

Development of "Seseragi" Plant (Satellite Plant)

Whole term

1993.4 ~ 1995.3

(Purpose)

Waste water after advanced treatment is sometimes utilized as a water resource for small streams (seseragi), fountains and waterfalls in many urban areas. However, for city centers or remote areas from sewage treatment plants, it is not practical in terms of maintenance and economic efficiency to install new advanced treatment facilities or to establish new water pipes and send treated water to those areas. Accordingly, we develop a small scale treatment plant, namely "Seseragi" Plant, which can be established on a main line of a sewage system or at a pumping station at low cost. It enables to carry out advanced wastewater treatment in those areas and to supply treated water to the places where clean streams are required.

(Results)

A certain amount of raw sewage is collected from a main line of a sewage system or from a pumping station and delivered to the "Seseragi Plant". The "Seseragi Plant" is a package type advanced treatment facility that delivers treated water to a destination through water conveyance pumps. The sewage sludge which remains after the advanced treatment is not discharged outside the system but sent back into the main line of the sewage system. Sewerage treatment plants downstream take over the sewage sludge treatment as backup facilities.

"Seseragi Plant" developed this year is a satellite facility which can be established in one structure within an area of approximately 400m², and has two kinds of aerobic filter beds with the capacity to treat water to the amount of 2000m³/d and 4000m³/d. The structure is downsized and simplified as much as possible. The equipments are placed three-dimensionally in three stories. The effluent quality targets are as follows; BOD less than 5mg/l, SS less than 5mg/l, T - N less than 20mg/l (NH₄ - N less than 8mg/l) and the number of coliform group less than 10, for influent quality of BOD=150mg/l, SS=150mg/l and T - N=35mg/l.

Though, the operation is basically unmanned and automatic, patrol check is required about once a month for maintenance. Besides, remote controlling system with alarms is also available. In addition, considering installation near a residential area, the plant is designed not to cause any secondary environmental pollution such as odor and noise.

The treated wastewater in the "Seseragi Plant" is available for the following purposes.

1. Water for landscaping...used as water resources for little stream chanel, ponds, fountains and waterfalls.
2. Water for purification...used as supplement water for circular purification of ponds and moats where water is polluted and algae are breeding.
3. Water for the recovery of clean river...used for purification, odor control and clear stream recovery by discharging it into a polluted river.
4. Water for river maintenance...used for water volume increment during dry weather for rivers where water flow has reduced due to the completion of sewage works and so on.
5. Water for toilet flushing...used for efficient toilet flushing in concentrated area with office buildings.
6. Water for pumping stations...used for equipment cooling, pump bearing lubrication and washing.
7. Spray water for trees...used as water spray for trees in parks and streets and for horticultural plants.
8. Water for road cleaning...used for cleaning and washing main roads in the nighttime.
9. Spray water for road cooling...used as water spray for cooling paved roads in summer to mitigate the heat island phenomenon.
10. Water for snow melting...used for melting snow on urban roads in snow zones.
11. Water for car washing...used for washing at bases for railroads, buses, trucks and garbage trucks.
12. Water for fire fighting...water in temporary storage tanks in the "Seseragi Plant" can be used.
13. Water for air conditioning...used for air conditioning by using the heat of the treated water through heat pumps.

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Keywords

Seseragi (litle stream), amenity, advanced treatment, recycled water, treated water, raw sewage, landscaping