Action Plan for Rejuvenation of

RIVER DHELA

Kashipur, Distt. Udham Singh Nagar, Uttarakhand

(River Stretch: Kashipur to Garhuwala, Thakurdwara)

Priority - I

Approved by

Uttarakhand River Rejuvenation Committee

(Constituted in compliance of order of the Hon'ble National Green Tribunal)

Submitted to

Central Pollution Control Board, Delhi

July, 2019

Action Plan: 2

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Executive Summary

River Dhela is a non-perennial river originating from the Ramnagar forest area of district Nainital. River water is diverted to the Tumaria dam at upstream of Kashipur, from where water is channelized for irrigation purpose, resulting most of the time no natural discharge is observed in the river. It is a tributary of river Ramganga and joins Ramganga at village Bhojpur, upstream of Moradabad city of Uttar Pradesh. Kashipur is a major urban settlement in the catchment of Dhela river.

River Bhela receives industrial wastewater from industries situated in its catchment mainly from the Moradabad Road and Aliganj road areas of Kashipur. Pulp and paper industries are predominantly situated in the catchment of Dhela river. There are four major drains which contribute industrial wastewater into river Dhela, namely - Pachhana Nala, Dandi Nala, Choti Dhela and Lapakna Nala. There are also six municipal drains which carries sewage / municipal drainage from Kashipur town, and finally merging into Dhela river.

Based on water quality data for the years 2016 & 2017, River Dhela from Kashipur to Gheruwala Thakurdwara (approximately 14 Km.) has been identified as polluted river stretch by the Central Pollution Control Board because of high concentration of BOD i.e. >30mg/L.

In pursuance to Hon'ble NGT orders dated 20.09.2018, 19.12.2018 and 08.04.2019, action plan has been prepared for restoration of polluted river stretch of River Dhela.

In order to improve river water quality, proposed activities are interception, diversion and treatment of municipal drains, solid waste processing and disposal facility for Kashipur town, surveillance of water polluting industries and drains carrying industrial wastewater, prohibition on illegal disposal of waste in river beds, groundwater quality monitoring and recharge of groundwater, plantation in catchment etc. About Rs. 14240.52 Lakhs would be required for interception, diversion and treatment of municipal drains; establishment of solid waste processing and disposal facility for Kashipur town, river training and plantation works.

1. INTRODUCTION

River Dhela is a non-perennial river originating from the Ramnagar forest area of district Nainital. River water is diverted to the Tumaria dam at upstream of Kashipur, from where water is channelized for irrigation purpose, resulting most of the time no natural discharge is observed in the river. River Dhela is a tributary of river Ramganga and joins Ramganga at village Bhojpur, upstream of Moradabad city of Uttar Pradesh.

Major town/villages in the catchment of river Dhela:

Kashipur town is having population of about 121623 (as per census, 2011), is a major human settlement in the catchment of Dhela river. Kashipur town is located in the south-west of the Kumaon region of Uttarakhand in the Terai - an area of relatively low-lying land, ranging between 500 and 1,000 feet above sea level and crossed by Kumaun's main north-south watershed between the basins of the Rivers Ramganga and Kosi. To the north of the city lies the Bhabar tract of Ramnagar, which separates the area from Shivalik Hills. Kashipur is drained only by minor rivers by Dhela river, a tributary of River Ramganga and river Bhela, a tributary of river Kosi. Three villages, namely – Guladiya, Shivlalpur Amar Janda nd Raipur Khurd are also located in the catchment of Dhela river within the boundary of Uttarakhand.

Major Industrial pockets in the catchment of river Dhela:

River Bhela receives industrial wastewater from industries situated in its catchment mainly from the Moradabad Road and Aliganj road areas of Kashipur. Uttarakhand Environment Protection and Pollution Control Board (UEPPCB) is having vigil on operation of effluent treatment plants particularly in grossly polluting industries (GPIs) and other red categories of water polluting industries. There are 14 GPIs operating in the catchment of river Dhela.

Major drains contributing sewage in the river Bhela:

There are six major drains namely – Laxmipur Minor Nala, Kailash Mandap wala Nala, Gabiya Nala, Ice Factory Nala, Beljudi Nala and Gularia Nala

which are carrying sewage / municipal drainage from Kashipur town, which finally merging into Dhela river.

Major drains contributing industrial effluent in the river Bhela:

There are four major drains which are contributing industrial wastewater into river Dhela. These are:

i. **Pachhana Nala:** This nala receives industrial wastewater from four pulp and paper industries and joins river Dhela at downstream of Kashipur.

ii. **Dandi Nala:** This nala is carrying industrial wastewater from six pulp and paper industries and joins river Dhela at downstream of Kashipur.

iii. **Lapakna Nala:** Lapakna nala receives industrial wastewater from one paper mill from Jaspur area.

iv. **Choti Dhela:** This drain is also contributing industrial wastewater into river Dhela from two pulp and paper mills and one plastic recycling unit.

Based on water quality data for the years 2016 and 2017, River Dhela from Kashipur to Gheruwala Thakurdwara (approximately 14 Km.) has been identified as polluted river stretch by the Central Pollution Control Board (CPCB) because of high concentration of BOD i.e. >30mg/L.

In pursuance to Hon'ble National Green Tribunal order dated 20.09.2018, 19.12.2018 and 08.04.2019, action plan has been prepared for restoration of polluted river stretch from Kashipur to Gheruwala Thakurdwara of River Dhela.

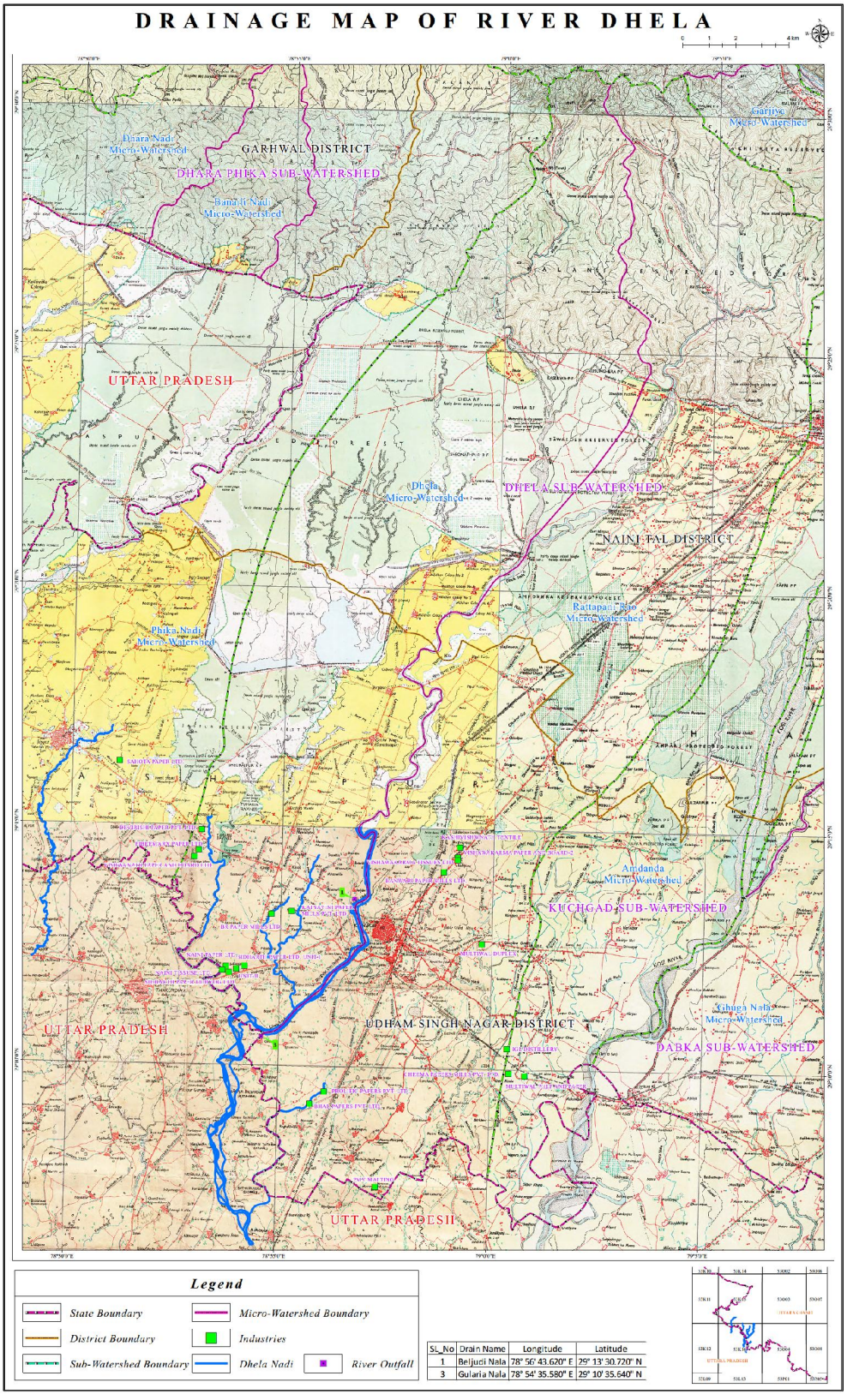

Figure: Drainage map of river Dhela, Kashipur, US Nagar.

Figure 2: Kashipur town, GPIs and the main drains contributing industrial wastewater in to river Dhela.

2. WATER QUALITY GOALS:

It is an important aspect for restoration of river Bhela in context of meeting water quality for designated uses. It is pertinent to mention that because of low natural flowing water during most of the time, even if the industries located in the catchment meet the prescribed discharge norms as stipulated under the Environment (Protection) Rules, 1986, it would not be possible to achieve river water quality of Class 'B'. Effort would be made to improve in river water quality Class by prevention and control measures. However, goals can be met for Class 'E' i.e., for irrigation, industrial cooling and controlled waste disposal.

3. WATER QUALITY CHARACTERISTICS OF RIVER DHELA AND DRAINS CARRYING INDUSTRIAL WASTEWATER:

River quality monitoring is being carried out the Uttarakhand Environment Protection and Pollution Control Board at upstream of Kashipur town at Manpur bridge and downstream at Bhojpur (Thakurdwara, Aliganj Road). Data collected in the year 2018 * 2019 (up to May, 2019) are as given blow:

A. Water quality characteristics of river Dhela at Upstream of Kashipur at Manpur bridge in the year 2018 and 2019 (Up to May, 2019).

Month	pH	BOD (mg/L)	COD (mg/L)	DO (mg/L)
Jan-18	7.2	12	38	5.2
Feb-18	7.4	4	18	6.4
Mar-18	7.3	8	26	5.4
Apr-18	River Dry			
May-18	River Dry			
Jun-18	River Dry			
Jul-18	River Dry			
Aug-18	7.4	8	24	6.2
Sep-18	7.1	7.2	20	6.2
Oct-18	7.2	8	30	5.6
Nov-18	7.3	8	18	4.6
Dec-18	7.4	4	10	6.4
Average	**7.28**	**7.4**	**23**	**5.75**
Min-Max	(7.1-7.4)	(4-12)	(10-38)	(4.6-6.4)

Month	pH	BOD (mg/L)	COD (mg/L)	DO (mg/L)
Jan-19	7.20	3.2	16	7.40
Feb-19	7.6	4.2	18	7.6
Mar-19	7.5	1.8	30	6.8
Apr-19	7.4	5.0	32	5.8
May-19	River Dry			

B. Water quality characteristics of river Dhela at downstream of Kashipur at Bhojpur (Thakurdwara, Aliganj Road) in the year 2018.

Month	pH	BOD (mg/L)	COD (mg/L)	DO (mg/L)
Jan-18	7.6	20	102	2.2
Feb-18	7.7	40	132	2.8
Mar-18	7.8	18	60	2.4
Apr-18	River Dry			
May-18	River Dry			
Jun-18	River Dry			
Jul-18	6.9	22	72	2.4
Aug-18	7.1	20	74	3.8
Sep-18	6.9	18	60	2.8
Oct-18	7.2	16	58	2.2
Nov-18	7.2	20	58	2.6
Dec-18	6.7	22	60	2.2
Average	**7.23**	**21.77**	**75.11**	**2.6**
Min-Max	(6.7-7.8)	(16-40)	(58-132)	(2.2-3.8)

Month	pH	BOD (mg/L)	COD (mg/L)	DO (mg/L)
Jan-18	7.90	12	38	2.4
Feb-18	7.4	10.6	34	2.2
Mar-18	7.9	12	49	1.8
Apr-18	7.5	12	42	2.6
May-18	River Dry			

C. Water quality of major drains contributing industrial wastewater to river Bhela.

Wastewater analysis of drains carrying industrial wastewater were carried out in the month of July, 2019. Wastewater characteristics of drains are as given below:

S.N.	Name of the Drain	Flow in KLD	Characteristics (Values are in mg/l except pH and Fecal Coliform)									
			pH	BOD mg/l	COD mg/l	Zn mg/l	Cr mg/l	Cd mg/l	Ni mg/l	Fe mg/l	As mg/l	FC (MPN/ 100 ml)
1.	Pachhana Nala	420.8	7.17	55	160	0.11	BDL	BDL	0.02	4.24	BDL	1720
2.	Dandi Nala	677.7	6.76	56	208	0.29	0.03	BDL	BDL	4.24	BDL	430
3.	Choti Dhela	325.39	7.10	45	176	0.21	BDL	BDL	0.04	1.71	BDL	220
4.	Lapakna Nala	1071.6	7.16	45	160	BDL	BDL	BDL	BDL	0.81	BDL	20

D. Ground water quality in the catchment of river Dhela:

So far contamination of groundwater is not reported in the area, however groundwater quality monitoring shall be carried out at least twice in the year (winter: December-January and summer: May-June) at strategic locations to ascertain quality of groundwater.

~~1.~~ IDENTIFICATION OF SOURCES OF POLLUTION:

Major sources of pollution in River Dhela are:

- **i.** Sewage / municipal drainage from the Kashipur town.
- **ii.** Industrial effluent from the industrial located nearby Kashipur Area.
- **iii.** Improper disposal of solid waste.
- **iv.** Agricultural runoff.

Following components have identified for preparation of action plan for rejuvenation of river in compliance to the Hon'ble NGT Orders as detailed below:

(a) Industrial Pollution control:

i. Identification of pollution potential industries.
ii. Sector specific categorization of industries.
iii. Assessment of Water consumption and wastewater discharge and gap in treatment of industrial effluent.
iv. Provision of wastewater treatment system.
v. Regulatory regime including "Charter for Prevention and Control of Pollution on Pulp and Paper Industries- 2015".

(b) Sewage Management:

i. Estimation of quantity of sewage generated and requirement of treatment capacity.
ii. Gap analysis in terms of sewage generation, existing installed treatment capacity and required treatment capacity.
iii. Identification of municipal drains & their discharge in the catchment of river Bhela.
iv. Interception and diversion of municipal drains to STP.
v. Treatment and disposal of septage and controlling open defecation.

(c) Solid Waste Management:

i. Implementation of Door-to-Door collection.
ii. Source segregation as biodegradable and non-biodegradable wastes.
iii. Identification of suitable site for setting up common waste processing and secure landfill facility.
iv. Transportation, disposal and treatment facilities of municipal solid wastes generated from town in accordance of provisions of the Solid Waste Management Rules, 2016.
v. Restriction illegal disposal of solid waste along the river bank and flood plain zones.
vi. Prohibition on burning of solid wastes.
vii. Implementation of Construction and Demolition Wastes Management Rules.

5. GAP ANALYSIS:

5.1 Sewage Management:

Kashipur is a major town located in catchment of River Dhela. Detail of sewage generation of Kashipur town is detailed below:-

1.	Major Town in the catchment area of River Bhela	Kashipur
2.	Population (as per census, 2011)	121623
3.	Expected Population (2031) (with2% floating population)	172580
4.	Water Consumption in litres per capita per day with 20 % margin for GW consumption i.e., 162 Lit/head /day	27958 KLD
5.	Total Sewage generation in KLD (in 2035)	22435 KLD
6.	Existing STP nos/Septic tanks	STPs: Nil
		Captive Septic Tanks : All houses
7.	Total sewage treatment capacity through STPs/Septic Tanks	STPs : Nil
		Captive Septic Tanks: 15740
8.	Gap in Sewage Treatment	100%
9.	Remarks: 18 MLD capacity STP is under construction, while 14 MLD STP proposal has been submitted to NMCG for financial assistance.	

Sewage generation of Kashipur town is about 28 MLD. Septic tanks have been made by individual households for disposal of sewage and supernatant is directly or indirectly disposed of in nearby drains which ultimately join six major drains, namely – Laxmipur Minor Nala, Kailash Mandap wala Nala, Gabiya Nala, Ice Factory Nala, Beljudi Nala and Gularia Nala and finally merging in to river Dhela. Details of drain are:

Existing	Drain	Discharge (MLD)	Proposed STPs	Remarks
Partial sewerage facility covering about 11% households.	Laxmipur Minor Nala	9.24	18 MLD (Under construction)	Sanctioned under AMRUT Programs.
	Kailash Mandap wala Nala	4.80		
	Gabiya Nala Ice Factory Nala	10.535 2.07	14 MLD	Proposal has been submitted to NMCG for financial assistance
	Beljudi Nala	0.250	--	--
	Gularia Nala	0.125	--	--

5.2 Industrial Effluent Management:

The UEPPCB is vigil on operation of effluent treatment plants particularly in grossly polluting industries (GPIs) and other red categories of water polluting industries. There are 14 GPIs operating in the catchment of river Dhela. Cumulative water consumption of these GPIs are 56514 KLD and discharging of about 29490 KLD wastewater directly or indirectly into river Dhela through drains. Detail of GPIs located in Dhela river catchment is given as below:

SN	Industry	Water Consumption (KLD)	Wastewater Generation (KLD)	Status of Treatment Plant	Capacity of ETP (KLD)	Gap (4)-(6)	Final mode of disposal of effluent
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Katyayini Paper Mills Pvt. Ltd. Near Sodhi Farm, vill. Kuddiyawala-Jaspur	2665	2250	Operative captive ETP	2250	nil	Pachhna Nala
2	Naini Papers Limited. Moradabad Road, Kashipur	5430	4920	Operative captive ETP	10000	nil	Dandi Nala
3	Naini Tissues Ltd., Moradabad Road, Kashipur	7675	5020	Operative captive ETP	10000	nil	Dandi Nala

4	Prolific Papers Pvt. Ltd.Vill. Girdhai, Kashipur	1858	1000	Operative captive ETP	1000	nil	Choti Dhela
5	Sidarth Papers Pvt. Ltd (Unit 2), Moradabad Road, Kashipur	5625	2200	Operative captive ETP	3165	nil	Dandi Nala
6	Siddheshwari Paper Udyog Pvt. Ltd., Moradabad Road, Kashipur	4660	2000	Operative captive ETP	2880	nil	Dandi Nala
7	Bahl Paper Mills Limited., Aliganj Road, Kashipur	5000	3450	Operative captive ETP	5000	nil	Choti Dhela
8	Sidharth Papers Pvt. Ltd., Moradabad Road, Kashipur	4680	2200	Operative captive ETP	2200	nil	Dandi Nala
9	Sahota Papers Limited., Narayanpur, Jaspur	5010	2250	Operative captive ETP	3300	nil	Lapakna Nala
10	Dev Rishi Papers Pvt. Ltd., Jagatpurpatti, Jaspur, Kashipur	2325	1650	Operative captive ETP	1650	nil	Dandi Nala
11	Fibremarx Papers Pvt Limited., Haldua Sahu, Shivrajpur, Kashipur	3500	2600	Operative captive ETP	3700	nil	Pachhna Nala
12	Vishwanath Paper & Boards Ltd, Haldua Sahu, Shivrajpur, Kashipur	1965	1750	Operative captive ETP	1750	Nil	Pachhna Nala
13	B.R. Papers Pvt. Ltd., Vill. Lalpur, Tehsil Jaspur, Kashipur	1296	270	Operative captive ETP	480	Nil	Pachna Nala
14	The Kisan Sahakari Chini Mill, Nadehi, US Nagar	4825	180	Operative captive ETP	3550	nil	Land discharge
	Total	56514	29490				

GPIs are being monitored in every quarter apart from other surprise inspection. Online effluent monitoring systems have also been provided at effluent outlet and real time data are being transmitted to Central Pollution Control Board and UEPPCB. Provisions of "Charter-2015" are being strictly being implemented in pulp and paper industries. Agro-based pulp and paper mills are allowed to operate only with Chemical Recovery Plant (CRP) with Zero Black Liquid Discharge. Environmental Surveillance Squad (ESS) also formed at head office level in order to make surprise inspection. Strengthening of ESS will be carried out for effective surveillance.

The UEPPCB is quite vigil on operation of GPIs. During the year 2018-19, no GPI was found non-complying.

5.3 Industrial hazardous waste management:

About 53.94 MTA hazardous waste is generated from the industries located in the catchment of river Dhela. Recyclable hazardous wastes, mainly used oil and contaminated barrels are being recycled through registered recyclers, while landfillable waste is being disposed thorough M/S Bharat Oil and Waste Management Pvt. Ltd. located at Lakhsar, Distt. Hardiwar with an installed capacity of 667 MT/month landfill and 1000 MT/month incineration capacity.

5.4 Solid Waste Management:

Kashipur is the only major towns in the catchment area of river Dhela. Nagar Nigam, Kashipur is statuary body for implementation of Solid Waste Management Rules, 2016. Nagar Nigam has identified site for solid waste processing and disposal facility. Partial door to door collection of waste is being done.

Nagar Nigam, Kashipur:	
Total Population	12162 (as per 2011 census)
No. of municipal wards	40
Total waste generation	36.48 MTPD
Door to Door collection	20 wards
Bye Laws for user charges	Approved and being implemented.
Realization of user charges	~ Rs. 1.25 Lakhs per month.
Identification of land for waste processing and disposal facility	Land identified for waste processing and disposal facility. DPR of **Rs. 32.31 Crore** has been prepared. Proposal has been submitted to Uttarakhand Urban Sector Development Agency (UUSDA) for approval and sanction.

In case of villages located in the Dhela river catchment, following activities are being carried out under Swach Bharat Mission- Rural:

Solid-Liquid Waste Management related works carrying out in Gram Panchayats under Swachh Bahrat Mission (Gramin):	
A. Liquid Waste Management	Construction of PVC/CC Drains & Individual / Community Soak pits.
B. Solid Waste Management	Establishment of Segregation Centre, individual dustbins, Community Garbage Pits, Individual Biogas plant and Vermi compost/NEDEP Compost Pit.
C. Social/ HRD activities	Swachhata Abhiyan, banned open Defecations, Plastic Banning Awareness, Personal/Domestic/environmental sanitation Awareness. Trainings for GP represented/ Swachhata Grahi, Rallies, awareness campaign etc.

Plastic Waste: Partial segregation of waste is being done in 20 wards only by Nagar Nigam, Kashipur.

A total of 30 plastic waste recycling units are registered with Uttarakhand Environment Protection and Pollution Control Board. Installed capacity of these plastic recycling units is 135259.44 MTA. As per annual return of 18 Recycling units, 99289.74 MTA plastic wastes have been recycled in the year 2018-19.

5.5 Bio-medical Waste:

About 95 Health Care Facilities (HCFs) are operating in Kashipur town. It is estimated that about 237.5 Kg/day biomedical waste is generated from these healthcare facilities. Common Bio-medical Waste Treatment Facility (CBMWTF) is located at Lambakheda, Gadarpur. Most of HCFs are contributing their waste to CBMWTF for treatment and disposal.

5.6 Groundwater Quality Monitoring:

Groundwater quality monitoring at two locations is being carried out at Bhela river catchment area on half yearly basis, for basic and core parameters.

Assessment of heavy metals and pesticides will be carried out along with basic and core parameters.

6. RIVER BHELA REJUVENATION PLAN:

Identified activities with time limits and budgetary requirements are given as below:

6.1 Proposed Interception and Diversion of municipal drains and construction of Sewage Treatment Plant:

Proposed Interception and Diversion of 2-drains and construction of 2-STPs.Sewage Treatment Plant under construction/proposal submitted for funding:

Existing	Proposed	No. of I&D activity	Cost (Rs. in Lakhs)
Interception and Diversion of drains:			618.48
Partial covering 11% house holds	Beljudi Nala	1 No.	
	Gularia Nala	2 No.	
Construction of STPs			
Nil	Beljudi Nala (250 KLD)	1 No.	
	Gularia Nala (125 KLD)	1 No.	
Operation and Maintenance of 2-STPs for 15 years.			506.93
For Beljudi Nala			
For Gularia Nala			
Land Acquisition for STPs			33.00
Project Preparation & Supervision @ 8% as per norms			47.30
		Total Cost	**1205.71**
		Say	**1206.00**

Total estimated cost of above proposed activities is: **Rs. 1205.71 Lakhs** say **Rs. 1206.00 Lakhs.**

Time line: Project Proposal has been submitted to NMCG by the State Government for allocation of funds. Proposed activities will be completed within two years from sanction and release of funds.

6.2 Establishment of Solid Waste Processing and Disposal Facility for Kashipur town:

Nagar Nigam, Kashipur is statuary body responsible for management of solid wastes as per provisions of Solid Waste Management Rules, 2016 as amended. The population of Kashipur town is 121623 as per census of 2011. Nagar Nigam is divided into 40 wards. Partial door to door collection is being undertaken, but because of lack of proper waste disposal site, mix / un-segregated wastes is being dumped at Kachnal Gazhi, Manpur Road. Nagar Nigam has approved Bye Laws for user charges and implemented. Land for waste processing and disposal facility has been identified and Detailed Project Report (DPR) is being prepared and it is estimated that about Rs. 32.31 Crore would be required for development of waste processing and disposal facility.

Detailed Project Report (DPR) is prepared and it is estimated that about Rs. 32.31Crore would be required for development of waste processing and disposal facility. Project Proposal has been submitted to Uttarakhand Urban Sector Development Agency for approval and sanction.

Total estimated cost for setting up solid waste processing and disposal facility is Approx. **Rs. 3231.00 Lakhs.**

Time Line: Proposal for solid waste processing and disposal facility have been submitted to the Uttarakhand Urban Sector Development Agency (UUSDA) for allocation of funds. Two year time would be required after sanction of project.

No case Construction and Demolition waste shall be disposed in river bed or road side. Necessary directions have already been issued to concerned local body for identification of site.

6.3 Flood Plan Zone (FPZ):

River Dhela is non-perennial water body and flash floods are occurring only during monsoon, therefore flood plain zoning is not required for river Bhela. All encroachments if any will be removed. Illegal dumping of waste etc. will be removed from flood plain areas.

6.4 Environmental Flow (E-Flow) and Groundwater recharge measures:

River Dhela carrying no natural water during non-monsoon months. Wastewater from industries increases the flow of river. Therefore, it would be difficult to maintain natural flow in the river.

However, provision for additional water storage in the form of artificial ponds and lakes wherever feasible will be taken care and same will be allowed to discharge in the Dhela with a spill way gate provision to maintain E-flows as far as possible in river Dhela. Also, artificial lakes and ponds also help in ground water recharge.

All the government offices will be directed to create a provision of roof top rain water harvesting provision in their buildings for ensuring ground water recharge in the catchment of river Dhela.

6.5 Greenery Development:

Adjacent to the banks of river Dhela, green coverage, wherever feasible will be developed with the help of forest department, Uttarakhand. Divisional Forest Officer, Tarai West Forest Division proposed following activities for river Dhela:

Activities	Estimated Cost
River training works to prevent soil erosion at River Dhela.	Rs. 1830500.00
Plantation works at the bank of river Dhela to prevent soil erosion.	Rs. 621700.00
Total	**Rs. 24,52,200.00**

Total estimated cost for above activities is Rs. 24,52,200.00 say **Rs. 24.52 Lakhs.**

6.6 Utilisation of treated sewage:

Treated sewage will be utilised for irrigation or agricultural or industrial cooling or construction activities purposes once the STPs become operational in the catchment of river Dhela Treated water channel may also linked with irrigation network in order to reduce ground water consumption for irrigation uses.

6.7 Monitoring of Action Plan:

The proposed Action Plans will be monitored by the River Rejuvenation Committee (RRC) constituted by Government of Uttarakhand vide Office order dated 05.12.2018, under the overall supervision and co-ordination of Principal Secretary, Forest & Environment, Govt. of Uttarakhand. CPCB experts also be invited for the RRC review meetings for taking feedback and suggestions.

5. ACTION PLAN:

Short Term and Long Term Action and the Identified Authorities for initiating actions and the time limits for ensuring compliance:

S. N.	Action plan for rejuvenation of river Bhela	Organisation/ Agency Responsible for Execution of the Action Plan	Time Target	Budgetary Requirement (Rs. In Lakhs)	Remarks
1. Industrial Effluent Management:					
a)	Routine /surprise inspection GPIs and Red category of industries for ensuring compliance of effluent discharge standards as prescribed under E (P) Rules, 1986, as amended.	Special Environmental Surveillance Task Force / UEPPCB	Continuous activities	Nil	Continuous activity.
b)	Strengthening of Environment Surveillance Squad (ESS) of UEPPCB	UEPPCB	Two months (By Sept., 2019)	Nil	Continuous activity.
c)	Monitoring of drains carrying industrial wastewater.	UEPPCB	Complied. (July, 2019 onwards)	Nil	Continuous activity.
2. Sewage Management:					
a)	Interception and diversion of 2- drains namely - Laxmipur Minor Nala and Kailash Mandal wala Nala and construction of 18-MLD capacity STP.	Uttarakhand Peyjal Jal Nigam	December, 2019	--	Executing under AMRUT program. STP is under construction
b)	Interception and diversion of 2- drains namely - Gabiya Nala and Ice Factory Nala and and construction of	Uttarakhand Peyjal Jal Nigam	Two years from sanction of funds.	**9779.00**	Proposal submitted to NMCG for funding.

	14-MLD capacity STP.				
c)	Interception and diversion of 2- drains namely - Beljudi Nala and Gularia Nala and construction of 2-STP (250 KLD and 500 KLD capacities) including O&M for 15 years.	Peyjal Jal Nigam / Nagar Nigam, Kashipur	Two years from sanction of funds.	**1206.00**	Proposed activities will be completed in two years from sanction and release of funds. Project proposal has been submitted to NMCG for funding.
d)	Monitoring of STPs outlet effluent quality w.r.t. STPs effluent discharge norms prescribed under E(P) Rules, 1986 as amended.	UEPPCB.	After commissioning of STP.	--	--
(e)	Utilization of treated sewage for horti-agri activities, construction activity, irrigation by irrigation drainage channel of treated sewage, industrial activity.	Peyjal Jal Nigam/ Irrigation Deptt.	One year	--	--
3. Solid Waste Management:					
a)	Door to door collection of solid waste in all 40 wards of town.	Nagar Nigam, Kashipur.	October, 2019	**3231.00**	DPR has been submitted to Uttarakhand Urban Sector Development Agency for sanction of project.
b)	Source segregation of wastes in all 40 wards of town.	Nagar Nigam, Kashipur.	April, 2020		
c)	Setting up solid waste processing facilities.	Nagar Nigam, Kashipur	Two years from sanction of		

			funds.		
4.Groundwater Quality					
a)	Groundwater quality monitoring at during summer (May-June) and winter (December-January).	UEPPCB	Continuous activity	-	Ground water monitoring will be done in Summer and winter month.
5. Flood Plain Zone:					
(a)	Prohibition on illegal disposal of waste and removal of encroachment from river banks.	District Administration/ Nagar Nigam, Kashipur	Continuous activity	-	Direction in this regard has already been issued by Urban Development Directorate. It will be monitored regularly.
6. Environmental Flow (E-Flow) and Groundwater recharge measures:					
(a)	Provisions of roof top rain water harvesting in Govt. building and construction of artificial lakes /ponds, wherever feasible.	District Administration/ Irrigation Deptt.	Continuous activity	-	Directions have already been issued by the Government.
7. Green Development:					
(a)	River Training works to prevent soil erosion and Plantation in catchment of river Dhela.	Tarai West Forest Division, Ramnagar	One year from sanction of project	**24.52**	-

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