

**ACTION PLAN FOR REJUVENATION OF RIVER KYRHUKHLA
EAST JAINTIA HILLS DISTRICT, MEGHALAYA
IDENTIFIED AS RIVER POLLUTED STRETCH
UNDER PRIORITY - IV**

PREPARED BY

**RIVER REJUVENATION COMMITTEE
MEGHALAYA**

River Name: Kyrhukhla River, Khliehriat, East Jaintia Hills District

The river is flowing across the coal mining areas. The drainage from these coal mines directly discharges into the river, thereby affecting the water quality to a greater extent. The water quality is also affected by the labour settlement. The waste generated is directly discharged into the river.

Monitoring of the water quality of Kyrhukhla River

The Meghalaya State Pollution Control Board is monitoring the water quality of the following 1(one) sampling locations along the stretch of Kyrhukhla River from since 1990 under National Water Monitoring programme (NWMP) sponsored by Central Pollution Control Board (CPCB), Delhi. The monitoring is done on a monthly basis for 30(thirty) parameters (i.e. Physico-Chemical & Bacteriological parameters). The data obtained is transmitted to CPCB for compilation and interpretation. Based on the water quality monitoring data CPCB has identified Kyrhukhla River as a polluted river stretch under Priority Class-IV.

Sampling Location: 1. Lad - Rymbai, Khliehriat

In the monitored location the pH was observed to be very low with a minimum value of 2.8. The dissolved Oxygen was found to be very low with a minimum value recorded as 2.4. The Bio-chemical Oxygen Demand was observed to be above 6.0 mg/l. The total coliform count recorded was in the range of 22-43 mpn/100ml and Faecal coliform in the range of 10-23 mpn/100ml. The monitoring result of Kyrhukhla River shows low pH and high BOD content.

Source of Pollution

The probable source of pollution is mainly due to acid effluent generated from coal mines located on the catchment areas and organic pollution is mainly due to the waste generated by the settlement in the area.

Action plan for Rejuvenation of Kyrhukhla River, Khliehriat- Priority Class -IV

SI No.	Action plan for rejuvenation of polluted rivers	Organization/ Agency Responsible for Execution of the Action plan	Time Target
1)	Industrial Pollution Control		
	(a) Field Survey to assess pollution load generated by industries discharging trade effluents into the river. Collection & analysis of effluent.	State Pollution Control Board	Within three months
	(b) Inventorisation of the industries in the catchment area of River covering assessment on aspects relating to status of Consents under Water & Air Acts and Authorisation, Assessment of Effluent Generation, Status of functioning of ETPs/STPs including capacities and final mode of discharge of treated effluent.	State Pollution Control Board	Within three months
	(c) Actions against the identified industries in operation without Consents under Water & Air Act/ Authorization under the H&OW (M&TM) Rules 2016 as amended	State Pollution Control Board	Within five months
	(d) Action against the industries not installed ETPs or ETPs exist but not operating or ETP outlet or treated effluent is not complying to the effluent discharge standards or norms.	State Pollution Control Board	Within six months
	(e) Small scale/ tiny and service providing units located in urban or semi –urban limits like Dairies ,Auto Service Stations to have a minimum provision of O & G traps	State Pollution Control Board	Within six months

	(f) Directions to all the industries which are observed to be not in operation or closed or temporarily closed to remain close till further orders from State Pollution Control Board	State Pollution Control Board	Within six months
	(g) Identification of the sources of Acid Mine Drainage discharging into the river.	State Pollution Control Board/Mining & Geology Dept.	Within six months
	(h) Development of appropriate method for treatment of AMD	State Pollution Control Board/Mining & Geology Dept.	Within two year
2)	Sewage Treatment and Disposal Plan		
	(a) Intensive Field Survey to identify the tributaries, rivulets and drains discharging into the river in the catchment area. To collect & analysis the water samples	State Pollution Control Board/Jaintia Hills Autonomous District Council / Water Resources Department/Community & Rural Development Dept./Public Health Engineering Dept.	Within six months
	(b) Estimation of total sewage generation, quantum of disposal of sewage presently through drains	State Pollution Control Board/Jaintia Hills Autonomous District Council / Water Resources Department/Community & Rural Development Dept./Public Health Engineering Dept.	Within six months
	(c) To undertake measurement of flow of all the drains presently contributing pollution load in polluted river	State Pollution Control Board/Jaintia Hills Autonomous District Council / Water Resources Department/Community & Rural Development Dept./Public Health Engineering Dept.	Within six months
	(d) Preparation of detailed project report (DPR) for sewage treatment & Disposal for restoration of polluted stretches	Urban affair Department/Public Health Engineering Dept./Community & Rural Development Dept./ Water Resources Department	Within one year

	(e) Proper design, execution of STPs with full utilization capacity	Public Health Engineering Dept./Community & Rural Development Dept./ Water Resources Department/ Local Authorities under the supervision of State Pollution Control Board	Within two to three years
	(f) Channelization including diversion of sewage generated from household/ townships/ villages to sewer lines/ interception of all the drains presently carrying sewage and for ensuring proper treatment through the upcoming STPs	Public Health Engineering Dept./Community & Rural Development Dept./ Water Resources Department/ Local Authorities under the supervision of State Pollution Control Board	Within one year after commissioning of STPs
	(g) Ensuring dairy/ automobile service stations and Hotels/ Restaurants particularly located on road-side should have a treatment system and levy of fine in case found violations	State Pollution Control Board/ Community & Rural Development /District Administration / Local authorities	Within one year
	(h) Construction of Check Dam & Solid Waste Trap in the streams/drains discharging into the river.	District Administration/ Urban Affairs Dept. / Water Resources Dept. / Jaintia Hills Autonomous District Council	Within Six months
3)	Quantification & Characterisation of solid waste		
	(a) Quantification & Characterisation of solid waste generated in Khliehriat, Lad Rymbai and Villages in the catchment areas.	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Jaintia Hills Autonomous District Council	Within three months
	(b) Segregation of bio- degradable and non-biodegradable waste at source.	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Jaintia Hills Autonomous District Council	Within six months

	(c) Collection of solid waste through implementation of door to door mechanism.	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Jaintia Hills Autonomous District Council	Within six months
	(d) Transportation of segregated waste in accordance to the provision of solid waste Rules,2016	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Jaintia Hills Autonomous District Council	Within six months
	(e) Treatment of biodegradable waste by composting method.	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Jaintia Hills Autonomous District Council	Within six months
	(f) Development of sanitary landfill for non-biodegradable waste	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Jaintia Hills Autonomous District Council	Within a year
	(g) Identification of site for storage, treatment & disposal of construction and demolition waste	District Administration/Community & Rural Development Dept./Jaintia Hills Autonomous District Council /State Pollution Control Board	Within a year
	(h) Ensuring compliance of the provisions of the construction and demolition waste rules,2016	District Administration/Community & Rural Development Dept./Jaintia Hills Autonomous District Council /Public Work Department/Public Health Engineering Dept.	Within a year

4)	Environmental Flow (E-Flow) and Irrigation Practices		
	(a) Measurement of flow of all the rivers and records maintained	Water Resource Department	Regularly
	(b) To conserve water and good irrigation practices to be adopted by the farmers by organizing mass awareness programmes and through media in vernacular language.	Water Resource Department /Agriculture Departments.	Regularly
5)	Ground Water		
	(a) Assessment of Ground Water extraction	Central Ground Water Board/ Water Resource Department/Public Health Engineering Dept.	Within three months
	(b) Assessment of Ground Water Quality	Central Ground Water Board/ Water Resource Department/Public Health Engineering Dept./State Pollution Control Board	Within three months
	(c) Regulating Ground water extraction and Ground water Recharge.	Central Ground Water Board/ Water Resource Department/Public Health Engineering Dept.	Within six months
6)	Setting up of Biodiversity Park & removal of river encroachment		
	(a) Identification of land availability in the river bank for Biodiversity park	Forest & Environment Dept./Jaintia Hills Autonomous District Council /Community & Rural Development Dept./ Tourism Dept./District Administration	Within six months
	(b) Establishment of Biodiversity park	Forest & Environment Dept./Jaintia Hills Autonomous District Council /Community & Rural Development Dept./ Tourism Dept./District Administration	Within one year

	(c) Identification of River encroachment	Forest & Environment Dept./Jaintia Hills Autonomous District Council /Community & Rural Development Dept./ Tourism Dept./District Administration	Withinsix months
	(d) Removal of encroachment	Forest & Environment Dept./Jaintia Hills Autonomous District Council /Community & Rural Development Dept./ Tourism Dept./District Administration	Within one year
7)	Legal Frame Works		
	(a) Examining the sufficiency of the existing Laws/Rules dealing with Sewage Management.	Urban affairs Dept. / Forest & Environment Dept./Water Resource Department/Public Health Engineering Dept./Jaintia Hills Autonomous District Council / District Administration	Within one year
	(b) Incorporating penalty clause in Municipal Bylaws/Building Bylaws for disposal of Solid Waste, and discharge of untreated Sewage into Drains etc.	Jaintia Hills Autonomous District Council /District Administration	Within one year

**ACTION PLAN FOR REJUVENATION OF RIVER NONBAH
WEST KHASI HILLS DISTRICT, MEGHALAYA
IDENTIFIED AS RIVER POLLUTED STRETCH
UNDER PRIORITY – IV**

PREPARED BY

**RIVER REJUVENATION COMMITTEE
MEGHALAYA**

River Name: Nonbah River, Nongstoin, West Khasi Hills District

This river rises from the uphill region of Nongstoin in West Khasi Hills District. The river is also joined by another source coming from Nondein and finally after passing the ravines and gorges joined the Kynshi River. This river passes through the town which is the headquarter of the West Khasi Hills District, and also as it is in the commercial areas of the place, the waste, garbage etc generated from the local markets, shops, houses and direct latrines are ultimately discharged into the water body, thereby deteriorating the water quality. Along the banks of the river agricultural activities takes place at a large scale.

Monitoring of the water quality of Nonbah River

The Meghalaya State Pollution Control Board is monitoring the water quality of the following 1(one) sampling locations along the stretch of Nonbah River from since 2012 under National Water Monitoring programme (NWMP) sponsored by Central Pollution Control Board (CPCB), Delhi. The monitoring is done on monthly basis for 30(thirty) parameters (i.e. Physico-Chemical & Bacteriological parameters). The data obtained is transmitted to CPCB for compilation and interpretation. Based on the water quality monitoring data CPCB has identified Nonbah River as polluted river stretch under Priority Class-IV.

Sampling Location: 1. Nongstoin

In the monitored station the pH was observed to be in the range of 6.6 to 7.2. The dissolved Oxygen was in the range of 3.5 - 6.4 mg/l. The Bio-chemical Oxygen Demand was observed to be above 6mg/l. The total coliform count was observed to be below 5000mpn/100 ml. and Faecal Coliform 2500mpn/100 ml.

Source of Pollution

The probable sources of pollution are mainly due to direct discharge of the untreated sewage, solid waste, the discharge of untreated effluent from shops, restaurants, etc.

Action plan for Rejuvenation of Nonbah River, Nongstoin- PriorityClass -IV

SI No.	Action plan for rejuvenation of polluted rivers	Organization/ Agency Responsible for Execution of the Action plan	Time Target
1)	Industrial Pollution Control		
	(a) Field Survey to assess pollution load generated by industries and discharging trade effluents into the river. Collection & analysis of effluent	State Pollution Control Board	Within three months
	(b) Inventorisation of the industries in the catchment area of River covering assessment on aspects relating to status of Consents under Water & Air Acts and Authorisation, Assessment of Effluent Generation, Status of functioning of ETPs/STPs including capacities and final mode of discharge of treated effluent.	State Pollution Control Board	Within three months
	(c) Actions against the identified industries in operation without Consents under Water & Air Act/ Authorization under the H&OW (M&TM) Rules 2016 as amended	State Pollution Control Board	Within five months
	(d) Action against the industries not installed ETPs or ETPs exist but not operating or ETP outlet or treated effluent is not complying to the effluent discharge standards or norms.	State Pollution Control Board	Within six months
	(e) Small scale/ tiny and service providing units located in urban or semi –urban limits like Dairies ,Auto Service Stations to have a minimum provision of O	State Pollution Control Board	Within six months

	& G traps		
	(f) Directions to all the industries which are observed to be not in operation or closed or temporarily closed to remain close till further orders from State Pollution Control Board	State Pollution Control Board	Within six months
2)	Sewage Treatment and Disposal Plan		
	(a) Intensive Field Survey to identify the tributaries, rivulets and drains discharging into the river in the catchment area. To collect & analysis the water samples	State Pollution Control Board	Within six months
	(b) Estimation of total sewage generation, quantum of disposal of sewage presently through drains	State Pollution Control Board / Water Resources Department/Urban affair Department/ Public Health Engineering Dept./ Community & Rural Development Dept./ Public Work Department./ Nongstoin Town Committee	Within six months
	(c) To undertake measurement of flow of all the drains presently contributing pollution load in polluted river	State Pollution Control Board / Water Resources Department/Urban affair Department/ Public Health Engineering Dept./ Community & Rural Development Dept./ Public Work Department./ Nongstoin Town Committee	Within six months
	(d) Preparation of detailed project report (DPR) for sewage treatment & Disposal for restoration of polluted stretches	Urban affair Department/ Water Resources Department/ Public Health Engineering Dept.	Within one year
	(e) Proper design, execution of STPs with full utilization capacity	Urban affair Department/ Water Resources Department/ Public Health Engineering Dept./Nongstoin Town	Within two to three years

		Committee under the supervision of State Pollution Control Board	
	(f) Channelization including diversion of sewage generated from household/ townships/ villages to sewer lines/ interception of all the drains presently carrying sewage and for ensuring proper treatment through the upcoming STPs	Urban affair Department/ Water Resources Department/ Public Health Engineering Dept./Nongstoin Town Committee under the supervision of State Pollution Control Board	Within one year after commissioning of STPs
	(g) Ensuring dairy/ automobile service stations and Hotels/ Restaurants particularly located on road-side should have a treatment system and levy of fine in case found violations.	State Pollution Control Board and Local authorities	Within one year
	(h) Construction of Check Dam & Solid Waste Trap in the streams/drains discharging into the river.	Urban Affairs Dept. / Water Resources Dept. / Khasi Hills Autonomous District Council /Nongstoin Town Committee.	Within Six months
3)	Quantification & Characterisation of solid waste		
	(a) Quantification & Characterisation of solid waste generated in Nongstoin town and surrounding Villages in the catchment areas.	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Khasi Hills Autonomous District Council/ Nongstoin Town Committee.	Within three months
	(b) Segregation of bio- degradable and non-biodegradable waste at source.	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Khasi Hills Autonomous District Council/ Nongstoin Town Committee.	Within six months
	(c) Collection of solid waste through implementation of door to door mechanism.	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Khasi Hills Autonomous District	Within six months

		Council/ Nongstoin Town Committee.	
	(d) Transportation of segregated waste in accordance to the provision of solid waste Rules,2016	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Khasi Hills Autonomous District Council/ Nongstoin Town Committee.	Within six months
	(e) Treatment of biodegradable waste by composting method.	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Khasi Hills Autonomous District Council/ Nongstoin Town Committee.	Within sixmonths
	(f) Development of sanitary landfill for non-biodgradable waste	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Khasi Hills Autonomous District Council/ Nongstoin Town Committee.	Within a year
	(g) Identification of site for storage, treatment & disposal of construction and demolition waste	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Khasi Hills Autonomous District Council/ Nongstoin Town Committee.	Within a year
	(h) Ensuring compliance of the provisions of the construction and demolition waste rules,2016	District Administration/Community & Rural Development Dept./Khasi Hills Autonomous District Council /Public Work Department/Public Health Engineering Dept. / Nongstoin Town Committee.	Within a year

	(i) Establishment of Eco-Friendly Crematorium	Forest & Environment Dept.	Within a year
4)	Environmental Flow (E-Flow) and Irrigation Practices		
	(a) Measurement of flow of all the rivers and records maintained	Water Resource Department	Regularly
	(b) To conserve water and good irrigation practices to be adopted by the farmers by organizing mass awareness programmes and through media in vernacular language.	Water Resource Department /Agriculture Departments.	Regularly
5)	Ground Water		
	(a) Assessment of Ground Water extraction	Central Ground Water Board/ Water Resource Department/Public Health Engineering Dept.	Within three months
	(b) Assessment of Ground Water Quality	Central Ground Water Board/ Water Resource Department/Public Health Engineering Dept./State Pollution Control Board	Within three months
	(c) Regulating Ground water extraction and Ground water Recharge.	Central Ground Water Board/ Water Resource Department/Public Health Engineering Dept.	Within six months
6)	Setting up of Biodiversity Park & removal of river encroachment		
	(a) Identification of land availability in the river bank for setting up of Biodiversity park	Forest & Environment Dept./Khasi Hills Autonomous District Council /Community & Rural Development Dept./ Tourism Dept./District Administration	Within six months
	(b) Establishment of Biodiversity park	Forest & Environment Dept./Khasi Hills Autonomous District Council /Community &	Within one year

		Rural Development Dept./ Tourism Dept./District Administration	
	(c) Identification of River encroachment	Forest & Environment Dept./Khasi Hills Autonomous District Council /Community & Rural Development Dept./ District Administration	Withinsix months
	(d) Removal of encroachment	Forest & Environment Dept./Khasi Hills Autonomous District Council /Community & Rural Development Dept./ District Administration	Within one year
7)	Legal Frame Works		
	(a) Examining the sufficiency of the existing Laws/Rules dealing with Sewage Management.	Urban affairs Dept. / Forest & Environment Dept./Water Resource Department/Public Health Engineering Dept./Khasi Hills Autonomous District Council / District Administration	Within one year
	(b) Incorporating penalty clause in Municipal Bylaws/Building Bylaws for disposal of Solid Waste, and discharge of untreated Sewage into Drains etc.	Khasi Hills Autonomous District Council /District Administration.	Within one year

**ACTION PLAN FOR REJUVENATION OF RIVER UMTREW,
RI-BHOI DISTRICT, MEGHALAYA
IDENTIFIED AS RIVER POLLUTED STRETCH
UNDER PRIORITY - IV**

PREPARED BY

**RIVER REJUVENATION COMMITTEE
MEGHALAYA**

River Name: Umtrew River, Byrnihat, Ri-Bhoi District

The River originates from the Sohpetbneng Peak. It flows across the Byrnihat town the unlimitedly joins the Brahmaputra River. Upstream of the sampling location is an industrial estate. The river also receives the pollution load from the residential and commercial area. Other human activities which interfere with the water quality are soil dredging, sand recovery, boating, fishing, bathing, washing etc.

Monitoring of the water quality of Umtrew River

The Meghalaya State Pollution Control Board is monitoring the water quality of the following 1(one) sampling locations along the stretch of UmtrewRiver from since 1990 under National Water Monitoring programme(NWMP)sponsored by Central Pollution Control Board(CPCB),Delhi. The monitoring is done on monthly basis for 30(thirty) parameters (i.e. Physico-Chemical & Bacteriologicalparameters).The data obtained is transmitted to CPCB for compilation and interpretation. Based on the water quality monitoring data CPCB has identified Umtrew River as polluted river stretch under Priority Class-IV.

Sampling Location: 1. Byrnihat

In the monitored station the pH was observed to be in the range of 7.1 to 7.6. The dissolved Oxygen was above 4mg/l. The Bio-chemical Oxygen Demand was observed to be above 6mg/l. The total coliform count was observed to be below 5000mpn/100 ml. and Faecal Coliform was found to be below 2500mpn/100 ml.

Source of Pollution

The probable sources of pollution is mainly due to direct discharge of the untreated sewage, solid waste, the discharge of untreated effluent from, hotels, restaurants, industrial units etc.

Action plan for Rejuvenation of Umtrew River, Byrnihat- PriorityClass -IV

SI No.	Action plan for rejuvenation of polluted rivers	Organization/ Agency Responsible for Execution of the Action plan	Time Target
1)	Industrial Pollution Control		
	(a) Field Survey to assess pollution load generated by industries and discharging trade effluents into the river. Collection & analysis of effluent	State Pollution Control Board	Within three months
	(b) Inventorisation of the industries in the catchment area of River covering assessment on aspects relating to status of Consents under Water & Air Acts and Authorisation, Assessment of Effluent Generation, Status of functioning of ETPs/STPs including capacities and final mode of discharge of treated effluent.	State Pollution Control Board	Within three months
	(c) Actions against the identified industries in operation without Consents under Water & Air Act/ Authorization under the H&OW (M&TM) Rules 2016 as amended	State Pollution Control Board	Within five months
	(d) Action against the industries not installed ETPs or ETPs exist but not operating or ETP outlet or treated effluent is not complying to the effluent discharge standards or norms.	State Pollution Control Board	Within six months

	(e) Small scale/ tiny and service providing units located in urban or semi –urban limits like Dairies ,Auto Service Stations to have a minimum provision of O & G traps	State Pollution Control Board/ Industries Dept./Meghalaya Urban Development Authority	Within six months
	(f) Directions to all the industries which are observed to be not in operation or closed or temporarily closed to remain close till further orders from State Pollution Control Board	State Pollution Control Board	Within six months
2)	Sewage Treatment and Disposal Plan		
	(a) Intensive Field Survey to identify the tributaries, rivulets and drains discharging into the river in the catchment area. To collect & analysis the water samples	State Pollution Control Board / Water Resources Department/Urban affair Department/ Public Health Engineering Dept./ Community & Rural Development Dept./ Public Work Department./ District Administration.	Within six months
	(b) Estimation of total sewage generation, quantum of disposal of sewage presently through drains	State Pollution Control Board / Water Resources Department/Urban affair Department/ Public Health Engineering Dept./ Community & Rural Development Dept./ Public Work Department./ District Administration.	Within six months
	(c) To undertake measurement of flow of all the drains presently contributing pollution load in polluted river	State Pollution Control Board / Water Resources Department/Urban affair Department/ Public Health Engineering Dept./ Community & Rural	Within six months

		Development Dept./ Public Work Department./ District Administration.	
	(d) Preparation of detailed project report (DPR) for sewage treatment & Disposal for restoration of polluted stretches	Urban affair Department/ Water Resources Department/ Public Health Engineering Dept.	Within one year
	(e) Proper design, execution of STPs with full utilization capacity	Urban affair Department/ Water Resources Department/ Public Health Engineering Dept. under the supervision of State Pollution Control Board	Within two to three years
	(f) Channelization including diversion of sewage generated from household/ townships/ villages to sewer lines/ interception of all the drains presently carrying sewage and for ensuring proper treatment through the upcoming STPs	Urban affair Department/ Water Resources Department/ Public Health Engineering Dept. under the supervision of State Pollution Control Board	Within one year after commissioning of STPs
	(g) Ensuring dairy/ automobile service stations and Hotels/ Restaurants particularly located on road-side should have a treatment system and levy of fine in case found violations	State Pollution Control Board and Local authorities	Within one year
	(h) Construction of Check Dam & Solid Waste Trap in the streams/drains discharging into the river.	Urban Affairs Dept. / Water Resources Dept. / Khasi Hills Autonomous District Council	Within Six months
3)	Quantification & Characterisation of solid waste		
	(a) Quantification & Characterisation of solid waste generated in Byrnihat Town and Industrial areas.	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Khasi Hills Autonomous District	Within three months

		Council/ Industries Dept./ Meghalaya Urban Development Authority	
	(b) Segregation of bio-degradable and non-biodegradable waste at source .	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Khasi Hills Autonomous District Council/ Industries Dept./ Meghalaya Urban Development Authority	Within six months
	(c) Collection of solid waste through implementation of door to door mechanism.	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Khasi Hills Autonomous District Council/ Industries Dept./ Meghalaya Urban Development Authority	Within six months
	(d) Transportation of segregated waste in accordance to the provision of solid waste Rules,2016	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Khasi Hills Autonomous District Council/ Industries Dept./ Meghalaya Urban Development Authority	Within six months
	(e) Treatment of biodegradable waste by composting method.	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Khasi Hills Autonomous District Council/ Industries Dept./ Meghalaya Urban Development Authority	Within six months
	(f) Development of sanitary landfill for non-biodegradable waste	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Khasi Hills Autonomous District Council/ Industries Dept./	Within a year

		Meghalaya Urban Development Authority	
	(g) Identification of site for storage, treatment & disposal of construction and demolition waste	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Khasi Hills Autonomous District Council/ Industries Dept./ Meghalaya Urban Development Authority	Within a year
	(h) Ensuring compliance of the provisions of the construction and demolition waste rules,2016	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Khasi Hills Autonomous District Council/ Industries Dept./ Meghalaya Urban Development Authority	Within a year
	(i) Establishment of Eco-Friendly Crematorium	Forest & Environment Dept.	Within a year
4)	Environmental Flow (E-Flow) and Irrigation Practices		
	(a) Measurement of flow of all the rivers and records maintained	Water Resource Department	Regularly
	(b) To conserve water and good irrigation practices to be adopted by the farmers by organizing mass awareness programmes and through media in vernacular language.	Water Resource Department /Agriculture Departments.	Regularly
5)	Ground Water		
	(a) Assessment of Ground Water extraction	Central Ground Water Board/ Water Resource Department/Public Health Engineering Dept.	Within three months
	(b) Assessment of Ground Water Quality	Central Ground Water Board/ Water Resource	Within three months

		Department/Public Health Engineering Dept./ State Pollution Control Board	
	(c) Regulating Ground water extraction and Ground water Recharge.	Central Ground Water Board/ Water Resource Department/Public Health Engineering Dept.	Within six months
6)	Setting up of Biodiversity Park & removal of river encroachment		
	(a) Identification of land availability in the river bank for setting up of Biodiversity park	Forest & Environment Dept./Khasi Hills Autonomous District Council /Community & Rural Development Dept./ Tourism Dept./District Administration	Within one year
	(b) Establishment of Biodiversity park	Forest & Environment Dept./Khasi Hills Autonomous District Council /Community & Rural Development Dept./ Tourism Dept./District Administration	Within one year
	(c) Identification of River encroachment	Forest & Environment Dept./Khasi Hills Autonomous District Council /Community & Rural Development Dept./ District Administration	Within three months
	(d) Removal of encroachment	Forest & Environment Dept./Khasi Hills Autonomous District Council /Community & Rural Development Dept./ District Administration	Within one year
7)	Legal Frame Works		
	(a) Examining the sufficiency of the existing Laws/Rules dealing with Sewage Management.	Urban affairs Dept. / Forest & Environment Dept./Water Resource Department/Public Health Engineering Dept./Khasi Hills Autonomous District Council / District Administration	Within one year
	(b) Incorporating penalty clause in Municipal Bylaws/Building Bylaws for	Khasi Hills Autonomous District Council /District Administration.	Within one year

	disposal of Solid Waste, and discharge of untreated Sewage into Drains etc.		
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**ACTION PLAN FOR REJUVENATION OF RIVER LUKHA
(LUNAR– MYNDIHATI)
EAST JAINTIA HILLS MEGHALAYA
IDENTIFIED AS RIVER POLLUTED STRETCH
UNDER PRIORITY - V**

PREPARED BY

**RIVER REJUVENATION COMMITTEE
MEGHALAYA**

River Name: Lukha(Lunar River- Myndihati), East Jaintia Hills District

It rises from the foot of Marangsih and Ikorsing Peak and flows to South West direction. It joins the river Surma in Bangladesh. Lumshnong, Sonapur, and other town ship and villages are located along the river Bank. Lunar River arising from coal mining areas of Sutnga, and Khliehriat also join this river. Apart from the effluent arising out from these activities, the river also receives sewage and domestic effluence generated by human settlements. The hilly terrain on either side of the river at Sonapur is covered by Reserve Forest-Narpuh Reserve Forest.

Monitoring of the water quality of Lukha(Lunar–Myndihati)

The Meghalaya State Pollution Control Board is monitoring the water quality of the following 1(one) sampling locations along the stretch of Lukha/LunarRiver from since 2012 under National Water Monitoring programme(NWMP)sponsored by Central Pollution Control Board(CPCB),Delhi. The monitoring is done on monthly basis for 30(thirty) parameters (i.e. Physico-Chemical & Bacteriologicalparameters).The data obtained is transmitted to CPCB for compilation and interpretation. Based on the water quality monitoring data CPCB has identified Lukha/Lunar River as polluted river stretch under Priority Class-V.

Sampling Location: 1. Myndihati

In the monitored station the pH was observed to be in the range of 2.7 to 3.0. The dissolved Oxygen was observed to be in the range 4.2-7.5mg/l. The Bio-chemical Oxygen Demand was observed to be above 3mg/l. The total coliform count was observed to be below 5000mpn/100 ml. and Faecal Coliform was found to be below 2500mpn/100 ml.

Source of Pollution

The probable sources of pollution is mainly due to direct discharge of acid effluent from coal mines located on the catchment areas as well as the waste generated by the labour settlement in the area into the river.

Action plan for Rejuvenation of Lukha(Lunar River-Myndihati) - PriorityClass - V

SI No.	Action plan for rejuvenation of polluted rivers	Organization/ Agency Responsible for Execution of the Action plan	Time Target
1)	Industrial Pollution Control		
	(a) Field Survey to assess pollution load generated by industries discharging trade effluents into the river. Collection & analysis of effluent.	State Pollution Control Board	Within three months
	(b) Inventorisation of the industries in the catchment area of River covering assessment on aspects relating to status of Consents under Water & Air Acts and Authorisation, Assessment of Effluent Generation, Status of functioning of ETPs/STPs including capacities and final mode of discharge of treated effluent.	State Pollution Control Board	Within three months
	(c) Actions against the identified industries in operation without Consents under Water & Air Act/ Authorization under the H&OW (M&TM) Rules 2016 as amended	State Pollution Control Board	Within five months
	(d) Action against the industries not installed ETPs or ETPs exist but not operating or ETP outlet or treated effluent is not complying to the effluent discharge standards or norms.	State Pollution Control Board	Within six months
	(e) Small scale/ tiny and service providing units located in urban or semi –urban limits like Dairies ,Auto Service Stations to have a minimum provision of O & G traps	State Pollution Control Board	Within six months

	(f) Directions to all the industries which are observed to be not in operation or closed or temporarily closed to remain close till further orders from State Pollution Control Board	State Pollution Control Board	Within six months
	(g) Identification of the sources of Acid Mine Drainage discharging into the river.	State Pollution Control Board/Mining & Geology Dept.	Within six months
	(h) Development of appropriate method for treatment of AMD	State Pollution Control Board/Mining & Geology Dept.	Within two year
2)	Sewage Treatment and Disposal Plan		
	(a) Intensive Field Survey to identify the tributaries, rivulets and drains discharging into the river in the catchment area. To collect & analysis the water samples	State Pollution Control Board/Jaintia Hills Autonomous District Council / Water Resources Department/Community & Rural Development Dept./Public Health Engineering Dept.	Within six months
	(b) Estimation of total sewage generation, quantum of disposal of sewage presently through drains	State Pollution Control Board/Jaintia Hills Autonomous District Council / Water Resources Department/Community & Rural Development Dept./Public Health Engineering Dept.	Within six months
	(c) To undertake measurement of flow of all the drains presently contributing pollution load in polluted river	State Pollution Control Board/Jaintia Hills Autonomous District Council / Water Resources Department/Community & Rural Development Dept./Public Health Engineering Dept.	Within six months
	(d) Preparation of detailed project report (DPR) for sewage treatment & Disposal for restoration of polluted stretches	Urban affair Department/Public Health Engineering Dept./Community & Rural Development Dept./ Water Resources Department	Within one year

	(e) Proper design, execution of STPs with full utilization capacity	Public Health Engineering Dept./Community & Rural Development Dept./ Water Resources Department / Local Authorities under the supervision of State Pollution Control Board	Within two to three years
	(f) Channelization including diversion of sewage generated from household/ townships/ villages to sewer lines/ interception of all the drains presently carrying sewage and for ensuring proper treatment through the upcoming STPs	Public Health Engineering Dept./Community & Rural Development Dept./ Water Resources Department / Local Authorities under the supervision of State Pollution Control Board	Within one year after commissioning of STPs
	(g) Ensuring dairy/ automobile service stations and Hotels/ Restaurants particularly located on road-side should have a treatment system and levy of fine in case found violations	State Pollution Control Board/ Community & Rural Development /District Administration / Local authorities	Within one year
	(h) Construction of Check Dam & Solid Waste Trap in the streams/drains discharging into the river.	District Administration/ Urban Affairs Dept. / Water Resources Dept. / Jaintia Hills Autonomous District Council	Within Six months
3)	Quantification & Characterisation of solid waste		
	(a) Quantification & Characterisation of solid waste generated in Khliehriat and Villages in the catchment areas.	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Jaintia Hills Autonomous District Council	Within three months
	(b) Segregation of bio- degradable and non-biodegradable waste at source.	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Jaintia Hills Autonomous District Council	Within six months

	(c) Collection of solid waste through implementation of door to door mechanism.	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Jaintia Hills Autonomous District Council	Within six months
	(d) Transportation of segregated waste in accordance to the provision of solid waste Rules,2016	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Jaintia Hills Autonomous District Council	Within six months
	(e) Treatment of biodegradable waste by composting method.	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Jaintia Hills Autonomous District Council	Within six months
	(f) Development of sanitary landfill for non-biodegradable waste	District Administration/ Public Health Engineering Dept./Community & Rural Development Dept./Jaintia Hills Autonomous District Council	Within a year
	(g) Identification of site for storage, treatment & disposal of construction and demolition waste	District Administration/Community & Rural Development Dept./Jaintia Hills Autonomous District Council /State Pollution Control Board	Within a year
	(h) Ensuring compliance of the provisions of the construction and demolition waste rules,2016	District Administration/Community & Rural Development Dept./Jaintia Hills Autonomous District Council /Public Work Department/Public Health Engineering Dept.	Within a year

4)	Environmental Flow (E-Flow) and Irrigation Practices		
	(a) Measurement of flow of all the rivers and records maintained	Water Resource Department	Regularly
	(b) To conserve water and good irrigation practices to be adopted by the farmers by organizing mass awareness programmes and through media in vernacular language.	Water Resource Department /Agriculture Departments.	Regularly
5)	Ground Water		
	(a) Assessment of Ground Water extraction	Central Ground Water Board/ Water Resource Department/Public Health Engineering Dept.	Within three months
	(b) Assessment of Ground Water Quality	Central Ground Water Board/ Water Resource Department/Public Health Engineering Dept./State Pollution Control Board	Within three months
	(c) Regulating Ground water extraction and Ground water Recharge.	Central Ground Water Board/ Water Resource Department/Public Health Engineering Dept.	Within six months
6)	Setting up of Biodiversity Park & removal of river encroachment		
	(a) Identification of land availability in the river bank for Biodiversity park	Forest & Environment Dept./Jaintia Hills Autonomous District Council /Community & Rural Development Dept./ Tourism Dept./District Administration	Within six months
	(b) Establishment of Biodiversity park	Forest & Environment Dept./Jaintia Hills Autonomous District Council /Community & Rural Development Dept./ Tourism Dept./District Administration	Within one year

	(c) Identification of River encroachment	Forest & Environment Dept./Jaintia Hills Autonomous District Council /Community & Rural Development Dept./ Tourism Dept./District Administration	Within six months
	(d) Removal of encroachment	Forest & Environment Dept./Jaintia Hills Autonomous District Council /Community & Rural Development Dept./ Tourism Dept./District Administration	Within one year
7)	Legal Frame Works		
	(a) Examining the sufficiency of the existing Laws/Rules dealing with Sewage Management.	Urban affairs Dept. / Forest & Environment Dept./Water Resource Department/Public Health Engineering Dept./Jaintia Hills Autonomous District Council / District Administration	Within one year
	(b) Incorporating penalty clause in Municipal Bylaws/Building Bylaws for disposal of Solid Waste, and discharge of untreated Sewage into Drains etc.	Jaintia Hills Autonomous District Council /District Administration	Within one year

**ACTION PLAN FOR REJUVENATION OF RIVER MYNTDU
WEST JAINZIA HILLS DISTRICT, MEGHALAYA
IDENTIFIED AS RIVER POLLUTED STRETCH
UNDER PRIORITY - V**

PREPARED BY

**RIVER REJUVENATION COMMITTEE
MEGHALAYA**

River Name: Myntdu River, Jowai, WestJaintia Hills District

The river Myntdu is originating from the hill locks situated on the northern side of the Jowai town. It receives the waste water discharges from the town and run off from the agricultural fields. Human activities such as sand recovery and dredging, fishing, washing is also affecting the water quality. Downstream of the sampling location the water is being tapped for supply of drinking water to the Jowai town. The water is also being used for irrigation purposes along its catchment area adjoining the Jowai town.

Monitoring of the water quality of Myntdu River

The Meghalaya State Pollution Control Board is monitoring the water quality of the following 1(one) sampling locations along the stretch of MyntduRiver from since 2001 under National Water Monitoring programme(NWMP)sponsored by Central Pollution Control Board(CPCB),Delhi. The monitoring is done on monthly basis for 30(thirty) parameters (i.e. Physico-Chemical & Bacteriologicalparameters).The data obtained is transmitted to CPCB for compilation and interpretation. Based on the water quality monitoring data CPCB has identified Myntdu River as polluted river stretch under Priority Class-V.

Sampling Location: 1. Jowai

In the monitored station the pH was observed to be in the range of 6.6 to 7.0. The dissolved Oxygen was above 4mg/l. The Bio-chemical Oxygen Demand was observed to be above 3mg/l. The total coliform count was observed to be below 5000mpn/100 ml. and Faecal Coliform was found to be below 2500mpn/100 ml.

Source of Pollution

The probable sources of pollution is mainly due to direct discharge of the untreated sewage, solid waste, municipal waste,the discharge of untreated effluent from hotels, restaurants, automobiles workshops etc.

Action plan for Rejuvenation of Myntdu River, Jowai, - PriorityClass - V

SI No.	Action plan for rejuvenation of polluted rivers	Organization/ Agency Responsible for Execution of the Action plan	Time Target
1)	Industrial Pollution Control		
	(a) Field Survey to assess pollution load generated by industries and discharging trade effluents into the river. Collection & analysis of effluent	State Pollution Control Board	Within three months
	(b) Inventorisation of the industries in the catchment area of River covering assessment on aspects relating to status of Consents under Water & Air Acts and Authorisation, Assessment of Effluent Generation, Status of functioning of ETPs/STPs including capacities and final mode of discharge of treated effluent.	State Pollution Control Board	Within three months
	(c) Actions against the identified industries in operation without Consents under Water & Air Act/ Authorization under the H&OW (M&TM) Rules 2016 as amended	State Pollution Control Board	Within five months
	(d) Action against the industries not installed ETPs or ETPs exist but not operating or ETP outlet or treated effluent is not complying to the effluent discharge standards or norms.	State Pollution Control Board	Within six months

	(e) Small scale/ tiny and service providing units located in urban or semi –urban limits like Dairies ,Auto Service Stations to have a minimum provision of O & G traps	State Pollution Control Board/Jowai Municipal Board/Jaintia Hills Autonomous District Council	Within six months
	(f) Directions to all the industries which are observed to be not in operation or closed or temporarily closed to remain close till further orders from State Pollution Control Board	State Pollution Control Board	Within six months
2)	Sewage Treatment and Disposal Plan		
	(a) Intensive Field Survey to identify the tributaries, rivulets and drains discharging into the river in the catchment area. To collect & analysis the water samples	State Pollution Control Board	Within six months
	(b) Estimation of total sewage generation, quantum of disposal of sewage presently through drains	Water Resources Department/Urban affair Department/Public Health Engineering Dept.	Within six months
	(c) To undertake measurement of flow of all the drains presently contributing pollution load in polluted river	Water Resources Department/Urban affair Department/Public Health Engineering Dept.	Within six months
	(d) Preparation of detailed project report (DPR) for sewage treatment & Disposal for restoration of polluted stretches	Urban affair Department	Within one years

	(e) Proper design, execution of STPs with full utilization capacity	Urban affair Department/ Public Health Engineering Dept./ Water Resources dept. / Local Authorities under the supervision of State Pollution Control Board	Within two to three years
	(f) Channelization including diversion of sewage generated from household/ townships/ villages to sewer lines/ interception of all the drains presently carrying sewage and for ensuring proper treatment through the upcoming STPs	Urban affair Department/ Public Health Engineering Dept./ Water Resources Dept. / Local Authorities under the supervision of State Pollution Control Board	Within one year after commissioning of STPs
	(g) Ensuring dairy/ automobile service stations and Hotels/ Restaurants particularly located on road-side should have a treatment system and levy of fine in case found violations	State Pollution Control Board and Local authorities	Within one year
	(h) Construction of Check Dam & Solid Waste Trap in the streams/drains discharging into the river.	Urban Affairs Dept. / Water Resources Dept./ Jaintia Hills Autonomous District Council /Jowai Municipal Board	Within Six months
3)	Quantification &Characterisation of solid waste		
	(a) Quantification &Characterisation of solid waste generated in Jowai Town and Surrounding Villages in the catchment areas.	Urban Affairs Dept. / Jaintia Hills Autonomous District Council /Jowai Municipal Board	Within three months
	(b) Segregation of bio-degradable and non-biodegradable waste at source.	Urban Affairs Dept. / Jaintia Hills Autonomous District Council /Jowai Municipal Board.	Within six months

	(c) Collection of solid waste through implementation of door to door mechanism.	Urban Affairs Dept. / Jaintia Hills Autonomous District Council /Jowai Municipal Board	Within six months
	(d) Transportation of segregated waste in accordance to the provision of solid waste Rules,2016	Urban Affairs Dept. / Jaintia Hills Autonomous District Council /Jowai Municipal Board	Within six months
	(e) Treatment of biodegradable waste by composting method.	Urban Affairs Dept. / Jaintia Hills Autonomous District Council /Jowai Municipal Board/Public Health Engineering Dept.	Within six months
	(f) Development of sanitary landfill for non-biodegradable waste	Urban Affairs Dept. / Jaintia Hills Autonomous District Council /Jowai Municipal Board	Within a year
	(g) Identification of site for storage, treatment & disposal of construction and demolition waste	Urban Affairs Dept. / Jaintia Hills Autonomous District Council /Jowai Municipal Board/ District Administration	Within a year
	(h) Ensuring compliance of the provisions of the construction and demolition waste rules,2016	State Govt.including all Developmental dept.,Real Estate Builders and other Stake holders.	Within a year
	(i) Establishment of of Eco-Friendly Crematorium	Forest & Environment Dept.	Within a year
4)	Environmental Flow (E-Flow) and Irrigation Practices		
	(a) Measurement of flow of all the rivers and records maintained	Water Resource Department	Regularly
	(b) To conserve water and good irrigation practices to be adopted by the farmers by organizing mass awareness programmes and through media in vernacular language.	Water Resource Department /Agriculture Departments.	Regularly
5)	Ground Water		
	(a) Assessment of Ground Water extraction	Central Ground Water Board/ Water Resource Department/Public Health Engineering Dept.	Within three months

	(b) Assessment of Ground Water Quality	Central Ground Water Board/ Water Resource Department/Public Health Engineering Dept./State Pollution Control Board	Within three months
	(c) Regulating Ground water extraction and Ground water Recharge.	Central Ground Water Board/ Water Resource Department/Public Health Engineering Dept.	Within six months
6)	Setting up of Biodiversity Park & removal of river encroachment		
	(a) Identification of land availability in the river bank for setting up of Biodiversity park	Urban affairs Dept./ Forest & Environment Dept./District Administration/ Tourism Dept./Jaintia Hills Autonomous District Council	Within six months
	(b) Establishment of Biodiversity park	Urban affairs Dept./ Forest & Environment Dept./District Administration/ Tourism Dept./Jaintia Hills Autonomous District Council	Within one year
	(c) Identification of River encroachment	Urban affairs Dept./ Forest & Environment Dept./District Administration/ Tourism Dept./Jaintia Hills Autonomous District Council	Within three months
	(d) Removal of encroachment	Urban affairs Dept. / District Administration/Jaintia Hills Autonomous District Council	Within one year
7)	Legal Frame Works		
	(a) Examining the sufficiency of the existing Laws/Rules dealing with Sewage Management.	Urban affairs Dept. / Forest & Environment Dept./Water Resource Department/Public Health Engineering Dept.	Within one year
	(b) Incorporating penalty clause in Municipal Bylaws/Building Bylaws for disposal of Solid Waste, and discharge of untreated Sewage into Drains etc.	Urban affairs Dept.	Within one year