treatment facility.
- 9.4 One of the Scheme of treatment may be Grit chamber, Primary sedimentation tank, Reaction Tank, Secondary sedimentation tank, Chlorination Tank followed by sand filtration.
- 9.5 Reverse osmosis filtration may be used for tertiary treatment.
- 9.6 100% households, commercial area and industrial area to be covered for wastewater recycling
- 9.7 Sewerage and water supply activity should be coordinated.
- 9.8 Water tariff should be such as to discourage the people from wasteful use of water.
- 9.9 Provision of adequate wastewater collection and treatment facilities for all the cities and towns in Jharkhand.
- 9.10 Protection of the environment and public health in the areas affected by the proposed systems, especially, surface water and ground water.
- 9.11 Consideration of treated effluents as a source for reuse (irrigation/ industrial).

10 THE POLICY

10.1 On Resource Development

Wastewater is a perennial water source and shall form an integral part of renewable water resources and the State water budget. Each local body will consider it as a resource and make the plan for reuse as per the site conditions with the help of experts. All local bodies will make city wastewater reuse plan (CWP) for a period of 20 years considering future development and city development in line with city Master plan to avoid any conflicts in developing the city in the future.

Existing levels of wastewater services shall be maintained and upgraded where necessary to enhance public health and the environment and separate plan is to be prepared by local body as per their requirement. Treatment of wastewater shall be targeted towards producing an effluent fit for reuse in irrigation in accordance with WHO guidelines as a minimum. Reuse of treated wastewater in other purposes shall be subject to appropriate specifications. Coordination shall be maintained with the official bodies in charge of urban development to account for the treatment and disposal of their liquid wastes. Central treatment plants shall be built to serve semi-urban areas, and collection of wastewater can be made initially through trucking until collection systems are justified. Specifications and minimum standards as stipulated by CPHEEO shall be applicable for the use of septic tanks in urban areas. Particular attention shall be paid to the protection of underlying aquifers.

10.2 On Resource Management

It is highly imperative that Urban Local Body shall develop and manage wastewater systems as well as the treatment and reuse of the effluent.

A basin management approach shall be adopted where possible. The use of treated wastewater from sewerage, households, commercial and from industrial application shall be given the highest priority and shall be pursued with care. Effluent quality standards shall be defined based on the best attainable treatment technologies, and calibrated to support or improve ambient receiving conditions, and to meet public health standards for end users. Key factors will include the location of the discharge, its proximity to wells, the type of receiving water, and the nature and extent of end uses. Industries shall be encouraged to recycle part of its wastewater and to treat the remainder to meet standards set for ultimate wastewater reuse or to meet the regulations set for its disposal through the collection systems and/or into the receiving environment. Wastewater from industries with significant pollution should be treated separately to standards allowing its reuse for purposes identified by the city or to allow its safe disposal or water recharging. Consideration shall be given to isolating treated wastewater from surface and ground waters used for drinking purposes, and to the blending of treated effluent with relatively fresher water for suitable reuse. Urban Local Bodies can engage Experts from Government Engineering Colleges of Jharkhand NITs/Engineering colleges.

10.3 On Wastewater Collection and Treatment

10.3.1 City Plan A proper and updated city plan is an essential pre-requisite for proper planning and design of all utilities and more so for the Sewerage Systems and water recycled from houses. The State shall endeavor to have proper digital city maps showing the levels prepared through modern available technology. The digital city maps should clearly show the city feature over ground and underground including all utilities. Geographical Information System (GIS), Ground Penetrating Radar (GPR), Total station etc. tools may be used for preparation of city map. The city maps should be updated for every 5 years. An effective and comprehensive GIS based data base and Management Information System correctly mapping the assets, user base and status of operations shall be established.

10.3.2 Design Period: Every city has to prepare a City Wastewater Recycling Plan (CWP) for next 20 years along with 5 year short term plan. The CWP for the city should take into account the likely changes in the city in next 20 years and plan for them and will be according to city Master plan. The Detailed Project Report (DPR) for recycling should be in accordance to CWP. The design of the sewers and planning of space should be for the 30 year projection requirements and for recycling from households and commercial establishments. However, the units which can be developed in modules (e.g. Sewage Treatment Facility, sewerage Pumping machinery, on site treatment facilities, etc.) can be designed for appropriate shorter period. Earmark of land for Sewage Pumping Station (SPS) and Sewage Treatment Plant (STP) should be done for all Urban Local Bodies (ULBs) and appropriate land allotment shall be done by Development Authority/Urban Improvement Trust/State Govt. on priority.

10.4 On Reuse of Treated Effluent and Sludge

10.4.1 Treated wastewater effluent is considered a water resource and is added to the water stock for reuse.

10.4.2 Blending of treated wastewater with fresh water shall be made to improve quality where possible.

10.4.3 Crop nutrient requirements shall be determined taking into consideration the prevailing effluent quality. Overuse of nutrients shall be avoided.

10.4.4 Accumulation of heavy metals and salinity shall be monitored, managed and mitigated. Leaching of soils shall be advocated by the irrigation authorities.

10.4.5 Treated effluent quality should be monitored and users alerted to any emergency causing deterioration of the quality so that they will not use such water unless corrective measures are taken.

10.4.6 Studies should be conducted and projects designed and implemented to store the excess treated wastewater in surface reservoirs but artificial recharge is not permitted. Due attention shall be given to the quality of treated and groundwater and the characteristics of the strata.

10.5 Industry: Industrial reuse of reclaimed wastewater represents major reuse next only to irrigation in both developed and developing countries. Reclaimed wastewater is ideal for many industrial purposes. Where effluent is to be used in the industrial processes, it should be the responsibility of the industry to treat it to the quality standards required. Wastewater is to achieve adequate quality for reuse as cooling water. The membrane filtration system can remove all suspended solids, faecal coli forms, and giardia cysts. It could also significantly reduce human enteric viruses such as *reovirus* and *enterovirus*.

10.6 Industrial uses for reclaimed water include:

10.6.1 Evaporative cooling water:

10.6.1.1 once-Through cooling system

10.6.1.2 Re-circulating cooling system

10.6.1.3 cooling water quality requirements

10.6.2 Boiler –Feed water- The use of reclaimed water differs little from use of conventional public supplies for boiler-feed water, as both require extensive additional treatment quality requirement for boiler feed make up water are dependent upon pressure at which boiler is operated.

10.6.3 Industrial process water- Suitability of reclaimed water for use in industrial process depends upon particular use like-

10.6.3.1 Pulp and paper

10.6.3.2 chemical industry

10.6.3.3 Textile industry

10.6.3.4 Petroleum and coal

10.7 Re-use Options: The following options or re–use of effluent have been identified: In general, public health concern is the major issue in any type of reuse of wastewater, be it for irrigation or non-irrigation utilization, especially long term impact of reuse practices. It is difficult to delineate acceptable health risks and is a matter that is still hotly debated. Potential reuse of wastewater depends on the hydraulic and biochemical characteristics of wastewater, which determine the methods and degree of treatment required. While agricultural irrigation reuses, in general, require lower quality levels of treatment, domestic reuse options (direct or indirect potable and non-potable) reuses need the highest treatment

level. Level of treatment for other reuse options lie between these two extremes. The reuse options may be (artificial recharge of aquifers is not permitted):

10.7.1 Irrigation

10.7.1.1 Agriculture and forestry

10.7.1.2 Landscaping

10.7.2 Fish – farming

10.7.3 Industry

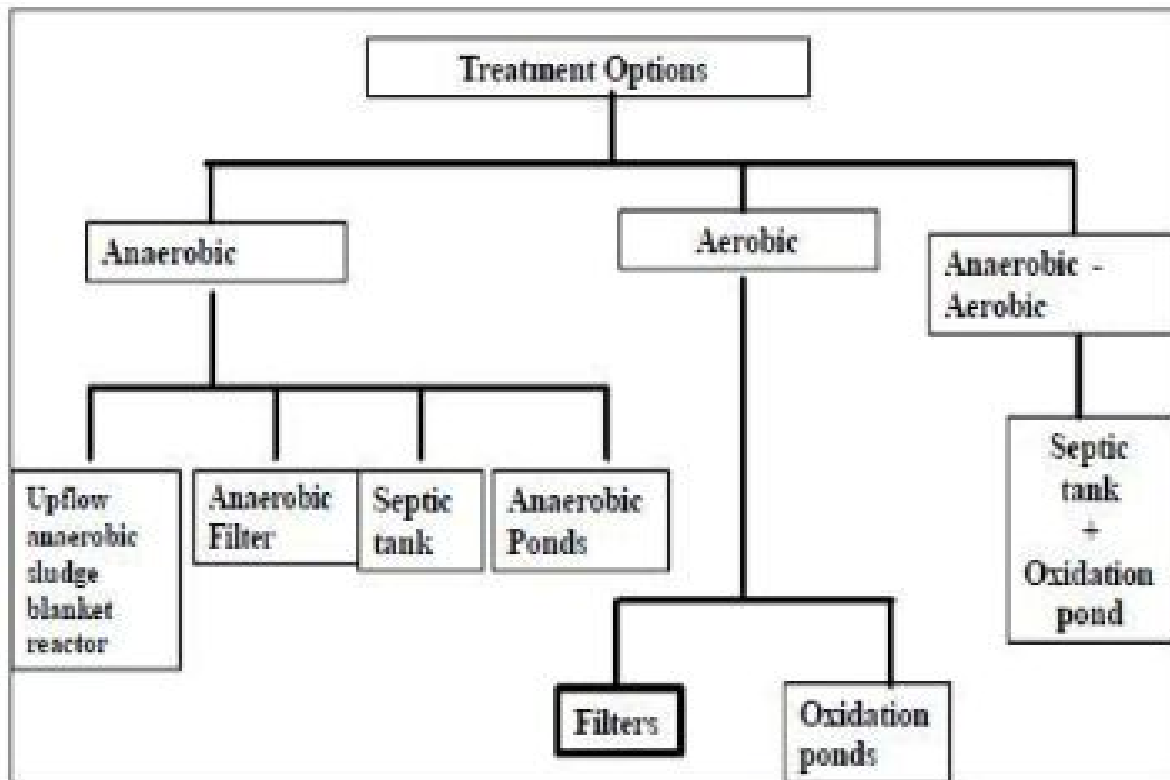
10.7.4 Non-potable Domestic Reuse:

The detailed project report should clearly define the best reuse option particular to town and strategy to obtain it. Action plan with clarity should be the part of Detailed Project Report (DPR), while preparing sewerage Projects. Before deciding the reuse of treated waste water authority must full fill the water quality norms and its legal implications.

Governing local body can sell the treated waste water and digested sludge to generate the revenue.

11 GREYWATER TREATMENT OPTIONS

Greywater reuse methods can range from low cost methods such as the manual bucketing of greywater from the outlet of bathroom, to primary treatment methods that coarsely screen oils, greases and solids from the greywater before other uses, to more expensive secondary treatment systems that treat and disinfect the greywater to a high standard before using it further. The choice of system will depend on a number of factors including whether a new system is being installed or a disused wastewater system is being converted because the household is connected to sewer.



12.1 Components of Greywater Treatment Systems

A number of technologies have been applied for greywater treatment worldwide varying in both complexity and performance. The following in general greywater systems considered :

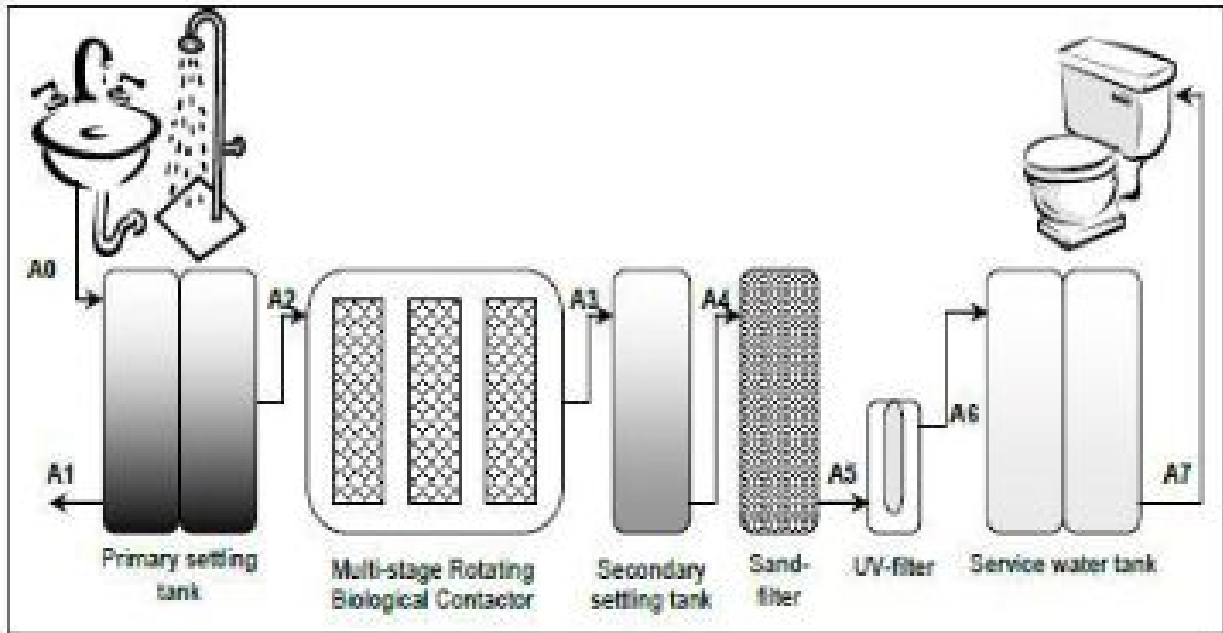
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12.1.1 Primary treatment pre-treatment to secondary treatment:

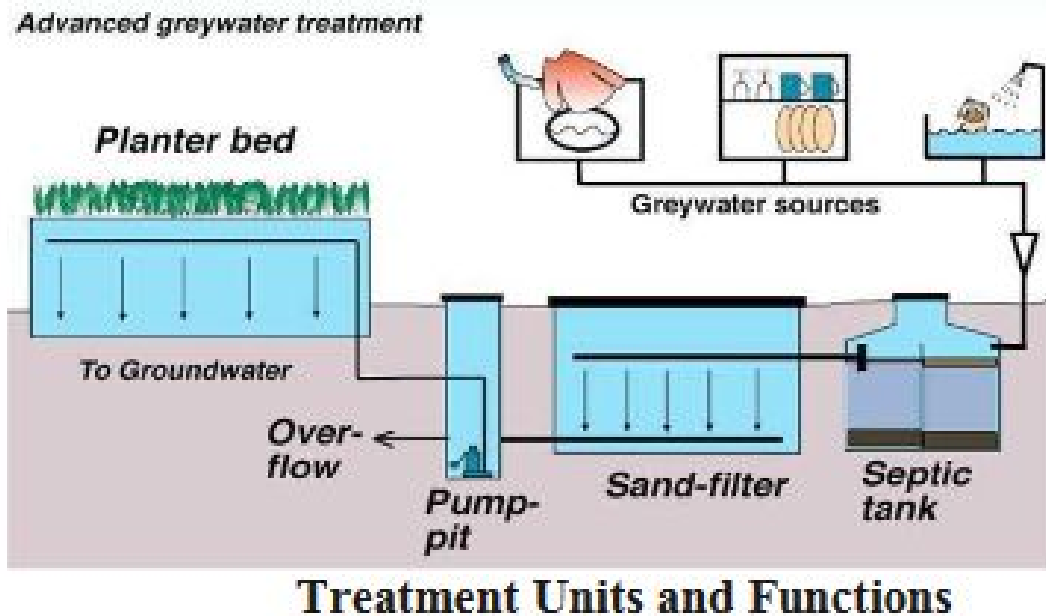
- 12.1.1.1 Screening
- 12.1.1.2 Equalization

12.1.2 Secondary treatment -1

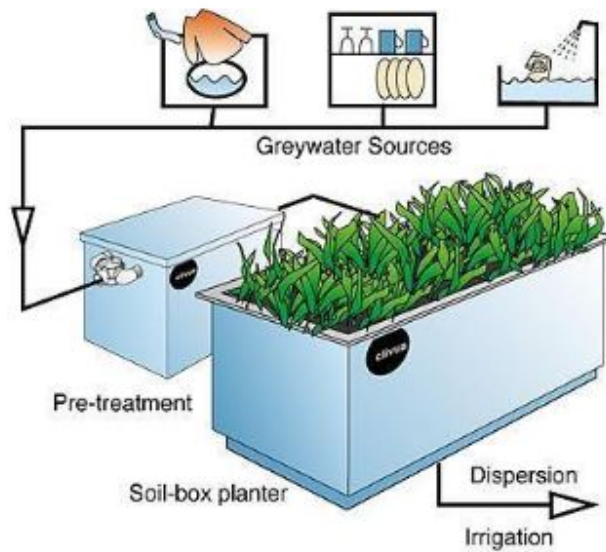
- 12.1.2.1.Gravel filtration
- 12.1.2.2.Sand filtration
- 12.1.2 3.Chlorination



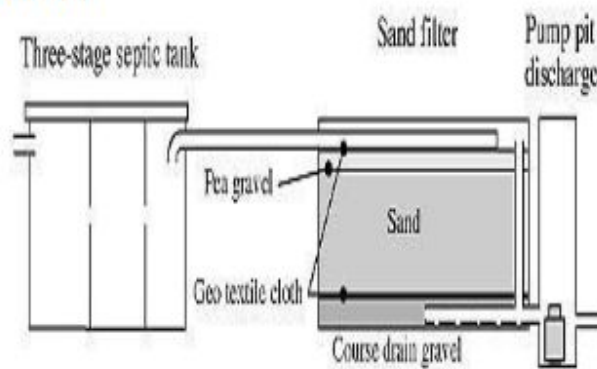
12.1.3 Secondary treatment -II.
 Broken brick, Charcoal, Chlorination, Treated greywater



Aerobic Pre-treatment -- suitable for showers, hand-washing and laundry⁺ water treatment.



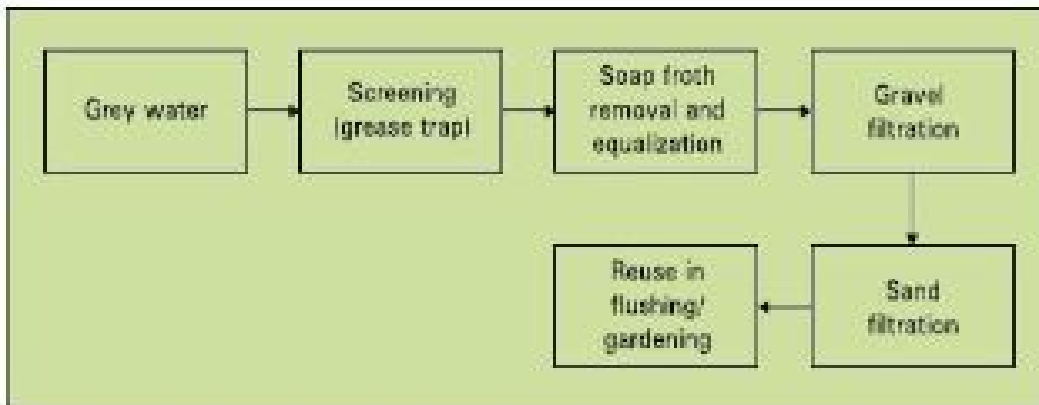
Anaerobic to aerobic treatment



12.2 Household level Greywater Treatment and Reuse System

In water scarce areas, with specific treatment the greywater can be cleaned and reused not only for gardening but for other use also.

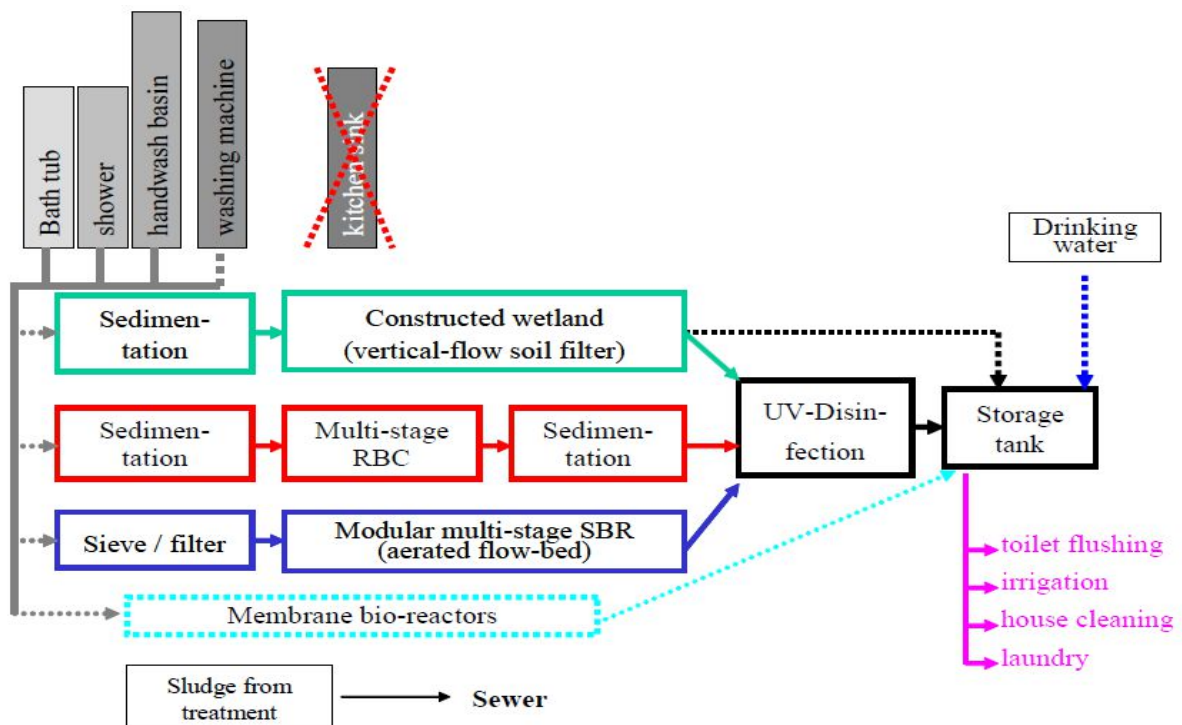
Technological process Greywater treatment process at the household level mainly involves screening (grease and silt removal), soap froth removal, equalization and filtration. Flow diagram of household based greywater treatment system is shown below



Greywater treatment for reuse in household

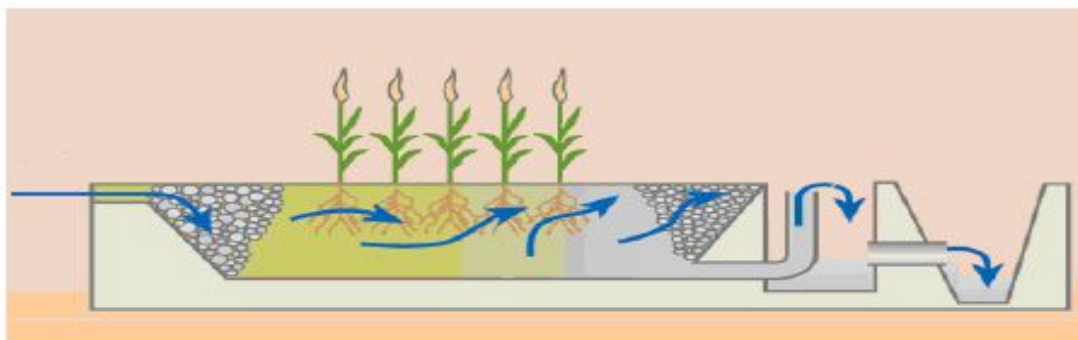
Advantages:

- 12.2.1 Reduces fresh water requirement
- 12.2.2 Prevents greywater stagnation
- 12.2.3 Prevents vector breeding
- 12.2.4 Use in flushing toilets to make toilets functional
- 12.2.5 Use of greywater in gardening
- 12.2.6 Minimal risk to users of greywater as it incorporates principles of water safety.



12.3 Constructed wetlands:

Constructed wetlands have been used successfully in the past for the treatment of wastewaters. Physical, chemical, and biological processes combine in wetlands to remove contaminants from wastewater. Greywater treatment is achieved by soil filtration in reed-bed systems which reduces the organic load of the greywater considerably, in addition to decreasing the concentrations of faecal bacteria. If properly designed, these systems would produce a clear and odourless effluent, which can be stored for several days without the need for disinfection.



13 ON PRICING FINANCING AND INVESTMENT

13.1 In view of increasing marginal cost of wastewater collection and treatment, wastewater charges, connection fees, sewerage taxes and treatment fees shall be set to cover at least the operation and maintenance costs. It is also highly desirable that part of the capital cost

of the services shall be recovered. The ultimate aim is for a full cost recovery.

- 13.2 Appropriate criteria in order to apply the "polluter pays" principle shall be established.
- 13.3 Different charges for different areas may be applied. This shall be assessed for each geographical area as a function of end uses and effluent quality and will be subject to economic and social considerations.
- 13.4 Because of the limited financial resources available to Government of Jharkhand, setting investment priorities in wastewater will be compatible with government investment plans.
- 13.5 Criteria for prioritizing investments in the wastewater sector shall take into account the current and future needs of the state, needs to expand wastewater systems in urban areas and to provide wastewater systems to smaller towns and villages.
- 13.6 Priorities of wastewater projects shall not be disconnected from water supply projects and urbanization in general. Decisions will be made concerning them to attain optimum solutions to the need for services, availability of finance and availability of trained manpower.
- 13.7 Treated effluent shall be priced and sold to end users at a price covering at least the operation and maintenance costs of delivery.
- 13.8 It is the intention of the Government, through private sector participation, to transfer management of infrastructure and services from the public to the private sector, in order to improve performance and upgrade the level of service.
- 13.9 The role of the private sector will expand with management contracts, concessions and other forms of private sector participation in wastewater management.
- 13.10 The concepts of Built Operate Own/Built Operate Transfer shall be entertained, and the impact of such concepts on the consumers shall be continually addressed and negative impacts mitigated.
- 13.11 The private sector role in reuse of treated effluent shall be encouraged and expanded.
- 13.12 As per urban reforms (under various schemes by Ministry of Urban Development) 90% cost of O&M of sewerage system shall be recovered from consumer.

13.12.1 The costs will depend on the system/technology adopted for collection of sewerage and treatment and the administration costs. It is important that the full cost of the service is assessed for each urban area instead of adopting a typical cost assessment. The full cost shall cover the following:

- 13.12.1.1 Institutional aspect of the sanitation service e.g. the management information systems, accountancy and finance management, billing and collection, customer services, etc. and oversight activities.
- 13.12.1.2 Operating, maintaining (on a planned maintenance basis), repairing replacing and extending sanitation service physical infrastructure.
- 13.12.1.3 Keeping updated infrastructure and customer data on a GIS base.
- 13.12.1.4 Managers, staff, vehicles, equipment and consumables associated with above.
- 13.12.1.5 Consumable like chemicals etc.
- 13.12.1.6 Power charges.
- 13.12.1.7 Spare Parts.
- 13.12.1.8 Any other O&M contract amount

13.12.2 The urban local bodies are proposed to have following sources funds for O&M

- 13.12.2.1 User charges: - Sewer charges to be increased as per the DPR made and detailed out. Sewer charges may be also be fixed in line with the Ministry's Advisory on tariff structure for urban water supply & sewerage services published in July 2013.
- 13.12.2.2 Revenue from sale of treated waste water

The government in town policy shall include the provision of the recovery of full capital cost of lying sewerage system and prorated cost of STP for new colonies. It shall be mandatory for the ULBs to adhere to minimum 20% reuse and recycling of treated waste water. The treated waste water may be sold at a rate as decided by adopting transparent procedure as decided by State Government.

13.13 Public Private Partnership (PPP)/Engineering Procure Construct (EPC) and Operational & Maintenance (O&M) Contract

As there is budget constraint from the Central and the state side the option of the Sewerage Project through Public Private Partnership (PPP) will be explored. In case the PPP mechanism is not workable then the EPC mechanism will be explored and long term O&M Contract will be done.

14. ON STANDARDS, REGULATIONS AND QUALITY ASSURANCE

14.1 Particular attention shall be focused on adopting and enforcing effluent and sludge standards for municipal and industrial wastewater treatment

- plants and for discharges from industries, laboratories, hospitals, slaughterhouses and other businesses.
- 14.2 Extensive and comprehensive monitoring programs shall be developed. Influent to and effluent from the plants and throughout watercourses shall be measured and monitored against all appropriate parameters to ensure that public health objectives and treatment efficiency goals are attained.
 - 14.3 Observation wells shall be installed near the treatment plants to monitor groundwater quality where necessary, and to mitigate adverse impacts where and when needed.
 - 14.4 Data collected from the monitoring process shall be entered and stored, processed and analyzed through computer software, and results published periodically.
 - 14.5 Roof and storm water connections to public sewers shall be prohibited. Collection of storm water shall be done separately and will be the subject of water harvesting.
 - 14.6 Effluent and sludge standards for the disposal of hazardous liquid wastes shall be defined to ensure the safe disposal of such wastes.
 - 14.7 State Pollution Control Board/ Central Pollution Control Board regulations for disposal norms shall be mandatory.
 - 14.8 Industrial waste water is not allowed to be disposed off in the sewer line. ULB can issue notification for penalties to be imposed on the such industrial units.
 - 14.9 Laboratories shall be maintained and properly equipped to provide services and reliable data needed to ensure enforcement of and adherence to standards and regulations.

15. ON LEGISLATION AND INSTITUTIONAL ARRANGEMENTS

- 15.1 Legislation and institutional arrangements for the development and management of wastewater shall be periodically reviewed. Gaps shall be filled, and updating of the institutional arrangements with parallel legislation shall be made periodically to cope with varying circumstances and for this government shall notify an agency giving full power to take necessary action in this matter.
- 15.2 The role of the Government shall be fine-tuned and its involvement reduced to be regulatory and supervisory. Involvement of the stakeholders in wastewater management and support shall be introduced and expanded.
- 15.3 On Public Awareness
 - 15.3.1 The public shall be educated through various means about the risks associated with the exposure to untreated wastewater and the value of treated effluents for the different end uses.
 - 15.3.2 Programs on public awareness shall be designed and conducted to promote the reuse of treated wastewater.

- 15.3.3 Public awareness campaigns shall also be waged to educate the public on the importance of domestic hygiene, wastewater collection, treatment and disposal.
 - 15.3.4 It is observed that the system is dependent on the appreciation of the beneficiaries to the advantages and importance of the system to them and thereby working together towards making it successful. The co-operation is vital for following areas:
 - 15.3.4.1 Protecting the system from getting choked due to entry of extraneous material in the sewer system. A vigilant public will help prevent this.
 - 15.3.4.2 The sewerage system yield full benefits or disease protection when there is 100% connectivity.
 - 15.3.4.3 It is important that the beneficiaries appreciate the benefits and pay for their upkeep. The systems require proper upkeep and the cost associated with maintenance and upkeep should at least be recovered from the beneficiaries. The principal of the polluter pays will be adopted only by an enlightened and participating public.
 - 15.3.5 A conscious campaign has to precede the planning and implementation of the sewerage Systems. ULB, Non Government Organizations and local neighborhood committees could give the process a thrust.
 - 15.3.6 A public participation process will not only aid in identifying potential consumers but also serve as a public education program. Potential users will be mainly concerned with the quality of reclaimed water and reliability of its delivery and the constraints in using reclaimed water. Also, connection costs or additional sewerage treatment cost might affect their ability to use the product. Consultations with various stake holders will aid in structuring of tariff and discounts for adopting reuse technologies, awareness on dual piping system, water conservation and safety issues.
 - 15.3.7 Municipal Bodies should decide and pass resolution regarding sewer connection charges. The provision should be widely publicized
 - 15.3.8 Series of 'Sewer connection camps' may be organized. The time and venue should be publicized widely to inform residents. The days, time and venue should be to suit the convenience of public.
 - 15.3.9 Ensure that all Government offices and schools are connected.
- 15.4 On the Human Resources Development & On Research and Development:
- 15.4.1 Capabilities of human resources in the management of wastewater shall be enhanced through training and continuous education. Work environment shall be improved and incentives provided.

- 15.4.2 Establishment of State Water & Waste water Training Center at state level. It will help in training of human resources in this sector.
 - 15.4.3 Human resources performance will be continually appraised in order to upgrade capabilities, sustain excellence and provide job security and incentives to qualified individuals with excellent performance.
 - 15.4.4 Applied research on relevant wastewater management topics shall be adopted and promoted. Topics such as the transfer of wastewater treatment technologies, low cost wastewater treatment technologies, reduction of energy consumption and others will receive adequate support.
 - 15.4.5 Cooperation with specialized centers in the country and abroad shall be advanced, and raising of funds for this purpose shall be supported.
 - 15.4.6 Transfer of appropriate technology suited for local conditions will be a primary target for the development activities and for adaptive research.
- 15.5 On Selected Priority Issues
- 15.5.1 To the extent that design capacities of wastewater treatment plants permit, priority of collection and house connections shall be accorded to expansion of urban areas served by treatment facilities. Users willing to contribute to the cost of the services in addition to fees and charges set by laws and regulations shall also be given priority.
 - 15.5.2 Where design capacities of treatment facilities and of conveyance systems are approached or exceeded, priority shall be given to the expansion of such capacities.
 - 15.5.3 Priority shall be accorded to situations and locations where wastewater disposal practices threaten the environmental integrity of freshwater resources, and where performance of cesspools and percolation pits pollute underground water aquifers.
More awareness campaigns will help spread the word. The civic body should make it mandatory for new constructions to have a separate system to collect grey water.

16. OPERATION AND MAINTENANCE

There are several important factors that need to be considered when planning wastewater plants and options which will have a direct impact on O&M and monitoring. Since O&M aspects are important for the overall long-term success of the programme, O&M planning, including the financial provision of funds, should be included in the terms of references for the design of each plant. Furthermore, the O&M plan should be reviewed and approved along with engineering designs and specifications, including the operation and maintenance cost:

- 16.1 location of the wastewater treatment plants and its proximity to residential areas;
- 16.2 volumes and schedules of wastewater collection;
- 16.3 degree of mechanisation of technologies; and
- 16.4 final end use or disposal of reuse
- 16.5 recovering the money by way of user charges
- 16.6 running it on PPP mechanism and charging the different users

17. STATE-LEVEL IMPLEMENTATION STRATEGY

- 17.1 State Urban Development Agency will develop and issue a Wastewater Implementation Strategy and Plan Guidelines. These Guidelines will provide an overall state-level framework, objectives, *timelines and implementation plans to the ULBs. The Implementation Strategy will cover* aspects such as implementation targets, framework for engagement of the private sector, training and capacity building, behavior change and social communication, M&E framework, specific roles and responsibilities of various entities, guidelines to develop ULB-level plans, and funding mechanisms.
- 17.2 ULB-specific Wastewater Strategy and Action Plan conforming to the State Policy will be developed by each ULB based on the State Faecal Sludge & Septage Management Implementation Strategy and Plan Guidelines.
- 17.3 How the policy will be executed in the in the cities/towns
 - A three phase approach will be designed to implement the policy.
 - 17.3.1 In the financial year 2017-18 it will be implemented in all the notified Nagar Nigam.
 - 17.3.2 In the financial year 2018-19 it will be implemented in all the notified Nagar Parisad.
 - 17.3.3 In the financial year 2019-20 it will be implemented in in all the notified Nagar Panchayat.

All efforts will be done to follow the execution method outlined above for the cities towns, however, depending upon the central/state programme and budget availability the cities/towns might be chosen from any category in any financial year. Due to environmental factors the cities/towns may also be chosen out of these to implement the plan.

18. MONITORING & EVALUATION

- 18.1 At the state level, State Urban Development Agency (SUDA)/ Jharkhand Urban Infrastructure Development Corporation (JUIDCO) will adopt San-Benchmark framework for revised service level benchmark for sanitation

that assess performance of citywide waste water recycling and sewage water treatment.

- 18.2 State Urban Development Agency (SUDA) / or JUIDCO will develop an M&E framework to measure cities' performance, and also devise data collection and reporting systems using indicator framework developed for San-Benchmark. This will be aligned with the 14th Finance Commission condition of publishing the service level benchmark to avail performance grant. ULBs will develop robust reporting format to track compliance of the various stakeholders with outcomes and process standards.
- 18.3 A cell will be created inside JUIDCO to monitor and evaluate the wastewater management operation. The cell will be created by funds from external agency funding or from the funds of 14th finance commission or through the state budget.
- 18.4 A Management Information System (MIS) will be developed accordingly to monitor the progress.

19. TAX INCENTIVE

The tax incentive will apply in following conditions:

- 19.1 All the Individual Households of RWAs will treat their waste water in a decentralised manner and reuse it inside their colonies as permissible will get the property tax of 10%.
- 19.2 All the new apartments which will be constructed and compulsory treat and reuse the treated waste water in their apartment, will get a 10% rebate of 10% of the construction permit fee, or Rs. 2,00,000/- (Two lakhs) whichever is less.
- 19.3 All the new malls, big hotels, industries, clubs, colleges, universities, hospitals, sports stadiums etc. which will be constructed will compulsory treat and reuse the treated water. In doing so they will get a rebate of 10 % of the construction permit fee, or Rs. 2,00,000/- (Two lakhs) whichever is less.
- 19.4 A separate head of the tax namely called 'Wastewater Tax' will be created which may be levied in the property tax for the operation and maintenance of the sepatge.

20. Policy evaluation:

- 20.1 Policy may be reviewed as and when required for assessing its effectiveness and making changes if necessary.
- 20.2 This policy shall come into force from the date of issue of this resolution.

21. Power of the State Government

- 21.1 Notwithstanding anything contained in the foregoing paragraphs of the Jharkhand Waste Water Policy, 2017 the State Government by issuance of notification in the official gazette may amend or withdraw any of the provisions and / or the schemes mentioned herein above.

21.2 Interpretation - Should any doubt arise as to the interpretation of any of the provisions of these Rules, the matter shall be referred to the Urban Development and Housing Department, whose decision thereon shall be final.

Order: It is hereby ordered that the copy of this resolution be published in the Special Gazette and wide publicity be given and circulated among all Department/ Head of the Department.

By the order of the Governor of Jharkhand,

(Arun Kumar Singh)

Principal Secretary to Government

Memo No- Suda/Amrut/ Waste Water-Policy/38/2017

Ranchi, Dated

Copy to : Copy of the resolution forwarded to the Superintendent, Government Press, Jharkhand, Ranchi for publication in the forthcoming issue of Government Gazette/Nodal officer, E-Gazette, Urban Development and Housing Department, Government of Jharkhand for information and necessary action.

Principal Secretary to Government

Memo No -Suda/Amrut/ Waste Water-Policy/38/2017

Ranchi, Dated

Copy to :P.S to Minister, Urban Development and Housing Department/ All Additional Chief Secretary/ Principal Secretary/Secretary, Govt of Jharkhand/All Divisional Commissioners, Jharkhand/Director, SUDA / Director DMA/All Deputy Commissioners, Jharkhand / All Officers, UD&HD/ Municipal Commissioners/ Executive Officers/ Special Officers, urban local bodies for information and necessary action.

Principal Secretary to Government