# SIX MONTHLY CRZ COMPLIANCE REPORT
## (April – 2024 TO September – 2024)

**CRZ Clearance No. 11-76/2007-IA-III dated 18/02/2008**

**FOR**

# Shipbuilding & Repairing facility

**OF**

# LARSEN & TOUBRO LIMITED

**AT**

**A.M. Naik Heavy Engineering Complex, Surat, Gujarat.**

Prepared By


## Ecosystem Resource Management Pvt. Ltd.

**(NABL accredited certificate No. TC-11369)**
**Office floor, Ashoka Pavilion–A, New Civil Road,**
**Opp. Kapadia Health Club, Surat – 395001**
**Tel No: 0261-2231630**
**E mail: eco@ecoshripad.com**

# TABLE OF CONTENTS

**PARTICULARS** **PAGE NO**

## INTRODUCTION

Larsen and Toubro Limited (L & T), Hazira Works is a heavy Engineering Work Complex situated on a 200 acres plot at Hazira, near Surat in Gujarat. It is state-of-the-art engineering workshop which is involved in designing and manufacturing of custom built fabricated equipment's, modules and systems required for the core sector industries of national importance viz., Nuclear, Defence and various process plants i.e. Refineries, Petrochemicals, Fertilizer etc. L & T is in the forefront of India's march towards globalization.

In the early eighties, leadership of L & T took the strategic decision to set up Heavy Engineering facilities with a waterfront. They could foresee the growing sizes and complexities of the core sector projects in India and abroad. This will involve design, manufacture and shipment of ever larger and heavier equipment to the project sites. Such green field projects sites were likely to be on or closer to the seaboard. The manufacturing facilities set up at Powai, Mumbai were land locked and hence could be inadequate to cater to these emerging businesses. Decision was taken to set up heavy engineering facilities at Hazira near Surat in South Gujarat. A 200-acre plot of government wasteland situated on the northern bank of river Tapi was purchased from government and construction was started in 1985.

Hazira Works was established in the year 1987. During initial period Hazira works lacked infrastructural facilities viz. power, water, roads, communication, housing for staff & workmen, etc. With advent of other major industries like Reliance Petrochemicals and Essar Limited and after declaration of Hazira as a notified area, the situations improved in all fronts gradually over 10 years. Construction of fabrication shops, jetty and installation of major equipment boosted the working capacity of Hazira works.

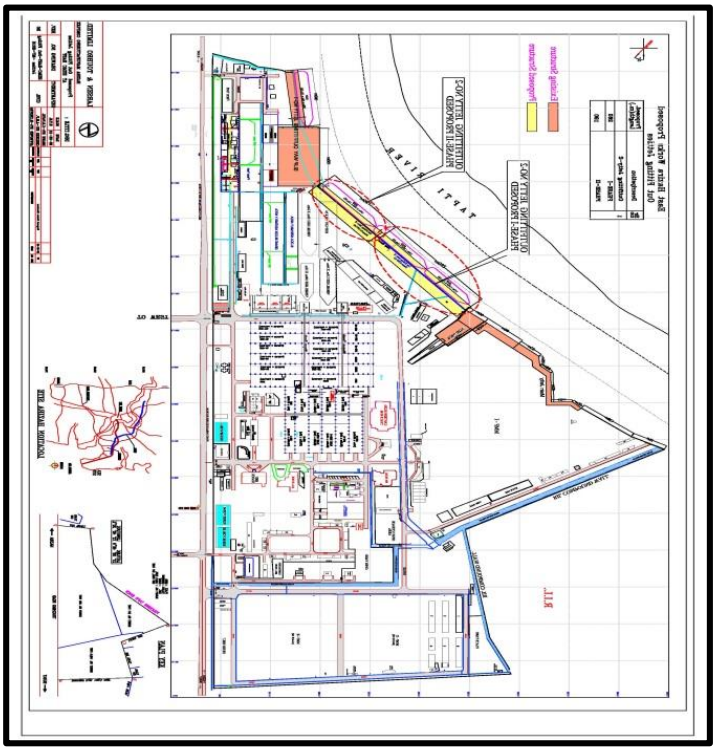
Today L & T has 65,000 $m^2$ of modern heavy shops and 3,00,000 $m^2$ of open fabrication facilities coupled with private jetties/load out facilities, modern offices, training centers, canteens and other industrial utilities and Hazira works is justifiably proud of the team of Workmen, Engineers and Managers developed over last 20 years.

From the past four decades, this division has been active in design, engineering and manufacturing of critical high tech plant and equipment for the core sectors such as Steel & Cement, Fertilizers, Oil & Gas, Petrochemicals & Refinery Equipment, Nuclear Power, Aerospace and Defense.

The project involves construction of Ship building and repairing facility at Village-Mora, Surat, Hazira Road, Dist.-Surat which includes, (i) Jetty (L shape with 100 m length and return 32 m), (ii) Slipway (150 m wide and 80 m long), (iii) Ship fabrication/ Repair facility activities includes Open area for ship building/repair, fabrication sheds/open area for smaller components and Fabrication shed for pipes. The smaller

components and pipes are fabricated and transported to the main fabrication shed on the river side for assembling. On completion of the same, job is launched in to the river at a suitable high tide and towed to the fitting out jetty for fitting of balance machinery, accommodation and navigation systems. On completion of fitting of all systems, the job is taken to sea for sea trials and on successful completion of trials, it is being/will be handed over to owners. Layout map is attached in data sheet**.** The Gujarat SCZMA has recommended the project vide letter no. ENV-10-2006-182-P dated 03/10/2007 and CRZ clearance has been obtained from MoEF&CC for the vide letter no. No. 11-76/2007-IA-III dated 18/02/2008. The study has been carried out to comply with the CRZ condition and environment legislation for submission of six-monthly compliance report for the same.

## DATA SHEET

| | | | |
|---|---|---|---|
| 1. | Project type: River-Valley / Mining / Industry / Thermal / Nuclear, Other (specify) | : | **Shipbuilding & Repairing facility along with shipbuilding and repairing yard and modification of Jetty.** |
| 2. | Name of the project | : | **Larsen and Toubro Limited** |
| 3. | Clearance letter (s) O M No and date | : | **11-76/2007-IA-III dated 18/02/2008.** |
| 4. | Location | | |
| | a. District | : | **Surat** |
| | b. State | : | **Gujarat** |
| | c. Latitude / Longitude | : | **Latitude: 21°09'31.99"N**<br>**Longitude: 72°39'57.96"E**<br>  |
| 5. | Address for correspondence | | |
| | a. Address of concerned project Chief engineer (with pin code & telephone / | : | **Mahesh Joshi**<br>**Head - Central Services** |

<table>
<tr><td></td><td>b. telex/fax number)</td><td></td><td>Larsen & Toubro Limited,<br>A.M. Naik Heavy Engineering Complex<br>Post Batha - 394 510<br>Dist - Surat, Gujarat<br>Ph - 0261-2807642<br>E-Mail: mahesh.Joshi@larsentoubro.com</td></tr>
<tr><td></td><td>c. Address of Executive project engineer /Manager (with pin code /fax numbers)</td><td>:</td><td>Same as Above</td></tr>
<tr><td>6.</td><td>Salient features</td><td></td><td></td></tr>
<tr><td></td><td>a. of the project</td><td>:</td><td>
<table>
<tr><th>Sr. No.</th><th>Particulars</th><th>Name</th><th>Aerial Distance from the project site</th></tr>
<tr><td>1.</td><td>Nearest Village</td><td>Mora</td><td>@ 2.42 km in NW direction</td></tr>
<tr><td>2.</td><td>Nearest Town/city</td><td>Surat</td><td>@ 17.50 km in E direction</td></tr>
<tr><td>3.</td><td>Nearest National Highway</td><td>NH–6</td><td>@ 0.55 km in NW direction</td></tr>
<tr><td>4.</td><td>Nearest State Highway</td><td>SH-66</td><td>@ 7.94 km in SE direction</td></tr>
<tr><td>5.</td><td>Nearest Railway Station</td><td>Surat</td><td>@ 20.00 km in NE direction</td></tr>
<tr><td>6.</td><td>Nearest Airport</td><td>Surat</td><td>@ 10.50 km in SE direction.</td></tr>
<tr><td>7.</td><td>Nearest River</td><td>Tapi</td><td>@ 0.15 km in SE direction.</td></tr>
</table>
</td></tr>
<tr><td></td><td>b. of the environmental management plans</td><td>:</td><td>Adequate environmental safeguards have been incorporated in EMP which was submitted to the</td></tr>
</table>

<table>
<tr><td></td><td></td><td></td><td>Ministry during grant of the CRZ.</td></tr>
<tr><td>7.</td><td>Breakup of the project area</td><td>:</td><td>Total project area – 280 Acres</td></tr>
<tr><td></td><td>a. Submergence area: forest & non forest</td><td>:</td><td>NIL</td></tr>
<tr><td></td><td>b. Others</td><td>:</td><td>NIL</td></tr>
<tr><td>8.</td><td>Break up of the project affected population with enumeration of those losing houses/dwelling units only agriculture land only, both dwelling units and agricultural land & landless laborers / artisan</td><td></td><td></td></tr>
<tr><td></td><td>a. SC.ST / Adivasis</td><td>:</td><td>NIL</td></tr>
<tr><td></td><td>b. Others</td><td>:</td><td>NIL</td></tr>
<tr><td>9.</td><td>Financial details</td><td></td><td></td></tr>
<tr><td></td><td>a. Project cost as originally planned & subsequent revised estimates and the year of price reference</td><td>:</td><td>Rs. 8,144 Lacs</td></tr>
<tr><td></td><td>b. Allocation made for environmental management plans with item-wise & year wise break up</td><td>:</td><td>
<table>
<tr><th>Sr. No.</th><th>Particulars</th><th>For the Year 2024-25 (Rs. in Lacs)</th></tr>
<tr><td>1.</td><td>STP Operation & Maintenance</td><td rowspan="3">14.5</td></tr>
<tr><td>2.</td><td>Air pollution control device</td></tr>
<tr><td>3.</td><td>Monitoring Cost</td></tr>
<tr><td colspan="2">Total</td><td>14.5</td></tr>
</table>
</td></tr>
<tr><td>10</td><td>Forest Land requirement</td><td></td><td>NOT APPLICABLE</td></tr>
<tr><td></td><td>a. The status of approval for diversion of forest land and non-forestry use</td><td>:</td><td></td></tr>
<tr><td></td><td>b. The status of clearing falling</td><td>:</td><td></td></tr>
<tr><td></td><td>c. The status of compensatory afforestation, if any</td><td>:</td><td></td></tr>
<tr><td></td><td>d. Comments on the viability and</td><td>:</td><td></td></tr>
</table>

| | | | |
|---|---|---|---|
| | sustainability of compensatory afforestation Program in the light of actual field experience so far | | |
| 11 | The status of clear falling in non-areas (much as submergence area of reservoir , approach roads), if any with quantitative information | : | **NOT APPLICABLE** |
| 12 | The status of construction | | |
| | a. Date of commencement (actual and / or planned) | : | **1st March, 2008** |
| | b. Date of completion (actual) and/or planned | : | **15th November, 2008** |
| 13 | Reasons for the delay if the project is yet to start | : | **Unit is operational since 2008** |
| 14 | Dates of site visits | | |
| | a. The dates on which the project was monitored by the Regional office on previous occasion, if any | : | **GPCB RO visit not done in during this period of April – September 2024.** |
| | b. Date of site visit for this monitoring report | : | **Dates of sampling are mentioned in respective analysis report.** |
| 15 | Details of correspondence with project authorities for obtaining act on plans/ information on status of compliance to safeguards other than the routine letters for logistic support for site visits (The first manufacturing report may contain the details of all the letters issued so far, but the letter reports may cover only the letters issued subsequently) | : | **Last six-monthly compliance report for the period of Jan-2024 to June - 2024 was submitted in August-2024 to RO, MOEFCC Bhopal.** |

## COASTAL REGULATION ZONE (CRZ) CLEARANCE BY MoEF&CC

**F. No. 11-76/2007-IA-III dated: 18/02/2008**

No.11-76/2007-IA-III .
Government of India
Ministry of Environment and Forests
(IA-III Division)

Paryavaran Bhavan,
C.G.O. Complex, Lodi Road,
New Delhi-110003

Dated the 18th February, 2008

**Sub: Coastal Regulation Zone clearance for shipbuilding and repairing facility alongwith shipbuilding and repairing yard and modification of jetty at village Mora, Surat – Hazira Road, District Surat by M/s Larsen & Tourbo Limited –regarding.**

****

Reference is invited to the letter No.ENV-10-2006-182-P, dated 3.10.2007 from Forests and Environment Department, Government of Gujarat and letter No.ADMN/BSJ/CRZ/13/2007, dated 7.1.2008 from M/s Larsen & Toubro Limited regarding the subject mentioned above. No Objection Certificate from the Gujarat Pollution Control Board has been obtained vide letter No.GPCB/CE/SRT-1736/10826, dated 10.4.2007. Gujarat Maritime Board has accorded 'No Objection Certificate' for creating facility for ship-building and ship-repairing yard, vide letter dated 15.4.2006.

2. The project involves construction of 4 numbers of ship each of 5000T per year. Ship building and repairing facility at Village Mora, Surat, Hazira Road, District- Surat which includes,-

(i) Expansion of jetty (L shape with 100m length and return 32m)

(ii) Construction of Slipway (150m wide and 80 m long)

(iii) Ship Fabrication/ Repair facility & activities

(a) Open area for shipbuilding/ repair
(b) Fabrication sheds/open area for smaller components (Defence Ship/Vessels)
(c) Fabrication shed for pipes (shipbuilding).

3. The fabrication and shipbuilding yard will cover the total area of approximately 3,60,000 sq m. The last two fabrication sheds to be located on the opposite side of the existing plant. The smaller components and pipes will be fabricated and transported to the main fabrication shed on the river side for hull assembling. On completion of hull the ship will be launched into the river at a suitable high tide and towed to the fitting out jetty for fitting of balance machinery, accommodation, and navigation systems. On completion of fitting of all systems trials of systems, the ship taken to sea for sea trials and on successful completion of sea trials, the ship will be handed over to owners. Area required for the project is 280 acres. Estimated cost of the project is Rs.81.44 crores. The major landuse for the proposed project is as follows:-

- Fabrication Yard : 3,25,000 $m^2$
- Shipbuilding Yard : 35,000 $m^2$
- Main Jetty : 5,600 $m^2$
- RO – RO jetty : 3,200 $m^2$
- Slipway : 12,000 $m^2$

4. Source of power supply is "Dakshin Gujarat Vij Co. Limited" and power will be around 2400 KVA. The unit will also install 1 number of DG set for use in case of power failure. Total manpower for the project is 180. The water requirement for the project is around 25.00 litres/day which will be

drawn from siganpore weir through a shared pipeline with Essar. Waste scraps are proposed to be disposed to the reusing units. And paints will be disposed to TSDF- MOU is required. Mitigation of Oil spillage is required. 15 – 20 KLD is proposed to met from Narmada Dam- Biological treatment is proposed. The proposed site falls in the intertidal area classified as CRZ-I (ii) and CRZ III. For the project 115 acres of land would be required.

5. The proposal was considered by Expert Appraisal Committee at its meeting held 29th - 30th November, 2007 and has recommended.

6. Keeping in view the above facts, the proposal has been examined in the Ministry of Environment & Forests and environmental clearance from Coastal Regulation Zone Notification, 1991 as amended from time to time is hereby accorded to this project subject to effective implementation of the following conditions:-

**(A) Specific Conditions:**

(i) All the conditions stipulated by the Environment Department, Government of Gujarat vide their letter No.ENV-10-2006-182-P, dated 3.10.2007 should be strictly implemented and a comprehensive compliance letter to be provided to Environment Department, Government of Gujarat and to the Regional Office of this Ministry at Bhopal every quarterly.

(ii) The project proponent should implement all the measures that have been suggested by them in the clarification letter No.ADMN/BSJ/CRZ/13/2007, dated 7.1.2008 provided to the Ministry of Environment and Forests.

(iii) No mangroves should be destroyed during construction and operation of the project.

(iv) A programme for Mangrove Conservation and Development in the region should be taken by the project proponent through a scientific/public spirited body for evolving sustainable and long term strategies. The detailed action plan alongwith fund allocation should be submitted to this Ministry as well as the Regional Office Bhopal within three months. The implementation of the conservation plan shall be monitored by the Environmental Cell of the company and a periodic report should be submitted to the Ministry's Regional Office at Bhopal.

(v) Sewage Treatment Plant should be included in the project and the details provided to the Regional Office of this Ministry within three months from the date of receipt of this letter.

(vi) The recommendations of the Risk Assessment Report should be incorporated, and report submitted.

(vii) Location of general cargo berth should be taken into consideration with regard to location of LNG terminal.

(viii) The materials for the filling and pavement construction should be made available from approved quarries.

(ix) Sufficient fixed and mobile fire fighting system should be provided exclusively for the terminal in consultation with the local statutory bodies and fire fighting authorities.

(x) The project proponent should ensure that during construction and operation of the port there will be no impact on the livelihood of the fisherman. The fishermen should be provided free access to carry out the fishing activity.

(xi) All necessary precaution while undertaking construction and operation of the port should be taken keeping in view the bathymetric changes caused due to cyclones.

(xii) All development in the port should be carried out in accordance with the Coastal Regulation Zone Notification, 1991 and approved Coastal Zone Management Plan of Gujarat.

(xiii) There should be no withdrawal of ground water in CRZ area, for this project. The proponent should ensure that as a result of the proposed constructions, ingress of saline water into ground water does not take place. Piezometers shall be installed for regular monitoring for this purpose at appropriate locations on the project site.

(xiv) The project should not be commissioned till the requisite water supply and electricity to the project are provided by the PWD/Electricity Department.

(xv) Specific arrangements for rain water harvesting should be made in the project design and the rain water so harvested should be optimally utilised. Details in this regard should be furnished to this Ministry's Regional Office at Bhopal within 3 months.

(xvi) Green buffer zone should be provided all around the project area in consultation with local forest department and the report submitted to this Ministry's Regional Office at Bhopal.

(xvii) No product other than those permissible in the Coastal Regulation Zone Notification, 1991 should be stored in the Coastal Regulation Zone area.

**B. General Conditions:**

(i) Construction of the proposed structures should be undertaken meticulously conforming to the existing Central/local rules and regulations including Coastal Regulation Zone Notification 1991 & its amendments. All the construction designs / drawings relating to the proposed construction activities must have approvals of the concerned State Government Departments / Agencies.

(ii) Adequate provisions for infrastructure facilities such as water supply, fuel, sanitation etc. should be ensured for construction workers during the construction phase of the project so as to avoid felling of trees/mangroves and pollution of water and the surroundings.

(iii) The project authorities must make necessary arrangements for disposal of solid wastes and for the treatment of effluents by providing a proper wastewater treatment plant outside the CRZ area. The quality of treated effluents, solid wastes and noise level etc. must conform to the standards laid down by the competent authorities including the Central/State Pollution Control Board and the Union Ministry of Environment and Forests under the Environment (Protection) Act, 1986, whichever are more stringent.

(iv) The proponent shall obtain the requisite consents for discharge of effluents and emissions under the Water (Prevention and Control of Pollution) Act, 1974 and the Air (prevention and Control of Pollution) Act, 1981 from the Gujarat State Pollution Control Board before commissioning of the project and a copy of each of these shall be sent to this Ministry.

(v) The proponents shall provide for a regular monitoring mechanism so as to ensure that the treated effluents conform to the prescribed standards. The records of analysis reports must be properly maintained and made available for inspection to the concerned State/Central officials during their visits.

(vi) In order to carry out the environmental monitoring during the operational phase of the project, the project authorities should provide an environmental laboratory well equipped with standard equipment and facilities and qualified manpower to carry out the testing of various environmental parameters.

(vii) The sand dunes and mangroves, if any, on the site should not be disturbed in any way.

(viii) A copy of the clearance letter will be marked to the concerned Panchayat/local NGO, if any, from whom any suggestion/representation has been received while processing the proposal.

(ix) The Gujarat State Pollution Control Board should display a copy of the clearance letter at the Regional Office, District Industries Centre and Collector's Office/Tehsildar's Office for 30 days.

(x) The funds earmarked for environment protection measures should be maintained, in a separate account and there should be no diversion of these funds for any other purpose. A year-wise expenditure on environmental safeguards should be reported to this Ministry's Regional Office at Bhopal and the State Pollution Control Board.

(xi) Full support should be extended to the officers of this Ministry's Regional Office at Bhopal and the officers of the Central and Sate Pollution Control Boards by the project proponents during their inspection for monitoring purposes, by furnishing full details and action plans including the action taken reports in respect of mitigative measures and other environmental protection activities.

(xii) In case of deviation or alteration in the project including the implementing agency, a fresh reference should be made to this Ministry for modification in the clearance conditions or imposition of new ones for ensuring environmental protection.

(xiii) This Ministry reserve the right to revoke this clearance, if any of the conditions stipulated are not complied with to the satisfaction of this Ministry.

(xiv) This Ministry or any other competent authority may stipulate any other additional conditions subsequently, if deemed necessary, for environmental protection, which shall be complied with.

(xv)The project proponent should advertise at least in two local newspapers widely circulated in the region around the project, one of which shall be in the vernacular language of the locality concerned informing that the project has been accorded environmental clearance and copies of clearance letters are available with the State Pollution Control Board and may also be seen at Website of the Ministry of Environment & Forests at http://www.envfornic.in. The advertisement should be made within 7 days from the date of issue of the clearance letter and a copy of the same should be forwarded to the Regional Office of this Ministry at Bhopal.

(xvi) The Project proponents should inform the Regional Office at Bhopal as well as the Ministry the date of financial closure and final approval of the project by the concerned authorities and the date of start of Land Development Work.

7. The above mentioned stipulations will be enforced among others under the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (protection) Act, 1986, the Hazardous Chemicals (Manufacture, Storage and Import) Rules, 1989, the Coastal Regulation Zone Notification, 1991 and its subsequent amendments and the Public Liability Insurance Act, 1991 and the Rules made thereunder from time to time. The project proponents should also ensure that the proposal complies with the provisions of the approved Coastal Zone Management Plan of Gujarat State and the Supreme Court's order dated 18th April, 1996 in the Writ Petition No.664 of 1993 to the extent the same are applicable to this proposal.

**(Dr. A. Senthil Vel)**
**Additional Director**

To

**Manager** (Corporate Affairs),
Larsen & Toubro Limited,
Gulab Bhawan, 2nd Floor,
6, Bahadur Shah Zafar Marg, New Delhi-110002.

# COMPLIANCE TO CONDITION STIPULATED IN CRZ CLEARANCE BY MoEFCC

**No. 11-76/2007-IA-III dated: 18/02/2008**

| Sr. No. | Conditions | Compliance status |
|---|---|---|
| **1.** | Reference is invited to the letter No.ENV-10-2006-182-P, dated No.3.10.2007 from Forests and Environment Department, Government of Gujarat and letter No. ADMN/BSJ/CRV/13/2007, dated 7.1.2008 from *MIs* Larsen. & Toubro Limited regarding the subject mentioned above. No Objection Certificate from the Gujarat Pollution Control Board has been obtained vide letter No.GPCB/CE/SRT-1736/10826, dated 10.4.2007. Gujarat Maritime Board has accorded 'No Objection Certificate' for creating facility for ship--building and ship-repairing yard, vide letter dated 15.4.2006. | **Noted & Agreed**<br>**Unit has got the vide letter No. GPCB/CE/SRT-1736/10826, dated 10.4.2007.** |
| **2.** | The project involves construction of 4 numbers of ship each of 5000T per year. Ship building and repairing facility at Village Mora, Burnt, Hazira Road, District-Surat which includes, | **Noted & Agreed** |
| | (i) Expansion of jetty (L shape with 100m length and return 32m) | **Noted & Agreed** |
| | (ii) Construction of Slip way (150 m wide and 80 m long) | **Noted & Agreed** |
| | (iii)Ship Fabrication/ Repair facility & activities<br><br>(a) Open area for shipbuilding/ repair<br>(b) Fabrication sheds/open area for smaller components (Defense Ship/Vessels)<br>(c) Fabrication shed for pipes (shipbuilding). | **Noted & Agreed** |

| | | |
|---|---|---|
| **3.** | The fabrication and shipbuilding yard will cover the total area of approximately 3,60,000 sq. m, the last two fabrication sheds to be located on the opposite side of the existing plant. The smaller components and pipes will be fabricated and transported to the main fabrication shed on the river side for hull assembling. On completion of hull the ship will be launched into the river at It suitable high tide and towed to the fitting out jetty for fitting of balance machinery, accommodation, and navigation systems. On completion of fitting of all systems trials of systems, the ship taken to sea for sea trials and on successful completion of sea trials, the ship will be handed over to owners. Area required for the project is 280 acres Estimated cost of the project is Rs.81.44 crores. The major land use for the proposed project is as follows: -<br><br>• Fabrication Yard: 3,25,000 $m^2$<br><br>• Shipbuilding Yard: 35,000 $m^2$<br><br>• Main Jetty: 5,600 $m^2$<br><br>• RO - RO jetty: 3,200 $m^2$<br><br>• Slipway: 12,000 $m^2$ | **Noted & Agreed.** |

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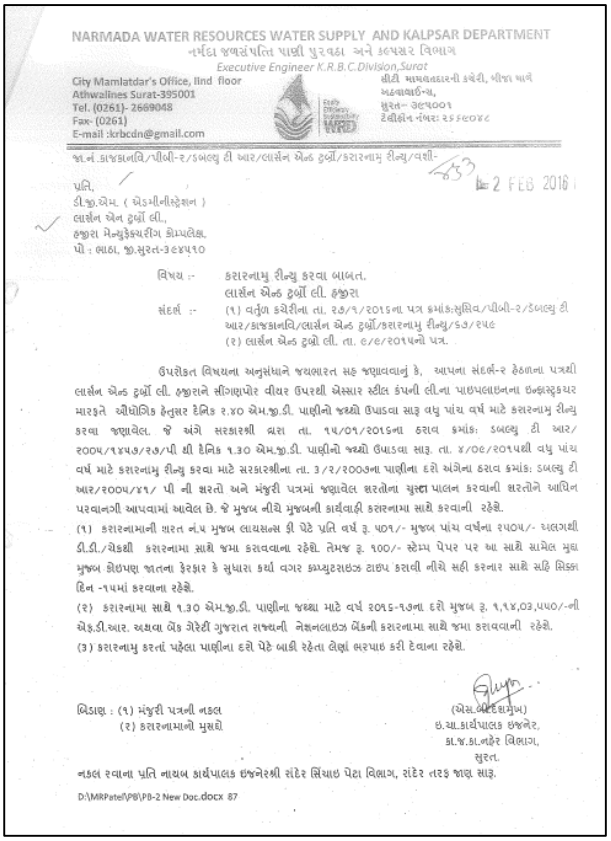
| **4.** | Source of power supply is "Dakshin Gujarat Vij Co. Limited" and power will be around 2400 KVA. The unit will also install 1 number of DG set for use in case of power failure. Total manpower for the project is 180. The water requirement for the project is around 25.00 liters/day which will be drawn from siganpore weir through a shared pipeline with Essar. Waste scraps are proposed to be disposed to the reusing units. And paints will be disposed to TSDF- MOU is required. Mitigation of Oil spillage is required. 15 -20 KLD is proposed to met from Narmada Dam- Biological treatment is proposed. The proposed site falls in the intertidal area classified as CRZ-I (ii) and CRZ III. For the project 115 acres of land would be required. | **Noted & Agreed.**<br>**Copy of Water Withdrawal Permission is enclosed.**<br>  <br>NARMADA WATER RESOURCES WATER SUPPLY AND KALPSAR DEPARTMENT<br>નર્મદા જળસંપત્તિ પાણી પુરવઠા અને કલ્પસર વિભાગ<br>Executive Engineer K.R.B.C.Division,Surat<br>City Mamlatdar's Office, IInd floor<br>Athwalines Surat-395001<br>Tel. (0261)- 2669048<br>Fax- (0261)<br>E-mail :krbcdn@gmail.com<br>મીની મામલતદારની કચેરી, બીજા માળે<br>અઠવાલાઈન્સ,<br>સુરત– ૩૯૫૦૦૧<br>ટેલીફોન નંબર: ૨૬૬૦૪૮<br>જા.નં.કા/જકડાનવિ/પીબી-૨/ડબલ્યુ ટી આર/લાર્સન એન્ડ ટુર્બો/કરારનામુ રીન્યુ/વશી-<br>2 FEB 2016<br>પ્રતિ,<br>ડી.જી.એમ. ( એડમીનીસ્ટ્રેશન )<br>લાર્સન એન્ડ ટુર્બો લી.,<br>હજીરા મેન્યુફેક્ચરીંગ ડીવીઝન,<br>પો : ભાઠા, જી.સુરત-૩૯૪૫૧૦<br>વિષય :- કરારનામુ રીન્યુ કરવા બાબત.<br>લાર્સન એન્ડ ટુર્બો લી. હજીરા<br>સંદર્ભ :- (૧) વર્તુળ કચેરીના તા. ૨૩/૧/૨૦૧૬ના પત્ર ક્રમાંક:સુસિવ/પીબી-૨/ડબલ્યુ ટી આર/કાજકાનવિ/લાર્સન એન્ડ ટુર્બો/કરારનામુ રીન્યુ/૬૩/૨૫૯<br>(૨) લાર્સન એન્ડ ટુર્બો લી. તા. ૯/૯/૨૦૧૫નો પત્ર.<br>ઉપરોકત વિષયના અનુસંધાને જયભારત સહ જણાવવાનું કે, આપના સંદર્ભ-૨ હેઠળના પત્રથી લાર્સન એન્ડ ટુર્બો લી. હજીરાને સીંગણપોર વીયર ઉપરથી એસ્સાર સ્ટીલ કંપની લી.ના પાઇપલાઇનના ઇન્ટ્રસ્ટ્રકચર મારફતે ઔધોગિક હેતુસર દૈનિક ૨.૪૦ એમ.જી.ડી. પાણીનો જથ્થો ઉપાડવા સારૂ વધુ પાંચ વર્ષ માટે કરારનામુ રીન્યુ કરવા જણાવેલ. જે અંગે સરકારશ્રી ઘ્વારા તા. ૧૫/૦૧/૨૦૧૬ના ઠરાવ ક્રમાંક: ડબલ્યુ ટી આર/ ૨૦૦૫/૧૪૫૭/૨૭/પી થી દૈનિક ૧.૩૦ એમ.જી.ડી. પાણીનો જથ્થો ઉપાડવા સારૂ. તા. ૪/૦૯/૨૦૧૫થી વધુ પાંચ વર્ષ માટે કરારનામુ રીન્યુ કરવા માટે સરકારશ્રીના તા. ૩/૨/૨૦૦૩ના પાણીના દરો અંગેના ઠરાવ ક્રમાંક: ડબલ્યુ ટી આર/૨૦૦૫/૪૧/ પી ની શરતો અને મંજુરી પત્રમાં જણાવેલ શરતોના ચુસ્ત પાલન કરવાની શરતોને આધિન પરવાનગી આપવામાં આવેલ છે. જે મુજબ નીચે મુજબની કાર્યવાહી કરારનામા સાથે કરવાની રહેશે.<br>(૧) કરારનામાની શરત નં.૫ મુજબ લાયસન્સ ફી પેટે પ્રતિ વર્ષ રૂ. ૫૦૧/- મુજબ પાંચ વર્ષના ૨૫૦૫/- ચલણથી ડી.ડી./ચેકથી કરારનામા સાથે જમા કરાવવાના રહેશે. તેમજ રૂ. ૧૦૦/- સ્ટેમ્પ પેપર પર આ સાથે સામેલ મુસદ્દા મુજબ ક્રોઇપણ જાતના ફેરફાર કે સુધારા કર્યા વગર ફ્લ્યુટરાઇઝ્ડ ટાઇપ કરાવી નીચે સહી કરનાર સાથે સહિ સિક્કા દિન -૧૫માં કરવાના રહેશે.<br>(૨) કરારનામા સાથે ૧.૩૦ એમ.જી.ડી. પાણીના જથ્થા માટે વર્ષ ૨૦૧૬-૧૭ના દરો મુજબ રૂ. ૧,૧૪,૦૩,૫૫૦/-ની એફ.ડી.આર. અથવા બેંક ગેરેંટી ગુજરાત રાજ્યની નેશનલાઇઝ્ડ બેંકની કરારનામા સાથે જમા કરાવવાની રહેશે.<br>(૩) કરારનામુ કરતાં પહેલા પાણીના દરો પેટે બાકી રહેતા લેણાં ભરપાઇ કરી દેવાના રહેશે.<br>(એસ.બી.દેસાઇ)<br>મુખ્ય ઇ.ચા.કાર્યપાલક ઇજનેર,<br>ક્ષા.જ.કા.નર્મદા વિભાગ,<br>સુરત.<br>બિડાણ : (૧) મંજુરી પત્રની નકલ<br>(૨) કરારનામાનો મુસદ્દો<br>નકલ રવાના પ્રતિ નાયબ કાર્યપાલક ઇજનેરશ્રી સંદેર સિંચાઇ પેટા વિભાગ, સંદેર તરફ જાણ સારૂ.<br>D:\MRPatel\PB\PB-2 New Doc.docx 87 |
| **5.** | The proposal was considered by Expert Appraisal Committee at its meeting held November, 2007 and has recommended. | **Noted** |
| **6.** | Keeping in view the above facts, the proposal has been examined in the Ministry of Environment & Forests and Environmental clearance from Coastal Regulation Zone Notification. 1991 as amended from time to time is hereby accorded to this project subject to effective implementation of the following conditions:- | **Noted** |
| **A.** | **Specific Condition** | |
| i. | All the conditions stipulated by the Environment Department, Government of Gujarat vide their letter No.ENV-102006--182-P, dated 3.10.2007 should be strictly implemented and a | **Complied.**<br>**The L&T Limited, Hazira has got the Letter No.ENV-10-2006-I82-P, dated 3.10.2007**<br>**Compliance of the letter is attached as Annexure - A.**<br>Six monthly compliance report along with the monitoring |

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| | comprehensive compliance letter to be provided to Environment Department, Government of Gujarat and to the Regional Office of this Ministry at Bhopal every quarterly. | data are regularly submitted to the Environment Department, Government of Gujarat and Regional Office, Bhopal. |
| ii. | The project proponent should implement all the measures that have been suggested by them in the clarification letter No. ADMN/BSJ/CRZ/13/2007, dated 7.1.2008 provided to the Ministry of Environment and Forests. | **Complied**<br>All the measures suggested in the letter No. ADMN/BSJ/CRZ/13/2007, dated 07.01.2008 are strictly implemented. |
| iii. | No mangroves should be destroyed during construction and operation of the project. | **Complied**<br>Company has not destroyed mangroves during construction and operation of the project. |
| iv. | A program for Mangrove Conservation and Development in the region should be taken by the project proponent through a scientific/ public spirited body for evolving sustainable and long term strategies. The detailed action plan along with fund allocation should be submitted to this ministry as well as the Regional Office Bhopal within three months. The implementation of the conservation plan shall be monitored by the Environmental Cell of the company and a periodic report should be submitted to the ministry's Regional Office at Bhopal. | **Complied**<br>The Memorandum of Understanding (MoU) between our company and the Gujarat Ecology Commission for the "Restoration, Plantation & Conservation of Mangroves along the Surat Coast, Gujarat" covering a 150-hectare area has already been executed, and the corresponding works have been completed. Photographs illustrating the completed work are attached below.<br>  <br>Memorandum of Understanding<br>for<br>To carry out<br>"Mangrove Plantation through PPP Mode"<br>Between<br>Larsen & Toubro Limited<br>Hazira – Surat<br>&<br>GEC<br>Gujarat Ecology Commission<br>Government of Gujarat<br>Gandhinagar<br>Year: 2014 - 15<br>Page 1 of 5 |

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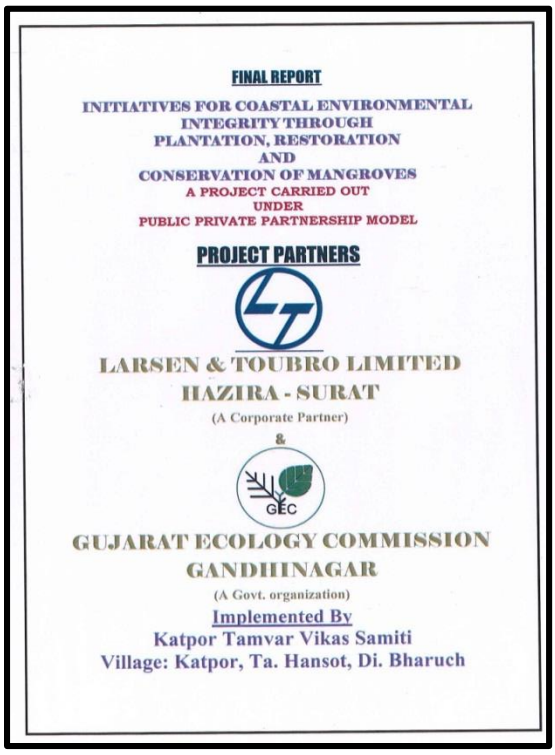
| | | • Environmental Management Cell of company is regularly monitoring the implementation of this project.<br>  <br>FINAL REPORT<br>INITIATIVES FOR COASTAL ENVIRONMENTAL INTEGRITY THROUGH PLANTATION, RESTORATION AND CONSERVATION OF MANGROVES<br>A PROJECT CARRIED OUT UNDER PUBLIC PRIVATE PARTNERSHIP MODEL<br>PROJECT PARTNERS<br>LARSEN & TOUBRO LIMITED<br>HAZIRA - SURAT<br>(A Corporate Partner)<br>&<br>GUJARAT ECOLOGY COMMISSION<br>GANDHINAGAR<br>(A Govt. organization)<br>Implemented By<br>Katpor Tamvar Vikas Samiti<br>Village: Katpor, Ta. Hansot, Di. Bharuch<br>Photographs of the mangrove plantation of as under.<br>  |
| v. | Sewage Treatment Plant should be included in the project and the details provided to the Regional Office of this Ministry within three months from the date of receipt of this letter. | **Complied**<br>Sewage Treatment Plant is included in the project and the details of the same have been sent to the Regional Office, Bhopal. |
| vi. | The recommendations of the Risk Assessment Report should be incorporate, and report submitted. | **Complied**<br>Recommendations of the Risk Assessment Report have been implemented. |

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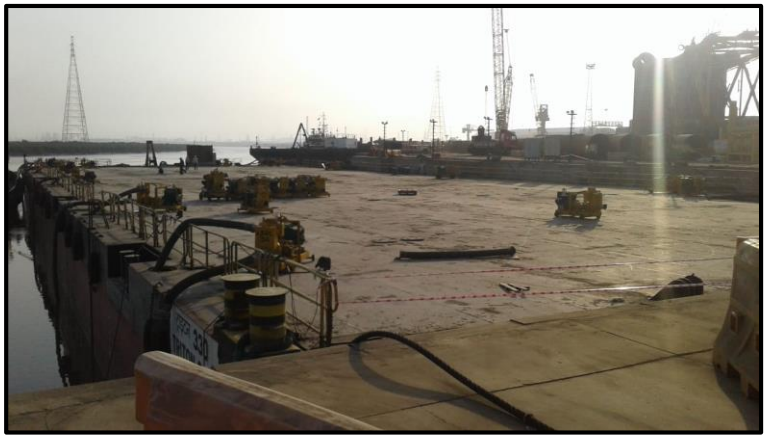
| vii. | Location of general cargo berth should be taken into consideration with regard to location of LNG terminal. | **Noted & Agreed.**<br>**Photo of cargo berth is attached as below.**<br>  |
| viii. | The materials for the filling and pavement construction should be made available from approved quarries. | **Complied**<br>Company had obtained the materials for the filling and pavement construction from the approved quarries only. |
| ix. | Sufficient fixed and mobile firefighting system should be provided exclusively for the terminal in consultation with the local statutory bodies and firefighting authorities. | **Complied**<br>Company has provided sufficient fixed & mobile fire-fighting system after consulting the local statutory bodies & firefighting authorities. |
| x. | The project proponent should ensure that during construction and operation of the port there will be no impact on the livelihood of the fisherman. The fishermen should be provided free access to carry out the fishing activity. | **Noted & Agreed.**<br>There is no adverse impact on the livelihood of the fisherman during construction phase and operation phase of the port. No fishing activity has been carried out. |
| xi. | All necessary precaution while undertaking construction and operation of the port should be taken keeping in view the bathymetric changes caused due to cyclones. | **Complied**<br>All the necessary precautions are undertaken during construction and operation phase of the port. |
| xii. | All development in the Port should be carried out in accordance with the Coastal Regulation Zone Notification, 1991 and approved Coastal Zone | **Complied**<br>All development in the port is carried out as per the Coastal Regulation Zone Notification, 1991 and approved Coastal Zone Management Plan of Gujarat. |

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| | Management Plan of Gujarat. | |
| xiii. | There should be no withdrawal of ground water in CRZ area, for this project. The proponent should ensure that as a result of the proposed constructions, ingress of saline water into ground water does not take place. Piezometers shall be installed for regular monitoring for this purpose at appropriate locations on the project site. | **Complied**<br>Unit had not tapped ground water during the construction phase. We are not tapping ground water for the domestic/other purposes. The source of water for this facility is surface water. |
| xiv. | The project should not be commissioned till the requisite water supply and electricity to the project are provided by the PWD/Electricity Department. | **Noted & Agreed.**<br>We have obtained prior permission for the water supply and electricity from the concerned authorities. |
| xv. | Specific arrangements for rainwater harvesting should be made in the project design and the rain water so harvested should be optimally utilized. Details in this regard should be furnished to this Ministry's Regional Office at Bhopal within 3 months. | Rainwater harvesting is not feasible since the major land use of the said-facility is open fabrication yard, ship-building yard, slipway, jetties etc. |
| xvi. | Green buffer zone should be provided all around the project area in consultation with local forest department and the report submitted to this Ministry's Regional Office at Bhopal. | **Complied**<br>Total 24,270 $m^2$ area has been provided for greenbelt and total 1,625 trees are planted within project premises.<br>  |

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| xvii. | No product other than those permissible in the Coastal Regulation Zone Notification, 1991 should be stored in the Coastal Regulation Zone area. | **Noted & Agreed**<br>We do not store any product other than those permissible in the CRZ Notification, 1991 in the CRZ area. |
| **B.** | **General Conditions** | |
| i. | Construction of the proposed structures Should be undertaken meticulously conforming to the existing Central/local rules and regulations including Coastal Regulation Zone Notification 1991 & its amendments. All the construction designs / drawings relating to the proposed construction activities must have approvals of the concerned State Government Department/ Agencies. | **Complied**<br>The said facility has been constructed conforming to the existing Central/local rules and regulations. |
| ii. | Adequate provisions for infrastructure facilities such as water supply, fuel, sanitation, etc. should be ensured for construction workers during the construction phase of the project so as to avoid felling of trees/ mangroves and pollution of water and the surroundings. | **Complied**<br>Necessary amenities such as drinking water, fuel, sanitation etc. were provided to the construction workers during the construction phase to avoid felling of trees/mangroves and water pollution. |
| iii. | The project authorities must make | **Complied** |

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| | necessary arrangements for disposal of solid wastes and for the treatment of effluents by providing a proper wastewater treatment plant outside the CRZ area. The quality of treated effluents, solid wastes and noise level etc. must conform to the standards laid down by the component authorities including the Central/State Pollution Control Board and the Union Ministry of Environment and Forests under the Environment (Protection) Act, 1986, Whichever are more stringent. | We have already undertaken necessary arrangements for disposal of sewage & solid waste. Since the manufacturing process principally involves cutting, welding & fabrication of structural steels, only sewage is generated, which is treated in the STP and the treated sewage is utilized for plantation / gardening purposes within premises as prescribed by GPCB.<br>The analysis reports of the same are attached as **Annexure – 3.** All results of final STP outlet are well within the GPCB norms. Summary of the inlet and outlet results are as below: |

| **Parameter** | | | **Result** | |
|---|---|---|---|---|
| | | | **Inlet** | **Outlet** |
| **pH** | **pH-Unit** | **Min** | 6.70 | 7.06 |
| | | **Max** | 7.08 | 7.42 |
| **Total Suspended Solids (T.S.S)** | **mg/L** | **Min** | 75 | 20 |
| | | **Max** | 92 | 26 |
| **BOD ( 3 days at $27^0$C)** | **mg/L** | **Min** | 65 | 14 |
| | | **Max** | 78 | 14 |
| **Residual Chlorine** | **mg/L** | **Min** | NIL | 0.6 |
| | | **Max** | NIL | 0.6 |

Monthly noise monitoring is being regularly done.

Noise report and monthly comparison of noise report are attached as **Annexure-4.** Overall ambient noise level was found in the range of 55 – 72 dB (A) in day time and 50 – 67 dB (A) in night time. During day time & night time, all results were well within the prescribed limit.

| **Location** | | | **Day Time dB(A)** | **Night Time dB(A)** |
|---|---|---|---|---|
| **MC Shop** | **0.5 m** | **Min** | 57 | 54 |
| | | **Max** | 60 | 58 |
| **Nr. ADM Building** | **10 m** | **Min** | 55 | 52 |
| | | **Max** | 61 | 57 |
| **Jetty 2** | **10 m** | **Min** | 69 | 56 |
| | | **Max** | 70 | 60 |
| **Jetty 1** | **5 m** | **Min** | 66 | 56 |
| | | **Max** | 69 | 62 |
| **Ware House (Paint)** | **0.5 m** | **Min** | 66 | 57 |
| | | **Max** | 70 | 59 |

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| **STP** | **5 m** | **Min** | 66 | 57 |
| | | **Max** | 71 | 61 |
| **Canteen** | **0.5 m** | **Min** | 58 | 50 |
| | | **Max** | 62 | 56 |
| **Gate 2** | **5 m** | **Min** | 65 | 54 |
| | | **Max** | 69 | 59 |
| **SHBD Shop -1** | **1 m** | **Min** | 70 | 62 |
| | | **Max** | 72 | 67 |

Monthly Ambient Air Monitoring and Stack (D.G. Set 380 KVA) Monitoring has been carried out and summary are as under. The analysis reports of the same are attached as **Annexure-1 & 2**.

| **LOCATION** | | **$PM_{2.5}$** | **$PM_{10}$** | **$SO_2$** | **$NO_X$** |
|---|---|---|---|---|---|
| | | **($mg/m^3$)** | **($mg/m^3$)** | **($mg/m^3$)** | **($mg/m^3$)** |
| **Nr. Main Gate** | **Min** | 33.6 | 64.2 | 10.3 | 16.7 |
| | **Max** | 40.2 | 76.4 | 12.5 | 20.6 |
| **Jetty 2** | **Min** | 33.5 | 64.2 | 9.8 | 18.4 |
| | **Max** | 43.5 | 69.5 | 14.9 | 19.3 |
| **Shop 1** | **Min** | 40.9 | 80.5 | 12.5 | 18.8 |
| | **Max** | 41.9 | 84.3 | 17.5 | 22.4 |
| **Jetty 1** | **Min** | 33.9 | 68.7 | 10.5 | 20.2 |
| | **Max** | 36.4 | 78.5 | 13.1 | 22.4 |

| **Stack Attached to** | **Parameter** | **Unit** | **Result** | |
|---|---|---|---|---|
| **D.G.Set (380 KVA)** | **PM** | **mg/Nm3** | **Min** | 78.8 |
| | | | **Max** | 84.6 |
| | **SO2** | **ppm** | **Min** | 21.6 |
| | | | **Max** | 24.1 |
| | **NOx** | **ppm** | **Min** | 17.3 |
| | | | **Max** | 19.0 |

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| iv. | The proponent shall obtain the requisite consents for discharge of effluents and emissions under the Water (Prevention and Control of Pollution) Act, 1974 and the Air (prevention and Control of Pollution) Act, 1981, from the Gujarat State Pollution Control Board before | **Complied**<br>We have obtained Consent To Establish (CTE) from GPCB vide letter no. GPCB/CE/SRT-1736/10826 dated 10th April, 2007 and Consolidated Consent & Authorization (CC&A) from GPCB vide letter No. AWH-122827 Date of issue: 07/02/2019, which is valid up to 24/12/2028. |

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| | commissioning of the project and a copy of each of these shall be sent to this Ministry. | |
| v. | The proponents shall provide for a regular monitoring mechanism so as to ensure that the treated effluents conform to the prescribed standards. The records of analysis reports must be properly maintained and made available for inspection to the concerned State/Central officials during their visits. | **Noted & Agreed**<br>Since the manufacturing process principally involves cutting, welding & fabrication of structural steels, only sewage is generated, which is treated in the STP and the treated sewage is utilized for plantation/gardening purposes within premises as prescribed by GPCB. The record of all the data is mentioned in log book & records of analysis reports are maintained and made available for inspection to the concerned State/Central officials during their visits anytime. |
| vi. | In order to carry out the environmental monitoring during the operational phase of the project, the project authorities should provide an environmental laboratory well equipped with standard equipment and facilities and qualified manpower to carry out the testing of various environmental parameters. | **Complied**<br>Environmental monitoring and testing of various environmental parameters is being done on monthly basis by NABL & MOEFCC approved laboratory**.** |
| vii | The sand dunes and mangroves. If any, on the site should not be disturbed in any way. | **Complied**<br>We have not disturbed the sand dunes and mangroves during the construction and operational phase. |
| vii. | A copy of the clearance letter will be marked to the concerned Panchayat/ local NGO, if any, from whom any suggestion/representation has been received while processing the proposal. | **Noted & Agreed**<br>A copy of the clearance letter has been marked to the panchayat, No suggestions received yet from Panchayat/ local NGO, we will do as and when required. |
| ix. | The Gujarat State Pollution Control board should display copy of the clearance letter at the Regional Office, District Industries Centre and Collector's office/ Tehsildar's office for 30 days. | **Complied**<br>GPCB had displayed a copy of the clearance letter at the Regional Office, District Industries Centre and Collector's office/Tehsildar's office for 30 days. |
| x | The funds earmarked for environment | **Agreed & Noted** |

| | | |
|---|---|---|
| | protection measures should be maintained in a separate account and there should be no diversion of these funds for any other purpose. A year-wise expenditure on environmental safeguards should be reported to this Ministry's Regional Office at Bhopal and the State Pollution Control Board. | We believe in sustainable management of natural resources and environment of project site and surrounding areas for which funds will not be a constraint. |
| xi | Full support should be extended to the officers of this Ministry's Regional Office at Bhopal and the officers of the Central and Sate Pollution Control Boards by the project proponents during their inspection of monitoring purposes, by furnishing full details and action plans including the action taken reports in respect of mitigative measures and other environmental protection activities. | **Noted & Agreed.**<br>We will provide full support and adequate details to the officers of MoEF&CC/ CPCB/ GPCB during their inspection for the monitoring purposes. |
| xii | In case of deviation or alteration in the project including the implementing agency, a fresh reference should be made to this Ministry for modification in the clearance conditions or imposition of new ones for ensuring environmental protection. | **Noted & Agreed.**<br>In case of deviation or alteration in the project, company will make a fresh-reference to the MoEF&CC for modification in the clearance conditions. |
| xiii. | This Ministry reserve the right to revoke this clearance, if any of the conditions stipulated are not complied with to the satisfaction of this ministry. | **Noted & Agreed.** |
| xiv | This Ministry or any other competent authority may stipulate any other additional conditions subsequently, if deemed necessary, for environmental protection, which Shall be complied | **Noted & Agreed.**<br>We will comply with the condition to be stipulated subsequently by the MoEF&CC or any other competent authority, if deemed necessary for environmental protection. |

| | | |
|---|---|---|
| | with. | |
| xv | The project proponent should advertise at least in two local newspapers widely circulated in the regional around the project, one of which shall be in the vernacular language of the locality Concerned informing that the project has been accorded environmental clearance and copies of clearance letters are available with the State Pollution Control Board and may also be seen at Website of the Ministry of Environment &.Forests at http://www.envforic.in. The advertisement Should be made within 7 days from the date of issue of the clearance letter and a copy of the same should be forwarded to the regional Office of this Ministry at Bhopal. | **Complied**<br>Information on Environmental Clearance has already been advertised on 23-06-2008 in two local newspapers - Sandesh & Divya Bhaskar and one national newspaper - Indian Express and a copy of the same forwarded to the RO, Bhopal. |
| xvi | The Project proponents should inform the Regional Office at Bhopal as well as the Ministry the date of financial closure and final approval of the project by the concerned authorities and the date of start of Land Development Work. | **Agreed & Noted** |

## SUMMARY

L & T has 65,000 $m^2$ of modern heavy shops and 3,00,000 $m^2$ of open fabrication facilities coupled with private jetties/load out facilities, modern offices, training centers, canteens and other industrial utilities and Hazira works is justifiably proud of the team of Workmen, Engineers and Managers developed over last 20 years.

The project involves construction of Ship building and repairing facility at Village-Mora, Surat, Hazira Road, Dist.-Surat which includes, (i) Jetty (L shape with 100 m length and return 32 m), (ii) Slipway (150 m wide and 80 m long), (iii) Ship fabrication/ Repair facility & activities includes Open area for ship building/repair, fabrication sheds/open area for smaller components and Fabrication shed for pipes. The project activity is covered in CRZ-1 (ii) and CRZ (iii) of CRZ notification. Hence CRZ clearance has been obtained from MoEF&CC for the vide letter no. No. 11-76/2007-IA-III dated 18/02/2008. The study has been carried out to comply with the CRZ condition and environment legislation for submission of six monthly compliance report for the same.

The industry has awarded contract for the Environmental monitoring and preparation of six monthly EC compliance report to Ecosystem Resource Management Pvt. Ltd. The consultancy firm has its own well equipped laboratory to measure the pollution parameters related to Environmental Monitoring (Air, Water, Wastewater, Soil) with National Accreditation Board for Testing and Calibration Laboratories (NABL) accreditation. All monitoring equipment's are available to measure Stack emissions, Ambient Air quality and noise level of various plants.

In this Project Involves two activity carried out 1) ship building activity 2) repairing facility. Our ship building activity has been discontinued but repairing facility for smaller components and Fabrication shed for pipes. The smaller components and pipes are fabricated and transported to the main fabrication shed on the river side for assembling.

Six monthly compliance report along with monitoring data are regularly submitted to the concerned department and during monitoring period of this report, RO visit was not undertaken during this period. All the conditions stipulated in CRZ clearance was compiled by the project proponent during construction phase as well as operation phase.

## MEMBERS ASSOCIATED WITH REPORT

**Project Proponent:**

**Mahesh Joshi**

**Head - Central Services**

**Larsen & Toubro Limited,**

A.M. Naik Heavy Engineering Complex

Post Bhatha – 394 510, Dist - Surat, Gujarat

**Ph. No.:** 0261-2807642

**E-mail:** mahesh.Joshi@larsentoubro.com

**Team Leader:**

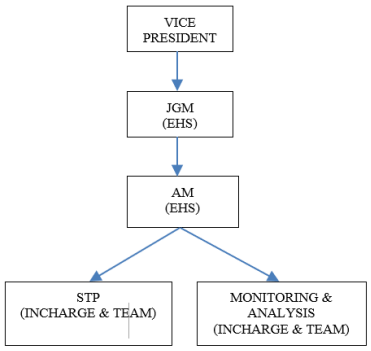
Mrs. Rekha Shah (Director – Ecosystem Resource Management Pvt. Ltd.)

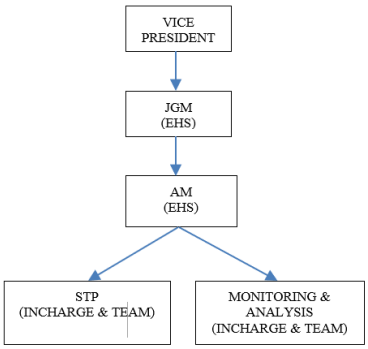
**Team Members (ERM)** :

| | | | |
|---|---|---|---|
| Environmental Monitoring & Data Collection | : | Team Leader – | Mr. Krishna Patel |
| | | Team Members – | Mr. Harpalsinh Sangdot |
| Sample Analysis | : | Lab. In charge – | Mr. Sunil Kumar Pandey |
| | | Chemist – | Mr. Bharat Patel |
| Report Prepared By | : | Mr. Harpalsinh Sangdot | |
| Report Checked By | : | Mr. Rajatkumar Gondaliya | |
| Report Approved By | : | Mrs. Rekha Shah | |

## Annexure – A: Compliance Report of Letter No. ENV-10-2006-J82-P

| S. No. | Conditions | Compliance |
|---|---|---|
| | **The Executive Vice President, L&T Ltd. has also given following undertakings:** | |
| 1 | The L&T Ltd. will implement all the suggestions and recommendations given by the consultant in their EIA and Risk Assessment report. | L&T Ltd. has implemented all the suggestions & recommendation given in EIA. |
| 2 | The L&T Ltd. will bear the cost or the external agency to be appointed by Forests & Environment Department for supervising/ monitoring of the proposed activities. | Agreed & Noted. |
| 3 | The L&T Ltd. will carry out Comprehensive Environmental Impact Assessment and Risk Assessment -report. | Noted |
| 4 | The L&T will not tap the ground water to meet the water requirement during construction and operational phase. | Agreed & Noted. |
| 5 | The L&T Ltd. will provide adequate amenities to the construction labours including water supply, sanitation and fuel to ensure that they do not ruin the existing environment. | L&T Ltd. had already provided amenities to the construction labours during construction. |
| 6 | The L&T Ltd. will not erect/ construct the labour campus within CRZ area and solid/ hazardous waste will not be disposed off in the CRZ area or in sea. | L&T Ltd. has not constructed labour campus within CRZ area and solid/hazardous waste has been disposed as per HWM rules. |
| 7 | The L&T Ltd., will carry out /implement the program associated with social-economical up liftment in consultation with the District Collector. | Agreed |
| 8 | The L&T Ltd. will develop green belt in consultation with the Forest Department. | L&T Ltd. has developed green belt within premises. |
| 9 | The L&T Ltd. will support financially the National Green Corps Scheme being implemented by GEER Foundation in Gujarat, in consultation with Forests and Environment Department. | L&T Ltd. has supported financially to the GEER Foundation in Gujarat. |
| | **SPECIFIC CONDITIONS** | |
| 1 | The L&T Ltd. shall strictly adhere to the provisions of the CRZ Notification, ·1991, and its amendments issued by the Ministry of Environment and Forests, GOI, from time to time. | Complied. |
| 2 | The L&T Ltd. shall obtain all necessary clearances permissions from different Government Departments / Agencies before commencing any construction activity related to the proposed project. | L&T Ltd. has taken all the necessary Clearances from different Government Departments / Agencies before commencing any construction activity related to the proposed project. |
| 3 | The L&T Ltd. shall carry out the construction activities either in the CRZ area or into the sea I estuary only after having the detailed study with respect to chances of erosion/accretion due to the proposed activities conducted through the institute of National repute. | Complied |
| 4 | The L&T Ltd. shall minimize the construction period to reduce the potential negative impacts that may arise during the construction phase. The construction drawing shall have to be got approved from the concerned Government Departments. | L&T Ltd. has completed the construction activity within given time period after getting approval of construction drawings from the concerned Government Department. |
| 5 | All necessary permissions from different offices of the | All the necessary permission has been |

| | | |
|---|---|---|
| | Government shall be obtained before commencing the construction activities. | obtained from the concerned authority before commencing the construction activities. |
| 6 | The L&T Ltd. shall strictly implement the measures suggested in the EIA report for mitigation of likely adverse impacts on coastal and marine environment. | Complied |
| 7 | There shall be no discharge of any kind of wastewater / sewage / effluent into the creek / sea or in the CRZ areas. | Agreed & Noted. |
| 8 | Toward mitigation of impacts and corporate social responsibility, the L&T Ltd. shall take up the mangrove plantation in 100 ha. Area. | L&T Ltd. has Successfully Planted and Regenerated 50 ha of mangroves area at Katpor village, Ta. Hansot, Di. Bharuch and 100 ha Karanj Village, olpad Taluka, Surat District . |
| 9 | The L&T Ltd. shall commission a comprehensive EIA for the proposed activities with specific emphasis on the coastal and marine environment and all the suggestions/recommendations for the purpose of environmental conservation and management given in the said report shall also be strictly implemented. | Complied |
| 10 | A full-fledged environmental management cell with qualified staff shall be created for the purpose of environmental monitoring and implementation of the environmental management plan. | Environmental Management Cell of company is regularly monitoring the implementation of this project.<br>  |
| | **GENERAL CONDITIONS** | |
| 11 | No groundwater Shall be tapped to meet with the water requirements during the construction and/or operation phases. | Company had not tapped ground water during the construction phase. Presently they are not tapping ground water for the domestic/other purposes. The source of water for their facility is surface water. |
| 12 | The L&T Ltd. shall not discharge any kind of waste including the construction debris into the river/ estuary or into the CRZ. | Complied |
| 13 | The L&T Ltd. shall participate financially for any common facility that may be established or any common study that may be carried out for the Gulf of Khambhat region for environmental protection and/or management purpose. | Agreed & Noted. |
| 14 | The L&T Ltd. shall have to face the consequences whatsoever due to implementation of the Kalpsar Project proposed by the Government of Gujarat and shall have to take all necessary actions as maybe desired by the Government from time to time. | Agreed & Noted. |
| 15 | The L&T Ltd. shall prepare and furnish the detailed | L&T Ltd. has prepared Disaster |

| | | |
|---|---|---|
| | Disaster Management Plan to the concerned offices including the District Authorities and this Department. | Management Plan to the concerned offices including the District Authorities and this Department. |
| 16 | The L&T Ltd. shall ensure that the construction camps are kept outside the CRZ areas and the construction labour are provided with adequate amenities like drinking water, fuel, sanitation, etc. to ensure that the existing environmental condition is not deterioted by them. | Complied |
| 17 | The L&T Ltd. shall bear the cost of the external agency that may be appointed by this Department for supervision / monitoring of proposed activities. | Agreed & Noted. |
| 18 | The L&T Ltd. shall take up massive mangrove plantation activities in approx. 100 ha. of area as well as greenbelt activities in consultation with the GEER Foundation and the Forest Department. | L&T Ltd. has Successfully Planted and Regenerated 50 ha of mangroves area at Katpor village, Ta. Hansot, Di. Bharuch and 100 ha Karanj Village, olpad Taluka, Surat District .s |
| 19 | The L&T Ltd. shall support financially the National Green Corps Scheme being implemented by the GEER Foundation in Gujarat in Consultation with this Department. | L&T Ltd. has supported financially to National Green Corps Scheme. |
| 20 | The L&T Ltd. shall take up socio-economic upliftment activities in consultation with the District Collector / DDO. A separate budget shall be earmarked for this purpose. | Agreed & Noted.<br><br>L & T Management believes in sustainable management of natural resources and environment of project site and surrounding areas for which funds has been allotted. |
| 21 | An Environmental Cell shall be constituted with technically qualified staff to implement the Environment Management Plan. A separate budget shall be earmarked annually for this purpose and the details shall be furnished to various regulatory authorities from time to time. | Environmental Management Cell of company is regularly monitoring the implementation of this project.<br>  |
| 22 | The L&T Ltd. shall furnish the environmental audit report including the aspects on coastal and marine environment, to this Department every year. | Complied |
| 23 | The L&T Ltd. shall regularly submit the half-yearly compliance report on the conditions stipulated by this Department. | Complied<br><br>Six Monthly compliance report has been regularly submitted at Regional Office at Bhopal. |
| 24 | Any other condition that may be stipulated by this Department from time to time for environmental protection / management purpose. | Agreed & Noted. |

**ANALYSIS REPORTS**

# Annexure -1 – Ambient Air Monitoring Reports.

Issue Date: 11/04/2024

**TEST REPORT**

**AMBIENT AIR QUALITY MONITORING REPORT**

**TEST REPORT NO:QF/7.8/01 B/AMBIENT/L&T/Rev.0-00/04-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | **:** Ambient Air Quality Monitoring |
| **Sample Collected On** | **:** 01/04/2024 |
| **Sample Received on** | **:** 02/04/2024 |
| **Sample Analyzed& Completion** | **:** 02/04/2024 & 03/04/2024 |
| **Quantity/No. of Sample** | **:** 1-1 no. of filter paper for $PM_{10}$ & $PM_{2.5}$, approx. 25 ml exposed scrubbing media for $SO_2$ and $NO_X$ in 1-1 no. of polyethylene bottle. /16 Nos. |
| **Packing/ Seal** | **:** Packed |
| **Protocol (Purpose)** | **:** As per work order |
| **Height from Ground Level (m)** | **:** 3.0 |
| **Average Wind speed (Km/hr)** | **:** 6.3 |
| **Average Temperature (°C)** | **:** 30.0 |
| **Average Humidity (%)** | **:** 32.0 |
| **Dominant wind direction** | **:** WSW |
| **Sampling Procedure** | **:** As per Test method given for the following parameters & instrument manual |
| **Sample Collected By** | **:** ERM Team |

| Sr. No. | Location | Parameters | | | |
|---|---|---|---|---|---|
| | | **Fine Particulate Matter ($PM_{2.5}$) µg/m³** | **RSPM ($PM_{10}$) µg/m³** | **Sulphur Dioxide ($SO_2$) µg/m³** | **Oxides of Nitrogen ($NO_2$) µg/m³** |
| **1.** | **Near Main Gate** | 37.8 | 76.4 | 12.5 | 20.6 |
| **2.** | **Jetty 2** | 43.5 | 68.7 | 14.9 | 18.9 |
| **3.** | **Shop 1** | 40.9 | 80.5 | 17.5 | 22.4 |
| **4.** | **Jetty 1** | 36.4 | 71.3 | 12.8 | 20.7 |
| **GPCB Limit** | | **60** | **100** | **80** | **80** |
| **Test Method** | | **IS 5182 (Part 24):2019** | **IS 5182 (Part 23) : 2006** | **IS 5182 (Part 2) : 2001** | **IS 5182 (Part 6) :2006** |

**Note: (1)** These results relate to the sample tested only.

**(2)** The report shall not be reproduced except in full without written approval of the laboratory.

S. D Patel

**CHEMIST**

**AUTHORIZED SIGNATORY**
**(Haresh Ahir)**

Issue Date: 11/05/2024

**TEST REPORT**

**AMBIENT AIR QUALITY MONITORING REPORT**

**TEST REPORT NO:QF/7.8/01 B/AMBIENT/L&T/Rev.0-00/05-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | **:** Ambient Air Quality Monitoring |
| **Sample Collected On** | **:** 01/05/2024 |
| **Sample Received on** | **:** 02/05/2024 |
| **Sample Analyzed& Completion** | **:** 02/05/2024 & 03/05/2024 |
| **Quantity/No. of Sample** | **:** 1-1 no. of filter paper for $PM_{10}$ & $PM_{2.5}$, approx. 25 ml exposed scrubbing media for $SO_2$ and $NO_X$ in 1-1 no. of polyethylene bottle. /16 Nos. |
| **Packing/ Seal** | **:** Packed |
| **Protocol (Purpose)** | **:** As per work order |
| **Height from Ground Level (m)** | **:** 3.0 |
| **Average Wind speed (Km/hr)** | **:** 10.3 |
| **Average Temperature (°C)** | **:** 33.0 |
| **Average Humidity (%)** | **:** 23.0 |
| **Dominant wind direction** | **:** SW |
| **Sampling Procedure** | **:** As per Test method given for the following parameters & instrument manual |
| **Sample Collected By** | **:** ERM Team |

| Sr. No. | Location | Parameters | | | |
|---|---|---|---|---|---|
| | | **Fine Particulate Matter ($PM_{2.5}$) µg/m³** | **RSPM ($PM_{10}$) µg/m³** | **Sulphur Dioxide ($SO_2$) µg/m³** | **Oxides of Nitrogen ($NO_2$) µg/m³** |
| **1.** | **Near Main Gate** | 33.6 | 64.2 | 10.3 | 16.7 |
| **2.** | **Jetty 2** | 36.8 | 69.5 | 9.8 | 18.4 |
| **3.** | **Shop 1** | 41.9 | 84.3 | 13.9 | 19.6 |
| **4.** | **Jetty 1** | 36.4 | 78.5 | 10.5 | 20.2 |
| **GPCB Limit** | | **60** | **100** | **80** | **80** |
| **Test Method** | | **IS 5182 (Part 24):2019** | **IS 5182 (Part 23) : 2006** | **IS 5182 (Part 2) : 2001** | **IS 5182 (Part 6) :2006** |

**Note: (1)** These results relate to the sample tested only.

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S. D Patel

**CHEMIST**

**AUTHORIZED SIGNATORY**
**(Haresh Ahir)**

Issue Date: 12/06/2024

**TEST REPORT**

**AMBIENT AIR QUALITY MONITORING REPORT**

**TEST REPORT NO:QF/7.8/01 B/AMBIENT/L&T/Rev.0-00/06-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | **:** Ambient Air Quality Monitoring |
| **Sample Collected On** | **:** 01/06/2024 |
| **Sample Received on** | **:** 03/06/2024 |
| **Sample Analyzed& Completion** | **:** 03/06/2024 & 04/06/2024 |
| **Quantity/No. of Sample** | **:** 1-1 no. of filter paper for $PM_{10}$ & $PM_{2.5}$, approx. 25 ml exposed scrubbing media for $SO_2$ and $NO_X$ in 1-1 no. of polyethylene bottle. /16 Nos. |
| **Packing/ Seal** | **:** Packed |
| **Protocol (Purpose)** | **:** As per work order |
| **Height from Ground Level (m)** | **:** 3.0 |
| **Average Wind speed (Km/hr)** | **:** 17.3 |
| **Average Temperature (°C)** | **:** 35.0 |
| **Average Humidity (%)** | **:** 47.0 |
| **Dominant wind direction** | **:** SSW |
| **Sampling Procedure** | **:** As per Test method given for the following parameters & instrument manual |
| **Sample Collected By** | **:** ERM Team |

| Sr. No. | Location | Parameters | | | |
|---|---|---|---|---|---|
| | | **Fine Particulate Matter ($PM_{2.5}$) µg/m³** | **RSPM ($PM_{10}$) µg/m³** | **Sulphur Dioxide ($SO_2$) µg/m³** | **Oxides of Nitrogen ($NO_2$) µg/m³** |
| **1.** | **Near Main Gate** | 40.2 | 76.4 | 10.3 | 18.5 |
| **2.** | **Jetty 2** | 33.5 | 64.2 | 11.9 | 19.3 |
| **3.** | **Shop 1** | 41.1 | 83.5 | 12.5 | 18.8 |
| **4.** | **Jetty 1** | 33.9 | 68.7 | 13.1 | 22.4 |
| **GPCB Limit** | | **60** | **100** | **80** | **80** |
| **Test Method** | | **IS 5182 (Part 24):2019** | **IS 5182 (Part 23) : 2006** | **IS 5182 (Part 2) : 2001** | **IS 5182 (Part 6) :2006** |

**Note: (1)** These results relate to the sample tested only.

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S. D. Patel

**CHEMIST**

**AUTHORIZED SIGNATORY**
**(Haresh Ahir)**

Issue Date: 01/08/2024

**TEST REPORT**

**AMBIENT AIR QUALITY MONITORING REPORT**

**TEST REPORT NO:QF/7.8/01 B/AMBIENT/L&T/Rev.0-00/07-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | **:** Ambient Air Quality Monitoring |
| **Sample Collected On** | **:** 03/07/2024 |
| **Sample Received on** | **:** 04/07/2024 |
| **Sample Analyzed& Completion** | **:** 04/07/2024 & 05/07/2024 |
| **Quantity/No. of Sample** | **:** 1-1 no. of filter paper for $PM_{10}$ & $PM_{2.5}$, approx. 25 ml exposed scrubbing media for $SO_2$ and $NO_X$ in 1-1 no. of polyethylene bottle. /16 Nos. |
| **Packing/ Seal** | **:** Packed |
| **Protocol (Purpose)** | **:** As per work order |
| **Height from Ground Level (m)** | **:** 3.0 |
| **Average Wind speed (Km/hr)** | **:** 14.0 |
| **Average Temperature (°C)** | **:** 30.0 |
| **Average Humidity (%)** | **:** 79.0 |
| **Dominant wind direction** | **:** S |
| **Sampling Procedure** | **:** As per Test method given for the following parameters & instrument manual |
| **Sample Collected By** | **:** ERM Team |

| Sr. No. | Location | Parameters | | | |
|---|---|---|---|---|---|
| | | **Fine Particulate Matter ($PM_{2.5}$) µg/m³** | **RSPM ($PM_{10}$) µg/m³** | **Sulphur Dioxide ($SO_2$) µg/m³** | **Oxides of Nitrogen ($NO_2$) µg/m³** |
| **1.** | **Near Main Gate** | 35.4 | 75.2 | 16.7 | 23.4 |
| **2.** | **Jetty 2** | 38.2 | 78.4 | 19.6 | 25.2 |
| **3.** | **Shop 1** | 42.0 | 75.0 | 18.5 | 24.8 |
| **4.** | **Jetty 1** | 34.6 | 68.8 | 15.2 | 22.0 |
| **GPCB Limit** | | **60** | **100** | **80** | **80** |
| **Test Method** | | **IS 5182 (Part 24):2019** | **IS 5182 (Part 23) : 2006** | **IS 5182 (Part 2) : 2001** | **IS 5182 (Part 6) :2006** |

**Note: (1)** These results relate to the sample tested only.

**(2)** The report shall not be reproduced except in full without written approval of the laboratory.

S. D. Patel

**CHEMIST**

**AUTHORIZED SIGNATORY**
**(Haresh Ahir)**

Issue Date: 02/09/2024

**TEST REPORT**

**AMBIENT AIR QUALITY MONITORING REPORT**

**TEST REPORT NO:QF/7.8/01 B/AMBIENT/L&T/Rev.0-00/08-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | **:** Ambient Air Quality Monitoring |
| **Sample Collected On** | **:** 01/08/2024 |
| **Sample Received on** | **:** 02/08/2024 |
| **Sample Analyzed& Completion** | **:** 02/08/2024 & 03/08/2024 |
| **Quantity/No. of Sample** | **:** 1-1 no. of filter paper for $PM_{10}$ & $PM_{2.5}$, approx. 25 ml exposed scrubbing media for $SO_2$ and $NO_X$ in 1-1 no. of polyethylene bottle. /16 Nos. |
| **Packing/ Seal** | **:** Packed |
| **Protocol (Purpose)** | **:** As per work order |
| **Height from Ground Level (m)** | **:** 3.0 |
| **Average Wind speed (Km/hr)** | **:** 12.0 |
| **Average Temperature (°C)** | **:** 28.0 |
| **Average Humidity (%)** | **:** 86.0 |
| **Dominant wind direction** | **:** S |
| **Sampling Procedure** | **:** As per Test method given for the following parameters & instrument manual |
| **Sample Collected By** | **:** ERM Team |

| Sr. No. | Location | Parameters | | | |
|---|---|---|---|---|---|
| | | **Fine Particulate Matter ($PM_{2.5}$) µg/m³** | **RSPM ($PM_{10}$) µg/m³** | **Sulphur Dioxide ($SO_2$) µg/m³** | **Oxides of Nitrogen ($NO_2$) µg/m³** |
| **1.** | **Near Main Gate** | 34.2 | 78.8 | 16.4 | 20.7 |
| **2.** | **Jetty 2** | 30.8 | 68.6 | 15.9 | 18.5 |
| **3.** | **Shop 1** | 38.9 | 78.8 | 22.2 | 24.8 |
| **4.** | **Jetty 1** | 36.4 | 72.5 | 16.0 | 19.2 |
| **GPCB Limit** | | **60** | **100** | **80** | **80** |
| **Test Method** | | **IS 5182 (Part 24):2019** | **IS 5182 (Part 23) : 2006** | **IS 5182 (Part 2) : 2001** | **IS 5182 (Part 6) :2006** |

**Note: (1)** These results relate to the sample tested only.

**(2)** The report shall not be reproduced except in full without written approval of the laboratory.

S. D. Patel

**CHEMIST**

**AUTHORIZED SIGNATORY**
**(Haresh Ahir)**

Issue Date: 01/10/2024

**TEST REPORT**

**AMBIENT AIR QUALITY MONITORING REPORT**

**TEST REPORT NO:QF/7.8/01 B/AMBIENT/L&T/Rev.0-00/09-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | **:** Ambient Air Quality Monitoring |
| **Sample Collected On** | **:** 02/09/2024 |
| **Sample Received on** | **:** 03/09/2024 |
| **Sample Analyzed& Completion** | **:** 03/09/2024 & 04/09/2024 |
| **Quantity/No. of Sample** | **:** 1-1 no. of filter paper for $PM_{10}$ & $PM_{2.5}$, approx. 25 ml exposed scrubbing media for $SO_2$ and $NO_X$ in 1-1 no. of polyethylene bottle. /16 Nos. |
| **Packing/ Seal** | **:** Packed |
| **Protocol (Purpose)** | **:** As per work order |
| **Height from Ground Level (m)** | **:** 3.0 |
| **Average Wind speed (Km/hr)** | **:** 9.3 |
| **Average Temperature (°C)** | **:** 27.0 |
| **Average Humidity (%)** | **:** 85.0 |
| **Dominant wind direction** | **:** W |
| **Sampling Procedure** | **:** As per Test method given for the following parameters & instrument manual |
| **Sample Collected By** | **:** ERM Team |

| Sr. No. | Location | Parameters | | | |
|---|---|---|---|---|---|
| | | **Fine Particulate Matter ($PM_{2.5}$) µg/m³** | **RSPM ($PM_{10}$) µg/m³** | **Sulphur Dioxide ($SO_2$) µg/m³** | **Oxides of Nitrogen ($NO_2$) µg/m³** |
| **1.** | **Near Main Gate** | 38.5 | 72.5 | 20.5 | 24.2 |
| **2.** | **Jetty 2** | 32.8 | 74.2 | 16.0 | 20.6 |
| **3.** | **Shop 1** | 34.2 | 77.2 | 19.5 | 25.2 |
| **4.** | **Jetty 1** | 38.0 | 76.8 | 18.2 | 23.0 |
| **GPCB Limit** | | **60** | **100** | **80** | **80** |
| **Test Method** | | **IS 5182 (Part 24):2019** | **IS 5182 (Part 23) : 2006** | **IS 5182 (Part 2) : 2001** | **IS 5182 (Part 6) :2006** |

**Note: (1)** These results relate to the sample tested only.

**(2)** The report shall not be reproduced except in full without written approval of the laboratory.

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**AUTHORIZED SIGNATORY**
**(Haresh Ahir)**

## Annexure -2 – Stack Monitoring Reports.

Issue Date: 11/04/2024

**TEST REPORT**
**STACK ANALYSIS REPORT**
**TEST REPORT NO:QF/7.8/01 C/STACK/L&T/Rev.0-00/04-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | **:** Stack Monitoring |
| **Stack attached to** | **:** Stack attached to D.G Set (380 KVA) |
| **Date of Sampling** | **:** 01/04/2024 |
| **Sample Received on** | **:** 02/04/2024 |
| **Sample Analyzed & Completion** | **:** 02/04/2024 & 03/04/2024 |
| **Quantity/No. of Sample** | **:** 1 No. Thimble for PM, Approx.50 ml exposed absorbing solution $SO_2$ (in Polyethylene Bottle), Approx. 50ml. exposed absorbing solution in PDA flask for NOx /3 Nos. |
| **Protocol (Purpose)/ Packing** | : As per Work Order/ Packed |
| **Packing/ Seal** | **:** Packed |
| **Height of Stack (m)** | **:** Approx. 09 |
| **Type of Fuel** | **:** Diesel |
| **Temperature of Flue Gas** | **:** 126 $^0$C |
| **Velocity of flue Gas** | **:** 7.2 m/s |
| **Sampling Method** | **:** Stack kit manual & IS 11255 as per respective parameters |
| **Sample Collected By** | **:** ERM Team |

| Sr. No. | Parameters | Unit | Results | Limits | Test Method |
|---|---|---|---|---|---|
| 1. | Particulate Matter (PM) | mg/Nm$^3$ | 84.6 | 150 | IS 11255 (Part 1) :1985 |
| 2. | Sulphur Dioxide ($SO_2$) | ppm | 24.1 | 100 | IS 11255 (Part 2) :1985 |
| 3. | Oxides of Nitrogen (NOx) | ppm | 19.0 | 50 | IS 11255 (Part 7) :2005 |

**Note:** (1) These results relate to the sample tested only.
(2) The report shall not be reproduced except in full without written approval of the laboratory.

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**(Haresh Ahir)**

Issue Date: 11/05/2024

**TEST REPORT**
**STACK ANALYSIS REPORT**
**TEST REPORT NO:QF/7.8/01 C/STACK/L&T/Rev.0-00/05-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | **:** Stack Monitoring |
| **Stack attached to** | **:** Stack attached to D.G Set (380 KVA) |
| **Date of Sampling** | **:** 01/05/2024 |
| **Sample Received on** | **:** 02/05/2024 |
| **Sample Analyzed & Completion** | **:** 02/05/2024 & 03/05/2024 |
| **Quantity/No. of Sample** | **:** 1 No. Thimble for PM, Approx.50 ml exposed absorbing solution $SO_2$ (in Polyethylene Bottle), Approx. 50ml. exposed absorbing solution in PDA flask for NOx /3 Nos. |
| **Protocol (Purpose)/ Packing** | : As per Work Order/ Packed |
| **Packing/ Seal** | **:** Packed |
| **Height of Stack (m)** | **:** Approx. 09 |
| **Type of Fuel** | **:** Diesel |
| **Temperature of Flue Gas** | **:** 124 $^0$C |
| **Velocity of flue Gas** | **:** 7.8 m/s |
| **Sampling Method** | **:** Stack kit manual & IS 11255 as per respective parameters |
| **Sample Collected By** | **:** ERM Team |

| Sr. No. | Parameters | Unit | Results | Limits | Test Method |
|---|---|---|---|---|---|
| 1. | Particulate Matter (PM) | mg/Nm$^3$ | 78.8 | 150 | IS 11255 (Part 1) :1985 |
| 2. | Sulphur Dioxide ($SO_2$) | ppm | 21.6 | 100 | IS 11255 (Part 2) :1985 |
| 3. | Oxides of Nitrogen (NOx) | ppm | 17.3 | 50 | IS 11255 (Part 7) :2005 |

**Note:** (1) These results relate to the sample tested only.
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Issue Date: 12/06/2024

**TEST REPORT**
**STACK ANALYSIS REPORT**
**TEST REPORT NO:QF/7.8/01 C/STACK/L&T/Rev.0-00/06-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | **:** Stack Monitoring |
| **Stack attached to** | **:** Stack attached to D.G Set (380 KVA) |
| **Date of Sampling** | **:** 01/06/2024 |
| **Sample Received on** | **:** 03/06/2024 |
| **Sample Analyzed & Completion** | **:** 03/06/2024 & 04/06/2024 |
| **Quantity/No. of Sample** | **:** 1 No. Thimble for PM, Approx.50 ml exposed absorbing solution $SO_2$ (in Polyethylene Bottle), Approx. 50ml. exposed absorbing solution in PDA flask for NOx /3 Nos. |
| **Protocol (Purpose)/ Packing** | : As per Work Order/ Packed |
| **Packing/ Seal** | **:** Packed |
| **Height of Stack (m)** | **:** Approx. 09 |
| **Type of Fuel** | **:** Diesel |
| **Temperature of Flue Gas** | **:** 126 $^0$C |
| **Velocity of flue Gas** | **:** 7.0 m/s |
| **Sampling Method** | **:** Stack kit manual & IS 11255 as per respective parameters |
| **Sample Collected By** | **:** ERM Team |

| Sr. No. | Parameters | Unit | Results | Limits | Test Method |
|---|---|---|---|---|---|
| 1. | Particulate Matter (PM) | mg/Nm$^3$ | 82.0 | 150 | IS 11255 (Part 1) :1985 |
| 2. | Sulphur Dioxide ($SO_2$) | ppm | 22.3 | 100 | IS 11255 (Part 2) :1985 |
| 3. | Oxides of Nitrogen (NOx) | ppm | 17.5 | 50 | IS 11255 (Part 7) :2005 |

**Note:** (1) These results relate to the sample tested only.
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**AUTHORISED SIGNATORY**
**(Haresh Ahir)**

Issue Date: 01/08/2024

**TEST REPORT**
**STACK ANALYSIS REPORT**
**TEST REPORT NO:QF/7.8/01 C/STACK/L&T/Rev.0-00/07-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | **:** Stack Monitoring |
| **Stack attached to** | **:** Stack attached to D.G Set (380 KVA) |
| **Date of Sampling** | **:** 03/07/2024 |
| **Sample Received on** | **:** 04/07/2024 |
| **Sample Analyzed & Completion** | **:** 04/07/2024 & 05/07/2024 |
| **Quantity/No. of Sample** | **:** 1 No. Thimble for PM, Approx.50 ml exposed absorbing solution $SO_2$ (in Polyethylene Bottle), Approx. 25ml. exposed absorbing solution in PDA flask for NOx /3 Nos. |
| **Protocol (Purpose)/ Packing** | : As per Work Order/ Packed |
| **Packing/ Seal** | **:** Packed |
| **Height of Stack (m)** | **:** Approx. 09 |
| **Type of Fuel** | **:** Diesel |
| **Temperature of Flue Gas** | **:** 120 $^0$C |
| **Velocity of flue Gas** | **:** 7.2m/s |
| **Sampling Method** | **:** Stack kit manual & IS 11255 as per respective parameters |
| **Sample Collected By** | **:** ERM Team |

| Sr. No. | Parameters | Unit | Results | Limits | Test Method |
|---|---|---|---|---|---|
| 1. | Particulate Matter (PM) | mg/Nm$^3$ | 79.2 | 150 | IS 11255 (Part 1) :1985 |
| 2. | Sulphur Dioxide ($SO_2$) | ppm | 25.3 | 100 | IS 11255 (Part 2) :1985 |
| 3. | Oxides of Nitrogen (NOx) | ppm | 21.6 | 50 | IS 11255 (Part 7) :2005 |

**Note:** (1) These results relate to the sample tested only.
(2) The report shall not be reproduced except in full without written approval of the laboratory.

S. D Patel

**CHEMIST**

**AUTHORISED SIGNATORY**
**(Haresh Ahir)**

Issue Date: 02/09/2024

**TEST REPORT**
**STACK ANALYSIS REPORT**
**TEST REPORT NO:QF/7.8/01 C/STACK/L&T/Rev.0-00/08-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | **:** Stack Monitoring |
| **Stack attached to** | **:** Stack attached to D.G Set (380 KVA) |
| **Date of Sampling** | **:** 01/08/2024 |
| **Sample Received on** | **:** 02/08/2024 |
| **Sample Analyzed & Completion** | **:** 02/08/2024 & 03/08/2024 |
| **Quantity/No. of Sample** | **:** 1 No. Thimble for PM, Approx.50 ml exposed absorbing solution $SO_2$ (in Polyethylene Bottle), Approx. 50ml. exposed absorbing solution in PDA flask for NOx /3 Nos. |
| **Protocol (Purpose)/ Packing** | : As per Work Order/ Packed |
| **Packing/ Seal** | **:** Packed |
| **Height of Stack (m)** | **:** Approx. 09 |
| **Type of Fuel** | **:** Diesel |
| **Temperature of Flue Gas** | **:** 122 $^0$C |
| **Velocity of flue Gas** | **:** 7.6 m/s |
| **Sampling Method** | **:** Stack kit manual & IS 11255 as per respective parameters |
| **Sample Collected By** | **:** ERM Team |

| Sr. No. | Parameters | Unit | Results | Limits | Test Method |
|---|---|---|---|---|---|
| 1. | Particulate Matter (PM) | mg/Nm$^3$ | 79.0 | 150 | IS 11255 (Part 1) :1985 |
| 2. | Sulphur Dioxide ($SO_2$) | ppm | 24.1 | 100 | IS 11255 (Part 2) :1985 |
| 3. | Oxides of Nitrogen (NOx) | ppm | 20.6 | 50 | IS 11255 (Part 7) :2005 |

**Note:** (1) These results relate to the sample tested only.
(2) The report shall not be reproduced except in full without written approval of the laboratory.

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Issue Date: 01/10/2024

**TEST REPORT**
**STACK ANALYSIS REPORT**
**TEST REPORT NO:QF/7.8/01 C/STACK/L&T/Rev.0-00/09-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | **:** Stack Monitoring |
| **Stack attached to** | **:** Stack attached to D.G Set (380 KVA) |
| **Date of Sampling** | **:** 02/09/2024 |
| **Sample Received on** | **:** 03/09/2024 |
| **Sample Analyzed & Completion** | **:** 03/09/2024 & 04/09/2024 |
| **Quantity/No. of Sample** | **:** 1 No. Thimble for PM, Approx.50 ml exposed absorbing solution $SO_2$ (in Polyethylene Bottle), Approx. 50ml. exposed absorbing solution in PDA flask for NOx /3 Nos. |
| **Protocol (Purpose)/ Packing** | : As per Work Order/ Packed |
| **Packing/ Seal** | **:** Packed |
| **Height of Stack (m)** | **:** Approx. 09 |
| **Type of Fuel** | **:** Diesel |
| **Temperature of Flue Gas** | **:** 124 $^0$C |
| **Velocity of flue Gas** | **:** 7.8 m/s |
| **Sampling Method** | **:** Stack kit manual & IS 11255 as per respective parameters |
| **Sample Collected By** | **:** ERM Team |

| Sr. No. | Parameters | Unit | Results | Limits | Test Method |
|---|---|---|---|---|---|
| 1. | Particulate Matter (PM) | mg/Nm$^3$ | 82.6 | 150 | IS 11255 (Part 1) :1985 |
| 2. | Sulphur Dioxide ($SO_2$) | ppm | 25.1 | 100 | IS 11255 (Part 2) :1985 |
| 3. | Oxides of Nitrogen (NOx) | ppm | 20.3 | 50 | IS 11255 (Part 7) :2005 |

**Note:** (1) These results relate to the sample tested only.
(2) The report shall not be reproduced except in full without written approval of the laboratory.

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**(Haresh Ahir)**

# Annexure -3 – Sewage Analysis Reports.

Issue Date: 11/04/2024

**TEST REPORT**

**SEWAGE SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/SEWAGE/L&T/Rev.0-00/04-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | **:** Sewage Sample |
| **Mode Of Sampling** | **:** Grab |
| **Sample Collected On** | **:** 01/04/2024 |
| **Sample Received on** | **:** 02/04/2024 |
| **Sample Analyzed & Completion** | **:** 02/04/2024 to 09/04/2024 |
| **Quantity/No. of Sample** | **:** 2 Litre In plastic carboys (each location) /2 Nos. |
| **Packing/ Seal** | **:** Packed |
| **Protocol (Purpose)** | **:** As per work order |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part 1000 Section 1060 B |
| **Sample Collected By** | **:** ERM Team |

| Sr. No. | Parameters | Unit | Result | | Consent Limit | Test Method |
|---|---|---|---|---|---|---|
| | | | Inlet | Outlet | | |
| 1. | pH at 25 °C | pH-Unit | 6.79 | 7.18 | 6.5-8.5 | IS 3025 (Part 11): 2022 |
| 2. | Total Suspended Solids | mg/L | 92 | 20 | 30 | IS 3025 (Part 17): 2022 |
| 3. | BOD (3 days at 27 °C) | mg/L | 78 | 16 | 20 | IS 3025 (Part 44): 1993 |
| 4. | Free Residual Chlorine | mg/L | Nil | 0.6 | >0.5 | IS 3025 (Part 26): 2021 |

**Note: (1)** These results relate to the sample tested only.

**(2)** The report shall not be reproduced except in full without written approval of the laboratory.

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**CHEMIST**

**AUTHORISED SIGNATORY**
**(Haresh Ahir)**

Issue Date: 11/05/2024

**TEST REPORT**

**SEWAGE SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/SEWAGE/L&T/Rev.0-00/05-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | **:** Sewage Sample |
| **Mode Of Sampling** | **:** Grab |
| **Sample Collected On** | **:** 01/05/2024 |
| **Sample Received on** | **:** 02/05/2024 |
| **Sample Analyzed & Completion** | **:** 02/05/2024 to 08/05/2024 |
| **Quantity/No. of Sample** | **:** 2 Litre In plastic carboys (each location) /2 Nos. |
| **Packing/ Seal** | **:** Packed |
| **Protocol (Purpose)** | **:** As per work order |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part 1000 Section 1060 B |
| **Sample Collected By** | **:** ERM Team |

| Sr. No. | Parameters | Unit | Result | | Consent Limit | Test Method |
|---|---|---|---|---|---|---|
| | | | Inlet | Outlet | | |
| 1. | pH at 25 °C | pH-Unit | 6.70 | 7.06 | 6.5-8.5 | IS 3025 (Part 11): 2022 |
| 2. | Total Suspended Solids | mg/L | 88 | 26 | 30 | IS 3025 (Part 17): 2022 |
| 3. | BOD (3 days at 27 °C) | mg/L | 78 | 18 | 20 | IS 3025 (Part 44): 1993 |
| 4. | Free Residual Chlorine | mg/L | Nil | 0.6 | >0.5 | IS 3025 (Part 26): 2021 |

**Note: (1)** These results relate to the sample tested only.

**(2)** The report shall not be reproduced except in full without written approval of the laboratory.

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**AUTHORISED SIGNATORY**
**(Haresh Ahir)**

Issue Date: 12/06/2024

**TEST REPORT**

**SEWAGE SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/SEWAGE/L&T/Rev.0-00/06-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | **:** Sewage Sample |
| **Mode Of Sampling** | **:** Grab |
| **Sample Collected On** | **:** 01/06/2024 |
| **Sample Received on** | **:** 03/06/2024 |
| **Sample Analyzed & Completion** | **:** 03/06/2024 to 10/06/2024 |
| **Quantity/No. of Sample** | **:** 2 Litre In plastic carboys (each location) /2 Nos. |
| **Packing/ Seal** | **:** Packed |
| **Protocol (Purpose)** | **:** As per work order |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part 1000 Section 1060 B |
| **Sample Collected By** | **:** ERM Team |

| Sr. No. | Parameters | Unit | Result | | Consent Limit | Test Method |
|---|---|---|---|---|---|---|
| | | | Inlet | Outlet | | |
| 1. | pH at 25 °C | pH-Unit | 6.98 | 7.42 | 6.5-8.5 | IS 3025 (Part 11): 2022 |
| 2. | Total Suspended Solids | mg/L | 80 | 22 | 30 | IS 3025 (Part 17): 2022 |
| 3. | BOD (3 days at 27 °C) | mg/L | 70 | 14 | 20 | IS 3025 (Part 44): 1993 |
| 4. | Free Residual Chlorine | mg/L | Nil | 0.6 | >0.5 | IS 3025 (Part 26): 2021 |

**Note: (1)** These results relate to the sample tested only.

**(2)** The report shall not be reproduced except in full without written approval of the laboratory.

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**CHEMIST**

**AUTHORISED SIGNATORY**
**(Haresh Ahir)**

Issue Date: 01/08/2024

**TEST REPORT**

**SEWAGE SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/SEWAGE/L&T/Rev.0-00/07-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | **:** Sewage Sample |
| **Mode Of Sampling** | **:** Grab |
| **Sample Collected On** | **:** 03/07/2024 |
| **Sample Received on** | **:** 04/07/2024 |
| **Sample Analyzed & Completion** | **:** 04/07/2024 to 11/07/2024 |
| **Quantity/No. of Sample** | **:** 2 Litre In plastic carboys (each location) /2 Nos. |
| **Packing/ Seal** | **:** Packed |
| **Protocol (Purpose)** | **:** As per work order |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part 1000 Section 1060 B |
| **Sample Collected By** | **:** ERM Team |

| Sr. No. | Parameters | Unit | Result | | Consent Limit | Test Method |
|---|---|---|---|---|---|---|
| | | | Inlet | Outlet | | |
| **1.** | **pH at 25 °C** | **pH-Unit** | 7.08 | 7.22 | **6.5-8.5** | **IS 3025 (Part 11): 2022** |
| **2.** | **Total Suspended Solids** | **mg/L** | 88 | 28 | **30** | **IS 3025 (Part 17): 2022** |
| **3.** | **BOD (3 days at 27 °C)** | **mg/L** | 68 | 15 | **20** | **IS 3025 (Part 44): 1993** |
| **4.** | **Free Residual Chlorine** | **mg/L** | Nil | 0.5 | **>0.5** | **IS 3025 (Part 26): 2021** |

**Note: (1)** These results relate to the sample tested only.

**(2)** The report shall not be reproduced except in full without written approval of the laboratory.

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**CHEMIST**

**AUTHORISED SIGNATORY**
**(Haresh Ahir)**

Issue Date: 02/09/2024

**TEST REPORT**

**SEWAGE SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/SEWAGE/L&T/Rev.0-00/08-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | **:** Sewage Sample |
| **Mode Of Sampling** | **:** Grab |
| **Sample Collected On** | **:** 01/08/2024 |
| **Sample Received on** | **:** 02/08/2024 |
| **Sample Analyzed & Completion** | **:** 02/08/2024 to 09/08/2024 |
| **Quantity/No. of Sample** | **:** 2 Litre In plastic carboys (each location) /2 Nos. |
| **Packing/ Seal** | **:** Packed |
| **Protocol (Purpose)** | **:** As per work order |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part 1000 Section 1060 B |
| **Sample Collected By** | **:** ERM Team |

| Sr. No. | Parameters | Unit | Result | | Consent Limit | Test Method |
|---|---|---|---|---|---|---|
| | | | Inlet | Outlet | | |
| 1. | **pH at 25 °C** | **pH-Unit** | 6.80 | 7.10 | **6.5-8.5** | **IS 3025 (Part 11): 2022** |
| 2. | **Total Suspended Solids** | **mg/L** | 85 | 29 | **30** | **IS 3025 (Part 17): 2022** |
| 3. | **BOD (3 days at 27 °C)** | **mg/L** | 78 | 18 | **20** | **IS 3025 (Part 44): 1993** |
| 4. | **Free Residual Chlorine** | **mg/L** | Nil | 0.5 | **>0.5** | **IS 3025 (Part 26): 2021** |

**Note: (1)** These results relate to the sample tested only.

**(2)** The report shall not be reproduced except in full without written approval of the laboratory.

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**CHEMIST**

**AUTHORISED SIGNATORY**
**(Haresh Ahir)**

Issue Date: 01/10/2024

**TEST REPORT**

**SEWAGE SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/SEWAGE/L&T/Rev.0-00/09-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | **:** Sewage Sample |
| **Mode Of Sampling** | **:** Grab |
| **Sample Collected On** | **:** 02/09/2024 |
| **Sample Received on** | **:** 03/09/2024 |
| **Sample Analyzed & Completion** | **:** 03/09/2024 to 10/09/2024 |
| **Quantity/No. of Sample** | **:** 2 Litre In plastic carboys (each location) /2 Nos. |
| **Packing/ Seal** | **:** Packed |
| **Protocol (Purpose)** | **:** As per work order |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part 1000 Section 1060 B |
| **Sample Collected By** | **:** ERM Team |

| Sr. No. | Parameters | Unit | Result | | Consent Limit | Test Method |
|---|---|---|---|---|---|---|
| | | | Inlet | Outlet | | |
| 1. | pH at 25 °C | pH-Unit | 6.98 | 7.08 | 6.5-8.5 | IS 3025 (Part 11): 2022 |
| 2. | Total Suspended Solids | mg/L | 75 | 20 | 30 | IS 3025 (Part 17): 2022 |
| 3. | BOD (3 days at 27 °C) | mg/L | 65 | 14 | 20 | IS 3025 (Part 44): 1993 |
| 4. | Free Residual Chlorine | mg/L | Nil | 0.5 | >0.5 | IS 3025 (Part 26): 2021 |

**Note: (1)** These results relate to the sample tested only.

**(2)** The report shall not be reproduced except in full without written approval of the laboratory.

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# Annexure -4 – Noise Monitoring Reports.

Issue Date: 11/04/2024

# TEST REPORT

## NOISE LEVEL MONITORING REPORT

## TEST REPORT NO:QF/7.8/01 D/NOISE/L&T/Rev.0-00/04-2024

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | **:** Noise Level Monitoring |
| **Date of Monitoring** | **:** 01/04/2024 |
| **Quantity/No. of Observations** | : 9 stations/18 observations |
| **Protocol (Purpose)** | **:** As per Work Order |
| **Sampling Method** | **:** Instrument's Manual & IS 9989 : 1981 Reaffirmed 2020 |
| **Noise level monitored by** | **:** ERM Team |

| Sr. No. | Location | Distance from the source | Day Time dB (A) 14:00 to 15:00 hr | Night Time dB (A) 22:00 to 23:00 hr |
|---|---|---|---|---|
| **1.** | **MC Shop** | **0.5 m** | 59 | 54 |
| **2.** | **Nr. ADM Building** | **10 m** | 56 | 52 |
| **3.** | **Jetty 2** | **10 m** | 70 | 59 |
| **4.** | **Jetty 1** | **5 m** | 66 | 56 |
| **5.** | **Ware House (Paint)** | **0.5 m** | 68 | 57 |
| **6.** | **STP** | **5 m** | 66 | 58 |
| **7.** | **Canteen** | **0.5 m** | 62 | 50 |
| **8.** | **Gate 2** | **5 m** | 65 | 54 |
| **9.** | **SHBD Shop- I** | **1 m** | 72 | 67 |
| **GPCB LIMIT** | | | **75** | **70** |

**Note: (1)** These results relate to the measurement taken at a time for particular place.

**(2)** The report shall not be reproduced except in full without written approval of the laboratory.

S. D Patel

**CHEMIST**

**AUTHORIZED SIGNATORY**
**(Haresh Ahir)**

Issue Date: 11/05/2024

# TEST REPORT

## NOISE LEVEL MONITORING REPORT

## TEST REPORT NO:QF/7.8/01 D/NOISE/L&T/Rev.0-00/05-2024

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | **:** Noise Level Monitoring |
| **Date of Monitoring** | **:** 01/05/2024 |
| **Quantity/No. of Observations** | : 9 stations/18 observations |
| **Protocol (Purpose)** | **:** As per Work Order |
| **Sampling Method** | **:** Instrument's Manual & IS 9989 : 1981 Reaffirmed 2020 |
| **Noise level monitored by** | **:** ERM Team |

| Sr. No. | Location | Distance from the source | Day Time dB (A) 14:00 to 15:00 hr | Night Time dB (A) 22:00 to 23:00 hr |
|---|---|---|---|---|
| **1.** | **MC Shop** | **0.5 m** | 57 | 55 |
| **2.** | **Nr. ADM Building** | **10 m** | 55 | 53 |
| **3.** | **Jetty 2** | **10 m** | 69 | 56 |
| **4.** | **Jetty 1** | **5 m** | 68 | 60 |
| **5.** | **Ware House (Paint)** | **0.5 m** | 66 | 59 |
| **6.** | **STP** | **5 m** | 71 | 61 |
| **7.** | **Canteen** | **0.5 m** | 62 | 53 |
| **8.** | **Gate 2** | **5 m** | 66 | 56 |
| **9.** | **SHBD Shop- I** | **1 m** | 72 | 66 |
| **GPCB LIMIT** | | | **75** | **70** |

**Note: (1)** These results relate to the measurement taken at a time for particular place.

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S. D Patel

**CHEMIST**

**AUTHORIZED SIGNATORY**
**(Haresh Ahir)**

Issue Date: 12/06/2024

# TEST REPORT

## NOISE LEVEL MONITORING REPORT

## TEST REPORT NO:QF/7.8/01 D/NOISE/L&T/Rev.0-00/06-2024

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | **:** Noise Level Monitoring |
| **Date of Monitoring** | **:** 01/06/2024 |
| **Quantity/No. of Observations** | : 9 stations/18 observations |
| **Protocol (Purpose)** | **:** As per Work Order |
| **Sampling Method** | **:** Instrument's Manual & IS 9989 : 1981 Reaffirmed 2020 |
| **Noise level monitored by** | **:** ERM Team |

| Sr. No. | Location | Distance from the source | Day Time dB (A) 14:00 to 15:00 hr | Night Time dB (A) 22:00 to 23:00 hr |
|---|---|---|---|---|
| **1.** | **MC Shop** | **0.5 m** | 60 | 58 |
| **2.** | **Nr. ADM Building** | **10 m** | 61 | 57 |
| **3.** | **Jetty 2** | **10 m** | 70 | 60 |
| **4.** | **Jetty 1** | **5 m** | 69 | 62 |
| **5.** | **Ware House (Paint)** | **0.5 m** | 70 | 59 |
| **6.** | **STP** | **5 m** | 69 | 57 |
| **7.** | **Canteen** | **0.5 m** | 58 | 56 |
| **8.** | **Gate 2** | **5 m** | 69 | 59 |
| **9.** | **SHBD Shop- I** | **1 m** | 70 | 62 |
| **GPCB LIMIT** | | | **75** | **70** |

**Note: (1)** These results relate to the measurement taken at a time for particular place.

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**CHEMIST**

**AUTHORIZED SIGNATORY**
**(Haresh Ahir)**

Issue Date: 01/08/2024

**TEST REPORT**

**NOISE LEVEL MONITORING REPORT**

**TEST REPORT NO:QF/7.8/01 D/NOISE/L&T/Rev.0-00/07-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | **:** Noise Level Monitoring |
| **Date of Monitoring** | **:** 03/07/2024 |
| **Quantity/No. of Observations** | : 9 stations/18 observations |
| **Protocol (Purpose)** | **:** As per Work Order |
| **Sampling Method** | **:** Instrument's Manual & IS 9989 : 1981 Reaffirmed 2020 |
| **Noise level monitored by** | **:** ERM Team |

| Sr. No. | Location | Distance from the source | Day Time dB (A) 14:00 to 15:00 hr | Night Time dB (A) 22:00 to 23:00 hr |
|---|---|---|---|---|
| **1.** | **MC Shop** | **0.5 m** | 68 | 54 |
| **2.** | **Nr. ADM Building** | **10 m** | 65 | 58 |
| **3.** | **Jetty 2** | **10 m** | 70 | 65 |
| **4.** | **Jetty 1** | **5 m** | 72 | 69 |
| **5.** | **Ware House (Paint)** | **0.5 m** | 69 | 66 |
| **6.** | **STP** | **5 m** | 71 | 68 |
| **7.** | **Canteen** | **0.5 m** | 68 | 55 |
| **8.** | **Gate 2** | **5 m** | 67 | 54 |
| **9.** | **SHBD Shop- I** | **1 m** | 70 | 65 |
| **GPCB LIMIT** | | | **75** | **70** |

**Note: (1)** These results relate to the measurement taken at a time for particular place.

**(2)** The report shall not be reproduced except in full without written approval of the laboratory.

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**CHEMIST**

**AUTHORIZED SIGNATORY**
**(Haresh Ahir)**

Issue Date: 02/09/2024

# TEST REPORT
## NOISE LEVEL MONITORING REPORT
## TEST REPORT NO:QF/7.8/01 D/NOISE/L&T/Rev.0-00/08-2024

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | **:** Noise Level Monitoring |
| **Date of Monitoring** | **:** 01/08/2024 |
| **Quantity/No. of Observations** | : 9 stations/18 observations |
| **Protocol (Purpose)** | **:** As per Work Order |
| **Sampling Method** | **:** Instrument's Manual & IS 9989 : 1981 Reaffirmed 2020 |
| **Noise level monitored by** | **:** ERM Team |

| Sr. No. | Location | Distance from the source | Day Time dB (A) 14:00 to 15:00 hr | Night Time dB (A) 22:00 to 23:00 hr |
|---|---|---|---|---|
| **1.** | **MC Shop** | **0.5 m** | 69 | 64 |
| **2.** | **Nr. ADM Building** | **10 m** | 65 | 58 |
| **3.** | **Jetty 2** | **10 m** | 70 | 66 |
| **4.** | **Jetty 1** | **5 m** | 69 | 65 |
| **5.** | **Ware House (Paint)** | **0.5 m** | 68 | 60 |
| **6.** | **STP** | **5 m** | 69 | 62 |
| **7.** | **Canteen** | **0.5 m** | 60 | 56 |
| **8.** | **Gate 2** | **5 m** | 68 | 59 |
| **9.** | **SHBD Shop- I** | **1 m** | 70 | 66 |
| **GPCB LIMIT** | | | **75** | **70** |

**Note: (1)** These results relate to the measurement taken at a time for particular place.
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**CHEMIST**

**AUTHORIZED SIGNATORY**
**(Haresh Ahir)**

Issue Date: 01/10/2024

# TEST REPORT
## NOISE LEVEL MONITORING REPORT
## TEST REPORT NO:QF/7.8/01 D/NOISE/L&T/Rev.0-00/09-2024

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | **:** Noise Level Monitoring |
| **Date of Monitoring** | **:** 02/09/2024 |
| **Quantity/No. of Observations** | : 9 stations/18 observations |
| **Protocol (Purpose)** | **:** As per Work Order |
| **Sampling Method** | **:** Instrument's Manual & IS 9989 : 1981 Reaffirmed 2020 |
| **Noise level monitored by** | **:** ERM Team |

| Sr. No. | Location | Distance from the source | Day Time dB (A) 14:00 to 15:00 hr | Night Time dB (A) 22:00 to 23:00 hr |
|---|---|---|---|---|
| **1.** | **MC Shop** | **0.5 m** | 64 | 58 |
| **2.** | **Nr. ADM Building** | **10 m** | 68 | 60 |
| **3.** | **Jetty 2** | **10 m** | 70 | 65 |
| **4.** | **Jetty 1** | **5 m** | 69 | 63 |
| **5.** | **Ware House (Paint)** | **0.5 m** | 66 | 59 |
| **6.** | **STP** | **5 m** | 71 | 66 |
| **7.** | **Canteen** | **0.5 m** | 65 | 58 |
| **8.** | **Gate 2** | **5 m** | 68 | 62 |
| **9.** | **SHBD Shop- I** | **1 m** | 72 | 67 |
| **GPCB LIMIT** | | | **75** | **70** |

**Note: (1)** These results relate to the measurement taken at a time for particular place.

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# Annexure -5 – Marine Water Analysis Reports.

Issue Date: 11/04/2024

**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/04-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water |
| **Sampling Location** | : Tapi River Near Narmada Cement Jetty |
| **Sample Collected on** | : 01/04/2024 |
| **Sample Received on** | : 02/04/2024 |
| **Sample Analyzed & Completion** | : 02/04/2024 to 09/04/2024 |
| **Quantity/No. of Sample** | : 2+1+1 L in plastic carboys (Each Location) /6 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part 1000 Section 1060 B |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | Low Tide | High Tide | |
| 1 | Temperature | $^0$C | 25 | 25 | IS 3025 (Part 9): 1984 (Thermometer ) |
| 2 | pH at 25 $^0$C | pH Unit | 7.99 | 8.10 | IS 3025 (Part 11): 2022 (Electrometric Method) |
| 3 | Colour | pt.co.scale | 12 | 18 | APHA 23rd Edition, (Part 2000) Section: 2120, C : 2017 (Spectrophotometric - Single Wavelength Method) |
| 4 | Total Suspended Solids | mg/L | 32 | 88 | IS 3025 (Part 17): 2022 (Gravimetric Method) |
| 5 | Total Hardness as $CaCO_3$ | mg/L | 1840 | 2216 | IS 3025 (Part 21): 2009 (EDTA Method) |
| 6 | Calcium as Ca | mg/L | 80 | 118 | IS 3025 (Part 40): 1991 (EDTA Titrimetric method) |
| 7 | Magnesium as Mg | mg/L | 399 | 467 | IS 3025 (Part 46): 1994 (Volumetric Method using EDTA) |
| 8 | Total Alkalinity as $CaCO_3$ | mg/L | 150 | 188 | IS 3025 (Part 23): 1986 ( Color Indicator Titration Method) |
| 9 | Salinity | ppt | 6.2 | 15.9 | APHA 23rd Edition- 2017, Section: 2520 |
| 10 | Sulphate as $SO_4$ | mg/L | 578 | 682 | APHA 23rd Edition, (Part 4000) Section 4500-SO4-2, E : 2017 (Turbidimetric Method) |
| 11 | Phenolic compounds as ($C_6H_5OH$) | mg/L | <0.01 | <0.01 | IS 3025 (Part 43/Section 1) : 2022 (4 -Aminoantipyrine method without Chloroform Extraction) |
| 12 | Oil and Grease | mg/L | <0.1 | <0.1 | IS 3025 (Part 39): 2021 (Partition Gravimetric Method) |
| 13 | Total Nitrogen | mg/L | 0.5 | 0.8 | IS 3025 (Part 34) : 1988 (Titrimetric Method) |
| 14 | Phosphate as $PO_4$ | mg/L | 0.3 | 0.7 | APHA 23rd Edition, (Part 4000) Section:4500-P, D: 2017 |
| 15 | BOD (3 Days at 27˚C) | mg/L | <2 | <2 | IS 3025 (Part 44) :1993 |
| 16 | Iron as Fe | mg/L | 0.3 | 0.5 | IS 3025 (Part 53): 2003 (1,10 Phenanthroline Method) |
| 17 | Copper as Cu | mg/L | 0.05 | 0.07 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 18 | Chromium as Cr | mg/L | <0.03 | <0.03 | IS 3025 (Part 52): 2003 (Diphenylcarbazide Method) |
| 19 | Zinc as Zn | mg/L | 0.2 | 0.4 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 20 | Cadmium as Cd | mg/L | <0.05 | <0.05 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 21 | Boron as B | mg/L | 0.1 | 0.1 | IS 3025 (Part 57): 2021 (Curcumin Method) |

**Note:** (1) These results relate to the sample tested only.

(2) The report shall not be reproduced except in full without written approval of the laboratory.

S. D Patel

**CHEMIST**

**AUTHORISED SIGNATORY**
**(Haresh Ahir)**

Issue Date: 11/04/2024

**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/04-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Zooplankton Analysis |
| **Sampling Location** | : Tapi River Near Narmada Cement Jetty |
| **Sample Collected on** | : 01/04/2024 |
| **Sample Received on** | : 02/04/2024 |
| **Sample Analyzed & Completion** | : 02/04/2024 to 09/04/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 578 | 490 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Protozoa | % | 82 | 77 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Rotifera | % | 10 | 11 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Nematoda | % | 6 | 6 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 5 | Copepoda | % | 2 | 6 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

**Note:** (1) These results relate to the sample tested only.

(2) The report shall not be reproduced except in full without written approval of the laboratory.

**MICROBIOLOGIST**

**AUTHORISED SIGNATORY**
**(Haresh Ahir)**

Issue Date: 11/04/2024

**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/04-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Phytoplankton Analysis |
| **Sampling Location** | : Tapi River Near Narmada Cement Jetty |
| **Sample Collected on** | : 01/04/2024 |
| **Sample Received on** | : 02/04/2024 |
| **Sample Analyzed & Completion** | : 02/04/2024 to 09/04/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 558 | 480 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Cynophyceae | % | 36 | 34 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Chlorophyena | % | 14 | 15 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Bacillariophyceae | % | 50 | 51 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

**Note:** (1) These results relate to the sample tested only.

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**MICROBIOLOGIST**

**AUTHORISED SIGNATORY**
**(Haresh Ahir)**

Issue Date: 11/04/2024

# TEST REPORT
## MARINE WATER SAMPLE ANALYSIS REPORT
## TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/04-2024

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water |
| **Sampling Location** | : Tapi River Near Jetty of L&T Ltd. |
| **Sample Collected on** | : 01/04/2024 |
| **Sample Received on** | : 02/04/2024 |
| **Sample Analyzed & Completion** | : 02/04/2024 to 09/04/2024 |
| **Quantity/No. of Sample** | : 2+1+1 L in plastic carboys (Each Location) /6 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part 1000 Section 1060 B |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | Low Tide | High Tide | |
| 1 | Temperature | $^0$C | 25 | 26 | IS 3025 (Part 9): 1984 (Thermometer ) |
| 2 | pH at 25 $^0$C | pH Unit | 8.10 | 8.25 | IS 3025 (Part 11): 2022 (Electrometric Method) |
| 3 | Colour | pt.co.scale | 14 | 22 | APHA 23rd Edition, (Part 2000) Section: 2120, C : 2017 (Spectrophotometric - Single Wavelength Method) |
| 4 | Total Suspended Solids | mg/L | 38 | 99 | IS 3025 (Part 17): 2022 (Gravimetric Method) |
| 5 | Total Hardness as $CaCO_3$ | mg/L | 1028 | 3665 | IS 3025 (Part 21): 2009 (EDTA Method) |
| 6 | Calcium as Ca | mg/L | 100 | 124 | IS 3025 (Part 40): 1991 (EDTA Titrimetric method) |
| 7 | Magnesium as Mg | mg/L | 189 | 815 | IS 3025 (Part 46): 1994 (Volumetric Method using EDTA) |
| 8 | Total Alkalinity as $CaCO_3$ | mg/L | 140 | 168 | IS 3025 (Part 23): 1986 ( Color Indicator Titration Method) |
| 9 | Salinity | ppt | 12.6 | 23.1 | APHA 23rd Edition- 2017, Section: 2520 |
| 10 | Sulphate as $SO_4$ | mg/L | 632 | 685 | APHA 23rd Edition, (Part 4000) Section 4500-SO4-2, E : 2017 (Turbidimetric Method) |
| 11 | Phenolic compounds as ($C_6H_5OH$) | mg/L | <0.01 | <0.01 | IS 3025 (Part 43/Section 1) : 2022 (4 -Aminoantipyrine method without Chloroform Extraction) |
| 12 | Oil and Grease | mg/L | <0.1 | <0.1 | IS 3025 (Part 39): 2021 (Partition Gravimetric Method) |
| 13 | Total Nitrogen | mg/L | 0.6 | 1.0 | IS 3025 (Part 34) : 1988 (Titrimetric Method) |
| 14 | Phosphate as $PO_4$ | mg/L | 0.4 | 0.9 | APHA 23rd Edition, (Part 4000) Section:4500-P, D: 2017 |
| 15 | BOD (3 Days at 27˚C) | mg/L | <2 | <2 | IS 3025 (Part 44) :1993 |
| 16 | Iron as Fe | mg/L | 0.5 | 0.7 | IS 3025 (Part 53): 2003 (1,10 Phenanthroline Method) |
| 17 | Copper as Cu | mg/L | 0.06 | 0.08 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 18 | Chromium as Cr | mg/L | <0.03 | <0.03 | IS 3025 (Part 52): 2003 (Diphenylcarbazide Method) |
| 19 | Zinc as Zn | mg/L | 0.3 | 0.6 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 20 | Cadmium as Cd | mg/L | <0.05 | <0.05 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 21 | Boron as B | mg/L | 0.1 | 0.2 | IS 3025 (Part 57): 2021 (Curcumin Method) |

**Note:** (1) These results relate to the sample tested only.
(2) The report shall not be reproduced except in full without written approval of the laboratory.

S. D. Patel

**CHEMIST**

**AUTHORISED SIGNATORY**
**(Haresh Ahir)**

Issue Date: 11/04/2024

**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/04-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Zooplankton Analysis |
| **Sampling Location** | : Tapi River Near Jetty of L&T Ltd. |
| **Sample Collected on** | : 01/04/2024 |
| **Sample Received on** | : 02/04/2024 |
| **Sample Analyzed & Completion** | : 02/04/2024 to 09/04/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 622 | 515 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Protozoa | % | 80 | 76 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Rotifera | % | 12 | 11 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Nematoda | % | 5 | 7 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 5 | Copepoda | % | 3 | 6 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

**Note:** (1) These results relate to the sample tested only.

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**(Haresh Ahir)**

Issue Date: 11/04/2024

**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/04-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Phytoplankton Analysis |
| **Sampling Location** | : Tapi River Near Jetty of L&T Ltd. |
| **Sample Collected on** | : 01/04/2024 |
| **Sample Received on** | : 02/04/2024 |
| **Sample Analyzed & Completion** | : 02/04/2024 to 09/04/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 589 | 514 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Cynophyceae | % | 34 | 35 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Chlorophyena | % | 14 | 19 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Bacillariophyceae | % | 52 | 46 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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**AUTHORISED SIGNATORY**
**(Haresh Ahir)**

Issue Date: 11/04/2024

**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/04-2023**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water |
| **Sampling Location** | : Tapi River Near Jetty of Essar Steel Ltd. |
| **Sample Collected on** | : 01/04/2024 |
| **Sample Received on** | : 02/04/2024 |
| **Sample Analyzed & Completion** | : 02/04/2024 to 09/04/2024 |
| **Quantity/No. of Sample** | : 2+1+1 L in plastic carboys (Each Location) /6 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part 1000 Section 1060 B |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | Low Tide | High Tide | |
| 1 | Temperature | $^0$C | 26 | 26 | IS 3025 (Part 9): 1984 (Thermometer ) |
| 2 | pH at 25 $^0$C | pH Unit | 8.10 | 8.22 | IS 3025 (Part 11): 2022 (Electrometric Method) |
| 3 | Colour | pt.co.scale | 12 | 18 | APHA 23rd Edition, (Part 2000) Section: 2120, C : 2017 (Spectrophotometric - Single Wavelength Method) |
| 4 | Total Suspended Solids | mg/L | 44 | 99 | IS 3025 (Part 17): 2022 (Gravimetric Method) |
| 5 | Total Hardness as $CaCO_3$ | mg/L | 1066 | 3852 | IS 3025 (Part 21): 2009 (EDTA Method) |
| 6 | Calcium as Ca | mg/L | 100 | 138 | IS 3025 (Part 40): 1991 (EDTA Titrimetric method) |
| 7 | Magnesium as Mg | mg/L | 198 | 852 | IS 3025 (Part 46): 1994 (Volumetric Method using EDTA) |
| 8 | Total Alkalinity as $CaCO_3$ | mg/L | 162 | 189 | IS 3025 (Part 23): 1986 ( Color Indicator Titration Method) |
| 9 | Salinity | ppt | 14.0 | 24.6 | APHA 23rd Edition- 2017, Section: 2520 |
| 10 | Sulphate as $SO_4$ | mg/L | 659 | 706 | APHA 23rd Edition, (Part 4000) Section 4500-SO4-2, E : 2017 (Turbidimetric Method) |
| 11 | Phenolic compounds as ($C_6H_5OH$) | mg/L | <0.01 | <0.01 | IS 3025 (Part 43/Section 1) : 2022 (4 -Aminoantipyrine method without Chloroform Extraction) |
| 12 | Oil and Grease | mg/L | <0.1 | <0.1 | IS 3025 (Part 39): 2021 (Partition Gravimetric Method) |
| 13 | Total Nitrogen | mg/L | 1.0 | 1.8 | IS 3025 (Part 34) : 1988 (Titrimetric Method) |
| 14 | Phosphate as $PO_4$ | mg/L | 1.2 | 2.0 | APHA 23rd Edition, (Part 4000) Section:4500-P, D: 2017 |
| 15 | BOD (3 Days at 27˚C) | mg/L | 2 | 3 | IS 3025 (Part 44) :1993 |
| 16 | Iron as Fe | mg/L | 0.5 | 0.9 | IS 3025 (Part 53): 2003 (1,10 Phenanthroline Method) |
| 17 | Copper as Cu | mg/L | 0.08 | 0.09 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 18 | Chromium as Cr | mg/L | <0.03 | <0.03 | IS 3025 (Part 52): 2003 (Diphenylcarbazide Method) |
| 19 | Zinc as Zn | mg/L | 0.5 | 0.9 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 20 | Cadmium as Cd | mg/L | <0.05 | <0.05 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 21 | Boron as B | mg/L | 0.1 | 0.3 | IS 3025 (Part 57): 2021 (Curcumin Method) |

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**CHEMIST**

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Issue Date: 11/04/2024

**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/04-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Zooplankton Analysis |
| **Sampling Location** | : Tapi River Near Jetty of Essar Steel Ltd. |
| **Sample Collected on** | : 01/04/2024 |
| **Sample Received on** | : 02/04/2024 |
| **Sample Analyzed & Completion** | : 02/04/2024 to 09/04/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 625 | 534 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Protozoa | % | 82 | 78 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Rotifera | % | 12 | 10 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Nematoda | % | 5 | 8 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 5 | Copepoda | % | 1 | 4 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/04-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Phytoplankton Analysis |
| **Sampling Location** | : Tapi River Near Jetty of Essar Steel Ltd. |
| **Sample Collected on** | : 01/04/2024 |
| **Sample Received on** | : 02/04/2024 |
| **Sample Analyzed & Completion** | : 02/04/2024 to 09/04/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 572 | 490 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Cynophyceae | % | 40 | 32 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Chlorophyena | % | 19 | 18 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Bacillariophyceae | % | 41 | 50 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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# TEST REPORT
## MARINE WATER SAMPLE ANALYSIS REPORT
## TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/05-2024

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water |
| **Sampling Location** | : Tapi River Near Narmada Cement Jetty |
| **Sample Collected on** | : 01/05/2024 |
| **Sample Received on** | : 02/05/2024 |
| **Sample Analyzed & Completion** | : 02/05/2024 to 08/05/2024 |
| **Quantity/No. of Sample** | : 2+1+1 L in plastic carboys (Each Location) /6 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part 1000 Section 1060 B |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | Low Tide | High Tide | |
| 1 | Temperature | $^0$C | 26 | 26 | IS 3025 (Part 9): 1984 (Thermometer ) |
| 2 | pH at 25 $^0$C | pH Unit | 8.01 | 8.26 | IS 3025 (Part 11): 2022 (Electrometric Method) |
| 3 | Colour | pt.co.scale | 14 | 20 | APHA 23rd Edition, (Part 2000) Section: 2120, C : 2017 (Spectrophotometric - Single Wavelength Method) |
| 4 | Total Suspended Solids | mg/L | 36 | 92 | IS 3025 (Part 17): 2022 (Gravimetric Method) |
| 5 | Total Hardness as $CaCO_3$ | mg/L | 1821 | 2238 | IS 3025 (Part 21): 2009 (EDTA Method) |
| 6 | Calcium as Ca | mg/L | 88 | 130 | IS 3025 (Part 40): 1991 (EDTA Titrimetric method) |
| 7 | Magnesium as Mg | mg/L | 389 | 465 | IS 3025 (Part 46): 1994 (Volumetric Method using EDTA) |
| 8 | Total Alkalinity as $CaCO_3$ | mg/L | 146 | 180 | IS 3025 (Part 23): 1986 ( Color Indicator Titration Method) |
| 9 | Salinity | ppt | 6.0 | 15.2 | APHA 23rd Edition- 2017, Section: 2520 |
| 10 | Sulphate as $SO_4$ | mg/L | 572 | 690 | APHA 23rd Edition, (Part 4000) Section 4500-SO4-2, E : 2017 (Turbidimetric Method) |
| 11 | Phenolic compounds as ($C_6H_5OH$) | mg/L | <0.01 | <0.01 | IS 3025 (Part 43/Section 1) : 2022 (4 -Aminoantipyrine method without Chloroform Extraction) |
| 12 | Oil and Grease | mg/L | <0.1 | <0.1 | IS 3025 (Part 39): 2021 (Partition Gravimetric Method) |
| 13 | Total Nitrogen | mg/L | 0.4 | 0.7 | IS 3025 (Part 34) : 1988 (Titrimetric Method) |
| 14 | Phosphate as $PO_4$ | mg/L | 0.2 | 0.6 | APHA 23rd Edition, (Part 4000) Section:4500-P, D: 2017 |
| 15 | BOD (3 Days at 27˚C) | mg/L | <2 | <2 | IS 3025 (Part 44) :1993 |
| 16 | Iron as Fe | mg/L | 0.3 | 0.6 | IS 3025 (Part 53): 2003 (1,10 Phenanthroline Method) |
| 17 | Copper as Cu | mg/L | 0.06 | 0.08 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 18 | Chromium as Cr | mg/L | <0.03 | <0.03 | IS 3025 (Part 52): 2003 (Diphenylcarbazide Method) |
| 19 | Zinc as Zn | mg/L | 0.2 | 0.3 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 20 | Cadmium as Cd | mg/L | <0.05 | <0.05 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 21 | Boron as B | mg/L | 0.1 | 0.1 | IS 3025 (Part 57): 2021 (Curcumin Method) |

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Issue Date: 11/05/2024

**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/05-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Zooplankton Analysis |
| **Sampling Location** | : Tapi River Near Narmada Cement Jetty |
| **Sample Collected on** | : 01/05/2024 |
| **Sample Received on** | : 02/05/2024 |
| **Sample Analyzed & Completion** | : 02/05/2024 to 08/05/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 582 | 486 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Protozoa | % | 80 | 75 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Rotifera | % | 12 | 13 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Nematoda | % | 5 | 8 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 5 | Copepoda | % | 3 | 4 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/05-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Phytoplankton Analysis |
| **Sampling Location** | : Tapi River Near Narmada Cement Jetty |
| **Sample Collected on** | : 01/05/2024 |
| **Sample Received on** | : 02/05/2024 |
| **Sample Analyzed & Completion** | : 02/05/2024 to 08/05/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 565 | 494 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Cynophyceae | % | 38 | 35 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Chlorophyena | % | 14 | 12 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Bacillariophyceae | % | 48 | 53 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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# TEST REPORT
## MARINE WATER SAMPLE ANALYSIS REPORT
## TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/05-2024

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water |
| **Sampling Location** | : Tapi River Near Jetty of L&T Ltd. |
| **Sample Collected on** | : 01/05/2024 |
| **Sample Received on** | : 02/05/2024 |
| **Sample Analyzed & Completion** | : 02/05/2024 to 08/05/2024 |
| **Quantity/No. of Sample** | : 2+1+1 L in plastic carboys (Each Location) /6 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part 1000 Section 1060 B |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | Low Tide | High Tide | |
| 1 | Temperature | $^0$C | 27 | 27 | IS 3025 (Part 9): 1984 (Thermometer ) |
| 2 | pH at 25 $^0$C | pH Unit | 8.14 | 8.20 | IS 3025 (Part 11): 2022 (Electrometric Method) |
| 3 | Colour | pt.co.scale | 14 | 20 | APHA 23rd Edition, (Part 2000) Section: 2120, C : 2017 (Spectrophotometric - Single Wavelength Method) |
| 4 | Total Suspended Solids | mg/L | 40 | 102 | IS 3025 (Part 17): 2022 (Gravimetric Method) |
| 5 | Total Hardness as $CaCO_3$ | mg/L | 1016 | 3650 | IS 3025 (Part 21): 2009 (EDTA Method) |
| 6 | Calcium as Ca | mg/L | 98 | 136 | IS 3025 (Part 40): 1991 (EDTA Titrimetric method) |
| 7 | Magnesium as Mg | mg/L | 187 | 804 | IS 3025 (Part 46): 1994 (Volumetric Method using EDTA) |
| 8 | Total Alkalinity as $CaCO_3$ | mg/L | 132 | 160 | IS 3025 (Part 23): 1986 ( Color Indicator Titration Method) |
| 9 | Salinity | ppt | 12.8 | 23.8 | APHA 23rd Edition- 2017, Section: 2520 |
| 10 | Sulphate as $SO_4$ | mg/L | 642 | 698 | APHA 23rd Edition, (Part 4000) Section 4500-SO4-2, E : 2017 (Turbidimetric Method) |
| 11 | Phenolic compounds as ($C_6H_5OH$) | mg/L | <0.01 | <0.01 | IS 3025 (Part 43/Section 1) : 2022 (4 -Aminoantipyrine method without Chloroform Extraction) |
| 12 | Oil and Grease | mg/L | <0.1 | <0.1 | IS 3025 (Part 39): 2021 (Partition Gravimetric Method) |
| 13 | Total Nitrogen | mg/L | 0.8 | 1.2 | IS 3025 (Part 34) : 1988 (Titrimetric Method) |
| 14 | Phosphate as $PO_4$ | mg/L | 0.5 | 0.9 | APHA 23rd Edition, (Part 4000) Section:4500-P, D: 2017 |
| 15 | BOD (3 Days at 27˚C) | mg/L | <2 | <2 | IS 3025 (Part 44) :1993 |
| 16 | Iron as Fe | mg/L | 0.4 | 0.6 | IS 3025 (Part 53): 2003 (1,10 Phenanthroline Method) |
| 17 | Copper as Cu | mg/L | 0.05 | 0.07 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 18 | Chromium as Cr | mg/L | <0.03 | <0.03 | IS 3025 (Part 52): 2003 (Diphenylcarbazide Method) |
| 19 | Zinc as Zn | mg/L | 0.3 | 0.5 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 20 | Cadmium as Cd | mg/L | <0.05 | <0.05 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 21 | Boron as B | mg/L | 0.1 | 0.1 | IS 3025 (Part 57): 2021 (Curcumin Method) |

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**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/05-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Zooplankton Analysis |
| **Sampling Location** | : Tapi River Near Jetty of L&T Ltd. |
| **Sample Collected on** | : 01/05/2024 |
| **Sample Received on** | : 02/05/2024 |
| **Sample Analyzed & Completion** | : 02/05/2024 to 08/05/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 628 | 505 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Protozoa | % | 77 | 72 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Rotifera | % | 15 | 18 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Nematoda | % | 6 | 6 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 5 | Copepoda | % | 2 | 4 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/05-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Phytoplankton Analysis |
| **Sampling Location** | : Tapi River Near Jetty of L&T Ltd. |
| **Sample Collected on** | : 01/05/2024 |
| **Sample Received on** | : 02/05/2024 |
| **Sample Analyzed & Completion** | : 02/05/2024 to 08/05/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 598 | 490 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Cynophyceae | % | 38 | 32 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Chlorophyena | % | 12 | 20 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Bacillariophyceae | % | 50 | 48 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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# TEST REPORT
## MARINE WATER SAMPLE ANALYSIS REPORT
## TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/05-2023

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water |
| **Sampling Location** | : Tapi River Near Jetty of Essar Steel Ltd. |
| **Sample Collected on** | : 01/05/2024 |
| **Sample Received on** | : 02/05/2024 |
| **Sample Analyzed & Completion** | : 02/05/2024 to 08/05/2024 |
| **Quantity/No. of Sample** | : 2+1+1 L in plastic carboys (Each Location) /6 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part 1000 Section 1060 B |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | Low Tide | High Tide | |
| 1 | Temperature | $^0$C | 27 | 27 | IS 3025 (Part 9): 1984 (Thermometer ) |
| 2 | pH at 25 $^0$C | pH Unit | 8.16 | 8.20 | IS 3025 (Part 11): 2022 (Electrometric Method) |
| 3 | Colour | pt.co.scale | 14 | 22 | APHA 23rd Edition, (Part 2000) Section: 2120, C : 2017 (Spectrophotometric - Single Wavelength Method) |
| 4 | Total Suspended Solids | mg/L | 40 | 94 | IS 3025 (Part 17): 2022 (Gravimetric Method) |
| 5 | Total Hardness as $CaCO_3$ | mg/L | 1058 | 3862 | IS 3025 (Part 21): 2009 (EDTA Method) |
| 6 | Calcium as Ca | mg/L | 94 | 130 | IS 3025 (Part 40): 1991 (EDTA Titrimetric method) |
| 7 | Magnesium as Mg | mg/L | 200 | 859 | IS 3025 (Part 46): 1994 (Volumetric Method using EDTA) |
| 8 | Total Alkalinity as $CaCO_3$ | mg/L | 150 | 181 | IS 3025 (Part 23): 1986 ( Color Indicator Titration Method) |
| 9 | Salinity | ppt | 14.5 | 25.0 | APHA 23rd Edition- 2017, Section: 2520 |
| 10 | Sulphate as $SO_4$ | mg/L | 648 | 712 | APHA 23rd Edition, (Part 4000) Section 4500-SO4-2, E : 2017 (Turbidimetric Method) |
| 11 | Phenolic compounds as ($C_6H_5OH$) | mg/L | <0.01 | <0.01 | IS 3025 (Part 43/Section 1) : 2022 (4 -Aminoantipyrine method without Chloroform Extraction) |
| 12 | Oil and Grease | mg/L | <0.1 | <0.1 | IS 3025 (Part 39): 2021 (Partition Gravimetric Method) |
| 13 | Total Nitrogen | mg/L | 1.2 | 1.5 | IS 3025 (Part 34) : 1988 (Titrimetric Method) |
| 14 | Phosphate as $PO_4$ | mg/L | 1.0 | 1.8 | APHA 23rd Edition, (Part 4000) Section:4500-P, D: 2017 |
| 15 | BOD (3 Days at 27˚C) | mg/L | 2 | 2 | IS 3025 (Part 44) :1993 |
| 16 | Iron as Fe | mg/L | 0.6 | 0.9 | IS 3025 (Part 53): 2003 (1,10 Phenanthroline Method) |
| 17 | Copper as Cu | mg/L | 0.06 | 0.08 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 18 | Chromium as Cr | mg/L | <0.03 | <0.03 | IS 3025 (Part 52): 2003 (Diphenylcarbazide Method) |
| 19 | Zinc as Zn | mg/L | 0.5 | 0.8 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 20 | Cadmium as Cd | mg/L | <0.05 | <0.05 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 21 | Boron as B | mg/L | 0.1 | 0.1 | IS 3025 (Part 57): 2021 (Curcumin Method) |

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S. D. Patel

**CHEMIST**

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**(Haresh Ahir)**

Issue Date: 11/05/2024

**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/05-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Zooplankton Analysis |
| **Sampling Location** | : Tapi River Near Jetty of Essar Steel Ltd. |
| **Sample Collected on** | : 01/05/2024 |
| **Sample Received on** | : 02/05/2024 |
| **Sample Analyzed & Completion** | : 02/05/2024 to 08/05/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 610 | 525 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Protozoa | % | 80 | 76 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Rotifera | % | 12 | 12 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Nematoda | % | 6 | 7 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 5 | Copepoda | % | 2 | 5 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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Issue Date: 11/05/2024

**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/05-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Phytoplankton Analysis |
| **Sampling Location** | : Tapi River Near Jetty of Essar Steel Ltd. |
| **Sample Collected on** | : 01/05/2024 |
| **Sample Received on** | : 02/05/2024 |
| **Sample Analyzed & Completion** | : 02/05/2024 to 08/05/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 580 | 505 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Cynophyceae | % | 38 | 34 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Chlorophyena | % | 22 | 19 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Bacillariophyceae | % | 40 | 47 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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**(Haresh Ahir)**

Issue Date: 12/06/2024

# TEST REPORT
## MARINE WATER SAMPLE ANALYSIS REPORT
## TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/06-2024

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water |
| **Sampling Location** | : Tapi River Near Narmada Cement Jetty |
| **Sample Collected on** | : 01/06/2024 |
| **Sample Received on** | : 03/06/2024 |
| **Sample Analyzed & Completion** | : 03/06/2024 to 10/06/2024 |
| **Quantity/No. of Sample** | : 2+1+1 L in plastic carboys (Each Location) /6 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part 1000 Section 1060 B |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | Low Tide | High Tide | |
| 1 | Temperature | $^0$C | 28 | 28 | IS 3025 (Part 9): 1984 (Thermometer ) |
| 2 | pH at 25 $^0$C | pH Unit | 7.97 | 8.19 | IS 3025 (Part 11): 2022 (Electrometric Method) |
| 3 | Colour | pt.co.scale | 12 | 17 | APHA 23rd Edition, (Part 2000) Section: 2120, C : 2017 (Spectrophotometric - Single Wavelength Method) |
| 4 | Total Suspended Solids | mg/L | 39 | 85 | IS 3025 (Part 17): 2022 (Gravimetric Method) |
| 5 | Total Hardness as $CaCO_3$ | mg/L | 1830 | 2220 | IS 3025 (Part 21): 2009 (EDTA Method) |
| 6 | Calcium as Ca | mg/L | 84 | 124 | IS 3025 (Part 40): 1991 (EDTA Titrimetric method) |
| 7 | Magnesium as Mg | mg/L | 393 | 464 | IS 3025 (Part 46): 1994 (Volumetric Method using EDTA) |
| 8 | Total Alkalinity as $CaCO_3$ | mg/L | 142 | 182 | IS 3025 (Part 23): 1986 ( Color Indicator Titration Method) |
| 9 | Salinity | ppt | 6.3 | 15.6 | APHA 23rd Edition- 2017, Section: 2520 |
| 10 | Sulphate as $SO_4$ | mg/L | 565 | 683 | APHA 23rd Edition, (Part 4000) Section 4500-SO4-2, E : 2017 (Turbidimetric Method) |
| 11 | Phenolic compounds as ($C_6H_5OH$) | mg/L | <0.01 | <0.01 | IS 3025 (Part 43/Section 1) : 2022 (4 -Aminoantipyrine method without Chloroform Extraction) |
| 12 | Oil and Grease | mg/L | <0.1 | <0.1 | IS 3025 (Part 39): 2021 (Partition Gravimetric Method) |
| 13 | Total Nitrogen | mg/L | 0.5 | 0.6 | IS 3025 (Part 34) : 1988 (Titrimetric Method) |
| 14 | Phosphate as $PO_4$ | mg/L | 0.1 | 0.4 | APHA 23rd Edition, (Part 4000) Section:4500-P, D: 2017 |
| 15 | BOD (3 Days at 27˚C) | mg/L | <2 | <2 | IS 3025 (Part 44) :1993 |
| 16 | Iron as Fe | mg/L | 0.2 | 0.5 | IS 3025 (Part 53): 2003 (1,10 Phenanthroline Method) |
| 17 | Copper as Cu | mg/L | 0.05 | 0.06 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 18 | Chromium as Cr | mg/L | <0.03 | <0.03 | IS 3025 (Part 52): 2003 (Diphenylcarbazide Method) |
| 19 | Zinc as Zn | mg/L | 0.3 | 0.4 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 20 | Cadmium as Cd | mg/L | <0.05 | <0.05 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 21 | Boron as B | mg/L | 0.1 | 0.1 | IS 3025 (Part 57): 2021 (Curcumin Method) |

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Issue Date: 12/06/2024

**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/06-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Zooplankton Analysis |
| **Sampling Location** | : Tapi River Near Narmada Cement Jetty |
| **Sample Collected on** | : 01/06/2024 |
| **Sample Received on** | : 03/06/2024 |
| **Sample Analyzed & Completion** | : 03/06/2024 to 10/06/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 574 | 482 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Protozoa | % | 78 | 72 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Rotifera | % | 13 | 15 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Nematoda | % | 7 | 9 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 5 | Copepoda | % | 2 | 4 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/06-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Phytoplankton Analysis |
| **Sampling Location** | : Tapi River Near Narmada Cement Jetty |
| **Sample Collected on** | : 01/06/2024 |
| **Sample Received on** | : 03/06/2024 |
| **Sample Analyzed & Completion** | : 03/06/2024 to 10/06/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 562 | 491 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Cynophyceae | % | 35 | 33 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Chlorophyena | % | 12 | 15 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Bacillariophyceae | % | 53 | 52 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/06-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water |
| **Sampling Location** | : Tapi River Near Jetty of L&T Ltd. |
| **Sample Collected on** | : 01/06/2024 |
| **Sample Received on** | : 03/06/2024 |
| **Sample Analyzed & Completion** | : 03/06/2024 to 10/06/2024 |
| **Quantity/No. of Sample** | : 2+1+1 L in plastic carboys (Each Location) /6 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part 1000 Section 1060 B |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | Low Tide | High Tide | |
| 1 | Temperature | $^0$C | 28 | 28 | IS 3025 (Part 9): 1984 (Thermometer ) |
| 2 | pH at 25 $^0$C | pH Unit | 8.08 | 8.23 | IS 3025 (Part 11): 2022 (Electrometric Method) |
| 3 | Colour | pt.co.scale | 13 | 18 | APHA 23rd Edition, (Part 2000) Section: 2120, C : 2017 (Spectrophotometric - Single Wavelength Method) |
| 4 | Total Suspended Solids | mg/L | 36 | 97 | IS 3025 (Part 17): 2022 (Gravimetric Method) |
| 5 | Total Hardness as $CaCO_3$ | mg/L | 1030 | 3620 | IS 3025 (Part 21): 2009 (EDTA Method) |
| 6 | Calcium as Ca | mg/L | 100 | 140 | IS 3025 (Part 40): 1991 (EDTA Titrimetric method) |
| 7 | Magnesium as Mg | mg/L | 189 | 794 | IS 3025 (Part 46): 1994 (Volumetric Method using EDTA) |
| 8 | Total Alkalinity as $CaCO_3$ | mg/L | 136 | 164 | IS 3025 (Part 23): 1986 ( Color Indicator Titration Method) |
| 9 | Salinity | ppt | 12.4 | 23.3 | APHA 23rd Edition- 2017, Section: 2520 |
| 10 | Sulphate as $SO_4$ | mg/L | 636 | 690 | APHA 23rd Edition, (Part 4000) Section 4500-SO4-2, E : 2017 (Turbidimetric Method) |
| 11 | Phenolic compounds as ($C_6H_5OH$) | mg/L | <0.01 | <0.01 | IS 3025 (Part 43/Section 1) : 2022 (4 -Aminoantipyrine method without Chloroform Extraction) |
| 12 | Oil and Grease | mg/L | <0.1 | <0.1 | IS 3025 (Part 39): 2021 (Partition Gravimetric Method) |
| 13 | Total Nitrogen | mg/L | 0.7 | 1.0 | IS 3025 (Part 34) : 1988 (Titrimetric Method) |
| 14 | Phosphate as $PO_4$ | mg/L | 0.3 | 0.7 | APHA 23rd Edition, (Part 4000) Section:4500-P, D: 2017 |
| 15 | BOD (3 Days at 27˚C) | mg/L | <2 | <2 | IS 3025 (Part 44) :1993 |
| 16 | Iron as Fe | mg/L | 0.3 | 0.5 | IS 3025 (Part 53): 2003 (1,10 Phenanthroline Method) |
| 17 | Copper as Cu | mg/L | 0.05 | 0.07 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 18 | Chromium as Cr | mg/L | <0.03 | <0.03 | IS 3025 (Part 52): 2003 (Diphenylcarbazide Method) |
| 19 | Zinc as Zn | mg/L | 0.2 | 0.4 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 20 | Cadmium as Cd | mg/L | <0.05 | <0.05 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 21 | Boron as B | mg/L | 0.1 | 0.1 | IS 3025 (Part 57): 2021 (Curcumin Method) |

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Issue Date: 12/06/2024

**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/06-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Zooplankton Analysis |
| **Sampling Location** | : Tapi River Near Jetty of L&T Ltd. |
| **Sample Collected on** | : 01/06/2024 |
| **Sample Received on** | : 03/06/2024 |
| **Sample Analyzed & Completion** | : 03/06/2024 to 10/06/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 620 | 510 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Protozoa | % | 79 | 74 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Rotifera | % | 13 | 16 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Nematoda | % | 5 | 6 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 5 | Copepoda | % | 3 | 4 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/06-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Phytoplankton Analysis |
| **Sampling Location** | : Tapi River Near Jetty of L&T Ltd. |
| **Sample Collected on** | : 01/06/2024 |
| **Sample Received on** | : 03/06/2024 |
| **Sample Analyzed & Completion** | : 03/06/2024 to 10/06/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 585 | 482 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Cynophyceae | % | 35 | 30 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Chlorophyena | % | 11 | 19 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Bacillariophyceae | % | 54 | 51 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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Issue Date: 12/06/2024

# TEST REPORT
## MARINE WATER SAMPLE ANALYSIS REPORT
## TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/06-2023

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water |
| **Sampling Location** | : Tapi River Near Jetty of Essar Steel Ltd. |
| **Sample Collected on** | : 01/06/2024 |
| **Sample Received on** | : 03/06/2024 |
| **Sample Analyzed & Completion** | : 03/06/2024 to 10/06/2024 |
| **Quantity/No. of Sample** | : 2+1+1 L in plastic carboys (Each Location) /6 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part 1000 Section 1060 B |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | Low Tide | High Tide | |
| 1 | Temperature | $^0$C | 27 | 28 | IS 3025 (Part 9): 1984 (Thermometer ) |
| 2 | pH at 25 $^0$C | pH Unit | 8.13 | 8.23 | IS 3025 (Part 11): 2022 (Electrometric Method) |
| 3 | Colour | pt.co.scale | 12 | 19 | APHA 23rd Edition, (Part 2000) Section: 2120, C : 2017 (Spectrophotometric - Single Wavelength Method) |
| 4 | Total Suspended Solids | mg/L | 42 | 91 | IS 3025 (Part 17): 2022 (Gravimetric Method) |
| 5 | Total Hardness as $CaCO_3$ | mg/L | 1070 | 3840 | IS 3025 (Part 21): 2009 (EDTA Method) |
| 6 | Calcium as Ca | mg/L | 96 | 140 | IS 3025 (Part 40): 1991 (EDTA Titrimetric method) |
| 7 | Magnesium as Mg | mg/L | 201 | 848 | IS 3025 (Part 46): 1994 (Volumetric Method using EDTA) |
| 8 | Total Alkalinity as $CaCO_3$ | mg/L | 144 | 185 | IS 3025 (Part 23): 1986 ( Color Indicator Titration Method) |
| 9 | Salinity | ppt | 14.1 | 24.5 | APHA 23rd Edition- 2017, Section: 2520 |
| 10 | Sulphate as $SO_4$ | mg/L | 640 | 703 | APHA 23rd Edition, (Part 4000) Section 4500-SO4-2, E : 2017 (Turbidimetric Method) |
| 11 | Phenolic compounds as ($C_6H_5OH$) | mg/L | <0.01 | <0.01 | IS 3025 (Part 43/Section 1) : 2022 (4 -Aminoantipyrine method without Chloroform Extraction) |
| 12 | Oil and Grease | mg/L | <0.1 | <0.1 | IS 3025 (Part 39): 2021 (Partition Gravimetric Method) |
| 13 | Total Nitrogen | mg/L | 1.1 | 1.3 | IS 3025 (Part 34) : 1988 (Titrimetric Method) |
| 14 | Phosphate as $PO_4$ | mg/L | 1.2 | 1.6 | APHA 23rd Edition, (Part 4000) Section:4500-P, D: 2017 |
| 15 | BOD (3 Days at 27˚C) | mg/L | 2 | 3 | IS 3025 (Part 44) :1993 |
| 16 | Iron as Fe | mg/L | 0.5 | 0.8 | IS 3025 (Part 53): 2003 (1,10 Phenanthroline Method) |
| 17 | Copper as Cu | mg/L | 0.07 | 0.09 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 18 | Chromium as Cr | mg/L | <0.03 | <0.03 | IS 3025 (Part 52): 2003 (Diphenylcarbazide Method) |
| 19 | Zinc as Zn | mg/L | 0.4 | 0.9 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 20 | Cadmium as Cd | mg/L | <0.05 | <0.05 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 21 | Boron as B | mg/L | 0.1 | 0.1 | IS 3025 (Part 57): 2021 (Curcumin Method) |

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S. D Patel

**CHEMIST**

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**(Haresh Ahir)**

Issue Date: 12/06/2024

**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/06-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Zooplankton Analysis |
| **Sampling Location** | : Tapi River Near Jetty of Essar Steel Ltd. |
| **Sample Collected on** | : 01/06/2024 |
| **Sample Received on** | : 03/06/2024 |
| **Sample Analyzed & Completion** | : 03/06/2024 to 10/06/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 622 | 538 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Protozoa | % | 83 | 80 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Rotifera | % | 10 | 11 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Nematoda | % | 5 | 6 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 5 | Copepoda | % | 2 | 3 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/06-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Phytoplankton Analysis |
| **Sampling Location** | : Tapi River Near Jetty of Essar Steel Ltd. |
| **Sample Collected on** | : 01/06/2024 |
| **Sample Received on** | : 03/06/2024 |
| **Sample Analyzed & Completion** | : 03/06/2024 to 10/06/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 565 | 492 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Cynophyceae | % | 41 | 36 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Chlorophyena | % | 17 | 15 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Bacillariophyceae | % | 42 | 49 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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**(Haresh Ahir)**

Issue Date: 01/08/2024

# TEST REPORT
## MARINE WATER SAMPLE ANALYSIS REPORT
## TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/07-2024

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water |
| **Sampling Location** | : Tapi River Near Narmada Cement Jetty |
| **Sample Collected on** | **:** 03/07/2024 |
| **Sample Received on** | **:** 04/07/2024 |
| **Sample Analyzed & Completion** | **:** 04/07/2024 to 11/07/2024 |
| **Quantity/No. of Sample** | : 2+1+1 L in plastic carboys (Each Location) /6 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part 1000 Section 1060 B |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | Low Tide | High Tide | |
| 1 | Temperature | $^0$C | 24 | 24 | IS 3025 (Part 9): 1984 (Thermometer ) |
| 2 | pH at 25 $^0$C | pH Unit | 7.98 | 7.91 | IS 3025 (Part 11): 2022 (Electrometric Method) |
| 3 | Colour | pt.co.scale | 10 | 13 | APHA 23rd Edition, (Part 2000) Section: 2120, C : 2017 (Spectrophotometric - Single Wavelength Method) |
| 4 | Total Suspended Solids | mg/L | 42 | 80 | IS 3025 (Part 17): 2022 (Gravimetric Method) |
| 5 | Total Hardness as $CaCO_3$ | mg/L | 1790 | 2100 | IS 3025 (Part 21): 2009 (EDTA Method) |
| 6 | Calcium as Ca | mg/L | 68 | 80 | IS 3025 (Part 40): 1991 (EDTA Titrimetric method) |
| 7 | Magnesium as Mg | mg/L | 394 | 462 | IS 3025 (Part 46): 1994 (Volumetric Method using EDTA) |
| 8 | Total Alkalinity as $CaCO_3$ | mg/L | 155 | 165 | IS 3025 (Part 23): 1986 ( Color Indicator Titration Method) |
| 9 | Salinity | ppt | 8.3 | 14 | APHA 23rd Edition- 2017, Section: 2520 |
| 10 | Sulphate as $SO_4$ | mg/L | 582 | 656 | APHA 23rd Edition, (Part 4000) Section 4500-SO4-2, E : 2017 (Turbidimetric Method) |
| 11 | Phenolic compounds as ($C_6H_5OH$) | mg/L | <0.01 | <0.01 | IS 3025 (Part 43/Section 1) : 2022 (4 -Aminoantipyrine method without Chloroform Extraction) |
| 12 | Oil and Grease | mg/L | <0.1 | <0.1 | IS 3025 (Part 39): 2021 (Partition Gravimetric Method) |
| 13 | Total Nitrogen | mg/L | 0.6 | 0.5 | IS 3025 (Part 34) : 1988 (Titrimetric Method) |
| 14 | Phosphate as $PO_4$ | mg/L | 0.4 | 0.42 | APHA 23rd Edition, (Part 4000) Section:4500-P, D: 2017 |
| 15 | BOD (3 Days at 27˚C) | mg/L | 3.1 | 2.8 | IS 3025 (Part 44) :1993 |
| 16 | Iron as Fe | mg/L | 0.3 | 0.4 | IS 3025 (Part 53): 2003 (1,10 Phenanthroline Method) |
| 17 | Copper as Cu | mg/L | 0.07 | 0.08 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 18 | Chromium as Cr | mg/L | <0.03 | <0.03 | IS 3025 (Part 52): 2003 (Diphenylcarbazide Method) |
| 19 | Zinc as Zn | mg/L | 0.4 | 0.3 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 20 | Cadmium as Cd | mg/L | <0.05 | <0.05 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 21 | Boron as B | mg/L | 0.1 | 0.1 | IS 3025 (Part 57): 2021 (Curcumin Method) |

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Issue Date: 01/08/2024

**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/07-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Zooplankton Analysis |
| **Sampling Location** | : Tapi River Near Narmada Cement Jetty |
| **Sample Collected on** | **:** 03/07/2024 |
| **Sample Received on** | **:** 04/07/2024 |
| **Sample Analyzed & Completion** | **:** 04/07/2024 to 11/07/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 580 | 450 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Protozoa | % | 72 | 65 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Rotifera | % | 18 | 17 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Nematoda | % | 6 | 5 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 5 | Copepoda | % | 4 | 13 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/07-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Phytoplankton Analysis |
| **Sampling Location** | : Tapi River Near Narmada Cement Jetty |
| **Sample Collected on** | **:** 03/07/2024 |
| **Sample Received on** | **:** 04/07/2024 |
| **Sample Analyzed & Completion** | **:** 04/07/2024 to 11/07/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 470 | 390 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Cynophyceae | % | 25 | 20 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Chlorophyena | % | 17 | 27 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Bacillariophyceae | % | 58 | 53 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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# TEST REPORT
## MARINE WATER SAMPLE ANALYSIS REPORT
## TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/07-2024

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water |
| **Sampling Location** | : Tapi River Near Jetty of L&T Ltd. |
| **Sample Collected on** | **:** 03/07/2024 |
| **Sample Received on** | **:** 04/07/2024 |
| **Sample Analyzed & Completion** | **:** 04/07/2024 to 11/07/2024 |
| **Quantity/No. of Sample** | : 2+1+1 L in plastic carboys (Each Location) /6 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part 1000 Section 1060 B |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | Low Tide | High Tide | |
| 1 | Temperature | $^0$C | 25 | 25 | IS 3025 (Part 9): 1984 (Thermometer ) |
| 2 | pH at 25 $^0$C | pH Unit | 7.99 | 8.07 | IS 3025 (Part 11): 2022 (Electrometric Method) |
| 3 | Colour | pt.co.scale | 14 | 19 | APHA 23rd Edition, (Part 2000) Section: 2120, C : 2017 (Spectrophotometric - Single Wavelength Method) |
| 4 | Total Suspended Solids | mg/L | 41 | 90 | IS 3025 (Part 17): 2022 (Gravimetric Method) |
| 5 | Total Hardness as $CaCO_3$ | mg/L | 1110 | 3580 | IS 3025 (Part 21): 2009 (EDTA Method) |
| 6 | Calcium as Ca | mg/L | 92 | 120 | IS 3025 (Part 40): 1991 (EDTA Titrimetric method) |
| 7 | Magnesium as Mg | mg/L | 214 | 797 | IS 3025 (Part 46): 1994 (Volumetric Method using EDTA) |
| 8 | Total Alkalinity as $CaCO_3$ | mg/L | 157 | 148 | IS 3025 (Part 23): 1986 ( Color Indicator Titration Method) |
| 9 | Salinity | ppt | 10.8 | 21.3 | APHA 23rd Edition- 2017, Section: 2520 |
| 10 | Sulphate as $SO_4$ | mg/L | 636 | 660 | APHA 23rd Edition, (Part 4000) Section 4500-SO4-2, E : 2017 (Turbidimetric Method) |
| 11 | Phenolic compounds as ($C_6H_5OH$) | mg/L | <0.01 | <0.01 | IS 3025 (Part 43/Section 1) : 2022 (4 -Aminoantipyrine method without Chloroform Extraction) |
| 12 | Oil and Grease | mg/L | <0.1 | <0.1 | IS 3025 (Part 39): 2021 (Partition Gravimetric Method) |
| 13 | Total Nitrogen | mg/L | 0.6 | 0.5 | IS 3025 (Part 34) : 1988 (Titrimetric Method) |
| 14 | Phosphate as $PO_4$ | mg/L | 0.3 | 0.38 | APHA 23rd Edition, (Part 4000) Section:4500-P, D: 2017 |
| 15 | BOD (3 Days at 27˚C) | mg/L | 2.8 | 2.1 | IS 3025 (Part 44) :1993 |
| 16 | Iron as Fe | mg/L | 0.5 | 0.4 | IS 3025 (Part 53): 2003 (1,10 Phenanthroline Method) |
| 17 | Copper as Cu | mg/L | 0.05 | 0.06 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 18 | Chromium as Cr | mg/L | <0.03 | <0.03 | IS 3025 (Part 52): 2003 (Diphenylcarbazide Method) |
| 19 | Zinc as Zn | mg/L | 0.5 | 0.4 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 20 | Cadmium as Cd | mg/L | <0.05 | <0.05 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 21 | Boron as B | mg/L | 0.1 | 0.2 | IS 3025 (Part 57): 2021 (Curcumin Method) |

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Issue Date: 01/08/2024

**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/07-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Zooplankton Analysis |
| **Sampling Location** | : Tapi River Near Jetty of L&T Ltd. |
| **Sample Collected on** | **:** 03/07/2024 |
| **Sample Received on** | **:** 04/07/2024 |
| **Sample Analyzed & Completion** | **:** 04/07/2024 to 11/07/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 552 | 490 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Protozoa | % | 72 | 67 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Rotifera | % | 18 | 20 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Nematoda | % | 7 | 5 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 5 | Copepoda | % | 3 | 8 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/07-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Phytoplankton Analysis |
| **Sampling Location** | : Tapi River Near Jetty of L&T Ltd. |
| **Sample Collected on** | **:** 03/07/2024 |
| **Sample Received on** | **:** 04/07/2024 |
| **Sample Analyzed & Completion** | **:** 04/07/2024 to 11/07/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 515 | 480 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Cynophyceae | % | 33 | 30 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Chlorophyena | % | 15 | 17 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Bacillariophyceae | % | 52 | 53 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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# TEST REPORT
## MARINE WATER SAMPLE ANALYSIS REPORT
## TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/07-2024

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water |
| **Sampling Location** | : Tapi River Near Jetty of ArcelorMittal Nippon Steel India Limited (AMNS) |
| **Sample Collected on** | **:** 03/07/2024 |
| **Sample Received on** | **:** 04/07/2024 |
| **Sample Analyzed & Completion** | **:** 04/07/2024 to 11/07/2024 |
| **Quantity/No. of Sample** | : 2+1+1 L in plastic carboys (Each Location) /6 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part 1000 Section 1060 B |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | Low Tide | High Tide | |
| 1 | Temperature | $^0$C | 24 | 25 | IS 3025 (Part 9): 1984 (Thermometer ) |
| 2 | pH at 25 $^0$C | pH Unit | 8.09 | 8.11 | IS 3025 (Part 11): 2022 (Electrometric Method) |
| 3 | Colour | pt.co.scale | 12 | 14 | APHA 23rd Edition, (Part 2000) Section: 2120, C : 2017 (Spectrophotometric - Single Wavelength Method) |
| 4 | Total Suspended Solids | mg/L | 45 | 84 | IS 3025 (Part 17): 2022 (Gravimetric Method) |
| 5 | Total Hardness as $CaCO_3$ | mg/L | 1120 | 3880 | IS 3025 (Part 21): 2009 (EDTA Method) |
| 6 | Calcium as Ca | mg/L | 108 | 136 | IS 3025 (Part 40): 1991 (EDTA Titrimetric method) |
| 7 | Magnesium as Mg | mg/L | 207 | 860 | IS 3025 (Part 46): 1994 (Volumetric Method using EDTA) |
| 8 | Total Alkalinity as $CaCO_3$ | mg/L | 151 | 163 | IS 3025 (Part 23): 1986 ( Color Indicator Titration Method) |
| 9 | Salinity | ppt | 14.3 | 25.1 | APHA 23rd Edition- 2017, Section: 2520 |
| 10 | Sulphate as $SO_4$ | mg/L | 641 | 662 | APHA 23rd Edition, (Part 4000) Section 4500-SO4-2, E : 2017 (Turbidimetric Method) |
| 11 | Phenolic compounds as ($C_6H_5OH$) | mg/L | <0.01 | <0.01 | IS 3025 (Part 43/Section 1) : 2022 (4 -Aminoantipyrine method without Chloroform Extraction) |
| 12 | Oil and Grease | mg/L | <0.1 | <0.1 | IS 3025 (Part 39): 2021 (Partition Gravimetric Method) |
| 13 | Total Nitrogen | mg/L | 0.6 | 0.7 | IS 3025 (Part 34) : 1988 (Titrimetric Method) |
| 14 | Phosphate as $PO_4$ | mg/L | 0.4 | 0.31 | APHA 23rd Edition, (Part 4000) Section:4500-P, D: 2017 |
| 15 | BOD (3 Days at 27˚C) | mg/L | 3 | 2 | IS 3025 (Part 44) :1993 |
| 16 | Iron as Fe | mg/L | 0.3 | 0.4 | IS 3025 (Part 53): 2003 (1,10 Phenanthroline Method) |
| 17 | Copper as Cu | mg/L | 0.08 | 0.06 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 18 | Chromium as Cr | mg/L | <0.03 | <0.03 | IS 3025 (Part 52): 2003 (Diphenylcarbazide Method) |
| 19 | Zinc as Zn | mg/L | 0.5 | 0.4 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 20 | Cadmium as Cd | mg/L | <0.05 | <0.05 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 21 | Boron as B | mg/L | 0.12 | 0.14 | IS 3025 (Part 57): 2021 (Curcumin Method) |

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S. D. Patel

**CHEMIST**

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**(Haresh Ahir)**

Issue Date: 01/08/2024

**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/07-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Zooplankton Analysis |
| **Sampling Location** | : Tapi River Near Jetty of ArcelorMittal Nippon Steel India Limited (AMNS) |
| **Sample Collected on** | **:** 03/07/2024 |
| **Sample Received on** | **:** 04/07/2024 |
| **Sample Analyzed & Completion** | **:** 04/07/2024 to 11/07/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 550 | 471 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Protozoa | % | 78 | 66 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Rotifera | % | 15 | 19 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Nematoda | % | 4 | 8 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 5 | Copepoda | % | 3 | 7 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/07-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Phytoplankton Analysis |
| **Sampling Location** | : Tapi River Near Jetty of ArcelorMittal Nippon Steel India Limited (AMNS) |
| **Sample Collected on** | **:** 03/07/2024 |
| **Sample Received on** | **:** 04/07/2024 |
| **Sample Analyzed & Completion** | **:** 04/07/2024 to 11/07/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 523 | 497 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Cynophyceae | % | 34 | 32 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Chlorophyena | % | 21 | 25 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Bacillariophyceae | % | 45 | 43 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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Issue Date: 02/09/2024

**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/08-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water |
| **Sampling Location** | : Tapi River Near Narmada Cement Jetty |
| **Sample Collected on** | **:** 01/08/2024 |
| **Sample Received on** | **:** 02/08/2024 |
| **Sample Analyzed & Completion** | **:** 02/08/2024 to 09/08/2024 |
| **Quantity/No. of Sample** | : 2+1+1 L in plastic carboys (Each Location) /6 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part 1000 Section 1060 B |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | Low Tide | High Tide | |
| 1 | Temperature | $^0$C | 24 | 25 | IS 3025 (Part 9): 1984 (Thermometer ) |
| 2 | pH at 25 $^0$C | pH Unit | 7.92 | 7.99 | IS 3025 (Part 11): 2022 (Electrometric Method) |
| 3 | Colour | pt.co.scale | 11 | 15 | APHA 23rd Edition, (Part 2000) Section: 2120, C : 2017 (Spectrophotometric - Single Wavelength Method) |
| 4 | Total Suspended Solids | mg/L | 34 | 82 | IS 3025 (Part 17): 2022 (Gravimetric Method) |
| 5 | Total Hardness as $CaCO_3$ | mg/L | 1790 | 2210 | IS 3025 (Part 21): 2009 (EDTA Method) |
| 6 | Calcium as Ca | mg/L | 84 | 112 | IS 3025 (Part 40): 1991 (EDTA Titrimetric method) |
| 7 | Magnesium as Mg | mg/L | 384 | 467 | IS 3025 (Part 46): 1994 (Volumetric Method using EDTA) |
| 8 | Total Alkalinity as $CaCO_3$ | mg/L | 160 | 175 | IS 3025 (Part 23): 1986 ( Color Indicator Titration Method) |
| 9 | Salinity | ppt | 8.5 | 13.4 | APHA 23rd Edition- 2017, Section: 2520 |
| 10 | Sulphate as $SO_4$ | mg/L | 570 | 642 | APHA 23rd Edition, (Part 4000) Section 4500-SO4-2, E : 2017 (Turbidimetric Method) |
| 11 | Phenolic compounds as ($C_6H_5OH$) | mg/L | <0.01 | <0.01 | IS 3025 (Part 43/Section 1) : 2022 (4 -Aminoantipyrine method without Chloroform Extraction) |
| 12 | Oil and Grease | mg/L | <0.1 | <0.1 | IS 3025 (Part 39): 2021 (Partition Gravimetric Method) |
| 13 | Total Nitrogen | mg/L | 0.6 | 0.7 | IS 3025 (Part 34) : 1988 (Titrimetric Method) |
| 14 | Phosphate as $PO_4$ | mg/L | 0.44 | 0.51 | APHA 23rd Edition, (Part 4000) Section:4500-P, D: 2017 |
| 15 | BOD (3 Days at 27˚C) | mg/L | 3.1 | 2.5 | IS 3025 (Part 44) :1993 |
| 16 | Iron as Fe | mg/L | 0.4 | 0.52 | IS 3025 (Part 53): 2003 (1,10 Phenanthroline Method) |
| 17 | Copper as Cu | mg/L | 0.06 | 0.07 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 18 | Chromium as Cr | mg/L | <0.03 | <0.03 | IS 3025 (Part 52): 2003 (Diphenylcarbazide Method) |
| 19 | Zinc as Zn | mg/L | 0.4 | 0.35 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 20 | Cadmium as Cd | mg/L | <0.05 | <0.05 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 21 | Boron as B | mg/L | 0.13 | 0.11 | IS 3025 (Part 57): 2021 (Curcumin Method) |

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Issue Date: 02/09/2024

**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/08-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Zooplankton Analysis |
| **Sampling Location** | : Tapi River Near Narmada Cement Jetty |
| **Sample Collected on** | **:** 01/08/2024 |
| **Sample Received on** | **:** 02/08/2024 |
| **Sample Analyzed & Completion** | **:** 02/08/2024 to 09/08/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 538 | 496 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Protozoa | % | 79 | 67 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Rotifera | % | 11 | 18 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Nematoda | % | 6 | 5 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 5 | Copepoda | % | 4 | 10 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/08-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Phytoplankton Analysis |
| **Sampling Location** | : Tapi River Near Narmada Cement Jetty |
| **Sample Collected on** | **:** 01/08/2024 |
| **Sample Received on** | **:** 02/08/2024 |
| **Sample Analyzed & Completion** | **:** 02/08/2024 to 09/08/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 515 | 450 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Cynophyceae | % | 36 | 31 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Chlorophyena | % | 15 | 18 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Bacillariophyceae | % | 49 | 51 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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# TEST REPORT
## MARINE WATER SAMPLE ANALYSIS REPORT
## TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/08-2024

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water |
| **Sampling Location** | : Tapi River Near Jetty of L&T Ltd. |
| **Sample Collected on** | **:** 01/08/2024 |
| **Sample Received on** | **:** 02/08/2024 |
| **Sample Analyzed & Completion** | **:** 02/08/2024 to 09/08/2024 |
| **Quantity/No. of Sample** | : 2+1+1 L in plastic carboys (Each Location) /6 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part 1000 Section 1060 B |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | Low Tide | High Tide | |
| 1 | Temperature | $^0$C | 25 | 25 | IS 3025 (Part 9): 1984 (Thermometer ) |
| 2 | pH at 25 $^0$C | pH Unit | 8.04 | 8.13 | IS 3025 (Part 11): 2022 (Electrometric Method) |
| 3 | Colour | pt.co.scale | 12 | 20 | APHA 23rd Edition, (Part 2000) Section: 2120, C : 2017 (Spectrophotometric - Single Wavelength Method) |
| 4 | Total Suspended Solids | mg/L | 31 | 92 | IS 3025 (Part 17): 2022 (Gravimetric Method) |
| 5 | Total Hardness as $CaCO_3$ | mg/L | 1050 | 3660 | IS 3025 (Part 21): 2009 (EDTA Method) |
| 6 | Calcium as Ca | mg/L | 92 | 128 | IS 3025 (Part 40): 1991 (EDTA Titrimetric method) |
| 7 | Magnesium as Mg | mg/L | 200 | 812 | IS 3025 (Part 46): 1994 (Volumetric Method using EDTA) |
| 8 | Total Alkalinity as $CaCO_3$ | mg/L | 151 | 157 | IS 3025 (Part 23): 1986 ( Color Indicator Titration Method) |
| 9 | Salinity | ppt | 14.5 | 22.3 | APHA 23rd Edition- 2017, Section: 2520 |
| 10 | Sulphate as $SO_4$ | mg/L | 640 | 665 | APHA 23rd Edition, (Part 4000) Section 4500-SO4-2, E : 2017 (Turbidimetric Method) |
| 11 | Phenolic compounds as ($C_6H_5OH$) | mg/L | <0.01 | <0.01 | IS 3025 (Part 43/Section 1) : 2022 (4 -Aminoantipyrine method without Chloroform Extraction) |
| 12 | Oil and Grease | mg/L | <0.1 | <0.1 | IS 3025 (Part 39): 2021 (Partition Gravimetric Method) |
| 13 | Total Nitrogen | mg/L | 0.7 | 0.85 | IS 3025 (Part 34) : 1988 (Titrimetric Method) |
| 14 | Phosphate as $PO_4$ | mg/L | 0.36 | 0.45 | APHA 23rd Edition, (Part 4000) Section:4500-P, D: 2017 |
| 15 | BOD (3 Days at 27˚C) | mg/L | 3.2 | 2.6 | IS 3025 (Part 44) :1993 |
| 16 | Iron as Fe | mg/L | 0.48 | 0.54 | IS 3025 (Part 53): 2003 (1,10 Phenanthroline Method) |
| 17 | Copper as Cu | mg/L | 0.07 | 0.08 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 18 | Chromium as Cr | mg/L | <0.03 | <0.03 | IS 3025 (Part 52): 2003 (Diphenylcarbazide Method) |
| 19 | Zinc as Zn | mg/L | 0.5 | 0.6 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 20 | Cadmium as Cd | mg/L | <0.05 | <0.05 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 21 | Boron as B | mg/L | 0.09 | 0.08 | IS 3025 (Part 57): 2021 (Curcumin Method) |

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**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/08-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Zooplankton Analysis |
| **Sampling Location** | : Tapi River Near Jetty of L&T Ltd. |
| **Sample Collected on** | **:** 01/08/2024 |
| **Sample Received on** | **:** 02/08/2024 |
| **Sample Analyzed & Completion** | **:** 02/08/2024 to 09/08/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 572 | 478 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Protozoa | % | 82 | 75 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Rotifera | % | 11 | 13 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Nematoda | % | 5 | 4 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 5 | Copepoda | % | 2 | 8 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/08-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Phytoplankton Analysis |
| **Sampling Location** | : Tapi River Near Jetty of L&T Ltd. |
| **Sample Collected on** | **:** 01/08/2024 |
| **Sample Received on** | **:** 02/08/2024 |
| **Sample Analyzed & Completion** | **:** 02/08/2024 to 09/08/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 534 | 492 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Cynophyceae | % | 34 | 31 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Chlorophyena | % | 16 | 22 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Bacillariophyceae | % | 50 | 47 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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# TEST REPORT
## MARINE WATER SAMPLE ANALYSIS REPORT
## TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/08-2024

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water |
| **Sampling Location** | : Tapi River Near Jetty of ArcelorMittal Nippon Steel India Limited (AMNS) |
| **Sample Collected on** | **:** 01/08/2024 |
| **Sample Received on** | **:** 02/08/2024 |
| **Sample Analyzed & Completion** | **:** 02/08/2024 to 09/08/2024 |
| **Quantity/No. of Sample** | : 2+1+1 L in plastic carboys (Each Location) /6 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part 1000 Section 1060 B |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | Low Tide | High Tide | |
| 1 | Temperature | $^0$C | 23 | 24 | IS 3025 (Part 9): 1984 (Thermometer ) |
| 2 | pH at 25 $^0$C | pH Unit | 8.06 | 8.15 | IS 3025 (Part 11): 2022 (Electrometric Method) |
| 3 | Colour | pt.co.scale | 10 | 21 | APHA 23rd Edition, (Part 2000) Section: 2120, C : 2017 (Spectrophotometric - Single Wavelength Method) |
| 4 | Total Suspended Solids | mg/L | 41 | 85 | IS 3025 (Part 17): 2022 (Gravimetric Method) |
| 5 | Total Hardness as $CaCO_3$ | mg/L | 1090 | 3720 | IS 3025 (Part 21): 2009 (EDTA Method) |
| 6 | Calcium as Ca | mg/L | 108 | 120 | IS 3025 (Part 40): 1991 (EDTA Titrimetric method) |
| 7 | Magnesium as Mg | mg/L | 199 | 831 | IS 3025 (Part 46): 1994 (Volumetric Method using EDTA) |
| 8 | Total Alkalinity as $CaCO_3$ | mg/L | 145 | 161 | IS 3025 (Part 23): 1986 ( Color Indicator Titration Method) |
| 9 | Salinity | ppt | 13.6 | 24.7 | APHA 23rd Edition- 2017, Section: 2520 |
| 10 | Sulphate as $SO_4$ | mg/L | 630 | 655 | APHA 23rd Edition, (Part 4000) Section 4500-SO4-2, E : 2017 (Turbidimetric Method) |
| 11 | Phenolic compounds as ($C_6H_5OH$) | mg/L | <0.01 | <0.01 | IS 3025 (Part 43/Section 1) : 2022 (4 -Aminoantipyrine method without Chloroform Extraction) |
| 12 | Oil and Grease | mg/L | <0.1 | <0.1 | IS 3025 (Part 39): 2021 (Partition Gravimetric Method) |
| 13 | Total Nitrogen | mg/L | 0.8 | 0.9 | IS 3025 (Part 34) : 1988 (Titrimetric Method) |
| 14 | Phosphate as $PO_4$ | mg/L | 1.1 | 1.0 | APHA 23rd Edition, (Part 4000) Section:4500-P, D: 2017 |
| 15 | BOD (3 Days at 27˚C) | mg/L | 3.4 | 3.1 | IS 3025 (Part 44) :1993 |
| 16 | Iron as Fe | mg/L | 0.3 | 0.4 | IS 3025 (Part 53): 2003 (1,10 Phenanthroline Method) |
| 17 | Copper as Cu | mg/L | 0.07 | 0.08 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 18 | Chromium as Cr | mg/L | <0.03 | <0.03 | IS 3025 (Part 52): 2003 (Diphenylcarbazide Method) |
| 19 | Zinc as Zn | mg/L | 0.4 | 0.45 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 20 | Cadmium as Cd | mg/L | <0.05 | <0.05 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 21 | Boron as B | mg/L | 0.15 | 0.18 | IS 3025 (Part 57): 2021 (Curcumin Method) |

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S. D. Patel

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**(Haresh Ahir)**

Issue Date: 02/09/2024

**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/08-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Zooplankton Analysis |
| **Sampling Location** | : Tapi River Near Jetty of ArcelorMittal Nippon Steel India Limited (AMNS) |
| **Sample Collected on** | **:** 01/08/2024 |
| **Sample Received on** | **:** 02/08/2024 |
| **Sample Analyzed & Completion** | **:** 02/08/2024 to 09/08/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 570 | 497 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Protozoa | % | 81 | 74 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Rotifera | % | 9 | 13 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Nematoda | % | 6 | 10 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 5 | Copepoda | % | 4 | 3 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/08-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Phytoplankton Analysis |
| **Sampling Location** | : Tapi River Near Jetty of ArcelorMittal Nippon Steel India Limited (AMNS) |
| **Sample Collected on** | **:** 01/08/2024 |
| **Sample Received on** | **:** 02/08/2024 |
| **Sample Analyzed & Completion** | **:** 02/08/2024 to 09/08/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 542 | 491 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Cynophyceae | % | 35 | 28 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Chlorophyena | % | 19 | 22 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Bacillariophyceae | % | 46 | 50 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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Issue Date: 01/10/2024

# TEST REPORT
## MARINE WATER SAMPLE ANALYSIS REPORT
## TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/09-2024

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water |
| **Sampling Location** | : Tapi River Near Narmada Cement Jetty |
| **Sample Collected on** | **:** 02/09/2024 |
| **Sample Received on** | **:** 03/09/2024 |
| **Sample Analyzed & Completion** | **:** 03/09/2024 to 10/09/2024 |
| **Quantity/No. of Sample** | : 2+1+1 L in plastic carboys (Each Location) /6 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part 1000 Section 1060 B |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | Low Tide | High Tide | |
| 1 | Temperature | $^0$C | 25 | 24 | IS 3025 (Part 9): 1984 (Thermometer ) |
| 2 | pH at 25 $^0$C | pH Unit | 7.93 | 8.06 | IS 3025 (Part 11): 2022 (Electrometric Method) |
| 3 | Colour | pt.co.scale | 12 | 18 | APHA 23rd Edition, (Part 2000) Section: 2120, C : 2017 (Spectrophotometric - Single Wavelength Method) |
| 4 | Total Suspended Solids | mg/L | 40 | 89 | IS 3025 (Part 17): 2022 (Gravimetric Method) |
| 5 | Total Hardness as $CaCO_3$ | mg/L | 1860 | 2270 | IS 3025 (Part 21): 2009 (EDTA Method) |
| 6 | Calcium as Ca | mg/L | 88 | 116 | IS 3025 (Part 40): 1991 (EDTA Titrimetric method) |
| 7 | Magnesium as Mg | mg/L | 399 | 481 | IS 3025 (Part 46): 1994 (Volumetric Method using EDTA) |
| 8 | Total Alkalinity as $CaCO_3$ | mg/L | 154 | 178 | IS 3025 (Part 23): 1986 ( Color Indicator Titration Method) |
| 9 | Salinity | ppt | 8.5 | 17.6 | APHA 23rd Edition- 2017, Section: 2520 |
| 10 | Sulphate as $SO_4$ | mg/L | 553 | 661 | APHA 23rd Edition, (Part 4000) Section 4500-SO4-2, E : 2017 (Turbidimetric Method) |
| 11 | Phenolic compounds as ($C_6H_5OH$) | mg/L | <0.01 | <0.01 | IS 3025 (Part 43/Section 1) : 2022 (4 -Aminoantipyrine method without Chloroform Extraction) |
| 12 | Oil and Grease | mg/L | <0.1 | <0.1 | IS 3025 (Part 39): 2021 (Partition Gravimetric Method) |
| 13 | Total Nitrogen | mg/L | 0.7 | 0.85 | IS 3025 (Part 34) : 1988 (Titrimetric Method) |
| 14 | Phosphate as $PO_4$ | mg/L | 0.5 | 0.6 | APHA 23rd Edition, (Part 4000) Section:4500-P, D: 2017 |
| 15 | BOD (3 Days at 27˚C) | mg/L | <2 | <2 | IS 3025 (Part 44) :1993 |
| 16 | Iron as Fe | mg/L | 0.5 | 0.6 | IS 3025 (Part 53): 2003 (1,10 Phenanthroline Method) |
| 17 | Copper as Cu | mg/L | 0.07 | 0.08 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 18 | Chromium as Cr | mg/L | <0.03 | <0.03 | IS 3025 (Part 52): 2003 (Diphenylcarbazide Method) |
| 19 | Zinc as Zn | mg/L | 0.4 | 0.5 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 20 | Cadmium as Cd | mg/L | <0.05 | <0.05 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 21 | Boron as B | mg/L | 0.2 | 0.1 | IS 3025 (Part 57): 2021 (Curcumin Method) |

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**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/09-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Zooplankton Analysis |
| **Sampling Location** | : Tapi River Near Narmada Cement Jetty |
| **Sample Collected on** | **:** 02/09/2024 |
| **Sample Received on** | **:** 03/09/2024 |
| **Sample Analyzed & Completion** | **:** 03/09/2024 to 10/09/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 550 | 505 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Protozoa | % | 85 | 76 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Rotifera | % | 10 | 14 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Nematoda | % | 3 | 6 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 5 | Copepoda | % | 2 | 4 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/09-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Phytoplankton Analysis |
| **Sampling Location** | : Tapi River Near Narmada Cement Jetty |
| **Sample Collected on** | **:** 02/09/2024 |
| **Sample Received on** | **:** 03/09/2024 |
| **Sample Analyzed & Completion** | **:** 03/09/2024 to 10/09/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 520 | 478 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Cynophyceae | % | 35 | 30 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Chlorophyena | % | 17 | 24 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Bacillariophyceae | % | 48 | 46 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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# TEST REPORT
## MARINE WATER SAMPLE ANALYSIS REPORT
## TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/09-2024

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water |
| **Sampling Location** | : Tapi River Near Jetty of L&T Ltd. |
| **Sample Collected on** | **:** 02/09/2024 |
| **Sample Received on** | **:** 03/09/2024 |
| **Sample Analyzed & Completion** | **:** 03/09/2024 to 10/09/2024 |
| **Quantity/No. of Sample** | : 2+1+1 L in plastic carboys (Each Location) /6 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part 1000 Section 1060 B |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | Low Tide | High Tide | |
| 1 | Temperature | $^0$C | 25 | 26 | IS 3025 (Part 9): 1984 (Thermometer ) |
| 2 | pH at 25 $^0$C | pH Unit | 7.97 | 8.11 | IS 3025 (Part 11): 2022 (Electrometric Method) |
| 3 | Colour | pt.co.scale | 12 | 18 | APHA 23rd Edition, (Part 2000) Section: 2120, C : 2017 (Spectrophotometric - Single Wavelength Method) |
| 4 | Total Suspended Solids | mg/L | 36 | 89 | IS 3025 (Part 17): 2022 (Gravimetric Method) |
| 5 | Total Hardness as $CaCO_3$ | mg/L | 1070 | 3580 | IS 3025 (Part 21): 2009 (EDTA Method) |
| 6 | Calcium as Ca | mg/L | 96 | 128 | IS 3025 (Part 40): 1991 (EDTA Titrimetric method) |
| 7 | Magnesium as Mg | mg/L | 202 | 792 | IS 3025 (Part 46): 1994 (Volumetric Method using EDTA) |
| 8 | Total Alkalinity as $CaCO_3$ | mg/L | 150 | 162 | IS 3025 (Part 23): 1986 ( Color Indicator Titration Method) |
| 9 | Salinity | ppt | 10.8 | 21.6 | APHA 23rd Edition- 2017, Section: 2520 |
| 10 | Sulphate as $SO_4$ | mg/L | 625 | 672 | APHA 23rd Edition, (Part 4000) Section 4500-SO4-2, E : 2017 (Turbidimetric Method) |
| 11 | Phenolic compounds as ($C_6H_5OH$) | mg/L | <0.01 | <0.01 | IS 3025 (Part 43/Section 1) : 2022 (4 -Aminoantipyrine method without Chloroform Extraction) |
| 12 | Oil and Grease | mg/L | <0.1 | <0.1 | IS 3025 (Part 39): 2021 (Partition Gravimetric Method) |
| 13 | Total Nitrogen | mg/L | 0.8 | 1.0 | IS 3025 (Part 34) : 1988 (Titrimetric Method) |
| 14 | Phosphate as $PO_4$ | mg/L | 0.5 | 0.4 | APHA 23rd Edition, (Part 4000) Section:4500-P, D: 2017 |
| 15 | BOD (3 Days at 27˚C) | mg/L | 3.3 | 3.1 | IS 3025 (Part 44) :1993 |
| 16 | Iron as Fe | mg/L | 0.3 | 0.4 | IS 3025 (Part 53): 2003 (1,10 Phenanthroline Method) |
| 17 | Copper as Cu | mg/L | 0.08 | 0.09 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 18 | Chromium as Cr | mg/L | <0.03 | <0.03 | IS 3025 (Part 52): 2003 (Diphenylcarbazide Method) |
| 19 | Zinc as Zn | mg/L | 0.5 | 0.7 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 20 | Cadmium as Cd | mg/L | <0.05 | <0.05 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 21 | Boron as B | mg/L | 0.2 | 0.1 | IS 3025 (Part 57): 2021 (Curcumin Method) |

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**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/09-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Zooplankton Analysis |
| **Sampling Location** | : Tapi River Near Jetty of L&T Ltd. |
| **Sample Collected on** | **:** 02/09/2024 |
| **Sample Received on** | **:** 03/09/2024 |
| **Sample Analyzed & Completion** | **:** 03/09/2024 to 10/09/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 620 | 535 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Protozoa | % | 75 | 70 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Rotifera | % | 14 | 11 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Nematoda | % | 7 | 8 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 5 | Copepoda | % | 4 | 11 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/09-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Phytoplankton Analysis |
| **Sampling Location** | : Tapi River Near Jetty of L&T Ltd. |
| **Sample Collected on** | **:** 02/09/2024 |
| **Sample Received on** | **:** 03/09/2024 |
| **Sample Analyzed & Completion** | **:** 03/09/2024 to 10/09/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 565 | 510 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Cynophyceae | % | 36 | 30 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Chlorophyena | % | 15 | 17 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Bacillariophyceae | % | 49 | 53 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/09-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water |
| **Sampling Location** | : Tapi River Near Jetty of ArcelorMittal Nippon Steel India Limited (AMNS) |
| **Sample Collected on** | **:** 02/09/2024 |
| **Sample Received on** | **:** 03/09/2024 |
| **Sample Analyzed & Completion** | **:** 03/09/2024 to 10/09/2024 |
| **Quantity/No. of Sample** | : 2+1+1 L in plastic carboys (Each Location) /6 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part 1000 Section 1060 B |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | Low Tide | High Tide | |
| 1 | Temperature | $^0$C | 24 | 25 | IS 3025 (Part 9): 1984 (Thermometer ) |
| 2 | pH at 25 $^0$C | pH Unit | 8.11 | 8.23 | IS 3025 (Part 11): 2022 (Electrometric Method) |
| 3 | Colour | pt.co.scale | 11 | 18 | APHA 23rd Edition, (Part 2000) Section: 2120, C : 2017 (Spectrophotometric - Single Wavelength Method) |
| 4 | Total Suspended Solids | mg/L | 42 | 90 | IS 3025 (Part 17): 2022 (Gravimetric Method) |
| 5 | Total Hardness as $CaCO_3$ | mg/L | 1100 | 3760 | IS 3025 (Part 21): 2009 (EDTA Method) |
| 6 | Calcium as Ca | mg/L | 112 | 152 | IS 3025 (Part 40): 1991 (EDTA Titrimetric method) |
| 7 | Magnesium as Mg | mg/L | 199 | 821 | IS 3025 (Part 46): 1994 (Volumetric Method using EDTA) |
| 8 | Total Alkalinity as $CaCO_3$ | mg/L | 152 | 170 | IS 3025 (Part 23): 1986 ( Color Indicator Titration Method) |
| 9 | Salinity | ppt | 12.5 | 22.7 | APHA 23rd Edition- 2017, Section: 2520 |
| 10 | Sulphate as $SO_4$ | mg/L | 630 | 654 | APHA 23rd Edition, (Part 4000) Section 4500-SO4-2, E : 2017 (Turbidimetric Method) |
| 11 | Phenolic compounds as ($C_6H_5OH$) | mg/L | <0.01 | <0.01 | IS 3025 (Part 43/Section 1) : 2022 (4 -Aminoantipyrine method without Chloroform Extraction) |
| 12 | Oil and Grease | mg/L | <0.1 | <0.1 | IS 3025 (Part 39): 2021 (Partition Gravimetric Method) |
| 13 | Total Nitrogen | mg/L | 0.7 | 1.1 | IS 3025 (Part 34) : 1988 (Titrimetric Method) |
| 14 | Phosphate as $PO_4$ | mg/L | 1.6 | 1.8 | APHA 23rd Edition, (Part 4000) Section:4500-P, D: 2017 |
| 15 | BOD (3 Days at 27˚C) | mg/L | 3 | 2.6 | IS 3025 (Part 44) :1993 |
| 16 | Iron as Fe | mg/L | 0.4 | 0.5 | IS 3025 (Part 53): 2003 (1,10 Phenanthroline Method) |
| 17 | Copper as Cu | mg/L | 0.06 | 0.07 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 18 | Chromium as Cr | mg/L | <0.03 | <0.03 | IS 3025 (Part 52): 2003 (Diphenylcarbazide Method) |
| 19 | Zinc as Zn | mg/L | 0.5 | 0.6 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 20 | Cadmium as Cd | mg/L | <0.05 | <0.05 | APHA 23rd Edition, (Part-3000) Section: 3111, B: 2017 (AAS Method) |
| 21 | Boron as B | mg/L | 0.1 | 0.15 | IS 3025 (Part 57): 2021 (Curcumin Method) |

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**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/09-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Zooplankton Analysis |
| **Sampling Location** | : Tapi River Near Jetty of ArcelorMittal Nippon Steel India Limited (AMNS) |
| **Sample Collected on** | **:** 02/09/2024 |
| **Sample Received on** | **:** 03/09/2024 |
| **Sample Analyzed & Completion** | **:** 03/09/2024 to 10/09/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 630 | 540 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Protozoa | % | 85 | 78 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Rotifera | % | 10 | 13 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Nematoda | % | 3 | 5 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 5 | Copepoda | % | 2 | 4 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

**Note:** (1) These results relate to the sample tested only.

(2) The report shall not be reproduced except in full without written approval of the laboratory.

**MICROBIOLOGIST**

**AUTHORISED SIGNATORY**
**(Haresh Ahir)**

Issue Date: 01/10/2024

**TEST REPORT**

**MARINE WATER SAMPLE ANALYSIS REPORT**

**TEST REPORT NO:QF/7.8/01 A/MARINE WATER/L&T/Rev.0-00/09-2024**

| | |
|---|---|
| **Name of the Industry** | **: M/s. Larsen & Toubro Limited Hazira Works, Dist. Surat** |
| **Sample Description** | : Marine water for Phytoplankton Analysis |
| **Sampling Location** | : Tapi River Near Jetty of ArcelorMittal Nippon Steel India Limited (AMNS) |
| **Sample Collected on** | **:** 02/09/2024 |
| **Sample Received on** | **:** 03/09/2024 |
| **Sample Analyzed & Completion** | **:** 03/09/2024 to 10/09/2024 |
| **Quantity/No. of Sample** | : 100ml concentrated water sample in plastic carboys (During High Tide & Low Tide)/2 Nos. |
| **Protocol (Purpose)** | : As Per work order |
| **Packing/ Seal** | : Packed |
| **Sampling Method** | **:** APHA 23rd Edition 2017, Part-9000, Section: 9060 A |
| **Sample Collected By** | : ERM Team |

| Sr. No. | Parameters | Unit | Result | | Test Method |
|---|---|---|---|---|---|
| | | | High Tide | Low Tide | |
| 1 | Total Count | No/L | 562 | 510 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 2 | Cynophyceae | % | 37 | 31 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 3 | Chlorophyena | % | 13 | 22 | APHA, 23rd Ed. - 2017, Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |
| 4 | Bacillariophyceae | % | 50 | 47 | APHA, 23rd Ed. – 2017 Part-9000 & Handbook of methods in Environmental studies by S.K.Maitti |

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