PRESENTATION
ON
STATUS OF TERTIARY TREATED WATER
IN
CHANDIGARH

Dated 20.02.2013

by
R C DIWAN SE(PH)
TERITARY TREATED WATER FOR IRRIGATION

- Part of the Sewage generated by the city is being treated up to tertiary level and supplied back to the city from Diggian Sewage Treatment Plant located in Phase XI, Mohali which is located approx. 15 km. from the city in order to conserve the fresh water being used for irrigation purposes.

- Further to ensure uninterrupted supply of tertiary water, 4 No. UGRs have been constructed. The tertiary treated water from the Diggian plant is first stored in these UGRs and then pumped to the respective areas, thus ensuring reliable tertiary treated water supply to all areas.

- Presently, one T.T. plant of capacity 10 MGD is functional and the other 10 MGD T.T. Plant which was constructed in 1991 is under renovation.
### Characteristics of Sewage and Treated Sewage Water

<table>
<thead>
<tr>
<th></th>
<th>Raw Sewage Water</th>
<th>After Secondary Treatment</th>
<th>After Tertiary Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD</td>
<td>150 - 285 mg/l</td>
<td>≤ 30 mg/l</td>
<td>≤ 10 mg/l</td>
</tr>
<tr>
<td>COD</td>
<td>540 mg/l</td>
<td>≤ 150 mg/l</td>
<td>≤ 60 mg/l</td>
</tr>
<tr>
<td>pH Value</td>
<td>7-8</td>
<td>7-8</td>
<td>7-8</td>
</tr>
<tr>
<td>TSS</td>
<td>310-330 mg/l</td>
<td>100 mg/l</td>
<td>1 mg/l</td>
</tr>
<tr>
<td>TDS</td>
<td>920 mg/l</td>
<td>≤ 300-400 mg/l</td>
<td>1 mg/l</td>
</tr>
<tr>
<td>Turbidity</td>
<td>150 mg/l</td>
<td>≤ 10 mg/l</td>
<td>≤ 5 mg/l</td>
</tr>
</tbody>
</table>
# Sewage Treatment Plants of Chandigarh

<table>
<thead>
<tr>
<th>Sr No.</th>
<th>Name of the Installation</th>
<th>Total Treatment Capacity</th>
<th>Tertiary Treatment Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Existing</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Sewage Treatment Plant Diggian</td>
<td>15 MGD + 30 MGD ASP</td>
<td>10 MGD + 10 MGD OLD JNURMN</td>
</tr>
<tr>
<td>2</td>
<td>Sewage Treatment Plant Raipur Kallan</td>
<td>5 MGD</td>
<td>-NIL-</td>
</tr>
<tr>
<td>3</td>
<td>Sewage Treatment Plant Raipur Khurd</td>
<td>1.25 MGD</td>
<td>-NIL-</td>
</tr>
<tr>
<td>4</td>
<td>Sewage Treatment Plant 3BRD</td>
<td>5 MGD</td>
<td>-NIL-</td>
</tr>
<tr>
<td><strong>Proposed/Under Construction</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sr No.</td>
<td>Name of the Installation</td>
<td>Total Capacity</td>
<td>Tertiary Treatment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Sewage Treatment Plant 3BRD(Under const).</td>
<td>10 MGD</td>
<td>-NIL-</td>
</tr>
<tr>
<td>2</td>
<td>Sewage Treatment Plant Maloya.</td>
<td>5 MGD</td>
<td>-NIL-</td>
</tr>
</tbody>
</table>
Quantities of saved Drinking Water By Substituting Tertiary Treated Water For Irrigation.

The total approx. Water requirement for irrigation of open /green spaces in Chandigarh works out as under :-

A) Areas of green spaces in sector-1 to 12 and sector-26 including area institutions.
   (Already having T.T water distribution network)
   = 1290 Acres

B) Areas of green spaces in sector-14 to 56 except sector-26.
   i) Area of green spaces in 1 Kanal & above houses
      = 370 Acres
   ii) Area of green spaces of parks, green belts & institutions
       = 1913 Acres
       = 2283 Acres
       = 3573 Acres

Total area of green spaces
Requirement @ 5400 gallons/acre/day
= 19.28 MGD
Say 20 MGD

Thus total quantity of water proposed to be conserved
= 20 MGD
TT PROJECT – I (1991)

NAME OF WORK :- Conservation of drinking water by harvesting of 10 MGD Tertiary treated sewage for irrigation of green spaces Chandigarh

INFRASTRUCTURE COVERED UNDER PHASE-1

- 10 MGD TT Water Filtration Plant at Diggian Commissioned in the year 1991. (Now under Renovation)

- PSC/ MS (800mm/600mm dia) rising main laid from TTP at Diggian, Mohali to Rajindra park and descends downwards from Sector-2 to Sector-36 as CI main of Dia varying from 500mm to 400mm.

- PVC distribution pipeline in green belts and for 1 kanal and above houses for TT water were laid for Sec 1 to Sec-7, 9, 10, 16 and part of Sec-23, 26 & 36 Chandigarh.
For full utilization of 10 MGD TT water, 2nd Project was executed in the year 2005 as Phase-2

- PSC/MS (500mm dia) rising main laid along Udyog path from Sector 28/29 to middle of Sector 16/23 and along Shantipath from Sec-31/47 to middle of Sector-36/42 Chandigarh

- A portion of HDPE distribution pipeline of 200mm was laid along V-5 roads for supply of TT water to green belts of Sector-16/23, 17/22, 18/21, 19/20, 27/30, 28/29, 31/47, 32/46, 33/45, 34/44, 35/43 and 36/42 Chandigarh.

- DI (300-200mm dia) rising main laid from Sector 47,48 to Sector 43/52 Chandigarh
**TT PROJECT – II**
(Under JnNurm)

**NAME OF WORK** :- Conservation of drinking water by harvesting of the tertiary treated sewage for irrigation of green spaces Chandigarh.

**Estimated Amount** : 36.72 Crores

**SCOPE OF THE PROJECT**
To save 10 MGD potable water by generating 10 MGD TT water after installation of TT Plant, laying of TT water pipe network for irrigation of green belts, parks and open space in the Institutions and houses of plot area above 1 Kanal

**INFRASTRUCTURE COVERED**
- Construction of 10 MGD TT Filtration Plant at STP Diggian.
- Laying of PSC/ MS rising main from STP to city.
- Laying of HDPE distribution pipe for green belts and Houses of plot area above 1 kanal.
- Construction of UGRs and installation of pumping machinery in Sec. 28,29-B,29-C & 48 to stabilise the TT water supply.
KEY PLAN OF T.T. WATER SUPPLY PIPE NETWORK IN CHANDIGARH

LEGEND

- Existing Main Lines
- Existing Trunk Lines
- Proposed Main Lines
- Proposed Trunk Lines

Green shaded areas: Covered with existing T.T. water distribution network
Orange shaded areas: Covered with T.T. water distribution network under separate estimate
Pink shaded areas: Proposed to open areas proposed to open areas to be covered with T.T. water distribution network

STP RAIPUR KALAN
STP MALOYA
STP Diggian
STP 3BRD
1) TOTAL AVAILABLE T.T. WATER = 10 MGD + 10 MGD
   (Under JnNurm) (Under Renovation)

2) NETWORK DIRECTION = TTP’s DIGGIAN TO 4 No’s UGR’S and Shantipath

3) MAJOR BRANCHES:
   - OUTER DAKSHIN MARG (SECTOR 47 / 48)
   - SHANTI PATH (SECTOR 31 / 47)
   - DAKSHIN MARG (SECTOR 29 / 31)
   - UDYOG PATH (SECTOR 28/29)
   - UTTAR MARG (SECTOR 1/3)
## Location and capacity of 4 NO’S UGRs for storage of Tertiary Treated Water (under JnNURM)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Location</th>
<th>Capacity of UGR (cum)</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Sec. 48 A</td>
<td>5905</td>
<td>COMPLETED &amp; COMMISSIONED</td>
</tr>
<tr>
<td>2.</td>
<td>Sec. 29 C</td>
<td>7816</td>
<td>COMPLETED &amp; COMMISSIONED</td>
</tr>
<tr>
<td>3.</td>
<td>Sec. 29 B</td>
<td>7871</td>
<td>COMPLETED</td>
</tr>
<tr>
<td>4.</td>
<td>Sec. 28 B</td>
<td>4414</td>
<td>COMPLETED &amp; COMMISSIONED</td>
</tr>
</tbody>
</table>
**TT WATER CONNECTIONS**

1. **370 NOS T.T. WATER CONNECTIONS ALREADY FUNCTIONAL IN INSTITUTIONS, PARKS AND HOUSES OF 1 KANAL & ABOVE.**

2. **ALL THE ACADEMIC INSTITUTES, GOLF CLUB, CHD. GOLF ACADEMY (CGA), AND SOME GREEN BELTS OF VARIOUS SECTORS FULLY FUNCTIONAL.**

3. **TO FACILITATE MORE DOMESTIC CONNECTIONS OF TT WATER, ABOUT 1000 CONNECTIONS ARE BEING RELEASED FOR WHICH SERVICE PROVIDER HAS BEEN ENGAGED.**
T.T. WATER FEASIBILITY IN SECTORS

Fully covered sectors
Sec.1, 5, 6, 9, 12, 48, 49, 50, 51, 56, 61

Partially covered sectors
Sec.2 to 4, 7, 8, 10, 11, 14, 15, 16, 17 to 47, 52

Sectors not covered and developed
Sec.53, 54, 55
CLARIFLOCULATOR
Thank You
Tertiary Treated Water being Used at Golf Course
Typical Hydraulic Diagram of 10 MGD Capacity Tertiary Treatment Plant at Diggian.
T.T. WATER TARIFF

1. Residential houses with metered supply @ Rs.2.50 per Kilolitre.

2. Residential houses without metered supply @Rs.50.00 per kanal, per month.

3. Other lawns/ parks having area of one acre or above @Rs.600/- per acre, per month.
<table>
<thead>
<tr>
<th>LOCATION OF UGR</th>
<th>AREA OF TT WATER SUPPLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) SECTOR 28B</td>
<td>SECTORS 1-12, Rajindra park and Sector-26</td>
</tr>
<tr>
<td>4) SECTOR 48A</td>
<td>C&amp;D PARTS OF SECTORS 39 TO 47, SECTORS 48-56.</td>
</tr>
</tbody>
</table>