



हिन्दुस्तान पेट्रोलियम कॉर्पोरेशन लिमिटेड

(भारत सरकार का उपक्रम) रजिस्टर्ड ऑफिस : 17, जमशेदजी टाटा रोड, मुंबई - 400 020

HINDUSTAN PETROLEUM CORPORATION LIMITED

(A GOVERNMENT OF INDIA ENTERPRISE) REGISTERED OFFICE : 17, JAMSHEDJI TATA ROAD, MUMBAI-400020

2 जी इथेनॉल बायो-रिफाइनरी प्रोजेक्ट : बठिण्डा रिटेल क्षेत्रीया कार्यालय : अर्बन एस्टेट, फेस - II, पार्ट -II, बठिण्डा-151 001,
2G Ethanol Bio-Refinery Project : BATHINDA RETAIL REGIONAL OFFICE : URBAN ESTATE, PHASE-II, PART-II, BATHINDA - 151001
website : www.hindustanpetroleum.com

To,

The Deputy Director / Scientist 'C'

Ministry of Environment, Forests & Climate Change,

Northern Regional Office

Bays No. 24-25, Sector-31A,

Dakshin Marg, Chandigarh-160030

(Email: chdmoefenv@gmail.com)

Sub: Submission of six-monthly compliance report of stipulated conditions of Environmental Clearance for setting up 2G Ethanol Bio-refinery plant of capacity 100KLPD at Village- Nasibpura, Tehsil Talwandi Sabo, Bathinda (Punjab) for the period of June 2025

Ref: F.No. J-11011/221/2017-IA II (I) Dated- 23.09.2020

Sir/ Madam

This has reference to the EC vide letter no. **J-11011/221/2017-IA II (I) Dated- 23.09.2020**. In this regard, we are submitting hereby status report of compliance with the specific and general conditions for period June 2025. Documents enclosed along with report are mentioned below as

1. Point- wise compliance of stipulated environmental conditions & safeguards
2. Analysis Reports
3. Supporting Documents

Thanking You

For M/s Hindustan Petroleum Corporation Limited

(Authorized Signatory)

Name - M S Janardhana Rao
Designation - DGM Projects
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Copy to:

1. The Director, Ministry of Environment, Forest & Climate Change, Govt of India, Sector 31, Chandigarh.
2. The Member Secretary, Central Pollution Control Board, Parivesh Bhawan, East Arjun Nagar Delhi-32
3. The Member Secretary, Punjab Pollution Control Board, Vataran Bhawan, Nabha Road, Patiala, 147001 (Punjab)

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PURPOSE OF THE REPORT

1.0 Introduction

1.1 About Project: M/s Hindustan petroleum Corporation Limited has proposed to set up 2G Ethanol Bio-Refinery plant of capacity 100 KLPD at village Nasibpura, Tehsil Talwandi Sabo, Bathinda (Punjab).

This Project has obtained Environmental Clearance vide letter dated 14th August, 2018 for setting up 2G Bio-refinery Plant of capacity 100 KLD and now has granted amended Environmental Clearance from Ministry of Environment, Forests and Climate Change Delhi, with certain conditions.

1.2 Purpose of the Report

As per the "Sub Para (i)" of "Para 10" of EIA Notification 2006, it is stated that *"It shall be mandatory for the project proponent to submit half-yearly compliance report in respect of the stipulated prior environmental clearance terms and conditions in hard and soft copies to the concerned regulatory authority, on 1st June and 1st December of each calendar year"* and as per compliance condition mentioned in Environment Clearance Letter.

The regulatory authorities in this case are MoEF& CC Delhi, MoEF& CC, Chandigarh and SPCB, Punjab. Various scheduled Site Visits were conducted by a team of Experts to Monitor Pollution related parameters as defined by CPCB / HSPCB. Samples for water and soil were also collected by NABL/ MoEF approved laboratory for analysis.

Based on the Specific and General Conditions mentioned in the EC Letter, a Compliance Report has been prepared and submitted regularly to the authority.

The Environmental assessment has been carried out to verify:

- 1) The proposed project does not have any adverse effect on the project site as well as its surrounding.
- 2) There is compliance with the conditions stipulated in the Environmental Clearance Letter.
- 3) The Project proponent is implementing the environmental safeguards in true spirit.
- 4) The project proponent is implementing the environmental pollution mitigative measures as suggested in approved EIA report.

1.3 Methodology for Preparation of Report is as follows:

- 1) Study of EC Letter & Related Documents,
- 2) Monitoring of Environment Parameters, viz. Ambient Air, Water, Noise & Soil by the NABL/MoEF labs.
- 3) Interpretation of Monitoring Results.
- 4) Preparation of half yearly Environmental Compliance Report.

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1.4 Generic Structure of Report:

- 1) Purpose of the Report, explaining the need of a Compliance Report and Methodology Adopted for preparation of Report.
- 2) Compliance Report, explaining the entire General & specific conditions in the EC Letter and providing details w.r.t. each condition/ guideline.
- 3) Monitoring Reports & Analysis, showing the level of emission within the project site for various Environment Parameters.
- 4) Photographs showing sample collection for environmental monitoring.
- 5) Supporting Documents which are mandatory for the project.

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ADHERENCE TO SPECIFIC AND GENERAL CONDITIONS

PART A- SPECIFIC CONDITION

S. No.	Conditions of Environmental Clearance	Status of Compliance
[A]	The final product (Ethanol) shall be used exclusively for fuel blending only.	<i>Noted.</i>
[B]	Consent to Establish/Operate for the project shall be obtained from the State Pollution Control Board as required under the Air (Prevention and Control of Pollution) Act, 1981 and the Water (Prevention and Control of Pollution) Act, 1974.	<i>Consent to Establish (CTE) was obtained from PPCB valid till 31.12.2021 as per the amended EC.</i>
[C]	As already committed by the project proponent, Zero Liquid Discharge shall be ensured and no waste/treated water shall be discharged outside the premises	<i>As proposed zero discharge of waste water will be met during operational phase.</i>
[D]	Necessary authorization required under the Hazardous and Other Wastes (Management and Trans-Boundary Movement) Rules, 2016, Solid Waste Management Rules, 2016 shall be obtained and the provisions contained in the Rules shall be strictly adhered to.	<i>Authorization required for hazardous and Other Wastes (Management and Trans-Boundary Movement) Rules, 2016, Solid waste Management Rules, 2016 will be obtained as per the requirement.</i>
[E]	To control source and the fugitive emissions, suitable pollution control devices shall be installed to meet the prescribed norms and/or the NAAQS. The gaseous emissions shall be dispersed through stack of adequate height as per CPCB/SPCB guidelines	<i>Measures will be taken to control fugitive emission, pollution control devices will be installed as per the requirement. Stack of adequate height as per the guidelines will be installed for the gaseous emission dispersion.</i>
[F]	Total fresh water requirement shall not exceed 2280 cum/day, proposed to be met from canal supply.	<i>Prescribed water requirement will not be exceeded.</i>
[G]	Process effluent/any wastewater shall not be allowed to mix with storm water. Storm water drain shall be passed through a separate conveyance system.	<i>We will ensure that process water is not mixed with storm water.</i>
[H]	The Company shall strictly comply with the rules and guidelines under Manufacture, Storage and Import of Hazardous Chemicals (MSIHC) Rules, 1989 as amended time to time. All transportation of Hazardous Chemicals shall be as per the Motor Vehicle Act (MVA), 1989.	<i>Noted.</i>

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[I]	<p>The company shall undertake waste minimization measures as below:-</p> <ol style="list-style-type: none"> i. Metering and control of quantities of active ingredients to minimize waste. ii. Reuse of by-products from the process as raw materials or as raw material substitutes in other processes. iii. Use of automated filling to minimize spillage. iv. Use of Close Feed system into batch reactors. v. Venting equipment through vapour recovery system vi. Use of high pressure hoses for equipment clearing to reduce wastewater generation. 	<p><i>We will comply with the condition as per the requirement to minimize waste generation in the plant-</i></p> <ol style="list-style-type: none"> <i>i. Metering and control of quantities of active ingredients will be done regularly.</i> <i>ii. By products will be reused as raw material as much as possible according to requirement.</i> <i>iii. Automated filling will be carried out to minimize spillage</i> <i>iv. Close feed system will be used into batch reactors.</i> <i>v. Water scrubber, vent bottle & flame arrestors will be provided as per requirement.</i> <i>vi. High pressure hoses for equipment clearing will be used to reduce waste water generation.</i>
[J]	<p>The green belt of 5-10 m width shall be developed in more than 33% of the total project area, mainly along the plant periphery, in downward wind direction, and along road sides etc. Selection of plant species shall be as per the CPCB guidelines in consultation with the State Forest Department.</p>	<p><i>We have submitted Green belt development plan to the MoEF&CC in the EIA report and same will be developed as per the EC requirement.</i></p>
[K]	<p>All the commitments made regarding issues raised during the public hearing/ consultation meeting shall be satisfactorily implemented.</p>	<p><i>Noted.</i></p>
[L]	<p>At least 1% of the total project cost shall be allocated for Corporate Environment Responsibility (CER) and the details along with time bound action plan shall be submitted to the Ministry's Regional Office.</p>	<p><i>The project is in initial stage and construction is yet to be commenced. CER details will be submitted to the authority in due course of time. .</i></p>
[M]	<p>For the DG sets, emission limits and the stack height shall be in conformity with the extant regulations and the CPCB guidelines. Acoustic enclosure shall be provided to DG set for controlling the noise pollution.</p>	<p><i>Acoustically enclosed DG sets will be installed and Stack height will be kept as per the CPCB guidelines.</i></p>
[N]	<p>The unit shall make the arrangement for protection of possible fire hazards during manufacturing process in material handling. Fire fighting system shall be as per the norms.</p>	<p><i>Fire Fighting system will be installed as per the condition.</i></p>
[O]	<p>Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.</p>	<p><i>Regular Health Check-up arrangement will be provided for the workers A qualified doctor will be appointed.</i></p>
[P]	<p>There shall be adequate space inside the plant premises earmarked for parking of vehicles for raw materials and finished products, and no parking to be allowed outside on public places.</p>	<p><i>No parking will be done outside on public places. Plan in this regard has already been submitted to authority.</i></p>
[Q]	<p>Storage of raw materials shall be either stored in silos or in covered areas to prevent dust pollution and other fugitive emissions.</p>	<p><i>During operation phase, raw materials will be stored properly in covered areas</i></p>
[R]	<p>Continuous online (24x7) monitoring system for stack emissions shall be installed for measurement of flue gas discharge and the pollutants concentration, and the data to be transmitted to the CPCB and SPCB server. For online continuous monitoring of effluent, the unit shall install web camera with night vision capability and flow meters in the channel/drain carrying effluent within the</p>	<p><i>We will comply.</i></p>

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	premises.	
[S]	CO ₂ generated from the process shall be bottled/made solid ice/value added products and sold to authorize vendors.	<i>Noted.</i>

11.1 OtherGenericConditions:-

S. No.	Conditions of Environmental Clearance	Status of Compliance
i.	The project authorities must strictly adhere to the stipulations made by the state Pollution Control Board (SPCB), State Government and/ or any other statutory authority.	<i>We ensure to follow the guidelines strictly.</i>
ii.	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forest and Climate Change. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.	<i>Noted.</i>
iii.	The locations of ambient air quality monitoring stations shall be decided in consultation with the State Pollution Control Board (SPCB) and it shall be ensured that at least one stations each is installed in the upwind and downwind direction as well as where maximum ground level concentrations are anticipated	<i>Noted and same will be complied.</i>
iv.	The National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R No. 826(E) dated 16 th November, 2009 Shall be Complied with.	<i>Noted.</i>
v.	The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under Environment (Protection) Act, 1986 Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).	<i>We will ensure to keep the noise levels within the standards.</i>
vi.	The Company shall harvest rainwater from the roof tops of the buildings and storm water drains to recharge the ground water and utilize the same for different industrial operations within the plant.	<i>Noted.</i>
vii.	Training shall be imparted to all employees on safety and health aspects of chemicals handling. Pre-employment and routine periodical medical examinations for all employees shall be undertaken on regular basis. Training to all employees on handling of chemicals shall be imparted.	<i>Regular training of health & safety will be provided to the employees for chemical handling.</i>

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viii.	The company shall comply with all the environmental protection measures and safeguards proposed in the documents submitted to the Ministry. All the recommendations made in the EIA/EMP in respect of environmental management, risk mitigation measures and public hearing shall be implemented.	<i>Noted and will be complied as per the requirement.</i>
ix.	The company shall undertake all measures for improving socio-economic conditions of the surrounding area. CSR activities shall be undertaken by involving local villagers, administration and other stake holders. Also eco-developmental measures shall be undertaken for overall improvement of the environment.	<i>CSR activities will be undertaken as per the proposed plan.</i>
x.	A separate Environmental Management Cell equipped with full-fledged laboratory facilities shall be set up to carry out the Environmental Management and Monitoring functions.	<i>Noted.</i>
xi.	The company shall earmark sufficient funds towards capital cost and recurring cost per annum to implement the conditions stipulated by the Ministry of Environment, Forest and Climate Changes well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so earmarked for environment management/Pollution control measures shall not be diverted for any other purpose.	<i>Separate funds will be kept for the implementation of the conditions stipulated by the Ministry of Environment, Forest and Climate Change as well as the State Government.</i>
xii.	A copy of the clearance letter shall be sent by the project proponent to concerned Panchayat, Zila Parisad/ Municipal Corporation, Urban local Body and the local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal.	<i>Noted.</i>
xiii.	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated Environmental Clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF&CC, the respective Zonal office of CPCB and SPCB. A copy of Environmental Clearance and six monthly compliance status reports shall be posted on the website of the company.	<i>Noted. We are complying with the condition.</i>
xiv.	The environmental statement for each financial year ending 31 st March in Form-Vas is mandated shall be submitted to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional offices of MoEF&CC by e-mail.	<i>Noted.</i>
xv.	The project proponent shall inform the public that the project has been accorded environmental clearance by	<i>Copy of advertisements attached.</i>

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	<p>the Ministry and copies of the clearance letter are available with the SPCB/Committee and may also be seen at Website of the Ministry at http://moef.nic.in. This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the concerned Regional office of the Ministry.</p>	
xvi.	<p>The Ministry reserves the right to stipulate additional conditions, if found necessary at subsequent stages and the project proponent shall implement all the said conditions in a time bound manner. The Ministry may revoke or suspend the environmental clearance, if implementation of any of the above conditions is not found satisfactory.</p>	<i>Noted.</i>
xvii.	<p>The above conditions will be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991 read with subsequent amendments therein.</p>	<i>Noted.</i>

3

DETAILS OF ENVIRONMENTAL MONITORING

3.1 AMBIENT AIR QUALITY MONITORING

3.1.1 Ambient Air Quality Monitoring Stations

Ambient air quality monitoring has been carried out at twelve locations on quarterly bases, to assess the ambient air quality of the project site. This will enable to have a comparative analytical understanding about air quality and the changes in the air environment in the study area with respect to the condition prevailing. The locations of the ambient air quality monitoring stations are given in **Table 3.1**.

Table 3.1 Details of Ambient Air Quality Monitoring Stations

S. No.	Location	Location Name/ Description	
		December 2024	March 2025
1.	AAQ1	Near Project site	Near Project site
2.	AAQ2	Jiwan Singh Wala	NasibPura
3.	AAQ3	Maawala	Kot Kashmir
4.	AAQ4	Mahi Nangal	Chathewala
5.	AAQ5	Leleana	KotFatta
6.	AAQ6	Baghi Bandar	Baghi Bandar
7.	AAQ7	Nasibpura	Kothbhara
8.	AAQ8	Kothbhara	Jiwan Singh Wala
9.	AAQ9	Kot Kashmir	GehriBoghi
10.	AAQ10	GehriBoghi	Mahi Nangal
11.	AAQ11	Chathewala	Maanwala
12.	AAQ12	KotFatta	Leleana

3.1.2 Ambient Air Quality Monitoring Methodology

Monitoring was conducted in respect of the following parameters:

- Particulate Matter 2.5 (PM 2.5)
- Particulate Matter 10 (PM 10)
- Sulphur Dioxide (SO₂)
- Oxides of Nitrogen (NO₂)
- Carbon Monoxide (CO)
- Ammonia (NH₃)
- Lead (Pb)
- Benzene (C₆H₆)
- Benzo(a)pyrene
- Ozone (O₃)
- Arsenic (As)

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- Nickel (Ni)
- Volatile Organic Carbon (VOCs)
- Hydrocarbon (as Methane)

Installation of Respirable Dust sampler (RDS) & Fine Particulate Sampler (FPS) was done with the attachment for the 24 hourly ambient air qualities monitoring as per Gazette Notification 16th November 2009.

The air samples were analyzed as per standard methods specified by Central Pollution Control Board (CPCB) and IS: 5182. The techniques used for ambient air quality monitoring and minimum detectable levels are given in **Table 3.2**.

Fine Particulate Sampler instruments have been used for monitoring Particulate Matter 2.5 (PM_{2.5} i.e. <2.5 microns), and Respirable Dust Sampler was used for sampling Repairable fraction (<10 microns), gaseous pollutants like SO₂, and NO₂. Bladder and Aspirator bags were used for collection Carbon monoxide samples. Gas Chromatography techniques have been used for the estimation of CO.

Table 3.2 Techniques used for Ambient Air Quality Monitoring

S. No.	Parameter	Technique	Technical Protocol
1	Particulate Matter 2.5	Fine Particulate Sampler, Gravimetric Method	SOP No. VEL/SOP/01, Section No. S/63
2	Particulate Matter 10	Respirable Dust Sampler, with cyclone separator, Gravimetric Method	IS: 5182 (P-23), 2006
3	Sulphur dioxide	Modified West and Gaeke	IS: 5182 (P-6)
4	Oxides of Nitrogen	Jacob & Hochheiser	IS: 5182 (P-2)
5	Carbon Monoxide	Gas Chromatography	IS:11255(P-6)
6	Ammonia	Distillation Method	IS: 5182 (P-22)
7	Lead	Atomic Absorption Spectro-photometer	IS: 5182 (P-10)
8	Benzene	Gas Chromatography	IS: 5182 (P-11)
9	Benzo(a)pyrene	Gas Chromatography	IS: 5182 (P-12)
10	Ozone	Colorimetry	IS: 5182 (P-9)
11	Arsenic	Atomic Absorption Spectro-photometer	IS: 5182 (P-22)
12	Nickel	Atomic Absorption Spectro-photometer	IS: 5182 (P-22)
13	Volatile Organic Carbon (VOCs)	IS:5182 (P-11)	IS:5182 (P-11)
14	Hydrocarbon (as Methane)	IS:5182 (P-17), 1979	IS:5182 (P-17), 1979

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3.1.3 Ambient Air Quality Monitoring Results (December 2024)

Table 3.6 Ambient Air Quality Monitoring Results (1-4 Location)

S. No.	Parameter	Test Result				NAAQS*
		AAQ1	AAQ2	AAQ3	AAQ4	
1	Particulate Matter (PM _{2.5}), µg/m ³	41.28	47.60	42.18	46.21	60
2	Particulate Matter (PM ₁₀), µg/m ³	62.71	65.15	63.79	68.50	100
3	Nitrogen Dioxide (NO ₂), µg/m ³	24.95	24.08	22.45	23.69	80
4	Sulphur Dioxide (SO ₂), µg/m ³	11.22	10.32	8.06	14.37	80
5	Carbon Monoxide (CO) mg/m ³	0.88	0.91	0.79	0.78	4
6	Ammonia (NH ₃), µg/m ³	22.51	BLQ(LOQ 20.0)	BLQ(LOQ 20.0)	BLQ(LOQ 20.0)	400
7	Lead (Pb), µg/m ³	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	1
8	Benzene(C ₆ H ₆),µg/m ³	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	05
9	Benzo(a)pyrene, ng/m ³	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	01
10	Ozone (O ₃),µg/m ³	22.60	26.40	24.51	24.03	180
11	Arsenic As, ng/ m ³	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	6
12	Nickel Ni, ng/ m ³	BLQ(LOQ 5.0)	BLQ(LOQ 5.0)	BLQ(LOQ 5.0)	BLQ(LOQ 5.0)	20
13	Volatile Organic Carbon (VOCs)	BLQ(LOQ 0.05)	BLQ(LOQ 0.05)	BLQ(LOQ 0.05)	BLQ(LOQ 0.05)	--
14	Hydrocarbon (as Methane)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	--

*NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)] 18.11.2009

Table 3.7 Ambient Air Quality Monitoring Results (5-8 Location)

S. No.	Parameter	Test Result				NAAQS*
		AAQ5	AAQ6	AAQ7	AAQ8	
1	Particulate Matter (PM _{2.5}), µg/m ³	43.19	44.07	49.92	47.80	60
2	Particulate Matter (PM ₁₀), µg/m ³	68.35	67.85	66.38	64.27	100
3	Nitrogen Dioxide (NO ₂), µg/m ³	25.47	22.92	21.17	23.01	80
4	Sulphur Dioxide (SO ₂), µg/m ³	8.23	16.50	10.43	9.14	80
5	Carbon Monoxide (CO) mg/m ³	0.81	0.77	0.88	0.65	4
6	Ammonia (NH ₃), µg/m ³	BLQ(LOQ 20.0)	BLQ(LOQ 20.0)	BLQ(LOQ 20.0)	BLQ(LOQ 20.0)	400

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7	Lead (Pb), µg/m ³	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	1
8	Benzene(C ₆ H ₆),µg/m ³	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	05
9	Benzo(a)pyrene, ng/m ³	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	01
10	Ozone (O ₃),µg/m ³	21.66	24.60	20.26	22.42	180
11	Arsenic As, ng/ m ³	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	6
12	Nickel Ni, ng/ m ³	BLQ(LOQ 5.0)	BLQ(LOQ 5.0)	BLQ(LOQ 5.0)	BLQ(LOQ 5.0)	20
13	Volatile Organic Carbon (VOCs)	BLQ(LOQ 0.05)	BLQ(LOQ 0.05)	BLQ(LOQ 0.05)	BLQ(LOQ 0.05)	--
14	Hydrocarbon (as Methane)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	--

*NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)] 18.11.2009

Table 3.8 Ambient Air Quality Monitoring Results (9-12 Location)

S. No.	Parameter	Test Result				NAAQS*
		AAQ9	AAQ10	AAQ11	AAQ12	
1	Particulate Matter (PM _{2.5}), µg/m ³	49.36	47.16	45.09	47.62	60
2	Particulate Matter (PM ₁₀), µg/m ³	62.20	60.25	68.17	60.58	100
3	Nitrogen Dioxide (NO ₂), µg/m ³	27.62	19.73	27.44	22.16	80
4	Sulphur Dioxide (SO ₂), µg/m ³	13.40	9.48	7.62	8.22	80
5	Carbon Monoxide (CO) mg/m ³	0.67	0.96	0.90	0.87	4
6	Ammonia (NH ₃), µg/m ³	BLQ(LOQ 20.0)	23.60	BLQ(LOQ 20.0)	BLQ(LOQ 20.0)	400
7	Lead (Pb), µg/m ³	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	1
8	Benzene(C ₆ H ₆),µg/m ³	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	05
9	Benzo(a)pyrene,	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	01
10	Ozone (O ₃),µg/m ³	25.33	16.32	23.19	14.65	180
11	Arsenic As, ng/ m ³	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	6
12	Nickel Ni, ng/ m ³	BLQ(LOQ 5.0)	BLQ(LOQ 5.0)	BLQ(LOQ 5.0)	BLQ(LOQ 5.0)	20
13	Volatile Organic	BLQ(LOQ 0.05)	BLQ(LOQ 0.05)	BLQ(LOQ 0.05)	BLQ(LOQ 0.05)	--
14	Hydrocarbon (as Methane)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	--

*NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)] 18.11.2009

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3.1.4 Discussion on Ambient Air Quality in the Study Area

PM₁₀ and PM_{2.5} levels at the project site are within the permissible limit of 100µg/m³ and 60 µg/m³ respectively (for residential, rural and other areas as stipulated in the National Ambient Air Quality Standards). SO₂, NO_x and CO was observed within the corresponding stipulated limits (Limit for SO₂ and NO_x: 80 µg/m³ and limit for CO: 4.0 mg/m³) at all monitoring locations. Station wise variation of ambient air quality parameters has been pictorially shown in **Figure 3.1, 3.2, 3.3 & 3.4.**

3.1.5 Ambient Air Quality Monitoring Results (March 2025)

Table 3.3 Ambient Air Quality Monitoring Results (1-4 Location)

S. No.	Parameter	Test Result				NAAQS*
		AAQ1	AAQ2	AAQ3	AAQ4	
1	Particulate Matter (PM _{2.5}), µg/m ³	36.40	38.72	33.58	37.35	60
2	Particulate Matter (PM ₁₀), µg/m ³	57.18	56.30	54.17	59.01	100
3	Nitrogen Dioxide (NO ₂), µg/m ³	18.62	15.04	23.26	18.95	80
4	Sulphur Dioxide (SO ₂), µg/m ³	10.47	11.47	9.23	11.43	80
5	Carbon Monoxide (CO) mg/m ³	0.52	0.79	0.65	0.59	4
6	Ammonia (NH ₃), µg/m ³	20.08	BLQ(LOQ 20.0)	BLQ(LOQ 20.0)	BLQ(LOQ 20.0)	400
7	Lead (Pb), µg/m ³	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	1
8	Benzene(C ₆ H ₆),µg/m ³	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	05
9	Benzo(a)pyrene, ng/m ³	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	01
10	Ozone (O ₃),µg/m ³	16.35	17.05	25.79	19.69	180
11	Arsenic As, ng/ m ³	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	6
12	Nickel Ni, ng/ m ³	BLQ(LOQ 5.0)	BLQ(LOQ 5.0)	BLQ(LOQ 5.0)	BLQ(LOQ 5.0)	20
13	Volatile Organic	BLQ(LOQ 0.05)	BLQ(LOQ 0.05)	BLQ(LOQ 0.05)	BLQ(LOQ 0.05)	--
14	Hydrocarbon (as Methane)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	--

*NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)] 18.11.2009

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Table 3.4 Ambient Air Quality Monitoring Results (5-8 Location)

S. No.	Parameter	Test Result				NAAQS*
		AAQ5	AAQ6	AAQ7	AAQ8	
1	Particulate Matter (PM _{2.5}), µg/m ³	32.19	35.21	37.92	31.67	60
2	Particulate Matter (PM ₁₀), µg/m ³	48.26	58.37	42.39	54.28	100
3	Nitrogen Dioxide (NO ₂), µg/m ³	16.55	13.45	15.08	19.63	80
4	Sulphur Dioxide (SO ₂), µg/m ³	9.49	11.09	11.92	10.56	80
5	Carbon Monoxide (CO) mg/m ³	0.63	0.53	0.56	0.57	4
6	Ammonia (NH ₃), µg/m ³	BLQ(LOQ 20.0)	BLQ(LOQ 20.0)	BLQ(LOQ 20.0)	BLQ(LOQ 20.0)	400
7	Lead (Pb), µg/m ³	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	1
8	Benzene(C ₆ H ₆),µg/m ³	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	05
9	Benzo(a)pyrene, ng/m ³	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	01
10	Ozone (O ₃),µg/m ³	16.32	15.09	18.33	18.62	180
11	Arsenic As, ng/ m ³	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	6
12	Nickel Ni, ng/ m ³	BLQ(LOQ 5.0)	BLQ(LOQ 5.0)	BLQ(LOQ 5.0)	BLQ(LOQ 5.0)	20
13	Volatile Organic Carbon (VOCs)	BLQ(LOQ 0.05)	BLQ(LOQ 0.05)	BLQ(LOQ 0.05)	BLQ(LOQ 0.05)	--
14	Hydrocarbon (as Methane)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	--

*NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)] 18.11.2009

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Table 3.5 Ambient Air Quality Monitoring Results (9-12 Location)

S. No.	Parameter	Test Result				NAAQS*
		AAQ9	AAQ10	AAQ11	AAQ12	
1	Particulate Matter (PM _{2.5}), µg/m ³	37.83	38.72	36.42	38.41	60
2	Particulate Matter (PM ₁₀), µg/m ³	54.26	49.08	57.09	45.26	100
3	Nitrogen Dioxide (NO ₂), µg/m ³	18.56	17.62	27.63	13.96	80
4	Sulphur Dioxide (SO ₂), µg/m ³	11.21	8.42	7.26	9.40	80
5	Carbon Monoxide (CO) mg/m ³	0.58	0.66	0.55	0.52	4
6	Ammonia (NH ₃), µg/m ³	BLQ(LOQ 20.0)	20.04	BLQ(LOQ 20.0)	BLQ(LOQ 20.0)	400
7	Lead (Pb), µg/m ³	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	1
8	Benzene(C ₆ H ₆), µg/m ³	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	05
9	Benzo(a)pyrene,	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	BLQ(LOQ 0.5)	01
10	Ozone (O ₃), µg/m ³	16.99	17.63	14.60	15.97	180
11	Arsenic As, ng/ m ³	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	6
12	Nickel Ni, ng/ m ³	BLQ(LOQ 5.0)	BLQ(LOQ 5.0)	BLQ(LOQ 5.0)	BLQ(LOQ 5.0)	20
13	Volatile Organic	BLQ(LOQ 0.05)	BLQ(LOQ 0.05)	BLQ(LOQ 0.05)	BLQ(LOQ 0.05)	--
14	Hydrocarbon (as Methane)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	BLQ(LOQ 0.1)	--

*NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)] 18.11.2009

3.1.6 Discussion on Ambient Air Quality in the Study Area

PM₁₀ and PM_{2.5} levels at the project site are within the permissible limit of 100µg/m³ and 60 µg/m³ respectively (for residential, rural and other areas as stipulated in the National Ambient Air Quality Standards). SO₂, NO_x and CO was observed within the corresponding stipulated limits (Limit for SO₂ and NO_x: 80 µg/m³ and limit for CO: 4.0 mg/m³) at all monitoring locations. Station wise variation of ambient air quality parameters has been pictorially shown in **Figure 3.1, 3.2, 3.3 & 3.4**.

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3.2 AMBIENT NOISE MONITORING

3.2.1 Ambient Noise Monitoring Locations

The main objective of noise monitoring in the study area is to assess the present ambient noise levels in near front gate due to various construction allied activities and increased vehicular movement. A preliminary reconnaissance survey has been undertaken to identify the major noise generating sources in the area. Ambient noise monitoring was conducted at 12 locations in and around the project site on quarterly bases as given in **Table 3.9**.

Table 3.9 Details of Ambient Noise Monitoring Stations

S. No.	Location Code	Location Name/ Description		Present Land use
		December 2024	March 2025	
1.	N1	Near Project site	Near Project site	Industrial
2.	N2	Jiwan Singh Wala	NasibPura	Residential
3.	N3	Maawala	Kot Kashmir	Residential
4.	N4	Mahi Nangal	Chathewala	Residential
5.	N5	Leleana	KotFatta	Residential
6.	N6	Baghi Bandar	Baghi Bandar	Residential
7.	N7	Nasibpura	Kothbhara	Residential
8.	N8	Kothbhara	Jiwan Singh Wala	Residential
9.	N9	Kot Kashmir	GehriBoghi	Residential
10.	N10	GehriBoghi	Mahi Nangal	Residential
11.	N11	Chathewala	Maanwala	Residential
12.	N12	KotFatta	Leleana	Residential

3.2.2 Methodology of Noise Monitoring

Noise levels were measured using sound level meter. Noise level monitoring was carried out continuously for 24-hours with one hour interval starting at 06:00hrs to 06:00hrs next day. The noise levels were monitored on working days only. During each hour Leq were directly computed by the instrument based on the sound pressure levels. Monitoring was carried out at 'A' response and fast mode.

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3.2.3 Ambient Noise Monitoring Results (December- 2024)

The location wise ambient noise monitoring results is summarized in **Table 3.13, 3.14& 3.15**. The location-wise variation of noise levels are graphically presented in **Figure**

Table 3.13 Ambient Noise Monitoring Results (1-4 Location)

Parameter	N1		N2		N3		N4	
	Day Time	Night Time						
Lmax	72.9	67.4	53.8	44.2	50.2	43.9	54.1	42.8
Lmin	53.5	46.3	46.0	36.8	41.8	32.8	38.9	32.6
Leq	61.32	50.61	50.21	41.53	47.33	38.12	49.2	37.01
CPCB Limit (Leq in dB(A) Industrial Limit& Residential Limit)	75.00	70.00	55.00	45.00	55.00	45.00	55.00	45.00

Note *A “decibel” is a unit in which noise is measured.

Table 3.14 Ambient Noise Monitoring Results (5-8 Location)

Parameter	N5		N6		N7		N8	
	Day Time	Night Time						
Lmax	52.1	43.6	53.1	40.1	53.8	40.8	54.1	41.9
Lmin	37.8	35.2	31.8	34.9	32.1	30.5	37.8	33.7
Leq	50.32	40.75	47.60	36.05	47.26	35.90	49.77	36.40
CPCB Limit (Leq in dB(A) Residential Limit)	55.00	45.00	55.00	45.00	55.00	45.00	55.00	45.00

Note *A “decibel” is a unit in which noise is measured.

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Table 3.15 Ambient Noise Monitoring Results (9-12 Location)

Parameter	N9		N10		N11		N12	
	Day Time	Night Time						
Lmax	54.9	44.2	52.6	42.7	52.8	42.8	54.9	44.1
Lmin	36.1	36.8	41.0	33.5	43.2	33.9	39.1	32.5
Leq	46.22	37.91	47.32	39.26	48.90	39.61	47.22	37.99
CPCB Limit (Leq in dB(A) Residential Limit)	55.00	45.00	55.00	45.00	55.00	45.00	55.00	45.00

Note: *A “decibel” is a unit in which noise is measured

3.2.4 Ambient Noise Monitoring Results (March 2025)

The location wise ambient noise monitoring results is summarized in **Table 3.10, 3.11 & 3.12**. The location-wise variation of noise levels are graphically presented in **Figure**

Table 3.10 Ambient Noise Monitoring Results (1-4 Location)

Parameter	N1		N2		N3		N4	
	Day Time	Night Time						
Lmax	73.8	68.2	52.6	43.1	51.7	42.8	53.0	41.6
Lmin	54.0	47.5	45.7	35.7	42.6	34.5	37.8	31.9
Leq	62.94	51.39	49.88	40.92	48.22	39.60	48.5	36.74
CPCB Limit (Leq in dB(A) Industrial Limit & Residential Limit)	75.00	70.00	55.00	45.00	55.00	45.00	55.00	45.00

Note: *A “decibel” is a unit in which noise is measured.

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Table 3.11 Ambient Noise Monitoring Results (5-8 Location)

Parameter	N5		N6		N7		N8	
	Day Time	Night Time						
Lmax	53.7	42.3	51.9	39.7	52.9	41.3	52.9	40.8
Lmin	36.5	36.4	30.5	32.8	31.5	31.0	36.1	32.5
Leq	51.68	41.95	46.74	35.10	46.58	36.77	48.57	35.42
CPCB Limit (Leq in dB(A) Residential Limit)	55.00	45.00	55.00	45.00	55.00	45.00	55.00	45.00

Note: *A “decibel” is a unit in which noise is measured.

Table 3.12 Ambient Noise Monitoring Results (9-12 Location)

Parameter	N9		N10		N11		N12	
	Day Time	Night Time						
Lmax	51.8	43.9	51.7	40.5	53.6	43.1	52.7	43.0
Lmin	34.6	32.6	40.5	32.1	44.1	34.8	38.2	31.7
Leq	45.37	36.12	46.90	38.47	49.57	40.93	45.69	36.11
CPCB Limit (Leq in dB(A) Residential Limit)	55.00	45.00	55.00	45.00	55.00	45.00	55.00	45.00

Note: *A “decibel” is a unit in which noise is measured

3.2.4 Discussion on Ambient Noise Levels in the Study Area

Day Time Noise Levels (L_{day}):

The day time noise level at all the locations were found to within limits prescribed for Industrial area i.e. 75 dB (A) and for residential are 55 dB (A).

Night Time Noise Levels (L_{night}):

The night time noise level at all the locations were found to within limit prescribed for Industrial area i.e. 70 dB (A) and for residential are 45

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3.3 WATER QUALITY MONITORING

3.3.1 Ground Water Quality Monitoring Locations

Keeping in view the importance of Ground water & Surface water as an important source of water to the local population, sample of ground water & surface water was collected from the project site for the assessment of impacts of the project on the ground water quality & surface water quality.

Water sample was collected from the project site and nearby villages. The sample was analyzed for various parameters to compare with the standards for water as per IS: 10500 for water sources. The details of water sampling locations are given in **Table 3.16**

Table 3.16 Details of Water Quality Monitoring Station

S. No.	Location Code	Location Name/ Description	
		December 2024	March 2025
1.	W 1	Ground Water (Near Project Site)	Ground Water (Near Project Site)
2.	W 2	Ground Water (Jiwan Singh Wala)	Ground Water (Jiwan Singh Wala)
3.	W 3	Ground Water (Maanwala)	Ground Water (Maanwala)
4.	W 4	Ground Water (Mahi Nangal)	Ground Water (Mahi Nangal)
5.	W 5	Ground Water (Kot Kashmir)	Ground Water (Kot Kashmir)
6.	W 6	Ground Water (NasibPura)	Ground Water (NasibPura)
7.	W 7	Ground Water (Baghi Bandar)	Ground Water (Baghi Bandar)
8.	W 8	Surface Water (KotFatta)	Surface Water (KotFatta)
9.	W 9	Surface Water (Chathewala)	Surface Water (Chathewala)

3.3.2 Methodology of Groundwater & Surface water Quality Monitoring

Sampling of water was carried out on **December 2024 & March 2025**. Samples were collected as grab sample and sampling forms are filled in as per the sampling plan. The preservative sample were properly added to preserve as per standard operating procedures (SOP) and stored immediately in ice boxes, which were ensured for appropriate temperatures. Sample for chemical analysis was collected in polyethylene carboys. Sample collected for metal content were acidified to <2 pH with 1 ml HNO₃. A sample for bacteriological analysis was collected in sterilized glass bottles.

Soon after the completion of sampling, chain of custody sheets for the samples are filled in and then they were transported to laboratory for further analysis. Proper care was taken during packing and transportation of samples. All the samples reached the central laboratory within the holding times for different parameters. After ensuring the same the samples were forwarded immediately for analysis.

The samples were analyzed as per the standard procedures specified in 'Standard Methods for the Examination of Water and Wastewater' published by American Public Health Association (APHA) and CPCB. The analytical techniques and the test methods adopted for testing of water are given in **Table 3.17-3.34**.

3.3.3 Ground Water & Surface Water Quality Monitoring Results (December 2024)

The detailed ground water & surface water quality monitoring results are presented in **Table 3.26-3.34**

Table 3.26 Ground water Quality Monitoring Result (Near Project Site)

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S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limits)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.38	--	6.5 to 8.5	No
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (P-21)	223.68	mg/L	200	600
7.	Calcium as Ca	IS 3025 (P-40)	69.72	mg/L	75	200
8.	Alkalinity as CaCO ₃	IS 3025 (P-23)	231.41	mg/L	200	600
9.	Chloride as Cl	IS 3025 (P-32)	60.18	mg/L	250	1000
10.	Cyanide as CN	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No
11.	Magnesium as Mg	APHA 3500 Mg B	12.08	mg/L	30	100
12.	Total Dissolved	IS 3025 (P-16)	511.09	mg/L	500	2000
13.	Sulphate as SO ₄	IS 3025 (P-24)	17.43	mg/L	200	400
14.	Fluoride as F	APHA 4500 F D	0.78	mg/L	1.0	1.5
15.	Nitrate as NO ₃	IS 3025 (Part -34)	6.40	mg/L	45	No
16.	Iron as Fe	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.31	mg/L	1.0	No Relaxation
17.	Aluminium as Al	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium as Cr	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No
22.	Anionic Detergents	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc as Zn	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.46	mg/L	5.0	15.0
24.	Copper as Cu	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese as Mn	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium as Cd	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead as Pb	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation

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28.	Selenium as Se	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic as As	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury as Hg	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/L	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	821	µS/cm	--	--
32.	Ammonia as NH ₃	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	26.3	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	4.5	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	---	
36.	E. coli	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any 100 ml sample	

Note: - *BDL-Below Detection Limit, **DL- Detection Limit

Table 3.27 Ground water Quality Monitoring Result (Jiwan Singh Wala)

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limits)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.32	--	6.5 to 8.5	No
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (P-21)	225.12	mg/L	200	600
7.	Calcium as Ca	IS 3025 (P-40)	61.34	mg/L	75	200
8.	Alkalinity as CaCO ₃	IS 3025 (P-23)	210.68	mg/L	200	600
9.	Chloride as Cl	IS 3025 (P-32)	40.05	mg/L	250	1000
10.	Cyanide as CN	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No
11.	Magnesium as Mg	APHA 3500 Mg B	17.51	mg/L	30	100
12.	Total Dissolved	IS 3025 (P-16)	468.92	mg/L	500	2000
13.	Sulphate as SO ₄	IS 3025 (P-24)	31.76	mg/L	200	400

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14.	Fluoride as F	APHA 4500 F D	0.74	mg/L	1.0	1.5
15.	Nitrate as NO ₃	IS 3025 (Part -34)	3.01	mg/L	45	No
16.	Iron as Fe	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.38	mg/L	1.0	No Relaxation
17.	Aluminium as Al	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium as Cr	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No
22.	Anionic Detergents	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc as Zn	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.34	mg/L	5.0	15.0
24.	Copper as Cu	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese as Mn	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium as Cd	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead as Pb	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
28.	Selenium as Se	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic as As	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury as Hg	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/L	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	736	µS/cm	--	--
32.	Ammonia as NH ₃	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	29.02	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	3.49	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	---	
36.	E. coli	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any 100 ml sample	

*BLQ-Below Limit of Quantification, **LOQ- Limit of Quantification.

@Amendment No.1 in June 2015 (Limits of Iron & Arsenic) and Amendment No.2 in Sept. 2018 (Limit of Boron & IS method of Total

Coliform & E.coli) & Amendment No.3 in Feb. 2021 (Limit of Mineral Oil).

Table 3.28 Ground water Quality Monitoring Result (Maanwala)

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S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limits)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.62	--	6.5 to 8.5	No
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (P-21)	228.65	mg/L	200	600
7.	Calcium as Ca	IS 3025 (P-40)	60.11	mg/L	75	200
8.	Alkalinity as CaCO ₃	IS 3025 (P-23)	226.98	mg/L	200	600
9.	Chloride as Cl	IS 3025 (P-32)	87.00	mg/L	250	1000
10.	Cyanide as CN	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No
11.	Magnesium as Mg	APHA 3500 Mg B	19.11	mg/L	30	100
12.	Total Dissolved	IS 3025 (P-16)	524.08	mg/L	500	2000
13.	Sulphate as SO ₄	IS 3025 (P-24)	39.62	mg/L	200	400
14.	Fluoride as F	APHA 4500 F D	0.33	mg/L	1.0	1.5
15.	Nitrate as NO ₃	IS 3025 (Part -34)	4.07	mg/L	45	No
16.	Iron as Fe	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.34	mg/L	1.0	No Relaxation
17.	Aluminium as Al	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium as Cr	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No
22.	Anionic Detergents	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc as Zn	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.67	mg/L	5.0	15.0
24.	Copper as Cu	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese as Mn	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium as Cd	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead as Pb	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation

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28.	Selenium as Se	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic as As	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury as Hg	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/L	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	852	µS/cm	--	--
32.	Ammonia as NH ₃	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	35.16	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	3.5	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	---	--
36.	E. coli	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any 100 ml	----

*BLQ-Below Limit of Quantification, **LOQ- Limit of Quantification.

@Amendment No.1 in June 2015 (Limits of Iron & Arsenic) and Amendment No.2 in Sept. 2018 (Limit of Boron & IS method of Total Coliform & E.coli) & Amendment No.3 in Feb. 2021 (Limit of Mineral Oil).

Table 3.29 Ground water Quality Monitoring Result (Mahi Nangal)

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limits)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.60	--	6.5 to 8.5	No
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (P-21)	264.15	mg/L	200	600
7.	Calcium as Ca	IS 3025 (P-40)	82.60	mg/L	75	200
8.	Alkalinity as CaCO ₃	IS 3025 (P-23)	247.36	mg/L	200	600
9.	Chloride as Cl	IS 3025 (P-32)	79.48	mg/L	250	1000
10.	Cyanide as CN	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No
11.	Magnesium as Mg	APHA 3500 Mg B	14.10	mg/L	30	100

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12.	Total Dissolved	IS 3025 (P-16)	512.00	mg/L	500	2000
13.	Sulphate as SO ₄	IS 3025 (P-24)	59.28	mg/L	200	400
14.	Fluoride as F	APHA 4500 F D	0.64	mg/L	1.0	1.5
15.	Nitrate as NO ₃	IS 3025 (Part -34)	9.01	mg/L	45	No
16.	Iron as Fe	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.32	mg/L	1.0	No Relaxation
17.	Aluminium as Al	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium as Cr	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No
22.	Anionic Detergents	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc as Zn	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.44	mg/L	5.0	15.0
24.	Copper as Cu	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese as Mn	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium as Cd	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead as Pb	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
28.	Selenium as Se	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic as As	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury as Hg	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/l	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	876	µS/cm	--	--
32.	Ammonia as NH ₃	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	21.7	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	3.9	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	---	
36.	E. coli	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any 100 ml sample	

*BLQ-Below Limit of Quantification, **LOQ- Limit of Quantification.

©Amendment No.1 in June 2015 (Limits of Iron & Arsenic) and Amendment No.2 in Sept. 2018 (Limit of Boron & IS method of Total Coliform & E.coli) & Amendment No.3 in Feb. 2021 (Limit of Mineral Oil).

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Table 3.30 Ground water Quality Monitoring Result (Kot Kashmir)

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limits)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.32	--	6.5 to 8.5	No
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (P-21)	237.56	mg/L	200	600
7.	Calcium as Ca	IS 3025 (P-40)	58.07	mg/L	75	200
8.	Alkalinity as CaCO ₃	IS 3025 (P-23)	151.63	mg/L	200	600
9.	Chloride as Cl	IS 3025 (P-32)	69.80	mg/L	250	1000
10.	Cyanide as CN	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No
11.	Magnesium as Mg	APHA 3500 Mg B	22.51	mg/L	30	100
12.	Total Dissolved	IS 3025 (P-16)	564.00	mg/L	500	2000
13.	Sulphate as SO ₄	IS 3025 (P-24)	51.22	mg/L	200	400
14.	Fluoride as F	APHA 4500 F D	0.79	mg/L	1.0	1.5
15.	Nitrate as NO ₃	IS 3025 (Part -34)	3.48	mg/L	45	No
16.	Iron as Fe	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.40	mg/L	1.0	No Relaxation
17.	Aluminium as Al	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium as Cr	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No
22.	Anionic Detergents	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc as Zn	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.39	mg/L	5.0	15.0
24.	Copper as Cu	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese as Mn	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium as Cd	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead as Pb	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation

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28.	Selenium as Se	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic as As	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury as Hg	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/L	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	756	µS/cm	--	--
32.	Ammonia as NH ₃	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	38.1	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	2.9	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	---	
36.	E. coli	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any 100 ml sample	

*BLQ-Below Limit of Quantification, **LOQ- Limit of Quantification.

@Amendment No.1 in June 2015 (Limits of Iron & Arsenic) and Amendment No.2 in Sept. 2018 (Limit of Boron & IS method of Total Coliform & E.coli) & Amendment No.3 in Feb. 2021 (Limit of Mineral Oil).

Table 3.31 Ground water Quality Monitoring Result (Nasibpura)

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limits)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.39	--	6.5 to 8.5	No
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (P-21)	153.44	mg/L	200	600
7.	Calcium as Ca	IS 3025 (P-40)	39.28	mg/L	75	200
8.	Alkalinity as CaCO ₃	IS 3025 (P-23)	161.05	mg/L	200	600
9.	Chloride as Cl	IS 3025 (P-32)	44.98	mg/L	250	1000

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10.	Cyanide as CN	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No
11.	Magnesium as Mg	APHA 3500 Mg B	13.47	mg/L	30	100
12.	Total Dissolved	IS 3025 (P-16)	352.16	mg/L	500	2000
13.	Sulphate as SO ₄	IS 3025 (P-24)	19.22	mg/L	200	400
14.	Fluoride as F	APHA 4500 F D	0.63	mg/L	1.0	1.5
15.	Nitrate as NO ₃	IS 3025 (Part -34)	5.88	mg/L	45	No Relaxation
16.	Iron as Fe	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.49	mg/L	1.0	No Relaxation
17.	Aluminium as Al	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium as Cr	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No
22.	Anionic Detergents	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc as Zn	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.32	mg/L	5.0	15.0
24.	Copper as Cu	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese as Mn	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium as Cd	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead as Pb	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
28.	Selenium as Se	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic as As	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury as Hg	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/L	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	595	µS/cm	--	--
32.	Ammonia as NH ₃	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	14.9	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	3.7	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	---	

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36.	E. coli	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any 100 ml sample
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*BLQ-Below Limit of Quantification, **LOQ- Limit of Quantification.

©Amendment No.1 in June 2015 (Limits of Iron & Arsenic) and Amendment No.2 in Sept. 2018 (Limit of Boron & IS method of Total Coliform & E.coli) & Amendment No.3 in Feb. 2021 (Limit of Mineral Oil).

Table 3.32 Ground water Quality Monitoring Result (Baghi Bandar)

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limits)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.50	--	6.5 to 8.5	No
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as CaCO ₃	IS 3025 (P-21)	238.51	mg/L	200	600
7.	Calcium as Ca	IS 3025 (P-40)	44.69	mg/L	75	200
8.	Alkalinity as CaCO ₃	IS 3025 (P-23)	192.40	mg/L	200	600
9.	Chloride as Cl	IS 3025 (P-32)	61.53	mg/L	250	1000
10.	Cyanide as CN	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No
11.	Magnesium as Mg	APHA 3500 Mg B	30.86	mg/L	30	100
12.	Total Dissolved	IS 3025 (P-16)	421.00	mg/L	500	2000
13.	Sulphate as SO ₄	IS 3025 (P-24)	19.05	mg/L	200	400
14.	Fluoride as F	APHA 4500 F D	0.59	mg/L	1.0	1.5
15.	Nitrate as NO ₃	IS 3025 (Part -34)	9.2	mg/L	45	No
16.	Iron as Fe	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.46	mg/L	1.0	No Relaxation
17.	Aluminium as Al	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium as Cr	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No
22.	Anionic Detergents	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc as Zn	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.61	mg/L	5.0	15.0
24.	Copper as Cu	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5

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25.	Manganese as Mn	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium as Cd	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead as Pb	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
28.	Selenium as Se	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic as As	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury as Hg	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/L	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	627	µS/cm	--	--
32.	Ammonia as NH ₃	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	29.2	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	3.8	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	---	
36.	E. coli	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any 100 ml	

Note: - *BDL-Below Detection Limit, **DL- Detection Limit

Table 3.33 Surface water Quality Monitoring Result (KotFatta)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25°C)	IS 3025 (P-11)	7.09	--
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen
3.	Turbidity	IS 3025 (P-10)	16.2	NTU
4.	Odour	IS 3025 (P-5)	Agreeable	--
5.	Taste	IS 3025 (P-8)	NR	--
6.	Chloride as Cl	IS 3025 (P-32)	61.54	mg/L
7.	Conductivity	IS 3025 (P-14)	589	µS/cm
8.	Nitrate as NO ₃	IS 3025 (P-34)	13.29	mg/L
9.	Iron as Fe	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.51	mg/L
10.	Total Dissolved Solids	IS 3025 (P-16)	354.78	mg/L
11.	Lead as Pb	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L

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12.	Boron	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.64	mg/L
13.	Sulphate as SO ₄	IS 3025 (P-24)	20.89	mg/L
14.	Fluoride as F	APHA 4500 F D	0.60	mg/L
15.	BOD (3 Days at 20°C)	IS 3025 (P-44)	5.31	mg/L
16.	COD	IS 3025 (P-58)	28.69	mg/L
17.	Free Ammonia as N	IS 3025 (P-34)	8.90	mg/L
18.	Total Coliform	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	Per 100ml
19.	Arsenic as As	IS 3025 (P-21)	129.00	mg/L
20.	Total Hardness as CaCO ₃	IS 3025 (P-40)	46.28	mg/L
21.	Calcium as Ca	IS 3025 (P-23)	137.05	mg/L
22.	Alkalinity as CaCO ₃	APHA 3500 Mg B Calculation Method	3.98	mg/L
23.	Magnesium as Mg	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	6.30	mg/L
24.	Copper as Cu	IS 3025 (P-45)	43.05	mg/L
25.	Sodium	IS 3025 (P-45)	7.7	mg/L
26.	Potassium	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L
27.	Total Chromium as Cr	IS 15185:2016	Absent	mg/L

Note:- BLQ-Below Limit of Quantification, *LOQ-Limit of Quantification, **NR- Not Reported.

Table 3.34 Surface water Quality Monitoring Result (Chathewala)

S. No.	Parameter	Test-Method	Result	Unit
1	pH (at 25°C)	IS 3025 (P-11)	7.90	--
2	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen
3	Turbidity	IS 3025 (P-10)	18.2	NTU
4	Odour	IS 3025 (P-5)	Agreeable	--
5	Taste	IS 3025 (P-8)	NR	--
6	Chloride as Cl	IS 3025 (P-32)	43.70	mg/L
7	Conductivity	IS 3025 (P-14)	852	µS/cm
8	Nitrate as NO ₃	IS 3025 (P-34)	5.29	mg/L
9	Iron as Fe	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.64	mg/L
10	Total Dissolved Solids	IS 3025 (P-16)	421.00	mg/L
11	Lead as Pb	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L
12	Boron	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.89	mg/L
13	Sulphate as SO ₄	IS 3025 (P-24)	27.02	mg/L
14	Fluoride as F	APHA 4500 F D	0.59	mg/L

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15	BOD (3 Days at	IS 3025 (P-44)	3.01	mg/L
16	COD	IS 3025 (P-58)	15.06	mg/L
17	Free Ammonia as	IS 3025 (P-34)	6.32	mg/L
18	Total Coliform	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	Per 100ml
19	Arsenic as As	IS 3025 (P-21)	133.76	mg/L
20	Total Hardness as CaCO ₃	IS 3025 (P-40)	53.58	mg/L
21	Calcium as Ca	IS 3025 (P-23)	146.90	mg/L
22	Alkalinity as CaCO ₃	APHA 3500 Mg B Calculation Method	3.49	mg/L
23	Magnesium as Mg	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	2.16	mg/L
24	Copper as Cu	IS 3025 (P-45)	41.05	mg/L
25	Sodium	IS 3025 (P-45)	4.0	mg/L
26	Potassium	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L
27	Total Chromium as Cr	IS 15185:2016	Absent	mg/L

Note:- BLQ-Below Limit of Quantification, *LOQ-Limit of Quantification, **NR- Not Reported.

3.3.4 Ground Water & Surface Water Quality Monitoring Results (March 2025)

The detailed ground water & surface water quality monitoring results are presented in **Table 3.17-3.25**

Table 3.17 Ground water Quality Monitoring Result (Near Project Site)

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limits)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.41	--	6.5 to 8.5	No
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness (as CaCO ₃)	IS 3025 (P-21)	224.56	mg/L	200	600
7.	Calcium (as Ca)	IS 3025 (P-40)	70.48	mg/L	75	200
8.	Alkalinity (as	IS 3025 (P-23)	232.15	mg/L	200	600
9.	Chloride (as Cl)	IS 3025 (P-32)	61.72	mg/L	250	1000
10.	Cyanide (as CN)	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No

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11.	Magnesium (as Mg)	APHA 3500 Mg B	11.83	mg/L	30	100
12.	Total Dissolved	IS 3025 (P-16)	512.49	mg/L	500	2000
13.	Sulphate(as SO ₄)	IS 3025 (P-24)	18.25	mg/L	200	400
14.	Fluoride (as F)	APHA 4500 FD	0.80	mg/L	1.0	1.5
15.	Nitrate (as NO ₃)	IS 3025 (Part -34)	7.22	mg/L	45	No
16.	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.38	mg/L	1.0	No Relaxation
17.	Aluminium(as Al)	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium (as Cr)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No
22.	Anionic Detergents	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc (as Zn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.55	mg/L	5.0	15.0
24.	Copper (as Cu)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese (as Mn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium (as Cd)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
28.	Selenium (as Se)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic (as As)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury (as Hg)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/L	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	823	µS/cm	--	--
32.	Ammonia (as NH ₃)	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	27.9	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	3.5	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	--	
36.	E. coli	IS 15185:2016	Absent	Per 100ml	'Shall not be detectable in any 100 ml	

*BLQ-Below Limit of Quantification, **LOQ- Limit of Quantification.

©Amendment No.1 in June 2015 (Limits of Iron & Arsenic) and Amendment No.2 in Sept. 2018 (Limit of Boron & IS method of Total

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Coliform & E.coli) & Amendment No.3 in Feb. 2021 (Limit of Mineral Oil)

Table 3.18 Ground water Quality Monitoring Result (Jiwan Singh Wala)

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limits)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.29	--	6.5 to 8.5	No
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness (as CaCO ₃)	IS 3025 (P-21)	226.48	mg/L	200	600
7.	Calcium (as Ca)	IS 3025 (P-40)	63.12	mg/L	75	200
8.	Alkalinity (as)	IS 3025 (P-23)	211.76	mg/L	200	600
9.	Chloride (as Cl)	IS 3025 (P-32)	41.33	mg/L	250	1000
10.	Cyanide (as CN)	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No
11.	Magnesium (as Mg)	APHA 3500 Mg B	16.73	mg/L	30	100
12.	Total Dissolved	IS 3025 (P-16)	469.54	mg/L	500	2000
13.	Sulphate(as SO ₄)	IS 3025 (P-24)	32.98	mg/L	200	400
14.	Fluoride (as F)	APHA 4500 F D	0.56	mg/L	1.0	1.5
15.	Nitrate (as NO ₃)	IS 3025 (Part -34)	2.97	mg/L	45	No
16.	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.40	mg/L	1.0	No Relaxation
17.	Aluminium(as Al)	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium (as Cr)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No
22.	Anionic Detergents	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc (as Zn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.30	mg/L	5.0	15.0
24.	Copper (as Cu)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese (as Mn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium (as Cd)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation

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27.	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
28.	Selenium (as Se)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic (as As)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury (as Hg)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/L	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	732	µS/cm	--	--
32.	Ammonia (as NH ₃)	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	30.45	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	2.88	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any	
36.	E. coli	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any	

*BLQ-Below Limit of Quantification, **LOQ- Limit of Quantification.

©Amendment No.1 in June 2015 (Limits of Iron & Arsenic) and Amendment No.2 in Sept. 2018 (Limit of Boron & IS method of Total Coliform & E.coli) & Amendment No.3 in Feb. 2021 (Limit of Mineral Oil).

Table 3.19 Ground water Quality Monitoring Result (Maanwala)

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limits)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.59	--	6.5 to 8.5	No
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness (as CaCO ₃)	IS 3025 (P-21)	229.76	mg/L	200	600
7.	Calcium (as Ca)	IS 3025 (P-40)	61.42	mg/L	75	200
8.	Alkalinity (as	IS 3025 (P-23)	227.35	mg/L	200	600
9.	Chloride (as Cl)	IS 3025 (P-32)	84.00	mg/L	250	1000
10.	Cyanide (as CN)	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No
11.	Magnesium (as Mg)	APHA 3500 Mg B	18.59	mg/L	30	100
12.	Total Dissolved	IS 3025 (P-16)	522.17	mg/L	500	2000
13.	Sulphate(as SO ₄)	IS 3025 (P-24)	40.83	mg/L	200	400

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14.	Fluoride (as F)	APHA 4500 F D	0.42	mg/L	1.0	1.5
15.	Nitrate (as NO ₃)	IS 3025 (Part -34)	5.99	mg/L	45	No
16.	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.44	mg/L	1.0	No Relaxation
17.	Aluminium(as Al)	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium (as Cr)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No
22.	Anionic Detergents	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc (as Zn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.70	mg/L	5.0	15.0
24.	Copper (as Cu)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese (as Mn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium (as Cd)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
28.	Selenium (as Se)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic (as As)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury (as Hg)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/L	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	849	µS/cm	--	--
32.	Ammonia (as NH ₃)	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	36.54	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	1.9	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any	
36.	E. coli	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any	

Note: - *BLQ-Below Limit of Quantification, **LOQ- Limit of Quantification.

@Amendment No.1 in June 2015 (Limits of Iron & Arsenic) and Amendment No.2 in Sept. 2018 (Limit of Boron & IS method of Total Coliform & E.coli) & Amendment No.3 in Feb. 2021 (Limit of Mineral Oil).

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Table 3.20 Ground water Quality Monitoring Result (Mahi Nangal)

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limits)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.58	--	6.5 to 8.5	No Relaxation
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness (as CaCO ₃)	IS 3025 (P-21)	265.30	mg/L	200	600
7.	Calcium (as Ca)	IS 3025 (P-40)	83.91	mg/L	75	200
8.	Alkalinity (as	IS 3025 (P-23)	245.83	mg/L	200	600
9.	Chloride (as Cl)	IS 3025 (P-32)	80.57	mg/L	250	1000
10.	Cyanide (as CN)	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No Relaxation
11.	Magnesium (as Mg)	APHA 3500 Mg B	13.59	mg/L	30	100
12.	Total Dissolved	IS 3025 (P-16)	513.00	mg/L	500	2000
13.	Sulphate(as SO ₄)	IS 3025 (P-24)	60.71	mg/L	200	400
14.	Fluoride (as F)	APHA 4500 F D	0.85	mg/L	1.0	1.5
15.	Nitrate (as NO ₃)	IS 3025 (Part -34)	10.33	mg/L	45	No Relaxation
16.	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.67	mg/L	1.0	No Relaxation
17.	Aluminium(as Al)	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium (as Cr)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No Relaxation
22.	Anionic Detergents	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc (as Zn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.57	mg/L	5.0	15.0
24.	Copper (as Cu)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese (as Mn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium (as Cd)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation

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28.	Selenium (as Se)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic (as As)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury (as Hg)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/l	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	879	µS/cm	--	--
32.	Ammonia (as NH ₃)	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	22.5	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	2.9	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any 100 ml sample	
36.	E. coli	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any 100 ml sample	

Note: - *BLQ-Below Limit of Quantification, **LOQ- Limit of Quantification.

@Amendment No.1 in June 2015 (Limits of Iron & Arsenic) and Amendment No.2 in Sept. 2018 (Limit of Boron & IS method of Total Coliform & E.coli) & Amendment No.3 in Feb. 2021 (Limit of Mineral Oil).

Table 3.21 Ground water Quality Monitoring Result (Kot Kashmir)

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limits)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.67	--	6.5 to 8.5	No
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness (as CaCO ₃)	IS 3025 (P-21)	238.60	mg/L	200	600
7.	Calcium (as Ca)	IS 3025 (P-40)	60.14	mg/L	75	200
8.	Alkalinity (as)	IS 3025 (P-23)	152.75	mg/L	200	600
9.	Chloride (as Cl)	IS 3025 (P-32)	70.90	mg/L	250	1000
10.	Cyanide (as CN)	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No
11.	Magnesium (as Mg)	APHA 3500 Mg B	21.51	mg/L	30	100
12.	Total Dissolved	IS 3025 (P-16)	567.00	mg/L	500	2000
13.	Sulphate(as SO ₄)	IS 3025 (P-24)	53.22	mg/L	200	400
14.	Fluoride (as F)	APHA 4500 F D	0.90	mg/L	1.0	1.5

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15.	Nitrate (as NO ₃)	IS 3025 (Part -34)	4.33	mg/L	45	No
16.	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.35	mg/L	1.0	No Relaxation
17.	Aluminium(as Al)	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium (as Cr)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No
22.	Anionic Detergents	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc (as Zn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.49	mg/L	5.0	15.0
24.	Copper (as Cu)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese (as Mn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium (as Cd)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
28.	Selenium (as Se)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic (as As)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury (as Hg)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/L	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	758	µS/cm	--	--
32.	Ammonia (as NH ₃)	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	39.3	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	2.5	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any	
36.	E. coli	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any	

Note: *BLQ-Below Limit of Quantification, **LOQ- Limit of Quantification.

©Amendment No.1 in June 2015 (Limits of Iron & Arsenic) and Amendment No.2 in Sept. 2018 (Limit of Boron & IS method of Total Coliform & E.coli) & Amendment No.3 in Feb. 2021 (Limit of Mineral Oil).

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Table 3.22 Ground water Quality Monitoring Result (Nasibpura)

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limits)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.43	--	6.5 to 8.5	No Relaxation
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness (as CaCO ₃)	IS 3025 (P-21)	150.32	mg/L	200	600
7.	Calcium (as Ca)	IS 3025 (P-40)	40.59	mg/L	75	200
8.	Alkalinity (as	IS 3025 (P-23)	162.10	mg/L	200	600
9.	Chloride (as Cl)	IS 3025 (P-32)	45.07	mg/L	250	1000
10.	Cyanide (as CN)	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No Relaxation
11.	Magnesium (as Mg)	APHA 3500 Mg B	11.91	mg/L	30	100
12.	Total Dissolved	IS 3025 (P-16)	353.08	mg/L	500	2000
13.	Sulphate(as SO ₄)	IS 3025 (P-24)	20.45	mg/L	200	400
14.	Fluoride (as F)	APHA 4500 F D	0.70	mg/L	1.0	1.5
15.	Nitrate (as NO ₃)	IS 3025 (Part -34)	6.12	mg/L	45	No Relaxation
16.	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.58	mg/L	1.0	No Relaxation
17.	Aluminium(as Al)	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium (as Cr)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No Relaxation
22.	Anionic Detergents	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc (as Zn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.47	mg/L	5.0	15.0
24.	Copper (as Cu)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese (as Mn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium (as Cd)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation

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28.	Selenium (as Se)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic (as As)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury (as Hg)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/L	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	597	µS/cm	--	--
32.	Ammonia (as NH ₃)	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	15.8	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	2.7	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any 100 ml sample	
36.	E. coli	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any 100 ml sample	

Note: - *BLQ-Below Limit of Quantification, **LOQ- Limit of Quantification.

©Amendment No.1 in June 2015 (Limits of Iron & Arsenic) and Amendment No.2 in Sept. 2018 (Limit of Boron & IS method of Total Coliform & E.coli) & Amendment No.3 in Feb. 2021 (Limit of Mineral Oil).

Table 3.23 Ground water Quality Monitoring Result (Baghi Bandar)

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limits)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.33	--	6.5 to 8.5	No
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness (as CaCO ₃)	IS 3025 (P-21)	234.98	mg/L	200	600
7.	Calcium (as Ca)	IS 3025 (P-40)	41.12	mg/L	75	200
8.	Alkalinity (as	IS 3025 (P-23)	193.57	mg/L	200	600
9.	Chloride (as Cl)	IS 3025 (P-32)	62.95	mg/L	250	1000
10.	Cyanide (as CN)	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No
11.	Magnesium (as Mg)	APHA 3500 Mg B	32.16	mg/L	30	100
12.	Total Dissolved Solids	IS 3025 (P-16)	423.00	mg/L	500	2000

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13.	Sulphate(as SO ₄)	IS 3025 (P-24)	20.99	mg/L	200	400
14.	Fluoride (as F)	APHA 4500 FD	0.64	mg/L	1.0	1.5
15.	Nitrate (as NO ₃)	IS 3025 (Part -34)	7.02	mg/L	45	No
16.	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.51	mg/L	1.0	No Relaxation
17.	Aluminium(as Al)	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01,	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium (as Cr)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No
22.	Anionic Detergents	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc (as Zn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.79	mg/L	5.0	15.0
24.	Copper (as Cu)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese (as Mn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium (as Cd)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
28.	Selenium (as Se)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic (as As)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury (as Hg)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/L	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	623	µS/cm	--	--
32.	Ammonia (as NH ₃)	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	27.8	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	2.9	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any	
36.	E. coli	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any	

Note: - *BLQ-Below Limit of Quantification, **LOQ- Limit of Quantification.

@Amendment No.1 in June 2015 (Limits of Iron & Arsenic) and Amendment No.2 in Sept. 2018 (Limit of Boron & IS method of Total Coliform & E.coli) & Amendment No.3 in Feb. 2021 (Limit of Mineral Oil).

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Table 3.24 Surface water Quality Monitoring Result (KotFatta)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25°C)	IS 3025 (P-11)	7.18	--
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen
3.	Turbidity	IS 3025 (P-10)	17.5	NTU
4.	Odour	IS 3025 (P-5)	Agreeable	--
5.	Taste	IS 3025 (P-8)	NR	--
6.	Chloride (as Cl)	IS 3025 (P-32)	59.07	mg/L
7.	Conductivity	IS 3025 (P-14)	568	µS/cm
8.	Nitrate (as NO ₃)	IS 3025 (P-34)	14.91	mg/L
9.	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.62	mg/L
10.	Total Dissolved Solids	IS 3025 (P-16)	355.83	mg/L
11.	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L
12.	Boron	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.75	mg/L
13.	Sulphate(as SO ₄)	IS 3025 (P-24)	21.34	mg/L
14.	Fluoride (as F)	APHA 4500 F D	0.56	mg/L
15.	BOD (5 Days at	IS 3025 (P-44)	6.23	mg/L
16.	COD	IS 3025 (P-58)	29.02	mg/L
17.	Free Ammonia (as	IS 3025 (P-34)	9.68	mg/L
18.	Total Coliform	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	Per 100ml
19.	Arsenic (as As)	IS 3025 (P-21)	127.00	mg/L
20.	Total Hardness (as CaCO ₃)	IS 3025 (P-40)	45.91	mg/L
21.	Calcium (as Ca)	IS 3025 (P-23)	136.10	mg/L
22.	Alkalinity (as	APHA 3500 Mg B Calculation Method	3.02	mg/L
23.	Magnesium (as Mg)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	7.46	mg/L
24.	Copper (as Cu)	IS 3025 (P-45)	44.10	mg/L
25.	Sodium (as Na)	IS 3025 (P-45)	9.3	mg/L
26.	Potassium (as K)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L
27.	Total Chromium (as Cr)	IS 15185:2016	Absent	mg/L

Note:- BLQ-Below Limit of Quantification, *LOQ-Limit of Quantification, **NR- Not Reported.

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Table 3.25 Surface water Quality Monitoring Result (Chathewala)

S. No.	Parameter	Test-Method	Result	Unit
1	pH (at 25°C)	IS 3025 (P-11)	7.72	--
2	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen
3	Turbidity	IS 3025 (P-10)	19.5	NTU
4	Odour	IS 3025 (P-5)	Agreeable	--
5	Taste	IS 3025 (P-8)	NR	--
6	Chloride (as Cl)	IS 3025 (P-32)	44.31	mg/L
7	Conductivity	IS 3025 (P-14)	854	μS/cm
8	Nitrate (as NO ₃)	IS 3025 (P-34)	6.30	mg/L
9	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.79	mg/L
10	Total Dissolved Solids	IS 3025 (P-16)	416.00	mg/L
11	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L
12	Boron	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.78	mg/L
13	Sulphate(as SO ₄)	IS 3025 (P-24)	28.55	mg/L
14	Fluoride (as F)	APHA 4500 F D	0.60	mg/L
15	BOD (5 Days at	IS 3025 (P-44)	4.32	mg/L
16	COD	IS 3025 (P-58)	16.85	mg/L
17	Free Ammonia (as	IS 3025 (P-34)	7.09	mg/L
18	Total Coliform	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	Per 100ml
19	Arsenic (as As)	IS 3025 (P-21)	130.91	mg/L
20	Total Hardness (as CaCO ₃)	IS 3025 (P-40)	58.60	mg/L
21	Calcium (as Ca)	IS 3025 (P-23)	142.33	mg/L
22	Alkalinity (as	APHA 3500 Mg B Calculation Method	3.71	mg/L
23	Magnesium (as Mg)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	3.09	mg/L
24	Copper (as Cu)	IS 3025 (P-45)	42.10	mg/L
25	Sodium (as Na)	IS 3025 (P-45)	5.0	mg/L
26	Potassium (as K)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L
27	Total Chromium (as Cr)	IS 15185:2016	Absent	mg/L

Note:- BLQ-Below Limit of Quantification, *LOQ-Limit of Quantification, **NR- Not Reported.

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3.4 SOIL MONITORING

3.4.1 Soil Monitoring Locations

The objective of the soil monitoring is to identify the impacts of ongoing project activities on soil quality and also predict impacts, which have arisen due to execution of various constructions allied activities. Accordingly, a study of assessment of the soil quality has been carried out.

To assess impacts of ongoing project activities on the soil in the area, the physico-chemical characteristics of soils were examined by obtaining soil samples from selected points and analysis of the same. Single sample of soil was collected from the project site for studying soil characteristics, the location of which is listed in **Table 3.35**.

Table 3.35 Details of Soil Quality Monitoring Location

S. No.	Location Code	Location Name/ Description	
		December 2024	March 2025
1.	S1	Near Project Site	Near Project Site
2.	S2	Jiwan Singh wala	Jiwan Singh wala
3.	S3	MaanWala	MaanWala
4.	S4	Mahi Nangal	Mahi Nangal
5.	S5	Leleana	Leleana
6.	S6	Baghi Bandar	Baghi Bandar
7.	S7	NasibPura	NasibPura
8.	S8	Kotbhara	Kotbhara
9.	S9	Kot Kashmir	Kot Kashmir
10.	S10	GehriBoghi	GehriBoghi
11.	S11	Chathewala	Chathewala
12.	S12	KotFatta	KotFatta

3.4.2 Methodology of Soil Monitoring

The sampling has been done in line with IS: 2720 & Methods of Soil Analysis, Part-1, 2nd edition, 1986 of American Society for Agronomy and Soil Science Society of America. The homogenized samples were analyzed for physical and chemical characteristics (physical, chemical and heavy metal concentrations). The soil samples were collected in the month of **December 2022 & March 2023**.

The samples have been analyzed as per the established scientific methods for physico-chemical parameters. The heavy metals have been analyzed by using Atomic Absorption Spectrophotometer.

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3.4.3 Soil Monitoring Results (June 2024)

Single sample of soil is collected from the site to check the quality of soil of the study area .The physio-chemical characteristics of the soil, as obtained from the analysis of the soil sample, are presented in **Table 3.48-3.59**.

Table 3.48 Physico-Chemical Characteristics of Soil in the Study Area (Near Project Site)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	8.24	--
2.	Conductivity	IS 14767	0.391	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	35.08	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	3.14	gm/cc
7.	Chloride as Cl	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	33.66	%
8.	Calcium as Ca	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	29.48	%
9.	Sodium as Na	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	31.75	%
10.	Potassium as K	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	128.01	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	8.35	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.67	%
13.	Magnesium as Mg	VEL/STP/EN/72, Issue No. 01, 01/11/2021	16.23	%
14.	Available Nitrogen as N	IS:14684	138.40	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	23.51	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	27.08	%
17.	Organic Carbon	IS 2720 (P-22)	0.72	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.64	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.60	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.69	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	15.08	mg/kg
22.	Molybdenum (as MO)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.57	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	20.39	%

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Table 3.49 Physico-Chemical Characteristics of Soil in the Study Area (Jiwan Singh Wala)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.69	--
2.	Conductivity	IS 14767	0.360	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	46.05	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	4.29	gm/cc
7.	Chloride as Cl	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	40.51	%
8.	Calcium as Ca	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	45.19	%
9.	Sodium as Na	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	53.40	%
10.	Potassium as K	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	133.01	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	3.08	mg/kg
12.	Organic Matter	IS 2720 (P-22)	1.98	%
13.	Magnesium as Mg	VEL/STP/EN/72, Issue No. 01, 01/11/2021	2.17	%
14.	Available Nitrogen as N	IS:14684	291.10	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	26.55	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	29.32	%
17.	Organic Carbon	IS 2720 (P-22)	0.66	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.79	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.62	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	6.19	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	3.26	mg/kg
22.	Molybdenum (as MO)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.70	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	14.51	%

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Table 3.50 Physico-Chemical Characteristics of Soil in the Study Area (Maanwala)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.61	--
2.	Conductivity	IS 14767	0.372	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	25.40	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	2.93	gm/cc
7.	Chloride as Cl	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	41.82	%
8.	Calcium as Ca	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	36.05	%
9.	Sodium as Na	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	45.58	%
10.	Potassium as K	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	129.17	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	6.33	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.64	%
13.	Magnesium as Mg	VEL/STP/EN/72, Issue No. 01, 01/11/2021	15.86	%
14.	Available Nitrogen as N	IS:14684	259.38	kg/hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	28.45	kg/hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	20.19	%
17.	Organic Carbon	IS 2720 (P-22)	0.55	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.77	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.94	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.60	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	12.03	mg/kg
22.	Molybdenum (as MO)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.78	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	20.39	%

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Table 3.51 Physico-Chemical Characteristics of Soil in the Study Area (Mahi Nangal)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.60	--
2.	Conductivity	IS 14767	0.392	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	31.42	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	3.06	gm/cc
7.	Chloride as Cl	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	35.70	%
8.	Calcium as Ca	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	56.21	%
9.	Sodium as Na	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	61.34	%
10.	Potassium as K	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	127.66	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	3.90	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.67	%
13.	Magnesium as Mg	VEL/STP/EN/72, Issue No. 01, 01/11/2021	24.50	%
14.	Available Nitrogen as N	IS:14684	225.63	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	18.02	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	13.35	%
17.	Organic Carbon	IS 2720 (P-22)	0.90	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.62	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.88	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	2.07	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	3.01	mg/kg
22.	Molybdenum (as MO)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	4.89	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	28.13	%

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Table 3.52 Physico-Chemical Characteristics of Soil in the Study Area (Leleana)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.31	--
2.	Conductivity	IS 14767	0.368	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty Loam	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	18.65	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	3.80	gm/cc
7.	Chloride as Cl	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	37.49	%
8.	Calcium as Ca	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	32.41	%
9.	Sodium as Na	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	45.50	%
10.	Potassium as K	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	67.32	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	6.48	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.86	%
13.	Magnesium as Mg	VEL/STP/EN/72, Issue No. 01, 01/11/2021	19.42	%
14.	Available Nitrogen as N	IS:14684	175.30	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	21.32	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	17.01	%
17.	Organic Carbon	IS 2720 (P-22)	0.78	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.69	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.85	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.76	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	8.24	mg/kg
22.	Molybdenum (as MO)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.39	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	27.05	%

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Table 3.53 Physico-Chemical Characteristics of Soil in the Study Area (Baghi Bandar)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.40	--
2.	Conductivity	IS 14767	0.394	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	32.28	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	3.69	gm/cc
7.	Chloride as Cl	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	45.27	%
8.	Calcium as Ca	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	41.09	%
9.	Sodium as Na	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	35.18	%
10.	Potassium as K	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	120.31	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	2.72	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.68	%
13.	Magnesium as Mg	VEL/STP/EN/72, Issue No. 01, 01/11/2021	25.10	%
14.	Available Nitrogen as N	IS:14684	192.13	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	10.95	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	7.01	%
17.	Organic Carbon	IS 2720 (P-22)	0.85	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.76	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.82	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	2.90	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	6.41	mg/kg
22.	Molybdenum (as MO)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.57	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 0.5)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	19.01	%

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Table 3.54 Physico-Chemical Characteristics of Soil in the Study Area (Nasibpura)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.46	--
2.	Conductivity	IS 14767	0.351	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Brownish	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	22.08	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	2.91	gm/cc
7.	Chloride as Cl	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	60.75	%
8.	Calcium as Ca	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	46.32	%
9.	Sodium as Na	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	80.47	%
10.	Potassium as K	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	122.96	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	3.44	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.58	%
13.	Magnesium as Mg	VEL/STP/EN/72, Issue No. 01, 01/11/2021	33.67	%
14.	Available Nitrogen as N	IS:14684	230.08	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	32.03	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	27.51	%
17.	Organic Carbon	IS 2720 (P-22)	0.66	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.33	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.74	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.86	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	5.13	mg/kg
22.	Molybdenum (as MO)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.56	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	24.90	%

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Table 3.55 Physico-Chemical Characteristics of Soil in the Study Area (Kotbhara)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.40	--
2.	Conductivity	IS 14767	0.367	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	35.89	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	4.67	gm/cc
7.	Chloride as Cl	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	39.12	%
8.	Calcium as Ca	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	47.83	%
9.	Sodium as Na	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	35.61	%
10.	Potassium as K	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	156.11	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	5.48	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.86	%
13.	Magnesium as Mg	VEL/STP/EN/72, Issue No. 01, 01/11/2021	27.14	%
14.	Available Nitrogen as N	IS:14684	245.32	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	18.22	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	14.69	%
17.	Organic Carbon	IS 2720 (P-22)	0.61	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.55	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.92	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	4.63	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	5.78	mg/kg
22.	Molybdenum (as MO)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.54	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	24.08	%

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Table 3.56 Physico-Chemical Characteristics of Soil in the Study Area (Kot Kashmir)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.69	--
2.	Conductivity	IS 14767	0.461	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	28.72	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	4.58	gm/cc
7.	Chloride as Cl	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	47.09	%
8.	Calcium as Ca	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	28.02	%
9.	Sodium as Na	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	51.29	%
10.	Potassium as K	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	131.38	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	6.07	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.81	%
13.	Magnesium as Mg	VEL/STP/EN/72, Issue No. 01, 01/11/2021	21.35	%
14.	Available Nitrogen as N	IS:14684	221.62	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	12.05	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	18.92	%
17.	Organic Carbon	IS 2720 (P-22)	0.54	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.68	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.71	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.69	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	5.10	mg/kg
22.	Molybdenum (as MO)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.84	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	23.93	%

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Table 3.57 Physico-Chemical Characteristics of Soil in the Study Area (GehriBoghi)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.63	--
2.	Conductivity	IS 14767	0.429	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty Loam	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	36.94	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	3.22	gm/cc
7.	Chloride as Cl	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	50.31	%
8.	Calcium as Ca	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	30.56	%
9.	Sodium as Na	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	55.22	%
10.	Potassium as K	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	126.75	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	12.41	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.62	%
13.	Magnesium as Mg	VEL/STP/EN/72, Issue No. 01, 01/11/2021	26.39	%
14.	Available Nitrogen as N	IS:14684	226.70	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	22.82	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	23.94	%
17.	Organic Carbon	IS 2720 (P-22)	0.88	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.62	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.59	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.61	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	3.70	mg/kg
22.	Molybdenum (as MO)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.51	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	19.25	%

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Table 3.58 Physico-Chemical Characteristics of Soil in the Study Area (Chathewala)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.68	--
2.	Conductivity	IS 14767	0.455	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Brown	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	25.10	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	3.89	gm/cc
7.	Chloride as Cl	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	41.76	%
8.	Calcium as Ca	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	37.00	%
9.	Sodium as Na	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	62.49	%
10.	Potassium as K	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	124.71	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	5.08	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.72	%
13.	Magnesium as Mg	VEL/STP/EN/72, Issue No. 01, 01/11/2021	28.90	%
14.	Available Nitrogen as N	IS:14684	227.86	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	13.71	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	12.30	%
17.	Organic Carbon	IS 2720 (P-22)	0.78	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.69	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.81	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	4.32	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	6.88	mg/kg
22.	Molybdenum (as MO)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.79	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	21.64	%

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Table 3.59 Physico-Chemical Characteristics of Soil in the Study Area (KotFatta)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.51	--
2.	Conductivity	IS 14767	0.465	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Brown	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	36.08	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	2.62	gm/cc
7.	Chloride as Cl	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	71.33	%
8.	Calcium as Ca	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	49.21	%
9.	Sodium as Na	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	37.09	%
10.	Potassium as K	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	159.28	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	2.01	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.64	%
13.	Magnesium as Mg	VEL/STP/EN/72, Issue No. 01, 01/11/2021	36.90	%
14.	Available Nitrogen as N	IS:14684	259.15	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	21.18	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	24.07	%
17.	Organic Carbon	IS 2720 (P-22)	0.78	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	3.00	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.69	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.54	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	2.18	mg/kg
22.	Molybdenum (as MO)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.75	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	26.08	%

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3.4.3 Soil Monitoring Results (March 2025)

Single sample of soil is collected from the site to check the quality of soil of the study area .The physio-chemical characteristics of the soil, as obtained from the analysis of the soil sample, are presented in **Table 3.36-3.47**.

Table 3.36 Physico-Chemical Characteristics of Soil in the Study Area (Near Project Site)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	8.31	--
2.	Conductivity	IS 14767	0.370	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	33.12	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	3.28	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	31.60	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	28.04	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	31.22	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	126.18	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	7.42	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.73	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	17.45	%
14.	Available Nitrogen (as N)	IS:14684	139.70	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	24.95	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	26.11	%
17.	Organic Carbon	IS 2720 (P-22)	0.67	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.62	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.76	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.70	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	16.32	mg/kg
22.	Molybdenum (as Mo)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.62	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	19.44	%

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Table 3.37 Physico-Chemical Characteristics of Soil in the Study Area (Jiwan Singh Wala)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.81	--
2.	Conductivity	IS 14767	0.429	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	47.10	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	5.35	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	41.68	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	46.57	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	54.23	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	131.49	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	4.10	mg/kg
12.	Organic Matter	IS 2720 (P-22)	2.04	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	3.12	%
14.	Available Nitrogen (as N)	IS:14684	292.30	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	27.69	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	30.17	%
17.	Organic Carbon	IS 2720 (P-22)	0.52	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.46	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.50	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	7.99	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	4.30	mg/kg
22.	Molybdenum (as MO)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.65	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	15.97	%

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Table 3.38 Physico-Chemical Characteristics of Soil in the Study Area (Maanwala)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.53	--
2.	Conductivity	IS 14767	0.398	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	23.55	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	3.79	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	42.64	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	37.18	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	46.73	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	130.66	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	7.42	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.70	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	16.98	%
14.	Available Nitrogen (as N)	IS:14684	260.46	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	29.07	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	21.35	%
17.	Organic Carbon	IS 2720 (P-22)	0.68	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.82	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.75	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.55	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	13.96	mg/kg
22.	Molybdenum (as MO)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.71	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	21.42	%

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Table 3.39 Physico-Chemical Characteristics of Soil in the Study Area (Mahi Nangal)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.51	--
2.	Conductivity	IS 14767	0.403	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	32.86	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	4.19	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	36.22	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	57.45	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	62.10	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	128.95	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	4.63	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.70	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	25.80	%
14.	Available Nitrogen (as N)	IS:14684	226.94	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	19.55	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	14.72	%
17.	Organic Carbon	IS 2720 (P-22)	0.88	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.70	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.91	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	3.14	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	4.02	mg/kg
22.	Molybdenum (as MO)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	5.28	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	29.53	%

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Table 3.40 Physico-Chemical Characteristics of Soil in the Study Area (Leleana)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.42	--
2.	Conductivity	IS 14767	0.399	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty Loam	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	19.42	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	2.78	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	38.56	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	33.77	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	46.09	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	68.40	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	7.32	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.75	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	20.84	%
14.	Available Nitrogen (as N)	IS:14684	176.93	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	22.67	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	18.23	%
17.	Organic Carbon	IS 2720 (P-22)	0.81	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.70	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.93	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.66	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	7.32	mg/kg
22.	Molybdenum (as Mo)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.40	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	28.10	%

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Table 3.41 Physico-Chemical Characteristics of Soil in the Study Area (Baghi Bandar)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.33	--
2.	Conductivity	IS 14767	0.475	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	33.79	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	4.58	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	46.55	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	42.16	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	36.72	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	121.63	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	3.42	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.70	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	23.64	%
14.	Available Nitrogen (as N)	IS:14684	193.52	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	11.80	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	8.01	%
17.	Organic Carbon	IS 2720 (P-22)	0.92	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.85	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.73	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	3.68	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	7.19	mg/kg
22.	Molybdenum (as Mo)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.60	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 0.5)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	20.78	%

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Table 3.42 Physico-Chemical Characteristics of Soil in the Study Area (Nasibpura)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.55	--
2.	Conductivity	IS 14767	0.387	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Brownish	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	23.12	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	3.76	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	61.90	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	47.28	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	81.53	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	123.45	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	4.86	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.60	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	34.21	%
14.	Available Nitrogen (as N)	IS:14684	231.49	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	33.07	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	28.09	%
17.	Organic Carbon	IS 2720 (P-22)	0.70	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.45	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.86	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.72	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	6.91	mg/kg
22.	Molybdenum (as Mo)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.53	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	25.36	%

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Table 3.43 Physico-Chemical Characteristics of Soil in the Study Area (Kotbhara)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.38	--
2.	Conductivity	IS 14767	0.421	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	36.93	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	5.28	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	40.52	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	48.61	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	34.89	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	157.33	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	6.57	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.79	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	28.22	%
14.	Available Nitrogen (as N)	IS:14684	246.98	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	19.31	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	15.72	%
17.	Organic Carbon	IS 2720 (P-22)	0.78	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.66	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.83	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	5.70	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	6.53	mg/kg
22.	Molybdenum (as Mo)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.67	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	25.18	%

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Table 3.44 Physico-Chemical Characteristics of Soil in the Study Area (Kot Kashmir)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.58	--
2.	Conductivity	IS 14767	0.396	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	29.33	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	5.60	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	48.17	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	29.42	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	52.89	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	132.26	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	7.32	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.79	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	22.50	%
14.	Available Nitrogen (as N)	IS:14684	220.14	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	13.20	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	19.35	%
17.	Organic Carbon	IS 2720 (P-22)	0.67	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.70	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.88	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.64	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	6.22	mg/kg
22.	Molybdenum (as Mo)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.94	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	24.77	%

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Table 3.45 Physico-Chemical Characteristics of Soil in the Study Area (GehriBoghi)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.56	--
2.	Conductivity	IS 14767	0.368	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty Loam	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	37.62	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	4.51	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	51.78	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	31.59	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	56.34	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	127.53	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	13.22	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.70	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	27.19	%
14.	Available Nitrogen (as N)	IS:14684	227.55	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	23.69	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	24.72	%
17.	Organic Carbon	IS 2720 (P-22)	0.90	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.78	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.61	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.72	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	4.33	mg/kg
22.	Molybdenum (as MO)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.69	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	20.50	%

Project: Setting up 2G Ethanol Bio-Refinery plant of capacity 100 KLPD at village Nasibpura, Tehsil Talwandi Sabo, Bhatinda, Punjab

(F.No. J-11011/221/2017-IA II (I) Dated-23/11/2020)

Table 3.46 Physico-Chemical Characteristics of Soil in the Study Area (Chathewala)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.42	--
2.	Conductivity	IS 14767	0.408	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Brown	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	26.37	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	4.95	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	42.13	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	38.00	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	60.59	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	125.08	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	6.16	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.77	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	29.32	%
14.	Available Nitrogen (as N)	IS:14684	227.44	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	14.56	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	13.82	%
17.	Organic Carbon	IS 2720 (P-22)	0.80	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.73	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.90	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	5.98	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	7.36	mg/kg
22.	Molybdenum (as Mo)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.88	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	22.79	%

Project: Setting up 2G Ethanol Bio-Refinery plant of capacity 100 KLPD at village Nasibpura, Tehsil Talwandi Sabo, Bhatinda, Punjab

(F.No. J-11011/221/2017-IA II (I) Dated-23/11/2020)

Table 3.47 Physico-Chemical Characteristics of Soil in the Study Area (KotFatta)

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.49	--
2.	Conductivity	IS 14767	0.398	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Brown	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	37.16	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	3.27	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	72.68	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	50.49	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	38.15	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	160.46	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	3.09	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.72	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	37.94	%
14.	Available Nitrogen (as N)	IS:14684	260.38	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	22.20	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	25.81	%
17.	Organic Carbon	IS 2720 (P-22)	0.69	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	4.00	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.70	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.68	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	3.20	mg/kg
22.	Molybdenum (as Mo)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.63	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	27.16	%

3.4.5 Discussion on Soil Characteristics in the Study Area

The soil in study area is characterized by moderate organic content. The soil quality in the project area has not been affected by the project activities.



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Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (HR)
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Test Report

Sample Number:	VEL/HPCL/A/01	Report No.:	VEL/AP/2501040019
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
Latitude:	30°05'46.90" N	Party Reference No.:	NIL
Longitude:	75°01'00.75" E	Reporting Date:	08/01/2025
		Period of Analysis:	04/01/2025 to 08/01/2025
		Receipt Date:	04/01/2025

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

Sample Collected by	: Vardan EnviroLab Representative
Sampling Location	: Near Project Site
Instrument Used	: RDS & FPS Sampler with all Accessories
Instrument Code	: VEL/RDS/FPS/05
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Cloudy Sky
Date of Monitoring	: 27/12/2024 to 28/12/2024
Time of Monitoring	: 10:00 AM to 10:00 AM
Ambient Temperature (°C)	: Min. 11.0°C, Max. 21.0°C
Surrounding Activity	: Human, Vehicular, & Other Plant Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No
Sampling & Analysis Protocol	: IS-5182 & CPCB Guideline
Parameter Required	: As per Work Order

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS [@] Limit
1.	Particulate Matter (as PM _{2.5})	IS 5182 (P-24)	41.28	µg/m ³	60
2.	Particulate Matter (as PM ₁₀)	IS 5182 (P-23)	62.71	µg/m ³	100
3.	Nitrogen Dioxide (as NO ₂)	IS 5182 (P-6)	24.95	µg/m ³	80
4.	Sulphur Dioxide (as SO ₂)	IS 5182 (P-2)	11.22	µg/m ³	80
5.	Carbon Monoxide (as CO)	IS 5182 (P-10), NDIR Method	0.88	mg/m ³	4
6.	Ammonia (as NH ₃)	VEL/ENV/STP/155, Issue No.-01, 20/06/2022	22.51	µg/m ³	400
7.	Lead (as Pb)	IS 5182 (P-22)	BLQ(LOQ 0.1)	µg/m ³	1
8.	Benzene (as C ₆ H ₆)	IS 5182 (P-12)	BLQ(LOQ 0.5)	µg/m ³	05
9.	Benzo(a)pyrene	VEL/ENV/STP/157, Issue No.-01, 01/11/2021	BLQ(LOQ 0.5)	ng/m ³	01
10.	Ozone (as O ₃)	IS 5182 (P-9)	22.60	µg/m ³	180
11.	Arsenic (as As)	VEL/ENV/STP/110, Issue No.-01, 01/11/2021	BLQ(LOQ 0.1)	ng/m ³	6
12.	Nickel (as Ni)	IS 5182 (P-26)	BLQ(LOQ 5.0)	ng/m ³	20
13.	Volatile Organic Carbon (VOCs)	IS 5182 (P-11)	BLQ(LOQ 0.05)	µg/m ³	--
14.	Hydrocarbon (as Methane)	IS 5182 (P-17)	BLQ(LOQ 0.1)	ppm(v/v)	--

Note :-@ NAAQS - National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.

*BLQ- Below Limit of Quantification, **LOQ- Limit of Quantification, STP-Standard Testing Procedure.



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Vardan EnviroLab LLP

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (HR)
ISO 9001 | ISO 14001 | ISO 45001



Test Report

Sample Number:	VEL/HPCL/A/02	Report No.:	VEL/AP/2501040020
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
Latitude:	30°07'92.63" N	Party Reference No.:	NIL
Longitude:	75°00'18.26" E	Reporting Date:	08/01/2025
		Period of Analysis:	04/01/2025 to 08/01/2025
		Receipt Date:	04/01/2025

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

Sample Collected by	: Vardan EnviroLab Representative
Sampling Location	: Nasibpura
Instrument Used	: RDS & FPS Sampler with all Accessories
Instrument Code	: VEL/RDS/FPS/06
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Cloudy Sky
Date of Monitoring	: 27/12/2024 to 28/12/2024
Time of Monitoring	: 09:30 AM to 09:30 AM
Ambient Temperature (°C)	: Min. 11.0°C, Max. 21.0°C
Surrounding Activity	: Human & Vehicular, & Other Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No
Sampling & Analysis Protocol	: IS-5182 & CPCB Guideline
Parameter Required	: As per Work Order

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS [®] Limit
1.	Particulate Matter (as PM _{2.5})	IS 5182 (P-24)	47.60	µg/m ³	60
2.	Particulate Matter (as PM ₁₀)	IS 5182 (P-23)	65.15	µg/m ³	100
3.	Nitrogen Dioxide (as NO ₂)	IS 5182 (P-6)	24.08	µg/m ³	80
4.	Sulphur Dioxide (as SO ₂)	IS 5182 (P-2)	10.32	µg/m ³	80
5.	Carbon Monoxide (as CO)	IS 5182 (P-10), NDIR Method	0.91	mg/m ³	4
6.	Ammonia (as NH ₃)	VEL/ENV/STP/155, Issue No.-01, 20/06/2022	BLQ(LOQ 20.0)	µg/m ³	400
7.	Lead (as Pb)	IS 5182 (P-22)	BLQ(LOQ 0.1)	µg/m ³	1
8.	Benzene (as C ₆ H ₆)	IS 5182 (P-12)	BLQ(LOQ 0.5)	µg/m ³	05
9.	Benzo(a)pyrene	VEL/ENV/STP/157, Issue No.-01, 01/11/2021	BLQ(LOQ 0.5)	ng/m ³	01
10.	Ozone (as O ₃)	IS 5182 (P-9)	26.40	µg/m ³	180
11.	Arsenic (as As)	VEL/ENV/STP/110, Issue No.-01, 01/11/2021	BLQ(LOQ 0.1)	ng/m ³	6
12.	Nickel (as Ni)	IS 5182 (P-26)	BLQ(LOQ 5.0)	ng/m ³	20
13.	Volatile Organic Carbon (VOCs)	IS 5182 (P-11)	BLQ(LOQ 0.05)	µg/m ³	--
14.	Hydrocarbon (as Methane)	IS 5182 (P-17)	BLQ(LOQ 0.1)	ppm(v/v)	--

Note :-@ NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.

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Test Report

Sample Number: VEL/HPCL/A/03
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab
Latitude: 30°10'20.53" N
Longitude: 75°00'70.68" E
Report No.: VEL/AP/2501040021
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 08/01/2025
Period of Analysis: 04/01/2025 to 08/01/2025
Receipt Date: 04/01/2025

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Kot Shamir
Instrument Used : RDS & FPS Sampler with all Accessories
Instrument Code : VEL/RDS/FPS/07
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Cloudy Sky
Date of Monitoring : 27/12/2024 to 28/12/2024
Time of Monitoring : 10:15 AM to 10:15 AM
Ambient Temperature (°C) : Min. 11.0°C, Max. 21.0°C
Surrounding Activity : Human & Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No
Sampling & Analysis Protocol : IS-5182 & CPCB Guideline
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS [®] Limit
1.	Particulate Matter (as PM _{2.5})	IS 5182 (P-24)	42.18	µg/m ³	60
2.	Particulate Matter (as PM ₁₀)	IS 5182 (P-23)	63.79	µg/m ³	100
3.	Nitrogen Dioxide (as NO ₂)	IS 5182 (P-6)	22.45	µg/m ³	80
4.	Sulphur Dioxide (as SO ₂)	IS 5182 (P-2)	8.06	µg/m ³	80
5.	Carbon Monoxide (as CO)	IS 5182 (P-10), NDIR Method	0.79	mg/m ³	4
6.	Ammonia (as NH ₃)	VEL/ENV/STP/155, Issue No.-01, 20/06/2022	BLQ(LOQ 20.0)	µg/m ³	400
7.	Lead (as Pb)	IS 5182 (P-22)	BLQ(LOQ 0.1)	µg/m ³	1
8.	Benzene (as C ₆ H ₆)	IS 5182 (P-12)	BLQ(LOQ 0.5)	µg/m ³	05
9.	Benzo(a)pyrene	VEL/ENV/STP/157, Issue No.-01, 01/11/2021	BLQ(LOQ 0.5)	ng/m ³	01
10.	Ozone (as O ₃)	IS 5182 (P-9)	24.51	µg/m ³	180
11.	Arsenic (as As)	VEL/ENV/STP/110, Issue No.-01, 01/11/2021	BLQ(LOQ 0.1)	ng/m ³	6
12.	Nickel (as Ni)	IS 5182 (P-26)	BLQ(LOQ 5.0)	ng/m ³	20
13.	Volatile Organic Carbon (VOCs)	IS 5182 (P-11)	BLQ(LOQ 0.05)	µg/m ³	--
14.	Hydrocarbon (as Methane)	IS 5182 (P-17)	BLQ(LOQ 0.1)	ppm(v/v)	--

Note :-@ NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.

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Test Report

Sample Number: VEL/HPCL/A/09
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd.
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab
Latitude: 30°05'79.86" N
Longitude: 75°06'8.24" E
Report No.: VEL/AP/2501040022
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 08/01/2025
Period of Analysis: 04/01/2025 to 08/01/2025
Receipt Date: 04/01/2025

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

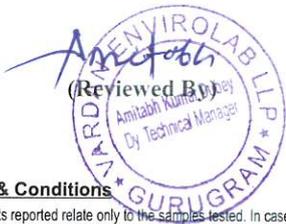
Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Chathewala
Instrument Used : RDS & FPS Sampler with all Accessories
Instrument Code : VEL/RDS/FPS/07
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Cloudy Sky
Date of Monitoring : 28/12/2024 to 29/12/2024
Time of Monitoring : 10:25 AM to 10:25 AM
Ambient Temperature (°C) : Min. 12.0°C, Max. 18.0°C
Surrounding Activity : Human & Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No
Sampling & Analysis Protocol : IS-5182 & CPCB Guideline
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS [@] Limit
1.	Particulate Matter (as PM _{2.5})	IS 5182 (P-24)	46.21	µg/m ³	60
2.	Particulate Matter (as PM ₁₀)	IS 5182 (P-23)	68.50	µg/m ³	100
3.	Nitrogen Dioxide (as NO ₂)	IS 5182 (P-6)	23.69	µg/m ³	80
4.	Sulphur Dioxide (as SO ₂)	IS 5182 (P-2)	14.37	µg/m ³	80
5.	Carbon Monoxide (as CO)	IS 5182 (P-10), NDIR Method	0.78	mg/m ³	4
6.	Ammonia (as NH ₃)	VEL/ENV/STP/155, Issue No.-01, 20/06/2022	BLQ(LOQ 20.0)	µg/m ³	400
7.	Lead (as Pb)	IS 5182 (P-22)	BLQ(LOQ 0.1)	µg/m ³	1
8.	Benzene (as C ₆ H ₆)	IS 5182 (P-12)	BLQ(LOQ 0.5)	µg/m ³	05
9.	Benzo(a)pyrene	VEL/ENV/STP/157, Issue No.-01, 01/11/2021	BLQ(LOQ 0.5)	ng/m ³	01
10.	Ozone (as O ₃)	IS 5182 (P-9)	24.03	µg/m ³	180
11.	Arsenic (as As)	VEL/ENV/STP/110, Issue No.-01, 01/11/2021	BLQ(LOQ 0.1)	ng/m ³	6
12.	Nickel (as Ni)	IS 5182 (P-26)	BLQ(LOQ 5.0)	ng/m ³	20
13.	Volatile Organic Carbon (VOCs)	IS 5182 (P-11)	BLQ(LOQ 0.05)	µg/m ³	--
14.	Hydrocarbon (as Methane)	IS 5182 (P-17)	BLQ(LOQ 0.1)	ppm(v/v)	--

Note :-@ NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.

*BLQ- Below Limit of Quantification, **LOQ- Limit of Quantification, STP-Standard Testing Procedure.



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Vardan EnviroLab LLP

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (HR)
ISO 9001 | ISO 14001 | ISO 45001



Test Report

Sample Number:	VEL/HPCL/A/11	Report No.:	VEL/AP/2501040023
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
Latitude:	30°08'78.46" N	Party Reference No.:	NIL
Longitude:	75°06'67.54" E	Reporting Date:	08/01/2025
		Period of Analysis:	04/01/2025 to 08/01/2025
		Receipt Date:	04/01/2025

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

Sample Collected by	: Vardan EnviroLab Representative
Sampling Location	: Kot Bhara
Instrument Used	: RDS & FPS Sampler with all Accessories
Instrument Code	: VEL/RDS/FPS/06
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Cloudy Sky
Date of Monitoring	: 28/12/2024 to 29/12/2024
Time of Monitoring	: 09:35 AM to 09:35 AM
Ambient Temperature (°C)	: Min. 12.0°C, Max. 18.0°C
Surrounding Activity	: Human & Vehicular, & Other Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No
Sampling & Analysis Protocol	: IS-5182 & CPCB Guideline
Parameter Required	: As per Work Order

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS [@] Limit
1.	Particulate Matter (as PM _{2.5})	IS 5182 (P-24)	43.19	µg/m ³	60
2.	Particulate Matter (as PM ₁₀)	IS 5182 (P-23)	68.35	µg/m ³	100
3.	Nitrogen Dioxide (as NO ₂)	IS 5182 (P-6)	25.47	µg/m ³	80
4.	Sulphur Dioxide (as SO ₂)	IS 5182 (P-2)	8.23	µg/m ³	80
5.	Carbon Monoxide (as CO)	IS 5182 (P-10), NDIR Method	0.81	mg/m ³	4
6.	Ammonia (as NH ₃)	VEL/ENV/STP/155, Issue No.-01, 20/06/2022	BLQ(LOQ 20.0)	µg/m ³	400
7.	Lead (as Pb)	IS 5182 (P-22)	BLQ(LOQ 0.1)	µg/m ³	1
8.	Benzene (as C ₆ H ₆)	IS 5182 (P-12)	BLQ(LOQ 0.5)	µg/m ³	05
9.	Benzo(a)pyrene	VEL/ENV/STP/157, Issue No.-01, 01/11/2021	BLQ(LOQ 0.5)	ng/m ³	01
10.	Ozone (as O ₃)	IS 5182 (P-9)	21.66	µg/m ³	180
11.	Arsenic (as As)	VEL/ENV/STP/110, Issue No.-01, 01/11/2021	BLQ(LOQ 0.1)	ng/m ³	6
12.	Nickel (as Ni)	IS 5182 (P-26)	BLQ(LOQ 5.0)	ng/m ³	20
13.	Volatile Organic Carbon (VOCs)	IS 5182 (P-11)	BLQ(LOQ 0.05)	µg/m ³	--
14.	Hydrocarbon (as Methane)	IS 5182 (P-17)	BLQ(LOQ 0.1)	ppm(v/v)	--

Note :-@ NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.

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Vardan Envirolab LLP

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (HR)
ISO 9001 | ISO 14001 | ISO 45001



Test Report

Sample Number:	VEL/HPCL/A/08	Report No.:	VEL/AP/2501040024
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
Latitude:	30°11'58.14" N	Party Reference No.:	NIL
Longitude:	75°08'22.13" E	Reporting Date:	08/01/2025
		Period of Analysis:	04/01/2025 to 08/01/2025
		Receipt Date:	04/01/2025

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

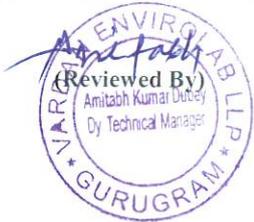
Sample Collected by	: Vardan EnviroLab Representative
Sampling Location	: Kot Fatta
Instrument Used	: RDS & FPS Sampler with all Accessories
Instrument Code	: VEL/RDS/FPS/05
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Cloudy Sky
Date of Monitoring	: 28/12/2024 to 29/12/2024
Time of Monitoring	: 10:20 AM to 10:20 AM
Ambient Temperature (°C)	: Min. 12.0°C, Max. 18.0°C
Surrounding Activity	: Human & Vehicular, & Other Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No
Sampling & Analysis Protocol	: IS-5182 & CPCB Guideline
Parameter Required	: As per Work Order

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS [@] Limit
1.	Particulate Matter (as PM _{2.5})	IS 5182 (P-24)	44.07	µg/m ³	60
2.	Particulate Matter (as PM ₁₀)	IS 5182 (P-23)	67.85	µg/m ³	100
3.	Nitrogen Dioxide (as NO ₂)	IS 5182 (P-6)	22.92	µg/m ³	80
4.	Sulphur Dioxide (as SO ₂)	IS 5182 (P-2)	16.50	µg/m ³	80
5.	Carbon Monoxide (as CO)	IS 5182 (P-10), NDIR Method	0.77	mg/m ³	4
6.	Ammonia (as NH ₃)	VEL/ENV/STP/155, Issue No.-01, 20/06/2022	BLQ(LOQ 20.0)	µg/m ³	400
7.	Lead (as Pb)	IS 5182 (P-22)	BLQ(LOQ 0.1)	µg/m ³	1
8.	Benzene (as C ₆ H ₆)	IS 5182 (P-12)	BLQ(LOQ 0.5)	µg/m ³	05
9.	Benzo(a)pyrene	VEL/ENV/STP/157, Issue No.-01, 01/11/2021	BLQ(LOQ 0.5)	ng/m ³	01
10.	Ozone (as O ₃)	IS 5182 (P-9)	24.60	µg/m ³	180
11.	Arsenic (as As)	VEL/ENV/STP/110, Issue No.-01, 01/11/2021	BLQ(LOQ 0.1)	ng/m ³	6
12.	Nickel (as Ni)	IS 5182 (P-26)	BLQ(LOQ 5.0)	ng/m ³	20
13.	Volatile Organic Carbon (VOCs)	IS 5182 (P-11)	BLQ(LOQ 0.05)	µg/m ³	--
14.	Hydrocarbon (as Methane)	IS 5182 (P-17)	BLQ(LOQ 0.1)	ppm(v/v)	--

Note :-@ NAAQS - National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.

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Vardan EnviroLab LLP

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (HR)
ISO 9001 | ISO 14001 | ISO 45001



Test Report

Sample Number: VEL/HPCL/A/04
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd.
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab
Latitude: 30°06'07.36" N
Longitude: 75°03'498" E

Report No.: VEL/AP/2501040025
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 08/01/2025
Period of Analysis: 04/01/2025 to 08/01/2025
Receipt Date: 04/01/2025

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Jivan Singh Wala
Instrument Used : RDS & FPS Sampler with all Accessories
Instrument Code : VEL/RDS/FPS/06
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 29/12/2024 to 30/12/2024
Time of Monitoring : 09:45 AM to 09:45 AM
Ambient Temperature (°C) : Min. 9.0°C, Max. 21.0°C
Surrounding Activity : Human & Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No
Sampling & Analysis Protocol : IS-5182 & CPCB Guideline
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS [@] Limit
1.	Particulate Matter (as PM _{2.5})	IS 5182 (P-24)	49.92	µg/m ³	60
2.	Particulate Matter (as PM ₁₀)	IS 5182 (P-23)	66.38	µg/m ³	100
3.	Nitrogen Dioxide (as NO ₂)	IS 5182 (P-6)	21.17	µg/m ³	80
4.	Sulphur Dioxide (as SO ₂)	IS 5182 (P-2)	10.43	µg/m ³	80
5.	Carbon Monoxide (as CO)	IS 5182 (P-10), NDIR Method	0.88	mg/m ³	4
6.	Ammonia (as NH ₃)	VEL/ENV/STP/155, Issue No.-01, 20/06/2022	BLQ(LOQ 20.0)	µg/m ³	400
7.	Lead (as Pb)	IS 5182 (P-22)	BLQ(LOQ 0.1)	µg/m ³	1
8.	Benzene (as C ₆ H ₆)	IS 5182 (P-12)	BLQ(LOQ 0.5)	µg/m ³	05
9.	Benzo(a)pyrene	VEL/ENV/STP/157, Issue No.-01, 01/11/2021	BLQ(LOQ 0.5)	ng/m ³	01
10.	Ozone (as O ₃)	IS 5182 (P-9)	20.26	µg/m ³	180
11.	Arsenic (as As)	VEL/ENV/STP/110, Issue No.-01, 01/11/2021	BLQ(LOQ 0.1)	ng/m ³	6
12.	Nickel (as Ni)	IS 5182 (P-26)	BLQ(LOQ 5.0)	ng/m ³	20
13.	Volatile Organic Carbon (VOCs)	IS 5182 (P-11)	BLQ(LOQ 0.05)	µg/m ³	--
14.	Hydrocarbon (as Methane)	IS 5182 (P-17)	BLQ(LOQ 0.1)	ppm(v/v)	--

Note :-@ NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.

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Vardan EnviroLab LLP

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (HR)
ISO 9001 | ISO 14001 | ISO 45001



Test Report

Sample Number: VEL/HPCL/A/10
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd.
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab
Latitude: 30°20'45.12" N
Longitude: 75°53'07.00" E
Report No.: VEL/AP/2501040026
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 08/01/2025
Period of Analysis: 04/01/2025 to 08/01/2025
Receipt Date: 04/01/2025

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Manwala
Instrument Used : RDS & FPS Sampler with all Accessories
Instrument Code : VEL/RDS/FPS/05
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 29/12/2024 to 30/12/2024
Time of Monitoring : 10:25 AM to 10:25 AM
Ambient Temperature (°C) : Min. 9.0°C, Max. 21.0°C
Surrounding Activity : Human & Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No
Sampling & Analysis Protocol : IS-5182 & CPCB Guideline
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS [@] Limit
1.	Particulate Matter (as PM _{2.5})	IS 5182 (P-24)	47.80	µg/m ³	60
2.	Particulate Matter (as PM ₁₀)	IS 5182 (P-23)	64.27	µg/m ³	100
3.	Nitrogen Dioxide (as NO ₂)	IS 5182 (P-6)	23.01	µg/m ³	80
4.	Sulphur Dioxide (as SO ₂)	IS 5182 (P-2)	9.14	µg/m ³	80
5.	Carbon Monoxide (as CO)	IS 5182 (P-10), NDIR Method	0.65	mg/m ³	4
6.	Ammonia (as NH ₃)	VEL/ENV/STP/155, Issue No.-01, 20/06/2022	BLQ(LOQ 20.0)	µg/m ³	400
7.	Lead (as Pb)	IS 5182 (P-22)	BLQ(LOQ 0.1)	µg/m ³	1
8.	Benzene (as C ₆ H ₆)	IS 5182 (P-12)	BLQ(LOQ 0.5)	µg/m ³	05
9.	Benzo(a)pyrene	VEL/ENV/STP/157, Issue No.-01, 01/11/2021	BLQ(LOQ 0.5)	ng/m ³	01
10.	Ozone (as O ₃)	IS 5182 (P-9)	22.42	µg/m ³	180
11.	Arsenic (as As)	VEL/ENV/STP/110, Issue No.-01, 01/11/2021	BLQ(LOQ 0.1)	ng/m ³	6
12.	Nickel (as Ni)	IS 5182 (P-26)	BLQ(LOQ 5.0)	ng/m ³	20
13.	Volatile Organic Carbon (VOCs)	IS 5182 (P-11)	BLQ(LOQ 0.05)	µg/m ³	--
14.	Hydrocarbon (as Methane)	IS 5182 (P-17)	BLQ(LOQ 0.1)	ppm(v/v)	--

Note :-@ NAAQS - National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.

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Vardan EnviroLab LLP

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (HR)
ISO 9001 | ISO 14001 | ISO 45001



Test Report

Sample Number: VEL/HPCL/A/07
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab
Latitude: 30°02'56.92" N
Longitude: 75°06'43.06" E

Report No.: VEL/AP/2501040027
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 08/01/2025
Period of Analysis: 04/01/2025 to 08/01/2025
Receipt Date: 04/01/2025

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Baghi Bandar
Instrument Used : RDS & FPS Sampler with all Accessories
Instrument Code : VEL/RDS/FPS/07
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 29/12/2024 to 30/12/2024
Time of Monitoring : 10:30 AM to 10:30 AM
Ambient Temperature (°C) : Min. 9.0°C, Max. 21.0°C
Surrounding Activity : Human & Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No
Sampling & Analysis Protocol : IS-5182 & CPCB Guideline
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS [@] Limit
1.	Particulate Matter (as PM _{2.5})	IS 5182 (P-24)	49.36	µg/m ³	60
2.	Particulate Matter (as PM ₁₀)	IS 5182 (P-23)	62.20	µg/m ³	100
3.	Nitrogen Dioxide (as NO ₂)	IS 5182 (P-6)	27.62	µg/m ³	80
4.	Sulphur Dioxide (as SO ₂)	IS 5182 (P-2)	13.40	µg/m ³	80
5.	Carbon Monoxide (as CO)	IS 5182 (P-10), NDIR Method	0.67	mg/m ³	4
6.	Ammonia (as NH ₃)	VEL/ENV/STP/155, Issue No.-01, 20/06/2022	BLQ(LOQ 20.0)	µg/m ³	400
7.	Lead (as Pb)	IS 5182 (P-22)	BLQ(LOQ 0.1)	µg/m ³	1
8.	Benzene (as C ₆ H ₆)	IS 5182 (P-12)	BLQ(LOQ 0.5)	µg/m ³	05
9.	Benzo(a)pyrene	VEL/ENV/STP/157, Issue No.-01, 01/11/2021	BLQ(LOQ 0.5)	ng/m ³	01
10.	Ozone (as O ₃)	IS 5182 (P-9)	25.33	µg/m ³	180
11.	Arsenic (as As)	VEL/ENV/STP/110, Issue No.-01, 01/11/2021	BLQ(LOQ 0.1)	ng/m ³	6
12.	Nickel (as Ni)	IS 5182 (P-26)	BLQ(LOQ 5.0)	ng/m ³	20
13.	Volatile Organic Carbon (VOCs)	IS 5182 (P-11)	BLQ(LOQ 0.05)	µg/m ³	--
14.	Hydrocarbon (as Methane)	IS 5182 (P-17)	BLQ(LOQ 0.1)	ppm(v/v)	--

Note :-@ NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.

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Test Report

Sample Number: VEL/HPCL/A/05
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd.
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab
Latitude: 29°59'49.83" N
Longitude: 75°01'15.53" E
Report No.: VEL/AP/2501040028
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 08/01/2025
Period of Analysis: 04/01/2025 to 08/01/2025
Receipt Date: 04/01/2025

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

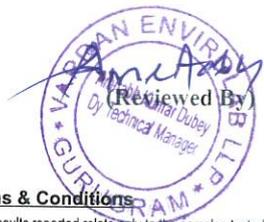
Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Leleana
Instrument Used : RDS & FPS Sampler with all Accessories
Instrument Code : VEL/RDS/FPS/06
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 30/12/2024 to 31/12/2024
Time of Monitoring : 10:00 AM to 10:00 AM
Ambient Temperature (°C) : Min. 10.0°C, Max. 23.0°C
Surrounding Activity : Human & Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No
Sampling & Analysis Protocol : IS-5182 & CPCB Guideline
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS [@] Limit
1.	Particulate Matter (as PM _{2.5})	IS 5182 (P-24)	47.16	µg/m ³	60
2.	Particulate Matter (as PM ₁₀)	IS 5182 (P-23)	60.25	µg/m ³	100
3.	Nitrogen Dioxide (as NO ₂)	IS 5182 (P-6)	19.73	µg/m ³	80
4.	Sulphur Dioxide (as SO ₂)	IS 5182 (P-2)	9.48	µg/m ³	80
5.	Carbon Monoxide (as CO)	IS 5182 (P-10), NDIR Method	0.96	mg/m ³	4
6.	Ammonia (as NH ₃)	VEL/ENV/STP/155, Issue No.-01, 20/06/2022	23.60	µg/m ³	400
7.	Lead (as Pb)	IS 5182 (P-22)	BLQ(LOQ 0.1)	µg/m ³	1
8.	Benzene (as C ₆ H ₆)	IS 5182 (P-12)	BLQ(LOQ 0.5)	µg/m ³	05
9.	Benzo(a)pyrene	VEL/ENV/STP/157, Issue No.-01, 01/11/2021	BLQ(LOQ 0.5)	ng/m ³	01
10.	Ozone (as O ₃)	IS 5182 (P-9)	16.32	µg/m ³	180
11.	Arsenic (as As)	VEL/ENV/STP/110, Issue No.-01, 01/11/2021	BLQ(LOQ 0.1)	ng/m ³	6
12.	Nickel (as Ni)	IS 5182 (P-26)	BLQ(LOQ 5.0)	ng/m ³	20
13.	Volatile Organic Carbon (VOCs)	IS 5182 (P-11)	BLQ(LOQ 0.05)	µg/m ³	--
14.	Hydrocarbon (as Methane)	IS 5182 (P-17)	BLQ(LOQ 0.1)	ppm(v/v)	--

Note :-@ NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.

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Vardan Envirolab LLP

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (HR)
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Test Report

Sample Number:	VEL/HPCL/A/06	Report No.:	VEL/AP/2501040029
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
Latitude:	30°02'38.59" N	Party Reference No.:	NIL
Longitude:	75°02'28.02" E	Reporting Date:	08/01/2025
		Period of Analysis:	04/01/2025 to 08/01/2025
		Receipt Date:	04/01/2025

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

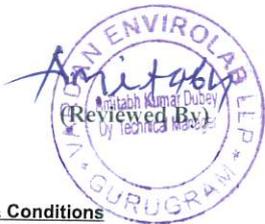
Sample Collected by	: Vardan EnviroLab Representative
Sampling Location	: Mahi Nangal
Instrument Used	: RDS & FPS Sampler with all Accessories
Instrument Code	: VEL/RDS/FPS/07
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 30/12/2024 to 31/12/2024
Time of Monitoring	: 10:35 AM to 10:35 AM
Ambient Temperature (°C)	: Min. 10.0°C, Max. 23.0°C
Surrounding Activity	: Human & Vehicular, & Other Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No
Sampling & Analysis Protocol	: IS-5182 & CPCB Guideline
Parameter Required	: As per Work Order

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS [@] Limit
1.	Particulate Matter (as PM _{2.5})	IS 5182 (P-24)	45.09	µg/m ³	60
2.	Particulate Matter (as PM ₁₀)	IS 5182 (P-23)	68.17	µg/m ³	100
3.	Nitrogen Dioxide (as NO ₂)	IS 5182 (P-6)	27.44	µg/m ³	80
4.	Sulphur Dioxide (as SO ₂)	IS 5182 (P-2)	7.62	µg/m ³	80
5.	Carbon Monoxide (as CO)	IS 5182 (P-10), NDIR Method	0.90	mg/m ³	4
6.	Ammonia (as NH ₃)	VEL/ENV/STP/155, Issue No.-01, 20/06/2022	BLQ(LOQ 20.0)	µg/m ³	400
7.	Lead (as Pb)	IS 5182 (P-22)	BLQ(LOQ 0.1)	µg/m ³	1
8.	Benzene (as C ₆ H ₆)	IS 5182 (P-12)	BLQ(LOQ 0.5)	µg/m ³	05
9.	Benzo(a)pyrene	VEL/ENV/STP/157, Issue No.-01, 01/11/2021	BLQ(LOQ 0.5)	ng/m ³	01
10.	Ozone (as O ₃)	IS 5182 (P-9)	23.19	µg/m ³	180
11.	Arsenic (as As)	VEL/ENV/STP/110, Issue No.-01, 01/11/2021	BLQ(LOQ 0.1)	ng/m ³	6
12.	Nickel (as Ni)	IS 5182 (P-26)	BLQ(LOQ 5.0)	ng/m ³	20
13.	Volatile Organic Carbon (VOCs)	IS 5182 (P-11)	BLQ(LOQ 0.05)	µg/m ³	--
14.	Hydrocarbon (as Methane)	IS 5182 (P-17)	BLQ(LOQ 0.1)	ppm(v/v)	--

Note :-@ NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.

*BLQ- Below Limit of Quantification, **LOQ- Limit of Quantification, STP-Standard Testing Procedure.



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Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (HR)
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Test Report

Sample Number: VEL/HPCL/A/12
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd.
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab
Latitude: 30°02'57.99" N
Longitude: 75°06'42.58" E

Report No.: VEL/AP/2501040030
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 08/01/2025
Period of Analysis: 04/01/2025 to 08/01/2025
Receipt Date: 04/01/2025

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Gehri Bhagi
Instrument Used : RDS & FPS Sampler with all Accessories
Instrument Code : VEL/RDS/FPS/05
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 30/12/2024 to 31/12/2024
Time of Monitoring : 10:30 AM to 10:30 AM
Ambient Temperature (°C) : Min. 10.0°C, Max. 23.0°C
Surrounding Activity : Human & Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No
Sampling & Analysis Protocol : IS-5182 & CPCB Guideline
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS [@] Limit
1.	Particulate Matter (as PM _{2.5})	IS 5182 (P-24)	47.62	µg/m ³	60
2.	Particulate Matter (as PM ₁₀)	IS 5182 (P-23)	60.58	µg/m ³	100
3.	Nitrogen Dioxide (as NO ₂)	IS 5182 (P-6)	22.16	µg/m ³	80
4.	Sulphur Dioxide (as SO ₂)	IS 5182 (P-2)	8.22	µg/m ³	80
5.	Carbon Monoxide (as CO)	IS 5182 (P-10), NDIR Method	0.87	mg/m ³	4
6.	Ammonia (as NH ₃)	VEL/ENV/STP/155, Issue No.-01, 20/06/2022	BLQ(LOQ 20.0)	µg/m ³	400
7.	Lead (as Pb)	IS 5182 (P-22)	BLQ(LOQ 0.1)	µg/m ³	1
8.	Benzene (as C ₆ H ₆)	IS 5182 (P-12)	BLQ(LOQ 0.5)	µg/m ³	05
9.	Benzo(a)pyrene	VEL/ENV/STP/157, Issue No.-01, 01/11/2021	BLQ(LOQ 0.5)	ng/m ³	01
10.	Ozone (as O ₃)	IS 5182 (P-9)	14.65	µg/m ³	180
11.	Arsenic (as As)	VEL/ENV/STP/110, Issue No.-01, 01/11/2021	BLQ(LOQ 0.1)	ng/m ³	6
12.	Nickel (as Ni)	IS 5182 (P-26)	BLQ(LOQ 5.0)	ng/m ³	20
13.	Volatile Organic Carbon (VOCs)	IS 5182 (P-11)	BLQ(LOQ 0.05)	µg/m ³	--
14.	Hydrocarbon (as Methane)	IS 5182 (P-17)	BLQ(LOQ 0.1)	ppm(v/v)	--

Note :- @ NAAQS - National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.

*BLQ- Below Limit of Quantification, **LOQ- Limit of Quantification, STP-Standard Testing Procedure.



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Test Report

Sample Number: VEL/N/03
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab

Report No.: VEL/AP/2501040033
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 08/01/2025
Receipt Date: 04/01/2025

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Kot Shamir
Latitude: 30°10'20.00" N
Longitude: 75°00'70.00" E
Instrument Used : Sound Level Meter
Instrument Code : VEL/S/SLM/08
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Cloudy Sky
Date of Monitoring : 27/12/2024 to 28/12/2024
Time of Monitoring : 09:50 AM to 09:50 AM
Ambient Temperature (°C) : Min. 11.0°C, Max. 21.0°C
Surrounding Activity : Human, Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No any
Sampling & Analysis Protocol : IS-9989 R-2014 & CPCB Guideline
Sampling Duration : 24 Hours
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L _{max}	IS 9989	50.2	43.9	dB(A)
2.	L _{min}	IS 9989	41.8	32.8	dB(A)
3.	L _{eq}	IS 9989	47.33	38.12	dB(A)
4.	CPCB Limits in dB(A*) Leq (Residential Area)	-	55.00	45.00	dB(A)

Note * A "decibel" is a unit in which noise is measured.



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Test Report

Sample Number:	VEL/N/01	Report No.:	VEL/AP/2501040031
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	08/01/2025
		Receipt Date:	04/01/2025

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample Collected by	: Vardan EnviroLab Representative
Sampling Location	: Near Project Site
Latitude:	30°55'46.90" N
Longitude:	75°01'00.75" E
Instrument Used	: Sound Level Meter
Instrument Code	: VEL/S/SLM/06
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Cloudy Sky
Date of Monitoring	: 27/12/2024 to 28/12/2024
Time of Monitoring	: 09:30 AM to 09:30 AM
Ambient Temperature (°C)	: Min. 11.0°C, Max. 21.0°C
Surrounding Activity	: Human, Vehicular, & Other Plant Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No any
Sampling & Analysis Protocol	: IS-9989 R-2014 & CPCB Guideline
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

TEST RESULTS

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L _{max}	IS 9989	72.9	67.4	dB(A)
2.	L _{min}	IS 9989	53.5	46.3	dB(A)
3.	L _{eq}	IS 9989	61.32	50.61	dB(A)
4.	CPCB Limits in dB(A) Leq (Industrial Area)	-	75.00	70.00	dB(A)

Note: * A "decibel" is a unit in which noise is measured.



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Test Report

Sample Number:	VEL/N/02	Report No.:	VEL/AP/2501040032
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	08/01/2025
		Receipt Date:	04/01/2025

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample Collected by	: Vardan EnviroLab Representative
Sampling Location	: Nasibpura
Latitude:	30°07'94.18" N
Longitude:	75°00'18.46" E
Instrument Used	: Sound Level Meter
Instrument Code	: VEL/S/SLM/07
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Cloudy Sky
Date of Monitoring	: 28/12/2024 to 29/12/2024
Time of Monitoring	: 09:40 AM to 09:40 AM
Ambient Temperature (°C)	: Min. 12.0°C, Max. 18.0°C
Surrounding Activity	: Human, Vehicular, & Other Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No any
Sampling & Analysis Protocol	: IS-9989 R-2014 & CPCB Guideline
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

TEST RESULTS

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L _{max}	IS 9989	53.8	44.2	dB(A)
2.	L _{min}	IS 9989	46.0	36.8	dB(A)
3.	L _{eq}	IS 9989	50.21	41.53	dB(A)
4.	CPCB Limits in dB(A*) Leq (Residential Area)	-	55.00	45.00	dB(A)

Note * A "decibel" is a unit in which noise is measured.



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Test Report

Sample Number:	VEL/N/04	Report No.:	VEL/AP/2501040039
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	08/01/2025
		Receipt Date:	04/01/2025

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample Collected by	: Vardan EnviroLab Representative
Sampling Location	: Jiwan Singh Wala
Latitude:	30°04'18.29" N
Longitude:	75°01'40.48" E
Instrument Used	: Sound Level Meter
Instrument Code	: VEL/S/SLM/12
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Cloudy Sky
Date of Monitoring	: 28/12/2024 to 29/12/2024
Time of Monitoring	: 10:15 AM to 10:15 AM
Ambient Temperature (°C)	: Min. 12.0°C, Max. 18.0°C
Surrounding Activity	: Human, Vehicular, & Other Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No any
Sampling & Analysis Protocol	: IS-9989 R-2014 & CPCB Guideline
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

TEST RESULTS

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L _{max}	IS 9989	54.9	44.2	dB(A)
2.	L _{min}	IS 9989	36.1	36.8	dB(A)
3.	L _{eq}	IS 9989	46.22	37.91	dB(A)
4.	CPCB Limits in dB(A*) Leq (Residential Area)	-	55.00	45.00	dB(A)

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Test Report

Sample Number: VEL/N/11 Report No.: VEL/AP/2501040037
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 08/01/2025
Receipt Date: 04/01/2025

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Manwala
Latitude: 30°20'45.12" N
Longitude: 75°53'07.00" E
Instrument Used : Sound Level Meter
Instrument Code : VEL/S/SLM/07
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 29/12/2024 to 30/12/2024
Time of Monitoring : 09:50 AM to 09:50 AM
Ambient Temperature (°C) : Min. 9.0°C, Max. 21.0°C
Surrounding Activity : Human, Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No any
Sampling & Analysis Protocol : IS-9989 R-2014 & CPCB Guideline
Sampling Duration : 24 Hours
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L _{max}	IS 9989	53.8	40.8	dB(A)
2.	L _{min}	IS 9989	32.1	30.5	dB(A)
3.	L _{eq}	IS 9989	47.26	35.90	dB(A)
4.	CPCB Limits in dB(A*) Leq (Residential Area)	-	55.00	45.00	dB(A)

Note * A "decibel" is a unit in which noise is measured.



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Test Report

Sample Number: VEL/N/06
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd.
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab

Report No.: VEL/AP/2501040038
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 08/01/2025
Receipt Date: 04/01/2025

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Baghi Bandar
Latitude: 30°05'4.64" N
Longitude: 75°01'01.69" E
Instrument Used : Sound Level Meter
Instrument Code : VEL/S/SLM/08
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 29/12/2024 to 30/12/2024
Time of Monitoring : 10:00 AM to 10:00 AM
Ambient Temperature (°C) : Min. 9.0°C, Max. 21.0°C
Surrounding Activity : Human, Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No any
Sampling & Analysis Protocol : IS-9989 R-2014 & CPCB Guideline
Sampling Duration : 24 Hours
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L _{max}	IS 9989	54.1	41.9	dB(A)
2.	L _{min}	IS 9989	37.8	33.7	dB(A)
3.	L _{eq}	IS 9989	49.77	36.40	dB(A)
4.	CPCB Limits in dB(A*) Leq (Residential Area)	-	55.00	45.00	dB(A)

Note * A "decibel" is a unit in which noise is measured.



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Test Report

Sample Number: VEL/N/10
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd.
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab

Report No.: VEL/AP/2501040036
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 08/01/2025
Receipt Date: 04/01/2025

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Chathewala
Latitude: 30°05'79.31" N
Longitude: 75°06'83.31" E
Instrument Used : Sound Level Meter
Instrument Code : VEL/S/SLM/10
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 29/12/2024 to 30/12/2024
Time of Monitoring : 10:55 AM to 10:55 AM
Ambient Temperature (°C) : Min. 9.0°C, Max. 21.0°C
Surrounding Activity : Human, Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No any
Sampling & Analysis Protocol : IS-9989 R-2014 & CPCB Guideline
Sampling Duration : 24 Hours
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L _{max}	IS 9989	53.1	40.1	dB(A)
2.	L _{min}	IS 9989	31.8	34.9	dB(A)
3.	L _{eq}	IS 9989	47.60	36.05	dB(A)
4.	CPCB Limits in dB(A)* Leq (Residential Area)	-	55.00	45.00	dB(A)

Note * A "decibel" is a unit in which noise is measured.



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Test Report

Sample Number: VEL/N/07
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd.
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab

Report No.: VEL/AP/2501040040
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 08/01/2025
Receipt Date: 04/01/2025

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Mahi Nangal
Latitude: 30°02'38.59" N
Longitude: 75°02'28.02" E
Instrument Used : Sound Level Meter
Instrument Code : VEL/S/SLM/07
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 29/12/2024 to 30/12/2024
Time of Monitoring : 10:30 AM to 10:30 AM
Ambient Temperature (°C) : Min. 9.0°C, Max. 21.0°C
Surrounding Activity : Human, Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No any
Sampling & Analysis Protocol : IS-9989 R-2014 & CPCB Guideline
Sampling Duration : 24 Hours
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L _{max}	IS 9989	52.6	42.7	dB(A)
2.	L _{min}	IS 9989	41.0	33.5	dB(A)
3.	L _{eq}	IS 9989	47.32	39.26	dB(A)
4.	CPCB Limits in dB(A) Leq (Residential Area)	-	55.00	45.00	dB(A)

Note * A "decibel" is a unit in which noise is measured.



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Test Report

Sample Number: VEL/N/08 Report No.: VEL/AP/2501040041
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd. Format No.: 7.8 F-03
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab Party Reference No.: NIL
Reporting Date: 08/01/2025
Receipt Date: 04/01/2025

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Leleana
Latitude: 29°59'49.83" N
Longitude: 75°01'15.53" E
Instrument Used : Sound Level Meter
Instrument Code : VEL/S/SLM/12
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 30/12/2024 to 31/12/2024
Time of Monitoring : 06:00 AM to 06:00 AM
Ambient Temperature (°C) : Min. 10.0°C, Max. 23.0°C
Surrounding Activity : Human, Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No any
Sampling & Analysis Protocol : IS-9989 R-2014 & CPCB Guideline
Sampling Duration : 24 Hours
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L _{max}	IS 9989	52.8	42.8	dB(A)
2.	L _{min}	IS 9989	43.2	33.9	dB(A)
3.	L _{eq}	IS 9989	48.90	39.61	dB(A)
4.	CPCB Limits in dB(A) Leq (Residential Area)	-	55.00	45.00	dB(A)

Note * A "decibel" is a unit in which noise is measured.



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Test Report

Sample Number: VEL/N/09 Report No.: VEL/AP/2501040034
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd. Format No.: 7.8 F-03
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab Party Reference No.: NIL
Reporting Date: 08/01/2025
Receipt Date: 04/01/2025

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Kot Bhara
Latitude: 30°08'78.46" N
Longitude: 75°06'75.04" E
Instrument Used : Sound Level Meter
Instrument Code : VEL/S/SLM/09
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 30/12/2024 to 31/12/2024
Time of Monitoring : 06:00 AM to 06:00 AM
Ambient Temperature (°C) : Min. 10.0°C, Max. 23.0°C
Surrounding Activity : Human, Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No any
Sampling & Analysis Protocol : IS-9989 R-2014 & CPCB Guideline
Sampling Duration : 24 Hours
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L _{max}	IS 9989	54.1	42.8	dB(A)
2.	L _{min}	IS 9989	38.9	32.6	dB(A)
3.	L _{eq}	IS 9989	49.2	37.01	dB(A)
4.	CPCB Limits in dB(A) Leq (Residential Area)	-	55.00	45.00	dB(A)

Note: * A "decibel" is a unit in which noise is measured.



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Test Report

Sample Number: VEL/N/12
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd.
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab

Report No.: VEL/AP/2501040042
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 08/01/2025
Receipt Date: 04/01/2025

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Gehri Bhagi
Latitude: 30°11'02.57" N
Longitude: 75°06'42.69" E
Instrument Used : Sound Level Meter
Instrument Code : VEL/S/SLM/12
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 30/12/2024 to 31/12/2024
Time of Monitoring : 11:30 AM to 11:30 AM
Ambient Temperature (°C) : Min. 10.0°C, Max. 23.0°C
Surrounding Activity : Human, Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No any
Sampling & Analysis Protocol : IS-9989 R-2014 & CPCB Guideline
Sampling Duration : 24 Hours
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L _{max}	IS 9989	54.9	44.1	dB(A)
2.	L _{min}	IS 9989	39.1	32.5	dB(A)
3.	L _{eq}	IS 9989	47.22	37.99	dB(A)
4.	CPCB Limits in dB(A*) Leq (Residential Area)	-	55.00	45.00	dB(A)

Note * A "decibel" is a unit in which noise is measured.



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Test Report

Sample Number: VEL/N/05 Report No.: VEL/AP/2501040035
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd. Format No.: 7.8 F-03
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab Party Reference No.: NIL
Reporting Date: 08/01/2025
Receipt Date: 04/01/2025

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Kot Fatta
Latitude: 30°11'58.33" N
Longitude: 75°08'22.28" E
Instrument Used : Sound Level Meter
Instrument Code : VEL/S/SLM/06
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 30/12/2024 to 31/12/2024
Time of Monitoring : 10:30 AM to 10:30 AM
Ambient Temperature (°C) : Min. 10.0°C, Max. 23.0°C
Surrounding Activity : Human, Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No any
Sampling & Analysis Protocol : IS-9989 R-2014 & CPCB Guideline
Sampling Duration : 24 Hours
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L _{max}	IS 9989	52.1	43.6	dB(A)
2.	L _{min}	IS 9989	37.8	35.2	dB(A)
3.	L _{eq}	IS 9989	50.32	40.75	dB(A)
4.	CPCB Limits in dB(A*) Leq (Residential Area)	-	55.00	45.00	dB(A)

Note * A "decibel" is a unit in which noise is measured.



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Test Report

Sample Number:	VEL/S0/01	Report No.:	VEL/PE/2501040013
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil- Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	08/01/2025
		Period of Analysis:	04/01/2025 to 08/01/2025
		Receipt Date:	04/01/2025
Sample Description:	Soil Sample	Sampling Date:	27/12/2024
Sample Location:	Near Project Site	Sampling Type:	Composite
Sample Collected By:	Vardan Envirolab Representative	Sample Quantity:	2.0 Kg
Sampling & Analysis Protocol:	IS 2720, USEPA 3050B & USDA	Packing Status:	Temp Sealed

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	8.24	--
2.	Conductivity	IS 14767	0.391	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	35.08	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	3.14	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	33.66	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	29.48	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	31.75	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	128.01	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	8.35	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.67	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	16.23	%
14.	Available Nitrogen (as N)	IS:14684	138.40	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	23.51	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	27.08	%
17.	Organic Carbon	IS 2720 (P-22)	0.72	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.64	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.60	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.69	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	15.08	mg/kg
22.	Molybdenum (as Mo)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.57	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	20.39	%

Note- STP- Standard Testing Procedure.

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Test Report

Sample Number:	VEL/ S0/03	Report No.:	VEL/PE/2501040015
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabu, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	08/01/2025
		Period of Analysis:	04/01/2025 to 08/01/2025
		Receipt Date:	04/01/2025
Sample Description:	Soil Sample	Sampling Date:	27/12/2024
Sample Location:	Kot Shamir	Sampling Type:	Composite
Sample Collected By:	Vardan Envirolab Representative	Sample Quantity:	2.0 Kg
Sampling & Analysis Protocol:	IS 2720, USEPA 3050B & USDA	Packing Status:	Temp Sealed

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25°C)	IS 2720 (P-26)	7.61	--
2.	Conductivity	IS 14767	0.372	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	25.40	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	2.93	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	41.82	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	36.05	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	45.58	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	129.17	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	6.33	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.64	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	15.86	%
14.	Available Nitrogen (as N)	IS:14684	259.38	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	28.45	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	20.19	%
17.	Organic Carbon	IS 2720 (P-22)	0.55	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.77	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.94	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.60	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	12.03	mg/kg
22.	Molybdenum (as Mo)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.78	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	20.39	%

Note- STP- Standard Testing Procedure.

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(Authorized Signatory)
Prakash Singh
08/01/2025
Authorized Signatory

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Test Report

Sample Number:	VEL /S0/08	Report No.:	VEL/PE/2501040020
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabu, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	08/01/2025
		Period of Analysis:	04/01/2025 to 08/01/2025
		Receipt Date:	04/01/2025
Sample Description;	Soil Sample	Sampling Date:	27/12/2024
Sample Location:	Manwala	Sampling Type:	Composite
Sample Collected By:	Vardan EnviroLab Representative	Sample Quantity:	2.0 Kg
Sampling & Analysis Protocol:	IS 2720, USEPA 3050B & USDA	Packing Status:	Temp Sealed

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.40	--
2.	Conductivity	IS 14767	0.367	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	35.89	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	4.67	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	39.12	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	47.83	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	35.61	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	156.11	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	5.48	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.86	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	27.14	%
14.	Available Nitrogen (as N)	IS:14684	245.32	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	18.22	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	14.69	%
17.	Organic Carbon	IS 2720 (P-22)	0.61	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.55	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.92	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	4.63	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	5.78	mg/kg
22.	Molybdenum (as MO)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.54	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	24.08	%

Note- STP- Standard Testing Procedure.

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Test Report

Sample Number:	VEL/ S0/09	Report No.:	VEL/PE/2501040021
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabu, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	08/01/2025
		Period of Analysis:	04/01/2025 to 08/01/2025
		Receipt Date:	04/01/2025
Sample Description:	Soil Sample	Sampling Date:	28/12/2024
Sample Location:	Jiwan Singh Wala	Sampling Type:	Composite
Sample Collected By:	Vardan EnviroLab Representative	Sample Quantity:	2.0 Kg
Sampling & Analysis Protocol:	IS 2720, USEPA 3050B & USDA	Packing Status:	Temp Sealed

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.69	--
2.	Conductivity	IS 14767	0.461	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	28.72	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	4.58	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	47.09	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	28.02	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	51.29	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	131.38	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	6.07	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.81	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	21.35	%
14.	Available Nitrogen (as N)	IS:14684	221.62	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	12.05	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	18.92	%
17.	Organic Carbon	IS 2720 (P-22)	0.54	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.68	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.71	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.69	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	5.10	mg/kg
22.	Molybdenum (as MO)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.84	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	23.93	%

Note- STP- Standard Testing Procedure.

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Test Report

Sample Number:	VEL/ S0/02	Report No.:	VEL/PE/2501040014
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	08/01/2025
		Period of Analysis:	04/01/2025 to 08/01/2025
		Receipt Date:	04/01/2025
Sample Description;	Soil Sample	Sampling Date:	28/12/2024
Sample Location:	Nasibpura	Sampling Type:	Composite
Sample Collected By:	Vardan EnviroLab Representative	Sample Quantity:	2.0 Kg
Sampling & Analysis Protocol:	IS 2720, USEPA 3050B & USDA	Packing Status:	Temp Sealed

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25°C)	IS 2720 (P-26)	7.69	--
2.	Conductivity	IS 14767	0.360	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	46.05	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	4.29	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	40.51	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	45.19	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	53.40	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	133.01	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	3.08	mg/kg
12.	Organic Matter	IS 2720 (P-22)	1.98	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	2.17	%
14.	Available Nitrogen (as N)	IS:14684	291.10	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	26.55	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	29.32	%
17.	Organic Carbon	IS 2720 (P-22)	0.66	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.79	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.62	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	6.19	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	3.26	mg/kg
22.	Molybdenum (as Mo)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.70	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	14.51	%

Note- STP- Standard Testing Procedure.

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(Authorized Signatory)

08/01/2025
Prakash Singh
Authorized Signatory

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Test Report

Sample Number:	VEL/ S0/04	Report No.:	VEL/PE/2501040016
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	08/01/2025
		Period of Analysis:	04/01/2025 to 08/01/2025
		Receipt Date:	04/01/2025
Sample Description:	Soil Sample	Sampling Date:	29/12/2024
Sample Location:	Kot Bhara	Sampling Type:	Composite
Sample Collected By:	Vardan EnviroLab Representative	Sample Quantity:	2.0 Kg
Sampling & Analysis Protocol:	IS 2720, USEPA 3050B & USDA	Packing Status:	Temp Sealed

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (a ²⁵)	IS 2720 (P-26)	7.60	--
2.	Conductivity	IS 14767	0.392	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	31.42	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	3.06	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	35.70	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	56.21	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	61.34	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	127.66	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	3.90	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.67	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	24.50	%
14.	Available Nitrogen (as N)	IS:14684	225.63	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	18.02	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	13.35	%
17.	Organic Carbon	IS 2720 (P-22)	0.90	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.62	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.88	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	2.07	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	3.01	mg/kg
22.	Molybdenum (as Mo)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	4.89	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	28.13	%

Note- STP- Standard Testing Procedure.

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Test Report

Sample Number:	VEL/S0/05	Report No.:	VEL/PE/2501040017
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	08/01/2025
		Period of Analysis:	04/01/2025 to 08/01/2025
		Receipt Date:	04/01/2025
Sample Description:	Soil Sample	Sampling Date:	29/12/2024
Sample Location:	Chathewala	Sampling Type:	Composite
Sample Collected By:	Vardan EnviroLab Representative	Sample Quantity:	2.0 Kg
Sampling & Analysis Protocol:	IS 2720, USEPA 3050B & USDA	Packing Status:	Temp Sealed

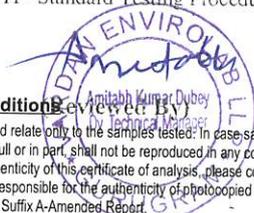
TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.31	--
2.	Conductivity	IS 14767	0.368	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty Loam	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	18.65	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	3.80	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	37.49	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	32.41	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	45.50	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	67.32	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	6.48	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.86	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	19.42	%
14.	Available Nitrogen (as N)	IS:14684	175.30	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	21.32	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	17.01	%
17.	Organic Carbon	IS 2720 (P-22)	0.78	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.69	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.85	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.76	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	8.24	mg/kg
22.	Molybdenum (as Mo)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.39	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	27.05	%

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Test Report

Sample Number:	VEL/ S0/07	Report No.:	VEL/PE/2501040019
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	08/01/2025
		Period of Analysis:	04/01/2025 to 08/01/2025
		Receipt Date:	04/01/2025
Sample Description;	Soil Sample	Sampling Date:	29/12/2024
Sample Location:	Baghi Bandar	Sampling Type:	Composite
Sample Collected By:	Vardan EnviroLab Representative	Sample Quantity:	2.0 Kg
Sampling & Analysis Protocol:	IS 2720, USEPA 3050B & USDA	Packing Status:	Temp Sealed

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.46	--
2.	Conductivity	IS 14767	0.351	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Brownish	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	22.08	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	2.91	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	60.75	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	46.32	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	80.47	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	122.96	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	3.44	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.58	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	33.67	%
14.	Available Nitrogen (as N)	IS:14684	230.08	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	32.03	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	27.51	%
17.	Organic Carbon	IS 2720 (P-22)	0.66	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.33	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.74	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.86	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	5.13	mg/kg
22.	Molybdenum (as Mo)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.56	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	24.90	%

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(Authorized Signatory)
Prakash
08/01/2025
Authorized Signatory

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Test Report

Sample Number:	VEL/ S0/11	Report No.:	VEL/PE/2501040023
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabu, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	08/01/2025
		Period of Analysis:	04/01/2025 to 08/01/2025
		Receipt Date:	04/01/2025
Sample Description:	Soil Sample	Sampling Date:	29/12/2024
Sample Location:	Mahi Nangal	Sampling Type:	Composite
Sample Collected By:	Vardan EnviroLab Representative	Sample Quantity:	2.0 Kg
Sampling & Analysis Protocol:	IS 2720, USEPA 3050B & USDA	Packing Status:	Temp Sealed

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.68	--
2.	Conductivity	IS 14767	0.455	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Brown	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	25.10	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	3.89	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	41.76	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	37.00	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	62.49	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	124.71	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	5.08	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.72	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	28.90	%
14.	Available Nitrogen (as N)	IS:14684	227.86	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	13.71	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	12.30	%
17.	Organic Carbon	IS 2720 (P-22)	0.78	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.69	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.81	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	4.32	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	6.88	mg/kg
22.	Molybdenum (as MO)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.79	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	21.64	%

Note- STP- Standard Testing Procedure.

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Test Report

Sample Number:	VEL/ S0/06	Report No.:	VEL/PE/2501040018
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabu, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	08/01/2025
		Period of Analysis:	04/01/2025 to 08/01/2025
		Receipt Date:	04/01/2025
Sample Description:	Soil Sample	Sampling Date:	30/12/2024
Sample Location:	Kot Fatta	Sampling Type:	Composite
Sample Collected By:	Vardan Envirolab Representative	Sample Quantity:	2.0 Kg
Sampling & Analysis Protocol:	IS 2720, USEPA 3050B & USDA	Packing Status:	Temp Sealed

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.40	--
2.	Conductivity	IS 14767	0.394	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	32.28	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	3.69	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	45.27	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	41.09	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	35.18	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	120.31	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	2.72	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.68	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	25.10	%
14.	Available Nitrogen (as N)	IS:14684	192.13	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	10.95	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	7.01	%
17.	Organic Carbon	IS 2720 (P-22)	0.85	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.76	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.82	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	2.90	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	6.41	mg/kg
22.	Molybdenum (as Mo)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.57	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 0.5)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	19.01	%

Note- STP- Standard Testing Procedure.

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Vardan Envirolab LLP

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (HR)
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Test Report

Sample Number:	VEL/S0/10	Report No.:	VEL/PE/2501040022
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	08/01/2025
		Period of Analysis:	04/01/2025 to 08/01/2025
		Receipt Date:	04/01/2025
Sample Description:	Soil Sample	Sampling Date:	30/12/2024
Sample Location:	Gehri Bhagi	Sampling Type:	Composite
Sample Collected By:	Vardan Envirolab Representative	Sample Quantity:	2.0 Kg
Sampling & Analysis Protocol:	IS 2720, USEPA 3050B & USDA	Packing Status:	Temp Sealed

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.63	--
2.	Conductivity	IS 14767	0.429	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty Loam	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	36.94	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	3.22	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	50.31	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	30.56	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	55.22	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	126.75	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	12.41	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.62	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	26.39	%
14.	Available Nitrogen (as N)	IS:14684	226.70	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	22.82	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	23.94	%
17.	Organic Carbon	IS 2720 (P-22)	0.88	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.62	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.59	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.61	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	3.70	mg/kg
22.	Molybdenum (as MO)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.51	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	19.25	%

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(Authorized Signatory)

Prakash Singh
08/01/2025
Authorized Signatory

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Test Report

Sample Number:	VEL/S0/12	Report No.:	VEL/PE/2501040024
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabu, Bathinda, Punjab	Format No.:	7.8 F-03
Sample Description:	Soil Sample	Party Reference No.:	NIL
Sample Location:	Laleana	Reporting Date:	08/01/2025
Sample Collected By:	Vardan Envirolab Representative	Period of Analysis:	04/01/2025 to 08/01/2025
Sampling & Analysis Protocol:	IS 2720, USEPA 3050B & USDA	Receipt Date:	04/01/2025
		Sampling Date:	30/12/2024
		Sampling Type:	Composite
		Sample Quantity:	2.0 Kg
		Packing Status:	Temp Sealed

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.51	--
2.	Conductivity	IS 14767	0.465	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Brown	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	36.08	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	2.62	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	71.33	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	49.21	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	37.09	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	159.28	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	2.01	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.64	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	36.90	%
14.	Available Nitrogen (as N)	IS:14684	259.15	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	21.18	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	24.07	%
17.	Organic Carbon	IS 2720 (P-22)	0.78	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	3.00	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.69	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.54	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	2.18	mg/kg
22.	Molybdenum (as Mo)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.75	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	26.08	%

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Test Report

Sample Number:	VEL/GW/01	Report No.:	VEL/W/2501040017
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil- Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	08/01/2025
		Period of Analysis:	04/01/2025 to 08/01/2025
		Receipt Date:	04/01/2025
Sample Description:	Ground Water Sample	Sampling Date:	27/12/2024
Sample Location:	Near Project Site	Sample Quantity:	2.0 Ltr. + 250 ml
Sample Collected By:	Vardan EnviroLab Representative	Sampling Type:	Grab
Parameter Required:	As per Work Order	Preservation:	Refrigerated
Sampling & Analysis Protocol:	APHA 23 rd Edition 2017 & IS:3025		

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.38	--	6.5 to 8.5	No Relaxation
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness (as CaCO ₃)	IS 3025 (P-21)	223.68	mg/L	200	600
7.	Calcium (as Ca)	IS 3025 (P-40)	69.72	mg/L	75	200
8.	Alkalinity (as CaCO ₃)	IS 3025 (P-23)	231.41	mg/L	200	600
9.	Chloride (as Cl)	IS 3025 (P-32)	60.18	mg/L	250	1000
10.	Cyanide (as CN)	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No Relaxation
11.	Magnesium (as Mg)	APHA 3500 Mg B	12.08	mg/L	30	100
12.	Total Dissolved Solids	IS 3025 (P-16)	511.09	mg/L	500	2000
13.	Sulphate (as SO ₄)	IS 3025 (P-24)	17.43	mg/L	200	400
14.	Fluoride (as F)	APHA 4500 F D	0.78	mg/L	1.0	1.5
15.	Nitrate (as NO ₃)	IS 3025 (Part -34)	6.40	mg/L	45	No Relaxation
16.	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.31	mg/L	1.0	No Relaxation
17.	Aluminium (as Al)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium (as Cr)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation



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Test Report

Sample No.: VEL/GW/01				Report No.: VEL/W/2501040017		
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No Relaxation
22.	Anionic Detergents (as MBAS)	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc (as Zn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.46	mg/L	5.0	15.0
24.	Copper (as Cu)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese (as Mn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium (as Cd)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
28.	Selenium (as Se)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic (as As)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury (as Hg)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/L	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	821	µS/cm	--	--
32.	Ammonia (as NH ₃)	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	26.3	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	4.5	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any 100 ml sample	--
36.	E. coli	IS 15185:2016	Absent	Per 100ml		

*BLQ-Below Limit of Quantification, **LOQ- Limit of Quantification.

@ Amendment No.1 in June 2015 (Limits of Iron & Arsenic) and Amendment No.2 in Sept. 2018 (Limit of Boron & IS method of Total Coliform & E.coli) & Amendment No.3 in Feb. 2021 (Limit of Mineral Oil).



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Test Report

Sample Number:	VEL/GW/03	Report No.:	VEL/W/2501040019
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	08/01/2025
		Period of Analysis:	04/01/2025 to 08/01/2025
		Receipt Date:	04/01/2025
Sample Description:	Ground Water Sample	Sampling Date:	27/12/2024
Sample Location:	Kot Shamir	Sample Quantity:	2.0 Ltr. + 250 ml
Sample Collected By:	Vardan Envirolab Representative	Sampling Type:	Grab
Parameter Required:	As per Work Order	Preservation:	Refrigerated
Sampling & Analysis Protocol:	APHA 23 rd Edition 2017 & IS:3025		

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit	Limit of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.62	--	6.5 to 8.5	No Relaxation
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness (as CaCO ₃)	IS 3025 (P-21)	228.65	mg/L	200	600
7.	Calcium (as Ca)	IS 3025 (P-40)	60.11	mg/L	75	200
8.	Alkalinity (as CaCO ₃)	IS 3025 (P-23)	226.98	mg/L	200	600
9.	Chloride (as Cl)	IS 3025 (P-32)	87.00	mg/L	250	1000
10.	Cyanide (as CN)	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No Relaxation
11.	Magnesium (as Mg)	APHA 3500 Mg B	19.11	mg/L	30	100
12.	Total Dissolved Solids	IS 3025 (P-16)	524.08	mg/L	500	2000
13.	Sulphate (as SO ₄)	IS 3025 (P-24)	39.62	mg/L	200	400
14.	Fluoride (as F)	APHA 4500 F D	0.33	mg/L	1.0	1.5
15.	Nitrate (as NO ₃)	IS 3025 (Part -34)	4.07	mg/L	45	No Relaxation
16.	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.34	mg/L	1.0	No Relaxation
17.	Aluminium (as Al)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium (as Cr)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation



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Test Report

Sample No.: VEL/GW/03				Report No.: VEL/W/2501040019		
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No Relaxation
22.	Anionic Detergents (as MBAS)	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc (as Zn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.67	mg/L	5.0	15.0
24.	Copper (as Cu)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese (as Mn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium (as Cd)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
28.	Selenium (as Se)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic (as As)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury (as Hg)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/L	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	852	µS/cm	--	--
32.	Ammonia (as NH ₃)	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	35.16	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	3.5	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any 100 ml sample	
36.	E. coli	IS 15185:2016	Absent	Per 100ml		

*BLQ-Below Limit of Quantification, **LOQ- Limit of Quantification.

@ Amendment No.1 in June 2015 (Limits of Iron & Arsenic) and Amendment No.2 in Sept. 2018 (Limit of Boron & IS method of Total Coliform & E.coli) & Amendment No.3 in Feb. 2021 (Limit of Mineral Oil).



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Vardan Envirolab LLP

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (HR)
ISO 9001 | ISO 14001 | ISO 45001



Test Report

Sample Number:	VEL/GW/02	Report No.:	VEL/W/2501040018
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	08/01/2025
		Period of Analysis:	04/01/2025 to 08/01/2025
		Receipt Date:	04/01/2025
Sample Description:	Ground Water Sample	Sampling Date:	28/12/2024
Sample Location:	Nasibpura	Sample Quantity:	2.0 Ltr. + 250 ml
Sample Collected By:	Vardan Envirolab Representative	Sampling Type:	Grab
Parameter Required:	As per Work Order	Preservation:	Refrigerated
Sampling & Analysis Protocol:	APHA 23 rd Edition 2017 & IS:3025		

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.32	--	6.5 to 8.5	No Relaxation
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness (as CaCO ₃)	IS 3025 (P-21)	225.12	mg/L	200	600
7.	Calcium (as Ca)	IS 3025 (P-40)	61.34	mg/L	75	200
8.	Alkalinity (as CaCO ₃)	IS 3025 (P-23)	210.68	mg/L	200	600
9.	Chloride (as Cl)	IS 3025 (P-32)	40.05	mg/L	250	1000
10.	Cyanide (as CN)	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No Relaxation
11.	Magnesium (as Mg)	APHA 3500 Mg B	17.51	mg/L	30	100
12.	Total Dissolved Solids	IS 3025 (P-16)	468.92	mg/L	500	2000
13.	Sulphate (as SO ₄)	IS 3025 (P-24)	31.76	mg/L	200	400
14.	Fluoride (as F)	APHA 4500 F D	0.74	mg/L	1.0	1.5
15.	Nitrate (as NO ₃)	IS 3025 (Part -34)	3.01	mg/L	45	No Relaxation
16.	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.38	mg/L	1.0	No Relaxation
17.	Aluminium (as Al)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium (as Cr)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation



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Test Report

Sample No.: VEL/GW/02			Report No.: VEL/W/2501040018			
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No Relaxation
22.	Anionic Detergents (as MBAS)	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc (as Zn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.34	mg/L	5.0	15.0
24.	Copper (as Cu)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese (as Mn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium (as Cd)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
28.	Selenium (as Se)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic (as As)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury (as Hg)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/L	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	736	µS/cm	--	--
32.	Ammonia (as NH ₃)	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	29.02	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	3.49	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any 100 ml sample	--
36.	E. coli	IS 15185:2016	Absent	Per 100ml		

*BLQ-Below Limit of Quantification. **LOQ- Limit of Quantification.

© Amendment No.1 in June 2015 (Limits of Iron & Arsenic) and Amendment No.2 in Sept. 2018 (Limit of Boron & IS method of Total Coliform & E.coli) & Amendment No.3 in Feb. 2021 (Limit of Mineral Oil).



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Test Report

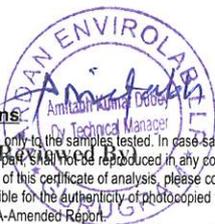
Sample Number:	VEL/GW/06	Report No.:	VEL/W/2501040022
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil- Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	08/01/2025
		Period of Analysis:	04/01/2025 to 08/01/2025
		Receipt Date:	04/01/2025
Sample Description:	Ground Water Sample	Sampling Date:	28/12/2024
Sample Location:	Jiwan Singh Wala	Sample Quantity:	2.0 Ltr. + 250 ml
Sample Collected By:	Vardan Envirolab Representative	Sampling Type:	Grab
Parameter Required:	As per Work Order	Preservation:	Refrigerated
Sampling & Analysis Protocol:	APHA 23 rd Edition 2017 & IS:3025		

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.39	--	6.5 to 8.5	No Relaxation
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness (as CaCO ₃)	IS 3025 (P-21)	153.44	mg/L	200	600
7.	Calcium (as Ca)	IS 3025 (P-40)	39.28	mg/L	75	200
8.	Alkalinity (as CaCO ₃)	IS 3025 (P-23)	161.05	mg/L	200	600
9.	Chloride (as Cl)	IS 3025 (P-32)	44.98	mg/L	250	1000
10.	Cyanide (as CN)	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No Relaxation
11.	Magnesium (as Mg)	APHA 3500 Mg B	13.47	mg/L	30	100
12.	Total Dissolved Solids	IS 3025 (P-16)	352.16	mg/L	500	2000
13.	Sulphate (as SO ₄)	IS 3025 (P-24)	19.22	mg/L	200	400
14.	Fluoride (as F)	APHA 4500 F D	0.63	mg/L	1.0	1.5
15.	Nitrate (as NO ₃)	IS 3025 (Part -34)	5.88	mg/L	45	No Relaxation
16.	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.49	mg/L	1.0	No Relaxation
17.	Aluminium (as Al)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium (as Cr)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation

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Test Report

Sample No.: VEL/GW/06			Report No.: VEL/W/2501040022			
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No Relaxation
22.	Anionic Detergents (as MBAS)	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc (as Zn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.32	mg/L	5.0	15.0
24.	Copper (as Cu)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese (as Mn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium (as Cd)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
28.	Selenium (as Se)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic (as As)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury (as Hg)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/L	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	595	µS/cm	--	--
32.	Ammonia (as NH ₃)	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	14.9	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	3.7	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any 100 ml sample	--
36.	E. coli	IS 15185:2016	Absent	Per 100ml		

*BLQ-Below Limit of Quantification, **LOQ- Limit of Quantification.

^(a) Amendment No.1 in June 2015 (Limits of Iron & Arsenic) and Amendment No.2 in Sept. 2018 (Limit of Boron & IS method of Total Coliform & E.coli) & Amendment No.3 in Feb. 2021 (Limit of Mineral Oil).



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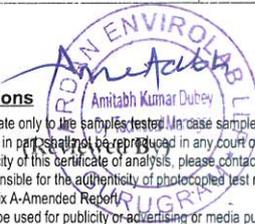
Sample Number:	VEL/GW/03	Report No.:	VEL/W/2501040020
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil- Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	08/01/2025
		Period of Analysis:	04/01/2025 to 08/01/2025
		Receipt Date:	04/01/2025
Sample Description:	Ground Water Sample	Sampling Date:	29/12/2024
Sample Location:	Baghi Bandar	Sample Quantity:	2.0 Ltr. + 250 ml
Sample Collected By:	Vardan Envirolab Representative	Sampling Type:	Grab
Parameter Required:	As per Work Order	Preservation:	Refrigerated
Sampling & Analysis Protocol:	APHA 23 rd Edition 2017 & IS:3025		

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:1500-2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.60	--	6.5 to 8.5	No Relaxation
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness (as CaCO ₃)	IS 3025 (P-21)	264.15	mg/L	200	600
7.	Calcium (as Ca)	IS 3025 (P-40)	82.60	mg/L	75	200
8.	Alkalinity (as CaCO ₃)	IS 3025 (P-23)	247.36	mg/L	200	600
9.	Chloride (as Cl)	IS 3025 (P-32)	79.48	mg/L	250	1000
10.	Cyanide (as CN)	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No Relaxation
11.	Magnesium (as Mg)	APHA 3500 Mg B	14.10	mg/L	30	100
12.	Total Dissolved Solids	IS 3025 (P-16)	512.00	mg/L	500	2000
13.	Sulphate (as SO ₄)	IS 3025 (P-24)	59.28	mg/L	200	400
14.	Fluoride (as F)	APHA 4500 F D	0.64	mg/L	1.0	1.5
15.	Nitrate (as NO ₃)	IS 3025 (Part -34)	9.01	mg/L	45	No Relaxation
16.	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.32	mg/L	1.0	No Relaxation
17.	Aluminium (as Al)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium (as Cr)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation

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Test Report

Sample No.: VEL/GW/04			Report No.: VEL/W/2501040020			
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No Relaxation
22.	Anionic Detergents (as MBAS)	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc (as Zn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.44	mg/L	5.0	15.0
24.	Copper (as Cu)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese (as Mn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium (as Cd)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
28.	Selenium (as Se)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic (as As)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury (as Hg)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/L	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	876	µS/cm	--	--
32.	Ammonia (as NH ₃)	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	21.7	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	3.9	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any 100 ml sample	--
36.	E. coli	IS 15185:2016	Absent	Per 100ml		

*BLQ-Below Limit of Quantification, **LOQ- Limit of Quantification.

@ Amendment No.1 in June 2015 (Limits of Iron & Arsenic) and Amendment No.2 in Sept. 2018 (Limit of Boron & IS method of Total Coliform & E.coli) & Amendment No.3 in Feb. 2021 (Limit of Mineral Oil).



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Test Report

Sample Number:	VEL/GW/05	Report No.:	VEL/W/2501040021
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
Sample Description:	Ground Water Sample	Party Reference No.:	NIL
Sample Location:	Maanwala	Reporting Date:	08/01/2025
Sample Collected By:	Vardan Envirolab Representative	Period of Analysis:	04/01/2025 to 08/01/2025
Parameter Required:	As per Work Order	Receipt Date:	04/01/2025
Sampling & Analysis Protocol:	APHA 23 rd Edition 2017 & IS:3025	Sampling Date:	29/12/2024
		Sample Quantity:	2.0 Ltr. + 250 ml
		Sampling Type:	Grab
		Preservation:	Refrigerated

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.32	--	6.5 to 8.5	No Relaxation
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness (as CaCO ₃)	IS 3025 (P-21)	237.56	mg/L	200	600
7.	Calcium (as Ca)	IS 3025 (P-40)	58.07	mg/L	75	200
8.	Alkalinity (as CaCO ₃)	IS 3025 (P-23)	151.63	mg/L	200	600
9.	Chloride (as Cl)	IS 3025 (P-32)	69.80	mg/L	250	1000
10.	Cyanide (as CN)	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No Relaxation
11.	Magnesium (as Mg)	APHA 3500 Mg B	22.51	mg/L	30	100
12.	Total Dissolved Solids	IS 3025 (P-16)	564.00	mg/L	500	2000
13.	Sulphate (as SO ₄)	IS 3025 (P-24)	51.22	mg/L	200	400
14.	Fluoride (as F)	APHA 4500 F D	0.79	mg/L	1.0	1.5
15.	Nitrate (as NO ₃)	IS 3025 (Part -34)	3.48	mg/L	45	No Relaxation
16.	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.40	mg/L	1.0	No Relaxation
17.	Aluminium (as Al)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium (as Cr)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation

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Test Report

Sample No.: VEL/GW/05			Report No.: VEL/W/2501040021			
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No Relaxation
22.	Anionic Detergents (as MBAS)	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc (as Zn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.39	mg/L	5.0	15.0
24.	Copper (as Cu)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese (as Mn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium (as Cd)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
28.	Selenium (as Se)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic (as As)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury (as Hg)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/L	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	756	µS/cm	--	--
32.	Ammonia (as NH ₃)	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	38.1	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	2.9	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any 100 ml sample	--
36.	E. coli	IS 15185:2016	Absent	Per 100ml		

*BLQ-Below Limit of Quantification, **LOQ- Limit of Quantification.

@ Amendment No.1 in June 2015 (Limits of Iron & Arsenic) and Amendment No.2 in Sept. 2018 (Limit of Boron & IS method of Total Coliform & E.coli) & Amendment No.3 in Feb. 2021 (Limit of Mineral Oil).



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Test Report

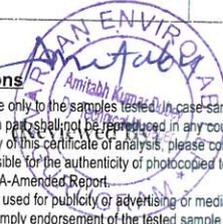
Sample Number:	VEL/GW/07	Report No.:	VEL/W/2501040023
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	08/01/2025
		Period of Analysis:	04/01/2025 to 08/01/2025
Sample Description:	Ground Water Sample	Receipt Date:	04/01/2025
Sample Location:	Mahi Nangal	Sampling Date:	29/12/2024
Sample Collected By:	Vardan Envirolab Representative	Sample Quantity:	2.0 Ltr. + 250 ml
Parameter Required:	As per Work Order	Sampling Type:	Grab
Sampling & Analysis Protocol:	APHA 23 rd Edition 2017 & IS:3025	Preservation:	Refrigerated

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.50	--	6.5 to 8.5	No Relaxation
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness (as CaCO ₃)	IS 3025 (P-21)	238.51	mg/L	200	600
7.	Calcium (as Ca)	IS 3025 (P-40)	44.69	mg/L	75	200
8.	Alkalinity (as CaCO ₃)	IS 3025 (P-23)	192.40	mg/L	200	600
9.	Chloride (as Cl)	IS 3025 (P-32)	61.53	mg/L	250	1000
10.	Cyanide (as CN)	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No Relaxation
11.	Magnesium (as Mg)	APHA 3500 Mg B	30.86	mg/L	30	100
12.	Total Dissolved Solids	IS 3025 (P-16)	421.00	mg/L	500	2000
13.	Sulphate (as SO ₄)	IS 3025 (P-24)	19.05	mg/L	200	400
14.	Fluoride (as F)	APHA 4500 F D	0.59	mg/L	1.0	1.5
15.	Nitrate (as NO ₃)	IS 3025 (Part -34)	9.2	mg/L	45	No Relaxation
16.	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.46	mg/L	1.0	No Relaxation
17.	Aluminium (as Al)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium (as Cr)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation

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Test Report

Sample No.: VEL/GW/07				Report No.: VEL/W/2501040023		
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No Relaxation
22.	Anionic Detergents (as MBAS)	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc (as Zn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.61	mg/L	5.0	15.0
24.	Copper (as Cu)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese (as Mn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium (as Cd)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
28.	Selenium (as Se)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic (as As)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury (as Hg)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/l	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	627	µS/cm	--	--
32.	Ammonia (as NH ₃)	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	29.2	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	3.8	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any 100 ml sample	--
36.	E. coli	IS 15185:2016	Absent	Per 100ml		

*BLQ-Below Limit of Quantification, **LOQ- Limit of Quantification.

© Amendment No.1 in June 2015 (Limits of Iron & Arsenic) and Amendment No.2 in Sept. 2018 (Limit of Boron & IS method of Total Coliform & E.coli) & Amendment No.3 in Feb. 2021 (Limit of Mineral Oil).



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Test Report

Sample Number:	VEL/SW/01	Report No.:	VEL/W/2501040024
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	08/01/2025
		Period of Analysis:	04/01/2025 to 08/01/2025
		Receipt Date:	04/01/2025
Sample Description:	Surface Water Sample	Sampling Date:	29/12/2024
Sample Location:	Chathewala	Sample Quantity:	2.0 Ltr. + 250 ml
Sample Collected By:	Vardan EnviroLab Representative	Sampling Type:	Grab
Parameter Required:	As per Work Order	Preservation:	Refrigerated
Sampling & Analysis Protocol:	APHA 23 rd Edition 2017 & IS:3025		

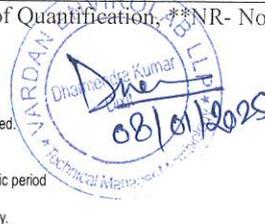
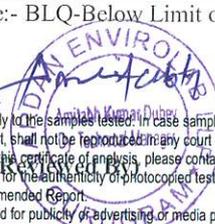
TEST RESULTS

S. No.	Parameter	Test Method	Results	Unit
1.	pH (at 25°C)	IS 3025 (P-11)	7.09	--
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen
3.	Turbidity	IS 3025 (P-10)	16.2	NTU
4.	Odour	IS 3025 (P-5)	Agreeable	--
5.	Taste	IS 3025 (P-8)	NR	--
6.	Chloride (as Cl)	IS 3025 (P-32)	61.54	mg/L
7.	Conductivity	IS 3025 (P-14)	589	µS/cm
8.	Nitrate (as NO ₃)	IS 3025 (P-34)	13.29	mg/L
9.	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.51	mg/L
10.	Total Dissolved Solids	IS 3025 (P-16)	354.78	mg/L
11.	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L
12.	Boron	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.64	mg/L
13.	Sulphate (as SO ₄)	IS 3025 (P-24)	20.89	mg/L
14.	Fluoride (as F)	APHA 4500 F D	0.60	mg/L
15.	BOD (3 Days at 27°C)	IS 3025 (P-44)	5.31	mg/L
16.	COD	IS 3025 (P-58)	28.69	mg/L
17.	Free Ammonia (as NH ₃)	IS 3025 (P-34)	8.90	mg/L
18.	Arsenic (as As)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L
19.	Total Hardness (as CaCO ₃)	IS 3025 (P-21)	129.00	mg/L
20.	Calcium (as Ca)	IS 3025 (P-40)	46.28	mg/L
21.	Alkalinity (as CaCO ₃)	IS 3025 (P-23)	137.05	mg/L
22.	Magnesium (as Mg)	APHA 3500 Mg B Calculation Method	3.98	mg/L
23.	Copper (as Cu)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	6.30	mg/L
24.	Sodium (as Na)	IS 3025 (P-45)	43.05	mg/L
25.	Potassium (as K)	IS 3025 (P-45)	7.7	mg/L
26.	Total Chromium (as Cr)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L
27.	Total Coliform	IS 15185:2016	Absent	Per 100ml

Note:- BLQ-Below Limit of Quantification, *LOQ-Limit of Quantification, **NR- Not Reported.

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Test Report

Sample Number:	VEL/SW/02	Report No.:	VEL/W/2501040025
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	08/01/2025
		Period of Analysis:	04/01/2025 to 08/01/2025
		Receipt Date:	04/01/2025
Sample Description:	Surface Water Sample	Sampling Date:	30/12/2024
Sample Location:	Kot Fatta	Sample Quantity:	2.0 Ltr. + 250 ml
Sample Collected By:	Vardan Envirolab Representative	Sampling Type:	Grab
Parameter Required:	As per Work Order	Preservation:	Refrigerated
Sampling & Analysis Protocol:	APHA 23 rd Edition 2017 & IS:3025		

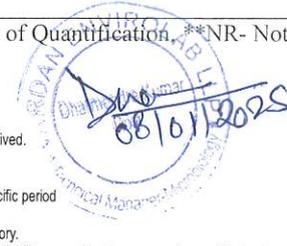
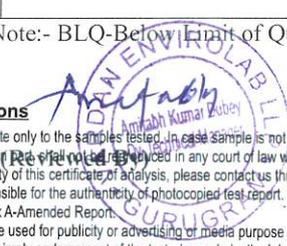
TEST RESULTS

S. No.	Parameter	Test Method	Results	Unit
1.	pH (at 25°C)	IS 3025 (P-11)	7.90	--
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen
3.	Turbidity	IS 3025 (P-10)	18.2	NTU
4.	Odour	IS 3025 (P-5)	Agreeable	--
5.	Taste	IS 3025 (P-8)	NR	--
6.	Chloride (as Cl)	IS 3025 (P-32)	43.70	mg/L
7.	Conductivity	IS 3025 (P-14)	852	µS/cm
8.	Nitrate (as NO ₃)	IS 3025 (P-34)	5.29	mg/L
9.	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.64	mg/L
10.	Total Dissolved Solids	IS 3025 (P-16)	421.00	mg/L
11.	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L
12.	Boron	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.89	mg/L
13.	Sulphate (as SO ₄)	IS 3025 (P-24)	27.02	mg/L
14.	Fluoride (as F)	APHA 4500 F D	0.59	mg/L
15.	BOD (3 Days at 27°C)	IS 3025 (P-44)	3.01	mg/L
16.	COD	IS 3025 (P-58)	15.06	mg/L
17.	Free Ammonia (as NH ₃)	IS 3025 (P-34)	6.32	mg/L
18.	Arsenic (as As)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L
19.	Total Hardness (as CaCO ₃)	IS 3025 (P-21)	133.76	mg/L
20.	Calcium (as Ca)	IS 3025 (P-40)	53.58	mg/L
21.	Alkalinity (as CaCO ₃)	IS 3025 (P-23)	146.90	mg/L
22.	Magnesium (as Mg)	APHA 3500 Mg B Calculation Method	3.49	mg/L
23.	Copper (as Cu)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	2.16	mg/L
24.	Sodium (as Na)	IS 3025 (P-45)	41.05	mg/L
25.	Potassium (as K)	IS 3025 (P-45)	4.0	mg/L
26.	Total Chromium (as Cr)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L
27.	Total Coliform	IS 15185:2016	Absent	Per 100ml

Note:- BLQ-Below Limit of Quantification, *LOQ-Limit of Quantification, **NR- Not Reported.

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ISO 9001 | ISO 14001 | ISO 45001



Test Report

Sample Number:	VEL/HPCL/A/01	Report No.:	VEL/AP/2504040019
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
Latitude:	30°05'46.28" N	Party Reference No.:	NIL
Longitude:	75°01'03.05" E	Reporting Date:	09/04/2025
		Period of Analysis:	04/04/2025 to 09/04/2025
		Receipt Date:	04/04/2025

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

Sample Collected by	: Vardan EnviroLab Representative
Sampling Location	: Near Project Site
Instrument Used	: RDS & FPS Sampler with all Accessories
Instrument Code	: VEL/RDS/FPS/05
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 28/03/2025 to 29/03/2025
Time of Monitoring	: 10:00 AM to 10:00 AM
Ambient Temperature (°C)	: Min. 16.0°C, Max. 29.0°C
Surrounding Activity	: Human, Vehicular, & Other Plant Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No
Sampling & Analysis Protocol	: IS-5182 & CPCB Guideline
Parameter Required	: As per Work Order

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS [@] Limit
1.	Particulate Matter (as PM _{2.5})	IS 5182 (P-24)	36.40	µg/m ³	60
2.	Particulate Matter (as PM ₁₀)	IS 5182 (P-23)	57.18	µg/m ³	100
3.	Nitrogen Dioxide (as NO ₂)	IS 5182 (P-6)	18.62	µg/m ³	80
4.	Sulphur Dioxide (as SO ₂)	IS 5182 (P-2)	10.47	µg/m ³	80
5.	Carbon Monoxide (as CO)	IS 5182 (P-10), NDIR Method	0.52	mg/m ³	4
6.	Ammonia (as NH ₃)	VEL/ENV/STP/155, Issue No.-01, 20/06/2022	20.08	µg/m ³	400
7.	Lead (as Pb)	IS 5182 (P-22)	BLQ(LOQ 0.1)	µg/m ³	1
8.	Benzene (as C ₆ H ₆)	IS 5182 (P-12)	BLQ(LOQ 0.5)	µg/m ³	05
9.	Benzo(a)pyrene	VEL/ENV/STP/157, Issue No.-01, 01/11/2021	BLQ(LOQ 0.5)	ng/m ³	01
10.	Ozone (as O ₃)	IS 5182 (P-9)	16.35	µg/m ³	180
11.	Arsenic (as As)	VEL/ENV/STP/110, Issue No.-01, 01/11/2021	BLQ(LOQ 0.1)	ng/m ³	6
12.	Nickel (as Ni)	IS 5182 (P-26)	BLQ(LOQ 5.0)	ng/m ³	20
13.	Volatile Organic Carbon (VOCs)	IS 5182 (P-11)	BLQ(LOQ 0.05)	µg/m ³	--
14.	Hydrocarbon (as Methane)	IS 5182 (P-17)	BLQ(LOQ 0.1)	ppm(v/v)	--

Note :- @ NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.
*BLQ- Below Limit of Quantification, **LOQ- Limit of Quantification, STP-Standard Testing Procedure.



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Test Report

Sample Number:	VEL/HPCL/A/02	Report No.:	VEL/AP/2504040020
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
Latitude:	30°07'91.88" N	Party Reference No.:	NIL
Longitude:	75°00'18.00" E	Reporting Date:	09/04/2025
		Period of Analysis:	04/04/2025 to 09/04/2025
		Receipt Date:	04/04/2025

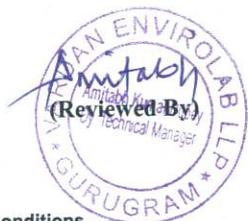
Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-	:	Vardan EnviroLab Representative
Sample Collected by	:	Nasibpura
Sampling Location	:	RDS & FPS Sampler with all Accessories
Instrument Used	:	VEL/RDS/FPS/06
Instrument Code	:	Calibrated
Instrument Calibration Status	:	Clear Sky
Meteorological condition during monitoring	:	28/03/2025 to 29/03/2025
Date of Monitoring	:	09:30 AM to 09:30 AM
Time of Monitoring	:	Min. 16.0°C, Max. 29.0°C
Ambient Temperature (°C)	:	Human & Vehicular, & Other Activities
Surrounding Activity	:	Regulatory Requirement
Scope of Monitoring	:	No
Control measure if Any	:	IS-5182 & CPCB Guideline
Sampling & Analysis Protocol	:	As per Work Order
Parameter Required	:	

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS [@] Limit
1.	Particulate Matter (as PM _{2.5})	IS 5182 (P-24)	38.72	µg/m ³	60
2.	Particulate Matter (as PM ₁₀)	IS 5182 (P-23)	56.30	µg/m ³	100
3.	Nitrogen Dioxide (as NO ₂)	IS 5182 (P-6)	15.04	µg/m ³	80
4.	Sulphur Dioxide (as SO ₂)	IS 5182 (P-2)	11.47	µg/m ³	80
5.	Carbon Monoxide (as CO)	IS 5182 (P-10), NDIR Method	0.79	mg/m ³	4
6.	Ammonia (as NH ₃)	VEL/ENV/STP/155, Issue No.-01, 20/06/2022	BLQ(LOQ 20.0)	µg/m ³	400
7.	Lead (as Pb)	IS 5182 (P-22)	BLQ(LOQ 0.1)	µg/m ³	1
8.	Benzene (as C ₆ H ₆)	IS 5182 (P-12)	BLQ(LOQ 0.5)	µg/m ³	05
9.	Benzo(a)pyrene	VEL/ENV/STP/157, Issue No.-01, 01/11/2021	BLQ(LOQ 0.5)	ng/m ³	01
10.	Ozone (as O ₃)	IS 5182 (P-9)	17.05	µg/m ³	180
11.	Arsenic (as As)	VEL/ENV/STP/110, Issue No.-01, 01/11/2021	BLQ(LOQ 0.1)	ng/m ³	6
12.	Nickel (as Ni)	IS 5182 (P-26)	BLQ(LOQ 5.0)	ng/m ³	20
13.	Volatile Organic Carbon (VOCs)	IS 5182 (P-11)	BLQ(LOQ 0.05)	µg/m ³	--
14.	Hydrocarbon (as Methane)	IS 5182 (P-17)	BLQ(LOQ 0.1)	ppm(v/v)	--

Note :- @ NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.
*BLQ- Below Limit of Quantification, **LOQ- Limit of Quantification, STP-Standard Testing Procedure.



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Test Report

Sample Number:	VEL/HPCL/A/03	Report No.:	VEL/AP/2504040021
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
Latitude:	30°10'19.35" N	Party Reference No.:	NIL
Longitude:	75°00'70.46" E	Reporting Date:	09/04/2025
		Period of Analysis:	04/04/2025 to 09/04/2025
		Receipt Date:	04/04/2025

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

Sample Collected by	: Vardan EnviroLab Representative
Sampling Location	: Kot Shamir
Instrument Used	: RDS & FPS Sampler with all Accessories
Instrument Code	: VEL/RDS/FPS/07
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 28/03/2025 to 29/03/2025
Time of Monitoring	: 10:15 AM to 10:15 AM
Ambient Temperature (°C)	: Min. 16.0°C, Max. 29.0°C
Surrounding Activity	: Human & Vehicular, & Other Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No
Sampling & Analysis Protocol	: IS-5182 & CPCB Guideline
Parameter Required	: As per Work Order

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS ^(a) Limit
1.	Particulate Matter (as PM _{2.5})	IS 5182 (P-24)	33.58	µg/m ³	60
2.	Particulate Matter (as PM ₁₀)	IS 5182 (P-23)	54.17	µg/m ³	100
3.	Nitrogen Dioxide (as NO ₂)	IS 5182 (P-6)	23.26	µg/m ³	80
4.	Sulphur Dioxide (as SO ₂)	IS 5182 (P-2)	9.23	µg/m ³	80
5.	Carbon Monoxide (as CO)	IS 5182 (P-10), NDIR Method	0.65	mg/m ³	4
6.	Ammonia (as NH ₃)	VEL/ENV/STP/155, Issue No.-01, 20/06/2022	BLQ(LOQ 20.0)	µg/m ³	400
7.	Lead (as Pb)	IS 5182 (P-22)	BLQ(LOQ 0.1)	µg/m ³	1
8.	Benzene (as C ₆ H ₆)	IS 5182 (P-12)	BLQ(LOQ 0.5)	µg/m ³	05
9.	Benzo(a)pyrene	VEL/ENV/STP/157, Issue No.-01, 01/11/2021	BLQ(LOQ 0.5)	ng/m ³	01
10.	Ozone (as O ₃)	IS 5182 (P-9)	25.79	µg/m ³	180
11.	Arsenic (as As)	VEL/ENV/STP/110, Issue No.-01, 01/11/2021	BLQ(LOQ 0.1)	ng/m ³	6
12.	Nickel (as Ni)	IS 5182 (P-26)	BLQ(LOQ 5.0)	ng/m ³	20
13.	Volatile Organic Carbon (VOCs)	IS 5182 (P-11)	BLQ(LOQ 0.05)	µg/m ³	--
14.	Hydrocarbon (as Methane)	IS 5182 (P-17)	BLQ(LOQ 0.1)	ppm(v/v)	--

Note :-@ NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.

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Test Report

Sample Number: VEL/HPCL/A/09
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab
Latitude: 30°06'95.18" N
Longitude: 75°06'79.83" E

Report No.: VEL/AP/2504040022
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 09/04/2025
Period of Analysis: 04/04/2025 to 09/04/2025
Receipt Date: 04/04/2025

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Chathewala
Instrument Used : RDS & FPS Sampler with all Accessories
Instrument Code : VEL/RDS/FPS/07
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 29/03/2025 to 30/03/2025
Time of Monitoring : 10:25 AM to 10:25 AM
Ambient Temperature (°C) : Min. 13.0°C, Max. 31.0°C
Surrounding Activity : Human & Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No
Sampling & Analysis Protocol : IS-5182 & CPCB Guideline
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS [@] Limit
1.	Particulate Matter (as PM _{2.5})	IS 5182 (P-24)	37.35	µg/m ³	60
2.	Particulate Matter (as PM ₁₀)	IS 5182 (P-23)	59.01	µg/m ³	100
3.	Nitrogen Dioxide (as NO ₂)	IS 5182 (P-6)	18.95	µg/m ³	80
4.	Sulphur Dioxide (as SO ₂)	IS 5182 (P-2)	11.43	µg/m ³	80
5.	Carbon Monoxide (as CO)	IS 5182 (P-10), NDIR Method	0.59	mg/m ³	4
6.	Ammonia (as NH ₃)	VEL/ENV/STP/155, Issue No.-01, 20/06/2022	BLQ(LOQ 20.0)	µg/m ³	400
7.	Lead (as Pb)	IS 5182 (P-22)	BLQ(LOQ 0.1)	µg/m ³	1
8.	Benzene (as C ₆ H ₆)	IS 5182 (P-12)	BLQ(LOQ 0.5)	µg/m ³	05
9.	Benzo(a)pyrene	VEL/ENV/STP/157, Issue No.-01, 01/11/2021	BLQ(LOQ 0.5)	ng/m ³	01
10.	Ozone (as O ₃)	IS 5182 (P-9)	19.69	µg/m ³	180
11.	Arsenic (as As)	VEL/ENV/STP/110, Issue No.-01, 01/11/2021	BLQ(LOQ 0.1)	ng/m ³	6
12.	Nickel (as Ni)	IS 5182 (P-26)	BLQ(LOQ 5.0)	ng/m ³	20
13.	Volatile Organic Carbon (VOCs)	IS 5182 (P-11)	BLQ(LOQ 0.05)	µg/m ³	--
14.	Hydrocarbon (as Methane)	IS 5182 (P-17)	BLQ(LOQ 0.1)	ppm(v/v)	--

Note :-@ NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.
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Test Report

Sample Number: VEL/HPCL/A/11
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd.
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab
Latitude: 30°98'18.6" N
Longitude: 75°06'45.56" E

Report No.: VEL/AP/2504040023
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 09/04/2025
Period of Analysis: 04/04/2025 to 09/04/2025
Receipt Date: 04/04/2025

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : **Kot Bhara**
Instrument Used : RDS & FPS Sampler with all Accessories
Instrument Code : VEL/RDS/FPS/06
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 29/03/2025 to 30/03/2025
Time of Monitoring : 09:35 AM to 09:35 AM
Ambient Temperature (°C) : Min. 13.0°C, Max. 31.0°C
Surrounding Activity : Human & Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No
Sampling & Analysis Protocol : IS-5182 & CPCB Guideline
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS [@] Limit
1.	Particulate Matter (as PM _{2.5})	IS 5182 (P-24)	32.19	µg/m ³	60
2.	Particulate Matter (as PM ₁₀)	IS 5182 (P-23)	48.26	µg/m ³	100
3.	Nitrogen Dioxide (as NO ₂)	IS 5182 (P-6)	16.55	µg/m ³	80
4.	Sulphur Dioxide (as SO ₂)	IS 5182 (P-2)	9.49	µg/m ³	80
5.	Carbon Monoxide (as CO)	IS 5182 (P-10), NDIR Method	0.63	mg/m ³	4
6.	Ammonia (as NH ₃)	VEL/ENV/STP/155, Issue No.-01, 20/06/2022	BLQ(LOQ 20.0)	µg/m ³	400
7.	Lead (as Pb)	IS 5182 (P-22)	BLQ(LOQ 0.1)	µg/m ³	1
8.	Benzene (as C ₆ H ₆)	IS 5182 (P-12)	BLQ(LOQ 0.5)	µg/m ³	05
9.	Benzo(a)pyrene	VEL/ENV/STP/157, Issue No.-01, 01/11/2021	BLQ(LOQ 0.5)	ng/m ³	01
10.	Ozone (as O ₃)	IS 5182 (P-9)	16.32	µg/m ³	180
11.	Arsenic (as As)	VEL/ENV/STP/110, Issue No.-01, 01/11/2021	BLQ(LOQ 0.1)	ng/m ³	6
12.	Nickel (as Ni)	IS 5182 (P-26)	BLQ(LOQ 5.0)	ng/m ³	20
13.	Volatile Organic Carbon (VOCs)	IS 5182 (P-11)	BLQ(LOQ 0.05)	µg/m ³	--
14.	Hydrocarbon (as Methane)	IS 5182 (P-17)	BLQ(LOQ 0.1)	ppm(v/v)	--

Note :-@ NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.

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Test Report

Sample Number: VEL/HPCL/A/08
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab
Latitude: 30°11'58.80" N
Longitude: 75°06'45.56" E

Report No.: VEL/AP/2504040024
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 09/04/2025
Period of Analysis: 04/04/2025 to 09/04/2025
Receipt Date: 04/04/2025

Sample Description: AMBIENT AIR QUALITY MONITORING

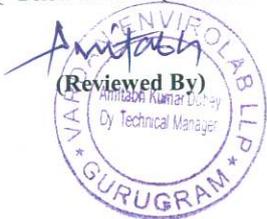
General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Kot Fatta
Instrument Used : RDS & FPS Sampler with all Accessories
Instrument Code : VEL/RDS/FPS/05
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 29/03/2025 to 30/03/2025
Time of Monitoring : 10:20 AM to 10:20 AM
Ambient Temperature (°C) : Min. 13.0°C, Max. 31.0°C
Surrounding Activity : Human & Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No
Sampling & Analysis Protocol : IS-5182 & CPCB Guideline
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS [®] Limit
1.	Particulate Matter (as PM _{2.5})	IS 5182 (P-24)	35.21	µg/m ³	60
2.	Particulate Matter (as PM ₁₀)	IS 5182 (P-23)	58.37	µg/m ³	100
3.	Nitrogen Dioxide (as NO ₂)	IS 5182 (P-6)	13.45	µg/m ³	80
4.	Sulphur Dioxide (as SO ₂)	IS 5182 (P-2)	11.09	µg/m ³	80
5.	Carbon Monoxide (as CO)	IS 5182 (P-10), NDIR Method	0.53	mg/m ³	4
6.	Ammonia (as NH ₃)	VEL/ENV/STP/155, Issue No.-01, 20/06/2022	BLQ(LOQ 20.0)	µg/m ³	400
7.	Lead (as Pb)	IS 5182 (P-22)	BLQ(LOQ 0.1)	µg/m ³	1
8.	Benzene (as C ₆ H ₆)	IS 5182 (P-12)	BLQ(LOQ 0.5)	µg/m ³	05
9.	Benzo(a)pyrene	VEL/ENV/STP/157, Issue No.-01, 01/11/2021	BLQ(LOQ 0.5)	ng/m ³	01
10.	Ozone (as O ₃)	IS 5182 (P-9)	15.09	µg/m ³	180
11.	Arsenic (as As)	VEL/ENV/STP/110, Issue No.-01, 01/11/2021	BLQ(LOQ 0.1)	ng/m ³	6
12.	Nickel (as Ni)	IS 5182 (P-26)	BLQ(LOQ 5.0)	ng/m ³	20
13.	Volatile Organic Carbon (VOCs)	IS 5182 (P-11)	BLQ(LOQ 0.05)	µg/m ³	--
14.	Hydrocarbon (as Methane)	IS 5182 (P-17)	BLQ(LOQ 0.1)	ppm(v/v)	--

Note :-@ NAAQS - National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.
*BLQ- Below Limit of Quantification, **LOQ- Limit of Quantification, STP-Standard Testing Procedure.



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Vardan Envirolab LLP

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (HR)
ISO 9001 | ISO 14001 | ISO 45001



Test Report

Sample Number: VEL/HPCL/A/04
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd.
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab
Latitude: 30°05'74.39" N
Longitude: 75°03'46.83" E

Report No.: VEL/AP/2504040025
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 09/04/2025
Period of Analysis: 04/04/2025 to 09/04/2025
Receipt Date: 04/04/2025

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Jiwan Singh Wala
Instrument Used : RDS & FPS Sampler with all Accessories
Instrument Code : VEL/RDS/FPS/06
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 30/03/2025 to 31/03/2025
Time of Monitoring : 09:45 AM to 09:45 AM
Ambient Temperature (°C) : Min. 14.0°C, Max. 35.0°C
Surrounding Activity : Human & Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No
Sampling & Analysis Protocol : IS-5182 & CPCB Guideline
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS [®] Limit
1.	Particulate Matter (as PM _{2.5})	IS 5182 (P-24)	37.92	µg/m ³	60
2.	Particulate Matter (as PM ₁₀)	IS 5182 (P-23)	42.39	µg/m ³	100
3.	Nitrogen Dioxide (as NO ₂)	IS 5182 (P-6)	15.08	µg/m ³	80
4.	Sulphur Dioxide (as SO ₂)	IS 5182 (P-2)	11.92	µg/m ³	80
5.	Carbon Monoxide (as CO)	IS 5182 (P-10), NDIR Method	0.56	mg/m ³	4
6.	Ammonia (as NH ₃)	VEL/ENV/STP/155, Issue No.-01, 20/06/2022	BLQ(LOQ 20.0)	µg/m ³	400
7.	Lead (as Pb)	IS 5182 (P-22)	BLQ(LOQ 0.1)	µg/m ³	1
8.	Benzene (as C ₆ H ₆)	IS 5182 (P-12)	BLQ(LOQ 0.5)	µg/m ³	05
9.	Benzo(a)pyrene	VEL/ENV/STP/157, Issue No.-01, 01/11/2021	BLQ(LOQ 0.5)	ng/m ³	01
10.	Ozone (as O ₃)	IS 5182 (P-9)	18.33	µg/m ³	180
11.	Arsenic (as As)	VEL/ENV/STP/110, Issue No.-01, 01/11/2021	BLQ(LOQ 0.1)	ng/m ³	6
12.	Nickel (as Ni)	IS 5182 (P-26)	BLQ(LOQ 5.0)	ng/m ³	20
13.	Volatile Organic Carbon (VOCs)	IS 5182 (P-11)	BLQ(LOQ 0.05)	µg/m ³	--
14.	Hydrocarbon (as Methane)	IS 5182 (P-17)	BLQ(LOQ 0.1)	ppm(v/v)	--

Note :-@ NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.
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Test Report

Sample Number: VEL/HPCL/A/10
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd.
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab
Latitude: 30°03'74.66" N
Longitude: 74°95'01.84" E

Report No.: VEL/AP/2504040026
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 09/04/2025
Period of Analysis: 04/04/2025 to 09/04/2025
Receipt Date: 04/04/2025

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

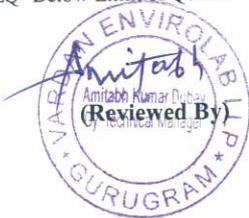
Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Manwala
Instrument Used : RDS & FPS Sampler with all Accessories
Instrument Code : VEL/RDS/FPS/05
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 31/03/2025 to 01/04/2025
Time of Monitoring : 10:25 AM to 10:25 AM
Ambient Temperature (°C) : Min. 16.0°C, Max. 37.0°C
Surrounding Activity : Human & Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No
Sampling & Analysis Protocol : IS-5182 & CPCB Guideline
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS [@] Limit
1.	Particulate Matter (as PM _{2.5})	IS 5182 (P-24)	31.67	µg/m ³	60
2.	Particulate Matter (as PM ₁₀)	IS 5182 (P-23)	54.28	µg/m ³	100
3.	Nitrogen Dioxide (as NO ₂)	IS 5182 (P-6)	19.63	µg/m ³	80
4.	Sulphur Dioxide (as SO ₂)	IS 5182 (P-2)	10.56	µg/m ³	80
5.	Carbon Monoxide (as CO)	IS 5182 (P-10), NDIR Method	0.57	mg/m ³	4
6.	Ammonia (as NH ₃)	VEL/ENV/STP/155, Issue No.-01, 20/06/2022	BLQ(LOQ 20.0)	µg/m ³	400
7.	Lead (as Pb)	IS 5182 (P-22)	BLQ(LOQ 0.1)	µg/m ³	1
8.	Benzene (as C ₆ H ₆)	IS 5182 (P-12)	BLQ(LOQ 0.5)	µg/m ³	05
9.	Benzo(a)pyrene	VEL/ENV/STP/157, Issue No.-01, 01/11/2021	BLQ(LOQ 0.5)	ng/m ³	01
10.	Ozone (as O ₃)	IS 5182 (P-9)	18.62	µg/m ³	180
11.	Arsenic (as As)	VEL/ENV/STP/110, Issue No.-01, 01/11/2021	BLQ(LOQ 0.1)	ng/m ³	6
12.	Nickel (as Ni)	IS 5182 (P-26)	BLQ(LOQ 5.0)	ng/m ³	20
13.	Volatile Organic Carbon (VOCs)	IS 5182 (P-11)	BLQ(LOQ 0.05)	µg/m ³	--
14.	Hydrocarbon (as Methane)	IS 5182 (P-17)	BLQ(LOQ 0.1)	ppm(v/v)	--

Note :-@ NAAQS - National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.

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Test Report

Sample Number: VEL/HPCL/A/07
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd.
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab
Latitude: 30°02'58.78" N
Longitude: 75°06'42.66" E

Report No.: VEL/AP/2504040027
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 09/04/2025
Period of Analysis: 04/04/2025 to 09/04/2025
Receipt Date: 04/04/2025

Sample Description: AMBIENT AIR QUALITY MONITORING

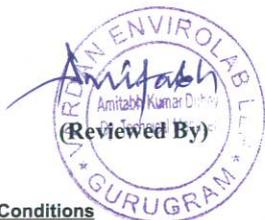
General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : **Baghi Bandar**
Instrument Used : RDS & FPS Sampler with all Accessories
Instrument Code : VEL/RDS/FPS/07
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 30/03/2025 to 31/03/2025
Time of Monitoring : 10:30 AM to 10:30 AM
Ambient Temperature (°C) : Min. 14.0°C, Max. 35.0°C
Surrounding Activity : Human & Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No
Sampling & Analysis Protocol : IS-5182 & CPCB Guideline
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS [®] Limit
1.	Particulate Matter (as PM _{2.5})	IS 5182 (P-24)	37.83	µg/m ³	60
2.	Particulate Matter (as PM ₁₀)	IS 5182 (P-23)	54.26	µg/m ³	100
3.	Nitrogen Dioxide (as NO ₂)	IS 5182 (P-6)	18.56	µg/m ³	80
4.	Sulphur Dioxide (as SO ₂)	IS 5182 (P-2)	11.21	µg/m ³	80
5.	Carbon Monoxide (as CO)	IS 5182 (P-10), NDIR Method	0.58	mg/m ³	4
6.	Ammonia (as NH ₃)	VEL/ENV/STP/155, Issue No.-01, 20/06/2022	BLQ(LOQ 20.0)	µg/m ³	400
7.	Lead (as Pb)	IS 5182 (P-22)	BLQ(LOQ 0.1)	µg/m ³	1
8.	Benzene (as C ₆ H ₆)	IS 5182 (P-12)	BLQ(LOQ 0.5)	µg/m ³	05
9.	Benzo(a)pyrene	VEL/ENV/STP/157, Issue No.-01, 01/11/2021	BLQ(LOQ 0.5)	ng/m ³	01
10.	Ozone (as O ₃)	IS 5182 (P-9)	16.99	µg/m ³	180
11.	Arsenic (as As)	VEL/ENV/STP/110, Issue No.-01, 01/11/2021	BLQ(LOQ 0.1)	ng/m ³	6
12.	Nickel (as Ni)	IS 5182 (P-26)	BLQ(LOQ 5.0)	ng/m ³	20
13.	Volatile Organic Carbon (VOCs)	IS 5182 (P-11)	BLQ(LOQ 0.05)	µg/m ³	--
14.	Hydrocarbon (as Methane)	IS 5182 (P-17)	BLQ(LOQ 0.1)	ppm(v/v)	--

Note :- @ NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.
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Test Report

Sample Number: VEL/HPCL/A/05
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd.
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab
Latitude: 29°99'07.18" N
Longitude: 75°01'09.02" E

Report No.: VEL/AP/2504040028
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 09/04/2025
Period of Analysis: 04/04/2025 to 09/04/2025
Receipt Date: 04/04/2025

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : **Leleana**
Instrument Used : RDS & FPS Sampler with all Accessories
Instrument Code : VEL/RDS/FPS/06
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 31/03/2025 to 01/04/2025
Time of Monitoring : 10:00 AM to 10:00 AM
Ambient Temperature (°C) : Min. 16.0°C, Max. 37.0°C
Surrounding Activity : Human & Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No
Sampling & Analysis Protocol : IS-5182 & CPCB Guideline
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS [®] Limit
1.	Particulate Matter (as PM _{2.5})	IS 5182 (P-24)	38.72	µg/m ³	60
2.	Particulate Matter (as PM ₁₀)	IS 5182 (P-23)	49.08	µg/m ³	100
3.	Nitrogen Dioxide (as NO ₂)	IS 5182 (P-6)	17.62	µg/m ³	80
4.	Sulphur Dioxide (as SO ₂)	IS 5182 (P-2)	8.42	µg/m ³	80
5.	Carbon Monoxide (as CO)	IS 5182 (P-10), NDIR Method	0.66	mg/m ³	4
6.	Ammonia (as NH ₃)	VEL/ENV/STP/155, Issue No.-01, 20/06/2022	20.04	µg/m ³	400
7.	Lead (as Pb)	IS 5182 (P-22)	BLQ(LOQ 0.1)	µg/m ³	1
8.	Benzene (as C ₆ H ₆)	IS 5182 (P-12)	BLQ(LOQ 0.5)	µg/m ³	05
9.	Benzo(a)pyrene	VEL/ENV/STP/157, Issue No.-01, 01/11/2021	BLQ(LOQ 0.5)	ng/m ³	01
10.	Ozone (as O ₃)	IS 5182 (P-9)	17.63	µg/m ³	180
11.	Arsenic (as As)	VEL/ENV/STP/110, Issue No.-01, 01/11/2021	BLQ(LOQ 0.1)	ng/m ³	6
12.	Nickel (as Ni)	IS 5182 (P-26)	BLQ(LOQ 5.0)	ng/m ³	20
13.	Volatile Organic Carbon (VOCs)	IS 5182 (P-11)	BLQ(LOQ 0.05)	µg/m ³	--
14.	Hydrocarbon (as Methane)	IS 5182 (P-17)	BLQ(LOQ 0.1)	ppm(v/v)	--

Note :-@ NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.

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Test Report

Sample Number: VEL/HPCL/A/06
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd.
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab
Latitude: 30°02'11.58" N
Longitude: 75°01'56.76" E

Report No.: VEL/AP/2504040029
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 09/04/2025
Period of Analysis: 04/04/2025 to 09/04/2025
Receipt Date: 04/04/2025

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Mahi Nangal
Instrument Used : RDS & FPS Sampler with all Accessories
Instrument Code : VEL/RDS/FPS/07
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 30/03/2025 to 31/03/2025
Time of Monitoring : 10:35 AM to 10:35 AM
Ambient Temperature (°C) : Min. 14.0°C, Max. 35.0°C
Surrounding Activity : Human & Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No
Sampling & Analysis Protocol : IS-5182 & CPCB Guideline
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS [@] Limit
1.	Particulate Matter (as PM _{2.5})	IS 5182 (P-24)	36.42	µg/m ³	60
2.	Particulate Matter (as PM ₁₀)	IS 5182 (P-23)	57.09	µg/m ³	100
3.	Nitrogen Dioxide (as NO ₂)	IS 5182 (P-6)	27.63	µg/m ³	80
4.	Sulphur Dioxide (as SO ₂)	IS 5182 (P-2)	7.26	µg/m ³	80
5.	Carbon Monoxide (as CO)	IS 5182 (P-10), NDIR Method	0.55	mg/m ³	4
6.	Ammonia (as NH ₃)	VEL/ENV/STP/155, Issue No.-01, 20/06/2022	BLQ(LOQ 20.0)	µg/m ³	400
7.	Lead (as Pb)	IS 5182 (P-22)	BLQ(LOQ 0.1)	µg/m ³	1
8.	Benzene (as C ₆ H ₆)	IS 5182 (P-12)	BLQ(LOQ 0.5)	µg/m ³	05
9.	Benzo(a)pyrene	VEL/ENV/STP/157, Issue No.-01, 01/11/2021	BLQ(LOQ 0.5)	ng/m ³	01
10.	Ozone (as O ₃)	IS 5182 (P-9)	14.60	µg/m ³	180
11.	Arsenic (as As)	VEL/ENV/STP/110, Issue No.-01, 01/11/2021	BLQ(LOQ 0.1)	ng/m ³	6
12.	Nickel (as Ni)	IS 5182 (P-26)	BLQ(LOQ 5.0)	ng/m ³	20
13.	Volatile Organic Carbon (VOCs)	IS 5182 (P-11)	BLQ(LOQ 0.05)	µg/m ³	--
14.	Hydrocarbon (as Methane)	IS 5182 (P-17)	BLQ(LOQ 0.1)	ppm(v/v)	--

Note :-@ NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.

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Test Report

Sample Number: VEL/HPCL/A/12
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd.
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab
Latitude: 30°11'10.85" N
Longitude: 74°96'12.48" E

Report No.: VEL/AP/2504040030
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 09/04/2025
Period of Analysis: 04/04/2025 to 09/04/2025
Receipt Date: 04/04/2025

Sample Description: AMBIENT AIR QUALITY MONITORING

General Information:-

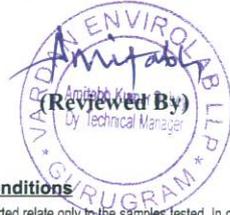
Sample Collected by : Vardan EnviroLab Representative
Sampling Location : **Gehri Bhagi**
Instrument Used : RDS & FPS Sampler with all Accessories
Instrument Code : VEL/RDS/FPS/05
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 31/03/2022 to 01/04/2025
Time of Monitoring : 10:30 AM to 10:30 AM
Ambient Temperature (°C) : Min. 16.0°C, Max. 37.0°C
Surrounding Activity : Human & Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No
Sampling & Analysis Protocol : IS-5182 & CPCB Guideline
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS [@] Limit
1.	Particulate Matter (as PM _{2.5})	IS 5182 (P-24)	38.41	µg/m ³	60
2.	Particulate Matter (as PM ₁₀)	IS 5182 (P-23)	45.26	µg/m ³	100
3.	Nitrogen Dioxide (as NO ₂)	IS 5182 (P-6)	13.96	µg/m ³	80
4.	Sulphur Dioxide (as SO ₂)	IS 5182 (P-2)	9.40	µg/m ³	80
5.	Carbon Monoxide (as CO)	IS 5182 (P-10), NDIR Method	0.52	mg/m ³	4
6.	Ammonia (as NH ₃)	VEL/ENV/STP/155, Issue No.-01, 20/06/2022	BLQ(LOQ 20.0)	µg/m ³	400
7.	Lead (as Pb)	IS 5182 (P-22)	BLQ(LOQ 0.1)	µg/m ³	1
8.	Benzene (as C ₆ H ₆)	IS 5182 (P-12)	BLQ(LOQ 0.5)	µg/m ³	05
9.	Benzo(a)pyrene	VEL/ENV/STP/157, Issue No.-01, 01/11/2021	BLQ(LOQ 0.5)	ng/m ³	01
10.	Ozone (as O ₃)	IS 5182 (P-9)	15.97	µg/m ³	180
11.	Arsenic (as As)	VEL/ENV/STP/110, Issue No.-01, 01/11/2021	BLQ(LOQ 0.1)	ng/m ³	6
12.	Nickel (as Ni)	IS 5182 (P-26)	BLQ(LOQ 5.0)	ng/m ³	20
13.	Volatile Organic Carbon (VOCs)	IS 5182 (P-11)	BLQ(LOQ 0.05)	µg/m ³	--
14.	Hydrocarbon (as Methane)	IS 5182 (P-17)	BLQ(LOQ 0.1)	ppm(v/v)	--

Note :-@ NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]18.11.2009.

*BLQ- Below Limit of Quantification, **LOQ- Limit of Quantification, STP-Standard Testing Procedure.



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Test Report

Sample Number:	VEL/N/01	Report No.:	VEL/AP/2504040031
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	09/04/2025
		Receipt Date:	04/04/2025

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample Collected by	: Vardan EnviroLab Representative
Sampling Location	: Near Project Site
Latitude:	30°05'46.23" N
Longitude:	75°01'03.48" E
Instrument Used	: Sound Level Meter
Instrument Code	: VEL/S/SLM/06
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 28/03/2025 to 29/03/2025
Time of Monitoring	: 09:30 AM to 09:30 AM
Ambient Temperature (°C)	: Min. 16.0°C, Max. 29.0°C
Surrounding Activity	: Human, Vehicular, & Other Plant Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No any
Sampling & Analysis Protocol	: IS-9989 R-2014 & CPCB Guideline
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

TEST RESULTS

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L _{max}	IS 9989	73.8	68.2	dB(A)
2.	L _{min}	IS 9989	54.0	47.5	dB(A)
3.	L _{eq}	IS 9989	62.94	51.39	dB(A)
4.	CPCB Limits in dB(A)[*] Leq (Industrial Area)	-	75.00	70.00	dB(A)

Note * A "decibel" is a unit in which noise is measured.



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Test Report

Sample Number: VEL/N/02
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd.
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab

Report No.: VEL/AP/2504040032
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 09/04/2025
Receipt Date: 04/04/2025

Sample Description: AMBIENT NOISE LEVEL MONITORING

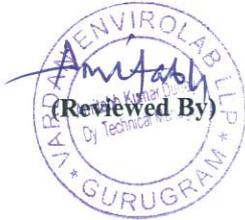
General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Nasibpura
Latitude: 30°07'92.05" N
Longitude: 75°00'18.31" E
Instrument Used : Sound Level Meter
Instrument Code : VEL/S/SLM/07
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 28/03/2025 to 29/03/2025
Time of Monitoring : 09:40 AM to 09:40 AM
Ambient Temperature (°C) : Min. 16.0°C, Max. 29.0°C
Surrounding Activity : Human, Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No any
Sampling & Analysis Protocol : IS-9989 R-2014 & CPCB Guideline
Sampling Duration : 24 Hours
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L _{max}	IS 9989	52.6	43.1	dB(A)
2.	L _{min}	IS 9989	45.7	35.7	dB(A)
3.	L _{eq}	IS 9989	49.88	40.92	dB(A)
4.	CPCB Limits in dB(A*) Leq (Residential Area)	-	55.00	45.00	dB(A)

Note * A "decibel" is a unit in which noise is measured.



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Vardan EnviroLab LLP

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (HR)
ISO 9001 | ISO 14001 | ISO 45001



Test Report

Sample Number:	VEL/N/03	Report No.:	VEL/AP/2504040033
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	09/04/2025
		Receipt Date:	04/04/2025

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample Collected by	: Vardan EnviroLab Representative
Sampling Location	: Kot Shamir
Latitude:	30°10'19.53" N
Longitude:	75°00'70.45" E
Instrument Used	: Sound Level Meter
Instrument Code	: VEL/S/SLM/08
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 28/03/2025 to 29/03/2025
Time of Monitoring	: 09:50 AM to 09:50 AM
Ambient Temperature (°C)	: Min. 16.0°C, Max. 29.0°C
Surrounding Activity	: Human, Vehicular, & Other Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No any
Sampling & Analysis Protocol	: IS-9989 R-2014 & CPCB Guideline
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

TEST RESULTS

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L _{max}	IS 9989	51.7	42.8	dB(A)
2.	L _{min}	IS 9989	42.6	34.5	dB(A)
3.	L _{eq}	IS 9989	48.22	39.60	dB(A)
4.	CPCB Limits in dB(A*) Leq (Residential Area)	-	55.00	45.00	dB(A)

Note: * A "decibel" is a unit in which noise is measured.



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Page 1 of 1

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Test Report

Sample Number: VEL/N/09
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd.
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab

Report No.: VEL/AP/2504040034
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 09/04/2025
Receipt Date: 04/04/2025

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Kot Bhara
Latitude: 30°09'81.73" N
Longitude: 75°06'45.46" E
Instrument Used : Sound Level Meter
Instrument Code : VEL/S/SLM/09
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 29/03/2025 to 30/03/2025
Time of Monitoring : 06:00 AM to 06:00 AM
Ambient Temperature (°C) : Min. 13.0°C, Max. 31.0°C
Surrounding Activity : Human, Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No any
Sampling & Analysis Protocol : IS-9989 R-2014 & CPCB Guideline
Sampling Duration : 24 Hours
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L _{max}	IS 9989	53.0	41.6	dB(A)
2.	L _{min}	IS 9989	37.8	31.9	dB(A)
3.	L _{eq}	IS 9989	48.5	36.74	dB(A)
4.	CPCB Limits in dB(A)* Leq (Residential Area)	-	55.00	45.00	dB(A)

Note: * A "decibel" is a unit in which noise is measured.



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Test Report

Sample Number: VEL/N/05 **Report No.:** VEL/AP/2504040035
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd.
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab **Format No.:** 7.8 F-03
Party Reference No.: NIL
Reporting Date: 09/04/2025
Receipt Date: 04/04/2025

Sample Description: AMBIENT NOISE LEVEL MONITORING

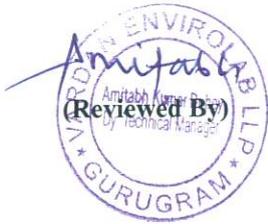
General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Kot Fatta
Latitude: 30°11'58.08" N
Longitude: 75°08'17.61" E
Instrument Used : Sound Level Meter
Instrument Code : VEL/S/SLM/06
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 29/03/2025 to 30/03/2025
Time of Monitoring : 10:30 AM to 10:30 AM
Ambient Temperature (°C) : Min. 13.0°C, Max. 31.0°C
Surrounding Activity : Human, Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No any
Sampling & Analysis Protocol : IS-9989 R-2014 & CPCB Guideline
Sampling Duration : 24 Hours
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L _{max}	IS 9989	53.7	42.3	dB(A)
2.	L _{min}	IS 9989	36.5	36.4	dB(A)
3.	L _{eq}	IS 9989	51.68	41.95	dB(A)
4.	CPCB Limits in dB(A*) Leq (Residential Area)	-	55.00	45.00	dB(A)

Note * A "decibel" is a unit in which noise is measured.



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Test Report

Sample Number: VEL/N/10
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd.
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab

Report No.: VEL/AP/2504040036
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 09/04/2025
Receipt Date: 04/04/2025

Sample Description: AMBIENT NOISE LEVEL MONITORING

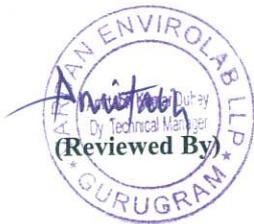
General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Chathewala
Latitude: 30°06'95.18" N
Longitude: 75°06'79.83" E
Instrument Used : Sound Level Meter
Instrument Code : VEL/S/SLM/10
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 29/03/2025 to 30/03/2025
Time of Monitoring : 10:55 AM to 10:55 AM
Ambient Temperature (°C) : Min. 13.0°C, Max. 31.0°C
Surrounding Activity : Human, Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No any
Sampling & Analysis Protocol : IS-9989 R-2014 & CPCB Guideline
Sampling Duration : 24 Hours
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L _{max}	IS 9989	51.9	39.7	dB(A)
2.	L _{min}	IS 9989	30.5	32.8	dB(A)
3.	L _{eq}	IS 9989	46.74	35.10	dB(A)
4.	CPCB Limits in dB(A*) Leq (Residential Area)	-	55.00	45.00	dB(A)

Note * A "decibel" is a unit in which noise is measured.



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Test Report

Sample Number: VEL/N/11
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd.
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab

Report No.: VEL/AP/2504040037
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 09/04/2025
Receipt Date: 04/04/2025

Sample Description: AMBIENT NOISE LEVEL MONITORING

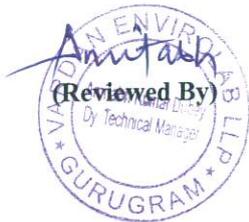
General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Manwala
Latitude: 30°03'74.66" N
Longitude: 75°95'01.84" E
Instrument Used : Sound Level Meter
Instrument Code : VEL/S/SLM/07
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 31/03/2025 to 01/04/2025
Time of Monitoring : 09:50 AM to 09:50 AM
Ambient Temperature (°C) : Min. 16.0°C, Max. 37.0°C
Surrounding Activity : Human, Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No any
Sampling & Analysis Protocol : IS-9989 R-2014 & CPCB Guideline
Sampling Duration : 24 Hours
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L _{max}	IS 9989	52.9	41.3	dB(A)
2.	L _{min}	IS 9989	31.5	31.0	dB(A)
3.	L _{eq}	IS 9989	46.58	36.77	dB(A)
4.	CPCB Limits in dB(A*) Leq (Residential Area)	-	55.00	45.00	dB(A)

Note * A "decibel" is a unit in which noise is measured.



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Vardan Envirolab LLP

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (HR)
ISO 9001 | ISO 14001 | ISO 45001



Test Report

Sample Number: VEL/N/06
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab

Report No.: VEL/AP/2504040038
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 09/04/2025
Receipt Date: 04/04/2025

Sample Description: AMBIENT NOISE LEVEL MONITORING

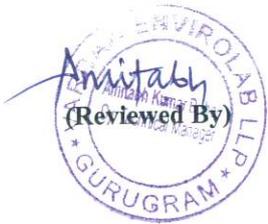
General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : **Baghi Bandar**
Latitude: **30°02'85.59" N**
Longitude: **75°06'42.03" E**
Instrument Used : Sound Level Meter
Instrument Code : VEL/S/SLM/08
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 30/03/2025 to 31/03/2025
Time of Monitoring : 10:00 AM to 10:00 AM
Ambient Temperature (°C) : Min. 14.0°C, Max. 35.0°C
Surrounding Activity : Human, Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No any
Sampling & Analysis Protocol : IS-9989 R-2014 & CPCB Guideline
Sampling Duration : 24 Hours
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L _{max}	IS 9989	52.9	40.8	dB(A)
2.	L _{min}	IS 9989	36.1	32.5	dB(A)
3.	L _{eq}	IS 9989	48.57	35.42	dB(A)
4.	CPCB Limits in dB(A*) L _{eq} (Residential Area)	-	55.00	45.00	dB(A)

Note: * A "decibel" is a unit in which noise is measured.



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Test Report

Sample Number: VEL/N/04
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd.
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab

Report No.: VEL/AP/2504040039
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 09/04/2025
Receipt Date: 04/04/2025

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Jiwan Singh Wala
Latitude: 30°05'74.01" N
Longitude: 75°03'46.48" E
Instrument Used : Sound Level Meter
Instrument Code : VEL/S/SLM/12
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 30/03/2025 to 31/03/2025
Time of Monitoring : 10:15 AM to 10:15 AM
Ambient Temperature (°C) : Min. 14.0°C, Max. 35.0°C
Surrounding Activity : Human, Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No any
Sampling & Analysis Protocol : IS-9989 R-2014 & CPCB Guideline
Sampling Duration : 24 Hours
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L _{max}	IS 9989	51.8	43.9	dB(A)
2.	L _{min}	IS 9989	34.6	32.6	dB(A)
3.	L _{eq}	IS 9989	45.37	36.12	dB(A)
4.	CPCB Limits in dB(A*) Leq (Residential Area)	-	55.00	45.00	dB(A)

Note * A "decibel" is a unit in which noise is measured.



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Test Report

Sample Number: VEL/N/07
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd.
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab

Report No.: VEL/AP/2504040040
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 09/04/2025
Receipt Date: 04/04/2025

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Mahi Nangal
Latitude: 30°02'11.88" N
Longitude: 75°01'56.66" E
Instrument Used : Sound Level Meter
Instrument Code : VEL/S/SLM/07
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 30/03/2025 to 31/03/2025
Time of Monitoring : 10:30 AM to 10:30 AM
Ambient Temperature (°C) : Min. 14.0°C, Max. 35.0°C
Surrounding Activity : Human, Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No any
Sampling & Analysis Protocol : IS-9989 R-2014 & CPCB Guideline
Sampling Duration : 24 Hours
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L _{max}	IS 9989	51.7	40.5	dB(A)
2.	L _{min}	IS 9989	40.5	32.1	dB(A)
3.	L _{eq}	IS 9989	46.90	38.47	dB(A)
4.	CPCB Limits in dB(A*) Leq (Residential Area)	-	55.00	45.00	dB(A)

Note * A "decibel" is a unit in which noise is measured.



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Test Report

Sample Number: VEL/N/08
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd.
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab

Report No.: VEL/AP/2504040041
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 09/04/2025
Receipt Date: 04/04/2025

Sample Description: AMBIENT NOISE LEVEL MONITORING

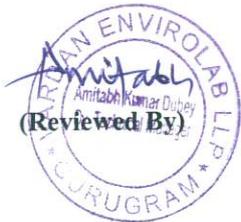
General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : **Leleana**
Latitude: 30°01'029.99" N
Longitude: 74°97'47.58" E
Instrument Used : Sound Level Meter
Instrument Code : VEL/S/SLM/12
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 31/03/2025 to 01/04/2025
Time of Monitoring : 06:00 AM to 06:00 AM
Ambient Temperature (°C) : Min. 16.0°C, Max. 37.0°C
Surrounding Activity : Human, Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No any
Sampling & Analysis Protocol : IS-9989 R-2014 & CPCB Guideline
Sampling Duration : 24 Hours
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L _{max}	IS 9989	53.6	43.1	dB(A)
2.	L _{min}	IS 9989	44.1	34.8	dB(A)
3.	L _{eq}	IS 9989	49.57	40.93	dB(A)
4.	CPCB Limits in dB(A*) Leq (Residential Area)	-	55.00	45.00	dB(A)

Note * A "decibel" is a unit in which noise is measured.



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Test Report

Sample Number: VEL/N/12 **Report No.:** VEL/AP/2504040042
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd.
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab **Format No.:** 7.8 F-03
Party Reference No.: NIL
Reporting Date: 09/04/2025
Receipt Date: 04/04/2025

Sample Description: AMBIENT NOISE LEVEL MONITORING

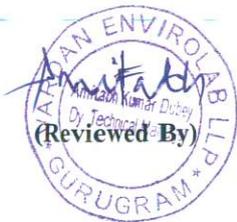
General Information:-

Sample Collected by : Vardan EnviroLab Representative
Sampling Location : Gehri Bhagi
Latitude: 30°11'10.71" N
Longitude: 74°96'12.01" E
Instrument Used : Sound Level Meter
Instrument Code : VEL/S/SLM/12
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear Sky
Date of Monitoring : 31/03/2025 to 01/04/2025
Time of Monitoring : 11:30 AM to 11:30 AM
Ambient Temperature (°C) : Min. 16.0°C, Max. 37.0°C
Surrounding Activity : Human, Vehicular, & Other Activities
Scope of Monitoring : Regulatory Requirement
Control measure if Any : No any
Sampling & Analysis Protocol : IS-9989 R-2014 & CPCB Guideline
Sampling Duration : 24 Hours
Parameter Required : As per Work Order

TEST RESULTS

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L _{max}	IS 9989	52.7	43.0	dB(A)
2.	L _{min}	IS 9989	38.2	31.7	dB(A)
3.	L _{eq}	IS 9989	45.69	36.11	dB(A)
4.	CPCB Limits in dB(A)* Leq (Residential Area)	-	55.00	45.00	dB(A)

Note *A "decibel" is a unit in which noise is measured.



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Test Report

Sample Number:	VEL/S0/01	Report No.:	VEL/PE/2504040013
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	09/04/2025
		Period of Analysis:	04/04/2025 to 09/04/2025
		Receipt Date:	04/04/2025
Sample Description:	Soil Sample	Sampling Date:	27/03/2025
Sample Location:	Near Project Site	Sampling Type:	Composite
Sample Collected By:	Vardan EnviroLab Representative	Sample Quantity:	2.0 Kg
Sampling & Analysis Protocol:	IS 2720, USEPA 3050B & USDA	Packing Status:	Temp Sealed

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	8.31	--
2.	Conductivity	IS 14767	0.370	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	33.12	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	3.28	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	31.60	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	28.04	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	31.22	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	126.18	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	7.42	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.73	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	17.45	%
14.	Available Nitrogen (as N)	IS:14684	139.70	kg/hect.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	24.95	kg/hect.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	26.11	%
17.	Organic Carbon	IS 2720 (P-22)	0.67	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.62	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.76	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.70	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	16.32	mg/kg
22.	Molybdenum (as Mo)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.62	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	19.44	%

Note- STP- Standard Testing Procedure.

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(Reviewed By)

Amitabh Kumar
Amitabh Kumar
Signature

(Authorized Signatory)

Prakash Singh
Prakash Singh
Signature
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Vardan Envirolab LLP

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (HR)
ISO 9001 | ISO 14001 | ISO 45001



Test Report

Sample Number:	VEL/ S0/02	Report No.:	VEL/PE/2504040014
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	09/04/2025
		Period of Analysis:	04/04/2025 to 09/04/2025
		Receipt Date:	04/04/2025
		Sampling Date:	28/03/2025
		Sampling Type:	Composite
		Sample Quantity:	2.0 Kg
		Packing Status:	Temp Sealed

Sample Description:	Soil Sample
Sample Location:	Nasibpura
Sample Collected By:	Vardan EnviroLab Representative
Sampling & Analysis Protocol:	IS 2720, USEPA 3050B & USDA

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.81	--
2.	Conductivity	IS 14767	0.429	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	47.10	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	5.35	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	41.68	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	46.57	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	54.23	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	131.49	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	4.10	mg/kg
12.	Organic Matter	IS 2720 (P-22)	2.04	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	3.12	%
14.	Available Nitrogen (as N)	IS:14684	292.30	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	27.69	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	30.17	%
17.	Organic Carbon	IS 2720 (P-22)	0.52	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.46	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.50	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	7.99	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	4.30	mg/kg
22.	Molybdenum (as Mo)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.65	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	15.97	%

Note- STP- Standard Testing Procedure.


(Reviewed By)
Armitabh Singh
Dy. Technical Officer

(Authorized Signatory)

Armitabh Singh
Authorized Signatory

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Test Report

Sample Number:	VEL/ S0/03	Report No.:	VEL/PE/2504040015
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	09/04/2025
		Period of Analysis:	04/04/2025 to 09/04/2025
		Receipt Date:	04/04/2025
Sample Description:	Soil Sample	Sampling Date:	28/03/2025
Sample Location:	Kot Shamir	Sampling Type:	Composite
Sample Collected By:	Vardan EnviroLab Representative	Sample Quantity:	2.0 Kg
Sampling & Analysis Protocol:	IS 2720, USEPA 3050B & USDA	Packing Status:	Temp Sealed

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.53	--
2.	Conductivity	IS 14767	0.398	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	23.55	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	3.79	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	42.64	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	37.18	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	46.73	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	130.66	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	7.42	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.70	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	16.98	%
14.	Available Nitrogen (as N)	IS:14684	260.46	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	29.07	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	21.35	%
17.	Organic Carbon	IS 2720 (P-22)	0.68	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.82	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.75	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.55	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	13.96	mg/kg
22.	Molybdenum (as Mo)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.71	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	21.42	%

Note- STP- Standard Testing Procedure.

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(Reviewed By)

(Authorized Signatory)



Vardan Envirolab LLP

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (HR)
ISO 9001 | ISO 14001 | ISO 45001



Test Report

Sample Number:	VEL/ S0/04	Report No.:	VEL/PE/2504040016
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	09/04/2025
		Period of Analysis:	04/04/2025 to 09/04/2025
		Receipt Date:	04/04/2025
		Sampling Date:	29/03/2025
		Sampling Type:	Composite
		Sample Quantity:	2.0 Kg
		Packing Status:	Temp Sealed

Sample Description:	Soil Sample
Sample Location:	Kot Bhara
Sample Collected By:	Vardan EnviroLab Representative
Sampling & Analysis Protocol:	IS 2720, USEPA 3050B & USDA

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.51	--
2.	Conductivity	IS 14767	0.403	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	32.86	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	4.19	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	36.22	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	57.45	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	62.10	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	128.95	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	4.63	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.70	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	25.80	%
14.	Available Nitrogen (as N)	IS:14684	226.94	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	19.55	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	14.72	%
17.	Organic Carbon	IS 2720 (P-22)	0.88	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.70	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.91	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	3.14	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	4.02	mg/kg
22.	Molybdenum (as Mo)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	5.28	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	29.53	%

Note- STP- Standard Testing Procedure.

(Reviewed By)
Amitabh Kumar Dubey
VARDAN ENVIROLAB LLP

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(Authorized Signatory)
Dr. Shikha
Bhaskar Singh
VARDAN ENVIROLAB LLP
Authorized Signatory

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Test Report

Sample Number:	VEL/S0/05	Report No.:	VEL/PE/2504040017
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	09/04/2025
		Period of Analysis:	04/04/2025 to 09/04/2025
		Receipt Date:	04/04/2025
		Sampling Date:	29/03/2025
		Sampling Type:	Composite
		Sample Quantity:	2.0 Kg
		Packing Status:	Temp Sealed

Sample Description;	Soil Sample
Sample Location:	Chathewala
Sample Collected By:	Vardan EnviroLab Representative
Sampling & Analysis Protocol:	IS 2720, USEPA 3050B & USDA

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.42	--
2.	Conductivity	IS 14767	0.399	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty Loam	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	19.42	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	2.78	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	38.56	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	33.77	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	46.09	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	68.40	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	7.32	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.75	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	20.84	%
14.	Available Nitrogen (as N)	IS:14684	176.93	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	22.67	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	18.23	%
17.	Organic Carbon	IS 2720 (P-22)	0.81	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.70	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.93	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.66	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	7.32	mg/kg
22.	Molybdenum (as Mo)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.40	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	28.10	%

Note- STP- Standard Testing Procedure.



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Vardan Envirolab LLP

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (HR)
ISO 9001 | ISO 14001 | ISO 45001



Test Report

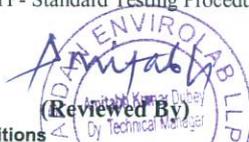
Sample Number:	VEL/ S0/06	Report No.:	VEL/PE/2504040018
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	09/04/2025
		Period of Analysis:	04/04/2025 to 09/04/2025
		Receipt Date:	04/04/2025
		Sampling Date:	29/03/2025
		Sampling Type:	Composite
		Sample Quantity:	2.0 Kg
		Packing Status:	Temp Sealed

Sample Description;	Soil Sample
Sample Location:	Kot Fatta
Sample Collected By:	Vardan Envirolab Representative
Sampling & Analysis Protocol:	IS 2720, USEPA 3050B & USDA

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.33	--
2.	Conductivity	IS 14767	0.475	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	33.79	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	4.58	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	46.55	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	42.16	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	36.72	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	121.63	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	3.42	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.70	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	23.64	%
14.	Available Nitrogen (as N)	IS:14684	193.52	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	11.80	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	8.01	%
17.	Organic Carbon	IS 2720 (P-22)	0.92	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.85	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.73	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	3.68	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	7.19	mg/kg
22.	Molybdenum (as Mo)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.60	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 0.5)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	20.78	%

Note- STP- Standard Testing Procedure.



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Test Report

Sample Number:	VEL/ S0/07	Report No.:	VEL/PE/2504040019
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	09/04/2025
		Period of Analysis:	04/04/2025 to 09/04/2025
		Receipt Date:	04/04/2025
Sample Description;	Soil Sample	Sampling Date:	30/03/2025
Sample Location:	Baghi Bandar	Sampling Type:	Composite
Sample Collected By:	Vardan Envirolab Representative	Sample Quantity:	2.0 Kg
Sampling & Analysis Protocol:	IS 2720, USEPA 3050B & USDA	Packing Status:	Temp Sealed

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.55	--
2.	Conductivity	IS 14767	0.387	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Brownish	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	23.12	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	3.76	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	61.90	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	47.28	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	81.53	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	123.45	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	4.86	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.60	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	34.21	%
14.	Available Nitrogen (as N)	IS:14684	231.49	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	33.07	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	28.09	%
17.	Organic Carbon	IS 2720 (P-22)	0.70	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.45	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.86	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.72	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	6.91	mg/kg
22.	Molybdenum (as Mo)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.53	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	25.36	%

Note- STP- Standard Testing Procedure.

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(Reviewed By)

 Technical Manager
 VARDAN ENVIROLAB LLP

(Authorized Signatory)

 Authorized Signatory
 VARDAN ENVIROLAB LLP



Test Report

Sample Number:	VEL /S0/08	Report No.:	VEL/PE/2504040020
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	09/04/2025
		Period of Analysis:	04/04/2025 to 09/04/2025
		Receipt Date:	04/04/2025
		Sampling Date:	31/03/2025
		Sampling Type:	Composite
		Sample Quantity:	2.0 Kg
		Packing Status:	Temp Sealed

Sample Description:	Soil Sample
Sample Location:	Manwala
Sample Collected By:	Vardan EnviroLab Representative
Sampling & Analysis Protocol:	IS 2720, USEPA 3050B & USDA

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.38	--
2.	Conductivity	IS 14767	0.421	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	36.93	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	5.28	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	40.52	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	48.61	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	34.89	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	157.33	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	6.57	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.79	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	28.22	%
14.	Available Nitrogen (as N)	IS:14684	246.98	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	19.31	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	15.72	%
17.	Organic Carbon	IS 2720 (P-22)	0.78	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.66	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.83	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	5.70	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	6.53	mg/kg
22.	Molybdenum (as MO)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.67	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	25.18	%

Note- STP- Standard Testing Procedure.


Anshu Kumer Dubey
(Reviewed By)

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(Authorized Signatory)

Dr. Shiv Prakash Singh
Authorized Signatory

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ISO 9001 | ISO 14001 | ISO 45001



Test Report

Sample Number:	VEL/ S0/09	Report No.:	VEL/PE/2504040021
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	09/04/2025
		Period of Analysis:	04/04/2025 to 09/04/2025
		Receipt Date:	04/04/2025
Sample Description;	Soil Sample	Sampling Date:	30/03/2025
Sample Location:	Jiwan Singh Wala	Sampling Type:	Composite
Sample Collected By:	Vardan EnviroLab Representative	Sample Quantity:	2.0 Kg
Sampling & Analysis Protocol:	IS 2720, USEPA 3050B & USDA	Packing Status:	Temp Sealed

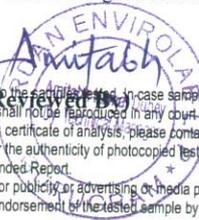
TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.58	--
2.	Conductivity	IS 14767	0.396	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	29.33	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	5.60	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	48.17	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	29.42	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	52.89	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	132.26	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	7.32	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.79	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	22.50	%
14.	Available Nitrogen (as N)	IS:14684	220.14	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	13.20	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	19.35	%
17.	Organic Carbon	IS 2720 (P-22)	0.67	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.70	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.88	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.64	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	6.22	mg/kg
22.	Molybdenum (as MO)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.94	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	24.77	%

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Test Report

Sample Number:	VEL/S0/10	Report No.:	VEL/PE/2504040022
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	09/04/2025
		Period of Analysis:	04/04/2025 to 09/04/2025
		Receipt Date:	04/04/2025
		Sampling Date:	31/03/2025
		Sampling Type:	Composite
		Sample Quantity:	2.0 Kg
		Packing Status:	Temp Sealed

Sample Description;	Soil Sample
Sample Location:	Gehri Bhagi
Sample Collected By:	Vardan Envirolab Representative
Sampling & Analysis Protocol:	IS 2720, USEPA 3050B & USDA

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.56	--
2.	Conductivity	IS 14767	0.368	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty Loam	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Red	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	37.62	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	4.51	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	51.78	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	31.59	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	56.34	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	127.53	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	13.22	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.70	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	27.19	%
14.	Available Nitrogen (as N)	IS:14684	227.55	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	23.69	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	24.72	%
17.	Organic Carbon	IS 2720 (P-22)	0.90	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.78	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.61	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.72	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	4.33	mg/kg
22.	Molybdenum (as MO)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.69	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	20.50	%

Note- STP- Standard Testing Procedure.



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Test Report

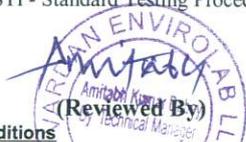
Sample Number:	VEL/ S0/11	Report No.:	VEL/PE/2504040023
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	09/04/2025
		Period of Analysis:	04/04/2025 to 09/04/2025
		Receipt Date:	04/04/2025
		Sampling Date:	30/03/2025
		Sampling Type:	Composite
		Sample Quantity:	2.0 Kg
		Packing Status:	Temp Sealed

Sample Description;	Soil Sample
Sample Location:	Mahi Nangal
Sample Collected By:	Vardan Envirolab Representative
Sampling & Analysis Protocol:	IS 2720, USEPA 3050B & USDA

TEST RESULTS

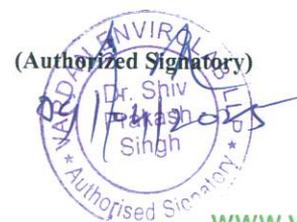
S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.42	--
2.	Conductivity	IS 14767	0.408	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Brown	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	26.37	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	4.95	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	42.13	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	38.00	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	60.59	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	125.08	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	6.16	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.77	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	29.32	%
14.	Available Nitrogen (as N)	IS:14684	227.44	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	14.56	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	13.82	%
17.	Organic Carbon	IS 2720 (P-22)	0.80	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.73	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.90	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	5.98	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	7.36	mg/kg
22.	Molybdenum (as MO)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.88	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	22.79	%

Note- STP- Standard Testing Procedure.



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Vardan Envirolab LLP

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (HR)
ISO 9001 | ISO 14001 | ISO 45001



Test Report

Sample Number:	VEL /S0/12	Report No.:	VEL/PE/2504040024
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	09/04/2025
		Period of Analysis:	04/04/2025 to 09/04/2025
		Receipt Date:	04/04/2025
Sample Description:	Soil Sample	Sampling Date:	31/03/2025
Sample Location:	Laleana	Sampling Type:	Composite
Sample Collected By:	Vardan EnviroLab Representative	Sample Quantity:	2.0 Kg
Sampling & Analysis Protocol:	IS 2720, USEPA 3050B & USDA	Packing Status:	Temp Sealed

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26)	7.49	--
2.	Conductivity	IS 14767	0.398	mS/cm
3.	Soil Texture	VEL/STP/EN/64, Issue No.- 01, 01/11/2021	Silty	--
4.	Color	VEL/STP/EN/67, Issue No.- 01, 01/11/2021	Yellowish Brown	--
5.	Water holding capacity	VEL/STP/EN/86, Issue No.- 01, 01/11/2021	37.16	%
6.	Bulk density	VEL/STP/EN/59, Issue No.- 01, 01/11/2021	3.27	gm/cc
7.	Chloride (as Cl)	VEL/STP/EN/69, Issue No.- 01, 01/11/2021	72.68	%
8.	Calcium (as Ca)	VEL/STP/EN/72, Issue No.- 01, 01/11/2021	50.49	%
9.	Sodium (as Na)	VEL/STP/EN/62, Issue No.- 01, 01/11/2021	38.15	%
10.	Potassium (as K)	VEL/STP/EN/61, Issue No.- 01, 01/11/2021	160.46	%
11.	Iron as (Fe)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	3.09	mg/kg
12.	Organic Matter	IS 2720 (P-22)	0.72	%
13.	Magnesium (as Mg)	VEL/STP/EN/72, Issue No. 01, 01/11/2021	37.94	%
14.	Available Nitrogen (as N)	IS:14684	260.38	kg./hec.
15.	Available Phosphorus	VEL/STP/EN/73, Issue No.- 01, 01/11/2021	22.20	kg./hec.
16.	Zinc (as Zn)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	25.81	%
17.	Organic Carbon	IS 2720 (P-22)	0.69	%
18.	Lead (as Pb)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	4.00	mg/kg
19.	Cadmium (as Cd)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.70	mg/kg
20.	Chromium (as Cr)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.68	mg/kg
21.	Copper (as Cu)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	3.20	mg/kg
22.	Molybdenum (as Mo)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	0.63	mg/kg
23.	Nickel (as Ni)	VEL/STP/HW/03, Issue No.- 01, 01/10/2021	BLQ (LOQ 1.0)	mg/kg
24.	Moisture Content	VEL/STP/EN/108, Issue No.- 01, 01/11/2021	27.16	%

Note- STP- Standard Testing Procedure.

Reviewed By
Amitabh Kumar Dubey
Technical Manager

(Authorized Signatory)
Dr. S.K. Singh
31/03/2025
Singh
Authorized Signatory

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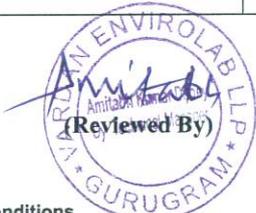


Test Report

Sample Number:	VEL/GW/01	Report No.:	VEL/W/2504040017
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	09/04/2025
		Period of Analysis:	04/04/2025 to 09/04/2025
		Receipt Date:	04/04/2025
Sample Description:	Ground Water Sample	Sampling Date:	28/03/2025
Sample Location:	Near Project Site	Sample Quantity:	2.0 Ltr. + 250 ml
Sample Collected By:	Vardan Envirolab Representative	Sampling Type:	Grab
Parameter Required:	As per Work Order	Preservation:	Refrigerated
Sampling & Analysis Protocol:	APHA 23 rd Edition 2017 & IS:3025		

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.41	--	6.5 to 8.5	No Relaxation
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness (as CaCO ₃)	IS 3025 (P-21)	224.56	mg/L	200	600
7.	Calcium (as Ca)	IS 3025 (P-40)	70.48	mg/L	75	200
8.	Alkalinity (as CaCO ₃)	IS 3025 (P-23)	232.15	mg/L	200	600
9.	Chloride (as Cl)	IS 3025 (P-32)	61.72	mg/L	250	1000
10.	Cyanide (as CN)	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No Relaxation
11.	Magnesium (as Mg)	APHA 3500 Mg B	11.83	mg/L	30	100
12.	Total Dissolved Solids	IS 3025 (P-16)	512.49	mg/L	500	2000
13.	Sulphate (as SO ₄)	IS 3025 (P-24)	18.25	mg/L	200	400
14.	Fluoride (as F)	APHA 4500 F D	0.80	mg/L	1.0	1.5
15.	Nitrate (as NO ₃)	IS 3025 (Part -34)	7.22	mg/L	45	No Relaxation
16.	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.38	mg/L	1.0	No Relaxation
17.	Aluminium (as Al)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium (as Cr)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation



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Test Report

Sample No.: VEL/GW/01			Report No.: VEL/W/2504040017			
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No Relaxation
22.	Anionic Detergents (as MBAS)	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc (as Zn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.55	mg/L	5.0	15.0
24.	Copper (as Cu)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese (as Mn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium (as Cd)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
28.	Selenium (as Se)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic (as As)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury (as Hg)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/L	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	823	µS/cm	--	--
32.	Ammonia (as NH ₃)	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	27.9	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	3.5	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any 100 ml sample	--
36.	E. coli	IS 15185:2016	Absent	Per 100ml		

*BLQ-Below Limit of Quantification, **LOQ- Limit of Quantification.

@Amendment No.1 in June 2015 (Limits of Iron & Arsenic) and Amendment No.2 in Sept. 2018 (Limit of Boron & IS method of Total Coliform & E.coli) & Amendment No.3 in Feb. 2021 (Limit of Mineral Oil).



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Test Report

Sample Number: VEL/GW/02
Name & Address of the Project: M/s Hindustan Petroleum Corporation Ltd.
Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab

Report No.: VEL/W/2504040018
Format No.: 7.8 F-03
Party Reference No.: NIL
Reporting Date: 09/04/2025
Period of Analysis: 04/04/2025 to 09/04/2025
Receipt Date: 04/04/2025
Sampling Date: 28/03/2025
Sample Quantity: 2.0 Ltr. + 250 ml
Sampling Type: Grab
Preservation: Refrigerated

Sample Description: Ground Water Sample
Sample Location: Nasibpura
Sample Collected By: Vardan Envirolab Representative
Parameter Required: As per Work Order
Sampling & Analysis Protocol: APHA 23rd Edition 2017 & IS:3025

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.29	--	6.5 to 8.5	No Relaxation
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness (as CaCO ₃)	IS 3025 (P-21)	226.48	mg/L	200	600
7.	Calcium (as Ca)	IS 3025 (P-40)	63.12	mg/L	75	200
8.	Alkalinity (as CaCO ₃)	IS 3025 (P-23)	211.76	mg/L	200	600
9.	Chloride (as Cl)	IS 3025 (P-32)	41.33	mg/L	250	1000
10.	Cyanide (as CN)	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No Relaxation
11.	Magnesium (as Mg)	APHA 3500 Mg B	16.73	mg/L	30	100
12.	Total Dissolved Solids	IS 3025 (P-16)	469.54	mg/L	500	2000
13.	Sulphate (as SO ₄)	IS 3025 (P-24)	32.98	mg/L	200	400
14.	Fluoride (as F)	APHA 4500 F D	0.56	mg/L	1.0	1.5
15.	Nitrate (as NO ₃)	IS 3025 (Part -34)	2.97	mg/L	45	No Relaxation
16.	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.40	mg/L	1.0	No Relaxation
17.	Aluminium (as Al)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium (as Cr)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation

Reviewed By
By Technical Manager

(Authorized Signatory)
Dr. Simran Singh
Rishabh Singh

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Test Report

Sample No.: VEL/GW/02			Report No.: VEL/W/2504040018			
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No Relaxation
22.	Anionic Detergents (as MBAS)	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc (as Zn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.30	mg/L	5.0	15.0
24.	Copper (as Cu)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese (as Mn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium (as Cd)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
28.	Selenium (as Se)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic (as As)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury (as Hg)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/L	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	732	µS/cm	--	--
32.	Ammonia (as NH ₃)	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	30.45	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	2.88	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any 100 ml sample	
36.	E. coli	IS 15185:2016	Absent	Per 100ml	--	

*BLQ-Below Limit of Quantification, **LOQ- Limit of Quantification.

@Amendment No.1 in June 2015 (Limits of Iron & Arsenic) and Amendment No.2 in Sept. 2018 (Limit of Boron & IS method of Total Coliform & E.coli) & Amendment No.3 in Feb. 2021 (Limit of Mineral Oil).



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Test Report

Sample Number:	VEL/GW/03	Report No.:	VEL/W/2504040019
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	09/04/2025
		Period of Analysis:	04/04/2025 to 09/04/2025
		Receipt Date:	04/04/2025
Sample Description:	Ground Water Sample	Sampling Date:	28/03/2025
Sample Location:	Kot Shamir	Sample Quantity:	2.0 Ltr. + 250 ml
Sample Collected By:	Vardan EnviroLab Representative	Sampling Type:	Grab
Parameter Required:	As per Work Order	Preservation:	Refrigerated
Sampling & Analysis Protocol:	APHA 23 rd Edition 2017 & IS:3025		

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.59	--	6.5 to 8.5	No Relaxation
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness (as CaCO ₃)	IS 3025 (P-21)	229.76	mg/L	200	600
7.	Calcium (as Ca)	IS 3025 (P-40)	61.42	mg/L	75	200
8.	Alkalinity (as CaCO ₃)	IS 3025 (P-23)	227.35	mg/L	200	600
9.	Chloride (as Cl)	IS 3025 (P-32)	84.00	mg/L	250	1000
10.	Cyanide (as CN)	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No Relaxation
11.	Magnesium (as Mg)	APHA 3500 Mg B	18.59	mg/L	30	100
12.	Total Dissolved Solids	IS 3025 (P-16)	522.17	mg/L	500	2000
13.	Sulphate (as SO ₄)	IS 3025 (P-24)	40.83	mg/L	200	400
14.	Fluoride (as F)	APHA 4500 F D	0.42	mg/L	1.0	1.5
15.	Nitrate (as NO ₃)	IS 3025 (Part -34)	5.99	mg/L	45	No Relaxation
16.	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.44	mg/L	1.0	No Relaxation
17.	Aluminium (as Al)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium (as Cr)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation



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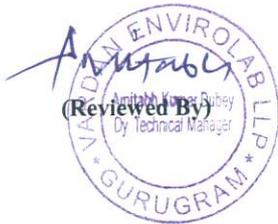


Test Report

Sample No.: VEL/GW/03				Report No.: VEL/W/2504040019		
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No Relaxation
22.	Anionic Detergents (as MBAS)	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc (as Zn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.70	mg/L	5.0	15.0
24.	Copper (as Cu)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese (as Mn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium (as Cd)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
28.	Selenium (as Se)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic (as As)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury (as Hg)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/L	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	849	µS/cm	--	--
32.	Ammonia (as NH ₃)	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	36.54	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	1.9	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any 100 ml sample	
36.	E. coli	IS 15185:2016	Absent	Per 100ml		

*BLQ-Below Limit of Quantification, **LOQ- Limit of Quantification.

@Amendment No.1 in June 2015 (Limits of Iron & Arsenic) and Amendment No.2 in Sept. 2018 (Limit of Boron & IS method of Total Coliform & E.coli) & Amendment No.3 in Feb. 2021 (Limit of Mineral Oil).



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Test Report

Sample Number:	VEL/GW/03	Report No.:	VEL/W/2504040020
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	09/04/2025
		Period of Analysis:	04/04/2025 to 09/04/2025
		Receipt Date:	04/04/2025
Sample Description:	Ground Water Sample	Sampling Date:	30/03/2025
Sample Location:	Baghi Bandar	Sample Quantity:	2.0 Ltr. + 250 ml
Sample Collected By:	Vardan Envirolab Representative	Sampling Type:	Grab
Parameter Required:	As per Work Order	Preservation:	Refrigerated
Sampling & Analysis Protocol:	APHA 23 rd Edition 2017 & IS:3025		

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.58	--	6.5 to 8.5	No Relaxation
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness (as CaCO ₃)	IS 3025 (P-21)	265.30	mg/L	200	600
7.	Calcium (as Ca)	IS 3025 (P-40)	83.91	mg/L	75	200
8.	Alkalinity (as CaCO ₃)	IS 3025 (P-23)	245.83	mg/L	200	600
9.	Chloride (as Cl)	IS 3025 (P-32)	80.57	mg/L	250	1000
10.	Cyanide (as CN)	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No Relaxation
11.	Magnesium (as Mg)	APHA 3500 Mg B	13.59	mg/L	30	100
12.	Total Dissolved Solids	IS 3025 (P-16)	513.00	mg/L	500	2000
13.	Sulphate (as SO ₄)	IS 3025 (P-24)	60.71	mg/L	200	400
14.	Fluoride (as F)	APHA 4500 F D	0.85	mg/L	1.0	1.5
15.	Nitrate (as NO ₃)	IS 3025 (Part -34)	10.33	mg/L	45	No Relaxation
16.	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.67	mg/L	1.0	No Relaxation
17.	Aluminium (as Al)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium (as Cr)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation

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Amिताभ
Amitabh Kumar Dubey
(Reviewed By)

(Authorized Signatory)
Prakash
09/04/2025
Authorized Signatory

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Test Report

Sample No.: VEL/GW/04			Report No.: VEL/W/2504040020			
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No Relaxation
22.	Anionic Detergents (as MBAS)	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc (as Zn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.57	mg/L	5.0	15.0
24.	Copper (as Cu)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese (as Mn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium (as Cd)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
28.	Selenium (as Se)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic (as As)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury (as Hg)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/L	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	879	μS/cm	--	--
32.	Ammonia (as NH ₃)	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	22.5	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	2.9	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any 100 ml sample	--
36.	E. coli	IS 15185:2016	Absent	Per 100ml		

*BLQ-Below Limit of Quantification, **LOQ- Limit of Quantification.

@Amendment No.1 in June 2015 (Limits of Iron & Arsenic) and Amendment No.2 in Sept. 2018 (Limit of Boron & IS method of Total Coliform & E.coli) & Amendment No.3 in Feb. 2021 (Limit of Mineral Oil).



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Test Report

Sample Number:	VEL/GW/05	Report No.:	VEL/W/2504040021
	M/s Hindustan Petroleum Corporation Ltd.	Format No.:	7.8 F-03
	Bio Refinery, Village-Nasibpura, Tehsil-	Party Reference No.:	NIL
Name & Address of the Project:	Talwandi Sabo, Bathinda, Punjab	Reporting Date:	09/04/2025
		Period of Analysis:	04/04/2025 to 09/04/2025
		Receipt Date:	04/04/2025
Sample Description:	Ground Water Sample	Sampling Date:	31/03/2025
Sample Location:	Maanwala	Sample Quantity:	2.0 Ltr. + 250 ml
Sample Collected By:	Vardan EnviroLab Representative	Sampling Type:	Grab
Parameter Required:	As per Work Order	Preservation:	Refrigerated
Sampling & Analysis Protocol:	APHA 23 rd Edition 2017 & IS:3025		

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.67	--	6.5 to 8.5	No Relaxation
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness (as CaCO ₃)	IS 3025 (P-21)	238.60	mg/L	200	600
7.	Calcium (as Ca)	IS 3025 (P-40)	60.14	mg/L	75	200
8.	Alkalinity (as CaCO ₃)	IS 3025 (P-23)	152.75	mg/L	200	600
9.	Chloride (as Cl)	IS 3025 (P-32)	70.90	mg/L	250	1000
10.	Cyanide (as CN)	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No Relaxation
11.	Magnesium (as Mg)	APHA 3500 Mg B	21.51	mg/L	30	100
12.	Total Dissolved Solids	IS 3025 (P-16)	567.00	mg/L	500	2000
13.	Sulphate (as SO ₄)	IS 3025 (P-24)	53.22	mg/L	200	400
14.	Fluoride (as F)	APHA 4500 F D	0.90	mg/L	1.0	1.5
15.	Nitrate (as NO ₃)	IS 3025 (Part -34)	4.33	mg/L	45	No Relaxation
16.	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.35	mg/L	1.0	No Relaxation
17.	Aluminium (as Al)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium (as Cr)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation



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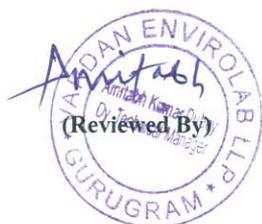


Test Report

Sample No.: VEL/GW/05			Report No.: VEL/W/2504040021			
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No Relaxation
22.	Anionic Detergents (as MBAS)	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc (as Zn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.49	mg/L	5.0	15.0
24.	Copper (as Cu)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese (as Mn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium (as Cd)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
28.	Selenium (as Se)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic (as As)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury (as Hg)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/L	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	758	µS/cm	--	--
32.	Ammonia (as NH ₃)	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	39.3	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	2.5	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any 100 ml sample	--
36.	E. coli	IS 15185:2016	Absent	Per 100ml		

*BLQ-Below Limit of Quantification, **LOQ- Limit of Quantification.

@Amendment No.1 in June 2015 (Limits of Iron & Arsenic) and Amendment No.2 in Sept. 2018 (Limit of Boron & IS method of Total Coliform & E.coli) & Amendment No.3 in Feb. 2021 (Limit of Mineral Oil).



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Test Report

Sample Number:	VEL/GW/06	Report No.:	VEL/W/2504040022
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil- Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	09/04/2025
		Period of Analysis:	04/04/2025 to 09/04/2025
		Receipt Date:	04/04/2025
Sample Description:	Ground Water Sample	Sampling Date:	30/03/2025
Sample Location:	Jiwan Singh Wala	Sample Quantity:	2.0 Ltr. + 250 ml
Sample Collected By:	Vardan Envirolab Representative	Sampling Type:	Grab
Parameter Required:	As per Work Order	Preservation:	Refrigerated
Sampling & Analysis Protocol:	APHA 23 rd Edition 2017 & IS:3025		

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.43	--	6.5 to 8.5	No Relaxation
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness (as CaCO ₃)	IS 3025 (P-21)	150.32	mg/L	200	600
7.	Calcium (as Ca)	IS 3025 (P-40)	40.59	mg/L	75	200
8.	Alkalinity (as CaCO ₃)	IS 3025 (P-23)	162.10	mg/L	200	600
9.	Chloride (as Cl)	IS 3025 (P-32)	45.07	mg/L	250	1000
10.	Cyanide (as CN)	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No Relaxation
11.	Magnesium (as Mg)	APHA 3500 Mg B	11.91	mg/L	30	100
12.	Total Dissolved Solids	IS 3025 (P-16)	353.08	mg/L	500	2000
13.	Sulphate (as SO ₄)	IS 3025 (P-24)	20.45	mg/L	200	400
14.	Fluoride (as F)	APHA 4500 F D	0.70	mg/L	1.0	1.5
15.	Nitrate (as NO ₃)	IS 3025 (Part -34)	6.12	mg/L	45	No Relaxation
16.	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.58	mg/L	1.0	No Relaxation
17.	Aluminium (as Al)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium (as Cr)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation

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Test Report

Sample No.: VEL/GW/06			Report No.: VEL/W/2504040022			
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No Relaxation
22.	Anionic Detergents (as MBAS)	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc (as Zn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.47	mg/L	5.0	15.0
24.	Copper (as Cu)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese (as Mn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium (as Cd)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
28.	Selenium (as Se)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic (as As)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury (as Hg)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/L	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	597	µS/cm	--	--
32.	Ammonia (as NH ₃)	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	15.8	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	2.7	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any 100 ml sample	--
36.	E. coli	IS 15185:2016	Absent	Per 100ml		

*BLQ-Below Limit of Quantification, **LOQ- Limit of Quantification.

@Amendment No.1 in June 2015 (Limits of Iron & Arsenic) and Amendment No.2 in Sept. 2018 (Limit of Boron & IS method of Total Coliform & E.coli) & Amendment No.3 in Feb. 2021 (Limit of Mineral Oil).



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Test Report

Sample Number:	VEL/GW/07	Report No.:	VEL/W/2504040023
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	09/04/2025
		Period of Analysis:	04/04/2025 to 09/04/2025
		Receipt Date:	04/04/2025
Sample Description:	Ground Water Sample	Sampling Date:	30/03/2025
Sample Location:	Mahi Nangal	Sample Quantity:	2.0 Ltr. + 250 ml
Sample Collected By:	Vardan Envirolab Representative	Sampling Type:	Grab
Parameter Required:	As per Work Order	Preservation:	Refrigerated
Sampling & Analysis Protocol:	APHA 23 rd Edition 2017 & IS:3025		

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
1.	pH (at 25°C)	IS 3025 (P-11)	7.33	--	6.5 to 8.5	No Relaxation
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen	5	15
3.	Turbidity	IS 3025 (P-10)	BLQ(LOQ 1.0)	NTU	1	5
4.	Odour	IS 3025 (P-5)	Agreeable	--	Agreeable	Agreeable
5.	Taste	IS 3025 (P-8)	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness (as CaCO ₃)	IS 3025 (P-21)	234.98	mg/L	200	600
7.	Calcium (as Ca)	IS 3025 (P-40)	41.12	mg/L	75	200
8.	Alkalinity (as CaCO ₃)	IS 3025 (P-23)	193.57	mg/L	200	600
9.	Chloride (as Cl)	IS 3025 (P-32)	62.95	mg/L	250	1000
10.	Cyanide (as CN)	IS 3025 (P-27)	BLQ(LOQ 0.02)	mg/L	0.05	No Relaxation
11.	Magnesium (as Mg)	APHA 3500 Mg B	32.16	mg/L	30	100
12.	Total Dissolved Solids	IS 3025 (P-16)	423.00	mg/L	500	2000
13.	Sulphate (as SO ₄)	IS 3025 (P-24)	20.99	mg/L	200	400
14.	Fluoride (as F)	APHA 4500 F D	0.64	mg/L	1.0	1.5
15.	Nitrate (as NO ₃)	IS 3025 (Part -34)	7.02	mg/L	45	No Relaxation
16.	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.51	mg/L	1.0	No Relaxation
17.	Aluminium (as Al)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.03	0.2
18.	Boron	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.5	2.4
19.	Total Chromium (as Cr)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	No Relaxation

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(Authorized Signatory)

Dr. Pankaj Singh
09/04/2025
Authorized

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Test Report

Sample No.: VEL/GW/07			Report No.: VEL/W/2504040023			
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable Limit)	Permissible limit in the Absence of Alternate Source
20.	Phenolic Compounds	IS 3025 (P-43)	BLQ(LOQ 0.0004)	mg/L	0.001	0.002
21.	Mineral Oil	IS 3025 (P-39) Clause 6	BLQ(LOQ 0.05)	mg/L	1.0	No Relaxation
22.	Anionic Detergents (as MBAS)	IS 3025 (P-68)	BLQ(LOQ 0.05)	mg/L	0.2	1.0
23.	Zinc (as Zn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.79	mg/L	5.0	15.0
24.	Copper (as Cu)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.05	1.5
25.	Manganese (as Mn)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.01)	mg/L	0.1	0.3
26.	Cadmium (as Cd)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.003	No Relaxation
27.	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
28.	Selenium (as Se)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.001)	mg/L	0.01	No Relaxation
29.	Arsenic (as As)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L	0.01	No Relaxation
30.	Mercury (as Hg)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.0005)	mg/l	0.001	No Relaxation
31.	Conductivity	IS 3025 (P-14)	623	µS/cm	--	--
32.	Ammonia (as NH ₃)	IS 3025 (P-34)	BLQ(LOQ 0.1)	mg/L	0.5	No Relaxation
33.	Sodium	IS 3025 (P-45)	27.8	mg/L	--	--
34.	Potassium	IS 3025 (P-45)	2.9	mg/L	--	--
35.	Total Coliform	IS 15185:2016	Absent	Per 100ml	Shall not be detectable in any 100 ml sample	--
36.	E. coli	IS 15185:2016	Absent	Per 100ml		

*BLQ-Below Limit of Quantification, **LOQ- Limit of Quantification.

@ Amendment No.1 in June 2015 (Limits of Iron & Arsenic) and Amendment No.2 in Sept. 2018 (Limit of Boron & IS method of Total Coliform & E.coli) & Amendment No.3 in Feb. 2021 (Limit of Mineral Oil).



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Vardan Envirolab LLP

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051 (HR)
ISO 9001 | ISO 14001 | ISO 45001



Test Report

Sample Number:	VEL/SW/01	Report No.:	VEL/W/2504040024
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	09/04/2025
		Period of Analysis:	04/04/2025 to 09/04/2025
		Receipt Date:	04/04/2025
Sample Description:	Surface Water Sample	Sampling Date:	29/03/2025
Sample Location:	Chathewala	Sample Quantity:	2.0 Ltr. + 250 ml
Sample Collected By:	Vardan Envirolab Representative	Sampling Type:	Grab
Parameter Required:	As per Work Order	Preservation:	Refrigerated
Sampling & Analysis Protocol:	APHA 23 rd Edition 2017 & IS:3025		

TEST RESULTS

S. No.	Parameter	Test Method	Results	Unit
1.	pH (at 25°C)	IS 3025 (P-11)	7.18	--
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen
3.	Turbidity	IS 3025 (P-10)	17.5	NTU
4.	Odour	IS 3025 (P-5)	Agreeable	--
5.	Taste	IS 3025 (P-8)	NR	--
6.	Chloride (as Cl)	IS 3025 (P-32)	59.07	mg/L
7.	Conductivity	IS 3025 (P-14)	568	µS/cm
8.	Nitrate (as NO ₃)	IS 3025 (P-34)	14.91	mg/L
9.	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.62	mg/L
10.	Total Dissolved Solids	IS 3025 (P-16)	355.83	mg/L
11.	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L
12.	Boron	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.75	mg/L
13.	Sulphate (as SO ₄)	IS 3025 (P-24)	21.34	mg/L
14.	Fluoride (as F)	APHA 4500 F D	0.56	mg/L
15.	BOD (3 Days at 27°C)	IS 3025 (P-44)	6.23	mg/L
16.	COD	IS 3025 (P-58)	29.02	mg/L
17.	Free Ammonia (as NH ₃)	IS 3025 (P-34)	9.68	mg/L
18.	Arsenic (as As)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L
19.	Total Hardness (as CaCO ₃)	IS 3025 (P-21)	127.00	mg/L
20.	Calcium (as Ca)	IS 3025 (P-40)	45.91	mg/L
21.	Alkalinity (as CaCO ₃)	IS 3025 (P-23)	136.10	mg/L
22.	Magnesium (as Mg)	APHA 3500 Mg B Calculation Method	3.02	mg/L
23.	Copper (as Cu)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	7.46	mg/L
24.	Sodium (as Na)	IS 3025 (P-45)	44.10	mg/L
25.	Potassium (as K)	IS 3025 (P-45)	9.3	mg/L
26.	Total Chromium (as Cr)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L
27.	Total Coliform	IS 15185:2016	Absent	Per 100ml

Note:- BLQ-Below Limit of Quantification, *LOQ-Limit of Quantification, **NR- Not Reported.



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ISO 9001 | ISO 14001 | ISO 45001



Test Report

Sample Number:	VEL/SW/02	Report No.:	VEL/W/2504040025
Name & Address of the Project:	M/s Hindustan Petroleum Corporation Ltd. Bio Refinery, Village-Nasibpura, Tehsil-Talwandi Sabo, Bathinda, Punjab	Format No.:	7.8 F-03
		Party Reference No.:	NIL
		Reporting Date:	09/04/2025
		Period of Analysis:	04/04/2025 to 09/04/2025
		Receipt Date:	04/04/2025
Sample Description:	Surface Water Sample	Sampling Date:	29/03/2025
Sample Location:	Kot Fatta	Sample Quantity:	2.0 Ltr. + 250 ml
Sample Collected By:	Vardan Envirolab Representative	Sampling Type:	Grab
Parameter Required:	As per Work Order	Preservation:	Refrigerated
Sampling & Analysis Protocol:	APHA 23 rd Edition 2017 & IS:3025		

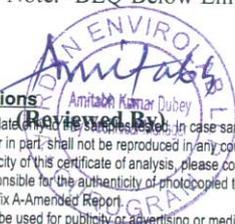
TEST RESULTS

S. No.	Parameter	Test Method	Results	Unit
1.	pH (at 25°C)	IS 3025 (P-11)	7.72	--
2.	Colour	IS 3025 (P-4)	BLQ(LOQ 1.0)	Hazen
3.	Turbidity	IS 3025 (P-10)	19.5	NTU
4.	Odour	IS 3025 (P-5)	Agreeable	--
5.	Taste	IS 3025 (P-8)	NR	--
6.	Chloride (as Cl)	IS 3025 (P-32)	44.31	mg/L
7.	Conductivity	IS 3025 (P-14)	854	µS/cm
8.	Nitrate (as NO ₃)	IS 3025 (P-34)	6.30	mg/L
9.	Iron (as Fe)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.79	mg/L
10.	Total Dissolved Solids	IS 3025 (P-16)	416.00	mg/L
11.	Lead (as Pb)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L
12.	Boron	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	0.78	mg/L
13.	Sulphate (as SO ₄)	IS 3025 (P-24)	28.55	mg/L
14.	Fluoride (as F)	APHA 4500 F D	0.60	mg/L
15.	BOD (3 Days at 27°C)	IS 3025 (P-44)	4.32	mg/L
16.	COD	IS 3025 (P-58)	16.85	mg/L
17.	Free Ammonia (as NH ₃)	IS 3025 (P-34)	7.09	mg/L
18.	Arsenic (as As)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L
19.	Total Hardness (as CaCO ₃)	IS 3025 (P-21)	130.91	mg/L
20.	Calcium (as Ca)	IS 3025 (P-40)	58.60	mg/L
21.	Alkalinity (as CaCO ₃)	IS 3025 (P-23)	142.33	mg/L
22.	Magnesium (as Mg)	APHA 3500 Mg B Calculation Method	3.71	mg/L
23.	Copper (as Cu)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	3.09	mg/L
24.	Sodium (as Na)	IS 3025 (P-45)	42.10	mg/L
25.	Potassium (as K)	IS 3025 (P-45)	5.0	mg/L
26.	Total Chromium (as Cr)	VEL/STP/ICP/W-01, Issue No.-01, 01/11/21	BLQ(LOQ 0.002)	mg/L
27.	Total Coliform	IS 15185:2016	Absent	Per 100ml

Note:- BLQ-Below Limit of Quantification, *LOQ-Limit of Quantification, **NR- Not Reported.

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