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IN THE NATIONAL GREEN TRIBUNAL, NEW DELHI

INDEX

IN

RESPONSE AFFIDAVIT

ON BEHALF OF

UTTARAKHAND POLLUTION CONTROL BOARD

(In response to the order dated 29.02.2024)

in

O.A. No. 530 of 2023 & O.A. No. 495 of 2023

Anuj Kumar

Applicant

Versus

State of Uttarakhand & Ors.

Respondents

with

Mohd Amjad & Anr.

Applicant(s)

Versus

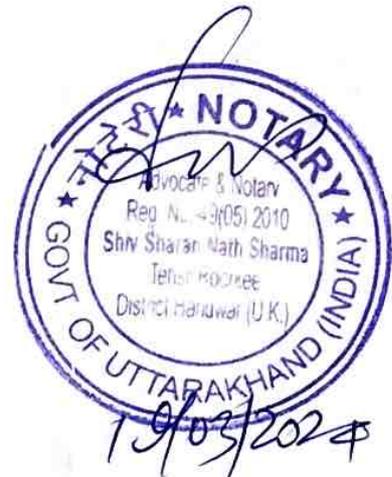
State of Uttar Pradesh & Ors.

Respondents

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Dated: March, 2024

Advocate
(Counsel for the UKPCB)



IN THE NATIONAL GREEN TRIBUNAL, NEW DELHI
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Versus

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Respondents

AFFIDAVIT of Shri Sompal Singh, aged about 52 years, S/o Late Shri Asha Ram Presently posted as Regional Officer, Uttarakhand Pollution Control Board, Regional Office, Roorkee, District Haridwar.


Deponent



I, the above-named deponent does hereby solemnly affirm and state on oath as under: -

1. That the deponent is presently posted as the Regional Officer, Uttarakhand Pollution Control Board, Regional Office, Roorkee,





District Haridwar and is duly authorized by the competent authority to sign and swear the instant affidavit.

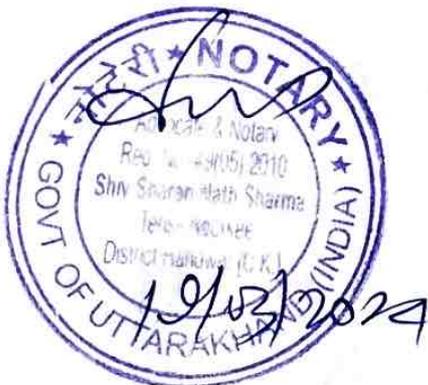
2. That the Hon'ble National Green Tribunal vide order dated 29.02.2024 was *inter-alia* pleased to direct Uttarakhand Pollution Control Board as under: -

“.....

4. *Meanwhile, State Pollution Control Board as also Central Pollution Control Board are directed to examine the above replies and file response to the partial compliance status disclosed in that reply by Respondent Nos.7 & 8.*

....”

3. That in compliance of observations made by the Joint Committee, UKPCB, vide letter bearing no. UKPCB/HO/Gen-183-717/2024/1472, UKPCB/HO/Gen-183-717/2024/1473 and UKPCB/HO/Gen-183-717/2024/14724, dated 23.02.2024, issued notices to M/s Rai Bahadur Narain Singh Sugar Mills Limited (Sugar Unit), M/s Rai Bahadur Narain Singh Sugar Mills Limited (Distillery Unit) and M/s Cavendish Industries Limited, respectively for compliance of the directions contained in the inspection report conducted in the month of September and December, 2023. Copies of notices issued to above three units is enclosed as **ANNEXURE-1**.
4. That in compliance of notices issued by UKPCB, all three unit have submitted their replies to the Board along with relevant documentary evidence.



[Handwritten signature]

5. That in compliance of order the dated 29.02.202 passed by the Hon'ble Tribunal, an inspection of all three units was carried out by the officials of Regional Office, Roorkee on 12.03.2024. Unit wise compliance status with respect to action points(s) recommended by the Joint Committee is enclosed as ANNEXURE-2.
6. It is evident from the compliance report that all three Units have complied with the recommendations of the Joint Committee, however, some recommendation(s) will be completed in due course of time.
7. The deponent is a responsible Government servant having the highest regard for the Hon'ble Tribunal and orders passed by them. The deponent has always made his sincerest efforts to carry out the orders passed by this Hon'ble Tribunal in its letter and spirit and shall continue to do so in the future.


Deponent

Verification: -

I, the deponent above named do hereby solemnly affirm and verify that the contents of the above response affidavit are true to my knowledge. No part of it is false and nothing material has been concealed there from. The legal submissions are further true as per legal advice received and believed to be true and correct. So help me God.

Verified at. Roorkee on 10th of March, 2024.

Uttarakhand


Deponent



Solemnly affirmed before me on this day of March, 2024 at Dehradun at about ~~4.25~~ AM/PM by the deponent who has been identified by the aforesaid person.

I have satisfied myself by examining the deponent who understood the contents of this affidavit.

The person has signed in my presence on the affidavit.

Identified By

[Signature]
Deponent
19/03/2024

Notary

SWORN & AFFIRMED BEFORE ME

[Signature]
Shiv Sharan Nath Sharma
Advocate & Notary
Roorkee, Haridwar (U.K.)
Reg. No. 49 (05) 10

[Signature]
Time 04.25 pm

Solo 0540/Pages 46

19/03/2024





LIFE
Lifestyle For
Environment

762

HEAD OFFICE

ANNEXURE-1

Uttarakhand Pollution Control Board
"Gaura Devi Paryavaran Bhawan"
46B, IT Park, Sahastradhara Road, Dehradun
E-mail : msukpcb@yahoo.com, Phone : 0135-2607092

Ref.: UKPCB/HO/Gen-183-717/2024/1413,

Date: 23.02.2024

SPEED POST/E-MAIL

NGT MATTER

To,

M/s Rai Bahadur Narayan Singh Sugar Mill Pvt. Ltd.,
(Sugar Mill), Laksar,
District Haridwar, Uttarakhand.

Sub.: In the matter of OA. No. 530 of 2023 titled as "Anuj Kumar Vs. State of Uttarakhand & Ors." and OA No. 495 of 2023 titled as "Mohd. Amjad & Anr. Vs. State of Uttarakhand & Ors."

Sir/Mam,

Kindly refer to orders passed by the Hon'ble National Green Tribunal (NGT) in the aforesaid matters, time to time. In compliance of orders passed by the Hon'ble NGT, the Joint Committee undertook inspection of industrial units and area in question during 14-15 September, 2023 and 11-12 December, 2023. Central Pollution Control Board has submitted the inspection reports of Joint Committee before the Hon'ble NGT for Kind consideration. The Joint Committee, in its inspection reports made following recommendations with respect to M/S Rai Bahadur Narayan Singh Sugar Mill Pvt. Ltd., Laksar, District Haridwar:

1. Inspection of September 14-15, 2023:

- i. As the unit is having a colony of approx 100 houses from which approximately 40KLD of sewage is generated hence, the unit shall install STP of adequate capacity for treatment of domestic sewage.
- ii. Unit shall construct boundary wall behind ETP to demarcate it from adjacent Laksar drain.
- iii. Unit shall carry out adequacy and performance assessment of ETP.
- iv. Unit shall make provision for gravitational flow from aeration tank to secondary clarifier for effective performance of clarifier.
- v. Unit shall submit irrigation management plan to UKPCB.
- vi. Unit shall ensure metering at all treated water consumption and discharge points and accordingly ensure proper record keeping.

2. Inspection of December 13-14, 2023:

- i. The unit shall maintain the proper record of ash disposal in low lying area.
- ii. Unit must ensure regular water sprinkling in and around the boiler and near bagasse storage area of the unit to minimize the dust dispersion in the ambient environment.
- iii. The unit shall display board for Hazardous waste storage at the hazardous waste storage area.
- iv. The unit shall relocate the oil and skimmer belt at appropriate place to collect the entire Oil & Grease content of the effluent.
- v. The unit shall install air mixing system in Equalization Tank for proper hominization of effluent.
- vi. The unit shall operate Primary Clarifier properly to avoid anaerobic condition in the tank.
- vii. The unit shall ensure proper functioning of lime dosing system.
- viii. The unit should get evaluation of its ETP for its performance from Expert Institute of Repute/Experts in the field.

Contd..... Page-2

- ix. The unit shall ensure to maintain the discharge norms as notified in the Gazette Notification G.S.R. 35(E) dated 14th January, 2016.
- x. The unit shall calibrate its OCEMS regularly.
- xi. The unit shall install flowmeter at Borewell, SRS outlet and effluent generation point in the mill.
- xii. The unit shall install flow meters to quantify the excess condensate utilizing in distillery unit through CPU.
- xiii. It is recommended that the unit shall prepare comprehensive irrigation management plan through reputed government institute/ university.
- xiv. The unit shall maintain the proper record of sludge as well as press mud generation and disposal.
- xv. The unit shall ensure proper functioning of SRS unit, so that sulphate may be efficiently removed from the effluent.
- xvi. The unit shall maintain Environment, Health & Safety protocols/rules/guidelines to avoid unwanted accidents and organized concerned periodic assessment by the competent authority.
- xvii. The unit shall maintain water line/pipelines to avoid water leakages.
- xviii. The unit shall maintain good housekeeping in the unit premises.
- xix. The unit shall maintain the record of used/waste oil properly.

The complete inspection reports of Joint Committee in the above mentioned matters are available in the website of Hon'ble NGT at: <https://greentribunal.gov.in/news-update?title=530+of+2023>.

In view of recommendation of Joint Committee, you are hereby directed to ensure compliances of above points at the earliest and submit compliance report to this office and Regional Office, Roorkee **within 7 days** of issue of this letter. In case of non-compliances of the same, strict action shall be taken in accordance of law.



(Dr. Parag Madhukar Dhakate)
Member Secretary

etc in

Copy to:-

1. **District Magistrate, Haridwar** for kind information please.
2. **Regional Officer, Uttarakhand Pollution Control Board, Regional Officer, Roorkee, District Haridwar** for information and necessary compliance.
3. Consent file of Unit.



Member Secretary

etc



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HEAD OFFICE
Uttarakhand Pollution Control Board
"Gaura Devi Paryavaran Bhawan"
46B, IT Park, Sahastradhara Road, Dehradun
E-mail : msukpcb@yahoo.com, Phone : 0135-2607092

Ref.: UKPCB/HO/Gen-183-717/2024/1474,

Date: 23.02.2024

SPEED POST/E-MAILNGT MATTER

To,

M/s Rai Bahadur Narayan Singh Sugar Mill Pvt. Ltd.,
(Distillery Unit), Laksar,
District Haridwar, Uttarakhand.

Sub.: In the matter of OA. No. 530 of 2023 titled as "Anuj Kumar Vs. State of Uttarakhand & Ors." and OA No. 495 of 2023 titled as "Mohd. Amjad & Anr. Vs. State of Uttarakhand & Ors."

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1. Inspection of September 14-15, 2023:

- i. The Unit shall ensure disposal of all spent wash i.e about 4500m³ stored in three lagoons of capacity (1925m³, 1925m³ and 1372 m³) through dryer in environmentally sound manner within two months time and thereafter, shall dismantle all the 03 lagoons.
- ii. The unit shall dispose all the stored ready bio-compost and press mud in bio-compost yard by adapting appropriate scientific method under the supervision of UKPCB within two months.
- iii. The unit shall prepare adequacy and performance assessment report of ZLD scheme for molasses based distillery as unit has expanded its production capacity from 60 KLPD to 120 KLPD and has installed spray dryers as ZLD system.
- iv. The unit shall make provision under supervision of UKPCB for flow of Laksar drain through the closed conduit pipe line starting from 500 meters upstream (u/s) to 500 meter downstream (d/s) of the unit to rule out any possibility of discharge of treated/untreated effluent into drain.
- v. It shall be the responsibility of the unit to maintain the quality of Laksar drain at downstream of the unit in synchronization with the quality at upstream of the unit. Also, unit shall be responsible for the maintenance of the closed conduit pipeline.
- vi. The Unit shall comply with ZLD norms as per CPCB direction dated 07.12.2015 issued under Section 18(1) (b) of Water (Prevention & Control of Pollution) Act, 1974.
- vii. The unit shall comply with the consent conditions issued by UKPCB and shall ensure that no fresh concentrated spent wash shall be disposed through bio-composting and entire spent wash shall be totally disposed through spray dryer.

2. Inspection of December 13-14, 2023:

- i. The unit shall install flow meters at the abstraction points on both the bore wells of sugar and distillery unit.

Contd..... Page-2

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- ii. The unit shall comply with the consent conditions issued by UKPCB and shall ensure that no fresh concentrated spent wash shall be disposed through bio-composting and entire spent wash shall be totally disposed through spray dryer.
- iii. The unit shall consume the concentrate spent wash stored in lagoons of capacity 1925m³ and 1375 m³ in dryer in environmentally sound manner thereafter, unit shall dismantle all the 02 lagoons in compliance to the recommendations of the joint committee report dated 21/11/2023.
- iv. After completion of the bio-composting cycle, the unit shall sell all the bio-compost and after that the unit shall clean the bio-compost area and shall submit photographic evidence to UKPCB.

The complete inspection reports of Joint Committee in the above mentioned matters are available in the website of Hon'ble NGT at: <https://greentribunal.gov.in/news-update?title=530+of+2023>.

In view of recommendation of Joint Committee, you are hereby directed to ensure compliances of above points at the earliest and submit compliance report to this office and Regional Office, Roorkee **within 7 days** of issue of this letter. In case of non-compliances of the same, strict action shall be taken in accordance of law.


(Dr. Parag Madhukar Dhakate)
Member Secretary

Copy to:-

1. **District Magistrate, Haridwar** for kind information please.
2. **Regional Officer, Uttarakhand Pollution Control Board, Regional Officer, Roorkee, District Haridwar** for information and necessary compliance. Regional Office, Roorkee shall carry out regular monitoring of u/s & d/s location of the Laksar drain on random basis and shall submit reports to this office.
3. Consent file of Unit.


Member Secretary



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HEAD OFFICE

Uttarakhand Pollution Control Board

"Gaura Devi Paryavaran Bhawan"

46B, IT Park, Sahastradhara Road, Dehradun

E-mail : msukpcb@yahoo.com, Phone : 0135-2607092

Ref.: UKPCB/HO/Gen-183-717/2024/1472.

Date: 23.02.2024

SPEED POST/E-MAIL

NGT MATTER

To,

M/S Cavendish Industries Ltd.,
(Formerly M/S Birla Tyres), a unit of J.K.Tyres,
Laksar, District Haridwar (Uttarakhand)

Sub.: In the matter of OA. No. 530 of 2023 titled as "Anuj Kumar Vs. State of Uttarakhand & Ors." and OA No. 495 of 2023 titled as "Mohd. Amjad & Anr. Vs. State of Uttarakhand & Ors."

Sir/Mam,

Kindly refer to orders passed by the Hon'ble National Green Tribunal (NGT) in the aforesaid matters, time to time. In compliance of orders passed by the Hon'ble NGT, the Joint Committee undertook inspection of industrial units and area in question during 14-15 September, 2023 and 11-12 December, 2023. Central Pollution Control Board has submitted the inspection reports of Joint Committee before the Hon'ble NGT for Kind consideration. The Joint Committee, in its inspection report made following recommendations with respect to M/S Cavendish Industries Ltd., (Formerly M/S Birla Tyres), a unit of J.K.Tyres, Laksar, District Haridwar:

1. Inspection of September 14-15, 2023:

- Unit shall get a water audit done by a reputed expert government technical institute and submit the report to UKPCB.
- Unit shall obtain valid Consent to operate for Unit-IV at the earliest.

The complete inspection reports of Joint Committee in the above mentioned matters are available in the website of Hon'ble NGT at: <https://greentribunal.gov.in/news-update?title=530+of+2023>.

In view of recommendation of Joint Committee, you are hereby directed to ensure compliances of above points at the earliest and submit compliance report to this office and Regional Office, Roorkee **within 7 days** of issue of this letter. In case of non-compliances of the same, strict action shall be taken in accordance of law.

(Dr. Parag Madhukar Dhakate)
Member Secretary

Copy to:-

- District Magistrate, Haridwar for kind information please.
- Regional Officer, Uttarakhand Pollution Control Board, Regional Officer, Roorkee, District Haridwar for information and necessary compliance.
- Consent file of Unit.

Member Secretary



क्षेत्रीय कार्यालय
उत्तराखण्ड प्रदूषण नियंत्रण बोर्ड
सिंचाई परिकल्प भवन परिसर, रुड़की -247667 हरिद्वार



पत्रांक-यूकेपीसीबी/आर0ओ0आर0/सा0- 147(53)/2024/1676
पंजीकृत डाक द्वारा

दिनांक: 14/03/2024
महत्वपूर्ण/एन0जी0टी0 मेट्र

सेवा में,

सदस्य सचिव महोदय,
उत्तराखण्ड प्रदूषण नियंत्रण बोर्ड,
देहरादून।

Uttarakhand Pollution Control Board
Diary No. 3945
Date 15/3/24

विषय:- मा0 एन0जी0टी0 में योजित O.A. No. 495/2023 Mohd Amjad & Anr. Vs. State of U.P.
Ors के सम्बन्ध में पारित आदेश दिनांक 14.08.2023 के अनुपालन के सम्बन्ध में।

महोदय,

कृपया उपरोक्त विषयक बोर्ड मुख्यालय के पत्रांक सं0- यूकेपीसीबी/एचओ/सा0-183-717/2024/1586 दिनांक 11.03.2024 का सन्दर्भ ग्रहण करना चाहें। जिसमें आप द्वारा मा0 एन0जी0टी0 में योजित O.A. No. 495/2023 Mohd Amjad & Anr. Vs. State of U.P. Ors के सम्बन्ध में निरीक्षण कर आख्या चाही गयी है।

उपरोक्तानुसार सम्बन्धित प्रकरण पर निरीक्षण कर आख्या आपके अवलोकनार्थ एवं अग्रिम आवश्यक कार्यवाही हेतु सादर प्रेषित की जा रही है।

संलग्नक:- यथोपरि।

भवदीय,

14/03/2024
(एस0 पी0 सिंह)
क्षेत्रीय अधिकारी

प्रतिलिपि:- अपर जिलाधिकारी महोदय, जिला- हरिद्वार को सादर सूचनार्थ प्रेषित।

क्षेत्रीय अधिकारी

Court call
16/3

In the matter of OA No.530 of 2023 titled as "Anuj Kumar Vs. State of Uttarakhand & Ors" and OA No.495 of 2023 titled as "Mohd. Amjad & Anr. Vs. State of Uttarakhand & Ors."

In compliance of order dated 29.02.2024 passed by the Hon'ble National Green Tribunal in above mentioned matter, inspection for verification of compliances were conducted by officials of Regional Office, Roorkee on 12.03.2024. Point wise compliance status is as follows:

1. M/s R.B.N.S (Sugar Unit), Laksar, Distt. Haridwar.

S. NO.	Inspection remarks	Compliance Status
A. Inspection of September 14-15, 2023		
i.	As the unit having a colony of Approx 100 houses from which approximately 40 KLD of sewage is generated hence, the unit shall install STP of adequate capacity for treatment of domestic sewage.	The unit has installed 3 Nos. of Sewage Treatment plant (STP) having installed capacity of 15 KLD each. STPs are under commissioning. Photographs of STPs are enclosed as Annexure-01 .
ii.	Unit shall construct boundary wall behind ETP to demarcate it from adjacent Laksar drain.	Unit has constructed Boundary wall behind the ETP. Photograph of boundary wall is enclosed as Annexure-02 .
iii.	Unit shall carry out adequacy and performance assessment of ETP.	The National Sugar Institute (NSI) has undertaken performance assessment of ETP of Sugar unit. ETP Validation report submitted by NSI, Kanpur is enclosed as Annexure-03 .
iv.	Unit shall make provision for gravitational flow from aeration tank to secondary clarifier for effective performance of clarifier.	The Unit has ensured that the provision gravitational flow from Aeration tank to secondary clarifier for effective performance of clarifier will be done by the end of June, 2024.
v.	Unit shall submit irrigation management plan to UKPCB.	Unit has requested to NSI, Kannpur vide email dated 08.03.2024 for preparation of irrigation management plan of sugar unit. Copy of email communicated to NSI is enclosed as Annexure-04 .
vi.	Unit shall ensure metering at all treated water consumption and discharge points and accordingly ensure proper record keeping.	Unit has provided the water meters at ETP treated water consumption points, Gardening water and Irrigation water and record is being maintained.

		Photographs of water meters is enclosed as Annexure-05.
B. Inspection of December 13-14, 2023		
i.	The unit shall maintain the proper record of ash disposal in low lying area.	Ash generation, ash disposal along with biomass consumption data is being maintained by the Unit. Copy of record is enclosed as Annexure-06.
ii.	Unit must ensure regular water sprinkling in and around the boiler and near bagasse storage area of the unit to minimize the dust dispersion in the ambient environment.	In order to minimize the dust dispersion in the ambient environment, the Unit has provided the water sprinkling systems in and around the boiler and near bagasse storage areas.
iii.	The unit shall display board for Hazardous waste storage at the hazardous waste storage area.	The unit provided the display board for hazardous waste. Photograph of display board is enclosed as Annexure-07.
iv.	The unit shall relocate the oil and skimmer belt at appropriate place to collect the entire oil & Grease content of the effluent.	The unit has relocated the oil and skimmer belt at appropriate location to collect the entire Oil & Grease content of the effluent. Photograph is enclosed as Annexure-08.
v.	The unit shall install air mixing system in Equalization Tank for proper hominization of effluent.	The unit has installed air mixing system in Equalization tank for proper hominization of effluent. Photograph of same is enclosed as Annexure-09.
vi.	The unit shall operate primary Clarifier properly to avoid anaerobic condition in the tank.	At the time of inspection, Primary clarify was working properly.
Vii.	The unit shall ensure proper functioning of lime dosing system.	The unit has modified the lime dosing system for proper functioning.
viii.	The unit should get evaluation of its ETP for its performance from Expert Institute Repute/Experts in the field.	The National Sugar Institute (NSI) has undertaken performance assessment of ETP of Sugar unit. ETP Validation report submitted by NSI, Kanpur is already enclosed as Annexure-03.
ix.	The unit shall ensure to maintain the discharge norms as notified in the Gazette Notification GSR 35(E) dated 14 th January, 2016.	At the time of inspection, ETP was in operation. ETP outlet sample analysis report showed pH-7.12, BOD-20 mg/L, COD-110 mg/L & TSS-30 mg/L. Analysis report of ETP outlet is enclosed as Annexure-10.

x.	The unit shall calibrate its OCEMS regularly.	OCEMS provided by the Unit are being calibrated regularly.
xi.	The unit shall install flowmeter at Borewell, SRS outlet and effluent generation point in the mill.	The unit has installed flow meter at Bore well, SRS outlet and at effluent generation point in the mill. Photographs are enclosed as Annexure-11.
xii.	The unit shall install flow meters to quantify the excess condensate utilizing in distillery unit through CPU.	The unit has provided flow meter to quantify the excess condensate utilizing in distillery unit through CPU.
xiii)	It is recommended that the unit shall prepare comprehensive irrigation management plan through reputed government institute/university.	Unit has requested to NSI, Kannpur vide email dated 08.03.2024 for preparation of irrigation management plan of sugar unit. Copy of email communicated to NSI is enclosed as Annexure-04.
xiv.)	The unit shall maintain the proper record of sludge as well as press mud generation and disposal.	Record of generation and disposal of sludge and press mud is being maintained properly.
xv)	The unit shall ensure proper functioning of SRS unit, so that sulphate may be efficiently removed from the effluent.	At the time of inspection, Sulphate Removal System (SRS) was found in operation
xvi)	The unit shall maintain Environment, Health & Safety protocols /rules/guidelines to avoid unwanted accidents and organized concerned periodic assessment by the competent authority.	Protocols / Rules/ Guidelines related environment, health & Safety to avoid unwanted accidents are being followed.
xvii)	The unit maintain water line/pipelines to avoid water leakage.	The unit has maintained waterline/pipelines to avoid water leakages.
xviii)	The unit shall maintain good housekeeping in the unit premises.	Efforts are being made for maintaining good housekeeping in the unit premises.
xix)	The unit shall maintain the record of used/waste oil properly.	The unit has maintained the records of used/waste oil.

3

SC

2. M/S R.B.N.S (Distillery Unit), Laksar, Distt. Haridwar:

S. No.	Inspection Remarks	Compliance Status
A. Inspection of September 14-15, 2023		
i.	The unit shall ensure disposal of all spent wash i.e. about 4500 m ³ stores in three lagoons of capacity (1925 m ³ , 1925 m ³ and 1372 m ³) through dryer in environmentally sound manner within two months' time and thereafter, shall dismantle all the 3 lagoons.	Unit has disposed the spent wash stored in lagoons through Spray Dryer and dismantling work was under progress and same will be completed by the end of June, 2024. Lagoon's capacity is restricted to 7 days concentrated spent wash storage capacity i.e. 4186 M ³ , as per direction of CPCB/UKPCB.
ii.	The unit shall dispose all the stored ready bio-compost and press mud in bio-compost yard by adapting appropriate scientific method under the supervision of UKPCB within two months.	All bio-compost will be sold out by the end of June 2024 and thereafter unit will clean the Bio compost area.
iii.	The unit shall prepare adequacy and performance assessment report of ZLD scheme for molasses based distillery as unit has expanded its production capacity from 60 KLPD to 120 KLPD and has installed spray dryers as ZLD system.	The National Sugar Institute (NSI) has undertaken performance assessment of ETP of distillery unit from 19-20 December, 2023. ETP Validation report submitted by NSI, Kanpur is enclosed as Annexure-12 .
iv.	The unit shall make provision under supervision of UKPCB for flow of Laksar drain through the closed conduit pipe line starting from 500 meters upstream (u/s) to 500 meter downstream (d/s) of the unit to rule out any possibility of discharge of treated/untreated effluent into drain.	The unit will make necessary provision to provide the Conduit pipe line by the end of June, 2024 in order to avoid possibility of discharge of effluent into Laksar drain.
v.	It shall be the responsibility of the unit maintain the quality of Laksar drain at downstream of the unit in synchronization with the quality at upstream of the unit. Also unit shall be responsible for the maintenance of the closed conduit pipeline.	Upstream and downstream water quality assessment of Laksar drain is being undertaken by the UKPCB on monthly basis.

3

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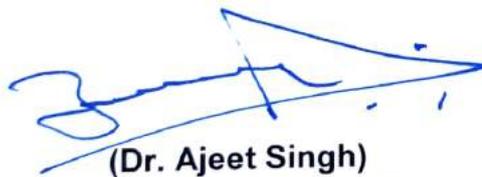
vi.	The unit shall comply with ZLD norms as per CPCB direction dated 7.12.2015 issued under section 18(l) (b) of water (Prevention & Control of Pollution) Act, 1974.	The Unit is complying with ZLD norms as per CPCB direction dated 07.12.2015 issued under Section 18(1) (b) of Water (Prevention & Control of Pollution) Act, 1974.
vii.	The unit shall comply with the consent conditions issued by UKPCB and shall ensure that no fresh concentrated spent wash shall be disposed through bio-composting and entire spent wash shall be totally disposed through spray dryer.	The unit is complying with the consent conditions issued by UKPCB. Unit has also ensured that no fresh concentrated spent wash will be disposed through bio-composting and entire spent wash will be disposed through spray dryers.
B. Inspection of December 13-14, 2023		
i.	The unit shall install flow meters at the abstraction points on both the bore wells of sugar and distillery unit.	The Unit has installed water flow meter at Bore wells of sugar mill and distillery unit. Photographs of borewell and water meter is enclosed as Annexure-13 .
ii.	The unit shall comply with the consent conditions issued by UKPCB and shall ensure that no fresh concentrated spent wash shall be disposed through bio-composting and entire spent wash shall be totally through spray dryer.	The unit is complying the consent conditions issued by UKPCB. Unit has also ensured that no fresh concentrated spent wash will be disposed through bio-composting and entire spent wash will be disposed through spray dryers.
iii.	The unit shall consume the concentrate spent wash stored in lagoons of capacity 1925 and 1375 m ³ in dryer in environmentally sound manner thereafter, unit shall dismantle all the 2 lagoons in compliance to the recommendations of the joint committee report dated 21.11.2023.	Unit has disposed the spent wash stored in lagoons through Spray Dryer and dismantling work was under progress and same will be completed by the end of June, 2024. Lagoon's capacity is restricted to 7 days concentrated spent wash storage capacity i.e. 4186 M ³ , as per direction of CPCB/UKPCB. At the time of inspection, dismantling work was under progress. Photograph is enclosed as Annexure- 14 .
iv.	After completion of the bio-composting cycle, the unit shall sell all the bio-compost and after that the unit shall clean the bio-compost area and shall submit photographic evidence to UKPCB.	All bio-compost will be sold out by the end of June 2024 and thereafter unit will clean the Bio compost area.

3

JK

3. M/S Cavendish Industries Ltd, Vill. Khedimubarakpur, Tehsil-Laksar, Distt. Haridwar:

S. NO.	Inspection Remarks	Compliance Status
Inspection of September 14-15, 2023		
i.	Unit shall get a water audit done by a reputed expert government technical institute and submit the report to UKPCB.	<p>The unit has submitted water audit reports carried out by National Productivity Council, Regional Directorate, Kanpur in the month of October, 2023. Copies of Water Audi Report for the Unit-III and Unit-II & IV are enclosed as Annexure- 15 & 16.</p> <p>As per audit report of Unitt-III, the actual water consumption of unit is 493.3 KLD as against the 622 KLD permitted by CGWA. However, Audit report recommended that freshwater consumption can be reduced up to 7.6 %.</p> <p>In case of Unit-II & IV, actual water consumption is 1014.6 KLD as against the 1253 KLD permitted by the CGWA. However, Audit report recommended that further 6.3 % of freshwater consumption can be reduced.</p>
ii)	Unit shall obtain valid Consent to operate for Unit-IV at the earliest.	The unit has obtained valid Consolidated Consent & Authorization (CCA) from UKPCB. Copy of CCA order is enclosed is Annexure-17.



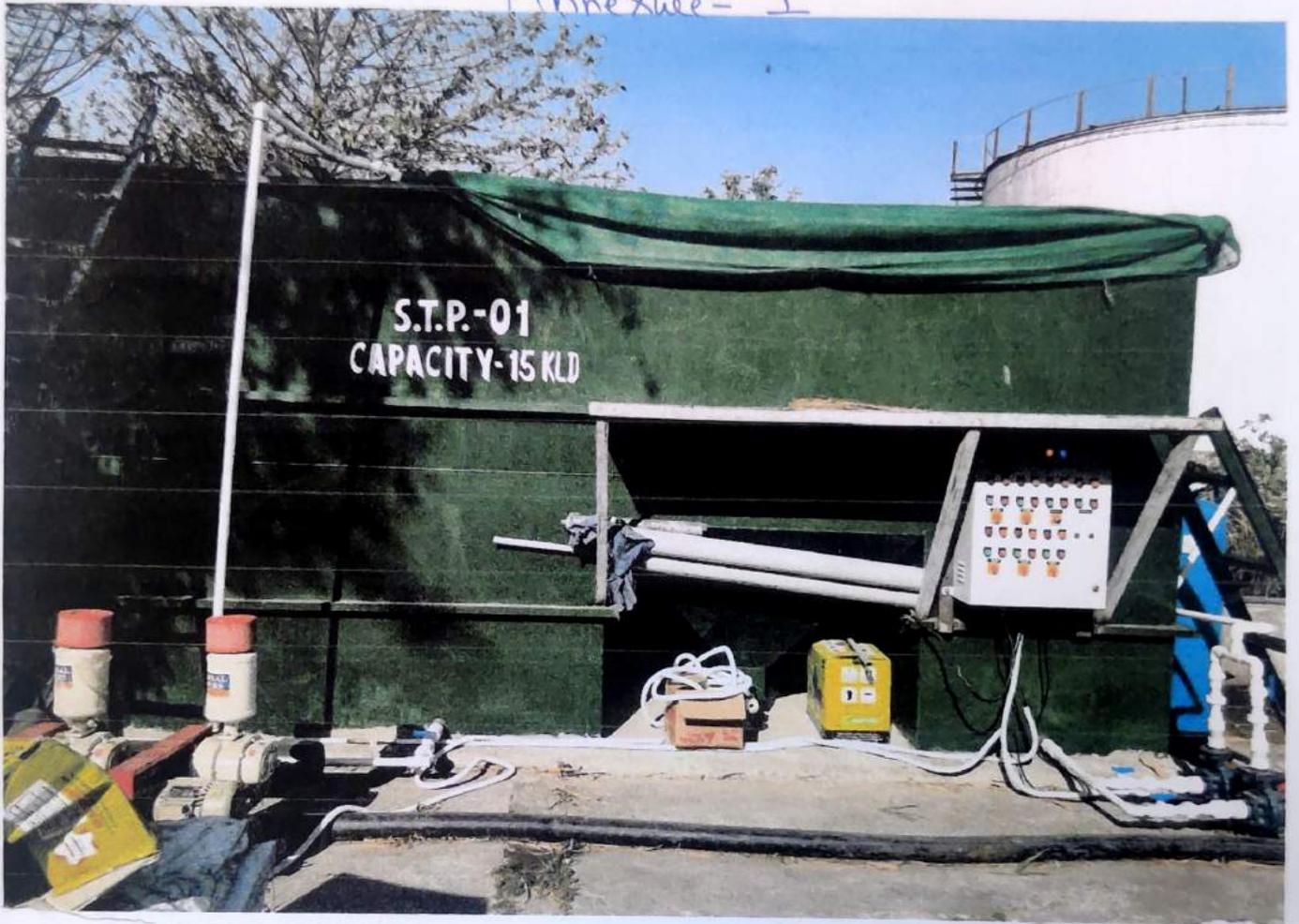
(Dr. Ajeet Singh)
Assistant Scientific Officer
UKPCB, Regional Office,
Roorkee (Haridwar)



(S.P. Singh)
Regional officer
UKPCB, Regional Office,
Roorkee (Haridwar)

I
Annexure - I

Annex. - 1

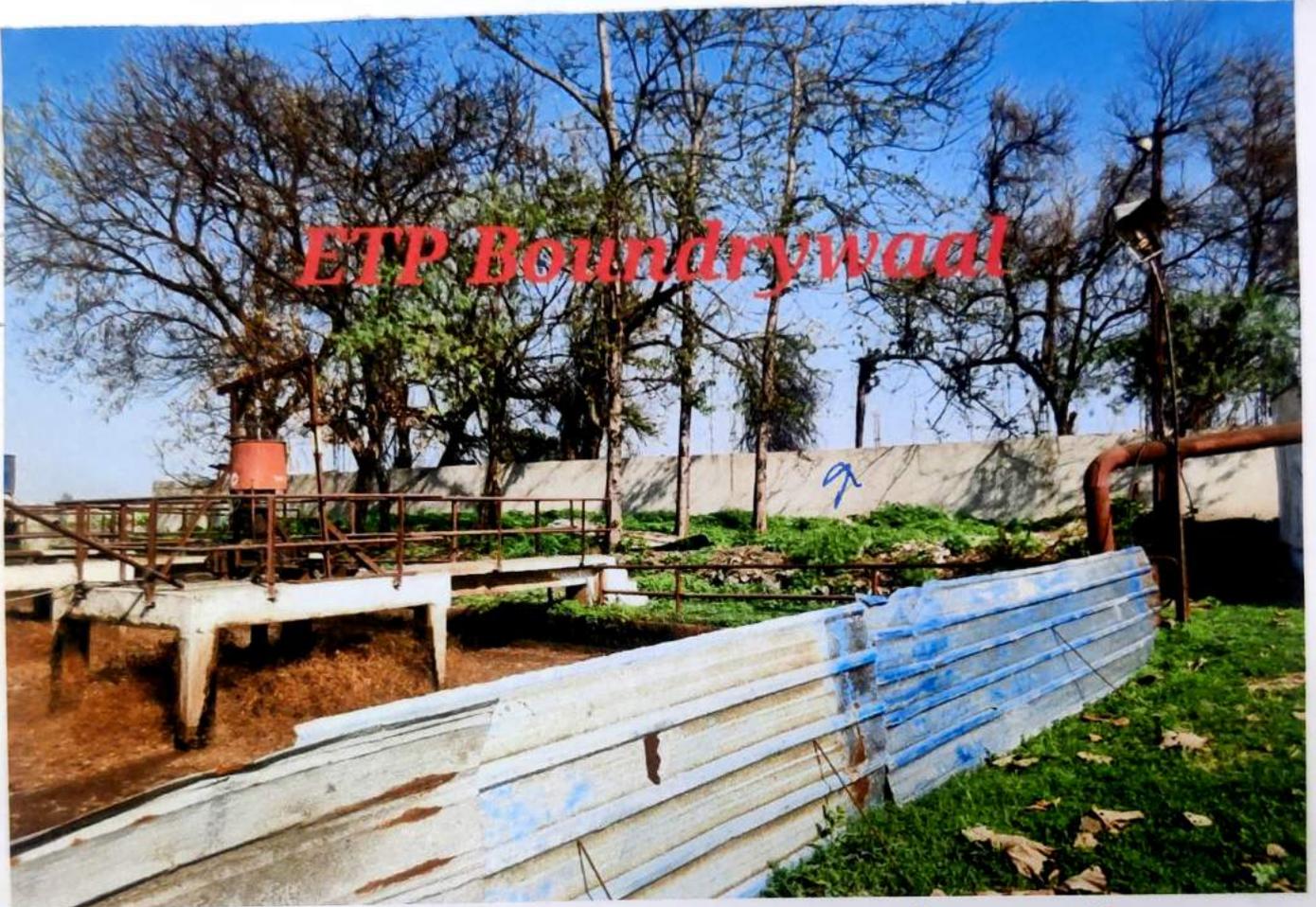


4/1



1/2





Annexure II

Annex - 2

ETP VALIDATION REPORT OF SUGAR UNIT चीनी इकाई की ईटीपी सत्यापन रिपोर्ट

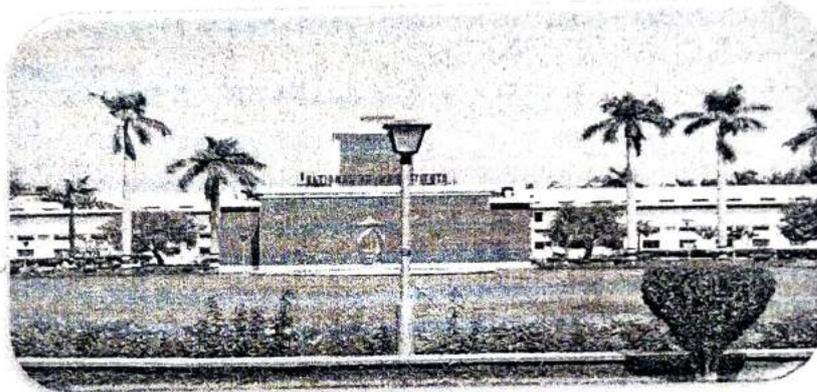
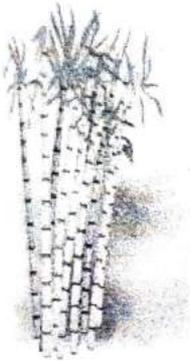
(During Season 2023-24)
(वर्ष 2023-24)

FOR

M/s Rai Bahadur Narain Singh Sugar
Mills limited. Unit- Laksar
District-Haridwar
(Uttarakhand)-247663

मेसर्स राय बहादुर नारायण सिंह
शुगर मिल्स लिमिटेड इकाई- लक्सर
जिला-हरिद्वार
(उत्तराखंड)-247663

PREPARED BY:
निर्मित द्वारा :



NATIONAL SUGAR INSTITUTE

राष्ट्रीय शर्करा संस्थान

Government of India

भारत सरकार

Ministry of Consumer Affairs, Food & Public Distribution

उपभोक्ता मामले, खाद्य एवं सार्वजनिक वितरण

Department of Food & Public Distribution

खाद्य एवं सार्वजनिक वितरण विभाग

Kanpur- 208 017 (U.P.) India

कानपुर, 208017 (उ.प्र.) भारत

Ph. +91-512-2570730, 2570273

Fax. +91-512-2570247

**VISIT REPORT SUGAR FACTORY DURING SEASON 2023-24
TO ASSESS THE PERFORMANCE OF EFFLUENT TREATMENT PLANT**

1. GENERAL INFORMATION

1	Name and address of the factory	M/s Rai Bahadur Narain Singh Sugar Mills Ltd., Laksar, Distt. Haridwar	
2	License capacity of sugar factory (TCD)	10,000 TCD, Plantation White Sugar	
3	Average actual crush rate (TCD)	7800 TCD	
4	Co-generation plant capacity (MW)	29.6 MW	
5	ETP installed capacity (KLPD)	2500 KLPD	
6	Period of visit	19.12.2023 to 20.12.2023	
7	NSI officials visited	Designation	Contact No & e-mail
	1. Vivek Pratap Singh	J.T.O (Sugar Technology)	07895755501 vivek83nsi@gmail.com
	2.Mohit Kumar	Sr. Technical Assistant	09451839769 Mahi.chauhan01@gmail.com
8	Factory officials interacted	Designation	Contact No & e-mail
	1. Sh. S.P Singh	General Manager	7830778880 edprbns@yahoo.com
	2.Sh. Rambir Singh	Sr. DGM (P)	8077757035

2. OPERATIONAL INFORMATION

S.NO.	PARTICULAR	STATUS/ QUANTITY	REMARK
1	Fresh water abstraction		
	a. No & capacity of bore well	01 nos., 1x 180 m ³ /hr	
	b. Installation of flow meters	Yes	
	c. Recording & maintaining of log books of water abstraction	Yes,	
	d. Measurement facility of fresh water used in sugar plant & maintaining of log books	Yes,	16.25 m ³ /hr
	e. Measurement facility of fresh water used at co-generation & maintaining of log books	Yes	
	f. Measurement facility of fresh water used for human needs, residential buildings & maintaining of log books	Yes,	
	(photocopy of log books to be enclosed)	Average fresh water consumption : 50 litre/ton of cane @7800 TCD crush rate	Annexure 1
2	Measurement of Cold water usage		
	a. Power turbine	Yes,	565.00 m ³ /hr
	b. Fibrizer & other cane preparatory devices	Yes,	
	c. Mills & drives	Yes,	
	d. DM/RO plant at boilers	Yes,	Records not provided
	f. SO ₂ gas cooling	Yes,	20 m ³ /hr
	g. B & C massecuites cooling	No	
	(photocopy of log books to be enclosed)		Annexure 2
3	Measurement of hot water usage		
	a. Imbibition water at mills	Yes,	130 m ³ /hr
	b. Filter cake wash water	Yes,	16.6 m ³ /hr
	c. Pan boiling, molasses conditioning	Yes,	15 m ³ /hr
	d. Wash water at B & C centrifugal machine	Yes,	18.75 m ³ /hr
	e. Wash water at A centrifugal machine	Yes,	15.40 m ³ /hr
	(photocopy of log books to be enclosed)		Annexure 3
4	Measurement of effluent generation		
	a. From mill house	No separate flow meter available	
	b. From boiling house		
	c. From steam generation		

	d. Spray pond/ Cooling tower over flow (Treated Separate in SRS System)	Magnetic flow meter	8.5 m ³ /hr
	e. Gross effluent generation at ETP inlet (photocopy of log books to be enclosed)	Ultrasonic V – notch flow meter	48 m ³ /hr Annexure 4
5	Cooling arrangement & recirculation of cooling water		
	a. at Power turbine	Yes,	Arrangement of cooling of recirculation water is being done by the spraying the water through cooling tower 500 m ³ /hr in cold water UGR's (250 +625 m ³).
	b. at Mill drives & mill bearings	Yes	
	c. at Fibrizer & other cane preparatory devices	Yes	
	d. at SO ₂ gas coolers	Yes,	Separate 02 no.FRP cooling tower of capacity 50m ³ /hr installed in series in 500 m ³ other cold water UGR.
	e. at B & C Masecuite cooling	Yes,	
	f. Surplus condensate	Yes,	
6	Construction of small pits near various pumps to collect gland cooling water for recirculation	No	
7	Construction of Hazardous tanks of adequate capacity to collect wash water generated during chemical/ mechanical cleaning of evaporators and discharging it in a controlled manner	No	
8	Installation of CPU (Condensate Polishing Unit) and circulation of polished condensate to co-generation plant cooling towers as a makeup water for more than 45kg/cm ² working pressure boilers and to other purposes.	No	
10	Closed loop hot and cold water circulation systems	Yes	
11	Sulphate removal system installed for spray pond/ process CT over flow. (system details with flow diagram to be enclosed	Yes	Drawing attached.

12	Retention/contact time in various units of ETP	48.00 m ³ /hr @ 7800 TCD , i.e 148 litres/ton of cane@ 7800 TCD	61.66 m ³ /hr, i.e 148 litres/ton of cane@ 10000 TCD	Remarks
	a. Bar screen chamber/Skimmer	No bar screen chamber		
	b. Oil & grease trap chamber(2x3x5)=30 m ³	37 min	30 min	Inadequate
	c. Equalization tank without aeration (13x11x3)=429 m ³	8 Hrs.	7 Hrs	Inadequate (Aeration not provided)
	d. pH correction tank	No separate pH correction tank available.		
	e. Primary clarifier Dia.=12 m & depth=3.9 m, Volume=440 m ³	9 hrs.	7 hrs	Adequate
	f. Aeration tank 31x16x3=1488 m ³ , with 04 no's surface aerator.	30 hrs.	24 hrs	Inadequate (Diffused aeration not provided)
	g. Secondary clarifier Dia,=16m & depth=3.9 m, volume=783	16 hrs.	12 hrs	Adequate
	h. Multi grade filter, Dia. =2m, H=2m	15 m ³ /m ² /hr	19.9 m ³ /m ² /hr	Inadequate
	i. Activated carbon filter Dai=2m,H=2m	15 m ³ /m ² /hr	19.9 m ³ /m ² /hr	Inadequate
	j. Sludge drying bed	0.06 m ³ /tch	0.06 m ³ /tch	Adequate

13	ETP Analysis (performance parameters), average value	As per record	As per sample taken during the visit
A	ETP Inlet		
	a. Effluent flow rate (m ³ /hr)	48 m ³ /hr i.e. 148 liters /ton of cane at Avg 7800 TCD.	47.5 m ³ /hr
	b. pH	8.5	7.8
	c. COD (mg/L)	250	350
	d. BOD (mg/L)	130	150
	e. TSS (mg/L)	240	310
	f. TDS (mg/L)	450	560
B	ETP Outlet		
	a. Treated effluent flow rate (m ³ /hr)	45.4 m ³ /hr	44.2 m ³ /hr
	b. pH	7.5	7.1
	c. COD (mg/L)	88	120
	d. BOD (mg/L)	15	29
	e. TSS (mg/L)	13	22
	f. TDS (mg/L)	350	410
C	ETP Analysis (other parameters), average value		
	a. MLSS (mg/L)	3000	2000
	b. DO (mg/L)	1.8	2.5

D	Sulphate removal system analysis		
	Inlet		
	a. Effluent flow rate((m ³ /hr)	09	8 m³/hr
	b. Sulphur (mg/L)	120	520
	outlet		
	a. Effluent flow rate((m ³ /hr)	8.5	7.9 m³/hr
	b. Sulphur (mg/L)	85	390
14	Storage of treated effluent		
	a. No & size of lagoons	Not available	
	b. Lagoon type- permeable/impermeable	NA	
15	Recirculation of treated effluent in sugar plant		
	consumption points	Quantity consumed	Measured/Estimated
	a. Farmers & Horticulture	No	Not Measured
	b. Molasses tank cooling	Yes	
	c. Makeup cooling tower	Yes	
16	Operation and maintenance staff of ETP (shift wise)		
	Name & designation	Experience	Remark
	1. Bhuvnesh Kumar 2. Dinesh kumar 3. Ravindra Kumar 4. Janeshwar 5. Indrajeet Shah 6. Manoj Kumar 7. Mohit Kumar 8. Anurag Kumar 04 No's	17 years 16 years 10 years 10 years 06 years 08 years 08 years 05 years	Dy. Manager Chemist Chemist Chemist Operator Operator Operator Operator Helpers
		STATUS	REMARK
18	Analytical facility (laboratory)	No	
19	Adoption of rainwater harvesting system	No	
20	Dry cleaning of factory floors etc. using bagasse	Yes,	In boiling house

3. OBSERVATIONS AND RECOMMENDATIONS:

1. Although the factory keeps track of the multiple log books correctly, they should be printed in the specified format.
2. At ETP, the bar screen chamber is not available. The same needs to be provided.
3. A well-designed separate pH correction tank and diffused aeration in an equalization tank may be provided at the ETP.

4. For increased efficiency in the ETP, a diffused aeration system may be installed in place of the surface aerators in the aeration tank.
5. The oil and grease removal chambers, equalization, Aeration tank & tertiary treatment (MGF/ACF) unit of the ETP are found to be insufficient capacity, the other ETP units have sufficient capacity at both the running and licensed capacities while taking into account the effluent generation rate of 148 liters/ton of cane.
6. The factory has implemented a sulphate removal system (separate from ETP). A satisfactory system operation was observed.
7. Installation a hazardous tank in the evaporator station with a sufficient capacity for chemical washing collection is recommended.
8. At the ETP site, an analysis laboratory for ETP effluents should be constructed.
9. The plant needs to design an irrigation strategy for utilization of treated effluent and to install a rainwater collection system.
10. The quantity and quality of treated effluent was found with in the norms of CPCB. However, for the proper measurement of total effluent should be measured through the digital volumetric flow meter instead of v-notch.
11. The calibration of all the flow meters and OCEMS should be properly carried out and recorded.

4. DOCUMENTS ATTACHED

1. DMR for period from 03.12.2023 to 18.12.2023.
2. Photocopy of data recorded on log books of fresh water abstraction and consumption.
3. Recorded Analysis Report of ETP & sulphate removal system operational parameters carried out by the factory.
4. OCEMS recorded data e.g. flow rate, pH, COD, BOD, TSS etc. sent on CPCB server during the visit.
5. Spray pond / process CT over flow treatment process details
6. ETP details with flow diagram.
7. Water balance calculation submitted by the factory

Vivek
23/01/2024
(Vivek Pratap Singh)

Junior Technical Officer (Sugar
Technology)

NATIONAL SUGAR INSTITUTE
MINISTRY OF CONSUMER AFFAIRS & PUBLIC DISTRIBUTION
DEPARTMENT OF FOOD & PUBLIC DISTRIBUTION
KANPUR

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Annexure-4

Annexure - IV and XII

Deputation of Team

From: laksar sugar (edprbns@yahoo.com)

To: nsikanpur@nic.in

Cc: director.nsi@gov.in

Date: Friday, 8 March, 2024 at 10:59 am IST

Ref. No.GM/01/IC/

Dated – 8.03.2024

To,
The Director
National Sugar Institute,
Kalyanpur,
Kanpur

Dear Sir,

We are in great need for a irrigation management plan of treated water at the earliest.

Please depute your team at the earliest for irrigation management plan purpose alongwith the fee charges.

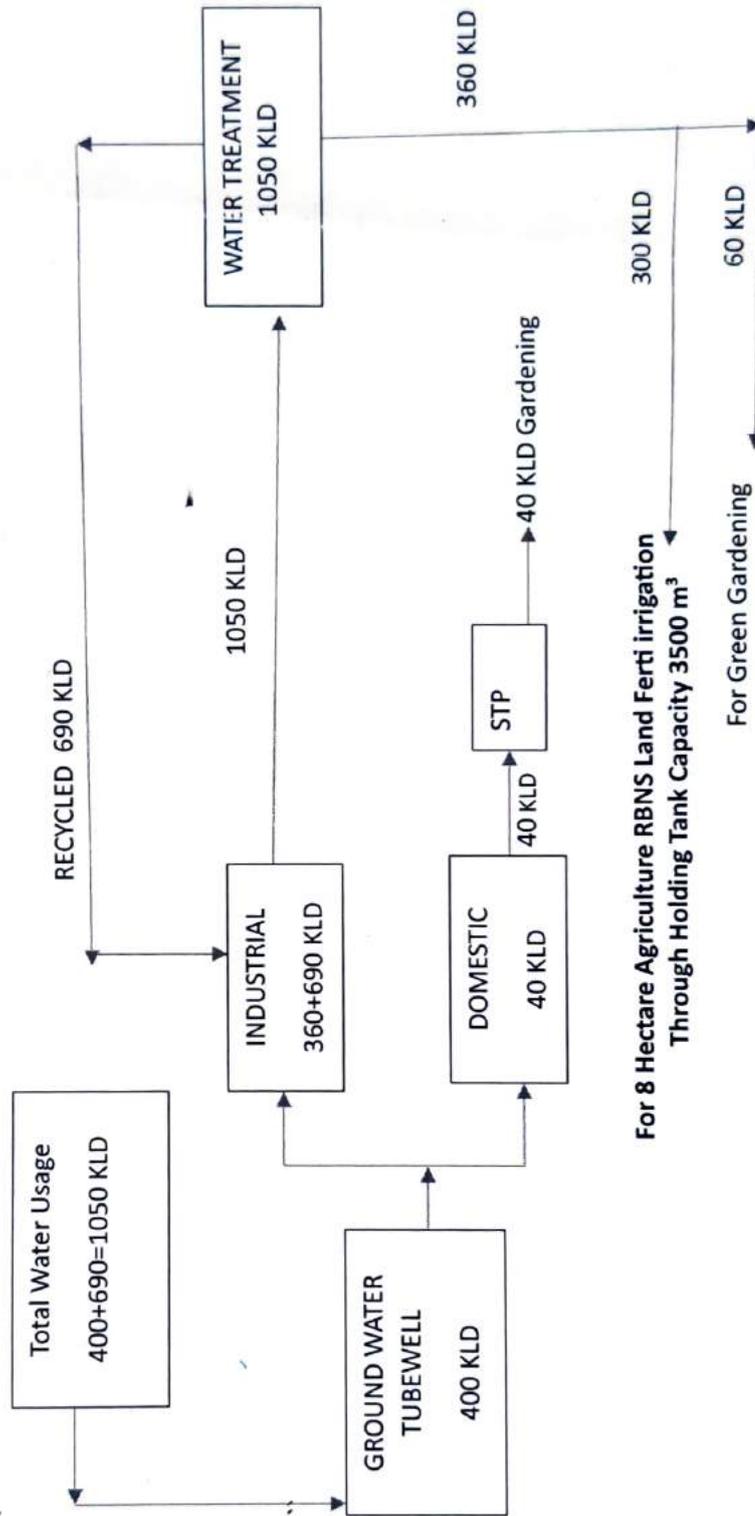
Thanking you,

Yours Faithfully,

General Manager

R.B.N.S SUGAR MILLS LTD., LAKSAR(DISTT- HARIDWAR)

WATER BALANCE FLOW CHART (FERTI IRRIGATION PLAN)



For 8 Hectare Agriculture RBNS Land Ferti irrigation
Through Holding Tank Capacity 3500 m³

Annexure - VI



ETP Treated Water
Flowmeter

5/1



Gardening water flowmeter

5/2



Boiler Ash Record

Date	Cane Crush (MT)	Bagasse Generation (MT)	Bagasse Consumption (MT)	Ash Generation (MT)	Ash at Biocompost (MT)	Ash at Low Land RBNS Area (MT)
16.11.2023	2530	710	653	5	0.5	4.7
17.11.2023	4200	1168	978	8	0.8	7.0
18.11.2023	5000	1386	1142	9	0.9	8.2
19.11.2023	5000	1389	1353	11	1.1	9.7
20.11.2023	6600	1831	1524	12	1.2	11.0
21.11.2023	6740	1865	1424	11	1.1	10.3
22.11.2023	6350	1754	1602	13	1.3	11.5
23.11.2023	7570	2098	1774	14	1.4	12.8
24.11.2023	6700	1842	1592	13	1.3	11.5
25.11.2023	7960	2202	1898	15	1.5	13.7
26.11.2023	8130	2250	1848	15	1.5	13.3
27.11.2023	8610	2382	1898	15	1.5	13.7
28.11.2023	8610	2367	1906	15	1.5	13.7
29.11.2023	8940	2441	1924	15	1.5	13.9
30.11.2023	8490	2322	1792	14	1.4	12.9
01.12.2023	8850	2408	1763	14	1.4	12.7
02.12.2023	8610	2344	1705	14	1.4	12.3
03.12.2023	8520	2321	1740	14	1.4	12.5
04.12.2023	8660	2372	1723	14	1.4	12.4
05.12.2023	7980	2173	1673	13	1.3	12.0
06.12.2023	5210	1418	1330	11	1.1	9.6
07.12.2023	8370	2243	1693	14	1.4	12.2
08.12.2023	7720	2069	1580	13	1.3	11.4
09.12.2023	9030	2394	1738	14	1.4	12.5
10.12.2023	9820	2590	1807	14	1.4	13.0
11.12.2023	9130	2415	1704	14	1.4	12.3
12.12.2023	9770	2586	1699	14	1.4	12.2
13.12.2023	9040	2396	1845	15	1.5	13.3
14.12.2023	8100	2138	1814	15	1.5	13.1
15.12.2023	10200	2687	1913	15	1.5	13.8
16.12.2023	9530	2509	1766	14	1.4	12.7

17.12.2023	9930	2610	1786	14	1.4	12.9
18.12.2023	7340	1931	1618	13	1.3	11.7
19.12.2023	10090	2635	1762	14	1.4	12.7
20.12.2023	9790	2560	1707	14	1.4	12.3
21.12.2023	9640	2520	1790	14	1.4	12.9
22.12.2023	9740	2544	1751	14	1.4	12.6
23.12.2023	10110	2642	1714	14	1.4	12.3
24.12.2023	9520	2500	1721	14	1.4	12.4
25.12.2023	9550	2511	1726	14	1.4	12.4
26.12.2023	10120	2660	1753	14	1.4	12.6
27.12.2023	9840	2588	1712	14	1.4	12.3
28.12.2023	8650	2262	1920	15	1.5	13.8
29.12.2023	9210	2408	1978	16	1.6	14.2
30.12.2023	9370	2448	2027	16	1.6	14.6
31.12.2023	9820	2583	1851	15	1.5	13.3
01.01.20234	8150	2145	1650	13	1.3	11.9
02.01.2024	6420	1680	1685	13	1.3	12.1
03.01.2024	7900	2078	1658	13	1.3	11.9
04.01.2024	7270	1930	1611	13	1.3	11.6
05.01.2024	8830	2340	1771	14	1.4	12.8
06.01.2024	8930	2380	1749	14	1.4	12.6
07.01.2024	8980	2394	1757	14	1.4	12.6
08.01.2024	9630	2570	1830	15	1.5	13.2
09.01.2024	7900	2116	1633	13	1.3	11.8
10.01.2024	8820	2338	1741	14	1.4	12.5
11.01.2024	8010	2125	1726	14	1.4	12.4
12.01.2024	7540	2037	1654	13	1.3	11.9
13.01.2024	8500	2300	1713	14	1.4	12.3
14.01.2024	8680	2344	1774	14	1.4	12.8
15.01.2025	6980	1885	1786	14	1.4	12.9
16.01.2024	6550	1779	1680	13	1.3	12.1
17.01.2024	7000	1902	1760	14	1.4	12.7
18.01.2024	5100	1373	1232	10	1.0	8.9

19.01.2024	7530	2034	1654	13	1.3	11.9
20.01.2024	6120	1662	1520	12	1.2	10.9
21.01.2024	6450	1742	1532	12	1.2	11.0
22.01.2024	6060	1638	1511	12	1.2	10.9
23.01.2024	5950	1615	1478	12	1.2	10.6
24.01.2024	6390	1722	1534	12	1.2	11.0
25.01.2024	6140	1674	1471	12	1.2	10.6
26.01.2024	6700	1817	1554	12	1.2	11.2
27.01.2024	7020	1913	1530	12	1.2	11.0
28.01.2024	7380	2027	1568	13	1.3	11.3
29.01.2024	6800	1874	1563	13	1.3	11.3
30.01.2024	7340	2038	1589	13	1.3	11.4
31.01.2024	7380	2052	1565	13	1.3	11.3
01.02.2024	4150	1146	1305	10	1.0	9.4
02.02.2024	4500	1241	1360	11	1.1	9.8
03.02.2024	5530	1525	1453	12	1.2	10.5
04.02.2024	4850	1339	1338	11	1.1	9.6
05.02.2024	3000	839	672	5	0.5	4.8
06.02.2024	4300	1180	960	8	0.8	6.9
07.02.2024	5470	1519	1267	10	1.0	9.1
08.02.2024	5300	1462	1259	10	1.0	9.1
09.02.2024	6410	1781	1500	12	1.2	10.8
10.02.2024	8130	2244	1695	14	1.4	12.2
11.02.2024	8470	2350	1735	14	1.4	12.5
12.02.2024	7860	2237	1696	14	1.4	12.2
13.02.2024	8000	2299	1709	14	1.4	12.3
14.02.2024	6110	1769	1372	11	1.1	9.9
15.02.2024	6670	1953	1460	12	1.2	10.5
16.02.2024	7130	2155	1520	12	1.2	10.9
17.02.2024	7210	2195	1529	12	1.2	11.0
18.02.2024	7250	2191	1562	12	1.2	11.2
19.02.2024	6020	1809	1346	11	1.1	9.7
20.02.2024	7210	2168	1575	13	1.3	11.3

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21.02.2024	6250	1874	1445	12	1.2	10.4
22.02.2024	6480	1930	1491	12	1.2	10.7
23.02.2024	6360	1897	1621	13	1.3	11.7
24.02.2024	6980	2069	1687	13	1.3	12.1
25.02.2024	6000	1783	1352	11	1.1	9.7
26.02.2024	5990	1765	1262	10	1.0	9.1
27.02.2024	7130	2085	1496	12	1.2	10.8
28.02.2024	6000	1742	1406	11	1.1	10.1
29.02.2024	5730	1662	1329	11	1.1	9.6

(Proforma for Display Board)

1. Date of Information update : 12-03-2024
 2. Name of the company (write in bold letters) **R. B. N. S. SUGAR MILL**
 3. Address : **LAKSAR (HARIDWAR)**
 4. Contact person : **BHUVNESH KR** Contact Number:
 Designation : **DY. MGR (ENVIRONMENT)**
 5. Total Capacity / Production **1000 T/Day**

Weeks	Date	Products	Raw Materials Consumption	Wastes
Previous week	From: 11/3/24 To: 7/11/24	2675T	26010MT	64T
Current week	From: 8/12/24 To: 12/31/24	2625T	25570MT	53T

6. Production flow chart indicating points of Waste (Solid, Liquid & gaseous) generation :
 7. Consent under Air Act & Water Act issued on : R-412019/1977, Valid up to : 31/3/24

7. (a) Conditions of waste water discharge:
 (i) Quantity of Effluent generation Per day (KLD): Trade Effluent : 1059 T Non-Trade Effluent
 (ii) Monitoring of ETP/STP :

	Discharge Quantity (KL)	Mode Of Disposal (Drain/sewer/Land)	Type & Capacity of ETP/STP	Type of Treatment in ETP/STP (Primary/Secondary/Tertiary)
ETP	1059 T/DAY	Integration, Gardening, Recycle	Tertiary & 2500 m ³ /day	
STP	40 T/DAY	Gardening	MAAR Tertiary 45 m ³ /day	✓

(iii) Quality of treated Effluent (Specify the relevant pollutant):

Prescribed parameters	pH	TSS	BOD	COD			
Prescribed Limits	5.5 to 9.0	100	30	250			
Input to the ETP	6.0	120	80	300			
Output from the ETP with Date	7.5	12	15	78			

7. (b) Condition of Air Emissions :

(i) Air Emission & Control Measures :

Capacity of Boiler/Furnace/TPH/Etc	Fuel Type	Fuel Consumption (Litrs or Kg/day)	Air Pollution Control System	Stack Height(s) Meters above ground	Capacity of D.G sets (KVA)
70290	BAGASSE	1359091 Kg	WET SCRUBBER	60 METER	625 1010

(iv) Quality of Air Emission (Sprcify the relevant pollutants for the industry):

Prescribed parameters	SPM 150 m ³ /hr	SPM		
Prescribed Limits	150 mg/m ³	150 mg/m ³		
Latest Monitoring Results of Air Emission with Date	89 mg/m ³ 29/12/24	929 mg/m ³ 29/12/24		

8. (a) Authorization issued under the Hazardous & Other Wastes (Management & Transboundary Movement) Rules] 2016 issued on Valid upto 31/3/24
 (b) Authorization granted for Hazardous waste generation under the conditions :

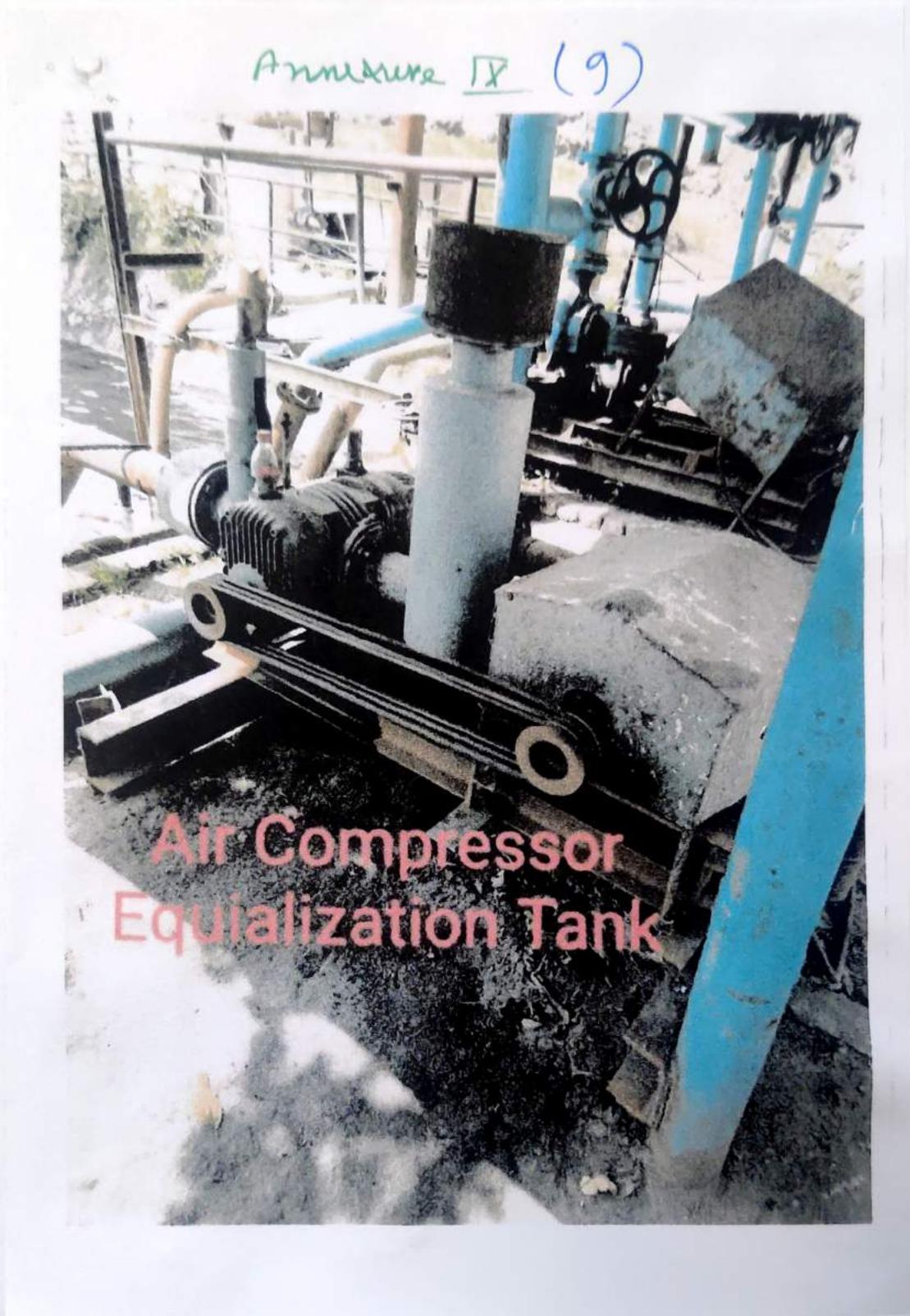
SN	Category of waste	Quantity of waste (MT)	Mode of storage	Capacity of remaining Storage (MT)	Final Disposal (Name of Agency)
	OL & Gaseous	1.0 - 1.5 Kg/day	DRUM	100 Kg	

(c) Use of Hazardous Chemicals :

Hazardous Chemicals	Quantity used	Safety Measures for storage

Annexure - VIII (2)





9/11



9/2




UTTARAKHAND POLLUTION CONTROL BOARD

Irrigation Design Building Campus, Roorkee-247667

उत्तराखण्ड प्रदूषण नियंत्रण बोर्ड

सिंचाई परिकल्प भवन परिसर, रूडकी-247667

Regional Laboratory Roorkee

Industrial Waste water Characteristics

Name and Site of Sampling Point		M/s RBNS Sugar Mills Ltd Laksar, Distt- Haridwar	
Sample Collected by		1. S.P. Singh (RO) 2. Dr. Ajeet Singh (ASO)	
Date of Sampling		12/03/2024	
Sampling point		ETP Outlet	
Nature of Sample		Grab	
S.No.	Parameters	Observation	Prescribed Standard
1	Colour	Colorless	-
2	Odour	Odourless	-
3	pH	7.12	6.5-8.5
4	BOD	20	30
5	COD	110	250
6	Total Solids	340	-
7	Total Dissolved Solids	310	-
8	Total Suspended Solids	30	100

All values are in mg/L except pH

(Rahul Negi)

Junior Lab Assistant

(Swati Kalra)

Junior Research Fellow

(Dr. Ajeet Singh)

 Assistant Scientific
Officer

(S. P. Singh)

Regional Officer

Annexure-11
Annex - 11





*Distillery Borewell
Flowmeter*



Sugar Mill Borewell



ETP VALIDATION REPORT OF DISTILLERY UNIT ' आसवनी इकाई की ईटीपी सत्यापन रिपोर्ट

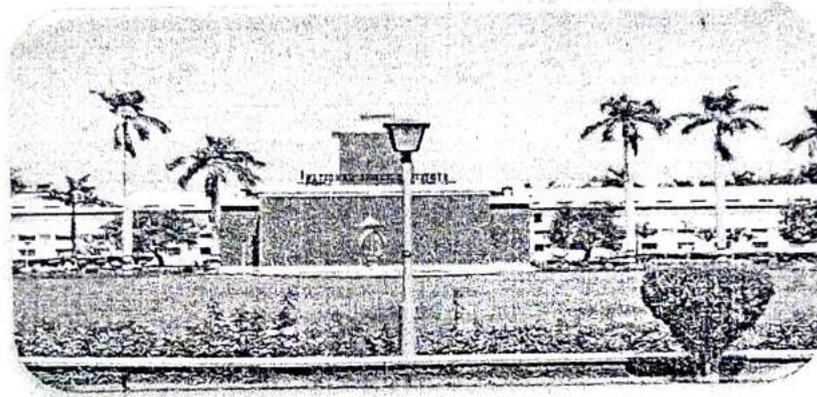
(During Season 2023-24)
(वर्ष 2023-24)

FOR

M/s Rai Bahadur Narain Singh Sugar
Mills limited. Unit- Laksar
District-Haridwar
(Uttarakhand)-247663

मेसर्स राय बहादुर नारायण सिंह
शुगर मिल्स लिमिटेड इकाई- लक्सर
जिला-हरिद्वार
(उत्तराखंड)-247663

PREPARED BY:
निर्मित द्वारा :



NATIONAL SUGAR INSTITUTE

राष्ट्रीय शर्करा संस्थान
Government of India
भारत सरकार

Ministry of Consumer Affairs, Food & Public Distribution
उपभोक्ता मामले, खाद्य एवं सार्वजनिक वितरण

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**REPORT ON VISIT TO DISTILLERY DURING SEASON FOR VALIDATION OF ETP
PERFORMANCE**

1. GENERAL INFORMATION

1	Name and address of the factory	M/s Rai Bahadur Narain Singh Sugar Mills Ltd., (Distillery division) Laksar , Distt. Haridwar ,Uttarakhand	
2	Period of visit	19 th & 20 th December 2023	
3	NSI officials visited	Designation	Contact No & e-mail
	1.Vivek Pratap Singh	JTO (Sugar Tech.)	7895755501 vivek83nsi@gmail.com
	2.Mohit Chauhan	STA	
	Factory officials interacted	Designation	Contact No & e-mail
	1.Shri S.P Singh	Unit Head	
	2.Shi Manish Rathi	AGM Distillery	
4	Year of Commissioning	2014 & 2022	
5	Manufacturing Process	Feed batch type fermentation & MPR	
6	Licensed capacity of Distillery(KLPD)	120 KLPD	
	Present Production in KLPD	100 KLPD	
	Products Manufacture KLPD		
	RS	-	
	ENA	-	
	Absolute Alcohol / Ethanol	100 KLPD	
7	Raw Material requirement per day Molasses (in Qtls)	3382 Qtls B heavy	
9	Status of consents and authorization (Validity/applied)	Valid	
10	Estimated no. of operating days during the season	330 days	
11	Process Details (attach mass balance, water balance & process flow diagram)	Annexure 01	

(Based on 1 month observation-Nov. & Dec. 2023)

2. WATER POLLUTION AND ITS CONTROL

1.	Water Supply Source	Bore Wells	
2.	No. of Bore wells	01	
3.	Water consumption (KLD)	172 KLD	
4.	Log Book Maintained Yes/No	Yes	
5.	One day reading Initial of dated 19.12.2023	50 m ³ /hr 241331-241495	Annexure 02
	Final	166 KLD	
6.	CGWA Permission	Yes	Annexure 03

- (Based on 1 month observation- Nov. & Dec. 2023)

3. WASTE WATER GENERATION (KLD)

1.	Stream/section	Quantity, m ³ /day	Disposal/utilization
2.	Spent wash generation	598	Bio-digester+ MEE
3.	Fermenter dilution process	CPU outlet + Fresh water	CPU
4.	Spent lees	120	CPU
5.	Fermenter washing	30	Recycle to fermenter
6.	Process condensate	420	CPU
7.	Floor washing	80	CPU
8.	Cooling tower blow down	80	CPU
9.	Boiler blow down	Not measured in Distillery unit	Sugar unit Boiler used
10.	DM & DA Plant regeneration water	Not measured in Distillery unit	
11.	Others (CO ₂ Plant + RO Reject water)	Not measured in Distillery unit	

- (Based on 1 month observation- Nov. & Dec. 2023)

4. BIO-METHANATION PLANT PERFORMANCE

Setting cum cooling tank capacity = 25 M³
 Setting cum cooling tank (Retention Time) = 1 hr.
 Digester design basis= Hydraulic Retention Time = 24 days
 = Organic Loading Rate = 6.0 kg/M³ /Day
 = Volume = 10,000 x 2 M³ & 7,500 M³

Type of Technology = CSTR

Date of observation-	Minimum Performance parameters	Actual Values
Feed rate, M ³ /Day	480 each	300 each
^o Brix, (Inlet/Outlet)	12.0/09.0	12.5/10.0
pH, (Inlet/Outlet)	4.5-7.80	4.5-7.88
COD, mg/L (Inlet/Outlet)	140000-60000	125000-37500
BOD, mg/L (Inlet/Outlet)	35000-1500	31000-3700
COD reduction %	60	70
BOD reduction %	85	88
Biogas generation, NM ³ /Kg of COD consumed	0.5	0.5
Biogas generation, M ³ /Day	51672	28000

Other observations related to Bio-digester

- No. of days of operation of digesters (days/annum) : 365 days

- Re-stabilization method and period required: 45 days
- How digester is maintained during ideal days?- with agitation
- Year of establishment of the digester. 2014
- How temp of digester is maintained? – through PHE
- Total biogas generated (M3/annum) and bagasse/coal saved. – Data not available.
- Whether digester has been revamped? If yes, how many times & for what purpose? – No
- Sludge generation from digester and how the sludge is disposed of? No sludge generation.
- Log Book record supporting biogas plant performance. Yes
- Present Bottle-necks/problems – No.

(Based on 1-month observation- Nov. & Dec. 2023)

5. WASTE MANAGEMENT

	Date-	Quantity	Disposal/utilization
		KLD	
1.	Sludge (Slurry fermentation)	1230 kg/Day	Compost
2.	Boiler Ash	Not measured in Distillery unit	Sugar unit Boiler used
3.	Disposal/utilization	Bio Compost	
4.	Log book maintained. Yes /No	Yes	

(Based on 1 month observation Nov. & Dec.2023)

6. INFORMATION REGARDING MEE

- Settling tank capacity before MEE = 1925 m³
- Year of installation / establishment & commissioning of MEE plant : 2014 & 2022
- Type of technology of MEE. : Multi effect evaporator
- Number of Effects with their HTA and MOC. Number of stand-by bodies and degasser provided.
 Set 1: - FFE (250 m² x 04 nos) + Forced (264 m² x 02 nos), MOC=SS304
 Set 2: - FFE (Integrated 336 m² x 03 nos), 2 FFE (350m² x 02 Nos)
 + 2 Forced (350 m² x 02 nos) + 1 stand by 292 m², MOC= SS304
- Designed feed capacity and evaporation duty of MEE (M3/day)= 840 m³ / day each
- Acceptable level of suspended solids, dissolved solids etc. in the feed : 10-11
- No of days of operations. = 330 days
- What is the frequency and duration of cleaning: with in the 02 months.
- Log Book supporting MEE plant performance.: Yes
(Annexure: 04)

(Based on 1 month observation- Nov. & Dec. 2023)

7: FURTHER TREATMENT / DISPOSAL OF CONDENSATE/CONCENTRATE

1.	Type-	Multi effect evaporator		
2.	Capacity	840 m ³ /day each		
3.	No. of Effects	Set 1: - 04 FFE+ 02 Forced Set 2: - 03 FFE (Integrated) and 02 FFE + 02 forced + 01 standby (standalone)		
4.	MEE feed rate	12.427 kg/hr (Set 1)	12.506 kg/hr (Set-2)	Remark
5.	Feed rate @ Sp.Gr.(Approximate)	12.42	12.50	
6.	Solid content in feed/brix	11.0 %	11.0 %	
7.	Water evaporation rate (Minimum)	8.714 kg/hr	8.775 kg/hr	
8.	Concentrate Generation	3.710 kg/hr	3.730 kg/hr	
9.	Solid content in concentrate Generation /brix	37.00 %	38.00 %	
10.	Steam required for water evaporation	2.17 MT	2.14 MT	
11.	Cooling water circulation rate	750 m ³	750 m ³	
12.	Power consumption for Evaporation			
13.	Feed temperature	70-80°C	70-80°C	
14.	Steam pressure/temperature	1.4Kg/cm ² / 125°C	1.4Kg/cm ² / 125°C	
15.	Steam Economy, (Kg water/kg steam)	4:1	4:1	
16.	Operation hour	24 hrs	24 hrs	
17.	Frequency of CIP	Once in 02 month	Once in 10 days	Hydro jet cleaning
18.	Quantity of CIP effluent	NA	NA	
19.	Quantity of process condensate	8714 Ltr	8775 Ltr	
20.	MEE Feed pH TSS TDS	7.1 Not determined Not determined	7.1 Not determined Not determined	
21.	Concentrate Colour Temp pH TSS TDS	Brown 70°C 7.1 Not determined Not determined	Brown 70°C 7.1 Not determined Not determined	
22.	Condensate Colour Temp pH TSS	Clear 70°C 7.8 Not determined	Clear 70°C 7.8 Not determined	

	TDS COD	Not determined 2200	Not determined 2200	
23.	Whether MEE achieving design efficiency	Yes	Yes	
24.	Whether MEE operated continuously	Yes	Yes	
25.	Details of online flow measuring device installed for MEE inlet	Mass flow meter available	Yes	
26.	Details of online flow measuring device installed for MEE outlet	Mass flow meter available	Yes	
27.	Utilisation of MEE condensate	CPU	CPU	
28.	Utilisation of MEE concentrate	Dryer/Bio-composting	Bio composting permission up to December 2024.	

(Based on one month observation: Nov. & Dec. 2023)

8. MEE OUTPUT CHARACTERISTICS

Particulars	Conc. spent wash	Process Condensate
Quantity, M3/day	178 m ³	420 m ³
pH	7.1	7.8
Temperature, degree C	70 °C	70 °C
BOD, ppm	62000	1000
COD, ppm	250000	2200
Total solids, %	38%	Not determined
Total dissolved solids, %	Not determined	Not determined
Total suspended solids, %	Not determined	Not determined
Ammonical Nitrogen (asN), ppm	Not determined	Not determined

(Based on 1 month observation –Nov. & Dec. 2023)

9. INFORMATION REGARDING CPU

1	Capacity	1050 m ³ /day
2	sources of effluent coming into CPU	Condensate + spent lees + cooling tower blow down+ Excess hot condensate
3	Quantity coming /day	750 m ³ /day
4	Inlet characteristics (Physical)	Hot (70 °C) & slightly yellow colour
5	Out let characteristics(Physical)	35 °C & colour less
6.	Quantity Utilized per day	700 m ³ /day

Date of installation of CPU Unit.: 2014

Name of plant / technology supplier. : MM Enviro. Pune

Type of technology of CPU plant: Conventional

Design capacity of CPU unit (1050 M³/day) and feed characteristics considered.

Sl.	Parameter	
1.	pH	7.8
2.	BOD	1000
3.	COD	2200
4.	TDS	700
5.	TSS	300

Low strength effluents treated though CPU& their quantities: (Process condensate, permeate, spentlees, etc).

Recovery (%) and characteristics of treated water and its further utilization details: 93 %

Is there any reject generated and how it is disposed? No reject

Total fresh water consumption after reuse of treated low strength effluents: 175 m³/day

CPU PERFORMANCE

Particulars	Mixed Influent	Treated effluent
Quantity, M3/day	750	700
Colour	Slightly yellow	Colourless
pH	7.80	7.20
Temperature, degree C	40 °C	30 °C
BOD, ppm	1080	20
COD, ppm	2250	100
Total solids, %	Not determined	Not determined
Total dissolved solids, %	700	150
Total suspended solids, %	300	30
Volatile Acids	Not determined	Not determined
Total Alkalinity	Not determined	Not determined

Log Book records supporting CPU performance - Annexure 5

10. INFORMATION REGARDING BIO-COMPOSTING

- 30 days holding tank capacity with dimensions and construction details : Yes
- Bio-compost yard details-Impervious bio-compost yard (PCC-1:3:6 or RCC-1:2:4 or brick on edge) with construction details. : Yes
- Area of impervious bio-compost yard (uncovered and covered) with bio-compost storage area: 14.02 Acres
- Number & type of turning & mixing machine : 02 No's
- Number of Bore well around compost yard : 0
- Number of Piezometers around the compost : 03 No's
- Spent wash available for bio-composting (M3/Annum) and spent wash characteristics.
- Log Book supporting bio-compost plant operations : Yes
- Bio-compost filler material availability (Press mud) : Details enclosed.
- Record of Press mud produced or purchased from outside : Yes
- Average Press mud to spent wash mixing ratio : 1:1.6
- Windrows size (Length x width x height): 56 m x3 mx 1.5 m
- Bio-compost cycle (45 days or 60 days) and number of cycle per annum : 45 days
- Bio-compost analysis report : Enclosed
- Bio-compost sold in loose or bag packing : Loose packing.

1	Active Area for Bio-composting	14.02 acres	
2	Area for press mud Storage	4.0 acres	
	Area for Ready Bio-compost storage	7.02 acres	
3	Finished compost packing facility	Yes	
4	Maturity time in days for one cycle & total cycle in year	45 days	
5	Spent wash storage capacity: Raw SW BMSW MEE	25 m ³ 1925 m ³ 1925+1372+500 m ³	
6	Availability of press mud (own) Quantity required	Own	
7	Utilization of S.W/ Conc. SW in bio-composting	With press mud	
8	Ratio of press mud to spent wash	1:1.6	
	Details of windrows		
	Number	5 Row	
	length	56 meter	
	Height	3.0 meter	
	Width of stacking	1.5 meter	
	Space between the two windrows	3 meter	
10	Equipment's Aero-tillers JCB Tractor	02 01 02	

	Loaders	02	
11	Details of registration required from agriculture department, as per new notification of Compost	Yes	
12	Arrangement for rainy season and details regarding closure of operations for 03 months during monsoon	No operation in monsoon	
13	Details of PTZ cameras provided and connectivity.	2.0	

13. Lagoon

1.	Actual Capacity of Lagoons*	Yes/No	Number	Dimensions (LxBxH)	Storage Capacity (m ³)	Approximate Volume found stored during Inspection (m ³)
	a. MEE Concentrate (for bio-composting)	Yes	02	22x25x3.5 28x14x3.5	1925 1372	1150 1250
	b. MEE Concentrate (for Incineration)	NA	NA	NA	NA	NA
	c. Details of Lagoon (if any) for storage of any other spent wash i.e., BMSW may be provided.	Yes	01	22x25x3.5	1925	750
2.	a. PTZ 360 cameras provided at Lagoon area b. Operating satisfactorily c. Connectivity to SPCB/CPCB	Yes	01	Details of Camera: Not provided User ID and Password for connectivity: Not provided Yes		

ANNEXURES:

Sl.	Description	Remarks
1.	ETP analysis report carried out as per sample taken during the visit.	Yes
2.	ETP performance report, if any analysis is carried out by external laboratory.	Yes
3.	ETP details with flow diagram. (CPU Flow Diagram)	Yes
4.	Status of consents & authorization from CPCB/ SPCB.	Yes
5.	Attach supporting documents /readings/analysis etc. as given above for a period of not less than thirty days.	Yes

- Number and location of mass flow meters installed (minimum two) with photographs: Attached.
- Date on which the online monitoring system was commissioned /connected to the server: Not provided.
- Name and contact details of the vendor who has supplied and commissioned the on-line monitoring system : Axix Nano
- Problems faced in maintaining the continuity of on-line monitoring system: No
- Green belt surrounding bio-compost yard (Photographs) : Attached
- Material and mass balance of your total distillery plant operations including ETPs showing ZLD: Yes
- Also indicate how your distillery unit is achieving steam and power balance: Yes
- Environment Management Cell-Mo Ms and necessary documents: Yes
- EC, Consent to Operate, Directions received and related documents: Enclosed
- Water conservation measures taken report (rain water harvesting etc.) : No

Conclusion and recommendation:

1. The MEE of capacity 840 m³/day to concentrate the generated spent wash are found adequate for 120 KLPD distillery.
2. The factory has condensate polishing unit (Conventional + Anaerobic) of capacity 1050 m³/day which is adequate for 120 KLPD distillery, however to enhance the quality of treated water the tertiary equipment's (MGF and ACF) followed by RO and UV may be installed.
3. The factory has drying of spent wash near about 80 % in spent wash drier followed by bio-methanation and remaining part 20 % of spent wash sent to the bio-composting. However, the factory has also planned for drying the complete concentrated spent wash through drier since January 2024 onward.
4. The factory has concentrated spent wash drier instead of incineration boiler for ZLD purposes.

Vivek
22.01.2024

(Vivek Pratap Singh)
Junior Technical Officer (Sugar Technology)

NATIONAL SUGAR INSTITUTE
An ISO 9001:2015 Certified Institute
Ministry of Consumer Affairs, Food & Public Distribution
Department of Food & Public Distribution
(Government of India)

Army-13
Annexure-13





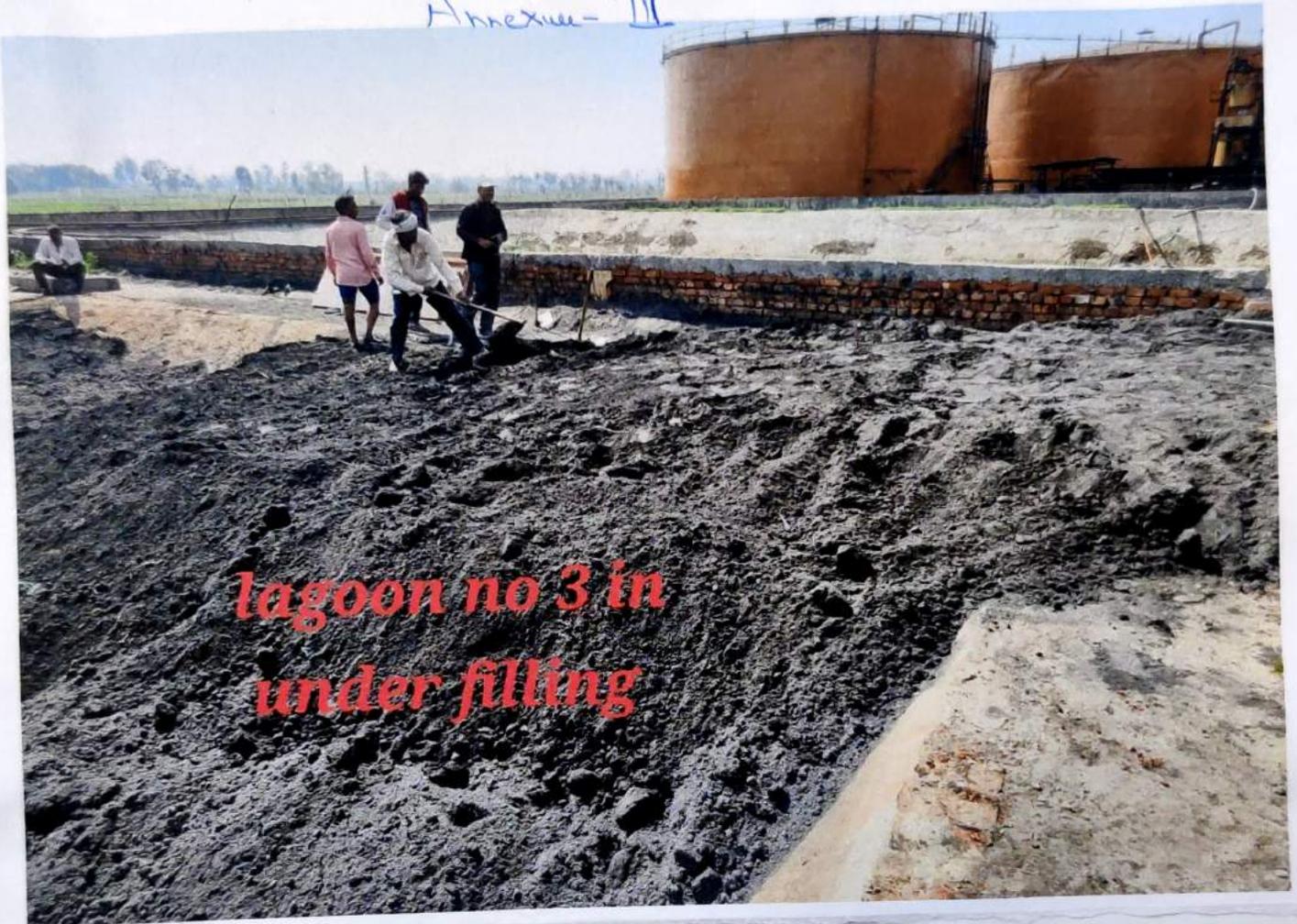
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Annexure - II

Annex-14



**lagoon no 3 in
under filling**

Confidential

Water Audit Report

(Application No- 21-4/454/UT/IND/2017)

As per the guidelines of CGWA



At

Cavendish Industries Limited

(Unit- III, A Unit of JK Tyre)

Village Khedimubarakpur, Tehsil Laksar,

Distt- Haridwar, Uttarakhand - 247663

Conducted By



National Productivity Council

Regional Directorate, Kanpur

4th Floor, Kabir Bhawan, GT Road,

Kanpur-208005, U.P.

(Ph: 0512- 2224176)

Website: -www.npcindia.gov.in

(October-2023)

ACKNOWLEDGEMENT

National Productivity Council is thankful to M/s Cavendish Industries Limited for awarding the work of “Water Audit” of its plant located at Village- Khedi Mubarakpur, Tehsil-Laksar, Distt.- Haridwar, Uttarakhand – 247663.

We express our gratitude to **Mr. Anjan Kumar Das -Vice President (Works)** for his valuable overarching support extended to this project. We are also grateful to him for the participation in discussions with audit team with tremendous patience and understanding.

We are also thankful to **Mr. Prasun Chayan Misra, Sr. Manager (HSE) and Mr. Rishu Kumar, Chief Manager (Utility)** for coordinating the study and providing all data, measurement and review support provided during and after the field study. Our sincere thanks to all respondents from different departments for clearing our doubts with tremendous patience and understanding.

We do hope that the recommendations given in this report will be useful in water conservation as well as improvement in system performance. We have made every attempt to adhere to high quality standards, in both data collection and analysis.

UJJWAL
NARAYAN
N

Digitally signed
by UJJWAL
NARAYAN
Date: 2023.12.27
13:48:06 +05'30'

Ujjwal Narayan
Certified Water Auditor
Certificate No. RGI/WA/014/2023

For Regional Director
National Productivity Council
under Ministry of Commerce and Industry, GOI
4th Floor, Kabir Bhawan, GT Road,
Kanpur-208005, U.P.

STUDY TEAM

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1	Ujjwal Narayan	DD, NPC, CWA
2	Preeti Gangwar	DD, NPC
3	Amit Kumar Purbey	PA, AEA-0321
4	Krishna Kant Dubey	PA, Envi. & Energy Engineer, EM-300297
5	Kuldeep Yadav	PA
6	Vipin Yadav	PA

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ABBREVIATIONS

ETP	:	Effluent Treatment Plant
KL	:	Kilo Litre
KLD	:	Kilo Litre Per day
kW	:	Kilo Watt
kWh	:	Kilo Watt hour
OHT	:	Overhead Tank
RWH	:	Rainwater Harvesting
RO	:	Reverse Osmosis
STP	:	Sewage Treatment Plant
SWC	:	Specific Water Consumption
WUR	:	Water Use Ratio
ERP	:	Effluent Recycling Plant
EDI	:	Electro de ionisation
HRSCC	:	High-Rate Solid contact clarifier
MGF	:	Multi grade Filter
ACF	:	Activated Carbon Filter
UF	:	Ultra filter
RO	:	Reverse Osmosis
DM	:	Demineralise Plant.

CGWA: Uttar Pradesh Ground Water Department

EXECUTIVE SUMMARY

National Productivity Council, Kanpur has conducted a detailed Water Audit Studied at AM/s Cavendish Industries Limited Unit-3 A JK Tyre Associate, Village Khedimubarakpur, Tehsil Laksar, Distt- Haridwar, Uttarakhand, during in Month of October-2023. As per NOC the Water Withdrawal Permissions from CGWA to **Cavendish Industries Limited**, is **622 m³/day** and **220810 m³/annum**. No surface water being used in the plant.

Presently the plant is using only 79% (FY-2022-23) of the abstraction limit of the plant.

The Plant has installed three numbers of bore well, all Bore wells are in operation during the water audit, water flow measurement has been done by the NPC team by Ultrasonic flow meter. The measured water flow of Bore well-1 is **105 m³/hr**, bore well-2 is **86.2 m³/hr** and bore well-3 is **82.5 m³/hr**.

On daily basis average water drawn from ground water for financial year 2022-23 from Bore well-1 is **185.2 m³/day**, bore well-2 is **221.8 m³/day**, bore well-3 is **86.3 m³/day** as per the monthly water abstraction data of plant.

Plant has installed two numbers of piezometers one is DWLR with telemetry system and one is DWLR, to monitor the level of the ground water.

The Audit is focused on improving water usage efficiency and identifying water Conservation opportunities. Accordingly, the field study and data collection for the said water audit was carried out by National Productivity Council team. This report discusses the water balance and various water saving options derived based on observation made, data collected and their analysis. The main water sources and their uses are given in table below:

Table 1: Description of water uses at the plant, FY 2022-23

Description of Water uses	m ³ /day	Water Quality	Major Usage Area	Water Use (%)
Tube well Water	493.3	Fresh Water	Plant process, Utility and Domestic uses	68.1%
STP Treated Water	57.3	Treated water		7.9%
ETP Treated Water	173.7	Treated water		24.0%
Surface water used	0.0	Fresh Water		0.0%
Total Water Usage (Raw + Treated)	724.2			100%

Table 2: Annual Raw water withdrawal, FY2022-23

Source of Water	m ³ /year	Water Use (%)
Tube well -1	65749	37.5%
Tube well -2	78726	45.0%
Tube well -3	30631	17.5%
Total Withdrawal	175106	100.0%

Specific water consumption in the plant process based on the production detail and total water abstraction is described below in the table. Specific water consumption for the FY - 2022-23 is 2.2 kL/MT of production.

Table 3: Specific water consumption, KL/MT production

Year	FY 2022-23	FY 2022-23
SWC, KL/MT	2.4	2.2

WATER MANAGEMENT SUMMARY

Table 4: Fact File- Cavendish Industries Limited, Unit-III, Laksar, UK

Plant Address	Village Khedimubarakpur, Tehsil Laksar, Distt- Haridwar, Uttarakhand - 247663
Plant zone	Safe Zone
Depth of ground water table	2.73 Meter
Type of products	Tyre
No. of working days/year	355 Days (FY 2022-23)
Cost of ground water abstraction and pumping	a) Bore well pumping cost - Rs 1.4/ m ³ b) CGWA abstraction cost- Rs 2.00 / m ³
Power Supply Cost (2022-23)	Rs 8.10 per kWh
Name of the project	Water audit of Cavendish Industries Limited Unit- iii as per guideline of CGWA
CGWA NOC validity period	17-01-2024
Ground water requirement as per the NOC	622 KLD
Water audit report prepared by	Certified Water Auditor, (CWA)
Is water audit as per the format	Yes
Total actual water consumption	493.3
Overall water balance chart	Industrial Process (Utility)- 366.1 KLD Other uses- 127.1 KLD

The water audit study of the plant has identified various water & cost saving opportunities which are discussed in the report. The summary of recommendations is given in table below. **It is estimated that by implementing NPC suggested schemes;**

The plant can reduce its freshwater consumption by 7.6 %. It was also noticed that there is no scope for further reduction of freshwater use in the process as water use is already optimized unless any technology advancement is adopted by the plant.

SUMMARY OF RECOMMENDATIONS

Sr. No	Particular	Before Implementation	After Implementation
1	Water usage per unit production (Specific water consumption)	2.2 kL/MT	2.0 kL/MT (at same production)
2	Process/stage where maximum water is used and its quantity	Boiler (286.4 KLD)	-
3	Reduction recommended in industrial process (Quantity and percentage)	5.7 KLD	1.2 % of total water saving quantity
4	Efficient technology adopted in industrial process/other process	-	-
	Saving proposed through other means/in other uses (water conservation/wastage minimisation/leakage plugging etc.)	31.4 KLD	6.4 % of total water saving quantity
5	Treated water quality (Recommended with its usage)	Plant is utilizing treated water using ETP & STP	Plant is utilizing treated water using ETP & STP
6	Its recommended reduction in industrial process/other process 20% or more (Y/N)	-	No

Table 5: Summary of proposed schemes

Sr. No.	Proposed Schemes	Savings (m ³ /day)	Annual Saving (m ³ /annum)
1	Increase the recovery of steam condensate for savings in raw ground water	45	16110
2	Optimize the Raw water consumption in colony areas	15	5370
3	Installation of Surface water storage Tank to maximize the collection of Rainfall runoff generated in the plant premises and reuse of rain water in the plant	50	17900
	Total	110	39380

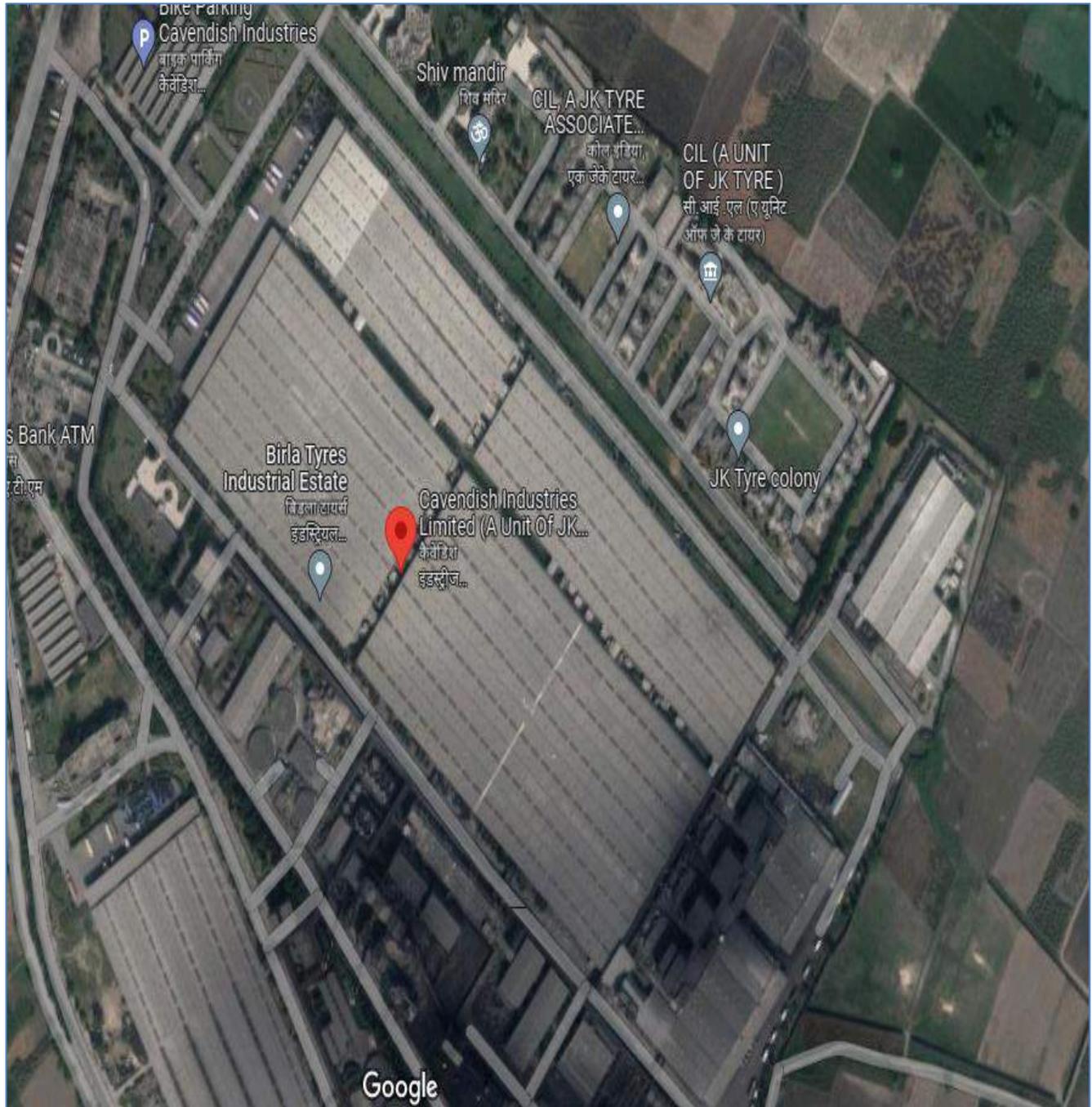
Table 6: Summary of water savings

Sr. No.	Description	Unit	Value
1	Annual Bore well Water Consumption	kL/Annum	175106
2	Savings	kL/Annum	39380
3	% Savings Achieved	%	22.5%

CHAPTER -1: INTRODUCTION

1.1 General Plant Details and Location

Figure 1: Location on Map



1.2 Brief Description About the Plant

M/s Cavendish Industries Ltd. Unit-3, Haridwar is a company owned by JK Tyres & Industries Ltd. and involved in manufacturing tubular engineering components (Truck Bus Radial tyre) for automotive industry. The company was established in the year 2009.

Employment & People at District-Haridwar:

Cavendish Industries Ltd. Unit-3 has approximate 1775 numbers of staff at its plant in the State of Uttarakhand. The working hours for the staff are 8 hours and the working timing is scheduled as per the following different shifts:

A shift: 6.00 AM to 2.00 PM	B shift: 2.00 PM to 10.00 PM	C shift: 10.00 PM to 6.00 AM
-----------------------------	------------------------------	------------------------------

Process description

The Company has existing processing capacity of 225 MT/day, where as expansion upto 425 MT/day is in process, CTE for expansion already taken. The company has also installed various types of instruments like Tyre manufacturing machines: Mixer, Extruder, Calendar, Bias Cutter, Tyre building, Tyre curing.

Environment:

Cavendish Industries Ltd. Unt-3, processes are amicable for creating pollution of water, air & land through solid waste disposal. However, with company policy & the company works in compliance of government norms and thus have been able to reduce the impact on mother earth. Green initiatives taken across its supply chain evidences its strong commitment for environmental improvement and prevention of natural resource depletion

Plant Details

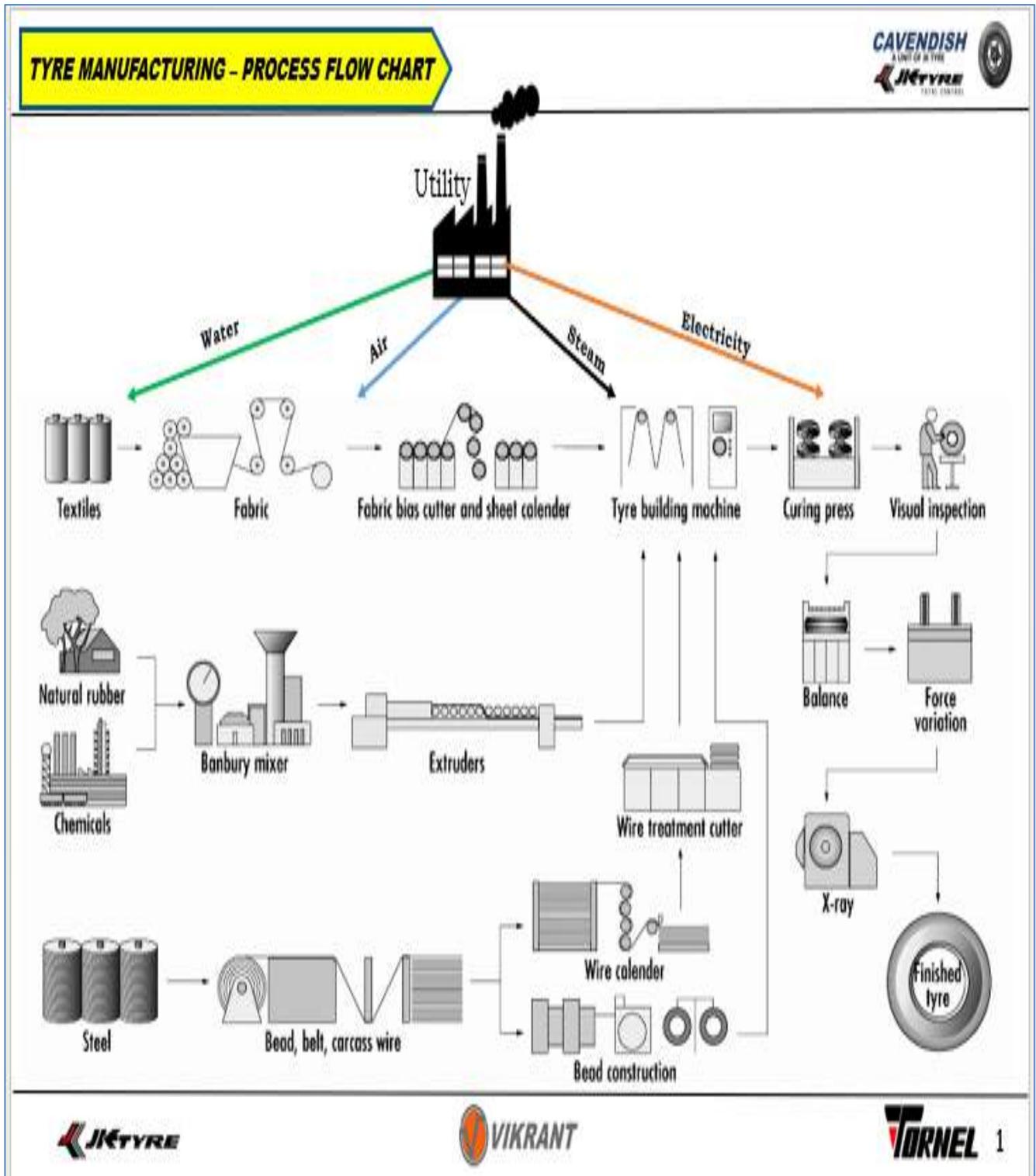
- The Establishment of the plant has been done on 03rd Sept., 2010
- The area of the plant is 1,01,468.66 sq. meter.
- The main products are Manufacturing of Radial Tyres.

To meet the water requirement of the plant three numbers of bore wells are installed.

However, one bore well is operated as per the need and the others are kept as standby when one is in use. The plant has consent for drawing fresh ground water of 622 m³/day from CGWA. Excluding holidays, the usual working days of the plant is nearly 355.

1.3 Manufacturing process and layout

Figure 2: Process layout



CHAPTER -2: SCOPE OF WORK

2.1 Scope of Water Audit Study

- On-site training and discussion with facility manager and personnel.
- Water system analysis and Quantification of baseline water map.
- Water use Monitoring and measurements using pressure and flow meters and various other devices
- Quantification of inefficiencies and leaks in the water system
- Quantification of water quality loads and discharges
- Quantification of variability in flows and quality parameters
- Strategies for water treatment and reuse or direct use
- Development of detailed water circuit diagram and water balance of the facility
- Mapping of water quality requirement to develop 'recycle' and 'reuse' opportunities
- Developing Water consumption and wastewater generation pattern
- Estimating Specific water use and conservation potential
- Develop & Maintain monthly MIS on water extracted from Bore wells, water level, water quality etc.
- Calculation of Rainwater Harvesting Potential for the site and assessment of the existing structures
- Evolving Water saving opportunities with method of implementing the proposal with
- Description and figures related to water management schemes
- Investment required for water saving schemes/Cost Benefit Analysis
- Submission of water audit report & its presentation at site (if required)
- Following opportunities would also be assessed for Industries for water conservation:
 - Setting up of norms for water budgeting
 - Modernization of industrial process to reduce water consumption
 - Recycling water with a re-circulating cooling system
 - Zonation cooling water approach which can result in fivefold reduction in blow down when compared to traditional chemical treatment
 - Reduction in reuse of de-ionized water by eliminating some plenum flushes, converting from a continuous flow to an intermittent flow system and improving control on the use
 - Use of wastewater for gardening
 - Proper processing of effluents to adhere to the norms of disposal

CHAPTER -3: METHODOLOGY OF THE WATER AUDIT STUDY

3.1 Methodology Followed for Conducting Water & Wastewater Audit

Step 1: Reconnaissance or Walk-through survey

- Understanding of existing water sourcing, storage, and distribution facility.
- Assessing the water demand and water consumption areas/processes.
- Preparation of detailed water circuit diagram.

Step 2: Secondary Data Collection through the Discussion with plant executives, past records, Available technical literature/specifications

- Analyse historic water use and wastewater generation
- Field measurements for estimating current water use
- Metered & unmetered supplies.
- Understanding of “base” flow and usage trend at site
- Past Water Bills
- Wastewater Treatment scheme & costs etc.

Step 3: Site Water Audit Planning (based on site operations and practices)

- Preparation of water flow measurement plan to quantify water use at various locations
- Wastewater flow measurement and sampling plan
- Instruments availability like Ultrasonic Water Flow Meter, Doppler type Flow meter, Stop Watch, measuring cylinders, Power Analyser etc.

Step 4: Conduction of Detailed Water Audit & Measurements

- Conduction of field measurements to Quantify water/wastewater streams
- Power Measurement of Pumps/Motors
- Measurement of suction & discharge pressure at various pumps
- Wastewater sampling & analysis
- Preparation of Water Balance Diagram
- Establishing Water Consumption Pattern
- Evolving value added “cost of water” at various locations
- Detection of potential leaks & water losses in the system
- Assessment of productive and unproductive usage of water
- Determine key opportunities for water consumption reduction, reuse & recycle with paybacks.

Step 5: Preparation of Water Audit Report with Sustainable Water Management Plan

- Documentation of collected & analysed Water Balancing and Measurement details
- Projects and procedures to maximize water savings and minimize/eliminate water losses
- Water Metering and Accounting System
- Opportunities for Water Conservation based on Reduce/ Recycle/ Reuse/ Regeneration/ Recharge options with Cost Benefit Analysis

Step 6: Water Audit Report Finalization and Submission

- Incorporation of required changes based on discussions with plant executives Preparation & submission of final report.

3.2 Methodology Adopted for Performance Evaluation of Pumping System**➤ Water Flow Measurement**

The water flow measurement was conducted using transit time ultrasonic flow meter at the discharge side of the pumps or any suitable location. The step wise methodology is given below:

- a. A suitable location for measurement of flow rate was identified on discharge pipeline of the pump and initial pipe preparation was done by cleaning and filing of pipe at measurement location
- b. The circumference of pipe for calculating the external diameter was measured by inch tape and the pipe thickness was measured by digital thickness gauge or by measurement of spare pipe.
- c. The parameter like pipe diameter, type of pipe, water temperature, pipe thickness, roughness etc. are input in the ultrasonic flow meter
- d. Based on above input values, the flow meter reflects the distance between the traducers to be positioned on the pipe while measuring the flow
- e. The traducers are placed on the surface of the pipe (filed surface) at the same distance given by flow meter
- f. The ultrasonic flow meter displays instantaneous values of water flow rate in m³/hr. The average of these values may be considered as flow rate of water.

CHAPTER -4: ASSESSMENT OF PRESENT WATER USAGE

4.1 Water Sourcing and Major Water Use Areas

Bore wells are only sources of freshwater for the plant. The total Ground water abstraction from three Bore wells is 175106 KL for FY 2022-23, which is average 493.3 KL per day.

For extracting fresh/raw water the plant has installed three numbers of Bore wells. With each Bore well electromagnetic digital water flow meters are installed. Daily, amount of water fetched from these Bore wells are recorded in logbook. The fresh water drawn from Bore wells is collected in water storage tank and distributed to different locations in the plant.

The waste water of industrial uses is treated in ETP. Treated water from ETP is diverted in two lines, one is sent to the recycle in the plant and one is reuse in the plant for Gardening purpose. The waste water from domestic section (Plant and Colony) is treated in STP. STP treated water reuse in the plant for cooling tower makeup.

Figure 3: Raw water storage tank

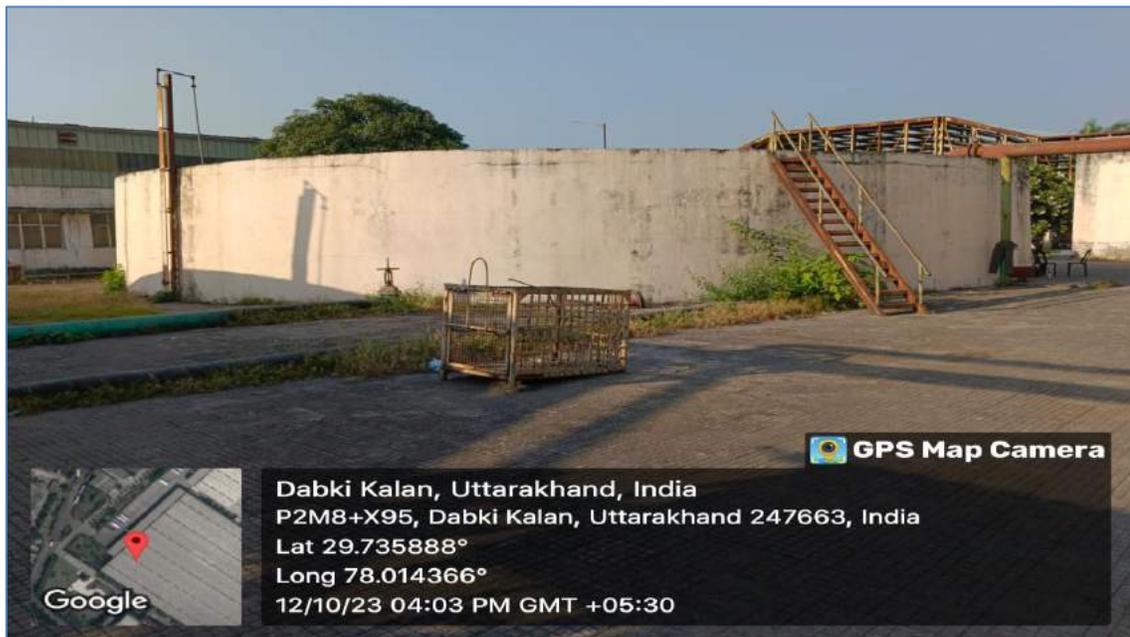


Table 7: List of ground water storage tanks

Type of Storage System (Over Head Tank, Underground Tanks, Reservoir etc.)	Location	Storage Capacity (KL)	Level from ground
Soft water storage tank	Softener Plant	1200	Ground
Raw water Storage tank	WTP Plant	1800	Ground
STP Collection tank	STP	1200	Ground

Figure 4: Bore well Pictures

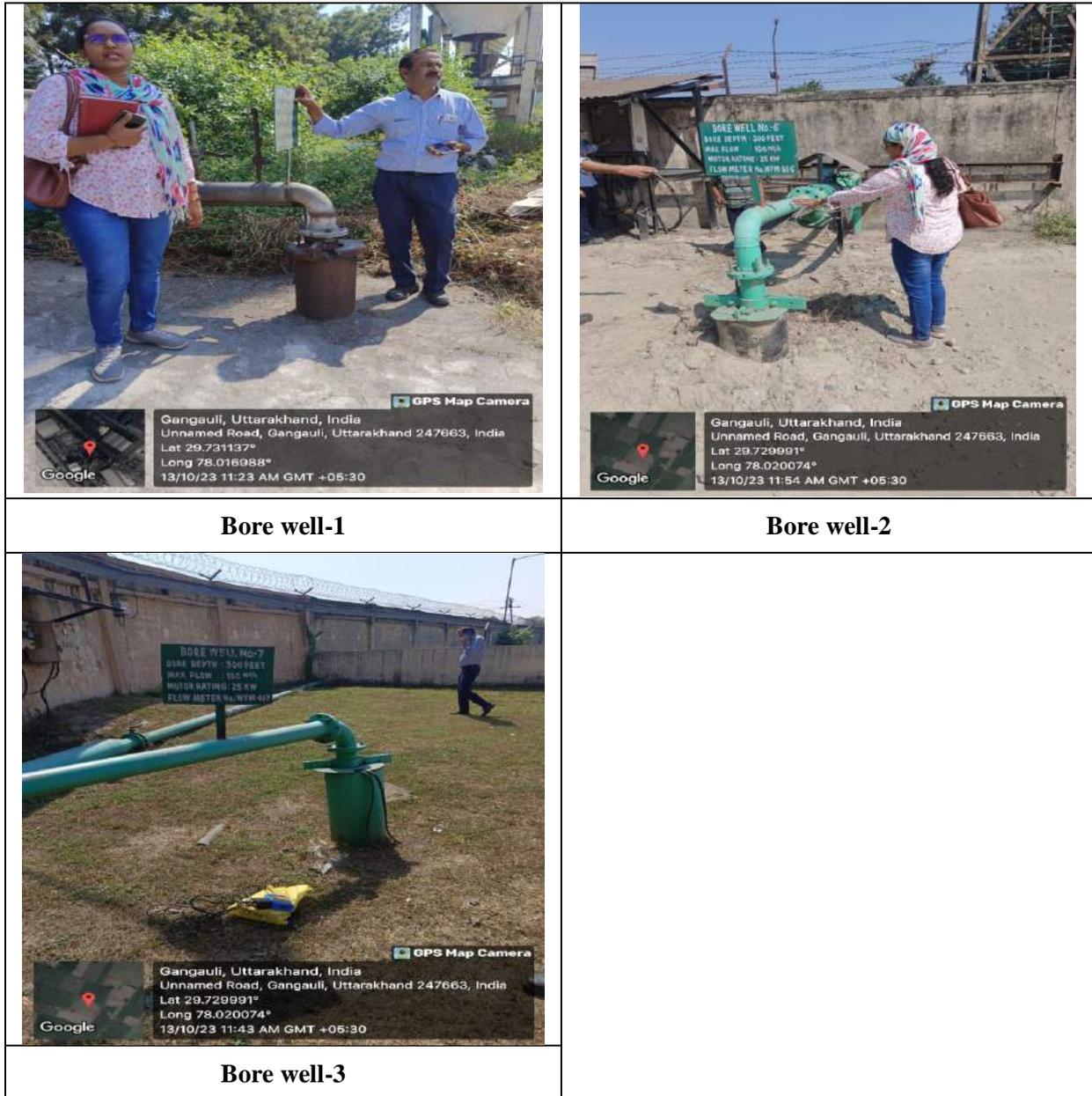


Table 8: Bore well water abstraction daily basis, FY 2022-23

Source of Water	m ³ /day	Water Quality	Major Usage Area	Water Use (%)
Tube well -1	185.2	Fresh water	Plant process, Utility and Domestic uses	37.5%
Tube well -2	221.8	Fresh water		45.0%
Tube well -3	86.3	Fresh water		17.5%
Total	493.3			100.0%

Table 9: Total water usages at the plant, FY 2022-23

Description of Water uses	m ³ /day	Water Quality	Major Usage Area	Water Use (%)
Tube well Water	493.3	Fresh Water	Plant process, Utility and Domestic uses	68.1%
STP Treated Water	57.3	Treated water		7.9%
ETP Treated Water	173.7	Treated water		24.0%
Surface water used	0.0	Fresh Water		0.0%
Total Water Usage (Raw + Treated)	724.2			100%

Figure 5: Graphical representation of usage fresh & treated water

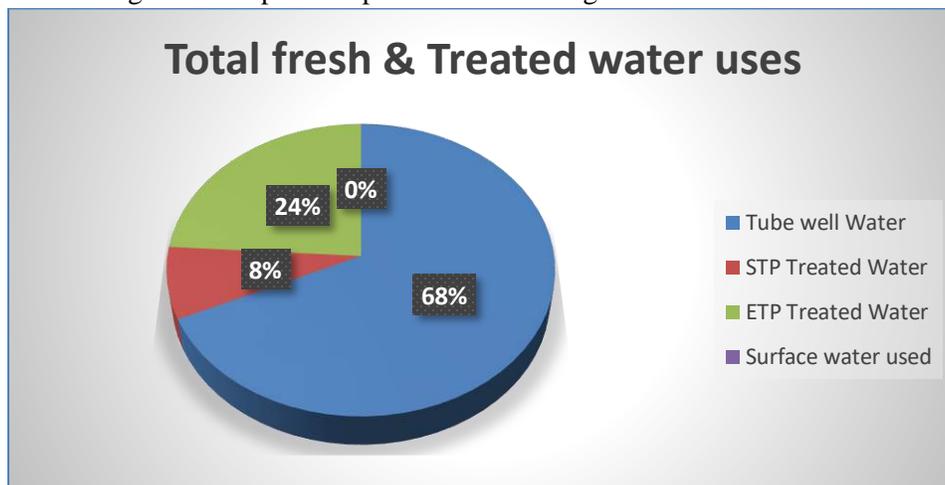


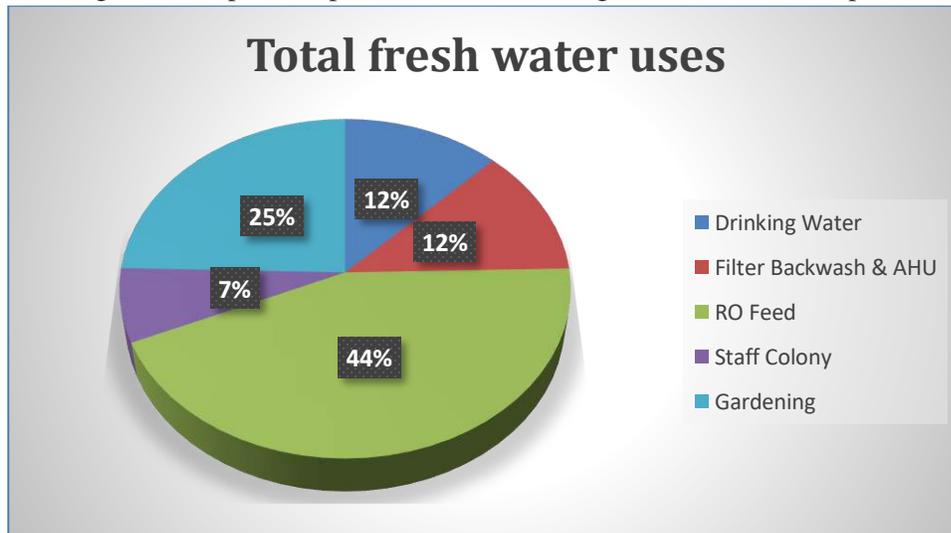
Table 10: Bore well Details

Borewells	Location of Bore-wells	Depth of Bore-well (Feet)	Type of Pump (mono-block/ Submersible etc.)	Pump Rated Capacity (KW)	Rated yield (m ³ /hr)	TDS (mg/l)
1	Near Boiler	300	Submersible pump	25	105	212
2	Near Scrap Yard	300	Submersible pump	25	86.2	220
3	Near RMS	300	Submersible pump	25	82.5	211

Table 11: Consumption of ground water at the plant, FY 2022-23

Key Water Usage Section	Type of water used	Quantity Used (m ³ /day)	Percentage
Drinking Water	Fresh Water	81.3	11.2%
Filter Backwash & AHU	Fresh Water	79.7	11.0%
Softener	Treated Water	57.3	7.9%
RO Feed	Fresh Water	286.4	39.5%
	Treated Water	12.9	1.8%
Staff Colony	Fresh Water	45.9	6.3%
Gardening	Treated Water	160.8	22.2%
Total		724.2	100%

Figure 6: Graphical representation area wise ground water consumption



4.2 Ground Water Quality

The plant regularly checks the water quality of the Groundwater. The sample of Bore well water third party quality test report is provided in Annexure.

Table 12: Results of Analysis of Ground Water Samples

Bore well -1

Parameters for Raw water (Drinking)	Unit	Data
Date of sample	13-10-2023	
PH		7.30
TDS	mg/l	355
Hardness	mg/l	180
Chloride	mg/l	48
Fluoride	mg/l	0.39

Bore well -2

Parameters for Raw water (Drinking)	Unit	Data
Date of sample	13-10-2023	
PH		7.20
TDS	mg/l	309
Hardness	mg/l	175
Chloride	mg/l	30
Fluoride	mg/l	0.45

Bore well -3

Parameters for Raw water (Drinking)	Unit	Data
Date of sample	13-10-2023	
PH		7.22
TDS	mg/l	321
Hardness	mg/l	180
Chloride	mg/l	30
Fluoride	mg/l	0.32

Note: The water test report provided by the plant is prepared mentioning 'drinking water'. It is suggested to the plant to prepare water quality test report of Ground water as per the guideline of CGWA. Third party test report is attached in annexure.

4.3 Water Distribution and Water Balance

Fresh water extracted through Bore wells and recycled treated water is used for industrial process, cooling towers, horticulture, and domestic use. All the waste water generated is treated in ETP. Recycled treated water is used in plant and some quantity of treated water is discharged outside the plant for irrigation purpose. And all the waste water generated is from domestic section is treated by the STP Plant and reused in the gardening purpose in the plant.

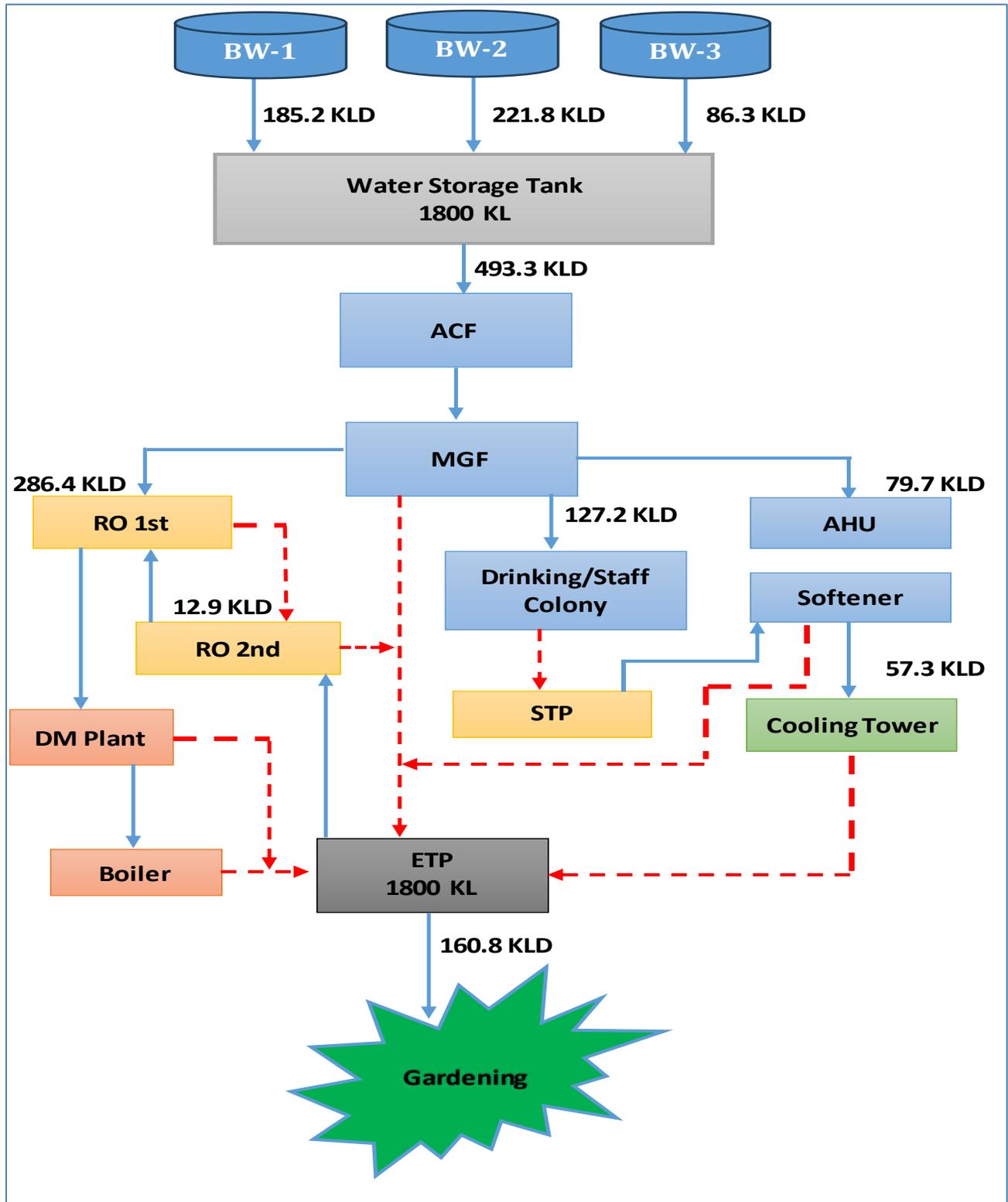
A simple water balance diagram for the period of April 2022 to March 2023 is presented below on average daily basis quantity for the same period. During the above period, 175106 KL per annum of water was drawn from Bore wells. Raw water is consumed in the plant in 45131 KL/annum in Domestic uses (Plant and Colony), 28307.1 KL/annum in AHUs and Backwash in the plant and 101667.6 KL/annum in RO (boiler makeup).

Waste water generated from all the sections of the plant is being treated in ETP. 61659 KL/annum waste water is treated in ETP.

ETP treated water is diverted in two streams. First is recycled water which used in plant and second is reuse in the plant for gardening purpose. Quantity of the recycled treated water in the plant is 4573 KL per annum and quantity of reuse water in gardening is 57086 KL per annum for the same time period mentioned above.

Waste water generated from Domestic sections (Plant and Colony) is being treated in STP. STP Treated water is 20324 KL/annum, which sent to softener plant for making of soft water and reuse in cooling tower makeup in the plant.

Figure 7: Water Balance and distribution chart



4.4 Water Metering System

The plant has installed Digital water flow meters at Bore wells to monitor the water abstraction from the ground. The water flow meters also installed at some other locations in the plan. Location with detail of water flow meter mention in table below and pictures of flow meters are attached in figure below:

Table 13: Location of Identified Water Meters & details

Sr. No.	Meter location	Type of Meter	Regularly recorded	Calibrated
1	Bore well No-1	Digital	Yes	Yes
2	Bore well No-2	Digital	Yes	Yes
3	Bore well No-3	Digital	Yes	Yes

Figure 8: Flow meters installed at Bore well and other locations.





ETP Inlet meter



STP Inlet meter



STP Outlet meter

4.5 Piezo-meter Measurement Details

The plant has installed two number of Piezometers to measure pressure via the rise of fluid column and estimate the ground water level. The one piezometer is equipped with DWLR and telemetry system and one is DWLR system enabled to monitor ground water level in the plant. Depth of the piezometer well is 300 feet and it installed at 62-meter distance from the nearest Bore well and water shown 2.73 m. The Piezometer telemetry recorded data is given in Annexure.

Figure 9: Piezometer installed in plants



Piezometer -1



Piezometer-2

Table 14: List of Piezometer installed in the plant

Piezometer	Meter location	Type of meter	Water level (Mtr.)	Regularly recorded (Yes/No)
Piezometer-1	Near Labour Canteen	Digital with telemetry	2.73	YES
Piezometer-2	Near Elasto Storage Tank	Digital	2.31	YES

4.6 Water Use Baseline Data as provided by the Plant

The Total water withdrawal was provided by the plant, details mentioned in the tables below. Monthly ground water abstraction details of last three years are attached in Annexure.

Table 15: Monthly ground water abstraction (KL), FY 2022-23

Month	TW No-1	TW No-2	TW No-3	Total
Apr-22	3642	8641	2035	14318
May-22	7027	7732	2228	16987
Jun-22	8886	2169	5092	16147
Jul-22	13728	1462	2397	17587
Aug-22	4094	10859	1159	16112
Sep-22	499	13493	484	14476
Oct-22	9830	4668	766	15264
Nov-22	3953	9173	1118	14244
Dec-22	2028	3465	7553	13046
Jan-23	847	4376	7175	12398
Feb-23	9207	1562	400	11169
Mar-23	2008	11126	224	13358
Total	65749	78726	30631	175106
Per day	185.2	221.8	86.3	493.3

Table 16: Total water usage base line data (KL), FY 2022-23

Month	Drinking Water	Filter Backwash & AHU	Softener	RO Feed		Staff Colony	Gardening	Total Consumption
	Raw Water		STP Treated Water	Raw Water	ETP Treated Water	Raw Water	ETP Treated Water	
Apr-22	2512	2355	1620	7791	0	1660	7185	23123
May-22	2607	4590	1699	8004	0	1786	6452	25138
Jun-22	2591	4845	1539	7175	0	1536	5865	23551
Jul-22	2649	4314	1990	9031	0	1593	6685	26262
Aug-22	2601	4207	1846	7934	0	1370	5088	23046
Sep-22	2378	2039	1794	8763	0	1296	4291	20561
Oct-22	2357	373	1329	11197	0	1336	3831	20424
Nov-22	2369	247	1782	10448	0	1180	4289	20315
Dec-22	2092	1525	1977	8367	482	1062	2395	17900
Jan-23	2119	1435	1776	7805	1732	1039	3219	19125
Feb-23	1998	1404	1222	6569	2359	1198	2731	17481
Mar-23	2580	970	1750	8585	0	1222	5055	20163
Total	28853	28307.1	20324	101667.6	4573	16278	57086	257089
Avg.	81.3	79.7	57.3	286.4	12.9	45.9	160.8	724.2

CHAPTER -5: WATER TREATMENT & RECYCLING PRACTICES

- a) **Effluent Treatment Plant:** - The Cavendish Industries Limited has installed effluent treatment plant for treatment of waste water generation from plant process section.
- b) **Sewage Treatment Plant:** - The Cavendish Industries Limited has installed sewage treatment plant for treatment of waste water generation from plant domestic section.
- c) **RO Plant:** - The Cavendish Industries Limited has installed two numbers of RO Plant, 1st RO Plant is using for treatment of Raw water and 2nd RO is using for treatment of 1st RO reject and ETP treated water.
- d) **Softener Plant:** - The Cavendish Industries Limited has installed Softener plant for the making of soft water of Raw water and STP treated water for cooling tower makeup.

5.1 Effluent Treatment Plant

The plant has installed Effluent Treatment Plant to treat waste water generated from all the sections of the plant. The waste water treated in continuous manner.

Stages of Treatment are-

1. Preliminary Treatment:

- a) Oil & Grease removal- oil, grease & lighter solids float to the surface removal by skimming.
- b) pH Equalization.

2. Primary Treatment: The main purpose of this treatment is to reduce any heavy solids (organic & inorganic) that settle to the bottom by sedimentation. The settled materials are removed in Primary clarifier and the remaining liquid transferred to the next stage i.e. secondary treatment. Primary treatment removes about 60% of suspended solids from waste water.

3. Secondary Treatment: The prime objective is the further treatment of the effluent from primary treatment to remove dissolved and suspended biological matter. Biological treatment is done in Aeration tank. The biological solids removed during secondary sedimentation in a secondary clarifier is supplied to the sludge drying bed and remaining water is supplied to tertiary treatment. Secondary treatment removes more than 90% of suspended solids.

4. Tertiary/Advanced Treatment: Tertiary treatment consisting PSF (Pressure sand filter and ACF (Activated carbon filter) aids the removal of those waste water constituents which cannot be removed in secondary treatment.

Figure 10: Picture of ETP

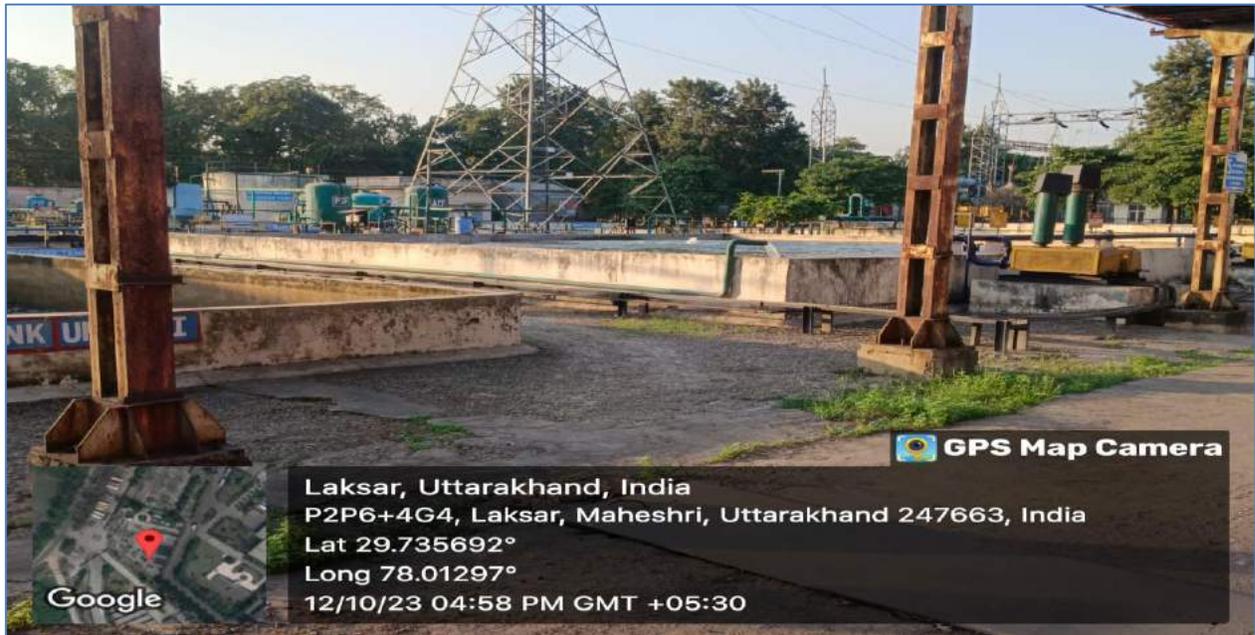


Figure 11: Process flow diagram of ETP

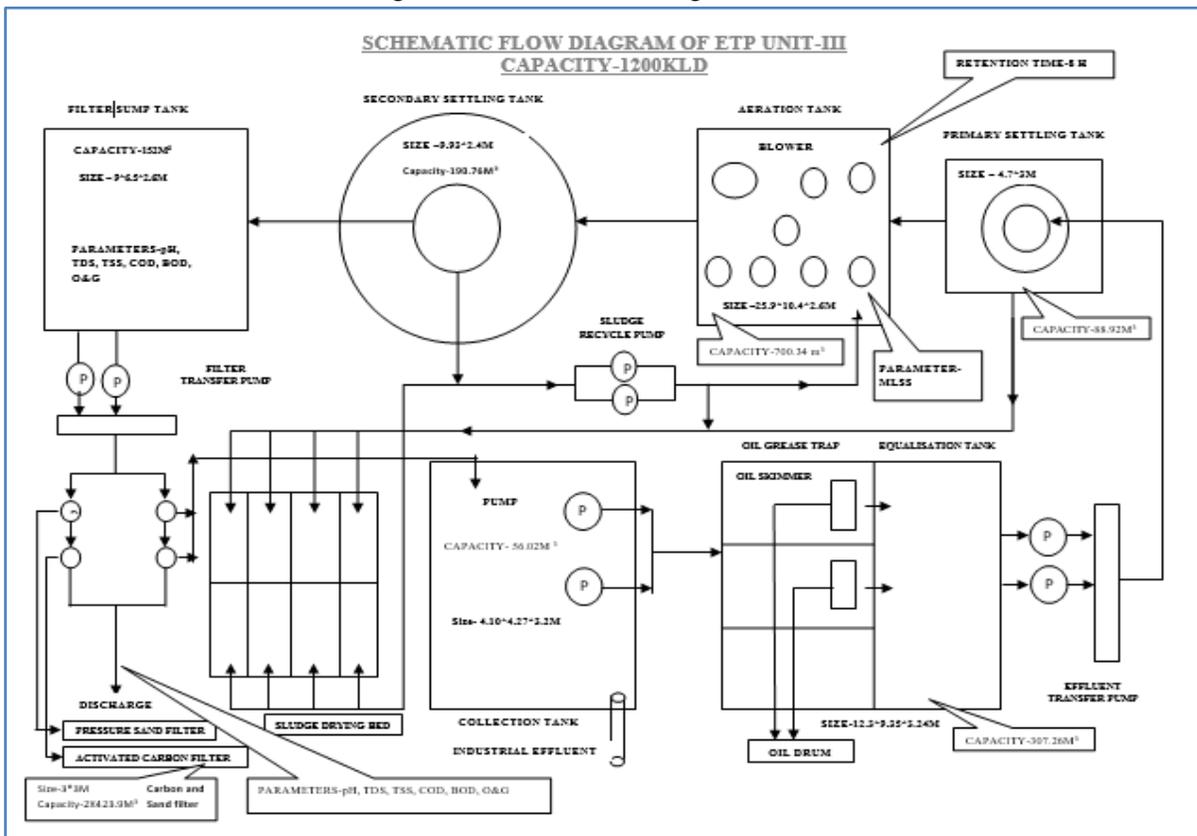


Table 17: Monthly ETP Treated water details

Month	ETP Treated	ETP Treated recycle in Plant	ETP Treated feed in RO 2nd
Apr-22	7185	7185	0
May-22	6452	6452	0
Jun-22	5865	5865	0
Jul-22	6685	6685	0
Aug-22	5088	5088	0
Sep-22	4291	4291	0
Oct-22	3831	3831	0
Nov-22	4289	4289	0
Dec-22	2877	2395	482
Jan-23	4951	3219	1732
Feb-23	5090	2731	2359
Mar-23	5055	5055	0
Total	61659	57086	4573

5.2 Sewage Treatment Plant

Sewage treatment refers to the process of removing contaminants, microorganisms, and other types of pollutants from wastewater influent. The main objective of sewage treatment is to produce an effluent (treated waste water) and a solid waste/sludge suitable for discharge into the natural environment.

Plant has installed a Sewage Treatment Plant of 160 KLD capacity to treat domestic wastewater coming from the plant.

Sewage Treatment Process:

1. Preliminary Treatment: This is the first stage of sewage treatment plant process and its main objective is the removal of coarse solids and other large materials often found in raw wastewater. Preliminary treatment operations typically include large filtering screens, manual grit removal. Excess grit causes severe pump blockages thereby affecting a range of subsequent treatment pumps. Flow measurement devices, are always included at the preliminary treatment stage.

2. Primary Treatment: The main purpose of this treatment is to reduce any heavy solids (organic & inorganic) that settle to the bottom by sedimentation while oil, grease & lighter solids float to the surface by skimming. The settled and floating materials are removed and the remaining liquid may be discharged or subjected to the next stage i.e. secondary treatment. Primary treatment removes about 60% of suspended solids from wastewater.

3. Secondary Treatment: The prime objective is the further treatment of the effluent from primary treatment to remove dissolved and suspended biological matter. The biological solids removed during secondary sedimentation, called secondary or biological sludge, are normally combined with primary sludge for sludge processing. Secondary treatment may require a separation process to remove the microorganisms from the treated water prior to discharge or tertiary treatment. Secondary treatment removes more than 90% of suspended solids.

4. Tertiary/Advanced Treatment: Tertiary treatment generally follows secondary treatment and aids the removal of those wastewater constituents which cannot be removed in secondary treatment. Treated wastewater is sometimes disinfected chemically or physically (for example, by lagoons and microfiltration) prior its discharge into the receiving environment (sea, river, lake, wet lands, ground, etc.)

Figure 12: Picture of STP



Figure 13: Process Flow diagram of STP

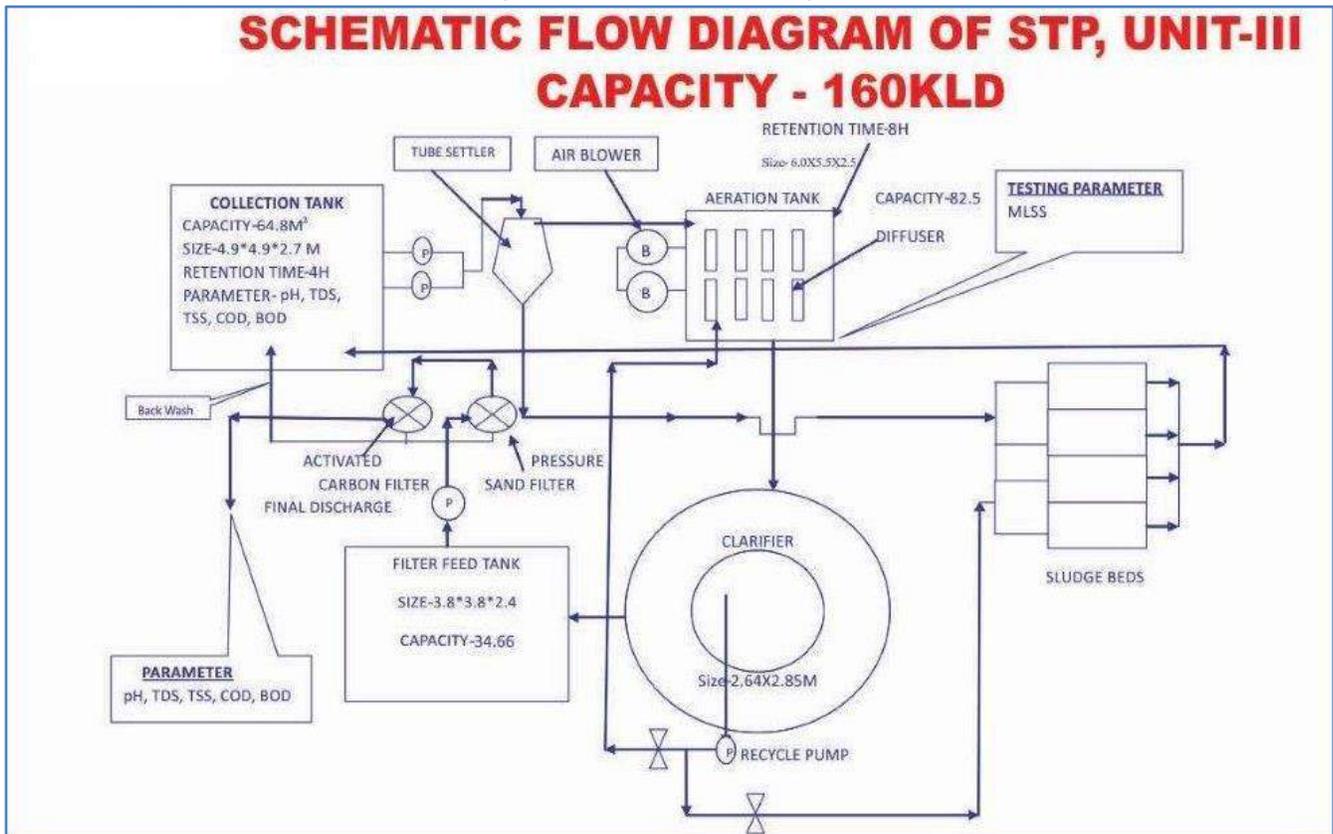


Table 18: Monthly STP Treated water, KL

Month	STP Treated water	Feed to Softener
Apr-22	1620	1620
May-22	1699	1699
Jun-22	1539	1539
Jul-22	1990	1990
Aug-22	1846	1846
Sep-22	1794	1794
Oct-22	1329	1329
Nov-22	1782	1782
Dec-22	1977	1977
Jan-23	1776	1776
Feb-23	1222	1222
Mar-23	1750	1750
Total	20324	20324
Avg.	57	57

CHAPTER -6: DATA ANALYSIS AND RESULTS

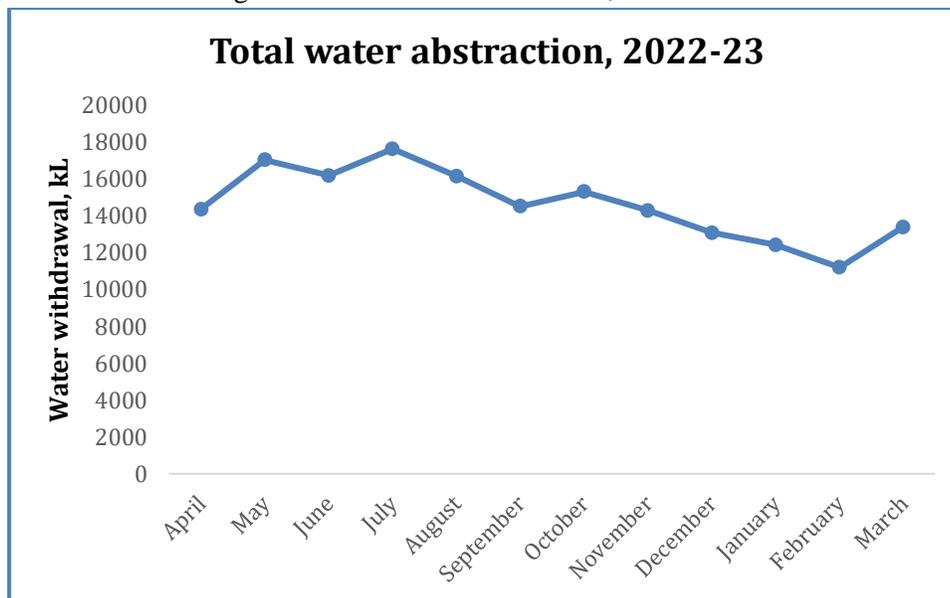
6.1 Ground Water Consumption Trend

Ground water consumption trend of the plant has been analysed based on the historical data provided by the plant of monthly water abstraction. Ground water consumption details has been given below in the table and figures:

Table 19: Historical data of water abstraction

Month	FY 2022-23
April	14318
May	16987
June	16147
July	17587
August	16112
September	14476
October	15264
November	14244
December	13046
January	12398
February	11169
March	13358
Total	175106

Figure 14: Total water abstraction, FY 2022-23



6.2 Specific Water Consumption

Specific water consumption of plant has been analysed based on the production data and water consumption data provided by the plant. It has been given in detail in the table and figures below:

Table 20: Specific water consumption

Month	Total Water (kL)	Total Production	SWC
Apr-21	16112	5923	2.7
May-21	15640	4641	3.4
Jun-21	15522	4162	3.7
Jul-21	14447	5000	2.9
Aug-21	13671	5387	2.5
Sep-21	8698	4292	2.0
Oct-21	13481	4391	3.1
Nov-21	12016	5405	2.2
Dec-21	11940	6633	1.8
Jan-22	9574	6395	1.5
Feb-22	8924	5910	1.5
Mar-22	11332	6744	1.7
Total	151357	64881	2.4

Figure 15: Specific water consumption trend, FY-2021-22

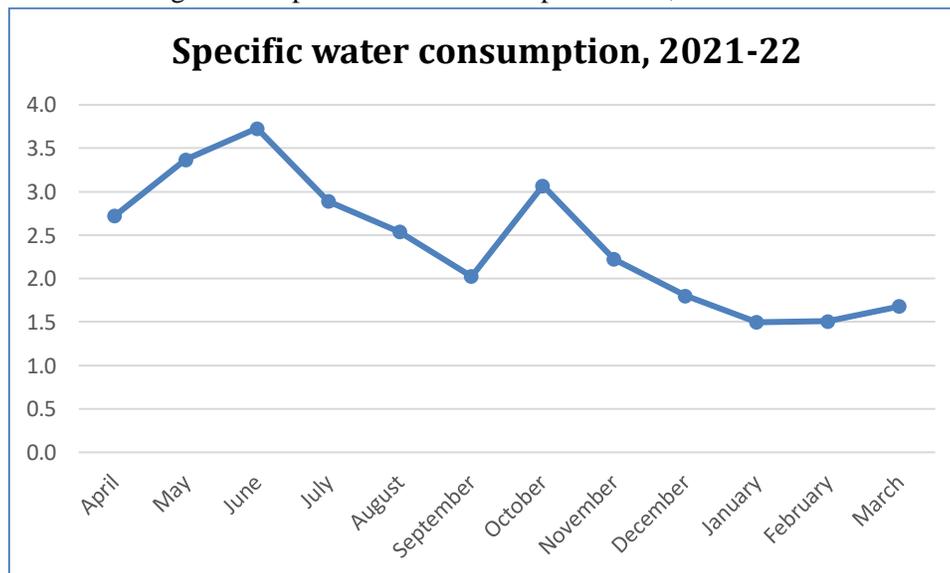
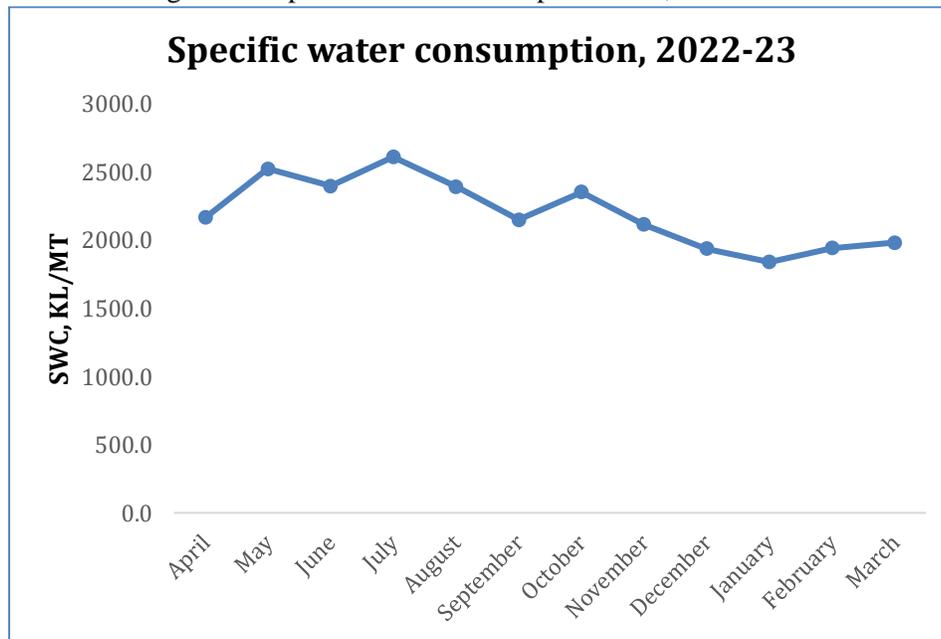


Table 21: Specific water consumption

Month	Total water in KL	Total Production in MT	SWC KL/MT
Apr-22	14318	6614	2.2
May-22	16987	6740	2.5
Jun-22	16147	6739	2.4
Jul-22	17587	6743	2.6
Aug-22	16112	6741	2.4
Sep-22	14476	6743	2.1
Oct-22	15264	6493	2.4
Nov-22	14244	6741	2.1
Dec-22	13046	6739	1.9
Jan-23	12398	6745	1.8
Feb-23	11169	5759	1.9
Mar-23	13358	6744	2.0
Avg.			2.2

Figure 16: Specific water consumption trend, FY-2022-23



CHAPTER -7: WATER CONSERVATION OPPORTUNITIES

7.1 Water Saving Opportunities

During Water audit at Cavendish Industries Ltd., water saving opportunities has been identified by the NPC team, which would help to minimise the ground water consumption of the plant after implementation.

Water saving opportunities are described in proposals given below:

Proposal-1: Increase the recovery of steam condensate for savings in raw ground water

Existing Scenario: During water audit at the plant, steam leakages and faulty steam traps are observed at many locations in the steam distribution system. Steam from all the points is being exhausted into the atmosphere. Condensate from all the traps is also being drained in the sewage line.

- **Recommendation:** It is recommended to maintain all the steam traps and recover flash steam and condensate from all the location by installation of a flash tank. It will increase the condensate recovery and minimise makeup water consumption in boiler. Details calculation is as under table: -

Table 22: Ground water saving proposal-1

Description	Unit	Value
Total Water consumption in Boiler	KLD	286.4
Total nos. of Steam taps in plant	Nos.	15
Estimated Raw Water saving per day @2%	KLD	5.7
Raw Water Pumping Cost	RS/KLD	1.4
CGWA Water Extraction charge	RS/KLD	2
Total water cost	RS/KLD	3.4
Monetary saving per day	RS	19
Annual Monetary saving	RS	6914
Annual Water saving	KL	2033

Proposal-2: Optimize the Raw water consumption in colony areas

Existing Scenario: During water audit at the plant, it was observed that the plant is supplying the raw water in colony 24 hours.

- **Recommendation:** It is suggested to reduce the running hours of water supply in colony and optimize the raw water consumption in colony. Details calculation is as under table: -

Table 23: Ground water saving proposal-2

Description	Unit	Value
Total Raw Water consumption in Domestic	KLD	127.1
Estimated Raw Water saving per day @5%	KLD	6.4
Raw Water Pumping Cost	RS/KLD	1.4
CGWA Water Extraction charge	RS/KLD	2
Total water cost	RS/KLD	3.4
Monetary saving per day	RS	22
Annual Monetary saving	RS	7670
Annual Water saving	KL	2256

Proposal-3: Installation of Surface water storage Tank to maximize the collection of Rainfall runoff generated in the plant premises and reuse of rain water in the plant

Existing Scenario: During water audit at the plant, it was observed that the plant is using the raw water for Process.

- **Recommendation:** It is suggested to constructing one more additional storage tank (may be of 100 m³ capacity) in the back side of plant to store surplus rainfall runoff in the plant premises and reuse the rain water in the plant. Details calculation is as under table: -

Table 24: Ground water saving proposal-3

Description	Unit	Value
Total Raw Water consumption	KLD	493.3
Estimated Raw Water saving per day	KLD	25
Raw Water Pumping Cost	RS/KLD	1.4
CGWA Water Extraction charge	RS/KLD	2
Total water cost	RS/KLD	3.4
Monetary saving per day	RS	85
Annual Monetary saving	RS	30175
Annual Water saving	KL	8875

7.2 Rainwater Harvesting System

The Rainwater Harvesting is a technique to capture the rainwater when it precipitates, store that water for direct use or charge the groundwater and use it later. This happens naturally in open areas however, in congested, over-paved places, we need to create methods to capture the rainwater in more efficient way. There are two main techniques of rainwater harvesting:

- a) Storage of rainwater on surface for direct use
- b) Recharge to ground water

The Plant comes under 'Orange category' hence recharging of surplus run off to the aquifer is not permitted. Only storage and reuse can be done. Plant has already constructed one storage tanks to store the surplus rainfall runoff in the plant premises and reuse the rain water but still there is ample scope / potential to store the surplus runoff and reuse the additional collected rain water by constructing two additional storage tanks in the back side of plant. Cleaning the Storage tank must be done before onset of monsoon every year.

7.3 Regularly calibrate & maintain existing water flow meters

The plant has installed digital water flow meters with telemetry system at Bore wells as per CGWA guidelines. Calibration certificate of Bore well flow meters are attached in annexure.

7.4 Maintain logbook of daily groundwater abstraction and submission of data to CGWA

The plant is recording the water abstraction data and maintaining the logbook of daily groundwater abstraction. Plant is also submitting the data to CGWA periodically.

7.5 Regular payment of applicable groundwater abstraction charges

The plant needs to pay applicable groundwater abstraction charges as per CGWA notification. The applicable rate of Ground Water abstraction charge for the plant is Rs 2.00 per m³ as per the table given below:

Table 25: Rates of GW abstraction charges for Plant (Rs per m³)

Sr. No.	Category of area ↓ Ground water Use →	Quantum of ground water withdrawal			
		< 200 m ³ /day	200 to <1000 m ³ /day	1000 to <5000 m ³ /day	5000 m ³ /day
1.	Safe	1.00	2.00	3.00	5.00
2.	Semi-critical	2.00	3.00	5.00	8.00
3.	Critical	4.00	6.00	8.00	10.00
4.	Over exploited (existing industries/ new Industries as per the present Guidelines)	6.00	10.00	16.00	20.00

7.6 Ensure to comply with the NOC conditions to avoid any penalty

It is suggested that the plant should comply with the applicable NOC conditions to avoid any penalty. The penalty provisions for non-compliance of NOC are given below:

Table 26: Penalty provision for non-Compliance of No Objection Certificate conditions

S. No.	Items	Status
1	Non installation/faulty Digital water Flow meter with telemetry system.	The plant has already installed digital water flow meter with telemetric system. It was working properly during the water audit.
2	Non-disclosure/ construction of additional groundwater abstraction structures a) Non-functional Structures. b) Defunct/Abandoned Note: Given rates are for unit non-functional/defunct/abandoned structures. This shall be multiplied with total such structures to arrive at consolidated penalty.	Such type of non-functional/defunct/abandoned structures was not found during water audit in the plant.
3	Reporting of freshwater zones as Brackish / Saline zones in application.	Correct information provided in CGWA application.
4	Non-Installation of Piezometer.	Plant has installed 2 nos Piezometers. One with DWLR and second with DWLR & Telemetry.
5	Non-Installation/faulty DWLR/Telemetry system	Piezometer is equipped with telemetry system & it is working properly during water audit.
6	Non-Construction/Inadequate capacity of Recharge / Water conservation structures.	Sufficient water conservation structure available in plant.
7	Non maintenance of Recharge structures.	It is maintained by plant.
8	Injection of treated/untreated water into the aquifer system. Note: In addition to penalty, the proponent shall bear the cost of aquifer remediation as per the provisions of Environment (Protection) Act, 1986.	Such type of activities was not found during water audit in the plant
9	Non-Submission of Water level/Water quality Data.	Water quality testing reports available in plant. It is submitted to CGWA.
10	Non-maintenance of logbook of daily withdrawal/non submission of Groundwater abstraction data.	Logbook maintained by plant.
11	Non submission of photograph of recharge structure(s).	Photograph Available
12	Non-Submission of Self Compliance report.	Submitted

S. No.	Items	Status
13	Construction of groundwater abstraction structures by unauthorized/unregistered Drilling Rigs (per structures).	Groundwater abstraction structures by unauthorized/unregistered Drilling Rigs was not found during water audit in the plant.
14	No registration of water supply tankers.	Tanker supply water is not required.
15	Submission of false information/ undertaking.	Such type of activities was not found during water audit in the plant.

7.7 Tips For Conserving Water

7.7.1 For Industrial Use

- Using fogging nozzles to cool product.
- Installing in-line strainers on all spray headers; regular inspection of nozzles for clogging.
- Adjusting pump cooling and water flushing to the minimum required level.
- Determining whether discharge from any one operation can be substituted for fresh water supply to another operation.
- Choosing conveying systems that use water efficiently.
- Handling waste materials in a dry mode wherever possible;
- Replacing high-volume hoses with high-pressure, low-volume cleaning systems;
- Replacing worn-out equipment with water-saving models;
- Equipping all hoses with spring loaded shutoff nozzles – it should be ensured that these nozzles are not removed.
- Instructing employees to use hoses sparingly and only when necessary.
- Turning off all flows during shutdowns unless flows are essential for clean-up - using solenoid valves to stop the flow of water when production stops (the valves could be activated by tying them to drive motor controls).
- Adjusting flow in sprays and other lines to meet minimum requirements.
- Sweeping and shovelling may be practiced instead of hosing down the floors.
- Making an inventory of all cleaning equipment's, such as hoses in the plant - determining how often equipment's are used and whether they are water-efficient.
- Washing cars, truck, and bus fleets less often.

7.7.2 For Domestic Use

- Timely Detection and repair of all leaks.
- Turning off water tap while brushing teeth.
- Use of mug rather than running water for shaving.

- Avoiding / minimising use of shower/bath tub in bathroom.
- Turning off faucets while soaping and rinsing clothes.
- Using automatic washing machine only when it is fully loaded.
- Avoiding use of running water while hand-washing.
- Using over flow stop valve in the overhead tanks to check over flow of water.
- Turning off the main valve of water while going outdoor.
- Avoiding use of hose for washing floors; Use of broom may be preferred.
- Minimizing water used in cooling equipment by following manufacturer's recommendations.
- Watering of lawn or garden during the coolest part of the day (early morning or late evening hours) when temperature and wind speed are the lowest. This reduces losses from evaporation.
- Avoiding use of excess fertilizers for lawns in view of the fact that application of fertilizer increases the requirement of water in addition to polluting the groundwater.
- Planting of native and/or drought tolerant grasses, ground covers, shrubs, and trees. Once established, they do not need to be watered as frequently and they usually survive a dry period without much watering.
- Grouping of plants based on water needs while planting them.
- Turning off water tap a little before watering time to use full water available in hose.
- Avoiding over watering of lawns. A good rain eliminates the need for watering for more than a week.
- Setting sprinklers to water the lawn or garden only, not the street or sidewalk.
- Avoiding installation or use of ornamental water features unless they recycle the water and avoiding running them during drought or hot weather.
- Installation of high-pressure, low-volume nozzles on spray washers.
- Replacement of high-volume hoses with high-pressure, low-volume cleaning systems.
- Equipping spring-loaded shutoff nozzles on hoses.
- Installation of float-controlled valve on the make-up line, closing filling line during operation, provision of surge tanks for each system to avoid overflow.
- Adjusting flow in sprays and other lines to meet minimum requirements.
- Washing vehicles less often, or using commercial car wash that recycles water.
- In case of big establishments like hotels, large offices and industrial complexes, community centres, etc. dual piped water supply may be insisted upon. Under such an arrangement one supply may carry fresh water for drinking, bathing and other human consumptions whereas recycled supply from second line may be utilized for flushing out human solid wastes. This may be made mandatory.
- Similarly, water harvesting through storming of water runoff including rainwater harvesting in all new building on plots of 100 sq. m and above may be made mandatory.

CHAPTER -8: IMPLEMENTATION PLAN

Timeline for the implementation of the recommendation/proposals for ground water reduction in the water audit is given below as discussed with the plant:

Table 27: Implementation plan

Sr. No.	Proposed Schemes	FY 2023-24	FY 2024-25
1	Increase the recovery of steam condensate for savings in raw ground water		
2	Optimize the Raw water consumption in colony areas		
3	Installation of Surface water storage Tank to maximize the collection of Rainfall runoff generated in the plant premises and reuse of rain water in the plant		

CHAPTER -9: CONCLUSION

National Productivity Council, RD Kanpur has conducted a detailed Water Audit Studied at Cavendish Industries Limited. Laksar, Uttarakhand, during in Month of October-2023. As per NOC the Water Withdrawal Permissions from CGWA to Cavendish Industries Limited. Laskar, Uttarakhand, is **622 m³/day** and **220810 m³/annum** from 3 bore wells. No surface water being used in the plant.

The Plant has installed 3 numbers of bore well, all Bore wells are in operation during the water audit, water flow measurement has been done by the NPC team by Ultrasonic flow meter. The measured water flow of Bore well-1 is **105 m³/hr**, bore well-2 is **86.2 m³/hr** and bore well-3 is **82.5 m³/hr**.

On daily basis average water drawn from ground water for financial year 2022-23 from Bore well-1 is **185.2 m³/day**, bore well-2 is **221.8 m³/day** and bore well-3 is **86.3 m³/day**, as per the monthly water abstraction data of plant.

The Audit is focused on improving water usage efficiency and identifying water Conservation opportunities. Accordingly, the field study and data collection for the said water audit was carried out by National Productivity Council team. This report discusses the water balance and various water saving options derived based on observation made, data collected and their analysis.

The water audit study of the plant has identified various water & cost saving opportunities which are discussed in the report. The summary of recommendations is given in detailed in Chapter 7. It is estimated that by implementing NPC suggested schemes; The plant can reduce its freshwater consumption **by 7.6 %**.

CHAPTER -10: REFERENCES

Central Ground Water Authority (CGWA)/ Uttar Pradesh Ground Water Department (UPGWD) guidelines

CHAPTER -11: ANNEXURES

11.1 NOC for Ground Water Abstraction:



भारत सरकार
जल प्रकृति मंत्रालय
जल संसाधन, नदी विकास
और गंगा संरक्षण विभाग
केन्द्रीय भूमि जल प्राधिकरण
Government of India
Ministry of Jal Shakti
Department of Water Resources,
River Development & Ganga Rejuvenation
Central Ground Water Authority

(भूजल निकासी हेतु अनापत्ति प्रमाण पत्र)
NO OBJECTION CERTIFICATE (NOC) FOR GROUND WATER ABSTRACTION

Project Name:		Cavendish Industries Limited Unit-III	
Project Address:		Village Kherimubarakpur, Tehsil Laksar, Distt- Haridwar	
Village:	Kherimubarakpur	Block:	Laksar
District:	Haridwar	State:	Uttarakhand
Pin Code:			
Communication Address:		Village Khedimubarakpur, Tehsil Laksar, Distt- Haridwar, Laksar, Haridwar, Uttarakhand - 247663	
Address of CGWB Regional Office :		Central Ground Water Board Uttarakhand Region, 419-a, Kanwali Road, Baluwala , Near Urja Bhawan, Dehradun, Dehradun, Uttarakhand - 248001	

1. NOC No.:	CGWA/NOC/IND/ORIG/2021/12796											
2. Application No.:	21-4/454/UT/IND/2017	3. Category: (GWRE 2017)	Safe									
4. Project Status:	Existing Project	5. NOC Type:	New									
6. Valid from:	18/01/2021	7. Valid up to:	17/01/2024									
8. Ground Water Abstraction Permitted:												
Fresh Water		Saline Water										
m ³ /day	m ³ /year	m ³ /day	m ³ /year									
622.00	220810.00											
Dewatering		Total										
m ³ /day	m ³ /year	m ³ /day	m ³ /year									
9. Details of ground water abstraction /Dewatering structures												
Total Existing No.:3						Total Proposed No.:0						
	DW	DCB	BW	TW	MP	MPu	DW	DCB	BW	TW	MP	MPu
Abstraction Structure*	0	0	3	0	0	0	0	0	0	0	0	0
*DW- Dug Well; DCB-Dug-cum-Bore Well; BW-Bore Well; TW-Tube Well; MP-Mine Pit;MPu-Mine Pumps												
10. Ground Water Abstraction/Restoration Charges paid (Rs.):						441620.00						
11. Number of Piezometers(Observation wells) to be constructed/ monitored & Monitoring mechanism.						Monitoring Mechanism						
						Manual		DWLR**		DWLR With Telemetry		
**DWLR - Digital Water Level Recorder						2		0		1		

(Compliance Conditions given overleaf)
This is an auto generated document & need not to be signed.

18/11, जामनगर हाउस, मानसिंह रोड, नई दिल्ली - 110011 / 18/11, Jamnagar House, Mansingh Road, New Delhi-110011
Phone: (011) 23383561 Fax: 23382051, 23386743
Website: cgwa-noc.gov.in

पानी बचाये - जीवन बचाये
SAVE WATER - SAVE LIFE

Validity of this NOC shall be subject to compliance of the following conditions:

Mandatory conditions:

- 1) Installation of tamper proof digital water flow meter with telemetry on all the abstraction structure(s) shall be mandatory for all users seeking No Objection Certificate and intimation regarding their installation shall be communicated to the CGWA within 30 days of grant of No Objection Certificate.
- 2) Proponents shall mandatorily get water flow meter calibrated from an authorized agency once in a year.
- 3) Construction of purpose-built observation wells (piezometers) for ground water level monitoring shall be mandatory as per Section 14 of Guidelines. Water level data shall be made available to CGWA through web portal. Detailed guidelines for construction of piezometers are given in Annexure-6 of the guidelines.
- 4) Proponents shall monitor quality of ground water from the abstraction structure(s) once in a year. Water samples from bore wells/ tube wells / dug wells shall be collected during April/May every year and analysed in NABL accredited laboratories for basic parameters (calcium and amonia), heavy metals, pesticides/ organic compounds etc. Water quality data shall be made available to CGWA through the web portal.
- 5) In case of mining projects, additional key wells shall be established in consultation with the Regional Director, CGWB for ground water level monitoring four (4) times a year (January, May, August and November) in core as well as buffer zones of the mine.
- 6) In case of mining project the firm shall submit water quality report of mine discharge/ seepage from Govt. approved/ NABL accredited lab.
- 7) The firm shall report compliance of the NOC conditions online in the website (www.cgwa-noc.gov.in) within one year from the date of issue of this NOC.
- 8) Industries abstracting ground water in excess of 100 m³/d shall undertake annual water audit through certified auditors and submit audit reports within three months of completion of the same to CGWA. All such industries shall be required to reduce their ground water use by at least 20% over the next three years through appropriate means.
- 9) Application for renewal can be submitted online from 90 days before the expiry of NOC. Ground water withdrawal, if any, after expiry of NOC shall be illegal & liable for legal action as per provisions of Environment (Protection) Act, 1986.
- 10) This NOC is subject to prevailing Central/State Government rules/laws/orders or Court orders related to construction of tube well/ground water abstraction structure / recharge or conservation structure/discharge of effluents or any such matter as applicable.

General conditions:

- 11) No additional ground water abstraction and/or de-watering structures shall be constructed for this purpose without prior approval of the Central Ground Water Authority (CGWA).
- 12) The proponent shall seek prior permission from CGWA for any increase in quantum of groundwater abstraction (more than that permitted in NOC for specific period).
- 13) Proponents shall install roof top rain water harvesting in the premises as per the existing building bye laws in the premises.
- 14) The project proponent shall take all necessary measures to prevent contamination of ground water in the premises falling which the firm shall be responsible for any consequences arising thereupon.
- 15) In case of industries that are likely to contaminate the ground water, no recharge measures shall be taken up by the firm inside the plant premises. The runoff generated from the rooftop shall be stored and put to beneficial use by the firm.
- 16) Wherever feasible, requirement of water for greenbelt (horticulture) shall be met from recycled / treated waste water.
- 17) Wherever the NOC is for abstraction of saline water and the existing wells (s) is /are yielding fresh water, the same shall be sealed and new tubewell(s) tapping saline water zone shall be constructed within 3 months of the issuance of NOC. The firm shall also ensure safe disposal of saline residue, if any.
- 18) Unexpected variations in inflow of ground water into the mine pit, if any, shall be reported to the concerned Regional Director, Central Ground Water Board.
- 19) In case of violation of any NOC conditions, the applicant shall be liable to pay the penalties as per Section 16 of Guidelines.
- 20) This NOC does not absolve the proponents of their obligation / requirement to obtain other statutory and administrative clearances from appropriate authorities.
- 21) The issue of this NOC does not imply that other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would consider the project on merits and take decisions independently of the NOC.
- 22) In case of change of ownership, new owner of the industry will have to apply for incorporation of necessary changes in the No Objection Certificate with documentary proof within 60 days of taking over possession of the premises.
- 23) This NOC is being issued without any prejudice to the directions of the Hon'ble NGT/court orders in cases related to ground water or any other related matters.
- 24) Proponents, who have installed/constructed artificial recharge structures in compliance of the NOC granted to them previously and have availed rebate of upto 50% (fifty percent) in the ground water abstraction charges/ground water restoration charges, shall continue to regularly maintain artificial recharge structures.
- 25) Industries which are likely to cause ground water pollution e.g. Tanning, Slaughter Houses, Dye, Chemical/ Petrochemical, Coal washeries, pharmaceutical, other hazardous units etc. (as per CPCB list) need to undertake necessary well head protection measures to ensure prevention of ground water pollution as per Annexure III of the guidelines.
- 26) In case of new infrastructure projects having ground water abstraction of more than 20 m³/day, the firm/entity shall ensure implementation of dual water supply system in the projects.
- 27) In case of infrastructure projects, paved/parking area must be covered with interlocking/perforated tiles or other suitable measures to ensure groundwater infiltration/harvesting.
- 28) In case of coal and other base metal mining projects, the project proponent shall use the advance dewatering technology (by construction of series of dewatering abstraction structures) to avoid contamination of surface water.
- 29) The NOC issued is conditional subject to the conditions mentioned in the Public notice dated 27.01.2021 failing which penalty/cancellation of NOC shall be imposed as the case may be.
- 30) This NOC is issued subject to the clearance of Expert Appraisal Committee (EAC) (if applicable).

(Non-compliance of the conditions mentioned above is likely to result in the cancellation of NOC and legal action against the proponent.)

11.2 Third party water quality test reports:

Bore well No. 1



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TEST REPORT

Issued To : M/s CAVENDISH INDUSTRIES LTD, (Unit-II),
Gram-Khedi Mubarkpur, Tehsil-Laksar,
Distt. Haridwar, (Uttarakhand)

Report No.	CEFT/2306/813	Report Date	07.07.2023
Your Ref. No.	Nil	Type of sample	Ground Water Sample
Sample Code Given by Customer	Nil	Quantity	5 LITER
		Date of sampling	27.06.2023
Sampling Location	Borewell -1	Date of sample receipt	28.06.2023
Sample Collected By	Lab Person	Sample I.D.	CEFT/GEN/2306/813
Sampling procedure	As per SOP	Date of test	28.06.2023-07.07.2023

S. No.	Parameters	Results	Limits of IS: 10500 – 2012		Test method
			Requirement (Acceptable Limit)	Permissible limit in absence of alternate source	
1	pH	7.30	6.5 – 8.5	No relaxation	IS 3025 (Part-11) : 2002
2	Total Dissolved Solids mg/l Max	355	500	2000	IS 3025 (Part-16) : 2002
3	Alkalinity (as CaCO ₃)mg/l ,Max	208	200	600	IS 3025 (Part-23) : 2003
4	Chloride (as Cl ⁻) mg/l, Max	48	250	1000	IS 3025 (Part-32) : 2007
5	Sulphate (as SO ₄) mg/l, Max	11	200	400	IS 3025 (Part-24) : 2003
6	Calcium (as Ca) mg/l Max	50	75	200	IS 3025 (Part-40) : 2002
7	Magnesium (as Mg) mg/l, Max	33	30	100	IS 3025 (Part-46) : 2003
8	Total Hardness(as CaCO ₃)mg/l, Max	180	200	600	IS 3025 (Part-21) : 2009
9	Sodium (as Na) mg/l Max	46	-	-	IS 3025 (Part-45) : 2003
10	Potassium (as K) mg/l Max	4.3	-	-	IS 3025 (Part-45) : 2003
11	Nitrate (as NO ₃) mg/l, Max	7.5	45	No relaxation	IS 3025 (Part-34) : 2003
12	Fluoride (as F) mg/l Max	0.39	1.0	1.5	APHA 4500F (D) : 2017
13	Colour, Hazen unit, max	<1	5	25	IS 3025 (Part-4) : 1983
14	Odour	Agreeable	Agreeable	-----	IS 3025 (Part-5) : 2002
15	Turbidity, NTU max	<1	5	10	IS 3025 (Part-10) : 2002
16	Taste	Agreeable	Agreeable	-----	IS 3025 (Part -8) : 2002
17	Iron (as Fe) mg/l Max	0.31	0.3	No relaxation	IS 3025 (Part-53) : 2003
18	Boron (as B) mg/l Max	ND	0.5	1.0	IS 3025 (Part-57) : 2005
19	Manganese (as Mn) mg/l Max	ND	0.1	0.3	IS 3025 (Part-59) : 2006
20	Zinc (as Zn) mg/l Max	2.9	5	15	IS 3025 (Part-49) : 1994
21	Copper (as Cu) mg/l Max	ND	0.05	1.5	IS 3025 (Part-42) : 1992
22	Cadmium (as Cd) mg/l Max	ND	0.003	No relaxation	IS 3025 (Part-41) : 1992
23	Lead (as Pb) mg/l Max	ND	0.01	No relaxation	IS 3025 (Part-67) : 1994
24	Aluminium (as Al) mg/l Max	ND	0.03	0.2	IS 3025 (Part 31) : 1964 3500 Al.B
25	Selenium (as Se) mg/l Max	ND	0.01	No relaxation	IS 3025 (Part-56) : 2003
26	Mercury (as Hg) mg/l Max	ND	0.001	No relaxation	IS 3025 (Part-48) : 1994
27	Arsenic (as As) mg/l	ND	0.01	0.05	IS 3025 (Part-37) : 1988
28	Chromium (as Cr) mg/l Max	ND	0.05	No relaxation	IS 3025 (Part-52) : 2003
29	Cyanide (as CN) mg/l Max	ND	0.05	No relaxation	IS 3025 (Part-27) : 2003
30	Phenolic Compound (as C ₆ H ₅ OH) mg/l Max	ND	0.001	0.002	IS 3025 (Part-43) Method-6 : 1992
31	Ammonia (as total ammonia-N), mg/l, Max	ND	0.5	No relaxation	IS 3025 (Part 34) 2012-4508 C

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Authorised Signatory

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TEST REPORT

Bacteriological examination:-

S. NO.	PARAMETERS	TEST RESULTS	LIMITS	TEST METHOD
1	E.coli/100ml	ABSENT	ABSENT	IS 15185 2016
2	Coliform /100ml	ABSENT	ABSENT	IS 15185 2016

Note: ND Denotes Not Detectable

Page No.2/2

End of Report



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Bore well No. 2



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TEST REPORT

Issued To : M/s CAVENDISH INDUSTRIES LTD, (Unit-II), **III**
Gram-Khedi Mubarkpur, Tehsil-Laksar,
Distt. Haridwar, (Uttarakhand)

Report No.	CEFT/2306/814	Report Date	07.07.2023
Your Ref. No.	Nil	Type of sample	Ground Water Sample
Sample Code Given by Customer	Nil	Quantity	5 LITER
		Date of sampling	27.06.2023
Sampling Location	Borewell -2	Date of sample receipt	28.06.2023
Sample Collected By	Lab Person	Sample I.D.	CEFT/GEN/2306/814
Sampling procedure	As per SOP	Date of test	28.06.2023-07.07.2023

S. No.	Parameters	Results	Limits of IS: 10500 - 2012		Test method
			Requirement (Acceptable Limit)	Permissible limit in absence of alternate source	
1	pH	7.20	6.5 - 8.5	No relaxation	IS 3025 (Part-11) : 2002
2	Total Dissolved Solids mg/l Max	309	500	2000	IS 3025 (Part-16) : 2002
3	Alkalinity (as CaCO ₃)mg/l Max	175	200	600	IS 3025 (Part-23) : 2003
4	Chloride (as Cl ⁻) mg/l Max	30	250	1000	IS 3025 (Part-32) : 2007
5	Sulphate (as SO ₄) mg/l Max	10	200	400	IS 3025 (Part-24) : 2003
6	Calcium (as Ca) mg/l Max	43	75	200	IS 3025 (Part-40) : 2002
7	Magnesium (as Mg) mg/l Max	18	30	100	IS 3025 (Part-46) : 2003
8	Total Hardness(as CaCO ₃)mg/l Max	175	200	600	IS 3025 (Part-21) : 2009
9	Sodium (as Na) mg/l Max	40	-	-	IS 3025 (Part-45) : 2003
10	Potassium (as K) mg/l Max	4.4	-	-	IS 3025 (Part-45) : 2003
11	Nitrate (as NO ₃) mg/l Max	7.2	45	No relaxation	IS 3025 (Part-34) : 2003
12	Fluoride (as F) mg/l Max	0.45	1.0	1.5	APHA 4500F (D) : 2017
13	Colour, Hazen unit, max	<1	5	25	IS 3025 (Part-4) : 1983
14	Odour	Agreeable	Agreeable	-----	IS 3025 (Part-5) : 2002
15	Turbidity, NTU max	<1	5	10	IS 3025 (Part-10) : 2002
16	Taste	Agreeable	Agreeable	-----	IS 3025 (Part-8) : 2002
17	Iron (as Fe) mg/l Max	0.20	0.3	No relaxation	IS 3025 (Part-53) : 2003
18	Boron (as B) mg/l Max	ND	0.5	1.0	IS 3025 (Part-57) : 2005
19	Manganese (as Mn) mg/l Max	ND	0.1	0.3	IS 3025 (Part-59) : 2006
20	Zinc (as Zn) mg/l Max	2.0	5	15	IS 3025 (Part-49) : 1994
21	Copper (as Cu) mg/l Max	ND	0.05	1.5	IS 3025 (Part-42) : 1992
22	Cadmium (as Cd) mg/l Max	ND	0.003	No relaxation	IS 3025 (Part-41) : 1992
23	Lead (as Pb) mg/l Max	ND	0.01	No relaxation	IS 3025 (Part-47) : 1994
24	Aluminium (as Al) mg/l Max	ND	0.03	0.2	IS: 3025 (Part 31) : 1964 3500 ALB
25	Selenium (as Se) mg/l Max	ND	0.01	No relaxation	IS 3025 (Part-56) : 2003
26	Mercury (as Hg) mg/l Max	ND	0.001	No relaxation	IS 3025 (Part-48) : 1994
27	Arsenic (as As) mg/l	ND	0.01	0.05	IS 3025 (Part-37) : 1988
28	Chromium (as Cr) mg/l Max	ND	0.05	No relaxation	IS 3025 (Part-52) : 2003
29	Cyanide (as CN) mg/l Max	ND	0.05	No relaxation	IS 3025 (Part-27) : 2003
30	Phenolic Compound (as C ₆ H ₅ OH) mg/l Max	ND	0.001	0.002	IS 3025 (Part-43) Method-6: 1992
31	Ammonia (as total ammonia-N), mg/l Max	ND	0.5	No relaxation	IS 3025 (Part 34) 2012-1500 C


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 Authorised Signatory

Note :

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TEST REPORT

Bacteriological examination:-

S. NO.	PARAMETERS	TEST RESULTS	LIMITS	TEST METHOD
1	E.coli/100ml	ABSENT	ABSENT	IS 15185 2016
2	Coliform /100ml	ABSENT	ABSENT	IS 15185 2016

Note: ND Denotes Not Detectable

Page No.2/2

End of Report



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Bore well No. 3



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TEST REPORT

Issued To : M/s CAVENDISH INDUSTRIES LTD. (Unit-II), III
Gram-Khedi Mubarkpur, Tehsil-Laksar,
Distt. Haridwar. (Uttarakhand)

Report No.	CEFT/2306/815	Report Date	07.07.2023
Your Ref. No.	Nil	Type of sample	Ground Water Sample
Sample Code Given by Customer	Nil	Quantity	5 LITER
		Date of sampling	27.06.2023
Sampling Location	Borewell -3	Date of sample receipt	28.06.2023
Sample Collected By	Lab Person	Sample I.D.	CEFT/GEN/2306/815
Sampling procedure	As per SOP	Date of test	28.06.2023-07.07.2023

S. No.	Parameters	Results	Limits of IS: 10500 – 2012		Test method
			Requirement (Acceptable Limit)	Permissible limit in absence of alternate source	
1	pH	7.22	6.5 – 8.5	No relaxation	IS 3025 (Part-11) : 2002
2	Total Dissolved Solids mg/l Max	321	500	2000	IS 3025 (Part-16) : 2002
3	Alkalinity (as CaCO ₃)mg/l ,Max	190	200	600	IS 3025 (Part-23) : 2003
4	Chloride (as Cl ⁻) ,mg/l, Max	30	250	1000	IS 3025 (Part-32) : 2007
5	Sulphate (as SO ₄) mg/l, Max	7.2	200	400	IS 3025 (Part-24) : 2003
6	Calcium (as Ca) mg/l Max	55	75	200	IS 3025 (Part-40) : 2002
7	Magnesium (as Mg) mg/l, Max	27	30	100	IS 3025 (Part-46) : 2003
8	Total Hardness(as CaCO ₃)mg/l, Max	180	200	600	IS 3025 (Part-21) : 2009
9	Sodium (as Na) mg/l Max	49	-	-	IS 3025 (Part-45) : 2003
10	Potassium (as K) mg/l Max	3.3	-	-	IS 3025 (Part-45) : 2003
11	Nitrate (as NO ₃) mg/l, Max	7.0	45	No relaxation	IS 3025 (Part-34) : 2003
12	Fluoride (as F) mg/l Max	0.32	1.0	1.5	APHA 4500F (D) : 2017
13	Colour, Hazen unit, max	<1	5	25	IS 3025 (Part-4) : 1983
14	Odour	Agreeable	Agreeable	---	IS 3025 (Part-5) : 2002
15	Turbidity, NTU max	<1	5	10	IS 3025 (Part-10) : 2002
16	Taste	Agreeable	Agreeable	---	IS 3025 (Part-8) : 2002
17	Iron (as Fe) mg/l Max	0.21	0.3	No relaxation	IS 3025 (Part-53) : 2003
18	Boron (as B) mg/l Max	ND	0.5	1.0	IS 3025 (Part-57) : 2005
19	Manganese (as Mn) mg/l Max	ND	0.1	0.3	IS 3025 (Part-59) : 2006
20	Zinc (as Zn) mg/l Max	2.3	5	15	IS 3025 (Part-49) : 1994
21	Copper (as Cu) mg/l Max	ND	0.05	1.5	IS 3025 (Part-42) : 1992
22	Cadmium (as Cd) mg/l Max	ND	0.003	No relaxation	IS 3025 (Part-41) : 1992
23	Lead (as Pb) mg/l Max	ND	0.01	No relaxation	IS 3025 (Part-47) : 1994
24	Aluminium (as Al) mg/l Max	ND	0.03	0.2	IS: 3025 (Part 31) : 1964 3500 Al B
25	Selenium (as Se) mg/l Max	ND	0.01	No relaxation	IS 3025 (Part-56) : 2003
26	Mercury (as Hg) mg/l Max	ND	0.001	No relaxation	IS 3025 (Part-48) : 1994
27	Arsenic (as As) mg/l	ND	0.01	0.05	IS 3025 (Part-37) : 1988
28	Chromium (as Cr) mg/l Max	ND	0.05	No relaxation	IS 3025 (Part-52) : 2003
29	Cyanide (as CN) mg/l Max	ND	0.05	No relaxation	IS 3025 (Part-27) : 2003
30	Phenolic Compound (as C ₆ H ₅ OH) mg/l Max	ND	0.001	0.002	IS 3025 (Part-43) Method-6: 1992
31	Ammonia (as total ammonia-N), mg/l, Max	ND	0.5	No relaxation	IS 3025 (Part 34) 2012-4500 C

Note : 1. The test results are related to the sample/ tested as identified.
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TEST REPORT

Bacteriological examination:-

S. NO.	PARAMETERS	TEST RESULTS	LIMITS	TEST METHOD
1	E.coli/100ml	ABSENT	ABSENT	IS 15185 2016
2	Coliform /100ml	ABSENT	ABSENT	IS 15185 2016

Note: ND Denotes Not Detectable

Page No.2/2

End of Report




Authorised Signatory

- Notes :**
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ETP Outlet



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TEST REPORT

Issued To : M/s CAVENDISH INDUSTRIES LTD,
(Unit-III), Gram-Khedi Mubarkpur, Tehsil-Laksar,
Distt. Haridwar. (Uttarakhand)

Report No.	: CEFT/2306/852	Report Date	: 07.07.2023
Your Ref. No.	: Nil	Type of sample	: ETP (OUT-LET)
Sample Code Given by Customer	: Nil	Quantity	: 2 LITER
		Date of sampling	: 27.06.2023
		Date of sample receipt	: 28.06.2023
		Sample I.D.	: CEFT/GEN/2306/852
		Date of test	: 28.06.2023- 07.07.2023

S. NO.	PARAMETERS	TEST RESULTS	STANDARDS			TEST METHODS
			Inland surface Water	Public Sewer	Land for Irrigation	
1.	pH	7.29	5.5 – 9.0	5.5 – 9.0	5.5 – 9.0	IS 3025(Part-11): 2002
2.	Total Suspended Solids, mg/L.	38	100	600	200	IS 3025 (Part-17) : 1984
3.	Total Dissolved Solid, mg/L.	789	2100	2100	2100	IS 3025 (Part-16) : 1984
4.	Bio-chemical Oxygen Demand at 27°C 3 days, mg/L.	25	30	350	100	IS 3025 (Part-44): 2003
5.	Chemical Oxygen Demand, mg/L.	75	250	No guideline	No guideline	IS 3025 (part-58) : 2006
6.	Oil and Grease, mg/L.	07	10	20	10	IS 3025 (Part-39): 2003

Page No.1/1

End of Report



Authorised Signatory

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ETP Inlet



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TEST REPORT

Issued To : M/s CAVENDISH INDUSTRIES LTD, (Unit-III),
Gram-Khedl Mubarkpur, Tehsil-Laksar,
Distt. Haridwar. (Uttarakhand)

Report No.	CEFT/2306/856	Report Date	07.07.2023
Your Ref. No.	Nil	Type of sample	ETP (INLET) Water
Sample Code given by customer	Nil	Quantity	2 Liter PP Bottle+1 Liter Glass Bottle
		Date of sampling	27.06.2023
Sampling Location	Within Premises	Date of sample receipt	28.06.2023
Sample Collected By	Lab Person	Sample I.D.	CEFT/GEN/2306/856
Sampling procedure	As per SOP	Date of test	28.06.2023 – 07.07.2023

S. NO.	PARAMETERS	TEST RESULTS	TEST METHODS
1.	pH	8.18	IS 3025(Part-11): 2002
2.	Total Suspended Solids, mg/L	151	IS 3025 (Part-17) : 1984
3.	Total Dissolved Solid, mg/L	1127	IS 3025 (Part-16) : 1984
4.	Bio-chemical Oxygen Demand at 27°C 3 days, mg/l.	77	IS 3025 (Part-44): 2003
5.	Chemical Oxygen Demand, mg/L	239	IS 3025 (part-58) : 2006
6.	Oil and Grease, mg/L	40	IS 3025 (Part-39): 2003

Note: ND Denotes Not Detectable

Page No. 1/1

End of Report



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STP Outlet



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TEST REPORT

Issued To : M/s CAVENDISH INDUSTRIES LTD,
(Unit-III), Gram-Khedi Mubarkpur, Tehsil-Laksar,
Distt. Haridwar, (Uttarakhand)

Report No.	CEFT/2306/853	Report Date	07.07.2023
Your Ref. No.	Nil	Type of sample	STP (OUT-LET)
Sample Code Given by Customer	Nil	Quantity	2 LITER
		Date of sampling	27.06.2023
		Date of sample receipt	28.06.2023
		Sample I.D.	CEFT/GEN/2306/853
		Date of test	28.06.2023- 07.07.2023

S. NO.	PARAMETERS	TEST RESULTS	STANDARDS	TEST METHODS
1.	pH	7.3	6.5-9.0	IS 3025 (Part-11): 2002
2.	Total Suspended Solids, mg/l.	06	10	IS 3025 (Part-17): 1984
3.	NH4-N, mg/l.	04	05	IS 3025 (Part-34): 2003
4.	Bio-chemical Oxygen Demand at 27°C 3 days, mg/l.	03	10	IS 3025 (Part-44): 2003
5.	Chemical Oxygen Demand, mg/l.	27	50	IS 3025 (part-58): 2006
6.	N-Total, mg/L	08	10	IS: 3025 (P-34)/ APHA 22 nd Edition
7.	Fecal Coliform, MPN/100ml	147	<230	IS 5401 (Part-1): 2012
8.	PO4-P., mg/L	ND	02	IS 3025 (Part-31): 2003

Note: ND Denotes Not Detectable

Page No. 1/1

End of Report



Authorised Signatory

Note : 1. The test results are related to the sample/ tested as identified.
 2. The sample will be discarded after retention time of 7 days unless otherwise specified.
 3. Any Discrepancy found in the test report may be communicated within seven days.
 4. This report shall not be reproduced, cannot be used as evidence in the court of law and should not be used in any advertising media without written permission of CEO, CEFT Pvt. Ltd.
 5. The Court Jurisdiction will be Delhi.
 6. Customer complaint register is available at the laboratory.

Regd. Address - Bldg. No. 17, 1st Floor, DLF Industrial Area, Moti Nagar, New Delhi - 110015 Ph.: - 011-45012722
 Email: info@ceftlab.com, Website : www.ceftlab.com

STP Inlet



Centre for Environment and Food Technology Pvt. Ltd.

ISO 9001: 2015, ISO 45001: 2018 (OHSAS); ISO/IEC 17025: 2017
NABL & IQAS Accredited, FSSAI and MoEF Recognised Testing Laboratory

TEST REPORT

Issued To : M/s CAVENDISH INDUSTRIES LTD, (Unit-III),
Gram-Khedi Mubarkpur, Tehsil-Laksar,
Distt. Haridwar. (Uttarakhand)

Report No.	CEFTJ2306J857	Report Date	07.07.2023
Your Ref. No.	Nil	Type of sample	STP (INLET) Water
Sample Code given by customer	Nil	Quantity	2 Liter PP Bottle+1 Liter Glass Bottle
Sampling Location	Within Premises	Date of sampling	27.06.2023
Sample Collected By	Lab Person	Date of sample receipt	28.06.2023
Sampling procedure	As per SOP	Sample I.D.	CEFTJGENJ2306J857
		Date of test	28.06.2023 - 07.07.2023

S. NO.	PARAMETERS	TEST RESULTS	TEST METHODS
1.	pH	8.43	IS 3025(Part-11): 2002
2.	Total Suspended Solids, mg/l.	70	IS 3025 (Part-17) : 1984
3.	N-Total, mg/l.	49	IS 3025 (Part-34): 2003
4.	Bio-chemical Oxygen Demand at 27°C 3 days, mg/L	70	IS 3025 (Part-44): 2003
5.	Chemical Oxygen Demand, mg/L	258	IS 3025 (part-58) : 2006
6.	NH4-N, mg/l.	15	IS: 3025 (P-34)/ APHA 22 nd Edition
7.	Fecal Coliform, MPN/100ml	1185	IS 5401 (Part-1): 2012
8.	PO4-P, mg/L	ND	IS 3025 (Part-31): 2003

Note: ND Denotes Not Detectable

Page No. 1/1

End of Report



- Note: 1. The test results are related to the sample/ tested as identified.
2. The sample will be discarded after retention time of 7 days unless otherwise specified.
3. Any Discrepancy found in the test report may be communicated within seven days.
4. This report shall not be reproduced, cannot be used as evidence in the court of law and should not be used in any advertising media without written permission of CEO, CEFT Pvt. Ltd.
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Regd. Address - Bldg. No. 17, 1st Floor, DLF Industrial Area, Moti Nagar, New Delhi - 110015 Ph.: - 011-45012722
Email: info@ceftlab.com, Website : www.ceftlab.com

11.3 Third party water Flow Meter Calibration Certificate:

Bore well-1

UPC INSTRUMENTS PVT. LTD.			
AN ISO 9001:2015, GMP & CE Certified Company			
Office Address: Plot No. 18, Towel Market, Gohana Road, Panipat-132103 (Harayana)			
Mfg. Unit: Plot no. 125, Near Tehsil, Dinger Majara Road, Gharaunda, Karnal-132114 (Harayana)			
info@unitechmeter.com, ho@unitechmeter.com			
Calibration Certificate			
Certificate No : UPC/0159/2023-24		O. A. No. :	
Date of Test : 12/04/2023		Due Date : 11/04/2024	
Product : UPCS-MAG-110		Sr. No. 21031003052	
Customer Name : CAVENDISH INDUSTRIES LIMITED, UNIT-111			
Details Of Flowmeter			
Type of Flowmeter :	Electromagnetic	Power Supply :	80 - 260 V AC
Display Type :	Integral	Accuracy :	(+/-) 0.5% of measured Value
Output Signal :	4 - 20 mA / RS 485	Calibrated Range :	2.83 - 283 m3/h
Calibration Factor :	2.041500	Display Range :	2.83 - 283 m3/h
Line Size :	DN 100		
List of Formulae			
1) % of Deviation in Qi = $\frac{(Qi-Qm) \times 100}{Qm}$			
Nomenclature			
Qm - Master's Flow Rate		Qi - Displayed Flow Rate	
Calibration Method	: Comparison Method		
Traceability	: All the instruments used are traceable to National Standards through reference Standards and their calibrations are valid		
Calibration Results			
Sr. No.	Master Flow Rate (Qm)	Indicated Flow Rate (Qi)	Deviation in Qi
	m3/h	m3/h	%
1	87.410	87.800	0.22
2	139.210	139.420	0.15
3	199.500	199.850	0.18
Calibration by :- Signature : yogesh		Verified By :- Signature :	
It is hereby certified that the equipment mentioned above has been tested and found to meet its specifications. The performance of the above equipment is guaranteed for a period of 12 months from the date of installation or 18 months from the date of despatch, whichever is earlier, against any manufacturing defects only.			

Bore well-2

UPC INSTRUMENTS PVT. LTD.
AN ISO 9001:2015, GMP & CE Certified Company
Office Address: Plot No. 18, Towel Market, Gohana Road, Panipat-132103 (Harayana)
Mfg. Unit: Plot no. 125, Near Tehsil, Dinger Majara Road, Gharaunda, Karnal-132114 (Harayana)
info@unitechmeter.com, ho@unitechmeter.com

Calibration Certificate			
Certificate No : UPC/0160/2023-24		O. A. No. :	
Date of Test : 12/04/2023		Due Date : 11/04/2024	
Product : UPCS-MAG-110		Sr. No. 21031003223	
Customer Name : CAVENDISH INDUSTRIES LIMITED, UNIT-111			
Details Of Flowmeter			
Type of Flowmeter :	Electromagnetic	Power Supply :	80 - 260 V AC
Display Type :	Integral	Accuracy :	(+/-) 0.5% of measured Value
Output Signal :	4 - 20 mA / RS 485	Calibrated Range :	2.83 - 283 m3/h
Calibration Factor :	2.050900	Display Range :	2.83 - 283 m3/h
Line Size :	DN 100		
List of Formulae			
1) % of Deviation in Qi = $\frac{(Qi-Qm) \times 100}{Qm}$			
Nomenclature			
Qm - Master's Flow Rate		Qi - Displayed Flow Rate	
Calibration Method	: Comparison Method		
Traceability	: All the instruments used are traceable to National Standards through reference Standards and their calibrations are valid		
Calibration Results			
Sr. No.	Master Flow Rate (Qm)	Indicated Flow Rate (Qi)	Deviation in Qi
	m3/h	m3/h	
1	58.700	58.800	0.17
2	147.320	147.690	0.25
3	202.400	202.770	0.18
Calibration by :- Signature : yogesh		Verified By :- Signature :	
It is hereby certified that the equipment mentioned above has been tested and found to meet its specifications. The performance of the above equipment is guaranteed for a period of 12 months from the date of installation or 18 months from the date of despatch, whichever is earlier, against any manufacturing defects only.			

Bore well-3

UPC INSTRUMENTS PVT. LTD.
AN ISO 9001:2015, GMP & CE Certified Company
Office Address: Plot No. 18, Towel Market, Gohana Road, Panipat-132103 (Harayana)
Mfg. Unit: Plot no. 125, Near Tehsil, Dinger Majara Road, Gharanda, Karnal-132114 (Harayana)
info@unitechmeter.com, ho@unitechmeter.com

Calibration Certificate			
Certificate No : UPC/0163/2023-24		O. A. No. :	
Date of Test : 12/04/2023		Due Date : 11/04/2024	
Product : UPCS-MAG-110		Sr. No. 21031003225	
Customer Name : CAVENDISH INDUSTRIES LIMITED, UNIT-111			
Details Of Flowmeter			
Type of Flowmeter :	Electromagnetic	Power Supply :	80 - 260 V AC
Display Type :	Integral	Accuracy :	(+/-) 0.5% of measured Value
Output Signal :	4 - 20 mA / RS 485	Calibrated Range :	2.83 - 283 m3/h
Calibration Factor :	1.986300	Display Range :	2.83 - 283 m3/h
Line Size :	DN 100		
List of Formulae			
1) % of Deviation = $\frac{(Q_i - Q_m) \times 100}{Q_m}$ in Q_i			
Nomenclature			
Qm - Master's Flow Rate		Qi - Displayed Flow Rate	
Calibration Method	: Comparison Method		
Traceability	: All the instruments used are traceable to National Standards through reference Standards and their calibrations are valid		
Calibration Results			
Sr. No.	Master Flow Rate (Qm)	Indicated Flow Rate (Qi)	Deviation in Qi
	m3/h	m3/h	%
1	84.360	84.580	0.26
2	162.410	162.770	0.22
3	204.250	204.500	0.12
Calibration by :- Signature : yogesh		Verified By :- Signature : 	
It is hereby certified that the equipment mentioned above has been tested and found to meet its specifications. The performance of the above equipment is guaranteed for a period of 12 months from the date of installation or 18 months from the date of despatch, whichever is earlier, against any manufacturing defects only.			

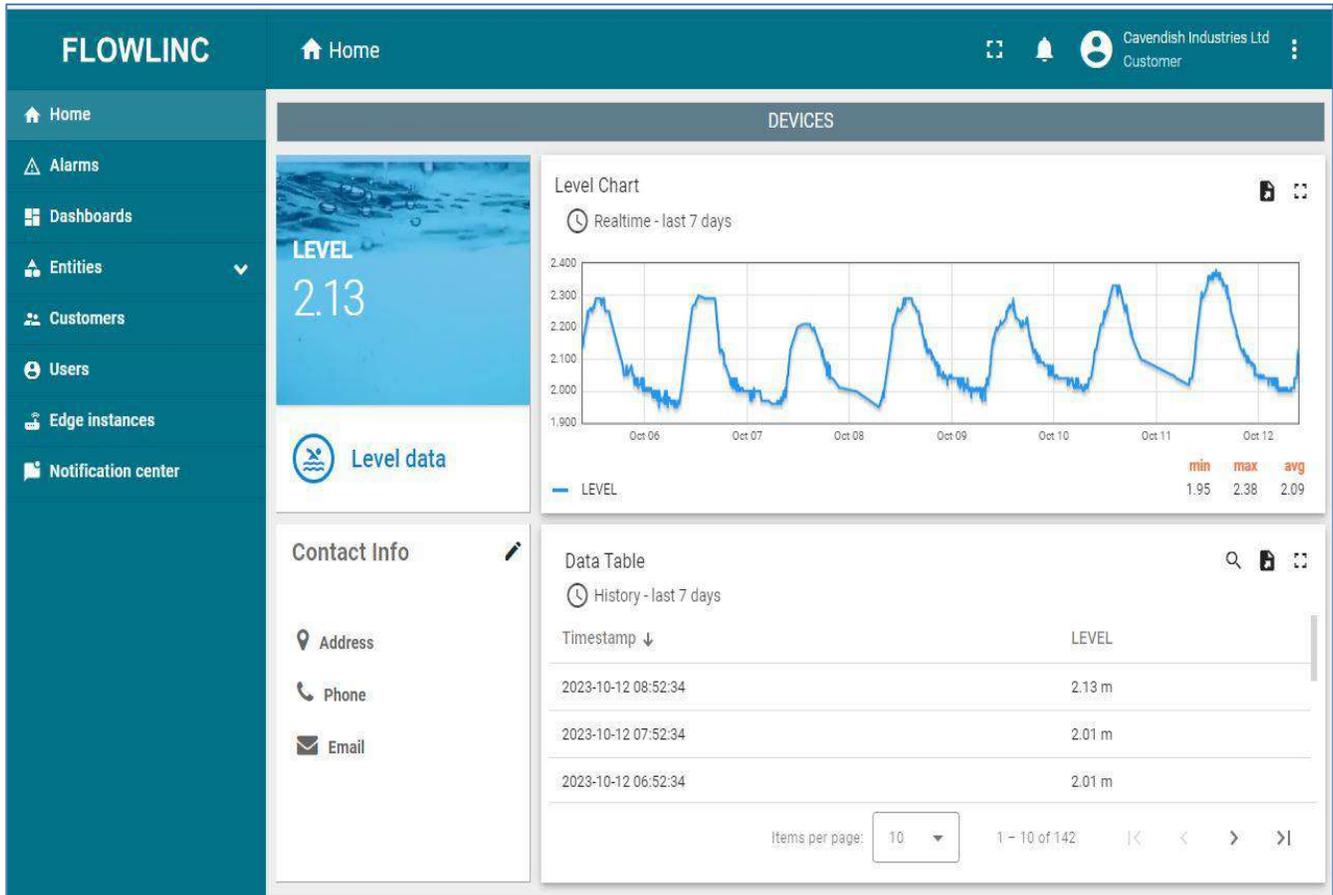
11.4 Ground water abstraction Historical Data, KL

Month	FY 2022-23
April	14318
May	16987
June	16147
July	17587
August	16112
September	14476
October	15264
November	14244
December	13046
January	12398
February	11169
March	13358
Total	175106

11.5 Production Data in KL

Month	FY 2022-23
April	6614
May	6740
June	6739
July	6743
August	6741
September	6743
October	6493
November	6741
December	6739
January	6745
February	5759
March	6744
Total	79540

11.6 Piezometer recorded data



Water Audit Report

(Application No- 21-4/455/UT/IND/2017)

As per the guidelines of CGWA



At

Cavendish Industries Limited

(Unit- II & IV, A Unit of JK Tyre)

Village Khedimubarakpur, Tehsil Laksar,

Distt- Haridwar, Uttarakhand - 247663

Conducted By



National Productivity Council

Regional Directorate, Kanpur

4th Floor, Kabir Bhawan, GT Road,

Kanpur-208005, U.P.

(Ph: 0512- 2224176)

Website: -www.npcindia.gov.in

(October-2023)

ACKNOWLEDGEMENT

National Productivity Council is thankful to M/s Cavendish Industries Limited (Unit- II & IV A JK Tyre Associate) for awarding the work of “**Water Audit**” of its plant located at Village Khedimubarakpur, Tehsil Laksar, Distt- Haridwar, Uttarakhand - 247663.

We express our gratitude to **Mr. Anjan Kumar Das -Vice President (Works)** for his valuable overarching support extended to this project. We are also grateful to him for the participation in discussions with audit team with tremendous patience and understanding.

We are also thankful to **Mr. Prasun Chayan Misra, Sr. Manager (HSE) and Mr. Rishu Kumar, Chief Manager (Utility)** for coordinating the study and providing all data, measurement and review support provided during and after the field study. Our sincere thanks to all respondents from different departments for clearing our doubts with tremendous patience and understanding.

We do hope that the recommendations given in this report will be useful in water conservation as well as improvement in system performance. We have made every attempt to adhere to high quality standards, in both data collection and analysis.

UJJWAL Digitally signed
by UJJWAL
NARAYAN
Date: 2023.12.27
AN 13:46:43 +05'30'

Ujjwal Narayan
Certified Water Auditor
Certificate No. RGI/WA/014/2023



For Regional Director
National Productivity Council
under Ministry of Commerce and Industry, GOI
4th Floor, Kabir Bhawan, GT Road,
Kanpur-208005, U.P.

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ABBREVIATIONS

ETP	:	Effluent Treatment Plant
KL	:	Kilo Litre
KLD	:	Kilo Litre Per day
kW	:	Kilo Watt
kWh	:	Kilo Watt hour
OHT	:	Overhead Tank
RWH	:	Rainwater Harvesting
RO	:	Reverse Osmosis
STP	:	Sewage Treatment Plant
SWC	:	Specific Water Consumption
WUR	:	Water Use Ratio
ERP	:	Effluent Recycling Plant
EDI	:	Electro de ionisation
HRSCC	:	High-Rate Solid contact clarifier
MGF	:	Multi grade Filter
ACF	:	Activated Carbon Filter
UF	:	Ultra filter
RO	:	Reverse Osmosis
DM	:	Demineralise Plant.
UPGWD:		Uttar Pradesh Ground Water Department

EXECUTIVE SUMMARY

National Productivity Council, Kanpur has conducted a detailed Water Audit Studied at AM/s Cavendish Industries Limited Unit-ii A Jk Tyre Associate, Village Khedimubarakpur, Tehsil Laksar, Distt- Haridwar, Uttarakhand, during in Month of October-2023. As per NOC the Water Withdrawal Permissions from CGWA to **Cavendish Industries Limited**, is **1253 m³/day** and **444815 m³/annum**. No surface water being used in the plant.

Presently the plant is using only 81% (FY-2022-23) of the abstraction limit of the plant.

The Plant has installed Five numbers of bore well, four Bore wells are in operation during the water audit, and one bore well is shutdown mode, water flow measurement has been done by the NPC team by Ultrasonic flow meter. The measured water flow of Bore well-1 is **80.4 m³/hr**, bore well-2 is **88.7 m³/hr**, bore well-3 is **100.2 m³/hr** and bore well-4 is **68.2 m³/hr**.

On daily basis average water drawn from ground water for financial year 2022-23 from Bore well-1 is **107.6 m³/day**, bore well-2 is **347.8 m³/day**, bore well-3 is **522.8 m³/day** and bore well-4 is **36.3 m³/day** as per the monthly water abstraction data of plant.

Plant has installed two numbers of piezometers one is DWLR with telemetry system and one is DWLR, to monitor the level of the ground water.

The Audit is focused on improving water usage efficiency and identifying water Conservation opportunities. Accordingly, the field study and data collection for the said water audit was carried out by National Productivity Council team. This report discusses the water balance and various water saving options derived based on observation made, data collected and their analysis. The main water sources and their uses are given in table below:

Table 1: Description of water uses at the plant, FY 2022-23

Description of Water uses	m ³ /day	Water Quality	Major Usage Area	Water Use (%)
Tube well Water	1014.6	Fresh Water	Plant process, Utility and Domestic uses	65.4%
STP Treated Water	217.0	Treated water		14.0%
ETP Treated Water	319.9	Treated water		20.6%
Surface water used	0.0	Fresh Water		0.0%
Total Water Usage (Raw + Treated)	1551.5			100%

Table 2: Annual Raw water withdrawal, FY2022-23

Source of Water	m ³ /year	Water Use (%)
Tube well -1	38203	10.6%
Tube well -2	123482	34.3%
Tube well -3	185598	51.5%
Tube well -4	12895	3.6%
Tube well -5	0	0.0%
Total Withdrawal	360178	100.0%

Specific water consumption in the plant process based on the production detail and total water abstraction is described below in the table. Specific water consumption for the FY- 2022-23 is 4.5 kL/MT of production.

Table 3: Specific water consumption, KL/KG production

Year	FY 2021-22	FY 2022-23
SWC, KL/MT	5.7	4.5

WATER MANAGEMENT SUMMARY

Table 4: Fact File- Cavendish Industries Limited, Laksar, UK

Plant Address	Village Khedimubarakpur, Tehsil Laksar, Distt- Haridwar, Uttarakhand - 247663
Plant zone	Safe Zone
Depth of ground water table	2.69 Meter
Type of products	Tyre
No. of working days/year	355 Days (FY 2022-23)
Cost of ground water abstraction and pumping	a) Bore well pumping cost - Rs 1.4/ m ³ b) CGWA abstraction cost- Rs 3.00 / m ³
Power Supply Cost (2022-23)	Rs 8.10 per kWh
Name of the project	Water audit of Cavendish Industries Limited Unit- ii & iv as per guideline of CGWA
CGWA NOC validity period	03-02-2024
Ground water requirement as per the NOC	1253 KLD
Water audit report prepared by	Certified water auditor, CWA
Is water audit as per the format	yes
Total actual water consumption	1014.6
Overall water balance chart	Industrial Process (Utility)- 684.7 KLD Other uses- 684.7 KLD

The water audit study of the plant has identified various water & cost saving opportunities which are discussed in the report. The summary of recommendations is given in table below. **It is estimated that by implementing NPC suggested schemes;**

The plant can reduce its fresh water consumption by 6.3 %. It was also noticed that there is no scope for further reduction of freshwater use in the process as water use is already optimized unless any technology advancement is adopted by the plant.

SUMMARY OF RECOMMENDATIONS

Sr. No	Particular	Before Implementation	After Implementation
1	Water usage per unit production (Specific water consumption)	4.5 kL/MT	4.1 kL/MT (at same production)
2	Process/stage where maximum water is used and its quantity	Boiler (572.4 KLD)	-
3	Reduction recommended in industrial process (Quantity and percentage)	11 KLD	1.1% of total water saving quantity
4	Reduction recommended in Domestic process (Quantity and percentage)	2KLD	0.2% of total water saving quantity
5	Efficient technology adopted in industrial process/other process	Replace the Spry Nozzles system type AHUs with Cellulose Pad system type AHUs	-
	Saving proposed through other means/in other uses (water conservation/wastage minimisation/leakage plugging etc.)	50 KLD	5 % of total water saving quantity
6	Treated water quality (Recommended with its usage)	Plant is utilizing treated water using ETP & STP	Plant is utilizing treated water using ETP & STP
7	Its recommended reduction in industrial process/other process 20% or more (Y/N)	-	No

Table 5: Summary of proposed schemes

Sr. No.	Proposed Schemes	Savings (m ³ /day)	Annual Saving (m ³ /annum)
1	Increase the recovery of steam condensate for savings in raw ground water	11	4064
2	Installation of Surface water storage Tank to maximize the collection of Rainfall runoff generated in the plant premises and reuse of rain water in the plant	50	17750
3	Installation of water efficient taps in washbasins	2	710
	Total	63	22524

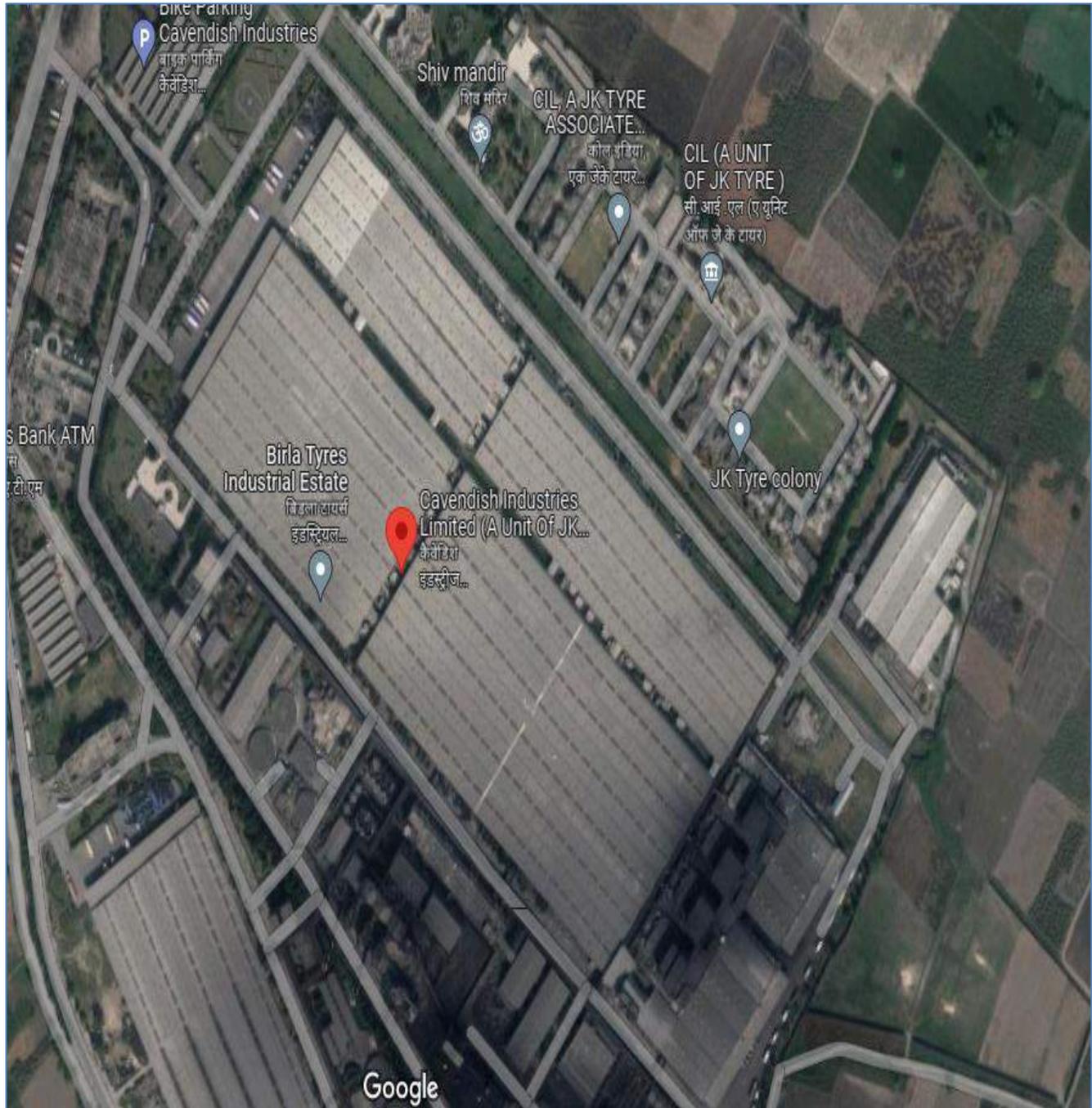
Table 6: Summary of water savings

Sr. No.	Description	Unit	Value
1	Annual Bore well Water Consumption	kL/Annum	360178
2	Savings	kL/Annum	22524
3	% Savings Achieved	%	6.3%

CHAPTER -1: INTRODUCTION

1.1 General Plant Details and Location

Figure 1: Location on Map



1.2 Brief Description About the Plant

M/s Cavendish Industries Ltd. Unit-2 & 4, Haridwar is a company owned by JK Tyres & Industries Ltd and involved in manufacturing tubular engineering components (Truck Bus Tyre, Tractor Tyre, Motorcycle and light commercial vehicle tyres) for automotive industry. The company was established in the year 2008.

Process description-

The Company has a processing capacity of 300 MT/day in Unit-2 and 93 MT/day in Unit-4. The company has also installed various types of instruments like Tyre manufacturing machines: Mixer, Extruder, Calendar, Bias Cutter, Tyre building, Tyre curing.

Environment:

Cavendish Industries Ltd. Unit-2 & 4, processes are amicable for creating pollution of water, air & land through solid waste disposal. However, with company policy & the company works in compliance of government norms and thus have been able to reduce the impact on mother earth. Green initiatives taken across its supply chain evidences its strong commitment for environmental improvement and prevention of natural resource depletion

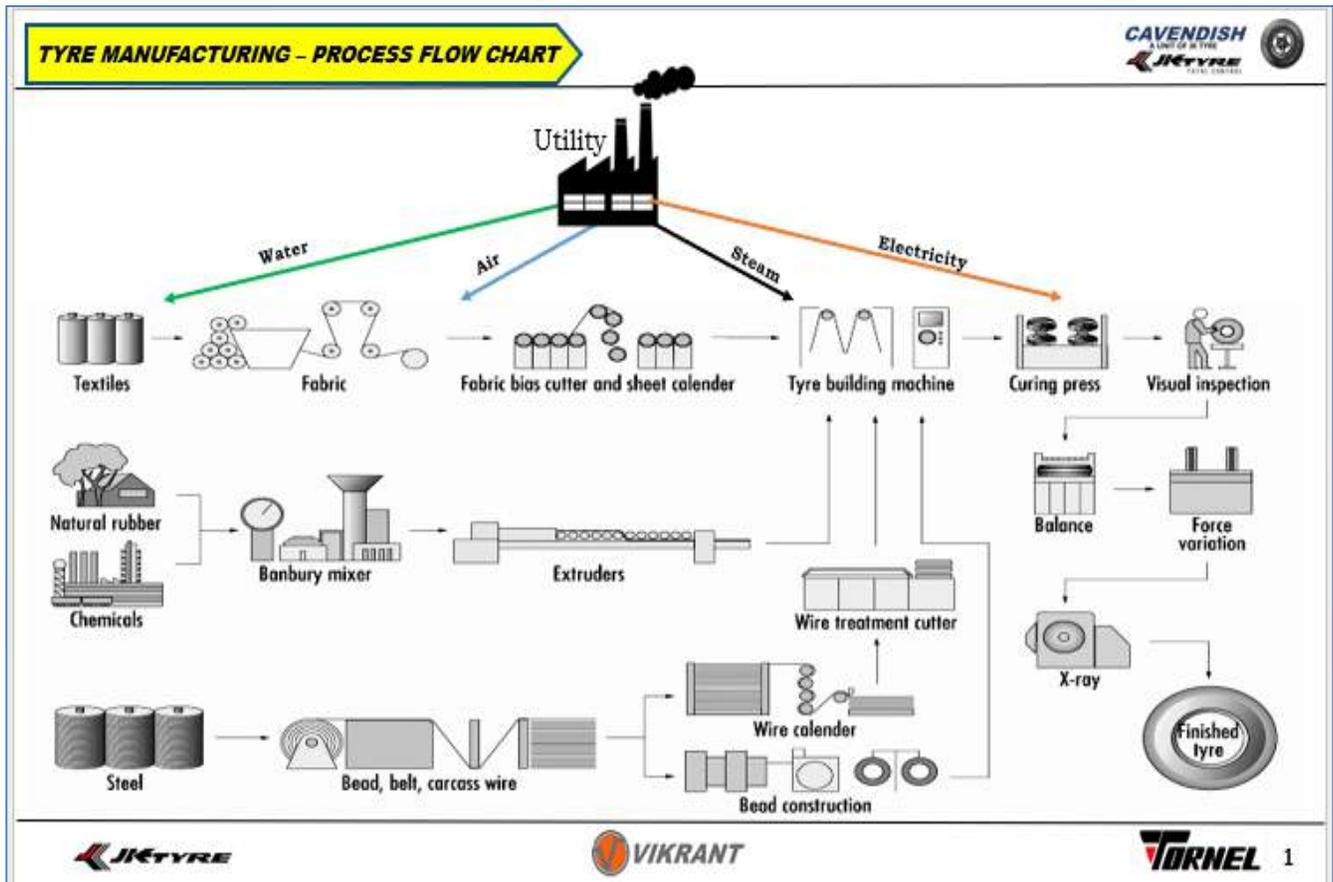
Plant Details

- The Establishment of the plant has been done in 2008
- The area of the plant is 113997 sq. meter in Unit-2 and 40020 sq. mtr in Unit-4.
- The main products are Manufacturing of Bias Tyres.

To meet the water requirement of the plant four numbers of bore wells are installed and operated as per as per the need. The plant has consent for drawing fresh ground water of 1253 m³/day from CGWA. Excluding holidays, the usual working days of the plant is nearly 355.

1.3 Manufacturing process and layout

Figure 2: Process layout



CHAPTER -2: SCOPE OF WORK

2.1 Scope of Water Audit Study

- On-site training and discussion with facility manager and personnel.
- Water system analysis and Quantification of baseline water map.
- Water use Monitoring and measurements using pressure and flow meters and various other devices
- Quantification of inefficiencies and leaks in the water system
- Quantification of water quality loads and discharges
- Quantification of variability in flows and quality parameters
- Strategies for water treatment and reuse or direct use
- Development of detailed water circuit diagram and water balance of the facility
- Mapping of water quality requirement to develop 'recycle' and 'reuse' opportunities
- Developing Water consumption and wastewater generation pattern
- Estimating Specific water use and conservation potential
- Develop & Maintain monthly MIS on water extracted from Bore wells, water level, water quality etc.
- Calculation of Rainwater Harvesting Potential for the site and assessment of the existing structures
- Evolving Water saving opportunities with method of implementing the proposal with
- Description and figures related to water management schemes
- Investment required for water saving schemes/Cost Benefit Analysis
- Submission of water audit report & its presentation at site (if required)
- Following opportunities would also be assessed for Industries for water conservation:
 - Setting up of norms for water budgeting
 - Modernization of industrial process to reduce water consumption
 - Recycling water with a re-circulating cooling system
 - Zonation cooling water approach which can result in fivefold reduction in blow down when compared to traditional chemical treatment
 - Reduction in reuse of de-ionized water by eliminating some plenum flushes, converting from a continuous flow to an intermittent flow system and improving control on the use
 - Use of wastewater for gardening
 - Proper processing of effluents to adhere to the norms of disposal

CHAPTER -3: METHODOLOGY OF THE WATER AUDIT STUDY

3.1 Methodology Followed for Conducting Water & Wastewater Audit

Step 1: Reconnaissance or Walk-through survey

- Understanding of existing water sourcing, storage, and distribution facility.
- Assessing the water demand and water consumption areas/processes.
- Preparation of detailed water circuit diagram.

Step 2: Secondary Data Collection through the Discussion with plant executives, past records, Available technical literature/specifications

- Analyse historic water use and wastewater generation
- Field measurements for estimating current water use
- Metered & unmetered supplies.
- Understanding of “base” flow and usage trend at site
- Past Water Bills
- Wastewater Treatment scheme & costs etc.

Step 3: Site Water Audit Planning (based on site operations and practices)

- Preparation of water flow measurement plan to quantify water use at various locations
- Wastewater flow measurement and sampling plan
- Instruments availability like Ultrasonic Water Flow Meter, Doppler type Flow meter, Stop Watch, measuring cylinders, Power Analyser etc.

Step 4: Conduction of Detailed Water Audit & Measurements

- Conduction of field measurements to Quantify water/wastewater streams
- Power Measurement of Pumps/Motors
- Measurement of suction & discharge pressure at various pumps
- Wastewater sampling & analysis
- Preparation of Water Balance Diagram
- Establishing Water Consumption Pattern
- Evolving value added “cost of water” at various locations
- Detection of potential leaks & water losses in the system
- Assessment of productive and unproductive usage of water
- Determine key opportunities for water consumption reduction, reuse & recycle with paybacks.

Step 5: Preparation of Water Audit Report with Sustainable Water Management Plan

- Documentation of collected & analysed Water Balancing and Measurement details
- Projects and procedures to maximize water savings and minimize/eliminate water losses
- Water Metering and Accounting System
- Opportunities for Water Conservation based on Reduce/ Recycle/ Reuse/ Regeneration/ Recharge options with Cost Benefit Analysis

Step 6: Water Audit Report Finalization and Submission

- Incorporation of required changes based on discussions with plant executives Preparation & submission of final report.

3.2 Methodology Adopted for Performance Evaluation of Pumping System**➤ Water Flow Measurement**

The water flow measurement was conducted using transit time ultrasonic flow meter at the discharge side of the pumps or any suitable location. The step wise methodology is given below:

- a. A suitable location for measurement of flow rate was identified on discharge pipeline of the pump and initial pipe preparation was done by cleaning and filing of pipe at measurement location
- b. The circumference of pipe for calculating the external diameter was measured by inch tape and the pipe thickness was measured by digital thickness gauge or by measurement of spare pipe.
- c. The parameter like pipe diameter, type of pipe, water temperature, pipe thickness, roughness etc. are input in the ultrasonic flow meter
- d. Based on above input values, the flow meter reflects the distance between the traducers to be positioned on the pipe while measuring the flow
- e. The traducers are placed on the surface of the pipe (fild surface) at the same distance given by flow meter
- f. The ultrasonic flow meter displays instantaneous values of water flow rate in m³/hr. The average of these values may be considered as flow rate of water.

CHAPTER -4: ASSESSMENT OF PRESENT WATER USAGE

4.1 Water Sourcing and Major Water Use Areas

Bore wells are only sources of freshwater for the plant. The total Ground water abstraction from all Bore wells is 360178 KL for FY 2022-23, which is average 1014.6 KL per day.

For extracting fresh/raw water the plant has installed four numbers of Bore wells. With four Bore well electromagnetic digital water flow meters are installed and one is Standby mode. Daily, amount of water fetched from these Bore wells are recorded in logbook. The fresh water drawn from Bore wells is collected in raw water storage tank and distributed to different locations in the plant.

The waste water of industrial uses is treated in ETP. Treated water from ETP is reused in the plant for gardening purpose and feed to 2nd RO. Domestic waste of the plant and colony is treated by the STP. Treated water from the STP is reused in the plant for Cooling Tower makeup after making soft water.

Figure 3: Raw water storage tank

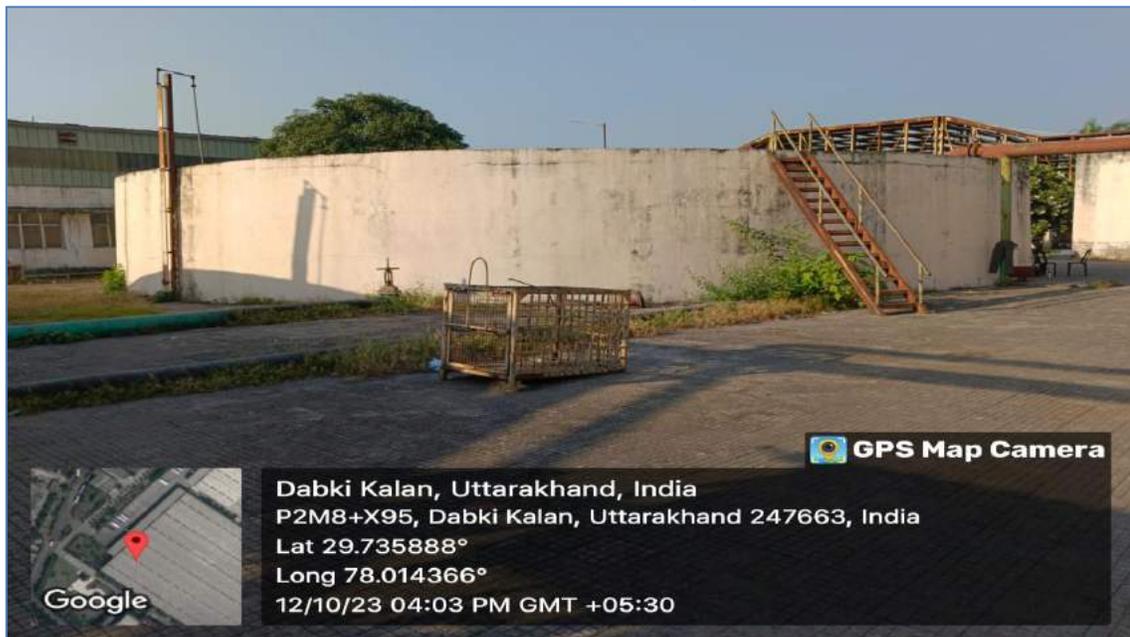


Table 7: List of ground water storage tanks

Type of Storage System (Over Head Tank, Underground Tanks, Reservoir etc.)	Location	Storage Capacity (KL)	Level from ground
Raw water storage tank	WTP Plant	1800	Ground
ETP Collection Tank	ETP	1800	Ground

Figure 4: Bore well Pictures



Bore well-1

Bore well-2

Bore well-3

Bore well-4

Table 8: Bore well water abstraction daily basis, FY 2022-23

Source of Water	m ³ /day	Water Quality	Major Usage Area	Water Use (%)
Tube well -1	107.6	Fresh water	Plant process, Utility and Domestic uses	10.6%
Tube well -2	347.8	Fresh water		34.3%
Tube well -3	522.8	Fresh water		51.5%
Tube well -4	36.3	Fresh water		3.6%
Tube well -5	0.0	Fresh water		0.0%
Total	1014.6			100.0%

Table 9: Total water usages at the plant, FY 2022-23

Description of Water uses	m ³ /day	Water Quality	Major Usage Area	Water Use (%)
Tube well Water	1014.6	Fresh Water	Plant process, Utility and Domestic uses	65.4%
STP Treated Water	217.0	Treated water		14.0%
ETP Treated Water	319.9	Treated water		20.6%
Surface water used	0.0	Fresh Water		0.0%
Total Water Usage (Raw + Treated)	1551.5			100%

Figure 5: Graphical representation of usage fresh & treated water

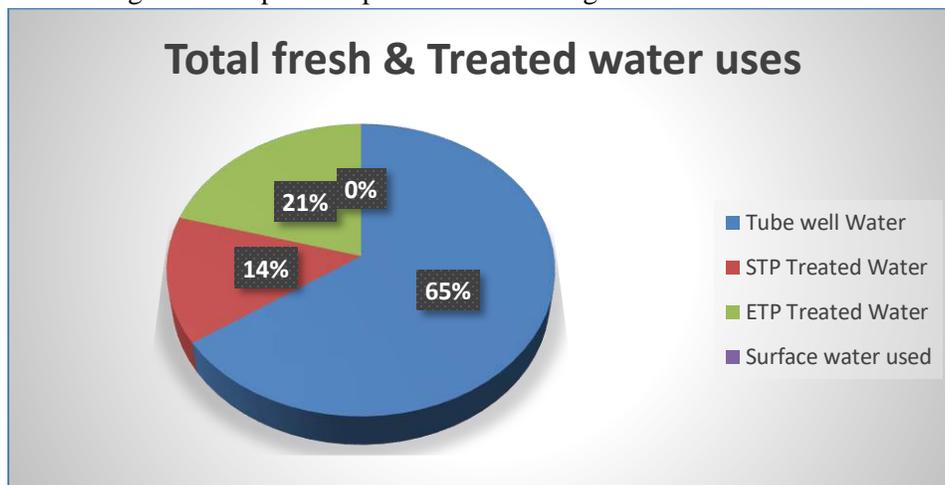


Table 10: Bore well Details

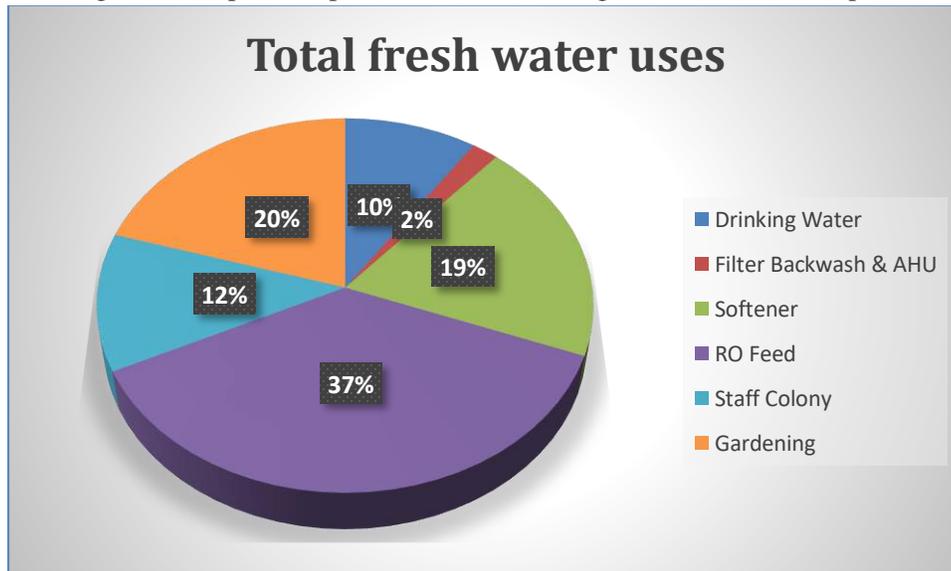
Borewells	Location of Bore-wells	Depth of Bore-well (Feet)	Type of Pump	Pump Rated Capacity (kW)	Rated yield (m ³ /hr)	TDS (mg/l)
1	Near Admin Block	300	Submersible pump	25	100	272
2	Near RO Plant	300	Submersible pump	25	100	288
3	Near Coal Crusher House	300	Submersible pump	25	100	200
4	In front of HSD Storage Tank	300	Submersible pump	25	100	241

5	Near	160	-	-	-	-
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Table 11: Consumption of ground water at the plant, FY 2022-23

Key Water Usage Section	Type of water used	Quantity Used (m ³ /day)	Percentage
Drinking Water	Fresh Water	146.5	9.4%
Filter Backwash & AHU	Fresh Water	29.3	1.9%
Softener	Fresh Water	83.0	5.3%
	Treated Water	217.0	14.0%
RO Feed	Fresh Water	572.4	36.9%
	Treated Water	6.6	0.4%
Staff Colony	Fresh Water	183.4	11.8%
Gardening	Fresh Water	313.3	20.2%
Total		1551.5	100%

Figure 6: Graphical representation area wise ground water consumption



4.2 Ground Water Quality

The plant regularly checks the water quality of the Groundwater. The sample of Bore well water third party quality test report is provided in Annexure.

Table 12: Results of Analysis of Ground Water Samples

- Bore well-1

Parameters for Raw water (Drinking)	Unit	Data
Date of sample	12-10-2023	
PH		7.20
TDS	mg/l	330
Hardness	mg/l	175
Chloride	mg/l	40
Fluoride	mg/l	0.39

- Bore well-2

Parameters for Raw water (Drinking)	Unit	Data
Date of sample	12-10-2023	
PH		7.21
TDS	mg/l	327
Hardness	mg/l	188
Chloride	mg/l	46
Fluoride	mg/l	0.32

- Bore well-3

Parameters for Raw water (Drinking)	Unit	Data
Date of sample	12-10-2023	
PH		7.48
TDS	mg/l	330
Hardness	mg/l	183
Chloride	mg/l	30
Fluoride	mg/l	0.32

- Bore well-4

Parameters for Raw water (Drinking)	Unit	Data
Date of sample	12-10-2023	
PH		7.13
TDS	mg/l	324
Hardness	mg/l	199
Chloride	mg/l	43
Fluoride	mg/l	0.30

Note: The water test report provided by the plant is prepared mentioning 'drinking water'. It is suggested to the plant to prepare water quality test report of Ground water as per the guideline of GGWA. Third party test report is attached in annexure.

4.3 Water Distribution and Water Balance

Fresh water extracted through Bore wells and recycled treated water is used for industrial process, cooling towers, horticulture, and domestic use. All the waste water generated by plant process is treated in ETP. ETP treated water is used in gardening and RO in the plant. And all the waste water generated in domestic section (Plant and Colony) is treated by the STP Plant. STP treated water feed in the Softener Plant after treatment soft water reuse in cooling tower makeup in the plant.

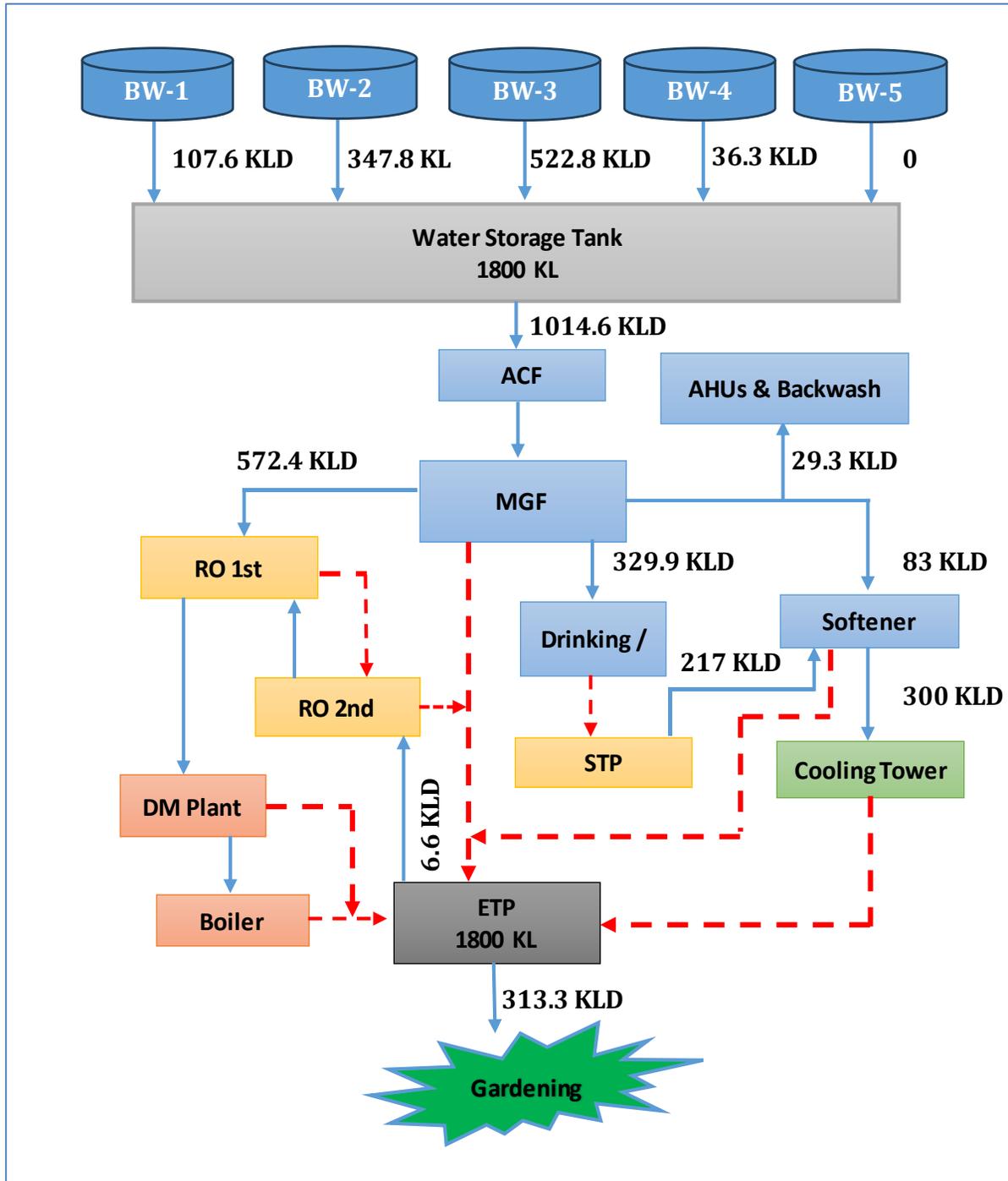
A simple water balance diagram for the period of April 2022 to March 2023 is presented below on average daily basis quantity for the same period. During the above period 360178 KL per annum of water was drawn from Bore wells. Raw water is consumed in Domestic uses (Plant and Colony) 117105 KL/annum, 10416 KL/annum in Filter Backwash & AHU, 29454 KL/annum in Softener Plant and 203202.3644 KL/annum in RO.

Waste water generated from all the sections of the plant is being treated in ETP. 113560 KL/annum waste water is treated in ETP.

ETP treated water is diverted in two streams. First is recycled water which used in plant and second is reuse water which sent for gardening purpose in the Plant. Quantity of the recycled treated water in the plant is 2336 KL per annum and quantity of reuse treated water is 111224 KL per annum for the same time period mentioned above.

Waste water generated from Domestic sections of the plant is being treated in STP. STP Treated water is 77049 KL/annum which is sent to softener plant for treatment and reuse in cooling tower makeup in the plant.

Figure 7: Water Balance and distribution chart



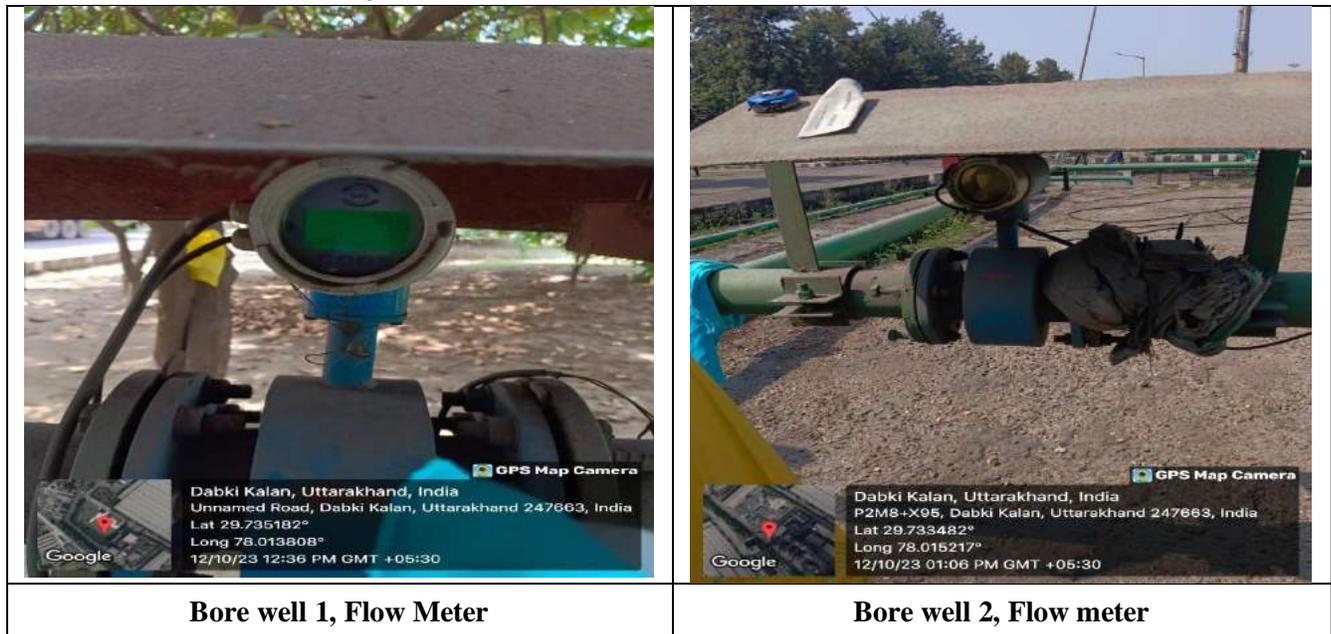
4.4 Water Metering System

The plant has installed Digital water flow meters at Bore wells to monitor the water abstraction from the ground. The water flow meters also installed at some other locations in the plan. Location with detail of water flow meter mention in table below and pictures of flow meters are attached in figure below:

Table 13: Location of Identified Water Meters & details

Sr. No.	Meter location	Type of Meter	Regularly recorded	Calibrated
1	Bore well No-1	Digital	Yes	Yes
2	Bore well No-2	Digital	Yes	Yes
3	Bore well No-3	Digital	Yes	Yes
4	Bore well No-4	Digital	Yes	Yes
5	STP Outlet	Digital	Yes	No
6	ETP Inlet	Analog	Yes	No

Figure 8: Flow meters installed at Bore well and other locations.



Bore well 1, Flow Meter

Bore well 2, Flow meter



Bore well 3, Flow Meter



Bore well 4, Flow Meter



STP Outlet meter



ETP Outlet meter

4.5 Piezo-meter Measurement Details

The plant has installed two number of Piezometers to measure pressure via the rise of fluid column and estimate the ground water level. The one piezometer is equipped with DWLR and telemetry system and one is DWLR system enabled to monitor ground water level in the plant. Depth of the piezometer well is 300 feet and it installed at 62-meter distance from the nearest Bore well and water shown 2.69 m. The Piezometer telemetry recorded data is given in Annexure.

Figure 9: Piezometer installed in plants

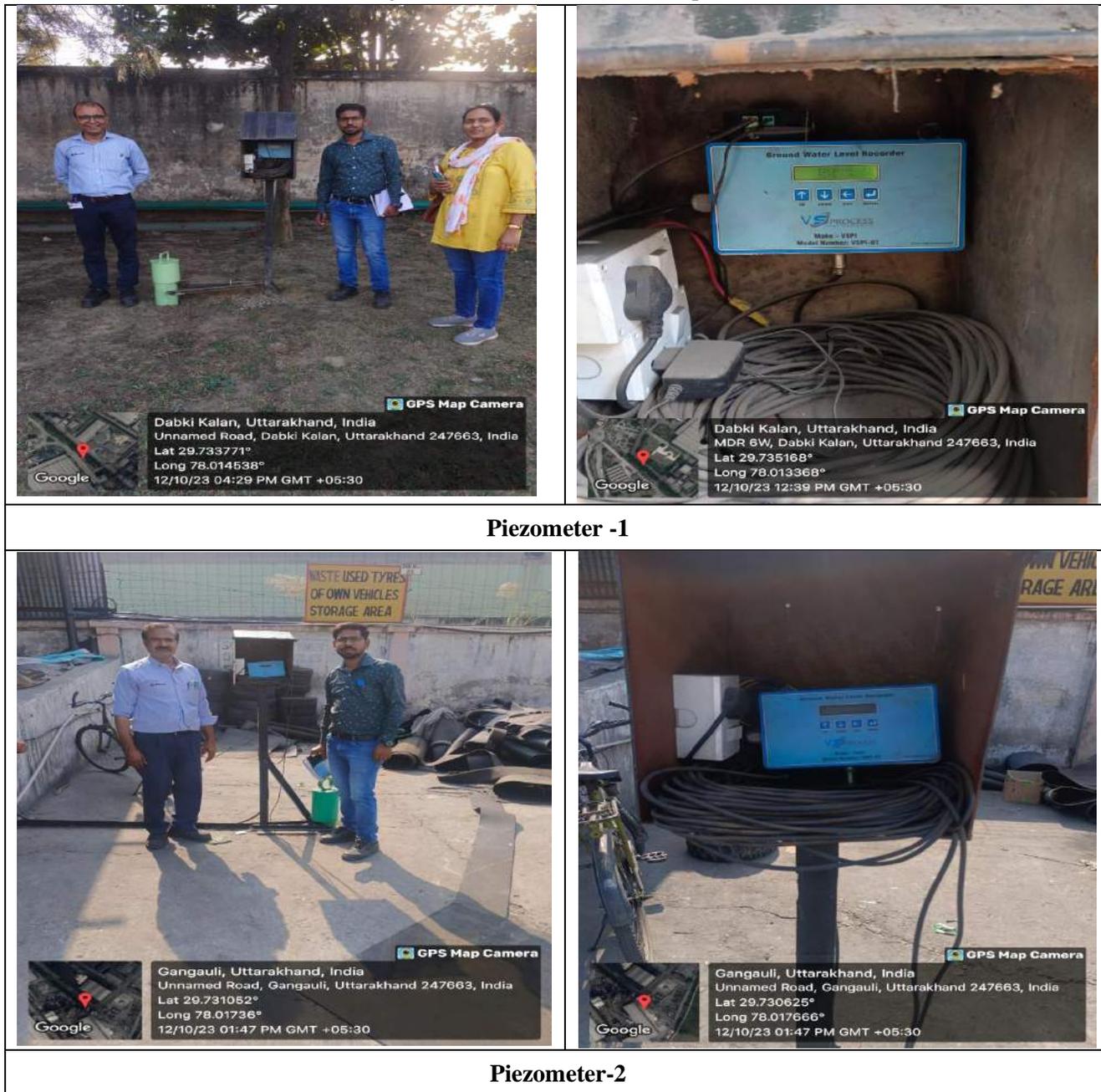


Table 14: List of Piezometer installed in the plant

Piezometer	Meter location	Type of meter	Water level (Mtr.)	Regularly recorded (Yes/No)
Piezometer-1	Near ETP	Digital with telemetry	2.69	YES
Piezometer-2	Near Scrap Yard	Digital	1.84	YES

4.6 Water Use Baseline Data as provided by the Plant

The Total water withdrawal was provided by the plant details mentioned in the tables below. Monthly ground water abstraction details of last three years are attached in Annexure.

Table 15: Monthly ground water abstraction (KL), FY 200-21

Month	TW No-1	TW No-2	TW No-3	TW No-4	TW No-5	Total
Apr-20	1734	4695	0	0	0	6429
May-20	10227	11057	0	55	0	21339
Jun-20	18170	13388	0	0	0	31558
Jul-20	27667	10322	0	0	0	37989
Aug-20	21768	14627	0	0	0	36395
Sep-20	23180	16111	0	0	0	39291
Oct-20	14905	19472	0	0	0	34377
Nov-20	14548	13655	0	0	0	28203
Dec-20	14891	14266	0	0	0	29157
Jan-21	12720	15653	0	0	0	28373
Feb-21	13489	13983	0	0	0	27472
Mar-21	18947	10226	0	0	0	29173
Total	192246	157455	0	55	0	349756

Table 16: Monthly ground water abstraction (KL), FY 2021-22

Month	TW No-1	TW No-2	TW No-3	TW No-4	TW No-5	Total
Apr-21	18466	17471	0	0	0	35937
May-21	15327	22412	0	0	0	37739
Jun-21	14910	21907	0	0	0	36817
Jul-21	21969	19292	0	0	0	41261
Aug-21	18514	21826	0	0	0	40340
Sep-21	16622	18616	0	0	0	35238
Oct-21	11408	20857	0	0	0	32265
Nov-21	16556	19755	0	0	0	36311
Dec-21	19549	16429	0	0	0	35978
Jan-22	16023	14413	0	0	0	30436
Feb-22	11769	8432	0	0	0	20201
Mar-22	18187	14176	0	0	0	32363
Total	199300	215586	0	0	0	414886

Table 17: Monthly ground water abstraction (KL), FY 2022-23

Month	TW No-1	TW No-2	TW No-3	TW No-4	TW No-5	Total
Apr-22	7807	17089	3827	6104	0	34827
May-22	186	6799	27190	370	0	34545
Jun-22	1399	10955	21578	912	0	34844
Jul-22	2363	10634	18578	639	0	32214
Aug-22	223	9650	21931	444	0	32248
Sep-22	4899	11975	12627	752	0	30253
Oct-22	2024	13439	13596	199	0	29258
Nov-22	438	15775	13324	88	0	29625
Dec-22	4023	6313	15568	496	0	26400
Jan-23	7508	8126	8296	948	0	24878
Feb-23	7142	4550	9470	834	0	21996
Mar-23	191	8177	19613	1109	0	29090
Total	38203	123482	185598	12895	0	360178
Per day	107.6	347.8	522.8	36.3	0.0	1014.6

Table 18: Total water usage base line data (KL), FY 2022-23

Month	Drinking Water	Filter Backwash & AHU	Softener		RO Feed		Staff Colony	Gardening	Total Consumption
	Raw Water			STP Treated Water	Raw Water	ETP Treated Water	Raw Water	ETP Treated Water	
Apr-22	4767	2536	2933	5794	17952	46	6639	8924	49591
May-22	4913	76	3809	6625	18603	320	7144	10670	52160
Jun-22	4743	76	4778	6305	19104	684	6143	9486	51319
Jul-22	4683	76	4568	6352	16515	205	6372	8525	47296
Aug-22	4598	76	3741	5957	18355	208	5478	8242	46655
Sep-22	4123	76	2225	6355	18646	276	5183	7504	44388
Oct-22	4412	76	5627	5623	13799	250	5345	8420	43551
Nov-22	4471	1028	1773	6735	17631	162	4722	11028	47550
Dec-22	3779	1119	0	7252	17253	0	4249	10140	43792
Jan-23	3842	1456	0	6839	15423	0	4157	9960	41677
Feb-23	3378	991	0	6096	12837	0	4790	8820	36912
Mar-23	4284	2834	0	7116	17083	185	4890	9505	45896
Total	51993	10416.9	29454	77049	203202.4	2336	65112	111224	550787
Avg.	146.5	29.3	83.0	217.0	572.4	6.6	183.4	313.3	1551.5

CHAPTER -5: WATER TREATMENT & RECYCLING PRACTICES

- a) **Effluent Treatment Plant:** - The Cavendish Industries Limited has installed effluent treatment plant for treatment of waste water generation from plant process section.
- b) **Sewage Treatment Plant:** - The Cavendish Industries Limited has installed sewage treatment plant for treatment of waste water generation from plant domestic section.
- c) **RO Plant:** - The Cavendish Industries Limited has installed two numbers of RO Plant, 1st RO Plant is using for treatment of Raw water and 2nd RO is using for treatment of 1st RO reject and ETP treated water.
- d) **Softener Plant:** - The Cavendish Industries Limited has installed Softener plant for the making of soft water of Raw water and STP treated water for cooling tower makeup.

5.1 Effluent Treatment Plant

The plant has installed Effluent Treatment Plant to treat waste water generated from all the sections of the plant. The waste water treated in continuous manner.

Stages of Treatment are-

1. Preliminary Treatment:

- a) Oil & Grease removal- oil, grease & lighter solids float to the surface removal by skimming.
- b) pH Equalization.

2. Primary Treatment: The main purpose of this treatment is to reduce any heavy solids (organic & inorganic) that settle to the bottom by sedimentation. The settled materials are removed in Primary clarifier and the remaining liquid transferred to the next stage i.e. secondary treatment. Primary treatment removes about 60% of suspended solids from waste water.

3. Secondary Treatment: The prime objective is the further treatment of the effluent from primary treatment to remove dissolved and suspended biological matter. Biological treatment is done in Aeration tank. The biological solids removed during secondary sedimentation in a secondary clarifier is supplied to the sludge drying bed and remaining water is supplied to tertiary treatment. Secondary treatment removes more than 90% of suspended solids.

4. Tertiary/Advanced Treatment: Tertiary treatment consisting PSF (Pressure sand filter and ACF (Activated carbon filter) aids the removal of those waste water constituents which cannot be removed in secondary treatment.

Figure 10: Picture of ETP



Figure 11: Process flow diagram of ETP

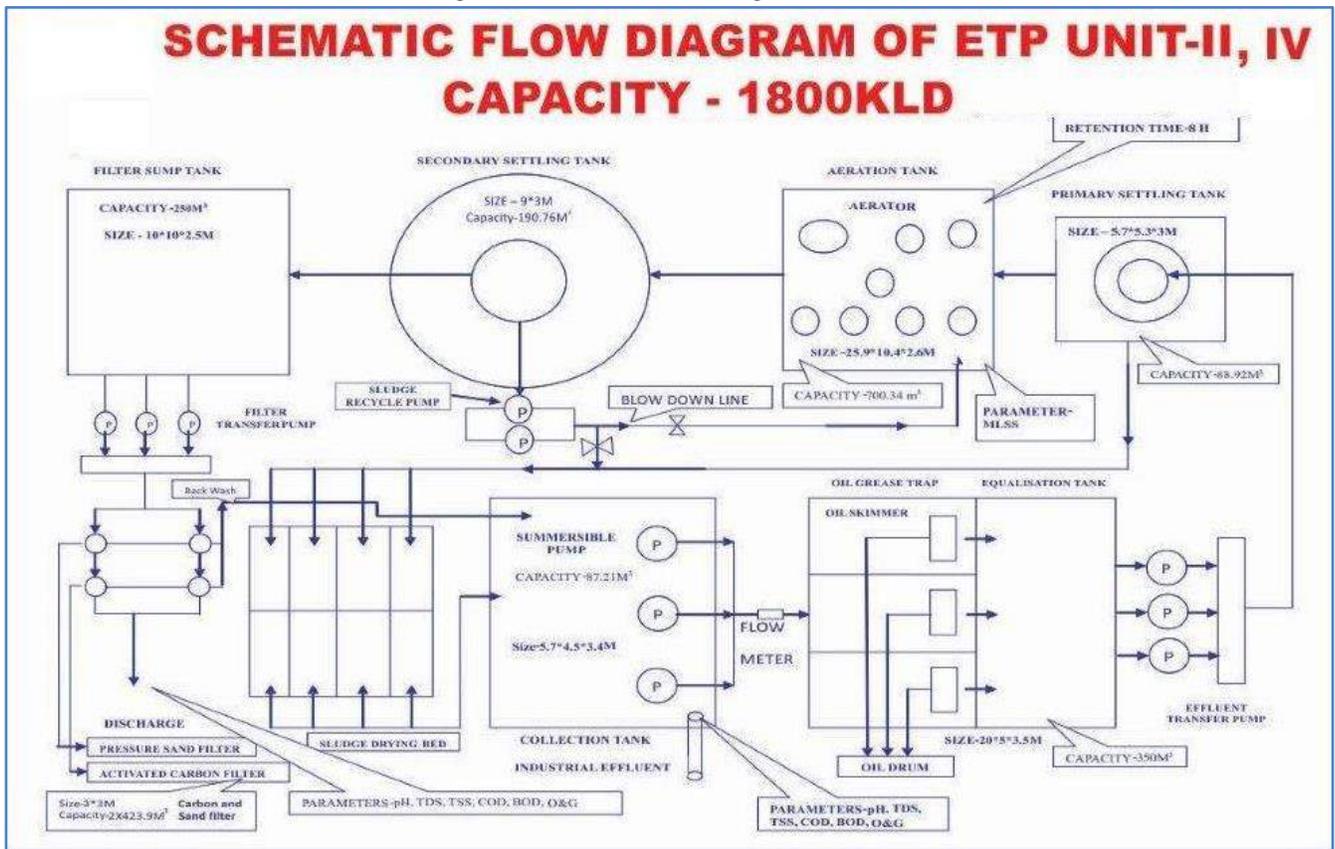


Table 19: Monthly ETP Treated water details

Month	ETP inlet	ETP Outlet	ETP Treated recycle in Plant	ETP Treated reuse in Gardening
Apr-22	9440	8970	46	8924
May-22	11440	10990	320	10670
Jun-22	10350	10170	684	9486
Jul-22	8940	8730	205	8525
Aug-22	8860	8450	208	8242
Sep-22	8120	7780	276	7504
Oct-22	9110	8670	250	8420
Nov-22	11620	11190	162	11028
Dec-22	10720	10140	0	10140
Jan-23	10790	9960	0	9960
Feb-23	9320	8820	0	8820
Mar-23	10260	9690	185	9505
Total	118970	113560	2336	111224

5.2 Sewage Treatment Plant

Sewage treatment refers to the process of removing contaminants, micro-organisms, and other types of pollutants from wastewater influent. The main objective of sewage treatment is to produce an effluent (treated waste water) and a solid waste/sludge suitable for discharge into the natural environment.

Plant has installed a Sewage Treatment Plant of 160 KLD capacity to treat domestic waste water coming from the plant.

Sewage Treatment Process:

1. Preliminary Treatment: This is the first stage of sewage treatment plant process and its main objective is the removal of coarse solids and other large materials often found in raw wastewater. Preliminary treatment operations typically include large filtering screens, manual grit removal. Excess grit causes severe pump blockages thereby affecting a range of subsequent treatment pumps. Flow measurement devices, are always included at the preliminary treatment stage.

2. Primary Treatment: The main purpose of this treatment is to reduce any heavy solids (organic & inorganic) that settle to the bottom by sedimentation while oil, grease & lighter solids float to the surface by skimming. The settled and floating materials are removed and the remaining liquid may

be discharged or subjected to the next stage i.e. secondary treatment. Primary treatment removes about 60% of suspended solids from wastewater.

3. Secondary Treatment: The prime objective is the further treatment of the effluent from primary treatment to remove dissolved and suspended biological matter. The biological solids removed during secondary sedimentation, called secondary or biological sludge, are normally combined with primary sludge for sludge processing. Secondary treatment may require a separation process to remove the micro-organisms from the treated water prior to discharge or tertiary treatment. Secondary treatment removes more than 90% of suspended solids.

4. Tertiary/Advanced Treatment: Tertiary treatment generally follows secondary treatment and aids the removal of those wastewater constituents which cannot be removed in secondary treatment. Treated wastewater is sometimes disinfected chemically or physically (for example, by lagoons and microfiltration) prior its discharge into the receiving environment (sea, river, lake, wet lands, ground, etc.)

Figure 12: Picture of STP



Figure 13: Process Flow diagram of STP

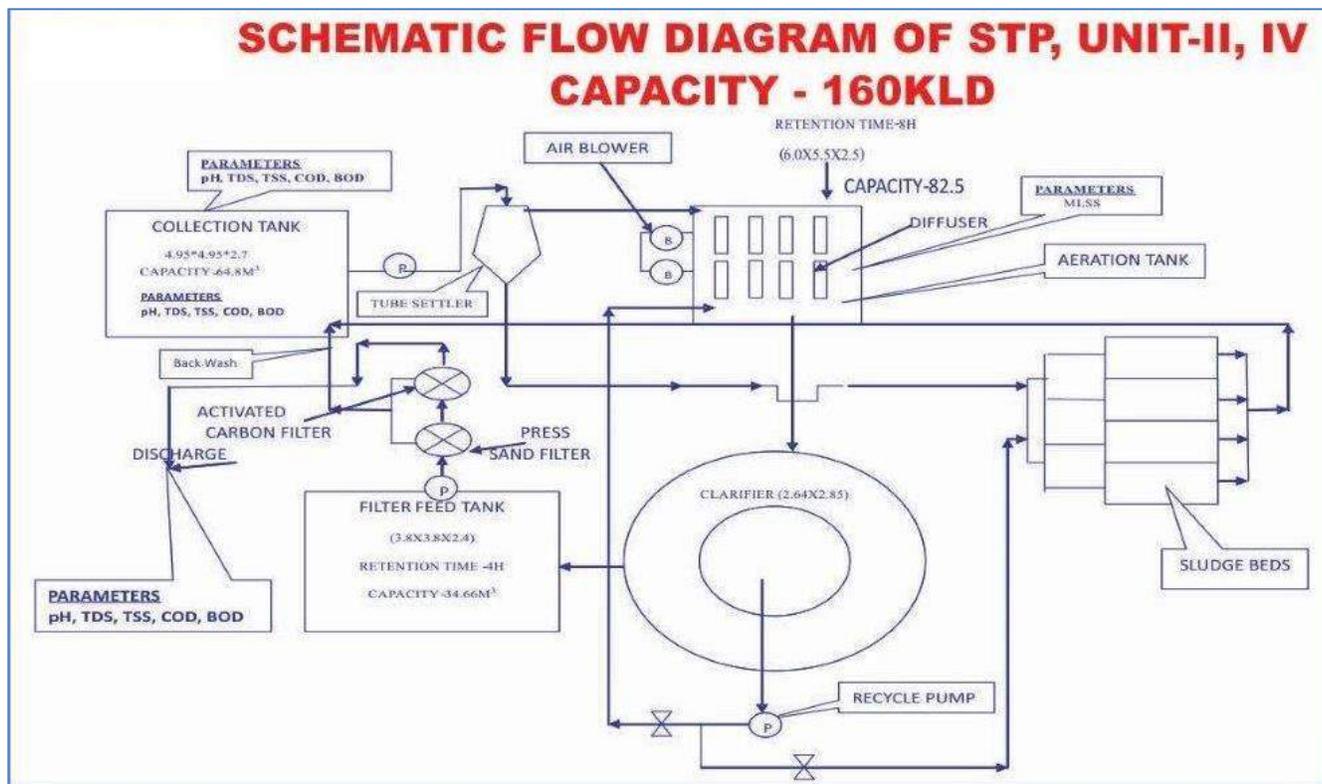


Table 20: Monthly STP Treated water, KL

Month	STP Treated water	Feed to Softener
Apr-22	5794	5794
May-22	6625	6625
Jun-22	6305	6305
Jul-22	6352	6352
Aug-22	5957	5957
Sep-22	6355	6355
Oct-22	5623	5623
Nov-22	6735	6735
Dec-22	7252	7252
Jan-23	6839	6839
Feb-23	6096	6096
Mar-23	7116	7116
Total	77049	77049
Avg.	217	217

CHAPTER -6: DATA ANALYSIS AND RESULTS

6.1 Ground Water Consumption Trend

Ground water consumption trend of the plant has been analysed based on the historical data provided by the plant of monthly water abstraction. Ground water consumption details has been given below in the table and figures:

Table 21: Historical data of water abstraction

Month	FY 2020-21	FY 2021-22	FY 2022-23
April	6429	35937	34827
May	21339	37739	34545
June	31558	36817	34844
July	37989	41261	32214
August	36395	40340	32248
September	39291	35238	30253
October	34377	32265	29258
November	28203	36311	29625
December	29157	35978	26400
January	28373	30436	24878
February	27472	20201	21996
March	29173	32363	29090
Total	349756	414886	360178

Figure 14: Total water abstraction, FY 2020-21

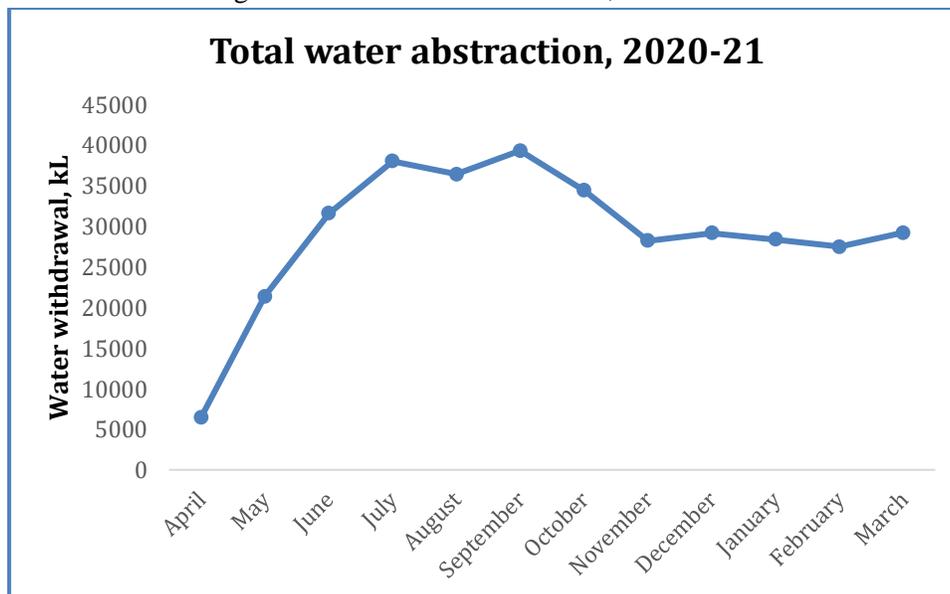


Figure 15: Total water abstraction, FY 2021-22

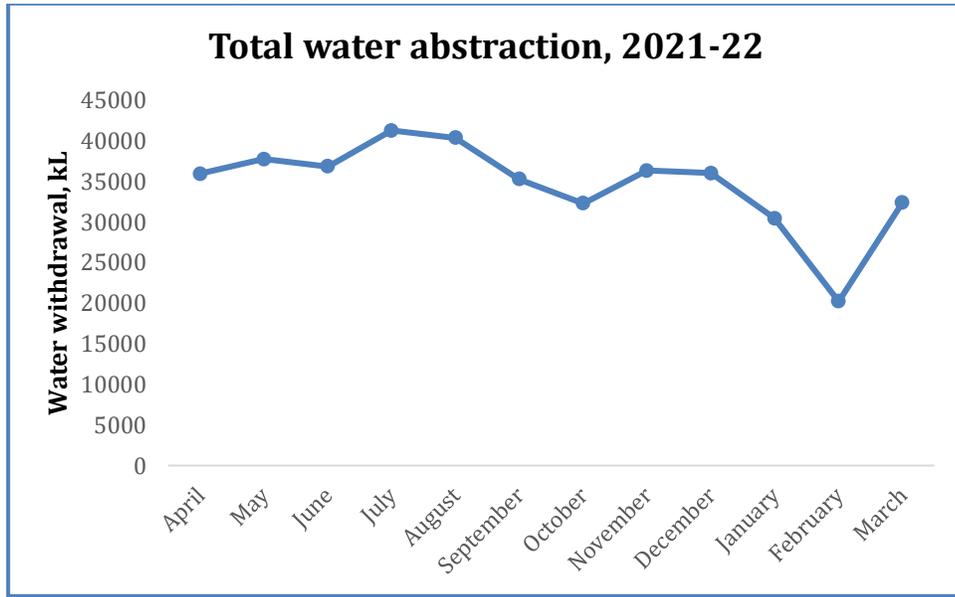
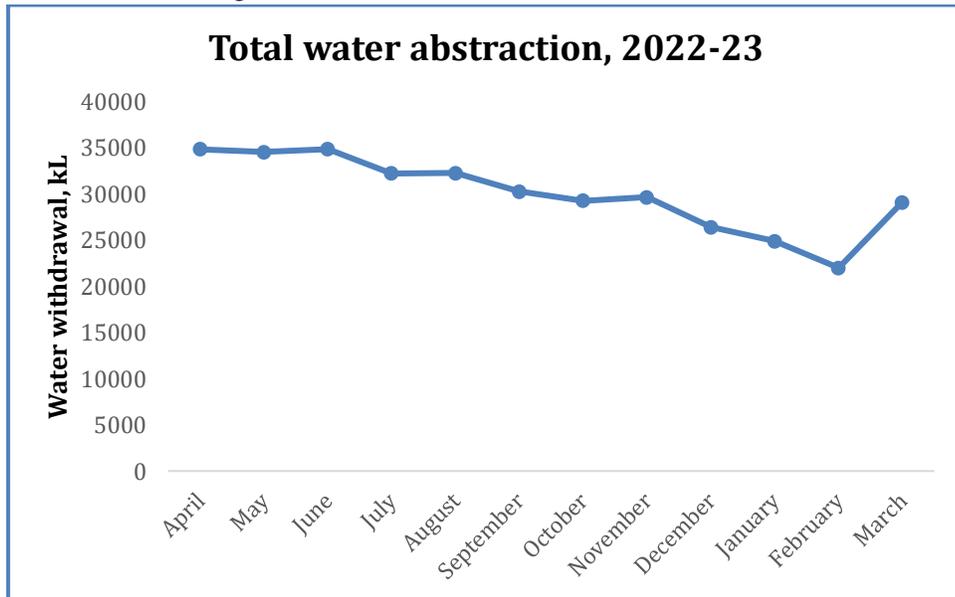
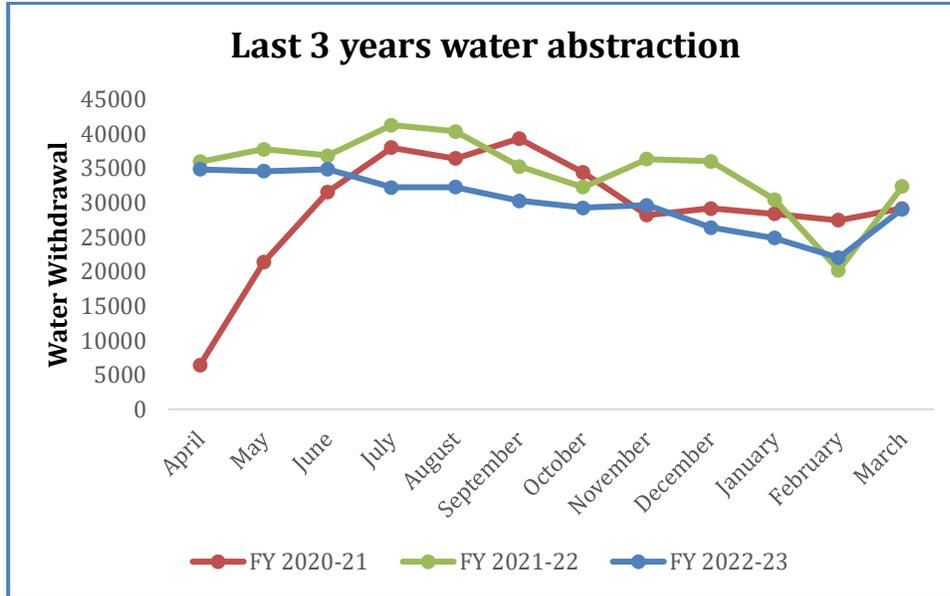


Figure 16: Total water abstraction, FY 2022-23



Graphical representation of total monthly ground water withdrawal of three years is provided below in figure:

Figure 17: Total water abstraction of 3 years



6.2 Specific Water Consumption

Specific water consumption of plant has been analysed based on the production data and water consumption data provided by the plant. It has been given in detail in the table and figures below:

Table 22: Specific water consumption, 2021-22

Month	Total water (kL)	Total Tube Production	SWC
April	35937	7181	5.0
May	37739	6550	5.8
June	36817	5544	6.6
July	41261	5466	7.5
August	40340	5906	6.8
September	35238	4659	7.6
October	32265	5244	6.2
November	36311	6951	5.2
December	35978	8122	4.4
January	30436	7223	4.2
February	20201	4992	4.0
March	32363	6300	5.1
Total/ Avg.	414886	74138	5.7

Figure 18: Specific water consumption trend, FY-2021-22

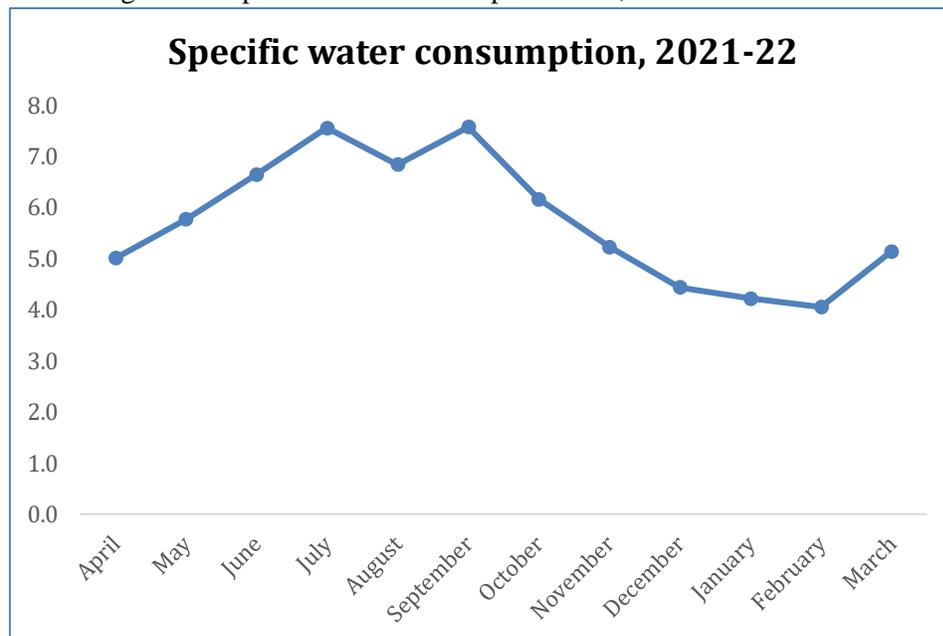
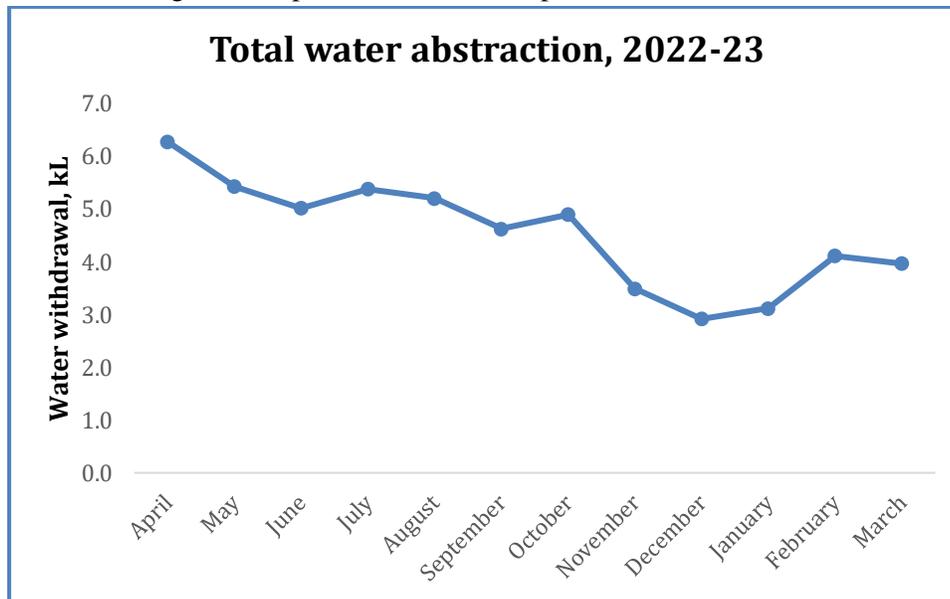


Table 23: Specific water consumption, 2022-23

Month	Total Water in KL	Total Production in MT	SWC KL/MT
April	34827	5553	6.3
May	34545	6367	5.4
June	34844	6945	5.0
July	32214	5990	5.4
August	32248	6199	5.2
September	30253	6542	4.6
October	29258	5977	4.9
November	29625	8481	3.5
December	26400	9057	2.9
January	24878	7979	3.1
February	21996	5351	4.1
March	29090	7334	4.0
Total/Avg.	360178	81775	4.5

Graphical representation of the specific water consumption is shown below in the graphs:

Figure 19: Specific water consumption trend, FY-2022-23



CHAPTER -7: WATER CONSERVATION OPPORTUNITIES

7.1 Water Saving Opportunities

During Water audit at Cavendish Industries Limited, water saving opportunities has been identified by the NPC team, which would help to minimise the ground water consumption of the plant after implementation.

Water saving opportunities are described in proposals given below:

Proposal-1: Increase the recovery of steam condensate for savings in raw ground water

Existing Scenario: During water audit at the plant, steam leakages and faulty steam traps are observed at many locations in the steam distribution system. Steam from all the points is being exhausted into the atmosphere. Condensate from all the traps is also being drained in the sewage line.

- **Recommendation:** It is recommended to maintain all the steam traps and recover flash steam and condensate from all the location by installation of a flash tank. It will increase the condensate recovery and minimise makeup water consumption in boiler. Details calculation is as under table: -

Table 24: Ground water saving proposal-1

Description	Unit	Value
Total Water consumption in Boiler	KLD	572.4
Total nos. of Steam taps in plant	Nos.	15
Estimated Raw Water saving per day @2%	KLD	11.4
Raw Water Pumping Cost	RS/KLD	1.4
CGWA Water Extraction charge	RS/KLD	3
Total water cost	RS/KLD	4.4
Monetary saving per day	RS	50
Annual Monetary saving	RS	17882
Annual Water saving	KL	4064

Proposal-2: Installation of Surface water storage Tank to maximize the collection of Rainfall runoff generated in the plant premises and reuse of rain water in the plant

Existing Scenario: During water audit at the plant, it was observed that the plant is using the raw water for Process.

- **Recommendation:** It is suggested to constructing one additional storage tank (may be of 1000 m³ capacity) in the plant to store surplus rainfall runoff in the plant premises and reuse the rain water in the plant. Details calculation is as under table: -

Table 25: Ground water saving proposal-2

Description	Unit	Value
Total Raw Water consumption	KLD	1014.6
Estimated Raw Water saving per day	KLD	50
Raw Water Pumping Cost	RS/KLD	1.4
CGWA Water Extraction charge	RS/KLD	3
Total water cost	RS/KLD	4.4
Monetary saving per day	RS	220
Annual Monetary saving	RS	78100
Annual Water saving	KL	17750

Proposal-3: Installation of water efficient taps in washbasins

Existing Scenario: During water audit at the plant, it was observed that water taps of washbasins have average flow rate of 8-10 lpm.

Recommendation: It is suggested to install water efficient taps with aerators in all the washbasins to reduce raw water consumption and domestic waste water generation of the plant. Details calculation is as under table: -

Table 26: Ground water saving proposal-3

Description	Unit	Value
Total Raw Water consumption in Domestic	KLD	146.5
Estimated Raw Water saving per day	KLD	2
Raw Water Pumping Cost	RS/KLD	1.4
CGWA Water Extraction charge	RS/KLD	3
Total water cost	RS/KLD	4.4
Monetary saving per day	RS	9
Annual Monetary saving	RS	3124
Annual Water saving	KL	710

7.2 Regularly calibrate & maintain existing water flow meters

The plant has installed digital water flow meters with telemetry system at Bore wells as per CGWA guidelines. Calibration certificate of Bore well flow meters are attached in annexure.

7.3 Maintain logbook of daily groundwater abstraction and submission of data to CGWA

The plant is recording the water abstraction data and maintaining the logbook of daily groundwater abstraction. Plant is also submitting the data to CGWA periodically.

7.4 Regular payment of applicable groundwater abstraction charges

The plant needs to pay applicable groundwater abstraction charges as per CGWA notification. The applicable rate of Ground Water abstraction charge for the plant is Rs 3.00 per m³ as per the table given below:

Table 27: Rates of GW abstraction charges for Plant (Rs per m³)

Sr. No.	Category of area ↓ Ground water Use →	Quantum of ground water withdrawal			
		< 200 m ³ /day	200 to <1000 m ³ /day	1000 to <5000 m ³ /day	5000 m ³ /day
1.	Safe	1.00	2.00	3.00	5.00
2.	Semi-critical	2.00	3.00	5.00	8.00
3.	Critical	4.00	6.00	8.00	10.00
4	Over exploited (existing industries/ new Industries as per the present Guidelines)	6.00	10.00	16.00	20.00

7.5 Ensure to comply with the NOC conditions to avoid any penalty

It is suggested that the plant should comply with the applicable NOC conditions to avoid any penalty. The penalty provisions for non-compliance of NOC are given below:

Table 28: Penalty provision for non-Compliance of No Objection Certificate conditions

S. No.	Items	Status
1	Non installation/faulty Digital water Flow meter with telemetry system.	The plant has already installed digital water flow meter with telemetric system. It was working properly during the water audit.
2	Non-disclosure/ construction of additional groundwater abstraction structures a) Non-functional Structures. b) Defunct/Abandoned Note: Given rates are for unit non-functional/defunct/abandoned structures. This shall be multiplied with total such structures to arrive at consolidated penalty.	Such type of non-functional/defunct/abandoned structures was not found during water audit in the plant.
3	Reporting of freshwater zones as Brackish / Saline zones in application.	Correct information provided in CGWA application.
4	Non-Installation of Piezometer.	Plant has installed 2 nos Piezometers. One with DWLR and second with DWLR & Telemetry.
5	Non-Installation/faulty DWLR/Telemetry system	Piezometer is equipped with telemetry system & it is working properly during water audit.
6	Non-Construction/Inadequate capacity of Recharge / Water conservation structures.	Sufficient water conservation structure available in plant.
7	Non maintenance of Recharge structures.	Rain water harvesting structure available in Unit-3. Planning to construct in Unit-2 in FY 2024-25.
8	Injection of treated/untreated water into the aquifer system. Note: In addition to penalty, the proponent shall bear the cost of aquifer remediation as per the provisions of Environment (Protection) Act, 1986.	Such type of activities was not found during water audit in the plant
9	Non-Submission of Water level/Water quality Data.	Water quality testing reports available in plant. It is submitted to CGWA.
10	Non-maintenance of logbook of daily withdrawal/non submission of Groundwater abstraction data.	Logbook maintained by plant.
11	Non submission of photograph of recharge structure(s).	Photograph Available
12	Non-Submission of Self Compliance report.	Submitted

S. No.	Items	Status
13	Construction of groundwater abstraction structures by unauthorized/unregistered Drilling Rigs (per structures).	Groundwater abstraction structures by unauthorized/unregistered Drilling Rigs was not found during water audit in the plant.
14	No registration of water supply tankers.	Tanker supply water is not required.
15	Submission of false information/ undertaking.	Such type of activities was not found during water audit in the plant.

7.6 Tips For Conserving Water

7.6.1 For Industrial Use

- Using fogging nozzles to cool product.
- Installing in-line strainers on all spray headers; regular inspection of nozzles for clogging.
- Adjusting pump cooling and water flushing to the minimum required level.
- Determining whether discharge from any one operation can be substituted for fresh water supply to another operation.
- Choosing conveying systems that use water efficiently.
- Handling waste materials in a dry mode wherever possible;
- Replacing high-volume hoses with high-pressure, low-volume cleaning systems;
- Replacing worn-out equipment with water-saving models;
- Equipping all hoses with spring loaded shutoff nozzles – it should be ensured that these nozzles are not removed.
- Instructing employees to use hoses sparingly and only when necessary.
- Turning off all flows during shutdowns unless flows are essential for clean-up - using solenoid valves to stop the flow of water when production stops (the valves could be activated by tying them to drive motor controls).
- Adjusting flow in sprays and other lines to meet minimum requirements.
- Sweeping and shovelling may be practiced instead of hosing down the floors.
- Making an inventory of all cleaning equipment's, such as hoses in the plant - determining how often equipment's are used and whether they are water-efficient.
- Washing cars, truck, and bus fleets less often.

7.6.2 For Domestic Use

- Timely Detection and repair of all leaks.
- Turning off water tap while brushing teeth.
- Use of mug rather than running water for shaving.

- Avoiding / minimising use of shower/bath tub in bathroom.
- Turning off faucets while soaping and rinsing clothes.
- Using automatic washing machine only when it is fully loaded.
- Avoiding use of running water while hand-washing.
- Using over flow stop valve in the overhead tanks to check over flow of water.
- Turning off the main valve of water while going outdoor.
- Avoiding use of hose for washing floors; Use of broom may be preferred.
- Minimizing water used in cooling equipment by following manufacturer's recommendations.
- Watering of lawn or garden during the coolest part of the day (early morning or late evening hours) when temperature and wind speed are the lowest. This reduces losses from evaporation.
- Avoiding use of excess fertilizers for lawns in view of the fact that application of fertilizer increases the requirement of water in addition to polluting the groundwater.
- Planting of native and/or drought tolerant grasses, ground covers, shrubs, and trees. Once established, they do not need to be watered as frequently and they usually survive a dry period without much watering.
- Grouping of plants based on water needs while planting them.
- Turning off water tap a little before watering time to use full water available in hose.
- Avoiding over watering of lawns. A good rain eliminates the need for watering for more than a week.
- Setting sprinklers to water the lawn or garden only, not the street or sidewalk.
- Avoiding installation or use of ornamental water features unless they recycle the water and avoiding running them during drought or hot weather.
- Installation of high-pressure, low-volume nozzles on spray washers.
- Replacement of high-volume hoses with high-pressure, low-volume cleaning systems.
- Equipping spring-loaded shutoff nozzles on hoses.
- Installation of float-controlled valve on the make-up line, closing filling line during operation, provision of surge tanks for each system to avoid overflow.
- Adjusting flow in sprays and other lines to meet minimum requirements.
- Washing vehicles less often, or using commercial car wash that recycles water.
- In case of big establishments like hotels, large offices and industrial complexes, community centres, etc. dual piped water supply may be insisted upon. Under such an arrangement one supply may carry fresh water for drinking, bathing and other human consumptions whereas recycled supply from second line may be utilized for flushing out human solid wastes. This may be made mandatory.
- Similarly, water harvesting through storming of water runoff including rainwater harvesting in all new building on plots of 100 sq. m and above may be made mandatory.

CHAPTER -8: IMPLEMENTATION PLAN

Timeline for the implementation of the recommendation/proposals for ground water reduction in the water audit is given below as discussed with the plant:

Table 29: Implementation plant

Sr. No.	Proposed Schemes	FY 2023-24	FY 2024-25
1	Increase the recovery of steam condensate for savings in raw ground water		
2	Installation of one more RO plant for Treatment of ETP Treated	Already Implemented	
3	Installation of Surface water storage Tank to maximize the collection of Rainfall runoff generated in the plant premises and reuse of rain water in the plant		
4	Replace the Spry Nozzles system type AHUs with Cellulose Pad system type AHUs	Already Implemented	
5	Installation of water efficient taps in washbasins		

CHAPTER -9: CONCLUSION

National Productivity Council, RD Kanpur has conducted a detailed Water Audit Studied at Cavendish Industries Limited. Laksar, Uttarakhand, during in Month of October-2023. As per NOC the Water Withdrawal Permissions from CGWA to Cavendish Industries Limited. Laskar, Uttarakhand, is **1253 m³/day** and **444815m³/annum** from 5 bore wells. No surface water being used in the plant.

The Plant has installed Five numbers of bore well, four Bore wells are in operation during the water audit, and one bore well is shutdown mode, water flow measurement has been done by the NPC team by Ultrasonic flow meter. The measured water flow of Bore well-1 is **80.4 m³/hr**, bore well-2 is **88.7 m³/hr**, bore well-3 is **100.2 m³/hr** and bore well-4 is **68.2 m³/hr**.

On daily basis average water drawn from ground water for financial year 2022-23 from Bore well-1 is **107.6 m³/day**, bore well-2 is **347.8 m³/day**, bore well-3 is **522.8 m³/day** and bore well-4 is **36.3 m³/day** as per the monthly water abstraction data of plant.

The Audit is focused on improving water usage efficiency and identifying water Conservation opportunities. Accordingly, the field study and data collection for the said water audit was carried out by National Productivity Council team. This report discusses the water balance and various water saving options derived based on observation made, data collected and their analysis.

The water audit study of the plant has identified various water & cost saving opportunities which are discussed in the report. The summary of recommendations is given in detailed in Chapter 7. It is estimated that by implementing NPC suggested schemes; The plant can reduce its freshwater consumption **by 6.3%**.

CHAPTER -10: REFERENCES

Central Ground Water Authority (CGWA)/ Uttar Pradesh Ground Water Department (UPGWD) guidelines

CHAPTER -11: ANNEXURES

11.1 NOC for Ground Water Abstraction:



भारत सरकार
जल शक्ति मंत्रालय
जल संसाधन, नदी विकास
और गंगा संरक्षण विभाग
केन्द्रीय भूमि जल प्राधिकरण
Government of India
Ministry of Jal Shakti
Department of Water Resources,
River Development & Ganga Rejuvenation
Central Ground Water Authority

(भूजल निकासी हेतु अनापत्ति प्रमाण पत्र)

NO OBJECTION CERTIFICATE (NOC) FOR GROUND WATER ABSTRACTION

Project Name:	Cavendish Industries Limited Unit-II A Jk Tyre Associate		
Project Address:	Village Khedimubarakpur, Tehsil Laksar, Distt- Haridwar		
Village:	Kherimubarakpur	Block:	Laksar
District:	Haridwar	State:	Uttarakhand
Pin Code:			
Communication Address:	Village Khedimubarakpur, Tehsil Laksar, Distt Haridwar, Laksar, Haridwar, Uttarakhand - 247663		
Address of CGWB Regional Office :	Central Ground Water Board Uttarakhand Region, 419-a, Kanwali Road, Baluwala , Near Urja Bhawan, Dehradun, Dehradun, Uttarakhand - 248001		

1. NOC No.:	CGWA/NOC/IND/ORIG/2021/12795											
2. Application No.:	21-4/455/UT/IND/2017	3. Category: (GWRE 2017)	Safe									
4. Project Status:	Existing Project	5. NOC Type:	New									
6. Valid from:	04/02/2021	7. Valid up to:	03/02/2024									
8. Ground Water Abstraction Permitted:												
	Fresh Water		Saline Water									
	m ³ /day	m ³ /year	m ³ /day									
	1253.00	444815.00										
	Dewatering		Total									
	m ³ /day	m ³ /year	m ³ /day									
			m ³ /year									
9. Details of ground water abstraction /Dewatering structures												
	Total Existing No.:5						Total Proposed No.:0					
	DW	DCB	BW	TW	MP	MPu	DW	DCB	BW	TW	MP	MPu
Abstraction Structure*	0	0	5	0	0	0	0	0	0	0	0	0
*DW- Dug Well; DCB-Dug-cum-Bore Well; BW-Bore Well; TW-Tube Well; MP-Mine Pit;MPu-Mine Pumps												
10. Ground Water Abstraction/Restoration Charges paid (Rs.):							1334445.00					
11. Number of Piezometers(Observation wells) to be constructed/ monitored & Monitoring mechanism.	No. of Piezometers						Monitoring Mechanism					
							Manual	DWLR**	DWLR With Telemetry			
**DWLR - Digital Water Level Recorder	2						0	1	1			

(Compliance Conditions given overleaf)

This is an auto generated document & need not to be signed.

18/11, जामनगर हाउस, मानसिंह रोड, नई दिल्ली - 110011 / 18/11, Jannagar House, Mansingh Road, New Delhi-110011
Phone: (011) 23382561 Fax: 23382051, 23386743
Website: cgwa-noc.gov.in

पानी बचाये - जीवन बचाये
SAVE WATER - SAVE LIFE

Validity of this NOC shall be subject to compliance of the following conditions:

Mandatory conditions:

- 1) Installation of tamper proof digital water flow meter with telemetry on all the abstraction structure(s) shall be mandatory for all users seeking No Objection Certificate and intimation regarding their installation shall be communicated to the CGWA within 30 days of grant of No Objection Certificate.
- 2) Proponents shall mandatorily get water flow meter calibrated from an authorized agency once in a year.
- 3) Construction of purpose-built observation wells (piezometers) for ground water level monitoring shall be mandatory as per Section 14 of Guidelines. Water level data shall be made available to CGWA through web portal. Detailed guidelines for construction of piezometers are given in Annexure-6 of the guidelines.
- 4) Proponents shall monitor quality of ground water from the abstraction structure(s) once in a year. Water samples from bore wells/ tube wells / dug wells shall be collected during April/May every year and analysed in NABL accredited laboratories for basic parameters (calcium and ammonia), heavy metals, pesticides/ organic compounds etc. Water quality data shall be made available to CGWA through the web portal.
- 5) In case of mining projects, additional key wells shall be established in consultation with the Regional Director, CGWB for ground water level monitoring four (4) times a year (January, May, August and November) in core as well as buffer zones of the mine.
- 6) In case of mining project the firm shall submit water quality report of mine discharge/ seepage from Govt. approved/ NABL accredited lab.
- 7) The firm shall report compliance of the NOC conditions online in the website (www.cgwa-noc.gov.in) within one year from the date of issue of this NOC.
- 8) Industries abstracting ground water in excess of 100 m³/d shall undertake annual water audit through certified auditors and submit audit reports within three months of completion of the same to CGWA. All such industries shall be required to reduce their ground water use by at least 20% over the next three years through appropriate means.
- 9) Application for renewal can be submitted online from 90 days before the expiry of NOC. Ground water withdrawal, if any, after expiry of NOC shall be illegal & liable for legal action as per provisions of Environment (Protection) Act, 1986.
- 10) This NOC is subject to prevailing Central/State Government rules/laws/orders or Court orders related to construction of tube well/ground water abstraction structure / recharge or conservation structure/discharge of effluents or any such matter as applicable.

General conditions:

- 11) No additional ground water abstraction and/or de-watering structures shall be constructed for this purpose without prior approval of the Central Ground Water Authority (CGWA).
- 12) The proponent shall seek prior permission from CGWA for any increase in quantum of groundwater abstraction (more than that permitted in NOC for specific period).
- 13) Proponents shall install roof top rain water harvesting in the premises as per the existing building bye laws in the premises.
- 14) The project proponent shall take all necessary measures to prevent contamination of ground water in the premises falling which the firm shall be responsible for any consequences arising thereupon.
- 15) In case of industries that are likely to contaminate the ground water, no recharge measures shall be taken up by the firm inside the plant premises. The runoff generated from the rooftop shall be stored and put to beneficial use by the firm.
- 16) Wherever feasible, requirement of water for greenbelt (horticulture) shall be met from recycled / treated waste water.
- 17) Wherever the NOC is for abstraction of saline water and the existing wells (s) is /are yielding fresh water, the same shall be sealed and new tubewell(s) tapping saline water zone shall be constructed within 3 months of the issuance of NOC. The firm shall also ensure safe disposal of saline residue, if any.
- 18) Unexpected variations in inflow of ground water into the mine pit, if any, shall be reported to the concerned Regional Director, Central Ground Water Board.
- 19) In case of violation of any NOC conditions, the applicant shall be liable to pay the penalties as per Section 16 of Guidelines.
- 20) This NOC does not absolve the proponents of their obligation / requirement to obtain other statutory and administrative clearances from appropriate authorities.
- 21) The issue of this NOC does not imply that other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would consider the project on merits and take decisions independently of the NOC.
- 22) In case of change of ownership, new owner of the industry will have to apply for incorporation of necessary changes in the No Objection Certificate with documentary proof within 60 days of taking over possession of the premises.
- 23) This NOC is being issued without any prejudice to the directions of the Hon'ble NGT/court orders in cases related to ground water or any other related matters.
- 24) Proponents, who have installed/constructed artificial recharge structures in compliance of the NOC granted to them previously and have availed rebate of upto 50% (fifty percent) in the ground water abstraction charges/ground water restoration charges, shall continue to regularly maintain artificial recharge structures.
- 25) Industries which are likely to cause ground water pollution e.g. Tanning, Slaughter Houses, Dye, Chemical/ Petrochemical, Coal washeries, pharmaceutical, other hazardous units etc. (as per CPCB list) need to undertake necessary well head protection measures to ensure prevention of ground water pollution as per Annexure III of the guidelines.
- 26) In case of new infrastructure projects having ground water abstraction of more than 20 m³/day, the firm/entity shall ensure implementation of dual water supply system in the projects.
- 27) In case of infrastructure projects, paved/parking area must be covered with interlocking/perforated tiles or other suitable measures to ensure groundwater infiltration/harvesting.
- 28) In case of coal and other base metal mining projects, the project proponent shall use the advance dewatering technology (by construction of series of dewatering abstraction structures) to avoid contamination of surface water.
- 29) The NOC issued is conditional subject to the conditions mentioned in the Public notice dated 27.01.2021 failing which penalty/cancellation of NOC shall be imposed as the case may be.
- 30) This NOC is issued subject to the clearance of Expert Appraisal Committee (EAC) (if applicable).

(Non-compliance of the conditions mentioned above is likely to result in the cancellation of NOC and legal action against the proponent.)

11.2 Third party water quality test reports:

Bore well No. 1



Centre for Environment and Food Technology Pvt. Ltd.
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NABL & IQAS Accredited, FSSAI and MoEF Recognised Testing Laboratory

TEST REPORT

Issued To : M/s CAVENDISH INDUSTRIES LTD, (Unit-II),
Gram-Khedi Mubarkpur, Tehsil-Laksar,
Distt. Haridwar, (Uttarakhand)

Report No.	CEFT/2306/808	Report Date	07.07.2023
Your Ref. No.	Nil	Type of sample	Ground Water Sample
Sample Code Given by Customer	Nil	Quantity	5 LITER
		Date of sampling	27.06.2023
Sampling Location	Borewell - I	Date of sample receipt	28.06.2023
Sample Collected By	Lab Person	Sample I.D.	CEFT/GEN/2306/808
Sampling procedure	As per SOP	Date of test	28.06.2023-07.07.2023

S. No.	Parameters	Results	Limits of IS: 10500 – 2012		Test method
			Requirement (Acceptable Limit)	Permissible limit in absence of alternate source	
1	pH	7.20	6.5 – 8.5	No relaxation	IS 3025 (Part-11): 2002
2	Total Dissolved Solids mg/l Max	330	500	2000	IS 3025 (Part-16): 2002
3	Alkalinity (as CaCO ₃)mg/l,Max	199	200	600	IS 3025 (Part-23): 2003
4	Chloride (as Cl), mg/l, Max	40	250	1000	IS 3025 (Part-32): 2007
5	Sulphate (as SO ₄) mg/l, Max	7.1	200	400	IS 3025 (Part-24): 2003
6	Calcium (as Ca) mg/l Max	70	75	200	IS 3025 (Part-40): 2002
7	Magnesium (as Mg) mg/l, Max	5.6	30	100	IS 3025 (Part-46): 2003
8	Total Hardness (as CaCO ₃)mg/l, Max	175	200	600	IS 3025 (Part-21): 2009
9	Sodium (as Na) mg/l Max	39	-	-	IS 3025 (Part-45): 2003
10	Potassium (as K) mg/l Max	3.4	-	-	IS 3025 (Part-45): 2003
11	Nitrate (as NO ₃) mg/l, Max	4.6	45	No relaxation	IS 3025 (Part-34): 2003
12	Fluoride (as F) mg/l Max	0.39	1.0	1.5	APHA 4500F (D): 2017
13	Colour, Hazen unit, max	<1	5	25	IS 3025 (Part-4): 1983
14	Odour	Agreeable	Agreeable	-----	IS 3025 (Part-5): 2002
15	Turbidity, NTU max	<1	5	10	IS 3025 (Part-10): 2002
16	Taste	Agreeable	Agreeable	-----	IS 3025 (Part-8): 2002
17	Iron (as Fe) mg/l Max	0.20	0.3	No relaxation	IS 3025 (Part-53): 2003
18	Boron (as B) mg/l Max	ND	0.5	1.0	IS 3025 (Part-57): 2005
19	Manganese (as Mn) mg/l Max	ND	0.1	0.3	IS 3025 (Part-59): 2006
20	Zinc (as Zn) mg/l Max	1.8	5	15	IS 3025 (Part-49): 1994
21	Copper (as Cu) mg/l Max	ND	0.05	1.5	IS 3025 (Part-42): 1992
22	Cadmium (as Cd) mg/l Max	ND	0.003	No relaxation	IS 3025 (Part-41): 1992
23	Lead (as Pb) mg/l Max	ND	0.01	No relaxation	IS 3025 (Part-47): 1994
24	Aluminium (as Al) mg/l Max	ND	0.03	0.2	IS: 3025 (Part 31) : 1964 3500 A.I.B
25	Selenium (as Se) mg/l Max	ND	0.01	No relaxation	IS 3025 (Part-56): 2003
26	Mercury (as Hg) mg/l Max	ND	0.001	No relaxation	IS 3025 (Part-48): 1994
27	Arsenic (as As) mg/l	ND	0.01	0.05	IS 3025 (Part-37): 1988
28	Chromium (as Cr) mg/l Max	ND	0.05	No relaxation	IS 3025 (Part-52): 2003
29	Cyanide (as CN) mg/l Max	ND	0.05	No relaxation	IS 3025 (Part-27): 2003
30	Phenolic Compound (as C ₆ H ₅ OH) mg/l Max	ND	0.001	0.002	IS 3025 (Part-43) Method-6: 1992
31	Ammonia (as total ammonia-N), mg/l, Max	ND	0.5	No relaxation	IS 3025 (Part 34) 2012-4500 C

Page No.1/2



Authorized Signatory

Note : 1. The test results are related to the sample/ tested as identified.
2. The sample will be discarded after retention time of 7 days unless otherwise specified.
3. Any Discrepancy found in the test report may be communicated.
4. This report shall not be reproduced, cannot be used as evidence in the court of law and should not be used in any advertising media without written permission of CED, CEFT Pvt. Ltd.
5. The Court Jurisdiction will be Delhi.
6. Customer complaint register is available at the laboratory.

Regd. Address - Bldg. No. 17, 1st Floor, DLF Industrial Area, Mofl Nagar, New Delhi - 110015 Ph. : - 011-45012722
Email: info@ceftlab.com, Website : www.ceftlab.com



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TEST REPORT

Bacteriological examination:-

S. NO.	PARAMETERS	TEST RESULTS	LIMITS	TEST METHOD
1	E.coli/100ml	ABSENT	ABSENT	IS 15185 2016
2	Coliform /100ml	ABSENT	ABSENT	IS 15185 2016

Note: ND Denotes Not Detectable

Page No.2/2

****End of Report****



- Note :
1. The test results are related to the sample/ tested as identified.
 2. The sample will be discarded after retention time of 7 days unless otherwise specified.
 3. Any Discrepancy found in the test report may be communicated
 4. This report shall not be reproduced, cannot be used as evidence in the court of law and should not be used in any advertising media without written permission of CEO, CEFT Pvt. Ltd.
 5. The Court Jurisdiction will be Delhi.
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Email: info@ceftlab.com, Website : www.ceftlab.com

Bore well No. 2



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NABL & IQAS Accredited, FSSAI and MoEF Recognised Testing Laboratory

TEST REPORT

Issued To : M/s CAVENDISH INDUSTRIES LTD, (Unit-II),
Gram-Khedl Mubarkpur, Tehsil-Laksar,
Distt. Haridwar. (Uttarakhand)

Report No.	CEFT/2306/809	Report Date	07.07.2023
Your Ref. No.	Nil	Type of sample	Ground Water Sample
Sample Code Given by Customer	Nil	Quantity	5 LITER
		Date of sampling	27.06.2023
Sampling Location	Borewell -2	Date of sample receipt	28.06.2023
Sample Collected By	Lab Person	Sample I.D.	CEFT/GEN/2306/809
Sampling procedure	As per SOP	Date of test	28.06.2023-07.07.2023

S. No.	Parameters	Results	Limits of IS: 10500 – 2012		Test method
			Requirement (Acceptable Limit)	Permissible limit in absence of alternate source	
1	pH	7.21	6.5 – 8.5	No relaxation	IS 3025 (Part-11) : 2002
2	Total Dissolved Solids mg/l Max	327	500	2000	IS 3025 (Part-16) : 2002
3	Alkalinity (as CaCO ₃)mg/l Max	189	200	600	IS 3025 (Part-23) : 2003
4	Chloride (as Cl ⁻) mg/l, Max	46	250	1000	IS 3025 (Part-32) : 2007
5	Sulphate (as SO ₄) mg/l, Max	7.8	200	400	IS 3025 (Part-24) : 2003
6	Calcium (as Ca) mg/l Max	51	75	200	IS 3025 (Part-40) : 2002
7	Magnesium (as Mg) mg/l, Max	19	30	100	IS 3025 (Part-46) : 2003
8	Total Hardness (as CaCO ₃)mg/l, Max	188	200	600	IS 3025 (Part-21) : 2009
9	Sodium (as Na) mg/l Max	42	-	-	IS 3025 (Part-45) : 2003
10	Potassium (as K) mg/l Max	3.3	-	-	IS 3025 (Part-45) : 2003
11	Nitrate (as NO ₃) mg/l, Max	4.8	45	No relaxation	IS 3025 (Part-34) : 2003
12	Fluoride (as F) mg/l Max	0.32	1.0	1.5	APHA 4500F (D) : 2017
13	Colour, Hazen unit, max	<1	5	25	IS 3025 (Part-4) : 1983
14	Odour	Agreeable	Agreeable	----	IS 3025 (Part-5) : 2002
15	Turbidity, NTU max	<1	5	10	IS 3025 (Part-10) : 2002
16	Taste	Agreeable	Agreeable	----	IS 3025 (Part-8) : 2002
17	Iron (as Fe) mg/l Max	0.19	0.3	No relaxation	IS 3025 (Part-53) : 2003
18	Boron (as B) mg/l Max	ND	0.5	1.0	IS 3025 (Part-57) : 2005
19	Manganese (as Mn) mg/l Max	ND	0.1	0.3	IS 3025 (Part-59) : 2006
20	Zinc (as Zn) mg/l Max	1.14	5	15	IS 3025 (Part-49) : 1994
21	Copper (as Cu) mg/l Max	ND	0.05	1.5	IS 3025 (Part-42) : 1992
22	Cadmium (as Cd) mg/l Max	ND	0.003	No relaxation	IS 3025 (Part-41) : 1992
23	Lead (as Pb) mg/l Max	ND	0.01	No relaxation	IS 3025 (Part-47) : 1994
24	Aluminium (as Al) mg/l Max	ND	0.03	0.2	IS 3025 (Part 31) : 1964 3500 ALB
25	Selenium (as Se) mg/l Max	ND	0.01	No relaxation	IS 3025 (Part-56) : 2003
26	Mercury (as Hg) mg/l Max	ND	0.001	No relaxation	IS 3025 (Part-48) : 1994
27	Arsenic (as As) mg/l	ND	0.01	0.05	IS 3025 (Part-37) : 1988
28	Chromium (as Cr) mg/l Max	ND	0.05	No relaxation	IS 3025 (Part-52) : 2003
29	Cyanide (as CN) mg/l Max	ND	0.05	No relaxation	IS 3025 (Part-27) : 2003
30	Phenolic Compound (as C ₆ H ₅ OH) mg/l Max	ND	0.001	0.002	IS 3025 (Part-43) Method-6: 1992
31	Ammonia (as total ammonia-N), mg/l, Max	ND	0.5	No relaxation	IS 3025 (Part 34) 2012-4500 C

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TEST REPORT

Bacteriological examination:-

S. NO.	PARAMETERS	TEST RESULTS	LIMITS	TEST METHOD
1	E.coli/100ml	ABSENT	ABSENT	IS 15185 2016
2	Coliform /100ml	ABSENT	ABSENT	IS 15185 2016

Note: ND Denotes Not Detectable

Page No.2/2

****End of Report****



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Bore well No. 3



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TEST REPORT

Issued To : M/s CAVENDISH INDUSTRIES LTD, (Unit-II),
Gram-Khedi Mubarkpur, Tehsil-Laksar,
Distt. Haridwar, (Uttarakhand)

Report No.	CEFT/2306/812	Report Date	07.07.2023
Your Ref. No.	Nil	Type of sample	Ground Water Sample
Sample Code Given by Customer	Nil	Quantity	5 LITER
		Date of sampling	27.06.2023
Sampling Location	Borewell -3	Date of sample receipt	28.06.2023
Sample Collected By	Lab Person	Sample I.D.	CEFT/GEN/2306/812
Sampling procedure	As per SOP	Date of test	28.06.2023-07.07.2023

S. No.	Parameters	Results	Limits of IS: 10500 - 2012		Test method
			Requirement (Acceptable Limit)	Permissible limit in absence of alternate source	
	pH	7.48	6.5 - 8.5	No relaxation	IS 3025 (Part-11): 2002
2	Total Dissolved Solids mg/l Max	330	500	2000	IS 3025 (Part-16): 2002
3	Alkalinity (as CaCO ₃)mg/l, Max	181	200	600	IS 3025 (Part-23): 2003
4	Chloride (as Cl ₂) mg/l, Max	30	250	1000	IS 3025 (Part-32): 2007
5	Sulphate (as SO ₄) mg/l, Max	7.7	200	400	IS 3025 (Part-24): 2003
6	Calcium (as Ca) mg/l Max	41	75	200	IS 3025 (Part-40): 2002
7	Magnesium (as Mg) mg/l, Max	12	30	100	IS 3025 (Part-46): 2003
8	Total Hardness (as CaCO ₃)mg/l, Max	183	200	600	IS 3025 (Part-21): 2009
9	Sodium (as Na) mg/l Max	31	-	-	IS 3025 (Part-45): 2003
10	Potassium (as K) mg/l Max	3.4	-	-	IS 3025 (Part-45): 2003
11	Nitrate (as NO ₃) mg/l, Max	5.0	45	No relaxation	IS 3025 (Part-34): 2003
12	Fluoride (as F) mg/l Max	0.32	1.0	1.5	APHA 4500F (D): 2017
13	Colour, Hazen unit, max	<1	5	25	IS 3025 (Part-4): 1983
14	Odour	Agroclabic	Agroclabic	-----	IS 3025 (Part-5): 2002
15	Turbidity, NTU max	<1	5	10	IS 3025 (Part-18): 2002
16	Taste	Agroclabic	Agroclabic	-----	IS 3025 (Part-8): 2002
17	Iron (as Fe) mg/l Max	0.1	0.3	No relaxation	IS 3025 (Part-53): 2003
18	Boron (as B) mg/l Max	ND	0.5	1.0	IS 3025 (Part-52): 2005
19	Manganese (as Mn) mg/l Max	ND	0.1	0.3	IS 3025 (Part-59): 2006
20	Zinc (as Zn) mg/l Max	2.7	5	15	IS 3025 (Part-49): 1994
21	Copper (as Cu) mg/l Max	ND	0.05	1.5	IS 3025 (Part-42): 1992
22	Cadmium (as Cd) mg/l Max	ND	0.003	No relaxation	IS 3025 (Part-43): 1992
23	Lead (as Pb) mg/l Max	ND	0.01	No relaxation	IS 3025 (Part-47): 1994
24	Aluminium (as Al) mg/l Max	ND	0.03	0.2	IS: 3025 (Part 31): 1964 3500 ALB
25	Selenium (as Se) mg/l Max	ND	0.01	No relaxation	IS 3025 (Part-56): 2003
26	Mercury (as Hg) mg/l Max	ND	0.001	No relaxation	IS 3025 (Part-48): 1994
27	Arsenic (as As) mg/l	ND	0.01	0.05	IS 3025 (Part-37): 1988
28	Chromium (as Cr) mg/l Max	ND	0.05	No relaxation	IS 3025 (Part-52): 2003
29	Cyanide (as CN) mg/l Max	ND	0.05	No relaxation	IS 3025 (Part-27): 2003
30	Phenolic Compound (as C ₆ H ₅ OH) mg/l Max	ND	0.001	0.002	IS 3025 (Part-43) Method-6: 1992
31	Ammonia (as total ammonia-N), mg/l, Max	ND	0.5	No relaxation	IS 3025 (Part 34) 2012-4500 C

Page No. 1/2



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TEST REPORT

Bacteriological examination:-

S. NO.	PARAMETERS	TEST RESULTS	LIMITS	TEST METHOD
1	E.coli/100ml	ABSENT	ABSENT	IS 15185 2016
2	Coliform /100ml	ABSENT	ABSENT	IS 15185 2016

Note: ND Denotes Not Detectable

Page No.2/2

End of Report



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Bore well No. 4



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TEST REPORT

Issued To : M/s CAVENDISH INDUSTRIES LTD, (Unit-II),
Gram-Khedi Mubarkpur, Tehsil-Laksar,
Distt. Haridwar, (Uttarakhand)

Report No.	CEFT/2306/816	Report Date	07.07.2023
Your Ref. No.	Nil	Type of sample	Ground Water Sample
Sample Code Given by Customer	Nil	Quantity	5 LITER
		Date of sampling	27.06.2023
Sampling Location	Borewell -4	Date of sample receipt	28.06.2023
Sample Collected By	Lab Person	Sample I.D.	CEFT/GEN/2306/816
Sampling procedure	As per SOP	Date of test	28.06.2023-07.07.2023

S. No.	Parameters	Results	Limits of IS: 10500 - 2012		Test method
			Requirement (Acceptable Limit)	Permissible limit in absence of alternate source	
1	pH	7.13	6.5 - 8.5	No relaxation	IS 3025 (Part-11): 2002
2	Total Dissolved Solids mg/l Max	324	500	2000	IS 3025 (Part-16): 2002
3	Alkalinity (as CaCO ₃)mg/l, Max	189	200	600	IS 3025 (Part-23): 2003
4	Chloride (as Cl ⁻) mg/l, Max	43	250	1000	IS 3025 (Part-32): 2007
5	Sulphate (as SO ₄) mg/l, Max	17	200	400	IS 3025 (Part-24): 2003
6	Calcium (as Ca) mg/l Max	53	75	200	IS 3025 (Part-40): 2002
7	Magnesium (as Mg) mg/l, Max	31	30	100	IS 3025 (Part-46): 2003
8	Total Hardness (as CaCO ₃)mg/l, Max	199	200	600	IS 3025 (Part-21): 2009
9	Sodium (as Na) mg/l Max	43	-	-	IS 3025 (Part-45): 2003
10	Potassium (as K) mg/l Max	3.2	-	-	IS 3025 (Part-45): 2003
11	Nitrate (as NO ₃) mg/l, Max	7.9	45	No relaxation	IS 3025 (Part-34): 2003
12	Fluoride (as F) mg/l Max	0.30	1.0	1.5	APHA 4500F (D): 2017
13	Colour, Hazen unit, max	<1	5	25	IS 3025 (Part-4): 1983
14	Odour	Agreeable	Agreeable	---	IS 3025 (Part-5): 2002
15	Turbidity, NTU max	<1	5	10	IS 3025 (Part-10): 2002
16	Taste	Agreeable	Agreeable	---	IS 3025 (Part-8): 2002
17	Iron (as Fe) mg/l Max	0.28	0.3	No relaxation	IS 3025 (Part-53): 2003
18	Boron (as B) mg/l Max	ND	0.5	1.0	IS 3025 (Part-57): 2005
19	Manganese (as Mn) mg/l Max	ND	0.1	0.3	IS 3025 (Part-59): 2006
20	Zinc (as Zn) mg/l Max	2.9	5	15	IS 3025 (Part-49): 1994
21	Copper (as Cu) mg/l Max	ND	0.05	1.5	IS 3025 (Part-42): 1992
22	Cadmium (as Cd) mg/l Max	ND	0.003	No relaxation	IS 3025 (Part-41): 1992
23	Lead (as Pb) mg/l Max	ND	0.01	No relaxation	IS 3025 (Part-47): 1994
24	Aluminium (as Al) mg/l Max	ND	0.03	0.2	IS: 3025 (Part 31): 1964 3500 ALB
25	Selenium (as Se) mg/l Max	ND	0.01	No relaxation	IS 3025 (Part-56): 2003
26	Mercury (as Hg) mg/l Max	ND	0.001	No relaxation	IS 3025 (Part-48): 1994
27	Arsenic (as As) mg/l	ND	0.01	0.05	IS 3025 (Part-37): 1988
28	Chromium (as Cr) mg/l Max	ND	0.05	No relaxation	IS 3025 (Part-52): 2003
29	Cyanide (as CN) mg/l Max	ND	0.05	No relaxation	IS 3025 (Part-27): 2003
30	Phenolic Compound (as C ₆ H ₅ OH) mg/l Max	ND	0.001	0.002	IS 3025 (Part-43) Method-6: 1992
31	Ammonia (as total ammonia-N), mg/l, Max	ND	0.5	No relaxation	IS 3025 (Part-34) 2012-4500 C

Page No.1/2

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TEST REPORT

Bacteriological examination:-

S. NO.	PARAMETERS	TEST RESULTS	LIMITS	TEST METHOD
1	E.coli/100ml	ABSENT	ABSENT	IS 15185 2016
2	Coliform /100ml	ABSENT	ABSENT	IS 15185 2016

Note: ND Denotes Not Detectable

Page No.2/2

****End of Report****



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ETP Outlet



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TEST REPORT

Issued To : M/s CAVENDISH INDUSTRIES LTD, (Unit-II),
Gram-Khedi Mubarkpur, Tehsil-Laksar,
Distt. Haridwar. (Uttarakhand)

Report No.	CEFT2306/842	Report Date	07.07.2023
Your Ref. No.	Nil	Type of sample	ETP (Outlet-LET) Water
Sample Code given by customer	Nil	Quantity	2 Liter PP Bottle+1 Liter Glass Bottle
		Date of sampling	27.06.2023
Sampling Location	Within Premises	Date of sample receipt	28.06.2023
Sample Collected By	Lab Person	Sample I.D.	CEFT[GEN]2306/842
Sampling procedure	As per SOP	Date of test	28.06.2023 – 07.07.2023

S. NO.	PARAMETERS	TEST RESULTS	Standards	TEST METHODS
1.	pH	6.98	5.5 – 9.0	IS 3025(Part-11): 2002
2.	Total Suspended Solids, mg/L	46	100	IS 3025 (Part-17) : 1984
3.	Total Dissolved Solid, mg/L	795	2100	IS 3025 (Part-16) : 1984
4.	Bio-chemical Oxygen Demand at 27°C 3 days, mg/L	28	30	IS 3025 (Part-44): 2003
5.	Chemical Oxygen Demand, mg/L	73	250	IS 3025 (part-58) : 2006
6.	Oil and Grease, mg/L	06	10	IS 3025 (Part-39): 2003

Page No.1/1

End of Report



Authorized Signatory

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ETP Inlet



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TEST REPORT

Issued To : M/s CAVENDISH INDUSTRIES LTD, (Unit-II),
Gram-Khedi Mubarkpur, Tehsil-Laksar,
Distt. Haridwar, (Uttarakhand)

Report No.	CEFT 2306 843	Report Date	07.07.2023
Your Ref. No.	Nil	Type of sample	ETP (INLET) Water
Sample Code given by customer	Nil	Quantity	2 Liter PP Bottle+1 Liter Glass Bottle
Sampling Location	Within Premises	Date of sampling	27.06.2023
Sample Collected By	Lab Person	Date of sample receipt	28.06.2023
Sampling procedure	As per SOP	Sample I.D.	CEFT GEN 2306 843
		Date of test	28.06.2023 - 07.07.2023

S. NO.	PARAMETERS	TEST RESULTS	TEST METHODS
1.	pH	7.36	IS 3025(Part-11):2002
2.	Total Suspended Solids, mg/L	139	IS 3025 (Part-17) : 1984
3.	Total Dissolved Solid, mg/L	1213	IS 3025 (Part-16) : 1984
4.	Bio-chemical Oxygen Demand at 27°C 3 days, mg/L	76	IS 3025 (Part-44): 2003
5.	Chemical Oxygen Demand, mg/L	216	IS 3025 (part-58) : 2006
6.	Oil and Grease, mg/L	36	IS 3025 (Part-39): 2003

Page No. 1/1

End of Report



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STP Outlet



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TEST REPORT

Issued To : M/s CAVENDISH INDUSTRIES LTD,
(Unit-II), Gram-Khedi Mubarkpur, Tehsil-Laksar,
Distt. Haridwar. (Uttarakhand)

Report No.	: CEFT/2306/832	Report Date	: 07.07.2023
Your Ref. No.	: Nil	Type of sample	: STP (OUT-LET)
Sample Code Given by Customer	: Nil	Quantity	: 2 LITER
		Date of sampling	: 27.06.2023
		Date of sample receipt	: 28.06.2023
		Sample I.D.	: CEFT/GEN/2306/832
		Date of test	: 28.06.2023 - 07.07.2023

S. NO.	PARAMETERS	TEST RESULTS	STANDARDS	TEST METHODS
1.	pH	7.18	6.5-9.0	IS 3025 (Part-11): 2002
2.	Total Suspended Solids, mg/L	06	10	IS 3025 (Part-17): 1984
3.	NH4-N, mg/L	04	05	IS 3025 (Part-34): 2003
4.	Bio-chemical Oxygen Demand at 27°C 3 days, mg/l.	06	10	IS 3025 (Part-44): 2003
5.	Chemical Oxygen Demand, mg/L	39	50	IS 3025 (part-58): 2006
6.	N-Total, mg/L	09	10	IS: 3025 (P-34)/ APHA 22 nd Edition
7.	Fecal Coliform, MPN/100ml	148	<230	IS 5401 (Part-1): 2012
8.	PO4-P, mg/L	ND	02	IS 3025 (Part-31): 2003

Note: ND Denotes Not Detectable

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End of Report



Authorized Signatory

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STP Inlet



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TEST REPORT

Issued To : M/s CAVENDISH INDUSTRIES LTD, (Unit-II),
Gram-Khedi Mubarkpur, Tehsil-Laksar,
Distt. Haridwar. (Uttarakhand)

Report No.	CEFT/2306/844	Report Date	28.06.2023
Your Ref. No.	Nil	Type of sample	STP (INLET) Water
Sample Code given by customer	Nil	Quantity	2 Liter PP Bottle+1 Liter Glass Bottle
		Date of sampling	27.06.2023
Sampling Location	Within Premises	Date of sample receipt	28.06.2023
Sample Collected By	Lab Person	Sample I.D.	CEFT/GEN/2306/844
Sampling procedure	As per SOP	Date of test	28.06.2023 - 28.06.2023

S. NO.	PARAMETERS	TEST RESULTS	TEST METHODS
1.	pH	7.8	IS 3025 (Part-11): 2002
2.	Total Suspended Solids, mg/L.	91	IS 3025 (Part-17) : 1984
3.	N-Total, mg/L.	29	IS 3025 (Part-34): 2003
4.	Bio-chemical Oxygen Demand at 27°C 3 days, mg/L.	74	IS 3025 (Part-44): 2003
5.	Chemical Oxygen Demand, mg/L.	282	IS 3025 (part-58) : 2006
6.	NH4-N, mg/L.	44	IS: 3025 (P-34)/ APHA 22 nd Edition
7.	Fecal Coliform, MPN/100ml	951	IS 5401 (Part-1): 2012
8.	PO4-P, , mg/L.	ND	IS 3025 (Part-31): 2003

Note: ND Denotes Not Detectable

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End of Report



- Note : 1. The test results are related to the sample/ tested as identified.
2. The sample will be discarded after retention time of 7 days unless otherwise specified.
3. Any Discrepancy found in the test report may be communicated within seven days.
4. This report shall not be reproduced, cannot be used as evidence in the court of law and should not be used in any advertising media without written permission of CEO, CEFT Pvt. Ltd.
5. The Court Jurisdiction will be Delhi.
6. Customer complaint register is available at the laboratory.

Regd. Address - Bldg. No. 17, 1st Floor, DLF Industrial Area, Mofl Nagar, New Delhi - 110015 Ph.: - 011-45012722
Email: info@ceflab.com, Website : www.ceflab.com

11.3 Third party water quality test reports:

Bore well-1

UPC INSTRUMENTS PVT. LTD.
AN ISO 9001:2015, GMP & CE Certified Company
Office Address: Plot No. 18, Towel Market, Gohana Road, Panipat-132103 (Harayana)
Mfg. Unit: Plot no. 125, Near Tehsil, Dinger Majara Road, Gharaunda, Karnal-132114 (Harayana)
info@unitechmeter.com, ho@unitechmeter.com

Calibration Certificate			
Certificate No : UPC/0162/2023-24		O. A. No. :	
Date of Test : 12/04/2023		Due Date : 11/04/2024	
Product : UPCS-MAG-110		Sr. No. 21031003222	
Customer Name : CAVENDISH INDUSTRIES LIMITED, UNIT-11			
Details Of Flowmeter			
Type of Flowmeter :	Electromagnetic	Power Supply :	80 - 280 V AC
Display Type :	Integral	Accuracy :	(+/-) 0.5% of measured Value
Output Signal :	4 - 20 mA / RS 485	Calibrated Range :	2.83 - 283 m3/h
Calibration Factor :	2.083900	Display Range :	2.83 - 283 m3/h
Line Size :	DN 100		
List of Formulae			
1) % of Deviation in Qi = $\frac{(Qi-Qm) \times 100}{Qm}$			
Nomenclature			
Qm - Master's Flow Rate		Qi - Displayed Flow Rate	
Calibration Method	: Comparison Method		
Traceability	: All the instruments used are traceable to National Standards through reference Standards and their calibrations are valid		
Calibration Results			
Sr. No.	Master Flow Rate (Qm)	Indicated Flow Rate (Qi)	Deviation in Qi
	m3/h	m3/h	%
1	91.180	91.400	0.24
2	128.660	128.880	0.17
3	231.410	231.790	0.16
Calibration by :- Signature : yogesh		Verified By :- Signature :	
It is hereby certified that the equipment mentioned above has been tested and found to meet its specifications. The performance of the above equipment is guaranteed for a period of 12 months from the date of installation or 18 months from the date of despatch, whichever is earlier, against any manufacturing defects only.			

Bore well-2

UPC INSTRUMENTS PVT. LTD.			
AN ISO 9001:2015, GMP & CE Certified Company			
Office Address: Plot No. 18, Towel Market, Gohana Road, Panipat-132103 (Harayana)			
Mfg. Unit: Plot no. 125, Near Tehsil, Dinger Majara Road, Gharaunda, Kamal-132114 (Harayana)			
info@unitechmeter.com, ho@unitechmeter.com			
Calibration Certificate			
Certificate No : UPC/0164/2023-24		O. A. No. :	
Date of Test : 12/04/2023		Due Date : 11/04/2024	
Product : UPCS-MAG-110		Sr. No. 21031003221	
Customer Name : CAVENDISH INDUSTRIES LIMITED, UNIT-11			
Details Of Flowmeter			
Type of Flowmeter :	Electromagnetic	Power Supply :	80 - 260 V AC
Display Type :	Integral	Accuracy :	(+/-) 0.5% of measured Value
Output Signal :	4 - 20 mA / RS 485	Calibrated Range :	2.83 - 283 m3/h
Calibration Factor :	2.007000	Display Range :	2.83 - 283 m3/h
Line Size :	DN 100		
List of Formulae			
1) % of Deviation in Qi = $\frac{(Qi-Qm) \times 100}{Qm}$			
Nomenclature			
Qm - Master's Flow Rate		Qi - Displayed Flow Rate	
Calibration Method	: Comparison Method		
Traceability	: All the instruments used are traceable to National Standards through reference Standards and their calibrations are valid		
Calibration Results			
Sr. No.	Master Flow Rate (Qm)	Indicated Flow Rate (Qi)	Deviation in Qi
	m3/h	m3/h	%
1	77.250	77.390	0.18
2	181.650	181.890	0.13
3	211.180	211.600	0.20
Calibration by :- Signature : yogesh		Verified By :- Signature :	
It is hereby certified that the equipment mentioned above has been tested and found to meet its specifications. The performance of the above equipment is guaranteed for a period of 12 months from the date of installation or 18 months from the date of despatch, whichever is earlier, against any manufacturing defects only.			

Bore well-3

UPC INSTRUMENTS PVT. LTD.
AN ISO 9001:2015, GMP & CE Certified Company
Office Address: Plot No. 18, Towel Market, Gohana Road, Panipat-132103 (Hararyana)
Mfg. Unit: Plot no. 125, Near Tehsil, Dinger Majara Road, Gharaunda, Karnal-132114 (Hararyana)
info@unitechmeter.com, ho@unitechmeter.com

Calibration Certificate			
Certificate No : UPC/0161/2023-24		O. A. No. :	
Date of Test : 12/04/2023		Due Date : 11/04/2024	
Product : UPCS-MAG-110		Sr. No. 21031003224	
Customer Name : CAVENDISH INDUSTRIES LIMITED, UNIT-11			
Details Of Flowmeter			
Type of Flowmeter :	Electromagnetic	Power Supply :	80 - 260 V AC
Display Type :	Integral	Accuracy :	(+/-) 0.5% of measured Value
Output Signal :	4 - 20 mA / RS 485	Calibrated Range :	2.83 - 283 m3/h
Calibration Factor :	1.995400	Display Range :	2.83 - 283 m3/h
Line Size :	DN 100		
List of Formulae			
1) % of Deviation in Qi = $\frac{(Qi-Qm) \times 100}{Qm}$			
Nomenclature			
Qm - Master's Flow Rate		Qi - Displayed Flow Rate	
Calibration Method	: Comparison Method		
Traceability	: All the instruments used are traceable to National Standards through reference Standards and their calibrations are valid		
Calibration Results			
Sr. No.	Master Flow Rate (Qm)	Indicated Flow Rate (Qi)	Deviation in Qi
	m3/h	m3/h	%
1	79.320	79.480	0.20
2	154.160	154.500	0.22
3	216.200	216.450	0.12
Calibration by :- Signature : yogesh		Verified By :- Signature :	
It is hereby certified that the equipment mentioned above has been tested and found to meet its specifications. The performance of the above equipment is guaranteed for a period of 12 months from the date of installation or 18 months from the date of despatch, whichever is earlier, against any manufacturing defects only.			

Bore well-4

UPC INSTRUMENTS PVT. LTD.
 AN ISO 9001:2015, GMP & CE Certified Company
 Office Address: Plot No. 18, Towel Market, Gohana Road, Panipat-132103 (Harayana)
 Mfg. Unit: Plot no. 125, Near Tehsil, Dinger Majara Road, Gharaunda, Karnal-132114 (Harayana)
 info@unitechmeter.com, ho@unitechmeter.com

Calibration Certificate			
Certificate No : UPC/0158/2023-24		O. A. No. :	
Date of Test : 12/04/2023		Due Date : 11/04/2024	
Product : UPCS-MAG-110		Sr. No. : 21031003051	
Customer Name : CAVENDISH INDUSTRIES LIMITED, UNIT-11			
Type of Flowmeter :	Electromagnetic	Power Supply :	80 - 260 V AC
Display Type :	Integral	Accuracy :	(+/-) 0.3% of measured Value
Output Signal :	4 - 20 mA / RS 485	Calibrated Range :	0 - 283 m3/h
Calibration Factor :	1.908100	Display Range :	0 - 283 m3/h
Line Size :	DN 100		
List of Formulae			
1) $\% \text{ of Deviation in } Q_i = \frac{(Q_i - Q_m) \times 100}{Q_m}$			
Nomenclature			
Q _m - Master's Flow Rate		Q _i - Displayed Flow Rate	
Calibration Method	: Comparison Method		
Traceability	: All the instruments used are traceable to National Standards through reference Standards and their calibrations are valid		
Calibration Results			
Sr. No.	Master Flow Rate (Q _m)	Indicated Flow Rate (Q _i)	Deviation in Q _i
	m3/h	m3/h	%
1	91.120	91.300	0.20
2	142.500	142.770	0.19
3	221.300	221.580	0.13

Calibration by :- Signature Yogesh	Verified By :- Signature :
--	--------------------------------------

It is hereby certified that the equipment mentioned above has been tested and found to meet its specifications. The performance of the above equipment is guaranteed for a period of 12 months from the date of installation or 18 months from the date of despatch, whichever is earlier, against any manufacturing defects only.

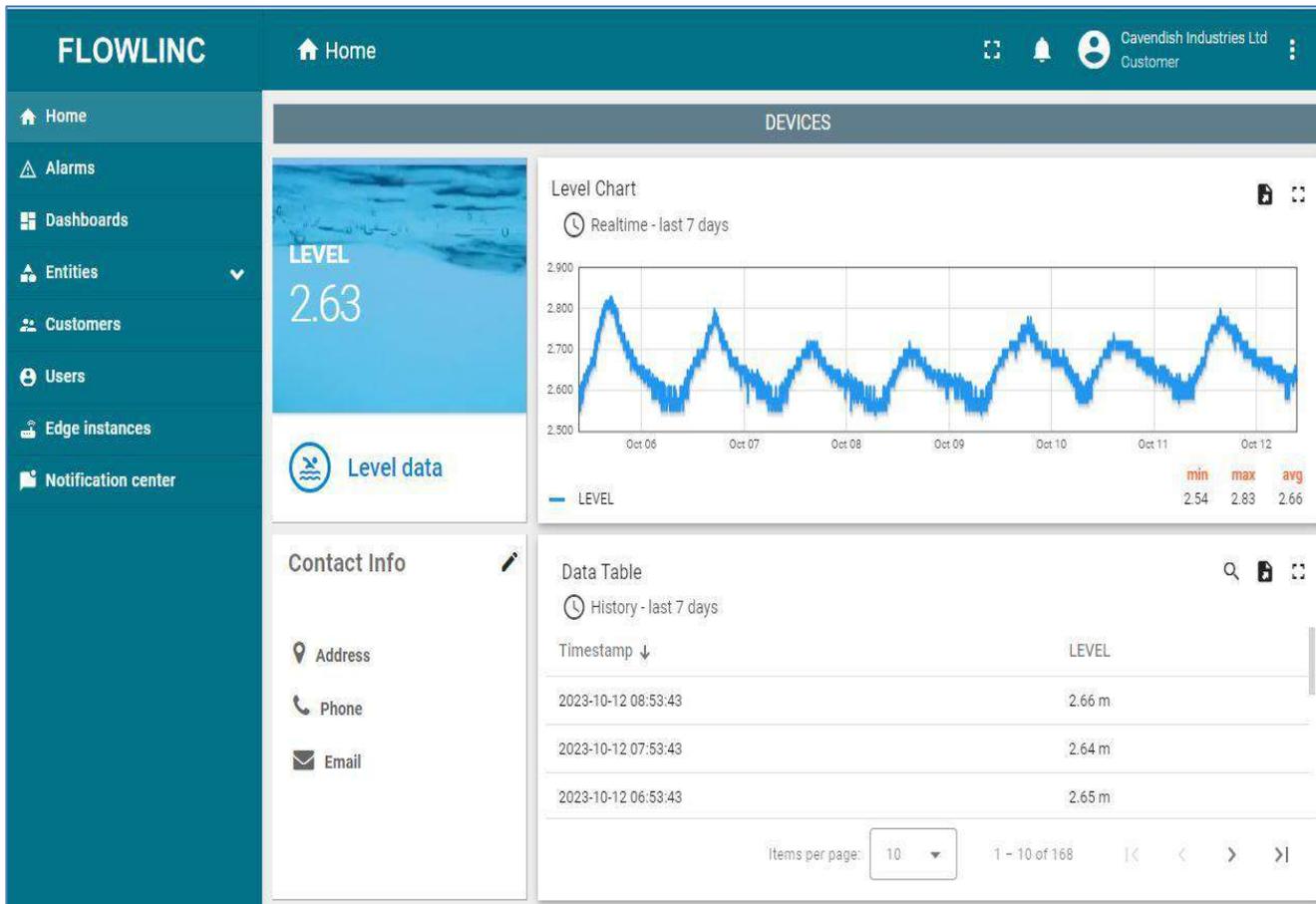
11.4 Ground water abstraction Historical Data, KL

Month	FY 2020-21	FY 2021-22	FY 2022-23
April	6429	35937	34827
May	21339	37739	34545
June	31558	36817	34844
July	37989	41261	32214
August	36395	40340	32248
September	39291	35238	30253
October	34377	32265	29258
November	28203	36311	29625
December	29157	35978	26400
January	28373	30436	24878
February	27472	20201	21996
March	29173	32363	29090
Total	349756	414886	360178

11.5 Production Data in Ton

Month	FY 2022-23
April	5553
May	6367
June	6945
July	5990
August	6199
September	6542
October	5977
November	8481
December	9057
January	7979
February	5351
March	7334
Total	81775

11.6 Piezometer recorded data





HEAD OFFICE
Uttarakhand Pollution Control Board
"Gaura Devi Paryavaran Bhawan"
46B, IT Park, Sahastradhara Road, Dehra Dun
E-mail : msukpcb@yahoo.com, Phone No.-0135-2607092

UKPCB/HO/Con/B-63/2024/ 1523

Date : 03.2.2024.
REGD. POST

To,

M/s Cavendish Industries Ltd., Unit-IV,
(Formerly - M/s Birla Tyres, Unit-IV),
Birla Tyres Industrial Estate,
Khedimubakpur, Laksar,
Distt- Haridwar.

Consolidated Consent to Operate and Authorisation hereinafter referred to as the CCA (Consolidated Consent & authorization) (Renewal) under Section-25 of the "Water (Prevention & Control of Pollution) Act, 1974" and under Section-21 of the "Air (Prevention & Control of Pollution) Act, 1981" and Authorization under "Rule-6(2)" of the "Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016" notified under "Environment (Protection) Act, 1986" as applicable (to be referred hereinafter as Water Act, Air Act and HW Rules respectively).

CAF ID - 6994 CCA (Renewal) Date :- 17.07.2024	Application No. - 2784751
--	---------------------------

CCA is hereby granted to M/s Cavendish Industries Ltd. located at (Formerly - M/s Birla Tyres, Unit-IV), Birla Tyres Industrial Estate, Khedimubakpur, Laksar, Distt- Haridwar subject to the provisions of the Water Act, Air Act and Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 and the orders that may be made further and subject to following terms and conditions :-

1. This CCA is granted for the period upto 30.09.2024 and valid for manufacturing of following products with Capital Investment/Net Assets Values Rs. 14457.0 Lakh:-

S. No.	Last CCA		Present CCA (Renewal)	
	Product	Quantity (Per Month)	Product	Quantity (Per Month)
I	Automobile Tyres (Motor Cycle & LCV)	2790MT	Automobile Tyres (Motor Cycle & LCV)	2790MT

2. Specific Conditions under Water Act :-

- (i) The daily quantity of effluent discharge (KLD) :-

	Last CCA	Present CCA (Renewal)
Trade Effluent	214	214
Sewage	50	50

- (ii) Trade Effluent Treatment and Disposal:- The applicant shall operate Effluent Treatment Plant consisting of primary/secondary and tertiary treatment as is required with reference to influent quantity and quality.

In case of stoppage of functioning of ETP, production has to be stopped immediately and this Board has to be intimated by fax/phone/email with a report in this regard to be dispatched immediately.

- (iii) The treated effluent shall be recycled to the maximum extent. Quality of the treated effluent shall meet to the following general and specific standards as prescribed under Environment (Protection) Rules, 1986 and applicable to the unit from time-to-time :-

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1	pH	Between	6.5 to 9.0
2	Suspended solids	Not to exceed	100mg/l
3	BOD (3 days 27°C)	Not to exceed	30 mg/l
4	COD	Not to exceed	250 mg/l
5	Oil & Grease	Not to exceed	10 mg/l

- (iv) **Sewage Treatment and Disposal:-** The applicant shall provide comprehensive STP as is required with reference to influent quantity and quality.

In case of stoppage of functioning of STP, production has to be stopped immediately and this Board has to be intimated by fax/phone/email with a report in this regard to be dispatched immediately.

- (v) The treated sewage shall be reuse in gardening etc. Quality of the treated effluent shall meet to the following standards within five years from the date of notification dated 13.10.2017.

S.No.	Parameters	Standards
1	pH	6.5 to 9.0
2	BOD (mg/L)	Not more than 30
3	TSS (mg/L)	Not more than 100
4	Fecal Coliform (MPN/100ml)	Less than 1000

3. Conditions under Air Act :-

- (i) The applicant shall use following fuel and install a comprehensive control system consisting of control equipment as is required with reference to generation of emissions and operate and maintain the same continuously so as to achieve the level of pollutants to the following standards :-

S. No	Stack attached with	Stack height (Mt)	Type of Fuel	Fuel Quantity	Emission Control Equipment	Emission standards not to exceed
1	DG Set (2000 KVA) x 2	27	HSD	300 Ltr/Hr	Acoustic enclosure & Stack	-

In case of stoppage of functioning of air pollution control equipment, production has to be stopped immediately and this Board has to be intimated by fax/phone/email with a report in this regard to be dispatched immediately.

- (ii) Noise from the D.G. Set and other source(s) should be controlled by providing an acoustic enclosure as is required for meeting the ambient noise standards for night and day time as prescribed for respective areas/zones (Industrial, Commercial, Residential, Silence) which are as follows :-

Standards for Noise level in db(A) Leq	Industrial Area		Commercial Area		Residential Area		Silence Zone	
	Day time	Night time	Day time	Night time	Day time	Night time	Day time	Night time
	75	70	65	55	55	45	50	40

Day time : from 6.00 a.m. to 10.00 p.m., Night time: from 10.00 p.m. to 6.00 a.m.

4. Conditions under Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 :-

- (i) The **Factory Manager** of M/s Cavendish Industries Ltd., Unit-IV, Laksar, Distt-Haridwar is hereby granted an authorization to operate a facility for collection and storage of Hazardous wastes.
- (ii) The authorization is granted to operate a facility for generation, collection and storage of hazardous wastes within factory premises for following category of wastes :-

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S.No.	Category (Schedule-I & Schedule-II)	Quantity of Waste for which authorization is being issued (MTA)	Mode of Disposal
1	Schedule I – 21.1	0.365	As per rules
2	Schedule I – 3.3	0.730	As per rules
3	Schedule I – 5.1	20.00	Recyclable
4	Schedule I – 5.2	1.800	As per rules
5	Schedule I – 27.1	1.50	As per rules

- (iii) The authorization shall be in force for the period upto 30.09.2024.
 (iv) The authorization is subject to the conditions stated below and such conditions as may be specified in the rules for the time being in force under Environment (Protection) Act, 1986.

Terms and conditions of authorization :-

- (i) The authorization shall comply with the provisions of the **Environment (Protection) Act, 1986**, and the rules made there under.
 - (ii) The authorization and its renewal shall be produced for inspection at the request of an officer authorized by the SPCB/PCC.
 - (iii) The person authorized shall not rent, lend, sell, transfer or otherwise transport the hazardous wastes without obtaining prior permission of the SPCB/PCC.
 - (iv) Any unauthorized changes in personnel, equipment as working conditions as mentioned in the application by the person authorized shall constitute a breach of his authorization.
 - (v) It is the duty of the authorized person to take prior permission of the SPCB/PCC to close down the facility.
 - (vi) An application for the renewal of an authorization shall be made as laid down under these rules.
 - (vii) The unit shall comply with any other conditions specified in the guidelines issued by the MoEF&CC or CPCB/SPCB from time to time.
5. This CCA is valid for compounding, dipping, calendaring, extrusion, tyre building, curing processes only.
6. **Compulsory documents to be submitted by the Industry/Unit :-**
- (i) Annual return in **Form-4** and **Waste Disposal Manifest in Form-10** under **Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016** and **Third Party Audit Report**.
 - (ii) Environment Statement in **Form-V** of **Environment (Protection) Rules, 1986**.
 - (iii) Quarterly compliance report of the CCA, photograph of ETP/APCs/Waste Storage Area.
7. Unit has to apply for renewal of CCA well in advance of 60 days of expiry of this CCA.
 8. Competent Authority reserves the right to change/modify/add any time any condition of this CCA.
 9. Unit has to submit Action Plan of collecting back and scientific disposal of plastic waste generated due to their used product within one month of receipt of this CCA to this Board.
 10. The Unit shall comply the "Approved Fuels" policy in the entire state of Uttarakhand and use the fuel as per the list of Approved Fuels listed in the order issued by the Board vide its letter no. UEPPCB/HO/Gen-183-426/2020/171-331 dated 17.07.2020.
 11. Unit shall comply the Extended Producer Responsibility (EPR) for waste tyre under Hazardous & Other Waste Management Rule, 2022 as amended.
 12. Unit has to comply with the other **Specific & General Conditions** which are as follows:-

Specific Conditions:

1. The Consent to Operate will attract execution of Board's Order dated 02.12.2022 subject to directions of Hon'ble High Court in this regard in the PIL 93/2022 as issued from time to time.
2. The applicant shall submit audited balance sheet of the unit at the end of each financial year so that fee submitted by the applicant could be assessed.

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3. The applicant shall provide ports in the chimney/stack and facilities such as ladder, platform etc. per requirement for monitoring the air emissions and the same shall be open for inspection and use at all times by the Board's staff. The chimney/stack attached to various sources of emission shall be designated by numbers such as S-1, S-2 etc. and these shall be painted/ displayed to facilitate identification.
4. The industry shall ensure interlocking of air pollution control devices and production processes.
5. Solid wastes generated from the industry has to be disposed in manner so that contamination of surface water bodies/ground water/soil etc. does not take place.
6. The industry shall take adequate measures to control of noise from its own source so as to comply with the standards as may be applicable.
7. The applicant shall develop three rows of green belt on the premises with plant species as suggested by the **Central Pollution Control Board**.
8. The industry shall strictly adhere with the specific and general conditions issued with CCA order. Any violation of stipulated conditions may attract legal action under the provisions of **Water Act, Air Act and Environment (Protection) Act and Rules** made thereunder.
9. The industry shall ensure **all safety measures** and shall undertake **periodical assessment** by the competent authority.
10. Unit shall ensure manifest system in **Form-10 of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016** while disposing hazardous waste.
11. Hazardous waste should not be stored beyond a period of **90 days**.
12. The industry situated nearby the River Ganga and its tributaries shall ensure the treatment facilities and disposal arrangement in such a way so that no waste water is discharged in water stream or water bodies.
13. **The applicant shall strictly avoid the usage of single use plastics in the premises as per the list of banned single use plastics mentioned in the notification of MoEF&CC, Government of India dated 12.08.2021 and notification of Uttarakhand Government issued vide letter no. 84/XXVIII-1-20-13(II)/2001 dated 16.02.2021.**
14. The unit shall strictly comply with the provisions of Water, Air & E (P) Acts and Rules/Notifications made there under.

General Conditions

1. The applicant shall get analyse the samples of effluent/emission/hazardous wastes at least once in a three month from the laboratory recognized by the MoEF&CC and shall report to the UKPCB.
2. The applicant shall however, not without the prior consent of the **Board** bring into use any new or altered outlet for the discharge of effluent or gases emission or sewage waste from the unit.
3. Treated waste water and domestic waste water shall be disposed jointly at one disposal point. The applicant shall provide discharge measurement equipment at final disposal point.
4. The applicant shall strictly comply with conditions of this CCA and submit compliance report of stipulated conditions within 30 days of receipt of this CCA. If, at any point of time, it is found that the industry is not complying with stipulated conditions or any further direction/instruction issued by the **Board**, legal action shall be initiated against the applicant.
5. The applicant shall maintain good house keeping. All valves/pipes/sewer/drains etc. must be leak-proof.
6. The industry shall provide uninterrupted entry to the STP's/ETP's inlet and outlet points, Air Pollution Control equipment and stack for smooth sampling/monitoring of efficiency of pollution control measures.
7. The industry shall provide "Inspection Book" at the time of inspection to the Board's officials.
8. Whenever due to any accident or other unforeseen act or event, such emission occurs or is apprehended to occur in excess of standards laid down, such information shall be reported to the Board's offices and all other concerned offices. In case of failure of pollution control equipment, the production process connected to it shall be stopped with immediate effect.
9. The industry shall operate in a manner so that all emissions be emitted through designated chimney/stack only.
10. In case of any damage to the agriculture productivity, human habitation etc. by the operation of industry, it shall be imperative to stop production in the industry with immediate effect and such information shall be reported to Board's offices. The industry shall be liable to pay compensation also in such cases as decided by the Competent Authority.

11. The applicant shall apply before the 60 days of expiry of CCA or any change in production types/ production capacity/manufacturing process/capacity enhancement etc. or any change in effluent discharge point or emission point.
12. The **Board** reserves the right to revoke/add/modify any stipulated condition issued along with CCA, as may be necessary.
13. The person authorized shall not rent, lend, sell, transfer or otherwise transport the hazardous waste without obtaining prior permission of the **Board**.
14. Any unauthorized change in personnel, equipment as working condition as mentioned in the application by the person authorized shall constitute a breach of his authorization.
15. It is the duty of the authorized person to take prior permission of the **Board** to close down the facility.
16. The authorization is valid for temporary storage of Hazardous Waste within premises only.
17. The authorized agency shall ensure that on-line data with regard to quantity and nature of hazardous chemicals being used in the plant as well as air emission and waste generated within premises is displayed on **Display Board of size 6x4 feet** outside the main factory gate within premises.
18. It is duty of the authorized person to take prior permission of this Board to close and cleanup the facility for treatment, storage and disposal of hazardous waste.
19. The applicant shall maintain record of hazardous waste in **Form-3** and shall submit annual return in **Form-4** on or before the 30th day of June following to the financial year to which that return relates.
20. In no case any hazardous waste shall be disposed off on land, in any drain, or into any water stream. All spillage must also be safely collected and stored.
21. Before the hazardous waste is stored or dumped in the facility, applicant must conduct a detailed **physical and chemical analysis of hazardous waste sample** and report to the **Board**.
22. Dried hazardous sludge from the process in the plant shall be **stored in double lined HDPE pit constructed with R.C.C. or such material which does not react with the waste contained in it.**
23. The storage area should be fenced properly and Sign/Notice Board indicating 'Danger' and 'Hazardous' shall be displayed at appropriate position both in Hindi and English.
24. The industry shall store non-ferrous metal waste, used oil/spent oil waste in sealed drums placed on impervious floor under covered shed. Hazardous waste if required shall be **sold only to Registered Recyclers/Re-processors.**
25. In case of any transportation of hazardous waste, the details in **Form-10** of the **Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016** shall be submitted to the **Board**.
26. This CCA Order is issued based on online approval of Competent Authority.


Environment Engineer

Copy to:

1. **Chairman, Uttarakhand Pollution Control Board, Dehradun** for kind information please.
2. **Regional Officer, Uttarakhand Pollution Control Board, Roorkee, Distt- Haridwar** with direction to visit & submit compliance report within 90 days.


Environment Engineer

g.c. a