HARYANA STATE POLLUTION CONTROL BOARD
C-11, SECTOR-6, PANCHKULA
Ph-0172-577870-73, Fax No. 2581201
E-mail: hspcbhazardouswaste@gmail.com

HSPCB/YMN/2021/ Dated: 22/11/2021

To

The Director General,
Information, Public Relations & Cultural Affairs Department,
Haryana, Chandigarh.

Subject: **Regarding conducting of Public hearing for Environmental Clearance for "Capacity Expansion for Formaldehyde Manufacturing unit with the existing production capacity 100 TPD to 200 TPD at Village Kurali, Sabapur Road, Distt. Yamuna Nagar, Haryana by M/s Om Chem.**

I have been directed to enclose herewith an advertisement regarding Public hearing to be held on **24.12.2021 at 11.00 AM** at M/s Om Chem situated at Village Kurali, Sabapur Road, Distt. Yamuna Nagar, Haryana regarding conducting of Public hearing for Environmental Clearance for "Capacity Expansion for Formaldehyde Manufacturing unit with the existing production capacity 100 TPD to 200 TPD at Village Kurali, Sabapur Road, Distt. Yamuna Nagar, Haryana by M/s Om Chem in compliance with EIA notification dated 14th September,2006 for publication in the following leading newspapers on DAVP rates:-

1. One major national daily newspaper.
2. One Regional vernacular daily Newspapers in Hindi.

This advertisement should appear on or before **24.11.2021** in the above said two newspapers only and bills of above two newspapers on DAVP rates may be sent to this office at the earliest, the bill payment of above said notice will be made for two newspapers only.

Endst. No. HSPCB/YMN/2021/ Dated: 22/11/2021

A copy of the above is forwarded to the following for information and necessary action:-

1. The Deputy Commissioner, Yamuna Nagar.
2. The Chairman Zila Parishad, Yamuna Nagar.
3. The Joint Director, District Industries Centre, Yamuna Nagar
4. The Secretary, Municipal Committee, Jagadhri, Distt. Yamuna Nagar.

Endst. No. HSPCB/YMN/2021/ Dated: 22/11/2021

A copy of the above is forwarded to the following for information and necessary action:-

1. Regional Officer, Haryana State Pollution Control Board, Yamuna Nagar. You are asked to send the copy of EIA report and Executive Summary and CD to the concerned authorities mentioned above to place the same

in their offices for consultation of the general public during office hours.

2. M/s Om Chem situated at Village Kurali, Sabapur Road, Distt. Yamuna Nagar.
3. Sr. EE (IT), to ensure that the notice along with Executive summary and EIA report is uploaded on the website of the Board.

Endst. No. HSPCB/YMN/2021/ Dated: 22/11/2021

A copy of the above is forwarded to the following for information please:-

1. The Additional Chief Secretary to Govt. of Haryana, Environment and Climate Change Department, Haryana, Chandigarh.
2. The Director, Environment and Climate Change Department, Haryana.

Endst. No. HSPCB/YMN/2021/ Dated: 22/11/2021

A copy of the above is forwarded to the following for information please:-

1. Administrative Officer-cum-P.S to Chairperson.
2. PA to Member Secretary.

DA/Advertisement

Signed by Naveen Gulia
Date: 22-11-2021 15:22:28
Reason: Approved

Sr. Environmental Engineer (HQ)
For Member Secretary

HARYANA STATE POLLUTION CONTROL BOARD
C-11, SECTOR-6, PANCHKULA
Ph- OI72 -2577870-73, Fax No. 2581201
E-mail: hspcbhazardouswaste@gmail.com

Notice for Public Hearing

It is for the information of all concerned regarding conducting the Public Hearing for considering grant of Environmental Clearance for the existing unit named M/s Om Chem situated at Village Kurali, Sabapur Road, Distt. Yamuna Nagar, Haryana, established for manufacturing of Formaldehyde under the violation category, as the unit was established without necessary prior Environmental Clearance, thus violating the provisions of EIA Notification, 2006, and for considering its expansion from 100 TPD to 200 TPA.

The project is covered under the category A of item 5 (f) "Synthetic Organic Chemicals" of the schedule to the EIA notification dated 14th September 2006, issued by Ministry of Environment, Forests and Climate Change, Govt. of India, New Delhi, requiring prior EC from Expert Appraisal Committee, MoEF&CC, and thus Environmental Clearance is mandatory for the project and its expansion. The project proponent will be liable to comply with the conditions / penalty / prosecution action, as imposed / provided by Government of India or any competent agency in this regard.

The project proponent has applied to the authority for Environmental Clearance for the existing unit under violation category and for expansion as mentioned above, and the public hearing has been fixed on **24.12.2021 at 11.00 AM** onwards at the factory site.

Copies of executive summary of the project report and EIA study report, submitted by the project proponent, are available in the Head Office of the Board and on the website of the Board i.e. https://hspcb.gov.in/ as well as in the following offices, which can be perused during office hours, on any working day:-

1. Deputy Commissioner, Yamuna Nagar.
2. Regional Officer, Yamuna Nagar, Haryana State Pollution Control Board, SCO 131/ 17, HUDA Jagadhari.
3. Chairman Zila Parishad, Yamuna Nagar.
4. Executive Officer, Municipal Council, Yamuna Nagar.
5. Joint Director, District Industries Centre, Yamuna Nagar.

Notice is hereby given to all concerned to file suggestions, views, comments and objections, if any, on the above said proposed project, to the Chairman, Haryana State Pollution Control Board, C-11, Sector-6, Panchkula as well as Regional Officer, Yamuna Nagar, Haryana State Pollution Control Board, SCO 131/ 17, HUDA Jagadhari within 30 days of the publication of this notice. Besides, a Public Hearing will also be held on the Date, Time & Venue mentioned above at the proposed site of the project, which can be attended by any person including Environmental Groups, bonafide residents and others, located at the project site/sites of displacement/sites likely to be affected. Oral/Written suggestions, if any can also be made during the Public Hearing.

No TA/DA will be admissible for attending the Public Hearing.

S Narayanan, IFS
Member Secretary

+91-94164-83233
+91-98969-99923

M/s OM CHEM

Manufacturer of Formaldehyde

Om chem

Dated: 31.08.2021

To
The Member Secretary
Haryana State Pollution Control Board
C-11, Sector-6, Panchkula

Sub: Submission of Draft EIA/EMP report of" Capacity Expansion of Formaldehyde Manufacturing Unit in Existing Facility from 100 TPD to 200 TPD at V.P.O. Kurali Distt. Yamunanagar, Haryana" by **M/s Om Chem- Regarding Public Hearing.**

Ref: ToR letter -. IA-J -11011/106/2021-IA-II (I) dated 20.07.2021.

Sir,

This is in reference to the aforesaid subject; we are hereby submitting the proposal for public hearing process for grant of Environment Clearance from MoEF & CC under EIA Notification, 2006 for Capacity Expansion of Formaldehyde Manufacturing Unit in Existing Facility from 100 TPD to 200 TPD at V.P.O. Kurali Distt. Yamunanagar, Haryana by M/s Om Chem.

We draw your kind attention that MoEF & CC has grant Terms of Reference vide letter no ToR letter - IA-J-11011/106/2021-IA-II (I) dated 20. 07.2021.for preparation of EIA/EMP report.

Accordingly, we have prepared the Draft EIA/EMP Report incorporating all the ToR points and are submitting the following documents:

1. Hard copy of Draft EIA / EMP Report (3 Copies).
2. Hard copy of Executive Summary of EIA/EMP in Hindi & English.
3. Public Hearing fee Rs. 50,000 (Draft No-837204..., dated 02.09.2021 Punjab National Bank

You are therefore requested to kindly fix a schedule for conducting public hearing at the earliest in view of above.

Thanking you,

Om Chem Auth. Signatory

Authorized Signatory
For M/s Om Chem.

Village - Kurali, Sabapur Road, PO Fatehgarh Thumbi Bilaspur,
Distt. Yamuna Nagar 133 206 (Haryana) ; Email : omchem@outlook.com
GST NO. 06AAFFO8239C1ZC

1128715/ 551

पंजाब नैशनल बैंक
punjab national bank

DDMMYYYY

मांगे जाने पर ON DEMAND PAY ... या उनके आदेश पर OR ORDER

रुपये RUPEES ...

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पंजाब नैशनल बैंक
punjab national bank

(NOT OVER Rs.50000/-)

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AUTHORISED SIGNATORY WITH SCRAN

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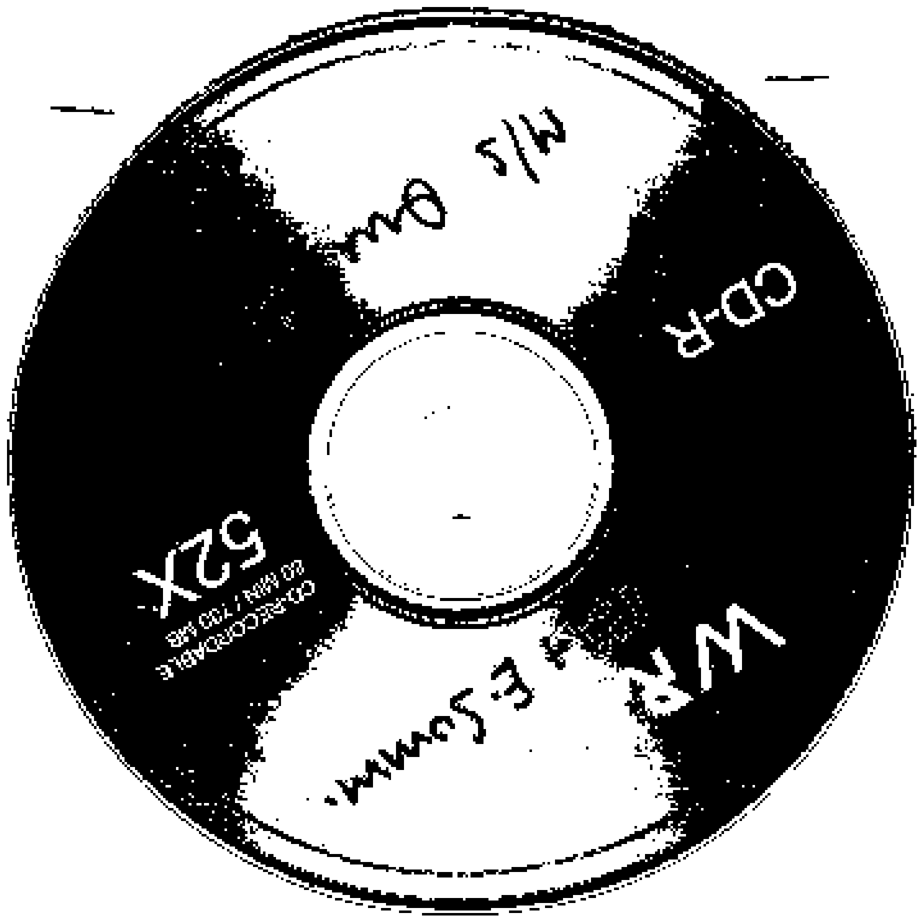

Sep, 2021 Rev-00

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PLAN

CAPACITY EXPANSION OF FORMALDEHYDE MANUFACTURING UNIT IN EXISTING FACILITY FROM 100 TPD TO 200 TPD ON 0.6430 HA EXISTING LAND

VILLAGE: KURALI, SABAPUR ROAD, TEHSIL: BILASPUR,

DISTRICT: YAMUNA NAGAR, HARYANA

STUDY PERIOD: MARCH TO MAY 2021

[Project falls under schedule 5 (f) "Synthetic Organic chemical Project". Project site is located outside Notified Industrial Area hence as per said Notification; project categorized under "A" Category Project]

PROJECT PROPONENT

M/S OM CHEM.

Kurali, Sabap

(QCI/

PLOT NO.: 82 A,

REVIEW AND REVISION HISTORY

History of revisions of the present report.

Table I: History of the Revisions

S.No.	Rev.	Date	Modifications	Remarks
1.	Rev. 00 Draft	31.08.2021	Draft EIA / EMP Report	Report has been prepared by team Vardan and all comments of reviewers have been incorporated in the Draft EIA/EMP Report.

Table II: Record of Review

Rev.	Date	Description	Review-2	Approval
Rev.00 Draft	31.08.2021	Draft EIA/ EMP Report	Anshul Yadav	Mr. R.S. Yadav
		The draft EIA EMP report has been prepared by Mr. Ashok Rathoure (EIA coordinator) and assisted by Ms. Avi Tomar (TAE) and other team members.		

This Report has been prepared by **Vardan EnviroNet** on behalf of and for the use of M/s Om Chem. with due consideration and skill as per our general terms and conditions of business and terms of agreement with M/s Om Chem

NABET ANNEXURE – VII

Declaration by Experts contributing to the Proposed Expansion Project for Manufacturing of Formaldehyde from 100 TPD to 200 TPD by M/s Om Chem, I hereby, certify that I was a part of the EIA team in the following capacity that developed the above EIA.

EIA coordinator: Mr. Ashok Rathoure

Period of involvement: March 2021 to till date

Contact information: Vardan Enviromet, Plot No 82A, Sec 5, IMT Manesar, Gurgaon-122051, Haryana

Contact no & E-mail address: 0124-4913750, industry@vardanenvironet.com

Functional Area Experts (FAEs):

S. No.	Functional Areas	Name of the Expert/s	Involvement	Signature & Date
1.	AP	Mr. K.M Khare	a) Identifying the sources of emissions and mitigation measures. b) Site-specific micro meteorology monitoring. c) Ambient Air Quality (AAQ) monitoring Impact predictions and mitigations. d) Impact Identification	
2.	WP	Mr. K.M Khare	a) selection of sampling; locations b) Ground water quality monitoring and assessment, impacts on water environment and mitigations. c) Identification, characterization of effluent and treatments there of	

1128715/2021/Estt.Br

M/s OM CHEM.	Capacity Expansion of Formaldehyde Manufacturing Unit in Existing Facility from 100 MTD to 200 MTD on 0.6430 ha existing land at V.P.O. Kurali Distt. Yamunanagar, Haryana

			d) Water balance and conservation measures	
3.	SHW	Mr. Pawan Kumar Verma Ms. Avi	a) Identification of haz, solid wg, and their disposal and mitigation measure. b) Recycling and disposal	
4.	SE	Ms. Shilpa Mishra	a) Determination of demographic profile including socio economy & livelihood b) Assessing, the changes in socio economic pattern	
5.	EB	Mr. Nitesh Kumar	a) Biological environment status in respect of terrestrial fauna and aquatic eco system. b) Impact on ecological environment.	
6.	HG/Geo	Mr. R.S. Yadav	a) Ground water resource assessment. b) Impact on ground water potential and mitigation measures for avoiding ground water contamination.	
7.	AQ	Ms. Surbhi Makhwana Ms. Avi (FAE - Cat. B)	a) Processing of site specific micro-meteorological data. b) Collection and use of data for modelling. c) Air dispersion modelling for prediction of GLCS due to PM10, SO2 and Nox	
8.	NV	Mr. K.M Khare	a) Analysis of ambient noise quality data b) Impact due to plant noise and abatement measures	

M/s OM CHEM.	Capacity Expansion of Formaldehyde Manufacturing Unit in Existing Facility from 100 TPD to 200 TPD on 0.6430 ha existing land at V.P.O. Kundi Distt. Yamunanagar, Haryana

9.	LU	Mr. Ankur Agarwal	a) Analysis of data related to land use pattern b) Land use map development. c) Impact on land environment in respect to land form change	
10.	RH	Ms. Ashwini Ganvir Mrs. Shweta Ghildiyal (FAE - Cat. B)	a) Identification of hazardous prone areas b) Environment risk evaluation c) On-site and Off-site emergency planning	
11.	SC	Sameer Vilasrao Deshpande TM- Ms. Avi	a) Monitoring, analysis and characterization of soil. b) Assessment of impact on soil quality and mitigation measure.	

List of Team Members

Mr. Anshul Yadav	
Mr. Aman Sharama	
Mrs. Shweta Ghildiyal	
Ms. Avi	
Mr. Ankur Agarwal	
Mr. Dushyant Parashar	
Mr. Shubham Tyagi	

Declaration by the Head of the accredited consultant organization/ authorized person.

1128715/2021/Estt.Br

I, R.S. Yadav, hereby, confirm that the above mentioned mining case of Stone along with associated minor minerals at Village Kurali, Sabapur Road, Tehsil Bilaspur, District Yamuna Nagar, Haryana proposed by M/s Om Chem.

I, hereby, certify that I was a part of the EIA team in the following capacity that developed the above EIA.

I also confirm that I shall be fully accountable for any mis-leading information mentioned in this statement.

Name: R.S. Yadav

Signature

Designation: Managing Director

Name of the EIA Consultant Organization: Vardan EnviroNet, QCI/NABET Accredited Environment Consultancy.

NABET Certificate No. & Issue Date NABET/EIA/1922/RA0166 valid up to 06.11.2022.

TABLE OF CONTENT

Consultant: M/s Vardan Environment, Plot No 82A, Sec 5, IMT Manesar, Gurgaon-122051 Haryana (Mob: 9999965842)

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LIST OF FIGURES

LIST OF ANNEXURES

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3.	Annexure 3	All show cause notices received till date
4.	Annexure 4	Land Documents and Change of Land Use
5.	Annexure 5	Diversion of forest land
6.	Annexure 6	HWRA Application
7.	Annexure 7	Environmental Baseline Reports
8.	Annexure 8	Wildlife Conservation Plan
9.	Annexure 9	List of Major Nearby Industries
10.	Annexure 10	Undertaking for Solid and Hazardous Waste Disposal
11.	Annexure 11	Environment Management Policy
12.	Annexure 12	Vehicular Dispersal Plan
13.	Annexure 13	Safety Policy
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15.	Annexure 15	Undertaking for Bank Guarantee submission

F. No. IA-J-11011/106/2021-IA-II(I)
Government of India
Ministry of Environment, Forest & Climate Change
Impact Assessment Division

Indira Paryavaran Bhawan
Vayu Wing, Aliganj,
Jor Bagh Road, New Delhi-110 003

Dated: 20th July, 2021

To,

M/s Om Chem
Village Kurali, Sahapur Road,
Tehsil Bilaspur, District Yamuna Nagar,
Haryana

E-mail : omchem44@gmail.com

Sub: **Capacity Expansion of Formaldehyde Manufacturing Unit in existing facility from 100 TPD to 200 TPD at Village Kurali, Sahapur Road, Tehsil Bilaspur, District Yamuna Nagar, Haryana by M/s Om Chem - Terms of Reference - reg.**

Sir,

This has reference to your online proposal No. IA/HR/TND/302403/2021 dated 8th June, 2021 for Terms of Reference to the above mentioned project.

2. The proposal is for Terms of Reference (ToR) for capacity expansion of Formaldehyde Manufacturing Unit in existing facility from 100 TPD to 200 TPD at Village Kurali, Sahapur Road, Tehsil Bilaspur, District Yamuna Nagar, Haryana by M/s Om Chem Industries, operating since 2018 without prior Environmental clearance, thus violating the provisions of the EIA Notification, 2006.

3. The said project/activity is covered under category "A" of item 5(f) "Synthetic Organic Chemicals" of the Schedule to the EIA Notification, 2006, and requires prior EC from Expert Appraisal Committee, MoEF&CC.

4. The chronology of events and the actions taken on the instant proposal are as under:

The plant was set up with the consent to establish dated 20th December 2018 from the Haryana State Pollution Control Board (HSPCB). The chronology of events is as under:

ToR for Om Chem

M/s OM CHEM.	Capacity Expansion of Formaldehyde Manufacturing Unit in Existing Facility from 100 TPD to 200 TPD on 0.6430 ha existing land at V.P.O. Kurali Distt. Yamunanagar, Haryana

S. No.	Date	Description
1	19.01.2018	Consent to Establish obtained from HSPCB vide letter no. 31509661SYAMCTE527420
2.	20.02.2019	Consent to Operate obtained from HSPCB vide letter no. 31509661SYAMCTO637922
3.	03.06.2019	Show cause notice issued by HSPCB to Closure under Section 5 of EPA, 1986 vide Letter no. HSPCB/YR/2019/530 and Prosecution under section 15 vide Letter No. HSPCB/YR/2019/1[illegible]
3	21.06.2019	Show cause notice by HSPCB for Revocation of CTE and CTO vide letter no. HSPCB/YR/2019/3616.
4	22.07.2020	Show cause notice by HSPCB for closure under Water Act, 1974 & under Air Act, 1981 vide Letter no. HSPCB/YR/ 0005819
5.	11.11.2020	Additional Chief Secretary, Environment Department, Haryana Govt. vide their order dated 11.11.2020 allowed the units to continue their operations for a period of six months without prejudice to any legal actions taken against the violations committed by them by the competent authorities with the condition that they will immediately apply for Environmental Clearance to the competent authority and provide the proof of such application within 60 days from the issuance of the said communication to Environment and Climate Change Department and the Board in State Pollution Control Board
6.	03.06.2021	In NGT order dated 03.06.2021 in Original Application No. 95/2019(Dinesh N.G.O. vs Synachem Organics Pvt. Ltd. & Ors.) it was noted "Since prior EC is statutory mandate, the same must be complied. We have no doubt that the issues of the private respondents will be duly considered by the concerned regulatory authorities, including the MoEF&CC on merits and in accordance with law. In view of the statutory mandate, the units cannot be allowed to function. For past violations, the concerned authorities are free to take appropriate action in accordance with polluter pays principle, following due process."
7	03.06.2021	The NGT order dated 03.06.2021 for the Original Application No. 840/2019 (Ayush Garg Vs. Union of India & Others) recorded "No further direction appears to be necessary except that the State PCB may ensure that the units are not functioning in violation with any requisite statutory clearance".

Production Capacity

Product	Existing Capacity	Proposed Expansion Capacity	Total Capacity after Expansion
Formaldehyde	0[illegible]	100 TPD	200 TPD

Contd... On Page

Raw Material Details: The major raw material is Methanol which comes by road through tankers from Kandla Port, Gujarat & stored in underground **M.S** tanks. Methanol requirement for the existing unit is 50 TPD and after expansion, total 100 TPD will be required.

Raw Material	Existing Requirement	Proposed Requirement	Total Requirement
Methanol	50 TPD	50TPD	100TPD

Resource Requirement

S. No.	Particular	Detail
1	Land Requirement	Total area available is 0.6430 Hectare. No additional land is required for proposed expansion. Green belt will be developed in an area of 0.2117 Hectare (Approximately 30.5% of total plant area)
2	Water Requirement	Existing: 100KLD; For Expansion: 95KLD; Total: 195 KLD Source: Ground Water Approving Authority: Haryana Water Resources Authority
3	Power Requirement	Existing: 160KW; For Expansion: 90KW; Total: 250KW Source: UHBVN (Uttar Haryana Bijli Vitran Nigam) **DG sets as backup:** 325 KVA (existing) 325 KVA (proposed)
4	Boiler	**Existing:** 1 No. 600 Kg/Hr HSD Fired **Proposed:** No **Total:** 1 No. 600 Kg/Hr HSD Fired
5	Manpower Requirement	Existing: 10; For Expansion: 02; Total: 12
6	Cost of the Project	Existing: 499 Lakhs; Estimated cost for proposed expansion: 200 Lakhs; Total: 699 Lakhs

For Om Chem

5. There are no Wild Life Sanctuary or National Park within 10 km radius of the Project Site. No NBWL Clearance required. No forest land involved in the project site. PP has obtained diversion of 0.0058355 Ha of forest land for access, from MoEF&CC.

6. **Details of Violation:**

S. No.	Period	Production	Remarks
1	Dec 2018-May 2021	Formaldehyde Manufacturing (100 TPD)	Prior EC was not secured before setting up and operating the Unit, hence covered under violation as per EIA Notification 2006 and subsequent amendments

7. The Committee was informed that the Ministry had issued a Notification vide S.O. 804 (E) dated 14th March, 2017 for appraisal of projects for grant of terms of reference/ Environmental Clearance, which have started the work on site, expanded the production beyond the limit of Environmental Clearance or changed the product mix without obtaining prior Environmental Clearance under EIA Notification, 2006. The above said notification i.e. Notification vide S.O. 804 (E) dated 14th March, 2017 was an open window for 6 months. The projects or activities which are in violation as on date of this notification only will be eligible to apply for environmental clearance under this notification and the project proponents can apply for environmental clearance under this notification only within six months from the date of this notification.

The Competent Authority in the Ministry (in other Proposals) has inter-alia instructed to deal the violation cases as under:

(i) The violation proposal should be considered by the sectoral EAC on merit.
(ii) Action to be taken against the alleged violation as per law.
(iii) Do not wait for either the evidence of action having been started or violation proceedings to finish before taking up the case on merit.
(iv) The EC if given after due evaluation on merit would be valid from the date it is given and not with retrospective effect. For the period before it, if violation is established by the Court ... the punishment/penalty as per law would be there.
(v) Assessment of environmental damage ...

8. The Committee was also apprised that there were three recent court cases in the Hon'ble NGT [viz. Dastak N.G.O. vs. Synochem Organics Pvt. Ltd. & Ors in OA No. 287 of 2020, Vineet Nagar vs. Central Ground Water Authority & Ors. in OA No. 298 of 2020, and Avantika Sharma vs. Union of India & Ors. in OA No. 840 of 2019], which were disposed of by Hon'ble NGT vide its Order dated 03.06.2021 with the following directions.

(i). For past Violations, the concerned Authorities are free to take appropriate action in accordance with polluter pays principle, following due process.

(ii). Status having prior EC is statutory mandate. It has to be complied with by the formaldehyde producing industrial units facing which the units cannot be allowed to function.

(iii). State PCB may assess and recover compensation for illegal operation of the Units on 'Polluter Pays' principle.

(iv). State PCB to ensure that the unit does not re-start functioning without requisite Statutory Clearance.

(v). To be duly considered by the concerned regulatory authorities including MOEFCC, wherever and in accordance with law.

The Proposal was examined by the Ministry and EDS was sought on Parivesh Portal on 17th May 2021. The Project Proponent on 18th June 2021 submitted the EDS reply on Parivesh Portal and accordingly the Proposal is placed in 13th EAC meeting for re-appraisal.

9. The proposal was considered by the EAC (Industry-3) in its 13th meeting held during 7-8 July, 2021. The project proponent and their consultant M/s Vardan Environment made a detailed presentation over the Video Conferencing (VC) and have presented the PFR report. The Committee after detailed deliberations on the information presented by the project proponent, recommended for issuing Standard Terms of Reference for undertaking the EIA for preparation of Environmental Management Plan (EMP) as per Annexure-I and with additional TOR as under:

(i) The project proponent will be liable to pay the penalty for the period of violation, as may be determined by Ministry, in case due to constructing and/or operating the project without prior EC. An undertaking in this regard shall be submitted by PP along with EC proposal. The project proponent shall also submit the details on the cost incurred on establishment of the project, and year wise turnover till date.

(ii) The Directions of the Hon'ble NGT shall be implemented vide its Orders dated 03.06.2021 in the matter of Dastak NGO vs Synechem Polymers Pvt. Ltd. & ors in OA No. 287 of 2020; Vineet Nagar Vs. Central Ground Water Authority & Ors, in OA No. 298 of 2020; and Ayush Garg Vs Union of India & Ors. in OA No. 840 of 2019]. Implementation Report shall be submitted by the PP at the time of submission of the CC&EMP Report.

(iii) The State Government/SPCB to take action against the project proponent under the provisions of section 19 of the Environment (Protection) Act, 1986, and for which consent mechanism are to be issued till the project is granted EC.

(iv) Haryana PCB may access and recover compensation for illegal operation of the Units on 'Polluter Pays' principle. Implementation Report may be

TOR for the Above

informed by the SPCB at the time of submission of EIA/EMP Report by the PP.

(vi) Assessment of ecological damage with respect to air, water, land and other environmental attributes. The collection and analysis of data shall be done by an environmental laboratory duly notified under the Environment (Protection) Act, 1986, or an environmental laboratory accredited by NABL, or a laboratory of the Council of Scientific and Industrial Research (CSIR) institution working in the field of environment. The cost for assessment of environmental damage may be guided by the Ministry of Environment, Forest and Climate Change O.M No. 19-45/2019-IA-III dated 07.07.2020.

(vii) EMP shall be prepared comprising remediation plan and natural and community resource augmentation plan corresponding to the ecological damage assessed and economic benefit derived due to violation.

(viii) The remediation plan and the natural and community resource augmentation plan to be prepared as an independent chapter in the EIA report by the accredited consultants.

(viii) The project proponent shall be required to submit a bank guarantee equivalent to the amount of remediation plan and natural and community resource augmentation plan with the SPCB prior to the grant of EC. The quantum shall be recommended by the EAC and finalized by the regulatory authority. The bank guarantee shall be released after successful implementation of the EMP, followed by recommendations of the EAC and approval of the regulatory authority.

(ix) Budget of remediation plan and natural and community resource augmentation plan corresponding to the ecological damage shall be completed within three years and to be prepared accordingly.

10. You are requested to submit the final EIA/EMP reports prepared by the consultants accredited by the Quality Council of India/National Accreditation Board of Education and Training (QCI/NABET), to the SEIAA/SEAC for grant of environmental clearance within 3 years, as per this Ministry's OM No. J-11013/41/2006-IA.II(I) dated 8th October, 2014.

11. This issues with the approval of the competent authority.

(Dr. Saranya P)
Scientist D/Joint Director

(DR. SARANYA P)

TOR for Om Chem Page 6 of 14

1128715/2021/Estt.Br

Copy to:-

1. The Deputy Director General of Forests (C), Ministry of Environment, Forest and Climate Change, Integrated Regional Office, Bays No. 24-25, Sector-31 A, Dakshin Marg, Chandigarh- 160030
2. The Member Secretary, Haryana State Pollution Control Board, C-11, Sector-6, Panchkula, Haryana *with a request to immediately close the unit and ensure that the unit does not re-start functioning without requisite Statutory Clearance in compliance to the Hon'ble NGT orders dated 05.06.2021 and this Ministry's OM dated 07.07.2021. The copies are enclosed for ready reference.*
3. Guard File/Monitoring File/Record File.

(Dr. Saranya. P)
Scientist D/ Joint Director
Email: saranya.p@gov.in

TOR :: Om Chem

1128715/2021/Estt.Br

M/s OM CHEM.	Capacity Expansion of Formaldehyde Manufacturing Unit in Existing Facility from: 200 TPD to 300 TPD on 0.6430 ha existing land at: V.P.O. Kurali Distt. Yamunanagar, Haryana

Annexure-I

Standard TOR for S (f) Category

A. STANDARD TERMS OF REFERENCE

1) Executive Summary
2) Introduction
   i. Copy of the EIA Consultant accreditation with NABET Association
   ii. Information about the project proponent
   iii. Importance and benefits of the project

3) Project Description
   i. Cost of project and time of completion.
   ii. Products with capacities for the proposed project.
   iii. In expansion project, details of existing products with capacities and whether adequate land is available for expansion, reference of earlier EC if any.
   iv. Details of existing products and production, if any, along with present product/production details in tabular format, to verify the compliance of the EIA Notifications.
   v. List of raw materials required and their source along with mode of transportation.
   vi. Other chemicals and materials required with quantities and storage facilities.
   vii. Details of Emission, effluents, hazardous waste generation and their management.
   viii. Requirement of water, power, waste water generation, supply, status of approval, water balance diagram, man power requirement (regular and contract).
   ix. Details of boilers/gensets including fuel used, emissions and units to be used.
   x. Process description along with major equipments and machineries, process flow sheet (quantities and rates) from raw materials to products to be provided.
   xi. Hazard identification and details of proposed safety systems.
   xii. Expansion/modernization proposals:
      a. Copy of all the Environmental Clearance(s) including Amendments thereto obtained for the project from MoEF/SEIAA shall be attached as an Annexure. A certified copy of the latest Monitoring Report of the Integrated Regional Office of the Ministry of Environment, Forest and Climate Change as per circular dated 16th May, 2012 on the status of compliance of conditions stipulated in all the existing environmental clearances including Amendments shall be provided. In addition, copy of the latest CTO and status of compliance of Consent to Operate for the existing/existing operation of the project from SPCB shall be included in the EIA/EMP report.
      b. In case the existing project has not obtained any environmental clearance, reasons for not taking EC under the provisions of the EIA Notification 1994 and/or EIA Notification 2006 shall be provided. Copies of Consent to Establish/No Objection Certificate and Consent to Operate (in case of units

operating prior to EIA Notification 2006, CTE and CTO of FY 2005-2006 obtained from the SPCB shall be submitted. Further, compliance report to the conditions of consents from the SPCB shall be submitted.

4) Site Details

(i) Location of the project site covering village, Taluka/Tehsil, District and State, Justification for selecting the site, whether other sites were considered.
(ii) A toposheet of the study area of radius of 10km and site location on 1:50,000/1:25,000 scale on an A3/A2 sheet. (including all eco-sensitive areas and environmentally sensitive places)
(iii) Details w.r.t. option analysis for selection of site
(iv) Co-ordinates (lat-long) of all four corners of the site.
(v) Google map-Earth downloaded of the project site.
(vi) Layout maps indicating existing unit as well as proposed unit indicating storage area, plant area, greenbelt area, utilities etc. If located within an Industrial area/Estate/Complex, layout of Industrial Area indicating location of unit within the Industrial area/Estate.
(vii) Photographs of the proposed and existing (if applicable) plant site. If existing, show photographs of plantation/greenbelt, in particular.
(viii) Land-use break-up of total land of the project site (identified and acquired), government/private - agricultural, forest, wasteland, water bodies, settlements, etc shall be included. (not required for industrial area)
(ix) A list of major industries with name and type within study area (10km radius) shall be incorporated. Land use details of the study area
(x) Geological features and Geo-hydrological status of the study area shall be included.
(xi) Details of Drainage of the project upto 5km radius of study area. If the site is within 1 km radius of any major river, peak and lean season river discharge as well as flood occurrence frequency based on peak rainfall data of the past 30 years. Details of Flood Level of the project site and maximum Flood Level of the river shall also be provided. (mega green field projects)
(xii) Status of acquisition of land. If acquisition is not complete, stage of the acquisition process and expected time of complete possession of the land. Documents related to conversion of land for Industrial purpose.
(xiii) R&R details in respect of land in line with state Government policy

5) Forest, wildlife and CRZ related issues (if applicable):

Permission and approval for the use of forest land (forestry clearance), if any, and recommendations of the State Forest Department. (if applicable)

ii. Land use map based on High resolution satellite imagery of the proposed site delineating the forestland (in case of projects involving forest land more than 40 ha)
iii. Status of Application submitted for obtaining the stage I forestry clearance along with latest status shall be submitted.
iv. The projects to be located within 10 km of the National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals, the project proponent shall submit the map duly authenticated by Chief Wildlife Warden showing these features vis-à-vis the project location and the recommendations or comments of the Chief Wildlife Warden-thereon
v. Wildlife Conservation Plan duly authenticated by the Chief Wildlife Warden of the State Government for conservation of Schedule I fauna, if any exists in the study area
vi. Copy of application submitted for clearance under the Wildlife (Protection) Act, 1972, to the Standing Committee of the National Board for Wildlife
vii. Recommendations and NOC from the concerned State/UT Coastal Zone Management Authority on CRZ angle

6) Environmental Status

(i) Determination of atmospheric inversion level at the project site and site-specific micro-meteorological data using temperature, relative humidity, hourly wind speed and direction and rainfall.

- AAQ data (except monsoon) at 8 locations for PM10, PM2.5, SO2, NOX, CO and other parameters relevant to the project shall be collected. The monitoring stations shall be based CPCB guidelines and take into account the pre-dominant wind direction, population zone and sensitive receptors including reserved forests. Study should indicate minimum, maximum value of different parameters for the period (3 months) collected. Collected data should be supported by the reference data of either CPCB or SPCB. AAQ data & GLC of pollutants from stack emissions should suggest technology/ measures- Best Practical Technology (BPT) indicating the achieved results.

(ii) Raw data of all AAQ measurement for 12 weeks of all stations as per frequency given in the NAAQM Notification of Nov. 2009 along with – min., max., average and 98% values for each of the AAQ parameters from data of all AAQ locations should be provided as an annexure to the EIA Report.

(iii) Surface water quality of nearby River (100m upstream and downstream of discharge point) and other surface drains at eight locations as per CPCB/MoEF&CC guidelines.

(iv) Whether the site falls near to polluted stretch of river identified by the CPCB/MoEF&CC, if yes give details.

(v) Ground water monitoring at minimum at 8 locations shall be included.

(vi) Noise levels monitoring at 8 locations within the study area.

(vii) Soil Characteristic as per CPCB guidelines.

(viii) Traffic study of the area, type of vehicles, frequency of vehicles for transportation of materials, additional traffic due to proposed project, parking arrangement etc.

(ix) Detailed description of flora and fauna (terrestrial and aquatic) existing in the study area shall be given with special reference to rare, endemic and endangered species. If Schedule-I fauna are found within the study area, a Wild life Conservation Plan shall be prepared and furnished.

(x) Socio-economic status of the study area.

7) **Environment Impact** and Environment **Management** Plan

i. Assessment of ground level concentration of pollutants from the source emission based on site-specific meteorological features. In case the project is located over hilly terrain, the AQIP Modelling should be done using inputs of the specific terrain characteristics for determining the incremental impacts due to the project on the AAQ. Cumulative impact of all sources of emissions (including transportation) on the AAQ of the area shall be assessed. Details of the model used and the input data used for modelling shall also be provided. The air quality contours shall be plotted on a location map showing the location of project site, habitation nearby, sensitive receptors, if any.

ii. Water Quality Modelling – in case of discharge in water body.

iii. Impact of the transport of the raw materials and end products on the surrounding environment shall be assessed and provided. In this regard, options for transport of raw materials and finished products and wastes (large quantities) by rail or rail-cum road transport or conveyor cum rail transport shall be examined.

iv. A note on treatment of wastewater from different plant operations, extent recycled and reused for different purposes shall be included. Complete scheme of effluent treatment i.e. segregation of untreated and treated effluent to meet the prescribed standards for discharge under E(P) Rules.

v. Details of stack emission and action plan for control of emissions to meet standards.

vi. Measures for fugitive emission control.

vii. Details of excavation, waste generation and their storage, utilization and management. Copies of MOU regarding utilization of solid and hazardous waste in cement plant shall also be included. EMP shall include the concept of waste-to-energy, reuse of wastewater, techniques, Energy conservation, natural resource conservation, etc.

viii. Proper utilization of fly ash shall be ensured as per Fly Ash Notification, 2009. A detailed plan of action shall be provided.

ix. Action plan for the green belt development plan in 33 % area i.e. land with not less than 1,500 trees per ha, Giving details of species, width of plantation, planting schedule etc. shall be included. The green belt shall be around the project boundary and a scheme for greening of the roads used for the project shall also be incorporated.

For M/s Om Chem

v. Action plan for rainwater harvesting measures at plant site shall be submitted to harvest rainwater from the roof tops and storm water drains to recharge the ground water and also to use for the various activities at the project site to conserve fresh water and reduce the water requirement from other sources.

vi. Total capital cost and recurring cost/annum for environmental pollution control measures shall be included.

vii. Action plan for post-project environmental monitoring shall be submitted.

viii. On and Offsite Disaster (natural and Man-made) Preparedness and Emergency Management Plan including Risk Assessment and Damage Control. Disaster management plan should be linked with Disaster Control Management Plan.

b) Occupational health

i. Plan and fund allocation to ensure the occupational health & safety of all contract and casual workers

ii. Details of exposure specific health status evaluation of worker. If the workers' health is being evaluated by pre designed formats, check x-rays, Audiometry, Spirometry, Vision testing (Far & Near vision, colour vision and any other ocular defect) ECG, during pre placement and periodical examinations give the details of the same. Details regarding last month analyzed data of above mentioned parameters as per Age, sex, duration of exposure and department wise.

iii. Details of existing Occupational & Safety Hazards. What are the exposure levels of hazards and whether they are within Permissible exposure level (PEL). If these are not within PEL, what measures the company has adopted to keep them within PEL so that health of the workers can be preserved.

iv. Annual report of health status of workers with special reference to Occupational Health and Safety.

9) **Corporate Environment Policy**

i. Does the company have overall Environment Policy approved by its Board of Directors? If so it may be detailed in the EIA report

ii. Does the Environmental Policy prescribe for standard operating process / procedures to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions? If so, it may be detailed in the EIA.

iii. What is the hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the environmental clearance conditions? Details of this system may be given.

iv. Does the company have system of reporting of non compliances / violations of conditions of the Board of Directors of the company and / or shareholders or stakeholders at large? This reporting procedure shall be detailed in the EIA report.

v. Details regarding infrastructure facilities such as sanitation, fuel, restroom etc. to be provided to the labour force during construction as well as to the casual workers including truck drivers during operation phase.

9) Corporate Environmental Responsibility (CER)

i. Adequate funds as per the Ministry's OM/Guidelines shall be earmarked towards the Corporate Environment Responsibility based on Public Hearing issues/socio economic issues and item-wise details along with time bound action plan shall be included (CER activities shall be related to environment). Socio economic development activities need to be elaborated upon. For the projects where public hearing is not conducted, CER plan shall be provided based on socio-economic study of the area.

10) Additional studies/Measures to be considered

(i) Provide latest and eco-friendly technology for product manufacturing.
(ii) Emphasize on Green chemistry/Clean Manufacturing
(iii) Provide CAS No. of products along with product list.
(iv) Provide details of amount of carbon sequestered in their unit through greenbelt/Carbon stocks, in case of expansion project.
(v) Risk structure and sustainability for carbon and water footprint.
(vi) Detailed pollution load estimation
(vii) Transportation of Hazardous substances/effluents etc shall be carried out through authorized and GPS enabled vehicles/Trucks only
(viii) Category of Hazardous Wastes shall be mentioned in the EIA/EMP report and in presentation
(ix) Details of greenhouse gases and emissions shall be provided.
(x) Greenbelt shall be developed in the first year of the project and wind breakers shall be erected.
(xi) Storage area map shall be overlapped with all the associated features
(xii) Emphasize on green fuels.
(xiii) The project from NCR shall not use Coal as fuel. Further, PP shall avoid use of Coal in the CPAs and in severe also if alternatives are available.
(xiv) Provide the Cost-Benefit analysis with respect to the environment due to the project.

11) Any litigation pending against the project and/or any direction/order passed by any Court of Law against the project, if so, details thereof shall also be included. Has the unit received any notice under the Section 5 of Environment (Protection) Act, 1986 or relevant Sections of Air and Water Acts? If so, details thereof and compliance/ATR to the notice(s) and present status of the case.

12) A tabular chart with index for point wise compliance of above TORs and its details needs to be submitted in the EIA/EMP Report.

TOR for Om Chem | Page 11 of 14

B SPECIFIC TERMS OF REFERENCE FOR EIA STUDIES FOR SYNTHETIC ORGANIC CHEMICALS INDUSTRY

1. Details on solvents to be used, procedures for solvent recovery and fire protection.
2. Details of process emissions and control proposed and its management to control.
3. Availability of safety data sheets for the VOC, other process reactants pollutants (i.e. NOx, Chlorine*, H_2S*, HCl*, SO_2*, HF*, etc.,(*-as applicable)
4. Work zone monitoring arrangements for hazardous chemicals
5. Detailed effluent treatment scheme including segregation of effluent streams for units adopting 'Zero' liquid discharge.
6. Action plan for odour control to be submitted.
7. A copy of the Memorandum of Understanding signed with common manufacturers indicating clearly that they do not process organic solid/hazardous waste generated.
8. Authorization/Membership for the disposal of solid/hazardous waste in CETP (i.e. solid/hazardous waste in TSDF if any.
9. Action plan for utilization of Solid/Hazardous wastes.
10. Material Safety Data Sheet for all the chemicals are being used will be used.
11. Authorization/Membership for the disposal of solid/hazardous waste in TSDF
12. Details of incinerator if to be provided
13. Risk assessment for storage and handling of hazardous chemicals, Disaster Action plan on fire fighting & safety system to be incorporated.
14. Arrangements for ensuring health and safety of workers engaged in handling of toxic materials.

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M/s OM CHEM.	Capacity Expansion of Formaldehyde Manufacturing Unit in Existing Facility from 100 TPD to 200 TPD on 0.6430 ha existing land at V.P.O. Kurali Distt. Yamunanagar, Haryana

TOR COMPLIANCE

S.No	ToR Point	Action to be taken	Chapter & Heading
		Executive Summary is attached before Chapter 1	
1	**Executive Summary**	**M/s Om Chem** has an existing Formaldehyde manufacturing unit for 100 TPD capacity at V.P.O. Kurali District Yamunanagar, Haryana The said project/activity is covered under category "A" (located outside Notified Industrial Area) of item 5(f) **"Synthetic Organic Chemicals"** of the Schedule to the EIA Notification, 2006	Executive Summary Page 1-4
2	**Introduction**		
I.	Details of the EIA Consultant including, NABET accreditation	Vardan EnviroNet is an accredited organization by Quality Council of India/NABET Certificate No. **NABET/EIA/1922/RA0166** and NABET accreditation certificate incorporated in the EIA.	Chapter 12
II.	Information about the project proponent	**Company Name:** M/s Om Chem **Manufacturing unit address:** Village Kurali, Sabapur Road, Tehsil Bilaspur, District Yamuna Nagar, Haryana **Registered address:** Kurali, Sabapur Road, Tehsil Bilaspur, Distt. Yamuna Nagar, Pincode: 135102. Name: Mr. Abhishek Garg (Partner) **Designation:** Director **Mob.:** 9876690002 **Email ID:** omchem@outlook.com	Chapter 1 Item No. 1.2.2 Page No. 7
III.	Importance and benefits of the project	**Importance** • The project is envisaged to meet the demand supply gap of domestic & international market. **Benefits** • Socio-economic benefit to the locals as it would provide both direct employment and indirect employment.	Chapter 8 Page No. 182-184

		• The project activity and the management will definitely support the local Govt. bodies and provide other form of assistance for the development of public amenities in this region. • The development of green belt in and around the plant premises will improve on the aesthetics of the area. Moreover, it will help in reducing the noise levels within the plant boundary. • It will attract generation of additional revenue to the Government by means of Taxes and duties. • The implementation of Rain Water Harvesting Scheme will help in increasing the ground water level of the area. Details of importance and benefits of the project are incorporated in the EIA	
3	**Project Description**		
I.	Cost of project and time of completion.	Cost of the project: Rs. 6.99 Crores Cost for EMP: Rs. 0.35 Crores (Rs. 35 Lakhs) The expansion project will commence after 6 months from getting EC.	Chapter 1, Table no 1.3,
II.	Products with capacities for the proposed project.	Formaldehyde manufacturing facility for 200 TPD capacity.	
III.	If expansion project, details of existing products with capacities and whether adequate land is available for expansion, reference of earlier EC if any.	**Capacity** / Formaldehyde: **Existing** 100 TPD; **Proposed** 100 TPD; **Total** 200 TPD The plant was operating on the basis of obtained CTE and CTO. The expansion will be within the land of the plant, no additional land is required.	
IV.	Details of existing products and production,	The unit was established in 19.04.2018 after obtaining CTE from HSPCB. The unit started it's operation from 22.02.2019 after obtaining CTO from	Chapter-1

M/s OM CHEM.	Capacity Expansion of Formaldehyde Manufacturing Unit in Existing Facility from 100 TPD to 200 TPD on 0.6430 ha existing land at V.P.O. Kurali Distt. Yamunanagar, Haryana

	if any, along with present product/ production details in tabular format, to verify the compliance of the EIA Notifications.	HSPCB. Production details are as follows.

S. No.	Product	Date	Max Production Capacity (TPD)
1	Formaldehyde	22.02.2019	100
2	Formaldehyde	08.04.2021	100

V.	List of raw materials required and their source along with mode of transportation.	

Raw Material	Existing Requirement	Proposed Requirement	Total Requirement	Source	Transport
Methanol	50 TPD	50 TPD	100 TPD	Will be Imported from Kandla Port, Gujarat	Tank Trucks

VI.	Other chemicals and materials required with quantities and storage capacities	No other Chemicals are required

VII.	Details of emission effluent, hazardous waste generation and their management	**Particulars**	**Emission**	**Effluent/Solid waste**	**Hazardous Waste**	Chapter - 2,
		Sources	Boiler (600 Kg/hr.) & 2 D.G. sets (325 KVA installed and 325 KVA proposed)	There will be no solid waste generated in the process. It is based on Zero Liquid Discharge.	Used oil	
		Control/ Treatment	Boiler - Stack height 30m, DG set stack height 6m &	Solid waste will be sent to TSDF site.	Used oil will be sold to vendors	

	fugitive emissions from manufacturing process- Wet Scrubber will be installed.		authorized by State Pollution Control Board.

The details of emission effluent, hazardous waste generation and their management are incorporated in EIA.

VIII. Requirement of water, power, with source of supply, status of approval, water balance diagram, man-power requirement (regular and contract)

Water Requirement:

Existing	Proposed expansion	Total	Source
100 KLD	95 KLD	195 KLD	The application has been submitted to HWRA.

Power Requirement:

Existing	Estimated for proposed expansion	Total	Source
160 KW	90 KW	250 KW	UHBVN (Uttar Haryana Bijli Vitran Nigam)

Manpower requirement:

Existing	Estimated for proposed expansion	Total	Source

10	2	12	Preference will be given to local public

IX.	Details of boiler/gensets (including stacks/ exhausts) and fuels to be used	Boiler of 600 kg/hr is used to generate steam for the manufacturing process and fuel used is High Speed Diesel.	
X.	Process description along with major equipment and machineries, process flow sheet (quantitative) from raw material to products to be provided	Process description and process flow sheet from raw material to product are incorporated in the EIA. Major equipment list is also mentioned in EIA report.	Chapter 2
XI.	Hazard identification and	Hazard identification and details of proposed safety systems are	Chapter 7

	details of proposed safety systems.	incorporated in the EIA.		
XII.	Expansion/ modernization proposals: • Copy of all the Environmental Clearance(s) including Amendments thereto obtained for the project from MOEF shall be attached as an Annexure. A certified copy of the latest Monitoring Report of the Integrated Regional Office of the Ministry of Environment, Forest and Climate Change as per circular dated 30th May, 2012 on the status of compliance of conditions stipulated in all the existing environmental clearances including Amendments shall be provided. In addition, copy of the latest CTO and status of compliance of Consent	Yes, Expansion The unit has never obtained Environmental Clearance and was operating on the basis of obtained CTOs from HSPCB. Copy of all CTOs is attached as Annexure 1 and Annexure 2		Annexure 1 and Annexure 2

to Operate for the ongoing/existing operation of the project from SPCB shall be attached with the EIA-EMP report • In case the existing project has not obtained environmental clearance, reasons for not taking EC under the provisions of the EIA Notification 1994 and/or EIA Notification 2006 shall be provided. Copies of Consent to Establish/No Objection Certificate and Consent to Operate (in case of units operating prior to EIA Notification 2006, CTE and CTO of FY 2005-2006) obtained from the SPCB shall be submitted. Further, compliance report to the conditions of consents from the	The unit has obtained CTE from HSPCB vide letter no. HSPCB/Consent/3130966618YAMCTE5274201 dated 19.04.2018. Unit came in operation after obtaining Consent To Operate (CTO) vide letter no. HSPCB/Consent/3130966619YAMCTO6377523 dated 22.02.2019 valid up to 30.09.2020 and renewed CTO vide Letter No. HSPCB/Consent/3130966621YAMCTO6383092 dated 08.04.2021 valid upto 10.05.2021. The unit had started construction in 2018 and came in operation in 2019 without securing Environmental Clearance hence it attracts the violation as per EIA Notification, 2006.	Annexure 1 Annexure 2

	SPCB shall be submitted.		
4	Site Details		
I.	Location of the project site covering village, Taluka/ Tehsil, District and State, Justification for selecting the site, whether other sites were considered	Village Kurali, Sabapur road, Tehsil: Bilaspur, District: Yamunanagar, Haryana. No alternative sites have been considered as the plant was already established since 2018. Land ownership documents are attached as Annexure 4.	
II.	A toposheet of the study area of radius of 10km and site location on 1:50,000/1:25,000 scale on an A3/A2 sheet. (including all eco-sensitive areas and environmentally sensitive places)	Toposheet No: H43L3 & H43L7 of SOI Incorporated in the EIA report.	Chapter-1,
III.	Details w.r.t. option analysis for selection of site	Site analysis study is not applicable as the unit is already established.	Chapter-5 Page No. 142
IV.	Co-ordinates (lat-long) of all four corners of the site.	(see coordinates table below)	Chapter 2 Table No. 2.1. Page No. 22
V.	Google map-Earth downloaded of the project	Google map-Earth downloaded of the project site is incorporated in the EIA.	Chapter- 2 Fig. 2.2

Points	Latitude	Longitude
Core	30°21'9.87"N	77°14'5.94"E
A	30°21'11.43"N	77°14'4.72"E
B	30°21'11.39"N	77°14'7.19"E
C	30°21'8.30"N	77°14'7.10"E
D	30°21'8.37"N	77°14'4.69"E

<table>
<tr><td></td><td>site.</td><td></td><td>Page No. 24</td></tr>
<tr><td>VI.</td><td>Layout maps indicating existing unit as well as proposed unit indicating storage area, plant area, greenbelt area, utilities etc. If located within an Industrial area/ Estate/ Complex, layout of Industrial Area indicating location of unit within the Industrial area/Estate.</td><td>The layout map of the existing unit indicating storage area, plant area, greenbelt area, utilities etc. is incorporated in the EIA report.</td><td>Chapter 2
Fig. 2.4
Page No. 26</td></tr>
<tr><td>VII.</td><td>Photographs of the proposed and existing (if applicable) plant site. If existing, show photographs of plantation/ greenbelt, in particular.</td><td>Photographs of the project site are incorporated in the EIA report.</td><td>Chapter-2
Fig. 2.5
Page No. 27</td></tr>
<tr><td>VIII.</td><td>Landuse break-up of total land of the project site (identified and acquired), government/ private - agricultural, forest, wasteland, water bodies, settlements, etc shall be included (not required for industrial area).</td><td>Landuse break-up of total land of the project site :
<table><tr><th>S.no.</th><th>Details</th><th>Area (Hec.)</th><th>Percentage (%)</th></tr><tr><td>1</td><td>Plant built up area</td><td>0.1225</td><td>19.05</td></tr><tr><td>2</td><td>Greenbelt area</td><td>0.2347</td><td>36.50</td></tr><tr><td>3</td><td>Road and Pathway</td><td>0.2858</td><td>44.45</td></tr><tr><td></td><td>Total</td><td>0.6430</td><td>100</td></tr></table></td><td>Chapter – 2
Table 2.10
Page No. 32</td></tr>
<tr><td>IX.</td><td>A list of major industries with name and type within study area shall be incorporated. Land use details of the study area</td><td>List of Major Industries are attached as an Annexure 9.</td><td>Annexure 9</td></tr>
</table>

X.	Geological features and Geo-hydrological status of the study area shall be included.	The Geological features and Geo hydrological status of the study area are incorporated in the EIA.	Chapter-3 Item No. 3.8 and 3.9 Page 68-76
XI.	Details of Drainage of the project upto 5 km radius of study area. If the site is within 1 km radius of any major river, peak and lean season river discharge as well as flood occurrence frequency based on peak rainfall data of the past 30 years. Details of Flood Level of the project site and maximum Flood Level of the river shall also be provided. (mega green field projects)	Drainage Map of study area (10km area) is attached in EIA report. The water body in the study area is mentioned below: - • Markanda River at a distance of 7.01 km in NW direction • Nakdi Nadi at approx. 1.5 km NW direction • Chautang Nadi at approx. 5.0 km SE direction	Chapter-3 Fig. 3.14 Page No. 67
XII.	Status of acquisition of land. If acquisition is not complete, stage of the acquisition process and expected time of complete possession of the land. Documents related to conversion of land for Industrial purpose.	The location of the project being outside the Notified Industrial Area. Proposed project established over the purchased land for which the document has been attached as an Annexure 1. The total land area for the proposed expansion project is 0.6430 Hectares, at Village Kurali, Sabapur road, Tehsil: Bilaspur, District: Yamunanagar, Haryana. Change of Land Use documents has been attached as Annexure 4.	Annexure 4
XIII	R&R details in respect of land in line with state Government policy.	Not applicable as the land is already under the possession of proponent & free from any forest land.	
5	Forest and wildlife		

	related issues	
I	Permission and approval for the use of forest land (forestry clearance), if any, and recommendations of the State Forest Department (if applicable)	YES. Company has obtained diversion of 0.0058355 ha of forest land for access, from MoEF&CC vide F.No. 9-HRB191/2018-CHA dated 19.12.2018.
II	Land use map based on High resolution satellite imagery (GPS) of the proposed site delineating the forest land (in case of projects involving forest land more than 40 ha)	Not applicable
III	Status of Application submitted for obtaining the stage I forestry clearance along with latest status shall be submitted.	Not applicable
IV	The projects to be located within 10 km of the National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals, the project proponent shall submit the map duly authenticated by Chief Wildlife Warden showing these features vis-à-vis the project location and the recommendations or	Not applicable

	comments of the Chief Wildlife Warden thereon		
v	Wildlife Conservation Plan duly authenticated by the Chief Wildlife Warden of the State Government for conservation of Schedule I fauna, if any exists in the study area.	Pavo cristatus is listed in the Schedule I, found in the study area. Wildlife Conservation Plan has been prepared and is attached as Annexure 8.	Annexure 8
vi	Copy of application submitted for clearance under the Wildlife (Protection) Act, 1972, to the Standing Committee of the National Board for Wildlife.	Not Applicable	
6	Environmental Status		
1	Determination of atmospheric inversion level at the project site and site-specific micrometeorological data using temperature, relative humidity, hourly wind speed and direction and rainfall.		Chapter-3 Table 3.1 Page No. 38
	▪ AAQ data (except monsoon) at 8 locations for PM10, PM2.5, SO2, NOX, CO and other parameters relevant to	The monitoring stations selected are based on CPCB guidelines. Nearest populated habitat, water body, protected/reserved forest are also been considered. AAQ data was collected from 8 locations in 10 km radius if the project site.	Chapter-3 Table 3.3 Page No. 40

Months	Temp (°C)		Avg Relative Humidity (%)	Total Rainfall (mm)
	Max.	Min		
March	28.5	13.7	53	42
April	35.3	19.2	33	27
May	38.4	23.3	34	28

	the project shall be collected. The monitoring stations shall be based CPCB guidelines and take into account the predominant wind direction, population zone and sensitive receptors including reserved forests. Study should indicate minimum, maximum value of different parameters for the period (3 months) collected. Collected data should be supported by the reference data of either CPCB or SPCB. AAQ data & GLC of pollutants from stack emissions should suggest technology/ measures- Best Practiced Technology (BPT) indicating best achieved results.		
II.	Raw data of all AAQ	Raw data of AAQ parameters PM_{10}, $PM_{2.5}$, SO_2, NO_2, CO, HC & VOC of	Chapter-3.

	measurement for 12 weeks of all stations as per frequency given in the NAQQM Notification of Nov. 2009 along with - min., max., average and 98% values for each of the AAQ parameters from data of all AAQ stations should be provided as an annexure to the EIA Report.	8 locations for 12 weeks of all stations mrasured twice a week are attached with EIA report as an Annexure 7.	Annexure 7
III.	Surface water quality of nearby River (100m upstream and downstream of discharge point) and other surface drains at eight locations as per CPCB/MoEF&CC guidelines.	Surface water quality data of 8 locations is incorporated in EIA. Surface water monitoring report is attached as Annexure 7.	Chapter-3, Annexure 7
IV.	Whether the site falls near to polluted stretch of river identified by the CPCB/ MoEF&CC, if yes give details	No polluted stretch nearby.	
V.	Ground water monitoring at minimum at 8 locations shall be included.	Ground water samples from 8 different locations & the results are incorporated in EIA report.	Chapter-3, Annexure 7
VI.	Noise levels monitoring at 8 locations within the study area.	Noise levels monitoring at 8 locations within the study area are incorporated in EIA report.	Chapter 3 Annexure 7
VII.	Soil Characteristic as per CPCB guidelines.	For studying the soil types and soil characteristics, 8 sampling locations were selected to assess the existing soil conditions representing various	Chapter 3 Annexure 7

		land use conditions and geological features.	
VIII.	Traffic study of the area, type of vehicles, frequency of vehicles for transportation of materials, additional traffic due to proposed project.	Detailed traffic study of the area along with type & frequency of the heavy vehicles and additional traffic due to proposed project has been carried out and incorporated in EIA report.	Chapter- 3 Item No. 3.12 Page No. 317
IX.	Detailed description of flora and fauna (terrestrial and aquatic) existing in the study area shall be given with special reference to rare, endemic and endangered species. If Schedule-I fauna are found within the study area, a Wildlife Conservation Plan shall be prepared and furnished	Detailed Ecology and Biodiversity report is incorporated in EIA Report. Pavo cristatus and Melanoperdix niger is listed in the Schedule I, found in the study area. Wildlife Conservation Plan has been prepared and is attached as Annexure 8.	Annexure 8
X.	Socio-economic status of the study area.	Any developmental activity exerts a direct impact on the socio-economic environment of the region. Usually, the beneficial impacts such as better job opportunities, improved education, communication, energy, housing, health, transportation facilities etc. The detailed study report is incorporated in EIA report.	Chapter 3 Item No. 3.11 Page No. 98
7	**Impact and Environment Management Plan**		
I.	Assessment of ground level concentration of pollutants from the stack emission based on site-specific meteorological features. Cumulative	**Air Quality Modeling** U.S. EPA AERMOD dispersion model, 1996 – 2013 Lakes Environmental Software, Version 9.5.0 has been used for this report. The details are incorporated in EIA report.	Chapter 4 Item No. 4.4 Page No. 134

	impact of all sources of emissions (including transportation) on the AAQ of the area shall be assessed.		
II.	Water Quality modelling in case of discharge in water body	Not Applicable.	
III.	Impact of the transport of the raw materials and end products on the surrounding environment shall be assessed and provided. In this regard, options for transport of raw materials and finished products and wastes (large quantities) by rail or rail-cum road transport or conveyor-cum-rail transport shall be examined.	The LOS value from the proposed expansion project may be same as earlier value "very good" for all highways. So the additional load on the carrying capacity of the concern roads is not likely to have any significant adverse effect.	Chapter-3 Item No. 3.12 Page No. 317
IV.	A note on treatment of wastewater from different plant operations, extent recycled and reused for different purposes shall be included. Complete scheme of effluent treatment. Characteristics of untreated and treated effluent to meet the prescribed standards of	The details scheme of Process waste is incorporated in the EIA report. There is no process effluent generated through the process. However, some solid waste from single stage evaporator will be sent to TSDF Site.	Chapter 2 Item No. 2.11 Page No. 34

	discharge under EP) Rules.		
V.	Details of stack emission and action plan for control of emissions to meet standards.	**DG sets:** Standard Emission from DG set is ≤0.2 g/kW-hr for PM, ≤3.5 g/kW hr for CO and ≤4.0 g/kW hr for NO2+HC which is strictly maintained. Also stack height of 6m is provided. **Boiler:** Standard Emission from boiler of 600 kg/hr capacity is approx. 1600 which is strictly maintained. Also stack height of 30m is provided.	Chapter 2 Item No. 2.11 Page No. 34
VI.	Measures for fugitive emission control	Formaldehyde manufacturing does not have significant fugitive emissions as the process is automated and carried out in closed environment.	Chapter 4
VII.	Details of hazardous waste generation and their storage, utilization and management. Copies of MOU regarding utilization of solid and hazardous waste in cement plant shall also be included. EMP shall include the concept of waste minimization, recycle/ reuse/ recover techniques, Energy conservation, and natural resource conservation	Used oil is the hazardous waste produced by operating of DG sets. It is stored in HDPE lined drums and disposed off to authorized vendors. Undertaking for Solid and Hazardous Waste Disposal is attached as Annexure 10.	Annexure 10
VIII.	Proper utilization of fly ash shall be ensured as per Fly Ash Notification, 2009. A detailed plan of action shall be provided.	Not applicable	

IX.	Action plan for the green belt development plan in 33% area. Giving details of species, width of plantation, planning schedule etc. shall be included. The green belt shall be around the project boundary and a scheme for greening of the roads used for the project shall also be incorporated	36.36% of total area as per CPCB norms will be developed as the green belt.	Chapter 10 Item No. 10.6 Page No. 200
X.	Action plan for rainwater harvesting measures at plant site shall be submitted to harvest rainwater from the roof tops and storm water drains to recharge the ground water and also to use for the various activities at the project site to conserve fresh water and reduce the water requirement from other sources	Rainwater Harvesting Plan is incorporated in EIA Report.	Chapter 4 Item no. 4.7 Page No. 147
XI.	Total capital cost and recurring cost/annum for environmental pollution control measures shall be included.	The total capital investment on environmental control measures is envisaged to be about Rs 0.35 Crores and Rs. 0.026 Crore Recurring Cost. Details are given in EIA report.	Chapter 1

XII.	Action plan for post-project environmental monitoring shall be submitted	A detailed monitoring of emissions and effluent sources for different environmental parameters will be carried out as per the present norms and any further notification / direction from Haryana State Pollution Control Board, Central Pollution Control Board and MoEF&CC. Monitoring methodologies will follow standard methods prescribed by Central Pollution Control Board (CPCB), Bureau of Indian Standards (BIS) etc.	
XIII.	Onsite and Offsite Disaster, Preparedness and Emergency Management Plan including Risk Assessment and damage control. Disaster management plan should be linked with District Disaster Management Plan.	Disaster management plan is prepared with an aim of taking precautionary step to control the hazard propagation, avert disaster, take action after the disaster which limits the damage to the minimum and follow the on-site & off-site emergency planning.	Chapter 7 Item 3.10-3.12 Page No. 177-187
S	**Occupational health**		
I.	Plan and fund allocation to ensure the occupational health & safety of all contract and casual workers	Rs. 0.04 Crores will be kept to ensure safety of all employees including contract & casual workers.	
II.	Details of exposure specific health status evaluation of worker. If the workers health is being evaluated by pre designed format, chest x rays, Audiometry, Spirometry, Vision testing	Camps for regular health checkup will be conducted for all the workers.	

	(Far & Near vision, colour vision and any other ocular defect) ECG, during pre-placement and periodical examinations give the details of the same. Details regarding last month analyzed data of above mentioned parameters as per age, sex, duration of exposure and department wise.		
III.	Details of existing Occupational & Safety Hazards. What are the exposure levels of above mentioned hazards and whether they are within Permissible Exposure level (PEL), what measures the company has adopted to keep them within PEL so that health of the workers can be preserved	Personal protective equipment are provided to the workers working at the production area, boiler, near storage tank, control room etc. PPE summary is incorporated in Chapter 7 of the EIA Report.	
IV.	Annual report of health status of workers with special reference to Occupational Health and Safety.	There is no such record maintain at the plant However, PP agreed to maintain after the expansion of unit.	
9	Corporate Environment Policy		
I.	Does the company have a well laid down	Environment Policy is attached with EIA report as Annexure 11.	Annexure 11

	Environment Policy approved by its Board of Directors? If so, it may be detailed in the EIA report.		
II.	Does the Environment Policy prescribe for standard operating process / procedures to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions? If so, it may be detailed in the EIA	Yes. All the Environmental policy is followed for SOPs and procedures so that any further violation regarding environmental or forest norms will be avoided. For that scheduled internal audits and management review meeting shall be done.	
III.	What is the hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the environmental clearance conditions? Details of this system may be given	Hierarchical system of the company is shown in Environmental Policy, attached as an Annexure II.	Annexure II
IV.	Does the company have system of reporting of non compliances / violations of environmental norms to the Board of Directors of the company and / or shareholders or stakeholders at large? This	The system of reporting of Non-conformances/ violation of any Environmental Law/Policy will be as per quality management system. The internal audit will be conducted on periodic basis and any Non-conformances/ violation to Environmental Law/Policy will be closed and discussed during Management Review Meetings of board of directors/partners and Environment Policy for this is attached as Annexure II.	Annexure II

	reporting mechanism shall be detailed in the EIA report	
v	Details regarding infrastructure facilities such as sanitation, fuel restroom etc. to be provided to the labour force during construction as well as to the casual workers includes truck drivers during operation phase.	Training will be given to all employees working at the unit.
30	**Corporate Environmental Responsibility (CER)**	
i.	Adequate funds, as per the Ministry's OM/ Guidelines, shall be earmarked towards the Corporate Environmental Responsibility based on Public Hearing issues/socio-economic issues and item-wise details along with time bound action plan shall be included (CER activities shall be related to environment). Socio-economic development activities need to be elaborated upon. For the projects where public hearing is not conducted,	CER budget will be finalized as per notification 30.09.2020 after Public Hearing of the project addressing the issues raised during the hearing.

	CER plan shall be provided based on socio-economic study of the area		
11	**Additional studies/Measures to be considered**		
i)	Provide latest and ecofriendly technology for product manufacturing	The technology adopted for formaldehyde manufacturing is ecofriendly itself as there is no hazardous waste or effluent generated from the process.	
ii)	Emphasize on Green chemistry/ Clean Manufacturing	Emissions can only be generated through HSD used in boiler. PP is committed to shift towards cleaner fuel is the LPG pipeline connection once it will be easily available at the project site.	
iii)	Provide CAS No. of products along with product list.	CAS No. is tabulated in EIA Report	Chapter 2
iv)	Provide details of amount of carbon sequestered in their unit through greenbelt/ other modes, in case of expansion project	Will be provided during final EIA	
v)	Life structure and sustainability for carbon and water foot print	Will be provided during final EIA	
vi)	Detailed pollution Load estimation	Will be provided during final EIA	
vii)	Transportation of Hazardous substance, effluents etc. shall be carried out through authorized and GPS enable vehicles/ Trucks only	Transportation plan is attached as Annexure 12.	Annexure 12
viii)	Category of Hazardous	Used oil is the only hazardous waste which comes under 5.1 of	

	Wastes shall be mentioned in the EIA/EMP report and in presentation	Schedule- I as per Hazardous and Other Waste Management Rules 2016 and will be sent to authorize recyclers.	
ix)	Details of greenhouse gases and emissions shall be provided	Will be provided during final EIA	
x)	Greenbelt shall be developed in the first year of the project and wind breaks shall be erected	Greenbelt plantation is already started by PP and will commit to achieve in coming 6 months.	
xi)	Study area map shall be overlapped with all the associated features	Toposheet Map for the same is prepared and is incorporated in the EIA Report.	Chapter 1
vii)	Emphasize on green fuels.	Emissions can only be generated through HSD used in boiler. PP is committed to shift towards cleaner fuel is the LPG pipeline connection once it will be easily available at the project site.	
xiii)	The project from NCR shall not use Coal as fuel. Further, PP shall avoid use of Coal in the CP As and elsewhere also if alternatives are available.	Coal is not used in the plant.	
xiv)	Provide the Cost-Benefit analysis with respect to the environment due to the project	Will be provided during final EIA	
12	Any litigation pending against the project and/or any direction/ order passed by any Court of Law against the project, if so, details thereof shall also be included. Has the	Chronology of legal orders is incorporated in EIA Report and all show cause notices are attached as Annexure 3.	Annexure 3

	unit received any notice under the Section 5 of Environment (Protection) Act, 1986 or relevant Sections of Air and Water Acts? If so, details thereof and compliance/ ATR to the notice(s) and present status of the case		
13	A tabular chart with index for point wise compliance of above TOR. **SPECIFIC TERMS OF REFERENCE**	Have been Complied.	
I.	Details on solvents to be used, measures for solvent recovery and for emissions control	There is no solvent used in the manufacturing process, the major raw material is methanol and hence no solvent recovery system is proposed.	
II.	Details of process emissions from the proposed unit and its arrangement to control	The details of process emission from the existing unit and its arrangement to control are incorporated in the EIA.	
III.	Ambient air quality data should include VOC, other process-specific pollutants* like NH_3*, chlorine*, HCl*, HBr*, H_2S*, HF*,etc., (*as applicable)	Ambient air quality data include the VOC and other process-specific pollutants* like HC. The results are incorporated in the EIA and Air results are attached as Annexure 7.	
IV.	Work zone monitoring arrangements for hazardous chemicals	Work place monitoring to be done regularly & detectors will be installed. Hazardous chemicals will be stored separately.	Chapter 7

V.	Detailed effluent treatment scheme including segregation of effluent streams for units adopting Zero liquid discharge	There will be no hazardous waste generated in the project. It is based on Zero Liquid Discharge. Although, septic tank is already exists for the treatment of domestic waste.	
VI.	Action plan for odour control to be submitted.	Green belt will be maintained to control the odour problem. 36.50% of total area as per CPCB norms will be developed as the green belt.	
VII.	A copy of the Memorandum of Understanding signed with cement manufacturers indicating clearly that they co process organic solid/ hazardous waste generated	Undertaking for the same is attached as Annexure 10.	Annexure 10
VIII.	Authorization/ Membership for the disposal of liquid effluent in CETP and solid/hazardous waste in TSDF, if any.	Undertaking for the same is attached as Annexure 10.	Annexure 10
IX	Action plan for utilization of MEE/ dryers salts.	Salt from single stage evaporator will be sent to TSDF Site.	
X.	Material Safety Data Sheet for all the Chemicals are being used/ will be used	Material safety data sheet for all the chemicals are attached as Annexure 13.	Annexure 13
XI.	Authorization/ Membership for the disposal of solid/ hazardous waste in TSDF	Company will collect, store separately and disposed off solid/ hazardous waste at authorized site. Company will take the Membership of TSDF facility after the grant of Environmental Clearance.	
XII.	Details of incinerator if to	Not Applicable	

	be installed		
XIII.	Risk assessment for storage and handling of hazardous chemicals/ solvents. Action plan for handling & safety system to be incorporated.	Risk assessment for storage and handling of hazardous chemicals and Action plan for handling & safety system is incorporated in the EIA.	Chapter 7
XIV.	Arrangements for ensuring health and safety of workers engaged in handling of toxic materials	Various arrangements will be made for ensuring the health and safety of worker engaged in handling of toxic materials are mention in the EIA report.	Chapter 7
ADDITIONAL POINTS			
(i)	The project proponent will be liable to pay the penalty for the period of violation, as may be determined by Ministry, arisen due to constructing and/or operating the project without prior EC. An undertaking in this regard shall be submitted by PP along with EC proposal. The project proponent shall also submit the details on the cost incurred on establishment of the project and year-wise total turnover till date.	The damage assessment study has been done as per MoEF&CC O.M No. 19-125/2019-IA.III, dated 05.03.2020 and is incorporated in Chapter 13 of EIA Report. PP has given an undertaking regarding bank Guarantee for remediation measures as decided by the EAC.	

(ii)	The Directions of the Hon'ble NGT shall be implemented vide its Orders dated 03.06.2021, in the matter of Dastak NGO vs Syncochem Prganics Pvt. Ltd. & ors in OA No. 287 of 2020; Vineet Nagar Vs. Central Ground Water Authority & Ors. in OA No. 298 of 2020; and Ayush Garg Vs Union of India & Ors. in OA No. 840 of 2019]. Implementation Report may be submitted by the project proponent at the time of submission of EIA/EMP Report.	As per the direction issued from NGT vide order dated 03.05.2021, the unit is not in operation phase any more. Implementation report for the same is under process and will submit till final EC Presentation.
(iii)	The State Government/ SPCB to take action against the project proponent under the provisions of section 19 of the Environment (Protection) Act, 1986, and further no consent to operate to be issued till the project is granted EC.	No further Consent to Operate is issued by Haryana State Pollution Control Board.
(iv)	Haryana PCB may assess and recover compensation for illegal operation of the Units on 'Polluter Pays' ;	Implementation report for the same is under process and will submit till final EC Presentation.

	principle. Implementation Report may be submitted by the SPCB at the time of submission of EIA/EMP Report by the project proponent.	
(v)	Assessment of ecological damage with respect to air, water, land and other environmental attributes. The collection and analysis of data shall be done by an environmental laboratory duly notified under the Environment (Protection) Act, 1986, or an environmental laboratory accredited by NABL, or a laboratory of a Council of Scientific and Industrial Research (CSIR) institution working in the field of environment. The cost for assessment of environmental damage may be guided by the Ministry of Environment, Forest and Climate Change O.M No. 19-125/2019-IA.III, dated 05.03.2020.	The damage assessment study has been done as per MoEF&CC O.M No 19-125/2019-IA.III, dated 05.03.2020 and is incorporated in Chapter 13 of EIA Report.

(vi)	EMP shall be prepared comprising remediation plan and natural and community resource augmentation plan corresponding to the ecological damage assessed and economic benefits derived due to violation.	Separate Ecological Assessment Plan is incorporated in Chapter 13
(vii)	The remediation plan and the natural and community resource augmentation plan to be prepared as an independent chapter in the EIA report by the accredited consultants.	The independent chapter for remediation plan and the natural and community resource augmentation plan has been prepared as Chapter 13 in EIA Report.
(viii)	The project proponent shall be required to submit a bank guarantee equivalent to the amount of remediation plan and natural and community resource augmentation plan with the SPCB prior to the grant of EC. The quantum shall be recommended by the EAC and finalized by the regulatory authority. The bank guarantee shall be released after successful	PP has given an undertaking regarding bank Guarantee for remediation measures as decided by the EAC.

	implementation of the EMP, followed by recommendations of the EAC and approval of the regulatory authority.		
(ix)	Budget of remediation plan and natural and community resource augmentation plan corresponding to the ecological damage shall be completed within three years and to be prepared accordingly.	Remediation plan corresponding to the ecological damage is prepared and the budget for same has been allocated. The details are provided in Chapter 13 of EIA Report.	Chapter 13

M/s OM CHEM.	Capacity Expansion of Formaldehyde Manufacturing Unit in Existing Facility from 100 TPD to 200 TPD on 0.6430 ha existing land at V.P.O. Kurali Distt. Yamunanagar, Haryana

EXECUTIVE SUMMARY

a) Introduction

M/s Om Chem has an existing Formaldehyde manufacturing unit at V.P.O. Kurali Kurali in Bilaspur Distt. Yamunanagar, Haryana.

The plant was setup with the consent to establish dated 19.04.2019 from the Haryana State Pollution Control Board (HSPCB) Subsequently, the unit has started operation after obtaining consent to operate dated 22.02.2019.

The said project/activity is covered under category "A" (located outside Notified Industrial Area) of item 5(f) "Synthetic Organic Chemicals" of the Schedule to the EIA Notification, 2006, and requires prior EC from Expert Appraisal Committee, MoEF&CC.

b) Basic Details of the Project

S.No.	Particulars	Details		
1.	**Nature and size of the Project**	Capacity Expansion of Formaldehyde Manufacturing Unit in existing facility from 100 TPD to 200 TPD at Village Kurali, Sabapur Road, Tehsil Bilaspur, District Yamuna Nagar, Haryana by M/s Om Chem		
	Location details			
2.	Village /Town/ Plot No.	Kurali, Sabapur Road		
	District	Yamuna Nagar		
	State	Haryana		
	Area Details			
3.	Total Project Area	Total area available is 0.6430 Hectare. No additional land is required for proposed expansion. Green belt will be developed in an area of 0.2347 Hectare (Approximately 36.50% of total land area).		
	Cost Details			
4.	Project Cost	**Existing**	**Estimated cost for proposed expansion**	Total
		Rs. 4.99 Crores	Rs. 2.00 Crores	Rs. 6.99 Crores
	Budget of EMP	Rs. 0.35 Crores		
5.	**Basic Requirements of the Project**			
	Fresh Water (m³/day)	Existing	**For Expansion**	Total
		100 KLD	95 KLD	195 KLD
		Source: HWRA		
	Power	Existing	**For Expansion**	Total

	160 KW	90 KW	250 KW

Source: UHBVN (Uttar Haryana Bijli Vitran Nigam)

DG sets as backup: 325 KVA (existing)
325 KVA (proposed)

	Existing	Proposed expansion	Total	Fuel
Boiler	1 boiler of 600 Kg/Hr Capacity		1 boiler of 600 Kg/Hr Capacity	HSD Fired
Fuel	HSD			

	Existing	For Expansion	Total
Manpower	10	2	12

Preference will be given to local public.

c) **Production Capacity**

Product	Existing Capacity	Proposed Expansion Capacity	Total Capacity after expansion
Formaldehyde	100 TPD	100 TPD	200 TPD

d) **Raw Material Detail**

The major raw material is Methanol which comes in road through tankers from Kandla Port, Gujarat & stored in underground tanks.

Raw Material	Existing Requirement	Proposed Requirement	Total Requirement	Source	Transport
Methanol	50 TPD	50 TPD	100 TPD	Import	Tank Trucks

e) **Project Benefits**

- The plant will help in providing employment in priority to local people.
- There will be an increase in indirect employment and earnings of the small time shop owners like tea vendors, transporters, etc.
- The Project proponent has planned to contribute in socio-economic development of the area.
- The easy availability of infrastructure, manpower, raw materials will reduce the production cost as well as demand supply gap.

- The development of greenbelt in and around the plant premises will improve on the aesthetics of the area. Moreover, it will help in reducing the noise levels within the plant boundary.

f) **Mitigation Measures for Control of Pollution**

i. **Air Pollution Control Measures**

- Online Stack Monitoring System as an air pollution control measures to control the emission of particulate matter, the flue gas emission will remain well within gaseous emission norms prescribed by the CPCB.
- To control the air emissions from D.G. Set, stack height of 6.0 m shall be provided.
- Green belt will be developed on 36.5% area of the total project area which will help in attenuating the pollutants emitted by the plant.

ii. **Waste Water Treatment**

There will be no waste water discharge from the plant. Zero Liquid Discharge (ZLD) concepts to be adopted. Domestic waste water after treatment (in septic tank) will be fully utilized with the facility for cleaning, flushing, water sprinkling and other non portable domestic purpose.

iii. **Noise Pollution Control**

- Vibrating pads & acoustic enclosure will be provided to noise generating equipment to control noise level within norms.
- Latest technology and utmost care will be taken at the time of equipment/machinery installation.
- Lubrication of moving/rotating part or component of machineries will be done on regular basis.
- The operators working in the high-noise areas will be provided with ear-muffs or plugs.
- Acoustic enclosures and silencers will be provided to the equipment wherever necessary
- Proper green belt will be developed to reduce the noise level.
- Thus, it is envisaged that there will not be any adverse impacts of noise. The greenbelt developed within the premises will have significant beneficial impacts on reduction of noise within the periphery and outside the boundary.

iv. **Land Pollution Control**

- The plant will implement zero liquid discharge concepts. The treated water will be recycled in the process. Therefore, there will not be any negative impact on soil.
- No toxic / waste water will be disposed directly on land.
- Other hazardous solid wastes will be sent to authorized recycler or vender.
- It is envisaged that there will not be any major impacts on land environment during the operation phase.

v. **Solid & Hazardous Waste Generation and Disposal**

- Used Oil will be sold to authorized recycler
- Solid waste from evaporator will be sent to TSDF.

All the Solid & hazardous waste generated, will be collected, stored separately and disposed off as per the guidelines issued by CPCB & Haryana State Pollution Control Board.

g) Environmental Management Plan (EMP)

Total capital cost for Environmental management is proposed to be Rs. 35.00 Lakhs whereas recurring cost for the same is Rs. 2.6 Lakhs/year out of total project cost Rs. 6.99 Crores.

h) National Parks or Wild Life Sanctuary

There is no Wild Life Sanctuary or National Park within 10 km radius of the Project Site hence no NBWL Clearance required. No forest land involved within the project site.

i) Demography & Socio-Economic Environment

- Improvement of infrastructure, transportation, health care and education facility.
- Direct and indirect employment will be generated like business, contract works and development work like roads, etc. and other welfare amenities such as medical facilities, conveyance, free education, drinking water supply etc.
- The impact of employment opportunities will not be significant due to low level of education and skills in the area which will result in sourcing skilled work force from outside the immediate area.
- Skill based training to local employed people will be given by project proponent.
- The interaction and intermingling of all these people will improve the understanding of various cultures and will definitely improve and strengthen friendliness, brotherhood and unity among them.

M/s OM CHEM.	Capacity Expansion of Formaldehyde Manufacturing Unit in Existing Facility from: 100 TPD to 200 TPD on 0.6430 ha existing land at V.P.O. Kurali Distt. Yamunanagar, Haryana

CHAPTER 1: INTRODUCTION

1.1 PURPOSE OF THE PROJECT

As per the EIA Notification dated 14th September 2006, as amended from time to time; it is mandatory to have the Environmental Clearance for any new industry or the expansion of the industry from Ministry of Environment Forest and Climate Change (MoEF&CC), Government of India, New Delhi for which EIA is required to be conducted as per the guidelines of MoEF&CC, New Delhi. The purpose of this report is to assess the environmental impacts due to expension of manufacturing unit of Formaldehyde at village Kurali, Sabapur road, Tehsil: Bilaspur, District: Yamunanagar, State: Haryana

1.2 IDENTIFICATION OF THE PROJECT AND PROJECT PROPONENT

1.2.1 Project Details

M/s Om Chem has an existing unit for manufacturing of Formaldehyde with the production capacity of 200 TPD at Village Kurali, Sabapur Road, Tehsil Bilaspur, District Yamuna Nagar (Haryana). The plant was setup with the consent to establish dated 19.04.2018 from the Haryana State Pollution Control Board (HSPCB) (Attched as Annexure-I). Subsequently, the unit has started operation after obtaining consent to operate dated 22.02.2019 valid up to 30.09.2020 and renewed CTO vide Letter No. HSPCB/Consent/3130966621YAMCTO6383032 dated 08.01.2021 valid upto 10.05.2021 (Attched as Annexure-II). HSPCB issued several show cause notices for closure and cancelling of CTO. The chronology of events is as under:

Table 1.1: Chronology of the Events

S.No.	Date	Description	Annexures
1	19.04.2018	Consent to Establish obtained from HSPCB vide letter no. HSPCB/Consent/3130966618YAMCTB627/4201 dated 19.04.2018	Annexure 1
2	22.02.2019	Consent to Operate under Air Act, 1981 vide Letter no. HSPCB/Consent/3130966619YAMCTO6377523 Dated 22.02.2019 valid up to 30.09.2020 and renewed CTO vide Letter No. HSPCB/Consent/3130966621YAMCTO6383032 Dated 08.01.2021 valid upto 10.05.2021.	Annexure 2
3	08.06.2019	Show cause Notice for closure of industry under section 05 of EPA Act 1986 vide letter no. dated	Annexure 3

S.No.	Date	Description	Annexures
		03.06.2019.	
4	12.06.2019	Reply Filed against Show cause Notice	
5	21.08.2019	Show Cause Notice for revocation of CTE & CTO under Water Act 1974 and Air Act 1981	
6	22.12.2019	Order passed by SEIAA requesting HSPCB for closure of unit in absence of EC	
7	14.07.2020	Order passed by HSPCB for cancelling CTE & CTO	
8	22.07.2020	Show cause for Closure U/s 33A of Water Act 1974 and Section 31A of Air Act 1981, Prosecution U/s 44 of Water Act 1974 and Section 37 of Air Act 1981 and imposition of Environmental Compensation as per Policy of the Board.	
9	07.08.2020	Closure order received for unit	
10	10.08.2020	Order passed by NGT for closure of unit	
11	06.11.2020	Appeal filed in High Court Chandigarh against closure of NGT order	
12	11.11.2020	Additional Chief Secretary, Environment Department, Haryana Govt. vide their order dated 11.11.2020 allowed the units to continue their operations for a period of six months without prejudice to any legal actions taken against the violations committed by them, by the competent authorities, with the conditions that they will immediately apply for Environmental Clearance from the competent authority and provide the proof of such application within 60 days from the issuance of this communication to Environment and Climate Change Department and to Haryana State Pollution Control Board.	
13	03.05.2021	Order to stop operations of Unit was Issued by Regional Officer, HSPCB due to expiration of 6 month validity of relaxation given by Haryana State Govt.	
14	03.06.2021	The NGT order dated 03.06.2021 for the Original Application No. 840/2019 (Ayush Garg Vs. Union of India & Ors.) concluded "no further direction appears to be necessary except that the State PCB may ensure that the unit does not re-start functioning without requisite statutory clearance".	

M/s OM CHEM.	Capacity Expansion of Formaldehyde Manufacturing Unit in Existing Facility from 100 TPD to 200 TPD on 0.6430 ha existing land at V.P.O. Kurali : Distt. Yamunanagar, Haryana

Table 1.2: Details of Violation

S. No.	Period	Production	Remarks
1	22.02.2019 to 03.05.2021	Formaldehyde Manufacturing (100 TPD)	Prior EC was not secured before setting up and operating the Unit, hence covered under violation as per EIA Notification 2006 and subsequent amendments. The plant has in operation phase from 2019 without taking prior Environmental Clearance. Considering this, we are applying our proposal to Expert Appraisal Committee, Violation.

M/s Om Chem is now proposing expansion in the production capacity from 100 MTPD to 200 MTPD. The land is already in possession of Project proponent (Land documents are attaced as Annexure 4). Permission has been granted for Change of Land Use (CLU) from Directorate of Town & Country Planning, Haryana vide Memo No. B 626 Dated 09.04.2018.

Company has obtained diversion of 0.0058333 ha of forest land for access, from MoEF&CC vide F.No. 9-HRB191/2018-CIA dated 13.12.2018 (Attched as Annexure 5).

Screening Category

As per EIA Notification 2006 and its subsequent amendments, the project falls under schedule 3 (f) "Synthetic Organic chemical Project" and EC was required before starting construction work. This project was developed after EIA Notification 2006 without securing Environmental Clearance; hence the project has violated the conditions of said Notification. Hence, the Environmental Clearance will be granted from Expert Appraisal Committee for the proposal involving violation of EIA Notification, 2006.

1.2.2 Identification of Project Proponent

Company Name	:	M/s Om Chem
Name (Applicant)	:	Abhishek Garg (Partner)
Designation	:	Director
Mailing Address	:	Kurali, Sabapur Road, Tehsil Bilaspur, Distt. Yamuna Nagar, Pincode- 135102
E-mail	:	omchem@outlook.com

M/s OM CHEM.	Capacity Expansion of Formaldehyde Manufacturing Unit in Existing Facility from 100 TPD to 200 TPD on 0.6430 ha existing land at V.P.O. Kurali Distt. Yamunanagar, Haryana
Telephone :	9816690002

1.3 BRIEF DESCRIPTION OF THE NATURE, SIZE, LOCATION OF THE PROJECT

The Brief description about the nature, size and location of the project is given in Table 1.1

Table 1.3: Project detail and Environment Setting

S.No.	Particulars	Details
1.	Nature and size of the Project	Capacity Expansion of Formaldehyde Manufacturing Unit in existing facility from 100 TPD to 200 TPD at Village Kurali, Sabapur Road, Tehsil Bilaspur, District Yamuna Nagar, Haryana by M/s Om Chem
2.	**Location details**	
	Village / Town / Plot No.	Kurali, Sabapur Road
	District	Yamuna Nagar
	State	Haryana
	Latitude and Longitude	Latitude- 30°21'9.85"N to Longitude- 77°14'6.04"E.
	Toposheet No.	143I/3 & 143I/7
	Land use	Land Use has been changed from Agricultural to Industrial
3.	**Area Details**	
	Total Project Area	Total area available is 0.6430 Hectare. No additional land is required for proposed expansion. Green belt will be developed in an area of 0.2347 Hectare (Approximately 36.50% of total land area).
4.	**Environmental Setting Details (with approximate aerial distance and direction from the project site)**	
	Nearest major settlement	Village Kurali is at a distance of 0.72 Kms (approx.) in SW direction.
	Nearest highway	SH-1 at a distance of 0.1 km in SW direction SH-4 at a distance of 3 km in NW direction
	Nearest Railway Station	Jagadhri Railway Station at a distance of 26.6 kms in SE direction.
	Nearest Airport	Chandigarh Airport is at a distance of 55.68 kms in NW direction.

M/s OM CHEM.	Capacity Expansion of Formaldehyde Manufacturing Unit in existing Facility from 100 TPD to 200 TPD on 0.6430 ha existing land at V.P.O. Kurali Distt. Yamunanagar, Haryana

	National Parks/ Wild Life Sanctuaries/ Biosphere Reserves/ RF and PF within 10km radius	No National Park/Wildlife Sanctuary within 10 km radius of the Project Site. • Dumanwala PF at a distance of 8.8 km in NNW direction. • Tibri RF at a distance of 4.5 km in NNW direction. • Sadiopur PF at a distance of 7.9 km in N direction. • Garhibiran PF at a distance of 6.7 km in N direction. • Jharsaila PF at a distance of 8.9 km in W direction. • Bir Sandhan RF at a distance of 8.0 km in E direction.
	Nearest Water Bodies	• Markanda River at a distance of 7.01 km in NW direction. • Nakdi Nadi at approx. 1.5 km NW direction • Chautang Nadi at approx. 5.0 km SE direction
	Interstate Boundary	Not within 10 km radius area. Haryana Himachal Pradesh State Boundary is at 13.0 km NE direction
	Nearest School	Shivalik Sr. Sec. School-2.6 km towards NNW direction. Doon International School-1.1 Km towards SSE direction
	Defence Installations	Nil
	Nearest Hospital	Basati Hospital-9.2 Km towards SE direction
	Nearest Temple	Sanatan Dharm Mandir-3.9 Km towards NNW direction
	Seismic Zone	Zone IV
	Cost Details	

5.	Project Cost	Existing	Estimated cost for proposed expansion	Total
		Rs. 4.99 Crores	Rs. 2.00 Crores	Rs. 6.99 Crores
	Budget of EMP	Rs. 0.35 Crores		

6. Basic Requirements of the Project

Fresh Water (m3/day)	Existing	For Expansion	Total
	100 KLD	95 KLD	195 KLD

Source: Application for ground water abstraction has been submitted to HWRA vide: HWRA/IND/N/2021/140 dated 01.07.2021 (Attached as Annexure 6)

Power	Existing	For Expansion	Total
	160 KW	90 KW	250 KW

Source: UHBVN (Uttar Haryana Bijli Vitran Nigam)

DG sets as backup: 325 KVA (existing)
325 KVA (proposed)

Boiler	Existing	Proposed	Total	Fuel

1128715/2021/Estt.Br

	1 boiler of 600 Kg/Hr Capacity	-	1 boiler of 600 Kg/Hr Capacity	HSD Fired
Fuel	HSD			
Manpower	Existing: 10	For Expansion: 2	Total: 12	
	Preference will be given to local public.			

The proposed expansion project will be executed within 18 months after grant of Environment Clearance and other Statuary clearances. All corner-coordinates of plant area are superimposed on Toposheet (OSM No.) of survey of India. Coordinate map and toposheet map is given as Figure 1.1 and 1.2 respectively.

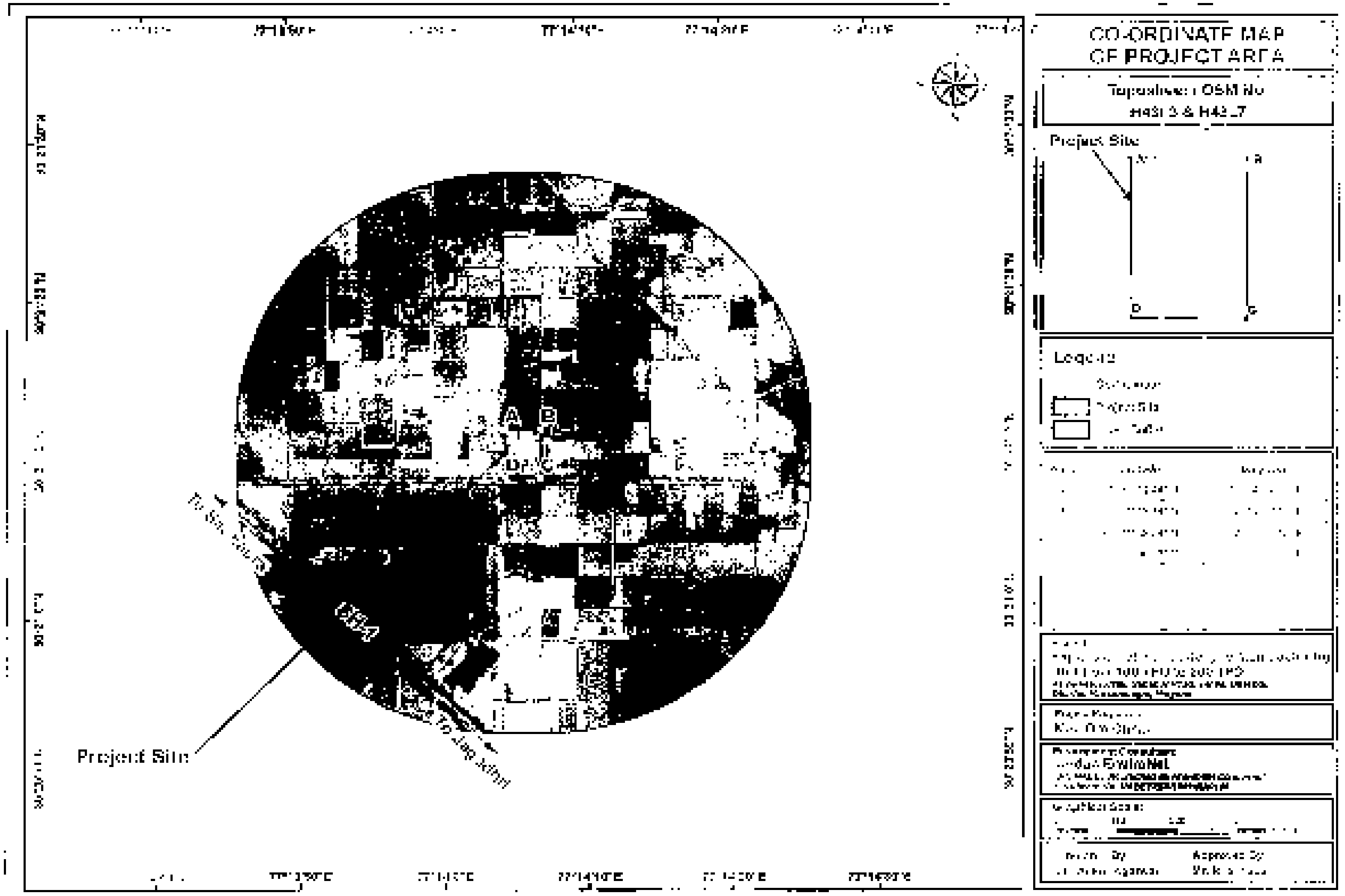


Figure 1.1: Coordinate Map of the Project Site

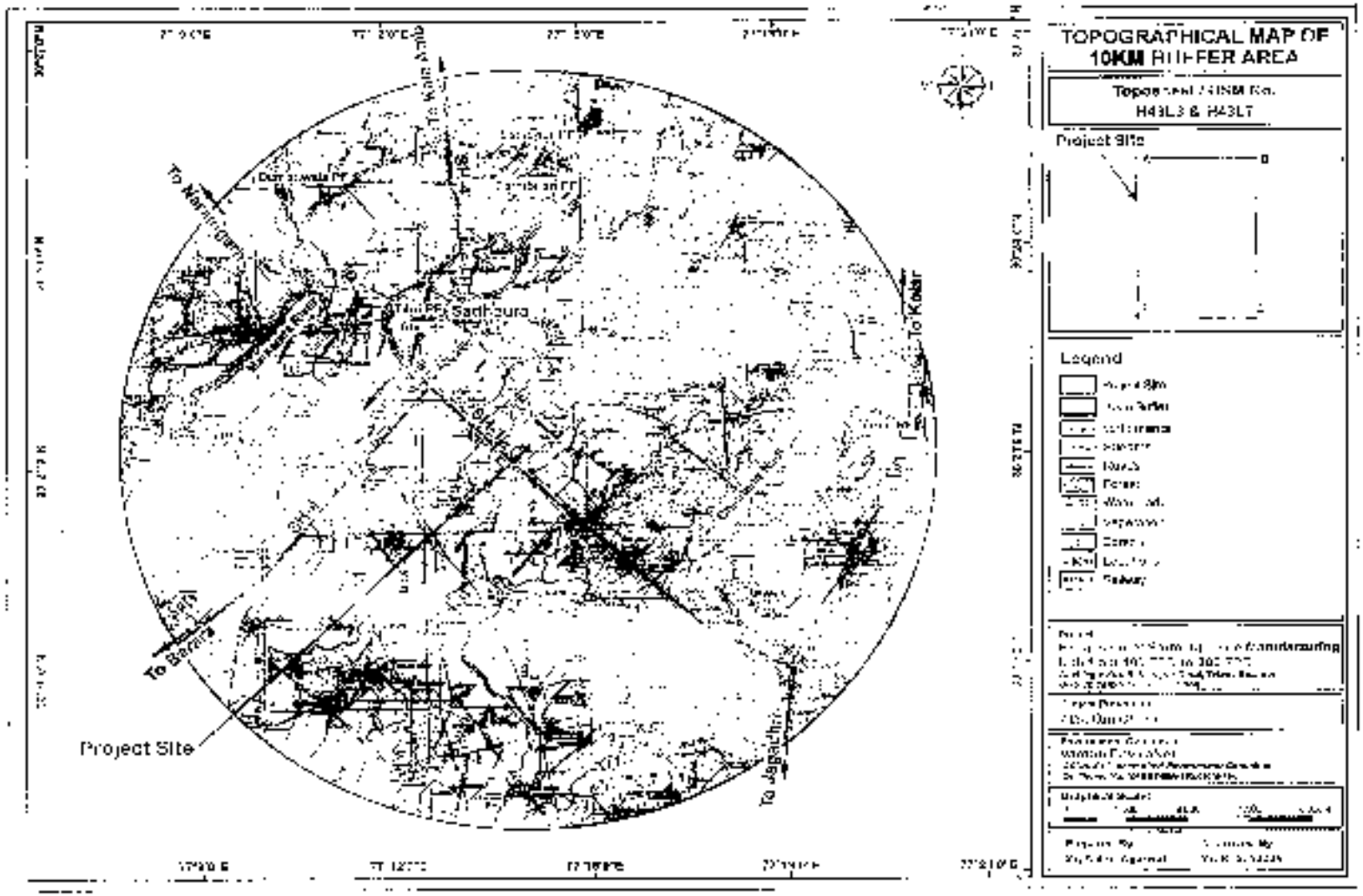


Figure 1.2: Study Area Map – 10 KM Radius around the Project Site

1.4 IMPORTANCE TO THE COUNTRY AND REGION

The formaldehyde segment (about 45% of the methanol market) is expected to grow at a CAGR of 10-15 per cent during the same period, led by growth in the enduser industries, mainly construction and automobiles

Formaldehyde

Unlike methanol, production of its derivative formaldehyde in India is sufficient to meet the domestic demand. The Indian formaldehyde market is projected to grow at a CAGR of 6% during 2019-2030 on account of growing focus towards roofing mat application and the surging demand for wood-based articles in India.

Figure 1.3: India Formaldehyde Market Size

The Formaldehyde is used by plywood and sunmica laminated sheets manufacturers, who make adhesives like Urea Formaldehyde, Phenol Formaldehyde, Malamine Formaldehyde.

Plywood Boards and sun mica sheets market is growing very fast in India. The market is expected to continue to grow at the minimum rate of 10 to 15% per year.

During the last decade, India has built a very strong position as sun mica sheets and ply wood boards for domestic consumption and for Exports to South asian countries & Middle East.

The proposed expansion project of formaldehyde manufacturing plant will play an important role in upliftment of the socio economic condition of the region particularly nearby villages.

1.4.1 Employment generation due to the project

The project shall generate direct & indirect employment opportunities, which will contribute to social upliftment of the people in surrounding area.

It is estimated that total 12 persons are required to ensure smooth working of the plant. Direct & Indirect employment will also be generated from the proposed expansion project during construction and operation.

1.5 SCOPE OF THE STUDY & METHODOLOGY FOR ENVIRONMENTAL IMPACT ASSESSMENT

This report is prepared based on the one non monsoon season (three months) baseline monitoring data during March 2021 – May 2021 (Pre mosoon Season) by field study. Data from the secondary sources are used for comparion between present environmental conditions and our laboratory results. The data includes meteorological conditions, ambient air quality, noise, water quality and soil quality. Site survey has been conducted for studying the flora and fauna, socio- economic conditions land use etc. Additional information is also collected from several agencies and departments, both under State and Central Governments pertaining to above. The collected data have been analyzed in detail for identifying, predicting, and evaluating the environmental impacts of the proposed expansion project. The anticipated impacts on environment are assessed and suitable environmental management plan has been suggested.

Chapter 1 – Introduction

The chapter provides description of project background, site and surroundings, objectives, scope and organization of the study and format of this report.

Chapter 2 – Project Description

This chapter deals with all the details pertaining to the proposed expansion project. These include technical details of the process, products & the raw material details alongwith the utilities in proposed expansion plant.

Chapter 3 – Description of the Environment

This chapter deals with the methodology and findings of field studies undertaken with respect to ambient air, meteorology, water, soils, noise levels, ecology to define the various existing environmental status in the area of the project. Once the affected environmental parameters are identified, a monitoring network is set up for each environmental parameter to establish itsbackground quality. For Air Environment,

ambient air quality monitoring stations were set up at key points to establish the representative background levels of criteria for air pollutants like Suspended Particulate Matter (SPM), Respirable Dust (RD), Carbon Monoxide (CO), and HydroCarbon (HC). The data for other environmental components such as Noise, Water, Land, Socio-economic were also collected in the study area. The detailed description on the above is covered in the relevant chapter of this report. Baseline data in terms of above environmental parameters had been collected by M/s. Vardan Envirolab, Gurgaon, an NABL and MoEF&CC approved Laboratory. Population statistics of villages in the study area was collected from census data available from the National Informatics Centre. Similarly, the baseline status of flora and fauna had been collected by Field Area Expert (Ecology & Biodiversity). Land Use/ Land Cover study was also done.

Chapter 4 – Anticipated Environmental Impacts and Mitigation Measures

In this part of the report the sources of emissions (Gaseous, Liquid, Solid, Noise) due to the proposed activities are identified and their emission load and characteristics are estimated. Predictions were then carried out to know the quantitative/qualitative effect on various environmental parameters. Parts of the predictions are qualitative in nature also, especially in cases where such predictive techniques are not available. These predictions are subsequently superimposed on the background quality of various environmental components and their individual and synergistic impact is evaluated using the "Cause and Effect' relationship matrix. The resultant matrix attempts to give an objective assessment to help the Assessment Agency in the decision-making process.

Chapter 5 – Analysis of Alternatives

This chapter deals with the consideration of alternative of sites and technologies so that best technology and least impacted site can be selected. As the project located within the Notified Industrial area hence no alternative site was considered.

Chapter 6 – Environment Monitoring Programme

This chapter described with the planning for Environmental Monitoring considering all environmental component during construction and operation of the project.

Chapter 7 – Additional Studies

This chapter includes risk assessment, studies conducted, proposing Onsite and off site emergency management plan, disaster management plan for the proposed expansion project.

Chapter 8 – Project Benefits

This chapter deals with improvements in the physical infrastructure, social infrastructure, employment potential and other tangible benefits due to proposed expansion project activity.

Chapter 9 – Environmental cost benefit analysis

Environmental Cost benefit analysis is not recommended hence not included in the EIA/EMP Report.

Chapter 10- Environment Management Plan

In order to mitigate or minimize the negative impacts of the proposed expansion project, an effective EMP is called for. Therefore, this chapter deals with the planning and implementation of various pollutant abatement strategies including the proposed monitoring/surveillance network.

Chapter 11 – Summary and Conclusion

This will constitute the summary of EIA Report.

Chapter 12 – Disclosure of Consultant

This will include the names of the consultants engaged in preparation of EIA and nature of consultancy rendered.

Chapter 13 – Damage assessment

This will include the damage of environment due to violation and its mitigation measure.

1.6 SUMMARY OF ENVIRONMENTAL LEGISLATION FOR PROPOSED EXPANSION PROJECT

Legislation	Responsible Ministries/Bodies	Objective of Legislation	Action Plan
The Environment (Protection) Acts 1986/ Rules 1986. The Environmental Impact Assessment (EIA) Notification, 2006.	MoEF&CC, CPCB, SPCB	Protection and Improvement of the Environment	1. Prevent discharge or emission of environment pollutants in excess of the prescribed standards 2. Submit 'Environmental Statement' every year. 3. Obtain prior "Environmental Clearance' from MoEF&CC in case of new project or for Modernisation / Expansion.
The Water (Prevention & Control of Pollution) Acts1974/ Rules1975	CPCB, SPCB	The prevention and control of water pollution and also maintaining or restoring the wholesomeness of water	1. Not to discharge any effluent, not confirming to standards, prescribed by CPCB into any stream, well, sewers or land 2. Not to discharge air pollutant(s) in excess of standards, prescribed by the State PCB 3. Obtain 'Consent to Establish' prior to establish any process, operation or treatment system 4. Obtain 'Consent to Operate' prior to operation of system which is likely to discharge effluent. 5. Apply for renewal of the 'Consent to Operate' before the expiry. 6. Comply with conditions as prescribed under consents.
The Air (Prevention & Control of Pollution) Acts 1981/ Rules 1982	CPCB, SPCB	The prevention, control and abatement of air pollution	1. Comply with conditions as prescribed under consents.
Hazardous and Other Wastes (Management and	MoEF&CC, CPCB, SPCB, DGFT	Management & Handling of hazardous wastes	1. It is the responsibility of the occupier to identify the hazardous wastes in their units and ensure proper handling and disposal.

Transboundary Movement) Rules, 2016		in line with the Basel convention	2. Obtain authorization from PCB and comply with the conditions. 3 Maintain records of Hazardous Waste generated in Form-3 and submit yearly return for generation, treatment, recycling, disposal etc., to SPCB 4. Used Oil to be send / sold to the registered recycler, re-processor, registered authorized facility 5. Shall be transported in accordance with the rule. 6. Site storage is allowed for 90 days only
Factories Act, 1948 (as amended till 1987)	Ministry of Labour, DGFASLI and Directorate of Industrial Safety and Health/Factories Inspectorate	Control of workplace environment, and providing for good health and safety of workers	1. Obtain and renew factory license and obtain permission for the site from State Government or the Chief Inspector of Factories in case of new or extension of any Factory. 2. Ensure health, safety and welfare of all workers while they are at work in the Factory as far as reasonably practicable. 3. Ensure effective and adequate ventilation of work place and adequate measures to be taken to protect workers particularly in the processes involving excessive temperature. 4. Ensure effective and adequate ventilation of work place and adequate measures to be taken to protect workers particularly in the processes involving excessive temperature.
The Central Motor Vehicle Rules, 1989	Ministry of Shipping, Road Transport and Highways	To consolidate and amend the law relating to motor vehicles including to regulate the transportation of dangerous goods	1. Ensure compliance to safety provisions in the transport vehicle carrying dangerous and hazardous substances inside works 2. Display of emergency information panels at front, back and both side of vehicle 3 Every transporter to ensure safe transportation of dangerous/ hazardous goods. 4. Earthing chain for grounding, any prevalent static charge

		with a view to prevent loss of life or damage to the environment	5. All motor vehicle entering the works shall have properly maintained brakes, lights, signal system for brakes, blinkers and registration number displayed, and valid Pollution under Control Certificate
The Solid Waste Management Rules, 2016	CPCB, SPCB	To manage/ utilize the generated solid waste without damaging the environment and surroundings	1. Segregate waste in to three streams, Wet (Biodegradable), Dry (Plastic, Paper, metal, wood, etc.) and domestic hazardous wastes (diapers, napkins, empty containers of cleaning agents, mosquito repellents, etc.) and handover segregated wastes to authorized rag-pickers or waste collectors or local bodies.
E-Waste (Management) Rules, 2016	SPCB, CPCB and MoEF&CC	To recycle/ manage the electronic waste from the industry	1. Shall make provisions for collection of e-waste generated from 'end of life' of their products and shall ensure that such e-wastes are channelized to registered dismantler or recycler, in line with the principle of 'Extended Producer Responsibility'. 2. Set-up of collection centres or take back systems either individually or collectively. 3. Finance and organize a system to meet costs involved in the environmentally sound management of e-waste generated from the 'end of life' of its own products. 4. Create Awareness
The Boiler Acts 1923 & Rules 1950	State Government, District magistrate	To register the boilers used in industry	1. Ensure availability and effective functioning of steam vents, safety valve, drain valve, monitoring instruments of critical parameter through regular checks and maintain records for the same. 2. Obtain authorization for boilers and their renewal prior to due date and / or when an accident occurs to the boiler / when any structural alteration / addition / renewal is made. 3. Ensure mandatory registration of boilers. 4. Ensure to obtain prior approval before taking any alteration

			and renewals to steam pipes after submitting plan and report. 5. Ensure to obtain prior approval before taking structural alteration, addition and renewal to boilers from Chief Boiler Inspectors. 6. Ensure prior examination of boiler by Inspector during & after any repair/shut down and maintain record for the same. 7. Report accident / incident or any severe damage to property, human life within 24 hours giving details of occurrence.
Noise Pollution (Regulation and Control) Rules, 2000 and its amendments	CPCB, SPCB, MoEF&CC	To maintain the noise levels with respect to the place/equipment/ industry	1. Noise Quality Monitoring & submission of reports on weekly/monthly basis. 2. Providing Ear plugs and Muffs to the workers working in noise prone areas. 3. Dampening the source noise level or making the noise characteristics less annoying by providing suitable enclosures and barriers.

CHAPTER 2: PROJECT DESCRIPTION

2.1 TYPE OF THE PROJECT

The proposal is for expansion of Formaldehyde manufacturing unit from 100 TPD to 200 TPD capacity at Village Kurali, Sabapur Road, Tehsil Bilaspur, District Yamuna Nagar, Haryana. The number of working days for the manufacturing of formaldehyde is 330 days. The operation of the unit is continuous along with effective utilization of the resources. Expansion will be done within the existing unit, no additional land is required.

As per EIA Notification dated 14th Sep, 2006, as amended from time to time; the project falls under Category "A"- as the project is located outside the Notified Industrial Area and Activity "5(f)"- Synthetic Organic Chemical Industry. But the unit had started construction in 2018 and came in operation in 2019 without securing Environmental Clearance hence it attracts the violation as per EIA Notification, 2006. Considering this, the project shall be appraised at MOEF as A category under violation.

2.2 NEED FOR THE PROJECT

Formaldehyde is best known for its preservative and anti-bacterial properties, but formaldehyde-based chemistry is used to make a wide range of value-added products. Formaldehyde is one of the most well studied and well-understood compounds in commerce. It is an essential building block chemical in the production of hundreds of items that improve everyday life. Some applications are as follows:

Building and Construction:

Formaldehyde-based resins are used to manufacture composite and engineered wood products used extensively in cabinetry, countertops, mouldings, furniture, shelving, stair systems, flooring, wall sheathing, support beams and trusses and many other household furnishings and structures. Glues that use formaldehyde as a building block are exceptional bonding agents, delivering high-quality performance that is also economical.

The wood products industry uses formaldehyde-based resins in a wide range of panel and board products, enabling sustainable use of forestry resources and minimizing waste. For example, composite wood panels are typically made from recovered wood waste that might otherwise be burned or disposed of in a landfill.

Personal Care and Consumer Products:

Formaldehyde-based chemistry is essential in the production of many personal care and consumer items. These products may contain formaldehyde-releasing ingredients, which

act as a preservative to kill microorganisms and prevent growth of bacteria and other pathogens, extending product shelf life.

Health Care Applications:

Formaldehyde has a long history of safe use in the manufacture of vaccines, anti-infective drugs and hard-gel capsules. For example, formaldehyde is used to inactivate viruses so they don't cause disease, such as the influenza virus in making the influenza vaccine.

Automobiles:

Formaldehyde technology helps make vehicles lighter and more energy efficient. Formaldehyde-based resins are used to make interior molded components and under the-hood components that need to withstand high temperatures. These resins are also used in the production of highly durable exterior primers, clear coat paints, tire-cord adhesives, brake pads and fuel system components.

2.3 LOCATION OF PROJECT (MAPS SHOWING GENERAL LOCATION, SPECIFIC LOCATIONS, PROJECT BOUNDARY AND PROJECT SITE LAYOUT)

The Existing plant is located in 0.6430 ha area and is situated at village Kurali, Sabapur road, Tehsil: Bilaspur, District: Yamunanagar, State: Haryana. The land is already under the possession of project proponent. The geographical coordinated of the plant is as under.

Table 2.1: Coordinates of Project

Points	Latitude	Longitude
Core	30°21'9.87"N	77°14'5.94"E
A	30°21'11.43"N	77°14'4.72"E
B	30°21'11.39"N	77°14'7.19"E
C	30°21'8.30"N	77°14'7.10"E
D	30°21'8.37"N	77°14'4.69"E

The Location Map, Google Imaginary, Route Map, Plant Layout and Site Photographs are shown below as **Fig. 2.1, Fig. 2.2, Fig. 2.3, Fig. 2.4 & Fig. 2.5.**

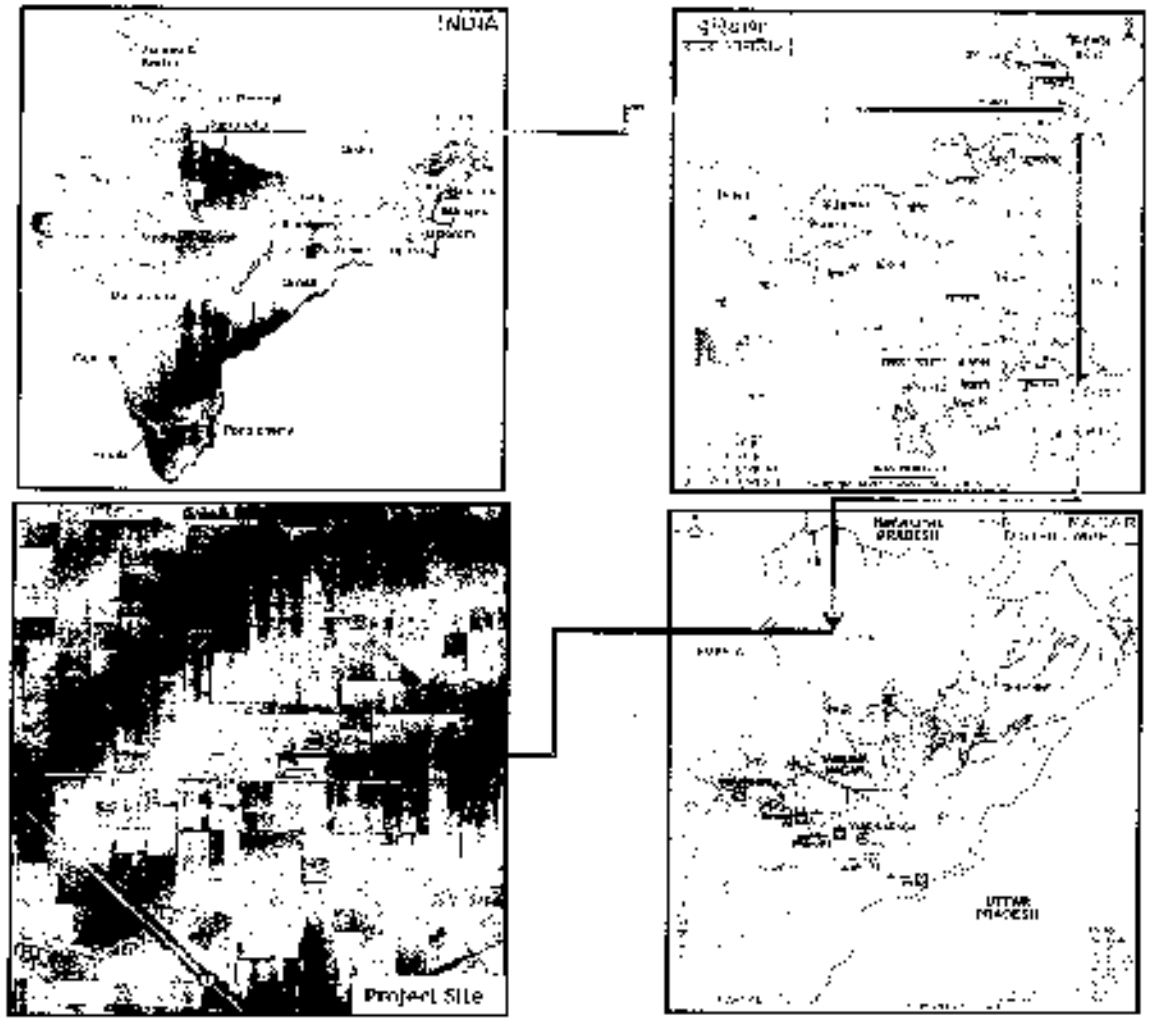


Figure 2.1: Location Map of the Project Site

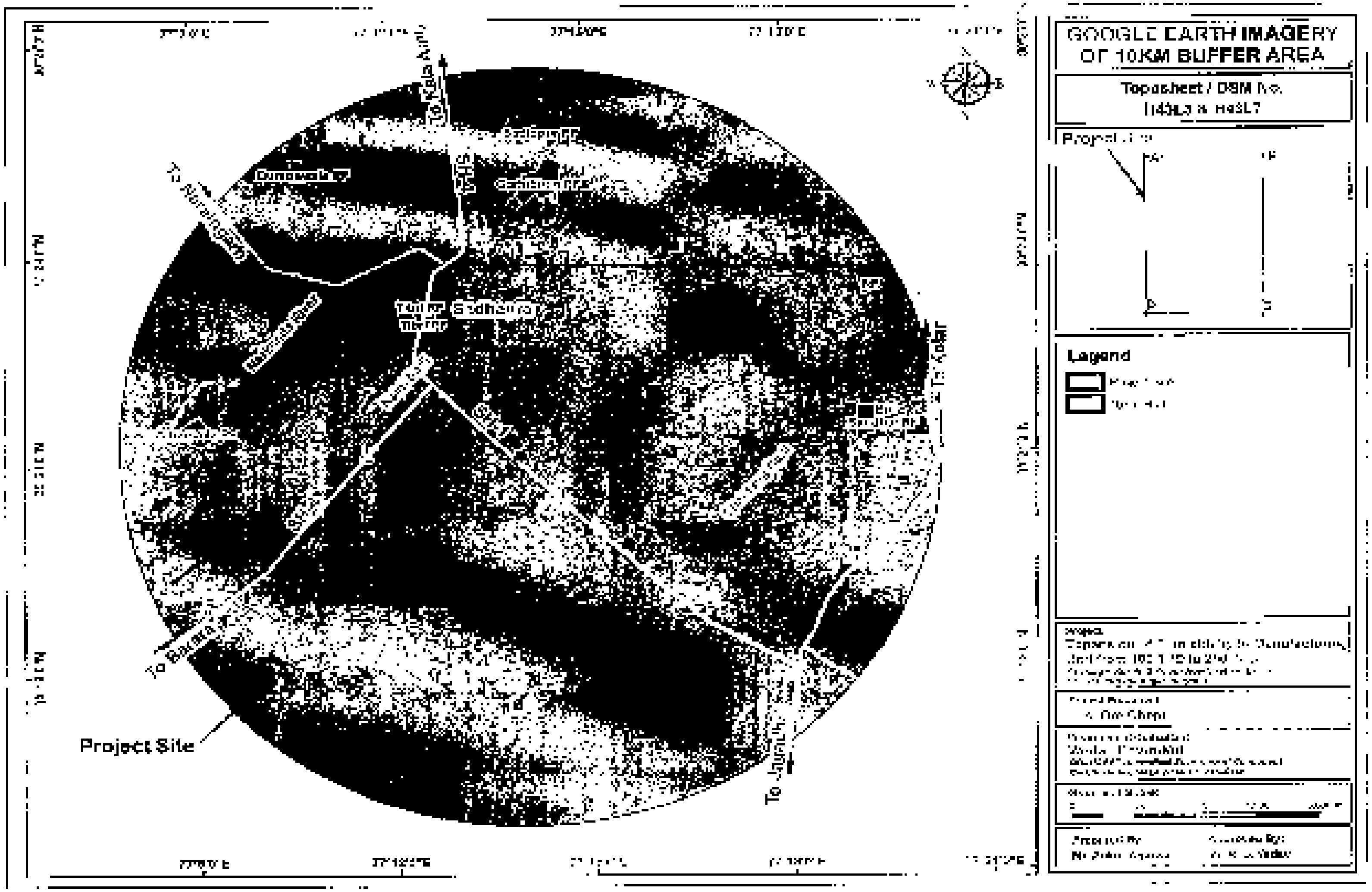


Figure 2.2: Google Earth Imagery of 10 km radius of Project Site

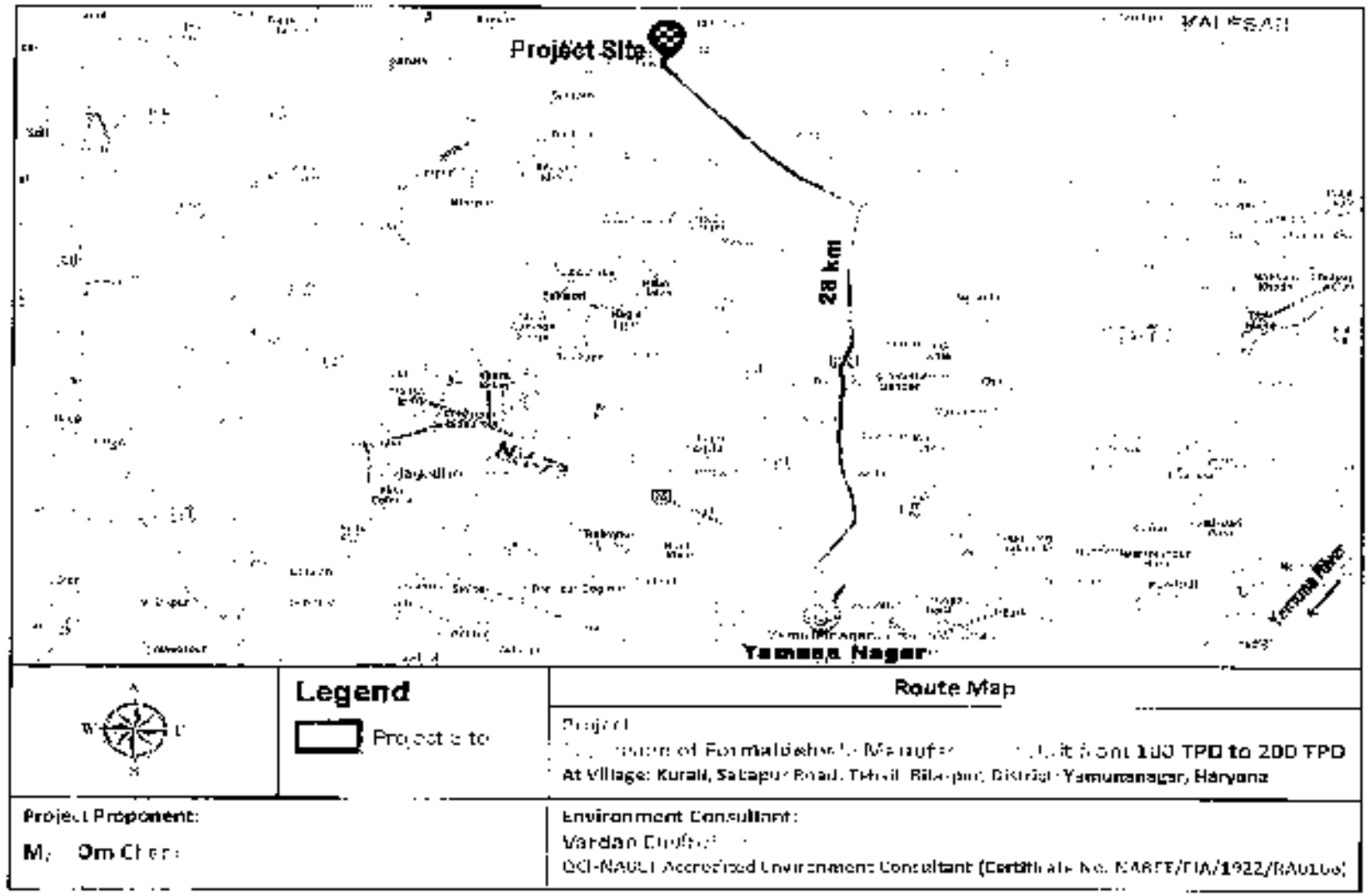


Figure 2.3: Route Map of the Project Site

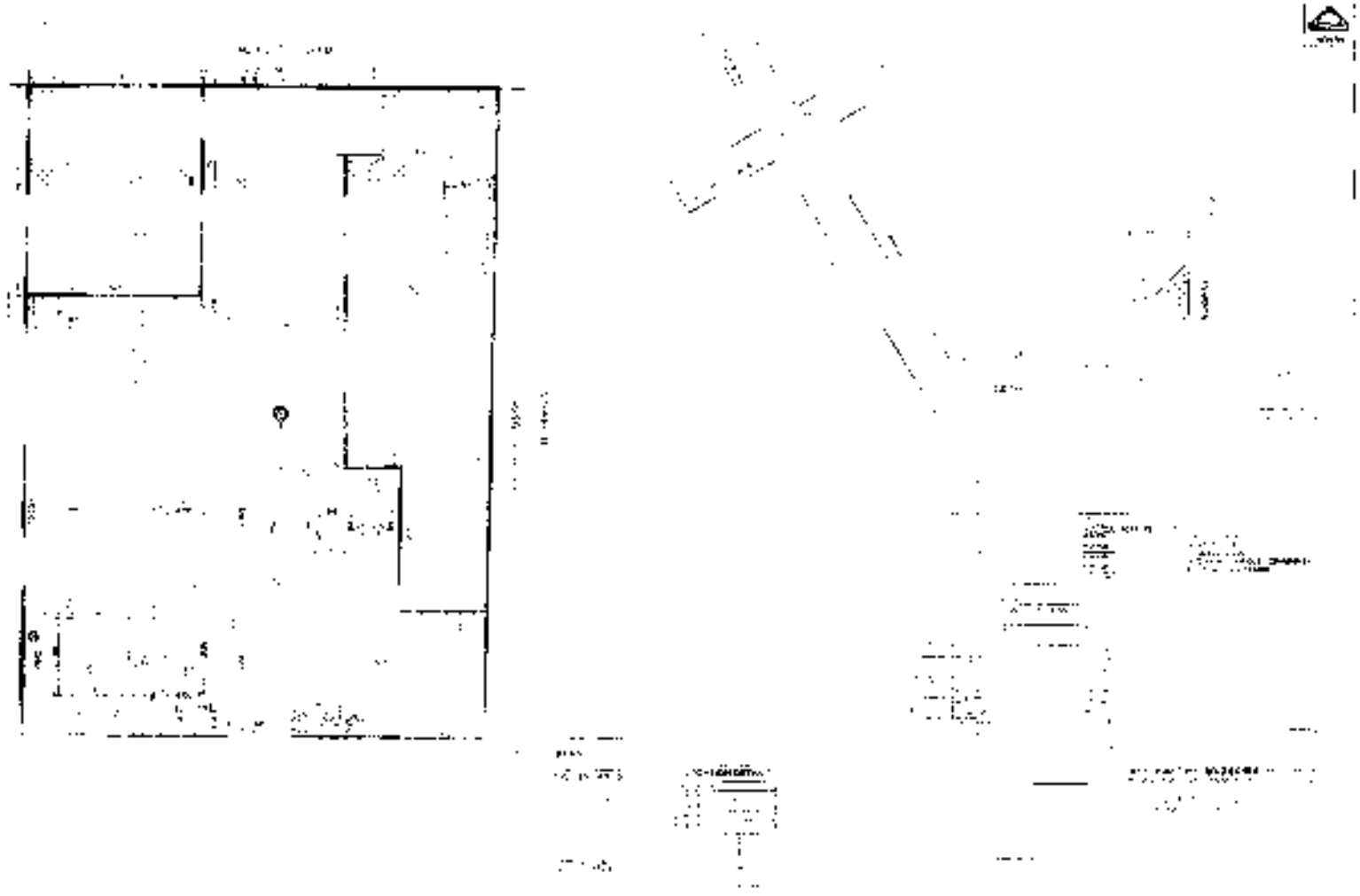


Figure 2.4: Plant Layout

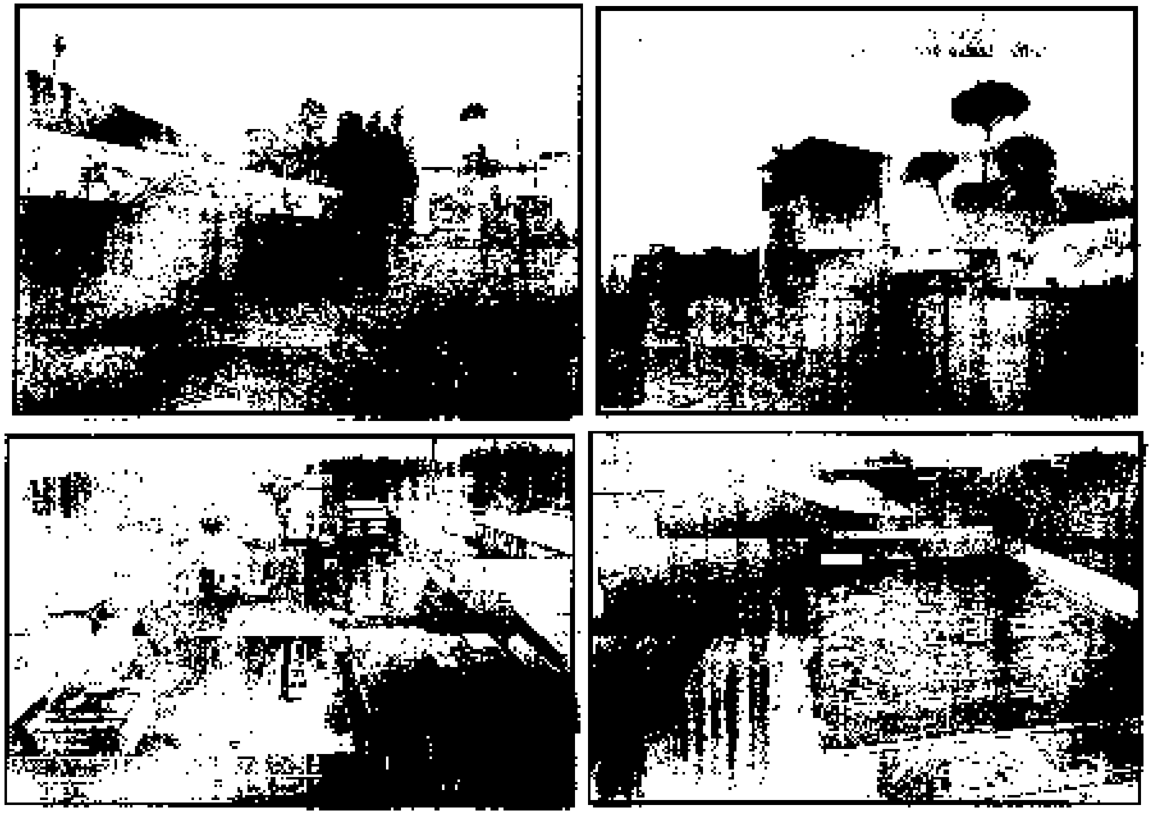


Figure 2.5: Site Pictures

2.4 MAGNITUDE OF OPERATION

The unit is operating on the basis of CTO granted from HSPCB vide 313096619YAMCTO6377523 dated 22.02.2019 for the production of Formaldehyde with capacity 100 ton per day and now wish to expand its capacity up to 200 ton per day by addition of 100 ton per day production.

Table 2.2: Production capacity

Capacity	Existing	Proposed	Total
Formaldehyde	100 TPD	100 TPD	200 TPD

2.5 CHRONOLOGY OF THE PROJECT

Table 2.3: Implementation Time

Date	Activity
March to May 2021	Baseline monitoring period
March 2021	Submission of online application (Form-1 & PFR)
June 2021	EDS raised by MoEF&CC
June 2021	EDS Reply submission
July 2021	ToR Presentation
20 July 2021	ToR Granted
August 2021	Draft EIA submission

2.6 REQUIREMENTS FOR THE PROJECT

2.6.1 Raw Material Requirement

The major raw material is Methanol which comes in road through tankers from Kandla Port, Gujarat & stored in underground MS tanks. Methanol requirement for the existing unit is 50 TPD and after expansion, total 100 TPD will be required.

Table 2.4: Raw Material Requirement

Raw Material	Existing Requirement	Proposed Requirement	Total Requirement	Source	Transport
Methanol	50 TPD	50 TPD	100 TPD	Will be imported from other countries via Kandla Port, Gujarat	Tank Trucks

2.7 PROCESS DESCRIPTION AND TECHNOLOGY

Chemical Reaction & Mass Balance for Manufacturing of Formaldehyde

Raw Material: 1. Methanol (CH_3OH)
2. Silver (Ag)
3. Water (H_2O from tubewell)
4. Oxygen (O_2 from atmosphere)

Finished Product: Formaldehyde (HCHO)

Plant & Machinery (Main): Evaporator, Mixing Tank, Reactor, Condenser, Absorption column, heat exchanger, pumps, pipe line

Methanol is converted into formaldehyde by oxidation process with Oxygen, Silver & Water at a temperature of 65ºC to 70ºC. It is an exothermic reaction.

1). Firstly, methanol is subjected to methanol vaporizer, where the compressed air is fed into the bottom of the methanol vaporizer. The ratio of the methanol and air is maintained between 35%-45%.

2). This mixture is heated to the reaction temperature with the help of pre-heaters, before entering into silver catalyst reactor.

3). The catalyst reactor is a fixed bed type filled with silver catalyst. The production stream is sent to rectification and recovery station. Unreacted methanol is fed back to the process to methanol vaporizer.

4). Recycled stream contains 15% unreacted methanol, which is fed into methanol vaporizer as started above.

5). Stripping column is used to separate Formaldehyde. The product is stored in aqueous form in the storage tank.

Normally, the ratio of methanol and formaldehyde is approx. 1:2, we get 2 kg of formaldehyde by 1 kg of methanol, if the quantity of raw material & product is OK. It is produced on the demand of buyer. The ratio of methanol and formaldehyde, sp. varies depends on the specification desired by the party.

Catalytic oxidation process is an optimized production method. It is a simple process as per the material balance shown below.

Material Balance:

Material Balance for 150 Ton capacity of Formaldehyde – 37%

2 Moles CH_3OH + ½ Mole O_2 → 2 Moles HCHO + 1 Mole H_2O

(64) (16) (60) (18)

The water produced will be reuse in the process to obtain formaldehyde

75 grams of HCHO solution formed is having 18 grams of water

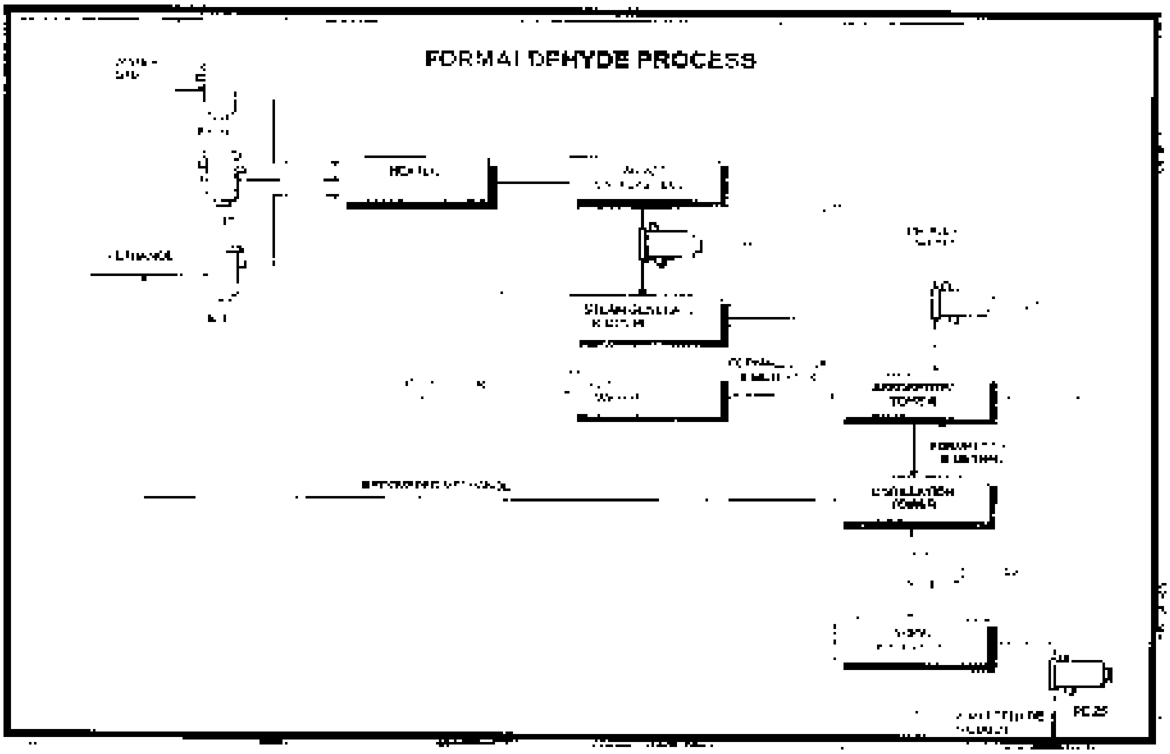


Figure-2.6: Flow Diagram of Formaldehyde Manufacturing

2.7.1 Boiler Details:

1 Boiler with capacity 600 kg/hr is already exists at the unit and no other boiler is required for the proposed expansion. Others details are mentioned in the table given below:

Table 2.5: Boiler Details

S. No.	Particular	Details
1.	Type of Fuel	HSD
2.	Capacity of Boiler	600 kg/hr.
3.	Stack Height	30 m
4.	Pollution Control Equipment Measures	Wet Scrubber

2.7.2 Details regarding the D.G. Sets:

1 DG set of 325 KVA capacity already exists in the unit and 1 more DG set of the same capacity is proposed for the proposed expansion. Details regarding the D.G. Sets are mentioned in the table given below:

Table 2.6: Details regarding the D.G. Sets

S. No.	Particular	Exists	Proposed	Total
1.	No. of DG sets	1	1	2
2.	Type of Fuel	HSD	HSD	--
3.	Capacity	325 KVA	325 KVA	650 KVA
4.	Stack Height	6m	6m	–

2.8 AVAILABILITY OF WATER, ITS SOURCE, ENERGY/ POWER REQUIREMENT AND SOURCE

2.8.1 Water Requirement:

Total water requirement after the proposed expansion project will be 195 KLD which will be sourced from own tubewell for which the Groundwater Abstraction application has been submitted to HWRA.

Table 2.7: Water Consumption Detail of Proposed Plant

Existing	Proposed expansion	Total	Source
100 KLD	95 KLD	195 KLD	Application for ground water abstraction has been submitted to HWRA vide HWRA/IND/N/2021/140 dated 01.07.2021.

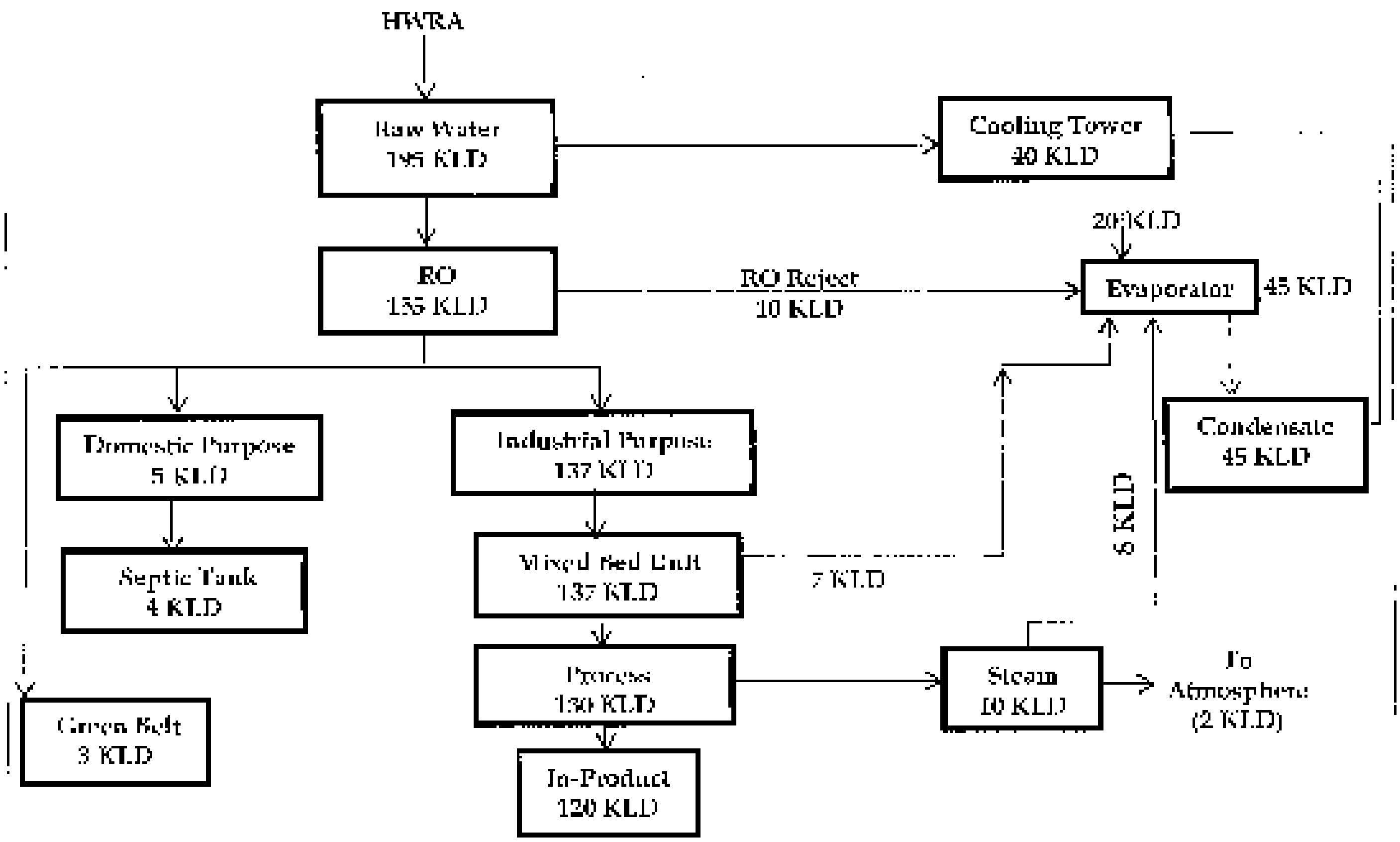


Figure 2.7: Flow Diagram of Formaldehyde Manufacturing

2.8.2 Power Requirement:

Table 2.8: Power Requirement

Existing	Estimated for proposed expansion	Total	Source
160 KW	90 KW	250 KW	UHBVN (Uttar Harvana Bijli

2.8.3 Manpower Requirement:

Table 2.9: Manpower Requirement during Operation Phase

Existing	Estimated for proposed expansion	Total	Source
10	2	12	Preference will be given to local public

Some temporary manpower will also be generated through construction phase for the proposed expansion.

2.8.4 Land Requirement:

The land use breakup for the proposed project is given in below table:

Table 2.10: Land use breakup

S.no.	Details	Area (Hec.)	Percentage (%)
1	Main Building	0.1225	19.05
2	Road and Pathway	0.2858	44.45
3	Green Belt Area	0.2347	36.50
	Total	0.6430	**100**

2.8.5 Cost Details:

The total cost after the proposed expansion is calculated to be Rs. 6.99 Crores.

Table 2.11: Cost Breakup

Existing	Estimated cost for proposed expansion	Total
Rs. 4.99 Crores	Rs. 2 Crores	Rs. 6.99 Crores

2.9 UTILITIES REQUIRED

The storage facility provided for the project along with the major equipment is listed below.

Table 2.12: Major Equipment

S.No.	Particulars	Material of Construction
1	Deaerator	S.S 304
2	Evaporator with steam	S.S 304
3	Coil and Air sparser	S.S 304

S.No.	Particulars	Material of Construction
4	Evaporator filter	S.S 304 tubular with S.S jacket
5	Super Heater with separator	Jacket S.S 304
6	Vapor filter jacketed	S.S 304
7	Flame arrester	S.S 304
8	Methanol arrester	S S 304
9	Reactor dome	S.S 304 and 316
10	Reactor tubular	S.S 304 tubular
11	Non boiler condenser	S.S 304
12	Nin boiler separator	S.S 304 with tubular
13	Condenser with sump	S.S 304
14	Mixing, vessel	S.S 304
15	Steam separator	S.S 304
16	Process water tank	S.S 304
17	Process water filter	S.S 304
18	Absurptim column	S.S 304
19	Circulation tower	
20	Condensor distillation	S.S 304
21	Vapor condenser	S.S 304
22	Distillation drum	S.S 304

Storage:

Industry will provide adequate and proper storage facilities for all the raw materials and finished products. Corrosive substances will be stored away from the moisture. Solid raw material will be stored in covered area and liquid raw material will be stored in closed storage tank. Hazardous chemicals and solid waste will be stored away from other plant activities. The storage yard of chemicals will be isolated & underground and it will be equipped with all necessary safety measures.

Handling:

All of the raw materials and finished products will be handled as per the standard practice. For proper handling, company will adapt good housekeeping technology to entire shed. To avoid leakage or spillage of chemicals from all storage tanks, third party will inspect transfer lines, valves, fittings and every joint periodically.

Transportation

All the necessary precautions will be taken carrying out transport of the above materials as per the hazardous rules of transportation. The vehicles for the transportation of raw materials and products will be parked at specified loading

facilities where there will be a provision of fire extinguishers. The finished product will be transported by road.

2.10 WATER AND WASTE WATER MANAGEMENT

5 KLD of water from the total 195 KLD will be use for domestic purpose. Approx. 4 KLD (80% of total domestic water consumption) will be generated after proposed expansion. Waste water is currently treated in Septic tank and will be continue to treat in septic tank (4 KLD) even after the proposed expansion. Treated wastewater will be used for cleaning, washing, water sprinkling and other non portable domestic purpose. No effluent will be generated from the process.

2.11 SOLID AND HAZARDOUAS WASTE GENERATION AND MANAGEMENT

Domestic Waste:

Total 12 workers will be involved after expansion. Considering 200 Gram of solid waste/day/person so total 2.4 Kg of solid waste will be generated (approx.). It is very less quantity of domestic west, will be stored in form of Dry and Wet waste and will be given to authorized waste managemet agency for safe disposal.

Hazardous Waste:

There is no hazardous waste generated from the process.

Used oil from machineries/D.G. Set is carefully stored in HDPE drums in isolated covered facility and is sold to vendors authorized by Haryana State Pollution Control Board for the treatment of the same. Suitable care has been taken so that spills / leaks of used oil from storage could be avoided.

The following hazardous waste identified for the expansion project.

5.1- Used Oil

28.3 - Off specification products/ date expired

33.3 - Discarded containers/barrels /drums

Air Emissions and Control:

To control the air emissions from D.G. Set, stack height of 6.0 m will be provided.

To control emission from boiler, stack height of 30 m will be provided.

To control fugitive emissions, wet scrubber will be provided.

2.12 DESCRIPTION OF MITIGATION MEASURE INCORPORATED IN TO THE PROJECT TO MEET ENVIRONMENTAL STANDARD, ENVIRONMENTAL OPERATING CONDITIONS OR OTHER EIA REQUIREMENTS

Details of emission effluent, hazardous waste generation and their management

Table 2.13: Mitigation Measures Adopted for the Proposed Project

Sl. No.	Particulars	Mitigation measures to be adopted
1.	Air Environment	• Online Stack Monitoring System as an air pollution control measures to control the emission of particulate matter the flue gas emission will remain well within gaseous emission norms prescribed by the CPCB. • Scrubber will be installed for scrubbing the residual Formaldehyde from the main product stream which also controls the odour problem. • To control the air emissions from D.G. Set, stack height of 6.9 m shall be provided. • Green belt will be developed on 36.59% area of the total project area which will help in attenuating the pollutants emitted by the plant. • Adequate measures for control of fugitive dust emissions will be taken.
2.	Water Environment	• Fresh water requirement of the project will be met by ground water through tubewell. • Domestic wastewater discharged will be treated in septic tank & will be utilized for greenbelt development to reduce the water consumption.
3.	Solid / Hazardous Waste Environment	• Used oil to be sold to registered recycler.
4.	Noise Environment	• Green belt development (plantation of dense trees across the boundary) will help in reducing noise levels in the plant as a result of attenuation of noise generated due to plant operations and transportation. • Personal protective equipments like ear plugs and ear muffs will be provided to employees working in the noise prone areas. • Time to time oiling and servicing and Maintenance of machineries will be done. • Acoustic enclosure for heavy machines/equipment/D.G. sets would be used. • The Noise free machines of latest technology will be installed • A high standard of maintenance and proper lubricants will be practiced for plant machinery and equipments, which helps to avert potential noise problems.

S. No.	Particulars	Mitigation measures to be adopted
5.	Odour management	• Scrubber system will be used to control the odour from the exit gases. • The remedial measures will be taken such as better house-keeping by regular steaming of all the equipments. • Temperature will be kept under control during the process

CHAPTER 3: DESCRIPTION OF ENVIRONMENT

3.1 INTRODUCTION

This chapter illustrates the description of the existing environmental status of the study area with reference to the prominent environmental attributes. The existing environmental setting is considered to establish the baseline conditions which are described with respect to physical environment, air environment, noise environment, traffic pattern and density, water environment, land environment, biological environment, socio economic environment. Baseline environmental status report contains the results of environmental monitoring carried out during the study period, March 2021 to May 2021. The baseline environmental study reveals information on existing environmental scenario. To achieve these objectives, team of Vardan Envirolab monitored the environmental parameters as per the Guidelines for EIA issued by the Ministry of Environment & Forests, Govt. of India.

3.1.1 Study Area

The environmental impact due to the project is likely to affect the project site and its surroundings. Therefore, the study area for monitoring of environmental parameters covers 10 kms. The impact identification always commences with the collection of baseline data such as Ambient Air Quality, Micro-Meteorology, Ground and Surface Water Quality, Noise levels, Soil Quality, Land use pattern, Biological Environment and Socio economic aspects in the 10 kms study area.

3.1.2 Study Period

The baseline environmental study has been done for the period of March 2021 to May 2021 by M/s Vardan Envirolab, Gurugram, NABL Accredited Lab, and Certificate No. TC 6299.

3.1.3 Components and Methodology

The baseline data has been collected during Pre monsoon season by M/s. Vardan Envirolab, Gurgaon (NABL Accredited Lab, Certificate No. T-2629 MOEFCC NO. S.O. 1783 (E) in accordance with the Guidelines for EIA issued by the Ministry of Environment Forests and Climate Change, Govt. of India and CPCB.

The scoping and the extent of data generation were formulated based on interdisciplinary team discussions, and professional judgment. Primary data was collected from the above mentioned monitoring stations. Various Government and other organizations were approached for getting information for the secondary data.

3.2 ESTABLISHMENT OF BASELINE FOR VALUED ENVIRONMENTAL COMPONENTS

The scope of the study is as per TOR issued by MoEF&CC vide File no. **IA-J-11011/106/2021-IA-II (I)** dated 20th July 2021..

3.2.1 Meterological Data

The meterological station was set-up at the project site and data were collected which are as under:

Wind

The critical weather elements that influence air pollution are wind speed, wind direction, temperature, which together determines atmosphere stability. Wind speed and direction data recorded during the study period is useful in identifying the influence of meteorology on the air quality of the area.

Wind Rose

The meteorological data was collected at the site by installing an automatic weather station during pre monsoon season, 2021. Wind Speed, Wind Direction, Temperature and Relative Humidity were recorded for the study period. The data on wind patterns are pictorially represented by means of windrose diagrams for study period March 2021, to May 2021 as **Figure 3.1**. The meteorological data reflecting, minimum, maximum temperature in °C, relative humidity in %, rainfall in mm/hr, wind speed in m/s, was collected for the study period.

Table 3.1: Onsite Meteorological Data (Period: March 2021 to May 2021)

Months	Temp (°C)		Avg Relative Humidity (%)	Total Rainfall (mm)
	Max	Min		
March 2021	28.5	13.7	59	42
April 2021	35.3	19.2	30	27
May 2021	38.4	23.3	34	28

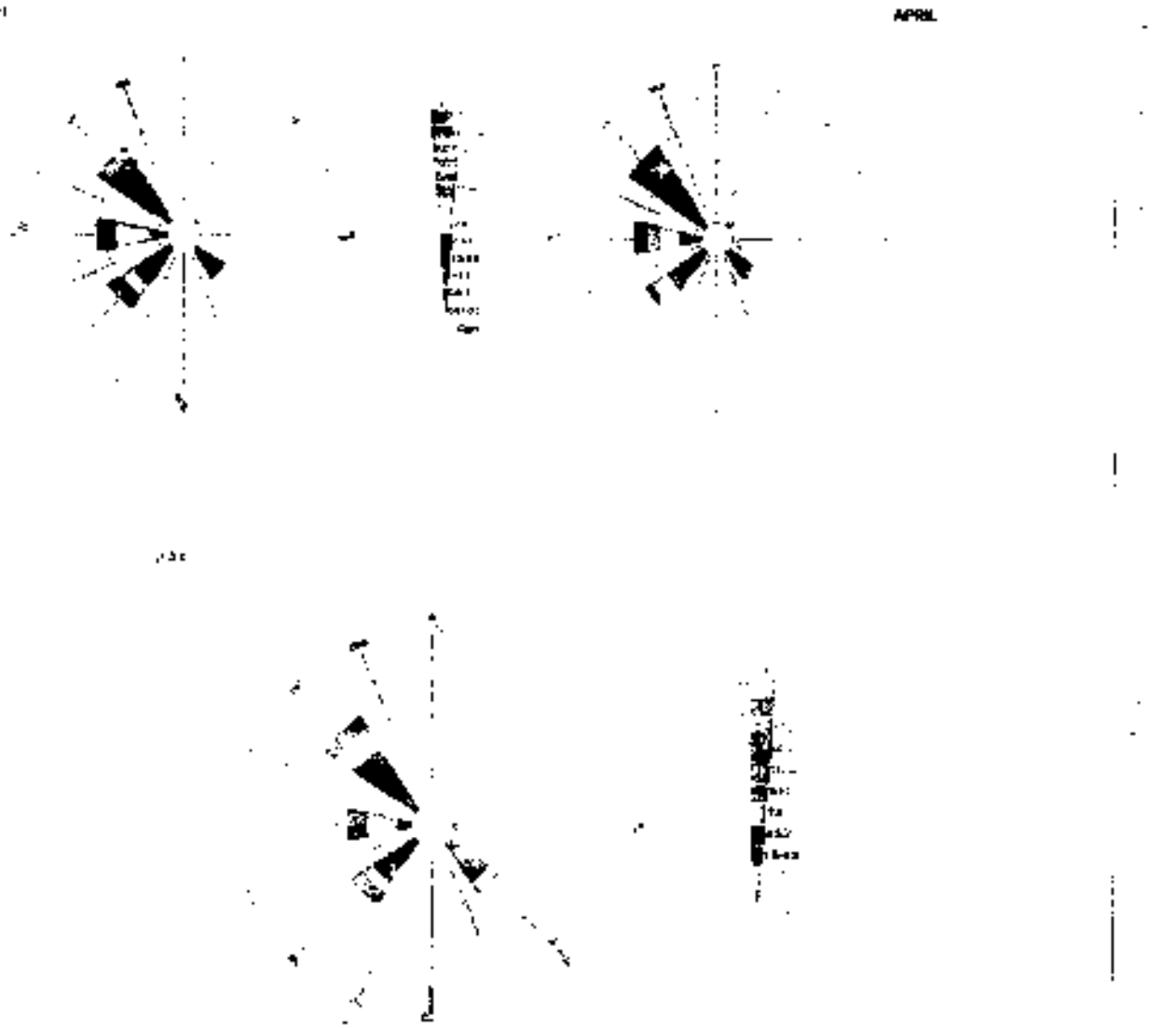


Figure 3.1: Wind Rose Diagram of Study Period: (March 2021 to March 2021)

3.3 AMBIENT AIR QUALITY

Baseline data for ambient air quality were collected from 8 locations within the study area during the period of March 2021 to May 2021. The sampling stations along with their distance and direction from the project site are detailed in Table 3.2 and Figure 3.2. Ambient air quality analysis data for various parameters are given in **Table 3.3.**

The observations made during the study period are presented under the forthcoming sub-sections.

3.3.1 Methodology Adopted for the Study

The baseline status of the ambient air has been established through a scientifically designed ambient air quality monitoring network.

Table 3.2: Procedures for Determining Various Air Quality Parameters

Parameters	Testing Procedure
PM10 & PM2.5	Gravimetric Method by using Respirable Dust Sampler" (RDS) and Repairable fine Particulate Matter 9 (PM2.5) sampler.
NO2	Absorption in diluted NaOH and then estimated calorimetrically with sulphanilamide and N (I-Nepthyle) Ethylene diamine Di-hydrochloride and Hydrogen Peroxide (IS: 5182 1975, Part-VI).
SO2	Absorption in Sodium Tetra Chloromercurate followed by Colorimetric estimation using P-Rosaniline hydrochloride and Formaldehyde (IS: 5182 Part – II, 2001).
CO	Each constituent gas in a sample will absorb some infra red at a particular frequency. By shining an infra-red beam through a sample cell (containing CO), and measuring the amount of infra-red absorbed by the sample at the necessary wavelength, a NDIR detector is able to measure the volumetric concentration of CO in the sample.
VOC	ASTM D2369 test standards & EPA Method 24

8 Ambient Air Quality Monitoring Locations are given below: -

Table 3.3: Ambient Air Quality Monitoring Locations

Ambient Air Quality Monitoring Station					
Code	Location	Distance (Km)	Direction	Latitude	Longitude
AAQ-1	Project Site	0.0	Core	30°21'9.83"N	77°14'5.89"E
AAQ 2	Butgarh	2.42	ESE	30°20'42.43"N	77°15'34.39"E
AAQ-3	Parbholi	2.82	NE	30°21'41.46"N	77°15'41.99"E
AAQ-4	Fatehgarh Tumbi	2.39	SE	30°20'4.45"N	77°15'2.03"E
AAQ-5	Sanam/ Bada Marwa	4.51	SE	30°19'32.64"N	77°16'16.79"E
AAQ 6	Bhogpur	1.73	SW	30°21'31.29"N	77°13'13.25"E
AAQ-7	Rajpur	2	NW	30°21'54.71"N	77°13'8.22"E
AAQ-8	Saraswan	4	W	30°21'52.17"N	77°11'35.10"E

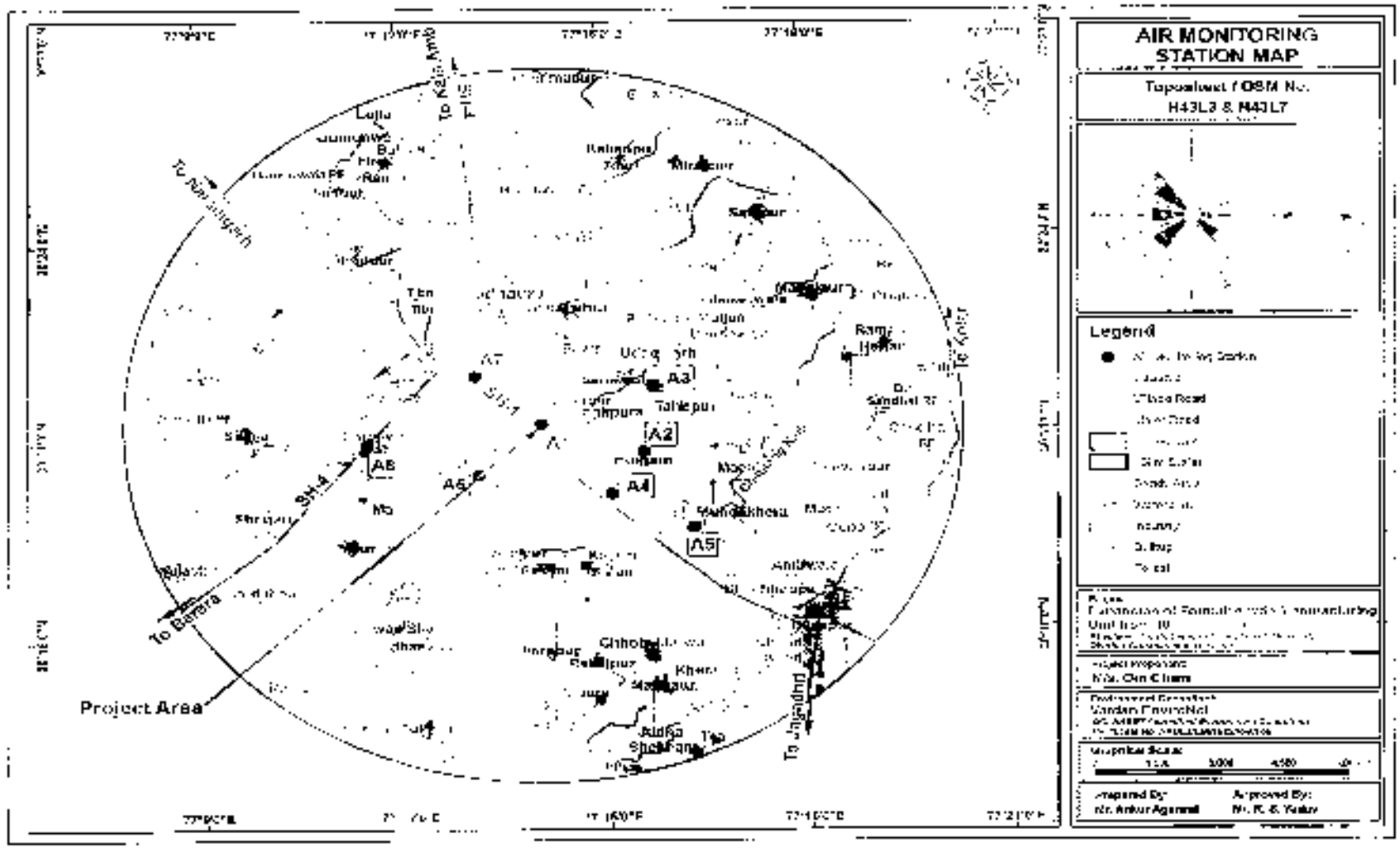


Figure 3.2: Air Monitoring Sampling Station

M/s OM CHEM.	Capacity Expansion of Formaldehyde Manufacturing Unit in Existing Facility from 100 TPD to 200 TPD on 0.6430 ha existing land at V.P.O. Kurali Distt. Yamunanagar, Haryana

Table 3.4: Ambient Air Quality Monitoring Results

Parameters	PM10 (µg/m3)	PM_{25} (µg/m³)	NO_2 (µg/m3)	SO_2 (µg/m³)	CO (mg/m3)	VOC (µg/m3)	HC (ppm)
AAQM Norms	100	60	80	80	4 (for 8 hours)	5	0.2
Project Site (AQ1)							
Max	96.8	50.6	30.2	12.6	0.98	ND	ND
Min	72.5	31.6	14.1	7.2	0.23	ND	ND
Mean	82.06	42.24	21.71	9.25	0.74	ND	ND
98 Percentile	95.71	50.44	29.26	12.50	0.96	ND	ND
Butgarh (AQ2)							
Max	91	57.4	31.8	18.2	0.95	ND	ND
Min	73.8	35.6	16.9	6.5	0.45	ND	ND
Mean	81.48	44.51	24.17	10.02	0.80	ND	ND
98 Percentile	90.58	56.78	31.49	17.11	0.94	ND	ND
Parbholi (AQ3)							
Max	90.8	57.2	37.5	18.4	0.94	ND	ND
Min	72	35.2	15.5	6.8	0.4	ND	ND
Mean	82.41	43.92	27.31	10.97	0.79	ND	ND
98 Percentile	90.70	55.64	36.30	16.94	0.94	ND	ND
Fatehgarh Tumbi (AQ4)							
Max	94.2	57.2	31.8	15.5	0.96	ND	ND
Min	75.6	36.3	17.2	6.3	0.56	ND	ND
Mean	83.38	44.87	23.85	10.39	0.82	ND	ND
98 Percentile	92.90	56.65	31.45	15.30	0.95	ND	ND
Sanaur (AQ5)							
Max	89.3	50.6	30.2	14.8	0.94	ND	ND
Min	69.6	30.3	14.1	6.2	0.54	ND	ND
Mean	80.80	40.58	21.63	9.89	0.79	ND	ND

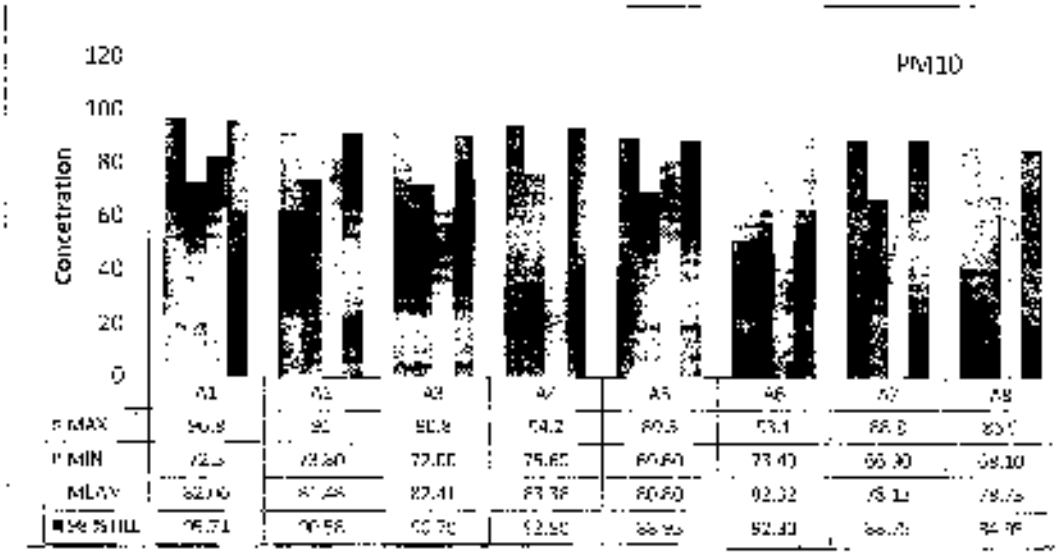
Parameters	PM10 (µg/m3)	$PM_{2.5}$ (µg/m³)	NO_2 (µg/m3)	SO_2 (µg/m³)	CO (mg/m3)	VOC (µg/m3)	HC (ppm)
AAQM Norms	**100**	**60**	**80**	**80**	**4 (for 8 hours)**	**5**	**0.2**
98 Percentile	88.95	50.40	28.90	14.10	0.93	ND	ND
Bhogpur (AQ6)							
Max	93.1	54.2	31.4	13.3	0.91	ND	ND
Min	73.4	33.1	16.3	6.6	0.51	ND	ND
Mean	82.32	43.40	23.92	10.03	0.78	ND	ND
98 Percentile	92.30	52.85	31.30	13.25	0.91	ND	ND
Rajpur (AQ7)							
Max	88.8	50.5	23.8	8.1	0.96	ND	ND
Min	66.9	40.1	18.1	5.1	0.55	ND	ND
Mean	78.13	44.63	20.61	6.68	0.77	ND	ND
98 Percentile	86.75	50.15	23.80	8.10	0.96	ND	ND
Sarawan (AQ8)							
Max	86.5	49.5	34	7.9	0.9	ND	ND
Min	68.1	38.9	18.1	5.4	0.54	ND	ND
Mean	78.73	43.77	23.32	6.68	0.76	ND	ND
98 Percentile	84.95	48.80	33.35	7.90	0.90	ND	ND

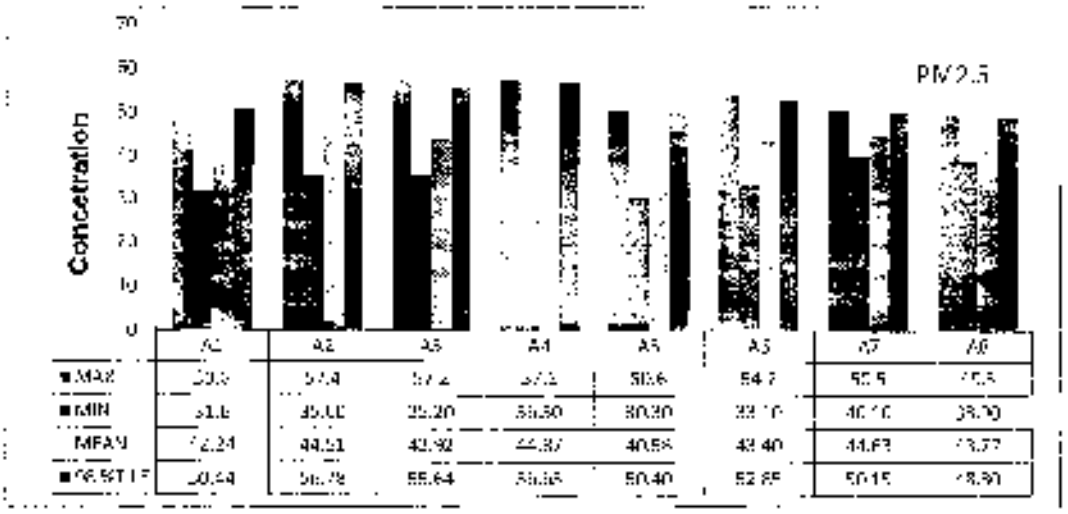
(Source: VardanEnviroLab)

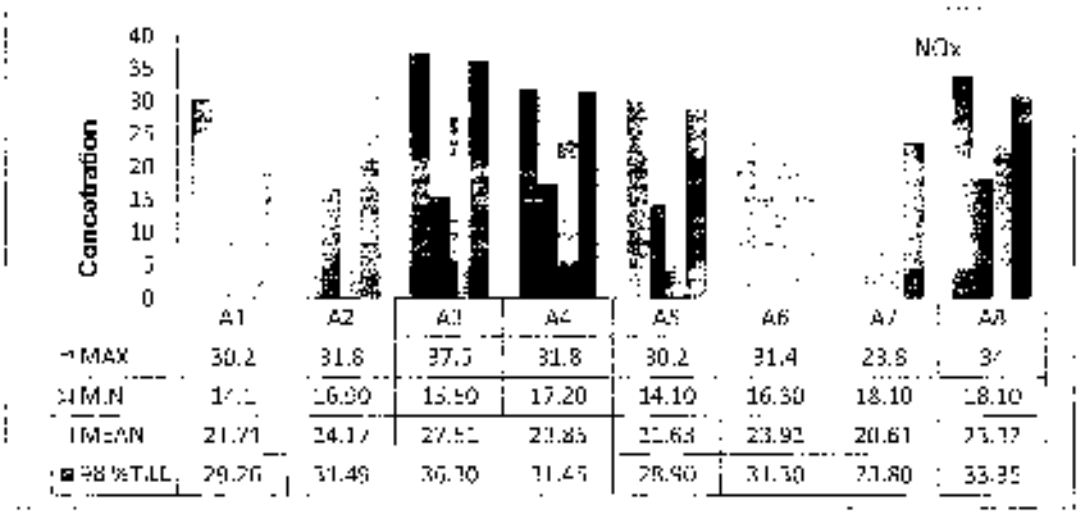
3.3.2 Observations

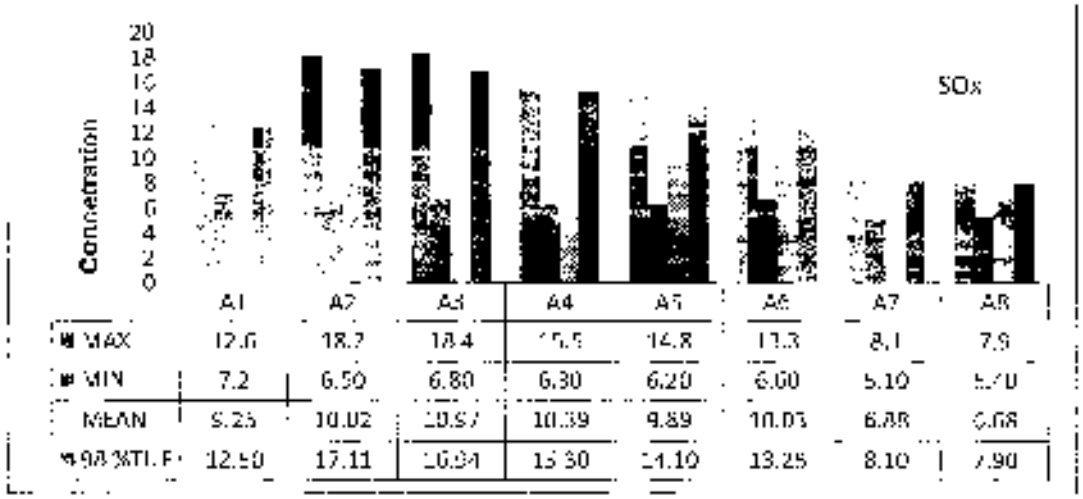
Ambient Air Quality Monitoring reveals that the **minimum** and **maximum concentrations of PM_{10}** for all the 8 Air Quality monitoring stations were found to be **66.9 µg/m³** and **96.8 µg/m³** respectively, while for **$PM_{2.5}$** varies between **30.3 µg/m³** and **57.4 µg/m³**. As far as the gaseous pollutants SO_2, NO_2, CO& VOC are concerned, the prescribed limits under NAAQ Standards for **residential and rural** areas has never surpassed at any station. The **minimum** and **maximum concentrations** of **NO_2** were found to be **14.1 µg/m³** and **37.5 µg/m³** respectively. The **minimum** and **maximum concentrations** of **SO_2** were found to be **5.1 µg/m³** and **18.4 µg/m³** respectively. The **minimum** and **maximum concentrations of CO** were found to be **0.23 mg/m³** and **0.98**

mg/m³ respectively. The prescribed limit of SO_2 and NO_2 is 80 $\mu g/m^3$ and CO is 2mg/m³ for residential and rural areas has never surpassed at any monitoring station. Detailed Air Monitoring Lab report is attached as Annexure 7. The standards of Ambient Air Quality in India are available online at *http://cpcb.nic.in/National_Ambient_Air_Quality_Standards.php*









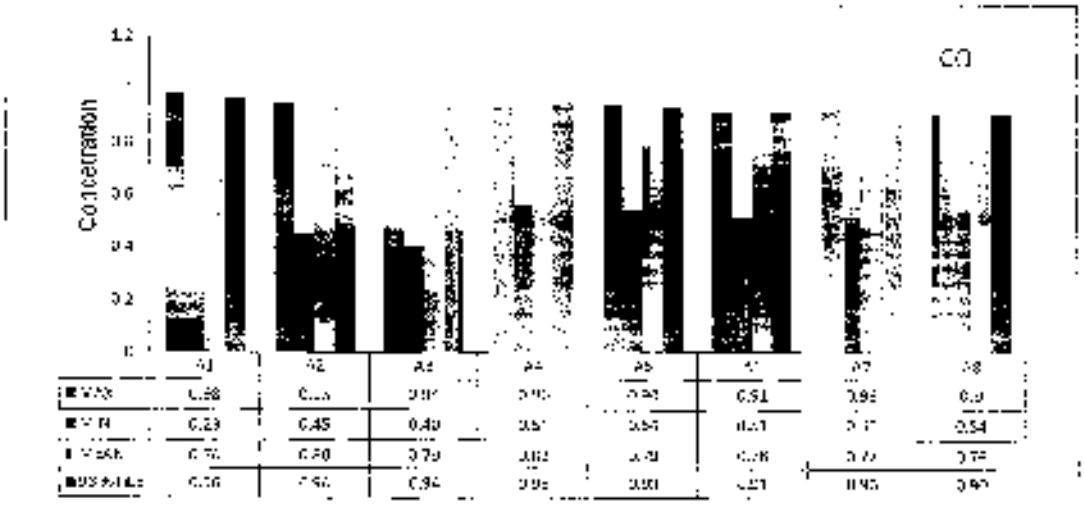


Figure 3.3: Graph Showing Pollutants Concentration of the Study Area

3.4 NOISE ENVIRONMENT

Noise often defined as unwanted sound, interferes with speech communication, causes annoyance, distracts from work, disturb sleep, thus deteriorating quality of human environment. Noise Pollution survey has therefore been carried out.

Noise levels were measured in residential areas and other settlements located within 10 km radius around the site.

3.4.1 Noise Analysis within the Study Area

The noise analysis within the study area was recorded using 4012 Maxtech sound level meter. The analysis reveals that the noise's well within the permissible range. The location of Noise level monitoring is presented in Table 3.5 and the levels recorded are as stated in Table 3.6.

Table 3.5: Noise Monitoring Sampling Station

Ambient Noise Quality Monitoring Station

Code	Location	Distance (Km)	Direction	Latitude	Longitude
N-1	Project Site	0.0	Core	30°21'9.83"N	77°14'5.89"E
N-2	Butgarh	2.42	ESE	30°20'42.43"N	77°15'34.39"E
N-3	Parbholi	2.82	NE	30°21'41.46"N	77°15'44.99"E
N-4	Fatehgarh Tumbi	2.39	SE	30°20'4.45"N	77°15'2.09"E
N-5	Sanaur/ Bada Marwa	4.51	SE	30°19'32.64"N	77°16'16.79"E
N-6	Bhogpur	1.73	SW	30°20'31.29"N	77°13'13.25"E
N-7	Rajpur	2	NW	30°21'54.71"N	77°13'8.77"E
N-8	Sarawan	4	W	30°20'52.17"N	77°11'35.10"E

Table 3.6: Noise Monitoring Result

S. No	Locations	Noise Level Leq. dB (A)	
		Day Time (6:00 a.m. to 10:00 p.m.)	Night Time (10:00 p.m. to 6:00 a.m.)
1.	N1	56.26	40.21
2.	N2	51.47	42.55
3.	N3	52.53	43.38
4.	N4	51.25	42.62
5.	N5	50.68	41.77
6.	N6	51.12	40.75
7.	N7	53.26	43.21
8.	N8	52.21	42.12
CPCB Standards			
a.	Residential Area	55.0	45.0
b.	Industrial Area	75.0	70.0
c.	Commercial Zone	65.0	55.0

d.	Silence Zone	50.0	40.0

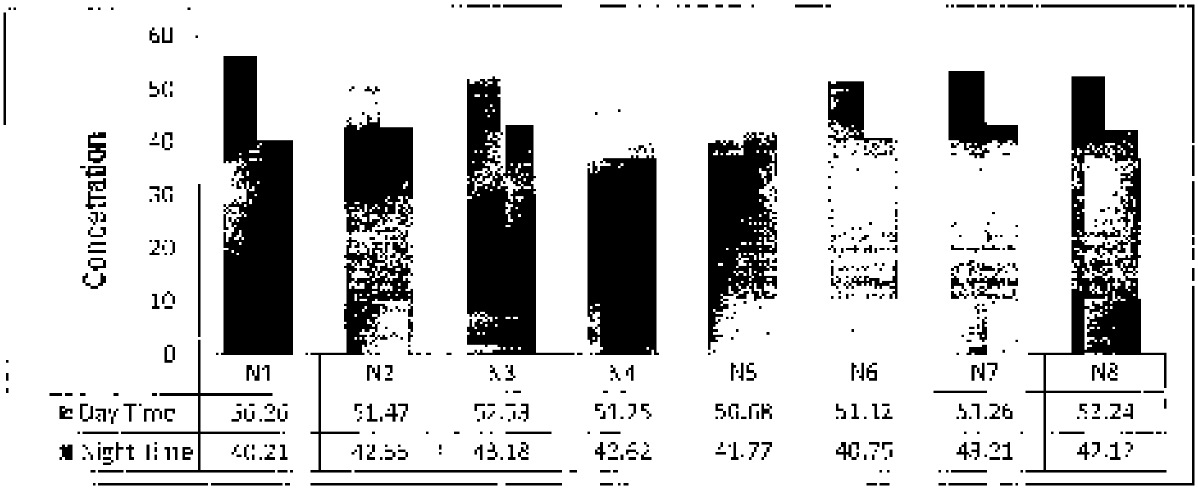


Figure 3.4: Graph Showing Noise Pollutants Concentration of the Study Area

3.4.2 Observations

Ambient noise levels were measured at 08 locations around the project site. **Minimum and maximum** noise levels recorded during the **day time** were from **50.68 Leq dB** and **56.26 Leq dB** respectively and **minimum and maximum** level of noise during **night time** were **40.21 Leq dB** and **43.21 Leq** dB respectively. Lab result is attached as **Annexure 7** and noise levels at all locations were observed to be within the prescribed limits and Ambient Air Quality Standards in respect of Noise is available online. From the above study and discussions it can be concluded that noise levels in the study area are well within the prescribed limits as prescribed by the CPCB and State Pollution Control Board.

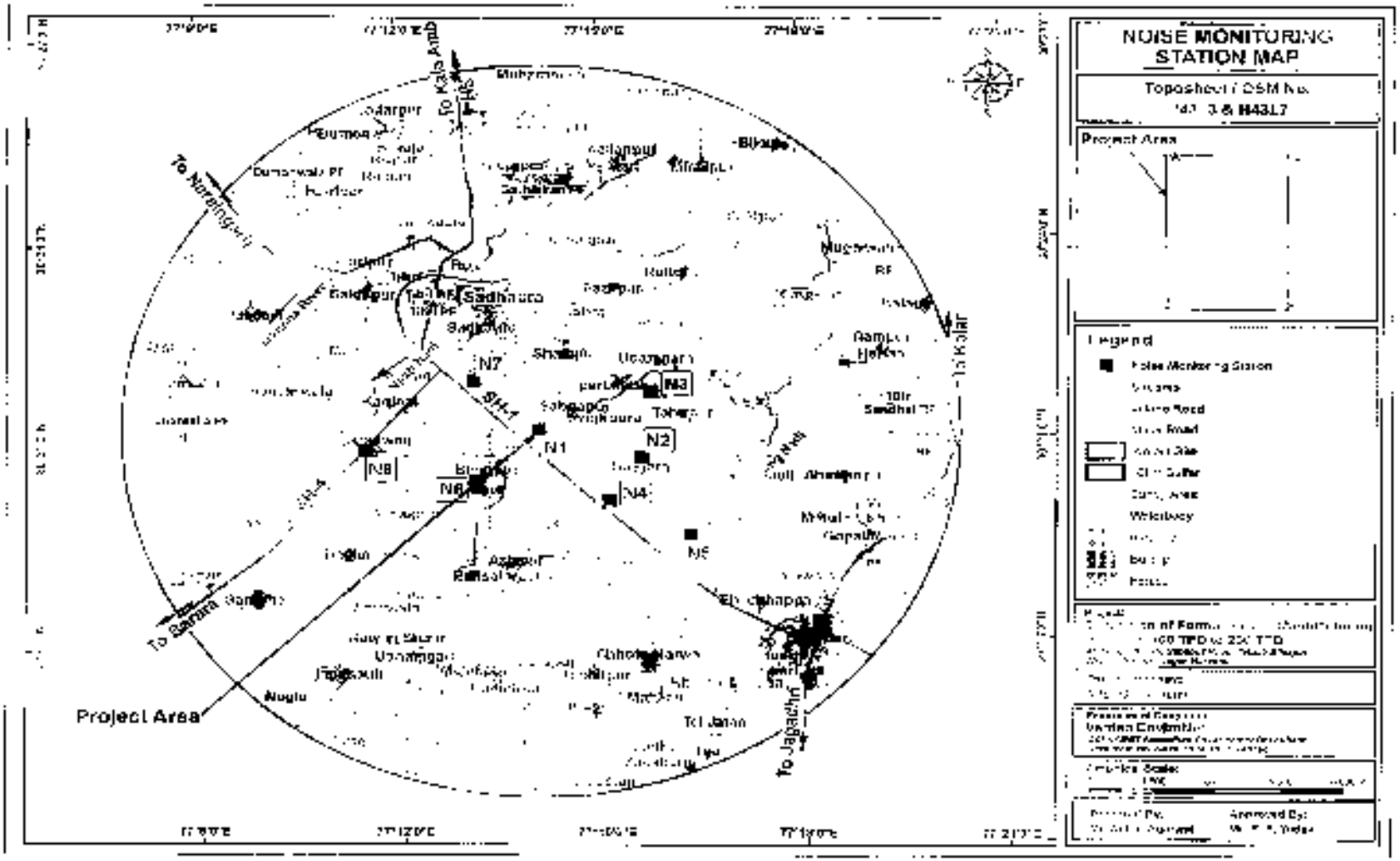


Figure 3.5: Key Plan of Noise Monitoring Station

3.5 SOIL ENVIRONMENT

The soils of district are mainly two types: Silty and Sandy loam.

3.5.1 Soil Quality and Characteristics

The information on soils has been collected from various secondary sources and also through primary soil sampling analysis of which is described in this section.

The sampling locations have been finalized with the following objectives:

- To determine the base line characteristics
- To determine the soil characteristics of proposed project site.
- To determine the impact of industrialization/ urbanization on soil characteristics.
- To determine the impacts on soils from agricultural productivity point of view.

3.5.2 Criteria Adopted for Selection of Sampling Locations

For studying the soil types and soil characteristics, 8 sampling locations were selected to assess the existing soil conditions representing various land use conditions and geological features.

3.5.3 Methodology and Sampling

The homogenized soil samples collected at different locations were packed in a polyethylene plastic bag and sealed. The sealed samples were sent to laboratory for analysis. The important physical, chemical parameter concentrations were determined from all samples

3.5.4 Soil Sampling Locations

Details of the soil sampling locations are given in **Table 3.7.**

Table 3.7: Soil Sample Monitoring Station

Soil Sampling Location					
Code	**Location**	**Distance (Km)**	**Direction**	**Latitude**	**Longitude**
S-1	Project Site	0.0	Core	30°21'9.83"N	77°14'3.89"E
S-2	Butgarh	2.42	ESE	30°20'45.08"N	77°15'30.15"E
S-3	Parbholi	2.82	NE	30°21'41.14"N	77°15'39.07"E
S-4	Patehgarh Tumbi	2.39	SE	30°20'1.25"N	77°15'5.84"E
S-5	Sanaur/ Bada Marwa	4.51	SE	30°19'43.64"N	77°16'21.51"E
S-6	Bhagpur	1.73	SW	30°20'37.27"N	77°13'12.71"E
S-7	Rajpur	2	NW	30°21'51.62"N	77°13'5.41"E
S-8	Sarawan	4	W	30°20'47.66"N	77°11'41.78"E

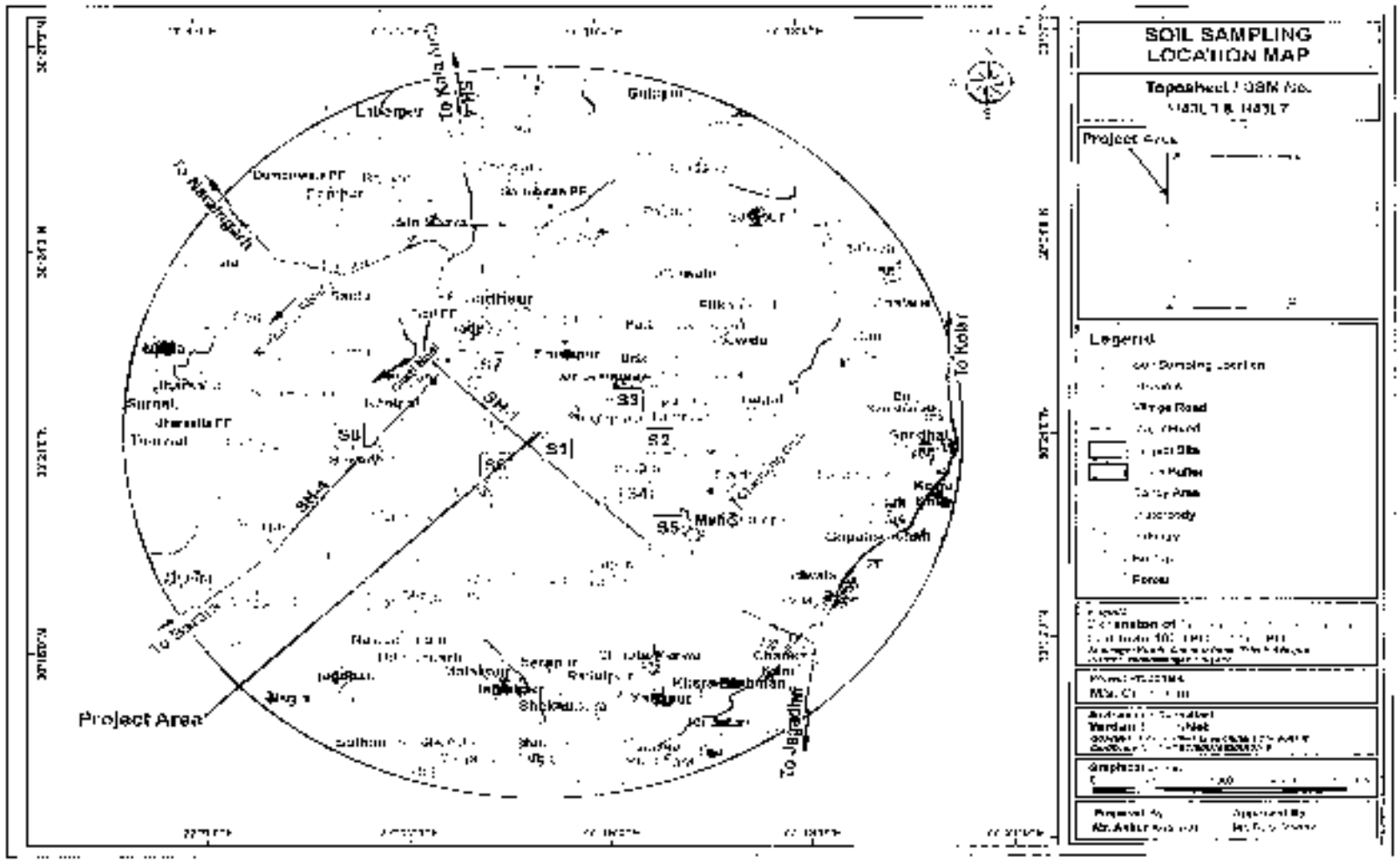


Figure 3.6: Soil Sampling Stations

Table 3.8: Soil Analysis Results

S.No	Parameter	Result (S1)	Result (S2)	Result (S3)	Result (S4)	Result (S5)	Result (S6)	Result (S7)	Result (S8)
1.	pH (at 25 °C)	7.78	7.69	7.89	8.32	8.41	8.14	8.15	8.31
2.	Conductivity (mS/cm)	0.285	0.325	0.406	0.365	0.351	0.278	0.304	0.324
3.	Soil Texture (%)	Sandy – 33	Sand-24	Sand-24	Sand – 32	Sand-28	Sand 32	Sand-28	Sand-37
		Silt – 52	Silt -58	Silt-60	Silt - 50	Silt - 51	Silt - 48	Silt -51	Silt -43
		Clay -15	Clay-18	Clay-16	Clay - 18	Clay-18	Clay -20	Clay-21	Clay-20
4.	Color	Yellowish Brown	Yellowish Brown	Yellowish Brown	Yellowish Brown	Yellowish Brown	Yellowish Red	Yellowish Brown	Yellowish Red
5.	Water holding capacity (%)	32.12	38.63	33.45	38.22	27.35	34.15	36.25	38.42
6.	Bulk density (gm/cc)	1.41	1.39	1.46	1.39	1.36	1.41	1.32	1.31
7.	Chloride as Cl (mg/100g)	36.12	39.42	36.1	38.61	55.24	42.32	32.4	31.04
8.	Calcium as Ca (mg/100g)	27.56	45.8	47.41	48.14	45.64	37.54	40.64	41.91
9.	Sodium as Na (mg/kg)	45.63	50.73	58.1	51	56.78	52.03	33.91	32.29
10.	Potassium as K (kg/hec.)	137.14	139.1	165	146.47	181.1	125.2	121.12	114.24
11.	Organic Matter (%)	0.48	0.49	0.51	0.47	0.56	0.13	0.4	0.44
12.	Magnesium as Mg (mg/100g)	17.64	19.26	22.35	19.44	24.44	19.63	16.61	20.51
13.	Available Nitrogen as	241	248.12	251	223.61	248	203	193.12	208

	N (kg/hec.)								
14.	Available Phosphorus (kg/hec.)	20.45	24.63	23.1	20.25	24.26	21.25	20.12	22.56
15.	Zinc as Zn (mg/kg)	12.66	12.38	10.73	8.21	14.74	11.61	8.46	10.31
16.	Manganese (as Mn) (mg/kg)	5.89	7.89	7.1	3.82	9.21	6.5	4.3	7.1
17.	Lead (as Pb) (mg/kg)	0.48	0.95	0.89	0.65	0.93	0.81	0.46	0.61
18.	Cadmium (as Cd) (mg/kg)	0.42	0.53	0.36	0.27	0.32	0.12	0.27	0.27
19.	Chromium (as Cr) (mg/kg)	0.28	0.34	0.24	0.14	0.2	0.18	0.11	0.1
20.	Copper (as Cu) (mg/kg)	2.38	3.1	4.98	2.18	4.16	3.14	2.08	3.11

3.5.5 Observations

The analysis results show that soil is basic in nature as pH value ranges from 7.69 to 8.41 with organic matter 0.40 % to 0.56%. The concentration of Nitrogen (190.12 Kg/ha to 251.0 Kg/ha.) Phosphorus (20.12 Kg/ha. to 24.63 Kg/ha.) and Potassium (111.21 Kg/ha. to 181.1 Kg/ha.) has been found to be in good amount in the soil samples. The consumption of fertilizers is as important factor as their production. There should be appropriate balance in the consumption of different fertilizer nutrients. Soil Quality data attached as **Annexure 7.**

3.6 WATER ENVIRONMENT

The impact has been assessed on randomly selected surface and ground water sources falling within the impact zone. In order to assess the existing water quality, the Ground water samples were collected from 8 different locations and Surface Water quality from 8 locations within the study area and analyzed it as per the procedure specified in standard methods for examination of water and wastewater published by American Public Health Association and Bureau of Indian Standards (APHA/BIS).

Monitored values have been used for describing the water environment and assessing the impacts on it. To assess the water quality impacts, water resources in the impact area have been grouped into 2 classes.

- Ground water resources in the deeper strata of the ground
- Surface water resources

A) Ground Water

About 8 ground water and surface water samples were collected from the study area to assess the water quality during the study period. The ground water samples were drawn from the hand pumps and open wells being used by the villagers for their domestic needs. Surface water sampling was carried out from distributary and pond present within 10 Km of the project site. The details of the locations are given in below tables

Table 3.9: Ground Water Sampling Stations

Ground Water Sampling Location					
Code	Location	Distance (Km)	Direction	Latitude	Longitude
GW-1	Project Site	0.0	Core	30°21'9.83"N	77°14'5.89"E
GW-2	Botgarh	2.42	ESE	30°20'42.43"N	77°15'34.39"E
GW-3	Parbholi	2.82	NE	30°21'41.46"N	77°15'44.99"E
GW-4	Fatehgarh Tumbi	2.39	SE	30°20'4.45"N	77°15'2.03"E
GW-5	Sanaur	1.51	SE	30°19'32.64"N	77°16'16.79"E
GW-6	Bhogpur	1.73	SW	30°20'31.29"N	77°13'13.25"E
GW-7	Rajpur	2	NW	30°21'54.71"N	77°13'8.77"E
GW-8	Sarawan	4	W	30°20'52.17"N	77°11'35.10"E

B) Surface Water

Surface water sampling locations is given in Table 3.10.

Table 3.10: Surface Water Sampling Stations

Surface Water Sampling Location					
Code	Location	Distance (Km)	Direction	Latitude	Longitude
SW-1	Nakti Nadi near Sadhaura (US)	4.5	NNW	30°23'29.03"N	77°12'44.85"E
SW-2	Nakti Nadi near Gadauli (DS)	6	WNW	30°21'50.62"N	77° 8'33.47"E

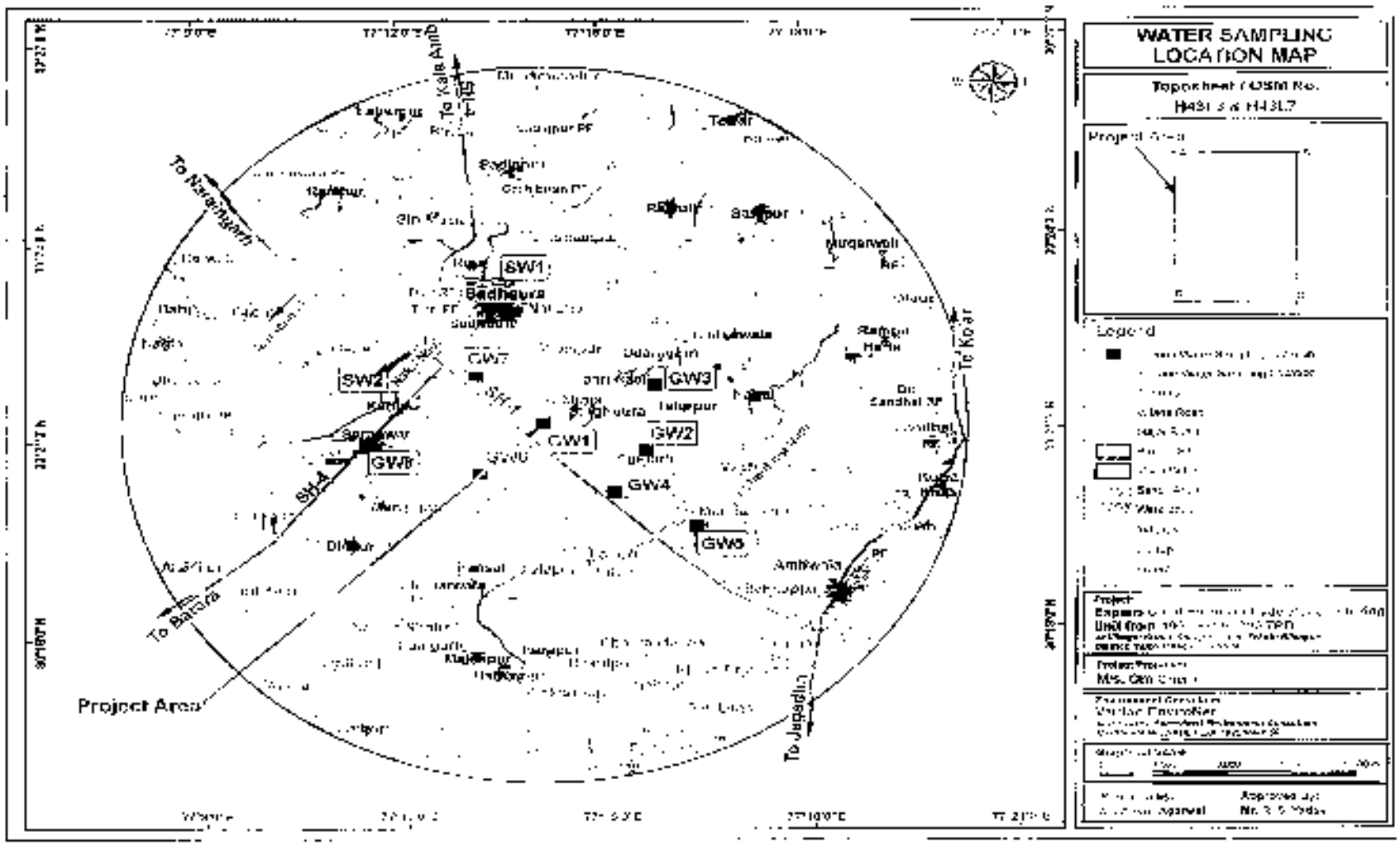


Figure 3.7: Key Plan of Water Sampling Stations

Table 3.11: Ground Water Analysis Results

S.no	Parameter	GW1	GW2	GW3	GW4	GW5	GW6	GW7	GW8	Desirable Limit	Permissible Limit
1.	pH (at 25 °C)	7.84	8.45	8.34	7.59	8.16	8.23	7.63	7.71	6.5 to 8.5	No Relaxation
2.	Colour (Hazen)	*BDL (**DL 1Hazen)	*BDL (**DL 1Hazen)	*BDL (**DL 1Hazen)	*BDL (**DL 1Hazen)	*BDL (**DL 1Hazen)	*BDL (**DL 1Hazen)	*BDL (**DL 1Hazen)	*BDL (**DL 1Hazen)	5	15
3.	Turbidity (NTU)	*BDL (**DL 1 NTU)	*BDL (**DL 1 NTU)	*BDL (**DL 1 NTU)	*BDL (**DL 1 NTU)	*BDL (**DL 1 NTU)	*BDL (**DL 1 NTU)	*BDL (**DL 1 NTU)	*BDL (**DL 1 NTU)	1	5
4.	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5.	Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
6.	Total Hardness as $CaCO_3$ (mg/l)	139.56	149.57	136.75	162.33	178.32	148.24	132.23	141.51	200	600
7.	Calcium as Ca (mg/l)	24.74	28.45	27.58	32.53	43.45	34.65	36.36	31.00	75	200
8.	Alkalinity as $CaCO_3$(mg/l)	133.24	171.52	136.80	146.52	186.36	156.40	128.25	162.4	200	600
9.	Chloride as Cl (mg/l)	61.45	46.36	32.64	36.25	56.24	39.42	32.14	40.02	250	1000
10	#Cyanide as CN(mg/l)	*BDL(**DL 0.02 mg/l)	*BDL (**DL 0.02 mg/l)	*BDL(**DL 0.02 mg/l)	*BDL(**DL 0.02 mg/l)	*BDL(**DL 0.05 mg/l)	*BDL(**DL 0.05 mg/l)	*BDL(**DL 0.05 mg/l)	*BDL(**DL 0.05 mg/l)	0.05	No Relaxation
11.	Magnesium as Mg (mg/l)	28.88	19.06	16.96	19.68	16.93	14.97	10.04	13.05	30	100
12.	Total Dissolved Solids (mg/l)	284.00	325.00	217.00	279.00	324.00	254.00	224.00	285.00	500	2000
13.	Sulphate as SO_4(mg/l)	21.56	34.52	26.53	42.62	40.17	26.23	28.61	38.71	200	400
14.	Fluoride as F	0.40	0.48	0.45	0.52	0.61	0.45	0.12	0.13	1.0	1.5

	(mg/l)										
15.	Nitrate as NO_3 (mg/l)	17.63	28.63	19.57	19.67	18.24	12.10	17.56	10.54	45	No Relaxation
16.	Iron as Fe (mg/l)	0.33	0.32	0.34	0.47	0.46	0.42	0.15	0.27	2.0	No relaxation
17.	#Aluminium as Al (mg/l)	*BDL(**DL 0.02mg/l)	*BDL(**DL 0.002mg/l)	*BDL(**DL 0.002mg/l)	*BDL(**DL 0.002mg/l)	*BDL(**DL 0.002mg/l)	*BDL (**DL 0.002mg/l)	*BDL(**DL 0.002mg/l)	*BDL(**DL 0.002mg/l)	0.03	0.2
18.	Boron (mg/l)	*BDL (**DL 0.01 mg/l)	*BDL(**DL 0.01 mg/l)	*BDL(**DL 0.01 mg/l)	*BDL(**DL 0.01 mg/l)	*BDL(**DL 0.01 mg/l)	*BDL(**DL 0.01 mg/l)	*BDL(**DL 0.01 mg/l)	*BDL(**DL 0.01 mg/l)	0.5	2.4
19	Chromium as Cr(mg/l)	*BDL (**DL 0.002mg/l)	*BDL(**DL 0.002mg/l)	*BDL(**DL 0.002mg/l)	*BDL(**DL 0.002mg/l)	*BDL(**DL 0.002mg/l)	*BDL(**DL 0.002mg/l)	*BDL(**DL 0.002mg/l)	*BDL(**DL 0.002mg/l)	0.05	No Relaxation
20.	Conductivity (µS/cm)	476	543	362	467	540	424	373	641	--	--
21.	Phenolic Compounds (mg/l)	*BDL(**DL 0.0004 mg/l)	*BDL(**DL 0.0004 mg/l)	*BDL(**DL 0.0004 mg/l)	*BDL (**DL 0.0004 mg/l)	*BDL(**DL 0.0004 mg/l)	*BDL(**DL 0.0004 mg/l)	*BDL (**DL 0.0004 mg/l)	*BDL(**DL 0.0004 mg/l)	0.001	0.002
22.	#Mineral Oil (mg/l)	*BDL(**DL 0.05mg/l)	*BDL (**DL 0.05mg/l)	*BDL(**DL 0.05mg/l)	*BDL(**DL 0.05mg/l)	*BDL (**DL 0.05mg/l)	*BDL(**DL 0.05mg/l)	*BDL(**DL 0.05mg/l)	*BDL(**DL 0.05mg/l)	1.0	No Relaxation
23.	Anionic Detergents as MBAS (mg/l)	*BDL(**DL 0.05 mg/l)	*BDL(**DL 0.05 mg/l)	*BDL(**DL 0.05 mg/l)	*BDL(**DL 0.05 mg/l)	*BDL(**DL 0.05 mg/l)	*BDL(**DL 0.05 mg/l)	*BDL(**DL 0.05 mg/l)	*BDL(**DL 0.05 mg/l)	0.2	1.0
24.	Zinc as Zn (mg/l)	0.76	0.71	0.67	0.82	0.46	0.76	0.71	0.62	5	15
25.	Copper as Cu (mg/l)	0.71	0.09	0.12	0.10	0.15	0.41	0.54	0.89	0.05	1.5
26.	Manganese as Mn (mg/l)	*BDL (**DL 0.01 mg/l)	*BDL(**DL 0.01 mg/l)	*BDL (**DL 0.01 mg/l)	*BDL(**DL 0.01 mg/l)	*BDL(**DL 0.01 mg/l)	*BDL(**DL 0.01 mg/l)	*BDL(**DL 0.01 mg/l)	*BDL(**DL 0.01 mg/l)	0.1	0.3
27.	Cadmium as Cd (mg/l)	*BDL(**DL 0.002	*BDL(**DL 0.002	*BDL(**DL 0.002	*BDL(**DL 0.002	*BDL(**DL 0.002	*BDL(**DL 0.002	*BDL(**DL 0.002	*BDL (**DL 0.002	0.003	No Relaxation

		mg/l)	mg/l)	mg/l)	mg/l)	mg/l)	mg/l)	mg/l)	mg/l)		
26.	Lead as Pb (mg/l)	*BDL (**DL 0.002 mg/l)	*BDL(**DL 0.002 mg/l)	*BDL(**DL 0.002 mg/l)	*BDL(**DL 0.002 mg/l)	*BDL(**DL 0.002 mg/l)	*BDL(**DL 0.002mg/l)	*BDL(**DL 0.002 mg/l)	*BDL (**DL 0.002 mg/l)	0.01	No Relaxation
29.	#Selenium as Se(mg/l)	*BDL(**DL 0.001 mg/l)	*BDL(**DL 0.001 mg/l)	*BDL(**DL 0.001 mg/l)	*BDL(**DL 0.001 mg/l)	*BDL (**DL 0.001 mg/l)	*BDL(**DL 0.001 mg/l)	*BDL(**DL 0.001 mg/l)	*BDL(**DL 0.001 mg/l)	0.01	No Relaxation
30.	#Arsenic as As (mg/l)	*BDL (**DL 0.002 mg/l)	*BDL(**DL 0.002 mg/l)	*BDL(**DL 0.002 mg/l)	*BDL(**DL 0.002 mg/l)	*BDL(**DL 0.002 mg/l)	*BDL(**DL. 0.002mg/l)	*BDL(**DL 0.002 mg/l)	*BDL(**DL 0.002mg/l)	0.01	No Relaxation
31.	#Mercury as Hg (mg/l)	*BDL (**DL 0.0005 mg/l)	*BDL (**DL 0.0005 mg/l)	*BDL (**DL 0.0005 mg/l)	*BDL (**DL 0.0005 mg/l)	*BDL (**DL 0.0005 mg/l)	*BDL (**DL 0.0005 mg/l)	*BDL (**DL 0.0005 mg/l)	*BDL (**DL 0.0005 mg/l)	0.001	No Relaxation
32.	Total Coliform (MPN/100ml)	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	Shall not be detectable in any 100 ml sample	
33.	E. Coli (MPN/100ml)	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Shall not be detectable in any 100 ml sample	

Table 3.12: Surface Water Analysis Results

S.No.	Parameter	SW1	SW2
1.	pH (at 25 0C)	7.82	7.89
2.	Colour (Hazen)	*BDL (**DL 1Hazen)	*BDL (**DL 1Hazen)
3.	Turbidity (NTU)	19.00	24.00
4.	Odour	Agreeable	Agreeable

5.	Total Hardness as $CaCO_3$ (mg/l)	158.52	185.42
6.	Calcium as Ca (mg/l)	26.47	33.40
7.	Alkalinity as $CaCO_3$(mg/l)	148.6	162.30
8.	Chloride as Cl (mg/l)	46.32	51.24
9.	Residual free Chlorine(mg/l)	*BDL(**DL 0.15mg/l)	*BDL(**DL 0.15mg/l)
10.	#Cyanide as CN (mg/l)	*BDL (**DL 0.02 mg/ l)	*BDL(**DL 0.02 mg/l)
11.	Magnesium as Mg (mg/l)	22.47	24.81
12.	Total Dissolved Solids (mg/l)	237.00	265.00
13.	Total Suspended solids(mg/l)	51.00	47.00
14.	Dissolved Oxygen(mg/l)	7.7	7.4
15.	Sulphate as SO4 (mg/l)	23.32	21.09
16.	Fluoride as F (mg/l)	0.36	0.46
17.	BOD (3 Days at 27°C)	<5.0	5.00
18.	COD(mg/l)	12.00	14.00
19.	Conductivity (µS/cm)	395	441
20.	Nitrate as NO3 (mg/l)	5.04	10.52
21.	Sodium as Na(mg/l)	18.8	22.4
22.	Potassium as K(mg/l)	5.6	7.9
23.	Iron as Fe (mg/l)	0.29	0.28

24.	#Aluminium as Al (mg/l)	*BDL(**DL 0.02 mg/l)	*BDL(**DL 0.02 mg/l)
25.	Boron (mg/l)	0.57	0.52
26.	Chromium as Cr(mg/l)	*BDL(**DL 0.002 mg/l)	*BDL(**DL 0.002 mg/l)
27.	Phenolic Compounds(mg/l)	*BDL(**DL 0.0004mg/l)	*BDL(**DL 0.0004mg/l)
28.	#Mineral Oil(mg/l)	*BDL(**DL 0.4 mg/l)	*BDL(**DL 0.4 mg/l)
29.	Anionic Detergents as MBAS (mg/l)	*BDL(**DL0.05 mg/l)	*BDL(**DL0.05 mg/l)
30.	Zinc as Zn (mg/l)	1.21	2.86
31.	Copper as Cu (mg/l)	0.66	0.75
32.	Manganese as Mn (mg/l)	*BDL(**DL 0.01 mg/l)	*BDL(**DL 0.01 mg/l)
33.	Cadmium as Cd (mg/l)	*BDL(**DL 0.002 mg/l)	*BDL(**DL 0.002 mg/l)
34.	Total Coliform (MPN/100ml)	900	1600
35.	Fecal Coliform (MPN/100ml)	100	300

3.6.1 Observations

Analysis results of ground water reveal the following:

- pH varies from 7.59 to 8.45
- Total Hardness varies from 132.23 to 178.32 mg/l.
- Total Dissolved Solids varies from 217 to 325 mg/l.

Analysis results of surface water reveal the following:

- pH varies from 7.82 to 7.89
- Total Hardness varies from 158.52 to 185.42 mg/l.
- Total Dissolved Solids varies from 237 to 265 mg/l.
- BOD varies from <5.00 to 5.00 (mg/l)
- COD varies from 12.00 to 14.00 (mg/l)

3.6.2 Interpretation

Water results indicate that the water quality is quite good due to less industrialization in the area & less water contamination

3.7 LAND USE AND LAND COVER

3.7.1 Data Used

United States Geological Survey (USGS) Satellite Data: Landsat 8 cloud free data has been used for land use /land cover analysis, Satellite Sensor–OLI TIRS multi spectral digital data has been used for the preparation of land use/ land cover map of present study. Survey of India reference map on 1:50,000 scales have been used for the preparation of base map and geometric correction of satellite data. Ground truthing has been carried out to validate the interpretation accuracy and reliability of remotely sensed data, by enabling verification of the interpreted details and by supplementing with the information, which cannot be obtained directly on satellite imagery.

Methodology: The methodology used for the study consists of following components.

3.7.2 Methodology Adopted for Thematic Data Extraction from the Satellite Imageries

ERDAS image processing 10.0 software and ARC/GIS 10.0 software were used for the project. ERDAS 10.0 image processing software was used for digital processing of the spatial data. Digital image processing techniques were applied for the mapping of the land use land cover classes of the provided area from the satellite data

The land use pattern of the study area is given in the table below:

Table 3.13: Land Use Pattern of the Study Area

Landuse Classification	Area in %	Area in Hectare
Water Body	0.3	88.1
Sandy Area	0.8	261.6
Industry	0.3	90.5
Forest	1.4	432.1
Builtup	4.6	1466.7
Crop Land	41.7	13225.7
Fallow Land	26.9	8514.3
Open Scrub	24	7629.2
Total	**100**	**31708.2**

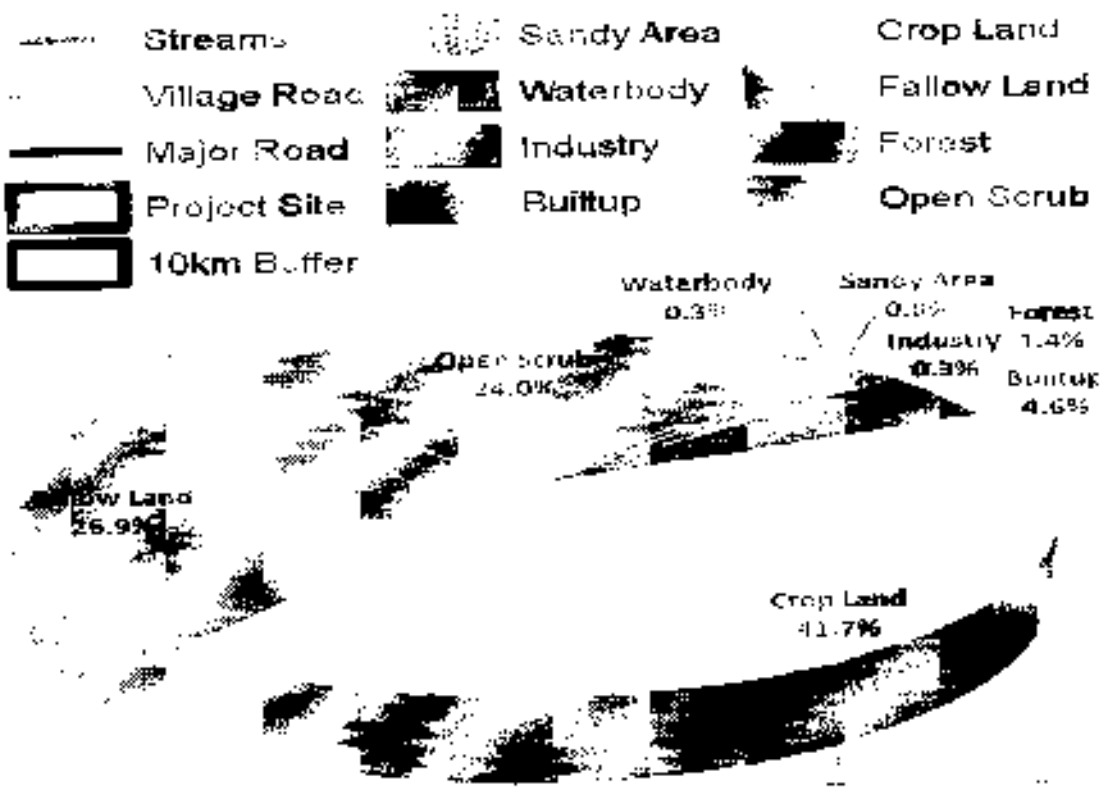


Figure 3.8: Pictorial Representation of Land Use Classification

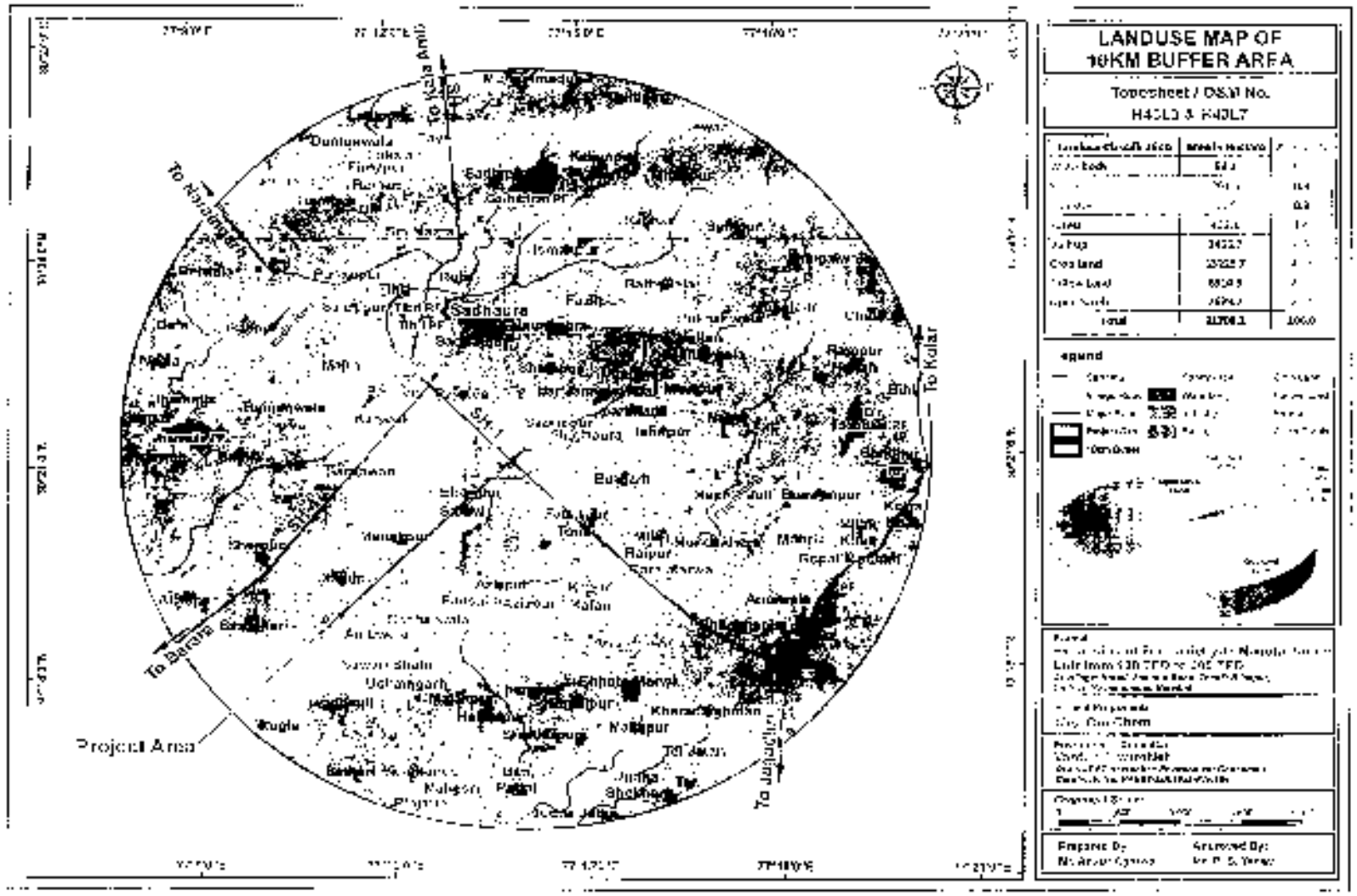


Figure 3.9: Land Use of Study Area

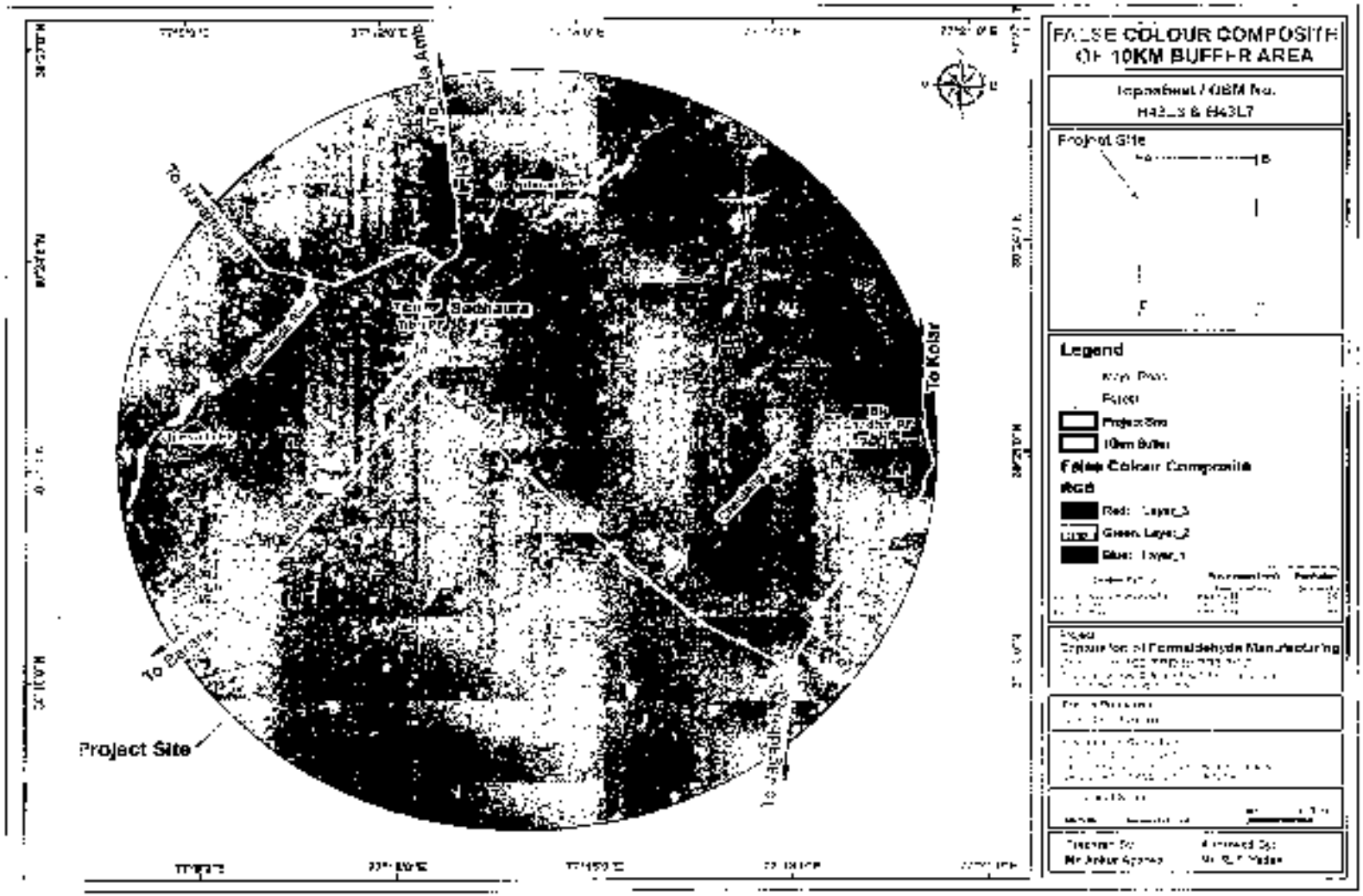


Figure 3.10: False Color composite (TCC) Map of study area

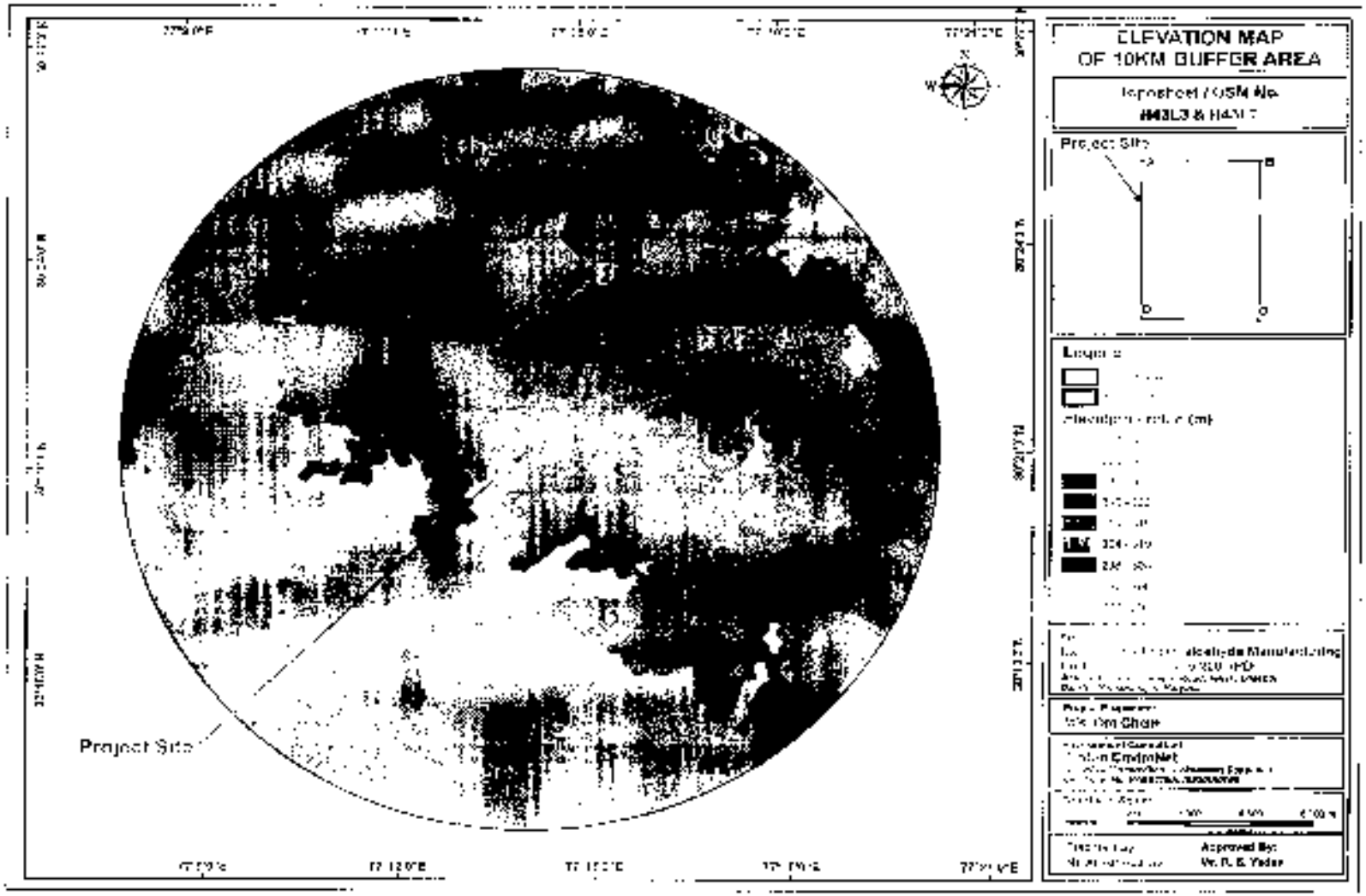


Figure 3.1J: Elevation Map of the Study Area

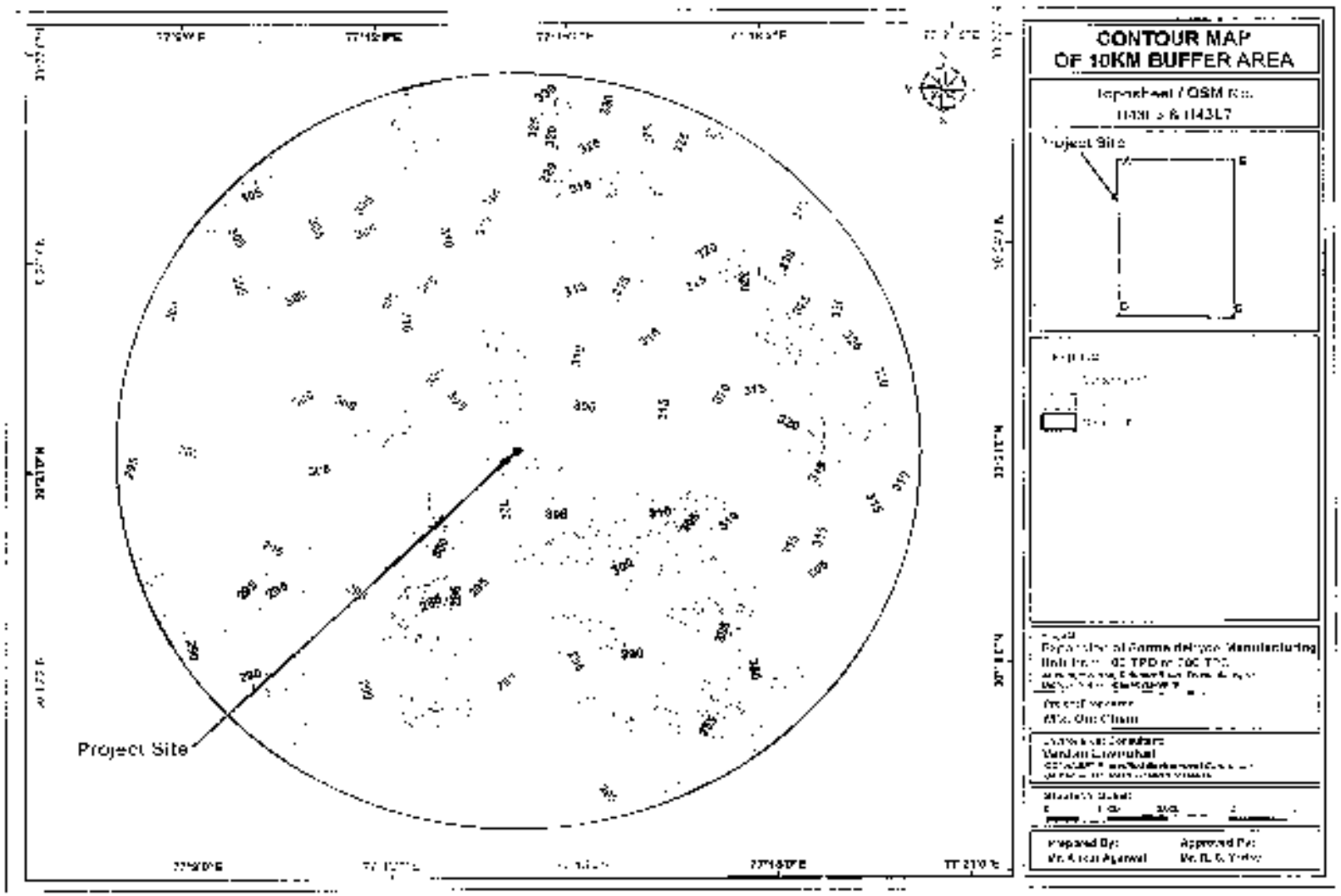


Figure 3.12: Contour Map of the Study Area

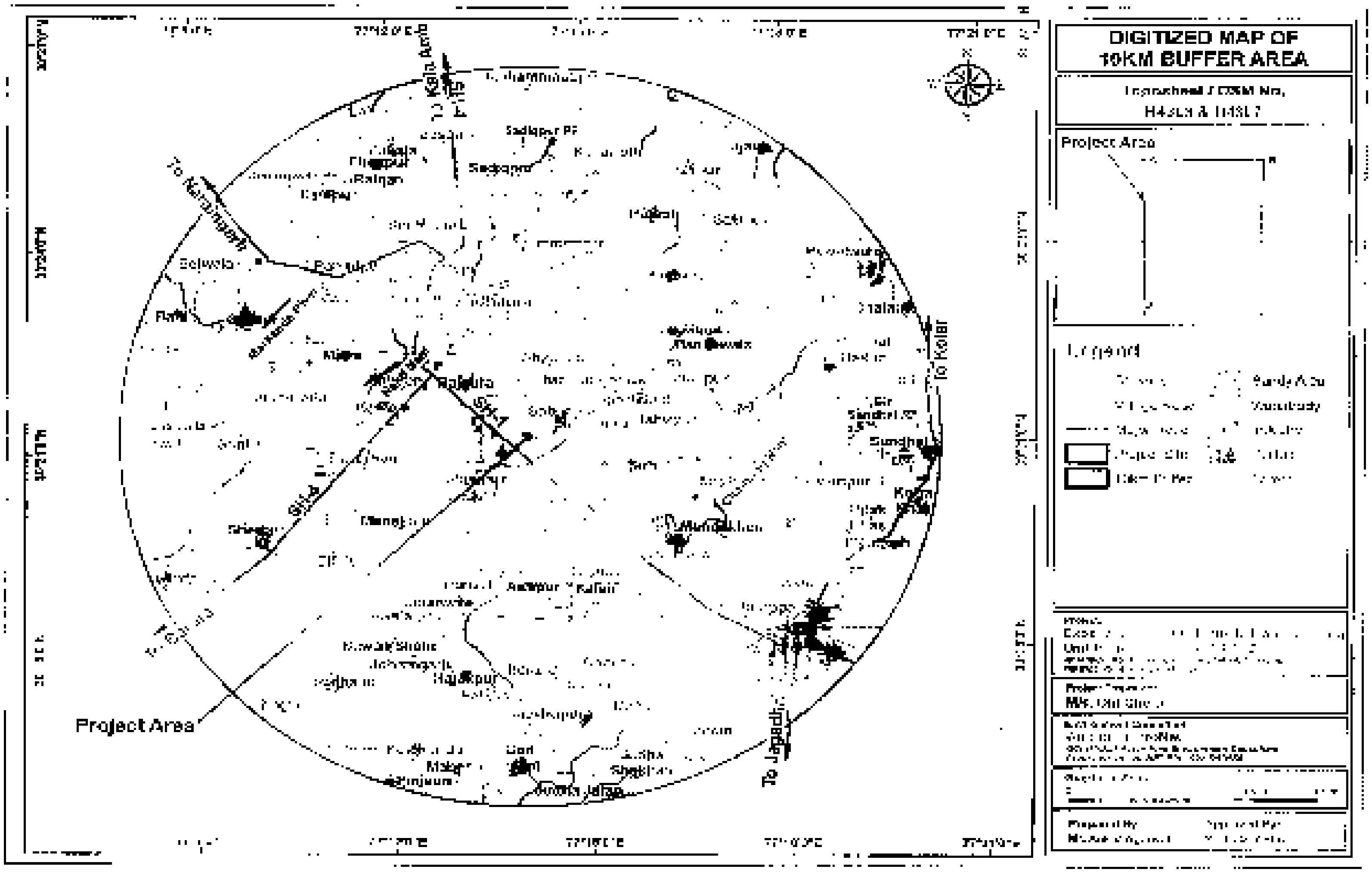


Figure 3.13: Digitize Map of the Study Area

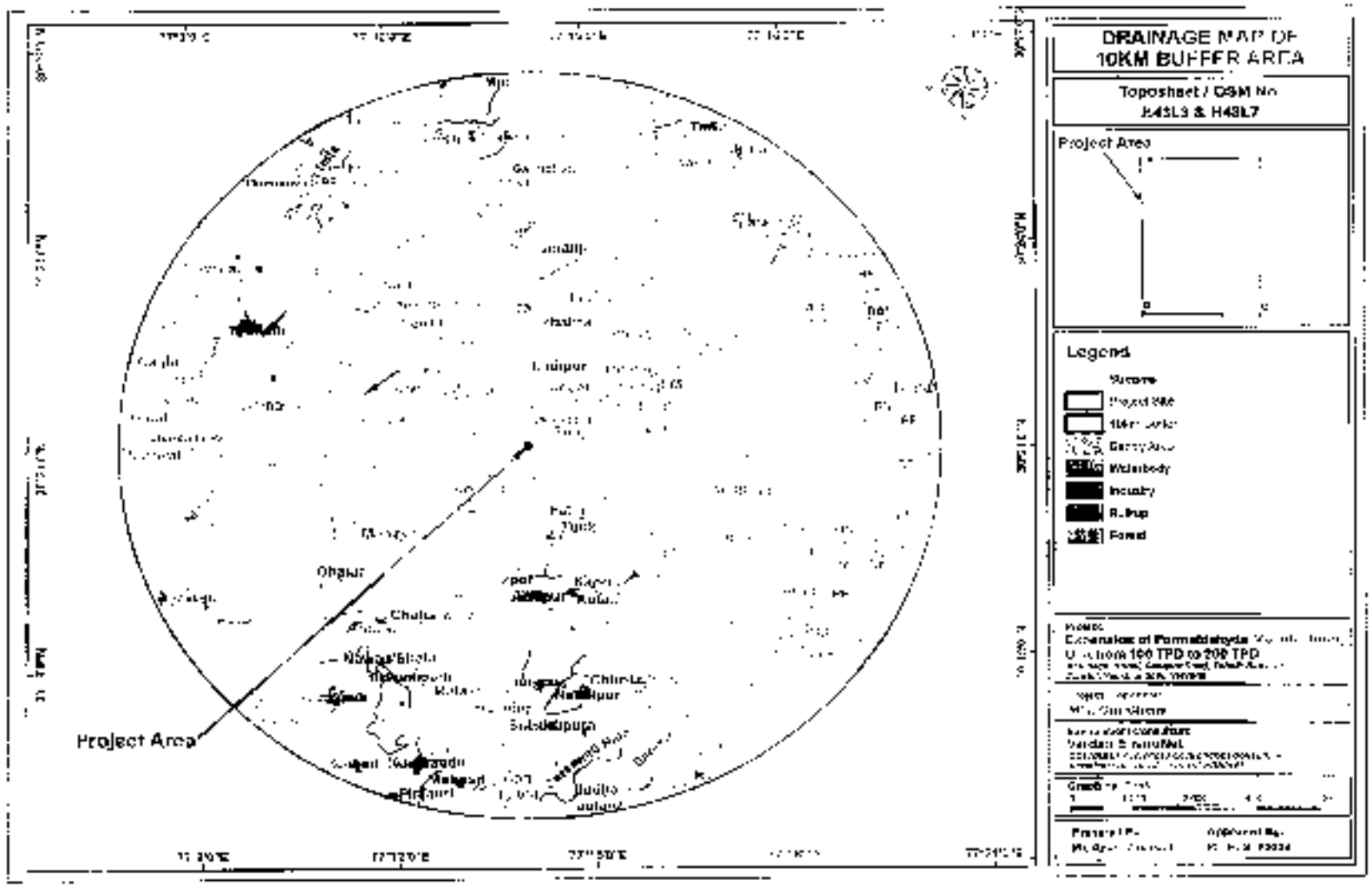


Figure 3.14: Drainage Map of the Study Area

3.8 GEOLOGY

3.8.1 Geomorphology

Physiography The district is divided into four Physiographic units

- Siwaliks
- Dissected Rolling Plains
- Interfluvial Plains
- Active And Recent Flood Plains
- Relict Plains

Siwaliks Hills - Siwalik hill ranges occupy the northern fringe of Yamuna Nagar district and attain the height up to 950m AMSL. The hills are about 500m high with respect to the adjacent alluvial plains. These are characterized by the broad tableland topography that has been carved into quite sharp slopes by numerous ephemeral streams come down to the outer slopes of the Siwaliks and spread much of gravels boulders, pebbles in the beds of these streams.

Kandi Belt - A dissected rolling plain in the northern parts of district is a transitional tract between Siwaliks hills and alluvial plains. It is about 25 km wide and elevation varies between 250 and 375m AMSL.

Interfluvial plains - This tract is part of higher ground between Ghaggar and Chautang and includes high mounds and valleys. In general, the slope is from northeast to southwest.

Active and recent flood plains - This plain is narrow tract along river Yamuna in the district.

Relict wedge plain - This is almost in alignment to the surface water divide between the westward flowing Ghaggar and eastward flowing Yamuna River. Geomorphological map of the study area is given in the below **Figure 3.15.**

Soil Type: Eurtrochrepts/ Udorthents - These are shallow and loamy sands to fine sandy loams, except in depressions, well-drained, non-saline, non-alkali, noncalcareous, mostly base saturated and are classified as loamy skeletal typic, lithyhic, eurtrochrepts/ udorthents. These soils are found in the Siwalik range.

- Udipsamments/ udorthents - These are loamy sand to sandy loam deep, excessively or well-drained, non saline, non-alkali. These are placed under the associations of transitional tract between Siwaiks hills and alluvial plains.
- Psammaquents and Haplaquepts - These soils are found in Yamuna Plains

- Haplaquept These soils are non-saline, alkalinity hazards are classified as typic ustochrepts but water-logged soils with loam to clay loam texture showing the effect of glazing, are classified as aeric / typic Haplaquepts. Areas as acridic soil moisture, moisture have soils classified as camborthics and torropsamments

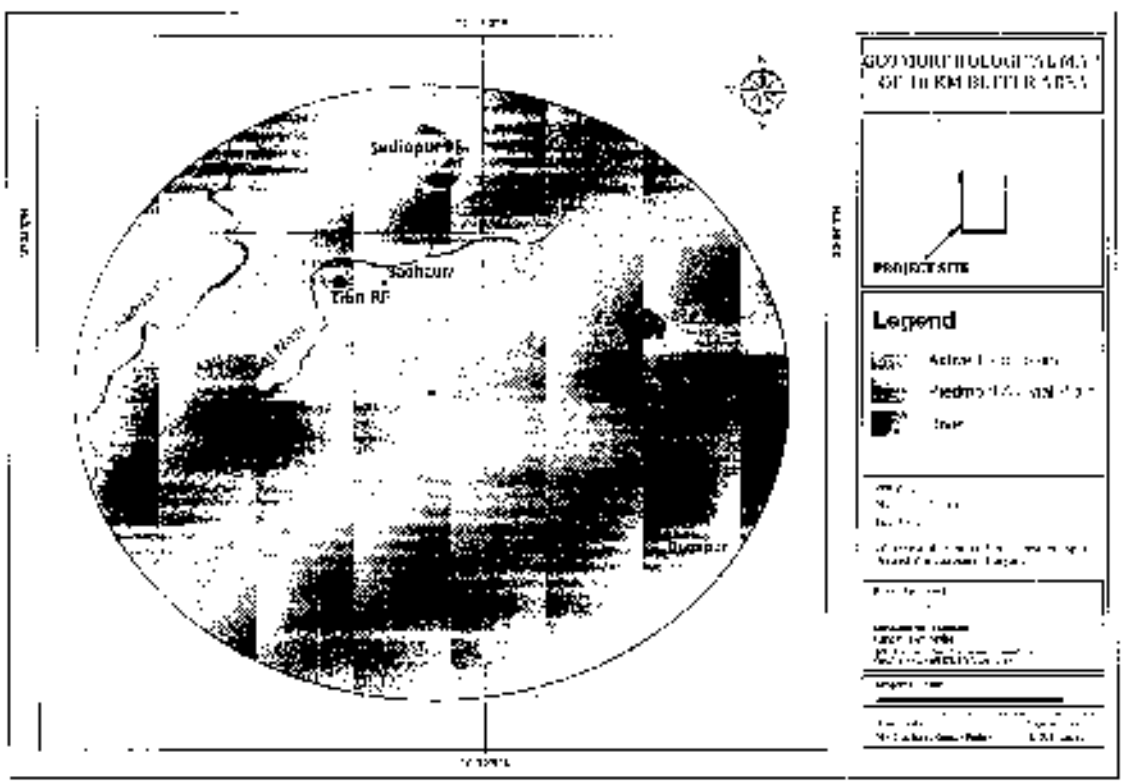


Figure 3.15: Geomorphology map of Haryana District

3.8.2 Regional Geology

The north-eastern and central part of Haryana is predominantly characterized by sedimentary lithology in the sub-Himalayan zone comprising Subathus, Dagshais, Kasaulis and Siwaliks. A general Regional Stratigraphic sequence in the area is given in the table.

Table 3.14: Geological Succession

Age	Super Group	Group	Formation	Lithology
Holocene			Newer alluvium and Newer Aeolian Deposits	Gravel, Sand, Silt, Clay, Limestone, gypsum
Lower to			Older alluvium and	Gravel, grey sand, silt

upper Pleistocene		older Aeolian deposits	clay brown sand, calcrete
Lower to Middle Pleistocene		Boulder Conglomerates formation	Conglomerate, sand stone, silt, Clay
Upper Pliocene	Upper Siwalik	Pinjore Formation	Coarse grit, red sand stone and clay, conglomerate
		Tatrot formation	Friable Sand Stone and variegated clay
	Middle Siwalik	Dhokpather Formation	Brown Sandstone and variegated clay
		Nagri Formation	Hard grey sand Stone and minor shale
	Lower Siwalik	Nahan Formation	Course gritty, clay and red sandstone often calcareous, brownish shale with lignite lenticels
Lower Miocene		Kasauli Formation	greenish white quartzite Grey and stone, green shale and grey clay
Upper Eocene	Sirmur	Dagsai formation	Purple sand green sand stone, deep red gritty, clay, white sand stone with ferruginous concretions
		Subathu Formation	Sandstone with grit clay, Impure fossiliferous limestone calcareous slate, greenish shale and dark brown quartzite
Pre-Preterozoic		Tunda pathar	Tickly bedded, stromatolite limestone with carboniferous shale and quartzite

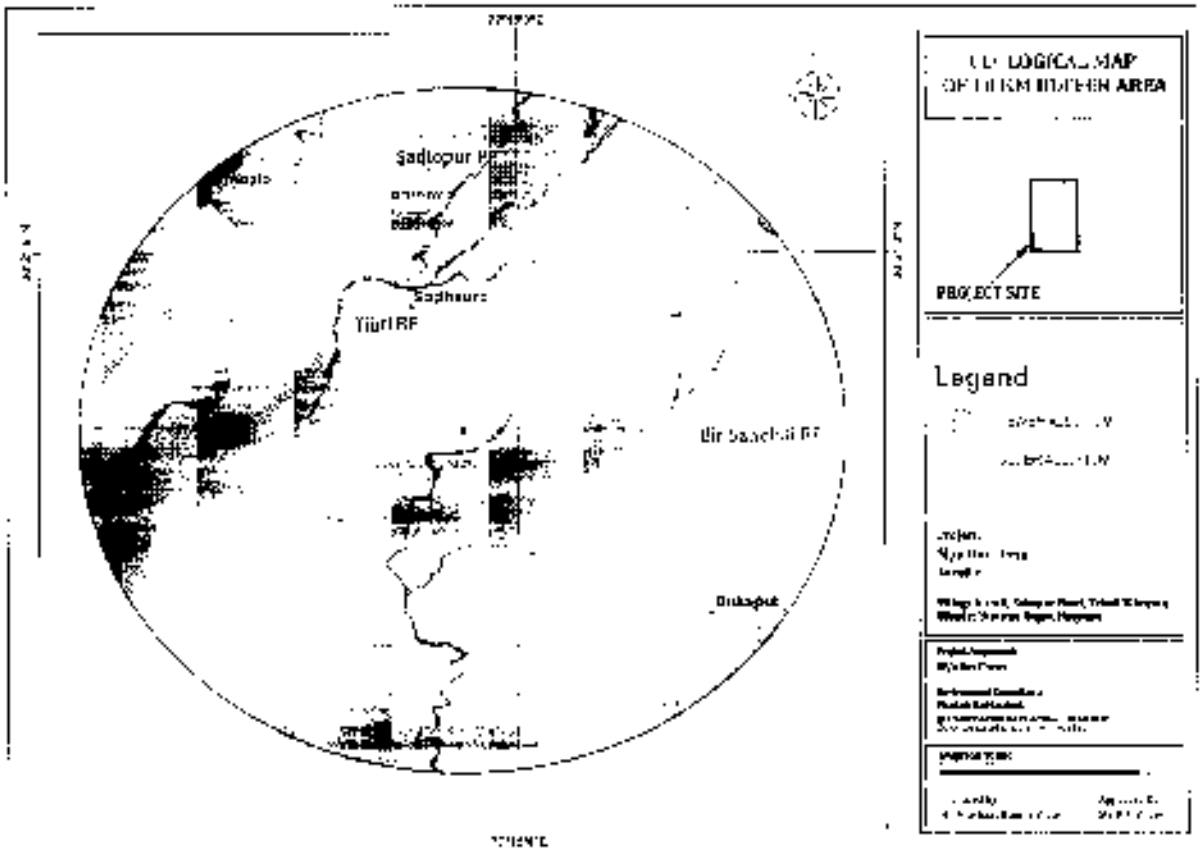


Figure 3.16: Geological map of 10 Km buffer

3.8.3 Seismic Study

As per seismic Map of Haryana, it can be clearly evident that Yamuna Nagar comes under the Low Damage Risk Zone-II.

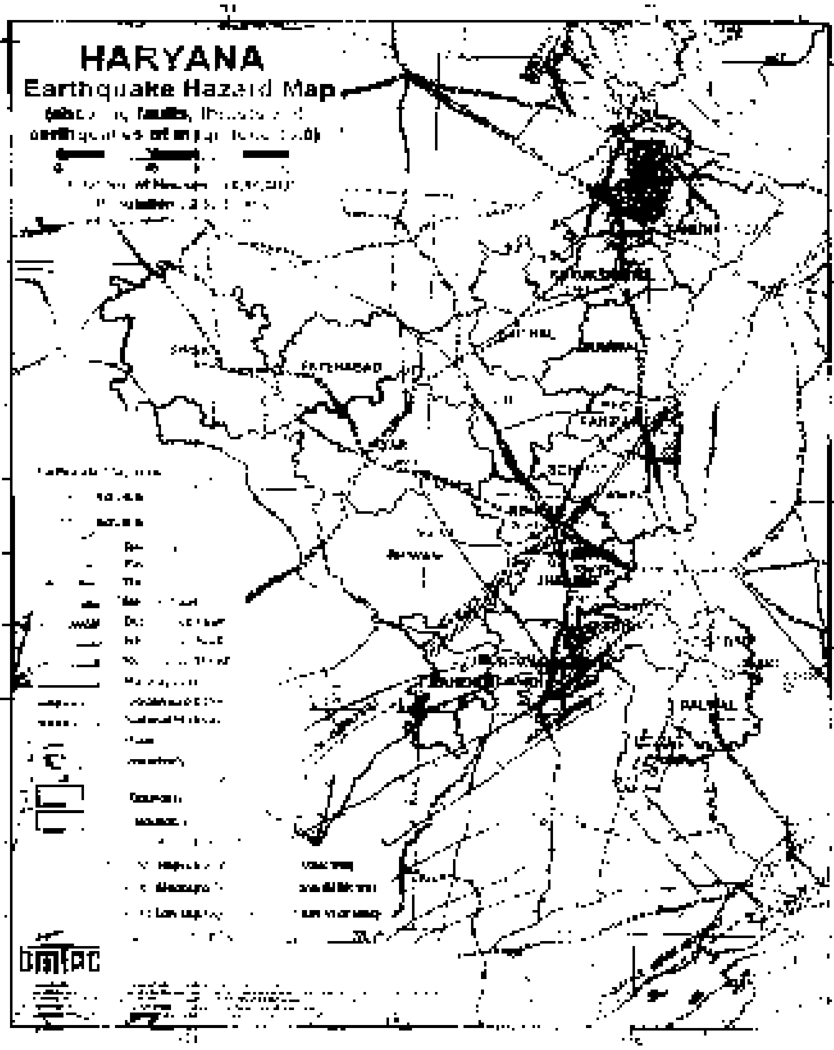


Figure 3.17: Seismic Map of Haryana

3.8.4 Study of Landslide

The project location present on plane surface at the avg elevation of 303 amsl so landslide will not take place at the project location.

3.9 HYDROGEOLOGY

As per CGWA the Bilaspur block (District-Yamuna Nagar) comes under the non notified, semi-critical zone.

3.9.1 Drainage Study

The district is mainly drained by the rivers Yamuna, Markanda and its tributaries. Markanda is tributary of river Ghaggar and drains major part of the district. The high land between Markanda River and small rivulets of River Yamuna acts as basin boundary between west flowing rivers of Indus system and east flowing rivers of Ganga basin. River Yamuna drains eastern part of the district and acts as boundary between Haryana and Uttar Pradesh State.

3.9.2 Hydrogeology

The ground water exploration in the district reveals that clay group of formations dominates over the sand group in the district area. Ground water in the district occurs in the alluvium under water table and semi-confined to confined conditions. These aquifers consist of sand, silt, gravels and kankar associated with clay and form highly potential aquifers. In alluvium, the permeable granular zones comprise fine to medium grained sand and occasionally coarse sand and gravel. Their lateral and as well as vertical extent is extensive.

In Kandi belt, which has not been explored fully boulders cobbles and pebbles, constitutes the major aquifer horizon. Siwalik Hills occupy marginal areas in the northeastern parts of the district constitute a low potential zone. In Kandi areas, the shallow aquifers are isolated lenses embedded in clay beds whereas aquifers in alluvial areas occur on regional scale and have pinching and swelling disposition and are quite extensive in nature. These aquifers generally consists sands (fine to coarse grained) and gravels and are often intercepted by clay and kankar horizons. These aquifers are under unconfined to semi-confined conditions and support a large number of shallow tubewells within the depth of 50m only. The discharge of these tubewells varies between 100 lpm and 500 lpm for moderate tubewells.

3.9.3 Aquifer Study

Majority of the Yamunanagar District falls under the Ghaggar River Basin; therefore, it belongs to a single aquifer system up to 180 m depth with thin inter-layering of sand and clay and below that clay layer starts getting thickened (Ghaggar River Project Report). Based on the same criteria, to know the broad picture of the aquifer disposition, inter-relationship of granular zones, nature, geometry and extension of aquifers in the Yamunanagar district, the aquifer grouping has been done using the sub-surface lithology and a three-dimensional aquifer model has been prepared in below mentioned figure. The aquifer grouping has been done in below mentioned table. The

first aquifer is water table aquifer and extends all over the area. The aquifer is mainly composed of fine to coarse grained sand.

Aquifer Group	Depth Range (mbgl)		Thickness (m)	
	From	To	Min	Max
Aquifer-I	0	180	95	180
Aquifer-II	179	300	16	110
Aquifer-III	245	300	16	55

3.9.1 Ground Water Level

3.9.1.1 District Scenario

Depth to ground water level of district Yamunanagar ranges from 3.10 mbgl at Bilaspur to 50.00 mbgl at Jhiwarheri during Pre monsoon). Groundwater level is shallow in northern part and deeper in south-western parts of the district which are adjacent to district Karnal and Kurukshetra.

Post-Monsoon:

The Depth to water level during post monsoon period in the district ranges between 2.04m bgl at Choli and 15.30m bgl at Dharamg. However, in major part of district water level ranges between 5.0m bgl and 15.0m bgl.

Water level fluctuation:

The long-term water level fluctuation shows a declining trend ranging from 0.17 m to 3.06 m. Maximum decline is shown in Rasulpur village of Sadhaura block. There is rise also seen in the Northern portion of the district ranging from 0.25 m to 4.94 m.

3.9.4.2 Ground water level at project location

Ground water level near the project location varies from 5.18 to 8.17 mbgl.

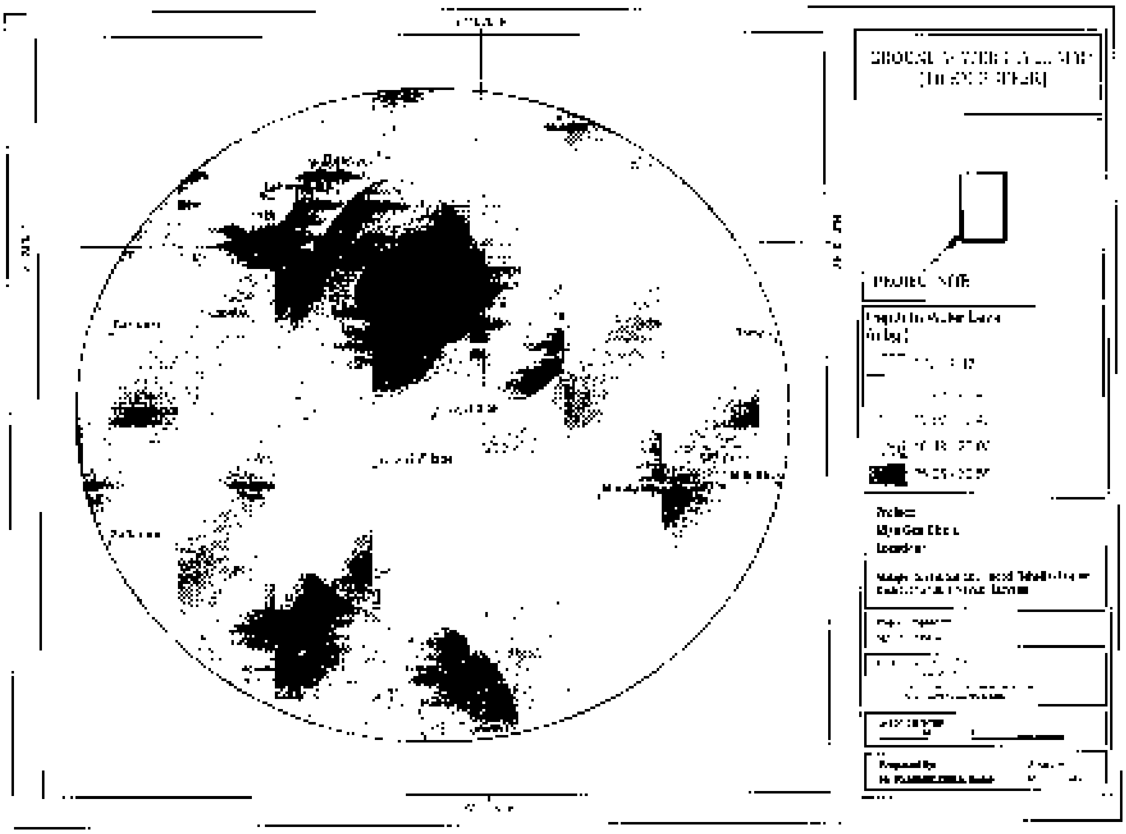


Figure 3.18: Ground Water Level of 10KM Buffer Area

3.9.4.3 Status of Ground Water Development

Ground water resource estimation of the area have been carried out by taking Dynamic and Static/In-storage resources of unconfined aquifer and confined aquifers present upto 300m depth. Stage of ground water development in the Yamunanagar district has been assessed to be 135%.

3.9.4.4 Ground Water Management Strategy

Depending upon the subsurface geological and hydrogeological features, there is very good scope of ground water development in the Yamuna Nagar. The kandi belt underlain by the colluviums of boulders, pebbles, cobbles mixed with clay is an area having very high permeability and porosity and thus very good scope for ground water recharge. This area is already the natural recharge area for aquifers down slope. In kandi belt of district, ground water recharge is feasible by various methods such as flooding, percolation tanks, contour bunding and tanks and ponds. In alluvial (plain) areas, various surface methods for artificial recharge are flooding, ditch and furrow,

stream augmentation. Ground water recharge through injection wells, recharge pit and recharge shaft are various sub-surface methods for the plain area..

3.9.4.5 Flood Study

There is no any flood history at project location. Markanda River flowing more than 6Km west from the project location so, there will not be any effect of flood due to this river.

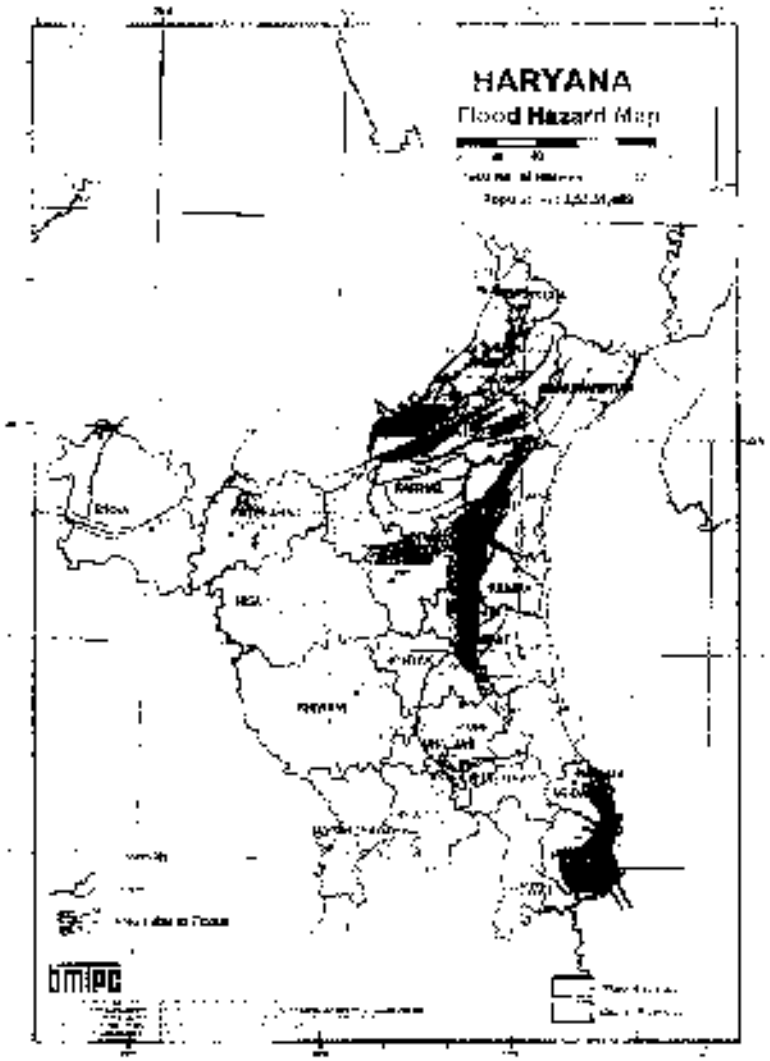


Figure 3.19: Flood Hazard Map of India

3.9.5 Hydrogeological Impacts and its Mitigation Measure

Appropriate mitigation measures can enormously reduce the damage caused by Hydrogeology is listed below.

Hydro-geological Impacts	Mitigation Measure
1.Due to over extraction of ground water, there will be chances of depletion of water level.	1.Adopted water saving technologies in the premises and adopted the rain water harvesting for the recharge of ground water
2.Due to release of the chemical there will be chance of contamination of ground water.	2. Any waste water will not be allowed to release on any open surface. It will be utilized in greenbelt area after proper treatment.
3.Existing drainage pattern will be changed due to topographical alteration.	3. There is no natural watercourse passing through the project site. Hence natural drainage pattern will not be affected.

3.10 BIOLOGICAL ENVIRONMENT

The term biological environment covers the prevalence of all living forms (plants and animals) both terrestrial and aquatic in study areas. Living forms range over a very wide spectrum of specie. Even a small area may have thousands of species including bacteria, protozoa, worms, insects, plants, animals and birds. In the present study, Flora (trees, small trees, shrubs, under shrubs, climbers and grasses) and fauna (mammals, birds and reptiles) are considered. It is needless to emphasize that living system is extremely complicated. They are directly affected by changes in the physical environment but may often either adapt or avoid the adverse environmental conditions. Generally, biological communities are the best indicators of climatic and edaphic factors. Studies on biological aspects of ecosystems are important in Environmental Impact Assessment for safety of natural flora and fauna. Information on the impact of environmental stress on the community structure serves as an inexpensive and efficient early warning system to check the damage to a particular ecosystem. The biological environment includes mainly terrestrial and aquatic ecosystems.

The animal and plant communities exist in their natural habitats in a well organized manner. Their natural settings can be disturbed by externally induced anthropological activities or by naturally induced calamities or disaster. So, once this setting is disturbed, it becomes practically impossible or takes a long time to come back to its original state. Plants and animals are more susceptible to environmental stress. A change in the composition of biotic communities is reflected by a change in the distribution pattern of natural species of flora and fauna existing in the ecosystem. The

sensitivity of animal and plant species to the changes occurring in their existing ecosystem can, therefore, be used for monitoring Environmental Impact Assessment studies of any project.

3.10.1 Objectives of Biological Study:

The main objectives of biological study were:

- To collect the baseline data for the study along with a description of the existing, terrestrial, wetland and aquatic biodiversity.
- To assess the scheduled species in the exisying site (rare, endangered, critically endangered, endemic and vulnerable).
- To identify the locations and features of ecological significance.
- To identify the impacts of proposed expansion project before, after and during development phase.

Table 3.15: Mode of data collection and parameters considered during the Survey

#	Aspect	Data	Mode of Data collection	Parameters monitored	Remarks
1.	Terrestrial Biodiversity	Primary data collection	By field survey	Floral and Faunal diversity	**For Floral Diversity:** Random survey, sapling survey/forest inventory, walking transect, collection and identification with the help of relevant literature. **For Faunal Diversity:** direct and indirect sampling, walking transect, point sampling and nest sampling etc. and identification with the help of relevant literature.
2.		Secondary data collection	From authentic sources like Forests department of Haryana and	Floral and Faunal diversity and study of vegetation,	Data collected from the working plan of the region, forest types from the authentic literature

			available published literatures from ZSI, BSI etc.	forest type, importance etc.	of Champion & Seth.
3.	Aquatic Biodiversity	Primary data	By field survey	Floral and Faunal diversity	For **Plankton** Study- Lackey's drops method and light microscope For other **aquatic-** Random survey, opportunistic observations
4.		Secondary data collection	From authentic sources like Forests department of Haryana.	Floral and Faunal diversity and study of vegetation, forest type, importance etc.	Desktop literature review to indentify the representative spectrum of threatened species, population and ecological communities.

3.10.2 Study Area

The proposed project is established on 6430 sq. m. land in Kurali Village, of Bilaspur Tehsil in Yamuna Nagar district, and A part of forest land has been used for approach road and permission for the same has taken form Forest Department vide FP/HR/APPROACH/34794/2018 dated 08/11/2018 for setting up of the existing project for manufacturing of Formaldehyde by M/s OM Chem. The geographical location of the Existing plant lies from Latitude- 30°21'9.85"N to Longitude- 77°14'6.04"E. The land of the unit falls and declared as non-controlled area by District Town Planner, Yamuna Nagar Vide memo no. E-626 dated 09/04/2018.

The site is well connected with the rail and road. Site is located at a roadways distance of ~ 31km towards south direction from District Head quarter Yamuna Nagar. Site is easily approachable through Atta-Bilaspur Road. It is connected with the adjacent states and other parts of India as well, which facilitates transportation of goods, both inwards and outwards. This further facilitates transportation of raw material and marketing of Formaldehyde all over India including Haryana, Punjab, Uttarakhand, Uttar Pradesh & Rajasthan having plywood and Sunmica/decorative laminate industry.

a) Core Zone: Project Site i.e. M/s Om Chem

b) **Buffer Zone:** Area within 10 Km radius from the project site.

3.10.3 Riparian Environemnt

Riparian habitats are the interface of terrestrial and aquatic ecosystems and they are essential in controlling flows of energy and nutrients between terrestrial and aquatic ecosystems. Despite the relatively small area that they occupy within the landscape, riparian zones provide a major contribution to the ecology and biodiversity in the areas where they occur.

The study of riparian vegetation of a river is an important as it strongly affects soil-water characteristics of the area and thus the aquatic life. Moreover, the vegetation provides the human population with vital life support and socio- economic security. Riparian zones often regulate aquatic terrestrial linkages. Riparian vegetation is important for regulating nutrient cycle of the streams, preventing soil erosion and stabilizing river banks. Further, the riparian vegetation is modified or destroyed by grazing, logging, urbanization, road construction, water development, mining and recreation. Also, the riparian zone is thought to have a disproportionate influence (relative to its land area) on the running water because of its immediate effects on the transport of water, nutrients and sediments. Riparian flora of Markanda River, Naki Nadi and Chautang Nadi was studied during the site visit

3.10.4 Terrestrial Flora and Fauna

Biological communities are the indicator environmental condition and resource of its distribution and survival. Biotic component comprises of both plants (Flora) and animal (Fauna) communities, which interact not only within and between them but also with the Abiotic components, viz. physical and chemical components of the environment. The changes in biotic community are studied in the pattern of distribution, abundance and diversity

3.10.5 Terrestrial Flora

The Vegetation and plant species composition observed and documented during field visit in and around the proposed location of the project. Besides primary surveys in the project sites, published literature and various floras were consulted to prepare an inventory of plant species growing at project sites. The vegetation of the study area is highly degraded and some areas consisting water bodies. The plant diversity is classified into various plant groups such as tree, shrubs, herbs, climbers, sedges and grasses. The plant diversity survey in the project area was undertaken during the

summer season with the objectives of preparing a checklist of flora in the study area which is divided into two parts i.e. Core Zone & Buffer Zone.

Core Zone: Core zone of the proposed project i.e. 0.6340 ha is situated at at village Kurali, Sabapur road, Tehsil- Bilaspur, Yamuna Nagar, Haryana. A part of forest land has been used for approach road and permission for the same has taken form Forest Department vide FP/HR/APPROACH/34794/2018 dated 08/11/2016 for setting up of the existing project for manufacturing of Formaldehyde by M/s OM Chem.

Buffer Zone: The selection of terrestrial and aquatic ecological sampling location was based on land use pattern, topography and habitat patterns of the study area. The terrestrial ecological survey was carried out in forest and non-forest areas (agricultural fields, roadsides, urban & semi-urban wastelands etc) and the aquatic ecological survey was carried out at rivers & ponds/lakes within the study area.

3.10.6 Methodology

The present study on the floral assessment for the project activity is based on field survey of the area. By the following forest inventory methodology; the survey of biological parameters has been conducted within the buffer zone (10 km radial distance) from project site at village Kurali, Sabapur road, Tehsil - Bilaspur, Yamuna Nagar, Haryana, in accordance with the guidelines issued by the Ministry of Environment, Forests and Climate Change, CPCB, and SPCB during the study period.

A preliminary survey of the study area has been performed to get a general picture of the landscapes in vegetation. Traverses have been taken within different zone of the study area to note major vegetation patterns and plant communities including their growth form and dominant species. A forest inventory is "an attempt to describe the quantity and quality of forest trees and many of the characteristics of the land area upon which the trees are grown." The objective this floral inventory of the study area, is to provide complete checklist of floristic structure within the core zone and buffer zone (10 km radial distance) from project site for formulating effective management and conservation measures.

Forest Type of Haryana

The state presents diverse vegetation types from pine forests to desert thorn forests. Depending upon the altitude and climate, the main forest types of Yamuna Nagar district as per Champion and Seth's classification (1968) are:

i. Northern Dry Mixed Deciduous Forests 5B/C2
ii. Dry Deciduous Scrub 5/DS1

Northern Dry Mixed Deciduous Forest 5B/C2:

This type occurs on the upper dry slopes along the Siwaliks and their extensions. The upper canopy is usually light, open and irregular. The trees having relatively short bole and poor form and a height rarely over 10 meters. The canopy is formed entirely of deciduous trees. Major species are Cassia fistula, *Diospyros tomentosa, Acacia catechu, Anogeissus latifolia, Bombax ceiba, Albizzia lebbek, Albizzia procera, Acacia nilotica, Acacia modesta, Bauhinia variegate, Syzygium cumini, Mangifera indica, Ehretia laevis, Phoenix sylvestris, Morus alba, Morus Australis, Terminalia tomentosa, Boswellia serrata, Aegle marmelos, Bauhinia racemosa, Bauhinia purpurea, Dryfloria suberosa, Ficus glomerata, Grewia elastic, Mallotus philippensis* and *Shorea robusta.*

Dry Deciduous Scrub (5/DS1):

This type is located adjacent to the habitation in the Siwalik foot hills of the district and state. These represents a degradation stage of the tropical dry deciduous forest and have been brought into existence by adverse biotic factor like excessive grazing, lopping, felling and fires. In spite of sufficient rains, moisture retention is very poor and the type has now become a stable edaphic climax. The crop is open with less tree cover. The main tree species found are *Diospyros tomentosa, Acacia leucophloea, Butea monosperma, Premna barbata, Cassia fistula, Anogeissus latifolia* and *Lannea grandis*. The undergrowth is mainly *Carissa spica, Woodfordia Fruticosa, Nyctanthes arbortristis* and *Flacourtia indica.*

3.10.7 Floristic Composition of Core Zone

Core zone of the proposed project i.e. at village Kurali, Sabapur road, Tehsil: Bilaspur, Yamuna Nagar, Haryana. During the field survey some floral (Some ornamental Greenbelt developed by Project Proponent) and faunal (Avifauna) diversity was recorded from the project area.

3.10.8 Floristic Composition of Buffer Zone:

The terrestrial flora of the study area i.e. buffer zone (10 km radial distance) from the project site could be categorized as agriculture vegetation, social forestry plantation, Agro-forestry plantation, plantation for green belt development and natural/forest vegetations

Agricultural and Horticulture Crops

Agriculture is the primary sector of Haryana State economy and majority of the population is directly or indirectly dependent on agriculture and its allied activities. The climatic conditions of a region affect the agricultural cropping pattern of different areas. Thus, it produces different crops. Amongst a host of climatic factors i.e. rainfall, temperature, humidity, wind velocity and duration of sunshine etc. affect the cropping pattern in a significant way. Annual rainfall and its distribution over the entire year and the regimes of diurnal and annual temperatures are by far, the prominent factors affecting agriculture and the life style of the people.

Table 3.16: Cropping pattern of Study area

Crop Variety	Family	Botanical Name	Trade Name
Agriculture Crops			
Vegetable	Malvaceae	*Abelmoschus esculentus*	Lady Finger
1.	Cucurbitaceae	*Cucurbita pepo*	Kaddu
2.	Cucurbitaceae	*Momordica charantia*	Karela
3.	Solanaceae	*Capsicum frutescens*	chilli
4.	Solanaceae	*Solanum melongena*	Brinjal
5.	Solanaceae	*Solanum tuberosum*	Potato
6.	Solanaceae	*Lycopersicon lycopersicum*	Tomato
7.	Liliaceae	*Allium cepa*	Onion
8.	Brassicaceae	*Brassica oleracea var. capitata*	Cabbage
9.	Brassicaceae	*Brassica oleracea var. botrytis*	Cauliflower
10.	Cucurbitaceae	*Cucumis melo*	Cucumber
11.	Cucurbitaceae	*Cucurbita maxima*	Pumpkin
12.	Apiaceae	*Daucus carota*	Carrot
13.	Convolvulaceae	*Ipomoea batatas*	Sweet Potato
14.	Brassicaceae	*Raphanus sativus*	Radish
15.	Chenopodiaceae	*Spinacia oleracea*	Spinach
Cereals	Poaceae	*Oryza sativa*	Rice
16.	Poaceae	*Triticum aestivum*	Wheat

Crop Variety	Family	Botanical Name	Trade Name
17.	Poaceae	*Zea mays*	Maize
Pulses			
18.	Fabaceae	*Vigna radiata*	Moong
18.	Fabaceae	*Vigna mungo*	Urd
19.	Fabaceae	*Cajanus cajan*	Pigeon Pea
20.	Faburaeae	*Vigna umbellata*	Rice Bean
21.	Fabaceae	*Cicer arietinum*	Gram
22.	Fabaceae	*Pisum sativum* Subsp. *arvense*	Field Pea
Spices			
23.	Amaryllidaceae	*Allium sativum*	Garlic
	Zingiberaceae	*Zingiber officinale*	Adrak
Oilseeds			
	Asteraceae	*Helianthus annus*	Sunflower
	Pedaliaceae	*Sesamum indicum*	Sesamum
Other			
	Malvaceae	*Gossypium hirsutum*	Cotton
24.	Poaceae	*Saccharum officinarum*	Sugar Cane
		Horticulture Crops	
Fruits			
	Moraceae	*Artocarpus heterophyllus*	Jack Fruit
25.	Caricaceae	*Carica papaya*	Papaya
26.	Rutaceae	*Aegle marmelos*	Bel
27.	Anacardiaceae	*Mangifera indica*	Mango
28.	Musaceae	*Musa paradisiaca*	Banana
29.	Myrtaceae	*Psidium guajava*	Guava
30.	Myrtaceae	*Syzygium cumini*	Jamun
31.	Fabaceae	*Tamarindus indica*	Imli

3.10.9 Social/Agro-Forestry:

In India, natural forests are being conserved primarily for the environmental benefits. Serious efforts are also being done to plant large number of trees outside forest under social forestry programs to increase the tree cover and fulfill demand of various forest produce required by the people and forest based industries. Agricultural fields are one of the potential areas, where large scale planting of trees can be taken up along with the agricultural crops. Agro-forestry models adopted by the farmers in Haryana state are highly lucrative, therefore, attracting farmers in a big way. (**Table-3.17**).

Table 3.17: Agro Forestry Species of the Study Area (Buffer Zone)

Botanical Name	Trade Name	Family
Delonix regia	Gulmohar	Caesalpiniaceae
Dalbergia sissoo	Sisham	Fabaceae

Azadirachta indica	Neem	Meliaceae
Mangifera indica	Aam	Anacardiaceae
Pongamia pinnata	Karanj	Euphorbiaceae
Musa paradisiaca	Banana	Musaceae
Ficus religiosa	Pipal	Moraceae
Eucalyptus camaldulensis	Nilgiri	Myrtaceae
Psidium guava	Guava	Myrtaceae
Tectona grandis	Sagwan	Verbenaceae
Dendrocalamus strictus	Lathi bans	Poaceae
Butea monosperma	Kachnar	Fabaceae
Cassia fistula	Amaltas	Fabaceae
Saraca asoca	Asok	Fabaceae
Populous deltoids	Popular	Salicaceae
Shorea robusta	Sal	Dipterocarpaceae
Tectona grandis	Teak	Lamiaceae
Toona ciliata	Toon	Meliaceae

Grasslands:

No prominent grass land ecosystem has been found in core and buffer zone of the project. However the grass lands were mixed with natural vegetation in low lands and cultivable waste lands are now being utilized as grazing grounds to the livestock species: Goat, Cow, Ox and Buffalo. The grass species and sedges of core and buffer zone are listed below with the natural vegetation of buffer zone.

Endemic/Endangered Flora:

No endangered and endemic flora was recorded from core and buffer zone of the project area.

Location of National Park/Sanctuaries:

There is no Bio-sphere Reserve, National Parks, Wildlife Sanctuary, Tiger Reserve and Elephant Reserve within 10 km radius of the project site.

Natural/Forest Vegetation:

Upper layer is stratified by dominant tree species. Mangifera indica (Mango); Dalbergia sisso (Shisham); Azadirachta indica (Neem); Populus deltoides (popular); Bombax cieba

(Semel); eucalyptus camelduleusis (Eucalyptus); ailanthus excelsa (Arusa); Zizyphus Mauritiana (Ber); and Ficus religiosa (Peepal).

Lower strata of shrubs occupied at ground level Cassia alata (Wild Senna); Cocculus hirsutus (Jamiti ki bel); Tinospora cordifolia (Giloy); Barleria cristata (Jhinti); Vitex negundo (Nirgundi); Coccinia grandis (Kundru); Lantana camara (Raimuniya); Ricinus communis (Arandi); and Hyptis suaveolens (Wilaiyati tulasi).

The herbaceous species: Cynodon dactylon (Dubb); Achyranthes aspera (Chirchira); Saccharum spontaneum (Kansh); Parthenium hysterophorus (Congress weed); Cassia tora (Tarota); Tridax procumbens (Kamarmudi); Panicum indicum (Fox tail grass); Croton bonplandianus (Mirchini); and Hemidesmus indicus (Anantmul). The status of natural/forest flora of buffer zone is presented below.

Table 3.18: Floristic composition of Buffer zone

Sr. No.	Botanical Name	Family	Common Name
	TREES		
1.	*Aegle marmelos*	Rutaceae	Bel
2.	*Ailanthus excels*	Simaroubaceae	Adrsa
3.	*Albizia procera*	Fabaceae	Safed Siris
4.	*Albizia lebbeck*	Fabaceae	Kala Siris
5.	*Anogeissus latifolia*	Combretaceae	Dhaura
6.	*Azadirachta indica*	Meliaceae	Neem
7.	*Acacia catechu*	Fabaceae	Khair
8.	*Adina cordifolia*	Rubiaceae	Haldu
9.	*Bauhinia acuminate*	Fabaceae	Safed Kachnar
10.	*Bauhinia vahlii*	Fabaceae	Malu Creeper
11.	*Bauhinia variegate*	Fabaceae	Kachnar
12.	*Bombax ceiba*	Malvaceae	Semal
13.	*Cassia fistula*	Fabaceae	Amaltas
14.	*Cassia siamea*	Fabaceae	Kasaud
15.	*Dalbergia sissoo*	Fabaceae	Shisham
16.	*Delonix regia*	Fabaceae	Gulmohar
17.	*Emblica officinalis*	Phyllanthaceae	Amla
18.	*Eucalyptus camaldulensis*	Myrtaceae	Nilgiri
19.	*Ficus racemosa*	Moraceae	Gular
20.	*Ficus religiosa*	Moraceae	Pipal
21.	*Ficus benghalensis*	Moraceae	Bargad
22.	*Holoptelia integrifolia*	Ulmaceae	Kanju
23.	*Mallotus philippensis*	Euphorbiaceae	Kamala

M/s OM CHEM.	Capacity Expansion of Formaldehyde Manufacturing Unit in Existing Facility from 100 TPD to 200 TPD on 0.6430 ha existing land at V.P.O. Kurali Distt. Yamunanagar, Haryana

Sr. No.	Botanical Name	Family	Common Name
24.	*Melia azedarach*	Meliaceae	Bakain
25.	*Morus alba*	Moraceae	Shehtoot
26.	*Phoenix sylvestris*	Palmaceae	Khajur
27.	*Populus deltoids*	Salicaceae	Puplar
28.	*Syzygium cumini*	Myrtaceae	Jamun
29.	*Tectona grandis*	Lamiaceae	Teak
30.	*Terminalia arjuna*	Combretaceae	Arjun
31.	*Terminalia chebula*	Combretaceae	Harad
32.	*Toona ciliata*	Meliaceae	Toon, Cedar
	SHRUBS & HERBS		
33.	*Abrus precatorius*	Fabaceae	Ratti
34.	*Abutilon indicum*	Malvaceae	Kanghi
35.	*Achyranthes aspera*	Amaranthaceae	Chirchitta
36.	*Adhatoda vasica*	Acanthaceae	Vasaka
37.	*Alternanthera sessilis*	Amaranthaceae	Garundi
38.	*Amaranthus spinosa*	Amaranthaceae	Kate Chawli
39.	*Amaranthus viridis*	Amaranthaceae	Jungle Chaulai
40.	*Argemmone mexicana*	Papaveraceae	Satyanashi
41.	*Barleria cristata*	Acanthaceae	Vajra Danti
42.	*Bauhinia vahlii*	Leguminoceae	Maljhan
43.	*Boerhavia diffusa*	Nyctaginaceae	Punarnawa
44.	*Bulbostylis barbata*	Cyperaceae	Water Grass
45.	*Caesalpinia sepiaria*	Sapindaceae	Kanju Bel
46.	*Calotropis procera*	Asclepiadaceae	Ak
47.	*Calotropis gigantea*	Asclepiadaceae	Madar
48.	*Cannabis sativa*	Urticaceae	Bhang
49.	*Carissa carandas*	Apocynaceae	Karaunda
50.	*Cassia fora*	Caesalpiniaceae	Panwar
51.	*Chinopodium album*	Amaranthaceae	Bathuwa
52.	*Clematis grandiflora*	Ranunculaceae	Balkangu
53.	*Crotolaria medicaginea*	Papilionaceae	Rattle Weed
54.	*Cryptolepis buchanani*	Apocynaceae	Dudhi
55.	*Cyperus compressus*	Cyperaceae	Annual Sedge
56.	*Cyperus rotundus*	Cyperaceae	Nut grass
57.	*Datura metel*	Solanaceae	Datura
58.	*Dendrocalamus strictus*	Poaceae	Lathi Baans
59.	*Eclipta alba*	Asteraceae	Bhangra
60.	*Eriophorum Comosum*	Cyperaceae	Nakdi Bhabbar
61.	*Euphorbia hirta*	Euphorbiaceae	Dudhi

Sr. No.	Botanical Name	Family	Common Name
62.	*Evolvulus alsinoides*	Convonvulaceae	Vishnukrantha
63.	*Gloriosa superba*	Colchicaceae	Glory Lilly
64.	*Ipomoea carnea*	Convonvulaceae	Besharam
65.	*Lantana camara*	Verbenaceae	Raimuniya
66.	*Murraya koenigii*	Rutaceae	Gandhela
67.	*Nerium indicum*	Apocynaceae	Kaner
68.	*Ocimum sanctum*	Lamiaceae	Tulsi
69.	*Oxalis corniculata*	Oxalidaceae	Yellow sorrel
70.	*Parthenium hysterophorus*	Asteraceae	Gajar Ghas
71.	*Physalis minima*	Solanaceae	Rasbhari
72.	*Pueraria tuberosa*	Leguminoceae	Sirvaj
73.	*Ranunculus sceleratus*	Ranunculaceae	Jaldhaniya
74.	*Rumex dentatus*	Polygonaceae	Jungle Palak
75.	*Sida acuta*	Malvaceae	Baraira
76.	*Solanum erianthum*	Solanaceae	Aradu, Ban
77.	*Solanum indicum*	Solanaceae	Makoi
78	*Solanum xanthocarpum*	Solanaceae	Jungle Begun
79.	*Syzygium cumini*	Myrtaceae	Jamun
80.	*Tephrosia purpurea*	Fabaceae	Nili
81.	*Terminalia chebula*	Combretaceae	Baliera
82.	*Tribulus terrestris*	Zygophyllaceae	Gokhru
83.	*Trichodesma indicum*	Boraginaceae	Chota Kalpa
84.	*Tridax procumbens*	Asteraceae	Kamarmodi
85.	*Typha angustifolia*	Typhaceae	Patera
86.	*Urena lobata*	Malvaceae	Caesar Weed
87.	*Withania somnifera*	Solanaceae	Asgandh
88.	*Xanthium strumarium*	Asteraceae	Chota Gokhru
89.	*Zizyphus nummularia*	Rhacnaceae	Beri
	GRASSES		
90.	*Aristida adscensionis*	Poaceae	Banjara grass
91.	*Aristida hystrix*	Poaceae	
92.	*Cenchrus echinatus*	Poaceae	Sandbur
93.	*Chloris barbata*	Poaceae	
94.	*Cymbopogon bladeratus*	Poaceae	Vikhadi
95.	*Cynodon dactylon*	Poaceae	Doob
96.	*Dactyloctenium aegyptium*	Poaceae	Crow foot grass
97.	*Digitaria bladeratus*	Poaceae	
98.	*Echinochloa colona*	Poaceae	Jungle Rice
99.	*Fragrostiella bifaria*	Poaceae	

Sr. No.	Botanical Name	Family	Common Name
100.	*Eragrostis ciliaris*	Poaceae	
101.	*Panicum triphenon*	Poaceae	
102.	*Saccharum spontanium*	Poaceae	

There are some RF/PF has been reported from the study area i.e. within the 10 km radius of the proposed project, these are as follows:

1. Sadiopur PF
2. Garhibiran PF
3. Dumonwala PF
4. Jharsaila PF

1. Bir Sandhai RF

The vegetation compositions of the terrestrial zones of RF/PF within the study area comprise, of Ficus rumphii, *Phyllanthus emblica, Musa balbasiana, Anthocephalus cadamba, Melia azadirachta, Polyalthia longifolia, Alstonia scolaris, Carica papaya, Artocarpus heterophyllus, Zizyphus jujube, Bombax ceiba,-Albizzia lebbeck, Bauhinia purpurea, Delonix regia.* The other important terrestrial plants included *Cynodon dactylon, Hemarthia compressa, Vetineria zizanioides, Phragmites karka, Saccharum spontaneum , Acacia nilotica, Acacia catechu, Azadirachta indica, Dalbergia sissoo, Ficus religiosa, Ficus benghalensis, Mangifera indica, Syzygium cumini, Tamarindus indica, Tectona grandis, Zizyphus mauritiana, Salvadora indica, Prosopis cineraria, Cordia dichotoma, Morus alba, Capparis decidua, Psidium guajava. Some small tree species like Careya arborea, Holarrhena antidysenterica, Mallotus philippinensis, Murraya exotica, Randia dumetorum, Wrightia tomentosa, Zizyphus mauritiana* etc were also present along the canal/River side within the study area.

The main shrub species comprise of *Adhatoda* sp., *Callicarpa macrophylla, Carissa opaca, Clerodendron viscosum, Colebrookia oppositifolia, Euphorbia royleana, Ixora* Sp., *Murraya* sp., *Woodfordia* sps., *Zizyphus* spp. Etc. The main climbers and grass comprise of the species *Acacia pinnata, Arundo donax, Bauhinia vahlii, Caesalpinia sepiaria, Cenchrus setigerus, Chrysopogon sp., Clematis gouriana, Cymbopogon martini, Dendrocalamus strictus, Dioscorea*

bilobiphylla, Eriadlus munja, Heteropogon contortus, Kalanchoe biranta, Ischaemum Sp., Millettia oenidolia, Mimosa himalayan, Pueraria tuberosa, Saccharum spontaneum, Salix sp., Vallaris solanacea, Vetiveria zizanioides etc.

Wetland Diversity & Marsh Lands

Wetlands are very useful to us. By producing resources, enabling recreational activities and controlling flood and pollution, they contribute to the national and local economies and environmental consequences. Wetlands provide important and incredible services to society, these services can neither be sold nor do they have the market value and tried to give wetlands an economic value.

Table 3.19: Wetland/Marshland Diversity of Study area

Family	Botanical Name	Local Name
Pteridaceae	*Adiantum capillus*	Maiden Hair fern
Fabaceae	*Aeschynomene indica*	Phulan
Amaranthaceae	*Alternanthera philoxeroides*	Alligator Weed
Amaranthaceae	*Alternanthera sessilis*	Garundi
Myrsinaceae	*Anagallis arvensis*	Neel
Salviniaceae	*Azolla pinnata*	Mosquito Fern
Asteraceae	*Centella asiatica*	Maka
Ceratophyllaceae	*Ceratophyllum demersum*	Hornwort
Poaceae	*Chrysopogon zizanioides*	Vetiver
Poaceae	*Coix lacryma-jobi*	Adlay Millet
Araceae	*Colocasia esculenta*	Taro
Commelinaceae	*Commelina benghalensis*	Kana
Cyperaceae	*Cyperus alternifolius*	Umbrella Sedge
Dryopteridaceae	*Dryopteris filix-mas*	fern
Dryopteridaceae	*Dryopteris sieboldii*	Fern
Poaceae	*Echinochloa colona*	Shama
Pontederiaceae	*Eichhornia crassipes*	Jal Kumbhi
Asteraceae	*Grangea maderaspatana*	Madras Carpet, Mustaru
Acanthaceae	*Hygrophila salicifolia*	—
Lemnaceae	*Lemna minor*	Duck Weed
Onagraceae	*Ludwigia adscendens*	Water Primrose
Marsileaceae	*Marsilea quadrifolia*	Four Leaf Clover
Sterculiaceae	*Melochia corchorifolia*	Bilpat
Nelumbonaceae	*Nelumbo nucifera*	Lotus, Kamal

Family	Botanical Name	Local Name
Nymphaeaceae	*Nymphaea pubescens*	White Lotus
Oxalidaceae	*Oxalis corniculata*	Amrul
Urticaceae	*Pilea microphylla*	Gun Powder Plant
Polygonaceae	*Polygonum hydropiper*	Marsh Pepper Knot Weed
Portulacaceae	*Portulaca oleracea*	Little Hog-Weed
Potamogetonaceae	*Potamogeton natans*	Floating Pond Weed
Lythraceae	*Trapa natans*	Water Chest Nut
Ranunculaceae	*Ranunculus sceleratus*	Aglaon
Polygonaceae	*Rumex dentatus*	Ambavati
Typhaceae	*Typha angustata*	Patera
Hydrocharitaceae	*Vallisneria spiralis*	Tape Grass
Lentibulariaceae	*Utricularia gibba*	Floating Bladderwort
Plantaginaceae	*Veronica anagallis aquatica*	Water Speedwell

(Source: Primary Survey conducted by Vardan Pvt.)

3.10.10 Faunal Diversity

To prepare a detailed report on the status of wildlife biodiversity within 10 km radial area from the project site to assess the impacts due to the project activity and evolve suitable mitigation measures to protect and conserve wildlife biodiversity following components were studied:

Wildlife Survey (Diversity)

Habitat Study (Feeding, Breeding and Roosting areas)

Distribution/Status of Birds

Rare & Endangered species of Fauna

Specific local characteristics of biodiversity in the study area.

Methodology for Faunal Diversity

A linear transect of 1.0 km each was chosen for sampling at each site. Each transect was trekked for 1.5 hr for the sampling of faunal diversity through following methods for different categories. For the sampling of butterflies, the standard 'Pollard Walk' method was employed and all the species recorded daily. Voucher specimens of the species that could not be identified in the field were collected using a butterfly net besides photographing them.

For bird's sampling, 'Point Sampling' along the fixed transect (Foot trails) was carried out. All the species of birds were observed through a binocular and identified with the help of field guide book and photographs.

For the sampling of mammals, direct count on open width (20m) transect was used. In addition, information on recent sightings/records of mammals by the villagers/locals was also collected. For carnivores, indirect sampling was carried out and the mammals were identified by foot marks, faeces and other marks/sign created by them. In case of reptiles mainly lizards were sampled by direct count on open width transects.

The study of fauna takes substantial amount of time to understand the specific faunal characteristic of area. The assessment of fauna has been done by extensive field survey of the area. During survey, the presence of wildlife was also inhabitants depending on animal sightings and the frequency of their visits in the project area which was later confirmed from forest department, Wildlife Department etc.

Table 3.20: Faunal Diversity from Study Area

S. No.	English Name	Scientific Name	Status/Schedule
		Mammals	
1.	Indian Hare	*Lepus nigricollis*	Schedule-IV
2.	Little Indian field mouse	*Mus booduga*	Schedule-V
3.	Nilgai	*Boselaphus tragocamelus*	Schedule-III
4.	Jungle Cat	*Felis catus*	Schedule-II
5.	Monkey	*Macaca mulatta*	Schedule II
6.	Black Rat	*Rattus rattus*	Schedule-V
7.	Bat	*Rousettus leschenaultii*	Schedule-V
8.	Common Langur	*Semnopithecus entellus*	Schedule-II
9.	Common Mangoose	*Herpestes edwardsii*	Schedule-II
10.	Five Striped Palm Squirrel	*Funambulus pennantii*	Schedule-IV
11.	Hare	*Lepus nigrigolis*	Schedule-IV
		Amphibians	
1.	Indian pond frog	*Rana hexadactyla*	Schedule-IV
2.	Common Indian Toad	*Duttaphrynus melanostictus*	Not Listed
3.	Indian Bull Frog	*Hoplobatrachus tigerinus*	Schedule-IV
4.	Indian Skipper Frog	*Euphlyctis cyanophlyctis*	Schedule-IV
5.	Marble Toad	*Bufo stomaticus*	Not Listed
		Reptiles	
1.	House gecko	*Hemidactylus flaviviridis*	Common
2.	Common garden lizard	*Calotes versicolor*	Common
3.	Brahminy skink	*Mabuya carinata*	Common

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S. No.	English Name	Scientific Name	Status/Schedule
4.	Indian Cobra	*Naja naja*	Schedule-II
5.	Rat Snake	*Ptyas mucosa*	Schedule-IV
6	Famn Throated Lizard	*Sitana ponticeriana*	Not Listed
		Butterflies	
1.	White orange tip	*Ixias marianne*	Common
2.	Lime butterfly	*Papilio demoleus*	Common
3.	Common crow	*Euploea core*	Common
4.	Common map	*Cyrestis thyodamas*	Common
5.	Common mormon	*Papilio polytes*	Common
6.	Common Grass Yellow	*Eurema hecabe*	Fairly Common
7.	Stripped Tiger	*Danaus genutia*	Common
8.	Danaid Egg Fly	*Hypolimnas misippus*	Common
9.	Common Bush Brown	*Mycalesis perseus*	Common
		Aves	
1.	House Crow	*Corvus splendens*	Schedule-V
2	Rock Pigeon	*Columba livia*	Common
3.	Grey francolin	*Francolinus pondicerianus*	Least Concern
4.	Jungle babbler	*Turdoides striatus*	Schedule-IV
5.	Common Myna	*Acridotheres tristis*	Schedule-IV
6.	Green bee-eater	*Merops orientalis*	Least Concern
7.	Indian roller	*Coracias benghalensis*	Schedule-IV
8.	Black Drongo	*Dicrurus macrocercus*	Schedule-IV
9.	Little cormorant	*Microcarbo niger*	Schedule-IV
10.	Common swift	*Apus apus*	Schedule-IV
11.	House swift	*Apus affinis*	Schedule-IV
12.	Shikra	*Accipiter badius*	Schedule-IV
13.	Cattle Egret	*Bubulcus ibis*	Schedule IV
14.	Little Egret	*Egretta garzetta*	Schedule-IV
15.	Pond heron	*Ardeola grayii*	Schedule-IV
16.	Red wattled lapwing	*Vanellus indicus*	Schedule-IV
17.	Black Ibis	*Pseudibis papillosa*	Schedule-IV
18.	Ring dove	*Streptopelia decaocto*	Schedule-IV
19.	Spotted Dove	*Streptopelia chinensis*	Schedule-IV
20.	White Breasted Kingfisher	*Halcyon smyrnensis*	Schedule-IV
21.	Blue Cheeked Bee Eater	*Merops persicus*	Schedule-IV
22.	Asian Koel	*Eudynamys scolopacea*	Schedule-IV
23	Drongo Cuckoo	*Surniculus lugubris*	Schedule-IV
24.	Red Jungle Fowl	*Gallus gallus*	Schedule IV

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S. No.	English Name	Scientific Name	Status/Schedule
25.	White breasted water hen	*Amaurornis phoenicurus*	Schedule-IV
26	Common Moorhen	*Gallinule chloropus*	Schedule-IV
27.	Raven	*Corvus corax*	Schedule-IV
28.	Tree Pie	*Dendrocitta vagabunda*	Schedule-IV
29.	Indian Robin	*Saxicoloides fulicata*	Schedule-IV
30.	Pied Bush Chat	*Saxicola caprata*	Schedule-IV
31.	Purple Sun Bird	*Nectarinia asiatica*	Schedule-IV
32.	Small Sun Bird	*Nectarinia minima*	Schedule-IV
33.	House Sparrow	*Passer domesticus*	Schedule-IV
34.	Grey Tit	*Parus major*	Schedule-IV
35.	Red Vented Bulbul	*Pycnonotus cafer*	Schedule-IV
36.	Bank Myna	*Acridotheres ginginianus*	Schedule-IV
37.	Common Babbler	*Turdoides caudatus*	Schedule-IV
38.	Tailor Bird	*Orthotomus sutorius*	Schedule-IV
39.	Rose Ringed Parakeet	*Psittacula krameri*	Schedule-IV
40.	Baya	*Ploceus philippinus*	Schedule-IV
41.	Owl	*Bubo bubo*	Schedule-IV
42.	Indian peafowl	*Pavo cristatus*	Schedule-I
		Pisces	
1.	Rohu	*Labeo rohita*	Least Concern
2.	Katla	*Catla catla*	Least Concern
3.	Calbasu	*Labeo calbasu*	Least Concern
4.	Cat fish	*Mystus cavasius*	Least Concern
5.	Mosquito fish	*Gambusia affinis*	Least Concern
6.	Black Fish	*Puntius chilinoides*	Least Concern
7.	Singi	*Clarias batrachus*	Least Concern
8.	Bronze Feather Back	*Notopterus notopterus*	Least Concern
9.	Ganges River Gizzard Shad	*Gonialosa manmina*	Least Concern
10.	Hilsa	*Tenualosa ilisha*	Not Listed
11.	Chellhah	*Aspidoparia morar*	Least Concern
12.	Barau Baril	*Barilius barna*	Least Concern
13.	Chagani	*Chagunius chaguno*	Least Concern
14.	Common Carp	*Cyprinus carpio*	Least Concern
15.	Reba Carp	*Cirrhinus reba*	Least Concern
16.	Sind Danio	*Danio devario*	Least Concern
17.	Kharsa, Butter	*Labeo angra*	Least Concern
18.	Baha	*Labeo bata*	Least Concern
19.	Boga Bata	*Labeo boga*	Least Concern

S. No.	English Name	Scientific Name	Status/Schedule
20.	Kurn, Khursa	*Labeo gonius*	Least Concern
21.	Swamp Barb	*Puntius chola*	Least Concern

3.10.11 Endangered Species

As per list of the Indian Wildlife (Protection) Act, 1972, Fauna coming under the schedule - I is treated as endangered species. As per reconnaissance survey only one species i.e. Pavo cristatus schedule - I faunal species have been reported from the project site. Although some schedule-II species have been reported during the site survey, which are very common species and found in every locality, even in villages. certain steps should be taken to conserve the critical wild life:

- Programs for the conservation of wildlife will be formulated and implemented outside the protected areas by educating the local communities with help of local public agencies, and other stakeholders including the environment division officers of our company, in order to reduce the scope of man-animal conflict.
- It will be ensured that human activities on the fringe of the protected areas do not degrade the habitat.

Over all, the status of wildlife in a region is an accurate index of the state of ecological resources, and thus, of the natural resources base of human well-being.

3.10.12 Aquatic Diversity

3.10.12.1 Methodology for Aquatic Diversity:

The samples for qualitative and quantitative analysis of planktons were collected from the sub surface layer at knee depth. Water samples were filtered through plankton net of 20µ mesh size (APHA, 1971). The filtered samples were concentrated by using the centrifuge. By using Lackey's drops method and light microscope (Lackey, 1938), the qualitative analysis was carried out for phytoplankton and zooplankton (**Table 3.21**). The standard flora and other literature were followed for the qualitative evaluation of Plankton.

Table 3.21: List of Phytoplankton & Zooplanktons from Study Area

PHYTOPLANKTON	ZOOPLANKTONS
CHLOROPHYCEAE	**PROTOZOA**
Ankistrodesmus falcatus	*Paramecium caudatum*
Chlorella vulgaris	*Vorticella campanula*
Chlorococcum infusionum	**CLADOCERA**

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PHYTOPLANKTON	ZOOPLANKTONS
Cladophora fracta	*Alona rectangula*
Cosmarium lenue	*Bosmina longirostris*
Closterium Sp.	*Daphnia carinata*
Hydrodictyon reticulatum	**COPEPODA**
Pediastrum simplex	*Cyclops bicuspidatus*
Ulothrix	*Macrocyclops albidus*
Spirogyra condensate	**ROTIFERA**
EUGLENOPHYCEAE	*Asplanchna intermedia*
Euglena acus	*Brachionus falcatus*
Phacus caudatus	*Filinia longiseta*
BACILLARIOPHYCEAE	*Keratella tropica*
Cyclotella meneghiniana	*Philodina citrine*
Synedra ulna	*Polyarthra* Sp.
CYANOPHYCEAE	**MACROBENTHOS – MOLLUSCA**
Anabaena fertilissima	*Pila*
Nostoc Sp.	*Bellamya* Sp.
Oscillatoria clorina	*Gyraulus*
Phormidium calcicola	

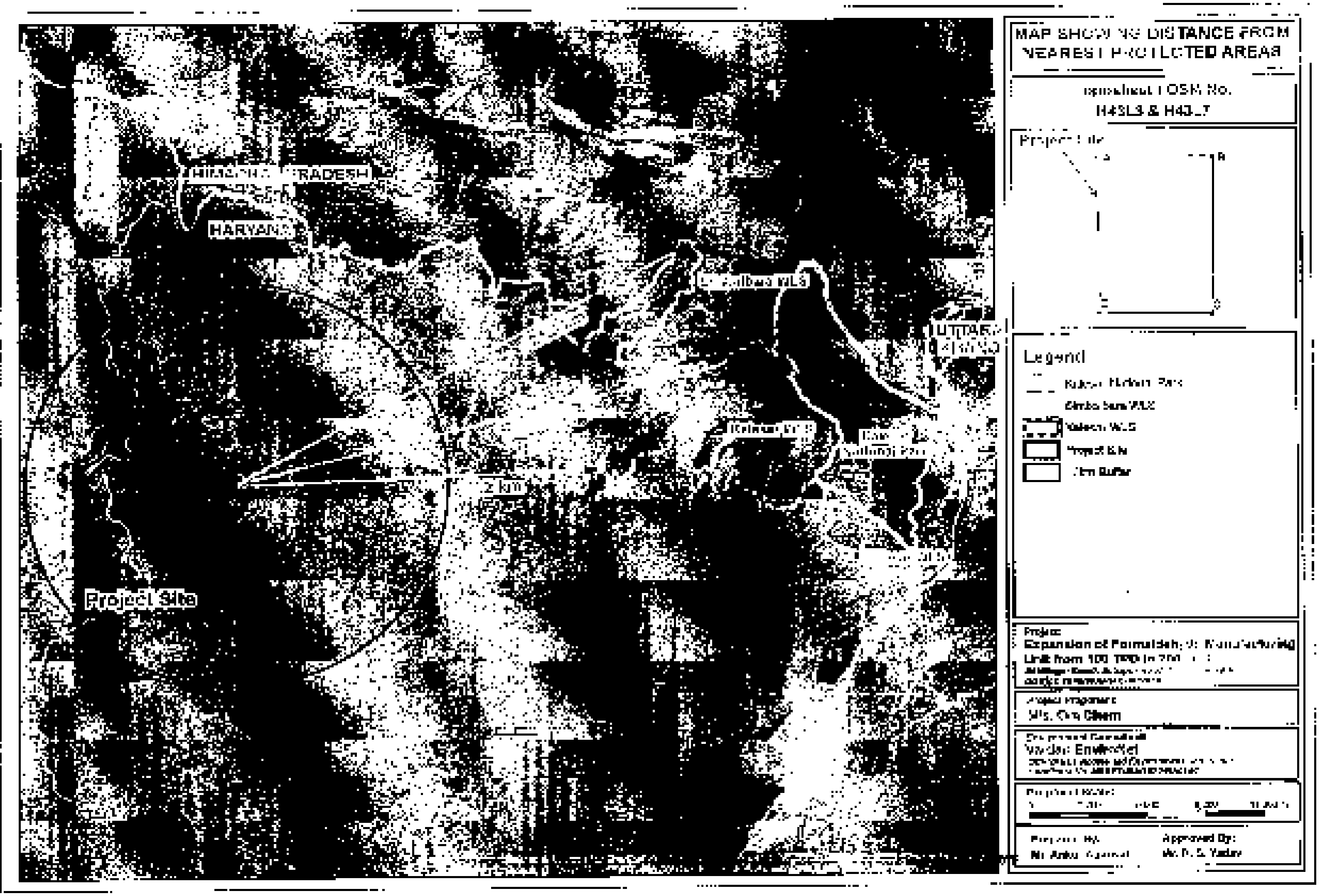


Figure 3.20: Map Showing Distance from Nearest Protected Areas

3.11 SOCIO-ECONOMIC ENVIRONMENT

Any developmental activity exerts a direct impact on the socio-economic environment of the region. Usually, the beneficial impacts such as better job opportunities, improved education, communication, energy, housing, health, transportation facilities etc outweighs the adverse impacts, if any.

The study of socio-economic component of environment is incorporating various facets, viz demographic structure, availability of basic amenities such as housing, education, health and medical services, occupation, water supply, sanitation, communication and power supply, prevailing diseases in the region as well as features such as places of tourist attraction and monuments of archaeological importance. The study of these parameters helps in identifying predicting and evaluating the likely impacts due to project activity in the surrounding region.

The existing unit is located in a 6430 sq.m plot and is situated at village Kurali, Sabapur road, Tehsil: Bilaspur, District: Yamunanagar, Haryana.

Baseline data such as demographic pattern, occupational status, educational, health and other amenities as existing in the study area have been studied

3.11.1 Baseline Status

The latest available data has been complied to generate the existing socio-economic scenario of the study area. Information on socio-economic profile was collected from the Primary Census Abstract CD 2011 including the population details of the region.

The Socio-Economic Status of the study areas is mentioned below and the villages surveyed are enlisted in Table 3.22.

Table 3.22: List of the Villages for Field Survey

S.No.	Villages
1.	Kurali
2.	Sabhapur
3.	Bhogpur
4.	Sabhri
5.	Rajpur
6.	Singpura
7.	Buraj Jamunawala
8.	Pandon

3.11.2 Village

The basic unit for rural areas is the revenue village which has definite surveyed boundaries. The revenue village may comprise of one or more hamlets but the entire village is treated as one unit for presentation of data.

3.11.3 Study Area

The study area was defined as an area within 10 km radius around the project site which includes total 78 villages are from Bilaspur and Jagadhri tehsil of Yamunanagar District and Naraingarh tehsil of Ambala District of Haryana State.

3.11.4 Demographic Structure

Demographic structure of the study area was estimated for the selected parameters as households, population, sex ratio, scheduled caste, scheduled tribes, literacy from primary census abstract, CD 2011 of Haryana State. The summarized demographic structure of the study area with rural and urban area is presented in Table 3.23, while the details of the parameters of demographic structure of the villages within 10 kms are shown in Table 3.24

Table 3.23: Summarized Demographic Stucture of the Study Area

Sr.No.	Parameter	Study Area
1	No. of Villages	78
2.	Households	16936
3.	Household Ratio	5.4
4.	Total Population	91608
5.	Male Population	48388(52.82%)
6.	Female Population	43220(47.17%)
7.	Population (0-6 Years.)%	11176(12.19%)
8.	Sex Ratio	893
9.	Child Sex Ratio	833
10.	Scheduled Caste %	31790(34.70%)
11.	Scheduled Tribes %	Nil
12.	Literates %	59550(65.00%)
13.	Male Literates%	34353(57.68%)
14.	Female Literates %	25197(42.31%)
15.	Main Workers %	22980(25.08%)
➢ Cultivators		7744(33.69%)
➢ Agriculture Labourers		7095(30.87%)
➢ Household Labourers		362(1.57%)
➢ Other Workers		7779(33.85%)

16.	Marginal Workers %	5230(5.70%)
17.	Non-Workers %	63398(69.20%)

Source: PCA Census 2011, Haryana State

Table 3.24: Demographic Structure of the Study Area (Rural)

Sr.No.	Villages	Households	Total Population	Population 0-6 Years	Scheduled Caste	Literates
Haryana State						
Yamunanagar District						
Bilaspur Tehsil						
1.	Kurali (284)	132	710	97	420	431
2.	Bhogpur (285)	231	1310	136	420	890
3.	Kanyan Wala (134)	67	364	34	262	211
4.	Saranwa (133)	914	4498	445	1116	3195
5.	Kanipla (150)	237	1266	151	549	849
6.	Pandori (151)	169	879	108	574	576
7.	Rajpur (152)	239	1227	165	803	804
8.	Sabhri (153)	23	139	17	0	99
9.	Subhapur (154)	148	832	115	214	535
10.	Buraj Jamunawala (161)	126	868	148	17	386
11.	Shampur (163)	257	1394	166	730	927
12.	Naushahra (162)	266	1316	144	386	820
13.	Parbholi (166)	70	396	34	0	270
14	Rattu Wala (167)	184	1111	135	220	722
15.	Ratauli (168)	252	1458	252	0	627
16.	Kalyanpur Atari(170)	182	1057	134	205	581
17.	Garhi Viran (169)	14	96	15	0	49
18.	Bana Bahadurpur (186)	31	243	36	0	127
19.	Islamnagar (171)	102	559	56	311	372

20.	Mirzapur (172)	207	1079	176	365	652
21.	Kotla (174)	95	521	69	35	324
22.	Tewar (173)	81	515	107	3	261
23.	Gulapur (181)	54	301	51	301	182
24.	Jafarpur Jafri (185)	81	474	74	0	261
25.	Bajawali (45)	198	1213	179	300	650
26.	Safilpur (46)	346	1850	264	973	1119
27.	Mugalwali (239)	262	1603	229	479	944
28.	Bansewala (50)	178	960	131	342	578
29.	Mianpur (51)	117	643	90	111	364
30.	Parbhaoli (52)	132	788	101	33	370
31.	Taharpur Khurd (261)	38	228	28	0	146
32.	Nagal Patti Machhrauli (262)	212	1147	153	426	711
33.	Nagli (264)	144	819	108	16	305
34.	Machhrauli (263)	659	3251	411	1467	2189
35.	Rampur Harnan (48)	200	1141	154	301	735
36.	Bihta (242)	137	740	79	115	533
37.	Bhawanipur (276)	93	561	57	141	386
38.	Milkkhas (275)	290	1497	171	610	1000
39.	Aharwala (273)	200	1047	103	360	711
40.	Kotra Khas (274)	286	1430	148	561	1099
41.	Udhamgirh (266)	36	191	27	113	131
42.	Mangiaur (49)	344	1968	293	966	1178
43.	Tunde Ki Taparian (47)	38	195	23	10	129
44.	Ambwala (278)	73	397	46	0	261

45.	Dhalaur (287)	292	1531	222	801	967
46.	Harhatpur (291)	438	2302	263	823	1616
47.	Majri (149)	84	438	37	346	300
48.	Tunda Bag (147)	0	0	0	0	0
49.	Haveli (141)	304	1406	147	274	966
50.	Bakala (142)	200	969	104	494	628
51.	Laharpur (328)	468	2513	285	829	1736
52.	Domanwala (327)	54	286	25	131	164
53.	Rampur Ranyan (144)	126	733	111	503	474
54.	Ferozepur Ranyan (143)	181	969	108	414	660
55.	Sadaura Nadipar (155)	246	1280	179	1071	791
56.	Sadiqpur (137)	431	2435	338	817	1367
	Total	10963	59140	7492	20474	37559
	Jagadhri Tehsil					
57.	Kulchandu (340)	358	1968	232	774	1319
58.	Malakpur (290)	183	977	129	373	672
59.	Uddham Garh (341)	60	327	28	233	226
60.	Nawan Shahar (342)	137	780	79	645	522
61.	Chaharwala (289)	221	1061	82	486	740
62.	Ambwala (288)	110	532	63	337	394
63.	Jagdhauli (343)	617	3342	405	1132	2249
64.	Nagla Khalsa (344)	152	828	90	359	570
65.	Mohri (5)	172	896	127	267	481
	Total	2010	10661	1235	4528	7113
	Ambala District					

Naraingarh Tehsil						
66.	Bet Kheri (298)	232	1241	144	227	904
67.	Gadauli (135)	888	4949	582	1305	3188
68.	Nagla (290)	247	1344	166	303	901
69.	Jhar Sahala (132)	9	50	6	5	33
70.	Surgal (131)	42	250	20	118	171
71.	Ambli (136)	379	2152	215	698	1566
72.	Ganauli (294)	216	1197	121	68	826
73.	Tharwa (166)	452	2429	274	937	1632
74.	Salakhani (4)	237	1202	120	585	835
75.	Shergur (5)	122	565	50	154	457
76.	Sardu Heri (6)	565	3184	383	1221	2100
77.	Aliaspur (7)	154	801	84	433	576
78.	Zalarpur (8)	420	2443	284	734	1689
Total		3963	21807	2449	6788	14878
Grand Total		16936	91608	11176	31790	59550

Source: JCA Census 2011, Haryana State

3.11.5 Demographic Profile of the Study Area (Rural Area)

3.11.5.1 Household and Population

Total number of household in the study area of rural region is about 16936 with total population of about 91608 with male population about 48388(52.82%) and female population is 43220(47.17%) and is represented in below Figure 3.21.

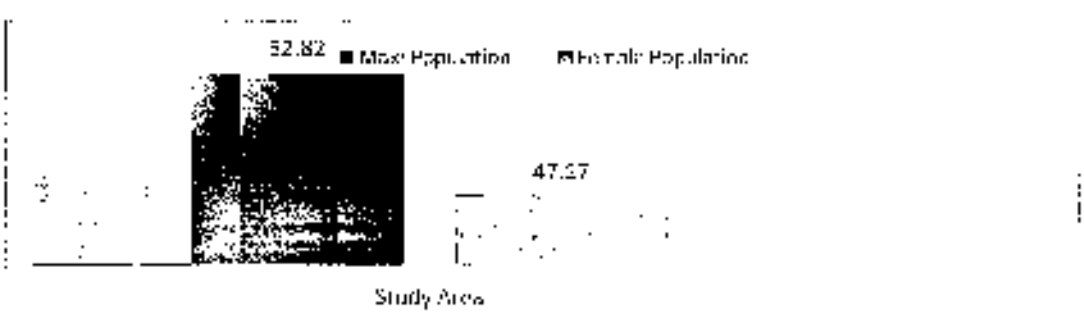


Figure 3.21: Bar diagram representing the distribution of population in the study area

Household Ratio- The average family size i.e person per family in rural area is 5.4 for study area.

Population Age-Group (0-6yrs)- Out of the total population, the population of children within the age of 0-6 age-group in study area is about 11176 (12.19%).

Sex Ratio & Child Sex Ratio-

Sex ratio (No. of females per 1000 males) is 893 in rural area of the study area which indicates that females are less in number than their male counterpart in rural area

Child Sex ratio is 833 in rural area i.e no.of female child per 1000 male child.

It can be concluded from the data that adult female is lower than male population but higher than the female child population in the study area.

The graphical presentation of the distribution of population is given in **Figure 3.25** below:

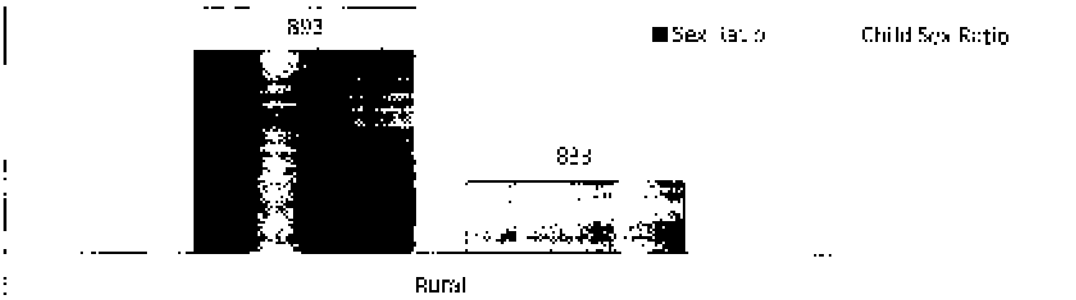


Figure 3.22: Bar Diagram Representing the Ratio of Population in the Study Area

3.11.5.2 Scheduled Caste Population in the Study Area

Scheduled caste population in study area is about 31790 i.e 34.70% in study area while the Scheduled tribe population are nil in the study area

3.11.5.3 Literacy Rate in the Study Area

Out of the total population 59550 i.e 65% literates are from study area. Male literates are 34353 (57.98%) than female literates about 25197(42.31%) in the study area.

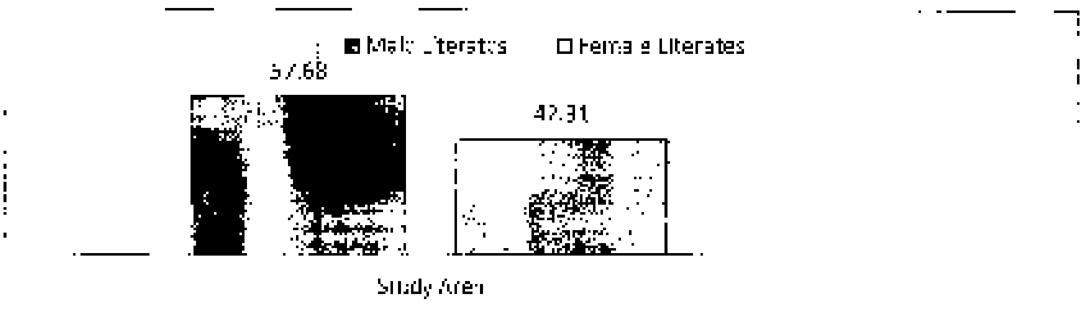


Figure 3.23: Representing the literacy rate in the study area

3.11.5.4 Occupational Pattern/ Economic Resource Base

'Work' has been defined as participation in any economically productive activity. Such participation may be physical or mental. Persons on leave and under training are also treated as workers. However, rent receivers and pensioners are not treated as workers.

3.11.5.5 Total Workers

Occupational pattern of the villages and urban area within 10 km is given in **Table 3.25**. Occupational pattern of any region mainly depends upon its economically active group i.e. the working populations involved in different economically productive activities. The total workers further categorized as main worker, marginal and the non-working population.

The workers coming under the main and marginal workers category are cultivators, agricultural labors and those engaged in live stock, forestry, fishing, hunting, and plantations, orchards and allied activities, mining and quarrying, manufacturing, processing, servicing and repairs in household industry, construction trade and commerce, transport, storage & communication, and other services

Different types of workers in total worker population may be classified as -

A. Main Workers

Main workers are those who have worked for a major part of the year (i.e. at least six months or 183 days). Main activity of a person who was engaged in more than one activity was reckoned in terms of time disposition Out of the total population 22980 (25.08%) comes under the main workers category. Main workers are further classified into 4 categories viz., cultivators, agricultural laborers and household workers and other main workers.

Cultivators

For purposes of the Census a person is classified as cultivator if he or she is engaged in cultivation on land owned or held from government or held from private persons or for payment in money, kind or share. The person who is engaged either as employer, single worker or family worker in cultivation of land is recognized as a cultivator. In the study area the cultivator population in rural area is 7744(33.69%).

Agricultural Laborers

Persons working on land owned by others for wages or share in the yield have been treated as agricultural laborers. Out of the total main worker category the agricultural laborers population in rural area is about 7095(30.87%).

Laborers in Household Industry

The laborers engaged in household activity are quite low in all the study area. Among the total main worker only 362 workers from study area i.e 1.57% are engaged in Household activity.

Other Workers

All main workers i.e. those who have been engaged in some economic activity during the last one year and who are neither cultivators nor agricultural laborers or household industry workers are classified as other main workers. The type of workers that come under this category includes factory workers, plantation workers, those in trade, commerce, business, transport, construction, political or social works, all government servants, municipal employees, teachers, priests, entertainers, artists etc. The other worker category can be seen higher in study area which is about 7779 (33.85%).

Category of Main Workers in Rural Area of the Study Area

B. Marginal Workers

Marginal workers are those who have worked any time in the year for less than six months or 183 days but have not worked for a major part of the year. The population of marginal workers within the study area comprises of about 3230(3.70%) of study area.

C. Non-Workers

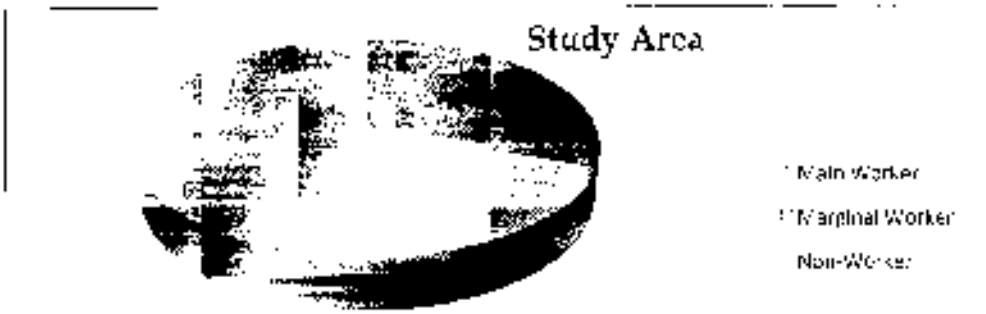
Non-Workers are those who have not worked any time at all in the year. Non-workers constitute householders, students, dependents, retired persons etc.

The economy of the study area is primarily based on agriculture. The agriculture sector has thus absorbed a major portion of the working force.

The categories of main workers, marginal workers & non workers are complementary to each other. Therefore, in areas where the proportion of main workers & marginal workers are high, the proportion of non workers would be naturally low. At present main workers category outweighs the marginal and non workers in the study area.

The proportion of female main worker population is high as compared to their male worker counterpart because in general rural areas offer more opportunities for men & women to work in agriculture & animal husbandry etc. In view of the labor intensive nature of agricultural economy, a large number of women are required to participate in work especially during the peak seasons of agricultural operations like sowing & harvesting which are to be carried out in a short span of time covering large areas in

each village. The non-worker population in rural area is observed to be almost about 63398(69.20%) in study area.



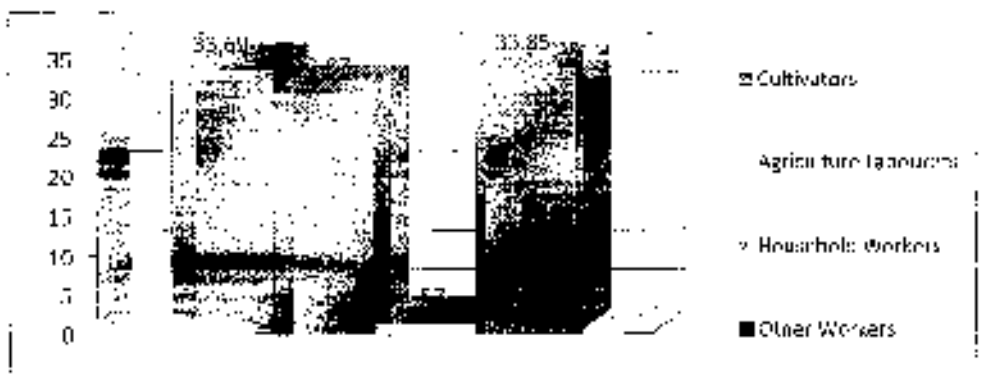


Figure 3.24: Occupational Structure in the Rural Area

Table 3.25: Occupational Structure of the Study Area (Rural)

Sr.No.	Villages	Total Main Workers	Main Workers			Marginal Workers		Non-Workers
			Cultivators	Agricultural Laborers	Household Laborers	Other Workers		
Haryana State								
Yamunanagar District								
Bilaspur Tehsil								
1.	Kurali (284)	184	33	58	9	84	7	519
2.	Bhogpur (285)	383	181	57	0	145	33	894
3.	Ramyan Wala (134)	111	50	30	0	31	0	253
4.	Saranwa (139)	1227	259	375	28	565	50	3221

5.	Kanipla (150)	345	93	123	3	124	100	821
6.	Pandon (151)	223	57	97	0	69	127	529
7.	Rajpur (152)	361	70	222	4	65	1	859
8.	Sabhri (153)	44	35	0	0	9	0	95
9.	Sabhapur (154)	162	98	25	4	35	71	599
10.	Buraj Jamunawala (164)	242	86	129	1	26	1	625
11.	Shampur (163)	445	109	110	32	194	45	904
12.	Naushahra (162)	333	91	71	2	169	98	835
13.	Partholi (166)	113	64	27	0	22	3	280
14.	Rattu Wala (167)	243	172	2	2	67	130	738
15.	Ratauli (168)	419	126	76	0	217	52	987
16.	Kalyanpur Atari(170)	267	137	115	0	15	7	789
17.	Garhi Viran (169)	21	5	16	0	0	0	75
18.	Bana Bahadurpur (186)	57	24	31	0	2	1	185
19.	Islamnagar (171)	131	21	97	2	11	16	412
20.	Mirzapur (172)	283	56	37	0	190	73	723
21.	Kotla (174)	131	17	78	8	28	3	387
22.	Tewar (179)	110	38	58	2	12	140	265
23.	Gulapur (181)	80	30	4	0	46	117	104

24.	Jafarpur Jafri (185)	133	60	23	3	45	2	337
25.	Bajawali (45)	357	70	149	1	137	262	594
26.	Safilpur (46)	540	128	284	0	128	3	1307
27.	Mugalwali (259)	314	148	192	4	30	206	1083
28.	Banswala (50)	289	102	150	0	37	0	671
29.	Mianpur (51)	107	43	61	1	2	55	481
30.	Parbhaoli (52)	168	150	8	1	9	25	595
31.	Taharpur Khurd (261)	55	41	10	0	4	0	173
32.	Nagal Patti Machhrauli (262)	236	131	21	5	76	85	826
33.	Nagli (264)	234	168	57	2	7	3	582
34.	Machhrauli (263)	899	208	253	21	417	56	2296
35.	Rampur Harian (48)	272	76	51	3	142	28	841
36.	Bihta (242)	163	87	11	1	61	42	535
37.	Bhawanipur (276)	149	72	26	0	51	4	406
38.	Milkkhas (275)	222	113	3	4	100	217	1038
39.	Aharwala (273)	300	137	13	0	150	6	741
40.	Kora Khas (274)	414	95	8	42	269	21	995
41.	Udhamgarh (266)	55	12	6	0	37	0	136
42.	Manglaur (49)	546	207	290	1	48	24	1398

43.	Tunda Ki Taparian (47)	57	5	30	0	22	1	137
44.	Ambwala (278)	87	44	34	0	9	27	283
45.	Dhalaur (287)	484	87	221	9	167	16	1031
46.	Haibatpur (291)	649	203	87	0	359	114	1539
47	Majri (149)	132	25	91	2	51	3	303
48.	Tunda Bag, (147)	0	0	0	0	0	0	0
49.	Haveli (141)	419	82	44	10	283	45	942
50.	Bakala (142)	265	53	141	2	69	17	687
51.	Laharpur (328)	733	284	216	1	292	24	1756
52.	Domanwala (327)	86	12	73	0	1	0	200
53.	Rampur Ranyan (144)	204	30	147	1	26	7	524
54.	Firozepur Ranyan (143)	122	61	2	1	55	149	699
55.	Sadaura Nadipar (155)	304	130	113	3	58	70	906
56.	Sadiqpur (157)	551	112	130	9	500	294	1591
Total		15463	5035	4691	226	5511	2880	40797
			Jagadhri Tehsil					
57.	Kulchandu (340)	488	96	279	10	103	56	1424
58.	Malakpur (290)	183	84	54	4	41	101	693
59.	Uddham	109	18	27	0	64	3	215

	Garh (341)							
60.	Nawan Shahar (342)	228	29	180	1	18	7	495
61.	Chaharwala (289)	310	115	140	2	50	8	713
62.	Ambwala (288)	138	26	87	1	24	22	372
63.	Jagdhauli (343)	716	243	255	4	214	277	2349
64.	Nagla Khalsa (344)	156	100	14	2	40	83	591
65.	Mohri (5)	226	84	105	1	36	159	511
	Total	2554	798	1141	25	590	714	7393
	Ambala District							
	Naraingarh Tehsil							
66.	Ber Kheri (293)	293	131	28	5	129	106	842
67.	Gadauli (135)	1131	420	447	24	240	339	3479
68.	Nagla (290)	320	123	75	16	106	131	898
69.	Jhar Sahala (132)	16	0	6	0	10	17	17
70.	Surgal (131)	60	31	26	0	3	35	155
71.	Ambli (136)	514	133	127	9	275	36	1572
72.	Ganauli (294)	356	171	46	4	135	3	838
73.	Tharwa (166)	709	203	124	23	359	15	1705
74.	Salakhani (4)	304	121	123	2	58	48	850
75.	Sherpur (5)	88	47	31	0	10	69	408
76.	Sarda Heri (6)	521	212	120	17	145	506	2154
77.	Aliaspur (7)	146	33	53	7	31	75	580
78.	Zafarpur (8)	472	234	57	4	177	256	1715
	Total	4963	1911	1263	111	1678	1636	15208

Grand Total	22980	7744	7095	362	7779	5230	63398

Source: PCA Census 2011, Haryana State

3.11.6 Infrastructure Resource Base

The details of infrastructure resources base of the study area with reference to education, medical facility, water supply, post and telegraph, transportation, communication facility, power supply, existence of nearest town etc. are presented in **Table 3.26**. The significant features of these important parameters for each study area are discussed as below:

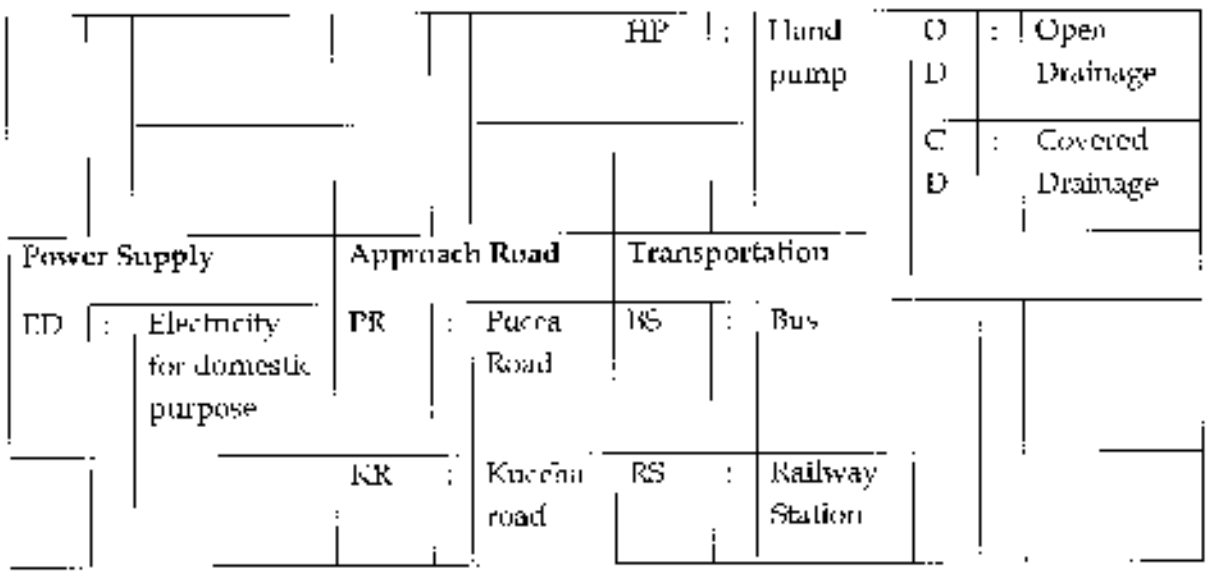
Table 3.26: Infrastructure Resource Base of the Study Area

Sr.No.	Amenities	Availability in Number
1.	Education Facility	P(76),PvtP(9), M(41),PvtM(9),S(17), Pvt.S(6),Ssc(7), PvtSsc(5),
2.	Medical Facility	PHC(3), PHS(15), MCW(2),D(3)
3.	Drinking Water Facility	T (78) , UnT(29), CW(6),HP(77),TW(71)
4.	Drainage Facility	OD(79), CD(--)
5.	Communication Facility	PO(2),T(85), M(78)
6.	Transportation Facility	BS(71),Pvt BS(71)
7.	Approach Road	KR(67),PR(78)
8.	Power Supply	ED(78),EAG(78)

Source: Village amenities 2011, Haryana State

Table 3.27: Abbreviations

Educational Institutions			Medical Facilities			Drinking Water Supply			Communication		
P	:	Primary School	PHC	:	Primary health Centre	T	:	Tap Water	PO	:	Post Office
M	:	Middle School	PHS	:	Primary health sub centre	CW	:	Covered Well Water	PT	:	Phone connections
S	:	Secondary School	D	:	Dispensary	UCW	:	Uncovered Well Water	Drainage Facility		



3.11.6.1 Educational Facility

As per the data available through village amenities 2011 there were 76 government primary school, 9 private Primary School, 41 Middle schools, 9 private middle schools and 17 secondary schools, 6 private secondary schools and only 7 senior secondary schools and 5 private senior secondary schools. There are colleges in Jagadhri, Mulana Naraingarh, Sadaura and Bilaspur town.

3.11.6.2 Drinking Water Facility

The numbers of major sources of drinking water in the study area is mainly through treated Tap water in 78 villages, untreated tap water in 29 villages Hand Pump facility in 77 villages, Tube Well in 71 villages and covered well in 6 villages.

3.11.6.3 Sanitation & Drainage Facility

Sanitation facility is poor in the villages of the study area. 40 villages have the open drainage system while no villages have closed drainage system.

3.11.6.4 Communication Facility

Communication facility is available in the form of Post office is available in only 2 villages. Telephone connections are available in all 78 villages. At the present time most of the villagers have mobile phones for communication.

3.11.6.5 Cultural and Aesthetic Attributes

As such no culturally and aesthetically important places are located within the 10 km of the study area.

3.11.6.6 Economic Attributes

Yamuna Nagar is well known for its industries. It has emerged as an important industrial destination in the state. This has been despite its relatively isolated location within the state. Due to expanding industries, the city kept on extending geographically.

The city produces sugar machinery, paper machinery, and highly efficient equipment for petrochemical plants, which are shipped to various refineries across the country. The city is also known for its plywood industries, which is attributed to the easy accessibility of primary raw material – poplar tree. It has also one of India's largest railways, carriage and wagon repair workshops. Recently, Reliance Infrastructure has also installed Deenbandhu Chhotu Ram Thermal Power Station in the town. Haryana Urban Development Authority has done major development work in the land stretch linking the city with Jagadhri, the other part of twin city. Jagadhri is famous for its brass and stainless steel utensils.

3.11.7 Agro-forestry in Yamunanagar

More than 70 % of the population of the Yamunanagar district depends on agriculture as its livelihood. The average land holding is 8.53 ha. There are two main crops in the year namely, Kharif and Rabi. Maize and rice are grown during Kharif and wheat, gram and potato in rabi. Large-scale crop of sugarcane has also been raised during recent years.

Health Status

Health of the people is not only a desirable goal, but it is also an essential investment in human resources. As per the National Health Policy (1983), Primary Health Care has been accepted as main instrument for achieving this goal of development and strengthening rural health infrastructure through a three-tier system, viz., Primary Health Center (PHCs), Primary Health Subcentres (PHS) and Community Health Centers have been established to provide heath care facility not only to the resident population of the concerned villages but also to the neighboring villages.

Primary Health Centers - PHC is the first contact point between village community and the Medical Officer. The PHCs were envisaged to provide an integrated curative and preventive health care to the rural population with emphasis on preventive and promotive aspects of health care.

Primary Health Sub-Centers - Sub-Centers are assigned tasks relating to interpersonal communication in order to bring about behavioral change and provide services in

relation to maternal and child health, family welfare, nutrition, immunization, diarrhea control and control of communicable diseases programmes.

Community Health Centre - Community Health Centre (CHCs) are being established and maintained by the State Government under MNP/BMS programme. As per minimum norms, a CHC is required to be manned by four medical specialists i.e. Surgeon, Physician, Gynecologist and Pediatrician supported by 21 paramedical and other staff.

Lack of building, shortage of manpower and inadequate provision of drug supplies are hampering the operation of these units. The standards to be met according to National Rural Health Care System are given below:

Table 3.28: National Rural Health Care System Standards

Population	Medical Facility & Infrastructure	Personnel
3000-5000	1 Sub centre (Contact Unit of PHC and Community)	1 Health Worker (Female)/ Auxiliary Nurse Midwives & 1 Health Worker (Male)
20,000-30,000	1 PHC (Unit of 6 Sub-Centers)- 6 beds	Medical officers & 14 Paramedical Staff
80,000-1,20,000	Community Health Centre (Referral Unit-4 PHCs)- 30 Bedded Hospital	Medical superintendent

Source: National Rural Health Care System in India (2005-12)

3.11.8 Socio-economic Survey

In order to access and evaluate likely impacts arising out of any development projects on socio economic environment, it is necessary to gauge the apprehensions of the people in the study areas.

3.11.8.1 Methodology applied for selection of sample & data collection

The methodology which is applied for primary source of data collection i.e. gathering data through field survey for socio-economic environment is depicted below:

3.11.8.2 Sampling Method

A judgmental and purposive sampling method was used for choosing respondents of various sections of the society i.e. Sarpanch, adult males and females, teachers, medical practitioners, businessmen, agriculture laborers, unemployed group etc. Judgmental and purposive sampling method includes the right cases from the total population that helps to fulfill the purpose of research needs.

3.11.8.3 Data Collection Method

For the process of data collection through primary source certain methods are used among that are:

3.11.8.4 Field Survey and Observations

Field survey and observations is made at each sampling village and the socioeconomic status of that region is studied. Visits are made at hospitals, primary health centers and sub-centers to know the health status of the region. Various governmental organizations such as statistical department, department of census operations are visited to collect the population details of that region.

3.11.8.5 Interview Method

Structured interview method is used to collect data regarding the awareness and opinion from the samples selected of the various socio- economic sections of the community. Structural interviews involve the use of a set of predetermined questions that includes fixed and alternative questions. The questionnaire mainly highlights the parameters such as income, employment and working conditions, housing, food, water supply, sanitation, health, energy, transportation and communication, education, environment and pollution to assess the standard of living of that particular region and general awareness, opinion and expectation of the respondents about the proposed project. Interview method helps to collect more correct and accurate information as the interviewer is present during the field survey.

Socio-economic survey was conducted in the villages within the study areas located in all directions with reference to the project site. 8 villages were surveyed from study area.

The respondents were asked for their awareness / opinion about the proposed project which is an important aspect of socio-economic environment, viz. job opportunities, education, health care, housing, transportation facility and economic status.

The salient observations recorded during socio economic survey in the study areas are depicted below.

- More than 40% villagers occupation is primarily based on agriculture and its allied activities
- Almost all the villages in the surveyed area have government and private Primary School (PS), about 60% have Middle School facility and 25% villages have Secondary school while very few have senior secondary schools. Further education villagers go to the Sampla and Bahadurgarh town
- The main source of drinking water supply is through treated Tap water facility and Hand Pump facility available in villages. But majority of respondents expressed that there is shortage of availability of drinking water facility.
- Power supply is available in mostly all the sampling villages for both agriculture and Domestic purpose. Street lights are also available in all villages

3.12 TRAFFIC STUDY

Traffic study measurements were performed at State Highway-1 and State Highway 4 to assess impact on local transport infrastructure due to this proposed project. Road and highway studies are given in Table 3.29.

Table 3.29: Highway in the Study Area

Name of National/State Highway	Direction		Ratio in Percentage (%)
	Up	Down	
SH-1	jagadhri	naraingarh	60
SH-4	barara	Kala amb	40
	Total		100%

*700 mineral material from the site initially transfer to SH-1 after that it will distribute on SH-20

Table 3.30: No. of Vehicles per Day

Vehicles Distribution	Number of Vehicles Distribution/Day		Equivalent PCU	PCU/Day		PCU/Hour	
	SH-1	SH-4		SH-1	SH-2	SH-1	SH-2
Trucks	1069	961	3	1069	961	44.5417	40.0417
Bus	1236	1065	3	3450	3195	143.75	133.125
Cars	2006	844	1	2874	2532	119.75	105.5
3-Wheeler	859	690	1	429.5	345	17.8958	14.375
2-Wheeler	1347	1242	0.5	975.75	931.5	40.6563	38.8125
Total	6517	4802		8798.25	7964.5	366.594	331.854

Table 3.31: Existing Traffic Scenario and LOS

Road	V (Volume in PCU/hr)	C (Capacity in PCU/hr)	Existing V/C Ratio	LOS
SH-1	366.59	1250	0.29	B
SH-4	331.85	1250	0.27	B

Note: The existing level may be "VERY GOOD" for both Highways.

V/C	LOS	Performance
0.0-0.2	A	Excellent
0.2-0.4	B	Very Good
0.4-0.6	C	Good / Average / Fair
0.6-0.8	D	Poor
0.8-1.0	E	Very Poor

Note: Capacity as per IRC: 64-1990

Table 3.32: Additional Traffic during Plant Operation

S. No.	Type of Vehicle	Additional Vehicle Per day	PCU	Total Number of Vehicle in PCU/day	Total Number of Vehicle in PCU/Hr
1	Truck	20	3	60	2.50
2	2 Wheeler	10	0.5	5	0.21
3	Car	5	1	5	0.21
Total				70	

Basis No. of vehicle x 2 (Up and Down)

Table 3.33: Modified Traffic Scenarios and LOS

Road	Increased PCU's- State/National Highway	V	C	Modified V/C Ratio	LOS
SH-1	2.92 x 60%=1.75	366.59+1.75=368.34	1250	0.29	B
SH-4	2.92 x 40%=1.17	331.85+1.17=333.02	1250	0.27	B

3.12.1 Conclusion

The LOS value from the proposed expansion project may be same as earlier value "VERY GOOD" for all the highways. So the additional load on the carrying capacity of

the concern roads is not likely to have any significant adverse effect. The transportation map is given as below figure.

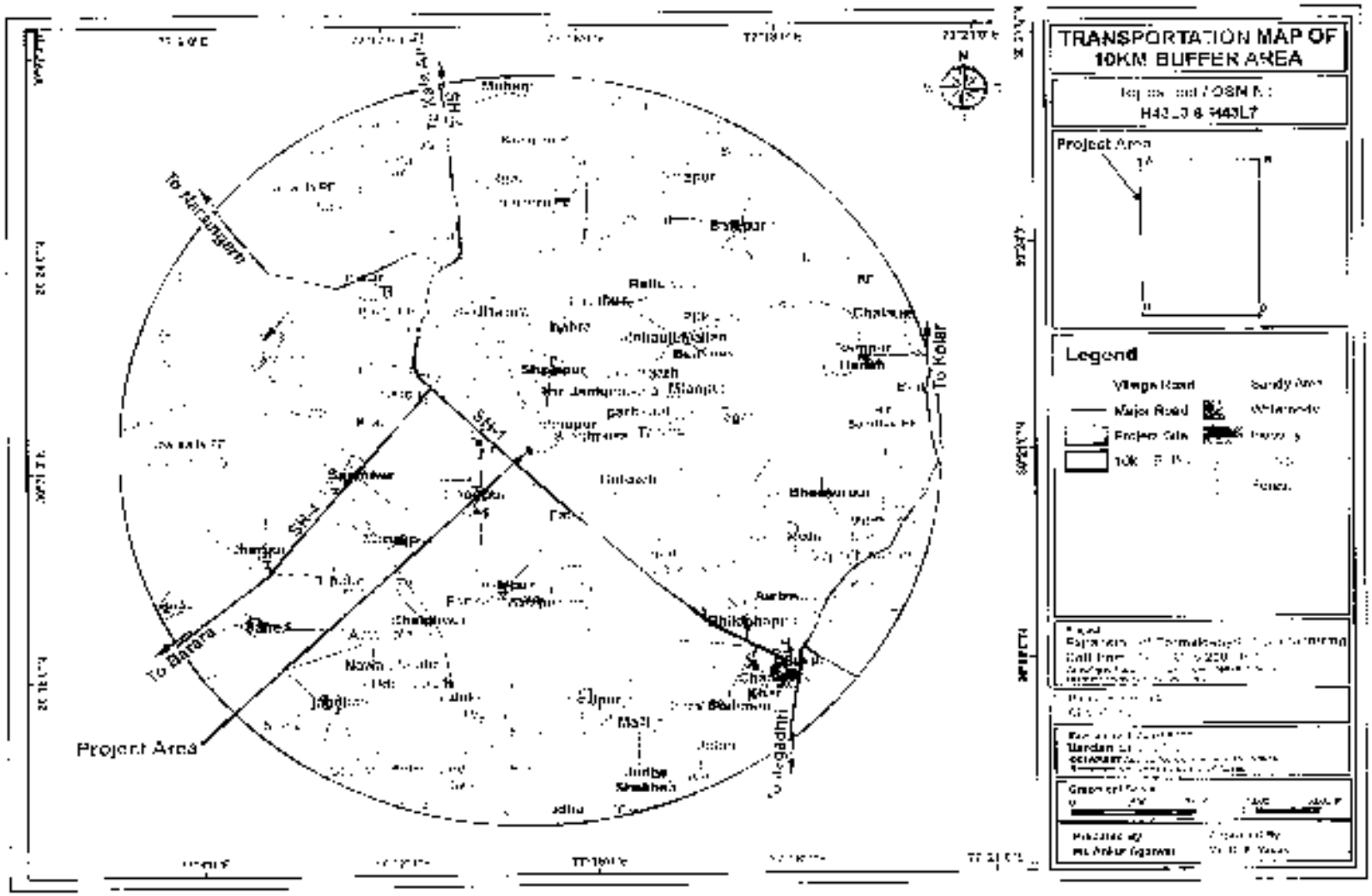


Figure 3.25: Transportation Map

CHAPTER 4: ANTICIPATED ENVIRONMENT IMPACT AND MITIGATION MEASURES

4.1 INTRODUCTION

This chapter presents identification and appraisal of various impacts from after expansion of the plant in the study area. Generally, the environmental impacts can be categorized as either primary or secondary. Primary impacts are those which are attributed directly to the project and secondary impacts are those which are indirectly induced and typically include the associated investment and changed patterns of social and economic activities by the proposed action

Quantification of assessments in terms of measurable units would be the ideal method for impact assessment. Mathematical models are the best tools to quantitatively describe cause-effect relationships between sources of pollution and different components of environment. However, due to lack of information/data, uncertainties involved and complex interrelationships between various sectors of environment; it is not always possible or at least not easily achievable. In such cases, only qualitative predictions have been made based on experience and judgments.

The Environment Management Plan (EMP) is required to ensure sustainable development in the study area (10 km) of the proposed expansion plant site, hence it needs to be an all encompassive plan for which the proposed industry, Regulating agencies like pollution control board working in the region and more importantly the affected population of the study area need to extend their co-operation and contribution.

The affected environmental attributes in the region are air quality, water quality, soil, land use, ecology and public health. The management action plan aims at controlling pollution at the source level to the extent possible with the available and affordable technology followed by treatment measures before they are discharged. The proposed expansion project would create impact on the environment in two distinct phases:

i. During the construction phase which may be regarded as temporary or short term;
ii. During the operation phase which would have long term effects.

Various imparts during the operation phase and during the minor construction phase on the environmental parameters have been studied and mitigation measures for the same are discussed briefly below and elaborated in the subsequent sections.

4.2 IMPACT IDENTIFICATION

Considering that identification of significant environmental impact is essential in the preparation of EIA report, an attempt has been made here through the use of "Activity Effect" matrix.

Table 4.1: Impact Identification Matrix during Construction Phase

Activities	Environmental Attributes										
	Air	Water	Soil	Noise	LU/LC	Hydro geology	Geology	SHW	Risk& Hazardous	Ecology and Biodiversity	Socio Economic
Material Supply (Transportation)	✔	-	-	✔	-	-	-	-	✔	-	✔
Storage	✔	-	-	✔	-	-	-	✔	✔	-	✔
Movement of Machinery	✔	-	-	✔	-	-	-	✔	✔	-	✔
Land Development/ Green belt Development	✔	✔	✔	✔	✔	✔	✔	-	✔	✔	✔
Construction of Building	✔	✔	✔	✔	✔	-	-	✔	✔	-	✔
Garbage Disposal	✔	-	✔	✔	-	✔	-	✔	✔	✔	✔
Operation of DG set	✔	-	-	✔	-	-	-	✔	✔	✔	✔
Painting and Finishing	-	-	-	✔	-	-	-	✔	✔	✔	✔

Table No 4.2: Impact Identification Matrix during Operation Phase

Component	Parameter Factor	Raw materials handling and storage, access, parking, and loading/ Unloading	Chemical reactions of unit processes and unit operations - Cracking process, Dryers, Reactors, Distillation units operation, Product separation and refinement	Process Emission	Flue Gas Emission	Water Consumption (Source: Bore well)	Wastewater Generation, its treatment and disposal	Storage of toxic and flammable chemicals Solid & Hazardous	Solid & Hazardous waste Management
Soil	Contamination	✔	✔	-	-		-	✔	✔
	Soil quality	✔	✔	-	-	✔	-	✔	✔
	Reduction of farmland productivity	✔	✔	-	-	-	-	-	-
Resources	Fuels/ Electricity	✔	✔	✔	✔	✔	✔	-	✔
Water	Alteration of Hydraulic	-	-	-		✔	-	-	
	Water Quality	-		-		-	✔	-	
Air	Air Quality	✔	✔	✔	✔		✔	✔	
Noise	Noise Environment	✔	✔	-	-	✔	✔	-	-
Biological	Effect on trees & shrubs	✔	✔	✔	✔	-	-	✔	✔

Component	Parameter / Factor	Raw materials handling and storage, access, parking, and loading/ Unloading	Chemical reactions of unit processes and unit operations - Cracking process, Dryers, Reactors, Distillation units operation, Product separation and refinement	Process Emission	Flue Gas Emission	Water Consumption (Source: Bore well)	Wastewater Generation, its treatment and disposal	Storage of toxic and flammable chemicals Solid & Hazardous	Solid & Hazardous waste Management
Social	Disturbance of habitats by Noise and vibration	✔		-	-	✔	✔		✔
	Generation of temporary and permanent jobs	✔	✔	-		-	✔	-	✔
	Income for the state and private sector	✔	✔	-	-	-			
	Training in new technology and new skill to worker.	-	✔	-	-	-	✔	-	✔
	Health	✔	✔	✔	✔		✔	✔	✔

4.3 ASSESSMENT OF SIGNIFICANCE OF IMPACTS (CRITERIA FOR DETERMINING SIGNIFICANCE, ASSIGNING SIGNIFICANCE) & MITIGATION MEASURES

This section is devoted to the assessment of impacts due to the proposed expansion industrial project, which are the most important components of EIA. Assessment involves determination of nature and extent of impacts due to the industrial activities or the actions involved. Here it is determined whether the environmental impacts will be:

1. Direct or Indirect
2. Impact of low, medium, or high significance

Based on Environmental Impact Analysis, the Environmental Impacts under this step are quantitatively and qualitatively assessed.

Quantitative assessment with the help of a mathematical model has been done wherever possible. In other cases, the impact assessment has been qualitative which is based on available scientific knowledge and judgement. The mathematical model used for assessment in the present study includes "AERMOD" Dispersion Model for air quality. For other cases i.e. Water, Noise, Land/Soil, Ecology, Socio-economic etc., the available scientific knowledge and judgements have been used.

- ✓ N (D): Negative Direct
- ✓ N (ID): Negative Indirect
- ✓ P (D): Positive Direct
- ✓ P (ID): Positive Indirect
- ✓ LS: Low Significance
- ✓ MS: Medium Significance
- ✓ HS: High Significance
- ✓ ST: Short Term
- ✓ LT: Long Term

Table 4.3: Impact Assessment Matrix during Construction Phase

Activities	Environmental Attributes										
	Air	Water	Soil	Noise	LU/LC	Hydro geology	Geology	SHW	Risk Hazardous	Ecology and Biodiversity	Socio Economic
Material Supply (Transportation)	N(D) HS ST	-	-	N(D) HS ST	-	-	-	-	N(D) HS ST	-	P(D) HS ST
Storage	N(D) HS ST	-		N(D) HS ST	-	-		N(D) HS ST	N(D) HS ST	-	P(D) HS ST
Movement of Machinery	N(D) HS ST	-		N(D) HS ST	-	-		N(D) HS ST	N(D) HS ST	-	P(D) HS ST
Land Development/ Green belt Development	N(D) HS ST	N(D) LS LT	N(D) LS ST	N(D) HS ST	N(D) HS LT	N(D) LS LT	N(D) HS LT	-	N(D) HS ST	N(D) HS LT	P(D) HS ST
Construction of Building	N(D) HS ST	N(D) LS LT	N(D) LS ST	N(D) HS ST	N(D) HS LT	-	-	N(D) HS ST	N(D) HS ST	-	P(D) HS ST
Operation of DG set	N(D) HS ST	-	-	N(D) HS ST	-	-		N(D) HS ST	N(D) HS ST	N(D) HS ST	P(D) HS ST
Painting and Finishing		-	-	N(D) HS ST		-	-	N(D) HS ST	N(D) HS ST	N(D) HS ST	P(D) HS ST

Table No 4.4: Impact Assessment Matrix during Operation Phase

Component	Parameter Factor	Raw materials handling and storage, access, parking, and loading/ Unloading	Chemical reactions of unit processes and unit operations - Cracking process, Dryers, Reactors, Distillation units operation, Product separation and refinement	Process Emission	Gas Emission	Water Consumption (Source: Borewell)	Wastewater Generation, its treatment and disposal	Storage of toxic and flammable chemicals Solid & Hazardous	Solid & Hazardous waste Management
Soil	Contamination	N(D) HS LT	N(D) HS LT		-	-	-		-
	Soil quality	N(D) HS LT	N(D) HS LT	-	-	-		-	-
Water	Reduction of farmland productivity	-	-	-		-	-		-
	Fuels/Electricity	N(D) HS LT	N(D) HS LT	N(D) HS LT	N(D) HS LT	N(D) HS LT	N(D) HS LT	-	N(D) HS LT
Water	Alteration of Hydraulic	-	-	-	-	N(D) HS LT		-	-
	Water Quality	-	-	-	-	-	N(D) HS LT	-	-
Air	Air Quality	N(D) HS LT	N(D) HS LT	N(D) HS LT	N(D) HS LT	-	-	N(D) HS LT	

Noise	Noise Environment	N(D) HS LT	N(D) HS LT	-	-	-	N(D) HS LT	-	N(D) HS LT
Biological	Effect on trees & shrubs	N(D) HS LT	N(D) HS LT	N(D) HS LT	N(D) HS LT			N(D) HS LT	N(D) HS LT
	Disturbance of habitats by Noise and vibration	N(D) HS LT	N(D) HS LT	-	-	N(D) HS LT	N(D) HS LT	-	N(D) HS LT
Social	Generation of temporary and permanent jobs	P(D) HS LT	P(D) HS LT	-	-	-	P(D) HS LT	-	P(D) HS LT
	Income for the state and private sector	P(D) HS LT	P(D) HS LT	-	-	-	P(D) HS LT	-	P(D) HS LT
	Training in new technology and new skill to worker	-	P(D) HS LT	P(D) HS LT	P(D) HS LT	-	P(D) HS LT	-	P(D) HS LT
	Health	N(D) HS LT	N(D) HS LT	N(D) HS LT	N(D) HS LT	N(D) HS LT	N(D) HS LT	N(D) HS LT	N(D) HS LT

4.4 AMBIENT AIR QUALITY MODELING

Air Dispersion Model

The impact has been predicted separately for operation phase of the project. During operation phase, air emissions both gaseous and fugitive will be on account of process emissions from stacks, transportation of men and material.

Air Quality Modeling

The Gaussian Dispersion Modeling (GDM) is used for prediction of dispersion of air emission and the computation of Ground Level Concentration (GLC) up to a specified distance from source. The fundamental model is given below:

$$c(x,y,z) = \frac{Q}{2\pi u \sigma_y \sigma_z} \exp\left(\frac{-y^2}{2\sigma_y^2}\right) \exp\left(\frac{-(z-h)^2}{2\sigma_z^2}\right) - \exp\left(\frac{-(z+h)^2}{2\sigma_z^2}\right)$$

Where c is a concentration at a given position, Q is the source term, x is the downwind, y is the crosswind and z is the vertical direction and u is the wind speed at the h height of the release. The σ_y, σ_z deviations describe the crosswind and vertical mixing of the pollutant. The above equation describes a mixing process that results in a Gaussian concentration distribution both in crosswind and in vertical direction, centered at the line downwind from the source. Gravitational settling and chemical or radioactive decays are neglected.

AERMOD VIEW: AERMOD is an air dispersion-modeling package, which seamlessly incorporates the popular USEPA Model AERMOD into one interface without any modifications to the models. These models are used extensively to assess pollution concentration and deposition from a wide variety of sources.

AERMET: In order to carry out the air dispersion modeling project using the AERMOD, it is necessary to process the meteorological data of study area being modeled. The collected meteorological data has been pre processed using, AERMET program. The AERMET Program is a meteorological pre-processor, which prepares hourly surface data and upper air data for use in the AERMOD air quality dispersion model.

Parameter	Details
Model name	AERMOD 9.5.0
Model type	Steady state Gaussian plume air dispersion model

Averaging time	24 Hour
Source type	Point source and line source
Boundary limits	10 km
Surface meteorological data	Site specific data processed by AERMET

Stack details

Impacts on ambient air during operation phase would be due to emissions from flue gas stacks (Total 1 Nos- Boilers (600kg/ hr) & 2 DG set (350 KVA each)

Emissions were analyzed for their impacts on the GLC for various distances using the dispersion modeling guidelines given by the Central Pollution Control Board, New Delhi and the dispersion modeling software AERMOD of the United States Environment Protection Agency (USEPA)

Table 4.5: DG Set details

Stack attached to	Fuel Used	Stack Height	Dia
Boiler (600 KPH- existing)	HSD	30 m	0.3 m
DG Set (350 KVA existing)	HSD	6 m	0.2 m
DG Set (350 KVA - proposed)	HSD	6 m	0.2 m

4.4.1 Meteorological Data

The meteorology of the project area plays very important role in dispersion of pollutants and buildup of pollution within the atmosphere. In the present study, one season (March 2021 to May 2021) meteorological data has been taken to find the dispersion of pollutant concentration. The mixing height for study period, which is an important parameter to express the dispersive potential of atmosphere, has been taken from the atlas of hourly mixing height and assimilative capacity of atmosphere in India (Attri, S.D. et al., 2008).

4.4.2 Results

The maximum cumulative GLC concentration of $PM_{2.5}$ viz. 96.8229 ug/m³ was predicted inside the study area. As the distance from source increases, the incremental concentration of PM10 drops drastically due to settling of PM10 particles under gravity.

The maximum cumulative GLC concentration of $PM_{2.5}$ viz. 57.4012 ug/m³ was predicted inside the study area.

The maximum cumulative GLC concentration of SO_2 viz. 18.4038 ug/m³ was predicted inside the study area.

The maximum cumulative GLC concentration of NOx viz. 37.5017 ug/m³ was predicted inside the study area.

Table 4.6: Predicted GLC at Ambient Air Quality Monitoring Stations

Location	Village	Max Baseline Concentrations					Predicted GLC - AERMOD					Cumulative GLC				
		PM10	PM2.5	Nox	SO2	CO	PM10	PM2.5	Nox	SO2	CO	PM10	[illegible]	Nox	SO2	[illegible]
		(µg/m³)														
A1	Project Site	96.8	50.6	30.2	12.6	0.98	0.02294	0.00863	0.0265	0.0834	0.00001 2	96.82 29	50.60 86	30.22 65	12.53 51	0.980012
A2	Butgarh	91	57.4	31.8	18.2	0.95	0.00372	0.00119	0.0042 2	0.01085	1.5E-05	91.00 31	57.40 12	31.80 42	13.21 95	0.950002
A3	Parbholi	90.8	57.2	37.5	18.4	0.94	0.00109	0.00042	0.0017	0.00379	6.9E-07	90.80 11	57.20 04	37.50 17	18.40 28	0.940002
A4	Fatehgarh Tumbi	94.2	57.2	31.8	15.5	0.96	0.00355	0.00149	0.0061 3	0.01512	1.5E-06	94.20 39	57.20 15	37.80 67	15.51 21	0.960003
A5	Sansau/ Bada Marwa	89.3	50.6	30.2	14.8	0.94	0.00387	0.0015	0.0061 6	0.01242	2.5E-06	89.50 39	50.60 15	30.20 62	14.81 24	0.940003
A6	Bhogpur	93.1	54.2	31.4	13.2	0.91	0.00242	0.00093	0.0034 9	0.0082	1.4E-06	93.10 24	54.20 09	31.40 35	13.20 82	0.910001
A7	Rajpur	88.8	50.5	23.8	8.1	0.96	0.0053	0.00205	0.0082 1	0.01776	3.4E-06	88.80 53	50.50 21	23.80 82	8.117 76	0.960003
A8	Sarawan	86.5	49.5	24	7.9	0.9	0.00171	0.00066	0.0029 1	0.00571	1.1E-06	86.50 17	49.50 07	24.00 29	7.905 71	0.900001

The contour maps showing the predicted concentration levels of PM10, PM2.5, SO2, NO2 of Study area are presented as below figures:

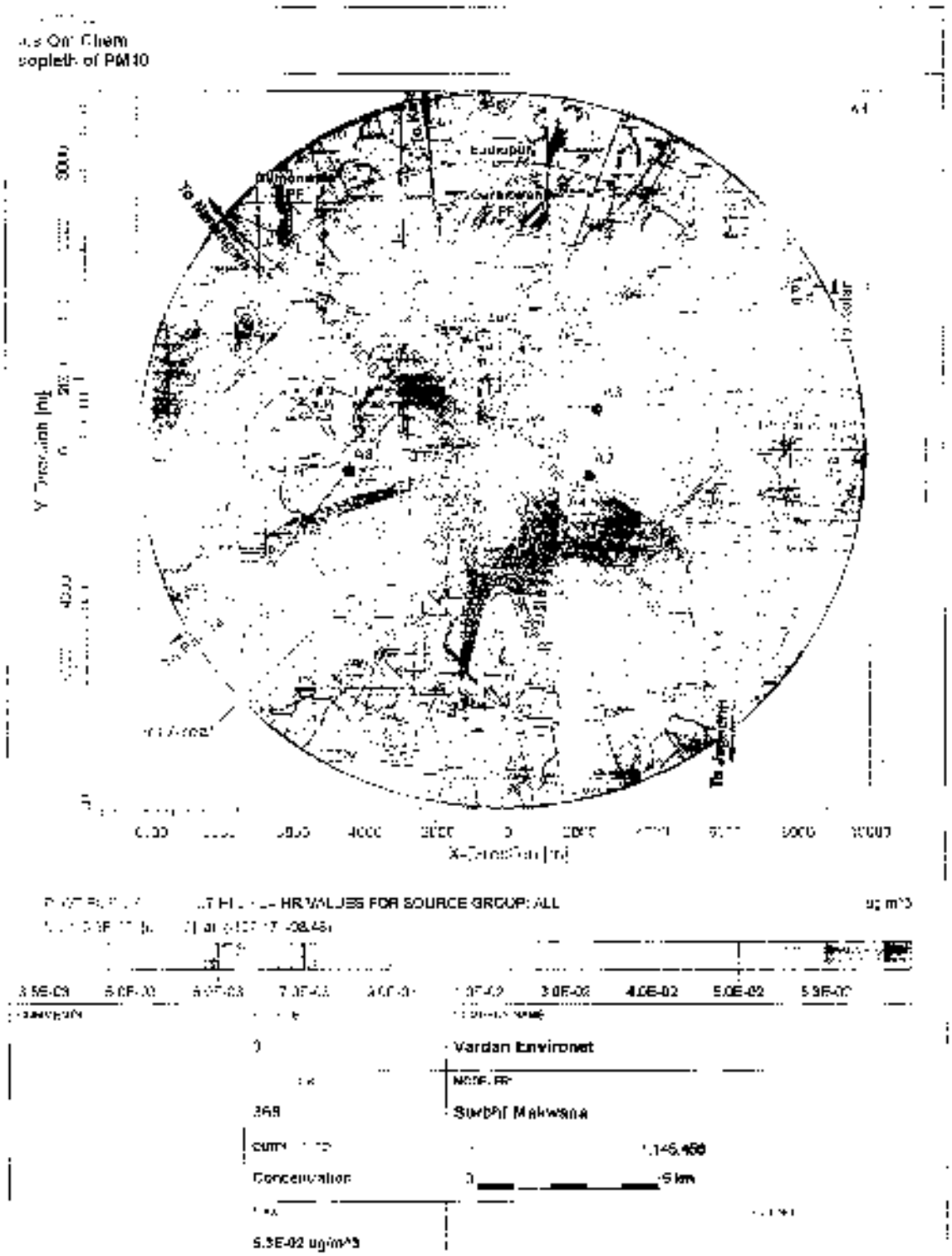


Figure 4.1: Spatial distribution of predicted GLCs of PM10

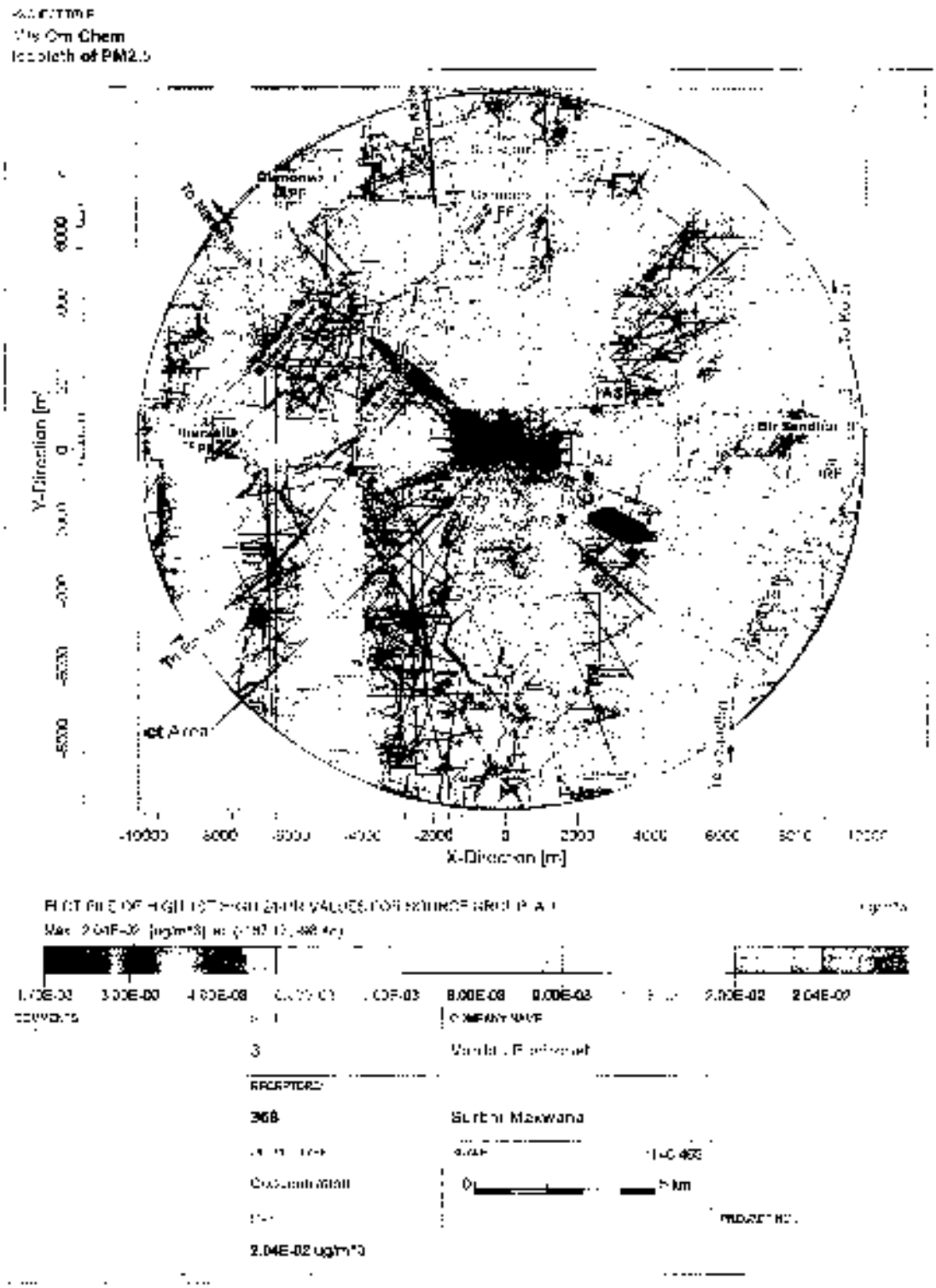


Figure 4.2: Spatial distribution of predicted GLCs of PM2.5

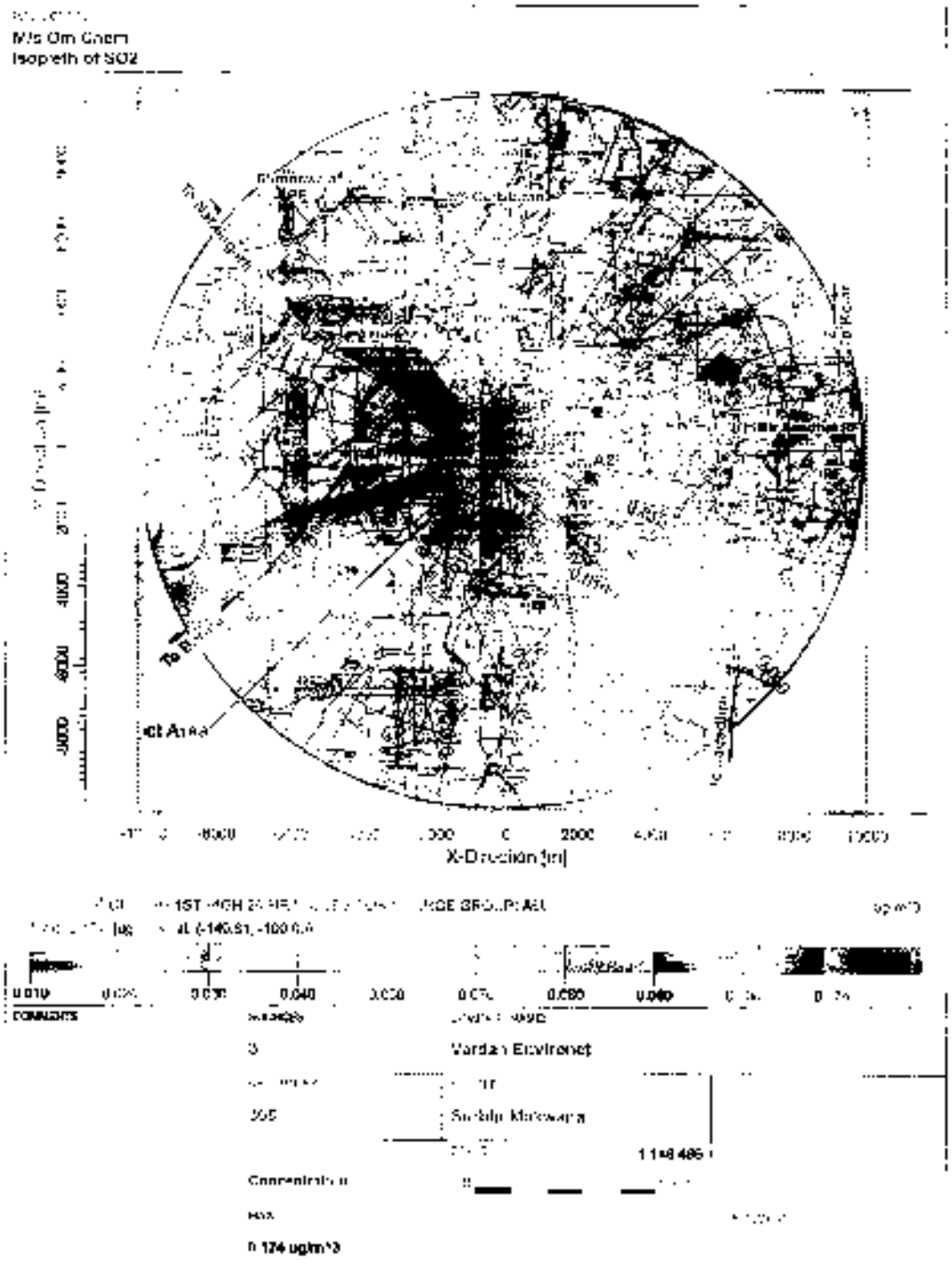


Figure 4.3: Spatial distribution of predicted GLCs of SO2

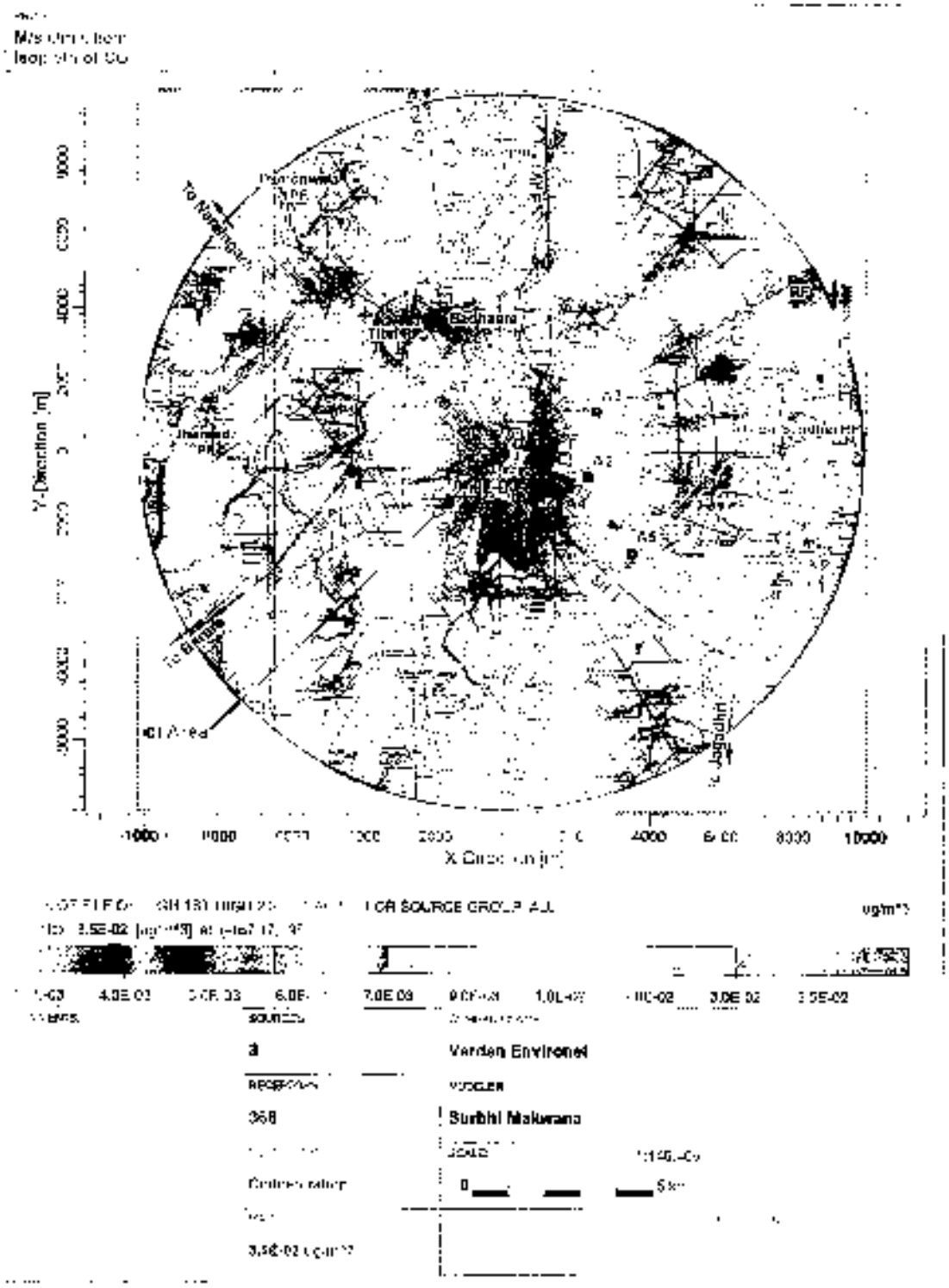


Figure 4.4: Spatial distribution of predicted GLCs of CO

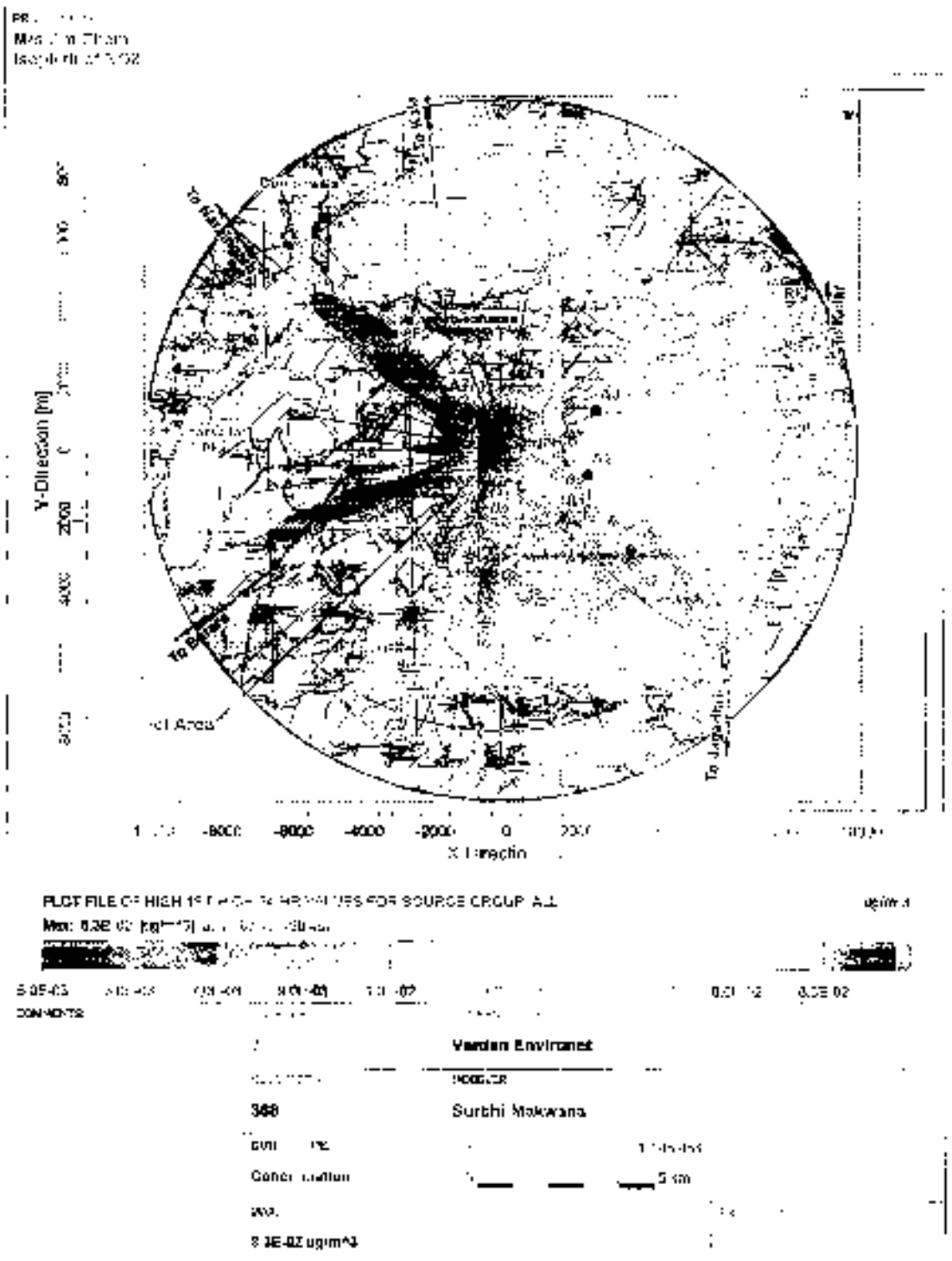


Figure 4.5: Spatial distribution of predicted GLCs of NOZ

4.5 MITIGATION MEASURES FOR IMPACTS ON ENVIRONMENT

4.5.1 Air Environment

(A) Impacts on Air Environment (Construction Phase)

- During construction phase, suspended particulate matter will be the main pollutant, which will be generated due to the expansion activities and vehicular movement, because of vehicular traffic there may be a marginal increase in the concentrations of NOx and SO_2.
- Fumes and gases near the work area due to welding & cutting activities.
- Dust emission due to removal of scrap materials, remaining and waste construction materials, construction machinery, dismantling, and removal of temporary structures, site cleaning and disposal of these materials.

Mitigation Measures

- The impact of such activities would be temporary and restricted to the construction phase only and will be confined within the project premises.
- Proper upkeep and maintenance of vehicles, sprinkling of water on roads at construction site, providing sufficient vegetation etc. are some of the proposed measures that would greatly reduce the impact on the air quality during the construction phase of the project.
- The vehicular impacts on the environment will be minimized by proper maintenance and limitation on speed.

(B) Impacts on Air Environment (Operation Phase)

4.5 MITIGATION MEASURES FOR IMPACTS ON ENVIRONMENT

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- The vehicular impacts on the environment will be minimized by proper maintenance and limitation on speed.

(B) Impacts on Air Environment (Operation Phase)

- Main sources of air emission will be from the DG and Boiler.

Mitigation Measures

- Scrubber will be installed for scrubbing the residual Formaldehyde from the main product stream which also controls the odour problem.
- Online Air monitoring system for stack emission (for Particulate Matter) will be installed & transmission of online data to Haryana State Pollution Control Board and CPCB will be done.
- Water sprinkling will be done during unloading/loading of trucks to control fugitive emissions
- Pucca roads within the premises, water sprinkling in dusty areas and greenbelt/green cover in 30.50% of total area to arrest the fugitive dust emission.

4.5.2 Water Environment

(A) Impacts on Water Environment (Construction Phase)

At the time of construction activities water will be required mainly for construction and domestic use. The main source of pollution and their anticipated impacts are mentioned below:

- Run off from construction site
- Health hazards due to unhygienic water

Mitigation Measures

All identified impacts during construction phase will be negligible, temporary and restricted to the plant boundary. Proper and effective mitigation measures will be implemented to minimize the impact and ensure minimum effect on water resources. Proposed mitigation measures to avoid/ minimized predicted impacts are mentioned below:

- Construction activities will be limited within project boundary. It will be ensured that construction equipment are washed properly only at designated washing places to avoid any unnecessary runoff at project site.
- Sewage will be discharged in a septic tank
- Drinking water and sanitation facilities will be provided to avoid unwanted impacts on health and ground water during construction.

(B) Impacts on Water Environment (Operation Phase)

- Ground water and soil pollution may occur if directly disposed on the land.
- Disposal of untreated wastewater may causes health problems in the community, change in physical and chemical properties of soil and water which ultimately affects organisms present.

Mitigation Measures

- This is a zero liquid discharge plant.
- Treated water from single stage evaporator is being reused in process and utilities.
- Treated water from sewage treatment plant will be used for gardening and the same will meet the quality required by local body regulations.

4.5.3 Land Environment

(A)Impacts on Land Environment (Construction Phase)

- Contamination of land due to spill of construction material may impact the land to some extent.

- There will be generation of garbage and sewage by the worker and other staff involved during construction phase. Untreated sewage and garbage disposal on land might pollute the land which may change physical and chemical properties of soil. Change in soil properties ultimately affects the living organisms present in the soil.

Mitigation Measures

- Construction work will be very minor as the plant is already developed.
- Spillage & leakage of fuel will be prevented by providing well lined/ paved area for the works having potential of leakage/ spillage of fuel or material. Hence contamination of land due to spillage/ leakage of fuel or construction material with soil would not arise.
- The sewage will be treated properly and garbage if any shall be disposed at a safe location to avoid the impact of these pollutants on the land.

(B) Impacts on Land Environment (Operation Phase)

- No major impact on land environment is investigated. No major civil work will be done which may create loss of Top soil, removal of vegetation. Apart from this land may be impacted if untreated waste water, waste oil disposed.drained openly which may contaminate the ground water.

Mitigation Measures

- The plant will implement zero level discharge concepts. Therefore, there will not be any negative impact on soil.
- Other hazardous solid wastes will be sent to authorized recycler or vendor.
- It is envisaged that there will not be any major impacts on land environment during the operation phase.

4.5.4 Noise Environment

(A) Impacts on Noise Environment (Construction Phase)

Predicted noise pollution sources and its impacts during the construction phase:

- Operation of construction machineries, equipment and associated mechanical works will generate the noise.
- Noise from Vehicular movement.

Noise pollution during construction phase is temporary and restricted to project boundary only.

Mitigation Measures

- Noise from Vehicular movement will be within the limit by implementing the policy of maintenance of Vehicles and PUC.
- Transportation of construction machinery or raw material shall be allowed only during daytime to reduce the impacts of increased noise.
- The construction equipment / machineries shall be turned off when not in use.
- Loud horn of vehicles will not be allowed at project area. Regular maintenance & lubrication of construction equipment & machineries will be undertaken to reduce the noise generation.
- Adequate Personal Protective Equipment (PPEs) like ear muff, ear plug, hand gloves, gum boots etc. will be provided to worker which helps to prevent occupation health problems.

(B) Impacts on Noise Environment (Operation Phase)

Ambient noise levels will be increased during operation phase due to machineries and other industrial activities. However, the impacts of noise during this phase will be confined within plant boundary or within the source of generation.

Mitigation Measures

- Vibrating pads & acoustic enclosure will be provided to noise generating equipment to control noise level within norms.
- It can be reduced by providing padding at various locations to avoid rattling due to vibration
- Latest technology and utmost care will be taken at the time of equipment / machinery installation.
- Lubrication of moving/ rotating part or component of machineries will be done on regular basis.
- The insulation provided for prevention of loss of heat and personnel safety gears will also act as noise reducers.
- Design and layout of building to minimize transmission of noise, segregation of particular items of plant.
- The operator's cabins (control rooms) will be properly (acoustically) insulated with special doors with observation windows.
- The operators working in the high-noise areas will be provided with ear-muffs or plugs.
- Acoustic enclosures and silencers will be provided to the Equipment wherever necessary
- Proper green belt will be developed to reduce the noise level.

- Thus, it is envisaged that there will not be any adverse impacts of noise. The greenbelt developed within the premises will have significant beneficial impacts on reduction of noise within the periphery and outside the boundary.

4.5.5 Occupational Health & Safety

(A)Impacts during the construction phase

- Accident may occur during operation of equipment, vehicular movement, construction activities etc.

Mitigation Measures

- PPE like helmets, goggles, safety mask, ear plugs, safety shoes, etc. will be provided to workers.
- Training to worker will help to minimize the probability of accident to large extent. Workers will get training considering their health aspects and hence the occupational health and safety impacts can be controlled.
- Effective implementation of the mitigation measures, proper care and training for the safety aspects will be followed which will controls occupational health or contagious diseases

(B) Impacts during Operation Phase

- It is envisaged that occupational health hazards shall be associated with operational activities such as spillage and exposure to the chemical, mechanical hazards like cuts and bits and electrical shocks.
- Accident due to fall from height, burn injury and trap in the machine or motors.

Mitigation Measures

- All safety signs will be placed at proper location.
- First aid kits will be made available at every department.
- Pre-employment Medical check up and periodical medical check up shall be undertaken to know the occupational health hazards at the early stage.
- Work permit system will be introduced to avoid the entry or un-authorized working to avoid the incidences which can lead to the accident if proper care is not taken.
- All arrangement required for Fire hydrant system shall made at every vulnerable location to have the firefighting facility.

- Apart from above, all required Fire Extinguishers shall be provided at appropriate locations.
- All staff and workers will be trained in firefighting operations and emergency preparedness plan or to tackle the accident.
- Apart from all engineering control measures, if required necessary PPEs shall be provided as last protection measures to the employees.
- Good housekeeping also plays important role in avoiding the undesirable incidences / accidents, hence good housekeeping practices will be employed throughout the factory premises

4.5.6 Socio Economic Environment

Impacts

Critically analyzing the existing environmental status of the socio-economic profile and visualizing the scenario with the project, the impacts of the project would be varied and may generate both positive and negative impacts of the proposed expansion project in the region that are stated below:

Positive Impacts:

- The expansion project does not involve any displacement of inhabitants and so issues like resettlement and rehabilitation does not figure in the study
- There was a growth in indirect jobs and business opportunities to the local about 12 personnel will be required for the project work and surrounding people will get jobs such as contractors, transporters and raw material suppliers etc. due to the proposed development in the area
- Demands of community services and commercial development also create additional employment for the poor strata of society by way of security guard, driver, maid/servant, sweeper, gardener etc.
- Educational facility, approach and internal road network, communicals as well as daily need shops are the major areas to experience positive impact due to the proposed township project
- Improvement is safety, security, banking and fire-fighting facility
- Health facility will also be improved with the development of the project.
- The project envisages bringing various other communities to the area and thereby enabling rapid enhancement of an urban environment.
- The sanitation and the aesthetic environment of the village would also improve with the coming of the project.

Adverse Impacts:

- Due to the proposed project activity, influx of population may increase during the construction phase. This may lead to strain on infrastructure facilities in the area as well as increase in population at local level. However, this impact is only for the short duration and temporary in nature
- The transport of construction materials to the project site will result in increased traffic in the impact area.
- Due to the frequent moving of the trucks at the site during construction the temporary traffic impacts like risks of accidents in the area will increase.
- Proposed development may have a significant impact on the community's ability to accommodate new residents and adapt to changes in the social environment for existing surrounding residents.
- The post project occupants from areas outside the region could introduce a potential effect on the local culture and habits.

Mitigation Measures

- Project proponent should take appropriate steps to keep environment clean and healthy during construction phase
- Provision of adequate drinking water, toilet and bathing facilities should be made available on project site
- Water shall be sprinkle/spread to suppress dust during construction phase to control air pollution and thereby avoid adverse health impact
- Proper living condition with appropriate facilities for residential labours should be provided
- Proper Training and awareness programme should be carried out so that the workers understand the importance of wearing the personal protective equipments.
- Periodic health checkup camps, distribution of medical aid and medicines shall be organized by project authority for villagers, contract laborers, employees and their family
- At the work place, first aid facilities shall be maintained at a readily accessible place with necessary appliances including sterilized cotton wool etc.
- Ambulance facility shall also be provided at the project site during emergency at the time of construction period

4.6 WASTE WATER MANAGEMENT

4.6.1 Domestic Effluent

Domestic wastewater will be treated through septic tank followed by soak pits & sludge from soak pit will be used as manure.

4.6.2 Process Waste

There will be no solid waste generated in the process. Any kitchen solid waste can be binned and disposed. There will be no liquid effluent generated from the process except once in 4 months when the plant is washed after shut down. The waste water will be treated in single stage evaporator and solid waste from evaporator will be sent to TSDF site. It is a ZLD project.

4.7 PROPOSED RAIN WATER HARVESTING

Rainwater harvesting is the accumulation and deposition of rainwater for reuse on-site, rather than allowing it to runoff. Rainwater can be collected from surface runoffs or roofs, and in many places the water collected is redirected to a deep pit (well, shaft, or borehole), a reservoir with percolation, or collected from dew or fog with nets or other tools. Its uses include water for domestic use, irrigation purpose, industrial uses etc. The harvested water can also be used as drinking water, longer-term storage and for other purposes such as groundwater recharge.

4.7.1 Design of Rainwater Recharge Structure

In designing any rainwater harvesting structure, capturing rainfall and runoff for local use is the key concept. Hard surface such as roof pavements and roads that decrease groundwater percolation constitute catchments and generate the high runoff which has to be diverted in to the storage tank & recharged in to ground water regime through simple filtration & injection well system for subsequent extraction by service wells. To improve water availability, rainwater harvesting is the most imminent & long-term solution.

In view of above, rainwater harvesting structures at this point can serve the purpose of arresting roof top rainwater and runoff generated through roads in the area. The design is based on average annual rainfall, peak rainfall intensity and the intake capacity of the water by the aquifers. In order to determine intake capacity of water by unsaturated zone & aquifers zone, the recharge tests were carried out in the investigated area.

For good design of rainwater harvesting, following points are to be kept under consideration:

a) Ideal location with good ground slope.

b) The location has adequate subsurface permeability of the aquifer to accommodate maximum recharge of rainwater through injection well.
c) Rate of filtration should exceed average rainfall intensity.
d) Clogging of filtration media should be cleaned periodically.

Total rooftop area of the plant is 1225.00 m² that may be connected through pipes and drains to Rainwater harvesting structures which has storage chamber and the percolation pits as per sites having rooms for recharge in resonance with average rainfall, catchment area and average rainfall intensity. Looking in to the average rainfall in this region and roof top area of the building rain water harvesting structures are designed in such a way that the cumulative runoff has to be preserved in such a way that water does not spill over and the entire rainwater falling over the total area goes in to the ground water body. Following dimensional parameters are considered for design of Rainwater harvesting system in the plant premises.

Design of Rain Water Harvesting Pit, Design considerations:

The important aspects to be looked into for designing the rainwater harvesting system to augment ground water resources are:

- Hydrogeology of the area including nature and extent of aquifer, soil cover, topography, depth to water level and chemical quality of water.
- The availability of source water one of the prime requisites for groundwater recharge basically assessed in terms of non-committed surplus monsoon runoff.
- Area contributing runoff like area available land use pattern, industrial, greenbelt, paved areas, roof top area etc.
- Hydrometrological characters like rainfall duration, general pattern and intensity of rainfall.

Table 4.7: Data Assumed and/or Available for Rain Water Harvesting

S. No.	Details	Values
1	Roof top Area (Plant & Storage area + Administrative offices, canteen, security) (m²)	1225.0
2	Average Annual rainfall (mm) for Yamunanagar District & surrounding areas (Source: Indian Metrological Dept.)	1063.0
3	Runoff coefficient for roof top 0.80-0.90	0.85

Table 4.8: Water Quantity of Runoff Water

Sr. No.	Details	Calculation (Annual Rainfall (m) x Area (m2) x Run-off coefficient	Total Runoff (Cubic m per Annum)
1	Roof top	1.063x1225x0.85	1106.85
Total Runoff water quantity/annum (m3/year)			1106.85
Potential harvested water (considering 20% loss due to evaporation, spillage, etc)			885.48

The industry is chemical based therefore recharge inside the plant site can have chances of contamination. As per the CGWA guidelines, only rooftop runoff can store and reuse for domestic purpose. Therefore, the industry has proposed a concrete storage tanks for storing of only rooftop runoff i.e. 885.48 m^3/year.

Tank size will be: 15m x 13m x 5m = 975 m^3

A typical size of rectangular tank will be proposed having dimensions of about 15m*13m*5m (Length*Width*Depth) to store and utilize the water for domestic purpose.

Observation:

- The industry is chemical based therefore recharge inside the plant site can have chances of contamination therefore, the industry has proposed a storage tanks for storing of approx. 975 cubic meter/year water and use the same for domestic purposes (Flushing).
- A typical size of about (1) one rectangular recharge tank will be proposed having dimensions of about 15*m*13m*5m. (Length*Width*Depth) to store and utilize the water for domestic purposes.

CHAPTER 5: ANALYSIS OF ALTERNATIVES

5.1 PREAMBLE

M/s Om Chem. is seeking Environmental clearance for Capacity Expansion of Formaldehyde Manufacturing Unit in Existing Facility from 100 TPD to 200 TPD at Village Kurali, Sahapur Road, Tehsil Bilaspur, District Yamuna Nagar, Haryana under violation. The alternative options considered for the existing unit were:

- Environmental Sensitivity
- Technology

5.1.1 Selection of Location

Selection of location in this case is not applicable as the project is for expansion of existing plant and will be installed within the existing plant area.

5.1.2 Environment Sensitivity of the Location

Environment sensitivities present in the study area of 10 km around the project site are given in Chapter 3.0.

- There is no Wildlife Sanctuary/National Park/Bio-sphere Reserve/Habitat of Migratory birds within 10 km radius from the project site.
- There is no Tiger Reserve / Elephant Reserve / Turtle Nesting Ground within 10 km radius from the project site.
- There is no Archeological Monument / Defense installation within 10 km radius from the project site.
- There is no Forest land in the project site

The location is having following advantages

- Proximity to the electricity grid.
- Access to markets.
- Both skilled and unskilled labour is available near the site.
- Good connectivity for transportation of inward and outward materials.

5.1.3 Selection of Technology

The existing technology used by M/s OM Chem., for manufacturing of Formaldehyde is one of the best and proven technology, hence no alternative technology has been analyzed.

CHAPTER 6: ENVIRONMENTAL MONITORING PROGRAMME

6.1 INTRODUCTION

Environmental Monitoring is an essential tool for sustainable development and ensuring most effective implementation and monitoring of Environmental Management Plan and mitigation measures. It is also very essential to keep updating the environmental management system for effective conservation of environment during construction and operation phase. The environment monitoring plan enables environmental management system with early sign of need for additional action and modification of ongoing actions for environment management, improvement and conservation. It provides exact idea for mitigation measures to be implemented as it is linked with actual degradation of environmental quality due to the project activities. Hence, monitoring of critical parameters of environmental quality is very essential in the routine activity schedule of project operation.

An Environmental Monitoring Program will be scheduled for the following major objectives:

- Assessment of the changes in environmental conditions, if any, during the project operation/construction activities.
- Monitoring and tracking the effectiveness of Environment Management Plan and implementation of mitigation measures planned.
- Identification of any significant adverse transformation in environmental condition to plan additional mitigation measures.

6.2 ENVIRONMENTAL MONITORING

It is imperative that proponent should set up regular monitoring locations to assess the environmental health in the post period. A post study monitoring program is important as it provides useful information on the following aspects:

- It helps to verify the predictions on environmental impacts presented in this study.
- It helps to indicate warnings of the development of any alarming environmental situations and thus provide opportunity for adopting appropriate control measures in advance.

The environmental monitoring points will be decided considering the environmental impacts likely to occur due to the operation of proposed project as the main scope of monitoring program is to track, timely and regularly, the change in environmental conditions and to take timely action for protection of environment. Post study

monitoring program including areas, number and location of monitoring stations, frequency of sampling and parameters to be covered has been given in the table below:

Table 6.1: Environmental Monitoring Program

Sr.No.	Item	Parameters	Frequency	Methodology
1.	Ambient Air quality	PM_{10}, $PM_{2.5}$, SO_2, NO_x, CO, etc.	3-4 Location (Main Gate, Process Area, Near Boilers and DG Sets Half Yearly, 24 Hr. at each location).	IS-5182, CPCB (guidelines for measurement of Ambient Air Pollutants).
2.	Stationary Emission from Stack	PM, SO_2, NO_x	Quarterly (Continuous Stack Monitoring, by provided Online Monitoring station.	IS-11255 (guidelines for stack emission)
3.	Process emission	Fugitive gaseous pollutant expected	Half Yearly	
4.	Surface water and ground water	pH, Temperature, EC, Turbidity, Total Dissolved Solids, Calcium, magnesium, Total hardness, Total Alkalinity, Chlorides, Sulphates, Nitrates, DO, COD, BOD, oil and Grease, Metals expected in effluent.	Half Yearly	Standard limits: Surface- IS:2296 Ground- IS 10500 Sampling Methodology- IS: 3025
5	Liquid Effluent/Waste Water	Physical and chemical parameters with organic content	Once in every week	Sampling Methodology- IS: 3025
6.	Noise	Equivalent noise level- dB (A)	Half Yearly	IS:9989 (Assessment of noise with respect to community response)
7.	Solid/Haz. Waste	As per CPCB/ HSPCB Direction	As per CPCB/ HSPCB Direction	As per CPCB/ HSPCB Direction
8.	Greenbelt	Number of plantation (Units), Number of Survived plants/ trees, Number of poor plants/ Trees	Regular basis	-

9.	Environmental Audit	As per Direction of ISO 14001	Once in a Year	-

6.2.1 Monitoring Methodology

Monitoring of environmental samples will be done as per the guidelines provided by MoEF&CC/ CPCB. The method followed will be recommended / standard method approved / recommended by MoEF&CC /CPCB/SPCB.

6.2.2 Reporting and Documentation

The records of the monitoring program will be kept on regular basis for all aspects of the monitoring. Separate records for water, wastewater, solid wastes, air emission, soil and manure/compost will be prepared and preserved regularly. Immediately upon the completion of monitoring as per the planned schedule, report will be prepared and necessary documents will be forwarded to the concerned authorities. Methodology of monitoring (sampling and analysis) will be prepared as separate documents as SOP (Standard Operating Procedure) wherever required. The records showing results/ outcome of the monitoring programs will be prepared as per the requirement of the schedule mentioned above. Regularly, these documents and records will be reviewed for necessary improvement of the monitoring plan/ mitigation measures/ environmental technologies as well as for necessary actions of environmental management cell.

Table 6.2: Post Project Environmental Monitoring Locations

S.No.	Environmental Components	Monitoring Points/Locations
1.	Ambient Air Quality	Ambient air quality monitoring at 3-4 locations within the plant premises (Main Gate, Process area, Near Boiler, DG Sets etc.)
2.	Water and Waste water	Intake Raw Water Quality
3.	Noise	At all source and outside the Plant area. At least 3 points near/around the plant Boundary.
4.	Greenbelt/Vegetation Cover	Greenbelt area at Boundary and Garden
5.	Solid Waste	As per CPCB/HSPCB Direction in EC Letter and CTO Letter respectively.

6.2.3 Meteorology

Meteorology forms one of the important categories of environment in the area as it directly controls the levels of ambient air quality in the surrounding. As such, a meteorological station is proposed to be set up inside of plant at the highest point of building/ structure for recording of relevant meteorological parameters. The observatory should have equipment for recording the temperature, relative humidity,

rainfall, atmospheric pressure as well as wind speed and wind direction. The parameters are regularly monitored at meterological stations.

6.2.4 Ambient Air Quality

Monitoring of ambient air quality at inside and outside the plant should be carried out on a regular interval to ascertain the levels of harmful pollutants in the atmosphere. Ambient Air quality shall be monitored on quarterly basis for PM10, SOx and NOx. 24 hourly samples of ambient air quality at three locations outside and inside the plant, at least one in dominant wind direction, one in upwind direction shall be taken for PM10, SO2 and NOx quarterly basis at uniform interval at each location.

6.2.5 Surface Water Quality

Water quality constitutes another important area in post study monitoring programme. There are some major streams or perennial sources of surface water in the study area. Contamination of surface water during operation of Plant is possible. Surface water should be generally sampled once in six months and analyzed for physical, chemical and bacteriological parameters, including heavy metals and trace elements throughout the year.

6.2.6 Ground Water Qaulity

Ground water quality is also required to be checked periodically to detect any contamination arising out of operation of plant. Ground water at the bore well should be generally sampled in six months and analyzed for physical, chemical and bacteriological parameters, including heavy metals and trace elements.

6.2.7 Noise Level

Ambient noise should be monitored at inside and outside of the plant covering industrial, commercial residential and sensitive areas seasons for day time and night time Leq.

6.3 BUDGET AND PROCUREMENT SCHEDULE

On regular basis Environment Management Cell will inspect the necessity and availability of the materials, technologies, services and maintenance works. The cell will make appropriate budget for the purpose. Regular record review for any change in financial requirement of environment management will be done and appropriate budget provisions will be made. Along with other budgets, budget for environmental management will be prepared and revised regularly as per requirement. The budget will include provisions for:

- Environmental Monitoring Program
- Operation and Maintenance of Equipments
- Emergency Purchase of necessary material, equipments, tools, services

- Greenbelt development
- Social and Environmental Welfare and Awareness programs / training (CSR)
- Annual Environmental Audit.

6.4 SUMMARY

The environment monitoring plan enables environmental management system with early sign of need for additional action and modification of ongoing actions for environment management, improvement and conservation. The environmental monitoring points will be decided considering the environmental impacts likely to occur due to the operation of proposed expansion project as the main scope of monitoring program is to track, timely and regularly, the change in environmental conditions and to take timely action for protection of environment Monitoring of environmental samples will be done as per the guidelines provided by MoEF&CC/CPCB/SPCB. Separate records for water, wastewater, air emission, soil and manure/ compost will be prepared and preserved regularly. Along with other budgets, budget for environmental management will be prepared and revised regularly as per requirement.

CHAPTER 7: ADDITIONAL STUDIES

7.1 PREAMBLE

In this chapter followings have been discussed:

- Public consultation / Public Hearing
- Hazard Identification and Risk Management

7.2 PUBLIC HEARING

Public hearing shall be incorporated after Public Hearing is conducted.

7.3 ACTION PLAN AS PER PUBLIC HEARING DEMAND

As per the Office Memorandum issued by MoEF&CC on 30.09.2020, the activities proposed shall be worked out based on the issues raised during the Public Hearing and social need assessment. The details of the activities to be undertaken and the budget allocated shall be prepared after Public Hearing is conducted.

7.4 INTRODUCTION TO RISK ASSESSMENT

Chemical industry is associated with potential hazards that effect to the employee and environment. In the event of failure (Leak or Catastrophic rupture) will require the assistance of emergency services to handle it effectively. The operation shall be taken out under the well management and control by the qualified safety manager.

Disaster management plan shall be formulated with an aim of taking precautionary steps to avert disasters and also to take such action after the disaster which limits the damage to the minimum.

(A) Objectives of Risk Assessment

Industrial accident results in great personal & financial loss. Managing these accidental risks in today's environment is the concern of every industry including chemical, because either real or perceived incidents can quickly jeopardize the financial viability of a business. Many facilities involve various manufacturing processes that have the potential for accidents which may be catastrophic to the plant, work force, and environment or public.

The main objective of the risk assessment study is to propose a comprehensive but simple approach to carry out risk analysis and conducting feasibility studies for industries and planning & management of industrial prototype hazard analysis in Indian context.

(B) Hazard Identification & Risk Assessment (HIRA)

Hazard analysis involves the identification and quantification of the various hazards (unsafe condition) that exist in the plant. On the other hand, risk analysis deals with the identification and quantification of the risk, the plant equipment and Personnel are exposed to due to accidents resulting from the hazards present in the plant.

Risk analysis involves the identification and assessment of risks to the population is exposed to as a result of hazards present. This requires an assessment of failure probability credible accident scenario, vulnerability of population etc.. Much of this information is difficult to get or generate consequently, the risk analysis in present case is confined to maximum credible accident studies and safety and risk aspect related to proposed production of Formaldehyde plant.

Activities requiring assessment of risk due to occurrence of most probable instances of hazard and accident are both onsite and off-site.

On-site

- Exposure to fugitive dust, noise, and other emissions
- Housekeeping practices requiring contact with solid and liquid wastes
- Emission/spillage etc. from storage and handling,

Off-site

- Exposure to pollutants released from offsite/ storage/ related activities
- Contamination due to accidental releases or normal release in combination with natural hazard
- Deposition of toxic pollutants in vegetation / other sinks and possible sudden releases due to accidental occurrences.

7.4.1 Raw Material Requirement (for production of Formaldehyde):

Raw material required for the manufacturing of Formaldehyde (i.e. Methanol) directly purchased from original importers at Kandla port, Gujarat along with the possibility from other network in Delhi and nearby states.

Table 7.1: Raw Material Requirement

Raw Material	Existing Requirement	Proposed Requirement	Total Requirement	Source
Methanol	50 TPD	50 TPD	100 TPD	Will be imported from other countries via Kandla Port, Gujarat.

7.4.2 Details of Finished products:

Table 7.2 Details of Finished Products

S.No.	Product	Quantity (MT/D)	Storage	Physical state
1.	Formaldehyde	200	MS Tank (lined with FRP)	Liquid

7.4.3 List of Hazardous Chemicals alongwith their Toxicity Level as per MSIHC Rules

Table 7.3: List of hazardous chemicals along with their toxicity levels as per MSIHC rules

S.No.	Chemicals	TLV	Toxicity level			Flammable limit				Chemicals Class	
			LD50 Oral mg/kg	LD50 Dermal mg/kg	LC50 Mg/l	LEL	UEL	FP°C	BP°C	Class	
1	Formaldehyde CAS No.- 50-00-0	0.1 ppm	100	270	203	6	36.5	50°C	96°C	B	Flammable, toxic, hazardous.
2	Methanol CAS No. 67-56-1	200 ppm	5628	15800	64000 ppm/ 4hr	6	36.5	12°C	64.5°C	A	Highly flammable
3	Silver Catalyst CAS No. 7440-22-4	0.1 mg/m³	N.A	N.A	N.A	N.A	N.A	-38°C	2210°C	-	Acute Toxic

The Toxicity level of hazardous chemicals as per Manufacture, storage and import of Hazardous Chemical (Amendment) Rules, 2000 (MSIHC) is shown as below:

Table 7.4: Toxicity index as per MSHC rules 2000

S.No	Toxicity	Oral Toxicity LD 50(mg/kg)	Dermal Toxicity LD50 (mg/kg)	Inhalation Toxicity LD 50(mg/kg)
1.	Extremely	<5	<40	<0.5
2.	Highly	>5-50	>40-200	>0.5-2.0
3.	Toxic	>50-200	>200-1000	>2.0-10

7.5 HAZARD IDENTIFICATION AND PREVENTIVE MEASURES

Man made disaster at Formaldehyde plant may occur due to following hazards:

- Fire in Electric Panels & fuel storage area
- Fire in Methanol and Formaldehyde storage area
- Run away reaction
- Explosion in Boiler house
- Cleaning of barrels, which have held chemical substances
- Fall of material

The potential hazardous areas and the likely accidents with the concerned area have been enlisted below **Table No 7.5.**

Table 7.5: Possible Hazardous Locations Onsite

S.No.	Hazardous Area	Likely Accident
1.	Boiler Area	Explosion
2.	Methanol and Formaldehyde storage area	Fire & toxic exposure
3.	Electrical rooms	Fire and electrocution
4.	Cable tunnel	Fire and electrocution
5.	Fuel storage area (HSD)	Fire hazard
6.	Chimney	Air pollution

A) Fire

Fire can be observed in the boiler area, storage yard, fuel spillage, Electrical rooms etc. due to accidental failure scenario.

B) Boiler Explosion/Explosion due to chemicals

Explosion may lead to release of heat energy & Pressure waves. Table 7.6 shows tentative list of Damages envisaged due to different heat loads.

Table 7.6 : List of Damages Envisaged at Various Heat Loads

S.No.	Heat loads	Likely Accident

	(kW/m²)	Damage to Equipment	Damage to People
1.	37.5	Damage to process equipment	100% lethality in 1 min. 1% lethality in 10 sec
2.	25.0	Minimum energy required to ignite wood	50% Lethality in 1 min. Significant injury in 10 sec
3.	19.0	Maximum thermal radiation intensity allowed on thermally unprotected equipment	--
4.	12.5	Minimum energy required to melt plastic tubing	1% lethality in 1 min
5.	4.0	--	First degree burns, causes pain for exposure longer than 10 sec.
6.	1.6	--	Causes no discomfort on long exposures

Source: World Bank (1988). Technical Report No. 55: Techniques for Assessing Industrial Hazards. , Washington, D.C.: The World Bank.

Table 7.7: List of Damages Envisaged at Various Overpressure Level

Overpressure (bar)	Damage
0.001	Annoying noise (137 dB if of low frequency 10-15 Hz)
0.002	Loud noise (143 dB, sonic boom glass failure
0.003	Occasional breaking of large glass windows already under strain
0.007	Breakage of small windows under strain
0.010	Typical pressure for glass breakage
0.020	Projectile limit; some damage to house ceilings; 10% window glass broken
0.027	Limited minor structural damage
0.034	Large and small windows usually shattered; occasional
0.034 to 0.068	damage to window frames
0.048	Minor damage to house structures
0.068	Partial demolition of houses, made uninhabitable
0.068 to 0.136	Corrugated asbestos shattered; corrugated steel or aluminum panels, fastenings fail, followed by buckling, wood panels (standard housing) fastenings fail, panels blown in

0.088	Steel frame of clad building slightly distorted
0.136	Partial collapse of walls and roofs of houses
0.136 to 0.204	Concrete of cinder brick walls, not reinforced, shattered
0.157	Lower limit of serious structural damage
0.170	50% destruction of brickwork of houses
0.204	Heavy machines (3,000 lb) in industrial building suffered little damage: steel frame building distorted and pulled away from foundations.
0.204 to 0.272	Frameless, self-framing steel panel building demolished: rupture of oil storage tanks
0.272	Cladding of light industrial buildings ruptured
0.340	Wooden utility poles snapped; tall hydraulic press (40,000 lb) in building, slightly damaged
0.340 to 0.476	Nearly complete destruction of houses
0.476	Loaded train wagons overturned
0.476 to 0.544	Brick panels, 8-12 inches thick, not reinforced; heavy machine tools (7,000 lb) moved and badly Loaded trains boxcars completely demolished
0.612	Probable total destruction of buildings; heavy machines tools (7,000 lb) moved and badly damaged, very heavy machines tools (12,000 lb) survived

(CCPS guidelines)

C) Electrocution

Fatal Accident due to carelessness in handling electrical appliances may lead to electrocution.

D) Consequences of Toxic Release

The effect of exposure to toxic substance depends upon the duration of exposure and the concentration of the toxic substance.

Short-term exposures to high concentration give Acute Effects while long term exposures to low concentrations result in Chronic Effects.

Only acute effects are considered under hazard analysis since they are likely credible scenarios. These effects are:

- Irritation (respiratory system skin, eyes)

- Narcosis (nervous system)
- Asphyxiation (oxygen deficiency)
- System damage: (blood organs)

Following are some of the common terms used to express toxicity of materials.

- Threshold Limit Value (TLV): It is the permitted level of exposure for a given period on a weighted average basis (usually 8 h for 5 days in a week)
- Short Time Exposure Limit (STEL): It is the permitted short term exposure limit usually for a 15 minutes exposure.
- Immediately Dangerous to life and health (IDLH): It represents the maximum concentration of a chemical from which, in the event of respiratory failure, one could escape within 30 minutes without a respirator and without experiencing any escape/ impairing (eg. Severe irritation) or irreversible health effects.
- Lethal Concentration Low (LCLo): It is the lowest concentration of a material in air, other than LC50, which has been reported to cause a death in human or animals.
- Toxic Concentration Low (TCLo): It is the lowest concentration of a material in air, to which humans or animals have been exposed for any given period of time that has produced a toxic effects in humans or produced carcinogenic, neoplastigenic or teratogenic effect in humans or animals.
- Emergency Response Planning Guidelines 1 (ERPG1): The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour (without a respirator) without experiencing other than mild transient adverse health effects or without perceiving a clearly defined objectionable odor.
- Emergency Response Planning Guidelines 2 (ERPG2): The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms that could impair their abilities to take protective action.
- Emergency Response Planning Guidelines 3 (ERPG3): The maximum airborne concentration below which it is believed nearly all individuals could be exposed for up to 1 hour without experiencing or developing life-threatening health effects.

F) Meteorology/Stability Class

Atmospheric stability plays an important role in the dispersion of the chemicals. "Stability means, its ability to suppress existing turbulence or to resist vertical motion".

Atmospheric stability plays an important role in the dispersion of chemicals. "Stability means, its ability to suppress existing turbulence or to resist vertical motion".

Dispersion of vapors largely depends upon the Stability Class. Various stability classes that are defined as Pasquill classes are:

- A Very Unstable
- B Unstable
- C Slightly Unstable
- D Neutral
- E Stable
- F Very Stable

The stability class for a particular location is generally dependent upon:

- Time of the Day (Day or Night)
- Cloud Cover
- Season
- Wind Speed

Six stability classes from A to F are defined while wind speed can take any one of numerous values. It may thus appear that a large number of outcome cases can be formulated by considering each one of very many resulting stability class wind speed combinations. However in fact the number of stability class – wind speed combinations that needs to be considered for formulating outcome cases in any analysis is very limited. This is because, in nature, only certain combinations of stability class and wind speed occur. Thus, for instance combinations such as A-3 m/s or B-5 m/s or F-1 m/s do not occur in nature. As a result only one or two stability class – wind speed combinations need to be considered to ensure reasonable completeness of Quantitative Risk Analysis study. Furthermore, though wind speeds less than 1 m/s may occur in practice, none of the available dispersion models, including state-of-art ones, can handle wind speeds below 1 m/s. Fortunately, wind speed does not influence consequences as much as stability class and for a given stability class, the influence of wind speed is relatively less. On the other hand, consequences vary considerably with stability class for the same speed.

Except during the monsoon months little or no cloud cover along with the prevailing low wind velocities results in unstable conditions during the day (C or D) and highly stable conditions (E or F) at night. During the three months of monsoons, the wind velocities are generally higher and cloud cover generally present. This results in stability class of D during the day and E or F during the night. The stability class distribution over the year roughly works out as below:

A B C	17%
D	50%
E or F	33%

The following wind velocity/ stability class combinations & frequencies are used for Quantified Risk Analysis.

D – 5 m/s
D 3 m/s
F – 2 m/s

Hazard Identification is a critical step in Risk Analysis. Many aids are available, including, experience, engineering codes, checklists, detailed process knowledge, equipment failure experience, hazard index techniques, What-if Analysis, Hazard and Operability (HAZOP) Studies, Failure Mode and Effects Analysis (FMEA), and Preliminary Hazard Analysis (PHA). In this phase all potential incidents are identified and tabulated. Site visit and study of operations and documents like drawings, process write up etc. are used for hazard identification. In the present case, the release of hazardous chemicals (as per MSIHC rules) like formaldehyde and methanol can lead to undesirable consequences like toxic exposure/ fire/ explosion.

7.6 PROPOSED MITIGATION MEASURES

(A) Preventive Measures for Electricity Hazard

- All electrical equipment's is to be provided with proper earthing. Earthed electrode are periodically tested and maintained
- Emergency lighting is to be available at all critical locations including the operator's room to carry out safe shut down of the plant
- Easy accessibility of fire fighting facilities such as fire water pumps and fire alarm stations is considered
- All electrical equipment's are to be free from carbon dust, oil deposits, and grease

- Use of approved insulated tools, rubber mats, shockproof gloves and boots, tester, fuse tongs, discharge rod, safety belt, hand lamp, wooden or insulated ladder and not wearing metal ring and chain.
- Flame and shock detectors and central fire announcement system for fire safety are to be provided.
- Temperature sensitive alarm and protective relays to make alert and disconnect equipment before overheating is to be considered
- Danger from excess current due to overload or short circuit is to be prevented by providing fuses, circuit breakers, thermal protection

(B) Precautionary Measures for Falling material

- Safety helmets to be used to protect workers below against falling Material
- Barriers like a toe boards or mesh guards is to be provided to prevent items from slipping or being knocked off the edge of a structure
- An exclusion zone is to be created beneath areas where work is taking place.
- Danger areas are to be clearly marked with suitable safety signs indicating that access is restricted to essential personnel wearing hard hats while the work is in progress.

7.6.1 Material **Handling Hazards** and Controls:

S.No.	Name of material stored	Quantity (max.)	Operating press/temp	Hazard rating systems	Type of hazard or risks involved	Persons affected
1	Formaldehyde	3×300 KL.	NTP	TLV-0.3 Ppm (1ppm) NFPA ratings: Health-3 Flammability -2 Reactivity-0 Flash point-50°C	-Flammable -Very toxic by inhalation -Very toxic in contact with skin -Very toxic if swallowed -Causes burns -Limited evidence of carcinogenic	-Operators -Maintenance -Technicians

S.No.	Name of material stored	Quantity (max.)	Operating press/temp	Hazard rating systems	Type of hazard or risks involved	Persons affected
					effect -Risk of serious damage to eyes -May cause sensitization by skin	
	Control measures: Dyke provision to storage tank. - Safety board's displayed in the tank area. - Good ventilation must be provided. - Use of proper PPES (like SCBA), full body protection suits					
2	Methanol	6x70 KL	NTP	TLV-200 PPM(8 hr TWA) STEL-250 PPM NFPA Ratings: Health-1 Flammability -3	-Highly flammable -Toxic by inhalation -Toxic when contact with skin -Toxic if swallowed -Danger of very serious irreversible effects	Operators -Maintenance -Technicians
	Control measures: -Keep away from sources of ignition -Safety board's displayed in the tank area. -Effective ventilation must be provided. -For accidental contact if you feel unwell, seek medical advice immediately -Handling of methanol with safety gloves and protective clothing. -Use of proper PPES (like SCBA), full body protection suits					

7.6.2 Process Hazards and Controls:

Table 7.8: Process Hazards and Controls

Name of hazardous process and operation	Material in process /operation	Type of hazard possible toxic gas release/ fire / explosion / run away reaction/ rupture, etc.	Control measures provided
Reactor Vessel	Formaldehyde	-Exothermic run away reaction -Release of heat and flammable gases -Fire, toxic gas release and explosion	-Raw materials quantity must be controlled either volumetrically or gravimetrically -Process control devices must be installed includes the use of sensors, alarms, trips and other control systems that either take automatic action or allow for manual intervention to prevent the conditions for uncontrolled reaction occurring. -High temperature indicator valve and alarm system must be provided -Auto cutoff system must be provided after reaching of predetermined maximum safe temperature. -Pressure gauge must be provided -Safety control valve must be provided. The vessel emergency relief vent should be discharged to suitably designed catch pot or should be so positioned that people working in

		the area and members of the public will not be in danger if the contents of the vessel are discharged -Use skilled worker -Proper selection of MOC -Mechanical seal in all pumps and reactors

7.6.3 Safe Practice for Handling, Storage, Transportation and Unloading of Hazardous Chemicals:

for Storage/Handling:

- Separate from strong oxidant & keep it in well ventilated room.
- Dyke wall shall be provided to all above ground storage tank.
- Fire hydrant system shall be installed.
- Safety shower and eye washer shall be installed near storage area.
- Flame proof light fitting shall be provided at flammable storage area.
- Sprinkler system shall be installed at flammable material storage area
- Earthing/bonding shall be provided for static charges.
- Level gauge and level measurement instrument shall be provided on material storage tank.
- Hazardous material should be stored separately at the plant and safe distance shall be maintained.
- Safety permit system shall be followed for loading, unloading of hazardous chemical.
- Fencing, caution note, hazardous identification board should be provided.
- Only authorized person shall be permitted in storage tank area and register will be maintained.

For Transportation & Unloading:

- Raw material shall be received by road tanker and stored in under ground storage tank in separated bulk storage area.
- Loading and unloading procedure shall be prepared for material received through road tanker.
- Earthing/bonding shall be provided for static charges.

- Flexible steel hose shall be used for unloading from the road tanker.
- Flame proof electric motor shall be used during loading/ unloading.
- Fixed pipeline with pumps shall be provided for transfer to vessel.
- TERM CARD will be provided to all transporters and shall be trained for transportation of hazardous chemicals.
- Personal Protective Equipment (safety goggles, hand gloves, apron, masks, gum boots etc.) shall be provided.

7.7 OCCUPATIONAL HEALTH SURVEILLANCE PROGRAMME

Health surveillance is the monitoring of a person's health to identify changes in health status due to occupational exposure to a hazardous substance. It includes biological monitoring. Ideally, the avoidance of work-related diseases should be achieved by the prevention or controlling exposures to hazardous substances in the workplace. Where a process cannot be designed or maintained to eliminate the risk of exposure, it may be necessary for workers to undergo health surveillance.

7.7.1 Aims of health surveillance:

i) Identify those at increased risk

Health surveillance is used to identify workers who have an increased risk of developing an occupational disease. For example, people who have existing skin problems, kidney, liver and eye disorders, heart problems additionally smokers and pregnant women are at increased risk of being severely affected if exposed to Methanol/ Formaldehyde.

ii) Early detection

The major purpose of health surveillance is to detect adverse health effects at an early stage so that the worker may be protected from further injury, either by control of the process or by removal from exposure.

iii) Evaluating effectiveness of control measures

Health surveillance is not a control measure in itself and should not be the sole means of determining whether control measures are effective. However, it can provide useful information on the effectiveness of safe working practices.

iv) Epidemiology and disease

Health surveillance can be used to evaluate the health experiences of groups of workers exposed to specific hazardous agents or working within a particular industry.

Workers should be made aware that health surveillance is sometimes necessary to ensure their ongoing health. Health surveillance is often used in addition to workplace monitoring. Workplace monitoring will only indicate the potential for exposure of workers to a hazardous substance. It can never be an indication of the actual amount of substance absorbed or the effect on the body of absorbing the hazardous substance.

When a toxic substance (such as an industrial chemical) is present in the environment, it contaminates air, water, food, or surfaces in contact with the skin: environmental monitoring evaluates the amount of toxic agent in these media.

As a result of absorption, distribution, metabolism, and excretion, a certain internal dose of the toxic agent (the net amount of a pollutant absorbed in or passed through the organism over a specific time interval) is effectively delivered to the body and becomes detectable in body fluids.

Subsequent interaction with a receptor in the critical organ (the organ which, under specific conditions of exposure, exhibits the first or the most important adverse effect) leads to biochemical and cellular events. Both the internal dose and the elicited biochemical and cellular effects may be measured through biological monitoring.

7.7.2 Occupational Health Programme

- The health & physical hazards caused due to toxic, irritant, corrosive, flammable materials. All chemicals should be within Threshold Limit Value as per ACGIH.
- Monitoring of occupational hazards like noise, ventilation, chemical exposure etc. will be carried out regularly and its record will be maintained.
- Good housekeeping, use of PPE, Engineering controls, Enclosure processes, scrubber system, display of safety boards, SOP of loading / unloading, local exhaust ventilation, safety shower etc. are important safety measures have taken to keep these chemicals within TLV.
- Appropriate personal protective equipment will be provided & ensure the usage of them.
- Workers will be trained on safe material handling of hazardous chemicals.
- Prepare & display the safe operating procedure for hazardous chemicals storage, handling & transporting or using.

- Periodical medical examination of the workers & Liver Function Testes will be done.
- Employee training and education will be carried out.
- Control the noise at source by substitution, isolation, segregation, barriers etc.
- Local Exhaust ventilation and scrubber should be installed where it is required to reduce fumes, vapors, temperature and heat stress.
- Insulate all hot equipment to reduce air temperature.
- Reduce the level of physical activity by sharing workload with other or by using mechanical mean.

7.7.3 Minimization of the Manual Handling of Hazardous Substance

- Whether moving materials manually or mechanically, your employees should know and understand the potential hazards associated with the task at hand and how to control. Their workplaces to minimize the danger.
- Employers and employees should examine their workplaces to detect any unsafe or unhealthful conditions, practices, or equipment and take corrective action.
- Provide flameproof electrical motor & transfer chemicals through the pipelines.
- Use specially designed pallets to hold, move raw materials, finished products through work areas.
- Minimize lifting of raw materials, heavy loads by using appropriate platforms, trolleys etc.
- Avoid the moving, manual handling of hazardous material.

7.8 DO'S AND DONTS'

7.8.1 Handling of Chemicals

Do's	Don'ts
• Know the hazards of the chemical before handling. • Know the antidotes for chemical, which is to be handled. • Do keep material safety data sheet in locations where chemicals are being handled and study it. • Use appropriate personal protective equipment like gloves, aprons, and respirator; face shield etc. depending upon	• Do not store the chemicals that are incompatible with other chemicals. • Do not spill the chemicals. • Do not dispose chemical without neutralizing • Do not keep large inventory of chemicals. • Do not allow empty containers of hazardous chemicals to be used by others. • Do not use compressed air for transferring chemicals.

nature of the work. • Label every chemical that you use and tightly close the container. • Use eye wash fountain / safety shower in case of splash of chemicals in the eye or body for at least 15 minutes. • Segregate toxic, flammable chemicals and keep them under control. • In addition to draining and closing valves, lines should be blanked before taking up maintenance work. • Provide proper ventilation at the chemical handling area to limit their concentration within prescribed level.	• Do not stand near chemical transfer pump while it is in operation with temporary hose connection. • Pouring of chemicals by hand or doing siphoning by mouth should never be adopted. • Chemicals drums should never be moved without protection. • Do not attempt to neutralize the acid / alkali on the skin. Use water only. • Do not use solvent for cleaning hands.

7.8.2 Material Handling

Do's	Don'ts
• Use proper lifting tool and tackle having adequate capacity. • Only authorized persons should operate material handling equipment's. • Each tool, tackle or equipment should have number and safe working load (SWL) marked on it. • Assess weight of the material, distance to be carried and hazards etc. before lifting the load. • Inspect and test all the lifting tools and tackles regularly as per Factory Rules. • Wear Personal Protective Equipments while handling of material.	• Do not use the equipment for the purpose other than its design intention. • Do not allow personnel to move underneath lifted load. • Do not load the equipment above its safe working load. • Does not use make shift arrangements for lifting equipment without inspection and test. • Do not use effective tool and tackles. • Keep the tools & tackles free from adverse effect of atmosphere by applying suitable protective coating.

7.8.3 House Keeping

Do's	Don'ts

• Assign places for everything and maintain things at assigned places. • Clean the area after completion of work. • Use aisle space free for personnel and material movement. • Ensure adequate illumination and ventilation for the job.	• Do not leave combustible materials in the work area. • Do not smoke in the area of work. • Do not allow dust bin to overflow. • Do not generate extra waste. • Do not disturb the safety equipment from assigned location. • Do not block emergency switches and on/off.

7.8.4 Fire Prevention

Do's	Don'ts
• Follow 'NO SMOKING' sign. • Deposit oily rags and waste combustible material in the identified containers and dispose them suitably. • Fire Hose used for any other purpose should be permanently marked and taken out of fire hydrant system. • Keep minimum inventory of flammable and combustible substances. • Take permission before breaking or removal of fire barrier and ensure subsequent relocation of fire barrier. • Check periodically the operability of fixed fire fighting system • Attend any abnormality/deficiency with fire protection system promptly. • Provide earthling or bonding to prevent accumulation of static charges to tanks where flammable chemicals are stored / handled. • Use instruments that are intrinsically safe in explosive atmosphere.	• Do not leave flammable material like acetone, kerosene etc. used as cleaning agent at the work area. • Do not over tighten fire hydrant valves with F-lever. • Do not allow wild grass growth around storage of the gas cylinders and switchyard. • Do not obstruct accessibility to the fire related equipment • Do not destroy the inspection tag provided with the fire equipment. • Do not misuse fire-fighting equipment other than intended purpose. • Do not store the flammable material in the open container. • Do not use instruments that are not intrinsically safe in the explosive atmosphere.

7.9 RISK REDUCTION MEASUREMENT & RECOMMENDATION IN VIEW OF SAFETY CONSIDERATION

- In order to ensure the safety of the installation, the facility should be constructed as per relevant codes and standards.
- As per consequence analysis, the damage distance may go outside the plant boundary as it involves the involvement as hazardous chemical like formaldehyde. So care to be taken to prevent the leakage of such chemical by proper designing, preventing corrosion, proper periodic inspection and maintenance of all instruments/ equipments.
- Storage tank of Formaldehyde and Methanol should be installed separately at the plant area.
- Wind indicator should be provided at the highest level of the plant to know the wind direction
- Automatic sprinkler system for the flammable material tanks (over ground tanks only) may be provided as knock on effect in case of fire is possible.
- Containment dyes with proper sloping and collection sumps should be provided so that any spillages in the bulk storage and other handling areas shall not stagnate and shall be quickly lead away to a safe distance from the source of leakage. This reduces the risk of any major fire on the bulk storages and the risk to the environment shall be minimized/ eliminated.
- Inspection of the storage tanks as per prefixed inspection schedule for thickness measurement, joint and weld efficiency etc..
- Provision of flameproof electrical fittings / equipment's.
- Proper maintenance of earth pits.
- Strict compliance of security procedures like issue of identity badges for outsiders, gate passes system for vehicles, checking of spark arrestors fitted to the tank lorries etc.
- Strict enforcement of no smoking.
- Periodic training and refresher courses to train the staff in safety fire fighting.
- Employee training and education will be carried out.
- Structural fireproofing in the process area could be considered as a safety measure in the light of probable spill and fires in the area.
- Emergency drills should be carried out periodically to ensure preparedness must continue.

- Many operations involve use of highly toxic/flammable materials and these needs to be documented as SOPs. These must be made and kept updated on priority.
- Extensive training on use of Self Contained Breathing apparatus (SCBAs) must be ensured for emergency control.
- Loose drums of waste materials must be removed from the working areas and close watch kept.
- Proper Earthing system needs to be provided at appropriate locations for example while loading/unlading of methanol from Tanker.
- All electrical equipment needs to place as per HAC.
- Ventilation should be provided for any enclosed are where hydrocarbon or toxic vapors may accumulate. Several such areas were noticed- these may be surveyed and tackled accordingly.
- All personnel should be trained in handling emergency situations and should be appraised of their role in handling emergency situation and to ensure adequacy of the emergency procedures simulated exercise should be carried out.
- Flame arrestor should be provided.
- Adequate number of caution boards highlighting the hazards of chemicals should be provided at critical locations.
- The health & physical hazards caused due to toxic, irritant, corrosive, flammable materials. All chemicals are within Threshold Limit Value as per ACGIH.
- Monitoring of occupational hazards like noise, ventilation, chemical exposure etc. will be carried out regularly and its record will be maintained.
- Good housekeeping, use of PPE, Engineering controls, Enclosure processes, scrubber system, display of safety boards, SOP of loading / unloading, local exhaust ventilation, safety shower etc. are important safety measures have taken to keep these chemicals within TLV.
- Appropriate personal protective equipment will be provided & ensure the usage of them.
- Workers will be trained on safe material handling of hazardous chemicals.
- Prepare & display the safe operating procedure for hazardous chemicals storage, handling & transporting or using.
- Local Exhaust ventilation and scrubber should be installed where it is required to reduce fumes, vapors, temperature and heat stress.

- Reduce the level of physical activity by sharing workload with other or by using mechanical means.
- Pre-employment medical checkup and periodically medical examination will be done.
- Proper inspection and maintenance of all instruments like PSVs, temperature indicator etc to avoid boiler/furnace box explosion
- Use alcohol foam, water spray or fog in case of large fire.
- Use dry chemical powder for small fire.

Following Fire Safety Devices/ Provision will be provided to protect from any incidents:

- Water storage of adequate capacity to meet the requirements of water for firefighting purposes.
- Fire hydrants and automatic sprinkler system. Diesel driven pumps and headers to supply water to fire hydrant network.
- Adequate Portable fire extinguishers, sand bucket, wheeled fire & safety equipment should be provided at the required places.
- Equipment required for personal safety like blankets, gloves, apron, gum boots, face mask helmets, safety belts, first aid boxes etc. are provided. Proximity suits and self- contained breathing apparatus to be provided.
- Designated fire fighting team should be present to handle the emergency.

7.10 DISASTER MANAGEMENT PLAN

7.10.1 Definition

A major emergency in an activity/project is one which has the potential to cause serious injury or loss of life. It may cause extensive damage to property and serious disruption both inside and outside the activity/project. It would normally require the assistance of emergency services to handle it effectively.

7.10.2 Scope

An important element of mitigation is emergency planning, i.e identifying accident possibility, assessing the consequences of such accidents and deciding on the emergency procedures, both on site and off site that would need to be implemented in the event of an emergency.

7.10.3 Objective

The overall objectives of the emergency plan will be:

- To localize the emergency and, eliminate it; and

- To minimize the effects of the accident on people and property.

Elimination will require prompt action by operations and works emergency staff using, for example, fire-fighting equipment, water sprays etc.

Minimizing the effects may include rescue, first aid, evacuation, rehabilitation and giving information promptly to people living nearby.

7.10.4 Phases of Disaster

There are various phases of Disaster including pre and post Management of Hazardous Event that may or has occurred.

Warning Phase

Emergencies /disasters are generally preceded by warnings during which preventive measures may be initiated. For example uncontrollable build-up of pressure in process equipment, weather forecast give warning about formation of vapor cloud, equipment failure etc

Period of Impact Phase

This is the phase when emergency /disaster actually strike and preventive measures may hardly be taken. However, control measures to minimize the effects may be taken through a well-planned and ready-to-act disaster management plan already prepared by organization. The duration may be from seconds to days.

Rescue Phase

This is the phase when impact is almost over and efforts are concentrated on rescue and relief measures.

Relief Phase

In this phase, apart from organization and relief measures internally, depending on severity of the disaster, external help are also to be summoned to provide relief measures (like evacuations to a safe place and providing medical help, food clothing etc.). This phase will continue till normalcy is restored.

Rehabilitation Phase

This is the final and longest phase. During which measures required to put the situation back to normal as far as possible are taken. Checking the systems, estimating the damages, repair of equipment and putting them again into service are taken up. Help from revenue/insurance authorities need to be obtained to assess the damage, quantum of compensation to be paid etc.

7.11 ONSITE EMERGENCY PLAN

The onsite emergency is an unpleasant situation that causes extensive damage to plant personnel and surrounding area and its environment due to in operation, maintenance,

design and human error. Onsite plan will be applied in case of proposed expansion. Following points are to be taken into consideration:

- To identify, assess, foresee and work out various kinds of possible hazards, their places, potential and damaging capacity and area in case of above happenings
- Review, revise, redesign, replace or reconstruct the process, plant, vessels and control measures if so assessed.
- Measures to protect persons and property of processing equipments in case of all kinds of accidents, emergencies and disasters.
- To inform people and surroundings about emergency if it is likely to adversely affect them.

7.11.1 Disaster control Management system

Disaster Management group plays an important role in combating emergency in a systematic manner. Schematic representation Emergency Control Management system for M/s OM Chem. is shown in Figure 7.1.

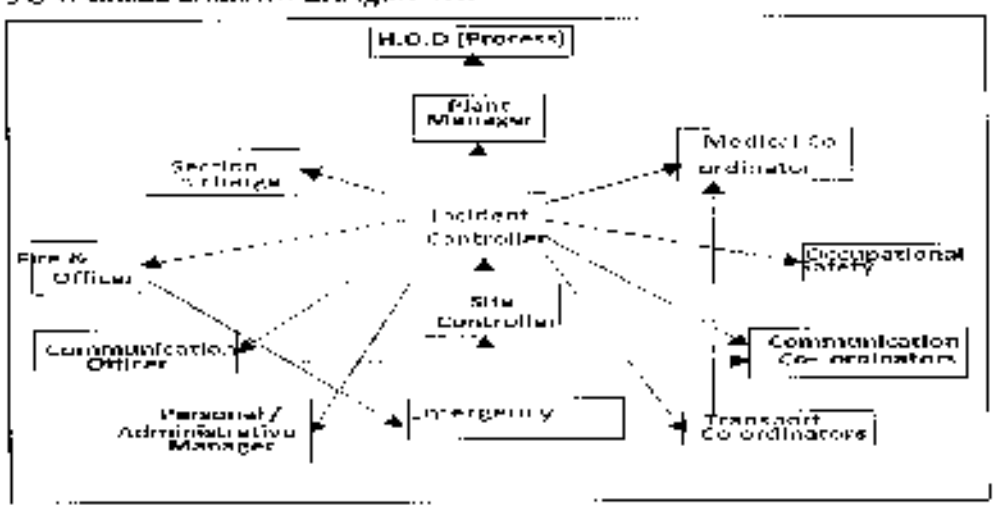

Figure 7.1: Onsite DMP – Disaster Control / Management System

7.11.2 Control Room Facility

Following are the facilities to be provided at the control room of M/s Om Chem to tackle the emergency failure scenarios:

- Fire Detection System is to be installed in the control room
- VHF base station with a range of 25 km and VHF handsets of range 5 km is to be installed for ready communication in emergency
- Public address System (PAS) is to be installed to ease the communication to various corners of the site

- The duties and responsibilities of different Co-ordinators of Onsite Disaster Management Plan are to be displayed in the Control Room.

7.11.3 Alarm System

A siren shall be provided under the control of Security office in the plant premises to give warning. In case of emergencies this will be used on the instructions to shift in charge that is positioned round the clock. The warning signal for emergency shall be as follows:

- Emergency Siren: Waxing and waning sound for 3 minutes.
- All clear signal: Continuous siren for one minute.

7.11.4 Communication

Walkies & Talkies shall be located at strategic locations; internal telephone system EPBX with external P&T telephones would be provided.

7.11.5 Fire Fighting System

The fire protection system for the unit is to provide for early detection, alarm, containment and suppression of fires. The fire detection and protection system has been planned to meet the above objective an all-statutory and insurance requirement of Tariff Advisory Committee (TAC) of India. The complete fire protection system will comprise of the following.

A designated fire fighting team would be available in the facility to handle the fire emergency.

System Description of Fire Fighting System

The entire fire safety installation shall be compliant with the most stringent codes / standard for the entire complex to ensure the highest safety standard and uniformity of system. Further, before property is operational, the fire protection shall be fully operated and tested under simulated conditions to demonstrate compliance with the most stringent standards, codes and guidelines.

A) Fire pumping system

The fire pumping system shall comprise of independent electrical pumps for hydrant and sprinkler system, diesel engine driven pump & jockey pump for hydrant & sprinkler system.

Electrical pump shall provide adequate flow for catering requirement of hydrant system. Diesel engine driven fire pumps shall be provided for ensuring operation & performance of the system in case of total electrical power failure. Jockey pumps shall compensate for pressure drop and line leakage in the hydrant and sprinkler installation. Provision of PRS/ orifice plate shall be made in sprinkler riser to restrict pressure on sprinkler system.

Individual suction lines shall be drawn from the fire reserve tanks at the basement level and connected to independent fire suction header. The electric fire pumps, diesel engine driven fire pumps and the jockey pumps shall all draw from this suction header.

Delivery lines from various pumps shall also be connected to a common header in order to ensure that maximum standby capacity is available. The sprinkler pump shall be isolated from the main discharge header by a non return valve so that the hydrant pump can also act as standby for the sprinkler system. The ring main shall remain pressurized at all times and Jockey pumps shall make up minor line losses. Automation required to make the system fully functional shall be provided.

B) Fire hydrant system

Internal and external standpipe fire hydrant system shall be provided with landing valve, hose reel, first and hose reels, complete with instantaneous pattern short gunmetal pipe in the Complex.

The internal diameter of inlet connection shall be at least 80 mm. The outlet shall be of instant spring lock type gunmetal ferrule coupling of 63 mm dia. for connecting to hose pipe. Provision of flow switch on risers shall be made for effective zone monitoring. The flow switch shall be wired to FAP and shall indicate water flow on hydrant of the identified zone.

Recessed cupboard/ fire hydrant cabinet shall be strategically located for firefighting requirement. Location of cabinets shall be accessed as per compartmentation plan in consultation with the Architect. Provision of fire man's axe shall be made for internal hydrant.

External hydrant shall be located within 2 m to 15 m from the building to be protected such that they are accessible and may not be damaged by vehicle movement. A spacing of about 45-50 m between hydrants for the building shall be adopted. Details of fire hydrant system are as follows:

Piping: Mild Steel pipes (heavy class) as per IS: 1239 shall be provided throughout the complex. Pipes buried below ground shall be suitably lagged with 2 layers of 400 micron polyethelene sheet over 2 coats of bitumen.

External Hydrants: External hydrants shall be provided all around the Complex. The hydrants shall be controlled by a cast iron sluice valve or butterfly valve. Hydrants shall have instantaneous type 63mm dia outlets.

For each external fire hydrant two numbers of 63mm dia. 15 m long controlled percolation hose pipe with gunmetal male and female instantaneous type couplings machine wound with GI wire, gunmetal branch pipe with nozzle shall be provided.

- Each external hydrant hose cabinet shall be provided with a drain in the bottom plate.
- Each hose cabinet shall be conspicuously painted with the letters "FIRE HOSE".

Hose Reel: Hose reel shall be heavy duty, 20 mm dia, length shall be 36.5 metre long fitted with gun metal chromium plated nozzle, mild steel pressed reel drum which can swing upto 170 degree with wall brackets of cast iron finished with red and black enamel complete.

C) Sprinkler system

Elaborate automatic sprinkler system shall be provided. The system shall be suitably zoned for its optimum functional performance.

The sprinkler system shall be provided with control valves, flow and tamper switches at suitable location and shall be connected to control module of the fire alarm system for its monitoring and annunciation in case of activation.

Sprinkler type along with its Quartzite bulbs rating shall be selected based on the requirement of the space and shall be specified accordingly. Inspector's test valve assembly with sight glass shall be provided at remote end with discharge piped to drain outlet / pipe.

D) Fire Extinguishers

Portable fire extinguishers of water (gas pressure), Carbon-di-oxide, foam type, Dry Chemical Powder and FM 200 or Clean agent type shall be provided as first aid fire extinguishing appliances. These extinguishers shall be suitably installed in the entire areas as per IS: 2190.

The appliances shall be so installed over the entire sections, that a person is not required to travel more than 15 m to reach the nearest extinguisher. These shall be placed or hanged on wall in a group on several suitable places.

F) Fire Pump

The fire pump shall be horizontally mounted, variable speed type. It shall have a capacity to deliver and developing adequate head so as to ensure a minimum pressure at the highest and the farthest outlet. The pump shall be capable of giving a discharge of not less than 150 per cent of the rated discharge, at a head of not less than 65 per cent of the rated head. The shut off head shall be within 120 per cent of the rated head.

The pump casing shall be of cast iron and parts like impeller, shaft sleeve, wearing ring, etc. shall be of non-corrosive metal like bronze/brass/gun metal. The shaft shall be of stainless steel. Provision of mechanical seal shall also be made.

Bearings of the pump shall be effectively sealed to prevent loss of lubricant or entry of dust or water. The pump shall be provided with a plate indicating the suction lift.

delivery head, discharge, speed and number of stages. The pump casing shall be designed to withstand 1.5 times the working pressure.

F) Foam System for Fire Fighting

Aqueous Film-Forming Foams (AFFF) based on combinations of fluoro chemical surfactants, hydrocarbon surfactants, and solvents will be used as foam agent. These agents require a very low energy input to produce high quality fire-fighting foam.

Foam concentrate will be stored in a bladder tank system. In AFFF systems a bladder tank containing a nylon reinforced elastomeric bladder is used to store the foam concentrate. System water pressure is used to squeeze the bladder providing firefighting foam concentrate, at the same pressure, to the proportional.

An aqueous film will be formed on the surface of the alcohol by the foam solution as it drains from the foam blanket

This film is very fluid and floats on the surface of most alcohol. This gives the AFFF unequaled speed in fire control and control the spill fire.

7.11.6 First Aid

A first aid centre with adequate facilities shall be provided. It shall be maintained round the clock by a compounder cum dresser and a doctor. An Ambulance shall also be provided at site to carry affected people to hospital.

7.11.7 Security

The security requirements of the company premises shall be taken care of by CSO assisted by a Fire In charge. The team, apart from the normal security functions will manage the role required during a disaster management operation as a part of the crisis control team.

7.11.8 Safety

The safety wing led by a Safety Head will meet the requirement of emergencies round the clock. The required safety appliances shall be distributed at different locations of the plant to meet any eventualities. Poster/placards reflecting, safety awareness will be placed at different locations in the plant area.

7.11.9 Evacuation Procedure

As the major hazard is only due to fire, which has more or less localized impact no mass evacuation, procedures are required. Evacuation would involve only the people working very close to the fire area.

7.11.10 Personal Protective Equipment's (PPE)

This equipment is used mainly for three reasons; to protect personnel from a hazard while performing rescue/accident control operations, to do maintenance and repair work under hazardous conditions, and for escape purposes. The list of Personal

Protective Equipment provided at the facility and their locations shall be available in ECC.

Effective command and control accomplish these functions necessitates personal trained in this On-site Disaster Management Plan with adequate facilities and equipments and equipment to carry out their duties and functions. These organizations and the facilities required to support their response are summarized in the following subsections.

Personal protective equipment's play a vital role in overcoming major disastrous situation saving life during onsite emergency. List of recommended Personal Protective equipment (PPE) is given below in Table 7.9.

Table 7.9: Summary of Recommended Personal Protective Equipment According to hazard onsite

Objective	Workplace Hazards	Suggested PPT
Eye and face protection	Flying particles, liquid chemicals, gases or vapors, light radiation	Safety glasses with side-shields, protective shades, etc
Head protection	Falling objects, inadequate height clearance, and overhead power cords	Plastic helmets with top and side impact protection
Hearing protection	Noise of machineries	Hearing protectors (ear plugs or ear muffs)
Foot protection	Falling or rolling objects, points objects. Corrosive or hot liquids	Safety shoes and boots for protection against moving and falling objects, liquids and chemicals
Hand protection	Hazardous materials, cuts or lacerations, vibrations, extreme temperatures	Gloves made of rubber or synthetic material (Neuprene), leather, steel, insulation materials, etc.
Respiratory protection	Dust, fogs, fumes, mists, gases, smokes, vapors	Facemasks with appropriate filters for dust removal and air purification (chemical, mists, vapors and gases). Single or multi-gas personal monitors, if available
	Oxygen deficiency	Portable or supplied air (fixed lines). Onsite rescue equipment
Body / leg	Extreme temperatures, hazardous	Insulating clothing, body suits,

protection	materials, biological agents, cutting and laceration	aprons etc. of appropriate materials

7.11.11 Mock Drill

As per the Industrial Major Accident Hazard Rules,

- Mock drills of the on site emergency plan will be conducted every six month.
- A detail report of the mock drill conducted is to be made immediately available to all the concerned authority
- Also, Major Fire and Minor Fire mock drills are conducted once in six months

7.11.12 Training

On job training to the engineers on various stages of risk analysis and preparedness during emergency to reflect in the operation of terminal, especially from the safety stand point. The fire team belonging to the firefighting department is to be intensively trained for the use of all equipment and in various fire fighting methods for handling different types of fires.

Details of Training facilities for

- Safety Monthly
- Fire Fighting Monthly
- Occupational Health & safety Monthly

7.11.13 Procedure for Testing & Updating the Plan

Simulated emergency preparedness exercises and mock fire fighting exercises including mutual aid scheme resources and in conservation with district emergency authority to be carried out time to time. Designated assembly point to be present in the facility.

7.11.14 Disclosure of Information to Worker & Public Awareness System in Existence & Anticipated

- Safety awareness among workers by conserving various training programs and Seminars, competition, slogans etc.
- Practical exercise.
- Distribution and practices of safety Instructions.
- Safety Quiz contests.
- Display of Safety Posters & Safety Slogans.
- Developing Safety Instructions for every Job and ensuring these instructions/booklets or manuals by the workers.

7.12 OFF-SITE EMERGENCY PLANNING

The off-site emergency plan is an integral part of any hazard control system. It is based on those accidents identified by the works management, which could affect people and the environment outside the works. Thus, the off-site plan follows logically from the analysis that took place to provide the basis for the on-site plan and the two plans therefore complement each other. The roles of the various parties that may be involved in the implementation of an off site plan are described below. The responsibility for the off-site plan will be likely to rest either with the works management or with the local authority. Schematic representation of various organizations involved during emergency is shown below in Figure 7.2.

Either way, the plan must identify an emergency coordinating officer who would take overall command of the off-site activities. Consideration of evacuation may include the following factors:

- In the case of a major fire but without explosion risk (e.g. an oil storage tank), only houses close to the fire are likely to need evacuation.
- If fire is escalating very fast it is necessary to evacuate people nearby as soon as possible.
- In acute emergency people are advised to stay indoors and shield themselves from the fire.

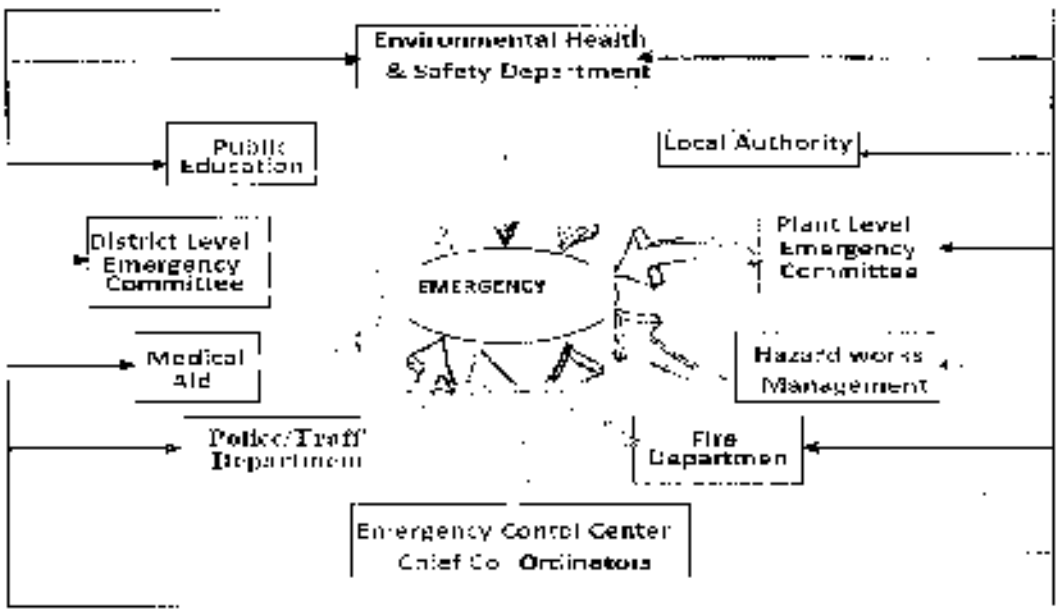

Figure 7.2: Various Organizations Involved During Emergency

7.12.1 Organization

Organizational details of command structure, warning systems, implementation procedures, emergency control centres include name and appointments of incident controller, site main controller, their deputies and other key personnel involved during emergency.

7.12.2 Communications

Identification of personnel involved, communication centre, call signs, network, list of telephone numbers.

7.12.3 Special Emergency Equipment

Details of availability and location of heavy lifting gear, specified fire-fighting equipment, fireboats etc.

7.12.4 Voluntary Organizations

Details of Voluntary organizations, telephone numbers nearby of hospitals, Emergency helpline, resources etc are to be available with chief authorities.

7.12.5 Non-governmental Organizations (NGO)

NGO's could provide a valuable source of expertise and information to support emergency response efforts. Members of NGOs could assist response personnel by performing specified tasks, as planned during the emergency planning process.

- Evacuation of personnel from the affected area
- Arrangements at parking yards

- Rehabilitation of evacuated persons

7.12.6 Chemical information

Details of the hazardous substances (MSDS information) and a summary of the risks associated with them are to be made available at respective site.

7.12.7 Meteorological information

There is to be arrangements for obtaining details of weather conditions prevailing at or before the time of accident and weather forecasts updates.

7.12.8 Humanitarian Arrangements

Transport, evacuation centers, emergency feeding, treatment of injured, first aid, ambulances, temporary mortuaries.

7.12.9 Public Information

- Dealing with the media-press office
- Informing relatives, etc.

7.12.10 Assessment

- Collecting information on the causes of the emergency
- Reviewing the efficiency and effectiveness of all aspects of the emergency plan.

7.12.11 Role of local authority

Local Authorities like Panchayat, Sabha, Samity, municipalities can help in combating emergency situation after assessing the impact scenario in rescue phase.

7.12.12 Role of police

The police is to assist in controlling of the accident site, organizing evacuation and removing of any seriously injured people to hospitals.

- Co-ordination with the transport authorities, civil defense and home guards.
- Arrange for post mortem of dead bodies
- Establish communication center with easy contact with ECC.

7.12.13 Role of Fire Brigade

The fire brigade is to be organized to put out fires and provide assistance as required during emergency.

7.12.14 Media

The media is to have ready and continuous access to designated officials with relevant information, as well as to other sources in order to provide essential and accurate information to public throughout the emergency and to avoid commotion and confusion.

- Efforts are made to check the clarity and reliability of information as it becomes available, and before it is communicated to public

- Public health authorities are consulted when issuing statements to the media concerning health aspects of chemical accidents
- Members of the media are to facilitate response efforts by providing means for informing the public with credible information about accidents involving hazardous substances

7.12.15 Role of health care authorities

Hospitals and doctors must be ready to treat all type of injuries to causalities during emergency.

- Co-ordinate the activities of Primary Health Centers and Municipal Dispensaries to ensure required quantities of drugs and equipment.
- Securing assistance of medical and paramedical personnel from nearby hospitals/ institutions.
- Temporary mortuary and identification of dead bodies.

7.13 CONCLUSION

As discussed in above sections, adequate risk control measures for process, needs to be considered for the expansion project activity, is not likely to cause major significant risk to onsite, offsite & environment. Suitable Mitigation Measures will be taken by M/s OM Chem., Haryana to ensure complete workplace safety. In the event of disaster onsite, offsite and all the emergency planning, procedures will be followed so as to minimize the impact on working personnel, plant surrounding and environment.

CHAPTER 8: PROJECT BENEFITS

8.1 INTRODUCTION

The development of industrial projects plays a key role in the economic growth of any country. Formaldehyde is best known for its preservative and anti-bacterial properties, but formaldehyde-based chemistry is used to make a wide range of value added products. Formaldehyde is one of the most well-studied and well-understood compounds in commerce. It is an essential building block chemical in the production of hundreds of items that improve everyday life. Peripheral development takes place and due to more influx of money through the area, overall importance of the area increases and overall the infrastructure improves.

8.2 EDUCATION

The local peoples' interest towards education will increase due to the expectation of getting jobs, especially from non-agricultural sources such as the industries in the vicinity of M/s OM Chem. The project is expected to increase such aspirations by bringing opportunities of some direct and indirect employment for the local people. The general awareness towards the importance of education is expected to increase as a result of the capacity expansion project. The project will have positive impact on the level of education of the people.

8.3 EMPLOYMENT POTENTIAL

8.3.1 Direct Employment

Employment scenario of the study area is largely dependent on the Industrialization of the area. The present expansion project has employment generation potential by way of recruiting local people directly for different activities of the project. it is estimated that total 12 persons will be required for the proposed expansion project during operation phase. Both skilled & un-skilled workers will be employed by the company. From unloading of raw materials to loading of finished goods one or more labour contracts will be awarded to local contractors. Local people will be given the opportunity in employment as per their capability and expertise. Priority will be given to scheduled tribe families. This will enhance the present socio economic status of the local people.

8.3.2 Indirect Employment

Indirect employment and income effects of the plant are non-marginal and usually remain widespread across a long region. Employment generation potential by way of

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more. Many different resins are created from formaldehyde, which are in turn used to create other materials having differ...

recruiting local people directly for different activities of the project, specifically at the construction phase. It is expected that substantial portion of the investment in this project will trickle down to the local people in the form of employment and income. A part of this increase in employment potential may be attributed to the existing plant and other industries in the vicinity. The project is expected to generate substantial indirect employment in other sectors such as service units etc employment and income effects indicates that the project has strong positive direct as well as indirect impact on employment and income generation of the area. Since the infrastructure for maintenance of the specialized plant and machinery may not be readily near site, adequate maintenance facilities for day-to day and minor plant maintenance including a well equipped workshop and trained technicians shall be developed for the project. Major maintenance and annual overall will be contracted out to manufactures or reputed agencies. During construction phase, it is estimated that approx. 5-10 persons will be required.

8.4 IMPROVEMENT IN INFRASTRUCTURE

M/s Om Chem. is intended to provide the following infrastructure in the study area of 10 km radius:

a) **Road Transport:** There will be improved road communication due to the proposed expansion activity and maintenance will also be done time to time.

b) **Market:** Need for the products are based on the demand and supply gap in the current market. With increasing utilization of the current products, in future, to cater the requirement of all the products, it is essential to have the manufacturing unit.

c) **Infrastructure:** Creation of community assets (infrastructure) like Installation/ Repair of Hand Pumps/ Bore wells Gram Panchayat dug well de-siltation and deepening, as a part of corporate social responsibility.

8.5 CORPORATE ENVIRONEMNET RESPONSIBILITY

M/s OM Chem. will carry out social development works under Corporate Environmental Responsibility as per Ministry of F.No.22-65/2017-IA.III OM dated 30.09.2020 to address the issues of the general public to the extent possible.

8.6 OTHER TANGIBLE BENEFITS

For several decades, formaldehyde has been used consistently in a wide range of products, ranging from personal hygiene, to medicine, to building products and much

CHAPTER 9: ENVIRONMETAL COST BENEFIT ANALYSIS

CHAPTER 10: ENVIRONMENT MANAGEMENT PLAN

10.1 INTRODUCTION

Any industrial development is associated with certain positive impacts as well as some negative impacts on the environment. However, the negative or adverse impacts cannot possibly rule out scientific development. At the same time adverse impacts cannot be neglected. An Environment Management Plan shall be formulated for mitigation of the adverse impacts and is based on the present environmental conditions and the environmental impact appraisal. This plan helps in formulation, implementation and monitoring of the environmental parameters during and after commissioning of the project. The Environmental Management Plan describes in brief, the management plan for proper and adequate implementation of treatment and control system for air and water and noise pollution and for maintaining the environment. It also includes the development of green belts in and around the plant, proper safety of the workers, noise control, fire protection systems and measures.

10.2 PURPOSE OF ENVIRONMENTAL MANAGEMENT PLAN

The environment management plan is prepared with a view to facilitate effective environment management of the project in general and implementation of the mitigation measures in particular. The EMP provides a delivery mechanism to address potential adverse impacts and to introduce standards of good practice to be adopted for all project works. For each stage of the program, the EMP lists all the requirements to ensure effective mitigation of every potential biophysical and socio-economic impact identified in the EIA. For each operation, which could otherwise give rise to impact, the following information is presented:

- To treat and dispose-off all the pollutants viz. liquid, gaseous and solid waste so as to meet statutory requirements (Relevant Pollution Control Acts) with appropriate technology
- To support and implement work to achieve environmental standards and to improve the methods of environmental management
- To promote green-belt development
- To encourage good working conditions for employees
- To reduce fire and accident hazards
- Budgeting and allocation of funds for environment management system
- To adopt cleaner production technology and waste minimization program

10.3 ENVIRONMENTAL MANAGEMENT CELL

Apart from having an EMP, it is also necessary to have a permanent organizational set up charged with the task of proposed expansion plant will create a department consisting of officers from various disciplines to co ordinate the activities concerned with the management and implementation of the environmental control measures. Environment Management cell is defined in the Fig 10.1.

Basically this department will undertake to monitor the environmental pollution levels by measuring stack emissions, ambient air quality, water and effluent quality, noise level etc. either departmentally or by appointing external agencies wherever necessary.

- In case the monitored results of environmental pollution are found exceeding the allowable values, the environmental management cell will suggest remedial action and get these suggestions implemented through the concerned plant authorities. The actual operation and maintenance of pollution control equipment of each unit will be under the respective plant managers.
- The Environmental Management Cell (EMC) will handle of all the related activities such as collection of statistics of health of workers and population of the region, afforestation and green belt development.

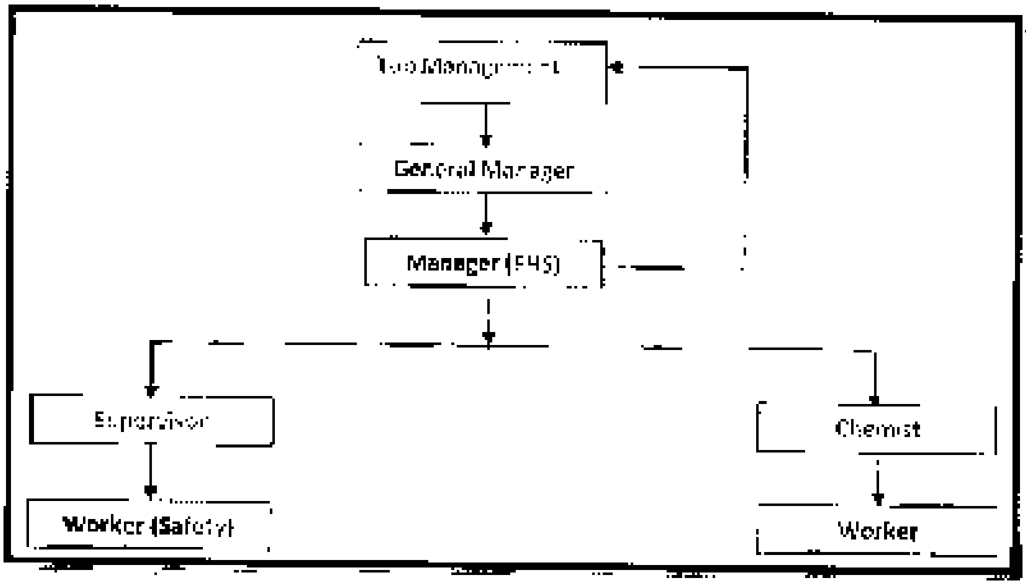

Figure 10.1: Organization Chart of Environmental Monitoring Cell

10.4 ENVIRONMENT MANAGEMENT POLICY

The Environment cell follows the well-defined Environment policy which is defined below:

- Effectively manage, monitor, Improve and communicate the environmental performance.
- Take all reasonable steps to prevent environmental pollution.
- Set realistic and measurable objectives and targets for continual improvement of the Environmental performance.
- Ensure that all employees and contractors are trained to understand their environmental responsibilities and create an environment that adheres to the company's Policies, Procedures and Application Regulations.
- Hold leadership accountable for good environment performance of our operations and projects, inherent in that accountability will be the commitment of senior management to provide resources and successfully create an appropriate environment.
- Comply fully with all relevant legal requirements, codes of practice and regulations.
- Reduce, recycle and reuse natural resources.
- Minimize waste and increase recycling within the frame work of waste management procedures, identify and manage environmental risks and hazards.

- The project proponent shall regularly review this policy and ensure that corrective and preventive actions are taken in order to ensure continual improvement.
- To treat all the pollutants viz liquid and gaseous, which contribute to the degradation of the environment, with appropriate technologies.
- To comply with all regulations stipulated by the Central State Pollution Control Boards related to air emission and liquid effluent discharge as per air and water pollution control laws.
- To handle hazardous wastes as per the Hazardous and Other Waste Management Rules 2016 of the Environment (Protection) Act, 1986.
- To encourage support and conduct development work for the purpose of achieving environmental standards and to improve the methods of environmental management.
- To create good working conditions (avoid of all order and noise pollution) for employees.
- To minimize fire and accident hazards.
- Perspective bed getting and allocation of funds for environment management expenditure.
- Preventive maintenance and regular checking of machineries and equipments.
- To make continuous efforts in waste minimization.
- For the equipments and pipe lines, leakage detection and repair shall be scheduled to minimize fugitive emissions.
- Continuous efforts with energy audist for the reduction of fuel and energy consumption.
- The system of reporting of none—conformance/ violation of any Environmental Law/ Policy will be as per quality management system. The internal audit will be conducted on periodic basis and any none—conformance violation to Environmental Law/ Policy will be closed and discussed during Management Review Meetings of Board of Directors/ Partners.
- Environmental Management Cell will be responsible to implement the Environmental Policy.

10.5 MONITORING AND RESPONSIBILITIES:

(a) For Water Environment

- The supervisor shall visit and check the devices daily.
- The General Manager will keep in touch with the Environmental Consultant and

seek their guidance for corrective action as and when required.

- The Committee shall meet once every month to ensure implementation of the programme.
- The General Manager will bring to the notice of the Managing Director any further action to be taken to ensure environmental requirements. The Managing Director will report to the Board of Directors, the action taken to set right deficiency, if any.

(b) For Air Environment

- The supervisor will ensure that the APCD provided are functional at all times. Air emissions from the stack will be got checked by him once a month from a Laboratory to see that the limits of the various parameters are not exceeded. In case of any deviation noticed, he will inform the General Manager to take corrective action.
- The supervisor will ensure that the water is sprinkled on roads whenever transportation of material is to be done to and from the factory premises in trucks
- The General Manager will ensure that all the vehicles coming to the premises have PUC Certificates and they do not blow horn unnecessarily within the premises.
- The Manager Operations will ensure that the transportation of raw materials and finished goods is done in trucks covered with Tarpaulins.
- The Board of Directors will discuss at frequent intervals & see that the environmental policy laid-down by them, is followed meticulously by all persons in the Unit and the Environment is within the prescribed limits.

(c) The cell will also be responsible for monitoring of the plant safety and safety related systems which include:

- Checking of safety related operating conditions.
- Visual inspection of safety equipments.
- Preparation of a maintenance plan and documentation of maintenance work specifying different maintenance intervals and the type of work to be performed.

Other responsibilities of the cell will include:

- Conduct and submit annual Environmental Audit. A registered agency will be retained to generate the data in respect of air, water, noise, soil and meteorological data and prepare the Environmental Audit report. Timely renewal of Consolidated Consents & Authorization (CC&A) will also be taken

care of.

- Submitting environmental monitoring report to statutory body. Data monitored by the cell will be submitted to the Board regularly. The cell will also take mitigative or corrective measures as required or suggested by the Board.
- Keeping the management updated on regular basis about the conclusions/ results of monitoring activities and proposes measures to improve environment preservation and protection.
- Conducting regular safety drills and training programs to educate employees on safety practices. A qualified and experienced safety officer will be responsible for the identification of the hazardous conditions and unsafe acts of workers and advise on corrective actions, organize training programs and provide professional expert advice on various issues related to occupational safety and health.
- Conducting safety and health audits to ensure that recommended safety and health measures are followed.

Table No.10.1: Responsibility of Environment Management Cell

S.No.	Designation	Nos.	Responsibility
1	Top Management	01	Communicate company strategy to board of directors. Attend board meetings. Work with audit committee to prepare budgets. Analyze financial reports for environmental protection measures. Report and share information with the board to ensure they are kept fully informed on the condition of the organization and important factors influencing it. Participate in and nurture broad networks of alliances with others to exchanges knowledge and information about learning and change in support of change initiatives.
2	General Manager	01	Sets goal, monitor work, and evaluate results to ensure that departmental and organizational objectives and operating requirements are met and are in line with the needs and mission of the organization. Supervision, public relations, marketing, profitability and sales, service, reporting, capital requirements, and

			other duties as assigned by the board of directors. Managing all the Environmental issue. Ensure appropriate EHS supervision of Employee. Checking of non compliance/ violations of environmental norms.
3	Manager (EHS)	01	Develop performance standards. Handle claims and complaints promptly. Developing and promoting a vision of EHS. Conduct and submit annual Environmental Audit. Submitting; environmental monitoring report to RSPCB. Reporting of non compliance/ violations of environmental norms to the Board of Directors of the company.
4	Supervisor	01	Report to Manager EHS. Provide information, training and supervision. Assist in preparation of risk assessments. Reporting to EHS hazardous and incidents.
5	Chemist	01	Report to Manager EHS. Taking responsibilities of all environmental issue as assigned by Manager EHS.
6	Worker (Safety)	01	Report to Supervisor for safety issues. Conducting, regular safety drills and training programs. Conducting, safety and health audits.
7	Worker (Environment)	01	Report to Supervisor for environmental issues. Conducting Environment audits.

10.6 GREENBELT DEVELOPMENT

Green belt will be developed over 36.50% area of the total plant area out of the 0.6430 ha of the plant area i.e., 0.2347 Ha of the total land. This greenbelt will serve as a buffer between the peripheries and the industry, there by controlling the air emissions and noise levels. PP has already developed green belt for exsitng unit.

A budget of approx. Rs. 2.8 Lakh has been kept for Green belt development.

Table 10.2: Calculation of Cost for Green Belt Development

S.No.	Components	Budget (in Rs)

1.	Total no. of plants i.e., 580 *100	58,000
2.	Maintenance of Green Belt (Tree gaurds, Watering, manure etc.)	1,50,000
	Total	2,08,000 (2.8 Lakhs~3 Lakhs)

10.7 BUDGETS FOR ENVIRONMENTAL MANAGEMENT PLAN

On regular basis, Environment Management Cell shall inspect the necessity and availability of the materials, technologies, services and maintenance works. The Cell shall make appropriate budget for the purpose. Regular record review for any change in financial requirement of environment management shall be done and appropriate budgetary provisions shall be made. Along with other budgets, Budget for environmental management shall be prepared and revised regularly as per requirement. The budget shall include provisions for:

- Air Pollution Control including instrumentation
- Water and Waste Water Treatement
- Occupational Health and Safety
- Stack and Online Monitoring system
- Greenbelt Development
- Rain water Harvesting
- Solid and Haz. Waste Management
- Environmental monitoring Program
- Miscellaneous item

The total capital investment on environmental control measures is envisaged to be about Rs 0.35 Crores out of a total project cost of Rs 6.99 Crores. Details are given in **Table 10.3.**

Table 10.3: EMP Cost Details

Sr. No.	Environmental Components	Activities under Capital cost	Capital Cost in Lakhs	Activities under recurring cost	Recurring Cost in Lakhs
1	Air Pollution Management	Wet scrubber, Acoustic enclosures with Boiler and DG sets, Stack with online Monitoring	15.0	Maintanance of Scrubber, Stack, Regular water sprinkling etc.	1.0

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Sr. No.	Environmental Components	Activities under Capital cost	Capital Cost in Lakhs	Activities under recurring cost	Recurring Cost in Lakhs
		System			
2	Water and Waste Water Management	Septic tank followed by Soak pits for domestic waste water. Single Stage Evaporator etc. (Remark: No Effluent generation from the process)	4.5	Maintenance of Septic Tanks, Providing drinking water facility etc.	0.3
3	Occupational Health and Safety	Inplant arrangement of safety of workers, Safety gadgets, health checkup, medical assistance if any.	4.00	Maintenance of fire fighting equipents, replacement of Personnal protective equipments with new one, training etc.	0.3
4	Greenbelt Development	Procurement of saplng, providing Metal Guard, Manure, digging and plantation cost etc.	4.0	Maintenance of greenbelt, manpower chemical expenditure	0.2
5	Rain water Harvesting	Providing Storm water collection system, providing separate drainage for Waste water and storm water, procurement	3.50	Maintenance of Storm water collection system, Drainage line cleaning, cleaning of storage tanks etc.	0.5
6	Environmental Monitoring	Environmental monitoing activities	4.0	Environmental audits, compliance	0.3

M/s OM CHEM.	Capacity Expansion of Formaldehyde Manufacturing Unit in Existing Facility from 200 TPD to 200 TPD on 0.6430 ha existing land at V.P.O. Kurali Distt. Yamunanagar, Haryana

Sr. No.	Environmental Components	Activities under Capital cost (Inhouse & Outsourced)	Capital Cost in Lakhs	Activities under recurring cost	Recurring Cost in Lakhs
				audits, statutory compliances, third party monitoring expenses, calibration and maintenance of online systems	
	Total		35.0 ~0.35 Crores	-	2.6 ~0.026 Crores

CHAPTER 11: EXCECUTIVE SUMMARY

11.1 STRUCTURE OF EIA REPORT

The EIA report has been prepared as per TOR (Terms of Reference) grant in addition to "Generic Structure of EIA/EMP Report" required by the Ministry of Environment & Forest, Government of India as per the general condition stipulated in the EIA notification dated 14.9.2006.

11.2 11.2 BRIEF SUMMARY OF PROJECT

Table No. 11.1: Project details

S.No.	Particulars	Details
1.	Nature and size of the Project	Capacity Expansion of Formaldehyde Manufacturing Unit in existing facility from 100 TPD to 200 TPD at Village Kurali, Sabapur Road, Tehsil Bilaspur, District Yamuna Nagar, Haryana by M/s Om Chem
2.	Location details	
	Village /Town/ Plot No.	Kurali, Sabapur Road
	District	Yamuna Nagar
	State	Haryana
	Latitude and Longitude	Latitude- 30°21'9.85"N to Longitude- 77°14'6.04"E.
	Toposheet No.	H43L3 & H43L7
	Land use	Land Use has been changed from Agricultural to Industrial
3.	Area Details	
	Total Project Area	Total area available is 0.6430 Hectare. No additional land is required for proposed expansion. Green belt will be developed in an area of 0.2347 Hectare (Approximately 36.50% of total land area).
4.	Environmental Setting Details (with approximate aerial distance and direction from the project site)	
	Nearest major settlement	Village Kurali is at a distance of 0.72 Kms (approx.) in SW direction.
	Nearest highway	SH-1 at a distance of 0.4 km in SW direction SH-4 at a distance of 3 km in NW direction

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	Nearest Railway Station	Jagadhri Railway Station at a distance of 26.6 kms in SE direction.
	Nearest Airport	Chandigarh Airport is at a distance of 55.68 kms in NW direction.
	National Parks/ Wild Life Sanctuaries/ Biosphere Reserves/ RF and PF within 10km radius	No National Park/Wildlife Sanctuary within 10 km radius of the Project Site. • Dumonwala PF at a distance of 9.8 km in NNW direction. • Tibri RF at a distance of 4.5 km in NNW direction. • Sadiopur PF at a distance of 7.9 km in N direction. • Garhibiran PF at a distance of 6.7 km in N direction. • Jharsaila PF at a distance of 8.9 km in W direction. • Bir Sandhai RF at a distance of 8.0 km in E direction.
	Nearest Water Bodies	• Markanda River at a distance of 7.01 km in NW direction. • Nakti Nadi at approx. 1.5 km NW direction • Chautang Nadi at approx. 5.0 km SE direction
	Interstate Boundary	Not within 10 km radius area. Haryana-Himachal Pradesh State Boundary is at 13.0 km NE direction
	Nearest School	• Shivalik Sr. Sec. School-2.6 km towards NNW direction. • Doon International School-1.1 Km towards SSE direction
	Defence Installations	Nil
	Nearest Hospital	Basati Hospital 9.2 Km towards SE direction
	Nearest Temple	Sanatan Dharm Mandir-3.9 Km towards NNW direction
	Seismic Zone	Zone IV
5.	Cost Details	
	Project Cost	Existing: Rs. 4.99 Crores; Estimated cost for proposed expansion: Rs. 2.00 Crores; Total: Rs. 6.99 Crores
	Recurring Cost/ Annum of EMP	0.35 Crores
6.	Basic Requirements of the Project	
	Fresh Water (m3/ day)	Existing: 100 KLD; For Expansion: 95 KLD; Total: 195 KLD

	Source: Application for ground water abstraction has been submitted to HWRA vide HWRA/IND/N/2021/140 dated 01.07.2021 (Attached as Annexure VI)
Power	Existing: 160 KW; For Expansion: 90 KW; Total: 250 KW Source: UHBVN (Uttar Haryana Bijli Vitran Nigam) DG sets as backup: 325 KVA (existing) 325 KVA (proposed)
Boiler	Existing: 1 boiler of 600 Kg/Hr Capacity; Proposed expansion: -; Total: 1 boiler of 600 Kg/Hr Capacity; Fuel: HSD Fired
Fuel	HSD
Manpower	Existing: 10; For Expansion: 2; Total: 12 Preference will be given to local public.

11.3 ENVIRONMENTAL BASELINE STUDY

The generation of primary data as well as collection of secondary data and information from the site and surroundings was carried out during March 2021 to May 2021.

S. No	Parameters	Baseline Status
1.	Ambient Air Quality	
i.	PM_{10}	66.9 µg/m³ to 96.8 µg/m³
ii.	$PM_{2.5}$	30.3 µg/m³ to 57.4 µg/m³
iii.	SO_2	18.4 µg/m³ to 5.1 µg/m³
iv.	NO_2	14.1 µg/m³ to 37.5 µg/m³
v.	CO	0.23 mg/m³ to 0.98 mg/m³
	Values are well within the stipulated standard of CPCB.	
2.	Noise Level Monitoring	
i.	Day Time (6:00 a.m. to 10:00 p.m.)	50.68 Leq dB to 56.26 Leq dB
ii.	Night Time (10:00 p.m. to 6:00 a.m.)	40.21 Leq dB to 43.21 Leq dB
	The observed noise levels were found below the stipulated standards of CPCB.	
3.	Soil Quality and Characteristics	
i.	pH	7.69 to 8.41

ii.	Organic Matter	0.40% to 0.56%
iii.	Nitrogen	193.12 Kg/ha. to 251 Kg/ha.
4.	**Ground Water**	
i.	pH	7.59 to 8.45
ii.	Total Hardness	132.29 to 178.32 mg/l
iii.	Total Dissolved Solids	217 to 325 mg/l.
5	**Surface Water**	
i.	pH	7.82 to 7.89
ii	Total Hardness	158.52 to 185.42 mg/l.
iii	Total Dissolved Solids	237 to 265 mg/l.

The concentrations were found to be within permissible limits (Compared with IS 10500:2012)

11.4 MITIGATION MEASURES FOR CONTROL OF POLLUTION

11.4.1 Air Pollution Control

- Online Stack Monitoring System as an air pollution control measures to control the emission of particulate matter, the flue gas emission will remain well within gaseous emission norms prescribed by the CPCB.
- Scrubber will be installed for scrubbing the residual Formaldehyde from the main product stream which also controls the odour problem.
- To control the air emissions from D.G. Set, stack height of 6.0 m shall be provided.
- Green belt will be developed on 36.50% area of the total project area which will help in attenuating the pollutants emitted by the plant.
- Adequate measures for control of fugitive dust emissions will be taken

11.4.2 Waste Water Treatment

There will be no waste water discharge from the plant. Zero Liquid Discharge (ZLD) concepts to be adopted. Domestic waste water after treatement (in septic tank) will be fully utilized with the facility for cleaning, flushing, water sprinkling and other non portable domestic purpose.

11.4.3 Noise Pollution Control

- Vibrating pads & acoustic enclosure will be provided to noise generating equipment to control noise level within norms.

- It can be reduced by providing padding at various locations to avoid rattling due to vibration.
- Latest technology and utmost care will be taken at the time of equipment/machinery installation.
- Lubrication of moving/rotating part or component of machineries will be done on regular basis.
- The insulation provided for prevention of loss of heat and personnel safety gears will also act as noise reducers.
- Design and layout of building to minimize transmission of noise, segregation of particular items of plant.
- The operator's cabins (control rooms) will be properly (acoustically) insulated with special doors with observation windows.
- The operators working in the high noise areas will be provided with ear-muffs or plugs.
- Acoustic enclosures and silencers will be provided to the equipment wherever necessary
- Proper green belt will be developed to reduce the noise level.
- Thus, it is envisaged that there will not be any adverse impacts of noise. The greenbelt developed within the premises will have significant beneficial impacts on reduction of noise within the periphery and outside the boundary.

11.4.4 Land Pollution Control

- The plant will implement zero level discharge concepts. The treated water will be recycled in the process. Therefore, there will not be any negative impact on soil.
- No toxic / waste water will be disposed directly on land.
- Vegetation will be done on uncovered soil.
- Other hazardous solid wastes will be sent to authorized recycler or vender.
- It is envisaged that there will not be any major impacts on land environment during the operation phase as most of the effluent generated shall be reused in the process.

11.4.5 Odour Management

- Scrubber will be installed for scrubbing the residual Formaldehyde from the main product stream.
- Temperature will be kept under control during operation phase.

11.4.6 Solid & Hazardous Waste Generation and Disposal

- Used Oil generated will be sold to authorised recycler.
- Solid waste from evaporator will be sent to TSDF.

All the Solid & hazardous waste generated, will be collected, stored separately and disposed off as per the guidelines issued by CPCB & Haryana State Pollution Control Board.

11.5 ENVIRONMENTAL MANAGEMENT PLAN (EMP)

Total capital cost for Environmental management is proposed to be Rs. 35.00 Lakhs whereas recurring cost for the same is Rs. 2.6 Lakhs/year.

11.6 CONCLUSION

Company has committed to implement all the pollution control measures to protect the surrounding environment. The project can definitely improve the regional, state and national economy. Industrial growth is an indication of socio economic development. The implementation of this project will definitely improve the physical and social infrastructure of the surrounding area.

CHAPTER 12: DISCLOSURE OF CONSULTANTS

12.1 INTRODUCTION

Vardan Environet is a pioneer consulting organisation of India specializing in Environmental Protection, Industrial Pollution Control, Environmental & Mechanical testing and engineering field. Vardan assists clients in comprehensive environmental and engineering services ranging from conceptual planning and preliminary investigation to detailed engineering designs.

Vardan has successfully completed a wide range of multi-disciplinary assignments/reports. The company's project formulation requires preliminary and detailed project investigation. The objective of the investigation is to assess the technical viability and cost effectiveness of the proposals vis-à vis the objective and benefit. Vardan was founded in 2012 and brought together a number of consultancy services with a track record of performance in the environmental Science and Engineering field. Headquartered in Gurugram, Vardan has prominent presence in Delhi-NCR, Rajasthan, Maharashtra, Madhya Pradesh, West Bengal and Jharkhand. With a man-power of over 125 professionals, the organization comprises of senior retired government officers from various departments like Pollution Control Board, Mines & Geology, Civil Services, SAIL, GAIL, NEERI who have decades of experience in the field of environmental management. The team also Comprises of young, dynamic and progress driven Environment, Civil, Mechanical & Chemical engineers, Geologists, GIS experts, Ecologists and Auditors.

Vardan Envirolab, a sister concern provides reliable and precise testing services for a wide range of Environmental, Chemical, Food testing, Microbiology and Building Materials with in-house Equipment/Instruments of advance technology along with experienced technical staff.

12.2 SERVICES OF VARDAN ENVIRONET

- Environmental Impact Assessment (EIA), Environmental Management Plan (EMP), Environmental Compliance, Mining Plan, Social Impact Assessment.
- Testing of water, Waste water, Ambient & work zone air, stack emissions, noise, soil, limestone, dolomite, iron ore, coal, cement, bricks, concrete blocks, steel bars & wires, Indoor Air Quality monitoring, Sludge.
- Hydrological surveys for ground water clearance.
- Approvals/NOC/Clearances from various Government Authorities.
- Detailed Project report/Feasibility report/Plans/Designs.

- Environmental Quality Monitoring and analysis.
- Geotechnical investigations, Topographical Survey, Planning and Designs.
- EIS, Energy and water Audit, risk/hazard studies and disaster management plan (both onsite and off-site).

12.3 RECOGNITIONS

- Approved by NABET in 14 sectors for preparation of EIA/EMP reports
- Vardan EnviroNet is recognized by Ministry of Environment, Forest & Climate Change, Govt. of India under Environmental Protection Act 1986
- Vardan EnviroLab is accredited by NABL in the field of Testing
- Vardan EnviroLab is certified by OHSAS 18001:2007
- Vardan EnviroLab is certified by ISO 14001:2015
- Vardan EnviroLab is certified by ISO 9001:2015
- Vardan EnviroLab is approved by HSPCB & RSPCB

12.4 KEY MANAGEMENT PERSONNEL OF VARDAN

- Multisource Dispersion Model based on Gaussian Model (ISCST3, AERMOD).
- Noise Propagation Model (Dhawani Pro).
- Risk and Hazard studies through PHAST model.
- GIS mapping through Arc GIS, watershed & area drainage mapping, cadastral mapping, DGPS survey, 3D modelling, Urban/Rural area planning & management and Digital Elevation Model.
- Transect and line intercepts for Ecology and Biodiversity studies.
- Extrapolative method & Intuitive technique (Delphi technique) in socio-economic assessment.

Sl.No.	Name	Designation	Experience (years)
1	R.S. Yadav	Managing Partner	36
2	Aman Sharma	Vice President	15
3	Roopika Sharma	CEO	10
4	Anshul Yadav	General Manager	8
5	K.M. Khare	EIA Coordinator	43

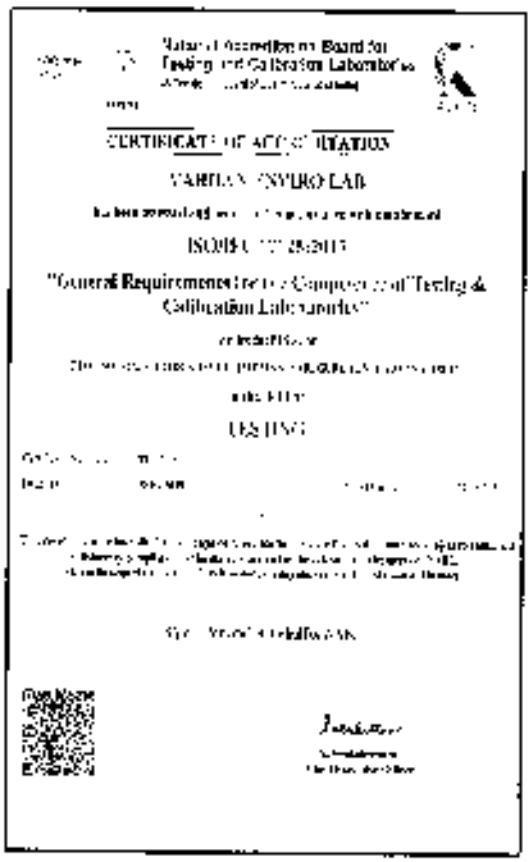
6	Dr. Ashok Rathoure	EIA Coordinator & FAE	14
7	Nemi Chand Choudhary	General Manager-Jaipur	12

12.5 EMINENT CLIENTELE OF VARDAN

Vardan has executed around 1000 projects across all over India in a short span of time covering both public and private sectors. Following are some of our reputed clients.

Indian Oil, HPCL, NTPC, NHPC, DMRC, GAIL, SAIL, NIIAL, APCPL, RITES, MPPGCL, Indian Railways, JK Lakshmi Cement Ltd., L&T, Tata, Adani, Hero, Honda, IICT, Panasonic, Jaypee group, DLF, Godrej, Haldiram's, Unitech, JBM, Trident hotels, Lanco, Mangalam cement, JW Marriot, Eros group and many others.

12.6 CERTIFICATIONS OF VARDAN

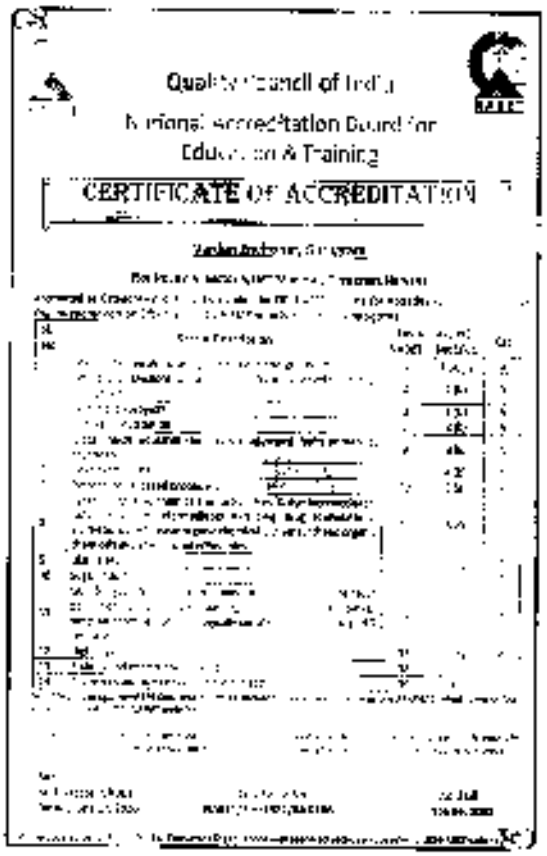


CERTIFICATE OF ACCREDITATION

VARDAN ENVIRO LAB

ISO/IEC 17025:2017

"General Requirements for the Competence of Testing & Calibration Laboratories"



Quality Council of India

National Accreditation Board for Education & Training

CERTIFICATE OF ACCREDITATION

CHAPTER 13: DAMAGE ASSESMENT, REMEDIATION PLAN AND NATURAL & COMMUNITY RESOURCE AUGMENTATION PLAN (NCRAP)

13.1 INTRODUCTION

The project was issued ToR by MoEFCC vide F.No. J-11011/106/2021-IA.II(I) dated 20th July 2021 for preparing the Environmental Impact Assessment Report and Environmental Management Plan (Including Assessment of ecological damage and the remediation plan and the natural and community resource augmentation plan as an independent chapter in the EIA).

The primary concern of remediation plan is to evaluate the extent to environmental damage done due to construction and operation of SAF in absence or inadequacy of environmental protection measures. The traditional knowledge of the project is being utilized to derive the extent of damage and plan remediation with time bound action plan and budgetary provision.

13.2 PROJECT DEVELOPMENT

As elaborated in the previous chapters, M/s OM Chem has installed Formaldehyde unit during the year 2018 in order to meet the market demand. This unit was installed in order to fulfill the market demands for economic benefits without obtaining prior Environmental Clearance.

13.3 NEED OF THE STUDY

The specific Terms of Reference granted to the project, under the provisions of MoEFCC's notification vide S.O. 804 (E) dated 14.03.2017 regarding conducting EIA Study for obtaining Environment Clearance to the projects, considering violation of EIA Notification, 2006 and its subsequent amendments and recommended the following.

- Assessment of damage to be carried out with respect to air, water, land, ecology and other environmental attributes.
- A remediation plan and natural and community resource augmentation plan to be prepared corresponding to the ecological damage assessed and economic benefits derived due to violation.

13.4 OBJECTIVE OF THE STUDY

The objective of Damage Assessment Report (DAR) and Natural & Community Resource Augmentation Plan (NCRAP) includes the study of affects which are caused by change in the environment due to the project activity and to identify the corrective measures to compensate or replace those resources such as "Land, Biota,

Air, Water and others in order to mitigate the adverse effects on such resources". The damage is assessed based on negative changes brought onto the various environmental aspects due to the project activity.

However, any industrial activity does pose threat on environmental, which can either be avoided or minimized in terms of size, scope and duration. It is based on the fact that minimizing the environmental impact of an activity primarily entails managing the environmental consequence(s)

To ameliorate the adverse impacts on the environment due to the construction of the new units as well as its operation, a remediation plan is necessary. Also, a Natural & Community resource augmentation plan (NCRAP) is required to pay for the ecological damage as well as economic benefits derived at the cost of the environment and the local community. Both of these, with respect to violation units, have been elaborated in the subsequent sections.

As per the ToR, the following studies were carried out with respect to the violation activities carried out within the premises of M/s OM Chem.

- Ecological/environmental damage assessment
- Remediation plan
- The natural and community resource augmentation plan

13.5 ECOLOGICAL DAMAGE ASSESSMENT AND REMEDIATION PLAN

The assessment of environmental damage caused due to an industrial activity under violation of a regulatory framework needs to be measured across different aspects viz. biotic environment; abiotic environment and social environment. The environmental damage & assessment has been studied in comparison to the earlier environmental status before the start of the construction considering following parameters.

- Air Environment
- Water Environment
- Noise Environment
- Land Environment
- Ecological Environment
- Socio-economic Environment

A regional background to the baseline data is presented in Chapter-3, which will help in better appreciation of field data, generated on several environmental and ecological attributes of the study area.

13.5.1 Damage Assessment and its Remediation Plan

The project proponent has installed and operated formaldehyde unit without getting environmental clearance under EIA notification 2006. Damage assessment and Remediation Plan along with Cost of remediation measures for Water, Noise, Air, Social and Ecological environment is given in **Table 13.1.**

M/s OM CHEM.	Capacity Expansion of Formaldehyde Manufacturing Unit in Existing Facility from 100 TPD to 200 TPD on 0.6430 ha existing land at V.P.O. Kurali Distt. Yamunanagar, Haryana

Table 13.1: Damage Assessment and Remediation Plan

Activity/ Causes of pollution	Probable Impacts	Environmental measures already taken	Damage Assessment	Remediation plan proposed	Remediation Measures
Land Environment					
1. Excavation 2. Generation of Hazardous waste like empty cans of paints, fuel/oil 3. Land contamination due to spill of oil, paint, varnishes etc., during construction phase 4. Generation of construction solid wastes 5. Solid waste from process.	1. Change in Land use/ Land cover of site 2. Change in topography and drainage pattern 3. Fugitive dust emission due to blowing of wind 4. Unmanaged dumping. 5. Soil erosion 6. Impact on productivity and fertility of the soil 7. Contamination of surface water bodies due to runoff	1. Sprinkling of water to reduce fugitive dust emission. 2. Material storage under sheds. 3. Separate bins for onsite collection and segregation of domestic waste. 4. Filling of low lying area with construction wastes 5. Constructions of storm water drain	1. Removal of top soil 2. Dust pollution in dry season 3. Contamination of soil/water. 4. Effects on Flora/ Fauna 5. Health effects on workers handling chemical/oil/fuel /paints etc. 6. Health effects on workers near solid waste collection area	1. To maintain quality of soil in vicinity of site 2. Reducing point of contact of hazardous waste if any. 3. Using designated /earmarked areas for refuelling, and washing of machinery or storing empty cans of	1. Assistance to gram panchayat regarding usage of Organic Fertilizer that shall be provided to the farmers to increase the productivity and to increase fertility of soil. 2. Concrete flooring for storage of raw materials, waste

Activity/ Causes of pollution	Probable Impacts	Environmental measures already taken	Damage Assessment	Remediation plan proposed.	Remediation Measures
	from construction site during rain 8. Contamination of Soil. Leaching may affect Ground water quality. 9. Unmanaged disposal of solid waste / Construction waste 10. Solid waste disposal on land may degrade soil.	to divert storm water from flowing over the construction areas. 6. Installation of oil and grease traps in construction workshop. 7. Solid waste was disposed as per Municipal rules.		paints, varnishes etc. 4. Concrete flooring of storage area to prevent leaching. 5. Solid waste generated was given to Municipal Corporation for proper disposal.	materials and products 3. Domestic waste collection and disposal system shall be created.
Air Environment 1. Site Clearance (removal of shrubs) 2. Soil Excavation	1. Dust emission during site cleaning 2. Dust and gaseous	1. Water sprinkling on haul road. 2. Only PUC certified	Air Pollution at nearby areas. Increase in air pollution due to installation of	To reduce Air Pollution in nearby area.	1. Suppression of dust by sprinkling of water by water

Activity/ Causes of pollution	Probable Impacts	Environmental measures already taken	Damage Assessment	Remediation plan proposed	Remediation Measures
3. Loading and Unloading of construction material 4. Operation of DG Sets 5. Transportation of construction materials through Vehicles 6. Operation of construction machineries like Mixer and others 7. Operation of formaldehyde unit	emission from transportation vehicle during construction 3. Dust and gaseous emission from transportation vehicle during operation 4. Emissions from Boiler operations, DG sets and transportation	vehicles were allowed to enter the site. 6. Material were transported with covered trucks 3 Wheel Wash arrangement was provided. 4. 'Pacca road' inside plant 5. Water sprinkling on 'kaccha road' 6. Bag filter system was provided to Boiler for control of air emissions	formaldehyde plant		tankers on 'kaccha' road of the nearby villages 2. Plantation and maintenance of trees along the approach road of plant in collaboration with NIIAI /Forest Deptt. 3. Regularly checking of Ambient Air Quality (3 stations) at nearby villages

Activity/ Causes of pollution	Probable Impacts	Environmental measures already taken	Damage Assessment	Remediation plan proposed	Remediation Measures (twice in year)
Water Environment					
Fresh Water **requirement** 1. Water requirement for Site Preparation and Infrastructure development 2. Water requirement for construction activities 3. Water requirement for domestic use 4. Water requirement during, operation of	1. Ground water (0.6 KL per sqm.) has been used in various construction activity like dust suppression, RMC Production, Cement Blocks/ Brick Preparation, Plastering etc. 2. Ground water has been used for domestic consumption and during, operation of Unit	Curing compounds have been used to reduce the usage of water during, construction purpose.	The rain water during, construction/Operation phase was neither used for storage/ recharge and wasted completely Tanker water was used during construction and Operation phases	1. Potable drinking water to be provided to nearby villages. 2. Rain water harvesting ponds to be installed in near village	Providing and maintaining water treatment plant in nearby area.

Activity/ Causes of pollution	Probable Impacts	Environmental measures already taken	Damage Assessment	Remediation plan proposed	Remediation Measures
formaldehyde unit					
Waste Water 1. Generated due to domestic use 2. Generated during construction activity 3. Waste water generated during operation of unit	1. Water Logging & Mosquito breeding 2 Soil Contamination 3. Odour issues 4. Ground water contamination.	1. Mobile toilets provided for labours on the site with soak pit 2. Waste water was treated in neutralization pit during operation of unit 3. Training of staff & labours on the site for proper usage of water through signage	1. Percolation of waste water in the soil 2. Runoff during rains will lead to increase in pollutants in surface drains	1. Preventing open defecation in the vicinity of site	1. Toilet construction under Swatch Bharat Mission. After construction the same shall be handed over to Municipal Corporation as Sulabh Shauchalya and will be operated on pay and use model.
Storm Water	1. Increase in Sediment load	Separate storm water drain to	1. Water logging in area	Increasing the ground water	1. Rain Water Harvesting

Activity/Causes of pollution	Probable Impacts	Environmental measures already taken	Damage Assessment	Remediation plan proposed	Remediation Measures
	2. Contamination of Soil due to run off from construction site.	avoiding mixing of plant effluent with storm water	leading to breading of mosquito 2. Deterioration of the water channel / drain and impact on aquatic life. 3. Reduction in ground water recharge quantum due to coverage of land with impervious materials	recharge in the area	Ponds are proposed for harvesting the rain water in government schools and panchayat building of nearby villages.
Noise Environment					
1. Movement and operation of construction equipment and construction	Noise and vibration Generation and increase in background ambient Noise levels	1. Construction workers working at site were provided with PPEs like ear plugs	1. Increase in noise levels due to construction activities. 2. Increase in ambient noise	Providing medical assistance to nearby villages.	1. Audiometry test for workers and nearby villagers. 2. Distribution of

Activity/ Causes of pollution	Probable Impacts	Environmental measures already taken	Damage Assessment	Remediation plan proposed	Remediation Measures
activity 2. Transportation of construction materials in Trucks and Dumpers 3. Operation of Unit		and ear muffs 2. Construction of boundary wall has been made >3m to reduce the level of noise outside the campus 3. PPE were provided to the worker during operation phase	levels causing discomfort to nearby locals and fauna.		Hearing Aids hearing impaired Sr. Citizens of nearby villages,
Socio- Economic Environment					
1. Occupational Health and Amenities 2. Other social attributes	1. Health of the construction and operational workers 2. Facilities related to	1. PPEs were provided to all the construction and operational workers	1. Injuries to labours while working at site 2. Health issues of construction	1. Organizing health camps for construction and operational labourers	1. Organizing health camps for labourers 2. Provision of an medical camp for

Activity/ Causes of pollution	Probable Impacts	Environmental measures already taken	Damage Assessment	Remediation plan proposed	Remediation Measures
	hygiene and sanitation 3. Pressure on the existing infrastructure 4. Loss of livelihood	2. Periodical health examination of workers was done 3. Existing Medical Establishmen t in the area are adequate	and operational workers 3. Health issues of cattle	2. Provision of medical camp for local domestic animals	local domestic animals of nearby villages.
Biological Environment					
Habitat Fragmentation and other ecological attributes	1. Key species likely to be disturbed. 2. Loss of herbs and shrubs	Nil	1. Habitat disturbance 2. Health problems to cattle	1. Landscape plan to improve vegetation cover in the area	1. Tree plantation

13.6 NATURAL & COMMUNITY RESOURCES AUGMENTATION PLAN (NCRAP)

13.6.1 Introduction

A need assessment survey was carried out for the purpose to formulate the Natural and community resources augmentation plan. The need assessment survey covered the 10 Km radius study area of plant site. The augmentation plan will be multi fold in nature and will be in conjunction with the damage assessment as stated earlier.

Activities for the augmentation plan can be classified in major categories as under;
A. Natural Resource Augmentation Plan
B. Community Augmentation Plan

Activities proposed for Natural Resource Augmentation Plan

- Creation of drainage & Repair of culverts and embankments in villages
- Road repair & maintenance
- Creation of Cow shed in villages
- Plantation in common areas of nearby villages
- Additional awareness programs on Environmental protection

Activities proposed for Natural Resource Augmentation Plan

- Infrastructure development for training of youth
- Entrepreneurial development program aiming make in India
- Provision of solar panel lighting in common areas of villages
- Supply of Agriculture water pump sets for locals

13.7 CONCLUSION

M/s OM Chem aims to compensate for whatever minimal damages identified due to the plant's construction and operation of the plant, by way of a dedicated Natural & Community resource augmentation plan with an earmarked budget and defined timeframe for implementation of the same.

Through the summary of budgetary allocation with respect to violation activity and remediation measures suggested/recommended, natural and community resource augmentation plan, the impact on the environment and its relative damages are very low.

As far as the impacts due to the future operation of the plant are concerned, the cumulative impact of implementation of the latest State-of-the-art technologies in the plant will bring an overall improvement in the environmental quality of the area.

1128715/2021/Estt.Br

Annexure

HARYANA STATE POLLUTION CONTROL BOARD

SCO-131 Sect... HUDA Jagadhari Ph.01732-200137
Web: ... Email: ...
Telephone: ...

No. HSPCB/Consent/...YAMUNANAGAR/... Dated: 19/04/2018

M/s OM CHEM
... Road ...
YAMUNA NAGAR
133206

Sub.: Grant of consent to Establish to M/s OM CHEM

Please refer with application no ... received on dated 2018 ... in regional office Yamunanagar.

With reference to ... above application for consent to establish ... M/s OM ... hereby granted consent ... specified terms and conditions.

Consent Order	...
Period of consent	19 ... 2018 ...
Industry Type	Organic Chemicals ...
Category	RED
Investment in Lakh	...
Total Land Area (Sq. ...)	...
... Built up Area (Sq. ...)	3000...
Quantity of effluent	
1. Trade	... /Day
2. Domestic	...
Number of outlets	1/1
Mode of discharge	
1. Domestic	Septic tank
2. Trade	...
Permissible Domestic Effluent Parameters	
1. NA	
Permissible Trade Effluent Parameters	
1. NA	
Number of stack	1
Details of stack	
...	
Permissible Emission parameters	

Annexure I

NA

Capacity of boiler

Type of Furnace

Type of Fuel

Terms and Conditions

Scanned with CamScanner

Annexure I

12. That there is no discharge directly or indirectly from the unit [illegible] into the river or [illegible] River [illegible]

13. That the industry or [illegible] not sited within [illegible] according to the Environment [illegible] Rules/Notifications/Orders and [illegible] of Central Pollution control Board or Haryana State Pollution Control Board.

14. That if the unit is discharging its sewage or trade effluent into the public sewer meant to receive the effluent from industries etc. then the permission of the Competent Authority [illegible] and operating such public sewer giving permission letter to this unit shall be submitted at time of consent to operate.

15. That if at any time, there is adverse report from [illegible] any other aggrieved party or Municipal Committee or [illegible] against the unit's pollution the Consent to [illegible] revoked.

16. That all the financial dues required under the rules and policies of the Board have been deposited in full by the unit for this Consent to Establish.

17. In case of change of name [illegible] Consent to Establish granted [illegible] Consent to Establish fee shall be [illegible]

18. Industry should adopt water [illegible] to ensure minimum consumption of water in their Process. Ground water based [illegible] should get clearance from Central Ground Water Authority for scientific [illegible] resources.

19. That the unit will take all other clearances from [illegible] agencies, wherever required.

20. That the unit will not change [illegible] permission of the Board.

21. That this consent to establish [illegible] valid, if the unit falls in [illegible] Area or non-conforming area.

22. That the unit will comply with the Hazardous Waste Management Rules and will also [illegible] the non leachate [illegible] storage of Hazardous Waste [illegible] to dispose off the same [illegible] own premises or with the authorized disposal [illegible]

23. That the unit will [illegible] it will comply with [illegible] specific and general conditions [illegible] Consent to Establish [illegible] failing which Consent to Establish [illegible]

24. That unit [illegible] EA from MoEF [illegible] at any stage.

25. In case [illegible] not comply with the [illegible] within the stipulated period, Consent [illegible] will be [illegible]

26. That [illegible] consent [illegible] the unit before the start of production [illegible]

Specific conditions [illegible]

Other Conditions [illegible]

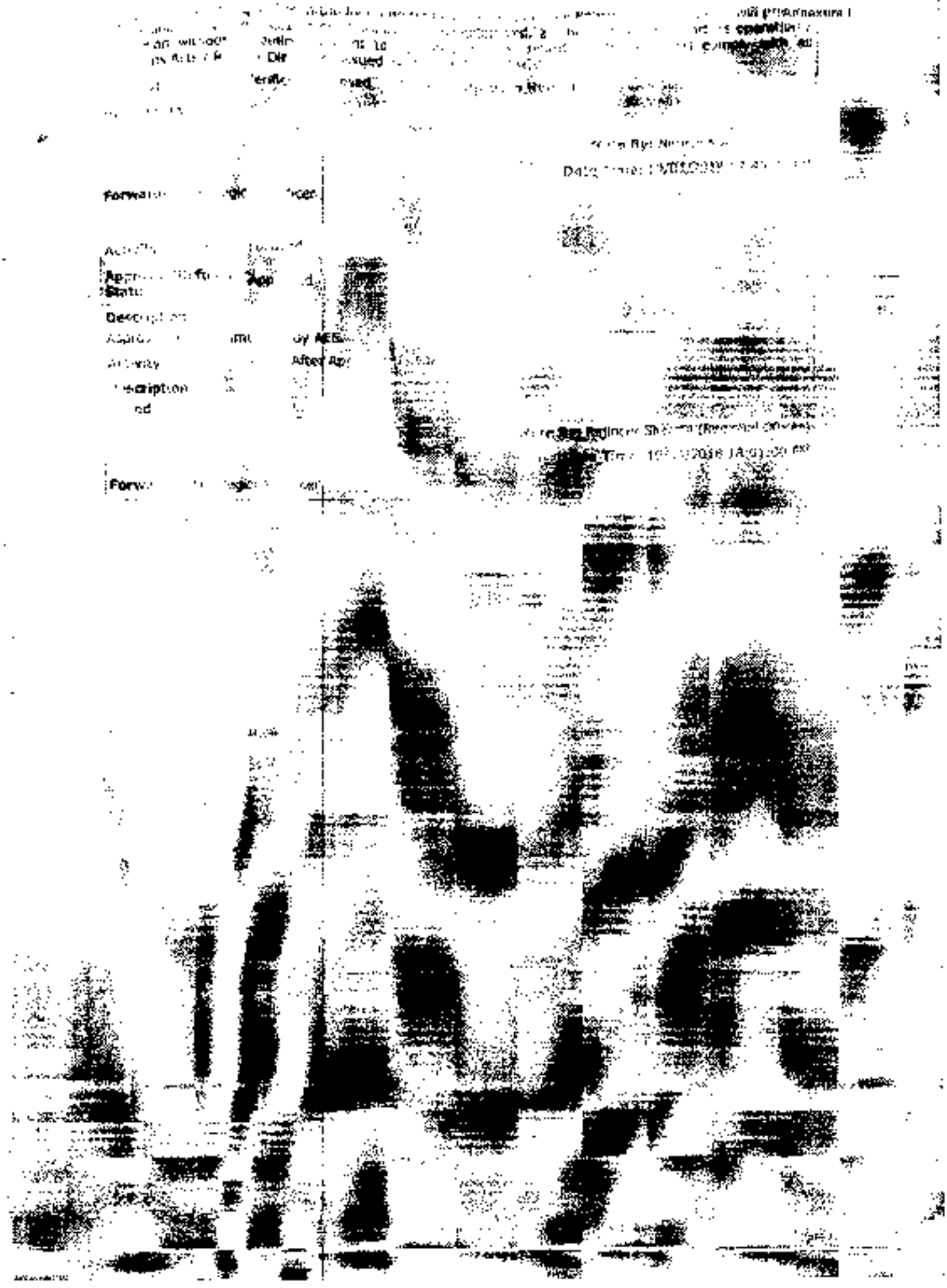
That the unit [illegible] Pollution control devices as per feasibility report submitted.

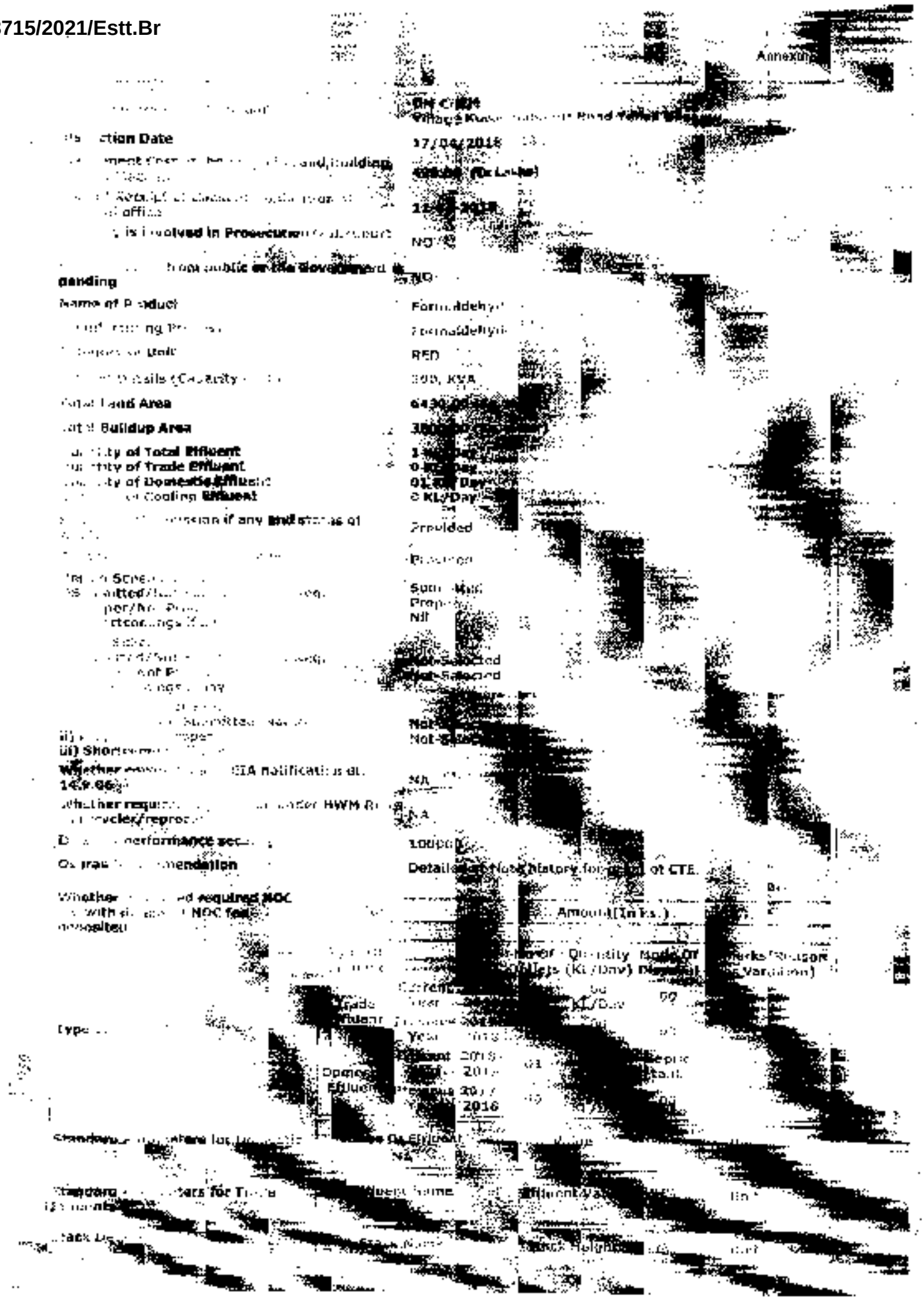
That the unit will not start the operation / production without obtaining Consent to Operate from the [illegible]

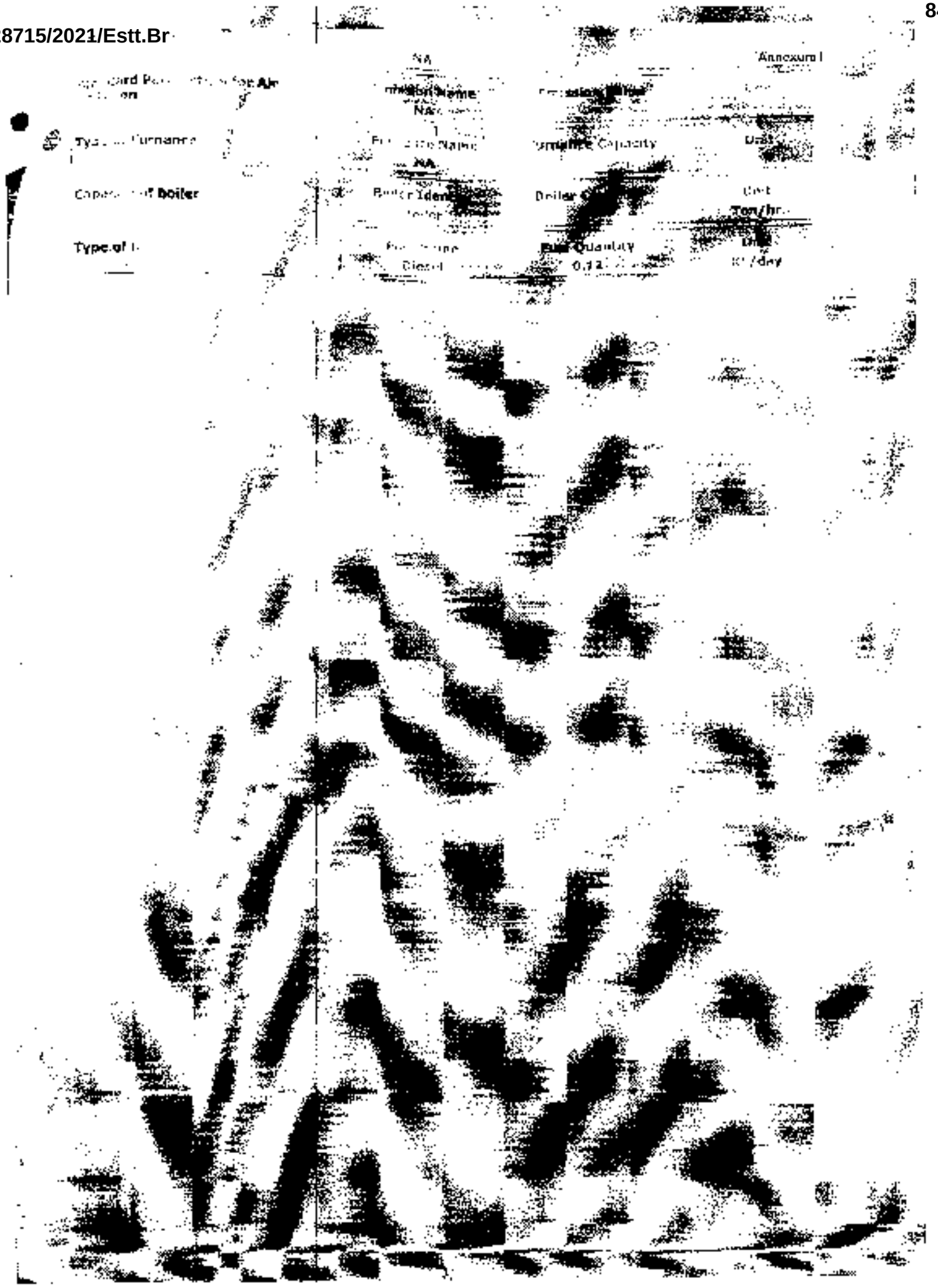
[illegible] will comply [illegible] provisions Acts [illegible] Directions issued by NGT / CPCB/

[illegible] Regional Officer, Yamuna Nagar [illegible] Pollution Control Board

1128715/2021/Estt.Br







1128715/2021/Estt.Br

Annexure 2

HARYANA STATE POLLUTION CONTROL
BOARD
C-131 Sector 17, PANCHKULA
Phone: 0172-2560187

HSPCB/Consent-313-96619YAMC-07/23 Dated: 22/08/2019

To

M/S MCU (I)
Village Kurali Sahayan P.O. Tehsil Ba...

Subject: Grant of consent to operate under CHEWS

Please refer to your application received on 02-2019 regarding Name Plate reference to your above application for consent to operate M/s C...
is granted subject to the following specifications/Terms and conditions.

Consent Under	Z-OTH
Period of Consent	02/2019 to 2020
Industry Type	Ceramic Clay/Table manufacturing
Area(HP)	
Investment (in Lakh)	
Total Plot Area Sq. meter	3310
Total Built up Area	2810
Quantity of effluent	
1. Trade	0.0 KL/Day
2. Domestic	0 KL/Day
Number of Outlets	
Mode of discharge	
1. Trade	Into tank
2. Domestic	
Domestic Effluent Parameters	
Type of Treatment	
NA	
Number of Stacks	
Height of stack	
Fuel	11 Meter
Emission parameters	
NA	
Fuel Details	
1. Fuel	0.0 Metric Tonne/day
Capacity of boiler	
Others	0.0 Tonne/hr

Annexure 2

Use of Farmers		
1. No.		
Type		
Dieat	0.12	
Raw Material Details		
Methane	50 Metric Tonnes	

VIRENDER SINGH PUNIA

Regional Officer, Yamuna Nagar

Haryana State Pollution Control Board

Terms and conditions

The applicants shall maintain and keep clean within factory area the premises ... storage tanks etc. ... be leak proof ... allowable pollutants level ... specified by State Board should be met ...

2. The applicant company shall comply with and carry out directive/orders issued by the Board ... in part ... applicant company shall be liable for such legal action against ... as per provision of the ... act in case of violation of any order/directives issued ... compliance of the terms and conditions of this consent order.

3. The applicant shall make an application for grant of consent at least ... days before the expiry of this consent.

4. Necessary fee as prescribed for obtaining renewal consent ... paid by the applicant alongwith the consent application.

5. ... technological ... the Board is of opinion that ... of the conditions referred ... required variation (including ... control equipment ...) the Board ... the applicant an opportunity of being heard ... applicant shall be bound ...

6. The industry shall provide adequate arrangement for fighting the accidental leakages discharge of any ... from the vessels mechanical equipment etc. which are likely to cause environment pollution.

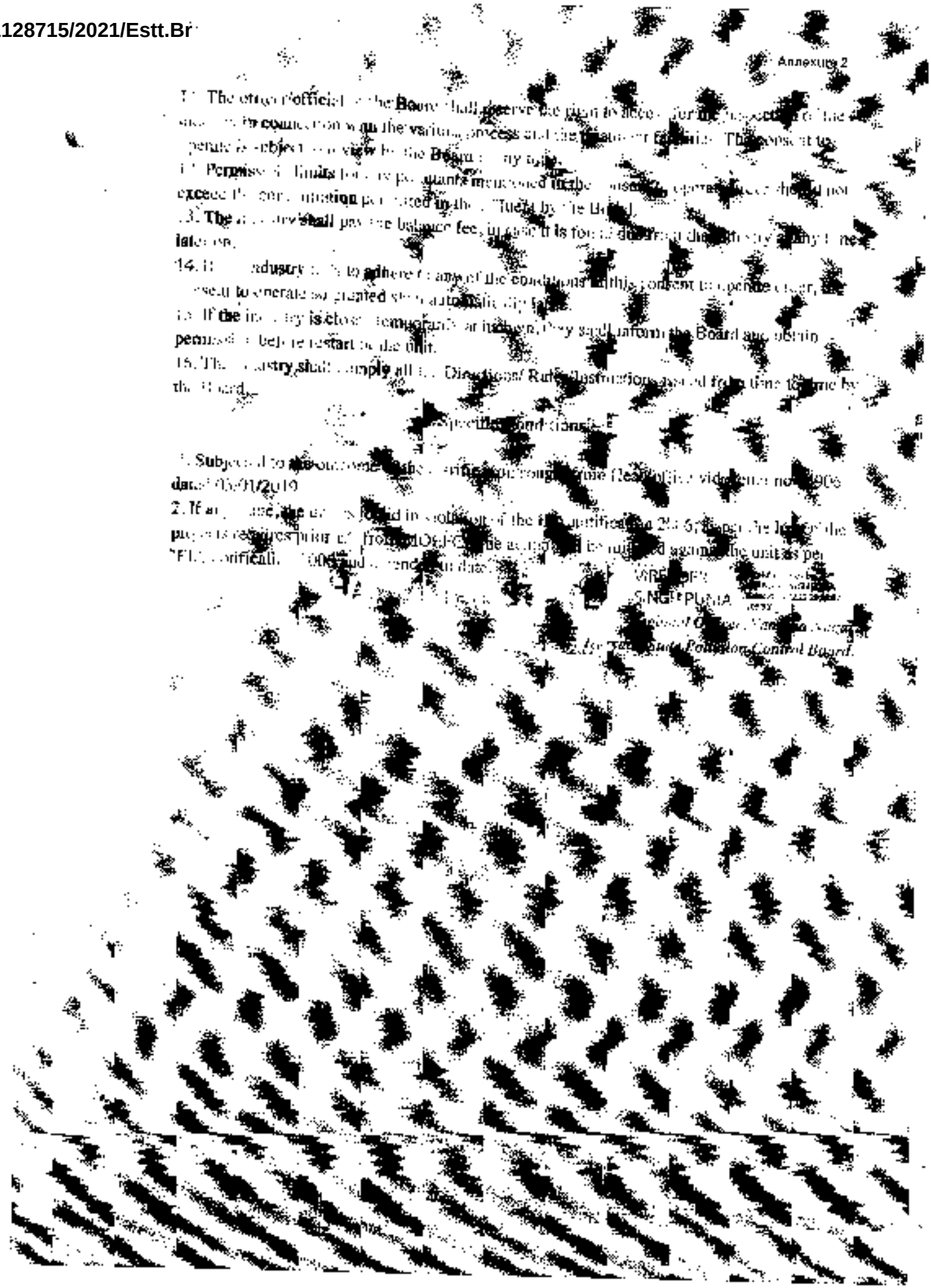
7. The industry shall comply noise pollution (Regulation and control) Rules ... 2000.

8. The Industry shall comply all the directions/guidelines/instructions as may be issued by the MoEF/CPCB/HSPCB from time to time.

9. The industry shall ensure that various characteristics of the effluents remain within the tolerance limits as specified in ... Standard and as amended from time to time ... the concentration of any characteristics shall exceed the limits for discharge.

10. The industry will immediately submit the revised application to the Board in the event of any change in the raw material ... process ... discharge of effluent. In case of change of process at any stage during the consent period, the industry shall submit fresh consent application ... account and shall be paid by the industry ... industry would immediately submit the consent application ... the Board in the event of any change during this year in the raw material ... quantity, quality of the effluent ... treatment facilities etc.

Annexure 2



1128715/2021/Estt.Br

Annexure 2

HARYANA STATE POLLUTION CONTROL BOARD

SCO-131 Sector-17, BUDA Jagadhari Ph.01732-200137 Email:- hspcbroyr@gmail.com
E-mail: hspcb@hry.nic.in

No. HSPCB Consent/ : 3139666/YAMCTO6383032 **Dated:08/04/2021**

To,

M/s OM CHEM
Village Kurali Sahapur Road Tehsil Bilaspur

Subject: Grant of consent to operate to M/s OM CHEM.

Please refer to your application no. 638303 received on dated 2021-02-09 in regional office Yamuna Nagar. With reference to your above application for consent to operate, M/s OM CHEM is here by granted consent as per following Specification, Terms and conditions.

Consent Under	BOTH
Period of consent	08/04/2021 - 30/09/2021
Industry Type	Organic Chemicals manufacturing
Category	RED
Investment(In Lakh)	499.0
Total Land Area(Sq. meter)	6200.0
Total Builtup Area(Sq. meter)	1200.0
Quantity of effluent	
1. Trade	0.0 KL/Day
2. Domestic	0.5 KL/Day
Number of outlets	1
Mode of disebarge	
1. Domestic	Septic tank
2. Trade	
Domestic Effluent Parameters	
1. NA	
Trade Effluent Parameters	
1. NA	
Number of stacks	1
Height of stack	
1. Stack	21 mtr
Emission parameters	
1. NA	
Product Details	
1. Formaldehyde	100 Metric Tonnes/day
Capacity of boiler	
1. Boiler 300 KG/Hour	0.3 Ton/hr

Annexure 2

Type of Furance	
1. NA	
Type of Fuel	
1. Diesel	100 KL/day
Raw Material Details	
Methanol	50 Metric Tonnes/Day

Nirmal Kumar
Digitally signed by Nirmal Kumar
Date: 2021.04.08 10:38:17 +05'30'
Regional Officer, Yamuna Nagar
Haryana State Pollution Control Board

Terms and conditions

1. The applicants shall maintain good house keeping both within factory and in the premises. All hose pipelines valves, storage tanks etc. shall be leak proof. In plant allowable pollutants levels, if specified by the Board should be met strictly.
2. The applicant/company shall comply with and carry out directive/orders issued by the Board in this consent order at all subsequent times without negligence of his/its part. The applicant/company shall be liable for such legal action against him as per provision of the law/act in case of violation of any order/directives issued at any time and or non compliance of the terms and conditions of this consent order.
3. The applicant shall make application for grant of consent at least 90 days before the date of expiry of this consent.
4. Necessary fee as prescribed for obtaining renewal consent shall be paid by the applicant alongwith the consent application.
5. If due to any technological improvement or otherwise this Board is of opinion that all or any of the conditions referred to above required variation (including the change of any control equipment) therein, this Board shall, after giving the applicant an opportunity of being heard, vary such condition accordingly and thereupon the applicant shall be bound to comply with the conditions so varied.
6. The industry shall provide [illegible] ing the accidental leakages, discharge of any pollutants [illegible] mechanical equipment etc. which are likely to cause environment pollution.
7. The industry shall comply noise pollution (Regulation and control) Rules, 2000.
8. The industry shall comply all the direction/Rules/Instructions as may be issued by the MOEF/CPCB/HSPCB from time to time.
9. The industry shall ensure that various characteristics of the effluents remain within the tolerance limits as specified in EPA Standard and as amended from time to time and at no time the concentration of any characteristics should exceed these limits for discharge.
10. The industry would immediately submit the revised application to the Board in the event of any change in the raw material in process, mode of treatment/discharge of effluent. In case of change of process at any stage during the consent period, the industry shall submit fresh consent application alongwith the consent to operate fee, if found due, which may be on any account, and that shall be paid by the industry and the industry would immediately submit the consent application to the Board in the event of any change during the year in the raw material, quantity, quality of the effluent, mode of discharge, treatment facilities etc.

Annexure 2

11. The officer/official of the Board shall reserve the right to access for the inspection of the industry in connection with the various process and the treatment facilities. The consent to operate is subject to review by the Board at any time.

12. Permissible limits for any pollutants mentioned in the consent to operate order should not exceed the concentration permitted in the effluent by the Board.

13. The industry shall pay the balance fee, in case it is found due from the industry at any time later on

14. If the industry fails to adhere to any of the conditions of this consent to operate order, the consent to operate so granted shall automatically lapse.

15. If the industry is closed temporarily at its own, they shall inform the Board and obtain permission before restart of the unit.

16. The industry shall comply all the Directions/ Rules/Instructions issued from time to time by the Board.

Specific Conditions :

1. That Unit will comply with the various provisions of Water Act 1974, Air Act 1981 and Environment Protection Act 1986 and the various directions conveyed by the HSPCB from time to time.

2. That Unit will be bound to closed the operation of the unit before or on 10.05.2021 if unit failed to obtain the Environment Clearance as per requirement of Environment Impact Assessment Notification dated 14 September 2006, dated 10.05.2021 or orders dated 11.11.2020 issued by the Govt. withdrawn or cancelled or any adverse directions issued by the Hon'ble National Green Tribunal of Law.

3. That the Haryana State Pollution Control Board shall be at liberty to issue closure orders against the Unit under Water Act and Air Act, any time during such period of consent.

4. That the Environment and Climate Change Deptt. Govt. of Haryana shall be at liberty to review the orders dated 11.11.2020 and closure directions issued against the Unit under Environment Protection Act 1986.

5. Unit will submit the analysis report within 30 days from the date of issuance of CTO or start of operation.

6. The CTO so granted is only to comply with the Govt orders dated 10.10.2020/11.11.2020 and nowhere change in the stand of board. Unit has been established and in operation in gross violation of EIA Notification 2006 and unit will remain liable for closure action once the relaxation period granted by Govt. expires on 10.05.2021 and legal action as per provisions of EP Act 1986 and Environmental Compensation as per policy of the Board.

7. Unit will deposit the Environmental Compensation imposed by board vide order no. 9793 dt. 27.11.2020 immediately.

Nirmal Kumar

Digitally signed by Nirmal Kumar
Date: 2021.06.09 16:28:56 +0530

Regional Officer, Yamuna Nagar

Haryana State Pollution Control Board.

Annexure 3

Regional Office, Yamuna Nagar Region
Haryana State Pollution Control Board
S.C.O. No- 131, Sector -17, [illegible], Yamuna Nagar
Website – www.hspcb.gov.in E-Mail – [illegible] Contact No. 0[illegible]

No. HSPCB/YR/2019/ 17380 Dated: 3/6/19

To

[illegible] CSIEM
Village Kharal Sahapur Road Tehsil Bilaspur
Yamuna Nagar

Sub: - Show Cause Notice [illegible] section 05 of Environment Protection **Act, 1986.**

Whereas your unit for [illegible] product is required [illegible] per project activity mentioned at Sr. No. 5 (j) of Schedule [illegible] Notification 2006.

Whereas, as per [illegible] your unit for **manufacturing** of **formaldehyde** was being established and operating **without prior Environmental Clearance as per** Environment Impact Assessment Notification 2006.

In view of the above, you are hereby show caused to [illegible] why closure [illegible] be initiated **against your unit as per provisions** of Sec. [illegible] Environment Protection Act, 1986.

In case you **fail to comply with** the [illegible] above within the [illegible] period, it will be presumed that you have nothing [illegible] to say in this regard and [illegible] the status as mentioned above, which will [illegible] against your unit under section 05 of Environment Protection Act, 1986.

[illegible]
Regional Officer
Yamuna Nagar

Endst. No. HSPCB / YMN /2019/ [illegible] Dt. [illegible]

A copy of the above is forwarded to **The Chairman**, HSPCB, [illegible] Panchkula for information please.

[illegible]
Yamuna Nagar

Annexure 3

Regional Office, Yamuna Nagar Region
Haryana State Pollution Control Board

S.C.O No- [illegible], Sector-17, HUDA, Jagadhri, Yamuna Nagar
Website: www.hspcb.gov.in, E-Mail: [illegible], Contact No. 01732-[illegible]

No. HSPCB/YR/2019/ 17386 Dated: 9/4/19

To

M/s OM CHEM
Village Kanhli Sabaypur Road Tehsil Bilaspur
Yamuna Nagar

Sub:- Show Cause Notice for Prosecution under section 15 of Environment Protection Act, 1986.

Whereas your unit is engaged in manufacturing of formaldehyde [illegible] products/resins prior Environmental Clearance as per project activity mentioned at Sr. No. 5 (i) of Schedule of Environment Impact Assessment Notification 2006.

Whereas, as per record of this office your unit for manufacturing of formaldehyde has been established and operating without prior Environmental Clearance as per Environment Impact Assessment Notification 2006

In view of the above, you are hereby show caused for 07 days as to why Prosecution action not be initiated against your unit as per provisions of section 15 of Environment Protection Act, 1986

In case you fail to comply with the deficiencies mentioned above within aforesaid period, it will be presumed that you have nothing to say in the matter and accept the statement as mentioned above, which will warrant prosecution action against your unit and its Owners/Proprietor/Partners/Directors/Stock Holders, under section 15 of Environment Protection Act, 1986.

Regional Officer
Yamuna Nagar

Endst. No. HSPCB/YMN/2019/ Dt. / /

A copy of the above is forwarded to The Chairman, HSPCB, C-11, Sector-6, Panchkula for information, please.

Regional Officer
Yamuna Nagar

Annexure 3

Regional Office, Yamuna Nagar Region
Haryana State Pollution Control Board

S.C.O. No- 101, Sector –17, H.U.D.A, Jagadhri, Yamuna Nagar

Website : www.hspcb.gov.in Email : rooyna@gmail.com Tel. No. 01732-260137

No. HSPCB/YR/2019/ [illegible] Dt. [illegible] / 08/ 2019

To

M/s [illegible] OF CHEM,
Village [illegible] Sabapur Road
Tehsil Jagadhri, Yamuna Nagar.

Sub: **Show Cause Notice for Revocation of Consent to Establish and Consent to Operate issued under Water Act 1974 & Air Act 1981.**

Sir/Madam, you have established and operated a unit for manufacturing of Formaldehyde from this product requires prior Environmental Clearance as per project activity mentioned at Sr. No. 5 (f) of Schedule of Environment Impact Assessment Notification 2006.

And whereas, as per terms of this notice, your unit for manufacturing of formaldehyde is running without prior obtained Environmental Clearance as per Environment Impact Assessment Notification 2006.

And whereas consent to establish was granted with the condition that unit will obtain Environment Clearance but unit failed to obtain Environment Clearance till date as per requirement of EIA notification 2006.

In view of the above, you are hereby show caused for 10 days as to why Consent to Establish and Consent to Operate granted to you under Water Act 1974 & Air Act 1981 may not be revoked.

In case you fail to comply with the directions mentioned above in the stipulated period, it will be presumed that you have nothing to say in this regard and action for the shutdown as mentioned above action will be taken for revocation of Consent to Establish and Consent to Operate issued under Water Act 1974 & Air Act 1981.

Regional Officer
Yamuna Nagar

Endst. No. HSPCB / YR / 2019/ Dt. / 08/ 2019

A copy of the above is forwarded to The Chairman, HSPCB, C-11, Sector-6 Panchkula for information, please.

Regional Officer
Yamuna Nagar

BEFORE THE HON'BLE APPELLATE AUTHORITY CONSTITUTED UNDER THE AIR ACT, 1981 AND WATER ACT, 1974, HARYANA STATE POLLUTION CONTROL BOARD, SECTOR-6, PANCHKULA

Appeal No. __ of 2019

M/s OM CHEM,

Versus

Haryana State Pollution Control Board and others

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5.	Annexure A-2 (CTO)	22.02.2019	19-21
6.	Annexure A-3 (Show cause notice u/s 5 of Environment Protection Act, 1986)	03.06.2019	22
7.	Annexure A-4 (Reply)	12.06.2019	23-24
8.	Annexure A-5 (Show cause notice u/s 15 of Environment Protection Act, 1986)	03.06.2019	25
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10.	Annexure A-7 (Impugned show cause notice for revocation of CTE and CTO under Water Act 1974 and Air Act 1981)	21.08.2019	28
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Chandigarh
Dated: 25.08.2019

(JITENDER DHANDA)
Advocate
Counsel for the appellant
P/1148/199_

BEFORE THE HON'BLE APPELLATE AUTHORITY CONSTITUTED UNDER THE AIR ACT, 1981 AND WATER ACT, 1974, HARYANA STATE POLLUTION CONTROL BOARD, SECTOR-6, PANCHKULA

CM ____ OF 2019

IN Appeal No. ____ of 2019

M/s OM CHEM

...Appellant

VERSUS

Haryana State Pollution Control Board and others

...Respondents

Application under order 39 Rule 1 & 2 for stay of operation of impugned show cause notice dated 21.08.2019 (Annexure A-7) for revocation of Consent to Establish and Consent to Operate issued under Water Act 1974 and Air Act 1981 restraining the respondent board from interfering in the peaceful running of the appellant-unit during the pendency of present appeal.

RESPECTFULLY SHOWETH:-

1. That the appellant is filing the above mentioned appeal before this Hon'ble Authority and is very much sanguine of acceptance of the same on the basis of grounds taken therein.
2. That the impugned show cause notice dated 21.08.2019 (Annexure A-7) for revocation of Consent to Establish and Consent to Operate issued under Water Act 1974 and Air Act 1981 have been issued in clear violation of statutory rules and by violating the principle of natural justice as such

the operation of the same liable to be stayed and the respondents liable to be restrained from interfering in the peaceful running of the appellant-unit during the pendency of present appeal. The grounds taken in the appeal may kindly be read as part of this application.

3. That the balance of convenience is in favor of the appellant and against the respondent. If the respondents are not restrained from interfering in the peaceful running of the appellant-unit during the pendency of present appeal the same will cause irreparable loss and injury to the applicant which may not be compensated later on.

It is therefore, respectfully prayed that the operation of the impugned show cause notice dated 21.08.2019 (Annexure A-7) for revocation of Consent to Establish and Consent to Operate issued under Water Act 1974 and Air Act 1981 may kindly be stayed and the respondents be restrained from interfering in the peaceful running of the appellant-unit during the pendency of present appeal and the appellant be permitted to operate the unit during the pendency of present appeal.

Date: 25.08.2019
Place: Panchkula.

M/s OM CHEM, village Kurali Sabapur Road Tehsil Bilaspur, Yamuna Nagar through its Partner Abhishek Garg s/o Parveen.

Through

JITENDER DHANDA

ADVOCATE

BEFORE THE HON'BLE APPELLATE AUTHORITY CONSTITUTED UNDER THE AIR ACT, 1981 AND WATER ACT, 1974, HARYANA STATE POLLUTION CONTROL BOARD, SECTOR-6, PANCHKULA

Appeal No._____ of 2019

M/s OM CHEM

...Appellant

VERSUS

Haryana State Pollution Control Board and others

...Respondents

Affidavit of Abhishek Garg s/o Parveen Partner of M/s Om Chem, village Kurali Sabapur Road Tehsil Bilaspur, Yamuna Nagar.

I, the above named deponent do hereby solemnly affirm and declare as under:

1. That the appellant is filing the above mentioned appeal before this Hon'ble Authority and is very much sanguine of acceptance of the same on the basis of grounds taken therein.

2. That the impugned show cause notice dated 21.08.2019 (Annexure A-7) for revocation of Consent to Establish and Consent to Operate issued under Water Act 1974 and Air Act, 1981 have been issued in clear violation of statutory rules and by violating the principle of natural justice as such the operation of the same liable to be stayed and the respondents liable to be restrained from interfering in the peaceful running of the appellant-unit during the pendency of present appeal. The grounds taken in the appeal may kindly be read as part of this application.

3. That the balance of convenience is in favor of the appellant and against the respondent. If the respondents are not restrained from interfering in the peaceful running of the appellant-unit during the pendency of present appeal the same will cause irreparable loss and injury to the appellant which may not be compensated later on.

Place: Panchkula

Date: 25.08.2019 Deponent

Verification:

It is verified that all the contents of my above affidavit are true and correct. No part of the same is false and nothing material has been kept concealed therein.

Place: Panchkula

Date: 25.08.2019 Deponent

BEFORE THE HON'BLE APPELLATE AUTHORITY CONSTITUTED UNDER THE AIR ACT, 1981 AND WATER ACT, 1974, HARYANA STATE POLLUTION CONTROL BOARD, SECTOR-6, PANCHKULA

Appeal No._____ of 2019

M/s OM CHEM, village Kurali Sahapur Road Tehsil Bilaspur, Yamuna Nagar through its Partner Abhishek Garg s/o Parveen.

...Appellant

VERSUS

1. Haryana State Pollution Control Board, C-11, Sector 6, Panchkula through its Chairman.
2. Regional Officer, Haryana State Pollution Control Board, Yamunanagar, Region Yamunanagar.

...Respondents

Appeal under Section 31 of the Air Act, 1981 and under Section 28 of the Water (Prevention and Control of Pollution) Act, 1971 for setting aside the show cause notice of revocation of Consent to Establish and Consent to Operate dated 21.08.2019 (Annexure A-7) under Water Act 1974 and Air Act 1981 and all the consequential proceedings issued by the respondents being illegal, unjust and without jurisdiction and authority and against the natural principles of law.

RESPECTFULLY SHOWTH:-

1. That the appellant is running a unit in the name and style of M/s Om Chem Pvt. Ltd. at the present address since 2018 and running its business by following all the directions and rules issued by the respondent-Board from time to time.

2. That the brief facts of the case are that the appellant unit was established in the year 2018 after obtaining a No Objection Certificate/Consent to Establish and expansion, from the respondent-Board. A true copy of the No Objection certificate dated 19.04.2018 is attached herewith as **Annexure A-1.**

3. That since its inception, the unit is obtaining Consent to Operate from the Board from time to time and in the year 2019 the unit has granted for Consent to Operate from 22.02.2019 to 30.09.2020 for a period of 1 year 6 months under the Water Act 1974 and Air Act 1981 and as such the unit is being run on the basis of a valid Consent to Operate. Copy of the Consent to Operate granted under Water Act 1974 and Air Act 1981 vide letters dated 22.02.2019 is annexed herewith as **Annexure A-2.**

4. That it was a case of shock and surprise for the appellant to receive a show cause notice dated 03.06.2019 for closure of the unit on the basis of following grounds:-

> "Whereas as per record of this office your unit for manufacturing of Formaldehyde has been established and operating without environmental clearance as per Environment Impact Assessment Notification 2006.

Copy of Show Cause Notice dated 03.06.2019 u/s 5 of Protection Act, 1986 is attached herewith as **Annexure A-3.**"

5. That on receipt of show cause notice (Annexure A 3) the appellant immediately filed a detailed reply to the same narrating the true facts and situation. A true copy of the reply is annexed herewith as **Annexure A-4**.

6. That the respondents has also issued another show cause notice dated 03.06.2019 u/s 15 of the Environment Protection Act 1986 for prosecution on the basis of following grounds:

"Whereas as per record of this office your unit for manufacturing of Formaldehyde has been established and operating without environmental clearance as per Environment Impact Assessment Notification 2006. Copy of Show Cause Notice dated 03.06.2019 u/s 15 of Protection Act, 1986 is attached herewith as **Annexure A-5.**"

7. That on receipt of show cause notice (Annexure A 5) the appellant immediately filed a detailed reply to the same narrating the true facts and situation. A true copy of the reply dated 12.06.2019 is annexed herewith as **Annexure A-6.**

8. That the respondent board has again issued another show cause notice dated 21.08.2019 for revocation of Consent to Establish and Consent to Operate issued to the appellant

under Water Act 1974 and Air Act 1981 on the basis of following grounds:-

> "Whereas as per record of this office your unit for manufacturing of Formaldehyde has been established and operating without environmental clearance as per Environment Impact Assessment Notification 2006. Copy of Show Cause Notice dated 21.08.2019 under Water Act 1974 and Air Act 1981 is attached herewith as **Annexure A-7**."

9. That the action of the respondents harassing the appellant by issuing repeated show cause notice is under one provision of the other, although on the same grounds, is illegal, unjust, arbitrary, against the principles of natural law of justice, hence the same is liable to be set aside by this Hon'ble Authority on the basis of following grounds:-

i) That on receipt of show cause notice dated 03.06.2019 u/s 5 and 16 of the Environment Protection Act (Annexures A-3 and A-5 respectively), the appellant immediately responded and submitted a detailed reply dated 12.06.2019 (Annexure A-4 and A-6 respectively) showing that the unit has a Zero discharge of the trade effluent and it is a 100% non-polluting unit, either air pollution or water pollution.

ii) That it was clearly clarified in the reply to the show cause notice that the appellant unit has no water consumption or discharge with regard to

the trade of the unit is concerned and the unit is consuming 0.5 KLD of water i.e. for domestic use which cannot be considered from any angle in use or discharge as trade effluent.

iii) That the point of obtaining EIA-clearance under the EIA notification dated 14.09.2006 was not raised by the respondent-Board either at the time of issuance of consent to establish or consent to operate granted to the appellant unit continuously since the year 2009 until 13.03.2016 when the appellant was granted Consent to Operate until 31.03.2023. This fact itself shows that even the officials of the respondent Board who are expert of their subjects were not aware of the fact that the appellant unit requires EIA clearance under the notification dated 14.9.2006 and as such this point was never raised not in the case of Appellant but even in the cases of several other units situated in State of Haryana involved in the same process/trade i.e. of the appellant.

iv) That now raising of this point after a gap of more than 10 years from the date of grant of consent to establish and grant of consent to operate continuously for 10 years invokes the principle of promissory estoppels against the respondent-Board.

v) That when the authorities approached the office of Environment Impact Assessment Authority to inquire about the process for obtaining the EIA clearance under the notification dated 14.9.2006, he was informed verbally by the officials there that the notification dated 14.9.2006 is under process of modification and the draft notification for the same has already been issued by the Central Govt. and appellant was advised to check the details there whether the unit in question will be required to obtain EIA clearance under the draft notification. The appellant went through the site and came across a letter dated 15.1.2019 issued by the Ministry of Environment Forest and Climate Change (Impact Assessment Division) which says that "*as the principal notification dated 14.9.2006 has undergone substantial changes over the years, the Ministry has decided to re-engineer the entire notification in the line with the amendment issued, OMs and circulars issued from time to time and the experience gained over the years in implementation of EIA notification.*"

In view of the above, the Zero draft of the Environment Impact Assessment notification 2019 was sent to the concerned States inviting their comments within one month of receipt of

the zero dratt for finalization of draft EIA notification 2019. A true copy of the letter dated 15.04.2019 and the zero draft notification showing the status of the appellant unit in the new notification is attached herewith as **Annexure A-8**.

vi) That a bare perusal of the zero draft notification shows at point 5(f) the appellant unit was earlier covered under the category of synthetic organic chemical and in the proposed notification it has been clearly mentioned by giving a note *"that middle and small units as defined by the MSMD from time to time are exempted from implementation of prio environment clearance"*.

vii) That this fact was duly brought to the notice of the respondent-Board by way of the reply to show cause notice submitted by the appellant. However, the same has been ignored by the respondent-Board.

viii) That the action of the respondent Board vide show cause notice dated 21.08.2019 for revocation of Consent to Establish and Consent to Operate issued under Water Act 1974 and Air Act 1981 is violative of right to earn livelihood only on the ground of non obtaining clearance under the EIA notification dated 14.9.2006 particularly in the situation when it has been

duly established on record that even the Ministry of Environment, Forest and Climate Change (Impact Assessment Division) Govt. of India has already considered the issue and found it reasonable to exempt the small and medium units involved in the manufacturing of synthetic organic chemical defined under the MSME from time to time from obtaining prior clearance from the EIA.

ix) That in view of the peculiar facts mentioned in the foregoing paras the decision taken by the respondent-Board is nothing more than an action taken on conjectures and surmises on cyber technical grounds and without application of judicious mind which is the requirement of law for any statutory authority before proceeding to take any action against any business entity established under law or citizens of the country. As such the impugned action of the Board is liable to be set aside by the Hon'ble Authority

x) That the respondent board being a statutory authority is duty bound to follow uniform formula, however it fails to perform this duty with honesty because on 07.07.2019 i.e. in between issuance of notices dated 03.06.2019 (Annexure A 3 and A 5) u/s 5 and 15 of the Environment Protection Act 1986 respectively

and Show Cause Notice dated 23.08.2019 (Annexure A-7) to the appellant unit for Closure, the respondent board has granted Consent to Operate to one of the similarly situated unit namely Banke Bihari Overseas Pvt. Ltd., Samola District Rohtak vide letter dated 07.07.2019. A true copy of the same is annexed herewith as **Annexure A-9**.

xi) That while granting Consent to Operate to Banke Bihari Overseas Pvt. Ltd. vide letter dated 07.07.2019 (Annexure A-9) the respondent board has put following three conditions:

1. Subjected to the outcome of the clarification sought by Technical Advisory Committee (TAC) at Head Office from MOEF&CC.
2. If any stage, the unit is found in violation of the EIA notification 2006, as per the list of the projects requires prior EC from MOEF&CC, the action will be initiated against the unit as per EIA Notification dated 14.09.2006 and amended to date.
3. Unit has also submitted undertaking that if EC required at any stage, the same will be obtained by the Unit.

xii) That while granting Consent to Operate to the appellant unit the respondent board in their minutes of meeting has clearly mentioned that

EIA Notification dated 11.01.2016 is not applicable on the unit. A true copy of the Minutes of Meeting is annexed herewith as **Annexure A-10**.

viii) That a bare perusal of the abovementioned noting by the respondent board makes it very clear that the board itself is not clear about the applicability of EIA Notification 2006 on the units manufacturing Formaldehyde, ever then the Appellant is being harassed and humiliated by the respondent board on the ground of EIA Notification 2006 by blaming the appellant for violation of the same despite the fact that the respondent board is granting Consent to Establish and Consent to Operate to all the similarly situated units since 2006 without obtaining clearance under EIA notification dated 2006 and particularly in the light of fact that the Central Government has already issued Zero Draft Notification 2019 exempting the category of appellant unit from obtaining clearance under EIA Notification 2006.

10. That the balance of connivance is in favor of the appellant and against the respondents.

11. That the required court fee has already been deposited with the original appeal.

It is therefore, respectfully prayed that the present appeal may kindly be allowed and the impugned show cause notice dated 21.08.2019 (Annexure A-7) for revocation of Consent to Establish and Consent to Operate issued under Water Act 1974 and Air Act 1981 issued by the respondents may kindly be set aside being illegal, arbitrary, unjust against the principle of natural law of justice.

Dated: 25.08.2019
Place: Panchkula

M/s OM CHEM, village Kurali Sabapur Road Tehsil Bilaspur, Yamuna Nagar through its Partner Abhishek Garg s/o Parveen.

Through

JITENDER DHANDA,

ADVOCATE

VERIFICATION:-

It is verified that the above mentioned appeal has been drafted under my instructions and all the facts narrated from para no.1 to 21 of the appeal are true and correct to the best of my knowledge and belief.

Dated: 25.08.2019
Place: Panchkula

M/s OM CHEM, village Kurali Sabapur Road Tehsil Bilaspur, Yamuna Nagar through its Partner Abhishek Garg s/o Parveen.

BEFORE THE APPELLATE AUTHORITY (HARYANA) UNDER THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT, 1974, AIR (PREVENTION AND CONTROL OF POLLUTION) ACT, 1981.

Appeal No.161/2019

M/s Synochem Organics Pvt Ltd ... Appellant

Versus

Haryana State Pollution Control ... others ... Respondents

Present: Mr. Jitender ... uda, Advocate for the appellant.

HEARD.

The learned counsel, appearing on behalf of the appellant ... The ... sel ... that the Comp... ...thority is acting ... inasmuch as the ... requirement ... an identical ... the Environment Clearance ... from the Environment Impact Assessment Authority (EIAA) ... been ... to ... in the case of other ... units while it is being put into ... to ... the foundational ... the impugned Show Cause Notice. In continuation ... that plea, the learned ... instructions ... case of ... recently ... units ... placed upon Annexure A ...

... apprehension in the mind of the app... instructed to the learned counsel ... during the ... of hearing ... that the Competent Authority may not give a surp... the appellant ... without taking cognizance of the ... recorded in the course of ... preceding paras of this order.

3. W... we are ... in a position to ... upon ... or otherwise of the apprehension ... mind of a ... (the appellant, in this case), we have to ... in the larger interest of justice and to ... the mind of the litigating party.

4. That the environment clearance ... was ... even in the case of the appellant for ... a decade ... that it is being pressed ... service ... certain modification in the relevant notification ... is under way at the Central ... level is the further averment. The learned counsel ... that the interest ... would be ... direction is issued to the Competent Authority to take an ... view in the matter ... noticing the

Annexure

... contents ... recorded in the preceding paras of this order and which may be raised during the course ... hearing.

NOTICE: -

Mr. ... Kumar Chahal, Advocate accepts notice on behalf of ... to respond to the ... of Paras ... and ... of the ... consideration ... relate to the ... matters ought to ... by nomenclature ... instrumentality of the State ... is a Public Welfare State. Though the constitutional documentation, is a Public Welfare State. Though the response on behalf of the respondents would obviously be based upon the information derived from the official record, it would be appropriate ... by an affidavit.

7. The Competent Authority may feel unfettered to conclude the deliberation within a period of 10 working days from today. It may also favourably consider the grant of an opportunity of a hearing to the appellant. The appellant may, if so advised, file a detailed reply to the Show Cause Notice too.

8. List on 13.09.2019.

9. In the meantime, no adverse action in pursuance of the impugned Show Cause Notice may be taken against the appellant till the next date of hearing.

Dated: 27.08.2019.

Dr. Sukhdev ... is on leave for today.

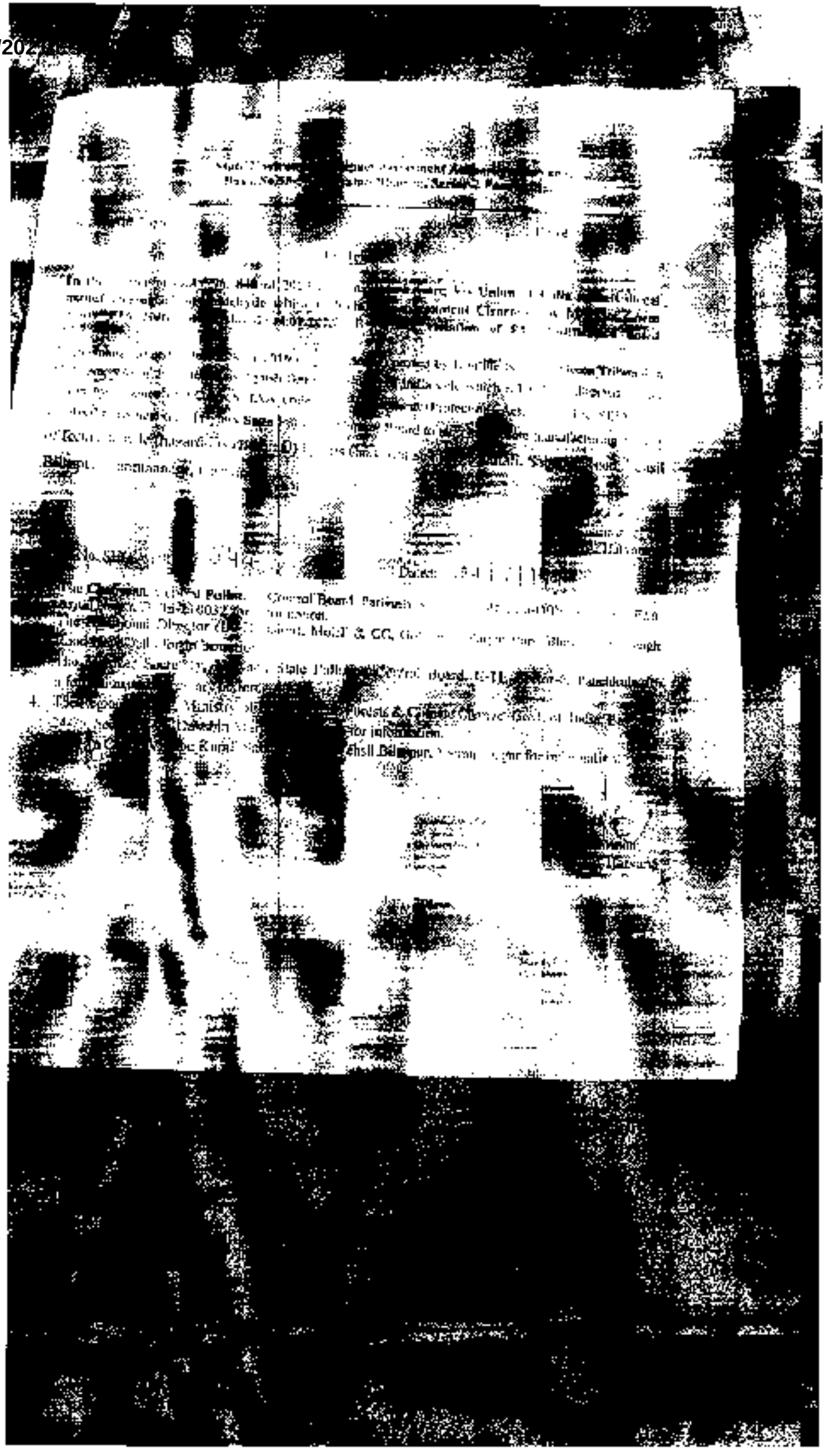
Sd/-

(JUSTICE S.S. ANAND)
President
Appellate Authority

Sd/-

(MAJ. GEN. HARISH JIT SINGH
SC, VSM. (RETD.)
Member
Appellate Authority

Attested to be true copy



BEFORE [illegible] APPELLATE AUTHORITY [illegible] UNDER THE WATER (PREVENTION AND CONTROL OF POLLUTION) [illegible] AIR (PREVENTION AND CONTROL OF POLLUTION) [illegible] 1981

Appeal No. 183 of 2019

M/s [illegible] Yamuna Nagar through its partner [illegible]

....Appellant

Versus

[illegible] State Pollution Control Board [illegible] Sector 6 [illegible] Panchkula [illegible]

Regional Officer, Haryana State Pollution Control Board, Yamuna Nagar [illegible] Yamuna Nagar

....Respondents

Present: 1. Shri [illegible] Appellant
2. Shri Ramesh Chand [illegible] Respondent (HSPCB)
3. Shri Satbir Singh, District [illegible] HSPCB

ORDER

[illegible] arguments for 17.06.2020.

[illegible] been filed under Section 31 [illegible] the Water (Prevention and Control [illegible] Show Cause Notice dated [illegible] Water Act, 1974 & Air Act 1981.

[illegible] the appellant unit for manufacturing [illegible] Environment Clearance as per Environment Impact Assessment [illegible] to Establish was granted to the Unit with the condition [illegible] Clearance but unit failed to obtain Environmental Clearance [illegible] Notification 2006. Vide letter No. HSPCB/YR/2019/[illegible] Officer, Yamuna Nagar issued Show Cause [illegible] (CTE) and Consent to Operate (CTO) [illegible] Appellant unit filed [illegible]

[illegible] the hearing.

[illegible] argued the case that the unit was established [illegible] Certificate/Consent to Establish from the [illegible] 2019 to 30.1.2020 [illegible] 6 [illegible] Act 1974 and Air Act 1981. He [illegible] EC clearance under [illegible] the [illegible] consent to operate [illegible] Impact [illegible] covered under [illegible] chemical and in the proposed [illegible] that "middle and small units as defined by [illegible] from time to time are exempted from implementation of [illegible] environment clearance [illegible] of the Respondent-Board [illegible] the Appellant [illegible]

[illegible] been ignored by [illegible] Respondent [illegible]. The action of the Respondent Board [illegible] Show Cause Notice dated [illegible].2019 for revocation of Consent to Establish and [illegible] to [illegible] under Water Act, 1974 and Air Act 1981 is violative of right [illegible] only [illegible] ground of non-obta[illegible] [illegible]nce under the EIA [illegible] dated 14.9.2006 [illegible] prayed that the [illegible] appeal may kindly be [illegible] impugned show cause notice dated [illegible] 2019 for revocation of [illegible] Consent [illegible] Establish and [illegible] to Operate [illegible], be set aside.

The Counsel of the Appell[illegible] [illegible] the rejoinder [illegible] dated [illegible] 07.2020 [illegible] facts were [illegible] in the rejoinder.

On [illegible] Ld. Counsel for [illegible] Respondent [illegible] Shri Sa[illegible] Singh, [illegible] stated that Consent to Establish [illegible] and [illegible] condition that [illegible] will obtain [illegible] Ministry [illegible] Government of India if [illegible] any stage. [illegible] covered at Sr. No. 5[illegible] [illegible] EIA [illegible] dated 14.9.2006 issued [illegible] Government [illegible] has not obtained the [illegible] as per provisions of the EIA notification [illegible] 9.2006 [illegible] environment clearance in [illegible] the Government [illegible] notification dated [illegible] 2006. [illegible] gross violation of [illegible] regarding draft [illegible] circulated by the [illegible] vide their letter [illegible] 13.4.20[illegible], it is only the [illegible] and not [illegible] finalized by the MoEF [illegible] no impact on [illegible] EIA notification dated 14.9.2006.

They have also [illegible] appellant [illegible] has not followed the due [illegible] appeal has been [illegible] the Show Cause Notice dated 21.8.2019 [illegible] Respondent Board being a [illegible] Appellant unit is a premature Appeal [illegible] dismissed being devoid of merit.

[illegible] the parties and perused [illegible] for the Appellant [illegible] rejoinder [illegible] dated [illegible] tenable that [illegible] Respondent Board has not taken a final decision [illegible] Show Cause Notice dated 21.8.2019 issued to the Appellant unit [illegible] Appellant [illegible] not followed the due procedure and filed [illegible] before the Appellate [illegible] Show Cause Notice.

[illegible] above facts [illegible] by the Appellant [illegible] being [illegible] may submit [illegible] 7 days from the [illegible] order [illegible] show cause notice to the [illegible] will pass an [illegible] considering [illegible] the reply/rep[illegible] [illegible] HSPCB [illegible] and any [illegible] appropriate [illegible] in the matter [illegible] disposed of.

Chandigarh, dated
the 30.0[illegible].2020

[illegible]
(Dheera Khandelwal)
Appellate Authority

[illegible] be true copy
[illegible]
[illegible] Authority of HSPCB

1128715/2021/Estt.Br

Annexure 3

(33) P-10

To

Dated: [illegible] 2020

The Chairman
HSPCB, Panchkula

Subject: Reply/representation in compliance of order dated 30.06.2020 passed by the Appellate Authority in Appeal No 163 of 2019. Of M/S OM [illegible] Vs HSPCB

Sir,

[illegible] (HARYANA)

The applicant submits as under:-

1. That the Regional Officer, Yamunanagar has issued show cause notice dated 03.06.2019 u/s 5 and 15 of EP Act, 1986 vide order dated 21.06.2019 [illegible] Consent to Establish and Consent to Operate granted to the applicant under Water Act, 1974 and Air Act, 81.

2. That the applicant has submitted reply to the Show Cause Notices dated 03.06.2019 u/s 5 and 15 of Act, 1986 on 12.06.2019. On receipt of notice dated 21.08.2019 for revocation of CTE and CTO the applicant approached the Hon'ble Appellate Authority by filing Appeal No 163 of 2019 and the Hon'ble Appellate Authority was pleased to grant stay to the applicant. The abovementioned appeal came up for final hearing on [illegible] the Hon'ble Appellate Authority vide an objection being raised by HSPCB that the appeal is pre-matured being against the show cause notice and the Hon'ble Appellate Authority was pleased to disposed of the said appeal with following directions:

> *"I have heard the arguments of both the parties and perused the appeal of the Counsel for appellant and the written statement of Respondent Board. In view of the facts and circumstances as explained by both the counsels, the appeal filed by the appellant unit being pre-mature is dismissed, and the unit may send reply within 7 days from the receipt of the order to the Board and hence to the Board while to pass an appropriate order by taking all the contentions of appellant unit mentioned in the reply and keeping in view the law, guidelines and any other applicable regulations in vogue. The Board may take appropriate decision in the matter following due procedure."*

3. That now the applicant is replying to the Show Cause Notice dated 03.06.2019 u/s 5 and 15 of the Act, 1986 and notice

dated 21.08.2019 for revocation of CTE and CTO because the action being taken by the board is not justified and the applicant is being made a scape goat without any fault on his behalf. The abovementioned show cause notices liable to be withdrawn on the basis of following grounds:

a. That the applicant unit has a zero discharge of trade effluent [illegible] non-polluting unit either for Air Pollution and Water Pollution.
b. That the unit has no water discharge with regard to the trade of the unit and is consuming 0.5% KLD of water [illegible] for domestic use which cannot be considered from any angle in use or discharge as trade effluent.
c. That the point of obtaining EIA clearance under EIA Notification dated 14.09.2006 was not raised by the Respondent-Board at [illegible] the time of issuance of Consent to Establish or [illegible] granted to the applicant [illegible] since 20[illegible] and [illegible] 22.02.20[illegible] the applicant was granted consent to operate [illegible] 30.09.[illegible] which means that even the official of Respondent Board who are expert of their subjects were not aware of the fact that the applicant unit required EIA Clearance under Notification dated 14.09.2006.
d. That [illegible] after a gap of more than [illegible] of grant of Consent to Establish and Grant of Consent to [illegible] having huge investment invokes the principle of [illegible] estoppels against the respondent-board.
e. The applicant [illegible] through the letter [illegible] dated 15.04.[illegible] issued by MOEF & CC (Impact Assessment Division) clearly mention that "as the principal Notification dated 14.09.2006 has undergone substantial changes over the years, the Ministry has decided to re-engineer the entire notification in the line with the amendment issued, OMs and Circulars issued from time to time & experience gained over the years in implementation of EIA notification.
f. That the applicant unit was earlier covered under the category of synthetic organic chemical and proposed notification clearly mention [illegible] that mobile and small units as defined by MSME from time to time are exempted from implementation of prior Environment clearance.]
g. That however the abovesaid draft notification stand amended by the Ministry of Forest and Environment vide [illegible] draft notification [illegible] when in the time for filing of objections ends on 30.0[illegible] In this notification the category of the applicant [illegible] placed in Column [illegible] wherein [illegible] decision has been made for [illegible] clearance to such [illegible] directly [illegible] SEIAA [illegible] Impact Assessment.
h. That the applicant [illegible] they are not ready to take EIA Clearance on the other hand as soon as the applicant was informed by the Board through the abovementioned show cause notice. The applicant immediately approached SEIAA for grant of EIA Clearance however he was informed that the violation window is closed since [illegible] and in this situation there is no provision/window for the applicant to apply for EIA Clearance.

35

- [illegible] considered by the MOEF wherein it is mentioned [illegible] allowed to apply and obtain [illegible] that even otherwise the HSPCB was not cleared until July 2019 whether the category of applicant unit required EIA and this fact is only proved from the letter dated 05.07.2019 written by the board to CPCB and MOEF seeking clarification whether the applicant unit is covered under EIA 2006 or not [illegible] under which category
- [illegible] is established that even the officials of HSPCB who [illegible] subject to environment are not aware of the [illegible] applicant unit is [illegible] EIA and due to this reason the HSPCB [illegible] CTE and CTO to such units until 2019. [illegible] applicant cannot be made to suffer [illegible] right of livelihood in the garb of EIA 2006 [illegible] that officials of your board are equally [illegible] the abovementioned mistake.

You are [illegible] to withdraw the abovementioned show cause notice dated [illegible] and dated 21.08.2019 for [illegible] to allow the applicant to continue business and all livelihood until the issuance of new notification by the MOEF and opening of window by SEIAA for receipt of applications under the violation category, in the interest of justice, equity and fair play.

Authorised Signatory

For M/s Go Chem

For GM CHEM

PARTNER

1128715/2021/Estt.Br

Regional Office, Yamuna Nagar Region
Haryana State Pollution Control Board

S.C.O. No- 131 Sector -17, HUDA,Jagadhri, Yamuna ...

Website - ... E-Mail - ...mail.com Contact No. ...

No. HSPCB / YR/2020/ 5819 Dt. 29/ ... 2020

... m Ch...
... Kam... Sadhapur road,
... Bilas... , Yamuna Nagar

Sub: ... **Cause Notice for closure under section** 33-A of the **Water (Prevention and Control of Pollution)** Act **1974 & section** 31-A of Air Act ... **Prosecution** under section 44 of Water Act 1974 & section ... **1981** and **imposition of Environmental Compensation as** per policy of the Board.

Whereas the ... consent to ... and Consent ... to ... as been withdrawn ... HSPCB ... was conveyed ... 07-2020.

... to verify ... compliance ... found in operation ... violation ... Water Act 1974 and Air Act 1981.

Whereas ... willfully and deliberately ... non-complying ... provisions ... section 25 of Water (Prevention and Control of Pollution) Act 1974 and section 21 of Air (Prevention ... Pollution) Act, 1981.

... above ... are here ... for 15 days ... your unit may ... closed ... connection ... including ... power under ... 33-A ... 1974 & ... 1981 and prosecuted under relevant ... of the said Act ... imposition of ... Environmental Compensation ... policy of the ... HSPCB ... 2019 ... dated 20...

In case ... fail to comply with ... mentioned above within stipulated period, it will be presumed that you have nothing ... in this regard and accept the status as mentioned ... which will warrant ... of Consent to Establish and Consent to Operate ... under Water Act ... Air Act 1981.

Regional Officer
Yamuna Nagar

Endst. No. HSPCB / YR /2020/ Dt. ... / 07/ 2020

A copy of the above is forwarded to The Chairman, HSPCB, C-..., Sector ..., Panchkula for information ...

Regional Officer
Yamuna Nagar

HARYANA STATE POLLUTION CONTROL BOARD

C-11, Sector-6, Panchkula

CLOSURE ORDER

Whereas M/s ... Chem ... established ... manufacturing of formaldehyde ... Kurali, ... Sadhaura Road, Tehsil Bilaspur, Yamuna Nagar which is ... located at ...

Whereas, ... Regional Officer, Yamuna Nagar ... has reported vide letter No. ... 5980 dated ...08.2020 that the CTO ... granted to the unit was revoked by the ... vide letter no. HSPCB/... 2020/... dated ... 07.2020 and the unit was inspected on ... 07.2020 and found operating without obtaining Consent to Establish ... & Consent to ... from the Board.

Whereas, Show Cause Notice for closure was issued by Regional Officer to the unit vide letter no. HSPCB/... dated 22.07.2020 under section 33A of Water Act, 1974 ... under section 31-A of Air Act 1981 ... reply of Show Cause Notice after 15 days ... the reply of the unit ... Board ...

Whereas, Regional Officer, Yamuna Nagar has recommended vide his letter No. HSPCB/... 2020/... dated 05.08.2020 to take action against the unit under section 31-A of Air (Prevention & Control of Pollution) Act 1981 & 33-A of Water (Prevention & Control of Pollution) Act, 1974 which has been examined and it has been found that the unit has violated the provisions of Air (Prevention & Control of Pollution) Act, 1981 and Water (Prevention & Control of Pollution) Act, 1974 as mentioned above.

... the said unit and in exercise of the powers conferred under section ... (Prevention & Control of Pollution) Act, 1981 & 33-A of Water (Prevention & Control of Pollution) Act, 1974 hereby ordered to close down the operation of unit M/s ... Chem, Village- Kurali, Sadhaura Road, Tehsil Bilaspur, Yamuna Nagar by sealing its plant & machinery/DG sets along with disconnection of the electric supply with immediate effect.

In addition to above, it is also intimated that non compliance to directions issued under section ... will attract penal provision of Air (Prevention & Control of Pollution) Act, 1981 and Water (Prevention & Control of Pollution) Act, 1974 respectively.

Ashok Kheterpal
Chairman

Dated: Panchkula, the
... August 2020

Endst. No. HSPCB/HW/2021-293/2020/ 929 - 932 Dated: ...8.2020

A copy of the above is forwarded to the following for information and necessary action:-

1. The Deputy Commissioner, Yamuna Nagar.
2. Executive Engineer, Uttar Haryana Bijli Vitran Nigam (UHBVN), Operation Division, ... Yamuna Nagar. He is directed to disconnect the electricity supply of the above said project of the unit immediately and submit compliance ... within 03 days positively.
3. The Regional Officer, Yamuna Nagar. He is asked to ensure the compliance of closure order immediately and to submit compliance report ... within 03 days positively. He will initiate legal action against the ... above said violations, and will ... environment compensation ... recommendation for ... closure Order immediately. He will also ... the environment compensation ... submit for approval to Head Office.
4. M/s ... Chem, Village- Kurali, Sadhaura Road, ... Bilaspur, Yamuna Nagar.

Environmental Engineer (HQ)
For Chairman

1128715/2021/Estt.Br

Annexure 3

Item Nos. 04 Court No. 1

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

(By Video Conferencing)

Original Application No. 840/2019

(With report dated 27.12.2019)

Ayush Garg Applicant(s)

Versus

Union of India & Ors. Respondent(s)

Date of hearing: 10.08.2020

CORAM: **HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON**
HON'BLE MR. JUSTICE S. P. WANGDI, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER

Applicant(s): Mr. Rahul Choudhary, Advocate

Respondent(s): Mr. Rahul Khurana, Advocate for HSPCB & SEIAA, Haryana

ORDER

1. A factual and action taken report was sought from a joint Committee of Haryana State Pollution Control Board (HSPCB) and the State Environment Impact Assessment Authority (SEIAA), Haryana with reference to the allegation of illegal operation of manufacturing unit by M/s Om Chem at Village Kurali, Sahapur Road, Tehsil Bilaspur, District Yamunanagar, Haryana. According to the Applicant, formaldehyde is a hazardous chemical which was being used releasing Volatile Organic Compounds (VOCs) in violation of Hazardous Waste (Management and Transboundary Movement) Rules, 2016.

2. The matter was considered on 28.11.2019 in light of the report filed by the State Environment Impact Assessment Authority (SEIAA), Haryana on 15.10.2019. It was observed:

> "2. *Accordingly, a report has been filed by SEIAA, Haryana on 15.10.2019 to the effect that there is no Environmental Clearance and thus operation of the unit is illegal. Notice for revocation of 'Consent to Establish' was issued by the SPCB but the same was stayed on 13.09.2019 by the Appellate Authority.*
>
> *3. Without commenting upon the issue of proceedings before the Appellate Authority on the subject of 'Consent to Establish', the action could certainly be taken for absence of EC by SEIAA under the Environment (Protection) Act, 1986. Regional Office of MoEF&CC at Chandigarh or SEIAA or CPCB can certainly exercise jurisdiction under Section 5 of the Environment (Protection) Act, 1986* ***for stopping illegal operation of manufacturing activities in violation of requirement of EC forthwith****. Let such action be taken in accordance with law. Let SEIAA, Haryana furnish an action taken report in the matter within one month after coordinating with concerned authorities by e-mail at judicial-ngt@gov.in."*

3. In view of the above, the SEIAA filed its report dated 27.12.2019 to the effect that a decision was taken to stop the activities of the unit. However, there was nothing to show that actual stopping of such activities was effective. The applicant has filed an application on 03.09.2020 to the effect that unit was still functioning. During the hearing, learned Counsel for the State Pollution Control Board states that on 07.08.2020 the functioning of the unit has been stopped.

4. In view of the above, we direct the District Magistrate, Yamunanagar and the State PCB to ensure that unless a valid Environmental Clearance (EC) and other statutory clearances are available, the unit may not be allowed to function. The State PCB will be nodal agency for compliance. State PCB may also assess and recover compensation for illegal operation of the unit on 'Polluter Pays' principle, following due process of law. Compliance report be filed before the next

date by e-mail at judicial-mgt@gov.in preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF.

List again on 12.11.2020.

A copy of this order be sent to the State PCS and the District Magistrate, Yamunanagar, by email.

Adarsh Kumar Goel, CP

S. P. Wangdi, JM

Dr. Nagin Nanda, EM

August 10, 2020
Original Application No. 840/2019
SN

Item No. 03 Court No. 1

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

Original Application No. 287/2020

Dastak N.G.O. Applicant

Versus

Synochem Organics Pvt. Ltd. & Ors. Respondent(s)

Date of hearing: 09.12.2020

CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE SHEO KUMAR SINGH, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER

Respondent: Mr. Pradeep Gupta, Advocate for R-1
Mr. Rahul Dhargava, Advocate for R-6

ORDER

1. This application seeks quashing of the order of State of Haryana dated 10.11.2020 allowing manufacturers of formaldehyde, requiring prior Environmental Clearance, to operate for six months without EC, subject to making application for EC within 60 days. The applicant submits that requirement of prior EC is mandatory. There is no jurisdiction with the State to exempt the same. Reference has been made to an order of this Tribunal dated 28.11.2019 in *O.A. No. 840/2019, Ayush Garg v. Union of India & Ors.* to the effect that consent to establish to such establishments is liable to be removed. Accordingly, closure order was passed by the State PCB but thereafter the impugned order has been passed by the State of Haryana. It is further stated that the industries are using ground water of approximately 6 Lakhs litres per day without requisite permission of the Ground Water Authority. There is also non-compliance of Manufacture,

Storage, and Import of Hazardous Chemicals Rules, 1989. No requisite safety measures have been allotted. There has been incidents of damage to the crops, soil and ground water for which no adequate compensation has been recovered. TDS of the water has been reduced to almost zero by use of Hydrochloric Acid (33%) and pH level has increased. Untreated effluents are dumped back into the ground water through reverse borewells. In the condensation process, excess steam is discharged, using chimney adding to the air pollution. There is no mechanism to check leaching of methanol from underground tanks. This is one of the causes of cancer. As per statistics, 30% of national deaths from cancer are taking place in the State of Haryana.

2. We prima facie find the impugned order to be without jurisdiction. Requirement of prior environmental clearance cannot be dispensed with. This legal position has been recently reiterated in *Alembic Pharmaceuticals Ltd. v. Nokil Prajapati & Ors.*, 2020 SCC Online 347. Learned Counsel for Respondent Nos. 1 and 6 have put in appearance without notice and have relied upon specific condition in the Notification dated 14.09.2006 to the effect that prior EC is not required where such prior EC is obtained by the industrial area, where a unit is set up. There is no merit in the submission as there is nothing to show that such prior EC has been obtained by the industrial area in question.

3. Accordingly, let the contesting respondents show cause why the impugned order be not quashed by their response by email before the next date. The applicant may provide a set of papers and a copy of this order to all the contesting respondents and file an affidavit of service within one week.

A copy of this order be also sent to the Member(NGOC, CPCB, Haryana, State PCB and Secretary Environment, Haryana by e-mail.

List for further consideration on 08.01.2021.

Adarsh Kumar Goel, CP

S.K. Singh, JM

Dr. Nagin Nanda, EM

December 09, 2020
Original Application No. 287/2020
SN

Annexure 3

Haryana Government
Environment and Climate Change Department
ORDER

Whereas, the process of manufacturing of Formaldehyde is covered under the provisions of 5(f) of Schedule of Environment Impact Assessment Notification (EIA), 2006 of Government of India, and requires the prior Environmental Clearance (EC) from the competent authority State Environment Impact Assessment Authority (SEIAA) / Ministry of Environment, Forest and Climate Change, Government of India, before establishment and operation of such units, besides other mandatory clearances, as applicable;

Whereas, it has come to the notice of Government that a total 15 such units have been permitted to establish / operate in the State of Haryana, without obtaining the necessary Prior Environmental Clearance, but with the Consent of the Haryana State Pollution Control Board (HSPCB), which while granted the said consent to establish of such units and on realizing the requirement of EC in these cases, has revoked its consents granted earlier to these units recently;

Whereas, some of these units approached the Government explaining their hardship due to such sudden revocation of their consents and have sought time for obtaining the necessary EC from the competent authority as the process is likely to take a minimum of 6 months to one year period, and to allow them to operate with all the pollution control measures, following the pollution control norms applicable; and,

Whereas, the Government has carefully considered their request and the competent authority has decided that these units shall be allowed to continue their operations for a period of six months, without prejudice to any legal action taken against the violations committed by them, by the competent authorities, with the conditions that they will immediately apply for Environment al Clearance from the competent authority and provide the proof of such application within 60 days from the issuance of this communication to Environment and Climate Change Department and to Haryana State Pollution Control Board;

Therefore, it is ordered accordingly.

Dated: 10.11.2020
Chandigarh

Dheeraj Khandelwal,
Additional Chief Secretary to Government of Haryana
Environment and Climate Change Department

Endst. No. 18/14/2020-3Env. Dated: 10.11.2020

A copy is forwarded to the following for information and necessary action:

1. Chief Secretary, Government of Haryana
2. Principal Secretary, Industries and Commerce Department, Government of Haryana
3. Director General, Environment and Climate Change Department, Government of Haryana
4. All Deputy Commissioners of State of Haryana

Superintendent Environment,
for Additional Chief Secretary to Govt. Haryana,
Environment and Climate Change Department.

Chairman (Actg)
11/11/2020

Endst. No. 19/14/2020-3Env Dated: 10.11.2020

A copy is forwarded to Chairman, Haryana State Pollution Control Board, C-11, Panchkula with reference to hearing No. 8238 dated 29.10.2020 (copy enclosed) for further necessary action.

Sr. SC (Env)

Put up on file

Clerk

Superintendent Environment,
for Additional Chief Secretary to Govt. Haryana,
Environment and Climate Change Department.

11.11.2020

Annexure 3

1128715/2021/Estt.Br

CWP-22362-2020

Mrs Om Chem, Village Kurali Vs State of Haryana and others

Present: Mr. Sunil Chadha, Senior Advocate, with
Mr. Rahul Bhargava, Advocate, for the petitioner.

Mr. Deepak Balyan, Additional Advocate General, Haryana.

Mr. Ankur Mittal, Advocate,
Ms. Kushaldeep Kaur Manchanda, Advocate, and
Mr. Vikas Denia, Advocate, for respondents No.2 and 3.

(The aforesaid presence is being recorded through video conferencing since the proceedings are being conducted in virtual Court)

****

Learned Additional Advocate General, Haryana, and learned counsel appearing on behalf of respondents No.2 and 3 pray for and are granted time to file reply.

List on 08.03.2021.

To be heard with CWP-15029-2020.

(RAVI SHANKER JHA)
CHIEF JUSTICE

(ARUN PALLI)
JUDGE

March 18, 2021
mcj

1128715/2021/Estt.Br

Annexure 3

Regional Office, Yamuna Nagar Region
Haryana State Pollution Control Board
S.C.O. No- 131, Sector [illegible], HUDA, Jagadhari, Yamuna Nagar
Website – www.hspcb.gov.in E-Mail – hspcbroyn@gmail.com
Contact No. 01732-[illegible], 237840

No. HSPCB/[illegible]/2021/[illegible] Dated: [illegible] / 05/2021

To

M/s OM CHEM[illegible]
[illegible] Kurukshetra Road
[illegible] Yamuna Nagar

Subject: Direction to stop operation of unit on dated 12.05.2021 in view of expiry of relaxation granted to formaldehyde units by Haryana Government.

Whereas your unit M/s OM Chem, Village [illegible] [illegible] provisions of 5(f) of the Schedule of the EIA Notification 2006 and so required [illegible] environmental clearance before established [illegible] the same [illegible] to obtain and [illegible] operated in violation of EIA [illegible] 2006.

Whereas the closure order under EP Act was [illegible] against the unit vide order No. [illegible] 3 Env. Dated 14.08.202[illegible]

Whereas the Board also issued the closure [illegible] against the unit vide order No. HSPCB/HA/[illegible]/2020/[illegible] dated 27.08.[illegible]

Whereas, [illegible] Haryana vide [illegible] 10/11/2020 – [illegible] Dated [illegible] allowed 06 months time of operation [illegible] formaldehyde [illegible] conditions that these unit [illegible] their operations for a period of six months [illegible] action against the violation [illegible] authorities.

Whereas the relaxation of 06 months granted by the Govt. [illegible] 2021. Therefore you are hereby directed to ensure the closure [illegible] 12.05.2021. No [illegible] the process will be [illegible]. You are [illegible] compliance in this regard immediately.

Regional officer
Yamuna Nagar

Item No. 07 Court No. 1

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

(By Video Conferencing)

Original Application No. 287/2020
(I.A. No. 10/2021)

(With report dated 03.03.2021)

Dastak N.G.O. Applicant

Versus

Synochem Organics Pvt. Ltd. & Ors. Respondent(s)

Date of hearing: 08.06.2021

CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE SUDHIR AGARWAL, JUDICIAL MEMBER
HON'BLE MR. JUSTICE M. SATHYANARAYANAN, JUDICIAL MEMBER
HON'BLE MR. JUSTICE BRIJESH SETHI, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER

Applicant: Dr. S.B. Bondi, Advocate

Respondent: Mr. Anil Grover, Senior AAG with Mr. Rahul Chhikara, Advocate for State of Haryana and HSPCB
Ms. Sunita Dhamija, Advocate for MoEF&CC
Mr. A.K. Prasad, Advocate for CGWA
Mr. Sunil Chadha, Senior Advocate with Mr. Akshay Gandhi, Advocate for R-6
Mr. Pradeep Gupta, Advocate for R-1
Mr. Shiv Ashish Sharma and Mr. Gaurabh Rajpal, Advocates for R-3,5&7
Mr. Ashu Jain, Advocate

ORDER

1. This application seeks quashing of the order of State of Haryana dated 10.11.2020 allowing manufacturers of formaldehyde, requiring prior Environmental Clearance (EC), to operate for six months without EC, subject to making application for EC within 60 days. The applicant submits that requirement of prior EC is mandatory. There is no jurisdiction with the State to exempt the same. Reference has been made to an order of this Tribunal dated 28.11.2019 in *O.A. No. 840/2019, Ayush Garg v. Union of India & Ors.* to the effect that consent to establish

to such establishments is liable to be removed. Accordingly, closure order was passed by the State PCB but thereafter the impugned order has been passed by the State of Haryana. It is further stated that the industries are using ground water of approximately 6 Lakhs litres per day without requisite permission of the Ground Water Authority. There is also non-compliance of Manufacture, Storage, and Import of Hazardous Chemicals Rules, 1989. No requisite safety measures have been allotted. There has been incidents of damage to the crops, soil and ground water for which no adequate compensation has been recovered. TDS of the water has been reduced to almost zero by use of Hydrochloric Acid (33%) and pH level has increased. Untreated effluents are dumped back into the ground water through reverse borewells. In the condensation process, excess steam is discharged, using chimney adding to the air pollution. There is no mechanism to check leaching of methanol from underground tanks. This is one of the causes of cancer. As per statistics, 39% of annual deaths from cancer are taking place in the State of Haryana.

2. The matter last considered on 9.12.2020 and finding *prima-facie* merit in the case of the applicant, the contesting respondents were required to show cause why impugned order dated 20.11.2020 passed by the State of Haryana be not quashed. Operative of the part of the order is as follows:-

> "1. ...xxx..... ....xxx..... xxx
>
> 2. *We prima facie find the impugned order to be without jurisdiction. Requirement of prior environmental clearance cannot be dispensed with. This legal position has been recently reiterated in Alembic Pharmaceuticals Ltd. v. Rohit Prajapati & Ors., 2020 SCC Online 347. Learned Counsel for Respondent Nos. 1 and 6 have put in appearance without notice and have relied upon specific condition in the Notification dated 14.09.2006 to the effect that prior EC is not required unless such prior EC is obtained by the industrial area*

where a unit is set up. There is no merit in the submission as there is nothing to show that such prior EC has been obtained by the industrial area in question.

3. Accordingly, let the contesting respondents show cause why the impugned order be not quashed by their response by email before the next date. The applicant may provide a set of papers and a copy of this order to all the contesting respondents and file an affidavit of service within one week."

3 Accordingly, the State of Haryana has filed an action taken report dated 03.03.2021 through the Secretary, Environment *inter-alia* stating as follows:-

"3. That for the purpose of environmental protection certain restriction and prohibition on new projects and activities, or on the expansion or modernization of the existing project or activities based on their potential environmental impact were imposed vide S.O. 1533 dated 14.09.2006 by MoEF, GOI. under schedule to the aforementioned notification, the process of manufacturing of Formaldehyde is covered under provision 5(f) which requires prior Environmental Clearance (EC) from the competent authorities State Environment Impact Assessment Authority(SEIAA)/MoEF & CC, GOI, before establishment and operation of such units, besides other mandatory clearances as applicable.

4. That 15 formaldehyde units list attached at Annexure — R/1 were issued consent to establish and consent to operate by Haryana State Pollution Control Board at different times which were later revoked by the HSPCB for violating provision 5(f) of schedule to EIA Notification 2006 on the ground that no prior environmental clearance was obtained before establishment and operation of these units.

5. That a representation was received from all Haryana formaldehyde manufacturing association, Yamunanagar dated 23.10.2020 addressed to Additional Chief Secretary to Govt. of Haryana department of Environment and Climate Change, Chandigarh requesting to allow such formaldehyde units to operate and give sufficient time reasonable to obtain the Environmental Clearance from MoEF & CC and SEIAA on the basis of parity that same decision was taken by State of Rajasthan in similar case (Annexure R/2). The copy of order of Rajasthan State Pollution Control Board was annexed with aforementioned representation.

6. That keeping in view the fact that units were established with the requisite consent from Haryana State Pollution Control Board and were operating with the necessary pollution control measures, as prescribed by Board, along with the investment in plant and machinery incurred by the individual units in establishing their plants, possible stock of raw material used for production, the case was referred to Government of Haryana by Haryana State Pollution Control Board for granting interim relief to

these units for obtaining environmental clearance from the appropriate authority.

7. The units were granted interim relief on basis of the fact that notification dated 14.09.2006 is being re-drafted by MoEF & CC and the zero draft has been circulated to all the States and other Stake holders for comments. The finalization and publication of revised notification is likely to take some time and that window for accepting application seeking environmental clearance is not kept open at present by the MoEF & CC.

Further, it is to mention here specifically that from the facts and circumstances of the given case, it can easily be inferred that the industries were operating in good faith with valid CTE/CTOs granted by Haryana State Pollution Control Board. Alongside it was admitted by Haryana State Pollution Control Board that the units in question were posing any pollution hazards and that only procedural laps was the deficiency against these units.

8. That keeping in view all the aforementioned facts, Government of Haryana vide order No. 16/11/2020-3Env. dated 11.11.2020 (Annexure—R/3) decided to allow these units to continue their operation for a period of 6 months without invoking any legal action against the procedural laps occurred, with the condition that these units will apply for environmental clearance within a period of 60 days from the date of issuance of this communication."

1 Reply has also been filed on behalf of the contesting Respondents Nos. 3, 5 and 7 which is in identical terms. It is stated that the contesting respondents have now sought EC in violation category. It is also stated that Central Government has delegated powers to the Haryana Government vide Notification dated 10.02..988 which enables the State to exempt units from seeking EC and thus order dated 10.11.2020 of the State of Haryana is valid. The point of requirement of EIA was never raised for about 9 years during which the private respondents have functioned which shows that the Authorities themselves were not aware about this requirement. The private respondents were merely given breathing time to comply with the law. The said units are not causing any pollution and even if prior EC is not

taken, Principle of Proportionalities applies as held in Aerobic Chemicals v Rohit Prajapati.

5. We have heard learned counsel for the parties and with their assistance perused the records.

6 While the period of operation of the impugned order is over, we have gone into the matter on merits in view of caveat by the private respondents.

7. It is clear from the stand of the State itself that prior EC is required under EIA Notification dated 14.09.2006 (Entry 5f) of the Schedule. Once it is so there is no justification to permit function of such units in violation of mandate of law. In *Aerobic Chemicals v Rohit Prajapati & Ors.*, 2020 SCC Online 347, the Hon'ble Supreme Court has made it clear that prior EC requirement cannot be dispensed with. While it is true that having regard to the fact situation therein particularly grant of EC later, the units were not closed and instead were required to pay compensation for the period the units functioned without prior EC, it does not mean that in absence of prior EC the units can be allowed to function by paying compensation. We thus hold that without prior EC the units cannot be allowed to operate. The State has no power to exempt the requirement of prior EC or to allow the units to function without EC on payment of compensation. Same view has been taken in O.A. No. *840/2019, Ayush Garg v. UOI & Ors.* which has been dealt with by a separate order today.

8. As regards the stand of the private respondents that the State has delegated power under section 3(3) of the Environment (Protection) Act,

[1] 2020 SCC OnLine SC 347

which implies that the State could exempt EIA requirement, neither any such delegation is shown nor the State claims to have such power or to have exercised such power. A statement has been made on behalf of the private respondents as well as State that the units now stand closed. Learned Counsel for the private respondents also submitted that their units have been functioning in a bonafide manner without causing pollution. Though they did not have EC only for want of knowledge of such requirement, they had requisite consents to establish and operate which have been renewed from time to time. They wish to comply with law and have also applied for EC.

9. We are of the view that since prior EC is statutory mandate, the same must be complied. We have no doubt that the stand of the private respondents will be duly considered by the concerned regulatory authorities, including the MoEF&CC on merits and in accordance with law but till compliance of statutory mandate, the units cannot be allowed to function. For past violations, the concerned authorities are free to take appropriate action in accordance with polluter pays principle, following due process.

The application is disposed of.

In view of order in the main matter, I.A. No. 10/2021 also stands disposed of.

Adarsh Kumar Goel, CP

Sudhir Agarwal, JM

1128715/2021/Estt.Br

Annexure 3

V. Sathyanarayanan, JM

Brijesh Sethi, JM

Dr. Nagin Nanda, AM

June 03, 2021
Original Application No. 287/2020
A

Item No. 06 Court No. 1

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

(By Video Conferencing)

Original Application No. 840/2019
(I.A. No. 52/2021)

(With report dated 18.12.2020)

Ayush Garg Applicant

Versus

Union of India & Ors. Respondent(s)

Date of hearing: 03.06.2021

CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE SUDHIR AGARWAL, JUDICIAL MEMBER
HON'BLE MR. JUSTICE M. SATHYANARAYANAN, JUDICIAL MEMBER
HON'BLE MR. JUSTICE BRIJESH SETHI, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER

Applicant: Mr. Rahul Choudhary, Advocate

Respondent: Mr. Anil Grover, Senior AAG with Mr. Rahul Kaushal, Advocate for State of Haryana and HSPCB
Mr. Shiv Mangal Sharma and Mr. Saurabh Rajput, Advocates for R-5

ORDER

1. A factual and action taken report was sought from a joint Committee of Haryana State Pollution Control Board (State PCB) and the State Environment Impact Assessment Authority (SEIAA), Haryana with reference to the allegation of illegal operation of manufacturing unit by M/s Om Chem at Village Kurali, Sahapur Road, Tehsil Bilaspur, District Yamunanagar, Haryana. According to the Applicant, formaldehyde is a hazardous chemical which was being used releasing Volatile Organic Compounds (VOCs) in violation of Hazardous Waste (Management and Transboundary Movement) Rules, 2016.

2. The matter was considered on 28.11.2019 in light of the report filed by the State Environment Impact Assessment Authority (SEIAA), Haryana on 15.10.2019, It was observed.

> "2. *Accordingly, a report has been filed by SEIAA, Haryana on 15.10.2019 to the effect that there is no Environmental Clearance and thus operation of the unit is illegal. Notice for revocation of 'Consent to Establish' was issued by the SPCB but the same was stayed on 13.05.2019 by the Appellate Authority.*
>
> *3. Without commenting upon the issue of proceedings before the Appellate Authority on the subject of 'Consent to Establish', the action could certainly be taken for absence of EC by SEIAA under the Environment (Protection) Act, 1986. Regional Officer of MoEF&CC at Chandigarh or SEIAA or CPCB can certainly exercise jurisdiction under Section 5 of the Environment (Protection) Act, 1986* ***for stopping illegal operation of manufacturing activities in violation of requirement of EC forthwith.*** *Let such action be taken in accordance with law. Let SEIAA, Haryana furnish an action taken report in the matter within one month after coordinating with concerned authorities by e-mail at judicial-mef@gov.in."*

3. The matter was thereafter considered on 10.08.2020 in the light of report of the SEIAA, Haryana dated 27.12.2019 that the activities of the unit have been directed to be stopped.

4. Accordingly, the Tribunal Directed unless valid Environmental Clearance (EC) and other statutory clearances taken, the Unit may not be allowed to function. It was also directed that State PCB may assess and recover compensation for illegal operation of the units on 'Polluter Pays' principle. Operative part of the order is quoted below:

> "16&2..xxx.....xxx.....xxx
>
> *3. In view of the above, the SEIAA filed its report dated 27.12.2019 to the effect that a decision was taken to stop the activities of the unit. However, there was nothing to show that actual stopping of such activities was effective. The applicant has filed an application on 03.08.2020 to the effect that unit was still functioning. During the hearing, learned Counsel for the State Pollution Control Board states that on 07.08.2020 the functioning of the unit has been stopped.*

> *5. In view of the above, we direct the District Magistrate, Yamunanagar and the State PCB to ensure that unless a valid Environmental Clearance (EC) and other statutory clearances are available, the unit may not be allowed to function. The State PCB will be nodal agency for compliance. State PCB may also assess and recover compensation for illegal operation of the unit on 'Polluter Pays' principle, following due process of law. Compliance report be filed before the next date by e-mail at judicial-ngt@gov.in preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF."*

5. Accordingly, the State PCB has filed its report on 18.12.2020 as follows:

> *"That the Unit M/s Om Chem Village Kurali, Tehsil Bilaspur, Yamuna Nagar has been closed by the Board vide order dated 07.08.2020 and same was complied on dated 08.08.2020. The Environmental compensation of Rs 19,40,000/- (Fifty Nine Lakh forty thousand, only) has been imposed on the unit vide order dated 21.11.2020."*

6. In view of above, no further direction appears to be necessary except that the State PCB may ensure that the unit does not re start functioning without requisite statutory clearance. We have also noted the stand of the private respondents in connected matter being OA 287/2020 that their activities are bonafide and except for technical violation which they are remedying by seeking EC, they have consent from State PCB and are compliant with environment norms. The authorities may verify and act as per law. The MoEF&CC may also consider the matter accordingly.

The application is disposed of.

In view of order in the main matter, I.A. No. 59/2021 also stands disposed of.

Adarsh Kumar Goel, CP

Sudhir Agarwal, JM

1128715/2021/Estt.Br

Annexure 3

M. Sathyanarayanan, JM

Brijesh Sethi, JM

Dr. Nagin Nanda, AM

June 03, 2021
Original Application No. 840/2019
A

Annexure 4

Indian-Non Judicial Stamp
Haryana Government

Date

Stamp Duty Paid ₹ 50500

Seller / First Party Detail

Village

Haryana

Chander ... Chaudhari

Buyer / Second Party Detail

Chem

Yamu

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औद्योग

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बाकि पेज नं 2 पर ..

खरीदार नेम ... कैम ... आधार नं 3194... पैन नं. AA..F08239C

गवाह

...3/2018

16-3-19

Annexure 4

प्रलेख न: 2438

डील सम्बंधी विवरण

डील का ... OUTSIDE ... AREA

... तहसील/सब-तहसील ... गांव/शहर कुराली ... जिला कुराली

भवन का विवरण

भूमि के विवरण

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धन सम्बंधी विवरण

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E-Stamp ... न. IAO2018C... स्टांप की राशि 505,000.00 ... DFC ... NNNL

रजिस्ट्रेशन फीस की राशि 15,00... ... पेस्टिंग शुल्क ... रुपये

Drafted By: ... Service Charge: 200.00 रुपये

यह प्रलेख आज दिनांक 16-03-2018 दिन शुक्रवार ... 07:00PM बजे श्री/श्रीमती/कुमारी ... पुत्र/पुत्री/पत्नी ... श्री/श्रीमती/कुमारी ... निवासी ... द्वारा ... हेतु प्रस्तुत किया ...

उप/संयुक्त पंजीयन अधिकारी

जिला ...

... अनुक्रम ...

प्रलेख ... एवं ... विभाग के ... अधिनियम ... के अन्तर्गत ... इसलिए ... पंजीकृत करने से पूर्व सम्बंधित विभाग से ... प्रमाण पत्र ... लिया गया है।

... प्रलेख में वर्णित ... नगर एवं ग्राम आयोजना विभाग के ... 1975 की ... के अन्तर्गत ... है इसलिए दस्तावेज को पंजीकृत करने से पूर्व संबंधित विभाग से ... प्रमाण पत्र ... आवश्यकता नहीं है।

... संयुक्त ... अधिकारी

... पुर

विक्रेता

... क्रेता ...

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... की पहचान श्री/श्रीमती/कुमारी ... पुत्र/पुत्री/पत्नी श्री/श्रीमती/कुमारी ... निवासी कुराली ... श्री/श्रीमती/कुमारी ... पुत्र/पुत्री/पत्नी श्री/श्रीमती/कुमारी निवासी ... ने की ... अधिवक्ता ... हैं तथा ... की ...

उप/संयुक्त पंजीयन अधिकारी

जिला ... पुर

दिनांक 16.03.2018

... प्रमाणित किया ... कि ... पंजीकृत दस्तावेज ... jamabandi ... ... की गई है ...

उप ... पंजीयन अधिकारी

जिला ... पुर

Annexure 4

1— [illegible] मूल्य 17,00,000/ [illegible] किया [illegible] रु० 63.6[illegible]/रु [illegible]

2— [illegible] धाका [illegible] मौका मुताबिक

3— [illegible] मा — [illegible] कनाल 14 मरले

4— [illegible] की किस्म [illegible] शाही

5— [illegible] मुताबिक [illegible] रेट कालेक्टर [illegible]

6— रकबा [illegible] कोई निर्माण [illegible] है।

[illegible] अरा[illegible] ला खाली [illegible] है।

[illegible] कले[illegible] रेट मुताबिक [illegible] रु० 26,80,750/ [illegible] का [illegible] अनुसार [illegible] रु० [illegible] 00,000 [illegible]

[illegible] रुपये

10— [illegible] की बा[illegible] है [illegible]

11— [illegible] नदी ए[illegible] बाहर

नोट:— [illegible] वर्णित रकबा [illegible] योजना [illegible] की अधिनियम 1975 की धारा 7—ए [illegible] अधिसूचित [illegible]।

[illegible] रामगोपाल पुत्र रामसरूप पुत्र [illegible] 2/3 [illegible] जिला यमुनानगर [illegible] मौजा [illegible] 23/4/2 किता [illegible] खेवट [illegible] 126/148 मिन [illegible] 23/3/ [illegible] मरले [illegible] खतौनी [illegible] 225 [illegible] खसरा [illegible] किता 01 [illegible] 04 कनाल 03 [illegible] खतौनी [illegible] 18/2 किता 01 [illegible] का खेवट [illegible] 53 मिन [illegible] 11//23/2/[illegible] मरले [illegible] कनाल 14 मरले [illegible] रकबा मौजा [illegible] 284 [illegible] बिलासपुर [illegible] यमुनानगर [illegible] फर्द जमाबन्दी [illegible] 2012—2013 [illegible] इन्त[illegible] 232 पारिवारिक हस्तारण के हम बाया [illegible] कोई कोर्ट केस [illegible] है [illegible] पूर्ण [illegible] बाया को हासिल है [illegible] 14 [illegible] बाया ने [illegible] कारोबार [illegible] की नय [illegible] हक [illegible]

[illegible] पेज न० 3 [illegible]

[illegible] — [illegible]

[illegible] 3/2-12

[illegible] Kumar
Advocate
[illegible]

[illegible] 3-12

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Annexure 4

Roll No. Reg. Year Book No.

2438 30.7.2018

बिजेता

सोना

रजत

कांस्य पदक विजेता

Department Haryana

HARGUN

[illegible] बतौर [illegible] स्वामी [illegible] राशी [illegible] 1,91,0[illegible] (एक [illegible] जिसमें [illegible] 32,000/रू [illegible] बैंक [illegible] दिनांक [illegible] बैंक [illegible] 858831 दिनांक [illegible] 03--2018 [illegible] बैंक [illegible] ओम [illegible] तहसील बिलासपुर जिला [illegible] [illegible] प्रयोग [illegible] है और [illegible] बैनामा [illegible] मलकियती [illegible] खरीदार [illegible] होंगे [illegible] अनुसार [illegible]

[illegible] किसी [illegible] 2018

[illegible] बिलासपुर

[illegible] किशन

[illegible] रामपुर

अलेखक--- [illegible] ओम [illegible] द्वारा [illegible] शर्मा [illegible] है।

09/12/2018

10-12-18

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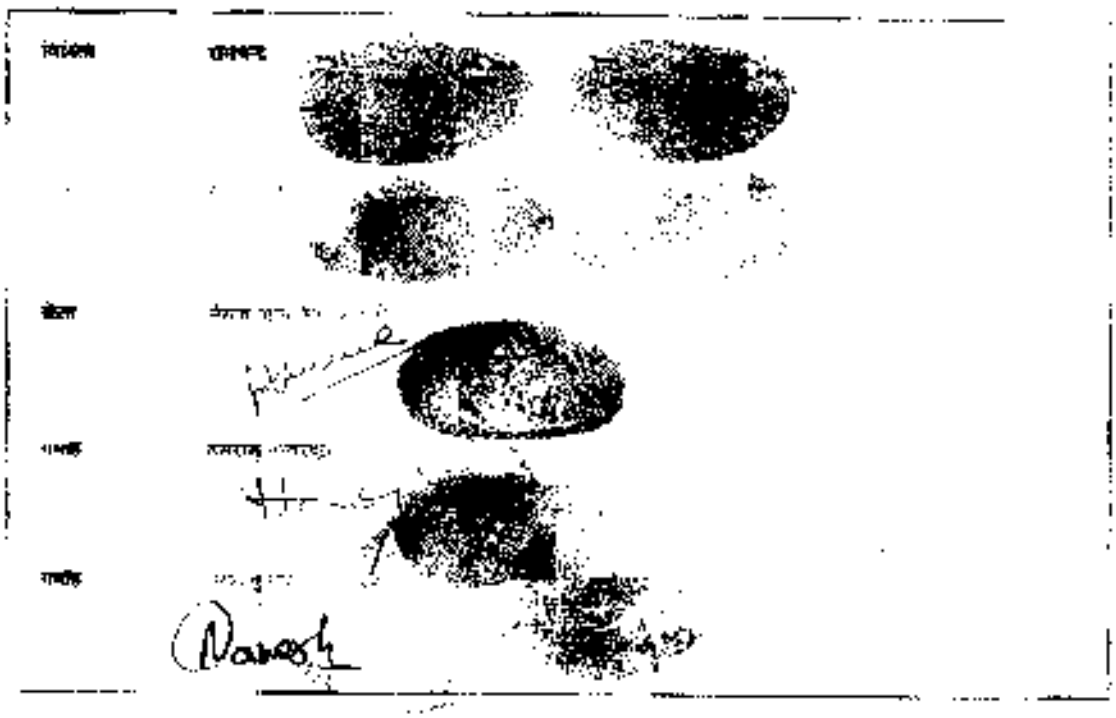
Regn. No. Reg. Year Book No



प्रमाण-पत्र

[illegible] 103 के [illegible] संख्यांक [illegible] पर पंजीकृत किया गया तथा उसकी एक प्रति [illegible] पर चिपकाई गई यह भी प्रमाणित [illegible] कि इस दस्तावेज [illegible] अपने [illegible] मुख्य मेरे सामने [illegible]

[illegible] 2018

[illegible]

[illegible]

Annexure 4

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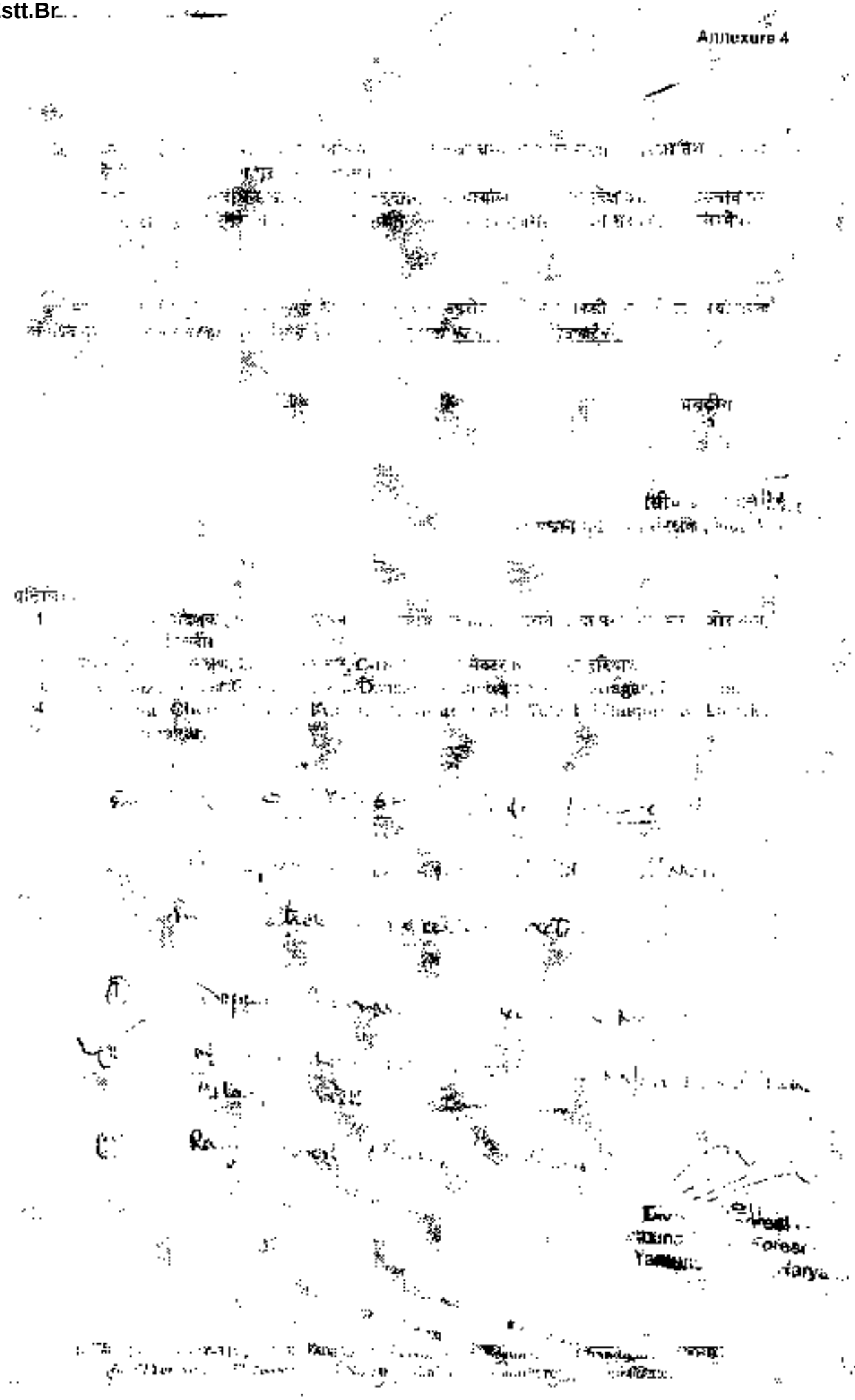

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Annexure 4

भारत सरकार
GOVERNMENT OF INDIA
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE
उत्तर क्षेत्रीय कार्यालय, चंडीगढ़ / Northern Regional Office, Chandigarh

F.No. : 9-HRB101/2018 CRA

दिनांक: 12 दिसम्बर 2018

प्रति,
अतिरिक्त मुख्य सचिव (वन),
हरियाणा सरकार,
हरियाणा सिविल सचिवालय,
चण्डीगढ़ - 160001

विषय:- **Diversion of 0.0058355 ha of forest land in favour of M/s Om Chem for access to M/s Om Chem at Village Kurali Sahapur road, under forest division and District Yamunanagar, Haryana.**

संदर्भ:- प्रधान मुख्य वन संरक्षक के पत्र क्रमांक फ्रा.-ई-तीन/8569/2779 दिनांक 22.10.2018

महोदय,

कृपया उपर्युक्त विषय से संबंधित पत्र एवं ऑनलाइन प्रस्ताव संख्या **FP/HR/Approach/34794/2018** का अवलोकन करें जिसे वन (संरक्षण) अधिनियम, 1980 की धारा 2 के अधीन अनुमति मांगी गई है। प्रस्ताव में इस कार्यालय के पत्र संख्या दिनांक 08.11.2018 द्वारा सैद्धांतिक स्वीकृति प्रदान की गई थी, जिस पर अनुपालन गतिविधि सहित एवं वन सरंक्षक के पत्र संख्या/प्रशा-ई तीन-8568/3173 दिनांक 04.12.2018 द्वारा प्राप्त होने के उपरांत केंद्र सरकार का मुख्य विषय हेतु 0.0058355 हैक्टेयर वन भूमि के उपयोग के लिए स्वीकृति निम्नलिखित शर्तों के पूरी करने पर प्रदान करती है।

i. वन भूमि की चिह्नित परिसीमाओं को बरकरार रखा जाएगा।
ii. प्रस्ताव के अनुसार कोई भी वृक्ष काटा/गिराया नहीं जाएगा।
iii. प्रतिपूर्ति पौधारोपण प्रस्ताव के अनुसार Village **Tibri RF Tehsil Bilaspur, District Yamunanagar,** में प्रयोक्ता एजेंसी से प्राप्त 51,271/- रुपये *(Rupees Fifty One Thousand Two Hundred & Seventy One Only)* की राशि से 50 पौधे लगवाए किया जायेगा।
iv. प्रतिपूर्ति पौधारोपण इस पत्र के जारी होने की तिथि से एक वर्ष के अन्दर हो जाना चाहिए।
v. वन भूमि का प्रयोग प्रस्ताव में दर्शाये गये उद्देश्य के अलावा किसी अन्य उद्देश्य के लिये नहीं किया जायेगा।
vi. जब कभी भी NPV की राशी बढ़ाई जायेगी तो उस बढ़ी हुई NPV की राशि को जमा करने के लिए प्रयोक्ता एजेंसी बाध्य होगी।
vii. खड़े लगते वन और वन भूमि को किसी भी रूप का कोई नुकसान नहीं पहुंचाया जायेगा और खड़े लगते हुए वन और वन भूमि को बचाने के लिये सभी प्रयास किये जायेंगे।
viii. स्थानान्तरण के लिए प्रस्तावित वन भूमि को केंद्रीय सरकार की पूर्व अनुमति के बिना किसी भी परिस्थिति में किसी अन्य एजेंसी, विभाग या व्यक्ति को हस्तांतरित नहीं किया जायेगा।
ix. केन्द्रीय सरकार की अनुमति के बिना प्रस्ताव की शर्तों में बदलाव नहीं किया जायेगा।
x. यदि आवश्यक हो तो प्रयोक्ता एजेंसी प्रदूषण (सुरक्षा) अधिनियम 1986, के अनुसार पर्यावरण अनुमति प्राप्त करेगी।
xi. स्थानांतरित वन भूमि की सीमायें प्रयोक्ता एजेंसी के खर्च पर 4 फीट ऊँचे सीमेंट के खम्भों द्वारा चिन्हित की जायेंगी। दूसरे खम्भे पर कार्य संख्या, डी.सी.एफ.एस.निर्देशांक तथा एक खम्भे से दूसरे खम्भे की दूरी आदि लिखी जानी चाहिये।
xii. शुष्क वार्षिक नियोजन वन विभाग द्वारा जारी योजना के अनुसार किया जायेगा।

बे नं. 34-35, सैक्टर-31ए, चंडीगढ़ 160030 Bays No. 34-35, Sector-31A, Chandigarh-160030
दूरभाष/Tel No : 0172-2628061 Fax No : 0172-2638135 Email : roez.chd-mef@nic.in

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xiii. अन्य कोई भी शर्त इस क्षेत्रीय कार्यालय द्वारा वन तथा वन्य जीव का संरक्षण, सुरक्षा तथा विकास के लिए समय पर लगाई जा सकती है।

xiv. यदि कोई अन्य संबंधित अधिनियम/नियम/न्यायालय आदेश/अनुदेश आदि इस प्रस्ताव पर लागू होते हैं तो उनके अधीन अपेक्षित अनुमति लेना सुनिश्चित एजेंसी या राज्य सरकार की जिम्मेवारी होगी।

3. यदि उक्त इस स्वीकृति से स्थानिकृत कर सकता है और उपरोक्त शर्तों से किसी भी शर्त का पालन संभव नहीं है *राज्य सरकार इस विषय में लिखकर से इस शर्तों का पालन सुनिश्चित करेगी।*

भवदीय,

(सी० डी० सिंह) IFS 2013
अपर प्रधान मुख्य वन संरक्षक (क्षेत्रीय)

प्रतिलिपि:

1. अपर महानिदेशक (वन), पर्यावरण वन एवं जलवायु परिवर्तन मंत्रालय, इन्दिरा पर्यावरण भवन, जोर बाग, अलीगंज, नई दिल्ली।
2. प्रधान मुख्य वन संरक्षक, हरियाणा सरकार, सी 18, वन भवन सेक्टर 6, पंचकूला हरियाणा।
3. Divisional Forest Officer, Forest Division & District Yamunanagar, Haryana.
4. M/s Om Chand, Village Kurali, Sabapur road, Tehsil Bilaspur & District Yamunanagar.

Annexure 4

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Annexure 4

Affidavit

Indian-Non Judicial Stamp
Haryana Government

Date : 01/03/2018

Certificate No. IDA2018C136

Stamp Duty Paid : ₹ 1000

GRN No. 35935122

Penalty :

Deponent

Name : Om Chem

H.No/Floor : 00 Sector/Ward : 00 Landmark : Model town

City/Village : Yamuna nagar Distric : Yamuna nagar State : Haryana

Phone : 9999[illegible]923 Others : ankit sakhuja and raman sakhuja and abhishek garg and vibhor garg

Purpose : Partnership Deed to be submitted at Personal

The authenticity of this document can be verified by scanning this QrCode Through smart phone or at the website http://[illegible]

PARTNERSHIP DEED

This Deed of Partnership is made on 07th Day of March 2018 entered between the following:-

1. Sh. Ankit Sakhuja s/o Rami Sakhuja r/o 169-A/R B-6/306A, Model Town, Yamuna Nagar is hereinafter called the party of the 1st part

2. Sh. Abhishek Garg s/o Parveen Garg r/o W.N. 16, Opp. Neelam Petrol Pump, Paonta Sahib Road, Yamuna Nagar is hereinafter called the party of the 2nd part.

3. Sh. Vibhor Garg s/o Parveen Garg r/o W.N. 16, Opp. Neelam Petrol Pump, Paonta Sahib Road, Yamuna Nagar is hereinafter called the party of the 3rd part.

4. Sh. Raman Sakhuja s/o Late Sh. Darshan Lal Sakhuja r/o 298-R, Behind Krishna Mandir, Model Town, Yamuna Nagar is hereinafter called the party of the 4th part.

5. Sh. Mohit Sakhuja s/o Sh. Rami Sakhuja r/o 169-A/R B-6/306A Model Town, Yamuna Nagar is hereinafter called the party of 5th Part.

EACH OF THE ABOVE IS HEREINAFTER CALLED A PARTNER

Whereas the parties referred to in above were doing business of manufacturing of Formaldehyde under the name and style as M/s Om Chem vide partnership deed dated 20.02.2018 and in order to obviate all doubts parties have agreed certain terms and conditions which they have decided to reduce the same into writing as under:

NOW THIS DEED WITNESSED AS UNDER:-

1. That the name and style of the firm shall be M/s OM Chem.

2. That the principal place of the business shall be at VILLAGE KURALI SABAP R ROAD P/O FATEHGARH TUMB, BILASPUR YAMUNA NAGAR TEHSIL BILASPUR DISTT. YAMUNA NAGAR (HARYANA). The business shall be continued on at its principal place of business but the same can be extended to such other place or places as mutually agreed between the partners from time to time.

3. That the partnership shall be deemed to have come into force with effect from 07.03.2018.

4. That the partnership shall be at WILL.

5. That the business of the firm shall be Manufacturing of Formaldehyde and other related business.

6. That Interest @12% shall be paid to the partners on their cap ital balances. The said interest may be increased or reduced with the mutual consent of both the partners.. However, the maximum interest shall be restricted to the maximum permissible interest u/s. 40(b) of the Income Tax Act.

7. That the working allowances based upon the percentage of profit s hall be paid to the partners with the mutual consent of all the partner s. However, the maximum

working allowances shall be restricted to the maximum permissible allowances as per Income Tax Act.

8. That the profits or the losses as the case may be shall be determined at the end of each financial year and shall be divided amongst the partners in following ratios as under:-

Ankit Sakhuja	16.66%
Abhishek Garg	25.00%
Vibhor Garg	25.00%
Raman Sakhuja	16.66%
Mahir Sakhuja	16.66%

9. That the firm may open Bank accounts with one or more Bank and shall be operated by any two from the partners i.e in first instance ANKIT SAKHUJA AND ABHISHEK GARG AND Secondly VIBHOR GARG AND RAMAN SAKHUJA. all the Partners in any manner decided by them from time to time they can avail loan facility/CC Limit from any bank in India

10. That in case of death of any of the partners the firm will not be dissolved but the firm shall be continued taking over the legal heir/heirs of the deceased partners or otherwise as decided at that time.

11. That all the partners shall work honestly and diligently in the interest of the firm.

12. That in case of any dispute arising in between the partners the same will be referred to an ARBITRATOR whose decision shall be final and binding to all the partners.

13. That the partners with unanimous consent can delete, amend or added to the provisions of this partnership deed orally or in writing.

14. That none of the partners shall assign, mortgage, or charge his interest in the partnership without the consent of other partners.

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15. That for all other matters for which no provisions has been made in the partnership deed shall be governed by the INDIAN PARTNERSHIP ACT OF 1932.

IN WITNESS WHEREOF THE ABOVE PARTIES HAVE SET THEIR HANDS ON THIS DATE AND MONTH OF THE YEAR MENTIONED ABOVE.

WITNESSES :-

1. [illegible] S/o Sh. [illegible] R/o WARD NO. 18 OPP. NEELAM PETROL PUMP JAGADHRI

2. JAGIR SINGH S/o Sh. ASHRAM Vill. BHOC PUR P.O. PURKALAN Distt Yamuna Nagar

EXECUTANTS :

1. Ankit Sakhuja

2. Abhishek Garg

3. Vibhor Garg

4. Rohan Sakhuja

5. Mahir Sakhuja

ATTESTED

NOTARY BOARD
YAMUNA NAGAR

Annexure 5

Diversion of 0.0058355 ha of forest land ... M/s Om Chem at Village K... District Yamunanagar, Haryana.

... 27.12.2018

...0058355 हेक्टेयर ...

... *One Thousand ... Hundred & Seventy One Only)* ...

... NPV ... NPV ...

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Annexure 5

Village

Yamuna Nagar

1128715/2021/Estt.Br

Annexure 6

Government of Haryana

Haryana Water Resources Authority

Applications for Issue of Permission to Extract Ground Water

Application for Permission to Extract Ground Water for Industrial Use

Application No: HWRA/IND/N/2021/140

1. General Information:

Application Type Category/ Type of Application:

(i)	Name of Applicant:	ABHISHEK GARG
	ID Proof Type	PAN
	ID Proof no	AITPG5960R
	Id Proof Document	Download
(ii)	Designation of Applicant:	Director
(iii)	Name of Industry:	OM CHEM
(iv)	Registration number of Industry:	HR/YBC/205227
(v)	Location Details of the Industrial Unit	
	State:	Haryana
	District:	YAMUNANAGAR
	Tehsil:	Bilaspur
	Block:	BILASPUR
	Village/MC:	Kurali
	Region:	semi- Critical
(vi)	Correspondence Address	
	Complete Postal Address	Village-Kurali, Saspur Road, Tehsil-Bilaspur, District-Yamuna Nagar, Haryana
	Mobile Number:	9816690002
	E-Mail of Industry:	omchem@rediffmail.com
(vii)	Salient Features of the Industrial Activity:	
	Type of Industry	Chemical
	Industry fall under	Micro Small, Medium (MSME)
	Is Water Intensive	No
	Purpose of Abstraction	Other Use
	Groundwater utilization for	Existing industry
	Date of commencement	
	Description	chemical industry
(viii)	Land use details of the existing/proposed industrial unit premises	
	Ownership of the land(Enclose documents of ownership)	Download
	Location Map	Download
	Total Land area(in sq m)	8433.00
	Rooftop area of buildings/sheds(in sq m)	1225.00
	Road/paved area(in sq m)	2058.00

Green belt area(in sq m)	2547.00
Open Land (in sq m)	0.00
Source of availability of surface water for Industrial use, if any	No
Townships/villages wtthin 2 km radius of the Industrial unit	No
Source of recycled water	ETP/STP

2) **Detail of water requirement/ recycled water usage : (Please enclose flow chart of activities and requirement of water at each stage)**

Flow Chart of activities and requirement of water	Download
Quality of groundwater	Fresh Water
Name of NABL(Under Valid Certificate)	ENVIROCHEM TEST NG LAB
Upload test report of groundwater quality from NABL accredited lab	Download
Total water required(in m3/day)	195.00
Ground Water required(in m3/day)	195.00
Recycled Water usage(in m3/day)	0.00
Proposed/existing water supply from any agency(in m3/day)	0.00

(ii) **Breakup of Water Requirement and Uasage:**

Activity	Existing Requirement (m3/day)	Proposed Requirement (m3/day)	Total Requirement (m3/day)	No. of Operational Days in a Year	Annual Requirement (m3/year)
Industrial Activity	95.00	98.00	193.00	300	57900.00

Green belt area(in sq m)		2347.00
Open Land (in sq m)		0.00
Source of availability of surface water for Industrial use, if any	No	
Townships/villages within 2 km radius of the Industrial unit	No	
Source of recycled water		ETP/STP

2) Detail of water requirement/ recycled water usage : (Please enclose flow chart of activities and requirement of water at each stage)

Flow Chart of activities and requirement of water	Download
Quality of groundwater	Fresh Water
Name of NABL(Under Valid Certificate)	ENVIROCERT MTESTING LAB
Upload test report of groundwater quality from NABL accredited lab	Download
Total water required(in m3/day)	193.00
Ground Water required(in m3/day)	193.00
Recycled Water usage(in m3/day)	0.00
Proposed/existing water supply from any agency(in m3/day)	0.00

(ii) Breakup of Water Requirement and Uasage:

Activity	Existing Requirement (m3/day)	Proposed Requirement (m3/day)	Total Requirement (m3/day)	No. of Operational Days in a Year	Annual Requirement (m3/year)
Industrial Activity	95.00	98.00	193.00	300	57900.00
Residential / Domestic	1.50	0.00	1.50	300	450.00
Greenbelt Development / Environment Maintenance	0.50	0.00	0.50	300	150.00
Other Use	0.00		0.00		0.00
Grand Total	97.00	98.00	195.00		58500.00

(iii) Breakup of Recycled Water Usage:

	(m3/day)	(Days)	(m3/year)
(a) Total Waste Water Generated:	0.00	300	0.00
(b) Quantity of Treated Water Available	0.00	300	0.00
I). Reuse in Industrial Activity:	0.00	300	0.00
II). Reuse in Green Belt Development:	0.00	300	0.00
(c) Total Treated Water Utilized:	0.00		0.00

3. Details of existing and/ or proposed groundwater abstraction structures

(a) Groundwater Abstraction Structure-Existing

SNo.	Type/ Year of construction	Depth (meter) / Diameter (mm)	Depth to water level (meters below ground level)	Discharge(m3 per hour)	Operational hours/ (day)/ days/year	Mode of lift	Horse Power of pump	Whether fitted with water meter or not	Wheter permission/ registered with HRWA / If so Details of permission
1	bore well/ 2018	85.00/ 115.00	25.00	18.00	6/ 300	1	5	No	No/

(b) Groundwater Abstraction Structure-Proposed

SNo.	Type/ Year of construction	Depth (meter) / Diameter (mm)	Depth to water level (meters below ground level)	Discharge(m3 per hour)	Operational hours/ (day)/ days/year	Mode of lift	Horse Power of pump	Whether fitted with water meter or not	Wheter permission/ registered with HRWA / If so Details of permission
-	bore wel / 2021	85.00/ 115.00	25.00	18.00	6/ 300	1	5	Yes	No/

Quantum of ground water recharge(m3/year)	3933.00
Details of rainwater harvesting and artificial recharge measures for groundwater recharge in the premises. If the firm has proposed to take up rainwater harvesting and recharge outside the industrial unit premises, then provide NOC from the concern authority/agency where the harvesting measures are proposed, if already implemented, details may be furnished. (attach report on comprehensive & feasible Rainwater harvesting/recharge proposal).	Download
Water Balance Chart with water requirement at each Stage.	Download
Have you applied earlier for groundwater clearance from Government Agency, if so, give details thereof with status	Download
Water Efficient Technology will be adopted	
Consent of operate issued by HSPCB(CTO)	Download
Impact Assesment Report Proposed Extraction	
Proof of MSME	Download
Certificate regarding non/ partial availability of fresh water/ treated waste water supply from the local government water supply agency	Download
Any Other Document/Information	Download

I shall comply with all the terms and conditions of the Permission	Yes

It is to certify that the details and Information furnished above are true to the best of my knowledge and belief and I am aware that if any part of the data/information submitted is found to be false or misleading at any stage the application will be rejected out rightly.

Date:

Place:

Name of Authorized Person:

Designation of Authorized Person:

Authorization Letter:

Signature of Applicant with Office Seal

a) Information of payment for Application Fee

Total Amount	
Mode of Payment	Online

Reference No.	Transaction No.	Date	Amount	Status
HRWA1008078017352322	VPNB008166242C	01/07/2021	5000	success

b) Information of payment for Tarrif Fee

Total Amount	
Mode of Payment	

Annexure 7

Vardan EnviroLab

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

Test Report

Sample No.:	VEL/OC/AA/01	Report No.:	VEL/AA/001-027
Name & Address of Project	M/s Om Chem, Village : Kavali, Sabapur Road, Tehsil: Bilaspur, District: Yamunanagar, Haryana	Reporting Date:	07/06/2021
		Ref. No:	NIL
		Monitoring (Period):	March 2021 to May 2021
		Equipment Used:	RDS & FPS with all accessories
Sample Collected By:	Vardan EnviroLab Representative	Protocol Used:	IS-5182
Sample Description:	Ambient Air Quality Monitoring	Parameter Required:	As per work order
Location	Project site [illegible]		

Results

Date	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	NO_2 (µg/m³)	SO_2 (µg/m³)	CO (mg/m³)	HC (ppm)	VOC (µg/m³)
01/03/2021	73.5	[illegible]	18.7	[illegible]	0.65	ND	ND
02/03/2021	[illegible]	[illegible]	14.1	7.9	0.85	ND	ND
08/03/2021	[illegible]	32.5	[illegible]	8.7	0.64	ND	ND
09/03/2021	[illegible]	40.9	21.4	10.0	0.23	ND	ND
15/03/2021	[illegible]	[illegible]	19.3	7.2	[illegible]	ND	ND
16/03/2021	[illegible]	[illegible]	[illegible]	9.5	0.65	ND	ND
22/03/2021	[illegible]	47.2	[illegible]	[illegible]	[illegible]	ND	ND
23/03/2021	[illegible]	[illegible]	23.4	12.6	[illegible]	[illegible]	ND
29/03/2021	81.2	42.2	[illegible]	[illegible]	0.55	ND	ND
30/03/2021	[illegible]	[illegible]	[illegible]	[illegible]	0.78	ND	ND
05/04/2021	[illegible]	43.5	[illegible]	[illegible]	0.56	ND	ND
06/04/2021	[illegible]	41.2	21.3	13.1	[illegible]	ND	ND
12/04/2021	82.4	47.3	25.5	9.0	[illegible]	ND	ND
13/04/2021	77.0	[illegible]	19.3	7.5	[illegible]	ND	[illegible]
19/04/2021	86.2	50.3	30.2	[illegible]	0.88	ND	ND
20/04/2021	[illegible]	42.5	[illegible]	12.5	0.92	ND	ND
26/04/2021	[illegible]	[illegible]	21.6	8.6	[illegible]	[illegible]	ND
27/04/2021	72.5	37.8	[illegible]	[illegible]	[illegible]	ND	ND
03/05/2021	84.8	[illegible]	[illegible]	[illegible]	[illegible]	ND	ND
04/05/2021	80.3	[illegible]	[illegible]	9.5	0.65	ND	ND
10/05/2021	[illegible]	[illegible]	[illegible]	[illegible]	0.89	ND	ND

[illegible] SH
ANALYST

[illegible] RAWAT

Gaurav
Authorised Sign.

Note: Terms & conditions refer on back side of test report.

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Ph: 0124-4349750/757/753, 9810955589, [illegible] E-mail: lab@vardanenvironet.com, bd@vardanenvironet.com

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Annexure 7

Vardan Environmental

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

Test Report

Report No.: VEL/AA/001-027

Date	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	NO_2 (µg/m³)	SO_2 (µg/m³)	CO (µg/m³)	HC (ppm)	VOC (µg/m³)
11/05/2021	77.2	40.1	19.5	7.4	0.75	ND	ND
17/05/2021	81.5	43.5	24.2	9.6	0.65	ND	ND
18/05/2021	75.9	38.7	16.8	7.3	0.98	ND	ND
24/05/2021	80.2	41.2	21.3	8.1	0.81	ND	ND
25/05/2021	94.7	45.6	26.9	11.2	0.72	ND	ND
31/05/2021	79.6	39.2	20.3	9.5	0.89	ND	ND

Note: - HC-Hydrocarbon, ND- Not Detected

Limit as per *NAAQS	Parameter	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	NO_2 (µg/m³)	SO_2 (µg/m³)	CO (mg/m³)
		100	60	80	80	4

*National Ambient Air Quality Standards

ARJUN RAWAT

Note: Terms & conditions refer on backside of test report.

Ph: 0124-4343750/752/753, 9810351569, 9953147268 E-mail: info@vardanenvironet.com, bd@vardanenvironet.com

Annexure 7

Vardan EnviroLab

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

Test Report

Sample No.:	VEL/OC/AA/02	Report No.:	VEL/AA/028-054
Name & Address of Project	M/s Om Chem Village : Kurali, Sahapur Road, Tehsil: Bilaspur District: Yamunanagar, Haryana	Reporting Date:	07/06/2021
		Ref. No:	NIL
		Monitoring Period:	March 2021 to May 2021
		Equipment Used:	RDS & FPS with all accessories
Sample Collected By:	Vardan Envirolab Representative	Protocol Used:	IS-5182
Sample Description:	Ambient Air Quality Monitoring	Parameter Required	As per work order
Location:	Bulgarh (A2)		

Results

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_x ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m^3)	HC (ppm)	VOC ($\mu g/m^3$)
01/03/2021	77.2	40.2	[illegible]	7.4	0.09	ND	ND
03/03/2021	82.6	44.6	[illegible]	9.2	0.76	ND	ND
08/03/2021	78.2	38.5	17.6	7.8	0.45	ND	ND
09/03/2021	80.9	42.3	21.4	10.6	0.68	ND	ND
15/03/2021	84.2	46.5	25.5	5.6	0.69	ND	ND
16/03/2021	85.3	48.2	31.2	16.1	0.72	ND	ND
22/03/2021	90.2	57.4	29.0	18.2	0.89	ND	ND
23/03/2021	86.4	52.3	25.9	10.6	0.94	ND	ND
29/03/2021	89.3	56.2	23.1	9.9	0.87	ND	ND
30/03/2021	80.3	43.5	21.3	8.4	0.69	ND	ND
05/04/2021	91.4	41.3	27.9	1.2	0.95	ND	ND
06/04/2021	76.8	38.5	19.2	8.9	0.81	ND	ND
12/04/2021	71.8	35.6	16.9	6.8	0.83	ND	ND
13/04/2021	77.2	39.5	20.5	8.3	0.94	ND	ND
19/04/2021	83.2	46.3	26.4	10.4	0.76	ND	ND
20/04/2021	87.5	40.9	28.2	9.8	0.82	ND	ND
26/04/2021	91.0	52.5	24.2	7.8	0.89	ND	ND
27/04/2021	76.2	46.7	[illegible]	8.	0.92	ND	ND
03/05/2021	79.8	40.8	21.4	9.4	0.73	ND	ND
04/05/2021	83.2	47.1	25.5	11.2	0.93	ND	ND
10/05/2021	88.5	[illegible]	27.8	13.6	0.84	ND	ND

Checked By

Reviewed By

Authorised Signatory

Note: Terms & conditions given on backside of test report.

1128715/2021/Estt.Br

Annexure 7

Vardan Enviro Lab

Laboratory: Plot No. 82A, Sector 5, MT Manesar, Gurugram - 122051, Haryana
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Report No.: VTL/AA/028-054

Date	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	NO_2 (µg/m³)	SO_2 (µg/m³)	CO (mg/m³)	HC (ppm)	VOC (µg/m³)
11/05/2021	78.3	42.4	26.3	8.4	0.86	ND	ND
17/05/2021	80.5	48.3	30.8	10.3	0.95	ND	ND
18/05/2021	75.9	39.8	24.2	7.4	0.76	ND	ND
24/05/2021	83.2	50.3	23.9	11.5	0.82	ND	ND
25/05/2021	78.7	41.6	27.3	9.2	0.93	ND	ND
31/05/2021	80.2	42.5	24.6	10.2	0.85	ND	ND

Note: - HC-Hydrocarbon, ND- Not Detected

Limit as per *NAAQS	Parameter	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	NO_2 (µg/m³)	SO_2 (µg/m³)	CO (mg/m³)
		100	60	80	80	4

*National Ambient Air Quality Standards

Note: Terms & conditions refer on backside of test report.

Annexure 7

Vardaan EnviroLab

Laboratory: Plot No. 82A, Sector 5, IMT Manesar, Gurugram 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample No.:	VEL/OC/AA/03	Report No.:	VEL/AA/055-081
Name & Address of Project	M/s Om Chem Village : Kurali, Sohapur Road, Tehsil: Bilaspur District : Yamunanagar, Haryana	Reporting Date:	07/06/2021
		Ref. No:	NIL
		Monitoring Period:	March 2021 to May 2021
		Equipment Used:	RDS & FPS with all accessories
Sample Collected By:	Vardaan Envirolab Representative	Protocol Used:	IS-5182
Sample Description:	Ambient Air Quality Monitoring	Parameter Required	As per work order
Location:	Purbboli (A3)		

Results

Date	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	NO_x (µg/m³)	SO_2 (µg/m³)	CO (mg/m³)	HC (ppm)	VOC (µg/m³)
01/03/2021	81.3	42.3	26.9	15.2	0.82	ND	ND
02/03/2021	85.1	54.2	31.3	9.8	0.78	ND	ND
04/03/2021	82.6	48.5	28.2	16	0.80	ND	ND
09/03/2021	78.4	39.4	21.7	9.5	0.91	ND	ND
15/03/2021	89.3	35.2	27.4	10.1	0.92	ND	ND
16/03/2021	97.8	57.2	37.5	15.3	0.96	ND	ND
23/03/2021	86.5	46.7	32.2	15.4	0.01	ND	ND
25/03/2021	75.4	51.3	29.7	12.5	0.4	ND	ND
29/03/2021	89.6	51.4	25.6	20.0	0.79	ND	ND
30/03/2021	86.3	49.5	32.4	10.5	0.92	ND	ND
05/04/2021	87.2	47.2	30.2	12.3	0.82	ND	ND
06/04/2021	79.3	52.5	28.2	14.5	0.94	ND	ND
12/04/2021	78.4	56.3	21.4	9.1	0.68	ND	ND
13/04/2021	82.1	41.3	26.8	10.2	0.67	ND	ND
19/04/2021	90.6	51.2	33.6	12.3	0.72	ND	ND
20/04/2021	78.2	38.2	22.2	9.5	0.92	ND	ND
26/04/2021	72.0	35.2	17.6	11.0	0.73	ND	ND
27/04/2021	90.6	53.1	35.5	6.8	0.86	ND	ND
03/05/2021	76.2	40.5	28.2	8.3	0.94	ND	ND
04/05/2021	82.3	42.2	27.4	10.2	0.76	ND	ND
10/05/2021	82.6	44.7	32.2	11.5	0.89	ND	ND

Authorised Signatory

Note: Terms & conditions refer on backside of test report.

Annexure 7

Vardan EnviroLab

Laboratory: Plot No. 62A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Report No.: VEL/A-AV/SS-08[illegible]

Date	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	NO_2 (µg/m³)	SO_2 (µg/m³)	CO (mg/m³)	HC (ppm)	VOC (µg/m³)
[illegible]/05/2021	84.5	45.3	[illegible]7.6	21.5	0.85	ND	ND
07/05/2021	[illegible]	[illegible]	21.3	[illegible]	0.80	ND	ND
18/05/2021	74.2	35.2	28.5	[illegible]	0.76	ND	ND
24/05/2021	[illegible]	[illegible]	25.[illegible]	12.6	0.91	ND	ND
25/05/2021	81.2	40.7	33.2	[illegible]	0.83	ND	ND
31/05/2021	73.5	[illegible]	29.6	[illegible]	0.75	ND	ND

Note: - HC-Hydrocarbon, ND- Not Detected

Limit as per NAAQS*	Parameter	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	NO_2 (µg/m³)	SO_2 (µg/m³)	CO (mg/m³)
		100	60	80	80	4

*National Ambient Air Quality Standards

Analyst   Checked By   Authorized Signatory

1128715/2021/Estt.Br

Vardan EnviroLab

Annexure 7

Laboratory: Plot No. 87A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No.:	VEL/OC/AA/04	Report No.:	VEL/AA/082-107
Name & Address of Project	M/s Om Chem, Village : Kurali, Sabapur Road, Tehsil: Bilaspur District: Yamunanagar, Haryana	Reporting Date:	07/06/2021
		Ref. No:	NIL
		Monitoring Period:	March 2021 to May 2021
		Equipment Used:	RDS & FPS with all accessories
Sample Collected By:	Vardan EnviroLab Representative	Protocol Used:	IS-5182
Sample Description:	Ambient Air Quality Monitoring	Parameter Required	As per work order
Location:	Fatehgarh/Tumbi (A4)		

Results

Date	PM10 (µg/m³)	PM2.5 (µg/m³)	NO2 (µg/m³)	SO2 (µg/m³)	CO (mg/m³)	HC (ppm)	VOC (µg/m³)
03/03/2021	75.6	36.6	17.6	7.5	0.56	ND	ND
[illegible]/03/2021	79.3	[illegible]	19.6	9.4	[illegible]	ND	ND
10/03/2021	82.6	[illegible]	[illegible]	11.2	0.84	ND	ND
11/03/2021	76.2	38.5	17.2	6.5	[illegible]	ND	ND
17/03/2021	68.3	35.5	31.1	12.3	0.87	ND	ND
18/03/2021	80.4	49.6	27.6	11.2	0.94	ND	ND
24/03/2021	69.[illegible]	50.2	24.4	13.4	0.86	ND	ND
25/03/2021	[illegible]	57.2	27.5	15.5	0.62	ND	ND
31/03/2021	84.2	44.3	21.6	[illegible]	0.91	ND	ND
01/04/2021	79.8	[illegible]	20.2	7.6	0.75	ND	ND
07/04/2021	82.7	42.3	22.6	8.4	0.68	ND	ND
08/04/2021	[illegible]	47.[illegible]	29.2	9.6	0.67	ND	ND
14/04/2021	84.2	[illegible]	24.3	[illegible]	0.82	ND	ND
15/04/2021	80.9	[illegible]	32.5	[illegible]	0.54	ND	ND
21/04/2021	[illegible]	38.8	12.2	10.7	0.75	ND	ND
22/04/2021	82.0	53.5	28.5	12.[illegible]	0.55	ND	[illegible]
28/04/2021	81.6	[illegible]	[illegible]	10.2	0.9	ND	ND
29/04/2021	80.2	42.0	31.8	15.2	0.70	ND	ND
05/05/2021	[illegible]	49.6	27.4	11.3	0.84	ND	ND
06/05/2021	[illegible]	47.2	24.1	[illegible]	[illegible]	ND	ND
12/05/2021	91.[illegible]	56.[illegible]	19.3	[illegible]	0.98	ND	ND

TESTED BY ANALYST

AUTHORISED SIGNATORY

Note: Terms & conditions refer on backside of test report

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1128715/2021/Estt.Br

Annexure 7

Vardan EnviroLab

Laboratory: Plot No. 874, Sector 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Report No.: VEL/AA/082/105

Date	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	NO_2 (µg/m³)	SO_2 (µg/m³)	CO (mg/m³)	HC (ppm)	VOC (µg/m³)
13/05/2021	75.5	36.3	18.7	7.5	0.06	ND	ND
19/05/2021	81.9	42.5	22.1	10.2	0.92	ND	ND
20/05/2021	94.2	50.2	26.9	12.1	0.73	ND	ND
26/05/2021	83.2	44.3	25.7	9.8	0.56	ND	ND
27/05/2021	84.7	42.5	27.6	10.7	0.73	ND	ND

Note: HC-Hydrocarbon, ND- Not Detected

Limit as per *NAAQS	Parameter	PM10 (µg/m³)	$PM_{2.5}$ (µg/m³)	NO_2 (µg/m³)	SO_2 (µg/m³)	CO (mg/m³)
		100	60	80	80	4

*National Ambient Air Quality Standards

AUTHORISED SIGNATORY

Checked

Vardan EnviroLab

Annexure 7

Laboratory: Plot No. 82A, Sector - 5, IMT-Manesar, Gurugram - 122052, Haryana
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No.: VEL/OC/AA/05
Name & Address of Project: M/s Om Cheri, Village : Kurali, Sabapur Road, Tehsil: Bilaspur District: Yamunanagar, Haryana.
Sample Collected By: Vardan Envirolab Representative
Sample Description: Ambient Air Quality Monitoring
Location: Sabapur (A5)

Report No.: VEL/AA/109-115
Reporting Date: 07/06/2021
Ref. No: NIL
Monitoring Period: March 2021 to May 2021
Equipment Used: RDS & FPS with all accessories
Protocol Used: IS-5182
Parameter Required: As per work order

Results

Date	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	NO_2 (µg/m³)	SO_2 (µg/m³)	CO (mg/m³)	HC (ppm)	VOC (µg/m³)
03/03/2021	78.5	38.5	18.3	8.5	0.62	ND	ND
04/03/2021	8[illegible]	35.1	26.5	10.6	0.67	ND	ND
10/03/2021	79.6	39.5	20.4	7.4	0.[illegible]5	ND	ND
11/03/2021	87.3	43.2	33.5	9.2	[illegible].84	ND	ND
17/03/2021	[illegible]	46.6	25.1	12.3	[illegible]	ND	ND
18/03/2021	86.4	46.[illegible]	27.6	12.6	0.77	ND	ND
24/03/2021	88.5	45.2	30.2	13.1	0.83	ND	ND
25/03/2021	82.6	30.6	26.4	14.8	0.59	ND	ND
31/03/2021	85.[illegible]	36.[illegible]	16.5	[illegible].4	0.84	ND	ND
01/04/2021	70.4	34.3	15.3	6.2	0.75	ND	ND
07/04/2021	75.5	35.[illegible]	17.4	9.0	0.69	ND	ND
08/04/2021	78.3	31.5	20.3	10.7	0.61	ND	ND
14/04/2021	87.4	42.1	25.4	9.4	0.6[illegible]	ND	ND
15/04/2021	76.4	36.4	20.2	8.3	0.51	ND	ND
21/04/2021	72.3	31.5	16.3	7.4	0.7[illegible]	ND	ND
22/04/2021	69.6	33.3	11.[illegible]	6.3	0.64	ND	ND
28/04/2021	75.3	37.4	17.6	9.3	0.56	ND	ND
29/04/2021	89.6	50.2	2[illegible].8	10.2	0.54	ND	ND
05/05/2021	83.5	43.6	25.2	12.4	0.86	ND	ND
06/05/2021	79.2	39.[illegible]	20.3	9.5	0.61	ND	ND
12/05/2021	74.5	36.[illegible]	1[illegible].6	7.6	[illegible].85	ND	ND

(Analyst) [illegible] RAWAT (Quality Manager) Authorised Signatory

Note: Terms & conditions refer on backside of test report.

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Annexure 7

Vardan EnviroLab

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

Test Report

Report No.							VEL/AA/109-135
Date	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	NO_2 (µg/m³)	SO_2 (µg/m³)	CO (mg/m³)	HC (ppm)	VOC (mg/m³)
13/05/2021	92.4	42.3	23.3	10.2	0.94	ND	ND
19/05/2021	85.3	45.3	[illegible]	12.4	0.85	ND	ND
20/05/2021	77.4	[illegible]	18.2	8.6	0.91	ND	ND
21/05/2021	73.5	30.4	15.6	9.4	0.39	ND	ND
27/05/2021	92.2	48.0	26.2	13.7	0.82	ND	ND

Note: HC-Hydrocarbon, ND- Not Detected

Limits as per *NAAQS	Parameter	PM10 (µg/m³)	$PM_{2.5}$ (µg/m³)	NO_2 (µg/m³)	SO_2 (µg/m³)	CO (mg/m³)
		100	60	80	80	4

*National Ambient Air Quality Standards

KOMAL SINGH
(Tech.) ANALYST

ARJUN RAWAT
(Checked by)

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Note: Terms & conditions refer on backside of test report.

1128715/2021/Estt.Br

Vardan EnviroLab

Annexure 7

Laboratory: Plot No. 87A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample No.:	VEL/AQC/AA/006	Report No.:	VEL/AA/136-162
Name & Address of Project:	M/s Jan Cha n Village : Kurali, Sahapur Road, Tehsil- Bilaspur, District: Yamunanagar, Haryana	Reporting Date:	07/06/2021
		Ref. No.:	NIL
		Monitoring Period:	March 2021 to May 2021
		Equipment Used:	RDS & FPS with all accessories
Sample Collected By:	Vardan Envirolab Representative	Protocol Used:	IS-5182
Sample Description:	Ambient Air Quality Monitoring	Parameter Required:	As per work order
Location:	Bhogpur (A6)		

Results

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m^3)	HC (ppm)	VOC ($\mu g/m^3$)
03/03/2021	81.7	36.6	21.6	9.8	0.57	ND	ND
04/03/2021	77.6	38.6	23.2	7.6	0.62	ND	ND
10/03/2021	75.1	38.1	1[illegible]	8.8	2.74	ND	ND
11/03/2021	80.7	[illegible]	21.7	9.3	0.72	ND	ND
17/03/2021	86.3	47.6	27.5	11.7	0.8[illegible]	ND	ND
18/03/2021	81.5	54.2	[illegible]	13.3	0.9[illegible]	ND	ND
24/03/2021	80.3	51.2	25.7	11.0	0.9[illegible]	ND	ND
25/03/2021	[illegible]	48.7	28.4	10.2	0.8[illegible]	ND	ND
31/03/2021	88.7	50.3	25.2	10.3	0.87	ND	ND
01/04/2021	77.2	43.8	25.3	8.6	0.82	ND	ND
07/04/2021	83.9	43.2	25.7	9.1	0.65	ND	ND
08/04/2021	84.4	45.3	30.1	11.1	0.88	ND	ND
14/04/2021	92.4	46.2	21.5	9.9	0.[illegible]	ND	ND
15/04/2021	93.1	45.4	26.8	7.6	0.77	ND	ND
21/04/2021	76.5	[illegible]	29.2	11.4	0.68	ND	ND
27/04/2021	85.7	42.3	27.7	9.2	0.52	ND	ND
28/04/2021	93.1	50.2	31.2	11.2	0.51	ND	ND
29/04/2021	85.2	47.[illegible]	26.3	9.2	0.88	ND	ND
05/05/2021	78.5	40.3	19.2	8.9	0.84	ND	ND
06/05/2021	82.1	46.[illegible]	22.4	12.0	0.97	ND	ND
12/05/2021	88.2	43.8	26.[illegible]	9.7	0.88	ND	ND

Reviewed By

Authorised By

Note: Terms & conditions refer onbackside of the test report.

Ph: 0124-434[illegible]/752/753, 9810855559, 9053147268 E-mail: lab@vardanenvironet.com, lab@vardanenvironet.com

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Annexure 7

Vardan Envi[illegible] La[illegible]

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

Test Report

Report No.: VEL/AA/136-162

Date	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	NO_2 (µg/m³)	SO_2 (µg/m³)	CO (mg/m³)	HC (ppm)	VOC (µg/m³)
13/05/2021	80.4	42.2	22.3	[illegible]	0.84	ND	ND
19/05/2021	[illegible]	39.6	19.1	[illegible]	0.64	ND	ND
20/05/2021	[illegible]	[illegible]	16.7	[illegible]	[illegible]	ND	ND
26/05/2021	78.8	40.2	20.3	[illegible]	0.91	ND	ND
27/05/2021	89.6	51.[illegible]	31.[illegible]	10.3	0.93	ND	ND

Note: - HC-Hydrocarbon, ND- Not Detected

Limit as per *NAAQS	Parameter	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	NO_2 (µg/m³)	SO_2 (µg/m³)	CO (mg/m³)
		100	60	80	80	4

*National Ambient Air Quality Standard

KOMAL GUPTA
(Technical Manager)

ARJUN RAWAT
(Checked By)

VARDAN ENVIRONET

Note: Terms & conditions refer on backside of test report.

1128715/2021/Estt.Br

Annexure 7

Vardan EnviroLab

Location: Plot No. 82A, Sector 15, IMT Manesar, Gurugram - 122051, Haryana
ISO Est | ISO 14001 | ISO 45001

Test Report

Sample No.:	VEL/Q0/AA07	Report No.:	VEL/AA/163 188
Name & Address of Project	M/s Om Cem. Village : Karali, Sahaspur Road Tehsil: Bilaspur District. Yamunan. Haryana	Reporting Date:	07/06/2021
		Ref. No:	NIL
		Monitoring Period:	March 2021 to May 2021
		Equipment Used:	RDS & FPS with all accessories
Sample Collected By:	Vardan Envirolab Representative	Protocol Used:	IS-5182
Sample Description:	Ambient Air Quality Monitoring	Parameter Required	As per work order
Location:	Rajpur (A7)		

Results

Date	PM10 (µg/m³)	PM2.5 (µg/m³)	NOx (µg/m³)	SO2 (µg/m³)	CO (mg/m³)	HC (ppm)	VOC (µg/m³)
05/03/2021	81.8	42.1	30.9	5.1	0.67	ND	ND
06/03/2021	78.7	43.5	23.5	9.1	0.61	ND	ND
12/03/2021	84.9	45.7	27.2	7.6	0.83	ND	ND
13/03/2021	86.8	44.7	20.6	8.1	0.75	ND	ND
19/03/2021	73.2	40.7	19.3	6.5	0.87	ND	ND
20/03/2021	75.5	41.1	22.5	7.3	0.59	ND	ND
26/03/2021	85.4	43.9	21.3	6.9	0.72	ND	ND
27/03/2021	88.6	50.3	23.6	6.8	0.68	ND	ND
02/04/2021	77.2	42.3	20.1	6.4	0.94	ND	ND
03/04/2021	74.3	40.7	19.5	6.0	0.96	ND	ND
09/04/2021	88.7	48.5	22.2	7.1	0.91	ND	ND
10/04/2021	85.8	46.1	23.1	6.5	0.86	ND	ND
16/04/2021	78.5	43.3	19.8	5.7	0.87	ND	ND
17/04/2021	75.2	41.3	18.5	7.2	0.92	ND	ND
23/04/2021	81.0	45.6	23.3	BDL	0.61	ND	ND
24/04/2021	83.9	44.2	22.7	7.2	0.59	ND	ND
30/04/2021	91.2	48.30	21.4	8.0	0.85	ND	ND
01/05/2021	72.4	43.6	19.01	6.9	0.74	ND	ND
07/05/2021	67.5	41.8	18.5	5.1	0.65	ND	ND
08/05/2021	75.1	40.2	17.8	6.5	0.93	ND	ND

Note: Terms & conditions refer on backside of test report

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Annexure 7

Vardan EnviroLab

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

Test Report

Report No.: VTL/AA/163-188

Date	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	NO_2 (µg/m³)	SO_2 (µg/m³)	CO (mg/m³)	HC (ppm)	VOC (µg/m³)
14/05/2021	75.3	46.1	19.8	6.6	0.52	ND	ND
15/05/2021	74.7	45.3	18.4	6.3	0.53	ND	ND
21/05/2021	79.3	47.0	20.6	7.1	0.96	ND	ND
25/05/2021	81.5	45.8	20.5	7.8	0.94	ND	ND
28/05/2021	95	45.8	18.1	5.0	0.59	ND	ND
29/05/2021							

Note:- HC-Hydrocarbon, ND-Not Detected

Limit as per *NAAQS	Parameter	PM_{10} (µg/m³) 100	$PM_{2.5}$ (µg/m³) 60	NO_2 (µg/m³) 80	SO_2 (µg/m³) 80	CO (mg/m³) 4

*National Ambient Air Quality Standard

ARJUN RAWAT
Chemist

NP

www.vardan.co.in

Note: Terms & conditions refer on backside of test report.

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Vardan EnviroLab

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

Annexure 7

Test Report

Sample No.:	VEL/OC/AA/08	Report No.:	VEL/AA/[illegible]
Name & Address of Project	M/s Om Clinic, Village: Kunjal, Sabapur Road, Tehsil: Bilaspur, District: Yamunanagar, Haryana	Reporting Date:	07/06/2021
		Ref. No.:	NIL
		Monitoring Period:	March 2021 to May 2021
		Equipment Used:	RDS & FPS with all accessories
Sample Collected By:	Vardan Envirolab Representative	Protocol Used:	IS-5182
Sample Description:	Ambient Air Quality Monitoring	Parameter Required	As per work order
Location:	Sabawan (A8)		

Results

Date	PM_{10} (μg/m³)	$PM_{2.5}$ (μg/m³)	NO_2 (μg/m³)	SO_2 (μg/m³)	CO (mg/m³)	HC (ppm)	VOC (μg/m³)
05/03/2021	82.4	43.8	[illegible]	6.9	0.58	ND	ND
[illegible]/03/2021	78.5	41.4	21.3	5.8	0.67	ND	ND
12/03/2021	[illegible]	42.8	[illegible]	6.1	0.82	ND	ND
13/03/2021	77.2	39.4	20.9	6.5	0.77	ND	ND
19/03/2021	83.[illegible]	[illegible]	21.1	5.6	0.81	ND	ND
20/03/2021	8[illegible].9	42.7	23.2	6.7	0.71	ND	ND
26/03/2021	75.[illegible]	38.9	15.[illegible]	[illegible]	0.74	ND	ND
27/03/2021	[illegible].7	[illegible]	20.[illegible]	[illegible]	[illegible]	ND	ND
[illegible]/04/2021	79.7	[illegible]	[illegible]	[illegible]	0.85	ND	ND
05/04/2021	[illegible]	[illegible]6.1	[illegible]	6.2	0.90	ND	ND
09/04/2021	80.9	[illegible]	[illegible]	[illegible]	0.84	ND	ND
10/04/2021	[illegible]	48.1	[illegible]	[illegible]	0.67	ND	ND
16/04/2021	79.8	[illegible]	[illegible]	7.4	0.6[illegible]	ND	ND
17/04/2021	76.2	45.5	[illegible]	[illegible]	0.78	ND	ND
23/04/2021	[illegible]	[illegible]	[illegible]	[illegible]	0.6[illegible]	ND	ND
24/04/2021	[illegible]	45.[illegible]	20.8	[illegible]	[illegible]	ND	ND
30/04/2021	75.[illegible]	42.[illegible]	[illegible]	6.5	0.71	ND	ND
01/05/2021	[illegible].8	[illegible]	[illegible]	[illegible]	0.61	ND	ND
07/05/2021	[illegible]	[illegible]	19.3	[illegible]	0.87	ND	ND
08/05/2021	[illegible]	44.[illegible]	18.[illegible]	[illegible]	0.90	ND	ND

Checked By [illegible]   Authorized Signatory

Note: Terms & conditions refer on backside of test report

Vardan EnviroLab

Annexure 7

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

Test Report

Report No.: VEL/A[illegible]/139-214

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m^3)	HC (ppm)	VOC ($\mu g/m^3$)
14/05/2021	75.2	42.1	17.8	5.7	0.76	ND	ND
15/05/2021	68.1	40.3	19.4	6.2	0.54	ND	ND
21/05/2021	71.0	43.2	19.8	7.5	0.61	ND	ND
22/05/2021	78.7	47.0	21.4	7.0	[illegible]	ND	ND
24/05/2021	83.4	49.5	20.4	7.7	0.90	ND	ND
29/05/2021	75.2	42.1	17.8	5.7	0.70	ND	ND

Notes:- HC-Hydrocarbon, ND- Not Detected

Limit as per *NAAQS	Parameter	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m^3)
		100	60	80	80	4

*National Ambient Air Quality Standard

KOMAL [illegible]
Chemist

[illegible]
Authorised

Note: Terms & conditions refer on backside of test report

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Annexure 7

Vardan EnviroLab

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

Test Report

Sample Number:	VEL/OC/AN/01	Report No.:	VEL/AN/2103/16/021
Name & Address of Project:	M/s Om Clean Village : Kamni Sabapur Road, Tehsil: Bilaspur District: Yamunanagar, Haryana	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	22/03/2021
		Receipt Date:	16/03/2021

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:	
Sample Collected by	: Vardan Envirolab Representative
Sampling Location	: Project Site (N1)
Instrument Used	: Sound Level Meter-01
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	Clear Sky
Date of Monitoring	09/03/2021 To 10/03/2021
Time of Monitoring	: 06:00 AM to 06:00 AM
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Sampling & Analysis Protocol	: IS-9989
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

RESULT

S. No.	Parameters	Protocol	Test Result dB(A): Day Time (06:00 am to 10:00 pm)	Test Result dB(A): Night Time (10:00 pm to 06:00 am)	Unit
1.	L_{max}	IS 9989	61.1	36.2	dB(A)
2.	L_{min}	IS 9989	43.3	35.5	dB(A)
3.	L_{eq}	IS 9989	57.26	41.31	dB(A)
	CPCB Limits in dB(A) Leq (Industrial Area)		75.00	70.00	dB(A)

KOMAL SINGH
(Checked By)

ARUN RAWAT
(Directed By)

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Note: Terms & conditions refer on backside of test report

Ph. 0124-4[illegible] Email: [illegible]@vardanenvironet.com, bd@vardanenvironet.com

Annexure 7

Vardan Enviro Lab

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

Test Report

Sample Number:	VEL/OC/AN/0[illegible]	Report No.:	VEL/AN/2103/16/002
Name & Address of Project:	M/s Om Clean Village : Kurufi, Sahapur Road, Tehsil: Bilaspur District: Yamunanagar, Haryana	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	22/03/2021
		Receipt Date:	16/03/2021

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:

Sample collected by	: Vardan Enviro Lab Representative
Sampling Location	Butgarh (N2)
Instrument Used	: Sound Level Meter-02
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	Clear Sky
Date of Monitoring	: 20/03/2021 To 21/03/2021
Time of Monitoring	: 06:00 AM to 06:00AM
Surrounding Activity	: Human & Vehicular activities
Scope of Monitoring	Regulatory Requirement
Sampling & Analysis Protocol	: IS-9989
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

RESULT

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L_{max}	IS 9989	58.1	49.3	dB(A)
2	L_{min}	IS 9989	40.2	35.1	dB(A)
3	L_{eq}	IS 9989	51.47	42.55	dB(A)
4.	CPCB Limits in dB(A) Leq (Residential Area)		55.00	45.00	dB(A)

ARJUN RAWAT

Authorized By

Note: Terms & conditions refer on backside of test report.

Annexure 7

Vardan EnviroLab

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

Test Report

Sample Number:	VEL/OC/AN/03	Report No.:	VEL/AN/2103/16/003
Name & Address of Project:	M/s Om Chem Village : Kurali, Subapur Road, Tehsil: Bilaspur District: Yamunanagar, Haryana	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	22/03/2021
		Receipt Date:	16/03/2021

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:

Sample collected by	: Vardan Envirolab Representative
Sampling Location	: Kakheli (N3)
Instrument Used	: Noise Level Meter-01
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 10/03/2021 To 11/03/2021
Time of Monitoring	: 06:00 AM to 06:00 AM
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Sampling & Analysis Protocol	: IS-9989
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

RESULT

S. No.	Parameters	Method/Protocol/Vardan Lab Method	Test Result dB (A) Leq: Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	Unit
1.	Lmax	IS 9989	61.5	55.1	dB(A)
2.	Lmin	IS 9989	48.6	37.3	dB(A)
3.	Leq	IS 9989	52.53	43.18	dB(A)
4.	CPCB Limits in dB(A) Leq (Residential Area)		55.00	45.00	dB(A)

Checked By — Arjun Rana (Signature)

Annexure 7

Vardan EnviroLab

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

Test Report

Sample Number:	VEL/OC/AN/04	Report No.:	VEL/AN/2103/16/004
Name & Address of Project:	M/s Om Chem, Village : Kurali, Sabapur Road, Tehsil: Bilaspur, District: Yamunanagar, Haryana	Format No.:	7.0 F 01
		Party Reference No.:	NIL
		Reporting Date:	22/03/2021
		Receipt Date:	16/03/2021

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample collected by	: Vardan Envirolab Representative
Sampling Location	: Fatehgarh Tumkd (N4)
Instrument Used	: Sound Level Meter 03
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 10/03/2021 To 11/03/2021
Time of Monitoring	: 06:00 AM to 06:00AM
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Sampling & Analysis Protocol	: IS-9989
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

RESULT

S. No.	Parameters	Protocol	Test Result dB (A) Day Time (6:00 am to 10:00 pm)	Test Result dB (A) Night Time (10:00 pm to 06:00 am)	Unit
1	L_{max}	IS 9989	64.2	57.5	dB(A)
2.	L_{min}	IS 9989	48.7	39.5	dB(A)
3.	L_{eq}	IS 9989	51.25	42.63	dB(A)
4.	CPCB Limits in dB(A) Leq (Residential Area)		55.00	45.00	dB(A)

GOPAL SINGH
ANALYST

ARJUN RAWAT
Checked By

Approved By

Note: Terms & conditions refer on backside of test report

1128715/2021/Estt.Br

Annexure 7

Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001:2015 | ISO 14001:2015 | ISO 45001:2018

Test Report

Sample Name/No.:	VEL/GC/AN/05	Report No.:	VEL/AN/2103/16/005
Name & Address of Project:	M/s Om Chem Village: Kuriali, Sahapur Road, Tehsil: Bilaspur District: Yamunanagar, Haryana	Format No.:	7.8.1-01
		Party Reference No.:	NIL
		Reporting Date:	22/03/2021
		Receipt Date:	16/03/2021

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:	
Sample collected by	Vardan Environment Research Pvt.
Sampling Location	Gujarat (N)
Instrument Used	Sound Level Meter
Instrument Calibration Status	On Service
Meteorological condition during monitoring	Clear Sky
Date of Monitoring	15/03/2021 To 15/03/2021
Time of Monitoring	24 Hrs (06:00 AM to 06:00 AM)
Surrounding Activity	Industrial & Vehicular Activities
Scope of Monitoring	Regulatory Compliance
Sampling & Analysis Protocols	IS-9989
Sampling Duration	24 Hours
Parameters Analyzed	As per Work Order

RESULT

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	[illegible]	[illegible]	[illegible]	52	dB(A)
2.	[illegible]	[illegible]	[illegible]	[illegible]	dB(A)
3.	Leq	IS 9989	56.80	41.77	dB(A)
	CPCB Limits i.e. dB(A) Leq (Residential Area)		55.00	45.00	dB(A)

ANALYST

ARUN RAWAT
Authorised Signatory

1128715/2021/Estt.Br

Annexure 7

Vardan EnviroLab

Laboratory: Plot No. 82A, Sector - 5, MT Manesar, Gurugram - 122051, Haryana
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VEL/OC/AN/06	Report No.:	VEL/AN/2103/10/... 06
Name & Address of Project:	M/s Om Cluster Village: Kural, Sahapur Road, Tehsil: Bilaspur District: Yamunanagar, Haryana	Format No.:	7.8 (F-61)
		Party Reference No.:	NIL
		Reporting Date:	22/03/2021
		Receipt Date:	16/03/2021

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:

Sample collected by	Vardan Enviolab Representative
Sampling Location	Shegpur (N6)
Instrument Used	Sound Level Meter
Instrument Calibration Status	Calibrated
Meteorological condition during monitoring	Clear Sky
Date of Monitoring	12/03/2021 To 13/03/2021
Time of Monitoring	06:00 AM to 06:00AM
Surrounding Activity	Human & Vehicular Activities
Scope of Monitoring	Regulatory Requirement
Sampling & Analysis Protocol	IS-9989
Sampling Duration	24 Hours
Parameter Reported	As per Work Order

RESULT

S. No.	Parameters	Protocol	Test Result dB (A) Day Time (6:00 am to 10:00 pm)	Test Result dB (A) Night Time (10:00 pm to 06:00 am)	Unit
1.	L_{max}	IS 9989	68.2	54.2	dB(A)
2.	L_{min}	IS 9989	46.1	35.4	dB(A)
3.	L_{eq}	IS 9989	51.73	40.75	dB(A)
4.	CPCB Limits in dB(A) Leq (Residential Area)		55.00	45.00	dB(A)

Note: Terms & conditions refer on backside of test report.

1128715/2021/Estt.Br

Annexure 7

Vardan EnviroLab

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

Test Report

Sample Number	VEL/OC/AN/07	Report No.:	VEL/AN/2103/16/ .07
Name & Address of Project	M/s Om Chem Village : Kundli, Sahapur Road, Tehsil: Bilaspur District: Yamunanagar, Haryana	Format No.:	7.8 F 01
		Party Reference No.:	NIL
		Reporting Date:	22/03/2021
		Receipt Date:	10/03/2021

Sample Description : AMBIENT NOISE LEVEL MONITORING

General Information:

Sample collected by	:	Vardan Envirolab Representative
Sampling Location	:	Rajpur (N7)
Instrument Used		Sound Level Meter- 01
Instrument Calibration Status	:	Calibrated
Meteorological condition during monitoring	:	Clear Sky
Date of Monitoring	:	13/03/2021 To 14/03/2021
Time of Monitoring		06:00 AM to 06:00AM
Surrounding Activity	:	Human & Vehicular Activities
Scope of Monitoring	:	Statutory Requirement
Sampling & Analysis Protocol		IS-9989
Sampling Duration	:	24 Hours
Parameter Required	:	As per Work Order

RESULT

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	[illegible]	IS 9989	60.1	[illegible]	dB(A)
2.	[illegible]	IS 9989	[illegible]	53.5	dB(A)
3.	[illegible]	IS 9989	53.26	45.21	dB(A)
4.	CPCB Limits (dB(A) Leq (Residential Area)		55.00	45.00	dB(A)

[illegible]

Note: Terms & conditions [illegible] back side of test report.

Annexure 7

Vardan EnviroLab

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

Test Report

Sample Number:	VEL/OC/AN/09	Report No.:	VEL/AN/2103/16/008
Name & Address of Project:	M/s Om Chem Village: Kundi, Sabapur Road, Tehsil: Bilaspur District: Yamunanagar, Haryana	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	22/03/2021
		Receipt Date:	16/03/2021

Sample Description: AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample collected by	:	Vardan Envirolab Representative
Sampling Location	:	[illegible]rawan (NH)
Instrument Used	:	Sound Level Meter 02
Instrument Calibration Status	:	Calibrated
Meteorological condition during monitoring	:	Clear Sky
Date of Monitoring	:	[illegible]/2021 To 11/03/2021
Time of Monitoring	:	[illegible] AM to [illegible]
Surrounding Activity	:	Human & Vehicular Activities
Scope of Monitoring	:	Regulatory Requirement
Sampling & Analysis Protocol	:	IS-9989
Sampling Duration	:	24 Hours
Parameter Required	:	As per Work Order

RESULT

S. No.	Parameters	Protocol	Test Result (dB(A)) Day Time (06:00 am to 10:00 pm)	Test Result (dB(A)) Night Time (10:00 pm to 06:00 am)	Unit
1.	L_{max}	IS 9989	63.2	55.[illegible]	dB(A)
2.	L_{min}	IS 9989	45.[illegible]	[illegible]	dB(A)
3.	L_{eq}	IS 9989	52.0[illegible]	[illegible]	dB(A)
4.	CPCB Limits in dB(A) Leq (Residential Area)		55.0[illegible]	[illegible]	dB(A)

[illegible] SINGH
(Analyst)

ARJUN RAWAT
(Checked By)

(Authorized By)

Note: Terms & conditions refer on backside of test report

Annexure 7

Vardan EnviroLab

Laboratory: Plot No. 82A, Sector 5, IMT Manesar, Gurugram 122051, Haryana
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VEL/2103/S/01	Report No.:	VEL/S/2103/06/001
Name & Address of the Project:	M/s Our Client, Village: Kurali, Saharpur Road, Teh & Bilaspur, District: Yamunanagar, Haryana	Format No.:	7.8 F-02
		Party Reference No.:	NIL
		Reporting Date:	12/03/2021
		Period of Analysis:	06/03/2021–11/03/2021
Sample Description:	Soil Sample	Receipt Date:	06/03/2021
Sampling Location:	Project Site (S1)	Sampling Date:	04/03/2021
Sample Collected by:	Vardan Enviro Lab Team	Type of Sampling:	Composite
Sampling & Analysis Protocol:	IS 2720, USEPA & SOP's	Sampling Quantity:	2.0 Kg
Packing Status:	Sealed	Depth of Sampling:	30 cm

S.No.	Parameter	Test Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26) by pH Meter	6.78	--
2.	Conductivity	IS 14767 by Conductivity meter	0.285	mS/cm
3.	Soil Texture	SOP: SP-87, Issue No-01 & Issue Date 14/02/2013	Sandy – [illegible] Silt – [illegible] [illegible]	%
4.	Colour	SOP: SP-[illegible], Issue No-01 & Issue Date 14/02/2013	[illegible]	--
5.	Water holding capacity	SOP: SP-81, Issue No-01 & Issue Date 14/02/2013	42.1[illegible]	%
6.	Bulk density	SOP: SP-80, Issue No-01 & Issue Date 14/02/2013	1.41	gm/cc
7.	Chloride as Cl	SOP: SP-[illegible], Issue No-01 & Issue Date 14/02/2013	36.[illegible]2	mg/100g
8.	Calcium as Ca	SOP: SP-[illegible], Issue No-01 & Issue Date 14/02/2013	27.[illegible]	mg/100g
9.	Sodium as Na	SOP: SP-84, Issue No-01 & Issue Date 14/02/2013	42.[illegible]	mg/kg
10.	Potassium as K	SOP: SP-8[illegible], Issue No-01 & Issue Date 14/02/2013	[illegible]	kg/ha
11.	Organic Matter	IS 2720 (P-22) Titrimetric Method	0.48	%
12.	Magnesium as Mg	SOP: SP-83, Issue No-01 & Issue Date 14/02/2013	12.6[illegible]	mg/100g
13.	Available Nitrogen as N	[illegible] (Kjeldahl Method)	211.[illegible]	kg/ha
14.	Available Phosphorous	SOP: SP-[illegible], Issue No-01 & Issue Date 14/02/2013	20.[illegible]	kg/ha
15.	Zinc (as Zn)	USEPA 3050B	12.66	mg/kg
16.	Manganese (as Mn)	USEPA 3050B	5.0[illegible]	mg/kg
17.	Lead (as Pb)	USEPA 3050B	[illegible]	mg/kg
18.	Cadmium (as Cd)	USEPA 3050B	[illegible]	mg/kg
19.	Chromium (as Cr)	USEPA 3050B	0.28	mg/kg
20.	Copper (as Cu)	USEPA 3050B	2.[illegible]8	mg/kg

Sample Collected by: [illegible]
VANDANA
Analyst

Checked by

Authorized by

Note: Terms & conditions refer on backside of test report.

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Ph: [illegible] E-mail: lab@vardanenviro[illegible].com, [illegible]@vardanenviro[illegible].com

Vardan EnviroLab

Annexure 7

Laboratory: Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122052 Haryana
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VEL/OCS/02	Report No.:	VEL/SS/2103/06/002
Name & Address of the Project:	M/s Om Chem, Village: Karoli, Saharpur Road, Tehsil: Bilaspur, District: Yamunanagar, Haryana	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	12/03/2021
Sample Description:	Soil Sample	Period of Analysis:	06/03/2021-11/03/2021
Sampling Location:	Butgarh (S2)	Receipt Date:	06/03/2021
Sample Collected by:	Vardan Enviro Lab Team	Sampling Date:	04/03/2021
Sampling & Analysis Protocol:	IS 2720, USEPA & SOP	Type of Sampling:	Composite
Packing Status:	Temp Sealed	Sampling Quantity:	2.0 Kg
		Depth of Sampling:	30 cm

S. No.	Parameter	Test Method	Result	Unit
1.	pH (at 25°C)	IS : 2720 (P-26) by pH Meter	7.69	--
2.	Conductivity	IS : 2720 by Conductivity meter	0.325	mS/cm
3.	Soil Texture	SOP, SP-87, Issue No.-01 & Issue Date 14/02/2013	Sand 24, Silt 38, Clay 38	%
4.	Colour	SOP, SP-78, Issue No.-01 & Issue Date 14/02/2013	Yellowish Brown	--
5.	Water holding capacity	SOP, SP-81, Issue No.-01 & Issue Date 14/02/2013	[illegible]	%
6.	Bulk density	SOP, SP-8[illegible], Issue No.-01 & Issue Date 14/02/2013	[illegible]	g/cc
7.	Chloride as Cl	SOP, SP-85, Issue No.-01 & Issue Date 14/02/2013	[illegible]	mg/100g
8.	Calcium as Ca	SOP, SP-82, Issue No.-01 & Issue Date 14/02/2013	[illegible]	mg/100g
9.	Sodium as Na	SOP, SP-84, Issue No.-01 & Issue Date 14/02/2013	[illegible]	mg/kg
10.	Potassium as K	SOP, SP-84, Issue No.-01 & Issue Date 14/02/2013	159.10	kg/hec.
11.	Organic Matter	IS 2720 (P-22) Titrimetric Method	[illegible]	%
12.	Magnesium as Mg	SOP, SP-83, Issue No.-01 & Issue Date 14/02/2013	[illegible]	mg/100g
13.	Available Nitrogen as N	Kjeldahl Distillation Method	248.1[illegible]	kg/hec.
14.	Available Phosphorus	SOP, SP-2[illegible], Issue No.-01 & Issue Date 14/02/2013	[illegible]	kg/hec.
15.	Zinc (as Zn)	USEPA 3050B	[illegible]	mg/kg
16.	Manganese (as Mn)	USEPA 3050B	7.85	mg/kg
17.	Lead (as Pb)	USEPA 3050B	0.35	mg/kg
18.	Cadmium (as Cd)	USEPA 3050B	[illegible]	mg/kg
19.	Chromium (as Cr)	USEPA 3050B	[illegible]	mg/kg
20.	Copper (as Cu)	USEPA 3050B	[illegible]	mg/kg

Name/Sign of Reviewer
Analyst

Note: Terms & conditions refer on backside of test report.

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Annexure 7

Vardan EnviroLab

Laboratory: Plot No. 82, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VEL/SOC/S/03	Report No.:	VEL/S/2103/06/003
Name & Address of the Projects:	M/s Om Care, Village - Sarali, Subugar [illegible], Tehsil: Bilaspur, District - Yamunanagar, Haryana	Serial No.:	7,8 [illegible]
		Party Reference No.:	Nil
		Reporting Date:	12/03/2021
		Period of Analysis:	06/03/2021-11/03/2021
		Receipt Date:	06/03/2021
		Sampling Date:	04/03/2021
Sample Description:	Soil Sample	Type of Sampling:	Composite
Sampling Location:	Patch [illegible] (S5)	Sampling Quantity:	2.0 Kg
Sample Collected by:	Vardan EnviroLab Team	Depth of Sampling:	30 cm
Sampling & Analysis Protocols:	IS 2720, USEPA & SOP	Package Status:	Temp Sealed

S. No.	Parameter	Test Method	Result	Unit
1.	pH (at 25 °C)	IS: 2720 (P-26) by pH Meter	7.80	–
2.	Conductivity	IS 14767 by Conductivity meter	0.40	mS/cm
3.	Soil Texture	SOP / SP-87, Issue No.-01 & Issue Date-14/02/2013	Sand-21 / Silt-[illegible] / Clay-[illegible]	%
4.	Colour	SOP / SP-78, Issue No.-01 & Issue Date-14/02/2013	Yellowish Brown	
5.	Water holding capacity	SOP / SP-81, Issue No.-01 & Issue Date-14/02/2013	33.45	%
6.	Bulk density	SOP / SP-80, Issue No.-01 & Issue Date-14/02/2013	1.45	gm/cc
7.	Chloride as Cl	SOP / SP-85, Issue No.-01 & Issue Date-14/02/2013	56.10	mg/100g
8.	Calcium as Ca	SOP / SP-82, Issue No.-01 & Issue Date-14/02/2013	[illegible]	mg/100g
9.	Sodium as Na	SOP / SP-84, Issue No.-01 & Issue Date-14/02/2013	58.10	mg/kg
10.	Potassium as K	SOP / SP-[illegible], Issue No.-01 & Issue Date-14/02/2013	165.00	kg/hec
11.	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.51	%
12.	Magnesium as Mg	SOP / SP-83, Issue No.-01 & Issue Date-14/02/2013	23.55	mg/100g
13.	Available Nitrogen as N	IS 14684 Kjeldahl Method	251.[illegible]	kg/hec
14.	Available Phosphorus	SOP / SP-86, Issue No.-01 & Issue Date-14/02/2013	23.10	kg/hec
15.	Zinc (as Zn)	USEPA 3050B	10.70	mg/kg
16.	Manganese (as Mn)	USEPA 3050B	[illegible]	mg/kg
17.	Lead (as Pb)	USEPA 3050B	0.82	mg/kg
18.	Cadmium (as Cd)	USEPA 3050B	0.[illegible]	mg/kg
19.	Chromium (as Cr)	USEPA 3050B	[illegible]	mg/kg
20.	Copper (as Cu)	USEPA 3050B	[illegible]	mg/kg

VARDANA [illegible]
(Analyst)

(Checked by)

(Authorised Signatory)

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Note: Terms & conditions refer on backside of test report.

Ph: 0124-4143750/752/753, 8816455569, 9953107268 E-mail: lab@vardanenviro.com, hd@vardanenviro.com

1128715/2021/Estt.Br

Vardan EnviroLab

Annexure 7

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

Test Report

Sample Number:	VEL/[illegible]/S004	Report No.:	VEL/S/[illegible]/004
Name & Address of the Project:	M/s [illegible] Chem; Village : Kurali, Sabapur Road, Tehsil: Bilaspur District: Yamunanagar, Haryana	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	12/03/2021
		Period of Analysis :	06/03/2021-11/03/2021
		Receipt Date:	06/03/2021
		Sampling Date:	04/03/2021
Sample Description:	Soil Sample	Type of Sampling:	Composite
Sampling Location:	Foreign[illegible] [illegible] (S4)	Sampling Quantity:	2.0 kg
Sample Collected by:	Vardan Enviro Lab Team	Depth of Sampling:	30 cm
Sampling & Analysis Protocol:	IS 2720, USEPA & SOP	Packing Status:	Temp Sealed

S.No.	Parameter	Test Method	Result	Unit
1.	pH (at 25 °C)	IS 2720 (P-26) by pH Meter	8.22	--
2.	Conductivity	IS 14767 by Conductivity Meter	0.365	mS/cm
3.	Soil Texture	SOP : SP-89, Issue No.-01 & Issue Date-14/02/2013	Sand - 32 Silt - 50 Clay - 18	%
4.	Colour	SOP : SP-93, Issue No.-01 & Issue Date-14/02/2013	[illegible] Brown	
5.	Water Holding capacity	SOP : SP-91, Issue No.-01 & Issue Date-14/02/2013	38.22	%
6.	Bulk density	SOP : SP-88, Issue No.-01 & Issue Date-14/02/2013	1.29	gm/cc
7.	Chloride as Cl	SOP : SP-85, Issue No.-01 & Issue Date-14/02/2013	25.61	mg/100g
8.	Calcium as Ca	SOP : SP-82, Issue No.-01 & Issue Date-14/02/2013	48.41	mg/100g
9.	Sodium as Na	SOP : SP-84, Issue No.-01 & Issue Date-14/02/2013	51.60	mg/kg
10.	Potassium as K	SOP : SP-94, Issue No.-01 & Issue Date-14/02/2013	156.47	kg/ha
11.	Organic Matter	IS 2720 (P-22) Titrimetric Method	0.47	%
12.	Magnesium as Mg	SOP : SP-83, Issue No.-01 & Issue Date-14/02/2013	15.24	mg/100g
13.	Available Nitrogen as N	IS 14684 Kjeldahl Method	223.67	kg/ha
14.	Available Phosphorus	SOP : SP-86, Issue No.-01 & Issue Date 14/02/2013	[illegible]	kg/ha
15.	Zinc (as Zn)	USEPA [illegible]	8.21	mg/kg
16.	Manganese (as Mn)	USEPA 3050[illegible]	3.86	mg/kg
17.	Lead (as Pb)	USEPA 3050B	0.05	mg/kg
18.	Cadmium (as Cd)	USEPA 3050B	0.27	mg/kg
19.	Chromium (as Cr)	USEPA 3050B	0.14	mg/kg
20.	Copper (as Cu)	USEPA 3050B	[illegible]	mg/kg

Note : SOP [illegible] Operating procedure

Analyst

Checked by

Authorized Signatory

Note: Terms & conditions refer on backside of test report.

[illegible]an Enviro Lab

Annexure 7

Laboratory: Plot No. 82A, Sector - [illegible] IMT Manesar, Gurugram - 12205[illegible], Haryana
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VEL/OC/S/05	Report No.:	VEL/S/2103/06/005
Name & Address of the Project:	M/s Om Chem, Village: Kurali, Sarsapur Road, Tehsil: Bilaspur, District: Yamunanagar, Haryana	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	12/03/2021
		Period of Analysis:	06/03/2021-11/03/2021
		Receipt Date:	06/03/2021
		Sampling Date:	04/03/2021
Sample Description:	Soil Sample	Type of Sampling:	Composite
Sampling Location:	[illegible]	Sampling Quantity:	2.0 kg
Sample Collected by:	Vardan Enviro Lab Team	Depth of Sampling:	30 cm
Sampling & Analysis Protocol:	IS 2720, USEPA & SOP	Packing Status:	Temp Sealed

S. No.	Parameter	Test Method	Result	Unit
1.	pH (at 25 °C)	IS : 2720 [illegible]	[illegible]	—
2.	Conductivity	IS 14767 [illegible] meter	[illegible]	µS/cm
3.	Soil Texture	SOP / SP-57 [illegible] Issue Date [illegible]/02/2013	Sand 28 Silt 54 Clay 18	%
4.	Colour	SOP / SP-78 [illegible] Issue Date 14/02/2013	[illegible] Brown	—
5.	Water holding capacity	SOP / SP [illegible] Issue Date [illegible]/02/2013	[illegible]	%
6.	Bulk density	SOP / [illegible] & Issue Date 14/02/2013	1.36	gm/cc
7.	Chloride as Cl	SOP / SP-[illegible] & Issue Date 14/02/2013	[illegible]	mg/100g
8.	Calcium as Ca	SOP / SP-[illegible] Issue Date 14/02/2013	[illegible]	mg/100g
9.	Sodium as Na	SOP / SP-[illegible] Issue Date 14/02/2013	[illegible]	mg/kg
10.	Potassium as K	SOP / SP-[illegible] Issue Date [illegible]2013	[illegible]	kg/hec
11.	Organic Matter	IS [illegible] Titrimetric Method	0.35	%
12.	Magnesium as Mg	SOP / SP-[illegible] Issue Date 14/02/2013	24.64	mg/100g
13.	Available Nitrogen as N	[illegible] Distillation Method	238.00	kg/hec
14.	Available Phosphorous	SOP / SP-86, Issue [illegible] Issue Date 14/02/2013	[illegible]	kg/hec
15.	Zinc (as Zn)	USEPA 3050 [illegible]	14.[illegible]	mg/kg
16.	Manganese (as Mn)	USEPA 3050 [illegible]	[illegible]	mg/kg
17.	Lead (as Pb)	USEPA 3050 [illegible]	[illegible]	mg/kg
18.	Cadmium (as Cd)	USEPA 3050 [illegible]	[illegible]	mg/kg
19.	Chromium (as Cr)	USEPA 3050 [illegible]	0.20	mg/kg
20.	Copper (as Cu)	USEPA 3050 [illegible]	[illegible]	mg/kg

Tested By

Checked by
Kushal Sharma

Approved by

Note: Terms & conditions refer on back side of test report.

www.vardan[illegible].com

[illegible] 0124-4344750/752/753, 9818995560, [illegible]147268 E-mail: lab@vardanenviro[illegible].com, hd@vardanenvironet.com

Annexure 7

Vardan EnviroLab

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

Test Report

Sample Number:	VEL/SOIL/S-08	Report No.:	VEL/SR/[illegible]
Name & Address of the Project:	M/s [illegible] Village: Kanoli, Sadhaura Road, Tehsil: Bilaspur District: Yamunanagar, Haryana	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	17/03/2021
		Period of Analysis:	06/03/2021 - 1[illegible]/03/2021
		Receipt Date:	06/03/2021
		Sampling Date:	04/03/2021
Sample Description:	Soil Sample	Type of Sampling:	Composite
Sampling Location:	Bilaspur (S6)	Sampling Quantity:	2.0 Kg
Sample Collected by:	Vardan Enviro Lab Team	Depth of Sampling:	[illegible] cm
Sampling & Analysis Protocol:	IS 2720, USEPA & SOP	Packing Status:	Temp Sealed

S. No.	Parameters	Test Method	Result	Unit
1	pH (at 25 °C)	IS : 2720 (P-26) By pH Meter	[illegible]	-
2	Conductivity	IS 14767 by Conductivity meter	0.298	ms/cm
3	Soil Texture	SOP, SP-87, Issue No-01 & Issue Date-14/02/2013	Sand - [illegible] Silt - 45 Clay - [illegible]	%
4	Colour	SOP, SP-[illegible], Issue No-01 & Issue Date-14/02/2013	Yellowish [illegible]	-
5	Water holding capacity	SOP, SP-81, Issue No-01 & Issue Date-14/02/2013	[illegible]	%
6	Bulk density	SOP, SP-[illegible], Issue No-01 & Issue Date-14/02/2013	1.41	g/cc
7	Chlorides as Cl	SOP, SP-85, Issue No-01 & Issue Date-14/02/2013	42.[illegible]	mg/100g
8	Calcium as Ca	SOP, SP-[illegible], Issue No-01 & Issue Date-14/02/2013	[illegible]	mg/100g
9	Sodium as Na	SOP, SP-[illegible], Issue No-01 & Issue Date-14/02/2013	[illegible]	mg/100g
10	Potassium as K	SOP, SP-84, Issue No-01 & Issue Date-14/02/2013	125.[illegible]	kg/ha
11	Organic Matter	IS:2720 (P-22) Titrimetric Method	0.[illegible]	%
12	Magnesium as Mg	SOP, SP-[illegible], Issue No-01 & Issue Date-14/02/2013	16.63	mg/100g
13	Available Nitrogen as N	IS:14684 Distillation Method	2[illegible].[illegible]	kg/ha
14	Available Phosphorus	SOP, SP-86, Issue No-01 & Issue Date-14/02/2013	[illegible]	kg/ha
15	Zinc (as Zn)	USEPA 3050B	[illegible].64	mg/kg
16	Manganese (as Mn)	USEPA 3050B	[illegible].50	mg/kg
17	Lead (as Pb)	USEPA 3050B	0.84	mg/kg
18	Cadmium (as Cd)	USEPA 3050B	0.12	mg/kg
19	Chromium (as Cr)	USEPA 3050B	[illegible]	mg/kg
20	Copper (as Cu)	USEPA 3050B	[illegible]	mg/kg

VANDANA
Analysed By

Note: Terms & conditions refer on backside of test report

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Vardan EnviroLab

Annexure 7

Laboratory: Plot No. 32A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana

ISO 9001, ISO 14001, ISO 45001

Test Report

Sample Number:	[illegible]	Report No.:	VEL/S/21/03/0002
Name & Address of Applicant:	M/S Om Clinic	Format No.:	F&T-01
	Village: Kotaliasahapur Road, Tehsil: Bilaspur	Party Reference No.:	NIL
	District: Yamunanagar, Haryana	Reporting Date:	12/03/2021
		Period of Analysis:	06/03/2021 to 08/03/2021
		Receipt Date:	06/03/2021
Sample Description:	Soil Sample	Sampling Date:	04/03/2021
Sampling Location:	Rajpur (S7)	Type of Sample:	Composite
Sample Collected by:	Vardan Enviro Lab Team	Sampling Quantity:	2.0 kg
Sampling & Analysis Protocol:	IS 2720, USEPA & SOP	Depth of Sampling:	30 cm
		Packing Status:	Type: Sealed

S. No.	Parameter	Test Method	Result	Unit
1	pH (at 25 °C)	[illegible]	8.15	
2	Conductivity	[illegible]	[illegible]	mS/cm
3	Soil Texture	[illegible]	Sandy Clay	
4	Color	[illegible]	[illegible]	
5	Water holding capacity	[illegible]	[illegible]	
6	Bulk density	[illegible]	[illegible]	
7	Chloride (as Cl)	[illegible]	[illegible]	
8	Calcium (as Ca)	[illegible]	[illegible]	
9	Sodium (as Na)	[illegible]	[illegible]	
10	Potassium (as K)	[illegible]	[illegible]	
11	Organic Matter	[illegible]	[illegible]	
12	Magnesium (as Mg)	[illegible]	[illegible]	
13	Available Nitrogen as N	[illegible]	[illegible]	
14	Available Phosphorus	[illegible]	[illegible]	
15	Zinc (as Zn)	[illegible]	[illegible]	
16	Manganese (as Mn)	[illegible]	[illegible]	
17	Lead (as Pb)	[illegible]	[illegible]	
18	Cadmium (as Cd)	[illegible]	[illegible]	
19	Chromium (as Cr)	[illegible]	[illegible]	
20	Copper (as Cu)	[illegible]	[illegible]	

Note: Terms & conditions refer on backside of test report.

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Annexure 7

Vardan EnviroLab

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

Test Report

Sample Number:	VEL/06/2108/	Report No.:	VEL/2021/226708
Name & Address of the Project:	M/s Our Client Village : Ismaili, Sohapur Road, Tehsil: Ellaspur District: Yamunanagar, Haryana	Format No.:	7.9.1
		Party Reference No.:	NIL
		Reporting Date:	12/03/2021
		Period of Analysis:	06/03/2021-11/03/2021
		Receipt Date:	06/03/2021
		Sampling Date:	04/03/2021
Sample Description:	Soil Sample	Type of Sampling:	Composite
Sampling Location:	Sonipat (SS)	Sampling Quantity:	2.0 kg
Sample Collected by:	Vardan Laboratory Team	Depth of Sample Taken:	30 cm.
Sampling & Analysis Protocol:	IS 2720-(Part 24 & Sec 1)	Packing Status:	Temp Seal

S.No.	Parameters	Test Method/Equipment	Result	Unit
1	pH (@ 25°C)	IS:2720 (P-26) Set-I	8.51	
2	Conductivity	IS:14767 by Conductivity Meter	0.574	mS/cm
3	Soil Texture	SOP/ISE/02, Issue No-01 & Issue Date-14/02/2013	Sand-43 Silt-28 Clay-29	
4	Colour	SOP/ISE/03, Issue No-01 & Issue Date-14/02/2013	Yellowish Red	
5	Water Holding Capacity	SOP/ISE/04, Issue No-01 & Issue Date-14/02/2013	38.12	%
6	Bulk Density	SOP/ISE/05, Issue No-01 & Issue Date-14/02/2013	1.31	gm/cc
7	Chloride as Cl	SOP/ISE/06, Issue No-01 & Issue Date-14/02/2013	414	mg/100g
8	Calcium as Ca	SOP/ISE/08, Issue No-01 & Issue Date-14/02/2013	410	mg/100g
9	Sodium as Na	SOP/ISE/09, Issue No-01 & Issue Date-14/02/2013	93.50	mg/kg
10	Potassium as K	SOP/ISE/10, Issue No-01 & Issue Date-14/02/2013	214.94	mg/kg
11	Organic Matter	IS:2720 (P-21) Titration Method	0.41	%
12	Magnesium as Mg	SOP/ISE/07, Issue No-01 & Issue Date-14/02/2013	90.51	mg/100g
13	Available Nitrogen as N	IS:14684 Titration Method	238.01	kg/ha
14	Available Phosphorus	SOP/ISE/11, Issue No-01 & Issue Date-14/02/2013	22.31	kg/ha
15	Zinc (as Zn)	USEPA 3050B	2.43	mg/kg
16	Manganese (as Mn)	USEPA 3050B	3.40	mg/kg
17	Lead (as Pb)	USEPA 3050B	0.20	mg/kg
18	Cadmium (as Cd)	USEPA 3050B	0.10	mg/kg
19	Chromium (as Cr)	USEPA 3050B	BDL	mg/kg
20	Copper (as Cu)	USEPA 3050B	BDL	mg/kg

VANDANA

Note: Terms & conditions refer on backside of test report.

Vardan EnviroLab

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

Annexure 7

Test Report

Sample Number:	VEL/[illegible]/SW/01	Report No.:	VEL/SW/[illegible]
Name of the Project:	M/S [illegible], Village: [illegible]/Sabapur [illegible], Tehsil: [illegible], District: Yamunanagar, Haryana	Format No.:	[illegible]
		Party Reference No.:	NIL
Sample Description:	Surface Water Sample	Reporting Date:	12/03/2021
Sampling Location:	Nadi [illegible] Sabapur (SW1)	Period of Analysis:	[illegible] 2021 - [illegible]
Sample Collected by:	Vardan EnviroLab Representative	Receipt Date:	[illegible]/2021
Preservation:	Refrigeration	Sampling Date:	[illegible]/2021
Sample Test and Analysis method:	APHA 23rd Edition 2017	Sampling Quantity:	5.0 Ltr + 250ml
		Sampling Type:	Grab

S. No.	Parameter	Test Method	Result	Unit
1.	pH	APHA 4500-H+ B, Electrometric Method	7.82	-
2.	Colour	APHA 2120 B, Visual Comparison Method	[illegible]	Hazen
3.	Turbidity	APHA 2130 B, Nephelometric Method	19.00	NTU
4	Odour	APHA 2150 B, Threshold Test Method	Agreeable	-
5.	Total Hardness as $CaCO_3$	APHA 2340 C, EDTA Titrimetric Method	128.0	mg/l
6.	Calcium as Ca	APHA 3500 Ca B, EDTA Titrimetric Method	35.0	mg/l
7.	Alkalinity as $CaCO_3$	APHA 2320 B, Titrimetric Method	[illegible]	mg/l
8.	Chloride as Cl	APHA 4500-Cl B, Argentometric Method	152.0	mg/l
9.	Residual free Chlorine	APHA 4500 Cl, Colorimetric Method	BDL (DL 0.15 mg/l)	mg/l
10.	Fluoride as F	APHA 4500 F D	BDL (DL 0.2 mg/l)	mg/l
11.	Magnesium as Mg	APHA 3500 Mg B, Calculation Method	8.6	mg/l
12.	Total Dissolved Solid	APHA 2540 C, Gravimetric Method	524.0	mg/l
13.	Total Suspended Solids	APHA 2540 D, Gravimetric Method	[illegible]	mg/l
14.	Dissolved Oxygen	APHA 4500 O, Iodometric Method	[illegible]	mg/l
15.	Sulphate as SO_4	APHA [illegible], Turbidimetric Method	[illegible]	mg/l
16.	[illegible]	APHA 4500 [illegible], SPADNS Method	[illegible]	mg/l
17.	BOD (3 days at 27°C)	APHA 5210 [illegible]	[illegible]	mg/l
18.	COD	APHA 5220 B, Open Reflux Method	12.0[illegible]	mg/l

NIDHI DEV
Jr. Lab Analyst
Checked By

Authorised Signatory
Dy. Technical Manager

Note: Terms & conditions refer on backside of test report. www.vardan.co.in

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Annexure 7

Vardan EnviroLab

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

Test Report

Report No.: VLL/W/2105/[illegible]

Sample No.: VLL/OGW/01

S. No.	Parameter	Test Method	Result	Unit
18.	[illegible]	APHA 2510 B, Conductivity Meter Method	775	µS/cm
19.	[illegible]	IS 3025 (P-[illegible]) Chromatographic Method	54.0	mg/l
20.	Nitrate as NO3	APHA [illegible] B, Flame Photometric Method	2.00	mg/l
21.	Sodium as Na	APHA 3500-K [illegible] Flame Photometric Method	24	mg/l
22.	Potassium as K	APHA 3500 Fe B, Phenanthroline Method	1.29	mg/l
23.	Iron as Fe	APHA 3111 D, Nitrous Oxide Acetylene [illegible] Method	BDL(DL 0.002 mg/l)	mg/l
24.	Aluminium as Al	APHA 4500 B C, Carmine Method	0.57	mg/l
25.	Boron	APHA 3111 B, Direct Air Acetylene Flame Method	BDL(DL 0.002 mg/l)	mg/l
26.	Chromium as Cr	APHA 5530 C, Chloroform Extraction Method	BDL(DL 0.009 mg/l)	mg/l
27.	Phenolic Compounds	Clause [illegible] IS 3025 (P-[illegible])	BDL(DL [illegible] mg/l)	mg/l
28.	Mercury as Hg	APHA 5540 C, MBAS Method	BDL(DL 0.025 mg/l)	mg/l
29.	Anionic Detergents as MBAS	APHA 3111 B, Direct Air Acetylene Flame Method	1.21	mg/l
30.	Zinc as Zn	APHA 3111 B, Direct Air Acetylene Flame Method	0.09	mg/l
31.	Copper as Cu	APHA 3111 B, Direct Air Acetylene Flame Method	BDL(DL [illegible] mg/l)	mg/l
32.	Manganese as Mn	APHA 3111 B, Direct Air Acetylene Flame Method	BDL(DL 0.007 mg/l)	mg/l
33.	[illegible] Coliform	IS 1622:[illegible]	900	MPN/100ml
34.	Total Coliform	IS 15185:2016 (RA 2021)	100	MPN/100ml
35.	Fecal Coliform	[illegible]	[illegible]	[illegible]

Note: All Those parameter are not covered in our NABL scope.
BDL- Below Detection Limit, DL - Detection Limit

NISHA DEVI
Jr. Analyst
(Chemical Analyst)

Dy. [illegible] Manager

Vardan EnviroLab

Annexure 7

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

Test Report

Sample Number	VEL OC/W/02	Report No.	VEL/W/210306/02
Name of the Project	M/s Om Chem [illegible], Village [illegible], District Muzaffarnagar, Haryana	Format No.	[illegible]
		Party Reference No.	NIL
Sample Description	Surface Water Sample	Reporting Date	12/03/2021
Sampling Location	Nalah Nau [illegible] (D/S) (SW2)	Period of Analysis	06/03/2021-12/03/2021
Sample Collected by	Vardan EnviroLab Representative	Receipt Date	06/03/2021
Preservation	Refrigeration	Sampling Date	04/03/2021
Sampling and Analysis Protocol	APHA 23rd Edition 2017	Sampling Quantity	5.0 Litre + 250ml
		Sampling Type	Grab

S. No.	Parameter	Test Method	Result	Unit
1.	pH at 25°C	APHA 4500-H+ B Electrometric Method	7.8	–
2.	Colour	APHA 2120 B Visual Comparison Method	[illegible]	Hazen
3.	Turbidity	APHA 2130 B Nephelometric Method	1.9	NTU
4.	Odour	APHA 2150 B Threshold Odour Test	Agreeable	–
5.	Total Hardness as $CaCO_3$	APHA 2340 C EDTA Titrimetric Method	155.4	mg/l
6.	Calcium as Ca	APHA 3500 Ca B EDTA Titrimetric Method	[illegible]	mg/l
7.	Alkalinity as $CaCO_3$	APHA 2320 B Titration Method	[illegible]	mg/l
8.	Chloride as Cl	APHA 4500 Cl^- B Argentometric Method	[illegible]	mg/l
9.	Residual Free Chlorine	APHA 4500 Cl B Iodometric Method	BDL (DL 0.1 mg/l)	mg/l
10.	Cyanide as CN	APHA 4500 CN^- E	BDL (DL 0.02 mg/l)	mg/l
11.	Magnesium as Mg	APHA 3500 Mg B Calculation Method	[illegible]	mg/l
12.	Total Dissolved Solids	APHA 2540 C Gravimetric Method	[illegible]	mg/l
13.	Total Suspended Solids	APHA 2540 D Gravimetric Method	[illegible]	mg/l
14.	Dissolved Oxygen	APHA 4500 O Iodometric Method	[illegible]	mg/l
15.	Sulphate as SO_4	APHA 4500 SO_4 E Turbidimetric Method	[illegible]	mg/l
16.	Fluoride as F	APHA 4500 F D SPADNS Method	[illegible]	mg/l
17.	BOD (3 Days at 27°C)	APHA 5210 B, IS 3025 P44	[illegible]	mg/l
18.	COD	APHA 5220 B Open Reflux Method	[illegible]	mg/l

[illegible]
Verified By

Technical Manager

Note: Terms & conditions refer on backside of test report

Annexure 7

Vardan EnviroLab

Plot No. 82A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana

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

Test Report

S. No.	Parameter	Test Method	Result	Unit
19.	Conductivity	APHA, 2510 B, Conductivity Meter Method	7.25	µS/cm
20.	Nitrate as NO3	IS 3025 (Part 34): 1988, Colorimetric Method	0.42	mg/l
21.	Sodium as Na	APHA,3500-Na B, Flame Photometric Method	92.00	mg/l
22.	Potassium as K	APHA,3500-K B, Flame Photometric Method	8.2	mg/l
23.	Phosphate	APHA, 4500-P B, D Stannous Chloride Method	0.24	mg/l
24.	Arsenic(As) as Total	APHA, 3120 B, Inductively Coupled Plasma Optical Emission Spectrometric Method	BDL (DL: 0.002 mg/l)	mg/l
25.	Boron	APHA,4500-B C, Carmine Method	0.52	mg/l
26.	Chromium as Cr	APHA, 3111 B, Direct Air Acetylene Flame Method	BDL (DL: 0.002 mg/l)	mg/l
27.	Phenolic Compounds	APHA, 5530 C, Chloroform Extraction Method	BDL (DL: 0.002 mg/l)	mg/l
28.	Mineral Oil	Clause 6 of IS 3025 (Part 39)	BDL (DL: 0.05 mg/l)	mg/l
29.	Anionic Detergents (MBAS)	APHA, 5540 C, MBAS Method	BDL (DL: 0.05 mg/l)	mg/l
30.	Zinc as Zn	APHA, 3111 B, Direct Air Acetylene Flame Method	0.05	mg/l
31.	Copper as Cu	APHA, 3111 B, Direct Air Acetylene Flame Method	0.18	mg/l
32.	Iron as Fe	APHA, 3111 B, Direct Air Acetylene Flame Method	BDL (DL: 0.01 mg/l)	mg/l
33.	Sulphate as SO4	APHA, 4500-SO4 E, Turbidimetric Method	BDL (DL: 0.5 mg/l)	mg/l
34	Total Coliform	IS 15185:2016 Clause 7.2.1	600	MPN/100 ml
35.	Fecal Coliform	IS 15185:2016 Clause 7.2.1	350	MPN/100 ml

Note: 1. The parameters are not covered under NABL scope.
2. BDL: Below Detection Limit, DL: Detection Limit

NISHA DEVI
Jr. Lab Analyst
Checked By

Dy. Technical Manager

Note: Terms & conditions refer on backside of test report.

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Annexure 7

Vardan EnviroLab

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

Test Report

Sample No.:	[illegible]/GW/21	Report No.:	VEL/W/21/03/00301
Name & Address of the Project:	M/s Uno Glass Village : Kundli, Sahapur Road, Tehsil : Rai, Distt : Sonipat, Haryana	Format No.:	F/T-01
		Party Reference No.:	NIL
		Reporting Date:	12/03/2021
Sample Description:	Ground Water Sample	Period of Analysis:	06/03/2021 to 12/03/2021
Sample Location:	Project Site (GW1)	Receipt Date:	06/03/2021
Sample Collected by:	Vardan Enviro Lab Representative	Sampling Date:	04/03/2021
Sampling and Analysis Protocol:	APHA 23rd Edition 2017	Sampling Quantity:	1 Lit. + 250ml
Preservation:	Refrigeration	Sampling Type:	Grab

S. No.	Parameter	Test Method	Result	Unit	Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
1	pH @25°C	APHA 4500 H+ B, Electrometric Method	7.1	--	6.5 - 8.5	No Relaxation
2	[illegible]	APHA 2120 B, Visual Comparison Method	BDL (DL 1 Hazen)	Hazen	5	15
3	Turbidity	APHA 2130 B, Nephelometric Method	BDL (DL 1 NTU)	NTU	1	5
4	Odour	APHA 2150 B, Threshold Odour Method	Agreeable	--	Agreeable	Agreeable
5	Taste	APHA 2160 C, Flavour Threshold Method	Agreeable	--	Agreeable	Agreeable
6	Total Hardness as $CaCO_3$	APHA 2340 C, EDTA Titrimetric Method	312	mg/l	200	600
7	Calcium as Ca	APHA 3500 Ca B, EDTA Titrimetric Method	74	mg/l	75	200
8	Alkalinity as $CaCO_3$	APHA 2320 B, Titrimetric Method	132.26	mg/l	200	600
9	Chlorides as Cl	APHA 4500-Cl B, Argentometric Method	67.75	mg/l	250	1000
10	Residual Chlorine	IS 3025 (P-26) CHLO Method	BDL (DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11	Magnesium as Mg	APHA 3500 Mg B, Calculation Method	19.93	mg/l	30	100
12	Total Dissolved Solids	APHA 2540 C, Gravimetric Method	547.20	mg/l	500	2000
13	Sulphate as SO_4	APHA 4500 SO_4^{2-} E, Turbidimetric Method	24.56	mg/l	200	400
14	Fluoride as F	APHA 4500-F B, SPADNS Method	0.46	mg/l	1.0	1.5
15	Nitrate as NO_3	IS 3025 (P-34) Cl-E Method	17.93	mg/l	45	No Relaxation
16	Iron as Fe	APHA 3500-Fe B, 1,10 Phenanthroline Method	0.25	mg/l	1.0	No Relaxation
17	Aluminium as Al	APHA 3500-Al B, Eriochrome Cyanine R Method	BDL (DL 0.02 mg/l)	mg/l	0.03	0.2
18	Boron	APHA 4500-B C, Curcumin Method	BDL (DL 0.05 mg/l)	mg/l	0.5	2.4
19	Chromium as Cr	APHA 3500-Cr B, Diphenylcarbazide Method	BDL (DL 0.05mg/l)	mg/l	0.05	No Relaxation

Dy. [illegible]

Note: Terms & conditions refer on backside of test report

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Annexure 7

Vardan EnviroLab

Laboratory: Plot No. 82A, Sector 3, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Sample No : VEL/ [illegible] Report No : VEL/W/21/[illegible]

S. No.	Parameter	Method	Result	Unit	Requirements (Acceptable) Limit	Permissible Limit
20.	Conductivity @ 25°C	APHA, 2510 B, Conductivity Meter	475	µS/cm	--	--
21.	Phenolic Compounds	APHA 5530 C Chloroform extraction Method	BDL (DL 0.005 mg/l)	mg/l	0.001	0.002
22.	Mineral Oil	IS:3025 (Part 39) 2003	BDL (DL 0.05 mg/l)	mg/l	0.5	No Relaxation
23.	Anionic Detergents as MBAS	APHA 5540 C MBAS Method	BDL (DL 0.05 mg/l)	mg/l	0.2	1.0
24.	Zinc as Zn	APHA 3111 B, Direct Aspiration Flame Method	0.76	mg/l	5	15
25.	Copper as Cu	APHA 3111 B, Direct Air Acetylene Flame Method	BDL (DL 0.03 mg/l)	mg/l	0.05	1.5
26.	Manganese as Mn	APHA 3111 B, Direct Air Acetylene Flame Method	BDL (DL 0.01 mg/l)	mg/l	0.1	0.3
27.	Cadmium as Cd	APHA 3111 B, Direct Air Acetylene Flame Method	BDL (DL 0.003 mg/l)	mg/l	0.003	No Relaxation
28.	Lead as Pb	APHA 3111 B, Direct Air Acetylene Flame Method	BDL (DL 0.002 mg/l)	mg/l	0.01	No Relaxation
29.	Selenium as Se	APHA 3114 B, Manual Hydride Generation Method	BDL (DL 0.001 mg/l)	mg/l	0.01	No Relaxation
30.	Arsenic as As	APHA 3114 B, Manual Hydride Generation Method	BDL (DL 0.001 mg/l)	mg/l	0.01	No Relaxation
31.	Mercury as Hg	APHA 3112 B, Cold Vapour AAS Method	BDL (DL 0.0005 mg/l)	mg/l	0.001	No Relaxation
32.	Total Coliform	IS 1622:1981 (RA 2003)	[illegible]	MPN/100ml	Shall not be detectable in any 100 ml sample	Shall not be detectable in any 100 ml sample
33.	E. Coli	IS 1622:1981 (RA 2003)	[illegible]	MPN/100ml	Shall not be detectable in any 100 ml sample	Shall not be detectable in any 100 ml sample

Note : These parameters are not covered in the NABL scope.
*DL=Detection Limit, **DL= Quantification Limit

NISHA DEVI
Jr. Lab Asstt.

BIBHUTI [illegible]

Note: Terms & conditions refer on backside of test report.

Annexure 7

Vardan EnviroLab

Laboratory: Plot No. 87A, Sector 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VEL/GW/[illegible]	Report No.:	VEL/W/[illegible]/2021
Name & Address of the Customer:	M/s Om Clinic, Village: [illegible] Sabapur Road, Tehsil: Bilaspur District: Yamunanagar, Haryana	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	[illegible]/2021
Sample Description:	Ground Water Sample	Period of Analysis:	06/03/2021 to 13/03/2021
Sample Location:	[illegible] (GW2)	Receipt Date:	06/03/2021
Sample Collected by:	Vardan Envirolab Representative	Sampling Date:	04/03/2021
Sampling and Analysis Protocol:	APHA, 23rd Edition 2017	Sampling Quantity:	5.0 Ltr + 250 ml
Preservation:	Refrigeration	Sampling Type:	Grab

S. No.	Parameter	Test Method	Result	Unit	Limits of IS:10500-2012: Requirement (Acceptable Limit)	Limits of IS:10500-2012: Permissible limit in the Absence of Alternate Source
1	pH (at 25°C)	APHA, 4500-H+ B Electrometric Method	[illegible]	-	6.5 to 8.5	No Relaxation
2	Colour	APHA, 2120 B. Visual Comparison Method	BDL (DL 1 Hazen)	Hazen	5	15
3	Turbidity	APHA, 2130 B. Nephelometric Method	BDL (DL 1 NTU)	NTU	1	5
4	Odour	APHA, 2150 B. Threshold Odour Method	Agreeable	-	Agreeable	Agreeable
5	Taste	APHA, 2160 B. Taste [illegible] Method	Agreeable	-	Agreeable	Agreeable
6	Total Hardness as $CaCO_3$	APHA, 2340 C. EDTA Titrimetric Method	149.50	mg/l	200	600
7	Calcium as Ca	APHA, 3500 Ca B. EDTA Titrimetric Method	28.45	mg/l	75	200
8	Alkalinity as $CaCO_3$	APHA, 2320 B. Titrimetric Method	174.50	mg/l	200	600
9	Chlorides as Cl	APHA, 4500-Cl B. Argentometric Method	[illegible].50	mg/l	250	1000
10	Cyanide as CN	APHA, 4500 CN D	BDL (DL [illegible])	mg/l	0.05	No Relaxation
11	Magnesium as Mg	APHA, 3500 Mg B. Calculation Method	19.06	mg/l	30	100
12	Total Dissolved Solids	APHA, 2540 C. Gravimetric Method	225.00	mg/l	500	2000
13	Sulphate as SO_4	APHA, 4500 E. Turbidimetric Method	54.52	mg/l	200	400
14	Fluorides as F	APHA, 4500-F D. SPADNS Method	[illegible]	mg/l	1.0	1.5
15	Nitrate as NO_3	IS 3025 (P 34) Chromotropic Method	28.6[illegible]	mg/l	45	No Relaxation
16	Iron as Fe	APHA, 3500-Fe B. Phenanthroline Method	[illegible]	mg/l	1.0	No Relaxation
17	Aluminium as Al	APHA, 3111 D. Nitrous Oxide Acetylene Flame Method	BDL (DL 0.01 mg/l)	mg/l	0.03	0.2
18	Boron	APHA, 4500 B C. Carmine Method	BDL (DL 0.01 mg/l)	mg/l	0.5	2.4
19	Chromium as Cr	APHA, 3111 B. Direct Air Acetylene Flame Method	BDL (DL 0.005 mg/l)	mg/l	0.05	No Relaxation

[illegible] Analyst

Dy. Technical Manager

Authorized Signatory

1128715/2021/Estt.Br

Annexure 7

Vardan EnviroLab

Laboratory: Plot No. 32A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001|ISO 14001|ISO 45001

Test Report

Report No.: VRL/W-21 [illegible]302

S. No.	Parameter	Test Method	Result	Unit	Acceptable Limits as per IS:10500	Permissible limit in the absence of Alternate Source
20.	Conductivity (at 25°C)	APHA, 2510 B, Conductivity Meter Method	542	µS/cm		**
21.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction Method	[illegible] (DL: 0.0004 mg/l)	mg/l	0.00	0.002
22.	Mineral Oil	Clause 6 of IS:3025 (Part 39)	*BDL(**DL: 0.05mg/l)	mg/l	1.0	No Relaxation
23.	Anionic Detergents as MBAS	APHA, 5540 C MBAS Method	*BDL(**DL: 0.05 mg/l)	mg/l	0.2	1
24.	Zinc as Zn	APHA, 3111 B, Direct Air Acetylene Flame Method	0.7*	mg/l	5	15
25.	Copper as Cu	APHA, 3111 B, Direct Air Acetylene Flame Method	0.09	mg/l	0.05	1.5
26.	Manganese as Mn	APHA, 3111 B, Direct Air Acetylene Flame Method	*BDL(**DL: 0.01 mg/l)	mg/l	0.1	0.3
27.	Cadmium as Cd	APHA, 3111 B, Direct Air, Acetylene Flame Method	*BDL(**DL: 0.003 mg/l)	mg/l	0.003	No Relaxation
28.	Arsenic as As	APHA, 3114 C, Dried Air, Acetylene Flame Method	*BDL(**DL: 0.007 mg/l)	mg/l	0.01	No Relaxation
29.	Selenium as Se	APHA, 3114 B, Manual Hydride Generation	*BDL(**DL: 0.001 mg/l)	mg/l	0.01	No Relaxation
30.	Aluminium as Al	APHA, 3111 D, Manual Hydride Generation	*BDL(**DL: 0.002 mg/l)	mg/l	0.01	No Relaxation
31.	Mercury as Hg	APHA, 3112 B, Cold Vapour AAS Method	*BDL(**DL: 0.0003 mg/l)	mg/l	0.001	No Relaxation
32.	Total Coliform	IS:1622:1981 (RA 2009)	Absent	MPN/100ml	Shall not be detected in any 100 ml sample	
33.	E. Coli	IS:1622:1981 (RA 2009)	Absent	MPN/100ml	Shall not be detected in any 100 ml sample	

Note: "These parameters are not covered in the NABL scope
*BDL-Below Detection Limit, **DL- Detection Limit.

USHA DEVI
Jr. Lab Analyst
(Tested By)

[illegible]
Dy. [illegible] Manager

(VARDAN ENVIRO LAB Authorised Signatory)

Note: Terms & conditions as per on back side of test report.

Ph: 0124-4343750/752/753; 9810755569, 9953147268 E-mail: lab@vardanenvironet.com, bd@vardanenvironet.com

Annexure 7

Vardan EnviroLab

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

Test Report

[illegible]	VEL/QC/WW31	Report No.:	VEL/WW2103060003
Name & Address of the Project:	M/s Om Chem Village: Kutab, Sabapur Road, Tehsil: Bilaspur District: Yamunanagar, Haryana	[illegible]:	7.8 F 01
		Party [illegible]:	Nil
		Reporting Date:	[illegible]
Sample Description:	Ground Water Sample	Period of Analysis:	[illegible]
Sample Location:	Parbhak (GW3)	Receipt Date:	[illegible]
Sample Collected by:	Vardan EnviroLab Representative	Sampling Date:	[illegible]
Sampling and Analysis Protocol:	APHA, 23rd Edition 2017	Sampling Quantity:	[illegible] = 250ml
Preservation:	Refrigerator	Sampling Type:	Grab

S. No.	Parameter	Test Method	Result	Unit	Limits of IS:10500-2012 Requirement (Acceptable) Limit	Limits of IS:10500-2012 Permissible Limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA, 4500-H+ B Electrometric Method	5.34	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA 2120 B, Visual Comparison Method	BDL (DL 1 Hazen)	Hazen	5	15
3.	Turbidity	APHA, 2130 B, Nephelometric Method	BDL (DL 1 NTU)	NTU	1	5
4.	Odour	APHA, 2150 B, Threshold Odour Method	Agreeable	--	Agreeable	Agreeable
5.	Taste	APHA, 2160 B, Threshold Test Method	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as $CaCO_3$	APHA, 2340 C, EDTA Titrimetric Method	[illegible]	mg/l	200	600
7.	Calcium as Ca	APHA, 3500 Ca B, EDTA Titrimetric Method	27.55	mg/l	75	200
8.	Alkalinity as $CaCO_3$	APHA, 2320 B, Titrimetric Method	[illegible]	mg/l	200	600
9.	Chloride as Cl	APHA, 4500 Cl B, Argentometric Method	[illegible]	mg/l	250	1000
10.	Cyanide as CN	APHA, 4500 CN D	BDL (DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA, 3500 Mg, Calculation Method	10.99	mg/l	30	100
12.	Total Dissolved Solids	APHA, 2540 C, Gravimetric Method	256.[illegible]	mg/l	500	2000
13.	Sulphate as SO_4	APHA, 4500 [illegible] Method	[illegible]	mg/l	200	400
14.	Fluoride as F	APHA, 4500 F [illegible] SPADNS Method	0.[illegible]	mg/l	1.0	1.5
15.	Nitrate as NO_3	IS 3025 [illegible]	19.52	mg/l	45	No Relaxation
16.	Iron as Fe	APHA, 3500 Fe B [illegible] Method	[illegible]	mg/l	1.0	No Relaxation
17.	Aluminium as Al	APHA, 3111 D Nitrous Oxide Acetylene Flame Method	BDL (DL 0.02 mg/l)	mg/l	0.03	0.2
18.	[illegible]	APHA, [illegible] Curcumin Method	BDL (DL 0.1 mg/l)	mg/l	0.5	2.4
19.	[illegible] as Cr	APHA, 3111 B, [illegible] Air Acetylene Flame Method	BDL (DL 0.002 mg/l)	mg/l	0.05	No Relaxation

[illegible] (Analyst) [illegible] (Authorized Signatory)

Note: Terms & conditions refer on backside of test report.

www.vardan.co.in

Ph: 0124-4348[illegible] 9810355569, 9953147268 E-mail: [illegible]@vardanenvironet.com, bd@vardanenvironet.com

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Annexure 7

Vardan EnviroLab

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

Test Report

Sample No.: VESZ OC [illegible] | Report No.: VLL/[illegible]

S. No.	Parameter	Test Method	Result	Unit	Limits of IS: [illegible] 00-2012 Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
20.	Corrosion [illegible]	APHA 2520 B, Conductivity Meter Method	[illegible]	Scm	–	–
[illegible]	Phenolic Compounds	APHA 5530 C Chloroform Extraction Method	[illegible] (DL 0.001 mg/l)	mg/l	0.001	0.002
[illegible]	Mineral Oil	Clause 6 of IS 3025 (Part 39)	BDL (DL 0.05 mg/l)	mg/l	0.5	No Relaxation
23.	Anionic Detergents as MBAS	APHA 5540 C MBAS Method	[illegible] (DL [illegible] mg/l)	mg/l	0.2	1.0
24.	Zinc as Zn	APHA 3111 [illegible] Direct Air Acetylene Flame Method	0.06	mg/l	5	15
25.	Copper as Cu	APHA 3111 B Direct Air Acetylene Flame Method	0.12	mg/l	0.05	5
26.	Manganese as Mn	APHA 3111 B Direct Air Acetylene Flame Method	BDL (DL 0.01 mg/l)	mg/l	0.1	0.3
27.	Cadmium as Cd	APHA 3111 B Direct Air Acetylene Flame Method	BDL (DL 0.00[illegible] mg/l)	mg/l	0.003	No Relaxation
28.	Lead as Pb	APHA 3111 B, Direct Air Acetylene Flame Method	BDL (DL 0.002 mg/l)	mg/l	0.01	No Relaxation
29.	Selenium as Se	APHA 3114 B, Manual Hydride Generation	BDL (DL 0.001 mg/l)	mg/l	0.01	No Relaxation
30.	Arsenic as As	APHA 3114 B, Manual Hydride Generation	BDL (DL 0.002 mg/l)	mg/l	0.01	No Relaxation
31.	Mercury as Hg	APHA 3112 B, Cold Vapour AAS Method	BDL (DL 0.0005 mg/l)	mg/l	0.001	No Relaxation
32.	Total Coliform	IS 1622 1981 (RA 2009)	< 2	MPN/100ml	Shall not be detectable in any 100 ml sample	
33.	E. Coli	IS 1622 1981 (RA 2009)	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note: *These parameters are not covered under NABL scope.
*BDL-Below Detection Limit, **DL - Detection Limit

NISHA DEVI
Jr. Lab Analyst
(Tested By)

BIDYUT [illegible]
Dy. T.M. (Verified By)

Authorised Signatory

Note: Terms & conditions refer on backside of test report.

www.vardan[illegible]

[illegible] 4242750/752/753, 9810255550, 9958147768 E-mail: lab@vardanenvironet.com, hr@vardanenvironet.com

1128715/2021/Estt.Br

Annexure 7

Vardan EnviroLab

Laboratory: Plot No. 47A, Sector - 5, IMT Manesar, Gurugram - 122051, Haryana
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VRL/GC/W/04	Report No.:	VRL/W/2103/060304
Name & Address of the Project:	M/s Om Chem Village: Kesrali, Jagadhri Road, Tehsil: Bilaspur District: Yamunanagar, Haryana	Format No.:	F/S/...01
		Party Reference No.:	Nil
		Reporting Date:	12/3/2021
Sample Description:	Ground Water Sample	Period of Analysis:	06/03/2021-11/03/2021
Sample Location:	Fatehgarh Tumbi (GW4)	Receipt Date:	06/03/2021
Sample Collected by:	Vardan Envirolab Representative	Sampling Date:	04/03/2021
Sampling and Analysis Protocol:	APHA, 24th Edition 2017	Sampling Quantity:	5.0 Ltr – 2Nos.
Preservation:	Refrigerated	Sampling Type:	Grab

S. No.	Parameter	Test Method	Result	Unit	Limits of IS:10500-2012	
					Requirement (Acceptable) Limit	Permissible Limit in the Absence of Alternate Source
1.	pH (at 25°C)	APHA 4500-H+ B, Electrometric Method	7.59		6.5 to 8.5	No Relaxation
2.	Colour	APHA 2120 B, Visual Comparison Method	<5.0 (DL: 5.0 Hazen)	Hazen	5	15
3.	Turbidity	APHA 2130 B, Nephelometric Method	<1.0 (DL: 1.0 NTU)	NTU	1	5
4.	Odour	APHA 2150 B, Threshold Odour Test	Agreeable		Agreeable	Agreeable
5.	Taste	APHA 2160 B, Threshold Test Method	Agreeable		Agreeable	Agreeable
6.	Total Hardness as CaCO3	APHA 2340 C, EDTA Titrimetric Method	160.48	mg/l	200	600
7.	Calcium as Ca	APHA 3500-Ca B, EDTA Titrimetric Method	47.55	mg/l	75	200
8.	Alkalinity as CaCO3	APHA 2320 B, Titrimetric Method	146.52	mg/l	200	600
9.	Chlorides as Cl	APHA 4500-Cl B, Argentometric Method	36.25	mg/l	250	1000
10.	Residual Chlorine	APHA 4500 Cl B	BDL (DL: 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA 3500-Mg B, Calculation Method	16.38	mg/l	30	100
12.	Total Dissolved Solids	APHA 2540 C, Gravimetric Method	370.00	mg/l	500	2000
13.	Sulphate as SO4	APHA 4500 E, Turbidimetric Method	47.62	mg/l	200	400
14.	Fluoride as F	APHA 4500-F D, SPADNS Method	0.52	mg/l	1.0	1.5
15.	Nitrate as NO3	IS 3025 (Part 34); Cadmium Reduction Method	19.51	mg/l	45	No Relaxation
16.	Arsenic as As	APHA 3500-As B & IS 3025 (Part 37); Silver Diethyldithiocarbamate Method	0.41	mg/l	0.01	No relaxation
17.	Aluminium as Al	APHA 3111 D, Nitrous Oxide Acetylene Flame Method	BDL (DL: 0.002 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA 4500-B, C, Carmine Method	BDL (DL: 0.01 mg/l)	mg/l	0.5	2.4
19.	Chromium as Cr	APHA 3111 D, Direct Air Acetylene Flame Method	BDL (DL: 0.002 mg/l)	mg/l	0.05	No Relaxation

Note: Terms & conditions refer on backside of test report.

Annexure 7

Vardan EnviroLab

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

Test Report

Sample No.: VEL/[illegible]/W/04

Report No.: VEL/W/2[illegible]06/001

S. No.	Parameter	Test Method	Result	Unit	Limits of IS 10500 -2012 Requirement (Acceptable) Limit	Limits of IS 10500 -2012 Permissible limit in the Absence of Alternate Source
20.	Conductivity (at 25 °C)	APHA, 2510 B, Conductivity Meter Method	[illegible]	µS/cm	--	--
21.	Phenolic Compounds	APHA, 5530 C, Chloroform Extraction Method	BDL (DL 0.0001 mg/l)	mg/l	0.001	0.002
22.	Mineral Oil	Clause 6 of IS 3025 (Part 39)	BDL (DL 0.05 mg/l)	mg/l	0.5	No relaxation
23.	Anionic Detergents as MBAS	APHA, 5540 C MBAS Method	BDL (DL 0.05 mg/l)	mg/l	0.2	1.0
24.	Zinc as Zn	APHA, 3111 B, Direct Air Acetylene Flame Method	0.62	mg/l	5	15
25.	Copper as Cu	APHA, 3111 B, Direct Air Acetylene Flame Method	[illegible]	mg/l	0.05	1.5
26.	Manganese as Mn	APHA, 3111 B, Direct Air Acetylene Flame Method	BDL (DL 0.01 mg/l)	mg/l	0.1	0.3
27.	Cadmium as Cd	APHA, 3111 B, Direct Air Acetylene Flame Method	BDL (DL 0.002 mg/l)	mg/l	0.003	No relaxation
28.	Lead as Pb	APHA, 3111 B, Direct Air Acetylene Flame Method	BDL (DL 0.002 mg/l)	mg/l	0.01	No relaxation
29.	Selenium as Se	APHA, 3114 B, Manual Hydride Generation	BDL (DL 0.001 mg/l)	mg/l	0.01	No relaxation
30.	Arsenic as As	APHA, 3114 B, Manual Hydride Generation	BDL (DL 0.002 mg/l)	mg/l	0.01	No relaxation
31.	Mercury as Hg	APHA, 3112 B, Cold Vapour AAS Method	BDL (DL 0.0005 mg/l)	mg/l	0.001	No relaxation
32.	Total Coliform	IS 15185: 2016	< 2	MPN/100ml	Shall not be detectable in any 100 ml sample	
33.	E. Coli	IS 1622: 1981 (RA 2009)	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note: - *These parameters are not covered in our NABL scope
*BDL: Below Detection Limit, *DL: Detection Limit

NISHA DEVI
Sr. Lab Analyst
(Tested by)

[illegible] (Verified by)

VARDAN ENVIROLAB (Authorized Signatory)

[illegible]

Note: Terms & conditions refer on back side of test report.

Annexure 7

Vardan EnviroLab

Laboratory: Plot No. 82A, Sector 5, IMT Manesar, Gurugram 122051, Haryana
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample Number:	VEL/OC/W/05	Report No.:	VEL/W/2103/06/005
Name & Address of the Projects	M/s Om Chem, Village Surah, Sahapur Road, Tehsil Bilaspur, District Yamunanagar, Haryana	Format No.:	7.8 F-01
		Party Reference No.:	NIL
		Reporting Date:	12/03/2021
Sample Description:	Ground Water Sample	Period of Analysis:	06/03/2021-11/03/2021
Sample Location:	Surah (GW5)	Receipt Date:	06/03/2021
Sample Collected by:	Vardan EnviroLab Representative	Sampling Date:	03/03/2021
Sampling and Analysis Protocol:	APHA, 23rd Edition 2017	Sampling Quantity:	5.0 Ltr – 250 ml
Preservation:	Refrigeration	Sampling Type:	Grab

S. No.	Parameter	Test Method	Result	Unit	Limits as IS:10500-2012 Requirement (Acceptable) Limit	Limits as IS:10500-2012 Permissible limit in absence of alternate source
1.	pH (at 25 °C)	APHA 4500 H+ B Electrometric Method	7.18	–	6.5-8.5	No Relaxation
2.	Colour	APHA 2120 B, Visual Comparison Method	BDL (DL 1 Hazen)	Hazen	5	15
3.	Turbidity	APHA 2130 B, Nephelometric Method	BDL (DL [illegible] NTU)	NTU	1	5
4.	Odour	APHA 2150 B, Threshold Odour Method	Agreeable	–	Agreeable	Agreeable
5.	Taste	APHA 2160 B, Flavour Test Method	Agreeable	–	Agreeable	Agreeable
6.	Total Hardness as $CaCO_3$	APHA 2340 C, EDTA Titrimetric Method	78.[illegible]	mg/l	200	600
7.	Calcium as Ca	APHA 3500 Ca B, EDTA Titrimetric Method	41.55	mg/l	75	200
8.	Alkalinity as $CaCO_3$	APHA 2320 B, Titration Method	185.30	mg/l	200	600
9.	Chlorides as Cl	APHA 4500-Cl B, Argentometric Method	56.24	mg/l	250	1000
10.	Cyanide as CN	APHA 4500 CN D	BDL (DL [illegible] mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA 3500 Mg B, Calculation Method	16.93	mg/l	30	100
12.	Total Dissolved Solids	APHA 2540 C, Gravimetric Method	224.00	mg/l	500	2000
13.	Sulphate as SO_4	APHA 4500 SO_4 E, Turbidimetric Method	40.[illegible]	mg/l	200	400
14.	Fluoride as F	APHA 4500 F D, SPADNS Method	[illegible]	mg/l	1.0	1.5
15.	Nitrate as NO_3	IS 3025 (P-34), Colorimetric Method	[illegible]	mg/l	45	No Relaxation
16.	Iron as Fe	APHA 3500 Fe B, Phenanthroline Method	0.[illegible]	mg/l	1.0	No relaxation
17.	Aluminium as Al	APHA 3111 D, Nitrous Oxide Acetylene Flame Method	BDL (DL [illegible] mg/l)	mg/l	0.03	0.2
18.	Boron	APHA 4500B C, Carmine Method	BDL (DL 0.01 mg/l)	mg/l	0.5	2.4
19.	Chromium as Cr	APHA 3111 B, Direct Air Acetylene Flame Method	BDL (DL 0.0[illegible] mg/l)	mg/l	[illegible]	No Relaxation

Tested By: (Analyst)

Dy. Technical Manager

Authorized Signatory

Note: Terms & conditions refer on back side of test report

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Ph: 0124-4343750/2520333, 9810355569, 9953147268 E-mail: lab@vardanenviro.net.com, ed@vardanenvironet.com

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Vardan EnviroLab

Annexure 7

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

Test Report

Sample No.: VEL/[illegible]/W08 Report No.: [illegible]

S. No.	Parameter	Test Method	Result	Unit	Limits of IS 10500: 2012 Requirement (Acceptable) Limit	Permissible Limit in the Absence of Alternate Source
20.	Conductivity at 25 °C	APHA, 2510 B, Conductivity Meter Method	498	µS/cm	-	
21.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction Method	BDL (DL 0.0004 mg/l)	mg/l	0.001	0.002
22.	Mineral Oil	Clause 6 of IS 3025 (Part 39)	BDL (DL 0.05 mg/l)	mg/l	1.0	No Relaxation
23.	Anionic Detergents as MBAS	APHA, 5540 C MBAS Method	BDL (DL 0.05 mg/l)	mg/l	0.2	1.0
24.	Zinc as Zn	APHA, 3111 B, Direct Air, Acetylene Flame Method	0.46	mg/l	5	15
25.	Copper as Cu	APHA, 3111 B, Direct Air, Acetylene Flame Method	0.15	mg/l	0.05	1.5
26.	Manganese as Mn	APHA, 3111 B, Direct Air, Acetylene Flame Method	BDL (DL 0.01 mg/l)	mg/l	0.1	0.3
27.	Cadmium as Cd	APHA, 3111 B, Direct Air, Acetylene Flame Method	BDL (DL 0.002 mg/l)	mg/l	0.003	No Relaxation
28.	Lead as Pb	APHA, 3111 B, Direct Air, Acetylene Flame Method	BDL (DL 0.002 mg/l)	mg/l	0.01	No Relaxation
29.	Selenium as Se	APHA, 3114 B, Manual Hydride Generation	BDL (DL 0.001 mg/l)	mg/l	0.01	No Relaxation
30.	Arsenic as As	APHA, 3114 B, Manual Hydride Generation	BDL (DL 0.005 mg/l)	mg/l	0.01	No Relaxation
31.	Mercury as Hg	APHA, 3112 B, Cold Vapour AAS Method	BDL (DL 0.0005 mg/l)	mg/l	0.001	No Relaxation
32.	Total Coliform	IS 1622:1981 (RA 2009)	<2	MPN/100ml	Shall not be detectable in any 100 ml sample	
33.	E. Coli	IS 1622:1981 (RA 2009)	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note: - *These parameters are not covered in our NABL scope.
BDL - Below Detection Limit, DL - Detection Limit

NISHA DEVI
Jr. Lab Analyst
(Tested By)

[illegible]
Dy. Technical Manager

Gaurav
(Technical Manager)

Note: Terms & conditions refer to backside of test report.

www.vardanenvironet.com

Ph: 0124-4343750/752/753, 9810355569, 9953147268 E-mail: lab@vardanenvironet.com, bd@vardanenvironet.com

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Annexure 7

Vardan EnviroLab

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

Test Report

Sample Number:	VEL/ OC /W/06	Report No:	VEL/W/21/03/0606
Name & Address of the Project:	M/s Our Client Village : Kherali, Sohnpur Road, Tehsil: Bilaspur, Gurugram, Haryana	Format No:	F/F/01
		Party Reference No:	NIL
		Reporting Date:	12/03/2021
Sample Description:	Ground Water Sample	Period of Analysis:	06/03/2021 to 10/03/2021
Sample Location:	Bhogpur (GW06)	Receipt Date:	06/03/2021
Sample Collected by:	Vardan Enviro Lab Representative	Sampling Date:	04/03/2021
Sampling and Analysis Protocol:	APHA, 23rd Edition 2017	Sampling Quantity:	5.0 Ltr = 250 ml
Preservation:	Refrigerate	Sampling Type:	Grab

S. No.	Parameter	Test Method	Result	Unit	Limits of IS:10500 : 2012 Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
1.	pH @ 25°C	APHA 4500-H+ B Electrometric Method	8.22	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA 2120 B, Visual Comparison Method	<5.0 (DL: 5.0)	Hazen	5	15
3.	Turbidity	APHA 2130 B Nephelometric Method	<0.5 (DL: 0.5)	NTU	1	5
4.	Odour	APHA 2150 B Threshold Odour Method	Agreeable		Agreeable	Agreeable
5.	Taste	APHA 2160 B, Flavour Test Method	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as CaCO3	APHA 2340 C EDTA Titrimetric Method	348.2	mg/l	200	600
7.	Calcium (Ca)	APHA 3500-Ca B EDTA Titrimetric Method	84.69	mg/l	75	200
8.	Alkalinity as CaCO3	APHA 2320 B, Titrimetric Method	155.10	mg/l	200	600
9.	Chlorides as Cl	APHA 4500-Cl B, Argentometric Method	9.92	mg/l	250	1000
10.	Cyanide as CN	APHA 4500-CN- D	<0.01 (DL: 0.01)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA 3500-Mg B, Calculation Method	19.97	mg/l	30	100
12.	Total Dissolved Solids	APHA 2540C Gravimetric Method	254.60	mg/l	500	2000
13.	Sulphate as SO4	APHA 4500-SO4 E Turbidimetric Method	25.25	mg/l	200	400
14.	Fluoride as F	APHA 4500-F- D SPADNS Method	0.25	mg/l	1.0	1.5
15.	Nitrate as NO3	IS 3025 (Pt-34) Titrimetric Method	12.71	mg/l	45	No Relaxation
16.	Iron as Fe	APHA 3500-Fe B 1,10 Phenanthroline Method	0.12	mg/l	1.0	No Relaxation
17.	Aluminium as Al	APHA 3111 D Aluminium by Direct Aspiration Flame Method	<0.03 (DL: 0.03)	mg/l	0.03	0.2
18.	Boron	APHA 4500-B B Curcumin Method	<0.1 (DL: 0.1)	mg/l	0.5	2.4
19.	Anionic Detergents as MBAS	APHA 5540 C Methylene Blue Active Surfactants as Surfactant	<0.2 (DL: 0.2)	mg/l	0.2	No Relaxation

Note: Terms & Conditions on backside of test report.

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Ph: 0124-4383750/752/754, 08100355669, 9953147268 E-mail: lab@vardanenvironet.com, sdr@vardanenvironet.com

Annexure 7

Vardan EnviroLab

Laboratory: Plot No. 82A, Sector 5, IMT Manesar, Gurugram 122051, Haryana
ISO 9001 | ISO 14001 | ISO 45001

Test Report

Sample No.: VEL/[illegible] | Report No.: VEL/[illegible]

S. No.	Parameter	Test Method	Result	Unit	Limits of IS:10500-2012: Requirement (Acceptable Limit)	Limits of IS:10500-2012: Permissible Limit in the Absence of Alternate Source
20.	Conductivity (at 25 °C)	APHA, 2510 B, Conductivity Meter Method	421	µS/cm	--	--
21.	Phenolic Compounds	APHA, 5530 C Chloroform Extraction Method	*BDL (**DL 0.001 mg/l)	mg/l	0.001	0.002
22.	*Mineral Oil	Clause 6 of IS 3025 (Part 39)	*BDL (**DL 0.05 mg/l)	mg/l	[illegible]	No Relaxation
23.	*Anionic Detergent as MBAS	APHA, 5540 C MBAS Method	*BDL (**DL 0.05 mg/l)	mg/l	0.2	1.0
24.	Zinc as Zn	APHA, 3111 B, Direct Air Acetylene Flame Method	[illegible]	mg/l	5	15
25.	Copper as Cu	APHA, 3111 B, Direct Air Acetylene Flame Method	[illegible]	mg/l	0.05	1.5
26.	Manganese as Mn	APHA, 3111 B, Direct Air Acetylene Flame Method	*BDL (**DL 0.01 mg/l)	mg/l	0.1	0.3
27.	Cadmium as Cd	APHA, 3111 B, Direct Air Acetylene Flame Method	*BDL (**DL 0.002 mg/l)	mg/l	0.003	No Relaxation
28.	Lead as Pb	APHA, 3111 B, Direct Air Acetylene Flame Method	*BDL (**DL 0.002 mg/l)	mg/l	0.01	No Relaxation
29.	Selenium as Se	APHA, 3114 B, Manual Hydride Generation	*BDL (**DL 0.001 mg/l)	mg/l	0.01	No Relaxation
30.	Arsenic as As	APHA, 3114 B, Manual Hydride Generation	*BDL (**DL 0.001 mg/l)	mg/l	0.01	No Relaxation
31.	Mercury as Hg	APHA, 3112 B, Cold Vapour AAS Method	*BDL (**DL 0.0005 mg/l)	mg/l	0.001	No Relaxation
32.	*Total Coliform	IS 1622:1981 (RA 2009)	< 2	MPN/100ml	Shall not be detectable in any 100 ml sample	
33.	E. Coli	IS 1622:1981 (RA 2009)	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note: - *These parameters are not covered in our NABL scope
*BDL - Below Detection Limit, **DL - Detection Limit

Jr. Lab Analyst

Authorized Signatory

Note: Terms & conditions refer on backside of test report.

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Annexure 7

Verdan EnviroLab

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

Test Report

Sample Number:	VEL/ GC/ W/07	Report No.:	VRL/W/21/GW/6807
Name & Address of the Project:	M/s Our Client Village : Kurali, Sahapur-Road, Tehsil: Bilaspur District: Yamunanagar, Haryana	Invoice No.:	21F-01
		Party Reference No.:	NIL
		Reporting Date:	12/03/2021
Sample Description:	Ground Water Sample	Period of Analysis:	06/03/2021-12/03/2021
Sample Location:	Rajpur (GW-7)	Receipt Date:	06/03/2021
Sample Collected by:	Verdan Envirolab Representative	Sampling Date:	04/03/2021
Sampling and Analysis Protocol:	APHA, 23rd Edition 2017	Sampling Quantity	5 Ltr + 250ml
Preservation:	Refrigeration	Sampling Type:	Grab

S. No.	Parameter	Test Method	Result	Unit	Limits of IS:10500-2012 Requirement (Acceptable)	Permissible limit in the Absence of Alternate Source
1.	pH @ 25 °C	APHA 4500-H+ B Electrometric Method	7.65	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA 2120 B, Visual Comparison Method	BDL (DL 1 Hazen)	Hazen	5	15
3.	Turbidity	APHA 2130 B, Nephelometric Method	BDL (DL 1 NTU)	NTU	1	5
4.	Odour	APHA 2150 B, Threshold Odour Method	Agreeable	--	Agreeable	Agreeable
5.	Taste	APHA 2160 B, Threshold Odour Method	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as CaCO3	APHA 2340 C, EDTA Titrimetric Method	132.25	mg/l	200	600
7.	Calcium as Ca	APHA 3500-Ca B, EDTA Titrimetric Method	36.35	mg/l	75	200
8.	Alkalinity as CaCO3	APHA 2320 B, Titrimetric Method	128.21	mg/l	200	600
9.	Chloride as Cl	APHA, 4500-Cl B, Argentometric Method	95.14	mg/l	250	1000
10.	Cyanide as CN	APHA 4500 CN- E	BDL (DL 0.01 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA 3500-Mg B, EDTA Titrimetric Method	10.34	mg/l	30	100
12.	Total Dissolved Solid	APHA 2540 C, Gravimetric Method	221.00	mg/l	500	2000
13.	Sulphate as SO4	APHA 4500 SO4 E, Turbidimetric Method	28.61	mg/l	200	400
14.	Fluoride as F	APHA 4500-F- D, SPADNS Method	0.37	mg/l	1	1.5
15.	Nitrate as NO3	IS 3025 (P-34) Clorimetric Method	3.159	mg/l	45	No Relaxation
16.	Iron as Fe	APHA 3500-Fe B, Phenanthroline Method	0.07	mg/l	0.3	No Relaxation
17.	Aluminium as Al	APHA 3500-Al B, Eriochrome Cyanine R Method	BDL (DL 0.03 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA 4500-B C, Carmine Method	BDL (DL 0.01 mg/l)	mg/l	0.5	1.0
19.	Hexavalent Cr	APHA 3111 B, Atomic Absorption Flame Method	BDL (DL 0.02mg/l)	mg/l	0.05	No Relaxation

NISHA DEVI
Sr. Lab Analyst
(Tested By)

Group Manager

Note: Terms & conditions refer on backside of test report

1128715/2021/Estt.Br

Annexure 7

Vardan EnviroLab

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

Test Report

Sample No.: VEL/GC/9909 — Report No.: VEL/W/2105/0610

S. No.	Parameter	Test Method	Result	Unit	Limits of IS:10500-2012: Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source**
20.	Conductivity @ 25 °C	APHA 2510 B, Conductivity Meter Method	97	µS/cm		
21.	Phenolic Compounds	APHA 5530 C Chloroform Extraction Method	*BDL (**DL: 0.0004 mg/l)	mg/l	0.001	0.002
22.	Mineral Oil	Cl. 6 of IS:3025 (Part 39)	BDL (DL: 0.05mg/l)	mg/l	1.0	No Relaxation
23.	Anionic Detergents as MBAS	APHA 5540 C MBAS Method	*BDL (**DL: 0.05 mg/l)	mg/l	0.2	1.0
24.	Aluminium as Al	APHA 3111 D, Direct Air Acetylene Flame Method	0.07	mg/l	0.03	0.2
25.	Copper as Cu	APHA 3111 B, Direct Air Acetylene Flame Method	0.01	mg/l	0.05	1.5
26.	Manganese as Mn	APHA 3111 B, Direct Air Acetylene Flame Method	*BDL (**DL: 0.01 mg/l)	mg/l	0.1	0.3
27.	Cadmium as Cd	APHA 3111 B, Direct Air Acetylene Flame Method	BDL (**DL: 0.001 mg/l)	mg/l	0.003	No Relaxation
28.	Lead as Pb	APHA 3111 B, Direct Air Acetylene Flame Method	BDL (**DL: 0.002 mg/l)	mg/l	0.01	No Relaxation
29.	Selenium as Se	APHA 3114 B, Manual Hydride Generation	BDL (**DL: 0.001 mg/l)	mg/l	0.01	No Relaxation
30.	Arsenic as As	APHA 3114 B, Manual Hydride Generation	BDL (**DL: 0.0005 mg/l)	mg/l	0.01	0.05
31.	Mercury as Hg	APHA 3112 B, Cold Vapour AAS Method	BDL (**DL: 0.0005 mg/l)	mg/l	0.001	No Relaxation
32.	Total Coliform	IS 15185:2016 (RA 2021)	5	MPN/100ml	Shall not be detectable in any 100 ml sample	
33.	E. Coli	IS 15185:2016 (RA 2021)	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note: These parameters are not covered under NABL scope.
*BDL-Below Detection Limit, **DL- Detection Limit.

NISHA DEVI
Jr. Lab Analyst
(Medical Dy)

Note: Terms & conditions refer on backside of test report.

Annexure 7

Vardan [illegible] Lab

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

Test Report

Sample Number:	[illegible]	Report No.:	[illegible]
Name & Address of the Project:	[illegible] Chem [illegible], Bilaspur District: Yamunanagar, Haryana	Format No.:	7.8 F 01
		Party Reference No.:	NIL
		Reporting Date:	[illegible]/2021
Sample Description:	Ground Water Sample	Period of Analysis:	[illegible]/2021 - [illegible]/2021
Sample Location:	Saraswati (GW8)	Receipt Date:	[illegible]/2021
Sample Collected by:	Vardan Envirolab Representative	Sampling Date:	[illegible]/2021
Sampling and Analysis Protocol:	APHA, 23rd Edition 2017	Sampling Quantity:	[illegible]
Preservation:	Refrigerator	Sampling Type:	Grab

S. No.	Parameter	Test Method	Result	Unit	Limits of IS:10500-2012 Requirement (Acceptable) Limit	Limits of IS:10500-2012 Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA, 4500-H+ B Electrometric Method	[illegible]	--	6.5 to 8.5	No Relaxation
2.	Color	APHA, 2120 B, Visual Comparison Method	[illegible] (**DL [illegible] Hazen)	Hazen	5	15
3.	Turbidity	APHA, 2130 B, Nephelometric Method	[illegible] (**DL [illegible] NTU)	NTU	1	5
4.	Odor	APHA, [illegible] Odour Method	Agreeable	--	Agreeable	Agreeable
5.	Taste	APHA, [illegible] Method	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as $CaCO_3$	APHA, [illegible] EDTA Titrimetric Method	1[illegible].51	mg/l	200	600
7.	Calcium as Ca	APHA, 3500 Ca B, EDTA Titrimetric Method	[illegible]	mg/l	75	200
8.	Alkalinity as $CaCO_3$	APHA, 2320 B, Titrimetric Method	[illegible]	mg/l	200	600
9.	Chloride as Cl	APHA, 4500-Cl- B, Argentometric Method	[illegible]	mg/l	250	1000
10.	Cyanide as CN	APHA, 4500 CN D	BDL(**DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA, 3500 Mg B, Calculation Method	13.55	mg/l	30	100
12.	Total Dissolved Solids	APHA, 2540 C, Gravimetric Method	[illegible]	mg/l	500	2000
13.	Sulphate as SO_4	APHA, [illegible] Turbidimetric Method	[illegible]	mg/l	200	400
14.	Fluoride as F	APHA, [illegible] SPADNS Method	0.1[illegible]	mg/l	1.0	1.5
15.	Nitrate as NO_3	IS 3025 (Part [illegible]) [illegible] Method	16.54	mg/l	45	No Relaxation
16.	Iron as Fe	APHA, 3500-Fe B, [illegible] Method	[illegible]	mg/l	1.0	No Relaxation
17.	Aluminium as Al	APHA, [illegible] Nitrous Oxide [illegible] Flame Method	BDL(**DL 0.0[illegible] mg/l)	mg/l	0.03	[illegible]
18.	Boron	APHA, 4500 B C, Curcumin Method	BDL(**DL 0.01 mg/l)	mg/l	0.5	[illegible]
19.	Chromium as Cr	APHA, [illegible] Direct Air [illegible] Flame Method	BDL(**DL [illegible] mg/l)	mg/l	[illegible]	No Relaxation

Sr. [illegible]
Checked By

[illegible]
Dy. [illegible]

Gaurav
[illegible] Authorised Signatory

Note: Terms & conditions refer on backside of test report.

www.[illegible]

Annexure 7

Vardan EnviroLab

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

Test Report

Sample No.: VEL/ OC/AW/08 | Report No.: VEL/AW/2103060/08

S. No.	Parameter	Test Method	Result	Unit	Requirement (Acceptable Limit)	Permissible limit in the absence of Alternate Source
20.	Conductivity at 25 °C	APHA 2510 B Conductivity Meter Method	[illegible]	µS/cm	--	--
21.	Phenolic Compounds	APHA 5530 C Chloroform Extraction Method	BDL(**DL 0.0001 mg/l)	mg/l	0.001	0.002
22.	Mineral Oil	Clause 6 of IS 3025 (Part-39)	[illegible] (DL 0.05mg/l)	mg/l	1.0	No Relaxation
23.	Anionic Detergents as MBAS	APHA 5540 C MBAS Method	BDL(**DL 0.05 mg/l)	mg/l	0.2	1.0
24.	Zinc as Zn	APHA 3111 B Direct Air Acetylene Flame Method	2.61	mg/l	5	15
25.	Copper as Cu	APHA 3111 B Direct Air Acetylene Flame Method	0.2	mg/l	0.05	1.5
26.	Manganese as Mn	APHA 3111 B Direct Air Acetylene Flame Method	BDL(**DL 0.01 mg/l)	mg/l	0.1	0.3
27.	Cadmium as Cd	APHA 3111 B Direct Air Acetylene Flame Method	BDL(**DL 0.002 mg/l)	mg/l	0.003	No Relaxation
28.	Lead as Pb	APHA 3111 B Direct Air Acetylene Flame Method	BDL(**DL 0.001 mg/l)	mg/l	0.01	No Relaxation
29.	Selenium as Se	APHA 3114 B Manual Hydride Generation	BDL(**DL 0.001 mg/l)	mg/l	0.01	No Relaxation
30.	Arsenic as As	APHA 3114 B Manual Hydride Generation	BDL(**DL 0.002mg/l)	mg/l	0.01	0.05
31.	Mercury as Hg	APHA 3112 B Cold Vapour AAS Method	BDL(**DL 0.0005 mg/l)	mg/l	0.001	No Relaxation
32.	Total Coliform	IS 1622 1981 (RA 2009)	[illegible]	MPN/100ml	Shall not be detectable in any 100 ml sample	
33.	E. Coli	IS 1622 1981 (RA 2009)	Absent	MPN/100ml	Shall not be detectable in any 100 ml sample	

Note: *These parameters are not covered in NABL scope.
BDL-Below Detection Limit, **DL-Detection Limit

NISHA
Sr. Lab [illegible]
Checked By

Technical Manager
Authorized Signatory

Note: Terms & conditions refer on backside of test report

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Annexure I

Wildlife Conservation Plan

For

Proposed Capacity Expansion of Formaldehyde Manufacturing Unit

From

100 TPD to 200 TPD

At

Village-Kurali, Sabapur Road, Tehsil-Bilaspur,
Dist.-Yamuna Nagar, Haryana

By

M/s Om Chem

Prepared by:
ENVIRONMENT CONSULTANT
KARDAN ENVIRONET
ACCREDITED NO. NABET/EIA/1922/RA 0108
Plot No. 82A, Sector-5, IMT Manesar
Gurgaon, Haryana

Table of Contents

CHAPTER-1: INTRODUCTION

1.1INTRODUCTION:

Biodiversity management is considered as a difficult task as it refers to diversity at all levels like genetic, species and community. The formulation of a biodiversity management and wildlife conservation plan for a developmental Project is one of the steps towards the environment conservation. Human activities like agricultural expansion, road construction, urbanization, and other mining activities are supposed to be major threats to biodiversity and wildlife, therefore, the most effective and efficient mechanisms for conserving biodiversity is to prevent further destruction of degradation of habitats. Four strategies required for the biodiversity management are in Situ strategy, ex Situ Strategy, reduction of anthropogenic pressure and rehabilitation of endangered species.

M/s Om Chem is registered as an MSME manufacturer of Basic Chemicals with effect fromthe commencement date of 03.03.2019. The industry has its registered office and manufacturing unit with the same address, i.e. at village Kurali, Sabapur road, Tehsil Bilaspur, District – Yamuna Nagar, Haryana-135102. **M/s Om Chem** currently has 5 Partners: Ankit Sakhuja, Abhishek Garg, Vibhor Garg, Raman Sakhuja, Mahir Sakhuja. **M/s Om Chem** has an existing unit for manufacturing of Formaldehyde with the production capacity 100 MTPD at Village Kurali, Sabapur road, Tehsil Bilaspur, District – Yamuna Nagar, Haryana. The existing plant was established on the basis of CTE Obtained by Haryana State Pollution Control Board vide Letter 3130966618YAMCTE6274201 dated 19.04.2018 and CTO vide application No. 3130966619YAMCTO6377523 dated 22.02.2019 from Haryana State Pollution Control Board. Now the company is proposing capacity expansion of Formaldehyde manufacturing from 100 TPD to 200 TPD.

M/s Om Chem will generate a fair amount of direct and indirect employment in the study region. The local economy will receive a boost due to employee spending and services generated by the company. The overall effect will improve the buying power of employees and locals, thus a higher standard of living viz. better education, improved health and sanitation facilities, housing etc. This will be envisaged as a major positive benefit, which will ultimately lead to the sustainable development of the region.

During biological environment study it has been found that through the local villagers and

by direct evidence that some wildlife are harboring the area occasionally for their food, water and crossing from one place to another places. During the survey total 102 plants species and 98 faunal species were recorded by primary field observations and information of local villages. Only one schedule –I species was documented as per Wildlife Protection Act. 1972. Hence, conservation Plan is to be prepared for the conservation of these scheduled species.

1.2 PROJECT DETAILS

The proposed Project is established on 0.643 ha is situated at at village Kurali, Sabapur road. Tehsil- Bilaspur, Yamuna Nagar, Haryana. A part of forest land has been used for approach road and permission for the same has taken form Forest Department. vide FP/HR/APPROACH/34794/2018 dated 08/11/2018 for setting up of the existing project for manufacturing of Formaldehyde by M/s OM Chem. The geographical location of the Existing plant lies from latitude- 30°21'9.85"N to Longitude- 77°14'6.04"E.

The site is well connected with the rail and road. Site is located at a roadways distance of ~ 31km towards south direction from District Head quarter Yamuna Nagar. Site is easily approachable through Atta-Bilaspur Road. It is connected with the adjacent states and other parts of India as well, which facilitates transportation of goods, both inwards and outwards. This further facilitates transportation of raw material and marketing of Formaldehyde all over India including Haryana, Punjab, Uttarakhand, Uttar Pradesh & Rajasthan having plywood and Sunmica/decorative laminate industry.

1.3 PROJECT/TECHNOLOGY

The commercial production of Formaldehyde is manufactured from oxidation-dehydrogenation using a silver catalyst involving the complete conversion of methanol.

Methanol is vaporized and mixed with air and steam and it is then passed over a thin bed of silver catalyst at 650 °C. Formaldehyde is formed by the dehydrogenation of methanol.

The heat required for the endothermic reaction is obtained by burning hydrogen content in the off gasses, produced from the dehydrogenation reaction.

1.4 MANPOWER REQUIREMENT

At present, 10 employees are working in the plant and about 2 more people will be hiring for the expansion. Therefore, a total of 12 employees will work in the plant after expansion.

1.5 WATER REQUIREMENT

Total water requirement after expansion will be 195 KLD for which Ground Water abstraction application is submitted to CGWA vide 21-4/3267/IIR/IND/2020.

1.6 POWER REQUIREMENT

Maximum power requirement for the plant is 160 KW (Total sanctioned load). The power is supplied from UHBVN (Uttar Haryana BijliVitran Nigam).

D.G sets of capacity 325 KVA is also installed as the backup power supply. For the expansion of unit, 1 more DG set of same capacity will also be installed.

1.7 RAW MATERIAL REQUIREMENT

The only raw material is Methanol which comes in road tankers from Kandla Port, Gujarat & stored in underground M.S tanks.

1.8 CAPITAL COST OF THE PROJECT

The Capital cost for the Existing unit is Rs. 499 lakhs which includes land, building, plant & machinery. For the proposed expansion, the calculated cost is approx. Rs. 699 Lakhs.

1.9 LOCATION OF THE PROJECT

The Existing project is located in 0.6430 ha land at Village Kurali, Sahapur Road, Tehsil Bilaspur, Distt. Yamuna Nagar, Haryana. The land is already under the possession of project proponent. Study area falls in Survey of India Toposheet No. H43L3 & H43L7 and is given as **Figure 1.1 &** 1.2.

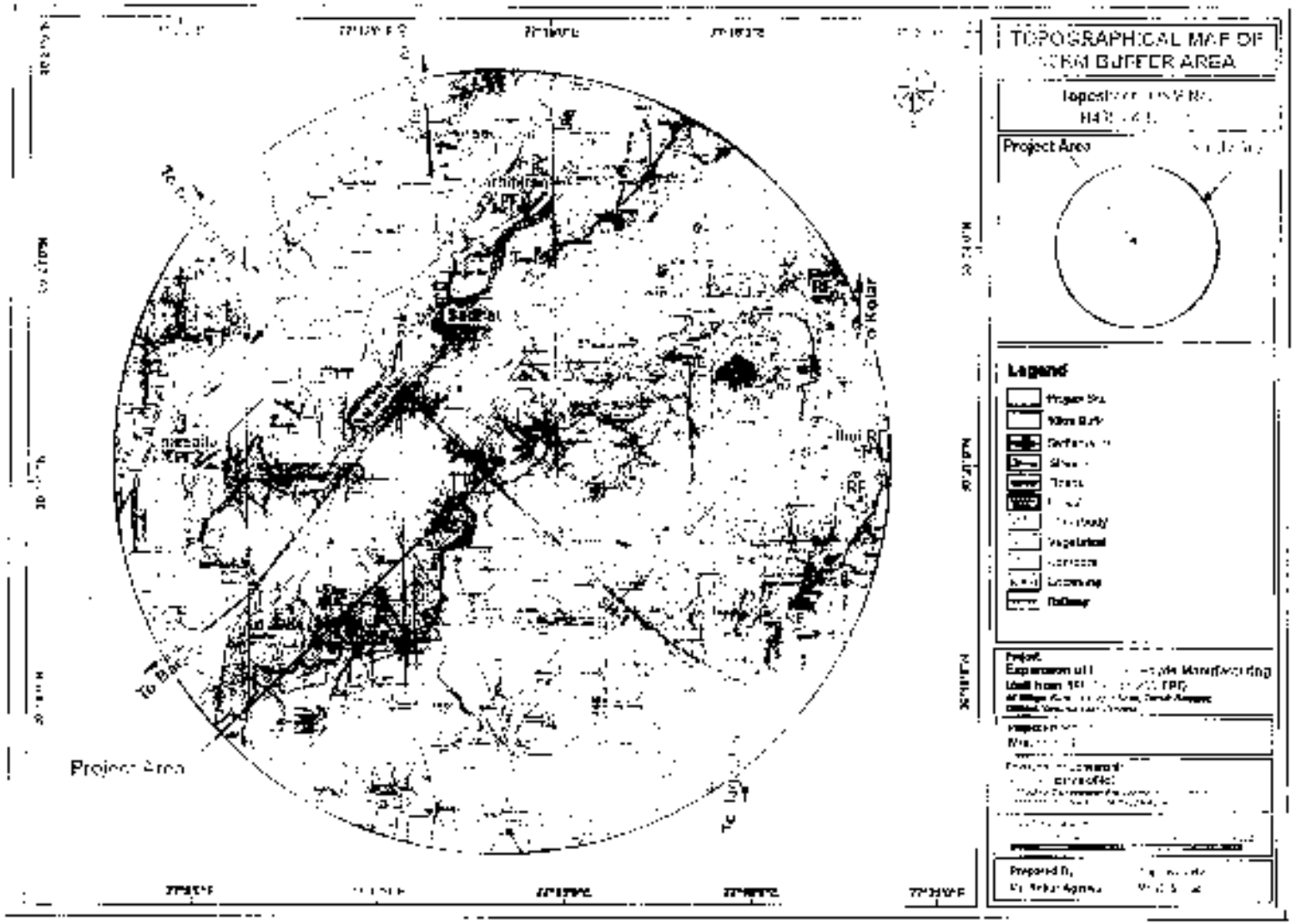

Fig-1.1: Location Map of the Study Area

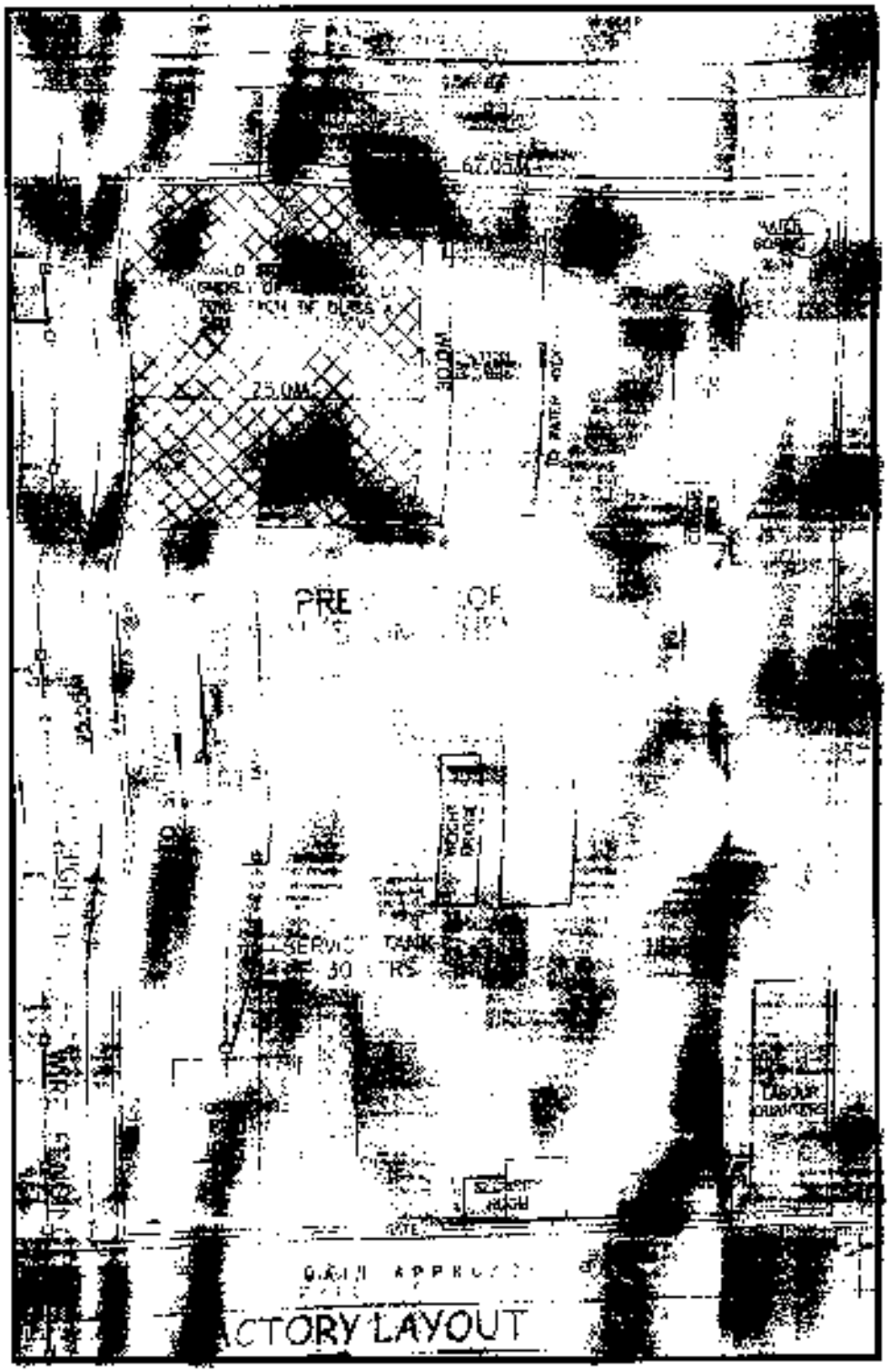

Fig-1.2: Layout Plan of M/s Om Chem

CHAPTER-2: BIOLOGICAL ENVIRONMENT

2.1 INTRODUCTION

The term biological environment covers the prevalence of all living forms (plants and animals) both terrestrial and aquatic in study areas. Living forms range over a very wide spectrum of specie. Even a small area may have thousands of species including bacteria, protozoa, worms, insects, plants, animals and birds. In the present study, Flora (trees, small trees, shrubs, under shrubs, climbers and grasses) and Fauna (mammals, birds and reptiles) are considered. It is needless to emphasize that living system is extremely complicated. They are directly affected by changes in the physical environment but may often either adapt or avoid the adverse environmental conditions.

Generally, biological communities are the best indicators of climatic and edaphic factors. Studies on biological aspects of ecosystems are important in Environmental Impact Assessment for safety of natural flora and fauna. Information on the impact of environmental stress on the community structure serves as an inexpensive and efficient early warning system to check the damage to a particular ecosystem. The biological environment includes mainly terrestrial and aquatic ecosystems.

The animal and plant communities exist in their natural habitats in a well-organized manner. Their natural settings can be disturbed by externally induced anthropological activities or by naturally induced calamities or disaster. So, once this setting is disturbed, it becomes practically impossible or takes a long time to come back to its original state. Plants and animals are more susceptible to environmental stress. A change in the composition of biotic communities is reflected by a change in the distribution pattern of natural species of flora and fauna existing in the ecosystem. The sensitivity of animal and plant species to the changes occurring in their existing ecosystem can, therefore, be used for monitoring Environmental Impact Assessment studies of any project.

2.2 OBJECTIVES OF BIOLOGICAL STUDY

- To collect the baseline data for the study along with a description of the existing terrestrial, wetland and aquatic biodiversity.
- To assess the scheduled species in the proposed site (rare, endangered, critically endangered, endemic and vulnerable).

- To identify the locations and features of ecological significance.
- To identify the impacts of a proposed project before, after and during the development phases.

Table: 2.1. Mode of data collection and parameters considered during the Survey

Sr. No.	Aspect	Mode of Data collection	Parameters monitored	Remarks
1.	Terrestrial Biodiversity	By field survey	Floral and Faunal diversity	**For Floral Diversity:** Random survey, sapling survey/forest inventory, walking transect, collection and identification with the help of relevant literature.
				For Faunal Diversity: direct and indirect sampling, walking transect, point sampling and nest sampling etc.
2.		From authentic sources like Forests department of Haryana and available published literatures from ZSI, BSI etc.	Floral and Faunal diversity and study of vegetation, forest type, importance etc.	Data collected from the working plan of the region, forest types from the authentic literature of Champion & Seth.
3.	Aquatic Biodiversity	By field survey	Floral and Faunal diversity	**For Plankton Study** Lackey's drops method and light microscope **For other aquatic-** Random survey, opportunistic observations
4.		From authentic sources like Forests department of Haryana.	Floral and Faunal diversity and study of vegetation, forest type, importance etc.	Desktop literature review to identify the representative spectrum of threatened species, population and ecological communities.

2.3 PROJECT DESCRIPTION

M/s. Om Chem has an existing unit for manufacturing of Formaldehyde with the production capacity 100 MTPD at Kurali Village, of Bilaspur Tehsil in Yamuna Nagar

district, Haryana. Now the company is proposing capacity expansion of Formaldehyde manufacturing from 100 TPD to 200 TPD.

2.4 STUDY AREA

The proposed project is established on 0.6430 ha land in Kurali Village, of Bilaspur Tehsil in Yamuna Nagar district, and A part of forest land has been used for approach road and permission for the same has taken form Forest Department vide FP/HR/APPROACH/34794/2018 dated 08/11/2018 for setting up of the existing project for manufacturing of Formaldehyde by M/s OM Chem. The geographical location of the Existing plant lies from Latitude- 30°21'9.85"N to Longitude- 77°14'6.04"E. The land of the unit fall's and declared as non-controlled area by District Town Planner, Yamuna Nagar Vide memo no. T-626 dated 09/04/2018.

The site is well connected with the rail and road. Site is located at a roadways distance of ~ 35km towards south direction from District Head quarter Yamuna Nagar. Site is easily approachable through Atta-Bilaspur Road. It is connected with the adjacent states and other parts of India as well, which facilitates transportation of goods, both inwards and outwards. This further facilitates transportation of raw material and marketing of Formaldehyde all over India including Haryana, Punjab, Uttarakhand, Uttar Pradesh & Rajasthan having plywood and Sunmica/decorative laminate industry. The study area is divided into two parts i.e.:

a) **Core Zone:** Project Site i.e. M/s Om Chem

b) **Buffer Zone:** Area within 10 Km radius from the project site.

2.5 RIPARIAN ENVIRONMENT

Riparian habitats are the interface of terrestrial and aquatic ecosystems and they are essential in controlling flows of energy and nutrients between terrestrial and aquatic ecosystems. Despite the relatively small area that they occupy within the landscape, riparian zones provide a major contribution to the ecology and biodiversity in the areas where they occur.

The study of riparian vegetation of a river is an important as it strongly affects soil-water characteristics of the area and thus the aquatic life. Moreover, the vegetation provides the human population with vital life support and socio- economic security. Riparian zones

often regulate aquatic-terrestrial linkages. Riparian vegetation is important for regulating nutrient cycle of the streams, preventing soil erosion and stabilizing river banks. Further, the riparian vegetation is modified or destroyed by grazing, logging, urbanization, road construction, water development, mining and recreation. Also, the riparian zone is thought to have a disproportionate influence (relative to its land area) on the running water because of its immediate effects on the transport of water, nutrients and sediments. Riparian flora of Markanda River, Nakti Nadi and Chautang Nadi was studied during the site visit.

2.6 TERRESTRIAL FLORA AND FAUNA

Biological communities are the indicator environmental condition and resource of its distribution and survival. Biotic component comprises of both plants (Flora) and animal (Fauna) communities, which interact not only within and between them but also with the Abiotic components, viz. physical and chemical components of the environment. The changes in biotic community are studied in the pattern of distribution, abundance and diversity.

2.7 TERRESTRIAL FLORA

The Vegetation and plant species composition observed and documented during field visit in and around the proposed location of the project. Besides primary surveys in the project sites, published literature and various floras were consulted to prepare an inventory of plant species growing at project sites. The vegetation of the study area is highly degraded and some areas consisting water bodies. The plant diversity is classified into various plant groups such as tree, shrubs, herbs, climbers, sedges and grasses. The plant diversity survey in the project area was undertaken during the summer season with the objectives of preparing a checklist of flora in the study area which is divided into two parts i.e. Core Zone & Buffer Zone.

Core Zone: Core zone of the proposed project i.e. 0.6340 ha is situated at at village Kurali, Sabapur road, Tehsil- Bilaspur, Yamuna Nagar, Haryana. A part of forest land has been used for approach road and permission for the same has taken form Forest Department vide FP/HR/APPROACH/34794/2018 dated 08/11/2018 for setting up of the existing project for manufacturing of Formaldehyde by **M/s OM Chem.**

Buffer Zone: The selection of terrestrial and aquatic ecological sampling location was based on land use pattern, topography and habitat patterns of the study area. The terrestrial ecological survey was carried out in forest and non-forest areas (agricultural fields, roadsides, urban & semi urban wastelands etc) and the aquatic ecological survey was carried out at rivers & ponds/lakes within the study area.

2.7.1. Methodology

The present study on the floral assessment for the project activity is based on field survey of the area. By the following forest inventory methodology the survey of biological parameters has been conducted within the buffer zone (10 km radial distance) from project site at village Kurali, Sahajpur road, Tehsil - Bilaspur, Yamuna Nagar, Haryana, in accordance with the guidelines issued by the Ministry of Environment, Forests and Climate Change, CPCB, and SPCB during the study period.

A preliminary survey of the study area has been performed to get a general picture of the landscapes in vegetation. Traverses have been taken within different zone of the study area to note major vegetation patterns and plant communities including their growth form and dominant species. A **forest inventory** is **"an attempt to describe the quantity and quality of forest trees and many of the characteristics of the land area upon which the trees are grown."** The objective this floral inventory of the study area, is to provide complete checklist of floristic structure within the core zone and buffer zone (10 km radial distance) from project site for formulating effective management and conservation measures.

2.7.2. Forest Types of Haryana

The state presents diverse vegetation types from pine forests to desert thorn forests. Depending upon the altitude and climate, the main forest types of Yamuna Nagar district as per Champion and Seth's classification (1968) are:

i) Northern Dry Mixed Deciduous Forests 5B/C2

ii) Dry Deciduous Scrub 5/DS1

Northern Dry Mixed Deciduous Forest 5B/C2:

This type occurs on the upper dry slopes along the Siwaliks and their extensions. The upper canopy is usually light, open and irregular. The trees having relatively short bole and poor form and a height rarely over 10 meters. The canopy is formed entirely of deciduous trees. Major species are Cassia fistula, *Diospyros tomentosa, Acacia catechu, Anogeissus latifolia, Bombax ciaba, Albizzia lebbek, Albizzia procera, Acacia nilotica, Acacia modesta, Bauhinia variegate, Syzygium cumini, Mangifera indica, Ehretia laevis, Phoenix sylvestris, Morus alba, Morus Australis, Terminalia tomentosa, Boswellia serrata, Aegle marmelos, Bauhinia racemosa, Bauhinia purpurea, Erythrina suberosa, Ficus glomerata, Grewia elastic, Mallotus philippensis* and *Shorea robusta*.

Dry Deciduous Scrub (5/DS1):

This type is located adjacent to the habitation in the Siwalik foot hills of the district and state. These represents a degradation stage of the tropical dry deciduous forest and have been brought into existence by adverse biotic factor like excessive grazing, lopping, felling and fires. In spite of sufficient rains, moisture retention is very poor and the type has now become a stable edaphic climax. The crop is open with less tree cover. The main tree species found are: *Diospyros tomentosa, Acacia leucophloea, Butea monosperma, Prosopis barbata, Cassia fistula, Anogeissus latifolia* and *Lannea grandis*. The undergrowth is mainly *Carissa opaca, Woodfordia fruticosa, Nyctanthes arbortristis* and *Flacourtia indica*.

2.7.3. Floristic Composition of Core Zone

Core zone of the proposed project i.e. at village Karali, Sabapur road, Tehsil: Bilaspur, Yamuna Nagar, Haryana. During the field survey some floral (Some ornamental Greenbelt developed by Project Proponent) and faunal (Avifauna) diversity was recorded from the project area.

2.7.4. Floristic Composition of Buffer Zone

The terrestrial flora of the study area i.e. buffer zone (10 km radial distance) from the project site could be categorized as agriculture vegetation, social forestry plantation, Agro-forestry plantation, plantation for green belt development and natural/forest vegetations.

2.7.4.1. Agricultural and Horticulture Crops:

Agriculture is the primary sector of Haryana State economy and majority of the population is directly or indirectly dependent on agriculture and its allied activities. The climatic conditions of a region affect the agricultural cropping pattern of different areas. Thus, it produces different crops. Amongst a host of climatic factors i.e. rainfall, temperature, humidity, wind velocity and duration of sunshine etc. affect the cropping pattern in a significant way. Annual rainfall and its distribution over the entire year and the regimes of diurnal and annual temperatures are by far, the prominent factors affecting agriculture and the life style of the people.

Table: 2.2: Cropping pattern of Study area

Crop Variety	Family	Botanical Name	Trade Name
Agriculture Crops			
Vegetable	Malvaceae	*Abelmoschus esculentus*	Lady Finger
	Cucurbitaceae	*Cucurbita pepo*	Keddu
	Cucurbitaceae	*Momordica charantia*	Karela
	Solanaceae	*Capsicum frutiscens*	chilli
	Solanaceae	*Solanum melongena*	Brinjal
	Solanaceae	*Solanum tuberosum*	Potato
	Solanaceae	*lycopersicon lycopersicum*	Tomato
	Liliaceae	*Allium cepa*	Onion
	Brassicaceae	*Brassica oleracea var. capitata*	Cabbage
	Brassicaceae	*Brassica oleracea var. botrytis*	Cauliflower
	Cucurbitaceae	*Cucumis melo*	Cucumber
	Cucurbitaceae	*Cucurbita maxima*	Pumpkin
	Apiaceae	*Daucus carota*	Carrot
	Convinvulaceae	*Ipomoea batatas*	Sweet Potato
	Brassicaceae	*Raphanus sativus*	Radish
	Chennopodiaceae	*Spinacia oleracea*	Spinach
Cereals	Poaceae	*Oryza sativa*	Rice

Crop Variety	Family	Botanical Name	Trade Name
	Poaceae	*Triticum aestivum*	Wheat
	Poaceae	*Zea mays*	Maize
Pulses	Fabaceae	*Vigna radiate*	Moong
	Fabaceae	*Vigna mungo*	Urd
	Fabaceae	*Cajanus cajan*	Pigeon Pea
	Fabaceae	*Vigna umbellata*	Rice Bean
	Fabaceae	*Cicer arietinum*	Gram
	Fabaceae	*Pisum sativum* Subsp. *arvense*	Field Pea
Spices	Amaryllidaceae	*Allium sativum*	Garlic
	Zingiberaceae	*Zingiber officinale*	Adrak
Oilseeds	Asteraceae	*Helianthus annus*	Sunflower
	Pedaliaceae	*Sesamum indicum*	Sesamum
Other	Malvaceae	*Gossypium hirsutum*	Cotton
	Poaceae	*Saccharum officinarum*	Sugar Cane
Horticulture Crops			
Fruits	Moraceae	*Artocarpus heterophyllus*	Jack Fruit
	Caricaceae	*Carica papaya*	Papaya
	Rutaceae	*Aegle marmelos*	Bel
	Anacardiaceae	*Mangifera indica*	Mango
	Musaceae	*Musa paradisiaca*	Banana
	Myrtaceae	*Psidium guajava*	Guava
	Myrtaceae	*Syzygium cumini*	Jamun
	Fabaceae	*Tamarindus indica*	Imli

2.7.4.2. Social/Agro-Forestry:

In India, natural forests are being conserved primarily for the environmental benefits. Serious efforts are also being done to plant large number of trees outside forest under social forestry programs to increase the tree cover and fulfill demand of various forest

produce required by the people and forest based industries. Agricultural fields are one of the potential areas, where large scale planting of trees can be taken up along with the agricultural crops. Agro-forestry models adopted by the farmers in Haryana state are highly lucrative. Therefore, attracting farmers in a big way.

Table 2.3: Agro Forestry Species of the Study Area (Buffer Zone)

Botanical Name	Trade Name	Family
Delonix regia	Gulmohar	Caesalpiniaceae
Dalbergia sisso	Shisham	Fabaceae
Azadirachta indica	Neem	Meliaceae
Mangifera indica	Aam	Anacardiaceae
Pongamia pinnata	Karanj	Euphorbiaceae
Musa paradisiacal	Banana	Musaceae
Ficus religiosa	Pipal	Moraceae
Eucalyptus camaldulensis	Nilgiri	Myrtaceae
Pisidium guava	Guava	Myrtaceae
Tectona grandis	Sagwan	Verbenaceae
Dendrocalamus strictus	Lathi bans	Poaceae
Butea monosperma	Kachnar	Fabaceae
Cassia fistula	Amaltas	Fabaceae
Saraca asoca	Asok	Fabaceae
Populous deltoids	Pupular	Salicaceae
Shorea robusta	Sal	Dipterocarpaceae
Tectona grandis	Teak	Lamiaceae
Toona ciliata	Toon	Meliaceae

2.7.4.3. Grasslands:

No prominent grass land ecosystem has been found in core and buffer zone of the project. However the grass lands were mixed with natural vegetation in low lands and cultivable waste lands are now being utilized as grazing grounds to the livestock species: Goat, Cow, Ox and Buffalo. The grass species and sedges of core and buffer zone are listed below with the natural vegetation of buffer zone.

2.7.4.4. Endemic/Endangered Flora:

No endangered and endemic flora was recorded from core and buffer zone of the project area.

2.7.4.5. Location of National Park/Sanctuaries:

There is no Bio-sphere Reserve, National Parks, Wildlife Sanctuary, Tiger Reserve and Elephant Reserve within 10 km radius of the project site.

2.7.4.6. Natural/Forest Vegetation:

Upper layer is stratified by dominant tree species: *Mangifera indica* (Mango); *Dalbergia sissoo* (Shisham); *Azadirachta indica* (Neem); *Populus deltoides* (popular); *Bombax ceiba* (Semel); *eucalyptus camaldulensis* (Eucalyptus); *ailanthus excelsa* (Arusa); *Zizyphus Mauritiana* (Ber); and *Ficus religiosa* (Peepal).

Lower strata of shrubs occupied at ground level: *Cassia alata* (Wild Senna); *Cocculus hirsutus* (Jamiti-ki-bel); *Tinospora cordifolia* (Giloy); *Berleria cristata* (Jhinti); *Vitex negundo* (Nirgundi); *Coccinia grandis* (Kundru); *Lantana camara* (Rainaunlya); *Ricinus communis* (Arandi); and *Hyptis suaveolens* (Wilaiyati tulasi).

The herbaceous species: *Cynodon dactylon* (Dubli); *Achyranthes aspera* (Chirchira); *Saccharum spontaneum* (Kansh); *Parthenium hysterophorus* (Congress weed); *Cassia tora* (Tarota); *Tridax procumbens* (Kamarmodi); *Panicum indicum* (Fox tail grass); *Croton bonpiondianus* (Mirchini); and *Hemidesmus indicus* (Anantmul). The status of natural/forest flora of buffer zone is presented below.

Table 2.4: Floristic composition of Buffer zone

Sr. No.	Botanical Name	Family	Common Name
	TREES		
1.	*Aegle marmelos*	Rutaceae	Bel
2.	*Ailanthus excels*	Simaroubaceae	Adusa
3.	*Albizia procera*	Fabaceae	Safed Siris
4.	*Albizia lebbeck*	Fabaceae	Kala Siris
5.	*Anogeissus latifolia*	Combretaceae	Dhaura

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Sr. No.	Botanical Name	Family	Common Name
6.	*Azadirachta indica*	Meliaceae	Neem
7.	*Acacia catechu*	Fabaceae	Khair
8.	*Adina cordifolia*	Rubiaceae	Laklu
9.	*Bauhinia acuminata*	Fabaceae	Safed Kachnar
10.	*Bauhinia vahlii*	Fabaceae	Malu Creeper
11.	*Bauhinia variegate*	Fabaceae	Kachnar
12.	*Bombax ceiba*	Malvaceae	Semal
13.	*Cassia fistula*	Fabaceae	Amaltas
14.	*Cassia siamea*	Fabaceae	Kasuod
15.	*Dalbergia sissoo*	Fabaceae	Shisham
16.	*Delonix regia*	Fabaceae	Gulmohar
17.	*Emblica officinalis*	Phyllanthaceae	Amla
18.	*Eucalyptus camaldulensis*	Myrtaceae	Nilgiri
19.	*Ficus racemosa*	Moraceae	Gular
20.	*Ficus religiosa*	Moraceae	Pipal
21.	*Ficus benghalensis*	Moraceae	Bargad
22.	*Holoptelia integrifolia*	Ulmaceae	Kanju
23.	*Mallotus philippensis*	Euphorbiaceae	Kamala
24.	*Melia azedarach*	Meliaceae	Bakain
25.	*Morus alba*	Moraceae	Shehtoot
26.	*Phoenix sylvestris*	Palmaceae	Khajur
27.	*Popolous deltoids*	Salicaceae	Poplar
28.	*Syzygium cumini*	Myrtaceae	Jamun
29.	*Tectona grandis*	Lamiaceae	Teak
30.	*Terminalia arjuna*	Combretaceae	Arjun
31.	*Terminalia chebula*	Combretaceae	Harad
32.	*Toona ciliata*	Meliaceae	Toon, Cedar

SHRUBS & HERBS

Sr. No.	Botanical Name	Family	Common Name
33.	*Abrus precatorius*	Fabaceae	Ratti
34.	*Abutilon indicum*	Malvaceae	Kanghi
35.	*Achyranthes aspera*	Amaranthaceae	Chirchitta
36.	*Adhatoda vasica*	Acanthaceae	Vasaka
37.	*Alternanthera sessilis*	Amaranthaceae	Garundi
38.	*Amaranthus spinosa*	Amaranthaceae	Kate Chawli
39.	*Amaranthus viridis*	Amaranthaceae	Jungle Chaulai
40.	*Argemmone mexicana*	Papaveraceae	Satyanashi
41.	*Barleria crisata*	Acanthaceae	Varja Danti
42.	*Bauhinia vahlii*	Leguminoceae	Maljhan
43.	*Boerhavia diffusa*	Nyctaginaceae	Punarnawa
44.	*Bulbostylis barbata*	Cyperaceae	Water Grass
45.	*Caesalpinia sepiaria*	Sapindaceae	Kainju Bel
46.	*Calotropis procera*	Asclepiadaceae	Aak
47.	*Calotropis gigantea*	Asclepiadaceae	Madar
48.	*Cannabis sativa*	Urticaceae	Bhang
49.	*Carissa occidentalis*	Apocynaceae	Karaunda
50.	*Cassia tora*	Caesalpiniaceae	Panwar
51.	*Chinopodium album*	Amaranthaceae	Bathuwa
52.	*Clematis gouriana*	Ranunculaceae	Balkangu
53.	*Crotalaria medicaginea*	Papilionaceae	Rattle Weed
54.	*Cryptolepis buchanani*	Apocynaceae	Dudhi
55.	*Cyperus compressus*	Cyperaceae	Annual Sedge
56.	*Cyperus rotundus*	Cyperaceae	Nut grass
57.	*Datura metel*	Solanaceae	Datura
58.	*Dendrocalamus strictus*	Poaceae	Lathi Baans
59.	*Eclipta alba*	Asteraceae	Bhangra
60.	*Eriophorum Comosum*	Cyperaceae	Nakli Bhabbar

Annexure 6

Wildlife Conservation Plan for proposed Capacity Enhancement project of Formaldehyde Manufacturing Unit from 100 TPD to 250 TPD by M/s Om Chem

Conservation Plan

Sr. No.	Botanical Name	Family	Common Name
61.	*Euphobia hirta*	Euphorbiaceae	Dudhi
62.	*Evolvulus alsinoides*	Convonvulaceae	Vishnukrantha
63.	*Gloriosa superba*	Colchicaceae	Glory Lilly
64.	*Ipomoea carnea*	Convonvulaceae	Besharam
65.	*Lantana camara*	Verbenaceae	Raimuniya
66.	*Murraya koenigii*	Rutaceae	Gandhela
67.	*Nerium indicum*	Apocynaceae	Kaner
68.	*Ocimum sanctum*	Lamiaceae	Tulsi
69.	*Oxalis corniculata*	Oxalidaceae	Yellow sorrel
70.	*Parthenium hysterophorus*	Asteraceae	Gajar Ghas
71.	*Physalis minima*	Solanaceae	Rasbhari
72.	*Pueraria tuberosa*	Leguminoceae	Sural
73.	*Ranunculus saderatus*	Ranunculaceae	Jalbhaniya
74.	*Rumex dentatus*	Polygonaceae	Jungle Palak
75.	*Sida acuta*	Malvaceae	Baraira
76.	*Solanum erinothum*	Solanceae	Aradu, Ban
77.	*Solanum indicum*	Solanaceae	Makoi
78.	*Solanum viarum*	Solanaceae	Jungle Begun
79.	*Syzygium cumini*	Myrtaceae	Jamun
80.	*Tephrosia purpurea*	Fabaceae	Nili
81.	*Terminalia chebula*	Combretaceae	Babera
82.	*Tribulus terrestris*	Zygophyllaceae	Gokhru
83.	*Trichodesma indicum*	Boraginaceae	Chota Kalpa
84.	*Tridax procumbens*	Asteraceae	Kamarmodi
85.	*Typha angustifolia*	Typhaceae	Patera
86.	*Urena lobata*	Malvaceae	Caesar Weed
87.	*Withania somnifera*	Solanceae	Asgandh
88.	*Xanthium stumarium*	Asteraceae	Chota Gokhru

Sr. No.	Botanical Name	Family	Common Name
89.	*Zizyphus nummularia*	Rhacnaceae	Beri
	GRASSES		
90.	*Apluda mutica*	Poaceae	Banjura grass
91.	*Aristida hystrix*	Poaceae	
92.	*Cenchrus echinatus*	Poaceae	Sandbur
93.	*Chloris barbata*	Poaceae	
94.	*Cymbopogon ornate*	Poaceae	Tikhadi
95.	*Cynodon dactylon*	Poaceae	Doob
96.	*Dactyloctenium aegyptium*	Poaceae	Crow foot grass
97.	*Digitaria ornate*	Poaceae	
98.	*Echinochloa colona*	Poaceae	Jungle Rice
99.	*Eragrostiella bifaria*	Poaceae	
100.	*Eragrostis ciliaris*	Poaceae	
101.	*Panicum tripheron*	Poaceae	
102.	*Saccharum spontaneum*	Poaceae	

There are some RF/PF has been reported from the study area i.e. within the 10 km radius of the proposed project, these are as follows:

1. Sadiopur PF
2. Garhibiran PF
3. Dummuwala PF
4. Ibarsaila PF
1. Bir Sandhai RF

The vegetation compositions of the terrestrial zones of RF/PF within the study area comprise, of Ficus rumphii, *Phyllanthus emblica, Musa balbisiana, Anthrocephalus cadamba, Melia azadirachta, Polyalthia longifolia, Alstonia scolaris, Carica papaya, Artocarpus heterophyllus, Zizyphus jujuba, Bombax ceiba, Albizzia lebbeck, Bauhinia purpurea, Delonix regia,* The other important terrestrial plants included *Cynodon dactylon, Hemarthia compressa, Vetiveria zizanoides, Phragmites karka, Saccharum spontaneum ,*

Acacia nilotica, Acacia catechu, Azadirachta indica, Dalbergia sissoo, Ficus religiosa, Ficus benghalensis, Mangifera indica, Syzygium cumini, Tamarindus indica, Tectona grandis, Zizyphus mauritiana, Salvadora indica, Prosopis cineraria, Cordia dichotoma, Morus alba, Capparis decidua, Psidium guajava. Some small tree species like *Careya arborea, Holarrhena antidysenterica, Mallotus philippinensis, Murraya exotica, Randia dumetorum, Wrightia tomentosa, Zizyphus mauritiana* etc were also present along the canal/River side within the study area.

The main shrub species comprise of *Adhatoda* sp., *Callicarpa macrophylla, Carissa opaca, Clerodendron viscosum, Colebrookia oppositifolia, Euphorbia royleana, Ixora* Sp., *Murraya* sp., *Woodfordia* sps., *Zizyphus* spp. Etc. The main climbers and grass comprise of the species *Acacia pinnata, Arundo donax, Bauhinia vahlii, Caesalpinia sepiaria, Cenchrus setigerus, Chrysopogon sp., Clematis gouriana, Cymbopogon martini, Dendrocalamus strictus, Dioscorea belophylla, Erianthus munja, Heteropogon contortus, Eulaliopsis binata, Ichnocarpus* Sp., *Millettia auriculata, Mimosa himalayana, Pueraria tuberosa, Saccharum spontaneum, Smilex* sp., *Vallaris solanacea, Vetiveria zizanioides* etc.

2.7.4.7. Wetland Diversity & Marsh Lands:

Wetlands are very useful to us. By producing resources, enabling recreational activities and controlling flood and pollution, they contribute to the national and local economies and environmental consequences. Wetlands provide important and incredible services to society, these services can neither be sold nor do they have the market value and tried to give wetlands an economic value.

Table 2.5: Wetland/Marshland Diversity of Study area

Family	Botanical Name	Local Name
Pteridaceae	*Adiantum capillus*	Maiden Hair Fern
Fabaceae	*Aeschynomene indica*	Phulan
Amaranthaceae	*Alternanthera philoxeroides*	Alligator Weed
Amaranthaceae	*Alternanthera sessilis*	Garundi
Myrsinaceae	*Anagallis arvensis*	Neel
Salviniaceae	*Azolla pinnata*	Mosquito Fern

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Family	Botanical Name	Local Name
Asteraceae	*Caesulia axillaris*	Maka
Ceratophyllaceae	*Ceratophyllum demersum*	Hornwort
Poaceae	*Chrysopogon zizanioides*	Vetiver
Poaceae	*Coix lacryma-jobi*	Adlay Millet
Araceae	*Colocasia esculenta*	Taro
Commelinaceae	*Commelina benghalensis*	Kana
Cyperaceae	*Cyperus alternifolius*	Umbrella Sedge
Dryopteridaceae	*Dryopteris filix-mas*	Fern
Dryopteridaceae	*Dryopteris sieboldii*	Fern
Poaceae	*Echinochloa colona*	Shama
Pontederiaceae	*Eichhornia crassipes*	Jal Kumbhi
Asteraceae	*Grangea maderaspatana*	Madras Carpet, Mustaru
Acanthaceae	*Hygrophila salicifolia*	---
Lemnaceae	*Lemna minor*	Duck Weed
Onagraceae	*Ludwigia adscendens*	Water Primrose
Marsileaceae	*Marsilea quadrifolia*	Four Leaf Clover
Sterculiaceae	*Melochia corchorifolia*	Bilpat
Nelumbonaceae	*Nelumbo nucifera*	Lotus, Kamal
Nymphaeaceae	*Nymphaea pubescens*	White Lotus
Oxalidaceae	*Oxalis corniculata*	Amrul
Urticaceae	*Pilea microphylla*	Gun Powder Plant
Polygonaceae	*Polygonum hydropiper*	Marsh Pepper Knot Weed
Portulacaceae	*Portulaca oleracea*	Little Hog Weed
Potamogetonaceae	*Potamogeton natans*	Floating Pond Weed
Lythraceae	*Trapa natans*	Water Chest Nut
Ranunculaceae	*Ranunculus sceleratus*	Aglaon
Polygonaceae	*Rumex dentatus*	Ambavati

Family	Botanical Name	Local Name
Typhaceae	*Typha angustata*	Patera
Hydrocharitaceae	*Vallisneria spiralis*	Tape Grass
Lentibulariaceae	*Utricularia gibba*	Floating Bladderwort
Plantaginaceae	*Veronica anagallis-aquatica*	Water Speedwell

2.8 FAUNAL DIVERSITY

To prepare a detailed report on the status of wildlife biodiversity within 10 km radial area from the project site to assess the impacts due to the project activity and evolve suitable mitigation measures to protect and conserve wildlife biodiversity following components were studied:

a) Wildlife Survey (Diversity)

b) Habitat Study (Feeding, Breeding and Roosting areas)

c) Distribution/Status of Birds

d) Rare & Endangered species of Fauna

e) Specific local characteristics of biodiversity in the study area.

2.8.1. Methodology for Faunal Diversity:

A linear transect of 1.0 km each was chosen for sampling at each site. Each transect was trekked for 1.5 hr for the sampling of faunal diversity through following methods for different categories. For the sampling of butterflies, the standard 'Pollard Walk' method was employed and all the species recorded daily. Voucher specimens of the species that could not be identified in the field were collected using a butterfly net besides photographing them.

For bird's sampling, 'Point Sampling' along the fixed transect (Foot trails) was carried out. All the species of birds were observed through a binocular and identified with the help of field guide book and photographs.

For the sampling of mammals, direct count on open width (20m) transect was used. In addition, information on recent sightings/records of mammals by the villagers/locals was also collected. For carnivores, indirect sampling was carried out and the mammals were

identified by foot marks, faeces and other marks/sign created by them. In case of reptiles mainly lizards were sampled by direct count on open width transects.

The study of fauna takes substantial amount of time to understand the specific faunal characteristic of area. The assessment of fauna has been done by extensive field survey of the area. During survey, the presence of wildlife was also inhabitants depending on animal sightings and the frequency of their visits in the project area which was later confirmed from forest department, Wildlife Department etc.

Table 2.6: Faunal Diversity from Study Area

S. No.	English Name	Scientific Name	Status/Schedule
		Mammals	
1.	Indian Hare	*Lepus nigricollis*	Schedule-IV
2.	Little Indian field mouse	*Mus booduga*	Schedule-V
3.	Nilgai	*Boselaphus tragocamelus*	Schedule-III
4.	Jungle Cat	*Felis catus*	Schedule-II
5.	Monkey	*Macaca mulata*	Schedule-II
6.	Black Rat	*Rattus rattus*	Schedule-V
7.	Bat	*Rousettus leschenaultia*	Schedule-V
8.	Common Langur	*Semnopithecus entellus*	Schedule-II
9.	Common Mangoose	*Herpestes edwardsii*	Schedule-II
10.	Five Striped Palm Squirrel	*Funambulus pennanii*	Schedule-IV
11.	Hare	*Lepus nigrigolis*	Schedule-IV
		Amphibians	
1.	Indian pond frog	*Rana hexadactyla*	Schedule-IV
2.	Common Indian Toad	*Duttaphrynus melanostictus*	Not Listed
3.	Indian Bull Frog	*Hoplobatrachus tigerinus*	Schedule-IV
4.	Indian Skipper Frog	*Euphlyctis cyanophlyctis*	Schedule-IV
5.	Marble Toad	*Bufo stomaticus*	Not Listed
		Reptiles	
1.	House gecko	*Hemidactylus flaviviridis*	Common
2.	Common garden lizard	*Calotes versicolor*	Common
3.	Brahminy skink	*Mabuya carinata*	Common
4.	Indian Cobra	*Naja naja*	Schedule II
5.	Rat Snake	*Ptyas mucosa*	Schedule-IV
6.	Fawn Throated Lizard	*Sitana ponticeriana*	Not Listed
		Butterflies	
1.	White orange tip	*Ixias marianne*	Common
2.	Lime butterfly	*Papilio demoleus*	Common
3.	Common crow	*Euploea core*	Common
4.	Common map	*Cyrestis thyodamas*	Common

S. No.	English Name	Scientific Name	Status/Schedule
5.	Common mormon	*Papilio polytes*	Common
6.	Common Grass Yellow	*Eurema hecabe*	Fairly Common
7.	Stripped Tiger	*Danaus genutia*	Common
8.	Danaid Egg Fly	*Hypolimnas misippus*	Common
9.	Common Bush Brown	*Mycalesis perseus*	Common
	Aves		
1.	House Crow	*Corvus splendens*	Schedule-V
2.	Rock Pigeon	*Columba livia*	Common
3.	Grey francolin	*Francolinus pondicerianus*	Least Concern
4.	Jungle babbler	*Turdoides striatus*	Schedule-IV
5.	Common Myna	*Acridotheres tristis*	Schedule-IV
6.	Green bee-eater	*Merops orientalis*	Least Concern
7.	Indian roller	*Coracias benghalensis*	Schedule IV
8.	Black Drongo	*Dicrurus macrocercus*	Schedule IV
9.	Little cormorant	*Microcarbo niger*	Schedule-IV
10.	Common swift	*Apus apus*	Schedule-IV
11.	House swift	*Apus affinis*	Schedule-IV
12.	Shikra	*Accipiter badius*	Schedule-IV
13.	Cattle Egret	*Bubulcus ibis*	Schedule-IV
14.	Little Egret	*Egretta garzetta*	Schedule-IV
15.	Pond heron	*Ardeola grayii*	Schedule-IV
16.	Red wattled lapwing	*Vanellus indicus*	Schedule-IV
17.	Black Ibis	*Pseudibis papillosa*	Schedule-IV
18.	Ring dove	*Streptopelia decaocto*	Schedule-IV
19.	Spotted Dove	*Streptopelia chinensis*	Schedule-IV
20.	White Breasted Kingfisher	*Halcyon smyrnensis*	Schedule IV
21.	Blue Cheeked Bee Eater	*Merops persicus*	Schedule-IV
22.	Asian Koel	*Eudynamys scolopacea*	Schedule-IV
23	Drongo Cuckoo	*Surniculus lugubris*	Schedule-IV
24.	Red Jungle Fowl	*Gallus gallus*	Schedule-IV
25.	White breasted water hen	*Amaurornis phoenicurus*	Schedule-IV
26.	Common Moorhen	*Gallinula chloropus*	Schedule-IV
27.	Raven	*Corvus corax*	Schedule-IV
28	Tree Pie	*Dendrocitta vagabunda*	Schedule-IV
29.	Indian Robin	*Saxicoloides fulicata*	Schedule-IV
30.	Pied Bush Chat	*Saxicola caprata*	Schedule-IV
31.	Purple Sun Bird	*Nectarinia asiatica*	Schedule-IV
32.	Small Sun Bird	*Nectarinia minima*	Schedule-IV
33.	House Sparrow	*Passer domesticus*	Schedule-IV
34.	Grey Tit	*Parus major*	Schedule IV
35.	Red Vented Bulbul	*Pycnonotus cafer*	Schedule-IV

S. No.	English Name	Scientific Name	Status/Schedule
36.	Bank Myna	*Acridotheres ginginianus*	Schedule-IV
37.	Common Babbler	*Turdoides caudatus*	Schedule-IV
38.	Tailor Bird	*Orthotomus sutorius*	Schedule-IV
39.	Rose Ringed Parakeet	*Psittacula krameri*	Schedule-IV
40.	Baya	*Ploceus philippinus*	Schedule-IV
41.	Owl	*Bubo bubo*	Schedule-IV
42.	Indian peafowl	*Pavo cristatus*	Schedule-I
		Pisces	
1.	Rohu	*Labeo rohita*	Least Concern
2.	Katla	*Catla catla*	Least Concern
3.	Calbasu	*Labeo calbasu*	Least Concern
4.	Cat fish	*Mystus cavasius*	Least Concern
5.	Musquito fish	*Gambusia affinis*	Least Concern
6.	Black Fish	*Barbus chilinoides*	Least Concern
7.	Singi	*Clarias batrachus*	Least Concern
8.	Bronze Feather Back	*Notopterus notopterus*	Least Concern
9.	Ganges River Gizzard Shad	*Gonialosa manmina*	Least Concern
10.	hilsa	*Tenualosa ilisha*	Not Listed
11.	Chellnah	*Aspidoparia morar*	Least Concern
12.	Barna Baril	*Barilius barna*	Least Concern
13.	Chaguni	*Chagunius chagunio*	Least Concern
14.	Common Carp	*Cyprinus carpio*	Least Concern
15.	Reba Carp	*Cirrhinus reba*	Least Concern
16.	Sind Danio	*Danio devario*	Least Concern
17.	Kharsa, Butter	*Labeo angra*	Least Concern
18.	Bata	*Labeo bata*	Least Concern
19.	Boga Bata	*Labeo boga*	Least Concern
20.	Kuri, Khursa	*Labeo gonius*	Least Concern
21.	Swamp Barb	*Puntius chola*	Least Concern

Reference: For Avifauna: The book of Indian Birds by Salim Ali
For Amphibians: Atlas of amphibians, Published by Zoological Survey of India, Kolkata

2.8.2. Endangered Species:

As per list of **The Indian Wildlife (Protection) Act, 1972,** Fauna coming under the **schedule -** I is treated as endangered species. As per reconnaissance survey only one species i.e. *Pavo cristatus* **schedule** - I faunal species have been reported from the project site. Although some schedule-II species have been reported during the site survey, which

are very common species and found in every locality, even in villages, certain steps should be taken to conserve the critical wild life:

I. Programs for the conservation of wildlife will be formulated and implemented outside the protected areas by educating the local communities with help of local public agencies, and other stakeholders including the environment division officers of our company, in order to reduce the scope of man-animal conflict.

II. It will be ensured that human activities on the fringe of the protected areas do not degrade the habitat.

Over all, the status of wildlife in a region is an accurate index of the state of ecological resources, and thus, of the natural resources base of human well being.

2.9 AQUATIC DIVERSITY

2.9.1. Methodology for Aquatic Diversity

The samples for qualitative and quantitative analysis of planktons were collected from the sub surface layer at knee depth. Water samples were filtered through plankton net of 20µ mesh size (APEA, 1971). The filtered samples were concentrated by using the centrifuge. By using Lackey's drops method and light microscope (Lackey, 1938), the qualitative analysis was carried out for phytoplankton and zooplankton (Table 2.7). The standard flora and other literature were followed for the qualitative evaluation of Plankton.

Table 2.7: List of Phytoplankton & Zooplanktons from Study Area

PHYTOPLANKTON	ZOOPLANKTONS
CHLOROPHYCEAE	**PROTOZOA**
Ankistrodesmus falcatus	*Paramecium caudatum*
Chlorella vulgaris	*Vorticella campanula*
Chlorococcum infusionum	**CLADOCERA**
Cladophora fracta	*Alona rectangula*
Cosmarium tenue	*Bosmina longirostris*
Closterium Sp.	*Daphnia carinata*
Hydrodictyon reticulatum	**COPEPODA**
Pediastrum simplex	*Cyclops bicuspidatus*
Ulothrix	*Macrocylops albidus*
Spirogyra condensata	**ROTIFERA**
EUGLENOPHYCEAE	*Asplanchna intermedia*
Euglena acus	*Brachionus falcatus*
Phacus caudatus	*Filinia longiseta*

PHYTOPLANKTON	ZOOPLANKTONS
BACILLARIOPHYCEAE	*Keratella tropica*
Cyclotella meneghiniana	*Philodina citrina*
Synedra ulna	*Polyarthra Sp.*
CYANOPHYCEAE	**MACROBENTHOS – MOLLUSCA**
Anabaena fertilissima	*Pila*
Nostoc Sp.	*Bellamya Sp.*
Oscillatoria chorina	*Gyraulus*
Phormidium calciola	

CHAPTER-3: WILDLIFE CONSERVATION PLAN

Biodiversity management is considered as a difficult task as it refers to diversity at all levels like genetic, species and community. The implementation of biodiversity conservation strategy is a challenging job especially in North India. The area is predominated with various Schedule/tribal populations, which consider themselves as an integral part of the forest ecosystem. The formulation of a biodiversity management and wildlife conservation plan for a developmental Project is one of the steps towards the environment conservation. Human activities like agricultural expansion, road construction, urbanization, and other developmental/Mining activities are supposed to be major threats to biodiversity and wildlife. therefore, the most effective and efficient mechanisms for conserving biodiversity is to prevent further destruction of degradation of habitats.

The destruction of habitats is the primary reason for the loss of biodiversity in terrestrial and aquatic ecosystems. Habitat loss could be attributed to conversion, habitat degradation and fragmentation. When people cut down trees, fill a wetland, plough grassland or burn a forest, the natural habitat of a species is changed or destroyed. Introduction of invasive species may cause disappearance of native species through biotic interactions. Invasive species are considered second only to habitat destruction as a major cause of extinction of species. Communities are affected by natural disturbances, such as fire, tree fall, and defoliation by insects. Man-made disturbances differ from natural disturbances in intensity, rate and spatial extent. For example, man by using fire more frequently may change species richness of a community. Exploitation, including hunting, collecting, fisheries and fisheries by-catch, and the impacts of trade in species and species' parts, constitute a major threat for globally threatened birds (30% of all), mammals (33% of all), amphibians (6% of those assessed), reptiles and marine fishes (Baillie et al. 2004). Trade affects 13% of both threatened birds and mammals. Extinction is a natural process. Species have disappeared and new ones have evolved to take their place over the long geological history of the earth.

1.1 STATUS OF BIODIVERSITY IN THE SURROUNDING

The terrestrial flora of the study area i.e. buffer zone (10 km radial distance) from the project site can be categorized as agriculture vegetation, social forestry plantation, Agro-forestry plantation and natural/forest vegetation. No endangered or endemic flora was

recorded from the core and buffer zone of the project area. No Wildlife Sanctuary/National Park is situated within the 10 km radius of the proposed project site.

Endangered species present within the study area are listed in Table 3.1. It was observed that out of 94 species only one species i.e. Peafowl listed in the Schedule I with 5 species of Schedule II, under the Wildlife Protection Act, 1972 and Near Threatened, Vulnerable, Endangered & Critically Endangered categories of IUCN 3.1.

Table -3.1: Schedule-I Species observed within 10 Km Study area

Species		Schedule
AVES		
1.	*Pavo cristatus*	Schedule-I

Table -3.2: Schedule-II Species observed within 10 Km Study area

Species		Schedule
REPTILE		
1.	*Naja naja* (Indian cobra)	Schedule-II
MAMMALS		
1.	*Semnopithecus entellus* (Langur)	Schedule-II
2.	*Macaca mulatta* (Monkey)	Schedule-II
3.	*Herpestes edwardsii* (Common mongoose)	Schedule-II
4.	*Felis chaus* (Jungle cat)	Schedule-II

1.2 SCHEDULE-I SPECIES

Biodiversity conservation plan is developed with the aim to reduce adverse impact on the natural habitat of various wild animals. Day by day issues related to threats to natural terrestrial and aquatic ecosystems arises due to high anthropogenic activities and loss of natural habitat due to climate change. A conservation plan is needed for the conservation of critical habitats of wildlife for endangered and schedule-I species along with their scientific management strategy. During the industrial/mining and construction activities, natural resources (land, Biodiversity, Forest, Animals and Humans) are likely to exert tremendous pressure due to various activities in the respective region, while the present management plan will ensure mitigation of such impacts. A separate Wildlife conservation Plan has been prepared for proposed Formaldehyde Manufacturing unit over an area of 0.61 ha at Village Shezadpur, Tehsil Jagadhri Distt. Yamuna Nagar, Haryana.

Some general behavior and biology of encountered schedule-I species are discussed below which help in making the conservation and management plan success fully.

3.2.1 INDIAN PEAFOWL:

Conservation status:

The Indian Peafowl is listed as Least Concern species in the Red List of International Union for Conservation of Nature (BirdLife International 2008), probably owing to its widespread distribution, occurrence of locally abundant semi-feral populations, and protection from people on religious grounds. In India, it is given the utmost protection by inclusion in the Schedule I of Indian Wildlife Act, 1972. Although the train feathers of the Indian Peafowl are traded for various reasons, it is not included on any Appendix of the Convention on International Trade of Endangered Species perhaps on the claim that these feathers are naturally fallen ones during annual molt of the species, and also that the scale of trade across international border is still to be understood.

Threats:

The Indian Peafowl is under threat from various quarters that include the demand for feathers and wild meat, conflict with farmers during cropping season, increased use of chemical fertilizers and pesticides, and habitat degradation. Other threats include habitat degradation and loss - more significantly from conversion of their habitat to agriculture, habitation and Mining/Industrial growth, poisoning to counter crop damage, consumption of eggs and fat extracts for alleged medicinal values, and killing for wild meat (del Hoyo *et. al.*, 1994; Chakkaravarthy 2002). Although these threats are believed to be causing an alarming decline in populations, the magnitude and pattern of the effects in different parts of the country are yet to be quantified.

Conservation Measures:

It is critical that urgent efforts are made to understand the habitat and population status of the species through field based research and *in situ* conservation projects. A meeting of the Indian Board for Wild Life (held on 19 June 2006) underlined the need for such efforts. The actions required are:

1) Mapping of habitat and distribution status of the species across the country, inside and outside protected areas;
2) Time series analysis of habitat change to quantify the rate of change and identify high-risk areas and potential sites for further affirmative action;
3) Estimation of population size by established count methods such as line transect, call counts and roost counts;
4) Intensive ecological investigations in representative sites in major biogeographic zones with focus on the effects of threats in relation to breeding success and survival probability;
5) Quantification of trade, with details on source and people involved; and

Undertaking outreach activities to sensitize local communities, which may be carried out by a network of 'student clubs' (e.g. National Green Corps) throughout the country. These people could be trained to collect population data and undertake monitoring within their localities, and the reliability of the results could be ensured by adopting rigorous protocols.

3.2.2 SCHEDULE-II SPECIES

3.2.2.1 Jungle Cat (*Felis chaus*):

Population:

Jungle Cat remains probably the most common cat species in South Asia (India, Nepal, Bangladesh), where the majority of the global population occurs and despite likely extensive declines in mainland Southeast Asia, where the species is now extremely scarce and largely restricted to remote lowland deciduous dipterocarp forest.

In India, there is evidence of continued, and likely accelerating, habitat loss and ongoing poaching for both skins and, potentially, as a result of conflict with farmers. The Jungle Cat's preference for habitat is open scrub and grassland. The majority of the suitable Indian habitat is classified as 'wasteland' which legally eases conversion into any other form of uses particularly industrialization and urbanization – the latter has been identified as a particular threat in India given the pace of urbanization of agricultural and unprotected forest areas.

Habitat & Ecology:

The Jungle Cat, despite its name, is not strongly associated with the classic rainforest "jungle" habitat, but rather with wetlands - habitats with water and dense vegetative cover, especially reed swamps, marsh, and littoral and riparian environments - scrubland, and deciduous dipterocarp forest. Water and dense ground cover can be found in a variety of habitats, ranging from desert (where it is found near oases or along riverbeds) to grassland, shrubby woodland and dry deciduous forest, as well as cleared areas in moist forest.

Major Threats:

The biggest threat to Jungle Cat is habitat loss particularly industrialization and urbanization of low intensity agricultural areas and scrubland in the Indian subcontinent. Habitat destruction for agricultural purposes and infrastructure development are also major issues. Unselective trapping, snaring and poisoning around agricultural and settled areas have caused population declines in many areas throughout its range. India formerly exported large numbers of Jungle Cat skins before the species came under legal protection (over 300,000 were declared as being held by traders there when export was banned in 1979).

Conservation Action:

The Jungle Cat is listed on CITES Appendix II. It is protected from hunting in some range states (India), but in many it receives no legal protection outside protected areas. The Indian Wildlife Protection Act. (1972) prohibits hunting of all wildlife and lists the Indian Fox in Schedule II. However, no hunting of any wildlife is permitted under the current legal system in India. The ecology and status of the Jungle Cat is poorly known.

3.2.2.2 Common Mongoose (*Herpestes edwardsii*):

Population:

Indian Grey Mongoose is mostly common, often abundant, in suitable habitat throughout its main range, but it is relatively rare in North-east India. One study in central India, where the species is common, found its abundance even decreased moving from human settlement towards undisturbed forests.

Habitat & Ecology:

Although it is a common semi-synanthropic species, the natural history of Indian Grey Mungoose is little studied. It has been recorded in disturbed (even urban) areas, in dry secondary forests, and thorn forests, in central India during 2002-2003, saw it near refuse bins and dumps, scavenging on carrion, and on roads. This species feeds on a wide variety of animal food including insects and snakes.

Major Threats:

Indian Grey Mongoose has no range-wide threats sufficient to drive significant population declines. It is likely that in some areas the levels of harvest are sufficient to reduce local densities. Over recent centuries the species has probably benefited from conversion of closed evergreen forest.

Conservation Action:

The Indian Grey Mongoose is listed on CITES Appendix III by India. It is listed in Schedule II of the Wildlife (Protection) Act (1972) in India. In central India people consider the mongoose to be sacred and thus it is not killed there. This species is found in numerous protected areas. Populations are not quantitatively monitored in any country; but the species remains widely and commonly seen in human dominated areas, indicating a lack of significant ongoing threats and no need for separate conservation action.

3.2.2.3 Langur (***Presbytis entellus***):

Population:

The total population of this species is unknown. Most of the populations occupy human-dominated landscapes, with very few actually occurring in forested areas. Conflict with humans is a major cause of concern and predicted declines are based on this.

Habitat & Ecology:

Gray langurs are diurnal. They sleep during the night in trees but also on man-made structures like towers and electric poles when in human settlements. When resting in trees, they generally prefer the highest branches.

Ungulates like bovine and deer will eat food dropped by foraging langurs. Langurs are preyed upon by leopards, dholes and tigers. Wolves, jackals and pythons may also prey on langurs.

Major Threats:

Major threats for this species are: intensive agriculture, habitat loss, man-animal conflict, and fires. Hunting for food by newly settled human populations in Andhra Pradesh and Orissa is very rampant and many populations are affected locally.

Conservation Action:

The Jungle Cat is listed on CITES Appendix II. Langur feature on Part II of Schedule II of the Wildlife Protection Act (1972) of India and are afforded the least legal protection. However, no hunting of any wildlife is permitted under the current legal system in India.

3.2.2.4 **Monkey (*Macaca mulutta*):**

Population:

It occurs to the north of the Krishna River in central and eastern India and to the north of the lower Tapi River in western India, north into Afghanistan, Nepal, Sikkim, Bhutan, and northeast into China. There are introduced populations (mostly not mapped) in areas within this region as well as outside it, for instance south of the Krishna River in India.

Habitat & Ecology:

This species is diurnal and omnivorous, and alternatively arboreal and terrestrial. It resides in a range of habitats, including temperate coniferous, moist and dry deciduous, bamboo, and mixed forests, mangroves, scrub, rainforest, and around human habitations and developments, including cultivated areas, temples, and roadsides.

Macaca mulatta lives in a wide range of habitats, and shows a great deal of adaptability. Some populations live in flatlands, while others, in northern India and Pakistan, live in the Himalayas at elevations up to 3,000 m. These primates are able to acclimate to a variety of climatic extremes, from the hot, dry temperatures found in deserts, to cold winter temperatures which fall to well below the freezing point.

In addition to living in the wilderness, some populations of *M. mulatta* have become accustomed to living alongside humans. Occasionally, small groups can be found living in the densely populated urban areas of northern India. Groups of rhesus monkeys that become used to living in areas occupied by people usually search out other human-populated areas if people attempt to relocate them away from civilization.

Major Threats:

This species is generally unthreatened, though its original habitat is increasingly being lost to development. While *M. mulatta* exists easily around humans, the increasing level of cohabitation has been associated with waning levels of human tolerance for the animals. Confiscation for laboratory testing is a mostly localized threat, but it is considerable in certain areas. Capture and release of laboratory and "problem monkeys" from rural and urban areas into natural forests is a major threat to wild macaques.

Conservation Action:

The species is included in CITES Appendix I (in India). Monkeys feature on Part II of Schedule II of the Wildlife Protection Act (1972) of India and are afforded the least legal protection. However, no hunting of any wildlife is permitted under the current legal system in India.

3.2.2.5 Indian cobra (*Naja naja*):

Description:

The Indian cobra (*Naja naja*) also known as the spectacled cobra, Asian cobra, or binocellate cobra is a species of the genus *Naja* found in the India, Pakistan, Bangladesh, Sri Lanka, Nepal, and Bhutan, and a member of the "big four" species that inflict the most snakebites on humans in India. This snake is revered in Indian mythology and culture, and is often seen with snake charmers. It is now protected in India under the *Indian Wildlife Protection Act* (1972).

Habitat & Ecology:

The Indian cobra is native to the Indian subcontinent and can be found throughout India, Pakistan, Sri Lanka, Bangladesh, and southern Nepal. In India, it may

or may not occur in the state of Assam, some parts of Kashmir, and it does not occur in high altitudes of over 2,000 metres (6,600 ft) and extreme desert regions.

The Indian Cobra inhabits a wide range of habitats throughout its geographical range. It can be found in dense or open forests, plains, agricultural lands (rice paddy fields, wheat crops), rocky terrain, wetlands, and it can even be found in heavily populated urban areas such as villages and city outskirts. This species is absent from true desert regions. The Indian cobra is often found in the vicinity of water. Preferred hiding locations are holes in embankments, tree hollows, termite mounds, rock piles and small mammal dens.

Major Threat:

The Indian cobra is not considered an endangered species, but there are some threats to the species. These include killing them out of fear or for human consumption and road kill. The Indian cobra is also the snake used by Indian snake charmers. Its toxic venom is also necessary in the production of anti-venom and other research including pain-killers and anti-cancer drugs, some of it harvested illegally in regions of India and other countries within its range.

They are also hunted for their skin bearing the distinctive hood markings which is then used in the leather industry. The Indian cobra is one of the many venomous snakes exploited for making traditional Chinese medicines and also snake vine. The species is listed in CITES because it closely resembles other threatened species. The species is also protected in India under the Indian Wildlife Protection Act (1972).

CHAPTER-4: ACTION PLAN AND FINANCIAL PROJECTION FOR CONSERVATION PLAN

4.1 Introduction

Protected areas and threatened species could most effectively be safeguarded if local people considered it in their own interest to do so. Working with rather than against local people has become a major working principle for IUCN. For the protection of habitat sensitive wildlife and other living form need proper action plan and budgetary allocation which will be a roadmap for the success of conservation scheme.

4.2 Conservation Plan for fauna requires knowledge on:

1. Home range of the animal
2. Territorial requirement of the animal
3. Deciding the number of animals to be conserved and accordingly evaluating the carrying capacity of the habitat
4. Conservation is aimed at single species or multiple species
5. Conservation is proposed in a managed ecosystem or an un-managed, natural ecosystem.
6. However, very little knowledge exists on the above parameters of most of the animals.

4.3 Reasons for decline of wildlife:

Several reasons for the decline of wild life and methods for their conservation are proposed. However, the best method for the conservation of wild life is related directly to the maintenance of ecosystems in their natural condition, allowing their natural development and protection to the wildlife and their habitat. Both these phenomena (ecosystem development and habitat protection) are related to anthropogenic factors. Some of the important anthropogenic factors are listed below:

I. Habitat fragmentation and destruction
II. Man-animal conflict
III. Forest fire
IV. Poaching
V. Stake-holders dependence on forest resources

VI. Creating awareness amongst forest stake holders

To the above-mentioned factors may be added a non-anthropogenic but important factor:

VII. Water scarcity

4.4 Action Plan

4.4.1 Non-Formal Education

Conservation education and awareness would be imparted both at the formal and non-formal levels. At the formal level, it would be given at school, colleges and university levels. Formal education, in spite of all the curriculum development and introduction of the study of ecology, wildlife and conservation at the school and college levels, however, largely remains text book and examination oriented. Because of the situation, non-formal education becomes all the more necessary for creating the right kind of awareness and attitude among people at all levels- children, teenagers, adults, family groups, teachers, administrators, politicians and policymakers. To achieve this some local tours of school and college students would be arranged to nearby National Parks.

4.2.2 Institutional Infrastructure

The prime requisite for building up an understanding and awareness about wildlife and conservation is to develop an appreciation, respect and love for nature. Most people lack the curiosity to know even the names of animals and plants they come across in their day-to-day life. Development of an inquisitive mind, a keen sense of observation and curiosity about the fauna and flora are, therefore, very important. Concern for conservation can only emanate from a love for nature and awareness about the interdependence of all species of animals and plants, including the man. To arouse curiosity about the wildlife in the young mind some quiz and essay competitions would be arranged in the schools and colleges of the buffer zone and some nearby areas.

4.2.3 Indian Tradition of Conservation

The theme of conservation, wildlife and reverence for life is reflected in some of the exquisite images in Indian art paintings, sculpture, architecture and decorative art. The most wide-ranging wild life imagery is found in Indian miniature paintings. Early literatures like the *Panchatantra* and *Hitopadesha* contain animal fables that have been

used to preach both wisdom and morals. The long term tradition and abiding faith in conservation of nature is vividly seen in recent times also like the Chipko and Appiko movements. These conservation themes would be popularized through pamphlets and posters.

4.2.4 Role of the Individual

Each individual should develop a personal ethic towards nature and wildlife which could pave the way for commitment and conviction not to destroy wildlife particularly that of not considering hunting as a sport, nor to use products made out of skins or other parts of endangered animals. Unless these products are boycotted by their users, the clandestine killing and poaching of wildlife at the hands of unscrupulous people would continue. Everyone can play important role in spreading the message of conservation among their friends, family and community at the large.

4.2.5 Eco-Development Works

People in and around the forest area generally are hostile against the forest department and its staff, because they are prevented from taking out timber and other forest products illegally. Such antagonistic behaviour arises mainly because little effort is made to meet their genuine demands either from outside the forest area or from the forest area but in a sustainable manner. Regular interaction with them with agreement for sustainable utilization of forest resources combined with some incentives can completely change their indifferent or even un-concerned attitude to conservative attitude.

4.2.6 Checks and control on the Movement of Vehicle

Due to movement of vehicles, animals might get injured. For this reason, speed limit of vehicles would be fixed and operators would be educated and advised regularly to drive vehicle safely and slowly. All operators would also be advised to stop the vehicle on seeing such animals and let it go away before moving the vehicle further.

4.2.7 Pressure horn

Noise generated by pressure horn disturbs the wild life and forces them to leave the place. No pressure horn would be fixed on vehicle plying in these industries. All the drivers would be advised to make minimum use of horn while working in industry.

4.2.8 Vehicles head lights

Efforts would be made to cover the lights suitably with paint so that strong beam of head light is not formed and light falls in front of the vehicle only.

4.2.9 People Participation

With the help of the local people and employees of the Company, watch would be kept on the wild life as well as illegal tree felling. A Forest and a police department would be informed if such incident occurs, to take legal action against the offenders. For this they would be trained for motivation.

4.2.10 Encourage local villagers to grow trees on their on their field bounds/court yards

In consultation with the Forest Department, the company would provide some finance, to grow saplings of tree species, having importance for wood, small timber and fuel wood to distribute to the villagers. Bamboo would be another important species with a lot of environmental and economic value. This no doubt would help reduce dependence of people on RF forest; as a result the ecological condition of the area would improve so the wild life would be attracted to this area.

4.2.11 Reducing Environmental Pollution

To keep the environment frees from smoke, cooking gas cylinders would be provided to all the workers.

4.2.12 Provide employment to the villagers

On the basis of their suitability, jobs in the plant would be provided to the nearby villagers. As a result, their economic condition would improve. This would keep them busy so that they would not be tempted/compelled to cause destruction to forest which would help improve the status of wild life in the zone of influence of proposed project.

4.3 Reclamation and Habitat Restoration

4.3.1 Green Belt Development

A green belt will be developed along the boundary of the proposed plant. The area for green belt plantation consists of undisturbed soil; hence plantation can be made in any garden or along periphery of the plant. Green belt will be erected not from biodiversity or conservation point of view, but is basically developed as a screen to check the spread of

dust pollution. A green belt, 2m in width will be developed on the periphery of the project site. Green belt plantation will be started with the onset of the operation of plant and will be completed within the time.

Following precaution will be taken:

- Seedlings of only local species, suitable for green belt plantation will be considered.
- All the representative plant species of the region are found to grow in and around the study site.
- Care will be provided against grazing and browsing.
- Timely watering during the initial stages of survival and provisions for the allocation of funds will be made as well.
- During the running of plant, flora will be regenerated in different stages and the area having matured afforestation will be properly fenced so as to avoid cutting, browsing and hacking of branches and pruning of trees
- Awareness will be created among villagers residing on the periphery of the plant regarding the use of plantations.
- Plantation of indigenous species, fodder and fruit bearing tree species which can also act as habitats for wild life will be carried out.
- Plantation of fruits bearing trees is attracting wildlife population.

4.3.2 Plantation in the Buffer zone

Trees are being planted in the buffer zone also. This plantation will be done at selected places only and only local species will be used in the plantation. Plantation of such tree species is ensuring provision for food to the herbivores, which in turn would be the food source for the carnivores. Water, particularly during drier seasons, becomes the most important factor to all types of wild animals including the mammals, birds and reptiles. If water is available safely, then all other factors become secondary for the presence and survival of the wild life in any forested area. Places suitable for mini watersheds will be identified in the core as well as in the buffer zone to store rainwater. Further, to make water available at all the times, throughout the year, some of these water holes will be recharged through artificial means. Proper slope will be given to approach these water sources so that the wild animals would be able to drink water without any difficulty. Proper

cover through vegetation or any other type of even artificial cover will be developed near these water sources so that the prey species would be able to hide themselves from the predators, at the time of approaching the water sources. To attract the birds, plants yielding food to the birds will be planted on priority basis. If water and food are available to the birds without any anthropogenic disturbances the area can become an ideal place for bird watching.

4.3.3 Plantation Programme

The tree plantation will he made all a'ong the industry approach roads surrounding the site services and road sides.

The survival rate will be 80%. The dead plants will be replaced by fresh plants in next year and 20% as replacement from second year.

The total project area is 0.6430 Ha, out of which, 33% should be maintained under greenbelt, i.e., 0.21 Ha should be under green cover within plant boundary. As per MoEF&CC Guidelines, number of plants per hectare within the green belt should not be less than 1500. In line with such guidelines, the number of plants has been calculated as 315 for 0.21 ha area. Based on the local land quality and climatic conditions, annual 20% mortality in the plantation has been observed. The same number of plants is being replaced annually to compensate the mortality.

As per the guideline, local mortality rate has been calculated and given in the table below.

Irrigation and proper protection measures will be provided by project proponent in order to sustain the plantation.

4.4 Financial Projection

Rs. 3.00 Lakh has been allocated towards conservation of scheduled fauna in the area for the implementation of conservation proposal. An effective conservation plan will help in proper management of habitat of such ecologically and nationally significant species. Implementation of conservation plan should he step by step in described formaL **M/s Om Chem** will allocate budget in assistance with the forest department, Yamuna Nagar, Haryana.

Table-4.2: Financial Projection for Wildlife Conservation

S. No.	Component	Budget in Rs (Lakh)
1	Planting of trees groves in surrounding area and Promotion of agro forest in villages planting fruits trees	1.0
2	Artificial nests, feeding and watering arrangement for Peafowl	0.7
3	Workshops, Training and awareness programs	0.7
4	Water supply	0.6
Total		3.00

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M/s OM CHEM

Manufacturer of Formaldehyde

Om chem

UNDERTAKING

I, **Mr. AbhishekGarg (Partner)**, of **M/s Om Chem**, located at Kurali, Sabapur Road, Tehsil Bilaspur, Distt. Yamuna Nagar Haryana is proposing Capacity Expansion of Formaldehyde Manufacturing Unit in Existing Facility from 100 TPD to 200 TPD, hereby solemnly affirm an undertaking as stated herein:

1) That a solid and hazardous waste generated from the project will be disposed at the TSDF site and sold to the authorized recycler respectively. Memorandum of Understanding will be signed after the grant of EC and before the starting of project for the same.

What is situated herein is true to the best of my knowledge and the same I believed to be true.

For OM CHEM
PR
M/s Om Chem

Village - Kurali, Sabapur Road, PO Fatehgarh Thumb, Bilaspur,
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M/s OM CHEM

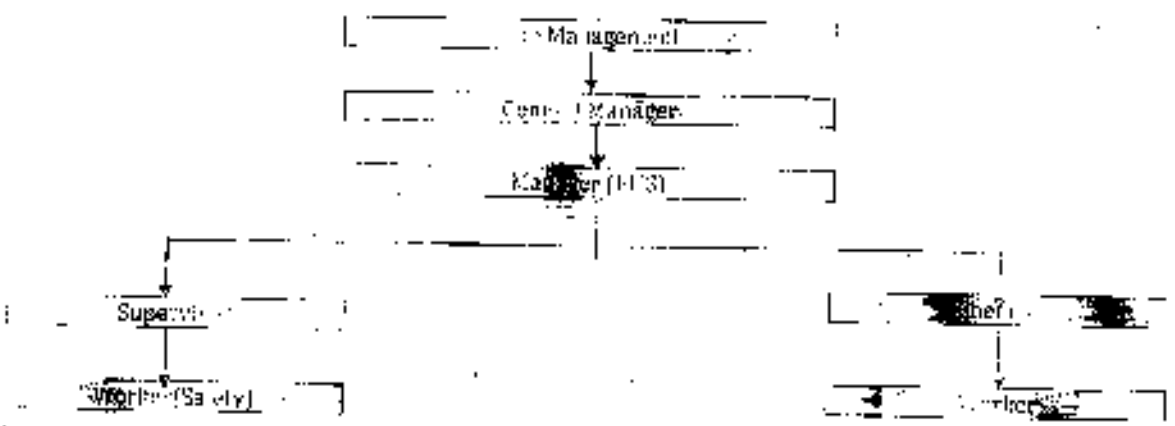
Manufacturer of Formaldehyde

Om chem

ENVIRONMENT MANAGEMENT POLICY

Mr.Abhishek Garg, partner of M/s Om Chem having vast experience in Industrial Management, acknowledge its responsibility to manage the environment issues associated with Capacity Expension of Formaldehyde Manufacturing Unit in Existing Facility from 100 TPD to 200 TPD at V.P.O. Kurali Dist. Yamunanagar, Haryana.

The company is very much oblivious of its responsibility in protecting the Environment. Regular monitoring has thus, been provided. The Company has a well defined policy to keep the Environment Clean. The company has decided that all effective steps shall be taken to prevent deterioration of the existing environment. They have formed an Environment Committee committed for this cause. The committee will consist of following persons as given in.



Environment Management Co..

The main aim under the said policy are to:

- Effectively manage, monitor, improve and communicate the environmental performance.
- Take all reasonable steps to prevent pollution.
- Set realistic and measurable objectives and targets for continual improvement of the environmental performance.

Village - Kurali, Subapur Road, PO Mehtabgarh Thumbi Bilaspur,
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Annexure 11

M/s OM CHEM

Manufacturer of Formaldehyde

Om che

- Comply fully with all relevant legal requirement, codes of practices and regulations
- Reduce, recycle and reuse natural resources
- Minimize waste and increase recycling within the framework of waste management procedures
- Identify and manage environmental risks and hazards.
- The project proponent shall regularly review the policy and ensure the corrective and preventative actions are taken in order to ensure continual improvement
- To treat all the pollutants viz. liquid and gaseous, which contribute to the degradation of the environment with appropriate technologies.
- To comply with all regulations stipulated by the Central/State Pollution Control Boards related to air emissions and liquid effluent discharge as per air and water pollution control laws.
- Hazardous and other wastes (Management and Trans boundary Movement) Amendments Rules 2017
- To encourage support and conduct developmental work for the purpose of achieving environmental standards and to improve the methods of environmental management.
- To create good working conditions (devoid of air and noise pollution) for employees.
- To minimize fire and accident hazards.
- Perspective budgeting and allocation of funds for environment management expenditure.
- Preventive maintenance and regular checking of machineries and equipments.
- To make continuous efforts in waste minimization.
- For the equipments and pipelines, leakage detection and repair shall be scheduled to minimize fugitive emissions.
- Continuous efforts with energy audits for the reduction of fuel and energy consumption.

Authorised Signatory
M/s Om Chem

Village - Kurali, Sabapur Road, PO Fatehgarh Churian Bilaspur,
Distt. Yamuna Nagar - 133 206 (Haryana) : Email : omchem@outlook.com

The Emission Norms for Heavy Diesel Vehicles will be within the limits as per CPCB Vehicular Exhaust Guidelines. The values for CO, HC, NOx, PM will be within 1 g/kmhr, 0.96 g/kmhr, 3.5 g/kmhr and 0.02 g/kwhr respectively.

TRUCK/VEHICLE DISPERSAL PLAN

The Truck/Vehicle dispersal plan has been developed for quick and safe dispersal of Truck/ Vehicle for effective control of emergencies. While developing this plan, the following points have been taken into consideration:

- Maximum numbers of Truck/ Vehicle available at a time inside premises,
- Safe route of Truck/ Vehicle for dispersal,
- Adequate parking space in safe areas,
- TREM Card to be provided to all drivers,
- Route for Fire tenders and imaginary emergency scenarios, which may necessitate the dispersal of Truck/ Vehicle etc.

GENERAL PROCEDURE FOR TRUCK/ VEHICLES DISPERSAL

1. In case of major fire/ disaster, siren will be raised and the dispersal of Trucks/Vehicles will automatically start on hearing the siren through main gate.
2. The route of Trucks/Vehicles dispersal and parking shall be categorically marked on road sides for guidance and mock rehearsal shall be carried out time to time to make the drivers and others conversant with the plan.
3. The security personal at those spots ensure the smooth dispersal of Trucks /Vehicles.

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Annexure 13
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M/s Om CHEM

Manufacturer of Formaldehyde

Om Chem

SAFETY POLICY

Mr. Abhishek Garg, partner of M/s Om Chem having vast experience in Industrial Management respectively, acknowledge its responsibility to manage the environment issues associated with Proposed Project for Capacity Expansion of Formaldehyde Manufacturing Unit in Existing Facility from 100 TPD to 200 TPD at V.P.O. Kurali Distt. Yamunanagar, Haryana.

We at M/s Om Chem, are committed to provide safe working condition to all our employees.

- To achieve zero accident target.
- To provide & ensure use of personal protective equipment to all employees as per job requirement.
- To provide first aid facilities& arrange training & provide medical checkup& medical help as required.
- To provide safe, hygiene & clean environment in & around working areas.
- To implement all rules &regulationsperfactoryAct1987(amended)

Authorised Signatory
M/s Om Chem

Village - Kurali, Sabapur Road, PO Fatehgarh Thuska, Bilaspur,
Distt. Yamuna Nagar - 133 206 (Haryana) ; Email : omchem@outlook.com

Home

FORMALDEHYDE
Methyl aldehyde
Methylene oxide
Methanal

ICSC: 0275

June 2012

CAS #: 50-00-0
UN #: (see Notes)
EC Number: 200-001-8

	ACUTE HAZARDS	PREVENTION	FIRE FIGHTING
FIRE & EXPLOSION	Extremely flammable. Gas/air mixtures are explosive. Risk of explosion on contact with strong oxidants, strong acids or strong bases.	NO open flames, NO sparks and NO smoking. Closed system, ventilation, explosion-proof electrical equipment and lighting. NO contact with incompatible materials. See Chemical Dangers.	Shut off supply; if not possible and no risk to surroundings, let the fire burn itself out. In other cases extinguish with powder, carbon dioxide. In case of fire: keep drums, etc., cool by spraying with water.

AVOID ALL CONTACT!

	SYMPTOMS	PREVENTION	FIRST AID
Inhalation	Cough. Sore throat. Burning sensation behind the breastbone. Headache. Shortness of breath.	Use ventilation, local exhaust or breathing protection.	Fresh air, rest. Half-upright position. Artificial respiration may be needed. Refer immediately for medical attention.
Skin	Redness.	Protective gloves.	Remove contaminated clothes. Rinse skin with plenty of water or shower. Seek medical attention if you feel unwell.
Eyes	Watering of the eyes. Redness. Pain. Blurred vision.	Wear safety goggles or eye protection in combination with breathing protection.	Rinse with plenty of water (remove contact lenses if easily possible). Refer immediately for medical attention.
Ingestion			

SPILLAGE DISPOSAL

Evacuate danger area! Consult an expert! Personal protection: gas-tight chemical protection suit including self-contained breathing apparatus. Remove all ignition sources. Turn off gas at source if possible. Remove gas with fine water spray.

STORAGE

Fireproof. Cool. Separated from incompatible materials. See Chemical Dangers.

PACKAGING

CLASSIFICATION & LABELLING

According to UN GHS Criteria

DANGER

Extremely flammable gas
Fatal if inhaled
Causes serious eye irritation
May cause cancer if inhaled
May cause an allergic skin reaction
May cause respiratory irritation

Transportation
UN Classification

Prepared by an international group of experts on behalf of ILO and WHO, with the technical assistance of the European Commission.
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World Health Organization

European Commission

FORMALDEHYDE

ICSC: 0275

PHYSICAL & CHEMICAL INFORMATION

Physical State; Appearance
COLOURLESS GAS WITH PUNGENT ODOUR.

Physical dangers
The gas mixes well with air, explosive mixtures are easily formed.

Chemical dangers
The substance polymerizes in concentrated alkalies and if sealed in water. Upon heating, toxic fumes are formed. Reacts violently with strong oxidants, strong acids and strong bases. This generates explosion hazard.

Formula: H_2CO
Molecular mass: 30.0
Boiling point: -20°C
Melting point: -92°C
Relative density (water = 1): 0.8
Solubility in water: very good
Relative vapour density (air = 1): 1.08
Auto-ignition temperature: 430°C
Explosive limits, vol% in air: 7-73
Octanol/water partition coefficient as log Pow: 0.35

EXPOSURE & HEALTH EFFECTS

Routes of exposure
The substance can be absorbed into the body by inhalation.

Effects of short-term exposure
The substance is severely irritating to the eyes and respiratory tract. Inhalation of high concentrations may cause lung oedema, but only after initial corrosive effects on the eyes and the upper respiratory tract have become manifest.

Inhalation risk
A harmful concentration of this gas in the air will be reached very quickly on loss of containment.

Effects of long-term or repeated exposure
Repeated or chronic inhalation of the vapour may cause chronic inflammation of the upper respiratory tract. Repeated or prolonged contact may cause skin sensitization. This substance is carcinogenic to humans.

OCCUPATIONAL EXPOSURE LIMITS

TLV: 0.1 ppm as TWA; 0.3 ppm as STEL; (SEN); A1 (confirmed human carcinogen).

MAK: 0.37 mg/m^3, 0.3 ppm; peak limitation category: I;2; carcinogen category: 4; pregnancy risk group: C; germ cell mutagen group: E; sensitization of skin (SH).

EU-OEL: 0.37 mg/m^3, 0.3 ppm as TWA; 0.74 mg/m^3, 0.5 ppm as STEL; (skin sensitizer), (see Notes).

ENVIRONMENT

NOTES

Immediate administration of an appropriate inhalation therapy by a doctor, or by an authorized person, should be considered.
No UN number is prescribed because formaldehyde is not transported as a gas. It is usually transported as a solution.
See ICSC 0695.
Limit value for EU-OEL of 0.62 mg/m^3 or 0.5 ppm for the health care, funeral and embalming sectors until 1 July 2024.

ADDITIONAL INFORMATION

EC Classification
Symbol: T; R: 23/24/25-34-40-43; S: (1/2)-26-36/37/39-45-51

See Also:
Toxicological Abbreviations
Formaldehyde (HSG 88, 1994)
Formaldehyde (IPCS 52, 2002)
Formaldehyde (CICADS 40, 2002)
Formaldehyde (IARC Summary & Evaluation, Volume 62, 1995)
Formaldehyde (IARC Summary & Evaluation, Volume 88, 2006)

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Annexure 1#

ScienceLab
Chemicals & Laboratory Equipment

Material Safety Data Sheet
Methyl alcohol MSDS

Section 1: Chemical Product and Company Identification

Product Name: Methyl alcohol

Catalog Codes: SLM3064, SLM3852

CAS#: 67-56-1

RTECS: PC1400000

TSCA: TSCA 8(b) inventory: Methyl alcohol

CI#: Not applicable.

Synonym: Wood alcohol; Methanol; Methylol; Wood Spirit; Carbinol

Chemical Name: Methanol

Chemical Formula: CH3OH

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: 1-800-901-7247
International Sales: 1-281-441-4400

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Methyl alcohol	67-56-1	100

Toxicological Data on Ingredients: Methyl alcohol: ORAL (LD50): Acute: 5628 mg/kg [Rat]. DERMAL (LD50): Acute: 15800 mg/kg [Rabbit]. VAPOR (LC50): Acute: 64000 ppm 4 hours [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator). Severe over exposure can result in death.

Potential Chronic Health Effects:
Slightly hazardous in case of skin contact (sensitizer). CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Classified POSSIBLE for human. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to eyes. The substance may be toxic to blood, kidneys, liver, brain, peripheral nervous system, upper respiratory tract, skin, central nervous system (CNS), optic nerve. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Get medical attention.

Skin Contact:
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used.Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediataly.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:
If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 464°C (867.2°F)

Flash Points: CLOSED CUP: 12°C (53.6°F), OPEN CUP: 16°C (60.8°F).

Flammable Limits: LOWER: 6% UPPER: 30.5%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:
Highly flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Explosive in presence of open flames and sparks, of heat.

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks on Fire Hazards:
Explosive in the form of vapor when exposed to heat or flame. Vapor may travel considerable distance to source of ignition and flash back. When heated to decomposition, it emits acrid smoke and irritating fumes. CAUTION: MAY BURN WITH NEAR INVISIBLE FLAME

Special Remarks on Explosion Hazards:
Forms an explosive mixture with air due to its low flash point. Explosive when mixed with Chloroform + sodium methoxide and diethyl zinc. It boils violently and explodes.

Section 6: Accidental Release Measures

Small Spill:
Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

Large Spill:
Flammable liquid. Poisonous liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, metals, acids.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 200 from OSHA (PEL) [United States] TWA: 200 STEL: 250 (ppm) from ACGIH (TLV) [United States] [1999] STEL: 250 from NIOSH [United States] TWA: 200 STEL: 250 (ppm) from NIOSH SKIN TWA: 200 STEL: 250 (ppm) [Canada] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Alcohol like. Pungent when crude.

Taste: Not available.

Molecular Weight: 32.04 g/mole

Color: Colorless.

pH (1% soln/water): Not available

Boiling Point: 64.5°C (148.1°F)

Melting Point: -97.8°C (-144°F)

Critical Temperature: 240°C (464°F)

Specific Gravity: 0.7915 (Water = 1)

Vapor Pressure: 12.3 kPa (@ 20°C)

Vapor Density: 1.11 (Air = 1)

Volatility: Not available.

Odor Threshold: 100 ppm

Water/Oil Dist. Coeff.: The product is more soluble in water; log(oil/water) = -0.8

Ionicity (in Water): Non-ionic.

Dispersion Properties: See solubility in water.

Solubility: Easily soluble in cold water, hot water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources, incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents, metals, acids.

Corrosivity: Non-corrosive in presence of glass

Special Remarks on Reactivity:
Can react vigorously with oxidizers. Violent reaction with alkyl aluminum salts, acetyl bromide, chloroform + sodium methoxide, chromic anhydride, cyanuric chloride, lead perchlorate, phosphorous trioxide, nitric acid. Exothermic reaction with sodium hydroxide + chloroform. Incompatible with beryllium dihydride, metals (potassium and magnesium), oxidants (barium perchlorate, bromine, sodium hypochlorite, chlorine, hydrogen peroxide), potassium tert-butoxide, carbon tetrachloride, alkali metals, metals (aluminum, potassium magnesium, zinc), and dichloromethane. Rapid autocatalytic dissolution of aluminum, magnesium or zinc in 9:1 methanol + carbon tetrachloride - sufficiently vigorous to be rated as potentially hazardous. May attack some plastics, rubber, and coatings

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Eye contact. Inhalation, ingestion.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4 HOUR EXPOSURE. Acute oral toxicity (LD50): 5628 mg/kg [Rat]. Acute dermal toxicity (LD50): 15800 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 64000 4 hours [Rat].

Chronic Effects on Humans:
MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Classified POSSIBLE for human. Causes damage to the following organs: eyes. May cause damage to the following organs: blood, kidneys, liver, brain, peripheral nervous system, upper respiratory tract, skin, central nervous system (CNS), optic nerve.

Other Toxic Effects on Humans:
Hazardous in case of skin contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:

Passes through the placental barrier. May affect genetic material. May cause birth defects and adverse reproductive effects(paremal and maternal effects and fetotoxicity) based on animal studies.

Special Remarks on other Toxic Effects on Humans:

Section 12: Ecological Information

Ecotoxicity: Ecotoxicity in water (LC50): 29400 mg/l 96 hours [Fathead Minnow].

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation:
Methanol in water is rapidly biodegraded and volatilized. Acuatic hydrolysis, oxidation, photolysis, adsorption to sediment, and bioconcentration are not significant fate processes. The half-life of methanol in surface water ranges from 24 hrs. to 168 hrs. Based on its vapor pressure, methanol exists almost entirely in the vapor phase in the ambient atmosphere. It is degraded by reaction with photochemically produced hydroxyl radicals and has an estimated half-life of 17.8 days. Methanol is physically removed from air by rain due to its solubility. Methanol can react with NO2 in polluted to form methyl nitrate. The half-life of methanol in air ranges from 71 hrs. (3 days) to 713 hrs. (29.7 days) based on photooxidation half-life in air.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Methyl alcohol UNNA: 1230 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
Connecticut hazardous material survey.: Methyl alcohol Illinois toxic substances disclosure to employee act: Methyl alcohol Illinois chemical safety act: Methyl alcohol New York release reporting list: Methyl alcohol Rhode Island RTK hazardous substances: Methyl alcohol Pennsylvania RTK: Methyl alcohol Minnesota: Methyl alcohol Massachusetts RTK: Methyl alcohol Massachusetts spill list: Methyl alcohol New Jersey: Methyl alcohol New Jersey spill list: Methyl alcohol Louisiana spill reporting: Methyl alcohol California Directors List of Hazardous Substances (8CCR 339): Methyl alcohol Tennessee Hazardous Right to Know : Methyl alcohol TSCA 8(b) inventory: Methyl alcohol SARA 313 toxic chemical notification and release reporting: Methyl alcohol CERCLA: Hazardous substances.: Methyl alcohol: 5000 lbs. (2268 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC). Class D-2B: Material causing other toxic effects (TOXIC).

DSCL (EEC):
R11- Highly flammable. R23/24/25- Toxic by inhalation, in contact with skin and if swallowed. R39- Danger of very serious irreversible effects. R39/23/24/25- Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed. S7- Keep container tightly closed. S16- Keep away from sources of ignition - No smoking. S36/37- Wear suitable protective clothing and gloves. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 1

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References:
-SAX, N.I. Dangerous Properties of Industrial Materials. Toronto, Van Nostrand Reinold, 5e ed., 1984. -Material safety data sheet emitted by: la Commission de la SantÃ© et de la SÃ©curitÃ© du Travail du QuÃ©bec. -Hawley, G.G., The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987. TOLL HSDB, RTECS, HAZARDTEXT, REPROTOX databases

Other Special Considerations: Not available.

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Annexure 15

+91-94164-83283
+91-98960-[illegible]23

M/s OM CHEM

Manufacturer of Formaldehyde

Om chem

UNDERTAKING

I, Vinish Garg, authorized signatory for M/s Om Chem, is proposing Capacity Expansion of Formaldehyde Manufacturing Unit in existing facility from 100 TPD to 200 TPD at Village Karari, Sahapur Road, Tehsil Bilaspur, District Yamuna Nagar, Haryana, hereby solemnly affirm and undertake as stated hereinafter:

1. That we will submit the bank guarantee for remediation measures as decided by the EAC.

Village Karari, Sahabpur Road, PO Farakpur, Tehsil Bilaspur,
Distt. Yamuna Nagar - 133 206 (Haryana), Email : [illegible]@yahoo.com
GST NO. 06AA[illegible]9C1ZC

EXECUTIVE SUMMARY

1. Introduction

M/s Om Chem has an existing Formaldehyde manufacturing unit at V.P.O. Kurali Kurali in Bilaspur Distt. Yamunanagar, Haryana.

The plant was setup with the consent to establish dated 09.04.2018 from the Haryana State Pollution Control Board (HSPCB). Subsequently, the unit has started operation after obtaining consent to operate dated 22.02.2019.

The said project/activity is covered under category "A" (located outside Notified Industrial Area) of item 5(f) "Synthetic Organic Chemicals" of the Schedule to the EIA Notification, 2006, and requires prior EC from Expert Appraisal Committee, MoEF&CC.

2. Basic Details of the Project

S.No.	Particulars	Details		
1.	Nature and size of the Project	Capacity Expansion of Formaldehyde Manufacturing Unit in existing facility from 100 TPD to 200 TPD at Village Kurali, Sabapur Road, Tehsil Bilaspur, District Yamuna Nagar, Haryana by M/s Om Chem		
	Location details			
2.	Village /Town/Plot No.	Kurali, Sabapur Road		
	District	Yamuna Nagar		
	State	Haryana		
	Area Details			
3.	Total Project Area	Total area available is 0.6430 Hectare. No additional land is required for proposed expansion. Green belt will be developed in an area of 0.2347 Hectare (Approximately 36.50% of total land area).		
	Cost Details			
4.	Project Cost	Existing	Estimated cost for proposed expansion	Total
		Rs. 1.99 Crores	Rs. 2.00 Crores	Rs. 6.99 Crores
	Budget of EMP	Rs. 0.35 Crores		
5.	Basic Requirements of the Project			
	Fresh Water (m3/day)	Existing	For Expansion	Total
		160 KLD	95 KLD	185 KLD
		Source: HWRA		
	Power	Existing	For Expansion	Total
		160 KW	90 KW	250 KW

Source: UHBVN (Uttar Haryana Bijli Vitran Nigam)
DG sets as backup: 325 KVA (existing)
325 KVA (proposed)

	Existing	Proposed expansion	Total	Fuel
Boiler	1 boiler of 600 Kg/Hr Capacity	-	1 boiler of 600 Kg/Hr Capacity	HSD Fired
Fuel	HSD			
Manpower	Existing 10	For Expansion 2	Total 12	

Preference will be given to local public.

3. Production Capacity

Product	Existing Capacity	Proposed Expansion Capacity	Total Capacity after expansion
Formaldehyde	100 TPD	100 TPD	200 TPD

4. Raw Material Detail

The major raw material is Methanol which comes in road through tankers from Kandla Port, Gujarat & stored in underground tanks.

Raw Material	Existing Requirement	Proposed Requirement	Total Requirement	Source	Transport
Methanol	50 TPD	50 TPD	100 TPD	Import	Tank Trucks

5. Project Benefits

- The plant will help in providing employment in priority to local people.
- There will be an increase in indirect employment and earnings of the small time shop owners like tea vendors, transporters, etc.
- The Project proponent has planned to contribute in socio-economic development of the area.
- The easy availability of infrastructure, manpower, raw materials will reduce the production cost as well as demand supply gap.
- The development of greenbelt in and around the plant premises will improve on the aesthetics of the area. Moreover, it will help in reducing the noise levels within the plant boundary.

6. Miligation Measures for Control of Pollution

i. Air Pollution Control Measures

- Online Stack Monitoring System as an air pollution control measures to control the emission of particulate matter, the flue gas emission will remain well within gaseous emission norms prescribed by the CPCB.
- To control the air emissions from D.G. Set, stack height of 6.0 m shall be provided.
- Green belt will be developed on 36.5% area of the total project area which will help in attenuating the pollutants emitted by the plant.

ii. Waste Water Treatment

There will be no waste water discharge from the plant. Zero Liquid Discharge (ZLD) concepts to be adopted. Domestic waste water after treatment (in septic tank) will be fully utilized with the facility for cleaning, flushing, water sprinkling and other non portable domestic purpose.

iii. Noise Pollution Control

- Vibrating pads & acoustic enclosure will be provided to noise generating equipment to control noise level within norms.
- Latest technology and utmost care will be taken at the time of equipment/ machinery installation.
- Lubrication of moving/ rotating part or component of machineries will be done on regular basis.
- The operators working in the high-noise areas will be provided with ear-muffs or plugs.
- Acoustic enclosures and silencers will be provided to the equipment wherever necessary
- Proper green belt will be developed to reduce the noise level.
- Thus, it is envisaged that there will not be any adverse impacts of noise. The greenbelt developed within the premises will have significant beneficial impacts on reduction of noise within the periphery and outside the boundary.

iv. Land Pollution Control

- The plant will implement zero liquid discharge concepts. The treated water will be recycled in the process. Therefore, there will not be any negative impact on soil.
- No toxic /waste water will be disposed directly on land.
- Other hazardous solid wastes will be sent to authorized recycler or vender.

- It is envisaged that there will not be any major impacts on land environment during the operation phase.

v. **Solid & Hazardous Waste Generation and Disposal**

- Used Oil will be sold to authorized recycler.
- Solid waste from evaporator will be sent to TSDF.

All the Solid & hazardous waste generated, will be collected, stored separately and disposed off as per the guidelines issued by CPCB & Haryana State Pollution Control Board.

7. **Environmental Management Plan (EMP)**

Total capital cost for Environmental management is proposed to be Rs. 35.00 Lakhs whereas recurring cost for the same is Rs. 2.6 Lakhs/year out of total project cost Rs. 6.99 Crores.

8. **National Parks or Wild Life Sanctuary**

There is no Wild Life Sanctuary or National Park within 10 km radius of the Project Site hence no NBWL Clearance required. No forest land involved within the project site.

9. **Demography & Socio-Economic Environment**

- Improvement of infrastructure, transportation, health care and education facility.
- Direct and indirect employment will be generated like business, contract works and development work like roads, etc. and other welfare amenities such as medical facilities, conveyance, free education, drinking water supply etc.
- The impact on employment opportunities will not be significant due to low level of education and skills in the area which will result in sourcing skilled work force from outside the immediate area.
- Skill based training to local employed people will be given by project proponent.
- The interaction and intermingling of all these people will improve the understanding of various cultures and will definitely improve and strengthen friendliness, brotherhood and unity among them.

मैसर्स ओम कैम द्वारा ग्राम कुराली, सबापुर रोड, तहसील बिलासपुर, जिला यमुना नगर, हरियाणा में मौजूदा सुविधा में फॉर्मलडिहाइड का निर्माण इकाई का 100 टन प्रति दिन से 200 टन प्रति दिन तक क्षमता का विस्तार

कार्यकारी सारांश

1 परिचय

मेसर्स ओम कैम की वी.पी.ओ. कुराली, बिलासपुर, जिला- यमुनानगर, राज्य- हरियाणा में एक मौजूदा फॉर्मलडिहाइड निर्माण इकाई है।

हरियाणा राज्य प्रदूषण नियंत्रण बोर्ड (HSPCB) की सहमति से दिनांक 19.04.2018 को संयंत्र की स्थापना की गई थी। तत्पश्चात, दिनांक 22.02.2019 को संचालित करने के लिए सहमति प्राप्त करने के बाद इकाई ने संचालन कार्य प्रारंभ कर दिया है।

उक्त परियोजना/गतिविधि ईआईए अधिसूचना, 2006 की अनुसूची के मद 5(एफ) "सिंथेटिक कार्बनिक रसायन" की श्रेणी "ए" (अधिसूचित औद्योगिक क्षेत्र के बाहर स्थित) के अंतर्गत आती है, और विशेषज्ञ मूल्यांकन समिति, पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय से पूर्व पर्यावरणीय स्वीकृति की आवश्यकता होती है।

2 परियोजना का मूल विवरण

क्रमिक संख्या	घटक	विवरण		
1.	**परियोजना की प्रकृति और आकार**	मैसर्स ओम कैम द्वारा ग्राम कुराली, सबापुर रोड, तहसील बिलासपुर, जिला यमुना नगर, हरियाणा में मौजूदा सुविधा में फॉर्मलडिहाइड निर्माण इकाई का 100 टन प्रति दिन से 200 टन प्रति दिन तक क्षमता का विस्तार		
	स्थान विवरण			
2.	गांव/कस्बा/प्लॉट नं.	कुराली, सबापुर रोड		
	जिला	यमुनानगर		
	राज्य	हरियाणा		
	क्षेत्र का विवरण			
3.	कुल परियोजना क्षेत्र	उपलब्ध कुल क्षेत्रफल 0.6430 हेक्टेयर है। प्रस्तावित विस्तार के लिए किसी अतिरिक्त भूमि की आवश्यकता नहीं है। हरित पट्टी 0.2347 हेक्टेयर (कुल भूमि क्षेत्र का लगभग 36.50%) के क्षेत्र में विकसित किया जाएगा।		
	लागत विवरण			
4.	परियोजना की लागत	मौजूदा **लागत** रु. 4.99 करोड़	प्रस्तावित विस्तार के लिए अनुमानित लागत रु. 2.00 करोड़	**कुल लागत** रु. 6.99 करोड़
	ईएमपी बजट	रु. 0.35 करोड़		
5.	**परियोजना की बुनियादी आवश्यकताएं**			

मेसर्स अमन जैन द्वारा ग्राम कुरली, खसरा नं. 88, तहसील बिलासपुर, जिला ± मुन नगर, हरियाणा में मौजूदा सुविधा में फॉर्मलडिहाइड के उत्पादन को 100 टन प्रति दिन से 200 टन प्रति दिन तक क्षमता का विस्तार

पानी	मौजूदा 100 किलो लीटर प्रति दिन	विस्तार के लिए 95 किलो लीटर प्रति दिन	कुल 195 किलो लीटर प्रति दिन

स्रोत: हरियाणा जल संसाधन प्राधिकरण।

बिजली की आवश्यकता	मौजूदा 160 किलो वाट	विस्तार के लिए 90 किलो वाट	कुल 250 किलो वाट

स्रोत: यूएचबीवीएन (उत्तर हरियाणा बिजली वितरण निगम)

डीजी सेट बैकअप के रूप में: 350 केवीए (मौजूदा)

350 केवीए (प्रस्तावित)

बायलर	मौजूदा	प्रस्तावित विस्तार	कुल	ईंधन
	600 किलो/घंटा क्षमता का 1 बॉयलर		600 किलो/घंटा क्षमता का 1 बॉयलर	एचएसडी का निकाल दिया

ईंधन: एचएसडी

श्रमशक्ति	मौजूदा	प्रस्तावित विस्तार	कुल
	10	2	12

स्थानीय लोगों को प्राथमिकता दी जाएगी।

3 उत्पादन क्षमता

उत्पाद	मौजूदा क्षमता	प्रस्तावित विस्तार क्षमता	विस्तार के बाद कुल क्षमता
फॉर्मलडिहाइड	100 टन प्रति दिन	100 टन प्रति दिन	200 टन प्रति दिन

4 कच्चे माल का विवरण

प्रमुख कच्चा माल मेथनॉल है जो कांडला बंदरगाह, गुजरात से टैंकरों के माध्यम द्वारा सड़क से आता है और निगत टैंकों में संग्रहीत किया जाता है।

कच्चा माल	मौजूदा आवश्यकता	प्रस्तावित आवश्यकता	कुल आवश्यकता	स्रोत	परिवहन
मेथनॉल	50 टन प्रति दिन	50 टन प्रति दिन	100 टन प्रति	आयात	टैंक ट्रक द्वारा

गैस्ट्रो ओन लैम द्वारा ग्राम कुरली, खरखौदा रोड, तहसील व जिला सोनीपत, जिला रेवाड़ी नगर, हरियाणा में भौगोलिक सुविधा में फार्मलिडेहाइड स्पेयरिंग इकाई का 100 कि.ग्रा प्रति दिन से 200 टन प्रति दिन तक क्षमता का विस्तार

दिन

5 परियोजना लाभ

- प्रस्तावित संयंत्र की स्थापना से रोजगार (स्थानीय लोगों को प्राथमिकता) उपलब्ध कराने में मदद मिलेगी।
- चाय विक्रेताओं, ट्रांसपोर्टरों आदि जैसे छोटे दुकान मालिकों के अप्रत्यक्ष रोजगार और आय में वृद्धि होगी।
- परियोजना प्रस्तावक ने क्षेत्र के सामाजिक-आर्थिक विकास में योगदान देने की योजना बनाई है और रक्तदान शिविर, स्वास्थ्य शिविर, स्वास्थ्य जागरूकता कार्यक्रम आदि आयोजित करेगा।
- बुनियादी ढांचे, जनशक्ति, कच्चे माल की आसान उपलब्धता से उत्पादन लागत के साथ-साथ मांग आपूर्ति का अंतर भी कम होगा।
- संयंत्र परिसर में और उसके आसपास हरित पट्टी के विकास से क्षेत्र की सुंदरता में सुधार होगा। इसके अलावा, यह संयंत्र की सीमा के भीतर शोर के स्तर को कम करने में मदद करेगा।

6 प्रदूषण नियंत्रण के उपाय

6.1 वायु प्रदूषण नियंत्रण के उपाय

- उत्सर्जन की निरंतर निगरानी के लिए स्टैक के साथ ऑनलाइन स्टैक मॉनिटरिंग सिस्टम उपलब्ध कराया जाएगा।
- डीजी. से वायु उत्सर्जन को नियंत्रित करने के लिए स्टैक की ऊंचाई 6.0 मीटर रखी जाएगी।
- कुल परियोजना क्षेत्र के 36.50 प्रतिशत क्षेत्र में हरित पट्टी विकसित की जायेगी जिससे संयंत्र से निकलने वाले प्रदूषकों को कम करने में मदद मिलेगी।

6.2 अपशिष्ट जल का उपचार

प्लांट से गंदे पानी का निस्राव नहीं होगा। जीरो लिक्विड डिस्चार्ज (जेडएलडी) अवधारणाओं को अपनाया जाना है। उपचार के बाद घरेलू अपशिष्ट जल का उपयोग पूरी तरह से सफाई, फ्लशिंग, पानी के छिड़काव और अन्य गैर पोर्टेबल घरेलू उद्देश्यों के लिए सुविधा के साथ किया जाएगा।

6.3 ध्वनि प्रदूषण नियंत्रण

- मानदंडों के भीतर शोर स्तर को नियंत्रित करने के लिए ध्वनि उत्पन्न करने वाले उपकरणों को वाइब्रेटिंग पैड और ध्वनिक संलग्नक प्रदान किया जाएगा।
- उपकरण/मशीनरी स्थापना के समय नवीनतम तकनीक और अत्यधिक सावधानी बरती जाएगी।
- मशीनों के गतिशील/घूर्णन वाले भाग अथवा घटकों का स्नेहन नियमित आधार पर किया जाएगा।
- उच्च शोर वाले क्षेत्रों में काम करने वाले ऑपरेटरों को ईयर मफ्स या प्लग प्रदान किए जाएंगे।
- जहां भी आवश्यक होगा, उपकरण को ध्वनिक बाड़े और साइलेंसर प्रदान किए जाएंगे।

- ध्वनि स्तर को कम करने के लिए उचित हरित पट्टी विकसित की जाएगी।
- इस प्रकार, यह परिकल्पना की गई है कि शोर का कोई प्रतिकूल प्रभाव नहीं होगा। परिसर के भीतर विकसित हरित पट्टी का परिधि के भीतर और सीमा के बाहर शोर में कमी पर महत्वपूर्ण लाभकारी प्रभाव पड़ेगा।

6.4 भूमि प्रदूषण नियंत्रण

- प्लांट जीरो लेवल डिस्चार्ज कॉन्सेप्ट को लागू करेगा। इस प्रक्रिया में उपचारित पानी का पुनर्चक्रण किया जाएगा। इसलिए, मिट्टी पर कोई नकारात्मक प्रभाव नहीं पड़ेगा।
- कोई भी जहरीला/अपशिष्ट जल सीधे जमीन पर नहीं डाला जाएगा।
- अन्य खतरनाक ठोस कचरे को अधिकृत पुनर्चक्रणकर्ता या विक्रेता को भेजा जाएगा।
- यह परिकल्पना की गई है कि संचालन चरण के दौरान भूमि पर्यावरण पर कोई बड़ा प्रभाव नहीं पड़ेगा।

6.5 ठोस और खतरनाक अपशिष्ट उत्पादन और निपटान

- उत्पादित तेल को अधिकृत पुनर्चक्रणकर्ता को बेचा जाएगा।
- बाष्पीकरणकर्ता से ठोस अपशिष्ट उपचार, भंडारण और निपटान की सुविधा को भेजा जाएगा।

उत्पन्न सभी ठोस और खतरनाक कचरे को सीपीसीबी और हरियाणा राज्य प्रदूषण नियंत्रण बोर्ड द्वारा जारी दिशा-निर्देशों के अनुसार अलग से एकत्र, संग्रहीत और निपटाया जाएगा।

7 पर्यावरण प्रबंधन योजना

पर्यावरण नियंत्रण उपायों पर कुल पूंजी निवेश रु. 0.35 करोड़ (35 लाख) रुपये की कुल विस्तार परियोजना है। **इसके लिए आवर्ती लागत रु. 2.6 लाख/वर्ष जो कि कुल परियोजना लागत रु. 6.99 करोड़ का है।**

8 राष्ट्रीय उद्यान या वन्य जीवन अभयारण्य

परियोजना स्थल के 10 किमी के दायरे में कोई वन्य जीव अभयारण्य या राष्ट्रीय उद्यान नहीं है इसलिए किसी राष्ट्रीय वन्यजीव बोर्ड से मंजूरी की आवश्यकता नहीं है। परियोजना स्थल के भीतर कोई वन भूमि शामिल नहीं है।

9 जनसांख्यिकी और सामाजिक-आर्थिक वातावरण

- बुनियादी ढांचे, परिवहन, स्वास्थ्य देखभाल और शिक्षा सुविधा में सुधार।
- व्यापार, ठेका कार्य एवं विकास कार्य जैसे सड़क आदि तथा अन्य कल्याणकारी सुविधाएं जैसे चिकित्सा सुविधा, वाहन, निःशुल्क शिक्षा, पेयजल आपूर्ति आदि प्रत्यक्ष एवं अप्रत्यक्ष रोजगार सृजित होंगे।
- परियोजना प्रस्तावक द्वारा स्थानीय नियोजित लोगों को कौशल आधारित प्रशिक्षण दिया जाएगा।

- इन सभी लोगों के आपस में मिलने से विभिन्न संस्कृतियों की समझ में सुधार होगा और निश्चित रूप से उनमें मित्रता, भाईचारा और एकता में सुधार और मजबूती आएगी।