

Visit Report

On

Water Treatment Plant

At

Puikhadi, Kolhapur

On

27th October, 2023

ACKNOWLEDGEMENT

We student of T. Y. B. Tech Civil engineering are gladly thankful to Prof. (Dr) S. N. Sapali Director Sir, B.Tech Civil Engineering Program Coordinator Prof. Mahesh S. Salunkhe Sir and Faculty has allowed us to visit at water treatment Plant, Puikhadi, Kolhapur. Also, we are thankful to Er. Netradeep Sarnobat (Hydraulic Engineer, City Water Supply, Municipal Corporation, Kolhapur) because they granted permission to water treatment plant at Puikhadi, Kolhapur, Mr. Uttam Jadhav, Aniket Powar (Supervisor) and Mr. Barale Sir, has given the proper information and guidance to us about WTP.

INTRODUCTION

As a part of curriculum we all T.Y.B.Tech Civil Engineering students visited the Water Treatment Plant, Puikhadi, and Kolhapur on 27th, October 2023 under the guidance of Professor Dr. G. S. Kulkarni Sir and Asst. Prof. Ms. T. R. Patil Ma'am. Supervisor of WTP has given information and guidance about the existing working of Water supply scheme (Phase-I) constructed Water Treatment Plant at Puikhadi having capacity of about 60 MLD. Along with we have visited newly completed Water Treatment Plant (Phase-II) having capacity of about 80 MLD. This newly constructed plant will receive raw water from Kalamawadi Dam.

The raw water collected from river near Shignapur are lifted Siphonally to Aptenagar area then pumped and forwarded to Puikhadi WTP for treatment Process. Every day, this plant treated water having capacity of 60 MLD and treated water supplied to Kolhapur A and B ward for drinking purpose.

We understand the complete treatment process of raw water step by steps as follows:

1) Aeration Fountain:

- i) R.L. – 636.500 M
- ii) Diameter - 9.0 meter,
- iii) No. of Cascades – 5 Trade of Cascade: 0.75 m, Rise of Cascade: 0.15 m,
- iv) Diameter of Inlet – 1.2 meter,
- v) Designed Capacity – 84 MLD.



Photo No.1 Aeration Fountain

Objective:

1. To eliminate unneeded dissolved gases such as (CO_2 , H_2S , NH_3).
2. To increase D.O. level in water.

2) Parshall Flume & Elevated Channel:

- i) F.S.L.RL – 535.500 M
- ii) Width – 1.75 m,
- iii) Depth of water – 0.70 m,
- iv) Free Board – 0.30 meter,
- v) Designed Capacity – 84 MLD



Photo No. 2 Parshall Flume

3) Flash Mixer:

- i) F.S.L.RL – 634.450 meter
- ii) Size – 5.05 meters X 3.80 meter,
- iii) Depth of water – 4.25 m,
- iv) Designed Capacity – 84 MLD

4) Clariflocculator:

- i) F.S.L.RL – 633.750 meter
- ii) No.s- 2 No's, Capacity- 60 MLD/No.
- iii) Side depth of water – 3.50 m,
- iv) Diameter of inlet shaft – 1.0 meter & Diameter of flocculator – 15.20 meter/No.
- v) Diameter of Clarifier – 37.25 meter/No.



Photo No.3 Clariflocculator Tank

Objective:

Flocculation is mixing process in which suspended particles are brought into contact in order to promote their agglomeration.

5) Rapid Sand Filter Beds:

- i) No. of Beds – 8 Nos.
- ii) Designed Capacity – 60 MLD of 7 Beds & 1 Bed Stand by.
- iii) Size of Beds: 7.5 meter X 4.0 meter for 1 Section, 2-Sections for each bed,
- iv) Area of each Filter Bed – 60 Square Meter
- v) Manifold – 0.75 M X 0.9 M R.C.C. Laterals – 80 mm ØA.C CL III23 X 2 Nos.

Filter Media:

- A) Supporting Gravel Media: 0.45 meter,
- B) Quartzite Sand: 0.70 meter.



Photo No.4 Rapid Sand Filter Beds

6) Wash Water Tank:

- i) F.S.L.RL – 642.500 & Bottom R.L.: 640.150
- ii) Capacity – 7, 00,000 Liters

7) Chlorination / Disinfection:

- i) Chlorine cylinders having 1 ton weight is filled with 900Kg of chlorine gas.
- ii) This chlorine gas is applied in dissolved form to water for disinfection

8) Chemical Tanks:

- i) Alum Tank – 6 No.s, Capacity- 6000 Ltrs/No.
- ii) Soda Tank – 2 No.s, Capacity- 6000 Ltrs/No.
- iii) TCL Tank – 6 No.s, Capacity- 6000 Ltrs/No.

9) Master Balancing Reservoir:

- i) F.S.L.RL – 630.000 & Outlet R.L. 627.000
- ii) Capacity – 70, 00,000 Litres.

10) Re-circulation Tank:

- i) F.S.L.RL – 626.700 & Bottom R.L.: 623.700
- ii) Capacity – 30, 00,000 Liters.

After the conventional treatment of water; it is collected and stored for some period into a specific elevated water reservoir. This treated water is then supplied to the required area as per daily demand of water. The water distribution is done statistically as per requirements for a combination of domestic, commercial, industrial and fire-fighting purposes.

CONCLUSION

The treatment of water plays an important role in human life, whether for daily routine purpose or demand of water per day per capita for the Kolhapur city. This WTP visit has given the information about the sources of raw water and on large scale for purification process. Also, we understood the design and a systematically the working process of WTP at Puikhadi, Kolhapur.



Photo No. 5 WTP Entrance