उत्तर प्रदेश प्रदूषण नियंत्रण बोर्ड
UTTAR PRADESH POLLUTION CONTROL BOARD

संदर्भ संख्याः H68703/सी-7/अक-40/21 दिनॉकः 29.11.21

सेवा में,

श्री ए0के0 विद्यार्थी
एडिशनल डायरेक्टर –डीएच डब्लूक्यूएम–II
केन्द्रीय प्रदूषण नियंत्रण बोर्ड,
परिवेश भवन, पूर्वी अर्जुन नगर,
दिल्ली–110032।

विषयः–माननीय राष्ट्रीय हरित अधिकरण, नई दिल्ली में दायर ओ0ए0 सं0–324/2016 शैलेष सिंह बनाम स्टेट आफ यू0पी0 एण्ड अदर्स एवं ओ0ए0 सं0–361/2017 डा0 तन्जीम फातिमा बनाम मिनिस्ट्री आफ इन्वायरमेन्ट एण्ड फारेस्ट्स एण्ड क्लाइमेट चेन्ज एण्ड अदर्स में पारित आदेशों के कम में अनुपालन आख्या प्रेषित किये जाने के संबंध में।

महोदय,

कृपया उपरोक्त विषयक माननीय राष्ट्रीय हरित अधिकरण, नई दिल्ली में दायर ओ0ए0 सं0–324/2016 शैलेष सिंह बनाम स्टेट आफ यू0पी0 एण्ड अदर्स एवं ओ0ए0 सं0–361/2017 डा0 तन्जीम फातिमा बनाम मिनिस्ट्री आफ इन्वायरमेन्ट एण्ड फारेस्ट्स एण्ड क्लाइमेट चेन्ज एण्ड अदर्स में पारित आदेशों के कम में केन्द्रीय प्रदूषण नियंत्रण बोर्ड, नई दिल्ली के साथ आहूत बैठक दिनांक 09.11.2021 में लिये गये निर्णयों के कम में संयुक्त समिति द्वारा उद्योगों के किये गये निरीक्षण दिनांक 28–29.10.2020 में की गयी संस्तुतियों एवं माननीय ओवरसाइट कमेटी द्वारा की गयी संस्तुतियों के संबंध में अद्यतन अनुपालन आख्या पत्र के साथ संलग्न कर प्रेषित की जा रही है।

संलग्नकः–उपरोक्तानुसार।

भवदीय,

(अजय कुमार शर्मा)
सदस्य सचिव

प्रतिलिपिः–

1. माननीय ओवरसाइट कमेटी, एन0जी0टी0, लखनऊ, पर्यावरण निदेशालय, विनीतखण्ड–1, गोमतीनगर, लखनऊ।
2. सदस्य सचिव, केन्द्रीय प्रदूषण नियंत्रण बोर्ड, परिवेश भवन, पूर्वी अर्जुन नगर, दिल्ली–110032।

सदस्य सचिव

टी.सी 12 वीं, विभूति खण्ड,
गोमती नगर, लखनऊ–226010
दूरभाषः 0522– 2720831,2720828,2720691,2720681
2720681e-mail: info@uppcb.com
वेब साईटः: www.uppcb.com

TC. 12 v. Vibhuti Khand,
Gomti Nagar, Lucknow-226010
Phone: 0522- 2720831,2720828, 2720691,
Web Site: www.uppcb.com

क्षेत्रीय कार्यालय
उ0प्र0 प्रदूषण नियंत्रण बोर्ड
1-ए/आई.एन.एस.-1, आवास विकास कालोनी, बौद्ध विहार,
दिल्ली रोड, मुरादाबाद

पत्र संख्या ...170/एन-13/361/324/जनरल

दिनांक 25.11.2021

सेवा में,

मुख्य पर्यावरण अधिकारी, वृत्त-7,
उ0प्र0 प्रदूषण नियंत्रण बोर्ड,
लखनऊ।

विषय : Minutes of meeting held on 09.11.2021 to review action taken/compliance status of Hon'ble NGT order dt 18.03.2021 in O.A. No. 324/2016 in the matter of Shailesh Singh Vs State of UP & Ors. With O.A. No. 361/2017 in the matter of Dr. Tanzeen Fatima Vs Ministry of Environment and Forests & Climate Change & Ors.

महोदय,

उपरोक्त विषय के संबंध में डिवीजनल हेड (WQM-II), केन्द्रीय प्रदूषण नियंत्रण बोर्ड, नई दिल्ली द्वारा दिनांक 09.11.2021 को वीडियो कॉन्फ्रेन्सिंग के माध्यम से बैठक आयोजित की गयी, जिसका कार्यवृत्त उनके पत्र सं0 B-19123/WQM-II/Legal/NGT-13/CPCB/2020-21 दिनांक 23.11.2021 के माध्यम से इस कार्यालय में ई-मेल के माध्यम से प्राप्त हुआ है, का संदर्भ ग्रहण करने का कष्ट करें। मा0 एन0जी0टी0 के आदेशों के अनुपालन में पूर्व में ओवर साइट कमेटी एवं संयुक्त समिति द्वारा दिये गये निर्देशों के क्रम में सम्बन्धित उद्योगों की अद्यतन अनुपालन आख्या संलग्न कर अवलोकनार्थ एवं अग्रिम आवश्यक कार्यवाही हेतु प्रस्तुत है।

भवदीय

संलग्नक : यथोपरि।

(विकास मिश्र)
क्षेत्रीय अधिकारी

Regional Office
U.P. Pollution Control Board
Moradabad

Compliance Report of the industries in compliance of the order passed in O.A. No. 361/2017 Tanjeen Fatima Vs MoEF & CC and ors.

S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
1.	**Radico Khaitan Limited,** Bareilly Road, Rampur, Uttar Pradesh - 244901	1. The unit shall obtain NOCs from CGWA for withdrawal of groundwater at earliest for all the groundwater abstraction sources, as the CGWA NOCs have already been expired on 02.10.2018. 2. The Unit shall ensure storage of concentrated spent wash with total solids 30% in both the lagoons (at Hitachi and Ajeetpur site) for use in bio composting.	1. The unit has obtained approvals from UPGWD. Annexed as **Annexure 1.** 2. Complying. The samples of spent wash were collected from the lagoons at the time of inspection dated 10-11-2021.	1. At the time of inspection, the floating levelling system was not operational at Ajeetpur site. Although the concentrated spent wash was within the limit marked by UPPCB. 2. The total area of two bio-composting yards was 60 acres out of which 25 acres was covered and remaining 35 acres of area was uncovered or open. 49 The requirement of covered bio-compost area to operate at consented capacity of 200 KLPD is 24 acres.	1. During present inspection dated 10-11-2021 the floating levelling system was operational. 2. The required covered area to operate at consented capacity is in compliance of CPCB guidelines.

S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
			The solid concentration found more than 30%. Annexed as **Annexure 2.**	3. Water logging was observed near the lagoon at Hitachi site. Samples of the same were collected by Joint team.	3. During inspection dated 10-11-2021, the water logging was not found.
		3. The unit shall provide proper lined surface in bio compost yard at Hitachi site so that possibility of leaching shall be eliminated.	3. The Unit has constructed properly lined surface of compost yard, photograph annexed as **Annexure 3.**	4. At bio-compost yard of Ajeetpur site, it was observed that at leachate collection pit, transfer pump was not provided by the unit.	4. During inspection dated 10-11-2021, transfer pump was provided by the unit.
		4. The unit shall take measures to stop contamination of piezometer well at downstream of Hitachi site.	4. The surface all around the piezometer wells have been repaired by providing	5. COD was reported from the ground water is a point of concern and probable source of it should be identified.	5. As per the evaluation report on impacts of ground water vetted by IIT, Roorkee, it has been observed that the ground water is of excellent water quality, there is no sign of ground water pollution, no heavy metals or fecal coliforms are observed and the ground water can be used

S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
			PCC surface up to 1.0 m^2 in addition to the provision of lined surface. Apart from that the unit has replaced the pipes of piezometers with PVC, photograph annexed as **Annexure-4.**	6. Site: **i.** Hand-pump of Hitachi Bio-compost Yard: The concentration of Copper and Iron was found beyond the permissible limits. **ii.** Piezo-metric well u/s of Hitachi Yard: The concentration of COD, Iron, Manganese and lead was found beyond permissible limits. **iii.** Piezo-metric well d/s of Hitachi Yard: The concentration of COD, TDS, TS, Iron, Manganese, Lead and Colour was found beyond the permissible limits.	directly for drinking. i. Industry has replaced all the pipe lines of GI with HDPE pipe lines. 1. ii to v- The surface all around the piezometer wells have been repaired by providing PCC surface. Apart from that the unit has replaced the pipes of piezometers with PVC. As per the evaluation report on impacts of ground water vetted by IIT, Roorkee, it has been observed that the ground water is of excellent water quality,
		5. The unit shall carry out detail study to identify contamination source of Fe, Mn and Pb of piezometric wells, hand pumps and bore wells and carry out remedial measures.	5. The unit has carried out detailed study through PHDCCI. As per the report the probable reasons for the		

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S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
			contamination are leaching of the iron and galvanized pipes. Unit has replaced all the pipe lines of GI with HDPE pipe lines, study report annexed as **Annexure-5A.** The industry has submitted an appraisal report on Impacts of Ground Water Abstraction and Groundwater recharge on Ground Water	**iv.** Piezo-metric well u/s of Ajeetpur Yard: The concentration of COD, Iron and Manganese was found beyond the permissible limits. **v.** Piezo-metric well d/s of Ajeetpur Yard: The concentration of COD, Iron, Manganese and Lead was found beyond the permissible limits. **vi.** Groundwater from the borewell in unit premises: The concentration of Iron and Manganese was found beyond the permissible limits. As per the report the probable reasons for the contamination are	there is no sign of ground water pollution, no heavy metals or fecal coliforms are observed and the ground water can be used directly for drinking. vi. Industry has replaced all the pipe lines of GI with HDPE pipe lines.

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S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
			Scenerio vetted by Department of Civil Engineering, IIT, Roorkee which was prepared byMr. Upendra Srivastava, Accredited Ground Water Proffessional, Lucknow. **Report is annexed as Annexure -5B**	leaching of the iron and galvanised pipes which seems very superficial and a detailed study should be done in this regard. Presence of high concentration of pollutants in the groundwater samples calls for a detailed analysis of soil profile to check the level and source of contamination in the area. 7. The analysis of samples drawn from the STP indicates that the industrial waste is rich in Iron, Copper and Manganese. Thus a detailed study is recommended to check the probable relation if any exists between the industrial waste	

S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
				and groundwater contamination. The industry is directed to comply with the following recommendations of the joint inspection:	
				i. The unit shall obtain NOCs for the drawl of groundwater at earliest.	i. Industry has obtain NOC for the drawl of groundwater.
				ii. The unit shall ensure storage of concentrated spent wash with total solids 30% in both the lagoons at Hitachi and Ajeetpur site) for use in bio-composting.	ii. Complying.
				iii. The unit shall provide proper lined surface in bio compost yard at Hitachi site so that possibility of leaching	iii. The Unit has constructed properly lined surface of compost yard.

S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
				shall be eliminated. **iv.** The unit shall take measures to stop contamination of piezometer well at downstream of Hitachi site.	iv. The surface all around the piezometer wells has been repaired by providing PCC surface up to 1.0 m^2 in addition to the provision of lined surface. . Apart from that the unit has replaced the pipes of piezometers with PVC.
				v. The unit shall carry out detailed study to identify contamination source of Iron, Manganese and Lead of piezometric wells, hand pumps and bore wells and carry out remedial measures.	vi. Complying. The unit has carried out detailed study through PHDCCI. As per the report the probable reasons for the contamination are leaching of the iron and

S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
					galvanized pipes. Unit has replaced all the pipe lines of GI with HDPE pipe lines, study report.
2.	**M/s Damya (PJ) Foods, Pvt. Ltd.** Village-ChiknaShahbad Road, Rampur-244901 (UP)	1. Unit shall install flowmeters on the borewell in the industry premises and maintain logbook for each flowmeter and obtain CGWA NOC for ground water abstraction. 2. Unit shall install	1. The unit has installed flow meter on the bore well and maintaining the log book. The unit has applied the NOC before UPGWD and is under consideration, annexed as **Annexure-6.** 2. Complying.	A detailed groundwater study be done by SGWA as the case may be and any permission to abstract groundwater be incumbent on the result of the study. Unit be directed to minimise their water consumption based on water audit studies. Also they may be asked to explore the possibility of using treated water/ water harvesting /recycling techniques. Water tariffs for ground water as per rules/guidelines be communicated and charges levied immediately. Pending EC on the unit be realised by UPPCB immediately.	Concerned to SGWA. No EC is pending on the unit.

S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
		flowmeter and maintain record for treated effluent reused in horticulture.	Photograph annexed as **Annexure -7.**		
		3. Unit shall operate ETP properly to meet the discharge standard.	3. Complying. The sample was collected from the outlet of ETP at the time of inspection dated 10-11-2021. All the parameters of the effluent found within the prescribed standards. Analysis report of ETP annexed as **Annexure-8.**		
		4. Unit shall obtain adequacy report of ETP system from a reputed expert government institutes.	4. The industry has obtained adequacy report from the Department of Civil Engineering, Aligarh Muslim University,		

S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
			Aligarh, annexed as **Annexure-9.**		
3.	**M/s Usha Steel Process** D-22, 23 & 29 Ajeetpur Industrial Estate Ajeetpur, Rampur Uttar Pradesh	1. Unit shall install flowmeters on the borewell and other points of effluent generations, reuse and discharge in the industry premises with logbook for each flowmeter and obtain CGWA-NOC for ground water abstraction.	1. The unit has installed flow meter (photograph annexed as **Annexure-10**) on the bore well and maintaining the log book. The unit is lying in SSI and the daily consumption of water is less than 10 KLD, hence it is exmpeted for NOC of UPGWD. However the industry has applied for NOC before UPGWD and under process (application is annexed as	A detailed groundwater study be done by SGWA as the case may be and any permission to abstract groundwater be incumbent on the result of the study. Unit be directed to minimise their water consumption based on water audit studies. Also they may be asked to explore the possibility of using treated water/ water harvesting /recycling techniques. Water tariffs for ground water as per rules/guidelines be communicated and charges levied immediately. Pending EC on the unit be realised by UPPCB immediately.	Concerned to SGWA. No EC is pending on the unit.

S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
			Annexure-11).		
		2. Unit shall install flowmeter and maintain record for treated effluent reused in process and amount of water discharged.	2. Complying. Copy of log book is annexed as **Annexure-12.**		
		3. Unit shall obtain adequacy report of ETP system from a reputed expert government institutes.	3. The industry has obtained adequacy report from the Department of Civil Engineering, Aligarh Muslim University, Aligarh. annexed as **Annexure-13.**		
		4. Unit shall operate the ETP properly and ensure that treated effluent shall meet the discharge norms.	4. Complying. The sample was collected from the outlet of ETP at the time of inspection dated 10-11-2021. All the parameters of the		

S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
			effluent found within the prescribed standards, Analysis report is annexed as **Annexure-14.**		
4.	**M/s Swati Menthol & Allied Chemicals Ltd.** 4.5kms. Bareilly Road Rampur 244901 (U.P.)	1. The unit shall obtain NOC from CGWA for withdrawal of ground water. 2. The unit shall install flowmeter at outlet of ETP. 3. The unit shall carry out feasibility study to explore possibility of reuse of treated effluent from ETP within	1. The unit has obtained the NOC from UPGWD, annexed as **Annexure-15.** 2. Complying. Photograph is annexed as **Annexure-16.** 3. The unit is reusing the maximum treated effluent. The industry has	A detailed groundwater study be done by SGWA as the case may be and any permission to abstract groundwater be incumbent on the result of the study. Unit be directed to minimise their water consumption based on water audit studies. Also they may be asked to explore the possibility of using treated water/ water harvesting /recycling techniques. Water tariffs for ground water as per rules/guidelines be communicated and charges levied immediately. Pending EC on the unit be realised by UPPCB immediately.	Concerned to SGWA. No EC is pending on the unit.

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S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
		industrial premises.	obtained adequacy report from the Department of Civil Engineering, Aligarh Muslim University, Aligarh, annexed as **Annexure-17.**		
5.	**M/s Rana Sugars Ltd.** Khasra No.318-320, Manpur, Belwara, Distt-Moradabad, Uttar Pradesh-	1. The unit shall obtain NOC from CGWA for extraction of ground water. 2. The unit shall provide a separate area for storage of ETP sludge and shall maintain record of the	1. The unit has obtained the NOC from UPGWD, annexed as **Annexure-18.** 2. Complying.	A detailed groundwater study be done by SGWA as the case may be and any permission to abstract groundwater be incumbent on the result of the study. Unit be directed to minimise their water consumption based on water audit studies. Also they may be asked to explore the possibility of using treated water/ water harvesting /recycling techniques. Water tariffs for	Concerned to SGWA. No EC is pending on the unit.

S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
	244925	ETP sludge generation and disposal. 3. The unit shall maintain record for fly ash generation and its disposal. 4. The unit shall improve bio-mass concentration in the aeration tank of ETP. 5. The unit shall prepare ETP dosing chemicals solutions; using ETP treated effluent, to save fresh water.	3. Complying. 4. Complying. Analysis report is annexed as **Annexure-19.** 5. Complying.	ground water as per rules/guidelines be communicated and charges levied immediately. Pending EC on the unit be realised by UPPCB immediately.	
6.	**M/s Rana Sugars Ltd. (Distillery Unit)**	1. The unit shall obtain renewal of NOC from CGWA for extraction of ground water.	1. The unit has obtained the NOC from UPGWD, annexed as **Anx.-20.**		

S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
	Khasra No.318-320, Manpur, Belwara, Distt-Moradabad, Uttar Pradesh-244925	2. The unit shall maintain records of Boiler ash and its disposal / utilization. 3. The unit shall install 2 nos piezo-wells near bio-compost yards; as per requirement of SOP for distilleries using molasses.	2. Complying. 3. Complying.		

River quality monitoring report:

The latest water quality of rivers are attached **as Annexure-21**.

Compliance status of the units :

All the units are complying with the directions given by joint committee and the oversight committee in the above matter.

GROUND WATER DEPARTMENT

(Namami Gange & Rural Water Supply Department)
Ministry of Jal Shakti
Government of Uttar Pradesh

Form 8 (E)

[See rules 15(2)]

(RENEWAL OF AUTHORIZATION/ NO-OBJECTION CERTIFICATE FOR SINKING OF NEW WELL FOR INDUSTRIAL/ COMMERCIAL/ INFRASTRUCTURAL OR BULK USER OF GROUND WATER)

VALID UP TO :

Registration No.: 202108000274

Name of the Owner	KRISHAN PAL SINGH		
Address of the Applicant	Radico Khaitan Limited, Brailley Road, Panwaria, Rampur, U.P.-244901	**Application Form Serial No.**	RMPR0821RIN0038
Date of Submission	09/08/2021	**Specimen Signature**	
Company Name	RADICO KHAITAN LIMITED GRAIN AND MALT SPIRIT PLANT	**Company Address**	Bareilly Road, Rampur, U.P. - 244901

Location Particulars

District	Rampur	**Block**	CHAMRAUAA (URBAN)
Plot No./Khasra No.	PLOT NO A 1 INDUSTRIAL AREA RAMPUR	**Municipality/Corporation**	Yes
Ward No./Holding No.			N/A

Particular of the Existing Well and Pumping Device

Date of Construction/Sinking of the Well	01/01/1995		
Type of Well	Tube Well/Boring	**Depth of the Well (In meter)**	110.00
Purpose of well	Industrial	**Assembly Size(For Tube Well)**	
Strainer Position (For Tube Well)			
Type of Pump Used	Submersible	**H.P. of the Pump**	41.00
Operational Device	Electric Motor	**Rate of Withdrawal (m3/hr.)**	100.00
Date of Energization (In Case of Electric Pump)		01/01/1995	
Maximum Allowable Rate of Withdrawal (m3/hr.):	100.00	**Maximum Allowable Running Hours Per Day:**	12.00
Maximum Allowable Annual Extraction of Ground Water:			438000
Reason for renewal of N.O.C. एन.ओ.सी. के नवीनीकरण का कारण	AS PER GOVERNMENT RULES		
Against Case			

This No-Objection certificate authorizes the owner applicant (user) to sink a well in the location specified at SI. (3) for extraction of ground water at a rate not exceeding that as shown at SI. (3j), for running hours I day as shown at SI. (3k), and for maximum allowable annual extraction of ground water as shown at SI. (3k) and is valid subject to the observance of the conditions stated overleaf.

Conditions

- (1) In case of any change of ownership of the proposed well, fresh authorization has to be obtained.
- (2) No change of location, design, rate of withdrawal and pumping device in respect of the proposed well as indicated at SL (2) and (3) of this certificate shall be made without prior permission of the Competent Authority. Any deviation in this regard shall lead to cancellation of this authorization.
- (3) For the purpose of measuring and recording the quantity of ground water extracted, every said user shall affix digital water flow meters(conforming to BIS/ IS standards) having telemetry system in the abstraction structure, which record rate and quantum of extraction, at

outlet of pumping devices and it shall be presumed that the quantity recorded by the meter has been extracted by the said user, until the contrary is proved. The rate of extraction of ground water from the well as shown in item 3(k) shall not exceed to the recorded rate from water meters

- (4) The concerned Authority reserves the right to stop extraction of ground water from the well due to quality hazards or any other reasons, if the situation so demands.
- (5) In case of any change of ownership of the existing well, fresh registration has to be obtained.
- (6) No change of location, design, rate of withdrawal and pumping device in respect of the existing well as indicated at SI. (2) and (3) of this certificate shall be made without prior permission of the Competent Authority. Any deviation in this regard shall lead to cancellation of this registration.
- (7) n case, any of the particulars I information furnished by the applicant in his application for issuance of this registration is found to be incorrect during verification at any subsequent stage, this registration is liable for cancellation.
- (8) The Certificate of Authorization/ NOC shall be valid for a period of three years from the date of issue. The applicant shall have to apply for renewal through a fresh application, at least ninety days prior to expiry of its validity.
- (9) Construction of piezometers and installation of digital water level recorders with telemetry shall be mandatory for user. Depth and zone tapped of piezometer should be commensurate with that of the pumping well. The data, obtained from digital water level recorders shall be made available to this office on monthly basis.
- (10) Guidelines for Installation of Piezometers and their Monitoring
- Piezometer is a borewell /tube well used only for measuring the water level by lowering the tape/ sounder or automatic water level measuring equipment. It is also used to take water sample for water quality testing whenever needed. General guidelines for installation of piezometers are as follows for compliance of NOC:
- • The piezometer is to be installed/constructed at the minimum of 50 m distance from the pumping well through which ground water is being withdrawn. The diameter of the piezometer should be about 4" to 6".
- • The depth of the piezometer should be same as is case of the pumping well from which ground water is being abstracted. If, more than one piezometer are installed the second piezometer should monitor the shallow ground water regime. It will facilitate shallow as well as deeper ground water aquifer monitoring.
- • No. of piezometers to be constructed & Type of water level monitoring mechanism shall be as per below table:

S.No	Quantum of Ground water withdrawal (cum/day)	No.of piezometers required	Monitiring Mechanism	
			Manual	DWLR with Telemetry
1	< 10	0	0	0
2	11 - 50	1	1	0
3	50- 500	1	0	1
4	> 500	2	0	2

- • The measuring frequency should be monthly and accuracy of measurement should be up to cm. the reported measurement should be given in meter up to two decimals.
- • For measurement of water level sounder or automatic water level recorder (AWLR)/ Digital Automatic water level recorder (DWLR) with telemetry system should be used for accuracy.
- • The measurement of water level in piezometer should be taken, only after the pumping from the surrounding tube wells has been stopped for about four to six hours.
- • All the details regarding coordinates, reduced level (with respect to mean level), depth, zone taped and assembly lowered should be provided for bringing the piezometer into the Hydrograph Monitoring System for Ground Water Department, Uttar Pradesh, and for its validation.
- • The ground water quality has to be monitored twice in a year during pre-monsoon (May/June) and post-monsoon (October/November) periods. Quality may be got analyzed from NABL approved lab. Besides, one sample (1 lt. capacity bottle) to the concerned Director, Ground Water Department, Uttar Pradesh, for chemical analysis.
- • A Permanent display board should be installed at piezometer/Tube wells site for providing the location, piezometer/ tube well number, depth and zone tapped of piezometer/tube well for standard referencing and identification.
- • Any other site-specific requirement regarding safety and access for measurement may be taken care off.
- (11) Any other condition(s) that may be imposed by the concerned Authority.
- (12) In case, any of the particulars I information furnished by the applicant in his application for issuance of this permit is found to be incorrect during verification at any subsequent stage, this permit is liable for cancellation.
- **SPECIFIC CONDITIONS:**
- (A) **For Industrial User:** No Objection Certificate for ground water extraction by industries shall be granted subject to the following specific conditions:
- i) No Objection Certificate shall be granted only in such cases where local government water supply agencies are not able to supply the desired quantity of water.
- ii) All industries shall be required to adopt latest water efficient technologies so as to reduce dependence on ground water resources.
- iii) All industries abstracting ground water in excess of 100 m3/d shall be required to undertake annual water audit through Confederation of Indian Industries (CII)/ Federation Indian Chamber of Commerce and Industry (FICCI)/ National Productivity Council (NPC) certified auditors and submit audit reports within three months of completion of the same to CGWA. All such industries shall be required to reduce their ground water use by at least 20% over the next three years through appropriate means.
- iv) Construction of observation well(s) (piezometer)(s) within the premises and installation of appropriate water level monitoring mechanism as mentioned in General Condition no.10 shall be mandatory for industries drawing/ proposing to draw more than 10 m3/day of ground water and. Monitoring of water level shall be done by the project proponent. The piezometer (observation well) shall be constructed at a minimum distance of 15 m from the bore well/production well. Depth and aquifer zone tapped in the piezometer shall be the same as that of the pumping well/ wells. Monthly water level data shall be submitted online to the Ground Water Department, UP.
- v) The proponent shall be required to adopt roof top rain water harvesting/ recharge in the project premises. Industries which are likely to pollute ground water (chemical, pharmaceutical, dyes, pigments, paints, textiles, tannery, pesticides/ insecticides, fertilizers, slaughter house, explosives etc.) shall store the harvested rain water in surface storage tanks for use in the industry.
- vi) Injection of treated/ untreated waste water into aquifer system is strictly prohibited.
- vii) Industries which are likely to cause ground water pollution e.g. Tanning, Slaughter Houses, Dye, Chemical/ Petrochemical, Coal washeries, other hazardous units etc. (as per CPCB list) need to undertake necessary well head protection measures to ensure prevention of ground water pollution.
- (B) **Infrastructural User:** The No Objection Certificate for ground water abstraction will be granted subject to the following specific conditions:
- i) In case of infrastructure projects that require dewatering, proponent shall be required to carry out regular monitoring of dewatering discharge rate (using a digital water flow meter) and submit the data online to Ground Water Department, UP as applicable. Monitoring records and results should be retained by the proponent for two years, for inspection or reporting as required by District Ground Water Management Council.
- ii) Installation of Sewage Treatment Plants (STP) shall be mandatory for new projects, where ground water requirement is more than 20 m3 /day. The water from STP shall be utilized for toilet flushing, car washing, gardening etc.

This certificate is electronically generated and does not require digital signature

GROUND WATER DEPARTMENT

(Namami Gange & Rural Water Supply Department)
Ministry of Jal Shakti
Government of Uttar Pradesh

Form 8 (E)

[See rules 15(2)]

(RENEWAL OF AUTHORIZATION/ NO-OBJECTION CERTIFICATE FOR SINKING OF NEW WELL FOR INDUSTRIAL/ COMMERCIAL/ INFRASTRUCTURAL OR BULK USER OF GROUND WATER)

VALID UP TO :

Registration No.: 202108000304

Name of the Owner	KRISHAN PAL SINGH		
Address of the Applicant	Radico Khaitan Limited, Brailley Road, Panwaria, Rampur, U.P.-244901	**Application Form Serial No.**	RMPR0821RIN0037
Date of Submission	10/08/2021	**Specimen Signature**	
Company Name	RADICO KHAITAN LIMITED MOLASSES SPIRIT PLANT	**Company Address**	Bareilly Road, Rampur, U.P. - 244901

Location Particulars

District	Rampur	**Block**	CHAMRAUAA (URBAN)
Plot No./Khasra No.	PLOT NO A 1 INDUSTRIAL AREA RAMPUR	**Municipality/Corporation**	Yes
Ward No./Holding No.			3

Particular of the Existing Well and Pumping Device

Date of Construction/Sinking of the Well	01/01/1994		
Type of Well	Tube Well/Boring	**Depth of the Well (In meter)**	110.00
Purpose of well	Industrial	**Assembly Size(For Tube Well)**	
Strainer Position (For Tube Well)			
Type of Pump Used	Submersible	**H.P. of the Pump**	41.00
Operational Device	Electric Motor	**Rate of Withdrawal (m3/hr.)**	100.00
Date of Energization (In Case of Electric Pump)		01/01/1994	
Maximum Allowable Rate of Withdrawal (m3/hr.):	100.00	**Maximum Allowable Running Hours Per Day:**	12.00
Maximum Allowable Annual Extraction of Ground Water:			438000
Reason for renewal of N.O.C. एन.ओ.सी. के नवीनीकरण का कारण	as per Government agency rules		
Against Case			

This No-Objection certificate authorizes the owner applicant (user) to sink a well in the location specified at SI. (3) for extraction of ground water at a rate not exceeding that as shown at SI. (3j), for running hours I day as shown at SI. (3k), and for maximum allowable annual extraction of ground water as shown at SI. (3k) and is valid subject to the observance of the conditions stated overleaf.

Conditions

- (1) In case of any change of ownership of the proposed well, fresh authorization has to be obtained.
- (2) No change of location, design, rate of withdrawal and pumping device in respect of the proposed well as indicated at SL (2) and (3) of this certificate shall be made without prior permission of the Competent Authority. Any deviation in this regard shall lead to cancellation of this authorization.
- (3) For the purpose of measuring and recording the quantity of ground water extracted, every said user shall affix digital water flow meters(conforming to BIS/ IS standards) having telemetry system in the abstraction structure, which record rate and quantum of extraction, at outlet of pumping devices and it shall be presumed that the quantity recorded by the meter has been extracted by the said user, until the contrary is proved. The rate of extraction of ground water from the well as shown in item 3(k) shall not exceed to the recorded rate from water meters

- (4) The concerned Authority reserves the right to stop extraction of ground water from the well due to quality hazards or any other reasons, if the situation so demands.
- (5) In case of any change of ownership of the existing well, fresh registration has to be obtained.
- (6) No change of location, design, rate of withdrawal and pumping device in respect of the existing well as indicated at Sl. (2) and (3) of this certificate shall be made without prior permission of the Competent Authority. Any deviation in this regard shall lead to cancellation of this registration
- (7) n case, any of the particulars I information furnished by the applicant in his application for issuance of this registration is found to be incorrect during verification at any subsequent stage, this registration is liable for cancellation.
- (8) The Certificate of Authorization/ NOC shall be valid for a period of three years from the date of issue. The applicant shall have to apply for renewal through a fresh application, at least ninety days prior to expiry of its validity.
- (9) Construction of piezometers and installation of digital water level recorders with telemetry shall be mandatory for user. Depth and zone tapped of piezometer should be commensurate with that of the pumping well. The data, obtained from digital water level recorders shall be made available to this office on monthly basis.
- (10) Guidelines for Installation of Piezometers and their Monitoring
- Piezometer is a borewell /tube well used only for measuring the water level by lowering the tape/ sounder or automatic water level measuring equipment. It is also used to take water sample for water quality testing whenever needed. General guidelines for installation of piezometers are as follows for compliance of NOC:
- • The piezometer is to be installed/constructed at the minimum of 50 m distance from the pumping well through which ground water is being withdrawn. The diameter of the piezometer should be about 4" to 6".
- • The depth of the piezometer should be same as is case of the pumping well from which ground water is being abstracted. If, more than one piezometer are installed the second piezometer should monitor the shallow ground water regime. It will facilitate shallow as well as deeper ground water aquifer monitoring.
- • No. of piezometers to be constructed & Type of water level monitoring mechanism shall be as per below table:

S.No	Quantum of Ground water withdrawal (cum/day)	No.of piezometers required	Monitiring Mechanism	
			Manual	DWLR with Telemetry
1	< 10	0	0	0
2	11 - 50	1	1	0
3	50- 500	1	0	1
4	> 500	2	0	2

- • The measuring frequency should be monthly and accuracy of measurement should be up to cm. the reported measurement should be given in meter up to two decimals.
- • For measurement of water level sounder or automatic water level recorder (AWLR)/ Digital Automatic water level recorder (DWLR) with telemetry system should be used for accuracy.
- • The measurement of water level in piezometer should be taken, only after the pumping from the surrounding tube wells has been stopped for about four to six hours.
- • All the details regarding coordinates, reduced level (with respect to mean level), depth, zone taped and assembly lowered should be provided for bringing the piezometer into the Hydrograph Monitoring System for Ground Water Department, Uttar Pradesh, and for its validation.
- • The ground water quality has to be monitored twice in a year during pre-monsoon (May/June) and post-monsoon (October/November) periods. Quality may be got analyzed from NABL approved lab. Besides, one sample (1 lt. capacity bottle) to the concerned Director, Ground Water Department, Uttar Pradesh, for chemical analysis.
- • A Permanent display board should be installed at piezometer/Tube wells site for providing the location, piezometer/ tube well number, depth and zone tapped of piezometer/tube well for standard referencing and identification.
- • Any other site-specific requirement regarding safety and access for measurement may be taken care off.
- (11) Any other condition(s) that may be imposed by the concerned Authority.
- (12) In case, any of the particulars I information furnished by the applicant in his application for issuance of this permit is found to be incorrect during verification at any subsequent stage, this permit is liable for cancellation.
- **SPECIFIC CONDITIONS:**
- (A) **For Industrial User:** No Objection Certificate for ground water extraction by industries shall be granted subject to the following specific conditions:
- i) No Objection Certificate shall be granted only in such cases where local government water supply agencies are not able to supply the desired quantity of water.
- ii) All industries shall be required to adopt latest water efficient technologies so as to reduce dependence on ground water resources.
- iii) All industries abstracting ground water in excess of 100 m3/d shall be required to undertake annual water audit through Confederation of Indian Industries (CII)/ Federation Indian Chamber of Commerce and Industry (FICCI)/ National Productivity Council (NPC) certified auditors and submit audit reports within three months of completion of the same to CGWA. All such industries shall be required to reduce their ground water use by at least 20% over the next three years through appropriate means.
- iv) Construction of observation well(s) (piezometer)(s) within the premises and installation of appropriate water level monitoring mechanism as mentioned in General Condition no.10 shall be mandatory for industries drawing/ proposing to draw more than 10 m3/day of ground water and. Monitoring of water level shall be done by the project proponent. The piezometer (observation well) shall be constructed at a minimum distance of 15 m from the bore well/production well. Depth and aquifer zone tapped in the piezometer shall be the same as that of the pumping well/ wells. Monthly water level data shall be submitted online to the Ground Water Department, UP.
- v) The proponent shall be required to adopt roof top rain water harvesting/ recharge in the project premises. Industries which are likely to pollute ground water (chemical, pharmaceutical, dyes, pigments, paints, textiles, tannery, pesticides/ insecticides, fertilizers, slaughter house, explosives etc.) shall store the harvested rain water in surface storage tanks for use in the industry.
- vi) Injection of treated/ untreated waste water into aquifer system is strictly prohibited.
- vii) Industries which are likely to cause ground water pollution e.g. Tanning, Slaughter Houses, Dye, Chemical/ Petrochemical, Coal washeries, other hazardous units etc. (as per CPCB list) need to undertake necessary well head protection measures to ensure prevention of ground water pollution.
- (B) **Infrastructural User:** The No Objection Certificate for ground water abstraction will be granted subject to the following specific conditions:
- i) In case of infrastructure projects that require dewatering, proponent shall be required to carry out regular monitoring of dewatering discharge rate (using a digital water flow meter) and submit the data online to Ground Water Department, UP as applicable. Monitoring records and results should be retained by the proponent for two years, for inspection or reporting as required by District Ground Water Management Council.
- ii) Installation of Sewage Treatment Plants (STP) shall be mandatory for new projects, where ground water requirement is more than 20 m3 /day. The water from STP shall be utilized for toilet flushing, car washing, gardening etc.

GROUND WATER DEPARTMENT

(Namami Gange & Rural Water Supply Department)
Ministry of Jal Shakti
Government of Uttar Pradesh

Form 8 (E)

[See rules 15(2)]

(RENEWAL OF AUTHORIZATION/ NO-OBJECTION CERTIFICATE FOR SINKING OF NEW WELL FOR INDUSTRIAL/ COMMERCIAL/ INFRASTRUCTURAL OR BULK USER OF GROUND WATER)

VALID UP TO :

Registration No.: 202108000378

Name of the Owner	KRISHAN PAL SINGH		
Address of the Applicant	Radico Khaitan Limited, Brailley Road, Panwaria, Rampur, U.P.-244901	**Application Form Serial No.**	RMPR0821RIN0039
Date of Submission	12/08/2021	**Specimen Signature**	
Company Name	RADICO KHAITAN LIMITED BOTTLING PLANT	**Company Address**	Bareilly Road, Rampur, U.P. - 244901

Location Particulars

District	Rampur	**Block**	CHAMRAUAA (URBAN)
Plot No./Khasra No.	PLOT NO A 1 INDUSTRIAL AREA RAMPUR	**Municipality/Corporation**	Yes
Ward No./Holding No.			3

Particular of the Existing Well and Pumping Device

Date of Construction/Sinking of the Well	01/01/2005		
Type of Well	Tube Well/Boring	**Depth of the Well (In meter)**	90.00
Purpose of well	Industrial	**Assembly Size(For Tube Well)**	
Strainer Position (For Tube Well)			
Type of Pump Used	Submersible	**H.P. of the Pump**	41.00
Operational Device	Electric Motor	**Rate of Withdrawal (m3/hr.)**	100.00
Date of Energization (In Case of Electric Pump)		01/01/2005	
Maximum Allowable Rate of Withdrawal (m3/hr.):	100.00	**Maximum Allowable Running Hours Per Day:**	12.00
Maximum Allowable Annual Extraction of Ground Water:			438000
Reason for renewal of N.O.C. एन.ओ.सी. के नवीनीकरण का कारण	AS PER GOVERNMENT AGENCY RULES		
Against Case			

This No-Objection certificate authorizes the owner applicant (user) to sink a well in the location specified at SI. (3) for extraction of ground water at a rate not exceeding that as shown at SI. (3j), for running hours I day as shown at SI. (3k), and for maximum allowable annual extraction of ground water as shown at SI. (3k) and is valid subject to the observance of the conditions stated overleaf.

Conditions

- (1) In case of any change of ownership of the proposed well, fresh authorization has to be obtained.
- (2) No change of location, design, rate of withdrawal and pumping device in respect of the proposed well as indicated at SL (2) and (3) of this certificate shall be made without prior permission of the Competent Authority. Any deviation in this regard shall lead to cancellation of this authorization.
- (3) For the purpose of measuring and recording the quantity of ground water extracted, every said user shall affix digital water flow meters(conforming to BIS/ IS standards) having telemetry system in the abstraction structure, which record rate and quantum of extraction, at outlet of pumping devices and it shall be presumed that the quantity recorded by the meter has been extracted by the said user, until the contrary is proved. The rate of extraction of ground water from the well as shown in item 3(k) shall not exceed to the recorded rate from water meters

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- v) The proponent shall be required to adopt roof top rain water harvesting/ recharge in the project premises. Industries which are likely to pollute ground water (chemical, pharmaceutical, dyes, pigments, paints, textiles, tannery, pesticides/ insecticides, fertilizers, slaughter house, explosives etc.) shall store the harvested rain water in surface storage tanks for use in the industry.
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This certificate is electronically generated and does not require digital signature

Annexure-2

REGIONAL LABORATORY OFFICE MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD

1-A/I.N.S.-1, Avas Vikas Colony, Buddha Vihar, Delhi Road,Moradabad

TEST REPORT: WASTE WATER LABORATORY

Ref No: 14027545/Moradabad/2021 **Date:22/11/2021**

1- **Name of Industry:** RADICO KHAITAN LIMITED

2- **Address of Industry:** Radico Khaitan Limited, Bareilly Road, Rampur, U.P.,RAMPUR,244901

3- **District:** Rampur

4- **Description about sampling point:** Lagoon Yard Hitachi

5- **Type of Sample (Grab/Composite/Integrated):** Grab

6- **Sample Collected By:** Vinod Kumar AEE & Jitendra Nath Tiwari JE

7- **Colour and Odour:** Blackish Sweetness

8- **Quantity and Packing:** 2 liter (PLASTIC JERICAN)

9- **Date of Sample Collection:** 10/11/2021

10- **Analyis Indented by:** RO Moradabad

11- **Date of sample receipt in Lab:** 11/11/2021

Parameter/Method Name	Unit	Results	Standard	Detection Range
Total Solids , 2540 B Total Solids dried at 103-105 0C	mg/l	32.50%		10- 50000 mg/l

Reference- (1)General Standards for discharge of envieronment Pollutants are as pert-A Effluent(Schedule-VI).The eniveronment (Protection) Rules,1986 source: www.cpcb.nic.in/GeneralStandards.pdf. Besides these standards,refer EPA standards for specific purpose

Remark: *NA*

Analysed by

[Alok Sharma (JRF)]

Authorized by

ANIL KUMAR VISHWAKARMA Digitally signed by ANIL KUMAR VISHWAKARMA Date: 2021.11.22 13:36:41 +05'30'

Anil Vishwkarma SA

VIKAS MISHRA Digitally signed by VIKAS MISHRA Date: 2021.11.23 10:59:57 +05'30'

Regional Officer

Note: 1 The results in the Test Report relate only to the items tested: 2. The report shall not be reproduced-except in full, without the written permission of laboratory. 3. The test report pertains to the sample as received in Lab.

REGIONAL LABORATORY OFFICE MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD

1-A/I.N.S.-1, Avas Vikas Colony, Buddha Vihar, Delhi Road,Moradabad

TEST REPORT: WASTE WATER LABORATORY

Ref No: 14027569/Moradabad/2021 **Date:22/11/2021**

1- Name of Industry: RADICO KHAITAN LIMITED

2- Address of Industry: Radico Khaitan Limited, Bareilly Road, Rampur, U.P.,RAMPUR,244901

3- District: Rampur

4- Description about sampling point: Lagoon Yard Ajeetpur

5- Type of Sample (Grab/Composite/Integrated): Grab

6- Sample Collected By: Vinod Kumar AEE & Jitendra Nath Tiwari JE

7- Colour and Odour: Blackish Sweetness

8- Quantity and Packing: 2 liter (PLASTIC JERICAN)

9- Date of Sample Collection: 10/11/2021

10- Analyis Indented by: RO Moradabad

11- Date of sample receipt in Lab: 11/11/2021

Parameter/Method Name	Unit	Results	Standard	Detection Range
Total Solids , 2540 B Total Solids dried at 103-105 0C	mg/l	32.13%		10- 50000 mg/l

Reference- (1)General Standards for discharge of envieronment Pollutants are as pert-A Effluent(Schedule-VI).The eniveronment (Protection) Rules,1986 source: www.cpcb.nic.in/GeneralStandards.pdf. Besides these standards,refer EPA standards for specific purpose

Remark: *NA*

Analysed by

[Alok Sharma (JRF)]

Authorized by

ANIL KUMAR VISHWAKARMA Digitally signed by ANIL KUMAR VISHWAKARMA Date: 2021.11.22 13:35:47 +05'30'

Anil Vishwkarma SA

VIKAS MISHRA Digitally signed by VIKAS MISHRA Date: 2021.11.23 11:00:22 +05'30'

Regional Officer

Note: 1 The results in the Test Report relate only to the items tested: 2. The report shall not be reproduced-except in full, without the written permission of laboratory. 3. The test report pertains to the sample as received in Lab.

WATER AUDIT REPORT

AS PER THE GUIDELINES OF CGWA

MINISTRY OF JAL SHAKTI

AT
M/S RAMPUR DISTILLERY
(A UNIT OF RADICO KHAITAN LIMITED)
BAREILLY ROAD, RAMPUR, DISTT MORADABAD UTTAR PRADESH 244901

BY

PHD Chamber of Commerce and Industry
PHD House, 4/2 Siri Institutional Area
August Kranti Marg, New Delhi-110016
Email: piyush@phdcci.in
Website: www.phdcci.in

March 2021

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ACKNOWLEDGMENT

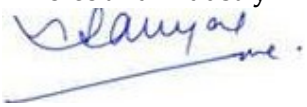
PHDCCI places on record its sincere thanks to the Management of Radico Khaitan Ltd, Rampur for entrusting the task of conducting Water Audit assignment at, Rampur Plant in line with CGWA Notification dated 24/09/2020.

We are grateful to Mr. K. P. Singh – Director Operations, for giving us the valuable opportunity to conduct water audit in Radico Khaitan Ltd. We also extend our sincere thanks to Mr. Devendra Singh – Sr. V. P. (Process), Mr. Vikas Saxena- Sr. G. M. (Instrumentation), Mr. G. B. Singh-Sr. G.M.(Bottling), Mr. Satish Tomar-D.G.M.(Process), Mr. Amrit Raj Tomar-Sr. Manager (Environment), Mr. Neeraj Dhama-Sr. Manager (Process) for their continuous support and guidance during the execution of the assignment.

PHDCCI Audit Team is indebted to the EHS department team of Radico Khaitan Ltd, Rampur for showing keen interest in the water audit and the wholehearted support and cooperation during the conduct of the field study, without which the study would not have steered to its successful completion.

It is well worthy to mention that the efforts being taken, and the enthusiasm shown by all the personnel towards water and energy conservation are really admirable.

PHD Chamber of Commerce and Industry



Mr. Saurabh Sanyal

Secretary General, PHDCCI

CERTIFICATE

We certify the following

- The report is based on the data collected at site during Audit and information provided by Radico Khaitan Ltd, Rampur.
- The data collection has been carried out diligently and truthfully.
- All data measuring devices used by the team are in good working condition, have been calibrated and have valid calibration certificate from the authorized approved agencies and tampering of such devices has not occurred.
- All reasonable professional skill, care and diligence have been taken in preparing the water audit report and the contents thereof are a true representation of the facts and figures.

ABBREVIATIONS

A	Ampere
AC	Alternating Current
Avg.	Average
CGWA	Central Ground Water Authority
CGWB	Central Ground Water Board
CWC	Central Water Commission
KL	Kilo Litre
KV	Kilo Volt
kVA	Kilo Volt Ampere
KVAr	Kilo Volt Ampere Reactive
kW	Kilo Watts
kWh	Kilo Watt Hour
Lit	Litres
LPCD	Litre Per Capita per Day
M or m	Meter
Max.	Maximum
mbgl	meters below ground level
Min.	Minimum
MT	Metric Ton
No.	Number
PF	Power Factor
RO	Reverse Osmosis
LPS	Low Pressure Switch
HPS	High Pressure Switch
ETP	Effluent Treatment Plant
V	Voltage
WDS	Water distribution station.
WTP	Water Treatment Plant
CETP	Common Effluent Treatment Plant
CWP	Cooling Water Pump

CHAPTER 1

Introduction

1. INTRODUCTION

Human activities consume and pollute lot of water. At a global scale, most of the water use occurs in agricultural production, but there are also substantial water volumes consumed and polluted in the industrial and domestic sectors (WWAP, 2009).

Global changes like population growth, climate variability, ever-expanding industrialization and urbanization — often combined with pollution — severely affect water availability and lead to chronic water shortages in a growing number of regions. India has been successful in the past to meet such water requirements for different usages with a phenomenal development of water resources. However, preserving the quality and availability of fresh water resources has now become a pressing environment challenge.

Water is an essential precondition for life, and according to the UN it is a human right to have access to clean water. However, in India millions of people are living without direct access to safe water and based on the rapid population growth coupled with the fact that the water reserve is finite, it will be a very valuable and scarce resource within only a few years. In this light, there is an urgent need for decision makers to act in order to improve the conditions for effective use and supply of water to the Indian people now and in the future.

Under the Indian Constitution and in our federal democratic set up drinking water comes within the domain of the State Governments (Provincial Governments). In fact, the 73rd Constitutional Amendment has gone a step forward. It mandates that responsibility for drinking water and sanitation services should be with Local Governments. Various States in India are at different stages of giving effect to this Constitutional mandate.

The Ministry of Urban Development has formulated Service Level Benchmarks (SLBs) in 2008 and circulated the same to the States for adoption. The SLBs include water conservation and management practices such as continuous water supply, 100% metering of water supply, sustainable tariffs and reduction in leakages to a level of 15% to 20%.

The National Water Policy – 2012 focuses on the need for publishing water accounts and water audit reports indicating leakages and pilferages. The policy recommends systems to evolve benchmarks for water uses for different purposes, i.e., water footprints, and water auditing to ensure efficient use of water.

National Water Mission (NWM) has been established by the Government of India with the objective of "conservation of water, minimizing wastage and ensuring its more equitable distribution both across and within States through integrated water resources development and management".
The Government of India has also launched a Centrally Sponsored Scheme for Repair, Renovation and Restoration (RRR) of water bodies, which has multiple objectives like comprehensive improvement and restoration of water bodies thereby increasing tank storage capacity, improved water use efficiency and increased availability of drinking water.

With its continuously declining per capita water availability (from about 5,177 m^3 in 1951 to 1,654 m^3 in 2007), India stands water stressed and is close to being categorized 'water scarce'. Water demand in India is expected to grow annually by 2.8 per cent to reach 1,500 bcm (by 2030) while the current supply is only about half (viz., 744 bcm). The Government of India, in its Intended Nationally Determined Contribution (INDC) submitted to UN Framework Convention on Climate Change (UNFCCC) in October, 2015, has committed to improve the water use efficiency by 20%, through regulatory mechanisms with differential entitlements and pricing. It further emphasizes the need to focus on integrated water resource management through water conservation, wastewater minimization, etc.

The notification dated 24/09/2020 from CGWA, all industries abstracting ground water in excess of 100KL/day shall be required to undertake annual water audit through CII/FICCI/NPC/PHDCCI certified auditors and submit water audit reports within three months of completion of the same to CGWA.

Water audit is an effective management tool for minimizing losses, optimizing various uses and thus enabling considerable conservation of water. Thus, RADICO KHAITAN LTD, RAMPUR has entrusted PHDCCI for conducting water audit in their plant premises.

This report discusses the existing water scenario at RADICO KHAITAN LTD, RAMPUR and its potential water savings and how the basic water audit approach has been applied to water conservation in line with the guidelines of CGWA

1.1 RATIONALE FOR WATER AUDIT

Water audit determines the amount of water lost from the water network/distribution system due to seepage, evaporation/leakage and other reasons such as theft, unauthorized or illegal withdrawals from the systems. Water audit improves the knowledge and documentation of the distribution system, and better understanding of what is happening to the water after it leaves the source point. Comprehensive water audit gives a detailed profile of the distribution system and water users, thereby facilitating easier and effective management of the resources with improved reliability. It helps in correct diagnosis of the problems faced in order to suggest optimum solutions. This leads to reduced water losses; improved financial performance; improved reliability of supply system; enhanced knowledge of the distribution; efficient use of existing supplies; better safeguard to public health and property; improved public relations; reduced legal liability and reduced disruption etc. thereby improving level of service to customers. It is thus an effective tool for realistic understanding and assessment of the present performance level and efficiency of the service and the adaptability of the system for future expansion & rectification of faults during modernization.

1.1.1 Steps of Water Audit

Water Audit includes water supply and usage study, process study, system audit, discharge analysis and preparation of water audit report.

1.1.2 Water Supply and Usage Study

Water audit comprises preparation of layout of water sources, distribution network, and service/delivery points to water users and return flow of waste or excess water. The layout should contain locations and capacities of flow measurement devices installed at key points, sizes of different channels, and fittings in the water supply system, locations and particulars of flow control devices and history sheets of all measuring and control devices including pipes and fittings etc.

PHDCCI has carried out the water supply and usage study at RADICO KHAITAN LTD, RAMPUR to understand the present water utilization pattern and projecting future requirement. PHDCCI also carried out a review of sustainable sources of water through rainwater harvesting and possible wastewater recycling at RADICO KHAITAN LTD, RAMPUR.

1.1.3 Process Study

Flow measurement devices were installed at all strategic points to calculate the water consumption at RADICO KHAITAN LTD, RAMPUR in various activities such as supply to the processing units, Process, Domestic, & STP.

Water quality of the distribution system needs to be monitored regularly at strategic points to find out the level and nature of contaminants present in the supplied water. RADICO KHAITAN LTD, RAMPUR has conducted the water quality test reports for raw water, waste water and treated waste water from CETP & STP outlet. Audit team reviewed all test reports and found acceptable as the results are in compliance to various standards as required by SPCB.

PHDCCI has carried out flow, pressure and power measurement of all bore well, cooling towers, CETP & STP Outlet to calculate the total water supplied to the different areas of the plant to understand the quantity of water received from ground and feed to the plant area. Accordingly, discharge from various processing units and estimation of losses was also assessed.

1.1.4 System Audit

The current water usages and systems for water use under various sections such as food & beverage preparation and domestic water supply need to be studied to check their operational efficiency and level of maintenance. The scope for any modification or up-gradation will depend on the status of existing systems. Measurement methodology from the intake point of the system through various sub-systems to the ultimate user points needs to be verified periodically for its suitability, efficiency and accuracy. Bulk metering should be done at the source, process area, water discharge etc. This will help in identifying the reaches of undue water wastage. The domestic wastewater return flows need to be studied for conformity to environment standards and the opportunity for recycling of waste water.

PHDCCI has carried out physical inspection of water distribution network/system of pump house, supply to various areas of the Plant, Drinking, Domestic & Gardening, to get their per day water consumption & to arrive at per capita water consumption in RADICO KHAITAN LTD, RAMPUR .

1.1.5 Discharge Analysis

The wastewater generated from the plant premises to CETP & residential colony to STP, return flows of treated water from the CETP, need to be studied for conformity to environment standards and the opportunity for recycling of waste water. The RADICO KHAITAN LTD, RAMPUR has installed one STP of 150 KLD for residential waste water & ETP with CPU unit respectively to treat the wastewater generated from domestic as well as industrial process. Unit is complying the ZLD norms by means of recycling of waste and treated water with effective Bio-composting facilities.

1.1.6 Water Audit Report

A water audit can be accomplished on the basis of water allotted for a service and water actually utilized for that service. After assessing the loss of water and the efficiency of the system, steps needed for utilization of recoverable water loss and reuse may be listed.

An effective water audit report may be purposeful in detection of water losses and improve efficiency of the system. Water audit of the system should be undertaken at regular intervals, at least on an annual basis.

PHDCCI water audit explains the losses of water in system and various management approaches for RADICO KHAITAN LTD, RAMPUR.

1.2 BRIEF DESCRIPTION ABOUT THE PLANT

Radico Khaitan Ltd., Rampur, UP has multiple product portfolios, ranging from Rampur Select Single Malt Whisky, Jaisalmer Craft GIN, 8PM whisky, Magic Moments Vodka, Contessa Rum, Old Admiral Brandy & much more while company is having good brand base in Country Liquor segment. Under his able leadership, Radico Khaitan is one of the largest and the most efficiently-run distilleries in India. It is spread over 100 acres of lush green campus with a high level of security systems. The distillery produces high-grade Extra Neutral Alcohol ("ENA") from molasses, grains and Scottish design malt spirit from barley malt. The unit is self-sufficient in meeting the fuel and power requirements by the way of backward integration. M/s Radico Khaitan Ltd, Rampur is an existing company located at Bareilly Road, Rampur in Distt Moradabad in Uttar Pradesh State.

1.2.1 Process Description

At Radico Khaitan Ltd, Rampur produces high-grade Extra Neutral Alcohol ("ENA") from molasses, grains and Scottish design malt spirit from Barley malt. The manufacturing plant having three separate unit based extraction raw material, i.e., Molasses, Grains, Barley Malt.

The Manufacturing Process are as follows:

1) **Molasses:** Molasses from sugar cane is purchased as raw material from sugar industry. In this process **molasses** is diluted with water and enzymes are added for the conversion of molasses into fermentable **sugar**. In Fermentation process the mash is fermented using yeast, whereby the sugar is converted into ethanol and carbon dioxide.

2) **Grain: Grain alcohol** is a purified form of ethyl **alcohol** (ethanol) **made** from the distillation of fermented **grain**. The ethanol is **produced** via fermentation of sugars in the **grain** by yeast prior to repeated distillation or rectification.

3) **Barley Malt:** Generally **malt** is made with **barley.** This is the same process as beer (at least at first), **malt** is mixed with water, the starches are broken into sugar, the sugars are fed to yeast, and the yeast produces **alcohol.**

4) **Country Liquor:** It is the primary and most popular alcoholic beverage in India's villages and it is fermented and distilled from molasses which is a byproduct of sugarcane.

5) **IMFL:** The ENA manufactured is mixed with de-mineralized water to form the base liquor which contains about 42% alcohol by volume. To **manufacture** whisky, special malts, flavors and colorings agents are blended in the base liquor. A good whisky is obtained based on the length of maturing the blended mix is kept for ageing. Rum, Whisky, Vodka & Gin are the products from IMFL.

CHAPTER 2

Scope of Work

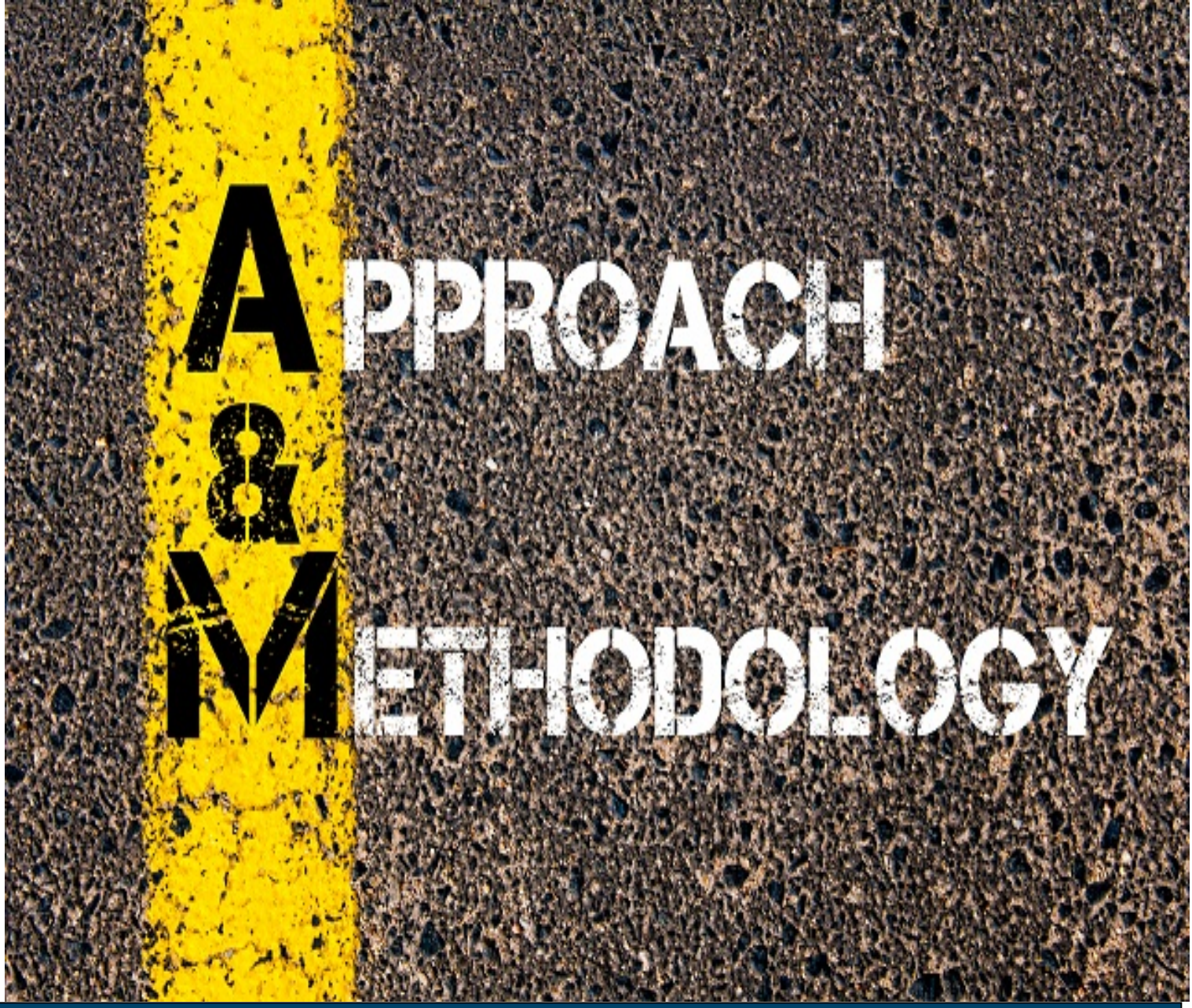
2. SCOPE OF WORK

The main objective of the study was to identify the water uses & water saving opportunities and to demonstrate water conservation at Radico Khaitan Ltd, Rampur. Scope of work of the study includes the following:

2.1 Water system analysis, water quality analysis
2.2 Quantification of baseline water map
2.3 Monitoring and measurements using pressure, flow meters and other devices
2.4 Quantification of inefficiencies and leaks
2.5 Quantification of water quality loads and discharges
2.6 Quantification of variability in flows and quality parameters
2.7 Strategies for water treatment and reuse or direct use
2.8 Water balance of the whole System
2.9 Mapping of Water quality requirement at various user areas

The detailed water audit report contains the following:

- Water consumption and wastewater generation pattern
- Specific water use and conservation
- Complete water balance of the facility
- Water saving opportunities
- Method of implementing the proposals
- Full description and figures
- Investment required
- Assessment of existing water sources and actual water consumption of the Plant.
- Identify the loss of water if any during transit and water distribution network and provide suggestion to eliminate these water losses.
- Identify the opportunities to reduce the water consumption by various activities and to establish specific water consumption in the premises.
- To study the performance of existing water circulating pumps/motors and recommends energy and water fixtures. This report aims at portraying the water audit details and the outcome along with recommendations for Radico Khaitan Ltd, Rampur.
- Assessment of adequacy and efficacy of existing treatment system and recommend feasible technological option for treatment of water and waste water.
- Identify the loss of water if any during transit and to provide suggestions to eliminate the losses.
- To analyse areas of water conservation, waste water generation and recycle.
- Preparation of detailed water balance schematic diagram.
- Evolve techno-economic feasible solutions for recommended measure for implementation along with annual financial savings/payback periods.
- Assessment of ground water quality within premises and the near by areas.



CHAPTER 3

Methodology of the Study

3. METHODOLOGY OF THE STUDY

PHDCCI has been entrusted to conduct Water Audit of Radico Khaitan Ltd, Rampur. In determining the water audit scope, PHDCCI has considered the extent and boundaries of the Installations.

The following step by step methodology and approach were adopted while carrying out the Water Audit at Radico Khaitan Ltd, Rampur. PHDCCI team visited Radico Khaitan Ltd, Rampur in the month of March-2021 for the field measurement and conducting the audit. The broad methodology adopted for the Water Audit at Radico Khaitan Ltd, Rampur is furnished below.

- Preliminary discussions with plant personnel and observations in all water consuming areas.
- Data collection through discussions, past records, specifications.
- Field studies in each of the areas involving:
    - ✓ Performance trials.
    - ✓ Measurement of flow parameters, pressure, power wherever possible using portable instruments such as ultrasonic flowmeter, pressure gauge and power analyser.
- Identification of water conservation options on short, medium & long terms.
- Identification of Investment grade projects in the plant for detailed analysis towards implementation
- Preparation, discussion and submission of report to the management.

The study focused on improving water use efficiency and identifying water saving opportunities. The analysis included simple payback calculations where investments are required to be made to implement recommendations, to establish their economic viability.

The audit study made use of various portable instruments for carrying out various measurements and analyses. PHDCCI has a wide array of latest, sophisticated, portable, diagnostic and measuring instruments to support our energy audit investigations and analyses. The specialized instruments that were used during the water audit include:

- Ultrasonic water flow meter
- Thermo couples & Indicators
- Pressure Gauge
- Load Manager

During the audit, there was continuous interaction between the audit team and facility personnel, to ensure that the suggestions made are realistic, practical and implementable to allow for possible concurrent implementation.

The broad methodology adopted for the Water Audit at Radico Khaitan Ltd, Rampur is furnished below.

3.1 Pre Audit Information

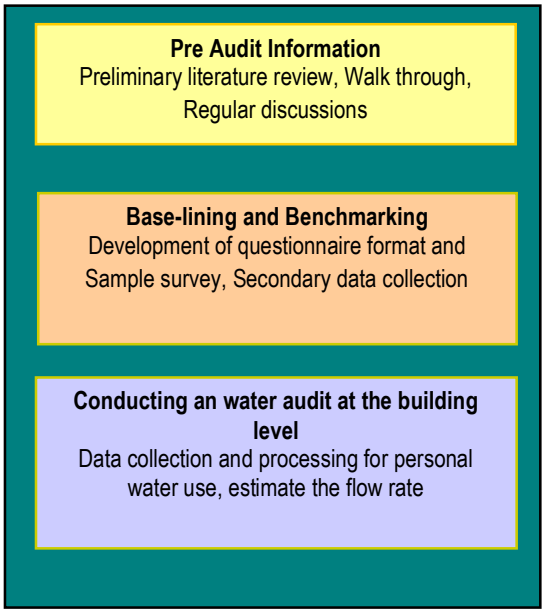
- Preliminary literature -review of concepts and methodologies related to water audit for utility, facilities and households.

- Walk through the entire Plant, water receiving pump stations, building to understand the nature of water uses and the systems installed in the building.
- Discussion with the administrative officers, pump operators, EHS staff, housekeeping and kitchen employees on the various water uses during the day and the source of water.

3.2 Base-lining and benchmarking

The water audit for Radico Khaitan Ltd, Rampur included both primary and secondary data collection for various identified water uses. Primary data collection included the following components:

- Development of questionnaire format for individual water use, process area, gardening etc.
- Sample Survey of Radico Khaitan Ltd, Rampur office staff to estimate individual water consumption on sanitary and drinking purposes based on questionnaire format.
- Flow rate calculation from the taps flow rates and number of all water using fixtures/ equipment was also undertaken.
- Secondary data collection included compilation of number of staff along with their duration of stay.
- Collecting records of water pumped to the overhead and underground tanks and average running hours of all pumps etc. to estimate actual supply.



3.3 Conducting a water audit at the Plant Level

- The data collection including raw water, process water, waste & reject water, etc. was done on the basis of actual consumption.
- As part of the survey, treated waste water from STP & CETP was also carried out.
- The data for all the above uses was calculated for varying time period for Radico Khaitan Ltd, Rampur to calculate per capita use.

CHAPTER 4

Assessment of Water Usage

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4. ASSESMENT OF PRESENT WATER USAGE

4.1 Plant Water Consumption Trends (last 3 years)

The source of water to the plant is through Ground Water supplied from three (3) Bore Wells which are being operating continuously to meet the demand of the plant. Each source and bore well is fitted with individual meter.

Groundwater after extraction is supplied to various areas such as WTP for treatment, Softener plant for process, utility, and domestic consumption such as hand wash, toilets and canteen. The water consumption patterns for last year at all the consumption areas are shown below:

Table 1 Water Consumption Trend FY 20-21

Year	Month	Bore well No.1	Bore well No.2	Bore well No.3	Total
2020-21	Apr-20	16780	13218	0	29998
	May-20	22375	26792	12792	61959
	Jun-20	25497	23586	24659	73742
	Jul-20	18384	24947	31040	74371
	Aug-20	22779	22119	29994	74892
	Sep-20	29526	11808	29793	71127
	Oct-20	19727	21826	27996	69549
	Nov-20	20261	25071	25169	70501
	Dec-20	25340	23108	28288	76736
	Jan-21	29685	4151	38022	71858
	Feb-21	14659	26737	23052	64448
	Mar-21	28404	15897	27955	72256
Total		**273417**	**239260**	**298760**	**811437**

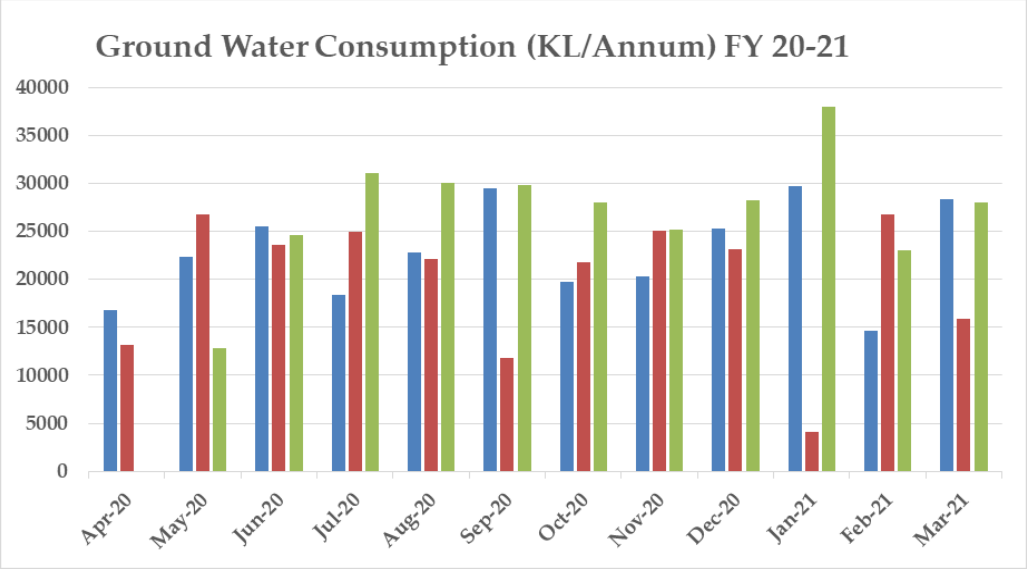


Table 2 Water Consumption Trend FY 19-20

Year	Month	Bore well No.1	Bore well No.2	Bore well No.3	Total
2019-20	Apr-19	30882	6544	30471	67897
	May-19	29835	8071	29142	67048
	Jun-19	24164	1174	28614	53952
	Jul-19	26727	1339	29075	57141
	Aug-19	30029	5830	30880	66739
	Sep-19	29583	14010	30898	74491
	Oct-19	29954	9150	29105	68209
	Nov-19	15276	15736	28715	59727
	Dec-19	17237	21662	29303	68202
	Jan-20	43085	8047	15734	66866
	Feb-20	10158	30132	23735	64025
	Mar-20	16552	20258	28254	65064
Total		**303482**	**141953**	**333926**	**779361**

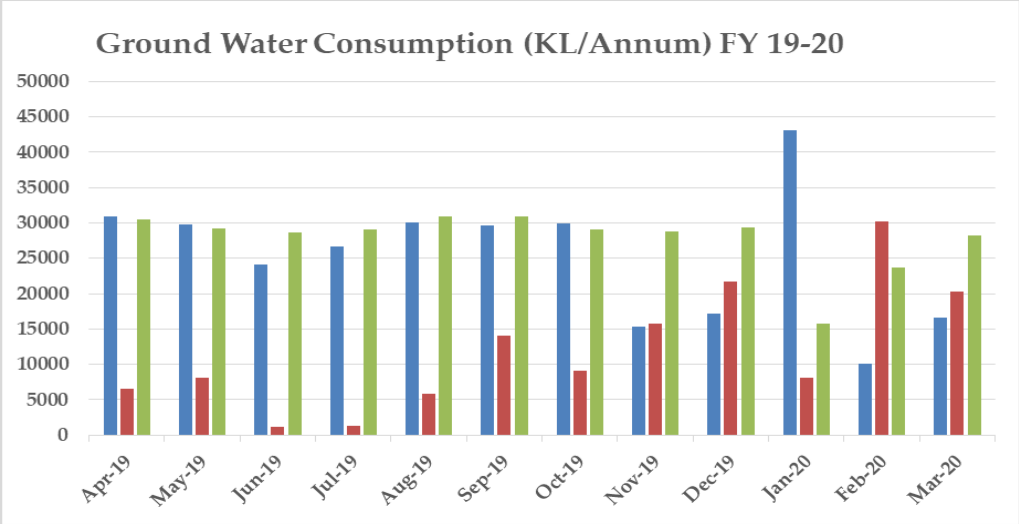
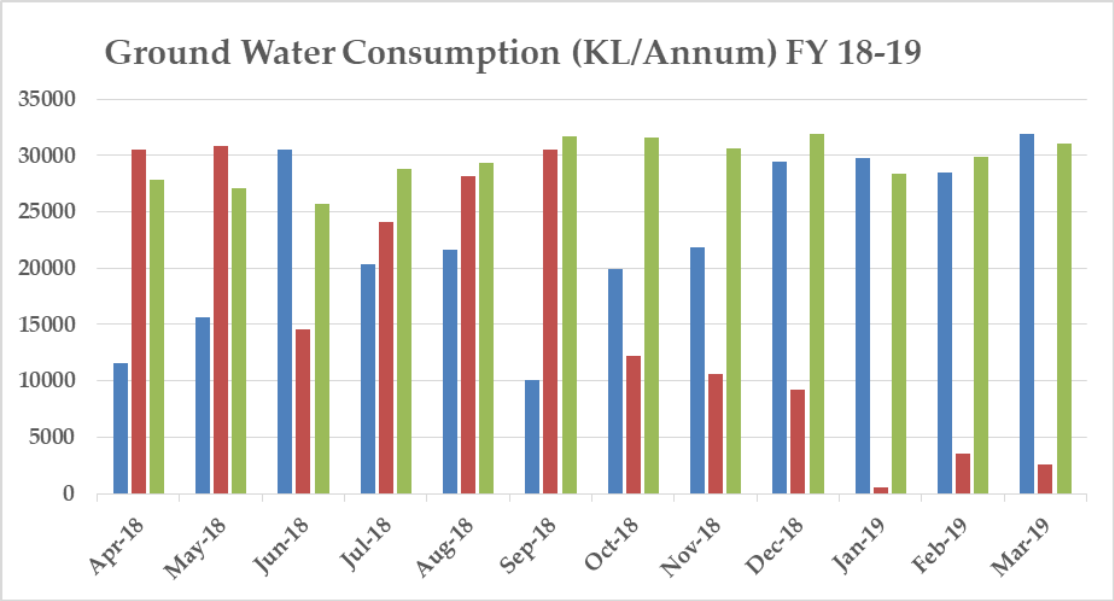


Table 3 Water Consumption Trend FY 18-19

Year	Month	Bore well No.1	Bore well No.2	Bore well No.3	Total
2018-19	Apr-18	11562	30515	27795	69872
	May-18	15686	30842	27072	73600
	Jun-18	30572	14530	25686	70788
	Jul-18	20340	24125	28808	73273
	Aug-18	21684	28125	29320	79129
	Sep-18	10081	30520	31697	72298
	Oct-18	19943	12196	31550	63689
	Nov-18	21812	10582	30671	63065
	Dec-18	29429	9232	31904	70565
	Jan-19	29777	582	28362	58721
	Feb-19	28528	3538	29845	61911
	Mar-19	11562	30515	27795	69872
Total		**271352**	**197389**	**353751**	**822492**



4.2 Water Sources, which should include rain water, ground water & other sources

The main source of drinking and other water usage at Radico Khaitan Ltd, Rampur is water received from ground water through 3 bore wells located in plant area. The details of pumps and their location are mentioned below:

Table 4 Rated Details and Location of Bore well Pumps

Sr. No.	Type of Structure/ Year of Construction	Bore well Depth (meter)	Location	Mode of lift	HP of Pump
1	Bore Well/1994(BW1)	110	GSP DM plant	Submersible Pump	41
2	Bore Well/1995 (BW2)	110	GSP Weigh Bridge	Submersible Pump	41
3	Bore Well/2005 (BW3)	90	MRP (Near CPU)	Submersible Pump	41

4.3 Water Supply & Distribution Details

A water distribution network diagram provides a schematic (simplified) representation of facility's water distribution system from the source or point of entry (to the facility) to points of water consumption.

Bore well to Supply: Radico Khaitan Ltd, Rampur has 3 bore wells each located at different locations inside the plant. Water is being passed through filters, softener and DM plant for respective sections in plant. Treated water received from CPU and bore wells is used for preparing soft water and to be used in cleaning, washing and other utilities. The Radico Khaitan Ltd, Rampur has installed one STP of 150 KLD for residential waste water & ETP with CPU unit respectively to treat the wastewater generated from domestic as well as industrial process. Treated water from STP is partially used for gardening & remaining is discharged outside. Treated water from ETP is used for gardening and for supplying to softener to generate soft water which is again utilized in cooling tower, boiler etc.

Process and Utility: Major water consumption in process is for cleaning, washing & process. Water is also required in Soft water & DM water preparation to be used in the product. Water is recycled in the process but the make-up is required to compensate water absorbed by the products, treated waste

water is being discharged for gardening inside the plant. In utility section, all the water is used for cooling tower (Evaporation and Blow down loss) & boiler make up.

For all the waste water, plant has installed STP & CETP all the waste water generated from domestic & utility is transferred to it for treatment. After treatment the water is being used for either in utilities or gardening purpose. & none of the water is discharge outside the plant.

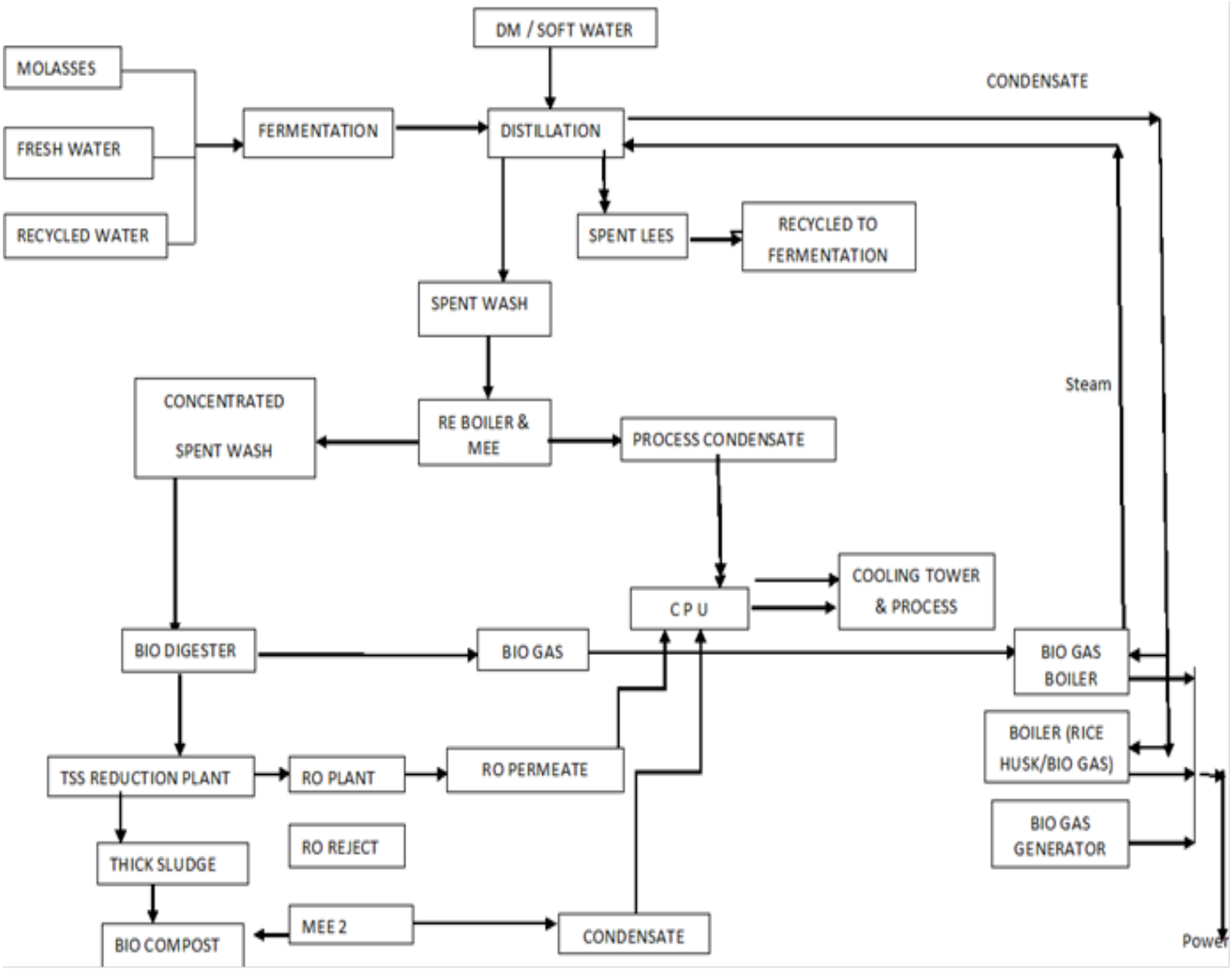


Figure 1 Water Distribution Network of Radico Khaitan Ltd, Rampur

4.4 Water Balance

The assessment team has reviewed the water supply and consumption as well as the losses in the water distribution network at plant. The water balance diagram of the system is given in below table and figure.

Table 5 Water Balance of Radico Khaitan Ltd, Rampur

Water Balance		KL/ANNUM	KLD
Sr. No.	**Source**		
1	Bore well	**811437**	2223
2	Recycled Water	1099208	3012
3	**Total Source**	**1910645**	**5235**
A	**Consumption**		
	For Molasses		
4	Soft water used for plant & Cooling towers	122979	337
5	Spent Lees/Sealing water of Molasses/GSP Plant to molasses fermentation	230862	632
6	Dm water	110018	301
7	CPU treated water	550075	1507
8	Process	56313	154
	Consumption (I)	**1070247**	**2932**
B	**For Grain**		
9	Spent Lees/Sealing water of GSP to grain liquefaction / fermentation	78643	215
10	CO_2 Scrubber water (fermentation house)	4296	12
11	DM water	37662	103
12	Soft water	82735	227
13	Process	38658	106
14	**Consumption (II)**	**241993**	**663**
C	**Utilities**		
15	Boiler	136855	375
16	All Cooling Tower	205733	564
17	Raw water used for DM & Soft water charging	52365	143
18	Domestic	14400	39
19	Gardening, Horticulture etc	29598	81
20	Bottling	159453	437
21	**Consumption (III)**	598404	1639
D	**Total Consumption**	**1910645**	5235

Total Water Consumption = 1070247+241993+598404= 1910645 KL

Bore well Source = 811437 KL
Recycling CPU Treated Water = 1099208 KL
Total Water Source= 1910645 KL

Water Balance= 2223 KLD

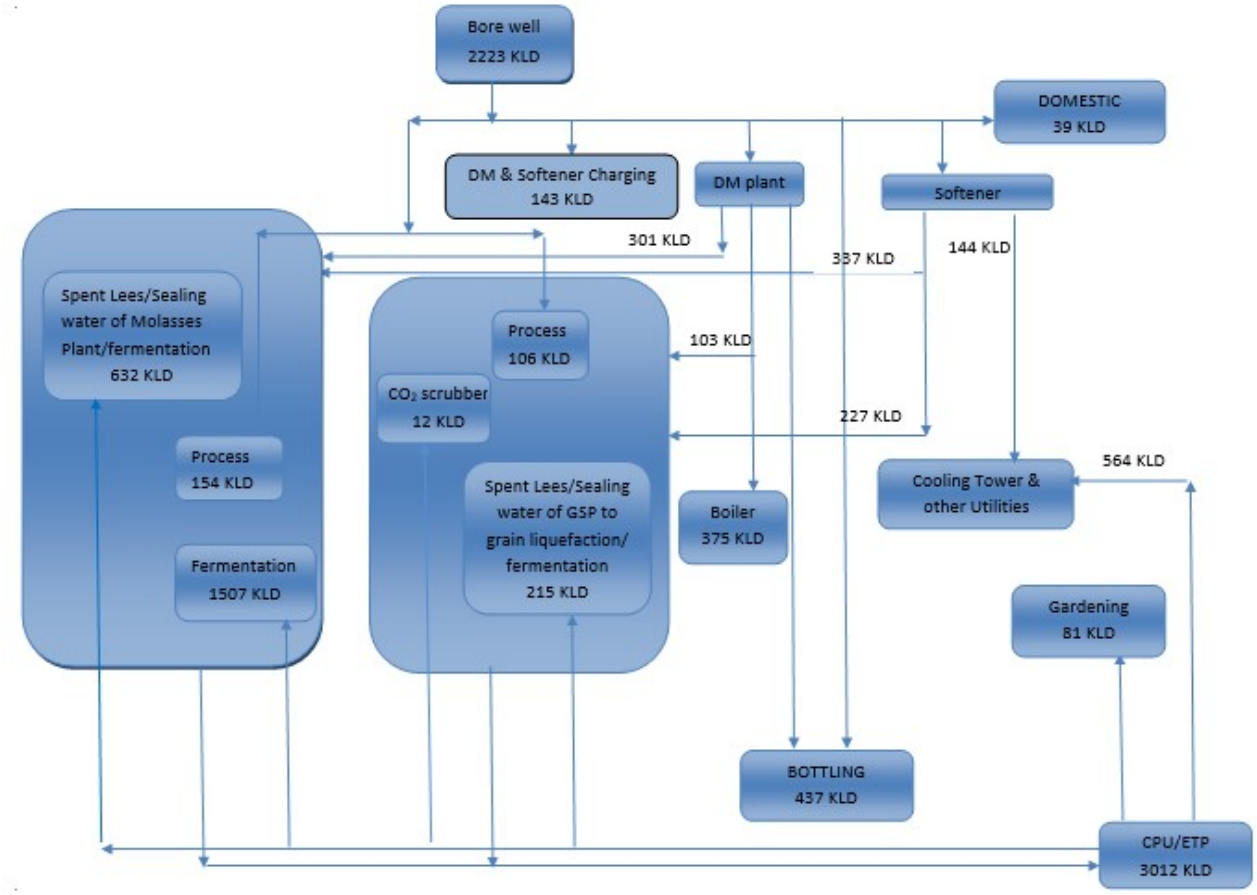


Figure 2 Water Balance Diagram

- It is evident from the above water balance diagram is that major water consuming area is account **42% fresh water consumption & 58% as recycled soft water**. **Process accounts for 21%, Utility accounts for 11%, 15% accounts for DM water, 50% accounts for soft water, 2% for gardening** and almost **1% for domestic accounts.** About **1099208 KL/year** wastewater is generated in the plant and is transferred to Condensing Polishing Unit(CPU) & ETP from which a part of treated water is being mixed with water from bore wells and passed through DM water treatment & softener so that recycled soft water can be used as make up water for Cooling tower, Boiler, cleaning and washing. Remaining part of treated waste water from ETP is used for horticulture in green belt.

- The audit team has collected the detail of Ground Water abstracted by the plant in year 2020-21. As per data provided by the plant, the total ground water abstraction in FY 2020-21 is **811,437** KL/year which is less than the **CGWA NOC** of 949,000 KL/year, issued to plant on **17/10/2016 vide NOC letter CGWA\NOC\IND\ORIG\2016\2308**.

4.5 Water Metering & Monitoring System

Monitoring is the most important prerequisite for efficient water management. Thus, in the water supply network, it is necessary to have a robust system of monitoring. During the audit, the available flow meters were identified, and their working conditions were checked.

4.5.1 Measurement at different locations through Ultrasonic Flow meter

PHDCCI team measures the flow for all the flow meters installed in the plant with the help of ultrasonic flow meter to check any variation in flow meter reading. All flow meters were giving accurate results. Data captured with Ultrasonic Flow meter and Meter installed at the plant is shown in below table.

Table 6 Measurement at Different Location through Ultrasonic Flow Meter

Sr. No.	Location	Flow Measurement by PHDCCI Flow Meter (KL/hr)
1	Bore well # 1	125
2	Bore well # 2	70
3	Bore well # 3	110

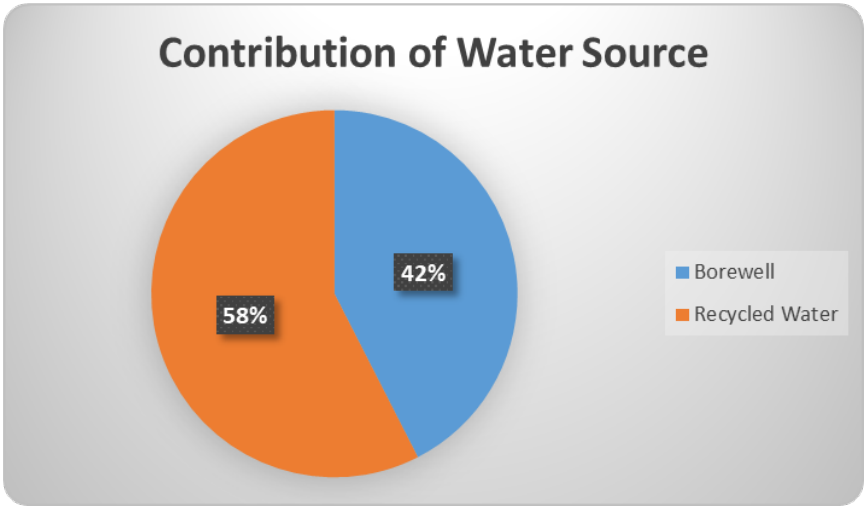


Figure 3 Contribution of Water Sources

4.5.2 Area Wise Water Consumption in Plant

The break up for water consumption in different area is provided in below tables and bar charts:

Table 7 Area Wise Water Consumption in the Plant

AREA WISE WATER CONSUMPTION			
1	Process water	1120	21%
2	DM water	780	15%
3	Soft water	2634	50%
4	Utilities	580	11%
5	Domestic	39	1%
6	Gardening	81	2%

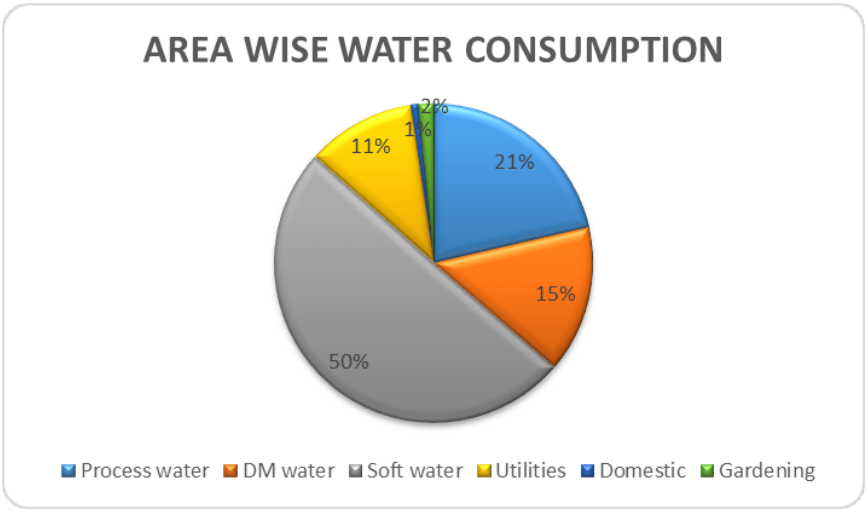


Figure 4 Area wise consumption in the Plant

As evident from the area wise water consumption table and graph, the major water consumption area in the plant is process and utilities.

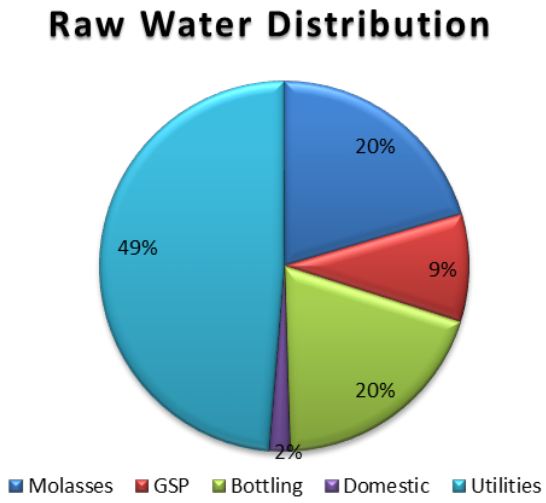


Figure 5 Raw Water Distribution

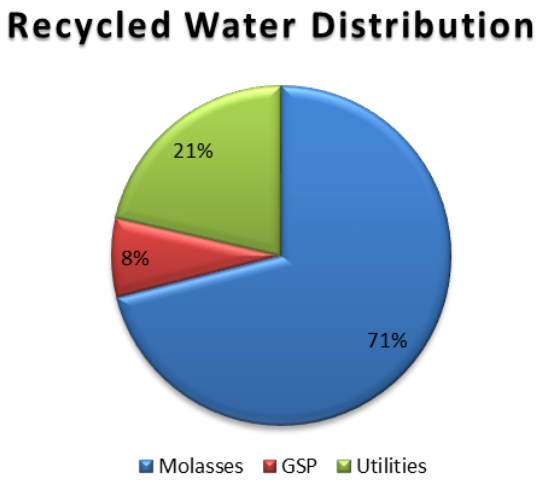


Figure 6 Recycled Water Distribution

4.5.3 Total Raw Water Withdrawal for Last Three Years

Total Raw Water Withdrawal for last three years (2018, 2019 and 2020) is shown in below table

Table 8 Total Raw Water Withdrawal for (2018, 2019 and 2020)

Year	Month	Total Water Withdrawal from Bore well Source (KL)
2018-19	Jun-18	69872
	Jul-18	73600
	Aug-18	70788
	Sep-18	73273
	Oct-18	79129
	Nov-18	72298
	Dec-18	63689
	Jan-19	63065
	Feb-19	70565
	Mar-19	58721
Total		**822492**
2019-20	Apr-19	67897
	May-19	67048
	Jun-19	53952
	Jul-19	57141
	Aug-19	66739
	Sep-19	74491
	Oct-19	68209
	Nov-19	59727
	Dec-19	68202
	Jan-20	66866
	Feb-20	64025
	Mar-20	65064
Total		**779361**
2020-21	Apr-20	29998
	May-20	61959
	Jun-20	73742
	Jul-20	74371
	Aug-20	74892
	Sep-20	71127
	Oct-20	69549
	Nov-20	70501
	Dec-20	76736
	Jan-21	71858
	Feb-21	64448
Total		**811437**

From above table, it is clear that normal water requirement of ground water extraction is around 8,00,000 KL /annum when the plant is running on full/peak load.

Table 9 Break-Up of Sources Withdrawal Pattern

Source	Total Raw water Withdrawal in KL (FY 2019-20)	Total
Bore well No. 1	273,417	34%
Bore well No. 2	239,260	29%
Bore well No. 3	298,760	37%
Total	**811,437**	**100%**

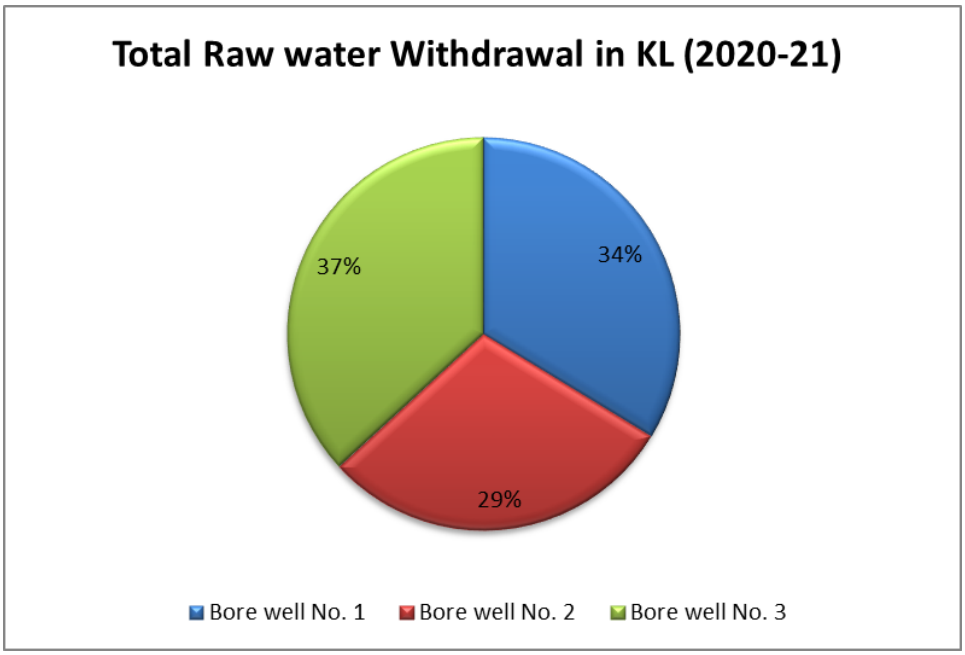


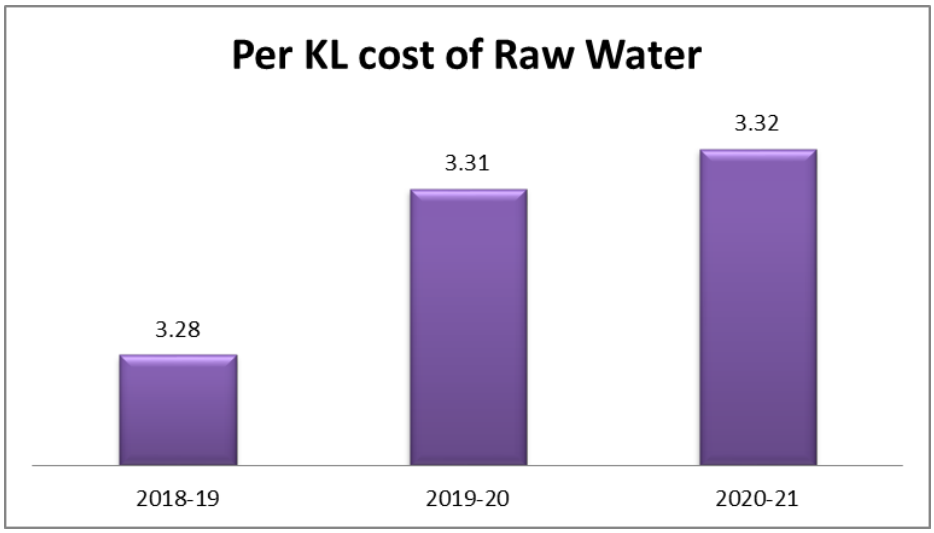
Figure 7 Total Raw water withdrawal

4.6 WATER COSTING

The Audit team calculated the Per KL cost of Raw Water. The Rs. /KL cost of Raw water is Rs. 3.3 for year 2021. The expenses towards energy consumption at bore well, Manpower cost, and maintenance costs are considered for calculating raw water cost. The detail of Raw Water Rs. /KL cost is provided in below table.

Table 10 Rs. / KL cost of Raw Water withdrawal

Year	Total Water Withdrawal (KL)	Man Power Cost (Rs.)	Maintenance Cost (Rs.)	Energy Cost (Rs.)	INR/KL
2018-19	**822492**	**20,000**	**255,000**	**2,424,278**	**3.28**
2019-20	**779361**	**20,000**	**268,500**	**2,294,886**	**3.31**
2020-21	**811437**	**20,000**	**285,000**	**2,391,113**	**3.32**



4.7 BOREWELL PUMP PERFORMANCE EVALUATION

Total three (3) bore well are installed at Radico Khaitan Ltd, Rampur. During audit, we measured Terminal Voltage, Load Current, Power Consumption and P.F. for all the pumps. We have also checked throttling, Flow, measured Suction and Discharge Pressure. All the measured data is tabulated below.

Table 11 Performance Evaluation of Bore Well Pumps

Particulars	Unit	Bore well # 1	Bore well # 2	Bore well #3
Running Status		Running	Standby	Running
Rated Flow	m^3/hr	150	150	190
Rated Head	M	45	45	50
Rated Power	KW	30	30	45
Measured Flow	m^3/hr	125	70	110
Velocity	m/s	1.733	0.348	1.52
Discharge Pressure (A)	Kg/cm^2	2.9	2.7	3.2
Depth of Water from Ground (B)	Meter	7	7	7
Total Head (=B+(AX10))	Meter	36	34	32
Head Utilization	%	80%	76%	83%
Flow Utilization	%	**83%**	**47%**	**21%**
Input power	kW	**23.21**	**27.88**	**20.49**
Hydraulic Power	KW	**12.26**	**6.49**	**9.59**
Motor Efficiency	%	90	90	90
Rated Efficiency		**61.3%**	**61.3%**	**57.5%**
Pump Efficiency	%	58.7%	25.8%	52.0%
Overall (Pump Set) Efficiency	%	52.8%	23.3%	46.8%

OBSERVATION

- The evaluated pump efficiency of bore wells and other transferring pump are **52.8%, 23.3% & 46.8%,** respectively. The results are found satisfactory.

4.8 CALIBRATION CERTIFICATES

`All of the meters have been regularly calibrated by Radico Khaitan Limited, Rampur & the calibration details have been shown below.

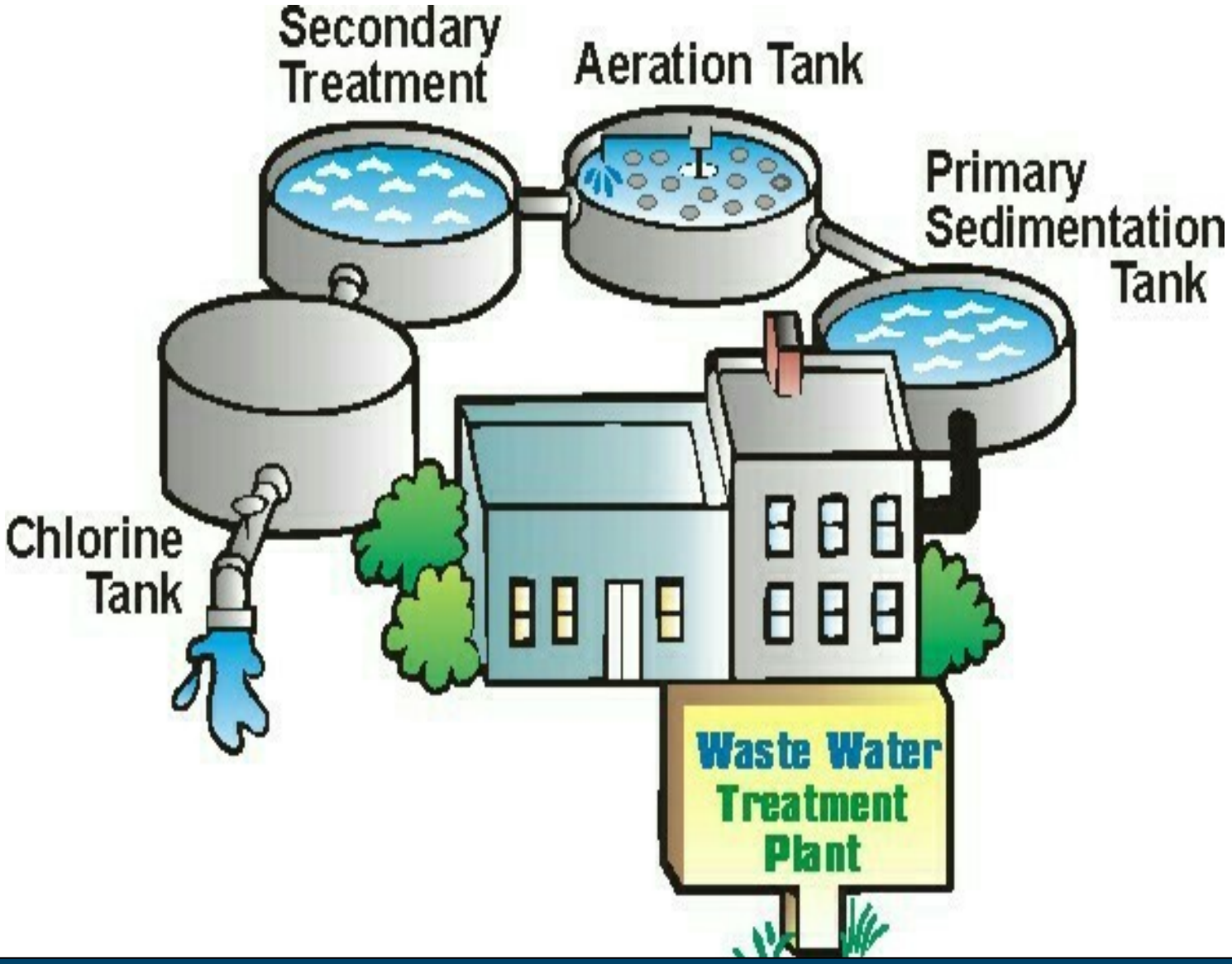
Table 12 Flow Meter Calibration Details

Meter Sr. No.	Certificate Number	Location of Meter	Date of Calibration	Due date of Calibration
1	4004181	Borewell 3	29-06-2020	28-05-2021
2	4004182	Borewell 1	29-06-2020	28-05-2021
3	4004183	Borewell 2	29-06-2020	28-05-2021

RECOMMENDATIONS

In most of the location, flow meters are installed and the plant is maintaining the data for bore wells & other process such as Soft water, DM water, Cooling tower section, Boiler make-up etc. but not drinking and gardening. The locations where flow meter should be installed are mentioned below:

a) Line going to STP treated water
b) Line going to Residential Colony



CHAPTER 5

Water Treatment Practices

5. WATER & WASTE WATER TREATMENT PRACTICES (OR) WATER TREATMENT & RECYCLING PRACTICES (OR) JUST 'WATER TREATMENT PRACTICES

The water treatment & Waste Water Treatment Practices in Radico Khaitan Ltd, Rampur includes borewell water, and 1 x 150 KLD STP for domestic sewage generation in the plant & ETP which collects waste water and provide treated water to be used in gardening and in utility as soft water.

5.1 Raw / Fresh Water Treatment

Radico Khaitan Ltd, Rampur receives fresh water from bore well which is already drinking quality however it is pass through filters, Softener plant & DM plant before supply to process & residential/domestic use. Fresh water is supplied to process. DM plant operates to provide DM water to be used in product & softener plant to provide soft water for utilities. The DM Plant & softener plant act as WTP of the plant. Process diagram of DM Plant and Softener plant at Radico Khaitan Ltd, Rampur is shown below.

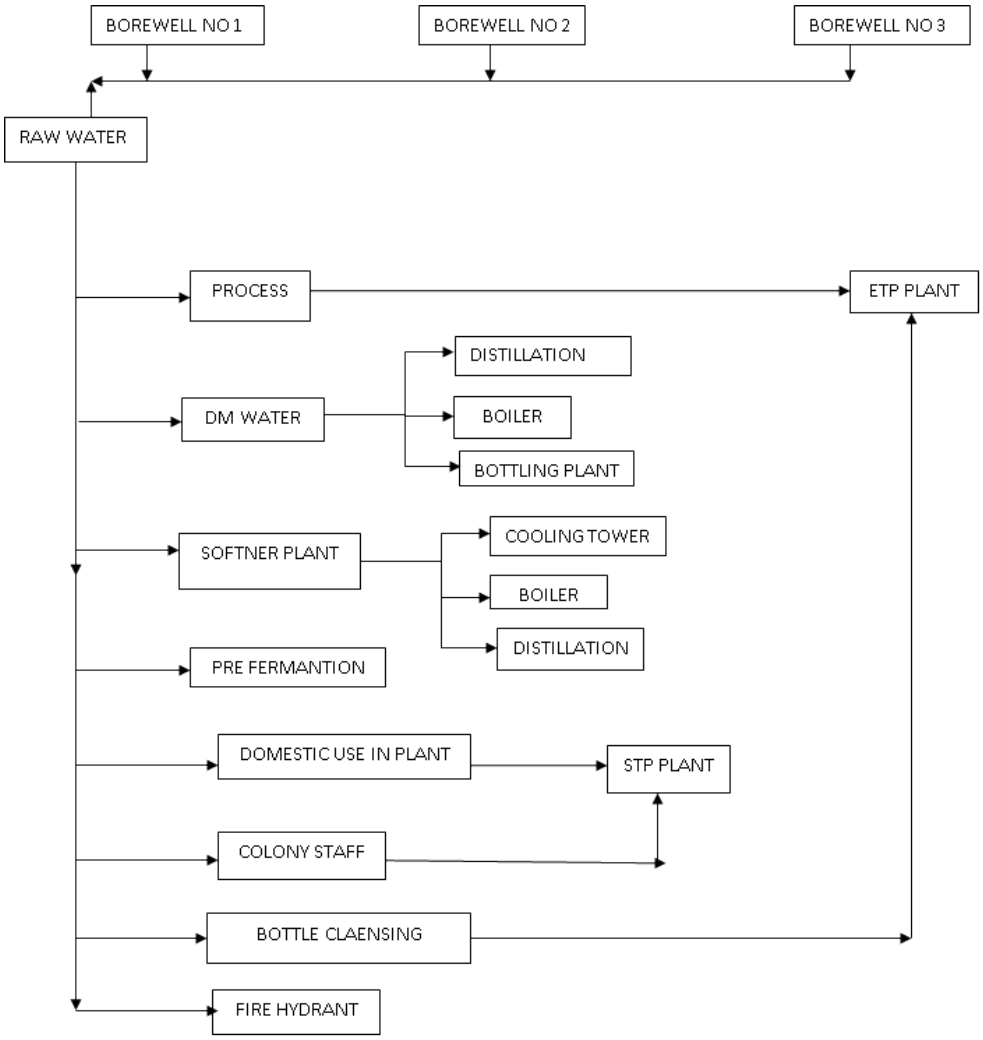


Figure 8 WTP Layout of Rampur Distillery, Rampur

5.2 WASTE WATER TREATMENT & DISPOSAL

Distillery have adopted the process of reduce and recycle process to manage effluent. All the waste water generated in the plant (except from residential colony) is being transferred to CPU. There is waste water collection tank (can be called as pre-ETP treatment) in which water is stored & pass through TSS reduction system, MEE, Bio-digesters before pumping into **ETP**. In ETP, there is set of ROs, collection tanks and aeration tanks in which Effluent water is treated and treated water is used for horticulture.

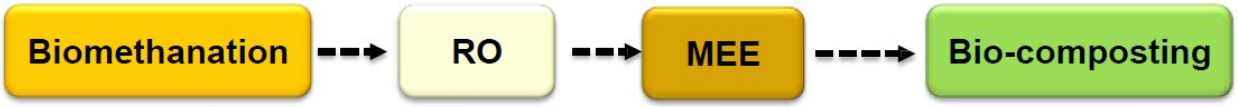
Waste stream is comprises of

A) Process Waste Streams

- Spent wash from Analyzer Column
- Fermenter Sludge
- Spent lees from Rectifier Column /PRC column/MSDH column
- Condensate from Spent wash Volume Reduction Unit
- Boiler Ash
- Boiler blow Down

B) **Non – Process Waste Streams**

- Cooling Tower Blow down
- Back wash water
- Water Treatment Plant Maintenance Water.



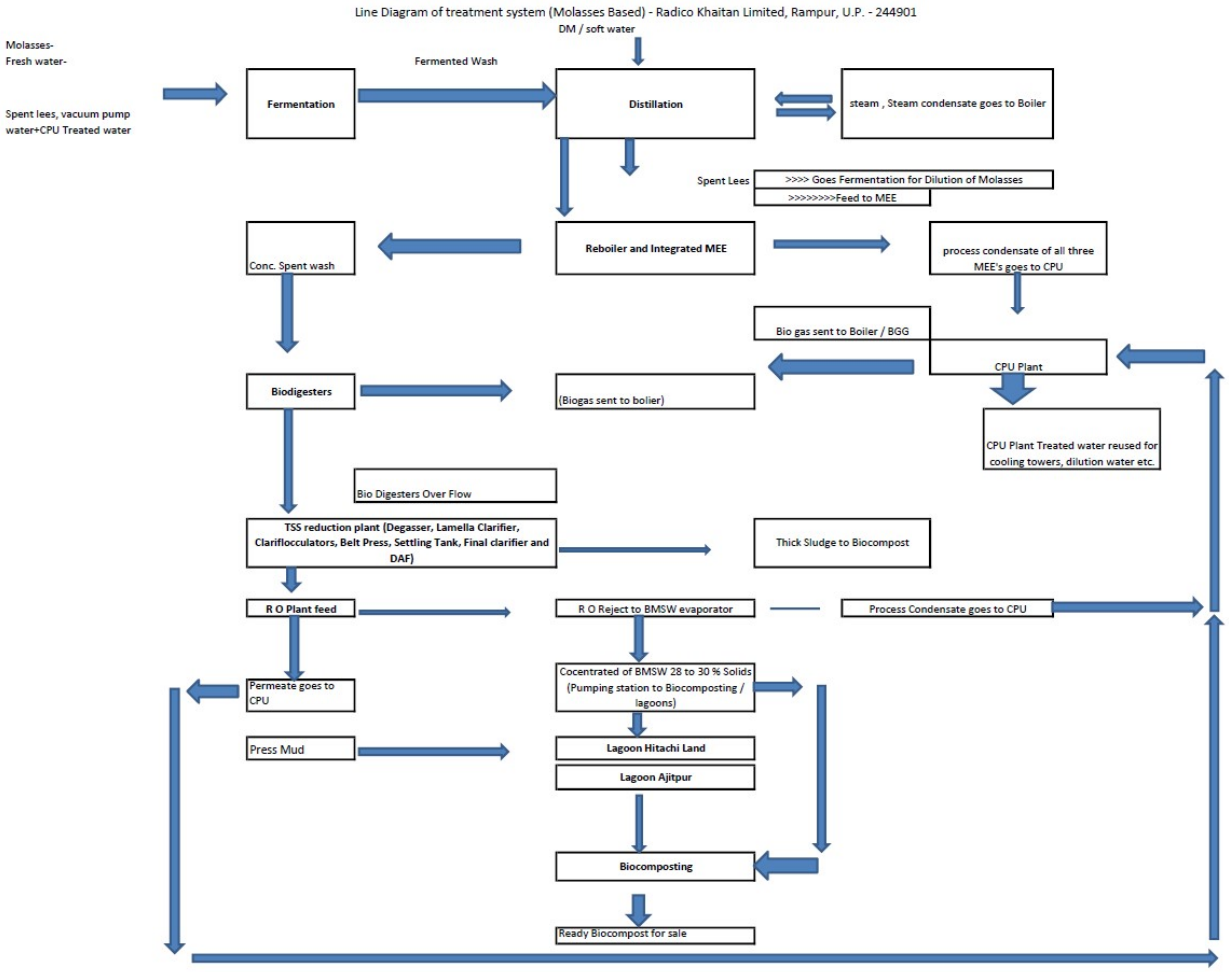
5.2.1 ETP

Reduction of volume to 25%, the concentration of solids is less than 30% in the effluent being used in Bio-composting. It is because of a different process which involves feeding of concentrated SpentWash of 24 % solids in digesters wherein the Solid Concentration is reduced again by ~60% leaving only 8~9% at the outlet of Digesters from 24~25% after MEE, which is again concentrated through RO Plant and BMSW MEE to 26~27% but due to settling of suspended solids and de-composition of organic matters in the storage lagoon at an average it remain 14~15% solids only for Bio-composting.

a. Molasses based distillation plant's Weak Spent Wash as a feed to Evaporator.
b. Molasses based distillation plant's Strong (Concentrate) Spent Wash as output of Evaporator.
c. Grain based distillation plant's Weak SpentWash as a feed to Evaporator.
d. Grain based distillation plant's Strong (Concentrate) SpentWash as output of Evaporator.

Volume reduction is achieved through re-boilers, integrated multi-effect evaporators (MEE) before Bio -Digesters.

In 2005, Radico has installed our First RO Plant of 1000 m^3 / day. In 2007, another RO plant of 1250 m^3 / day was installed. Radico has modified both the RO plants in 2013 to take load of higher TDS, after installation of MEE on distillation plants. In the year 2002, we started Bio-Composting and at present we have about 52 Acres of Bio-composting. At present, it has 14 Acres of covered Bio- Composting for composting in rainy season.



Bio-digester for Biogas Recovery

Radico, Rampur has installed Sophisticated TSS removal system (To bring down Digester outlet TSS 20,000 PPM to 2000 PPM at RO Inlet) comprising of Lamella Clarifiers, Series of Clariflocculators, filter press. Clarifier and Dissolved air floatation for further volume reduction through R.O. plants.

1) Reduced Effluent Generation through Multi Effect Evaporators and High Pressure RO Plants of 1000 m^3/day and 1250 m^3/day followed by permeate polishing unit.
2) Improved efficiency of RO Plant by increasing RO pressure from 60 Bar to 75 Bar and improved TSS reduction system through following additional equipments in now added one more stage of 90 Bar to improve recovery.
3) Installed 2nd stage RO as RO III plant for ultra-filtration of First stage Permeate in order to recycle it in fermentation and cooling tower. 4) Degasser to de-gasify the effluent for better settling of suspended solids.
4) Settlers (3 nos.) for better sludge separation.
5) Lamella Clarifier for better sludge separation.
6) Filter Press- for thickening of separated sludge.
7) Dissolved Air Floatation (DAF) Mechanism with the help of Special Polyelectrolyte for settling of fine sludge particles.
8) Lamella Degasser Filter Press

H.P.R.O. - 1 PLANT OF RADICO

H.P.R.O. - 2 PLANT OF RADICO

Radico is one of the pioneers to accept and introduce the new Technologies. For the First Time in India we have installed the DAF System on Distillery Effluent. TSS Reduction thru DAF is from 3200 PPM to 2000 PPM i.e. about 38%.

It has achieved 70% reduction in overall effluent volume and targeted to have 80% reduction after stabilization of currently installed systems.
In order to reduce effluent volume to less than 1: 2 ratio, Radico has install evaporator for its effluent from RO reject. Radico is installing five falling film and one force flow evaporator along with one stand by (FF) for all the five evaporators. It will be having auto CIP / change over through DCS control system. Concentration of effluent shall be increased up to 28-30% from % of RO reject.

Plant has installed Permeate polishing unit in RO plant for recycling of Permeate in Process. Recycling of lees, process condensate and Permeate in fermentation for Molasses dilution. Radico has been able to cut their fresh water consumption by about 60% through recycling of steam Condensate to Boilers, Using MEE condensate for dilution of Molasses and recycling R O. permeate to cooling towers and for gardening.

Stream recycles to

1. Rectification, Pre-rectifier column Lees Recycle Fermentation Recycled

2. Vacuum Pump water Recycle Fermentation 95% recovery

3. Steam Condensate Recycle Boiler 98% recovery

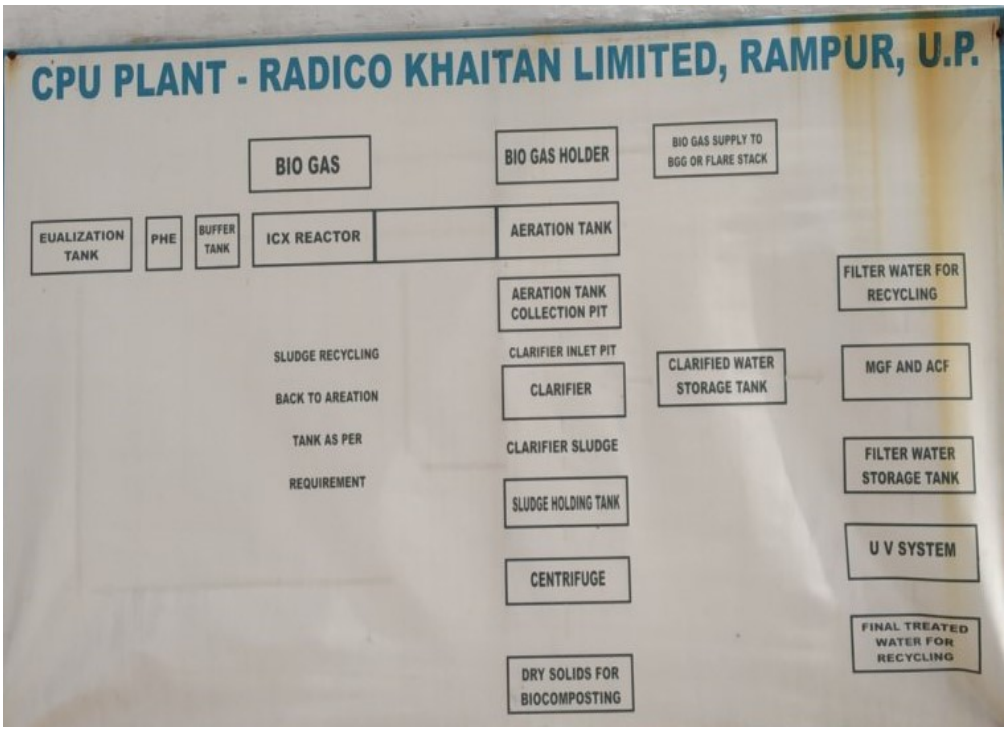
4. Process Condensate re-cycle Fermentation 95% recovery

5. CO2 Scrubber Water re-cycle Fermentation 98% recovery

6. RO Permeate recycle Cooling tower, Fermenters and Gardening 100% recovery

Water Consumption / BL of Alcohol Before adopting recycling Systems 12 Liter / BL

Water Consumption / BL of Alcohol after adopting recycling system 8 Liter / BL



After volume reduction through MEE & R.O. remaining effluent is sent for Bio-Composting using sugar mill press mud and manufacturing highly valuable and micro-nutrient rich organic manure Bio-compost. The Bio-compost manufactured in the Distillery is being packed in sealed bags and no Bio-Compost sale is done through tractor trolleys now.

Radico has adopted very innovative and effective way of Bio-composting in Rainy season by covering Bio-composting yards. These poly sheds are very useful in the rainy season and protect the press mud from rain water in order to continue the process of Sp. Wash consumption in the press mud in the rainy season as well. By adopting covered Bio-composting, Radico is able to achieve ZSD in the rainy season and thereby facilitate operation of distillery throughout the year including rainy season.

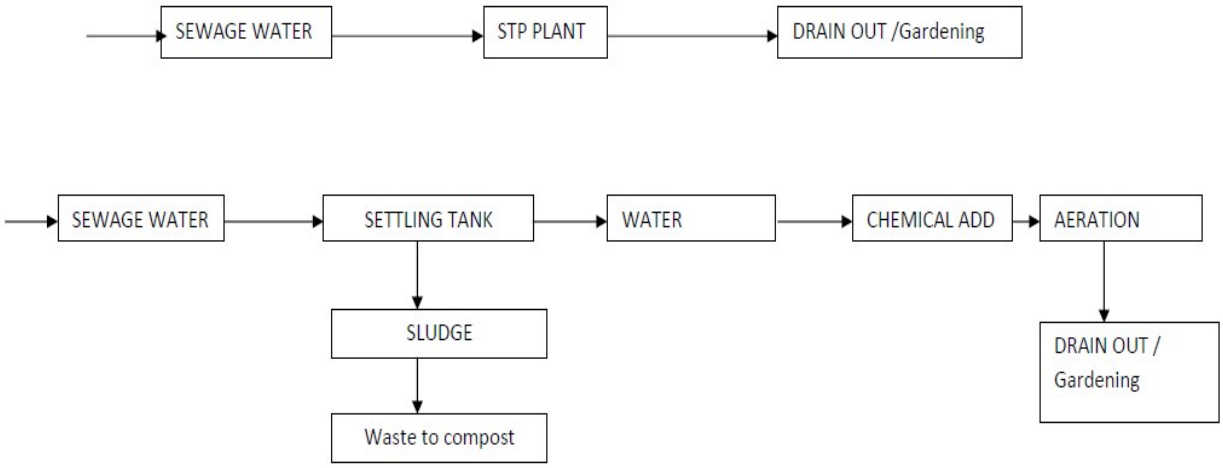
Radico Khaitan Ltd has achieved remarkable landmarks in the field of effluent management, achieving Zero Spent Wash Discharge through various means and reduction in fresh water consumption per litre of alcohol production.

Table 13 Details of Bio-Compsting

1	Total Area for Bio Composting (acres)	acres	58
2	**Break up of total area**	acres	
	Active area of Bio-composting	acres	48
	Covered active area	acres	25
	Uncovered active area	acres	33
	Storage Area	acres	
	Area for press mud storage(excluding active area)	acres	5
	Area for press mud storage having facility to cover press mud storage with tarpaulin plastic (covered/uncovered)	acres	5
	Area for ready Bio-compost storage (excluding active area)	acres	5
	Area for ready Bio-compost storage having facility to cover press mud storage with tarpaulin plastic(covered/uncovered)	acres	5

5.2.2 SEWAGE TREATMENT PLANT

All residential waste water is sent to 150 KLD STP installed in the plant for treatment of sewage water and treated water is utilized in gardening of cricket ground and nearby areas for vegetation and plantation. A typical layout is shown below.



5.2.4 ENVIRONMENTAL COMPLIANCE (RELATED TO WATER)

1. Radico Khaitan Ltd, Rampur does comply with the NOC for ground water withdrawal of **2600 KL/day (and not exceeding 949,000 KL/year)** of ground water; through proposed three bore wells only. The audit team has collected the detail of Ground Water abstracted by the plant in year 2020. As per data provided by the plant, the total ground water abstraction in FY 2020-21 is **811,437 KL/year which is less than the CGWA NOC of 949,000 KL/year, issued to plant on 17/10/2016**.

2. As per CGWA guidelines, all the bore wells to be fitted with water meter by the firm and monitoring of ground water abstraction to be undertaken accordingly on regular basis, at least once a month and Radico Khaitan Ltd, Rampur has installed flow meters on all the bore well and are maintaining the data on monthly basis. All the raw water extraction data is submitted to CGWA on yearly basis.

3. As per the water quality reports, all the parameters are well within the prescribed limits. However, it was brought into notice that in Joint Inspection Report of CPCB after inspection on 27th October 2020, reports of hand pump, piezometer wells and bore wells that the Fe, Mn & Pb contents are marginally above the limits. On further investigation, it was observed that the presence of Fe, Mn & Pb is possible due to the pipe material. Generally galvanized iron or Mild Steel pipes can show increase in such components. Specially piezometer wells, where inside water is stagnant, may show a bit higher values.

4. The audit team has checked and verified all the water quality test reports such as Raw Water and Treated Water from Effluent Treatment Plant. All of the reports comply with the environmental factors related to water uses and discharge. (Attached separately in annexure).

Radico Khaitan Ltd has taken various innovative initiatives for Upliftment of ground water level of Chamraua Block and developed various ponds in various villages of Rampur in order to recharge optimum rainwater through pond of respective villages. Although the ground water level is majorly depends on rain water fall quantum in respective area, but development of pond is also very important to recharge the rain water through ponds. In development of ponds for making them suitable for rain water recharging following activities are being carried out:

1. Pond's leveling activity:

With surface leveling activity, the bottom of the pond is being leveled for equal water filling all across the pond area. It helps in uniform distribution of water pressure arisen from total catchment area. Radico is doing this activity in ponds, wherever it is needed.

2. Drilling of Water Recharging Shaft inside the Ponds:

It is being carried out for providing the easy path to pond water to get recharged in underground water regime. This activity is required during new construction of Rain Water Recharging system.

3. Pond's Desilting activity:

Whenever rain carryover water of the pond get settles, the available silt also gets settled at the bottom of the pond and on filter material of water recharging shaft. This silt layer slowdown the

water recharging process. To reactivate the water recharging process, removal of silt during pre-monsoon period is required. Radico is doing Desilting activity during pre-monsoon period.

4. Pre monsoon maintenance activity:

With this activity the filter material like gravels & plastic screen are being cleaned /replaced. Brick structure of water recharging shaft is being repaired wherever needed.

Till the end of monsoon period 2020, Radico has developed 129 nos of rainwater recharging shafts in 38 nos of villages (list is being attached as Annexure - D) where proper development of pond has been done along with the above-mentioned activities.

Table 14 Total Runoff Available for Recharge

Type of area	No. of recharging pits	Total Recharge Volume (m_3)
Inside the plant	27	173093
****In nearby villages**	129	2623194
TOTAL	156	**2796287**

The total water recharged through rain water harvesting is shown in below table:

Table 15 Ground Water Recharged Through RWH Pits (Jan-2020 to Dec-2020)

Type of area	Avg. Rainfall in mtr	Total Recharge Capacity (m_3)	Total Recharge Volume (m_3)
Inside the plant	1117.1	173093	243222.8809
In nearby villages	1117.1	2623194	3686000.022
TOTAL		2796287	**3929223**

As evident, 27 artificial rain water harvesting structure within the Radico Khaitan Ltd, Rampur & 129 artificial rain water harvesting structure within the Radico Khaitan Ltd, Rampur in nearby villages of project area are sufficient for the adequate quantity of artificial recharge. Radico Khaitan Ltd, Rampur has recharged more water than the compliance of 200% of withdrawal limit, i.e., 18, 84,000 kL.

Guest House Building (Above)
Plant Shed (Below)
Roof water collection and
Water Recharging system

Biocompost Yards (Above)
Roof water collection and
Water Recharging system
Actual snap of bore (Below)

Water Recharging Shaft Constructed By: Radico Khaitan Ltd,

Village : Kakraua, Block Chamrawa, Distt. Rampur, U.P. Total Water Recharging Shafts in Village = 3

Water Recharging Shaft Constructed By: Radico Khaitan Ltd,

Village : Ladaura, Block Chamrawa, Distt. Rampur, U.P. Total Water Recharging Shafts in Village = 3

Before Monsoon

Pond Status after cleaning & maintenance

Before Monsoon

After Monsoon

On 04.11.2019 during Inspection

After Monsoon

On 04.11.2019 during Inspection

As per CGWA notice dated 01/02/2019, In case the ground water abstraction is more than 10 KL/day, monthly water level monitoring data shall be maintained and submitted annually to the Regional

Office of CGWB. Therefore, the Radico Khaitan Ltd, Rampur, has installed six Piezometers inside the plant near the bore wells, record the monthly water level in and around the plant. Radico Khaitan Ltd, Rampur is maintaining all the data of all the piezometer and is submitting the data to CGWB on yearly basis. For monitoring the impact of water recharging system, Radico has also installed 6 Nos Piezometers, which are direct online indicators for ground water level measurement. With the impact of rainwater recharging through recharging shafts, the ground water level is indicating a stable and improving trend in recent years. From 2017 onwards, the average ground water level of Chamraua has improved by approx. 1.5 mtr. Average ground water level through all the piezometers is being attached as Annexure – E.

CHAPTER 6

Data Analysis and Results

6. DATA ANALYSIS & RESULTS

6.1 SEASON WISE WITHDRAWAL AND CONSUMPTION DETAILS

Season wise water extraction, consumption and discharge for Radico Khaitan Ltd, Rampur has been analyzed. The below table shows the analyzed data.

Table 16 Season Wise Extraction and Consumption Details

Description (For the year 2019-20)	Summers (KLD) (Mar-June)	Monsoons (KLD) (Jul–Oct)	Winters (KLD) (Nov- Feb)
Groundwater source, Borewell-1	757	735	731
Groundwater source, Borewell-2	646	656	643
Groundwater source, Borewell-3	603	966	931
Total Fresh Water Inlet	**2006**	**2357**	**2305**
Recycled water from ETP/STP	3232	2661	3145
Rain Water Harvested	NA	NA	NA
Total Water Available for Utilization	5237	5018	5450
Total Consumption	5237	5018	5450
Utility	933	1251	1239
Domestic	39	39	39
Process	4265	3727	4172

Observations:

- From the above table, it is seen that the major water extraction and consumption is in the almost same in whole year.

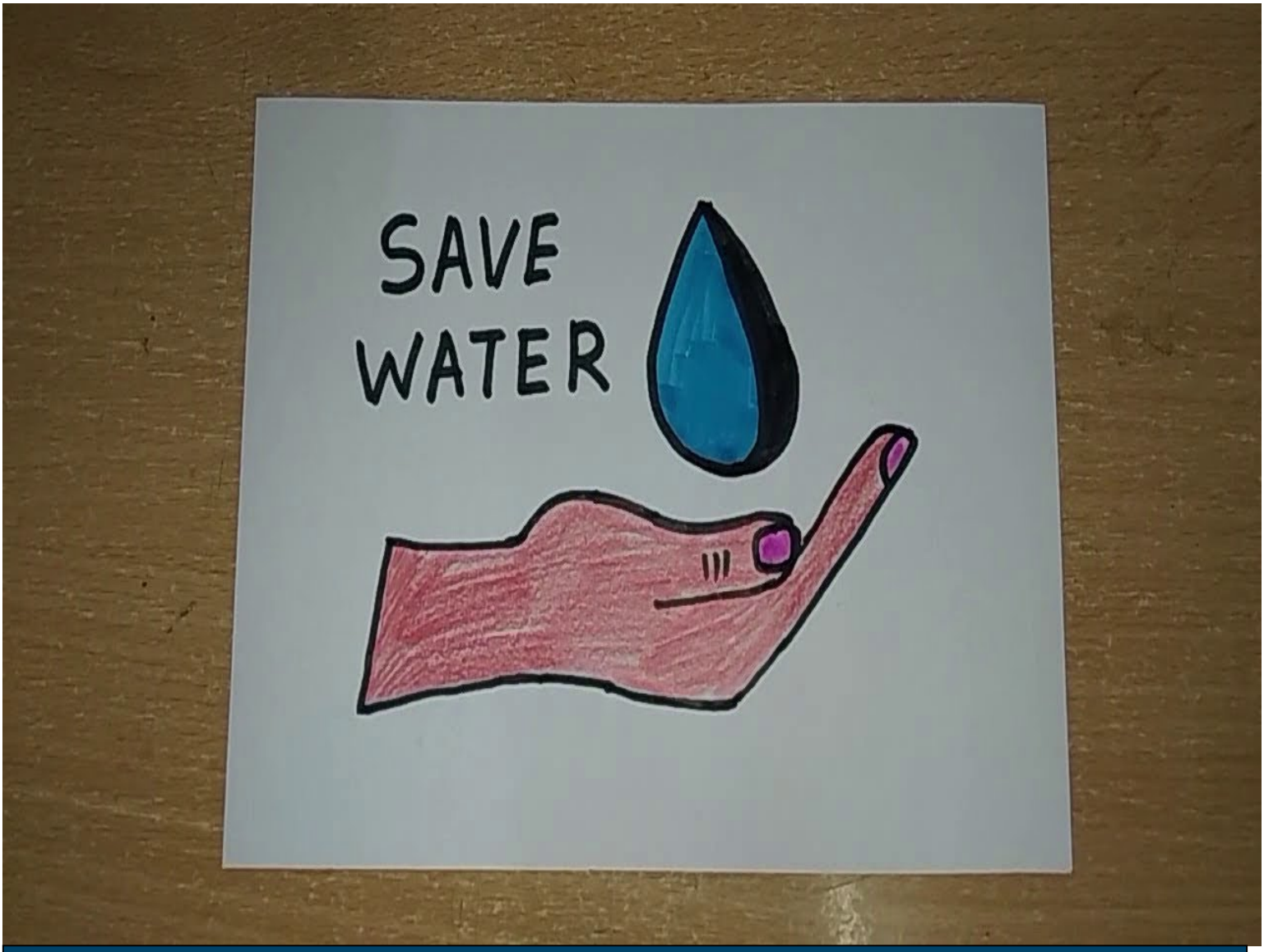
6.2 TOTAL RAW WATER WITHDRAWAL, CONSUMPTION AND DISCHARGE DETAILS (LAST THREE YEARS)

Audit team analysed the monthly data for Source, consumption and discharge for FY 2019-20. Details provided in below table:

Table 17 Total Source, Consumption and Discharge Data

Year	Month	Source (KL)	Consumption (KL)	Discharge (KL)
2018-19	April	69872	69872	0
	May	73600	73600	0
	June	70788	70788	0
	July	73273	73273	0
	August	79129	79129	0
	September	72298	72298	0
	October	63689	63689	0
	November	63065	63065	0
	December	70565	70565	0
	January	58721	58721	0

	February	61911	61911	0
	March	65581	65581	0
	Total	**822492**	**822492**	**0**
2019-20	April	67897	67897	0
	May	67048	67048	0
	June	53952	53952	0
	July	57141	57141	0
	August	66739	66739	0
	September	74491	74491	0
	October	68209	68209	0
	November	59727	59727	0
	December	68202	68202	0
	January	66866	66866	0
	February	64025	64025	0
	March	65064	65064	0
	Total	**779361**	**779361**	**0**
2020-21	April	29998	29998	0
	May	61959	61959	0
	June	73742	73742	0
	July	74371	74371	0
	August	74892	74892	0
	September	71127	71127	0
	October	69549	69549	0
	November	70501	70501	0
	December	76736	76736	0
	January	71858	71858	0
	February	64448	64448	0
	March	72256	72256	0
	Total	**811437**	**811437**	**0**



CHAPTER 7

Water Conservation Opportunities

7. WATER CONSERVATION OPPURTUNITIES

Best management practices (BMPs) are a set of hands-on recommendations that help to identify opportunities and implement programs to save water in the plant. BMPs are developed for the various water-use categories in the office buildings and for monitoring and operational procedures. They are grouped according to indoor water use, outdoor water use, and monitoring and operational procedures. We can tailor water-saving program by using part or all the BMPs depending on budget and environmental requirements. Tips and information are provided on water-saving amounts and cost recovery to help in prioritizing measures and make the most knock for buck.
Based on the information collected and observations, the following can be recommended to reduce water use and increase its efficiency.

7.1 INSTALLING AUTOMATIC NOZZLES OR SPRINKLER FOR GARDENING

Present Scenario

Currently, Gardening is done with the help flexible hose that can use 40 litres of water per minute.

Recommendation

Here, we recommend installing either nozzles install sprinkler in the hose or with timer based system. The treated water saved can be utilized in domestic uses such as flushing in toilets and for cleaning of auditorium etc., which in turn reduces fresh water in domestic and residential.

Water Savings Potential

The total resultant benefit in terms of water savings workout by installing automatic timer based sprinkler for gardening is **6051 KL** per annum with an estimated investment of **Rs. 0.5 Lac** with the simple payback period of **29 months.** Water saving potential after installing timer based sprinkler is shown below:

Table 18 Saving Potential for Gardening

Sr. No.	Particulars	Unit	Values
1	Water Used in Gardening	KL/year	30255
2	Water saving Potential	%	20
3	Total Water Saving Potential	KL/year	6051
4	Average Cost of Water	Rs./KL	3.4
5	Monetary Saving Potential (3.4x 6051 = 20753)	**Rs.**	20573
6	Cost of Investment	Rs	50000
7	Payback Period	months	29

7.2 INSTALLING FLOW REGULATORS IN FAUCETS OF WASH BASIN

Present Scenario

Total 44 wash basins were found with flow of existing tap/faucets is 4 Litres per Minute (LPM).

Recommended

It is recommended to throttle 50% of the present condition in wash basin faucets to reduce the flow from 4LPM to 2LPM. Faucets flows can easily be reduced without affecting the comfort of the water user.

Water Savings Potential

The total resultant benefit in terms of water savings workout by installing flow regulator **is 6658 KL** per annum with an estimated investment of **Rs. 32000** with the simple payback period of **17 months.**

Table 19 Saving Potential for wash basin

Sr. No	Particulars	Unit	Value
1	Total no. of wash basin	-	40
2	Total no. of employee	-	1500
3	Water used in wash basin for one Wash	Litre	0.076
4	Total Daily Water Consumption in Wash Basin	KL/day	36.48
5	Total Annual Water Consumption (considering 365 days) (36.48x 365 = 13315.2)	KL/year	13315.2
6	Total Annual Water Consumption by Reducing flow to 50% (13315/2 = 6657.6)	KL/year	6658
7	Annual Water Saving by Reducing Flow to 50%	KL/year	6658
8	Average Cost of Water	Rs. /KL	3.4
9	Total Annual Monetary Saving	Rs.	22636
10	Investment	Rs	32000
11	Payback Period	months	17

7.3 Replacements of Inefficient Pumps with New Energy Efficient Pumps

As the efficiency of bore well #1 is very low. We recommend replacing this in-efficient pump with energy efficient pump. The resultant benefit in terms of energy savings workout for replacing it with energy efficient pump is Rs. 4.5 Lac per annum with an estimated investment of Rs. 3.2 Lac with the simple payback period of 9 months.

Table 20 Saving Potential for Inefficient Pumps with New Energy Efficient Pumps

Sr. No	Particulars	Unit	Bore well # 1
1	Running Status		Running
2	Rated Flow	m^3/hr	150
3	Rated Head	M	45
4	Rated Power	KW	30
5	Measured Flow	m^3/hr	70
6	Discharge Pressure (A)	Kg/cm^2	2.7
7	Depth of Water from Ground (B)	Meter	7
8	Total Head (=B+(AX10))	Meter	34
9	Input power	kW	**27.88**

10	Hydraulic Power	KW	**6.49**
11	Motor Efficiency	%	90
12	Overall (Pump Set) Efficiency	%	23.3%
13	Overall Energy Efficient Pump Efficiency	%	55.0%
14	Energy consumed for same hydraulic power@50%	kW	5.9
15	Overall Energy Savings	kWh	47167
16	Cost of Electricity	Rs./unit	9.5
17	Annual Monetary Savings	Rs	448089
19	Investment	Rs	320000
20	Simple Payback	month	9

7.4 RECOVERY OF BACKWASH WATER OF SOFTENER AND DM PLANT

Recovery of DM, regeneration waste water, implementation of rinse recycling in the DM plant, Recovery of backwash effluent from pretreatment filtration plant & Recovery of back wash water of Pressure Sand Filters (PSF) and Sand Filters (SF) will reduce the fresh water consumption by 1-2% in water treatment plant.

Table 21 Saving Potential of Backwash of SOFTENER AND DM

Sr. No.	Particulars	Unit	Values
1	Backwash generation	KLD	143
2	No of working days in a year	days	365
3	Annual Backwash water recovery @50%	KL	26183
4	Total Make up Water Saving Potential	KL/year	26183
5	Average Cost of Water	Rs./KL	3.4
6	Monetary Saving Potential After Implementing New Condensate Recovery System (3.4*26183= 89021)	Rs.	89,021
7	Investment	Rs	300000
8	Payback Period	months	40

7.5 REPLACEMENT OF OPEN TYPE COOLING TOWER WITH CLOSED CIRCUIT COOLING TOWER (CCCT)

The audit team observed that the cooling water required for utilities such as Boiler, Compressor, DGs etc., are being provided with the help of Open type cooling tower of respective size. However, open type cooling tower has lower COC (recommended by OEMs) in comparison to Closed Circuit Cooling Tower (CCCT).

Closed circuit cooling towers or fluid coolers operate just like the open type, but dissipate the process fluid heat load into the ambient air via a heat exchange coil. Closed circuit cooling towers are used in the following applications: water source heat pumps, industrial processes, air compressors, weld machine cooling, mold water cooling, power plant auxiliary cooling, furnace cooling, transformer cooling, closed condenser loops, critical systems, and systems requiring plume elimination.

The key benefits of CCCT are:

1. **LOWEST OPERATING COST:**
   - Clean process fluids sustain the performance of high efficiency components
   - Save on energy consumption by operating in "Free Cooling Mode" during the winter
2. **LOWEST MAINTENANCE COSTS:**
   - Reduces or eliminates cleaning the heat exchanger
   - Extends the life of the equipment
3. **OPERATIONAL FLEXIBILITY:**
   - Free cooling without an intermediate heat exchanger
   - Dry operation during winter months
   - Variable speed pumping to conserve energy without the potential of scaling the unit
4. **LOWEST WATER COSTS:**
   - Lower volume of recirculating water reduce water treatment cost
   - Dry operation and adiabatic modes reduce or eliminate water consumption
5. **MINIMAL INSTALLATION COSTS:**
   - Compact single piece of equipment conserves space replaces three components (cooling tower, heat exchanger, and pump arrangement)

Table 23 Water Saving Potential by installing CCCT

Sr. No.	Particulars	Unit	Values
1	Approximate water saving per day	KLD	71
2	Total No. of Running Days	Days	365
3	Annual Water Saving in Cooling Tower	KL	25828
4	Approximate Energy Saving	kWh	175200
5	Unit Cost of Electricity	Rs./Unit	9.5
6	Cost of Soft water	Rs./KL	11
7	Annual Monetary Saving in reducing water losses in Cooling Tower	Rs	271,194
8	Annual Monetary Saving in Energy reduction	Rs.	1664400
9	Total Annual Monetary Saving	Rs.	1,935,594
10	Investment	Rs.	18375000
11	Payback Period	months	114

7.6 GENERAL TIPS FOR WATER CONSERVATION

A) TOILET TANK BANK

With economical, maintenance free 'Green Toilet Bank' it is very easy to save water on toilet flushing, it helps to save 3 litres water on every flushing, with no sacrifice on performance. Toilet Bank filled with water is hanged inside the toilet flushing tank or reservoir. It will displace an amount of water equivalent to 3 Litres in the tank, which means every flush we will save water, thus saving you money. Less the water you use, the less you need to recycle.

B) SAVING WATER THROUGH MONITORING AND OPERATIONAL PROCEDURES

a) Identifying and Fixing Leaks

The hidden water leaks can cause loss of considerable water and energy without anyone being aware of it. A small leak can amount to large volumes of water loss. Leaks become larger with time, and they can lead to other equipment failure. Fix that leaky pipe, toilet, faucet, or roof top tank to save considerable amount of money and water. The establishment of a leak detection and repair program would be a most cost-effective way to save money and water in the Plant premises. Following are some best practices to identify and fixing leaks:

The Management must be committed for providing the staff and resources needed to maintain plumbing fixtures and equipment on a regular basis and assuring prompt identification and repair of leaks.

- Repair staff is given the tools needed and is trained to make leak repair a priority activity.
- Staffs are taught to report leaks and other water-using equipment malfunctions promptly.
- Staffs are rewarded for success.
- Rooftop tank overflow or leakage water should flow to rainwater gutter system not to sewage system to allow detection of rooftop water loss.
- Records of the type, location, number, and repair of leaks are kept in a central location.

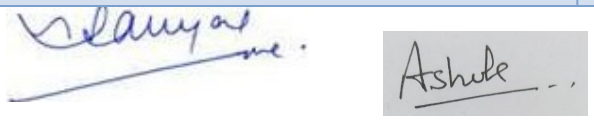
b) Water Metering and Sub-metering

The metering and sub-metering of the Plant's water use is essential to understand the water consumption pattern inside the Plant. The accurate measurements enable management to understand maximum and minimum consumption area in the Plant and improve water efficiency in the Plant. Monitoring the water use allows management to know where and when water is being used and where the best opportunities for water savings exist.

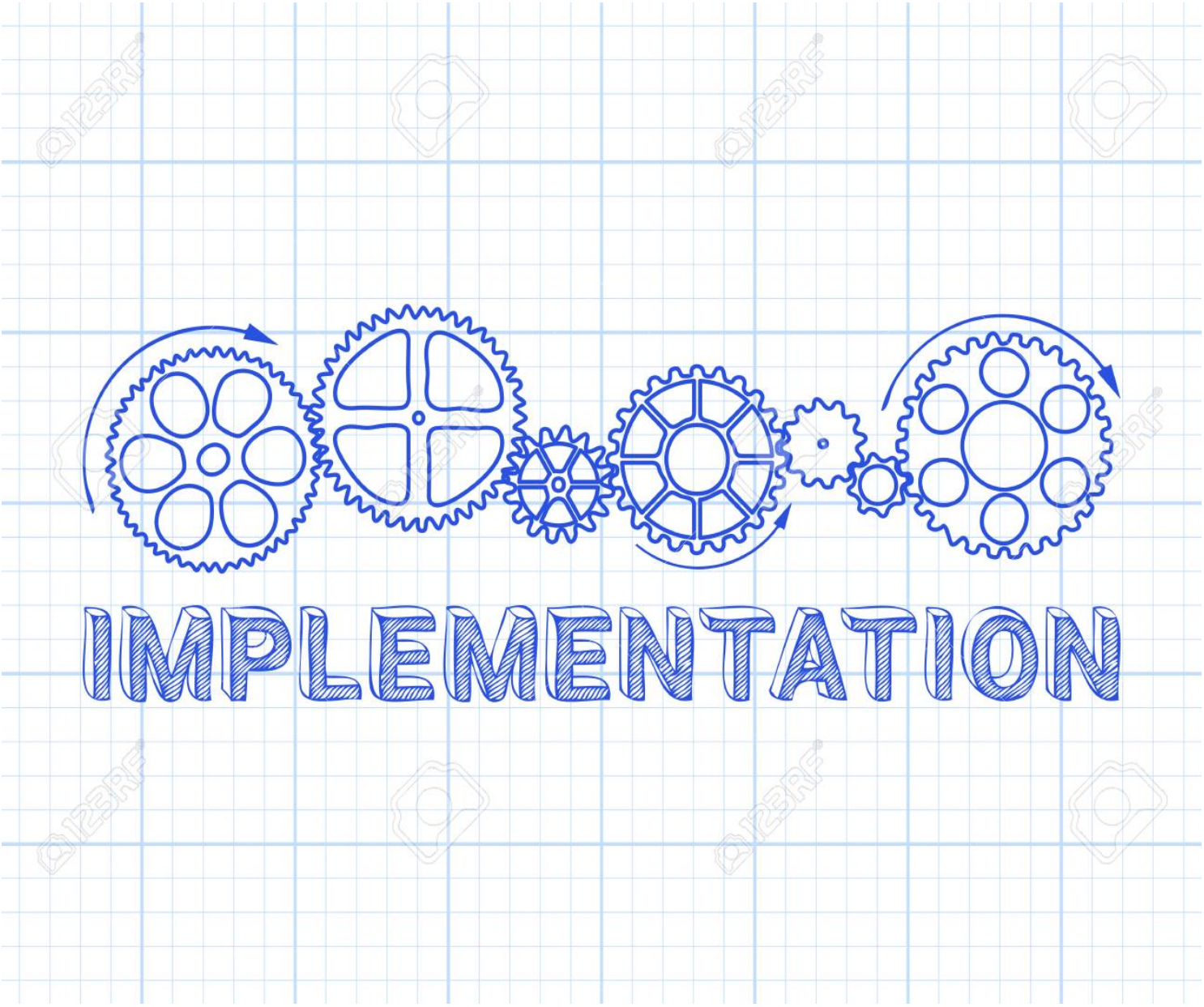
EXECUTIVE SUMMARY

Given the above scenario of prevailing resource challenge, accelerating over time Progressive management of Radico Khaitan Ltd, Rampur is very keen to do water audit of their premises. To get benefit of water saving projects, management of Radico Khaitan Ltd, Rampur awarded the task of water audit of its premises to PHDCCI.

This report is an attempt of PHDCCI to provide an overview of the water distribution system and water usage at Radico Khaitan Ltd, Rampur. The report also highlights the major water sources, consumption area, wastewater treatment facilities and available water saving opportunities in the plant. A set of recommendations which will assist in improving water efficiency has also been highlighted in this report. This report has emerged after a detailed water audit conducted by PHDCCI in the month of March - 2021.

<table>
<tr><td colspan="2">Project Title:</td><td colspan="2">PHDCCI Report Number:</td></tr>
<tr><td colspan="2">Water Audit at Radico Khaitan Ltd, Rampur (UTTAR PRADESH)</td><td colspan="2">2020/WA/PHDCCI/61</td></tr>
<tr><td colspan="4">Client:</td></tr>
<tr><td colspan="4">Radico Khaitan Ltd, Rampur</td></tr>
<tr><td colspan="4">Contact Person:</td></tr>
<tr><td colspan="4">Mr. Vikas Saxena - Head EHS</td></tr>
<tr><td colspan="2">Date of Audit:</td><td colspan="2">Source of Water:</td></tr>
<tr><td colspan="2">15/03/2021 – 18/03/2021</td><td colspan="2">Ground Water</td></tr>
<tr><td colspan="2">Date of this Report:</td><td colspan="2">Date of Approval:</td></tr>
<tr><td colspan="2">24/06/2021</td><td colspan="2"></td></tr>
<tr><td>Work Carried out by:
(Team Composition)</td><td>Ashok Kumar
Vivek Zaveri
Vipul Garg</td><td>Team Leader
Team Member
Team Member</td><td>No Distribution without permission from the client or responsible organization or unit</td></tr>
<tr><td rowspan="2">Final Report Approved:</td><td colspan="3">  </td></tr>
<tr><td colspan="2">Mr. Saurabh Sanyal
Secretary General, PHDCCI
Ashok Kumar, Lead Auditor – Water Audit</td><td>Date: 24-06-2021</td></tr>
</table>

Sr. No.	Section/Area	Key Observations	Recommendations	Annual Water Savings (KL/year)	Annual Monetary Savings (Rs.)	Investment (Rs.)	Payback Period (Months)	Estimated Time Frame for Implementation (Months)
I	**Total Bore well Water Intake**			**811437**				
II	**Bore well Water Saving Achievable**			**64,720**				
Option 1: Immediate/Short term benefits								
1	Domestic	Total 44 wash basins were found with flow of existing tap/faucets is 4 Litres Per Minute (LPM).	It is recommended to throttle 50% of the present condition in wash basin faucets to reduce the flow from 4LPM to 2LPM. Faucets flows can easily be reduced without affecting the comfort of the water user.	6658	22636	32000	17	6
2	Gardening	Gardening is done with the help flexible hose of 1" dia that can use 40 LPM of water.	It is recommend installing either nozzles install sprinkler in the hose or with timer based system	6051	20573	40000	23	12
Option 2: Long-term benefits								
3	Cooling Tower	Plant has installed open type cooling tower for utility requirement which requires normal cooling water temperature for cooling. It has high COC and drift losses	It is recommended to install the Closed circuit cooling tower which reduces losses and result into huge water savings.	25,828	1935594	18375000	114	Under review
4	Process	Currently backwash and regeneration water is being directly sent to CETP	Recovery of back wash water of Pressure Sand Filters (PSF) and Sand Filters (SF) will reduce the fresh water consumption by 1-2% in water treatment plant.	26183	89021	300000	40	Under review
TOTAL				**64,720**	**2,067,824**	**18,747,000**	**109**	**-**



CHAPTER 8

Implementation Plan

8. IMPLEMENTATION PLAN

The Audit team has conducted detail audit of Water Sources, Consumption Area and Discharge side of Radico Khaitan Limited, Rampur and noticed that the plant officials has maintained water sources and water treatment plant properly. There are few recommendations provided by the audit team. The recommendation/implementation plans are provided below:

8.1 Installing automatic nozzles or sprinkler for gardening

The total resultant benefit in terms of water savings workout by installing automatic timer based sprinkler for gardening is **6051 KL** per annum with an estimated investment of **Rs. 0.5 Lac** with the simple payback period of **29 months.**

8.2 Replacements of Inefficient Pump with New Energy Efficient Pump

As the efficiency of bore well #1 is very low. We recommend replacing this in-efficient pump with energy efficient pump. The resultant benefit in terms of energy savings workout for replacing it with energy efficient pump is **Rs. 4.5 Lac per annum** with an estimated investment of **Rs. 3.2 Lac** with the simple payback period of 9 months.

8.3 Installing The flow regulators in Faucets of wash basin

The total resultant benefit in terms of water savings workout by installing flow regulator **is 6658 KL** per annum with an estimated investment of **Rs. 32000** with the simple payback period of **17 months.**

8.4 Recovery of backwash water of Softener and DM plant

Recovery of DM, regeneration waste water, implementation of rinse recycling in the DM plant, Recovery of backwash effluent from pretreatment filtration plant & Recovery of back wash water of Pressure Sand Filters (PSF) and Sand Filters (SF) will reduce the fresh water consumption by 1-2% in water treatment plant. The total resultant benefit in terms of water savings workout by recovery of backwash water is **26183 KL** per annum with an estimated investment of **Rs. 3.0 lac** & simple payback of **40 months.**

8.5 Replacement of open type cooling tower with Closed Circuit Cooling Tower (CCCT)

Open type cooling tower has lower COC (recommended by OEMs) in comparison to Closed Circuit Cooling Tower (CCCT). The total resultants benefit in terms of water savings workout by installing CCCT is **25828 KL** per annum with an estimated an investment of approx. Rs. 1.8 Cr & simple payback of **95 months.**

Table 22 Summary of Implementation Plan

Sr. No.	Section/ Area	Key Observations	Recommendations	Annual Water Savings (KL/year)	Annual Monetary Savings (Rs.)	Investment (Rs.)	Payback Period (Months)	Estimated Time Frame for Implementation (Months)
I	**Total Bore well Water Intake**					**811437**		
II	**Bore well Water Saving Achievable**					**64,720**		
Option 1: Immediate benefits								
1	Domestic	Total 44 wash basins were found with flow of existing tap/faucets is 4 Litres Per Minute (LPM).	It is recommended to throttle 50% of the present condition in wash basin faucets to reduce the flow from 4LPM to 2LPM. Faucets flows can easily be reduced without affecting the comfort of the water user.	6658	22636	32000	17	6
2	Gardening	Gardening is done with the help flexible hose of 1″ dia that can use 40 LPM of water.	It is recommend installing either nozzles install sprinkler in the hose or with timer based system	6051	20573	40000	23	12
Option 2: Long-term benefits								
3	Cooling Tower	Plant has installed open type cooling tower for utility requirement which requires normal cooling water temperature for cooling. It has high COC and drift losses	It is recommended to install the Closed circuit cooling tower which reduces losses and result into huge water savings.	25,828	1935594	18375000	114	Under review

Sr. No.	Section/ Area	Key Observations	Recommendations	Annual Water Savings (KL/year)	Annual Monetary Savings (Rs.)	Investment (Rs.)	Payback Period (Months)	Estimated Time Frame for Implementation (Months)
4	Process	Currently backwash and regeneration water is being directly sent to CETP	Recovery of back wash water of Pressure Sand Filters (PSF) and Sand Filters (SF) will reduce the fresh water consumption by 1-2% in water treatment plant.	26183	89021	300000	40	Under review
TOTAL				**64,720**	**2,067,824**	**18,747,000**	**109**	**-**

9. CONCLUSION

Radico Khaitan Limited, Rampur district, Uttar Pradesh- is a distillery located east of Rampur town, covering an area of 44.392 Ha and occupies western parts of Chamraua block of Rampur district. The distillery produces high-grade Extra Neutral Alcohol ("ENA") from molasses, grains and Scottish design malt spirit from barley malt.

1. The plant has consent to withdraw **2600 KL/day** of water from bore wells available in the plant. At present, approximately **2200 KL/day** of water is being used for the plant operations from the bore wells.

2. As per data provided by the plant, the total ground water abstraction in FY 2020-21 is **811,437 KL/year which is less than the CGWA NOC of 949,000 KL/year, issued to plant on 17/10/2016 vide NOC letter CGWA\NOC\IND\ORIG\2016\2308**.

3. All the water quality test reports such as Raw Water and Treated Water from Effluent Treatment Plant. All of the reports comply with the environmental factors related to water uses and discharge.

4. Thorough study was carried out to find the root cause for presence of Fe, Mg & Pb etc in piezometer well / borewell samples. The basic reason for the presence of such components is use of Galvanized Iron and Mild Steel pipes.

5. Radico Khaitan Limited, Rampur adopted ponds in 41 villages of Chamraua block of district Rampur and this will lead to **ground water recharge to the tune 295% of required quantity of water against 200% requirement of NOC.**

6. Plant has already **reduced its water consumption by 11000 KLD w.r.t 2019 water consumption**.

7. Ground water regime which was showing deteriorating tendency since 2008, has improved after the recharge measures adopted by Radico Khaitan Ltd within the premises.The piezometers constructed Radico Khaitan Limited, Rampur at Ajitpur and Hitachi land (both within the premises) also show a rising trend of 0.548 m/year (54.8 cm/year) and 0.365 m/year (36.5 cm/year) in the ground water level respectively since 2017.

8. Radico Khaitan Limited, Rampur has installed **TSS reduction system & 2nd stage RO with ultrafiltration** to increase the recycling the water & thus decreasing the water consumption.

9. Radico Khaitan Limited, Rampur has installed **Condensate Polishing Unit (CPU)** to recycle the water and utilize in it fermentation & cooling towers.

10. Water balance across the plant has been successfully achieved. Total water consumption is 5235 KLD out of which bore well water consumption inside the plant is 2223 KLD only.

11. Source Water savings of 64,720 KL/year (8 %) is achievable in the short term. Water savings of 12,709 KL/year (1.6%) is achievable in the short term benefit, and 52011 KL/year (6.4 %) is achievable in the long term benefit. Proposals have been given for review and implementation.

12. Strategies identified (provided in Chapter 8) for reduction, reuse and recycle shows around **8%** saving can be achieved in ground water consumption.

10. ANNEXURES MEASURED DATA

FLOW, POWER AND PRESSURE MEASUREMENT OF PUMPS

Particulars	Unit	Bore well # 1	Bore well # 2	Bore well #3
Running Status		Running	Standby	Running
Rated Flow	m^3/hr	100	100	100
Rated Head	M	45	45	50
Rated Power	KW	30	30	30
Measured Flow	m^3/hr	100	70	100
Velocity	m/s	1.733	0.348	1.52
Discharge Pressure (A)	Kg/cm^2	2.9	2.7	3.2
Depth of Water from Ground (B)	Meter	7	7	7
Total Head (=B+(AX10))	Meter	36	34	32
Head Utilization	%	80%	76%	83%
Flow Utilization	%	**83%**	**47%**	**21%**
Input power	kW	**23.21**	**27.88**	**20.49**
Hydraulic Power	KW	**12.26**	**6.49**	**9.59**
Motor Efficiency	%	90	90	90
Rated Efficiency		**61.3%**	**61.3%**	**57.5%**
Pump Efficiency	%	58.7%	25.8%	52.0%
Overall (Pump Set) Efficiency	%	52.8%	23.3%	46.8%

11. ANNEXURES (DATA PROVIDED BY PLANT)

ANNEXURE-A (CGWA NOC)

MEMBER SECRETARY

भारत सरकार
केन्द्रीय भूमि जल प्राधिकरण
जल संसाधन, नदी विकास
और गंगा संरक्षण मंत्रालय

Government of India
Central Ground Water Authority
Ministry of Water Resources,
River Development & Ganga Rejuvenation

File No:- 21-4/1054/UP/IND/2016 - 2280

NOC No:- CGWA/NOC/IND/ORIG/2016/2308

Dated :- 17 OCT 2016

To,
M/s Radico Khaitan Limited,
Bareilly Road, Rampur,
Uttar Pradesh – 244901

Sub:- NOC for ground water withdrawal to M/s Radico Khaitan Ltd in respect of their Distillery unit located at Bareilly Road, Rampur, Block Chamraon, District Rampur, Uttar Pradesh – reg.

Refer to your application on the above cited subject. Based on recommendations of Regional Director, Central Ground Water Board, Northern Region, Lucknow vide their recommendations dated 02/08/2016 and further deliberations on the subject, the NOC of Central Ground Water Authority is hereby accorded to **M/s Radico Khaitan Ltd in respect of their Distillery unit located at Bareilly Road, Rampur, Block Chamraon, District Rampur, Uttar Pradesh.** The NOC is, however subject to the following conditions:-

1. The firm may abstract **2600 cu.m/day** (and not exceeding **9,49,000 cu.m/year**) of ground water, through existing three (3) tubewells only. No additional ground water abstraction structures to be constructed for this purpose without prior approval of the CGWA.
2. All the wells to be fitted with water meter by the firm at its own cost and monitoring of ground water abstraction to be undertaken accordingly on regular basis, atleast once in a month. The ground water quality to be monitored twice in a year during pre- monsoon and post- monsoon periods.
3. **M/s Radico Khaitan Ltd.,** shall, in consultation with the Regional Director, Central Ground Water Board Northern Region, Lucknow implement ground water recharge measures atleast to the tune of **18,84,000 cu.m/year** as proposed, for augmenting the ground water resources of the area within six months from the date of issue of this letter. In addition, the firm shall adopt 2 to 3 nos. villages for Water Security Plan in District Rampur, Uttar Pradesh. The necessary guideline for the Water Security Plan is available on website of Ministry of Water Resources, RD & GR (www.mowr.gov.in). Both, the Demand Side Management /Supply Side Management with maintenance of structures in the said villages to be ensured and a comprehensive plan to be submitted to Regional Director, CGWB. Firm shall also undertake periodic maintenance of

West Block - 2, Wing - 3, Sector - 1, R.K. Puram, New Delhi - 110066
Tel : 011-26175362, 26175373, 26175379 • Fax : 011-26175369
Website : www.cgwa-noc.gov.in

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सबको सुरक्षित जल - सुन्दर सुखद कल
CONSERVE WATER - SAVE LIFE

recharge structures at its own cost. Firm to take up area specific plantation to enhance the recharge measures.

4. The photographs of the recharge structures after completion of the same are to be furnished immediately to the Regional Director, Central Ground Water Board, Northern Region, Lucknow for verification and under intimation to this office. Firm to take up area specific plantation to enhance recharge measures.

5. The firm at its own cost shall install 6-7 piezometers fitted with automatic water level recorders having telemetry systems at suitable locations and execute ground water regime monitoring programme in and around the project area on regular basis in consultation with the Central Ground Water Board, Northern Region, Lucknow.

6. The ground water monitoring data in respect of S. No. 2 & 5 to be submitted to Central Ground Water Board, Northern Region, Lucknow on regular basis at least once in a year.

7. The firm shall ensure proper recycling and reuse of waste water after adequate treatment.

8. Action taken report in respect of S. No. 1 to 7 may be submitted to CGWA within one year period.

9. The permission is liable to be cancelled in case of non-compliance of any of the conditions as mentioned in S. No. 1 to 8.

10. This NOC is subject to prevailing Central/State Government rules/laws or Courts orders related to construction of tubewell/ground water withdrawal/construction of recharge or conservation structure/discharge of effluents or any such matter as applicable.

11. This NOC does not absolve the applicant / proponent of this obligation / requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.

12. The NOC does not imply that other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would consider the project on merits and be taking decisions independently of the NOC.

13. This NOC is valid from 03/10/2016 till 02/10/2018.

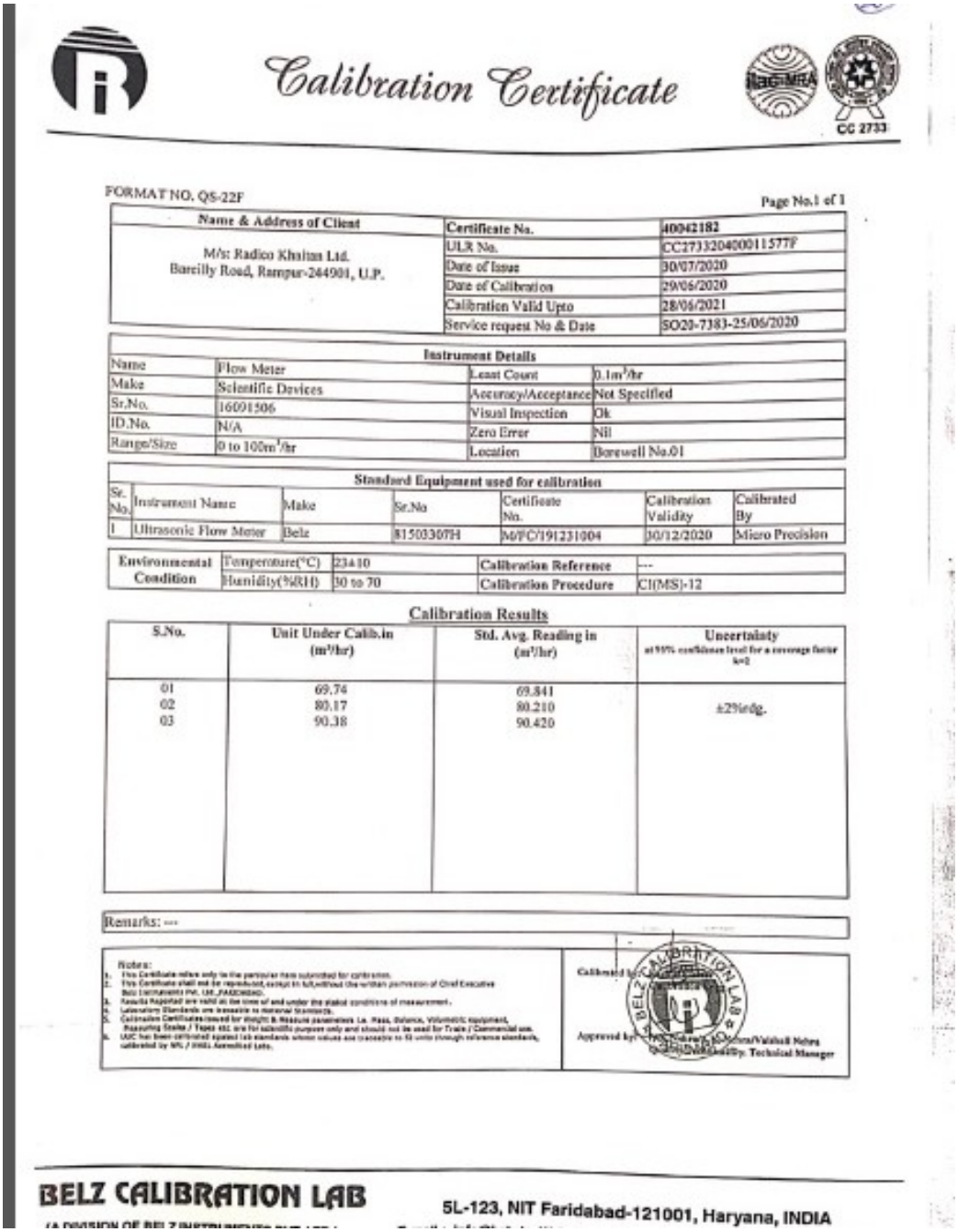
Member Secretary

Copy to:

1. The Member Secretary, Uttar Pradesh Pollution Control Board, PICUP Bhawan, Third Floor, B-Block, Vibhuti Khand, Gomti Nagar, Lucknow, Uttar Pradesh **with a request to ensure that the conditions mentioned in the NOC are complied by the firm.**
2. The District Magistrate, District Rampur, Uttar Pradesh.
3. The Regional Director, Central Ground Water Board, Northern Region, Lucknow. This has reference to your recommendation dated 02/08/2016.
4. TS to the Chairman, Central Ground Water Board, Bhujal Bhawan, Faridabad.
5. Guard File 2016-17.

Member Secretary

ANNEXURE-B (CALIBRATION CERTIFICATES)



Calibration Certificate

CC 2733

FORMAT NO. QS-22F

Page No.1 of 1

Name & Address of Client		
M/s: Radico Khaitan Ltd. Bareilly Road, Rampur-244901, U.P.	Certificate No.	40042182
	ULR No.	CC273320400011577F
	Date of Issue	30/07/2020
	Date of Calibration	29/06/2020
	Calibration Valid Upto	28/06/2021
	Service request No & Date	SO20-7383-25/06/2020

Instrument Details

Name	Flow Meter	Least Count	0.1m³/hr
Make	Scientific Devices	Accuracy/Acceptance	Not Specified
Sr.No.	16091506	Visual Inspection	Ok
ID.No.	N/A	Zero Error	Nil
Range/Size	0 to 100m³/hr	Location	Borewell No.01

Standard Equipment used for calibration

Sr. No.	Instrument Name	Make	Sr.No	Certificate No.	Calibration Validity	Calibrated By
1	Ultrasonic Flow Meter	Belz	81503307H	M/FC/191231004	30/12/2020	Micro Precision

Environmental Condition	Temperature(°C)	23±10	Calibration Reference	---
	Humidity(%RH)	30 to 70	Calibration Procedure	CI(MS)-12

Calibration Results

S.No.	Unit Under Calib.in (m³/hr)	Std. Avg. Reading in (m³/hr)	Uncertainty at 95% confidence level for a coverage factor k=2
01	69.74	69.841	±2%rdg.
02	80.17	80.210	
03	90.38	90.420	

Remarks: ---

Notes:
1. This Certificate refers only to the particular item submitted for calibration.
2. This Certificate shall not be reproduced, except in full, without the written permission of Chief Executive Belz Instruments Pvt. Ltd., FARIDABAD.
3. Results Reported are valid at the time of and under the stated conditions of measurement.
4. Laboratory Standards are traceable to national standards.
5. Calibration Certificates issued for weight & Measure parameters i.e. Mass, Balance, Volumetric equipment, Measuring Scale / Tapes etc. are for scientific purpose only and should not be used for Trade / Commercial use.
6. UUC has been calibrated against lab standards whose values are traceable to SI units through reference standards, calibrated by NPL / NABL Accredited Labs.

Calibrated by: BELZ CALIBRATION LAB

Approved by: Vaishali Mehra, Technical Manager

BELZ CALIBRATION LAB

5L-123, NIT Faridabad-121001, Haryana, INDIA

Calibration Certificate

CC 2733

FORMAT NO. QS-[illegible]

Page No.1 of 1

Name & Address of Client		
M/s. Radico Khaitan Ltd. Bareilly Road, Rampur-244901, U.P.	Certificate No.	40042183
	ULR No.	CC273320400011578F
	Date of Issue	[illegible]
	Date of Calibration	29/06/2020
	Calibration Valid Upto	28/06/2021
	Service request No & Date	SO20-7383-25/06/2020

Instrument Details

Name	Flow Meter	Least Count	[illegible]
Make	Rockwin	Accuracy/Acceptance	Not Specified
Sr.No.	182072	Visual Inspection	Ok
ID.No.	N/A	Zero Error	Nil
Range/Size	0 to 100m³/hr	Location	Borewell No.02

Standard Equipment used for calibration

Sr. No.	Instrument Name	Make	Sr.No	Certificate No.	Calibration Validity	Calibrated By
1	Ultrasonic Flow Meter	Belz	8150331071	M/FC/191231004	30/12/2020	Micro Precision

Environmental Condition	Temperature(°C)	23±10	Calibration Reference	---
	Humidity(%RH)	30 to 70	Calibration Procedure	CI(MS)-12

Calibration Results

S.No.	Unit Under Calib.in (m^3/hr)	Std. Avg. Reading in (m^3/hr)	Uncertainty at 95% confidence level for a coverage factor k=2
01	69.847	69.881	±2%rdg.
02	80.149	80.187	
03	89.973	90.074	

Remarks: ---

Notes:
1. This Certificate refers only to the particular item submitted for calibration.
2. This Certificate shall not be reproduced, except in full, without the written permission of Chief Executive Belz Instruments Pvt. Ltd.,Faridabad.
3. Results Reported are valid at the time of and under the stated conditions of measurement.
4. Laboratory Standards are traceable to National Standards.
5. [illegible]
6. [illegible]

Calibrated by:

Approved by: [illegible]/Vaishali Nehra Quality Manager/Dy. Technical Manager

BELZ CALIBRATION LAB

(A DIVISION OF BELZ INSTRUMENTS PVT. LTD.)

5L-123, NIT Faridabad-121001, Haryana, INDIA

E-mail : info@belz.in Website: www.belz.in GST No.: 06AABCB7053L1ZM

(29)

Calibration Certificate

CC 2733

FORMAT NO. QS-22F

Page No.1 of 1

Name & Address of Client		
M/s. Radico Khaitan Ltd. Bareilly Road, Rampur-244901, U.P.	Certificate No.	40042181
	ULR No.	CC273320400011576F
	Date of Issue	30/07/2020
	Date of Calibration	29/06/2020
	Calibration Valid Upto	28/06/2021
	Service request No & Date	SO20-7383-25/06/2020

Instrument Details

Name	Flow Meter	Least Count	0.1m³/hr
Make	Scientific Devices	Accuracy/Acceptance	Not Specified
Sr.No.	16099507	Visual Inspection	Ok
ID.No.	N/A	Zero Error	Nil
Range/Size	0 to 100m³/hr	Location	Borewell No.03

Standard Equipment used for calibration

Sr. No.	Instrument Name	Make	Sr.No	Certificate No.	Calibration Validity	Calibrated By
1	Ultrasonic Flow Meter	Belz	8150330711	MPC/191231004	30/12/2020	Micro Precision

Environmental Condition		Calibration Reference	
Temperature(°C)	23±10	Calibration Reference	---
Humidity(%RH)	30 to 70	Calibration Procedure	CI(MS)-12

Calibration Results

S.No.	Unit Under Calib.in (m^3/hr)	Std. Avg. Reading in (m^3/hr)	Uncertainty at 95% confidence level for a coverage factor k=2
01	70.1	70.348	±2%rdg.
02	79.8	80.036	
03	90.2	90.409	

Remarks: ---

Notes:
1. This Certificate refers only to the particular item submitted for calibration.
2. This Certificate shall not be reproduced, except in full, without the written permission of Chief Executive Belz Instruments Pvt. Ltd., FARIDABAD.
3. Results Reported are valid at the time of and under the stated conditions of measurement.
4. Laboratory Standards are traceable to National Standards.
5. [illegible] measuring Scales / Tapes etc. are for scientific purpose only and should not be used for Trade / Commercial use.
6. UUC has been calibrated against lab standards whose values are traceable to SI units through reference standards calibrated by NPL / NABL Accredited Labs.

Calibrated By:

Approved By: [illegible] Nehra/Vaishali Nehra
Authorized Signatory, Technical Manager

BELZ CALIBRATION LAB
(A DIVISION OF BELZ INSTRUMENTS PVT. LTD.)

5L-123, NIT Faridabad-121001, Haryana, INDIA
E-mail : info@belz.in Website: www.belz.in GST No.: 06AABCB7053L1ZM

ANNEXURE-C (LISTR OF DEVDELOP PONDS & RECHARGING POINTS)

List of developed ponds in villages

Water Recharging Pit Arrangements in Village Ponds			
S. No.	Name of Village	No. of Shaft	Year of Construction
1	Agapur	4	2017-2018-2019
2	Ballu Ki Madhaiya	3	2017-2018-2019
3	Beesri	4	2017-2018-2019
4	Bhamraua	2	2017-2018-2019
5	Bhandpura	3	2017-2018-2019
6	Chamraua	3	2017-2018-2019
7	Chittiramnagar	9	2017-2018-2019
8	Dabka	2	2017-2018-2019
9	Daniapur	2	2017-2018-2019
10	Dinpur	4	2017-2018-2019
11	Hajinagar	3	2017-2018-2019
12	Hariyal	3	2017-2018-2019
13	Jasmauli	3	2017-2018-2019
14	Kakraua	3	2017-2018-2019
15	Kalrakh	5	2017-2018-2019
16	Khajuria	2	2017-2018-2019
17	Ladora	4	2017-2018-2019
18	Madhauli	3	2017-2018-2019
19	Mahmoodpur	4	2017-2018-2019
20	Meghanagla	5	2017-2018-2019
21	Milak Chikna	5	2017-2018-2019
22	Nasratnagar	2	2017-2018-2019
23	Naugama	6	2017-2018-2019
24	Raipur	3	2017-2018-2019
25	Raja rampur	2	2017-2018-2019
26	Ramu Ki Madhaiya	2	2017-2018-2019
27	Shankarpur	2	2017-2018-2019
28	Sikrol	3	2017-2018-2019
29	Baasnagli	1	2019-2020
30	Bijaiya	5	2019-2020
31	Dundai	3	2019-2020
32	Indra	2	2019-2020
33	Koyla	1	2019-2020
34	Koyli	5	2019-2020
35	Madhaiya Udairaj	3	2019-2020
36	Milak Nibbi Singh	3	2019-2020
37	Mominpur Ahmedabad	5	2019-2020
38	Tumaria	5	2019-2020
	Total No of Shafts	129	

ANNEXURE-E (GROUND WATER LEVEL)

Ground water Level	October 2017	October 2018	October 2019	October 2020
Post Monsoon (Meter)	-5.7	-4.8	-4.9	-4.5
Ground water Level		July 2018	July 2019	July 2020
Pre Monsoon (Meter)		-6.9	-5.8	-5.3

Similar improving trend has been observed by UP Ground water Department after year 2017. Report on next slide

EVALUATION REPORT

ON

IMPACTS OF GROUNDWATER ABSTRACTION AND GROUNDWATER RECHARGE ON GROUNDWATER SCENARIO FOR RADICO KHAITAN LIMITED, DISTRICT RAMPUR, UTTAR PRADESH

Submitted To-

RadicoKhaitan Ltd, Rampur

DEPARTMENT OF CIVIL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY
ROORKEE-247 667

November 2021

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5.0	GROUNDWATER QUALITY	6
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1.0 INTRODUCTION:

RadicoKhaitan Limited distillery is located east of Rampur town. It produces high-grade Extra Neutral Alcohol ("ENA") from molasses, grains, and Scottish design malt spirit from barley malt.

Based on the order of the National Green Tribunal (NGT) and Central Groundwater Authority, RadicoKhaitan carried out impact assessment studies on groundwater abstraction andconservation and recharge measures adopted by the industry.

RadicoKhaitan contacted IIT Roorkee to evaluate the report on "Impacts of Ground Water Abstraction and Ground Water Recharge on Ground Water Scenario for RadicoKhaitan Limited, District Rampur, Uttar Pradesh."

2.0 METHODOLOGY ADOPTED IN EVALUATION

The methodology adopted in evaluation is based on the desk work and field visit. A field visit was conducted on 30th Oct. 2021 to the distillery unit to check the groundwater recharge structures; piezometers and groundwater samples were collected from borewells to cross-check the groundwater quality. In addition, STP performance was also checked, and a field visit was also conducted to verify nearby pond recharge structures.

3.0 GROUNDWATER LEVEL

a) Groundwater levels inside the premises of the RadicoKhaitan Ltd. and outside the premises are constantly recorded two times in a day with an automatic pressure-based water level recorder. Earlier, six piezometers were installed – two inside the premises at Ajeetpur and Hitachi and four outside the premises at Deeper, Hariyal, Milak Chicken, and Madhaiya- and measurements were taken. In the year 2020, six more piezometers were installed on the premises to assess the fairly accurate spatial variation of the groundwater level. All the piezometers are fitted with Digital Water Level Recorder (DWLR) with a telemetry system. Online data of the groundwater level at all the piezometers are available. Groundwater data of the earlier six piezometers are available from 2017 and of the new piezometers from 2020.

b) The pre-monsoon water level map prepared from the data collected from the State Ground Water Department, Government of Uttar Pradesh, Lucknow, indicate that water level in the study area (Chamraua block) varies from 3.98 to 7.72 mbgl in pre-monsoon and while 3.45 to 6.82 mbgl in the monsoon period during period 2019-2020. The deepwater level is observed near Bhont, Chamraua, Deenpur, and MadhaiyaUdairaj. It is pertinent to note that the groundwater table has improved in the monsoon period, which indicatesfavorable soil conditions for recharge.

c) Record of water level from 2017 to 2021 at all the six piezometers at Ajeetpur, Hitachi, Deeper, Hariyal, Milak Chicken, and Madhaiya show a rising water level trend a rate of about 0.20 m/year.

d) Historical groundwater table data, collected by State Ground Water Department from 2008 to 2020 at ten stations, indicates a falling trend at eight stations and a rising trend at two stations. However, data analysis from 2017 to 2020 shows a rising trend at all the stations, which can be attributed to the groundwater recharge system implemented in the year 2017.

e) It is suggested that infiltration tests shall be carried out at some location to quantify groundwater recharge due to rain.

f) Before the year 2017 in the Chamraua block, the percentage stage of groundwater withdrawalwas of the order of 133%, but after implementing the recharge systems, it is now less than 100%; thus, the area will not be categorized as "Over Exploited."

g) The groundwater table at Piezometer No. 1 inside the premises and Milak Chicken was measured using a Groundwater measuring instrument during the site visit. At Piezometer No. 1, the Groundwater level was at 5.8 m below the ground level, and at Milak Chicken, the level was at 2.75 m below the ground level. Such values were cross-checked with the recorded groundwater level by DWLR, which was available online, and found that both levels are almost the same.

h) Historical recorded groundwater level of some Piezometers was examined and found that groundwater levels have improved from 2017 to 2021.

i) It is suggested that reference ground level be marked on the ground near the installed Piezometers, and groundwater level shall be reported with that reference level. Some photographs of the Piezometers are shown in Figs. 1-5.

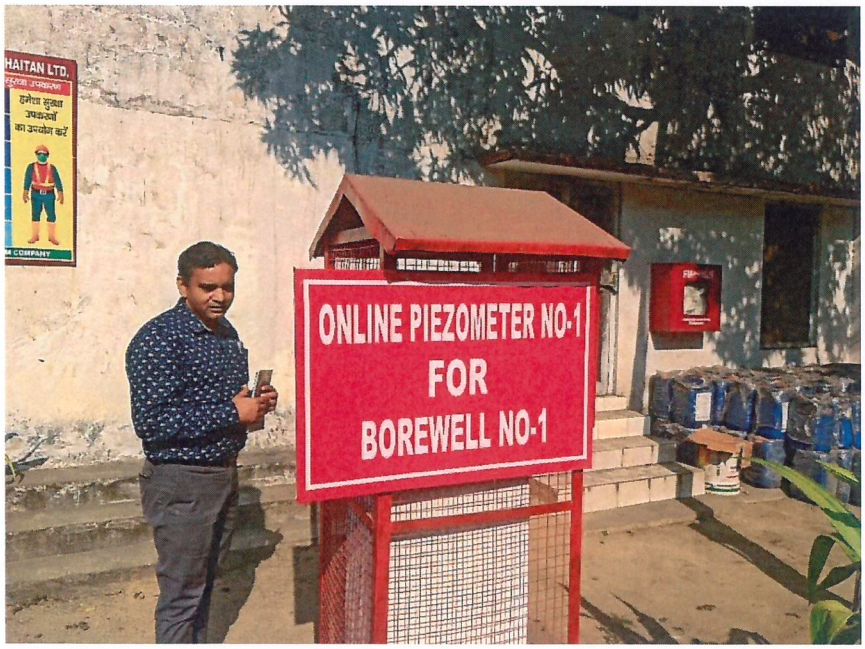

Fig.1 Piezometer No. 1 located inside the campus

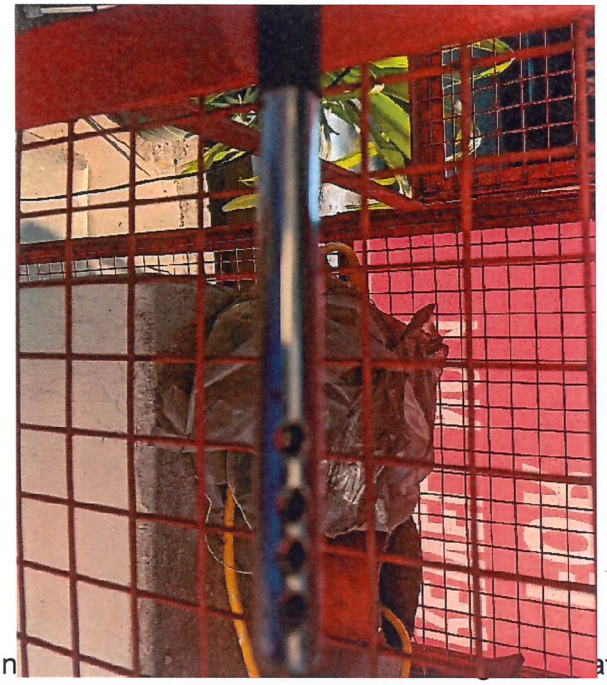

Fig.2 In ater level.

Fig.3 Measurement of groundwater table during the visit in Piezometer No.1

Fig. 4 Piezometer located at MilakChickna

Fig.5 Measurement of groundwater table during the visit in Piezometer located at Milak Chicken

4. GROUNDWATER RECHARGE

a) For recharging the groundwater, 156 rainwater harvesting systems (RWHS) are installed at various locations inside and outside Radico Khaitan Ltd. Out of 156 RWHS, 27 systems are in the premises, and 129 systems are located outside and nearby the premises.

b) Mostly the outside RWHS is located in the existing rain-fed ponds for maximizing the recharge of the groundwater.

c) The constructed RWHS has successfully improved the groundwater level in the premises and outside from their construction, i.e., 2017. At all the six earlier piezometers, the water level is rising at a rate of about 0.20 m/year.

d) The RadicoKhaitan Limited Having permission to withdraw groundwater for various uses and claims to recharge the groundwater to a tune of 5200 KLD through 156 installed RWHS. However, an actual measurement of the recharge has not been carried out. It is suggested that the recharging capacity of some of the RWHS shall be obtained through experimentation during monsoon and non-monsoon periods to assess the volume of recharged water.

e) The recharging capacity of the RWHS can be obtained following the steps mentioned below:

2. As time passes, the water level in the chamber will go down, a known volume of water shall be added to the chamber to ensure the water level close to the specified level.
3. After 12 or 24 hours, depending on the recharge rate, the volume of water added in the chamber is to be calculated, say it is ~~V~~.
4. Recharge rate = ~~V~~/duration of filling water (12 hr or 24 hr)

f) Over time, the coarse sand-gravel filter provided in the chamber covering the recharge pipe gets chocked with fine material coming with rainwater. This results in a decrease in the porosity of the filter and a reduction in the recharge rate. It is suggested that re-laying the filter after washing it or a new filter shall be carried out after a certain time to ensure a high recharging rate. Photographs of some of the RHWS and their locations are shown in Figs. 6-8.

Fig.6 Rainwater harvesting shaft No. 8 located on the campus

Fig.7 Four Rainwater harvesting systems are installed in the pond at Village Agapur

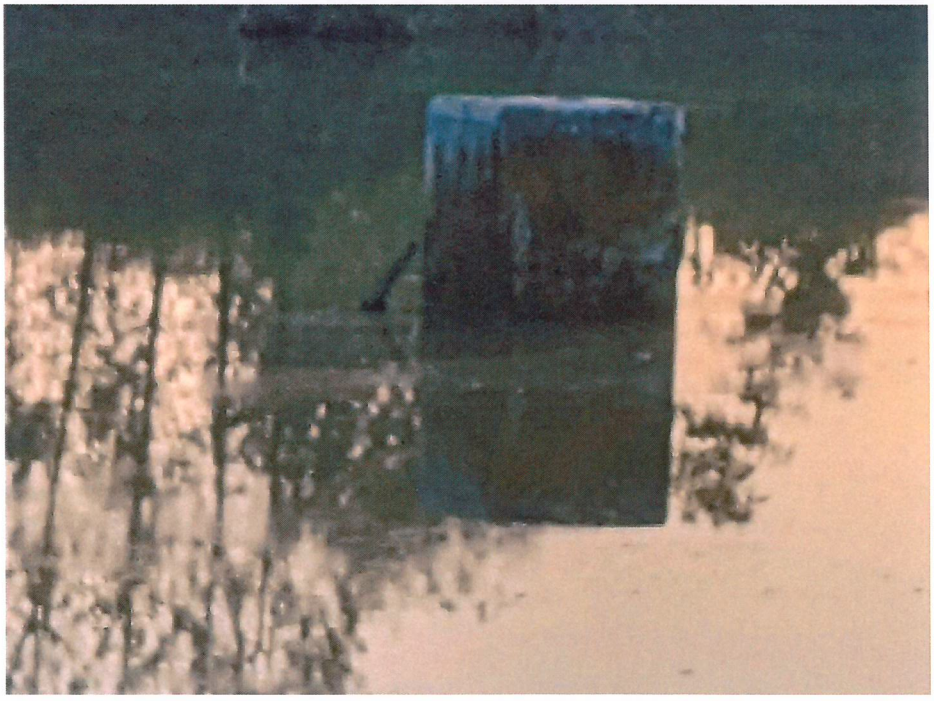

Fig. 8 Rainwater harvesting systems at 28°44'27.39"N & 79° 1'21.82"E

5.0 GROUNDWATER QUALITY

IIT Roorkee performed water quality sampling from Tubewell 1 and 2 inside the distillery premises (Figure 9). The main objective is to check the groundwater contamination due to industrial activities. For common Physico-chemical water quality parameters and heavy metals, water samples were collected from each source in clean PVC bottles of 0.5 L capacity; the samples were collected in 100 ml sterilized glass bottles for bacteriological parameters.

For heavy metals, the samples are preserved by adding HNO_3 to reduce the pH to 2.0. While for other parameters, it is cooled at 4°C in the icebox and transported to IIT Roorkee. All analyses were carried out as per methodologies in Standard Methods for the examination of water and wastewater APHA (2005). E Coli and Fecal coliforms were estimated by using mTEC agar medium and standard Multiple Tube Fermentation Technique.

The results are summarized in Table 1, and the values are compared with the acceptable and permissible limits of IS **IS-10500: 2012.**

Figure 9: Groundwater Sampling from Borewell 1 & 2

Table 1: Water Quality of Borewells 1 & 2

S. No.	Parameters	Units	Borewell No. 2	Borewell No. 3	BIS Standard IS 10500: 2012	
					Requirement (Acceptable limit)	Permissible limit in the absence of alternate source
1	pH	-	7.5	7.6	6.5 - 8.5	No relaxation
2	Electrical Conductivity (EC)	µS/cm	514	840	-	-
3	Total Dissolved Solid (TDS)	mg/L	212	347	500	2000
4	Total Hardness	NTU	228	284	200	600
5	Total Alkalinity	mg/L	212	180	200	600
6	Sulphates (as SO_4),	mg/L	54	66	200	400

	mg/L, Max					
7	Chloride (as Cl), mg/L, Max	mg/L	88	92	250	1000
8	Fluoride (as F), mg/L, Max	mg/L	0.31	0.62	1	1.5
9	Iron (as Fe), mg/L, Max	mg/L	0.05	0.04	0.3	No relaxation
10	Manganese (as Mn), mg/L, Max	mg/L	0.002	0.002	0.1	0.3
11	Total Coliforms	MPN/ 100 mL	NIL	NIL	-	-
12	Fecal Coliforms	MPN/ 100 mL	NIL	NIL	-	-
13	Total aresenic (as As), mg/L, Max	mg/L	BD	BD	-	-
14	Cadmium (as Cd), mg/L, Max	mg/L	BD	BD	0.003	No relaxation
15	Total chromium (as Cr), mg/L, Max	mg/L	0.001	0.002	0.05	No relaxation
16	Total copper (as Cu), mg/L, Max	mg/L	0.002	0.002	0.05	1.5
17	Zinc (as Zn), mg/L, Max	mg/L	0.152	0.153	5	15
18	Nickel (as Ni), mg/L, Max	mg/L	0.004	0.004	0.02	No relaxation
19	Aluminium (as Al), mg/L, Max	mg/L	0.002	0.002	0.03	0.2
20	Lead (as Pb), mg/L, Max	mg/L	0.003	0.004	0.01	No relaxation
21	Molybdenum (as Mo), mg/L, Max	mg/L	0.002	0.003	0.07	No relaxation

It has been observed that the groundwater is of excellent water quality, there is no sign of groundwater pollution, no heavy metals or fecal coliforms are observed, and the groundwater can be used directly for drinking.

6.0 PERFORMANCE EVALUATION OF STP

A 150 KLD STP is installed in the distillery premises to treat sewage generated by workers (Figure 10). Treated effluent was collected, preserved in an icebox at 4 °C before the analysis, and transported to the laboratory at IIT Roorkeewithin 24 h of samples collection. Samples collected from the STP site were analyzedfor physicochemical analysisasper Standard Methods (APHA, 2012), and the data is summarized in Table 2.

Figure 10: 150 KLD STP at RadicoKhaitan

Table 2: Effluent Quality of STP

S. No.	Parameter	Units	STP Outlet	Effluent Standards (NGT 2019)
1	Temp.	°C	26	26
2	pH	-	7.7	5.5 – 9
3	Color	-	Colourless	Colourless
4	Odor	-	Aseptic	Aseptic
5	Turbidity	NTU	5.3	-
6	Alkalinity	mg/L	320	-
7	COD	mg/L	32	50
8	BOD	mg/L	18	10
9	TSS	mg/L	16	10
10	Total Coliforms	MPN/ 100 mL	4.2x10^3	-
11	Fecal Coliforms	MPN/ 100 mL	930	Desirable-100 Permissible-230

It has been observed that STP is working well and producing the desired effluent quality for discharge.

7.0 CONCLUDING REMARKS& SUGGESTIONS

a) Historical groundwater table data from the year 2008 to 2017 shows a falling trend at almost all stations. However, a rising trend at all the stations from 2017 is observed, which can be attributed to the groundwater recharge system implemented in 2017.
b) The constructed RWHS has successfully improved the groundwater level in and outside of the premises from the year of their construction.
c) It is suggested that infiltration tests shall be carried out at some location to quantify groundwater recharge due to rain.
d) It is suggested that reference ground level be marked on the ground near the installed Piezometers, and groundwater level shall be reported with that reference level.
e) Details of groundwater recharge from sources other than the rainfall shall be provided.
g) It is suggested that the recharging capacity of some of the RWHS shall be obtained through experimentation during monsoon and non-monsoon periods to assess the volume of recharged water.
h) The recharging capacity of the RWHS can be obtained following the steps mentioned below:
    - Fill the water up to a specified level in the chamber, and time is to be noted.
    - As time passes, the water level in the chamber will go down, a known volume of water shall be added to the chamber to ensure the water level close to the specified level.
    - After 12 or 24 hours, depending on the recharge rate, the volume of water added in the chamber is calculated, say it is ~~V~~.
    - Recharge rate = ~~V~~/duration of filling water (12 hr or 24 hr)
i) Over time, the coarse sand-gravel filter provided in the chamber covering the recharge pipe gets chocked with fine material coming with rainwater. This results in a decrease in the porosity of the filter and a reduction in the recharge rate. It is suggested that re-laying the filter after washing it or a new filter shall be carried out after a certain time to ensure a high recharging rate.
j) It has been observed that the groundwater is of excellent water quality, there is no sign of groundwater pollution, no heavy metals or fecal coliforms are observed, and the groundwater can be used directly for drinking.
k) It has been observed that STP is working well and producing the desired effluent quality for discharge. It is recommended to conduct an adequacy report of the STP for the improvement of water quality.

सिविल इंजीनियरिंग विभाग

भारतीय प्रौद्योगिकी संस्थान, रुड़की - 247 667 (उत्तराखण्ड) भारत

DEPARTMENT OF CIVIL ENGINEERING

INDIAN INSTITUTE OF TECHNOLOGY, ROORKEE - 247 667 (U.K.) INDIA

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absarakazmi@yahoo.com

Devendra Singh (Sr. Vice President Process)

Radico Khaitan ltd.

Bareilly Road , Rampur - 244901

District- Rampur U.P.

Subject: Appraisal Report on Impacts of Groundwater Abstraction and Groundwater Recharge on Groundwater Scenario.

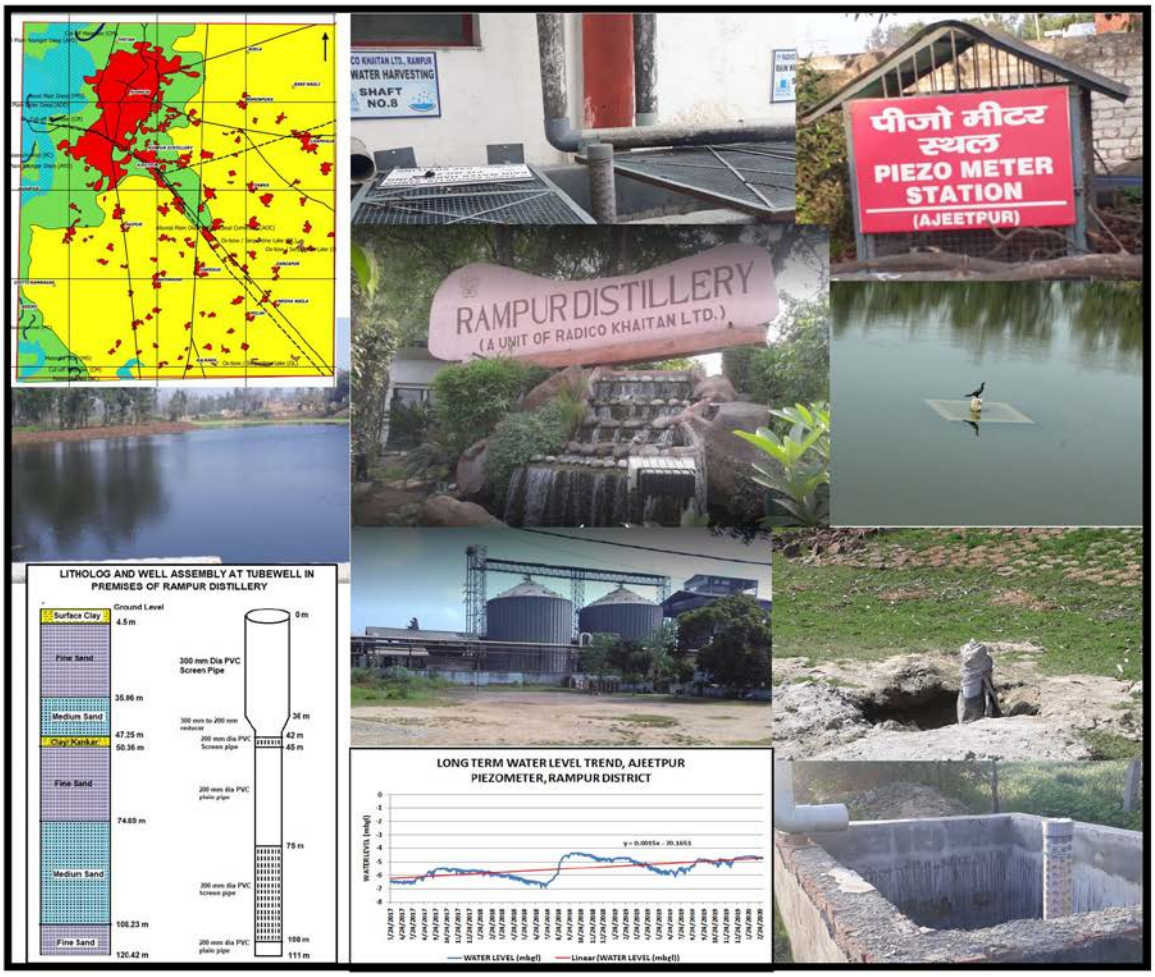
Dear Mr. Singh,

Please find attached herewith the appraisal report on the Impacts of Groundwater Abstraction and Groundwater Recharge on Groundwater Scenario for Radico Khaitan.

With Regards

Kazmi

A REPORT ON
IMPACTS OF GROUND WATER ABSTRACTION AND GROUND WATER RECHARGE ON GROUND WATER SCENARIO FOR RADICO KHAITAN LIMITED, DISTRICT RAMPUR, UTTAR PRADESH
REVISED VERSION 1.0



Prepared by-
UPENDRA SRIVASTAVA
ACCREDITED GROUND WATER PROFESSIONAL
LUCKNOW

SEP, 2021

CERTIFICATE

The "A REPORT ON IMPACTS OF GROUND WATER ABSTRACTION AND GROUND WATER RECHARGE ON GROUND WATER SCENARIO FOR RADICO KHAITAN LIMITED, DISTRICT RAMPUR, UTTAR PRADESH REVISED VERSION 1.0" has been prepared by undersigned as per the norms of State Ground Water Department.

The undersigned is retired Hydrogeologist from Central Ground Water Board and has been Accredited as Ground Water Professional by Central Ground Water Authority (http://www.cgwa-noc.gov.in/LandingPage/UserAssistance/Results_Accreditation_with_Contact_Details%2017-03-2021.pdf#ZOOM=100). Undersigned is qualified for preparation of Impact Assessment Reports and Ground Water Modeling studies.

The report has been prepared based on primary hydrogeological data collected during field surveys and the secondary data collected from various Central and State govt. departments. The analysis of spatial and temporal variations in ground water regime are based on long term ground water level data collected regularly by State Ground Water Department, Govt. of Uttar Pradesh, Lucknow, through the permanent monitoring stations. The detailed information about vertical and horizontal disposition of aquifers and its characteristics has been obtained from various reports of Central Ground Water Board. The entire data and its analysis has been compiled in the report to bring out the impacts of ground water abstraction by the industry and also by the water conservation measures adopted by the industry, on the ground water regime in the buffer area around the plant. Impacts of ground water abstraction on the socio-economic conditions of inhabitants in the surrounding areas have also been studied based on landuse and livelihood of the people in the buffer zone.

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Accreditation Board of CGWA

Certificate of Accreditation

Mr. Upendra Shrivastava

Has been accredited as Ground Water Professional to prepare reports in the Functional Areas of

- *Impact Assessment of Existing / Proposed GW Extraction*
- *GW Modelling*

Valid from : 15.02.2021

Valid thru : 14.02.2026

Certificate No. : CGWA/RGI/003

Dated : 07.07.2021

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A REPORT ON
IMPACTS OF GROUND WATER ABSTRACTION AND GROUND WATER RECHARGE ON GROUND WATER SCENARIO FOR RADICO KHAITAN LIMITED, DISTRICT RAMPUR, UTTAR PRADESH
REVISED VERSION 1.0

1. INTRODUCTION

Radico Khaitan Limited, Rampur district, Uttar Pradesh- has set up a distillery located east of Rampur town, covering an area of 44.392 ha and occupies western parts of Chamraua block of Rampur district. The distillery produces high-grade Extra Neutral Alcohol ("ENA") from molasses, grains and Scottish design malt spirit from barley malt.

- The industry has obtained No Objection Certificate (NOC) for ground water abstraction of 2600 KLD (kilo litre per day) from Central Ground Water Authority (CGWA) wef from 03.10.2016 and validity for two years that was upto 02.10.2018.
- In pursuance of directives given by CGWA vide NOC no. CGWA/NOC/IND/ORIG/2016/2308 dated 17.10.2016, Radico Khaitan Ltd has adopted suitable rain water harvesting measures within and outside the premises of industry. In addition industry has been continuously striving for technological upgradation and innovations for reducing ground water withdrawal by the industry.
- The NOC issued was valid upto 02.10.2018 and before expiry of NOC the application was filed by Radico Khaitan Ltd vide online application no. 21-4/1054/REN/UP/IND/2016 dated 15.09.2018. Subsequently, Central Ground Water Board, Directorate office at Lucknow conducted an inspection to verify the compliance report submitted by industry.
- The application for renewal was forwarded by Central Ground Water Board, Northern Region, Lucknow to CGWA, New Delhi vide their letter no. 21-4/1054/REN/UP/IND/2016-1991 dated 14.05.2019.
- This was followed by reminders vide letter nos. (a) RKL/601, dated 09.07.2019; (b) RKL/SRVP(P), dated 17.07.2019; (c) RKL/SRVP(P)/1158, dated 15.11.2019 and (d)

RKL/SRVP(P)/1477, dated 24.01.2020 from Radico Khaitan Ltd requesting CGWA for renewal of NOC.

- With reference to letter no RKL/SRVP(P)/1477, dated 24.01.2020 from Radico Khaitan Ltd and in pursuance of Hon'ble National Green Tribunal (NGT) orders, CGWA has directed the industry vide letter no. 21-4/1054/UP/IND/2016-125 dated 11.02.2020, to carryout impact assessment studies on ground water abstraction and conservation and recharge measures adopted by industry. The Report on "IMPACTS OF GROUND WATER ABSTRACTION AND GROUND WATER RECHARGE ON GROUND WATER SCENARIO FOR RADICO KHAITAN LIMITED, DISTRICT RAMPUR, UTTAR PRADESH" was prepared and submitted during Mar, 2020.
- A supplementary report was again prepared during July, 2020, with updated number and impacts of additional ground water recharge structures in the Chamraua block, by RKL.
- Since Oct, 2020 the Govt of Uttar Pradesh has issued notification for taking responsibility of issuing NOC for ground water abstraction in the state.
- Subsequently, RKL applied for NOC through online portal of State Ground Water Department, Govt of Uttar Pradesh. The NOC for ground water abstraction of 3600 KLD through three tubewells within the premises has been granted with a condition to submit the updated report on "IMPACTS OF GROUND WATER ABSTRACTION AND GROUND WATER RECHARGE ON GROUND WATER SCENARIO FOR RADICO KHAITAN LIMITED, DISTRICT RAMPUR, UTTAR PRADESH".

Present study has been taken up to re- assess the impacts of rain water harvesting and recharge measures within and outside the premises of Radico Khaitan Ltd on the hydrogeological conditions of the area based on additional dynamic hydrogeological data for year 2020.

2. PROJECT DESCRIPTION

Rampur Distillery is one of the most efficiently-run distilleries in India. It is spread over 100 acres of lush green campus with a high level of security systems. The distillery produces high-grade Extra Neutral Alcohol ("ENA") from molasses, grains and malt spirit from barley malt. The unit is self-sufficient in meeting the fuel and power requirements by the way of backward

integration. It utilizes the effluents to generate biogas, which is utilized for generating the steam and power for its captive requirement.

3. BACKGROUND

The industry has obtained NOC for ground water withdrawal of 2600 kld (kilo litre per day), vide NOC no. CGWA/NOC/IND/ORIG/2016/2308 dated 17.10.2016. The ground water is being extracted through 3 (three) tubewells constructed within the premises. All the tubewells are fitted with digital flow meter and the quantity of ground water withdrawn is being regularly sent to Regional Director, Central Ground Water Board, Northern Region, Lucknow.

Since the industry is located in Chamraua block of Rampur district which has been categorized as "Over Exploited" as per Dynamic Ground Water Estimation 2017 and categorization of assessment units, the Industry can withdraw ground water to the tune of 50% of annual ground water recharge being done by the industry through suitable measures within or outside the industry. Radico Khaitan Ltd have complied all the conditions of NOC and constructed suitable rainwater harvesting and ground water recharge structures. Twenty two recharge trenches with recharge wells have been constructed within the Radico Khaitan plant and also in both the lagoons at Ajitpur and Hitachi Land. In addition to this ponds have been adopted in 38 villages of Chamraua block. A total of 129 recharge shafts have been constructed in these ponds for enhancing the rate of ground water recharge. Thus it has been ensured that required recharge of 27,96,287 m3/annum and even more than that is being achieved.

4. OBJECTIVES AND SCOPE

The industry has adopted several rain water harvesting and ground water recharge measures in compliance with directives issued by CGWA vide NOC no CGWA/NOC/IND/ORIG/2016/2308 dated 17.10.2016. The study has been taken up within and outside the premises of Radico Khaitan Ltd with following objectives:

a. Study the hydrogeological, geological, climate, landuse, topography, drainage and geomorphological conditions of the study area
b. To assess the impacts of measures adopted by Radico Khaitan Limited for rain water harvesting within the premises

c. To assess the impact of water conservation and artificial recharge to ground water measures adopted outside the premises as on August, 2021.

An approach adopted included revision of report prepared on Impact Assessment of ground water withdrawal and ground water recharge by RKL. The ground water levels since Jun, 2020 were collected from select monitoring stations of State Ground Water Department, Govt of Uttar Pradesh and water table analysis was done as per updated data. Time series analysis of water level data collected was done to infer the historical changes in ground water regime of the area. Entire data- collected or generated was compiled and integrated to prepare this version of revised impact assessment report.

5. REGIONAL SETTING

5.1. LOCATION

The study area occupies an area of **230 sq. km** and is located in the western part of Chamraua block of Rampur district, Uttar Pradesh state. It lies between north latitudes 28.674800° and 28.835600° and east longitudes 78.976700° and 79.121300° and falls in parts of Survey of India toposheets 53 L/13, 53 L/14, 53 P/1 & 53 P/2. The study area is mainly a part of Chamraua block and is bounded on north by Saidnagar block, in eastern side it is bounded by Milak block of Rampur. Shahabad block of Rampur bounds the area from southern side and Moradabad district is located few kilometers west of study area. (Fig-1 & 2).

FIG 1 Location Map of Study area

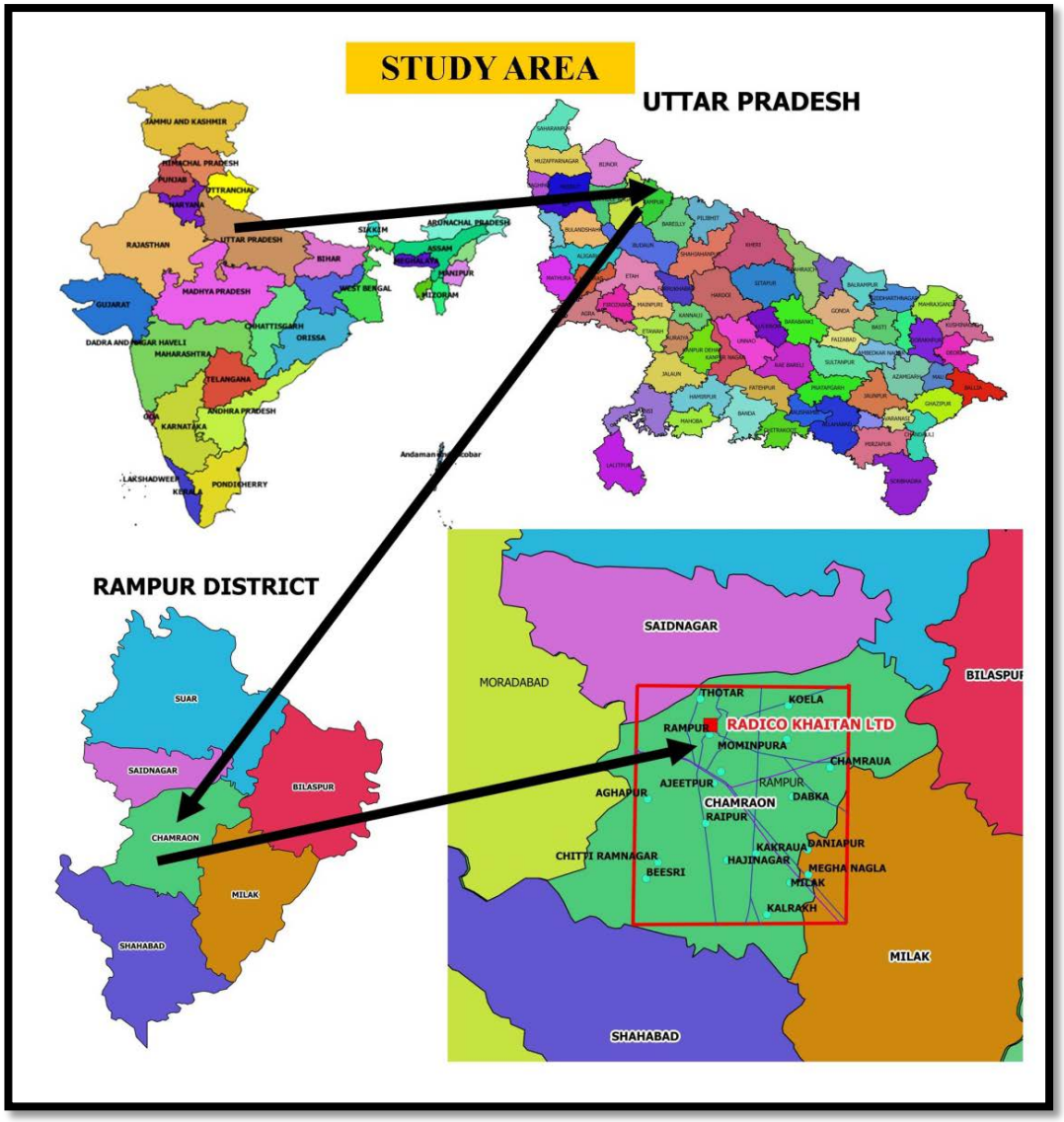
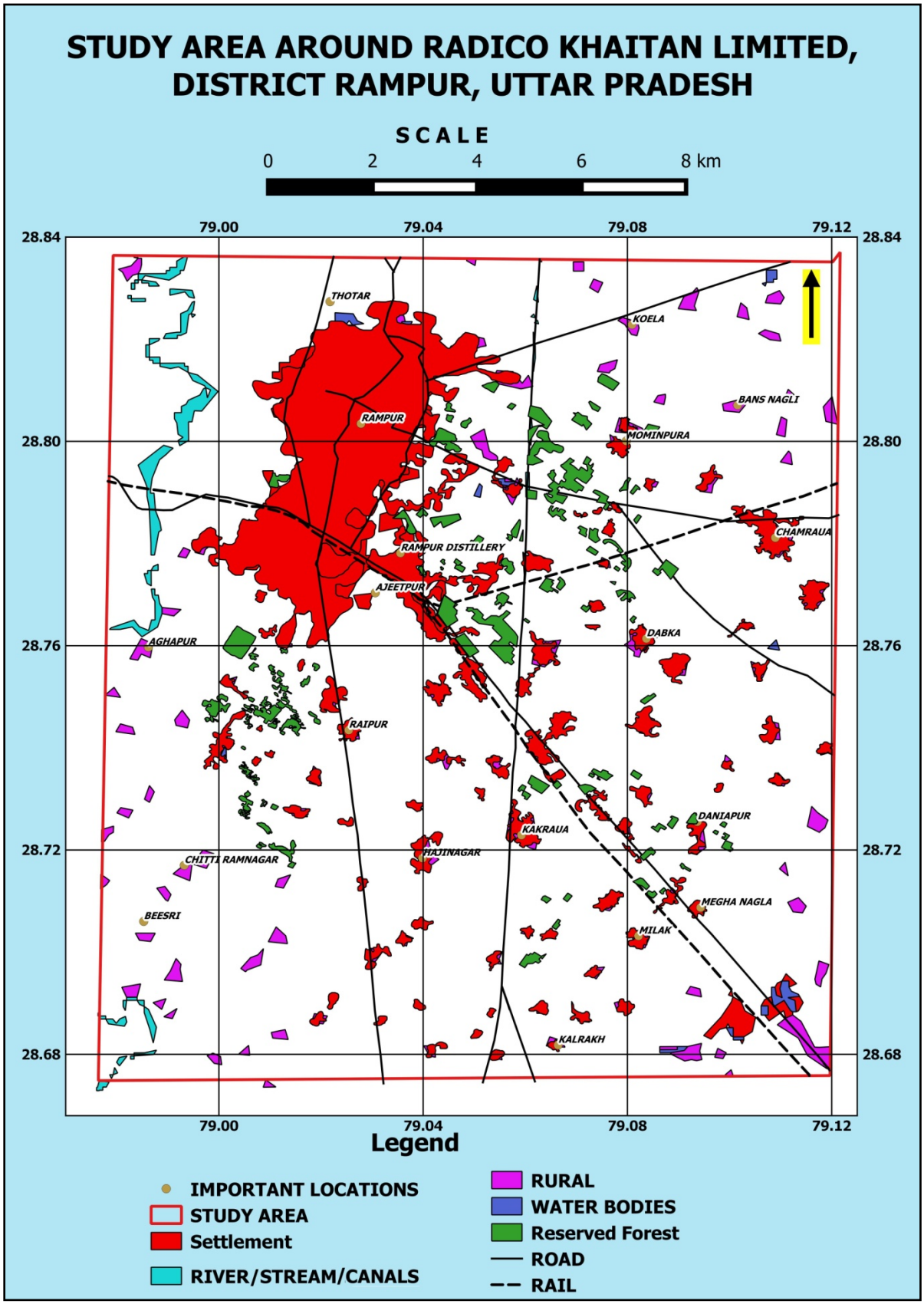


FIG 2 Index Map of Study area, district Rampur



5.2. LANDUSE

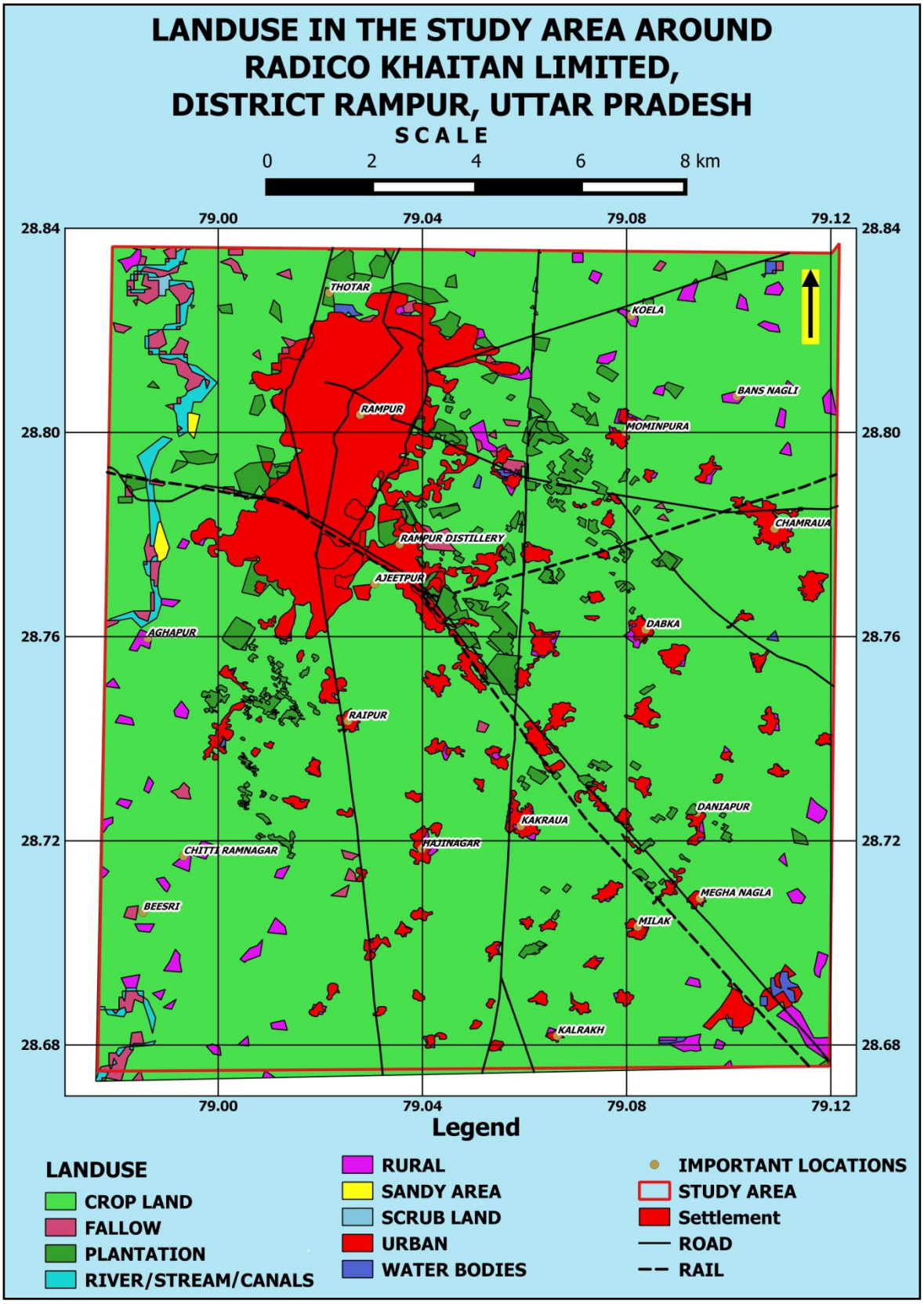
Study area falls under rural area (especially the eastern side of the industry) and hence a major part of the land in the study area is utilized for cropping. As per the statistical data available for the year 2016-17, following land utilization pattern has been observed in the study area (Table-1). Land use distribution in the study area is shown in Fig-3. A perusal of the Table-1 and Fig 3 shows that maximum area falls under cropped land i.e. about 85.7 % of total surveyed area. Fallow land and forest plantation, occupy about 4% together, out of the total area. Urban area including the rural settlement area covers about 10.0% of total area. The Radico Khaitan industry is located in the urban settlement area of Rampur town.

Intensive cropping pattern is practiced in the area, including water intensive crops like paddy, sugar cane, mentha and wheat. As per statistical data of Rampur district for 2018, the net sown area in Chamraua block is 17474 ha, whereas gross sown area is 35129 ha. Therefore the cropping intensity in the block is 201%. The net irrigated area in the block is 10873 ha and gross irrigated area is 29336 ha. Thus irrigation intensity is 168%, and the main source being ground water, there is heavy withdrawal of water through tubewells.

Table 1 LANDUSE PATTERN IN STUDY AREA

Landuse	Area (km2)	%age
CROP LAND	197.79	85.70
FALLOW	3.03	1.31
PLANTATION	6.04	2.62
RIVER/STREAM CANALS	1.76	0.76
RURAL	7.80	3.38
SANDY AREA	0.23	0.10
SCRUB LAND	0.09	0.04
URBAN	13.55	5.87
WATER BODIES	0.50	0.22
Grand Total	**230.79**	

FIG 3 Location Map of Study area

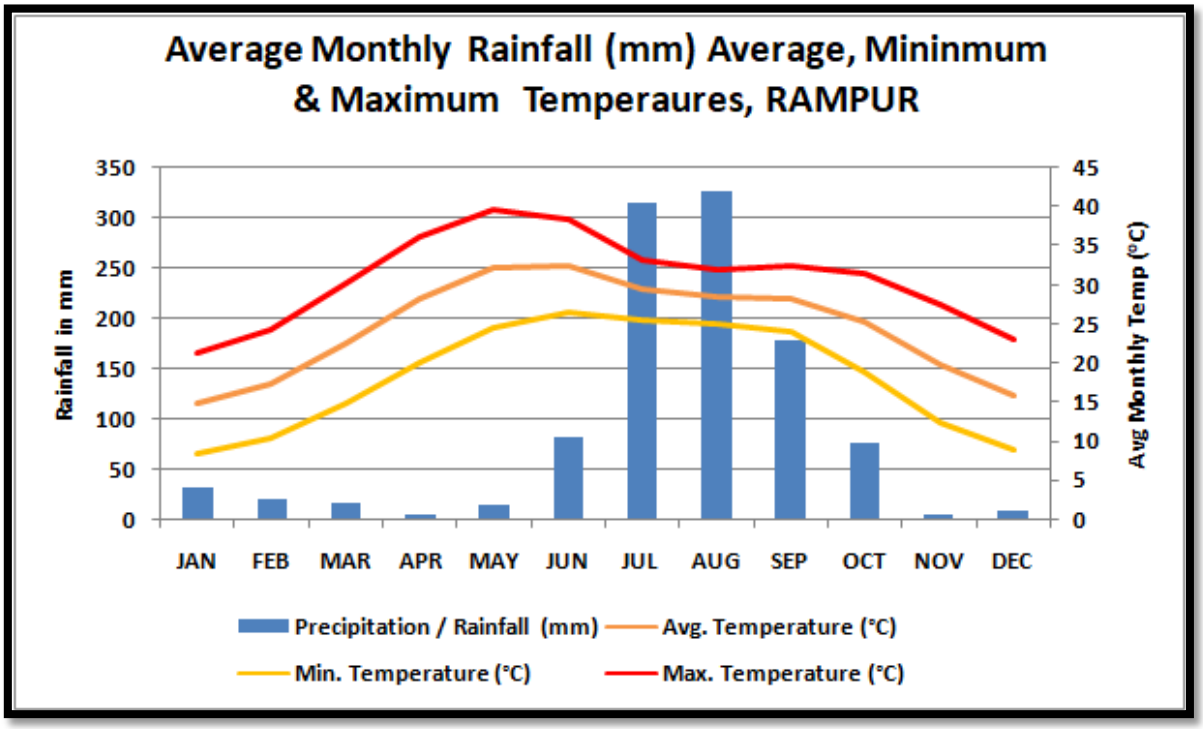


5.3. CLIMATE

The Rampur lies 194 m above sea level (mamsl) and the climate here is mild, and generally warm and temperate. When compared with winter, the summers have much more rainfall. This climate is considered to be Cwa (Monsoon-influenced humid subtropical climate) according to the Köppen-Geiger climate classification. The average annual temperature in Rampur is 24.6 °C. The rainfall here is around 1071 mm per year as shown in Table 2 (Source : https://en.climate-data.org/asia/india/uttar-pradesh/rampur-54809/).

Precipitation is the lowest in November, with an average of 3 mm. In August, the precipitation reaches its peak, with an average of 326 mm. The long term average annual monsoon rainfall is 902 mm. The average monthly rainfall and temperatures are shown in Fig 4.

FIG 4 Monthly Rainfall In Rampur District



With an average of 32.6 °C, June is the warmest month. In January, the average temperature is 14.8 °C. It is the lowest average temperature of the whole year.

The air is very humid during the southwest monsoon season to a lesser extent in the post monsoon season. The mean monthly morning relative humidity is 69% and the mean monthly evening relative humidity 51%. Wind are generally light, the mean wind velocity is 5 kph. The potential evapotranspiration is 1402.8 mm.

Table 2 Rampur Climate Table // Average Historical Weather Data												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. Temperature (°C)	14.8	17.3	22.5	28.2	32.2	32.5	29.4	28.5	28.3	25.2	19.9	15.9
Min. Temperature (°C)	8.3	10.2	14.9	20.1	24.7	26.6	25.6	25	24.2	18.9	12.2	8.9
Max. Temperature (°C)	21.3	24.4	30.2	36.3	39.7	38.4	33.3	32.1	32.5	31.6	27.6	23
Precipitation / Rainfall (mm)	30	19	16	4	14	82	316	326	178	76	3	7

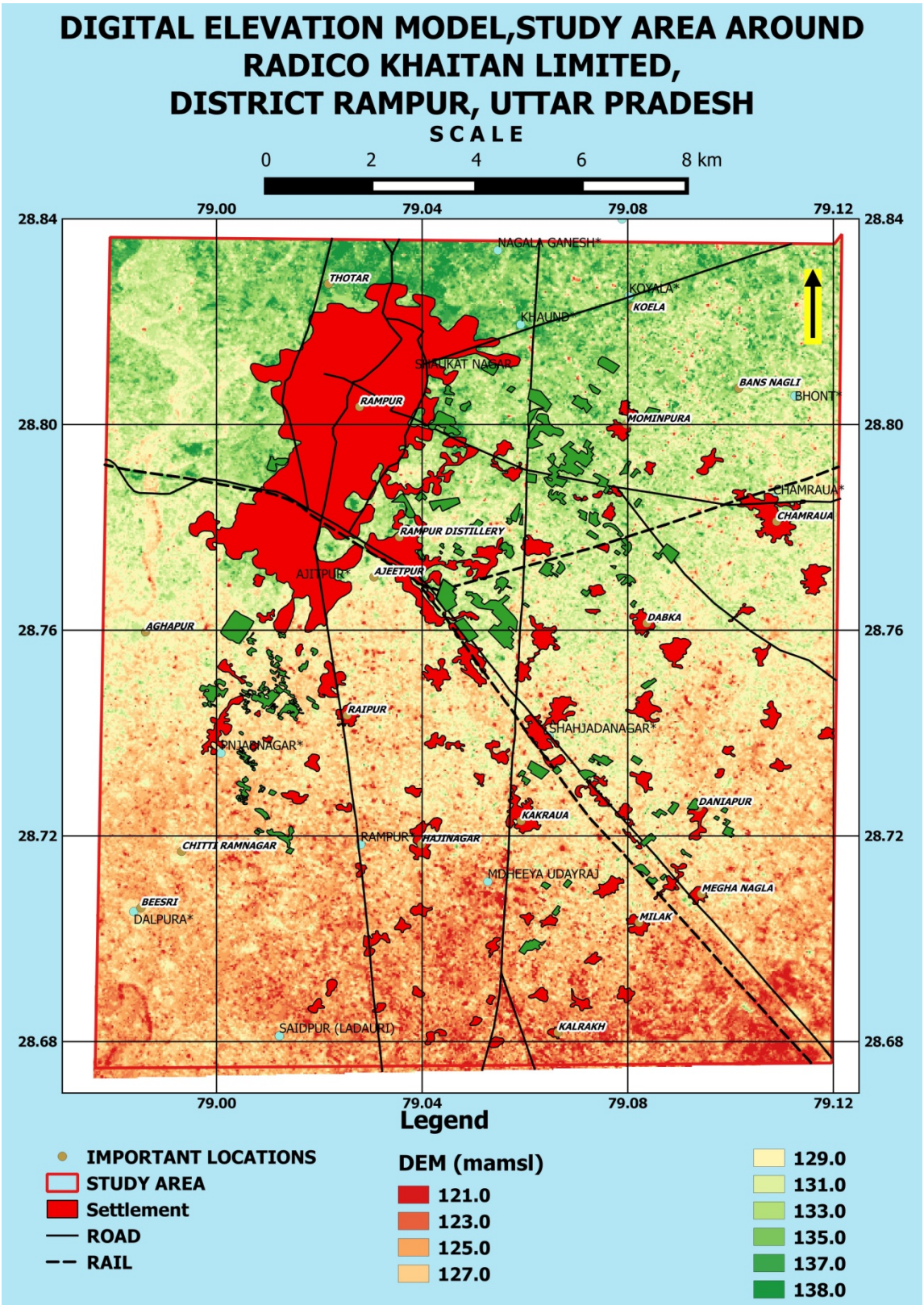
5.4. TOPOGRAPHY AND DRAINAGE

Rampur district is a part of Central Ganga Alluvial plain and represented by high slopes in the north which gradually flattens out towards south. The highest altitude in the Rampur district is located at village Manunagar which is 224 metres above mean sea level (mamsl) and lowest being at village Gangapur (172 mamsl) in the Ram Ganga Flood plain. The average slope of the land surface varies from 0.75 to 1.00 m/km, towards south direction.

The study area overlies older alluvial plain occupying upland with general north to south slope. It is marked by palaeochannels, meander channels, river valleys and shallow depressions. As seen in Fig 5 the ground elevation in the study area varies from 193 mamsl in the northern parts around Thotri to 180 mamsl in the southeast. The gradient in the study area is about 1 m/km from north to south.

The study area occupies part of Ram Ganga sub basin and is drained by Kosi river which flows in the western side of study area from north to south. Another river Baur nadi flows north to south, in eastern side of Milak. Drainage density is very low in the area (Source: Report on Reappraisal Hydrogeological Survey, district Rampur, UP).

FIG 5 Topography In The Study Area, Rampur District



5.5. GEOMORPHOLOGY

Rampur district is a part of Central Ganga Alluvial Plain and represented by moderate relief in the northern parts, which gradually flatten towards south. The following geomorphic units have been identified in the study area (Fig 7).

a) Tarai Tract: This tract is southerly extension of the Tarai tract of Udham Singh Nagar district. It occupies the northern most part of the district. This tract is marked by shallow water level conditions and flowing wells at places. However, tarai tract is not observed in the study area as it lies further north.

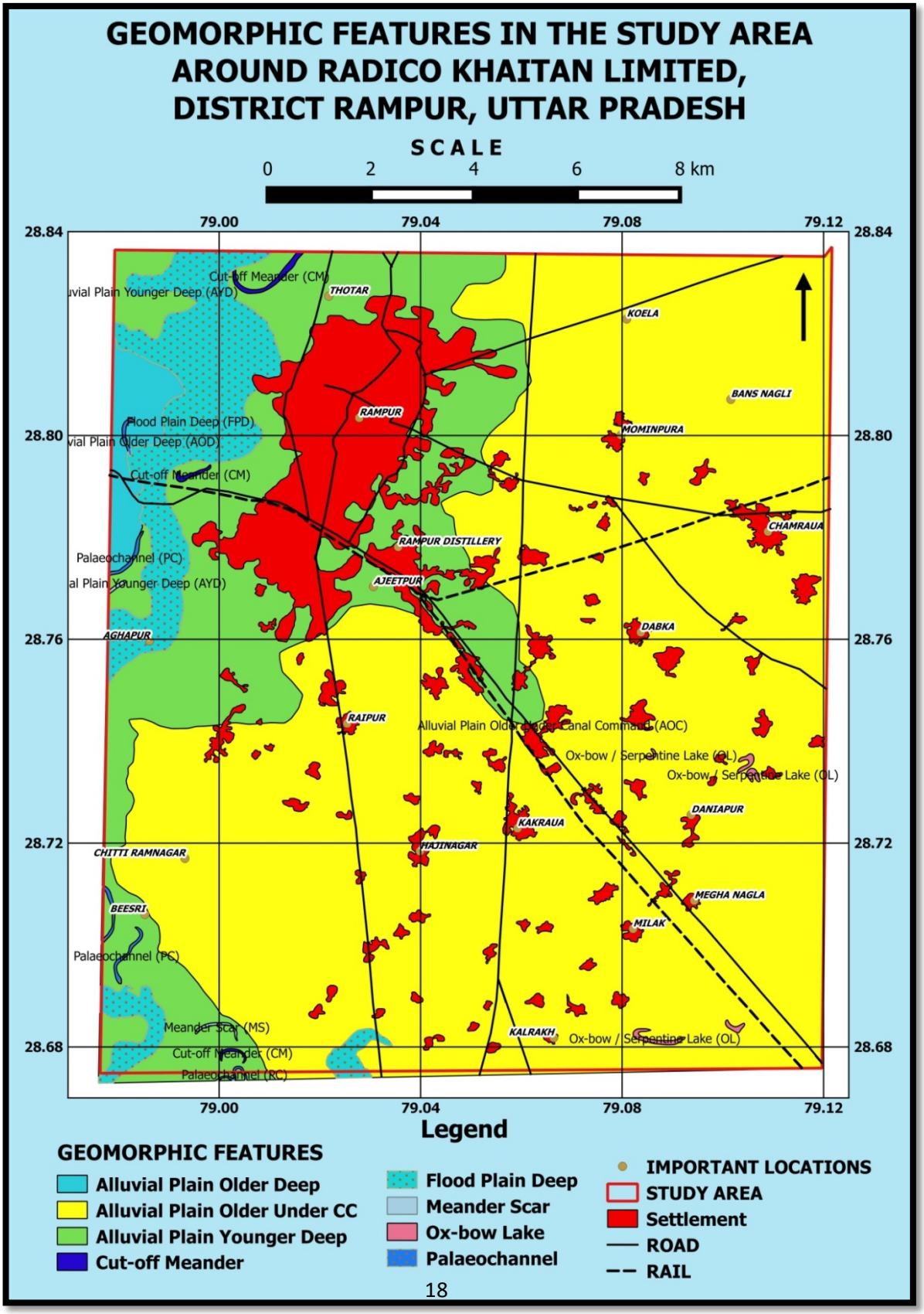
b) Meander Flood Plain: It is a flat low lying, poorly drained area of little or no relief confined to the river channels of Ram Ganga, Kosi, Pilkhau. Point bars and Sand bars are typical geomorphic features in this unit. These features are seen in the west of study area along Kosi river.

c) Younger Alluvial Plain: Northwestern and western parts of the area overly younger alluvial plain. These plain areas are characterised by a flat to gently sloping and slightly undulating topography and are limited to the areas along Kosi river with maximum lateral extension of about 10 Kms. The fluvial landform such as palaeo-channels, meander scars, oxbow-lakes are common features.

d) Older Alluvial Plain: Maximum part of the study area occupies a relatively higher elevation than the younger alluvial plain and forms the inter stream area. This plain covers about 70% of the study area. This is further classified depending on canal command area. Major part falls under older alluvial plain under canal command area. This is marked by several palaeo-channels, which act as prospective ground water repositories and being widely used for agricultural purposes.

e) Ravinous Tract: This tract is formed by erosional activity of runoff water and characterised by the network of gullies along river Kosi.

FIG 6 Geomorphic Features in the Study Area, Rampur District



5.6. GEOLOGY- REGIONAL AND LOCAL

Study area which is a part of Rampur district occupies a part of Central Ganga plain and is underlain by alluvial deposits of quaternary age. The deposits attain significant thickness ranging between 400 and 500m in the northern part of the indo Gangetic Alluvial Plain. This alluvium is a pile of unconsolidated sediments made up of sequence of clay, silt, kankar and different grades of sand, and occurrence of gravel at depth is also occasionally seen. Kankar, nodules, indicative of sedimentation gaps, occur as thin beds and lenses. The sediments are dominantly arenaceous. At places in the deeper depths lithified sand is very hard and compact.

Geologically in Ganga basin, the basement is assumed to be continuation of Satpura folded belt, overlain by Vindhyans and Neogene sequence. The tentative succession, which has been worked out with the help of ONGC drilling specially those at Puranpur (Pilibhit district) and Ujhani (Badaun district) is detailed in the table. Two boreholes drilled by Central Ground Water Board (CGWB) in north eastern part of the adjacent Moradabad district, at Budhnagar and Dilari down to 450m suggest that the sediments are dominantly arenaceous, and there is a change in lithofacies between depths 390 and 400m, which may well correspond to the post Siwalik break.

Table 3 GENERALISED STRATIGRAPHIC SUCCESSION

TIME UNIT	ROCK TYPE	TIME ROCK UNIT	BASIN	THICKNESS
Recent to 0.01 my	Clay, sand sequence sand, clay pebbles	Alluvium	Ram Ganga depression	116 to 300 m
Holocene (less than 1m.y.)	Sand, Clay, Pebble, gravel and kankar	Piedmont Fan deposits	Ram ganga	300 to 500 m
----------Disconformity----------				
Pleistocene (1m.y.)	Conglomerate sandstone	Upper Siwalik	Ram Ganga	-
Pleistocene to L. Miocene	Argillaceous sediments	Middle to lower Siwalik	-	-
----------Disconformity----------				
Precambrian	Sand stone shale quartzite	Vindhyan -Delhi-	-	Missing not known
m y – Million years				

6. GENERAL HYDROGEOLOGY

6.1. Potential Aquifer Groups

Study area lies over alluvial deposits of the quaternary period brought by river systems of Ganga and Ram Ganga. These comprise sand, silt and clays in various proportions. There are Four major aquifer groups present in the area down to 440 mbgl.

The **First Aquifer Group**, comprising fine to medium sand, is utlised mostly for irrigational purpose follows the top soil and extends down to depth of 60 to 90 mbgl. A single aquifer system has been deciphered in the area down to 180 to 200 mbgl. The system at places is separated or divided into a number of aquifers by the intercalated clay layers. The system behaves as an unconfined to confined aquifer depending upon the disposition of clay layers. This zone extends from 90 m to 160 m at Milak and down to 200 m at Pipla, Rampur district.

As revealed by lithology of Water supply tubewell at Rampur fort, there are alternative layers of clay and sand. Clay layers are observed 33 to 41 mbgl (8 m thick); 58 -64 mbgl (6 m thick); 67 – 70 mbgl (3 m thick); 103 to 107 mbgl (4 m thick) (source: Central ground Water Board Report). These are not very extensive and locally define different aquifer zones.

S. No.	Aquifer group	Level (mbgl)	Maximum Discharge (lpm)
1	1st aquifer group	8.5 to 180.0	1000 – 3000 lpm
2	2nd aquifer group	180.0 – 300.0	2500 lpm
3	3rd aquifer group	300.0 - 400.0	2000 – 2500 lpm
4	4th aquifer group	Deeper than 400.0	Not known

General depth of tubewells ranges from 50 to 130 mbgl. The cumulative screened length varies from 20 to 30 m down to the depth of tubewell. The specific capacity of tubewells ranging from 50 to 100 mbgl varies from 295 to 1263 lit/min/m and average yield in this first aquifer varies from 840-5220 lpm (liter per minute) for draw downs ranging from 1.5 to 8.0 m. (Source Central Ground Water Board Report).

The area is characterized numerous shallow tubewells constructed for irrigation purposes. These tubewells have been constructed down to 35 to 40 m bgl. The yield of these tubewells varies from 30 to 50 m3/hr, for a minimal drawdown of 1 or 2 meters. The first aquifer is followed by a clay layer of varying thickness from 10-24 m.

The **Second Aquifer Group** is intermixing zone in which clay and sand layers are intercalated. This zone extends from 200 m to 300 mbgl at Pipla EW in Milak block of Rampur district (Basic Data Report (Exploratory Well), National Aquifer Mapping Programme, Pipla Shiv Nagar (EW – I & II, Milak Block), Rampur District, Central Ground Water Board, Lucknow) .

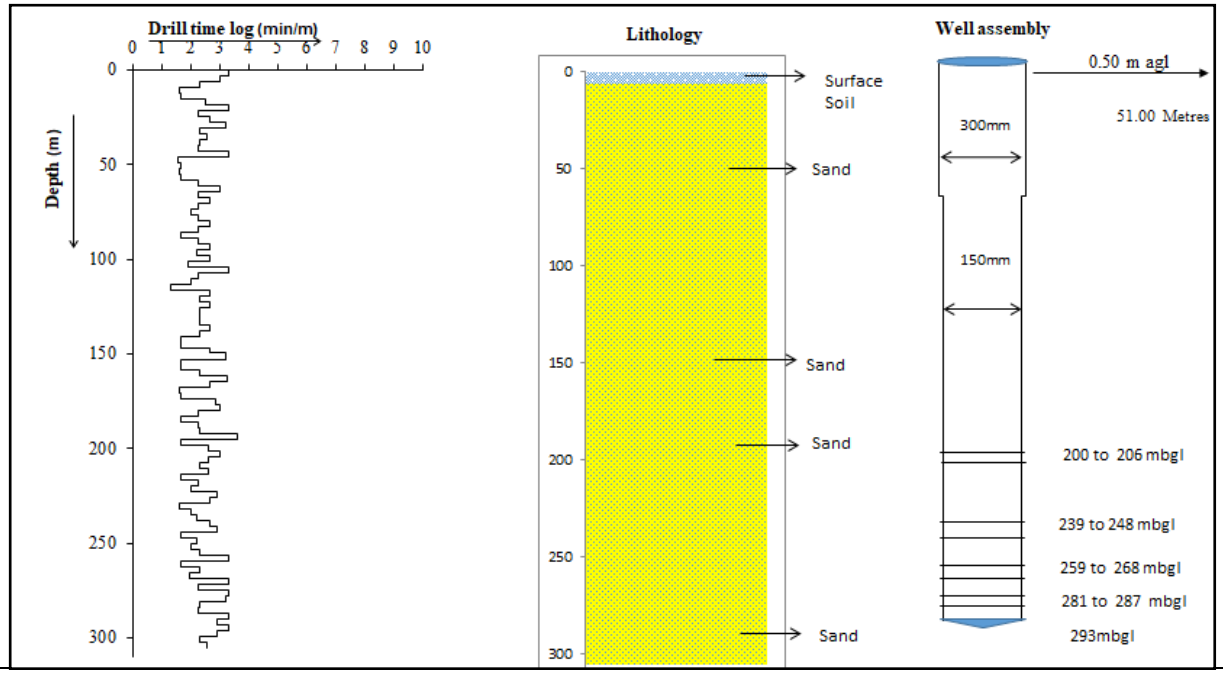
The **Third Aquifer Group** occurs down to a depth range of 388 to 400 mbgl and the change in the sediment facies occur at this depth range. The third aquifer which is quite thick at Milak extends from 294 m to total explored depth of 440 m. The **Fourth Aquifer Group** extends beyond 400 mbgl, and is not explored in this area.

Ground water in shallow zones occurs under unconfined conditions whereas in the deeper zone it occurs under semi-confined to confined conditions.

6.1.1. Exploratory drilling carried out by Central Ground Water Board in Pipla Shiv Nagar, Block Milak, District Rampur

Under the NAQUIM project, Central Ground Water Board has constructed one exploratory well (EW) at Pipla Shiv Nagar (28.619166^{o}N, 79.132222^{o}E) along with one observation well to demarcate various groups of aquifers down to 300 m depth and to estimate the aquifer parameters. The site is located about 9 km southeast of study area in Milak block of Rampur district. Geologically, the aea is occupied by Central – Gangetic alluvial plain of Quaternary age. The ground water occurs in alluvial formations comprising fine to coarse grained sand which forms the potential aquifers. The total drilled depth of the EW was 303 mbgl and assembly was lowered down to 293 mbgl. The lithological log of the exploratory borehole (Annexure-I) and compromise log shown in Fig 7, reveals lenses of sand of various grades and colour, occasional gravels, clay & silt with kankar. Static water level non pumping water level was recorded as 4.71 mbgl. (**Source:** Basic Data Report (Exploratory Well), National Aquifer Mapping Programme, Pipla Shiv Nagar, EW-I, Milak Block, Rampur District, Uttar Pradesh State, Central Ground Water Board, Lucknow).

FIG 7 Compromise Log of Exploratory well (Source: CGWB Report)



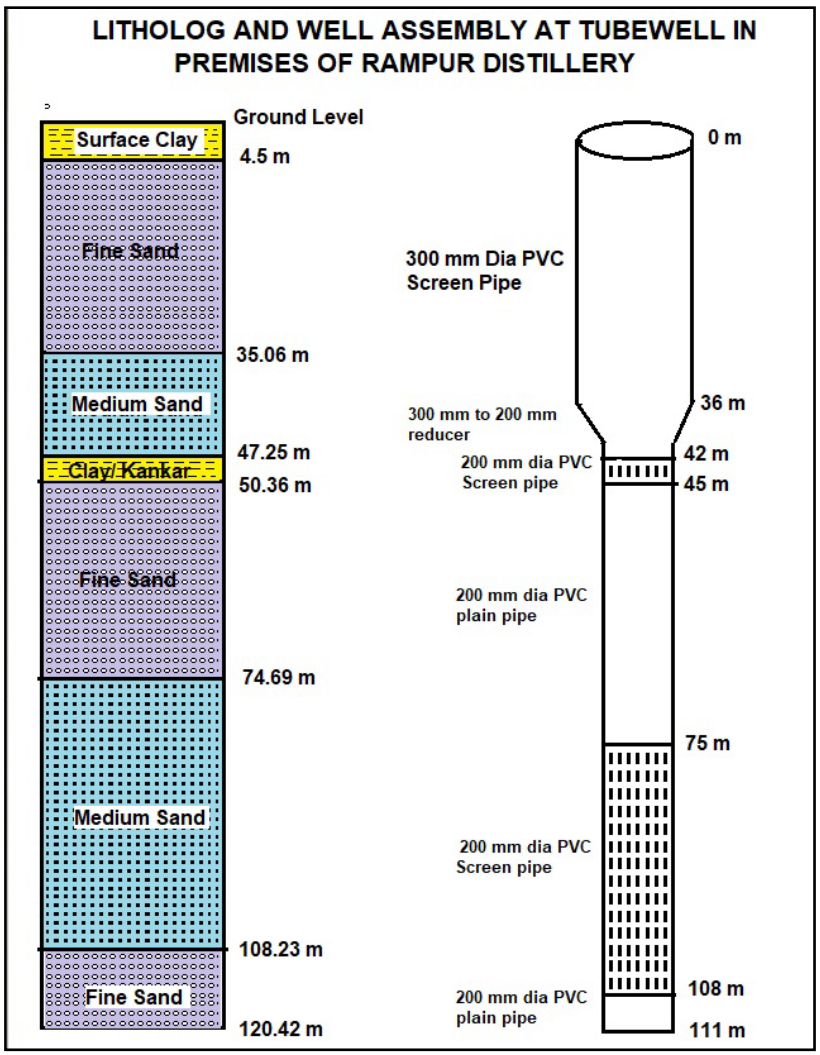
In order to determine aquifer parameters and well characteristics, pumping tests were conducted at the site by using submersible pump. Aquifer Performance Test (APT) was conducted at controlled discharge to estimate hydraulic properties of aquifer system such as Transmissivity and Storativity.

Aquifer Performance Test of 1500 minutes duration at a uniform discharge of 2240 m3/day (1555 lpm) was carried out. Transmissivity values evaluated were 1140 m2/day and Storativity was estimated as 6.95×10^{-3}.

6.1.2. Lithology as per tubewell constructed within the premises

Fig–8 shows litholog and well assembly of tubewell constructed within the premises of industry. The well was drilled down to 120 mbgl. It is observed that surface soil and clay layer is found down to 4.5 mbgl. This is followed by fine sand zone down to 35 mbgl and medium sand from 35 to 47.25 mbgl. This was followed by 3 m thick clay zone, followed again by fine and medium sand down to 120 mbgl.

FIG 8 Litholog and Well Assembly of Tubewell constructed within the premises of Rampur Distillery, Rampur district



6.1.3. Natural Gamma Ray logging

Natural Gamma Ray logging was conducted on 05.03.2020 at four sites – (a) Tubewell Within premises of Radico Khaitan (65 mbgl); (b) Tubewell at Ajeetpur lagoon site (22 mbgl); (c) Tubewell at Hitachi land premises (22 mbgl); and (d) Piezometer at Deenpur (18 mbgl). the natural gamma logs for all the four sites are shown in Fig 9. On the basis of Natural Gamma Ray Log the lithology of the subsurface formations was interpreted and lithologies for all the sites are given below.

(a) Site: Radico Khaitan Ltd Premises

As per Natural Gamma Ray Log at the Radico Khaitan Premises site sand formation is observed from 5 to 25 mbgl depth. Below this layer clay zone is identified up to depth of 30 m. The depth range from 30 to 58 mbgl indicates the presence of fine sand/ silt sand layer. From 58 to 65 mbgl log indicates presence of clay layer.

Depth range (mbgl)		Thickness (m)	Lithology
From	To		
0	5	4.0	Top soil/ clay
5	25	4.2	Sandy formation
25	30	3.8	Clay
30	58	2.4	Fine Sand or silty sand
58	65	1.6	Clay

(b) Site: Ajitpur lagoon, Radico Khaitan Ltd

Natural Gamma Ray Log for the Ajitpur site, shows presence of sand formation from 4 to 8.2 mbgl. Below this layer clay zone is identified up to depth of 12 m. Fine sand/ silty sand is present from 12 to 14.4 mbgl. Clay layer is identified from 14.4 to 16 mbgl. The last layer from 16 to 22 m indicates presence of fine sand.

Depth range (mbgl)		Thickness (m)	Lithology
From	To		
0	4	4.0	Top soil/ clay
4	8.2	4.2	Sandy formation
8.2	12	3.8	Clay
12	14.4	2.4	Fine Sand or silty sand
14.4	16	1.6	Clay
16	22	6.0	Fine sand

(c) Site: Hitachi Land, Radico Khaitan Ltd

Natural Gamma Ray logging conducted at the site Hitachi Land up to depth of 22 m bgl indicates presence of sandy formation from 4 to 14 mbgl followed by clay or silty sand down to 18 mbgl. The log indicates presence of sand layer from 18 to 22 mbgl.

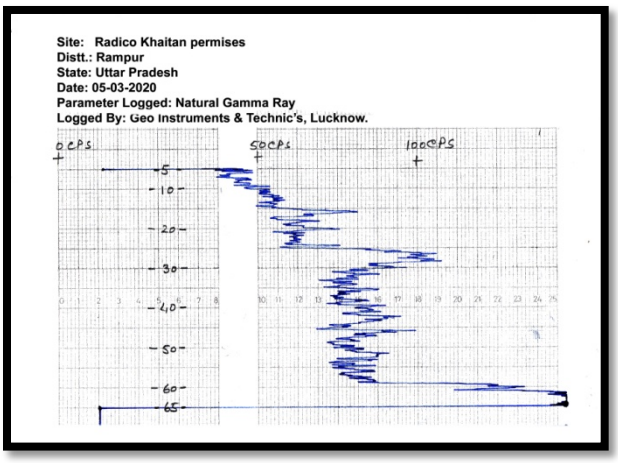
Depth range (mbgl)		Thickness (m)	Lithology
From	To		
0	4	4	Top soil/ clay
4	14	10	Sandy formation
14	18	4	Clay or silty sand
18	22	4	Sand

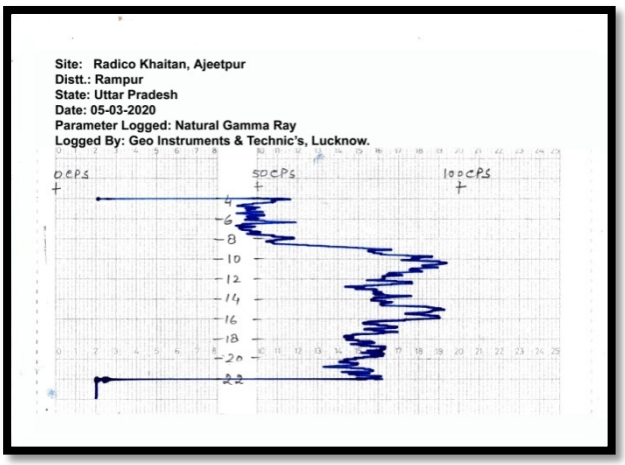
(d) Site: Deenpur PZ, Rampur

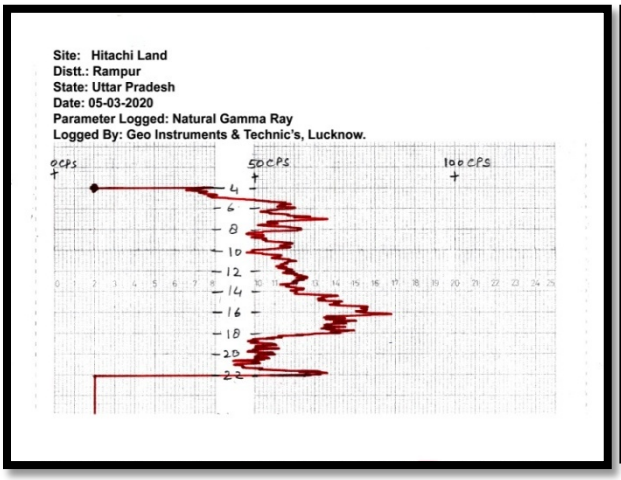
Natural Gamma Ray log shows presence of clay from 4 to 6 mbgl followed by sand down to to 16 mbgl, further followed by clay down to 18 mbgl.

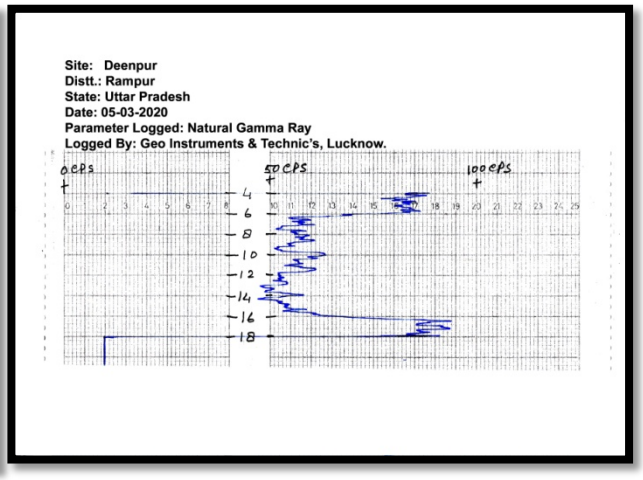
Depth range (mbgl)		Thickness (m)	Lithology
From	To		
0	2	2	Top soil
2	4	2	Fine sand
4	6	2	Clay
6	16	10	Sand
16	18	2	Clay

FIG 9 Natural Gamma Log plots for all the four sites









6.1.4. Aquifer Disposition

The subsurface configurations of aquifers have been delineated based on available lithological logs of Exploratory wells (EW) constructed by Central Ground Water Board. Three EW's were constructed in Moradabad at- Dilari, Azadnagar and Bilari. Five EW's constructed in Rampur district as shown in Fig 10, at Raipur, Sikraura, Bilaspur, Rajpur and Pipla. These EW's are located all around the Rampur Distillery site. A fence diagram (Fig 13) shows disposition of first and second group of aquifers in the area. The first aquifer group is found from 10 to 180 mbgl. The second group of aquifers extends from 200 to 300 mbgl and beyond.

a. Section along Raipur- Rajpur-Pipla.

The hydrogeological cross-section along Raipur-Rajpur-Pipla consists of three exploratory wells as shown in Fig 12. Based on the observations, the lithology reveals the presence of a thick granular zone within the confining clay layers. The hydrogeological details of the exploratory well at Pipla, which has also been used for the preparation of the hydrogeological cross-sections for knowing the aquifer geometry in the study area is given in Annexure- I. The granular zone is separated by clay layers, having thickness of 5 to 15 m.

FIG 10 Map Showing locations of Exploratory wells and Study area

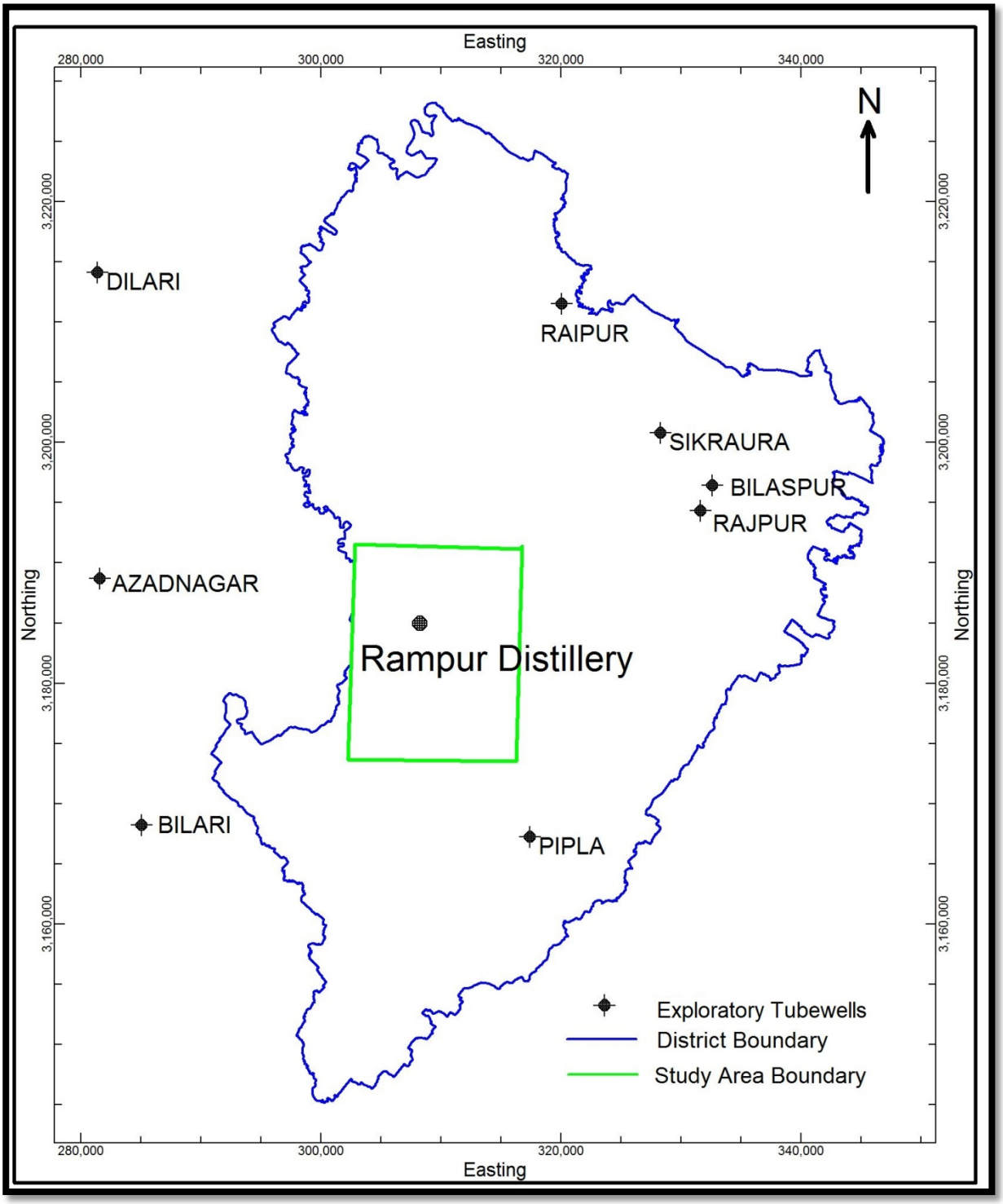


FIG 11 A General 3D View of Aquifer Disposition in the Study area

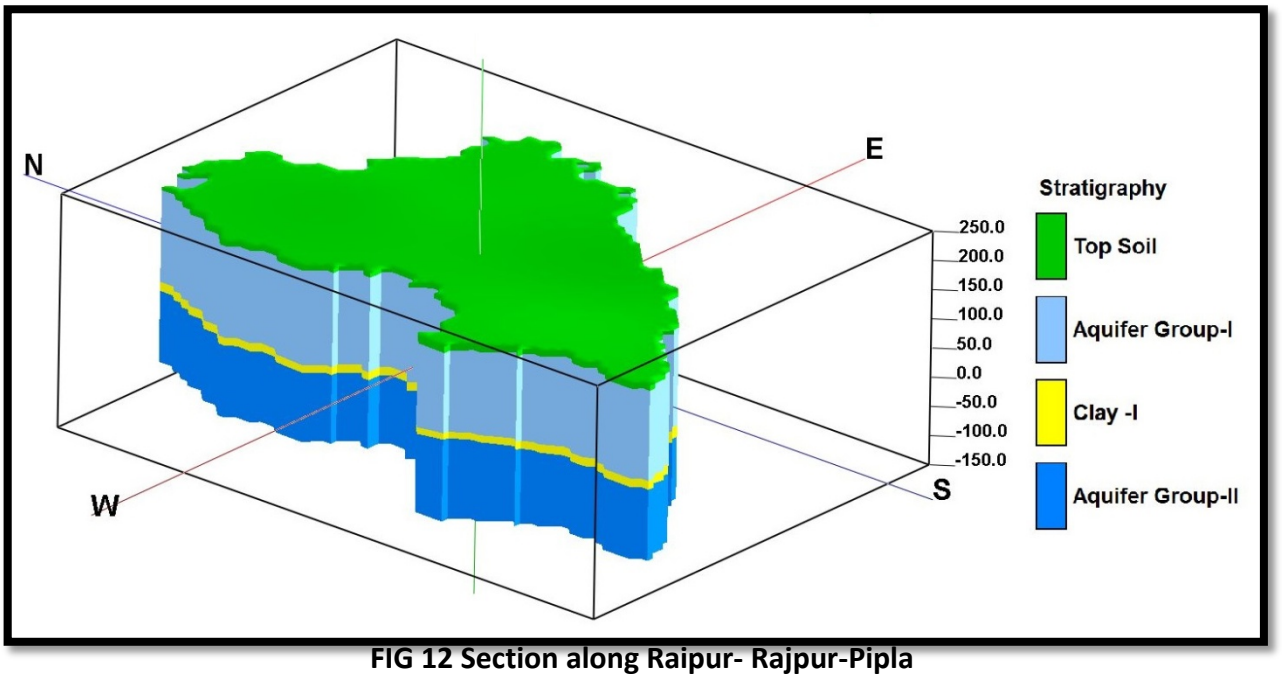


FIG 12 Section along Raipur- Rajpur-Pipla

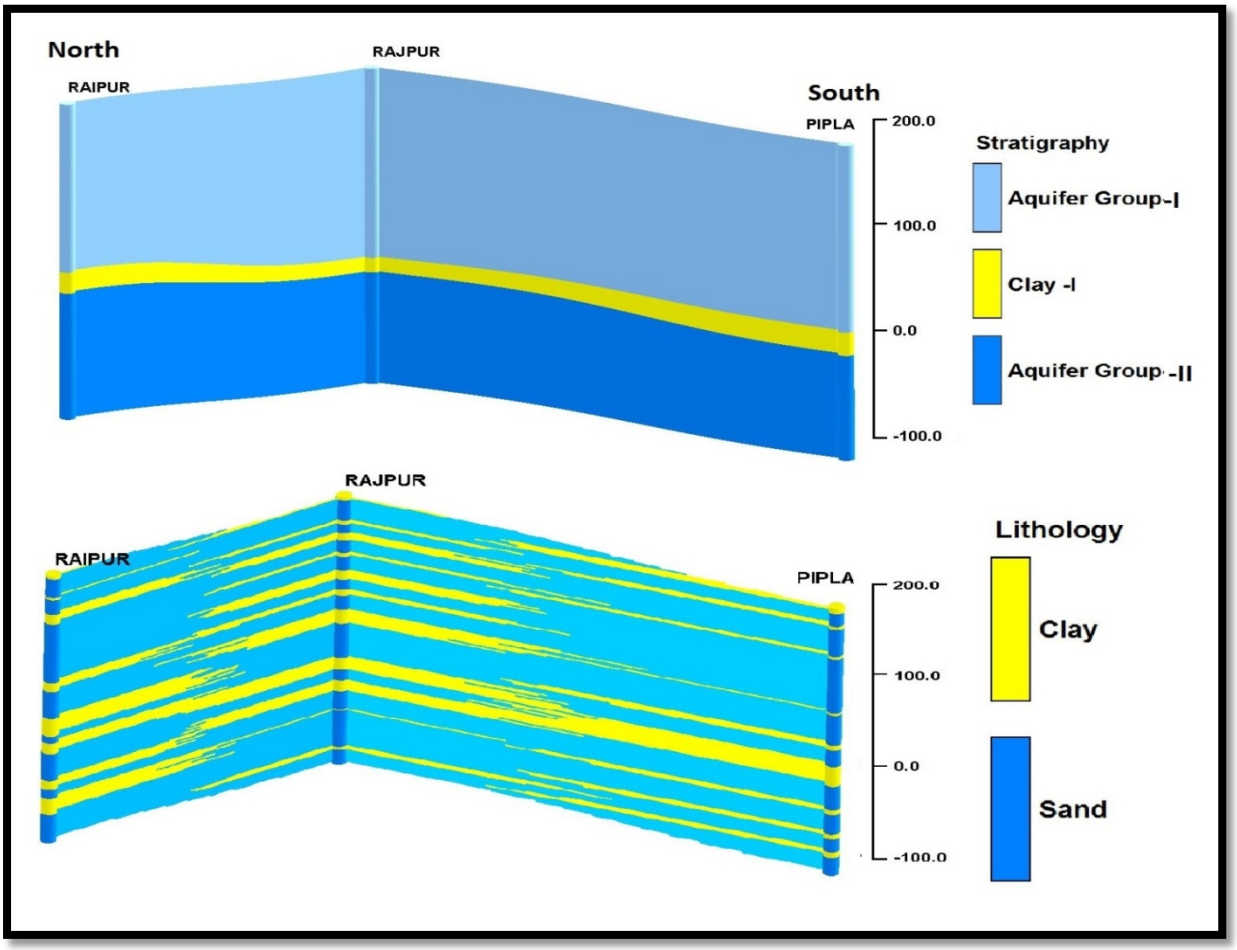
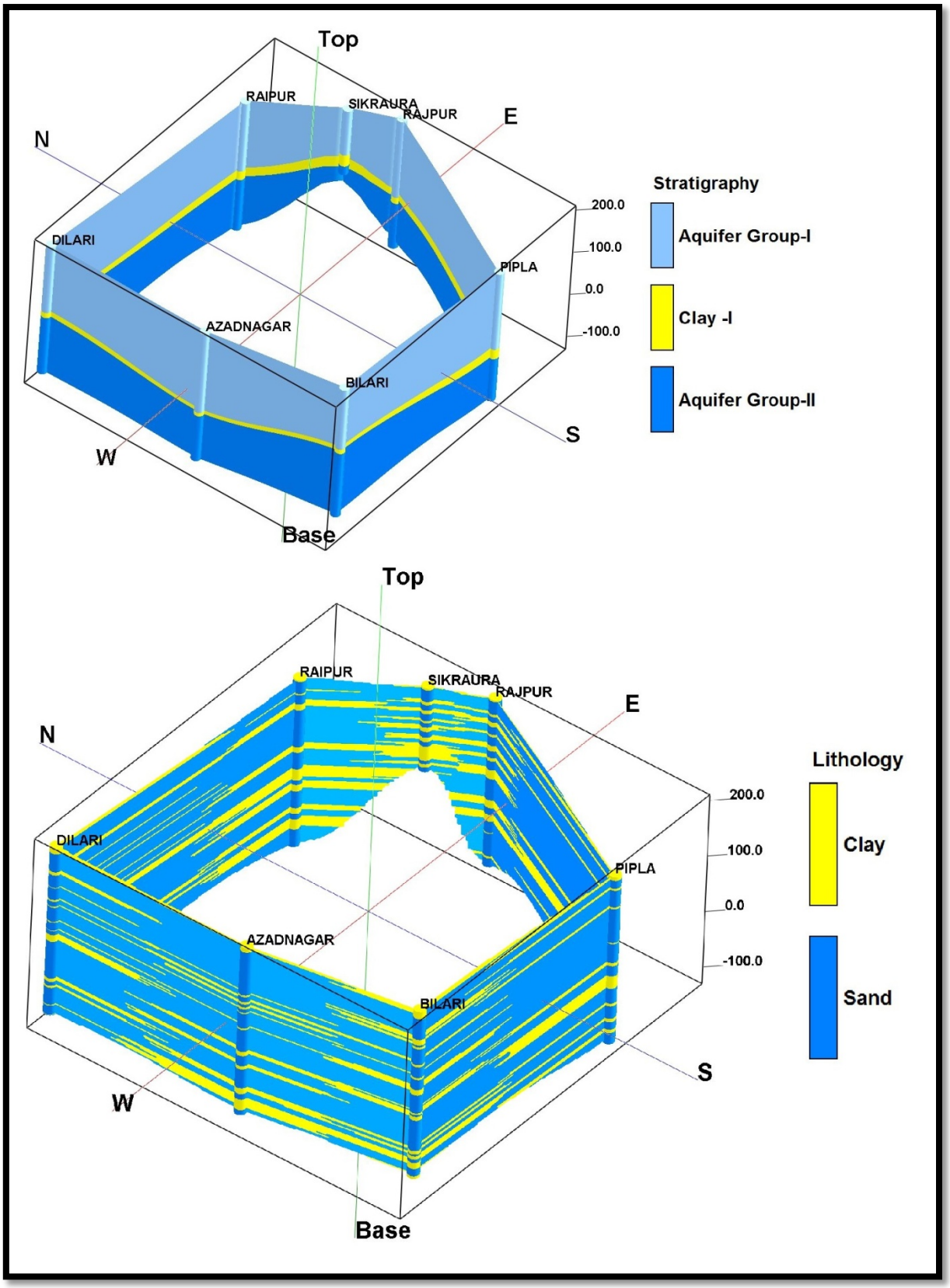


FIG 13 Fence diagram showing disposition of Aquifer groups in area around Rampur Distillery



6.2. Ground Water Occurrence

Ground water occurs in the pore spaces of the unconsolidated alluvial sediments in the saturation zone. The near surface sediments down to 20 m depth comprise fine to medium grained sand with thin clay intercalations. In this zone ground water generally occurs under unconfined conditions. The topography controls occurrence and movement of groundwater in the area. In shallow aquifer the groundwater occurs under unconfined state while in deeper aquifer it occurs in confined to semi-confined state.

6.3. Ground Water Condition in Area around Radico Khaitan Limited

In the study area around the distillery plant, ground water occurs in the pore spaces of unconsolidated alluvial sediments in the zone of saturation. The top sandy bed mixed with silt existing down to the depth of about 50 metres below ground level generally supports the dugwells, shallow tube wells and handpumps. The total depth of dugwells generally ranges from 8 to 15 mbgl. A large number of dugwells in the area have become obsolete due to construction of handpumps and shallow tubewells. As such handpumps have become more popular for domestic needs and shallow tubewells for irrigational purposes. Ground water in this zone occurs under water table conditions.

Radico Khaitan Ltd has constructed six piezometers at different locations in Chamraua block during 2016-17 and six piezometers during 2020-21. All the piezometers are fitted with Digital Water Level Recorder (DWLR) with telemetry system. The daily ground water level data is being automatically monitored regularly since 2017 and 2020 respectively. The entire data was downloaded from the server, validated and analysed for studying ground water scenario and extracting trends of changes in ground water scenario.

The premonsoon and post monsoon ground water level data has also been collected regularly from ground water monitoring stations (dugwells/ piezometers) by State Ground Water Department for last 10 to 15 years (data shown in Annexure-II & IV). The locations of piezometers and GWMS are shown in Fig 14). The data for all the monitoring stations located in Rampur district was obtained and was utilized for preparing pre and post monsoon period depth to ground water level maps for 2019 and seasonal ground water level fluctuation map for

2019. The ground water table maps for pre and post monsoon period of 2019 was also prepared for analyzing the ground water flow regime. These observations are discussed in following chapters.

6.3.1. Ground Water level situation during Premonsoon period

The pre-monsoon water level map prepared from the data collected from the State Ground Water Department, Government of Uttar Pradesh, Lucknow (Annexure II & IV) indicate that the depth to water level in the study area varies from 3.98 to 7.72 mbgl (Fig 15). Depth to water levels of less than 5 mbgl has also been observed in small patches around Beesri and Milak Chikna villages located about 10 and 5 km in the south direction from Rampur Distillery. Shallowest water level of 3.98 mbgl is observed at Milak Chikna piezometer of Radico Khaitan Ltd. Water levels around Koela in the northern parts of study area also show water levels less than 5.0 mbgl. Maximum water level is observed in northeastern part of the study area, about 2 to 3 km from Koela village, around Bhont (7.72 mbgl) and Chamraua (6.6 mbgl). Water levels of more than 7.0 mbgl are also observed in Rampur town and in the southern side of the study area around Deenpur and Madhaiya Udairaj. In general water levels vary between 5.0 and 6.0 mbgl in the maximum part of the study area. Water level increases from north and west towards east and southeast. Table-4 shows that 60% stations show water levels ranging from 5 to 7 mbgl and 27% show water levels below 5 mbgl. The depth to ground water levels in the area around Rampur Distillery falls in the range of 6.0 to 6.5 mbgl.

Table 4 Frequency distribution of Water Levels during Premonsoon period of 2019, Chamraua block of Rampur district

Block	Total monitoring stations analysed	3.0 - 5.0 mbgl	5.0 - 7.0 mbgl	> 7.0 mbgl
Chamraua	15	4 (27%)	9 (60%)	2 (13%)

Table 5 Frequency distribution of Water Levels during Premonsoon period of 2020, Chamraua block of Rampur district

Block	Total monitoring stations analysed	3.0 - 5.0 mbgl	5.0 - 7.0 mbgl	> 7.0 mbgl
Chamraua	7	1 (14%)	5 (72%)	1 (14%)

FIG 14

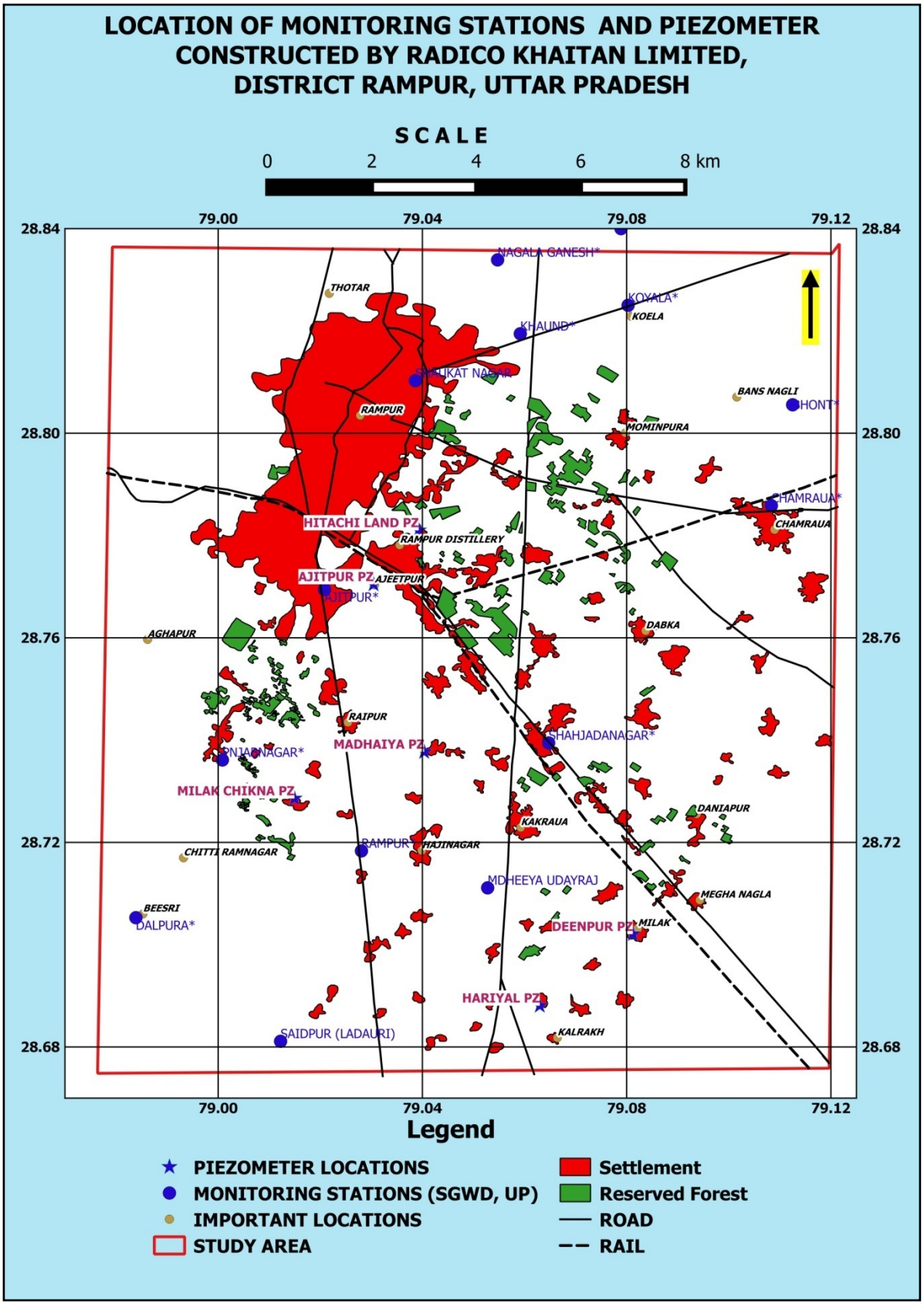

LOCATION OF MONITORING STATIONS AND PIEZOMETER CONSTRUCTED BY RADICO KHAITAN LIMITED, DISTRICT RAMPUR, UTTAR PRADESH
SCALE
0 2 4 6 8 km
79.00
79.04
79.08
79.12
28.84
28.80
28.76
28.72
28.68
NAGALA GANESH*
THOTAR
KOYALA*
KOELA
KHAUND*
RAMPUR
BANS NAGLI
HONT*
MOMINPURA
CHAMRAUA*
CHAMRAUA
HITACHI LAND PZ
RAMPUR DISTILLERY
AJITPUR PZ
AJEETPUR
AJITPUR*
AGHAPUR
DABKA
RAIPUR
MADHAIYA PZ
SHAHJADANAGAR*
MILAK CHIKNA PZ
KAKRAUA
DANIAPUR
CHITTI RAMNAGAR
RAMPUR HAJINAGAR
MDHEEYA UDAYRAJ
MEGHA NAGLA
BEESRI
DALPURA*
DEENPUR PZ
MILAK
HARIYAL PZ
SAIDPUR (LADAURI)
KALRAKH
Legend
PIEZOMETER LOCATIONS
MONITORING STATIONS (SGWD, UP)
IMPORTANT LOCATIONS
STUDY AREA
Settlement
Reserved Forest
ROAD
RAIL

FIG 15 Depth to Water Level (Premonsoon period 2019) in the Study Area, Rampur District

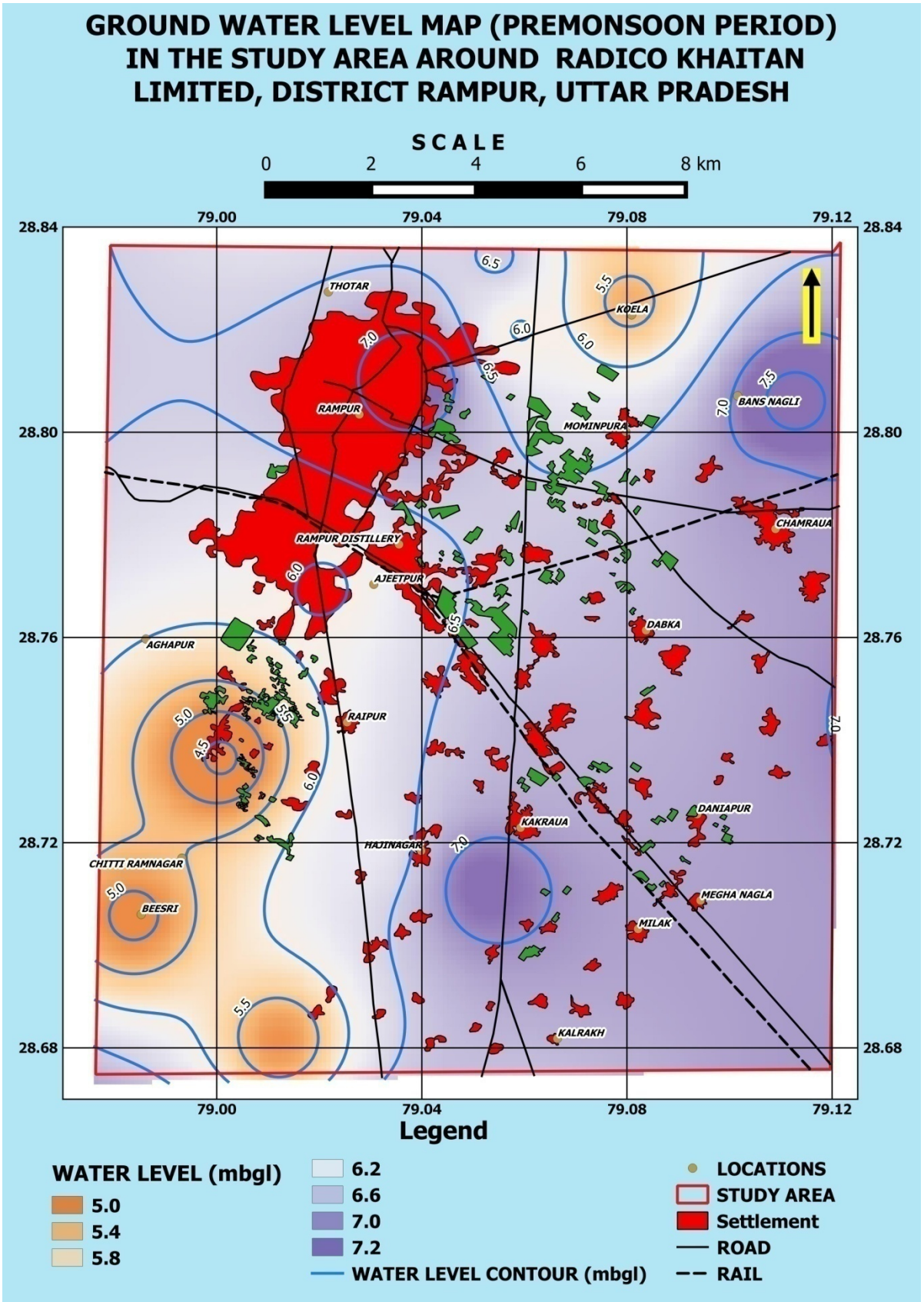
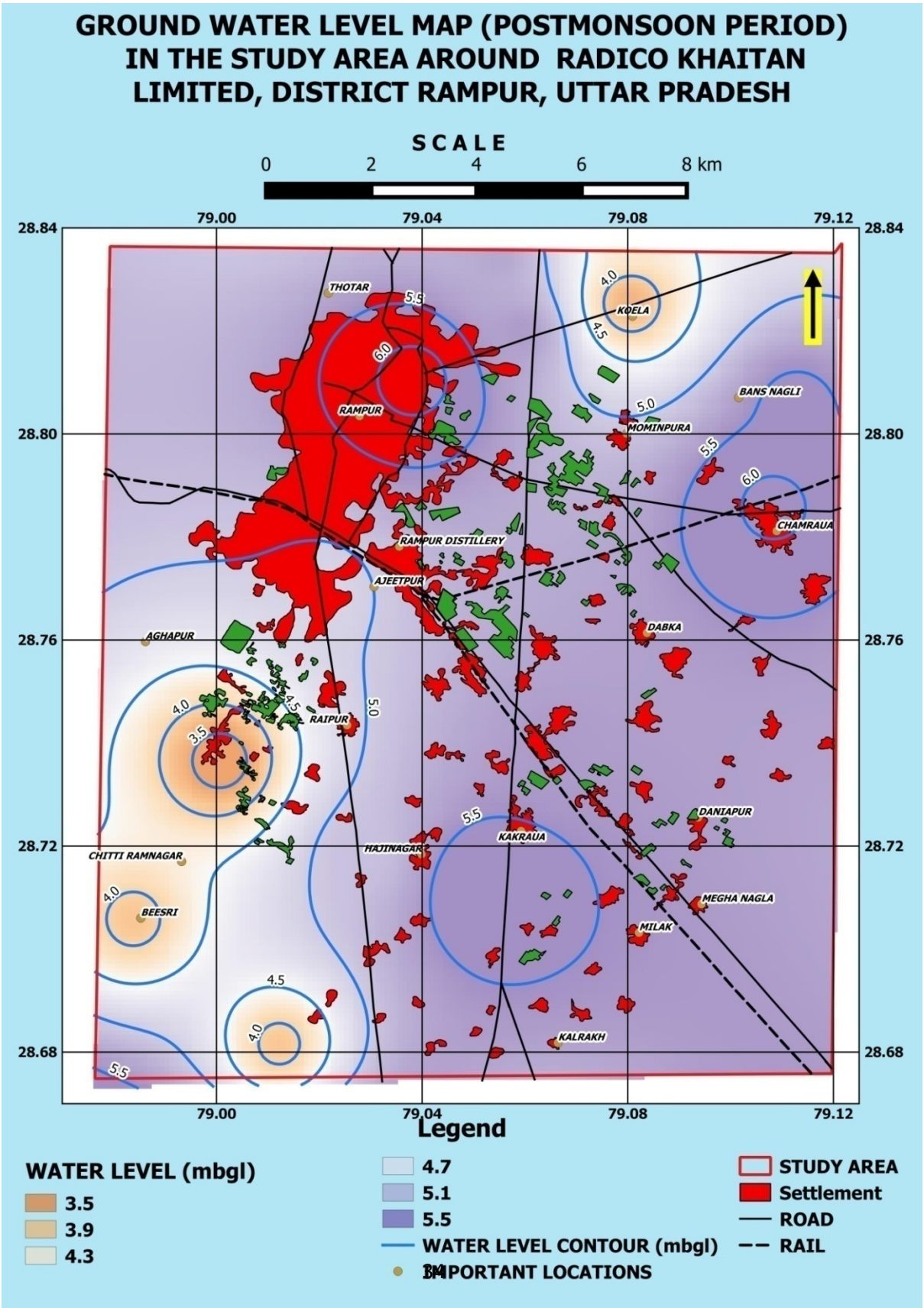


FIG 16 Depth to Water Level (Postmonsoon period 2019) in the Study Area, Rampur District



6.3.2. Ground Water level situation during Postmonsoon period

During post monsoon period of 2019, 13 monitoring stations in Chamraua block of Rampur district have been analysed for establishing spatial distribution of ground water levels in the study area. The water level pattern is similar to that of premonsoon period, except that water levels range from 3.45 to 6.82 mbgl. The depth to ground water levels in the area around Rampur Distillery falls in the range of 5.0 to 6.0 mbgl. (Fig 16)

Table 6a Frequency distribution of Water Levels during Postmonsoon period of 2019, Chamraua block of Rampur district

Block	Total monitoring stations analysed	3.0- 5.0 mbgl	5.0 - 7.0 mbgl	> 7.0 mbgl
Chamraua	13	7 (54%)	6 (46%)	0

Table 7b Frequency distribution of Water Levels during Postmonsoon period of 2020, Chamraua block of Rampur district

Block	Total monitoring stations analysed	3.0- 5.0 mbgl	5.0 - 7.0 mbgl	> 7.0 mbgl
Chamraua	7	3 (43%)	4 (57%)	0

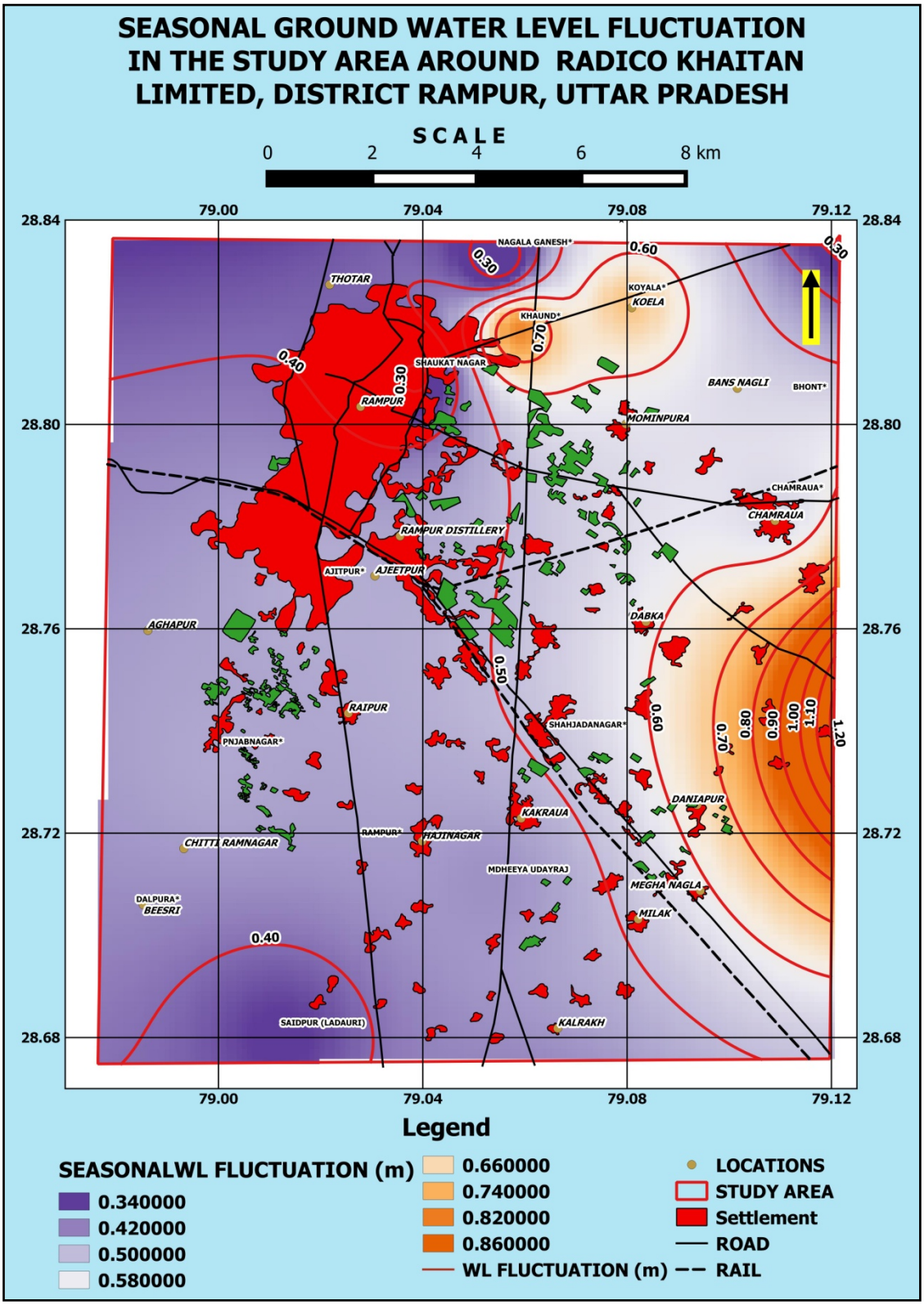
Thus studies indicate that in general water levels are deeper than 5.0 mbgl, therefore the recharge measures are feasible through site specific structures. Historical Water levels do not show much decline as the aquifers in the zone are being recharged from Tarai zone in the northern parts of Rampur district.

6.3.3. Seasonal Water level Fluctuation

A perusal of the water level seasonal fluctuation map (*Pre and Monsoon period, 2019)* in study area reveals that a rise in water level is observed in entire study area. A rise of less than 1 m is observed at all the 13 monitoring stations in Chamraua block. Maximum part of the study area shows seasonal water level fluctuation ranging from 0.34 to 0.60 m. Fluctuation of more than 0.60 m is observed in the northern part of the area around Khaund and Koela villages, and in the eastern part of the study area east of Daniapur village. The fluctuation of more than 1.0 m is seen in the seasonal water level fluctuation map (Fig -17) in the eastern parts which is effect of fluctuation in Barakhas station of Milak block. This minimal fluctuation shows that in study

area the ground water withdrawal for irrigation and other purposes is quickly replenished by lateral flow of ground water from tarai areas in the north and recharge to ground water by rainfall is ample to restore the water levels during monsoon period.

FIG 17 Seasonal Water Level Fluctuation in the Study Area (Pre & Post monsoon, 2019), Rampur District



6.3.4. Long Term Water Level Trends

Radico Khaitan Ltd has established six piezometers within the premises and buffer zone in Chamraua block. Two piezometers are located within the premises at Ajitpur and Hitachi Land. These piezometers are about 25 m in depth. Four other piezometers are located in surrounding buffer zone at Deenpur, Hariyal, Milak Chikna and Madhaiya. The water level data has been collected at these piezometers through DWLR and telemetry system, since issuance of NOC for ground water abstraction in 2017. This water level data was downloaded from the server for long term water level trend analysis.

State Ground Water Department, Government of Uttar Pradesh, Lucknow has also collected historical water level data for last 10 12 years from fixed Ground Water Monitoring Stations (GWMS) located in different parts of Rampur district. Eight such monitoring stations in Chamraua block and one in adjacent Bilaspur block have been selected for long term water level trend analysis. These GWMS represent the buffer zone around the industry where rainwater conservation measures and ground water recharge measures have been implemented by Radico Khaitan Ltd.

The annual water level trends observed at piezometer of Radico Khaitan Ltd are shown in Table-6. The data indicates that the ground water levels at all the six piezometers are showing rising trends ranging from 0.365 m/year at Hitachi Land to 0.620 m/year as observed at Madhaiya piezometer. Falling trend is not observed at any piezometer in the premises or in the buffer zone. The hydrographs of all the piezometers are shown in Fig 18 to 23.

The depth to ground water levels at these piezometers ranges from 2.55 mbgl at Madhaiya to 8.59 mbgl at Deenpur. In general the minimum water levels vary from 2.55 mbgl at Madhaiya to 6.39 mbgl at Deenpur. The maximum water level varies from 4.23 mbgl at Milak Chikna to 8.59 Deenpur.

Earlier the trends were estimated for the period upto 2019. In the present report the ground water level data for the year 2020 collected by State Ground Water Department has been updated and trends were calculated upto 2020. As shown in Table 8 below it is indicated that rising trends of water levels are observed for all the six piezometers. The rate of rise has

reduced slightly at 5 piezometers and for one it is stable. Thus a rise in water levels is observed since 2017 at all the piezometer locations in Chamraua block.

Table 8 LONG TERM WATER LEVEL TRENDS AT PIEZOMETERS CONSTRUCTED BY RADICO KHAITAN LTD WITHIN THE PREMISES AND IN BUFFER ZONE AROUND THE DISTILLERY

PIEZOMETERS OF RADICO KHAITAN LIMITED	DATA AVAILBLE FOR	LONG TERM WATER LEVEL TRENDS (m/year)		DATA UPDATED UPTO SEPTEMBER, 2021	LONG TERM WATER LEVEL TRENDS (m/year)	
		RISE	FALL		RISE	FALL
AJEETPUR	May'2017 – Feb-2020	0.548	-	MAY'2017 –Sep'2021	0.256	-
HITACHI LAND	MAY'2017– Feb-2020	0.365	-	MAY'2017– Sep'2021	0.365	-
DEENPUR	OCT'2017 – Feb-2020	0.584	-	OCT'2017 – Sep'2021	0.037	-
HARIYAL	OCT'2017 – Feb-2020	0.475	-	OCT'2017 – Sep'2021	0.110	-
MADHAIYA	OCT'2017 – Feb-2020	0.620	-	OCT'2017 – Sep'2021	0.073	-
MILAK CHIKNA	JUN'2019– Feb-2020	0.438	-	JUN'2019– Sep'2021	0.329	-

FIG 18

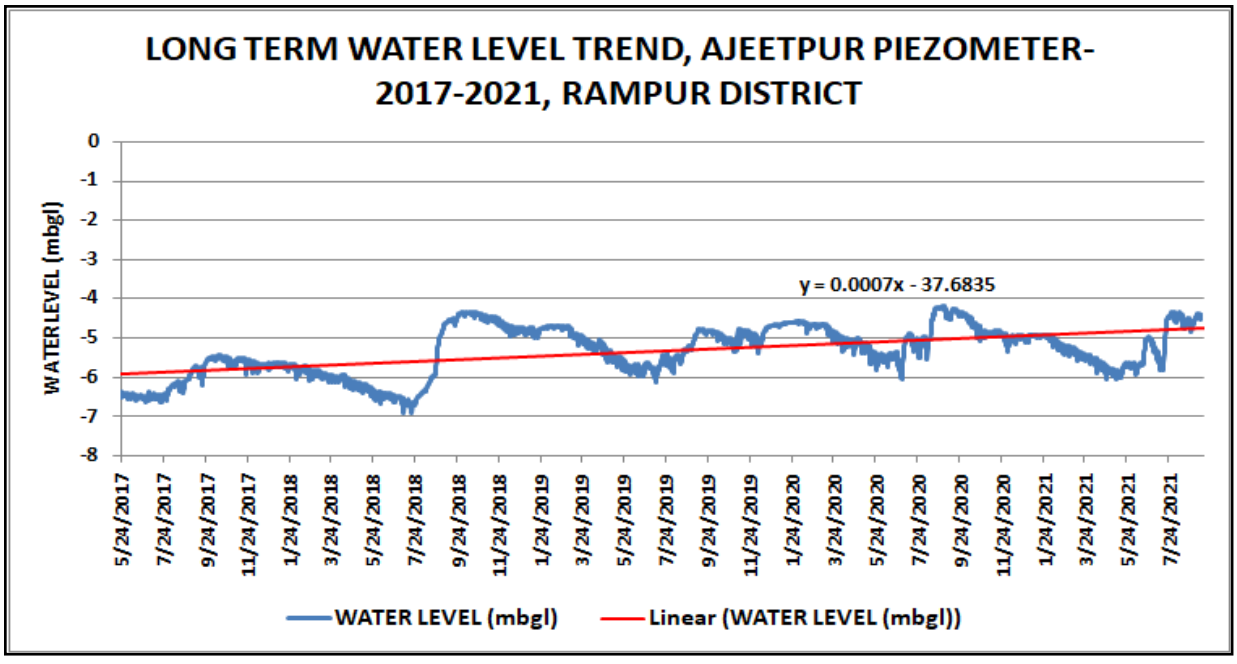


FIG 19

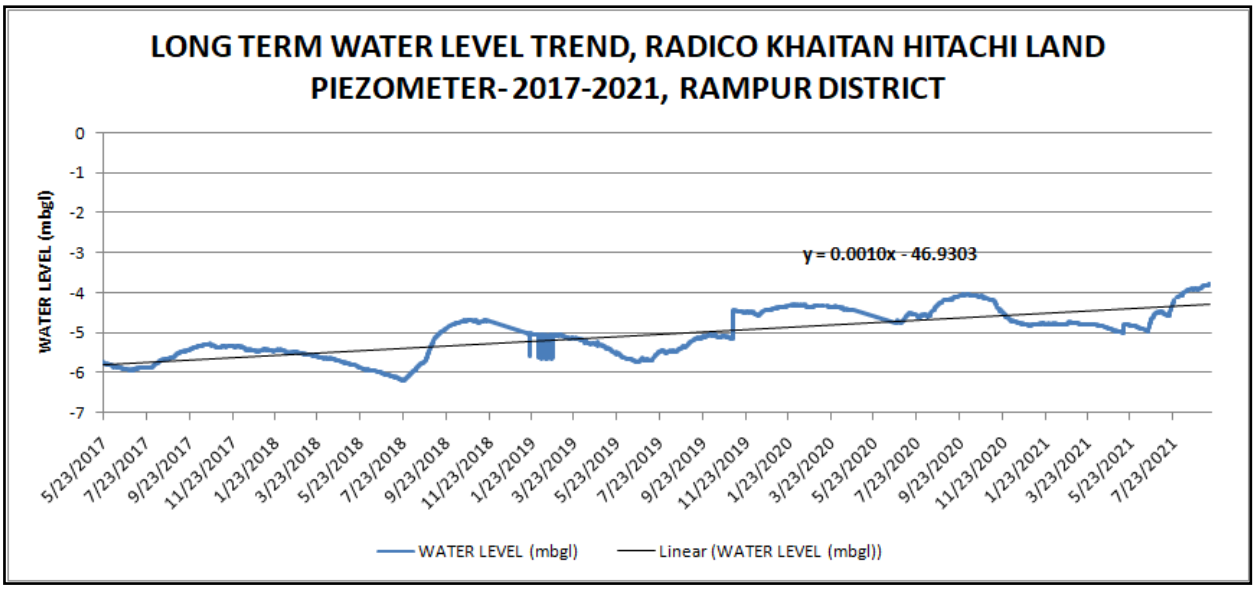

LONG TERM WATER LEVEL TREND, RADICO KHAITAN HITACHI LAND PIEZOMETER- 2017-2021, RAMPUR DISTRICT
WATER LEVEL (mbgl)
y = 0.0010x - 46.9303
WATER LEVEL (mbgl)
Linear (WATER LEVEL (mbgl))

FIG 20

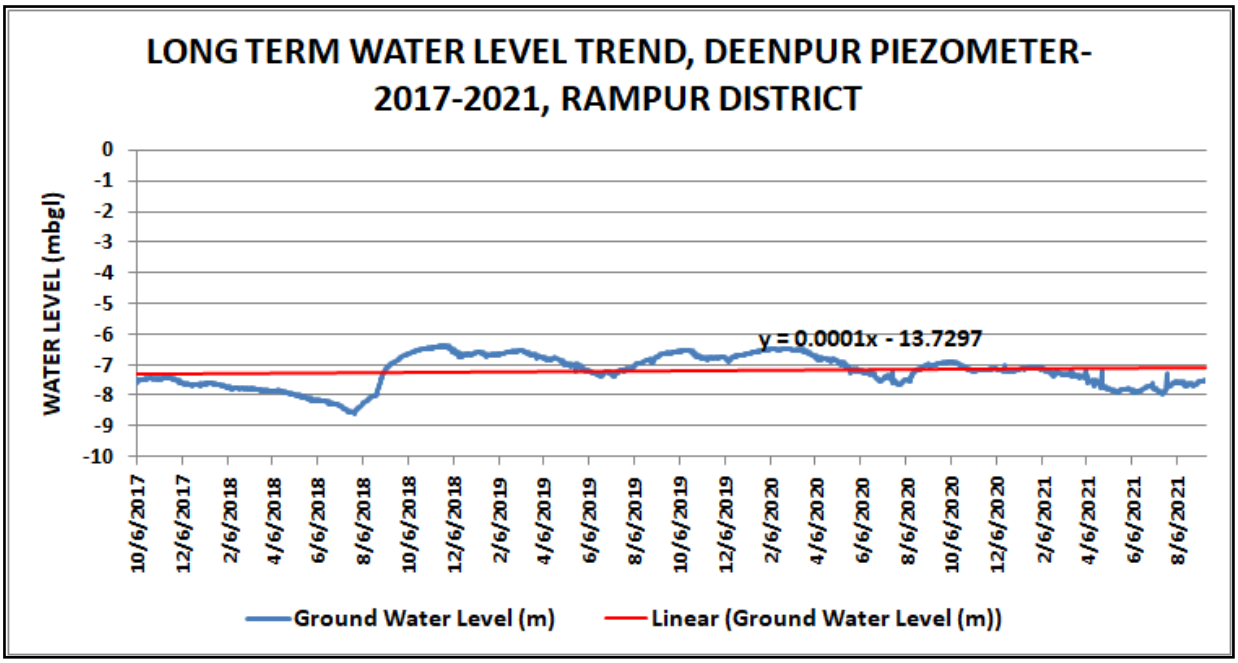

LONG TERM WATER LEVEL TREND, DEENPUR PIEZOMETER- 2017-2021, RAMPUR DISTRICT
WATER LEVEL (mbgl)
y = 0.0001x - 13.7297
Ground Water Level (m)
Linear (Ground Water Level (m))

FIG 21

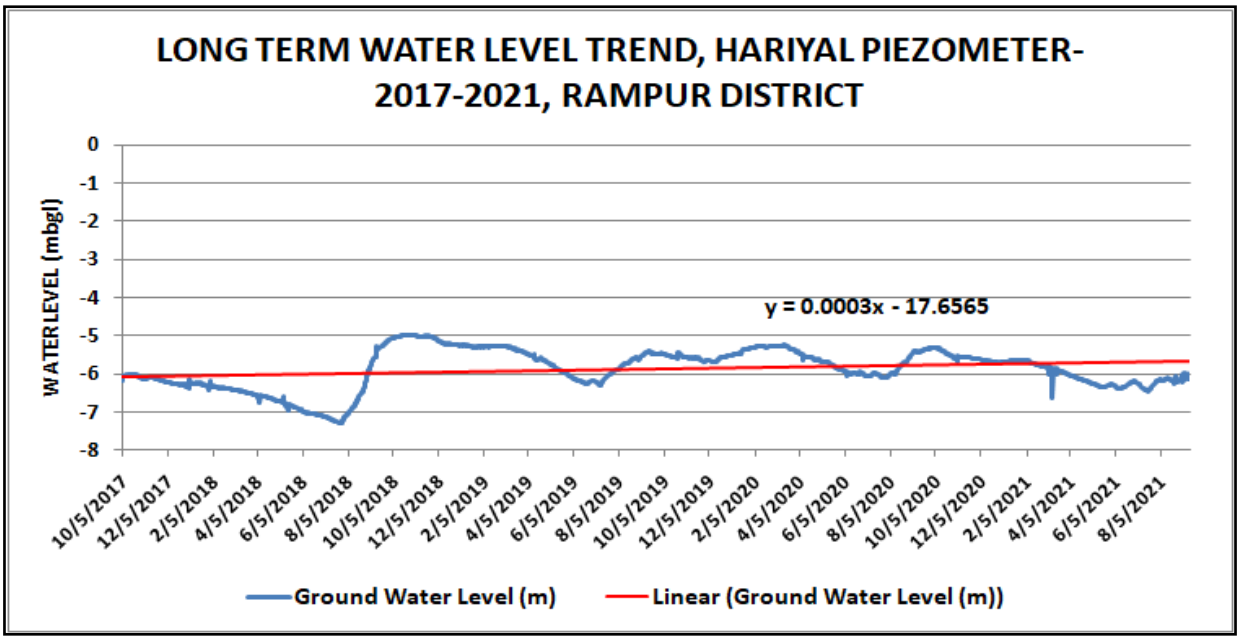

LONG TERM WATER LEVEL TREND, HARIYAL PIEZOMETER- 2017-2021, RAMPUR DISTRICT
WATER LEVEL (mbgl)
0
-1
-2
-3
-4
-5
-6
-7
-8
y = 0.0003x - 17.6565
10/5/2017
12/5/2017
2/5/2018
4/5/2018
6/5/2018
8/5/2018
10/5/2018
12/5/2018
2/5/2019
4/5/2019
6/5/2019
8/5/2019
10/5/2019
12/5/2019
2/5/2020
4/5/2020
6/5/2020
8/5/2020
10/5/2020
12/5/2020
2/5/2021
4/5/2021
6/5/2021
8/5/2021
Ground Water Level (m)
Linear (Ground Water Level (m))

FIG 22

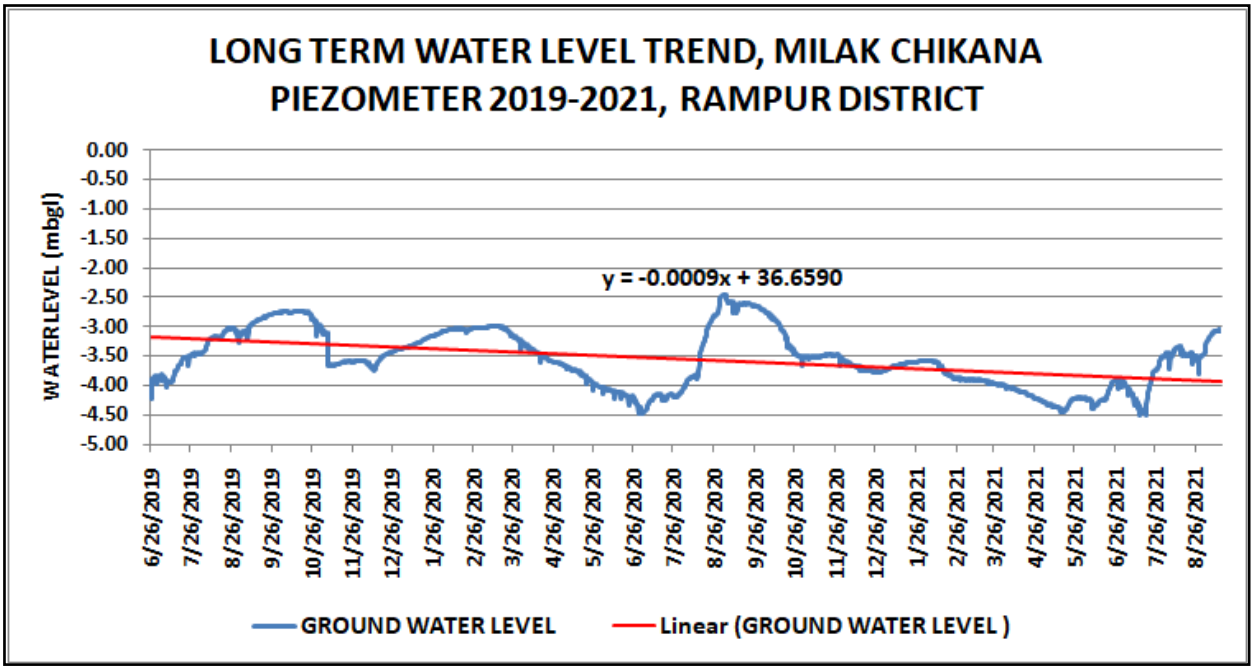
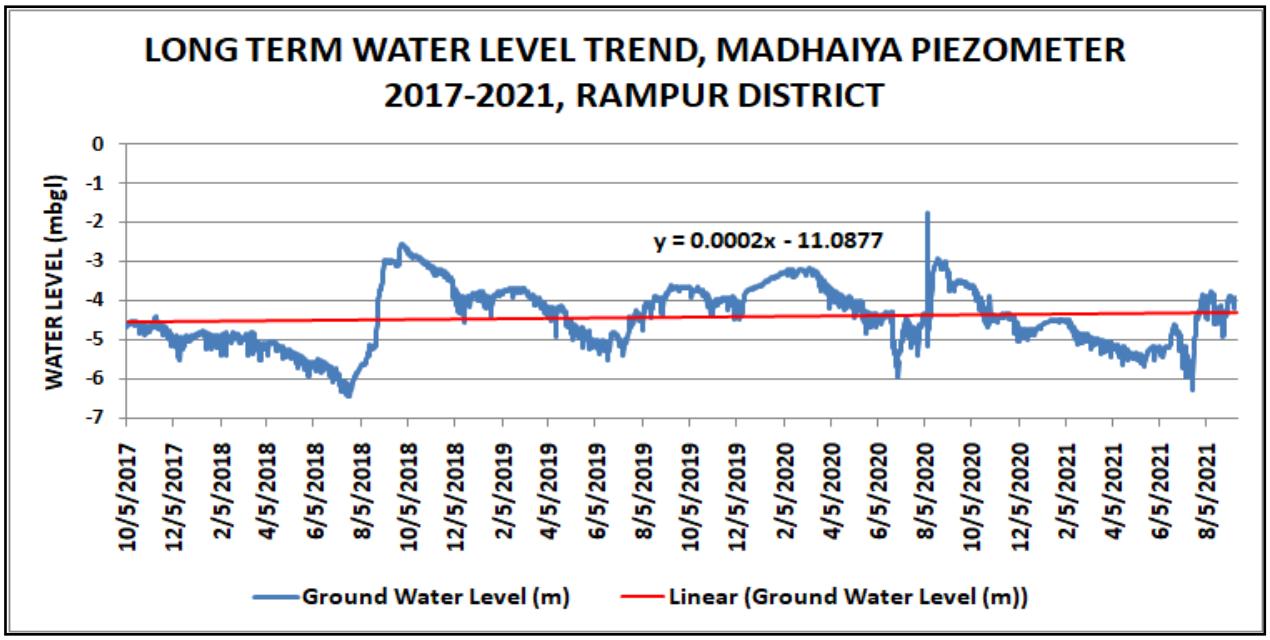

LONG TERM WATER LEVEL TREND, MILAK CHIKANA PIEZOMETER 2019-2021, RAMPUR DISTRICT
WATER LEVEL (mbgl)
0.00
-0.50
-1.00
-1.50
-2.00
-2.50
-3.00
-3.50
-4.00
-4.50
-5.00
y = -0.0009x + 36.6590
6/26/2019
7/26/2019
8/26/2019
9/26/2019
10/26/2019
11/26/2019
12/26/2019
1/26/2020
2/26/2020
3/26/2020
4/26/2020
5/26/2020
6/26/2020
7/26/2020
8/26/2020
9/26/2020
10/26/2020
11/26/2020
12/26/2020
1/26/2021
2/26/2021
3/26/2021
4/26/2021
5/26/2021
6/26/2021
7/26/2021
8/26/2021
GROUND WATER LEVEL
Linear (GROUND WATER LEVEL)

FIG 23



Long term water level trends have also been estimated using long term water level data collected at GWMS of State Ground Water Department and the summary is shown in table-7. It is observed that out of ten stations analysed, two stations at Bilaspur (Bilaspur block) and Panjabnagar (Chamraua block) show a rise in water level trends for the last 10 to 11 years. Remaining eight GWMS show a long term declining trend of ground water level trends, ranging from 0.014 m/year (at Dalpura) to 0.250 m/year at Chamraua. The hydrographs are shown in Fig 24 to 33.

Thus it is observed that historical ground water levels indicate a falling trend in the buffer zone prior to interventions for ground water recharge by Radico Khaitan Ltd, whereas piezometers that have been constructed by Radico Khaitan Ltd in the buffer zone during or after 2017 (after issuance of NOC and compliance to directives), show a rise at all the stations.

FIG 24

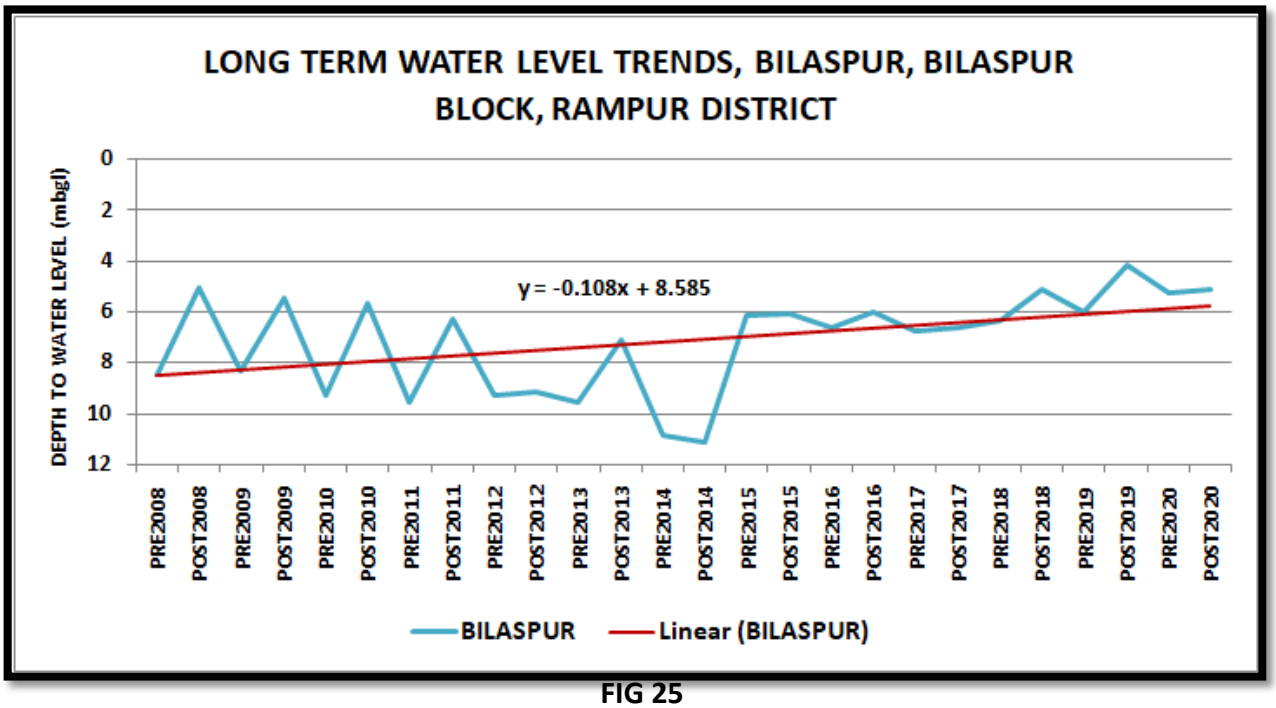

LONG TERM WATER LEVEL TRENDS, BILASPUR, BILASPUR BLOCK, RAMPUR DISTRICT
DEPTH TO WATER LEVEL (mbgl)
0
2
4
6
8
10
12
y = -0.108x + 8.585
PRE2008
POST2008
PRE2009
POST2009
PRE2010
POST2010
PRE2011
POST2011
PRE2012
POST2012
PRE2013
POST2013
PRE2014
POST2014
PRE2015
POST2015
PRE2016
POST2016
PRE2017
POST2017
PRE2018
POST2018
PRE2019
POST2019
PRE2020
POST2020
BILASPUR
Linear (BILASPUR)

FIG 25

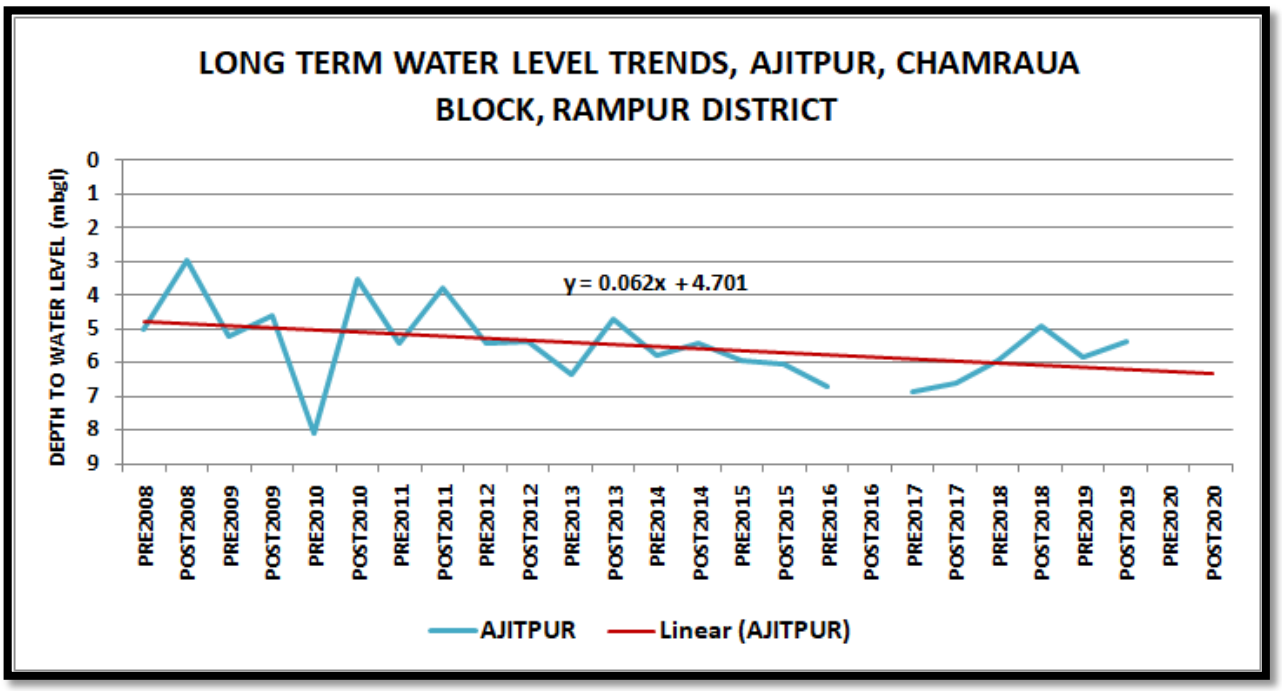

LONG TERM WATER LEVEL TRENDS, AJITPUR, CHAMRAUA BLOCK, RAMPUR DISTRICT
DEPTH TO WATER LEVEL (mbgl)
0
1
2
3
4
5
6
7
8
9
y = 0.062x + 4.701
PRE2008
POST2008
PRE2009
POST2009
PRE2010
POST2010
PRE2011
POST2011
PRE2012
POST2012
PRE2013
POST2013
PRE2014
POST2014
PRE2015
POST2015
PRE2016
POST2016
PRE2017
POST2017
PRE2018
POST2018
PRE2019
POST2019
PRE2020
POST2020
AJITPUR
Linear (AJITPUR)

FIG 26

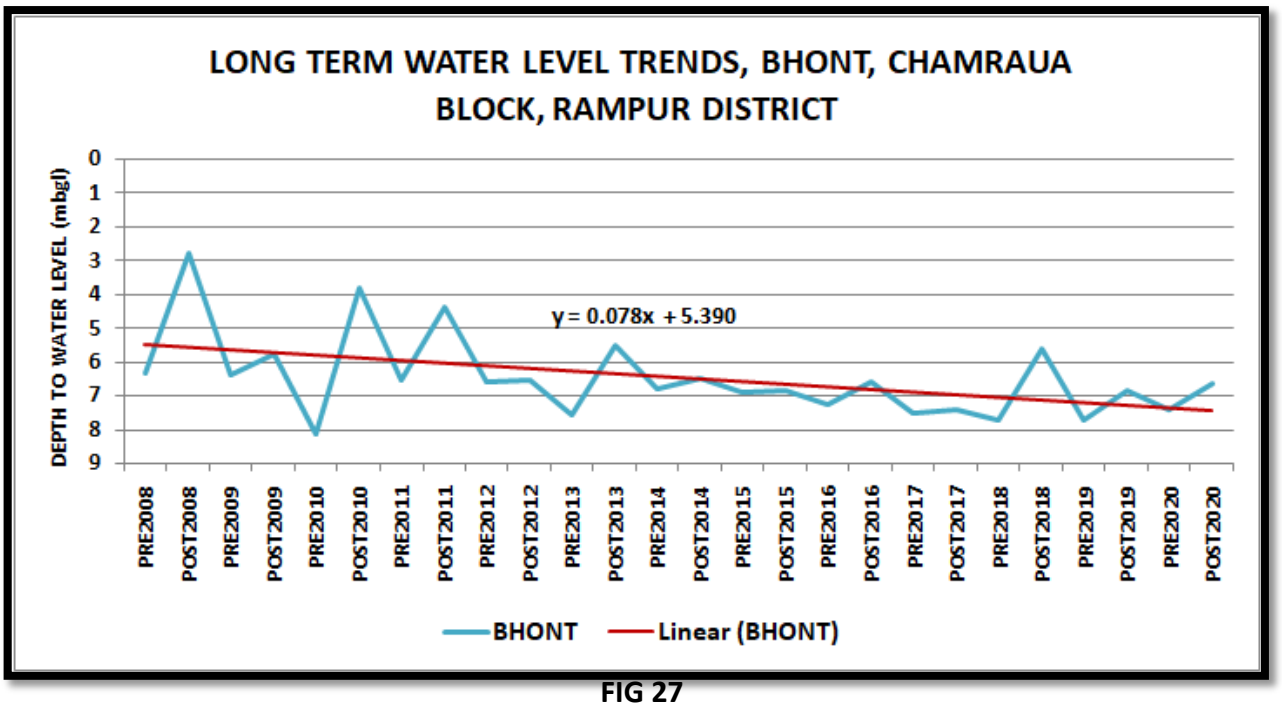

LONG TERM WATER LEVEL TRENDS, BHONT, CHAMRAUA BLOCK, RAMPUR DISTRICT
DEPTH TO WATER LEVEL (mbgl)
0
1
2
3
4
5
6
7
8
9
y = 0.078x + 5.390
PRE2008
POST2008
PRE2009
POST2009
PRE2010
POST2010
PRE2011
POST2011
PRE2012
POST2012
PRE2013
POST2013
PRE2014
POST2014
PRE2015
POST2015
PRE2016
POST2016
PRE2017
POST2017
PRE2018
POST2018
PRE2019
POST2019
PRE2020
POST2020
BHONT
Linear (BHONT)

FIG 27

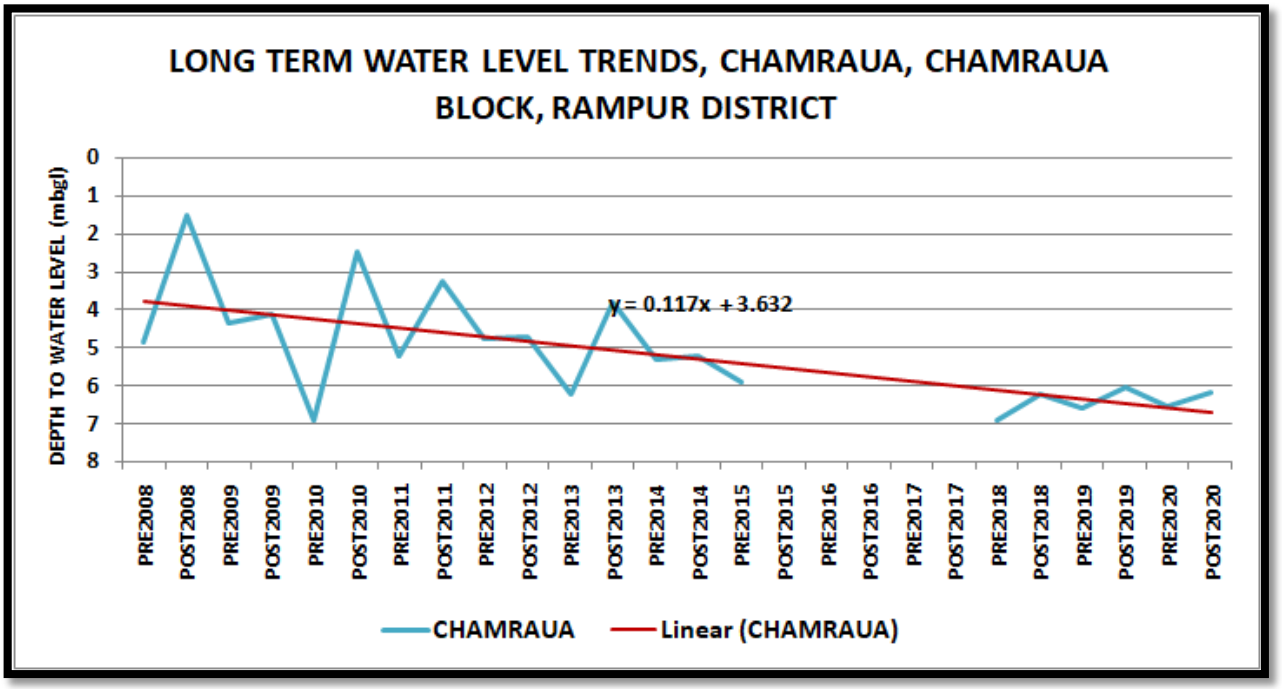

LONG TERM WATER LEVEL TRENDS, CHAMRAUA, CHAMRAUA BLOCK, RAMPUR DISTRICT
DEPTH TO WATER LEVEL (mbgl)
0
1
2
3
4
5
6
7
8
y = 0.117x + 3.632
PRE2008
POST2008
PRE2009
POST2009
PRE2010
POST2010
PRE2011
POST2011
PRE2012
POST2012
PRE2013
POST2013
PRE2014
POST2014
PRE2015
POST2015
PRE2016
POST2016
PRE2017
POST2017
PRE2018
POST2018
PRE2019
POST2019
PRE2020
POST2020
CHAMRAUA
Linear (CHAMRAUA)

FIG 28

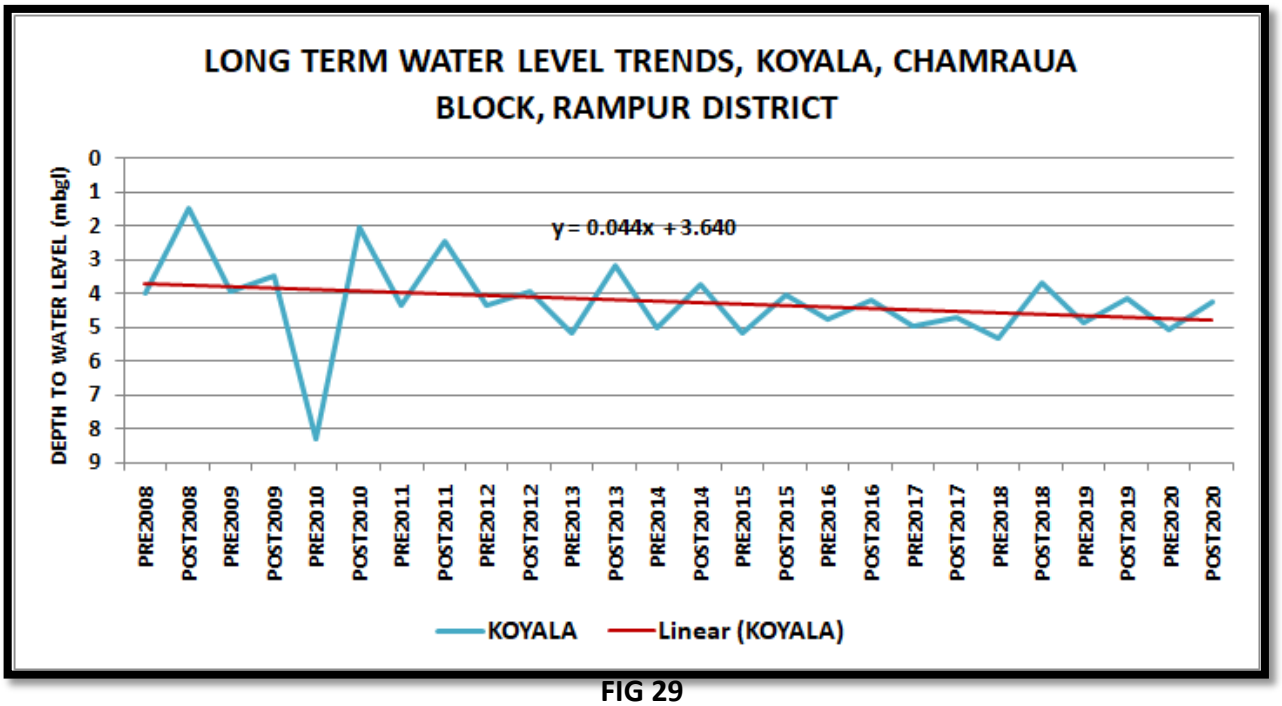

LONG TERM WATER LEVEL TRENDS, KOYALA, CHAMRAUA BLOCK, RAMPUR DISTRICT
DEPTH TO WATER LEVEL (mbgl)
y = 0.044x + 3.640
PRE2008
POST2008
PRE2009
POST2009
PRE2010
POST2010
PRE2011
POST2011
PRE2012
POST2012
PRE2013
POST2013
PRE2014
POST2014
PRE2015
POST2015
PRE2016
POST2016
PRE2017
POST2017
PRE2018
POST2018
PRE2019
POST2019
PRE2020
POST2020
KOYALA
Linear (KOYALA)

FIG 29

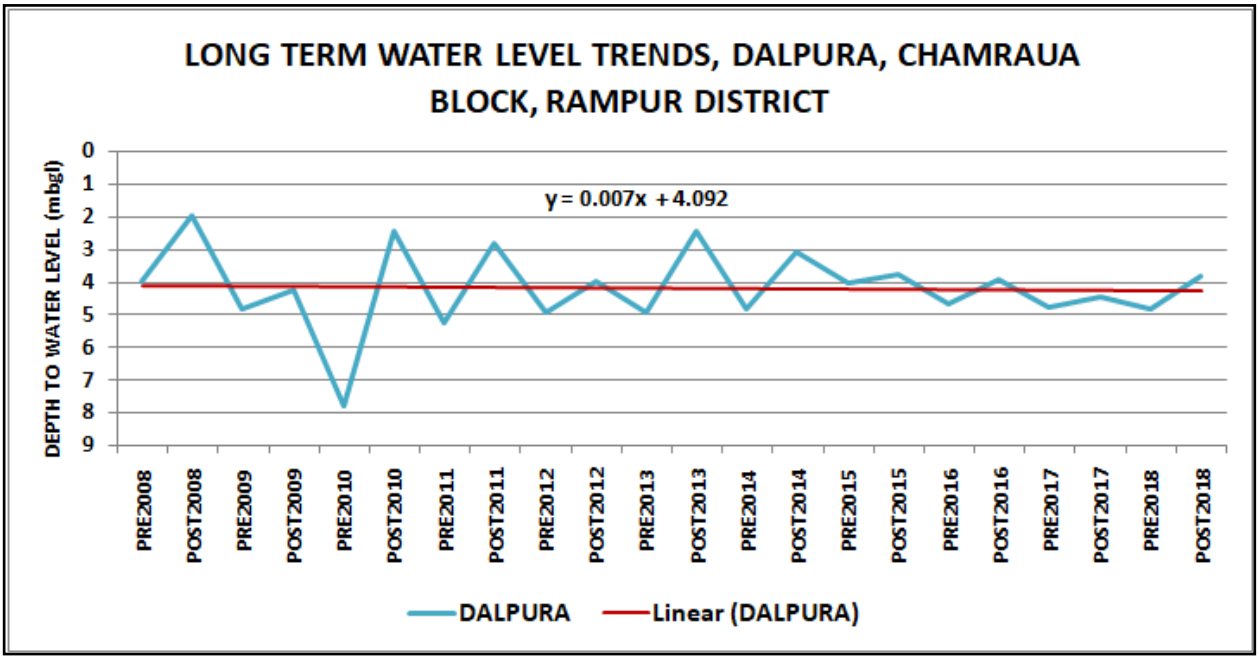

LONG TERM WATER LEVEL TRENDS, DALPURA, CHAMRAUA BLOCK, RAMPUR DISTRICT
DEPTH TO WATER LEVEL (mbgl)
y = 0.007x + 4.092
PRE2008
POST2008
PRE2009
POST2009
PRE2010
POST2010
PRE2011
POST2011
PRE2012
POST2012
PRE2013
POST2013
PRE2014
POST2014
PRE2015
POST2015
PRE2016
POST2016
PRE2017
POST2017
PRE2018
POST2018
DALPURA
Linear (DALPURA)

FIG 30

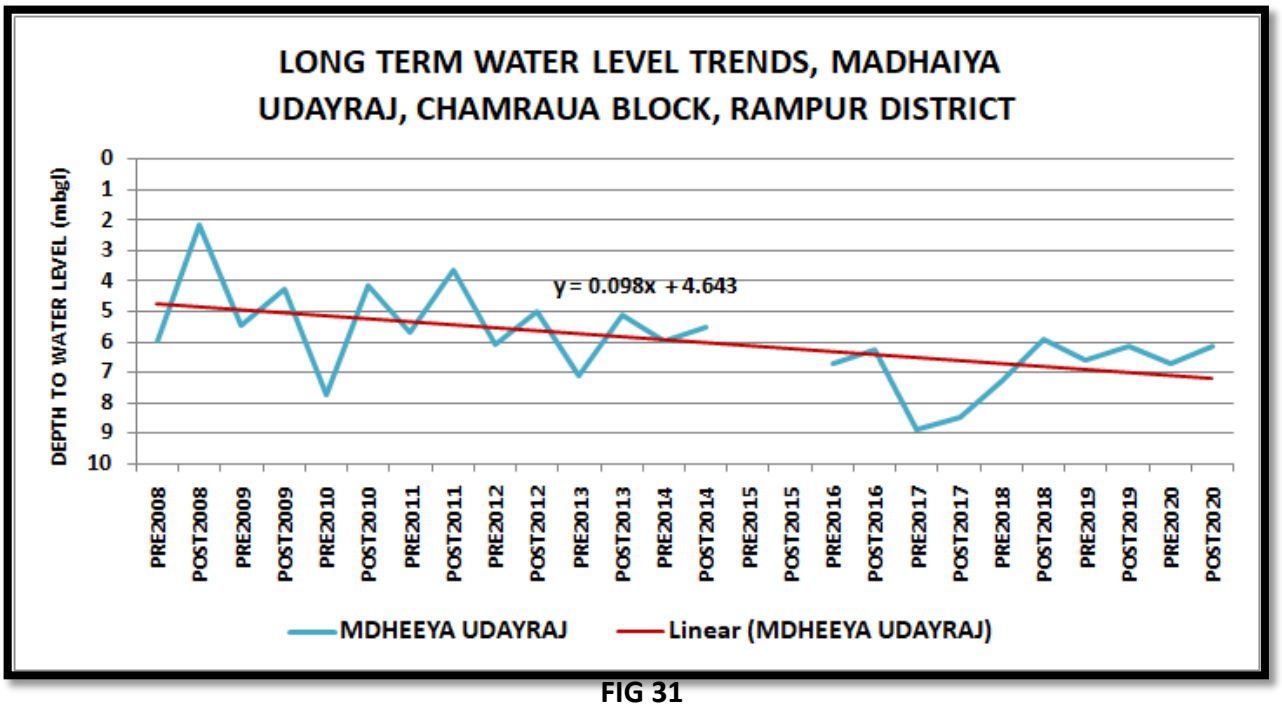

LONG TERM WATER LEVEL TRENDS, MADHAIYA UDAYRAJ, CHAMRAUA BLOCK, RAMPUR DISTRICT
DEPTH TO WATER LEVEL (mbgl)
0
1
2
3
4
5
6
7
8
9
10
y = 0.098x + 4.643
PRE2008
POST2008
PRE2009
POST2009
PRE2010
POST2010
PRE2011
POST2011
PRE2012
POST2012
PRE2013
POST2013
PRE2014
POST2014
PRE2015
POST2015
PRE2016
POST2016
PRE2017
POST2017
PRE2018
POST2018
PRE2019
POST2019
PRE2020
POST2020
MDHEEYA UDAYRAJ
Linear (MDHEEYA UDAYRAJ)

FIG 31

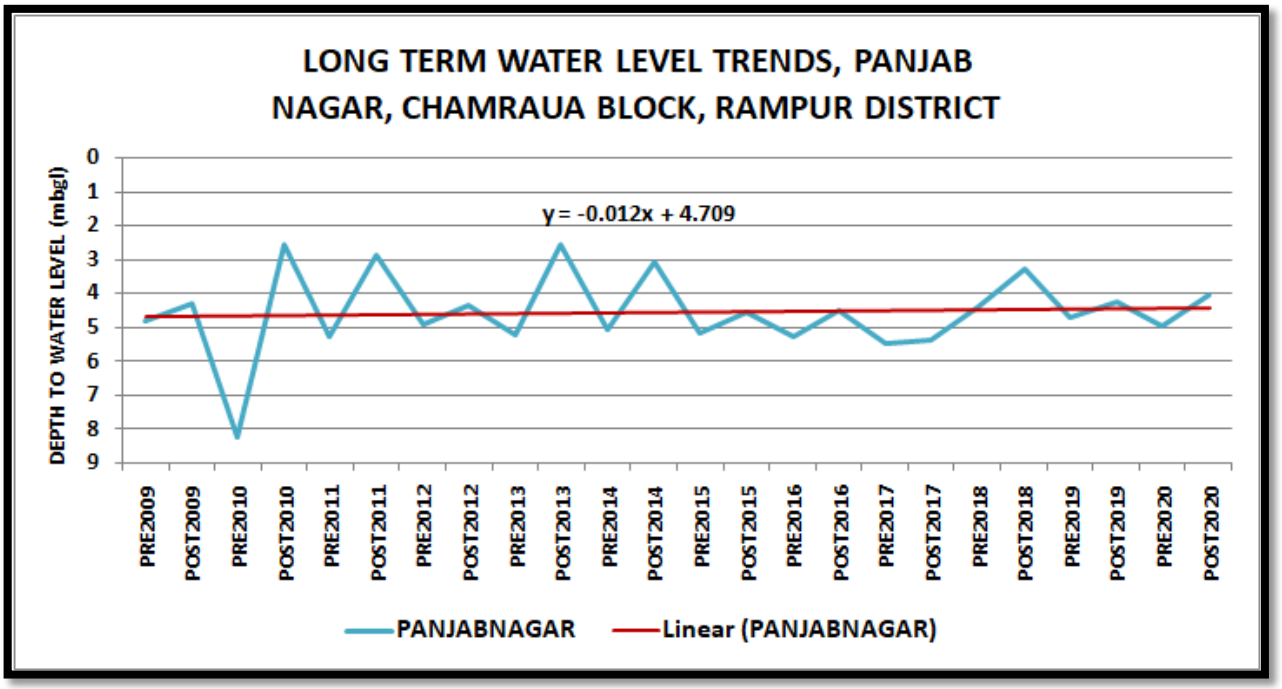

LONG TERM WATER LEVEL TRENDS, PANJAB NAGAR, CHAMRAUA BLOCK, RAMPUR DISTRICT
DEPTH TO WATER LEVEL (mbgl)
0
1
2
3
4
5
6
7
8
9
y = -0.012x + 4.709
PRE2009
POST2009
PRE2010
POST2010
PRE2011
POST2011
PRE2012
POST2012
PRE2013
POST2013
PRE2014
POST2014
PRE2015
POST2015
PRE2016
POST2016
PRE2017
POST2017
PRE2018
POST2018
PRE2019
POST2019
PRE2020
POST2020
PANJABNAGAR
Linear (PANJABNAGAR)

FIG 32

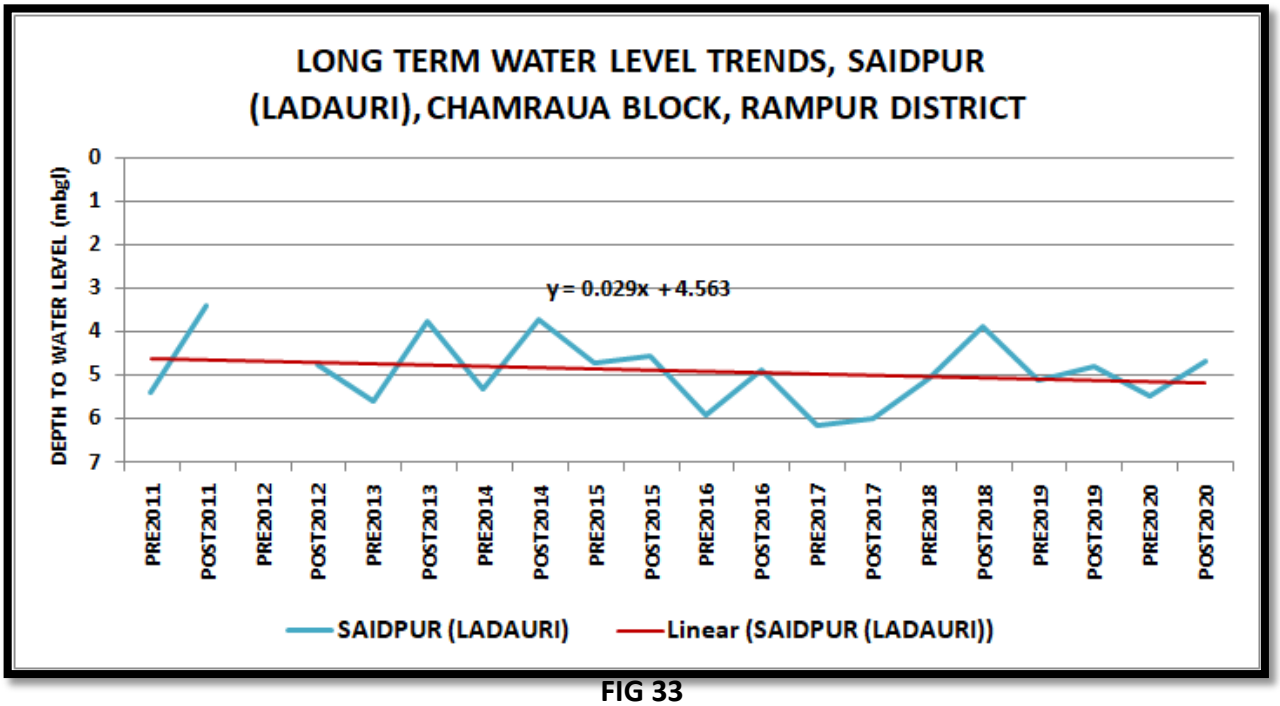
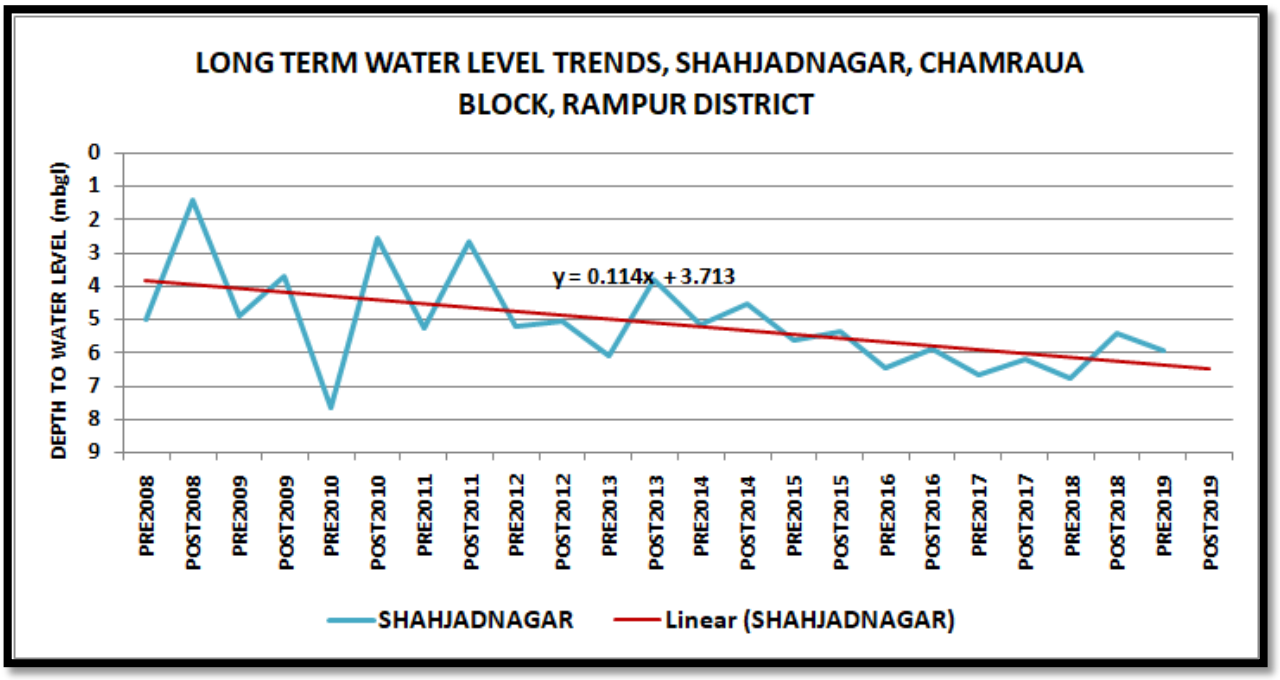


FIG 33



The long term water level trends for monitoring stations in Chamraua block were updated for 2020 water level data. The re-estimated water level trends are shown in Table 9 b. At Bilaspur and Punjab nagar stations the rising trend is observed during 2008-2020 also but rate of rise is slightly higher as compared to that of 2008-2019 period in Bilaspur area. Remaining stations

show a declining trend similar to 2008-2019 period. The declining trends during 2008-2020 (Table 9b) at all these stations are slightly less than trends during 2008-2019 (Table 9a).

Table 9a LONG TERM WATER LEVEL TRENDS (2008-2019) AT GWMS MONITORED BY STATE GROUND WATER DEPARTMENT IN BUFFER ZONE AROUND THE DISTILLERY

BLOCK	PIEZOMETERS OF RADICO KHAITAN LIMITED	DATA AVAILBLE FOR	RANGE OF WATER LEVELS (mbgl)	LONG TERM WATER LEVEL TRENDS (m/year)	
				RISE	FALL
BILASPUR	BILASPUR	2008-2019	4.18 – 11.10	0.186	-
CHAMRAUA	AJITPUR	2008-2019	2.95 – 8.10		0.124
CHAMRAUA	BHONT	2008-2019	2.77 – 8.11		0.172
CHAMRAUA	CHAMRAUA	2008-2015	1.50 – 6.90		0.250
CHAMRAUA	KOYALA	2008-2019	1.45 – 8.30		0.094
CHAMRAUA	DALPURA	2008-2018	1.97 – 7.80		0.014
CHAMRAUA	MADHAIYA	2008-2019	2.15 – 8.90		0.232
CHAMRAUA	PANJABNAGAR	2009-2019	2.55 – 8.26	0.028	
CHAMRAUA	SAIDPUR (LADAURI)	2011-2019	3.38 – 6.15		0.068
CHAMRAUA	SHAHJADNAGAR	2008-2019	1.40 – 7.63		0.228

Table 9b LONG TERM WATER LEVEL TRENDS (2008-2020) AT GWMS MONITORED BY STATE GROUND WATER DEPARTMENT IN BUFFER ZONE AROUND THE DISTILLERY

BLOCK	PIEZOMETERS OF RADICO KHAITAN LIMITED	DATA AVAILBLE FOR	RANGE OF WATER LEVELS (mbgl)	LONG TERM WATER LEVEL TRENDS (m/year)		REMARKS (CHANGE WITH RESPECT TO 2008-2019 PERIOD)
				RISE	FALL	
BILASPUR	BILASPUR	2008-2020	4.18 – 11.10	0.216	-	Increase in rising trend
CHAMRAUA	AJITPUR	2008-2019	2.95 – 8.10		0.124	No change
CHAMRAUA	BHONT	2008-2020	2.77 – 8.11		0.156	Reduction in declining trend
CHAMRAUA	CHAMRAUA	2008-2020	1.50 – 6.90		0.234	Reduction in declining trend
CHAMRAUA	KOYALA	2008-2020	1.45 – 8.30		0.088	Reduction in declining trend
CHAMRAUA	DALPURA	2008-2018	1.97 – 7.80		0.014	No change
CHAMRAUA	MADHAIYA	2008-2020	2.15 – 8.90		0.196	Reduction in declining trend
CHAMRAUA	PANJABNAGAR	2009-2019	2.55 – 8.26	0.024		Slight change in rising trend
CHAMRAUA	SAIDPUR (LADAURI)	2011-2020	3.38 – 6.15		0.058	Reduction in declining trend
CHAMRAUA	SHAHJADNAGAR	2008-2019	1.40 – 7.63		0.228	No change

6.4. Ground Water Flow:

Ground water movement is derivative of various functions of slope, topography and micro-geomorphology of the area. Usually it follows the topographic slope of the area. In the area close to the Distillery site, ground water movement has been deciphered on the basis of water table elevations monitored at hydrograph stations of State Ground Water Department in Rampur district and detailed analysis has been done for GWMS in Chamraua block, in which the Rampur distillery is situated. Gridding of the water table elevation gives the movement direction, which is being followed by ground water. Movement can be categorized as short-term movement.

6.4.1. Ground Water flow during Premonsoon period

Ground water movement for pre monsoon period of 2019, shows a master flow direction from north around Koela towards Kalrakh in south. Water table elevation varies from 187 to 177 mamsl (metres above mean sea level) (Fig 34).

- In the northwestern part of the study area flow is from Khound in the east to west towards Kosi river. The ground water gradient in this part is about 1.4 m/km.
- In the northeastern parts ground water flows from Khound towards Dabka and Shahjadnagar, where gradient is about 1.2 m/km. After this point, gradient further decreases to 0.5 m/km and about 0.25 m/km further south around Daniapur and Kalrakh.
- There is small crest at Madhaiya Udayraj where water table elevation is recorded as 182 mamsl. Another crest is observed at Rampur town around Distillery. The water table elevation is 182 mamsl and gradient is about 1.0 m/km in all directions and especially towards south.

6.4.2. Ground Water flow during Post monsoon period

Ground water movement for post monsoon period of 2019, also shows a master flow direction from north around Koela towards Kalrakh in south. Water table elevation varies from 189 to 178 mamsl (Fig 35).

- In the northwestern part of the study area flow is from Khound in the east to west towards Kosi river. The ground water gradient in this part is about 1.45 m/km.

- In the northeastern parts ground water flows from Khound towards Dabka and Shahjadnagar, where gradient is about 1.5 m/km. After this point, gradient further decreases to 0.5 m/km and about 0.30 m/km further south around Daniapur and Kalrakh.
- There is small crest at Madhaiya Udayraj where water table elevation is recorded as 184 mamsl.
- Another crest is observed at Rampur town around Distillery. The water table elevation is 183 mamsl and gradient is about 0.8 m/km in all directions and especially towards south.
- Lowest ground water elevation is 178 mamsl recorded at Beesri in the southwestern part of the study area. In this part entire ground water flows towards Kosi river flowing west of study area or towards Ramganga river in the south.
- Ground water flow pattern during 2020 is similar to that during 2019.

FIG 34 Ground Water Flow (Premonsoon period, 2019) in the Study Area, Rampur District

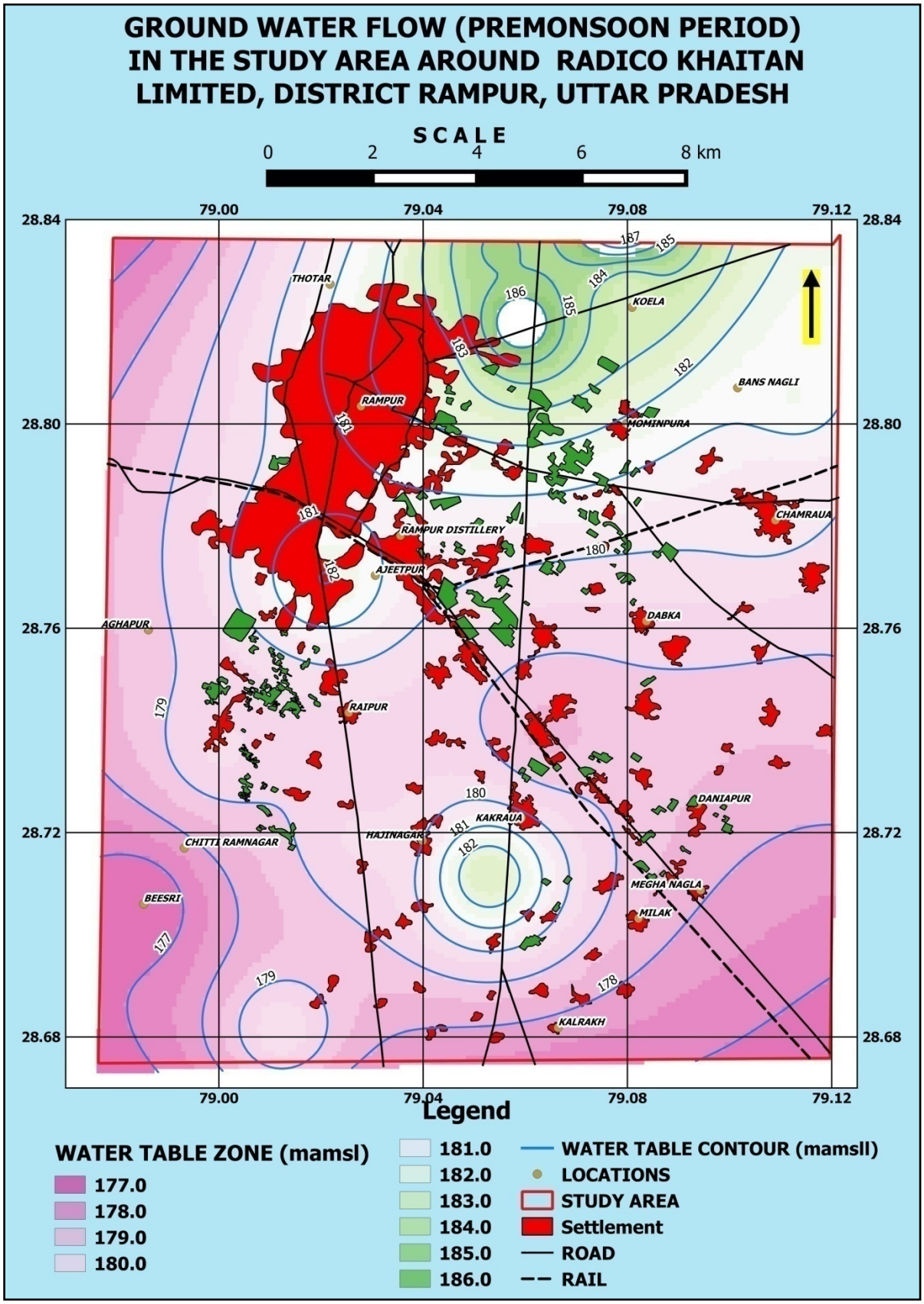
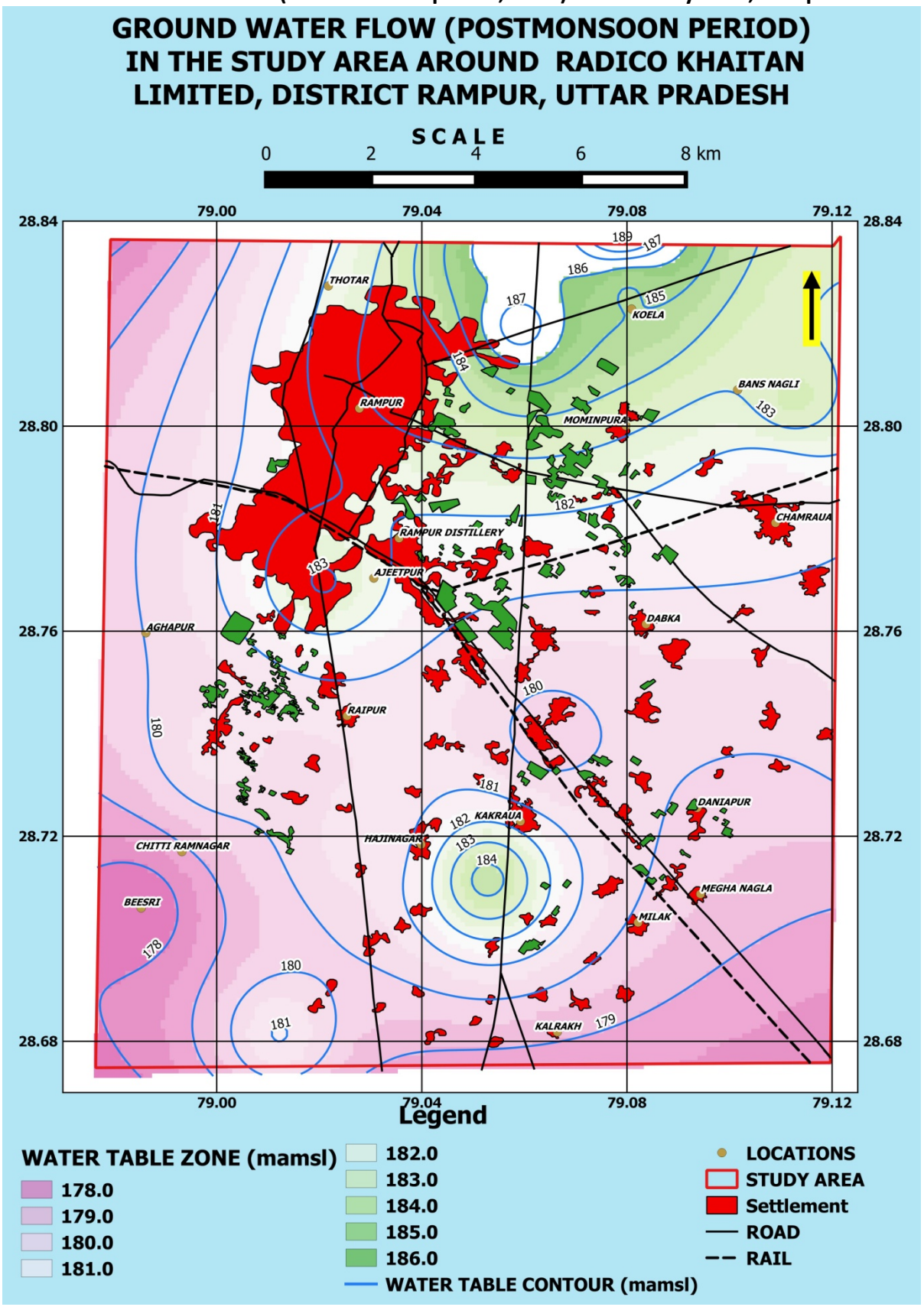


FIG 35 Ground Water Flow (Postmonsoon period, 2019) in the Study Area, Rampur District



7. GROUND WATER RESOURCE ESTIMATES AND STATUS OF GW WITHDRAWAL

7.1. Ground Water Resources Estimation as on March 2017

Ground Water Resource estimation of Ground Water Assessment units (blocks in case of Uttar Pradesh) has been carried out by Central Ground Water Board in coordination with State Ground Water Department, Lucknow and its corresponding field divisions according to the methodology recommended by the Ground Water Estimation Committee, 2015 constituted by Government of India (Groundwater Estimation Committee, 2015).

7.1.1. Dynamic Ground Water Resources

Dynamic Ground Water Resource Estimation as on 31.3.2017 has been carried out with administrative blocks as ground water assessment units by CGWB. Due to lack of data on command, non-command and poor ground water quality areas, the resources could not be estimated separately and the administrative unit (block) as a whole without sub-dividing it into sub-units has been considered. The precise estimation of ground water reserves and irrigation potential is prerequisite for proper planning and execution for socio-economic development in the area. The ground water recharge has been estimated on the basis of water level fluctuation method which has been evaluated by significant change in water level during pre and post monsoon periods. Estimation of ground water resources for Chamraua block of Rampur district has been discussed below.

7.1.2. Recharge from Rainfall

Precipitation is the principal source of recharge to ground water in the district. The quantity of recharge depends upon the intensity and duration of rainfall, nature and texture of soil, vegetation cover and land use pattern of the area. Recharge from rainfall has been computed separately for monsoon and non-monsoon periods. Recharge from rainfall is mainly a function of geographical area of the district, normal monsoon rainfall and lithology of the area. The recharge from rainfall during monsoon season has been computed using mainly Water Level Fluctuation Method & Rainfall Infiltration Factor Method, whereas recharge from rainfall during

non-monsoon period has been computed using Rainfall Infiltration Factor Method. Block-wise recharge from rainfall is given in Table-10. Total recharge from monsoon rainfall in the Chamraua block is of the order of 3072.32 ham (hectare meter).

7.1.3. Recharge from Other Sources:

Total Recharge to ground water has several components, rainfall being the major one. The other component include seepage from canals, return flow from surface water irrigation, return flow from ground water irrigation, seepage from Tanks and Ponds etc. for command area. Blockwise recharge from other sources is given Table-10. Component of recharge from other sources during monsoon is 1382.28 ham and during non monsoon it is 2249.15 ham.

Table 10 Annual Ground Water Recharge Estimation

Sl. No.	Assessment Units/ Blocks in Rampur	Recharge from Rainfall during Monsoon Season	Recharge from Other Sources during Monsoon Season	Recharge from Rainfall during Non-Monsoon Season	Recharge from Other Sources during Non-Monsoon Season	Total Annual Ground Water Recharge (3+4+5+6)
		(ham)				
1	2	3	4	5	6	7
1	Chamraua	3072.32	1382.28	172.35	2249.15	6876.11

7.1.4. Recharge from All Sources:

Total replenishable ground water resources including rainfall recharge and recharge from other sources have been computed block- wise which is presented Table-10. Total annual recharge from all sources in Chamraua is of the order 6876.11 ham.

7.1.5. Unaccounted Natural Discharge and Net Ground Water Availability

The total annual ground water recharge of the area is the sum of monsoon and non-monsoon recharge. An allowance of 10% of total annual ground water recharge has been kept for natural discharge in the non-monsoon season because WLF/RIF method respectively is employed to compute rainfall recharge during monsoon season. The balance of ground water available accounts for existing net ground water availability for various uses and potential for future development. Block wise unaccounted natural discharge and net ground water availability is

given in Table -11. Total unaccounted natural discharge in the Chamraua block is of the order of 687.61 ham. The net ground water availability in the block is 6188.50 ham.

Table 11 Unaccounted Natural Discharge & Net Ground Water Availability				
Sl. No.	**Assessment Unit/ Blocks in Rampur**	**Total Annual Ground Water Recharge (a)**	**Provision for Natural Discharges (b)**	**Net Annual Ground Water Availability (a-b)**
		(ham)		
1	Chamraua	6876.11	687.61	6188.50

7.1.6. Ground Water Draft:

The ground water draft is the quantity of water withdrawn from ground water reservoirs. The principal ground water development structures for utilization of ground water in the district are open wells, dug cum borewells, private tubewells/ government tubewells/ government tubewells constructed under minor irrigation works and by other state government departments. On the basis of statistical data available on the number of various ground water structures, the block wise annual gross draft has been computed by multiplying its average discharge and annual working hours. The total draft from the Chamraua block of Rampur is 8240.27 ham (Table-12).

Table 12 Total Annual Ground Water Draft for various uses				
Sl. No.	**Assessment Unit/ Blocks in Rampur**	**Total GW Draft for Irrigation (a)**	**Total GW Draft for Domestic & Industrial purposes (b)**	**Total GW Draft for all uses (a+b)**
		(ham)		
1	Chamraua	7698.29	541.98	8240.27

7.1.7. Stage of Ground Water Withdrawal and Categorization of Blocks

The level of ground water withdrawal in Chamraua block has been worked out as the ratio of gross annual draft to net ground water availability.

$$\text{Stage of Ground Water Withdrawal (\%)} = \frac{\text{Gross Annual Ground Water Draft}}{\text{Net Ground Water Availability}} \times 100$$

The Chamraua block shows the stage of Ground water Withdrawal as 133.15%, as shown in the Table 13 & 14. This block has been categorized as "Over Exploited".

Table 13 Annual GW Draft and Stage of GW Withdrawal						
Sl. No.	Assessment Units/ Blocks in Rampur City area	Net Annual Ground Water Availability	Existing Gross Ground Water Draft for Irrigation	Existing Gross Ground Water Draft for Domestic & Industrial Water Supply	Existing Gross Ground Water Draft for All Uses (4+5)	Stage of Ground Water Withdrawal (6/3)*100
		(ham)				(%)
1	2	3	4	5	6	7
1	Chamraua	6188.50	7698.29	541.98	8240.27	133.15

Table 14 Category of Blocks					
Sl. No.	Assessment Units - Blocks/ District	Net Annual Ground Water Availability	Existing Gross Ground Water Draft for All Uses	Stage of Ground Water Development	CATEGORY OF BLOCK
		(ham)		%	
1	Chamraua	6188.50	8240.27	133.15	OVER EXPLOITED

Comparison of ground water draft for various uses reveals that draft for irrigation accounts for more than 93% of total ground water draft, where as draft for domestic & industrial supply accounts for **7% of the total ground water draft in the block. Even if draft for domestic & industrial use is reduced to zero, the stage of ground water extraction will still be 124.40%.**

7.1.8. Dynamic Ground Water Resource Estimation as on 31.03.2020

The dynamic ground water resource as on 31.03.2020 has also been carried out jointly by Central and state Ground Water Department. As per the assessment report the Chamraua block of Rampur which had stage of ground water abstraction as 133.15% was categorized as "Over Exploited" block. During 2019-20 assessment the stage of ground water abstraction has been further refined and the new figure is 94.46% and the block has been categorized as "Critical" block (as per the unpublished report prepared jointly by Central Ground Water Board, Govt. of India and State Ground Water Department, Govt of UP, Lucknow).

7.2. GROUND WATER QUALITY

Ground water quality plays an important role in the development. The quality of ground water is as important as its quantity. The most extensive use of ground water is for irrigation of crops and a part of the ground water potential is for domestic and industrial uses. With the advent of industrialization and inadequate attention paid to protect the environment degradation in water quality one of the challenges of modern time. Sometimes the excess mineralization exceeds the maximum permissible limit for human consumption. Followings are the factors affecting the chemical quality of ground water.

- Physiochemical characteristics of the rocks through which ground water is circulating.
- Geological environment of the area.
- Climate of the area.
- Role of microorganism.
- Chemical physical and mineralogical characteristic of the soil through which Meteoric water percolate to the underground reservoir.
- Topography of the area.
- Mixing of connate water.
- Manmade pollution due to excessive use of manure, pesticides, harmful disposal of industrial and sewerage of urban area etc.

a) Results of Basic Constituents

To study the chemical quality of ground water, samples from three tubewells within the premises of Rampur Distillery were collected and analysed regularly. These samples represented the ground water from first aquifer group down to 100-120 mbgl. The summarized result of basic constituents, for these samples is given in Table 15 and Annexure- V.

Table 15 Ground Water Quality – Ranges of Basic Parameters, 2019						
S. No.	**Parameters**	**Unit**	**Minimum**	**Maximum**	**BIS Standard IS 10500: 2012**	
					Requirement (Acceptable limit)	**Permissible limit in the absence of alternate source**
1.	pH	-	7.23	7.25	6.5-8.5	NR
2.	Electrical Conductivity	µmhos/cm	710	736	750	-
3.	TDS	mg/l	476	493	500	2000
4.	Hardness as CaCO3	mg/l	167	180	200	600
5.	Alkalinity	mg/l	185	192	200	600
6.	Chloride as Cl	mg/l	81.2	88.6	250	1000
7.	Sulphate as SO4	mg/l	42.5	48.0	200	400
8.	Fluoride as F	mg/l	0.20	0.23	1.0	1.5
9.	Iron as Fe	mg/l	0.24	0.29	0.3	-

i. pH Value:

pH is one of the most important parameter in water chemistry and is defined as log[H+]. The pH concentration determines the alkaline/acidic nature of water on a scale ranges from 0-14. The pH concentration determines the alkaline/acidic nature of water. The BIS, (10500- 2012) has indicated a maximum range of 6.5 to 8.5 but allows a range of 6.5 to 9.2 for domestic uses. In the study area, the pH range of 7.23 to 7.25 with average values of 7.24 which is quite safe and water is free from al corrosive & sealing action.

ii. Electrical Conductivity (EC):

Electrical conductivity is a measure of the total mineralization in water and thus indicates its degree of salinity. EC has been arrived at after dividing TDS values by a factor of 0.67. Thus EC values of the area indicate that conductivity in ground water generally varies from 710 to 736 µmhos/cm at 25^0C (Table 15). Thus salinity of ground water is well within permissible limits.

iii. Total Hardness as Caco3:

Hardness in water is caused by a variety of dissolved polyvalent metallic ions, predominantly calcium and magnesium cations. It is usually expressed as milligrams of calcium carbonate per litre. The degree of hardness of drinking-water is important for aesthetic acceptability by consumers. Hardness is the property of water which prevents the lather (foam) formation with the soap and increases the boiling point of the water. Hardness is classified in four categories as soft water, hard water, moderately hard water and very hard water in table-16 below.

Table 16 WATER CLASS AS PER HARDNESS

HARDNESS (mg/l)	**WATER CLASS**
0-75	SOFT
75-150	MODERATELY HARD
150-300	HARD
> 300	VERY HARD

The BIS, (10500- 2012) shows desirable limit upto 200 mg/l. maximum permissible limit of 600 mg/l. Higher concentration may cause urinary diseases of kidney, bladder and stomach disorder. Total hardness of the groundwater in Rampur Distillery area varies between 167 and 180 mg/l. In general water is Hard in nature as per above table-16.

iv. Chloride:

The concentration of chloride (Cl) controls the taste of the water and its maximum permissible limit is 250 mg/l by BIS, (10500- 2012). However the permissible limit in the absence of alternate sources is relaxable upto 1000 mg/l. the chloride concentration in water samples varies between 81.2 and 88.6 mg/l. Chloride is below 250 mg/l, hence the quality of ground in the area with reference to chloride concentration is fit for human consumption.

v. Alkalinity as CaCO3:

Alkalinity determines how water resists changes in pH, in particular resistance to becoming acidic. Higher alkalinity means higher resistance to changes in pH. Changes in pH can be devastating to the ecosystem. Many plants and aquatic animals require a very narrow pH range

to survive. Even less pH-sensitive animals suffer if changes in pH impact the food chain. In addition to the natural ecosystem, alkalinity impacts wastewater systems and suitability of water for irrigation. Alkalinity, also referred to as water hardness, impacts home water systems by building mineral deposits in pipes and pans as well as increasing the amount of soap people use by inhibiting lather.

Alkalinity measures the amount of calcium, magnesium and other acid-moderating ions. Alkalinity may be reported in terms of calcium carbonate, $CaCO_3$. Alkalinity is usually measured and reported in terms of parts per million (ppm).

Required alkalinity is 200 mg/l and maximum permissible limit is 600 mg/l. Ground water in the area ranges from 185 to 192 mg/l, which is within permissible limit of drinking standard and considered to be fairly safe and good for irrigation and domestic purposes.

vi. Fluoride:

Fluoride is found in all natural waters at some concentration. Seawater typically contains about 1 mg/L while rivers and lakes generally exhibit concentrations of less than 0.5 mg/L. In groundwater, however, low or high concentrations of fluoride can occur, depending on the nature of the rocks and the occurrence of fluoride-bearing minerals. Fluoride occurs as fluorspar (fluorite), rock phosphate, triphite, phosphorite minerals etc in nature. The WHO (2011) and BIS (10500- 2012) estimates the maximum allowable limit for fluoride uptake to human's in drinking water as 1.5 mg/L. Excess fluoride intake causes different types of fluorosis, primarily dental and skeletal fluorosis. White line striations followed by brown patches and, in severe cases, brittling of the enamel are common symptoms of dental fluorosis. Skeletal fluorosis first causes pain in the different joints, then limits joint movement and finally causes skeletal deformities, which become particularly acute if fluoride uptake occurs during growth. Since these ailments are incurable, fluorosis can only be mitigated by preventing intake of excess fluoride. Fluoride concentration in the area ranges from 0.20 to 0.23 mg/l which is well within desirable limit of 1.0 mg/l.

Thus from chemical analysis of ground water samples collected in the study area it is evident that ground water quality is well within permissible for domestic as well as irrigation purposes.

b) Changes in Ground Water Quality since issuance of NOC to industry in 2016

The changes in water quality over time indicate deterioration or improvement in quality of ground water due to geogenic or anthropogenic processes. The quality of ground water levels has been analysed every year since 2016 and up to 2019 as shown in Annexure-V.

FIG 36

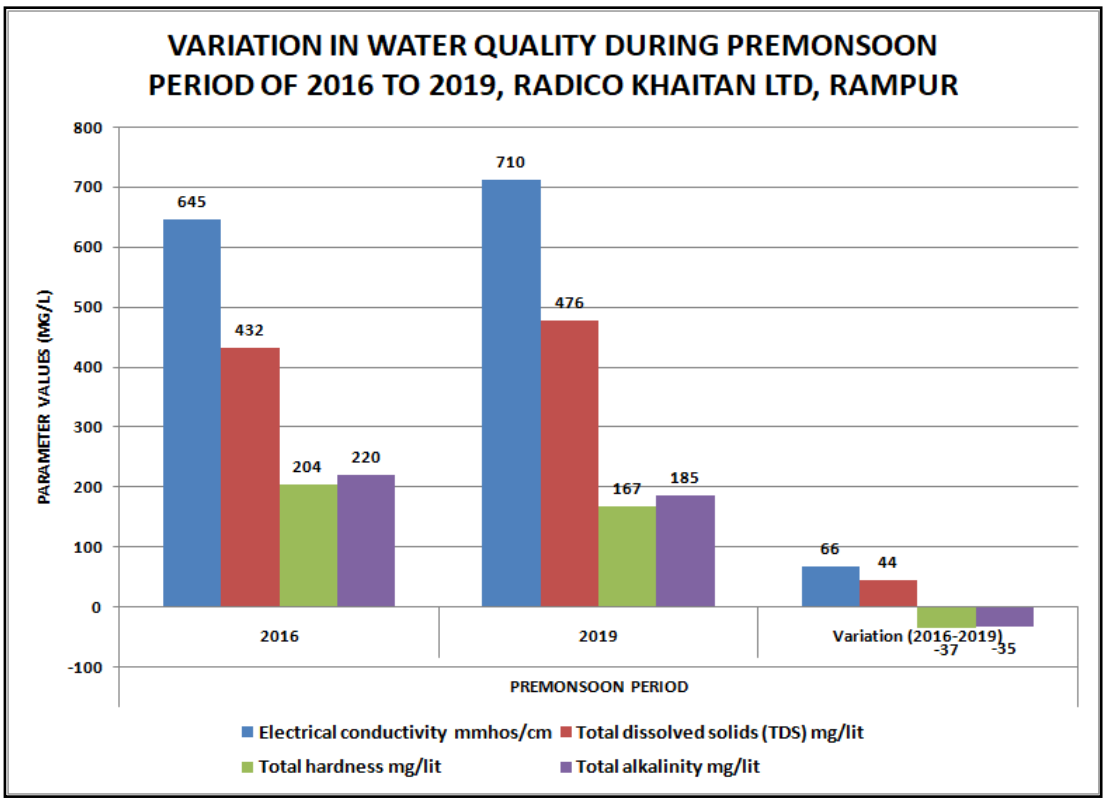


FIG 37

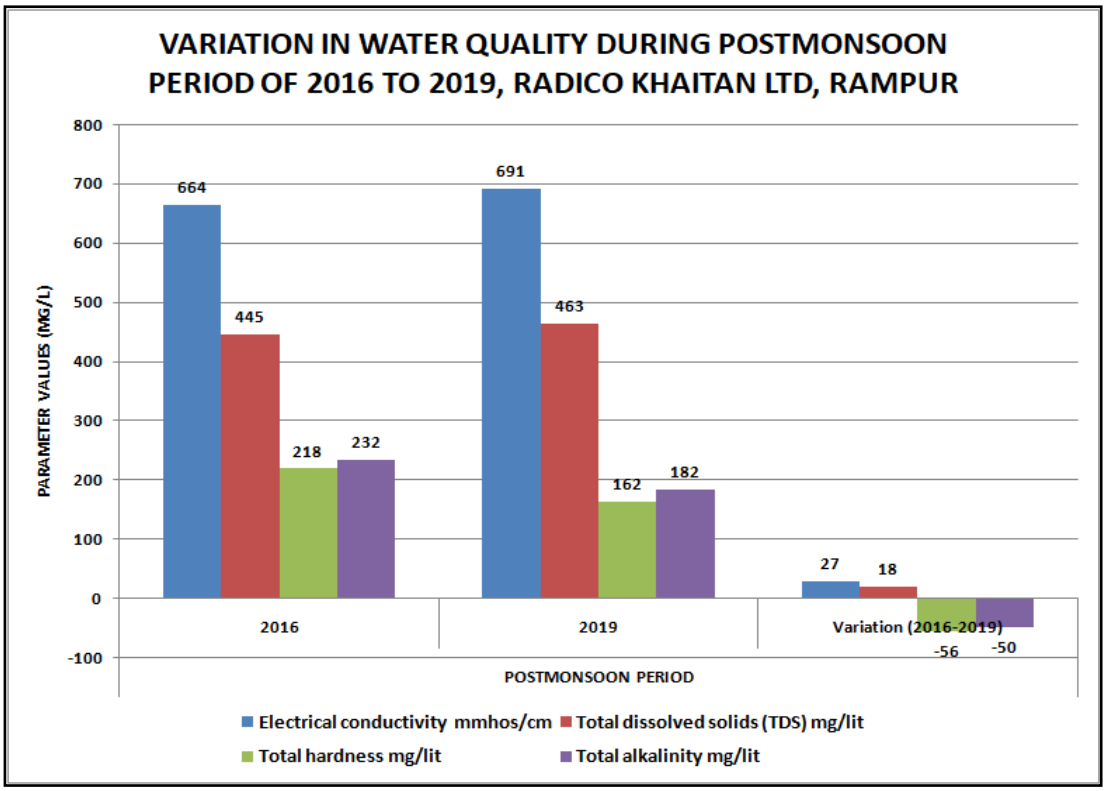


Table 17 Pre and Post monsoon period Variation in GW Quality from 2016 to 2019, Radico Khaitan Premises, Rampur

Parameters	Units	PREMONSOON PERIOD			POSTMONSOON PERIOD		
		2016	2019	Variation (2016-2019)	2016	2019	Variation (2016-2019)
pH		7.21	7.23	0.02	7.24	7.21	-0.03
Electrical conductivity	µmhos/cm	645	710	66	664	691	27
Total dissolved solids (TDS)	mg/lit	432	476	44	445	463	18
Total hardness	mg/lit	204	167	-37	218	162	-56
Total alkalinity	mg/lit	220	185	-35	232	182	-50
Fluoride(F)	mg/lit	0.09	0.2	0.11	0.11	0.19	0.08
Iron (Fe)	mg/lit	0.14	0.24	0.1	0.22	0.22	0.0

Table-17 shows the variation in ground water quality within the premises of Rampur Distillery from 2016 and 2019, for pre and post monsoon periods. The variations are also shown graphically in Fig 36 & 37.

- Very minor changes are observed in the ground water parameters.

- pH value shows no variation during last four years.
- Electrical Conductivity shows a rise of 66 μmhos/cm, during premonsoon period of 2016 and 2019 whereas during postmonsoon period a rise of 27 μmhos/cm is observed. This reduction may be due to dilution due to rain water harvesting and ground water recharge measures within the premises since issuance of NOC to the industry in 2016.
- Total hardness and alkalinity both show a decline for pre as well as post monsoon period 2016 and 2019.
- Fluoride content shows a minor rise of 0.11 mg/lit from premonsoon of 2016 and 2019. The fluoride shows a rise of 0.08 mg/lit for postmonsoon period of 2016 to 2019.
- Minor rise of 0.1 mg/lit is observed in Iron content over this period.
- Thus ground water quality does not show any significant changes over last 4 years since 2016, rather an improvement in water quality is observed, which may be due to ground water recharge measures adopted by industry.

8. GROUND WATER RECHARGE MEASURES ADOPTED BY RADICO KHAITAN LTD

The Radico Khaitan Limited obtained NOC for ground water abstraction of 2600 KLD (949000 kl/annum) in 17.10.2016. The industry is extracting ground water through three tubewells constructed within the premises of the industry. As per the directives of CGWA, vide issued NOC, the industry was to adopt measures for recharging ground water to the tune of 18,98,000 KL/annum.

In pursuance of the directives of CGWA industry has adopted suitable ground water recharge measures both within the premises as well as outside the premises in the buffer zone. The structures are discussed below.

8.1. Ground Water Recharge Measures within the premises

Industry covers a total area of 4,43,920 m^2, which includes 153407 m^2 of roof area; 23300 m^2 of road and paved areas; 156862 m^2 of green belt area and 110351m^2 of open area. The rainfall runoff from the premise area, except the runoff from open area, has been used for recharging ground water through twenty (22) recharge trenches constructed within the premises. Through these measures annually **156074 m3** of rainfall runoff is being recharged to ground water. The photographs of few recharge structures are shown in Fig 38 to 40.

FIG 38 RAIN WATER HARVESTING WITHIN PREMISES

FIG 39

FIG 40 Rain Water harvesting structures within the premsies

8.2. Ground Water Recharge Measures outside the premises

The ground water recharge measures within the premises were not sufficient to meet the requirement as per CGWA directives; hence Radico Khaitan Limited has adopted several ponds in the buffer zone within the Chamraua block for taking up recharge measures. Table –18 shows the list of ponds adopted by the industry. A total area of ponds is 299140 sq meter and annual expected recharge through construction of recharge shafts in each pond is about 18,84,582 m^3. The design of recharge shaft is shown in Fig 41. A total of 28 villages of Chamraua block have been covered for the interventions (Fig-42).

Table 18 List of Villages & Ponds with Water Recharging Summary

S. No	Location	Area (Hect)	Area (Acre)	Area (Sqmt)	Depth (m)	Total Storage capacity (cum)	60%	No of filling in Year	Quantity of water to be recharge (M3/Yr)	No of Shafts
1	Madhaiya Ballu	0.746	1.843	7460	3.5	26110	15666	3	46998	3
2	Madhaiya Rami	0.177	0.437	1770	3.5	6195	3717	3	11151	2
3	Chamraoa	0.809	1.999	8090	3.5	28315	16989	3	50967	3
4	Dabka	0.873	2.157	8730	3.5	30555	18333	3	54999	2
5	Rajarampur	0.417	1.03	4170	3.5	14595	8757	3	26271	2
6	Raipur	0.834	2.061	8340	3.5	29190	17514	3	52542	3
7	Deenpur	0.126	0.311	1260	3.5	4410	2646	3	7938	2
8	Agapur	0.899	2.221	8990	3.5	31465	18879	3	56637	4
9	Kalrakh	1.087	2.686	10870	3.5	38045	22827	3	68481	4
10	Hariyal-3	1.138	2.812	11380	3.5	39830	23898	3	71694	3
11	Khajuria	0.721	1.782	7210	3.5	25235	15141	3	45423	2
12	Chikti Ramnagar	2.859	7.064	28590	3.5	100065	60039	3	180117	9
13	Megha Nagla	0.959	2.37	9590	3.5	33565	20139	3	60417	4
14	Naugawan	1.607	3.971	16070	3.5	56245	33747	3	101241	6
15	Bhamraua	2.267	5.602	22670	3.5	79345	47607	3	142821	4
16	Kakrava	1.15	2.842	11500	3.5	40250	24150	3	72450	3
17	Bhandpura	2.213	5.468	22130	3.5	77455	46473	3	139419	7
18	Hajinagar	0.545	1.347	5450	3.5	19075	11445	3	34335	3
19	Madhauli	2.263	5.592	22630	3.5	79205	47523	3	142569	3
20	Beesri	0.2	0.494	2000	3.5	7000	4200	3	12600	4
21	Daniyapur	1.1	2.718	11000	3.5	38500	23100	3	69300	2
22	Shankerpur									2
23	Ladaura-Narayanpur	2.36	5.831	23600	3.5	82600	49560	3	148680	3
24	Nasrat Nagar	0.468	1.156	4680	3.5	16380	9828	3	29484	2
25	Mahmoodpur	0.126	0.311	1260	3.5	4410	2646	3	7938	4
26	Milak Chikna	1.68	4.151	16800	3.5	58800	35280	3	105840	5

Table 18 List of Villages & Ponds with Water Recharging Summary										
S. No	Location	Area (Hect)	Area (Acre)	Area (Sqmt)	Depth (m)	Total Storage capacity (cum)	60%	No of filling in Year	Quantity of water to be recharge (M3/Yr)	No of Shafts
27	Sikraual	1.31	3.237	13100	3.5	45850	27510	3	82530	3
28	Jasmauli	0.98	2.422	9800	3.5	34300	20580	3	61740	2
Total		29.91	73.92	299140		1046990	628194	3	**1884582**	96
Recharge available from premises									**156000**	
Grand Total									**2040582**	

FIG 41 Design of Recharge Shafts Constructed in ponds for ground water recharge

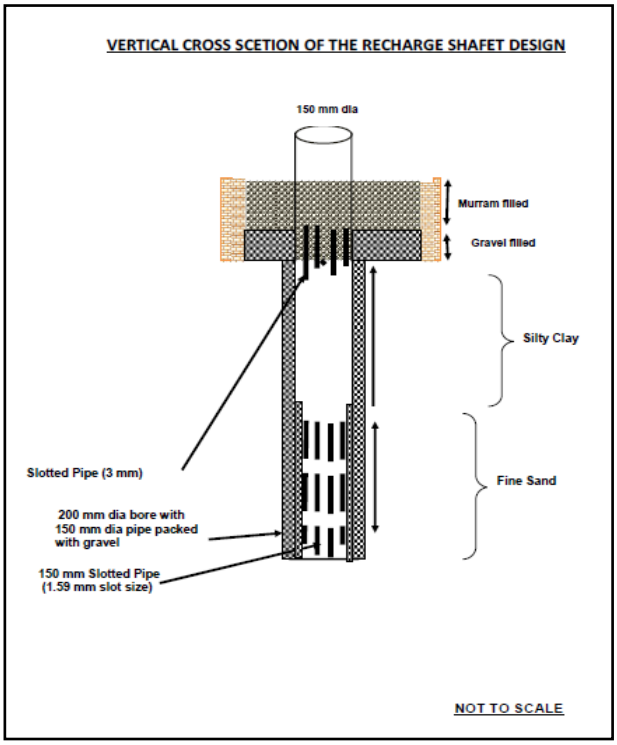


Table-20 shows summary of required ground water vis-à-vis the ground water recharge being done by industry through different measures within and outside the premises. Against required recharge of 1898000 m3/year (200% of ground water extraction for Over Exploited areas), industry is doing total ground water recharge of **20,40,656 m3/year** which is **215% of required quantity of water for the industry**.

Table 19 Summary of Required Recharge versus Implemented ground water recharge by Radico Khaitan Limited	
Annual Water recharge through Roof Top measures upto 2018-19 (M3)	156074
Annual Water recharge through Ponds upto 2018-19(M3)	1884582
Total Annual Water Recharge (M3)	**2040656**
Existing permission – (M3/Day)	2600
Existing permission – (M3/Year)	949000
Required recharge with 200% - (M3/Year)	1898000
Actual Recharging Done (M3/Year)	2040656
Ground water recharge as %age of Ground water utilization	**215%**
Ground Water Recharge through adoption of ponds during 2019-20 – (M3/Year)	**343350**
Annual Water recharge through Roof Top measures during 2019-20 (M3)	**17019**
Total recharge including additional recharge proposed in 2019-20 (M3/Year)	**2401025**
Ground water recharge as %age of Ground water utilization	**253%**
Ground Water Recharge through adoption of ponds during 2020-21- (M3/Year)	**395262**
Grand total of recharge and required recharge by industry (M3/Year)	**2796287**
Ground water recharge as %age of Ground water utilization	**295%**

Ponds in five villages covering a total area of 73900 sq meters were adopted up during 2019-20 for recharge measures (upto Mar, 2020). The expected annual recharge through these ponds will be **3,43,350 m3/year.**

In addition to this industry has constructed roof top rain water structures within the premises which would help in recharging **17,019 m3/year** of roof top runoff.

The total ground water recharge through measures adopted upto Mar, 2020 was **24,01,025 m3/year, which is 253% of the annual withdrawal of ground water by the industry (Table 19).**

Table 20 List of Villages & Ponds for Proposed Water Recharging 2019-20 & 20-21 (Status as on 31.08.2021)

S. No	Village	Area (Hect)	Area (Acre)	Area (Sqmt)	Depth (m)	Total Storage capacity (cum)	60%	No of filling in Year	No of Shafts	Quantity of water to be recharge (M3/Yr)	Status
1	Behpuri				0.0	0	0	3	0	0	Water in Pond
2	Bijaiya	1.76	4.35	17600	3.5	61600	36960	3	5	110880	Completed

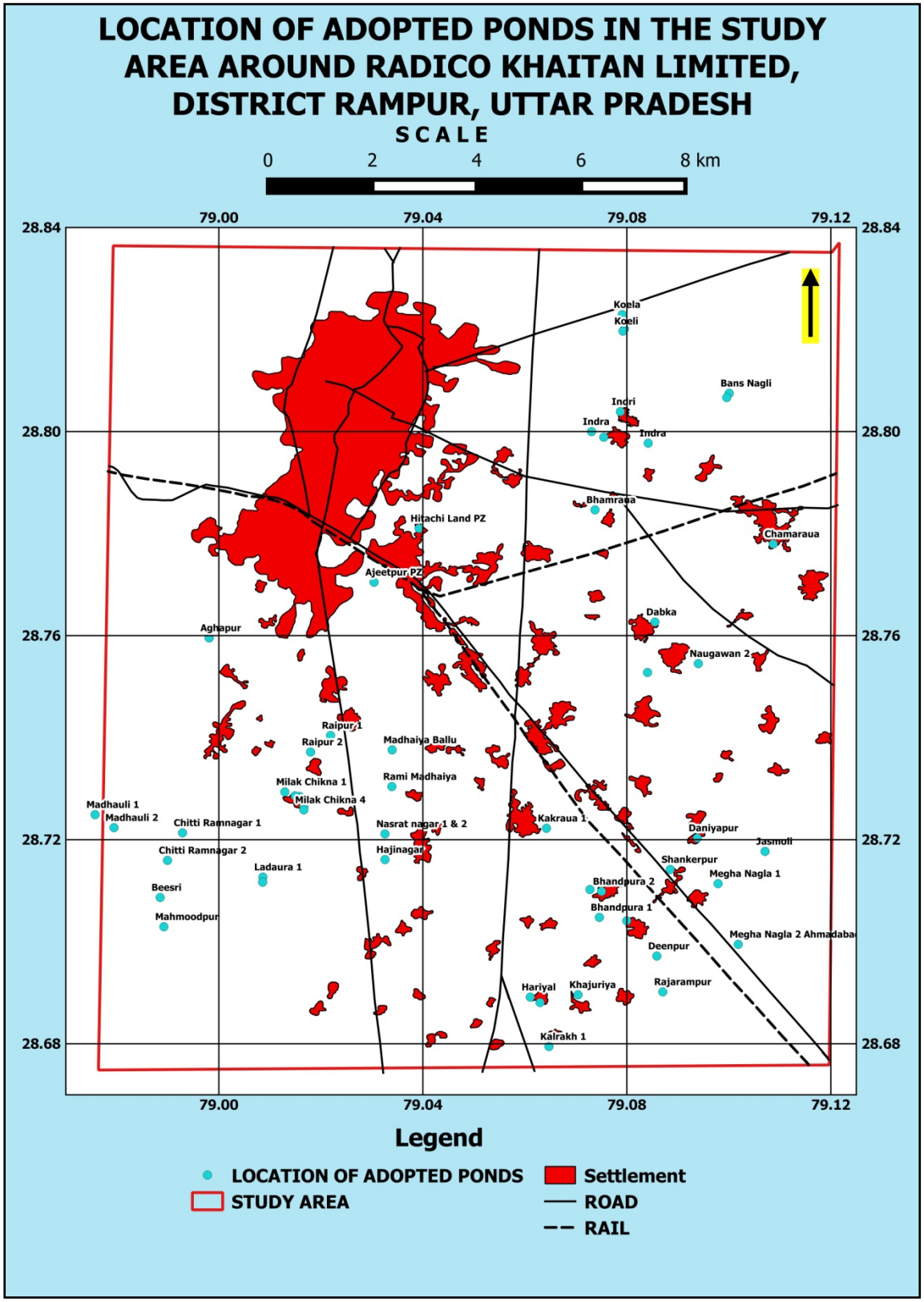
Table 20 List of Villages & Ponds for Proposed Water Recharging 2019-20 & 20-21 (Status as on 31.08.2021)											
S. No	**Village**	**Area (Hect)**	**Area (Acre)**	**Area (Sqmt)**	**Depth (m)**	**Total Storage capacity (cum)**	**60%**	**No of filling in Year**	**No of Shafts**	**Quantity of water to be recharge (M3/Yr)**	**Status**
3	Jaulpur				0.0	0	0	3	0	0	Water in Pond
4	Ladauri				0.0	0	0	3	0	0	Water in Pond
5	Milak Sikraul				0.0	0	0	3	0	0	Water in Pond
6	Thakurdwara				0.0	0	0	3	0	0	Water in Pond
7	Baasnagli	0.58	1.43	5800	3.5	20300	12180	3	1	18270	50% Completed
8	Barapura serki				0.0	0	0	3	0	0	Water in Pond
9	Indra	1.84	4.55	18400	3.5	64400	38640	3	2	57960	50% Completed
10	Indri				0.0	0	0	3	0	0	Water in Pond
11	Mominpur Ahmedabad	1.98	4.89	19800	3.5	69300	41580	3	5	78750	Completed
12	Koyli	1.23	3.04	12300	3.5	43050	25830	3	5	77490	Completed
TOTAL (2019-20)		**7.39**	**18.26**	**73900**	**3.5**	**258650**	**155190**	**3**	**18**	**343350**	
13	Koyla	1.57	3.87	15680	3.5	54880	32928	3	1	98784	Completed
14	Tumaria	2.83	7.00	28310	3.5	99085	59451	3	5	178353	Completed
15	Dundai	0.75	1.85	7500	3.5	26250	15750	3	3	47250	Completed
16	Madhaiya Udairaj	0.59	1.47	5940	3.5	20790	12474	3	3	37422	Completed
17	Milak Nibbi Singh	0.53	1.31	5310	3.5	18585	11151	3	3	33453	Completed
TOTAL (2020-21)		**6.27**	**15.50**	**62740**		**219590**	**131754**		**15**	**395262**	
Grand Total		**13.66**	**33.76**	**136640**		**478240**	**286944**		**33**	**738612**	

Five ponds in other villages having a total area of **62740 m2**, were taken up during 2020-21 (after March, 2020) and recharge measures were adopted at these ponds through deepening and construction of suitably designed 15 recharge shafts. The expected annual recharge through these ponds will be **3,95,262 m3/year** (Table-20).

Remaining 7 (seven) ponds selected for the purpose were filled up with water so the development work and construction of recharge measures could not be taken up in these ponds. It is proposed to complete this work later.

The total ground water recharge measures adopted by Radico Khaitan Limited till date is therefore **27,96,287 m3/year which is 295% of the annual withdrawal of ground water by the industry (Table 20).**

FIG 42


LOCATION OF ADOPTED PONDS IN THE STUDY AREA AROUND RADICO KHAITAN LIMITED, DISTRICT RAMPUR, UTTAR PRADESH
SCALE
0 2 4 6 8 km
79.00
79.04
79.08
79.12
28.84
28.80
28.76
28.72
28.68
Koela
Koeli
Bans Nagli
Indri
Indra
Bhamraua
Hitachi Land PZ
Chamaraua
Ajeetpur PZ
Dabka
Aghapur
Naugawan 2
Raipur 1
Raipur 2
Madhaiya Ballu
Rami Madhaiya
Milak Chikna 1
Milak Chikna 4
Madhauli 1
Madhauli 2
Chitti Ramnagar 1
Chitti Ramnagar 2
Nasrat nagar 1 & 2
Hajinagar
Kakraua 1
Daniyapur
Jasmoli
Shankerpur
Megha Nagla 1
Ladaura 1
Beesri
Bhandpura 2
Bhandpura 1
Mahmoodpur
Megha Nagla 2 Ahmadaba
Deenpur
Hariyal
Khajuriya
Rajarampur
Kairakh 1
Legend
LOCATION OF ADOPTED PONDS
STUDY AREA
Settlement
ROAD
RAIL

9. IMPACT OF GROUND WATER EXTRACTION AND GROUND WATER RECHARGE ON GROUND WATER REGIME

9.1. Spatial and Temporal Variations in Water Level

In the earlier chapters general hydrogeological features of the study area around industry premises and in the buffer zone around the industry have been studied. It has been observed that, ground water level around the distillery in the study area varies from about 3 mbgl to 7 mbgl in general. Maximum area shows ground water levels ranging from 4 to 6 mbgl. Areas showing water levels more than 6 mbgl are observed in patches in northern parts of the study area around Koela and eastern parts around Bhont and Chamraua. Another patch is observed in the southern parts around Madhaiya.

During pre as well as post monsoon period of 2019, ground water flows from north to south in the eastern parts of industry, whereas it flows towards west and southwest towards Kosi river, in the western side of industry. During premonsoon period, 2019, water table elevation varies from 187 to 177 mamsl (metres above mean sea level). The ground water gradient varies from 1.4 m/km in the northern parts to 0.25 to 0.50 m/km in the southern parts.

During postmonsoon period 2019, the water table elevation varies from 189 to 178 mamsl. In the northwestern part of the study area flow is from Khound in the east to west towards Kosi river. In the northeastern parts of study area, ground water flows from Khound towards Dabka and Shahjadnagar, where gradient is about 1.5 m/km. Lowest ground water elevation is 178 mamsl recorded at Beesri in the southwestern part of the study area.

For studying the impact of ground water abstraction and ground water recharge by Radico Khaitan Limited the historical data collected from GWMS of State Ground Water Department located in Chamraua block (and one in Bilaspur block) have been considered. The water levels collected from piezometer of Radico Khaitan Ltd has also been analysed to assess the impacts of ground water recharge measures by the industry.

The impacts of ground water withdrawal and ground water regime has been further analysed in subsequent chapters, based on the long term water level trends for premonsoon and post monsoon period separately for period prior to issuance of NOC and also for period after the issuance of NOC.

9.2. Impact of Ground Water Extraction and Ground Water Recharge on Ground Water Regime within the premises

The piezometers constructed within the premises were constructed after issuance of NOC hence the GWMS of State GWD at Ajitpur, which is located adjacent to lagoon of distillery, was considered for studying ground water scenario prior to issuance of NOC.

9.2.1. Historical Water Level Data analysis

The long term water trends at Ajitpur from **2008 to 2019** show a declining trend of 0.124 m/year (12.4 cm/year) (Table 21). The observed decline in water levels was not significant, as it was less than 20 cm/year.

Table 21 LONG TERM WATER LEVEL TRENDS AT GWMS IN PREMISES OF RADICO KHAITAN LTD, RAMPUR DISTRICT

BLOCK	GROUND WATER MONITORING STATIONS	HISTORICAL WATER LEVEL TRENDS (m/year)	
		RISE	FALL
CHAMRAUA	AJITPUR		0.124

9.2.2. Analysis of water level trends prior to issuance of NOC

The time series data for Ajitpur GWMS has been classified for pre NOC issuance period and post NOC issuance period and the long term trends have been analysed. The hydrographs are shown in Fig- 43 & 44. The water level trends prior to issuance of NOC for the period 2008 – 2016 have been estimated and a declining trend of 0.202 m/year (20.2 cm/year) was observed, which is significant.

FIG 43

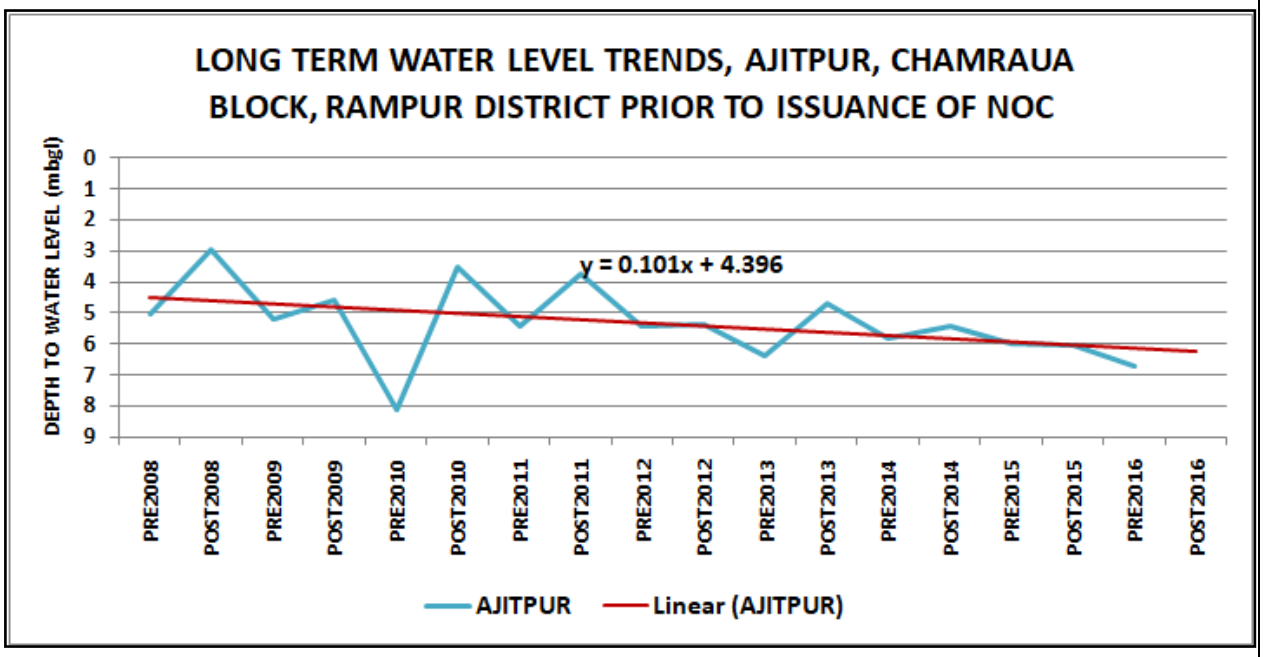
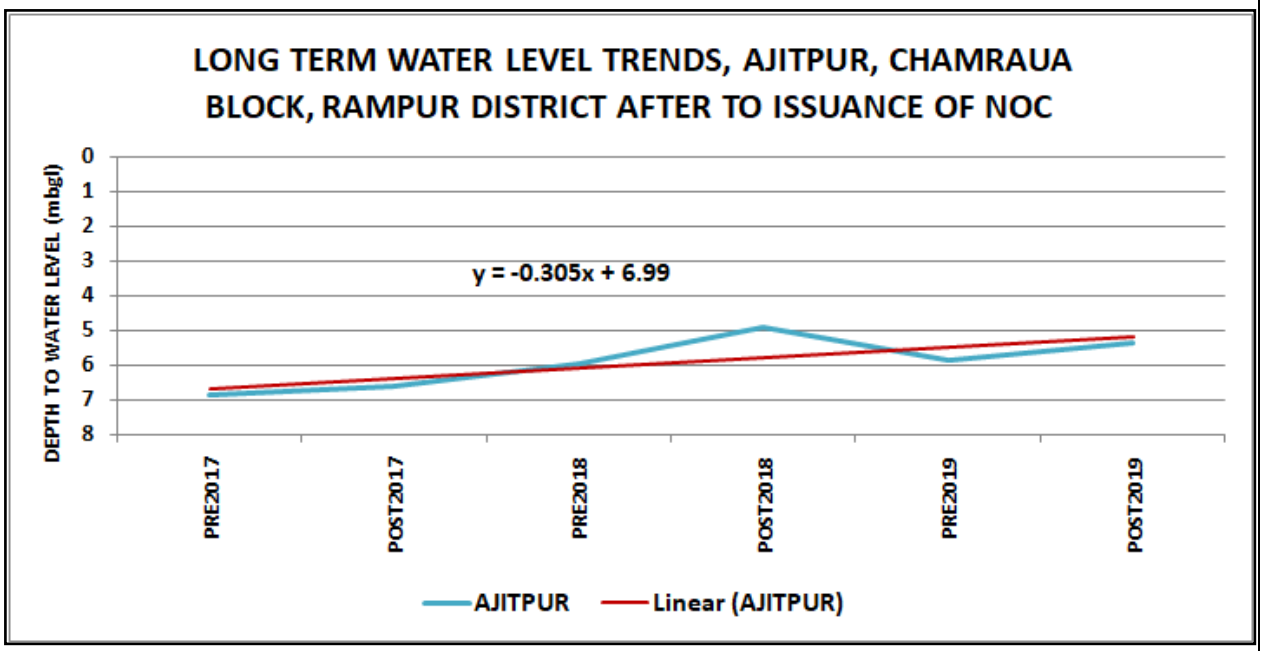

LONG TERM WATER LEVEL TRENDS, AJITPUR, CHAMRAUA BLOCK, RAMPUR DISTRICT PRIOR TO ISSUANCE OF NOC
DEPTH TO WATER LEVEL (mbgl)
0
1
2
3
4
5
6
7
8
9
y = 0.101x + 4.396
PRE2008
POST2008
PRE2009
POST2009
PRE2010
POST2010
PRE2011
POST2011
PRE2012
POST2012
PRE2013
POST2013
PRE2014
POST2014
PRE2015
POST2015
PRE2016
POST2016
AJITPUR
Linear (AJITPUR)

FIG 44


LONG TERM WATER LEVEL TRENDS, AJITPUR, CHAMRAUA BLOCK, RAMPUR DISTRICT AFTER TO ISSUANCE OF NOC
DEPTH TO WATER LEVEL (mbgl)
0
1
2
3
4
5
6
7
8
y = -0.305x + 6.99
PRE2017
POST2017
PRE2018
POST2018
PRE2019
POST2019
AJITPUR
Linear (AJITPUR)

9.2.3. Analysis of water level trends after the issuance of NOC

The water level trends at Ajitpur GWMS for the period of 2017 – 2019 (after issuance of NOC and compliance by industry) show a **rising trend of 0.61 m/year (61 cm/year)**. The data for 2020 was not available for Ajitpur station.

The piezometers constructed **by industry, at Ajitpur and Hitachi land (both within the premises) during 2017 also show a rising trend of 0.548 m/year (54.8 cm/year) and 0.365 m/year (36.5 cm/year) respectively, as shown in Table 8 and Fig 18 & 19 in the earlier chapter.** These observations show a lot of improvement in the ground water scenario of the area.

The trends for period 2017-2021 were again estimated in the present report and shown in Table 8. The rising trend is observed at all the six piezometers ranging from 0.037 m/year (Deenpur) to 0.365 m/year (Hitachi Land). There is a slight decrease in rate of ground water rise during 2017-2021 period.

9.2.4. Inferences

The trends clearly indicate that **ground water regime which was showing deteriorating tendency since 2008, has improved after the recharge measures adopted by Radico Khaitan Ltd** within the premises.

- The water level trends at Ajitpur GWMS prior to issuance of NOC for the period 2008 – 2016 have shown a declining trend of 0.202 m/year (20.2 cm/year). Whereas, for the period of 2017 – 2019 (after issuance of NOC and compliance by industry) this station shows a **rising trend of 0.61 m/year (61 cm/year)**.
- **The piezometers constructed by industry, at Ajitpur and Hitachi land (both within the premises) also show a rising trend of 0.548 m/year (54.8 cm/year) and 0.365 m/year (36.5 cm/year) respectively since 2017.**
- Ground water levels measured at these monitoring stations vary from 4.30 to 6.91 mbgl. The historical data of Ajitpur GWMS also shows water levels within 7.0 mbgl. The maximum water level of 8.10 mbgl, as shown in Annexure IV, was recorded during premonsoon period of 2010. Frequency Distribution of monitoring stations showing rise/ fall in water level trends is shown in Table 22.

Table 22 Frequency Distribution of monitoring stations showing rise/ fall in water level trends												
BLOCK	NO OF STATIONS SHOWING RISE/FALL IN HISTORICAL WATER LEVEL TRENDS				NO OF STATIONS SHOWING RISE/FALL IN WATER LEVEL TRENDS PRIOR TO ISSUANCE OF NOC				NO OF STATIONS SHOWING RISE/FALL IN WATER LEVEL TRENDS AFTER TO ISSUANCE OF NOC			
	Pre monsoon		Post monsoon		Pre monsoon		Post monsoon		Pre monsoon		Post monsoon	
	RISE	FALL	RISE	FALL	RISE	FALL	RISE	FALL	RISE	FALL	RISE	FALL
BILASPUR	1	-	1	-	1	-	-	1	1	-	1	-
CHAMRAUA	2	6	1	7	3	5	1	7	5	3	8	-

9.3. Impact of Ground Water Extraction on the Ground Water Regime in the Buffer Zone

Ground water levels, it's spatial and temporal variation, are main indicator of ground water regime condition in any area. To study the impacts of ground water extraction and ground water recharge measures, adopted by Radico Khaitan Ltd, on ground water regime in buffer zone around the industry, the historical water level data collected from six piezometers constructed by the industry and ten GWMS of State GWD located in the study areas were considered.

9.3.1. Historical Water Level data analysis

The water level data has been collected from six piezometers through DWLR and telemetry system, since issuance of NOC for ground water abstraction in 2017.

The annual water level trends observed at piezometer of Radico Khaitan Ltd are shown in Table-23. The data indicates that ground water levels at **all the six piezometers are showing rising trends ranging from 0.365 m/year at Hitachi Land to 0.620 m/year as observed at Madhaiya piezometer** (Table 23). Falling trend is not observed at any piezometer in the premises or in the buffer zone. The hydrographs of all the piezometers are shown in Fig 18 to 23 in earlier chapter.

Table 23 LONG TERM WATER LEVEL TRENDS (2017-2020) AROUND THE DISTILLERY

PIEZOMETERS OF RADICO KHAITAN LIMITED	DATA AVAILBLE FOR	LONG TERM WATER LEVEL TRENDS (m/year)	
		RISE	FALL
AJEETPUR	MAY'2017 –Sep'2021	0.256	-
HITACHI LAND	MAY'2017– Sep'2021	0.365	-
DEENPUR	OCT'2017 – Sep'2021	0.037	-
HARIYAL	OCT'2017 – Sep'2021	0.110	-
MADHAIYA	OCT'2017 – Sep'2021	0.073	-
MILAK CHIKNA	JUN'2019– Sep'2021	0.329	-

Table 24 LONG TERM WATER LEVEL TRENDS (2008 -2019 & 2008-2020) AT GWMS IN BUFFER ZONE AROUND RADICO KHAITAN LTD, RAMPUR DISTRICT

BLOCK	GROUND WATER MONITORING STATIONS	HISTORICAL WATER LEVEL TRENDS (m/year)			
		2008-2019		2008-2020	
		RISE	FALL	RISE	FALL
BILASPUR	BILASPUR	0.186	-	0.216	-
CHAMRAUA	AJITPUR		0.124		0.124
CHAMRAUA	BHONT		0.172		0.156
CHAMRAUA	CHAMRAUA		0.250		0.234
CHAMRAUA	KOYLA		0.094		0.088
CHAMRAUA	DALPURA		0.014		0.014
CHAMRAUA	MADHAIYA UDAIRAJ		0.232		0.196
CHAMRAUA	PUNJAB NAGAR	0.028		0.024	
CHAMRAUA	SAIDNAGAR LADAURI		0.068		0.058
CHAMRAUA	SHAHJAD NAGAR		0.228		0.228

Historical water level data for Ten GWMS of State Ground Water Department, for last 10 to 12 years, was also analysed for studying water level trends in the buffer zone since 2008 and analysis has been shown in Table- 24.

- It is observed that out of ten stations analysed, two stations at Bilaspur (Bilaspur block) and Panjabnagar (Chamraua block) show a rise in water level trends for the last 10 to 11 years.
- All the remaining eight GWMS show a long term declining trend of ground water level trends, ranging from 0.014 m/year (at Dalpura) to 0.234 m/year at Chamraua. The hydrographs are shown in Fig 23 to 32.

Thus it is observed that historical ground water levels indicate a long term falling trend in the buffer zone prior to interventions for ground water recharge and rain water harvesting by Radico Khaitan Limited, whereas piezometers that have been constructed by Radico Khaitan Ltd in the buffer zone during or after 2017 (after issuance of NOC and compliance to directives), show a rise at all the stations.

9.3.2. Comparison of Post monsoon water level map in the study area for 2016 and 2019

Depth to water level during post monsoon period of 2016 and post monsoon period of 2019 has also been compared for the study area. The maps are shown in **Annexure –VI.** Maximum area during 2016 post monsoon period falls under water level range of 5 to 6 mbgl as seen in the map. However, during post monsoon period of 2019 maximum area falls under depth range of 4.5 to 5.5 mbgl. This indicates improvement in ground water level scenario in the study area, which is likely a result of ground water recharge measures adopted by the industry.

9.3.3. ANALYSIS OF WATER LEVEL TRENDS PRIOR TO ISSUANCE OF NOC

In order to assess the ground water scenario and trends prior to issuance of NOC to industry and adoption of recharge measures, the historical water level data has been analysed separately for periods prior and after the issuance of NOC. Table 25 shows the summary of water level trends prior and after the issuance of NOC (and interventions by industry). Hydrographs are shown in Fig- 45 to 53.

It is indicated from the table-25 that during period prior to issuance of NOC, **2008 to 2016**, two GWMS at Dalpura and Panjabnagar are showing rising trends of water levels, rest eight GWMS are showing declining trends of water levels. For Chamraua GWMS water level data was available only upto 2016, after which the station was abandoned.

This indicates that **ground water level situation since 2008 was showing a declining trend in upto 2016**. The result of this declining trend has resulted in categorization of Chamraua block as Over Exploited.

Table 25 LONG TERM WATER LEVEL TRENDS IN BUFFER ZONE AROUND RADICO KHAITAN LTD, RAMPUR DISTRICT (2008-2016)

BLOCK	GROUND WATER MONITORING STATIONS	WATER LEVEL TRENDS PRIOR TO ISSUANCE OF NOC (m/year)	
		RISE	FALL
BILASPUR	BILASPUR	-	0.018
CHAMRAUA	AJITPUR	-	0.202
CHAMRAUA	BHONT	-	0.204
CHAMRAUA	CHAMRAUA	-	0.250
CHAMRAUA	KOYLA	-	0.114

Table 25 LONG TERM WATER LEVEL TRENDS IN BUFFER ZONE AROUND RADICO KHAITAN LTD, RAMPUR DISTRICT (2008-2016)

BLOCK	GROUND WATER MONITORING STATIONS	WATER LEVEL TRENDS PRIOR TO ISSUANCE OF NOC (m/year)	
		RISE	FALL
CHAMRAUA	DALPURA	0.020	-
CHAMRAUA	MADHAIYA UDAIRAJ	-	0.208
CHAMRAUA	PUNJAB NAGAR	0.060	-
CHAMRAUA	SAIDNAGAR LADAURI	-	0.088
CHAMRAUA	SHAHJAD NAGAR	-	0.226

FIG 45

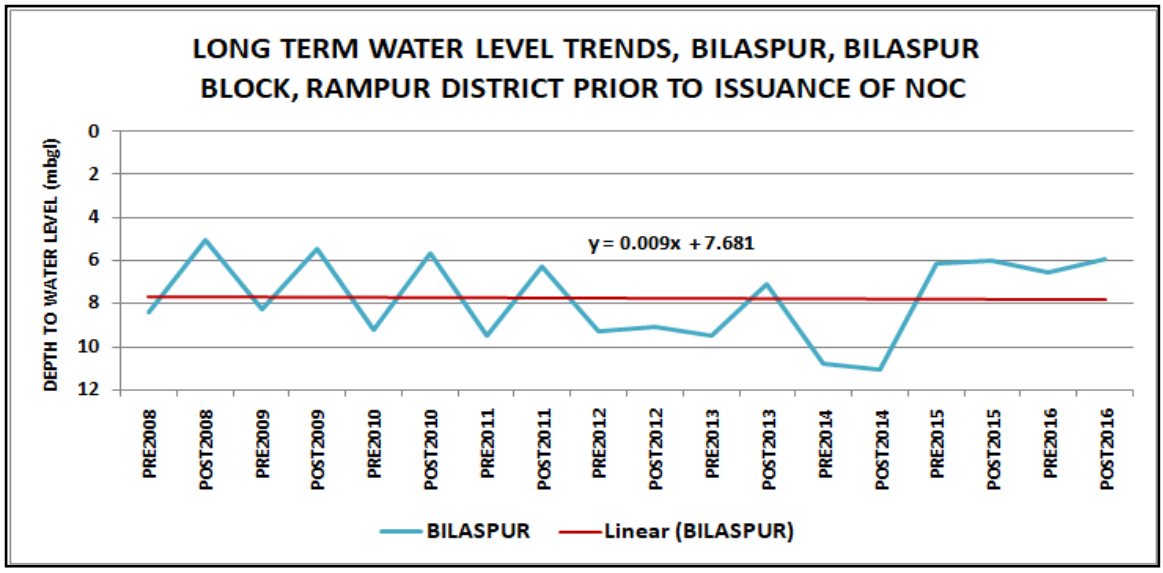


FIG 46

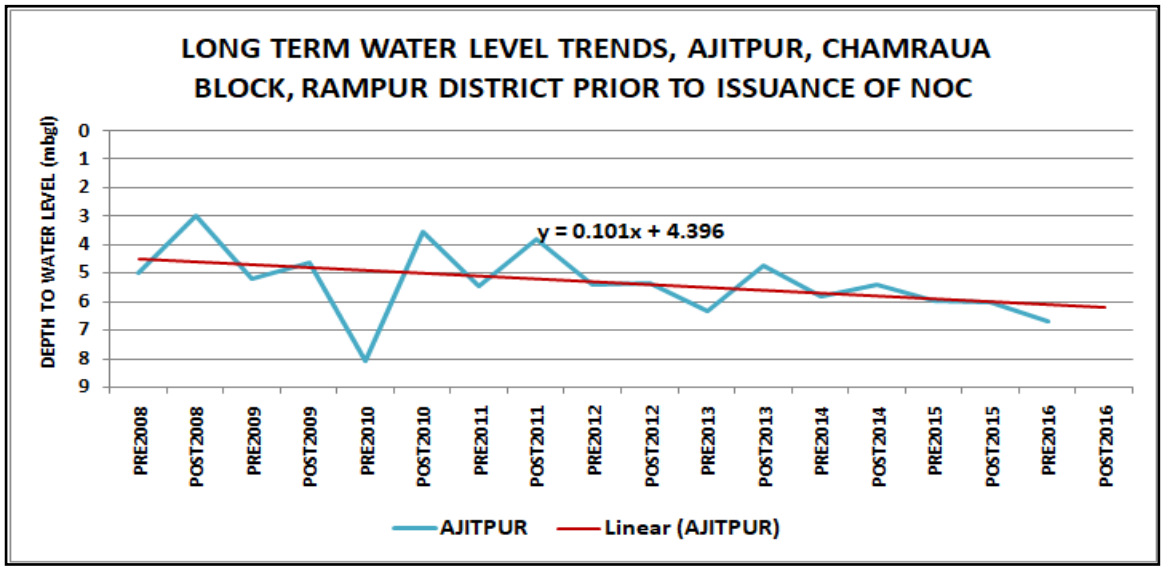

LONG TERM WATER LEVEL TRENDS, AJITPUR, CHAMRAUA BLOCK, RAMPUR DISTRICT PRIOR TO ISSUANCE OF NOC
DEPTH TO WATER LEVEL (mbgl)
0
1
2
3
4
5
6
7
8
9
y = 0.101x + 4.396
PRE2008
POST2008
PRE2009
POST2009
PRE2010
POST2010
PRE2011
POST2011
PRE2012
POST2012
PRE2013
POST2013
PRE2014
POST2014
PRE2015
POST2015
PRE2016
POST2016
AJITPUR
Linear (AJITPUR)

FIG 47

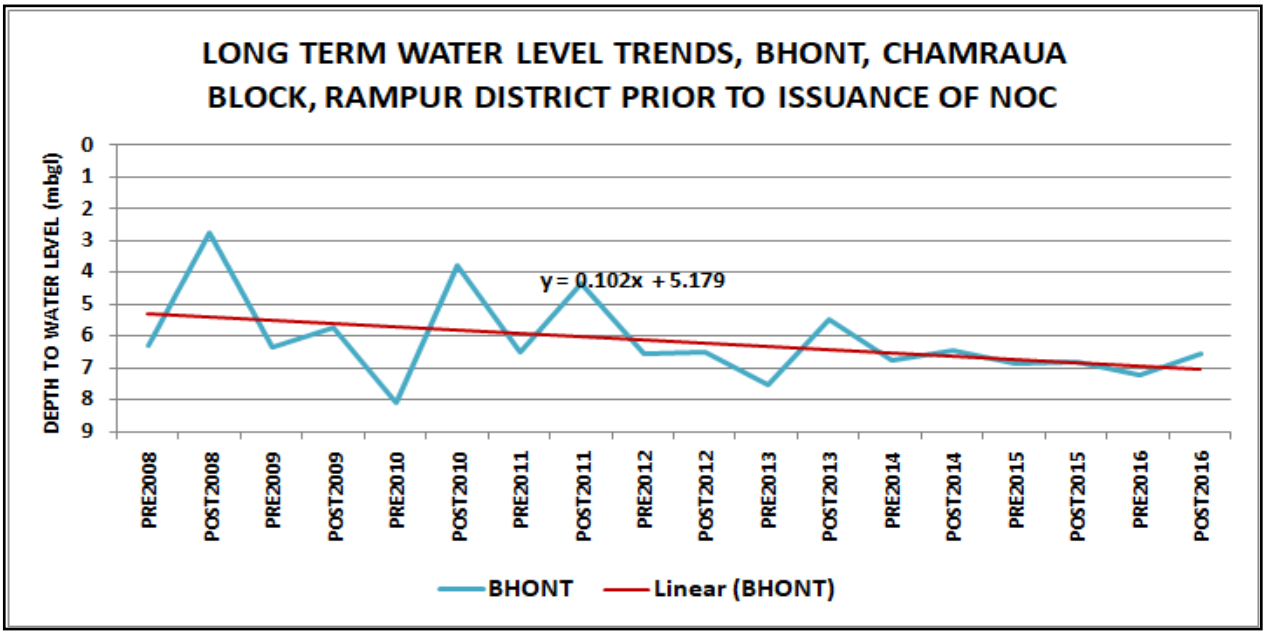

LONG TERM WATER LEVEL TRENDS, BHONT, CHAMRAUA BLOCK, RAMPUR DISTRICT PRIOR TO ISSUANCE OF NOC
DEPTH TO WATER LEVEL (mbgl)
0
1
2
3
4
5
6
7
8
9
y = 0.102x + 5.179
PRE2008
POST2008
PRE2009
POST2009
PRE2010
POST2010
PRE2011
POST2011
PRE2012
POST2012
PRE2013
POST2013
PRE2014
POST2014
PRE2015
POST2015
PRE2016
POST2016
BHONT
Linear (BHONT)

FIG 48

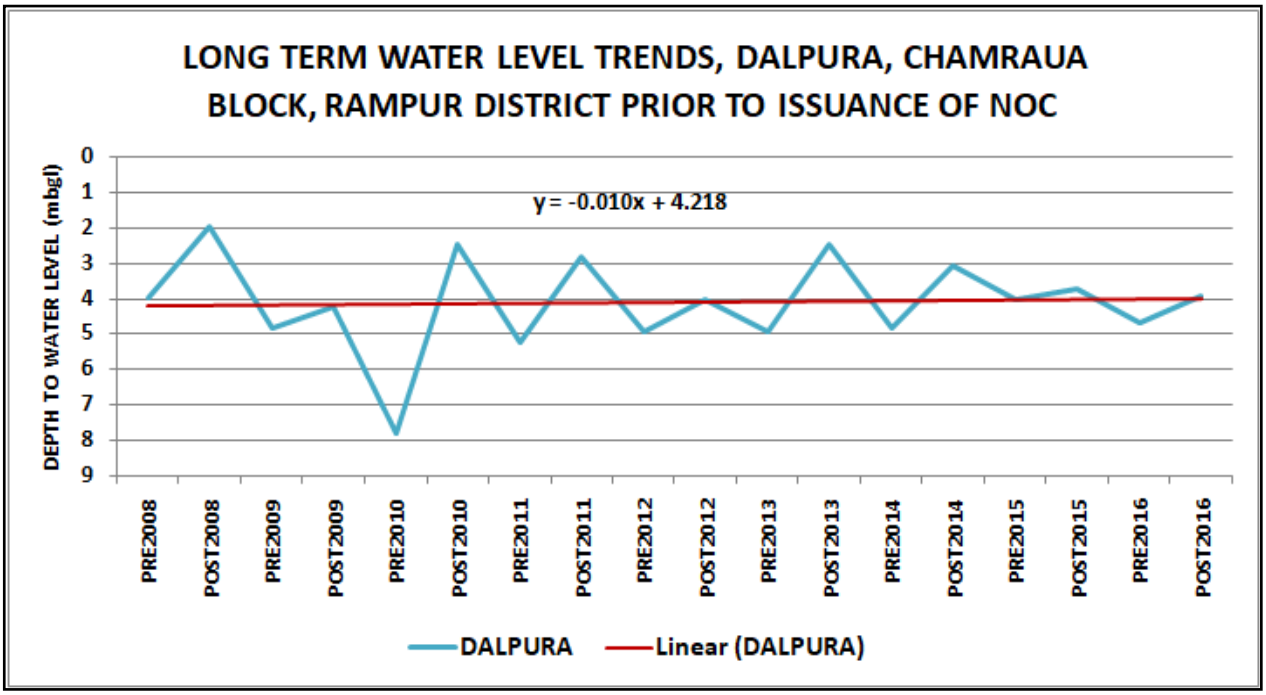

LONG TERM WATER LEVEL TRENDS, DALPURA, CHAMRAUA BLOCK, RAMPUR DISTRICT PRIOR TO ISSUANCE OF NOC
DEPTH TO WATER LEVEL (mbgl)
y = -0.010x + 4.218
0
1
2
3
4
5
6
7
8
9
PRE2008
POST2008
PRE2009
POST2009
PRE2010
POST2010
PRE2011
POST2011
PRE2012
POST2012
PRE2013
POST2013
PRE2014
POST2014
PRE2015
POST2015
PRE2016
POST2016
DALPURA
Linear (DALPURA)

FIG 49

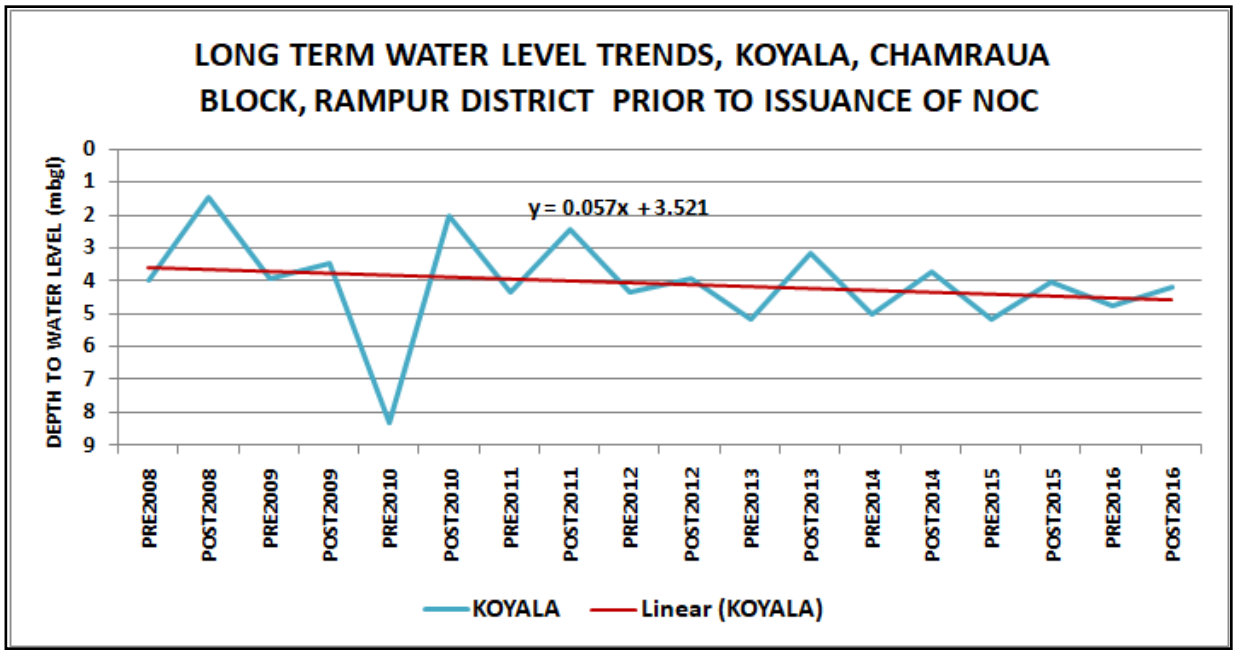

LONG TERM WATER LEVEL TRENDS, KOYALA, CHAMRAUA BLOCK, RAMPUR DISTRICT PRIOR TO ISSUANCE OF NOC
DEPTH TO WATER LEVEL (mbgl)
y = 0.057x + 3.521
0
1
2
3
4
5
6
7
8
9
PRE2008
POST2008
PRE2009
POST2009
PRE2010
POST2010
PRE2011
POST2011
PRE2012
POST2012
PRE2013
POST2013
PRE2014
POST2014
PRE2015
POST2015
PRE2016
POST2016
KOYALA
Linear (KOYALA)

FIG 50

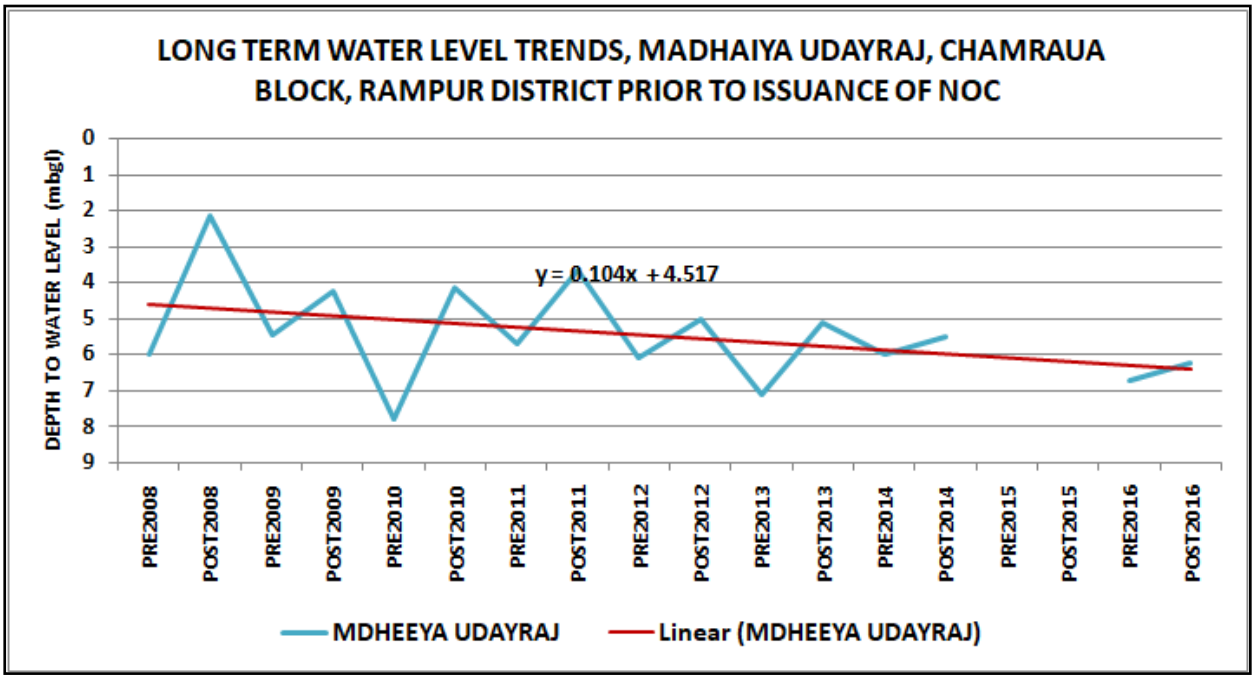

LONG TERM WATER LEVEL TRENDS, MADHAIYA UDAYRAJ, CHAMRAUA BLOCK, RAMPUR DISTRICT PRIOR TO ISSUANCE OF NOC
DEPTH TO WATER LEVEL (mbgl)
0
1
2
3
4
5
6
7
8
9
y = 0.104x + 4.517
PRE2008
POST2008
PRE2009
POST2009
PRE2010
POST2010
PRE2011
POST2011
PRE2012
POST2012
PRE2013
POST2013
PRE2014
POST2014
PRE2015
POST2015
PRE2016
POST2016
MDHEEYA UDAYRAJ
Linear (MDHEEYA UDAYRAJ)

FIG 51

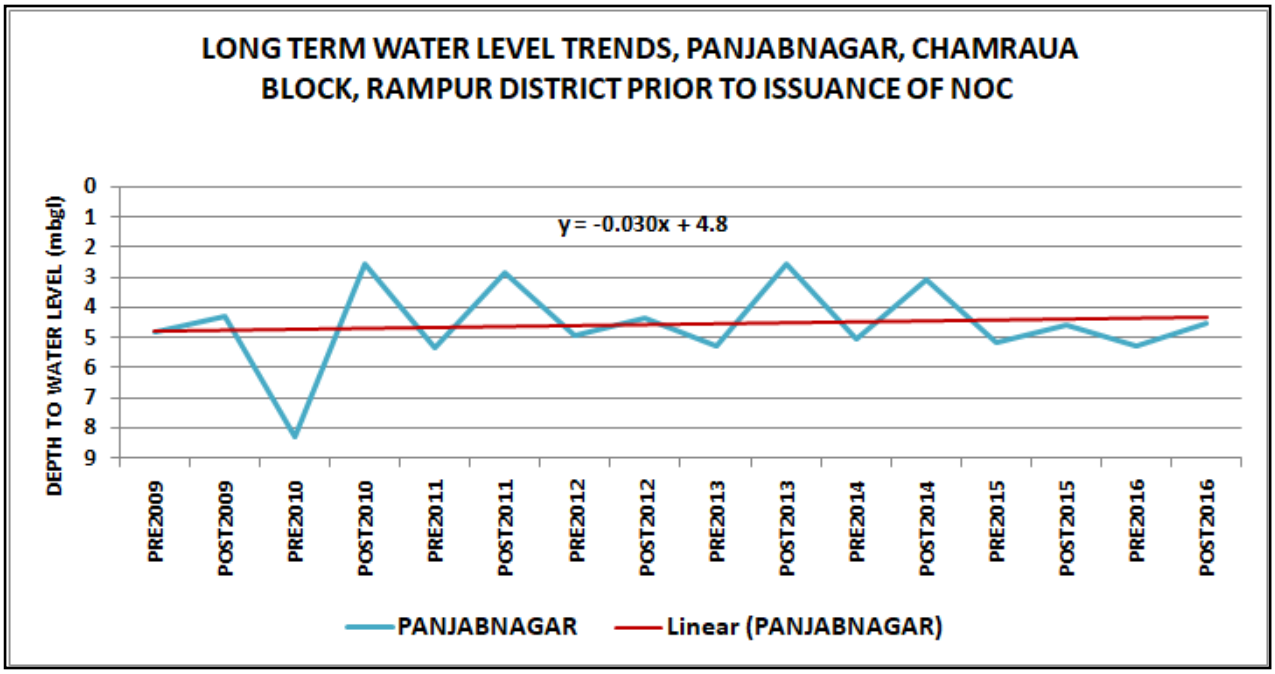

LONG TERM WATER LEVEL TRENDS, PANJABNAGAR, CHAMRAUA BLOCK, RAMPUR DISTRICT PRIOR TO ISSUANCE OF NOC
DEPTH TO WATER LEVEL (mbgl)
0
1
2
3
4
5
6
7
8
9
y = -0.030x + 4.8
PRE2009
POST2009
PRE2010
POST2010
PRE2011
POST2011
PRE2012
POST2012
PRE2013
POST2013
PRE2014
POST2014
PRE2015
POST2015
PRE2016
POST2016
PANJABNAGAR
Linear (PANJABNAGAR)

FIG 52

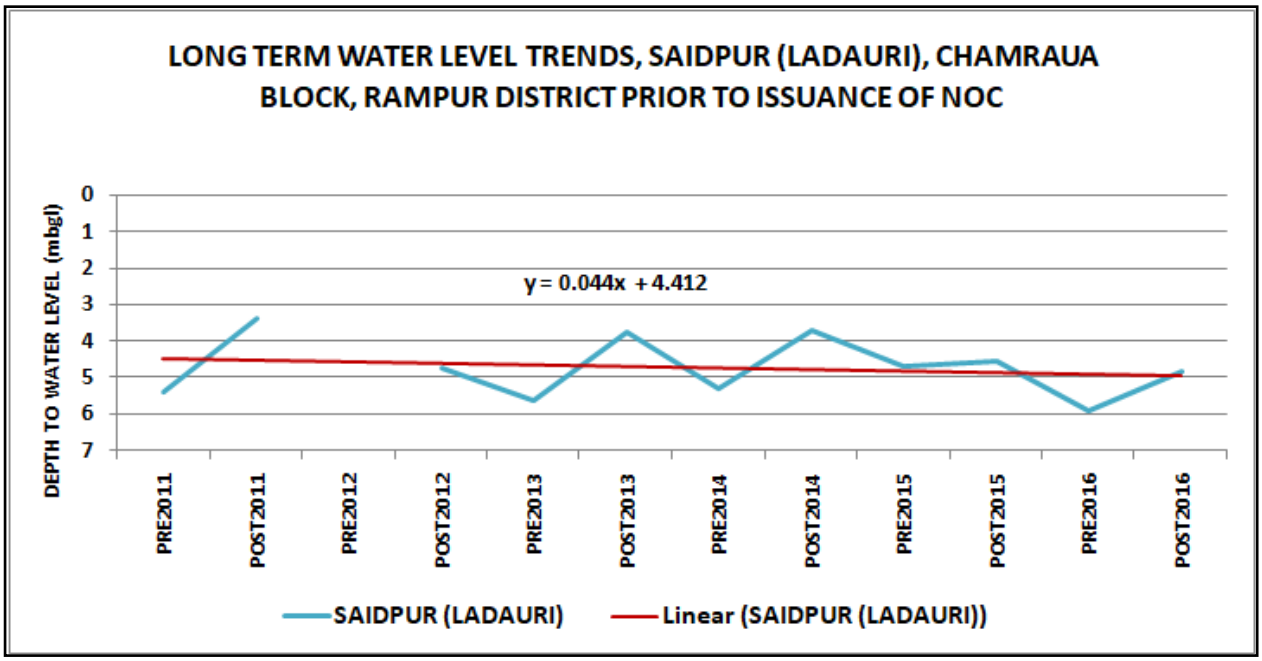
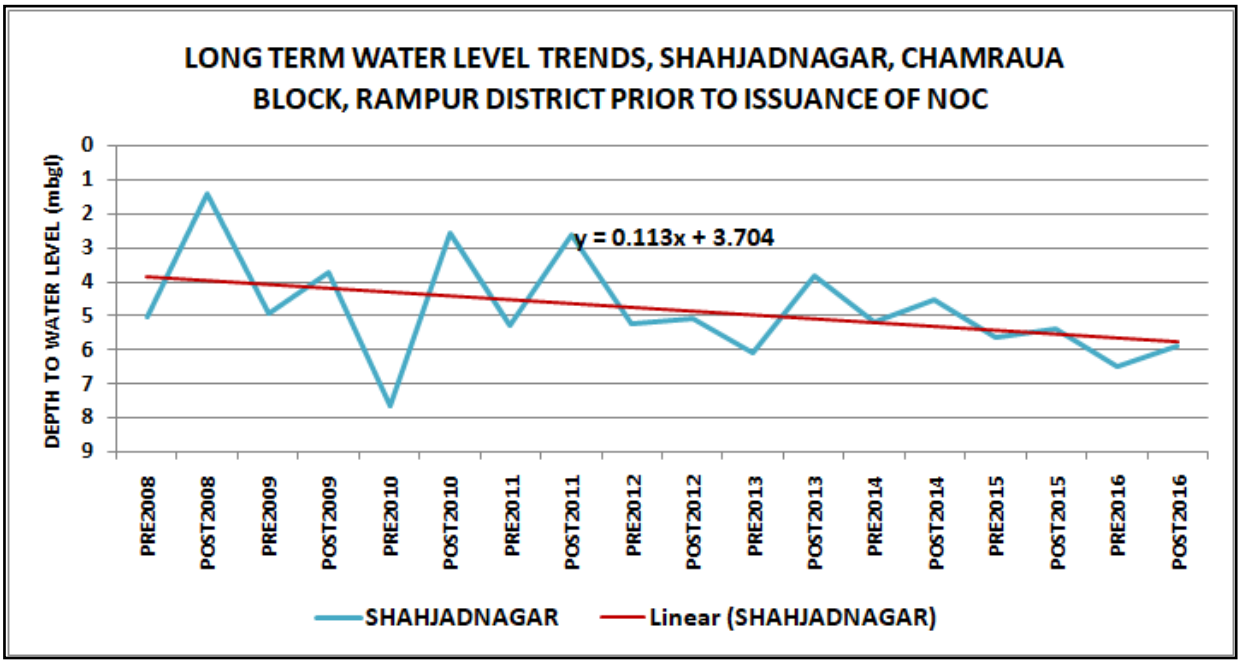

LONG TERM WATER LEVEL TRENDS, SAIDPUR (LADAURI), CHAMRAUA BLOCK, RAMPUR DISTRICT PRIOR TO ISSUANCE OF NOC
DEPTH TO WATER LEVEL (mbgl)
0
1
2
3
4
5
6
7
y = 0.044x + 4.412
PRE2011
POST2011
PRE2012
POST2012
PRE2013
POST2013
PRE2014
POST2014
PRE2015
POST2015
PRE2016
POST2016
SAIDPUR (LADAURI)
Linear (SAIDPUR (LADAURI))

FIG 53


LONG TERM WATER LEVEL TRENDS, SHAHJADNAGAR, CHAMRAUA BLOCK, RAMPUR DISTRICT PRIOR TO ISSUANCE OF NOC
DEPTH TO WATER LEVEL (mbgl)
0
1
2
3
4
5
6
7
8
9
y = 0.113x + 3.704
PRE2008
POST2008
PRE2009
POST2009
PRE2010
POST2010
PRE2011
POST2011
PRE2012
POST2012
PRE2013
POST2013
PRE2014
POST2014
PRE2015
POST2015
PRE2016
POST2016
SHAHJADNAGAR
Linear (SHAHJADNAGAR)

9.3.4. ANALYSIS OF WATER LEVEL TRENDS AFTER THE ISSUANCE OF NOC

For assessing the ground water scenario and trends after the issuance of NOC to industry and adoption of recharge measures, the historical water level data since 2017, has been analysed. Table 26 shows the summary of water level trends after the issuance of NOC (and interventions by industry). Hydrographs are shown in Fig- 54 to 62.

Table-26 showing water level trends since 2017 indicate that **all the GWMS (except Chamraua station, for which water level data since 2017 is not available) are showing rising water level trends**. Rising water level trends are ranging from 0.162 m/year (16 cm/year) at Bhont GWMS which is located in northeastern part of study area to 0.734 m/year at Madhaiya GWMS which is located in the southeastern parts of the study area.

As already discussed earlier the annual water level trends observed at all the piezometers of Radico Khaitan Ltd are **showing rising trends ranging from 0.365 m/year (36.5 cm/year) at Hitachi Land to 0.620 m/year (62 cm/year) as observed at Madhaiya piezometer**.

Table 26 WATER LEVEL TRENDS AFTER ISSUANCE OF NOC IN BUFFER ZONE AROUND RADICO KHAITAN LTD, RAMPUR DISTRICT

BLOCK	GROUND WATER MONITORING STATIONS	WATER LEVEL TRENDS AFTER ISSUANCE OF NOC (m/year)				REMARKS (Change in trend value with respect to 2008-2019 period)
		2017-2019		2017-2020		
		RISE	FALL	RISE	FALL	
BILASPUR	BILASPUR	0.904	-	0.556	-	Slight reduction in rate of rising trends
CHAMRAUA	AJITPUR	0.610	-	0.610	-	No change
CHAMRAUA	BHONT	0.260	-	0.162	-	Slight reduction in rate of rising trends
CHAMRAUA	CHAMRAUA	-	-		-	-
CHAMRAUA	KOYLA	0.296	-	0.128	-	Slight reduction in rate of rising trends
CHAMRAUA	DALPURA	0.490	-	0.490	-	No change
CHAMRAUA	MADHAIYA UDAIRAJ	1.188	-	0.734	-	Slight reduction in rate of rising trends
CHAMRAUA	PUNJAB NAGAR	0.538	-	0.270	-	Slight reduction in rate of rising trends
CHAMRAUA	SAIDNAGAR LADAURI	0.616	-	0.302	-	Slight reduction in rate of rising trends
CHAMRAUA	SHAHJAD NAGAR	0.452	-	0.452	-	No change

FIG 54

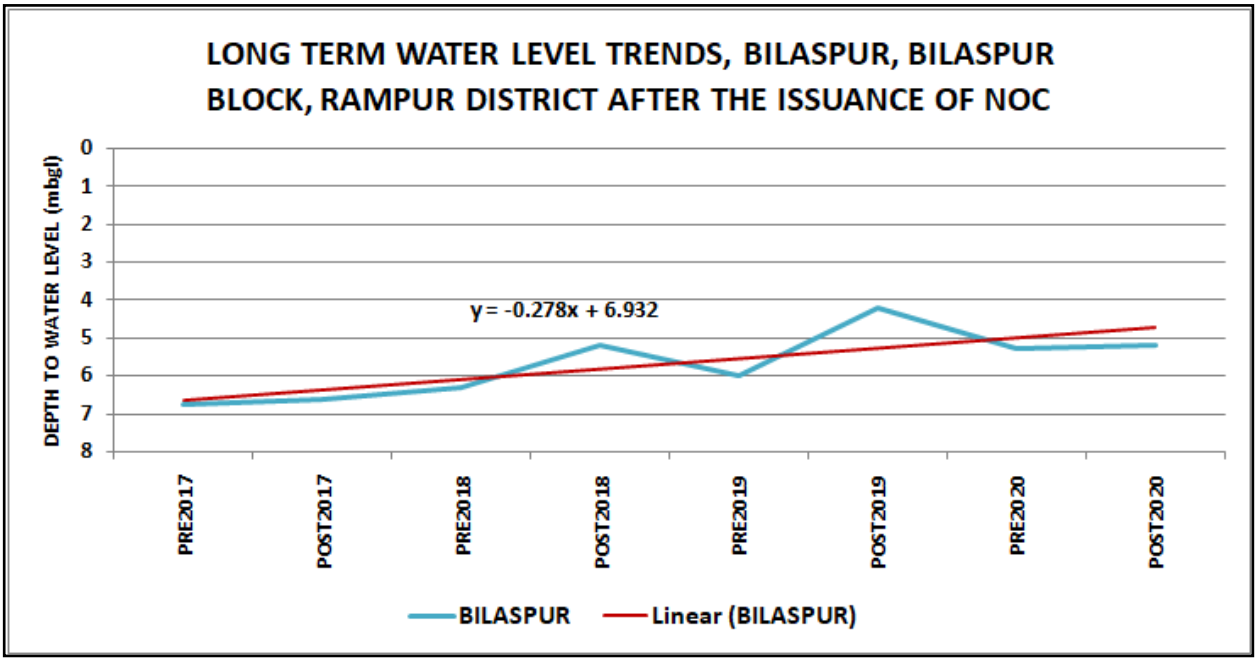

LONG TERM WATER LEVEL TRENDS, BILASPUR, BILASPUR BLOCK, RAMPUR DISTRICT AFTER THE ISSUANCE OF NOC
DEPTH TO WATER LEVEL (mbgl)
0
1
2
3
4
5
6
7
8
y = -0.278x + 6.932
PRE2017
POST2017
PRE2018
POST2018
PRE2019
POST2019
PRE2020
POST2020
BILASPUR
Linear (BILASPUR)

FIG 55

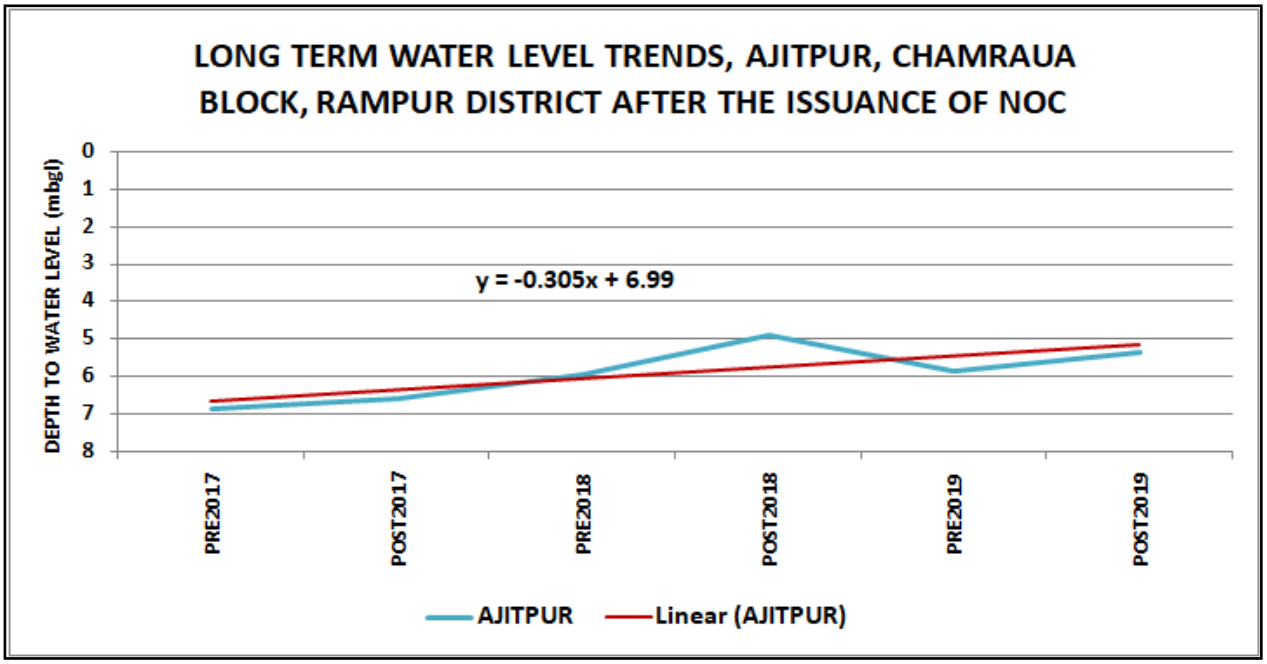

LONG TERM WATER LEVEL TRENDS, AJITPUR, CHAMRAUA BLOCK, RAMPUR DISTRICT AFTER THE ISSUANCE OF NOC
DEPTH TO WATER LEVEL (mbgl)
0
1
2
3
4
5
6
7
8
y = -0.305x + 6.99
PRE2017
POST2017
PRE2018
POST2018
PRE2019
POST2019
AJITPUR
Linear (AJITPUR)

FIG 56

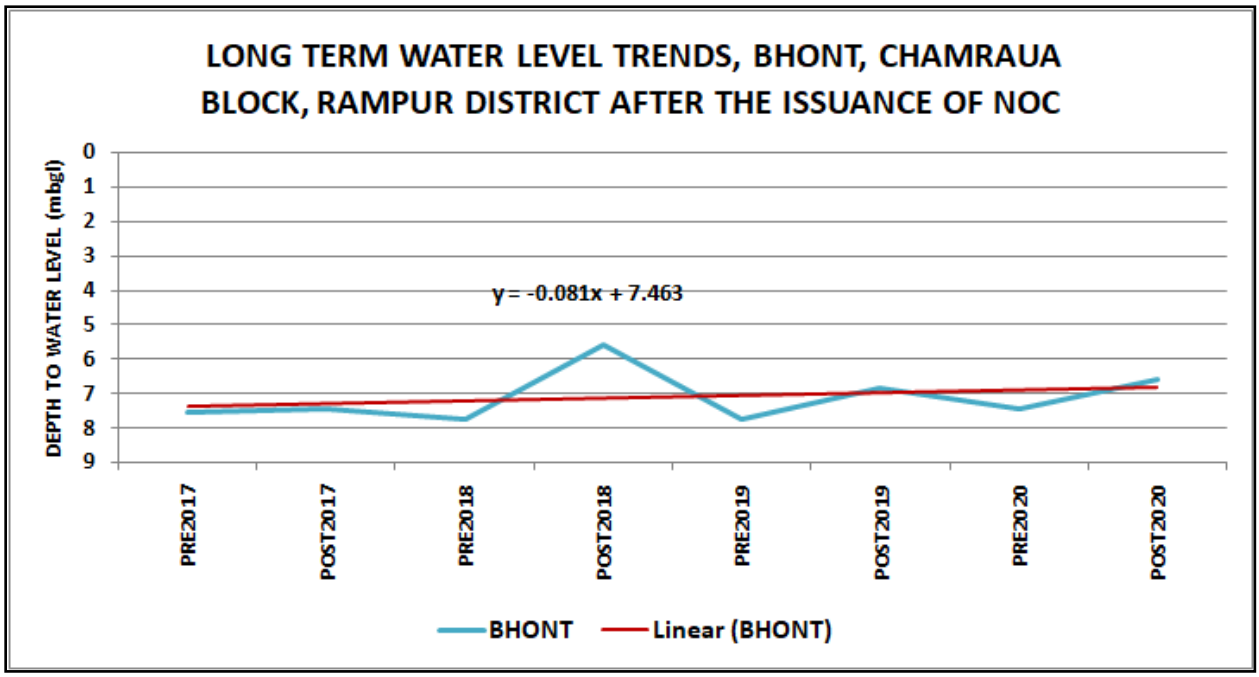

LONG TERM WATER LEVEL TRENDS, BHONT, CHAMRAUA BLOCK, RAMPUR DISTRICT AFTER THE ISSUANCE OF NOC
DEPTH TO WATER LEVEL (mbgl)
0
1
2
3
4
5
6
7
8
9
y = -0.081x + 7.463
PRE2017
POST2017
PRE2018
POST2018
PRE2019
POST2019
PRE2020
POST2020
BHONT
Linear (BHONT)

FIG 57

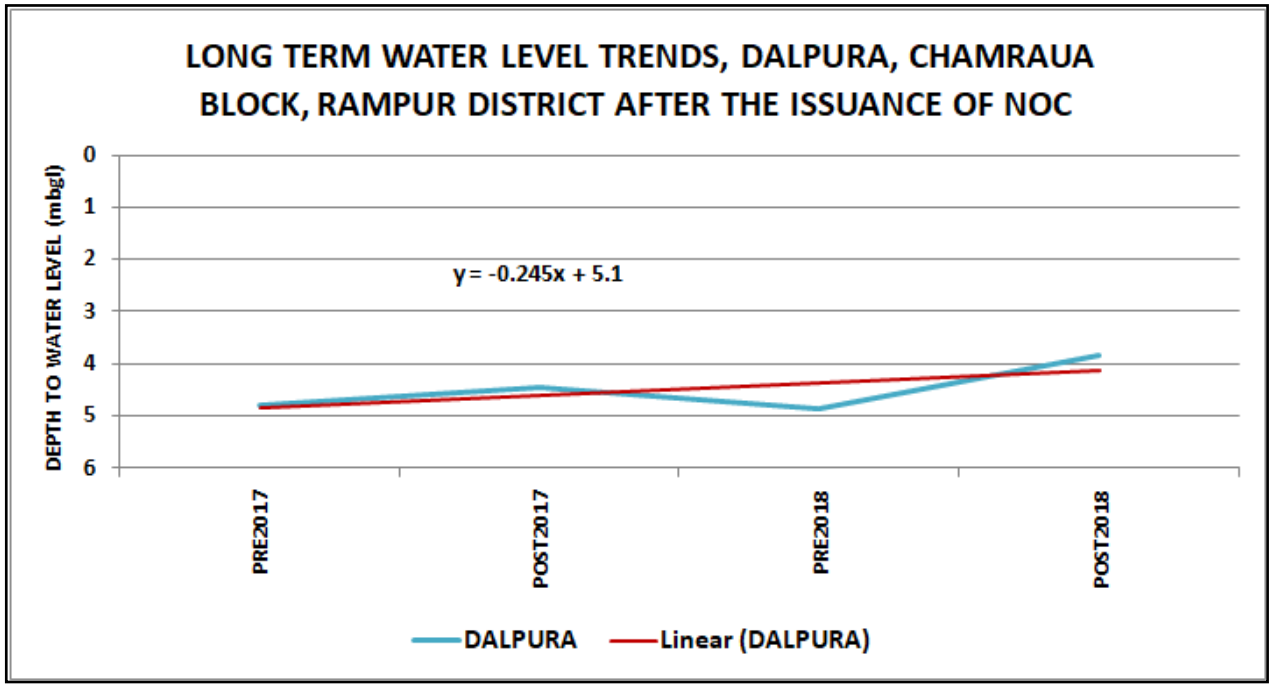

LONG TERM WATER LEVEL TRENDS, DALPURA, CHAMRAUA BLOCK, RAMPUR DISTRICT AFTER THE ISSUANCE OF NOC
DEPTH TO WATER LEVEL (mbgl)
0
1
2
3
4
5
6
y = -0.245x + 5.1
PRE2017
POST2017
PRE2018
POST2018
DALPURA
Linear (DALPURA)

FIG 58

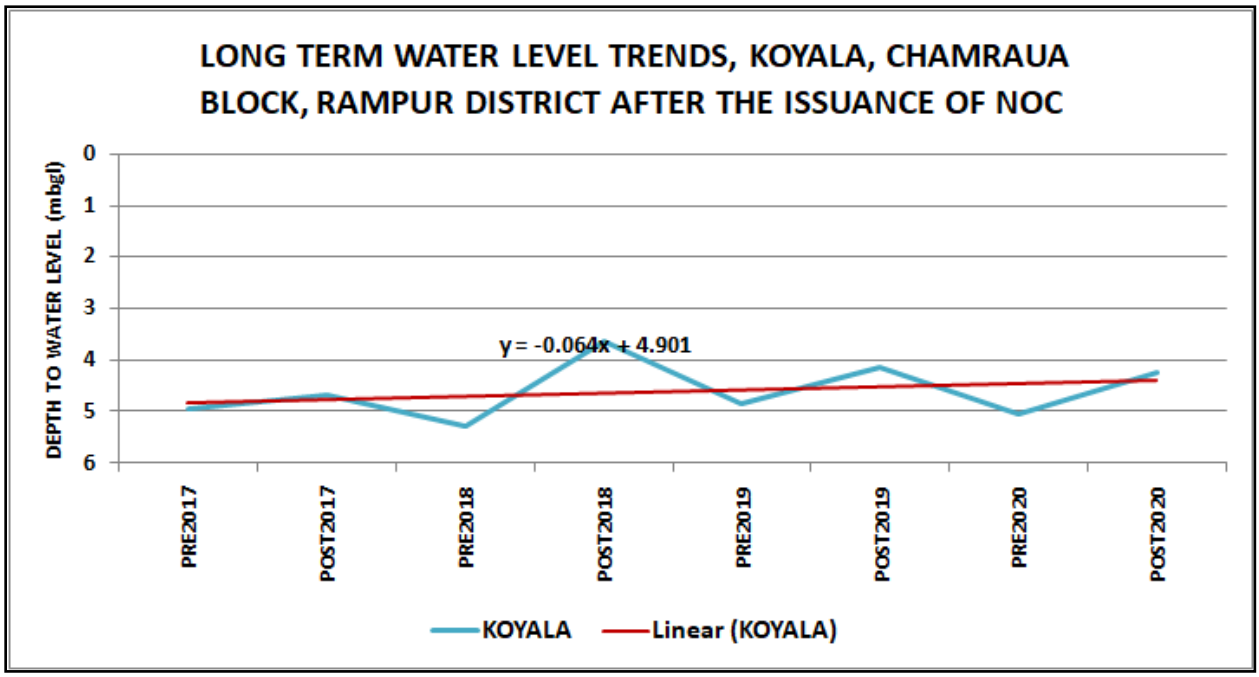

LONG TERM WATER LEVEL TRENDS, KOYALA, CHAMRAUA BLOCK, RAMPUR DISTRICT AFTER THE ISSUANCE OF NOC
DEPTH TO WATER LEVEL (mbgl)
0
1
2
3
4
5
6
y = -0.064x + 4.901
PRE2017
POST2017
PRE2018
POST2018
PRE2019
POST2019
PRE2020
POST2020
KOYALA
Linear (KOYALA)

FIG 59

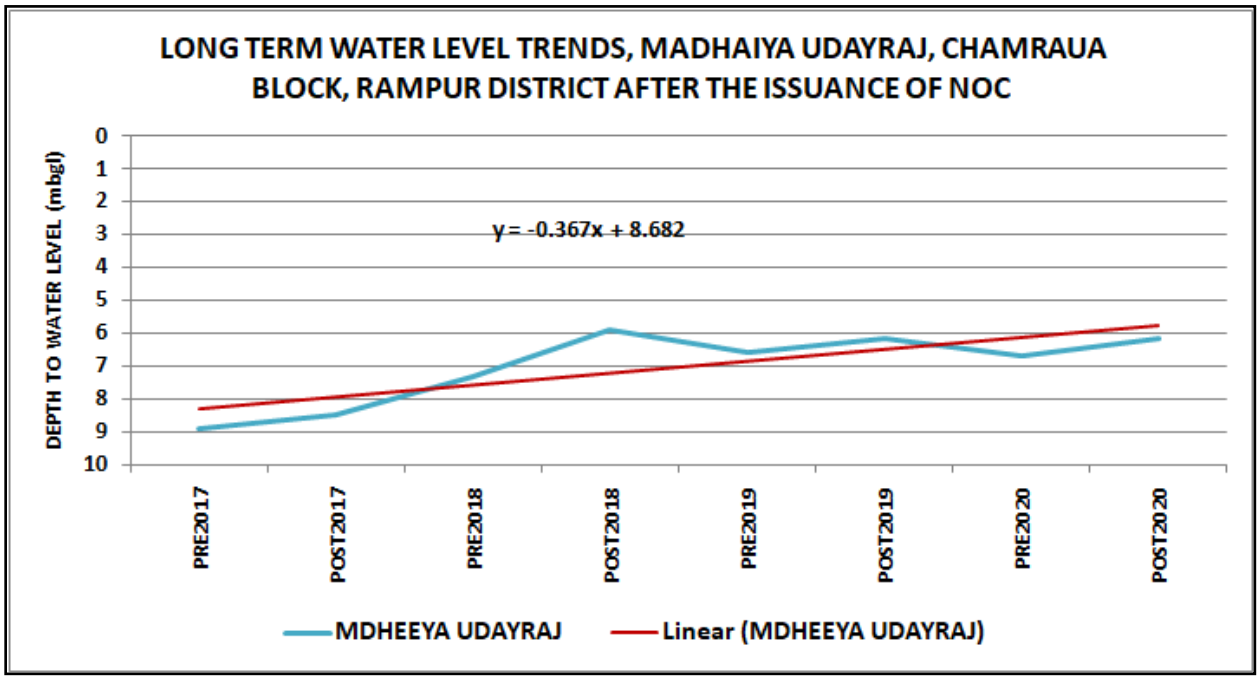

LONG TERM WATER LEVEL TRENDS, MADHAIYA UDAYRAJ, CHAMRAUA BLOCK, RAMPUR DISTRICT AFTER THE ISSUANCE OF NOC
DEPTH TO WATER LEVEL (mbgl)
0
1
2
3
4
5
6
7
8
9
10
y = -0.367x + 8.682
PRE2017
POST2017
PRE2018
POST2018
PRE2019
POST2019
PRE2020
POST2020
MDHEEYA UDAYRAJ
Linear (MDHEEYA UDAYRAJ)

FIG 60

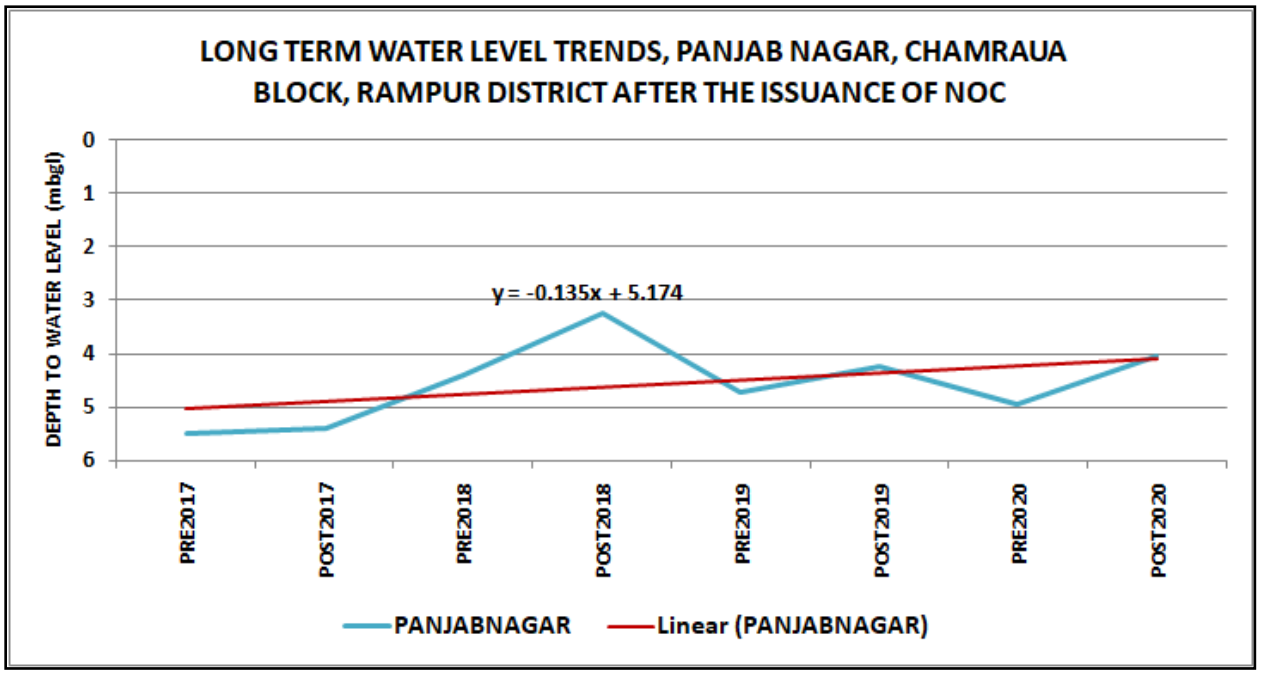

LONG TERM WATER LEVEL TRENDS, PANJAB NAGAR, CHAMRAUA BLOCK, RAMPUR DISTRICT AFTER THE ISSUANCE OF NOC
DEPTH TO WATER LEVEL (mbgl)
0
1
2
3
4
5
6
y = -0.135x + 5.174
PRE2017
POST2017
PRE2018
POST2018
PRE2019
POST2019
PRE2020
POST2020
PANJABNAGAR
Linear (PANJABNAGAR)

FIG 61

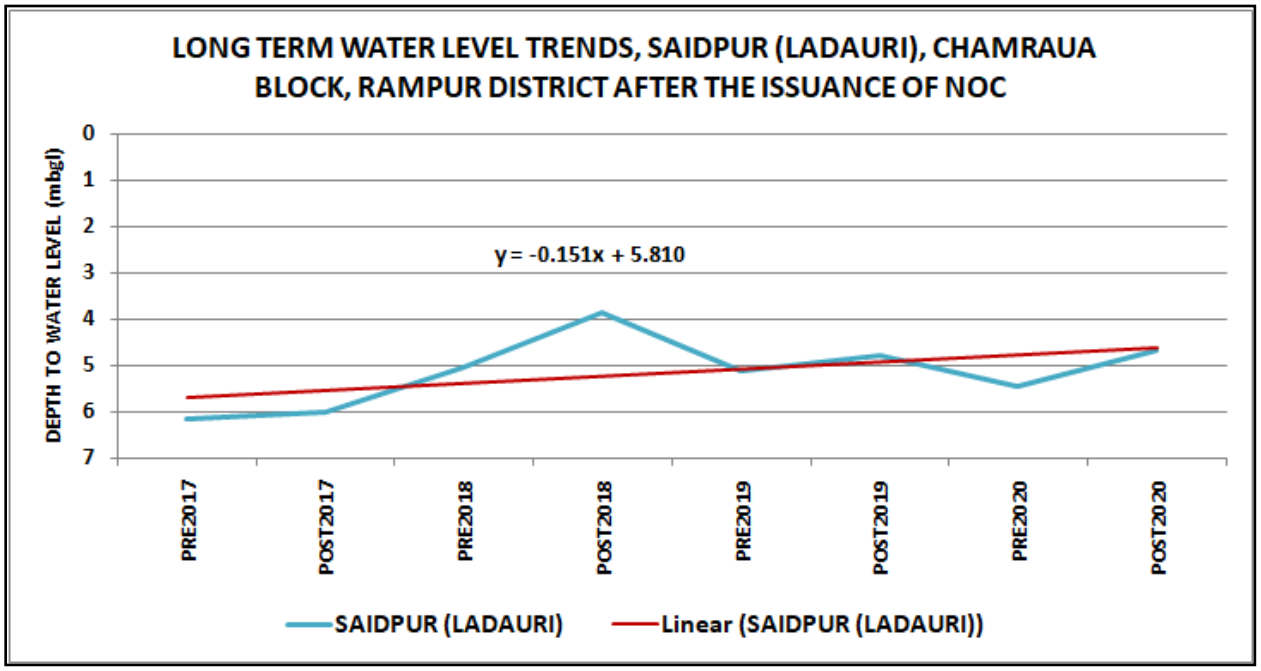
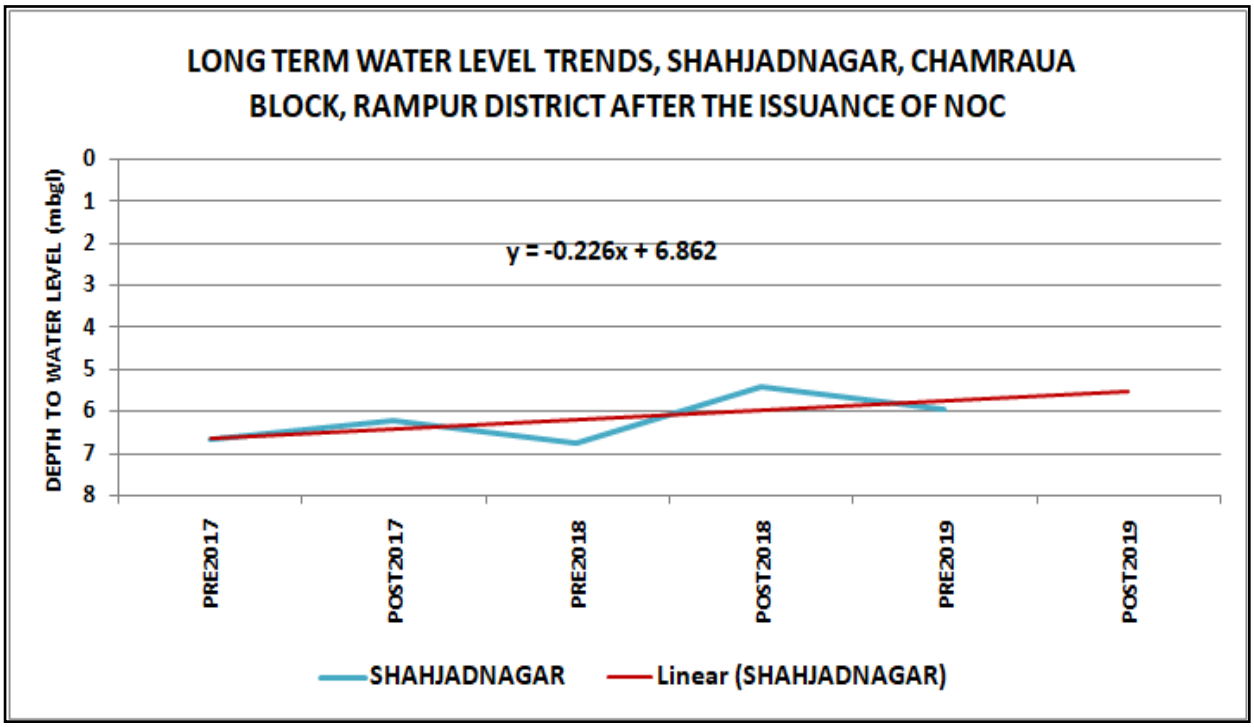

LONG TERM WATER LEVEL TRENDS, SAIDPUR (LADAURI), CHAMRAUA BLOCK, RAMPUR DISTRICT AFTER THE ISSUANCE OF NOC
DEPTH TO WATER LEVEL (mbgl)
0
1
2
3
4
5
6
7
y = -0.151x + 5.810
PRE2017
POST2017
PRE2018
POST2018
PRE2019
POST2019
PRE2020
POST2020
SAIDPUR (LADAURI)
Linear (SAIDPUR (LADAURI))

FIG 62


LONG TERM WATER LEVEL TRENDS, SHAHJADNAGAR, CHAMRAUA BLOCK, RAMPUR DISTRICT AFTER THE ISSUANCE OF NOC
DEPTH TO WATER LEVEL (mbgl)
0
1
2
3
4
5
6
7
8
y = -0.226x + 6.862
PRE2017
POST2017
PRE2018
POST2018
PRE2019
POST2019
SHAHJADNAGAR
Linear (SHAHJADNAGAR)

9.3.5. ANALYSIS OF PRE AND POST MONSOON PERIOD WATER LEVEL TRENDS BEFORE AND AFTER THE ISSUANCE OF NOC

The **impacts of ground water recharge have also been assessed using pre and post monsoon water level data for period prior and after the issuance of NOC to the industry**. The following analysis has been done using historical data from GWMS, and shown in Table-27 a & b below.

a. Overall (historical) pre and post monsoon water level trends
b. Pre and post monsoon water level trends prior to issuance of NOC
c. Pre and post monsoon water level trends after the issuance of NOC

Premonsoon (May/Jun) water levels are normally the maximum ground water levels observed during the year and post monsoon (Nov) water levels are resultant of monsoon period withdrawal of ground water for various purposes and the monsoon recharge. For categorization of ground water assessment units also, the pre and post monsoon water level trends are considered. The hydrographs showing annual, premonsoon and post monsoon period water levels are shown in Fig 63 to 71).

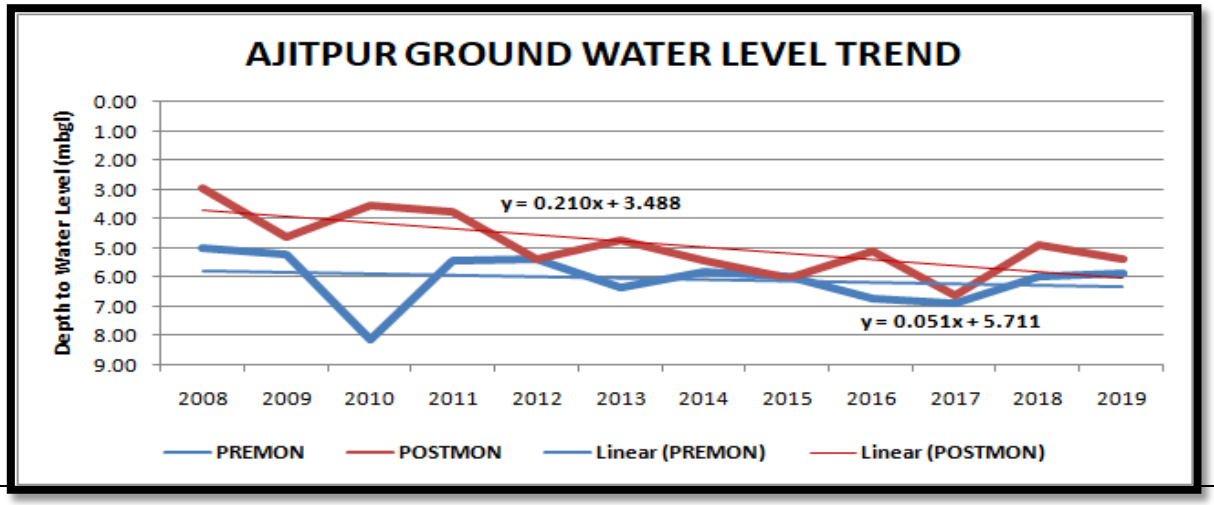
Table 27 a LONG TERM WATER LEVEL TRENDS IN BUFFER ZONE AROUND RADICO KHAITAN LTD, RAMPUR

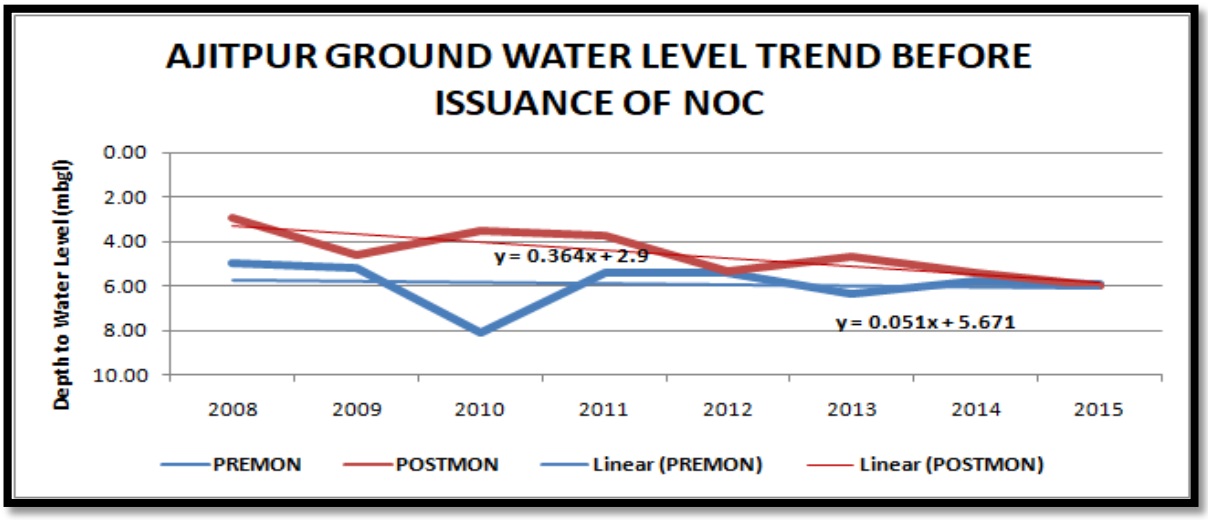
BLOCK	GROUND WATER MONITORING STATIONS	HISTORICAL WATER LEVEL TRENDS (m/year)				WATER LEVEL TRENDS PRIOR TO ISSUANCE OF NOC (2008-2016) (m/year)				WATER LEVEL TRENDS AFTER THE ISSUANCE OF NOC (m/year)			
		Premonsoon		Postmonsoon		Premonsoon		Postmonsoon		Premonsoon		Postmonsoon	
		RISE	FALL	RISE	FALL	RISE	FALL	RISE	FALL	RISE	FALL	RISE	FALL
BILASPUR	BILASPUR	0.297		0.046		0.031			0.498	0.140		0.425	
CHAMRAUA	AJITPUR		0.051		0.210		0.051		0.364	0.345		0.089	
CHAMRAUA	BHONT		0.086		0.284		0.049		0.464		0.097	0.099	
CHAMRAUA	DALPURA		0.062	0.127		0.099			0.093		0.042	0.090	
CHAMRAUA	KOYLA		0.011		0.210		0.053		0.290		0.065	0.120	
CHAMRAUA	MADHAIYA UDAIRAJ		0.126		0.366		0.050		0.416	0.190		0.287	
CHAMRAUA	PANJAB NAGAR	0.133			0.113	0.193		0.05		0.272		0.290	
CHAMRAUA	SHAHJAD NAGAR		0.091		0.362		0.007		0.450	0.149		0.185	
CHAMRAUA	SAIDNAGAR LADAURI	0.010			0.142	0.151			0.131	0.350		0.239	

Table 27 b LONG TERM WATER LEVEL TRENDS IN BUFFER ZONE AROUND RADICO KHAITAN LTD, RAMPUR- COMPARISON OF TRENDS UPTO 2019 AND UPDATED DATA FOR 2020

BLOCK	GROUND WATER MONITORING STATIONS	WATER LEVEL TRENDS PRIOR TO ISSUANCE OF NOC (2008-2019) (m/year)				WATER LEVEL TRENDS AFTER TO ISSUANCE OF NOC (2017-2019 period) (m/year)				WATER LEVEL TRENDS AFTER THE ISSUANCE OF NOC (2017-2020) AS PER UPDATED DATA FOR 2020 (m/year)			
		Premonsoon		Postmonsoon		Premonsoon		Postmonsoon		Premonsoon		Postmonsoon	
		RISE	FALL	RISE	FALL	RISE	FALL	RISE	FALL	RISE	FALL	RISE	FALL
BILASPUR	BILASPUR	0.031			0.498	0.140		0.425		0.189		0.326	
CHAMRAUA	AJITPUR		0.051		0.364	0.345		0.089		0.095		0.242	
CHAMRAUA	BHONT		0.049		0.464		0.097	0.099			0.122	0.059	
CHAMRAUA	CHAMRAUA	0.099			0.093		0.042	0.090			0.138	0.020	
CHAMRAUA	DALPURA		0.053		0.290		0.065	0.120			0.042	0.090	
CHAMRAUA	KOYLA		0.050		0.416	0.190		0.287			0.004	0.005	
CHAMRAUA	MADHAIYA UDAIRAJ	0.193		0.05		0.272		0.290		0.230		0.252	
CHAMRAUA	PANJAB NAGAR		0.007		0.450	0.149		0.185		0.106		0.154	
CHAMRAUA	SHAHJAD NAGAR	0.151			0.131	0.350		0.239		0.149		0.185	
CHAMRAUA	SAIDNAGAR LADAURI	0.031			0.498	0.140		0.425			0.007	0.051	

FIG 63


AJITPUR GROUND WATER LEVEL TREND
Depth to Water Level (mbgl)
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
y = 0.210x + 3.488
y = 0.051x + 5.711
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
PREMON
POSTMON
Linear (PREMON)
Linear (POSTMON)


AJITPUR GROUND WATER LEVEL TREND BEFORE ISSUANCE OF NOC
Depth to Water Level (mbgl)
0.00
2.00
4.00
6.00
8.00
10.00
y = 0.364x + 2.9
y = 0.051x + 5.671
2008
2009
2010
2011
2012
2013
2014
2015
PREMON
POSTMON
Linear (PREMON)
Linear (POSTMON)

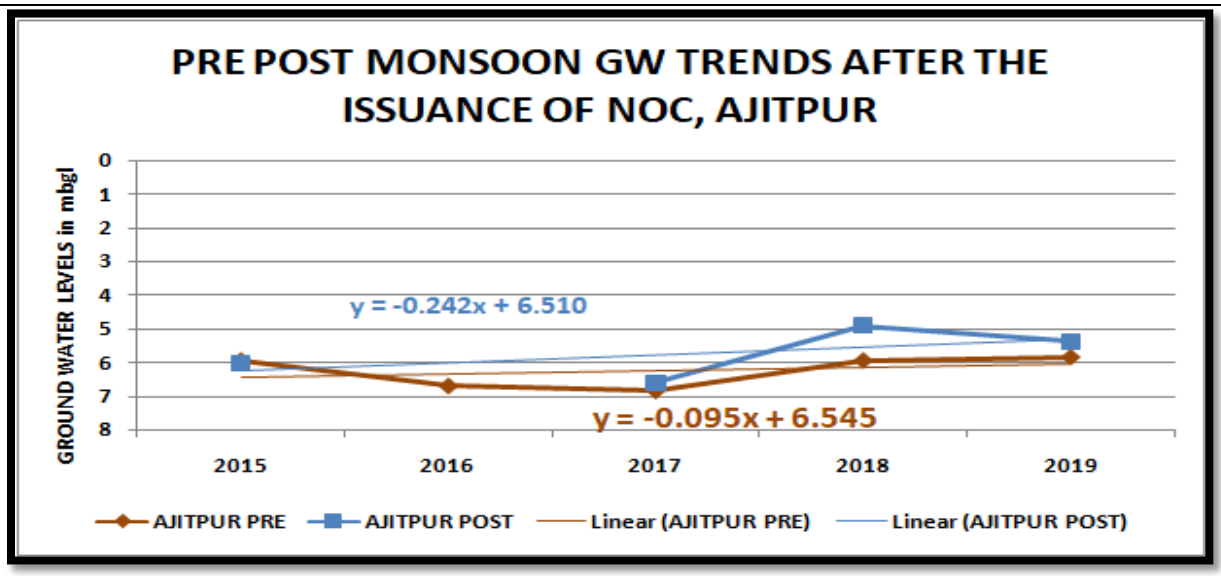
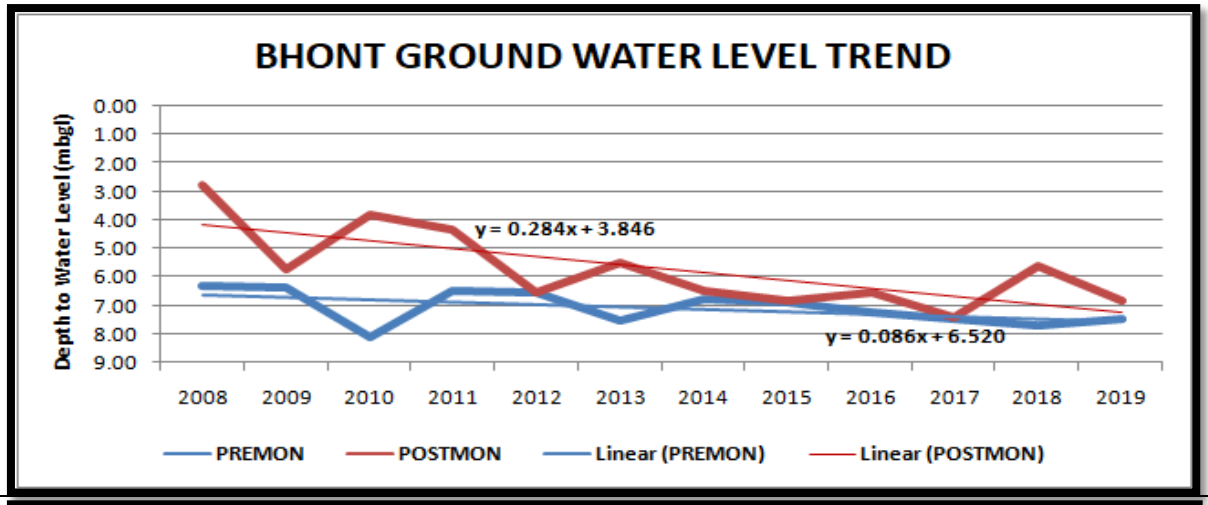
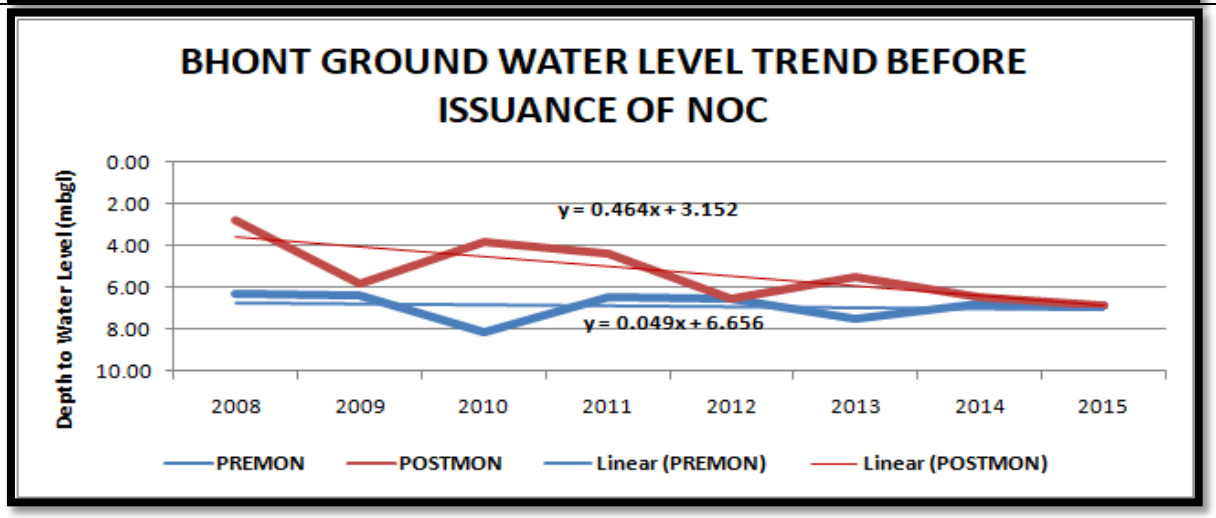

PRE POST MONSOON GW TRENDS AFTER THE ISSUANCE OF NOC, AJITPUR
GROUND WATER LEVELS in mbgl
0
1
2
3
4
5
6
7
8
y = -0.242x + 6.510
y = -0.095x + 6.545
2015
2016
2017
2018
2019
AJITPUR PRE
AJITPUR POST
Linear (AJITPUR PRE)
Linear (AJITPUR POST)

FIG 64


BHONT GROUND WATER LEVEL TREND
Depth to Water Level (mbgl)
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
y = 0.284x + 3.846
y = 0.086x + 6.520
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
PREMON
POSTMON
Linear (PREMON)
Linear (POSTMON)


BHONT GROUND WATER LEVEL TREND BEFORE ISSUANCE OF NOC
Depth to Water Level (mbgl)
0.00
2.00
4.00
6.00
8.00
10.00
y = 0.464x + 3.152
y = 0.049x + 6.656
2008
2009
2010
2011
2012
2013
2014
2015
PREMON
POSTMON
Linear (PREMON)
Linear (POSTMON)

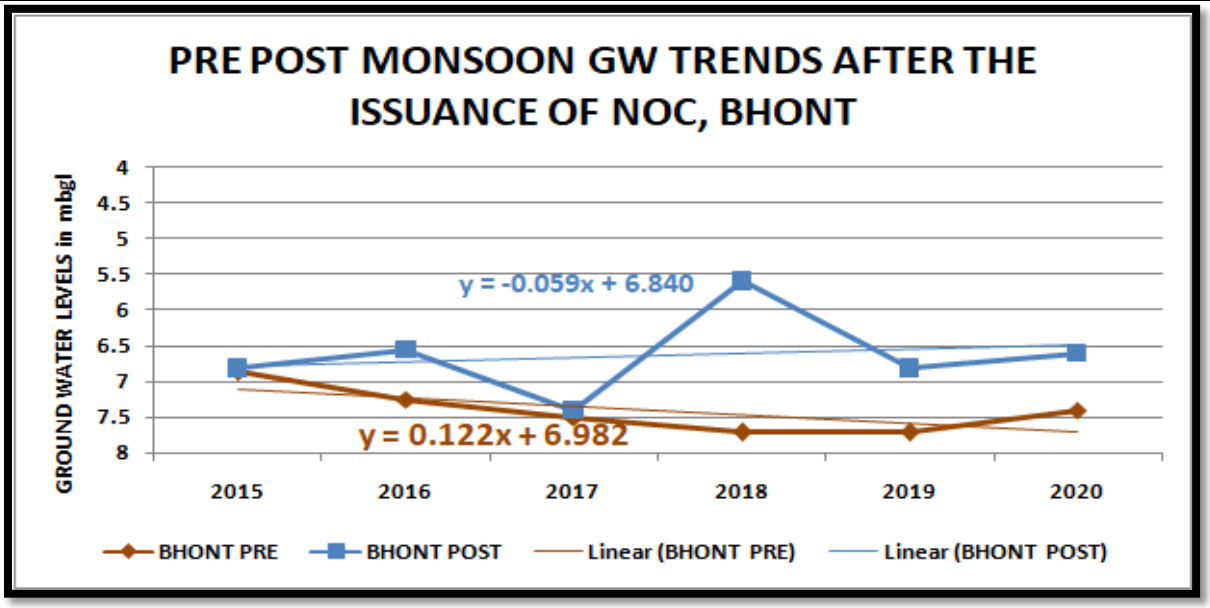
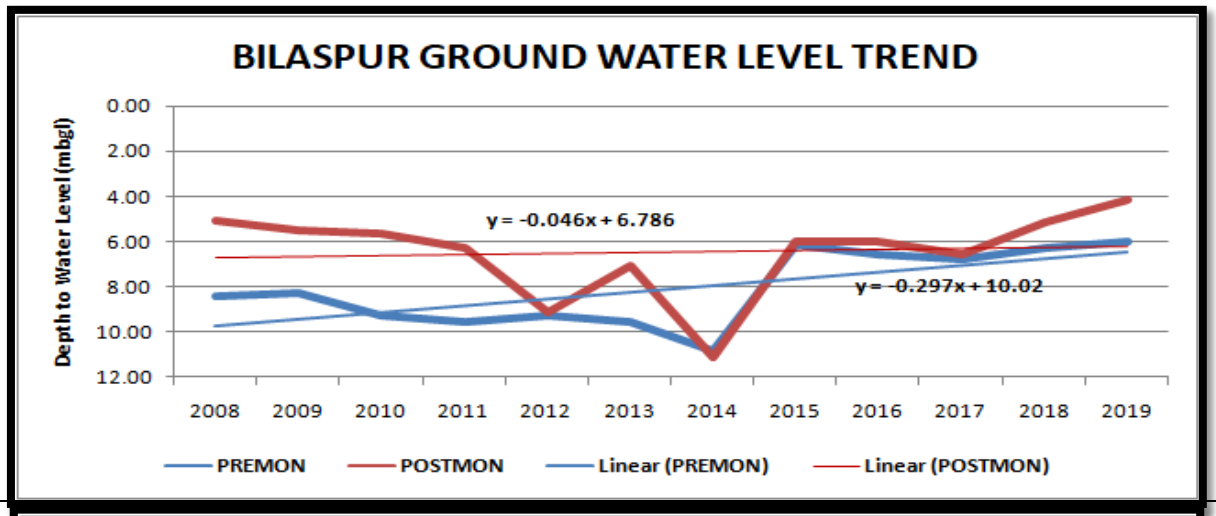
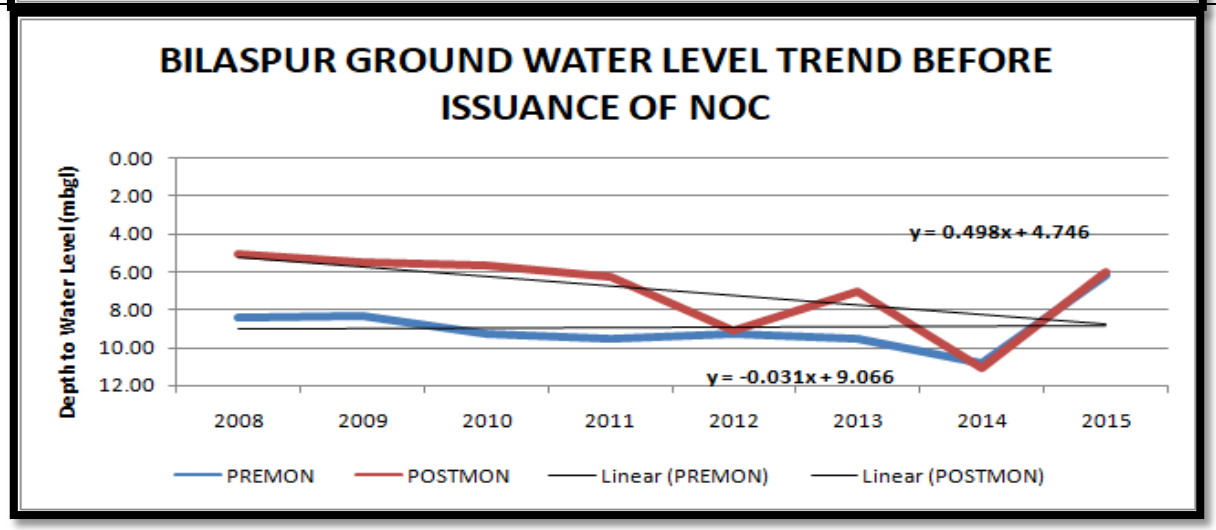

PRE POST MONSOON GW TRENDS AFTER THE ISSUANCE OF NOC, BHONT
GROUND WATER LEVELS in mbgl
4
4.5
5
5.5
6
6.5
7
7.5
8
y = -0.059x + 6.840
y = 0.122x + 6.982
2015
2016
2017
2018
2019
2020
BHONT PRE
BHONT POST
Linear (BHONT PRE)
Linear (BHONT POST)

FIG 65


BILASPUR GROUND WATER LEVEL TREND
Depth to Water Level (mbgl)
0.00
2.00
4.00
6.00
8.00
10.00
12.00
y = -0.046x + 6.786
y = -0.297x + 10.02
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
PREMON
POSTMON
Linear (PREMON)
Linear (POSTMON)


BILASPUR GROUND WATER LEVEL TREND BEFORE ISSUANCE OF NOC
Depth to Water Level (mbgl)
0.00
2.00
4.00
6.00
8.00
10.00
12.00
y = 0.498x + 4.746
y = -0.031x + 9.066
2008
2009
2010
2011
2012
2013
2014
2015
PREMON
POSTMON
Linear (PREMON)
Linear (POSTMON)

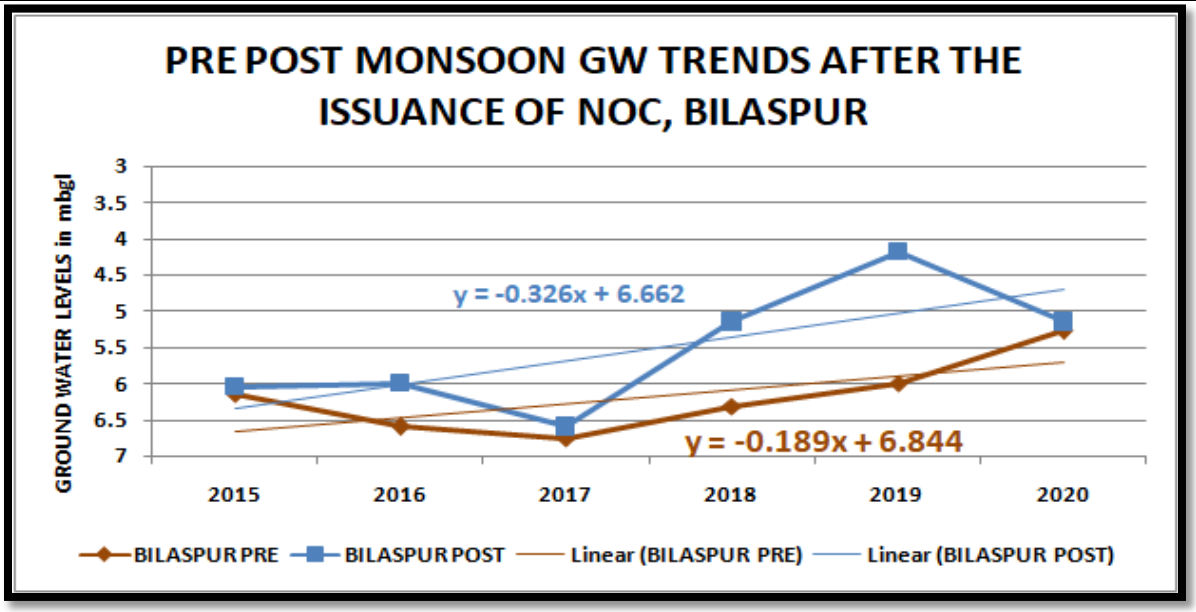
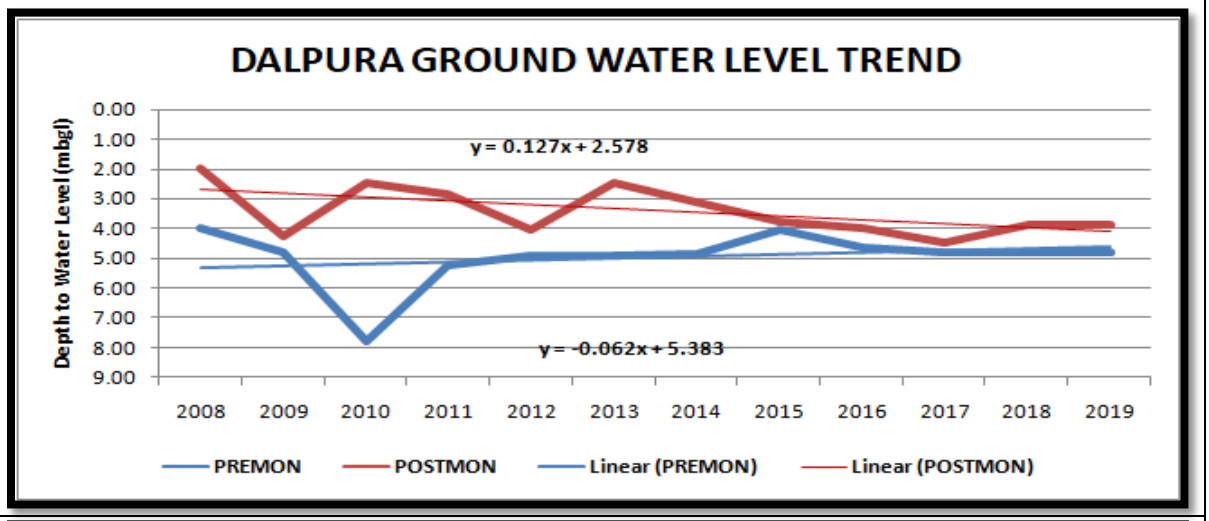
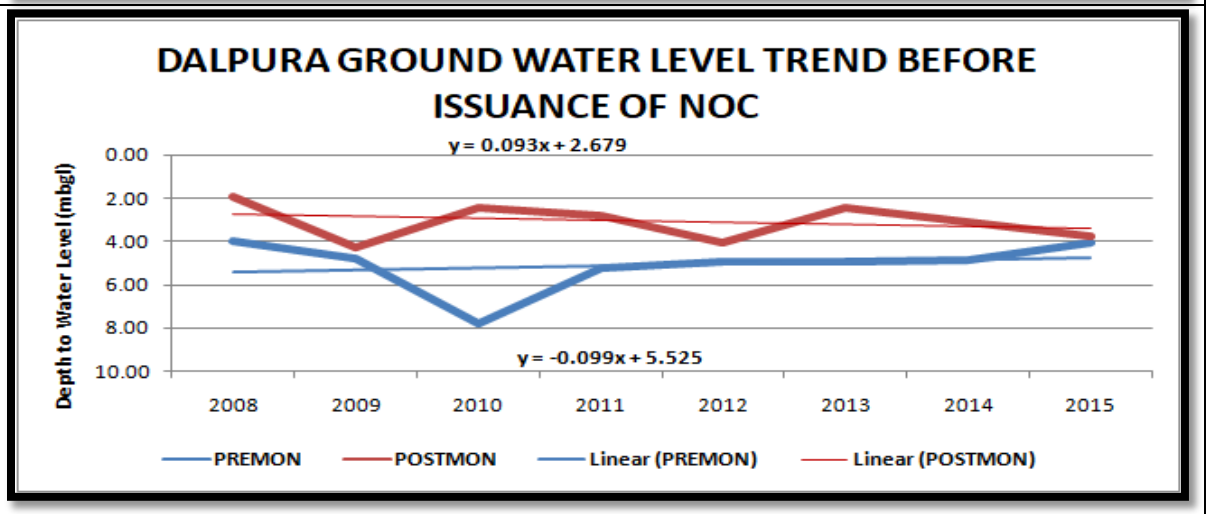

PRE POST MONSOON GW TRENDS AFTER THE ISSUANCE OF NOC, BILASPUR
GROUND WATER LEVELS in mbgl
3
3.5
4
4.5
5
5.5
6
6.5
7
y = -0.326x + 6.662
y = -0.189x + 6.844
2015
2016
2017
2018
2019
2020
BILASPUR PRE
BILASPUR POST
Linear (BILASPUR PRE)
Linear (BILASPUR POST)

FIG 66


DALPURA GROUND WATER LEVEL TREND
Depth to Water Level (mbgl)
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
y = 0.127x + 2.578
y = -0.062x + 5.383
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
PREMON
POSTMON
Linear (PREMON)
Linear (POSTMON)


DALPURA GROUND WATER LEVEL TREND BEFORE ISSUANCE OF NOC
Depth to Water Level (mbgl)
0.00
2.00
4.00
6.00
8.00
10.00
y = 0.093x + 2.679
y = -0.099x + 5.525
2008
2009
2010
2011
2012
2013
2014
2015
PREMON
POSTMON
Linear (PREMON)
Linear (POSTMON)

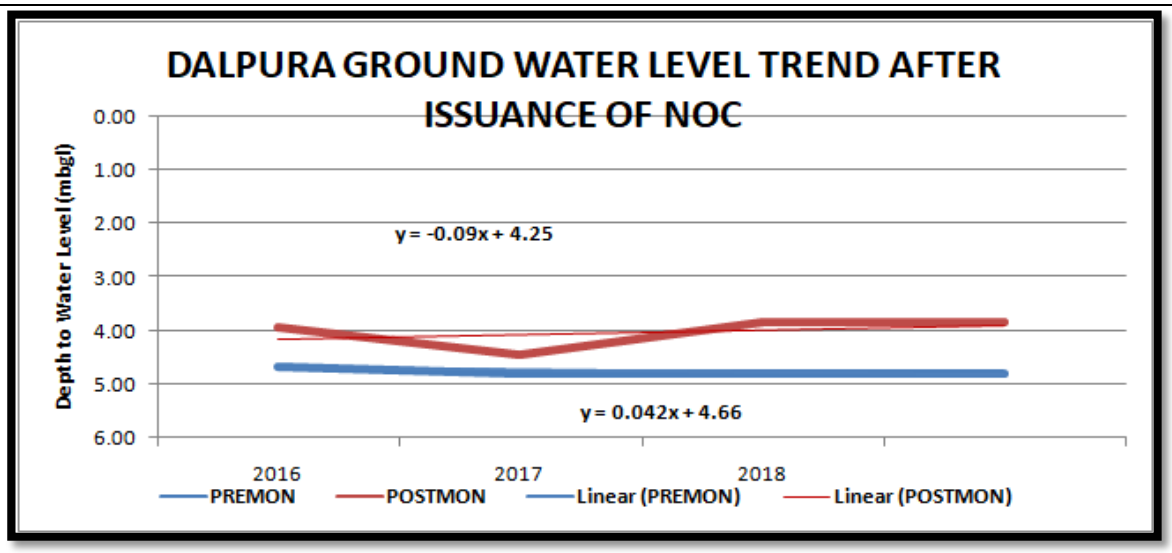
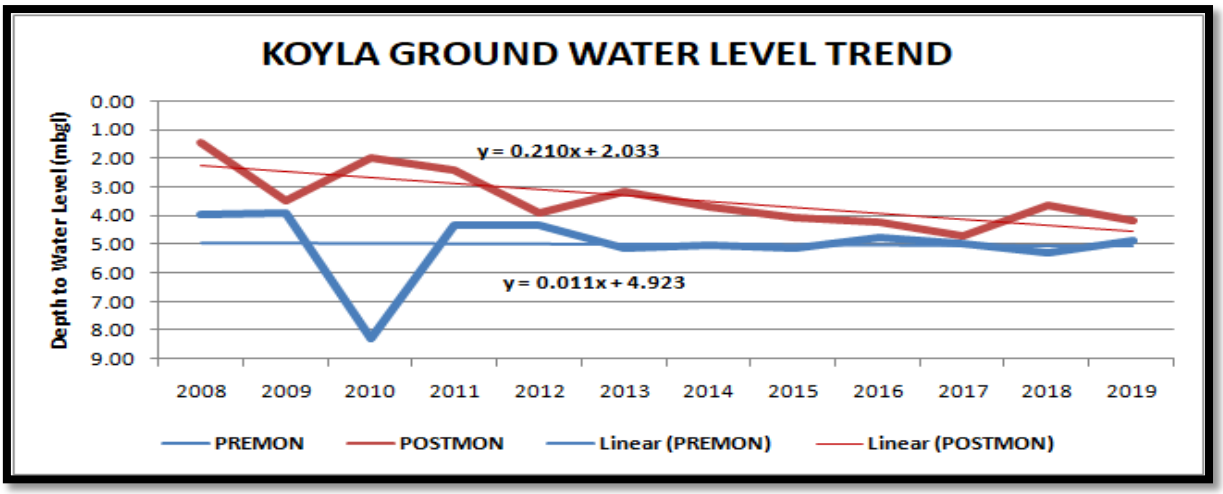
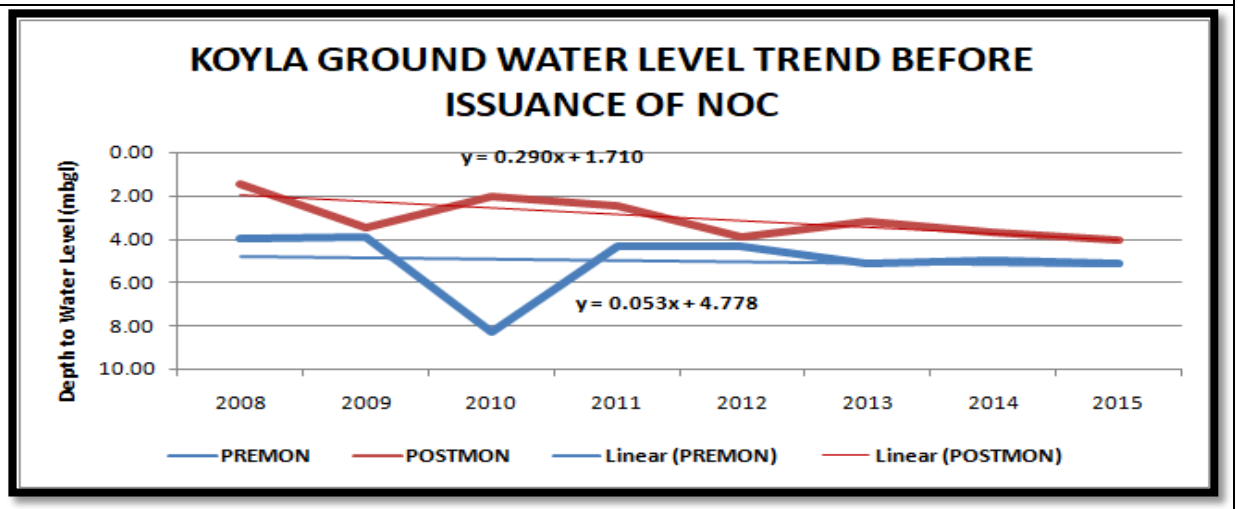

DALPURA GROUND WATER LEVEL TREND AFTER ISSUANCE OF NOC
Depth to Water Level (mbgl)
0.00
1.00
2.00
3.00
4.00
5.00
6.00
y = -0.09x + 4.25
y = 0.042x + 4.66
2016
2017
2018
PREMON
POSTMON
Linear (PREMON)
Linear (POSTMON)

FIG 67


KOYLA GROUND WATER LEVEL TREND
Depth to Water Level (mbgl)
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
y = 0.210x + 2.033
y = 0.011x + 4.923
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
PREMON
POSTMON
Linear (PREMON)
Linear (POSTMON)


KOYLA GROUND WATER LEVEL TREND BEFORE ISSUANCE OF NOC
Depth to Water Level (mbgl)
0.00
2.00
4.00
6.00
8.00
10.00
y = 0.290x + 1.710
y = 0.053x + 4.778
2008
2009
2010
2011
2012
2013
2014
2015
PREMON
POSTMON
Linear (PREMON)
Linear (POSTMON)

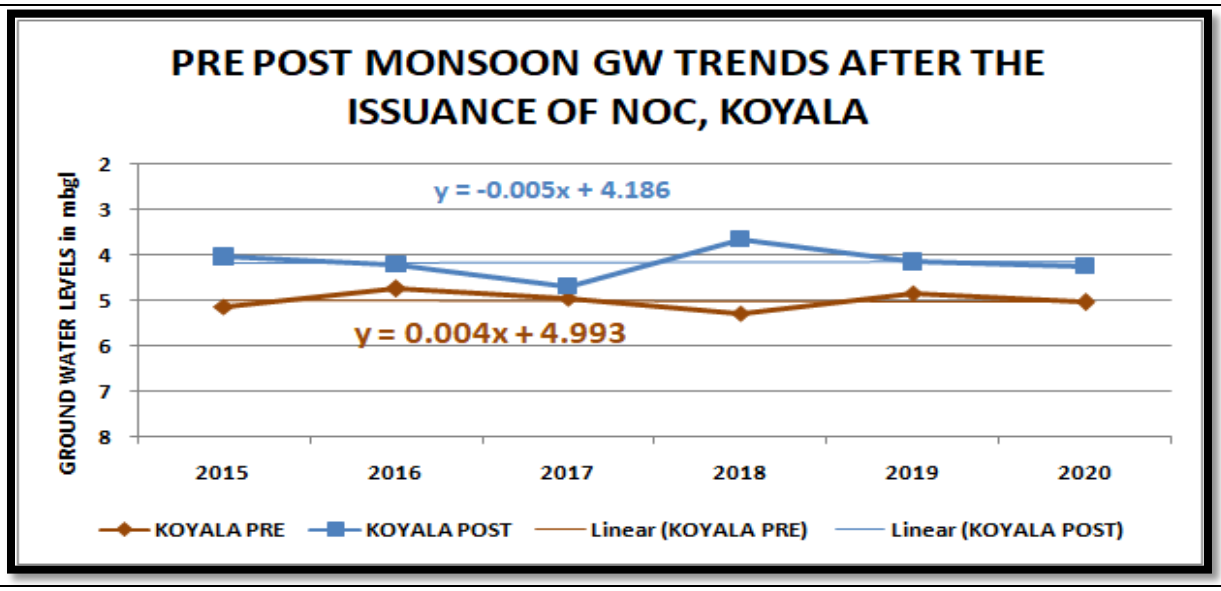
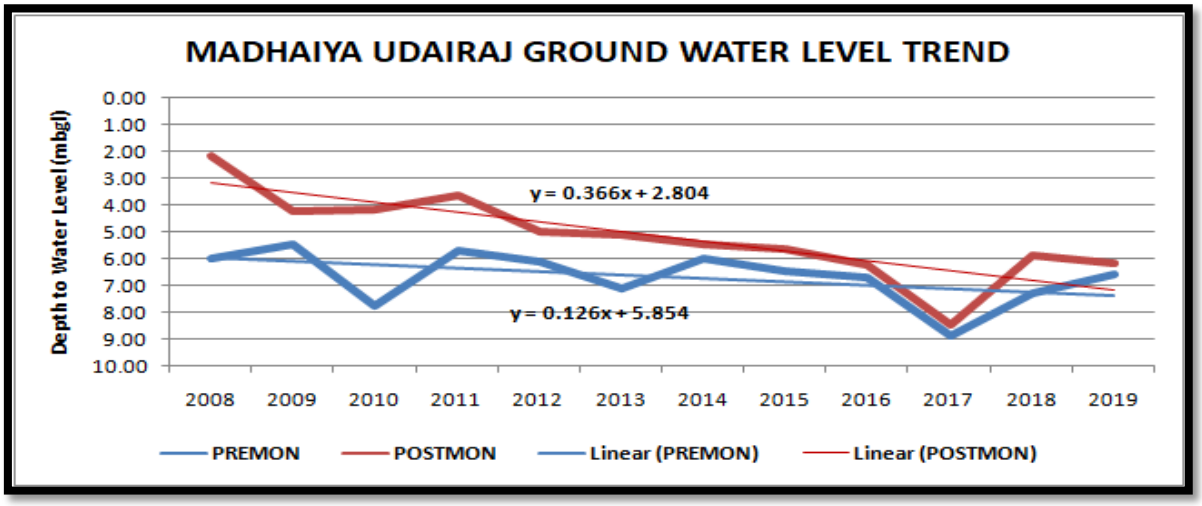
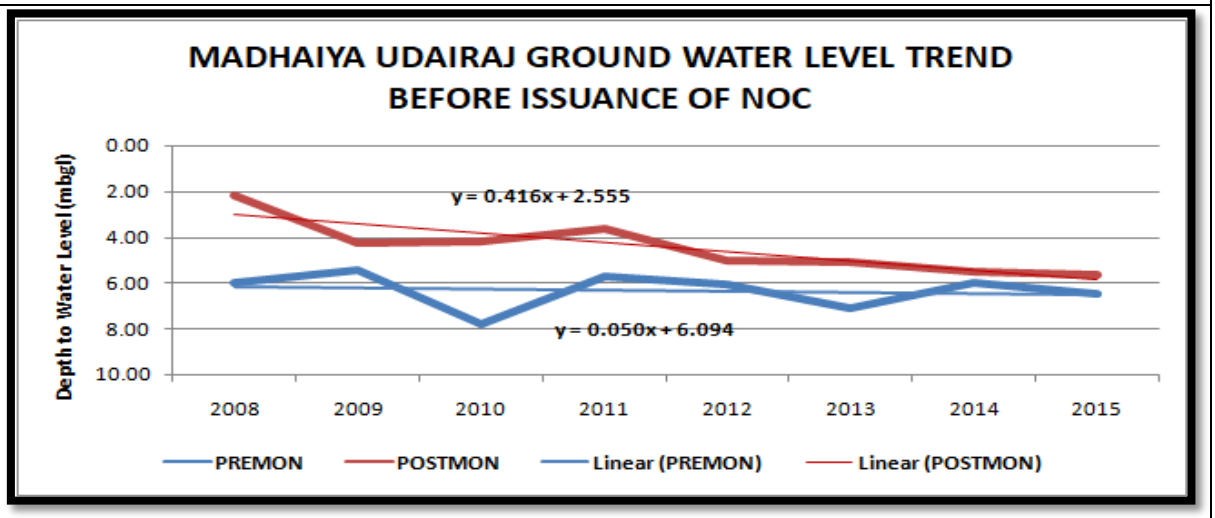

PRE POST MONSOON GW TRENDS AFTER THE ISSUANCE OF NOC, KOYALA
GROUND WATER LEVELS in mbgl
2
3
4
5
6
7
8
y = -0.005x + 4.186
y = 0.004x + 4.993
2015
2016
2017
2018
2019
2020
KOYALA PRE
KOYALA POST
Linear (KOYALA PRE)
Linear (KOYALA POST)

FIG 68


MADHAIYA UDAIRAJ GROUND WATER LEVEL TREND
Depth to Water Level (mbgl)
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
y = 0.366x + 2.804
y = 0.126x + 5.854
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
PREMON
POSTMON
Linear (PREMON)
Linear (POSTMON)


MADHAIYA UDAIRAJ GROUND WATER LEVEL TREND
BEFORE ISSUANCE OF NOC
Depth to Water Level (mbgl)
0.00
2.00
4.00
6.00
8.00
10.00
y = 0.416x + 2.555
y = 0.050x + 6.094
2008
2009
2010
2011
2012
2013
2014
2015
PREMON
POSTMON
Linear (PREMON)
Linear (POSTMON)

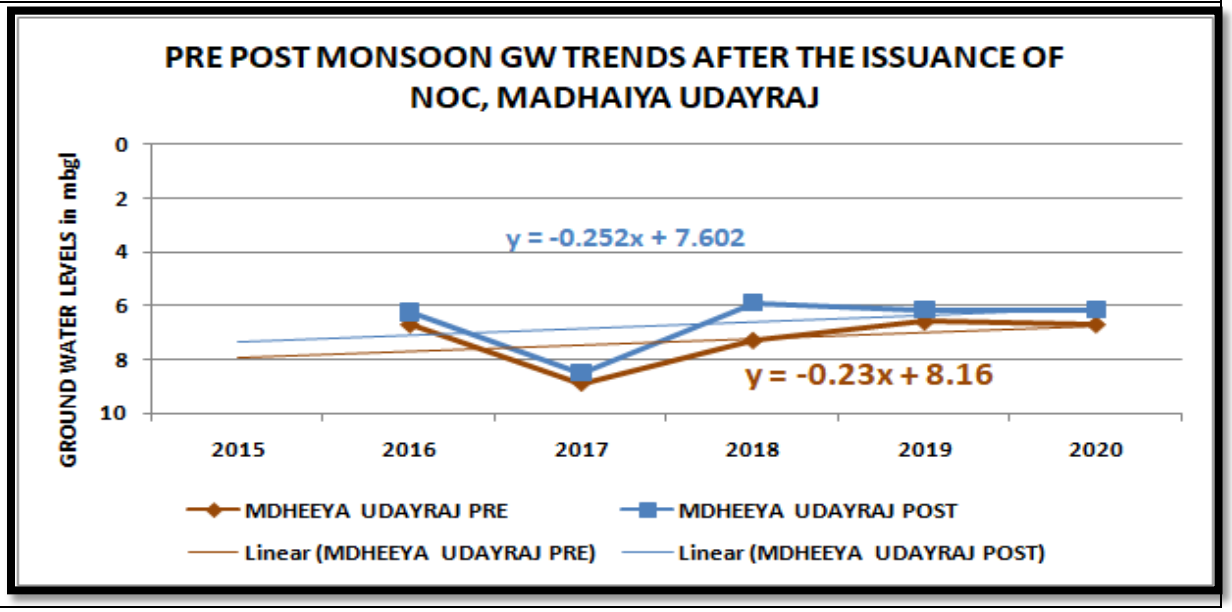
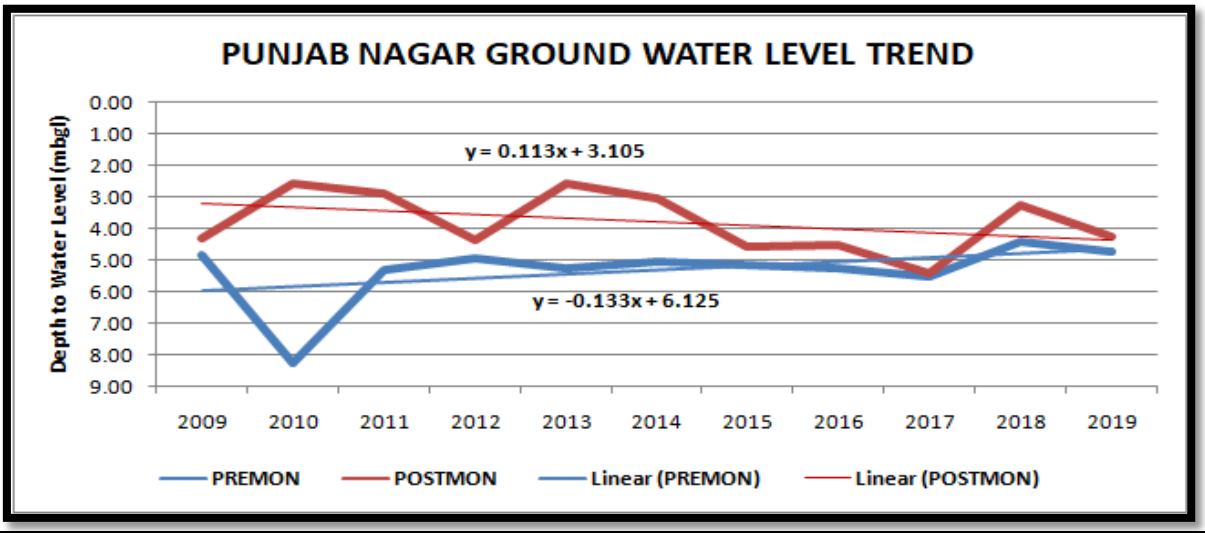
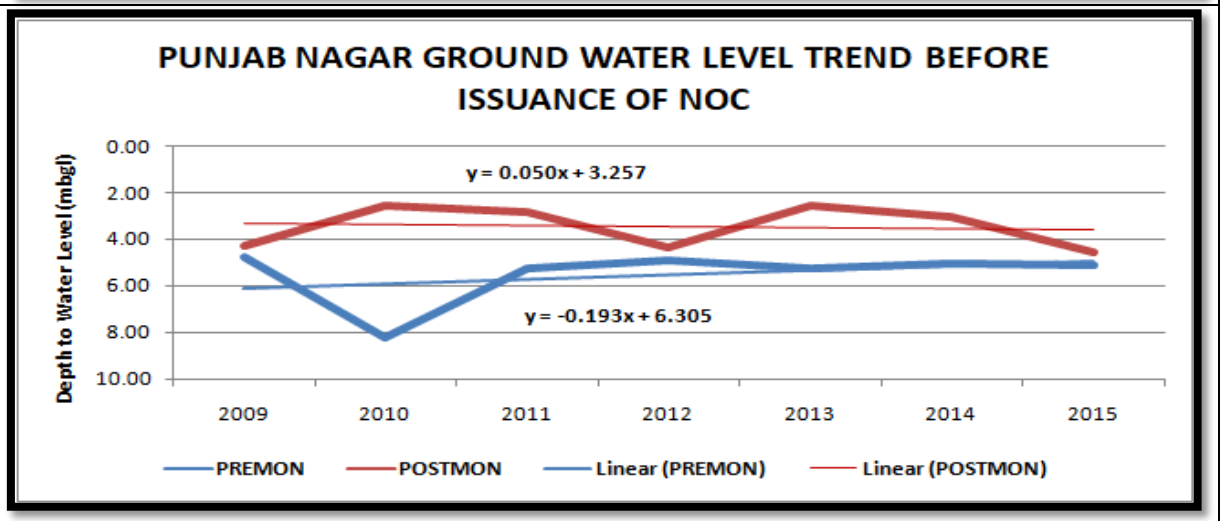

PRE POST MONSOON GW TRENDS AFTER THE ISSUANCE OF
NOC, MADHAIYA UDAYRAJ
GROUND WATER LEVELS in mbgl
0
2
4
6
8
10
y = -0.252x + 7.602
y = -0.23x + 8.16
2015
2016
2017
2018
2019
2020
MDHEEYA UDAYRAJ PRE
MDHEEYA UDAYRAJ POST
Linear (MDHEEYA UDAYRAJ PRE)
Linear (MDHEEYA UDAYRAJ POST)

FIG 69


PUNJAB NAGAR GROUND WATER LEVEL TREND
Depth to Water Level (mbgl)
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
y = 0.113x + 3.105
y = -0.133x + 6.125
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
PREMON
POSTMON
Linear (PREMON)
Linear (POSTMON)


PUNJAB NAGAR GROUND WATER LEVEL TREND BEFORE ISSUANCE OF NOC
Depth to Water Level (mbgl)
0.00
2.00
4.00
6.00
8.00
10.00
y = 0.050x + 3.257
y = -0.193x + 6.305
2009
2010
2011
2012
2013
2014
2015
PREMON
POSTMON
Linear (PREMON)
Linear (POSTMON)

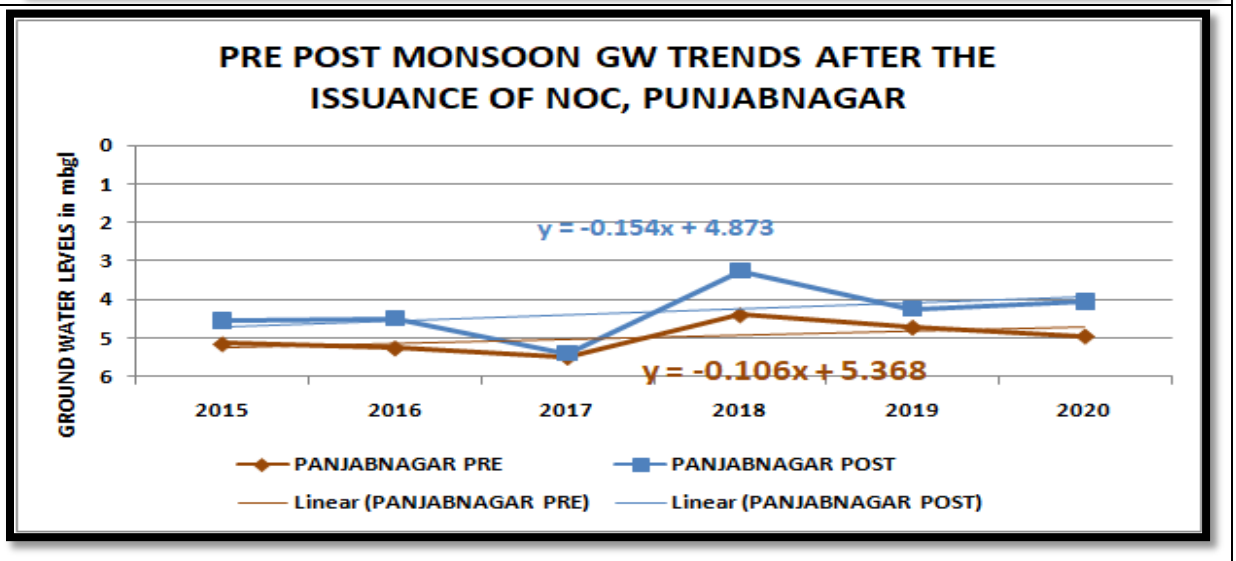
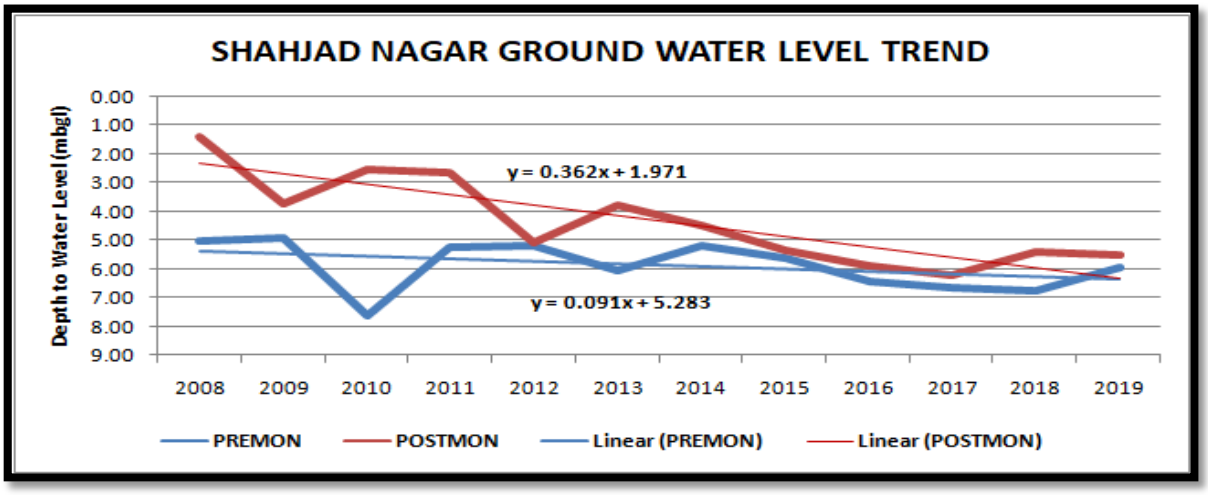
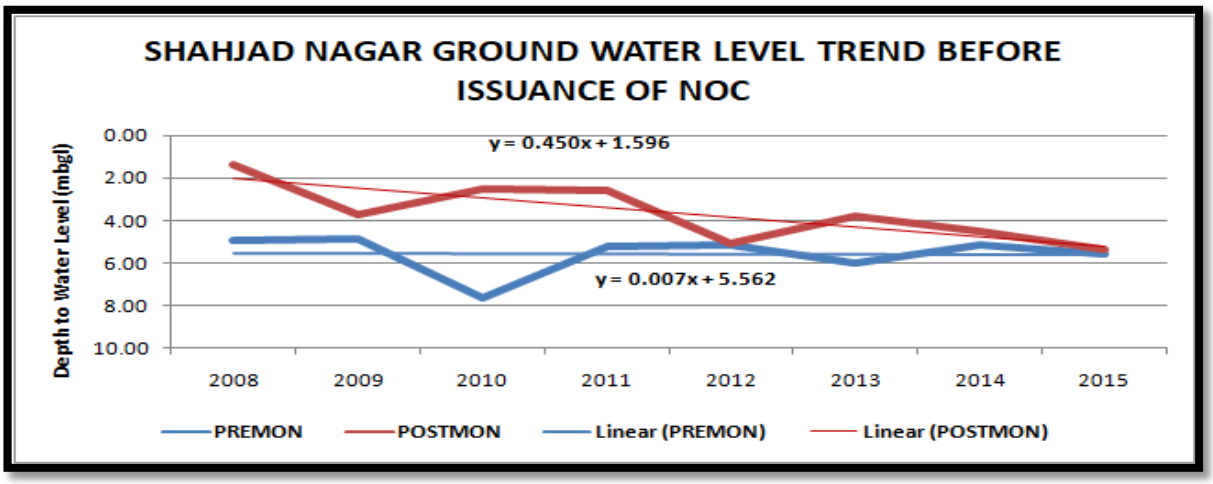

PRE POST MONSOON GW TRENDS AFTER THE ISSUANCE OF NOC, PUNJABNAGAR
GROUND WATER LEVELS in mbgl
0
1
2
3
4
5
6
y = -0.154x + 4.873
y = -0.106x + 5.368
2015
2016
2017
2018
2019
2020
PANJABNAGAR PRE
PANJABNAGAR POST
Linear (PANJABNAGAR PRE)
Linear (PANJABNAGAR POST)

FIG 70


SHAHJAD NAGAR GROUND WATER LEVEL TREND
Depth to Water Level (mbgl)
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
y = 0.362x + 1.971
y = 0.091x + 5.283
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
PREMON
POSTMON
Linear (PREMON)
Linear (POSTMON)


SHAHJAD NAGAR GROUND WATER LEVEL TREND BEFORE ISSUANCE OF NOC
Depth to Water Level (mbgl)
0.00
2.00
4.00
6.00
8.00
10.00
y = 0.450x + 1.596
y = 0.007x + 5.562
2008
2009
2010
2011
2012
2013
2014
2015
PREMON
POSTMON
Linear (PREMON)
Linear (POSTMON)

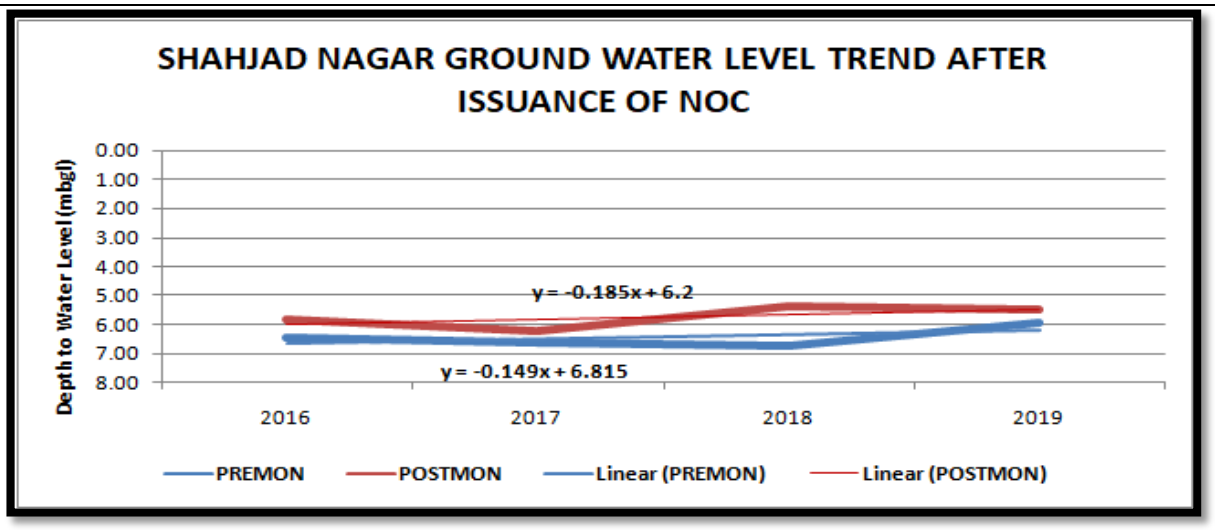
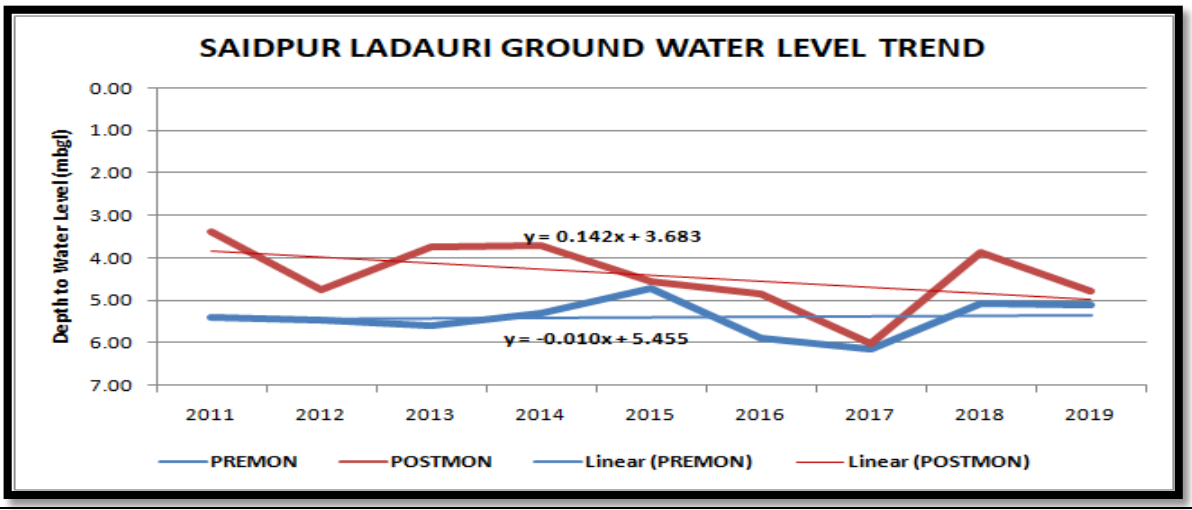
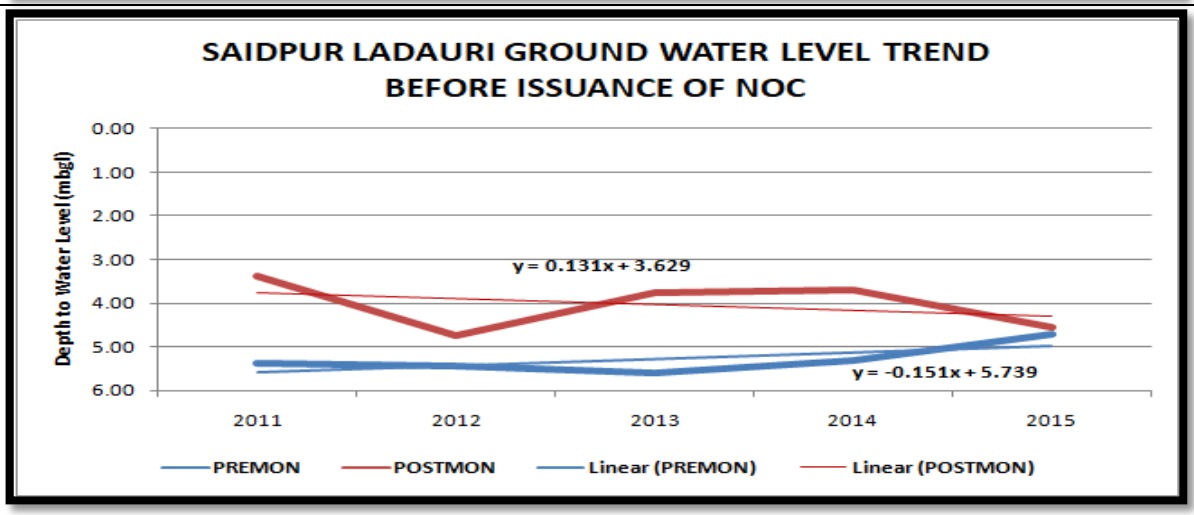
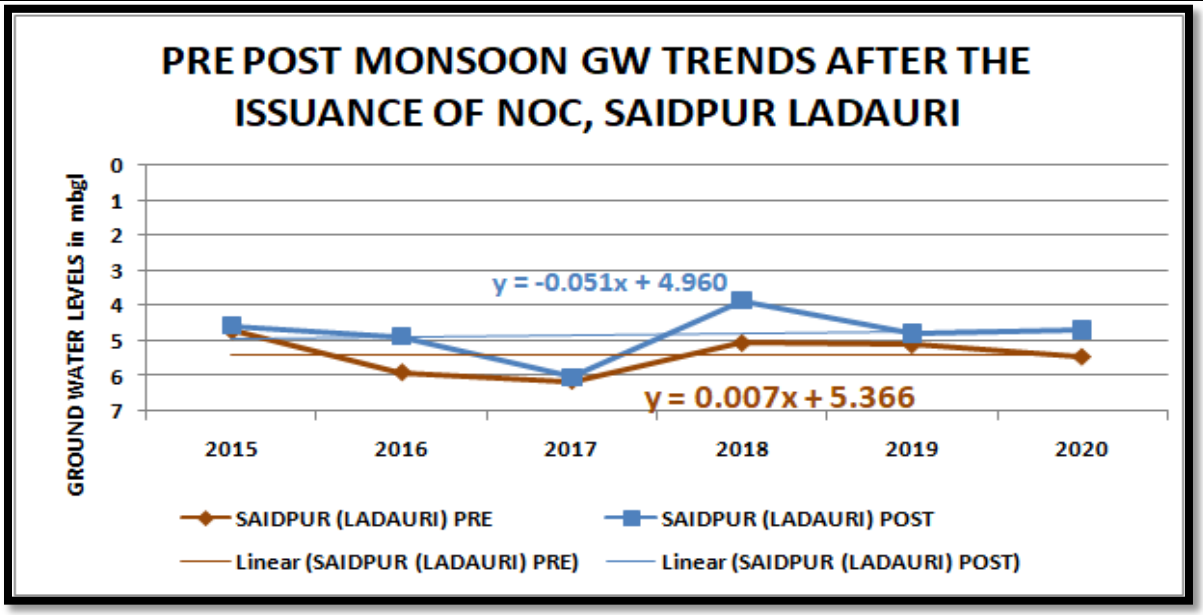

SHAHJAD NAGAR GROUND WATER LEVEL TREND AFTER ISSUANCE OF NOC
Depth to Water Level (mbgl)
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
y = -0.185x + 6.2
y = -0.149x + 6.815
2016
2017
2018
2019
PREMON
POSTMON
Linear (PREMON)
Linear (POSTMON)

FIG 71


SAIDPUR LADAURI GROUND WATER LEVEL TREND
Depth to Water Level (mbgl)
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
y = 0.142x + 3.683
y = -0.010x + 5.455
2011
2012
2013
2014
2015
2016
2017
2018
2019
PREMON
POSTMON
Linear (PREMON)
Linear (POSTMON)


SAIDPUR LADAURI GROUND WATER LEVEL TREND
BEFORE ISSUANCE OF NOC
Depth to Water Level (mbgl)
0.00
1.00
2.00
3.00
4.00
5.00
6.00
y = 0.131x + 3.629
y = -0.151x + 5.739
2011
2012
2013
2014
2015
PREMON
POSTMON
Linear (PREMON)
Linear (POSTMON)


PRE POST MONSOON GW TRENDS AFTER THE
ISSUANCE OF NOC, SAIDPUR LADAURI
GROUND WATER LEVELS in mbgl
0
1
2
3
4
5
6
7
y = -0.051x + 4.960
y = 0.007x + 5.366
2015
2016
2017
2018
2019
2020
SAIDPUR (LADAURI) PRE
SAIDPUR (LADAURI) POST
Linear (SAIDPUR (LADAURI) PRE)
Linear (SAIDPUR (LADAURI) POST)

a. Overall (historical) Pre and Post monsoon water level trends

Premonsoon water level Trends (2008-2020) - indicate that during premonsoon period, out of nine stations analysed **four GWM stations viz Bilaspur, Dalpura, Panjabnagar and Saidnagar, show a rising trend** whereas six GWMS show a declining trends ranging from 0.007 m/year (0.7 cm/year) at Shahjadnagar to 0.148 m/year (14.8 cm/year) at Chamraua (Table 27 b and Fig 63 to 71).

Postmonsoon water level Trends (2008-2020)- during postmonsoon period the **rising trend is observed only at one station** namely Bilaspur. For remaining nine GWM Stations a falling trend ranging from 0.097 m/year (9.7 cm/year) to 0.450 m/year (45.0 cm/year) is observed.

b. Pre and post monsoon water level trends PRIOR TO ISSUANCE OF NOC

Premonsoon and postmonsoon water level trends for the period 2008 to 2019 i.e. prior to ground water recharge measures by the industry are shown in Table 27 a & b (Fig 63 to 71).

Premonsoon water level Trends (2008-2016) - During premonsoon period, out of nine stations analysed **four GWM stations** viz Bilaspur, Dalpura, Panjabnagar and Saidnagar, **show a rising trend** ranging from 0.031 m/year to 0.193 m/year, whereas five GWMS show a declining trends ranging from 0.007 m/year (0.70 cm/year) at Shahjadnagar to 0.053 m/year (5.3 cm/year) at Koyla.

Postmonsoon water level Trends (2008-2016) - Postmonsoon trends prior to issuance of NOC and ground water recharge measures indicate the **rising trend only at one station** namely Panjabnagar. Falling trends are observed for remaining eight GWM Stations, ranging from 0.093 m/year (9.3 cm/year) to 0.498 m/year (49.8 cm/year). Only two stations show a declining trend of less than 20 cm/year. Other six stations show significant trends of more than 20 cm/year and as high as 49.8 cm/year.

c. Pre and post monsoon water level trends AFTER THE ISSUANCE OF NOC

After the issuance of NOC from CGWA, industry has adopted several measures for rain water harvesting and ground water recharge. To bring out the impacts of these interventions,

Premonsoon and postmonsoon water level trends were analysed for the period 2017 to 2020. Pre and post monsoon trend values for the GWMS are shown in Table 27 b and Fig 63 to 71.

Premonsoon water level Trends (2017-2020) - During premonsoon period, out of ten stations analysed **five GWM stations** viz Bilaspur, Ajitpur (near the premises), Madhaiya Udairaj, Shahjadnagar and Panjab nagar, **show a rising trend** ranging from 0.095 m/year to 0.230 m/year, whereas four GWMS show a declining trends ranging from 0.004 m/year (0.40 cm/year) at Koyla to 0.138 m/year (13.8 cm/year) at Chamraua.

Postmonsoon water level Trends (2017-2020) - **Postmonsoon trends after the issuance of NOC and ground water recharge measures indicate a rising ground water level trends at all the GWM Stations**, ranging from 0.005 m/year (0.50 cm/year) to 0.326 m/year (432.6 cm/year) at Bilaspur. **None of the stations show a declining trend**. There is slight decline in rising trends as compared to that of period 2008-2019.

9.3.6. Inferences drawn

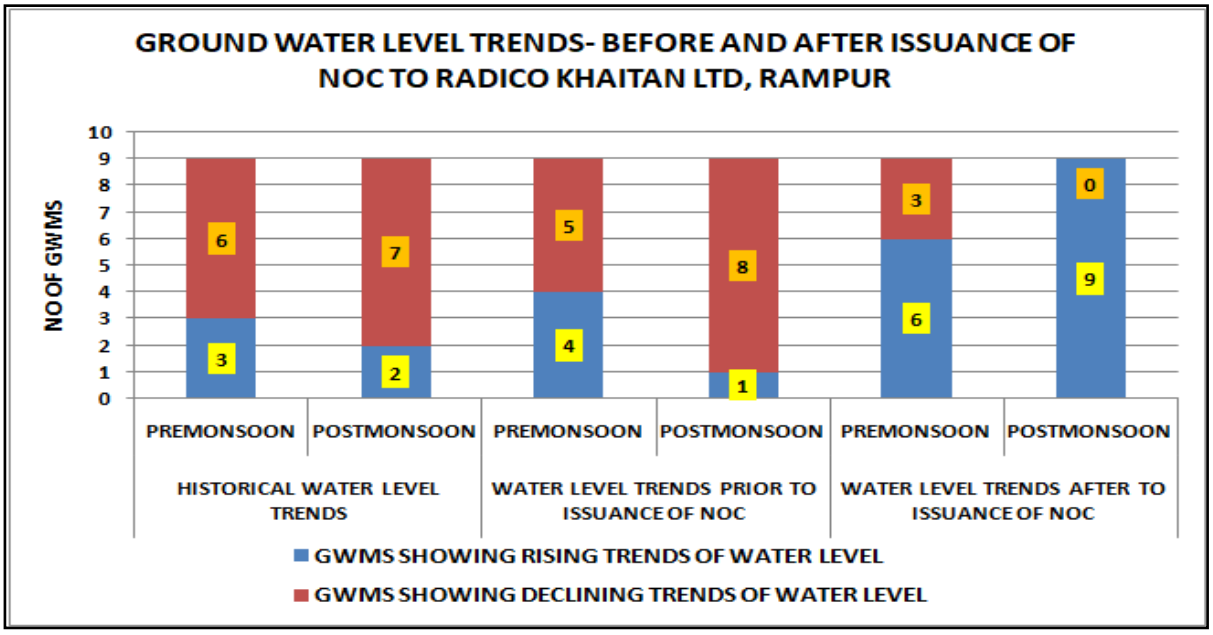
Detailed analysis of ground water level trends of all the monitoring stations in the study area indicate that the overall annual, pre and post monsoon trends in the entire study area has

- The **annual water level trends** observed at all the six piezometers of Radico Khaitan Ltd **are showing rising trends ranging from 0.365 m/year at Hitachi Land to 0.620 m/year as observed at Madhaiya piezometer**. Falling trend is not observed at any piezometer in the premises or in the buffer zone.
- Annual ground water trends at eight out of ten GWM stations show declining trends for the period of 2008 to 2020. Only two stations at Bilaspur (Bilaspur block) and Panjabnagar (Chamraua block) show a rise in water level trends for the last 10 to 11 years. All the remaining eight GWMS show a long term declining trend of ground water level trends, ranging from 0.014 m/year (at Dalpura) to 0.234 m/year at Chamraua (Table 24).
- Analysis of water level trends for 2008-2016 (prior to issuance of NOC), indicates that **ground water level situation since 2008 was showing a declining trend in general upto 2016**. Eight out of ten stations were showing declining trends of water level.
- The trend analysis of water levels since 2017, that is after issuance of NOC and ground water recharge measures adopted by industry show a remarkable improvement in ground

water scenario. Post monsoon Water level trends since 2017 and upto 2020 indicate that **all the GWMS (for Dalpura and Shahjadnagar stations trends for 2017-2019 has been taken as data for 2020 was not available) are showing rising water level trends (Table 27 b)**. Rising water level trends are ranging from 0.128 m/year (12.8 cm/year) at Koyla GWMS which is located in northern part of study area to 0.734 m/year at Madhaiya GWMS which is located in the southeastern parts of the study area.

- Pre and post monsoon water level trends (Table 27 a & b) also indicate that there is much improvement in ground water scenario since the interventions by industry for ground water recharge.
- During premonsoon period for period of 2008 to 2016 it is observed that five GWMS show a declining trend and five show rising trend. Ground water level trends during the premonsoon period of 2017-2020 also show that five stations show a declining trend of water levels and five stations show a rising trend.
- **During post monsoon period for period of 2008 to 2016 (prior to issuance of NOC) it is observed that nine GWMS show a declining trends and only one station shows a rising trends, whereas, water level trends during the period of 2017-2020, after ground water measures by industry, all the stations show a rising trend of water levels (Table 27 b).**
- Fig-72 below shows number of GWMS stations showing rising or declining trends for different periods of prior and after the issuance of NOC to the industry.

FIG 72



- Study revealed that maximum area **during 2016 post monsoon period falls under water level range of 5 to 6 mbgl** as seen in the map, whereas, **during post monsoon period of 2019 maximum area falls under depth range of 4.5 to 5.5 mbgl**. The maps show an improvement from year 2016 to 2019.

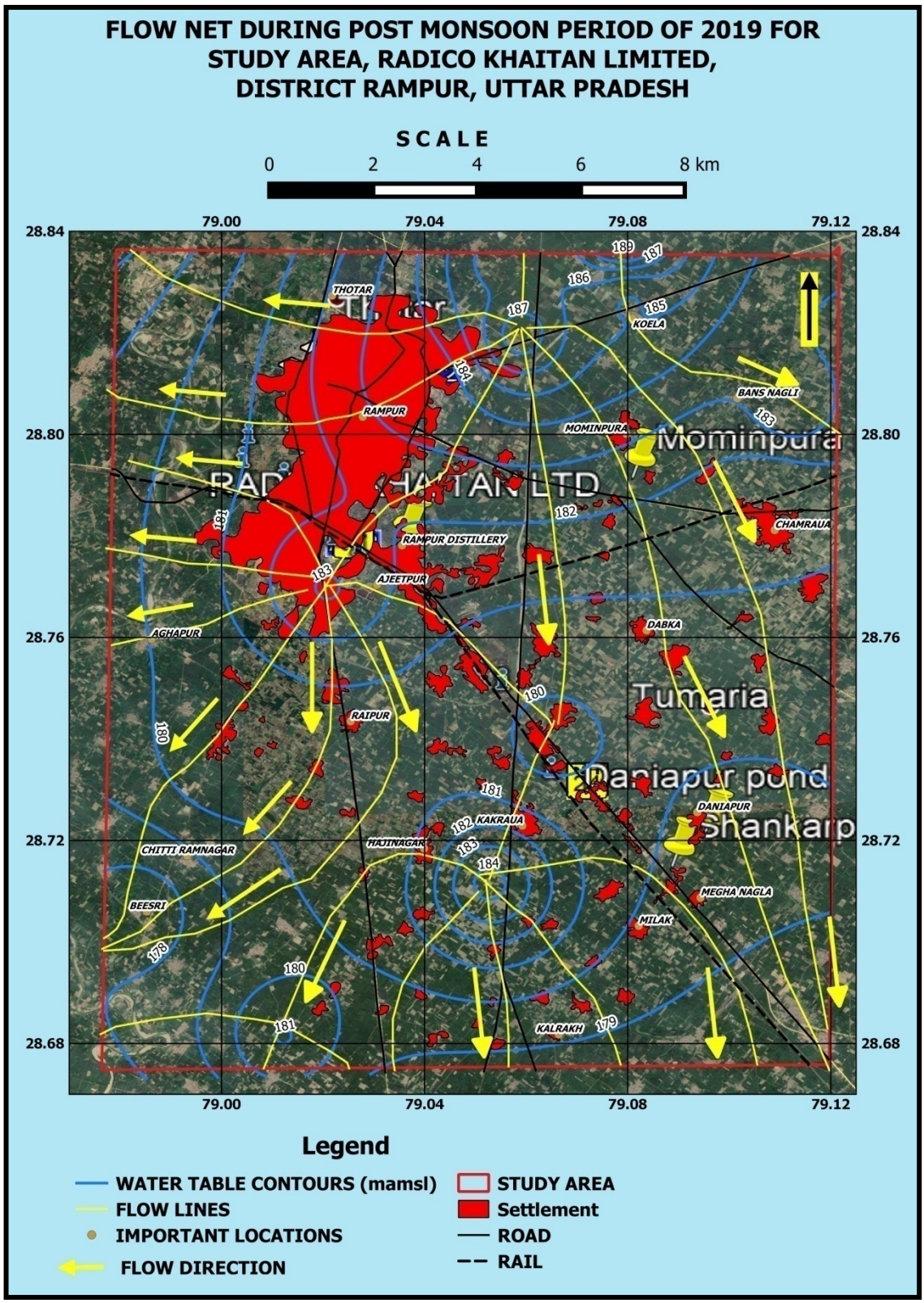
9.4. FLOW NET ANALYSIS (GROUND WATER FLOW DIRECTION)

A flow net is a graphical solution to the equations of steady state groundwater flow. A flow net consists of two sets of lines which must always be orthogonal (perpendicular to each other): flow lines, which show the direction of groundwater flow, and equipotential lines (lines of constant head), which show the distribution of potential energy.

For the study area, post monsoon water level data was collected from ground water monitoring stations, for November, 2019. Based on the elevation of ground level at piezometer station's site (in meters above mean sea level), the water table contour map was prepared for the study area. Subsequently ground water flow lines have been drawn based on water table contours. A plan view of flow net by contouring using field heads (water table data) and drawing flow lines perpendicular are shown in Fig- 73.

- From Fig 73 it is observed that there are two crests showing water table contour value as 189 and 183 mamsl (meter above mean sea level) at Nawada in the north of Koela in the northern part and near Rampur Distillery respectively.
- The ground water flow in the study area is from northern boundary towards south, west and southeastern directions. **Major ground water flow is towards south**, but the gradient changes (reduces) towards south up to Daniapur.
- In the northwestern part of the study area, ground water flows from Khound in the east towards Kosi river in west. The ground water gradient in this part is about 1.45 m/km.
- In the northeastern parts ground water flows from Khound towards Dabka and Shahjadnagar, where gradient is about 1.5 m/km. After this point, gradient further decreases to 0.5 m/km and about 0.30 m/km further south around Daniapur and Kalrakh.
- There is a crest at Madhaiya Udayraj where water table elevation is recorded as 184 mamsl.
- Another crest is observed at Rampur town around Distillery. The water table elevation is 183 mamsl and gradient is about 0.8 m/km in west, south and east directions (especially towards south).
- Lowest ground water elevation is 178 mamsl recorded at Beesri in the southwestern part of the study area. Entire ground water flows towards Kosi river flowing west of study area or towards Ramganga river in the south.

FIG 73


FLOW NET DURING POST MONSOON PERIOD OF 2019 FOR
STUDY AREA, RADICO KHAITAN LIMITED,
DISTRICT RAMPUR, UTTAR PRADESH
SCALE
0 2 4 6 8 km
79.00
79.04
79.08
79.12
28.84
28.80
28.76
28.72
28.68
THOTAR
KOELA
RAMPUR
MOMINPURA
BANS NAGLI
RAMPUR DISTILLERY
AJEETPUR
CHAMRAUA
AGHAPUR
DABKA
RAIPUR
DANIAPUR
KAKRAUA
HAJINAGAR
CHITTI RAMNAGAR
BEESRI
MEGHA NAGLA
MILAK
KALRAKH
Legend
WATER TABLE CONTOURS (mamsl)
FLOW LINES
IMPORTANT LOCATIONS
FLOW DIRECTION
STUDY AREA
Settlement
ROAD
RAIL

10. IMPACTS OF GROUND WATER RECHARGE MEASURES TAKEN BY INDUSTRY ON SOCIO ECONOMIC DEVELOPMENT IN THE BUFFER ZONE

The precise estimation of ground water scenario and irrigation potential is prerequisite for proper planning and execution for socio-economic development in the area. Water conservation and recharge measures also have positive impact on the socio economic development of the population living in the area around the industry, by way of improving cropping intensity, change in land use pattern, sustainability of the groundwater abstraction structures and reduction in the power consumed for groundwater withdrawal. The impact of the interventions adopted by Rampur Distillery is evident as discussed below.

- The impacts of ground water recharge measures have resulted in improvement in ground water regime as discussed in earlier chapters. The water levels have shown rising trends. The augmentation of ground water resources has resulted in sustainability of ground water abstraction structures and overall improvement of ecology of the area.
- The reduced heads, due to rise in water levels, has lead to reduction in pumping energies thus saving money for the farmers.
- The area has a network of canal system but as per the information from locales water is not being released in the canals for last several years. Thus ground water sustainability has helped farmers in enhancing cropping intensity as well as irrigation intensity. This has added to the livelihood and income of the farmers.
- The plantation of poplar trees is very commonly observed in the area and cultivation of khariff, wheat and sugarcane is common in the area. But augmentation of ground water reserves due to measures adopted by Radico Khaitan Ltd, are supporting these water intensive plantation, which otherwise would have lead to significant depletion of the ground water resources.
- Fishery has also been adopted as livelihood by villagers after the renovation and repair of ponds.

11. SUMMARY OF WATER AUDIT REPORT

Water audit is an effective management tool for minimizing losses, optimizing various uses and thus enabling considerable conservation of water. Thus, RADICO KHAITAN LTD, RAMPUR has entrusted PHDCCI for conducting water audit in their plant premises. This detailed audit report was submitted during Jun, 2021. The report discusses the existing water scenario at RADICO KHAITAN LTD, RAMPUR and its potential water savings and how the basic water audit approach has been applied to water conservation in line with the guidelines of CGWA. Few highlights of the report are given below.

11.1. Water Consumption Pattern

- It is evident from the water balance diagram that major water consuming area is 42% fresh water consumption & 58% as recycled soft water. Process accounts for 21%, Utility accounts for 11%, 15% accounts for DM water, 50% accounts for soft water, 2% for gardening and almost 1% for domestic accounts.
- About 10,99,208 KL/year wastewater is generated in the plant and is transferred to Condensing Polishing Unit(CPU) & ETP from which a part of treated water is being mixed with water from bore wells and passed through DM water treatment & softener so that recycled soft water can be used as make up water for Cooling tower, Boiler, cleaning and washing. Remaining part of treated waste water from ETP is used for horticulture in green belt.
- The evaluated pump efficiency of bore wells and other transferring pump are 52.8%, 23.3% &46.8%, respectively, which were found to be satisfactory.
- It is recommended that additional flow meters need to be installed in lines going to STP treated water and residential colony area.

11.2. Waste Water Treatment Practices

- Radico Khaitan Ltd has achieved remarkable landmarks in the field of effluent management, achieving Zero Spent Wash Discharge through various means and reduction in fresh water consumption per litre of alcohol production.

- The water treatment & Waste Water Treatment Practices in Radico Khaitan Ltd, Rampur includes borewell water, and 1 x 150 KLD STP for domestic sewage generation in the plant & ETP which collects waste water and provide treated water to be used in gardening and in utility as soft water.
- Distillery has adopted the process of reducing and recycling process to manage effluent. All the waste water generated in the plant (except from residential colony) is being transferred to CPU. There is waste water collection tank (can be called as pre-ETP treatment) in which water is stored & passed through TSS reduction system, MEE, Bio-digesters before pumping into ETP. In ETP, there is set of ROs, collection tanks and aeration tanks in which Effluent water is treated and treated water is used for horticulture.
- In the year 2002, RKL started Bio-Composting and at present they have about 52 Acres of Bio-composting. At present there is 14 Acres of covered Bio- Composting for composting in rainy season.
- RKL is one of the pioneers to accept and introduce the new Technologies. For the First Time in India they had installed the DAF System on Distillery Effluent. TSS Reduction through DAF is from 3200 PPM to 2000 PPM i.e. about 38%. It has achieved 70% reduction in overall effluent volume and targeted to have 80% reduction after stabilization of currently installed systems.

11.3. Sewage Treatment Plant

- All residential waste water is sent to 150 KLD STP installed in the plant for treatment of sewage water and treated water is utilized in gardening of cricket ground and nearby areas for vegetation and plantation.

11.4. Environmental Compliance (Related To Water)

- Radico Khaitan Ltd, Rampur does comply with the NOC for ground water withdrawal of 2600 KL/day (and not exceeding 949,000 KL/year) of ground water; through proposed three bore wells only. As per data provided by the plant, the total ground water abstraction in FY 2020-21 is 811,437 KL/year which is less than the CGWA NOC of 949,000 KL/year, issued to plant on 17/10/2016.

- Radico Khaitan Ltd, Rampur have installed flow meters on all the bore wells and are maintaining the data on monthly basis. All the raw water extraction data is submitted to CGWA on yearly basis.
- Joint Inspection Report of CPCB after inspection on 27th October 2020, reports of hand pump, piezometer wells and bore wells that the Fe, Mn & Pb contents are marginally above the limits. Water audit team has investigated the same and it was observed that the presence of Fe, Mn & Pb is possible due to the pipe material. Generally galvanized iron or Mild Steel pipes can show increase in such components. Especially piezometer wells, where inside water is stagnant, may show slightly higher values.

11.5. Recommendations for Water Conservation

- Based on the information collected and observations, the following interventions are recommended by the Water audit Team to reduce water use and increase its efficiency.
    - Automatic nozzles or sprinkler for gardening with timer based system can save about 6051 KL/year.
    - Flow regulators in faucets of wash basin to reduce the flow from 4LPM to 2LPM, which can save about 6658 KL/year
    - Replacements of inefficient pumps with new energy efficient pumps
    - Recovery of back wash water of Pressure Sand Filters (PSF) and Sand Filters (SF) will reduce the fresh water consumption by 1-2% in water treatment plant. This can save water upto 26,183 KL/year.
    - Replacement of open type cooling tower with Closed Circuit Cooling Tower (CCCT) which can reduce losses and will result into huge water saving of 25,828 KL/year.
    - Saving water through monitoring and operational procedures

12. ACTIVITIES UNDER CSR BY RKL

RKL has always striven to achieve ecological balance and ensure sustainability of natural resources available. The efforts for reducing the water consumption for the industry and restoration of ground water resources have been appreciable. The ground water recharge measures have been beyond the compliance requirements of CGWA. RKL has adopted suitable measures to recharge ground water by 295% of total annual ground water abstraction.

In addition to above RKL have endeavored in another field of water resource sustainability. In view of dwindling surface water resources and drying up rivers it has given a thought to rejuvenate the rivers/ streams which have lost their perenniality with time due to various human interventions and natural hazards. The Kosi river which emerges from the Himalayas and flows along western boundary of district Rampur was a perennial river about 2 to 3 decades ago. This flow in this river has been adversely affected by erratic rainfall and its skewed distribution and also by the large scale urbanization and changes in land use in Bhabhar and terai belt in the northern parts.

RKL has ventured into a Kosi rejuvenation proposal under technical support of "**Art of Living**". Leading technical experts from Art of Living family have mopped up their resources and are conceptualizing a suitable management plan for catchment areas of river Kosi so as to rejuvenate the river and maintain E-flows throughout the year.

The project would be very helpful to augment ground and surface water resources and local farmers and other stake holders will be benefitted.

13. CONCLUSIONS

Radico Khaitan Limited, Rampur district, Uttar Pradesh- is a distillery located east of Rampur town, covering an area of 44.392 Ha and occupies western parts of Chamraua block of Rampur district. The distillery produces high-grade Extra Neutral Alcohol ("ENA") from molasses, grains and Scottish design malt spirit from barley malt.

i. The industry has obtained NOC for ground water withdrawal of 2600 kld (kilo litre per day), vide NOC no. CGWA/NOC/IND/ORIG/2016/2308 dated 17.10.2016. Since the industry is located in Chamraua block of Rampur district which has been categorized as "Over Exploited" as per Dynamic Ground Water Estimation and categorization of assessment units. As per CGWA norms the Industry located in "Over Exploited" can withdraw ground water to the tune of 50% of annual ground water recharge being done by the industry through suitable measures within and outside the industry.

ii. The present study has been taken up within and outside the premises of Radico Khaitan Ltd to study the hydrogeological, geological, climate, landuse, topography, drainage and geomorphological conditions of the study area and mainly to assess the impacts of ground water abstraction and ground water recharge measures adopted by Radico Khaitan Ltd within or outside the premises'

iii. The study area occupies an area of **230 sq. km** and is located in the western part of Chamraua block of Rampur district, Uttar Pradesh state. It lies between north latitudes 28.674800° and 28.835600° and east longitudes 78.976700° and 79.121300°. The average annual rainfall is 976 mm.

iv. Land use distribution in the study area shows that maximum area falls under cropped land i.e. about 85.7 % of total surveyed area. Fallow land and forest plantation, occupy about 4% together, out of the total area. Urban area including the rural settlement area covers about 10.0% of total area. The Radico Khaitan industry is located in the urban settlement area of Rampur town. Cropping intensity in the block is 201% and the irrigation intensity is 168%.

v. The study area overlies older alluvial plain occupying upland with general north to south slope. It is marked by palaeochannels, meander channels, river valleys and shallow

depressions. The ground elevation in the study are varies from 138 mamsl in the northern parts around Thotri to 121 mamsl in the southeast.

vi. Maximum part of the study area occupies a relatively higher elevation than the younger alluvial plain and forms the inter stream area. This plain covers about 70% of the study area. This is further classified depending on canal command area. Major part falls under older alluvial plain under canal command area.

vii. Study area lies over alluvial deposits of the Quaternary period brought by river system of Ram Ganga. These comprise sand, silt and clays in various proportions. There are four aquifer groups present in the area down to 440 mbgl. A single aquifer system has been deciphered in the area down to 180 to 200 mbgl. The system at places is separated or divided into a number of aquifers by the intercalated clay layers. General depth of tubewells ranges from 50 to 130 mbgl. The cumulative screened length varies from 20 to 30 m down to the depth of tubewell. The specific capacity of tubewells ranging from 50 to 100 mbgl varies from 295 to 1263 lit/min/m and average yield in this first aquifer varies from 800 to 5200 lpm (litre per minute) for draw downs ranging from 1.5 to 8.0 m. The exploratory drilling at Pipla Shiv Nagar indicates that Transmissivity values are 1140 m2/day and Storativity is 6.95×10^{-3}. The second aquifer is intermixing zone in which clay and sand layers are intercalated. This zone extends from 200 m to 300 mbgl at Pipla EW in Milak block of Rampur district. The third aquifer occurs at a depth range of 388 to 400 mbgl and the change in the sediment facies occur at this depth range. The fourth aquifer extends beyond 400 mbgl, and is not explored in this area.

viii. In the study area around the distillery plant, ground water occurs in the pore spaces of unconsolidated alluvial sediments in the zone of saturation. The top sandy bed mixed with silt existing down to the depth of about 50 metres below ground level generally supports the dugwells, shallow tube wells and handpumps.

ix. In general water levels during premonsoon period of 2019, vary between 5.0 and 6.0 mbgl in the maximum part of the study area. Water level increases from north and west towards east and southeast. The depth to ground water levels in the area around Rampur Distillery falls in the range of 6.0 to 6.5 mbgl.

x. During post monsoon period 2019, the water level pattern is similar to that of premonsoon period, except that water levels range from 3.45 to 6.82 mbgl. The depth to ground water levels in the area around Rampur Distillery falls in the range of 5.0 to 6.0 mbgl. Maximum area falls under depth to water level range of 4.5 to 5.5 mbgl.

xi. The study area shows seasonal water level fluctuation (pre to post monsoon period 2019) ranging from 0.34 to 0.60 m. Fluctuation of more than 0.60 m is observed in the northern part of the area around Khaund and Koela villages, and in the eastern part of the study area east of Daniapur village.

xii. It is observed that long term historical ground water levels indicate a falling trend in the buffer zone prior to interventions by Radico Khaitan Ltd, whereas piezometers that have been constructed by Radico Khaitan Ltd in the buffer zone during or after 2017 (after issuance of NOC and compliance to directives), show a rise at all the six stations.

xiii. Ground water movement for pre monsoon period of 2019, shows a master flow direction from north around Koela towards Kalrakh in south. Water table elevation varies from 187 to 177 mamsl. In the northwestern part of the study area flow is from Khound in the east to west towards Kosi river. The ground water gradient in this part is about 1.4 m/km. In the northeastern parts ground water flows from Khound towards Dabka and Shahjadnagar, where gradient is about 1.2 m/km. After this point, gradient further decreases to 0.5 m/km and about 0.25 m/km further south around Daniapur and Kalrakh.

xiv. Pattern of Ground water movement for post monsoon period of 2019, is similar to that of premonsoon period except that water table elevation varies from 189 to 178 mamsl.

xv. The Chamraua block shows the stage of Ground water Withdrawal as 133.15% as on 31.03.2017, as shown in the Table 10 & 11. This block has been categorized as “Over Exploited”.

xvi. As per dynamic ground water resource estimation as on 31.03.2020 the Chamraua block has been re-categorized as “Critical” block (as per the unpublished report prepared jointly by Central Ground Water Board, Govt. of India and State Ground Water Department, Govt of UP, Lucknow). This shows improvement in the ground water scenario of the block.

xvii. **As per the chemical analysis of ground water samples collected in the study area it is evident that ground water quality is well within permissible for domestic as well as irrigation purposes.** During 2019 EC values of the area indicate that conductivity in ground water generally varies from 710 to 736 μmhos/cm at 25^0C, which is well within permissible limits. Total hardness of the groundwater in Rampur Distillery area varies between 167 and 180 mg/l, therefore is classified as Hard in nature. The Fluoride and iron contents are also within permissible limits.

xviii. Ground water quality does not show any significant changes over last 4 years since 2016, analysis of data reveals a improvement in water quality which may be due to ground water recharge measures adopted by industry.

xix. The rainfall runoff from the premise area, except the runoff from open area, has been used for recharging ground water through twenty (20) recharge trenches constructed within the premises. Through these measures annually **156074 m3** of rainfall runoff is being recharged to ground water.

xx. To meet the required ground water recharge measures for meeting the requirement as per CGWA directives; Radico Khaitan Limited has also adopted ponds in Chamraua block. The total ground water recharge measures adopted by Radico Khaitan Limited till date is **27,96,287 m3/year which is 295% of the annual withdrawal of ground water by the industry.**

xxi. Ground water levels, it's spatial and temporal variation, are main indicator of ground water regime condition in any area. To study the impacts of ground water extraction and ground water recharge measures, adopted by Radico Khaitan Ltd, on ground water regime in buffer zone around the industry, the historical water level data collected from six piezometers constructed by the industry and ten GWMS of State GWD located in the study areas were considered.

xxii. The water level trends in the **buffer zone**, clearly indicate that **ground water regime which was showing deteriorating tendency since 2008, has improved after the recharge measures adopted by Radico Khaitan Ltd** within the premises.

xxiii. The water level trend data **is showing rising trend** at **all the six piezometers ranging from 0.365 m/year at Hitachi Land to 0.620 m/year as observed at Madhaiya piezometer**. Falling trend is not observed at any piezometer in the premises or in the buffer zone.

xxiv. Impacts of ground water extraction by industry and adopted measures for ground water recharge in the study area vis-à-vis overall annual, pre and post monsoon trends in the entire study area are as below

- The annual water level trends observed at all the six piezometers of Radico Khaitan Ltd **are showing rising trends ranging from 0.365 m/year at Hitachi Land to 0.620 m/year as observed at Madhaiya piezometer**. Falling trend is not observed at any piezometer in the premises or in the buffer zone.
- Annual ground water trends at eight out of ten GWM stations show declining trends **for the period of 2008 to 2020**. Only two stations at Bilaspur (Bilaspur block) and Panjabnagar (Chamraua block) show a rise in water level trends for the last 10 to 11 years. All the remaining eight GWMS show a long term declining trend of ground water level trends, ranging from 0.014 m/year (at Dalpura) to 0.234 m/year at Chamraua.
- Analysis of water level trends for **2008-2016** (prior to issuance of NOC), indicates that **ground water level situation since 2008 was showing a declining trend in general upto 2016**. Eight out of ten stations were showing declining trends of water level.
- The trend analysis of water levels **since 2017**, that is after issuance of NOC and ground water recharge measures adopted by industry show a remarkable improvement in ground water scenario. Water level trends since 2017 indicate that **all the nine GWMS (except Chamraua station, for which water level data since 2017 is not available) are showing rising water level trends**. Rising water level trends are ranging from 0.128 m/year (12.8 cm/year) at Koyla GWMS which is located in northern part of study area to 0.734 m/year at Madhaiya GWMS which is located in the southeastern parts of the study area (Table 27 b).

- **Pre and post monsoon water level trends also indicate that there is much improvement in ground water scenario since the interventions by industry for ground water recharge.**
- During premonsoon period for period of 2008 to 2016 it is observed that five GWMS show a declining trend of water levels whereas, water level trends during the period of 2017-2020 only three stations show a declining trends of water level (Table 27 b).
- **During post monsoon period for period of 2008 to 2016 it is observed that nine GWMS show a declining trends and one station shows a rising trends, whereas, water level trends during the period of 2017-2020, after ground water measures by industry, all the stations show a rising trend of water levels.**
- Thus it is clearly observed that water level monitoring stations which were showing declining trends prior to adoption of ground water recharge measures by the industry, are showing rising water level trends at all the stations.
- **Although three stations in the study area show declining trends during the premonsoon period, the recharge measures taken are sufficient to replenish the depleted ground water levels and the ground water levels recover to the normal levels or even shallower water levels (Table 27 b)**. Three stations show rising water level trends of more than 20 cm/year and remaining stations show rising trends between 0.50 to 18 cm/year.
- Study revealed that during 2016 post monsoon period maximum area falls under water level range of 5 to 6 mbgl as seen in the map, whereas, during post monsoon period of 2019 maximum area falls under depth range of 4.5 to 5.5 mbgl. The depth to post monsoon water level maps for 2016 and 2019, also show an improvement in ground water conditions from year 2016 to 2019.
- **The piezometers constructed by industry, at Ajitpur and Hitachi land (both within the premises) also show a rising trend of 0.548 m/year (54.8 cm/year) and 0.365 m/year (36.5 cm/year) respectively since 2017.**

xxv. **Flow net analysis in the study area** indicates that there are two crests showing water table contour value as 189 and 183 mamsl (meter above mean sea level) at Nawada in the north

of Koela in the northern part and near Rampur Distillery respectively. The ground water flow in the study area is from northern boundary towards south, west and southeastern directions. Major ground water flow is towards south, but the gradient changes (reduces) towards south upto Daniapur. In the northwestern part of the study area, ground water flows from Khound in the east towards Kosi river in west. The ground water gradient in this part is about 1.45 m/km. In the northeastern parts ground water flows from Khound towards Dabka and Shahjadnagar, where gradient is about 1.5 m/km. After this point, gradient further decreases to 0.5 m/km and about 0.30 m/km further south around Daniapur and Kalrakh.

xxvi. Water conservation and recharge measures also have positive impact on the socio economic development of the population living in the area around the industry, by way of improving cropping intensity, change in land use pattern, sustainability of the groundwater abstraction structures and reduction in the power consumed for groundwater withdrawal.

xxvii. Major water consuming area is 42% fresh water consumption & 58% as recycled soft water. Process accounts for 21%, Utility accounts for 11%, 15% accounts for DM water, 50% accounts for soft water, 2% for gardening and almost 1% for domestic accounts

xxviii. RKL has achieved remarkable landmarks in the field of effluent management, achieving Zero Spent Wash Discharge through various means and reduction in fresh water consumption per litre of alcohol production.

xxix. RKL is one of the pioneers to accept and introduce the new Technologies. For the First Time in India they had installed the DAF System on Distillery Effluent. TSS Reduction through DAF is from 3200 PPM to 2000 PPM i.e. about 38%.

xxx. All residential waste water is sent to 150 KLD STP installed in the plant for treatment of sewage water and treated water is utilized in gardening of cricket ground and nearby areas for vegetation and plantation.

xxxi. In pursuance of compliance conditions of NOC, RKL have established total 12 piezometers. Six piezometers were established during 2016-17 and six piezometers have been constructed during 2020-21. The piezometers are fitted with telemetry system and daily water level data is being collected automatically and is accessible through server. The data

will be very helpful in keeping a close look at short and long term ground water level changes in the area around the plant.

xxxii. RKL has ventured into Kosi rejuvenation proposal under technical support of "**Art of Living**". Leading technical experts from Art of Living family are conceptualizing a suitable management plan for catchment areas of river Kosi so as to rejuvenate the river and maintain E-flows throughout the year.

xxxiii. Thus ground water abstraction by RKL is not having any significant adverse impacts on ground water regime in the area. Rather extensive activities for ground water recharge have resulted in improved ground water scenario in the Chamraua block.

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Annexure I
: Composite Litholog of Pipla Shiv Nagar Exploratory Well - I, Milak Block, Rampur District, Uttar Pradesh

S.No.	Lithology	Depth Range (mbgl)		Thickness (m)
		From	To	
1	Clay,brown in color sticky in nature	0	10	10
2	Medium grained sand, light grey in color sub angular to sub rounded	10	20	10
3	Medium grained sand, light grey in color sub angular to sub rounded mixed with clay	20	26	6
4	Medium to coarse grained sand, brown in color sub angular to sub rounded	26	42	16
5	Fine grained sand, brown in color well rounded	42	48	6
6	Medium to coarse grained sand, brown in color sub angular to sub rounded	48	54	6
7	Medium to coarse grained sand, brown in color sub angular to sub rounded mixed with clay	54	60	6
8	Medium to coarse grained sand, brown in color sub angular to sub rounded	60	72	12
9	Medium grained sand, brown in color sub angular to sub rounded mixed with silt	72	76	4
10	Medium grained sand, brown in color sub angular to sub rounded	76	84	8
11	Medium to coarse grained sand, brown in color sub angular to sub rounded mixed with little kankar and silt	84	92	8
12	Medium to coarse grained sand, brown in color sub angular to sub rounded mixed with little kankar	92	98	6
13	Medium to coarse grained sand, brown in color sub angular to sub rounded mixed with little kankar and silt	98	112	14
14	Medium grained sand, brown in color sub angular to sub rounded mixed with clay	112	120	8
15	Medium to coarse grained sand, brown in color sub angular to sub rounded	120	146	26

S.No.	Lithology	Depth Range (mbgl)		Thickness (m)
		From	To	
16	Medium to coarse grained sand, brown in color sub angular to sub rounded	146	150	4
17	Medium to coarse grained sand, brown in color sub angular to sub rounded	150	154	4
18	Medium to coarse grained sand, brown in color sub angular to sub rounded mixed with clay	154	160	6
19	Medium grained sand, brown in color sub angular to sub rounded	160	178	18
20	Medium to coarse grained sand, reddish brown color sub angular to sub rounded mixed with some parts of fine grain sand and clay	178	200	22
21	Medium to coarse grained sand, reddish brown color sub angular to sub rounded mixed with kankar	200	206	6
22	Medium to coarse grained sand, reddish brown color sub angular to sub rounded mixed with kankar	206	216	10
23	Medium to coarse grained sand, reddish brown color sub angular to sub rounded mixed with some parts of fine grain sand and clay	216	232	16
24	Fine to medium grained sand, brown in color sub angular to sub rounded	232	236	4
25	Fine to medium grained sand, brown in color sub angular to sub rounded	236	240	4
26	Fine to medium grained sand, brown in color sub angular to sub rounded	240	248	8
27	Medium to coarse grained sand, reddish brown color sub angular to sub rounded mixed with some parts of fine grain sand mixed with clay	248	250	2
28	Medium to coarse grained sand, reddish brown color sub angular to sub rounded mixed with some parts of fine grain sand	250	254	4
29	Medium to coarse grained sand, reddish brown color sub angular to sub rounded mixed with some parts of fine grain sand mixed with clay	254	260	6
30	Medium to coarse grained sand, reddish brown color sub	260	270	10

S.No.	Lithology	Depth Range (mbgl)		Thickness (m)
		From	To	
	angular to sub rounded mixed with some parts of fine grain sand			
31	Medium to coarse grained sand, reddish brown color sub angular to sub rounded mixed with some parts of fine grain sand mixed with clay	270	280	10
32	Medium to coarse grained sand, reddish brown color sub angular to sub rounded mixed with some parts of fine grain sand	280	288	8
33	Medium to coarse grained sand, reddish brown color sub angular to sub rounded mixed with some parts of fine grain sand mixed with silt	288	292	4
34	Medium to coarse grained sand, reddish brown color sub angular to sub rounded mixed with some parts of fine grain sand mixed with silt	292	300	8

Annexure II

PRE AND POST MONSOON DATA FOR CHAMRAUA BLOCK, DISTRICT RAMPUR (2008-2020)

HYDROGRAPH	Reduced Level (mamsl)	PERIOD	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
			(values in meters below ground level)												
AJITPUR PZ	187.970	PRE												5.57	5.34
AJITPUR PZ		POST												4.96	4.90
AJITPUR*	187.970	PRE	5.00	5.2	8.1	5.43	5.4	6.35	5.79	5.95	6.7	6.85	5.95	5.85	-
AJITPUR*		POST	2.95	4.6	3.53	3.76	5.35	4.7	5.4	6.02	0	6.6	4.9	5.37	-
BHONT*	189.240	PRE	6.32	6.37	8.11	6.5	6.57	7.52	6.77	6.87	7.25	7.5	7.72		7.4
BHONT*		POST	2.77	5.75	3.8	4.36	6.52	5.47	6.45	6.82	6.55	7.4	5.6	6.82	6.6
CHAMRAUA*	187.260	PRE	4.85	4.35	6.9	5.2	4.75	6.23	5.3	5.9		Choked	6.9	6.6	6.52
CHAMRAUA*		POST	1.5	4.1	2.46	3.23	4.7	3.8	5.2			Choked	6.2	6.05	6.16
DALPURA*	181.280	PRE	4.00	4.81	7.8	5.25	4.93	4.95	4.85	4.05	4.66	4.8	4.85		-
DALPURA*		POST	1.97	4.25	2.46	2.82	4.01	2.45	3.1	3.75	3.95	4.45	3.85		-
DEENPUR PZ	185.000	PRE												7.01	7.02
DEENPUR PZ		POST												6.78	7.17
HARIYAL PZ	183.000	PRE												5.88	5.76
HARIYAL PZ		POST												5.59	5.58
HITACHI LAND PZ	189.000	PRE												5.44	4.73
HITACHI LAND PZ		POST												4.59	4.35
KOYALA*	188.590	PRE	3.95	3.9	8.3	4.34	4.35	5.15	5.00	5.15	4.75	4.95	5.3	4.85	5.05
KOYALA*		POST	1.45	3.45	2.00	2.43	3.9	3.15	3.7	4.05	4.2	4.7	3.65	4.15	4.25
MADHAIYA PZ	185.000	PRE												4.81	4.27
MADHAIYA PZ		POST												4.07	4.43
MDHEEYA UDAYRAJ	190.180	PRE	6.00	5.45	7.78	5.7	6.1	7.1	6.00		6.7	8.9	7.3	6.6	-
MDHEEYA UDAYRAJ		POST	2.15	4.24	4.15	3.65	5.00	5.1	5.5		6.25	8.5	5.9	6.16	-
MILAK CHIKNA PZ	187.000	PRE												3.98	3.82
MILAK CHIKNA PZ		POST												3.45	3.51

Annexure II

PRE AND POST MONSOON DATA FOR CHAMRAUA BLOCK, DISTRICT RAMPUR (2008-2020)

HYDROGRAPH	Reduced Level (mamsl)	PERIOD	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
			(values in meters below ground level)												
PNJABNAGAR*	183.990	PRE		4.8	8.26	5.3	4.91	5.25	5.05	5.15	5.26	5.5	4.4	4.72	4.95
PNJABNAGAR*		POST		4.3	2.56	2.86	4.35	2.55	3.05	4.55	4.5	5.4	3.25	4.25	4.05
RAMPUR*	185.820	PRE	4.46	4.00	7.00	4.64	4.5	4.65	4.33	4.65	Choked		6.25	6.15	-
RAMPUR*		POST	2.45	3.9	3.6	3.28	3.95	3.5	5.1	4.55	Choked		5.1		-
SAIDPUR (LADAURI)	184.890	PRE				5.38		5.6	5.3	4.7	5.9	6.15	5.05	5.1	5.45
SAIDPUR (LADAURI)		POST				3.38	4.73	3.75	3.7	4.55	4.85	6.00	3.85	4.77	4.67
SHAHJADANAGAR*	185.120	PRE	5.00	4.9	7.63	5.25	5.2	6.05	5.15	5.6	6.45	6.65	6.75	5.92	-
SHAHJADANAGAR*		POST	1.4	3.7	2.55	2.63	5.05	3.8	4.5	5.35	5.85	6.2	5.4		-

Annexure III

LONG TERM WATER LEVEL TRENDS IN AREA AROUND RADICO KHAITAN LTD, RAMPUR (2008-2020)

BLOCK	MONITORING STATIONS	HISTORICAL WATER LEVEL TRENDS (m/year)				WATER LEVEL TRENDS PRIOR TO ISSUANCE OF NOC (m/year)				WATER LEVEL TRENDS AFTER TO ISSUANCE OF NOC (m/year)			
		Premonsoon		Postmonsoon		Premonsoon		Postmonsoon		Premonsoon		Postmonsoon	
		RISE	FALL	RISE	FALL	RISE	FALL	RISE	FALL	RISE	FALL	RISE	FALL
BILASPUR	BILASPUR	0.297		0.046		0.031			0.498	**0.189**		**0.326**	
CHAMRAUA	AJITPUR		0.051		0.210		0.051		0.364	**0.095**		**0.242**	
CHAMRAUA	BHONT		0.086		0.284		0.049		0.464		**0.122**	**0.059**	
CHAMRAUA	CHAMRAUA		0.148		0.339						0.138	0.020	
CHAMRAUA	DALPURA		0.062	0.127		0.099			0.093		**0.042**	**0.090**	
CHAMRAUA	KOYLA		0.011		0.210		0.053		0.290		**0.004**	**0.005**	
CHAMRAUA	MADHAIYA UDAIRAJ		0.126		0.366		0.050		0.416	**0.230**		**0.252**	
CHAMRAUA	PUNJAB NAGAR	0.133			0.113	0.193		0.050		**0.106**		**0.154**	
CHAMRAUA	SHAHJAD NAGAR		0.091		0.362		0.007		0.450	**0.149**		**0.185**	
CHAMRAUA	SAIDNAGAR LADAURI	0.010			0.142	0.151			0.131		**0.007**	**0.051**	

Annexure IV

GROUND WATER LEVEL DATA 2019, RAMPUR DISTRICT

BLOCK	HYDROGRAPH	LONGITUDE	LATITUDE	P_W	RL	PRM_19	PTM_19	WLFLUCT19	WTPRE19	WTPOST19
BILASPUR	BAIRKHERI	79.279444	28.918333	P	175.780	5.90	3.95	1.95	169.880	171.830
BILASPUR	BALKHERA	79.332222	28.759444	P	178.190	6.35	5.95	0.40	171.84	172.24
BILASPUR	BILASPUR*	79.262500	28.886667	P	169.800	6.00	4.18	1.82	163.800	165.620
BILASPUR	KAUSHAL GANJ	79.376667	28.889444	P	173.520	8.29	4.90	3.39	165.230	168.620
BILASPUR	MUNDIYA KALAN	79.276667	28.741389	P	175.630	9.80	8.13	1.67	165.830	167.500
BILASPUR	PAIGAMBARPUR DANDIA	79.347222	28.822222	P	172.040	5.25	5.85	-0.60	166.790	166.190
BILASPUR	PANWARIYA	79.360000	28.786111	P	176.920	6.55	5.80	0.75	170.370	171.120
CHAMRAUA	AJITPUR PZ	28.770456	79.030434	PZ	187.970	5.57	4.96	0.61	182.400	183.010
CHAMRAUA	AJITPUR*	79.020833	28.769444	P	187.970	5.85	5.37	0.48	182.120	182.600
CHAMRAUA	BHONT*	79.112500	28.805556	P	189.240		6.82			182.420
CHAMRAUA	CHAMRAUA*	79.108333	28.785833	P	187.260	6.60	6.05	0.55	180.660	181.210
CHAMRAUA	DALPURA*	78.983889	28.705278	P	181.280	4.85	3.85	1.00	176.43	177.43
CHAMRAUA	DEENPUR PZ	28.702063	79.081201	PZ	185.000	7.01	6.78	0.23	177.990	178.220
CHAMRAUA	HARIYAL PZ	28.688075	79.062984	PZ	183.000	5.88	5.59	0.29	177.120	177.410
CHAMRAUA	HITACHI LAND PZ	28.781005	79.039276	PZ	189.000	5.44	4.59	0.85	183.560	184.410
CHAMRAUA	KOYALA*	79.080278	28.825000	P	188.590	4.85	4.15	0.70	183.740	184.440
CHAMRAUA	MADHAIYA PZ	28.737700	79.040349	PZ	185.000	4.81	4.07	0.74	180.190	180.930
CHAMRAUA	MDHEEYA UDAYRAJ	79.052778	28.711111	P	190.180	6.60	6.16	0.44	183.580	184.020
CHAMRAUA	MILAK CHIKNA PZ	28.728582	79.014939	PZ	187.000	3.98	3.45	0.53	183.020	183.550
CHAMRAUA	PNJABNAGAR*	79.000833	28.736111	P	183.990	4.72	4.25	0.47	179.270	179.740
CHAMRAUA	RAMPUR*	79.028056	28.718333	P	185.820	6.15			179.670	
CHAMRAUA	SAIDPUR (LADAURI)	79.012222	28.681111	P	184.890	5.10	4.77	0.33	179.790	180.120
CHAMRAUA	SHAHJADANAGAR*	79.064722	28.739444	P	185.120	5.92			179.200	
MILAK	BALBHADRAPUR	79.269167	28.689444	P	173.610	7.10	6.80	0.30	166.510	166.810
MILAK	BARAKHAS	79.144167	28.745556	P	188.110	6.80	4.38	2.42	181.310	183.730

Annexure IV

GROUND WATER LEVEL DATA 2019, RAMPUR DISTRICT

BLOCK	HYDROGRAPH	LONGITUDE	LATITUDE	P_W	RL	PRM_19	PTM_19	WLFLUCT19	WTPRE19	WTPOST19
MILAK	BHAWERKA	79.255278	28.712500	P	166.770	6.15	5.48	0.67	160.620	161.290
MILAK	GANGAPUR KDIM*	79.203333	28.766111	P	181.760	5.63	4.90	0.73	176.130	176.860
MILAK	INAYTPUR	79.298056	28.738611	P	177.390		6.20			171.190
MILAK	KAPNERI	79.256667	28.721944	P	165.720	6.37	5.55	0.82	159.350	160.170
MILAK	KHATA CHINTAMAN	79.187222	28.675000	P	181.630	5.13	5.90	-0.77	176.500	175.730
MILAK	KUNDANPUR PIEZ	79.110278	28.600556	P	188.240	5.20	4.85	0.35	183.040	183.390
MILAK	MANOUNA	79.272500	28.723056	P	174.790	7.10			167.690	
MILAK	NIPANIYA	79.173889	28.741111	P	186.060	5.54			180.520	
MILAK	ROOPPUR	79.193056	28.723611	P	186.470	6.20			180.270	
SAIDNAGAR	DILPURA*	79.138611	28.857500	P	192.800	4.55	5.15	-0.60	188.250	187.650
SAIDNAGAR	HAMIRPUR*	78.949444	28.888611	P	191.060	6.77	6.53	0.24	184.290	184.530
SAIDNAGAR	KARANPUR*	79.068611	28.908056	P	192.130	6.27	7.00	-0.73	185.860	185.130
SAIDNAGAR	KHAUND*	79.059167	28.819444	P	192.950	5.60	4.80	0.80	187.350	188.150
SAIDNAGAR	KISHANPUR ATARI	79.122222	28.883333	P	191.980	5.85	5.60	0.25	186.130	186.380
SAIDNAGAR	LALPUR*	79.016111	28.868333	P	189.330	4.65	4.50	0.15	184.680	184.830
SAIDNAGAR	NAGALA GANESH*	79.054722	28.833889	P	191.740	6.58	6.35	0.23	185.160	185.390
SAIDNAGAR	NAWARNGAPUR*	79.078889	28.840000	P	195.340	5.40	4.80	0.60	189.940	190.540
SAIDNAGAR	SAID NAGAR*	78.978333	28.894444	P	153.930	6.25	6.50	-0.25	147.680	147.430
SAIDNAGAR	SHAUKAT NAGAR	79.038611	28.810278	P	189.870	7.14	6.85	0.29	182.730	183.020
SHAHABAD	CHAKARPUR*	78.991667	28.536944	P	181.340	13.90	13.60	0.30	167.440	167.740
SHAHABAD	DEVIYA NAGLA	78.976111	28.616944	P	182.350	5.20	5.10	0.10	177.150	177.250
SHAHABAD	DHAKIYA	78.971389	28.466667	P	181.770	12.85			168.920	
SHAHABAD	ISHAKHERA	79.068056	28.526944	P	174.280	11.60	11.30	0.30	162.680	162.980
SHAHABAD	JAITOLI	78.992500	28.597500	P	183.710	6.60	6.10	0.50	177.110	177.610
SHAHABAD	KHADELI*	78.970000	28.515556	P	181.900	14.45	14.05	0.40	167.450	167.850
SHAHABAD	KIRA*	79.006944	28.639167	P	182.330	5.85	5.68	0.17	176.480	176.650

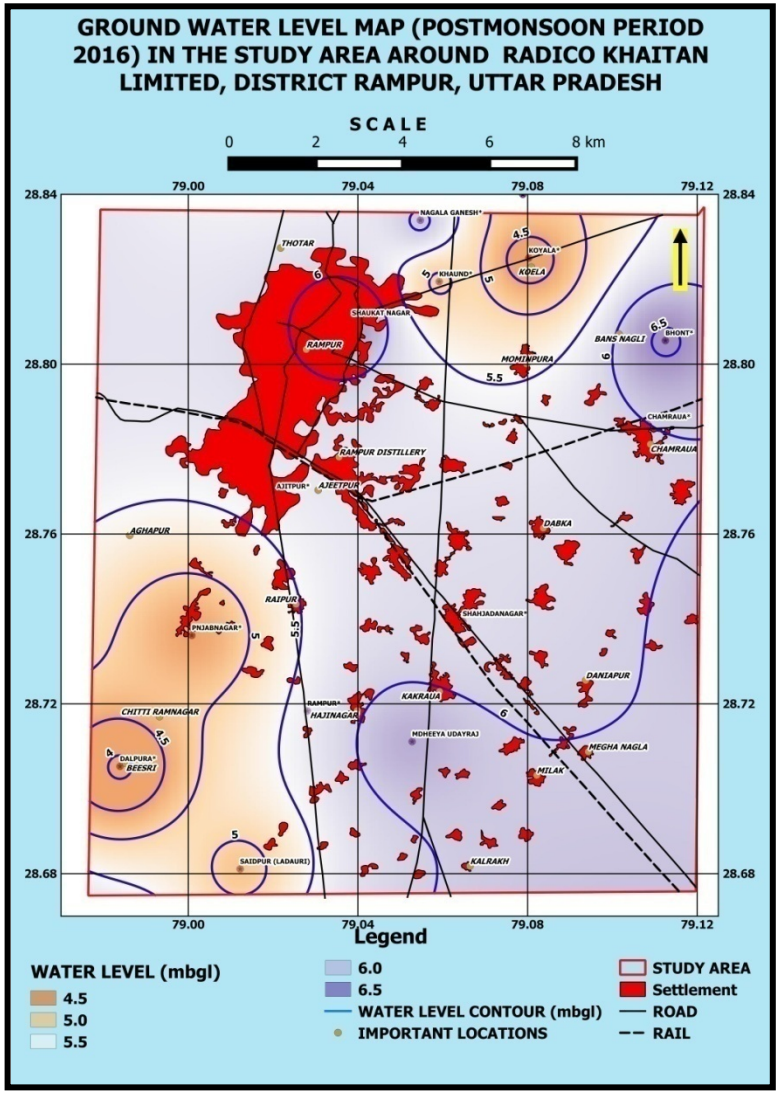
Annexure IV

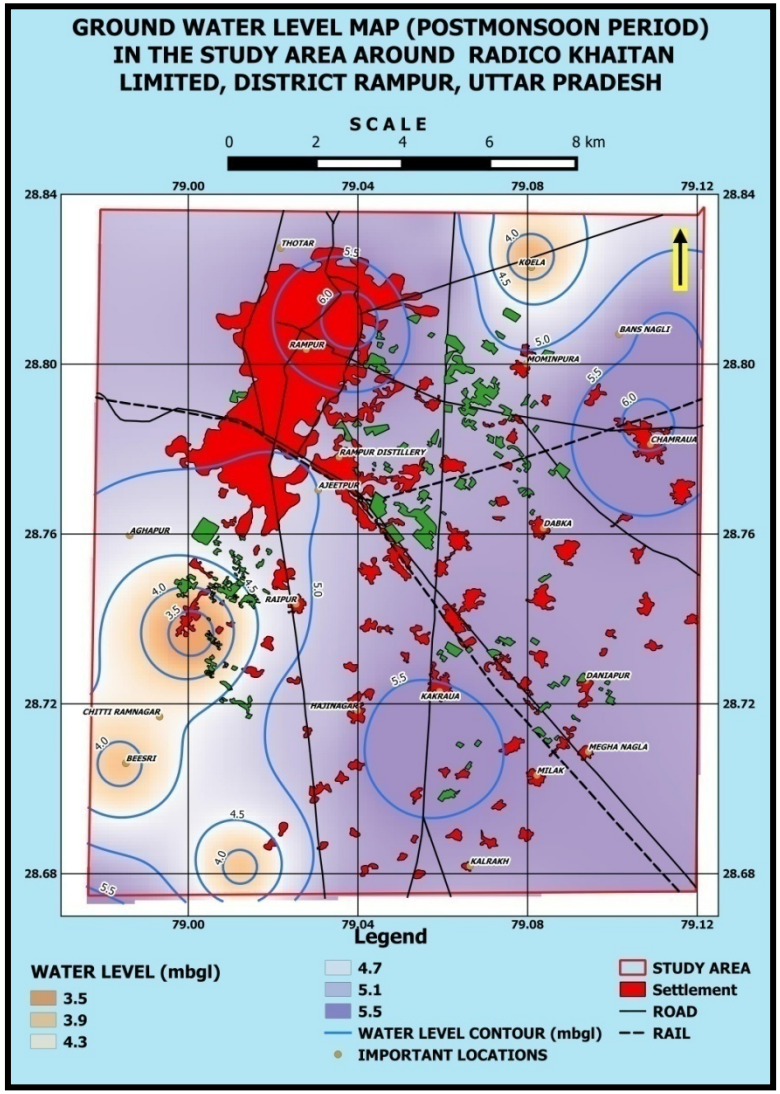
GROUND WATER LEVEL DATA 2019, RAMPUR DISTRICT

BLOCK	HYDROGRAPH	LONGITUDE	LATITUDE	P_W	RL	PRM_19	PTM_19	WLFLUCT19	WTPRE19	WTPOST19
SHAHABAD	MATHURAPUR*	79.075278	28.604722	P	182.330	4.42	3.80	0.62	177.910	178.530
SHAHABAD	NARKHERI*	79.060556	28.648611	P	181.740	4.49	4.20	0.29	177.250	177.540
SHAHABAD	RAWANA	78.949444	28.614722	P	184.820	13.85			170.970	
SHAHABAD	REVRI KHURAD	79.044167	28.621111	P	180.880	4.75	4.45	0.30	176.130	176.430
SHAHABAD	TANDA*	79.035833	28.500000	P	180.380	15.04	14.80	0.24	165.340	165.580
SHAHABAD	UCHA GAWA*	79.033056	28.515833	P	182.440	13.82	13.50	0.32	168.620	168.940
SHAHABAD	UDAYAPUR JAGIR	79.019722	28.628333	P	184.430	6.60	5.53	1.07	177.830	178.900
SWAR	DHAKKANAGLAIYA	78.940833	28.959722	P	187.780	6.75	5.80	0.95	181.030	181.980
SWAR	DHANUPURA	79.016111	28.903611	P	161.250	5.50	4.80	0.70	155.750	156.450
SWAR	SAMODIA	79.097778	28.947222	P	164.510	3.65	3.00	0.65	160.860	161.510
SWAR	SHIKAMPUR*	78.943611	29.020833	P	162.750	9.40			153.350	
SWAR	SHIKARPUR	79.141389	29.060278	P	173.730	7.25	6.95	0.30	166.480	166.780
SWAR	SWAR*	79.060278	29.030278	P	166.810	5.00	4.35	0.65	161.810	162.460

Annexure V Ground Water Quality since 2016, Radico Khaitan Ltd, Rampur															
Parameters	**Units**	**BIS Standard IS 10500: 2012**		**BOREWELL NO 1 & 2**		**BOREWELL NO 3**		**BOREWELL NO 1, 2 & 3**		**BOREWELL NO -1**		**BOREWELL NO 2**		**BOREWELL NO 3**	
		Requirement (Acceptable limit)	**Permissible limit in the absence of alternate source**	**Pre monsoon 2016**	**Post monsoon 2016**	**Pre monsoon 2017**	**Post monsoon 2017**	**Pre monsoon 2018**	**Post monsoon 2018**	**Pre monsoon 2019**	**Post monsoon 2019**	**Pre monsoon 2019**	**Post monsoon-2019**	**Pre monsoon 2019**	**Post monsoon 2019**
pH		6.5 - 8.5	NR**	7.21	7.24	7.22	7.19	7.28	7.3	7.23	7.21	7.25	7.23	7.27	7.26
Electrical conductivity	mmhos/cm	-	-	645	664	719	672	633	612	710	691	730	710	736	719
Total dissolved solids (TDS)	mg/lit	500	2000	432	445	482	450	424	410	476	463	489	476	493	482
Total hardness	mg/lit	200	600	204	218	229	215	199	210	167	162	172	167	180	174.5
Total alkalinity	mg/lit	200	600	220	232	245	230	215	212	185	182	189	182	192	186
Sulphates (SO4)	mg/lit	200	400	29	40	42	34	28	38	42.5	69.8	44.6	43.5	48	43.5
Chloride (Cl)	mg/lit	250	1000	114	110	128	104	98	92	81.2	80	84.5	82.9	88.6	84
Fluoride(F)	mg/lit	1	1.5	0.09	0.11	0.19	0.12	0.19	0.15	0.2	0.19	0.23	0.2	0.22	0.21
iron (Fe)	mg/lit	0.3	NR**	0.14	0.22	0.29	0.21	0.21	0.28	0.24	0.22	0.27	0.24	0.29	0.25
Residual free chlorine	mg/lit			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Annexure VI Post monsoon period Depth to Water level Map of study area for 2016 and 2019





DEENPUR PZ

MADHAIYA PZ

AJEETPUR PZ

HITACHI LAND PZ

MILAK CHIKNA PZ

HARIYAL PZ

GROUND WATER DEPARTMENT

(Namami Gange & Rural Water Supply Department)
Ministry of Jal Shakti
Government of Uttar Pradesh

Form 8 (A)/फॉर्म 8 (ए)

APPLICATION FOR OBTAINING GRANT OF AUTHORIZATION/NO OBJECTION CERTIFICATE FOR SINKING OF EXISTING WELL
विद्यमान कूप की बोरिंग हेतु प्राधिकार/अनापत्ति प्रमाणपत्र प्राप्त करने के लिए आवेदन

(Any Commercial or Industrial or Infrastructural or Bulk user)
(वाणिज्यिक अथवा औद्योगिक अथवा अवसंरचनात्मक अथवा सामूहिक उपयोक्ता)

[Under Section 14 of the Uttar Pradesh Ground Water Management and Regulation Bill, 2019]
[धारा 14, उत्तर प्रदेश भूगर्भ जल प्रबंधन तथा विनियमन बिल, 2019 के अधीन]

Applicant's Details
आवेदक का विवरण

Type of Applicant आवेदक का प्रकार	Behalf of Firm/Company	**Application Number** आवेदन संख्या	RMPR1120NIN0004
Name of the Applicant आवेदक का नाम	AMIT JAIN	**Father's Name** पिता का नाम	KAILASH BIHARI JAIN
Date of Birth जन्मतिथि	22/01/1974	**Gender** लिंग	Male
Nationality राष्ट्रीयता	Indian	**ID as Address Proof** निवास प्रमाण हेतु आईडी	Aadhaar Card
Aadhaar Card Number आधार कार्ड संख्या	2484-6648-0412	**Uploaded Aadhaar Card** अपलोड किया गया आधार कार्ड	Download
House No./Flat No./Building No. मकान सं0/फ़्लैट सं0/भवन सं0	JAINA ESTATE	**Locality/Village** मुहल्ला/गाँव	CRPF ROAD
City/Town/Post Office नगर/कस्वा/पोस्ट ऑफिस	JWALA NAGAR	**State** राज्य	Uttar Pradesh
District जनपद	Rampur	**Pin Code** पिन कोड	244901
Designation पद	MANAGING DIRECTOR	**Company Name** कंपनी का नाम	DAMYAA PJ FOODS PRIVATE LIMITED
Company Address कंपनी का पता	KHASRA NO 334 VILLAGE CHIKNA SHAHBAD ROAD RAMPUR	**Authorization Letter** प्राधिकार पत्र	Download

Details of Existing Well
विद्यमान कूप का विवरण

District जनपद	Rampur	**Block** ब्लॉक	CHAMRAUAA (URBAN)
Plot No./Khasra No. प्लॉट संख्या/खसरा संख्या	KHASRA NO 334	**Municipality/Municipal Corporation** नगर पालिक/नगर निगम	VILLAGE CHIKNA
Ward No./Holding No. वॉर्ड संख्या/होल्डिंग संख्या			SHAHBAD ROAD

Particulars of The Existing Well
विद्यमान कूप का ब्यौरा

Date of Construction/Sinking of Well कूप की निर्माण तिथि	14/10/2013	**Type of the Well** कूप का प्रकार	Tube Well/Boring
Housing Pipe If Any यदि कोई है		No	

For Damyaa (PJ) Foods Private Limited

Managing Director

Strainer Details
स्ट्रेनर का विवरण

Material of Strainer स्ट्रेनर की सामग्री	PVC	**Number of Strainer(s)** स्ट्रेनर की संख्या	1

S.No. क्रम संख्या	Strainer Installed at what Depth from Ground Level (in Meter) स्ट्रेनर, भू-स्तर से कितनी गहराई पर स्थापित है (मीटर में)	Strainer Installed upto what Depth from Ground Level (in Meter) स्ट्रेनर, भू-स्तर से कितनी गहराई तक स्थापित है (मीटर में)	Length (In meter) लंबाई (मीटर में)	Diameter (In millimeter) व्यास (मिलीमीटर में)
1	38.00	44.00	6.00	100.00

Approx. Depth of Well (In meter) कूप की अनुमानित गहराई (मीटर में)	44.00	**Whether there has been Any Adverse Report Regarding Water Quality of the Well?** क्या कूप के जल की गुणवत्ता के संबंध में कोई प्रतिकूल रिपोर्ट है?	No
Give Particulars Regarding Water Quality of the Well कूप की जलीय गुणवत्ता का विवरण दें		N/A	

Details of Existing Pumping Device
विद्यमान पंपिंग उपकरण का विवरण

Type of Pump to be Used प्रयोग किये जाने वाले पंप का प्रकार	Submersible	**Pump Capacity (In m3/hr)** पंप क्षमता (m3/hr)	4.00
Horse Power (H.P.) हॉर्स पावर (एच.पी.)		2.00	
Operational Device परिचालन उपकरण	Electric Motor	**Date of Energization** विद्युतीकरण तिथि	14/10/2013

Details of Utilization of Well
कूप के उपयोग का विवरण

Purpose of the Existing Well विद्यमान कूप का उद्देश्य?	Industrial	**Annual Running Hours** वार्षिक उपयोग (घंटे में)	1825.00
Daily Running Hours दैनिक उपयोग (घंटे में)	5.00	**Whether the Water Supplied in Well Area Through Pipe Water Supply or Not?** क्या क्षेत्र में जल की आपूर्ति पाइप जलापूर्ति के माध्यम से होती है?	No
Please Submit Mode of Treatment of Waste Water/Effluent (For Industries) अपशिष्ट जल की उपचार प्रणाली भरें (उद्योग हेतु)	THROUGH EFFLUENT TREATMENT PLANT	**Please Mention Whether Obtained NOC from Uttar Pradesh Pollution Control Board for Discharge of Effluent/Waste Water or Not?** कृपया उल्लेख करें कि क्या उत्तर प्रदेश प्रदूषण नियंत्रण बोर्ड से अपशिष्ट प्रवाह/ अपशिष्ट जल प्रवाह हेतु अनापत्ति प्रमाण पत्र प्राप्त कर लिया गया है अथवा नहीं	Yes
Upload NOC अनापत्ति प्रमाणपत्र अपलोड करें		Download	
Whether Rain Water Harvesting Structure has been Constructed within the Premises? क्या परिसर में वर्षा जल संचयन संरचना का निर्माण किया गया है?	Yes	**Any Other Information Which You Would Like to Furnish** कोई अन्य जानकारी जो आप प्रदान करना चाहते हैं:	N/A
Capacity of Structure, Constructed for Rain Water Harvesting (M^3) वर्षा जल के संचयन हेतु निर्मित संरचना की क्षमता (मी०^3)		4.00	

For Damyaa (PJ) Foods Private Limited

Managing Director

Declaration by the Applicant
आवेदक द्वारा उद्घोषणा

I do hereby declare that the particulars fuenished herein above are correct and true . I understand that in case any of the information and particulars is found to be incorrect at any stage of scrutiny and investigation or thereafter, my application/registration is liable to be rejected/cancelled .
मैं एतद्द्वारा घोषित करता हूँ कि ऊपर दिये गए विवरण सही व सत्य हैं। मैं जानता हूँ कि यदि जांच पड़ताल के दौरान किसी भी स्तर पर उपरोक्त विवरण असत्य पाये गए तो मेरा आवेदन/रजिस्ट्रीकरण अस्वीकृत/निरस्त किए जाने योग्य होगा

I Agree/सहमत

For Damyaa (PJ) Foods Private Limited

Managing Director

Annexure 8

REGIONAL LABORATORY OFFICE MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD

1-A/I.N.S.-1, Avas Vikas Colony, Buddha Vihar, Delhi Road,Moradabad

TEST REPORT: WASTE WATER LABORATORY

Ref No: 14027615/Moradabad/2021 **Date:22/11/2021**

1- Name of Industry: DAMYAA (PJ) FOODS PRIVATE LIMITED

2- Address of Industry: VILLAGE MILAK CHIKNA, SHAHBAD ROAD,TEHSIL RAMPUR DISTRICT RAMPUR U.P 244901,RAMPUR,244901

3- District: Rampur

4- Description about sampling point: FINAL OUTLET OF ETP

5- Type of Sample (Grab/Composite/Integrated): Grab

6- Sample Collected By: Vinod Kumar AEE & Jitendra Nath Tiwari JE

7- Colour and Odour: COLOURLESS ODOURLESS

8- Quantity and Packing: 2 liter (PLASTIC JERICAN)

9- Date of Sample Collection: 10/11/2021

10- Analyis Indented by: RO Moradabad

11- Date of sample receipt in Lab: 11/11/2021

Parameter/Method Name	Unit	Results	Standard	Detection Range
pH,4500 H B Electronic method	-	7.5	-	02-12
Suspended Solids , 2540 D Total Suspended Solids dried at 103-105 0C	mg/l	60	-	10-20000 mg/l
Dissolved Solids, 2540 C Total Dissolved Solids dried at 180 0C	mg/l	580.0	-	10- 50000 mg/l
BOD, 3 day 27 0C IS 3025 (Part 44): 1993 Bio	mg/l	24.0	-	1.0 -50000 mg/l
COD, 5220 B Open Reflux Method	mg/l	208	-	5.0 -100000 mg/l

Reference- (1)General Standards for discharge of envieronment Pollutants are as pert-A Effluent(Schedule-VI).The enviveronment (Protection) Rules,1986 source: www.cpcb.nic.in/GeneralStandards.pdf. Besides these standards,refer EPA standards for specific purpose

Remark: *NA*

Analysed by

[Alok Sharma (JRF)]

Authorized by

ANIL KUMAR VISHWAKARMA Digitally signed by ANIL KUMAR VISHWAKARMA Date: 2021.11.22 13:40:18 +05'30'

Anil Vishwkarma SA

VIKAS MISHRA Digitally signed by VIKAS MISHRA Date: 2021.11.23 11:00:09 +05'30'

Regional Officer

Note: 1 The results in the Test Report relate only to the items tested: 2. The report shall not be reproduced-except in full, without the written permission of laboratory. 3. The test report pertains to the sample as received in Lab.

Annexure-9

ADEQUACY REPORT

OF

EFFLUENT TREATMENT PLANT

OF

DAMYAA (P.J) FOODS PVT . LTD

RAMPUR, U.P

SUBMITTED

BY

DEPARTMENT OF CIVIL ENGINEERING
FACULTY OF ENGINEERING & TECHNOLOGY
ALIGARH MUSLIM UNIVERSITY ALIGARH

NOVEMBER-2021

1.0 INTRODUCTION

Damyaa Pj Foods Pvt. Ltd. is a noted name in the food industry. They are noted manufacturer and supplier of 9 am food products. A wide array of food products like sauce, combo sauce, synthetic vinegar, mayonnaise, tomato puree, pickles, noodles, sharbat, and jam. All of these food items are prepared under stringent hygienic conditions. Moreover, they provide eatables of Creamooz brand as well at nominal rates. Their teams ensure that every food item manufactured and supplied has the highest quality. Hence, people trust their services.

Damyaa Pj Foods Pvt. Ltd. is managed by Mr. Parth Jain. He established the company back in the year 2011 in Rampur (Uttar Pradesh). The prime aim behind establishing the company was to simplify the provision of 9 am snacks to all their clients. The dedicated workforce that provides the optimal resolution. They have expert team, that checks the acquired raw material and finalized products on international parameters. They ensure that all products belong to superlative quality while being delivered to the client.

Plant has a capacity to produce snacks sauce -5TPD, Ketchup-2.5 TPD, Soya Sauce 1TPD,Chilli sauce 2.5 TPD, Noodles -2 TPD etc.

The units function on consents and directions given by the U.P. Pollution Control Board. As per the consent the effluent is allowed to discharge outside the premises and in surface water body after proper treatment as per the instruction given in the consent letter. Damyaa (PJ) Foods has installed exhaustive treatment system to treat the waste water and making it suitable for reuse in to process as well as for use in horticulture.

Damyaa (PJ) Foods private Ltd., Rampur, U.P has been visited on November 12, 2021. The presence of unit operations/processes of ETP have been physically verified (photographs attached – Annexure III). At the time of visit, various units of ETP were installed and found to be operational. The unit has been suggested some minor modifications for efficient working/treatment of wastewater. Later on, unit has informed that they have completed the modifications. The aesthetic view of the plant is satisfactory and the plant area was odor free at the time of inspection.

2.0 Objective of the present study:

The aim of the present study is to assess adequacy of existing ETP schemes in Mls. **Damyaa (PJ) Foods private Ltd., Rampur, U.P.**

3.0 Manufacturing Process

Production Process:

Creating the emulsion: A continuous blending system is employed to sustain the correct degree of emulsification. An emulsion (known technically as a colloid) occurs when the blending of two liquids, in this case vinegar and oil, causes one of the liquids to form small droplets that are dispersed throughout the other liquid. The blend of vinegar and oil moves continuously through a series of positive replacement pumps. These pumps feature a cavity or set of cavities fitted with rotary impellers. A regulated pumping action causes the cavities to fill and empty. The impellers move the blended fluid from one cavity to another

Adding ingredients: Pre-measured ingredients are piped in through openings in the sides of the pumps or from spigots overhead.

Bottling the mayonnaise: The mayonnaise is moved through the pumping system to the bottling station. Pre-sterilized jars move along conveyer belts as premeasured amounts of mayonnaise are poured into the jars. The jars are sealed with metal screwcaps. They are not vacuum-sealed. Quality Control : All raw materials are check for freshness when they arrive at the processing plant. Stored materials are tested periodically as well. Samples of the mayonnaise are drawn off and taste-tested during the manufacturing process as shown in (Annexure IV).

4.0 WATER AND WASTEWATER: GENERATION AND CHARACTERIZATION

4.1 QUANTIFICATION OF WASTEWATER

The sources of effluent include water left after processing of food ingredients, washing /cleaning of plant and utility section. The quantity of effluent generated from various sources of the unit has been estimated considering 60% of the total water

consumption. The total effluent generated has been estimated for present scenario is run for Maximum 6.5 KLD as per consent. Whereas it can handle up to 25.0 KLD.

4.2 CHARACTERIZATION OF WASTEWATER

The characteristics of effluent are source specific and differ from source to source. Therefore, the effluent generated is of interest from the standpoint of environmental impact in terms of both effluent volume and contaminant loading. Therefore, the characteristics of effluent include mainly pH, total suspended solids, biochemical oxygen demand, chemical oxygen demand and oil and grease. The current reports of influent and effluent are seen and attached (Annexure –I).

4.3 QUANTIFICATION OF WATER

Two bore wells with capacity of 20 KLD are used to drawn water from underground. The average water consumption including from food processing, domestic as well as staff colony and horticulture purposes is 16KLD. The quantity of fresh water consumption from various sources of the unit has been estimated for present scenario found to be 16-20 KLD.

4.4 CHARACTERIZATION OF WATER

The characteristics of raw water are source specific and differ from source to source. Therefore, the water consumption is of interest from the standpoint of environmental impact in terms of both influent volume and contaminant loading. Therefore, the characteristics of influent include mainly pH, total suspended solids, biochemical properties, oil and grease. The current reports are seen and attached (Annexure-I).

5.0 TREATMENT PROCESS DESCRIPTION

The unit has provided effluent treatment plant (ETP) for the treatment of wastewater prior to discharge and to comply with the requirements of the pollution control board. The treatment system consists of conventional wastewater treatment system followed by adsorption system. The detail wastewater treatment plant units are shown in the given figure. Process wastewater is collected through gravity to a

collection tank. Wastewater is pumped to flash mixing tank where coagulation and flocculation is added to settle down suspended particles. To settle material by gravity, removing floatable objects, and reducing the pollution to ease secondary treatment primary settlers are constructed. Ultimately reduces the Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS) in the wastewater. Aeration provides oxygen to bacteria for treating and stabilizing the wastewater. Oxygen is needed by the bacteria to allow biodegradation to occur. The supplied oxygen is utilised by bacteria in the wastewater to break down the organic matter containing carbon to form carbon dioxide and water. Treated wastewater from aeration tank is moved to secondary settlers flowed by activated sludge aeration tank. The treated wastewater from the secondary clarifier is pumped to multigame filter followed by activated carbon filter.

6.0 TREATMENT PLANT: UNIT OPERATIONS/PROCESSES

(i) Flash mixing tank
(ii) Primary settler
(iii) Collection cum Equalization Tank
(iv) Aeration tank I & II
(v) Secondary clarifier
(vi) Sludge drying bed
(vii) Dual Media Filter
(viii) Activated carbon filter

6.1 SPECIFICATION OF PROCESS UNITS

S. No.	ETP component	Nos.	Size/capacity	Material of Construction	Whether adequate , If not , give reasons
(i)	Screening tank	03	Total volume 1000 kl	RCC.	HRT 16 hrs Adequate
(ii)	Collection tank	01	Total volume 16 m3	RCC	HRT 16 hrs Adequate
(iii)	Flash mixing tank	01	Total volume 0.5 m3	MS	HRT 30mint Adequate

(iv)	Primary settler	01	1.0 m x 2.3 m x 1.0 m	MS Sheets	HRT 130 mint Adequate
(v)	Aeration tank	01	14 m Depth 3.0 m	MS Sheets.	Adequate
(vi)	Secondary settler tank	01	1.0 m x 2.3 m x 1.8 m	MS	HRT 3.3 hrs Adequate
(vii)	Activated carbon filter	01	50 cubic meter capacity	MS	Adequate
(viii)	Dual Media Filter	01	50 cubic meter capacity	MS	Adequate

**Information provided by the client*

7.0 ANALYSIS OF INFLUENT AND EFFLUENT CHARACTERISTICS

The client has provided recent test report of influent and effluent characteristics. It can be seen from the report that quality of treated wastewater obtained after multi grade filter is good quality and suitable for discharge to drains as well as re use for cleaning / washing and gardening. Thus out of 6.5 KLD wastewater generated 3.5 KLD is used back to green zone and 3.0 KLD discharge in to the nearby drain. The values of characteristic parameters at the outlet of ETP have been found to be within the permissible limit (Annexure I).

8.0 CONCLUSIONS AND RECOMMENDATIONS

(i) The capacity - wise all the unit operations and processes of ETP are seem to be adequate to cater the wastewater generated from the unit.

(ii) The influent and effluent characteristics having case specific selected parameters complies the regulatory norms of discharge standards.

(iii) 58 % wastewater after treatment used in the green zone and rest 42 % discharge in the drain after proper treatment as per CPCB guidelines.

(iv) Damyaa (PJ) foods pvt Ltd is discharging 42 % effluent out of the premises.

(v) Wastewater treatment scheme is adequately designed and working satisfactorily.

(vi) It has been suggested to arrange the technical training programme for operating personnel on treatment plant operation and maintenance on regular bases to aware of the significance and principles of the operating system.

(vii) It has been suggested to make regular maintenances of Multi grade and activated carbon filters

Name : Dr. Sohail Ayub
Designation : Professor
Name of organization/institute: Dept. of Civil Engg.
Aligarh Muslim University Aligarh – 202002

Dr. Sohail Ayub (Ph.D.)
Professor, Dept. of Civil Engg.
A.M.U., Aligarh

SUMMARY SHEET OF ADEQUACY REPORT FOR ETP

OF

M/S Damyaa (PJ) Foods private Ltd., Rampur, U.P.

Adequacy Report No.: EPES/CED/169/2021 Date of Issue: 23.11.2021

S. No.	Description	Details
1	Name of unit	**M/S Damyaa (PJ) Foods private Ltd., Rampur, U.P.**
2	Address of unit	Village Milak Chikna, Shahbad road Rampur UP
3	Date of Commissioning/ Commencement of Production	2011
4	(a) Plot area (in sq feet) (b) Built up area (in sq feet)	12393.0 SQM 4135.38 SQM RCC and 5102.22 Shed
5	Name, Designation & contact No(s) of the In- charge dealing with pollution control matters.	Mr.Pramod Kumar 975923085
6	Name, Designation of the person (s) contacted at the site during the visit.	Mr. Ajeet Singh
7	Activity/process	Manufacturer, Exporter , Wholesaler & Retailer
8	Production capacity	produce snacks sauce -5TPD, Ketchup-2.5 TPD, Soya Sauce 1TPD, Chilli sauce 2.5 TPD, Noodles -2 TPD etc.
9	Manufacturing process /Main Activities (in brief, Also Attach Process Flow Diagram))	As per process flow chart (Annexure- IV)
10	Main Raw Materials	as per requirement
11	Main Products	Snack sauces, Ketchup, noodles, soya souse, jam, pickles, Jeggre etc.
12	Source of water	Ground water (bore well)

Part B: Water Consumption, Waste Water Generation and Treatment

13 Water consumption, source and waste water generation (in KLD): (please Annex Water Mass Balance chart)

		Usage	Water consumption Quantity, KLD	Source	Water meter installed	Wastewater generation, KLD	Flow meter installed

	(a)	Domestic (toilet/Bathroom/ washroom & colony etc.	1.0 KLD	Ground Water	Yes	0.5 KLD	
	(b)	Used in production as ingredient	15.0 KLD	Ground Water	yes	6.0 KLD	Yes
		Total	16.0 KLD	Ground Water	Yes	6.50KLD	

14	Basis of the quantity of water consumption and waste water generation mentioned above: **Estimation/Waste Water Meter Reading**
15	Wastewater treatment facilities: Effluent Treatment Plant (ETP)

S No.	Design capacity (in KLD)	Treatment facility	Design parameter (BOD etc.)	Treatment process(physio-chemical/Biological, mention technology used)	Batch/Continuous process	Sources of waste water leading to ETP	Present average waste water generation KLD	Flow meter at inlet & outlet (yes/No)	Disposal point
1	25.0	ETP	BOD-350 mg/l COD-1000 mg/l	Physico-Chemical	Continuous process	By Pump	6.5	Yes	Yes

16	Whether all the wastewater generated from the unit /establishment is treated: Yes	
17	Mode and location of effluent discharge : (please attach location map of disposal clearly indicating the outlets for sampling/effluent discharge) (a) **Treated effluent** : partially used for cleaning/ gardening and partially discharges outside after proper treatment as per the CPCB guidlines.	
18	Details of the Constituent Units of ETP	Screening tanks,Collection cum Equalization tank, Flash mixing tank, primary settler, aeration tank, Treated Water Tank, Dual Media Filter, ACF
	Design Capacity of ETP (in KLD)	25.00
	Treatment process (physic-chemical /biological, mention technology used)	1. *Physico-Chemical Process* Collection cum Equalization tank, Flash mixing tank, primary settler 2. *Biological Treatment Process* NIL 3. *Chemical Treatment* Aeration 4. *Tertiary Treatment* Dual Media Filter, ACF

	Date of commissioning of ETP Whether continuous or batch? if batch , no. of batches? (Enclose schematic diagram/ process flow sheet of treatment scheme & photograph of ETP	Commissioning Date: 2014 Type: Continuous process Photo attached (Annexure II & III)

ETP COMPONENTS DETAILS

S. No.	ETP component	Nos.	Size/capacity	Material of Construction	Whether adequate , If not , give reasons
(i)	Screening tank	03	Total volume 1000 kl	RCC.	HRT 16 hrs Adequate
(i)	Collection tank	01	Total volume 16 m3	M.S.	HRT 16 hrs Adequate
(ii)	Flash mixing tank	01	Total volume 0.5 m3	MS	HRT 30mint Adequate
(iii)	Primary settler	01	1.0 m x 2.3 m x 1.0 m	MS Sheets	HRT 130 mint Adequate
(iv)	Aeration tank	01	14 m Depth 3.0 m	MS Sheets.	Adequate
(v)	Secondary settler tank	01	1.0 m x 2.3 m x 1.8 m	MS	HRT 3.3 hrs Adequate
(vi)	Activated carbon filter	01	50 cubic meter capacity	MS	Adequate
(vii)	Dual Media Filter	01	50 cubic meter capacity	MS	Adequate

19	Whether design aspects were taken in to account while evaluating the performance of ETP: Yes
20	• Whether any modification was suggested to rectify deficiencies improve /upgrade the ETP: Yes • Whether modifications are incorporated: Yes
21	Whether ETP found operating and wastewater is treated : Yes
22	Whether wastewater measured : Yes, Electromagnetic Flowmeter (At inlet and outlet of ETP) (if yes please enclose details of flow meters type /No locations etc.) photograph attached
23	Whether all the wastewater generated from the unit is treated? If not , how much % of is being treated: Yes 100% treated
24	Whether unit is having any Bypass arrangement for discharge of untreated effluent from the premises : No
25	Whether the entire treated effluent is being reused? If yes mention the quantity of reuse /recycle of treated effluent in various in various usages and provide details. If not. How much % is being reused?: 42 % is used in green zone re circulation and recycling purposes.
26	Whether the unit has proper arrangement /system for handling and disposal of sludge generated from the ETP: Yes

27	Whether the unit is having adequate and qualified /skilled operators(s) for the proper operation and maintenance of the ETP: Yes (It was suggested to have one more)			
28	Whether proper log book is being maintained for the operation and maintenance of ETP?: Yes			
29	Whether influent (untreated) and effluent (treated) characteristics have been monitored? If yes, then details in the table below)			
	Date and time of effluent sampling	Whether grab or composite sample	Name & designation of the person who collected sample	Name of the Empanelled laboratory which conducted monitoring /analysis
	28.07.2021 2;30 PM	Grab Sampling	Sunil Kumar	Green Lab Analysis & Research centre New Delhi
30	Whether the treated effluent is meeting the prescribed standards: Yes			
31	Date of visit /inspection of the unit /establishment		12-11-2021	
32	Name and designation of the person conducted visit/inspection of the unit /establishment		Dr. Sohail Ayub	
33	Whether existing ETP is adequate to treat the waste water up to its designed capacity (10.0KLD) to meet the prescribed standards: Yes			
34	Advice (if any) given to the unit for the proper operation & maintenance of ETP (separate sheet may be enclosed) Requested to adopt ZLD system and install RO unit and Multi evaporator.			
35	Suggestion for best available technology :Nil			
36	Remarks (if any): The sizes of the different treatment units were found adequate and as per the laboratory reports the ETP is treating wastewater satisfactorily and the effluent discharge limits of CPCB are achieved.			

Adequacy Report No.: EPES/CED/169/2021 Date of Issue: 23.11.2021

Name : Dr. Sohail Ayub
Designation : Professor
Name of organization/institute: Dept. of Civil Engg.
Aligarh Muslim University Aligarh – 202002

Dr. Sohail Ayub (Ph.D.)
Professor, Dept. of Civil Engg.
A.M.U., Aligarh

Enclosures: As Above

ANNEXURE -I

Analysis Reports:

1.Influent and Effluent Wastewater Quality.

2. Domestic Water Quality.

3. Ambient Noise Quality.

4. Air quality

(Original reports attached)

Green Lab Analysis & Research Centre Pvt. Ltd.

A-74, Naraina Industrial Area, Phase-I, New Delhi-110028
Tel.: 011-42240220
E-mail: info@glarc.in
Website: www.glarc.in

GLARC

ISO 9001 : 2015
Govt. Approved Testing Lab

RESULT OF ANALYSIS

TEST REPORT

Page No	1 of 1	Sample Report No	GLARC/WT-2107280105
Name and Address of Customer:	M/s. Damyaa P J Foods, Village Chikna Shahbad Road, Rampur - 244901 (U.P.)	Date of Receipt:	28-07-2021
Sample Name	RO Water	Start Date of Analysis:	28-07-2021
Batch No	RO/WT/234	End Date of Analysis:	10-08-2021
M.F.G Date	29/06/2021	Report Issue Date:	12-08-2021
Sampling Method :	IS: 3025	Sample Quantity:	5.0 Ltr.
Sample collected by	Lab Representative (Mr. Sunil Kumar)	Any Other Information	Sterilized Pet Bottle

S.No	Parameters	Unit	Result	Requirement as per IS 10500:2012 Amendment 1 & 2		Test Method
				acceptable Limit	Permissible Limit	
1	Colour	Hazen	4.0	5 Max	15 Max	IS: 3025 (Part 4)
2	Odour	.....	Agreeable	Agreeable	Agreeable	IS: 3025 (Part 5)
3	pH value	.....	7.73	6.5-8.5	No relaxation	IS: 3025 (Part 11)
4	Taste	.....	Agreeable	Agreeable	Agreeable	IS: 3025 (Part 7 & 8)
5	Turbidity	NTU	<1.0	1 Max	5Max	IS: 3025 (Part 10)
6	Total dissolved solids	mg/l	73.0	500 Max	2000 Max	IS: 3025 (Part 16)
7	Aluminium	mg/l	BDL	0.03Max	0.2Max	IS: 3025 (Part 55)
8	Ammonia	mg/l	BDL	0.5Max	No relaxation	IS 3025 (Part 34)
9	Anionic detergents	mg/l	BDL	0.2 Max	1.0 Max	Annex K of IS 13428
10	Barium(as Ba)	mg/l	BDL	0.7 Max	No relaxation	Annex F of IS 13428
11	Boron (as B),	mg/l	BDL	0.5 Max	1.0 Max	IS 3025 (Part 57)
12	Calcium (as Ca)	mg/l,	12.15	75 Max	200 Max	IS 3025 (Part 40)
13	Chloramines (as Cl2)	mg/l	BDL	4.0 Max	No relaxation	IS 3025 (Part 26)
14	Chloride (as Cl)	mg/l	21.30	250 Max	1 000 Max	IS 3025 (Part 32)
15	Copper (as Cu),	mg/l	BDL	0.05 Max	1.5 Max	IS 3025 (Part 42)
16	Fluoride (as F)	mg/l,	0.01	1.0 Max	1.5 Max	IS 3025 (Part 60)
17	Free residual chlorine	mg/l	BDL	0.2 Max	1 Max	IS 3025 (Part 26)
18	Iron (as Fe)	mg/l	0.03	0.3 Max	No relaxation	IS 3025 (Part 53)
19	Magnesium (as Mg)	mg/l	6.58	30 Max	100 Max	IS 3025 (Part 46)
20	Manganese (as Mn)	mg/l	BDL	0.1 Max	0.3 Max	IS 3025 (Part 59)
21	Mineral oil	mg/l	BDL	0.5 Max	No relaxation	IS 3025 (Part 39)
22	Nitrate (as NO3)	mg/	0.07	45 Max	No relaxation	IS 3025 (Part 34)
23	Phenolic compounds (as C6H5OH)	mg/l	BDL	0.001 Max	0.002 Max	IS 3025 (Part 43)
24	Selenium (as Se)	mg/l	BDL	0.01 Max	No relaxation	IS 3025 (Part 56)

Green Lab Analysis & Research Centre Pvt. Ltd.
A-74, Naraina Industrial Area, Phase-I, New Delhi-110028
Tel.: 011-42240220
E-mail: info@glarc.in
Website: www.glarc.in

GLARC

ISO 9001 : 2015
Govt. Approved Testing Lab

RESULT OF ANALYSIS

Nature of the sample : RO Water

S.No	Parameters	Unit	Result	Requirement as per IS 10500:2012 Amendment 1 & 2		Test Method
				acceptable Limit	Permissible Limit	
25	Silver (as Ag)	mg/l	BDL	0.1 Max	No relaxation	Annex J of IS 13428
26	Sulphate (as SO4)	mg/l	9.24	200 Max	400 Max	IS 3025 (Part 24)
27	Sulphide (as H2S)	mg/l	BDL	0.05 Max	No relaxation	IS 3025 (Part 29)
28	Total alkalinity as calcium carbonate	mg/l	18.70	200 Max	600 Max	IS 3025 (Part 23)
29	Total hardness (as CaCO3)	mg/l	22.54	200 Max	600 Max	IS 3025 (Part 21)
30	Zinc (as Zn)	mg/l	BDL	5 Max	15 Max	IS 3025 (Part 49)
31	Cadmium (as Cd)	mg/l,	BDL	0.003 Max	No relaxation	IS 3025 (Part 41)
32	Cyanide (as CN)	mg/l	BDL	0.05 Max	No relaxation	IS 3025 (Part 27)
33	Lead (as Pb)	mg/l	BDL	0.01 Max	No relaxation	IS 3025 (Part 47)
34	Mercury (as Hg)	mg/l,	BDL	0.001 Max	No relaxation	IS 3025 (Part 48)
35	Molybdenum (as Mo)	mg/l	BDL	0.07 Max	No relaxation	IS 3025 (Part 2)
36	Nickel (as Ni)	mg/l	BDL	0.02 Max	No relaxation	IS 3025 (Part 54)
37	Polychlorinated biphenyls	mg/l	BDL	0.000 5 Max	No relaxation	ASTM
38	Polynuclear aromatic hydrocarbons (as PAH)	mg/l	BDL	0.000 1 Max	No relaxation	APHA
39	Total arsenic (as As)	mg/l	BDL	0.01 Max	0.05 Max	IS 3025 (Part 37)
40	Total chromium (as Cr)	mg/l	BDL	0.05 Max	No relaxation	IS 3025 (Part 52)
41	Trihalomethanes:					
a)	Bromoform	mg/l	BDL	0.1 Max	No relaxation	APHA
b)	Dibromochloromethane	mg/l	BDL	0.1 Max	No relaxation	APHA
c)	Bromodichloromethane	mg/l	BDL	0.06 Max	No relaxation	APHA
d)	Chloroform	mg/l	BDL	0.2 Max	No relaxation	APHA
Pesticide Parameters						
1	Alachlor	µg/l	BDL	20	--	USEPA-525.2,507
2	Atrazine	µg/l	BDL	2	--	USEPA- 525.2, 8141 A
3	Aldrin	µg/l	BDL	0.03	--	USEPA-506
4	Dieldrin	µg/l	BDL		--	USEPA-508
5	Alpha HCH	µg/l	BDL	0.01	--	USEPA-508
6	Beta HCH	µg/l	BDL	0.04	--	USEPA-508
7	Butachlor	µg/l	BDL	125	--	USEPA-525.2, 8141 A

Green Lab Analysis & Research Centre Pvt. Ltd.

A-74, Naraina Industrial Area, Phase-I, New Delhi-110028
Tel.: 011-42240220
E-mail: info@glarc.in
Website: www.glarc.in

GLARC

ISO 9001 : 2015
Govt. Approved Testing Lab

RESULT OF ANALYSIS

Nature of the sample : RO Water						
S.No	Parameters	Unit	Result	Requirement as per IS 10500:2012 Amendment 1 & 2		Test Method
				acceptable Limit	Permissible Limit	
8	Chlorpyriphos	µg/l	BDL	30	--	USEPA-525.2, 8141 A
9	Delta HCH	µg/l	BDL	0.04	--	USEPA-508
10	2,4- Dichlorophenoxyacetic acid	µg/l	BDL	30	--	USEPA-515.1
11	DDT	µg/l	BDL	1	--	USEPA-508
12	Isomers of DDT	µg/l	BDL			
13	DDE	µg/l	BDL			
14	DDD	µg/l	BDL			
15	Endosulfan	µg/l	BDL	0.4	--	USEPA-508
16	Ethion	µg/l	BDL	3	--	USEPA-1657 A
17	Gamma — HCH (Lindane)	µg/l	BDL	2	--	USEPA-532
18	Isoproturon	µg/l	BDL	9	--	USEPA-8141 A
19	Malathion	µg/l	BDL	190	--	USEPA-8141 A
20	Methyl parathion	µg/l	BDL	0.3	--	USEPA-8141 A
21	Monocrotophos	µg/l	BDL	1	--	USEPA-8141 A
22	Phorate	µg/l	BDL	2	--	USEPA-8141 A
Microbiology Parameters						
1	Aerobic Microbial Count (at 20-22°C IN 72 Hours)	cfu/ml	18	100.0max.	--	FSSAI Lab Manual
2	Yeast and mould counts	per 250ml	Absent	Absent	--	FSSAI Lab Manual
3	Salmonella	per 250ml	Absent	Absent	--	FSSAI Lab Manual
4	Shigella	per 250ml	Absent	Absent	--	FSSAI Lab Manual
5	E.coli	per 250ml	Absent	Absent	--	FSSAI Lab Manual
6	Coliforms	per 250ml	Absent	Absent	--	FSSAI Lab Manual
7	Staphylococcus aureus	per 250ml	Absent	Absent	--	FSSAI Lab Manual
8	Pseudomonas aeruginosa	per 250ml	Absent	Absent	--	FSSAI Lab Manual
9	Sulphite-reducing anaerobes	per 250ml	Absent	Absent	--	FSSAI Lab Manual
10	Vibrio cholera	per 250ml	Absent	Absent	--	FSSAI Lab Manual
11	V. paraheamolyticus	per 250ml	Absent	Absent	--	FSSAI Lab Manual

Remarks : The sample conform to various requirement tested as per IS 10500 with Amendment 1 & 2 respect to above tests.

****End of Report****

Authorized Signatory
(S.D Sharma)

Green Lab Analysis & Research Centre Pvt. Ltd.
A-74, Naraina Industrial Area, Phase-I, New Delhi-110028
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RESULT OF ANALYSIS

TEST REPORT

Page No	1 of 1	Sample Report No	GLARC/WT-2106300104
Name and Address of Customer:	M/s. Damyaa P J Foods, Village Chikna Shahbad Road, Rampur - 244901 (U.P.)	Date of Receipt:	30-06-2021
Sample Name	ETP Outlet Water	Start Date of Analysis:	30-06-2021
Batch No	ETPOUT/WT/286	End Date of Analysis:	05-07-2021
M[illegible] Date	28.06.2021	Report Issue Date:	05-07-2021
Sample Pkg	Sterilized Pet Bottle	Sample Quantity:	2.0 Ltr.
Sampling Method :	N.S	Any Other Information	N.S
Sample collected by	Lab Representative (Mr. Sunil Kumar)		

S.NO.	Test Parameter	Unit of Measurements	Result	Requirement as per CPCB	Method Reference
CHEMICAL PARAMETERS					
1.	pH value (at 25°C)	-	7.42	6.5 – 8.5	IS: 3025 (P-11)-1983
2.	Colour	Hazen	<1.0	5 max	IS: 3025 (P-4)-1984
3.	Chemical Oxygen Demand (COD)	mg/l	53.0	250.0 Max.	IS: 3025 (P-58) 2006
4.	Biochemical Oxygen demand (at 3 days at 27°C)	mg/l	15.0	50.0 Max.	IS: 3025 (P-44) - 1993
5.	Total Suspended Solids	mg/l	8.0	100.0 Max.	IS: 3025 (P-17) -1984

CPCB : Central pollution control board

End of Report

Authorized Signatory
(Chemical)

ENVIRONMENT POLLUTION ANALYSIS LAB

(AN ISO 9001, ISO 14001, OHSAS 18001, NABL CERTIFIED LAB)
Laboratory : 1/18, 1st Floor, UIT Colony, Near Mansa Chowk Bhiwadi-301019, Alwar (Raj.), +91-9759427231

NABL ACCREDITED

TEST CERTIFICATE

Issued to:
M/S DAMYA (PJ) FOODS PVT. LTD.
VILL.- CHIKNA, SHAHBAD ROAD, RAMPUR
U.P.- 244901, INDIA

Date of Report : 21/12/2020
Report No : EPAL/20/0923
Job Order No : EPAL/20/12/1215
Period of Testing : 18/12/2020 to 21/12/2020
Date of Receiving : 18/12/2020

STACK EMISSION TEST REPORT

A. SAMPLE PARTICULARS:

1.	**Name of the Unit**	: **M/S DAMYA (PJ) FOODS PVT. LTD.**
2.	Name of Plant/Section	: Boiler
3.	Capacity of Boiler	: 5 TPH
4.	Type of the Sample	: Stack Emission
5.	Date of Sampling	: 18/12/2020
6.	Type of Fuel Used	: Coal
7.	Stack Height in feet	: 95 Feet
8.	Diameter of stack in Inch	: 750 mm
9.	Instrument Status	: Calibrated
10.	Parameter Monitored	: PM, SO_x, NO_x
11.	Point of Sample Collection	: From Port Hole of Stack
12.	Purpose of Analysis	: Monitoring
13.	Sample Collected/ Supplied by	: Lab Rep.

B. OBSERVATIONS:

1.	Stack Temperature, °C	: 42
2.	Ambient Temperature, °C	: 20.0
3.	Flue gas velocity, m/sec	: 6.6
4.	Sampling flow rate, lt./min.	: 15.1
5.	Period of sampling, minutes	: 13.4
6.	Volumetric Flow Rate (h/Nm^3)	: 213.87

C. TEST RESULTS:

S.No.	Parameters	Units	Results	Limits as per CPCB	Protocol Used
1.	Particulate Matter (at 15% O_2)	mg/Nm^3	22.4	800	IS 11255(P-1)
2.	Sulphur dioxide (at 15% O_2)	mg/Nm^3	8.2	---	IS 11255(P-2)
3.	Oxides of Nitrogen (as NO_2)	mg/Nm^3	32.6	---	IS 11255(P-7)

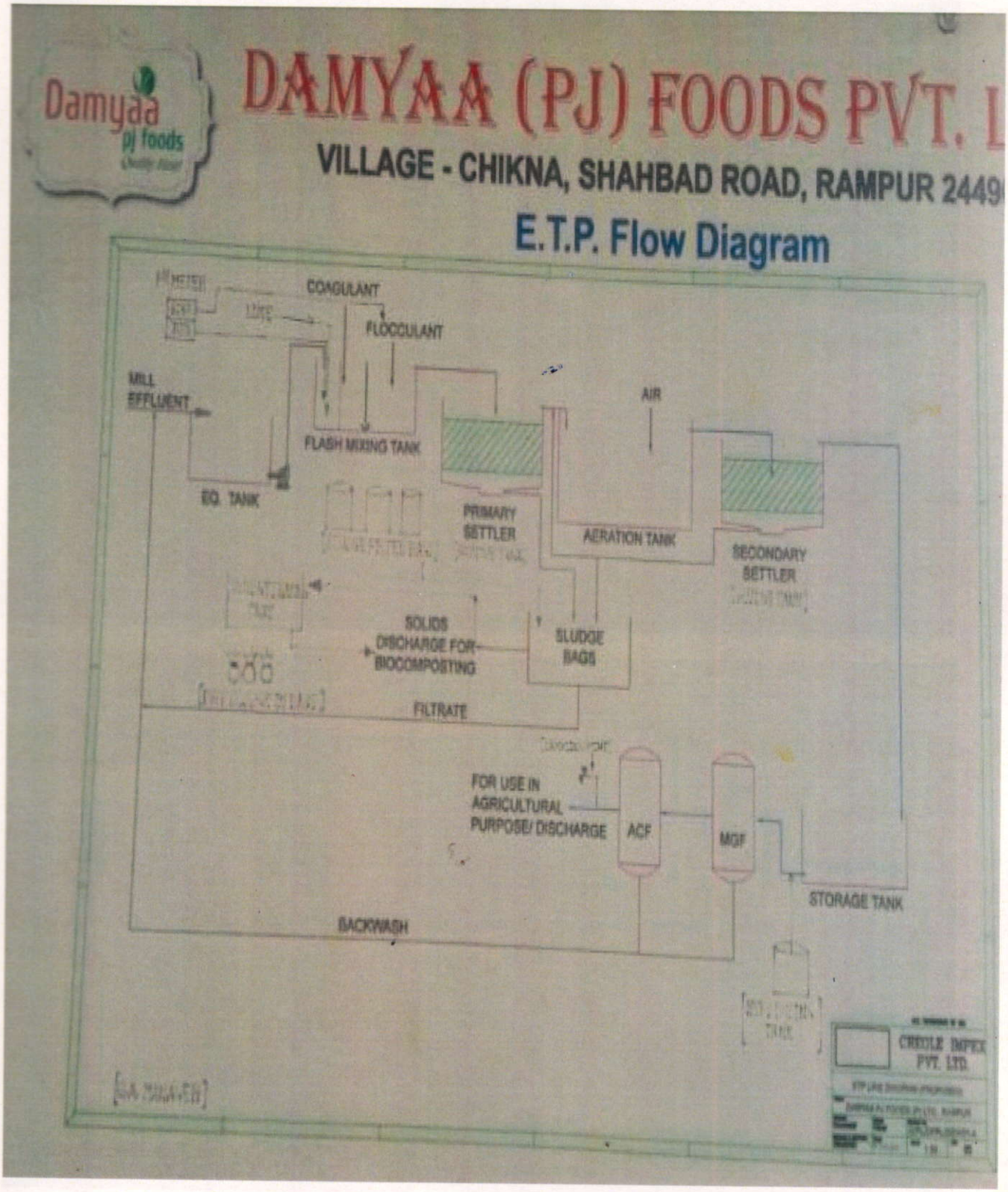
Checked By

Approved By

Note: 01. The result listed refer only to the tested samples and applicable parameters.
02. Sample will be destroyed one month from the date of issue of test certificate.
03. Any complaints about this report should be communicated within 7 days of issue of this report.
04. The report is not to be reproduced- wholly or in part and cannot be used as an evidence in the court of law and should not be used in any advertising media without our special permission in writing.

ANNEXURE-II

1. ETP Process Flow Scheme



ANNEXURE -III

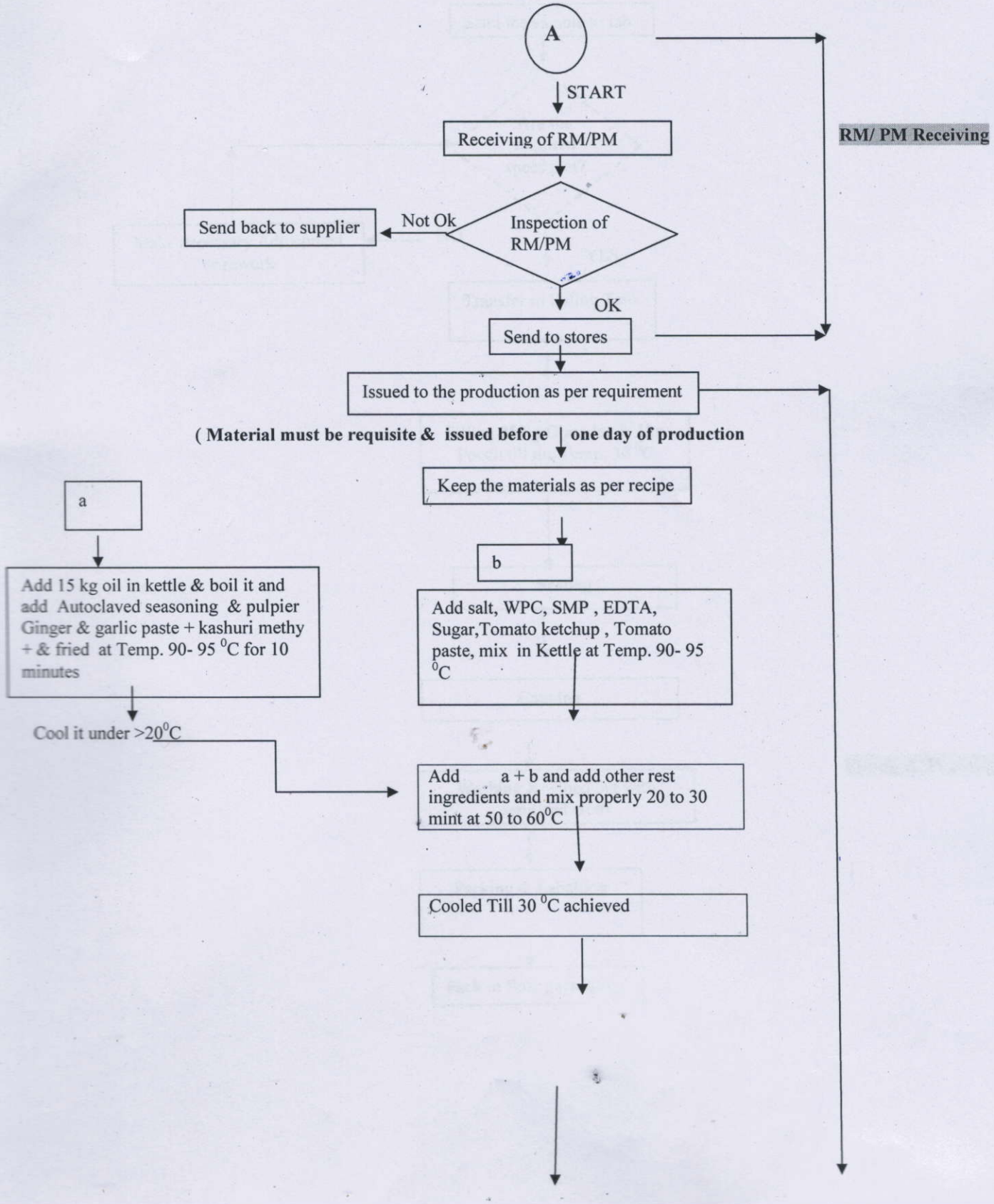
Current Photographs of the existing treatment plant:

ANNEXURE -IV

Details of the Manufacturing Process:

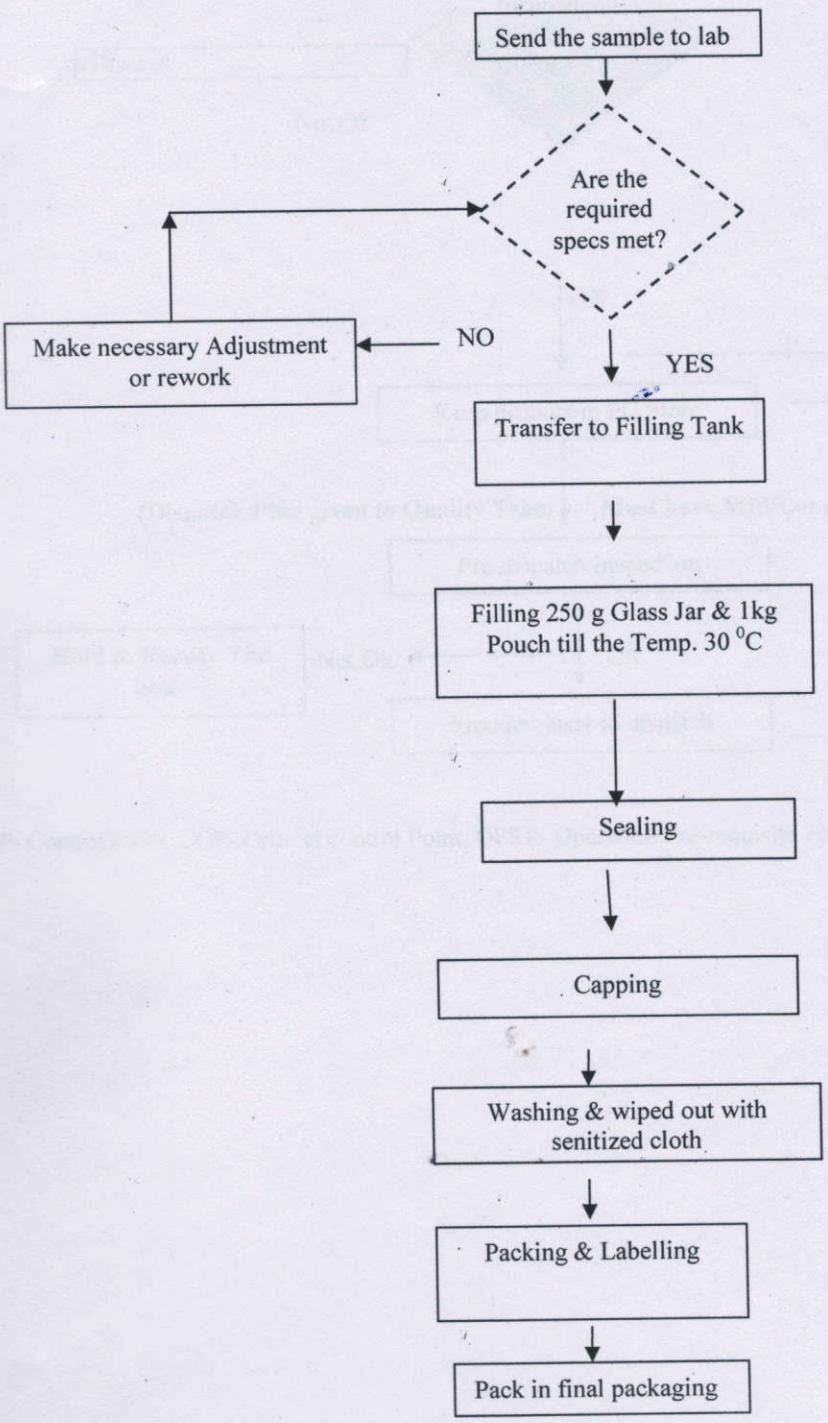
	DAMYAA (P.J.) FOODS PVT. LTD	Doc. No : DPJFPL/QC//FC-
	Village-Chikna, Shahbad Road, Rampur,(U.P.)-244901	W.E.d :22.02.21
	Food Safety Management System	Rev. No/ Date :21.02.22
	Process Flow Chart- Tandoori mayo	Issue No/ Issue Date :01/01.08.2016
Location : Mayonnaise section		Responsibility : Quality executive

TANDOORI MAYO FLOW CHART:-



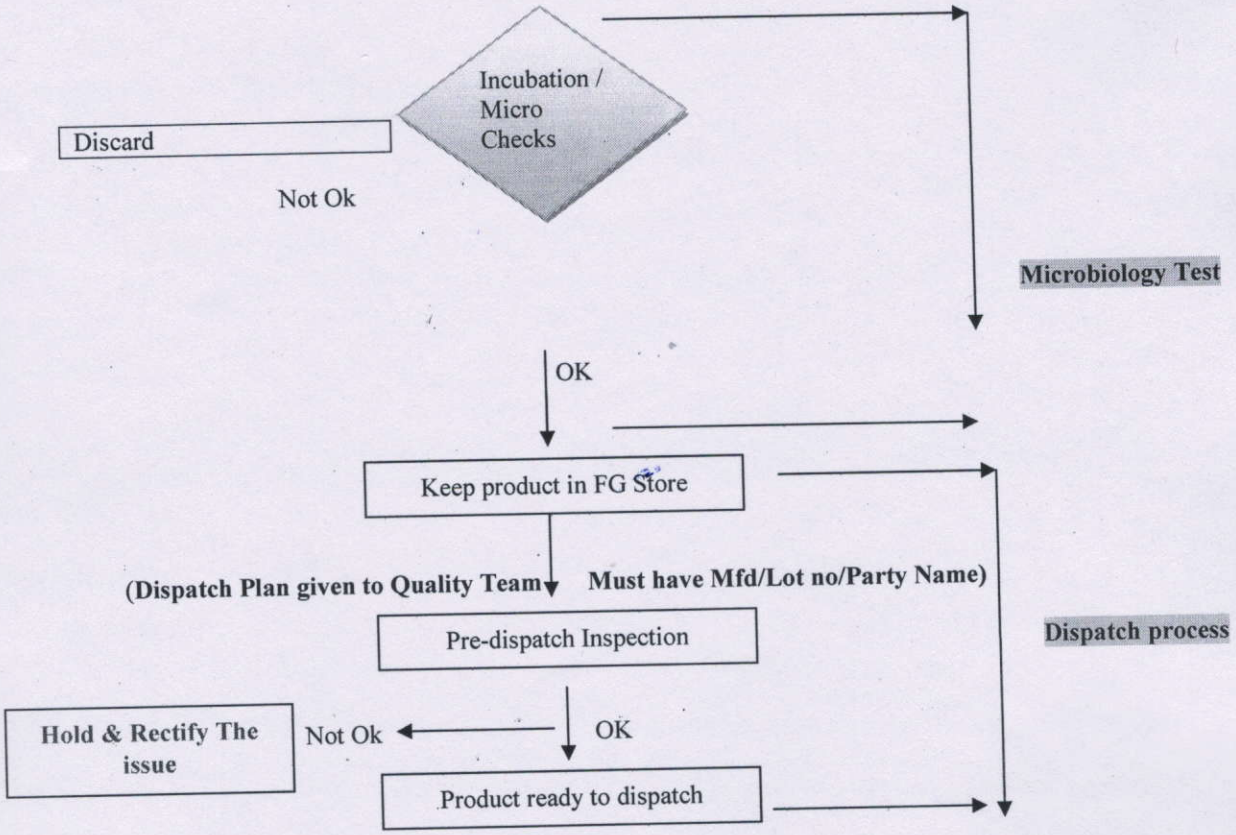
9am	DAMYAA (P.J.) FOODS PVT. LTD	Doc. No : DPJFPL/QC//FC-
	Village-Chikna, Shahbad Road, Rampur,(U.P.)-244901	W.E.d :22.02.21
	Food Safety Management System	Rev. No/ Date :21.02.22
	Process Flow Chart- Tandoori mayo	Issue No/ Issue Date :01/01.08.2016
Location : Mayonnaise section		Responsibility : Quality executive

Manufacturing



Filling & Packing

9am	DAMYAA (P.J.) FOODS PVT. LTD	Doc. No : DPJFPL/QC//FC-
	Village-Chikna, Shahbad Road, Rampur,(U.P.)-244901	W.E.d :22.02.21
	Food Safety Management System	Rev. No/ Date :21.02.22
	Process Flow Chart- Tandoori mayo	Issue No/ Issue Date :01/01.08.2016
Location : Mayonnaise section		Responsibility : Quality executive



Abbreviation : CP- Control point, CCP- Critical control Point, OPRP- Operation Pre-requisite Program.

ANNEXURE -V

Details of the available consents:

UTTAR PRADESH POLLUTION CONTROL BOARD
Building. No TC-12V Vibhuti Khand, Gomti Nagar, Lucknow-226010
Phone:0522-2720828,2720831, Fax:0522-2720764, Email: info@uppcb.com, Website: www.uppcb.com

CONSENT ORDER

Ref No. -
112860/UPPCB/Moradabad(LAB)/CTO/water/RAMPUR/2020

Dated : 29/12/2020

To ,

Shri AMIT JAIN
M/s DAMYAA (PJ) FOODS PRIVATE LIMITED
VILLAGE MILAK CHIKNA, SHAHBAD ROAD,TEHSIL RAMPUR DISTRICT RAMPUR U.P 244901,RAMPUR,244901
RAMPUR

Sub : Consent under Section 25/26 of The Water (Prevention and control of Pollution) Act, 1974 (as amended) for discharge of effluent to M/s. DAMYAA (PJ) FOODS PRIVATE LIMITED

Reference Application No :10377838 **Dated :29/12/2020**

1. For disposal of effluent into water body or drain or land under The Water (Prevention and control of Pollution) Act,1974 as amended (here in after referred as the act) M/s. DAMYAA (PJ) FOODS PRIVATE LIMITED is hereby authorized by the board for discharge of their industrial effluent generated through ETP for irrigation/river through drain and disposal of domestic effluent through septic tant/soak pit subject to general and special conditions mentioned in the annexure ,in refrence to their foresaid application .
2. This consent is valid for the period from 01/01/2021 to 31/07/2022 .
3. In spite of the conditions and provisions mentioned in this consent order UP Pollution Control Board reserves its right and powers to reconsider/amend any or all conditions under section 27(2) of the Water (Previntion and Controt of Pollution) Act, 1974 as amended .

This consent is being issued with the permission of competent authority .

For and on behalf of U.P. Pollution Control Board

VIKAS MISHRA
Digitally signed by VIKAS MISHRA
DN: c=IN, o=Personal, 2.5.4.20=54d7d02d72698c594c01418af63079ad17fb8d282d496a427b4d67c27e451e46, postalCode=226017, st=Uttar pradesh, serialNumber=a701d81c087d764428e37dec5b16a664bf7abbd5f5c9784baf205d7b4ab37f2d, cn=VIKAS MISHRA
Date: 2020.12.29 18:49:54 +05'30'

Regional Officer

Enclosed : As above
(condition of consent):

Copy to:

Regional Officer

U.P. POLLUTION CONTROL BOARD, LUCKNOW

Annexure to Consent issued to M/s.DAMYAA (PJ) FOODS PRIVATE LIMITED vide

Consent Order No. 10377838/ Water Dated : 29/12/2020

CONDITIONS OF CONSENT

1. This consent is valid only for the approved production capacity of Snacks Sauce-5 TPD,Ketchup-2.5 TPD,Soya Sauce-1 TPD,Chilli Sauce-2.5TPD, Noodles-2 TPD.
2. The quantity of maximum daily effluent discharge should not be more than the following :

Effluent Discharge Details			
S.No	**Kind of Effulant**	**Maximum daily discharge,KL/day**	**Treatment facility and discharge point**
1	Domestic	1 KLD	Septic Tank
2	Industrial	15 KLD	ETP

3. Arrangement should be made for collection of water used in process and domestic effluent separately in closed water supply system. The treated domestic and industrial effluent if discharged outside the premises, if meets at the end of final discharge point, arrangement should be made for measurement of effluent and for collecting its sample. Except the effluent informed in the application for consent no other effluent should enter in the said arrangements for collection of effluent. It should also be ensured that domestic effluent should not be discharged in storm water drain .

4(a) The domestic effluent should be treated in treatment plant so that the should be in conformity with the following norms dated treated effluent .

Domestic Effulant		
S.No	**Parameter**	**Standard**
1	Total Suspended Solids	100 mg/l
2	BOD	30 mg/l
3	COD	250 mg/l
4	Oil & Grease	10 mg/l

4(b). The industrial effluent should be treated in treatment plant so that the treated effluent should be in conformity with the following norms. .

Industrial Effulant		
S.No	**Parameter**	**Standard**
1	Total Suspended Solids	100 mg/l
2	BOD	30 mg/l
3	COD	250 mg/l
4	Oil & Grease	10 mg/l

5. Effluent generated in all the processes, bleed water, cooling effluent and the effluent generated from washing of floor and equipments etc should be treated before its disposal with treated industrial effluent so that it should be according to the norms prescribed under The Environment (Protection) Act,1986 or otherwise mandatory .
6. The other pollutant for which norms have not been prescribed, the same should not be more than the norms prescribed for the water used in manufacturing process of the industry .
7. The method for collecting industrial and domestic effluent and its analysis should be as per legal Indian standards and its subsequent amendments/standards prescribed under The Environment (Protection) Act, 1986.
8. The treated domestic and industrial effluent be mixed (as per the provisions of Condition No. 2) and disposed of on one disposal point. This common effluent disposal point should have arrangement for flow meter/V Notch for measuring effluent and its log book be maintained .
9. The Unit will file the renewal application at least 2 months prior to the expiry of this Order.

VIKAS MISHRA

Specific Conditions:

1. This consent is valid for the production of Snacks Sauce-5 TPD,Ketchup-2.5 TPD,Soya Sauce-1 TPD,Chilli Sauce-2.5TPD, Noodles-2 TPD by using Vegetables,Wheat Flour,Sugar,Salt,Spices etc. as raw material.
2. This consent is valid for the current products and capacity. In Case of any change in process, capacity enhancement, etc., the No Objection Certificate shall be obtained from the Board.
3. Generated hazardous waste shall be stored temporarily in the factory premises and disposed off through authorized TSDF after obtaining the authorization from the Board.
4. Industry shall submit the latest copy of Audited Balance Sheet/C.A. Certificate (Fixed Assets+ Current Assets - Current Liabilities) so the Consent fee payable by the industry may be verified.
5. The Order issued by Hon'ble Courts/Hon'ble NGT, MoEF &CC, Central Pollution Control Board, U.P. Pollution Control Board, shall be complied with.
6. The industry shall ensure the proper operation and maintenance of Effluent Treatment Plant .The industry shall also ensure to make arrangement to maximise the use of treated water in Horticulture/reuse in floor washing etc.
7. The industry shall ensure to submit the analysis report of treated effluent from NABL accredited laboratory on quarterly basis.
8. Industry shall obtain permission from UPGWD for withdrawal of ground water immediately and submit it to the Board.
9. The unit shall develop green belt as per the protocol attached with the UPPCB office order no. H16405/220/2018/02 dated 16-02-2018 which is available on board's website. The plantation of saplings should be completed within 04 months time and action taken report shall be submitted to this office. Failing which consent would be revoked without serving any notice to the industry.
10. The industry shall comply with the provisions of the Environment (Protection) Act 1986, Water (Prevention and Control of Pollution) Act, 1974 as amended, Air (Prevention and Control of Pollution) Act, 1981 as amended, Plastic Waste Management Rules 2016, E- Waste (Management) Rules 2016, Solid Waste Management Rules 2016 & Hazardous and other Waste (Management and Transboundary Movement) Rules 2016 (Whichever is applicable).
11. If closure order is issued by CPCB or UPPCB against any defaulting unit, then CTO issued earlier will remain suspended during the closure period and after ensuring the compliance and after revocation of closure order, the CTO will automatically be effective from the date of issuance of closure order revocation, with additional conditions mentioned in the closure revocation order.
12. This Consent is being issued under the provisions of the Water (Prevention and Control of Pollution)Act 1974.
13. All the necessary NOC's, Permissions, Licenses etc shall be taken from all concerned statutory authorities.

Issued with the permission of competent authority .

For and on behalf of U.P. Pollution Control Board .

Regional Officer

VIKAS MISHRA

Digitally signed by VIKAS MISHRA
DN: c=IN, o=Personal, 2.5.4.20=54d7d02d72698c594c0141 8af63079ad17fb8d282dd496a427b4d 67c27e451e46, postalCode=226017, st=Uttar pradesh, serialNumber=a701d81c087d764428 e37dec5b14e664b07abbd5f5c9784b ef205d7b4ab37f2d, cn=VIKAS MISHRA
Date: 2020.12.29 18:50:23 +05'30'

UTTAR PRADESH POLLUTION CONTROL BOARD

Building. No TC-12V Vibhuti Khand, Gomti Nagar, Lucknow-226010

Phone:0522-2720828,2720831, Fax:0522-2720764, Email: info@uppcb.com, Website: www.uppcb.com

CONSENT ORDER

Ref No. - 112855/UPPCB/Moradabad(LAB)/CTO/air/RAMPUR/2020 **Dated : 29/12/2020**

To ,

Shri AMIT JAIN
M/s DAMYAA (PJ) FOODS PRIVATE LIMITED
VILLAGE MILAK CHIKNA, SHAHBAD ROAD,TEHSIL RAMPUR DISTRICT RAMPUR U.P 244901,RAMPUR,244901
RAMPUR

Sub : Consent under section 21/22 of the Air (Prevention and control of Pollution) Act, 1981 (as amended) to M/s. DAMYAA (PJ) FOODS PRIVATE LIMITED

Reference Application No. 10376994 Dated : 29/12/2020

1. With reference to the application for consent for emission of air pollutants from the plant of M/s DAMYAA (PJ) FOODS PRIVATE LIMITED . under Air Act 1981. It is being authorised for said emissions, as per the standards, in environment, by the Board as per enclosed conditions .
2. This consent is valid for the period from 01/01/2021 to 31/07/2022 .
3. Inspite of the conditions and provisions mentioned in this consent order UP Pollution Control Board reserves its right and powers to reconsider/amend any or all conditions under section 21 (6) of the Air (Previntion and Controt of Pollution) Act, 1981 as amended.

   This consent is being issued with the permission of competent authority .

For and on behalf of U.P. Pollution Control Board

VIKAS MISHRA

Digitally signed by VIKAS MISHRA
DN: c=IN, o=Personal, 2.5.4.20=54d7d02d72698c194c01418a863079ed17fb8d282d496e427b4d57c27e451e46, postalCode=226017, st=Uttar pradesh, serialNumber=a701d81c087d764428e37dec5b16a664bf7abbd5f5c9784baf205d7b4ab37f2d, cn=VIKAS MISHRA
Date: 2020.12.29 18:48:52 +05'30'

Regional Officer

Enclosed : As above
(condition of consent):

Copy to:

Regional Officer

U.P. Pollution Control Board

Dated : 29/12/2020

CONDITIONS OF CONSENT

1. This consent is valid only for the approved production capacity of Snacks Sauce-5 TPD,Ketchup-2.5 TPD,Soya Sauce-1 TPD,Chilli Sauce-2.5TPD, Noodles-2 TPD.
2. This consent is valid only for products and quantity mentioned above. Industry shall obtain prior approval before making any modification in product/ process /fuel/ plant machinery failing which consent would be deemed void.

3(a) The maximum rate of emission of flue gas should not be more than the emission norms for the stacks.

3(b) Air Pollution Source Details.

Air Pollution Source Details					
S.No	**Air Polution Source**	**Type of Fuel**	**Stack No.**	**Parameters**	**Height**
1	Boiler-5 TPH & 1.5 TPH	Rice Husk	1	Particulate Matter	30 meter above Ground level
2	DG set-250 KVA	Diesel	2	Particulate Matter	3.0 meter from nearest highest roof level
3	DG Set-63 KVA	Diesel	3	Particulate Matter	2.0 meter from nearest highest roof level

3(c) The emissions by various stacks into the environment should be as per the norms of the Board .

Emission Quality Details Detail			
S.No	**Stack No**	**Parameter**	**Standard**

4. Quantity of other pollutants should also be as per the norms prescribed by the Board/MOEF & CC/or otherwise mandatory .
5. The equipment for air pollution control system and monitoring ,as proposed by the industry and approved by the Board should be installed in their premises itself .
6. The modification or installation in the existing pollution control equipments should be done only by prior approval of Board .
7. The operation of air pollution control system and maintenance be done in such a way that the quantity of pollutants should be in accordance with the standards prescribed by the Board/MoEF & CC/or otherwise mandatory .
8. Unit should do provisions for fugitive emissions chimney/stack as per the norms of the Board/MOEF & CC/or otherwise mandatory .
9. The unit should submit the stack emissions monitoring report within one month from issuance of consent order along with the point wise compliance report of the consent order . Further quarterly monitering report should be submitted .

The Unit will file the renewal application at least 2 months prior to the expiry of this Order.

Specific Conditions:

VIKAS MISHRA

Digitally signed by VIKAS MISHRA
DN: c=IN, o=Personal,
2.5.4.20=54d7d02d72698c594c01418a f63079ed17fb8d282d496a427b4d67c2 7e451e46, postalCode=226017, st=Uttar pradesh, serialNumber=a701d81c087d764428e 37dec5b16a664bf7abbd5f5c9784baf2 05d7b4ab37f2d, cn=VIKAS MISHRA
Date: 2020.12.29 18:49:09 +05'30'

1. This consent is valid for the production of Snacks Sauce-5 TPD,Ketchup-2.5 TPD,Soya Sauce-1 TPD,Chilli Sauce-2.5TPD, Noodles-2 TPD by using Vegetables,Wheat Flour,Sugar,Salt,Spices etc. as raw material.
2. This consent is valid for the current products and capacity. In Case of any change in process, capacity enhancement, etc, the No Objection Certificate shall be obtained from the Board.
3. Generated hazardous waste shall be stored temporarily in the factory premises and disposed off through authorized TSDF after obtaining the authorization from the Board.
4. Industry shall submit the latest copy of Audited Balance Sheet/C.A. Certificate (Fixed Assets+ Current Assets - Current Liabilities) so the Consent fee payable by the industry may be verified.
5. The Order issued by Hon'ble Courts/Hon'ble NGT, MoEF&CC, Central Pollution Control Board, U.P. Pollution Control Board, shall be complied with.
6. Industry shall operate and maintain installed APCS effectively .The stack of boilers shall not be less than 30 m from Ground Level.
7. Source Emission monitoring report and Ambient Air Quality Monitoring report from any EPA recognised/NABL accredited laboratory must be submitted quarterly basis.
8. Noise and emission level from the DG sets installed of 250 KVA and 63 KVA capacity shall be within the prescribed norms.
9. The unit shall ensure the ambient air quality according to the standards.
10. In case of installation of any new source of air pollution, the unit shall ensure to obtain separate CTE/NOC from the Board.
11. The unit shall develop green belt as per the protocol attached with the UPPCB office order no. H16405/220/2018/02 dated 16-02-2018 which is available on board's website. The plantation of saplings should be completed within 04 months time and action taken report shall be submitted to this office. Failing which consent would be revoked without serving any notice to the industry.
12. The industry shall comply with the provisions of, Environment (Protection) Act 1986, Water (Prevention and Control of Pollution) Act, 1974 as amended, Air (Prevention and Control of Pollution) Act, 1981 as amended, Plastic Waste Management Rules 2016, E- Waste (Management) Rules 2016, Solid Waste Management Rules 2016 & Hazardous and other Waste (Management and Transboundary Movement) Rules 2016 (Whichever is applicable).
13. If closure order is issued by CPCB or UPPCB against the unit, then CTO issued earlier will remain suspended during the closure period and after ensuring the compliance and after revocation of closure order, the CTO will automatically be effective from the date of issuance of closure order revocation, with additional conditions mentioned in the closure revocation order.
14. This Consent is being issued under the provisions of the Air (Prevention and Control of Pollution)Act 1981.
15. All the necessary NOC's, Permissions, Licenses etc shall be taken from all concerned statutory authorities.

Issued with the permission of competent authority .

For and on behalf of U.P. Pollution Control Board .

Regional Officer

VIKAS MISHRA

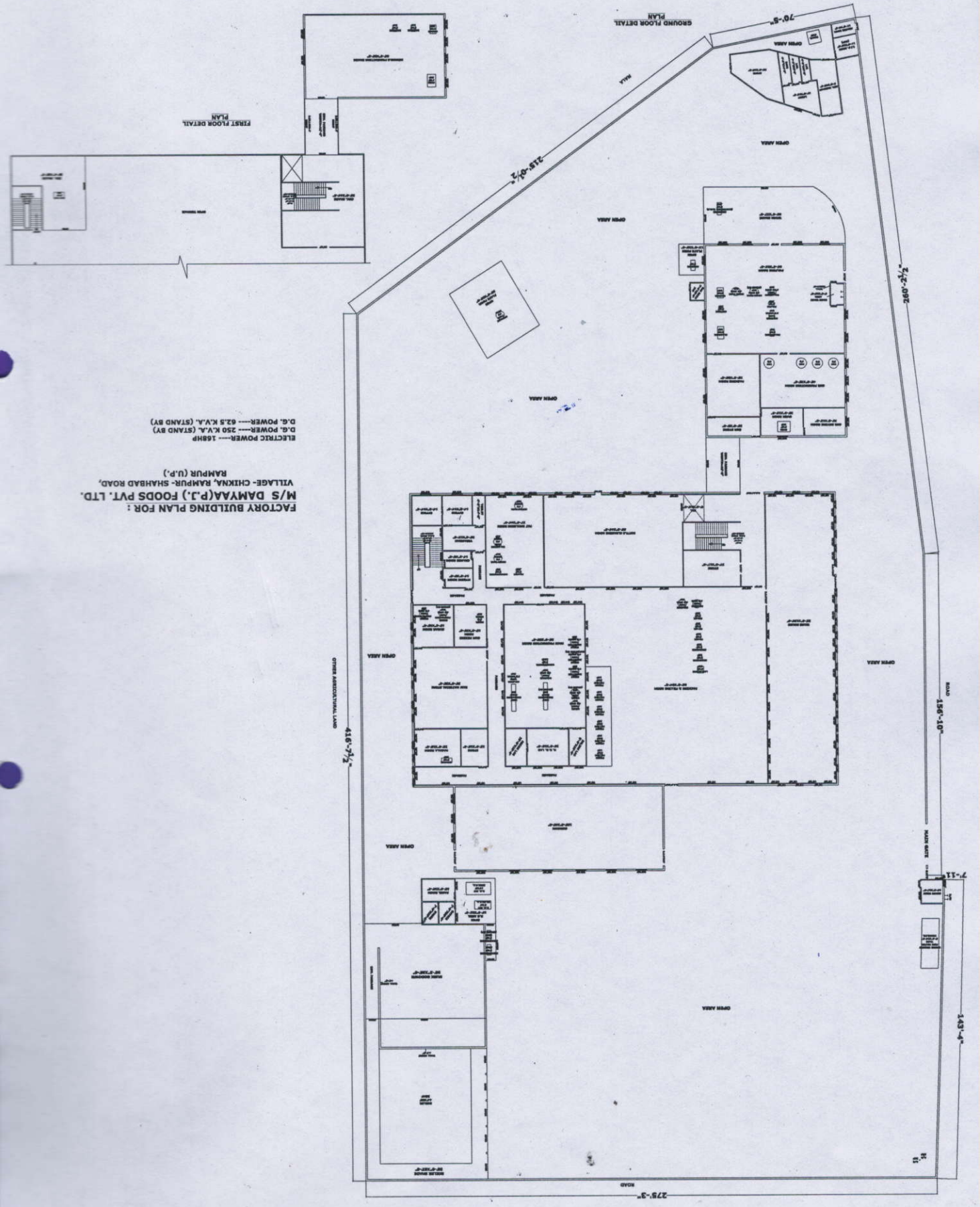
Digitally signed by VIKAS MISHRA
DN: c=IN, o=Personal, 2.5.4.20=54d7d02d72698c594c01418af63079ad17fbfa6282d496a427b4d67c27e451e46, postalCode=226017, st=Uttar pradesh, serialNumber=a701d81c087d76442fe37dec8b16a464bf7abbd5f5c9784baf205d7b4ab37f2d, cn=VIKAS MISHRA
Date: 2020.12.29 18:49:23 +05'30'

ANNEXURE -VI

Details of the Damyaa Foods layout Plan

① - Head of Plant - Mr. Amit Jain

② - ETP operator - Mr. Prasad Kumar - 8-9759230855



GROUND WATER DEPARTMENT

(Namami Gange & Rural Water Supply Department)
Ministry of Jal Shakti
Government of Uttar Pradesh

Form 8 (A)/फॉर्म 8 (ए)

APPLICATION FOR OBTAINING GRANT OF AUTHORIZATION/NO OBJECTION CERTIFICATE FOR SINKING OF EXISTING WELL IN NON-NOTIFIED AREA
विद्यमान कूप की बोरिंग हेतु प्राधिकार/अनापत्ति प्रमाणपत्र प्राप्त करने के लिए आवेदन

(Any Commercial or Industrial or Infrastructural or Bulk user)
(वाणिज्यिक अथवा औद्योगिक अथवा अवसंरचनात्मक अथवा सामूहिक उपयोक्ता)

[Under Section 14 of the Uttar Pradesh Ground Water Management and Regulation Bill, 2019]
[धारा 14, उत्तर प्रदेश भूगर्भ जल प्रबंधन तथा विनियमन बिल, 2019 के अधीन]

Applicant's Details
आवेदक का विवरण

Type of Applicant आवेदक का प्रकार	Behalf of Firm/Company	**Application Number** **आवेदन संख्या**	RMPR1121NIN0042
Application Date आवेदन तिथि		16/11/2021	
Name of the Applicant आवेदक का नाम	USHA GUPTA		
Mobile No. मोबाइल नंबर	9412717711	**Email ID.** **ईमेल आईडी**	pc00793@rediffmail.com
Date of Birth जन्मतिथि	14/12/1955	**Gender** **लिंग**	Female
Nationality राष्ट्रीयता	Indian	**ID as Address Proof** **निवास प्रमाण हेतु आईडी**	Aadhaar Card
Aadhaar Card Number	3442-2934-9071	**Uploaded Aadhaar Card** **अपलोड किया गया आधार कार्ड**	Download
House No./Flat No./Building No. मकान सं0/फ्लैट सं0/भवन सं0	D-22.23,29 AJEETPUR INDUSTRIAL ESTATE TEHSIL RAMPUR DISTRICT RAMPUR U.P 244901		
City/Town/Post Office नगर/कस्बा/पोस्ट ऑफिस	RAMPUR	**State** **राज्य**	Uttar Pradesh
District जनपद	RAMPUR	**Pin Code** **पिन कोड**	244901
Designation पद	OWNER	**Company Name** **कंपनी का नाम**	USHA STEEL PROCESS
Company Address कंपनी का पता	AJEET INDUSTRIAL AREA RAMPUR 244901	**Authorization Letter** **प्राधिकार पत्र**	Download

Details of Existing Well
विद्यमान कूप का विवरण

District जनपद	Rampur	**Block** **ब्लॉक**	CHAMRAUAA (URBAN)

For Usha Steel Process

Proprietor

Plot No./Khasra No. प्लॉट संख्या/खसरा संख्या	D- 22, 23, 29
Ward No./Holding No. वॉर्ड संख्या/होल्डिंग संख्या	N/A

Particulars of The Existing Well
विद्यमान कूप का ब्यौरा

Date of Construction/Sinking of Well कूप की निर्माण तिथि	01/01/2013
Approx. Depth of Well (In meter) कूप की अनुमानित गहराई (मीटर में)	76.00

Give Particulars Regarding Water Quality of the Well
कूप की जलीय गुणवत्ता का विवरण दें

pH 7.04 TDS 1.22 ppt its

Details of Existing Pumping Device
विद्यमान पंपिंग उपकरण का विवरण

Type of Pump to be Used प्रयोग किये जाने वाले पंप का प्रकार	Submersible
Horse Power (H.P.) हॉर्स पावर (एच.पी.)	2.00
Operational Device परिचालन उपकरण	Electric Motor

Details of Utilization of Well
कूप के उपयोग का विवरण

Purpose of the Existing Well विद्यमान कूप का उद्देश्य?	Industrial
Daily Running Hours दैनिक उपयोग (घंटे में)	1.00
Please Submit Mode of Treatment of Waste Water/Effluent (For Industries) अपशिष्ट जल की उपचार प्रणाली भरें (उद्योग हेतु)	ETP
Upload NOC अनापत्ति प्रमाणपत्र अपलोड करें	Download
Whether Rain Water Harvesting Structure has been Constructed within the Premises? क्या परिसर में वर्षा जल संचयन संरचना का निर्माण किया गया है?	No

Municipality/Municipal Corporation नगर पालिक/नगर निगम	No
Uploaded Land Details अपलोड किया गया भूमि का विवरण	Download
Type of the Well कूप का प्रकार	Others
Whether there has been Any Adverse Report Regarding Water Quality of the Well? क्या कूप के जल की गुणवत्ता के संबंध में कोई प्रतिकूल रिपोर्ट है?	Yes
Pump Capacity (In m^3/hr) पंप क्षमता (m^3/hr)	2.00
Date of Energization विद्युतीकरण तिथि	01/01/2012
Annual Running Hours वार्षिक उपयोग (घंटे में)	365.00
Whether the Water Supplied in Well Area Through Pipe Water Supply or Not? क्या क्षेत्र में जल की आपूर्ति पाइप जलापूर्ति के माध्यम से होती है?	No
Please Mention Whether Obtained NOC from Uttar Pradesh Pollution Control Board for Discharge of Effluent/Waste Water or Not? कृपया उल्लेख करें कि क्या उत्तर प्रदेश प्रदूषण नियंत्रण बोर्ड से अपशिष्ट प्रवाह/ अपशिष्ट जल प्रवाह हेतु अनापत्ति प्रमाण पत्र प्राप्त कर लिया गया है अथवा नहीं	Yes
Length of Section Pipe (in Meter) सक्शन पाइप की लंबाई (मीटर में)	15.00
Any Other Information Which You Would Like to Furnish कोई अन्य जानकारी जो आप प्रदान करना चाहते हैं:	Treated Water Recycle By RO

M/s Usha Steal Process

Proprietor

Maximum Allowable Annual Extraction of Ground Water: 730

affidavit on non judicial stamp paper of Rs. 10/- regarding non availability of water supply from local government agencies in cases where ground water requirement is up to 10 m^3/day	Download	**Certificate regarding non/ partial availability of fresh water/ treated waste water supply from the concerned local government water supply agency in cases where requirement of ground water is more than 10m^3/day**	Download
Ground water quality data of bore well/ tube well/ dug well in respect of existing industries from NABL accredited laboratories/Government approved laboratories	Download	**Proposal for rain water harvesting/ recharge within the premises as per Model Building Bye Laws issued by Ministry of Housing & Urban Affairs**	Download
Impact Assessment report: All projects extracting/proposing to extract ground water in excess of 100 m^3/day in Notified and non-notified areas shall have to mandatorily submit impact assessment report of existing/ proposed ground water withdrawal on the ground water regime and also socio-economic impacts report prepared by accredited consultants. Pro-forma for the report is given in Annexure-1.	Download		
Does industry come under MSME? क्या उद्योग MSME के अंतर्गत आता है ?	Yes		
MSME Certificate No. एमएसएमई प्रमाणपत्र संख्या	UP63A0001513	**MSME Certificate Issuance Date एमएसएमई प्रमाणपत्र के निर्गमन की तिथि**	08/02/2017
MSME Certificate Validity एमएसएमई प्रमाणपत्र की वैधता	07/02/2022	**Uploaded MSME Certificate अपलोड किया गया एमएसएमई प्रमाणपत्र**	Download
Type of MSME एमएसएमई का प्रकार	Small		

M/s Usha Steel Process

Proprietor

Declaration by the Applicant
आवेदक द्वारा उद्घोषणा

I do hereby declare that the particulars fuenished herein above are correct and true . I understand that in case any of the information and particulars is found to be incorrect at any stage of scrutiny and investigation or thereafter, my application/registration is liable to be rejected/cancelled .
मैं एतद्द्वारा घोषित करता हूँ कि ऊपर दिये गए विवरण सही व सत्य हैं | मैं जानता हूँ कि यदि जांच पड़ताल के दौरान किसी भी स्तर पर उपरोक्त विवरण असत्य पाये गए तो मेरा आवेदन/रजिस्ट्रीकरण अस्वीकृत/निरस्त किए जाने योग्य होगा"

I Agree/सहमत

Note/नोट

- Separate application form should be used for registration of each individual well.
- The application form should be completed in all respect before submission. Incomplete applications are liable for rejection. Any correction I alteration shall be duly authenticated.
- In case any of the particulars/information is found to be incorrect at any stage of verification I scrutiny, the application is liable for rejection.
- In case any of the particulars/ information furnished is found to be in correct at any stage even after issue of the AUTHORIZATION/ NO_OBJECTION CERTIFICATE FOR SINKING OF NEW WELL, same shall be liable for cancellation.
- Please write 'N.A.' against those items which are not applicable.
- Please attach the following documents along with the application:
- (a) Document showing proof of ownership of land;
- (b) Photocopy of Aadhaar card / voter ID I ration card I any other proof of identification
- (c) Map showing location of the proposed well, which have been referred to in item no.2(a), (b)and(c).
- (d) Affidavit referred to in item no. 7(i) or 7(ii), as the case may be (if required)
- **Additional Documents to be submitted with the application**
- **(I) For Industrial User**
- (a) An affidavit on non judicial stamp paper of Rs. 10/- regarding non availability of water supply from local government agencies in cases where ground water requirement is up to 10 cubic meter/day.
- (b) Certificate regarding non/ partial availability of fresh water/ treated waste water supply from the concerned local government water supply agency in cases where requirement of ground water is more than 10 cubic meter/day.
- (c) Ground water quality data of bore well/ tube well/ dug well in respect of existing industries from NABL accredited laboratories/Government approved laboratories.
- (d) Proposal for rain water harvesting/ recharge within the premises as per Model Building Bye Laws issued by Ministry of Housing & Urban Affairs.
- (e) Impact Assessment report: All projects extracting/proposing to extract ground water in excess of 100 m^3/day in Notified and non-notified areas shall have to mandatorily submit impact assessment report of existing/ proposed ground water withdrawal on the ground water regime and also socio-economic impacts report prepared by accredited consultants. Pro-forma for the report is given in Annexure-1.
- **(II) For Commercial User**
- (a) In cases where dewatering is involved, submission of impact assessment report prepared by a consultant on the ground water situation in the area giving detailed plan of pumping, proposed usage of pumped water and comprehensive impact assessment of the same on the ground water regime shall be mandatory. The report should highlight environmental risks and proposed management strategies to overcome any significant environmental issues such as ground water level decline, land subsidence etc.
- (b) An affidavit on non judicial stamp paper of Rs. 10/- regarding non availability of water from any other source in case water is required for construction in safe and semi critical areas.
- (c) Certificate from a government agency regarding non availability of treated sewage water for construction within 10 km radius of the site in notified areas.
- (d) Certificate of non-availability of water from local government water supply agency in respect of all categories of assessments units for commercial use.
- (e) Details of water requirement computed as per National Building Code, 2016 (Annexure I), taking into account recycling/ reuse of treated water for flushing etc. (in case of completed infrastructure projects for commercial use).
- (f) Completion certificate from the concerned agency for infrastructure projects requiring water for commercial use.
- The District Ground Water Management Council reserves the right to ask for any other document(s) from the owner applicant for examination of the merit of the case.

M/s Usha Steal Process

Proprietor

M/s Usha Steel Process

Proprietor

Aug-2021

Annexure-12

R.O

Date	Flow Meter opng Reading	Flow Meter closing Reading	Total used water
1/8/21	—	—	—
2/8/21	472.6	473.6	1000
3/8/21	473.6	474.6	1000
4/8/21	474.6	475.5	900
5/8/21	475.5	476.4	900
6/8/21	476.4	477.4	1000
7/8/21	477.4	478.3	900
8/8/21	478.3	—	—
9/8/21	478.3	479.3	1000
10/8/21	479.3	480.3	1000
11/8/21	480.3	481.2	900
12/8/21	481.2	482.2	1000
13/8/21	482.2	483.2	1000
14/8/21	483.2	404.1	900
15/8/21	—	—	—
16/8/21	404.1	485	900
17/8/21	405	486	1000
18/8/21	406	407	1000
19/8/21	407	407.9	900
20/8/21	407.9	488.9	1000
21/8/21	488.9	489.9	1000
22/8/21	—	—	—
23/8/21	489.9	490.9	1000
24/8/21	490.9	491.8	900
25/8/21	491.8	492.8	1000
26/8/21	492.8	493.8	1000
27/8/21	493.8	494.7	900
28/8/21	494.7	495.7	1000
29/8/21	—	—	—
30/8/21	495.7	496.7	1000

R.O Sep. 2024 M/s Usha Steal Process

DATE	Flow meter Opening Reding	Flow meter Closing Red	use water
01/9/21	497.6	498.6	1000
02/9/21	498.6	499.4	800
03/9/21	499.4	500.4	1000
04/9/21	500.4	501.4	1000
05/9/21	—	—	—
06/9/21	501.4	502.3	900
07/9/21	502.3	503.3	1000
08/9/21	503.3	504.3	1000
9-9-21	504.3	505.2	900
10.9.21	505.2	506.2	1000
11.9.21	506.2	507.1	900
12.9.21	—	—	—
13.9.21	507.1	508.0	900
14/9/21	508.0	509.0	1000
15/9/21	509.0	510	1000
16/9/21	510	510.8	800
17/9/21	—	—	—
18/9/21	510.8	511.7	900
19/9/21	—	—	—
20/9/21	511.7	512.7	1000
21/9/21	512.7	513.6	900
22/9/21	513.6	514.6	1000
23/9/21	514.6	515.6	1000
24/9/21	515.6	516.5	900
25/9/21	516.5	517.5	1000
26/9/21	—	—	—
27/9/21	517.5	518.4	900
28/9/21	518.4	519.4	1000
29/9/21	—	—	—
30/9/21	—	—	—

Proprietor R.O Oct. 2024 USHA STEEL R

Date	Flow Meter Opening Reading	Flow Meter Closing Reading	Use water
01/10/24	-	-	-
02/10/24	-	-	-
03/10/24	-	-	-
04/10/24	519.4	520.4	1000
05/10/24	520.4	521.3	900
06/10/24	521.3	522.2	900
07/10/24	522.2	523.2	1000
8/10/24	523.2	524.2	1000
9/10/24	524.2	525.1	900
10/10/24	-	-	-
11/10/24	525.1	526.1	1000
12/10/24	526.1	527.0	900
13/10/24	527.0	527.9	900
14/10/24	527.9	528.9	1000
15/10/24	-	-	-
16/10/24	528.9	529.8	900
17/10/24	-	-	-
18/10/24	529.8	530.8	1000
19/10/24	530.8	531.7	900
20/10/24	531.7	532.7	1000
21/10/24	532.7	533.6	900
22/10/24	533.6	534.5	900
23/10/24	534.5	535.3	800
24/10/24	-	-	-
25/10/24	535.3	536.3	1000
26/10/24	536.3	537.3	1000
27/10/24	537.3	538.3	1000
28/10/24	538.3	539.2	900
29/10/24	539.2	539.1	900
30/10/24	539.1	540.1	1000
31/10/24	-	-	-

R·O NOV·2024 M/s Usha Steel Process

Proprietor

Date	flow meter opening Reading	Flow Meter Closing Reading	Total use meter
01/11/24	540·1	541	900
02/11/24	541	542	1000
03/11/24	542	543	1000
04/11/24	-	-	-
05/11/24	-	-	-
06/11/24	-	-	-
07/11/24	-	-	-
08/11/24	543	543·9	900
9/11/24	543·9	545·1	1200
10/11/24	545·1		

Date	Flow Meter Opening Rd	Flow Meter Closing Rd	Total	Water PH Before Treatment	Chemical: Caustic	Alum	Poly in ...	After Treat PH	Filter Press ... in kg	Water PH for Ready RO	M/s Usha S...
0/21	-	-	-	-	-	-	-	-	-	-	-
9/21	438.2	439.4	1200	2	13	8	9	8	14.5	7.5	
9/21	439.4	440.4	1000	2	10	6	5	8	10	7.5	C.E.T.P
0/21	440.4	441.5	1100	2	10	6	5	8	10½	7.5	
9/21	441.5	442.5	1000	2	9	5	4	8	10	7.5	
8/21	442.5	443.7	1200	2	12	7	8	8	13½	7.5	
13/8/21	443.7	444.8	1100	2	11	7	6	8	12	7.5	
13/8/21	-	-	-	-	-	-	-	-	-	-	-
13/8/21	444.8	446.0	1200	2	12	8	5	8	14	7.5	
8/21	446.0	447.2	1200	2	12½	8	6	8	14	7.5	
0/21	447.2	448.4	1200	2	11	8	8	8	12	7.5	
8/21	448.4	449.5	1100	2	10	8	7	8	11	7.5	
8/21	449.5	450.7	1200	2	12	6	8	8	12	7.5	
8/21	450.7	451.7	1000	2	9	6	8	8	12	7.5	
0/21	-	-	-	-	-	-	-	-	-	-	
9/21	451.7	452.9	1200	2	12	8	7	8	14	7.5	
9/21	452.9	458	1100	2	11	8	6	8	13	7.5	
9/21	454	455.2	1200	2	11	8	8	8	14½	7.5	
1/21	[illegible]	456.[illegible]	[illegible]								

	451.7	452.9	1200	2	12	8	7	8	14	7.5	Avg. 8
8/21	452.9	454	1100	2	11	8	6	8	13	7.5	
8/8/21	454	455.2	1200	2	11	8	8	8	14½	7.5	E.T.P
9/8/21	455.2	456.4	1200	2	12	7	6	8	13½	7.5	
0/8/21	456.4	457.5	1100	2	11	8	7	8	12	7.5	
1/8/21	457.5	458.7	1200	2	12	9	8	8	13	7.5	
2/8/21	—	—	—	—	—	—	—	—	—	—	—
3/8/21	458.7	459.9	1200	2	12	8	7	8	14	7.5	
4/8/21	459.9	461.0	1150	2	10	8	7	8	13	7.5	
5/8/21	461.0	462.2	1200	2	12	8	6	8	14	7.5	
6/8/21	462.2	463.4	1200	2	12	8	6	8	13	7.5	
7/8/21	463.4	464.5	1150	2	10	7	5	8	12	7.5	
8/8/21	464.5	465.7	1200	2	12	8	6	8	12½	7.5	
7.9.21	—	—	—	—	—	—	—	—	—	—	
0.09.21	465.7	466.9	1200	2	13	8	6	8	13	7.5	
9/21	466.9	468	1150	2	11	7	6	8	12	7.5	

	Opening Read	Closing Read	CTQ	PH Befor Treatment	caustic	Alum	Poly	treatment PH	Slug	PH for 2.0
9.21	468.0	469.2	1200	2	12½	7	8	8	14	7.5
9.21	469.2	470.2	1000	2	11	5	6	8	9½	7.5
9.21	470.2	471.4	1200	2	13	8	9	8	13	7.5
09.21	471.4	472.6	1200	2	12½	7	8	8	14	7.5
09.21	—	—	—	—	—	—	—	—	—	—
09.21	472.6	473.7	1100	2	12	5	6	8	11	7.5
9.21	473.7	474.9	1200	2	13	8	9	8	13	7.5
9.21	474.9	476.1	1200	2	12	8	8	8	12½	7.5
9.21	476.1	477.2	1100	2	11	6	7	8	12	7.5
9.21	477.2	478.4	1200	2	13	7	8	8	13	7.5
9.21	478.4	479.6	1200	2	13	8	7	8	14	7.5
9.21	—	—	—	—	—	—	—	—	—	—
9.21	479.6	480.7	1100	2	11	7	7	8	12	7.5
9.21	480.7	482	1300	2	14	8	8	8	14	7.5
9.21	482	483.2	1200	2	13	7	6	8	13	7.5
9.21	483.2	484.2	1000	2	10	6	5	8	11	7.5
9.21	—	—	—	—	—	—	—	—	—	—
9.21	484.2	485.4	1200	2	13	7	6	8	12	7.5
9.21	—	—	—	—	—	—	—	—	—	—

M/s Usha Steel

Pro

Sep. 2021

E.T.P

03.2	403.2	1000	2	10	6	5	8	11	5.5	
—	—	—	—	—	—	—	—	—	—	
19/21	404.2	405.4	1200	2	13	7	6	0	12	7.5
19/21	—	—	—	—	—	—	—	—	—	—
0/9/21	405.4	406.6	1200	2	13½	8	8	0	13½	7.5
1/9/21	406.6	407.7	1100	2	12	8	7	8	12½	25
2/9/21	407.7	408.7	1000	2	10	6	5	8	9½	7.5
3/9/21	408.7	409.9	1200	2	14	8	7	8	13½	25
4/9/21	409.9	491.1	1200	2	13	8	6	8	13	25
5/9/21	491.1	492.3	1300	2	14	8	7	8	14	7.5
6/9/21	—	—	—	—	—	—	—	—	—	—
7/9/21	492.3	493.3	1500	2	8	4	4	8	9	7.5
8/9/21	493.3	494.5	1200	2	13	8	6	8	13	75
19/21	—	—	—	—		—	—	—	—	—
19/21	—	—	—	—		—	—	—	—	—

Sep.2
E.T.P

	Flow meter Opening Read	Flow meter Closing Read	Total QR	Water PH Before Treatment	Chemical Caustic	Alum	Poly	After Treatment P.H	Filer Pressure	Water PH for R.O	
	-	-	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	-	-	E.T.P
	495.5	-	-	-	-	-	-	-	-	-	
	495.5	496.7	1200	2	12	7	8	8	14	7.5	
	496.7	497.8	1100	2	11	5	6	8	12	7.5	
	497.8	498.8	1000	2	11	6	6	8	12	7.5	
	498.8	500.0	1200	2	13	7	8	8	13	7.5	
	500	501.2	1200	2	12	7	8	7	14	7.5	
	501.2	502.3	1100	2	10	8	8	7	13	7.5	
	-	-	-	-	-	-	-	-	-	-	-
	502.3	503.5	1200	2	12	7	8	7	13	7.5	
	503.5	504.6	1100	2	12	7	7	8	13	7.5	
	504.6	505.6	1000	2	11	8	7	7	12	7.5	
	505.6	506.8	1200	2	12	8	8	8	14	7.5	
	-	-	-	-	-	-	-	-	-	-	-
	506.8	507.9	1100	2	12	7	7	8	13	7.5	
	-	-	-	-	-	-	-	-	-	-	-

	-	-	-	-	-	-	-	-	-	-	-	-	
11	506.8	507.9	1100	2	12	7	7	8		13	7.5		OCT.2
12/10/21	-	-	-	-	-	-	-	-	-	-	-		ETP
13/10/21	507.9	509.1	1200	2	13	8	7	7		14	7.5		
14/10/21	509.1	510.1	1000	2	10	6	5	7		10	7.5		
15/10/21	510.1	511.3	12	2	13	8	7	7		13½	7.5		
16/10/21	511.3	512.5	12	2	12	7	6	7		14	7.5		
17/10/21	512.5	513.6	1100	2	12	6	5	7		12	7.5		
18/10/21	513.6	514.0	12	2	13	7	8	7		14	7.5		
19/10/21	-	-	-	-	-	-	-	-	-	-	-		
20/10/21	514.8	516.	1200	2	14	8	7	7		13	7.5		
21/10/21	516	517.3	1300	2	14	8	8	7		14½	7.5		
22/10/21	517.3	518.3	1000	2	10	6	5	7		11	7.5		
23/10/21	518.3	519.3	1000	2	10	5	6	7		11½	7.5		
24/10/21	519.3	520.5	1200	2	14	5	5	7		14	7.5		
25/10/21	520.5	521.6	1100	2	13	4	5	7		12½	7.5		
26/10/21	-	-	-	-	-	-	-	-	-	-	-		

Nov-20

M/s Usha Stea

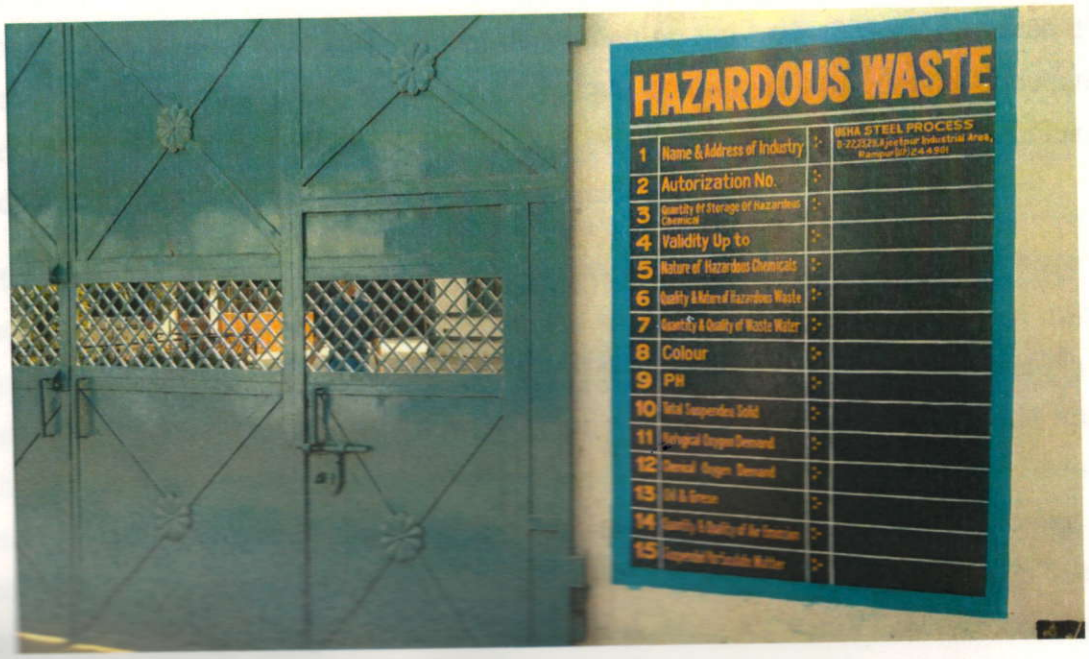
E.TP

	Opening Read	Closing Read	Ltr	PH Befor Treatment	Caustic	Alum	Poly 1% Ltr	Treatment PH	Sludge IN Kg	for RO
/21	521.6	522.7	1100	2	11	6	4	8	12.5	7.5
/21	522.7	524	1300	2	14	7	6	8	14	7.5
/21	524	525.2	1200	2	13	6	5	8	13	7.5
/21	-	-	-	-	-	-	-	-	-	-
/21	-	-	-	-	-	-	-	-	-	-
/21	-	-	-	-	-	-	-	-	-	-
/21	-	-	-	-	-	-	-	-	-	-
/21	525.2	526.2	1000	2	10	4	4.5	8	12	7.5
/21	526.2	527.7	1500	2	14	8	7	8	13	7.5
/21	527.7									

ADEQUACY REPORT OF

EFFLUENT TREATMENT PLANT

OF



M/S USHA STEEL PROCESS

AJEETPUR,RAMPUR U.P

SUBMITTED

BY

DEPARTMENT OF CIVIL ENGINEERING
FACULTY OF ENGINEERING & TECHNOLOGY
ALIGARH MUSLIM UNIVERSITY ALIGARH

NOVEMBER-2021

M/s Usha Steal Process
Proprietor

1.0 INTRODUCTION

M/s Usha Steel process Rampur, U.P. is in pickling business. Pickling is a metal treatment process that removes superficial impurities from metal. It's called "pickling" because it involves the use of an acidic solution known as pickle liquor. The exact composition of the pickle liquor varies depending on the type of metal on which it's used. For low-carbon steel, pickle liquor typically consists of hydrochloric or sulfuric acid. For high-carbon steel, on the other hand, pickle liquor typically contains additional acids like phosphoric and/or nitric acid.

The Benefits of Pickling: It's not uncommon for newly produced metal to have a layer of impurities on the surface. Hot-rolled steel, for example, develops an oxide layer when worked. The presence of this oxide prevents the steel from obtaining a smooth and clean surface. Although there are numerous ways to remove oxide from steel, manufacturing companies often prefer pickling because of its simplicity. When pickled, the acidic pickle liquor eats away at the oxide layer without harming or otherwise disturbing the underlying steel. Even if a piece of metal doesn't have oxide on its surface, it probably still contains some impurities. It's not uncommon for newly produced metal to contain inorganic compounds like trace metals. Depending on the application for which the metal is intended, these impurities may hinder its performance. Pickling, however, can remove most impurities thanks to the acidic properties of pickle liquor.

Pickling is performed by submerging metal in pickle liquor. After working a piece of metal, the manufacturing company will submerge it in the acid solution. The pickle liquor will then eat away at any oxide or other impurities lingering on the surface of the metal.In addition to pickling, there are other ways to descale and clean metal. Smooth clean surface is an alternative treatment process that offers similar benefits. With smooth clean surface, metal is exposed to an abrasive compound that physically removes surface imperfections and impurities. There's also abrasive blasting, which involves blasting metal with a pressurized stream of an abrasive solution to create a clean and smooth surface.

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The unit was visited on November 12, 2021. The different unit operations/processes of ETP were physically verified (photographs attached – Annexure II). At the time of visit, the ETP was found in running condition with all the units operational. Certain instructions were given to the management as well as ETP operators regarding improving the working of the plant.

2.0 Objective of the present study:

The aim of the present study is to assess the feasibility to explore possibility of reuse of treated effluent from ETP within industrial process schemes in **Mls. Usha Steel Process.** The broad objectives of the work are

- To assess availability and efficacy of cleaner/ advance technology/state of the art technology for implementation of **Zero Liquid Discharge** (ZLD) in **Usha Steel Process**.
- To explore and carry out technical assessment of implementation of '**Zero Liquid Discharge**' scheme (Annexure-III).

3.0 Methodology:

The two possible options for zero liquid discharge (ZLD) are:

(i) Close up all process water loops by total recycling inside a process sequence or into adifferent process sequence within the industry.

(ii) Treat the effluent in a stand-alone facility to render it suitable for process reuse.

The scope of the adequacy assessment of ZLD in the **Mls. Usha Steel Process** is to analyze the feasibility of steps taken by the industry under both the above options. Following are the three major steps to achieve the above scope of work

(i) Water audit of the unit and preparation of the Water Balance

(ii) To assess water recycling arrangements

(iii) Analysis of ZLD scheme.

Following check list is used as guideline for the work

- Complete process flow sheet showing material flow including water

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balance of the production process.

- Scheme of Zero liquid discharge along with water and pollution load balance diagram.
- Balance of water and pollution load across various unit operations used for treating process water for recycling/treatment under ZLD scheme.
- Provision of flow meter and water sampling wherever recycled water is used in the process.
- Balance of water and contaminants across the section where fresh water or recycled water is used.
- Flow meters log records put across the various unit operations used for treating process water for recycling/treatment under ZLD scheme.
- Log book record of utility section including fuel consumption.
- Record of solid waste generation and disposal generated from ZLD scheme.
- Recovery and reject ratio of RO plant if exist
- Log record of RO plant.
- Operation and maintenance record of unit operation used for treating process water for recycling/treatment under ZLD scheme (Annexure III).

Water Audit: Water audit includes collection and compilation of water consumption data, process details, and section wise water balance. Documents and information are necessary to implement an audit. Following are the steps for the water audit

- Meeting with Management
- Plant Visit.

Preparation of Process Flow Diagram and complete Water balance of the plant. Available information of the industry was tried to collect as much as possible. The information includes the process flow sheet of different sections of the industry, mass flow rate, and consistencies. Data and detailed flow diagrams provided by the industry helped in achieving the objective of the report.

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Water Recycling Arrangement: Adequacy of water recycling arrangements is assessed through

- Adequacy of treatment scheme
- Recycling water quality analysis

Analysis of ZLD scheme:

- Flow sheet analysis
- Technical feasibility

4.0 Manufacturing Process

No manufacturing is done at M/s Usha Steel Process

5.0 WATER AND WASTEWATER: GENERATION AND CHARACTERIZATION

5.1 QUANTIFICATION OF WASTEWATER

The sources of effluent include cooling tower for chillers condensers (refrigeration) cooling towers for distillation condensers and floor washing section. The quantity of effluent generated from various sources of the unit has been estimated considering 100% of the total water consumption. The total effluent generated has been estimated for present scenario is run for Maximum 0.8 KLD. Whereas it can handle up to 4.0 KLD.

5.2 CHARACTERIZATION OF WASTEWATER

The characteristics of effluent are source specific and differ from source to source. Therefore, the effluent generated is of interest from the standpoint of environmental impact in terms of both effluent volume and contaminant loading. Therefore, the characteristics of effluent include mainly pH, total suspended solids, biochemical oxygen demand, chemical oxygen demand and oil and grease. The current reports of influent and effluent are seen and attached (Annexure –I).

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5.3 QUANTIFICATION OF WATER

One bore well with total capacity of 4.0 KLD are used to drawn water from underground. The quantity of fresh water consumption from various sources of the unit has been estimated for present scenario found to be 1.3KLD.

5.4 CHARACTERIZATION OF WATER

The characteristics of raw water are source specific and differ from source to source. Therefore, the water consumption is of interest from the standpoint of environmental impact in terms of both influent volume and contaminant loading. Therefore, the characteristics of influent include mainly pH, total suspended solids, biochemical properties, oil and grease. The current reports are seen and attached (Annexure-I).

6.0 TREATMENT PROCESS DESCRIPTION

The unit has provided effluent treatment plant (ETP) for the treatment of wastewater prior to discharge and to comply with the requirements of the pollution control board. The designed capacity of ETP to treat the wastewater is 4.0 KLD, However, the estimated effluent generated has been found to be 0.8KLD. The wastewater generated from process of rinsing after pickling will collect in an equalization tank where flow will equalise. The waste water from equalisation tank will pump to ETP. The waste water collected in equalization tank is being pumped to reaction cum settling tank, where pH boosting chemicals is being added to maintain pH between 9-10. After that coagulants agent is being added so that precipitation could start and then flocculating agent is being added to increase the weight of precipitate due to which solid and liquid get separated. The solid in form of sludge settled down at hopper i.e bottom of reaction cum settling chamber. The treated water is being pumped to multigrade filter and then activated carbon filter. The filtered water from activated carbon being pushed to reverse osmosis plant. The permeate water after osmosis plant is being collected in permeate water collection tank and is further pumped to rinsing water tanks for rinsing MS Sheets after process of pickling. The reject water will transfer in treated water tank for feeding in RO plant. When TDS increases more than 30,000 mg/l in that case RO reject water transfer to evaporator.

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Vapour from evaporator is being recover in permeate water collection tank for recycling in process of rinsing. Online monitoring system is being installed as per the guidelines of CPCB

7.0 TREATMENT PLANT: UNIT OPERATIONS/PROCESSES

(i) Equalization tank
(ii) Reaction cum settling chamber
(iii) Treated water collection tank
(iv) Multi media filter
(v) Activated carbon filter
(vi) Filter press
(vii) Reverse Osmosis plant
(viii) RO treated water (permeate) collection tank
(ix) RO reject water collection tank
(x) Evaporator

7.1 SPECIFICATION OF PROCESS UNITS

S. No.	ETP component	Nos.	Size/capacity in feet	Material of Construction	Whether adequate , If not , give reasons
(i)	Equalization tank	01	Volume 4,500 lt	BW/RCC	Adequate
(ii)	Reaction cum settling tank	01	2 m high 2.0 m in dia	MS febricated	Adequate
(iii)	Treated water collection tank	01	1.3 m high 1.50 m in dia	MS fabricated	3.50 hrs detention time Adequate
(iv)	Pressure sand filter	01	Dia 0.4m Height 0.60 m	PVC.	Adequate
(v)	Activated carbon filter	01	Dia 30.4 m Height 0.60 m	PVC.	Adequate

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(vi)	Filtered water tank	01	2000 lit capacity	PVC.	Adequate
(vii)	Filter press	01	600mm x 600 mm x 24 plates	Steel	Adequate
(viii)	RO plant	01	Average permeate flow 300-500 lph		Adequate
(ix)	Evaporator	01	100 lph capacity 800 mm dia x 1500 mm	PVC	Adequate

**Information provided by the client*

8.0 ANALYSIS OF INFLUENT AND EFFLUENT CHARACTERISTICS

The client has provided recent test report of influent and effluent characteristics (issued on July 05, 2021) having case specific selected parameters. The parameters include pH, Total Suspended Solids, TDS, TS, odour, colour, heavy metals, BOD, COD, Oil, and Grease. These parameters have been analyzed by Research testing and calibration laboratory Moradabad UP (Annexure -I). The values of characteristic parameters at the outlet of ETP have been found to be within the permissible limit.

6.0 CONCLUSIONS AND RECOMMENDATIONS

(i) The capacity - wise all the unit operations and processes of ETP are seem to be adequate to cater the wastewater generated from the unit.

(ii) The influent and effluent characteristics (as provided by the client) comply with the regulatory norms of discharge standards.

(iv) The treated water is used for rinsing of M.S Sheets after process of pickling. The reject water transfer to treated water chamber for feeding in RO plant.

(v) Vapour from evaporator is being used to recover in permeate water collection tank for recycling in process of rinsing.

(iv) 100 % wastewater after treatment used within the premises.

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(vi) **Mls. Usha Steel Process** is not discharging any effluent out of the premises.

(vii) Wastewater treatment including zero level discharge schemes is adequately designed and working satisfactorily.

(viii) It has been advise to check updates from CPCB website for compliance of pollution emerging from the industries.

(ix) It has been suggested to arrange the technical training programme for operating personnel on treatment plant operation and maintenance on regular bases to aware of the significance and principles of the operating system.

Consultant

Name : **Dr. Sohail Ayub**
Designation : **Professor**
Name of organization/institute: Dept. of Civil Engg.
Aligarh Muslim University, Aligarh

Dr. Sohail Ayub (Ph.D.)
Professor, Dept. of Civil Engg.
A.M.U., Aligarh

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Proprietor

SUMMARY SHEET OF FEASIBILITY REPORT FOR ETP

OF

M/S. USHA STEEL PROCESS, AJEETPUR INDUSTRIAL AREA

RAMPUR, U.P.

Adequacy Report No.: EPES/CED/167/2021 Date of Issue: 17.11.2021

S. No.	Description	Details
1	Name of unit	**Mls. Usha Steel Process.**
2	Address of unit	*Ajeetpur Industrial Area Dist.Rampur, U.P.*
3	Date of Commissioning/ Commencement of Production	2011
4	(a) Plot area (in sq meter) (b) Built up area (in sq meter)	1500.00 978.82
5	Name, Designation & contact No(s) of the In- charge dealing with pollution control matters.	Shri. Usha Gupta CEO Contact No.:
6	Name, Designation of the person (s) contacted at the site during the visit.	Mr. Prakash Chandra ETP Manager Contact No.: +91-9412717711
7	Activity/process	Attached (Annexure – III)
8	Production capacity	Pickling of 1000 sheets per day
9	Manufacturing process /Main Activities (in brief, Also Attach Process Flow Diagram))	Only processing (No manufacturing)
10	Main Raw Materials	MS Plates
11	Main Products	MS Plates process
12	Source of water	Ground water (bore well)

Part B: Water Consumption, Waste Water Generation and Treatment

13 Water consumption, source and waste water generation (in KLD): (please Annex Water Mass Balance chart)

	Usage	Quantity, KLD	Source	Water meter installed	Wastewater generation, KLD	Flow meter installed
(a)	Domestic (toilet/Bathroom/ washroom etc.	0.5KLD	Ground Water	Yes	0.5KLD to septic tank	yes
(b)	RPO cleaning	0.8 KLD	Ground Water	Yes	0.8 KLD	

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		Total	**1.3 KLD**	**Ground Water**	**Yes**	**0.8 KLD**	**Yes**

14	Basis of the quantity of water consumption and waste water generation mentioned above: **Estimation/Waste Water Meter Reading**
15	Wastewater treatment facilities: Effluent Treatment Plant (ETP)

S No.	Design capacity (in KLD)	Treatment facility	Design parameter (BOD etc.)	Treatment process(physio-chemical/Biological, mention technology used)	Batch/Continuous process	Sources of waste water leading to ETP	Present average waste water generation KLD	Flow meter at inlet & outlet (yes/No)	Disposal point
1	4.0	ETP	BOD-10 - 20 mg/l COD-500-600 mg/l	Physical, Chemical as well as Biological with tertiary treatment	Continuous process	By Pump	0.8	Yes	Yes

16	Whether all the wastewater generated from the unit /establishment is treated: Yes	
17	Mode and location of effluent discharge : (please attach location map of disposal clearly indicating the outlets for sampling/effluent discharge) (a) **Treated effluent** : Partly for watering of streets and gardening purposes but majority of treated wastewater is taken for cooling tower re cycling	
18	Details of the Constituent Units of ETP	Equalization tank ,Reaction cum settling chamber ,Treated water collection tank, Multi media filter, Activated carbon filter Filter press ,Reverse Osmosis plant RO treated water (permeate) collection tank ,RO reject water collection tank Evaporator, Air Blowers, Effluent Transfer Pump, Filter Feed Pump, Sludge Transfer Pump
	Design Capacity of ETP (in KLD)	04
	Treatment process (physic-chemical /biological, mention technology used)	1. *Physico-Chemical Process* Settling Chambers, Oil and Fat Removal, Equalization tank 2. *Biological Treatment Process* NIL

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		4. *Tertiary Treatment* Multi Media Filter, Activated Carbon Filter Reverse osmosis and evaporator
	Date of commissioning of ETP Whether continuous or batch? if batch , no. of batches? (Enclose schematic diagram/ process flow sheet of treatment scheme & photograph of ETP	Commissioning Date: 2011 Type: Continuous process

S. No.	ETP component	Nos.	Size/capacity in feet	Material of Construction	Whether adequate , If not , give reasons
(i)	Equalization tank	01	Volume 4,500 lt	BW/RCC	Adequate
(ii)	Reaction cum settling tank	01	2 m high 2.0 m in dia	MS febricated	Adequate
(iii)	Treated water collection tank	01	1.3 m high 1.50 m in dia	MS fabricated	3.50 hrs detention time Adequate
(iv)	Pressure sand filter	01	Dia 0.4m Height 0.60 m	PVC.	Adequate
(v)	Activated carbon filter	01	Dia 30.4 m Height 0.60 m	PVC.	Adequate
(vi)	Filtered water tank	01	2000 lit capacity	PVC.	Adequate
(vii)	Filter press	01	600mm x 600 mm x 24 plates	Steel	Adequate
(viii)	RO plant	01	Average permeate flow 300-500 lph		Adequate
(ix)	Evaporator	01	100 lph capacity 800 mm dia x 1500 mm	PVC	Adequate

**Information provided by the client*

19	Whether design aspects were taken in to account while evaluating the performance of ETP: Yes
20	• Whether any modification was suggested to rectify deficiencies improve /upgrade the ETP: Yes • Whether modifications are incorporated: Yes
21	Whether ETP found operating and wastewater is treated : Yes

M/s Usha Steal Process

Proprietor

22	Whether wastewater measured : Yes, Electromagnetic Flowmeter (At inlet and outlet of ETP) (if yes please enclose details of flow meters type /No locations etc.) photograph attached			
23	Whether all the wastewater generated from the unit is treated? If not , how much % of is being treated: Yes 100% treated			
24	Whether unit is having any Bypass arrangement for discharge of untreated effluent from the premises : No			
25	Whether the entire treated effluent is being reused? If yes mention the quantity of reuse /recycle of treated effluent in various in various usages and provide details. If not. How much % is being reused?: 100% is used in re circulation and recycling purposes.			
26	Whether the unit has proper arrangement /system for handling and disposal of sludge generated from the ETP: Yes			
27	Whether the unit is having adequate and qualified /skilled operators(s) for the proper operation and maintenance of the ETP: Yes (It was suggested to have one more)			
28	Whether proper log book is being maintained for the operation and maintenance of ETP?: Yes			
29	Whether influent (untreated) and effluent (treated) characteristics have been monitored? If yes, then details in the table below)			
	Date and time of effluent sampling	Whether grab or composite sample	Name & designation of the person who collected sample	Name of the Empanelled laboratory which conducted monitoring /analysis
	05.07.2021 2:30 PM	Grab Sampling	P. Gupta	Research Testing and calibration Lab Moradabad.UP
30	Whether the treated effluent is meeting the prescribed standards: Yes			
31	Date of visit /inspection of the unit /establishment		12-11-2021	
32	Name and designation of the person conducted visit/inspection of the unit /establishment		Dr. Sohail Ayub	
33	Whether existing ETP is adequate to treat the waste water up to its designed capacity (4.0KLD) to meet the prescribed standards: Yes			
34	Advice (if any) given to the unit for the proper operation & maintenance of ETP (separate sheet may be enclosed) Already installed RO unit and Multi evaporator.			
35	Suggestion for best available technology Nil			
36	Remarks (if any): The sizes of the different treatment units were found adequate and as per the laboratory reports the ETP is treating wastewater satisfactorily and the effluent discharge limits of CPCB are achieved.			

Date of Issue: 17.11.2021

M/s Usha Steal Process

Proprietor

Name : Dr. Sohail Ayub
Designation : Professor
Name of organization/institute: Dept. of Civil Engg.
Aligarh Muslim University, Aligarh

Dr. Sohail Ayub (Ph.D.)
Professor, Dept. of Civil Engg.
A.M.U., Aligarh

M/s Usha Steal Process
Proprietor

Annexure - I

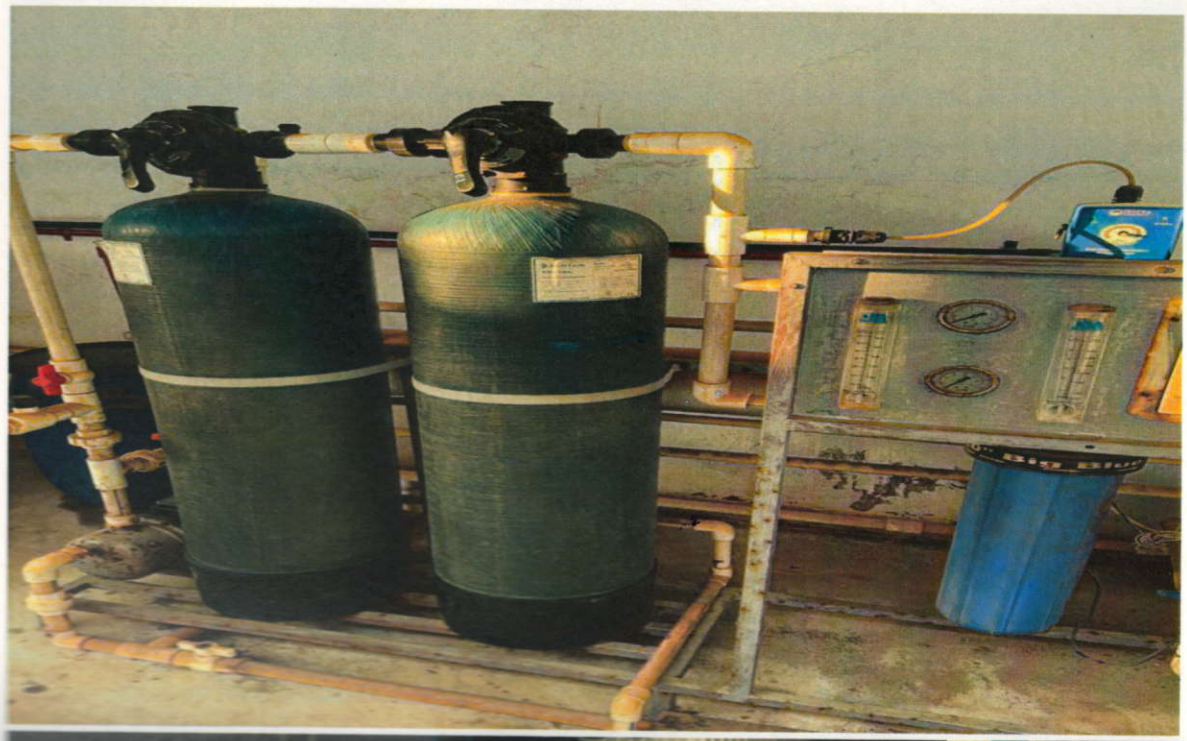
1-Testing Reports

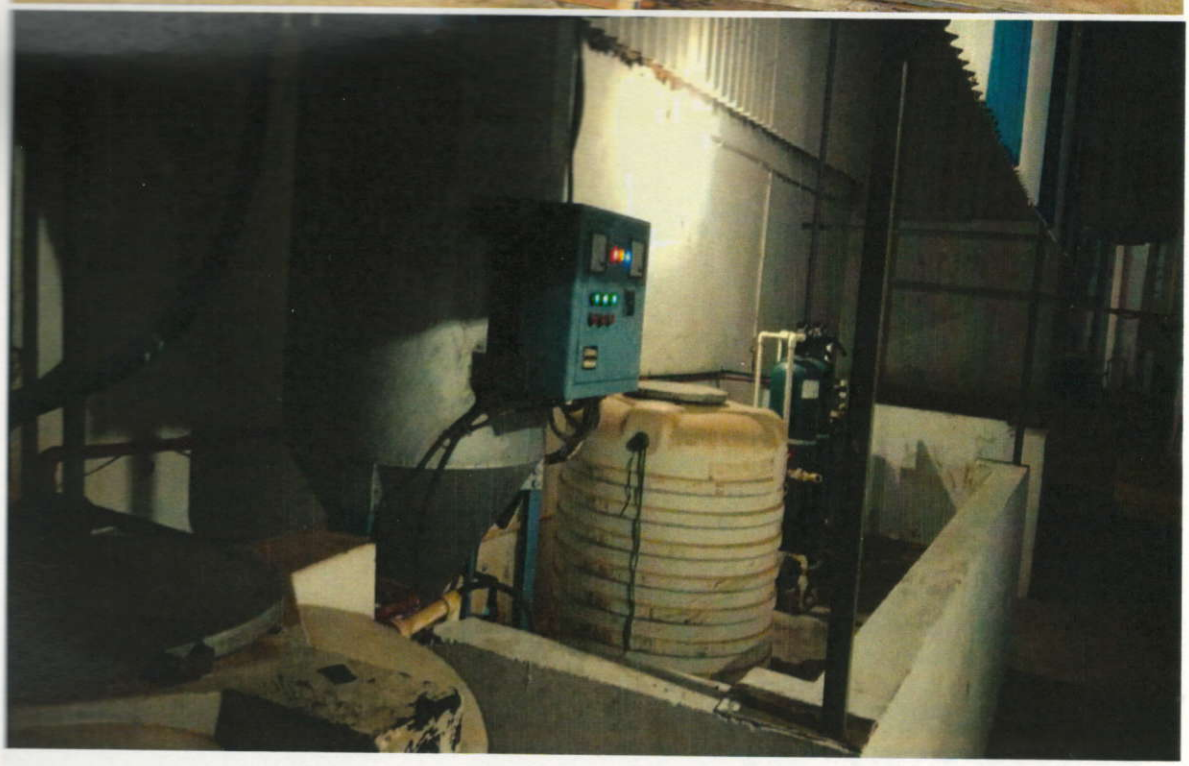
2- Valid Consents

M/s Usha Steal Process
Proprietor

Annexure - II

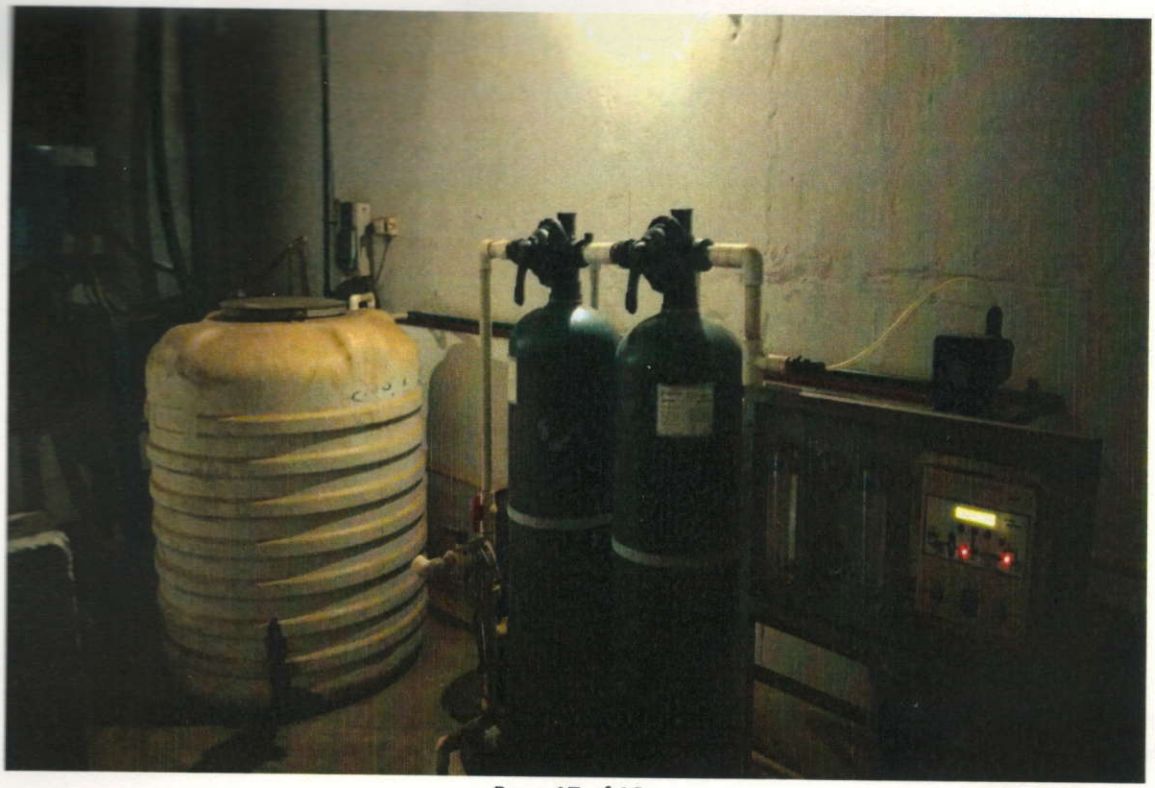
Photographs of ETP





M/s Usha Steal Process

Proprietor



M/s Usha Steal Process

Proprietor

Annexure - III

FLOW DIAGRAM OF ETP

M/s Usha Steal Process

Proprietor

Annexure – 14

REGIONAL LABORATORY OFFICE MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD

1-A/I.N.S.-1, Avas Vikas Colony, Buddha Vihar, Delhi Road,Moradabad

TEST REPORT: WASTE WATER LABORATORY

Ref No: 14027676/Moradabad/2021 **Date:22/11/2021**

1- Name of Industry: USHA STEEL PROCESS

2- Address of Industry: PLOT NO- 22, 23 AND 29, AJEETPUR INDUSTRIAL ESTATE TEHSIL RAMPUR DISTRICT RAMPUR U.P 244901,RAMPUR,244901

3- District: Rampur

4- Description about sampling point: FINAL OUTLET OF ETP

5- Type of Sample (Grab/Composite/Integrated): Grab

6- Sample Collected By: Vinod Kumar AEE & Jitendra Nath Tiwari JE

7- Colour and Odour: COLOURLESS ODOURLESS

8- Quantity and Packing: 2 liter (PLASTIC JERICAN)

9- Date of Sample Collection: 10/11/2021

10- Analyis Indented by: RO Moradabad

11- Date of sample receipt in Lab: 11/11/2021

Parameter/Method Name	Unit	Results	Standard	Detection Range
pH,4500 H B Electronic method	-	7.6		02-12
Suspended Solids , 2540 D Total Suspended Solids dried at 103-105 0C	mg/l	48.0		10-20000 mg/l
Dissolved Solids, 2540 C Total Dissolved Solids dried at 180 0C	mg/l	340		10- 50000 mg/l
BOD, 3 day 27 0C IS 3025 (Part 44): 1993 Bio	mg/l	4.8		1.0 -50000 mg/l
COD, 5220 B Open Reflux Method	mg/l	176		5.0 -100000 mg/l

Reference- (1)General Standards for discharge of envieronment Pollutants are as pert-A Effluent(Schedule-VI).The eniveronment (Protection) Rules,1986 source: www.cpcb.nic.in/GeneralStandards.pdf. Besides these standards,refer EPA standards for specific purpose

Remark: *NA*

Analysed by

[Alok Sharma (JRF)]

Authorized by

ANIL KUMAR VISHWAKARMA Digitally signed by ANIL KUMAR VISHWAKARMA Date: 2021.11.22 13:55:19 +05'30'

Anil Vishwkarma SA

VIKAS MISHRA Digitally signed by VIKAS MISHRA Date: 2021.11.23 10:59:15 +05'30'

Regional Officer

Note: 1 The results in the Test Report relate only to the items tested: 2. The report shall not be reproduced-except in full, without the written permission of laboratory. 3. The test report pertains to the sample as received in Lab.

GROUND WATER DEPARTMENT

(Namami Gange & Rural Water Supply Department)
Ministry of Jal Shakti
Government of Uttar Pradesh

Form 8 (C)

[See Rule 8(1)]

AUTHORIZATION/ NO-OBJECTION CERTIFICATE FOR SINKING OF NEW / EXISTING WELL FOR INDUSTRIAL/ COMMERCIAL/ INFRASTRUCTURAL OR BULK USER OF GROUND WATER

[Under Section 14 of the Uttar Pradesh Ground Water Management and Regulation Act, 2019.]

AUTHORIZATION/ NO-OBJECTION CERTIFICATE NO: NOC036353

VALID FROM 29/10/2021 TO 28/10/2026

{UIS10(1) of the Uttar Pradesh Ground Water Management and Regulation Act, 2019}

Registration No.: 202109000316

Name of the Owner	NITIN KUMAR GUPTA		
Designation पद	DIRECTOR TECHNICAL	**Company Name** **कंपनी का नाम**	SWATI MENTHOL & ALLIED CHEMICALS LTD UNIT I
Company Address कंपनी का पता	OPPOSITE AKASHWANI, BAREILLY ROAD RAMPUR UP	**Authorization Letter** **प्राधिकार पत्र**	Download
Address of the Applicant	KHASRA NO-165, 169, 4.5 K.M. BAREILLY ROAD, DISTRICT-RAMPUR, U.P. 244901	**Application Form Serial No.**	RMPR0921NIN0035
Date of Submission	11/09/2021	**Specimen Signature**	

Location Particulars

District	Rampur	**Block**	CHAMRAUAA (URBAN)
Plot No./Khasra No.	165,169	**Municipality/Corporation**	No
Ward No./Holding No.			N/A

Particular of the Existing Well and Pumping Device

Date of Construction/Sinking of the Well	01/01/2007		
Type of Well	Tube Well/Boring	**Depth of the Well (In meter)**	45.00
Purpose of well	Industrial	**Assembly Size(For Tube Well)**	
Strainer Position (For Tube Well)			
Type of Pump Used	Submersible	**H.P. of the Pump**	3.00
Operational Device	Electric Motor	**Rate of Withdrawal (m^3/hr.)**	15.00
Date of Energization (In Case of Electric Pump)		01/01/2007	

...mum Allowable Rate of Withdrawal (m^3/hr.):	15.00	**Maximum Allowable Running Hours Per Day:**	1.00
Maximum Allowable Annual Extraction of Ground Water:			1500

This No-Objection certificate authorizes the owner applicant (user) to sink a well in the location specified at Sl. (2) for extraction of ground water at a rate not exceeding that as shown at Sl. (3j), for Running Hours per day as shown at Sl. (3k), and for maximum allowable annual extraction of ground water as shown at Sl. (3k) and is valid subject to the observance of the conditions stated overleaf.

GENERAL CONDITIONS:

- In case of any change of ownership of the proposed well, fresh authorization has to be obtained.
- No change of location, design, rate of withdrawal and pumping device in respect of the proposed well as indicated at SL (2) and (3) of this certificate shall be made without prior permission of the Competent Authority. Any deviation in this regard shall lead to cancellation of this authorization
- For the purpose of measuring and recording the quantity of ground water extracted, every said user shall affix digital water flow meters (conforming to BIS/ IS standards) having telemetry system in the abstraction structure, which record rate and quantum of extraction, at outlet of pumping devices and it shall be presumed that the quantity recorded by the meter has been extracted by the said user, until the contrary is proved. The rate of extraction of ground water from the well as shown in item 3(k) shall not exceed to the recorded rate from water meters
- The concerned Authority reserves the right to stop extraction of ground water from the well due to quality hazards or any other reasons, if the situation so demands
- In case of any change of ownership of the existing well, fresh registration has to be obtained.
- No change of location, design, rate of withdrawal and pumping device in respect of the existing well as indicated at Sl. (2) and (3) of this certificate shall be made without prior permission of the Competent Authority. Any deviation in this regard shall lead to cancellation of this registration
- In case, any of the particulars I information furnished by the applicant in his application for issuance of this registration is found to be incorrect during verification at any subsequent stage , this registration is liable for cancellation.
- The Certificate of Authorization/ NOC shall be valid for a period of five years from the date of issue. The applicant shall have to apply for renewal through a fresh application, at least ninety days prior to expiry of its validity.
- Construction of piezometers and installation of digital water level recorders with telemetry shall be mandatory for user. Depth and zone tapped of piezometer should be commensurate with that of the pumping well. The data, obtained from digital water level recorders shall be made available to this office on monthly basis
- **Guidelines for Installation of Piezometers and their Monitoring**

Piezometer is a borewell /tubewell used only for measuring the water level by lowering the tape/ sounder or automatic water level measuring equipment. It is also used to take water sample for water quality testing when ever needed. General guidelines for installation of piezometers are as follows:

- The piezometer is to be installed/constructed at the minimum of 50 m distance from the pumping well through which ground water is being withdrawn. The diameter of the piezometer should be about 4" to 6".
- The depth of the piezometer should be same as is case of the pumping well from which ground water is being abstracted. If, more than one piezometers are installed the second piezometer should monitor the shallow ground water regime. It will facilitate shallow as well as deeper ground water aquifer monitoring.
- No. of piezometers to be constructed & Type of water level monitoring mechanism shall be as per below table:

S.No	Quantum of Ground water withdrawal (cum/day)	No.of piezometers required	Monitiring Mechanism	
			Manual	DWLR with Telemetry
1	< 10	0	0	0
2	11 - 50	1	1	0
3	50- 500	1	0	1
4	> 500	2	0	2

- The measuring frequency should be monthly and accuracy of measurement should be up to cm. the reported measurement should be given in meter upto two decimal.
- For measurement of water level sounder or automatic water level recorder (AWLR)/ Digital Automatic water level recorder (DWLR) with telemetry system should be used for accuracy.
- The measurement of water level in piezometer should be taken, only after the pumping from the surrounding tube wells has been stopped for about four to six hours.
- All the details regarding coordinates, reduced level (with respect to mean level), depth, zone taped and assembly lowered should be provided for bringing the piezometer into the Hydrograph Monitoring System for Ground Water Department, Uttar Pradesh, and for its validation.
- The ground water quality has to be monitored twice in a year during pre-monsoon (May/June) and post-monsoon (October/November) periods. Quality may be got analyzed from NABL approved lab. Besides, one sample (1 lt capacity bottle) to the concerned Director, Ground Water Department, Uttar Pradesh, for chemical analysis.
- A Permanent display board should be installed at piezometer/Tube wells site for providing the location, piezometer/ tube well number, depth and zone tapped of piezometer/tube well for standard referencing and identification.

- Any other site specific requirement regarding safety and access for measurement may be taken care of.

Any other condition(s) that may be imposed by the concerned Authority.

- In case, any of the particulars I information furnished by the applicant in his application for issuance of this permit is found to be incorrect during verification at any subsequent stage, this permit is liable for cancellation.
-
- **SPECIFIC CONDITIONS:**
- **(A) For Industrial User:** No Objection Certificate for ground water extraction by industries shall be granted subject to the following specific conditions:
- i) No Objection Certificate shall be granted only in such cases where local government water supply agencies are not able to supply the desired quantity of water.
- ii) All industries shall be required to adopt latest water efficient technologies so as to reduce dependence on ground water resources.
- iii) All industries abstracting ground water in excess of 100 m^3/d shall be required to undertake annual water audit through Confederation of Indian Industries (CII)/ Federation Indian Chamber of Commerce and Industry (FICCI)/ National Productivity Council (NPC) certified auditors and submit audit reports within three months of completion of the same to Ground Water Department Uttar Pradesh. All such industries shall be required to reduce their ground water use by at least 20% over the next five years through appropriate means.
- iv) Construction of observation well(s) (piezometer)(s) within the premises and installation of appropriate water level monitoring mechanism as mentioned in General Condition no.10 shall be mandatory for industries drawing/ proposing to draw more than 10 m^3 /day of ground water and. Monitoring of water level shall be done by the project proponent. The piezometer (observation well) shall be constructed at a minimum distance of 50 m from the bore well/production well. Depth and aquifer zone tapped in the piezometer shall be the same as that of the pumping well/ wells. Monthly water level data shall be submitted online to the Ground Water Department, UP.
- v) The proponent shall be required to adopt roof top rain water harvesting/ recharge in the project premises. Industries which are likely to pollute ground water (chemical, pharmaceutical, dyes, pigments, paints, textiles, tannery, pesticides/ insecticides, fertilizers, slaughter house, explosives etc.) shall store the harvested rain water in surface storage tanks for use in the industry.
- vi) Injection of treated/ untreated waste water into aquifer system is strictly prohibited.
- vii) Industries which are likely to cause ground water pollution e.g. Tanning, Slaughter Houses, Dye, Chemical/ Petrochemical, Coal washeries, other hazardous units etc. (as per CPCB list) need to undertake necessary well head protection measures to ensure prevention of ground water pollution.
-
- (B) **Infrastructural User:** The No Objection Certificate for ground water abstraction will be granted subject to the following specific conditions:
- i) In case of infrastructure projects that require dewatering, proponent shall be required to carry out regular monitoring of dewatering discharge rate (using a digital water flow meter) and submit the data online to Ground Water Department, UP as applicable. Monitoring records and results should be retained by the proponent for two years, for inspection or reporting as required by District Ground Water Management Council.
- ii) Installation of Sewage Treatment Plants (STP) shall be mandatory for new projects, where ground water requirement is more than 20 m^3 /day. The water from STP shall be utilized for toilet flushing, car washing, gardening etc

Date :**09/11/2021**

Place:**Rampur**

This certificate is electronically generated and does not require digital signature

GROUND WATER DEPARTMENT

(Namami Gange & Rural Water Supply Department)
Ministry of Jal Shakti
Government of Uttar Pradesh

Form 8 (C)

[See Rule 8(1)]

AUTHORIZATION/ NO-OBJECTION CERTIFICATE FOR SINKING OF NEW / EXISTING WELL FOR INDUSTRIAL/ COMMERCIAL/ INFRASTRUCTURAL OR BULK USER OF GROUND WATER

[Under Section 14 of the Uttar Pradesh Ground Water Management and Regulation Act, 2019.]

AUTHORIZATION/ NO-OBJECTION CERTIFICATE NO: NOC031067

VALID FROM 29/10/2021 TO 28/10/2026

{UIS10(1) of the Uttar Pradesh Ground Water Management and Regulation Act, 2019}

Registration No.: 202109000312

Name of the Owner	NITIN KUMAR GUPTA		
Designation पद	DIRECTOR TECHNICAL	**Company Name** कंपनी का नाम	SWATI MENTHOL &ALLIED CHEMICAL LTD UNIT I
Company Address कंपनी का पता	OPPOSITE AKASHWANI, BAREILLY ROAD RAMPUR UP	**Authorization Letter** प्राधिकार पत्र	Download
Address of the Applicant	KHASRA NO-165, 169, 4.5 K.M. BAREILLY ROAD, DISTRICT-RAMPUR, U.P. 244901	**Application Form Serial No.**	RMPR0921NIN0033
Date of Submission	11/09/2021	**Specimen Signature**	

Location Particulars

District	Rampur	**Block**	CHAMRAUAA (URBAN)
Plot No./Khasra No.	165,169	**Municipality/Corporation**	No
Ward No./Holding No.			N/A

Particular of the Existing Well and Pumping Device

Date of Construction/Sinking of the Well	01/01/2007		
Type of Well	Tube Well/Boring	**Depth of the Well (In meter)**	45.00
Purpose of well	Industrial	**Assembly Size(For Tube Well)**	
Strainer Position (For Tube Well)			
Type of Pump Used	Submersible	**H.P. of the Pump**	3.00
Operational Device	Electric Motor	**Rate of Withdrawal (m^3/hr.)**	15.00
Date of Energization (In Case of Electric Pump)		01/01/2007	

,num Allowable Rate . Withdrawal (m^3/hr.):	15.00	**Maximum Allowable Running Hours Per Day:**	2.00
Maximum Allowable Annual Extraction of Ground Water:			10950

This No-Objection certificate authorizes the owner applicant (user) to sink a well in the location specified at Sl. (2) for extraction of ground water at a rate not exceeding that as shown at Sl. (3j), for Running Hours per day as shown at Sl. (3k), and for maximum allowable annual extraction of ground water as shown at Sl. (3k) and is valid subject to the observance of the conditions stated overleaf.

GENERAL CONDITIONS:

- In case of any change of ownership of the proposed well, fresh authorization has to be obtained.
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- For the purpose of measuring and recording the quantity of ground water extracted, every said user shall affix digital water flow meters (conforming to BIS/ IS standards) having telemetry system in the abstraction structure, which record rate and quantum of extraction, at outlet of pumping devices and it shall be presumed that the quantity recorded by the meter has been extracted by the said user, until the contrary is proved. The rate of extraction of ground water from the well as shown in item 3(k) shall not exceed to the recorded rate from water meters
- The concerned Authority reserves the right to stop extraction of ground water from the well due to quality hazards or any other reasons, if the situation so demands
- In case of any change of ownership of the existing well, fresh registration has to be obtained.
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- In case, any of the particulars I information furnished by the applicant in his application for issuance of this registration is found to be incorrect during verification at any subsequent stage , this registration is liable for cancellation.
- The Certificate of Authorization/ NOC shall be valid for a period of five years from the date of issue. The applicant shall have to apply for renewal through a fresh application, at least ninety days prior to expiry of its validity.
- Construction of piezometers and installation of digital water level recorders with telemetry shall be mandatory for user. Depth and zone tapped of piezometer should be commensurate with that of the pumping well. The data, obtained from digital water level recorders shall be made available to this office on monthly basis
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S.No	Quantum of Ground water withdrawal (cum/day)	No.of piezometers required	Monitiring Mechanism	
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3	50- 500	1	0	1
4	> 500	2	0	2

- The measuring frequency should be monthly and accuracy of measurement should be up to cm. the reported measurement should be given in meter upto two decimal.
- For measurement of water level sounder or automatic water level recorder (AWLR)/ Digital Automatic water level recorder (DWLR) with telemetry system should be used for accuracy.
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- Any other site specific requirement regarding safety and access for measurement may be taken care of.

Any other condition(s) that may be imposed by the concerned Authority.

- In case, any of the particulars I information furnished by the applicant in his application for issuance of this permit is found to be incorrect during verification at any subsequent stage, this permit is liable for cancellation.

SPECIFIC CONDITIONS:

(A) For Industrial User: No Objection Certificate for ground water extraction by industries shall be granted subject to the following specific conditions:

i) No Objection Certificate shall be granted only in such cases where local government water supply agencies are not able to supply the desired quantity of water.

ii) All industries shall be required to adopt latest water efficient technologies so as to reduce dependence on ground water resources.

iii) All industries abstracting ground water in excess of 100 m^3/d shall be required to undertake annual water audit through Confederation of Indian Industries (CII)/ Federation Indian Chamber of Commerce and Industry (FICCI)/ National Productivity Council (NPC) certified auditors and submit audit reports within three months of completion of the same to Ground Water Department Uttar Pradesh. All such industries shall be required to reduce their ground water use by at least 20% over the next five years through appropriate means.

iv) Construction of observation well(s) (piezometer)(s) within the premises and installation of appropriate water level monitoring mechanism as mentioned in General Condition no.10 shall be mandatory for industries drawing/ proposing to draw more than 10 m^3 /day of ground water and. Monitoring of water level shall be done by the project proponent. The piezometer (observation well) shall be constructed at a minimum distance of 50 m from the bore well/production well. Depth and aquifer zone tapped in the piezometer shall be the same as that of the pumping well/ wells. Monthly water level data shall be submitted online to the Ground Water Department, UP.

v) The proponent shall be required to adopt roof top rain water harvesting/ recharge in the project premises. Industries which are likely to pollute ground water (chemical, pharmaceutical, dyes, pigments, paints, textiles, tannery, pesticides/ insecticides, fertilizers, slaughter house, explosives etc.) shall store the harvested rain water in surface storage tanks for use in the industry.

vi) Injection of treated/ untreated waste water into aquifer system is strictly prohibited.

vii) Industries which are likely to cause ground water pollution e.g. Tanning, Slaughter Houses, Dye, Chemical/ Petrochemical, Coal washeries, other hazardous units etc. (as per CPCB list) need to undertake necessary well head protection measures to ensure prevention of ground water pollution.

(B) Infrastructural User: The No Objection Certificate for ground water abstraction will be granted subject to the following specific conditions:

i) In case of infrastructure projects that require dewatering, proponent shall be required to carry out regular monitoring of dewatering discharge rate (using a digital water flow meter) and submit the data online to Ground Water Department, UP as applicable. Monitoring records and results should be retained by the proponent for two years, for inspection or reporting as required by District Ground Water Management Council.

ii) Installation of Sewage Treatment Plants (STP) shall be mandatory for new projects, where ground water requirement is more than 20 m^3 /day. The water from STP shall be utilized for toilet flushing, car washing, gardening etc

Date :**09/11/2021**

Place:**Rampur**

This certificate is electronically generated and does not require digital signature

GROUND WATER DEPARTMENT

(Namami Gange & Rural Water Supply Department)
Ministry of Jal Shakti
Government of Uttar Pradesh

Form 8 (C)

[See Rule 8(1)]

AUTHORIZATION/ NO-OBJECTION CERTIFICATE FOR SINKING OF NEW / EXISTING WELL FOR INDUSTRIAL/ COMMERCIAL/ INFRASTRUCTURAL OR BULK USER OF GROUND WATER

[Under Section 14 of the Uttar Pradesh Ground Water Management and Regulation Act, 2019.]

AUTHORIZATION/ NO-OBJECTION CERTIFICATE NO: NOC015217

VALID FROM 29/10/2021 TO 28/10/2026

{UIS10(1) of the Uttar Pradesh Ground Water Management and Regulation Act, 2019}

Registration No.: 202109000314

Name of the Owner	NITIN KUMAR GUPTA		
Designation पद	DIRECTOR TECHNICAL	**Company Name** **कंपनी का नाम**	SWATI MENTHOL & ALLIED CHEMICALS LTD UNIT I
Company Address कंपनी का पता	OPPOSITE AKASHWANI, BAREILLY ROAD RAMPUR UP	**Authorization Letter** **प्राधिकार पत्र**	Download
Address of the Applicant	KHASRA NO-165, 169, 4.5 K.M. BAREILLY ROAD, DISTRICT-RAMPUR, U.P. 244901	**Application Form Serial No.**	RMPR0921NIN0034
Date of Submission	11/09/2021	**Specimen Signature**	

Location Particulars

District	Rampur	**Block**	CHAMRAUAA (URBAN)
Plot No./Khasra No.	165,169	**Municipality/Corporation**	No
Ward No./Holding No.			N/A

Particular of the Existing Well and Pumping Device

Date of Construction/Sinking of the Well	01/01/2007		
Type of Well	Tube Well/Boring	**Depth of the Well (In meter)**	45.00
Purpose of well	Industrial	**Assembly Size(For Tube Well)**	
Strainer Position (For Tube Well)			
Type of Pump Used	Submersible	**H.P. of the Pump**	3.00
Operational Device	Electric Motor	**Rate of Withdrawal (m^3/hr.)**	15.00
Date of Energization (In Case of Electric Pump)		01/01/2007	

...um Allowable Rate Withdrawal (m^3/hr.):	15.00	**Maximum Allowable Running Hours Per Day:**	2.00
Maximum Allowable Annual Extraction of Ground Water:			6000

This No-Objection certificate authorizes the owner applicant (user) to sink a well in the location specified at Sl. (2) for extraction of ground water at a rate not exceeding that as shown at Sl. (3j), for Running Hours per day as shown at Sl. (3k), and for maximum allowable annual extraction of ground water as shown at Sl. (3k) and is valid subject to the observance of the conditions stated overleaf.

GENERAL CONDITIONS:

- In case of any change of ownership of the proposed well, fresh authorization has to be obtained.
- No change of location, design, rate of withdrawal and pumping device in respect of the proposed well as indicated at SL (2) and (3) of this certificate shall be made without prior permission of the Competent Authority. Any deviation in this regard shall lead to cancellation of this authorization
- For the purpose of measuring and recording the quantity of ground water extracted, every said user shall affix digital water flow meters (conforming to BIS/ IS standards) having telemetry system in the abstraction structure, which record rate and quantum of extraction, at outlet of pumping devices and it shall be presumed that the quantity recorded by the meter has been extracted by the said user, until the contrary is proved. The rate of extraction of ground water from the well as shown in item 3(k) shall not exceed to the recorded rate from water meters
- The concerned Authority reserves the right to stop extraction of ground water from the well due to quality hazards or any other reasons, if the situation so demands
- In case of any change of ownership of the existing well, fresh registration has to be obtained.
- No change of location, design, rate of withdrawal and pumping device in respect of the existing well as indicated at Sl. (2) and (3) of this certificate shall be made without prior permission of the Competent Authority. Any deviation in this regard shall lead to cancellation of this registration
- In case, any of the particulars I information furnished by the applicant in his application for issuance of this registration is found to be incorrect during verification at any subsequent stage , this registration is liable for cancellation.
- The Certificate of Authorization/ NOC shall be valid for a period of five years from the date of issue. The applicant shall have to apply for renewal through a fresh application, at least ninety days prior to expiry of its validity.
- Construction of piezometers and installation of digital water level recorders with telemetry shall be mandatory for user. Depth and zone tapped of piezometer should be commensurate with that of the pumping well. The data, obtained from digital water level recorders shall be made available to this office on monthly basis
- **Guidelines for Installation of Piezometers and their Monitoring**

Piezometer is a borewell /tubewell used only for measuring the water level by lowering the tape/ sounder or automatic water level measuring equipment. It is also used to take water sample for water quality testing when ever needed. General guidelines for installation of piezometers are as follows:

- The piezometer is to be installed/constructed at the minimum of 50 m distance from the pumping well through which ground water is being withdrawn. The diameter of the piezometer should be about 4" to 6".
- The depth of the piezometer should be same as is case of the pumping well from which ground water is being abstracted. If, more than one piezometers are installed the second piezometer should monitor the shallow ground water regime. It will facilitate shallow as well as deeper ground water aquifer monitoring.
- No. of piezometers to be constructed & Type of water level monitoring mechanism shall be as per below table:

S.No	Quantum of Ground water withdrawal (cum/day)	No.of piezometers required	Monitiring Mechanism	
			Manual	DWLR with Telemetry
1	< 10	0	0	0
2	11 - 50	1	1	0
3	50- 500	1	0	1
4	> 500	2	0	2

- The measuring frequency should be monthly and accuracy of measurement should be up to cm. the reported measurement should be given in meter upto two decimal.
- For measurement of water level sounder or automatic water level recorder (AWLR)/ Digital Automatic water level recorder (DWLR) with telemetry system should be used for accuracy.
- The measurement of water level in piezometer should be taken, only after the pumping from the surrounding tube wells has been stopped for about four to six hours.
- All the details regarding coordinates, reduced level (with respect to mean level), depth, zone taped and assembly lowered should be provided for bringing the piezometer into the Hydrograph Monitoring System for Ground Water Department, Uttar Pradesh, and for its validation.
- The ground water quality has to be monitored twice in a year during pre-monsoon (May/June) and post-monsoon (October/November) periods. Quality may be got analyzed from NABL approved lab. Besides, one sample (1 lt capacity bottle) to the concerned Director, Ground Water Department, Uttar Pradesh, for chemical analysis.
- A Permanent display board should be installed at piezometer/Tube wells site for providing the location, piezometer/ tube well number, depth and zone tapped of piezometer/tube well for standard referencing and identification.

- Any other site specific requirement regarding safety and access for measurement may be taken care of.
- Any other condition(s) that may be imposed by the concerned Authority.
- In case, any of the particulars I information furnished by the applicant in his application for issuance of this permit is found to be incorrect during verification at any subsequent stage, this permit is liable for cancellation.

SPECIFIC CONDITIONS:

(A) For Industrial User: No Objection Certificate for ground water extraction by industries shall be granted subject to the following specific conditions:

i) No Objection Certificate shall be granted only in such cases where local government water supply agencies are not able to supply the desired quantity of water.

ii) All industries shall be required to adopt latest water efficient technologies so as to reduce dependence on ground water resources.

iii) All industries abstracting ground water in excess of 100 m^3/d shall be required to undertake annual water audit through Confederation of Indian Industries (CII)/ Federation Indian Chamber of Commerce and Industry (FICCI)/ National Productivity Council (NPC) certified auditors and submit audit reports within three months of completion of the same to Ground Water Department Uttar Pradesh. All such industries shall be required to reduce their ground water use by at least 20% over the next five years through appropriate means.

iv) Construction of observation well(s) (piezometer)(s) within the premises and installation of appropriate water level monitoring mechanism as mentioned in General Condition no.10 shall be mandatory for industries drawing/ proposing to draw more than 10 m^3 /day of ground water and. Monitoring of water level shall be done by the project proponent. The piezometer (observation well) shall be constructed at a minimum distance of 50 m from the bore well/production well. Depth and aquifer zone tapped in the piezometer shall be the same as that of the pumping well/ wells. Monthly water level data shall be submitted online to the Ground Water Department, UP.

v) The proponent shall be required to adopt roof top rain water harvesting/ recharge in the project premises. Industries which are likely to pollute ground water (chemical, pharmaceutical, dyes, pigments, paints, textiles, tannery, pesticides/ insecticides, fertilizers, slaughter house, explosives etc.) shall store the harvested rain water in surface storage tanks for use in the industry.

vi) Injection of treated/ untreated waste water into aquifer system is strictly prohibited.

vii) Industries which are likely to cause ground water pollution e.g. Tanning, Slaughter Houses, Dye, Chemical/ Petrochemical, Coal washeries, other hazardous units etc. (as per CPCB list) need to undertake necessary well head protection measures to ensure prevention of ground water pollution.

(B) Infrastructural User: The No Objection Certificate for ground water abstraction will be granted subject to the following specific conditions:

i) In case of infrastructure projects that require dewatering, proponent shall be required to carry out regular monitoring of dewatering discharge rate (using a digital water flow meter) and submit the data online to Ground Water Department, UP as applicable. Monitoring records and results should be retained by the proponent for two years, for inspection or reporting as required by District Ground Water Management Council.

ii) Installation of Sewage Treatment Plants (STP) shall be mandatory for new projects, where ground water requirement is more than 20 m^3 /day. The water from STP shall be utilized for toilet flushing, car washing, gardening etc

Date :**09/11/2021**

Place:**Rampur**

This certificate is electronically generated and does not require digital signature

ADEQUACY REPORT OF

EFFLUENT TREATMENT PLANT

OF

SWATI MENTHOL & ALLIED CHEMICALS LTD UNIT-1

RAMPUR U.P

SUBMITTED

BY

DEPARTMENT OF CIVIL ENGINEERING
FACULTY OF ENGINEERING & TECHNOLOGY
ALIGARH MUSLIM UNIVERSITY ALIGARH

NOVEMBER-2021

1.0 INTRODUCTION

M/s Swati Menthol & Allied Chemicals Ltd unit-1. Rampur, U.P. A ISO 9001:2008 certified company, they are one of the leading manufacturers and exporters of natural menthol, essential oil, peppermint oil, crude menthol oil, peppermint essential oil and terpene chemicals from India. They have reputation as a noteworthy supplier in global supply chain and can be credited to their technically advanced production facilities, international quality standards, extensive R&D and customer oriented approach.

Swati menthol working objective is to achieve total customer satisfaction. At the same time, they also strive to offer effective and reliable products at most competitive prices within scheduled time. The driving force behind this enthusiastic approach is their quest to serve clients with the most dedicated and professionally. In addition, the industry have a countrywide sales and marketing network in India with a vibrant team of trained and motivated professionals.

The company is promoted by Mr. S. K. Gupta, a Chemical Engineer, who has vast experience in the same industry. He started the first production division i.e. natural menthol manufacturing unit in the year 1977 at Rampur (UP, India). At Swati Menthol & Allied Chemicals Limited, they follow the principles of corporate citizen to grow and sustain its growth. It includes: Dedication for best client service ,Correct market information by avoiding speculation ,Flexibility and competitive pricing and Diligent working with highest ethical standards

Production Facilities

They have state-of-the-art infrastructural set-up, which is equipped with modern production equipment. The company has three production divisions viz. Mint division, natural peppermint oil, pine division and essential oil division. They have integrated facilities for production, quality testing, product packaging and storage facilities, which assist them for the timely execution of entire business requirements.

They employ purification through distillation to provide extra shine, clarity and purity to crystals. The crystal size is graded by sieving machine into large, small, medium,

rice and fine before final packaging. Their manufacturing unit is located in Western Uttar Pradesh, which gives us an advantage regarding materials sourcing, business networking, etc.

With the burgeoning desire to achieve higher growth, they welcome technical collaborations, joint ventures and international trading through strategic alliances with MNC and global leaders. They are committed to follow global acceptable quality standards like IP, BP and USP. An ISO 9001:2008 certified company, they carry out all their production as per GMP guidelines. For quality testing, there is an ultra modern laboratory equipped with the latest testing equipment and instruments. To perform analytical research and quality control, following sophisticated instruments are being used: Gas liquid chromatography ,Polarimeter, Melting range unit ,DR range unit ,Ash content unit, Viscometer and Other relevant testing equipment. They are engaged in intense R&D activities, with an aim to develop innovative and improvised products. With ultra-modern R&D center, they ensure constant research, analysis and development. The various aspects of R&D are carried out by highly skilled scientists and researchers.

The unit was visited on November 12, 2021. The different unit operations/processes of ETP were physically verified (photographs attached – Annexure II). At the time of visit, the ETP was found in running condition with all the units operational. Certain instructions were given to the management as well as ETP operators regarding improving the working of the plant.

2.0 Objective of the present study:

The aim of the present study is to assess the feasibility to explore possibility of reuse of treated effluent from ETP within industrial process schemes in **Mls. Swati Menthol & Allied Chemicals Limited.** The broad objectives of the work are

- To assess availability and efficacy of cleaner/ advance technology/state of the art technology for implementation of **Zero Liquid Discharge** (ZLD) in **Swati Manthol**.
- To explore and carry out technical assessment of implementation of

'**Zero Liquid Discharge**' scheme (Annexure-II).

3.0 Methodology:

The two possible options for zero liquid discharge (ZLD) are:

(i) Close up all process water loops by total recycling inside a process sequence or into adifferent process sequence within the industry.

(ii) Treat the effluent in a stand-alone facility to render it suitable for process reuse.

The scope of the adequacy assessment of ZLD in the **Mls. Swati Menthol & Allied Chemicals Limited** is to analyze the feasibility of steps taken by the industry under both the above options. Following are the three major steps to achieve the above scope of work

(i) Water audit of the unit and preparation of the Water Balance

(ii) To assess water recycling arrangements

(iii) Analysis of ZLD scheme.

Following check list is used as guideline for the work

- Complete process flow sheet showing material flow including water balance of the productionprocess.
- Scheme of Zero liquid discharge along with water and pollution load balance diagram.
- Balance of water and pollution load across various unit operations used for treating processwater for recycling/treatment under ZLD scheme.
- Provision of flow meter and water sampling wherever recycled water is used in the process.
- Balance of water and contaminants across the section where fresh water or recycled water is used.
- Flow meters log records put across the various unit operations used for treating process waterfor recycling/treatment under ZLD scheme.
- Log book record of utility section including fuel consumption.
- Record of solid waste generation and disposal generated from ZLD

scheme.

- Recovery and reject ratio of RO plant if exist
- Log record of RO plant.
- Operation and maintenance record of unit operation used for treating process water for recycling/treatment under ZLD scheme (Annexure II).

Water Audit: Water audit includes collection and compilation of water consumption data, process details, and section wise water balance. Documents and information are necessary to implement an audit. Following are the steps for the water audit

- Meeting with Management
- Plant Visit.

Preparation of Process Flow Diagram and complete Water balance of the plant. Available information of the industry was tried to collect as much as possible. The information includes the process flow sheet of different sections of the industry, mass flow rate, and consistencies. Data and detailed flow diagrams provided by the industry helped in achieving the objective of the report.

Water Recycling Arrangement: Adequacy of water recycling arrangements is assessed through

- Adequacy of treatment scheme
- Recycling water quality analysis

Analysis of ZLD scheme:

- Flow sheet analysis
- Technical feasibility

4.0 Manufacturing Process

The different processes involved are mentioned in the process flow diagram (Annexure – III). Normal sequences unit operation include: dementholised oil,

dementholised oil storage, fractional distillation, blending, analysis, filtration and filling and weighting.

5.0 WATER AND WASTEWATER: GENERATION AND CHARACTERIZATION

5.1 QUANTIFICATION OF WASTEWATER

The sources of effluent include cooling tower for chillers condensers (refrigeration) cooling towers for distillation condensers and floor washing section. The quantity of effluent generated from various sources of the unit has been estimated considering 100% of the total water consumption. The total effluent generated has been estimated for present scenario is run for Maximum 9.0 KLD. Whereas it can handle up to 15.0 KLD.

5.2 CHARACTERIZATION OF WASTEWATER

The characteristics of effluent are source specific and differ from source to source. Therefore, the effluent generated is of interest from the standpoint of environmental impact in terms of both effluent volume and contaminant loading. Therefore, the characteristics of effluent include mainly pH, total suspended solids, biochemical oxygen demand, chemical oxygen demand and oil and grease. The current reports of influent and effluent are seen and attached (Annexure –I).

5.3 QUANTIFICATION OF WATER

Three bore wells with total capacity of 15 KLD are used to drawn water from underground. The quantity of fresh water consumption from various sources of the unit has been estimated for present scenario found to be 14.5KLD.

5.4 CHARACTERIZATION OF WATER

The characteristics of raw water are source specific and differ from source to source. Therefore, the water consumption is of interest from the standpoint of environmental impact in terms of both influent volume and contaminant loading. Therefore, the

characteristics of influent include mainly pH, total suspended solids, biochemical properties, oil and grease. The current reports are seen and attached (Annexure-I).

6.0 TREATMENT PROCESS DESCRIPTION

The unit has provided effluent treatment plant (ETP) for the treatment of wastewater prior to discharge and to comply with the requirements of the pollution control board. The designed capacity of ETP to treat the wastewater is 15.0 KLD, However, the estimated effluent generated has been found to be 9.0KLD. The wastewater from different streams is passed through screens and then moved to oil & grease trap then further collected in a collection tank. The wastewater from collection tank is taken to chemical treatment unit. The wastewater from here is taken to Primary tube settler for the separation of suspended particles. From primary tube settler the effluent is pumped to MBBR tank I. The sludge from PTS is taken to D-Mech sludge. The effluent from MBBR is taken to secondary tube settler and further to MBBR Tank II and finally to final tube settler. The effluent from balance tank is further treated to pressure sand filter and activated carbon filter. The sludge from different units is taken to sludge drying beds. Part of the treated effluent is taken to agricultural field / horticulture purposes, cooling tower for re cycling and part is taken for street cleaning/ floor washing and watering of parks etc. Online monitoring system is being installed as per the guidelines of CPCB

7.0 TREATMENT PLANT: UNIT OPERATIONS/PROCESSES

(i) Oil and Grease Trap
(ii) Flash mixing tank
(iii) Equalization tank
(iv) Primary tube settler
(v) MBBR tank I
(vi) MBBR tank II
(vii) Pressure sand filter
(viii) Activated carbon filter

7.1 SPECIFICATION OF PROCESS UNITS

S. No.	ETP component	Nos.	Size/capacity in feet	Material of Construction	Whether adequate , If not , give reasons
(i)	Collection tank	01	Length= 8.0 feet, diameter =5.0 feet	MS fabricated	Adequate
(ii)	Chemical treatment	01	6.5 x 2.0 x 10 feet	MS febricated	Adequate
(iii)	Primary tube settler	02	6.5 x 2.5 x 10 feet	MS fabricated	Adequate
(iv)	MBBR Tank 1	01	6.5 x 4.5 x 10 feet	MS fabricated	Adequate
(v)	MBBR tank 2	01	6.5 x 4.5 x 10 feet	MS fabricated	Adequate
(vi)	Final Tube settler	01	6.5 x 2.5 x 10 feet	MS fabricated	Adequate
(vii)	Balance tank	01	4.0 x 4.0 x 4.0 feet	MS fabricated	Adequate
(viii)	Pressure sand filter	01	Dia 300 mm Height 1200 mm	PVC.	Adequate
(ix)	Activated carbon filter	01	Dia 300 mm Height 1200 mm	PVC.	Design Adequate
(x)	Treated water tank	01	Diameter 4.0 SWD = 5.0	R.C.C.	Design Adequate
(xi)	Sludge drying bed	01	5.0 x 3.5 x 1.0 feet	RB	Adequate

**Information provided by the client*

8.0 ANALYSIS OF INFLUENT AND EFFLUENT CHARACTERISTICS

The client has provided recent test report of influent and effluent characteristics (issued on August 05, 2021) having case specific selected parameters. The parameters include pH, Total Suspended Solids, TDS, TS, BOD_3, COD, odour, colour, Oil, and Grease. These parameters have been analyzed by Envirochem Research & Tests Lab private limited Lucknow UP. (Annexure -I). The values of

characteristic parameters at the outlet of ETP have been found to be within the permissible limit.

6.0 CONCLUSIONS AND RECOMMENDATIONS

(i) The capacity - wise all the unit operations and processes of ETP are seem to be adequate to cater the wastewater generated from the unit.

(ii) The influent and effluent characteristics (as provided by the client) comply with the regulatory norms of discharge standards.

(iii) The treated water is used for cooling tower recycling, Horticulture purposes/ gardening and flushing floor cleaning.

(iv) 100 % wastewater after treatment used within the premises.

(iv) **Mls. Swati Menthol & Allied Chemicals Limited** is not discharging any effluent out of the premises.

(v) Wastewater treatment including zero level discharge schemes is adequately designed and working satisfactorily.

(iv) It has been suggested to arrange the technical training programme for operating personnel on treatment plant operation and maintenance on regular bases to aware of the significance and principles of the operating system.

Consultant

Name : Dr. Sohail Ayub
Designation : Professor
Name of organization/institute: Dept. of Civil Engg.
Aligarh Muslim University, Aligarh

Dr. Sohail Ayub (Ph.D.)
Professor, Dept. of Civil Engg.
A.M.U., Aligarh

SUMMARY SHEET OF FEASIBILITY REPORT FOR ETP

OF

MLS. SWATI MENTHOL & ALLIED CHEMICALS LIMITED UNIT-1 RAMPUR, U.P.

Adequacy Report No.: EPES/CED/166/2021 Date of Issue: 18.11.2021

S. No.	Description	Details
1	Name of unit	**Mls. Swati Menthol & Allied Chemicals Limited Unit -1** .
2	Address of unit	*Bareilly road, Tehsil Sadar Dist.Rampur, U.P.*
3	Date of Commissioning/ Commencement of Production	March 1990
4	(a) Plot area (in sq meter) (b) Built up area (in sq meter)	12997.52 9078.82
5	Name, Designation & contact No(s) of the In- charge dealing with pollution control matters.	Shri. Nitin Gupta CEO Contact No.: +91-9837055373
6	Name, Designation of the person (s) contacted at the site during the visit.	Mr. Sumit Mittal ETP Manager Contact No.: +91-8923929371
7	Activity/process	Attached (Annexure – III)
8	Production capacity	4200 MTPA
9	Manufacturing process /Main Activities (in brief, Also Attach Process Flow Diagram))	As per process flow chart
10	Main Raw Materials	Mentha oil
11	Main Products	Mother luquir for peppermint oil
12	Source of water	Ground water (bore well)

Part B: Water Consumption, Waste Water Generation and Treatment

13 Water consumption, source and waste water generation (in KLD): (please Annex Water Mass Balance chart)

		Usage	Quantity, KLD	Source	Water meter installed	Wastewater generation, KLD	Flow meter installed
	(a)	Domestic (toilet/Bathroom/ washroom etc.	3 KLD	Ground Water	Yes	2KLD	

	(b)	Cooling towers for distillation condensers	8 KLD	Ground Water	Yes	4.5 KLD	Yes
	(c)	Cooling towers for chillers condensers (refrigeration)	4 KLD	Ground Water	Yes	2.5 KLD	
		Total	**15 KLD**	**Ground Water**	**Yes**	**9 KLD**	**Yes**

14	Basis of the quantity of water consumption and waste water generation mentioned above: **Estimation/Waste Water Meter Reading**
15	Wastewater treatment facilities: Effluent Treatment Plant (ETP)

S No.	Design capacity (in KLD)	Treatment facility	Design parameter (BOD etc.)	Treatment process(physio-chemical/Biological, mention technology used)	Batch/Continuous process	Sources of waste water leading to ETP	Present average waste water generation KLD	Flow meter at inlet & outlet (yes/No)	Disposal point
1	15	ETP	BOD-200 - 350 mg/l COD-400-600 mg/l	Physical, Chemical as well as Biological with tertiary treatment	Continuous process	By Pump	14.5	Yes	Yes

16	Whether all the wastewater generated from the unit /establishment is treated: Yes	
17	Mode and location of effluent discharge : (please attach location map of disposal clearly indicating the outlets for sampling/effluent discharge) (a) **Treated effluent** : Partly for watering of streets and gardening purposes but majority of treated wastewater is taken for cooling tower re cycling	
18	Details of the Constituent Units of ETP	Oil and Grease Trap,Flash mixing tank Equalization tank, Primary tube settler MBBR tank I,MBBR tank II ,Pressure sand filter, Activated carbon filter Filter feed tank, Sludge Drying Beds, Air Blowers, Effluent Transfer Pump, Filter Feed Pump, Sludge Transfer Pump
	Design Capacity of ETP (in KLD)	15
	Treatment process (physic-chemical /biological, mention technology used)	1. *Physico-Chemical Process* Screen Chambers, Oil and Fat Removal, Primary Clarifier

		2. *Biological Treatment Process* Tube settlers and MBBR tanks 4. *Tertiary Treatment* Media Filter, Carbon Filter
	Date of commissioning of ETP Whether continuous or batch? if batch , no. of batches? (Enclose schematic diagram/ process flow sheet of treatment scheme & photograph of ETP	Commissioning Date: 1990 Type: Continuous process

S. No.	ETP component	Nos.	Size/capacity in feet	Material of Construction	Whether adequate , If not , give reasons
(i)	Collection tank	01	Length= 8.0 feet, diameter =5.0 feet	MS fabricated	Adequate
(ii)	Chemical treatment	01	6.5 x 2.0 x 10 feet	MS febricated	Adequate
(iii)	Primary tube settler	02	6.5 x 2.5 x 10 feet	MS fabricated	Adequate
(iv)	MBBR Tank 1	01	6.5 x 4.5 x 10 feet	MS fabricated	Adequate
(v)	MBBR tank 2	01	6.5 x 4.5 x 10 feet	MS fabricated	Adequate
(vi)	Final Tube settler	01	6.5 x 2.5 x 10 feet	MS fabricated	Adequate
(vii)	Balance tank	01	4.0 x 4.0 x 4.0 feet	MS fabricated	Adequate
(viii)	Pressure sand filter	01	Dia 300 mm Height 1200 mm	PVC.	Adequate
(ix)	Activated carbon filter	01	Dia 300 mm Height 1200 mm	PVC.	Design Adequate
(x)	Treated water tank	01	Diameter 4.0 SWD = 5.0	R.C.C.	Design Adequate
(xi)	Sludge drying bed	01	5.0 x 3.5 x 1.0 feet	RB	Adequate

**Information provided by the client*

19	Whether design aspects were taken in to account while evaluating the performance of ETP: Yes
20	• Whether any modification was suggested to rectify deficiencies improve /upgrade the ETP: Yes • Whether modifications are incorporated: Yes
21	Whether ETP found operating and wastewater is treated : Yes
22	Whether wastewater measured : Yes, Electromagnetic Flowmeter (At inlet and outlet of ETP) (if yes please enclose details of flow meters type /No locations etc.) photograph attached
23	Whether all the wastewater generated from the unit is treated? If not , how much % of is being treated: Yes 100% treated
24	Whether unit is having any Bypass arrangement for discharge of untreated effluent from the premises : No
25	Whether the entire treated effluent is being reused? If yes mention the quantity of reuse /recycle of treated effluent in various in various usages and provide details. If not. How much % is being reused?: 100% is used in Plantation, floor cleaning and cooling tower.
26	Whether the unit has proper arrangement /system for handling and disposal of sludge generated from the ETP: Yes
27	Whether the unit is having adequate and qualified /skilled operators(s) for the proper operation and maintenance of the ETP: Yes (It was suggested to have one more)
28	Whether proper log book is being maintained for the operation and maintenance of ETP?: Yes
29	Whether influent (untreated) and effluent (treated) characteristics have been monitored? If yes, then details in the table below)

Date and time of effluent sampling	Whether grab or composite sample	Name & designation of the person who collected sample	Name of the Empanelled laboratory which conducted monitoring /analysis
05.08.2021 1PM	Grab Sampling	Ashok kumar	Envirochem Research & Tests Lab private limited Lucknow UP

30	Whether the treated effluent is meeting the prescribed standards: Yes	
31	Date of visit /inspection of the unit /establishment	12-11-2021
32	Name and designation of the person conducted visit/inspection of the unit /establishment	Dr. Sohail Ayub
33	Whether existing ETP is adequate to treat the waste water up to its designed capacity (15KLD) to meet the prescribed standards: Yes	
34	Advice (if any) given to the unit for the proper operation & maintenance of ETP (separate sheet may be enclosed) It was advised to install RO unit and Multi evaporators.	

35	Suggestion for best available technology Nil
36	Remarks (if any): The sizes of the different treatment units were found adequate and as per the laboratory reports the ETP is treating wastewater satisfactorily and the effluent discharge limits of CPCB are achieved.

Date of Issue: 18.11.2021

Name : Dr. Sohail Ayub
Designation : Professor
Name of organization/institute: Dept. of Civil Engg.
Aligarh Muslim University, Aligarh

Dr. Sohail Ayub (Ph.D.)
Professor, Dept. of Civil Engg.
A.M.U., Aligarh

Annexure - I

Current reports

Envirochem Research & Test Labs Pvt. Ltd.

Specialist in : Environmental Impact Assessment, Environmental Monitoring & Management

NABL Accredated Laboratory Certificate No - TC-7516 ISO/IEC 17025:2005

Approved Environmental Laboratory From MoEF&CC Under E.PAct 1986, Scince 2001 & UPPCB, Lucknow, Since 1995

ISO 14001:2015 (EMS) Cert No. SISINDE05201802 ■ OHSAS18001 : 2017 (OH&S) Cert No.SISIN005201802 ■ ISO 9001:2015 (QMS) Cert No. SISIND005201805

HIG - 79, Sector - E, Aliganj, Lucknow - 226 024 Ph. : 8318644902, 8840551474 E-mail : etl_2@yahoo.com, ertlm2016@gmail.com

Report No.22 **11.08.2021**

EFFLUENT WATER ANALYSIS REPORT

1. Name & Address of Industry : M/s Swati Menthol & Allied Chemicals Ltd. (Unit-1), 4.5 Kms, (Opp. Akashwani) PO Modipur Bareilly Road, Distt. – Rampur -244901 (U.P.)
2. Sampling done by : Mr. Ashok Kumar
3. Date of Sample Collection : 05.08.2021
4. Date of Analysis Complete : 10.08.2021
5. Nature of Sample : **ETP Outlet**

SL. NO.	PARAMETERS	OBSERVED VALUE	LIMITING VALUE As per EP Act and CPCB guide line
1.	pH	7.26	5.5 -9.0
2.	Oil & Grease in mg/l	1.1	10.0
3.	Total Suspended solids in mg/l	36.8	100.0
4.	BOD (3 days at 27^0C) in mg/l	16.0	30.0
5.	COD in mg/l	96.0	250.0

Ankita
Lab Chemist

Manager (Laboratory)

E T L Envirochem Research & Test Labs Pvt. Ltd.

Specialist in : Environmental Impact Assessment, Environmental Monitoring & Management

NABL Accredated Laboratory Certificate No - TC-7516 ISO/IEC 17025:2005

Approved Environmental Laboratory From MoEF&CC Under E.P.Act 1986, Scince 2001 & UPPCB, Lucknow, Since 1995

ISO 14001:2015 (EMS) Cert No. SSINDE05201802 ■ OHSAS18001 : 2017 (OHSS) Cert No.SSINO05201802 ■ ISO 9001:2015 (QMS) Cert No. SSINDQ05201805

HIG - 79, Sector - E, Aliganj, Lucknow - 226 024 Ph. : 8318644902, 8840551474 E-mail : etl_2@yahoo.com, ertlm2016@gmail.com

Report No.21

11.08.2021

AMBIENT AIR QUALITY MONITORING REPORT

1.	Name & Address of Industry	M/s Swati Menthol & Allied Chemicals Ltd. (Unit-1), 4.5 Km, Opp. Akashwani PO - Modipur, Bareilly Road Distt. – Rampur -244901 (U.P.)
2.	Date of Monitoring	04.08.2021 to 05.08.2021
3.	Monitoring done by	Mr. Ashok Kumar & Rohit Singh

S.No.	Parameter	Standard*	Location	METHODS OF MEASUREMENT
		Industrial Area	Nr. Assembly Area	
1	PM_{10}	100 µg/m^3	68.24	Gravimetric
2	$PM_{2.5}$	60 µg/m^3	39.82	Gravimetric
3	SO_x	80 µg/m^3	18.46	Improved West and Gacke
4	NO_x	80 µg/m^3	21.65	Modified Jacob & Hochheiser (Na-Arsenic)
5	Ozone (O_3)	180 µg/m^3	14.22	Chemical method
6	Lead (Pb)	1.0 µg/m^3	<0.05	AAS
7	Carbon Monoxide (CO)	04 mg/m^3	0.78	Detector tube
8	Ammonia (NH_3)	400 µg/m^3	<0.05	Indophenols blue method
9	Benzene (C_6H_6)	05 µg/m^3	<0.05	GC Analysis
10	Benzo Pyrene (BaP)	01 ng/m^3	<0.1	GC Analysis
11	Nickel (Ni)	20 ng/m^3	<0.1	AAS
12	Arsenic (As)	06 ng/m^3	<0.05	AAS

Asstt. Technical Officer

Envirochem Research & Test Labs Pvt. Ltd. Lucknow 226024 HIG - 79, Sector-E, Aliganj

Manager (Laboratory)

Note : 1. The above results are related only to the test performed on the sample. Endorsement of product is neither inferred not implied. 2. This report is not to be reproduce wholly or in part and can not be used as an evidence in the court of law and should not be used in any advertising media without our special permission in writting. 3. Sample will be destroyed after fifteen days from the date of reporting. 4. Total liability of our lab is limited to the invoiced amount. 5. Report refers to the sample received by Envirochem Research & Test Labs Pvt. Ltd. unless mentioned otherwise.

E T L Envirochem Research & Test Labs Pvt. Ltd.

Specialist in : Environmental Impact Assessment, Environmental Monitoring & Management

NABL Accredated Laboratory Certificate No - TC-7516 ISO/IEC 17025:2005

Approved Environmental Laboratory From MoEF&CC Under E.P.Act 1986, Scince 2001 & UPPCB, Lucknow, Since 1995

ISO 14001:2015 (EMS) Cert No. SISINDE05201802 ■ OHSAS18001 : 2017 (OH&S) Cert No.SISIN005201802 ■ ISO 9001:2015 (QMS) Cert No. SISIND005201805

HIG - 79, Sector - E, Aliganj, Lucknow - 226 024 Ph. : 8318644902, 8840551474 E-mail : etl_2@yahoo.com, ertlm2016@gmail.com

Report No.26

11.08.2021

WATER QUALITY REPORT

1.	Name & Address of Industry	M/s Swati Menthol & Allied Chemicals Ltd. (Unit-1), 4.5 Kms, Opp. Akashwani PO - Modipur, Bareilly Road Distt. – Rampur -244901 (U.P.)
2.	Nature of Sample	Drinking Water (Water Cooler)
3.	Sample collected by	Mr. Ashok Kumar
3.	Date of Sample Collection	05.08.2021
3.	Date of Analysis completed	10.08.2021

S.No.	PARAMETERS	UNIT	OBSERVED VALUE	STANDARDS (IS 10500 : 2012)	
	Physical Parameters			Desirable Limits	Permissible Limits
1.	Colour, units.	Hazen	<5	5	15
2.	Odour	Agreeable	Agreeable	Agreeable	
3.	Temperature	^{0}C	26.1	-	-
4.	Turbidity	NTU	0.06	1	5
5.	Conductivity	µmho/cm	365.0	-	
	Chemical Parameters				
6.	pH	-	7.26	6.5 to 8.5	No Relaxation
7.	Suspended Solid	mg/l	Nil	-	-
8.	Dissolved Solids	mg/l	269.0	500	2000
9.	Total Solids	mg/l	269.0	-	-
10	Alkalinity due to Phenolphthalein (as $CaCO_3$)	mg/l	Nil	-	
11.	Alkalinity due to Methyl Orange (as $CaCO_3$)	mg/l	156.0	200	600
12.	Total hardness (as $CaCO_3$)	mg/l	64.0	200	600
13.	Calcium as $CaCO_3$	mg/l	43.2	-	-
14.	Calcium as Ca^{++}	mg/l	21.8	75	200
15.	Magnesium as Mg^{++}	mg/l	11.6	30	100
16.	Chlorides (as Cl)	mg/l	18.0	250	1000
17.	Sulphate (as SO_4)	mg/l	6.8	200	400
18.	Phosphate (as PO_4)	mg/l	Nil	-	-
19.	Nitrate (as NO_3)	mg/l	3.98	45	No Relaxation
20	Iron (Fe)	mg/l	0.036	0.3	No Relaxation
21	Copper (as Cu)	mg/l	BDL (<0.005)	0.05	1.5

Envirochem Research & Test Labs Pvt. Ltd. Lucknow

Envirochem Research & Test Labs Pvt. Ltd.

Specialist in : Environmental Impact Assessment, Environmental Monitoring & Management

NABL Accredated Laboratory Certificate No - TC-7516 ISO/IEC 17025:2005

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HIG - 79, Sector - E, Aliganj, Lucknow - 226 024 Ph. : 8318644902, 8840551474 E-mail : etl_2@yahoo.com, ertlm2016@gmail.com

M/s Swati Menthol & Allied Chemicals Ltd., (Unit-1) 4.5 Kms, Bareilly Road, Rampur (UP)

S.No.	PARAMETERS	UNIT	OBSERVED VALUE	STANDARDS (IS 10500 : 2012)	
Chemical Parameters				Desirable Limits	Permissible Limits
22	Hexavalent Chromium as Cr^{+6}	mg/l	BDL (<0.005)	0.05	No Relaxation
23	Manganese (as Mn)	mg/l	BDL (<0.05)	0.1	0.3
24	Fluoride (as F)	mg/l	BDL (<0.05)	1.0	1.5
25	Mercury (as Hg)	mg/l	BDL (<0.0001)	0.001	No Relaxation
26	Cadmium (as Cd)	mg/l	BDL (<0.0001)	0.003	No Relaxation
27	Selenium (as Se)	mg/l	BDL(<0.001)	0.01	No Relaxation
28	Arsenic (as As)	mg/l	BDL (<0.005)	0.01	0.5
29	Cyanide (as CN)	mg/l	BDL (<0.005)	0.05	No Relaxation
30	Lead (as Pb)	mg/l	BDL (<0.005)	0.01	No Relaxation
31	Zinc (as Zn)	mg/l	0.01	5.0	15.0
32	Aluminium (as Al)	mg/l	BDL (<0.005)	0.03	0.2
33	Boron (as B)	mg/l	BDL (<0.005)	0.5	1.0
34	Phenolic Compounds (C_6H_5 OH)	mg/l	BDL(<0.0001)	0.001	0.002
35	Anionic Detergents (as MBAS)	mg/l	BDL(<0.005)	0.2	1.0
36	Mineral Oil	mg/l	BDL (<0.005)	0.03	No Relaxation
Biological Parameters					
37	Total Coliform	MPN/100ml	Absent	Absent	Absent
38	Fecal Coliform (E.Coli)	MPN/100ml	Absent	Absent	Absent

- BDL – Below Detection Limit

Note: The water is suitable for drinking purpose with respect to all above tests.

Ankita
Lab Chemist

Envirochem Research & Test Labs Pvt. Ltd. Lucknow 226024 HIG - 79, Sector-E, Aliganj

Manager
(Laboratory)

Annexure - II

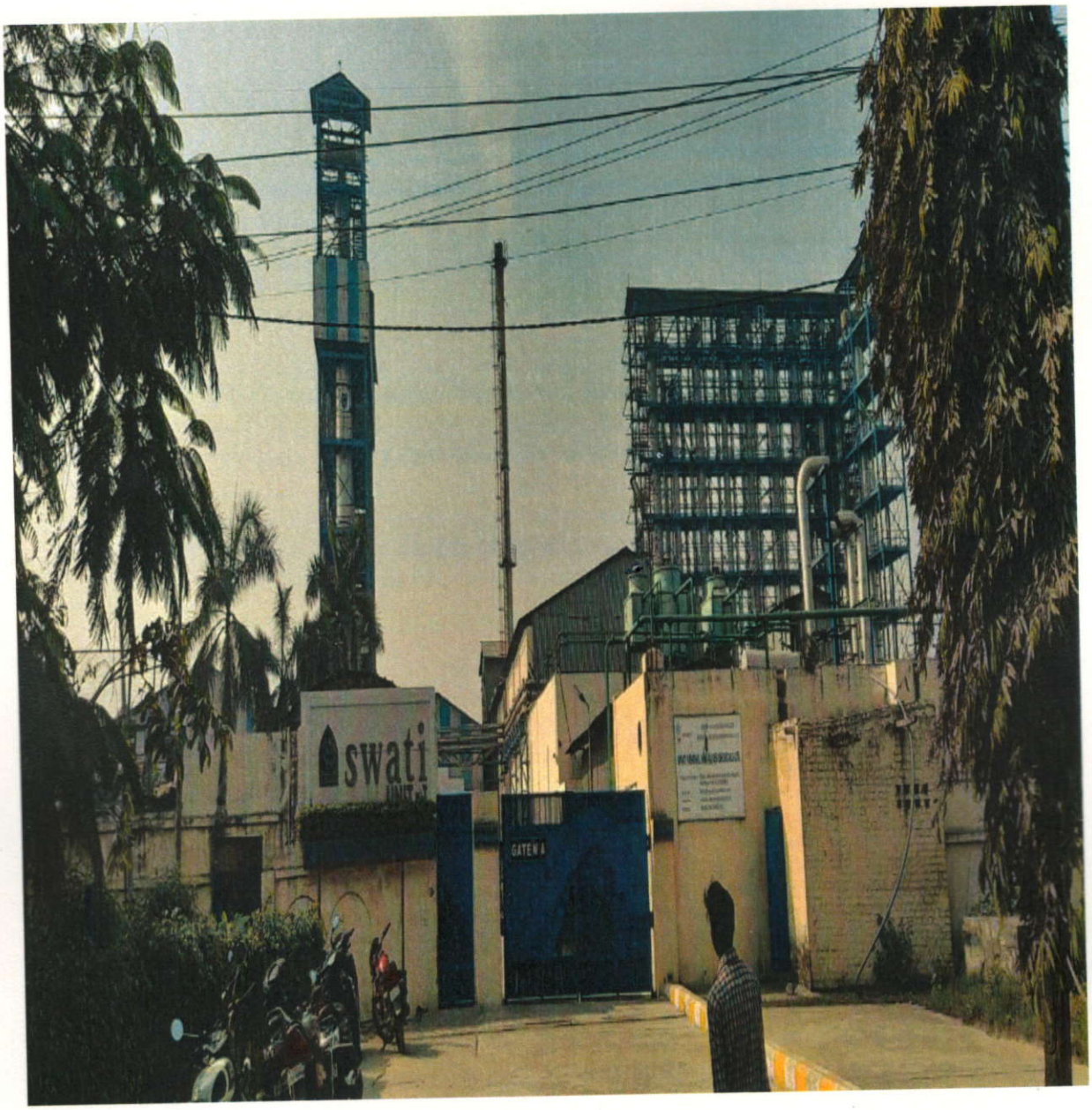
Photographs of ETP


BOREWELL PUMP-1
BOREWELL PUMP-2
BOREWELL PUMP-3


ETP
ETP

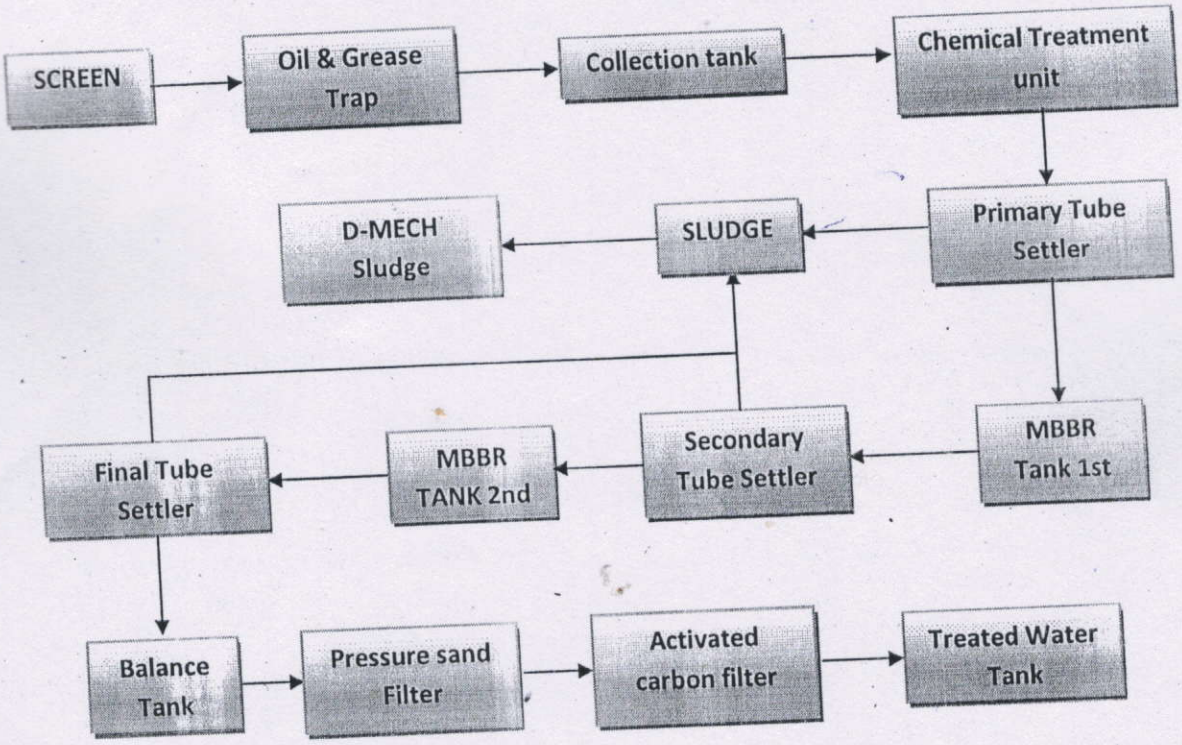

ETP


COLLECTION TANK
ETP


swati
GATE No.

Annexure - III

FLOW DIAGRAM OF ETP


SCREEN
Oil & Grease Trap
Collection tank
Chemical Treatment unit
Primary Tube Settler
SLUDGE
D-MECH Sludge
MBBR Tank 1st
Secondary Tube Settler
MBBR TANK 2nd
Final Tube Settler
Balance Tank
Pressure sand Filter
Activated carbon filter
Treated Water Tank

Annexure – IV

LAY OUT PLAN

EXISTING FACTORY BUILDING PLAN FOR
M/S SWATI MENTHOL & ALLIED CHEMICALS Ltd.(UNIT-1)
SITUATED AT- BAREILLY ROAD POST OF MODIPUR
TEHSIL SADAR DISTT- RAMPUR (U.P.)

NORTH -

ARCHITECTS-

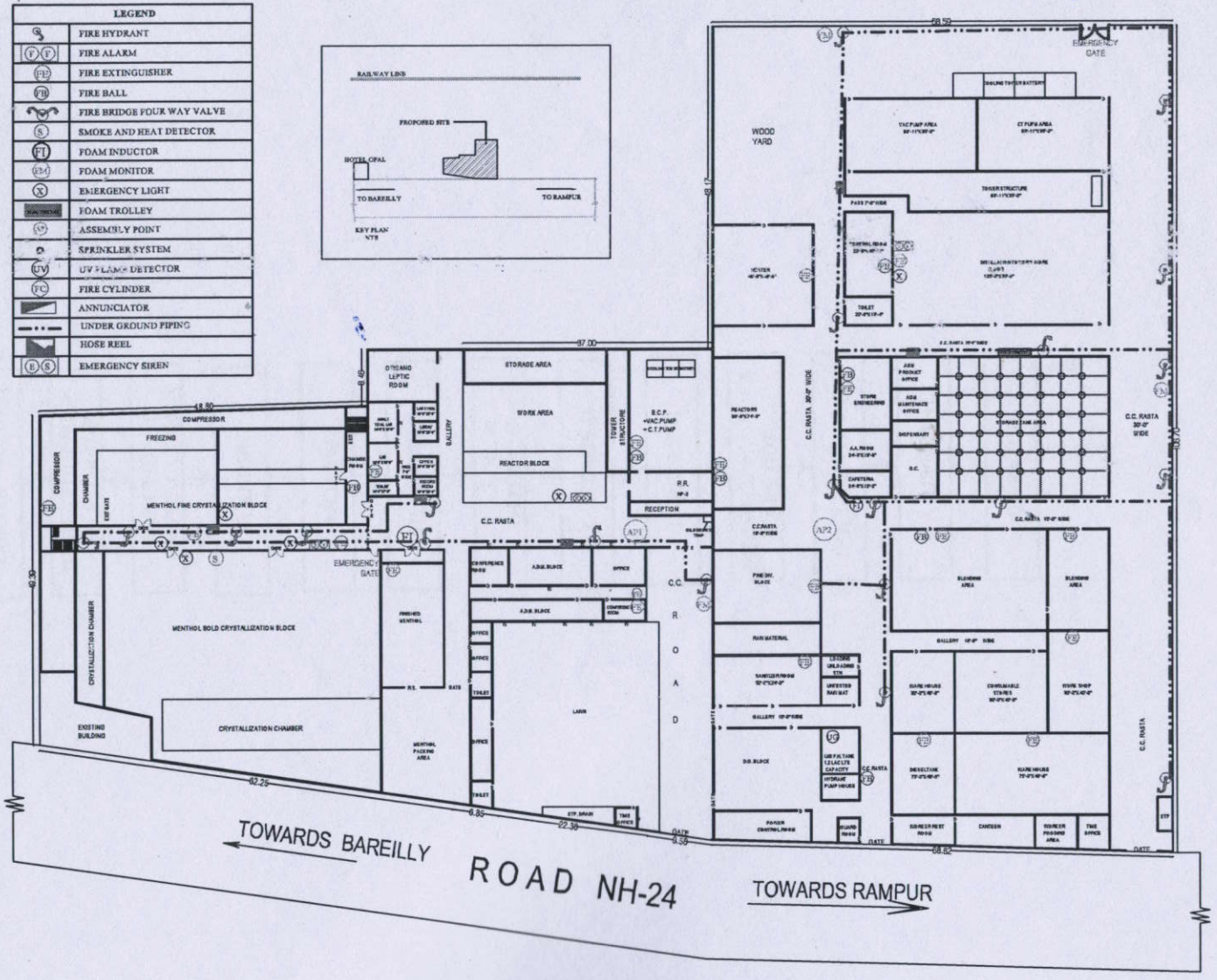
AKRITI
144, Prakash Enclave Kanth Road, Moradabad - 244001
PH: 9458648077, e-mail: sakriti3@gmail.com
ARCHITECTS, PLANNERS, INTERIOR AND EXTERIOR
LANDSCAPE CONSULTANT, VASTU CONSULTANT
ESTIMATION AND VALUATION

CLIENT-

SCHEDULE OF AREA CHART IN SQMT :

TOTAL PLOT AREA:	12997.52 SQ M
TOTAL COVERED AREA:	9078.82 SQ M
TOTAL OPEN AREA:	3918.7 SQ M
HEIGHT OF DISTILLATION TOWER STRUCTURE	38.1 MT.
HEIGHT OF PLANT SHED	7.62 MT.

LEGEND	
	FIRE HYDRANT
F F	FIRE ALARM
FE	FIRE EXTINGUISHER
FB	FIRE BALL
	FIRE BRIDGE FOUR WAY VALVE
S	SMOKE AND HEAT DETECTOR
FI	FOAM INDUCTOR
FM	FOAM MONITOR
X	EMERGENCY LIGHT
	FOAM TROLLEY
AP	ASSEMBLY POINT
	SPRINKLER SYSTEM
UV	UV FLAME DETECTOR
FC	FIRE CYLINDER
	ANNUNCIATOR
	UNDER GROUND PIPING
	HOSE REEL
ES	EMERGENCY SIREN

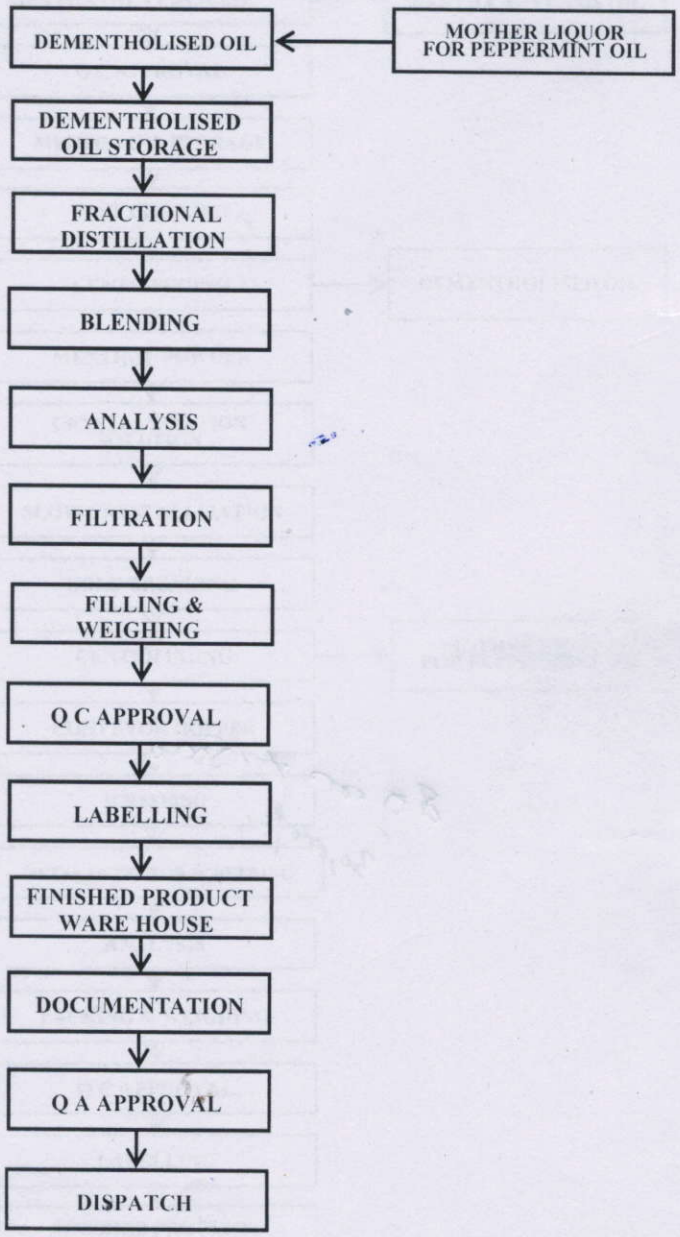


SITE PLAN

swati Menthol & Allied Chemicals Ltd. UNIT-ONE

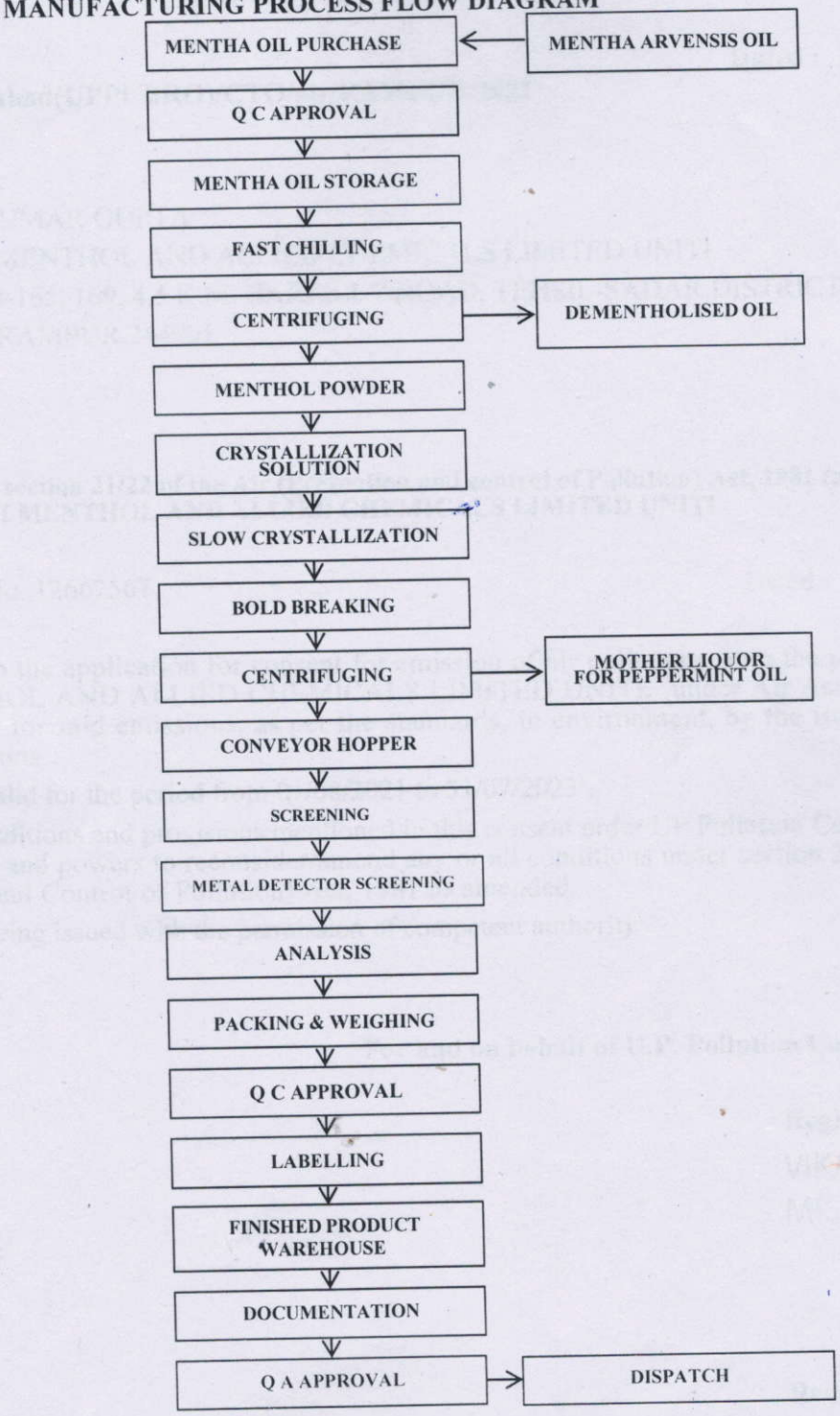
PEPPERMINT OIL

MANUFACTURING PROCESS FLOW DIAGRAM



swati Menthol & Allied Chemicals Ltd.

L-MENTHOL
MANUFACTURING PROCESS FLOW DIAGRAM



UTTAR PRADESH POLLUTION CONTROL BOARD

Building. No TC-12V Vibhuti Khand, Gomti Nagar, Lucknow-226010

Phone:0522-2720828,2720831, Fax:0522-2720764, Email: info@uppcb.com, Website: www.uppcb.com

CONSENT ORDER

Ref No. -
130567/UPPCB/Moradabad(UPPCBRO)/CTO/air/RAMPUR/2021

Dated : 14/07/2021

To ,

Shri NITIN KUMAR GUPTA
M/s SWATI MENTHOL AND ALLIED CHEMICALS LIMITED UNITI
KHASRA NO-165, 169, 4.5 K.M. BAREILLY ROAD, TEHSIL-SADAR,DISTRICT-RAMPUR, U.P. 244901,RAMPUR,244901
RAMPUR

Sub : Consent under section 21/22 of the Air (Prevention and control of Pollution) Act, 1981 (as amended) to M/s. SWATI MENTHOL AND ALLIED CHEMICALS LIMITED UNITI

Reference Application No. 12667567 Dated : 14/07/2021

1. With reference to the application for consent for emission of air pollutants from the plant of M/s SWATI MENTHOL AND ALLIED CHEMICALS LIMITED UNITI. under Air Act 1981. It is being authorised for said emissions, as per the standards, in environment, by the Board as per enclosed conditions .
2. This consent is valid for the period from 01/08/2021 to 31/07/2023 .
3. Inspite of the conditions and provisions mentioned in this consent order UP Pollution Control Board reserves its right and powers to reconsider/amend any or all conditions under section 21 (6) of the Air (Previntion and Controt of Pollution) Act, 1981 as amended.

This consent is being issued with the permission of competent authority .

For and on behalf of U.P. Pollution Control Board

Regional Officer
VIKAS MISHRA
Digitally signed by VIKAS MISHRA
Date: 2021.07.14 15:03:52 +05:30

Enclosed : As above
(condition of consent):

Copy to:

Regional Officer

U.P. Pollution Control Board

Dated : 14/07/2021

CONDITIONS OF CONSENT

1. This consent is valid only for the approved production capacity of Mint Products-450 MT/MONTH.
2. This consent is valid only for products and quantity mentioned above. Industry shall obtain prior approval before making any modification in product/ process /fuel/ plant machinery failing which consent would be deemed void.

3(a) The maximum rate of emission of flue gas should not be more than the emission norms for the stacks.

3(b) Air Pollution Source Details.

Air Pollution Source Details					
S.No	**Air Polution Source**	**Type of Fuel**	**Stack No.**	**Parameters**	**Height**
1	DG Set-750 KVA	Diesel	1	Particulate Matter	7.5 meter from Nearest Highest rooftop
2	DG Set-500 KVA	Diesel	2	Particulate Matter	5 meter from Nearest Highest rooftop
3	DG Set-100 KVA	Diesel	3	Particulate Matter	2.0 meter from Nearest Highest rooftop
4	Thermic Fluid Heater- 25 Lakh Kilo Calorie & 30 Lakh Kilo Calorie	Wood,Coal,Biobriquate	4	Particulate Matter	30 meter above Ground Level

3(c) The emissions by various stacks into the environment should be as per the norms of the Board .

Emission Quality Details Detail			
S.No	**Stack No**	**Parameter**	**Standard**

4. Quantity of other pollutants should also be as per the norms prescribed by the Board/MOEF & CC/or otherwise mandatory .
5. The equipment for air pollution control system and monitoring ,as proposed by the industry and approved by the Board should be installed in their premises itself .
6. The modification or installation in the existing pollution control equipments should be done only by prior approval of Board .
7. The operation of air pollution control system and maintenance be done in such a way that the quantity of pollutants should be in accordance with the standards prescribed by the Board/MoEF & CC/or otherwise mandatory .
8. Unit should do provisions for fugitive emissions chimney/stack as per the norms of the Board/MOEF & CC/or otherwise mandatory .
9. The unit should submit the stack emissions monitoring report within one month from issuance of consent order along with the point wise compliance report of the consent order . Further quarterly monitering report should be submitted .

The Unit will file the renewal application at least 2 months prior to the expiry of this Order.

Specific Conditions:

VIKAS MISHRA

Digitally signed by VIKAS MISHRA
DN: c=IN, o=Personal,
2.5.4.20=[illegible]
postalCode=226017, st=Uttar pradesh,
serialNumber=[illegible]
cn=VIKAS MISHRA
Date: 2021.07.14 15:04:12 +05'30'

1. This consent is valid for the production of Mint Products-450 MT/MONTH by using DMO/MENTHA OIL, ALPHA PINENE/GUM TURPENTINE OIL/TURPENTINE OIL/BETA PINENE, CRUDE EUCALYPTUS OIL ,ROSIN ,TERPENE as raw material.
2. This consent is valid for the current products and capacity. In Case of any change in process, capacity enhancement, etc, the No Objection Certificate shall be obtained from the Board.
3. Generated hazardous waste shall be stored temporarily in the factory premises and disposed off through authorized TSDF after obtaining the authorization from the Board.
4. Industry shall submit the latest copy of Audited Balance Sheet/C.A. Certificate (Fixed Assets+ Current Assets - Current Liabilities) so the Consent fee payable by the industry may be verified.
5. The Order issued by Hon'ble Courts/Hon'ble NGT, MoEF&CC, Central Pollution Control Board, U.P. Pollution Control Board, shall be complied with.
6. Industry shall operate and maintain installed APCS (Dust Collector,Wet Scrubber)effectively .The stack of Thermic Fluid Heater shall not be less than 30 m from Ground Level.
7. Source Emission monitoring report and Ambient Air Quality Monitoring report from any EPA recognised/NABL accredited laboratory must be submitted quarterly basis.
8. Noise and emission level from the DG set installed of 100 KVA,500 KVA,750 KVA capacity shall be within the prescribed norms.
9. The unit shall ensure the ambient air quality according to the standards.
10. In case of installation of any new source of air pollution, the unit shall ensure to obtain separate CTE/NOC from the Board.
11. The unit shall develop green belt as per the protocol attached with the UPPCB's office order no. H16405/220/2018/02 dated 16-02-2018 which is available on UPPCB's website. The plantation of saplings should be completed within 04 months time and action taken report shall be submitted to this office. Failing which consent would be revoked without serving any notice to the industry.
12. The industry shall comply with the provisions of, Environment (Protection) Act 1986, Water (Prevention and Control of Pollution) Act, 1974 as amended, Air (Prevention and Control of Pollution) Act, 1981 as amended, Plastic Waste Management Rules 2016, E- Waste (Management) Rules 2016, Solid Waste Management Rules 2016 & Hazardous and other Waste (Management and Transboundary Movement) Rules 2016 (Whichever is applicable).
13. If closure order is issued by CPCB or UPPCB against the unit, then CTO issued earlier will remain suspended during the closure period and after ensuring the compliance and after revocation of closure order, the CTO will automatically be effective from the date of issuance of closure order revocation, with additional conditions mentioned in the closure revocation order.
14. This CTO is Being Issued as per the provisions of the Air (Prevention and control of Pollution) Act 1981.
15. All the necessary NOC's, Permissions, Licenses etc shall be taken from all concerned statutory authorities.

Issued with the permission of competent authority .

For and on behalf of U.P. Pollution Control Board .

Regional Officer

VIKAS MISHRA

Digitally signed by VIKAS MISHRA
DN: c=IN, o=Personal, 2.5.4.20=54d7d02d72698c594c01418a863079ad17fb8d282d496a427b4d67c27e451e46, postalCode=226017, st=Uttar pradesh, serialNumber=a701d81c087d764428e37dec5b16a664bf7abbd5f5c9784baf205d7b4ab37f2d, cn=VIKAS MISHRA
Date: 2021.07.14 15:04:32 +05'30'

UTTAR PRADESH POLLUTION CONTROL BOARD
Building. No TC-12V Vibhuti Khand, Gomti Nagar, Lucknow-226010
Phone:0522-2720828,2720831, Fax:0522-2720764, Email: info@uppcb.com, Website: www.uppcb.com

CONSENT ORDER

Ref No. - 130996/UPPCB/Moradabad(UPPCBRO)/CTO/water/RAMPUR/2021 **Dated : 14/07/2021**

To ,

Shri NITIN KUMAR GUPTA
M/s SWATI MENTHOL AND ALLIED CHEMICALS LIMITED UNITI
KHASRA NO-165, 169, 4.5 K.M. BAREILLY ROAD, TEHSIL-SADAR,DISTRICT-RAMPUR, U.P. 244901,RAMPUR,244901
RAMPUR

Sub : **Consent under Section 25/26 of The Water (Prevention and control of Pollution) Act, 1974 (as amended) for discharge of effluent to M/s. SWATI MENTHOL AND ALLIED CHEMICALS LIMITED UNITI**

Reference Application No :12760624 **Dated :14/07/2021**

1. For disposal of effluent into water body or drain or land under The Water (Prevention and control of Pollution) Act,1974 as amended (here in after referred as the act) M/s. SWATI MENTHOL AND ALLIED CHEMICALS LIMITED UNITI is hereby authorized by the board for discharge of their industrial effluent generated through ETP for irrigation/river through drain and disposal of domestic effluent through septic tant/soak pit subject to general and special conditions mentioned in the annexure ,in refrence to their foresaid application .
2. This consent is valid for the period from 01/08/2021 to 31/07/2023 .
3. In spite of the conditions and provisions mentioned in this consent order UP Pollution Control Board reserves its right and powers to reconsider/amend any or all conditions under section 27(2) of the Water (Prevition and Controt of Pollution) Act, 1974 as amended .

This consent is being issued with the permission of competent authority .

For and on behalf of U.P. Pollution Control Board

Regional Officer

VIKAS MISHRA
Digitally signed by VIKAS MISHRA
Date: 2021.07.14 15:07:35 +05'30'

Enclosed : As above
(condition of consent):

Copy to:

Regional Officer

U.P. POLLUTION CONTROL BOARD, LUCKNOW

Annexure to Consent issued to M/s.SWATI MENTHOL AND ALLIED CHEMICALS LIMITED UNITI vide

Consent Order No. 12760624/ Water Dated : 14/07/2021

CONDITIONS OF CONSENT

1. This consent is valid only for the approved production capacity of Mint Products-450 MT/MONTH.
2. The quantity of maximum daily effluent discharge should not be more than the following :

Effluent Discharge Details			
S.No	**Kind of Effulant**	**Maximum daily discharge,KL/day**	**Treatment facility and discharge point**
1	Domestic	3 KLD	Septic Tank
2	Industrial	12 KLD	ETP

3. Arrangement should be made for collection of water used in process and domestic effluent separately in closed water supply system. The treated domestic and industrial effluent if discharged outside the premises, if meets at the end of final discharge point, arrangement should be made for measurement of effluent and for collecting its sample. Except the effluent informed in the application for consent no other effluent should enter in the said arrangements for collection of effluent. It should also be ensured that domestic effluent should not be discharged in storm water drain .

4(a) The domestic effluent should be treated in treatment plant so that the should be in conformity with the following norms dated treated effluent .

Domestic Effulant		
S.No	**Parameter**	**Standard**
1	Total Suspended Solids	100 mg/l
2	BOD	30 mg/l
3	COD	250 mg/l
4	Oil & Grease	10 mg/l

4(b). The industrial effluent should be treated in treatment plant so that the treated effluent should be in conformity with the following norms. .

Industrial Effulant		
S.No	**Parameter**	**Standard**
1	Total Suspended Solids	100 mg/l
2	BOD	30 mg/l
3	COD	250 mg/l
4	Oil & Grease	10 mg/l

5. Effluent generated in all the processes, bleed water, cooling effluent and the effluent generated from washing of floor and equipments etc should be treated before its disposal with treated industrial effluent so that it should be according to the norms prescribed under The Environment (Protection) Act,1986 or otherwise mandatory .
6. The other pollutant for which norms have not been prescribed, the same should not be more than the norms prescribed for the water used in manufacturing process of the industry .
7. The method for collecting industrial and domestic effluent and its analysis should be as per legal Indian standards and its subsequent amendments/standards prescribed under The Environment (Protection) Act, 1986.
8. The treated domestic and industrial effluent be mixed (as per the provisions of Condition No. 2) and disposed of on one disposal point. This common effluent disposal point should have arrangement for flow meter/V Notch for measuring effluent and its log book be maintained .
9. The Unit will file the renewal application at least 2 months prior to the expiry of this Order.

VIKAS MISHRA

Specific Conditions:

1. This consent is valid for the production of Mint Products-450 MT/Month by using DMO/MENTHA OIL, ALPHA PINENE/GUM TURPENTINE OIL/TURPENTINE OIL/BETA PINENE, CRUDE EUCALYPTUS OIL ,ROSIN ,TERPENE as raw material.
2. This consent is valid for the current products and capacity. In Case of any change in process, capacity enhancement, etc., the No Objection Certificate shall be obtained from the Board.
3. Generated hazardous waste shall be stored temporarily in the factory premises and disposed off through authorized TSDF after obtaining the authorization from the Board.
4. Industry shall submit the latest copy of Audited Balance Sheet/C.A. Certificate (Fixed Assets+ Current Assets - Current Liabilities) so the Consent fee payable by the industry may be verified.
5. The Order issued by Hon'ble Courts/Hon'ble NGT, MoEF &CC, Central Pollution Control Board, U.P. Pollution Control Board, shall be complied with.
6. The industry shall ensure to obtain the NOC from UPGWD for ground water abstraction.
7. The industry shall ensure no water logging pertained inside or outside the premises.
8. The industry shall not discharge any type of industrial waste water and the domestic waste water shall be discharge through soak pit/Septic tank. The treated Industrial effluent shall be used in horticulture/reused in process totally.
9. The unit shall develop green belt as per the protocol attached with the UPPCB's office order no. H16405/220/2018/02 dated 16-02-2018 which is available on UPPCB's website. The plantation of saplings should be completed within 04 months time and action taken report shall be submitted to this office. Failing which consent would be revoked without serving any notice to the industry.
10. The industry shall comply with the provisions of the Environment (Protection) Act 1986, Water (Prevention and Control of Pollution) Act, 1974 as amended, Air (Prevention and Control of Pollution) Act, 1981 as amended, Plastic Waste Management Rules 2016, E- Waste (Management) Rules 2016, Solid Waste Management Rules 2016 & Hazardous and other Waste (Management and Transboundary Movement) Rules 2016 (Whichever is applicable).
11. If closure order is issued by CPCB or UPPCB against any defaulting unit, then CTO issued earlier will remain suspended during the closure period and after ensuring the compliance and after revocation of closure order, the CTO will automatically be effective from the date of issuance of closure order revocation, with additional conditions mentioned in the closure revocation order.
12. This CTO is Being Issued as per the provisions of the Water (Prevention and control of Pollution) Act 1974.
13. All the necessary NOC's, Permissions, Licenses etc shall be taken from all concerned statutory authorities.

Issued with the permission of competent authority .

For and on behalf of U.P. Pollution Control Board .

Regional Officer

VIKAS MISHRA

Digitally signed by VIKAS MISHRA
DN: c=IN, o=Personal,
2.5.4.20=54d7d02d72698c594c01418af63079ad17fbbd282d496a427b4d67c27e451e46,
postalCode=226017, st=Uttar pradesh,
serialNumber=a701d81c087d764428e37dec5b16a664bf7abbd5f5c9784baf205d7b4ab37f2d,
cn=VIKAS MISHRA
Date: 2021.07.14 15:08:08 +05'30'

Ground Water Department

(Namami Gange & Rural Water Supply Department)
Ministry of Jal Shakti
Government of Uttar Pradesh

Form 8 (E)

[See rules 15(2)]

(RENEWAL OF AUTHORIZATION/ NO-OBJECTION CERTIFICATE FOR SINKING OF EXISTING WELL FOR INDUSTRIAL/ COMMERCIAL/ INFRASTRUCTURAL OR BULK USER OF GROUND WATER)

AUTHORIZATION/ NO-OBJECTION CERTIFICATE NO: REG014532

VALID FROM 02/07/2021 TO 01/07/2026

Registration No.: 202106000045			
Name of the Owner	RANA VEER		
Address of the Applicant	VIIL.- BELWARA , P.O. - MANPUR , DISTT. - MORADABAD	**Application Form Serial No.**	MRBD0621RIN0068
Date of Submission	03/06/2021	**Specimen Signature**	
Company Name	RANA SUGARS LIMITED	**Company Address**	Vill.-Belwara, PO-Manpur, District-Moradabad - 244
Location Particulars			
District	Moradabad	**Block**	BHAGATPUR TANDA
Plot No./Khasra No.	146, 142 mi, 3, 143 etc	**Municipality/Corporation**	No
Ward No./Holding No.			NA
Particular of the Existing Well and Pumping Device			
Date of Construction/Sinking of the Well	01/11/2007		
Type of Well	Tube Well/Boring	**Depth of the Well (In meter)**	58.00
Purpose of well	Industrial	**Assembly Size(For Tube Well)**	
Strainer Position (For Tube Well)			
Type of Pump Used	Submersible	**H.P. of the Pump**	10.00
Operational Device	Electric Motor	**Rate of Withdrawal (m3/hr.)**	60.00
Date of Energization (In Case of Electric Pump)		01/11/2007	
Approx. Strainer Length (For Tube Well)	0.00	**Diameter (For Dug Well)**	0.00
Maximum Allowable Rate of Withdrawal (m^3/hr.):	60.00	**Maximum Allowable Running Hours Per Day:**	1.00
Maximum Allowable Annual Extraction of Ground Water (m^3/year):			21900
Reason for renewal of N.O.C. एन.ओ.सी. के नवीनीकरण का कारण	CGWA stop giving NOC and transferred the process to UPGWD.		
Against Case	No		

This No-Objection certificate authorizes the owner applicant (user) to sink a well in the location specified at SI. (3) for extraction of ground water at a rate not exceeding that as shown at SI. (3j), for Running Hours per day as shown at SI. (3k), and for maximum allowable annual extraction of ground water as shown at SI. (3k) and is valid subject to the observance of the conditions stated overleaf.

Conditions

- (1) In case of any change of ownership of the proposed well, fresh authorization has to be obtained.
- (2) No change of location, design, rate of withdrawal and pumping device in respect of the proposed well as indicated at SL (2) and (3) of this certificate shall be made without prior permission of the Competent Authority. Any deviation in this regard shall lead to cancellation of this authorization.
- (3) For the purpose of measuring and recording the quantity of ground water extracted, every said user shall affix digital water flow meters(conforming to BIS/ IS standards) having telemetry system in the abstraction structure, which record rate and quantum of extraction, at outlet of pumping devices and it shall be presumed that the quantity recorded by the meter has been extracted by the said user, until the contrary is proved. The rate of extraction of ground water from the well as shown in item 3(k) shall not exceed to the recorded rate from water meters
- (4) The concerned Authority reserves the right to stop extraction of ground water from the well due to quality hazards or any other reasons, if the situation so demands.
- (5) In case of any change of ownership of the existing well, fresh registration has to be obtained.
- (6) No change of location, design, rate of withdrawal and pumping device in respect of the existing well as indicated at SI. (2) and (3) of this certificate shall be made without prior permission of the Competent Authority. Any deviation in this regard shall lead to cancellation of this registration.
- (7) In case, any of the particulars I information furnished by the applicant in his application for issuance of this registration is found to be incorrect during verification at any subsequent stage, this registration is liable for cancellation.
- (8) The Certificate of Authorization/ NOC shall be valid for a period of five years from the date of issue. The applicant shall have to apply for renewal through a fresh application, at least ninety days prior to expiry of its validity.
- (9) Construction of piezometers and installation of digital water level recorders with telemetry shall be mandatory for user. Depth and zone tapped of piezometer should be commensurate with that of the pumping well. The data, obtained from digital water level recorders shall be made available to this office on monthly basis.
- (10) Guidelines for Installation of Piezometers and their Monitoring
- Piezometer is a borewell /tube well used only for measuring the water level by lowering the tape/ sounder or automatic water level measuring equipment. It is also used to take water sample for water quality testing whenever needed. General guidelines for installation of piezometers are as follows for compliance of NOC:
- • The piezometer is to be installed/constructed at the minimum of 50 m distance from the pumping well through which ground water is being withdrawn. The diameter of the piezometer should be about 4” to 6”.
- • The depth of the piezometer should be same as is case of the pumping well from which ground water is being abstracted. If, more than one piezometer are installed the second piezometer should monitor the shallow ground water regime. It will facilitate shallow as well as deeper ground water aquifer monitoring.
- • No. of piezometers to be constructed & Type of water level monitoring mechanism shall be as per below table:

S.No	Quantum of Ground water withdrawal (cum/day)	No.of piezometers required	Monitiring Mechanism	
			Manual	DWLR with Telemetry
1	< 10	0	0	0
2	11 - 50	1	1	0
3	50- 500	1	0	1
4	> 500	2	0	2

- • The measuring frequency should be monthly and accuracy of measurement should be up to cm. the reported measurement should be given in meter up to two decimals.
- • For measurement of water level sounder or automatic water level recorder (AWLR)/ Digital Automatic water level recorder (DWLR) with telemetry system should be used for accuracy.
- • The measurement of water level in piezometer should be taken, only after the pumping from the surrounding tube wells has been stopped for about four to six hours.
- • All the details regarding coordinates, reduced level (with respect to mean level), depth, zone taped and assembly lowered should be provided for bringing the piezometer into the Hydrograph Monitoring System for Ground Water Department, Uttar Pradesh, and for its validation.
- • The ground water quality has to be monitored twice in a year during pre-monsoon (May/June) and post-monsoon (October/November) periods. Quality may be got analyzed from NABL approved lab. Besides, one sample (1 lt. capacity bottle) to the concerned Director, Ground Water Department, Uttar Pradesh, for chemical analysis.
- • A Permanent display board should be installed at piezometer/Tube wells site for providing the location, piezometer/ tube well number, depth and zone tapped of piezometer/tube well for standard referencing and identification.
- • Any other site-specific requirement regarding safety and access for measurement may be taken care of.
- (11) Any other condition(s) that may be imposed by the concerned Authority.
- (12) In case, any of the particulars I information furnished by the applicant in his application for issuance of this permit is found to be incorrect during verification at any subsequent stage, this permit is liable for cancellation.
- (13) Any other condition imposed by the concerned Authority
- **SPECIFIC CONDITIONS:**
- (A) **For Industrial User:** No Objection Certificate for ground water extraction by industries shall be granted subject to the following specific conditions:
- i) No Objection Certificate shall be granted only in such cases where local government water supply agencies are not able to supply the desired quantity of water.
- ii) All industries shall be required to adopt latest water efficient technologies so as to reduce dependence on ground water resources.
- iii) All industries abstracting ground water in excess of 100 m^3/d shall be required to undertake annual water audit through Confederation of Indian Industries (CII)/ Federation Indian Chamber of Commerce and Industry (FICCI)/ National Productivity Council (NPC) certified auditors and submit audit reports within three months of completion of the same to Ground Water

Department, Uttar Pradesh. All such industries shall be required to reduce their ground water use by at least 20% over the next five years through appropriate means.

- iv) Construction of observation well(s) (piezometer)(s) within the premises and installation of appropriate water level monitoring mechanism as mentioned in General Condition no.10 shall be mandatory for industries drawing/ proposing to draw more than 10 m3/day of ground water and. Monitoring of water level shall be done by the project proponent. The piezometer (observation well) shall be constructed at a minimum distance of 50 m from the bore well/production well. Depth and aquifer zone tapped in the piezometer shall be the same as that of the pumping well/ wells. Monthly water level data shall be submitted online to the Ground Water Department, UP.
- v) The proponent shall be required to adopt roof top rain water harvesting/ recharge in the project premises. Industries which are likely to pollute ground water (chemical, pharmaceutical, dyes, pigments, paints, textiles, tannery, pesticides/ insecticides, fertilizers, slaughter house, explosives etc.) shall store the harvested rain water in surface storage tanks for use in the industry.
- vi) Injection of treated/ untreated waste water into aquifer system is strictly prohibited.
- vii) Industries which are likely to cause ground water pollution e.g. Tanning, Slaughter Houses, Dye, Chemical/ Petrochemical, Coal washeries, other hazardous units etc. (as per CPCB list) need to undertake necessary well head protection measures to ensure prevention of ground water pollution.
- (B) **Infrastructural User:** The No Objection Certificate for ground water abstraction will be granted subject to the following specific conditions:
- i) In case of infrastructure projects that require dewatering, proponent shall be required to carry out regular monitoring of dewatering discharge rate (using a digital water flow meter) and submit the data online to Ground Water Department, UP as applicable. Monitoring records and results should be retained by the proponent for two years, for inspection or reporting as required by District Ground Water Management Council.
- ii) Installation of Sewage Treatment Plants (STP) shall be mandatory for new projects, where ground water requirement is more than 20 m3 /day. The water from STP shall be utilized for toilet flushing, car washing, gardening etc.

Date :**14/07/2021**

Place:**Moradabad**

This certificate is electronically generated and does not require digital signature

Ground Water Department

(Namami Gange & Rural Water Supply Department)
Ministry of Jal Shakti
Government of Uttar Pradesh

Form 8 (E)

[See rules 15(2)]

(RENEWAL OF AUTHORIZATION/ NO-OBJECTION CERTIFICATE FOR SINKING OF EXISTING WELL FOR INDUSTRIAL/ COMMERCIAL/ INFRASTRUCTURAL OR BULK USER OF GROUND WATER)

AUTHORIZATION/ NO-OBJECTION CERTIFICATE NO: REG037275

VALID FROM 02/07/2021 TO 01/07/2026

Registration No.: 202106000044			
Name of the Owner	RANA VEER		
Address of the Applicant	VIIL.- BELWARA , P.O. - MANPUR , DISTT. - MORADABAD	**Application Form Serial No.**	MRBD0621RIN0067
Date of Submission	03/06/2021	**Specimen Signature**	
Company Name	RANA SUGARS LIMITED	**Company Address**	VILL.- BELWARA , P.O.- MANPUR , DISTT.- MORADABAD
Location Particulars			
District	Moradabad	**Block**	BHAGATPUR TANDA
Plot No./Khasra No.	146, 142 mi, 3, 143 etc	**Municipality/Corporation**	No
Ward No./Holding No.			NA
Particular of the Existing Well and Pumping Device			
Date of Construction/Sinking of the Well	11/07/2018		
Type of Well	Tube Well/Boring	**Depth of the Well (In meter)**	58.00
Purpose of well	Industrial	**Assembly Size(For Tube Well)**	
Strainer Position (For Tube Well)			
Type of Pump Used	Submersible	**H.P. of the Pump**	10.00
Operational Device	Electric Motor	**Rate of Withdrawal (m3/hr.)**	50.00
Date of Energization (In Case of Electric Pump)		01/05/2019	
Approx. Strainer Length (For Tube Well)	0.00	**Diameter (For Dug Well)**	0.00
Maximum Allowable Rate of Withdrawal (m^3/hr.):	50.00	**Maximum Allowable Running Hours Per Day:**	16.00
Maximum Allowable Annual Extraction of Ground Water (m^3/year):			288000
Reason for renewal of N.O.C. एन.ओ.सी. के नवीनीकरण का कारण	CGWA stop giving NOC and transferred the process to UPGWD.		
Against Case	No		

This No-Objection certificate authorizes the owner applicant (user) to sink a well in the location specified at SI. (3) for extraction of ground water at a rate not exceeding that as shown at SI. (3j), for Running Hours per day as shown at SI. (3k), and for maximum allowable annual extraction of ground water as shown at SI. (3k) and is valid subject to the observance of the conditions stated overleaf.

Conditions

- (1) In case of any change of ownership of the proposed well, fresh authorization has to be obtained.
- (2) No change of location, design, rate of withdrawal and pumping device in respect of the proposed well as indicated at SL (2) and (3) of this certificate shall be made without prior permission of the Competent Authority. Any deviation in this regard shall lead to cancellation of this authorization.
- (3) For the purpose of measuring and recording the quantity of ground water extracted, every said user shall affix digital water flow meters(conforming to BIS/ IS standards) having telemetry system in the abstraction structure, which record rate and quantum of extraction, at outlet of pumping devices and it shall be presumed that the quantity recorded by the meter has been extracted by the said user, until the contrary is proved. The rate of extraction of ground water from the well as shown in item 3(k) shall not exceed to the recorded rate from water meters
- (4) The concerned Authority reserves the right to stop extraction of ground water from the well due to quality hazards or any other reasons, if the situation so demands.
- (5) In case of any change of ownership of the existing well, fresh registration has to be obtained.
- (6) No change of location, design, rate of withdrawal and pumping device in respect of the existing well as indicated at SI. (2) and (3) of this certificate shall be made without prior permission of the Competent Authority. Any deviation in this regard shall lead to cancellation of this registration.
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S.No	Quantum of Ground water withdrawal (cum/day)	No.of piezometers required	Monitiring Mechanism	
			Manual	DWLR with Telemetry
1	< 10	0	0	0
2	11 - 50	1	1	0
3	50- 500	1	0	1
4	> 500	2	0	2

- • The measuring frequency should be monthly and accuracy of measurement should be up to cm. the reported measurement should be given in meter up to two decimals.
- • For measurement of water level sounder or automatic water level recorder (AWLR)/ Digital Automatic water level recorder (DWLR) with telemetry system should be used for accuracy.
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- • The ground water quality has to be monitored twice in a year during pre-monsoon (May/June) and post-monsoon (October/November) periods. Quality may be got analyzed from NABL approved lab. Besides, one sample (1 lt. capacity bottle) to the concerned Director, Ground Water Department, Uttar Pradesh, for chemical analysis.
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- (11) Any other condition(s) that may be imposed by the concerned Authority.
- (12) In case, any of the particulars I information furnished by the applicant in his application for issuance of this permit is found to be incorrect during verification at any subsequent stage, this permit is liable for cancellation.
- (13) Any other condition imposed by the concerned Authority
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- iii) All industries abstracting ground water in excess of 100 m^3/d shall be required to undertake annual water audit through Confederation of Indian Industries (CII)/ Federation Indian Chamber of Commerce and Industry (FICCI)/ National Productivity Council (NPC) certified auditors and submit audit reports within three months of completion of the same to Ground Water

Department, Uttar Pradesh. All such industries shall be required to reduce their ground water use by at least 20% over the next five years through appropriate means.

- iv) Construction of observation well(s) (piezometer)(s) within the premises and installation of appropriate water level monitoring mechanism as mentioned in General Condition no.10 shall be mandatory for industries drawing/ proposing to draw more than 10 m3/day of ground water and. Monitoring of water level shall be done by the project proponent. The piezometer (observation well) shall be constructed at a minimum distance of 50 m from the bore well/production well. Depth and aquifer zone tapped in the piezometer shall be the same as that of the pumping well/ wells. Monthly water level data shall be submitted online to the Ground Water Department, UP.
- v) The proponent shall be required to adopt roof top rain water harvesting/ recharge in the project premises. Industries which are likely to pollute ground water (chemical, pharmaceutical, dyes, pigments, paints, textiles, tannery, pesticides/ insecticides, fertilizers, slaughter house, explosives etc.) shall store the harvested rain water in surface storage tanks for use in the industry.
- vi) Injection of treated/ untreated waste water into aquifer system is strictly prohibited.
- vii) Industries which are likely to cause ground water pollution e.g. Tanning, Slaughter Houses, Dye, Chemical/ Petrochemical, Coal washeries, other hazardous units etc. (as per CPCB list) need to undertake necessary well head protection measures to ensure prevention of ground water pollution.
- (B) **Infrastructural User:** The No Objection Certificate for ground water abstraction will be granted subject to the following specific conditions:
- i) In case of infrastructure projects that require dewatering, proponent shall be required to carry out regular monitoring of dewatering discharge rate (using a digital water flow meter) and submit the data online to Ground Water Department, UP as applicable. Monitoring records and results should be retained by the proponent for two years, for inspection or reporting as required by District Ground Water Management Council.
- ii) Installation of Sewage Treatment Plants (STP) shall be mandatory for new projects, where ground water requirement is more than 20 m3 /day. The water from STP shall be utilized for toilet flushing, car washing, gardening etc.

Date :**20/07/2021**

Place:**Moradabad**

This certificate is electronically generated and does not require digital signature

Annexure- 19

REGIONAL LABORATORY OFFICE MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD

1-A/I.N.S.-1, Avas Vikas Colony, Buddha Vihar, Delhi Road,Moradabad

TEST REPORT: WASTE WATER LABORATORY

Ref No: 14043065/Moradabad/2021 **Date:23/11/2021**

1- **Name of Industry:** RANA SUGARS LIMITED

2- **Address of Industry:** VILLAGE-BELWARA, POST-MANPUR, TEHSIL AND DISTRICT-MORADABAD, UP 244001,MORADABAD,244001

3- **District:** Moradabad

4- **Description about sampling point:** Aeration Tank

5- **Type of Sample (Grab/Composite/Integrated):** Grab

6- **Sample Collected By:** Vinod Kumar AEE & Jitendra Nath Tiwari JE

7- **Colour and Odour:** Brownish ODOURLESS

8- **Quantity and Packing:** 2 liter (PLASTIC JERICAN)

9- **Date of Sample Collection:** 12/11/2021

10- **Analyis Indented by:** RO Moradabad

11- **Date of sample receipt in Lab:** 12/11/2021

Parameter/Method Name	Unit	Results	Standard	Detection Range
MLSS, 2540D dried at 103-105'C as method prescribed by CPCB	mg/l	2820	-	10-20000

Reference- (1)General Standards for discharge of envieronment Pollutants are as pert-A Effluent(Schedule-VI).The eniveronment (Protection) Rules,1986 source: www.cpcb.nic.in/GeneralStandards.pdf. Besides these standards,refer EPA standards for specific purpose

Remark: *NA*

Analysed by

[Alok Sharma (JRF)]

Authorized by

ANIL KUMAR VISHWAKARMA Digitally signed by ANIL KUMAR VISHWAKARMA Date: 2021.11.23 10:57:41 +05'30'

Anil Vishwkarma SA

VIKAS MISHRA Digitally signed by VIKAS MISHRA Date: 2021.11.23 10:58:44 +05'30'

Regional Officer

Note: 1 The results in the Test Report relate only to the items tested: 2. The report shall not be reproduced-except in full, without the written permission of laboratory. 3. The test report pertains to the sample as received in Lab.

Ground Water Department

(Namami Gange & Rural Water Supply Department)
Ministry of Jal Shakti
Government of Uttar Pradesh

Form 8 (E)

[See rules 15(2)]

(RENEWAL OF AUTHORIZATION/ NO-OBJECTION CERTIFICATE FOR SINKING OF EXISTING WELL FOR INDUSTRIAL/ COMMERCIAL/ INFRASTRUCTURAL OR BULK USER OF GROUND WATER)

AUTHORIZATION/ NO-OBJECTION CERTIFICATE NO: REG030875

VALID FROM 02/07/2021 TO 01/07/2026

Registration No.: 202106000046			
Name of the Owner	RANA VEER		
Address of the Applicant	VIIL.- BELWARA , P.O. - MANPUR , DISTT. - MORADABAD	**Application Form Serial No.**	MRBD0621RIN0069
Date of Submission	03/06/2021	**Specimen Signature**	
Company Name	RANA SUGARS LIMITED	**Company Address**	Vill.-Belwara, PO-Manpur, District-Moradabad - 244
Location Particulars			
District	Moradabad	**Block**	BHAGATPUR TANDA
Plot No./Khasra No.	143, 3, 142 mi, 146 etc	**Municipality/Corporation**	No
Ward No./Holding No.			NA
Particular of the Existing Well and Pumping Device			
Date of Construction/Sinking of the Well	01/11/2007		
Type of Well	Tube Well/Boring	**Depth of the Well (In meter)**	91.00
Purpose of well	Industrial	**Assembly Size(For Tube Well)**	
Strainer Position (For Tube Well)			
Type of Pump Used	Submersible	**H.P. of the Pump**	60.00
Operational Device	Electric Motor	**Rate of Withdrawal (m3/hr.)**	170.00
Date of Energization (In Case of Electric Pump)		01/11/2007	
Approx. Strainer Length (For Tube Well)	0.00	**Diameter (For Dug Well)**	0.00
Maximum Allowable Rate of Withdrawal (m^3/hr.):	170.00	**Maximum Allowable Running Hours Per Day:**	2.00
Maximum Allowable Annual Extraction of Ground Water (m^3/year):			68000
Reason for renewal of N.O.C. एन.ओ.सी. के नवीनीकरण का कारण	CGWA stop giving NOC and transferred the process to UPGWD.		
Against Case	No		

This No-Objection certificate authorizes the owner applicant (user) to sink a well in the location specified at SI. (3) for extraction of ground water at a rate not exceeding that as shown at SI. (3j), for Running Hours per day as shown at SI. (3k), and for maximum allowable annual extraction of ground water as shown at SI. (3k) and is valid subject to the observance of the conditions stated overleaf.

Conditions

- (1) In case of any change of ownership of the proposed well, fresh authorization has to be obtained.
- (2) No change of location, design, rate of withdrawal and pumping device in respect of the proposed well as indicated at SL (2) and (3) of this certificate shall be made without prior permission of the Competent Authority. Any deviation in this regard shall lead to cancellation of this authorization.
- (3) For the purpose of measuring and recording the quantity of ground water extracted, every said user shall affix digital water flow meters(conforming to BIS/ IS standards) having telemetry system in the abstraction structure, which record rate and quantum of extraction, at outlet of pumping devices and it shall be presumed that the quantity recorded by the meter has been extracted by the said user, until the contrary is proved. The rate of extraction of ground water from the well as shown in item 3(k) shall not exceed to the recorded rate from water meters
- (4) The concerned Authority reserves the right to stop extraction of ground water from the well due to quality hazards or any other reasons, if the situation so demands.
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- • No. of piezometers to be constructed & Type of water level monitoring mechanism shall be as per below table:

S.No	Quantum of Ground water withdrawal (cum/day)	No.of piezometers required	Monitiring Mechanism	
			Manual	DWLR with Telemetry
1	< 10	0	0	0
2	11 - 50	1	1	0
3	50- 500	1	0	1
4	> 500	2	0	2

- • The measuring frequency should be monthly and accuracy of measurement should be up to cm. the reported measurement should be given in meter up to two decimals.
- • For measurement of water level sounder or automatic water level recorder (AWLR)/ Digital Automatic water level recorder (DWLR) with telemetry system should be used for accuracy.
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- • All the details regarding coordinates, reduced level (with respect to mean level), depth, zone taped and assembly lowered should be provided for bringing the piezometer into the Hydrograph Monitoring System for Ground Water Department, Uttar Pradesh, and for its validation.
- • The ground water quality has to be monitored twice in a year during pre-monsoon (May/June) and post-monsoon (October/November) periods. Quality may be got analyzed from NABL approved lab. Besides, one sample (1 lt. capacity bottle) to the concerned Director, Ground Water Department, Uttar Pradesh, for chemical analysis.
- • A Permanent display board should be installed at piezometer/Tube wells site for providing the location, piezometer/ tube well number, depth and zone tapped of piezometer/tube well for standard referencing and identification.
- • Any other site-specific requirement regarding safety and access for measurement may be taken care of.
- (11) Any other condition(s) that may be imposed by the concerned Authority.
- (12) In case, any of the particulars I information furnished by the applicant in his application for issuance of this permit is found to be incorrect during verification at any subsequent stage, this permit is liable for cancellation.
- (13) Any other condition imposed by the concerned Authority
- **SPECIFIC CONDITIONS:**
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- i) No Objection Certificate shall be granted only in such cases where local government water supply agencies are not able to supply the desired quantity of water.
- ii) All industries shall be required to adopt latest water efficient technologies so as to reduce dependence on ground water resources.
- iii) All industries abstracting ground water in excess of 100 m^3/d shall be required to undertake annual water audit through Confederation of Indian Industries (CII)/ Federation Indian Chamber of Commerce and Industry (FICCI)/ National Productivity Council (NPC) certified auditors and submit audit reports within three months of completion of the same to Ground Water

Department, Uttar Pradesh. All such industries shall be required to reduce their ground water use by at least 20% over the next five years through appropriate means.

- iv) Construction of observation well(s) (piezometer)(s) within the premises and installation of appropriate water level monitoring mechanism as mentioned in General Condition no.10 shall be mandatory for industries drawing/ proposing to draw more than 10 m3/day of ground water and. Monitoring of water level shall be done by the project proponent. The piezometer (observation well) shall be constructed at a minimum distance of 50 m from the bore well/production well. Depth and aquifer zone tapped in the piezometer shall be the same as that of the pumping well/ wells. Monthly water level data shall be submitted online to the Ground Water Department, UP.
- v) The proponent shall be required to adopt roof top rain water harvesting/ recharge in the project premises. Industries which are likely to pollute ground water (chemical, pharmaceutical, dyes, pigments, paints, textiles, tannery, pesticides/ insecticides, fertilizers, slaughter house, explosives etc.) shall store the harvested rain water in surface storage tanks for use in the industry.
- vi) Injection of treated/ untreated waste water into aquifer system is strictly prohibited.
- vii) Industries which are likely to cause ground water pollution e.g. Tanning, Slaughter Houses, Dye, Chemical/ Petrochemical, Coal washeries, other hazardous units etc. (as per CPCB list) need to undertake necessary well head protection measures to ensure prevention of ground water pollution.
- (B) **Infrastructural User:** The No Objection Certificate for ground water abstraction will be granted subject to the following specific conditions:
- i) In case of infrastructure projects that require dewatering, proponent shall be required to carry out regular monitoring of dewatering discharge rate (using a digital water flow meter) and submit the data online to Ground Water Department, UP as applicable. Monitoring records and results should be retained by the proponent for two years, for inspection or reporting as required by District Ground Water Management Council.
- ii) Installation of Sewage Treatment Plants (STP) shall be mandatory for new projects, where ground water requirement is more than 20 m3 /day. The water from STP shall be utilized for toilet flushing, car washing, gardening etc.

Date :**14/07/2021**

Place:**Moradabad**

This certificate is electronically generated and does not require digital signature

April to Nov. 2021

Ann. 21

Upstream Ramganga, Near village Agawanpur

S.No.	Reported Date	Color (Hazen)	pH	Dissolved Oxygen (mg/L)	BOD (mg/L)	Total Coliform (MPN/100 mL)	COD (mg/L)
1	01-04-2021	7	7.4	9.3			
2	02-04-2021	8	7.7	9.4			
3	03-04-2021	7	7.4	9.5			
4	04-04-2021	6	7.6	9.6			
5	05-04-2021	7	7.3	9.2			
6	06-04-2021	6	7.2	9.1	1.6	600	12
7	07-04-2021	7	7.5	9.2			
8	08-04-2021	8	7.6	9.3			
9	09-04-2021	7	7.2	9.1			
10	10-04-2021	7	7.8	9.3			
11	11-04-2021	6	7.3	9.2			
12	12-04-2021	7	7.6	9.1			
13	13-04-2021	6	7.7	9.0	1.8	800	16
14	14-04-2021	7	7.7	9.2			
15	15-04-2021	6	7.3	9.1			
16	16-04-2021	7	7.2	9.0			
17	17-04-2021	8	7.5	8.6			
18	18-04-2021	7	7.4	8.8			
19	19-04-2021	7	7.4	8.3			
20	20-04-2021	6	7.3	8.0	2.0	700	20
21	21-04-2021	7	7.4	8.1			
22	22-04-2021	6	7.3	8.3			
23	23-04-2021	7	7.2	8.5			
24	24-04-2021	7	7.5	8.4			
25	27-04-2021	8	7.3	8.5	1.8	600	16
26	04-05-2021	7	7.4	8.7	2.0	700	16
27	11-05-2021	6	7.2	9.0	2.2	900	16
28	18-05-2021	7	7.3	8.9	2.2	1000	12
29	21-05-2021	6	7.2	9.2			
30	25-05-2021	7	7.4	9.0	2.0	900	12
31	28-05-2021	6	7.2	8.8			
32	01-06-2021	7	7.7	8.9	1.8	700	12
33	04-06-2021	6	7.3	8.5			
34	08-06-2021	7	7.3	8.8	1.6	900	16
35	11-06-2021	7	7.2	8.6			
36	15-06-2021	8	7.3	9.0	1.4	700	12
37	18-06-2021	7	7.2	8.8			
38	22-06-2021	8	7.2	8.6	2.0	900	16
39	25-06-2021	9	7.6	8.5			
40	29-06-2021	8	7.3	8.4	2.2	700	20
41	02-07-2021	9	7.4	8.6			
42	06-07-2021	8	7.8	8.2	2.0	900	16
43	09-07-2021	7	7.2	8.4			
44	13-07-2021	8	7.3	8.6	1.8	800	12
45	16-07-2021	8	7.8	8.0			
46	20-07-2021	9	7.6	8.0	2.0	900	16
47	23-07-2021	8	7.3	8.2			
48	27-07-2021	9	7.2	8.4	1.8	700	12
49	30-07-2021	8	7.2	8.0			
50	03-08-2021	9	7.3	7.9	1.6	900	20
51	06-08-2021	8	7.3	8.0			

52	10-08-2021	8	7.1	7.6	1.8	1100	24
53	13-08-2021	9	7.9	7.4			
54	17-08-2021	10	7.6	7.2	20	900	20
55	20-08-2021	9	7.5	7.3			
56	24-08-2021	8	7.3	7.6	1.8	1100	16
57	27-08-2021	9	7.3	7.4			
58	31-08-2021	8	7.6	7.6	2	1300	20
59	03-09-2021	9	7.3	7.8			
60	07-09-2021	8	7.5	7.6	1.8	1100	16
61	10-09-2021	7	7.4	8.2			
62	14-09-2021	8	7.3	8	1.6	900	12
63	17-09-2021	7	7.5	8.4			
64	21-09-2021	10	7.6	8.5	1.4	700	12
65	24-09-2021	8	7.4	8.2			
66	28-09-2021	9	7.2	8.0	2.0	900	16
67	01-10-2021	8	7.4	8.2			
68	05-10-2021	8	7.5	7.9	1.8	700	12
69	08-10-2021	8	7.3	8.6			
70	12-10-2021	9	7.5	8.3	2.0	900	16
71	15-10-2021	10	7.3	8.2			
72	19-10-2021	8	7.3	8.0	2.2	1100	16
73	22-10-2021	9	7.5	8.1			
74	26-10-2021	10	7.4	8.2	2	900	12
75	29-10-2021	8	7.6	8.4			
76	02-11-2021	9	7.3	8.2	2.2	1100	16
77	05-11-2021	8	7.6	8.4			
78	09-11-2021	9	7.5	8.6	2	900	12
79	11-11-2021	8	7.3	8.4			
80	12-11-2021	9	7.6	8.6			
81	13-11-2021	8	7.3	8.5			
82	14-11-2021	9	7.4	8.4			
83	15-11-2021	8	7.3	8.6			
84	16-11-2021	9	7.6	8.5	2	900	12

Ramganga Katghar

S.No.	Reported Date	Color (Hazen)	pH	Dissolved Oxygen (mg/L)	BOD (mg/L)	Total Coliform (MPN/100 mL)	COD (mg/L)
1	01-04-2021	24	7.4	4.6			
2	02-04-2021	22	7.5	4.5			
3	03-04-2021	23	7.4	4.6			
4	04-04-2021	22	7.3	4.8			
5	05-04-2021	23	7.2	4.6			
6	06-04-2021	22	7.3	4.3	9.4	34000	40
7	07-04-2021	21	7.6	4.1			
8	08-04-2021	22	7.5	4.2			
9	09-04-2021	23	7.4	4.3			
10	10-04-2021	22	7.3	4.5			
11	11-04-2021	24	7.5	4.3			
12	12-04-2021	23	7.4	4.4			
13	13-04-2021	22	7.5	4.3	9.0	33000	36
14	14-04-2021	21	7.2	4.5			
15	15-04-2021	22	7.6	4.3			
16	16-04-2021	23	7.5	4.4			
17	17-04-2021	22	7.8	4.1			
18	18-04-2021	21	7.6	4.0			
19	19-04-2021	21	7.5	4.4			
20	20-04-2021	20	7.8	4.0	9.2	33000	40
21	21-04-2021	21	7.6	4.1			
22	22-04-2021	20	7.8	3.9			
23	23-04-2021	21	7.6	4.1			
24	24-04-2021	20	7.7	4.0			
25	27-04-2021	22	7.5	3.8	9.0	33000	40
26	04-05-2021	21	7.6	3.7	9.2	34000	40
27	11-05-2021	22	7.5	3.8	8.8	33000	36
28	18-05-2021	21	7.4	3.6	9.6	34000	40
29	21-05-2021	20	7.6	3.8			
30	25-05-2021	20	7.5	3.7	9.2	31000	40
31	28-05-2021	21	7.6	3.4			
32	01-06-2021	21	7.6	3.9	8.8	28000	36
33	04-06-2021	20	7.4	3.3			
34	08-06-2021	21	7.2	3.6	9.0	28000	40
35	11-06-2021	22	7.5	3.4			
36	15-06-2021	24	7.6	3.7	8.6	31000	36
37	18-06-2021	22	7.3	3.5			
38	22-06-2021	23	7.6	3.2	9.0	33000	40
39	25-06-2021	25	7.5	3.4			
40	29-06-2021	26	7.2	3.5	8.8	31000	36
41	02-07-2021	24	7.5	3.4			
42	06-07-2021	25	7.8	3.0	8.4	28000	32
43	09-07-2021	23	7.3	3.3			
44	13-07-2021	24	7.2	3.4	7.8	25000	28
45	16-07-2021	25	7.7	3.0			
46	20-07-2021	26	7.5	3.0	8.0	27000	36
47	23-07-2021	25	7.3	3.2			
48	27-07-2021	24	7.5	3.5	7.6	25000	32
49	30-07-2021	25	7.2	3.4			
50	03-08-2021	25	7.4	3.3	7.8	28000	36
51	06-08-2021	24	7.6	3.5			
52	10-08-2021	24	7.8	3.0	8	31000	40

53	13-08-2021	25	7.4	3.3			
54	17-08-2021	26	7.5	3.4	7.8	28000	36
55	20-08-2021	25	7.5	3.6			
56	24-08-2021	23	7.4	3.8	7.6	25000	32
57	27-08-2021	26	7.3	3.5			
58	31-08-2021	25	7.6	3.4	7.4	19000	28
59	03-09-2021	26	7.2	3.8			
60	07-09-2021	24	7.6	3.6	7.2	17000	24
61	10-09-2021	23	7.2	3.8			
62	14-09-2021	24	7.6	3.9	7	15000	20
63	17-09-2021	22	7.5	3.8			
64	21-09-2021	20	7.3	4	7.6	13000	32
65	24-09-2021	23	7.3	4.1			
66	28-09-2021	24	7.2	4.0	7.8	15000	36
67	01-10-2021	25	7.6	4.1			
68	05-10-2021	23	7.3	4.3	7.4	17000	32
69	08-10-2021	24	7.5	4.4			
70	12-10-2021	23	7.6	4.2	7.2	15000	36
71	15-10-2021	23	7.2	4.3			
72	19-10-2021	24	7.6	4.0	7.4	17000	36
73	22-10-2021	22	7.2	4.2			
74	26-10-2021	20	7.4	4.5	7.2	15000	32
75	29-10-2021	21	7.6	4.3			
76	02-11-2021	23	7.5	4.1	7.4	17000	40
77	05-11-2021	22	7.3	4.2			
78	09-11-2021	23	7.5	4.3	7.2	15000	36
79	11-11-2021	22	7.4	4.5			
80	12-11-2021	23	7.2	4.6			
81	13-11-2021	22	7.3	4.4			
82	14-11-2021	21	7.6	4.2			
83	15-11-2021	22	7.2	4.3			
84	16-11-2021	20	7.5	4.2	7.2	17000	36

Downstream Ramganga , Shahabad, Rampur

S.No.	Reported Date	Color (Hazen)	pH	Dissolved Oxygen (mg/L)	BOD (mg/L)	Total Coliform (MPN/100 mL)	COD (mg/L)
1	01-04-2021	22	7.5	4.7			
2	02-04-2021	21	7.4	4.9			
3	03-04-2021	22	7.6	4.8			
4	04-04-2021	21	7.4	5.0			
5	05-04-2021	20	7.5	5.2			
6	06-04-2021	21	7.6	4.9	8.6	28000	36
7	07-04-2021	20	7.3	4.5			
8	08-04-2021	21	7.2	4.7			
9	09-04-2021	20	7.5	4.5			
10	10-04-2021	20	7.7	4.8			
11	11-04-2021	22	7.6	4.5			
12	12-04-2021	21	7.3	4.6			
13	13-04-2021	20	7.4	4.4	9.2	31000	36
14	14-04-2021	20	7.2	4.7			
15	15-04-2021	21	7.4	4.2			
16	16-04-2021	22	7.7	4.6			
17	17-04-2021	21	7.4	4.3			
18	18-04-2021	20	7.5	4.4			
19	19-04-2021	22	7.9	4.0			
20	20-04-2021	21	7.6	3.7	9.6	34000	44
21	21-04-2021	20	7.4	3.8			
22	22-04-2021	18	7.5	4.1			
23	23-04-2021	20	7.6	4.4			
24	24-04-2021	19	7.6	4.2			
25	27-04-2021	20	7.7	4.1	8.8	31000	36
26	04-05-2021	20	7.3	4.2	8.6	33000	32
27	11-05-2021	21	7.4	4.4	8.4	31000	36
28	18-05-2021	23	7.5	4.1	8.4	33000	36
29	21-05-2021	21	7.4	4.4			
30	25-05-2021	22	7.6	4.2	8.0	28000	36
31	28-05-2021	23	7.4	4.1			
32	01-06-2021	23	7.5	4.3	7.8	25000	32
33	04-06-2021	21	7.1	3.8			
34	08-06-2021	23	7.5	4.2	8.2	26000	36
35	11-06-2021	24	7.6	4.6			
36	15-06-2021	26	7.2	4.7	8.0	23000	32
37	18-06-2021	24	7.5	4.2			
38	22-06-2021	26	7.3	4.0	8.4	25000	36
39	25-06-2021	27	7.3	3.8			
40	29-06-2021	26	7.5	3.9	8.0	21000	32
41	02-07-2021	27	7.6	3.8			
42	06-07-2021	28	7.2	3.4	8.0	19000	36
43	09-07-2021	26	7.7	3.6			
44	13-07-2021	25	7.6	3.8	7.4	19000	32
45	16-07-2021	26	7.4	3.6			
46	20-07-2021	27	7.4	3.4	7.8	21000	36
47	23-07-2021	26	7.5	3.5			
48	27-07-2021	25	7.3	3.8	7.4	19000	32

49	30-07-2021	26	7.7	3.7			
50	03-08-2021	27	7.6	3.6	7.6	21000	32
51	06-08-2021	26	7.2	3.8			
52	10-08-2021	26	7.3	3.4	7.8	23000	36
53	13-08-2021	27	7.7	3.0			
54	17-08-2021	28	7.2	3.2	8.0	21000	40
55	20-08-2021	26	7.6	3.0			
56	24-08-2021	24	7.5	3.2	8.2	23000	36
57	27-08-2021	25	7.2	3.3			
58	31-08-2021	24	7.3	3.2	8	21000	28
59	03-09-2021	25	7.7	3.3			
60	07-09-2021	26	7.2	3	8.2	15000	36
61	10-09-2021	25	7.6	4			
62	14-09-2021	26	7.5	4.2	8	13000	32
63	17-09-2021	24	7.2	4.4			
64	21-09-2021	25	7.4	4.6	7.8	11000	28
65	24-09-2021	25	7.2	4.8			
66	28-09-2021	26	7.5	4.3	8.2	13000	32
67	01-10-2021	26	7.3	4.5			
68	05-10-2021	24	7.4	4.5	8.0	13000	28
69	08-10-2021	25	7.6	4.6			
70	12-10-2021	24	7.3	4.4	8.2	11000	32
71	15-10-2021	25	7.7	4.6			
72	19-10-2021	26	7.5	4.4	8.4	13000	28
73	22-10-2021	25	7.5	4.2			
74	26-10-2021	25	7.4	4.6	8.6	19000	36
75	29-10-2021	23	7.3	4.5			
76	02-11-2021	25	7.6	4.6	8.4	21000	32
77	05-11-2021	24	7.4	4.5			
78	09-11-2021	25	7.3	4.6	8.2	17000	28
79	11-11-2021	24	7.6	4.4			
80	12-11-2021	25	7.5	4.3			
81	13-11-2021	24	7.6	4.2			
82	14-11-2021	23	7.3	4.3			
83	15-11-2021	25	7.6	4.5			
84	16-11-2021	22	7.3	4.3	8.2	19000	28

Kosi River, Moradabad Rampur Road Bridge							
S.No.	Reported Date	Color (Hazen)	pH	Dissolved Oxygen (mg/L)	BOD (mg/L)	Total Coliform (MPN/100 mL)	COD (mg/L)
1	01-04-2021	9	7.5	8.4			
2	02-04-2021	10	7.4	8.5			
3	03-04-2021	8	7.3	8.6			
4	04-04-2021	8	7.4	8.8			
5	05-04-2021	9	7.3	8.6			
6	06-04-2021	8	7.5	8.9	2.2	17000	28
7	07-04-2021	9	7.3	8.8			
8	08-04-2021	8	7.5	8.7			
9	09-04-2021	9	7.3	8.5			
10	10-04-2021	8	7.2	8.7			
11	11-04-2021	9	7.4	8.9			
12	12-04-2021	9	7.5	8.8			
13	13-04-2021	8	7.6	8.9	2	15000	24
14	14-04-2021	9	7.4	8.8			
15	15-04-2021	10	7.6	8.7			
16	16-04-2021	8	7.3	8.9			
17	17-04-2021	9	7.6	8.7			
18	18-04-2021	8	7.3	8.6			
19	19-04-2021	8	7.8	8.3			
20	20-04-2021	7	7.5	8	2.2	17000	24
21	21-04-2021	9	7.7	8.7			
22	22-04-2021	8	7.4	8.2			
23	23-04-2021	10	7.5	8.4			
24	24-04-2021	9	7.6	8.1			
25	27-04-2021	10	7.6	8.2	2.4	15000	20
26	04-05-2021	9	7.5	8.4	2.6	17000	24
27	11-05-2021	8	7.3	8.6	2.4	15000	12
28	18-05-2021	10	7.5	8.5	2.2	17000	12
29	21-05-2021	9	7.4	8.8			
30	25-05-2021	8	7.3	8.7	2	15000	12
31	28-05-2021	9	7.6	8.5			
32	01-06-2021	7	7.4	8.8	2.2	17000	16
33	04-06-2021	8	7.8	8.2			
34	08-06-2021	7	7.6	8.4	2.4	19000	20
35	11-06-2021	8	7.3	8.5			
36	15-06-2021	9	7.5	8.7	2.2	17000	16
37	18-06-2021	8	7.3	8.6			
38	22-06-2021	9	7.4	8.4	2.4	19000	20
39	25-06-2021	27	7.3	8.2			
40	29-06-2021	9	7.3	8.0	2.6	21000	24
41	02-07-2021	10	7.6	8.2			
42	06-07-2021	9	7.5	8.4	2.4	19000	20
43	09-07-2021	8	7.3	8.6			
44	13-07-2021	9	7.4	8.2	2.6	21000	24
45	16-07-2021	7	7.5	8			
46	20-07-2021	10	7.3	7.6	2.8	23000	28
47	23-07-2021	9	7.4	7.5			
48	27-07-2021	10	7.4	7.6	2.6	21000	24
49	30-07-2021	9	7.5	7.9			
50	03-08-2021	10	7.6	7.8	2.4	19000	20

51	06-08-2021	9	7.3	7.6			
52	10-08-2021	9	7.4	7.6	2.8	21000	24
53	13-08-2021	10	7.5	7.2			
54	17-08-2021	11	7.3	7.0	3.0	23000	28
55	20-08-2021	10	7.3	6.8			
56	24-08-2021	9	7.4	6.9	3.2	25000	24
57	27-08-2021	10	7.3	7.0			
58	31-08-2021	9	7.5	7.2	3	23000	20
59	03-09-2021	10	7.3	7			
60	07-09-2021	9	7.2	7.2	2.8	21000	16
61	10-09-2021	10	7.4	7.5			
62	14-09-2021	9	7.2	7.6	2.6	19000	16
63	17-09-2021	10	7.2	7.8			
64	21-09-2021	10	7.3	7.7	2.4	17000	16
65	24-09-2021	10	7.2	7.6			
66	28-09-2021	11	7.5	7.5	2.8	19000	20
67	01-10-2021	10	7.4	7.6			
68	05-10-2021	11	7.3	7.8	2.6	17000	16
69	08-10-2021	10	7.3	7.6			
70	12-10-2021	11	7.5	7.8	2.4	15000	16
71	15-10-2021	12	7.3	7.6			
72	19-10-2021	10	7.3	7.5	2.8	17000	20
73	22-10-2021	11	7.8	7.4			
74	26-10-2021	10	7.5	7.6	2.6	15000	16
75	29-10-2021	11	7.6	7.3			
76	02-11-2021	10	7.3	7.5	2.8	17000	20
77	05-11-2021	11	7.3	7.8			
78	09-11-2021	10	7.2	7.9	2.6	15000	16
79	11-11-20211	11	7.3	8			
80	12-11-20211	10	7.5	8.2			
81	13-11-2011	11	7.3	8			
82	14-11-2011	10	7.5	8.2			
83	15-11-2011	9	7.6	8			
84	16-11-2011	10	7.3	8.2	2.4	15000	16

Dhela River

S.No.	Reported Date	Color (Hazen)	pH	Dissolved Oxygen (mg/L)	BOD (mg/L)	Total Coliform (MPN/100 mL)	COD (mg/L)
1	01-04-2021	DRY					
2	02-04-2021						
3	03-04-2021						
4	04-04-2021						
5	05-04-2021						
6	06-04-2021						
7	07-04-2021						
8	08-04-2021						
9	09-04-2021						
10	10-04-2021						
11	11-04-2021						
12	12-04-2021						
13	13-04-2021						
14	14-04-2021						
15	15-04-2021						
16	16-04-2021						
17	17-04-2021						
18	18-04-2021						
19	19-04-2021						
20	20-04-2021						
21	21-04-2021						
22	22-04-2021						
23	23-04-2021						
24	24-04-2021						
25	27-04-2021						
26	04-05-2021						
27	11-05-2021						
28	18-05-2021						
29	21-05-2021						
30	25-05-2021	24	7.5	3.0	9.2	31000	44
31	28-05-2021	23	7.4	3.2			
32	01-06-2021	22	7.6	3.2	9.0	28000	40
33	04-06-2021	21	7.4	2.8			
34	08-06-2021	20	7.3	3.1	9.2	31000	44
35	11-06-2021	21	7.2	3.2			
36	15-06-2021	23	7.3	3.1	8.8	28000	40
37	18-06-2021	21	7.2	2.8			
38	22-06-2021	24	7.3	2.4	9.2	31000	44
39	25-06-2021	22	7.5	2.2			
40	29-06-2021	23	7.6	2.4	9.6	33000	48
41	02-07-2021	24	7.3	2.0			
42	06-07-2021	22	7.7	1.8	9.4	31000	44
43	09-07-2021	21	7.5	2.2			
44	13-07-2021	24	7.3	2.0	9.2	28000	40
45	16-07-2021	22	7.8	1.8			
46	20-07-2021	25	7.7	1.4	9.6	31000	44
47	23-07-2021	24	7.7	1.6			
48	27-07-2021	22	7.5	1.8	9.4	28000	40

49	30-07-2021	23	7.6	1.4			
50	03-08-2021	24	7.3	1.2	9.6	31000	44
51	06-08-2021	22	7.5	1.4			
52	10-08-2021	23	7.6	1.0	9.8	33000	48
53	13-08-2021	24	7.8	0.8			
54	17-08-2021	25	7.5	1.0	9.6	31000	44
55	20-08-2021	26	7.6	1.2			
56	24-08-2021	25	7.5	1.6	9.2	28000	40
57	27-08-2021	26	7.2	1.2			
58	31-08-2021	24	7.4	1.3	8.8	25000	36
59	03-09-2021	25	7.2	1.6			
60	07-09-2021	21	7.5	1.9	86	23000	32
61	10-09-2021	19	7.2	2			
62	14-09-2021	20	7.3	2.2	8.4	21000	28
63	17-09-2021	21	7.3	2.4			
64	21-09-2021	20	7.4	2.6	8.2	19000	32
65	24-09-2021	20	7.4	2.6			
66	28-09-2021	21	7.3	2.4	8.4	21000	36
67	01-10-2021	22	7.5	2.0			
68	05-10-2021	22	7.4	2.6	8.2	19000	32
69	08-10-2021	22	7.5	2.8			
70	12-10-2021	22	7.3	2.6	8.4	21000	36
71	15-10-2021	24	7.5	2.5			
72	19-10-2021	22	7.4	2.2	8.6	23000	40
73	22-10-2021	23	7.6	2.6			
74	26-10-2021	25	7.5	2.7	8.4	21000	36
75	29-10-2021	20	7.3	2.5			
76	02-11-2021	21	7.5	2.7	8.6	23000	36
77	05-11-2021	20	7.8	2.6			
78	09-11-2021	21	7.6	2.5	8.4	21000	32
79	11-11-20211	20	7.2	2.3			
80	12-11-20211	10	7.5	8.2			
81	13-11-2011	20	7.5	2.5			
82	14-11-2011	10	7.5	8.2			
83	15-11-2011	9	7.6	8			
84	16-11-2011	10	7.3	8.2	2.4	15000	16

Bahella River, Moradabad Tanda Road Bridge

S.No.	Reported Date	Color (Hazen)	pH	Dissolved Oxygen (mg/L)	BOD (mg/L)	Total Coliform (MPN/100 mL)	BOD (mg/L)
1	01-04-2021	18	7.5	3.3			
2	02-04-2021	18	7.3	3.2			
3	03-04-2021	17	7.5	3.3			
4	04-04-2021	16	7.5	3.5			
5	05-04-2021	17	7.7	3.8			
6	06-04-2021	19	7.7	3.6	9.0	31000	48
7	07-04-2021	17	7.4	3.5			
8	08-04-2021	18	7.3	3.8			
9	09-04-2021	17	7.9	3.4			
10	10-04-2021	16	7.4	3.6			
11	11-04-2021	18	7.6	3.9			
12	12-04-2021	17	7.5	3.8			
13	13-04-2021	18	7.4	3.6	8.8	28000	44
14	14-04-2021	17	7.6	3.5			
15	15-04-2021	18	7.5	3.4			
16	16-04-2021	17	7.5	3.6			
17	17-04-2021	15	7.3	3.3			
18	18-04-2021	17	7.5	3.2			
19	19-04-2021	16	7.9	3.5			
20	20-04-2021	15	8.1	3.1	9.0	31000	48
21	21-04-2021	17	7.8	3.0			
22	22-04-2021	16	7.6	3.2			
23	23-04-2021	16	7.4	3.4			
24	24-04-2021	17	7.5	3.2			
25	27-04-2021	18	7.4	3.1	9.2	33000	48
26	04-05-2021	17	7.3	3.4	8.8	31000	44
27	11-05-2021	16	7.6	3.3	9.0	28000	40
28	18-05-2021	17	7.4	3.2	9.2	31000	44
29	21-05-2021	16	7.5	3.4			
30	25-05-2021	18	7.4	3.4	8.8	28000	40
31	28-05-2021	17	7.3	3.2			
32	01-06-2021	17	7.3	3.5	8.6	26000	36
33	04-06-2021	18	7.6	3.0			
34	08-06-2021	17	7.5	3.8	8.8	28000	40
35	11-06-2021	19	7.6	3.5			
36	15-06-2021	17	7.5	3.6	8.4	25000	36
37	18-06-2021	16	7.6	3.2			
38	22-06-2021	18	7.5	2.8	8.8	26000	40
39	25-06-2021	19	7.2	2.6			
40	29-06-2021	20	7.3	2.7	8.6	23000	36
41	02-07-2021	21	7.2	2.8			
42	06-07-2021	20	7.1	2.4	8.2	21000	32
43	09-07-2021	18	7.4	2.8			
44	13-07-2021	19	7.6	2.6	8.0	23000	36
45	16-07-2021	18	7.6	2.2			
46	20-07-2021	21	7.3	2.2	8.2	25000	40
47	23-07-2021	20	7.4	2.4			
48	27-07-2021	21	7.4	2.5	8.0	23000	36

49	30-07-2021	20	7.3	2.6			
50	03-08-2021	21	7.2	2.3	8.2	25000	40
51	06-08-2021	19	7.2	2.6			
52	10-08-2021	20	7.5	2.1	3.4	27000	44
53	13-08-2021	21	7.7	1.8			
54	17-08-2021	20	7.2	1.6	8.6	25000	40
55	20-08-2021	22	7.3	1.4			
56	24-08-2021	21	7.5	1.8	8.8	26000	36
57	27-08-2021	20	7.5	2.0			
58	31-08-2021	21	7.3	1.8	8.6	23000	32
59	03-09-2021	22	7.5	2			
60	07-09-2021	20	7.3	2.2	8.4	19000	28
61	10-09-2021	17	7.5	2.8			
62	14-09-2021	19	7.4	2.6	8.0	17000	32
63	17-09-2021	20	7.6	2.9			
64	21-09-2021	20	7.5	2.8	7.8	15000	36
65	24-09-2021	20	7.5	2.8			
66	28-09-2021	19	7.6	2.2	8.0	17000	40
67	01-10-2021	17	7.3	3.0			
68	05-10-2021	18	7.5	2.8	7.8	15000	36
69	08-10-2021	19	7.2	3.2			
70	12-10-2021	17	7.4	3.0	7.6	13000	32
71	15-10-2021	19	7.6	3.0			
72	19-10-2021	17	7.6	2.8	7.8	15000	36
73	22-10-2021	18	7.5	3.1			
74	26-10-2021	20	7.6	3.2	7.4	13000	32
75	29-10-2021	19	7.4	3			
76	02-11-2021	17	7.4	3.1	7.8	15000	36
77	05-11-2021	18	7.5	3.2			
78	09-11-2021	17	7.3	3	7.6	13000	32
79	11-11-2021	18	7.5	3.2			
80	12-11-2021	19	7.6	3.3			
81	13-11-2021	16	7.2	3.1			
82	14-11-2021	17	7.5	3			
83	15-11-2021	19	7.6	3.1			
84	16-11-2021	16	7.5	3	7.6	15000	32

Gagan River, Moradabad Tanda Road Bridge

S.No.	Reported Date	Color (Hazen)	pH	Dissolved Oxygen (mg/L)	BOD (mg/L)	Total Coliform (MPN/100 mL)	COD (mg/L)
1	01-04-2021	10	7.6	8.9			
2	02-04-2021	9	7.3	8.6			
3	03-04-2021	8	7.6	8.7			
4	04-04-2021	9	7.3	8.5			
5	05-04-2021	8	7.6	8.7			
6	06-04-2021	9	7.4	8.8	2	22000	20
7	07-04-2021	8	7.3	8.9			
8	08-04-2021	9	7.8	9			
9	09-04-2021	8	7.6	8.9			
10	10-04-2021	7	7.5	9.1			
11	11-04-2021	8	7.3	9			
12	12-04-2021	8	7.4	8.8			
13	13-04-2021	8	7.6	8.9	1.8	21000	20
14	14-04-2021	8	7.5	8.7			
15	15-04-2021	8	7.4	8.6			
16	16-04-2021	9	7.4	8.8			
17	17-04-2021	10	7.7	8.4			
18	18-04-2021	9	7.8	8.2			
19	19-04-2021	9	7.2	8			
20	20-04-2021	10	7.5	7.6	2.4	23000	24
21	21-04-2021	9	7.7	7.5			
22	22-04-2021	9	7.5	7.7			
23	23-04-2021	8	7.4	7.8			
24	24-04-2021	10	7.6	7.7			
25	27-04-2021	9	7.4	7.5	2.2	21000	20
26	04-05-2021	8	7.2	7.9	2.4	28000	20
27	11-05-2021	9	7.5	8.2	2.6	31000	20
28	18-05-2021	10	7.4	8	2.8	33000	20
29	21-05-2021	9	7.6	9.4			
30	25-05-2021	10	7.5	8.2	2.4	31000	16
31	28-05-2021	9	7.4	8.1			
32	01-06-2021	10	7.6	8.4	2.2	28000	12
33	04-06-201	9	7.2	7.8			
34	08-06-2021	8	7.7	8.2	2.6	31000	16
35	11-06-2021	9	7.3	8.4			
36	15-06-2021	8	7.4	8.6	2.4	27000	16
37	18-06-2021	8	7.3	8.5			
38	22-06-2021	10	7.4	8.0	2.6	28000	20
39	25-06-2021	10	7.3	8.2			
40	29-06-2021	9	7.2	8.2	2.4	25000	20
41	02-07-2021	10	7.3	8.3			
42	06-07-2021	9	7.5	7.9	2.6	23000	24
43	09-07-2021	8	7.7	8.1			
44	13-07-2021	9	7.5	8.0	2.4	21000	20
45	16-07-2021	10	7.9	7.4			
46	20-07-2021	10	7.9	7.0	2.6	23000	24

47	23-07-2021	11	7.8	6.8			
48	27-07-2021	12	7.7	6.9	2.2	21000	20
49	30-07-2021	10	7.3	7.4			
50	03-08-2021	9	7.5	7.6	2	23000	24
51	06-08-2021	10	7.5	6.9			
52	10-08-2021	9	7.3	7.2	2.4	26000	28
53	13-08-2021	10	7.7	7.0			
54	17-08-2021	12	7.4	6.8	2.6	23000	32
55	20-08-2021	11	7.2	6.4			
56	24-08-2021	9	7.4	6.5	2.8	21000	28
57	27-08-2021	10	7.6	6.6			
58	31-08-2021	9	7.2	6.8	3.2	19000	28
59	03-09-2021	11	7.5	7.2			
60	07-09-2021	10	7.3	7	3	17000	24
61	10-09-2021	9	7.5	8			
62	14-09-2021	10	7.6	7.8	2.8	15000	20
63	17-09-2021	9	7.3	7.6			
64	21-09-2021	10	7.5	7.8	2.6	13000	16
65	24-09-2021	10	7.5	7.4			
66	28-09-2021	9	7.3	7.2	2.4	15000	20
67	01-10-2021	10	7.5	7.8			
68	05-10-2021	10	7.3	7.6	2.2	13000	16
69	08-10-2021	9	7.5	7.9			
70	12-10-2021	10	7.7	7.5	2.4	11000	20
71	15-10-2021	11	7.5	7.7			
72	19-10-2021	10	7.4	7.3	2.6	13000	24
73	22-10-2021	12	7.3	7.2			
74	26-10-2021	10	7.5	7.4	2.4	11000	20
75	29-10-2021	9	7.2	7.9			
76	02-11-2021	10	7.4	8	2.6	13000	24
77	05-11-2021	9	7.3	8.2			
78	09-11-2021	10	7.4	8.3	2.4	11000	20
79	11-11-2021	9	7.5	8.2			
80	12-11-2021	10	7.3	8.3			
81	13-11-2021	10	7.6	8.2			
82	14-11-2021	11	7.3	8.1			
83	15-11-2021	10	7.5	8.2			
84	16-11-2021	11	7.6	8.3	2.4	11000	20

Regional Office
U.P. Pollution Control Board
Moradabad

Compliance Report of the industries in compliance of the order passed in O.A. No. 361/2017 Tanjeen Fatima Vs MoEF & CC and ors.

S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
1.	**Radico Khaitan Limited,** Bareilly Road, Rampur, Uttar Pradesh - 244901	1. The unit shall obtain NOCs from CGWA for withdrawal of groundwater at earliest for all the groundwater abstraction sources, as the CGWA NOCs have already been expired on 02.10.2018. 2. The Unit shall ensure storage of concentrated spent wash with total solids 30% in both the lagoons (at Hitachi and Ajeetpur site) for use in bio composting.	1. The unit has obtained approvals from UPGWD. Annexed as **Annexure 1.** 2. Complying. The samples of spent wash were collected from the lagoons at the time of inspection dated 10-11-2021.	1. At the time of inspection, the floating levelling system was not operational at Ajeetpur site. Although the concentrated spent wash was within the limit marked by UPPCB. 2. The total area of two bio-composting yards was 60 acres out of which 25 acres was covered and remaining 35 acres of area was uncovered or open. 49 The requirement of covered bio-compost area to operate at consented capacity of 200 KLPD is 24 acres.	1. During present inspection dated 10-11-2021 the floating levelling system was operational. 2. The required covered area to operate at consented capacity is in compliance of CPCB guidelines.

S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
			The solid concentration found more than 30%. Annexed as **Annexure 2.**	3. Water logging was observed near the lagoon at Hitachi site. Samples of the same were collected by Joint team.	3. During inspection dated 10-11-2021, the water logging was not found.
		3. The unit shall provide proper lined surface in bio compost yard at Hitachi site so that possibility of leaching shall be eliminated.	3. The Unit has constructed properly lined surface of compost yard, photograph annexed as **Annexure 3.**	4. At bio-compost yard of Ajeetpur site, it was observed that at leachate collection pit, transfer pump was not provided by the unit.	4. During inspection dated 10-11-2021, transfer pump was provided by the unit.
		4. The unit shall take measures to stop contamination of piezometer well at downstream of Hitachi site.	4. The surface all around the piezometer wells have been repaired by providing	5. COD was reported from the ground water is a point of concern and probable source of it should be identified.	5. As per the evaluation report on impacts of ground water vetted by IIT, Roorkee, it has been observed that the ground water is of excellent water quality, there is no sign of ground water pollution, no heavy metals or fecal coliforms are observed and the ground water can be used

S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
			PCC surface up to 1.0 m^2 in addition to the provision of lined surface. Apart from that the unit has replaced the pipes of piezometers with PVC, photograph annexed as **Annexure-4.**	6. Site: **i.** Hand-pump of Hitachi Bio-compost Yard: The concentration of Copper and Iron was found beyond the permissible limits. **ii.** Piezo-metric well u/s of Hitachi Yard: The concentration of COD, Iron, Manganese and lead was found beyond permissible limits. **iii.** Piezo-metric well d/s of Hitachi Yard: The concentration of COD, TDS, TS, Iron, Manganese, Lead and Colour was found beyond the permissible limits.	directly for drinking. i. Industry has replaced all the pipe lines of GI with HDPE pipe lines. 1. ii to v- The surface all around the piezometer wells have been repaired by providing PCC surface. Apart from that the unit has replaced the pipes of piezometers with PVC. As per the evaluation report on impacts of ground water vetted by IIT, Roorkee, it has been observed that the ground water is of excellent water quality,
		5. The unit shall carry out detail study to identify contamination source of Fe, Mn and Pb of piezometric wells, hand pumps and bore wells and carry out remedial measures.	5. The unit has carried out detailed study through PHDCCI. As per the report the probable reasons for the		

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S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
			contamination are leaching of the iron and galvanized pipes. Unit has replaced all the pipe lines of GI with HDPE pipe lines, study report annexed as **Annexure-5A.** The industry has submitted an appraisal report on Impacts of Ground Water Abstraction and Groundwater recharge on Ground Water	**iv.** Piezo-metric well u/s of Ajeetpur Yard: The concentration of COD, Iron and Manganese was found beyond the permissible limits. **v.** Piezo-metric well d/s of Ajeetpur Yard: The concentration of COD, Iron, Manganese and Lead was found beyond the permissible limits. **vi.** Groundwater from the borewell in unit premises: The concentration of Iron and Manganese was found beyond the permissible limits. As per the report the probable reasons for the contamination are	there is no sign of ground water pollution, no heavy metals or fecal coliforms are observed and the ground water can be used directly for drinking. vi. Industry has replaced all the pipe lines of GI with HDPE pipe lines.

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S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
			Scenerio vetted by Department of Civil Engineering, IIT, Roorkee which was prepared byMr. Upendra Srivastava, Accredited Ground Water Proffessional, Lucknow. **Report is annexed as Annexure -5B**	leaching of the iron and galvanised pipes which seems very superficial and a detailed study should be done in this regard. Presence of high concentration of pollutants in the groundwater samples calls for a detailed analysis of soil profile to check the level and source of contamination in the area. 7. The analysis of samples drawn from the STP indicates that the industrial waste is rich in Iron, Copper and Manganese. Thus a detailed study is recommended to check the probable relation if any exists between the industrial waste	

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				and groundwater contamination. The industry is directed to comply with the following recommendations of the joint inspection:	
				i. The unit shall obtain NOCs for the drawl of groundwater at earliest.	i. Industry has obtain NOC for the drawl of groundwater.
				ii. The unit shall ensure storage of concentrated spent wash with total solids 30% in both the lagoons at Hitachi and Ajeetpur site) for use in bio-composting.	ii. Complying.
				iii. The unit shall provide proper lined surface in bio compost yard at Hitachi site so that possibility of leaching	iii. The Unit has constructed properly lined surface of compost yard.

S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
				shall be eliminated. **iv.** The unit shall take measures to stop contamination of piezometer well at downstream of Hitachi site.	iv. The surface all around the piezometer wells has been repaired by providing PCC surface up to 1.0 m^2 in addition to the provision of lined surface. . Apart from that the unit has replaced the pipes of piezometers with PVC.
				v. The unit shall carry out detailed study to identify contamination source of Iron, Manganese and Lead of piezometric wells, hand pumps and bore wells and carry out remedial measures.	vi. Complying. The unit has carried out detailed study through PHDCCI. As per the report the probable reasons for the contamination are leaching of the iron and

S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
					galvanized pipes. Unit has replaced all the pipe lines of GI with HDPE pipe lines, study report.
2.	**M/s Damya (PJ) Foods, Pvt. Ltd.** Village-ChiknaShahbad Road, Rampur-244901 (UP)	1. Unit shall install flowmeters on the borewell in the industry premises and maintain logbook for each flowmeter and obtain CGWA NOC for ground water abstraction. 2. Unit shall install	1. The unit has installed flow meter on the bore well and maintaining the log book. The unit has applied the NOC before UPGWD and is under consideration, annexed as **Annexure-6.** 2. Complying.	A detailed groundwater study be done by SGWA as the case may be and any permission to abstract groundwater be incumbent on the result of the study. Unit be directed to minimise their water consumption based on water audit studies. Also they may be asked to explore the possibility of using treated water/ water harvesting /recycling techniques. Water tariffs for ground water as per rules/guidelines be communicated and charges levied immediately. Pending EC on the unit be realised by UPPCB immediately.	Concerned to SGWA. No EC is pending on the unit.

S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
		flowmeter and maintain record for treated effluent reused in horticulture.	Photograph annexed as **Annexure -7.**		
		3. Unit shall operate ETP properly to meet the discharge standard.	3. Complying. The sample was collected from the outlet of ETP at the time of inspection dated 10-11-2021. All the parameters of the effluent found within the prescribed standards. Analysis report of ETP annexed as **Annexure-8.**		
		4. Unit shall obtain adequacy report of ETP system from a reputed expert government institutes.	4. The industry has obtained adequacy report from the Department of Civil Engineering, Aligarh Muslim University,		

S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
			Aligarh, annexed as **Annexure-9.**		
3.	**M/s Usha Steel Process** D-22, 23 & 29 Ajeetpur Industrial Estate Ajeetpur, Rampur Uttar Pradesh	1. Unit shall install flowmeters on the borewell and other points of effluent generations, reuse and discharge in the industry premises with logbook for each flowmeter and obtain CGWA-NOC for ground water abstraction.	1. The unit has installed flow meter (photograph annexed as **Annexure-10**) on the bore well and maintaining the log book. The unit is lying in SSI and the daily consumption of water is less than 10 KLD, hence it is exmpeted for NOC of UPGWD. However the industry has applied for NOC before UPGWD and under process (application is annexed as	A detailed groundwater study be done by SGWA as the case may be and any permission to abstract groundwater be incumbent on the result of the study. Unit be directed to minimise their water consumption based on water audit studies. Also they may be asked to explore the possibility of using treated water/ water harvesting /recycling techniques. Water tariffs for ground water as per rules/guidelines be communicated and charges levied immediately. Pending EC on the unit be realised by UPPCB immediately.	Concerned to SGWA. No EC is pending on the unit.

S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
			Annexure-11).		
		2. Unit shall install flowmeter and maintain record for treated effluent reused in process and amount of water discharged.	2. Complying. Copy of log book is annexed as **Annexure-12.**		
		3. Unit shall obtain adequacy report of ETP system from a reputed expert government institutes.	3. The industry has obtained adequacy report from the Department of Civil Engineering, Aligarh Muslim University, Aligarh. annexed as **Annexure-13.**		
		4. Unit shall operate the ETP properly and ensure that treated effluent shall meet the discharge norms.	4. Complying. The sample was collected from the outlet of ETP at the time of inspection dated 10-11-2021. All the parameters of the		

S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
			effluent found within the prescribed standards, Analysis report is annexed as **Annexure-14.**		
4.	**M/s Swati Menthol & Allied Chemicals Ltd.** 4.5kms. Bareilly Road Rampur 244901 (U.P.)	1. The unit shall obtain NOC from CGWA for withdrawal of ground water. 2. The unit shall install flowmeter at outlet of ETP. 3. The unit shall carry out feasibility study to explore possibility of reuse of treated effluent from ETP within	1. The unit has obtained the NOC from UPGWD, annexed as **Annexure-15.** 2. Complying. Photograph is annexed as **Annexure-16.** 3. The unit is reusing the maximum treated effluent. The industry has	A detailed groundwater study be done by SGWA as the case may be and any permission to abstract groundwater be incumbent on the result of the study. Unit be directed to minimise their water consumption based on water audit studies. Also they may be asked to explore the possibility of using treated water/ water harvesting /recycling techniques. Water tariffs for ground water as per rules/guidelines be communicated and charges levied immediately. Pending EC on the unit be realised by UPPCB immediately.	Concerned to SGWA. No EC is pending on the unit.

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S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
		industrial premises.	obtained adequacy report from the Department of Civil Engineering, Aligarh Muslim University, Aligarh, annexed as **Annexure-17.**		
5.	**M/s Rana Sugars Ltd.** Khasra No.318-320, Manpur, Belwara, Distt-Moradabad, Uttar Pradesh-	1. The unit shall obtain NOC from CGWA for extraction of ground water. 2. The unit shall provide a separate area for storage of ETP sludge and shall maintain record of the	1. The unit has obtained the NOC from UPGWD, annexed as **Annexure-18.** 2. Complying.	A detailed groundwater study be done by SGWA as the case may be and any permission to abstract groundwater be incumbent on the result of the study. Unit be directed to minimise their water consumption based on water audit studies. Also they may be asked to explore the possibility of using treated water/ water harvesting /recycling techniques. Water tariffs for	Concerned to SGWA. No EC is pending on the unit.

S.No.	Name of the unit	Recommendations of Joint Committee as per Inspection report based on Inspection dt. 28-29 Oct, 2020	Compliance Status	Recommendations of Over Sight Committee	Compliance Status
	244925	ETP sludge generation and disposal. 3. The unit shall maintain record for fly ash generation and its disposal. 4. The unit shall improve bio-mass concentration in the aeration tank of ETP. 5. The unit shall prepare ETP dosing chemicals solutions; using ETP treated effluent, to save fresh water.	3. Complying. 4. Complying. Analysis report is annexed as **Annexure-19.** 5. Complying.	ground water as per rules/guidelines be communicated and charges levied immediately. Pending EC on the unit be realised by UPPCB immediately.	
6.	**M/s Rana Sugars Ltd. (Distillery Unit)**	1. The unit shall obtain renewal of NOC from CGWA for extraction of ground water.	1. The unit has obtained the NOC from UPGWD, annexed as **Anx.-20.**		

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	Khasra No.318-320, Manpur, Belwara, Distt-Moradabad, Uttar Pradesh-244925	2. The unit shall maintain records of Boiler ash and its disposal / utilization. 3. The unit shall install 2 nos piezo-wells near bio-compost yards; as per requirement of SOP for distilleries using molasses.	2. Complying. 3. Complying.		

River quality monitoring report:

The latest water quality of rivers are attached **as Annexure-21**.

Compliance status of the units :

All the units are complying with the directions given by joint committee and the oversight committee in the above matter.