

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL,
PRINCIPAL BENCH, NEW DELHI**

ORIGINAL APPLICATION NO. 234 OF 2020

IN THE MATTER OF:

ANURADHA

...APPLICANT

VERSUS

STATE OF UTTAR PRADESH & ORS.

...RESPONDENTS

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ANUNAYA MEHTA

ADVOCATE FOR THE RESPONDENT

CHAMBER NO. 388, BLOCK - 2

DELHI HIGH COURT

NEW DELHI

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NEW DELHI

DATED: 24.06.2025



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ORIGINAL APPLICATION NO. 234 OF 2020

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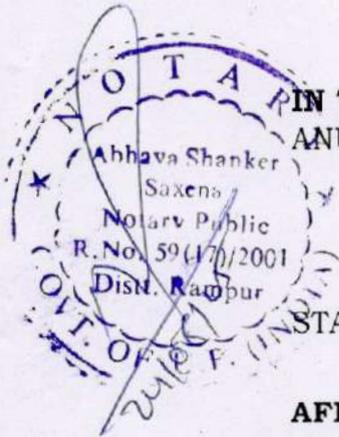
...RESPONDENTS

AFFIDAVIT ON BEHALF OF RESPONDENT NO. 4 - M/S. TRIVENI ENGINEERING & INDUSTRIES LTD. SUMMARISING ITS OBJECTIONS/REPLY/EXPLANATION IN RELATION TO FINDINGS OF THE JOINT INSPECTION COMMITTEE MADE IN THE REPORT DATED 23.12.2020 AS ALSO RESPONSE TO THE RECOMMENDATIONS MADE IN THAT REPORT

I, Dinesh Kumar, aged about 59 years, S/o Shri Mahavir Singh, R/o 134, Singpur Sani Sambhal Uttar Pradesh 244302, presently in Milak Narayanpur District Rampur do hereby solemnly affirm and declare as under:

1. That I am working as General Manager of M/s Triveni Engineering and Industries Ltd. in the above-mentioned matter and am well conversant with the facts and circumstances of the case and as such I am competent to swear this affidavit.
2. For the convenience of this Hon'ble Tribunal, Respondent No. 4 is summarising below its objections/reply/explanations


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already given in its Objections dated 12.12.2023 and Rejoinder dated 16.04.2024 to the response of UPPCB in relation to conclusions made by the joint inspection committee in para 5 of their report dated 23.12.2020 appended at page___ and further response / confirmation of implementation by Respondent No. 4 of the recommendations made by the joint inspection committee in the aforesaid report in para 6.

RESPONSE TO FINDINGS / CONCLUSIONS

3. Unit is operating beyond consented capacity of 5000 TCD

5220 TCD cane crushed on day of inspection

5091.5 TCD cane crushed in the month of December 2020

(Conclusion No.1, Page 19 of the Report)

Response

- For the whole season, average is 4932 TCD as per the Certificate issued by the District Cane Officer, Rampur, for the Crushing Season 2020-21 [Annexure R-3 with Objections - **Annexure A herewith**] which is within the consented capacity of the unit.
- Daily average cannot be seen since amount of cane crushed depends of various factors, such as cane brought by farmers as per indent issued by the cane commissioner, which needs to be crushed immediately, due to loss of water by drying in the case sticks.

Detailed explanation on this finding already furnished on paras 11-16 of the Objections dated 12.12.2023 and para 1 rejoinder dated 16.04.2024 filed by Respondent No. 4

4. Requisite Flow meters not installed

Flow meter not installed at main inlet channel of ETP

Separate Flow meter not installed at SRS outlet

(Conclusion No.2, Page 19 of the Report)

Response

- Respondent No. 4 did not have a statutory obligation to install separate flowmeter at inlet of ETP or SRS outlet as

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there was no such condition prescribed either under the CTE / CTO and nor was the unit intimated of such requirement during any of the previous multiple inspections.

- Be that as it may, Flowmeter now installed at ETP inlet as also SRS outlet.
- UPPCB reply acknowledges that the requisite flowmeters have now been installed.

Detailed explanation on this finding already furnished on paras 17-26 of the Objections dated 12.12.2023 and para 2 rejoinder dated 16.04.2024.

5.

Storage Lagoon is of over-capacity

Unit has seepage proof Lagoon having capacity of 12990 Cum to store treated effluent. Effluent generation was for much less than the 15 days holding capacity of storage lagoon, which indicates overcapacity.

(Conclusion No.3, Page 19 of the Report)

Response

- As per MoEF Notification GSR 35(E) dated 14.01.2016/ CPCB charter, maximum effluent discharge per day permitted is 1000 KLD [Annex R-5 with Objections - **Annexure B herewith**].
- As per consent to operate, treated effluent storage lagoon of upto 15 days holding capacity permitted i.e. 15x1000 KLD = 15,000 KL. However, Lagoon capacity is 12990 KL i.e. well within permissible limits.
- UPPCB reply admits no infraction on this point.

Detailed explanation on this finding already furnished on paras 27-29 of the Objections dated 12.12.2023 and para 3 rejoinder dated 16.04.2024.

6. Two impermeable lagoons in the unit

One Lagoon filled with rainwater.

One Lagoon used for storage of waste water generated from backwash - filled with black water which was reported to be pumped back to ETP via flexible pipe.

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(Conclusion No.4, Page 19 of the Report)**Response**

- One impermeable 'tank' / lagoon used to temporarily hold backwash to enable proper treatment of backwash by routing into the ETP on the same day. Done to ensure that no untreated effluent is discharged from the unit. Anyways, after Joint Committee recommendations, practice has been stopped.
- Lagoons also no longer part of Sugar unit's set-up. Both lagoons have been sanctioned as part of adjacent Distillery – as 'CT Lagoon' and 'Condensate Lagoon' [Annex 6-8 with objections - **Annexure C herewith**].
- UPPCB reply acknowledges that lagoons no longer used in Sugar unit; and diverted to the Distillery.
- Most importantly the lagoons were found to be completely impermeable and seepage proof no damage to environment found.

Detailed explanation on this finding already furnished on paras 30-36 of the Objections dated 12.12.2023 and para 4 rejoinder dated 16.04.2024.

7. ETP is not operating satisfactorily

MLSS/MLVSS were found (1581/ 1305), which is at lower side as against desired level of 2000-2500 mg/ l, which indicates the ETP was not properly stabilized.

(Conclusion No.5, Page 19 of the Report)**Response**

- Maintenance of MLSS levels in the aeration tank of the ETP is a continuous and on-going process. Just a day prior to the joint inspection, in view of the high biomass levels (3000-4000 mg/l), biomass (MLSS) had been removed from the aeration tank to maintain optimum treatment capacity of the ETP. It is for this reason that temporarily the MLSS levels were found to be low.
- Crucially, OCEMS installed with 24x7 continuous feeds being relayed to UPPCB and CPCB. If ETP was not functioning properly, BOD levels would have been affected



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and detected through OCEMS. However, no such intimation has been received from UPPCB / CPCB in the past years.

- Test reports from Approved MoEF lab for sample from same place collected by the unit on the same day as Joint Inspection i.e. 23.12.2020 show results within norms [Annexure R-6 rejoinder -**Annexure D herewith**].
- Test reports from Approved MoEF lab for similar time period – samples collected on 12.11.2020, 18.12.2020, 22.01.2021 etc. show all parameters (pH, BOD, COD, TDS, TSS) within norms which indicates that ETP is functioning properly [Annexure 9 with Objections– **Annexure E herewith**].
- Random testing of samples done during Magh Mela on 21.01.2021 and 03.02.2021 found to be proper. Further, results of samples collected by R.O., UPPCB, on 22.01.2021 and 27.01.2021 also within norms [Annexure 10 & 11 with Objections – **Annexure F herewith**].
- Further, recently, the unit has even installed an anaerobic filter with capacity of 1600 m³ in the ETP which would significantly reduce the organic load and improve the overall quality of the treated effluent [Annex R-9: Rejoinder to IA No. 575/24– **Annexure G herewith**].

Detailed explanation on this finding already furnished on paras 37-45 of the Objections dated 12.12.2023 and para 5 rejoinder dated 16.04.2024.

8. **SRS Unit not functioning properly**

Value of Sulphate at inlet of SRS was 563 mg/l whereas value of Sulphate at outlet of SRS was 864 mg/l.

(Conclusion No.6, Page 19 of the Report)

Response

- This is a clear case of sample testing error / mix-up qua results of inlet and outlet of SRS. Samples collected by the unit on the same day as the Joint Inspection i.e. 23.12.2020 were sent by the unit for testing to an approved MoEF laboratory on 24.12.2020, which returned results of Sulphur at the inlet at 815 mg/l and at the outlet at 556 mg/l i.e. results which are diagonally opposite to the results of the


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joint committee [Annexure R-6 rejoinder – **Annexure H herewith**].

- Sample mix-up is also evident in view of the fact that COD at the SRS inlet, as noted in Table 5 of the Joint Inspection report is 837 whereas at SRS outlet, the COD is 63. Reduction in COD does not correlate with increase in Sulphur levels, as alleged [**Pg. 17 of the Joint Inspection Report**].
- The manufacturer of the SRS system “Membrane India Ltd.” vide email dated 24.07.2024 informed the Respondent that the dominant salts in the chemical “Catalyst” used in the SRS system are salts of Sodium, Calcium, Magnesium and Alumina. Therefore, there is no possibility of increase in Sulphur levels *via* the SRS system [Annex R-3 in IA No. 351–**Annexure I herewith**].
- The fact, the Respondent has also filed reports of an MoEF accredited lab for samples collected on 18.12.2020, 22.01.2021, 13.02.2021 and 14.03.2021 i.e. before and after the Joint Inspection, which show SRS functioning properly [Annexure R-12 with Objections – **Annexure J herewith**].
- Further, UPPCB reports of treated effluent dated 03.03.2022, 19.12.2022, 18.02.2023, 05.04.2023, 19.12.2023, 11.02.2024, 26.12.2024 and 18.02.2025 etc. from the Storage lagoon (i.e. of the treated effluent) show results within norms [Annex R-1 with Rejoinder to IA No. 575/24–**Annexure K herewith**].
- Anyways, now, the unit has invested a huge amount of Rs. 16.37 Cr. and completely changed its process for sugarcane juice clarification from Double Sulphitation (DS) to Defco-Melt Phosphotation Process (DMP) which does not use Sulphur *at all* and even reduces lime consumption to half [Annex R-10 with Rejoinder to IA No. 575/24– **Annexure L herewith**]. Therefore, the SRS system going forward has virtually become redundant.

Detailed explanation on this finding already furnished on paras 46-51 of the Objections dated 12.12.2023 and para 6 rejoinder dated 16.04.2024; and in para 3 of IA No. 575 of 2024.


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9. Discharge of Treated Effluent through common channel

Treated effluent from SRS being discharged through common channel into effluent storage lagoon after mixing with ETP outlet wherein it become diluted with ETP treated effluent.

(Conclusion No.7, Page 19 of the Report)

Response

- Charter directions mentioned in GSR 35 (E) dated 14.01.2016 provide for a single outlet point from the Unit for (1) final effluent discharge as well as (2) for the waste water from spray pond overflow or cooling tower blowdown. Hence, both treated streams are being combined and stored in treated water lagoon for final disposal as irrigation as per statutory compliance.

Detailed explanation on this finding already furnished on paras 52-53 of the Objections dated 12.12.2023 and para 7 rejoinder dated 16.04.2024.



10. Possibility of dilution in Primary Clarifier

Results show primary clarifier reducing BOD by 97%, COD by 96% and TSS 80% - which is unrealistic

Effluent quality at outlet of secondary clarifier is poor than outlet of primary clarifier

(Conclusion No.8, Page 19 of the Report)

Response

- This is nothing but a case of sample mix-up rather than dilution in ETP. See Table 5 in the Joint Inspection Report - (1) pH level at outlet of secondary clarifier (essentially the outlet of ETP) is shown to be '5.6', and (2) pH level at the outlet of SRS before merging with ETP treated effluent is shown to be '7.2', whereas, (3) pH level after the merging of SRS outlet is '7.4'. Scientifically, effluent from ETP at 5.6 pH and effluent from SRS at 7.2 pH cannot merge to become 7.4 pH.
- See Table 6 in the Joint Inspection Report - in order to bring the pH level from 4.8 at the ETP Inlet Channel to 7.6 at the Outlet of Primary Clarifier, the answering Respondent would have to utilise approximately 2424 m³ of water (whereas

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volume of ETP Primary Clarifier is only 101 m³). Similarly, in order to bring down the COD registered at the ETP Inlet Channel from 1569 mg/L to 62 mg/L at the Outlet of Primary Clarifier, the answering Respondent would have to dilute with approximately 2556 m³ of water. Notably, the water consumption as recorded in the Groundwater Extraction Log has remained constant from 01.12.2020 to 23.12.2020. Therefore, the result suggested by the Committee is impossible.

- Test reports from Approved MoEF lab for sample collected by the unit on the same day as Joint Inspection i.e. 23.12.2020 show results within norms [Annexure R-6 rejoinder - **Annexure V herewith**].

Detailed explanation on this finding already furnished on paras 66-74 of the Objections dated 12.12.2023 and para 9 rejoinder dated 16.04.2024.

11. Contamination of Ground Water

Hardness is high in all 4 samples

Results in Sample No. 3 at Mahmudpur Village shows results beyond norms

(Conclusion No.9, Page 19 of the Report)

Response

Hardness of Ground Water

- As far as hardness is concerned, it is a geographical phenomenon and not attributable to the unit as the entire region faces hardness of water. Article titled "Assessment of Physico-chemical status of Ground water from Four Blocks (Suar, Milak, Bilaspur, Shahabad) of Rampur District, U.P. India" supports this statement [Annex R-13 to Objections- **Annexure M herewith**].

Contamination of Ground Water

- First and foremost, it may be noted that the conclusion of the Joint Inspection report only says that ground water contamination may be due to discharged effluent; and the report does not pin the blame on the Respondent. Rather, the Joint Inspection report has recommended a further study.



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- Further, as far as the 4 samples of groundwater tested, levels of BOD, COD, Colour, TDS are within limits in 3 out of the 4 samples. Only Sample No. 3 shows irregular results.
- The Respondent has gotten conducted a Source-Apportionment study qua Sample No. 3 (Village Mahmudpur) which indicates that Ground Water pollution in the area is attributable to domestic / agricultural factors. Probable sources of contamination:
 - Open unlined sewage drains in vicinity of handpump No. 3 [UPPCB has conducted testing of a drain next to the house of Satyapal which shows contamination – Annex. 5 with Rejoinder to IA 575 of 2024 – **Annexure N herewith**]
 - Pond located in the vicinity of handpump No. 3 [at a distance of 50-150m] – and the pond is completely polluted and contains garbage, domestic waste etc. [UPPCB has conducted testing of village pond on 12.07.2024 showing high levels of Solids, BOD and COD – Annex R-5 with IA No. 575/24 – **Annexure O herewith**]
 - Cow Dung is also dumped at the banks of the Pond, which is a significant source of Pond pollution [Refer article “*water Quality Assessment of Pond Water of Kalanaur Block, Rohtak, Haryana*” @ Annex. 7 of Rejoinder to IA 575 of 2024 – **Annexure P herewith** and article titled “*Comparison of the output ...*” @ Annex R-6 with IA 575 of 2024 – **Annexure Q herewith**]. Photographs of Pond @ Annex R-4 with IA 575 of 2024 – **Annexure R herewith**.
 - Seepage from septic tanks in the individual houses in the villages.
- The Source-Apportionment study has observed that surface-water and ground-water movement is from North-West to South-East. Therefore, location of the factory, the fields where the unit gives treated effluent water for irrigation purposes, and village Mahmudpur, [as Seen on Pg. 53 of Rejoinder to IA 575 of 2024 – **Annexure S herewith**] there is no possibility of the unit contributing to groundwater pollution in Village Mahmudpur.



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- Pertinently, the Respondent got testing done of groundwater at Village Narayanpur, Jatpura and Peepli through an MoEF recognized lab and results dated 18.11.2023 show results within norms [Annex R-3 with Rejoinder to UPPCB reply - **Annexure T herewith**].
- Further, groundwater testing reports of UPPCB dated 18.03.2024 at various locations in the unit and Village Narayanpur, Village Peepli, village Milak Narayanpur are within norms [Annex R-4 with Rejoinder to UPPCB reply - **Annexure U herewith**].

Detailed explanation on this finding already furnished on paras 54-65 of the Objections dated 12.12.2023 and para 8 rejoinder dated 16.04.2024; as also in detail in IA No. 575 of 2024 and the Rejoinder to IA No. 575 of 2024.



RESPONSE TO RECOMENDATIONS

1. *Unit shall operate mill at consented capacity of 5000 TCD only*
Reply – the unit has operated in the past and continues to operate the sugar mill only at the consented capacity.

2. *Unit shall obtain valid NOC from CGWA / UPGWD to abstract ground water.*
Reply - The Unit had NOC dated 13.07.2017 issued by CGWA to abstract ground water which was valid till 12.07.2019. The application for renewal of NOC had been submitted prior to its expiry, on 22.06.2019 itself. However, no decision on the application had been taken as on the date of Joint inspection. In terms of para 44 of the Notification dated 24.09.2020 issued by CGWA, the NOC of the unit would stand deemed to have been approved till the date of renewal. Therefore, there is no violation on this count by the unit.
 Subsequently, NOCs have been issued by the State Ground Water Department which are valid till 17.06.2026 and 26.02.2026 respectively. **Therefore, the recommendation has been complied with.**


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3. *The unit shall ensure proper operation & maintenance of ETP and also ensure proper stabilization of ETP*

Reply: The Unit is ensuring proper maintenance and operation of ETP and also ensuring proper stabilization of ETP. No adverse observation regarding this observation has been made or communicated to the Unit till date.

4. *The unit shall maintain adequate MLSS/MLVSS ratio in aeration tank while operating the ETP and ensure proper stabilization of ETP*

Reply: As explained, the unit was already maintaining adequate MLSS / MLVSS ration is aeration tank. Even as on date, the unit is fully compliant.

5. *Unit shall install separate flowmeter at ETP outlet*

Reply: **This recommendation has been complied with** and the requisite flowmeter has been installed.

6. *Unit shall relocate the inlet flowmeter to main inlet channel of ETP to avoid any possibility of effluent bypass before ETP*

Reply: **This recommendation has been complied with** and the requisite flowmeter has been installed.

7. *The unit shall install a separate flow meter at outlet of SRS*

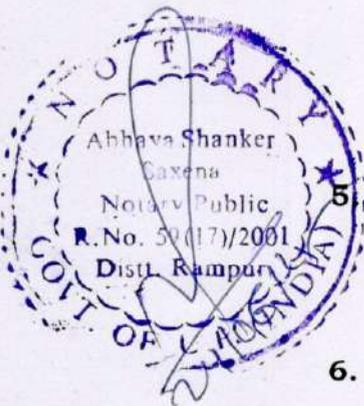
Reply: **This recommendation has been complied with** and the requisite flowmeter has been installed.

8. *The unit shall install a flow meter at the pumping point of treated effluent from storage lagoon for keeping the record of treated effluent quantity being pumped to farmers for irrigation purpose.*

Reply: **This recommendation has been complied with** and the requisite flowmeter has been installed.

9. *The unit shall restrict the capacity of treated effluent storage lagoon to 15 days holding capacity*

Reply: The capacity of the effluent treated storage lagoon was restricted to 15 days holding capacity even at the time of inspection, as explained above and as confirmed by UPPCB in its reply. The unit continues to comply with the requirements.

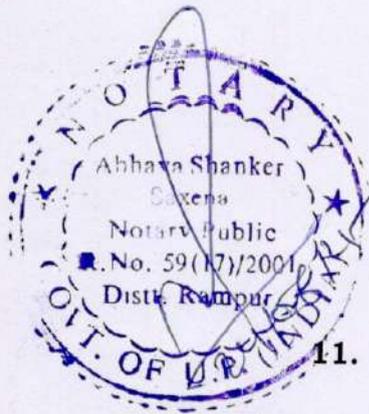


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10. *Back-wash water stored in a separate lagoon shall immediately be treated in ETP; and the unit shall dismantle/level the lagoon. Also, the unit shall discontinue the practice of storing backwash effluent in lagoon.*

Reply: The backwash stored in the lagoon was treated through the ETP soon after the joint-inspection, as per usual practice at that time, followed to ensure proper treatment of all effluent through the ETP.

Following the recommendation of the joint committee, the practice has been stopped. Further, the lagoon is no longer associated with the ETP of the unit. Rather, the lagoon has been designated for use as *Condensate Lagoon* for the adjacent distillery as per sanction / consent. Therefore, this lagoon is no longer part of the sugar unit. **The recommendation stands complied with.**



11. *The unit shall dismantle/level the extra lagoon observed adjacent to treated effluent storage lagoon*

Reply: As far as second lagoon is concerned, the lagoon is no longer associated with the ETP of the unit. Rather, the lagoon has been designated for use at the adjacent distillery as per sanction / consent. Therefore, this lagoon is no longer part of the sugar unit. **The recommendation stands complied with.**

12. *The unit shall submit a time bound action plan for dismantling/leveling the pond which was being used for storage of molasses earlier, in a scientific manner.*

Reply: Temporary pond behind molasses tank no. 2, was earlier being used for molasses storage (lined pit) after taking due permission of competent authority. During the inspection also, levelling/ refilling work was in progress which was observed by the joint committee officials also. The said pond has been duly dismantled. The site forms a part of the distillery duly approved layout plan, which is set adjacent to the sugar unit and is currently being used by them as 'Water storage Tank'.

Therefore, the recommendation stands complied with.

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13. *The unit shall ensure levelling of low-lying area where ponding was observed after treating the filled water for ETP*

Reply: filled water in low lying area has already been shifted to ETP for treatment and its disposal. Further, the leveling of the said area has already been done. It may be noted that presently on the site in question, a portion of distillery has been constructed and no longer remains a part of the sugar Unit.

Therefore, the recommendation stands complied with.

14. *The unit shall ensure the proper treatment/ operation of its SRS system.*

Reply: The Unit was fully compliant at the time of Inspection. SRS system was and continues to operate properly.

Further, the unit has invested a huge amount of Rs. 16.37 Cr. and completely changed its process for sugarcane juice clarification from Double Sulphitation (DS) to Defco-Melt Phosphotation Process (DMP) which does not use Sulphur *at all*.

15. *The unit shall maintain volume-wise records for the press mud and boiler ash generation & disposal*

Reply: The Joint Committee has itself observed and mentioned (in Point 23 of the Observations) that the logbooks in question are being maintained. Therefore, nothing further is required in terms of this recommendation.

16. *Uttar Pradesh Ground Water Department may be asked to look into the matter, and arrangement for deep borewell for drinking water should be made.*

Reply: The Unit has no objection to the recommendation made by the Inspection Committee regarding the ground water study and agrees that the same may be carried out by UPGWD / CGGWD. With respect to the possibility of contribution of Unit to the status of ground water, the Unit at its own expenses has carried out, a source apportionment study by an independent hydrologist and placed the report on record before this Hon'ble Tribunal. The findings of this study rule out any contribution by the Unit and instead indicate several other potential localized factors that may be influencing the status of the ground water.



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As such, in view of the foregoing, it is prayed that the present proceedings be closed.

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VERIFICATION:-

Verified at Rampur on this 24th day of June 2025 that the contents of my above affidavit are true and correct to my knowledge and no part thereof is false and nothing material has been concealed therefrom.

[Signature]
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S. No. 15/48A Date 24/06/25
I certified that..... Arish Kerman
Identified by..... Samar Singh
Sworn to / Solemnly / Declared Arish
the contents of this affidavit being true
by presence after full understanding
of contents on the Dated 24/06/25 at..... AM/

Identified by
[Signature]

[Signature]
NOTARY
RAMPUR U.P.



REGIONAL LABORATORY MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD
I-A/I.N.S.-I, Avas Vikas Colony, Buddha Vihar, Delhi Road, Moradabad

TEST REPORT: WASTE WATER LABORATORY

Ref No: 19541374/Moradabad/2023/paybasis

Date:18/02/2023

- 1- Name of Industry: Triveni Engineering & Industries Limited
- 2- Address of Industry: Sugar Unit-Milak Narayanpur
- 3- District: Rampur
- 4- Description about sampling point: Final Outlet of SRS
- 5- Type of Sample (Grab/Composite/Integrated): Grab
- 6- Sample Collected By: Rajendra Lal JLA & Vishal Bharti LA
- 7- Colour and Odour: Colourless Odourless
- 8- Quantity and Packing: 2 Liter
- 9- Date of Sample Collection: 27/01/2023
- 10- Analysis Indented by: RO Moradabad
- 11- Date of sample receipt in Lab: 27/01/2023

Parameter/Method Name	Unit	Results	Standard	Detection Range
pH,4500 H B Electronic method	-	7.65		02-12
Oil Grease	mg/l	-		02-12
Suspended Solids , 2540 D Total Suspended Solids dried at 103-105 0C	mg/l	26.0		10-20000 mg/l
Dissolved Solids, 2540 C Total Dissolved Solids dried at 180 0C	mg/l	410.0		10- 50000 mg/l
BOD, 3 day 27 0C IS 3025 (Part 44): 1993 Bio	mg/l	20.0		1.0 -50000 mg/l
COD, 5220 B Open Reflux Method	mg/l	144.0		5.0 -100000 mg/l

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

Remark: NA

Analysed by-
[Atul Kumar(JRF)]

Authorized by
Sunil Singh
Chauhan
Sunil Singh Chauhan (ASO)
Digitally signed by
Sunil Singh Chauhan
Date: 2023.02.20
11:21:10 +05'30'

VIKAS
MISHRA
Regional Officer
Digitally signed
by VIKAS MISHRA
Date: 2023.02.20
11:29:23 +05'30'



भारत का राजपत्र

The Gazette of India

असाधारण

EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (i)

PART II—Section 3—Sub-section (i)

प्राधिकार से प्रकाशित

PUBLISHED BY AUTHORITY

सं. 31]

नई दिल्ली, शुक्रवार, जनवरी 15, 2016/पौष 25, 1937

No. 31]

NEW DELHI, FRIDAY, JANUARY 15, 2016/ PAUSA 25, 1937

पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय

अधिसूचना

नई दिल्ली, 14 जनवरी, 2016

सा.का.नि. 35(अ).—केंद्रीय सरकार, पर्यावरण (संरक्षण) अधिनियम, 1986 (1986 का 29) की धारा 6 और धारा 25 द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए पर्यावरण (संरक्षण) नियम, 1986 का और संशोधन करने के लिए निम्नलिखित नियम बनाती है, अर्थात् :-

- लघु शीर्षक और प्रवर्तन.- (1) इन नियमों का संक्षिप्त नाम पर्यावरण (संरक्षण) संशोधन नियम, 2016 है।
(2) ये उनके राजपत्र में प्रकाशन की तारीख को प्रवृत्त होंगे।
- पर्यावरण (संरक्षण) नियम, 1986 की अनुसूची 1 में,-
(क) क्रम सं. 4 और उससे संबंधित प्रविष्टियों के स्थान पर निम्नलिखित क्रम सं. और प्रविष्टियां रखी जाएंगी, अर्थात् :-

क्रम सं.	उद्योग	मापदंड	मानक
(1)	(2)	(3)	(4)
"4.	चीनी उद्योग	बहिःस्राव	सभी सांद्रण मूल्य सिवाय पीएच के मिलीग्राम प्रति लीटर में है
		पीएच	5.5 – 8.5
		कुल निलंबित ठोस पदार्थ (टीएसएस), मिलीग्राम प्रति लीटर	100 (भूमि पर निपटान के लिए) 30 (भू-पृष्ठ जल पर निपटान के लिए)
		जैव आक्सीजन मांग, बीओडी, [27° सेंटीग्रेट पर तीन दिन], मिलीग्राम प्रति लीटर	100 (भूमि पर निपटान के लिए) 30 (भू-पृष्ठ जल पर निपटान के लिए)

तेल एवं ग्रीज़, मिलीग्राम प्रति लीटर	10
कुल भंग ठोस पदार्थ (टीडीएस), मिलीग्राम प्रति लीटर	2100
अंतिम अपशिष्ट जल बहिःस्राव सीमा	200 लीटर प्रति टन पेराई किए हुए गन्ने के लिए
(पेराई किए हुए गन्ने के प्रति टन के लिए अंतिम उपचारित अपशिष्ट बहिःस्राव 100 लीटर तक निर्बंधित है और छिड़काव तालाब ओवरफ्लो से अपशिष्ट जल या शीतलन टावर ब्लो डाउन पेराई किए हुए गन्ने के लिए 100 लीटर प्रति टन तक निर्बंधित है तथा इकाई से एकल आउटलेट बिन्दु अनुज्ञात है)	
उत्सर्जन	
स्टेक से विविक्त पदार्थ उत्सर्जन प्रति सामान्य क्यूबिक मीटर 150 मिलीग्राम से कम होगा।	

4(1) चीनी उद्योगों में उपचारित बहिःस्राव सिंचाई प्रोटोकाल और अपशिष्ट जल संरक्षण या अपशिष्ट जल प्रबंधन

(i) विभिन्न मृदा टेक्सचरों के लिए लदाई दरें

क्रम सं.	मृदा टेक्सचर	m ³ /Ha/Day में लदाई दर
1.	रेतीली	225 से 280
2.	रेतीली दुमट	170 से 225
3.	दुमट	110 से 170
4.	क्ले दुमट	55 से 110
5.	क्ले	35 से 55

(ii) अपशिष्ट जल संरक्षण और प्रदूषण नियंत्रण प्रबंधन

- अधिक साधित्र जल के पुनः चक्रण के लिए उपयोगिताओं या अनुषंगी इकाईयों के प्रसंस्करण के लिए शीतलन प्रबंधन और पालिसिंग टैंकों की स्थापना हो।
- अपशिष्ट जल उपचार संयंत्र का पेराई ऋतु आरंभ होने से एक मास पूर्व स्थिरीकरण किया जाएगा और यह पेराई ऋतु के पश्चात् एक मास तक प्रचालन करना जारी रखेगा।
- सिंचाई के लिए कोई मांग नहीं अवधि के दौरान उपचारित अपशिष्ट जल को केवल 15 दिन की धारण क्षमता वाले रिसाव रोधी लाइन तालाब में भंडारित किया जाएगा।
- बहावमापी को सभी जल ऐन्स्ट्रैक्शन बिन्दुओं पर प्रतिस्थापित किया जाएगा और ताजे जल के उपयोग को न्यूनतम किया जाएगा।
- समुचित वायु प्रदूषण नियंत्रण युक्तियों को विविक्त पदार्थ उत्सर्जन मानक को पूरा करने के लिए स्थापित किया जाएगा।

[फा.सं. क्यू-15017/31/2007-सीपीडब्ल्यू]

डा. राशिद हसन, सलाहकार

टिप्पण: मूल नियम भारत के राजपत्र, असाधारण, भाग II, खंड 3, उप-खंड (i) में का.आ.सं0 844(अ), तारीख 19 नवंबर, 1986 द्वारा प्रकाशित किए गए थे और तत्पश्चात उनमें निम्नलिखित अधिसूचनाओं के द्वारा संशोधन किए गए :

का.आ. सं. 433(अ), तारीख 18 अप्रैल, 1987; सा.का.नि. सं. 176(अ), तारीख 2 अप्रैल, 1996; सा.का.नि. सं. 97(अ), तारीख 18 फरवरी, 2009; सा.का.नि. सं. 149(अ), तारीख 4 मार्च, 2009; सा.का.नि. सं. 543(अ), तारीख 22 जुलाई, 2009; सा.का.नि. सं. 739(अ), तारीख 9 सितंबर, 2010; सा.का.नि. सं. 809(अ), तारीख 4 अक्टूबर, 2010; सा.का.नि. सं. 215(अ), तारीख 15 मार्च, 2011; सा.का.नि. सं. 221(अ), तारीख 18 मार्च, 2011; सा.का.नि. सं. 354(अ), तारीख 2 मई, 2011; सा.का.नि. सं. 424(अ), तारीख 1 जून, 2011; सा.का.नि. सं. 446(अ), तारीख 13 जून, 2011; सा.का.नि. सं. 152(अ), तारीख 16 मार्च, 2012; सा.का.नि. सं. 266(अ), तारीख 30 मार्च, 2012; सा.का.नि. सं. 277(अ), तारीख 31 मार्च, 2012; सा.का.नि. सं. 820(अ), तारीख 9 नवंबर, 2012; सा.का.नि. सं. 176(अ), तारीख 18 मार्च, 2013; सा.का.नि. सं. 535(अ), तारीख 7 अगस्त, 2013; सा.का.नि. सं. 771(अ), तारीख 11 दिसंबर, 2013; सा.का.नि. सं. 2(अ), तारीख 2 जनवरी, 2014; सा.का.नि. सं. 229(अ), तारीख 28 मार्च, 2014; सा.का.नि. सं. 232(अ), तारीख 31 मार्च, 2014; सा.का.नि. सं. 325(अ), तारीख 7 मई, 2014; सा.का.नि. सं. 612(अ), तारीख 25 अगस्त, 2014; सा.का.नि. सं. 789(अ), तारीख 11 नवंबर, 2014; का.आ. सं. 3305(अ), तारीख 7 दिसंबर, 2015 और अंत में अधिसूचना का.आ. सं. 4(अ), तारीख 1 जनवरी, 2016 द्वारा संशोधन किए गए थे।

MINISTRY OF ENVIRONMENT, FORESTS AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 14th January, 2016

G.S.R. 35(E).—In exercise of the powers conferred by sections 6 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government hereby makes the following rules further to amend the Environment (Protection) Rules, 1986, namely:-

1. **Short title and Commencement.**- (1) These rules may be called the Environment (Protection) Amendment Rules, 2016.
(2) They shall come into force on the date of their publication in the Official Gazette.
2. In Schedule-I to the Environment (Protection) Rules, 1986, for serial number 4 and the entries relating thereto, the following serial number and entries shall be substituted, namely:-

S.No.	Industry	Parameters	Standards
(1)	(2)	(3)	(4)
"4.	SUGAR INDUSTRY	EFFLUENTS	All concentration values are in milligramme per litre except for pH
		pH	5.5 - 8.5
		Total Suspended Solids (TSS), milligramme per litre	100 (for disposal on land) 30 (for disposal in surface waters)
		Biological Oxygen Demand ,	100 (for disposal on land)

	BOD[3 days at 27°C], milligramme per litre	30 (for disposal in surface waters)
	Oil & Grease, milligramme per litre	10
	Total Dissolved Solids (TDS), milligramme per litre	2100
	Final wastewater discharge limit	200 litre per tonne of cane crushed
	(Final treated effluent discharge restricted to 100 litre per tonne of cane crushed and Waste water from spray pond overflow or cooling tower blow down to be restricted to 100 litre per tonne of cane crushed and only single outlet point from unit is allowed.)	
	EMISSIONS	
	The particulate matter emissions from the stack shall be less than 150 milligramme per normal cubic metre	

4(1) Treated effluent Irrigation protocol and waste water conservation or waste water management in Sugar industries

(i) Loading rates for different soil textures

S.N	Soil Texture	Loading rate in m ³ /Ha/Day
1	Sandy	225 to 280
2	Sandy loam	170 to 225
3	Loam	110 to 170
4	Clay loam	55 to 110
5	Clay	35 to 55

(ii) Waste water conservation and pollution control management

1. Establishment of cooling arrangement and polishing tank for recycling the excess condensate water to process or utilities or allied units.
2. Effluent Treatment Plant to be stabilized one month prior to the start of the crushing season and continue to operate one month after the crushing season.
3. During no demand period for irrigation, the treated effluent to be stored in a seepage proof lined pond having 15 days holding capacity only.
4. Flow meter to be installed in all water abstraction points and usage of fresh water to be minimized.
5. Suitable Air pollution control devices to be installed to meet the particulate matter emission standard.

[F.No. Q-15017/31/2007- CPW]
DR. RASHID HASAN, Advisor

Note: - The principal rules were published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (i) vide number S.O. 844(E), dated the 19th November, 1986 and subsequently amended vide the following notifications, namely:-

S. O. 433 (E), dated the 18th April 1987; G.S.R. 176(E), dated the 2nd April, 1996; G.S.R. 97 (E), dated the 18th February, 2009; G.S.R. 149 (E), dated the 4th March, 2009; G.S.R. 543(E), dated the 22nd July, 2009; G.S.R. 739 (E), dated the 9th September, 2010; G.S.R. 809(E), dated the 4th October, 2010, G.S.R. 215 (E), dated the 15th March, 2011; G.S.R. 221(E), dated the 18th March, 2011; G.S.R. 354 (E), dated the 2nd May, 2011; G.S.R. 424 (E), dated the 1st June, 2011; G.S.R. 446 (E), dated the 13th June, 2011; G.S.R. 152 (E), dated the 16th March, 2012; G.S.R. 266(E), dated the 30th March, 2012; G.S.R. 277 (E), dated the 31st March, 2012; G.S.R. 820(E), dated the 9th November, 2012; G.S.R. 176 (E), dated the 18th March, 2013; G.S.R. 535(E), dated the 7th August, 2013; G.S.R. 771(E), dated the 11th December, 2013;

G.S.R. 2(E), dated the 2nd January, 2014; G.S.R. 229 (E), dated the 28th March, 2014; G.S.R. 232(E), dated the 31st March, 2014; G.S.R. 325(E), dated the 07th May, 2014, G.S.R. 612, (E), dated the 25th August 2014; G.S.R. 789(E), dated the 11th November, 2014; S.O. 3305(E), dated the 7th December, 2015 and lastly amended *vide* notification S.O. 4(E), dated the 1st January, 2016.

ANNEXURE C







Annexure D

ETRC/PM14/TEST-REP/FT/17

TEST REPORT WATER ANALYSIS

Test Report Ref No.: ETRC/2008/2020	Date of Report : 30/12/2020
Name /Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

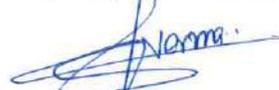
1	Water/ Waste Water	Waste water	5	Packing Condition	Sealed
2	Sample Description	Near Molasses Tank	6	Sample Collected By	Industry Self
3	Sample received date	24.12.2020	7	Analysis Start Date	24.12.2020
4	Sample Quantity	2.0 liters	8	Analysis End Date	29.12.2020

TEST RESULT

Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	pH	-	APHA 23 rd Ed. 2017-4500H ⁺	7.8	1 - 14
2	Colour	Hazen	IS: 3025 (Part-4): 1983 Reaffirmed: 2017	120.0	5 - 100
3	Total Dissolved Solid (TDS)	mg/l	APHA 23 rd Ed. 2017-2540 C IS: 3025 (Part-16): 1984 Reaffirmed: 2017	1310.0	10 - 10000
4	Total Suspended Solid (TSS)	mg/l	APHA 23 rd Ed. 2017-2540 D	89.0	5 - 5000
5	Bio-chemical Oxygen Demand (BOD)	mg/l	IS: 3025 (Part-44): 1993 Reaffirmed: 2019	39.0	1 - 90000
6	Chemical Oxygen Demand (COD)	mg/l	APHA 23 rd Ed. 2017-5220 B IS: 3025 (Part-58): 2006 Reaffirmed: 2017	201.0	5 - 135000

..... END OF REPORT.....

- ETRC warrants that all analytical work is conducted professionally in accordance with all applicable standard laboratory practices and that this data reflects our best attempt to generate accurate results for the sample, mentioned in the report as above.
- The result relate only to the items tested.
- ETRC does not assume any liability for any claims or damages related to the quality of parameter analyzed in the results and/or the performance of the equipment constituting to the results.
- All disputes subject to Lucknow jurisdiction.
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- Complain register is available in our laboratory.


Authorized Signatory
(Sandeep Kr Verma)
Lab-Incharge




Authorized Signatory
(Ritu Garg)
QM



ENVIRONMENTAL AND TECHNICAL RESEARCH CENTRE

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ISO 9001:2015, ISO 14001 : 2015, OHSAS 18001 : 2007 & NABL Accredited Laboratory



ETRC/PM14/TEST-REP/FT/17

TEST REPORT WATER ANALYSIS

Test Report Ref No.: ETRC/2009/2020	Date of Report : 30/12/2020
Name /Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

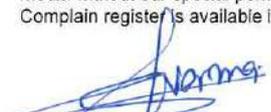
1	Water/ Waste Water	Waste water	5	Packing Condition	Sealed
2	Sample Description	ETP Inlet	6	Sample Collected By	Industry Self
3	Sample received date	24.12.2020	7	Analysis Start Date	24.12.2020
4	Sample Quantity	2.0 liters	8	Analysis End Date	29.12.2020

TEST RESULT

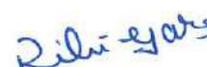
Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	pH	-	APHA 23 rd Ed. 2017-4500H ⁺	4.8	1 - 14
2	Colour	Hazen	IS: 3025 (Part-4): 1983 Reaffirmed: 2017	16.0	5 - 100
2	Total Dissolved Solid (TDS)	mg/l	APHA 23 rd Ed. 2017-2540 C IS: 3025 (Part-16): 1984 Reaffirmed: 2017	1325.0	10 - 10000
3	Total Suspended Solid (TSS)	mg/l	APHA 23 rd Ed. 2017-2540 D	218.0	5 - 5000
4	Bio-chemical Oxygen Demand (BOD)	mg/l	IS: 3025 (Part-44): 1993 Reaffirmed: 2019	470.0	1 - 90000
5	Chemical Oxygen Demand (COD)	mg/l	APHA 23 rd Ed. 2017-5220 B IS: 3025 (Part-58): 2006 Reaffirmed: 2017	1410.0	5 - 135000

..... END OF REPORT.....

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TC-5469

ETRC/PM14/TEST-REP/FT/17

TEST REPORT WATER ANALYSIS

Test Report Ref No.: ETRC/2010/2020	Date of Report : 30/12/2020
Name /Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

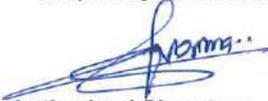
1	Water/ Waste Water	Waste water	5	Packing Condition	Sealed
2	Sample Description	Aeration II nd Outlet	6	Sample Collected By	Industry Self
3	Sample received date	25.12.2020	7	Analysis Start Date	25.12.2020
4	Sample Quantity	2.0 liters	8	Analysis End Date	26.12.2020

TEST RESULT

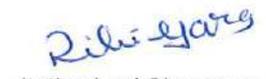
Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	MLSS	mg/l	APHA 23 rd Ed. 2017-2540 D	1786.1	500 - 4500

..... END OF REPORT.....

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(Sandeep Kr Verma)
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(Ritu Garg)
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ETRC/PM14/TES-REP/FT/17

TEST REPORT WATER ANALYSIS

Test Report Ref No.: ETRC/2011/2020	Date of Report : 30/12/2020
Name /Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

1	Water/ Waste Water	Waste water	5	Packing Condition	Sealed
2	Sample Description	ETP Primary Clarifier	6	Sample Collected By	Industry Self
3	Sample received date	24.12.2020	7	Analysis Start Date	24.12.2020
4	Sample Quantity	2.0 liters	8	Analysis End Date	29.12.2020

TEST RESULT

Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	pH	-	APHA 23 rd Ed. 2017-4500H ⁺	7.1	1 - 14
2	Colour	Hazen	IS: 3025 (Part-4): 1983 Reaffirmed: 2017	19.0	5 - 100
2	Total Dissolved Solid (TDS)	mg/l	APHA 23 rd Ed. 2017-2540 C IS: 3025 (Part-16): 1984 Reaffirmed: 2017	843.0	10 - 10000
3	Total Suspended Solid (TSS)	mg/l	APHA 23 rd Ed. 2017-2540 D	156.0	5 - 5000
4	Bio-chemical Oxygen Demand (BOD)	mg/l	IS: 3025 (Part-44): 1993 Reaffirmed: 2019	260.0	1 - 90000
5	Chemical Oxygen Demand (COD)	mg/l	APHA 23 rd Ed. 2017-5220 B IS: 3025 (Part-58): 2006 Reaffirmed: 2017	735.0	5 - 135000

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TEST REPORT WATER ANALYSIS

Test Report Ref No.: ETRC/2012/2020	Date of Report : 30/12/2020
Name /Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

1	Water/ Waste Water	Waste water	5	Packing Condition	Sealed
2	Sample Description	Godown Side	6	Sample Collected By	Industry Self
3	Sample received date	24.12.2020	7	Analysis Start Date	24.12.2020
4	Sample Quantity	2.0 liters	8	Analysis End Date	29.12.2020

TEST RESULT

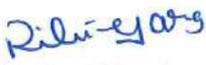
Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	pH	-	APHA 23 rd Ed. 2017-4500H ⁺	7.1	1 - 14
2	Colour	Hazen	IS: 3025 (Part-4): 1983 Reaffirmed: 2017	10.0	5 - 100
2	Total Dissolved Solid (TDS)	mg/l	APHA 23 rd Ed. 2017-2540 C IS: 3025 (Part-16): 1984 Reaffirmed: 2017	192.0	10 - 10000
3	Total Suspended Solid (TSS)	mg/l	APHA 23 rd Ed. 2017-2540 D	17.0	5 - 5000
4	Bio-chemical Oxygen Demand (BOD)	mg/l	IS: 3025 (Part-44): 1993 Reaffirmed: 2019	28.0	1 - 90000
5	Chemical Oxygen Demand (COD)	mg/l	APHA 23 rd Ed. 2017-5220 B IS: 3025 (Part-58): 2006 Reaffirmed: 2017	135.0	5 - 135000

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TEST REPORT WATER ANALYSIS

Test Report Ref No.: ETRC/2013/2020	Date of Report : 30/12/2020
Name /Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

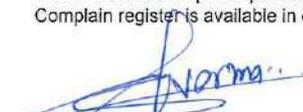
1	Water/ Waste Water	Waste water	5	Packing Condition	Sealed
2	Sample Description	ETP Secondary Clarifier	6	Sample Collected By	Industry Self
3	Sample received date	24.12.2020	7	Analysis Start Date	24.12.2020
4	Sample Quantity	2.0 liters	8	Analysis End Date	29.12.2020

TEST RESULT

Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	pH	-	APHA 23 rd Ed. 2017-4500H ⁺	7.2	1 - 14
2	Colour	Hazen	IS: 3025 (Part-4): 1983 Reaffirmed: 2017	15.0	5 - 100
2	Total Dissolved Solid (TDS)	mg/l	APHA 23 rd Ed. 2017-2540 C IS: 3025 (Part-16): 1984 Reaffirmed: 2017	1140.0	10 - 10000
3	Total Suspended Solid (TSS)	mg/l	APHA 23 rd Ed. 2017-2540 D	26.0	5 - 5000
4	Bio-chemical Oxygen Demand (BOD)	mg/l	IS: 3025 (Part-44): 1993 Reaffirmed: 2019	15.0	1 - 90000
5	Chemical Oxygen Demand (COD)	mg/l	APHA 23 rd Ed. 2017-5220 B IS: 3025 (Part-58): 2006 Reaffirmed: 2017	225.0	5 - 135000

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TEST REPORT WATER ANALYSIS

Test Report Ref No.: ETRC/2014/2020	Date of Report : 30/12/2020
Name /Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

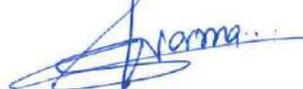
1	Water/ Waste Water	Waste water	5	Packing Condition	Sealed
2	Sample Description	SRS Inlet	6	Sample Collected By	Industry Self
3	Sample received date	24.12.2020	7	Analysis Start Date	24.12.2020
4	Sample Quantity	2.0 liters	8	Analysis End Date	29.12.2020

TEST RESULT

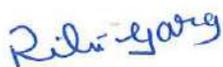
Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	pH	-	APHA 23 rd Ed. 2017-4500H ⁺	8.5	1 - 14
2	Colour	Hazen	IS: 3025 (Part-4): 1983 Reaffirmed: 2017	12.0	5 - 100
2	Total Dissolved Solid (TDS)	mg/l	APHA 23 rd Ed. 2017-2540 C IS: 3025 (Part-16): 1984 Reaffirmed: 2017	4122.0	10 - 10000
3	Total Suspended Solid (TSS)	mg/l	APHA 23 rd Ed. 2017-2540 D	142.0	5 - 5000
4	Bio-chemical Oxygen Demand (BOD)	mg/l	IS: 3025 (Part-44): 1993 Reaffirmed: 2019	325.0	1 - 90000
5	Chemical Oxygen Demand (COD)	mg/l	APHA 23 rd Ed. 2017-5220 B IS: 3025 (Part-58): 2006 Reaffirmed: 2017	811.0	5 - 135000
6	Sulphate (SO ₄)	mg/l	APHA 23 rd Ed. 2017-4500 SO ₄ ²⁻ E	815.0	1 - 800

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TEST REPORT WATER ANALYSIS

Test Report Ref No.: ETRC/2015/2020	Date of Report : 30/12/2020
Name /Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

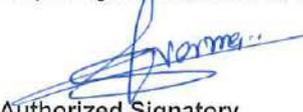
1	Water/ Waste Water	Waste water	5	Packing Condition	Sealed
2	Sample Description	SRS Outlet	6	Sample Collected By	Industry Self
3	Sample received date	24.12.2020	7	Analysis Start Date	24.12.2020
4	Sample Quantity	2.0 liters	8	Analysis End Date	29.12.2020

TEST RESULT

Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	pH	-	APHA 23 rd Ed. 2017-4500H ⁺	7.7	1 - 14
2	Colour	Hazen	IS: 3025 (Part-4): 1983 Reaffirmed: 2017	10.0	5 - 100
2	Total Dissolved Solid (TDS)	mg/l	APHA 23 rd Ed. 2017-2540 C IS: 3025 (Part-16): 1984 Reaffirmed: 2017	2056.0	10 - 10000
3	Total Suspended Solid (TSS)	mg/l	APHA 23 rd Ed. 2017-2540 D	26.0	5 - 5000
4	Bio-chemical Oxygen Demand (BOD)	mg/l	IS: 3025 (Part-44): 1993 Reaffirmed: 2019	18.0	1 - 90000
5	Chemical Oxygen Demand (COD)	mg/l	APHA 23 rd Ed. 2017-5220 B IS: 3025 (Part-58): 2006 Reaffirmed: 2017	73.0	5 - 135000
6	Sulphate (SO ₄)	mg/l	APHA 23 rd Ed. 2017-4500 SO ₄ ²⁻ E	556.0	1 - 800

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TC-5469

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TEST REPORT WATER ANALYSIS

Test Report Ref No.: ETRC/2016/2020	Date of Report : 30/12/2020
Name /Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

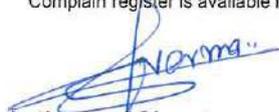
1	Water/ Waste Water	Waste water	5	Packing Condition	Sealed
2	Sample Description	ETP Outlet	6	Sample Collected By	Industry Self
3	Sample received date	24.12.2020	7	Analysis Start Date	24.12.2020
4	Sample Quantity	2.0 liters	8	Analysis End Date	29.12.2020

TEST RESULT

Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	pH	-	APHA 23 rd Ed. 2017-4500H ⁺	7.6	1 - 14
2	Colour	Hazen	IS: 3025 (Part-4): 1983 Reaffirmed: 2017	8.0	5 - 100
2	Total Dissolved Solid (TDS)	mg/l	APHA 23 rd Ed. 2017-2540 C IS: 3025 (Part-16): 1984 Reaffirmed: 2017	2048.0	10 - 10000
3	Total Suspended Solid (TSS)	mg/l	APHA 23 rd Ed. 2017-2540 D	21.0	5 - 5000
4	Bio-chemical Oxygen Demand (BOD)	mg/l	IS: 3025 (Part-44): 1993 Reaffirmed: 2019	14.0	1 - 90000
5	Chemical Oxygen Demand (COD)	mg/l	APHA 23 rd Ed. 2017-5220 B IS: 3025 (Part-58): 2006 Reaffirmed: 2017	52.0	5 - 135000

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TEST REPORT WATER ANALYSIS

Test Report Ref No.: ETRC/2017/2020	Date of Report : 30/12/2020
Name /Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

1	Water/ Waste Water	Waste water	5	Packing Condition	Sealed
2	Sample Description	Lagoon Treated	6	Sample Collected By	Industry Self
3	Sample received date	24.12.2020	7	Analysis Start Date	24.12.2020
4	Sample Quantity	2.0 liters	8	Analysis End Date	29.12.2020

TEST RESULT

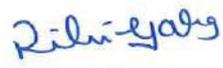
Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	pH	-	APHA 23 rd Ed. 2017-4500H ⁺	7.7	1 - 14
2	Colour	Hazen	IS: 3025 (Part-4): 1983 Reaffirmed: 2017	5.0	5 - 100
3	Total Dissolved Solid (TDS)	mg/l	APHA 23 rd Ed. 2017-2540 C IS: 3025 (Part-16): 1984 Reaffirmed: 2017	2056.0	10 - 10000
4	Total Suspended Solid (TSS)	mg/l	APHA 23 rd Ed. 2017-2540 D	23.0	5 - 5000
5	Bio-chemical Oxygen Demand (BOD)	mg/l	IS: 3025 (Part-44): 1993 Reaffirmed: 2019	11.0	1 - 90000
6	Chemical Oxygen Demand (COD)	mg/l	APHA 23 rd Ed. 2017-5220 B IS: 3025 (Part-58): 2006 Reaffirmed: 2017	49.0	5 - 135000

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TEST REPORT WATER ANALYSIS

Test Report Ref No.: ETRC/2018/2020	Date of Report : 30/12/2020
Name /Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

1	Water/ Waste Water	Ground Water	5	Packing Condition	Sealed
2	Sample Description	Tubewell	6	Sample Collected By	Industry self
3	Sample received date	25.12.2020	7	Analysis Start Date	25.12.2020
4	Sample Quantity	5.0 litre	8	Analysis End Date	29.12.2020

TEST RESULT

Sr. No	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection	Indian Standard 10500 : 2012	
						Desirable	Permissible
Physico-chemical Parameters							
1	Colour	Hazen	IS: 3025 (Part-4): 1983 Reaffirmed: 2017	<5.0	5 - 100	5	15
2	Odour	-	IS: 3025 (Part-5): 1983 Reaffirmed: 2017	Agreeable	Qualitative	Agreeable	Agreeable
3	pH	-	APHA 23 rd Ed. 2017-4500 H ⁺	7.6	1 - 14	6.5-8.5	No Relaxation
4	Turbidity	NTU	APHA 23 rd Ed. 2017-2130 B	BDL	2 - 40	1	5
5	Total Hardness as CaCO ₃	mg/l	APHA 23 rd Ed. 2017-2340 C	64.0	5 - 5000	200	600
6	Alkalinity as CaCO ₃	mg/l	APHA 23 rd Ed. 2017-2320 B	100.0	2 - 1000	200	600
7	Calcium as Ca	mg/l	APHA 23 rd Ed. 2017-3500 Ca, B IS: 3025 (Part-40): 1991 Reaffirmed: 2019	16.03	2 - 900	75	200
8	Magnesium as Mg	mg/l	APHA 23 rd Ed. 2017-3500 Mg, B	5.83	0.2 - 400	30	100
9	Chloride as Cl	mg/l	APHA 23 rd Ed. 2017-4500-Cl ⁻ B	8.0	2 - 2000	250	1000
10	Fluoride as F	mg/l	APHA 23 rd Ed. 2017-4500 F ⁻ C	0.41	0.02 - 10	1.0	1.5
11	Total Dissolved Solids (TDS)	mg/l	APHA 23 rd Ed. 2017-2540 C IS: 3025 (Part-16): 1984 Reaffirmed: 2017	103.8	10 - 10000	500	2000
12	Sulphate as SO ₄	mg/l	APHA 23 rd Ed. 2017-4500- SO ₄ ²⁻	9.802	1 - 800	200	400
13	Nitrate as NO ₃	mg/l	APHA 23 rd Ed. 2017-4500- NO ₃ ⁻ IS: 3025 (Part-34): 1986 Reaffirmed: 2019	BDL	1.0 - 150	45	No Relaxation
14	Total Chromium	mg/l	APHA 23 rd Ed. 2017-3120 B (ICP-OES)	BDL	0.05 - 10	0.05	No Relaxation
15	Zinc as Zn	mg/l	APHA 23 rd Ed. 2017-3120 B (ICP-OES)	0.067	0.05 - 15	5	15



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Test Report Ref No.: ETRC/2018/2020

16	Copper as Cu	mg/l	APHA 23 rd Ed. 2017-3120 B (ICP-OES)	BDL	0.05 – 10	0.05	1.5
17	Cadmium as Cd	mg/l	APHA 23 rd Ed. 2017-3120 B (ICP-OES)	BDL	0.05 – 2	0.003	No Relaxation
18	Nickel as Ni	mg/l	APHA 23 rd Ed. 2017-3120 B (ICP-OES)	BDL	0.05 – 10	0.02	No Relaxation
19	Manganese as Mn	mg/l	APHA 23 rd Ed. 2017-3120 B (ICP-OES)	BDL	0.05 - 5	0.1	0.3
20	Iron as Fe	mg/l	APHA 23 rd Ed. 2017-3120 B (ICP-OES)	0.11	0.05 - 10	0.3	No Relaxation
21	Lead as Pb	mg/l	APHA 23 rd Ed. 2017-3120 B (ICP-OES)	BDL	0.01 - 10	0.01	No Relaxation
22	Arsenic as As	mg/l	APHA 23 rd Ed. 2017-3120 B (ICP-OES)	BDL	0.02 - 2	0.01	0.05
23	Mercury as Hg	µg/l	APHA 23 rd Ed. 2017-3120 B (ICP-OES)	BDL	0.5 - 1000	1.0	No Relaxation

BDL=Below Detection Limit

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ETRC/PM14/TEST-REP/FT/17

TEST REPORT WATER ANALYSIS

Test Report Ref No.: ETRC/EPA/3945/2020	Date of Report : 30/12/2020
Name /Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

1	Water/ Waste Water	Waste water	5	Packing Condition	Sealed
2	Sample Description	Aeration 1 st Outlet	6	Sample Collected By	Industry Self
3	Sample received date	24.12.2020	7	Analysis Start Date	24.12.2020
4	Sample Quantity	2.0 liters	8	Analysis End Date	26.12.2020

TEST RESULT

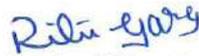
Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	MLSS	mg/l	APHA 23 rd Ed. 2017-2540 D	2820.0	500 - 4500

..... END OF REPORT.....

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- The result relate only to the items tested.
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- Complain register is available in our laboratory.


Authorized Signatory
(Sandeep Kr Verma)
Lab-Incharge




Authorized Signatory
(Ritu Garg)
QM



ENVIRONMENTAL AND TECHNICAL RESEARCH CENTRE

Office & Laboratory: 2/261, Vishwas Khand, Gomti Nagar, Lucknow- 226 010 (U.P.)

Email : ETRCLTH@YAHOO.IN. Web: www.etrindia.com

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ETRC/PM14/TES-REP/FT/17

TEST REPORT WATER ANALYSIS

Test Report Ref No. ETRC/EPA/3747/2020	Date of Report : 20.11.2020
Name/Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

1	Water/ Waste Water	Waste Water	5	Packing Condition	Scaled
2	Sample Description:	ETP Outlet	6	Sample Collected By	ETRC, Lucknow
3	Sample received date	12.11.2020	7	Analysis Start Date	12.11.2020
4	Sample Quantity	2.0 litre	8	Analysis End Date	19.11.2020

TEST RESULT

Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	pH	-	APHA 23 rd Ed. 2017-4000H	7.6	1 - 14
2	Total Dissolved Solid (TDS)	mg/l	APHA 23 rd Ed. 2017-2540 C IS: 3025 (Part-15): 1984 Reaffirmed: 2017	612.0	10 - 20000
3	Total Suspended Solid (TSS)	mg/l	APHA 23 rd Ed. 2017-2540 D	17.8	5 - 5000
4	Bio chemical Oxygen Demand (BOD)	mg/l	IS: 3025 (Part-44): 1993 Reaffirmed: 2019	16.4	1 - 90000
5	Chemical Oxygen Demand (COD)	mg/l	APHA 23 rd Ed. 2017-5220 B IS: 3025 (Part-58): 2006 Reaffirmed: 2017	132.0	5 - 135000

DISCLAIMER

- ETRC warrants that all analytical work is conducted professionally in accordance with all applicable standard laboratory practices and that the data reflects our best analytical performance. We generate accurate results for the samples submitted in this report to the best of our ability.
- ETRC does not assume any liability for any errors or omissions which may result from the quality of our clients' samples or the results unless the client has notified us in writing at the time of sampling.
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Lab-Incharge



Authorized Signatory
(Ritu Garg)
(JM)



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ETRC/PM14/TEC-REP/FT/17

TEST REPORT WATER ANALYSIS

Test Report Ref No. ETRC/EPA/3857/2020	Date of Report: 21.12.2020
Name/Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

1	Water/ Waste Water	Waste Water	5	Packing Condition	Sealed
2	Sample Description	ETP Outlet	6	Sample Collected By	ETRC, Lucknow
3	Sample received date	18.12.2020	7	Analysis Start Date	18.12.2020
4	Sample Quantity	2.0 litre	8	Analysis End Date	21.12.2020

TEST RESULT

Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	pH	-	APHA 23 rd Ed. 2017-4500H*	7.6	1 - 14
2	Total Dissolved Solid (TDS)	mg/l	APHA 23 rd Ed. 2017-2540 C IS: 3025 (Part-16): 1984 Reaffirmed: 2017	1268.0	10 - 20000
3	Total Suspended Solid (TSS)	mg/l	APHA 23 rd Ed. 2017-2540 D	13.8	5 - 5000
4	Bio chemical Oxygen Demand (BOD)	mg/l	IS 3025 (Part-44): 1993 Reaffirmed: 2019	14.4	1 - 90000
5	Chemical Oxygen Demand (COD)	mg/l	APHA 23 rd Ed. 2017-5220 B IS: 3025 (Part-58): 2006 Reaffirmed: 2017	136.0	5 - 135000
6	Oil & Grease	mg/l	APHA 23 rd Ed. 2017-5520 A+D	BDL	5 - 200

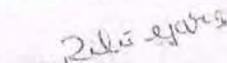
BDL= Below Detection Limit

..... END OF REPORT

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 (Ritu Garg)
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ETRC/PM14/TE/REP/FT/17

TEST REPORT WATER ANALYSIS

Test Report Ref No. ETRC/EPA/4000/2021	Date of Report : 25.01.2021
Name/Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

1	Water/ Waste Water	Waste Water	5	Packing Condition	Sealed
2	Sample Description	ETP Outlet	6	Sample Collected By	ETRC, Lucknow
3	Sample received date	22.01.2021	7	Analysis Start Date	22.01.2021
4	Sample Quantity	2.0 litre	8	Analysis End Date	25.01.2021

TEST RESULT

Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	pH	-	APHA 23 rd Ed. 2017-4500H ⁺	7.3	1 - 14
2	Total Dissolved Solid (TDS)	mg/l	APHA 23 rd Ed. 2017-2540 C IS: 3025 (Part-16): 1984 Reaffirmed: 2017	734.0	10 - 20000
3	Total Suspended Solid (TSS)	mg/l	APHA 23 rd Ed. 2017-2540 D	19.8	5 - 5000
4	Bio Chemical Oxygen Demand (BOD)	mg/l	IS 3025 (Part-44): 1993 Reaffirmed: 2019	15.6	1 - 90000
5	Chemical Oxygen Demand (COD)	mg/l	APHA 23 rd Ed. 2017-5220 B IS: 3025 (Part-58): 2006 Reaffirmed: 2017	116.0	5 - 135000

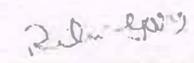
BDL = Below Detection Limit

..... END OF REPORT.....

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TEST REPORT WATER ANALYSIS

Test Report Ref No. ETRC/WW/2131/2021	Date of Report : 19.02.2021
Name /Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

1 Water/ Waste Water	Waste Water	5 Packing Condition	Sealed
2 Sample Description	ETP Outlet	6 Sample Collected By	ETRC, Lucknow
3 Sample received date	13.02.2021	7 Analysis Start Date	13.02.2021
4 Sample Quantity	2.0 liters	8 Analysis End Date	16.02.2021

TEST RESULT

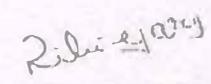
Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	pH	-	APHA 23 rd Ed. 2017-4500H*	7.8	1 - 14
2	Total Dissolved Solid (TDS)	mg/l	APHA 23 rd Ed 2017-2540 C IS: 3025 (Part-16): 1984 Reaffirmed: 2017	980	10 - 20000
3	Total Suspended Solid (TSS)	mg/l	APHA 23 rd Ed 2017-2540 D	17.0	5 - 5000
4	Bio-chemical Oxygen Demand (BOD)	mg/l	IS: 3025 (Part-44): 1993 Reaffirmed: 2019	15.0	1 - 90000
5	Chemical Oxygen Demand (COD)	mg/l	APHA 23 rd Ed 2017-5220 B IS: 3025 (Part-58): 2006 Reaffirmed: 2017	132.0	5 - 135000

..... END OF REPORT.....

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TEST REPORT WATER ANALYSIS

Test Report Ref No. ETRC/EPA/4195/2021	Date of Report: 17.03.2021
Name/Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

1	Water/ Waste Water	Waste Water	5	Packing Condition	Sealed
2	Sample Description	ETP Outlet (OCEMS)	6	Sample Collected By	ETRC, Lucknow
3	Sample received date	14.03.2021	7	Analysis Start Date	14.03.2021
4	Sample Quantity	2.0 litre	8	Analysis End Date	17.03.2021

TEST RESULT

Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	pH	-	APHA 23 rd Ed. 2017-4500H*	7.9	1 - 14
2	Total Dissolved Solid (TDS)	mg/l	APHA 23 rd Ed. 2017-2540 C IS: 3025 (Part-16): 1984 Reaffirmed: 2017	1615.0	10 - 20000
3	Total Suspended Solid (TSS)	mg/l	APHA 23 rd Ed. 2017-2540 D	13.0	5 - 5000
4	Bio chemical Oxygen Demand (BOD)	mg/l	IS 3025 (Part-44): 1993 Reaffirmed: 2019	12.0	1 - 90000
5	Chemical Oxygen Demand (COD)	mg/l	APHA 23 rd Ed. 2017-5220 B IS: 3025 (Part-58): 2006 Reaffirmed: 2017	112.0	5 - 135000

..... END OF REPORT.....

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ETRC/PM14/TES-REP/FT/17

TEST REPORT WATER ANALYSIS

Test Report Ref No. ETRC/WW/4313/2021	Date of Report : 10.04.2021
Name /Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

1	Water/ Waste Water	Waste Water	5	Packing Condition	Sealed
2	Sample Description	ETP Outlet	6	Sample Collected By	ETRC, Lucknow
3	Sample received date	03.04.2021	7	Analysis Start Date	06.04.2021
4	Sample Quantity	2.0 liters	8	Analysis End Date	09.04.2021

TEST RESULT

Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	pH	-	APHA 23 rd Ed. 2017-4500H ¹	7.6	1 - 14
2	Total Dissolved Solid (TDS)	mg/l	APHA 23 rd Ed 2017-2540 C IS: 3025 (Part-16): 1984 Reaffirmed: 2017	1026.0	10 - 20000
3	Total Suspended Solid (TSS)	mg/l	APHA 23 rd Ed 2017-2540 D	16.8	5 - 5000
4	Bio-chemical Oxygen Demand (BOD)	mg/l	IS: 3025 (Part-44): 1993 Reaffirmed: 2019	16.0	1 - 90000
5	Chemical Oxygen Demand (COD)	mg/l	APHA 23 rd Ed 2017-5220 B IS: 3025 (Part-58): 2006 Reaffirmed: 2017	126.0	5 - 135000

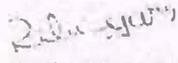
BDL* Below Detection Limit

..... END OF REPORT
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QM

प्रमुख सचिव, पर्यावरण, वन एवं जलवायु परिवर्तन, अनुभाग-7 उ0प्र0 शासन के अ.शा.पत्र सं0-1113(3)/81-7-2010-53 (पर्या)/2017, दिनांक - के अनुपालन में जनपद-प्रयागराज, उ.प्र. में माह जनवरी व फरवरी 2021 में आयोजित होने वाले माघ मेला के संबंध में जिलाधिकारी महोदय, रामपुर ध. दिनांक- 14.12.2020 को गठित समिति द्वारा जल प्रदूषणकारी उद्योगों (उ.प्र. प्रदूषण नियंत्रण बोर्ड द्वारा चिह्नित) की निरीक्षण आख्या- 43

निरीक्षण की तिथि- 21.1.2021

1-जनपद का नाम- रामपुर।

2-निरीक्षण का विवरण-

उद्योग का नाम/पता	जांच का परिणाम	निरीक्षण में दोषी पाये गये उद्योगों का विवरण	दोषी पाये गये उद्योगों के विरुद्ध की गयी कार्यवाही का विवरण	अभ्युक्ति
1	2	3	4	5
मि० त्रिवेणी इंजीनियरिंग एण्ड इंप्रूवमेंट लि, मिलन नारायणपुर, राण, रामपुर	निरीक्षण के समय उद्योग उत्पादन में था। एवं ई.टी.पी. संपादन पाया गया। अक्षय इंद्र प्रकाश लैंगन के अक्षय इंद्र के कृषकों को सिंचाई हेतु प्रयुक्त किया जाता पाया गया। संगीत/अक्षय इंद्र प्रकाश निरीक्षण होता नहीं पाया गया।	कोई नहीं।	कोई नहीं।	अक्षय इंद्र प्रकाश का प्रयोग सिंचाई हेतु किया जा रहा है।

क्र.सं.	निरीक्षणकर्ता का नाम एवं पदनाम	विभाग	हस्ताक्षर
1.	ओम शन, निवासी, अक्षय अभिषेक	उ.प्र. प्रदूषण नियंत्रण बोर्ड, मुंबई	
2.	गोपाल कृष्ण शर्मा, प्रधान सहा.	जिला उद्योग एवं उद्यम अ.शा.क. केंद्र, रामपुर	
3.	निधि देवी, उपजिलाधिकारी	तहसील-राण, रामपुर	
4.			



REGIONAL LABORATORY OFFICE MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD
E-47, N.S.-1, AVAS VIKAS Colony, Buddha Vihar, Delhi Road, Moradabad

TEST REPORT: WASTE WATER LABORATORY

Ref No: H17862/Moradabad/2021

Date: 03/02/2021

Name and Address of Industry/S.E.P.: TRIVENI ENGINEERING INDUSTRIES LIMITED, Rampur

Description about sampling point: OUTLET OF E.T.P.

3. Type of Sample (Grab/Composite/Integrated): Grab
4. Sample Collected By: S.S. Singh AEF, Jitendra Nath Tiwari JJ
5. Colour and Odour: COLOURLESS ODORLESS
6. Quantity and Packing: 2 liter (PLASTIC JERICAN)
7. Date of Sample Collection: 27/01/2021
8. Analysis Indented by: RO Moradabad
9. Date of sample receipt in Lab: 27/01/2021
10. method of analysis: APHA, AWWA, WEF, 23rd Edition, 2017, IS 3025 (Part-44): For BOD

Parameter	Unit	Results	Detection Range
pH, 4500 H B Electronic method	-	7.2	02-12
Oil Grease	-	3.2	02-12
Suspended Solids, 2540 D Total Suspended Solids dried at 103-105 °C	mg/l	26.0	10-20000 mg/l
Dissolved Solids, 2540 C Total Dissolved Solids dried at 180 °C	mg/l	1920.0	10-50000 mg/l
BOD, 5 day 27 °C IS 3025 (Part 44): 1993 Bio	mg/l	22.0	1.0-50000 mg/l
COD, 5220 B Open Reflux Method	mg/l	216.0	5.0-100000 mg/l

Reference: (1) General Standards for discharge of environment Pollutants are as per-A Effluent (Schedule VI)

The environment (Protection) Rules, 1986 source: www.epcb.nic.in/GeneralStandards.pdf

Besides these standards, refer EPA standards for specific purpose

Analysed by -

[Signature] Sharma (JRF)

Authorized by -

[Signature] Chhatriya SA

[Signature] Regional Officer

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



REGIONAL LABORATORY OFFICE MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD

1-A/1, N.S.T. Axis Vikas Colony, Bahadur Vihar, Delhi Road, Moradabad

WASTEWATER LABORATORY

Ref No: 1111989/Moradabad/2021

Date: 03/02/2021

Name and Address of Industry/S.T.P.: Triveni Engineering & Industries Limited, Rampur

Description about sampling point: OUTLET OF ETP

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

Sample Collected By: Jitendra Nath Thakral, JE, NO NO

Colour and Odour: COLOURLESS ODOURLESS

Quantity and Packaging: 2 liter (PLASTIC JERICAN)

Date of Sample Collection: 22/01/2021

Analysis Initiated by: RO Moradabad

Date of sample receipt in Lab: 22/01/2021

0. method of analysis: APHA, AWWA, WEF, 23rd Edition, 2017, IS 3025 (Part-44) : For BOD

Parameter	Unit	Results	Detection Range
pH: 2560 H H Electronic method	-	7.5	02-12
O ₂ Grease	-	3.6	02-12
Suspended Solids: 2540-D Total Suspended Solids filtered at 100°C	mg/l	28.0	10-20000 mg/l
Dissolved Solids: 2540-E Total Dissolved Solids filtered at 180°C	mg/l	1880.0	10-50000 mg/l
BOD: 5025 Part-44: 1993 Bio	mg/l	24.0	10-50000 mg/l
Cr: 5220 Barium Reflux Method	mg/l	220.0	5.0-100000 mg/l

Reference: 1- General Standards for discharge of environment Pollutants are as per-A Effluent (Schedule-VI)

The Environment (Protection) Rules, 1986 source: www.epcb.nic.in/GeneralStandards.pdf

Besides these standards refer EPA standards for specific purpose

Analysed by

Dr. Anand (JRF)

Authorized by

Dr. Anand Sharma, SA

Regional Officer

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

Ref. No : TEIL/MNP/24/
 Date: 15th October 2024

To,
 The Regional Officer,
 U.P. Pollution Control Board,
 Moradabad, Uttar Pradesh

Subject: Intimation Regarding Installation of Anaerobic Filter at Effluent Treatment Plant (ETP)

Dear Sir/Madam,

This is to inform you that Triveni Engineering & Industries Ltd. has installed an anaerobic filter with a capacity of 1600 m³ (02 nos. of 800 m³ each) at our Effluent Treatment Plant (ETP) located at Milak Narayanpur, Distt- Rampur. This installation is part of our continuous efforts to enhance the efficiency of wastewater treatment and ensure compliance with the environmental regulations set forth by the Pollution Control Board.

We are pleased to inform you that the anaerobic filter will be operational during the upcoming sugarcane crushing season. The anaerobic filter is designed to significantly reduce the organic load in the wastewater and improve the overall quality of the treated effluent. This upgrade is expected to assist in meeting the prescribed effluent discharge norms more effectively, thereby contributing to the sustainability goals of our company.

We kindly request your office to acknowledge the installation and update our records accordingly. We appreciate your support and cooperation.

Regards,

Triveni Engineering & Ind. Ltd.
 Unit-Milak Narayanpur, Rampur

(Chandra Shekhar Singh)
 Dy. General Manager (HR & Admn.)





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Annexure H

ETRC/PM14/TES-REP/FT/17

TEST REPORT WATER ANALYSIS

Test Report Ref No.: ETRC/2014/2020	Date of Report : 30/12/2020
Name /Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

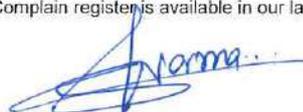
1	Water/ Waste Water	Waste water	5	Packing Condition	Sealed
2	Sample Description	SRS Inlet	6	Sample Collected By	Industry Self
3	Sample received date	24.12.2020	7	Analysis Start Date	24.12.2020
4	Sample Quantity	2.0 liters	8	Analysis End Date	29.12.2020

TEST RESULT

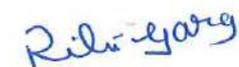
Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	pH	-	APHA 23 rd Ed. 2017-4500H ⁺	8.5	1 - 14
2	Colour	Hazen	IS: 3025 (Part-4): 1983 Reaffirmed: 2017	12.0	5 - 100
2	Total Dissolved Solid (TDS)	mg/l	APHA 23 rd Ed. 2017-2540 C IS: 3025 (Part-16): 1984 Reaffirmed: 2017	4122.0	10 - 10000
3	Total Suspended Solid (TSS)	mg/l	APHA 23 rd Ed. 2017-2540 D	142.0	5 - 5000
4	Bio-chemical Oxygen Demand (BOD)	mg/l	IS: 3025 (Part-44): 1993 Reaffirmed: 2019	325.0	1 - 90000
5	Chemical Oxygen Demand (COD)	mg/l	APHA 23 rd Ed. 2017-5220 B IS: 3025 (Part-58): 2006 Reaffirmed: 2017	811.0	5 - 135000
6	Sulphate (SO ₄)	mg/l	APHA 23 rd Ed. 2017-4500 SO ₄ ²⁻ E	815.0	1 - 800

..... END OF REPORT.....

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- Complain register is available in our laboratory.


Authorized Signatory
(Sandeep Kr Verma)
Lab-Incharge




Authorized Signatory
(Ritu Garg)
QM



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ETRC/PM14/TEST-REP/FT/17

TEST REPORT WATER ANALYSIS

Test Report Ref No.: ETRC/2015/2020	Date of Report : 30/12/2020
Name /Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

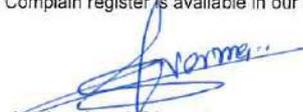
1	Water/ Waste Water	Waste water	5	Packing Condition	Sealed
2	Sample Description	SRS Outlet	6	Sample Collected By	Industry Self
3	Sample received date	24.12.2020	7	Analysis Start Date	24.12.2020
4	Sample Quantity	2.0 liters	8	Analysis End Date	29.12.2020

TEST RESULT

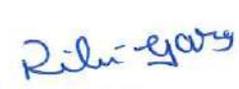
Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	pH	-	APHA 23 rd Ed. 2017-4500H ⁺	7.7	1 - 14
2	Colour	Hazen	IS: 3025 (Part-4): 1983 Reaffirmed: 2017	10.0	5 - 100
2	Total Dissolved Solid (TDS)	mg/l	APHA 23 rd Ed. 2017-2540 C IS: 3025 (Part-16): 1984 Reaffirmed: 2017	2056.0	10 - 10000
3	Total Suspended Solid (TSS)	mg/l	APHA 23 rd Ed. 2017-2540 D	26.0	5 - 5000
4	Bio-chemical Oxygen Demand (BOD)	mg/l	IS: 3025 (Part-44): 1993 Reaffirmed: 2019	18.0	1 - 90000
5	Chemical Oxygen Demand (COD)	mg/l	APHA 23 rd Ed. 2017-5220 B IS: 3025 (Part-58): 2006 Reaffirmed: 2017	73.0	5 - 135000
6	Sulphate (SO ₄)	mg/l	APHA 23 rd Ed. 2017-4500 SO ₄ ²⁻ E	556.0	1 - 800

..... END OF REPORT.....

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Authorized Signatory
(Sandeep Kr Verma)
Lab-Incharge




Authorized Signatory
(Ritu Garg)
QM



Avdesh kumar Yadav <process@mnt.trivenigroup.com>

Fwd: Offer of Catalyst and Liquid PAC for Triveni, Chandanpur

1 message

Process Membrane Group <process@membranegroupindia.com>
To: Process@mnt.trivenigroup.com

Wed, Jul 24, 2024 at 4:30 PM

Dear Sir,

As discussed & desired, as per trailing mail, we already indicate the dominant salts of the catalyst. Please look into this.

With Regards:
Dr. Dhermander Kumar

----- Forwarded message -----

From: **Process Membrane Group** <process@membranegroupindia.com>

Date: Thu, Nov 7, 2019 at 12:35 PM

Subject: Offer of Catalyst and Liquid PAC for Triveni, Chandanpur

To: <tcrajauria@chp.trivenigroup.com>, <bipin_mishra@chp.trivenigroup.com>

Cc: Faiz Rahmani <faiz.rahmani@membranegroupindia.com>, Projects Membrane Group

<projects@membranegroupindia.com>, Proposal1 Membrane Group <proposal1@membranegroupindia.com>

Dear Sir,

As per our telephonic discussion, please find attached offer for Catalyst and Liquid PAC. It is requested please arrange the desired chemicals as soon as possible before strating the effluent treatment.

- Regarding the details of **Catalyst**, this is our proprietary product for better reduction in soluble sulphate at inlet of ETP, Catalyst is the salts of Sodium, Calcium, Magnesium and Alumina.
- Doses of Catalyst (Will depend on how much concentration we want to reduce the sulphate concentration).

With Regards:**Dr. Dhermander Kumar**
(Sr. Scientist Environment)

Mob. 08527077754
Membrane Group India Pvt. Ltd.
Plot No. 217, Udyog Vihar IV, Gurgaon, Haryana

--

With Regards:

Dr. Dhermander Kumar
Mob. 08527077754
Membrane Group India Pvt. Ltd.
Plot No. 217, Udyog Vihar IV, Gurgaon, Haryana



ETRC/PM14/TEST-REP/FT/17

TEST REPORT WATER ANALYSIS

Test Report Ref No. ETRC/EPA/3746/2020	Date of Report : 21.12.2020
Name /Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

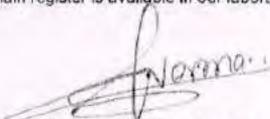
1	Water/ Waste Water	Waste Water	5	Packing Condition	Sealed
2	Sample Description	SRS Outlet	6	Sample Collected By	ETRC, Lucknow
3	Sample received date	18.12.2020	7	Analysis Start Date	18.12.2020
4	Sample Quantity	2.0 liters	8	Analysis End Date	21.12.2020

TEST RESULT

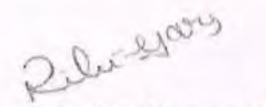
Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	pH	-	APHA 23 rd Ed. 2017-4500H ⁺	7.7	1 - 14
2	Total Dissolved Solid (TDS)	mg/l	APHA 23 rd Ed 2017-2540 C IS: 3025 (Part-16): 1984 Reaffirmed: 2017	1878.0	10 - 20000
3	Total Suspended Solid (TSS)	mg/l	APHA 23 rd Ed 2017-2540 D	15.1	5 - 5000
4	Bio-chemical Oxygen Demand (BOD)	mg/l	IS: 3025 (Part-44): 1993 Reaffirmed: 2019	16.0	1 - 90000
5	Chemical Oxygen Demand (COD)	mg/l	APHA 23 rd Ed 2017-5220 B IS: 3025 (Part-58): 2006 Reaffirmed: 2017	112.0	5 - 135000
6	Sulphate (SO ₄)	mg/l	APHA 23 rd Ed. 2017-4500 SO ₄ ²⁻ E	320.0	1 - 800

..... END OF REPORT.....

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Authorized Signatory
(Sandeep Kr Verma)
Lab-Incharge




Authorized Signatory
(Ritu Garg)
QM



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TEST REPORT WATER ANALYSIS

Test Report Ref No. ETRC/2501/8851/2021	Date of Report : 25.01.2021
Name /Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

1	Water/ Waste Water	Waste Water	5	Packing Condition	Sealed
2	Sample Description	SRS Inlet	6	Sample Collected By	ETRC, Lucknow
3	Sample received date	22.01.2021	7	Analysis Start Date	22.01.2021
4	Sample Quantity	2.0 liters	8	Analysis End Date	25.01.2021

TEST RESULT

Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	pH	-	APHA 23 rd Ed. 2017-4500H ⁺	8.4	1 - 14
2	Total Dissolved Solid (TDS)	mg/l	APHA 23 rd Ed 2017-2540 C IS: 3025 (Part-16): 1984 Reaffirmed: 2017	1920.5	10 - 20000
3	Total Suspended Solid (TSS)	mg/l	APHA 23 rd Ed 2017-2540 D	148.0	5 - 5000
4	Bio-chemical Oxygen Demand (BOD)	mg/l	IS: 3025 (Part-44): 1993 Reaffirmed: 2019	326.0	1 - 90000
5	Chemical Oxygen Demand (COD)	mg/l	APHA 23 rd Ed 2017-5220 B IS: 3025 (Part-58): 2006 Reaffirmed: 2017	1124.0	5 - 135000
6	Sulphate (SO ₄)	mg/l	APHA 23 rd Ed. 2017-4500 SO ₄ ²⁻ E	891.9	1 - 800

..... END OF REPORT.....

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TEST REPORT WATER ANALYSIS

Test Report Ref No. ETRC/2501/8852/2021	Date of Report : 25.01.2021
Name /Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

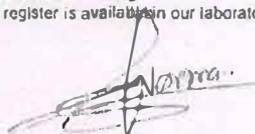
1	Water/ Waste Water	Waste Water	5	Packing Condition	Sealed
2	Sample Description	SRS Outlet	6	Sample Collected By	ETRC, Lucknow
3	Sample received date	22.01.2021	7	Analysis Start Date	22.01.2021
4	Sample Quantity	2.0 liters	8	Analysis End Date	25.01.2021

TEST RESULT

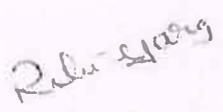
Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	pH	-	APHA 23 rd Ed. 2017-4500H ⁺	7.6	1 - 14
2	Total Dissolved Solid (TDS)	mg/l	APHA 23 rd Ed 2017-2540 C IS: 3025 (Part-16): 1984 Reaffirmed: 2017	1928.6	10 - 20000
3	Total Suspended Solid (TSS)	mg/l	APHA 23 rd Ed 2017-2540 D	19.8	5 - 5000
4	Bio-chemical Oxygen Demand (BOD)	mg/l	IS: 3025 (Part-44): 1993 Reaffirmed: 2019	17.8	1 - 90000
5	Chemical Oxygen Demand (COD)	mg/l	APHA 23 rd Ed 2017-5220 B IS: 3025 (Part-58): 2006 Reaffirmed: 2017	128.0	5 - 135000
6	Sulphate (SO ₄)	mg/l	APHA 23 rd Ed. 2017-4500 SO ₄ ²⁻ E	297.6	1 - 800

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(Sandeep Kr Verma)
Lab-In-charge




Authorized Signatory
(Ritu Garg)
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ETRC/PM14/TES-REP/FT/17

TEST REPORT WATER ANALYSIS

Test Report Ref No. ETRC/WW/2132/2021	Date of Report : 19.02.2021
Name /Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

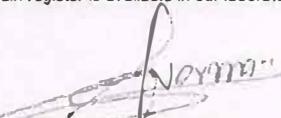
1	Water/ Waste Water	Waste Water	5	Packing Condition	Sealed
2	Sample Description	SRS Inlet	6	Sample Collected By	ETRC, Lucknow
3	Sample received date	13.02.2021	7	Analysis Start Date	13.02.2021
4	Sample Quantity	2.0 liters	8	Analysis End Date	18.02.2021

TEST RESULT

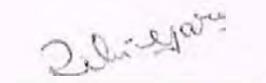
Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	pH	-	APHA 23 rd Ed. 2017-4500H ⁺	8.5	1 - 14
2	Total Dissolved Solid (TDS)	mg/l	APHA 23 rd Ed 2017-2540 C IS: 3025 (Part-16): 1984 Reaffirmed: 2017	19050	10 - 20000
3	Total Suspended Solid (TSS)	mg/l	APHA 23 rd Ed 2017-2540 D	181.8	5 - 5000
4	Bio-chemical Oxygen Demand (BOD)	mg/l	IS: 3025 (Part-44): 1993 Reaffirmed: 2019	304.0	1 - 90000
5	Chemical Oxygen Demand (COD)	mg/l	APHA 23 rd Ed 2017-5220 B IS: 3025 (Part-58): 2006 Reaffirmed: 2017	1316.0	5 - 135000
6	Sulphate (SO ₄)	mg/l	APHA 23 rd Ed. 2017-4500 SO ₄ ²⁻ E	951.6	1 - 800

..... END OF REPORT

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(Sandeep Kr Verma)
Lab-Incharge




Authorized Signatory
(Ritu Garg)
QM



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ETRC/PM14/TES-REP/FT/17

TEST REPORT WATER ANALYSIS

Test Report Ref No. ETRC/EPA/4188/2021	Date of Report : 17.03.2021
Name /Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

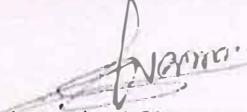
1	Water/ Waste Water	Waste Water	5	Packing Condition	Sealed
2	Sample Description	SRS Inlet	6	Sample Collected By	ETRC, Lucknow
3	Sample received date	14.03.2021	7	Analysis Start Date	14.03.2021
4	Sample Quantity	2.0 liters	8	Analysis End Date	17.03.2021

TEST RESULT

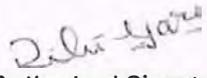
Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	pH	-	APHA 23 rd Ed. 2017-4500H ⁺	8.0	1 - 14
2	Total Dissolved Solid (TDS)	mg/l	APHA 23 rd Ed 2017-2540 C IS: 3025 (Part-16): 1984 Reaffirmed: 2017	1605.0	10 - 20000
3	Total Suspended Solid (TSS)	mg/l	APHA 23 rd Ed 2017-2540 D	155.6	5 - 5000
4	Bio-chemical Oxygen Demand (BOD)	mg/l	IS: 3025 (Part-44): 1993 Reaffirmed: 2019	344.0	1 - 90000
5	Chemical Oxygen Demand (COD)	mg/l	APHA 23 rd Ed 2017-5220 B IS: 3025 (Part-58): 2006 Reaffirmed: 2017	1304.0	5 - 135000
6	Sulphate (SO ₄)	mg/l	APHA 23 rd Ed. 2017-4500 SO ₄ ²⁻ E	755.2	1 - 800

..... END OF REPORT.....

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Authorized Signatory
(Sandeep Kr Verma)
Lab-Incharge




Authorized Signatory
(Ritu Garg)
QM



ETRC/PM14/TES-REP/FT/17

**TEST REPORT
WATER ANALYSIS**

Test Report Ref No. ETRC/EPA/4189/2021	Date of Report : 17.03.2021
Name /Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

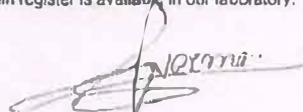
1	Water/ Waste Water	Waste Water	5	Packing Condition	Sealed
2	Sample Description	SRS Outlet	6	Sample Collected By	ETRC, Lucknow
3	Sample received date	14.03.2021	7	Analysis Start Date	14.03.2021
4	Sample Quantity	2.0 liters	8	Analysis End Date	17.03.2021

TEST RESULT

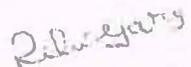
Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	pH	-	APHA 23 rd Ed. 2017-4500H ⁺	7.7	1 - 14
2	Total Dissolved Solid (TDS)	mg/l	APHA 23 rd Ed 2017-2540 C IS: 3025 (Part-16): 1984 Reaffirmed: 2017	1638.6	10 - 20000
3	Total Suspended Solid (TSS)	mg/l	APHA 23 rd Ed 2017-2540 D	16.3	5 - 5000
4	Bio-chemical Oxygen Demand (BOD)	mg/l	IS: 3025 (Part-44): 1993 Reaffirmed: 2019	16.0	1 - 90000
5	Chemical Oxygen Demand (COD)	mg/l	APHA 23 rd Ed 2017-5220 B IS: 3025 (Part-58): 2006 Reaffirmed: 2017	124.0	5 - 135000
6	Sulphate (SO ₄)	mg/l	APHA 23 rd Ed. 2017-4500 SO ₄ ²⁻ E	313.9	1 - 800

..... END OF REPORT.....

- ETRC warrants that all analytical work is conducted professionally in accordance with all applicable standard laboratory practices and that this data reflects our best attempt to generate accurate results for the sample, mentioned in the report as above.
- The result relate only to the items tested.
- ETRC does not assume any liability for any claims or damages related to the quality of parameter analyzed in the results and/or the performance of the equipment constituting to the results.
- All disputes subject to Lucknow jurisdiction.
- This report is not to be reproduced wholly or in part and cannot be used as evidence in the court of law and should not be used in any advertising media without our special permission in writing.
- Complain register is available in our laboratory.


Authorized Signatory
(Sandeep Kr Verma)
Lab-Incharge




Authorized Signatory
(Ritu Garg)
QM



REGIONAL LABORATORY OFFICE MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD
 1-A/L.N.S.-1, Avas Vikas Colony, Buddha Vihar, Delhi Road, Moradabad

TEST REPORT: WASTE WATER LABORATORY

Ref No: 15323147/Moradabad/2022/paybasis

Date: 03/03/2022

- 1- Name of Industry: Triveni Engineering & Industries Limited, Milak Narayanpur
- 2- Address of Industry: Sugar Unit-Milak Narayanpur
- 3- District: Rampur
- 4- Description about sampling point: Storage Lagoon
- 5- Type of Sample (Grab/Composite/Integrated): Grab
- 6- Sample Collected By: Alok Sharma JRF & Rajendra Lal JLA
- 7- Colour and Odour: colourless Odourless
- 8- Quantity and Packing: 2 Liter
- 9- Date of Sample Collection: 22/02/2022
- 10- Analysis Indented by: RO Moradabad
- 11- Date of sample receipt in Lab: 23/02/2022

Parameter/Method Name	Unit	Results	Standard	Detection Range
pH, 4500 H B Electronic method	-	7.5	-	02-12
Oil Grease	-	3.2	-	02-12
Suspended Solids, 2540 D Total Suspended Solids dried at 103-105 0C	mg/l	21.0	-	10-20000 mg/l
Dissolved Solids, 2540 C Total Dissolved Solids dried at 180 0C	mg/l	620	-	10- 50000 mg/l
BOD, 3 day 27 0C IS 3025 (Part 44): 1993 Bio	mg/l	20.0	-	1.0 -50000 mg/l
COD, 5220 B Open Reflux Method	mg/l	148	-	5.0 -100000 mg/l

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

Remark: NA

Analysed by

[Alok Sharma (JRF)]

Authorized by

ANIL KUMAR / Digitally signed by ANIL
KUMAR VISHWAKARMA
VISHWAKARMA / Date: 2022.03.03
15:42:57 +05'30'

Anil Vishwkarma SA

Regional Officer

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





REGIONAL LABORATORY MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD
 1-A/L.N.S.-1, Avas Vikas Colony, Buddha Vihar, Delhi Road, Moradabad

TEST REPORT: WASTE WATER LABORATORY

Ref No: 18565936/Moradabad/2022/pnybusis

Date: 19/12/2022

- 1- Name of Industry: Triveni Engineering & Industries Limited
- 2- Address of Industry: Sugar Unit-Milak Narayanpur
- 3- District: Rampur
- 4- Description about sampling point: Storage of Lagoon
- 5- Type of Sample (Grab/Composite/Integrated): Grab
- 6- Sample Collected By: Anil Vishwkarma SA & --
- 7- Colour and Odour: Colourless Odourless
- 8- Quantity and Packing: 2 liter
- 9- Date of Sample Collection: 01/12/2022
- 10- Analysis Indented by: RO Moradabad
- 11- Date of sample receipt in Lab: 01/12/2022

Parameter/Method Name	Unit	Results	Standard	Detection Range
pH-4500 H B Electronic method	-	7.63		02-12
Oil Grease	mg/l	2.0		02-12
Suspended Solids, 2540 D Total Suspended Solids dried at 103-105 OC	mg/l	23.0		10-20000 mg/l
Dissolved Solids, 2540 C Total Dissolved Solids dried at 180 OC	mg/l	480.0		10-50000 mg/l
Total Solids, 2540 B Total Solids dried at 103-105 OC	mg/l	503.0		10-50000 mg/l
BOD, 3 day 20 OC IS 3025 (Part 44): 1993 Bio	mg/l	16.0		1.0-50000 mg/l
COD, 5220 B Open Reflux Method	mg/l	180.0		5.0-100000 mg/l

Reference: Environmental Standards for discharge of environment Pollutants are as per-A Efluent(Schedule-VI). The environment (Protection) Rules, 1986. Also refer to the General Standards.pdf. Besides these standards, refer EPA standards for specific purpose

Remark: Nil

Analysed by

{Viney Kumar (JRF)}

Authorized by

Sund Singh Chauhan
Chief Analyst

Sund Singh Chauhan ASO

VIKAS
 MISHRA
Regional Officer

Regional Officer

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



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UTTAR PRADESH POLLUTION CONTROL BOARD
1-A/L.N.S.-1, Avus Vikas Colony, Buddha Vihar, Delhi Road, Moradabad

TEST REPORT: WASTE WATER LABORATORY

Date: 18/02/2023

Ref No: 19541477/Moradabad/2023/paybasls

- 1- Name of Industry: Triveni Engineering & Industries Limited
- 2- Address of Industry: Sugar Unit-Milak Narayanpur
- 3- District: Rampur
- 4- Description about sampling point: Storage Lagoon
- 5- Type of Sample (Grab/Composite/Integrated): Grab
- 6- Sample Collected By: Rajendra Lal JLA & Vishal Bharti LA
- 7- Colour and Odour: Colourless Odourless
- 8- Quantity and Packing: 2 Liter
- 9- Date of Sample Collection: 27/01/2023
- 10- Analysis Indented by: RO Moradabad
- 11- Date of sample receipt in Lab: 27/01/2023

Parameter/Method Name	Unit	Results	Standard	Detection Range
pH, 4500 H B Electronic method	-	7.52		02-12
Oil Grease	mg/l	2.0		02-12
Suspended Solids, 2540 D Total Suspended Solids dried at 103-105 0C	mg/l	29.0		10-20000 mg/l
Dissolved Solids, 2540 C Total Dissolved Solids dried at 180 0C	mg/l	390.0		10- 50000 mg/l
BOD, 3 day 27 0C IS 3025 (Part 44): 1993 Bio	mg/l	24.0		1.0 -50000 mg/l
COD, 5220 B Open Reflux Method	mg/l	152.0		5.0 -100000 mg/l

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

Remark: NA

Analysed by-
[Atul Kumar(JRF)]

Authorized by
Sunil Singh
Chauhan
Sunil Singh Chauhan (ASO)

VIKAS
MISHRA
Regionl Officer



REGIONAL LABORATORY MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD
 1-A/I.N.S.-I, Avas Vikas Colony, Buddha Vihar, Delhi Road, Moradabad

TEST REPORT: WASTE WATER LABORATORY

Ref No: 20005622/Moradabad/2023/paybasis

Date: 05/04/2023

- 1- Name of Industry: Triveni Engineering & Industries Limited
- 2- Address of Industry: Sugar Unit-Milak Narayanpur
- 3- District: Rampur
- 4- Description about sampling point: Storage Lagoon
- 5- Type of Sample (Grab/Composite/Integrated): Grab
- 6- Sample Collected By: Rajendra Lal JLA & Vishal Bharti LA
- 7- Colour and Odour: Colourless Odourless
- 8- Quantity and Packing: 2 Liter
- 9- Date of Sample Collection: 02/03/2023
- 10- Analysis Indented by: RO Moradabad
- 11- Date of sample receipt in Lab: 02/03/2023

Parameter/Method Name	Unit	Results	Standard	Detection Range
pH, 4500 H B Electronic method	-	7.73		02-12
Oil Grease	mg/l	2.8		02-12
Suspended Solids, 2540 D Total Suspended Solids dried at 103-105 0C	mg/l	29.0		10-20000 mg/l
Dissolved Solids, 2540 C Total Dissolved Solids dried at 180 0C	mg/l	380.0		10- 50000 mg/l
BOD, 3 day 27 0C IS 3025 (Part 44): 1993 Bio	mg/l	24.0		1.0 -50000 mg/l
COD, 5220 B Open Reflux Method	mg/l	168		5.0 -100000 mg/l

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

Remark: NA

Analysed by-
[Atul Kumar(JRF)]

Authorized by
Sunil Singh
Chauhan
Sunil Singh Chauhan (ASO)

Digitally signed by Sunil Singh
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VIKAS
MISHRA
Regional Officer

Digitally signed by
VIKAS MISHRA
Date: 2023.04.05
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REGIONAL LABORATORY MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD
 1-A/I.N.S.-1, Avas Vikas Colony, Buddha Vihar, Delhi Road, Moradabad

TEST REPORT: WASTE WATER LABORATORY

Date: 19/12/2023

Ref No: 23677836/Moradabad/2023/paybasis

- 1- Name of Industry: Triveni Engineering & Industries Limited
- 2- Address of Industry: Sugar Unit-Milak Narayanpur
- 3- District: Rampur
- 4- Description about sampling point: Storage Lagoon
- 5- Type of Sample (Grab/Composite/Integrated): Grab
- 6- Sample Collected By: Anil Kumar SA & Rajendra Lal JLA
- 7- Colour and Odour: Colourless Odourless
- 8- Quantity and Packing: 2 Liter Plastic Can
- 9- Date of Sample Collection: 08/12/2023
- 10- Analysis Indented by: RO Moradabad
- 11- Date of sample receipt in Lab: 08/12/2023

Parameter/Method Name	Unit	Results	Standard	Detection Range
pH, 4500 HB Electronic method	-	7.42		02-12
Oil Grease	mg/l	4.8		02-12
Suspended Solids, 2540 D Total Suspended Solids dried at 103-105 0C	mg/l	28		10-20000 mg/l
Dissolved Solids, 2540 C Total Dissolved Solids dried at 180 0C	mg/l	860		10- 50000 mg/l
BOD, 3 day 27 0C IS 3025 (Part 44): 1993 Bio	mg/l	18		1.0 -50000 mg/l
COD, 5220 B Open Reflux Method	mg/l	128		5.0 -100000 mg/l

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

Remark: NA

Analysed by-
[Rajni Raj(JRF)]

Authorized by
Anil Kumar Digitally signed by Anil Kumar Vishwakarma
Vishwakarma Date: 2023.12.19 14:40:44 +05'30'
Anil Vishwakarma (SA)

Ashutosh Digitally signed by Ashutosh Chauhan
Chauhan Date: 2023.12.19 14:40:05 +05'30'

Regional Officer



REGIONAL LABORATORY MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD
 1-A/L.N.S.-1, Avas Vikas Colony, Buddha Vihar, Delhi Road, Moradabad

TEST REPORT: WASTE WATER LABORATORY

Date: 11/01/2024

Ref No: 23962430/Moradabad/2024/paybasis

- 1- Name of Industry: Triveni Engineering & Industries Limited, Sugar Unit-Milak Narayanpur
- 2- Address of Industry: Sugar Unit-Milak Narayanpur
- 3- District: Rampur
- 4- Description about sampling point: Storage Lagoon
- 5- Type of Sample (Grab/Composite/Integrated): Grab
- 6- Sample Collected By: Mr. Anil Vishwkarma SA & Mr. Rajendra Lal JLA
- 7- Colour and Odour: Colourless Odourless
- 8- Quantity and Packing: 2 Liter Plastic Can
- 9- Date of Sample Collection: 27/12/2023
- 10- Analysis Indented by: RO Moradabad
- 11- Date of sample receipt in Lab: 27/12/2023

Parameter/Method Name	Unit	Results	Standard	Detection Range
pH, APHA 24th Ed. 4500B: 2023	-	7.38		02-12
*Oil Grease	mg/l	5.2		-
Suspended Solids, APHA 24th Ed. 2540 D Total Suspended Solids dried at 103-105 °C 2023	mg/l	24		10-20000 mg/l
Dissolved Solids, APHA 24th Ed. 2540 C Total Dissolved Solids dried at 180 °C 2023	mg/l	790		10- 50000 mg/l
Total Solids, APHA 24th Ed. 2540 B: 2023	mg/l	814		10- 50000 mg/l
BOD, APHA 24th Ed. 3 day 27 °C IS 3025 (Part 44): 1993 Bio 2023	mg/l	16		1.0 -50000 mg/l
COD, APHA 24th Ed. 5220 B Open Reflux Method 2023	mg/l	132		5.0 -100000 mg/l

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

*Non-NABL Parameters.

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

Remark: NA

Analysed by-
[Vinay Kumar (JRF)]

Authorized by
Anil Kumar
Vishwakarma
Anil Vishwkarma (SA)

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Ashutosh Chauhan
Regional Officer

Digitally signed by Ashutosh Chauhan
Date: 2024.01.11 17:17:24 +05:30'



REGIONAL LABORATORY MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD
 1-A/I.N.S.-1, Avas Vikas Colony, Buddha Vihar, Delhi Road, Moradabad

TEST REPORT: WASTE WATER LABORATORY

Ref No: 24689379/Moradabad/2024/paybasis

Date: 28/02/2024

- 1- Name of Industry: Triveni Engineering & Industries Limited, Sugar Unit-Milak Narayanpur
- 2- Address of Industry: Sugar Unit-Milak Narayanpur
- 3- District: Rampur
- 4- Description about sampling point: Storage Lagoon
- 5- Type of Sample (Grab/Composite/Integrated): Grab
- 6- Sample Collected By: Rajeev Kumar MA & Rajendra Lal JLA
- 7- Colour and Odour: Colourless Odourless
- 8- Quantity and Packing: 2 Lit.
- 9- Date of Sample Collection: 06/02/2024
- 10- Analysis Indented by: RO Moradabad
- 11- Date of sample receipt in Lab: 06/02/2024

Parameter/Method Name	Unit	Results	Standard	Detection Range
pH, APHA 24th Ed. 4500B: 2023	-	7.86		02-12
*Oil Grease	mg/l	4.4		-
Suspended Solids , APHA 24th Ed. 2540 D Total Suspended Solids dried at 103-105 °C 2023	mg/l	22		10-20000 mg/l
Dissolved Solids, APHA 24th Ed. 2540 C Total Dissolved Solids dried at 180 °C 2023	mg/l	480		10- 50000 mg/l
BOD, APHA 24th Ed. 3 day 27 °C IS 3025 (Part 44): 1993 Bio 2023	mg/l	16		1.0 -50000 mg/l
COD, APHA 24th Ed. 5220 B Open Reflux Method 2023	mg/l	116		5.0 -100000 mg/l

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

*Non-NABL Parameters.

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

Remark: NA

Analysed by-
[Rajni Raj(JRF)]

Authorized by
 Anil Kumar
 Vishwakarma
 Anil Vishwkarma (SA)

Digitally signed by Anil Kumar
 Vishwakarma
 Date: 2024.02.28 12:58:23 +05'30'

Ashutosh
 Chauhan
 Regional Officer

Digitally signed by Ashutosh
 Chauhan
 Date: 2024.02.28 12:58:18 +05'30'



REGIONAL LABORATORY MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD
 I-A/I.N.S.-I, Avas Vikas Colony, Buddha Vihar, Delhi Road, Moradabad

TEST REPORT: WASTE WATER LABORATORY

Ref No: 29198814/Moradabad/2024/paybasis

Date: 26/12/2024

- 1- Name of Industry: Triveni Engineering & Industries Limited, Sugar Unit-Milak Narayanpur
- 2- Address of Industry: Sugar Unit-Milak Narayanpur
- 3- District: Rampur
- 4- Description about sampling point: Lagoon
- 5- Type of Sample (Grab/Composite/Integrated): Grab
- 6- Sample Collected By: Anil Vishwkarma SA & Amit Kumar Yadav JE
- 7- Colour and Odour: Colourless Odourless
- 8- Quantity and Packing: 2 Ltr
- 9- Date of Sample Collection: 07/12/2024
- 10- Analysis Indented by: RO Moradabad
- 11- Date of sample receipt in Lab: 07/12/2024

Parameter/Method Name	Unit	Results	Standard	Detection Range
pH, APHA 24th Ed. 4500B: 2023	-	7.72		02-12
*Oil Grease	mg/l	2.8		-
Suspended Solids, APHA 24th Ed. 2540 D Total Suspended Solids dried at 103-105 °C 2023	mg/l	24.0		10-20000 mg/l
Dissolved Solids, APHA 24th Ed. 2540 C Total Dissolved Solids dried at 180 °C 2023	mg/l	520		10- 50000 mg/l
BOD, APHA 24th Ed. 3 day 27 °C JS 3025 (Part 44): 1993 Bio 2023	mg/l	15.0		1.0 -50000 mg/l
COD, APHA 24th Ed. 5220 B Open Reflux Method 2023	mg/l	120		5.0 -100000 mg/l

Reference- (1) General Standards for discharge of environmental pollutants are as part-A Effluent (Schedule-VI), The Environment (Protection) Rules, 1986 source: www.epcb.nic.in/GeneralStandards.pdf. Besides these standards, refer EPA standards for specific purpose

*Non-NABL Parameters.

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

Remark: NA

Analysed by-
[Rajni Raj(JRF)]

Authorized by
Anil Kumar
Vishwakarma
Anil Vishwkarma (SA)

Digitally signed by Anil Kumar Vishwakarma
Date: 2024.12.26
13:25:26 +05'30'

Ashutosh Chauhan
Chauhan
Regional Officer

Digitally signed by Ashutosh Chauhan
Date: 2024.12.26
13:26:44 +05'30'



REGIONAL LABORATORY MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD
 1-A/I.N.S.-1, Avas Vikas Colony, Buddha Vihar, Delhi Road, Moradabad

TEST REPORT: WASTE WATER LABORATORY

Ref No: 30312857/Moradabad/2025/paybasis

Date: 18/02/2025

- 1- Name of Industry: Triveni Engineering & Industries Limited, Sugar Unit-Milak Narayanpur
- 2- Address of Industry: Sugar Unit-Milak Narayanpur
- 3- District: Rampur
- 4- Description about sampling point: From Storage Lagoon
- 5- Type of Sample (Grab/Composite/Integrated): Grab
- 6- Sample Collected By: Anil Vishwkarma SA & Asif Ali JLA
- 7- Colour and Odour: Colourless Odourless
- 8- Quantity and Packing: 2 Ltr
- 9- Date of Sample Collection: 07/02/2025
- 10- Analysis Indented by: RO Moradabad
- 11- Date of sample receipt in Lab: 07/02/2025
- 12- Period of Analysis: 07/02/2025 to 11/02/2025
- 13- ULR Number: TC1167625000000086F
- 14- Sampling Plan/Ref. No.: 30312857
- 15- Sampling Method Ref.: APHA 24th Edition 2023- 1060 A, B, C, Page No.- 42- 52, Collection & Preservation of Samples

S. N.	Parameter/Method Name	Unit	Results	Standard	Detection Range
1	pH, APHA 24th Ed. 4500B: 2023	-	7.63		02-12
2	Suspended Solids, APHA 24th Ed. 2540 D Total Suspended Solids dried at 103-105 °C 2023	mg/l	22.0		10-20000 mg/l
3	Dissolved Solids, APHA 24th Ed. 2540 C Total Dissolved Solids dried at 180 °C 2023	mg/l	680.0		10- 50000 mg/l
4	BOD, APHA 24th Ed. 3 day 27 °C IS 3025 (Part 44): 1993 Bio 2023	mg/l	16.0		1.0 -50000 mg/l
5	COD, APHA 24th Ed. 5220 B Open Reflux Method 2023	mg/l	136.0		5.0 -100000 mg/l

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

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

Remark: NA

Analysed by-
[Rajni Raj(JRF)]

Authorized by
Anil Kumar
Vishwakarma
Anil Vishwkarma (SA)

Digitally signed by Anil
Kumar Vishwakarma
Date: 2025.02.18
14:43:27 +05'30'

Ashutosh
Chauhan
Regional Officer

Digitally signed
by Ashutosh
Chauhan
Date: 2025.02.18
14:44:45 +05'30'

UPPCB/CL/7.8.2	Issue No.: 05	Issue Date: 15.08.2022	Page No.: Page 1 of 2
Amendment No.: 01	Amendment Date.: 01.02.2025	Approved by: TM	Issued by: QM





622
REGIONAL LABORATORY MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD
1-A/I.N.S.-1, Avas Vikas Colony, Buddha Vihar, Delhi Road, Moradabad

68

TEST REPORT: WATER LABORATORY(GROUND WATER)

Ref No: 25052508/Moradabad/2024

Date:18/03/2024

- 1- **Sample Location:** Triveni Engineering & Industries Limited, TubeWell-1
- 2- **Address:** Sugar Unit-Milak Narayanpur
- 3- **Distirct:** Rampur
- 4- **Sample Source:** TubeWell
- 5- **Type of sample :** Ground Water
- 6- **Sample Collected By :** Anil Vishwkarma , SA, Vishal Bharti, LA
- 7- **Odour :** None
- 8- **Quantity and Packing :** 2 Litr.
- 9- **Date of Sample Collection :** 11/03/2024
- 10- **Analyis Indented by :** RO Moradabad
- 11- **Date of sample receipt in Lab :** 11/03/2024

Parameter	Unit	Standards Source: IS 10500:2012(2nd Rev.) Required Acceptable Limit	Results	Detection Range
pH, APHA 24th Ed.4500-B: 2023	-	6.5-8.5	7.70	02-12
Turbidity, APHA24th Ed 2130B: 2023	N.T.U	1.00	2.68	1-500NTU
Colour, APHA 24th Ed. 2120B: 2023	Hazen	5.00	Colourless	5-10000 Hazen
Conductivity, APHA 24th Ed. 2510B: 2023	µS/cm	NS	545	0.1-10000 µS/cm
Hardness, APHA 24th Ed. 2340 C EDTA Titrimetric Method 2023	mg/l	200	154	10-5000 mg/l
Calcium, APHA 24th Ed. 3500Ca-B: 2023	mg/l	75	39.2	10-1000 mg/l
Magnesium, APHA 24th Ed. 3500 Mg-B: 2023	mg/l	30	13.44	10-1000 mg/l

These standards are subject to revision

*Non-NABL Parameters.

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

mark:* - NA

Analysed by
[Rajni Raj(JRF)]

Authorized by

Anil Kumar
Vishwakarma 2024.03.18 15:30:59 +0530'

Anil Vishwkarma (SA)

Ashutosh 2024.03.18
Chauhan 15:32:09 +05'30'
Regional Officer



REGIONAL LABORATORY MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD
 1-A/I.N.S.-1, Avas Vikas Colony, Buddha Vihar, Delhi Road, Moradabad

TEST REPORT: WATER LABORATORY(GROUND WATER)

Date:18/03/2024

Ref No: 25052486/Moradabad/2024

- 1- Sample Location: Triveni Engineering & Industries Limited, TubeWell-2
- 2- Address: Sugar Unit-Milak Narayanpur
- 3- Distirct: Rampur
- 4- Sample Source: TubeWell
- 5- Type of sample : Ground Water
- 6- Sample Collected By : Anil Vishwkarma , SA, Vishal Bharti, LA
- 7- Odour : None
- 8- Quantity and Packing : 2 Litr.
- 9- Date of Sample Collection : 11/03/2024
- 10- Analys Indented by : RO Moradabad
- 11- Date of sample receipt in Lab : 11/03/2024

Parameter	Unit	Standards Source: IS 10500:2012(2nd Rev.) Required Acceptable Limit	Results	Detection Range
pH, APHA 24th Ed.4500-B: 2023	-	6.5-8.5	7.56	02-12
Turbidity, APHA24th Ed 2130B: 2023	N.T.U	1.00	2.91	1-500NTU
Colour, APHA 24th Ed. 2120B: 2023	Hazen	5.00	Colourless	5-10000 Hazen
Conductivity, APHA 24th Ed. 2510B: 2023	µS/cm	NS	520	0.1-10000 µS/cm
Hardness, APHA 24th Ed. 2340 C EDTA Titrimetric Method 2023	mg/l	200	114	10-5000 mg/l
Calcium, APHA 24th Ed. 3500Ca-B: 2023	mg/l	75	30.4	10-1000 mg/l
Magnesium, APHA 24th Ed. 3500 Mg-B: 2023	mg/l	30	9.12	10-1000 mg/l

These standards are subject to revision

*Non-NABL Parameters.

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

received in Lab.

Remark: * - NA

Analysed by
[Rajni Raj(JRF)]

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 Anil Kumar 2024.03.18
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Anil Vishwkarma (SA)

Ashutosh 2024.03.18
 Chauhan 15:32:18 +05'30'
Regional Officer



REGIONAL LABORATORY MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD
 1-A/I.N.S.-1, Avas Vikas Colony, Buddha Vihar, Delhi Road, Moradabad

TEST REPORT: WATER LABORATORY(GROUND WATER)

Ref No: 26280216/Moradabad/2024

Date:30/05/2024

- 1- **Sample Location:** Triveni Engineering & Industries Limited, TubeWell-1
- 2- **Address:** Sugar Unit-Milak Narayanpur
- 3- **Distirt:** Rampur
- 4- **Sample Source:** TubeWell
- 5- **Type of sample :** Ground Water
- 6- **Sample Collected By :** Anil Vishwkarma , SA, Rajendra Lal, JLA
- 7- **Odour :** None
- 8- **Quantity and Packing :** 2 Litr.
- 9- **Date of Sample Collection :** 18/05/2024
- 10- **Analys Indented by :** RO Moradabad
- 11- **Date of sample receipt in Lab :** 18/05/2024

Parameter	Unit	Standards Source: IS 10500:2012(2nd Rev.) Required Acceptable Limit	Results	Detection Range
pH, APHA 24th Ed.4500-B: 2023	-	6.5-8.5	7.58	02-12
Turbidity, APHA24th Ed 2130B: 2023	N.T.U	1.00	1.9	1-500NTU
Colour, APHA 24th Ed. 2120B: 2023	Hazen	5.00	Colourless	5-10000 Hazen
Conductivity, APHA 24th Ed. 2510B: 2023	µS/cm	NS	492	0.1-10000 µS/cm
Hardness, APHA 24th Ed. 2340 C EDTA Titrimetric Method 2023	mg/l	200	188	10-5000 mg/l
Calcium, APHA 24th Ed. 3500Ca-B: 2023	mg/l	75	44.8	10-1000 mg/l
Magnesium, APHA 24th Ed. 3500 Mg-B: 2023	mg/l	30	18.24	10-1000 mg/l

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Analysed by
[Rajni Raj(JRF)]

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Anil Vishwkarma (SA)

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Date: 2024.05.30 14:11:18 +0530'

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Chauhan
Regional Officer

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UTTAR PRADESH POLLUTION CONTROL BOARD
 1-A/I.N.S.-1, Avas Vikas Colony, Buddha Vihar, Delhi Road, Moradabad

TEST REPORT: WATER LABORATORY(GROUND WATER)

Ref No: 26279774/Moradabad/2024

Date:30/05/2024

- 1- **Sample Location:** Triveni Engineering & Industries Limited, TubeWell-2
- 2- **Address:** Sugar Unit-Milak Narayanpur
- 3- **Distirct:** Rampur
- 4- **Sample Source:** TubeWell
- 5- **Type of sample :** Ground Water
- 6- **Sample Collected By :** Anil Vishwkarma , SA, Rajendra Lal, JLA
- 7- **Odour :** None
- 8- **Quantity and Packing :** 2 Litr.
- 9- **Date of Sample Collection :** 18/05/2024
- 10- **Analys Indented by :** RO Moradabad
- 11- **Date of sample receipt in Lab :** 18/05/2024

Parameter	Unit	Standards Source: IS 10500:2012(2nd Rev.) Required Acceptable Limit	Results	Detection Range
pH, APHA 24th Ed.4500-B: 2023	-	6.5-8.5	7.56	02-12
Turbidity, APHA24th Ed 2130B: 2023	N.T.U	1.00	2.6	1-500NTU
Colour, APHA 24th Ed. 2120B: 2023	Hazen	5.00	Colourless	5-10000 Hazen
Conductivity, APHA 24th Ed. 2510B: 2023	µS/cm	NS	446	0.1-10000 µS/cm
Hardness, APHA 24th Ed. 2340 C EDTA Titrimetric Method 2023	mg/l	200	240	10-5000 mg/l
Calcium, APHA 24th Ed. 3500Ca-B: 2023	mg/l	75	58.4	10-1000 mg/l
Magnesium, APHA 24th Ed. 3500 Mg-B: 2023	mg/l	30	22.56	10-1000 mg/l

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Analysed by
[Rajni Raj(JRF)]

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Anil Vishwkarma (SA)

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Regional Officer

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REGIONAL LABORATORY MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD
 1-A/I.N.S.-1, Avas Vikas Colony, Buddha Vihar, Delhi Road, Moradabad

TEST REPORT: WATER LABORATORY(GROUND WATER)

Ref No: 27128944/Moradabad/2024

Date: 01/08/2024

- 1- **Sample Location:** Triveni Engineering & Industries Limited, TubeWell-2
- 2- **Address:** Sugar Unit-Milak Narayanpur
- 3- **Distirt:** Rampur
- 4- **Sample Source:** TubeWell
- 5- **Type of sample :** Ground Water
- 6- **Sample Collected By :** Anil Vishwkarma , SA, Vishal Bharti, LA
- 7- **Odour :** None
- 8- **Quantity and Packing :** 2 Litr.
- 9- **Date of Sample Collection :** 15/07/2024
- 10- **Analys Indented by :** RO Moradabad
- 11- **Date of sample receipt in Lab :** 15/07/2024

Parameter	Unit	Standards Source: IS 10500:2012(2nd Rev.) Required Acceptable Limit	Results	Detection Range
pH, APHA 24th Ed.4500-B: 2023	-	6.5-8.5	7.21	02-12
Turbidity, APHA24th Ed 2130B: 2023	N.T.U	1.00	1.8	1-500NTU
Colour, APHA 24th Ed. 2120B: 2023	Hazen	5.00	Colourless	5-10000 Hazen
Conductivity, APHA 24th Ed. 2510B: 2023	µS/cm	NS	354.6	0.1-10000 µS/cm
Dissolved Solids, APHA 24th Ed. 2540 C Total Dissolved Solids dried at 180 °C 2023	mg/l	500	220	5-10000 mg/l
Hardness, APHA 24th Ed. 2340 C EDTA Titrimetric Method 2023	mg/l	200	218	10-5000 mg/l
Calcium, APHA 24th Ed. 3500Ca-B: 2023	mg/l	75	56.8	10-1000 mg/l
Magnesium, APHA 24th Ed. 3500 Mg-B: 2023	mg/l	30	18.24	10-1000 mg/l

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Remark: * - NA

Analysed by
[Vinay Kumar (JRF)]

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Kumar Vishwkarma
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Anil Vishwkarma (SA)

Ashutosh Chauhan
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Ashutosh Chauhan
Date: 2024.08.01
16:06:14 +05'30'
Regional Officer



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REGIONAL LABORATORY MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD
1-A/I.N.S.-1, Avas Vikas Colony, Buddha Vihar, Delhi Road, Moradabad

TEST REPORT: WATER LABORATORY(GROUND WATER)

Ref No: 27129024/Moradabad/2024

Date:01/08/2024

- 1- Sample Location: Triveni Engineering & Industries Limited, TubeWell-1
- 2- Address: Sugar Unit-Milak Narayanpur
- 3- District: Rampur
- 4- Sample Source: TubeWell
- 5- Type of sample : Ground Water
- 6- Sample Collected By : Anil Vishwkarma , SA, Vishal Bharti, LA
- 7- Odour : None
- 8- Quantity and Packing : 2 Litr.
- 9- Date of Sample Collection : 15/07/2024
- 10- Analysis Indented by : RO Moradabad
- 11- Date of sample receipt in Lab : 15/07/2024

Parameter	Unit	Standards Source: IS 10500:2012(2nd Rev.) Required Acceptable Limit	Results	Detection Range
pH, APHA 24th Ed.4500-B: 2023	-	6.5-8.5	7.32	02-12
Turbidity, APHA24th Ed 2130B: 2023	N.T.U	1.00	1.2	1-500NTU
Colour, APHA 24th Ed. 2120B: 2023	Hazen	5.00	Colourless	5-10000 Hazen
Conductivity, APHA 24th Ed. 2510B: 2023	µS/cm	NS	341.2	0.1-10000 µS/cm
Dissolved Solids, APHA 24th Ed. 2540 C Total Dissolved Solids dried at 180 °C 2023	mg/l	500	210	5-10000 mg/l
Hardness, APHA 24th Ed. 2340 C EDTA Titrimetric Method 2023	mg/l	200	222	10-5000 mg/l
Calcium, APHA 24th Ed. 3500Ca-B: 2023	mg/l	75	72.8	10-1000 mg/l
Magnesium, APHA 24th Ed. 3500 Mg-B: 2023	mg/l	30	9.6	10-1000 mg/l

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Analysed by
[Vinay Kumar (JRF)]

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Anil Vishwkarma (SA)

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Regional Officer

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REGIONAL LABORATORY MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD
 1-A/I.N.S.-1, Avas Vikas Colony, Buddha Vihar, Delhi Road, Moradabad

TEST REPORT: WATER LABORATORY(GROUND WATER)

Ref No: 28642995/Moradabad/2024

Date:16/11/2024

- 1- Sample Location: Triveni Engineering & Industries Limited(Tubewell-1)
- 2- Address: Sugar Unit-Milak Narayanpur
- 3- Distirct: Rampur
- 4- Sample Source: TubeWell
- 5- Type of sample : Ground Water
- 6- Sample Collected By : Anil Vishwkarma , SA, Vishal Bharti, LA
- 7- Odour : None
- 8- Quantity and Packing : 2 Ltr
- 9- Date of Sample Collection : 29/10/2024
- 10- Analysis Indented by : RO Moradabad
- 11- Date of sample receipt in Lab : 29/10/2024

Parameter	Unit	Standards Source: IS 10500:2012(2nd Rev.) Required Acceptable Limit	Results	Detection Range
pH, APHA 24th Ed.4500-B: 2023	-	6.5-8.5	7.26	02-12
Turbidity, APHA24th Ed 2130B: 2023	N.T.U	1.00	1.6	1-500NTU
Colour, APHA 24th Ed. 2120B: 2023	Hazen	5.00	Colourless	5-10000 Hazen
Conductivity, APHA 24th Ed. 2510B: 2023	µS/cm	NS	428.6	0.1-10000 µS/cm
Dissolved Solids, APHA 24th Ed. 2540 C Total Dissolved Solids dried at 180 °C 2023	mg/l	500	240.0	5-10000 mg/l
Hardness, APHA 24th Ed. 2340 C EDTA Titrimetric Method 2023	mg/l	200	232.0	10-5000 mg/l
Calcium, APHA 24th Ed. 3500Ca-B: 2023	mg/l	75	77.6	10-1000 mg/l
Magnesium, APHA 24th Ed. 3500 Mg-B: 2023	mg/l	30	9.12	10-1000 mg/l

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Remark: * - NA

Analysed by
[Rajni Raj(JRF)]

Authorized by
Anil Kumar
Vishwakarma
Anil Vishwkarma (SA)

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Kumar Vishwakarma
Date: 2024.11.16
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**Ashutosh
Chauhan**
Regional Officer

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Ashutosh Chauhan
Date: 2024.11.16
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REGIONAL LABORATORY MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD
 1-A/I.N.S.-1, Avas Vikas Colony, Buddha Vihar, Delhi Road, Moradabad

TEST REPORT: WATER LABORATORY(GROUND WATER)

Ref No: 28643073/Moradabad/2024

Date:16/11/2024

- 1- Sample Location: Triveni Engineering & Industries Limited(Tubewell-2)
- 2- Address: Sugar Unit-Milak Narayanpur
- 3- Distinct: Rampur
- 4- Sample Source: TubeWell
- 5- Type of sample : Ground Water
- 6- Sample Collected By : Anil Vishwkarma , SA, Vishal Bharti, LA
- 7- Odour : None
- 8- Quantity and Packing : 2 Ltr.
- 9- Date of Sample Collection : 29/10/2024
- 10- Analysis Indented by : RO Moradabad
- 11- Date of sample receipt in Lab : 29/10/2024

Parameter	Unit	Standards Source: IS 10500:2012(2nd Rev.) Required Acceptable Limit	Results	Detection Range
pH, APHA 24th Ed.4500-B: 2023	-	6.5-8.5	7.41	02-12
Turbidity, APHA24th Ed 2130B: 2023	N.T.U	1.00	1.4	1-500NTU
Colour, APHA 24th Ed. 2120B: 2023	Hazen	5.00	Colourless	5-10000 Hazen
Conductivity, APHA 24th Ed. 2510B: 2023	µS/cm	NS	398.4	0.1-10000 µS/cm
Dissolved Solids, APHA 24th Ed. 2540 C Total Dissolved Solids dried at 180 °C 2023	mg/l	500	210	5-10000 mg/l
Hardness, APHA 24th Ed. 2340 C EDTA Titrimetric Method 2023	mg/l	200	214	10-5000 mg/l
Calcium, APHA 24th Ed. 3500Ca-B: 2023	mg/l	75	60.8	10-1000 mg/l
Magnesium, APHA 24th Ed. 3500 Mg-B: 2023	mg/l	30	14.88	10-1000 mg/l

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Analysed by
[Rajni Raj(JRF)]

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 Vishwakarma
 Anil Vishwkarma (SA)

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 by Ashutosh
 Chauhan
 Date: 2024.11.16
 15:28:23 +05'30'
**Ashutosh
 Chauhan
 Regional Officer**

REF :TEIL/MNP/2024/
Date: 12.10.2023

To,
The Regional Officer,
U.P. Pollution Control Board
Budhi Vihar, Moradabad (U.P.)

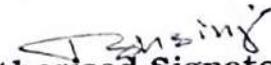
Subject: **Process Conversion**

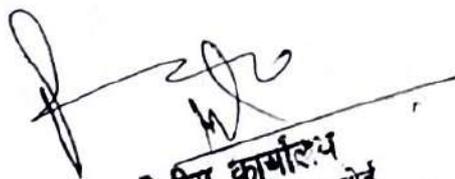
Dear Sir,

This is to inform you that we are changing the process of Sugarcane Juice clarification from Double Sulphitation (D.S.) to Defco-Melt Phosphotation Process (DMP) to produce refined sugar in this process quantum of key clarifications would reduced significantly i.e. Sulpher consumption will be zero and lime consumption will be half in comparison to D.S. Process.

Information submitted for your reference and further needful please.

Triveni Engineering & Industries Limited
Sugar Unit-Milak Narayanpur


(Authorised Signatory)


क्षेत्रीय कार्यालय
उ.प्र. प्रदूषण नियंत्रण बोर्ड
1-A/1.N.S1 अवास विकास कालोनी
बुद्धि विहार, मुरादाबाद



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ASSESSMENT OF PHYSICO-CHEMICAL STATUS OF GROUND WATER TAKEN FROM FOUR BLOCKS (SUAR, MILAK, BILASPUR, SHAHABAD) OF RAMPUR DISTRICT, UTTAR PRADESH, INDIA

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ABSTRACT

The ground water quality is determined in four blocks (Suar, Milak, Bilaspur, Shahabad), that lies in district Rampur of Uttar Pradesh, where from each block fifteen villages are under studied from assessment of Physico-chemical status of ground water. One sample from each village is under assessment of Physico-chemical solution and various quality parameter are measured including pH, electrical conductivity (EC), total dissolved solids (TDS), total hardness (TH), content of calcium (Ca^{2+}), magnesium (Mg^{2+}), sodium (Na^+), potassium (K^+), bicarbonate (HCO_3^-), chloride (Cl^-) and sulphate (SO_4^{2-}) concentration present in water. A systematic calculation of correlation is performed among these parameters. The chemical analysis of water samples show considerable variations and also most of the samples do not comply with WHO standards for the parameter measured. Overall the water quality is found to be not suitable for drinking purposes with any prior treatment except at eight locations out of sixty village's samples

Keywords: Ground water, water quality, correlation coefficient, Rampur District (Suar, Milak, Bilaspur, Shahabad)

INTRODUCTION

Water plays a vital role in human life. The consequences of urbanization and industrialization leads to spoil the water for agricultural purposes ground water is explored in rural especially in those areas where other sources of water like dam and river or a canal is not considerable. During last decade, this is observed that ground water get polluted drastically because of increased human activities^{1,2}. Consequently number of cases of water borne diseases has been seen which a cause of health hazards³⁻⁵. An understanding of water chemistry is the bases of the knowledge of the multidimensional aspect of aquatic environmental chemistry which involves the source, composition, reactions and transportation of water. The quality of water is of vital concern for the mankind since it is directly linked with human welfare. It is a matter of history that facial pollution of drinking water caused water-borne diseases which wiped out entire population of the studied area. The present work is an attempt to measure the water quality of various water sources of four blocks of Rampur district, Uttar Pradesh, India.

EXPREMENTAL

Study Area

The area under studied four blocks (Suar, Milak, Bilaspur, Shahabad) lies Rampur District and it is located between longitudes 78-0-54 to 69-0-28 East and latitude 28-25 to 29-10 North, and on coordinate it is lies 28.8⁰N 79.0⁰E. It is cover 2,367 km² area. It has an average elevation of 288 meters (968ft)⁷ Fig.(1,2,3). The study was undertaken in four blocks (Suar, Milak, Bilaspur, Shahabad) in 15 villages of each block of Rampur district. These villages are occupied by people who work mainly in agricultural and some government jobs in the nearest places. The population of these villages is not known actually. The ground water is considered as the source of drinking water, in addition of agricultural and home uses where there is no surface water at all. The water is extracted from hand dug wells and also transported by private

water tanker through out the four blocks of these villages. The precipitation which is the sole source of ground water recharge in the study area is very low due to average rainfall. The water table in the study area is found to vary from 3.2m to 12.86m and the aquifer is unconfined.

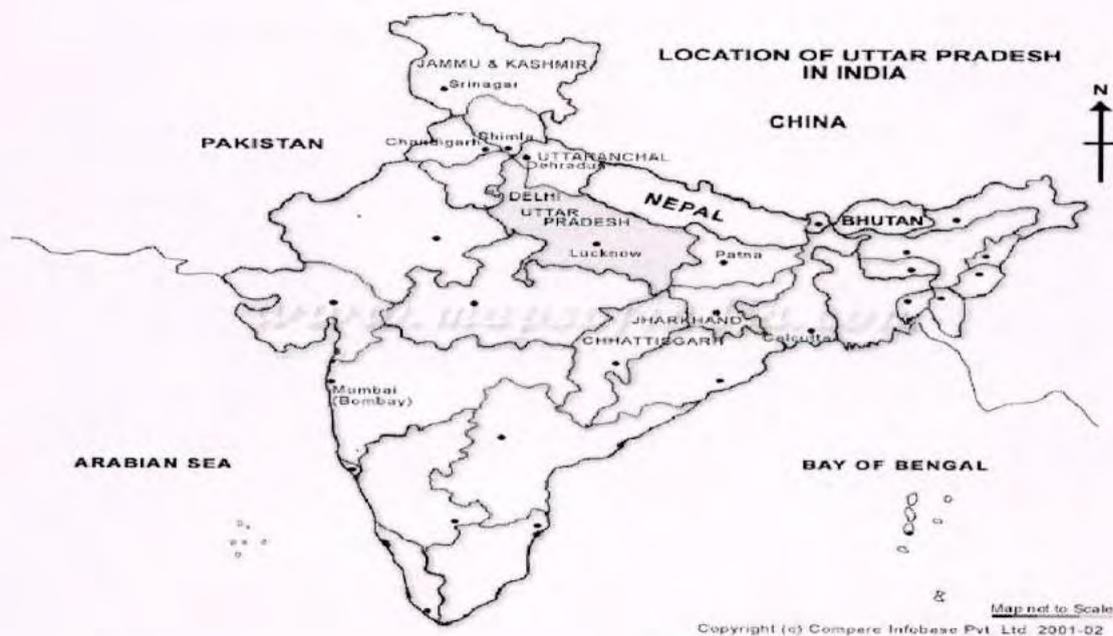


Fig.-1:Location of Uttar Pradesh in India



Fig.-2;Location of Rampur in Uttar Pradesh

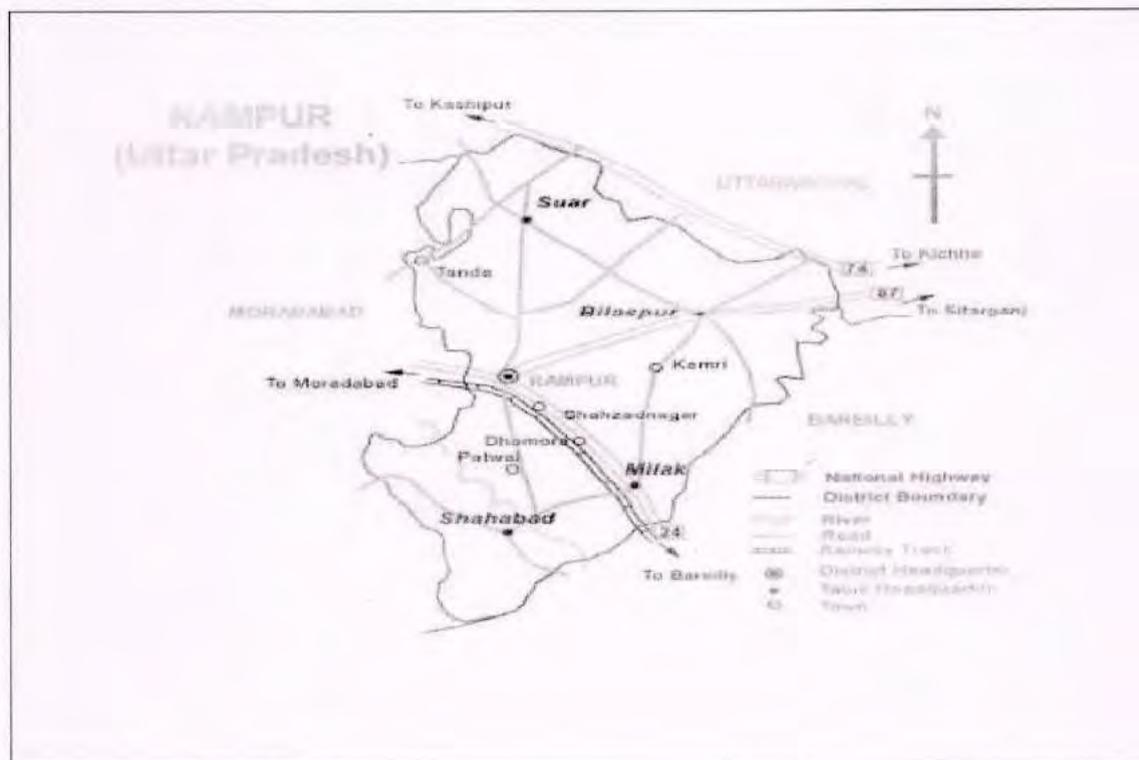


Fig.-3: Map of Rampur (Suar, Milak, Bilaspur, Shahabad)

Water Sampling

A total of 60 ground water samples are collected one each for 15 villages, in four blocks (Suar, Milak, Bilaspur, Shahabad). The samples are collected in clean polyethylene bottles and prior to collection, the samples are rinsed thoroughly with sample water⁸. The samples are analyzed for Ca^{2+} , Mg^{2+} , Na^+ , K^+ , bicarbonate, chloride and sulphate. The water samples are taken through pumping so the samples will be a representative and order to avoid only contamination from the surface⁹.

3. Methodology: - The pH and electrical conductivity (EC) are measured for each sample at well head during field study to these areas. So the pH is measured using pH-Meter Model E- 588 While EC is determined using EC -Meter Model LF 91. The TDS is calculated using a formula from the United States Salinity Laboratory, 1954¹⁰. The Chemical analysis samples are carried out at faculty of chemistry, Govt. Raza (P.G) College, Rampur (U.P.), where sodium and potassium are analyzed using a Flame Photometer, the calcium and magnesium are determined with EDTA, while the titration with mercury nitrated are used to determine chloride. Sulphate was determined nephelometrically using ELICO CL-52 Nephelometer¹¹. For bicarbonate, a titration with 0.01N sulphuric acid is used. Finally, a turbidity method is explored for the surface analysis some statistical analysis are done using Statistical Package for Social Sciences (SPSS).

RESULTS AND DISCUSSIONS

The ground water from the study areas had no color, odor and turbidity. Taste of the water showed some brackish water at most of the locations. The results of the chemical analysis of ground from these blocks are present in (Table 1-4) so, it is necessary to make a comparison of ground water quality of the study areas with drinking water standards (WHO) and these are presented in Table 5. The data of the chemical results showing consider variation which reflects their chemical composition. The pH of ground water in their area ranges from 7.14 to 8.50 these values (Table 1, 2, 3,4) reveals that samples lie with the permissible range of 6.5-9.2¹². The EC of the water samples shows a wide variation in all the villages in

the four blocks. According to Salinity classification by Rabinove et al.¹³ groundwater was non saline at 9 locations, slightly saline 24 locations and moderately saline at 27 locations (Table 6). According to Durfor and Backer¹⁴ classification of total hardness. Water was very hard at all the locations. The calcium and TA content was beyond acceptable limits. Carbonate was either absent or present in negligible amounts. Chloride concentration ranged from 1.7 to 2048 mg/l. Except at 15 locations, the chloride content was higher than the WHO acceptable limits. Sulphate concentration varied from 34 to 3108 mg/l and found to be in acceptable limits in nine locations. Bicarbonate ranged from 144 to 1070 mg/l in these blocks villages. Except at fourteen locations, sodium was higher than the WHO acceptable limits of 200 mg/l. Lower concentration of calcium compared to sodium indicated the absence of readily soluble calcium minerals or the action of base exchanged by sodium¹⁵. The statistical analysis (Table 8) showed that the EC has a positive and significant correlation with TDS, TH, Ca²⁺, Na⁺, So₄²⁻, and Mg²⁺. TH was positively and significantly correlated with Ca²⁺, Mg²⁺, So₄²⁻, and Cl⁻. The regression equations among the significantly correlated parameters are given in Table 9.

CONCLUSION

This study shows that ground water is the only source for people in the study area, and the results of the chemical analyses of ground water indicate considerable variation. Most of the water samples do not comply with WHO standards for drinking purpose. The water quality in the investigated area is found to be suitable for drinking only at eight locations, while as out prior treatments. It must be noted that a regular chemical analysis must be done to insure that the quality of water in this area is not contaminated, in addition to research for new wells in the area in order to get additional water for the resident people.

Table-1: Physico-chemical properties of ground water at Suar block

Village's Name	pH	EC	TDS	TH	TA	Ca ²⁺	Mg ²⁺	Na ⁺	K ⁺	CO ₃ ²⁻	HCO ₃ ⁻	Cl ⁻	SO ₄ ²⁻
Rajpura Tanda	7.66	4.1	2624	356	736	66	46	576	4	2	897	426	580
Ahamdasadurf Telipura	7.99	3.01	1926	312	777	48	46	456	4	75	796	185	267
Chaukhandi	7.64	3.78	2419	309	767	61	38	504	8	21	885	236	540
Jamal Gang	7.55	3.51	2246	577	616	65	100	456	7	2	752	298	570
Suraj Pur	8.48	3.91	2502	220	710	49	24	504	4	56	752	253	400
Ahmmad Nager	7.58	5.73	3667	848	554	90	151	636	9	2	676	787	960
Loharri Landa	7.62	6.01	3846	594	689	88	91	684	7	2	841	744	980
Bhati Khera	7.85	7.74	4954	373	596	52	59	188	5	81	562	270	170
Shamsabad khabania	8.33	3.76	2406	366	580	53	56	528	5	75	556	364	690
Khandi Khera	7.68	3.32	2125	165	793	56	30	468	5	31	904	224	567
Kundesera	7.34	4.75	3040	906	694	83	169	516	9	2	847	639	560
Parratpur	7.54	4.21	2694	488	663	74	73	528	10	2	809	440	698
Kundeser	7.66	4.32	2765	343	767	67	43	540	6	31	872	386	980
Lodipur Nayak	7.90	7.37	4717	1265	4627	106	243	732	10	68	549	1210	1000
Hassan Pur NAth	7.73	3.01	1926	227	767	51	24	504	3	0	935	224	280

All the values are in mg/l, except pH and EC, unit of EC are $\mu\text{s}/\text{cm}$.

Table-2: Physico-chemical properties of ground water at Milak block

Village's Name	pH	EC	TDS	TH	TA	Ca ²⁺	Mg ²⁺	Na ⁺	K ⁺	CO ₃ ²⁻	HCO ₃ ⁻	Cl ⁻	SO ₄ ²⁻
Chakia Hayat Nager	7.61	7.32	4685	512	696	90	70	648	12	34	780	863	940
Mohammadpur Qadim	7.32	4.76	3046	448	714	70	66	528	4	2	872	412	500
Sahu Nagla	8.05	6.30	4032	448	832	75	63	660	8	73	866	582	860
Shadi Nager	7.26	11.56	7066	1079	578	182	154	1164	72	2	705	1406	2640
Katra	8.26	6.49	4154	576	879	77	7	780	1	85	900	693	660
Barakhan	8.44	6.42	4109	828	592	88	148	720	12	11	700	826	1520
Harji Pur	7.78	6.18	3955	454	766	85	59	744	22	73	786	738	780
Mirzapur Chakarpu r	7.83	5.05	3232	441	630	80	58	612	6	68	631	588	1140
Patna	7.93	0.77	493	110	124	15	18	22	1	0	144	17	52
Milak Mohd.Box	7.14	7.82	5005	848	776	104	142	720	12	68	808	1003	680
Nagli Bhagwan t	7.68	2.34	1498	173	639	43	16	420	6	79	619	222	140
Suhag Nagla	7.34	1.78	965	332	531	43	55	120	1	90	464	74	240
Jangu nagar	8.00	5.59	3578	807	550	87	143	424	10	62	845	736	998
Kaga Nager	7.64	3.40	2176	587	790	57	108	772	56	68	826	284	420
Ganga Pur Kadim	7.91	4.50	2880	238	644	65	19	636	7	66	671	443	840

All the Values are in mg/l, except pH and EC, unit of EC are $\mu\text{s/cm}$.

Table-3: Physico-chemical properties of ground water at Bilaspur block

Village's Name	pH	EC	TDS	TH	TA	Ca ²⁺	Mg ²⁺	Na ⁺	K ⁺	CO ₃ ²⁻	HCO ₃ ⁻	Cl ⁻	SO ₄ ²⁻
Ahraula	8.41	2.32	1299	334	834	45	45	140	1	56	905	31	156
Bhogpur	7.82	3.76	2547	370	1032	65	53	475	8	93	1070	271	488
Chandpur	8.05	3.30	3874	322	775	89	9	567	4	56	828	345	701
Dalki	7.86	6.04	2663	176	826	73	27	710	6	146	1011	602	1160
Gada	7.26	4.49	3458	258	788	32	8	601	4	84	859	349	605
Hamidabad	7.74	5.42	800	200	550	72	13	550	6	67	823	614	639
Inderpur	8.08	1.18	2495	116	908	93	18	104	1	68	537	1.7	70
Jamnupur	8.03	3.85	4769	254	955	63	46	576	3	82	942	356	622
Ishwerpur	7.93	7.45	1889	422	784	37	20	840	6	138	885	835	580
Mankara	7.54	2.82	1285	267	730	31	32	496	4	2	955	210	480
Pajawa	8.50	2.00	998	113	634	42	24	130	166	56	778	28	260

Qadri Ganj	8.34	1.68	1296	176	779	43	22	118	1	82	609	18	80
Salehpur	7.90	2.09	1286	194	550	87	21	190	3	81	804	99	240
Talmahawar	7.94	2.40	959	215	730	57	29	180	4	37	815	118	250
Umri	7.76	6.70	1446	376	604	65	39	720	4	62	608	809	880

All the Values are in mg/l, expect pH and EC. unit of EC are $\mu\text{s/cm}$.

Table-4: Physico-chemical properties of ground water at Shahabad block

Village's Name	pH	EC	TDS	TH	TA	Ca ²⁺	Mg ²⁺	Na ⁺	K ⁺	CO ₃ ²⁻	HCO ₃ ⁻	Cl ⁻	SO ₄ ²⁻
Tejpur Lakhani	7.31	9.59	6138	1357	855	158	233	888	24	90	860	1480	1500
Chhitauni	7.93	1.27	813	134	400	35	35	98	03	62	361	62	79
Saddiq Nager	7.46	7.87	5037	319	630	102	15	912	03	56	654	1218	660
Karan Pur	8.24	1.96	986	173	362	36	20	141	02	62	315	176	170
Lahtaura	7.70	8.51	5446	800	719	112	126	840	12	107	659	1281	1820
Sarai Mahesh	8.37	0.67	424	109	193	11	29	21	02	28	144	26	34
Dariyapur	7.85	5.76	3686	234	743	86	6	570	07	2	906	719	830
Tejpur	7.88	7.05	4512	539	672	97	72	828	06	45	728	892	1440
Saifini	8.12	3.44	2202	238	494	56	24	984	03	56	487	324	540
Madhupuri	7.30	13.56	8662	1540	855	220	306	1244	33	73	895	2048	3108
Tejpur Behta	7.96	5.40	3456	373	710	79	43	648	05	68	728	608	780
Bisauli	8.43	1.98	1267	197	353	37	25	102	02	45	338	122	230
Bal Pura	8.04	1.52	973	217	376	33	33	92	03	39	378	60	200
Jat Pura	7.68	5.77	3693	454	597	75	65	612	06	51	625	704	730
Chandpur kalan	8.10	2.03	1299	200	432	43	23	171	02	51	424	185	280

All the values are in mg/l; expect pH and EC, unit of EC are $\mu\text{s/cm}$.

Table-5: Comparison of ground water quality at the study areas with drinking water standards (WHO.1993)

Parameters	Values from collected samples			WHO
	Minimum	Maximum	Mean	
pH	7.14	8.50	7.85	6.5-9.2
EC	0.66	13.53	4.67	-
TDS	424	8662	2987	500
TH	110	1540	445	500
TA	124	4627	741	-
Ca ²⁺	11	200	68	75
Mg ²⁺	6	306	72	150
Na ⁺	21	1244	518	200
K ⁺	1	166	11	200
CO ₃ ²⁻	2	146	52	200
HCO ₃ ⁻	144	1070	720	-
Cl ⁻	1.7	2048	498	500
So ₄ ²⁻	34	3108	688	-

All the values are in mg/l, expect pH and EC, unit of are $\mu\text{s/cm}$.

Table-6: Classification of the water samples in the study area on the basis of TDS

Sample No.	Classification of Ground water	Total Dissolved solid (mg/l)	No. of Samples
1	Non-saline	<1000	9
2	Slightly saline	1000-3000	24
3	Moderately saline	3000-10,000	27
4	Very saline	>10000	-

Table-7: Classification of the water samples in the study area on the basis of TH

Sample no.	Description	Hardness(Mg/l)	No. of Samples
1	Soft	0-60	-
2	Moderately hard	61-120	4
3	Hard	121-180	6
4	Very hard	>180	50

Table-8: Correlation matrix for different water quality parameters

	Ph	EC	TDS	TH	Ca ²⁺	Mg ²⁺	Na ⁺	K ⁺	Hco ₃ ⁻	Cl ⁻	So ₄ ²⁻	
pH	1.0	-0.4697	-0.5004	-0.0502	-0.569	-0.446	-0.4198	0.0326	-0.3033	-0.4669	-0.3894	
EC		1.0	0.7755	0.2606	0.9417	0.6601	0.8589	0.1568	0.3726	0.9503	0.8562	
TDS			1.0	0.2626	0.9417	0.6601	0.8589	0.1568	0.3725	0.9503	0.8562	
TH				1.0	0.8442	0.9818	0.6336	0.5925	0.2384	0.8191	0.7690	
TA					1.0	0.2588	0.2472	0.0319	0.2002	0.3042	0.1601	
Ca ²⁺						1.0	0.7273	0.2155	0.4068	0.9526	0.9221	
Mg ²⁺							1.0	0.5378	0.1509	0.7123	0.6596	
Na ⁺								1.0	0.4684	0.8567	0.8095	
K ⁺									1.0	0.1394	0.2354	
HCo ₃										1.0	0.2651	
Cl ⁻											1.0	
So ₄ ²⁻												1.0

Table-9: Least square of the relation (X=A+BY) among significantly correlated parameters

X(dependent)	y(independent)	Correlation	A	b
EC	TH	0.7755	1.905	0.0064
EC	Ca ²⁺	0.9417	-0.313	0.0708
EC	Na ⁺	0.8589	0.55	0.0079
EC	Cl ⁻	0.9503	1.77	0.0058

EC	SO ₄ ²⁻	0.8562	1.98	0.0039
TH	TDS	0.7755	-3.15	0.147
TDS	Ca ²⁺	0.9417	-200.5	45.35
TDS	Na ⁺	0.8589	353.88	5.08
TDS	Cl ⁻	0.9503	1133.99	3.72
TDS	SO ₄ ²⁻	0.8562	1270.65	2.496
TH	Ca ²⁺	0.8442	-103.76	7.65
TH	Mg ²⁺	0.9819	110.514	5.182
TH	Cl ⁻	0.8191	130.85	0.608
TH	SO ₄ ²⁻	0.7690	145.146	0.421
Ca ²⁺	Mg ²⁺	0.7273	44.229	0.4234
Ca ²⁺	Na ⁺	0.8689	14.966	0.1068
Ca ²⁺	Cl ⁻	0.9526	31.566	0.077
Ca ²⁺	SO ₄ ²⁻	0.9221	31.66	0.0558
Mg ²⁺	Cl ⁻	0.7123	12.698	0.1003
Na ⁺	Cl ⁻	0.8567	235.65	0.566
Na ⁺	SO ₄ ²⁻	0.8095	243.7	0.398
Cl ⁻	SO ₄ ²⁻	0.8785	48.196	0.654

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RJC-621)



REGIONAL LABORATORY MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD
1-A/I.N.S.-1, Avas Vikas Colony, Buddha Vihar, Delhi Road, Moradabad

TEST REPORT: WATER LABORATORY(SURFACE WATER)

Ref no-30312940/Moradabad/2025

Date:18/02/2025

- 1- **Sample Location:** Triveni Engineering & Industries Limited (Near Satyapal House Village Peepali Nayak Tanda Rampur)
- 2- **District:** Rampur
- 3- **Address:** Sugar Unit-Milak Narayanpur
- 4- **Sample Source:** Drain
- 5- **Type of sample :** Surface Water
- 6- **Sample Collected By :** Anil Kumar Vishwakarma,SA, Sri Asif Ali, JLA
- 7- **Odour :** None
- 8- **Quantity and Packing :** 2 Ltr.
- 9- **Date of Sample Collection :** 07/02/2025
- 10- **Analysis Indented by :** RO Moradabad
- 11- **Date of sample receipt in Lab :** 07/02/2025

Parameter	Unit	Results	Detection Range
pH, APHA24th Ed.4500-B: 2023	-	7.84	02-12
Turbidity, APHA24th Ed 2130B	N.T.U	12.8	1-500NTU
Colour, APHA 24th Ed. 2120B: 2023	Hazen	Turbid	5-10000 Hazen
Conductivity, APHA 24th Ed. 2510B :2023	µS/cm	1530	0.1-10000 µS/cm
Suspended Solids , APHA 24th Ed. 2540 D Total Suspended Solids dried at 103-105 °C 2023	mg/l	56.0	5.0 -10000 mg/l
Dissolved Solids, APHA 24th Ed. 2540 °C Total Dissolved Solids dried at 180 °C 2023	mg/l	1140	5.0 -10000 mg/l
BOD, APHA 24th Ed. 3 day 27 °C IS 3025 (Part 44): 1993 Bio 2023	mg/l	38.0	1.0 -1000 mg/l
COD, APHA 24th Ed. 5220 B Open Reflux Method 2023	mg/l	112.0	4.0 -1000 mg/l

*Non-NABL Parameters.

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

Remark:* - NA

Analysed by
[Rajni Raj(JRF)]

Authorized by

Anil Vishwkarma (SA)

Regional Officer

Water Quality Criteria

Designated-Best-Use	Class of water	Criteria
Drinking Water Source without conventional treatment but after disinfection	A	Total Coliforms Organism MPN/100ml shall be 50 or less pH between 6.5 and 8.5 Dissolved Oxygen 6mg/l or more Biochemical Oxygen Demand 5 days 20 °C 2mg/l or less
Outdoor bathing (Organised)	B	Total Coliforms Organism MPN/100ml shall be 500 or less pH between 6.5 and 8.5 Dissolved Oxygen 5mg/l or more Biochemical Oxygen Demand 5 days 20 °C 3mg/l or less
Drinking water source after conventional treatment and disinfection	C	Total coliforms Organism MPN/100ml shall be 5000 or less pH between 6 to 9 Dissolved Oxygen 4mg/l or more Biochemical Oxygen Demand 5 days 20 °C 3mg/l or less
Propagation of Wild life and Fisheries	D	pH between 6.5 to 8.5 Dissolved Oxygen 4mg/l or more Free Ammonia (as N) 1.2 mg/l or less
Irrigation, Industrial Cooling, Controlled Waste disposal	E	pH between 6.0 to 8.5 Electrical Conductivity at 25 °C micro mhos/cm Max. 2250 Sodium absorption Ratio Max. 26 Boron Max. 2mg/l

Source: <http://www.cpcb.nic.in/wqstandards/>



REGIONAL LABORATORY MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD

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

TEST REPORT: WATER LABORATORY(SURFACE WATER)

Ref no-27031562/Moradabad/2024

Date:12/07/2024

- 1- **Sample Location:** Triveni Engineering & Industries Limited (Pond, Village Pipali Nayak, Near Sugar Mill)
- 2- **District:** Rampur
- 3- **Address:** Sugar Unit-Milak Narayanpur
- 4- **Sample Source:** Pond
- 5- **Type of sample :** Surface Water
- 6- **Sample Collected By :** Anil Vishwkarma , SA, Vishal Bharti, LA
- 7- **Odour :** None
- 8- **Quantity and Packing :** 2 liter
- 9- **Date of Sample Collection :** 05/07/2024
- 10- **Analysis Indented by :** RO Moradabad
- 11- **Date of sample receipt in Lab :** 05/07/2024

Parameter	Unit	Results	Detection Range
pH, APHA24th Ed.4500-B: 2023	-	7.48	02-12
Suspended Solids , APHA 24th Ed. 2540 D Total Suspended Solids dried at 103-105 °C 2023	mg/l	262	5.0 -10000 mg/l
Dissolved Solids, APHA 24th Ed. 2540 °C Total Dissolved Solids dried at 180 °C 2023	mg/l	520.0	5.0 -10000 mg/l
BOD, APHA 24th Ed. 3 day 27 °C IS 3025 (Part 44): 1993 Bio 2023	mg/l	48.0	1.0 -1000 mg/l
COD, APHA 24th Ed. 5220 B Open Reflux Method 2023	mg/l	392.0	4.0 -1000 mg/l

*Non-NABL Parameters.

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

Remark:* - NA

Analysed by
[Rajni Raj(JRF)]

Authorized by
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Vishwakarma
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+05'30'
Vishwakarma
Anil Vishwkarma (SA)

Ashutosh Digitally signed by
Ashutosh Chauhan
Date: 2024.07.12
12:29:46 +05'30'
Chauhan
Regional Officer

Designated-Best-Use	Class of water	Criteria
Drinking Water Source without conventional treatment but after disinfection	A	Total Coliforms Organism MPN/100ml shall be 50 or less pH between 6.5 and 8.5 Dissolved Oxygen 6mg/l or more Biochemical Oxygen Demand 5 days 20 °C 2mg/l or less
Outdoor bathing (Organised)	B	Total Coliforms Organism MPN/100ml shall be 500 or less pH between 6.5 and 8.5 Dissolved Oxygen 5mg/l or more Biochemical Oxygen Demand 5 days 20 °C 3mg/l or less
Drinking water source after conventional treatment and disinfection	C	Total coliforms Organism MPN/100ml shall be 5000 or less pH between 6 to 9 Dissolved Oxygen 4mg/l or more Biochemical Oxygen Demand 5 days 20 °C 3mg/l or less
Propagation of Wild life and Fisheries	D	pH between 6.5 to 8.5 Dissolved Oxygen 4mg/l or more Free Ammonia (as N) 1.2 mg/l or less
Irrigation, Industrial Cooling, Controlled Waste disposal	E	pH between 6.0 to 8.5 Electrical Conductivity at 25 °C micro mhos/cm Max. 2250 Sodium absorption Ratio Max. 26 Boron Max. 2mg/l

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Water Quality Assessment of Pond Water of Kalanaur Block, Rohtak, Haryana

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Abstract: Various physico-chemical characters of pond water of selected villages of Kalanaur block of Rohtak district in Haryana were compared with WHO and Indian standards. Most of the samples were highly polluted due to higher values of conductivity, turbidity, TDS and dissolved ions and were out of the permissible limits. The results suggested that the water quality of these freshwater bodies is rapidly declining. Regularly updating the data on pond water and appointment of pond managers can help to conserve these freshwater ecosystems.

Keywords: Freshwater, Physico-chemical, Village ponds, Water quality

Water is the basic and most essential requirement for life on earth. All living organisms require water for survival, growth, reproduction and other life processes. About 71% of Earth's surface is covered with water and oceans account about 96.5% of the total water. Earth surface has limited sources of freshwater and it contributes only 2.5% to total water on Earth (Hu et al 2018). It is mainly the freshwater, which is valuable for human beings for drinking and irrigation. Major sources of freshwater are glaciers, rivers, lakes and ponds. From human health to proper functioning of an ecosystem everything depends upon the water (Costanza et al 2017). A pond is a small area of still and fresh water, which holds water for four or more months in a year and is between 1 m² to 20,000 m² in area (Biggs et al 2005). Ponds are the most dynamic and productive freshwater ecosystems with stunning biological diversity. Ponds cover nearly 30% of global water by surface area (Downing et al 2006). Pond ecosystems help in groundwater recharging, supports livestock, prevention of soil erosion, water purification and most importantly in carbon sequestration (Sarma and Saikia 2010, Kumar and Padhy 2015, Nag et al 2019). Ponds provide many ecosystem services free of cost to human beings including social, cultural, economic, scientific, medicinal and aesthetic, etc. (Gupta et al 2012). In spite of having a central role in the life of all organisms, ponds are continuously being degraded due to anthropogenic activities viz. industrialization, urbanization, habitat loss, pollution, etc. (Mishra et al 2014, Chen et al 2019). Due to lack of proper sanitation facilities, most of the people in villages use pond catchment areas for defecation purpose (Adhikary 2016). Increased salinity, acidic content and heavy metal content are some of the consequences of deterioration and

degradation of water quality in these ponds (Nwani et al 2010, Ritchie and Olson 2015, Gerdol et al 2018).

India being an agricultural country has high requirement of freshwater for irrigation purpose. Ponds are mainly exploited by rural people to sustain their life. India has achieved only 71.8% of the target to provide the rural population with safe, adequate and drinking water and is also far behind at achieving its Sustainable Development Goal (SDG) on clean water and sanitation. Thus, conservation of ponds is important in the present scenario to deal with climate change where drought, floods and erratic rainfall are common. Lack of awareness and understanding has somehow hindered the conservation of pond ecosystems. At the national level, various initiatives have been taken by the government of India. National Wetland Conservation Programme (NWCP) was operationalized by the Government of India in close collaboration with concerned State Governments. Recently, Government of India has set up a separate ministry, 'Jal Shakti' to manage and conserve the local water bodies. As a part of the outreach initiative, Maharshi Dayanand University, Rohtak (Haryana) has adopted five villages of Kalanaur block in Rohtak district. Hence, the present study was conducted in these villages to study quality of pond water.

MATERIAL AND METHODS

Study area: Kalanaur block is located in Rohtak district of Haryana, India. The geographical coordinates of the block are 28.8312°N and 76.3956°E. This block receives an average annual rainfall of 44.3cm. The highest temperature recorded is 46°C and the lowest temperature recorded is 4°C. In summers the temperature ranges from 23°C-45°C.

Soil is sandy loam in nature. Bhali Anandpur, Balab, Baniyani, Marodhi Jattan and Marodhi Rangran were the villages selected for physico-chemical analysis of pond water from Kalanaur block of Rohtak district, Haryana (India).

Sample collection: Water samples for analysis were collected from fourteen ponds from five selected villages. Sample collection was carried out from February to April 2018 in morning hours before noon. The bottles were washed with detergent and dilute nitric acid before sampling. Finally, the de-ionized water was used to rinse the sampling bottles and then dried in sunlight. Samples were collected in plastic bottles from each sampling point. After taking the samples the bottles were marked with sampling numbers (Table 1). The samples were collected and preserved in an icebox and were brought to the laboratory of Botany Department, Maharshi Dayanand University, Rohtak, Haryana.

Sample analysis: Physical parameters viz. temperature, pH, conductivity, turbidity and salinity were measured using mercury thermometer, pH meter (ESICO-1615), conductivity meter (ESICO-1615), portable turbidity meter and portable salinity meter, respectively. Sodium and Potassium ion concentration was determined using Flame Photometer (ESICO, Model No.-381) against the standard solutions of NaCl and KCl at different light intensities (Amrutkar 2013). Calcium, Magnesium and total hardness were measured using titration methods. Chloride, carbonate and bicarbonate concentrations were measured using titration methods of Gupta (2000) with minor modifications. The amount of sulphate in the collected samples was measured with little modifications in accordance with (BIS 2003, IS: 3025, Part 24 Reaffirmed 2003).

Statistical Analysis: The data collected was suitably tabulated and analysed. Coefficient of correlation (r) among different parameters were also calculated.

RESULTS AND DISCUSSION

The ponds are backbone of rural society. Villagers depend upon village ponds for source of fresh water. In these areas the main occupation is agriculture and animal husbandry. They depend on pond water for cattle drinking, bathing and also for irrigation. But due to continuous decrease in water quality, ponds can no longer be used as a source of water. From the present study, it was observed that most of the village ponds have physical and chemical parameters out of acceptable limit.

Physical Parameters

Colour, odour and temperature: The colour and odour in a natural water body are mainly due to the presence of phytoplankton and zooplankton. Most of the samples were greenish to yellowish in colour. S_1 was blackish and S_2 was

Table 1. Name of villages and ponds selected for sample collection

S. No.	Name of pond	Name of village	Latitude	Longitude
S_1	Bada johr	Bhali Anandpur	28°52'44"N	76°30'38"E
S_2	Guhae johr	Bhali Anandpur	28°52'58"N	76°30'31"E
S_3	Pirali johr	Bhali Anandpur	28°52'50"N	76°30'15"E
S_4	Tarne wala johr	Baniyani	28°51'04"N	76°30'34"E
S_5	Budha johr	Baniyani	28°50'54"N	76°30'33"E
S_6	Thakuron wala johr	Baniyani	28°50'59"N	76°30'46"E
S_7	Sati wala johr	Marodhi Jattan	28°50'13"N	76°31'24"E
S_8	Nanu wala johr	Marodhi Jattan	28°50'05"N	76°31'29"E
S_9	Dalla wala johr	Marodhi Jattan	28°49'58"N	76°31'27"E
S_{10}	School wala johr	Marodhi Rangran	28°50'01"N	76°31'12"E
S_{11}	Choudhary wala johr	Marodhi Rangran	28°50'12"N	76°31'15"E
S_{12}	Mandir wala johr	Balab	28°47'56"N	76°30'30"E
S_{13}	Badi wali johr	Balab	28°47'59"N	76°30'52"E
S_{14}	Semali johr	Balab	28°47'53"N	76°30'53"E

turbid. Odour for most of the samples was non-agreeable. The temperature of samples ranged from 19.9°C to 27.6°C and was within permissible limits. The colour and odour are indicators of water quality of fresh water bodies (Dhanalakshmi et al 2013). Further, colour does not affect the aquatic organism directly, but it prevents the light penetration and reduces the growth of aquatic plants (Olopade 2013). The green colour represents higher planktons and light green color represents low planktons level (Das 1997). Some village ponds were covered with cow dung cakes. The black colour of village ponds may be due to dumping of cow dung cakes with rainwater within the ponds. The odour of the water may be due to the organic and inorganic contaminants in water (Table 2).

pH: The value of pH ranged from 7.4-9.0 and was within acceptable limits as specified by Indian standard (BIS 2012). The maximum value of pH was recorded for S_{14} and minimum for S_2 .

Conductivity: The recorded conductivity ranged from 1382-9970 $\mu\text{-mho cm}^{-1}$. The maximum conductivity was recorded in S_{14} (9970 $\mu\text{-mho cm}^{-1}$) and minimum in S_3 (1382 $\mu\text{-mho cm}^{-1}$). The acceptable limit for conductivity is 600 $\mu\text{-mho cm}^{-1}$ (WHO 2018). When compared to WHO standard all the samples were out of the acceptable limit.

Turbidity: Turbidity of water is due to the suspension of particles and these suspension particles make the solution to appear cloudy. Turbidity recorded in the water samples ranged from 04 to 46 Nephelometric Turbidity Units (NTU). The maximum value of turbidity was recorded in S_2 (46 NTU)

and the minimum value of turbidity was recorded in S₅ (4 NTU). In context with turbidity, the results were in concordance with Senthilkumar et al (2017) and Muralidaran et al (2017). The fresh water bodies may get contamination from soil runoff that increases the turbidity (EPA 2000, Schwartz et al 2000).

Total dissolved solids (TDS) and salinity: The TDS ranged from (908 ppm) in S₃ to (6600 ppm) in S₁₄. According to Indian standard (BIS 2012), the acceptable limit of TDS for drinking water is specified at 500 ppm. All the samples were out of acceptable limits. Maximum salinity was reported in S₁₄ (4960 ppm) and minimum in S₃ (680 ppm). The change in salinity might be due to changes in total solids. High level of TDS is an indicator of increased nutrient content which results into eutrophication of aquatic bodies (Singh and Mathur 2005, Verma et al 2012).

Chemical Parameters

Chloride: Chloride anions recorded in pond water samples ranged from 207.5-1614.5 mg l⁻¹ (Table 3). Maximum in S₁₄ (1614.5 mg l⁻¹) and minimum in S₁₁ (207.5 mg l⁻¹). The permissible limit of chloride content is 250 mg/l (BIS 2012). The high chloride content in water samples may be due to the high rate of sedimentation and evaporation. All other samples were out of acceptable limit. The higher concentration of chloride ions in freshwater bodies is an indication of pollution by dumping of domestic sewage. High concentration of chloride ions in natural freshwater bodies is due to

anthropogenic impacts viz. dumping of village waste, cow dung cakes, washing of agricultural tools and tractors, washing of clothes and invasive plants (Singh 2017).

Calcium: Maximum value of calcium cation was recorded in S₁₄ (516.2 mg l⁻¹) and minimum in S₃ (44.1 mg l⁻¹). According to Indian standard (BIS 2012), the acceptable limit of calcium for drinking water is specified at 75 mg l⁻¹. Almost half of the collected samples were out of permissible limits.

Magnesium: Magnesium ions recorded in the pond water samples ranged from 101.5-454.9 mg l⁻¹. Maximum magnesium content was reported in S₁ (454.9 mg l⁻¹) and minimum in S₂ (101.5 mg l⁻¹). According to Indian standard (BIS 2012), the acceptable limit is 30 mg l⁻¹. High concentration magnesium may be due to washing away of nutrients into the ponds with rainwater, from a widespread agricultural area. When the samples were compared with Indian standard, it was reported that all the samples were out of acceptable limit. It may be due to the washing away of nutrients into the ponds with rainwater, from a widespread agricultural area and thus resulting in the increase in level of magnesium ions.

Sulphate: Sulphate is a naturally occurring ion in freshwater bodies. Sample S₁₄ (466.3 mg l⁻¹) was reported to have a maximum value of sulphate and minimum was reported in case of S₉ (18.6 mg l⁻¹). According to Indian standard (BIS 2012), the acceptable limit is 200 mg l⁻¹. The high concentration of sulphate may be due to the extensive growth

Table 2. Physical parameters of the analyzed samples

S. No.	Colour	Odour	Temperature (°C)	pH	Conductivity (μ-mho/cm)	Turbidity (NTU)	TDS (ppm)	Salinity (ppm)
S ₁	Blackish	Non-agreeable	22.1	8.5	4290	18	3290	2330
S ₂	Turbid	Non-agreeable	19.9	7.4	4110	46	2160	2000
S ₃	Light green	Agreeable	24.0	7.8	1382	26	908	680
S ₄	Light green	Non-agreeable	26.7	7.9	2540	10	1790	996
S ₅	Light green	Non-agreeable	26.9	7.5	2980	04	1910	1490
S ₆	Green	Non-agreeable	22.9	7.6	4490	09	2950	2320
S ₇	Yellowish	Non-agreeable	25.1	8.2	3540	08	2300	1720
S ₈	Green	Non-agreeable	23.7	8.7	3560	23	2370	1770
S ₉	Green	Non-agreeable	27.6	8.0	5640	30	3600	2830
S ₁₀	Yellowish	Non-agreeable	26.3	8.4	5140	06	3420	2560
S ₁₁	Yellowish	Non-agreeable	26.6	8.4	3850	34	2660	1900
S ₁₂	Light green	Non-agreeable	24.1	8.1	2410	13	1590	1190
S ₁₃	Green	Non-agreeable	26.5	8.1	6740	16	4490	3380
S ₁₄	Green	Non-agreeable	25.3	9.0	9970	38	6600	4960
Permissible limits								
Range	-	-	-	6.5-9.2	600	1	500	-
Ref.	-	-	-	BIS 2012	WHO 2018	BIS 2012	BIS 2012	-

of water hyacinth (Aneja and Singh 1992). When sulphate samples were compared with Indian standard it was reported that the samples (S_2 , S_3 , S_5 , S_6 , S_7 , S_8 , S_9 , and S_{11}) were within the acceptable limits. The results were in concordance with Senthilkumar et al (2017) and Dubey (2017).

Sodium: Sodium level recorded in the pond samples ranged from 57-460 mg l⁻¹. The maximum sodium concentration was recorded in S_{14} (460 mg l⁻¹) and minimum in S_3 (57 mg l⁻¹). According to (WHO 2006) standard acceptable limit for sodium is 200 mg l⁻¹. Pollution due to human waste disposal in the form of soap solution and detergents might be the cause of high sodium content in ponds. Pond samples viz. S_3 , S_4 , S_5 , S_6 , S_7 , S_{10} and S_{12} were within the acceptable limit. The high concentration of sodium in natural freshwater bodies is mainly due to pollution such as soapy solution, detergent, human and animal waste disposal, precipitation runoff, sewage disposal, mineral deposits and water treatment chemicals such as sodium fluoride, sodium bicarbonate and sodium hypochlorite etc. (Singh 2017).

Potassium: Potassium concentration recorded from water samples ranged from 73-525 mg l⁻¹. The maximum value of potassium was recorded in S_{14} (525 mg l⁻¹) and minimum in S_{12} (73 mg l⁻¹). The acceptable limit of K⁺ for drinking water is specified at 10 mg l⁻¹ (WHO 2018). All water samples were out of acceptable limit. The results also show similarity with the recent studies conducted by Gulia et al (2017) and Akhtar and Rai (2018) for high range of potassium in pond water.

Carbonate: The carbonate anions recorded in pond water samples ranged from 0-120 mg l⁻¹. S_{14} (120 mg l⁻¹) had a maximum value of carbonate ions and most of the other samples had no carbonate content. The carbonate was found nil in more than half of the water samples. The reason for low carbonate was high pH in all the samples because higher pH makes a solution more alkaline and thus less carbonic acid dissociates into carbonate ions.

Bicarbonate: The bicarbonate anions recorded in pond water samples ranged from 414.8-1708 mg l⁻¹. S_{14} (1708 mg l⁻¹) had maximum bicarbonate content and S_5 and S_{12} (414.8 mg l⁻¹) had minimum bicarbonate content. According to Indian standard (BIS 2012), the acceptable limit is 200 mg l⁻¹. Most of the samples had a high concentration of bicarbonate anions.

The dumping of village waste in the ponds is the leading factor for degradation. Most of the villages have very poor drainage system and there is no separate disposal of village waste. Hence, the waste water of most of villages is thrown in ponds. The village waste water contains detergents, cow dung, rotten vegetable waste and many other organic compounds which make the water rich in organic material. There is lack of proper sanitation facilities in most of the houses in villages which results in direct dumping of human excreta in these fresh water bodies. Some religious ponds are also used by villagers for dumping of religious and ceremonial waste i.e. *puja samagri* and garlands in the ponds. Yadav et al (2013) also reported that the ponds surrounded by temple

Table 3. Chemical parameters of analyzed samples

S. No.	Chloride (mg l ⁻¹)	Calcium (mg l ⁻¹)	Magnesium (mg l ⁻¹)	Sulphate (mg l ⁻¹)	Sodium (mg l ⁻¹)	Potassium (ppm)	Carbonate (mg l ⁻¹)	Bicarbonate (mg l ⁻¹)
S_1	925.0	73.8	454.9	345.0	395	187	0	1039
S_2	714.5	230.8	101.5	96.7	256	192	0	1202
S_3	368.4	44.1	175.4	53.0	57	81	0	495.3
S_4	702.9	85.8	350.7	210.1	110	200	0	927.2
S_5	974.1	104.2	311.6	132.5	92	130	0	414.8
S_6	1124.6	393.6	348.1	59.5	131	325	0	1342
S_7	779.6	64.9	319.1	166.4	140	112	0	805.2
S_8	1050.2	359.9	263.7	22.8	260	190	0	1634.8
S_9	869.6	44.9	237.3	18.6	315	210	0	976
S_{10}	707.2	62.5	349.4	299.9	138	275	36	986
S_{11}	207.5	287.0	135.8	111.5	245	300	60	1122.4
S_{12}	620.5	44.9	267.6	238.5	112	73	0	414.8
S_{13}	1028.5	406.4	117.3	329.6	360	230	36	976
S_{14}	1614.5	516.2	261.0	466.3	460	525	120	1708
Permissible limits								
Range	250	75	30	200	200	10	75	200
Ref.	BIS 2012	BIS 2012	BIS 2012	BIS 2012	WHO 2006	WHO 2018	BIS 2012	BIS 2012

Table 4. Correlation among different parameters from analyzed samples

Parameters	pH	EC	Turbidity	TDS	Salinity	Cl ⁻	Ca ²⁺	Mg ²⁺	SO ₄ ²⁻	Na ⁺	K ⁺	CO ₃ ²⁻	HCO ₃ ⁻
pH	1												
EC	0.518	1											
Turbidity	0.154	0.336	1										
TDS	0.591	0.989	0.272	1									
Salinity	0.521	0.996	0.330	0.989	1								
Cl ⁻	0.320	0.729	-0.013	0.726	0.720	1							
Ca ²⁺	0.327	0.656	0.363	0.637	0.651	0.587	1						
Mg ²⁺	0.187	-0.085	-0.636	0.003	-0.065	0.289	-0.497	1					
SO ₄ ²⁻	0.532	0.601	-0.080	0.655	0.596	0.438	0.221	0.254	1				
Na ⁺	0.584	0.798	0.547	0.815	0.814	0.546	0.544	-0.118	0.492	1			
K ⁺	0.488	0.841	0.348	0.843	0.828	0.577	0.742	-0.005	0.454	0.596	1		
CO ₃ ²⁻	0.633	0.785	0.390	0.794	0.766	0.374	0.618	-0.218	0.627	0.563	0.836	1	
HCO ₃ ⁻	0.525	0.638	0.462	0.628	0.632	0.558	0.769	-0.026	0.139	0.643	0.770	0.495	1

receives larger amount of organic and inorganic waste from temples. The pond peripheries are used by villagers for sun drying of cow dung cakes. Gupta et al (2012) conducted study on village ponds of Haryana and also reported the ill impact of cow dung cakes on village ponds.

The EC and TDS, EC and Salinity, TDS and Salinity were closely correlated to each other and value of the r approaches to unity. The correlation between Mg²⁺ and TDS, Mg²⁺ and K⁺ were not significant (Table 4).

CONCLUSIONS

Foul smell from all the samples indicated impurities present in the pond water. Among physical parameters, turbidity and TDS in all the samples were out of permissible limits. According to Indian standard chloride and magnesium, potassium contents were out-off the acceptable limits. Almost half of the samples had more than permissible levels of calcium, sodium and sulphate. So, from the results obtained in the present study, it can be concluded that most of the ponds in these villages were highly polluted and the rest were moderately polluted. Also, due to over-exploitation these water bodies are continuously being deteriorated and degraded. The water from these ponds is unsuitable for human and animal consumption. Assessment and monitoring of pond water should be done on a regular basis. Collective and collaborative efforts by the government and local people can help to conserve and protect these water bodies. Regular monitoring, awareness campaigns and improved regulation of the ponds may help in conservation of these ponds.

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Comparison of the Output Voltage Characteristics Pattern for Sewage Sludge, Kitchen Waste and Cow Dung in Single Chamber Single Electrode Microbial Fuel Cell

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Abstract

Background/Objectives: The demand of energy is increasing exponentially worldwide. This demand is mostly supplied by the fossil fuels, which is a nonrenewable source of energy. The most recently, renewable source of energy, Microbial Fuel Cell (MFC) is attracting the scientist over the globe for research. **Methods/Statistical Analysis:** MFC is a promising green technology which simultaneously generates direct electricity through metabolic activities of the microbes and also treating the organic waste. This technology is not commercialized yet, but holds a promising future, both in terms of energy production and waste reduction. In the present work, a Single chamber single electrode Microbial Fuel Cell (MFC) has been fabricated to generate electricity from sewage sludge, cow dung and kitchen waste at an ambient temperature of $32 \pm 10^\circ\text{C}$. The performance on the basis of voltage obtained, surface power density and COD reduction have been evaluate for those different substrate on same ambient condition. **Findings:** The change in pH is also recorded for all the substrate used. The maximum voltage output of 1652 mV is obtained with sewage sludge on the 5th day (120 hrs.) with the surface power density of 988.32 mW/m^2 . The maximum voltage obtained from kitchen waste is about 657 mV on 8th day (192hrs.) and in case of cow-dung the maximum voltage is about 452 mV on 8th day (216hrs.). Almost constant output voltage of about 350 mV for a month can be harvested with cow dung. At the end of the 29th day, the maximum COD reduction for the cow dung was 50%. **Applications/Improvements:** When comparing with other single chamber single electrode MFC, the present model is generating more electricity that any MFC using sewage sludge as substrate except platinum electrode, which is much costlier that electrode used in the present study.

Keywords: Graphite Electrode, Microbial Fuel Cell, Used Dry Cell Voltage

1. Introduction

The Microbial Fuel Cell (MFC) is a promising green technology which simultaneously generates direct electricity through metabolic activities of the microbes and also treating the organic waste. Microorganisms oxidize organic matters aerobically or anaerobically generating electrons and protons. The generated electrons are transferred from the anode to the cathode through an external circuit¹. This MFC technology is also being used as biosensor and for the

generating bio-hydrogen^{2,3}. The performance of MFC is mainly depends upon various factors such as electrode materials, substrate and its concentration and microbe, pH, temperature and ionic strength of the substrate. The microbial fuel cells are operated successfully with electrodes such as Platinum, Graphite, Fine woven graphite felt, Carbon woven graphite felt, Carbon paper, Reticulated Vitreous Carbon (RVS). Both pure compounds such as glycerol, acetate, starch, glucose, cysteine, and ethanol⁴ as well as complex organic

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matter such as wastewater⁵, cow dung⁶, kitchen waste⁷ is successfully used as a substrate in MFCs. There are several microorganisms that possess the ability to transfer the electrons obtained from the metabolism of organic matters to the anode through biofilm formation. Some of the microorganism which has been studied in MFC are *Shewanella putrefaciens*, *Geobacteraceae sulfurreducens*, *Geobacter metallireducens* and *Rhodospirillum rubrum*⁸. There are number of ways in which MFC can be constructed but all these can be broadly classified into two types. Dual Chamber MFC, consisting of two chamber containing anode and cathode, separated by Proton Exchange Membrane (PEM) or sometime salt bridge. Single chamber MFC consisting of a single chamber containing anode without any aerated cathode chamber. The anode chamber is coupled to a porous air-cathode exposed directly to the air. The Single Chamber MFC is cheaper and simple in design than that of dual Chamber MFC. The H shaped traditional dual chamber is bulky due to two separate anodic and cathodic chambers. From India, the maximum potential difference of 423 mV was recorded from wastewater with the COD removal 62.5% at ambient temperature of $28 \pm 2^\circ\text{C}$ using double chamber MFC^{9,10}. In case of cow dung and composite canteen food waste using double chamber MFC the maximum potential difference of 320 mV and 398 was reported from India. The COD removal data corresponding to the potential difference are not reported. In our present studies for the first time, we have modified the conventional single chamber MFC such way that same electrode can be used as anode and cathode (Figure 1(a)). In conventional single chamber MFC in which anode and cathode are completely different material in design and composition. In our MFC the part of the electrode which is exposed to air acts like cathode which is connected with anode through external circuit. The substrates used are domestic sewage sludge, kitchen waste and cow dung.

2. Materials and Methodology

2.1 Collection of Sample

The sewage sludge is collected from the waste water treatment plant and the kitchen waste is collected from the hostel mess at VIT, University, Vellore campus. The cow-dung was collected from the dairy opposite to VIT, University, Vellore campus. The physiochemical characteristics of the substrates used in MFC are shown in the Table 1.

Table 1. Physiochemical characteristics of sewage sludge, kitchen waste and cow dung

Sl. No.	Parameters	Sewage Sludge	Kitchen waste	Cow Dung
1	COD	80000 mg/l	60000 mg/l	32000 mg/l
2	% of Total Solid	17.2	16.4	15.75
3	% of Volatile Solid	11.6	12.1	11.3
5	Colour	Grey	Pale Yellow	Brown
6	pH	5.3	6.8	7.1

2.2 Fabrication

Three set of MFC of similar type were fabricated for each type of substrate (sewage sludge, kitchen waste, and cow dung). Each type of MFC consists of six substrate chamber which contain 180 ml of substrate with electrode fixed in it and shown in Figure 1(c). Each graphite electrode are connected externally in series with copper wire have been used in this present study. The electrodes are partially submerged in the substrate and partially exposed to atmosphere acting as anode and cathode respectively. About 70% of the total lengths of the electrode were in the sludge and the rest 30% of the length was exposed to the air. The graphite electrodes having 10 mm diameter and 57 mm length were extracted from the used dry cell, before using the electrodes were cleaned with 0.1 M HCl and stored in distilled water for 12 hours. The 70% of the length (40 mm) is anode and 17 mm as cathode, hence the surface area of an anode is 1256 mm². The copper wires used for connecting the electrode had the resistance of 0.7 ohms. These six electrodes were fixed in the plastic containers with copper wires and are connected in series externally. The collected substrates were mixed uniformly and was poured into the container and allowed the bacteria present in it to grow and start the metabolic activities in aerobic condition.

2.3 Performance Evaluation Criteria

The three sets of the MFC operated in sewage sludge, kitchen waste and cow dung have been evaluated for maximum voltage output at ambient temperature range of $32 \pm 10^\circ\text{C}$. The voltage output were recorded by the Calibrated multimeter (Model No. MAS83OL) for all the three SETs across the resistor of 1000 ohm at the regular interval of 8 hrs till the output voltage and diminished to

zero (least count of the multimeter is 0.01 mV). The surface power density P (mW/m^2) is calculated as $P = V^2 / (R \times A \times 1000)$, where V (mV) is the measured fuel cell voltage, R (ohm) external resistant and A (m^2) projected surface area of the anode 1000 is needed for maintaining the units. Apart from the voltage measurement the change of pH of each substrate in MFC was also monitored during the study. The experiment is continued till substantial amount of electricity is generated and after that period the available COD of the substrate is measured to identify the reduction of COD.

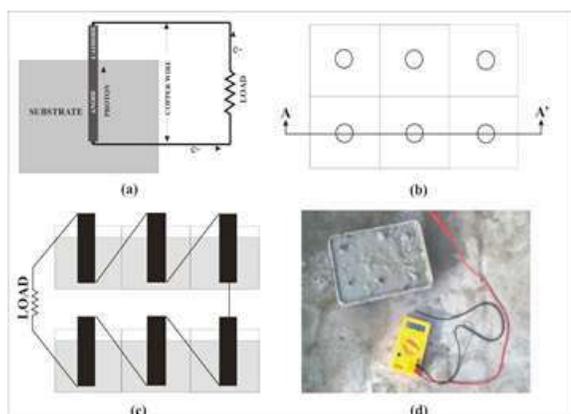


Figure 1. Single chamber single electrode MFC. (a) Circuit diagram of single cell of single chamber single electrode MFC. (b) Schematic representation top view of the setup. (c) Schematic representation of the circuit diagram of single chamber single electrodes MFC in series. (d) Photograph of the experimental setup of the combination of single chamber single electrode.

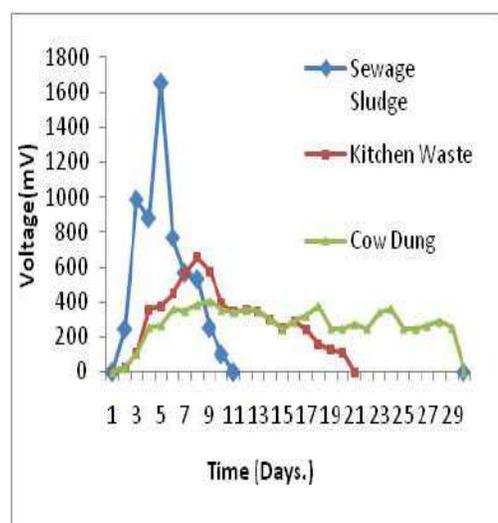


Figure 2. Voltage output for sewage sludge, kitchen waste and cow-dung at $32 \pm 10^\circ\text{C}$.

3. Results and Discussion

3.1 Sewage Sludge

The MFC using sewage sludge has the maximum voltage output of 1652 mV which would achieve on 5th day (120 hrs.). The generation of electricity was substantially slowed down after 11 days (Figure 2). The pH was increased from 5.3 at first day to 6.0 at eleventh day. The overall COD removal was from 80000 mg/L to 56000 mg/L (Figure 3).

3.2 Kitchen Waste

The MFC using kitchen waste has the maximum voltage output of 657 mV which would achieve on 8th day (192 hrs.). The generation of electricity was substantially slowed down after 21 days (Figure 2). The pH was decreased from 7.1 to 5.4 at the end of the experiment. The overall COD removal was from 60000 mg/L to 45000 mg/L (Figure 3).

3.3 Cow Dung

The MFC using cow dung has the maximum voltage output of 452 mV which would achieve on 9th day (216 hour). The generation of electricity was continued for almost one month (Figure 2). The pH was increased from 6.8 at first day to 8.3 at the end of the study. The overall COD removal was from 32000 mg/L to 16000 mg/L (Figure 3).

From the result it is evident that the sewage sludge gives the highest voltage output compared to all the three substrates operated under same ambient condition in our fabricated MFC model. The change of voltage for this substrate is much intense than other substrates and the generation of electricity almost stopped after 11 days, which is much shorter compared to cow dung, i.e., almost one month. The MFC which used cow dung as substrate generate lowest electricity among the three but it was very much stable compared to the other.

Reduction of COD was highest in cow dung which is around 50% compared to 30% and 25% for sewage sludge and kitchen waste (Figure 3).

4. Conclusions

The highest surface power density found to be 988.3 mW/m^2 from sewage sludge. This value when compared

Table 2. Comparison of the present study results (the maximum voltage and/or power density) with the reported results.

Substrate	Electrode	Voltage	Power density	Refs.
Sewage sludge	Graphite	NA	152 mW/m ²	10
	Platinum, polyaniline-co-modified	NA	6000 mW/m ²	10
Present study	Graphite	1652 mV	988.3 mW/m ²	
Kitchen waste	Graphite	398 mV	NA	7
	Present study	Graphite	657 mV	57.27 mW/m ²
Cow dung	Graphite	320 mV	NA	6
	Present study	Graphite	452 mV	27.11 mW/m ²

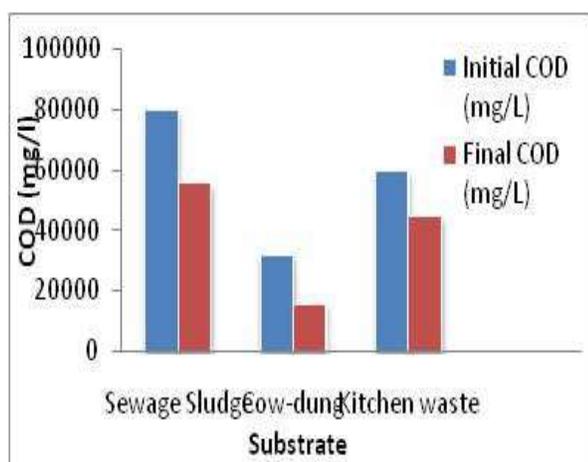


Figure 3. The COD reduction for sewage sludge cow-dung and kitchen waste and cow-dung.

with any other reported study on MFC which used sewage sludge as substrate was found to be very encouraging (Table 2). The maximum peak voltage is also obtained in lesser days than that of kitchen waste and cow dung. Thus, the most suitable candidate for production of electricity using microbial fuel cell is the sewage sludge but the digestion period is low. There is problem of change in polarity. For the food waste the peak is higher than cow-dung but again here there is problem of polarity change. In case of cow-dung there is almost constant power output but the peak is not very high it could be increase by adding some mediators.

When the reduction of COD level in all the substrate was compared against the maximum voltage output produced, it has been found that the sewage sludge most efficiently produce electricity from the substrate, i.e., 63.7

mV/gm COD reduction compared to 40.6 mV/gm COD reduction and 26.16 mV/gm COD reduction for kitchen waste and cow dung respectively, though COD reduction was highest in cow dung. That indicates the reduction of COD for cow dung was not mostly contributing to the generation of electricity. On the other hand the decrease of pH for the kitchen waste indicates high proton-transfer resistance in that MFC. This is a very preliminary study for the performance of electricity generation through our developed MFC. The result is very encouraging though more details study is required to understand and optimize various designing parameters which is ongoing stage.

5. Acknowledgement

We are very grateful to Vellore Institute of Technology for the financial support to carry out the above project work.

6. References

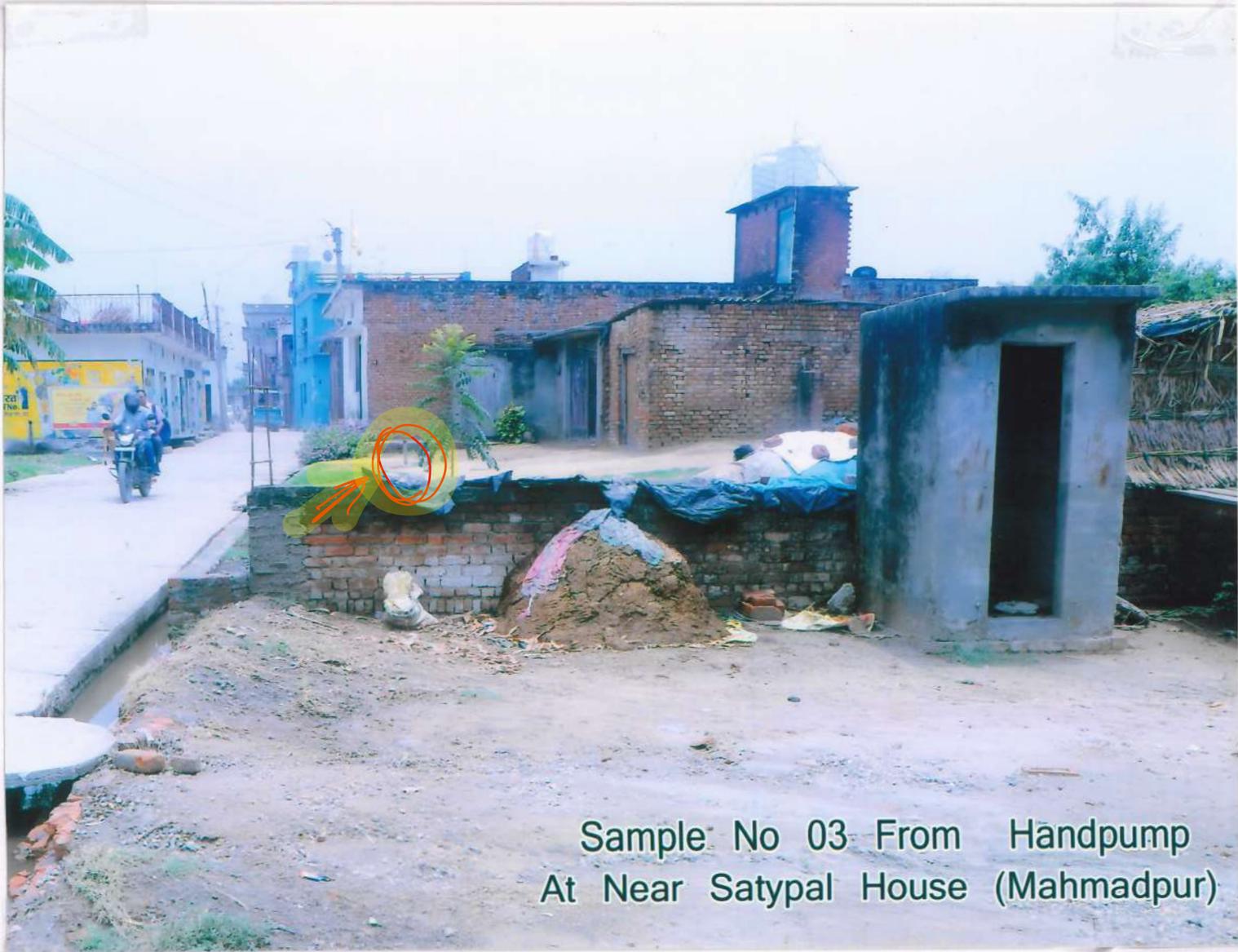
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Pond

At Near Satypal House (Mahmadpur)





Pond
At Near Satypal House (Mahmadpur)

ANNEXURE S

Source Apportionment Study Report on Groundwater Contamination in Village- Mahmadpur, Tehsil-Tanda, Distt- Rampur, Uttar Pradesh

Dated- 05 May 2025

1. Introduction

This report presents primarily a **Source Apportionment Study** of groundwater contamination in the vicinity of **Village Mahmadpur, Tehsil-Tanda, District-Rampur** based on sampling data collected by joint inspection committee in the year 2020, visual analysis, the report of the Pond dtd 12.07.2024 provided by M/s Triveni Engineering and Industries Ltd (Sugar Unit). The study evaluates groundwater quality from four hand pumps in nearby village- Mahmadpur and assesses potential contamination sources.

Key Observations:

- The industry is **located around 500 m distance from the contaminated Handpump.**
- **Surface water flow direction is** from affected hand pump to Triveni plant as per google elevation.
- **Ground water movement** is from North-West to South-East as per ground water contour map.
- **No industrial drain connects the plant to the affected region (Handpump).**
- Contamination may arise from **Natural geological factors or other anthropogenic sources such as-**
 1. A pond which is situated in village Mahmadpur in west direction on 150 m distance from affected handpump/well, in which sewage water of village is accumulated.
 2. Seepage from sewage drains of nearby area.
 3. Seepage from septic tanks in most of the houses in the area.
 4. Garbage and cow dung are dumped in and on the bank of pond and it goes into the pond with runoff, leads to contamination in the pond and finely seep to ground water.

2. Methodology

2.1 Sampling Locations

Four groundwater samples were collected from hand pumps in nearby villages:

Sample No.	Location	Coordinates	Depth (ft)	Proximity to Industry
GW-01	Mahmadpur Hand Pump	29.02550524, 78.98428206	40-50	550 m from Industry
GW-02	Hand Pump near Plant Boundary Wall	29.02844772, 78.98750271	200	80 m from Industry
GW-03	Mahmadpur Hand Pump (Near Satypal House)	29.025984, 78.985311	50	450 m from Industry
GW-04	Hand Pump near ITI (Sarakthal)	29.02267045, 78.99061869	50-60	600 m from Industry

2.2 Analytical Parameters

- **Physicochemical:** pH, Conductivity, TDS, COD, BOD, Total Hardness, Sulphate (SO₄)
- **Heavy Metals:** As, Cd, Cr, Cu, Fe, Mn, Ni, Pb, Sb, Se, V, Zn

2.3 Standards for Comparison

- **Bureau of Indian Standards (BIS) Acceptable & Permissible Limits**
-

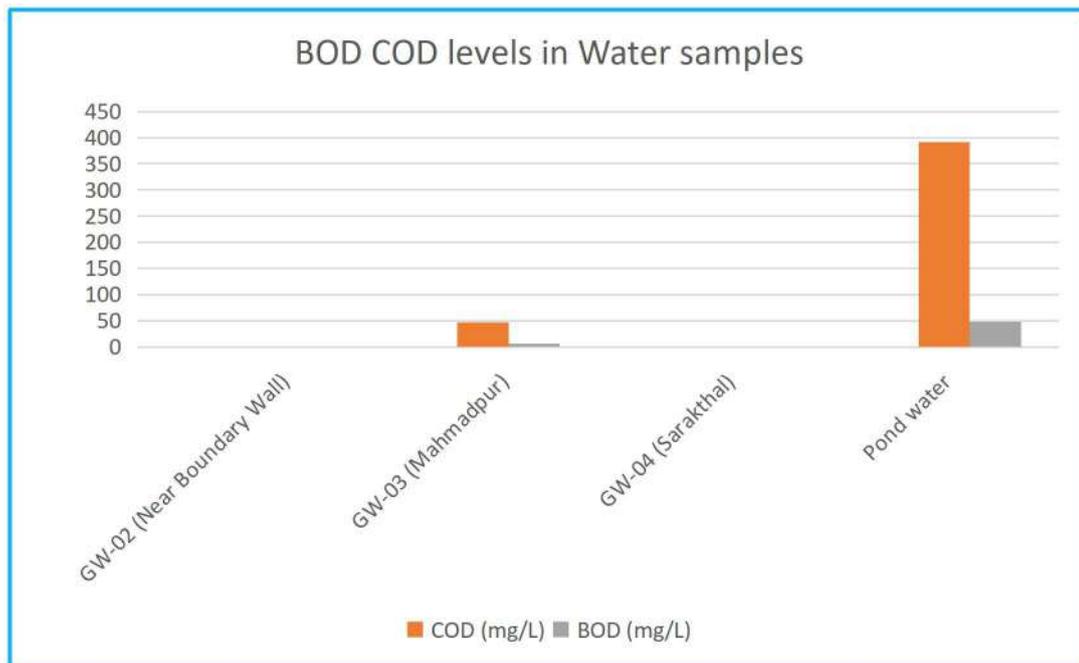
3. Results & Discussion

3.1 Physicochemical Parameters

Parameter	GW-01 (Mahmadpur)	GW-02 (Near Boundary Wall)	GW-03 (Mahmadpur) Affected Handpump	GW-04 (Sarakthal)	Pond water	BIS Acceptable Limit	BIS Permissible Limit
pH	6.4	7.7	6.8	6.8	7.48	6.5-8.5	6.5-8.5
Conductivity ($\mu\text{S}/\text{cm}$)	970	338	1690	924	-	-	-
TDS (mg/L)	602	209	918	530	520	500	2000
COD (mg/L)	06	BDL	46	BDL	392	-	-
BOD (mg/L)	BDL	BDL	5.8	BDL	48	-	-
Total Hardness (mg/L as CaCO_3)	669	216	1275	693	-	200	600
Sulphate (SO_4) (mg/L)	221	BDL	498	310	-	200	400

Key Findings:

- **GW-03 (Satyapal house Mahmadpur)** shows **highest contamination** (TDS: 918 mg/L, Hardness: 1275 mg/L, SO_4 : 498 mg/L)
- **GW-02 (Near Boundary Wall)** has no contamination (TDS: 209 mg/L, Hardness: 216 mg/L).
- **GW-04 (Sarakthal,)** has **no contamination**.
- **GW-01 (Mahmadpur)** exceeds **acceptable limits** but under permissible limit for TDS, Hardness, and Sulphate.
- Visual Analysis

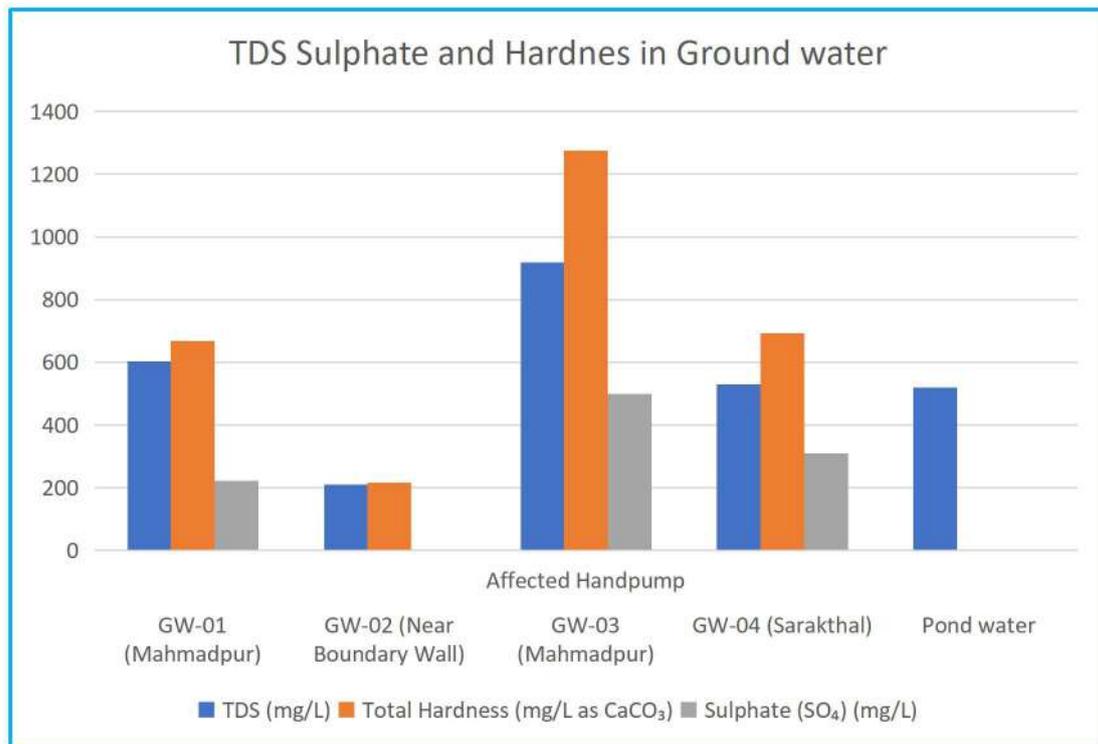


Graph 1: BOD and COD Comparison

Analysis of Pond Water Quality Report

Key Test Results (compared with standard surface water classes)

Parameter	Result	Guideline for Class A (Drinking w/o treatment)	Class B (Bathing)	Class C (Drinking w/ treatment)
pH	7.48	6.5–8.5	6.5–8.5	6–9
Suspended Solids	262 mg/l	No direct standard, but high	-	-
Dissolved Solids	520 mg/l	-	-	-
BOD (3 days @ 27°C)	48.0 mg/l	≤2 mg/l	≤3 mg/l	≤3 mg/l
COD	392.0 mg/l	No specific threshold, but >250 = highly polluted	-	-



Graph 2: TDS, Sulphate, and Hardness

Interpretation:

- **Biochemical Oxygen Demand (BOD)** is extremely high at **48 mg/l in village pond**, which far exceeds the limit for all classes of designated water uses. High BOD levels indicate excessive organic pollution, likely from **untreated sewage or poorly treated wastewater**, possibly from domestic or agricultural sources.
- **Chemical Oxygen Demand (COD)** is also very high at **392 mg/l in village pond** which supports the observation of significant organic and possibly chemical contamination from garbage, cow dung and domestic sewage
- **Suspended Solids** at **262 mg/l** suggest high levels of particulate matter, potentially from runoff or domestic discharge. This can smother aquatic life and alter pond ecology.

Implications for Groundwater Contamination:

The pond water shows **clear signs of heavy pollution**, particularly with biodegradable organic matter. Such contamination poses a **significant threat to nearby groundwater**, especially in areas with:

1. **Shallow water tables** – where polluted surface water can quickly percolate.

2. **Sandy or porous soil** – which allows faster infiltration.
3. **No proper pond lining or protection** – allowing leachate migration.

As the pond is unlined and located near borewells or handpumps, there's a **high risk** that contaminants (especially BOD/COD-related pollutants and pathogens with TDS and Sulphate) can seep into the groundwater, degrading drinking water quality.

3.2 Heavy Metal Analysis

Heavy Metal (mg/L)	GW-01	GW-02	GW-03	GW-04	BIS Acceptable Limit	BIS Permissible Limit
As (Arsenic)	BDL	BDL	-	-	0.01	0.05
Cd (Cadmium)	BDL	BDL	-	-	0.003	NR*
Cr (Chromium)	BDL	BDL	-	-	0.05	NR*
Cu (Copper)	BDL	BDL	-	-	0.05	1.5
Fe (Iron)	0.24	0.76	-	-	0.3	NR*
Mn (Manganese)	0.19	0.19	-	-	0.1	0.3
Ni (Nickel)	BDL	BDL	-	-	0.02	NR*
Pb (Lead)	BDL	BDL	-	-	0.01	NR*
Zn (Zinc)	BDL	0.16	-	-	5	15

Key Findings:

- **Iron (Fe) exceeds acceptable limit** in GW-01 (0.24 mg/L) and GW-02 (0.76 mg/L).
- **Manganese (Mn) exceeds acceptable limit** in GW-01 & GW-02 (0.19 mg/L).
- **Zinc (Zn) detected in GW-02 (0.16 mg/L) but within limits.**
- **No heavy metals (As, Cd, Cr, Pb) detected** in any sample.

4. Source Apportionment Analysis

4.1 Possible Contamination Sources

1. Natural Geological Factors:

- High TDS, Hardness, and Sulphate suggest **geogenic contamination** (mineral leaching).
- Sewage drain nearby hand pump may be one of the cause of contamination.
- **Most probably nearby pond may be the source of ground water contamination** with high BOD/COD and inorganic compounds in it.
- **Seepage from nearby septic tanks may also be a source of contamination in ground water.**
- **Garbage and cow dung dumping on pond bank may lead contamination through rain water and other possible runoff.**

2. Agricultural Runoff:

- Excessive fertilizer use may contribute to **sulphate contamination**.
- Excessive use of fertilizer in nearby agriculture field may be a cause of sulphate contaminant.

3. Domestic Sewage & Open Defecation:

- **BOD (5.8 mg/L in GW-03)** indicates possible organic contamination.

4. Industrial Influence

- **No direct drain from the industry** to the affected area.
- **Surface water flow direction is opposite** to the industry.
- **Heavy metals (except Fe & Mn) are absent**, ruling out industrial pollution.
- Ground water flow direction is opposite to the Industry

4.2 Correlation with Industry

- **GW-02 (Nearest to Industry)** has lower contamination than **GW-03 (far from Industry)**.
- **No chemical signature (e.g., heavy metals, COD/BOD spikes)** linking contamination to the industry.
- **Industrial influence is not observed in this case.**

5. Conclusion & Recommendations

5.1 Conclusion

- **Groundwater contamination is primarily geogenic (natural) and from domestic/agricultural sources**
- **At first glance no evidence links contamination by Unit operations (Triveni) as ground water and surface water movement is towards Triveni plant from contaminated hand pump as per attached google map(Aannexure-I) and ground water movement map(Annexure-III).**
- **Probable source of contamination may be -**
 - **Sewage drain nearby hand pump.**
 - **Most probably nearby pond may be the source of ground water contamination** in Handpumps through seepage flowed by ground water movement.
 - Cow dung, garbage at the bank of pond, indicated that the village pond water is polluted. Photograph of ponds are shown in **Annexure-IV**.
 - **Seepage from nearby septic tanks may be a significant source of contamination in ground water.**
- **High TDS, Hardness, and Sulphate** are due to **natural aquifer conditions**.
- Likelihood of treated water irrigation in the vicinity of M/s Triveni, Milaknarayanpur unit at N/W direction Mahmadpur and village Piplinayak agriculture fields within 200 meters vicinity of the plant, ground water flow of the irrigated land is towards the industry i.e. NW to SE. Hence the impact must be reflected in the plant tube well/handpumps, which was not reflected in the ground water analysis report of the plant tubewells done by the UPPCB and Joint Committee report Dec 2020. It shows the ground water contamination in the ground water in village due to other man-made activities and not Industrial activity.

5.2 Recommendations

1. A detail study should be conducted and sampling analysis should be done by pollution control Board or other government agency.
 2. Monitor agricultural runoff to reduce sulphate/nitrate leaching.
 3. Conduct periodic groundwater quality assessments.
-

6. Annexure

- Annexure -I Google Maps Coordinates of Sampling Locations
 - Annexure-II Laboratory Test Reports of hand pumps and village pond.
 - Annexure-III Groundwater Flow Direction map
 - Annexure IV Photographs of Pond in village Mahmampur, Tehsil Tanda Distt Rampur.
-

Prepared by

Date 05 May 2025



SANTOSH KUMAR SRIVASTAVA
SR.GEOLOGIST
CGWA CERTIFIED GROUND WATER CONSULTANT

Google Map of the area



Annexure-II

Test report by Joint Committee CPCB and UPPCB 2020

Total Hardness	669	216	1275	693	200	600
SO ₄	221	BDL	498	310	200	400
Heavy Metal Analysis						
As	BDL	BDL	---	---	0.01	0.05
Cd	BDL	BDL	---	---	0.003	NR*
Co	BDL	BDL	---	---	---	---
Cr	BDL	BDL	---	---	0.05	NR*
Cu	BDL	BDL	---	---	0.05	1.5
Fe	0.24	0.76	---	---	0.3	NR*
Mn	0.19	0.19	---	---	0.1	0.3
Ni	BDL	BDL	---	---	0.02	NR*
Pb	BDL	BDL	---	---	0.01	NR*
Sb	BDL	BDL	---	---	---	---
Se	BDL	BDL	---	---	0.01	NR*
V	BDL	BDL	---	---	---	---
Zn	BDL	0.16	---	---	5	15

NR*=No Relaxation

Parameters, mg/l except pH, Color in Hazen and Conductivity in μ mho/cm						
Parameters	Sampling Locations				(Acceptable limit) Drinking water standards (BIS) DRINKING WATER — SPECIFICATION (Second Revision) IS 10500: 2012	(Permissible limit in the absence of alternate source) Drinking water standards (BIS) DRINKING WATER — SPECIFICATION (Second Revision) IS 10500: 2012
	Groundwater sample- 01 from hand-pump at Mahmadpur village	Groundwater sample - 02 from hand-pump located near the boundary wall of unit adjacent to temple - village Mahmadpur	Groundwater sample- 03 from hand-pump at Mahmadpur village (from residence of Satypal Slugh)	Groundwater sample - 04 from hand-pump near ITI from Sarakthal village (from residence of Sompal)		
Depth (ft)	50	200	40-50	50-60	---	---
Color	BDL	BDL	28	BDL	---	---
pH	6.4	7.7	6.8	6.8	5	15
Conductivity	970	338	1690	924	6.5-8.5	6.5-8.5
TDS	602	209	918	530	---	---
COD	06	BDL	46	BDL	500	2000
BOD	BDL	BDL	5.8	BDL	---	---

6 | Page

Handpump Satypal Mahmadpur Sample-GW 03 (affected well)

Ground water analysis report from Plant area

As per CPCB and UPPCB joint committee report

19. One sample was collected from the tap near factory area reported to be borewell water. The analysis results of the sample are placed in Table-2 below:
Table-2 Groundwater Analysis Report- Quality of Groundwater is compared with Bureau of Indian Standard (BIS) DRINKING WATER — SPECIFICATION (Second Revision) IS 10500: 2012.

Sampling Point	Ground water from tap in industry	(Acceptable limit) Drinking water standards (BIS) DRINKING WATER — SPECIFICATION (Second Revision) IS 10500: 2012	(Permissible limit in the absence of alternate source) Drinking water standards (BIS) DRINKING WATER — SPECIFICATION (Second Revision) IS 10500: 2012
Depth	105 meter (344.5 ft)	---	---
Color	BDL	5	15
pH	7.8	6.5-8.5	6.5-8.5
Conductivity	608	---	---
TDS	194	500	2000
COD	BDL	---	---
BOD	BDL	---	---
Total Hardness	240	200	600
SO ₄	5	200	400
As	BDL	0.01	0.05
Cd	BDL	0.003	-
Co	BDL	-	-
Cr	BDL	0.05	NR*
Cu	BDL	0.05	1.5
Fe	0.04	0.3	NR*
Mn	0.02	0.1	0.3
Ni	BDL	0.02	NR*
Pb	BDL	0.01	NR*
Sb	BDL	-	-
Se	BDL	0.01	NR*
V	BDL	-	-
Zn	0.04	5	15

NR*=No Relaxation

20. Storage of treated Effluent

a. No. & size of lagoons	01 no. of capacity 12990m ³ Size (114 x 53 x 2.15 mt)
b. Retention time	15 days
c. Lagoon type- permeable/impermeable	Impermeable

21. Sludge Handling Process details:

Annexure-III

Water Analysis of Pond water



REGIONAL LABORATORY MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD
 1-A/I.N.S.-1, Avas Vikas Colony, Buddha Vihar, Delhi Road, Moradabad

TEST REPORT: WATER LABORATORY(SURFACE WATER)

Ref no-27031562/Moradabad/2024

Date:12/07/2024

- 1- **Sample Location:** Triveni Engineering & Industries Limited (Pond, Village Pipali Nayak, Near Sugar Mill)
- 2- **District:** Rampur
- 3- **Address:** Sugar Unit-Milak Narayanpur
- 4- **Sample Source:** Pond
- 5- **Type of sample :** Surface Water
- 6- **Sample Collected By :** Anil Vishwkarma , SA, Vishal Bharti, LA
- 7- **Odour :** None
- 8- **Quantity and Packing :** 2 liter
- 9- **Date of Sample Collection :** 05/07/2024
- 10- **Analysis Indented by :** RO Moradabad
- 11- **Date of sample receipt in Lab :** 05/07/2024

Parameter	Unit	Results	Detection Range
pH, APHA24th Ed.4500-B: 2023	-	7.48	02-12
Suspended Solids , APHA 24th Ed. 2540 D Total Suspended Solids dried at 103-105 °C 2023	mg/l	262	5.0 -10000 mg/l
Dissolved Solids, APHA 24th Ed. 2540 °C Total Dissolved Solids dried at 180 °C 2023	mg/l	520.0	5.0 -10000 mg/l
BOD, APHA 24th Ed. 3 day 27 °C IS 3025 (Part 44): 1993 Bio 2023	mg/l	48.0	1.0 -1000 mg/l
COD, APHA 24th Ed. 5220 B Open Reflux Method 2023	mg/l	392.0	4.0 -1000 mg/l

*Non-NABL Parameters.

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

Remark:* - NA

Analysed by
[Rajni Raj(JRF)]

Authorized by
 Anil Kumar
 Vishwakarma
 Anil Vishwkarma (SA)

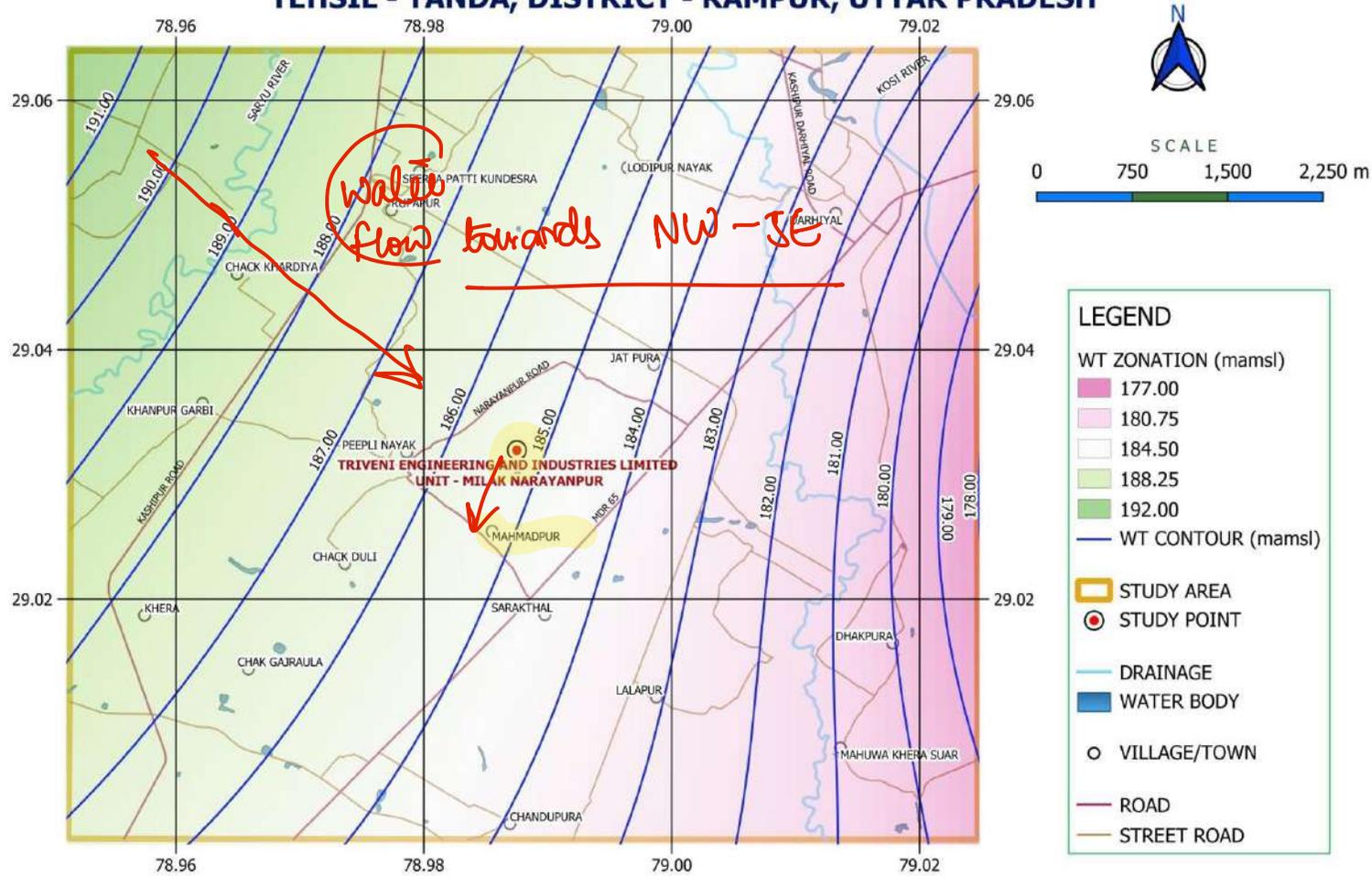
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 Vishwakarma
 Date: 2024.07.12 12:28:21
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Ashutosh
 Chauhan
 Regional Officer

Digitally signed by
 Ashutosh Chauhan
 Date: 2024.07.12
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Annexure-III

GROUND WATER FLOW (PREMONSOON - 2020) MAP IN AREA AROUND TRIVENI ENGINEERING AND INDUSTRIES LIMITED, UNIT - MILAK NARAYANPUR, TEHSIL - TANDA, DISTRICT - RAMPUR, UTTAR PRADESH



Source : GW Impact assessment report 2020 based on UPGWD data



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Annexure T

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ETRC/PM09/TEST-REP/FT/45

TEST REPORT WATER & WASTE WATER ANALYSIS

Test Report Ref No. ETRC/EPA/9786/2023	Date of Report: 18.11.2023
Name/Address/Type of Industry	M/s Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

1	Water/ Waste Water	Ground Water	5	Packing Condition	Sealed
2	Sample Description	Handpump (Village: Narayanpur)	6	Sample Collected By	ETRC
3	Sample received date	15.11.2023	7	Analysis Start Date	15.11.2023
4	Sample Quantity	5.0 liters	8	Analysis End Date	18.11.2023

TEST RESULT

Sr. No	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection	Indian Standard 10500: 2012	
						Desirable	Permissible
Physico-chemical Parameters							
1	Colour	Hazen	IS: 3025 (Part-4): 2021	<5.0	5 - 30	5	15
2	Odour	-	IS: 3025 (Part-5): 2018	Agreeable	Qualitative	Agreeable	Agreeable
3	pH	-	APHA 24 th Ed 2023-4500 H ⁺	7.3	1 - 14	6.5-8.5	No Relaxation
4	Turbidity	NTU	APHA 24 th Ed 2023-2130 B	BDL	2 - 40	1	5
5	Total Dissolved Solid (TDS)	mg/l	IS: 3025 (Part-16): 2023	268.0	10 - 5000	500	2000
6	Ammonia (as total ammonia-N)	mg/l	IS: 3025 (Part-34): 1988 Reaffirmed: 2019	BDL	0.5 - 10	0.5	No Relaxation
7	Anionic Detergents (as MBAS)	mg/l	APHA 24 th Ed 2023-5540 C	BDL	0.05 - 0.5	0.2	1.0
8	Calcium as Ca	mg/l	IS: 3025 (Part-40): 1991 Reaffirmed: 2019	43.2	2.0 - 600	75	200
9	Magnesium as Mg	mg/l	APHA 24 th Ed 2023-3500 Mg, B	14.58	0.1 - 200	30	100
10	Chloride as Cl	mg/l	APHA 24 th Ed 2023-4500-Cl ⁻ B	18.0	2.0 - 2000	250	1000
11	Fluoride as F	mg/l	APHA 24 th Ed 2023-4500 F ⁻ C	0.36	0.02 - 5.0	1.0	1.5
12	Free Residual Chlorine	mg/l	IS: 3025 (Part-26): 1986 Reaffirmed: 2019	BDL	0.1 - 5.0	0.2	1.0
13	Nitrate as NO ₃	mg/l	IS: 3025 (Part-34): 1988 Reaffirmed: 2019	BDL	1.0 - 70	45	No Relaxation
14	Phenolic Compound (as C ₆ H ₅ OH)	mg/l	APHA 24 th Ed 2023-5530 C	BDL	0.001-0.005	0.001	0.002
15	Sulphate as SO ₄	mg/l	APHA 24 th Ed 2023-4500 SO ₄ ²⁻ E	16.0	1.0 - 500	200	400
16	Alkalinity as CaCO ₃	mg/l	APHA 24 th Ed 2023-2320 B	192.0	2.0 - 1000	200	600
17	Total Hardness as CaCO ₃	mg/l	APHA 24 th Ed 2023-2340 C	168.0	5.0 - 800	200	600
18	Aluminium as Al	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	BDL	0.015 - 5.0	0.03	0.2
19	Boron as B	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	BDL	0.05 - 2.0	0.5	1.0
20	Copper as Cu	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	BDL	0.03 - 10	0.05	1.5
21	Iron as Fe	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	0.09	0.05 - 20	0.3	No Relaxation
22	Manganese as Mn	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	0.04	0.02 - 5.0	0.1	0.3

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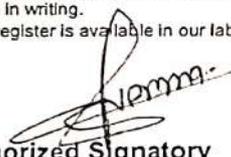
Test Report Ref No. ETRC/EPA/9786/2023

23	Zinc as Zn	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	0.45	0.05 - 15	5	15
24	Cadmium as Cd	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	BDL	0.05 - 2.0	0.003	No Relaxation
25	Lead as Pb	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	BDL	0.01 - 10	0.01	No Relaxation
26	Mercury as Hg	µg/l	APHA 24 th Ed 2023-3112 B	BDL	0.5 - 1000	1.0	No Relaxation
27	Nickel as Ni	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	BDL	0.05 - 5.0	0.02	No Relaxation
28	Arsenic as As	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	BDL	0.02 - 2.0	0.01	0.05
29	Total Chromium as Cr	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	BDL	0.03 - 5.0	0.05	No Relaxation
Microbiological Parameters							
30	E. coli	MPN/100 ml	IS:1622: 1981 Reaffirmed: 2019	Absent	≥ 2 MPN Present or Absent per 100 ml	Shall not be detected in any 100 ml sample	
31	T. coli	MPN/100 ml	IS:1622: 1981 Reaffirmed: 2019	Absent	≥ 2 MPN Present or Absent per 100 ml	Shall not be detected in any 100 ml sample	

BDL=Below Detection Limit

..... END OF REPORT.....

- ETRC warrants that all analytical work is conducted professionally in accordance with all applicable standard laboratory practices and that this data reflects our best attempt to generate accurate results for the sample, mentioned in the report as above.
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Authorized Signatory
(Sandeep Kr. Verma)
Lab-Incharge


Authorized Signatory
(Ritu Garg)
QM



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ETRC/PM09/TEST-REP/FT/45

TEST REPORT WATER & WASTE WATER ANALYSIS

Test Report Ref No. ETRC/EPA/9785/2023	Date of Report: 18.11.2023
Name/Address/Type of Industry	M/s Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

1	Water/ Waste Water	Ground Water	5	Packing Condition	Sealed
2	Sample Description	Handpump (Jatpura)	6	Sample Collected By	ETRC
3	Sample received date	15.11.2023	7	Analysis Start Date	15.11.2023
4	Sample Quantity	5.0 liters	8	Analysis End Date	18.11.2023

TEST RESULT

Sr. No	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection	Indian Standard 10500: 2012	
						Desirable	Permissible
Physico-chemical Parameters							
1	Colour	Hazen	IS: 3025 (Part-4): 2021	<5.0	5 - 30	5	15
2	Odour	-	IS: 3025 (Part-5): 2018	Agreeable	Qualitative	Agreeable	Agreeable
3	pH	-	APHA 24 th Ed 2023-4500 H ⁺	7.2	1 - 14	6.5-8.5	No Relaxation
4	Turbidity	NTU	APHA 24 th Ed 2023-2130 B	BDL	2 - 40	1	5
5	Total Dissolved Solid (TDS)	mg/l	IS: 3025 (Part-16): 2023	296.0	10 - 5000	500	2000
6	Ammonia (as total ammonia-N)	mg/l	IS: 3025 (Part-34): 1988 Reaffirmed: 2019	BDL	0.5 - 10	0.5	No Relaxation
7	Anionic Detergents (as MBAS)	mg/l	APHA 24 th Ed 2023-5540 C	BDL	0.05 - 0.5	0.2	1.0
8	Calcium as Ca	mg/l	IS: 3025 (Part-40): 1991 Reaffirmed: 2019	39.2	2.0 - 600	75	200
9	Magnesium as Mg	mg/l	APHA 24 th Ed 2023-3500 Mg, B	16.0	0.1 - 200	30	100
10	Chloride as Cl	mg/l	APHA 24 th Ed 2023-4500-Cl ⁻ B	20.0	2.0 - 2000	250	1000
11	Fluoride as F	mg/l	APHA 24 th Ed 2023-4500 F ⁻ C	0.29	0.02 - 5.0	1.0	1.5
12	Free Residual Chlorine	mg/l	IS: 3025 (Part-26): 1988 Reaffirmed: 2019	BDL	0.1 - 5.0	0.2	1.0
13	Nitrate as NO ₃	mg/l	IS: 3025 (Part-34): 1988 Reaffirmed: 2019	BDL	1.0 - 70	45	No Relaxation
14	Phenolic Compound (as C ₆ H ₅ OH)	mg/l	APHA 24 th Ed 2023-5530 C	BDL	0.001-0.005	0.001	0.002
15	Sulphate as SO ₄	mg/l	APHA 24 th Ed 2023-4500 SO ₄ ²⁻ E	20.0	1.0 - 500	200	400
16	Alkalinity as CaCO ₃	mg/l	APHA 24 th Ed 2023-2320 B	188.0	2.0 - 1000	200	600
17	Total Hardness as CaCO ₃	mg/l	APHA 24 th Ed 2023-2340 C	164.0	5.0 - 800	200	600
18	Aluminium as Al	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	BDL	0.015 - 5.0	0.03	0.2
19	Boron as B	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	BDL	0.05 - 2.0	0.5	1.0
20	Copper as Cu	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	BDL	0.03 - 10	0.05	1.5
21	Iron as Fe	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	0.15	0.05 - 20	0.3	No Relaxation
22	Manganese as Mn	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	0.04	0.02 - 5.0	0.1	0.3



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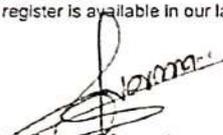
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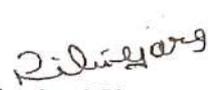
23	Zinc as Zn	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	0.31	0.05 - 15	5	15
24	Cadmium as Cd	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	BDL	0.05 - 2.0	0.003	No Relaxation
25	Lead as Pb	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	BDL	0.01 - 10	0.01	No Relaxation
26	Mercury as Hg	µg/l	APHA 24 th Ed 2023-3112 B	BDL	0.5 - 1000	1.0	No Relaxation
27	Nickel as Ni	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	BDL	0.05 - 5.0	0.02	No Relaxation
28	Arsenic as As	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	BDL	0.02 - 2.0	0.01	0.05
29	Total Chromium as Cr	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	BDL	0.03 - 5.0	0.05	No Relaxation
Microbiological Parameters							
30	E. coli	MPN/100 ml	IS:1622: 1981 Reaffirmed: 2019	Absent	≥ 2 MPN Present or Absent per 100 ml	Shall not be detected in any 100 ml sample	
31	T. coli	MPN/100 ml	IS:1622: 1981 Reaffirmed: 2019	Absent	≥ 2 MPN Present or Absent per 100 ml	Shall not be detected in any 100 ml sample	

BDL=Below Detection Limit

..... END OF REPORT.....

- ETRC warrants that all analytical work is conducted professionally in accordance with all applicable standard laboratory practices and that this data reflects our best attempt to generate accurate results for the sample, mentioned in the report as above.
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Authorized Signatory
(Sandeep Kr. Verma)
Lab-Incharge


Authorized Signatory
(Ritu Garg)
QM



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ETRC/PM09/TEST-REP/FT/45

TEST REPORT WATER & WASTE WATER ANALYSIS

Test Report Ref No. ETRC/EPA/9784/2023	Date of Report: 18.11.2023
Name/Address/Type of Industry	M/s Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

1	Water/ Waste Water	Ground Water	5	Packing Condition	Sealed
2	Sample Description	Handpump (Village: Peepali)	6	Sample Collected By	ETRC
3	Sample received date	15.11.2023	7	Analysis Start Date	15.11.2023
4	Sample Quantity	5.0 liters	8	Analysis End Date	18.11.2023

TEST RESULT

Sr. No	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection	Indian Standard 10500: 2012	
						Desirable	Permissible
Physico-chemical Parameters							
1	Colour	Hazen	IS: 3025 (Part-4): 2021	<5.0	5 - 30	5	15
2	Odour	-	IS: 3025 (Part-5): 2018	Agreeable	Qualitative	Agreeable	Agreeable
3	pH	-	APHA 24 th Ed 2023-4500 H ⁺	7.5	1 - 14	6.5-8.5	No Relaxation
4	Turbidity	NTU	APHA 24 th Ed 2023-2130 B	BDL	2 - 40	1	5
5	Total Dissolved Solid (TDS)	mg/l	IS: 3025 (Part-16): 2023	296.8	10 - 5000	500	2000
6	Ammonia (as total ammonia-N)	mg/l	IS: 3025 (Part-34): 1988 Reaffirmed: 2019	BDL	0.5 - 10	0.5	No Relaxation
7	Anionic Detergents (as MBAS)	mg/l	APHA 24 th Ed 2023-5540 C	BDL	0.05 - 0.5	0.2	1.0
8	Calcium as Ca	mg/l	IS: 3025 (Part-40): 1991 Reaffirmed: 2019	41.6	2.0 - 600	75	200
9	Magnesium as Mg	mg/l	APHA 24 th Ed 2023-3500 Mg, B	18.46	0.1 - 200	30	100
10	Chloride as Cl	mg/l	APHA 24 th Ed 2023-4500-Cl ⁻ B	16.0	2.0 - 2000	250	1000
11	Fluoride as F	mg/l	APHA 24 th Ed 2023-4500 F ⁻ C	0.26	0.02 - 5.0	1.0	1.5
12	Free Residual Chlorine	mg/l	IS: 3025 (Part-26): 1986 Reaffirmed: 2019	BDL	0.1 - 5.0	0.2	1.0
13	Nitrate as NO ₃	mg/l	IS: 3025 (Part-34): 1988 Reaffirmed: 2019	BDL	1.0 - 70	45	No Relaxation
14	Phenolic Compound (as C ₆ H ₅ OH)	mg/l	APHA 24 th Ed 2023-5530 C	BDL	0.001-0.005	0.001	0.002
15	Sulphate as SO ₄	mg/l	APHA 24 th Ed 2023-4500 SO ₄ ²⁻ E	18.0	1.0 - 500	200	400
16	Alkalinity as CaCO ₃	mg/l	APHA 24 th Ed 2023-2320 B	204.0	2.0 - 1000	200	600
17	Total Hardness as CaCO ₃	mg/l	APHA 24 th Ed 2023-2340 C	180.0	5.0 - 800	200	600
18	Aluminium as Al	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	BDL	0.015 - 5.0	0.03	0.2
19	Boron as B	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	BDL	0.05 - 2.0	0.5	1.0
20	Copper as Cu	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	BDL	0.03 - 10	0.05	1.5
21	Iron as Fe	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	0.08	0.05 - 20	0.3	No Relaxation
22	Manganese as Mn	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	0.03	0.02 - 5.0	0.1	0.3

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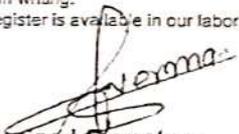
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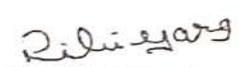
23	Zinc as Zn	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	0.43	0.05 - 15	5	15
24	Cadmium as Cd	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	BDL	0.05 - 2.0	0.003	No Relaxation
25	Lead as Pb	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	BDL	0.01 - 10	0.01	No Relaxation
26	Mercury as Hg	µg/l	APHA 24 th Ed 2023-3112 B	BDL	0.5 - 1000	1.0	No Relaxation
27	Nickel as Ni	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	BDL	0.05 - 5.0	0.02	No Relaxation
28	Arsenic as As	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	BDL	0.02 - 2.0	0.01	0.05
29	Total Chromium as Cr	mg/l	APHA 24 th Ed 2023-3120 B (ICP-OES)	BDL	0.03 - 5.0	0.05	No Relaxation
Microbiological Parameters							
30	E. coli	MPN/ 100 ml	IS:1622: 1981 Reaffirmed: 2019	Absent	≥ 2 MPN Present or Absent per 100 ml	Shall not be detected in any 100 ml sample	
31	T. coli	MPN/ 100 ml	IS:1622: 1981 Reaffirmed: 2019	Absent	≥ 2 MPN Present or Absent per 100 ml	Shall not be detected in any 100 ml sample	

BDL=Below Detection Limit

..... END OF REPORT.....

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Authorized Signatory
(Sandeep Kr. Verma)
Lab-Incharge


Authorized Signatory
(Ritu Garg)
QM

पत्रांक: TEIL/MNP/2024

दिनांक 18.03.2024

सेवा में,

श्रीमान क्षेत्रीय अधिकारी
उ०प्र० प्रदूषण नियंत्रण बोर्ड
बुद्धि विहार, मुरादाबाद (उ०प्र०)

महोदय,

कृपया उ०प्र० प्रदूषण नियंत्रण बोर्ड के पत्र संख्या एच 61396/सी-7/जल 394/21 दिनांक 05.04.2021 का संदर्भ ग्रहण करें, जिसके द्वारा जल (प्रदूषण निवारण तथा नियंत्रण) अधिनियम 1974 की धारा 33 ए सपठित 27(2) के अन्तर्गत मै० त्रिवेणी इंजीनियरिंग एण्ड इण्डस्ट्रीज लिमिटेड मिलक नरायनपुर, रामपुर के विरुद्ध जारी नोटिस को इस शर्त के साथ निक्षेपित किया गया था कि उद्योग प्रत्येक त्रैमाह में उद्योग परिसर के भूगर्भीय जल एवं सिंचाई हेतु उपयोग की जाने वाली कृषि भूमि के भूगर्भीय जल एवं उद्योग द्वारा निस्तारित औद्योगिक उत्प्रवाह के जल की गुणवत्ता का अनुश्रवण राज्य बोर्ड से पेड बेसिस पर करायेगा।

उक्त के अनुपालन में उद्योग परिसर के भूगर्भीय जल एवं आस-पास के क्षेत्र में सिंचाई हेतु उपयोग किये जाने वाले जल तथा उद्योग द्वारा निस्तारित उत्प्रवाह जल की राज्य बोर्ड द्वारा परीक्षण की गई गुणवत्ता रिपोर्ट अग्रिम कार्यवाही हेतु प्रस्तुत की जा रही है।

(अधिकृत हस्ताक्षरी)

त्रिवेणी इंजीनियरिंग एण्ड इण्डस्ट्रीज लि०
मिलक नरायनपुर, रामपुर (उ०प्र०)

प्रतिलिपि:

मुख्य पर्यावरण अधिकारी वृत्त-7
टी सी 12 वी, विभूति खण्ड,
गेमतीनगर, लखनऊ (उ०प्र०)

18/03/2024
क्षेत्रीय अधिकारी
उ.प्र. प्रदूषण नियंत्रण बोर्ड
अवास विकास कालोनी
मुरादाबाद



REGIONAL LABORATORY MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD
 1-A/I.N.S.-1, Avas Vikas Colony, Buddha Vihar, Delhi Road, Moradabad

TEST REPORT: WATER LABORATORY(GROUND WATER)

Ref No: 25052347/Moradabad/2024

Date:18/03/2024

- 1- **Sample Location:** Vill. Milak Narayanpur, Near PNB Bank
- 2- **Address:** Sugar Unit-Milak Narayanpur
- 3- **Distirct:** Rampur
- 4- **Sample Source:** Handpump
- 5- **Type of sample :** Ground Water
- 6- **Sample Collected By :** Anil Vishwkarma , SA, Vishal Bharti, LA
- 7- **Odour :** None
- 8- **Quantity and Packing :** 2 Litr.
- 9- **Date of Sample Collection :** 11/03/2024
- 10- **Analysis Indented by :** RO Moradabad
- 11- **Date of sample receipt in Lab :** 11/03/2024

Parameter	Unit	Standards Source: IS 10500:2012(2nd Rev.) Required Acceptable Limit	Results	Detection Range
pH, APHA 24th Ed.4500-B: 2023	-	6.5-8.5	7.38	02-12
Turbidity, APHA24th Ed 2130B: 2023	N.T.U	1.00	3.08	1-500NTU
Colour, APHA 24th Ed. 2120B: 2023	Hazen	5.00	Colourless	5-10000 Hazen
Conductivity, APHA 24th Ed. 2510B: 2023	µS/cm	NS	586	0.1-10000 µS/cm
Hardness, APHA 24th Ed. 2340 C EDTA Titrimetric Method 2023	mg/l	200	172	10-5000 mg/l
Calcium, APHA 24th Ed. 3500Ca-B: 2023	mg/l	75	40.8	10-1000 mg/l
Magnesium, APHA 24th Ed. 3500 Mg-B: 2023	mg/l	30	16.8	10-1000 mg/l

These standards are subject to revision

*Non-NABL Parameters.

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

Remark:* - NA

Analysed by
[Rajni Raj(JRF)]

Authorized by

Anil Vishwkarma (SA)

Regional Officer



REGIONAL LABORATORY MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD
 1-A/I.N.S.-1, Avas Vikas Colony, Buddha Vihar, Delhi Road, Moradabad

TEST REPORT: WATER LABORATORY(GROUND WATER)

Ref No: 25052384/Moradabad/2024

Date:18/03/2024

- 1- **Sample Location:** Vill. Narayanpur
- 2- **Address:** Sugar Unit-Milak Narayanpur
- 3- **Distirct:** Rampur
- 4- **Sample Source:** Handpump
- 5- **Type of sample :** Ground Water
- 6- **Sample Collected By :** Anil Vishwkarma , SA, Vishal Bharti, LA
- 7- **Odour :** None
- 8- **Quantity and Packing :** 2 Litr.
- 9- **Date of Sample Collection :** 11/03/2024
- 10- **Analys Indented by :** RO Moradabad
- 11- **Date of sample receipt in Lab :** 11/03/2024

Parameter	Unit	Standards Source: IS 10500:2012(2nd Rev.) Required Acceptable Limit	Results	Detection Range
pH, APHA 24th Ed.4500-B: 2023	-	6.5-8.5	7.39	02-12
Turbidity, APHA24th Ed 2130B: 2023	N.T.U	1.00	3.12	1-500NTU
Colour, APHA 24th Ed. 2120B: 2023	Hazen	5.00	Colourless	5-10000 Hazen
Conductivity, APHA 24th Ed. 2510B: 2023	µS/cm	NS	495	0.1-10000 µS/cm
Hardness, APHA 24th Ed. 2340 C EDTA Titrimetric Method 2023	mg/l	200	160	10-5000 mg/l
Calcium, APHA 24th Ed. 3500Ca-B: 2023	mg/l	75	35.2	10-1000 mg/l
Magnesium, APHA 24th Ed. 3500 Mg-B: 2023	mg/l	30	17.28	10-1000 mg/l

These standards are subject to revision

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Remark:* - NA

Analysed by
[Rajni Raj(JRF)]

Authorized by

Anil Vishwkarma (SA)

Regional Officer



REGIONAL LABORATORY MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD
 1-A/I.N.S.-1, Avas Vikas Colony, Buddha Vihar, Delhi Road, Moradabad

TEST REPORT: WATER LABORATORY(GROUND WATER)

Ref No: 25052434/Moradabad/2024

Date:18/03/2024

- 1- **Sample Location:** Vill. Peepli Nayak
- 2- **Address:** Sugar Unit-Milak Narayanpur
- 3- **Distirct:** Rampur
- 4- **Sample Source:** Handpump
- 5- **Type of sample :** Ground Water
- 6- **Sample Collected By :** Anil Vishwkarma , SA, Vishal Bharti, LA
- 7- **Odour :** None
- 8- **Quantity and Packing :** 2 Litr.
- 9- **Date of Sample Collection :** 11/03/2024
- 10- **Analys Indented by :** RO Moradabad
- 11- **Date of sample receipt in Lab :** 11/03/2024

Parameter	Unit	Standards Source: IS 10500:2012(2nd Rev.) Required Acceptable Limit	Results	Detection Range
pH, APHA 24th Ed.4500-B: 2023	-	6.5-8.5	7.58	02-12
Turbidity, APHA24th Ed 2130B: 2023	N.T.U	1.00	3.01	1-500NTU
Colour, APHA 24th Ed. 2120B: 2023	Hazen	5.00	Colourless	5-10000 Hazen
Conductivity, APHA 24th Ed. 2510B: 2023	µS/cm	NS	454	0.1-10000 µS/cm
Calcium, APHA 24th Ed. 3500Ca-B: 2023	mg/l	75	36.8	10-1000 mg/l
Magnesium, APHA 24th Ed. 3500 Mg-B: 2023	mg/l	30	15.36	10-1000 mg/l

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Remark:* - NA

Analysed by
[Rajni Raj(JRF)]

Authorized by

Anil Vishwkarma (SA)

Regional Officer



REGIONAL LABORATORY MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD
 1-A/I.N.S.-1, Avas Vikas Colony, Buddha Vihar, Delhi Road, Moradabad

TEST REPORT: WATER LABORATORY(GROUND WATER)

Ref No: 25052486/Moradabad/2024

Date:18/03/2024

- 1- **Sample Location:** Triveni Engineering & Industries Limited, TubeWell-2
- 2- **Address:** Sugar Unit-Milak Narayanpur
- 3- **Distirt:** Rampur
- 4- **Sample Source:** TubeWell
- 5- **Type of sample :** Ground Water
- 6- **Sample Collected By :** Anil Vishwkarma , SA, Vishal Bharti, LA
- 7- **Odour :** None
- 8- **Quantity and Packing :** 2 Litr.
- 9- **Date of Sample Collection :** 11/03/2024
- 10- **Analys Indented by :** RO Moradabad
- 11- **Date of sample receipt in Lab :** 11/03/2024

Parameter	Unit	Standards Source: IS 10500:2012(2nd Rev.) Required Acceptable Limit	Results	Detection Range
pH, APHA 24th Ed.4500-B: 2023	-	6.5-8.5	7.56	02-12
Turbidity, APHA24th Ed 2130B: 2023	N.T.U	1.00	2.91	1-500NTU
Colour, APHA 24th Ed. 2120B: 2023	Hazen	5.00	Colourless	5-10000 Hazen
Conductivity, APHA 24th Ed. 2510B: 2023	µS/cm	NS	520	0.1-10000 µS/cm
Hardness, APHA 24th Ed. 2340 C EDTA Titrimetric Method 2023	mg/l	200	114	10-5000 mg/l
Calcium, APHA 24th Ed. 3500Ca-B: 2023	mg/l	75	30.4	10-1000 mg/l
Magnesium, APHA 24th Ed. 3500 Mg-B: 2023	mg/l	30	9.12	10-1000 mg/l

These standards are subject to revision

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Remark:* - NA

Analysed by
[Rajni Raj(JRF)]

Authorized by

Anil Vishwkarma (SA)

Regional Officer



REGIONAL LABORATORY MORADABAD
UTTAR PRADESH POLLUTION CONTROL BOARD
 1-A/I.N.S.-1, Avas Vikas Colony, Buddha Vihar, Delhi Road, Moradabad

TEST REPORT: WATER LABORATORY(GROUND WATER)

Ref No: 25052508/Moradabad/2024

Date:18/03/2024

- 1- **Sample Location:** Triveni Engineering & Industries Limited, TubeWell-1
- 2- **Address:** Sugar Unit-Milak Narayanpur
- 3- **Distirct:** Rampur
- 4- **Sample Source:** TubeWell
- 5- **Type of sample :** Ground Water
- 6- **Sample Collected By :** Anil Vishwkarma , SA, Vishal Bharti, LA
- 7- **Odour :** None
- 8- **Quantity and Packing :** 2 Litr.
- 9- **Date of Sample Collection :** 11/03/2024
- 10- **Analys Indented by :** RO Moradabad
- 11- **Date of sample receipt in Lab :** 11/03/2024

Parameter	Unit	Standards Source: IS 10500:2012(2nd Rev.) Required Acceptable Limit	Results	Detection Range
pH, APHA 24th Ed.4500-B: 2023	-	6.5-8.5	7.70	02-12
Turbidity, APHA24th Ed 2130B: 2023	N.T.U	1.00	2.68	1-500NTU
Colour, APHA 24th Ed. 2120B: 2023	Hazen	5.00	Colourless	5-10000 Hazen
Conductivity, APHA 24th Ed. 2510B: 2023	µS/cm	NS	545	0.1-10000 µS/cm
Hardness, APHA 24th Ed. 2340 C EDTA Titrimetric Method 2023	mg/l	200	154	10-5000 mg/l
Calcium, APHA 24th Ed. 3500Ca-B: 2023	mg/l	75	39.2	10-1000 mg/l
Magnesium, APHA 24th Ed. 3500 Mg-B: 2023	mg/l	30	13.44	10-1000 mg/l

These standards are subject to revision

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Remark:* - NA

Analysed by
[Rajni Raj(JRF)]

Authorized by

Anil Vishwkarma (SA)

Regional Officer



Annexure V

ETRC/PM14/TEs-REP/FT/17

TEST REPORT WATER ANALYSIS

Test Report Ref No.: ETRC/2011/2020	Date of Report : 30/12/2020
Name /Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

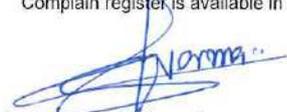
1	Water/ Waste Water	Waste water	5	Packing Condition	Sealed
2	Sample Description	ETP Primary Clarifier	6	Sample Collected By	Industry Self
3	Sample received date	24.12.2020	7	Analysis Start Date	24.12.2020
4	Sample Quantity	2.0 liters	8	Analysis End Date	29.12.2020

TEST RESULT

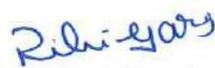
Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	pH	-	APHA 23 rd Ed. 2017-4500H ⁺	7.1	1 - 14
2	Colour	Hazen	IS: 3025 (Part-4): 1983 Reaffirmed: 2017	19.0	5 - 100
2	Total Dissolved Solid (TDS)	mg/l	APHA 23 rd Ed. 2017-2540 C IS: 3025 (Part-16): 1984 Reaffirmed: 2017	843.0	10 - 10000
3	Total Suspended Solid (TSS)	mg/l	APHA 23 rd Ed. 2017-2540 D	156.0	5 - 5000
4	Bio-chemical Oxygen Demand (BOD)	mg/l	IS: 3025 (Part-44): 1993 Reaffirmed: 2019	260.0	1 - 90000
5	Chemical Oxygen Demand (COD)	mg/l	APHA 23 rd Ed. 2017-5220 B IS: 3025 (Part-58): 2006 Reaffirmed: 2017	735.0	5 - 135000

..... END OF REPORT.....

- ETRC warrants that all analytical work is conducted professionally in accordance with all applicable standard laboratory practices and that this data reflects our best attempt to generate accurate results for the sample, mentioned in the report as above.
- The result relate only to the items tested.
- ETRC does not assume any liability for any claims or damages related to the quality of parameter analyzed in the results and/or the performance of the equipment constituting to the results.
- All disputes subject to Lucknow jurisdiction.
- This report is not to be reproduced wholly or in part and cannot be used as evidence in the court of law and should not be used in any advertising media without our special permission in writing.
- Complain register is available in our laboratory.


Authorized Signatory
(Sandeep Kr Verma)
Lab-Incharge




Authorized Signatory
(Ritu Garg)
QM



ENVIRONMENTAL AND TECHNICAL RESEARCH CENTRE

Office & Laboratory: 2/261, Vishwas Khand, Gomti Nagar, Lucknow- 226 010 (U.P.)

Email : ETRCLTH@YAHOO.IN, Web: www.etrclth.com

ISO 9001:2015, ISO 14001 : 2015, OHSAS 18001 : 2007 & NABL Accredited Laboratory



ETRC/PM14/TEST-REP/FT/17

TEST REPORT WATER ANALYSIS

Test Report Ref No.: ETRC/2013/2020	Date of Report : 30/12/2020
Name /Address/Type of Industry	Triveni Engineering & Industries Limited Unit: Sugar Village: Milak Narayanpur, Tehsil: Swar District: Rampur (U.P.)

SAMPLE DETAILS

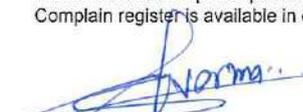
1	Water/ Waste Water	Waste water	5	Packing Condition	Sealed
2	Sample Description	ETP Secondary Clarifier	6	Sample Collected By	Industry Self
3	Sample received date	24.12.2020	7	Analysis Start Date	24.12.2020
4	Sample Quantity	2.0 liters	8	Analysis End Date	29.12.2020

TEST RESULT

Sr. No.	Test Parameter	Unit	Protocol/Test Method	Result	Range of testing /limit of detection
1	pH	-	APHA 23 rd Ed. 2017-4500H ⁺	7.2	1 - 14
2	Colour	Hazen	IS: 3025 (Part-4): 1983 Reaffirmed: 2017	15.0	5 - 100
2	Total Dissolved Solid (TDS)	mg/l	APHA 23 rd Ed. 2017-2540 C IS: 3025 (Part-16): 1984 Reaffirmed: 2017	1140.0	10 - 10000
3	Total Suspended Solid (TSS)	mg/l	APHA 23 rd Ed. 2017-2540 D	26.0	5 - 5000
4	Bio-chemical Oxygen Demand (BOD)	mg/l	IS: 3025 (Part-44): 1993 Reaffirmed: 2019	15.0	1 - 90000
5	Chemical Oxygen Demand (COD)	mg/l	APHA 23 rd Ed. 2017-5220 B IS: 3025 (Part-58): 2006 Reaffirmed: 2017	225.0	5 - 135000

..... END OF REPORT.....

- ETRC warrants that all analytical work is conducted professionally in accordance with all applicable standard laboratory practices and that this data reflects our best attempt to generate accurate results for the sample, mentioned in the report as above.
- The result relate only to the items tested.
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- Complain register is available in our laboratory.


Authorized Signatory
(Sandeep Kr Verma)
Lab-Incharge




Authorized Signatory
(Ritu Garg)
QM

687



Kunika Champawat <kunikachampawat99@gmail.com>

Service: Anuradha v. State of U.P. & Ors., O.A No. 234 of 2020

Kunika Champawat <kunikachampawat99@gmail.com>

Fri, Jun 27, 2025 at 2:30 PM

To: Anu Chauhan <anuc039@gmail.com>, pradeepmisra@yahoo.com, daleepdhyani@yahoo.com

Cc: Anunaya Mehta <anunaya.mehta@gmail.com>

Dear all,

Please find attached the Affidavit being filed on behalf of Respondent No. 4 in the above-captioned matter.

Best regards,
Kunika Champawat



Affidavit.pdf