Recycled Water Applying Natural Treatment for Horticulture from Waste Water

At Delhi, there are dirty waste water rivulets, “Nallahs” crisscrossing all localities and adding to the pollutant load of the river Yamuna. The situation is alarming with today’s count of Nallahs standing at more than 22 Nos. These urban drains are nature’s creation and are meant to convey storm / rain water from upstream areas to down stream, finally leading to the river. Indian rivers are the most polluted and contain 10 times more pathogens and pollutants than other developing countries.

The city faces shortage of water supply and while domestic supply is sustained, the horticultural needs are not met. The result is all the public parks and their lawns and gardens are not maintained and remain parched.

In such an urban scenario, on the supply side there are dirty drains with water flowing always and on the demand side the parks are devoid of water for irrigation. Here a novel concept is planned to source dirty water and optimally process and make it fairly clean for watering the nearby parks.

Innovations introduced

In 2002, Vasant Vihar Residents Welfare Associations (RWA), MCD, Horticulture Department planned an innovative approach of sourcing waste water, processing it and the recycled water for watering the parks. The core group met with Ngo, The Vigyan Vijay Foundation (VVF) working in NCR – Delhi areas on environmental up-gradation, rain water harvesting and bio-composting Etc. A detailed plan was discussed on a pilot plant to be made at the bank of the urban drain.

The problem of funding the project was sought through RWA and passionate citizen’s efforts. Around Rs.1.5 Lakhs was raised and the first stage pilot plant was decided to be made. The Ngo VVF also agreed to assist the project team with honorary work in the design, lay-out and supervision during the making of the plant.

Upon completing and testing the out flow parameters, some deficiencies were noted in both the quantity and the quality of remediation. The flow that could be maintained was only around 10 to 15 Kl per day and with 80% remediation, was able to cater to parks of area of 5 to 6 acres- 25,000 Sqm. whereas the average waste water flow in the drain was more than 150 Kl per day. If all this water was taken up for process and re use, could cater to more than 200,000 Sqm (50 acres).

Optimum plant made

This remained as a challenge to the project team and continuous endeavor remained to upgrade both the quality of remediation and also to enhance the quantity in order to bring in more park areas under irrigation. Persistent efforts progressed and many officials from Urban Local Bodies, MCD, DDA, Environment Depts. viewed the plant with appreciation. In 2005 some funds from residents and support from MCD by way of supply of materials was sourced. This called for re-orientation of the plant design.

The existent plant was kept as the component of the final phase of treatment and the presently made was intended for the initial process. Better bio-remediation applying Decentralised Waste Water Treatment Systems DEWATS-concepts were introduced with initial anaerobic process having bio- settler and filter reactors Etc. followed by part aerobic and with some use of stones and plants-Phyto-remediation, coconut

kernel fibres and wood coal with stone and boulders as filters. The overall cost of the plant came to around Rs.7.0 Lakhs, plant capacity at 35Kl per day.

In 2006 the plant after stabilization for 3 months, revealed results with BOD reduction upto 90% at an out let level of 30ppm.Upon conveyance to the park located 1.5 Kms away, the processed water is consolidated at a reception tank in the park. A lift pump is used to convey the water to the feed hoses and to other parks in the area. At this point out fluent is observed with considerable remediation. Daily around 35 Kl of recycled water is led to the parks at A and E Blocks of Vasant Vihar total areas irrigated is 45,000 Sqm (12 Acres).

Conclusion

1. Decentralized waste water treatment plant at Delhi has indicated satisfactory potential. Also has addressed the issue of remediation of dirty waste-water drain channels in city and making available fairly clean irrigation water for local parks.
2. All urban cities are having dirty drain channels due to varied reasons like lack of planning and deficient governance Etc. The rivers which had given birth to the cities have lost their sanctity and situation is getting worse day by day.
3. Energy and resources saving, DEWATS-Decentralised Waste Water Treatment Systems can work well in preserving natural nutrient cycles, cause no damage to aquatic systems and would pave the way for appropriate “Ecological sanitation”.
4. Alternative decentralized technologies have been in practice at many organizations and institutions with optimum usage of recycled water for lower end uses. It would be appropriate to create more awareness and participation wherever possible with propagation of these sustainable initiatives at local level.

For more information, contact:

Er.Ajit Seshadri,
The Vigyan Vijay Foundation
H-2/2-5, Mahavir Enclave,
PalamDabri Road,
New Delhi-110 045
Ph. : 011-25058853 & 09810460049 (M)
Email: ajit.seshadri@vigyanvijay.org
Website : www.vigyanvijay.org New Delhi