CHAPTER - 3

SYSTEM UNDER STUDY:
RIVER SHEONATH & THE STUDY AREAS

3.1 DESCRIPTION OF SHEONATH RIVER

The River Sheonath is a non perennial river. It originates from high land of Rajnandgaon district near protected forest having grid references 80° 37.5'E. Longitude and 20° 5' N Latitude. After meandering for about 40 kms. it touches Durg town. Further the river travels about 200 kms. to merge into the Mahanadi river. During its course a number of natural drains and tributaries join the river throughout (Fig. No. 1)

3.1.1 River in study area “Durg-Bhilai section”

Durg town is very well known for Bhilai Steel Plant, which was established in the year 1955. It is a district headquarter with a number of public and private institutions along with many industrial and commercial establishments. The present population of Durg and Bhilai is estimated to be approximately ten lakhs.

The Bhilai is developing at a very fast rate because of the Bhilai Steel Plant which has become an important industrial center. The entire region has vast resources of minerals. Nandini, Rajhara mines provide iron ore for the Bhilai Steel Plant. There are appreciable deposits of bauxite, manganese, fire-clay, china-clay and soft-stone also in the region and its vicinity. Due to the presence of all these resources the rate of growth of this area is very fast.
3.1.2 Pollution in Sheonath river

With the rapid development, urbanization, increase in population and industrialization, Bhilai is becoming a main commercial center. Bhilai and Durg towns generate adequate quantity of waste water. The total waste water generated due to the human, commercial, industrial activities ultimately meets the Sheonath river through various nallahas and tributaries with the result that the river water has become highly polluted in this region. The stretches of the river from the study Site number 1 to number 9 is approximately 25kms.

Major nallahas which flow from different areas of Durg-Bhilai town are:
1. Pulgaon nallah
2. Shankar nallah
3. Bhilai nallah
4. Kosa nallah
5. Industrial nallah
6. Samoda nallah: This nallah is formed by the joining of Bhilai nallah, Kosa nallah and Industrial nallah.

3.2 POLLUTING STREAMS:

3.2.1 Pulgaon Nallah

This nallah flows through the territory of Durg town area of Padmanabhpur, Kasaridih, Adarsh Nagar, Kalibadi, Potiya, Mahavir Nagar and a part of Ganjpara. Wastes from the industries such as poha mill, rice mill and the domestic effluents flow through this and discharge into the Sheonath river. This nallah joins Sheonath river on the upstream of intake well for Durg water supply which is also the study Site No.2. It is at a distance of approximately 2.5kms. from the study Site No.1.
3.2.2 Shankar Nallah

This nallah flows through the heart of the Durg town and joins the river Sheonath at village Kotni. This nallah carries mainly the domestic wastes of the town. It is the study Site No. 5 and at a distance of approximately 12.5kms. from the study Site No. 1.

3.2.3 Bhilai Nallah

This nallah carries the domestic waste and also waste from the Bhilai Steel Plant. It flows through the eastern part of Bhilai Township and ultimately joins the Kosa Nallah.

3.2.4 Kosa Nallah

This Nallah carries mainly the domestic and small industry effluents from the central part of township and also from private colonies in the northern part of Bhilai.

3.2.5 Industrial Nallah

The Industrial nallah carries composite waste from various industries such as dyes and chemical industry, fertilizer fabrication and moulding industry, distillery, plastic industry etc. located in the Bhilai Industrial area.

3.2.6 Samoda Nallah

Samoda nallah is the main polluted stream and carries sizable quantity of industrial and domestic waste water into the river Sheonath and pollute it to a great extent. It is necessary to mention here that the Kosa nallah, Bhilai nallah and the industrial nallah flowing within the Bhilai area join with each other and form the Samoda nallah which ultimately joins the Sheonath river. (the study Site No. 9) It is approximately 25kms. from the study Site No. 1.
Kosa nallah merges with Bhilai nallah at about 2 kms. upstream of village Kutalabhata, Bhilai nallah and Industrial nallah meet near Ballu's agriculture farm. Thus these three nallah together constitute Samoda nallah.

In the coming years there will be more industrialization in this area and will increase the pollution load in the Sheonath river destroying the aquatic life and may create serious human health problems. For this reason, it has now become very essential to study the physico-chemical and biological characteristics of the river and nallah waters and suggest some preventive measures to lower down the pollution level in the river.

3.3 LIST OF STUDY SITES:

For the purpose of investigation and collection of water samples the following ten study sites were selected (These have been also identified in the map.)

Study Site No. 1. Sheonath river under road bridge.
Study Site No. 2. Pulgaon Nallah.
Study Site No. 3. Confluence point of River Sheonath and Pulgaon Nallah.
Study Site No. 4. River Sheonath before confluence with Shankar Nallah.
Study Site No. 5. Shankar Nallah.
Study Site No. 6. River Sheonath after confluence with Shankar Nallah.
Study Site No. 7. River Sheonath before confluence with Samoda Nallah.
Study Site No. 8. Samoda Nallah.
Study Site No. 9. River Sheonath after confluence with Samoda Nallah.
Study Site No. 10. Industrial Nallah
### TABLE 3.1 DETAILS OF THE STUDY SITES ON SHEONATH RIVER

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Study Site No.</th>
<th>Name of the study site</th>
<th>Details of water quality</th>
<th>Distance from the 1st study site</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.</td>
<td>River Sheonath under road bridge</td>
<td>Good</td>
<td>0.00 km</td>
<td>River coming from Rajnandgaon before entering Durg city.</td>
</tr>
<tr>
<td>2</td>
<td>2.</td>
<td>Pulgaon Nallah</td>
<td>Slightly contaminated.</td>
<td>2.5 kms</td>
<td>Nallah carrying domestic poha, &amp; rice mill waste water.</td>
</tr>
<tr>
<td>3</td>
<td>3.</td>
<td>Confluence point of River Sheonath and Pulgaon Nallah.</td>
<td>Slightly contaminated.</td>
<td>3.0 kms</td>
<td>Effluents from the study site 2 are diluted to some extent.</td>
</tr>
<tr>
<td>4</td>
<td>4.</td>
<td>River Sheonath before confluence with Shankar Nallah.</td>
<td>Better than study site No.3.</td>
<td>12.0 kms</td>
<td>This site represents the upper stream point of river and Shankar Nallah confluence.</td>
</tr>
<tr>
<td>5</td>
<td>5.</td>
<td>Shankar Nallah.</td>
<td>Domestic water contamination.</td>
<td>12.50 kms</td>
<td>Domestic waste water inputs after partial recovery.</td>
</tr>
<tr>
<td>6</td>
<td>6.</td>
<td>River Sheonath after confluence with Shankar Nallah</td>
<td>Slightly Contaminated</td>
<td>14.00 km.</td>
<td>Domestic waste water inputs after partial recovery.</td>
</tr>
<tr>
<td>7</td>
<td>7.</td>
<td>River Sheonath before confluence with Samoda Nallah</td>
<td>Better than study site No.6.</td>
<td>24.00 km.</td>
<td>Water partially recovered from the pollution inputs of station 5 and 6.</td>
</tr>
<tr>
<td>8</td>
<td>8.</td>
<td>Samoda Nallah</td>
<td>Carries the effluents from Kosa Nallah, Bhilai Nallah and Industrial Nallah discharging them in the River Sheonath.</td>
<td>24.50 km.</td>
<td>Represents the highly polluted zone of Sheonath River</td>
</tr>
<tr>
<td>9</td>
<td>9.</td>
<td>River Sheonath after confluence with Samoda Nallah</td>
<td>Water quality is most contaminated due to confluence of Samoda Nallah in Sheonath River</td>
<td>25.00 km.</td>
<td>Highly contaminated river water.</td>
</tr>
<tr>
<td>10</td>
<td>10.</td>
<td>Industrial Nallah</td>
<td>Highly contaminated</td>
<td>22.00 kms</td>
<td>Industrial Nallah subsequently joining Samoda and River Sheonath.</td>
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</tbody>
</table>