

# *Revised Action plan for restoration of polluted river stretches*

## *(ARASALAR RIVER)*



Arasalar River



*Puducherry Pollution Control Committee*  
*Department of Science, Technology & Environment*  
*Government of Puducherry*



# **REVISED ACTION PLAN FOR RESTORATION OF ARASALAR RIVER**

## **U.T. OF PUDUCHERRY ( KARAİKAL REGION)**

### **Preamble:**

In pursuance of the Hon'ble National Green Tribunal (Principal Bench), New Delhi, orders dt. 20.09.2018 and 19.12.2018 in original application No. 673/2018 in the matter of News item published in "The Hindu" Titled more river stretches are now critically polluted - Central Pollution Control Board. Action plans were framed with the objective of restoration of Arasalar river , Karaikal to meet the bathing standards of pH, Dissolved Oxygen (DO), Biological Oxygen Demand (BOD), Faecal coliforms and Faecal Streptococci within 2 years period.

River Rejuvenation committee has been constituted vide OM No. 4739/PPCC/RRC/SCI-I/2018 dt. 13.11.2018 to prepare and execute the action plan. A meeting was held on 28.01.2019 under the Chairmanship of Hon'ble Chief Minister on preparation of revised Action plan to restore polluted river stretches.



**Fig.1 Revised Action plan presented before the Hon'ble Chief Minister of Puducherry**

In compliance with the Hon'ble NGT order dated 06.12.2019, State Level Monitoring Committee (SLMC) has been constituted under the Chairmanship of Secretary (Env't) vide order no. 6836/PPCC/NGT/SEE/2020 dt. 08.01.2020. First State Level Monitoring Meeting was held on 29.01.2020.

## **Arasalar:**

Arasalar River is having a total run of 24 Km, enters Karaikal, a little east of kalanganni. It forms the natural boundary line separating Neravy Commune from Thirunallar on the north-west and Karaikal on the north-east.

It runs a distance of 12 Km, in Karaikal district before entering into the Bay of Bengal. The construction of Kannambadi Dam in 1916 and Mettur Dam in 1932 have reduced the flow of water in Arasalar.

It has been categorized by CPCB as Priority IV based on the value of BOD of the River (7 mg/l).

The Action Plan was presented before the Central Pollution Control Board on 12.09.2019. CPCB has directed to revise the Action Plan incorporating few additional factors. Accordingly, the Action Plan has been revised.

### **The revised Action Plan consists of the following fifteen components:**

- (i). Assessment of pollution level in the river, drains and Ground water.
- (ii). Inventorisation of industries located on the bank of the river and closing down of unauthorized industrial operations if any .
- (iii). Identification of polluted streams which contaminates the river.
- (iv) Identification and prevention of Municipal Solid Waste, Hazardous Waste and Bio-Medical Waste dumping along the river beds and its scientific management.
- (v). Installation / upgradation of ETP/STP in the industries.
- (vi). Provision of STP in the habituated area of river bank.
- (vii) Eradication of open defecation on the River Bank
- (viii). Development of Green belt on the bank and improving biodiversity.
- (ix). Arresting of sand mining.

- (x). Developing Information Education and Communication programmes (IEC)
- (xi) Ground water regulation and management.
- (xii) Ground Water Recharge
- (xiii) Biodiversity monitoring and indexing of Arasalar River to assess the efficacy of River Restoration activities.
- (xiv) Maintaining Environment flow of river.
- (xv) Protection and management of Flood Plain Zones.

### 1. Assessment of pollution level in the river, drains and Ground water

The study will involve collection of water samples from the Arasalar river, Karaikal Region, drains leading to the river and ground water which will throw light on pollution dynamics of the river, identification of major factors for pollution, dilution requirement etc.  
(Action: PPCC, cost: Zero)

**Table 1: River Water Quality**

Parameters	ARASALAR RIVER
	Jan – 2020
<b>Dt. Of Sampling</b>	28-01-2020
<b>Time</b>	06:45 AM
<b>pH</b>	7.51
<b>DO (mg/l)</b>	7
<b>BOD (mg/l)</b>	1.5
<b>Faecal Coliform (MPN/100ml)</b>	220
<b>Faecal Streptococci (MPN/100ml)</b>	<1.8
<b>Inference</b>	All the parameters are within the standard limit

**Table 2: Drains to Arasalar River**

S.No	Parameters	Drainage - I (Puthurai)
1	Date	04.02.2020
2	Temp°C	27
3	pH	7.38
4	COD (mg/l)	16
5	BOD (mg/l)	0.5
6	TSS (mg/l)	15
7	Faecal Coliform MPN/100ml	540
8	Faecal Streptococci MPN/100ml	<1.8

**Table 3: Ground Water Quality Data near Arasalar River**

Sl.No	Parameters	Vadamattam	Vanjore	Permissible limit
1	<b>Dt.of Sampling</b>	28.01.2020	28.01.2020	
2	<b>Time</b>	06.15 A.M	07.15 A.M	
3	<b>Temperature °C</b>	31.0	28.0	
4	<b>pH</b>	8.35	8.23	NR
5	<b>Conductivity µmho/cm</b>	1429	2140	
6	<b>COD (mg/l)</b>	Nil	Nil	

7	<b>BOD (mg/l)</b>	BDL	BDL	
8	<b>Turbidity NTU</b>	0	0	5
9	<b>Nitrate -N (mg/l)</b>	0.66	0.55	
10	<b>Nitrite-N (mg/l)</b>	0.12	0.03	
11	<b>Nitrate (mg/l)</b>	2.92	2.42	NR
12	<b>Hexavalent Chromium (mg/l)</b>	BDL	BDL	
13	<b>Bi- Carbonate as CaCO<sub>3</sub> (mg/l)</b>	378.2	397.7	600
14	<b>Carbonate (mg/l)</b>	17.1	14.64	
15	<b>Chloride (mg/l)</b>	275.5	452.2	1000
16	<b>Total Hardness (mg/l)</b>	432.0	394.0	600
17	<b>Calcium Hardness (mg/l)</b>	366.0	364.0	
18	<b>Magnesium Hardness (mg/l)</b>	66.0	30.0	
19	<b>Calcium as Ca<sup>++</sup> (mg/l)</b>	146.4	145.6	200
20	<b>Magnesium as Mg<sup>++</sup> (mg/l)</b>	16.0	7.3	100
21	<b>TDS (mg/l)</b>	802.0	1132.0	2000
22	<b>TSS (mg/l)</b>	BDL	4	
23	<b>FDS /TFS (mg/l)</b>	484.0	841.0	
24	<b>Sodium (mg/l)</b>	298.6	386.6	
25	<b>Potassium (mg/l)</b>	3.9	3.5	
26	<b>Sulphate mg/L</b>	13.6	40.3	
27	<b>Ortho Phosphate (mg/l)</b>	0.24	0.28	
28	<b>% Sodium</b>	59.74	67.82	
29	<b>SAR</b>	6.2	8.5	

30	(NH <sub>3</sub> -N)	3.5	BDL	
31	<b>Copper mg/L</b>	BDL	BDL	1.5
32	<b>Nickel mg/L</b>	BDL	BDL	NR
33	<b>Cadmium mg/L</b>	BDL	BDL	NR
34	<b>Lead mg/L</b>	BDL	BDL	NR
35	<b>Total Chromium mg/L</b>	BDL	BDL	NR
36	<b>Iron mg/L</b>	0.044	0.050	NR
37	<b>Zinc mg/L</b>	BDL	BDL	15
38	<b>Arsenic mg/L</b>	BDL	BDL	0.05
39	<b>Mercury mg/L</b>	BDL	BDL	NR

**2. Inventorisation of industries located on the bank of river and Closing down of unauthorized industrial operations if any.**

Arasalar river passes through Karaikal Municipality and T.R. Pattinam Commune Panchayat. Many industries are located on the bank of the river. Inventorization will be useful in identification of unauthorized units, adequacy of existing STP/ETP in the units and compliance of consent conditions. Industry located on the bank of the river, capacity of STP and ETP and gap analysis is given below:

**Table 4: Gap Analysis in waste water / sewage treatment**

Sl. No	Name of the Industry	Water Requirement (KLD)	Waste Water	Sewage Generation	ETP	STP	Gap Analysis
1.	M/s. Jayaprakash Narayanan Co -op Spinning Mills, Keezhamanai.	15.0	0	15.0	-	Not installed	STP of 15 KLD is required to be installed. However, the unit was sick and was not in operation for over 10 years.

No industry in the bank of river is operating without Consent to Establish from PPCC.

*(Action: PPCC, Cost: Zero, Period of Completion: 2 months)*

**3. Identification of polluted streams which contaminates the river**

1

Based on the pollution level assessment report, the hotspots will be identified and the polluted streams which causes deterioration of river quality could be nabbed out.

*(Action: PPCC, Cost: Zero, Period of Completion: 4 months)*

**4. Identification and prevention of Municipal Solid Waste, Plastic Waste, Hazardous Waste and Bio-Medical Waste dumping along the river beds and its scientific management.**

River bank is one of the places for illegal dumping of Solid Waste, Plastic Waste Hazardous Waste and Bio-medical Waste. These practices would contaminate the river water. Inspection team consisting of Commissioners of respective Commune Panchayat and Officer of PPCC will make periodical inspection and identify such dumping and take action on the offender to remove the waste immediately. Signboard will be erected in all areas depicting not to dump the waste and imposing fine by the Municipality/Commune Panchayats.

*Action: Local Administration Department, and PPCC, Cost: Rs. 25,000, Period of Completion: 2 Months).*

**5. Installation / Upgradation of ETP/STP in the Industries**

It will be ensured in the industries that installation, and upgradation of suitable STP/ETP and its proper operation, separate energy meter installed and the readings are recorded in separate register. It will be periodically checked inorder to ensure proper functioning of STP/ETP.

*(Action: Puducherry Pollution Control Committee, Cost: Zero, Period of Completion: 2 Months).*



## 6. Provision of STP in the habituated area of river banks

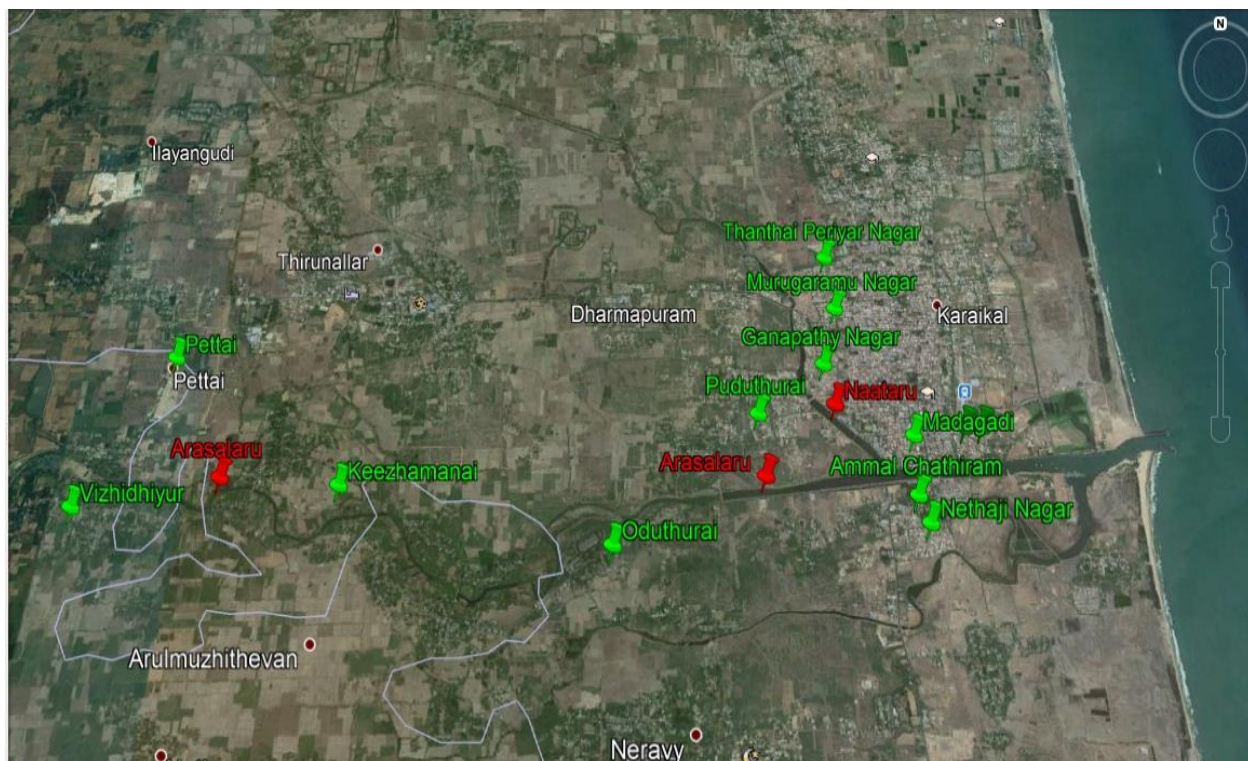
Human settlement and commercial establishments are present on the bank of Arasalar river. Public Works Department will provide STP near Arasalar river.

*(Action: Public Works Department and Local administration Department, Period of completion 3 months)*

## 7. Eradication of open defecation on the River Bank

There are 10 Revenue villages (Fig.2) present on the bank of Arasalar. Identification of Households not having toilet facility and Construction of toilet under Swachh Bharat Mission-Gramin will be carried out. Awareness programmes will be conducted on the ill effect of open defecation.

*(Action : DRDA, Period of completion : 6 months)*



**Fig. 2 Villages on the bank of Arasalar River**

**8. Development of Green belt on the bank and improving biodiversity**

As Arasalar river is influenced by tidal action, it is suitable for development of salinity resistance plantation on both the banks upto the check dam followed by indigenous plantation.

*(Action: Forest Department, Cost: 10 Lakhs, Period of Completion: 6 months).*

**9. Arresting of illegal sand mining**

River bed is known for illegal sand mining. It affects flow of the river. In collaboration with Revenue and Police Department, periodical inspection will be carried out to check illegal sand mining.

*(Action: District Collector, SP, Cost: Zero, Period of Completion: 6 months).*

**10. Information, Education and Communication Programme. (IEC)**

Creating awareness among the public about the necessity of restoration of the river is necessary. Whatsapp group “*Save Arasalar*” has been formed and connected with line departments viz, Local Administration Departments, Forest Department, Department of Science Technology & Environment, Revenue, Police Department, Public Works Department, and NGO. Any act of affecting purity of the river will be posted in the group and remedial action will be immediately initiated.

*(Action: DSTE, Cost: Zero, Period of Completion: 30 days)*

**11. Ground water regulation and management.**

The Puducherry Ground Water Authority has been constituted under the Pondicherry Ground Water (Control & Regulation) Act, 2002 to effectively and efficiently control and regulate the extraction of Ground water in the Union Territory. The Puducherry Ground Water Authority does not issues fresh permits / renews permits to any industries / institutions unless it is installing the Rain Water Harvesting System in their respective

buildings. This is put as a precondition and insisted upon while granting clearance to the industries.

*(Action: Puducherry Ground Water Authority)*

## **12. Ground Water Recharge**

To augment ground water recharge in the river basins the Public Works Department has constructed 26 bed dams in Puducherry and Karaikal region another 8 bed dams are proposed to be newly constructed. The construction of bed dam has considerably helped in the raising of ground water level.

*(Action: DSTE, Cost: Zero, Period of Completion: 1 year)*

## **13. Biodiversity monitoring and indexing of Arasalar River to assess the efficacy of River Restoration activities.**

Biodiversity monitoring and indexing of Arasalar River has been entrusted to the Department of Ecology and Environmental Science, Pondicherry University. Mangrove plantation of 25 acres has been identified for development of Bio-diversity Park. It will attract lot of avian fauna and butterflies besides enhancing aesthetic values of the river.

*(Action: Pondicherry University, Cost: 2.8 Lakhs, Period of Completion: 2 years)*

## **14. Maintaining Environment flow of river.**

Illegal sand Mining will affect the flow of river. Controlling illegal sand mining will restore the flow. Periodical removal of sand bar will be carried out.

*(Action: Public Works Department)*

## **15. Protection and management of Flood Plain Zones.**

The Karaikal Region is receiving water from the Seven Cauvery distributaries from Tamilnadu. The flood / excess water due to rainfall run off will be released and regulated by Tamilnadu Irrigation Division from the upper reaches through these seven distributaries. The river banks and the inspection tracks are almost strengthened to receive the flood water

from upper reaches in Tamilnadu and to dispose safely to the Ocean (Bay of Bengal). However flood protection scheme works has been included under Flood Management and Border Area Programme for an amount of Rs.50 Crore in the proposal for the period from 2020-2025 for getting approval of Government, in which to protect the Left Bank of Arasalar river above tail end regulator at Melaoduthurai an amount of Rs.10.00 Crore is earmarked.

*(Action: PWD, Cost: 10 crores, Period of Completion: 5 years)*

