

GOVERNEMENT OF PUNJAB
DEPARTMENT OF LOCAL GOVERNEMENT
(LOCAL GOVERNMENT-4 BRANCH)
[Punjab Municipal Bhawan Sector 35-A, Chandigarh]

Notification

No. 5/29/2017-1LG4/1107 :- The Governor of Punjab is pleased to notify "The State Treated Waste Water Policy -2017", as given in the schedule.

Policy is framed to resolve the following key issues:

1. Provision of adequate wastewater collection and treatment facilities for all the cities and towns in Punjab.
2. Consideration of treated effluents as a source for reuse (irrigation/ industrial).
3. Improvement of the socioeconomic conditions in the areas to be served by the proposed systems.

Goal and Vision of the Policy:

- (i) To protect public health.
- (ii) To protect the environment and the State's water resources.
- (iii) Promote recycling & re-use of treated sewage for non-potable applications.
- (iv) To make Sewerage project economical and environmentally sustainable.

BACKGROUND

Sanitation is defined as safe management of human excreta, including its safe confinement treatment, disposal and associated hygiene-related practices. While this policy pertains to management of treated waste water and associated public health and environmental impacts, it recognizes that the integral solutions need to take account of other elements of environmental sanitation, i.e. solid waste management, generation of industrial and other specialized/ hazardous waste & drainage. Disposal of waste water generated from cities or from industrial areas is a big challenge not only for Punjab state but also at national level. Treated wastewater generated from existing wastewater treatment plants can be considered as an important component of water resources of Punjab. Due to the terrain and the concentration of the urban population, the majority of treated wastewater is discharged into various rivers, nallas or on open land and only a part of it is being used for irrigation.

To achieve the goal of health and hygiene for citizens:

1. A Separate System: Sewerage system to carry domestic sewage, while separate drainage system for storm water.
2. Sewage Treatment plant for the treatment of domestic sewage.
3. Where STP is situated in the midst of residential area, small size STPs (box type) can be built.
4. There are various technologies for sewage treatment i.e SBR technology where processes are Screening, Degrating, Filling, Aeration, Settling, Decanting & after chlorination, effluent is released.
5. Reverse osmosis filtration may be used for tertiary treatment.
6. Sludge may be dewatered, thickened and incinerated. Ashes remains may be used for landfill.
7. 100% households should be covered by sewerage system.
8. Sewerage and water supply activity should be coordinated.

9. Water tariff should be such as to discourage the people from wasteful use of water.

2. **NEED & OBJECTIVES FOR STATE TREATED WASTE WATER POLICY**

To overcome the shortage of water, for different purposes, use of potable water should mostly be for drinking purposes and re-use of water up to a certain quality after proper treatment of water for non-drinking purpose and last but not the least scientific disposal of the remaining waste is the object behind formulating this policy. Further to facilitate sustainable sanitation services to citizens of Punjab State, a State level policy for collection and treatment of waste water and its reuse is needed, which shall improve the level of sanitation, hygiene and bring positive impact on environment and public health.

- (i) Pure water is available in scarce quantity whether from canals, tube wells etc. Therefore, reuse of treated sewerage can provide incremental supply for non – potable applications and thus reduce need for augmenting supplies. In other words, water reuse promotes environmental sustainability by reducing burden on already stressed river water sources & ground water aquifers and preventing their depletion.
- (ii) Water reuse ensures resource conservation & preservation of sensitive eco-system and reducing pollutant loading.
- (iii) By promoting use of treated waste water and educating people, there will be reduced load on the existing water supply systems.

4. **LEGISLATION AND GUIDANCE DOCUMENTS**

The Government Treated Waste Water Policy should be read in accordance with the most current versions of the following, legislations and documents:

- (i) Latest Manual on Sewerage and Sewage Treatment Systems, 2013. (ii) Environmental (Protection) Act, 1986.
- (iii) The Environment (Protection) rules, 1986.
- (iv) Punjab Municipalities Act, 1911
- (v) Punjab Municipal Corporation Act, 1976
- (vi) Standards set by Bureau of Indian Standards (BIS).

5. **THE POLICY**

(A) **Off – Site Sanitation**

The ideal mode for sanitation is an off-site system which collects all the waste from within the city and transfers it to a treatment facility outside the city which treats it to acceptable levels of effluent and sludge which is then disposed /reused. The essential pre-requisite to a sustained functioning of the offsite facilities are:

- i. Adequate sewerage flow (approximately 100lpcd minimum) which is possible only in town/areas with a minimum supply of 135lpcd and 100% connectivity.
- ii. Availability of Land for Sewerage Treatment Plant and Pumping Stations will be ensured while preparing the DPR (Detailed Project Report) of sewerage for town. Local Government department & Housing & Urban Development Department shall mandatorily earmark land for Sewerage Treatment Plant and other facilities. The Department, Authorities/UITs/State Govt. shall allot a land to ULBs for sewerage projects.
- iii. Where possible, gravity flow shall command the collection and conveyance lines.

- iv. Treatment plants shall be located away from any potential population growth. Location selection shall be coordinated and approved with the concerned governmental agencies. Due consideration shall be given to interact with landowners and adjacent communities.
- v. It is mandatory to construct decentralized Sewage Treatment Plants (STPs) for the treatment of waste water in high rise buildings, so that sewerage system in that area may function properly and the treated waste water may be utilized in the nearby area. It will also reduce the investment requirement of sewerage system.
- vi. The use of advanced wastewater treatment technologies shall be endorsed and encouraged. However, appropriate wastewater treatment technologies shall be selected with due consideration to operation and maintenance costs and energy savings, in addition to their efficiency in attaining and sustaining quality standards.
- vii. Innovative approaches to wastewater treatment, particularly for the small municipal systems have to be considered. Design criteria, performance specifications and guidelines for such systems shall be adopted and generalized.
- viii. Design and performance specifications of wastewater treatment plants shall be as per guidelines given in the manual on sewerage treatment systems published by CPHEEO. Sufficient room in tendering for the construction of new plants shall be provided for competition to take place in both technologies and costs.

5.1. Reuse of Treated Effluent and Sludge

1. Treated wastewater effluent is considered a water resource and is added to the water stock for reuse.
2. Priority shall be given to agricultural reuse of treated effluent for unrestricted irrigation. Blending of treated wastewater with fresh water shall be made to improve quality wherever it is required. Crops to be irrigated by the treated effluent or blend thereof with freshwater resources shall be selected to suit the irrigation water, soil type and chemistry, and the economics of the reuse operations.
3. Crop nutrient requirements shall be determined taking into consideration the prevailing effluent quality. Overuse of nutrients shall be avoided.
4. Accumulation of heavy metals and salinity shall be monitored, managed and mitigated. Leaching of soils shall be advocated by the irrigation authorities.
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.
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.
7. Plans and studies for power generation from sludge, if proven technically, economically and financially feasible, shall be made with due attention to environment impacts.
8. Sludge produced from the treatment process would be processed so it may be used as fertilizer and soil conditioner. Care shall be taken to conform to the regulations of public health and environment protection norms.
9. For reuse gardening, foresting, dyeing unit & fishery may be adopted under proper monitoring.

10. **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. It is possible to economically treat the domestic wastewater to achieve adequate quality for reuse as cooling water. Based on the conclusions of the feasibility study, a full-scale treatment plant employing cross-flow membrane microfiltration system may be installed. The membrane filtration system can remove all suspended solids, fecal coliforms, and giardia cysts. It could also significantly reduce human enteric viruses such as *reovirus* and *enterovirus*. The water reclamation plant may bring the quality level for reuse of wastewater in power generation and other industrial manufacturing facilities.

Industrial uses for reclaimed water include: (i)

Evaporative cooling water:-

(a) Once-through cooling system. (b)

Re-circulating cooling system.

(c) Cooling water quality requirements.

(ii) **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 requirements for boiler feed make up water are dependent upon pressure at which boiler is operated.

(iii) **Industrial process water-**

Suitability of reclaimed water for use in industrial process depends upon particular use

like:-

(a) Pulp and paper.

(b) Chemical industry. (c)

Textile industry.

(d) Petroleum and coal.

(e) Dyeing units

(f) Construction Purposes

11. Whenever possible, other end uses of treated effluents; such as recycling, cooling, power generation, etc. shall be considered.

12. **Re-use Options:** The following options for 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):

i. **Irrigation**

(a) Agriculture and forestry

(b) Landscaping ii.

Fish - farming

iii. **Industry**

iv. **Thermal Plants**

v. **Non-potable Domestic Reuse.**

The (DPR) 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, authorities must full fill the water quality norms and its legal implications.

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

5.2. On Pricing, Financing and Investment

1. In view of increasing marginal cost of wastewater collection (where waste water is available other free water should not be there) 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.
2. Appropriate criteria in order to apply the "polluter pays" principle shall be established.
3. 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.
4. Treated effluent shall be priced and sold to end users at a price covering at least the operation and maintenance costs of delivery.
5. 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.
6. The role of the private sector will expand with management contracts, concessions and other forms of private sector participation in wastewater management.
7. The concepts of BOO/BOT shall be entertained, and the impact of such concepts on the consumers shall be continually addressed and negative impacts mitigated.
8. The private sector role in reuse of treated effluent shall be encouraged and expanded.

5.3. Source of Funds for Reuse of Treated waste water Project

- (A) In general, implementation of reuse facility requires substantial capital expenses. In addition to capital cost associated with reclaimed water facility, there are also additional operation, maintenance, and replacement and administrative costs. Hence responsible agencies may consider following sources of 'Funds for Construction of "Reuse of treated waste water Project"': from

- (i) Own Source of funds of ULB.
- (ii) Funds Provided by GOI under centrally sponsored schemes.
- (iii) Loan taken by State Government from multinational international organizations.
- (iv) Loan from Financial Institutions.
- (v) Grant from Central/State Government.
- (vi) Funds deployed by PPP operators.
- (vii) VAT share

- (B) The urban local bodies are proposed to have following sources for funds for O&M:

(i) Revenue from sale of treated waste water. (ii)

Revenue from sale of fertilizer.

(iii) Revenue from Sale of electricity generated.

5.4. On Standards, Regulations and Quality Assurance

Industrial department, Punjab Agriculture University, Punjab Energy Development Agency, Soil conservation department. Irrigation department are the Stake Holders.

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.
3. All crops irrigated with treated or mixed waters shall be analyzed and monitored periodically.
4. Observation wells shall be installed near the treatment plants to monitor groundwater quality where necessary, and to mitigate adverse impacts where and when needed.
5. Data collected from the monitoring process shall be entered and stored, processed and analyzed through computer software, and results published periodically.
6. 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.
7. Effluent and sludge standards for the disposal of hazardous liquid wastes shall be defined to ensure the safe disposal of such wastes.
8. PPCB/ CPCB regulations for disposal norms shall be mandatory.
9. 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.
10. Laboratories shall be maintained and properly equipped to provide services and reliable data needed to ensure enforcement of and adherence to standards and regulations.
11. Storm Water should not be allowed to mix with sewer.

5.5. On Legislation and Institutional Arrangements

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.
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.
3. The departments of irrigation and soil conservations shall prepare schemes for utilization of treated waste water for purpose of irrigation as per the following capacity of STP:-
 - I. For STP having discharge less than 10MLD Deptt. Of Soil Conservation
 - II. For STP having discharge more than 10 MLD Deptt. of Irrigation

5.6. On Public Awareness

- a. 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.

- b. Programs for public and farmers awareness shall be designed and conducted to promote the reuse of treated wastewater, methods of irrigation and handling of product. Such programs shall concentrate on methods of protection of farmers health, animal and bird health and the environment.
- c. Public awareness campaigns shall also be waged to educate the public on the importance of domestic hygiene, wastewater collection, treatment and disposal.
- d. 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:
 - i. Protecting the system from getting choked due to entry of extraneous material in the sewer system. A vigilant public will help prevent this.
 - ii. The sewerage system yield full benefits or disease protection when there is 100% connectivity.
 - iii. 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 principle of the polluter pays will be adopted only by an enlightened and participating public.

A conscious campaign has to precede the planning and implementation of the sewerage systems. ULB, Non Government Organizations and local neighbourhood committees could give the process a thrust.

5.7. On the Human Resources Development & On Research and Development:

- 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.
- 2. Human resources performance will be continually appraised in order to upgrade capabilities, sustain excellence, provide job security and incentives to qualified individuals with excellent performance.
- 3. 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.
- 4. Cooperation with specialized centers in the country and abroad shall be encouraged, and raising of funds for this purpose shall be supported.

ANNEXURE 1

Present Status of Sewage Treatment in Punjab State

The Govt. of Punjab is committed to provide public with clean greener environment by providing efficient sewerage system and ensure safe and healthy reuse of treated waste water.

In the State of Punjab 211 no. Sewage Treatment Plants (STPs) are to be constructed in 164 towns. Approximately 2046 MLd (Million Liters per day) of waste water is generated everyday, out of which 1305.6 MLd of waste water is treated daily through 73 no. STPs constructed in 55 towns. At present 64% Sewage is treated in Punjab which is highest in any State of India, 44 No. STPs are under construction in 30 towns with treatment capacity of 435 MLd are likely to be completed by August'2018.

Status of Sewage Treatment Plants in State of Punjab is as under:-

Sr. No.	STPs	STPs (Nos)					No. of Towns Covered	Total Capacity (MLd)
		PWSSB	WSSD	GMADA	GLADA	Total		
I	Completed & Commissioned	64	6	1	2	73	55	1305.6
ii	Work under progress	36	1	2	5	44	30	435.3
III	Funds Available but work not started	4	-	1		5	3	49.3
IV	Funds Available But Land not available	15	-	-	-	15	10	112.3
V	Funds untied	42	-	-		42	34	143.6
VI	Towns where Sewerage System do not Exist	26	6			32	32	
Note :-	Total number of towns in the State are 164, but the STPs to be constructed shall be 211.							2046.1

At present, the treated waste water is discharged into streams/rivers or is used for irrigation. The waste water is treated to meet up the parameters fixed by Punjab Pollution control Board which are as under:-

S. No	Parameters / Pollutants	Values
i)	Temperature	: Shall not exceed 50c above the water temperature of receiving body.
ii)	pH	: 6.5-9.0
iii)	Biochemical Oxygen Demand (as BOD5) at 200c	: < 10 mg/l
iv)	COD	: < 50 mg/l
v)	Total Suspended Solids	: < 10 mg/l
vi)	Fecal Coliforms	: < 230MPN/100 ml.
vii)	Total Nitrogen (as N)	: < 10 mg/l
viii)	Ammonical Nitrogen – as (N)	: < 5 mg/l
ix)	PO4-P	: < 2 mg/l
x)	RSC (Residual Sodium Content)	: < 2.5meq/l
xii)	SAR (Sodium Adsorption Ratio)	: < 3.5 mg/l
xiii)	EC (Electrical Conductivity)	: < 2000 us/cm

Dated Chandigarh the
08 May, 2017

Endst. No. 5/29/2017-1LG4/1108

Satish Chandra, IAS
Additional Chief Secretary to Government, Punjab.
Department of Local Government
dated Chandigarh, the 18 May, 2017

A copy is forwarded to the Controller, Printing & Stationery, Punjab, Sahibzada Ajit Singh Nagar, with the request to publish this notification in the extra ordinary gazette of the State Government.

and supply 25 spare copies immediately.

Jfle
Additional Secretary Local Government

Endst. No. 5/29/2017-1LG4/ 1109- 1118

dated Chandigarh, the 18 May, 2017

A copy each is forwarded to the following for information and necessary action:-

- 1) Principal Secretary, Housing and Urban Development, Punjab, Chandigarh.
- 2) Director, Local Government, Punjab, Chandigarh.
- 3) Chief Executive Officer, PWSSB, Chandigarh.
- 4) All Mayors of Municipal Corporations, in the State of Punjab
- 5) All Commissioners of Municipal Corporations, in the State of Punjab
- 6) All Regional Deputy Directors, Local Government, in the State of Punjab
- 7) All officers of the Department of Local Government Secretariat/Directorate.
- 8) All Superintendents and officials of Branches of Department of Local Government Secretariat and Directorate.
- 9) All Executive Officers, Urban Local Government, in the State of Punjab
- 10) Director, Information and Public Relations Punjab, Chandigarh.

Jfle
Additional Secretary Local Government