GOVERNMENT OF PUDUCHERRY
RAJNIWAS SECRETARIAT

Refresh ing historic memory
on
Water Resources in Puducherry

Water – Every drop is precious

by

Dr. S. Bascarane, Ph.D (HRM), PGDCPIC, PGDCA
Grievance Redressal Officer to Lt Governor
Inspector of Police – cum – Web Officer
Puducherry Police
SOURCE OF WATER FOR PUDUCHERRY

RAIN & RIVER

1. River is a stream of water
2. River Bed - River flowing Surface
3. River Banking - Sides of River Bed
4. River Head - Point of water accumulation on surface (Rain / Snow fall)
5. Young River - Near the River Head
6. Mature River - Middle part of a river
7. Mouth of the river - Last part of the river entering bigger body of water (Sea / Lake / River etc).
8. Tail of the river - Last part of the river, if dries on the surface
9. Bed Dam - Reservoir
10. Bridging river Bed Dam to natural low lying area will create / recharge Reservoirs / Lagoons
11. Lagoon is the low lying land surface area near sea where water gets collected naturally & artificially called as “Water Tank or Dam”

WATER CYCLING - Eco-system
Earthing - Soil Connectivity - Balancing Ground Water
Fountain eye or Aquifers or Rain water harvest
Natural renewable water resources are the total amount of a water resources (internal and external resources), both surface water and groundwater, which is generated through the hydrological cycle.

External:
1. Sankarabarani River @ Gingee River @ Ganga
   Source: Mel-Malayanur hills -“GINGEE LAKE” Veedur Dam.
   Flows along Middle regions of Puducherry

2. Thene Pennai Piver or South Pennar River or PONNAIYAR
   Source: Nandi Hills, Karnataka
   Flows along Southern boarder of Puducherry

Internal:
1. Oustery Lake
2. Velrampet Lake
3. Murungapakkam Lake
4. Kanagan lake
5. Bahour Lake
1. The **Sankaraparani River** originates on the western slope of Gingee Hill in Viluppuram district, Tamil nadu.

2. It has two sources, 
   A. Flows from Pakkammalai Reserve Forest Hills but No source exists now & 
   B. Flows from Mel-Malayanur hills in to “GINGEE LAKE”

- Surplus from Gingee Lake, flows to Veedur Dam
- Surplus from Veedur Dam, flows in to Puducherry as **SANKARAPARANI** also known as Varahanadi or Gingee river or Ganga.
- It gets more power at Thirukanchi, Villianour where its spiritual power is compared with Kasi
- Total length of 30.80 Kms including 8 Kms of Tamilnadu area within Puducherry
Sankaraparani River - 2 Main Water Resource

Gingee Lake - Melmalayanur Hills

Pakkamalai Lake (Reserve Forest Hills)
Gingee Lake - Melmalayanur Hills

Gingee Lake - surplus flow
Veedur Dam surplus is Sankarabarani River.
Tapping Sankarabarani River
1873-74 - French Regime
Suthukenni to Usutari

Suthukenni -- Katterikuppam - Thuthipettu - Kunimudakku - Usutary - Villianour - Sulthanpet - Puducherry - Bench mark Height is 17.14 Mts from Sea level.
Pillaiarkuppam village

2 Man Made TAPPING for USUTARY LAKE

Sankarabarani River

Suthukenni village

USUTARY LAKE
SANKARAPARANI RIVER

TRIBUTARIES

Sankaraparani river has six tributaries namely:

1. Annamangalam surplus
2. Nariyar odai
3. Thondiar
4. Pambaiyar
5. Pambai
6. Guduvaiyar
River sankaraparani, flows to the “east”.

1. 1\textsuperscript{st} Annamangalam surplus joins near Melacheri. Then the river turns “south” in eastern part of Singavaram village and then flows East again.
2. 2\textsuperscript{nd} “Nariyar Odai” joins sankaraparani near Uranithangal village. Near Vallam village, the river turns southeast to flow toward of Rettanai, Nedimozhiyanur, towards Veedur dam.
3. 3\textsuperscript{rd} “Thondiar” joins near Veedur.

The Veedur Dam surplus titled “Sankaraparani” flows south-east.

1. “Pambaiyar” tributary joins near Radhapuram. Then sankaraparani enters Puducherry Union Territory at Manalipet.
2. “Pambai” tributary joins sankaraparani near sellipet.
3. The last tributary, “Guduvaiyar river”, joins near boat house. at this point, sankaraparani is also called chunnambar. From here it flows for 2 kilometres (1.2 mi) before draining into Bay of Bengal at paradise beach.

The total length of the river is 78.5 kilometres (48.8 mi). of the total length, 34 kilometres (21 mi) flows in Puducherry.
THENEPENNAIRIVER
or
SOUTHPENNARRIVER
or
PONNAIYAR

Source:
Nandi Hills, Karnataka
- Flows along Bahour, Puducherry and Cuddalore, TN finally enters into sea.
SANKARAPARANI RIVER – Flow Chart

1. Manalipet
2. Chettipet
3. Suthukenni
4. Pillaiyarkuppam Reservoir – Sellipet – Konnerikuppam
5. Uruvaiyaru
6. Thirukanchi
7. Murungapakkam
8. Nonankuppam
9. Ariyuankuppam
10. Bay of Bengal – Sea

French Period – 1873

1. Tapping of water to reservoirs was done at Suthukenni
2. Bed dams and bridges were developed
   A. Thiruvakkarai, TN
   B. Suthukenni
   C. Pakkiripalayam, TN
   D. Kumarapalayam, TN
   E. Pillaiyarkuppam
   F. Uruvaiyaru
   G. Nonankuppam
## NUMBER OF PONDS
(as per Land & Survey Records 1971)

<table>
<thead>
<tr>
<th>SN</th>
<th>Commune</th>
<th>No. of Ponds</th>
<th>Area (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ariyankuppam</td>
<td>86</td>
<td>10.267</td>
</tr>
<tr>
<td>2</td>
<td>Bahour</td>
<td>147</td>
<td>27.114</td>
</tr>
<tr>
<td>3</td>
<td>Mannadipet</td>
<td>106</td>
<td>36.013</td>
</tr>
<tr>
<td>4</td>
<td>Nettapakkam</td>
<td>52</td>
<td>13.832</td>
</tr>
<tr>
<td>5</td>
<td>Oulgaret</td>
<td>90</td>
<td>14.105</td>
</tr>
<tr>
<td>6</td>
<td>Puducherry</td>
<td>58</td>
<td>4.914</td>
</tr>
<tr>
<td>7</td>
<td>Villianur</td>
<td>70</td>
<td>16.835</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>609</td>
<td>123.08</td>
</tr>
</tbody>
</table>
NUMBER OF IRRIGATION TANKS
(as per Land & Survey Records 1971)

<table>
<thead>
<tr>
<th>SN</th>
<th>Commune</th>
<th>No. of Irrigation Tanks</th>
<th>Ayacut Area (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Systemic</td>
<td>Non-Systemic</td>
</tr>
<tr>
<td>1</td>
<td>Ariyankuppam</td>
<td>1</td>
<td>Nil</td>
</tr>
<tr>
<td>2</td>
<td>Bahour</td>
<td>23</td>
<td>Nil</td>
</tr>
<tr>
<td>3</td>
<td>Mannadipet</td>
<td>20</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>Nettapakkam</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>Oulgaret</td>
<td>Nil</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Puducherry</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>7</td>
<td>Villianur</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td><strong>60</strong></td>
<td><strong>24</strong></td>
</tr>
</tbody>
</table>

Total - 84

- Systemic – Automatic Channelled
- Non-Systemic – Manual pumping
AVERAGE GROUND WATER LEVEL of Puducherry is measured through OBSERVATION TUBE WELLS mounted at the selected places in

- Puducherry - 31 and
- Karaikal - 6

North East - 76 Mts below

North West - 84 Mts below

South East - 22 Mts - below Sea Shore Area

South West - 32 Mts below

It is being periodically and automatically measured through "Observation Tube Well" mounted at various points in this behalf.

URL - https://www.pdywaterinfo.in

Automatic Weather Station at kalapet
GOOD SOIL depends on its water bearing capacity with permeable and porous nature.

1. **Aquifers** are underground **water-bearing** rock / layer
2. Liquids and gases can **pass through** as they are permeable, such as sandstone / Sand / Gravel / Silt.
3. Groundwater can be extracted using a **water well**.
4. The study on **aquifers** and its characterization is **Hydrogeology**.

A. Kanagan Lake – Clay Soil
B. Velrampet Lake – Semi – Sand and Clay
C. Usutery Lake – Lime-stone and semi-permissable
D. Bahour Lake – Clay
TYPES OF SOIL AQUIFERS

A. Permissibility – Permits retention and flow of water / gas
B. Semi-permissibility – Clay and gravel
C. Non-permissibility – Clay soil and Line stone soil

EXTRACTION OF WATER through CONNECTIVITY:
1. Tube well
2. Bore-well
3. AQUIFER @ FOUNTAIN EYE

Example:
1. All liquids keeps on balancing its pressure.
2. Water recharge / intake is only from high point.
3. Lowest point will have more pressure based on its highest point.
4. Puncturing or inserting aquifer or tapping at low point, ejects the water out to balance the pressure
5. Gorimedu is high while Rajniwas is low
PUDUCHERRY WATER SOURCE BY NATURE

In and around the city are Artesian Wells supply water for irrigation. Crops - Rice, Sugarcane, Cotton and peanuts (groundnuts). The Puducherry area has about 300 villages and hamlets.

ARTESIAN WELL:
1. Well from which water flows under natural pressure without pumping.
2. It is dug or drilled wherever a gently dipping, permeable rock layer (such as sandstone) receives water along its outcrop at a level higher than the level of the surface of the ground at the well site.

ARTESIAN AQUIFER
1. An artesian aquifer is a confined aquifer containing groundwater under positive pressure.
2. This causes the water level in a well to rise to a point where hydrostatic equilibrium has been reached. A well drilled into such an aquifer is called an artesian well. If water reaches the ground surface under the natural pressure of the aquifer, the well is called a flowing artesian well.
HIGH LIGHTS

USUTARY PROJECT of FRENCH

1. The Usutary project developed in 1873 is an history connecting Puducherry for Water Recharge
2. Bridges & Culverts
3. Bed Dams
4. Structured Ducts– Surface connectivity
5. Artesian Aquifer & Wells – Earth connectivity
6. Structured Gate Ways – Flood and water level Control
7. Entry and Exit of fresh water cycle to Ponds (Ex Villianour, Sulthanpet etc)
8. House hold Artesian Well – Motivation & sensitivity to Citizen on ground water
9. Artesian Well - indirect Rain Water Harvesting
10. Responsibility on maintenance
REQUEST

Responsibilities

1. After “USUTARY PROJECT of FRENCH”, we have not established any new nor maintaining the structure of the established projects

NOT CLEAR

1. Responsibility of PWD and Communes
2. Responsibilities of the Citizens
3. Administrative Responsibilities of Political Government & Government
4. Responsibilities of Political leaders, Village Heads, NGO
5. Violations ignored with fine as part of regularization
6. Encouragement for illegal encroachment and free patta to encroachers.
7. Law & Sentiments not to be mixed both are North & South Poles
8. Sentiments and welfare principles to be encouraged
9. Law of limitations to be strictly followed maintaining order of the land and governance.
Vulnerability in our Cultural values made us to forget this great work of resourcing the water to Puducherry Channels to water banks (Lake & Ponds) and its lagoons (Thengaithittu, Krishna Nagar, Rainbow Nagar, Kamaraj Nagar & etc)

Protect the society from known blindness

By

Dr. S. Bascarane,
GRO to Lt Governor
Inspector CRB - cum - Web Officer
Puducherry Police