BEFORE THE NATIONAL GREEN TRIBUNAL,

PRINCIPAL BENCH, AT NEW DELHI

ORIGINAL APPLICATION NO. 691 OF 2022

IN THE MATTER OF:-

RAMA SHANKER AWASTHI ….. APPLICANT(S)

VERSUS

STATE OF UTTAR PRADESH & ORS. …. RESPONDENT(S)

INDEX

	Directorate of Research C.S. Azad University of Agriculture & Technology, Kanpur-208002.	
5.	**ANNEXURE-R-4:** A true copy of the Compliance Letter dated 15.07.2024 submitted by Respondent No.6 in respect of its Maqsoodapur Unit to UPPCB enclosing Technical Report on Impact Assessment Study of Treated Water Utilisation on Agriculture Land and Technical Report on Ground Water Recharge Study carried out by Directorate of Research C.S. Azad University of Agriculture & Technology, Kanpur-208002.	**148-200**
6.	**ANNEXURE-R-5 (Colly):** A true copy of the Compliance Letter dated 16.07.2024 submitted by Respondent No.6 in respect of its Khamberkhera Unit to UPPCB enclosing Technical Report on Impact Assessment Study of Treated Water Utilisation on Agriculture Land and Technical Report on Ground Water Recharge Study carried out by Directorate of Research C.S. Azad University of Agriculture & Technology, Kanpur-208002.	**201-234**
7.	Proof of Service	**285**

FILED BY:-

Bhishm

[SANJEEV KUMAR SINGH, BHISHM PRATAP SINGH & SHIGHRA KUMAR]
(ADVOCATES FOR THE RESPONDENT NO.6)
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NEW DELHI
Dated:03.08.2024

BEFORE THE NATIONAL GREEN TRIBUNAL, PRINCIPAL BENCH AT NEW DELHI

ORIGINAL APPLICATION NO. 691 OF 2022

IN THE MATTER OF:

RAMA SHANKER AWASTHI .....APPLICANT(S)

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STATE OF UTTAR PRADESH & ORS. ....RESPONDENT(S)

AFFIDAVIT ON BEHALF OF THE RESPONDENT NO.6 M/S. BAJAJ HINDUSTHAN SUGAR LIMITED

I, Amit Kumar Pandey, S/o Suresh Pandey, aged about 44 years, having Regd. Office at: TC-13, Vibhuti Khand, Gomti Nagar, Lucknow-226010, Uttar Pradesh, presently at New Delhi, do hereby solemnly affirm and state as under:

1. That I am the authorized representative of the Respondent No. 6/Ms Bajaj Hindusthan Sugar Ltd. and I have been duly authorized to file the present affidavit.

2. That I am well conversant with the facts and records of the case and therefore, competent to swear this affidavit.

3. That vide order dated 13.02.2023, this Hon'ble Tribunal had recorded the recommendations of the Joint Committee Report where under, it was recommended that the Respondent had to carry out:

   A. Study for impact assessment of treated water utilisation on agriculture land and

   B. Study on the rate of ground water recharge through the pond adopted by them.

4. I state that the Respondent No.6 has accordingly submitted the two Reports with the UPPCB which are being placed on record as under:

SNO	DATE	UNIT	ANNEXURES
1	15.07.2024	Barkhera	ANNEXURE R-1

2	15.07.2024	Kunderkhi	ANNEXURE R-2
3	16.07.2024	Utraula	ANNEXURE R-3
4	15.07.2024	Maqsoodapur	ANNEXURE R-4
5	16.07.2024	Khamberkhera	ANNEXURE R-5

5. I state that the contents of this affidavit are true and correct.

6. I further state that the documents annexed with the present Affidavit are true copies of their respective originals.

DEPONENT

I identified the deponent who has signed in my presence

VERIFICATION: 03 AUG 2024

I, Amit Pandey, the deponent above named, do hereby verify declare that the contents of paras 1 to 6 of the above affidavit are true to my personal knowledge and that I have not suppressed any material facts.

Verified at New Delhi on this the day of August 2024.

DEPONENT

NOTARY
Debajyoti Bachria
Advocate
Regn. No. 19716
Period: 24/02/2020
to 24/02/2025
Central Delhi
GOVT. OF INDIA

CERTIFIED THAT THE DEPONENT
Sh/Smt./Km. Amit Kumar Pandey
S/o, W/o, D/o, Su Tesh Pandey
R/o.....
Identified by Sh/Smt. Sanjeev Kumar Adv
has Solemnly affirmed before me at
New Delhi on..... as Sl. No. 99 99
That the Contents of the affidavit which have
been read & explained to him are true and
correct to his knowledge.

Notary Public

03 AUG 2024

ANNEXURE-R-1

bajaj SUGAR

Ref. No.- BHSL/BRK/EHS/2024/ 517

Dated – 15.07.2024.

To,
The Regional Officer,
Uttar Pradesh Pollution Control Board
Rajendra Nagar, Bareilly (U.P.) PIN-243122

Sub: 1-Compliance status of order issued by Hon'ble NGT against OA No 691/2022 vide Dated 13.02.2023.

Ref: BHSL Letter Dated 20.04.2024 for Submission of Impact Assessment Study for treated water utilization on agriculture land & ground water recharge study through the ponds adopted.

Dear Sir,

With reference to above mentioned subject, we would like to apprise that following studies were carried out by Chandra Shekhar Azad University of Agriculture & Technology Kanpur.

- Impact Assessment Study for treated water utilization on agriculture land.
- Study of Ground Water Recharge study through the ponds adopted by the Unit – Barkhera Sugar.

As we have received the above-said study reports from the CS Azad University of Agriculture & Technology Kanpur, copy of the reports are enclosed herewith as **Annexure -1 & 2.**

Kindly acknowledge receipt of the above-said study reports.

Thanking you
Yours Faithfully
For Bajaj Hindusthan Sugar Ltd.,
Unit: **Barkhera Sugar**

(Authorized signatory)

Enclosure: As Above

Copy: The Chief Environmental Officer (Circle-7), UPPCB -Lucknow

Bajaj Hindusthan Sugar Ltd.
Unit : Barkhera Kalan, PO/Mt - Bisalpur Road, District - Pilibhit 262203, (U.P.)
Tel.: +91-5881-228811/10/14 | Fax : + 91-5881-228815
Regd. Office : Belagokarannath, Lakhimpur-Kheri, District Kheri, Uttar Pradesh - 262 802
Tel.: + 91-5876-233754/5/7/8, 233403 | Fax: +91-5876-233401
E-mail : investor.complaints@bajajhindusthan.com | Website : www.bajajhindusthan.com | CIN: L15420UP1931PLC065343

bajaj GROUP
THINK TOMORROW

Technical Report

On

IMPACT ASSESSMENT STUDY
OF
TREATED WATER UTILIZATION ON AGRICULTURE LAND

For

Bajaj Hindusthan Sugar Limited
Unit - Barkhera
District – Pilibhit, Uttar Pradesh

Carried out By

Directorate of Research
C. S. Azad University of Agriculture & Technology,
Kanpur – 208 002 (India)

Technical Report
on
Impact Assessment Study of Treated Water Utilization on Agriculture Land

Introduction:

Water is the most abundant natural resource in the world. The earth surface is covered 70 per cent by water and out of this the saline sea water is 97 per cent. But, the potable or drinking water is about 13 per cent of the residual which is 0.40 per cent of all the world water and the remaining is held either as ice and atmosphere.

The primary competing uses of water is typically agriculture followed by industry, domestic, recreational and more recently environmental preservation. Proper distribution of water among these sectors requires planning and management. Sustainability of water resources and an equitable distribution of available water drive much of this planning. Finding sustainable solutions for water stressed regions is an important focus of water resources planners. For sustainable water management to occur, the allocation of water must be socially fair for both current and future populations.

With the population growing at a higher rate, the need for increased food production is inevitable. Use of treated water in agriculture therefore, could be an important consideration when its disposal is properly planned. The quality of treated effluent will then become very important in terms of its performance to groundwater, soil and plant. For irrigation, the quality of effluent will depend on crops to be irrigated, the soil conditions and the system of effluent distribution adopted besides the output quality of crops grown.

Treated water has high potential for reuse in agriculture; an opportunity for increasing food and environmental security, avoiding direct pollution of rivers, canals, surface water; conserving water and nutrients, thereby reducing the need for chemical fertilizer. Among different sources of treated water, industrial treated water reuse is one of the momentous components of water reuse in agriculture as the source content are known and treatment is done by the industry.

The different socio-environmental and economical benefits resulting from water conservation and reuse included: (a) agriculture benefits such as value of a secure supply of treated water, increased farm production and value of treated water

nutrients, i.e. savings in fertilizer applications; (b) environmental water quality benefits such as reduction in freshwater diversions, reduction in pollutant discharges, reduction of the potential salinity intrusion risk in groundwater aquifers and improvement of the ecosystem and increase of the fauna and flora species and (c) increase of the quality of life of the population.

Under these circumstances, the present study was taken up with the following objectives namely:

1. To identifying the externalities of use of treated water from sugar plant in agriculture.
2. To assess the impact of treated water use in the agriculture in terms of crop productivity, soil fertility, socio economic and environmental factors.

Methodology:

The study entitled "Impact Assessment Study of Treated Water Utilization on Agriculture Land" was conducted during the month of March, 2024 by a team included representatives of the sugar plant. During the course of the study different kind of information *viz.*, soil conditions, farmers perceptions, technology adoption, development activities and farmers knowledge in regard to the treated water of the sugar plant were gathered. The approach used in gathering information included PRA tools and techniques, personal interviews, field visits, etc. In addition to above, the desired information were also gathered from different places like ETP, analytical laboratory, storage tank, water supply system, monitoring system etc.

Brief Description About Company:

Bajaj Hindusthan Sugar Limited (BHSL) was established on 24th November 1931, as 'Hindusthan Sugar Mills Limited.' Founded by the late Shri Jamnalal Bajaj, a respected businessman, freedom fighter, and close confidant of Mahatma Gandhi, the company's inception aimed to address a critical national mission-providing momentum to the industry, given that there were fewer than 30 sugar mills in the country at that time-and advancing inclusive growth. The chosen site for the first plant was in Gola Gokaran Nath in the Lakhimpur Kheri district in the Terai region of present-day Uttar Pradesh (UP). Positioned in an area abundant with sugarcane plantations, the original capacity of the plant was 400 tonnes of cane crushed per

day (TCD), which eventually increased to its current 13,000 TCD. The distillery unit of the plant began production in 1944. During World War II, the distillery primarily produced power alcohol, a commodity in short supply at the time. Notably, the unit became the first in the country to supply alcohol-mixed petrol to the army.In 1967, a new company, Sharda Sugar & Industries Limited, emerged as a subsidiary of Hindusthan Sugar Mills Limited. Under this subsidiary, a sugar plant with a cane crushing capacity of 1,400 TCD was established in 1972 at Palia Kalan, a major cane-supplying centre located 70 kilometres north of the Gola Gokaran Nath unit. The Palia Kalan unit's capacity was gradually increased to its current 11,000 TCD.

In 1988, Hindusthan Sugar Mills Limited underwent a name change, becoming Bajaj Hindusthan Sugar Limited (BHSL). Two years later, Sharda Sugar & Industries Limited was amalgamated with the company.

During the 2000s, BHSL initiated an ambitious greenfield expansion from 2003 to 2007, establishing eight plants across the state. This rapid expansion, starting with a plant at Kinauni near Meerut, was notably completed in just 7 months, contrasting with the industry norm of 18-24 months. The total cane crushing capacity of the company surged to 96,000 TCD.

In 2005, BHSL acquired Pratappur Sugar and Industries Limited (PSIL) in UP's Deoria district. Operating since 1903, it was Asia's oldest plant with a crushing capacity of 3,200 TCD. Post-acquisition, its capacity doubled to 6,000 TCD within a year.

PSIL was subsequently renamed Bajaj Hindusthan Sugar and Industries Limited (BHSIL) and made a subsidiary of BHSL. This acquisition provided BHSL with a strategic foothold in the sugar-deficient region of Eastern UP and reaffirmed the consolidation that took place in the sugar industry. By the end of 2007, the expansion drive not only enhanced BHSL's overall cane crushing capacity but also positioned the company as India's largest ethanol producer, generating 480 kiloliters per day (KLD).While enhancing the capacity of its existing sugar plant at Pratappur, the company concurrently established three additional sugar units in virgin, cane-rich areas of East UP at Rudauli (district: Basti), Kundarkhi (district: Gonda), and Utraula (district: Balrampur). This elevated BHSIL's total crushing capacity to 40,000 TCD. The commissioning of three Bagasse-based power co-generation plants at

Kundarkhi, Rudauli, and Utraula contributed to BHSIL's aggregate power generation capacity of 95.8 MW. Coupled with the power generation capacity of 325 MW from BHSL, the company's total generation capacity stands at 420.8 MW, surpassing its energy needs. Notably, the surplus 90 MW of energy is supplied to the UP state grid. In December 2010, the amalgamation of BHSIL with BHSL was completed. BHSL's growth initiative was strategically focused on achieving global manufacturing scale and cost competitiveness. Simultaneously, it created significant developmental opportunities in UP, a state eager for infrastructural growth, youth employment, and overall socioeconomic development in rural communities.

Today, BHSL holds a unique position, towering over local peers and ranking among the world's best in planning and processes. With the company impacting over 5 lakh farmers in UP, it directly contributes to the rural economy, bringing positive change to countless lives in UP and beyond across India.

Detail About the Unit:

The Bajaj Hindusthan Sugar Limited, Barkhera was established in 2006 in district Pilibhit of Uttar Pradesh. At present it is engaged in producing plantation white sugar. It has installed capacity of 10000 TCD and operating average crush is 7000TCD. The sugar production capacity is 1000 MT/day.

Entry gate of the Barkhera (Pilibhit) unit

Effluent Treatment Plant Description:

a) ETP Layout and Unit Capacity Details:

The details information is given in attached Annexure- 1.

ETP flow diagram

b) **ETP Process Description**:

Unit has installed state of art technology ETP for the treatment of effluent from various production processes. ETP is based on activated sludge process comprised with bar screen, oil & grease trap, equalization tank, primaryclarifier, aeration tank with air fine bubble diffuses ,secondary clarifier followed by sand filer and activated carbon filters at tertiary treatment stage .The system is designed to achieve the standard norms as notified by MOEF & CC Notification dated 14.01.2016. The sulphate removal system has also been installed and is being operated for the treatment of the cooling tower overflow which further treated in activated sludge process ETP with single outlet point.

c) **Details about Analytical Facility at Site:**

Barkhera Unit has an Environmental Laboratory well equipped with environmental monitoring and testing and different parameters like pH, BOD, COD, TSS, TDS, Sulphate etc are being tested.

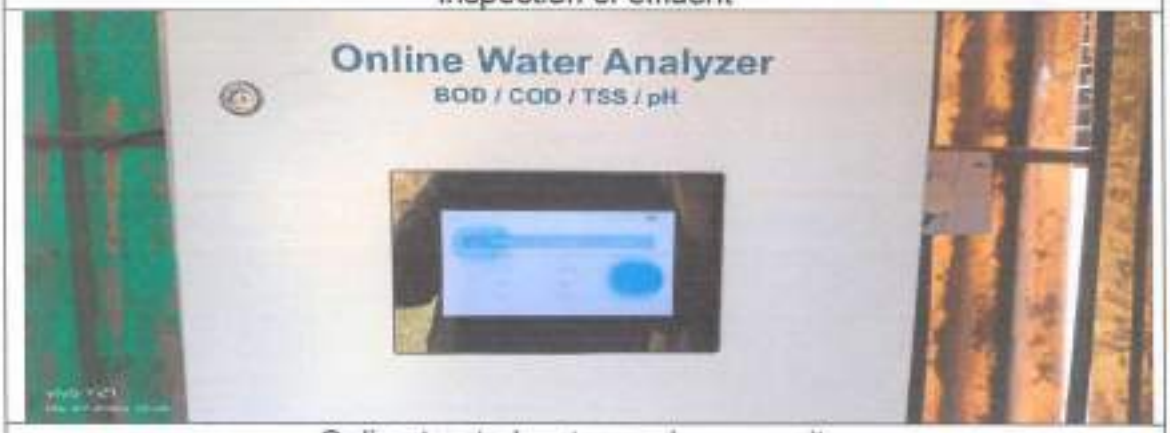
d) **Details about Manpower at Site to Monitor ETP & Irrigation Management Plan:**

At site, one EHS Head along with ETP chemist, one supervisor, six skilled operators and one helper are working for effective monitoring of ETP and Irrigation Management Plan.

e) **Details about Treated Water Storage Impervious Lagoon:**

The unit has constructed impervious lined storage tank with the **capacity of 9000 KL** for storage of treated effluent during low/no demand, based on the Irrigation Management Plan.

Inspection of effluent



Online treated water analyser monitor

f) **Details about Treated Water Transportation at Farmers Field**:

The Bajaj Hindusthan Sugar limited, Barkhera has Lagoon with a capacity of 9000 cubic meters and from here the treated water is being supplied to the field of farmers of targeted area through pumping set with the help of underground water supply system. The underground water supply system is made up from 4" size of HDPE pipes along with appropriate number of outlets at different location.

g) **Details about Treated Water Utilisation**:

The industrial treated effluent is being used in irrigation, in compliance with MOEF&CC notification 2016, as per irrigation management plan developed & approved by NSI, Kanpur. The treated domestic effluent is being utilized in

lawn, garden and other horticultural area. The flow meter is installed for the measurement of final treated water used for Irrigation Management Plan.

h) **Physio-Chemical Properties of Treated Effluent:**

The treated effluent is being tested by the unit regularly and analysis of these samples were analysed by NABL and MOEF & CC approved laboratory. The tested values of different parameters of treated effluent for the year of 2023-24 and 2022-23 (previous year) are given as below:

S. No.	Treated Effluent Particulars	Avg. value (2022-23)	Avg. value (2023-24)
1.	pH	7.72	7.60
2.	BOD (mg/l)	19.1	20.33
3.	COD (mg/l)	110	111.0
4.	TSS (mg/l)	19.7	22.13
5.	TDS (mg/l)	1440.16	1309

The analysis reports are attached as Annexure -2.

Farmers and Irrigation Areas:

The details information about village wise number of farmers and their covered area under irrigation is given as below:

S.No.	Name of Village	Total number of farmers covered	Land covered under Irrigation plan
1.	Bahadurpur Hukumi	20	14.52 Hectares
2.	Machua Khera	15	30.20 Hectares
3.	Gulra	57	73.92 Hectares
4.	Nakta Muradabad	80	76.47 Hectares
	Total	**172**	**195.11 Hectares**

The village wise list of the farmers is attached as Annexure-3.

Outlets of the water supply system

Agro-ecological Conditions of Operational Area:

As meeting the prescribed norms is not the only criterion for use of treated water in irrigation, the requirement of water for irrigation be a limiting condition and this depends upon various factors as mentioned below:

1. **Cropping Patters of Command Area:**

   At command area of M/s Bajaj Hindusthan Sugar Limited, Barkhera is 195.11 hectares cultivated area and sugar cane crop is grown as main cash crop. The cropping systems are as follows:

   (i) Wheat-Sugarcane (Plant)-Sugarcane (Ratoon)- 2 Years

   (ii) Mustard-Sugarcane (Plant)-Sugarcane (Ratoon)- 2 Years

   (iii) Paddy -Wheat-Sugarcane (Plant)-Sugarcane (Ratoon)- 2 Years

2. **Climate:**

   The command area has a humid subtropical, dry winter climate. The yearly temperature is 28.67°C (83.61°F) and it is 2.7% higher than India's averages. It typically receives about 122.88 millimeters (4.84 inches) of precipitation and has 103.45 rainy days (28.34% of the time) annually.

3. **Irrigation type:**

   The majority of the farmers are using flood irrigation method in command area.

4. **Soil Condition of Command Areas:**

   The command area having sandy loam and loam soils with moderate fertility. It is most suitable for paddy, wheat, sugarcane, Pulses etc.

Agreements with the Farmers:

The practice of agreements between sugar plant and farmers in regards to the use of treated water is being adopted. The details are attached as Annexure-4.


Interaction with beneficiaries farmers

Available of Treated Water for Irrigation and Command Area:

In command area, the treated effluent is available from the month of November to April depending upon the duration of crushing season. In Barkhera area, intensive agriculture is practiced by farmers wherein wheat is immediately sown after ratoon cane harvesting and land is not left vacant. This intensive agriculture requires continuous use of water. Under such type of practices, the treated effluent provided to the farmers is a big support for them as it is available on weekly rotation schedule to the farmers.

The total available area and others related information is as given below:

S. No.	Total available area (hectare)	Area available at 70 % land efficiency	Distance from unit (Km)	Mode of effluent supply
1.	135	94.50	Within 2.40 km	Underground 4" HDPE Pipeline
2.	60	42.0	Within 2.40 km	Underground 4" HDPE Pipeline
Total	**195**	**136.50**	-	-

Crop Grown and Soil Properties:

During the course of intensive study (field/on site visit), it was found that the crop of wheat and sugarcane is grown by majority of the farmers. The crop of the visited fields was in good conditions and farmers are happy with the performance of their crop.

Similar to treated effluent, the soil of the concerned farmers' fields is being tested by the sugar unit regularly. During onsite field visit, the soil samples were also collected from farmers' fields where irrigation is being applied/adopted through treated water and analysis of these samples was carried out by NABL and MOEF & CC approved laboratory. In addition, the previous soil testing reports were also available with the unit and farmers as well. The soil test values of different parameters for the year of 2023-24 (on site visit) and 2022-23 (previous year) are given as below:

S.No.	Soil Samples Particulars	Avg. value (2022-23)	Avg. value (2023-24)
1.	pH	7.80	7.23
2.	Salinity EC	465	264
3.	Sodium Absorption Ratio (SAR)	6.14	7.78
	Soil fertility rating		
4.	Organic Carbon (%by mass)	0.45	0.58
5.	Available Nitrogen (Kg/ha)	308	322
6.	Available Phosphorous (Kg/ha)	19.6	23.7
7.	Available Potash (as K) (mg/kg)	288	322

The data of the soil analysis revealed that the fertility status of the soil is good and heavy metals contents are also under limits, which indicated that there is no adverse effect of the treated effluent on soil of the farmers' field. The analysis reports are attached as Annexure -5.

Irrigation with treated water

Properties of the Ground Water of Borewells:

During onsite field visit, the water sample from borewells of the nearby beneficiary farmers was also collected where irrigation is being applied/adopted through treated water and analysis of the water sample was carried out by NABL and MOEF & CC approved laboratory. In addition, the previous water testing reports was also available with the sugar unit. The values of different physcio-chemical properties of the underground water of borewells for the year of 2023-24 (on site visit) and 2022-23 (previous year) are given as below:

S.No.	Ground Water Parameters	Unit	Avg. Value (2022-23)	Avg. Value (2023-24)
1.	*Escherichia coli*	-	Absent	Absent
2.	*Coliform bacteria*	-	Absent	Absent
3.	Colour	Hazen	<5.00	<5.00
4.	Odour	-	Agreeable	Agreeable
5.	Taste	-	Agreeable	Agreeable
6.	Turbidity	NTU	<1.00	<1.00
7.	pH Value	-	7.25	7.38
8.	TDS	Mg/l	466	420

9.	Aluminium	Mg/l	<0.01	<0.01
10.	Total Ammonia	Mg/l	<0.10	<0.10
11.	Anionic Detergents	Mg/l	<0.10	<0.10
12.	Barium	Mg/l	<0.10	<0.10
13.	Boron	Mg/l	<0.10	<0.10
14.	Calcium	Mg/l	52.16	56.80
15.	Chloramines	Mg/l	< 1.00	< 1.00
16.	Chloride	Mg/l	38.80	32.10
17.	Copper	Mg/l	<0.01	<0.01
18.	Fluoride	Mg/l	0.35	0.32
19.	Free Residual Chlorine	Mg/l	<0.10	<1.00
20.	Iron	Mg/l	0.176	0.154
21.	Magnesium	Mg/l	14.80	16.10
22.	Manganese	Mg/l	<0.01	<0.01
23.	Mineral Oil	Mg/l	<0.10	<0.10
24.	Nitrate	Mg/l	2.75	3.26
25.	Selenium	Mg/l	<0.01	<0.01
26.	Silver	Mg/l	<0.01	<0.01
27.	Sulphate	Mg/l	2.94	28.60
28.	Sulphide	Mg/l	<0.05	<0.05
29.	Alkalinity	Mg/l	192.0	186.0
30.	Total Hardness	Mg/l	186.0	172
31.	Zinc	Mg/l	0.154	0.140
32.	Cadmium	Mg/l	<0.001	<0.001

33.	Cyanide	Mg/l	<0.01	<0.01
34.	Lead	Mg/l	<0.01	<0.01
35.	Mercury	Mg/l	<0.001	<0.001
36.	Molybdenum	Mg/l	<0.01	<0.01
37.	Nickel	Mg/l	<0.05	<0.05
38.	Poly Nuclear Aromatic Hydro Carbons	Mg/l	<0.0001	<0.0001
39.	Poly Chlorinated biphenyl	Mg/l	<0.0001	<0.0001
40.	Total Arsenic	Mg/l	<0.01	<0.01
41.	Total Chromium	Mg/l	<0.05	<0.05

The data furnished in the above table are indicated that all the toxic substances in underground water are within the acceptable limits. The analysis reports are attached as Annexure- 6.

Farmers Reaction:

During the course of study (field/on site visit), the interactions were made with the beneficiaries farmers to know the impact of the treated water on their crop and soil as well. The farmers are using the treated water since last five-six years and growing various crops suitable for the region. The saving in the amount of chemical fertilizers, vigorous growth of the plants, more greenery of the plants, high yield, good soil health, reduction in cultivation cost and availability as and when required were the common opinion of the beneficiary farmers about the treated water.

Interaction with Mr. Suneel Kumar

Interaction with Mr. Ashok Kumar

Farmers Outreach Programmes:

To educate and trained to the farmers about use of treated water, the various farmers promotional programmes *viz.*, demonstration, kishan goshthi, group discussion and interaction are being organised by the sugar unit regularly.

Kishan goshthi

Group discussion with farmers

CONCLUSION:

Based on the above said findings of the study entitled "Impact Assessment Study of Treated Water Utilization on Agriculture Land", it can be concluded that ....

1. There is no adverse effect of treated water utilization on agriculture land in terms of crop productivity, soil fertility, socio economic status and environmental factors.

2. Hence, irrigation through treated water of the sugar plant can be continued without any hazardous effects. The proposed system shall be able to cope-up the requirement of the water for irrigation purposes through utilization of the generated effluent.

Dated: 11.05.2024

11/05/24

Dr. Rajiv
Scientist/ Team Leader
Directorate of Research
Chandra Shekhar Azad University of Agriculture & Technology,
Kanpur- 208 002, Uttar Pradesh, India

Annexure -1

Annexure -2

Annexure -3

Annexure -4

Annexure -5

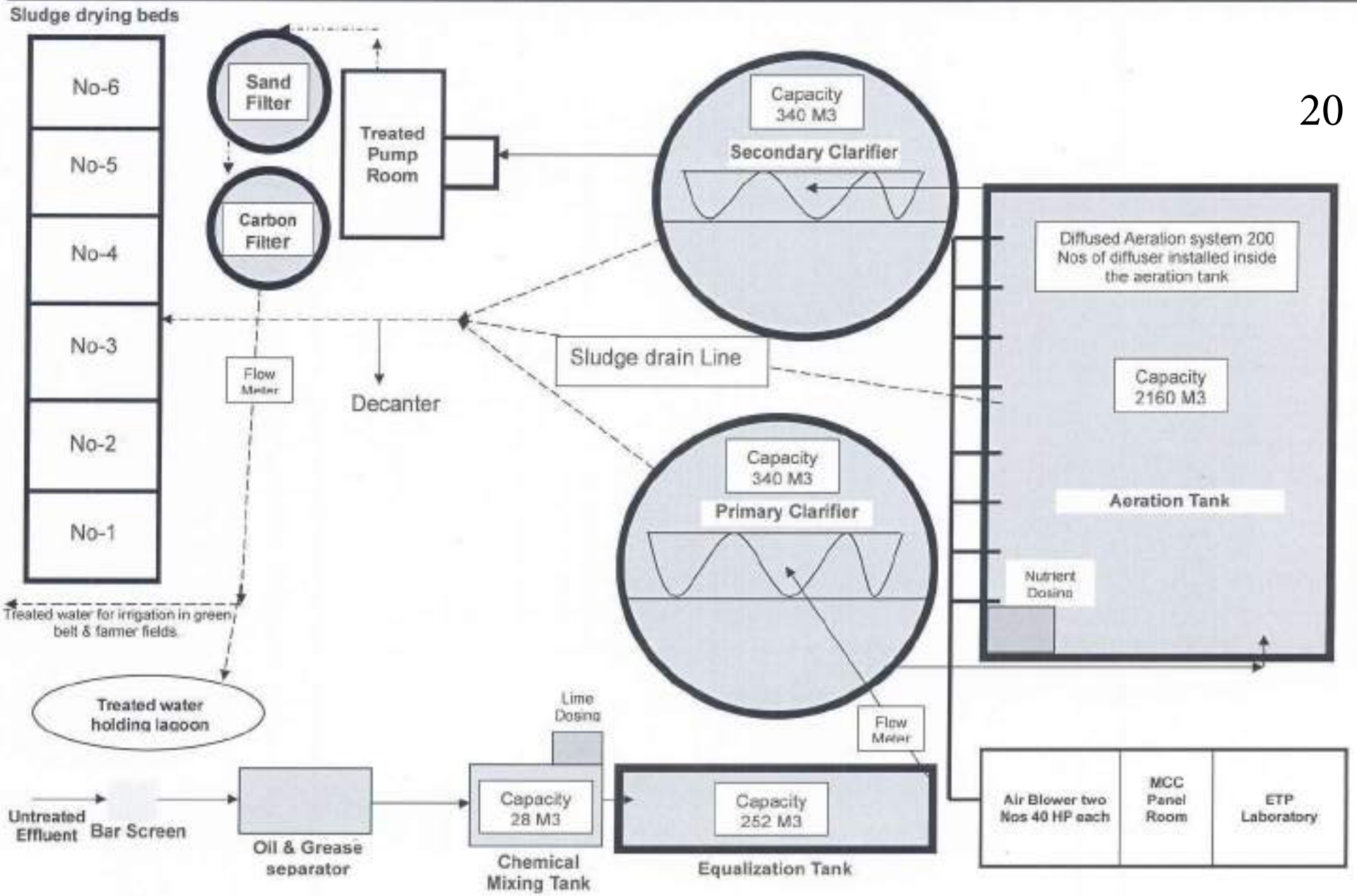
Annexure -6

Annexure -1

2776

ETP PROCESS FLOW DIAGRAM

BAJAJ HINDUSTHAN SUGAR LTD. UNIT-BARKHERA, PILIBHIT



Newcon Consultants & Laboratories

(GOVERNMENT APPROVED TESTING LABORATORIES)
An ISO 9001 : 2015, ISO 14001 : 2015, ISO 45001 : 2018 Certified Laboratory

TEST REPORT NO. NCL/ED-060/13/12/22 DATE OF REPORT : 20/12/2022 Page 1 of 1

EFFLUENT WATER ANALYSIS REPORT

Name and Address of Customer	M/S BAJAJ HINDUSTAN SUGAR LTD. VILLAGE- BARKHERA KALAN, PILIBHIT UTTAR PRADESH

SAMPLE DETAILS

Analysis Start Date	13/12/2022	Analysis End Date	20/12/2022
Date of Sampling	12/12/2022	Sample ID No.	NCL/ED-060/13/12/22
Time of Sampling	01:00 Hr		
Sampling Done By	NCL		
Sampling Location	ETP OUTLET		
Sampling Description	EFFLUENT WATER AFTER TREATMENT		
Sampling Protocol	IS:3025(Part-I)	Sampling Quantity	TWO Lt.
Packing Condition	SEALED	Packed in	GLASS BOTTLE

TEST RESULT

S.No.	Parameter	Unit	Protocol	Result	Standards (CPCB) (Max)	
					Inland Surface Water	Public Sewer
1	pH	-	APHA 4500 H+(B)	7.62	5.5-9.0	5.5-9.0
2	Total Dissolved Solids (TDS)	mg/L	APHA 2540 (C)	1340	2100	Not Specified
3	Total Solids	mg/L	APHA 2540	603.0	Not Specified	Not Specified
4	Total Suspended Solids (TSS)	mg/l	APHA 2540 (D)	21.0	30	600
5	Bio Chemical Oxygen Demand (3 days at 27°C)	mg/l	APHA-5210 (B)	19.0	30	350
6	Chemical Oxygen Demand (COD)	mg/l	APHA-5220 (B)	92.0	250	Not Specified
7	Oil & Grease	mg/l	APHA-5220	ND(DL-5.0)	10	20

****End Of Report****

FOR NEWCON CONSULTANTS & LABORATORIES

NEWCON CONSULTANTS & LABORATORIES GHAZIABAD

CHECKED BY

AUTHORIZED SIGNATORY

FORMAT No. NCL/QSP-28/TC-SET/FMT-01 Revision 01 Date:18/07/2011

Laboratory : A-1/156, Sector-17, (Swadeshi Compound) Kavi Nagar Industrial Area, GHAZIABAD - 201 002 (U.P.)
Mobile : 9810430345, 9205601788 | Website : www.newconlab.in
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ENVIRONMENT MANAGEMENT CENTRE

ENVIRONMENTAL TESTING & APPRAISAL LABORATORIES

(HOUSE OF POLLUTION MONITORING, ANALYSIS & CONSULTANCY SERVICES)

NABL ACCREDITED

NABL ACCREDITED, GOVT. APPROVED & ISO CERTIFIED LAB

WASTE WATER SAMPLE ANALYSIS REPORT

SAMPLING DETAILS

Test Report No: ET&A/WS/64721/23 Laboratory Sample Code : EMC/WS/64785/23 Work Order No.& Date : 64721/23 & 23.03.2023			Date: 31.03.2023
Name and Address of Customer	M/s Bajaj Hindusthan Sugar Ltd. Vill. Barkhera Kalan Pilibhit, Uttar Pradesh (India)		Order Reference : Through e-mail
Sample Description/Type	*Waste Water After Treatment(ETP OUTLET)*	Sample Collected & Provided by	Laboratory Representative
Sampling Location	Industrial premises	Sample Quantity / Packing	2 L x 1 No.PVC can 300 ml Sample for BOD
Date of Sampling	23.03.2023	Date of Receipt of Sample	24.03.2023
Sampling Procedure:	As per IS: 3025 (Part 1) 1987 Reaff. 2019		
Date of Start of Analysis	24.03.2023	Date of Completion of Analysis	31.03.2023
Production Capacity of Plant	7,500 TCD & 12 MW Power		

TEST RESULTS

Sl. No.	Test(s) Conducted	Unit	Test Results	Standards Effluents discharging in stream	Test Method (IS 3025)
1.	Total Dissolved Solids	mg/L	1520.316	Not specified	IS:3025(Part 16) 1984 Reaff.2017
2.	Total Suspended Solids	mg/l	18.40	30.0	IS: 3025(Part 17) 1984 Reaff.2021
3.	pH	-	7.82	5.5-9.5	IS: 3025(Part 11) 1983 Reaff.2021
4.	BOD	mg/l	19.20	30	IS: 3025(Part 44) 1993 Reaff.2019
5.	COD	mg/l	128.0	250	IS: 3025(Part 58) 2006 Reaff.2017
6.	Oil & Grease	mg/l	N.D	10	IS: 3025(Part 39) 1991 Reaff. 2019

N.D-Not Detected

Neha Seth
Checked by

E.M.C. E.T.&A.LAB ROORKEE

Authorized Signatory
Director
Environment Management Centre
Khasra No: 1102, Indl. Area
Salempur Rajputan, Roorkee

Remarks:

- The above results are related only to tests performed on the Sample. Endorsement of product is not implied.
- This report is not to be reproduced wholly or in part & can not be used as evidence in the court of law & should not be used in any advertising media without our special permission in writing.
- Sample will be destroyed after 15 days of reporting unless otherwise specified.
- Report refers to the Sample submitted to us and not drawn by ET&A Lab., unless mentioned otherwise.
- Result in parentheses is from subcontractor

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Industrial Area, Salempur Rajputan,
Roorkee - 247 667 (Uttarakhand)

ISO 9001:2015 ISO 14001:2015 ISO 45001:2018

NOIDA TESTING LABORATORIES
(A Government of India Approved Testing Laboratory)
(An ISO : 9001 : 2015, ISO 45001 : 2018 (OH&S) Certified & NABL Accredited Laboratory)
MoEF & CC (Ministry of Environment, Forest & Climate Change), UPPCB Recognized Laboratory
+91-9313611642, 8510081921, 7503031145, 8527870572, 7503031146, 9999794369

TEST CERTIFICATE

Issued To: M/s Bajaj Hindusthan Sugar Ltd.	Report Code : WW-201123-01
	ULR No. : TC6814230000018561 F
Address: Village-Barkhera, Pilibhit, Uttar Pradesh	Test Report of : Waste Water
	Service Request No : NTL/SRF/11/23-012
	Service Request Date : 18/11/2023
	Report Issue Date : 25/11/2023

SAMPLING & ANALYSIS DATA

Sample Drawn On	:	20/11/2023
Sample Drawn By	:	NTL Representative
Sample Description	:	ETP- Outlet
Sample Received On	:	20/11/2023
Sample Quantity/Packing detail	:	2 lt/Plastic Cane
Weather Conditions	:	Normal
Analysis Duration	:	20/11/2023 to 25/11/2023

TEST RESULTS

S.No	Parameter	Test Method	Results	Units	Limits as per CPCB Norms
1.	pH	IS:3025(Part-11):1983	7.62	-	5.5 - 9.0
2.	Total Dissolved Solid	IS:3025(Part-16):1984	1246.0	mg/l	----
3.	Total Suspended Solid	IS:3025(Part-17):1984	21.0	mg/l	100.0
4.	Chemical Oxygen Demand (as O_2)	APHA 5220 B:2005	110.0	mg/l	250.0
5.	Biological Oxygen Demand (as O_2) (3 days at 27°C)	IS:3025(Part-44):1993	18.0	mg/l	30.0
6.	Oil & Grease	IS:3025(Part-39)	BDL(<3.0)	mg/l	10.0

BDL-Below Detection limit

End of Report

Notes:

1. The results given above are related to the tested sample, as received & mentioned parameters. The customer asked for the above tests only.
2. Responsibility of the Laboratory is limited to the invoiced amount only.
3. This test report will not be generated again, either wholly or in part, without prior written permission of the laboratory.
4. The test samples will be disposed off after two weeks from the date of issue of test report, unless until specified by the customer.

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TEST CERTIFICATE

Issued To: M/s Bajaj Hindusthan Sugar Ltd. **Address:** Village Barkhera Kalan, Pilibhit, U.P. (India)	**Report Code** : WW-191223-014 **ULR No.** : TC6814230000019814 F **Test Report of** : Waste Water **Service Request No** : NTL/SRF/12/23-024 **Service Request Date** : 17/12/2023 **Report Issue Date** : 25/12/2023

SAMPLING & ANALYSIS DATA

Sample Drawn On	:	18/12/2023
Sample Drawn By	:	NTL Representative
Sample Description	:	ETP Outlet
Sample Received On	:	19/12/2023
Sample Quantity/Packing detail	:	2 lt/Plastic Cane
Weather Conditions	:	Normal
Analysis Duration	:	19/12/2023 to 25/12/2023

TEST RESULTS

S.No	Parameter	Test Method	Results	Units	Limits as per CPCB Norms
1.	pH	IS:3025(Part-11):1983	7.74	-	5.5 - 9.0
2.	Total Dissolved Solid	IS:3025(Part-16):1984	1280.0	mg/l	NS
3.	Total Suspended Solid	IS:3025(Part-17):1984	23.6	mg/l	100.0
4.	Total Solid	IS:3025(Part-17):1984	1304	mg/l	NS
5.	Chemical Oxygen Demand (as O_2)	APHA 5220 B:2005	98.0	mg/l	250.0
6.	Biological Oxygen Demand (as O_2) (3 days at 27°C)	IS:3025(Part-44):1993	20.0	mg/l	30.0
7.	Oil & grease	IS:3025(Part-19):1984	BDL (<1.0)	mg/l	10.0

BDL- Below Detection Limit

Notes:

1. The results given above are related to the tested sample, as received & mentioned parameters. The customer asked for the above tests only.
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4. The test samples will be disposed off after two weeks from the date of issue of test report, unless until specified by the customer.

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TEST CERTIFICATE

Issued To: M/s Bajaj Hindusthan Sugar Ltd. Address: Village Barkhera Kalan, Pilibhit, U.P. (India)	Report Code : WW-190124-024 ULR No. : TC681424000001071F Test Report of : Waste Water Service Request No : NTL/SRF/01/24-02 Service Request Date : 17/01/2024 Report Issue Date : 25/01/2024

SAMPLING & ANALYSIS DATA

Sample Drawn On	:	18/01/2024
Sample Drawn By	:	NTL Representative
Sample Description	:	ETP Outlet
Sample Received On	:	19/01/2024
Sample Quantity/Packing detail	:	2 lt/Plastic Cane
Weather Conditions	:	Normal
Analysis Duration	:	19/01/2024 to 25/01/2024

TEST RESULTS

S.No	Parameter	Test Method	Results	Units	Limits as per CPCB Norms
1.	pH	IS:3025(Part-11):1983	7.46	-	5.5 - 9.0
2.	Total Dissolved Solid	IS:3025(Part-16):1984	1402	mg/l	NS
3.	Total Suspended Solid	IS:3025(Part-17):1984	21.8	mg/l	100.0
4.	Chemical Oxygen Demand (as O_2)	APHA 5220 B:2005	125.0	mg/l	250.0
5.	Biological Oxygen Demand (as O_2) (3 days at 27°C)	IS:3025(Part-44):1993	23.0	mg/l	30.0
6.	Oil & grease	IS:3025(Part-19):1984	1.1	mg/l	10.0

Notes:

1. The results given above are related to the tested sample, as received & mentioned parameters. The customer asked for the above tests only.
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3. This test report will not be generated again, either wholly or in part, without prior written permission of the laboratory.
4. The test samples will be disposed off after two weeks from the date of issue of test report, unless until specified by the customer.

Arjaei
CHECKED BY

AUTHORIZED SIGNATORY

Laboratory : GT-20, Sector-117, Noida Gautam Budh Nagar - 201301
Branch Office : IP-2, Haridwar, Uttrakhand
Branch Office : Gayatri Nagar, Katgodam, Haldwani, Uttrakhand
E. : noida.laboratory@gmail.com, info@noidalabs.com **W.:** www. noidalabs.com

Bajaj Hindusthan Sugar Ltd, Barkhera (Pilibhit)

List of farmers using treated effluent water for irrigation purpose

S.No.	Name of farmer	Father/Husband Name	Village	Block & District	Area (Hectare)
1	Shri Krishna	Sundarlal	Bahadurpurhukumi	Barkhera, Pilibhit	0.55
2	Vedram	Sundarlal	Bahadurpurhukumi	Barkhera, Pilibhit	0.175
3	Buddhasen	Tikaram	Bahadurpurhukumi	Barkhera, Pilibhit	0.6
4	Sureshchand	Shankarlal	Bahadurpurhukumi	Barkhera, Pilibhit	0.85
5	Harishankar	Bhagwan Das	Bahadurpurhukumi	Barkhera, Pilibhit	0.8
6	Natthulal	Ram Prasad	Bahadurpurhukumi	Barkhera, Pilibhit	0.225
7	Jitendra Kumar	Chotelal	Bahadurpurhukumi	Barkhera, Pilibhit	1.8
8	Chokhelal	Natthulal	Bahadurpurhukumi	Barkhera, Pilibhit	0.75
9	Shivcharanlal	Mohanlal	Bahadurpurhukumi	Barkhera, Pilibhit	1.2
10	Hetram	Tulsiram	Bahadurpurhukumi	Barkhera, Pilibhit	0.6
11	Rampal	Lalaram	Bahadurpurhukumi	Barkhera, Pilibhit	0.2
12	Chattrapal	Lalaram	Bahadurpurhukumi	Barkhera, Pilibhit	0.2
13	Subodh Kumar	Anil Kumar	Bahadurpurhukumi	Barkhera, Pilibhit	2.15
14	Omprakash	Dodraj	Bahadurpurhukumi	Barkhera, Pilibhit	0.4
15	Summerlal	DwarikaPrasad	Bahadurpurhukumi	Barkhera, Pilibhit	0.64
16	Natthulal	Chunnilal	Bahadurpurhukumi	Barkhera, Pilibhit	0.5
17	Makhanlal	Chandrasen	Bahadurpurhukumi	Barkhera, Pilibhit	0.3
18	Laksman Prasad	Chandrasen	Bahadurpurhukumi	Barkhera, Pilibhit	0.3
19	Mewa Ram	DwarkaPrasad	Bahadurpurhukumi	Barkhera, Pilibhit	0.64
20	Buddha Prakash	Shyam Lal	Bahadurpurhukumi	Barkhera, Pilibhit	1.64
	TOTAL				14.52
21	Sohanlal	Jankiprasad	Machua khera	Barkhera, Pilibhit	4.130
22	Om prakash	Mohanlal	Machua khera	Barkhera, Pilibhit	3.655
23	Natthulal	Kesarilal	Machua khera	Barkhera, Pilibhit	2.612
24	Jagdayee	Siyaram	Machua khera	Barkhera, Pilibhit	2.228
25	Bhanu Prakash	Brijnandan Prasd	Machua khera	Barkhera, Pilibhit	1.928
26	Pyarelal	Devaki Nandan	Machua khera	Barkhera, Pilibhit	1.861
27	Ram chandra	Dwarika Prasad	Machua khera	Barkhera, Pilibhit	1.812
28	Raj Kumar	Jamuna Lal	Machua khera	Barkhera, Pilibhit	1.587
29	Tarachand	Devi Prasad	Machua khera	Barkhera, Pilibhit	1.494
30	Dinesh Kumar	Brijnandan Prasad	Machua khera	Barkhera, Pilibhit	1.389
31	Jamnaprasad	Devi Prasad	Machua khera	Barkhera, Pilibhit	1.290
32	Ramchandra	Gendan Lal	Machua khera	Barkhera, Pilibhit	1.250
33	Surendra Pal	Om prakash	Machua khera	Barkhera, Pilibhit	1.250
34	Sombati	Nanhelal	Machua khera	Barkhera, Pilibhit	1.247
35	Janki Prasad	Lalta Prasad	Machua khera	Barkhera, Pilibhit	2.473
	TOTAL				30.203
36	Suresh Chandra	Ramesh Chandra	Gulra	Barkhera, Pilibhit	2.076
37	Krishna Pal Singh	Vijay pal Singh	Gulra	Barkhera, Pilibhit	1.912
38	Sarvesh Kumar	Ramesh Chandra	Gulra	Barkhera, Pilibhit	1.682
39	Usha Mishra	Surendra Kumar	Gulra	Barkhera, Pilibhit	1.574
40	Hira kali	Dataram	Gulra	Barkhera, Pilibhit	1.439
41	Prabha Devi	Vinod Kumar	Gulra	Barkhera, Pilibhit	1.400

42	Naresh Chandra	Ramesh Chandra	Gulra	Barkhera, Pilibhit	1.400
43	Kamlesh Kumari	Brij Kishore	Gulra	Barkhera, Pilibhit	1.341
44	Virendra Kumar Mishra	Data Ram	Gulra	Barkhera, Pilibhit	1.300
45	SarvendrMishra	Data Ram	Gulra	Barkhera, Pilibhit	1.300
47	Sushma Devi	Sarvesh Kumar	Gulra	Barkhera, Pilibhit	2.007
48	Surya Prakash	Madan Lal	Gulra	Barkhera, Pilibhit	2.963
49	Ram Beti	Anand Kumar	Gulra		2.963
50	Ram Naresh	Natthu Lal	Gulra	Barkhera, Pilibhit	2.939
51	Surendra Kumar	Natthu Lal	Gulra	Barkhera, Pilibhit	2.870
52	Jagpal Singh	Vijay Pal Singh	Gulra	Barkhera, Pilibhit	2.823
53	Rajesndra Prasad	Rachunandan Prasad	Gulra	Barkhera, Pilibhit	2.812
54	Ram Bahadur	Raghunandan	Gulra	Barkhera, Pilibhit	2.812
55	Suresh Babu	Raghunandan	Gulra	Barkhera, Pilibhit	2.811
56	Chandra Prakash	Madan Lal	Gulra	Barkhera, Pilibhit	2.698
57	Milan Mishra	Rajendra Prasad	Gulra	Barkhera, Pilibhit	2.650
58	Manoj Kumar	Krishan pal Singh	Gulra	Barkhera, Pilibhit	2.592
59	Rajeev Kumar Singh	Krishan Pal Singh	Gulra	Barkhera, Pilibhit	2.592
60	Kusma Devi	Brij Madan Prasad	Gulra	Barkhera, Pilibhit	2.565
61	Sanjeev Kumar Singh	Krishan Pal Singh	Gulra	Barkhera, Pilibhit	2.564
62	Dharmendra Kumar	Krishan Kumar	Gulra	Barkhera, Pilibhit	2.564
63	Santosh Kumar Singh	Jagpal Singh	Gulra	Barkhera, Pilibhit	2.540
64	Shamsher Singh	Jagpal Singh	Gulra	Barkhera, Pilibhit	2.540
65	Munni Devi	Shivcharanlal	Gulra	Barkhera, Pilibhit	0.487
66	Lala Ram	Brijnandan	Gulra	Barkhera, Pilibhit	0.468
67	Pushpa Mishra	Rajendra Kumar Mishra	Gulra	Barkhera, Pilibhit	0.433
68	Akhilesh Kumar	Bramha Swarup	Gulra	Barkhera, Pilibhit	0.397
69	Ashok Kumar	Bhagwan das	Gulra	Barkhera, Pilibhit	0.335
70	Pavan Kumar	Bharhma Swarup	Gulra	Barkhera, Pilibhit	0.334
71	Prem Beti	Lala Ram	Gulra	Barkhera, Pilibhit	0.284
72	KhyaliCharan	Mangli Prasad	Gulra	Barkhera, Pilibhit	0.251
73	Lela Ram	Netram	Gulra	Barkhera, Pilibhit	0.247
74	Puttulal	Mani ram	Gulra	Barkhera, Pilibhit	0.244
75	Lalta Prasad	Narayan Lal	Gulra	Barkhera, Pilibhit	0.243
76	Kushma Rani	Bhramha Swarup	Gulra	Barkhera, Pilibhit	2.229
77	Pradeep Kumar	Bhramha Swarup	Gulra	Barkhera, Pilibhit	0.229
78	Ram Kumar	Bhagwan Das	Gulra	Barkhera, Pilibhit	0.159
79	Umesh Kumar	Brijnandan Prasad	Gulra	Barkhera, Pilibhit	0.158
80	Suraj Pal	Lalta Prasad	Gulra	Barkhera, Pilibhit	0.154
81	Laljit	Nanhulal	Gulra	Barkhera, Pilibhit	0.106
82	Siyaram	Nanhulal	Gulra	Barkhera, Pilibhit	0.106
83	Nitin	Surendra Pal	Gulra	Barkhera, Pilibhit	0.098
84	Sachin	Surendra Pal	Gulra	Barkhera, Pilibhit	0.098

85	Bipin Kumar	Surendra Kumar	Gulra	Barkhera, Pilibhit	0.093
86	Jagan Lal	Thakuri	Gulra	Barkhera, Pilibhit	0.071
87	Rajpal	Thakuri	Gulra	Barkhera, Pilibhit	0.071
88	Omprakash	Nathulal	Gulra	Barkhera, Pilibhit	0.065
89	Munish Kumar	Mangli Prasad	Gulra	Barkhera, Pilibhit	0.062
90	Srikrisan	Nathulal	Gulra	Barkhera, Pilibhit	0.049
91	Chaterpal	Nathulal	Gulra	Barkhera, Pilibhit	0.046
92	Srikrisan	Brijlal	Gulra	Barkhera, Pilibhit	0.026
93	Gaurav Mishra	Rajendra Kumar	Gulra	Barkhera, Pilibhit	2.650
	TOTAL				73.92
93	Dharam Pal	Khanjan Lal	Nakta Muradabad	Barkhera, Pilibhit	2.557
94	Madan Lal	Moolchand	Nakta Muradabad	Barkhera, Pilibhit	2.204
95	Bhoj Raj	Sundar Lal	Nakta Muradabad	Barkhera, Pilibhit	2.152
96	Nandram	Kanahilal	Nakta Muradabad	Barkhera, Pilibhit	2.151
97	Hari shankar	Radhey Shyam	Nakta Muradabad	Barkhera, Pilibhit	2.141
98	Shanti devi	Lochan Prasad	Nakta Muradabad	Barkhera, Pilibhit	1.716
99	Ram pal	Pooran lal	Nakta Muradabad	Barkhera, Pilibhit	1.533
100	Jhammanlal	Motiram	Nakta Muradabad	Barkhera, Pilibhit	1.413
101	BholaNath	Jisukh	Nakta Muradabad	Barkhera, Pilibhit	1.297
102	Vidyadevi	Pooran lal	Nakta Muradabad	Barkhera, Pilibhit	1.282
103	Mahendrapal	Pooranlal	Nakta Muradabad	Barkhera, Pilibhit	1.282
104	Ramesh Chandra	Chedalal	Nakta Muradabad	Barkhera, Pilibhit	1.249
105	Midhailal	Chedalal	Nakta Muradabad	Barkhera, Pilibhit	1.248
106	Kalawati	Dharam pal	Nakta Muradabad	Barkhera, Pilibhit	1.247
107	Yashpal Singh	Omkar	Nakta Muradabad	Barkhera, Pilibhit	1.242
108	Dhanpal	Omkar	Nakta Muradabad	Barkhera, Pilibhit	1.242
109	Jagdish	Totaram	Nakta Muradabad	Barkhera, Pilibhit	1.186
110	Shivratan	Totaram	Nakta Muradabad	Barkhera, Pilibhit	1.185
111	Shri Krishna	Baburam	Nakta Muradabad	Barkhera, Pilibhit	1.177
112	Khemkaran	Mungalal	Nakta Muradabad	Barkhera, Pilibhit	1.167
113	Jograj	Salik Ram	Nakta Muradabad	Barkhera, Pilibhit	1.138
114	Ramchandra	Bhimsen	Nakta Muradabad	Barkhera, Pilibhit	1.109
115	Sumerlal	Ramlal	Nakta Muradabad	Barkhera, Pilibhit	1.100
116	Tuliram	Kanhilal	Nakta Muradabad	Barkhera, Pilibhit	1.077
117	Gangaram	Liladhar	Nakta Muradabad	Barkhera, Pilibhit	1.077
118	Anjani Devi	Ram swaroop	Nakta Muradabad	Barkhera, Pilibhit	1.044
119	Lalkora	Dayashankar	Nakta Muradabad	Barkhera, Pilibhit	1.005
120	Bablu	Manohar lal	Nakta Muradabad	Barkhera, Pilibhit	0.978
121	Kamlesh Kumar	Manohar lal	Nakta Muradabad	Barkhera, Pilibhit	0.978
122	Ramlal	Gomid ram	Nakta Muradabad	Barkhera, Pilibhit	0.965
123	Pooran dei	Gokul Prasad	Nakta Muradabad	Barkhera, Pilibhit	0.959
124	Rishipal	Chetram	Nakta Muradabad	Barkhera, Pilibhit	0.953
125	Kuttulal	Girdharilal	Nakta Muradabad	Barkhera, Pilibhit	0.939
126	Pyarelal	Durgaprasad	Nakta Muradabad	Barkhera, Pilibhit	0.936
127	Rampal	Patiram	Nakta Muradabad	Barkhera, Pilibhit	0.934
128	Sombati	Lajja Prasad	Nakta Muradabad	Barkhera, Pilibhit	0.903
129	Hiralal	Khayali Ram	Nakta Muradabad	Barkhera, Pilibhit	0.876
130	Jasodadevi	Lalaram	Nakta Muradabad	Barkhera, Pilibhit	0.862
131	Anokhadevi	Shri krishna	Nakta Muradabad	Barkhera, Pilibhit	0.862

132	Hemadevi	Chotelal	Nakta Muradabad	Barkhera, Pilibhit	0.828
133	Ram dulare	Shyamlal	Nakta Muradabad	Barkhera, Pilibhit	0.810
134	Jagan Lal	Shyamlal	Nakta Muradabad	Barkhera, Pilibhit	0.810
135	Bhagwan Das	Sundarlal	Nakta Muradabad	Barkhera, Pilibhit	0.796
136	Kiraih	Jankiprasad	Nakta Muradabad	Barkhera, Pilibhit	0.793
137	Duli ram	Ramlal	Nakta Muradabad	Barkhera, Pilibhit	0.793
138	Rambeti	Madan lal	Nakta Muradabad	Barkhera, Pilibhit	0.770
139	Chavinath	Sundarlal	Nakta Muradabad	Barkhera, Pilibhit	0.764
140	Kamladevi	Tuli Ram	Nakta Muradabad	Barkhera, Pilibhit	0.746
141	Tuli ram	Mangli Prasad	Nakta Muradabad	Barkhera, Pilibhit	0.744
142	Hirakali	Ram Kumar	Nakta Muradabad	Barkhera, Pilibhit	0.742
143	Sompal	Tuttulal	Nakta Muradabad	Barkhera, Pilibhit	0.739
144	Chedalal	Dodram	Nakta Muradabad	Barkhera, Pilibhit	0.700
145	Satyapal	Tuttulal	Nakta Muradabad	Barkhera, Pilibhit	0.692
146	Patiram	Jagan Lal	Nakta Muradabad	Barkhera, Pilibhit	0.675
147	Lajja Prasad	Lalaram	Nakta Muradabad	Barkhera, Pilibhit	0.674
148	Madan Lal	Shri Krishna	Nakta Muradabad	Barkhera, Pilibhit	0.670
149	Ram kishor	Ram kumar	Nakta Muradabad	Barkhera, Pilibhit	0.661
150	Dal Chand	Vijayilal	Nakta Muradabad	Barkhera, Pilibhit	0.643
151	Chedalal	Joravar	Nakta Muradabad	Barkhera, Pilibhit	0.630
152	Anokhi Devi	Nandram	Nakta Muradabad	Barkhera, Pilibhit	0.627
153	Salik Ram	Biharilal	Nakta Muradabad	Barkhera, Pilibhit	0.624
154	Anokhelal	Biharilal	Nakta Muradabad	Barkhera, Pilibhit	0.624
155	Baburam	Tikaram	Nakta Muradabad	Barkhera, Pilibhit	0.620
156	Jam Vati	Rajpal	Nakta Muradabad	Barkhera, Pilibhit	0.618
157	Javitridevi	Jaganlal	Nakta Muradabad	Barkhera, Pilibhit	0.618
158	Om Prakash	Kundanlal	Nakta Muradabad	Barkhera, Pilibhit	0.614
159	Sumerlal	Mathura Prasad	Nakta Muradabad	Barkhera, Pilibhit	0.613
160	Bhimsen	Godhanlal	Nakta Muradabad	Barkhera, Pilibhit	0.602
161	Arvind	Dharampal	Nakta Muradabad	Barkhera, Pilibhit	0.597
162	Premadevi	Ramchandra	Nakta Muradabad	Barkhera, Pilibhit	0.595
163	Babu	Bhimsen	Nakta Muradabad	Barkhera, Pilibhit	0.594
164	Dinanath	Horilal	Nakta Muradabad	Barkhera, Pilibhit	0.584
165	Satyapal	Madanlal	Nakta Muradabad	Barkhera, Pilibhit	0.583
166	Devdutti	Madanlal	Nakta Muradabad	Barkhera, Pilibhit	0.582
167	Pushpendra Singh	Hari Shankar	Nakta Muradabad	Barkhera, Pilibhit	0.571
168	Takan Singh	Hari Shankar	Nakta Muradabad	Barkhera, Pilibhit	0.571
169	Champa Devi	Rampal	Nakta Muradabad	Barkhera, Pilibhit	0.563
170	Ramesh	Pooran	Nakta Muradabad	Barkhera, Pilibhit	0.524
171	Ganesh	Pooran	Nakta Muradabad	Barkhera, Pilibhit	0.554
172	Rani Devi	Bhimsen	Nakta Muradabad	Barkhera, Pilibhit	0.550
	TOTAL				76.47

सहमति पत्र

मै अर्जुन प्रसाद पुत्र श्री छोटे लाल गॉव मन्यवारेडा का निवासी हूँ। मेरी ..... हेक्टेयर जमीन बजाज हिन्दुस्थान शुगर लि0, बरखेड़ा के नजदीक है। मेरी जमीन में गन्ना एवं गेहूँ आदि फसलें होती है। मैं चीनी मिल के (ETP) प्लान्ट के ट्रीटेड वाटर (शोधित जल) को अपनी खेती में सिंचाई के लिये प्रयोग करना चाहता हूँ। मैं इस पानी के लाभ से भली–भाँति परिचित हूँ।

हस्ताक्षर कृषक अर्जुन

नाम कृषक अर्जुन प्रसाद

पिता का नाम छोटे लाल

गॉव मन्यवारेडा

सहमति पत्र

मै ओम प्रकाश पुत्र श्री मोहन लाल गॉव मन्यवारेडा का निवासी हूँ। मेरी ..... हेक्टेयर जमीन बजाज हिन्दुस्थान शुगर लि0, बरखेड़ा के नजदीक है। मेरी जमीन में गन्ना एवं गेहूँ आदि फसलें होती है। मैं चीनी मिल के (ETP) प्लान्ट के ट्रीटेड वाटर (शोधित जल) को अपनी खेती में सिंचाई के लिये प्रयोग करना चाहता हूँ। मैं इस पानी के लाभ से भली–भाँति परिचित हूँ।

हस्ताक्षर कृषक ओमप्रकाश

नाम कृषक ओमप्रकाश

पिता का नाम मोहन लाल

गॉव मन्यवारेडा

सहमति पत्र

मै सोहन लाल पुत्र श्री जानकी प्रसाद गॉव मन्नपारखेड़ा का निवासी हूँ। मेरी ..... हैक्टेयर जमीन बजाज हिन्दुस्थान शुगर लि0, बरखेड़ा के नजदीक है। मेरी जमीन में गन्ना एवं गेहूँ आदि फसलें होती है। मैं चीनी मिल के (ETP) प्लान्ट के ट्रीटेड वाटर (शोधित जल) को अपनी खेती में सिंचाई के लिये प्रयोग करना चाहता हूँ। मैं इस पानी के लाभ से भली–भाँति परिचित हूँ।

हस्ताक्षर कृषक सोहन लाल

नाम कृषक सोहन लाल

पिता का नाम जानकी प्रसाद

गॉव मन्नपारखेड़ा

सहमति पत्र

मै सोम वती पुत्र श्री मन्ने लाल गॉव मन्नपारखेड़ा का निवासी हूँ। मेरी ..... हैक्टेयर जमीन बजाज हिन्दुस्थान शुगर लि0, बरखेड़ा के नजदीक है। मेरी जमीन में गन्ना एवं गेहूँ आदि फसलें होती है। मैं चीनी मिल के (ETP) प्लान्ट के ट्रीटेड वाटर (शोधित जल) को अपनी खेती में सिंचाई के लिये प्रयोग करना चाहता हूँ। मैं इस पानी के लाभ से भली–भाँति परिचित हूँ।

हस्ताक्षर कृषक सोमवती

नाम कृषक सोमवती

पिता का नाम मन्ने लाल

गॉव मन्नपारखेड़ा

सहमति पत्र

मै नरेश कुमार पुत्र श्री जयंती प्रसाद गाँव मचपवारखेड़ा का निवासी हूँ। मेरी ..... हेक्टेयर जमीन बजाज हिन्दुस्थान शुगर लि0, बरखेड़ा के नजदीक है। मेरी जमीन में गन्ना एवं गेहूँ आदि फसलें होती है। मैं चीनी मिल के (ETP) प्लान्ट के ट्रीटेड वाटर (शोधित जल) को अपनी खेती में सिंचाई के लिये प्रयोग करना चाहता हूँ। मैं इस पानी के लाभ से भली–भाँति परिचित हूँ।

हस्ताक्षर कृषक नरेश कुमार

नाम कृषक नरेश कुमार

पिता का नाम जयंती प्रसाद

गाँव मचपवारखेड़ा

सहमति पत्र

मै महेन्द्र कुमार पुत्र श्री जयंती प्रसाद गाँव मचपवारखेड़ा का निवासी हूँ। मेरी ..... हेक्टेयर जमीन बजाज हिन्दुस्थान शुगर लि0, बरखेड़ा के नजदीक है। मेरी जमीन में गन्ना एवं गेहूँ आदि फसलें होती है। मैं चीनी मिल के (ETP) प्लान्ट के ट्रीटेड वाटर (शोधित जल) को अपनी खेती में सिंचाई के लिये प्रयोग करना चाहता हूँ। मैं इस पानी के लाभ से भली–भाँति परिचित हूँ।

हस्ताक्षर कृषक महेन्द्र कुमार

नाम कृषक महेन्द्र कुमार

पिता का नाम जयंती प्रसाद

गाँव मचपवारखेड़ा

सहमति पत्र

मै श्री कृष्ण पुत्र श्री सुन्दर लाल गॉव बहादुर पुर का निवासी हूँ। मेरी ..... हेक्टेयर जमीन बजाज हिन्दुस्थान शुगर लि0, बरखेड़ा के नजदीक है। मेरी जमीन में गन्ना एवं गेहूँ आदि फसलें होती है। मैं चीनी मिल के (ETP) प्लान्ट के ट्रीटेड वाटर (शोधित जल) को अपनी खेती में सिंचाई के लिये प्रयोग करना चाहता हूँ। मैं इस पानी के लाभ से भली–भॉति परिचित हूँ।

हस्ताक्षर कृषक श्री कृष्ण

नाम कृषक श्री कृष्ण

पिता का नाम सुन्दर लाल

गॉव बहादुर पुर

सहमति पत्र

मै शिवचरन पुत्र श्री मोहन लाल गॉव बहादुर पुर का निवासी हूँ। मेरी ..... हेक्टेयर जमीन बजाज हिन्दुस्थान शुगर लि0, बरखेड़ा के नजदीक है। मेरी जमीन में गन्ना एवं गेहूँ आदि फसलें होती है। मैं चीनी मिल के (ETP) प्लान्ट के ट्रीटेड वाटर (शोधित जल) को अपनी खेती में सिंचाई के लिये प्रयोग करना चाहता हूँ। मैं इस पानी के लाभ से भली–भॉति परिचित हूँ।

हस्ताक्षर कृषक शिवचरन

नाम कृषक शिवचरन

पिता का नाम मोहन लाल

गॉव बहादुर पुर

सहमति पत्र

मै ....सुनील कुमार.... पुत्र श्री ....शिव प्रसाद.... गॉव ....मचावारीड़ा का निवासी हूँ। मेरी ....2.... हेक्टेयर जमीन बजाज हिन्दुस्थान शुगर लि0, बरखेड़ा के नजदीक है। मेरी जमीन में गन्ना एवं गेहूँ आदि फसलें होती है। मैं चीनी मिल के (ETP) प्लान्ट के ट्रीटेड वाटर (शोधित जल) को अपनी खेती में सिंचाई के लिये प्रयोग करना चाहता हूँ। मैं इस पानी के लाभ से भली–भॉति परिचित हूँ।

हस्ताक्षर कृषक ....सुनील....

नाम कृषक ....सुनील कुमार....

पिता का नाम ....शिव प्रसाद....

गॉव ....मचावारीड़ा....

सहमति पत्र

मै ....सतेश कुमार.... पुत्र श्री ....नरायन लाल.... गॉव ....मचावारीड़ा का निवासी हूँ। मेरी ....1.... हेक्टेयर जमीन बजाज हिन्दुस्थान शुगर लि0, बरखेड़ा के नजदीक है। मेरी जमीन में गन्ना एवं गेहूँ आदि फसलें होती है। मैं चीनी मिल के (ETP) प्लान्ट के ट्रीटेड वाटर (शोधित जल) को अपनी खेती में सिंचाई के लिये प्रयोग करना चाहता हूँ। मैं इस पानी के लाभ से भली–भॉति परिचित हूँ।

हस्ताक्षर कृषक ....सतेश कुमार....

नाम कृषक ....सतेश कुमार....

पिता का नाम ....नरायन लाल....

गॉव ....मचावारीड़ा....

सहमति पत्र

मै राज कुमार पुत्र श्री कुंवर सेन गॉव मटावाखेड़ा का निवासी हूँ। मेरी 4 बीघा हेक्टेयर जमीन बजाज हिन्दुस्थान शुगर लि0, बरखेड़ा के नजदीक है। मेरी जमीन में गन्ना एवं गेहूँ आदि फसलें होती है। मैं चीनी मिल के (ETP) प्लान्ट के ट्रीटेड वाटर (शोधित जल) को अपनी खेती में सिंचाई के लिये प्रयोग करना चाहता हूँ। मै इस पानी के लाभ से भली–भॉति परिचित हूँ।

हस्ताक्षर कृषक राज कुमार

नाम कृषक राज कुमार

पिता का नाम कुंवर सेन

गॉव मटावाखेड़ा

सहमति पत्र

मै कमलेश कुमार पुत्र श्री सुरेश चन्द्र गॉव मटावाखेड़ा का निवासी हूँ। मेरी 3 बीघा हेक्टेयर जमीन बजाज हिन्दुस्थान शुगर लि0, बरखेड़ा के नजदीक है। मेरी जमीन में गन्ना एवं गेहूँ आदि फसलें होती है। मैं चीनी मिल के (ETP) प्लान्ट के ट्रीटेड वाटर (शोधित जल) को अपनी खेती में सिंचाई के लिये प्रयोग करना चाहता हूँ। मै इस पानी के लाभ से भली–भॉति परिचित हूँ।

हस्ताक्षर कृषक कमलेश

नाम कृषक कमलेश कुमार

पिता का नाम सुरेश चन्द्र

गॉव मटावाखेड़ा

सहमति पत्र

मै मदन लाल पुत्र श्री नन्हे लाल गाँव मचताखेड़ा का निवासी हूँ। मेरी 1 हेक्टेयर जमीन बजाज हिन्दुस्थान शुगर लि0, बरखेड़ा के नजदीक है। मेरी जमीन में गन्ना एवं गेहूँ आदि फसलें होती है। मैं चीनी मिल के (ETP) प्लान्ट के ट्रीटेड वाटर (शोधित जल) को अपनी खेती में सिंचाई के लिये प्रयोग करना चाहता हूँ। मैं इस पानी के लाभ से भली–भाँति परिचित हूँ।

हस्ताक्षर कृषक मदन लाल

नाम कृषक मदन लाल

पिता का नाम नन्हे लाल

गाँव मचताखेड़ा

सहमति पत्र

मै श्री कृष्ण पुत्र श्री पातीराम गाँव मचताखेड़ा का निवासी हूँ। मेरी 4 बीघा हेक्टेयर जमीन बजाज हिन्दुस्थान शुगर लि0, बरखेड़ा के नजदीक है। मेरी जमीन में गन्ना एवं गेहूँ आदि फसलें होती है। मैं चीनी मिल के (ETP) प्लान्ट के ट्रीटेड वाटर (शोधित जल) को अपनी खेती में सिंचाई के लिये प्रयोग करना चाहता हूँ। मैं इस पानी के लाभ से भली–भाँति परिचित हूँ।

हस्ताक्षर कृषक श्री कृष्ण

नाम कृषक श्री कृष्ण

पिता का नाम पातीराम

गाँव मचताखेड़ा

सहमति पत्र

मै ....सुरेन्द्र कुमार.... पुत्र श्री ....कमला शंकर.... गॉव ....मचावखेड़ा का निवासी हूँ। मेरी 2 बीघा हेक्टेयर जमीन बजाज हिन्दुस्थान शुगर लि0, बरखेड़ा के नजदीक है। मेरी जमीन में गन्ना एवं गेहूँ आदि फसलें होती है। मैं चीनी मिल के (ETP) प्लान्ट के ट्रीटेड वाटर (शोधित जल) को अपनी खेती में सिंचाई के लिये प्रयोग करना चाहता हूँ। मैं इस पानी के लाभ से भली–भाँति परिचित हूँ।

हस्ताक्षर कृषक ....सुरेन्द्र कुमार....

नाम कृषक ....सुरेन्द्र कुमार....

पिता का नाम ....कमला शंकर....

गॉव ....मचावखेड़ा....

सहमति पत्र

मै ....योगेश कुमार.... पुत्र श्री ....प्रेम राज.... गॉव ....मचावखेड़ा का निवासी हूँ। मेरी 2 बीघा हेक्टेयर जमीन बजाज हिन्दुस्थान शुगर लि0, बरखेड़ा के नजदीक है। मेरी जमीन में गन्ना एवं गेहूँ आदि फसलें होती है। मैं चीनी मिल के (ETP) प्लान्ट के ट्रीटेड वाटर (शोधित जल) को अपनी खेती में सिंचाई के लिये प्रयोग करना चाहता हूँ। मैं इस पानी के लाभ से भली–भाँति परिचित हूँ।

हस्ताक्षर कृषक ....योगेश कुमार....

नाम कृषक ....योगेश कुमार....

पिता का नाम ....प्रेम राज....

गॉव ....मचावखेड़ा....

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TEST CERTIFICATE

Issued To: M/s Bajaj Hindusthan Sugar Ltd. Address: Unit Barkhera ,Village Barkhera Kala Post Bisalpur Distt-Pillibhit 262201 UP) India	Report Code : SQ-191223-018 ULR :TC6814230000019818 F Test Report of : Soil Quality Service Request No : NTL/SRF/12/23-024 Service Request Date : 17/12/2023 Report Issue Date : 25/12/2023

Sampling & Analysis Data

Sample Drawn On : 18/12/2023
Sample Drawn By & Sealed By : NTL Representative
Sample Description : Soil Sample at 30 cm Depth from farmers field
Sample Received On : 19/12/2023
Sample Quantity : 2.0 Kg
Weather Conditions : Normal
Analysis Duration : 19/12/2023 to 25/12/2023

S.No.	PARAMETERS	RESULT	Classification of Soil		
1	Ph (1:2 suspension)	7.80	Neutral		
2	Salinity Electrical Conductivity @25°C (mmhos/cm)	465	Should be less 1000		
3	Sodium adsorption ratio meq/l	6.14	-		
4	Soil Fertility Ratings		Soil Fertility Ratings		
			Low	Medium	High
a	Organic Carbon (% by mass)	0.45	<0.5	0.5-0.75	>0.75
b	Available Nitrogen (Kg/ha)	308	<280	280-560	>560
c	Available Phosphorous (Kg/ha)	19.6	<10	10-24.6	>24.6
d	Available Potash (as K- Kg/ha)	288	<180	180-280	>280
5	Heavy Metals Analysis		Used Protocol	The Environmental Management (Soil, quality Standards) Regulation:2007 upper Limit (Max)	
a	Lead Content (as Pb) (mg/kg)	45.0	IS:11047:1998	200	
b	Arsenic (as As) (mg/Kg)	0.16	IS:11047:1998	1	
c	Cadmium (as Cd) (mg/Kg)	0.38	IS:11047:1998	1	
d	Manganese (as Mn) (mg/Kg)	121	IS:11047:1998	1800	
e	Mercury (as Hg) (mg/Kg)	<1.0	IS:167772:2004	2	
f	Nikel (as Ni) (mg/Kg)	24.0	IS:11047:1998	100	
g	Selenium as Se) (mg/Kg)	2.11	SW:846:7742	20	
h	Copper (as Cu) (mg/Kg)	28.2	IS:11047:1998	200	
i	Zinc (as Zn) (mg/Kg)	10.56	IS:11047:1998	150	
j	Molybdenum (as Mo) (mg/Kg)	<1.0	IS:11047:1998	5	

Conclusion- Based on above tested parameters, soil sample have good fertility value provided by department of Agriculture & Cooperation Ministry of Agriculture Government of India- New Delhi.

Notes:
1. The results given above are related to the tested sample, as received & mentioned parameters the customer asked for the above tests only.
2. Responsibility of the Laboratory is limited to the invoiced amount only.
3. This test report will not be generated again, either wholly or in part, without prior written permission of the laboratory.
4. The test samples will be disposed off after two weeks from the date of issue of test report, unless until specified by the customer.

Checked by :

Authorized Signatory

ITS TESTING LABORATORY PRIVATE LIMITED

Laboratory: A-114, Sector-80, Phase-II Noida, Gautam Budh Nagar - 201305, (U.P.)
(An ISO 9001: 2015, ISO 14001:2015 & ISO 45001:2018 Certified Laboratory)
Website: www.itslab.in, Email: itlrclab@gmail.com, info@itslab.in, contact@itslab.in
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SS-270324-11 (Page 1to 2)

Test Report of	Report Code	Date of Issue
Soil Sample	SS-270324-11	02/04/2024

Issued to: M/S. BAJAJ HINDUSTHAN SUGAR LIMITED
UNIT-BARKHERA, VILLAGE-BARKHERA KALA, POST-BISALPUR, DISTT-PILLIBHIT-262201 (U.P) INDIA

Sampling & Analysis Data

Sample Description	Soil Sample Collected at 30cm depth from Farmer Field.
Sample Drawn & Sealed by	ITS Representative Mr. Amit Sharma & Dr. Rajeev Chandra Sekhar Azzad University of Agricultural & Technology, Kanpur
Date of Sample Received	27/03/2024
Purpose of sampling	Crop Cultivation (Agricultural Purpose)
Protocol Used for Testing	IS:2720, IS:14767& Department of agriculture & Cooperation ministry of agriculture government of india-New Delhi.
Analysis Duration	27/03/2024 to 02/04/2024

ANALYSIS TEST RESULT

S.No.	PARAMETERTS	RESULT	Classification of Soil		
1.	pH (1:2 suspension)	7.23	Neutral		
2.	Salinity Electrical Conductivity @25°C (mmhos/cm)	264	Should be less 1000		
3.	Soil Fertility Ratings		Soil Fertility Ratings		
			Low	Medium	High
a.	Organic Carbon (% by mass)	0.58	<0.5	0.5-0.75	>0.75
b.	Available Nitrogen (Kg/ha)	322	<280	280-560	>560
c.	Available Phosphorous (Kg/ha)	23.7	<10	10-24.6	>24.6
d.	Available Potash (as K) (Kg/ha)	322	<180	108-280	>280

V.Vk

ITS TESTING LABORATORY PRIVATE LIMITED

Laboratory: A-114, Sector-80, Phase-II Noida, Gautam Budh Nagar - 201305, (U.P.)
(An ISO 9001: 2015, ISO 14001:2015 & ISO 45001:2018 Certified Laboratory)
Website: www.itslab.in, Email: itlrclab@gmail.com, info@itslab.in, contact@itslab.in
+91 9911659800, 9305780312, 09953849784

S.No.	PARAMETERTS	RESULT	Protocol Used	The Environmental Management (Soil, quality Standards) Regulation:2007 Upper Limit (max)
1.	Lead Content (as Pb) (mg/kg)	45.0	IS:11047:1998	200
2.	Arsenic (as As) (mg/kg)	0.13	IS:11047:1998	1
3.	Cadmium (as Cd) (mg/kg)	0.54	IS:11047:1998	1
4.	Manganese (as Mn)(mg/kg)	103	IS:11047:1998	1800
5.	Mercury (as Hg)(mg/kg)	<1.0	IS:167772:2004	2
6.	Nickel (as Ni)(mg/kg)	17.9	IS:11047:1998	100
7.	Selenium (as Se) (mg/kg)	1.76	SW-846:7742	20
8.	Copper (as Cu)(mg/kg)	28.0	IS:11047:1998	200
9.	Zinc (as Zn) (mg/kg)	86.0	IS:11047:1998	150
10.	Molybdenum (as Mo)(mg/kg)	<1.0	IS:11047:1998	5
11.	Sodium Absorption Ratio (SAR)	7.78	By Calculation	---

SS-270324-11 (Page 1 to 2)

Conclusion- Based on above tested parameters, soil sample have good fertility value provided by Department of Agriculture & Cooperation Ministry of Agriculture Government of India-New Delhi.

Checked by

Authorized Signatory

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TEST CERTIFICATE

Issued To: M/s Bajaj Hindusthan Sugar Ltd.	
Address: Village Barkhera Kalan, Pilibhit, U.P. (India)	

Report Code	: W-230223-011
ULR No.	: TC681423000002160F
Test Report of	: Water
Service Request No	: NTL/SRF/02/23-014
Service Request Date	: 21/02/2023
Report Issue Date	: 28/02/2023

Sampling & Analysis Duration

Sample Drawn By	:	Mr. Varun (NTL Representative)
Sample Drawn On	:	22/02/2023
Sample Received On	:	23/02/2023
Sample Quantity	:	2.0 Lt. + 500 ml.
Analysis Duration	:	23/02/2023 to 28/02/2023
Sampling Location	:	Bahadurpur Village Farmer Field
Sample Description	:	Ground Water

MICROBIOLOGICAL REQUIREMENT RESULT

S.No.	Parameter	Test Method	Results	Requirements as per IS-10500:2012
1.	*Escherichia coli*	IS-15185	Absent	Absent/100ml
2.	*Coliform Bacteria*	IS-15185	Absent	Absent/100ml

ORGANOLEPTIC & PHYSICAL PARAMETERS

S.No.	Parameter	Test Method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1.	Colour	IS-3025(P-04)	<5.0	Hazen Unit	5	15
2.	Odour	IS-3025(P-05)	Agreeable	-	Agreeable	Agreeable
3.	Taste	IS-3025(P-07 & 08)	Agreeable	-	Agreeable	-
4.	Turbidity	IS-3025(P-10)	<1.0	NTU	1	5
5.	pH value	IS-3025(P-11)	7.25	-	6.5 - 8.5	-
6.	Total dissolve solid (TDS)	IS-3025(P-16)	465.0	mg/l	500	2000

GENERAL PARAMETERS CONCERNING SUBSTANCES UNDESIRABLE IN EXCESSIVE AMOUNTS

S.No.	Parameter	Test method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1.	Aluminum (as Al)	IS: 3025 (P- 55)	BDL(DL-0.01)	mg/l	0.03	0.2

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2.	Total Ammonia	IS: 3025 (P- 34)	BDL(DL-0.1)	mg/l	0.5	No Relaxation
3.	Anionic Detergents (as MBAS)	Annex K of IS-13428	BDL(DL-0.1)	mg/l	0.2	1.0
4.	Barium (as Ba)	IS: 15302	BDL(DL-0.1)	mg/l	0.7	No Relaxation
5.	Boron (as B)	IS: 3025 (P- 57)	BDL(DL-0.1)	mg/l	0.5	2.4
6.	Calcium (as Ca)	IS: 3025 (P- 40)	52.16	mg/l	75	200
7.	Chloramines (as Cl_2)	IS: 3025 (P- 26)	BDL(DL-1.0)	mg/l	4.0	No Relaxation
8.	Chloride (as Cl)	IS: 3025 (P- 32)	38.80	mg/l	250	1000
9.	Copper (as Cu)	IS : 3025 (P-42)	BDL(DL-0.01)	mg/l	0.05	1.5
10.	Fluoride (as F)	IS: 3025 (P-60)	0.35	mg/l	1.0	1.5
11.	Free Residual Chlorine	IS: 3025 (P-26)	BDL(DL-1.0)	mg/l	0.2	1.0
12.	Iron (as Fe)	IS: 3025(P-53)	0.176	mg/l	1.0	No Relaxation
13.	Magnesium (as Mg)	IS: 3025 (P-46)	14.80	mg/l	30	100
14.	Manganese (as Mn)	IS: 3025 (P-59)	BDL(DL-0.01)	mg/l	0.1	0.3
15.	Mineral Oil	Clause 6 of IS: 3025	BDL(DL-0.1)	mg/l	0.5	No Relaxation
16.	Nitrate (as NO_3)	IS: 3025 (P- 34)	2.75	mg/l	45	No Relaxation
17.	Selenium (as Se)	IS: 3025 (P- 56)	BDL(DL-0.01)	mg/l	0.01	No Relaxation
18.	Silver (as Ag)	Annex J IS: 13428	BDL(DL-0.01)	mg/l	0.1	No Relaxation
19.	Sulphate (as SO_4)	IS: 3025 (P- 24)	2.94	mg/l	200	400
20.	Sulphide(as H_2S)	IS-3025 (P-29)	BDL(DL-0.05)	mg/l	0.05	No Relaxation
21.	Alkalinity (as Ca CO_3)	IS: 3025 (P- 23)	192.0	mg/l	200	600
22.	Total Hardness (as $CaCO_3$)	IS: 3025 (P- 21)	186.0	mg/l	200	600
23.	Zinc (as Zn)	IS: 3025 (P- 49)	0.154	mg/l	5.0	15

Parameters Concerning Toxic Substances:

S.No.	Parameter	Test method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1.	Cadmium (as Cd)	IS-3025(P-41)	BDL(DL-0.001)	mg/l	0.003	No Relaxation
2.	Cyanide (as CN)	IS-3025(P-27)	BDL(DL-0.01)	mg/l	0.05	No Relaxation
3.	Lead (as Pb)	IS-3025(P-47)	BDL(DL-0.01)	mg/l	0.01	No Relaxation
4.	Mercury (as Hg)	IS-3025(P-48)	BDL(DL-0.001)	mg/l	0.001	No Relaxation
5.	Molybdenum (Mo)	IS-3025(P-2)	BDL(DL-0.01)	mg/l	0.07	No Relaxation
6.	Nickel (as Ni)	IS-3025(P-54)	BDL(DL-0.05)	mg/l	0.02	No Relaxation
7.	Poly nuclear Aromatic Hydro Carbons	APHA 6440	BDL(DL-0.0001)	mg/l	0.0001	No Relaxation
8	Poly chlorinated biphenyl	APHA 6630	BDL(DL-0.0001)	mg/l	0.0005	No Relaxation
9.	Total Arsenic (as As)	IS-3025(P-37)	BDL(DL-0.010)	mg/l	0.01	No Relaxation
10.	Total Chromium (as Cr)	IS-3025(P-52)	BDL(DL-0.05)	mg/l	0.05	No Relaxation

BDL: Below Detection limit.

Notes:

1. The results given above are related to the tested sample, as received & mentioned parameters. The customer asked for the above tests only.
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TEST CERTIFICATE

Issued To: M/s Bajaj Hindusthan Sugar Ltd.	
Address: Village Barkhera Kalaa, Pilibhit, U.P. (India)	

Report Code	: W-280324-025
ULR No.	: TC681424000003216F
Test Report of	: Water
Service Request No	: NTL/SRF/01/24-05
Service Request Date	: 26/03/2024
Report Issue Date	: 03/04/2024

Sampling & Analysis Duration

Sample Collected By	:	NTL Representative
Sample Drawn On	:	27/03/2024
Sample Drawn & sealed by	:	Dr. Rajiv (Chandra Shekhar Azad University of Agriculture & Technology, Kanpur & NTL Representative)
Sample Received On	:	28/03/2024
Sample Quantity	:	2.0 Lt. + 500 ml.
Analysis Duration	:	28/03/2024 to 03/04/2024
Sampling Location	:	Bahadurpur Village Farmer Field
Sample Description	:	Ground Water

MICROBIOLOGICAL REQUIREMENT RESULT

S.No.	Parameter	Test Method	Results	Requirements as per IS-10500:2012
1.	*Escherichia coli*	IS-15185	Absent	Absent/100ml
2.	*Coliform Bacteria*	IS-15185	Absent	Absent/100ml

ORGANOLEPTIC & PHYSICAL PARAMETERS

S.No.	Parameter	Test Method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1.	Colour	IS-3025(P-04)	<5.0	Hazen Unit	5	15
2.	Odour	IS-3025(P-05)	Agreeable	-	Agreeable	Agreeable
3.	Taste	IS-3025(P-07 & 08)	Agreeable	-	Agreeable	-
4.	Turbidity	IS-3025(P-10)	<1.0	NTU	1	5
5.	pH value	IS-3025(P-11)	7.38	-	6.5 - 8.5	-
6.	Total dissolve solid (TDS)	IS-3025(P-16)	420.0	mg/l	500	2000

GENERAL PARAMETERS CONCERNING SUBSTANCES UNDESIRABLE IN EXCESSIVE AMOUNTS

S.No.	Parameter	Test method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1.	Aluminum (as Al)	IS: 3025 (P- 55)	BDL(DL-0.01)	mg/l	0.03	0.2

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TEST CERTIFICATE

2.	Total Ammonia	IS: 3025 (P-34)	BDL(DL-0.1)	mg/l	0.5	No Relaxation
3.	Anionic Detergents (as MBAS)	Annex K of IS-13428	BDL(DL-0.1)	mg/l	0.2	1.0
4.	Barium (as Ba)	IS: 15302	BDL(DL-0.1)	mg/l	0.7	No Relaxation
5.	Boron (as B)	IS: 3025 (P-57)	BDL(DL-0.1)	mg/l	0.5	2.4
6.	Calcium (as Ca)	IS: 3025 (P-40)	56.80	mg/l	75	200
7.	Chloramines (as Cl_2)	IS: 3025 (P-26)	BDL(DL-1.0)	mg/l	4.0	No Relaxation
8.	Chloride (as Cl)	IS: 3025 (P-32)	32.10	mg/l	250	1000
9.	Copper (as Cu)	IS : 3025 (P-42)	BDL(DL-0.01)	mg/l	0.05	1.5
10.	Fluoride (as F)	IS: 3025 (P-60)	0.32	mg/l	1.0	1.5
11.	Free Residual Chlorine	IS: 3025 (P-26)	BDL(DL-1.0)	mg/l	0.2	1.0
12.	Iron (as Fe)	IS: 3025(P-53)	0.154	mg/l	1.0	No Relaxation
13.	Magnesium (as Mg)	IS: 3025 (P-46)	16.10	mg/l	30	100
14.	Manganese (as Mn)	IS: 3025 (P-59)	BDL(DL-0.01)	mg/l	0.1	0.3
15.	Mineral Oil	Clause 6 of IS: 3025	BDL(DL-0.1)	mg/l	0.5	No Relaxation
16.	Nitrate (as NO_3)	IS: 3025 (P-34)	3.26	mg/l	45	No Relaxation
17.	Selenium (as Se)	IS: 3025 (P-56)	BDL(DL-0.01)	mg/l	0.01	No Relaxation
18.	Silver (as Ag)	Annex J IS: 13428	BDL(DL-0.01)	mg/l	0.1	No Relaxation
19.	Sulphate (as SO_4)	IS: 3025 (P-24)	28.60	mg/l	200	400
20.	Sulphide(as H_2S)	IS-3025 (P-29)	BDL(DL-0.05)	mg/l	0.05	No Relaxation
21.	Alkalinity (as Ca CO_3)	IS: 3025 (P-23)	186.0	mg/l	200	600
22.	Total Hardness (as $CaCO_3$)	IS: 3025 (P-21)	172.0	mg/l	200	600
23.	Zinc (as Zn)	IS: 3025 (P-49)	0.140	mg/l	5.0	15

Parameters Concerning Toxic Substances:

S.No.	Parameter	Test method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1	Cadmium (as Cd)	IS-3025(P-41)	BDL(DL-0.001)	mg/l	0.003	No Relaxation
2.	Cyanide (as CN)	IS-3025(P-27)	BDL(DL-0.01)	mg/l	0.05	No Relaxation
3.	Lead (as Pb)	IS-3025(P-47)	BDL(DL-0.01)	mg/l	0.01	No Relaxation
4.	Mercury (as Hg)	IS-3025(P-48)	BDL(DL-0.001)	mg/l	0.001	No Relaxation
5.	Molybdenum (Mo)	IS-3025(P-2)	BDL(DL-0.01)	mg/l	0.07	No Relaxation
6.	Nickel (as Ni)	IS-3025(P-54)	BDL(DL-0.05)	mg/l	0.02	No Relaxation
7.	Poly nuclear Aromatic Hydro Carbons	APHA 6440	BDL(DL-0.0001)	mg/l	0.0001	No Relaxation
8	Poly chlorinated biphenyl	APHA 6630	BDL(DL-0.0001)	mg/l	0.0005	No Relaxation
9.	Total Arsenic (as As)	IS-3025(P-37)	BDL(DL-0.010)	mg/l	0.01	No Relaxation
10.	Total Chromium (as Cr)	IS-3025(P-52)	BDL(DL-0.05)	mg/l	0.05	No Relaxation

BDL: Below Detection limit.

Notes:

1. The results given above are related to the tested sample, as received & mentioned parameters. The customer asked for the above tests only.
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Technical Report

On

GROUND WATER RECHARGE STUDY

For

Bajaj Hindusthan Sugar Limited
Unit - Barkhera
District – Pilibhit, Uttar Pradesh

Carried out By

Directorate of Research
C. S. Azad University of Agriculture & Technology,
Kanpur – 208 002 (India)

Technical Report
on
Ground Water Recharge Study

Introduction:

Artificial recharge of groundwater is accomplished through placing surface water in basins, furrows, ditches, or different centres wherein it infiltrates into the soil and actions downward to recharge aquifers. Synthetic recharge is an increasing number of used for short- or lengthy-term underground garage, where it has several blessings over floor storage, and in water reuse. Artificial recharge requires permeable surface soils. In which these are not available, trenches or shafts in the unsaturated sector can be used, or water can be at once injected into aquifers via wells. To design a machine for artificial recharge of groundwater, infiltration rates of the soil have to be determined and the unsaturated area among land floor and the aquifer ought to be checked for good enough permeability and lack of polluted regions.

The artificial recharge to ground water aims at augmentation of ground water reservoir by modifying the natural movement of surface water utilizing suitable civil construction techniques. Artificial recharge is the process by which the ground water is augmented at a rate much higher than those under natural condition of percolation. In most low rainfall areas of the country the availability of utilizable surface water is so low that people have to depend largely on ground water for agriculture and domestic use. So in order to improve the ground water situation it is necessary to artificially recharge the depleted ground water aquifers.

Under these circumstances, the present study was taken up with the following objectives namely:

1. To analyze the working of artificial recharge of ground water.
2. To determine the amount of water that would be available from a given catchments and the size of storages.

Methodology:

The study entitled "Ground Water Recharge Study" was conducted during the month of March, 2024 by a team included representatives of the sugar plant. During the course of the study different kind of information were gathered. The appropriate

tools and techniques were used in gathering information. In addition to above, the desired information was also gathered from different places/points.

Brief Description About Company:

Bajaj Hindusthan Sugar Limited (BHSL) was established on 24th November 1931, as 'Hindusthan Sugar Mills Limited' Founded by the late Shri Jamnalal Bajaj, a respected businessman, freedom fighter, and close confidant of Mahatma Gandhi, the company's inception aimed to address a critical national mission-providing momentum to the industry, given that there were fewer than 30 sugar mills in the country at that time-and advancing inclusive growth. The chosen site for the first plant was in Gola Gokaran Nath in the Lakhimpur Kheri district in the Terai region of present-day Uttar Pradesh (UP). Positioned in an area abundant with sugarcane plantations, the original capacity of the plant was 400 tonnes of cane crushed per day (TCD), which eventually increased to its current 13,000 TCD. The distillery unit of the plant began production in 1944. During World War II, the distillery primarily produced power alcohol, a commodity in short supply at the time. Notably, the unit became the first in the country to supply alcohol-mixed petrol to the army.In 1967, a new company, Sharda Sugar & Industries Limited, emerged as a subsidiary of Hindusthan Sugar Mills Limited. Under this subsidiary, a sugar plant with a cane crushing capacity of 1,400 TCD was established in 1972 at Palia Kalan, a major cane-supplying centre located 70 kilometres north of the Gola Gokaran Nath unit. The Palia Kalan unit's capacity was gradually increased to its current 11,000 TCD.

In 1988, Hindusthan Sugar Mills Limited underwent a name change, becoming Bajaj Hindusthan Sugar Limited (BHSL). Two years later, Sharda Sugar & Industries Limited was amalgamated with the company.

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Detail About the Unit:

The premises of M/S Bajaj Hindusthan Sugar Limited Unit Barkhera (Sugar Plant) is situated in Barkhera village of Block Barkhera in district Pilibhit of Uttar Pradesh well connected with road to major cities. The unit was established in 2006. The sugar production capacity is 1000 MT/day.

Water Requirement and Quality of Groundwater:

The total ground water requirement of plant is 1100.00 m^3/day or 198000.00 m^3 /year. Since the area is non-notified and falls in safe category, as per ground water NOC for withdrawal of ground water, adoption of artificial recharge to ground water is required.

The study area theoretically covers within the circle encompassed by 5 km radius around the sugar plant site is classified into 4 classes *viz.*, settlements, agriculture land, industry, and rocky water body. The district experiences sub-humid climate and three distinct seasons *viz.*, summer, rainy and winter.

The ground water exploration in the district reveals that clay group of formations dominates over the sand group in the district area. Ground water in the district occurs in the alluvium under water table and semi-confined to confined conditions. On the basis of the depth to water level of the district, the pre-monsoon depth to water level ranges between 4.2 m bgl to 4.8 m bgl, while post-monsoon depth to water level ranges between 3.3 m bgl to 4.4 m bgl.

A detailed groundwater level monitoring has been carried at about 8 different locations within the buffer zone from existing open wells and bore wells. The physio-chemical quality of groundwater was compared with drinking water standard (IS: 10500- 2012). Some of the parameters of the ground water samples showed values lower than the permissible limit. Thus, can be inferred from the sampling results for groundwater that some of the parameters are in lower range so adequate measures to be taken before consumption of the same as per standards (IS: 10500-2012).

Details of Ground Water Abstraction

Artificial recharge has been practiced within the sugar plant premises. Rainwater harvesting practices through roof-top is being carried out and the available run-off from the same is used for green belt or dust suppression etc.

There are three existing bore-well present in the industry premises. The monitoring of ground water abstraction is done on regular basis. Awareness programme about the conservation of ground water resources are also being organised to create the awareness among people.

S.No.	NOC NO./ Certificate NO.	Maximum Allowable Withdrawal (m3/day)	Total Allowable Withdrawal (m3/day)	Maximum Allowable Annual Extraction of Ground Water	Total Allowable Annual Extraction of Ground Water	Validity Start	Validity End	Validity in a Year (No. Of days)
1.	NOC026674	400	1100	72000	198000	18.06.2021	17.06.2028	180
2.	NOC033625	400		72000				
3.	NOC039665	300		54000				

Artificial Recharge:

Natural replenishment of ground water storage is slow and is unable to keep pace with the excessive exploitation of ground water. With increasing urbanization, the land area for natural rainwater recharge is also shrinking and large unutilized runoff carries pollution to the water bodies. Artificial recharge to groundwater aims at augmentation of the ground water storage by modifying the natural movement of surface water, utilizing suitable civil construction techniques to increase the seepage rate exceeding that under natural conditions of replenishment. The rainfall occurrence in India is limited to about 3 months period, ranging from about 10 to 60 rainy days. The natural recharge is restricted to this period only. The artificial recharge techniques aim at increasing the recharge period in the post-monsoon for about 3 months to provide additional recharge. This would result in providing sustainability to ground water development.

In majority of the areas, scarcity of water is felt in post-monsoon season. Due to steep gradients, a large quantity of water flows out to low lying areas as surface runoff. There is a need to provide sustainability to these surface storages which are effective in providing additional recharge and sustain the flow for a longer period. Most of the urban areas in the country are facing water scarcity. The dependence on ground water has increased many folds and the natural recharge to ground water has decreased due to increased buildings and paved areas etc. Roof top rain water harvesting, which involves the collection of rainwater from the roof of the buildings and its storage in surface tanks or recharge to sub-surface aquifer, can play an important role in conservation of water. Thus, the need for artificial recharge of groundwater is beyond doubt and is the most powerful management strategy available to face the challenge of fast depletion in ground water storages.

Inside Plant Premises:

Rainwater harvesting can be done by diverting the runoff that is generated from roof sheds, roads and green belt areas of recharging into ground water system. Implantation of recharge mechanism ensures the balance between the discharge vis-a-vis recharge of the aquifer system and improvement in the ground water quality. The normal annual rain fall for the said area has been taken as 1255.9 mm based on the site plan and land use pattern of the plot, the computation of runoff for each unit has worked out and the details are tabulated below:

Calculation of annual rainfall runoff potential

S. No.	Land use type	Area (sq m)	Coefficient of runoff	Rainfall (m)	Quantity of Rainwater (m^3)
1	Rooftop Area	37397	0.85	1.25	39734.31
Total		**37397**	-	-	**39734.31**

From the above computation, it is evident that a total quantum of 39734.31 m^3 /year of rain water is fruitfully harvested & recharged from plant premises annually by constructed suitable recharge structures against the withdrawal of 198000.00 m^3/year. In order to design the recharge structures, hourly runoff of 25 mm/hr has been taken into account and the details are tabulated below:

Hourly Computation of Runoff – (25 mm/hr)

S. No.	Land use type	Area (sq m)	Coefficient of runoff	Intensity of Rainfall (m)	Quantity of Rainwater (m^3)
1	Rooftop Area	37397	0.85	0.025	794.68
Total		**37397**	-	-	**794.68**

Structure Calculation:

- Thus, the total rainwater harvesting capacity of roof top area of the industry is about 794.68 m^3 per hour.

- Assuming retention time of 0.25 hour in the recharge pit, the design volume for the recharge pit is 601.66/4 = 198.67 m^3
- Let us provide recharge pit of 2 m × 2 m in size and 2.5 depth.
- Volume of one pit = 10 m^3
- Capacity of One Bore well recharge: 30 cubic meters
- Average Recharge Capacity of Pit with two well = 10 + 30 + 30 = 70
- Required no. of pits = 198.67/70 = 2.84 (03 appx.)
- The sugar plant provided 03 nos. recharge pits each of 2 m × 2 m × 2.5 m in size at peak rainfall intensity of 25 mm.

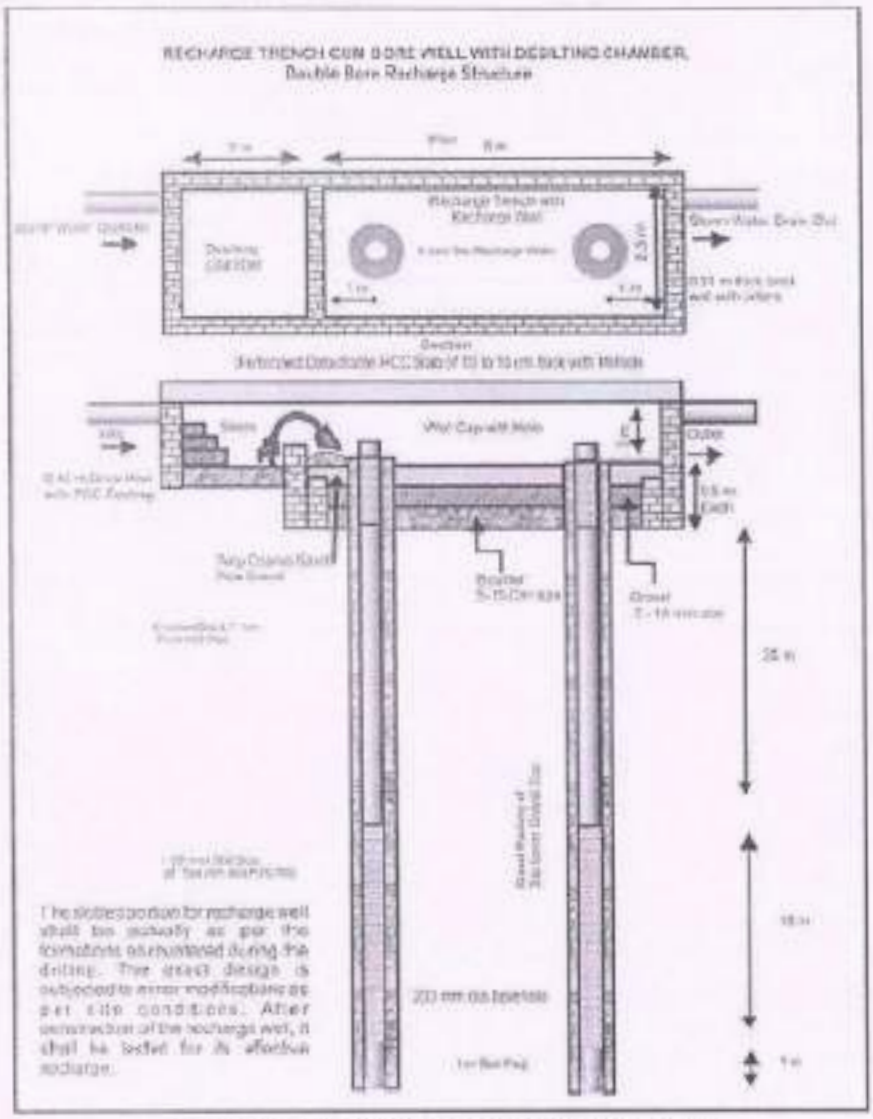

Fig. 1: Recharge trench cum bore well

Designs of Double Bore Recharge Structure:

The location of these sites is located as per the layout of storm water drains and the catch basins that are constructed. Necessary precautions are taken to avoid any contaminated water entering into the recharge structures. The recharge structures so designed that these are operational only during the monsoon seasons. All the structures are constructed in series and the overflow from one may be accommodated to the next structure. For the plot areas having green belt necessary slopes is given so that the rainfall runoff is channelized and diverted to the recharge shafts. In implementing the recharge structures, the spacing between two consecutive recharge trenches is 50 meters apart. Settling chambers is located at suitable locations before the recharge structures so as to avoid any excess siltation to the recharge trenches (Fig. 1). Provision of Geo-textile mesh/ Johnson cloth on the top of the filter media is preferred to avoid frequent clogging of the filter media. Special care is being taken for identifying the exact locations of the recharge structures so that the ground water augmentation is optimal. The area under recharge project has hydro-geological conditions having alluvial ascertained based initial wells and subsequently tested for its intake rate.

Proper type of rig deployment and construction of recharge structures warrants for strict supervision of ground water experts while implementation. The recharge wells are tested and slug test also conducted at selected recharge wells so as to ascertain the dissipation rate of the rainfall runoff to the aquifer systems. Such an approach reflected the proper recharge mechanism at the study area.

Therefore, the total annual recharge from rain water harvesting is about 39734.31 m^3 per year against the withdrawal of 198000.00 m^3 per annum of ground water (which is around 20%). The balance amount of recharge is made by adopting suitable village ponds in the Barkhera block and converting them in recharge ponds. Implementation of recharge mechanism in the study area creates a balance between the recharge vis-à-vis discharge relationships of the aquifer system. It is also maintain the ground water quality, which may deteriorate due to prolonged pumping, and the recharge of fresh rainfall runoff shall compensate it. Aquifer systems, exact depth of recharge well and its slot positions ascertained based initial wells and subsequently tested for its intake rate.

Artificial Recharge of Groundwater From the Village Pond:

The industry has adopted pond near the industrial complex in order to recharge the rain water. These village ponds are generally filled with water only during the rainy season and during summer they are dry. The adopted these village ponds to take-up artificial recharge to ground water of the pond water which is overflowing to adjacent areas during monsoon period. According to opinion of the users, the artificial recharge to ground water in the pond areas resulted into rise in water levels in the village tube-wells as wells and increases the supply of water to the lands adjacent for irrigation purposes. Thus, recharge schemes in the ponds is benefit the area.

Recharge Calculation in Ponds

Type	Village Name	Gata No.	Area (Sq m)	Depth of Ponds (M)	Total Storage Capacity (m3)
Pond- I	Gulda Machwapur	74,76,92	14780	3.0	44340
Total			14780	3.0	44340

Pond Recharge Calculations:

Pond- I:

- Now, total storage capacity of pond from above computation is about 44340 m^3.
- In approximation, in a year 3 filling occur. Hence, 44340 X 3 = 133020 m^3
- Out of 133020 m^3 we take 60 % filling on safer side.
- So, the total is 79812.00 m^3

Through Ponds of Village Gulda Machwapur:

Recharge can either be natural, from precipitation that falls on the earth's surface and moves on its way underground or it can be artificial, from human activities that deliberately or inadvertently replenish an aquifer. Artificial recharge may be defined as the process of replenishing groundwater by augmenting the natural infiltration of rainwater or surface water into underground formations through

various methods designed depending on the topographic, geologic and soil conditions.

The industry has adopted 1 pond located in village Gulda Machwapur for artificial rain water harvesting as recharge shaft and natural percolation in ponds which resulted into creation of additional recharge which is sufficient to fulfil the mandatory requirements as per guidelines of the concerned Ministry.

Total pond area is 1.478 hectares i.e. 14780 m^2.

Recharge Calculation in Ponds

S.No.	Area (ha)	Area (m^2)	Depth after desilting (m)	Total storage capacity	60%	No of filling	Quantity of water recharge	No. of recharge structure (@15 m^3/hr)
1.	1.478	14780	3.0	44340	26604	3	79812	06 Nos.

- From pond, the total water available recharge is 79812.00 m^3.
- The total amount of recharge including both within premises and outside the premise is 119546.31 m^3 (within premises: 39734.31 m^3 + pond outside the premises: 79812.00 m^3) in a year and withdrawal is 198000 m^3 per year (1100 m^3 x 180 days).

Existing industry is situated in safe block Barkhera of district Pilibhit and as per Ground Water Dynamic- 2020, hence we will have to recharge 50% of total withdrawal annually.

As per CGWA (Central Ground Water Authority) guidelines total amount of rainwater to recharge for the withdrawal of 198000.00 m^3/annum is 99000.00 m^3/annum (50% of 198000.00 m^3/annum).

Against requirement of 198000.00 m^3/annum, the company recharge 119546.31 m^3/annum through 06 no. of recharge structures, which is more than 50 %.

Recharge Summary

Total fresh water requirement for sugar project	1100 KLD/198000.00 m^3/year
Source of water for plant activates	Ground water
RHW potential/ artificial recharge required	Maximum up to 50 % recharge criteria (safe zone)- 99000.00 m^3/year
Total artificial rainwater recharge inside the plant	39734.31 m^3/year
Total artificial rainwater recharge outside the plant	79812.00 m^3/year
Total recharge	**119546.31 m^3/year**

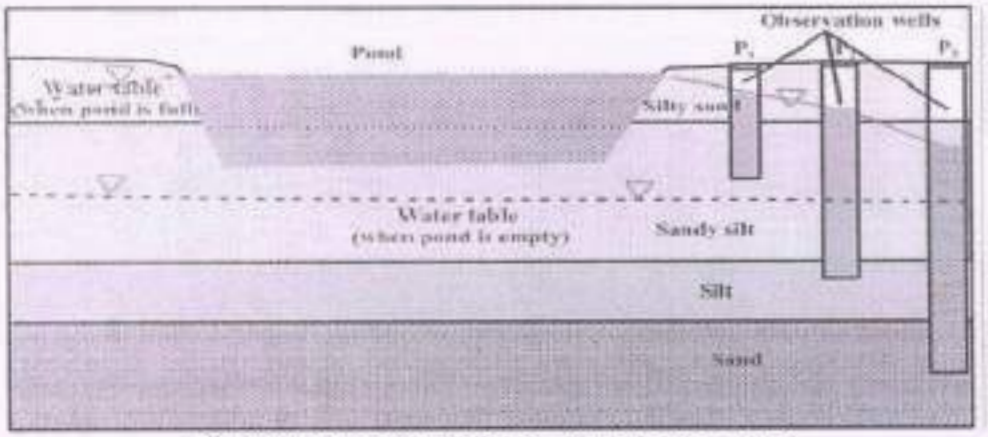

Fig 2: Schematic diagram of recharge pond

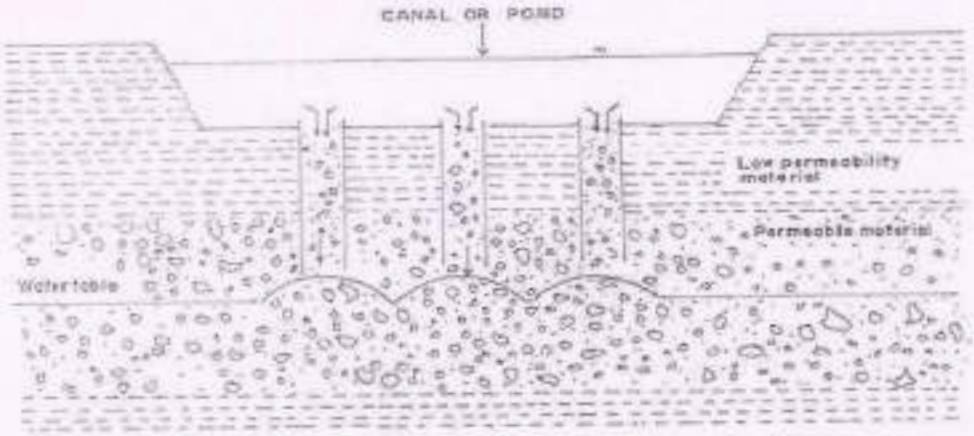

Fig 3: Cross section of pond recharge shaft

OBSERVATIONS AND RECOMMENDATIONS

- To make the people aware, the awareness programme about the conservation of ground water resources should be organized regularly.
- The water level monitoring network needs to be increased in the nearby areas.
- Community efforts and create the spirit of cooperation needed to subsequently manage sustainably ground water as a community resource.
- The BHSLBarkheda unit is situated in safe zone as per Ground Water Notification and this unit is doing artificial ground water recharge though in-house roof top rain water harvesting network and also through village ponds adopted outside factory premises .
- BHSL Barkheda unit artificial water recharge quantity is more than required quantity as prescribed by UP-Ground Water Deptt.

CONCLUSION

Based on the study, it can be concluded that the BHSL Barkheda unit recharges more than 50 % of the required quantity of the water as prescribed by UP-Ground Water Deptt.

Dated: 14.05.2024

14/05/24

Dr. Rajiv
Scientist/ Team Leader
Directorate of Research
Chandra Shekhar Azad University of Agriculture & Technology,
Kanpur- 208 002, Uttar Pradesh, India

bajaj SUGAR

Ref: BHSL/KDK/EHS/SUG/2024/367

Dated 15.07.2024

To,
The Regional Officer,
Uttar Pradesh Pollution Control Board
1/17/104, Ram Nagar Colony, Parikrama Marg,
Ayodhya (U.P.)

Sub: Compliance status of order issued by Hon'ble NGT against OA No 691/2022 vide Dated 13.02.2023.

Ref: BHSL BHSL/KDK/Sugar/2024 Letter Dated- 11.04.2024 for Submission of Impact Assessment Study for treated water utilization on agriculture land &ground water recharge study through the ponds adopted

Dear Sir,

With reference to above mentioned subject, we would like to apprise that following studies were carried out by Chandra Shekhar Azad University of Agriculture & Technology Kanpur.

- Impact Assessment Study for treated water utilization on agriculture land.
- Study of Ground Water Recharge study through the ponds adopted by the Unit – Kundarkhi, Gonda.

As we have received the above-said study reports from the CS Azad University of Agriculture& Technology Kanpur, copy of the reports are enclosed herewith as **Annexure -1 & 2.**

Kindly acknowledge receipt of the above-said study reports.

Thanking you

Yours Faithfully

For Bajaj Hindusthan Sugar Ltd.,
Unit: **Sugar**, Kundarkhi, Gonda

(Authorized signatory)

Enclosure: As Above

Copy: The Chief Environmental Officer (Circle -6), UPPCB -Lucknow

bajaj GROUP
THINK TOMORROW

Technical Report

On

IMPACT ASSESSMENT STUDY
OF
TREATED WATER UTILIZATION ON AGRICULTURE LAND

For

Bajaj Hindusthan Sugar Limited
Unit - Kundarkhi
District – Gonda, Uttar Pradesh

Carried out By

Directorate of Research
C. S. Azad University of Agriculture & Technology,
Kanpur – 208 002 (India)

Technical Report
on
Impact Assessment Study of Treated Water Utilization on Agriculture Land

Introduction:

Water is the most abundant natural resource in the world. The earth surface is covered 70 per cent by water and out of this the saline sea water is 97 per cent. But, the potable or drinking water is about 13 per cent of the residual which is 0.40 per cent of all the world water and the remaining is held either as ice and atmosphere.

The primary competing uses of water is typically agriculture followed by industry, domestic, recreational and more recently environmental preservation. Proper distribution of water among these sectors requires planning and management. Sustainability of water resources and an equitable distribution of available water drive much of this planning. Finding sustainable solutions for water stressed regions is an important focus of water resources planners. For sustainable water management to occur, the allocation of water must be socially fair for both current and future populations.

With the population growing at a higher rate, the need for increased food production is inevitable. Use of treated water in agriculture therefore, could be an important consideration when its disposal is properly planned. The quality of treated effluent will then become very important in terms of its performance to groundwater, soil and plant. For irrigation, the quality of effluent will depend on crops to be irrigated, the soil conditions and the system of effluent distribution adopted besides the output quality of crops grown.

Treated water has high potential for reuse in agriculture; an opportunity for increasing food and environmental security, avoiding direct pollution of rivers, canals, surface water; conserving water and nutrients, thereby reducing the need for chemical fertilizer. Among different sources of treated water, industrial treated water reuse is one of the momentous components of water reuse in agriculture as the source content are known and treatment is done by the industry.

The different socio-environmental and economical benefits resulting from water conservation and reuse included: (a) agriculture benefits such as value of a secure supply of treated water, increased farm production and value of treated water

nutrients, i.e. savings in fertilizer applications; (b) environmental water quality benefits such as reduction in freshwater diversions, reduction in pollutant discharges, reduction of the potential salinity intrusion risk in groundwater aquifers and improvement of the ecosystem and increase of the fauna and flora species and (c) increase of the quality of life of the population.

Under these circumstances, the present study was taken up with the following objectives namely:

1. To identifying the externalities of use of treated water from sugar plant in agriculture.
2. To assess the impact of treated water use in the agriculture in terms of crop productivity, soil fertility, socio economic and environmental factors.

Methodology:

The study entitled "Impact Assessment Study of Treated Water Utilization on Agriculture Land" was conducted during the month of March, 2024 by a team included representatives of the sugar plant. During the course of the study different kind of information *viz.*, soil conditions, farmers perceptions, technology adoption, development activities and farmers knowledge in regard to the treated water of the sugar plant were gathered. The approach used in gathering information included PRA tools and techniques, personal interviews, field visits, etc. In addition to above, the desired information were also gathered from different places like ETP, analytical laboratory, storage tank, water supply system, monitoring system etc.

Brief Description About Company:

Bajaj Hindusthan Sugar Limited (BHSL) was established on 24th November 1931, as 'Hindusthan Sugar Mills Limited.' Founded by the late Shri Jamnalal Bajaj, a respected businessman, freedom fighter, and close confidant of Mahatma Gandhi, the company's inception aimed to address a critical national mission-providing momentum to the industry, given that there were fewer than 30 sugar mills in the country at that time-and advancing inclusive growth. The chosen site for the first plant was in Gola Gokaran Nath in the Lakhimpur Kheri district in the Terai region of present-day Uttar Pradesh (UP). Positioned in an area abundant with sugarcane plantations, the original capacity of the plant was 400 tonnes of cane crushed per day (TCD), which eventually increased to its current 13,000 TCD. The distillery unit

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Detail About the Unit:

The Bajaj Hindusthan Sugar Limited, Kundarkhi was established in 2007 in district Gonda of Uttar Pradesh. At present it is engaged in producing plantation white sugar. The sugar production capacity is 15000 TCD.

Entry gate of the Kundarkhi (Gonda) unit

Effluent Treatment Plant Description:

a) **ETP Layout and Unit Capacity Details:**

The details information is given in attached Annexure-1.

b) **ETP Process Description:**

	
Lagoon	Treatment of effluent

g) **Details about Treated Water Utilisation**:

The industrial treated effluent is being used in irrigation, in compliance with MOEF&CC notification 2016, as per irrigation management plan developed & approved by NSI, Kanpur. The treated domestic effluent is being utilized in lawn, garden and other horticultural area. The flow meter is installed for the measurement of final treated water used for Irrigation Management Plan.

h) **Physio-Chemical Properties of Treated Effluent:**

The treated effluent is being tested by the unit regularly and samples were analysis by NABL and MOEF & CC approved laboratory. The tested values of different parameters of treated effluent for the year of 2023-24 and 2022-23 (previous year) are given as below:

S.No.	Treated Effluent Particulars	Avg. Value (2022-23)	Avg. Value (2023-24)
1.	pH	7.60	7.32
2.	BOD (mg/l)	18.0	23.0
3.	COD (mg/l)	140.0	118
4.	TSS (mg/l)	14.3	21.0
5.	TDS (mg/l)	1620	1450
6.	Oil & grease (mg/l)	-	1.1

The analysis reports are attached as Annexure -2.

Farmers:

The details information about village wise number of farmers is given as below:

S.No.	Name of Village	Total Number of Farmers Covered
1.	Kundarkhi	140
2.	Kastua	151
	Total	**291**

Agro-ecological Conditions of Operational Area:

As meeting the prescribed norms is not the only criterion for use of treated water in irrigation, the requirement of water for irrigation be a limiting condition and this depends upon various factors as mentioned below:

1. **Cropping Patters of Command Area:**
   At command area of M/s Bajaj Hindusthan Sugar Limited, Kundarkhi (Gonda) is 373 hectares cultivated area. The sugarcane crop is grown as main cash crop and other major crops are Wheat, Rice, Maize, Brinjal, Tomato, Okra, Mango and Fodder. Crop intensity is 157%.
2. **Climate:**
   The command area has a moist sub-humid to dry sub-humid climate. Average rainfall is 1552 mm and temperature varies from 1.0°C-49°C.
3. **Irrigation type:**
   The majority of the farmers are using flood irrigation method in command area. The tubewells are the major source of irrigation and about 60% cultivated land is irrigated.
4. **Soil Condition of Command Areas:**
   There are various soil types such as loam, clay, sandy, clay loam and sandy loam but majority of the land are under the category of sandy loam.

Agreements with the Farmers:

The practice of agreement between sugar plant and beneficiary farmers in regards to the use of treated water is being adopted. The details are attached as Annexure-3.

Available of Treated Water for Irrigation and Command Area:

In command area, the treated effluent is available from the month of November to April depending upon the duration of crushing season. In Kundarkhi (Gonda) area, intensive agriculture is practiced by majority of the farmers wherein land is not left vacant. This intensive agriculture requires continuous use of water. Under such type of practices, the treated effluent provided to the farmers is a big support for them as it is available on weekly rotation schedule to the farmers. The total available farmers command area is 373 hectares and all command area comes within 1.5 – 2.0 km distance from the sugar unit.

Irrigation through treated water

Crop Grown and Soil Properties:

During the course of intensive study (field/on site visit), it was found that the different crops viz., Sugarcane, Mustard, Paddy and Wheat are grown by majority of the beneficiary farmers. The crop of the visited fields was in good conditions and farmers are happy with the performance of their crop and soil condition.

Similar to treated effluent, the soil of the concerned farmers' fields is being tested by the sugar unit regularly. During onsite field visit, the soil samples were also collected from farmers' fields where irrigation is being applied/adopted through treated water and analysis of these samples was carried out by NABL and MOEF & CC approved laboratory. In addition, the previous soil testing reports were also available with the sugar unit and farmers as well. The soil test values of different

parameters for the year of 2023-24 (on site visit) and 2022-23 (previous year) are given as below:

S.No.	Soil Samples Particulars	Avg. Value (2022-23)	Avg. Value (2023-24)
1.	pH	7.12	7.64
2.	Salinity Electrical Conductivity	268 mmhos/cm	495 mmhos/cm
3.	Sodium Absorption Ration (SAR)	3.6 meg/L	3.16 meg/L
	Soil Fertility Ratings		
4.	Organic Carbon (% by mass)	0.52 %	0.56 %
5.	Available Nitrogen	326 kg/ha	309 kg/ha
6.	Available Phosphorous	24.0 kg/ha	19.1 kg/ha
7.	Available Potash	348 kg/ha	215 kg/ha

The data of the soil analysis revealed that the soil fertility status of the soil is good and heavy metals contents are also under upper limits, which indicated that there is no adverse effect of the treated effluent on soil of the farmers' field. The analysis reports are attached as Annexure -4.

Properties of the Ground Water of Borewells:

During onsite field visit, the water sample from borewells of the nearby beneficiary farmers was also collected where irrigation is being applied/adopted through treated water and analysis of the water sample was carried out by NABL and MOEF & CC approved laboratory. In addition, the previous water testing reports was also available with the sugar unit. The values of different physcio-chemical properties of the underground water of borewells for the year of 2023-24 (on site visit) and 2022-23 (previous year) are given as below:

S.No.	Ground Water Parameters	Avg. Value (2022-23)	Avg. Value (2023-24)

1.	Escherichia coli	Absent	Absent
2.	Coliform bacteria	Absent	Absent
3.	Colour (Hazen)	<1.00	<1.00
4.	Ordour	Agreeable	Agreeable
5.	Taste	Agreeable	Agreeable
6.	Turbidity (NTU)	<1.00	<1.00
7.	pH Value	7.36	7.28
8.	TDS (mg/l)	425	416
9.	Aluminium (mg/l)	<0.01	<0.01
10.	Total Ammonia (mg/l)	<0.10	<0.10
11.	Anionic Detergents (mg/l)	<0.10	<0.10
12.	Barium (mg/l)	<0.10	<0.10
13.	Boron (mg/l)	<0.10	<0.10
14.	Calcium (mg/l)	42.5	47.18
15.	Chloramines (mg/l)	< 1.00	< 1.00
16.	Chloride (mg/l)	52.8	54.6
17.	Copper (mg/l)	<0.05	<0.05
18.	Fluoride (mg/l)	0.42	0.46
19.	Free Residual Chlorine (mg/l)	BDL*(<0.1)	BDL*(<0.1)
20.	Iron (mg/l)	0.136	0.128
21.	Magnesium (mg/l)	15.08	14.6
22.	Manganese (mg/l)	<0.10	<0.10
23.	Mineral Oil (mg/l)	<0.50	<0.50
24.	Nitrate (mg/l)	4.27	4.30

25.	Selenium (mg/l)	<0.01	<0.01
26.	Silver (mg/l)	<0.05	<0.05
27.	Sulphate (mg/l)	36.2	34.8
28.	Sulphide (mg/l)	<0.05	<0.05
29.	Alkalinity (mg/l)	192.0	176.0
30.	Total Hardness (mg/l)	176.0	189.0
31.	Zinc (mg/l)	0.145	0.132
32.	Phenolic Compound (mg/l)	BDL*(<0.001)	BDL*(<0.001)
	Toxic Substances		
33.	Cadmium (mg/l)	<0.001	<0.001
34.	Cyanide (mg/l)	<0.01	<0.01
35.	Lead (mg/l)	<0.01	<0.01
36.	Mercury (mg/l)	<0.001	<0.001
37.	Molybdenum (mg/l)	<0.05	<0.05
38.	Nickel (mg/l)	<0.01	<0.01
39.	Poly Nuclear Aromatic Hydro Carbons (mg/l)	<0.0001	<0.0001
40.	Poly Chlorinated biphenyl(mg/l)	<0.0001	<0.0001
41.	Total Arsenic (mg/l)	<0.01	<0.01
42.	Total Chromium (mg/l)	<0.05	<0.05

BDL*= Below Detection Limit

The data furnished in above table showed that the toxic substances in the ground water are under the acceptable limits. The details analysis reports are attached as Annexure -5.

Farmers Reaction:

During the course of study (field/on site visit), the interactions were made with the beneficiary farmers to know the impact of the treated water on their crop and soil

1. There is no adverse effect of treated water utilization on agriculture land in terms of crop productivity, soil fertility, socio economic status and environmental factors.
2. Hence, irrigation through treated water of the sugar plant can be continued without any hazardous effects. The proposed system shall be able to cope-up the requirement of the water for irrigation purposes through utilization of the generated effluent.

Dated: 11.05.2024

11/05/24

Dr. Rajiv
Scientist/ Team Leader
Directorate of Research
Chandra Shekhar Azad University of Agriculture & Technology,
Kanpur- 208 002, Uttar Pradesh, India

Annexure -1

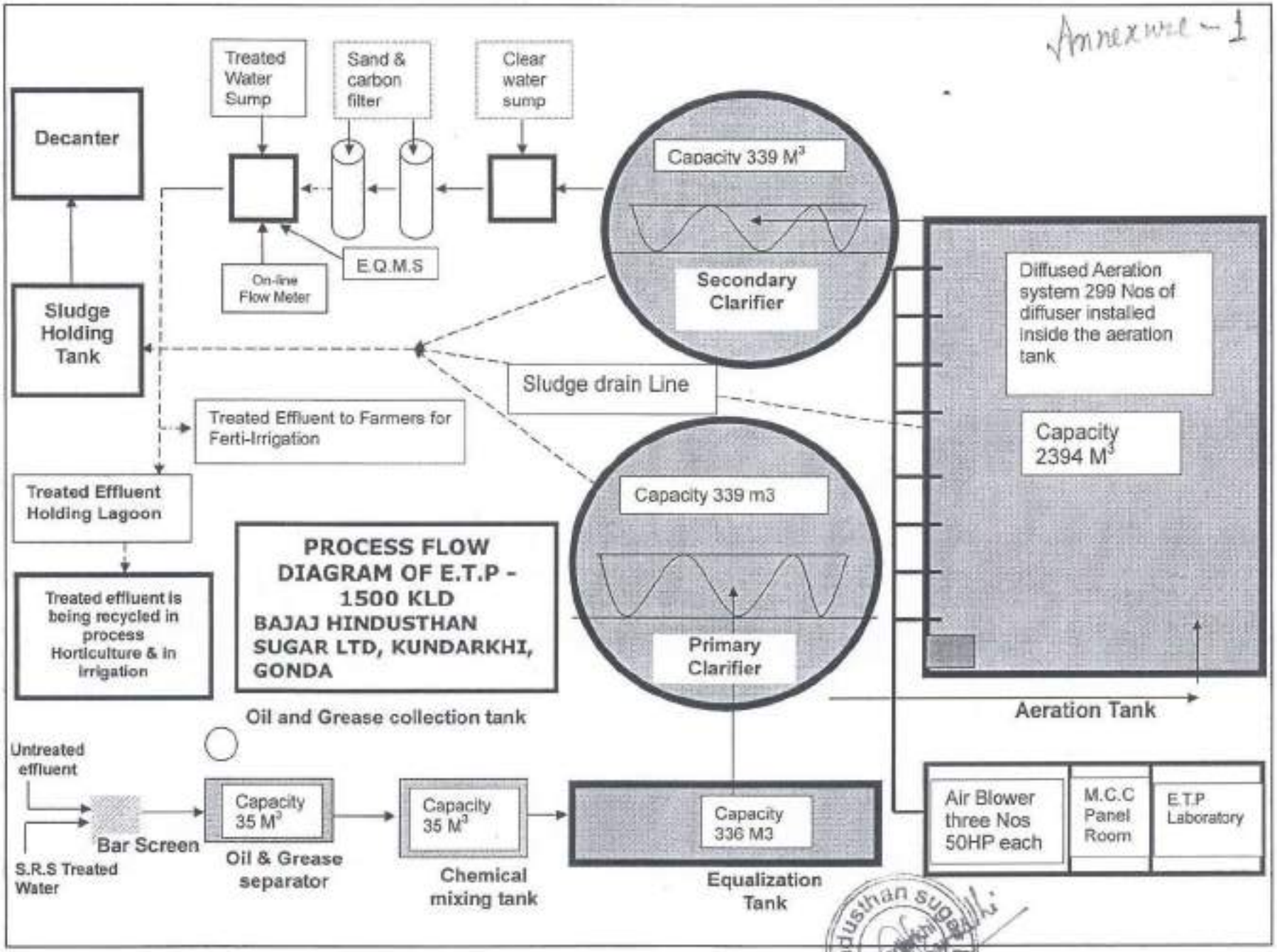
Annexure -2

Annexure -3

Annexure -4

Annexure -5

Annexure - 1


Treated Water Sump
Sand & carbon filter
Clear water sump
Decanter
Capacity 339 M3
E.Q.M.S
On-line Flow Meter
Secondary Clarifier
Diffused Aeration system 299 Nos of diffuser installed inside the aeration tank
Sludge Holding Tank
Sludge drain Line
Treated Effluent to Farmers for Ferti-Irrigation
Capacity 2394 M3
Treated Effluent Holding Lagoon
Capacity 339 m3
PROCESS FLOW DIAGRAM OF E.T.P - 1500 KLD
BAJAJ HINDUSTHAN SUGAR LTD, KUNDARKHI, GONDA
Treated effluent is being recycled in process Horticulture & in irrigation
Primary Clarifier
Aeration Tank
Oil and Grease collection tank
Untreated effluent
Capacity 35 M3
Capacity 35 M3
Capacity 336 M3
Air Blower three Nos 50HP each
M.C.C Panel Room
E.T.P Laboratory
Bar Screen
S.R.S Treated Water
Oil & Grease separator
Chemical mixing tank
Equalization Tank

NOIDA TESTING LABORATORIES

(A Government of India Approved Testing Laboratory)

(An ISO : 9001 : 2015, ISO 45001 : 2018 (OH&S) Certified & NABL Accredited Laboratory)

MoEF & CC (Ministry of Environment, Forest & Climate Change), UPPCB Recognized Laboratory

☎ +91-9313611642, 8510081921, 7503031145, 8527870572, 7503031146, 9999794369

TEST CERTIFICATE

Annexure -2

Issued To: M/s Bajaj Hindusthan Sugar Ltd.	Report Code : WW-0203243-020
	ULR No. : TC681424000002629F
Address: Unit – Sugar, Vill- Kundarkki, District– Gonda (U.P), India	Test Report of : Waste Water
	Service Request No : NTL/SRF/03/24-015
	Service Request Date : 29/02/2024
	Report Issue Date : 07/03/2024

SAMPLING & ANALYSIS DATA

Sample Drawn On	:	01/03/2024
Sample Drawn By	:	NTL Representative
Sample Description	:	ETP Outlet
Sample Received On	:	02/03/2024
Sample Quantity/Packing detail	:	2 ltr/Plastic Cane
Weather Conditions	:	Normal
Analysis Duration	:	02/03/2024 to 07/03/2024

TEST RESULTS

S.No	Parameter	Test Method	Results	Units	Limits as per CPCB Norms
1.	pH	IS:3025(Part-11):1983	7.52	-	5.5 - 9.0
2.	Total Dissolved Solid	IS:3025(Part-16):1984	1450	mg/l	---
3.	Total Suspended Solid	IS:3025(Part-17):1984	21.0	mg/l	100.0
4.	Chemical Oxygen Demand (as O_2)	APHA 5220 B:2005	118.0	mg/l	250.0
5.	Biological Oxygen Demand (as O_2) (3 days at 27°C)	IS:3025(Part-44):1993	23.0	mg/l	30.0
6.	Oil & grease	IS:3025(Part-19):1984	1.1	mg/l	10.0

Notes:

1. The results given above are related to the tested sample, as received & mentioned parameters. The customer asked for the above tests only.
2. Responsibility of the Laboratory is limited to the invoiced amount only.
3. This test report will not be generated again, either wholly or in part, without prior written permission of the laboratory.
4. The test samples will be disposed off after two weeks from the date of issue of test report, unless until specified by the customer.

CHECKED BY

AUTHORIZED SIGNATORY

NOIDA TESTING LABORATORIES

(A Government of India Approved Testing Laboratory)

(An ISO 9001 : 2015, ISO 45001 : 2018 (OH&S) Certified & NABL Accredited Laboratory)

Min. & CPCB Ministry of Environment, Forest & Climate Change, UPPCB Recognized Laboratory

☎ (+91-95) 9311642, 8510081921, 7503031145, 8527870572, 7503031146, 9999794369

TEST CERTIFICATE

Issued To : M/S Bajaj Hindusthan Sugar Ltd.	Report Code : WW-200123-019
	ULR No. : TC681-230000001561 F
Address : Distt. - Bagpat, Vill- Kandarkhi, District - Gaza (U.P.), India	Test Report of : Waste Water
	Service Request No : NTL/SRF/01/23-019
	Service Request Date : 18/01/2023
	Report Issue Date : 25/01/2023

SAMPLING & ANALYSIS DATA

Sample Drawn On	:	20/01/2023
Sample Drawn By	:	NTL Representative
Sample Description	:	ETP Outlet
Sample Received On	:	20/01/2023
Sample Container/Packing detail	:	2 ltr/Plastic Cane
Weather Conditions	:	Normal
Analysis Duration	:	20/01/2023 to 25/01/2023

TEST RESULTS

S.No	Parameter	Test Method	Results	Units	Limits as per CPCB Norms
1	pH	IS:3025(Part-11):1983	7.90	-	5.5 – 9.0
2	Total Dissolved Solid	IS:3025(Part-16):1984	1620	mg/l	---
3	Total Suspended Solid	IS:3025(Part-17):1984	14.3	mg/l	100.0
4	Chemical Oxygen Demand (as O_2)	APHA 5220 B:2005	140.0	mg/l	250.0
5	Biological Oxygen Demand (as O_2) (3 days at 27°C)	IS:3025(Part-44):1993	18.0	mg/l	30.0

Notes:

1. The results given here are for the tested sample, as received & mentioned parameters. The customer relied for the above results.
2. Liability of the Laboratory is limited to the invoiced amount only.
3. This test report will not be accepted again either wholly or in part, without prior written permission of the laboratory.
4. The samples will be disposed off after two weeks from the issued date of test report, unless need specified by the customer.

CHECKED BY

AUTHORIZED SIGNATORY

Annexure-3

सहमति पत्र

मैं दाताराम पुत्र श्री कुधई गाँव कस्तुआ का निवासी हूँ। मेरा एक हेक्टेयर जमीन बजाज हिन्दुस्थान शुगर लिमिटेड कुन्दर्खी मिल के नजदीक है। मेरी जमीन में गन्ना, सरसों, धान एवं गेंहू की फसल होती है। यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेती की सिचाई हेतु आपूर्ति करे तो मै चीनी मिल से निकलने वाले पानी से अपने खेतों की सिचाई करने के लिए तैयार हूँ।

Bajaj Hindusthan Sugar Ltd. Kundarkhi

हस्ताक्षर कृषक : दाताराम

नाम कृषक : दाताराम

पिता का नाम : कुधई

गाँव का नाम : कस्तुआ

सहमति पत्र

मैं राजू पुत्र श्री रामदीन गाँव कटुआ का निवासी हूँ। मेरा दो हेक्टेयर जमीन बजाज हिन्दुस्थान शुगर लिमिटेड कुन्दरकी मिल के नजदीक है। मेरी जमीन मे गन्ना, सरसों, धान एवं गेंहू की फसल होती है। यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेती की सिचाई हेतु आपूर्ति करे तो मै चीनी मिल से निकलने वाले पानी से अपने खेतों की सिचाई करने के लिए तैयार हूँ।

Bajaj Hindusthan Sugar Ltd. Kundarki

हस्ताक्षर कृषक : राजू

नाम कृषक : राजू

पिता का नाम : रामदीन

गाँव का नाम : कटुआ

सहमति पत्र

मैं मुरालीलाल पुत्र श्री धनीराम गाँव कटुआ का निवासी हूँ। मेरा दो हेक्टेयर जमीन बजाज हिन्दुस्थान शुगर लिमिटेड कुन्दरखी मिल के नजदीक है। मेरी जमीन मे गन्ना, सरसों, धान एवं गेंहू की फसल होती है। यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेती की सिचाई हेतु आपूर्ति करे तो मै चीनी मिल से निकलने वाले पानी से अपने खेतों की सिचाई करने के लिए तैयार हूँ।

Bajaj Hindusthan Sugar Ltd. Kunderkhi

हस्ताक्षर कृषक : मुरालीलाल

नाम कृषक : मुरालीलाल

पिता का नाम : धनीराम

गाँव का नाम : कटुआ

सहमति पत्र

मैं तिलकराम पुत्र श्री बृजलाल गाँव कटुआ का निवासी हूँ। मेरा दो हेक्टेयर जमीन बजाज हिन्दुस्थान शुगर लिमिटेड कुन्दर्की मिल के नजदीक है। मेरी जमीन मे गन्ना, सरसों, धान एवं गेंहू की फसल होती है। यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेती की सिचाई हेतु आपूर्ति करे तो मै चीनी मिल से निकलने वाले पानी से अपने खेतों की सिचाई करने के लिए तैयार हूँ।

Bajaj Hindusthan Sugar Ltd. Kundarki

हस्ताक्षर कृषक : तिलकराम

नाम कृषक : तिलकराम

पिता का नाम : बृजलाल

गाँव का नाम : कटुआ

सहमति पत्र

मैं घनश्याम पुत्र श्री गंगादीन गाँव कन्दुआ का निवासी हूँ। मेरा एक हेक्टेयर जमीन बजाज हिन्दुस्थान शुगर लिमिटेड कुन्दरखी मिल के नजदीक है। मेरी जमीन मे गन्ना, सरसों, धान एवं गेंहू की फसल होती है। यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेती की सिचाई हेतु आपूर्ति करे तो मैं चीनी मिल से निकलने वाले पानी से अपने खेतों की सिचाई करने के लिए तैयार हूँ।

Bajaj Hindusthan Sugar Ltd. Kundarkhi

हस्ताक्षर कृषक : घनश्याम

नाम कृषक : घनश्याम

पिता का नाम : गंगादीन

गाँव का नाम : कन्दुआ

सहमति पत्र

मैं इन्द्रजीत मिश्रा पुत्र श्री रामचन्द्र मिश्रा गाँव कुन्दरखी का निवासी हूँ। मेरा दो हेक्टेयर जमीन बजाज हिन्दुस्थान शुगर लिमिटेड कुन्दरखी मिल के नजदीक है। मेरी जमीन मे गन्ना, सरसों, धान एवं गेंहू की फसल होती है। यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेती की सिचाई हेतु आपूर्ति करे तो मै चीनी मिल से निकलने वाले पानी से अपने खेतों की सिचाई करने के लिए तैयार हूँ।

Bajaj Hindusthan Sugar Ltd. Kundarkhi

हस्ताक्षर कृषक : इन्द्रजीत मिश्रा

नाम कृषक : इन्द्रजीत मिश्रा

पिता का नाम : रामचन्द्र मिश्रा

गाँव का नाम : कुन्दरखी

सहमति पत्र

मैं मनोज मिश्रा पुत्र श्री रामचन्द्र गाँव कुदुरुखी का निवासी हूँ। मेरा दो हेक्टेयर जमीन बजाज हिन्दुस्थान शुगर लिमिटेड कुन्दरखी मिल के नजदीक है। मेरी जमीन मे गन्ना, सरसों, धान एवं गेंहू की फसल होती है। यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेती की सिचाई हेतु आपूर्ति करे तो मै चीनी मिल से निकलने वाले पानी से अपने खेतों की सिचाई करने के लिए तैयार हूँ।

Bajaj Hindusthan Sugar Ltd. Kundarkhi

हस्ताक्षर कृषक : मनोज मिश्रा

नाम कृषक : मनोज मिश्रा

पिता का नाम : राम चन्द्र

गाँव का नाम : कुदुरुखी

सहमति पत्र

मैं लालमनी मिश्रा पुत्र श्री राम चन्द्र गाँव कुदुरखी का निवासी हूँ। मेरा दो हेक्टेयर जमीन बजाज हिन्दुस्थान शुगर लिमिटेड कुन्दर्खी मिल के नजदीक है। मेरी जमीन मे गन्ना, सरसों, धान एवं गेंहू की फसल होती है। यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेती की सिचाई हेतु आपूर्ति करे तो मै चीनी मिल से निकलने वाले पानी से अपने खेतों की सिचाई करने के लिए तैयार हूँ।

Bajaj Hindusthan Sugar Ltd. Kundarkhi

हस्ताक्षर कृषक : लालमनी मिश्रा

नाम कृषक : लालमनी मिश्रा

पिता का नाम : राम चन्द्र

गाँव का नाम : कुदुरखी

सहमति पत्र

मैं पप्पू मिश्रा पुत्र श्री शेषदत्त मिश्रा गाँव कुडुरवी का निवासी हूँ। मेरा 3.5 हेक्टेयर जमीन बजाज हिन्दुस्थान शुगर लिमिटेड कुन्दर्खी मिल के नजदीक है। मेरी जमीन मे गन्ना, सरसों, धान एवं गेंहू की फसल होती है। यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेती की सिचाई हेतु आपूर्ति करे तो मै चीनी मिल से निकलने वाले पानी से अपने खेतो की सिचाई करने के लिए तैयार हूँ।

Bajaj Hindusthan Sugar Ltd. Kundarkhi

हस्ताक्षर कृषक : पप्पू मिश्रा

नाम कृषक : पप्पू मिश्रा

पिता का नाम : शेषदत्त मिश्रा

गाँव का नाम : कुडुरवी

सहमति पत्र

मैं दद्दन मिश्रा पुत्र श्री शेषदत्त मिश्रा गाँव कुदुरखी का निवासी हूँ। मेरा 3.5 हेक्टेयर जमीन बजाज हिन्दुस्थान शुगर लिमिटेड कुन्दरखी मिल के नजदीक है। मेरी जमीन मे गन्ना, सरसों, धान एवं गेंहू की फसल होती है। यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेती की सिचाई हेतु आपूर्ति करे तो मै चीनी मिल से निकलने वाले पानी से अपने खेतों की सिचाई करने के लिए तैयार हूँ।

Bajaj Hindusthan Sugar Ltd. Kundarkhi

हस्ताक्षर कृषक : दद्दन मिश्रा

नाम कृषक : दद्दन मिश्रा

पिता का नाम : शेषदत्त मिश्रा

गाँव का नाम : कुदुरखी

सहमति पत्र

मैं दुर्गेश मिश्रा पुत्र श्री चन्द्रभूषण गाँव कुदुरखी का निवासी हूँ। मेरा 4.5 हेक्टेयर जमीन बजाज हिन्दुस्थान शुगर लिमिटेड कुन्दरखी मिल के नजदीक है। मेरी जमीन मे गन्ना, सरसों, धान एवं गेंहू की फसल होती है। यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेती की सिचाई हेतु आपूर्ति करे तो मै चीनी मिल से निकलने वाले पानी से अपने खेतों की सिचाई करने के लिए तैयार हूँ।

Bajaj Hindusthan Sugar Ltd. Kundarkhi

हस्ताक्षर कृषक : दुर्गेश मिश्रा

नाम कृषक : दुर्गेश मिश्रा

पिता का नाम : चन्द्रभूषण

गाँव का नाम : कुदुरखी

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Annexure - 4

Issued To: M/s Bajaj Hindusthan Sugar Ltd. Address: Unit- Sugar Village- Kundarkhi, Distt- Gonda (UP) India	Report Code : SQ-270224-050 Test Report of : Soil Quality Service Request No : NTL/SRF/02/24-018 Service Request Date : 26/02/2024 Report Issue Date : 05/03/2024

Sampling & Analysis Data

Sample Drawn On	: 27/02/2024
Sample Drawn By & Sealed By	: Dr. Rajeev (Chandra Shekhar Azad University of Agriculture & Technology, Kanpur)
Sample Collect By	: NTL Representative
Sample Description	: Soil Sample at 30 cm Depth from farmers field
Sample Received On	: 27/02/2024
Sample Quantity	: 2.0 Kg
Weather Condition	: Normal
Analysis Duration	: 27/02/2024 to 05/03/2024

S.No.	PARAMETERS	RESULT	Classification of Soil		
1	Ph (1:2 suspension)	7.64	Neutral		
2	Salinity Electrical Conductivity @25°C (µmhos/cm)	495	Should be less 1000		
3	Sodium Absorption Ration (SAR) meq/L	3.16	-		
4	Soil Fertility Ratings		Soil Fertility Ratings		
			Low	Medium	High
a	Organic Carbon (% by mass)	0.56	<0.5	0.5-0.75	>0.75
b	Available Nitrogen (Kg/ha)	308	<280	280-560	>560
c	Available Photohorous (Kg/ha)	18.1	<10	10-24.6	>24.6
d	Available Potash (as K- Kg/ha)	215	<180	180-280	>280
5	Heavy Metals Analysis		Used Protocol	The Environmental Management (Soil, quality Standards) Regulation:2007 upper Limit (Max)	
a	Lead Content (as Pb) (mg/kg)	43.0	IS:11047:1998	200	
b	Arsenic (as As) (mg/Kg)	0.14	IS:11047:1998	1	
c	Cadmium (as Cd) (mg/Kg)	0.33	IS:11047:1998	1	
d	Manganese (as Mn) (mg/Kg)	124	IS:11047:1998	1800	
e	Mercury (as Hg) (mg/Kg)	<1.0	IS:167772:2004	2	
f	Nikel (as Ni) (mg/Kg)	22.0	IS:11047:1998	100	
g	Selenium as Se) (mg/Kg)	2.18	SW:846:7742	20	
h	Copper (as Cu) (mg/Kg)	27.9	IS:11047:1998	200	
i	Zinc (as Zn) (mg/Kg)	50.0	IS:11047:1998	150	
j	Molybdenum (as Mo) (mg/Kg)	<1.0	IS:11047:1998	5	

Conclusion- Based on above tested parameters, soil sample have good fertility value provided by department of Agriculture & Cooperation Ministry of Agriculture Government of India- New Delhi.

Notes:

1. The results given above are related to the tested sample, as received & mentioned parameters the customer asked for the above tests only.
2. Responsibility of the Laboratory is limited to the invoiced amount only.
3. This test report will not be generated again, either wholly or in part, without prior written permission of the laboratory.
4. The test samples will be disposed off after two weeks from the date of issue of test report, unless until specified by the customer.

Checked by

Ajaei

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TEST CERTIFICATE

Issued To: M/s Bajaj Hindusthan Sugar Ltd.	Report Code : SQ-250323-026
	Test Report of : Soil
Address: Unit – Sugar, Vill- Kundarkhi, District– Gonda (U.P), India	Service Request No : NTL/SRF/03/23-018
	Service Request Date : 24/03/2023
	Report Issue Date : 30/03/2023

Sampling & Analysis Data

Sample Drawn On	: 25/03/2023
Sample Drawn & sealed by	: Mr. Varun
Sample Collected By	: NTL Representative
Sample Location	: Farmer Field
Sample Description	: Soil Sample
Sample Received On	: 25/03/2023
Sample Quantity	: 2.0 Kg
Weather Conditions	: Normal
Analysis Duration	: 25/03/2023 to 30/03/2023

S.No.	PARAMETERS	RESULT	Classification of Soil		
1	Ph (1:2 suspension)	7.12	Neutral		
2	Salinity Electrical Conductivity @25°C (mmhos/cm)	268	Should be less 1000		
3	Sodium Absorption Ration (SAR) meq/l	3.60	-		
4	Soil Fertility Ratings		Soil Fertility Ratings		
			Low	Medium	High
a	Organic Carbon (% by mass)	0.52	<0.5	0.5-0.75	>0.75
b	Available Nitrogen (Kg/ha)	325	<280	280-560	>560
c	Available Phosphorous (Kg/ha)	24.0	<10	10-24.6	>24.6
d	Available Potash (as K- Kg/ha)	348	<180	180-280	>280
5	Heavy Metals Analysis		Used Protocol	The Environmental Management (Soil, quality Standards) Regulation:2007 upper Limit (Max)	
a	Lead Content (as Pb) (mg/kg)	36.5	IS:11047:1998	200	
b	Arsenic (as As) (mg/Kg)	0.092	IS:11047:1998	1	
c	Cadmium (as Cd) (mg/Kg)	0.38	IS:11047:1998	1	
d	Manganese (as Mn) (mg/Kg)	112	IS:11047:1998	1800	
e	Mercury (as Hg) (mg/Kg)	<1.0	IS:167772:2004	2	
f	Nikel (as Ni) (mg/Kg)	23.0	IS:11047:1998	100	
g	Selenium as Se) (mg/Kg)	1.48	SW:846:7742	20	
h	Copper (as Cu) (mg/Kg)	19.60	IS:11047:1998	200	
i	Zinc (as Zn) (mg/Kg)	68.0	IS:11047:1998	150	
j	Molybdenum (as Mo) (mg/Kg)	<1.0	IS:11047:1998	5	

Condusion- Based on above tested parameters, soil sample have good fertility value provided by department of Agriculture & Cooperation Ministry of Agriculture Government of India- New Delhi.

Note:

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4. The test sample will be disposed off after two weeks from the date of issue of test report, unless until specified by the customer.

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TEST CERTIFICATE

Annexure – 5

Issued To: M/s Bajaj Hindusthan Sugar Ltd. Address: Unit – Sugar, Vill- Kundarkhi, District- Gonda (U.P), India	Report Code : W-270224-016 Test Report of : Water Service Request No : NTL/SRF/02/24-020 Service Request Date : 26/02/2024 Report Issue Date : 03/03/2024

Sampling & Analysis Duration

Sample Collected By	:	NTL Representative
Sample Drawn On	:	27/02/2024
Sample Drawn & sealed by	:	Dr. Rajiv (Chandra Shekhar Azad University of Agriculture & Technology, Kanpur)
Sample Received On	:	27/02/2024
Sample Quantity	:	2.0 Lt. + 500 ml.
Analysis Duration	:	27/02/2024 to 03/03/2024
Sampling Location	:	Farmer Field
Sample Description	:	Ground Water

MICROBIOLOGICAL REQUIREMENT RESULT

S.No.	Parameter	Test Method	Results	Requirements as per IS-10500:2012
1.	*Escherichia coli*	IS-15185	Absent	Absent/100ml
2.	*Coliform Bacteria*	IS-15185	Absent	Absent/100ml

ORGANOLEPTIC & PHYSICAL PARAMETERS

S.No.	Parameter	Test Method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1.	Colour	IS-3025(P-04)	<1.00	Hazen Unit	5	15
2.	Odour	IS-3025(P-05)	Agreeable	-	Agreeable	Agreeable
3.	Taste	IS-3025(P-07 & 08)	Agreeable	-	Agreeable	-
4.	Turbidity	IS-3025(P-10)	<1.00	NTU	1	5
5.	pH value	IS-3025(P-11)	7.28	-	6.5 - 8.5	-
6.	Total dissolve solid (TDS)	IS-3025(P-16)	416	mg/l	500	2000

GENERAL PARAMETERS CONCERNING SUBSTANCES UNDESIRABLE IN EXCESSIVE AMOUNTS

S.No.	Parameter	Test method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1.	Aluminium (as Al)	IS: 3025 (P- 55)	<0.01	mg/l	0.03	0.2
2.	Total Ammonia	IS: 3025 (P- 34)	<0.10	mg/l	0.5	No Relaxation
3.	Anionic Detergents (as MBAS)	Annex K of IS-13428	<0.10	mg/l	0.2	1.0
4.	Barium (as Ba)	IS: 15302	<0.10	mg/l	0.7	No Relaxation
5.	Boron (as B)	IS: 3025 (P- 57)	<0.10	mg/l	0.5	2.4

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6.	Calcium (as Ca)	IS: 3025 (P-40)	47.18	mg/l	75	200
7.	Chloramines (as Cl_2)	IS: 3025 (P-26)	<1.00	mg/l	4.0	No Relaxation
8.	Chloride (as Cl)	IS: 3025 (P-32)	54.60	mg/l	250	1000
9.	Copper (as Cu)	IS: 3025 (P-42)	<0.05	mg/l	0.05	1.5
10.	Fluoride (as F)	IS: 3025 (P-60)	0.46	mg/l	1.0	1.5
11.	Free Residual Chlorine	IS: 3025 (P-26)	BDL(<0.1)	mg/l	0.2	1.0
12.	Iron (as Fe)	IS: 3025(P-53)	0.128	mg/l	1.0	No Relaxation
13.	Magnesium (as mg)	IS: 3025 (P-46)	14.60	mg/l	30	100
14.	Manganese (as Mn)	IS: 3025 (P-59)	<0.10	mg/l	0.1	0.3
15.	Mineral Oil	Clause 6 of IS: 3025	<0.50	mg/l	0.5	No Relaxation
16.	Nitrate (as NO_3)	IS: 3025 (P-34)	4.39	mg/l	45	No Relaxation
17.	Selenium (as Se)	IS: 3025 (P-56)	<0.01	mg/l	0.01	No Relaxation
18.	Silver (as Ag)	Annex J IS: 13428	<0.05	mg/l	0.1	No Relaxation
19.	Sulphate (as SO_4)	IS: 3025 (P-24)	34.80	mg/l	200	400
20.	Sulphide(as H_2S)	IS-3025 (P-29)	<0.05	mg/l	0.05	No Relaxation
21.	Alkalinity (as Ca CO_3)	IS: 3025 (P-23)	176.0	mg/l	200	600
22.	Total Hardness (as $CaCO_3$)	IS: 3025 (P-21)	189.0	mg/l	200	600
23.	Zinc (as Zn)	IS: 3025 (P-49)	0.132	mg/l	5.0	15
24.	Phenolic Compound as (C_6H_5OH)	IS: 3025 (P-43)	BDL (<0.001)	mg/l	0.001	0.002

Parameters Concerning Toxic Substances:

S.No.	Parameter	Test method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1.	Cadmium (as Cd)	IS-3025(P-41)	<0.001	mg/l	0.003	No Relaxation
2.	Cyanide (as CN)	IS-3025(P-27)	<0.01	mg/l	0.05	No Relaxation
3.	Lead (as Pb)	IS-3025(P-47)	<0.01	mg/l	0.01	No Relaxation
4.	Mercury (as Hg)	IS-3025(P-48)	<0.001	mg/l	0.001	No Relaxation
5.	Molybdenum (Mo)	IS-3025(P-2)	<0.05	mg/l	0.07	No Relaxation
6.	Nickel (as Ni)	IS-3025(P-54)	<0.01	mg/l	0.02	No Relaxation
7.	Poly nuclear Aromatic Hydro Carbons	APHA 6440	<0.0001	mg/l	0.0001	No Relaxation
8.	Poly chlorinated biphenyl	APHA 6630	<0.0001	mg/l	0.0005	No Relaxation
9.	Total Arsenic (as As)	IS-3025(P-37)	<0.01	mg/l	0.01	No Relaxation
10.	Total Chromium (as Cr)	IS-3025(P-52)	<0.05	mg/l	0.05	No Relaxation

*Remark : BDL: Below Detection limit

Notes:
1. The results given above are related to the tested sample, as received & mentioned parameters. The customer asked for the above test only.
2. Responsibility of the Laboratory is limited to the received/tested only.
3. This test report will not be quoted again, either wholly or in part, without prior written permission of the laboratory.
4. The test report will be disposed off after two months from the date of issue of test report, unless test specified by the customer.

Anjali
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TEST CERTIFICATE

Issued To: M/s Bajaj Hindusthan Sugar Ltd. Address: Unit – Sugar, Vill- Kundarkhi, District– Gonda (U.P), India	Report Code : W-160323-022 Test Report of : Water Service Request No : NTL/SRF/03/23-018 Service Request Date : 15/03/2023 Report Issue Date : 21/03/2023

Sampling & Analysis Duration

Sample Collected By	:	NTL Representative
Sample Drawn On	:	16/03/2023
Sample Drawn & sealed by	:	Mr. Varun
Sample Received On	:	16/03/2023
Sample Quantity	:	2.0 Lt. + 500 ml.
Analysis Duration	:	16/03/2023 to 21/03/2023
Sampling Location	:	Farmer Field
Sample Description	:	Ground Water

MICROBIOLOGICAL REQUIREMENT RESULT

S.No.	Parameter	Test Method	Results	Requirements as per IS-10500:2012
1.	*Escherichia coli*	IS-15185	Absent	Absent/100ml
2.	*Coliform Bacteria*	IS-15185	Absent	Absent/100ml

ORGANOLEPTIC & PHYSICAL PARAMETERS

S.No.	Parameter	Test Method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1.	Colour	IS-3025(P-04)	<1.00	Hazen Unit	5	15
2.	Odour	IS-3025(P-05)	Agreeable	-	Agreeable	Agreeable
3.	Taste	IS-3025(P-07 & 08)	Agreeable	-	Agreeable	-
4.	Turbidity	IS-3025(P-10)	<1.00	NTU	1	5
5.	pH value	IS-3025(P-11)	7.36	-	6.5 - 8.5	-
6.	Total dissolve solid (TDS)	IS-3025(P-16)	425	mg/l	500	2000

GENERAL PARAMETERS CONCERNING SUBSTANCES UNDESIRABLE IN EXCESSIVE AMOUNTS

S.No.	Parameter	Test method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1.	Aluminium (as Al)	IS: 3025 (P- 55)	<0.01	mg/l	0.03	0.2
2.	Total Ammonia	IS: 3025 (P- 34)	<0.10	mg/l	0.5	No Relaxation
3.	Anionic Detergents (as MBAS)	Annex K of IS-13428	<0.10	mg/l	0.2	1.0
4.	Barium (as Ba)	IS: 15302	<0.10	mg/l	0.7	No Relaxation
5.	Boron (as B)	IS: 3025 (P- 57)	<0.10	mg/l	0.5	2.4
6.	Calcium (as Ca)	IS: 3025 (P- 40)	42.50	mg/l	75	200

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7.	Chloramines (as Cl_2)	IS: 3025 (P- 26)	<1.00	mg/l	4.0	No Relaxation
8.	Chloride (as Cl)	IS: 3025 (P- 32)	52.80	mg/l	250	1000
9.	Copper (as Cu)	IS: 3025 (P-42)	<0.05	mg/l	0.05	1.5
10.	Fluoride (as F)	IS: 3025 (P-60)	0.42	mg/l	1.0	1.5
11.	Free Residual Chlorine	IS: 3025 (P-26)	BDL(<0.1)	mg/l	0.2	1.0
12.	Iron (as Fe)	IS: 3025(P-53)	0.136	mg/l	1.0	No Relaxation
13.	Magnesium (as mg)	IS: 3025 (P-46)	15.08	mg/l	30	100
14.	Manganese (as Mn)	IS: 3025 (P-59)	<0.10	mg/l	0.1	0.3
15.	Mineral Oil	Clause 6 of IS: 3025	<0.50	mg/l	0.5	No Relaxation
16.	Nitrate (as NO_3)	IS: 3025 (P- 34)	4.27	mg/l	45	No Relaxation
17.	Selenium (as Se)	IS: 3025 (P- 56)	<0.01	mg/l	0.01	No Relaxation
18.	Silver (as Ag)	Annex J IS: 13428	<0.05	mg/l	0.1	No Relaxation
19.	Sulphate (as SO_4)	IS: 3025 (P- 24)	36.20	mg/l	200	400
20.	Sulphide(as H_2S)	IS-3025 (P-29)	<0.05	mg/l	0.05	No Relaxation
21.	Alkalinity (as Ca CO_3)	IS: 3025 (P- 23)	192.0	mg/l	200	600
22.	Total Hardness (as $CaCO_3$)	IS: 3025 (P- 21)	176.0	mg/l	200	600
23.	Zinc (as Zn)	IS: 3025 (P- 49)	0.145	mg/l	5.0	15
24.	Phenolic Compound as (C_6H_5OH)	IS: 3025 (P- 43)	BDL (<0.001)	mg/l	0.001	0.002

Parameters Concerning Toxic Substances:

S.No.	Parameter	Test method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1.	Cadmium (as Cd)	IS-3025(P-41)	<0.001	mg/l	0.003	No Relaxation
2.	Cyanide (as CN)	IS-3025(P-27)	<0.01	mg/l	0.05	No Relaxation
3.	Lead (as Pb)	IS-3025(P-47)	<0.01	mg/l	0.01	No Relaxation
4.	Mercury (as Hg)	IS-3025(P-48)	<0.001	mg/l	0.001	No Relaxation
5.	Molybdenum (Mo)	IS-3025(P-2)	<0.05	mg/l	0.07	No Relaxation
6.	Nickel (as Ni)	IS-3025(P-54)	<0.01	mg/l	0.02	No Relaxation
7.	Poly nuclear Aromatic Hydro Carbons	APHA 6440	<0.0001	mg/l	0.0001	No Relaxation
8	Poly chlorinated biphenyl	APHA 6630	<0.0001	mg/l	0.0005	No Relaxation
9.	Total Arsenic (as As)	IS-3025(P-37)	<0.01	mg/l	0.01	No Relaxation
10.	Total Chromium (as Cr)	IS-3025(P-52)	<0.05	mg/l	0.05	No Relaxation

*Remark - BDL: Below Detection limit

Notes:
1. The results given above are related to the sample as received & mentioned parameters. The sampling is valid for the above only.
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Technical Report

On

GROUND WATER RECHARGE STUDY

For

Bajaj Hindusthan Sugar Limited
Unit - Kundarkhi
District – Gonda, Uttar Pradesh

Carried out By

Directorate of Research
C. S. Azad University of Agriculture & Technology,
Kanpur – 208 002 (India)

Technical Report
on
Ground Water Recharge Study

Introduction:

Artificial recharge of groundwater is accomplished through placing surface water in basins, furrows, ditches, or different centres wherein it infiltrates into the soil and actions downward to recharge aquifers. Synthetic recharge is an increasing number of used for short- or lengthy-term underground garage, where it has several blessings over floor storage, and in water reuse. Artificial recharge requires permeable surface soils. In which these are not available, trenches or shafts in the unsaturated sector can be used, or water can be at once injected into aquifers via wells. To design a machine for artificial recharge of groundwater, infiltration rates of the soil have to be determined and the unsaturated area among land floor and the aquifer ought to be checked for good enough permeability and lack of polluted regions.

The artificial recharge to ground water aims at augmentation of ground water reservoir by modifying the natural movement of surface water utilizing suitable civil construction techniques. Artificial recharge is the process by which the ground water is augmented at a rate much higher than those under natural condition of percolation. In most low rainfall areas of the country the availability of utilizable surface water is so low that people have to depend largely on ground water for agriculture and domestic use. So in order to improve the ground water situation it is necessary to artificially recharge the depleted ground water aquifers.

Under these circumstances, the present study was taken up with the following objective (s) namely:

1. To analyze the working of artificial recharge of ground water.
2. To determine the amount of water that would be available from a given catchments and the size of storages.

Methodology:

The study entitled "Ground Water Recharge Study" was conducted during the month of March, 2024 by a team included representatives of the sugar plant. During the course of the study different kind of information were gathered. The appropriate

tools and techniques were used in gathering information. In addition to above, the desired information was also gathered from different places/points.

Brief Description About Company:

Bajaj Hindusthan Sugar Limited (BHSL) was established on 24th November 1931, as 'Hindusthan Sugar Mills Limited.' Founded by the late Shri Jamnalal Bajaj, a respected businessman, freedom fighter, and close confidant of Mahatma Gandhi, the company's inception aimed to address a critical national mission-providing momentum to the industry, given that there were fewer than 30 sugar mills in the country at that time-and advancing inclusive growth. The chosen site for the first plant was in Gola Gokaran Nath in the Lakhimpur Kheri district in the Terai region of present-day Uttar Pradesh (UP). Positioned in an area abundant with sugarcane plantations, the original capacity of the plant was 400 tonnes of cane crushed per day (TCD), which eventually increased to its current 13,000 TCD. The distillery unit of the plant began production in 1944. During World War II, the distillery primarily produced power alcohol, a commodity in short supply at the time. Notably, the unit became the first in the country to supply alcohol-mixed petrol to the army.In 1967, a new company, Sharda Sugar & Industries Limited, emerged as a subsidiary of Hindusthan Sugar Mills Limited. Under this subsidiary, a sugar plant with a cane crushing capacity of 1,400 TCD was established in 1972 at Palia Kalan, a major cane-supplying centre located 70 kilometres north of the Gola Gokaran Nath unit. The Palia Kalan unit's capacity was gradually increased to its current 11,000 TCD.

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capacity of 3,200 TCD. Post-acquisition, its capacity doubled to 6,000 TCD within a year.

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Today, BHSL holds a unique position, towering over local peers and ranking among the world's best in planning and processes. With the company impacting over 5 lakh farmers in UP, it directly contributes to the rural economy, bringing positive change to countless lives in UP and beyond across India.

Detail About the Unit:

The premises of M/S Bajaj Hindusthan Sugar Limited Unit Kundarkhi (Sugar Plant) is situated in Kundarkhi village (Block: Jhanjhari) in district Gonda of Uttar Pradesh well connected with road to major cities. The unit was established in 2007. The sugar production capacity is 15000 TCD.

Water Requirement and Quality of Groundwater:

The total ground water requirement of plant is 2000 m^3/day or 300000 m^3 /year. Since the area is non-notified and falls in safe category, as per ground water NOC for withdrawal of ground water, adoption of artificial recharge to ground water is required.

The study area theoretically covers within the circle encompassed by 5 km radius around the sugar plant site is classified into 4 classes *viz.*, settlements, agriculture land, industry, and rocky water body. The district experiences sub-humid climate and three distinct seasons *viz.*, summer, rainy and winter.

The ground water exploration in the district reveals that clay group of formations dominates over the sand group in the district area. Ground water in the district occurs in the alluvium under water table and semi-confined to confined conditions. On the basis of the depth to water level of the district, the pre-monsoon depth to water level ranges between 4.2 m bgl to 4.8 m bgl, while post-monsoon depth to water level ranges between 3.3 m bgl to 4.4 m bgl.

A detailed groundwater level monitoring has been carried at about 7 different locations within the buffer zone from existing open wells and bore wells. The physio-chemical quality of groundwater was compared with drinking water standard (IS: 10500- 2012). Some of the parameters of the ground water samples showed values lower than the permissible limit. Thus, can be inferred from the sampling results for groundwater that some of the parameters are in lower range so adequate measures to be taken before consumption of the same as per standards (IS: 10500-2012).

Details of Ground Water Abstraction

Artificial recharge has been practiced within the sugar plant premises. Rainwater harvesting practices through roof-top is being carried out and the available run-off from the same is used for green belt or dust suppression etc.

There are four existing bore-well present in the industry premises. The monitoring of ground water abstraction is done on regular basis. Awareness programme about the conservation of ground water resources are also being organised to create the awareness among people.

S.No.	NOC NO./ Certificate NO.	Maximum Allowable Withdrawal (m3/day)	Total Allowable Withdrawal (m3/day)	Maximum Allowable Annual Extraction of Ground Water	Total Allowable Annual Extraction of Ground Water	Validity Start	Validity End	Validity in a Year (No. Of days)
1.	NOC-043562	750	2000	112500	300,000	18.06.2021	17.06.2026	150
2.	NOC-047600	750		112500				
3.	NOC-020211	300		45000				
4.	NOC-026057	200		30000				

Artificial Recharge:

Natural replenishment of ground water storage is slow and is unable to keep pace with the excessive exploitation of ground water. With increasing urbanization, the land area for natural rainwater recharge is also shrinking and large unutilized runoff carries pollution to the water bodies. Artificial recharge to groundwater aims at augmentation of the ground water storage by modifying the natural movement of surface water, utilizing suitable civil construction techniques to increase the seepage rate exceeding that under natural conditions of replenishment. The rainfall occurrence in India is limited to about 3 months period, ranging from about 10 to 60 rainy days. The natural recharge is restricted to this period only. The artificial recharge techniques aim at increasing the recharge period in the post-monsoon for about 3 months to provide additional recharge. This would result in providing sustainability to ground water development.

In majority of the areas, scarcity of water is felt in post-monsoon season. Due to steep gradients, a large quantity of water flows out to low lying areas as surface runoff. There is a need to provide sustainability to these surface storages which are effective in providing additional recharge and sustain the flow for a longer period. Most of the urban areas in the country are facing water scarcity. The dependence on ground water has increased many folds and the natural recharge to ground water has decreased due to increased buildings and paved areas etc. Roof top rain water harvesting, which involves the collection of rainwater from the roof of the buildings and its storage in surface tanks or recharge to sub-surface aquifer, can play an important role in conservation of water. Thus, the need for artificial recharge of

groundwater is beyond doubt and is the most powerful management strategy available to face the challenge of fast depletion in ground water storages.

Inside Plant Premises:

Rainwater harvesting can be done by diverting the runoff that is generated from roof sheds, roads and green belt areas of recharging into ground water system. Implantation of recharge mechanism ensures the balance between the discharge vis-a-vis recharge of the aquifer system and improvement in the ground water quality. The normal annual rain fall for the said area has been taken as 1151.80 mm based on the site plan and land use pattern of the plot, the computation of runoff for each unit has worked out and the details are tabulated below:

Calculation of annual rainfall runoff potential

S. No.	Land use type	Area (sq m)	Coefficient of runoff	Rainfall (m)	Quantity of Rainwater (m^3)
1	Rooftop Area	14968.02	0.80	1.15	13771.00
Total		**14968.02**	-	-	**13771.00**

From the above computation, it is evident that a total quantum of 13771.0 m^3 /year of rain water is fruitfully harvested & recharged from plant premises annually by constructed suitable recharge structures against the withdrawal of 300000.00 m^3 /year. In order to design the recharge structures, hourly runoff of 30 mm/hr has been taken into account and the details are tabulated below:

Hourly Computation of Runoff – (30 mm/hr)

S. No.	Land use type	Area (sq m)	Coefficient of runoff	Intensity of Rainfall (m)	Quantity of Rainwater (m^3)
1	Rooftop Area	14968.02	0.80	0.03	359.23
Total		**14968.02**	-	-	**359.23**

Structure Calculation:

- Thus, the total rainwater harvesting capacity of roof top area of the industry is about 359.23 m^3 per hour.
- Assuming retention time of 0.25 hour in the recharge pit, the design volume for the recharge pit is 359.23/4 = 89.80 m^3
- Let us provide recharge pit of 2 m × 2 m in size and 2.5 depth.
- Volume of one pit = 10 m^3
- Capacity of One Bore well recharge: 30 cubic meters
- Average Recharge Capacity of Pit with two well = 10 + 30 + 30 = 70
- Required no. of pits = 89.80/70 = 1.28 (01 appx.)
- The sugar plant provided 01 no. recharge pit of 2 m × 2 m × 2.5 m in size at peak rainfall intensity of 30 mm.

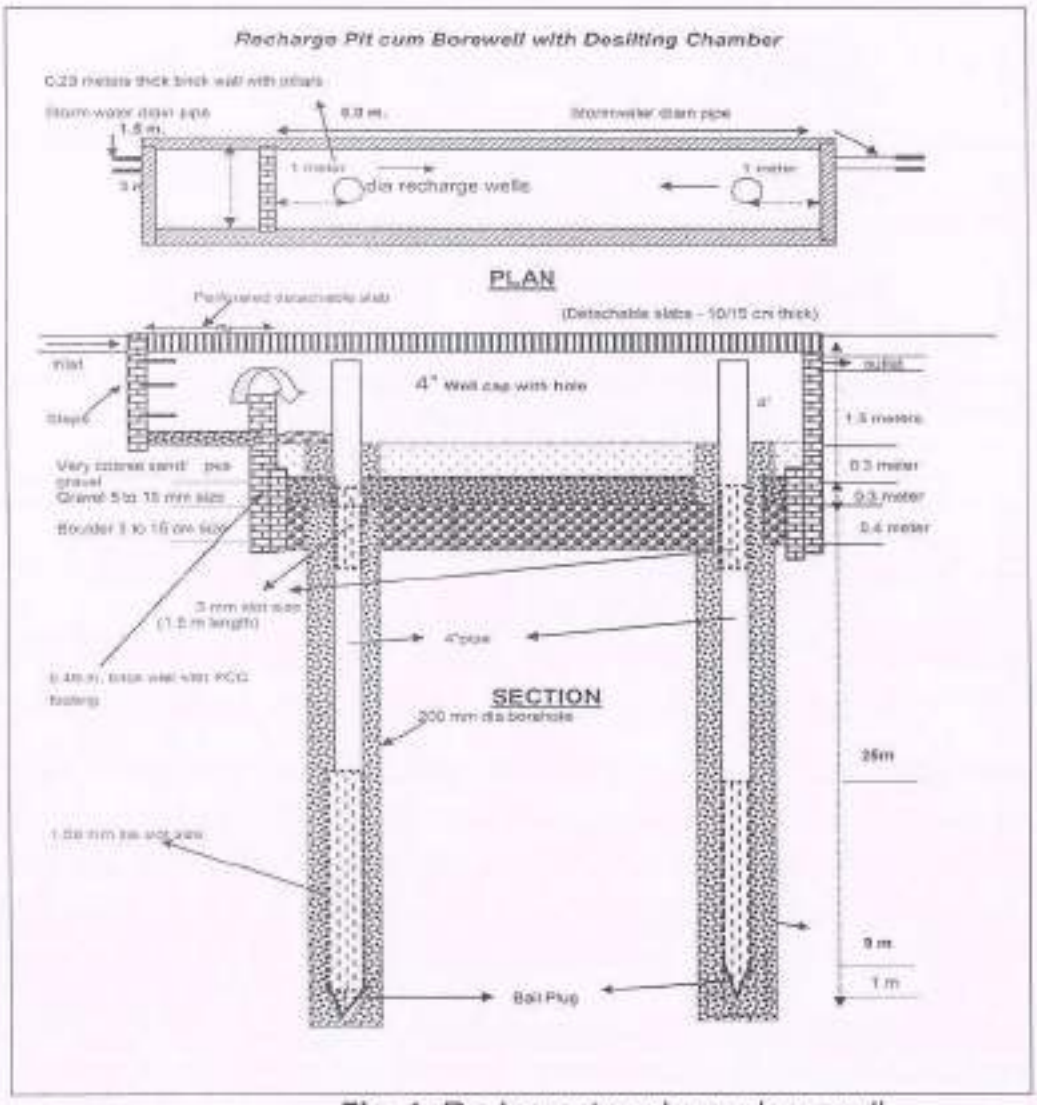

Fig. 1: Recharge trench cum bore well

Designs of Double Bore Recharge Structure:

The location of these sites is located as per the layout of storm water drains and the catch basins that are constructed. Necessary precautions are taken to avoid any contaminated water entering into the recharge structures. The recharge structures so designed that these are operational only during the monsoon seasons. All the structures are constructed in series and the overflow from one may be accommodated to the next structure. For the plot areas having green belt necessary slopes is given so that the rainfall runoff is channelized and diverted to the recharge shafts. In implementing the recharge structures, the spacing between two consecutive recharge trenches is 50 meters apart. Settling chambers is located at suitable locations before the recharge structures so as to avoid any excess siltation to the recharge trenches (Fig. 1). Provision of Geo-textile mesh/ Johnson cloth on the top of the filter media is preferred to avoid frequent clogging of the filter media. Special care is being taken for identifying the exact locations of the recharge structures so that the ground water augmentation is optimal. The area under recharge project has hydro-geological conditions having alluvial ascertained based initial wells and subsequently tested for its intake rate.

Proper type of rig deployment and construction of recharge structures warrants for strict supervision of ground water experts while implementation. The recharge wells are tested and slug test also conducted at selected recharge wells so as to ascertain the dissipation rate of the rainfall runoff to the aquifer systems. Such an approach reflected the proper recharge mechanism at the study area.

Therefore, the total annual recharge from rain water harvesting is about 13771.00 m^3 per year against the withdrawal of 300000.00 m^3 per annum of ground water (which is around 5 % only). The balance amount of recharge is made by adopting suitable village ponds in the Jhanjhari block and converting them in recharge ponds. Implementation of recharge mechanism in the study area creates a balance between the recharge vis-à-vis discharge relationships of the aquifer system. It is also maintain the ground water quality, which may deteriorate due to prolonged pumping, and the recharge of fresh rainfall runoff shall compensate it. Aquifer systems, exact depth of recharge well and its slot positions ascertained based initial wells and subsequently tested for its intake rate.

Artificial Recharge of Groundwater From the Village Pond:

The industry has adopted pond near the industrial complex in order to recharge the rain water. These village ponds are generally filled with water only during the rainy season and during summer they are dry. The adopted these village ponds to take-up artificial recharge to ground water of the pond water which is overflowing to adjacent areas during monsoon period. According to opinion of the users, the artificial recharge to ground water in the pond areas resulted into rise in water levels in the village tube-wells as wells and increases the supply of water to the lands adjacent for irrigation purposes. Thus, recharge schemes in the ponds is benefit the area.

Recharge Calculation in Ponds

Type	Village Name	Gata No.	Area (Sq m)	Depth of Ponds (M)	Total Storage Capacity (m3)
Pond- 1	Birwa Babhani	223 स	26000	3.0	78000
Total			**26000**	**3.0**	**78000**

Pond Recharge Calculations:

Pond- 1:

- Now, total storage capacity of pond from above computation is 78000.00 m^3.
- In approximation, in a year 3 filling will occur. Hence, 78000X3 = 234000.00 m3
- Out of 234000.00 m^3 we take 60 % filling on safer side.
- So, the total is 140400.00 m^3

Through Ponds of Village Birwa Babhani:

Recharge can either be natural, from precipitation that falls on the earth's surface and moves on its way underground or it can be artificial, from human activities that deliberately or inadvertently replenish an aquifer. Artificial recharge may be defined as the process of replenishing groundwater by augmenting the natural infiltration of rainwater or surface water into underground formations through various methods designed depending on the topographic, geologic and soil conditions.

The industry has adopted 1 pond located in village Birwa Babhani for artificial rain water harvesting as recharge shaft and natural percolation in ponds which resulted into creation of additional recharge which is sufficient to fulfil the mandatory requirements as per guidelines of the concerned Ministry.

Total pond area is 2.6 hectares i.e. 26000 m^2.

Recharge Calculation in Ponds

S.No.	Area (ha)	Area (m^2)	Depth after desilting (m)	Total storage capacity	60%	No of filling	Quantity of water recharge	No. of recharge structure (@15 m^3/hr)
1.	2.6	26000	3.0	78000	46800	3	140400	09 Nos.

- From pond, the total water available recharge is 140400.00 m^3.
- The total amount of recharge including both within premises and outside the premise is 154171.00 m^3 (within premises: 13771.00 m^3 + pond outside the premises: 140400.00 m^3) in a year and withdrawal is 300000.00 m^3 per year.

Existing industry is situated in safe block Jhanjhari of district Gonda and as per Ground Water Dynamic- 2020, hence we will have to recharge 50% of total withdrawal annually.

As per CGWA (Central Ground Water Authority) guidelines total amount of rainwater to recharge for the withdrawal of 300000.00 m^3/annum is 150000.00 m^3/annum (50% of 300000 m^3/annum).

Against requirement of 300000.00 m^3/annum, the company recharge 154171.00 m^3/annum through 09 nos. of recharge structures, which is more than 50 %.

Recharge Summary

Total fresh water requirement for sugar project	821.9 KLD/ 300000.00 m^3/year
Source of water for plant activates	Ground water
RHW potential/ artificial recharge required	Maximum up to 50 % recharge criteria (safe zone)- 150000.00 m^3/ year
Total artificial rainwater recharge inside the plant	13771.00 m^3/year
Total artificial rainwater recharge outside the plant	140400.00 m^3/year
Total recharge	**154171.00 m^3/year**

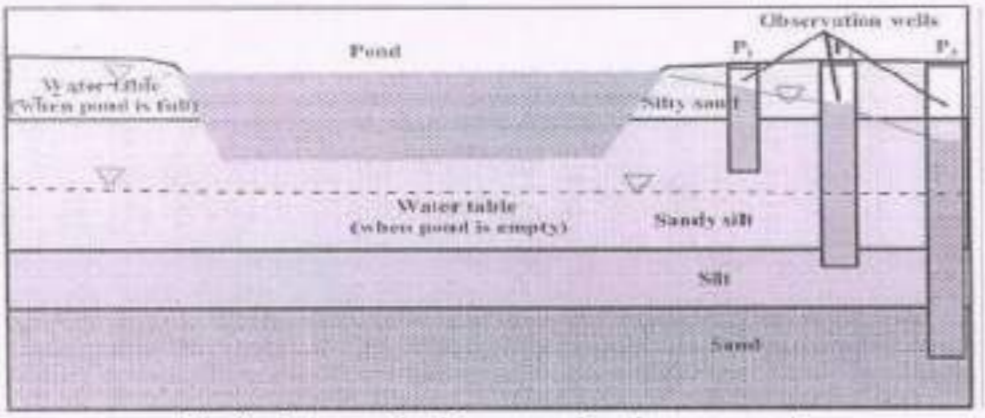

Fig 2: Schematic diagram of recharge pond

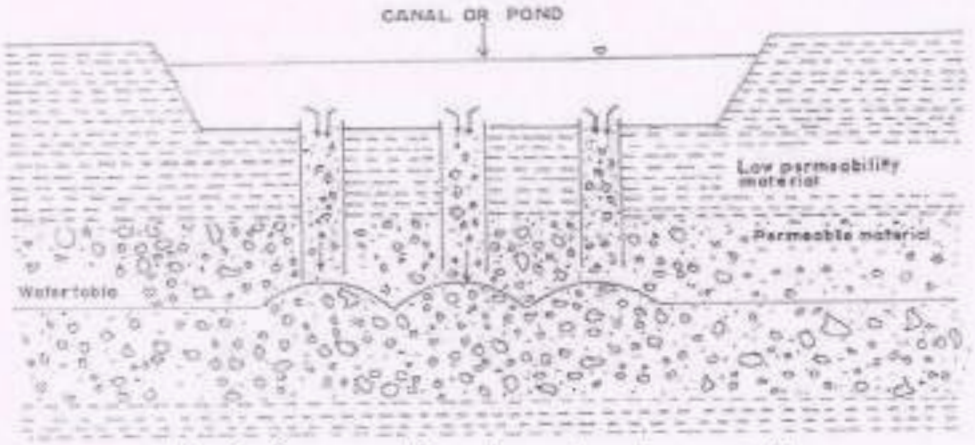

Fig 3: Cross section of pond recharge shaft

OBSERVATIONS AND RECOMMENDATIONS

- To make the people aware, the awareness programme about the conservation of ground water resources should be organized regularly.
- The water level monitoring network needs to be increased in the nearby areas.
- Community efforts and create the spirit of cooperation needed to subsequently manage sustainably ground water as a community resource.
- The BHSL Kundarkhi unit is situated in safe zone as per Ground Water Notification and this unit is doing artificial ground water recharge though in-house roof top rain water harvesting network and also through village ponds adopted outside factory premises .
- BHSL Kundarkhi unit artificial water recharge quantity is more than required quantity as prescribed by UP-Ground Water Deptt.

CONCLUSION

Based on the study, it can be concluded that the BHSL Kundarkhi unit recharges more than 50 % of the required quantity of the water as prescribed by UP-Ground Water Deptt.

Dated: 14.05.2024

14/05/24

Dr. Rajiv
Scientist/ Team Leader
Directorate of Research
Chandra Shekhar Azad University of Agriculture & Technology,
Kanpur- 208 002, Uttar Pradesh, India

bajaj SUGAR

Date 16.07.2024

To,
The Regional Officer,
Uttar Pradesh Pollution Control Board
Block road, Badevan Buddhapuram
Basti (U.P)

Sub: Compliance status of order issued by Hon'ble NGT against OA No 691/2022 vide Dated 13.02.2023.

Ref: BHSL UTRAULA Letter Dated 12/04/2024 for Submission of Impact Assessment Study for treated water utilization on agriculture land & ground water recharge study through the ponds adopted

Dear Sir,

With reference to above mentioned subject, we would like to apprise that following studies were carried out by Chandra Shekhar Azad University of Agriculture & Technology Kanpur.

- Impact Assessment Study for treated water utilization on agriculture land.
- Study of Ground Water Recharge study through the ponds adopted by the Unit Utraula

As we have received the above-said study reports from the CS Azad University of Agriculture & Technology Kanpur, copy of the reports are enclosed herewith as **Annexure -1 & 2.**

Kindly acknowledge receipt of the above-said study reports.

Thanking you
Yours Faithfully
For Bajaj Hindusthan Sugar Ltd.,
Unit: Utraula **Sugar**

(Authorized signatory)

Enclosure: As Above

Copy: The Chief Environmental Officer (Circle 6), UPPCB -Lucknow

Technical Report

On

IMPACT ASSESSMENT STUDY
OF
TREATED WATER UTILIZATION ON AGRICULTURE LAND

For

Bajaj Hindusthan Sugar Limited
Unit - Utraula
District – Balrampur, Uttar Pradesh

Carried out By

Directorate of Research
C. S. Azad University of Agriculture & Technology,
Kanpur – 208 002 (India)

Technical Report
on
Impact Assessment Study of Treated Water Utilization on Agriculture Land

Introduction:

Water is the most abundant natural resource in the world. The earth surface is covered 70 per cent by water and out of this the saline sea water is 97 per cent. But, the potable or drinking water is about 13 per cent of the residual which is 0.40 per cent of all the world water and the remaining is held either as ice and atmosphere.

The primary competing uses of water is typically agriculture followed by industry, domestic, recreational and more recently environmental preservation. Proper distribution of water among these sectors requires planning and management. Sustainability of water resources and an equitable distribution of available water drive much of this planning. Finding sustainable solutions for water stressed regions is an important focus of water resources planners. For sustainable water management to occur, the allocation of water must be socially fair for both current and future populations.

With the population growing at a higher rate, the need for increased food production is inevitable. Use of treated water in agriculture therefore, could be an important consideration when its disposal is properly planned. The quality of treated effluent will then become very important in terms of its performance to groundwater, soil and plant. For irrigation, the quality of effluent will depend on crops to be irrigated, the soil conditions and the system of effluent distribution adopted besides the output quality of crops grown.

Treated water has high potential for reuse in agriculture; an opportunity for increasing food and environmental security, avoiding direct pollution of rivers, canals, surface water; conserving water and nutrients, thereby reducing the need for chemical fertilizer. Among different sources of treated water, industrial treated water reuse is one of the momentous components of water reuse in agriculture as the source content are known and treatment is done by the industry.

The different socio-environmental and economical benefits resulting from water conservation and reuse included: (a) agriculture benefits such as value of a secure supply of treated water, increased farm production and value of treated water

nutrients, i.e. savings in fertilizer applications; (b) environmental water quality benefits such as reduction in freshwater diversions, reduction in pollutant discharges, reduction of the potential salinity intrusion risk in groundwater aquifers and improvement of the ecosystem and increase of the fauna and flora species and (c) increase of the quality of life of the population.

Under these circumstances, the present study was taken up with the following objectives namely:

1. To identifying the externalities of use of treated water from sugar plant in agriculture.
2. To assess the impact of treated water use in the agriculture in terms of crop productivity, soil fertility, socio economic and environmental factors.

Methodology:

The study entitled "Impact Assessment Study of Treated Water Utilization on Agriculture Land" was conducted during the month of March, 2024 by a team included representatives of the sugar plant. During the course of the study different kind of information *viz.*, soil conditions, farmers perceptions, technology adoption, development activities and farmers knowledge in regard to the treated water of the sugar plant were gathered. The approach used in gathering information included PRA tools and techniques, personal interviews, field visits, etc. In addition to above, the desired information were also gathered from different places like ETP, analytical laboratory, storage tank, water supply system, monitoring system etc.

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capacity of 95.8 MW. Coupled with the power generation capacity of 325 MW from BHSL, the company's total generation capacity stands at 420.8 MW, surpassing its energy needs. Notably, the surplus 90 MW of energy is supplied to the UP state grid. In December 2010, the amalgamation of BHSIL with BHSL was completed. BHSL's growth initiative was strategically focused on achieving global manufacturing scale and cost competitiveness. Simultaneously, it created significant developmental opportunities in UP, a state eager for infrastructural growth, youth employment, and overall socioeconomic development in rural communities.

Today, BHSL holds a unique position, towering over local peers and ranking among the world's best in planning and processes. With the company impacting over 5 lakh farmers in UP, it directly contributes to the rural economy, bringing positive change to countless lives in UP and beyond across India.

Detail About the Unit:

The Bajaj Hindusthan Sugar Limited, Utraula was established in 2007 in district Balrampur of Uttar Pradesh. At present it is engaged in producing plantation white sugar. It has installed capacity of 12000 TCD. The sugar production capacity is 12000 TCD.

Entry gate of the Utraula (Balrampur) unit

Effluent Treatment Plant Description:

a) ETP Layout and Unit Capacity Details:

The details information is given in attached Annexure-1.

b) **ETP Process Description**:

Unit has installed state of art technology ETP for the treatment of effluent from various production processes. ETP is based on activated sludge process comprised with bar screen, oil & grease trap, equalization tank, primary clarifier, aeration tank with air fine bubble diffuses ,secondary clarifier followed by sand filer and activated carbon filters at tertiary treatment stage .The system is designed to achieve the standard norms as notified by MOEF & CC Notification dated 14.01.2016. The sulphate removal system has also been installed and is being operated for the treatment of the cooling tower overflow which further treated in activated sludge process ETP with single outlet point.

c) **Details about Analytical Facility at Site:**

Utraula unit has a well equipped Environmental Laboratory for environmental monitoring and testing and different parameters like pH, BOD, COD, TSS, TDS, Sulphate etc are being tested. The list of the available lab equipment is attached in Annexure- 2.

d) **Details about Manpower at Site to Monitor ETP & Irrigation Management Plan:**

At site, one EHS Assistant Manager along with one supervisor, three skilled operators and three helpers are working for effective monitoring of ETP and Irrigation Management Plan.

e) **Details about Treated Water Storage Impervious Lagoon:**

The unit has constructed impervious lined storage tank with the **capacity of 12000 KL** for storage of treated effluent during low/no demand, based on the Irrigation Management Plan.

f) **Details about Treated Water Transportation at Farmers Field**:

The Bajaj Hindusthan Sugar limited, Utraula has Lagoon with a capacity of 12000 cubic meters and from here the treated water is being supplied to the field of farmers of targeted area through pumping set with the help of underground water supply system which is fully controlled via butter fly valve. The underground water supply system is made up from 4" size of HDPE pipes along with appropriate number of outlets at different location.

Lagoon

Analytical facility

g) **Details about Treated Water Utilisation:**

The industrial treated effluent is being used in irrigation, in compliance with MOEF&CC notification 2016, as per irrigation management plan developed & approved by NSI, Kanpur. The treated domestic effluent is being utilized in lawn, garden and other horticultural area. The flow meter is installed for the measurement of final treated water used for Irrigation Management Plan.

h) **Physio-Chemical Properties of Treated Effluent:**

The treated effluent is being tested by the unit regularly and samples were analysis by NABL and MOEF & CC approved laboratory. The tested values of different parameters of treated effluent for the year of 2023-24 and 2022-23 (previous year) are given as below:

S.No.	Treated Effluent Particulars	Avg. Value (2022-23)	Avg. Value (2023-24)
1.	pH	7.25	7.36
2.	BOD (mg/l)	20	20.0
3.	COD (mg/l)	116	98.0
4.	TSS (mg/l)	23	21.0
5.	Oil & Grease (mg/l)	BDL* <1.0	BDL <1.0

BDL* = Below Detection Limit

The values of the different parameters of the treated effluent are under the limits as per CPCB norms. The analysis reports are attached as Annexure -3.

Farmers and Irrigation Areas:

The list of the some beneficiary progressive farmers and their covered area under irrigation plan is given as below:

S.No.	Name of Village	Village & Block	Land covered under Irrigation plan (Hectares)
1.	Rangeela	Dhovadabar, Sriduttganj	1.728
2.	Augnu	Dhovadabar, Sriduttganj	0.587
3.	Zamil Ahamd	Dhovadabar, Sriduttganj	0.482
4.	Sagir Ahamd	Dhovadabar, Sriduttganj	2.671
5.	Eqbal	Dhovadabar, Sriduttganj	2.395

Agro-ecological Conditions of Operational Area:

As meeting the prescribed norms is not the only criterion for use of treated water in irrigation, the requirement of water for irrigation be a limiting condition and this depends upon various factors as mentioned below:

1. **Cropping Patters of Command Area:**

   At command area of M/s Bajaj Hindusthan Sugar Limited, Utraula is 255 hectares cultivated area and sugar cane crop is grown as main cash crop with more than 50% cane intensity. The cropping systems are as follows:

   (i) Sugarcane (Plant) - Sugarcane (Ratoon)- 2 Years

   (ii) Sugarcane (Plant) - Sugarcane (Ratoon) – Wheat - 2 Years

   (iii) Mustard-Sugarcane (Plant)-Sugarcane (Ratoon)- 2 Years

2. **Climate:**

   The command area has a humid subtropical, hot summer climate.

3. **Irrigation type:**

   The majority of the farmers are using flood irrigation method in command area.

4. **Soil Condition of Command Areas:**

collected from farmers' fields where irrigation is being applied/adopted through treated water and analysis of these samples was carried out by NABL and MOEF & CC approved laboratory. In addition, the previous soil testing reports were also available with the sugar unit and farmers as well. The soil test values of different parameters for the year of 2023-24 (on site visit) and 2022-23 (previous year) are given as below:

S.No	Soil Samples Particulars	Unit	Avg. Value (2022-23)	Avg. Value (2023-24)
1.	pH	-	7.65	7.82
2.	Salinity Electrical conductivity@ 25^0C	mmhos/cm	508	510
3.	Sodium Absorption Ratio (SAR)	Meq/l	3.16	3.24
	Soil Fertility Ratings			
4.	Organic Carbon	% by mass	0.45	0.52
5.	Available Nitrogen	Kg/ha	308	311
6.	Available Phosphorus	Kg/ha	19.6	20.5
7.	Available Potash (as-k)	Kg/ha	288	276

The data of the soil analysis revealed that the fertility status of the soil is good and heavy metals contents are also under upper limits, which indicated that there is no adverse effect of the treated effluent on soil of the farmers' field. The analysis reports are attached as Annexure -5.

Properties of the Ground Water of Borewells:

During onsite field visit, the water sample from borewells of the nearby beneficiary farmers was also collected where irrigation is being applied/adopted through treated water and analysis of the water sample was carried out by NABL and MOEF & CC approved laboratory. In addition, the previous water testing reports was also available with the sugar unit. The values of different physcio-chemical properties

of the underground water of borewells for the year of 2023-24 (on site visit) and 2022-23 (previous year) are given as below:

S.No.	Ground Water Parameters	Unit	Avg. Value (2022-23)	Avg. Value (2023-24)
1.	*Escherichia coli*	-	Absent	Absent
2.	*Coliform bacteria*	-	Absent	Absent
3.	Colour	Hazen	<1.00	<5.00
4.	Odour	-	Agreeable	Agreeable
5.	Taste	-	Agreeable	Agreeable
6.	Turbidity	NTU	<1.00	<1.00
7.	pH Value	-	7.46	7.36
8.	TDS	Mg/l	358	428
9.	Aluminium	Mg/l	<0.01	<0.01
10.	Total Ammonia	Mg/l	<0.10	<0.10
11.	Anionic Detergents	Mg/l	<0.10	<0.10
12.	Barium	Mg/l	<0.10	<0.10
13.	Boron	Mg/l	<0.10	<0.10
14.	Calcium	Mg/l	46.20	41.80
15.	Chloramines	Mg/l	< 1.00	< 1.00
16.	Chloride	Mg/l	32.08	54.60
17.	Copper	Mg/l	<0.05	<0.05
18.	Fluoride	Mg/l	0.36	0.46
19.	Free Residual Chlorine	Mg/l	BDL*(<0.1)	BDL*(<0.1)
20.	Iron	Mg/l	0.135	0.128
21.	Magnesium	Mg/l	12.40	15.40

22.	Manganese	Mg/l	<0.10	<0.10
23.	Mineral Oil	Mg/l	<0.50	<0.50
24.	Nitrate	Mg/l	4.20	4.26
25.	Selenium	Mg/l	<0.01	<0.01
26.	Silver	Mg/l	<0.05	<0.05
27.	Sulphate	Mg/l	38.70	25.60
28.	Sulphide	Mg/l	<0.05	<0.05
29.	Alkalinity	Mg/l	179.0	189.0
30.	Total Hardness	Mg/l	156.0	212
31.	Zinc	Mg/l	0.114	0.145
32.	Phenolic Compound	Mg/l	-	BDL*(<0.001)
	Toxic Substances			
33.	Cadmium	Mg/l	<0.001	<0.001
34.	Cyanide	Mg/l	<0.01	<0.01
35.	Lead	Mg/l	<0.01	<0.01
36.	Mercury	Mg/l	<0.001	<0.001
37.	Molybdenum	Mg/l	<0.05	<0.05
38.	Nickel	Mg/l	<0.01	<0.01
39.	Poly Nuclear Aromatic Hydro Carbons	Mg/l	<0.0001	<0.0001
40.	Poly Chlorinated biphenyl	Mg/l	<0.0001	<0.0001
41.	Total Arsenic	Mg/l	<0.01	<0.01
42.	Total Chromium	Mg/l	<0.05	<0.05

BDL*= Below Detection Limit

The data furnished in above table showed that the toxic substances in the ground water are under the acceptable limits. The details analysis reports are attached as Annexure -6.

Farmers Reaction:

During the course of study (field/on site visit), the interactions were made with the beneficiary farmers to know the impact of the treated water on their crop and soil as well. The farmers are using the treated water since last five-six years and growing various crops suitable for the region. The saving in the amount of chemical fertilizers, vigorous growth of the plants, more greenery of the plants, high yield, good soil health, reduction in cultivation cost and availability as and when required were the common opinion of the beneficiary farmers about the treated water.

	
Interaction with Farmers	Healthy crop grown with treated water

Farmers Outreach Programmes:

To educate and trained to the farmers about use of treated water and conservation of natural resources, the various farmers promotional programmes *viz.*, kishan goshthi, group discussion and interaction are being organised by the sugar unit regularly.

Demonstrations and Field Monitoring: The cane department of the sugar unit conducted demonstrations on farmers' field regularly. The demonstration is not restricted to cultivation of the new sugarcane varieties but agro-techniques for good agricultural practices (GAP) also demonstrated during the course of sugarcane cultivation. The large no. of the farmers of the command area is benefited through this transfer of technology practice i.e. demonstrations. In addition, the fields of the farmers are also being monitored at fourth nightly intervals.

CONCLUSION:

Based on the above said findings of the study entitled "Impact Assessment Study of Treated Water Utilization on Agriculture Land", it can be concluded that ....

1. There is no adverse effect of treated water utilization on agriculture land in terms of crop productivity, soil fertility, socio economic status and environmental factors.
2. Hence, irrigation through treated water of the sugar plant can be continued without any hazardous effects. The proposed system shall be able to cope-up the requirement of the water for irrigation purposes through utilization of the generated effluent.

Dated: 11.05.2024

11/05/24

Dr. Rajiv
Scientist/ Team Leader
Directorate of Research
Chandra Shekhar Azad University of Agriculture & Technology,
Kanpur- 208 002, Uttar Pradesh, India

Annexure -1

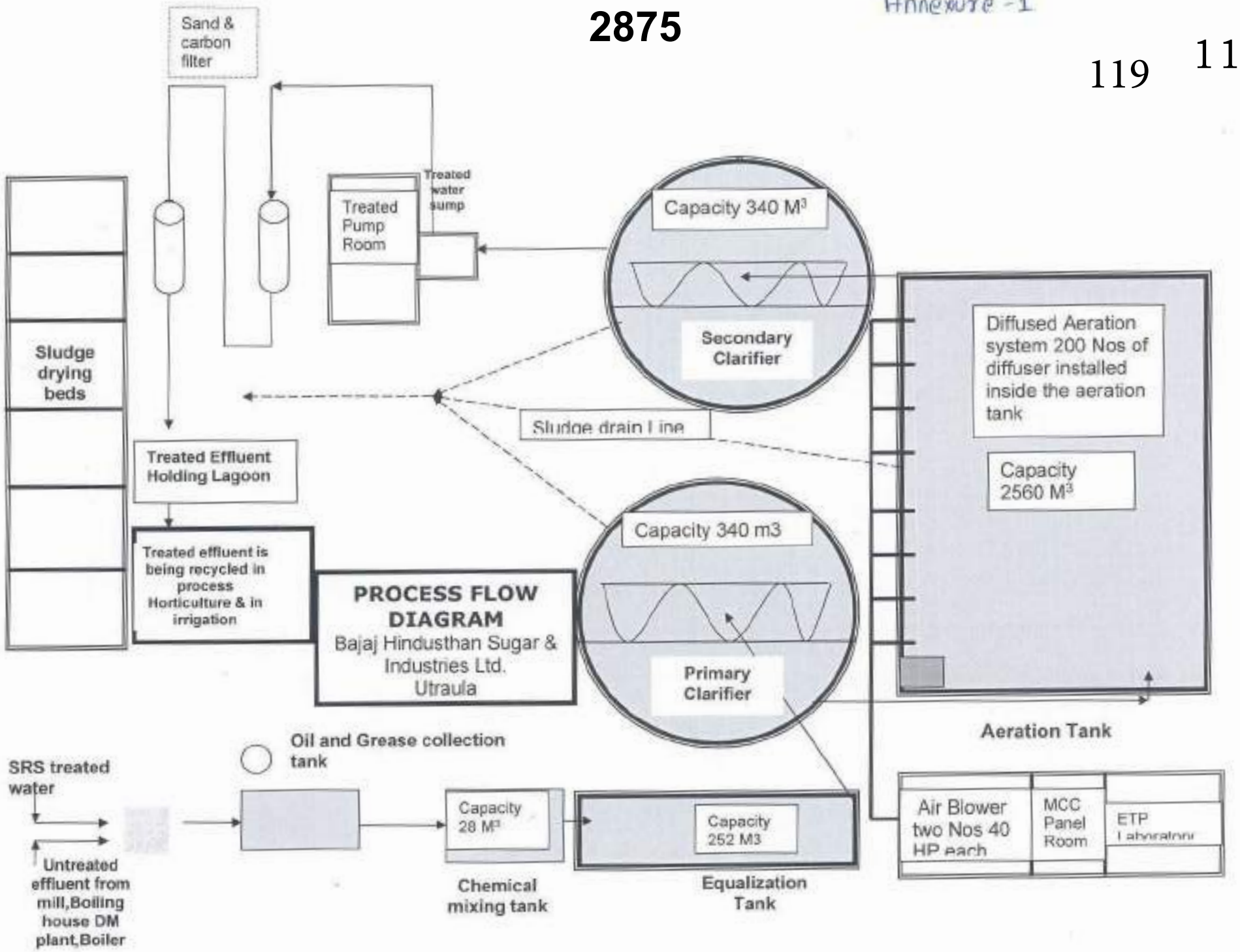
Annexure -2

Annexure -3

Annexure -4

Annexure -5

Annexure -6


Sand & carbon filter
Treated water sump
Treated Pump Room
Capacity 340 M³
Secondary Clarifier
Sludge drying beds
Diffused Aeration system 200 Nos of diffuser installed inside the aeration tank
Sludge drain Line
Treated Effluent Holding Lagoon
Capacity 2560 M³
Capacity 340 m3
Treated effluent is being recycled in process Horticulture & in irrigation
PROCESS FLOW DIAGRAM
Bajaj Hindusthan Sugar & Industries Ltd. Utraula
Primary Clarifier
Aeration Tank
Oil and Grease collection tank
SRS treated water
Capacity 28 M³
Capacity 252 M3
Air Blower two Nos 40 HP each
MCC Panel Room
ETP Laboratory
Untreated effluent from mill,Boiling house DM plant,Boiler
Chemical mixing tank
Equalization Tank

Annexure - 02

ETP Lab Equipment List

S.NO.	Lab Instruments Name	Qty.
1	PH Meter	1
2	BOD incubator	1
3	Glass distillation apparatus	1
4	Flame photometer	1
5	Conductivity meter	1
6	Thermo-Hygrometer	1
7	Laboratory Electrical Oven	1
8	Muffle Furnace	1
9	COD distillation Unit	1
10	Centrifugal Machine	1
11	Oil & grease apparatus	1
12	Kjeldahl distillation Apparatus	1
13	Spectrophotometer	1
14	Refrigerator.	1
15	Electronic Balance	1
16	Stack Monitoring Kit	1
17	Digital sound level meter	1
18	High Volume Air Sampler	1

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TEST CERTIFICATE

Issued To: M/s. Bajaj Hindusthan Sugar Ltd.	**Report Code** : WW-240224-027
Address: Village- Itaimaida Utraula, P.O. Sri Duttganj, District- Balrampur (U.P) India	**ULR No.** : TC681424000001798F
	Test Report of : Waste Water
	Service Request No : NTL/SRF/02/24 -07
	Service Request Date : 22/02/2024
	Report Issue Date : 28/02/2024

SAMPLING & ANALYSIS DATA

Sample Drawn On	:	23/02/2024
Sample Drawn By	:	NTL Representative
Sample Description	:	ETP Outlet
Sample Quantity/Packing detail	:	1 lit/Plastic Cane
Analysis Duration	:	24/02/2024 to 28/02/2024

TEST RESULTS

S.No.	Parameter	Test Method	Results	Limit as per CPCB Norms
1.	pH	IS:3025(P-11)	7.36	5.0-9.0
2.	Total Suspended Solid (TSS)mg/l	IS:3025(P-17)	21.0	100
3.	Chemical Oxygen Demand (as O_2) mg/l	APHA 5220 B-2005	98.0	250
4.	Biological Oxygen Demand (as O_2) mg/l (3 days at 27°C)	IS:3025(P-44)	20.0	30
5.	Oil & Grease (mg/l)	IS:3025(P-39)	BDL (<1.0)	10

EPA- Environmental Protection Act-1986

BDL- Below Detection Limit

Notes:

1. The results given above are related to the tested sample, as received & mentioned parameters. The customer asked for the above tests only.
2. Responsibility of the Laboratory is limited to the invoiced amount only.
3. This test report will not be generated again, either wholly or in part, without prior written permission of the laboratory.
4. The test samples will be disposed off after two weeks from the date of issue of test report, unless until specified by the customer.

CHECKED BY

AUTHORIZED SIGNATORY

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TEST CERTIFICATE

Issued To: M/s. Bajaj Hindusthan Sugar Ltd.	Report Code : WW-150223-035
	ULR No. : TC6814230000007855 F
Address: Village- Itaimaida Utraula, P.O. Sri Duttganj, District-Balrampur (U.P) India	Test Report of : Waste Water
	Service Request No : NTL/SRF/02/23-010
	Service Request Date : 13/02/2023
	Report Issue Date : 20/02/2023

SAMPLING & ANALYSIS DATA

Sample Drawn On	:	14/02/2023
Sample Drawn By	:	NTL Representative
Sample Description	:	ETP Outlet
Sample Quantity/Packing detail	:	1 litre pet bottle
Weather Conditions	:	Normal
Analysis Duration	:	15/02/2023 to 20/02/2023

TEST RESULTS

S.No.	Parameter	Test Method	Results	Limit as per CPCB Norms
1.	pH	IS:3025(P-11)	7.25	5.0-9.0
2.	Total Suspended Solid (TSS)mg/l	IS:3025(P-17)	23.0	100
3.	Chemical Oxygen Demand (as O_2) mg/l	APHA 5220 B-2005	116.0	250
4.	Biological Oxygen Demand (as O_2) mg/l	IS:3025(P-44)	20.0	30
5.	Oil & Grease (mg/l)	IS:3025(P-39)	BDL (<1.0)	10

EPA- Environmental Protection Act-1986
BDL- Below Detection Limit

Notes:

1. The results given above are related to the tested sample, as received & mentioned parameters. The customer asked for the above tests only.
2. Responsibility of the Laboratory is limited to the invoiced amount only.
3. This test report will not be generated again, either wholly or in part, without prior written permission of the laboratory.
4. The test samples will be disposed off after two weeks from the date of issue of test report, unless until specified by the customer.

Ajgali
CHECKED BY

AUTHORIZED SIGNATORY

Annexure-4

सहमति–पत्र

मैं रेशमी पुत्र श्री राम प्रसाद गाँव देवाडीहर का निवासी हूँ । मेरी 1.728 हैक्टेअर जमीन बजाज हिन्दुस्थान सुगर लिमिटेड, इटई मैदा, उतरौला के नजदीक है । मेरी जमीन में गन्ना बिक्रि की फसल होती है । यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संपोधित कर खेत की सिंचाई हेतु आपूर्ति करें जिससे कि मेरी फसल को कोई नुकसान न हो तो मैं चीनी मिल से निकलने वाले पानी से अपने खेतों की सिंचाई करने के लिए तैयार हूँ ।

हस्ता० कृषक : रेशमी

नाम कृषक : रेशमी

पिता का नाम : राम प्रसाद

गाँव : देवाडीहर

BAJAJ HINDUSTHAN SUGAR LTD.

सहमति–पत्र

मैं अंगनू पुत्र श्री हुसैनी गाँव दोयाडीकर का निवासी हूँ । मेरी 0.587 हैक्टेअर जमीन बजाज हिन्दुस्थान शुगर लिमिटेड, इटई मैदा, उतरौला के नजदीक है । मेरी जमीन में आलू/गेहूँ की फसल होती है । यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेत की सिंचाई हेतु आपूर्ति करें जिससे कि मेरी फसल को कोई नुकसान न हो तो मैं चीनी मिल से निकलने वाले पानी से अपने खेतों की सिंचाई करने के लिए तैयार हूँ ।

हस्ता0 कृषक :

नाम कृषक : अंगनू

पिता का नाम : हुसैनी

गाँव : दोयाडीकर

BAJAJ HINDUSTHAN SUGAR LTD.

सहमति–पत्र

मैं जमील अहमद पुत्र श्री सबूर गाँव दोवाडबर का निवासी हूँ । मेरी 0.482 हैक्टेअर जमीन बजाज हिन्दुस्थान सुगर लिमिटेड, इटई मैदा, उतरौला के नजदीक है । मेरी जमीन में अरहर / गेहूं की फसल होती है । यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेत की सिंचाई हेतु आपूर्ति करें जिससे कि मेरी फसल को कोई नुकसान न हो तो मैं चीनी मिल से निकलने वाले पानी से अपने खेतों की सिंचाई करने के लिए तैयार हूँ ।

हस्ता0 कृषक :

नाम कृषक : जमील अहमद

पिता का नाम : सबूर

गाँव : दोवाडबर

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सहमति–पत्र

मैं सगीर अहमद पुत्र श्री इस्हाक गाँव दौवाडाबर का निवासी हूँ । मेरी 2.67 हैक्टेयर जमीन बजाज हिन्दुस्थान सुगर लिमिटेड, इटई मैदा, उतरौला के नजदीक है । मेरी जमीन में धान/गेहूँ की फसल होती है । यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेत की सिंचाई हेतु आपूर्ति करें जिससे कि मेरी फसल को कोई नुकसान न हो तो मैं चीनी मिल से निकलने वाले पानी से अपने खेतों की सिंचाई करने के लिए तैयार हूँ ।

हस्ता0 कृषक : सगीर अहमद

नाम कृषक : सगीर अहमद

पिता का नाम : इस्हाक

गाँव : दौवाडाबर

BAJAJ HINDUSTHAN SUGAR LTD.

सहमति–पत्र

मैं इकबाल पुत्र श्री साबीक गॉव कोवासावर का निवासी हूँ । मेरी 2.35 हेक्टेअर जमीन बजाज हिन्दुस्थान सुगर लिमिटेड, इटई मैदा, उतरौला के नजदीक है । मेरी जमीन में गन्ना की फसल होती है । यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेत की सिंचाई हेतु आपूर्ति करें जिससे कि मेरी फसल को कोई नुकसान न हो तो मैं चीनी मिल से निकलने वाले पानी से अपने खेतों की सिंचाई करने के लिए तैयार हूँ ।

हस्ता0 कृषक :

नाम कृषक : इकबाल

पिता का नाम : साबीक

गॉव : कोवासावर

BAJAJ HINDUSTHAN SUGAR LTD. Unit Itaimada Utraula Balrampur PIN 271801

सहमति–पत्र

मैं मोहम्मद हसन पुत्र श्री सहादत गाँव दौवाडीह का निवासी हूँ । मेरी 1.310 हैक्टेअर जमीन बजाज हिन्दुस्थान सुगर लिमिटेड, इटई मैदा, उतरौला के नजदीक है । मेरी जमीन में गन्ना/धान की फसल होती है । यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेत की सिंचाई हेतु आपूर्ति करें जिससे कि मेरी फसल को कोई नुकसान न हो तो मैं चीनी मिल से निकलने वाले पानी से अपने खेतों की सिंचाई करने के लिए तैयार हूँ ।

हस्ता० कृषक :

नाम कृषक : मोहम्मद हसन

पिता का नाम : सहादत

गाँव : दौवाडीह

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TEST CERTIFICATE

Issued To: M/s Bajaj Hindusthan Sugar Ltd. Address: Village- Itaimoida Utraula, P.O. Sri Duttganj, Distt- Balrampur (U.P) India	Report Code : SQ-260224-020 Test Report of : Soil Quality Service Request No : NTL/SRF/02/24-015 Service Request Date : 24/02/2024 Report Issue Date : 05/03/2024

Sampling & Analysis Data

Sample Drawn On	: 26/02/2024
Sample Drawn By & Sealed By	: Dr. Rajeev (Chandra Shekhar Azad University of Agriculture & Technology, Kanpur)
Sample Collect By	: NTL Representative
Sample Description	: Soil Sample at 30 cm Depth from farmers field
Sample Received On	: 26/02/2024
Sample Quantity	: 2.0 Kg
Weather Conditions	: Normal
Analysis Duration	: 26/02/2024 to 05/03/2024

S.No.	PARAMETERS	RESULT	Classification of Soil		
1	Ph (1:2 suspension)	7.82	Neutral		
2	Salinity Electrical Conductivity @25°C (mmhos/cm)	510	Should be less 1000		
3	Sodium Absorption Ration (SAR) meq/L	3.24	-		
4	Soil Fertility Ratings		Soil Fertility Ratings		
			Low	Medium	High
a	Organic Carbon (% by mass)	0.52	<0.5	0.5-0.75	>0.75
b	Available Nitrogen (Kg/ha)	311	<280	280-560	>560
c	Available Phosphorous (Kg/ha)	20.5	<10	10-24.6	>24.6
d	Available Potash (as K- Kg/ha)	276	<180	180-280	>280
5	Heavy Metals Analysis		Used Protocol	The Environmental Management (Soil, quality Standards) Regulation:2007 upper Limit (Max)	
a	Lead Content (as Pb) (mg/kg)	41.0	IS:11047:1998	200	
b	Arsenic (as As) (mg/Kg)	0.12	IS:11047:1998	1	
c	Cadmium (as Cd) (mg/Kg)	0.37	IS:11047:1998	1	
d	Manganese (as Mn) (mg/Kg)	116	IS:11047:1998	1800	
e	Mercury (as Hg) (mg/Kg)	<1.0	IS:167772:2004	2	
f	Nikel (as Ni) (mg/Kg)	18.0	IS:11047:1998	100	
g	Selenium as Se) (mg/Kg)	2.11	SW:846:7742	20	
h	Copper (as Cu) (mg/Kg)	26.6	IS:11047:1998	200	
i	Zinc (as Zn) (mg/Kg)	91.0	IS:11047:1998	150	
j	Molybdenum (as Mo) (mg/Kg)	<1.0	IS:11047:1998	5	

Conclusion- Based on above tested parameters, soil sample have good fertility value provided by department of Agriculture & Cooperation Ministry of Agriculture Government of India- New Delhi.

Notes:

1. The results given above are related to the tested sample, as received & mentioned parameters the customer asked for the above tests only.
2. Responsibility of the Laboratory is limited to the invoiced amount only.
3. This test report will not be generated again, either wholly or in part, without prior written permission of the laboratory.
4. The test samples will be disposed off after two weeks from the date of issue of test report, unless until specified by the customer.

Checked by

Rajeev

Authorized Signatory

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TEST CERTIFICATE

Issued To: M/s Bajaj Hindusthan Sugar Ltd. Address: Village- Itaimaida Utraula, P.O. Sri Duttganj, Distt- Balrumpur (U.P) India	Report Code : SQ-150323-011 Test Report of : Soil Quality Service Request No : NTL/SRF/03/23-020 Service Request Date : 14/03/2023 Report Issue Date : 21/03/2023

Sampling & Analysis Data

Sample Drawn On	: 15/03/2023
Sample Drawn By & Sealed By	: Mr. Varun
Sample Collect By	: NTL Representative
Sample Description	: Soil Sample at 30 cm Depth from farmers field
Sample Received On	: 15/03/2023
Sample Quantity	: 2.0 Kg
Weather Conditions	: Normal
Analysis Duration	: 15/03/2023 to 21/03/2023

S.No.	PARAMETERS	RESULT	Classification of Soil		
1	Ph (1:2 suspension)	7.65	Neutral		
2	Salinity Electrical Conductivity @25°C (mmhos/cm)	508	Should be less 1000		
3	Sodium Absorption Ration (SAR) meq/L	3.16	-		
4	Soil Fertility Ratings		Soil Fertility Ratings		
			Low	Medium	High
a	Organic Carbon (% by mass)	0.45	<0.5	0.5-0.75	>0.75
b	Available Nitrogen (Kg/ha)	308	<280	280-560	>560
c	Available Phosphorous (Kg/ha)	19.6	<10	10-24.6	>24.6
d	Available Potash (as K- Kg/ha)	288	<180	180-280	>280
5	Heavy Metals Analysis		Used Protocol	The Environmental Management (Soil, quality Standards) Regulation:2007 upper Limit (Max)	
a	Lead Content (as Pb) (mg/kg)	45.0	IS:11047:1998	200	
b	Arsenic (as As) (mg/Kg)	0.16	IS:11047:1998	1	
c	Cadmium (as Cd) (mg/Kg)	0.38	IS:11047:1998	1	
d	Manganese (as Mn) (mg/Kg)	121	IS:11047:1998	1800	
e	Mercury (as Hg) (mg/Kg)	<1.0	IS:167772:2004	2	
f	Nikel (as Ni) (mg/Kg)	24.0	IS:11047:1998	100	
g	Selenium as Se) (mg/Kg)	2.11	SW:846:7742	20	
h	Copper (as Cu) (mg/Kg)	28.2	IS:11047:1998	200	
i	Zinc (as Zn) (mg/Kg)	97.0	IS:11047:1998	150	
j	Molybdenum (as Mo) (mg/Kg)	<1.0	IS:11047:1998	5	

Conclusion- Based on above tested parameters, soil sample have good fertility value provided by department of Agriculture & Cooperation Ministry of Agriculture Government of India- New Delhi.

Notes:

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Issued To: M/s Bajaj Hindusthan Sugar Ltd. Address: Village- Itaimaida Utraula, P.O. Sri Duttganj, Distt- Balrampur (U.P) India	Report Code : W-120123-053 ULR No. : TC6814230000001589 F Test Report of : Water Service Request No : NTL/SRF/01/23-053 Service Request Date : 11/01/2023 Report Issue Date : 17/01/2023

SAMPLING & ANALYSIS DATA

Sample Drawn On	:	12/01/2023
Sample Drawn By	:	NTL Representative
Analysis Duration	:	12/01/2023 to 17/01/2023
Sample Quantity	:	2.0 ltr.+ 500 ml.
Sampling Location	:	Village Dhobadabar
Sample Description	:	Ground Water

MICROBIOLOGICAL REQUIREMENT RESULT

S.No.	Parameter	Test Method	Results	Requirements as per IS-10500:2012
1.	*Escherichia coli*	IS-15185	Absent	Absent/100ml
2.	*Coliform Bacteria*	IS-15185	Absent	Absent/100ml

ORGANOLEPTIC & PHYSICAL PARAMETERS

S.No.	Parameter	Test Method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1.	Colour	IS-3025(P-04)	<1.00	Hazen Unit	5	15
2.	Odour	IS-3025(P-05)	Agreeable	-	Agreeable	Agreeable
3.	Taste	IS-3025(P-07 & 08)	Agreeable	-	Agreeable	-
4.	Turbidity	IS-3025(P-10)	<1.00	NTU	1	5
5.	pH value	IS-3025(P-11)	7.46	-	6.5 - 8.5	-
6.	Total dissolve solid (TDS)	IS-3025(P-16)	358	mg/l	500	2000

GENERAL PARAMETERS CONCERNING SUBSTANCES UNDESIRABLE IN EXCESSIVE AMOUNTS

S.No.	Parameter	Test method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1.	Aluminum (as Al)	IS: 3025 (P- 55)	<0.01	mg/l	0.03	0.2

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2.	Total Ammonia	IS: 3025 (P- 34)	<0.10	mg/l	0.5	No Relaxation
3.	Anionic Detergents (as MBAS)	Annex K of IS-13428	<0.10	mg/l	0.2	1.0
4.	Barium (as Ba)	IS: 15302	<0.10	mg/l	0.7	No Relaxation
5.	Boron (as B)	IS: 3025 (P- 57)	<0.10	mg/l	0.5	2.4
6.	Calcium (as Ca)	IS: 3025 (P- 40)	46.20	mg/l	75	200
7.	Chloramines (as Cl_2)	IS: 3025 (P- 26)	<1.00	mg/l	4.0	No Relaxation
8.	Chloride (as Cl)	IS: 3025 (P- 32)	32.08	mg/l	250	1000
9.	Copper (as Cu)	IS : 3025 (P-42)	<0.05	mg/l	0.05	1.5
10.	Fluoride (as F)	IS: 3025 (P-60)	0.36	mg/l	1.0	1.5
11.	Free Residual Chlorine	IS: 3025 (P-26)	BDL	mg/l	0.2	1.0
12.	Iron (as Fe)	IS: 3025(P-53)	0.135	mg/l	1.0	No Relaxation
13.	Magnesium (as Mg)	IS: 3025 (P-46)	12.40	mg/l	30	100
14.	Manganese (as Mn)	IS: 3025 (P-59)	<0.10	mg/l	0.1	0.3
15.	Mineral Oil	Clause 6 of IS: 3025	<0.50	mg/l	0.5	No Relaxation
16.	Nitrate (as NO_3)	IS: 3025 (P- 34)	4.20	mg/l	45	No Relaxation
17.	Selenium (as Se)	IS: 3025 (P- 56)	<0.01	mg/l	0.01	No Relaxation
18.	Silver (as Ag)	Annex J IS: 13428	<0.05	mg/l	0.1	No Relaxation
19.	Sulphate (as SO_4)	IS: 3025 (P- 24)	38.70	mg/l	200	400
20.	Sulphide(as H_2S)	IS-3025 (P-29)	<0.05	mg/l	0.05	No Relaxation
21.	Alkalinity (as Ca CO_3)	IS: 3025 (P- 23)	179.0	mg/l	200	600
22.	Total Hardness (as $CaCO_3$)	IS: 3025 (P- 21)	156.0	mg/l	200	600
23.	Zinc (as Zn)	IS: 3025 (P- 49)	0.114	mg/l	5.0	15

Parameters Concerning Toxic Substances:

S.No.	Parameter	Test method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1.	Cadmium (as Cd)	IS-3025(P-41)	<0.001	mg/l	0.003	No Relaxation
2.	Cyanide (as CN)	IS-3025(P-27)	<0.01	mg/l	0.05	No Relaxation
3.	Lead (as Pb)	IS-3025(P-47)	<0.01	mg/l	0.01	No Relaxation
4.	Mercury (as Hg)	IS-3025(P-48)	<0.001	mg/l	0.001	No Relaxation
5.	Molybdenum (Mo)	IS-3025(P-2)	<0.05	mg/l	0.07	No Relaxation
6.	Nickel (as Ni)	IS-3025(P-54)	<0.01	mg/l	0.02	No Relaxation
7.	Poly nuclear Aromatic Hydro Carbons	APHA 6440	<0.0001	mg/l	0.0001	No Relaxation
8	Poly chlorinated biphenyl	APHA 6630	<0.0001	mg/l	0.0005	No Relaxation
9.	Total Arsenic (as As)	IS-3025(P-37)	<0.01	mg/l	0.01	No Relaxation
10.	Total Chromium (as Cr)	IS-3025(P-52)	<0.05	mg/l	0.05	No Relaxation

BDL: Below Detection limit.

Notes:

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TEST CERTIFICATE

Issued To: M/s Bajaj Hindusthan Sugar Ltd. Address: Village- Itaimaida Utraula, P.O. Sri Duttganj, Distt- Balrampur (U.P) India	Report Code : W-260224-013 Test Report of : Water Service Request No : NTL/SRF/02/24-050 Service Request Date : 24/02/2024 Report Issue Date : 02/03/2024

Sampling & Analysis Duration

Sample Collected By	:	NTL Representative
Sample Drawn On	:	26/02/2024
Sample Drawn & sealed by	:	Dr. Rajiv (Chandra Shekhar Azad University of Agriculture & Technology, Kanpur)
Sample Received On	:	26/02/2024
Sample Quantity	:	2.0 Lt. + 500 ml.
Analysis Duration	:	26/02/2024 to 02/03/2024
Sampling Location	:	Farmer Field
Sample Description	:	Ground Water

MICROBIOLOGICAL REQUIREMENT RESULT

S.No.	Parameter	Test Method	Results	Requirements as per IS-10500:2012
1.	*Escherichia coli*	IS-15185	Absent	Absent/100ml
2.	*Coliform Bacteria*	IS-15185	Absent	Absent/100ml

ORGANOLEPTIC & PHYSICAL PARAMETERS

S.No.	Parameter	Test Method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1.	Colour	IS-3025(P-04)	<5.00	Hazen Unit	5	15
2.	Odour	IS-3025(P-05)	Agreeable	-	Agreeable	Agreeable
3.	Taste	IS-3025(P-07 & 08)	Agreeable	-	Agreeable	-
4.	Turbidity	IS-3025(P-10)	<1.00	NTU	1	5
5.	pH value	IS-3025(P-11)	7.36	-	6.5 - 8.5	-
6.	Total dissolve solid (TDS)	IS-3025(P-16)	428	mg/l	500	2000

GENERAL PARAMETERS CONCERNING SUBSTANCES UNDESIRABLE IN EXCESSIVE AMOUNTS

S.No.	Parameter	Test method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1.	Aluminium (as Al)	IS: 3025 (P- 55)	<0.01	mg/l	0.03	0.2
2.	Total Ammonia	IS: 3025 (P- 34)	<0.10	mg/l	0.5	No Relaxation
3.	Anionic Detergents (as MBAS)	Annex K of IS-13428	<0.10	mg/l	0.2	1.0
4.	Barium (as Ba)	IS: 15302	<0.10	mg/l	0.7	No Relaxation
5.	Boron (as B)	IS: 3025 (P- 57)	<0.10	mg/l	0.5	2.4

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6.	Calcium (as Ca)	IS: 3025 (P-40)	41.80	mg/l	75	200
7.	Chloramines (as Cl_2)	IS: 3025 (P-26)	<1.00	mg/l	4.0	No Relaxation
8.	Chloride (as Cl)	IS: 3025 (P-32)	54.60	mg/l	250	1000
9.	Copper (as Cu)	IS: 3025 (P-42)	<0.05	mg/l	0.05	1.5
10.	Fluoride (as F)	IS: 3025 (P-60)	0.46	mg/l	1.0	1.5
11.	Free Residual Chlorine	IS: 3025 (P-26)	BDL(<0.1)	mg/l	0.2	1.0
12.	Iron (as Fe)	IS: 3025(P-53)	0.128	mg/l	1.0	No Relaxation
13.	Magnesium (as mg)	IS: 3025 (P-46)	15.40	mg/l	30	100
14.	Manganese (as Mn)	IS: 3025 (P-59)	<0.10	mg/l	0.1	0.3
15.	Mineral Oil	Clause 6 of IS: 3025	<0.50	mg/l	0.5	No Relaxation
16.	Nitrate (as NO_3)	IS: 3025 (P-34)	4.26	mg/l	45	No Relaxation
17.	Selenium (as Se)	IS: 3025 (P-56)	<0.01	mg/l	0.01	No Relaxation
18.	Silver (as Ag)	Annex J IS: 13428	<0.05	mg/l	0.1	No Relaxation
19.	Sulphate (as SO_4)	IS: 3025 (P-24)	25.60	mg/l	200	400
20.	Sulphide(as H_2S)	IS-3025 (P-29)	<0.05	mg/l	0.05	No Relaxation
21.	Alkalinity (as Ca CO_3)	IS: 3025 (P-23)	189.0	mg/l	200	600
22.	Total Hardness (as $CaCO_3$)	IS: 3025 (P-21)	212.0	mg/l	200	600
23.	Zinc (as Zn)	IS: 3025 (P-49)	0.145	mg/l	5.0	15
24.	Phenolic Compound as (C_6H_5OH)	IS: 3025 (P-43)	BDL (<0.001)	mg/l	0.001	0.002

Parameters Concerning Toxic Substances:

S.No.	Parameter	Test method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1.	Cadmium (as Cd)	IS-3025(P-41)	<0.001	mg/l	0.003	No Relaxation
2.	Cyanide (as CN)	IS-3025(P-27)	<0.01	mg/l	0.05	No Relaxation
3.	Lead (as Pb)	IS-3025(P-47)	<0.01	mg/l	0.01	No Relaxation
4.	Mercury (as Hg)	IS-3025(P-48)	<0.001	mg/l	0.001	No Relaxation
5.	Molybdenum (Mo)	IS-3025(P-2)	<0.05	mg/l	0.07	No Relaxation
6.	Nickel (as Ni)	IS-3025(P-54)	<0.01	mg/l	0.02	No Relaxation
7.	Poly nuclear Aromatic Hydro Carbons	APHA 6440	<0.0001	mg/l	0.0001	No Relaxation
8	Poly chlorinated biphenyl	APHA 6630	<0.0001	mg/l	0.0005	No Relaxation
9.	Total Arsenic (as As)	IS-3025(P-37)	<0.01	mg/l	0.01	No Relaxation
10.	Total Chromium (as Cr)	IS-3025(P-52)	<0.05	mg/l	0.05	No Relaxation

*Remark - BDL: Below Detection limit

Notes:

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Technical Report

On

GROUND WATER RECHARGE STUDY

For

Bajaj Hindusthan Sugar Limited
Unit - Utraula
District – Balrampur, Uttar Pradesh

Carried out By

Directorate of Research
C. S. Azad University of Agriculture & Technology,
Kanpur – 208 002 (India)

Technical Report
on
Ground Water Recharge Study

Introduction:

Artificial recharge of groundwater is accomplished through placing surface water in basins, furrows, ditches, or different centres wherein it infiltrates into the soil and actions downward to recharge aquifers. Synthetic recharge is an increasing number of used for short- or lengthy-term underground garage, where it has several blessings over floor storage, and in water reuse. Artificial recharge requires permeable surface soils. In which these are not available, trenches or shafts in the unsaturated sector can be used, or water can be at once injected into aquifers via wells. To design a machine for artificial recharge of groundwater, infiltration rates of the soil have to be determined and the unsaturated area among land floor and the aquifer ought to be checked for good enough permeability and lack of polluted regions.

The artificial recharge to ground water aims at augmentation of ground water reservoir by modifying the natural movement of surface water utilizing suitable civil construction techniques. Artificial recharge is the process by which the ground water is augmented at a rate much higher than those under natural condition of percolation. In most low rainfall areas of the country the availability of utilizable surface water is so low that people have to depend largely on ground water for agriculture and domestic use. So in order to improve the ground water situation it is necessary to artificially recharge the depleted ground water aquifers.

Under these circumstances, the present study was taken up with the following objective (s) namely:

1. To analyze the working of artificial recharge of ground water.
2. To determine the amount of water that would be available from a given catchments and the size of storages.

Methodology:

The study entitled "Ground Water Recharge Study" was conducted during the month of March, 2024 by a team included representatives of the sugar plant. During the course of the study different kind of information were gathered. The appropriate

tools and techniques were used in gathering information. In addition to above, the desired information was also gathered from different places/points.

Brief Description About Company:

Bajaj Hindusthan Sugar Limited (BHSL) was established on 24th November 1931, as 'Hindusthan Sugar Mills Limited.' Founded by the late Shri Jamnalal Bajaj, a respected businessman, freedom fighter, and close confidant of Mahatma Gandhi, the company's inception aimed to address a critical national mission-providing momentum to the industry, given that there were fewer than 30 sugar mills in the country at that time-and advancing inclusive growth. The chosen site for the first plant was in Gola Gokaran Nath in the Lakhimpur Kheri district in the Terai region of present-day Uttar Pradesh (UP). Positioned in an area abundant with sugarcane plantations, the original capacity of the plant was 400 tonnes of cane crushed per day (TCD), which eventually increased to its current 13,000 TCD. The distillery unit of the plant began production in 1944. During World War II, the distillery primarily produced power alcohol, a commodity in short supply at the time. Notably, the unit became the first in the country to supply alcohol-mixed petrol to the army.In 1967, a new company, Sharda Sugar & Industries Limited, emerged as a subsidiary of Hindusthan Sugar Mills Limited. Under this subsidiary, a sugar plant with a cane crushing capacity of 1,400 TCD was established in 1972 at Palia Kalan, a major cane-supplying centre located 70 kilometres north of the Gola Gokaran Nath unit. The Palia Kalan unit's capacity was gradually increased to its current 11,000 TCD.

In 1988, Hindusthan Sugar Mills Limited underwent a name change, becoming Bajaj Hindusthan Sugar Limited (BHSL). Two years later, Sharda Sugar & Industries Limited was amalgamated with the company.

During the 2000s, BHSL initiated an ambitious greenfield expansion from 2003 to 2007, establishing eight plants across the state. This rapid expansion, starting with a plant at Kinauni near Meerut, was notably completed in just 7 months, contrasting with the industry norm of 18-24 months. The total cane crushing capacity of the company surged to 96,000 TCD.

In 2005, BHSL acquired Pratappur Sugar and Industries Limited (PSIL) in UP's Deoria district. Operating since 1903, it was Asia's oldest plant with a crushing

capacity of 3,200 TCD. Post-acquisition, its capacity doubled to 6,000 TCD within a year.

PSIL was subsequently renamed Bajaj Hindusthan Sugar and Industries Limited (BHSIL) and made a subsidiary of BHSL. This acquisition provided BHSL with a strategic foothold in the sugar-deficient region of Eastern UP and reaffirmed the consolidation that took place in the sugar industry. By the end of 2007, the expansion drive not only enhanced BHSL's overall cane crushing capacity but also positioned the company as India's largest ethanol producer, generating 480 kiloliters per day (KLD).While enhancing the capacity of its existing sugar plant at Pratappur, the company concurrently established three additional sugar units in virgin, cane-rich areas of East UP at Rudauli (district: Basti), Kundarkhi (district: Gonda), and Utraula (district: Balrampur). This elevated BHSIL's total crushing capacity to 40,000 TCD. The commissioning of three Bagasse-based power co-generation plants at Kundarkhi, Rudauli, and Utraula contributed to BHSIL's aggregate power generation capacity of 95.8 MW. Coupled with the power generation capacity of 325 MW from BHSL, the company's total generation capacity stands at 420.8 MW, surpassing its energy needs. Notably, the surplus 90 MW of energy is supplied to the UP state grid. In December 2010, the amalgamation of BHSIL with BHSL was completed. BHSL's growth initiative was strategically focused on achieving global manufacturing scale and cost competitiveness. Simultaneously, it created significant developmental opportunities in UP, a state eager for infrastructural growth, youth employment, and overall socioeconomic development in rural communities.

Today, BHSL holds a unique position, towering over local peers and ranking among the world's best in planning and processes. With the company impacting over 5 lakh farmers in UP, it directly contributes to the rural economy, bringing positive change to countless lives in UP and beyond across India.

Detail About the Unit:

The premises of M/S Bajaj Hindusthan Sugar Limited Unit Utraula (Sugar Plant) is situated in Itai Maida village of Block Sriduttaganj in district Balrampur of Uttar Pradesh well connected with road to major cities. The unit was established in 2007. The sugar production capacity is 12000 TCD.

Water Requirement and Quality of Groundwater:

The total ground water requirement of plant is 2160 m^3/day or 324000 m^3 /year. Since the area is non-notified and falls in safe category, as per ground water NOC for withdrawal of ground water, adoption of artificial recharge to ground water is required.

The study area theoretically covers within the circle encompassed by 5 km radius around the sugar plant site is classified into 4 classes *viz.*, settlements, agriculture land, industry, and rocky water body. The district experiences sub-humid climate and three distinct seasons *viz.*, summer, rainy and winter.

The ground water exploration in the district reveals that clay group of formations dominates over the sand group in the district area. Ground water in the district occurs in the alluvium under water table and semi-confined to confined conditions. On the basis of the depth to water level of the district, the pre-monsoon depth to water level ranges between 3.5 m bgl to 4.0 m bgl, while post-monsoon depth to water level ranges between 2.5 m bgl to 3.0 m bgl.

A detailed groundwater level monitoring has been carried at about 7 different locations within the buffer zone from existing open wells and bore wells. The physio-chemical quality of groundwater was compared with drinking water standard (IS: 10500- 2012). Some of the parameters of the ground water samples showed values lower than the permissible limit. Thus, can be inferred from the sampling results for groundwater that some of the parameters are in lower range so adequate measures to be taken before consumption of the same as per standards (IS: 10500-2012).

Details of Ground Water Abstraction

Artificial recharge has been practiced within the sugar plant premises. Rainwater harvesting practices through roof-top is being carried out and the available run-off from the same is used for green belt or dust suppression etc.

There are three existing bore-well present in the industry premises. The monitoring of ground water abstraction is done on regular basis. Awareness programme about the conservation of ground water resources are also being organised to create the awareness among people.

S.No.	NOC NO./ Certificate NO.	Maximum Allowable Withdrawal (m3/day)	Total Allowable Withdrawal (m3/day)	Maximum Allowable Annual Extraction of Ground Water	Total Allowable Annual Extraction of Ground Water	Validity Start	Validity End	Validity in a Year (No. Of days)
1.	NOC045903	540	2160	81000	324000	18.10.2021	17.10.2026	150
2.	NOC022896	720		108000				
3.	NOC040290	900		135000				

Artificial Recharge:

Natural replenishment of ground water storage is slow and is unable to keep pace with the excessive exploitation of ground water. With increasing urbanization, the land area for natural rainwater recharge is also shrinking and large unutilized runoff carries pollution to the water bodies. Artificial recharge to groundwater aims at augmentation of the ground water storage by modifying the natural movement of surface water, utilizing suitable civil construction techniques to increase the seepage rate exceeding that under natural conditions of replenishment. The rainfall occurrence in India is limited to about 3 months period, ranging from about 10 to 60 rainy days. The natural recharge is restricted to this period only. The artificial recharge techniques aim at increasing the recharge period in the post-monsoon for about 3 months to provide additional recharge. This would result in providing sustainability to ground water development.

In majority of the areas, scarcity of water is felt in post-monsoon season. Due to steep gradients, a large quantity of water flows out to low lying areas as surface runoff. There is a need to provide sustainability to these surface storages which are effective in providing additional recharge and sustain the flow for a longer period. Most of the urban areas in the country are facing water scarcity. The dependence on ground water has increased many folds and the natural recharge to ground water has decreased due to increased buildings and paved areas etc. Roof top rain water harvesting, which involves the collection of rainwater from the roof of the buildings and its storage in surface tanks or recharge to sub-surface aquifer, can play an important role in conservation of water. Thus, the need for artificial recharge of groundwater is beyond doubt and is the most powerful management strategy available to face the challenge of fast depletion in ground water storages.

Inside Plant Premises:

Rainwater harvesting can be done by diverting the runoff that is generated from roof sheds, roads and green belt areas of recharging into ground water system. Implantation of recharge mechanism ensures the balance between the discharge vis-a-vis recharge of the aquifer system and improvement in the ground water quality. The normal annual rain fall for the said area has been taken as 968 mm based on the site plan and land use pattern of the plot, the computation of runoff for each unit has worked out and the details are tabulated below:

Calculation of annual rainfall runoff potential

S. No.	Land use type	Area (sq m)	Coefficient of runoff	Rainfall (m)	Quantity of Rainwater (m^3)
1.	Rooftop Area	20224	0.85	0.968	16640.30
Total		**20224**	-	-	**16640.30**

From the above computation, it is evident that a total quantum of 16640.30 m^3 /year of rain water is fruitfully harvested & recharged from plant premises annually by constructed suitable recharge structures against the withdrawal of 324000.00 m^3/year. In order to design the recharge structures, hourly runoff of 35 mm/hr has been taken into account and the details are tabulated below:

Hourly Computation of Runoff – (35 mm/hr)

S. No.	Land use type	Area (sq m)	Coefficient of runoff	Intensity of Rainfall (m)	Quantity of Rainwater (m^3)
1.	Rooftop Area	20224	0.85	0.035	601.66
Total		**20224**	-	-	**601.66**

Structure Calculation:

- Thus, the total rainwater harvesting capacity of roof top area of the industry is 601.66 m^3 per hour.
- Assuming retention time of 0.25 hour in the recharge pit, the design volume for the recharge pit is 601.66/4 = 150.42 m^3

- Let us provide recharge pit of 3 m × 3 m in size and 3.5 depth
- Volume of one pit = 31.5 m^3
- Capacity of One Bore well recharge: 30 m^3
- Average Recharge Capacity of Pit with two well = 31.5 + 30 + 30 = 91.5
- Required no. of pits = 150.42/91.5 = 1.64 (02 appx.)
- The sugar plant provided 02 nos. recharge pits each of 3 m × 3 m × 3.5 m in size at peak rainfall intensity of 35 mm.

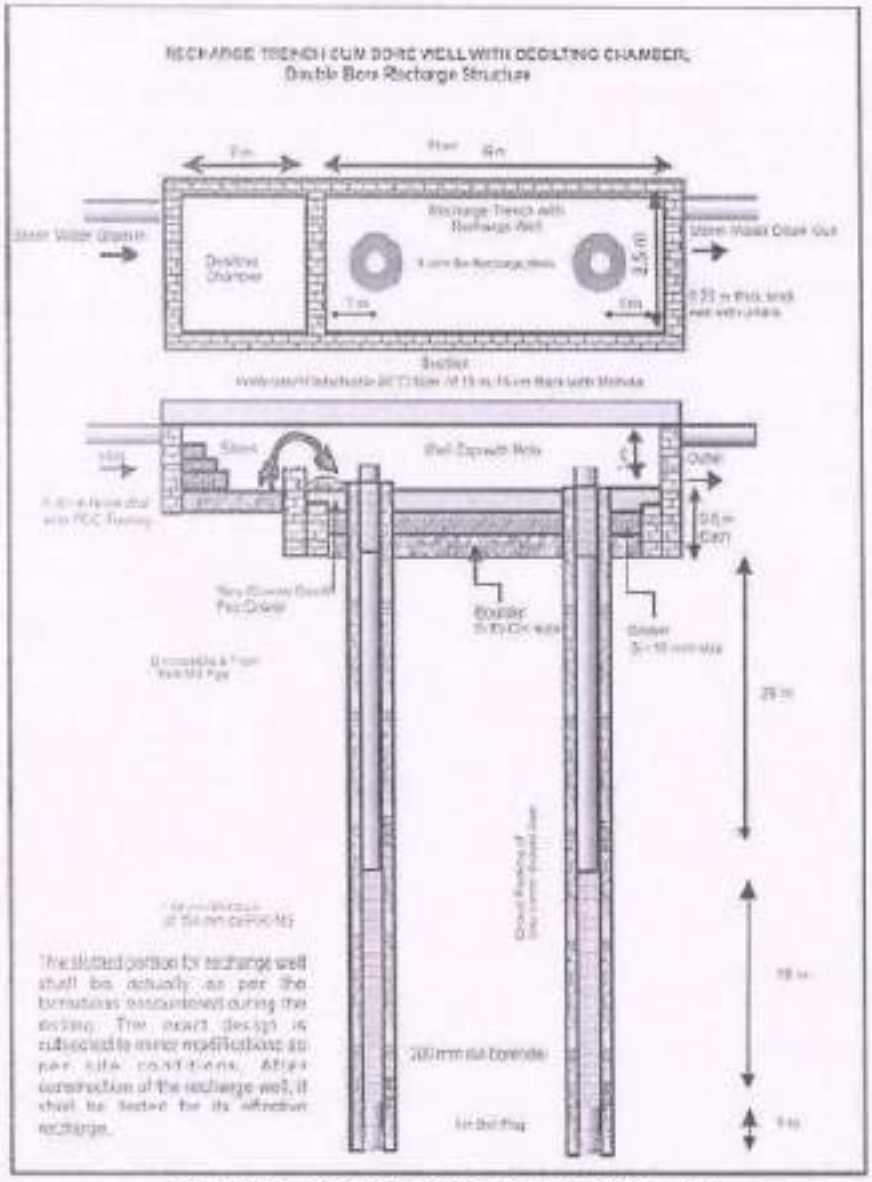


Fig. 1: Recharge trench cum bore well

Designs of Double Bore Recharge Structure:

The location of these sites is located as per the layout of storm water drains and the catch basins that are constructed. Necessary precautions are taken to avoid any contaminated water entering into the recharge structures. The recharge structures so designed that these are operational only during the monsoon seasons. All the structures are constructed in series and the overflow from one may be accommodated to the next structure. For the plot areas having green belt necessary slopes is given so that the rainfall runoff is channelized and diverted to the recharge shafts. In implementing the recharge structures, the spacing between two consecutive recharge trenches is 50 meters apart. Settling chambers is located at suitable locations before the recharge structures so as to avoid any excess siltation to the recharge trenches (Fig. 1). Provision of Geo-textile mesh/ Johnson cloth on the top of the filter media is preferred to avoid frequent clogging of the filter media. Special care is being taken for identifying the exact locations of the recharge structures so that the ground water augmentation is optimal. The area under recharge project has hydro-geological conditions having alluvial ascertained based initial wells and subsequently tested for its intake rate.

Proper type of rig deployment and construction of recharge structures warrants for strict supervision of ground water experts while implementation. The recharge wells are tested and slug test also conducted at selected recharge wells so as to ascertain the dissipation rate of the rainfall runoff to the aquifer systems. Such an approach reflected the proper recharge mechanism at the study area.

Therefore, the total annual recharge from rain water harvesting is 16640.30 m^3 per year against the withdrawal of 324000.00 m^3 per annum of ground water (which is around 5 % only). The balance amount of recharge is made by adopting suitable village ponds in the Sriduttaganj block and converting them in recharge ponds. Implementation of recharge mechanism in the study area creates a balance between the recharge vis-à-vis discharge relationships of the aquifer system. It is also maintain the ground water quality, which may deteriorate due to prolonged pumping, and the recharge of fresh rainfall runoff shall compensate it. Aquifer systems, exact depth of recharge well and its slot positions ascertained based initial wells and subsequently tested for its intake rate.

Artificial Recharge of Groundwater From the Village Pond:

The industry has adopted pond near the industrial complex in order to recharge the rain water. These village ponds are generally filled with water only during the rainy season and during summer they are dry. The adopted these village ponds to take-up artificial recharge to ground water of the pond water which is overflowing to adjacent areas during monsoon period. According to opinion of the users, the artificial recharge to ground water in the pond areas resulted into rise in water levels in the village tube-wells as wells and increases the supply of water to the lands adjacent for irrigation purposes. Thus, recharge schemes in the ponds is benefit the area.

Recharge Calculation in Ponds:

Type	Village Name	Gata No.	Area (Sq m)	Depth of Ponds (M)	Total Storage Capacity (m3)
Pond- I	Puraina Vaajid	554	52990	2.00	105980.00
Total			**52990**	**2.00**	**105980.00**

Pond Recharge Calculations:

Pond- I:

- Now, total storage capacity of pond from above computation is 105980.00 m^3
- In approximation, in a year 3 filling will occur. Hence, 105980.00X3 = 317940.00 m3
- Out of 317940.00 m^3 we take 60 % filling on safer side.
- So, the total is 190764.00 m^3

Through Ponds of Village Puraina Vaajid:

Recharge can either be natural, from precipitation that falls on the earth's surface and moves on its way underground or it can be artificial, from human activities that deliberately or inadvertently replenish an aquifer. Artificial recharge may be defined as the process of replenishing groundwater by augmenting the natural infiltration of rainwater or surface water into underground formations through

various methods designed depending on the topographic, geologic and soil conditions.

The industry has adopted 1 pond located in village Puraina Vaajid for artificial rain water harvesting as recharge shaft and natural percolation in ponds which resulted into creation of additional recharge which is sufficient to fulfil the mandatory requirements as per guidelines of the concerned Ministry.

Total pond area is 5.299 hectares i.e. 52990 m^2.

Recharge Calculation in Ponds:

S.No.	Area (ha)	Area (m^2)	Depth after desilting (m)	Total storage capacity	60%	No of filling	Quantity of water recharge	No. of recharge structure (@15 m^3/hr)
1.	5.299	52990	2.0	105980	63588	3	190764	10 Nos.

- From pond, the total water available recharge is 190764.00 m^3.
- The total amount of recharge including both within premises and outside the premise is 207404.00 m^3 (within premises: 16640.30 m^3 + pond outside the premises: 190764.00 m^3) in a year and withdrawal is 324000.00 m^3 per year.

Existing industry is situated in safe block Sriduttaganj of district Balrampur and as per Ground Water Dynamic- 2020, hence we will have to recharge 50% of total withdrawal annually.

As per CGWA (Central Ground Water Authority) guidelines total amount of rainwater to recharge for the withdrawal of 324000.00 m^3/annum is 162000.00 m^3/annum (50% of 198000.00 m^3/annum).

Against requirement of 324000.00 m^3/annum, the company recharge 207404.00 m^3/annum through 10 no. of recharge structures, which is more than 50 %.

Recharge Summary

Total fresh water requirement for sugar project	2160 KLD/324000.00 m^3/year
Source of water for plant activates	Ground water
RHW potential/ artificial recharge required	Maximum up to 50 % recharge criteria (safe zone)- 162000.00 m^3/year
Total artificial rainwater recharge inside the plant	16640.00 m^3/year
Total artificial rainwater recharge outside the plant	190764.00 m^3/year
Total recharge	**207404.00 m^3/year**

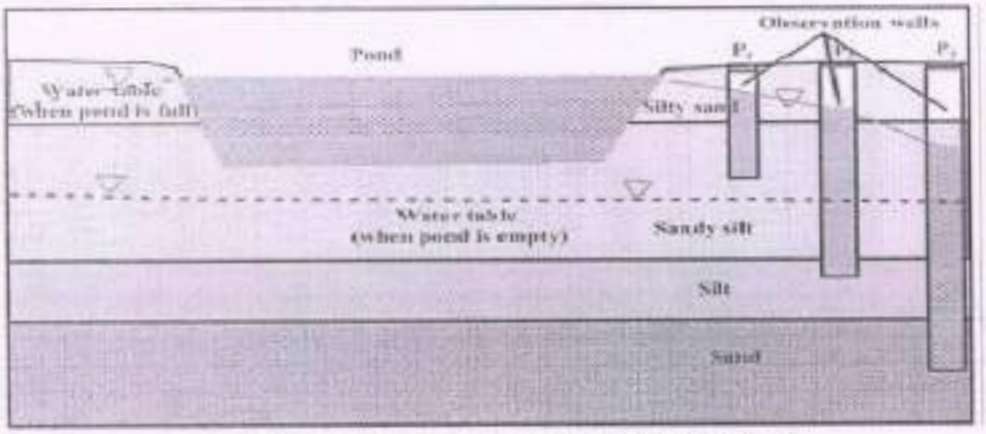


Fig 2: Schematic diagram of recharge pond

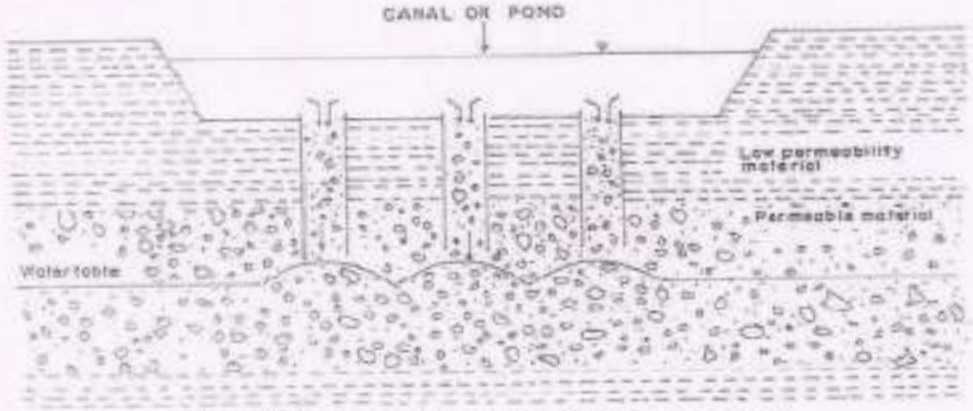


Fig 3: Cross section of pond recharge shaft

OBSERVATIONS AND RECOMMENDATIONS

- To make the people aware, the awareness programme about the conservation of ground water resources should be organized regularly.
- The water level monitoring network needs to be increased in the nearby areas.
- Community efforts and create the spirit of cooperation needed to subsequently manage sustainably ground water as a community resource.
- The BHSL Utraula unit is situated in safe zone as per Ground Water Notification and this unit is doing artificial ground water recharge though in-house roof top rain water harvesting network and also through village ponds adopted outside factory premises .
- BHSL Utraula unit artificial water recharge quantity is more than required quantity as prescribed by UP-Ground Water Deptt.

CONCLUSION

Based on the study, it can be concluded that the BHSL Utraula unit recharges more than 50 % of the required quantity of the water as prescribed by UP-Ground Water Deptt.

Dated: 14.05.2024

14/05/24

Dr. Rajiv
Scientist/ Team Leader
Directorate of Research
Chandra Shekhar Azad University of Agriculture & Technology,
Kanpur- 208 002, Uttar Pradesh, India

bajaj SUGAR

ANNEXURE-R-4

Ref. No.-BHSL/MQR/EHS/2024/125 Dated -15.07.2024

To,
The Regional Officer,
Uttar Pradesh Pollution Control Board
Rajendra Nagar, Bareilly (U.P.) PIN-243122

Sub: Compliance status of order issued by Hon'ble NGT against OA No 691/2022 vide Dated 13.02.2023.

Ref: BHSL Letter Dated 20.04.2024 for Submission of Impact Assessment Study for treated water utilization on agriculture land & ground water recharge study through the ponds adopted.

Dear Sir,

With reference to above mentioned subject, we would like to apprise that following studies were carried out by Chandra Shekhar Azad University of Agriculture & Technology Kanpur.

- Impact Assessment Study for treated water utilization on agriculture land.
- Study of Ground Water Recharge study through the ponds adopted by the Unit Maqsoodapur Sugar.

As we have received the above-said study reports from the CS Azad University of Agriculture & Technology Kanpur, copy of the reports are enclosed herewith as **Annexure -1 & 2.**

Kindly acknowledge receipt of the above-said study reports.

Thanking you
Yours Faithfully
For Bajaj Hindusthan Sugar Ltd.,
Unit: **Maqsoodapur Sugar**

(Authorized signatory)

Enclosure: As Above

Copy: The Chief Environmental Officer (Circle-7), UPPCB -Lucknow

Bajaj Hindusthan Sugar Ltd.
Unit : Maqsoodapur (Banda-Bilsanda Road), Tehsil Powayan, Distt. Shahjahanpur - 242042 (U.P.)
Regd. Office : Golagokarannath, Lakhimpur - Kheri, District Kheri, Uttar Pradesh - 262 802
Tel. +91-5878-233734/5/7/8, 233403 1 Fax: +91-5878-233401 1 E-mail : investors@bajajhindusthan.com I CIN: L15420UP1931PLC065241

bajaj GROUP THINK TOMORROW

Technical Report

On

IMPACT ASSESSMENT STUDY
OF
TREATED WATER UTILIZATION ON AGRICULTURE LAND

For

Bajaj Hindusthan Sugar Limited
Unit - Maqsoodapur
District – Shahjahanpur, Uttar Pradesh

Carried out By

Directorate of Research
C. S. Azad University of Agriculture & Technology,
Kanpur – 208 002 (India)

Technical Report
on
Impact Assessment Study of Treated Water Utilization on Agriculture Land

Introduction:

Water is the most abundant natural resource in the world. The earth surface is covered 70 per cent by water and out of this the saline sea water is 97 per cent. But, the potable or drinking water is about 13 per cent of the residual which is 0.40 per cent of all the world water and the remaining is held either as ice and atmosphere.

The primary competing uses of water is typically agriculture followed by industry, domestic, recreational and more recently environmental preservation. Proper distribution of water among these sectors requires planning and management. Sustainability of water resources and an equitable distribution of available water drive much of this planning. Finding sustainable solutions for water stressed regions is an important focus of water resources planners. For sustainable water management to occur, the allocation of water must be socially fair for both current and future populations.

With the population growing at a higher rate, the need for increased food production is inevitable. Use of treated water in agriculture therefore, could be an important consideration when its disposal is properly planned. The quality of treated effluent will then become very important in terms of its performance to groundwater, soil and plant. For irrigation, the quality of effluent will depend on crops to be irrigated, the soil conditions and the system of effluent distribution adopted besides the output quality of crops grown.

Treated water has high potential for reuse in agriculture; an opportunity for increasing food and environmental security, avoiding direct pollution of rivers, canals, surface water; conserving water and nutrients, thereby reducing the need for chemical fertilizer. Among different sources of treated water, industrial treated water reuse is one of the momentous components of water reuse in agriculture as the source content are known and treatment is done by the industry.

The different socio-environmental and economical benefits resulting from water conservation and reuse included: (a) agriculture benefits such as value of a secure supply of treated water, increased farm production and value of treated water

nutrients, i.e. savings in fertilizer applications; (b) environmental water quality benefits such as reduction in freshwater diversions, reduction in pollutant discharges, reduction of the potential salinity intrusion risk in groundwater aquifers and improvement of the ecosystem and increase of the fauna and flora species and (c) increase of the quality of life of the population.

Under these circumstances, the present study was taken up with the following objectives namely:

1. To identifying the externalities of use of treated water from sugar plant in agriculture.
2. To assess the impact of treated water use in the agriculture in terms of crop productivity, soil fertility, socio economic and environmental factors.

Methodology:

The study entitled "Impact Assessment Study of Treated Water Utilization on Agriculture Land" was conducted during the month of March, 2024 by a team included representatives of the sugar plant. During the course of the study different kind of information *viz.*, soil conditions, farmers perceptions, technology adoption, development activities and farmers knowledge in regard to the treated water of the sugar plant were gathered. The approach used in gathering information included PRA tools and techniques, personal interviews, field visits, etc. In addition to above, the desired information were also gathered from different places like ETP, analytical laboratory, storage tank, water supply system, monitoring system etc.

Brief Description About Company:

Bajaj Hindusthan Sugar Limited (BHSL) was established on 24th November 1931, as 'Hindusthan Sugar Mills Limited.' Founded by the late Shri Jamnalal Bajaj, a respected businessman, freedom fighter, and close confidant of Mahatma Gandhi, the company's inception aimed to address a critical national mission-providing momentum to the industry, given that there were fewer than 30 sugar mills in the country at that time-and advancing inclusive growth. The chosen site for the first plant was in Gola Gokaran Nath in the Lakhimpur Kheri district in the Terai region of present-day Uttar Pradesh (UP). Positioned in an area abundant with sugarcane plantations, the original capacity of the plant was 400 tonnes of cane crushed per day (TCD), which eventually increased to its current 13,000 TCD. The distillery unit

of the plant began production in 1944. During World War II, the distillery primarily produced power alcohol, a commodity in short supply at the time. Notably, the unit became the first in the country to supply alcohol-mixed petrol to the army. In 1967, a new company, Sharda Sugar & Industries Limited, emerged as a subsidiary of Hindusthan Sugar Mills Limited. Under this subsidiary, a sugar plant with a cane crushing capacity of 1,400 TCD was established in 1972 at Palia Kalan, a major cane-supplying centre located 70 kilometres north of the Gola Gokaran Nath unit. The Palia Kalan unit's capacity was gradually increased to its current 11,000 TCD.

In 1988, Hindusthan Sugar Mills Limited underwent a name change, becoming Bajaj Hindusthan Sugar Limited (BHSL). Two years later, Sharda Sugar & Industries Limited was amalgamated with the company.

During the 2000s, BHSL initiated an ambitious green field expansion from 2003 to 2007, establishing eight plants across the state. This rapid expansion, starting with a plant at Kinauni near Meerut, was notably completed in just 7 months, contrasting with the industry norm of 18-24 months. The total cane crushing capacity of the company surged to 96,000 TCD.

In 2005, BHSL acquired Pratappur Sugar and Industries Limited (PSIL) in UP's Deoria district. Operating since 1903, it was Asia's oldest plant with a crushing capacity of 3,200 TCD. Post-acquisition, its capacity doubled to 6,000 TCD within a year.

PSIL was subsequently renamed Bajaj Hindusthan Sugar and Industries Limited (BHSIL) and made a subsidiary of BHSL. This acquisition provided BHSL with a strategic foothold in the sugar-deficient region of Eastern UP and reaffirmed the consolidation that took place in the sugar industry. By the end of 2007, the expansion drive not only enhanced BHSL's overall cane crushing capacity but also positioned the company as India's largest ethanol producer, generating 480 kiloliters per day (KLD).While enhancing the capacity of its existing sugar plant at Pratappur, the company concurrently established three additional sugar units in virgin, cane-rich areas of East UP at Rudauli (district: Basti), Kundarkhi (district: Gonda), and Utraula (district: Balrampur). This elevated BHSIL's total crushing capacity to 40,000 TCD. The commissioning of three Bagasse-based power co-generation plants at Kundarkhi, Rudauli, and Utraula contributed to BHSIL's aggregate power generation

capacity of 95.8 MW. Coupled with the power generation capacity of 325 MW from BHSL, the company's total generation capacity stands at 420.8 MW, surpassing its energy needs. Notably, the surplus 90 MW of energy is supplied to the UP state grid. In December 2010, the amalgamation of BHSIL with BHSL was completed. BHSL's growth initiative was strategically focused on achieving global manufacturing scale and cost competitiveness. Simultaneously, it created significant developmental opportunities in UP, a state eager for infrastructural growth, youth employment, and overall socioeconomic development in rural communities.

Today, BHSL holds a unique position, towering over local peers and ranking among the world's best in planning and processes. With the company impacting over 5 lakh farmers in UP, it directly contributes to the rural economy, bringing positive change to countless lives in UP and beyond across India.

Detail About the Unit:

The Bajaj Hindusthan Sugar Limited, Maqsoodapur was established in 2007 in district Shahjahanpur of Uttar Pradesh. At present it is engaged in producing plantation white sugar. It has installed capacity of 10000 TCD and operating average crush is 7000 TCD. The sugar production capacity is 10000 TCD.

Entry gate of the Maqsoodapur (Shahjahanpur) unit

Effluent Treatment Plant Description:

a) **ETP Layout and Unit Capacity Details:**

The details information is given in attached Annexure-1.

b) **ETP Process Description**:

Unit has installed state of art technology ETP for the treatment of effluent from various production processes. ETP is based on activated sludge process comprised with bar screen, oil & grease trap, equalization tank, primary clarifier, aeration tank with air fine bubble diffuses, secondary clarifier followed by sand filer and activated carbon filters at tertiary treatment stage .The system is designed to achieve the standard norms as notified by MOEF & CC Notification dated 14.01.2016. The sulphate removal system has also been installed and is being operated for the treatment of the cooling tower overflow which further treated in activated sludge process ETP with single outlet point.

c) **Details about Analytical Facility at Site:**

Maqsoodapur (Shahjahanpur) unit has a well equipped Environmental Laboratory for environmental monitoring and testing and different parameters like pH, BOD, COD, TSS, TDS, Sulphate etc are being tested.

	
Treatment of effluent	Online water analyser monitor

d) **Details about Manpower at Site to Monitor ETP & Irrigation Management Plan:**

At site, one supervisor along with three skilled operators are working for effective monitoring of ETP and Irrigation Management Plan.

e) **Details about Treated Water Storage Impervious Lagoon:**

The unit has constructed impervious lined storage tank with the **capacity of 13500 KL** for storage of treated effluent during low/no demand, based on the Irrigation Management Plan.

f) **Details about Treated Water Transportation at Farmers Field**:

The Bajaj Hindusthan Sugar limited, Maqsoodapur has Lagoon with a capacity of 13500 cubic meters and from here the treated water is being supplied to the

field of farmers of targeted area through pumping set with the help of underground water supply system which is fully controlled via butter fly valve. The underground water supply system is made up from 4" size of HDPE pipes along with appropriate number of outlets at different location.

	
Lagoon	Analytical facility

g) **Details about Treated Water Utilisation**:

The industrial treated effluent is being used in irrigation, in compliance with MOEF&CC notification 2016, as per irrigation management plan developed & approved by NSI, Kanpur. The treated domestic effluent is being utilized in lawn, garden and other horticultural area. The flow meter is installed for the measurement of final treated water used for Irrigation Management Plan.

h) **Physio-Chemical Properties of Treated Effluent:**

The treated effluent is being tested by the unit regularly and samples were analysis by NABL and MOEF & CC approved laboratory. The tested values of different parameters of treated effluent for the year of 2023-24 and 2022-23 (previous year) are given as below:

S.No.	Treated Effluent Particulars	Avg. Value (2022-23)	Avg. Value (2023-24)
1.	pH	7.45	7.42
2.	BOD (mg/l)	21.0	21.75
3.	COD (mg/l)	126	126

4.	TSS (mg/l)	26.4	22.2
5.	Oil & Grease (mg/l)	<1	2.2

The analysis reports are attached as Annexure -2.

Farmers and Irrigation Areas:

The details information about covered area under irrigation is given as below:

S. No.	Location/ Village	Total available area (hectare)
1.	Kuiya Maholia	232.00

A list of some progressive farmers, which are using treated water, is also furnished as given below:

S. No.	Name of farmer	Father/Husband Name	Village	Area (Hectare)	Crop cultivated
1.	Dilbagh Singh	Seva Singh	Kuiya Maholia	5.426	Sugar Cane
2.	Kulvinder Singh	Gurdeep Singh	Kuiya Maholia	3.50	Sugar Cane
3.	Harmeet Singh	Dilbagh Singh	Kuiya Maholia	1.00	Sugar Cane
4.	Gurdeep Singh	Labha Singh	Kuiya Maholia	5.00	Sugar Cane
5.	Jageer Singh	Surat Singh	Kuiya Maholia	5.23	Sugar Cane
6.	Mangal Singh	Harbans Singh	Kuiya Maholia	7.20	Sugar Cane
7.	Sadha Singh	Mahinder Singh	Kuiya Maholia	7.20	Sugar Cane
Total				**34.53**	

Agro-ecological Conditions of Operational Area:

As meeting the prescribed norms is not the only criterion for use of treated water in irrigation, the requirement of water for irrigation be a limiting condition and this depends upon various factors as mentioned below:

1. **Cropping Pattern of Command Area:**

   In command area of M/s Bajaj Hindusthan Sugar Limited, Maqsoodapur falls between Khannot River and Sharda Canal in Village Maqsoodapur of district Shahjahanpur in central Uttar Pradesh. The soil of the area is mostly sandy loam soil having soft pan of $CaCO_3$ & $MgCO_3$ and having medium permeability of water. These soils are comparatively medium in organic carbon and humus. The major crops grown in the area are wheat, paddy, pulses, sugarcane, maize, mustard, mango and guava.

2. **Climate:**

   The command area has a hot and dry summers, humid monsoon season and dry winters comes under sub-tropical sub-humid climate. The temperature varies from 8.5 to 28.6^{0}C in winters and 21.4^{0}C to 40.5^{0}C in summers.

3. **Irrigation type:**

   The majority of the farmers are using flood irrigation method in command area. Some innovative farmers are also using sprinkler system to irrigate their fields.

4. **Soil Condition of Command Areas:**

   There are various soil types such as loam, clay, sandy, clay loam and sandy loam but majority of the land are under the category of sandy loam.

Agreements with the Farmers:

The practice of agreements between sugar plant and farmers in regards to the use of treated water is being adopted. The details are attached as Annexure-3.

Available of Treated Water for Irrigation and Command Area:

In command area, the treated effluent is available from the month of November to April depending upon the duration of crushing season. In Maqsoodapur area of Shahjahanpur district, intensive agriculture is practiced by majority of the farmers wherein land is not left vacant. This intensive agriculture requires continuous use of water. Under such type of practices, the treated effluent provided to the farmers is a big support for them as it is easily available to the farmers as and when required. The details about total available farmers command area and related information are furnished as below:

S. No.	Total available area (hectare)	Distance from sugar unit (Km)	Mode of Effluent Transport
1.	232.00	Within 1.5 km	HDPE Pipe Lines
Total	**232.00**	-	-

Treated water irrigated field

Good crop of planted cane

Crop Grown and Soil Properties:

During the course of intensive study (field/on site visit), it was found that the crop of wheat and sugarcane is grown by majority of the farmers. The crop of the visited fields was in good conditions and farmers are happy with the performance of their crops.

Similar to treated effluent, the soil of the concerned farmers' fields is being tested by the sugar unit regularly. During onsite field visit, the soil samples were also collected from farmers' fields where irrigation is being applied/adopted through treated water and analysis of these samples was carried out by NABL and MOEF & CC approved laboratory. In addition, the previous soil testing reports were also available with the sugar unit and farmers as well. The soil test values of different parameters for the year of 2023-24 (on site visit) and 2022-23 (previous year) are given as below:

S.No.	Soil Samples Particulars	Avg. value (2022-23)	Avg. value (2023-24)
1.	pH (1:2 suspension)	7.88	7.15

2.	Sodium Absorption Ratio (SAR), meq/L	-	8.34
3.	Salinity Electrical Conductivity@ 25^0 C (mmhos/cm)	343	233
	Soil Fertility Ratings		
4.	Organic Carbon (% by mass)	0.24	0.53
5.	Nitrogen	0.054 (% N)	312 (kg/ha)
6.	Phosphorous	64.2 (mg/kg)	22.8 (kg/ha)
7.	Potash	-	312 (kg/ha)

The data of the soil analysis revealed that the fertility status of the soil is good, which indicated that there is no adverse effect of the treated effluent on soil of the farmers' field. The analysis reports are attached as Annexure -4.

Properties of the Ground Water of Borewells:

During onsite field visit, the water sample from borewells of the nearby beneficiary farmers was also collected where irrigation is being applied/adopted through treated water and analysis of the water sample was carried out by NABL and MOEF & CC approved laboratory. In addition, the previous water testing reports was also available with the sugar unit. The values of different toxic substances of the underground water of borewells for the year of 2023-24 (on site visit) and 2022-23 (previous year) are given as below:

S.No.	Ground Water Parameters	Unit	Avg. Value (2022-23)	Avg. Value (2023-24)
1.	*Escherichia coli*	-	Absent	Absent
2.	*Coliform bacteria*	-	Absent	Absent
3.	Colour	Hazen	<5.00	<5.00
4.	Odour	-	Agreeable	Agreeable
5.	Taste	-	Agreeable	Agreeable

6.	Turbidity	NTU	<1.00	<1.00
7.	pH Value	-	7.65	7.38
8.	TDS	Mg/l	438	416
9.	Aluminium	Mg/l	<0.01	<0.01
10.	Total Ammonia	Mg/l	<0.10	<0.10
11.	Anionic Detergents	Mg/l	<0.10	<0.10
12.	Barium	Mg/l	<0.10	<0.10
13.	Boron	Mg/l	<0.10	<0.10
14.	Calcium	Mg/l	51.02	48.10
15.	Chloramines	Mg/l	< 1.00	< 1.00
16.	Chloride	Mg/l	58.40	57.40
17.	Copper	Mg/l	<0.05	<0.05
18.	Fluoride	Mg/l	0.48	0.46
19.	Free Residual Chlorine	Mg/l	<0.10	<0.10
20.	Iron	Mg/l	0.127	0.138
21.	Magnesium	Mg/l	14.50	15.02
22.	Manganese	Mg/l	<0.10	<0.10
23.	Mineral Oil	Mg/l	<0.50	<0.50
24.	Nitrate	Mg/l	3.26	4.60
25.	Selenium	Mg/l	<0.01	<0.01
26.	Silver	Mg/l	<0.05	<0.05
27.	Sulphate	Mg/l	23.50	21.80
28.	Sulphide	Mg/l	<0.05	<0.05
29.	Alkalinity	Mg/l	198.0	197.0

30.	Total Hardness	Mg/l	215.0	221
31.	Zinc	Mg/l	0.148	0.156
32.	Phenolic Compound	Mg/l	<0.001	<0.001
33.	Cadmium	Mg/l	<0.001	<0.001
34.	Cyanide	Mg/l	<0.01	<0.01
35.	Lead	Mg/l	<0.01	<0.01
36.	Mercury	Mg/l	<0.001	<0.001
37.	Molybdenum	Mg/l	<0.05	<0.05
38.	Nickel	Mg/l	<0.01	<0.01
39.	Poly Nuclear Aromatic Hydro Carbons	Mg/l	<0.0001	<0.0001
40.	Poly Chlorinated biphenyl	Mg/l	<0.0001	<0.0001
41.	Total Arsenic	Mg/l	<0.01	<0.01
42.	Total Chromium	Mg/l	<0.05	<0.05

The data furnished in above table showed that the toxic substances in the ground water are under the acceptable limits. The details analysis reports are attached as Annexure -5.

Farmers Reaction:

During the course of study (field/on site visit), the interactions were made with the beneficiary farmers to know the impact of the treated water on their crop and soil as well. The farmers are using the treated water since last five-six years and growing various crops suitable for the region. The saving in the amount of chemical fertilizers, vigorous growth of the plants, more greenery of the plants, high yield, good soil health, reduction in cultivation cost and availability as and when required were the common opinion of the beneficiary farmers about the treated water.

Interaction with Farmer Mr. Mangal Singh

Interaction with Farmer Mr. Gurdeep Singh

Farmers Outreach Programmes:

To educate and trained to the farmers about use of treated water and conservation of natural resources, the various farmers promotional programmes *viz.*, kishan goshthi, group discussion and interaction are being organised by the sugar unit regularly at the short intervals.

kishan goshthi

Demonstrations and Field Monitoring: The cane department of the sugar unit conducted demonstrations on farmers' field regularly. The demonstration is not restricted to cultivation of the new sugarcane varieties but agro-techniques for good agricultural practices (GAP) also demonstrated during the course of sugarcane cultivation. The large no. of the farmers of the command area is benefited through this transfer of technology practice i.e. demonstrations. In addition, the fields of the farmers are also being monitored at fourth nightly intervals.

CONCLUSION:

Based on the above said findings of the study entitled "Impact Assessment Study of Treated Water Utilization on Agriculture Land", it can be concluded that ....

1. There is no adverse effect of treated water utilization on agriculture land in terms of crop productivity, soil fertility, socio economic status and environmental factors.
2. Hence, irrigation through treated water of the sugar plant can be continued without any hazardous effects. The proposed system shall be able to cope-up the requirement of the water for irrigation purposes through utilization of the generated effluent.

Dated: 11.05.2024

11/05/24

Dr. Rajiv
Scientist/ Team Leader
Directorate of Research
Chandra Shekhar Azad University of Agriculture & Technology,
Kanpur- 208 002, Uttar Pradesh, India

Annexure -1

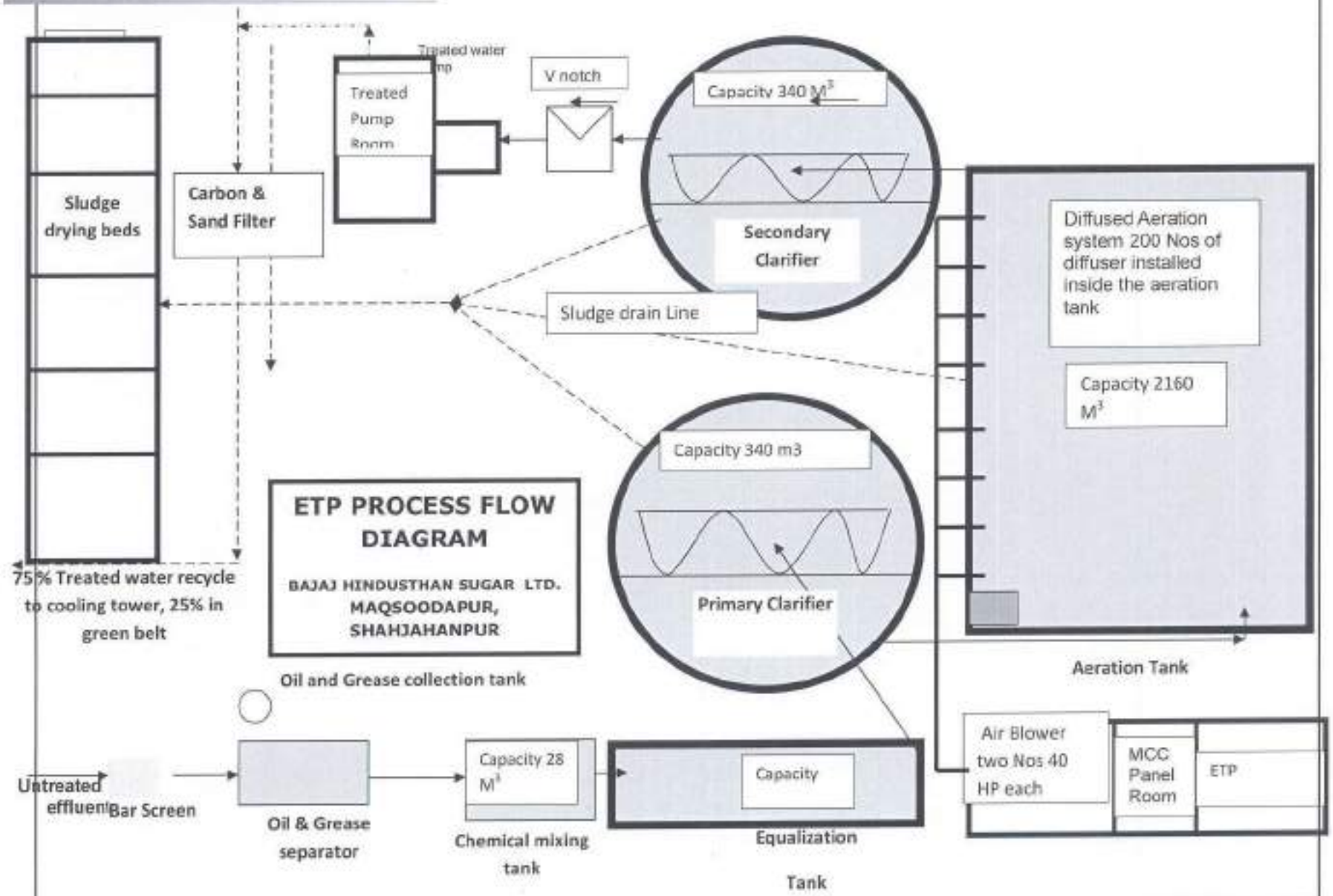
Annexure -2

Annexure -3

Annexure -4

Annexure -5

Annexure - L



NOIDA TESTING LABORATORIES

(A Government of India Approved Testing Laboratory)

(An ISO : 9001 : 2015, ISO 45001 : 2018 (OH&S) Certified & NABL Accredited Laboratory)

MoEF & CC (Ministry of Environment, Forest & Climate Change), UPPCB Recognized Laboratory

Analysing for an Assured Future

+91-9313611642, 8510081921, 7503031145, 8527870572, 7503031146, 9999794369

TEST CERTIFICATE

Test Report of	Report Code	Date of Issue
Waste Water	WW-301222-04	03/01/2023

Issued To: M/s. Bajaj Hindusthan Sugar Ltd

Vill- Maqsoodpur, Tehsil- Pawayan, Dist- Shahjahanpur, Uttar Pradesh (242401).

SAMPLING & ANALYSIS DATA

Sample Drawn On	:	29/12/2022
Sample Drawn By	:	NTL Representative
Sample Description	:	ETP Outlet
Sample Received On	:	30/12/2022
Sample Quantity/Packing detail	:	1 litre pet bottle
Weather Conditions	:	Normal
Analysis Duration	:	30/12/2022 to 03/01/2023

TEST RESULTS

S.No	Parameter	Test Method	Results	Units	Limit as per CPCB Norms
1.	pH	IS:3025(Part-11):1983	7.45	-	5.5-9.0
2.	Total Suspended Solid (TSS)	IS:3025(Part-17):1984	26.4	mg/l	100
3.	Chemical Oxygen Demand (as O_2)	APHA 5220 B:2005	126.0	mg/l	250
4.	Biological Oxygen Demand (as O_2) (3 days at 27°C)	IS:3025(Part-44):1993	21.0	mg/l	30
5.	Oil & grease	IS:3025(Part-39):1984	<1.0	mg/l	10

Remarks: Test parameters coming in under limit, prescribe limits are given by MoEF/Central Pollution Control Board.

Notes:

1. The results given above are related to the tested sample, as received & mentioned parameters. The customer asked for the above tests only.
2. Responsibility of the Laboratory is limited to the invoiced amount only.
3. This test report will not be generated again, either wholly or in part, without prior written permission of the laboratory.
4. The test samples will be disposed off after two weeks from the date of issue of test report, unless until specified by the customer.

CHECKED BY

AUTHORIZED SIGNATORY

ITS TESTING LABORATORY PRIVATE LIMITED

Laboratory: A-114, Sector-80, Phase-II Noida, Gautam Budh Nagar - 201305, (U.P.)
(An ISO 9001: 2015, ISO 14001:2015 & ISO 45001:2018 Certified Laboratory)
Website: www.itslab.in, Email: itlrclab@gmail.com, info@itslab.in, contact@itslab.in
+91 9911659800, 9305780312, 09958649764

TEST REPORT

Waste Water Sample Analysis

Report Code: SL-051223-14 **Issue Date: 12/12/2023**

Issue To: M/S. BAJAJ HINDUSTHAN SUGAR LTD. (SUGAR UNIT)
Address VILL- MAQSOODPUR, TEHSIL PAWAYAN, DIST SHAHJAHAPUR
UTTAR PRADESH - 242401

SAMPLING & ANALYSIS DATA

Sample Drawn On	:	05/12/2023
Sample Received On	:	06/12/2023
Sample Drawn By	:	Mr. Amit Sharma (ITS Lab)
Sample Description	:	**ETP Outlet Water**
Sample Quantity	:	2.0 Liter in Pet Bottle
Environment Conditions	:	Normal
Analysis Duration	:	06/12/2023 To 12/12/2023

TEST RESULT

S.No.	Parameter	Test Method	Results	Units	Limits, max
1.	pH	IS:3025 (Part-11)	7.39	-	5.5-8.5
2.	Total Suspended Solids	IS:3025 (Part-17)	26.4	mg/l	100
3.	Chemical Oxygen Demand (as O_2)	IS:3025 (Part-58)	106	mg/l	250
4.	Biological Oxygen Demand (as O_2)	IS:3025 (Part-44)	17	mg/l	30
5.	Oil & Grease	IS:3025 (Part-39)	<1.0	mg/l	10

Jitendra
Checked By

Authorized Signatory

NOIDA TESTING LABORATORIES

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(An ISO : 9001 : 2015, ISO 45001 : 2018 (OH&S) Certified & NABL Accredited Laboratory)

MoEF & CC (Ministry of Environment, Forest & Climate Change), UPPCB Recognized Laboratory

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TEST CERTIFICATE

Test Report of	Report Code	Date of Issue
Waste Water	WW-150124-011	20/01/2024

Issued To: **M/s. Bajaj Hindusthan Sugar Ltd**

Vill- Maqsoodpur, Tehsil- Pawayan, Dist- Shahjahanpur, Uttar Pradesh (242401).

SAMPLING & ANALYSIS DATA

Sample Drawn On	:	15/01/2024
Sample Drawn By	:	NTL Representative
Sample Description	:	ETP Outlet
Sample Received On	:	15/01/2024
Sample Quantity/Packing detail	:	1-liter pet bottle
Weather Conditions	:	Normal
Analysis Duration	:	15/01/2024 to 20/01/2024

TEST RESULTS

S. No	Parameter	Test Method	Results	Units	Limit as per CPCB Norms
1.	pH	IS:3025(Part-11):1983	7.45	-	5.5-9.0
2.	Total Suspended Solid (TSS)	IS:3025(Part-17):1984	18.0	mg/l	100
3.	Chemical Oxygen Demand (as O_2)	APHA 5220 B:2005	146.0	mg/l	250
4.	Biological Oxygen Demand (as O_2) (3 days at 27^0C)	IS:3025(Part-44):1993	26.5	mg/l	30
5.	Oil & grease	IS:3025(Part-39):1984	2.2	mg/l	10

Remarks: Test parameters coming in under limit, prescribe limits are given by MoEF/Central Pollution Control Board.

Notes:

1. The results given above are related to the tested sample, as received & mentioned parameters. The customer asked for the above tests only.
2. Responsibility of the Laboratory is limited to the invoiced amount only.
3. This test report will not be generated again, either wholly or in part, without prior written permission of the laboratory.
4. The test samples will be disposed off after two weeks from the date of issue of test report, unless until specified by the customer.

CHECKED BY **AUTHORIZED SIGNATORY**

Annexure-3

सहमति पत्र

मैं.....मंगल सिंह.....पुत्र श्री.....प्रीतम सिंह.....गाँव.....कुइया महोलिया.....का निवासी हूँ। मेरी 0.4860 0.9020 हैक्टेयर जमीन बजाज चीनी मिल, मक्सूदापुर, शाहजहाँपुर, उ०प्र० के नजदीक है। मेरी जमीन में गन्ना / धान एवं गेहूँ की फसल होती है। यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेती की सिंचाई हेतु आपूर्ति करे जिससे कि मेरी फसल को कोई नुकसान न हो तो मैं चीनी मिल से निकलने वाले पानी से अपने खेतों की सिचांई करने के लिए तैयार हूँ।

हस्ता० कृषक.....मंगल सिंह

नाम कृषक.....मंगल सिंह

पिता का नाम.....प्रीतम सिंह

गाँव.....कुइया महोलिया

दिनाँक.....08/11/17

सहमति पत्र

मैं सतनाम सिंह पुत्र श्री वीर सिंह गॉव कुइया महोलिया का निवासी हूँ। मेरी 2.4560 हैक्टेयर जमीन बजाज चीनी मिल, मक्सूदापुर, शाहजहाँपुर, उ०प्र० के नजदीक है। मेरी जमीन में गन्ना / धान एवं गेहूँ की फसल होती है। यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेती की सिंचाई हेतु आपूर्ति करे जिससे कि मेरी फसल को कोई नुकसान न हो तो मैं चीनी मिल से निकलने वाले पानी से अपने खेतों की सिचांई करने के लिए तैयार हूँ।

हस्ता० कृषक सतनाम सिंह

नाम कृषक सतनाम सिंह

पिता का नाम वीर सिंह

गॉव कुइया महोलिया

दिनॉक 07/11/17

सहमति पत्र

मैं प्रीतम सिंह पुत्र श्री करतार सिंह गॉव कुइया अघोलिया का निवासी हूँ। मेरी 2.2500 हैक्टेयर जमीन बजाज चीनी मिल, मक्सूदापुर, शाहजहॉपुर, उ०प्र० के नजदीक है। मेरी जमीन में गन्ना / धान एवं गेहूँ की फसल होती है। यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेती की सिंचाई हेतु आपूर्ति करे जिससे कि मेरी फसल को कोई नुकसान न हो तो मैं चीनी मिल से निकलने वाले पानी से अपने खेतों की सिचांई करने के लिए तैयार हूँ।

हस्ता० कृषक प्रीतम सिंह

नाम कृषक प्रीतम सिंह

पिता का नाम करतार सिंह

गॉव कुइया अघोलिया

दिनॉक 09/11/17

सहमति पत्र

मैं.....हरबेल सिंह.....पुत्र श्री.....जीत सिंह.....गाँव.....कुइया महोलिया .....का निवासी हूँ। मेरी 1.546.0.. हैक्टेयर जमीन बजाज चीनी मिल, मक्सूदापुर, शाहजहाँपुर, उ०प्र० के नजदीक है। मेरी जमीन में गन्ना / धान एवं गेहूँ की फसल होती है। यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेती की सिंचाई हेतु आपूर्ति करे जिससे कि मेरी फसल को कोई नुकसान न हो तो मैं चीनी मिल से निकलने वाले पानी से अपने खेतों की सिचांई करने के लिए तैयार हूँ।

नि०अ०

हस्ता० कृषक.....हरबेल सिंह

नाम कृषक.....हरबेल सिंह

पिता का नाम.....जीत सिंह

गाँव.....कुइया महोलिया

दिनाँक.....13/11/17

सहमति पत्र

मैं सुखबिन्दर सिंह पुत्र श्री हरबंश सिंह गाँव कुईपा महोलिया का निवासी हूँ। मेरी 1.1330 0.5910 हैक्टेयर जमीन बजाज चीनी मिल, मकसूदापुर, शाहजहाँपुर, उ०प्र० के नजदीक है। मेरी जमीन में गन्ना / धान एवं गेहूँ की फसल होती है। यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेती की सिंचाई हेतु आपूर्ति करे जिससे कि मेरी फसल को कोई नुकसान न हो तो मैं चीनी मिल से निकलने वाले पानी से अपने खेतों की सिचांई करने के लिए तैयार हूँ।

हस्ता० कृषक ...

नाम कृषक ... सुखबिन्दर सिंह

पिता का नाम ... हरबंश सिंह

गाँव ... कुईपा महोलिया

दिनाँक ... 08/11/17

सहमति पत्र

मैं सुखविन्दर सिंह पुत्र श्री हरवंश सिंह गॉव कुइया मघोलिया का निवासी हूँ। मेरी 3.0960 हैक्टेयर जमीन बजाज चीनी मिल, मक्सूदापुर, शाहजहॉपुर, उ०प्र० के नजदीक है। मेरी जमीन में गन्ना / धान एवं गेहूँ की फसल होती है। यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेती की सिंचाई हेतु आपूर्ति करे जिससे कि मेरी फसल को कोई नुकसान न हो तो मैं चीनी मिल से निकलने वाले पानी से अपने खेतों की सिचांई करने के लिए तैयार हूँ।

हस्ता० कृषक

नाम कृषक सुखविन्दर सिंह

पिता का नाम हरवंश सिंह

गॉव कुइया मघोलिया

दिनॉक 08/11/17

सहमति पत्र

मैं बलजिन्दर कौर पुत्र/पत्नी श्री गुरमीत सिंह गाँव कुइया महोलिया का निवासी हूँ। मेरी 2.1240 हैक्टेयर जमीन बजाज चीनी मिल, मक्सूदापुर, शाहजहाँपुर, उ०प्र० के नजदीक है। मेरी जमीन में गन्ना / धान एवं गेहूँ की फसल होती है। यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेती की सिंचाई हेतु आपूर्ति करे जिससे कि मेरी फसल को कोई नुकसान न हो तो मैं चीनी मिल से निकलने वाले पानी से अपने खेतों की सिचाई करने के लिए तैयार हूँ।

हस्ता० कृषक बलजिन्दर कौर

नाम कृषक बलजिन्दर कौर

पिता/पति का नाम गुरमीत सिंह

गाँव कुइया महोलिया

दिनाँक 10/11/17

सहमति पत्र

मैं गुरमीत सिंह पुत्र श्री प्रीतम सिंह गॉव मुश्या महेलिया का निवासी हूँ। मेरी 0.6230 हैक्टेयर जमीन बजाज चीनी मिल, मकसूदापुर, शाहजहॉपुर, उ०प्र० के नजदीक है। मेरी जमीन में गन्ना / धान एवं गेहूँ की फसल होती है। यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेती की सिंचाई हेतु आपूर्ति करे जिससे कि मेरी फसल को कोई नुकसान न हो तो मैं चीनी मिल से निकलने वाले पानी से अपने खेतों की सिचांई करने के लिए तैयार हूँ।

हस्ता० कृषक गुरमीत सिंह

नाम कृषक गुरमीत सिंह

पिता का नाम प्रीतम सिंह

गॉव मुश्या महेलिया

दिनॉक 14/11/17

सहमति पत्र

मैं.....सादा सिंह.....पुत्र श्री.....महेन्द्र सिंह.....गॉव.....कुश्फा महोलिया .....का निवासी हूँ। मेरी 1.9110..... हैक्टेयर जमीन बजाज चीनी मिल, मक्सूदापुर, शाहजहॉपुर, उ०प्र० के नजदीक है। मेरी जमीन में गन्ना / धान एवं गेहूँ की फसल होती है। यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेती की सिंचाई हेतु आपूर्ति करे जिससे कि मेरी फसल को कोई नुकसान न हो तो मैं चीनी मिल से निकलने वाले पानी से अपने खेतों की सिचांई करने के लिए तैयार हूँ।

हस्ता० कृषक.....सादा सिंह.....

नाम कृषक.....सादा सिंह

पिता का नाम.....महेन्द्र सिंह

गॉव.....कुश्फा महोलिया

दिनॉक.....06/11/17

सहमति पत्र

मैं.....सादा सिंह.....पुत्र श्री.....महेन्द्र सिंह.....गाँव.....कुइर्पा महोलिया .....का निवासी हूँ। मेरी .0.1.0.1.4.0 हैक्टेयर जमीन बजाज चीनी मिल, मक्सूदापुर, शाहजहाँपुर, उ०प्र० के नजदीक है। मेरी जमीन में गन्ना / धान एवं गेहूँ की फसल होती है। यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेती की सिंचाई हेतु आपूर्ति करे जिससे कि मेरी फसल को कोई नुकसान न हो तो मैं चीनी मिल से निकलने वाले पानी से अपने खेतों की सिचांई करने के लिए तैयार हूँ।

हस्ता० कृषक.....सादा सिंह.....

नाम कृषक.....सादा सिंह

पिता का नाम.....महेन्द्र सिंह

गाँव.....कुइर्पा महोलिया

दिनाँक.....06/11/17

सहमति पत्र

मैं.....बलिहार सिंह.....पुत्र श्री.....महेन्द्र सिंह.....गॉव.....कुरपॉ महोलिया .....का निवासी हूँ। मेरी 4.4440 हैक्टेयर जमीन बजाज चीनी मिल, मक्सूदापुर, शाहजहॉपुर, उ०प्र० के नजदीक है। मेरी जमीन में गन्ना / धान एवं गेहूँ की फसल होती है। यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेती की सिंचाई हेतु आपूर्ति करे जिससे कि मेरी फसल को कोई नुकसान न हो तो मैं चीनी मिल से निकलने वाले पानी से अपने खेतों की सिचांई करने के लिए तैयार हूँ।

हस्ता० कृषक ..... नि० अ० बलिहार सिंह

नाम कृषक.....बलिहार सिंह.....

पिता का नाम.....महेन्द्र सिंह.....

गॉव.....कुरपॉ महोलिया

दिनॉक.....07/11/17

सहमति पत्र

मैं.....अजायब सिंह.....पुत्र श्री.....महेन्द्र सिंह.....गॉव.....कुइया महोकिला .....का निवासी हूँ। मेरी 1.444 हैक्टेयर जमीन बजाज चीनी मिल, मकसूदापुर, शाहजहॉपुर, उ०प्र० के नजदीक है। मेरी जमीन में गन्ना / धान एवं गेहूँ की फसल होती है। यदि चीनी मिल से निकलने वाले पानी को चीनी मिल संशोधित कर खेती की सिंचाई हेतु आपूर्ति करे जिससे कि मेरी फसल को कोई नुकसान न हो तो मैं चीनी मिल से निकलने वाले पानी से अपने खेतों की सिचांई करने के लिए तैयार हूँ।

हस्ता० कृषक.....मनजीत सिंह (पुत्र अजायब सिंह)

नाम कृषक.....अजायब सिंह

पिता का नाम.....महेन्द्र सिंह

गॉव.....कुइया महोकिला

दिनॉक.....07/11/17

ITS TESTING LABORATORY PRIVATE LIMITED

Laboratory: A-114, Sector-80, Phase-II Noida, Gautam Budh Nagar - 201305, (U.P.)
(An ISO 9001: 2015, ISO 14001:2015 & ISO 45001:2018 Certified Laboratory)
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SS-280324-02(Page 1to 2)

Test Report of	Report Code	Date of Issue
Soil Sample	SS-280324-02	02/04/2024

Issued to: M/S. BAJAJ HINDUSTHAN SUGAR LIMITED
MAQSOODAPUR, DISTT-SHAJAHANPUR-242042 (U.P) INDIA

Sampling & Analysis Data

Sample Description	Soil Sample Collected at 30cm depth from Farmer Field.
Sample Drawn & Sealed by	ITS Representative Mr. Amit Sharma & Dr. Rajeev Chandra Sekhar Aazad University of Agricultural & Technology, Kanpur
Date of Sample Received	28/03/2024
Purpose of sampling	Crop Cultivation (Agricultural Purpose)
Protocol Used for Testing	IS:2720, IS:14767& Department of agriculture & Cooperation ministry of agriculture government of India-New Delhi.
Analysis Duration	28/03/2024 to 02/04/2024

ANALYSIS TEST RESULT

S.No.	PARAMETERTS	RESULT	Classification of Soil		
1.	pH (1:2 suspension)	7.15	Neutral		
2.	Salinity Electrical Conductivity @25°C (mmhos/cm)	233	Should be less 1000		
3.	**Soil Fertility Ratings**		**Soil Fertility Ratings**		
			Low	**Medium**	**High**
a.	Organic Carbon (% by mass)	0.53	<0.5	0.5-0.75	>0.75
b.	Available Nitrogen (Kg/ha)	312	<280	280-560	>560
c.	Available Phosphorous (Kg/ha)	22.8	<10	10-24.6	>24.6
d.	Available Potash (as K) (Kg/ha)	312	<180	108-280	>280

V.K

ITS TESTING LABORATORY PRIVATE LIMITED
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S.No.	PARAMETERTS	RESULT	Protocol Used	The Environmental Management (Soil, quality Standards) Regulation:2007 Upper Limit (max)
1.	Lead Content (as Pb) (mg/kg)	42.0	IS:11047:1998	200
2.	Arsenic (as As) (mg/kg)	0.11	IS:11047:1998	1
3.	Cadmium (as Cd) (mg/kg)	0.38	IS:11047:1998	1
4.	Manganese (as Mn)(mg/kg)	118	IS:11047:1998	1800
5.	Mercury (as Hg)(mg/kg)	<1.0	IS:167772:2004	2
6.	Nickel (as Ni)(mg/kg)	18.5	IS:11047:1998	100
7.	Selenium (as Se) (mg/kg)	2.12	SW-846:7742	20
8.	Copper (as Cu)(mg/kg)	26.9	IS:11047:1998	200
9.	Zinc (as Zn) (mg/kg)	92.0	IS:11047:1998	150
10.	Molybdenum (as Mo)(mg/kg)	<1.0	IS:11047:1998	5
11.	Sodium Absorption Ratio (SAR)	8.34	By Calculation	---

SS-280324-02 (Page 1 to 2)

Conclusion- Based on above tested parameters, soil sample have good fertility value provided by Department of Agriculture & Cooperation Ministry of Agriculture Government of India-New Delhi.

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TEST CERTIFICATE

Issued To: M/s Bajaj Hindusthan Sugar Ltd. Address: Village- Itaimaida Utraula, P.O. Sri Duttganj, Distt- Balrampur (U.P) India	Report Code : SQ-230223-018 Test Report of : Soil Quality Service Request No : NTL/SRF/02/23-050 Service Request Date : 23/02/2023 Report Issue Date : 03/03/2023

SAMPLING & ANALYSIS DATA

Sample Drawn On	: 23/02/2023
Sample Drawn By & Sealed By	: NOIDA TESTING LABORATORIES A Government of India Approved
Sample Collect By	: NTL Representative
Sample Location	: Farmer Field
Sample Description	: Soil Sample
Sample Received On	: 23/02/2023
Sample Quantity	: 2.0 Kg
Weather Conditions	: Normal
Analysis Duration	: 23/02/2023 to 03/03/2023

TEST RESULT

S.No.	Parameter	Unit	Test Results	Test Method
1.	Water Content in	%	18.15	NTL/LAB/SOP/SOIL-03
2.	Texture of Soil	-	Sandy loam	NTL/LAB/SOP/SOIL-04
3.	pH	-	7.88	NTL/LAB/SOP/SOIL-05
4	EC (µ mhos/cm)	Us/cm	489	NTL/LAB/SOP/SOIL-02
5.	Salinity	mg/kg	343	NTL/SOP/SOIL-06
6.	Sulphur (as SO_3)	mg/kg	154	NTL/SOP/SOIL-06
7.	Organic Carbon	%	0.24	NTL/LAB/SOP/SOIL-07
8.	Nitrogen (N)	%	0.054	NTL/LAB/SOP/SOIL-08
9.	Phosphorous (P)	mg/kg	64.2	NTL/LAB/SOP/SOIL-09
HEAVY METLAS TEST (On Dry Basis).				
1.	Iron (Fe)	mg/kg	75.8	USEPA 846-3052
2.	Copper (Cu)	mg/kg	1.22	USEPA 846-3052
3.	Manganese (Mn)	mg/kg	3.65	USEPA 846-3052
4.	Boron (B)	mg/kg	BDL (<0.50)	USEPA 846-3052
5.	Molybdenum (Mo)	mg/kg	BDL<0.05)	USEPA 846-3052

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6.	Chromium (Cr)	mg/kg	0.021	USEPA 846-3052
7.	Cadmium (Cd)	mg/kg	0.24	USEPA 846-3052
8.	Zinc (Zn)	mg/kg	44.8	USEPA 846-3052
9.	Lead (Pb)	mg/kg	BDL(<0.05)	USEPA 846-3052
10.	Nikel (Ni)	mg/kg	2.48	USEPA 846-3052
11.	Arsenic (As)	mg/kg	1.24	USEPA 846-3052

Notes:

1. The results given above are related to the tested sample, as received & mentioned parameters. The customer asked for the above tests only.
2. Responsibility of the Laboratory is limited to the invoiced amount only.
3. This test report will not be generated again, either wholly or in part, without prior written permission of the laboratory.
4. This test report will not be used for any publicity/legal purpose.
5. The test samples will be disposed off after two weeks from the date of issue of test report, unless until specified by the customer.

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AUTHORIZED SIGNATORY

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TEST CERTIFICATE

Issued To: M/s Bajaj Hindusthan Sugar Ltd. (Sugar Unit) **Address: Vill- Maqsoodpur, Tehsil- Pawayan, Dist- Shahjahanpur, Uttar Pradesh (242401).**	**Report Code : W-290324-047** **Test Report of : Water** **Service Request No : NTL/SRF/03/24-06** **Service Request Date : 27/03/2024** **Report Issue Date : 03/04/2024**

Sampling & Analysis Duration

Sample Collected By	:	NTL Representative
Sample Drawn On	:	28/03/2024
Sample Drawn & sealed by	:	Dr. Rajiv (Chandra Shekhar Azad University of Agriculture & Technology, Kanpur)
Sample Received On	:	29/03/2024
Sample Quantity	:	2.0 Lt. + 500 ml.
Analysis Duration	:	29/03/2024 to 03/04/2024
Sampling Location	:	Kuniyamohlia
Sample Description	:	Ground Water

MICROBIOLOGICAL REQUIREMENT RESULT

S.No.	Parameter	Test Method	Results	Requirements as per IS-10500:2012
1.	*Escherichia coli*	IS-15185	Absent	Absent/100ml
2.	*Coliform Bacteria*	IS-15185	Absent	Absent/100ml

ORGANOLEPTIC & PHYSICAL PARAMETERS

S.No.	Parameter	Test Method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1.	Colour	IS-3025(P-04)	<5.00	Hazen Unit	5	15
2.	Odour	IS-3025(P-05)	Agreeable	-	Agreeable	Agreeable
3.	Taste	IS-3025(P-07 & 08)	Agreeable	-	Agreeable	-
4.	Turbidity	IS-3025(P-10)	<1.00	NTU	1	5
5.	pH value	IS-3025(P-11)	7.38	-	6.5 - 8.5	-
6.	Total dissolve solid (TDS)	IS-3025(P-16)	416	mg/l	500	2000

GENERAL PARAMETERS CONCERNING SUBSTANCES UNDESIRABLE IN EXCESSIVE AMOUNTS

S.No.	Parameter	Test method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1.	Aluminium (as Al)	IS: 3025 (P- 55)	<0.01	mg/l	0.03	0.2
2.	Total Ammonia	IS: 3025 (P- 34)	<0.10	mg/l	0.5	No Relaxation
3.	Anionic Detergents (as MBAS)	Annex K of IS-13428	<0.10	mg/l	0.2	1.0
4.	Barium (as Ba)	IS: 15302	<0.10	mg/l	0.7	No Relaxation
5.	Boron (as B)	IS: 3025 (P- 57)	<0.10	mg/l	0.5	2.4

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6.	Calcium (as Ca)	IS: 3025 (P-40)	48.10	mg/l	75	200
7.	Chloramines (as Cl_2)	IS: 3025 (P-26)	<1.00	mg/l	4.0	No Relaxation
8.	Chloride (as Cl)	IS: 3025 (P-32)	57.40	mg/l	250	1000
9.	Copper (as Cu)	IS: 3025 (P-42)	<0.05	mg/l	0.05	1.5
10.	Fluoride (as F)	IS: 3025 (P-60)	0.46	mg/l	1.0	1.5
11.	Free Residual Chlorine	IS: 3025 (P-26)	BDL(<0.1)	mg/l	0.2	1.0
12.	Iron (as Fe)	IS: 3025(P-53)	0.138	mg/l	1.0	No Relaxation
13.	Magnesium (as mg)	IS: 3025 (P-46)	15.02	mg/l	30	100
14.	Manganese (as Mn)	IS: 3025 (P-59)	<0.10	mg/l	0.1	0.3
15.	Mineral Oil	Clause 6 of IS: 3025	<0.50	mg/l	0.5	No Relaxation
16.	Nitrate (as NO_3)	IS: 3025 (P-34)	4.60	mg/l	45	No Relaxation
17.	Selenium (as Se)	IS: 3025 (P-56)	<0.01	mg/l	0.01	No Relaxation
18.	Silver (as Ag)	Annex J IS: 13428	<0.05	mg/l	0.1	No Relaxation
19.	Sulphate (as SO_4)	IS: 3025 (P-24)	21.80	mg/l	200	400
20.	Sulphide(as H_2S)	IS-3025 (P-29)	<0.05	mg/l	0.05	No Relaxation
21.	Alkalinity (as Ca CO_3)	IS: 3025 (P-23)	197.0	mg/l	200	600
22.	Total Hardness (as $CaCO_3$)	IS: 3025 (P-21)	221.0	mg/l	200	600
23.	Zinc (as Zn)	IS: 3025 (P-49)	0.156	mg/l	5.0	15
24.	Phenolic Compound as (C_6H_5OH)	IS: 3025 (P-43)	BDL (<0.001)	mg/l	0.001	0.002

Parameters Concerning Toxic Substances:

S.No.	Parameter	Test method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1.	Cadmium (as Cd)	IS-3025(P-41)	<0.001	mg/l	0.003	No Relaxation
2.	Cyanide (as CN)	IS-3025(P-27)	<0.01	mg/l	0.05	No Relaxation
3.	Lead (as Pb)	IS-3025(P-47)	<0.01	mg/l	0.01	No Relaxation
4.	Mercury (as Hg)	IS-3025(P-48)	<0.001	mg/l	0.001	No Relaxation
5.	Molybdenum (Mo)	IS-3025(P-2)	<0.05	mg/l	0.07	No Relaxation
6.	Nickel (as Ni)	IS-3025(P-54)	<0.01	mg/l	0.02	No Relaxation
7.	Poly nuclear Aromatic Hydro Carbons	APHA 6440	<0.0001	mg/l	0.0001	No Relaxation
8	Poly chlorinated biphenyl	APHA 6630	<0.0001	mg/l	0.0005	No Relaxation
9.	Total Arsenic (as As)	IS-3025(P-37)	<0.01	mg/l	0.01	No Relaxation
10.	Total Chromium (as Cr)	IS-3025(P-52)	<0.05	mg/l	0.05	No Relaxation

*Remark - BDL: Below Detection limit

Notes:

1. The results given above are related to the tested sample, as received & mentioned parameters. The customer asked for the above tests only.
2. Responsibility of the Laboratory is limited to the received samples only.
3. This test report will not be generated again, either wholly or in part, without prior written permission of the laboratory.
4. The test samples will be disposed off after two weeks from the date of issue of test report, unless well specified by the customer.

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TEST CERTIFICATE

Issued To: M/s Bajaj Hindusthan Sugar Ltd. (Sugar Unit) **Address: Vill- Maqsoodpur, Tehsil- Pawayan, Dist- Shahjahanpur, Uttar Pradesh (242401).**	**Report Code : W-230223-016** **Test Report of : Water** **Service Request No : NTL/SRF/02/23-05** **Service Request Date : 21/02/2023** **Report Issue Date : 28/02/2023**

Sampling & Analysis Duration

Sample Collected By	:	NTL Representative
Sample Drawn On	:	22/02/2023
Sample Drawn & sealed by	:	Mr. Varun (NTL Representative)
Sample Received On	:	23/02/2023
Sample Quantity	:	2.0 Lt. + 500 mL
Analysis Duration	:	23/02/2023 to 28/02/2023
Sampling Location	:	Kuniyamohlia
Sample Description	:	Ground Water

MICROBIOLOGICAL REQUIREMENT RESULT

S.No.	Parameter	Test Method	Results	Requirements as per IS-10500:2012
1.	*Escherichia coli*	IS-15185	Absent	Absent/100ml
2.	*Coliform Bacteria*	IS-15185	Absent	Absent/100ml

ORGANOLEPTIC & PHYSICAL PARAMETERS

S.No.	Parameter	Test Method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1.	Colour	IS-3025(P-04)	<5.00	Hazen Unit	5	15
2.	Odour	IS-3025(P-05)	Agreeable	-	Agreeable	Agreeable
3.	Taste	IS-3025(P-07 & 08)	Agreeable	-	Agreeable	-
4.	Turbidity	IS-3025(P-10)	<1.00	NTU	1	5
5.	pH value	IS-3025(P-11)	7.65	-	6.5 - 8.5	-
6.	Total dissolve solid (TDS)	IS-3025(P-16)	438	mg/l	500	2000

GENERAL PARAMETERS CONCERNING SUBSTANCES UNDESIRABLE IN EXCESSIVE AMOUNTS

S.No.	Parameter	Test method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1.	Aluminium (as Al)	IS: 3025 (P- 55)	<0.01	mg/l	0.03	0.2
2.	Total Ammonia	IS: 3025 (P- 34)	<0.10	mg/l	0.5	No Relaxation
3.	Anionic Detergents (as MBAS)	Annex K of IS-13428	<0.10	mg/l	0.2	1.0
4.	Barium (as Ba)	IS: 15302	<0.10	mg/l	0.7	No Relaxation
5.	Boron (as B)	IS: 3025 (P- 57)	<0.10	mg/l	0.5	2.4
6.	Calcium (as Ca)	IS: 3025 (P- 40)	51.02	mg/l	75	200

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7.	Chloramines (as Cl_2)	IS: 3025 (P- 26)	<1.00	mg/l	4.0	No Relaxation
8.	Chloride (as Cl)	IS: 3025 (P- 32)	58.40	mg/l	250	1000
9.	Copper (as Cu)	IS: 3025 (P-42)	<0.05	mg/l	0.05	1.5
10.	Fluoride (as F)	IS: 3025 (P-60)	0.48	mg/l	1.0	1.5
11.	Free Residual Chlorine	IS: 3025 (P-26)	BDL(<0.1)	mg/l	0.2	1.0
12.	Iron (as Fe)	IS: 3025(P-53)	0.127	mg/l	1.0	No Relaxation
13.	Magnesium (as mg)	IS: 3025 (P-46)	14.50	mg/l	30	100
14.	Manganese (as Mn)	IS: 3025 (P-59)	<0.10	mg/l	0.1	0.3
15.	Mineral Oil	Clause 6 of IS: 3025	<0.50	mg/l	0.5	No Relaxation
16.	Nitrate (as NO_3)	IS: 3025 (P- 34)	3.26	mg/l	45	No Relaxation
17.	Selenium (as Se)	IS: 3025 (P- 56)	<0.01	mg/l	0.01	No Relaxation
18.	Silver (as Ag)	Annex J IS: 13428	<0.05	mg/l	0.1	No Relaxation
19.	Sulphate (as SO_4)	IS: 3025 (P- 24)	23.50	mg/l	200	400
20.	Sulphide(as H_2S)	IS-3025 (P-29)	<0.05	mg/l	0.05	No Relaxation
21.	Alkalinity (as Ca CO_3)	IS: 3025 (P- 23)	198.0	mg/l	200	600
22.	Total Hardness (as $CaCO_3$)	IS: 3025 (P- 21)	215.0	mg/l	200	600
23.	Zinc (as Zn)	IS: 3025 (P- 49)	0.148	mg/l	5.0	15
24.	Phenolic Compound as (C_6H_5OH)	IS: 3025 (P- 43)	BDL (<0.001)	mg/l	0.001	0.002

Parameters Concerning Toxic Substances:

S.No.	Parameter	Test method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1.	Cadmium (as Cd)	IS-3025(P-41)	<0.001	mg/l	0.003	No Relaxation
2.	Cyanide (as CN)	IS-3025(P-27)	<0.01	mg/l	0.05	No Relaxation
3.	Lead (as Pb)	IS-3025(P-47)	<0.01	mg/l	0.01	No Relaxation
4.	Mercury (as Hg)	IS-3025(P-48)	<0.001	mg/l	0.001	No Relaxation
5.	Molybdenum (Mo)	IS-3025(P-2)	<0.05	mg/l	0.07	No Relaxation
6.	Nickel (as Ni)	IS-3025(P-54)	<0.01	mg/l	0.02	No Relaxation
7.	Poly nuclear Aromatic Hydro Carbons	APHA 6440	<0.0001	mg/l	0.0001	No Relaxation
8	Poly chlorinated biphenyl	APHA 6630	<0.0001	mg/l	0.0005	No Relaxation
9.	Total Arsenic (as As)	IS-3025(P-37)	<0.01	mg/l	0.01	No Relaxation
10.	Total Chromium (as Cr)	IS-3025(P-52)	<0.05	mg/l	0.05	No Relaxation

*Remark - BDL: Below Detection limit

Notes:

1. The results given above are related to the tested sample, as received & mentioned parameters. The customer asked for the above tests only.
2. Responsibility of the Laboratory is limited to the invoiced amount only.
3. This test report will not be generated again, either wholly or in part, without prior written permission of the laboratory.
4. The test samples will be disposed off after two weeks from the date of issue of test report, unless until specified by the customer.

Ajiali

Checked by

Authorized Signatory

Technical Report

On

GROUND WATER RECHARGE STUDY

For

Bajaj Hindusthan Sugar Limited
Unit - Maqsoodapur
District – Shahjahanpur, Uttar Pradesh

Carried out By

Directorate of Research
C. S. Azad University of Agriculture & Technology,
Kanpur – 208 002 (India)

Technical Report
on
Ground Water Recharge Study

Introduction:

Artificial recharge of groundwater is accomplished through placing surface water in basins, furrows, ditches, or different centres wherein it infiltrates into the soil and actions downward to recharge aquifers. Synthetic recharge is an increasing number of used for short- or lengthy-term underground garage, where it has several blessings over floor storage, and in water reuse. Artificial recharge requires permeable surface soils. In which these are not available, trenches or shafts in the unsaturated sector can be used, or water can be at once injected into aquifers via wells. To design a machine for artificial recharge of groundwater, infiltration rates of the soil have to be determined and the unsaturated area among land floor and the aquifer ought to be checked for good enough permeability and lack of polluted regions.

The artificial recharge to ground water aims at augmentation of ground water reservoir by modifying the natural movement of surface water utilizing suitable civil construction techniques. Artificial recharge is the process by which the ground water is augmented at a rate much higher than those under natural condition of percolation. In most low rainfall areas of the country the availability of utilizable surface water is so low that people have to depend largely on ground water for agriculture and domestic use. So in order to improve the ground water situation it is necessary to artificially recharge the depleted ground water aquifers.

Under these circumstances, the present study was taken up with the following objective (s) namely:

1. To analyze the working of artificial recharge of ground water.
2. To determine the amount of water that would be available from a given catchments and the size of storages.

Methodology:

The study entitled "Ground Water Recharge Study" was conducted during the month of March, 2024 by a team included representatives of the sugar plant. During the course of the study different kind of information were gathered. The appropriate

tools and techniques were used in gathering information. In addition to above, the desired information was also gathered from different places/points.

Brief Description About Company:

Bajaj Hindusthan Sugar Limited (BHSL) was established on 24th November 1931, as 'Hindusthan Sugar Mills Limited.' Founded by the late Shri Jamnalal Bajaj, a respected businessman, freedom fighter, and close confidant of Mahatma Gandhi, the company's inception aimed to address a critical national mission-providing momentum to the industry, given that there were fewer than 30 sugar mills in the country at that time-and advancing inclusive growth. The chosen site for the first plant was in Gola Gokaran Nath in the Lakhimpur Kheri district in the Terai region of present-day Uttar Pradesh (UP). Positioned in an area abundant with sugarcane plantations, the original capacity of the plant was 400 tonnes of cane crushed per day (TCD), which eventually increased to its current 13,000 TCD. The distillery unit of the plant began production in 1944. During World War II, the distillery primarily produced power alcohol, a commodity in short supply at the time. Notably, the unit became the first in the country to supply alcohol-mixed petrol to the army.In 1967, a new company, Sharda Sugar & Industries Limited, emerged as a subsidiary of Hindusthan Sugar Mills Limited. Under this subsidiary, a sugar plant with a cane crushing capacity of 1,400 TCD was established in 1972 at Palia Kalan, a major cane-supplying centre located 70 kilometres north of the Gola Gokaran Nath unit. The Palia Kalan unit's capacity was gradually increased to its current 11,000 TCD.

In 1988, Hindusthan Sugar Mills Limited underwent a name change, becoming Bajaj Hindusthan Sugar Limited (BHSL). Two years later, Sharda Sugar & Industries Limited was amalgamated with the company.

During the 2000s, BHSL initiated an ambitious greenfield expansion from 2003 to 2007, establishing eight plants across the state. This rapid expansion, starting with a plant at Kinauni near Meerut, was notably completed in just 7 months, contrasting with the industry norm of 18-24 months. The total cane crushing capacity of the company surged to 96,000 TCD.

In 2005, BHSL acquired Pratappur Sugar and Industries Limited (PSIL) in UP's Deoria district. Operating since 1903, it was Asia's oldest plant with a crushing

capacity of 3,200 TCD. Post-acquisition, its capacity doubled to 6,000 TCD within a year.

PSIL was subsequently renamed Bajaj Hindusthan Sugar and Industries Limited (BHSIL) and made a subsidiary of BHSL. This acquisition provided BHSL with a strategic foothold in the sugar-deficient region of Eastern UP and reaffirmed the consolidation that took place in the sugar industry. By the end of 2007, the expansion drive not only enhanced BHSL's overall cane crushing capacity but also positioned the company as India's largest ethanol producer, generating 480 kiloliters per day (KLD).While enhancing the capacity of its existing sugar plant at Pratappur, the company concurrently established three additional sugar units in virgin, cane-rich areas of East UP at Rudauli (district: Basti), Kundarkhi (district: Gonda), and Utraula (district: Balrampur). This elevated BHSIL's total crushing capacity to 40,000 TCD. The commissioning of three Bagasse-based power co-generation plants at Kundarkhi, Rudauli, and Utraula contributed to BHSIL's aggregate power generation capacity of 95.8 MW. Coupled with the power generation capacity of 325 MW from BHSL, the company's total generation capacity stands at 420.8 MW, surpassing its energy needs. Notably, the surplus 90 MW of energy is supplied to the UP state grid. In December 2010, the amalgamation of BHSIL with BHSL was completed. BHSL's growth initiative was strategically focused on achieving global manufacturing scale and cost competitiveness. Simultaneously, it created significant developmental opportunities in UP, a state eager for infrastructural growth, youth employment, and overall socioeconomic development in rural communities.

Today, BHSL holds a unique position, towering over local peers and ranking among the world's best in planning and processes. With the company impacting over 5 lakh farmers in UP, it directly contributes to the rural economy, bringing positive change to countless lives in UP and beyond across India.

Detail About the Unit:

The premises of M/S Bajaj Hindusthan Sugar Limited Unit Maqsoodapur (Sugar Plant) is situated in Maqsoodapur village of Block Banda in district Shahjahanpur of Uttar Pradesh well connected with road to major cities. The unit was established in 2007. The sugar production capacity is 10000 TCD.

Water Requirement and Quality of Groundwater:

The total ground water requirement of plant is 1800 m^3/day or 270000 m^3 /year. Since the area is non-notified and falls in safe category, as per ground water NOC for withdrawal of ground water, adoption of artificial recharge to ground water is required.

The study area theoretically covers within the circle encompassed by 5 km radius around the sugar plant site is classified into 4 classes *viz.*, settlements, agriculture land, industry, and rocky water body. The district experiences sub-humid climate and three distinct seasons *viz.*, summer, rainy and winter.

The ground water exploration in the district reveals that clay group of formations dominates over the sand group in the district area. Ground water in the district occurs in the alluvium under water table and semi-confined to confined conditions. On the basis of the depth to water level of the district, the pre-monsoon depth to water level ranges between 2.5 m bgl to 3.0 m bgl, while post-monsoon depth to water level ranges between 2.5 m bgl to 3.5 m bgl.

A detailed groundwater level monitoring has been carried at about 8 different locations within the buffer zone from existing open wells and bore wells. The physio-chemical quality of groundwater was compared with drinking water standard (IS: 10500- 2012). Some of the parameters of the ground water samples showed values lower than the permissible limit. Thus, can be inferred from the sampling results for groundwater that some of the parameters are in lower range so adequate measures to be taken before consumption of the same as per standards (IS: 10500-2012).

Details of Ground Water Abstraction

Artificial recharge has been practiced within the sugar plant premises. Rainwater harvesting practices through roof-top is being carried out and the available run-off from the same is used for green belt or dust suppression etc.

There are two existing bore-well present in the industry premises. The monitoring of ground water abstraction is done on regular basis. Awareness programme about the conservation of ground water resources are also being organised to create the awareness among people.

S.No.	NOC NO./ Certificate NO.	Maximum Allowable Withdrawal (m3/day)	Total Allowable Withdrawal (m3/day)	Maximum Allowable Annual Extraction of Ground Water	Total Allowable Annual Extraction of Ground Water	Validity Start	Validity End	Validity in a Year (No. Of days)
1.	NOC025218	800	1800	120000	270000	13.05.2021	16.08.2026	150
2.	NOC037091	1000		150000				

Artificial Recharge:

Natural replenishment of ground water storage is slow and is unable to keep pace with the excessive exploitation of ground water. With increasing urbanization, the land area for natural rainwater recharge is also shrinking and large unutilized runoff carries pollution to the water bodies. Artificial recharge to groundwater aims at augmentation of the ground water storage by modifying the natural movement of surface water, utilizing suitable civil construction techniques to increase the seepage rate exceeding that under natural conditions of replenishment. The rainfall occurrence in India is limited to about 3 months period, ranging from about 10 to 60 rainy days. The natural recharge is restricted to this period only. The artificial recharge techniques aim at increasing the recharge period in the post-monsoon for about 3 months to provide additional recharge. This would result in providing sustainability to ground water development.

In majority of the areas, scarcity of water is felt in post-monsoon season. Due to steep gradients, a large quantity of water flows out to low lying areas as surface runoff. There is a need to provide sustainability to these surface storages which are effective in providing additional recharge and sustain the flow for a longer period. Most of the urban areas in the country are facing water scarcity. The dependence on ground water has increased many folds and the natural recharge to ground water has decreased due to increased buildings and paved areas etc. Roof top rain water harvesting, which involves the collection of rainwater from the roof of the buildings and its storage in surface tanks or recharge to sub-surface aquifer, can play an important role in conservation of water. Thus, the need for artificial recharge of groundwater is beyond doubt and is the most powerful management strategy available to face the challenge of fast depletion in ground water storages.

Inside Plant Premises:

Rainwater harvesting can be done by diverting the runoff that is generated from roof sheds, roads and green belt areas of recharging into ground water system. Implantation of recharge mechanism ensures the balance between the discharge vis-a-vis recharge of the aquifer system and improvement in the ground water quality. The normal annual rain fall for the said area has been taken as 1040.00 mm based on the site plan and land use pattern of the plot, the computation of runoff for each unit has worked out and the details are tabulated below:

Calculation of annual rainfall runoff potential

S. No.	Land use type	Area (sq m)	Coefficient of runoff	Rainfall (m)	Quantity of Rainwater (m^3)
1	Rooftop Area	7000	0.85	1.04	6188.00
Total		**7000**	**-**	**-**	**6188.00**

From the above computation, it is evident that a total quantum of 6188.00 m^3 /year of rain water is fruitfully harvested & recharged from plant premises annually by constructed suitable recharge structures against the withdrawal of 270000.00 m^3/year. In order to design the recharge structures, hourly runoff of 30 mm/hr has been taken into account and the details are tabulated below:

Hourly Computation of Runoff – (30 mm/hr)

S. No.	Land use type	Area (sq m)	Coefficient of runoff	Intensity of Rainfall (m)	Quantity of Rainwater (m^3)
1	Rooftop Area	7000	0.85	0.03	178.50
Total		7000	-	-	178.50

Structure Calculation:

- Thus, the total rainwater harvesting capacity of roof top area of the industry is 178.5 m^3 per hour.
- Assuming retention time of 0.25 hour in the recharge pit, the design volume for the recharge pit is 178.5/4 = 44.62 m^3
- Let us provide recharge pit of 2 m × 2 m in size and 2.5 depth

- Volume of one pit = 10 m^3
- Capacity of One Bore well recharge: 30 cubic meters
- Average Recharge Capacity of Pit with two well = 10 + 30 + 30 = 70
- Required no. of pits = 44.62/70 = 0.6375 (01 appx.)
- The sugar plant provided 01 no. recharge pit of 2 m × 2 m × 2.5 m in size at peak rainfall intensity of 30 mm.

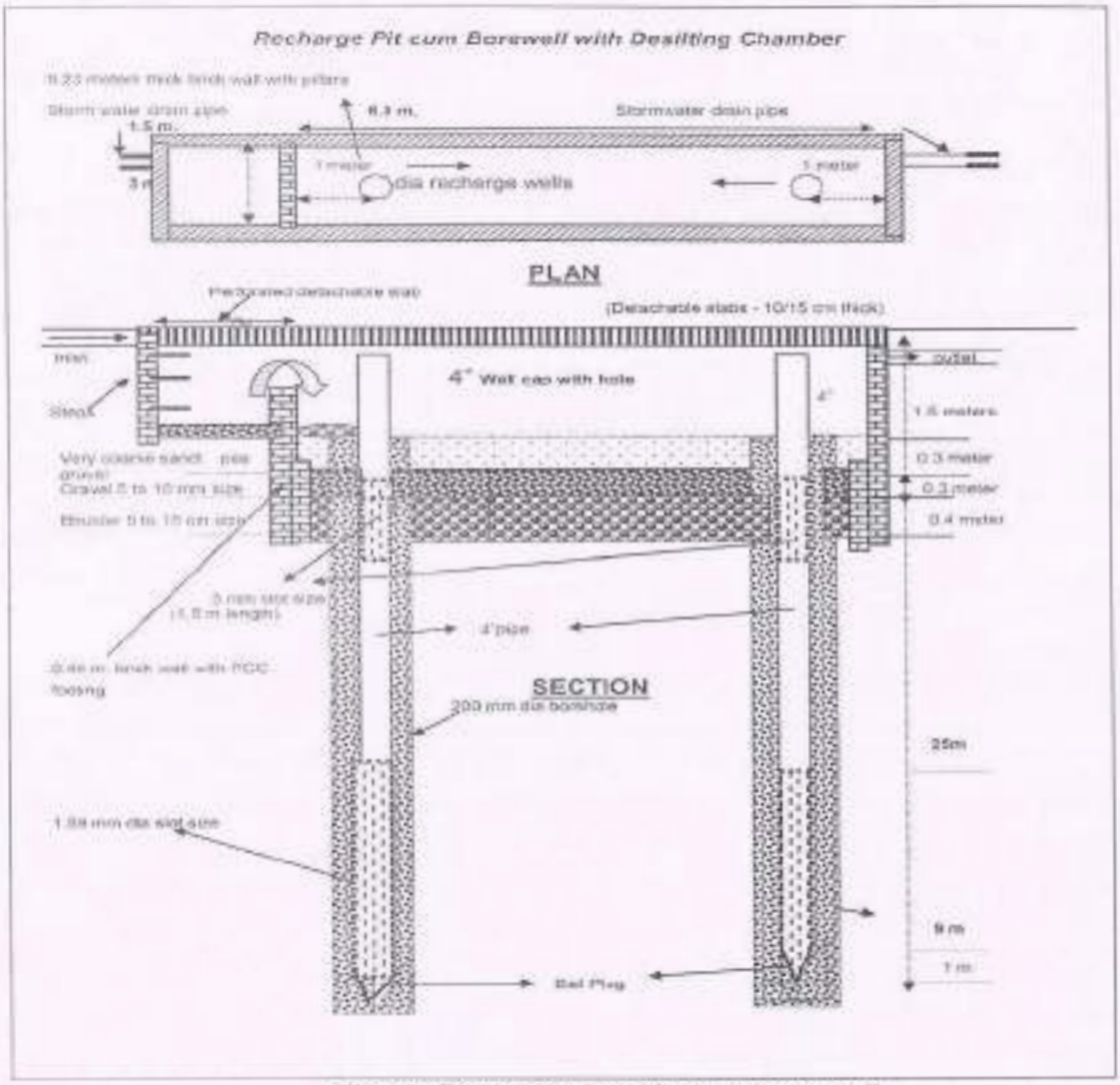

Fig. 1: Recharge trench cum bore well

Designs of Double Bore Recharge Structure:

The location of these sites is located as per the layout of storm water drains and the catch basins that are constructed. Necessary precautions are taken to avoid any contaminated water entering into the recharge structures. The recharge

structures so designed that these are operational only during the monsoon seasons. All the structures are constructed in series and the overflow from one may be accommodated to the next structure. For the plot areas having green belt necessary slopes is given so that the rainfall runoff is channelized and diverted to the recharge shafts. In implementing the recharge structures, the spacing between two consecutive recharge trenches is 50 meters apart. Settling chambers is located at suitable locations before the recharge structures so as to avoid any excess siltation to the recharge trenches (Fig. 1). Provision of Geo-textile mesh/ Johnson cloth on the top of the filter media is preferred to avoid frequent clogging of the filter media. Special care is being taken for identifying the exact locations of the recharge structures so that the ground water augmentation is optimal. The area under recharge project has hydro-geological conditions having alluvial ascertained based initial wells and subsequently tested for its intake rate.

Proper type of rig deployment and construction of recharge structures warrants for strict supervision of ground water experts while implementation. The recharge wells are tested and slug test also conducted at selected recharge wells so as to ascertain the dissipation rate of the rainfall runoff to the aquifer systems. Such an approach reflected the proper recharge mechanism at the study area.

Therefore, the total annual recharge from rain water harvesting is 6188.00 m^3 per year against the withdrawal of 270000.00 m^3 per annum of ground water (which is around 3 % only). The balance amount of recharge is made by adopting suitable village ponds in the Banda block and converting them in recharge ponds. Implementation of recharge mechanism in the study area creates a balance between the recharge vis-à-vis discharge relationships of the aquifer system. It is also maintain the ground water quality, which may deteriorate due to prolonged pumping, and the recharge of fresh rainfall runoff shall compensate it. Aquifer systems, exact depth of recharge well and its slot positions ascertained based initial wells and subsequently tested for its intake rate.

Artificial Recharge of Groundwater From the Village Pond:

The industry has adopted pond near the industrial complex in order to recharge the rain water. These village ponds are generally filled with water only during the rainy season and during summer they are dry. The adopted these village

ponds to take-up artificial recharge to ground water of the pond water which is overflowing to adjacent areas during monsoon period. According to opinion of the users, the artificial recharge to ground water in the pond areas resulted into rise in water levels in the village tube-wells as wells and increases the supply of water to the lands adjacent for irrigation purposes. Thus, recharge schemes in the ponds is benefit the area.

Recharge Calculation in Ponds

Type	Village Name	Gata No.	Area (Sq m)	Depth of Ponds (M)	Total Storage Capacity (m3)
Pond- 1	Maqsoodapur	354,364, 372,394, 398,456	24390	3.0	73170
Total			**24390**	**3.0**	**73170**

Pond Recharge Calculations:

Pond- 1:

- Now, total storage capacity of pond from above computation is 73170.00 m^3.
- In approximation, in a year 3 filling will occur. Hence, 73170.00X3 = 219510.00 m3
- Out of 219510.00 m^3 we take 60 % filling on safer side.
- So, the total is 131706.00 m^3

Through Ponds of Village Maqsoodapur:

Recharge can either be natural, from precipitation that falls on the earth's surface and moves on its way underground or it can be artificial, from human activities that deliberately or inadvertently replenish an aquifer. Artificial recharge may be defined as the process of replenishing groundwater by augmenting the natural infiltration of rainwater or surface water into underground formations through various methods designed depending on the topographic, geologic and soil conditions.

The industry has adopted one pond located in village Maqsoodapur for artificial rain water harvesting as recharge shaft and natural percolation in ponds

which resulted into creation of additional recharge which is sufficient to fulfil the mandatory requirements as per guidelines of the concerned Ministry.

Total pond area is 2.439 hectares i.e. 24390 m^2.

Recharge Calculation in Ponds:

S.No.	Area (ha)	Area (m^2)	Depth after desilting (m)	Total storage capacity	60%	No of filling	Quantity of water recharge	No. of recharge structure (@15 m^3/hr)
1.	2.439	24390	3.0	73170	43902	3	131706	10 Nos.

- From pond, the total water available recharge is 131706.00 m^3.
- The total amount of recharge including both within premises and outside the premise is 137894.00 m^3 (within premises: 6188.00m^3 + pond outside the premises: 131706.00 m^3) in a year and withdrawal is 270000.00 m^3 per year.

Existing industry is situated in safe block Banda of district Shahjahanpur and as per Ground Water Dynamic- 2020, hence we will have to recharge 50% of total withdrawal annually.

As per CGWA (Central Ground Water Authority) guidelines total amount of rainwater to recharge for the withdrawal of 270000.00 m^3/annum is 135000.00 m^3/annum (50% of 270000.00 m^3/annum).

Against requirement of 270000.00 m^3/annum, the company recharge 137894.00 m^3/annum through 10 nos. of recharge structures, which is more than 50 %.

Recharge Summary

Total fresh water requirement for sugar project	1800 KLD/270000.00 m^3/year
Source of water for plant activates	Ground water
RHW potential/ artificial recharge required	Maximum up to 50 % recharge criteria (safe zone)- 135000.00 m^3/year

Total artificial rainwater recharge inside the plant	6188.00 m^3/year
Total artificial rainwater recharge outside the plant	131706.00 m^3/year
Total recharge	**137894.00 m^3/year**

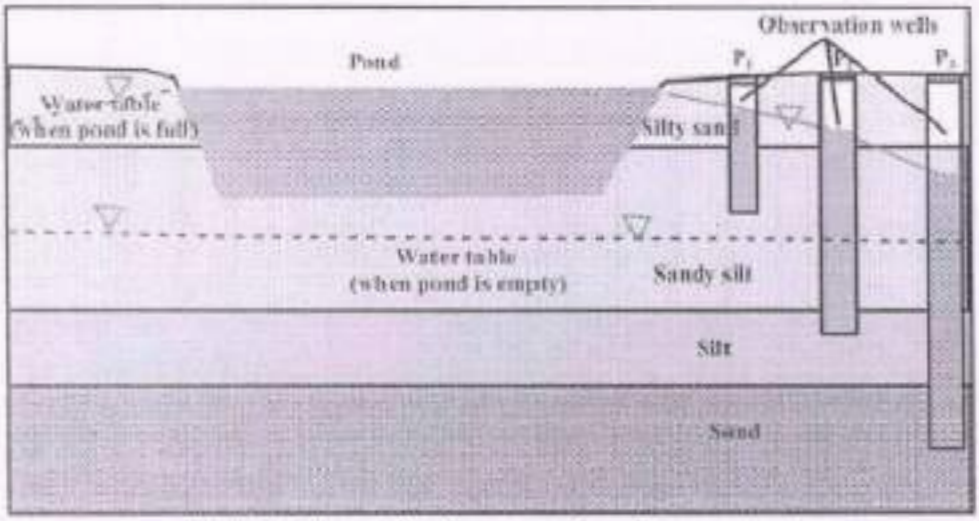

Fig 2: Schematic diagram of recharge pond

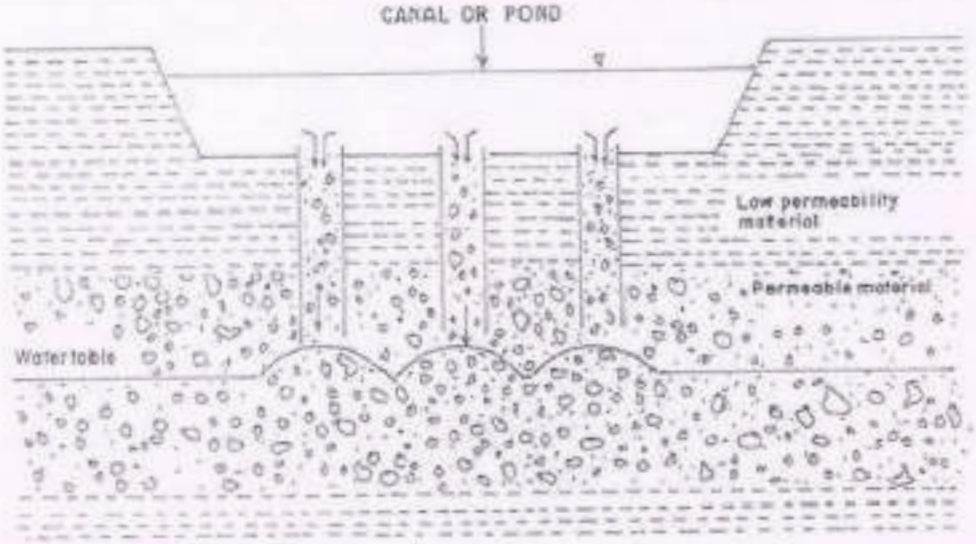

Fig 3: Cross section of pond recharge shaft

OBSERVATIONS AND RECOMMENDATIONS

- To make the people aware, the awareness programme about the conservation of ground water resources should be organized regularly.
- The water level monitoring network needs to be increased in the nearby areas.
- Community efforts and create the spirit of cooperation needed to subsequently manage sustainably ground water as a community resource.
- The BHSL Maqsoodapur unit is situated in safe zone as per Ground Water Notification and this unit is doing artificial ground water recharge though in-house roof top rain water harvesting network and also through village ponds adopted outside factory premises .
- BHSL Maqsoodapur unit artificial water recharge quantity is more than required quantity as prescribed by UP-Ground Water Deptt.

CONCLUSION

Based on the study, it can be concluded that the BHSL Maqsoodapur unit recharges more than 50 % of the required quantity of the water as prescribed by UP-Ground Water Deptt.

Dated: 14.05.2024

Rajiv 14/05/24

Dr. Rajiv
Scientist/ Team Leader
Directorate of Research
Chandra Shekhar Azad University of Agriculture & Technology,
Kanpur- 208 002, Uttar Pradesh, India

bajaj SUGAR

ANNEXURE-R-5 (Colly)

Dated -16.07.2024

To,
The Regional Officer,
Uttar Pradesh Pollution Control Board
TC-12V,Vibhuti Khand,Gomti Nagar,
Lucknow-226010 (UP)

Sub: Compliance status of order issued by Hon'ble NGT against OA No 691/2022 vide Dated 13.02.2023.

Ref: BHSL Letter Dated:-20.04.2024 for Submission of Impact Assessment Study for treated water utilization on agriculture land & ground water recharge study through the ponds adopted

Dear Sir,
With reference to above mentioned subject, we would like to apprise that following studies were carried out by Chandra Shekhar Azad University of Agriculture & Technology Kanpur.

- Impact Assessment Study for treated water utilization on agriculture land.
- Study of Ground Water Recharge study through the ponds adopted by the Unit Khambharkhera,Lakhimpur Kheri (UP)

As we have received the above-said study reports from the CS Azad University of Agriculture & Technology Kanpur, copy of the reports are enclosed herewith as **Annexure -1 & 2.**

Kindly acknowledge receipt of the above-said study reports.

Thanking you
Yours Faithfully
For Bajaj Hindusthan Sugar Ltd.,
Unit: Khambharkhera, Lakhimpur kheri (UP)

bajaj hindusthan sugar ltd.

डाक प्राप्ति रसीद
प्राप्ति दिनांक 23/7/24
प्राप्तकर्ता के हस्ताक्षर
उ०प्र० प्रदूषण नियंत्रण बोर्ड

(Authorized signatory)
Enclosure: As Above

Vivek
EAS

Copy: The Chief Environmental Officer (Circle -5), UPPCB -Lucknow

Bajaj Hindusthan Sugar Ltd.
Unit : Khambharkhera, Distt. Lakhimpur Kheri- 261506, Uttar Pradesh
Tel: +91- 5872- 220005, 220008
Regd. Office : Dalippakarmath, Lakhimpur Kheri, District Kheri,Uttar Pradesh - 262 802
Tel: + 91-5876-233754/5/7/8, 233480 | Fax: +91-5876-233481
E-mail: investor.complaints@bajajhindusthan.com | Website : www.bajajhindusthan.com | CIN: L15420UP1931PLC086243

bajaj GROUP
THINK TOMORROW

Technical Report

On

IMPACT ASSESSMENT STUDY
OF
TREATED WATER UTILIZATION ON AGRICULTURE LAND

For

Bajaj Hindusthan Sugar Limited
Unit - Khambharkhera
District – LakhimpurKheri, Uttar Pradesh

Carried out By

Directorate of Research
C. S. Azad University of Agriculture & Technology,
Kanpur – 208 002 (India)

Technical Report
on
Impact Assessment Study of Treated Water Utilization on Agriculture Land

Introduction:

Water is the most abundant natural resource in the world. The earth surface is covered 70 per cent by water and out of this the saline sea water is 97 per cent. But, the potable or drinking water is about 13 per cent of the residual which is 0.40 per cent of all the world water and the remaining is held either as ice and atmosphere.

The primary competing uses of water is typically agriculture followed by industry, domestic, recreational and more recently environmental preservation. Proper distribution of water among these sectors requires planning and management. Sustainability of water resources and an equitable distribution of available water drive much of this planning. Finding sustainable solutions for water stressed regions is an important focus of water resources planners. For sustainable water management to occur, the allocation of water must be socially fair for both current and future populations.

With the population growing at a higher rate, the need for increased food production is inevitable. Use of treated water in agriculture therefore, could be an important consideration when its disposal is properly planned. The quality of treated effluent will then become very important in terms of its performance to groundwater, soil and plant. For irrigation, the quality of effluent will depend on crops to be irrigated, the soil conditions and the system of effluent distribution adopted besides the output quality of crops grown.

Treated water has high potential for reuse in agriculture; an opportunity for increasing food and environmental security, avoiding direct pollution of rivers, canals, surface water; conserving water and nutrients, thereby reducing the need for chemical fertilizer. Among different sources of treated water, industrial treated water reuse is one of the momentous components of water reuse in agriculture as the source content are known and treatment is done by the industry.

The different socio-environmental and economical benefits resulting from water conservation and reuse included: (a) agriculture benefits such as value of a secure supply of treated water, increased farm production and value of treated water

nutrients, i.e. savings in fertilizer applications; (b) environmental water quality benefits such as reduction in freshwater diversions, reduction in pollutant discharges, reduction of the potential salinity intrusion risk in groundwater aquifers and improvement of the ecosystem and increase of the fauna and flora species and (c) increase of the quality of life of the population.

Under these circumstances, the present study was taken up with the following objectives namely:

1. To identifying the externalities of use of treated water from sugar plant in agriculture.
2. To assess the impact of treated water use in the agriculture in terms of crop productivity, soil fertility, socio economic and environmental factors.

Methodology:

The study entitled "Impact Assessment Study of Treated Water Utilization on Agriculture Land" was conducted during the month of March, 2024 by a team included representatives of the sugar plant. During the course of the study different kind of information *viz.*, soil conditions, farmers perceptions, technology adoption, development activities and farmers knowledge in regard to the treated water of the sugar plant were gathered. The approach used in gathering information included PRA tools and techniques, personal interviews, field visits, etc. In addition to above, the desired information were also gathered from different places like ETP, analytical laboratory, storage tank, water supply system, monitoring system etc.

Brief Description About Company:

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of the plant began production in 1944. During World War II, the distillery primarily produced power alcohol, a commodity in short supply at the time. Notably, the unit became the first in the country to supply alcohol-mixed petrol to the army.In 1967, a new company, Sharda Sugar & Industries Limited, emerged as a subsidiary of Hindusthan Sugar Mills Limited. Under this subsidiary, a sugar plant with a cane crushing capacity of 1,400 TCD was established in 1972 at Palia Kalan, a major cane-supplying centre located 70 kilometres north of the Gola Gokaran Nath unit. The Palia Kalan unit's capacity was gradually increased to its current 11,000 TCD.

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In 2005, BHSL acquired Pratappur Sugar and Industries Limited (PSIL) in UP's Deoria district. Operating since 1903, it was Asia's oldest plant with a crushing capacity of 3,200 TCD. Post-acquisition, its capacity doubled to 6,000 TCD within a year.

PSIL was subsequently renamed Bajaj Hindusthan Sugar and Industries Limited (BHSIL) and made a subsidiary of BHSL. This acquisition provided BHSL with a strategic foothold in the sugar-deficient region of Eastern UP and reaffirmed the consolidation that took place in the sugar industry. By the end of 2007, the expansion drive not only enhanced BHSL's overall cane crushing capacity but also positioned the company as India's largest ethanol producer, generating 480 kiloliters per day (KLD).While enhancing the capacity of its existing sugar plant at Pratappur, the company concurrently established three additional sugar units in virgin, cane-rich areas of East UP at Rudauli (district: Basti), Kundarkhi (district: Gonda), and Utraula (district: Balrampur). This elevated BHSIL's total crushing capacity to 40,000 TCD. The commissioning of three Bagasse-based power co-generation plants at Kundarkhi, Rudauli, and Utraula contributed to BHSIL's aggregate power generation

capacity of 95.8 MW. Coupled with the power generation capacity of 325 MW from BHSL, the company's total generation capacity stands at 420.8 MW, surpassing its energy needs. Notably, the surplus 90 MW of energy is supplied to the UP state grid. In December 2010, the amalgamation of BHSIL with BHSL was completed. BHSL's growth initiative was strategically focused on achieving global manufacturing scale and cost competitiveness. Simultaneously, it created significant developmental opportunities in UP, a state eager for infrastructural growth, youth employment, and overall socioeconomic development in rural communities.

Today, BHSL holds a unique position, towering over local peers and ranking among the world's best in planning and processes. With the company impacting over 5 lakh farmers in UP, it directly contributes to the rural economy, bringing positive change to countless lives in UP and beyond across India.

Detail About the Unit:

The Bajaj Hindusthan Sugar Limited, Khambharkhera was established in 2006 in district LakhimpurKheri of Uttar Pradesh. At present it is engaged in producing plantation white sugar. The sugar production capacity is 12600 TCD.

Entry Gate of the Khambharkhera (LakhimpurKheri) Unit

Effluent Treatment Plant Description:

a) ETP Layout and Unit Capacity Details:

The details information is given in attached Annexure-1.

b) **ETP Process Description:**

Unit has installed state of art technology ETP for the treatment of effluent from various production processes. ETP is based on activated sludge process comprised with bar screen, oil & grease trap, equalization tank, primary clarifier, aeration tank with air fine bubble diffuses, secondary clarifier followed by sand filer and activated carbon filters at tertiary treatment stage. The system is designed to achieve the standard norms as notified by MOEF & CC Notification dated 14.01.2016. The sulphate removal system has also been installed and is being operated for the treatment of the cooling tower overflow which further treated in activated sludge process ETP with single outlet point.

c) **Details about Analytical Facility at Site:**

Khambharkhera (LakhimpurKheri) unit has a well equipped Environmental Laboratory for environmental monitoring and testing and different parameters like pH, BOD, COD, TSS, TDS, Sulphate etc are being tested. The list of the available lab equipment is attached in Annexure- 2.

d) **Details about Manpower at Site to Monitor ETP & Irrigation Management Plan:**

At site, one Environment Manager along with one lab chemist, four skilled operators and three helpers are working for effective monitoring of ETP and Irrigation Management Plan.

e) **Details about Treated Water Storage Impervious Lagoon:**

The unit has constructed impervious lined storage tank with the **capacity of 17200 KL** for storage of treated effluent during low/no demand, based on the Irrigation Management Plan.

f) **Details about Treated Water Transportation at Farmers Field:**

The Bajaj Hindusthan Sugar limited, Khambharkhera (LakhimpurKheri) has Lagoon with a capacity of 17200 cubic meters and from here the treated water is being supplied to the field of farmers of targeted area through pumping set with the help of underground water supply system which is fully controlled via butter fly valve. The length of the underground water supply system is about 1000 metres which is made up from 4" size of HDPE pipes along with appropriate number of outlets at different location.

Analytic al Facility

g) **Details about Treated Water Utilis ation:**

The industrial treated effluent is he ing used in irrigation, in compliance with MOEF&CC notification 2016, as pe irrigation management plan developed & approved by NSI, Kanpur. The tre ated domestic effluent is being utilized in lawn, garden and other horticultura l area. The flow meter is installed for the measurement of final treated water u sed for Irrigation Management Plan.

h) **Physio-Chemical Properties of Tre ated Effluent:**

The treated effluent is being tested by the sugar unit regularly. During onsite visit of unit, the treated water sar nples were collected from irrigation line carrying treated effluent at farmer field and analysis of these samples was carried out by NABL and MOEF & CC approved laboratory. In addition, the previous testing reports were also av ailable the sugar unit. The tested values of different parameters of treated effluer t for the year of 2023-24 (on site visit) and 2022-23 (previous year) are given as below:

S.No.	Treated Effluent Particulars	Avg. value (2022-23)	Avg. value (2023-24)
1.	pH	7.36	7.52
2.	BOD (mg/l)	23.00	15.5
3.	COD (mg/l)	121.00	64.5
4.	TSS (mg/l)	[illegible]	11
5.	TDS (mg/l)	912.00	826
6.	Oil & grease (mg/l)	BDL* (< 1.0)	BDL* (< 1.0)

BDL* = Below detection limit

The analysis reports are attached as Annexure -3.

Farmers and Irrigation Areas:

The details information about some progressive farmers and their covered area under irrigation plan is given as below:

S.No.	Name of Farmer	Village /Block	Land covered under Irrigation plan
1	Mahendra Pal Yadav	Dhaurahara	1.681 ha
2	Rameshwar	Dhaurahara	1.693 ha
3	Jokhe	Dhaurahara	0.604 ha
4	Santram	Dhaurahara	0.394 ha
5	Raja Ram	Dhaurahara	0.382 ha
6	Ram Naresh	Dhaurahara	0.634 ha
7	Dharmendra Kumar	Dhaurahara	0.194 ha

Agro-ecological Conditions of Operational Area:

As meeting the prescribed norms is not the only criterion for use of treated water in irrigation, the requirement of water for irrigation be a limiting condition and this depends upon various factors as mentioned below:

1. **Cropping Pattern of Command Area:**

   In command area of M/s Bajaj Hindusthan Sugar Limited, Khambharkhera (LakhimpurKheri), wheat, sugarcane, oilseeds, pulses, fodder, maize and vegetables are main crops. The majority of the area is covered by three crops viz., sugarcane, wheat, and rice. The sugar cane crop is grown as main cash crop.

2. **Climate:**

   The command area has a humid subtropical, dry winter climate. The normal rainfall is 1231.2 mm, of which 86% rainfall is received during monsoon period and 14% during non-monsoon period. The hottest month with maximum temperature upto 32.3^{0}C in May and the coldest month with temperature 15.6 ^{0}C is January. The humidity is lowest in April with 39.5% where as it increases

to about 82.5% in August. The mean monthly wind speed is generally high from March to September reaching maximum 5.2km/hr in May and in December being around 1.4km/hr. The annual potential evapo-transpiration is 1369.1mm. The highest P.E.T. occurs during May and lowest in December.

3. **Irrigation type:**

The majority of the farmers are using flood irrigation method in command area.

4. **Soil Condition of Command Areas:**

There are various soil types such as loam, clay, sandy, clay loam and sandy loam but majority of the land are under the category of sandy loam.

Agreements with the Farmers:

The practice of agreements between sugar plant and farmers in regards to the use of treated water is being adopted. The details are attached as Annexure-4.

Available of Treated Water for Irrigation and Command Area:

In command area, the treated effluent is available from the month of November to May depending upon the duration of crushing season which is generally below 190 days. The treated effluent is utilized for irrigation purpose by sugarcane farmers (occupies plant and ratoon cane crop) on an average of every 15 days interval, while wheat farmers are using treated effluent on an average of every 20-25 days. In Khambharkhera area, intensive agriculture is practiced by majority of the farmers wherein land is not left vacant. This intensive agriculture requires continuous use of water. Under such type of practices, the treated effluent provided to the farmers is a big support for them as it is easily available to the farmers as and when required. The total available farmers command area is 305.98 hectares (sugarcane grown area of 250.59 hectares + wheat grown area of 55.39 hectares) and all command area comes within 1.5 km distance from the sugar unit.

Wheat crop grown with treated water

Online treated effluent monitoring system

Crop Grown and Soil Properties:

During the course of intensive study (field/on site visit), it was found that the crop of wheat and sugarcane is grown by majority of the farmers. The crop of the visited fields was in good conditions and farmers are happy with the performance of their crop.

Similar to treated effluent, the soil of the concerned farmers' fields is being tested by the sugar unit regularly. During onsite field visit, the soil samples were also collected from farmers' fields where irrigation is being applied/adopted through treated water and analysis of these samples was carried out by NABL and MOEF & CC approved laboratory. In addition, the previous soil testing reports were also available with the sugar unit and farmers as well. The soil test values of different parameters for the year of 2023-24 (on site visit) and 2022-23 (previous year) are given as below:

S.No.	Soil Samples Particulars		Avg. value (2022-23)	Avg. value (2023-24)
1.	pH (1:2 suspension)		7.05	7.05
2.	Sodium Absorption Ratio (SAR),	meq/L	3.78	6.89
3.	Salinity Electrical Conductivity @ (mmhos/cm)	25°C	246	242
4.	Soil Fertility Ratings			
i	Organic Carbon (% by mass)		0.57	0.59

ii	Available Nitrogen (kg/ha)	330	328
iii	Available Phosphorous (kg/ha)	23.8	23.7
iv	Available Potash (as k-kg/ha)	342	341

The data of the soil analysis revealed that the soil fertility is good which indicated that there is no adverse effect of the treated effluent on soil of the farmers' field. The analysis reports are attached as Annexure -5.

Beneficiary farmer Mr. Vijay Singh

Beneficiary farmer Mr. Rameshwar

Beneficiary farmer Mr. Ramsanehi

Properties of the Ground Water of Borewells:

During onsite field visit, the water sample from borewells of the nearby beneficiary farmers was also collected where irrigation is being applied/adopted through treated water and analysis of the water sample was carried out by NABL and MOEF & CC approved laboratory. In addition, the previous water testing reports was also available with the sugar unit. The values of different physcio-chemical properties of the underground water of borewells for the year of 2023-24 (on site visit) and 2022-23 (previous year) are given as below:

S.No.	Ground Water Parameters (Toxic Substances)	Avg. value (2022-23)	Avg. value (2023-24)
1.	Cadmium (as Cd) (mg/l)	<0.001	<0.001
2.	Cyanide (as Cn) (mg/l)	<0.01	<0.01
3.	Lead (as Pb) (mg/l)	<0.01	<0.01
4.	Mercury (as Hg) (mg/l)	<0.001	<0.001

5.	Molybdenum (Mo) (mg/l)	<0.05	<0.05
6.	Nickel (as Ni) (mg/l)	<0.01	<0.01
7.	Poly Nuclear Aromntic Hydo Carbons (mg/l)	<0.0001	<0.0001
8.	Poly Chlorinated Biphenyl (mg/l)	<0.0001	<0.0001
9.	Total Arsenic (as As) (mg/l)	<0.01	<0.01
10.	Total Chromium (as Cr) (mg/l)	<0.05	<0.05

The data furnished in the above table are indicated that all the toxic substances in under ground water are with in the acceptable limits. The analysis reports are attached as Annexure -6.

Farmers Reaction:

During the course of study (field/on site visit), the interactions were made with the beneficiary farmers to know the impact of the treated water on their crop and soil as well. The farmers are using the treated water since last five-six years and growing various crops suitable for the region. The saving in the amount of chemical fertilizers, vigorous growth of the plants, more greenery of the plants, high yield, good soil health, reduction in cultivation cost and availability as and when required were the common opinion of the beneficiary farmers about the treated water.

Interaction with beneficiary farmers

Farmers Outreach Programmes:

To educate and trained to the farmers about use of treated water and conservation of natural resources, the different kind of farmers promotional

programmes *viz.*, kishan goshthi, group discussion and interaction on various aspects are being organised by cane department of the sugar unit regularly.

Farmers Promotional Programmes

Demonstrations and Field Monitoring: The cane department of the sugar unit is conducted technology demonstrations on farmers' field on various aspects regularly. The demonstration is not restricted to cultivation of the new sugarcane varieties but agro-techniques for good agricultural practices (GAP) also demonstrated during the course of sugarcane cultivation. The large no. of the farmers of the command area is benefited through this transfer of technology practice i.e. demonstrations. In addition, the fields of the farmers are also being monitored at fourth nightly intervals.

Demonstration on treatment of the sugarcane setts before planting

CONCLUSION:

Based on the above said findings of the study entitled "Impact Assessment Study of Treated Water Utilization on Agriculture Land", it can be concluded that ....

1. There is no adverse effect of treated water utilization on agriculture land in terms of crop productivity, soil fertility, socio economic status and environmental factors.
2. Hence, irrigation through treated water of the sugar plant can be continued without any hazardous effects. The proposed system shall be able to cope-up the requirement of the water for irrigation purposes through utilization of the generated effluent.

Dated: 11.05.2024

11/05/24

Dr. Rajiv
Scientist/ Team Leader
Directorate of Research
Chandra Shekhar Azad University of Agriculture & Technology,
Kanpur- 208 002, Uttar Pradesh, India

Annexure -1

Annexure -2

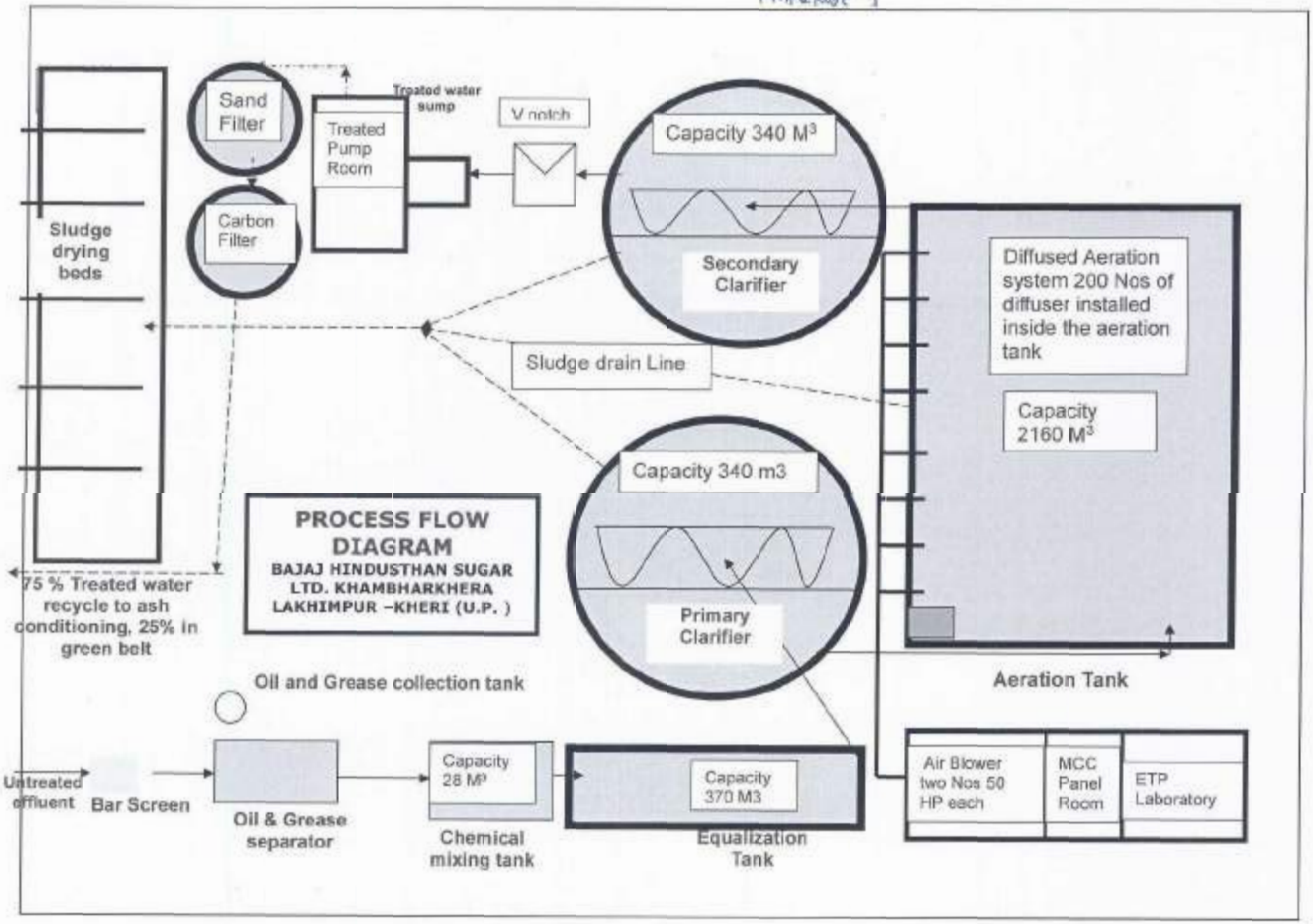
Annexure -3

Annexure -4

Annexure -5

Annexure -6

Annexure -1


Sand Filter
Carbon Filter
Treated Pump Room
Treated water sump
V notch
Capacity 340 M3
Secondary Clarifier
Sludge drying beds
Sludge drain Line
Diffused Aeration system 200 Nos of diffuser installed inside the aeration tank
Capacity 2160 M3
Capacity 340 m3
Primary Clarifier
PROCESS FLOW DIAGRAM
BAJAJ HINDUSTHAN SUGAR LTD. KHAMBHARKHERA LAKHIMPUR -KHERI (U.P.)
75 % Treated water recycle to ash conditioning, 25% in green belt
Oil and Grease collection tank
Aeration Tank
Untreated effluent
Bar Screen
Oil & Grease separator
Capacity 28 M3
Chemical mixing tank
Capacity 370 M3
Equalization Tank
Air Blower two Nos 50 HP each
MCC Panel Room
ETP Laboratory

Annexure-2

List of the equipments

1.	pH meter		01 No.
2.	Conductivity Meter		01 No.
3.	Thermometer (-10 to 110 Deg. C	) make Zeal	06 No.
4.	pH electrode		02 No.
5.	BOD Incubator		01 No.
6.	Muffle Furnace		01 No.
7.	Desiccator		02 No.
8.	Magnetic stirrer with hot plate		01 No.
9.	Oven		01 No.
10.	Centrifuge Machine, Make- Remi		01 No.
11.	Glass Distillation Apparatus		01 No.
12.	Kjeldahl Apparatus		01 No.
13.	C.O.D set with Condenser		01 Set.

NOIDA TESTING LABORATORIES
(A Government of India Approved Testing Laboratory)
(An ISO : 9001 : 2015, ISO 45001 : 2018 (OH&S) Certified & NABL Accredited Laboratory)
MoEF & CC (Ministry of Environment, Forest & Climate Change), UPPCB Recognized Laboratory
+91-9313611642, 8510081921, 7503031145, 8527870572, 7503031146, 9999794369

TEST CERTIFICATE

Issued To: M/s Bajaj Hindusthan Sugar Ltd.	
Address:	Unit – Khambarkhera (Sugar Division), Sarda Nagar Road Khambarkhera, District-Lakhimpur kheri (U.P)-261502 India.

Report Code	: WW-151222-010
ULR No.	: TC6814220000016342 F
Test Report of	: Waste Water
Service Request No	: NTL/SRF/12/22-010
Service Request Date	: 14/12/2022
Report Issue Date	: 20/12/2022

SAMPLING & ANALYSIS DATA

Sample Received On	:	15/12/2022
Sample Drawn By	:	NTL Representative
Sample Description	:	ETP Outlet
Sample Drawn On	:	15/12/2022
Sample Quantity/Packing detail	:	2 ltr/Plastic Cane
Weather Conditions	:	Normal
Analysis Duration	:	15/12/2022 to 20/12/2022

TEST RESULTS

S.No	Parameter	Test Method	Results	Units	Limits as per CPCB Norms
1.	pH	IS:3025(Part-11):1983	7.36	-	5.5 – 8.5
2.	Total Dissolved Solid	IS:3025(Part-16):1984	912.0	mg/l	---
3.	Total Suspended Solid	IS:3025(Part-17):1984	10.50	mg/l	30.0
4.	Chemical Oxygen Demand (as O_2)	APHA 5220 B:2005	121.0	mg/l	250.0
5.	Biological Oxygen Demand (as O_2) (3 days at 27^0C)	IS:3025(Part-44):1993	23.0	mg/l	30.0
6.	Oil & grease	IS:3025(Part-19):1984	BDL (<1.0)	mg/l	10.0

BDL- Below Detection Limit

Notes:

1. The results given above are related to the tested sample, as received & mentioned parameters. The customer asked for the above tests only.
2. Responsibility of the Laboratory is limited to the invoiced amount only.
3. This test report will not be generated again, either wholly or in part, without prior written permission of the laboratory.
4. The test samples will be disposed off after two weeks from the date of issue of test report, unless until specified by the customer.

Aljaei
CHECKED BY

AUTHORIZED SIGNATORY

Annexure 3 (2)

NOIDA TESTING LABORATORIES

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(An ISO : 9001 : 2015, ISO 45001 : 2018 (OH&S) Certified & NABL Accredited Laboratory)

MoEF & CC (Ministry of Environment, For... & Climate Change), UPPCB Recognized Laboratory

+91-9313611642, 8510081921, 75...03031145, 8527870572, 7503031146, 9999794369

TEST CERTIFICATE

Issued To: M/s Bajaj Hindusthan Sugar Ltd.	
Address: Unit – Khambarkhera (Sugar Division), Sarda Nagar Road Khambarkhera, District-Lakhimpur kheri (U.P)-261502 India.	

Report Code	: WW-021223-02
ULR No.	: TC6814230000018913 F
Test Report of	: Waste Water
Service Request No	: NTL/SRF/12/23-025
Service Request Date	: 01/12/2023
Report Issue Date	: 08/12/2023

SAMPLING & ANALYSIS DATA

Sample Drawn On	: 02/12/2023
Sample Drawn By	: NTL Representative
Sample Description	: ETP Outlet
Sample Received On	: 02/12/2023
Sample Quantity/Packing detail	: 2 ltr/Plastic Cane
Weather Conditions	: Normal
Analysis Duration	: 02/12/2023 to 08/12/2023

TEST RESULTS

S.No	Parameter	Test Method	Results	Units	Limits as per CPCB Norms
1.	pH	IS:3025(Part-11):1983	7.48	-	5.5 – 8.5
2.	Total Dissolved Solid	IS:3025(Part-16):1984	812.0	mg/l	----
3.	Total Suspended Solid	IS:3025(Part-17):1984	10.0	mg/l	30.0
4.	Chemical Oxygen Demand (as O_2)	APHA 5220 B:2005	65.0	mg/l	250.0
5.	Biological Oxygen Demand (as O_2) (3 days at 27°C)	IS:3025(Part-44):1993	16.0	mg/l	30.0
6.	Oil & grease	IS:3025(Part-39):1984	BDL (<1.0)	mg/l	10.0

BDL- Below Detection Limit

Notes:

1. The results given above are related to the tested sample, as received & mentioned parameters. The customer asked for the above tests only.
2. Responsibility of the Laboratory is limited to the invoiced amount only.
3. This test report will not be generated again, either wholly or in part, without prior written permission of the laboratory.
4. The test samples will be disposed off after two weeks from the date of issue of test report, unless until specified by the customer.

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MoEF & CC (Ministry of Environment, Forest & Climate Change), UPPCB Recognized Laboratory
☎ : 01-9582031034, 8218681126, 7503031145, 8527870572, 7503031146, 9999794369

TEST CERTIFICATE

Issued To: M/s Bajaj Hindusthan Sugar Ltd.	Report Code : WW-290324-017
Address: Unit – Khambarkhera, Sur... Nagar Road Khambarkhera, District- Lakhimpur kheri (U.P.)- 261502 India.	Test Report of : Waste Water Service Request No : NTL/SRF/02/24-020 Service Request Date : 28/03/2024 Report Issue Date : 04/04/2024

SAMPLING & ANALYSIS DATA

Sample Drawn On	: 29/03/2024
Sample Drawn & Sealed By	: Dr. Rajiv (Chandra Shekhar Azad University of Agriculture & Technology, Kanpur)
Sample Description	: Treated Water Sample collected from Farmer Field
Sample Received On	: 29/03/2024
Sample Quantity/Packing detail	: 2 lt/Plastic Cane
Weather Conditions	: Normal
Analysis Duration	: 29/03/2024 to 04/04/2024

TEST RESULTS

S.No	Parameter	Test Method	Results	Units	Limits as per CPCB Norms
1.	pH	IS:3025(Part-11):1983	7.56	-	5.5 – 8.5
2.	Total Dissolved Solid	IS:3025(Part-16):1984	840.0	mg/l	—
3.	Total Suspended Solid	IS:3025(Part-17):1984	12.0	mg/l	30.0
4.	Chemical Oxygen Demand (as O_2)	API 1A 5220 B:2005	64.0	mg/l	250.0
5.	Biological Oxygen Demand (as O_2) (3 days at 27°C)	IS:3025(Part-44):1993	15.0	mg/l	30.0
6.	Oil & grease	IS:3025(Part-39):1984	BDL (<1.0)	mg/l	10.0

BDL- Below Detection Limit

Notes:

1. The results given above are related to the tested sample, as re...
2. Responsibility of the Laboratory is limited to the invoiced am...
3. This test report will not be generated again, either wholly or i...
4. The test samples will be disposed off after two weeks from th...

...ceived & mentioned parameters. The customer asked for the above tests only.
...ment only.
...n part, without prior written permission of the laboratory.
...e date of issue of test report, unless until specified by the customer.

Rohit
CHECKED BY

NOIDA TESTING LABORATORIES NTL
AUTHORIZED SIGNATORY

Annexure 4

दिनांक 19/11/2023 — 23/11/2023

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- समभारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपलब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेच्छा से मिल का शोधित पानी अपने खेत में सिंचाई वास्ते ले रहा हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूँगा ।

भवदीय,

प्रार्थी हस्ताक्षर मिलान ..... राजू .....

नाम श्री .... राजू .....

पिता का नाम श्री ...उमाशंकर कटियार

ग्राम .... मैनहा .....

रकबा ... 2 एकड़ (गन्ना)

मोबाइल नं० .. 9956728312

दिनांक 25-11-2023

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिन्दुस्थान शुगर लिमिटेड,

यूनिट- खनखनाखेड़ा ।

विषय: चीनी मिल का शोधित पानी सप्लाई [illegible]

महोदय,

आपसे निवेदन है कि प्रार्थी का फसल में सिंचाई [illegible] आवश्यकता है । मैं अपनी स्वेच्छा से मिल का शो[illegible] हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती [illegible] की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मु[illegible] रहेगा ।

[illegible] चीनी मिल के सम्बन्ध में ।

[illegible] चीनी मिल के शोधित पानी की [illegible]धित पानी अपने खेत में सिंचाई कार्य [illegible] है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल [illegible] आपका बहुत आभारी

धन्यवाद,

हस्ताक्षर विद्वान .....

प्रार्थी

श्री

[illegible] का नाम श्री ...

पिता

ग्राम

[illegible] ....

रक्[illegible]

मोबाइल नं0

सोनूराम

बाबूराम

[illegible]

3 [illegible] (मन्ना)

~~9705863335~~

9705864335

दिनांक: 29-11-2023

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खम्भारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उप[illegible]ब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलो मे सिंचाइ [illegible] शोधित पानी की आवश्यकता है । मैं अपनी स्वेछा से मिल का शोधि[illegible]ल पानी अपने खेत में सिंचाई वास्ते ले रहा हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती [illegible] तो उसका जिम्मेदार मै स्वयं हूंगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मुझे [illegible] उपलब्ध करा दे तो मै आपका बहुत आभारी रहूँगा ।

अतिशय

प्रार्थी हस्ताक्षर विशेष ....

नाम श्री .... अतिबल

पिता का नाम श्री .... मोहन लाल

ग्राम ..... हौरहरा

खसरा ..... 12 बीघा (गन्ना) 2 खण्ड

मोबाइल नं० - 9580121904

दिनांक: 08/11/2023

सेवा में,

श्रीमान, [illegible]

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- समभारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उ[illegible] लब्ध कराने के सम्बन्ध में।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचा[illegible] है करने हेतु चीनी मिल का शोधित पानी की आवश्यकता है । मैं अपनी स्वेक्षा से मिल का शो[illegible] धित पानी अपने खेत में सिंचाई वास्ते ले रहा हूँ । यदि मेरे खेत में [illegible] है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मु[illegible] इसे उपलब्ध करा दे तो मैं आपका बहुत आभारी रहूँगा ।

धन्यवाद,

प्रार्थी [illegible] हस्ताक्षर किसान ..... जीतपाल

नाम श्री .... जीतपाल

पिता का नाम श्री .... सोहन लाल

ग्राम ..... खौरखेरा

रकबा ..... 2 बीघा (गन्ना)

मोबा[illegible] 9580121704

दिनांक 05/12/2023

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खम्भारखेड़ा।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपलब्ध कराने के सम्बन्ध में।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई के लिए पानी की आवश्यकता है। मैं अपनी स्वेच्छा से मिल का शोधित पानी अपने खेत में सिंचाई हेतु ले रहा हूँ। यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा। मिल की कोई जिम्मेदारी नहीं होगी। यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूंगा।

धन्यवाद,

प्रार्थी हस्ताक्षर किसान ..... रामेश्वर

नाम श्री .... रामेश्वर

पिता का नाम श्री .... फतूलाल

ग्राम .... धोलदरा

रकबा .... 10 बीघा (गन्ना)

मोबाइल नं० 9781849552

दिनांक 07-12-2023

सेवा में,

श्रीमान, इकाई प्रमुख महोदय

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- उमरारखेड़ा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उ

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचा
आवश्यकता है । मैं अपनी इच्छा से मिल का शो
हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती
की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मु
रहूँगा ।

प्रार्थी

नाम

पिता

ग्राम

रकबा

इत नं० ..

धन्यवाद,

हस्ताक्षर किसान .....

का नाम श्री ....

.....

....

8392678364

...चीनी मिल के शोधित पानी की
धित पानी अपने खेत में सिंचाई वास्ते ले रहा
है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल
... के ले के आपका बहुत आभारी

दिनांक 15/12/23

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खमभारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपलब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेच्छा से मिल का शोधित पानी अपने खेत में सिंचाई वास्ते ले रहा हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूंगा ।

धन्यवाद,

प्रार्थी हस्ताक्षर किसान विजय सिंह

नाम श्री विजय ~~[illegible]~~ सिंह

पिता का नाम श्री रामचन्द्र

ग्राम ....धौरहरा

रकबा .... 2 एकड़ जोड़ा

मोबाइल नं० 8081013643

दिनांक 17/12/023

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खमभारखेरा ।

विषय: चीनी मिल का शोधित पानी सिचाई हेतु उपल[illegible]ब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिचाई [illegible] करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेक्षा से मिल का शोधि[illegible]त पानी अपने खेत में सिचाई वास्ते ले रहा हूं । यदि मेरे खेत में किसी प्रकार की क्षति होती [illegible] तो प्रत्यक्ष जिम्मेदार मैं स्वयं हूंगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूंगा ।

धन्यवाद,

हस्ताक्षर किसान .....

प्रार्थी [illegible]

नाम [illegible]

पिता [illegible]

ग्राम [illegible]

रकबा [illegible]

मोबाइल नं० 8115258497

[illegible]

दिनांक 20/12/23

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खनभारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपल[illegible]था फसलों के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों मे सिंचाई [illegible] करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेच्छा से मिल का शोधि[illegible] पानी अपने खेत मे सिंचाई खर्च से रा[illegible] हूँ । यदि मेरे खेत में किसी प्रकार का क्षति हाता [illegible] [illegible] के स्वयं होगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूँगा ।

धन्यवाद,

प्रार्थी के हस्ताक्षर किसान [illegible]

नाम श्री शोधित

पिता का नाम श्री [illegible]

ग्राम ...डौरहरा

तहसील उन्नाव (गेंहूं)

मोबाइल नं० ...9454187580

दिनांक: 22/12/23

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खम्भारखेड़ा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपल[illegible]

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई [illegible] करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेच्छा से मिल का शोधि[illegible] पानी अपने खेत में सिंचाई वास्ते ले रहा हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल को कोई जिम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूँगा ।

भवदीय

प्रार्थी हस्ताक्षर हिन्दी ..... संदीप कुमार

नाम श्री ..... संदीप कुमार

पिता का नाम श्री राम नरेश .....

ग्राम ..... धारहरा .....

रकबा ... 4 एकड़ (गेहूँ)

मोबाइल नं० .. 8052754961

दिनांक 25/12/2023

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खनभारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपलब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेच्छा से मिल का शोधित पानी अपने खेत में सिंचाई वास्ते ले रहा हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूंगा ।

धन्यवाद,

प्रार्थी हस्ताक्षर किसान ..... आशीष

नाम श्री .... आशीष यादव

पिता का नाम श्री .... मोती लाल

ग्राम ..... धौरहरा

रकबा ... 6 बीघा (गेहूं)

मोबाइल नं0 .. 7355274029

दिनांक 28/12/23

सेवा मे,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खमभारखेरा ।

विषय: चीनी मिल का शोधित पानी सिचाई हेतु उपल[illegible]ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिचाई [illegible] करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेक्षा से मिल का शोधि[illegible] पानी अपने खेत में सिचाई वास्ते ले रहा हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती [illegible] तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूँगा ।

धन्यवाद,

प्रार्थी ह[illegible] हस्ताक्षर निशान .....

नाम श्री आशीष यादव

पिता [illegible] नाम श्री मौजी लाल

ग्राम धौरहरा

रकबा [illegible] बीघा (गन्ना)

मोबाइल नं० 7355274029

दिनांक: 29/12/2023

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खम्भारखेरा ।

विषय: चीनी मिल का शोधित पानी सिचाई हेतु उपल[illegible]बध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिचाई [illegible] करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेच्छा से मिल का शोधि[illegible]त पानी अपने खेत में सिचाई वास्ते ले रहा हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती [illegible] तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इस [illegible] [illegible] कर दें तो मैं आपका बहुत आभारी रहूँगा ।

धन्यवाद,

प्रार्थी ह[illegible] ताहार किसान ..... उमेशकुमार

नाम श्री .... उमेशकुमार

पिता का नाम श्री .... रामकुमार

ग्राम .... धौरहरा

रकबा .... 3 बीघा (गेहूं) +3

मो0 नं0 .. 6384493869

दिनांक 5/4/024

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- रामगंजमंडी ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उप[illegible] उपलब्ध कराने के सम्बन्ध में ।

महोदय,

प्रार्थना निवेदन है कि प्रार्थी को पानी की सिंचाई [illegible] करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी इच्छा से मिल का शो[illegible] शोधित पानी अपने खेत में सिंचाई वास्ते ले रहा हूं । यदि मेरे खेत से किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इसे स्वी[illegible] करते हैं तो मैं आपका बहुत आभारी रहूंगा ।

धन्यवाद,

प्रार्थी हस्ताक्षर विद्यान ..... राजेश कुमार

नाम ..... राजेश कुमार

पिता का नाम श्री रामकुमार

ग्राम ..... गंगहा,

डाकघर ..... 85 ई [illegible] 43 [illegible]

मोबाइल नं० 9318451757

दिनांक 10/1/24

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खमभारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उ[illegible] लब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि [illegible] आवश्यकता है । मैं अपनी स्वेच्छा से मिल का शो[illegible] हूं । यदि मेरे खेत में किसी प्रकार की क्षति होती [illegible] की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मु[illegible] रहूंगा ।

[illegible] करने हेतु चीनी मिल के शोधित पानी की [illegible] धित पानी अपने खेत मे सिंचाई वास्ते ले रहा [illegible] है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल [illegible] उपलब्ध करा दे तो मैं आपका बहुत आभारी

[illegible]

हस्ताक्षर किसान [illegible]

भाषी [illegible]

नाम [illegible] .....

पिता [illegible] का नाम श्री .... [illegible]

ग्राम [illegible] ....

[illegible] [illegible]

[illegible] नं० ..

दिनांक 14-01-2024

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खनभारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपलब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेच्छा से मिल का शोधित पानी अपने खेत में सिंचाई वास्ते ले रहा हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूँगा ।

धन्यवाद,

प्रार्थी हस्ताक्षर किसान ....

नाम श्री .... धर्मेन्द्र.....

पिता का नाम श्री .... मोजी लाल

ग्राम ..... धौरहरा

रकबा .... 3 बीघा (गेहूं)

मोबाइल नं० .. 9161087 84

दिनांक 17/01/24

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- रामभारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपलब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेक्षा से मिल का शोधित पानी अपने खेत में सिंचाई वास्ते ले रहा हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दे तो मैं आपका बहुत आभारी रहूँगा ।

धन्यवाद,

प्रार्थी हस्ताक्षर किसान ....रामेश्वर

नाम श्री .... रामेश्वर

पिता का नाम श्री .... पुत्तूलाल

ग्राम ..... दौसरी (जोंदू)

एकवा .... 2½ बीघा

मोबाइल नं० .. 9721849552

दिनांक: 19/01/24

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- बम्भारखेरा ।

विषय: धौनी मिल का शोधित पानी सिंचाई हेतु उप[illegible] [illegible] के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई [illegible] करने हेतु धौनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेच्छा से मिल का शो[illegible]धित पानी अपने खेत में सिंचाई वास्ते ले रहा हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मु[illegible] उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूँगा ।

धन्यवाद,

प्रार्थी हस्ताक्षर किसान [illegible]

नाम श्री मिश्रीलाल

पिता का नाम श्री नन्दा

ग्राम चौरहा

तहसील 7 [illegible] (गेहूं)

मोबाइल नं० 6306913044

दिनांक 22/01/2024

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- बनभारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपलब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेक्षा से मिल का शोधित पानी अपने खेत में सिंचाई वास्ते ले रहा हूँ । यदि मेरे खेत मे किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई जिम्मेदारी नही होगी । यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूँगा ।

धन्यवाद,

प्रार्थी हस्ताक्षर किसान ..... आरीफ

नाम श्री .... आरीफ

पिता का नाम श्री .... मौजीलाल

ग्राम ..... खोरहवा

रकबा .... 2 बीघा (लाही)

मोबाइल नं० .. 7355274029

दिनांक: 25/01/24

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खतभारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपलब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेच्छा से मिल का शोधित पानी अपने खेत में सिंचाई वास्ते ले रहा हूं । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूंगा ।

धन्यवाद,

प्रार्थी हस्ताक्षर मिलान ...पंकज कुमार.....

नाम श्री पंकज कुमार .....

पिता का नाम श्री अमरीक

ग्राम ...मनेरा .....

डाकघर .... 10 मील (गढ़ी, मेरठ)

मोबाइल नं० 6388616017

दिनांक 30/01/024

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खमभारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपलब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेच्छा से मिल का शोधित पानी अपने खेत में सिंचाई वास्ते ले रहा हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूँगा ।

भवदीय,

प्रार्थी हस्ताक्षर किसान ..... जितेन्द्र सिंह

नाम श्री .... जितेन्द्र सिंह

पिता का नाम श्री .... राधे श्याम

ग्राम ..... चौरहरा

डाकघर .... [illegible]

मोबाइल नं० .. 8005799307

दिनांक 01/02/024

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खनभारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपलब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई के लिये पानी की आवश्यकता है । मैं अपनी स्वेक्षा से मिल का शोधित पानी अपने खेत में सिंचाई वास्ते ले रहा हूं । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप हमें यह सुविधा उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूंगा ।

धन्यवाद,

प्रार्थी हस्ताक्षर किसान ..... राजेन्द्र प्रसाद

नाम श्री राजेन्द्र प्रसाद .....

पिता का नाम श्री सोहन लाल .....

ग्राम ..... मोहद .....

रकबा ..... 2 एकड़ (गेहूं)

मोबाइल नं0 .....

दिनांक: 07/02/24

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खमभारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपलब्ध करवाने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को [illegible] सिंचाई के लिये [illegible] आवश्यकता है । मैं अपनी स्वेक्षा से मिल का शोधित [illegible] ने हेतु चीनी मिल के शोधित पानी की [illegible] हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती है त[illegible] पानी अपने खेत में सिंचाई वास्ते ले रहा [illegible] की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मुझे उप[illegible] उसका जिम्मेदार मैं स्वयं होगा । मिल [illegible] रहूँगा । [illegible] उपलब्ध करा दें तो मैं आपका बहुत आभारी

भवदीय,

प्रार्थी हस्ताक्षर किसान .....

नाम श्री .....

पिता का नाम श्री .....

ग्राम .....

रकबा .....

LEKHPAL

जलराम

पूलचन्द

खोरखेरा

[illegible] (जेटू)

8303881798

दिनांक 11/02/24

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खमभारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपलब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेच्छा से मिल का शोधित पानी अपने खेत में सिंचाई वास्ते ले रहा हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई ज़िम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूँगा ।

धन्यवाद,

प्रार्थी हस्ताक्षर किसान ..... रोहित कुमार

नाम श्री .... रोहित कुमार

पिता का नाम श्री .... रामनौहर

ग्राम ..... धौरहरा

रकबा ...1 एकड़ (गन्ना खेत)

मोबाइल नं0 7275475689

दिनांक 12/02/24

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- बम्भारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपलब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेच्छा से मिल का शोधित पानी अपने खेत में सिंचाई वास्ते ले रहा हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई ज़िम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूँगा ।

प्रार्थी हस्ताक्षर किसान .....

नाम श्री .....

पिता का नाम श्री .....

ग्राम ..... चौरहरा .....

एकवा ... 1 रकबा (गेहूं)

मोबाइल नं० 8052734961

दिनांक 15/02/024

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खमभारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपलब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई कराने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेक्षा से मिल का शोधित पानी अपने खेत में सिंचाई वास्ते ले रहा हूं । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूंगा ।

प्रार्थी हस्ताक्षर किसान ..... संजय

नाम श्री .... रामभु सिं

पिता का नाम श्री .... संजय

ग्राम ..... डोरेला

रकबा .... 2 (गेहूं)

मोबाइल नं० 6389869442

दिनांक: 16/02/024

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खमभारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपलब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलो में सिंचाई करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेक्षा से मिल का शोधित पानी अपने खेत में सिंचाई करते ले रहा हूं । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई ज़िम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी हूँगा ।

धन्यवाद,

प्रार्थी हस्ताक्षर किसान ..... धर्मेन्द्र यादव

नाम श्री .... धर्मेन्द्र यादव

पिता का नाम श्री .... मंगलसेन

ग्राम ..... घोरहरा

रकबा 1.25

मोबाइल नं० 9161168789

दिनांक: 18/02/024

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खमभारखेरा ।

विषय: चीनी मिल का शोधित पानी सिचाई हेतु उपलब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि पार्थी की फसलों में सिचाई [illegible] करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेक्षा से मिल का शोधित पानी अपने खेत में सिचाई वास्ते ले रहा हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल [illegible] की कोई जिम्मेदारी नहीं होगी । यदि आप इस मुझ [illegible] करते हैं तो मैं आपका बहुत आभारी रहूंगा ।

भवदीय

हस्ताक्षर निशान ..... शिव शंकर यादव

पार्थी हस्ताक्षर ..... शिव शंकर यादव

नाम श्री ..... राम आसरे

पिता का नाम श्री ..... [illegible]

ग्राम ..... धारहरा

रकबा ..... 5 बीघा (लगभग)

मोबाइल नं0 .....

दिनांक: 21/02/024

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खमभारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपलब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेक्षा से मिल का शोधित पानी अपने खेत में सिंचाई वास्ते ले रहा हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई ज़िम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूंगा ।

भवदीय,

प्रार्थी के हस्ताक्षर किसान ..... जगदीश

नाम श्री ... जगदीश .....

पिता का नाम श्री ... बाबुराम .....

ग्राम ... धौरहरा .....

रकबा ... 3 बीघा (लगभग)

मोबाइल नं० ... 9555024538

दिनांक: 23/02/024

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खमभारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु प्रदान करने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेच्छा से मिल का शोधित पानी अपने खेत में सिंचाई वास्ते ले रहा हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूँगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मंजूर उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूँगा ।

धन्यवाद,

प्रार्थी हस्ताक्षर किसान ..... संदीप कुमार

ग्राम श्री .... संदीप कुमार

पिता का नाम श्री .... रामनरेश .....

ग्राम ..... खारखरा .....

रकबा .... 2 एकड़ गेहूँ

मोबाइल नं० .. 6052754961

दिनांक: 21/2/2024

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिन्दुस्थान शुगर लिमिटेड,

यूनिट- खमभारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपलब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेक्षा से मिल का शोधित पानी अपने खेत में सिंचाई वास्ते ले रहा हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूँगा ।

धन्यवाद,

प्रार्थी हस्ताक्षर किसान ....संतोष..

नाम श्री संतोष वंशिका

पिता का नाम श्री संतोष .....

ग्राम ....खेड़खेड़ा .....

रकबा ....12 बीघा (गन्ना)

मोबाइल नं0 .. 8999099845

दिनांक: 01/03/024

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खमनारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपलब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेच्छा से मिल का शोधित पानी अपने खेत में सिंचाई वास्ते ले रहा हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूंगा ।

धन्यवाद,

प्रार्थी हस्ताक्षर किसान आशीष

नाम श्री आशीष

पिता का नाम श्री मोतीलाल

ग्राम औरहा

खसरा 1 एकड़ डेढ़

मोबाइल नं0 7395274029

दिनांक: ~~03/03/24~~
04/03/024

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खमभारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपलब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेच्छा से मिल का शोधित पानी अपने खेत में सिंचाई वास्ते ले रहा हूं । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूंगा ।

धन्यवाद,

प्रार्थी हस्ताक्षर निशान ....छोटेराम..

नाम श्री .... बतराम .....

पिता का नाम श्री .... फूलचन्द .....

ग्राम ..... चौरहरा .....

रकबा .... 4 बीघा (गेहूं)

मोबाइल नं० .. 8303881798

दिनांक 10/03/24

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- छतमारखेरा ।

विषय, चीनी मिल का शोधित पानी सिंचाई हेतु उपलब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेच्छा से मिल का शोधित पानी अपने खेत में सिंचाई वास्ते ले रहा हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल को कोई जिम्मेदारी नहीं होगा । यदि आप इस मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूंगा ।

भवदीय,

प्रार्थी हस्ताक्षर मिलान ..... विजय सिंह

नाम श्री .... विजय सिंह

पिता का नाम श्री .... रामभजन

ग्राम .... चौरहरा (गेंहू)

पोस्ट .... 3 बीघा

मोबाइल नं० .. 6392678364

दिनांक: 13/03/024

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खमभारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपलब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेच्छा से मिल का शोधित पानी अपने खेत में सिंचाई वास्ते ले रहा हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूँगा ।

भवदीय,

प्रार्थी हस्ताक्षर किसान ..... सन्तराम

नाम श्री .... सन्तराम

पिता का नाम श्री .... बाबूराम

ग्राम .... दौरहरा

रकबा ... 5 बीघा (गेहूँ)

मोबाइल नं० 7705864335

दिनांक 19/03/024

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खजभारयोरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उप[illegible]लब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचा[illegible]ई करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेच्छा से मिल का शो[illegible]धित पानी अपने खेत में सिंचाई वास्ते ले रहा हूं । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इसे सु[illegible]ओ उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूँगा ।

धन्यवाद,

प्रार्थी हस्ताक्षर किसान ..... मोतीलाल सिंह

नाम श्री ..... [illegible] सिंह .....

पिता का नाम श्री .... सोहन लाल .....

ग्राम [illegible] .....

खसरा .... / [illegible] गेटू

मोबाइल नं0 .. 9580121704

दिनांक 21-3-2024

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खम्भारखेरा ।

विषय: चीनी मिल का शोधित पानी सिचाई हेतु उपलब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिचाई के [illegible] हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेच्छा से मिल का शोधित पानी अपने खेत में सिचाई वास्ते ले रहा हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई ज़िम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूँगा ।

धन्यवाद,

प्रार्थी हस्ताक्षर किसान ..... प्रभु सिंह

नाम श्री ..... पप्पू

पिता का नाम श्री ..... ओमप्रकाश

ग्राम ..... खेरा

पोस्ट ..... बेहा (परसा)

मोबाइल नं० 9799183750

दिनांक 24/3/2024,
30/03/2024

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- समसारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपलब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी इच्छा से मिल का शोधित पानी अपने खेत में सिंचाई वास्ते ले रहा हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूंगा ।

धन्यवाद,

प्रार्थी हस्ताक्षर किसान ..... संजय यादव

नाम श्री ..... संजय यादव

पिता का नाम श्री ..... रामू

ग्राम ..... धोरहरा

पत्रा ..... 1+2 एकाऽ (जन्ना)

मोबाइल नं० .. 6386869942

दिनांक 08/04/24

प्रेषा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खमभारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपलब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेक्षा से मिल का शोधित पानी अपने खेत मे सिंचाई वास्ते ले रहा हूं । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दे तो मैं आपका बहुत आभारी रहूँगा ।

धन्यवाद,

प्रार्थी हस्ताक्षर मिसाल .....

नाम श्री .... धर्मेन्द्र सिंह

पिता का नाम श्री .... स्व० मौजीलाल

ग्राम ..... घोरहा

रकबा .... 1 एकड़ (गन्ना)

मोबाइल नं० .. 9161108784

दिनांक 9/4/24

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्तान शुगर लिमिटेड,

यूनिट- बनबारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपलब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेक्षा से मिल का शोधित पानी अपने खेत में सिंचाई करने ले रहा हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूँगा ।

धन्यवाद,

प्रार्थी हस्ताक्षर निशान ..... विजय.....

नाम श्री ....विजय .....

पिता का नाम श्री .... रामचन्द्र

ग्राम ..... धोरखरा .....

तहसील ....। अलवर रूरल (ग्रा-ना)

मोबाइल नं० - 8081813647

दिनांक 13/04/24

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- रामगोरखेरा ।

विषय: चीनी मिल का शोधित पानी सिचाई हेतु उपलब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिचाई करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेक्षा से मिल का शोधित पानी अपने खेत में सिचाई वास्ते ले रहा हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूँगा ।

धन्यवाद,

प्रार्थी हस्ताक्षर किसान ..... सन्तोष

नाम श्री .... सन्तोष

पिता का नाम श्री .... [illegible]

ग्राम .... [illegible]

रकबा .... [illegible] (पन्ना)

मोबाइल नं0 ....

दिनांक 14/04/24

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- रामभारथोश ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपलब्ध कराने के सम्बन्ध में।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेक्षा से मिल का शोधित पानी अपने खेत में सिंचाई वास्ते ले रहा हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई ज़िम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूंगा ।

धन्यवाद,

प्रार्थी हस्ताक्षर किसान पप्पू सिंह

नाम श्री पप्पू सिंह

पिता का नाम श्री भूमिधर

ग्राम धरिहरा

रकबा 3 बिघा / गन्ना

मोबाइल नं० 9752183750

दिनांक 23/04/2019

सेवा में,

श्रीमान, इकाई प्रमुख महोदय,

बजाज हिंदुस्थान शुगर लिमिटेड,

यूनिट- खमभारखेरा ।

विषय: चीनी मिल का शोधित पानी सिंचाई हेतु उपलब्ध कराने के सम्बन्ध में ।

महोदय,

आपसे निवेदन है कि प्रार्थी को फसलों में सिंचाई करने हेतु चीनी मिल के शोधित पानी की आवश्यकता है । मैं अपनी स्वेच्छा से मिल का शोधित पानी अपने खेत में सिंचाई वास्ते ले रहा हूँ । यदि मेरे खेत में किसी प्रकार की क्षति होती है तो उसका जिम्मेदार मैं स्वयं हूंगा । मिल की कोई जिम्मेदारी नहीं होगी । यदि आप इसे मुझे उपलब्ध करा दें तो मैं आपका बहुत आभारी रहूँगा ।

धन्यवाद,

प्रार्थी हस्ताक्षर किसान ..... संदीप कुमार

नाम श्री .... संदीप

पिता का नाम श्री .... रामनरेश

ग्राम ..... चौरहरा

रकबा ..... 5 बीघा (गन्ना)

मोबाइल नं० ...

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MoEF & CC (Ministry of Environment, Forest & Climate Change), UPPCB Recognized Laboratory

+91-9313611642, 8510081921, 7503031145, 8527870572, 7503031146, 9999794369

TEST CERTIFICATE

Issued To:	M/s Bajaj Hindusthan Sugar Limited	Report Code	: SQ-311022-010
		ULR No.	: C681422000009294 F
		Test Report of	: Soil Quality
Address:	Khambharkhera, District-Lakhimpur Kheri (U.P)-261506 India	Service Request No	: NTL/SRF/10/22-010
		Service Request Date	: 28/10/2022
		Report Issue Date	: 02/11/2022

Sampling & Analysis Data

Sample Drawn On	:	30/10/2022
Sample Location	:	Khambharkhera Village
Sample Description	:	Soil Sample
Sample Received On	:	31/10/2022
Sample Quantity	:	2.0 Kg
Weather Conditions	:	Normal
Analysis Duration	:	31/10/2022 to 02/11/2022

S.No.	PARAMETERS	RESULT	Classification of Soil		
1	Ph (1:2 suspension)	7.05	Neutral		
2	Salinity Electrical Conductivity @25°C (mmhos/cm)	246	Should be less 1000		
3	Sodium Absorption Ration (SAR) meq/L	3.78	-		
4	Soil Fertility Ratings		Soil Fertility Ratings		
			Low	Medium	High
a	Organic Carbon (% by mass)	0.57	<0.5	0.5-0.75	>0.75
b	Available Nitrogen (Kg/ha)	330	<280	280-560	>560
c	Available Phosphorous (Kg/ha)	23.8	<10	10-24.6	>24.6
d	Available Potash (as K- Kg/ha)	342	<180	180-280	>280
5	Heavy Metals Analysis		Used Protocol	The Environmental Management (Soil, quality Standards) Regulation:2007 upper Limit (Max)	
a	Lead Content (as Pb) (mg/kg)	38.8	IS:11047:1998	200	
b	Arsenic (as As) (mg/Kg)	0.096	IS:11047:1998	1	
c	Cadmium (as Cd) (mg/Kg)	0.35	IS:11047:1998	1	

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TEST CERTIFICATE

d	Manganese (as Mn) (mg/Kg)	110	IS:11047:1998	1800
e	Mercury (as Hg) (mg/Kg)	<1.0	IS:167772:2004	2
f	Nikel (as Ni) (mg/Kg)	24.0	IS:11047:1998	100
g	Selenium as Se) (mg/Kg)	1.46	SW:846:7742	20
h	Copper (as Cu) (mg/Kg)	19.89	IS:11047:1998	200
i	Zinc (as Zn) (mg/Kg)	67.0	IS:11047:1998	150
j	Molybdenum (as Mo) (mg/Kg)	<1.0	IS:11047:1998	5

Conclusion- Based on above tested parameters, soil sample have good fertility value provided by department of Agriculture & Cooperation Ministry of Agriculture Government of India- New Delhi.

Notes:

1. The results given above are related to the tested sample, as received & requested parameters the customer asked for the above tests only.
2. Responsibility of the Laboratory is limited to the invoiced amount only.
3. This test report will not be generated again, either wholly or in part, without prior written permission of the laboratory.
4. The test samples will be disposed off after two weeks from the date of issue of test report, unless until specified by the customer.

Ajaib
Checked by

Authorized Signatory

ITS TESTING LABORATORY PRIVATE LIMITED

Laboratory: A-114, Sector-80, Phase-II Noida, Gautam Budh Nagar - 201305, (U.P.)
(An ISO 9001: 2015, ISO 14001:2015 & ISO 45001:2018 Certified Laboratory)
Website: www.itslab.in, Email: itlrclab@gmail.com, info@itslab.in, contact@itslab.in
+91 9911659800, 9305780312, 09968849764

SS-290324-01(Page 1to 2)

Test Report of	Report Code	Date of Issue
Soil Sample	SS-290324-01	02/04/2024

Issued to: M/S. BAJAJ HINDUSTHAN SUGAR LIMITED
KHAMBHARKHERA, DISTT-LAKHIMPUR KHERI-261506 (U.P) INDIA

Sampling & Analysis Data

Sample Description	Soil Sample Collected at 30cm depth from Farmer Field.
Sample Drawn & Sealed by	ITS Representative Mr. Amit Sharma & Dr. Rajeev Chandra Sekhar Azzad University of Agricultural & Technology, Kanpur
Date of Sample Received	29/03/2024
Purpose of sampling	Crop Cultivation (Agricultural Purpose)
Protocol Used for Testing	IS:2720, IS:14767/78, Department of agriculture & Cooperation ministry of agriculture government of India-New Delhi.
Analysis Duration	29/03/2024 to 02/04/2024

ANALYSIS TEST RESULT

S.No.	PARAMETERTS	RESULT	Classification of Soil		
1.	pH (1:2 suspension)	7.05	Neutral		
2.	Salinity Electrical Conductivity @25°C (mmhos/cm)	242	Should be less 1000		
3.	**Soil Fertility Ratings**		*Soil Fertility Ratings*		
			Low	Medium	High
a.	Organic Carbon (% by mass)	0.59	<0.5	0.5-0.75	>0.75
b.	Available Nitrogen (Kg/ha)	328	<280	280-560	>560
c.	Available Phosphorous (Kg/ha)	237	<10	10-24.6	>24.6
d.	Available Potash (as K) (Kg/ha)	341	<180	108-280	>280

ITS TESTING LABORATORY PVT. LTD. RK SINGH Technical Manager

ITS TESTING LABORATORY PRIVATE LIMITED

Laboratory: A-114, Sector-80, Phase-II Noida, Gautam Budh Nagar - 201305, (U.P.)
(An ISO 9001: 2015, ISO 14001:2015 & ISO 45001:2018 Certified Laboratory)
Website: www.itslab.in, Email: itslab@gmail.com, info@itslab.in, contact@itslab.in
+91 9911659800, 9305780312, 09958849764

S.No.	PARAMETERTS	RESULT	Protocol Used	The Environmental Management (Soil, quality Standards) Regulation:2007 Upper Limit (max)
1.	Lead Content (as Pb) (mg/kg)	38.6	IS:11047:1998	200
2.	Arsenic (as As) (mg/kg)	0.095	IS:11047:1998	1
3.	Cadmium (as Cd) (mg/kg)	0.32	IS:11047:1998	1
4.	Manganese (as Mn)(mg/kg)	102	IS:11047:1998	1800
5.	Mercury (as Hg)(mg/kg)	<1.0	IS:167772:2004	2
6.	Nickel (as Ni)(mg/kg)	22.0	IS:11047:1998	100
7.	Selenium (as Se) (mg/kg)	1.45	SW-846:7742	20
8.	Copper (as Cu)(mg/kg)	19.88	IS:11047:1998	200
9.	Zinc (as Zn) (mg/kg)	66.0	IS.11047:1998	150
10.	Molybdenum (as Mo)(mg/kg)	<1.0	IS:11047:1998	5

SS-290324-01 (Page 1 to 2)

Conclusion- Based on above tested parameters, soil sample have good fertility value provided by Department of Agriculture & Cooperation Ministry of Agriculture Government of India-New Delhi.

Checked by

ITS TESTING LABORATORY PVT LTD
RK SINGH
Authorised Signatory

NOIDA TESTING LABORATORIES

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MoEF & CC (Ministry of Environment, Forest & Climate Change), UEPCB Recognized Laboratory

+91-9313611642, 8510081921, 7503031145, 8527870572, 7503031146, 9999794369

TEST CERTIFICATE

Issued To:	M/s Bajaj Hindusthan Sugar Limited
Address:	Khambharkhera, District-Lakhimpur Kheri (U.P)-261506 India

Report Code	: W-311022-01
ULR No.	: TC6814220000009285 F
Test Report of	: Water
Service Request No	: NTL/SRF/10/22-01
Service Request Date	: 28/10/2022
Report Issue Date	: 02/11/2022

SAMPLING & ANALYSIS DATA

Sample Drawn On	:	30/10/2022
Sample Drawn By	:	NTL Representative
Analysis Duration	:	31/10/2022 to 02/11/2022
Sample Quantity	:	2.0 lit.+ 500 ml.
Sampling Location	:	Village Khambharkhera
Sample Description	:	Ground Water

MICROBIOLOGICAL REQUIREMENT RESULT

S.No.	Parameter	Test Method	Results	Requirements as per IS-10500:2012
1.	*Escherichia coli*	IS-15185	Absent	Absent/100ml
2.	*Coliform Bacteria*	IS-15185	Absent	Absent/100ml

ORGANOLEPTIC & PHYSICAL PARAMETERS

S.No.	Parameter	Test Method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1.	Colour	IS-3025(P-04)	<1.00	Hazen Unit	5	15
2.	Odour	IS-3025(P-05)	Agreeable	-	Agreeable	Agreeable
3.	Taste	IS-3025(P-07 & 08)	Agreeable	-	Agreeable	-
4.	Turbidity	IS-3025(P-10)	<1.00	NTU	1	5
5.	pH value	IS-3025(P-11)	7.32	-	6.5 - 8.5	-
6.	Total dissolve solid (TDS)	IS-3025(P-16)	326	mg/l	500	2000

GENERAL PARAMETERS CONCERNING SUBSTANCES UNDESIRABLE IN EXCESSIVE AMOUNTS

S.No.	Parameter	Test method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1.	Aluminum (as Al)	IS: 3025 (P-55)	<0.01	mg/l	0.03	0.2

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MoEF & CC (Ministry of Environment, Forest & Climate Change), UPPCB Recognized Laboratory
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TEST CERTIFICATE

2.	Total Ammonia	IS: 3025 (P- 34)	<0.10	mg/l	0.5	No Relaxation
3.	Anionic Detergents (as MBAS)	Annex K of IS-13428	<0.10	mg/l	0.2	1.0
4.	Barium (as Ba)	IS: 15302	<0.10	mg/l	0.7	No Relaxation
5.	Boron (as B)	IS: 3025 (P- 57)	<0.10	mg/l	0.5	2.4
6.	Calcium (as Ca)	IS: 3025 (P- 40)	48.16	mg/l	75	200
7.	Chloramines (as Cl_2)	IS: 3025 (P- 26)	<1.00	mg/l	4.0	No Relaxation
8.	Chloride (as Cl)	IS: 3025 (P- 32)	32.40	mg/l	250	1000
9.	Copper (as Cu)	IS : 3025 (P-42)	<0.05	mg/l	0.05	1.5
10.	Fluoride (as F)	IS: 3025 (P-60)	0.36	mg/l	1.0	1.5
11.	Free Residual Chlorine	IS: 3025 (P-26)	BDL	mg/l	0.2	1.0
12.	Iron (as Fe)	IS: 3025(P-53)	0.152	mg/l	1.0	No Relaxation
13.	Magnesium (as Mg)	IS: 3025 (P-46)	9.13	mg/l	30	100
14.	Manganese (as Mn)	IS: 3025 (P-59)	<0.10	mg/l	0.1	0.3
15.	Mineral Oil	Clause 6 of IS: 3025	<0.50	mg/l	0.5	No Relaxation
16.	Nitrate (as NO_3)	IS: 3025 (P- 34)	4.08	mg/l	45	No Relaxation
17.	Selenium (as Se)	IS: 3025 (P- 56)	<0.01	mg/l	0.01	No Relaxation
18.	Silver (as Ag)	Annex J IS: 13428	<0.05	mg/l	0.1	No Relaxation
19.	Sulphate (as SO_4)	IS: 3025 (P- 24)	51.20	mg/l	200	400
20.	Sulphide(as H_2S)	IS-3025 (P-29)	<0.05	mg/l	0.05	No Relaxation
21.	Alkalinity (as Ca CO_3)	IS: 3025 (P- 23)	196.0	mg/l	200	600
22.	Total Hardness (as $CaCO_3$)	IS: 3025 (P- 21)	158.0	mg/l	200	600
23.	Zinc (as Zn)	IS: 3025 (P- 49)	0.121	mg/l	5.0	15

Parameters Concerning Toxic Substances:

S.No.	Parameter	Test method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1.	Cadmium (as Cd)	IS-3025(P-41)	<0.001	mg/l	0.003	No Relaxation
2.	Cyanide (as CN)	IS-3025(P-27)	<0.01	mg/l	0.05	No Relaxation
3.	Lead (as Pb)	IS-3025(P-47)	<0.01	mg/l	0.01	No Relaxation
4.	Mercury (as Hg)	IS-3025(P-48)	<0.001	mg/l	0.001	No Relaxation
5.	Molybdenum (Mo)	IS-3025(P-2)	<0.05	mg/l	0.07	No Relaxation
6.	Nickel (as Ni)	IS-3025(P-54)	<0.01	mg/l	0.02	No Relaxation
7.	Poly nuclear Aromatic Hydro Carbons	APHA 6440	<0.0001	mg/l	0.0001	No Relaxation
8	Poly chlorinated biphenyl	APHA 6630	<0.0001	mg/l	0.0005	No Relaxation
9.	Total Arsenic (as As)	IS-3025(P-37)	<0.01	mg/l	0.01	No Relaxation
10.	Total Chromium (as Cr)	IS-3025(P-52)	<0.05	mg/l	0.05	No Relaxation

BDL: Below Detection limit.

Notes:

1. The results given above are related to the tested sample, as received & mentioned parameters. The customer asked for the above tests only.
2. Responsibility of the Laboratory is limited to the invoiced amount only.
3. This test report will not be generated again, either wholly or in part, without prior written permission of the laboratory.
4. The test samples will be disposed off after two weeks from the date of issue of test report, unless until specified by the customer.

Ayaz
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AUTHORIZED SIGNATORY

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MoEF & CC (Ministry of Environment, Forest & Climate Change), UPPCB Recognized Laboratory

☎ +91-9313611642, 8510081921, 7503031145, 8527870572, 7503031146, 9999794369

TEST CERTIFICATE

Issued To: M/s Bajaj Hindusthan Sugar Ltd.

Address: Unit – Khambarkhera, Sarda Nagar Road Khambarkhera, District- Lakhimpur Kheri (U.P.) 261502 India.

Report Code : W-290324-016
Test Report of : Water
Service Request No : NTL/SRF/02/24-020
Service Request Date : 28/03/2024
Report Issue Date : 04/04/2024

Sampling & Analysis Duration

Sample Collected By	NTL Representative
Sample Drawn On	29/03/2024
Sample Drawn & sealed by	Dr. Rajiv (Chandra Shekhar Azad University of Agriculture & Technology, Kanpur)
Sample Received On	29/03/2024
Sample Quantity	2.0 Lt. + 500 ml.
Analysis Duration	29/03/2024 to 04/04/2024
Sampling Location	Farmer Field
Sample Description	Ground Water

MICROBIOLOGICAL REQUIREMENT RESULT

S.No.	Parameter	Test Method	Results	Requirements as per IS-10500:2012
1	*Escherichia coli*	IS-5185	Absent	Absent/100ml
2	*Coliform Bacteria*	IS-5185	Absent	Absent/100ml

ORGANOLEPTIC & PHYSICAL PARAMETERS

S.No.	Parameter	Test Method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1	Colour	IS-3025(P-04)	<5.00	Hazen Unit	5	15
2	Odour	IS-3025(P-05)	Agreeable	-	Agreeable	Agreeable
3	Taste	IS-3025(P-07 & 08)	Agreeable	-	Agreeable	-
4	Turbidity	IS-3025(P-10)	<1.00	NTU	1	5
5	pH value	IS-3025(P-11)	7.28	-	6.5 - 8.5	-
6	Total dissolve solid (TDS)	IS-3025(P-16)	460	mg/l	500	2000

GENERAL PARAMETERS CONCERNING SUBSTANCES UNDESIRABLE IN EXCESSIVE AMOUNTS

S.No.	Parameter	Test method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1	Aluminium (as Al)	IS: 3025 (P- 55)	<0.01	mg/l	0.03	0.2
2	Total Ammonia	IS: 3025 (P- 34)	<0.10	mg/l	0.5	No Relaxation
3	Anionic Detergents (as MBAS)	Annex K of IS-13428	<0.10	mg/l	0.2	1.0

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TEST CERTIFICATE

4	Barium (as Ba)	IS: 15302	<0.10	mg/l	0.7	No Relaxation
5	Boron (as B)	IS: 3025 (P-57)	<0.10	mg/l	0.5	2.4
6	Calcium (as Ca)	IS: 3025 (P-40)	42.60	mg/l	75	200
7	Chloramines (as Cl_2)	IS: 3025 (P-26)	<1.00	mg/l	4.0	No Relaxation
8	Chloride (as Cl)	IS: 3025 (P-32)	[illegible]	mg/l	250	1000
9	Copper (as Cu)	IS: 3025 (P-42)	<0.00	mg/l	0.05	1.5
10	Fluoride (as F)	IS: 3025 (P-60)	0.48	mg/l	1.0	1.5
11	Free Residual Chlorine	IS: 3025 (P-26)	BDL(<0.1)	mg/l	0.2	1.0
12	Iron (as Fe)	IS: 3025(P-53)	0.126	mg/l	1.0	No Relaxation
13	Magnesium (as mg)	IS: 3025 (P-46)	[illegible]	mg/l	30	100
14	Manganese (as Mn)	IS: 3025 (P-59)	<0.10	mg/l	0.1	0.3
15	Mineral Oil	Clause 6 of IS: 3[illegible]	[illegible]	[illegible]	0.5	No Relaxation
16	Nitrate (as NO_3)	IS: 3025 (P-34)	4.38	mg/l	45	No Relaxation
17	Selenium (as Se)	IS: 3025 (P-56)	<0.01	mg/l	0.01	No Relaxation
18	Silver (as Ag)	Annex J IS: 1342	<0.05	mg/l	0.1	No Relaxation
19	Sulphate (as SO_4)	IS: 3025 (P-24)	24.80	mg/l	200	400
20	Sulphide (as H_2S)	IS: 3025 (P-29)	<0.05	mg/l	0.05	No Relaxation
21	Alkalinity (as Ca CO_3)	IS: 3025 (P-23)	196.0	mg/l	200	600
22	Total Hardness (as $CaCO_3$)	IS: 3025 (P-21)	220.0	mg/l	200	600
23	Zinc (as Zn)	IS: 3025 (P-49)	0.142	mg/l	5.0	15
24	Phenolic Compound as (C_6H_5OH)	IS: 3025 (P-43)	BDL (<0.001)	mg/l	0.001	0.002

Parameters Concerning Toxic Substances:

S.No.	Parameter	Test method	Result	Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1	Cadmium (as Cd)	IS-3025(P-41)	<0.001	mg/l	0.001	No Relaxation
2.	Cyanide (as CN)	IS-3025(P-27)	<0.01	mg/l	0.05	No Relaxation
3.	Lead (as Pb)	IS-3025(P-47)	<0.01	mg/l	0.01	No Relaxation
4.	Mercury (as Hg)	IS-3025(P-48)	<0.001	mg/l	0.001	No Relaxation
5.	Molybdenum (Mo)	IS-3025(P-2)	<0.05	mg/l	0.07	No Relaxation
6.	Nickel (as Ni)	IS-3025(P-54)	<0.01	mg/l	0.02	No Relaxation
7.	Poly nuclear Aromatic Hydro Carbons	APHA 6440	<0.0001	mg/l	0.0001	No Relaxation
8	Poly chlorinated biphenyl	APHA 6630	<0.0001	mg/l	0.0005	No Relaxation
9.	Total Arsenic (as As)	IS-3025(P-37)	<0.01	mg/l	0.01	No Relaxation
10.	Total Chromium (as Cr)	IS-3025(P-52)	<0.02	mg/l	0.05	No Relaxation

*Remark - BDL: Below Detection limit

Notes:
1. The results given above are related to the tested sample as received. A representative sample
2. Responsibility of the Laboratory is limited to the received sample only.
3. Test results report shall be produced again, either wholly or in part, without prior written permission of the laboratory.
4. The samples will be disposed off after two weeks from the date of issue of test report.

Checked by

NOIDA TESTING LABORATORIES NTL

Authorized Signatory

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Technical Report

On

GROUND WATER RECHARGE STUDY

For

Bajaj Hindusthan Sugar Limited
Unit - Khambharkhera
District – Lakhimpur Kheri, Uttar Pradesh

Carried out By

Directorate of Research
C. S. Azad University of Agriculture & Technology,
Kanpur – 208 002 (India)

Technical Report
on
Ground Water Recharge Study

Introduction:

Artificial recharge of groundwater is accomplished through placing surface water in basins, furrows, ditches, or different centres wherein it infiltrates into the soil and actions downward to recharge aquifers. Synthetic recharge is an increasing number of used for short- or lengthy-term underground garage, where it has several blessings over floor storage, and in water reuse. Artificial recharge requires permeable surface soils. In which these are not available, trenches or shafts in the unsaturated sector can be used, or water can be at once injected into aquifers via wells. To design a machine for artificial recharge of groundwater, infiltration rates of the soil have to be determined and the unsaturated area among land floor and the aquifer ought to be checked for good enough permeability and lack of polluted regions.

The artificial recharge to ground water aims at augmentation of ground water reservoir by modifying the natural movement of surface water utilizing suitable civil construction techniques. Artificial recharge is the process by which the ground water is augmented at a rate much higher than those under natural condition of percolation. In most low rainfall areas of the country the availability of utilizable surface water is so low that people have to depend largely on ground water for agriculture and domestic use. So in order to improve the ground water situation it is necessary to artificially recharge the depleted ground water aquifers.

Under these circumstances, the present study was taken up with the following objective (s) namely:

1. To analyze the working of artificial recharge of ground water.
2. To determine the amount of water that would be available from a given catchments and the size of storages.

Methodology:

The study entitled "Ground Water Recharge Study" was conducted during the month of March, 2024 by a team included representatives of the sugar plant. During the course of the study different kind of information were gathered. The appropriate

tools and techniques were used in gathering information. In addition to above, the desired information was also gathered from different places/points.

Brief Description About Company:

Bajaj Hindusthan Sugar Limited (BHSL) was established on 24th November 1931, as 'Hindusthan Sugar Mills Limited.' Founded by the late Shri Jamnalal Bajaj, a respected businessman, freedom fighter, and close confidant of Mahatma Gandhi, the company's inception aimed to address a critical national mission-providing momentum to the industry, given that there were fewer than 30 sugar mills in the country at that time-and advancing inclusive growth. The chosen site for the first plant was in Gola Gokaran Nath in the Lakhimpur Kheri district in the Terai region of present-day Uttar Pradesh (UP). Positioned in an area abundant with sugarcane plantations, the original capacity of the plant was 400 tonnes of cane crushed per day (TCD), which eventually increased to its current 13,000 TCD. The distillery unit of the plant began production in 1944. During World War II, the distillery primarily produced power alcohol, a commodity in short supply at the time. Notably, the unit became the first in the country to supply alcohol-mixed petrol to the army.In 1967, a new company, Sharda Sugar & Industries Limited, emerged as a subsidiary of Hindusthan Sugar Mills Limited. Under this subsidiary, a sugar plant with a cane crushing capacity of 1,400 TCD was established in 1972 at Palia Kalan, a major cane-supplying centre located 70 kilometres north of the Gola Gokaran Nath unit. The Palia Kalan unit's capacity was gradually increased to its current 11,000 TCD.

In 1988, Hindusthan Sugar Mills Limited underwent a name change, becoming Bajaj Hindusthan Sugar Limited (BHSL). Two years later, Sharda Sugar & Industries Limited was amalgamated with the company.

During the 2000s, BHSL initiated an ambitious greenfield expansion from 2003 to 2007, establishing eight plants across the state. This rapid expansion, starting with a plant at Kinauni near Meerut, was notably completed in just 7 months, contrasting with the industry norm of 18-24 months. The total cane crushing capacity of the company surged to 96,000 TCD.

In 2005, BHSL acquired Pratappur Sugar and Industries Limited (PSIL) in UP's Deoria district. Operating since 1903, it was Asia's oldest plant with a crushing

capacity of 3,200 TCD. Post-acquisition, its capacity doubled to 6,000 TCD within a year.

PSIL was subsequently renamed Bajaj Hindusthan Sugar and Industries Limited (BHSIL) and made a subsidiary of BHSL. This acquisition provided BHSL with a strategic foothold in the sugar-deficient region of Eastern UP and reaffirmed the consolidation that took place in the sugar industry. By the end of 2007, the expansion drive not only enhanced BHSL's overall cane crushing capacity but also positioned the company as India's largest ethanol producer, generating 480 kiloliters per day (KLD).While enhancing the capacity of its existing sugar plant at Pratappur, the company concurrently established three additional sugar units in virgin, cane-rich areas of East UP at Rudauli (district: Basti), Kundarkhi (district: Gonda), and Utraula (district: Balrampur). This elevated BHSIL's total crushing capacity to 40,000 TCD. The commissioning of three Bagasse-based power co-generation plants at Kundarkhi, Rudauli, and Utraula contributed to BHSIL's aggregate power generation capacity of 95.8 MW. Coupled with the power generation capacity of 325 MW from BHSL, the company's total generation capacity stands at 420.8 MW, surpassing its energy needs. Notably, the surplus 90 MW of energy is supplied to the UP state grid. In December 2010, the amalgamation of BHSIL with BHSL was completed. BHSL's growth initiative was strategically focused on achieving global manufacturing scale and cost competitiveness. Simultaneously, it created significant developmental opportunities in UP, a state eager for infrastructural growth, youth employment, and overall socioeconomic development in rural communities.

Today, BHSL holds a unique position, towering over local peers and ranking among the world's best in planning and processes. With the company impacting over 5 lakh farmers in UP, it directly contributes to the rural economy, bringing positive change to countless lives in UP and beyond across India.

Detail About the Unit:

The premises of M/S Bajaj Hindusthan Sugar Limited Unit Khambharkhera (sugar plant) is situated in Khambharkhera village of Block Fulbehad in district Pilibhit of Uttar Pradesh well connected with road to major cities. The unit was established in 2006. The sugar production capacity is 12,600 TCD.

Water Requirement and Quality of Groundwater:

The total ground water requirement of plant is 1200 m^3/day or 216000 m^3 /year. Since the area is non-notified and falls in safe category, as per ground water NOC for withdrawal of ground water, adoption of artificial recharge to ground water is required.

The study area theoretically covers within the circle encompassed by 5 km radius around the sugar plant site is classified into 4 classes *viz.*, settlements, agriculture land, industry, and rocky water body. The district experiences sub-humid climate and three distinct seasons *viz.*, summer, rainy and winter.

The ground water exploration in the district reveals that clay group of formations dominates over the sand group in the district area. Ground water in the district occurs in the alluvium under water table and semi-confined to confined conditions. On the basis of the depth to water level of the district, the pre-monsoon depth to water level ranges between 3.5 m bgl to 4.0 m bgl, while post-monsoon depth to water level ranges between 2.5 m bgl to 3.0 m bgl.

A detailed groundwater level monitoring has been carried at about 8 different locations within the buffer zone from existing open wells and bore wells. The physio-chemical quality of groundwater was compared with drinking water standard (IS: 10500- 2012). Some of the parameters of the ground water samples showed values lower than the permissible limit. Thus, can be inferred from the sampling results for groundwater that some of the parameters are in lower range so adequate measures to be taken before consumption of the same as per standards (IS: 10500-2012).

Details of Ground Water Abstraction

Artificial recharge has been practiced within the sugar plant premises. Rainwater harvesting practices through roof-top is being carried out and the available run-off from the same is used for green belt or dust suppression etc.

There are three existing bore-well present in the industry premises. The monitoring of ground water abstraction is done on regular basis. Awareness programme about the conservation of ground water resources are also being organised to create the awareness among people.

S.No.	NOC NO./ Certificate NO.	Maximum Allowable Withdrawal (m3/day)	Total Allowable Withdrawal (m3/day)	Maximum Allowable Annual Extraction of Ground Water	Total Allowable Annual Extraction of Ground Water	Validity Start	Validity End	Validity in a Year (No. Of days)
1.	NOC028922	400	1200	72000	180,000	22.06.2021	21.06.2026	150
2.	NOC033242	400		72000				
3.	NOC043004	400		72000				

Artificial Recharge:

Natural replenishment of ground water storage is slow and is unable to keep pace with the excessive exploitation of ground water. With increasing urbanization, the land area for natural rainwater recharge is also shrinking and large unutilized runoff carries pollution to the water bodies. Artificial recharge to groundwater aims at augmentation of the ground water storage by modifying the natural movement of surface water, utilizing suitable civil construction techniques to increase the seepage rate exceeding that under natural conditions of replenishment. The rainfall occurrence in India is limited to about 3 months period, ranging from about 10 to 60 rainy days. The natural recharge is restricted to this period only. The artificial recharge techniques aim at increasing the recharge period in the post-monsoon for about 3 months to provide additional recharge. This would result in providing sustainability to ground water development.

In majority of the areas, scarcity of water is felt in post-monsoon season. Due to steep gradients, a large quantity of water flows out to low lying areas as surface runoff. There is a need to provide sustainability to these surface storages which are effective in providing additional recharge and sustain the flow for a longer period. Most of the urban areas in the country are facing water scarcity. The dependence on ground water has increased many folds and the natural recharge to ground water has decreased due to increased buildings and paved areas etc. Roof top rain water harvesting, which involves the collection of rainwater from the roof of the buildings and its storage in surface tanks or recharge to sub-surface aquifer, can play an important role in conservation of water. Thus, the need for artificial recharge of groundwater is beyond doubt and is the most powerful management strategy available to face the challenge of fast depletion in ground water storages.

Inside Plant Premises:

Rainwater harvesting can be done by diverting the runoff that is generated from roof sheds, roads and green belt areas of recharging into ground water system. Implantation of recharge mechanism ensures the balance between the discharge vis-a-vis recharge of the aquifer system and improvement in the ground water quality. The normal annual rain fall for the said area has been taken as 1231.20 mm based on the site plan and land use pattern of the plot, the computation of runoff for each unit has worked out and the details are tabulated below:

Calculation of annual rainfall runoff potential

S. No.	Land use type	Area (sq m)	Coefficient of runoff	Rainfall (m)	Quantity of Rainwater (m^3)
1	Rooftop Area	5750.00	0.85	1.231	6016.51
Total		**5750.00**	-	-	**6016.51**

From the above computation, it is evident that a total quantum of 6016.51 m^3 /year of rain water is fruitfully harvested & recharged from plant premises annually by constructed suitable recharge structures against the withdrawal of 216000.00 m^3 /year. In order to design the recharge structures, hourly runoff of 30 mm/hr has been taken into account and the details are tabulated below:

Hourly Computation of Runoff – (30 mm/hr)

S. No.	Land use type	Area (sq m)	Coefficient of runoff	Intensity of Rainfall (m)	Quantity of Rainwater (m^3)
1	Rooftop Area	5750.00	0.85	0.030	146.625
Total		**5750.00**	-	-	**146.625**

Structure Calculation:

- Thus, the total rainwater harvesting capacity of roof top area of the industry is about 146.625 m^3 per hour.
- Assuming retention time of 0.25 hour in the recharge pit, the design volume for the recharge pit is 146.625/4 = 36.66 m^3

- Let us provide recharge pit of 2 m × 2 m in size and 2.5 depth.
- Volume of one pit = 10 m^3
- Capacity of One Bore well recharge: 30 cubic meters
- Average Recharge Capacity of Pit with two well = 10 + 30 + 30 = 70
- Required no. of pits = 36.66/70 = 0.52 (01 appx.)
- The sugar plant provided 01 no. recharge pit of 2 m × 2 m × 2.5 m in size at peak rainfall intensity of 30 mm.

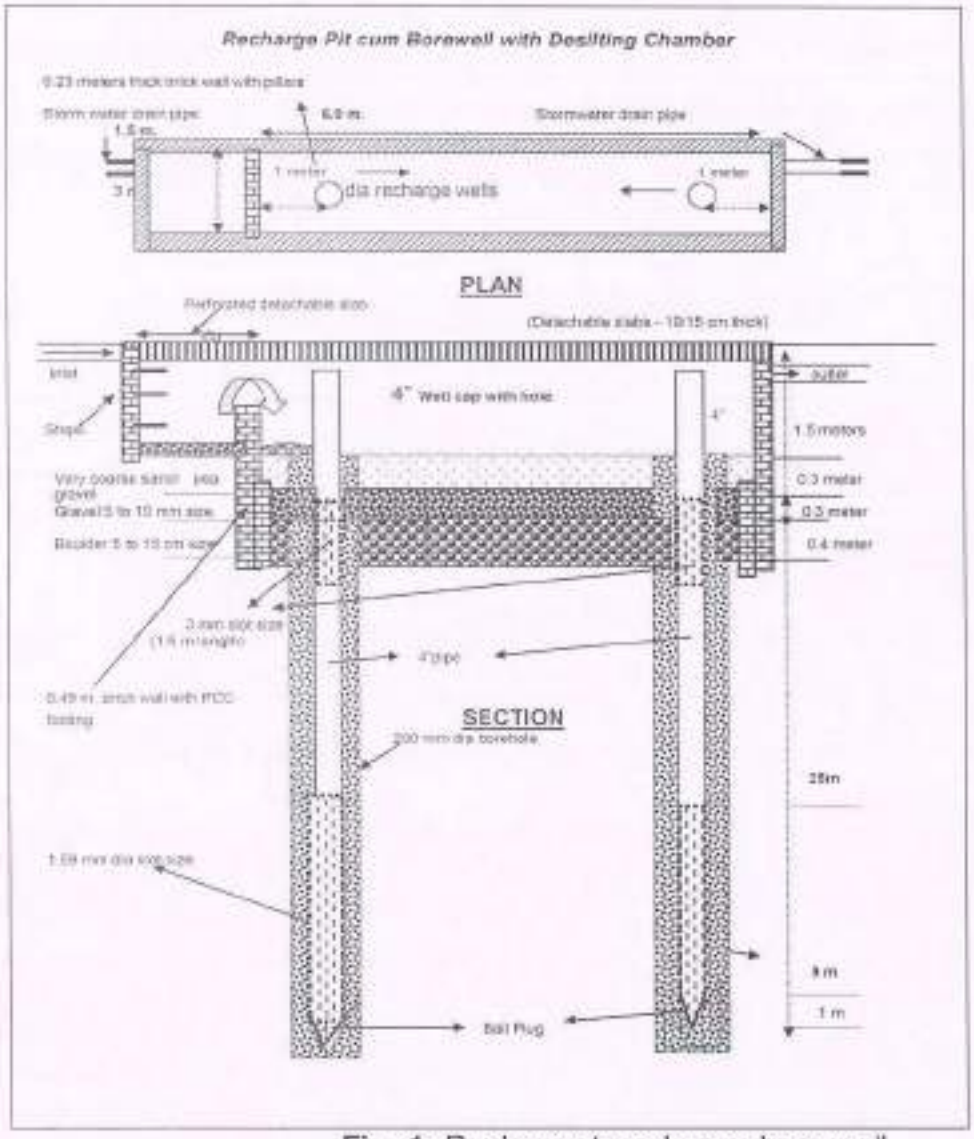

Fig. 1: Recharge trench cum bore well

Designs of Double Bore Recharge Structure:

The location of these sites is located as per the layout of storm water drains and the catch basins that are constructed. Necessary precautions are taken to avoid

any contaminated water entering into the recharge structures. The recharge structures so designed that these are operational only during the monsoon seasons. All the structures are constructed in series and the overflow from one may be accommodated to the next structure. For the plot areas having green belt necessary slopes is given so that the rainfall runoff is channelized and diverted to the recharge shafts. In implementing the recharge structures, the spacing between two consecutive recharge trenches is 50 meters apart. Settling chambers is located at suitable locations before the recharge structures so as to avoid any excess siltation to the recharge trenches (Fig. 1). Provision of Geo-textile mesh/ Johnson cloth on the top of the filter media is preferred to avoid frequent clogging of the filter media. Special care is being taken for identifying the exact locations of the recharge structures so that the ground water augmentation is optimal. The area under recharge project has hydro-geological conditions having alluvial ascertained based initial wells and subsequently tested for its intake rate.

Proper type of rig deployment and construction of recharge structures warrants for strict supervision of ground water experts while implementation. The recharge wells are tested and slug test also conducted at selected recharge wells so as to ascertain the dissipation rate of the rainfall runoff to the aquifer systems. Such an approach reflected the proper recharge mechanism at the study area.

Therefore, the total annual recharge from rain water harvesting is about 6016.51 m^3 per year against the withdrawal of 216000.00 m^3 per annum of ground water (which is around 3 % only). The balance amount of recharge is made by adopted suitable village ponds in the Fulbehad block and converting them in recharge ponds. Implementation of recharge mechanism in the study area creates a balance between the recharge vis-à-vis discharge relationships of the aquifer system. It is also maintain the ground water quality, which may deteriorate due to prolonged pumping, and the recharge of fresh rainfall runoff shall compensate it. Aquifer systems, exact depth of recharge well and its slot positions ascertained based initial wells and subsequently tested for its intake rate.

Artificial Recharge of Groundwater From the Village Pond:

The industry has adopted pond near the industrial complex in order to recharge the rain water. These village ponds are generally filled with water only

during the rainy season and during summer they are dry. The adopted these village ponds to take-up artificial recharge to ground water of the pond water which is overflowing to adjacent areas during monsoon period. According to opinion of the users, the artificial recharge to ground water in the pond areas resulted into rise in water levels in the village tube-wells as wells and increases the supply of water to the lands adjacent for irrigation purposes. Thus, recharge schemes in the ponds is benefit the area.

Recharge Calculation in Ponds

Type	Village Name	Gata No.	Area (Sq m)	Depth of Ponds (M)	Total Storage Capacity (m3)
Pond- 1	Khambharkhera	981	11409	3.0	34227
Pond- 2	Chamalpur	740	10520	3.0	31560
Total			**21929**	**3.0**	**65787**

Pond Recharge Calculations:

Pond- I:

- Now, total storage capacity of pond from above computation is about 65787.00 m^3.
- In approximation, in a year 3 filling will occur. Hence, 65787.00X3 = 197361.00 m3
- Out of 197361.00 m^3 we take 60 % filling on safer side.
- So, the total is 118416.60 m^3

Through Ponds of Villages:

Recharge can either be natural, from precipitation that falls on the earth's surface and moves on its way underground or it can be artificial, from human activities that deliberately or inadvertently replenish an aquifer. Artificial recharge may be defined as the process of replenishing groundwater by augmenting the natural infiltration of rainwater or surface water into underground formations through various methods designed depending on the topographic, geologic and soil conditions.

The industry has adopted two ponds located in village Khambharkhera and Chamalpur for artificial rain water harvesting as recharge shaft and natural percolation in ponds which resulted into creation of additional recharge which is sufficient to fulfil the mandatory requirements as per guidelines of the concerned Ministry.

Total pond area is 2.1929 hectares i.e. 21929 m^2.

Recharge Calculation in Ponds

S.No.	Area (ha)	Area (m^2)	Depth after desilting (m)	Total storage capacity	60%	No of filling	Quantity of water recharge	No. of recharge structure (@15 m^3/hr)
1.	2.1929	21929	3.0	65787	39472	3	118416	09 Nos.

- From pond, the total water available recharge is 118416.00 m^3.
- The total amount of recharge including both within premises and outside the premise is 124432.51 m^3 (within premises: 6016.51m^3 + pond outside the premises: 118416.00 m^3) in a year and withdrawal is 216000.00 m^3 per year.

Existing industry is situated in safe block Fulbehad of district LakhimpurKheri and as per Ground Water Dynamic- 2020, hence we will have to recharge 50% of total withdrawal annually.

As per CGWA (Central Ground Water Authority) guidelines total amount of rainwater to recharge for the withdrawal of 216000 m^3/annum is 108000.00 m^3/annum (50% of 216000.00 m^3/annum).

Against requirement of 216000.00 m^3/annum, the company recharge 124432.51 m^3/annum through 09 nos. of recharge structures, which is more than 50%.

Recharge Summary

Total fresh water requirement for sugar project	1200 KLD/216000.00 m^3/year
Source of water for plant activates	Ground water
RHW potential/ artificial recharge required	Maximum up to 50 % recharge criteria (safe zone)- 108000.00 m^3/year
Total artificial rainwater recharge inside the plant	6016.51 m^3/year
Total artificial rainwater recharge outside the plant	118416.00 m^3/year
Total recharge	**124432.51 m^3/year**

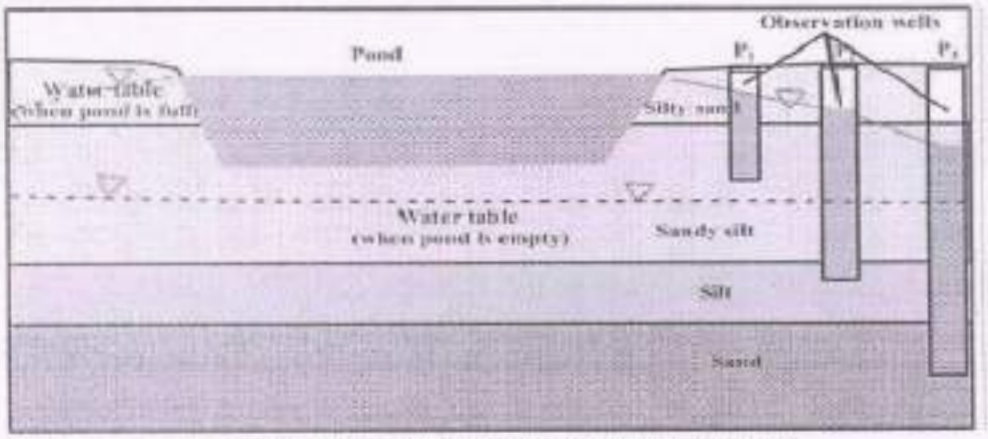

Fig 2: Schematic diagram of recharge pond

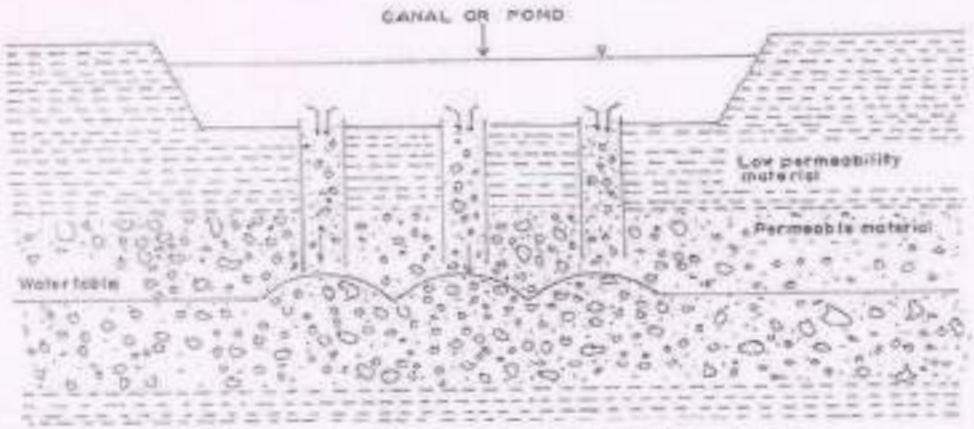

Fig 3: Cross section of pond recharge shaft

OBSERVATIONS AND RECOMMENDATIONS

- To make the people aware, the awareness programme about the conservation of ground water resources should be organized regularly.
- The water level monitoring network needs to be increased in the nearby areas.
- Community efforts and create the spirit of cooperation needed to subsequently manage sustainably ground water as a community resource.
- The BHSL Khambharkhera unit is situated in safe zone as per Ground Water Notification and this unit is doing artificial ground water recharge though in-house roof top rain water harvesting network and also through village ponds adopted outside factory premises .
- BHSL Khambharkhera unit artificial water recharge quantity is more than required quantity as prescribed by UP-Ground Water Deptt.

CONCLUSION

Based on the study, it can be concluded that the BHSL Khambharkhera unit recharges more than 50 % of the required quantity of the water as prescribed by UP-Ground Water Deptt.

Dated: 14.05.2024

14/05/24

Dr. Rajiv
Scientist/ Team Leader
Directorate of Research
Chandra Shekhar Azad University of Agriculture & Technology,
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O.A. No.691/2022 Titled as Rama Shanker Awasthi Vs. State of Uttar Pradesh & Ors. (Reply on behalf of the Respondent No.6)

1 message

Legal Vibes <legalvibes.lawfirm@gmail.com> Sun, Aug 4, 2024 at 5:53 PM
To: sanjetcs89@gmail.com, psecforest-up@nic.in, grievance@uppcb.com, chairman.seiaa.up@gmail.com, upgwd.in@gmail.com, adesai@bajajenergy.com, mcgwa-cgwb@nic.in
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Dear all,
Please find the attachment reply on behalf of the Respondent No.6 (M/s. Bajaj Hindusthan Sugar Ltd.)
Kindly accept the services.

REPLY BHSL FINAL 03.08.2024.pdf

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Thanks & Regards,

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