

ACTION PLAN FOR DISANG RIVER-PRIORITY V

1. Basic information about the Stretch

The Disang river originates in the Patkai hill ranges at an elevation of 2,200 meters in the Tirap district of Arunachal Pradesh. The river is known as Tisa at its source, Dilli in the middle part and Disang in its lower part. The length of the master river Disang in Arunachal Pradesh is 65.50 km, while the length in Assam is 187.50 km.

The river Disang has its two distinct sections on the basis of topography and river gradient i.e. the hilly portion and the plain portion. The Disang river from its source covers a hilly tract in the Patkai hill ranges of Arunachal Pradesh and a plain part in Assam. The length of the hilly portion is 65.50 km. The river which is known as the Tisa here, flows in the north-south direction throughout the entire hilly area. All the left and right bank tributary streams in the hills form an efficient drainage system in Arunachal Pradesh, Nagaland and Assam. The plain portion of the Disang river extends from the Dilli tea garden in Namrup (Assam) to the Disangmukh (i.e. the confluence of this Disang with the Brahmaputra) with an axial length of 187.50 km. There are altogether six major tributary streams meeting the Disang river in its plain portion. These are Timan river, Tawkak river, Safrai river, Diroi river, Dimau river and Balamariver, etc.

The Disang river basin covers an area of 3845.98 kms out of which an area of 2009.01 km is in the plains and hills of Dibrugarh and Sivasagar districts of Assam. The remaining area of 1836.97 Km lies in the hills of Tirap and Mon districts of Arunachal Pradesh and Nagaland respectively.

1.1. Polluted river stretch/length

The length of the polluted stretch of Disang river at Gudam ghat is 2.9 km (approx.) with an area of 1.3 sq.km. (Fig 1). The stretch identified as polluted is from Kecharuguri No.1 to Kecharuguri No.3 at Sivasagar District.

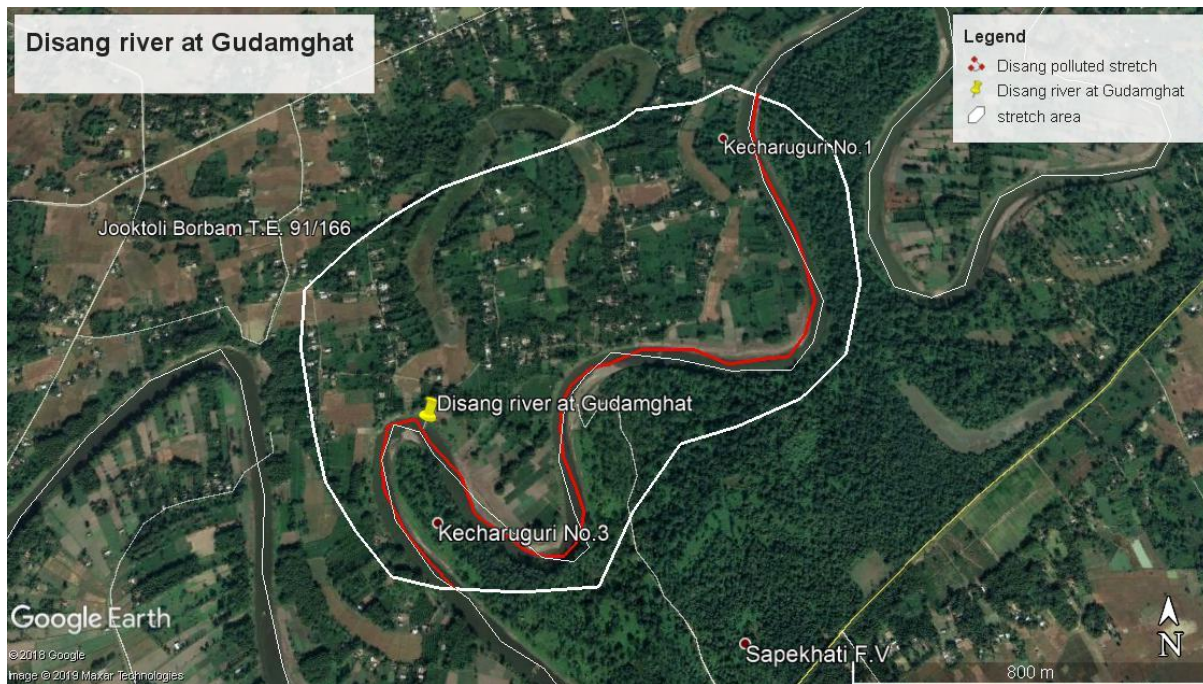


Fig 1: Map showing the polluted river stretch of Disang River at Gudamghat

2. Background:

In compliance of the direction of Hon'ble National Green Tribunal, Principal Bench, New Delhi in the matter of news published in 'The Hindu' authored by Jacob Koshy, Titled 'More river stretches are now critically polluted CPCB', Government of Assam constituted River Rejuvenation Committee (RRC) vide memorandum 673/2018 dated 19/12/2018 for effective abatement of pollution, rejuvenation, protection and management of the identified polluted stretches, for bringing the polluted river stretches to be fit at least for bathing purposes within six months

3. Basis of Action Plan for Disang polluted river stretch

The action plan for rejuvenation, protection and management of the identified polluted river stretch of Assam has been prepared based on the following

- As per direction of Hon'ble National Green Tribunal, Principal Bench, New Delhi in the matter of news published in 'The Hindu' authored by Jacob Koshy, Titled 'More river stretches are now critically polluted CPCB'

- Comprehensive report on Prevention and Control of Pollution in River Hindon: An Action Plan for Rejuvenation' [Submitted in compliance to Hon'ble National Green Tribunal]

4. Components of Action Plan

(a) Industrial Pollution Control

- Inventorisation of industries
- Categories of industry and effluent quality
- Treatment of effluents, compliance with standards and mode of disposal of effluents
- Regulatory regime.

(b) Identification, Channelization, Treatment and Utilization of Treated Domestic Sewage

- Identification of towns in the catchment of river
- Town-wise Estimation of quantity of sewage generated and existing sewage treatment capacities to arrive at the gap between the sewage generation and treatment capacities
- Identification of towns for installing sewerage system and sewage treatment plants.
- Storm water drains now carrying sewage and sullage joining river and interception and diversion of sewage to STPs,
- Treatment and disposal of septage and controlling open defecation.

(c) River catchment/Basin Management-Controlled ground water extraction and periodic quality assessment

- Periodic assessment of groundwater resources and regulation of ground water extraction by industries particularly in over exploited and critical zones/blocks.
- Ground water re-charging /rain water harvesting
- Periodic ground water quality assessment and remedial actions in case of contaminated ground water tube wells/bore wells or hand pumps.
- Assessment of the need for regulating use of ground water for irrigation purposes.

(d)Flood Plain Zone

- Regulating activities in flood plain zone.
- Management of Municipal, Plastic, Hazardous, Bio-medical and Electrical and Electronic wastes.
- Greenery development- Plantation plan.

(e)Ecological/Environmental Flow (E-Flow)

- Issues relating to E-Flow
- Irrigation practices

(f)Such other issues which may be found relevant for restoring water quality to the prescribed standards.

5. Action Plan as per direction of Hon'ble NGT

The components to be discussed in the action plan for rejuvenation, protection and management of identified polluted stretch of Disang river are as follows

5.1. Industrial Pollution Control

No classified industrial estate/notified industrial area is located in the polluted stretch of Disang catchment area as presented in **Table I**

Table I: Industry details as per the following in the polluted river stretch

Name of the Industry	Category	Total Water Consumption/ Waste Generation	Without consent/Directions issued	ETPs	CETPs	OCEMS	Gaps	Proposed CETP
Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

5.2. Number of industries- category Red or water polluting/ Small scale

There has been no account of industrial estate/notified industrial area in the Disang catchment area

5.3. Industries without consent/authorisation

No industrial estate/notified industrial area observed in the vicinity of the river

5.4 Number of directions issued to industries

No industrial estate/notified industrial area observed in the vicinity of the river

5.5. Total water consumption and the waste water generation by the industries

There has been no account of industrial estate/notified industrial area in the Disang catchment area

5.6. Number of industries having captive ETPs and treatment capacity

There has been no account of industrial estate/notified industrial area in the Disang catchment area

5.7. Number of industries are members of the CETPs

There is no any CETPs at present

5.8. Number of CETPs existing in the catchment of the polluted river stretch and the treatment capacity

There is no any CETPs at present in the catchment area of the wetland.

5.9. OCEMS installation status by industries

There has been no account of industrial estate/notified industrial area in the Disang catchment area

5.10. Gaps in treatment of industrial effluent

There is no gap in treatment of industrial effluent.

6. Identification, Channelisation, Treatment and Utilization of Treated Domestic Sewage

6.1. Major towns located on the bank

Two medium sized villages namely Kecharuguri No.1 and Kecharuguri No. 3 are located in the bank of the polluted stretch that belongs to Dibrugarh district. It is situated 80km away from sub-district headquarter Tingkhong and 80km away from district headquarter Dibrugarh. The area has a total population of approximately 1134 with 228 numbers of households which are settled in scattered plan as per the Census of 2011.

6.2. Town wise estimation of quantity of sewage generated and existing sewage treatment capacities

The major villages responsible for contribution of sewage in the polluted stretches of Disang river are Kechaguri No. 1 and Kechaguri No. 3. The waste generated is approximately 147.1 KLD

6.3. Identification of towns for installing sewerage system and sewage treatment plants.

As per the survey done, the sewage generation from the identified villages are minimal and hence the untreated sewage can be taken care of by adopting stringent remedial actions.

Table II: Sewage generation and gaps in treatment

S.N	Area	Population as per 2011 census	Water Consumption (KLD) @135lpcd	Sewage Generation (KLD)	No. of STPs proposed	Existing Treatment capacity (KLD)	Gaps in KLD
1	Kechuguri No. 1	791	106.8	85.4	Nil	Nil	85.4
2	Kechuguri No. 3	343	46.3	37.1	Nil	Nil	37.1

6.4. Water Quality of the river stretch

There are three (03) sampling locations of Disang River under NWMP which is presented as below. Out of them, only Disang river at Gudamghat has failed to meet the standard norms.

Table III: Monitoring Locations Details

S.No	Sampling Location	Coordinates
1	Disang river at Dillighat	27°8'33.15" N 95°21'59.32" E
2	Disang river at Gudamghat	27°8'5.00" N 94°3'37.07" E
3	Disang river at NH Crossing	27°3'13.03" N 94°40'41.50" E

The change in the water quality of Disang river in terms of BOD value for the period 2016-2019 is presented below in **Table IV**

Table IV: BOD value in mg/l of Disang river at Gudamghat from the year January, 2016-April, 2019

Year	BOD Value	Year	BOD Value	Year	BOD Value	Year	BOD Value
Jan-16	0.8	Jan-17	1.3	Jan-18	2.0	Jan-19	2.3
Feb-16	1.3	Feb-17	1.2	Feb-18	1.4	Feb-19	2.2
Mar-16	3.1	Mar-17	1.0	Mar-18	0.4	Mar-19	1.2
Apr-16	1.4	Apr-17	1.4	Apr-18	2.7	Apr-19	
May-16	2.2	May-17	2.1	May-18	2.4		
Jun-16	2.1	Jun-17	1.8	Jun-18	1.9		
Jul-16	4.2	Jul-17	1.5	Jul-18	1.4		
Aug-16	0.6	Aug-17	1.4	Aug-18	1.4		
Sep-16	1.7	Sep-17	1.3	Sep-18	1.3		
Oct-16	3.4	Oct-17	1.2	Oct-18	1.1		
Nov-16	1.7	Nov-17	1.7	Nov-18	2.5		
Dec-16	1.2	Dec-17	0.9	Dec-18	1.1		

The above data indicated that BOD value has increased in only three (04) occasions out of forty (40) occasions. The data also reflected the BOD load to have decreased in the recent years and observed to be within the standard norms. Assam is cursed with the catastrophic flood every year and hence the BOD load also vary due to additional organic matter introduced in the river as a result of continuous rainfall during this disastrous calamity. A river has also the ability to recover itself and self-purify which can be strongly influenced by water discharge and with the heavy flow the river may recover again. Hence this exceedance can be considered as incidental and can be omitted from the polluted river stretch. Moreover, this occasional exceedance of BOD level does not reflect the extremity of pollution.

6.5. Drains contributing to pollution

The river receives storm water along with municipal sewage by one major drains namely 2 No. Kothiakhunda Gaondrain, Dillibari, Dibrugarh

Table V: Major channels/drains contributing to the pollution load of the River

Channels/Drains	Description
2 No. KothiakhundaGaon drain	The drain is orinated at 2 No. Kothiakhundagaon, Dibrugarh and confluence with Desang River at Sapekhati, Sivasagar

Further, the discharges from the open drains gets absorbed by the coarse soil before making their way to the river. Some of the individuals follow segregation at the source and perform composting at their premises

6.6. Characteristics of the major drains

All the drains contributing to pollution of the river are domestic sewage carrying drains.

6.7. Flow details of the major drains contributing to river pollution

Action initiated to measure the flow of various out falling drains.

6.8. Sewage generation from the towns located on the banks of the polluted river

The main contributor of pollution in the river is municipal sewage. There are no treatment systems for the sewage which are dumped in open thereby gets absorbed in soil or ultimately find their ways to water bodies without treatment.

6.9. Number of Sewage treatment plants present and treatment capacity, and gaps

There is no any sewage treatment plant at present.

6.10. Number of STPs proposed and capacity

As per the survey done, STP is not required for such minimal sewage generated area.

6.11. Drainage system/ sewerage network present/proposed

Some natural drainage like streams and rivulets of local origin are acting as the main drainage system

There is no sewerage system at present. No sewerage system has been proposed under this project. The sewage generation is minimal and by adopting stringent remedial actions, sewage generation and treatment can be done.

6.12. Treatment and Disposal of Septage and controlling Open Defecation

The type of toilets used in villages situated in the bank of the polluted river stretch are deep single pit/leach pit, double pits and properly equipped septic tanks. Under the Dibrugarh division, approximately 781 numbers of IHHL under Swachh Bharat Mission have been constructed to achieve Open Defecation Free status. However, the identified villages of the polluted stretch under the Tinkhong Tehsil is still deprived of IHHL scheme and community toilets are also not available.

Following remedial actions will be taken in consideration of treatment and disposal of sewage

- The discharge should be trapped by strainers before draining off to the river.
- Every household should be recommended to have individual drainage that should be connected to soak pits or stagnated pool.
- Roadside hotels/restaurants should not be allowed to dispose untreated sewage and solid waste into the nearby drains or rivers. These establishments should be properly regulated by the concerned authority.
- Public awareness to control open defecation and understand the sanitary hygiene.
- Local administration should provide proper pucca toilets for the individuals or at least community toilets through the IHHL scheme under Swachh Bharat Mission.

7. Controlled Ground water Extraction and quality Assessment

The district is potential from ground water point of view as revealed by the studies carried out by CGWB. The stage of ground water development in Dibrugarh district is 21%, which shows under the SAFE category. As long-term water level trend does not show any major change so the whole district may be considered as **SAFE**

Table VI: Estimation of ground water resource in the Dibrugarh district

Ground water extraction details	Ground water	Ground water recharging mechanism	Rain water harvesting
Net Ground Water Availability	1794.65 mcm	Recharging of groundwater are done by creation of Pond/lakes under government schemes.	The roof top rainwater harvesting is practiced.
Gross Ground Water Draft	266.76 mcm		
Stage of Ground Water Development	15%		
Future provision for Domestic & Industrial Use	37.45 ham		
Future Provision for Irrigation Use	1519.49 ham		

(a) Irrigation Practices

At present, the district has undertaken some minor and medium irrigation schemes such as DTW and STW. However, under the Tingkhong Tehsil, two DTW irrigation schemes is underway as presented below in **Table VII**

Table VII: Irrigation schemes in progress under Tingkhong Tehsil

S.No	Name of Scheme	Created Potential
1	DTW scheme at Tingkhong Mohpoliam (1 pt)	100
2	DTW Scheme at Dillibari (3 pts)	300

7.1. Status of Ground Water

Chemically, the water to be used for domestic purpose should preferably be soft, low in dissolved solids and free from poisonous constituents. Ground water of the district is colorless, odor-less and free from turbidity. The iron content in most part of the district is below 5 ppm in ground water. But, in and around Tengakhat area, concentration of iron is found more than permissible limit for drinking purpose. However, the high concentration of iron beyond permissible limit in ground water in some of the areas can pose

problem, which can be lowered by aeration and filtration method. Thus, in general, the area is safe in all respect for utilizing of ground water.

7.2. Remedial Actions

The following remedial actions will be taken in consideration of contaminated ground water sources, controlled ground water extraction and periodic quality assessment

- Ground water of deeper aquifers should be analyzed for periodic assessment of element like Arsenic, Fluoride, Iron etc.
- Alternate sources of drinking water should be explored and prioritized.
- Awareness campaigns about health hazards due to intake of excessive Arsenic, Fluoride are the need of the time.
- Role of pesticides used for agricultural activity should be carefully observed.
- Survey should be conducted regarding ground water uses by different categories such as domestic, Industries etc and also to identify the over exploited and critical areas in the river stretches with respect to ground water extraction.
- Effective management of industrial effluent or sewage for preventing contamination of ground water sources.
- The industry that will extract groundwater for manufacturing process should not operate unless they possess valid permission for groundwater extraction from Central Ground Water Authority.
- Strict vigilance and conducting inspection of the industries to rule out any forceful treated effluent injection in to ground water resources.
- Roof top rain water harvesting techniques should be encouraged for industrial, commercial or individual households and community.

8. Flood Plain Zone

The following are the identified flood prone area for the polluted river stretch

Sl. No	Name of River	Flood plain areas
1	Disang River at Gudamghat	Kechuguri No. 1, Kechuguri No. 3

8.1. Regulating activities in the Flood Plain Zone

The following activities need to be regulated in the flood plain zones.

S.No	Action points	Responsible authority
1	Plantation in the flood plain zone	Forest Department
2	Checking Encroachment	Local administration
3	Demarcation of the flood plain zone	Water Resource Department
4	Prohibition of disposal of all kinds of wastes	District Administration

8.2. Waste management status

Table VIII: Management of Industrial, Municipal, Biomedical, Plastic and Electronics Waste

Sl. No	Type	Status	Proposed actions	Authority
1	Industrial Waste	No industrial units have been identified in the polluted river stretch	N/A	Pollution Control Board Assam
2	Municipal waste	The locality does not fall under any municipal board. The individual households adopt insitu management like burial/composting in their premises.	Village Panchayats and NGOs has inducted awareness generation regarding the solid waste management rules	Village Panchayats/NGOs
3	Plastic Waste	Negligible volume of plastic wastes are generated	Issue directions to village panchayats to segregate and collect plastic waste and intitiate necessary steps to channelize the waste to authorised agencies for recycling and reprocessing	Village Panchayats/NGOs
4	Hazardous Waste	No industrial units have been identified in the polluted river stretch	N/A	Pollution Control Board Assam
5	Bio-medical Waste	No healthcare units have been identified in the polluted river stretch	N/A	Pollution Control Board Assam/Health Department
6	E –waste	No bulk consumers and generators have been identified	N/A	Pollution Control Board Assam

8.3. Gaps identified in waste management

Presently, around 996.8 Kg/day of gaps has been identified from villages situated at the Disang polluted catchment area for municipal solid waste management.

8.4. Greenery development - Plantation Plan

State Government has initiated afforestation in the degraded forestland, also raising roadside plantation besides creating check dams/embankments in the river catchment areas to combat erosion and soil conservation.

The following remedial actions has to be initiated in consideration of greenery development

- Raise plantation along the river bank to control the flow run off water directly to the river
- Bamboo species to be raised as it is a good soil binder thereby stabilize the banks of the river from erosion

9. Environmental Flow (E-Flow)

9.1. Stretch of river perennial or non- perennial/flow available/water usage in the stretch

The entire river stretch is perennial. The river lowest discharge of the river is 48.59 m³/sec and the highest discharge is 996.25 m³/sec

Irrigation practices in the river

The high volume of discharge and water level of the river can be of great use for good irrigation practices for the people. Irrigation activity in the form of LIS, FIS has been undertaken in the river at Dibrugarh district under government proposed schemes. However, under the Tingkhong Tehsil, the irrigation schemes underway in the Disang river are as per the following in **Table IX**

Table IX: Irrigation schemes in progress and proposed at Disang River under Tinkhong Tehsil

Sl. No.	Name of the Scheme	Activity	Command Area/Created Potential
1	LIS from river Disang in Chapatolipathar	Lift Irrigation	300
2	LIS from river Disang in Joypur area	Lift Irrigation	100
3	LIS from river Disang	Lift Irrigation	66

10. Identified organisations responsible for preparation and execution of the action plans

Organisations responsible for preparation and execution of the action plans are as follows:

- Secretary to the Govt. of Assam, Environment and Forest department
- Secretary to the Govt. of Assam, Urban Development department
- Commissioner, Industries and Commerce, Assam
- Member Secretary, Pollution Control Board Assam
- Commissioner, Guwahati Municipal Corporation
- Commissioner to the Govt. of Assam, Water Resource Department
- Divisional Forest officer, Social Forestry, Basistha, Guwahati -29

11. Monitoring mechanism proposed for implementation of action plans

The water quality assessment and evaluation of impacts is necessary to understand the river state at various stages of the project implementation and post implementation of the project. Therefore the water quality assessment and evaluation of the project achievements is essential component for the long term benefit of the project. The monitoring and evaluation also indicate for taking corrective measure at appropriate time. The ill effects may be controlled by taking step at right time for right cause. The monitoring and evaluation schedule and plan is proposed, which is under.

11.1 Water Quality Stations (WQS):

The water quality monitoring will include following parameters, which shall be monitored at monthly interval or as and when required. The one

complete unit to be purchased and identified parameters to be monitored at defined sampling stations.

The sampling stations are:

- Disang river before confluence with Brahmaputra river

The parameters to be monitored are as follows.

- | | | | |
|---|-----------------------|---|----------------------------------|
| 1 | pH | 6 | Bio-Chemical Oxygen Demand (BOD) |
| 2 | Turbidity | 7 | Faecal coliform |
| 3 | Conductivity | 8 | Total coliform |
| 4 | Temperature | | |
| 5 | Dissolved Oxygen (DO) | | |

Most of the parameters will be monitored manually and will be incorporated in database.

12. Public Mass awareness etc.

Any river conservation project to be implemented successfully, public awareness is of utmost importance. Unless the public are made aware about the irreversible damage and pollution caused by indiscriminate littering and dumping of waste and garbage in drain and water bodies connected to DisangRiver, the project cannot be implemented in true sense of the word to achieve conservation. Some members of the communities are already aware that there is a need for river conservation programme and that they will be benefitted. Hence, it should be ensured with the following points

- The communities are effectively involved in all the stages of the project cycle from conceptualization, to preparation, to finalization, to implementation and finally O & M.
- Public Awareness & Public Participation should be affront-end activity of the project
- The entire programme of conservation should be conceived, formulated, implemented, monitored and evaluated in close consultation with the stake holding communities.
- Therefore, education and awareness programmes are key to the sustainability of the various components implemented as part of the river restoration project.

13. Action Plan

Table X: Action Points

Type	Action Points	Responsible Authority	Time Targeted
Industries	a) No industrial units have been identified within 500 meters periphery of the catchment area.	Not Applicable	
Interception and treatment of raw sewage	a) No Sewage Treatment Plant (STP) has been proposed at these villages.	Not Applicable	
Ground Water Assessment	a) Conducting survey regarding ground water usage by category wise such as domestic, community, etc. and also identification of over exploited and critical blocks in the river stretches with respect to the ground water extraction. b) Carry out assessment of ground water survey in the catchment area of the identified polluted stretch once in a year to ensure quality. c) To promote roof top rain water harvesting by individual households	PCBA/CGWA	Continuous
Flood Plain Zone	a) Conservation of the river through watershed management. b) Cleaning of the river bed and bank. c) Afforestation on both the banks to prevent soil erosion d) Recreational activities to be promoted.	Soil Conservation Department/Water Resource/ Municipal Corporation /Forest Department/ Tourism Department/PWD Assam/Local Administration	6 Months (February,2020 to July, 2020)

Type	Action Points	Responsible Authority	Time Targeted
	<ul style="list-style-type: none"> e) Erection of pathway of the river banks. f) Checking encroachment in the flood plain zone of the polluted river stretch g) Prohibition of disposal of municipal, plastic, biomedical and other wastes in the polluted stretch of the river bank h) Demarcation of the flood plain zone. 		
	<p>The plan for the polluted stretches of the river may be implemented in a time bound manner by fragmenting activities as</p> <ul style="list-style-type: none"> a) Modification of consent conditions in and around the polluted stretches. b) Surveillance of sources of pollution in contrast to the norms. c) Assessment of water quality of the polluted stretches on monthly basis has already been commencing d) The monitoring committee may convene meeting of Stakeholder organizations on Quarterly basis with under the chairmanship of Chief Secretary 	<p>Pollution Control Board Assam</p>	<p>3 Months (June,2019 to August, 2020)</p> <p>c) Monthly Basis</p>
<p>Solid Waste</p>	<ul style="list-style-type: none"> a) Prohibition of direct disposal of solid waste in the river banks. b) Frequent River Surface 	<p>Village Panchayats/ Water Resource Department</p>	<p>3 Months (November, 2019 to</p>

Type	Action Points	Responsible Authority	Time Targeted
	cleaning by removal of debris, plastics etc.		January, 2020)
Environmental Flow	<ul style="list-style-type: none"> a) Flow measurement of the river should be carried out by the concerned department and the record has to be maintained b) Fresh water flowing through escape channels/small barrages should be checked. c) The river can be of good potential for irrigation practices and should be carried out by the farmers. 	Water Resource Department	Continuous
Public Awareness	<ul style="list-style-type: none"> a) Awareness programs to highlight the issues related with the direct discharge of solid waste and open defecation. b) Mass awareness to conserve water. 	Village Panchayats/PCBA/NGOs	Continuous


Members of River Rejuvenation Committee (RRC)



Secretary to the Govt of Assam
Environment & Forest Department



Secretary to the Govt of Assam
Urban Development Department



Commissioner
Industries and Commerce Assam



Member Secretary
Pollution Control Board Assam