

BEFORE THE NATIONAL GREEN TRIBUNAL

WESTERN ZONE BENCH, PUNE

ORIGINAL APPLICATION NO. 210/2024(WZ)

In the matter of :

Sunil Ramchandra Shinde & Anr

..... Applicant

Versus

State of Maharashtra & Ors.

..... Respondents

Table of content

Sr. No.	Details	Page No.	Pagination
	Rejoinder Affidavit on Behalf of Maharashtra Pollution Control Board In Compliance of Order Passed by Hon'ble Tribunal On 09.06.2026	2 to 8	1264-1271
Annexure I	Hon'ble NGT Order dated 09.06.2026	9 to 13	1272-1276
Annexure II	Comparison of proposals received from three research institutions for Matheran Horse Study	14 to 22	1277-1285
Annexure III	Work order from MPCB dtd. 09.01.2025	23 to 28	1286-1291
Annexure IV	Detailed letter from DBATU on 08.06.2026	29 to 54	1292-1317



**REJOINDER AFFIDAVIT ON BEHALF OF MAHARASHTRA
POLLUTION CONTROL BOARD IN COMPLIANCE OF ORDER
PASSED BY HON'BLE TRIBUNAL ON 09.06.2026.**

I, **RUTUJA VIKRANT BHALERAO**, aged 39 years, Occupation: Service, the Sub-Regional Officer of the Maharashtra Pollution Control Board (MPCB) at Raigad-II, having my office at Raigad Bhavan, C.B.D. Belapur, Navi Mumbai, do hereby submit this report on behalf of the Maharashtra Pollution Control Board (MPCB), in compliance with the order dated **09.06.2026** passed by the Hon'ble National Green Tribunal (NGT).

1. The Hon'ble NGT in its Order dated 09.06.2026 observed as follows :-

- i. Respondent No.5- Sthanik Ashwal Sanghatana, Respondent No.6- Mulvasi Ashwapal Sanghtna and Respondent No.7- Dasturi (Matheran) Ashwapal Kalyankari Samajik Sanstha have raised their objection vide their reply affidavit to the Final Environmental Monitoring Report titled "Environment Impact Assessment Report for Air, Water and Soil in Matheran area due to presence of the Horse Dung" prepared by Dr. Sachin M. Pore, Civil engineering and expert in earthquake engineering affiliated to Dr. Balasaheb Ambedkar Technological University (DBATU), Lonere.
- ii. It has been alleged that the said report is not reliable as the same is prepared by an expert in the field of civil engineering, structural dynamics and earthquake engineering and not by the ecological experts as well as geologist, hydrologist to assess the





actual impact on the environmental damage caused by movement of horses, horse dung at Matheran.

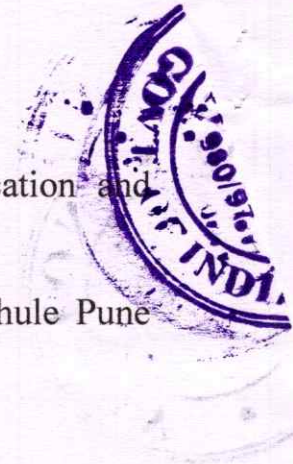
- iii. It has been alleged by Respondent Nos.5 to 7 that the report does make reference to the terms of reference, which were laid by this Tribunal, hence it is prayed that a direction may be issued to Respondent No.4-MPCB to conduct fresh assessment of the entire hill station of Matheran by an expert body, such as NEERI or IIT Bombay, which have experts, specifically relating to environmental monitoring and research issues. A copy of the Hon'ble NGT Order dated 09.06.2026 is enclosed herewith and marked as an **Annexure-I.**

2. It is submitted that earlier, Hon'ble National Green Tribunal in their order dated **25.10.2024** directed to the aforesaid Joint Committee as follows:

“to visit the site in question; assess the Environmental Damage caused by movement of horses; and recommend measures for minimizing impact thereof on Environment. The Committee will be free to hire services of any expert organization, and the cost therefor will be borne by MPCB from EDC funds available with MPCB.”

3. I say and submit that, technical presentations were requested by MPCB from following four expert institutions:

- I. Dr. Babasaheb Ambedkar Technological University (BATU), Lonere, Mangaon, Dist.- Raigad;
- II. Department of Environmental Science, Fergusson College, Pune;



- III. Bharati Vidyapeeth Institute of Environment Education and Research, Pune.
- IV. Department of Environmental Science, Savitribai Phule Pune University;

4. I say and submit that accordingly, first three institutions presented before the Joint Committee and MPCB Head office officials. After thorough evaluation by the Joint Committee, Dr. Babasaheb Ambedkar Technological University (DBATU), Lonere, Mangaon, Dist. Raigad was found the most suitable on the basis of the technical and financial details provided, as well as the agency's prior experience in handling matters before the Hon'ble NGT and other courts. A copy of the comparison of proposals received from these three institutions is enclosed herewith and marked as an **Annexure II.**
5. I say and submit accordingly work order was issued by MPCB to DBATU on 09.01.2025 to carry out work for total cost of Rs. 11,45,500/, for the following terms of reference:
- I. Assessment of environmental damage caused by the movement of horses and horse dung in Matheran;
 - II. Recommendations for minimizing environmental impact; and
 - III. Suggesting best eco-friendly practices for managing horse dung.

The work order was given for 75 number of samples (air= 25, soil= 25 and water= 25 number of samples).



A copy of the said work order 09.01.2025 is enclosed herewith and marked as an **Annexure - III.**

6. I say and submit that accordingly, Dr. Babasaheb Ambedkar Technological University (DBATU), Mangaon, Dist. Raigad submitted Interim Report to Maharashtra Pollution Control Board, Raigad on 09.04.2025 and final report on 28.01.2026, which has been e-filed by MPCB and taken on record before Hon'ble NGT.

The team of experts who were part of the aforementioned final report, is specified as follows:

- 1) Dr. Babasaheb Ambedkar Technological University (DBATU), Lonere, Mangaon, Dist. Raigad

Name	Experience	Qualification	Designation
Dr. Sachin M. Pore	27 years	B.E. (Civil), M.E. (Structures), Ph.D. (Structural Dynamics – Earthquake Engineering)	Head, Professor, Dean (R&D), Civil Engineering
Ganesh Suyarvanshi	7 years	B.E. (Civil), M.E. (Geotechnical Engineering)	Assistant Professor, Civil Engineering
Aakanksha Darge	11 years	B.E. (Civil), M.E. (Environmental Engineering)	Assistant Professor, Civil Engineering



2) NK Orchid College of Engineering & Technology (NKOCET), Solapur

Name	Experience	Qualification	Designation
Dr. Vinayak K. Patki	25 years	B.E. (Civil), M.E. (Environmental), Ph.D. (NITK, Surathkal)	Vice-Principal & Professor, Civil Engineering
Dr. Shrikant S. Jahagirdar	23 years	B.E. (Civil), M.E. (Environmental), Ph.D. (NITK, Surathkal)	Dean (R&D) & Professor, Civil Engineering

7. I further say and submit that, MPCB has received detailed letter from DBATU on 08.06.2026 which specify the technical roles of the investigation team and their technical resume/ biodata and Comparison of Proposed Sampling Plan vs Actual Sampling Conducted in Matheran Environmental Study. A copy of the Letter dated 08.06.2026 is enclosed herewith and marked as an **Annexure-IV**.
8. I say and submit that the final report submitted by DBATU covers the three terms of references as follow-

Objective No.	Objective	Report Pg. No.
1	Assessment of the environmental damage caused by movement of horses, horse dung at the Matheran	Pg. No. 04 to 98, 120,121,124
2	Recommend measures for minimizing impact thereof on environment	Pg. No. 98 to 100, 104 to106, 122, 124



3	Recommend the best eco-friendly practices for the management of Horse dung	Pg. No. 113 to 119, 122, 123, 124
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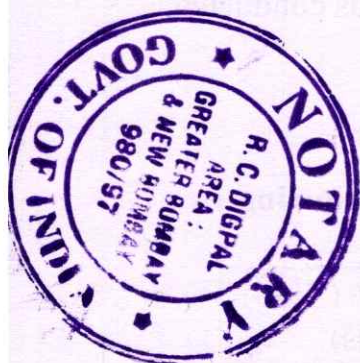
9. I say and submit that against the planned number of environmental samples (75) as per work order for one season, DBATU has conducted analysis of 263 environmental samples as follow: -

Component	Proposed samples	Actual samples / monitoring points
Air Quality	25	3 Stations × 3 Seasons (≈144 analytical observations)
Water Quality	25	61 Samples
Soil Quality	25	58 Samples
Total	75 Samples	263 Environmental Samples/Observations

10. I say and submit that, the work order was given only for period of 8 weeks for only one season. However, considering the need to identify the seasonal variation, the DBATU has conducted the study for three seasons that are Phase I (Pre Monsoon), Phase II (Monsoon) and Phase III (Post Monsoon) for the same financial terms of the work order, and has submitted final report accordingly.
11. In view of the above, it is hereby humbly submitted before this Hon'ble NGT that the DBATU has adequately complied with the terms of reference as per Hon'ble NGT order dtd. 25.10.2024 and subsequent work order was issued by MPCB and the expert team of the research

team involved in the final report of the DBATU has sufficient technical education and experience for the required study.

Solemnly affirmed on this ^{14th}..... day of July 2026 at CBD Belapur



For and on behalf of
Maharashtra Pollution Control Board,

(Rutuja Vikrant Bhalerao)
Sub Regional Officer,
MPCB, Raigad-2

Before Me

R. C. DIGPAL
ADVOCATE & NOTARY
MUMBAI

REGISTERED VIDE	
SL. NO.	DATE
631	14 JUL 2026

Item No.13

(Pune Bench)

**BEFORE THE NATIONAL GREEN TRIBUNAL
WESTERN ZONE BENCH, PUNE**

[THROUGH PHYSICAL HEARING (WITH HYBRID OPTION)]

ORIGINAL APPLICATION NO.210 OF 2024 (WZ)

Sunil Ramchandra Shinde & Anr.

.....Applicants

Versus

State of Maharashtra & Ors.

....Respondents

Date of hearing: 09.06.2026

**CORAM: HON'BLE MR. JUSTICE DINESH KUMAR SINGH, JUDICIAL MEMBER
HON'BLE DR. PRASHANT GARGAVA, EXPERT MEMBER**

Applicants	:	Ms. Varnika Bajaj, Advocate
Respondents	:	Mr. Aniruddha S. Kulkarni, Advocate R-1 Mr. Pushkal Mishra, Advocate for R-2/MoEF&CC. Mr. Ajay Gadegaonkar, Advocate along-with Ms. Priya Vaidya Gondhalekar, Advocate for R-3/MMC Ms. Manasi Joshi, Advocate along-with Ms. Pooja Natu, Advocate for R-4/MPCB Ms. Deepali Bagla, Advocate for R-5 to 7.

ORDER

1. Learned counsel for Respondent No.3- Matheran Hill Station Municipal Council has filed reply affidavit dated 01.06.2026. A copy of the same is said to have been served upon learned counsel for the applicants yesterday evening. Therefore, learned counsel for the applicants seeks some time to file rejoinder affidavit against the same. We grant her two weeks' time to file the same.

2. In compliance with our previous order, learned counsel for Respondent No.5- Sthanik Ashwal Sanghatana, Respondent No.6- Mulvasi Ashwapal Sanghtna and Respondent No.7- Dasturi (Matheran) Ashwapal Kalyankari Samajik Sanstha has also filed reply affidavit dated

23.03.2026, wherein they have raised objection to the Final Environmental Monitoring Report titled “*Environment Impact Assessment Report for Air, Water and Soil in Matheran area due to presence of the Horse Dung*” prepared by Dr. Sachin M. Pore, Civil engineering and expert in earthquake engineering affiliated to Dr. Balasaheb Ambedkar Technological University, Lonere. It is submitted that the said report is not reliable as the same is prepared by an expert in the field of civil engineering, structural dynamics and earthquake engineering and not by the ecological experts as well as geologist, hydrologist to assess the actual impact on the environmental damage caused by movement of horses, horse dung at Matheran.

3. It is also submitted in this affidavit by Respondent Nos.5 to 7 that the report does make reference to the terms of reference, which were laid by this Tribunal, hence it is prayed that a direction may be issued to Respondent No.4-MPCB to conduct fresh assessment of the entire hill station of Matheran by an expert body, such as NEERI or IIT Bombay, which have experts, specifically relating to environmental monitoring and research issues.

4. Learned counsel for Respondent No.4- MPCB wants to file rejoinder affidavit to the above reply affidavit of Respondent Nos.5 to 7 and it is being submitted by her that the report of Dr. Sachin M. Pore is very exhaustive and as suggested therein, the mitigation measures are to be adopted by Respondent No.3- Matheran Hill Station Municipal Council. Some of the mitigation measures, which are proposed to be adopted by Respondent No.3, are quoted herein below for the sake of convenience:-

“3.9 Mandatory Policy Measures

3.9.1 Compulsory Equine Waste Management Protocol: The Local Authority, under the supervision of the Monitoring

Committee, shall implement a compulsory equine waste management protocol throughout Matheran. This shall include daily collection and removal of horse dung and urine-soaked bedding from all horse routes, stable areas, market zones, and tourist points. Open dumping of dung on trails, slopes, forest edges, or near drainage lines shall be strictly prohibited. All collected waste shall be temporarily stored only in covered and impermeable (lined) holding facilities. This measure is essential to directly reduce excessive organic carbon accumulation, salinity (EC), potassium enrichment, and microbial contamination in soils.

3.9.2 Establishment of Engineered Manure Handling & Treatment: The Maharashtra Pollution Control Board shall approve, and the Local Body shall establish, engineered manure handling and treatment facilities at designated locations. These facilities shall have impermeable flooring with leachate collection systems to prevent infiltration into soil. Treatment of equine waste shall be limited to scientifically approved methods such as composting or bio methanation. This measure is necessary to prevent leachate percolation, avoid formation of monsoon slurry, and eliminate uncontrolled nutrient and pathogen release into surrounding soils.

3.9.3 Horse Movement Zoning and Seasonal Restrictions: The Monitoring Committee shall regulate horse movement through spatial zoning and seasonal restrictions. Horse movement shall be restricted or significantly reduced during peak monsoon periods when soil is saturated and most vulnerable. Designated “no-horse buffer zones” shall be established around water bodies, drainage channels, steep slopes, and ecologically sensitive forest patches. This regulation is required to reduce soil compaction, prevent erosion, and limit the spatial spread of fecal pathogens and nutrients during rainfall events.

3.9.4 Soil Stabilization and Restoration at Identified Hotspots: The Local Body, with appropriate technical guidance, shall undertake soil stabilization and restoration measures at identified degradation hotspots such as horse corridors, stable

surroundings, and lake approach zones. These measures shall include installation of coir or jute matting on exposed soils, development of vegetative swales to intercept runoff, and trail hardening using permeable materials. Such interventions are necessary to prevent further soil loss, reduce contaminant transport, and support gradual ecological recovery of degraded soil systems. Impervious flooring [natural soil stabilization] at all existing stables with side drains to collect dung and urine may also be provided.

4.6 Immediate Source-Control Measures (Highest Priority)

- **Compulsory Equine Waste Management Protocol**
 - Daily removal of dung and urine-soaked bedding.
 - Absolute prohibition of dumping on trails, slopes, forest margins, and drainage lines. Animals shall be provided with horse diapers, or excrement collectors to collect the dung without dropping on to ground. Horse attendant shall deliver such bags at dung deposit points established along route of horse movement.
 - Covered, lined interim storage at designated collection points.
- **Scientifically Determined Carrying Capacity**
 - Fix a maximum permissible number of horses per day.
 - Enforce seasonal reduction during monsoon months.
 - Link permits strictly to waste handling capacity.

7.6 Final Expert Conclusion

Based on comprehensive field data, regulatory standards, judicial precedent and environmental science, this report concludes that:

Equine activity in its present scale and spatial form is environmentally unsustainable in Matheran Eco-Sensitive Zone.

*Effective protection of Matheran's air quality, drinking-water sources, soil health and ecological integrity **cannot be achieved through downstream cleaning alone.** It requires **source-level intervention**, namely:*

- *strict regulation and phased reduction of horse numbers,*
- *relocation of stables outside ESZ limits,*
- *zoning of routes and protection of water catchments,*
- *Continuous monitoring over 3–5 years to validate outcomes.”*

5. We deem it appropriate to grant an opportunity of two weeks to the learned counsel for Respondent No.4- MPCB to file rejoinder affidavit to the above reply affidavit of Respondent Nos.5 to 7.

6. The mitigation measures, which have been proposed to be adopted by Respondent No.3- Matheran Hill Station Municipal Council in the said report, were read out by learned counsel for Respondent No.3 also. In this regard, when we enquired from him as to why the said mitigation measures should not be adopted immediately by Respondent No.3, to which it is responded by saying that he may be provided an opportunity to file objection against the said report of Dr. Sachin M. Pore. We grant him two weeks' time to file full-fledged reply in this regard, indicating therein as to why the said measures should not be directed to be adopted by them.

7. Put up this matter for further consideration on 16.07.2026.

Justice Dinesh Kumar Singh, JM

Dr. Prashant Gargava, EM

June 09, 2026

ORIGINAL APPLICATION NO.210 OF 2024 (WZ)

P.Kr.

MAHARASHTRA POLLUTION CONTROL BOARD**DOCKET SHEET****Sub-Regional Office (Raigad-2)**

.....

Sub :- Submission of evaluation by Joint Committee for proposals received regarding appointment of Expert Agency for carrying out work as per Order Dated 25/10/2024 Passed by Hon'ble NGT in Original Application No. 210/2024 (WZ), (Matheran Horse related matter)

Ref: 1. Order Dated 25/10/2024 Passed by Hon'ble NGT in Original Application No. 210/2024 (WZ), (Matheran Horse related matter)
2. Technical presentations by expert agencies conducted before the Joint Committee and MPCB officials dtd. 04/12/2024

Date	Referred to	Remarks
17/12/2024	RO(Raigad)	

Date: 27/12/2024

Sub-Regional Office (Raigad-2)

Office Note

Sub :- Submission of evaluation by Joint Committee for proposals received regarding appointment of Expert Agency for carrying out work as per Order Dated 25/10/2024 Passed by Hon'ble NGT in Original Application No. 210/2024 (WZ), (Matheran Horse related matter)

Ref: 1. Order Dated 25/10/2024 Passed by Hon'ble NGT in Original Application No. 210/2024 (WZ), (Matheran Horse related matter)

2. Technical presentations by expert agencies conducted before the Joint Committee and MPCB officials dtd. 10/12/2024

Submitted:

As per order dated 25/10/2024 is passed by Hon'ble National Green Tribunal in Original Application No. 210/2024 (WZ), Ramchandra Shinde & Anr. Vs. State of Maharashtra & Ors (Matheran Horse related matter), Hon'ble NGT has constituted a Joint Committee consisting of One representative of the Ministry of Environment, Forest & Climate Change (MoEF&CC); One representative of the Matheran Hill Station Municipal Council; and One representative of the Maharashtra Pollution Control Board (MPCB). As per the order-

The Joint Committee will be free to hire services of any expert organization, and the cost therefor will be borne by MPCB from EDC funds available with MPCB.

Hon'ble NGT has directed the said Joint Committee to visit the site in question; assess the environmental damage caused by movement of horses; and recommend measures for minimizing impact thereof on environment. The Committee is directed to submit its report within 06 (six) weeks.

Shri Thirunavukkarasu Elangovan, Scientist E, MoEF&CC; Sub-Regional Officer (Raigad-2), MPCB and Chief Officer, Matheran Municipal Council are the members of the Joint Committee as per the official communication.

The next date of the hearing before Hon'ble NGT is **23/12/2024**.

MPCB invited proposals from the following five expert institutes - Dr. Babasaheb Ambedkar Technological University (BATU), Mangaon, Dist.- Raigad; Department of Environmental Science, Savitribai Phule Pune University; Department of environmental science, Fergusson College, Pune, Bharati Vidyapeeth Institute of Environment Education and Research, Pune and Veermata Jijabai Technological Institute (VJTI), Mumbai for following terms of references.

- i. Assessment of the environmental damage caused by movement of horses, horse dung at the Matheran

- ii. Recommend measures for minimizing impact thereof on environment
- iii. Recommend the best eco-friendly practices for the management of Horse dung

Accordingly, three institutes namely Dr. Babasaheb Ambedkar Technological University (BATU), Mangaon, Dist.- Raigad; Department of Environmental Science, Fergusson College, Pune and Bharati Vidyapeeth Institute of Environment Education and Research, Pune submitted their proposals.

The Joint Committee along with Joint Director (APC), MPCB, conducted technical presentations on 10/12/2024 through video conferencing, given by Babasaheb Ambedkar Technological University (BATU), Mangaon, Dist.- Raigad; Department of Environmental Science, Fergusson College, Pune and Bharati Vidyapeeth Institute of Environment Education and Research, Pune, for appointment of expert agency as per Hon'ble NGT direction. The proposals have been evaluated by the Joint committee as per comparison shown in the attached table (Annexure 1). Copy of the technical presentations given by the institutes are enclosed as Annexure 2.

(A) The Committee found that the proposal submitted by Dr. Babasaheb Ambedkar Technological University (BATU), Mangaon, Dist.- Raigad is more suitable in terms of technical details, financial details and the prior experience of the agency in Hon'ble NGT and Court matters. Copy of the communication from the Joint Committee is enclosed herewith (Annexure 3).

In view of the above, submitted for further approval for an appointment of the Expert Agency to carry out the work and its payment from the Environmental Damage Cost Fund available with the Board.

Rus

(Rutuja Bhalerao)
SRO (Raigad-2)

RO (Raigad):- Proposal 'A' is submitted for approval. pl.

Joint Director (APC):-

The presentation taken on 10/12/2024, out of 3 insth the committee recommended the proposal submitted by BATU Raigad for the above study for Rs 15.5 lakhs + taxes to be completed in 08 weeks time period. Submitted for approval.

M.S. Sir:-

This may be approved.

Recd. on
23/12/2024

Hon-Chairman.

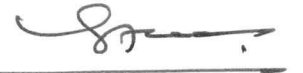
Submit the findings 21/12/2024
23/12/24

Recd on
23/11/2014

M.S. Sin


23/11/14

JD. ~~XX~~ R.O. (Raisra) to issue the work order
immediately


30/12/2014

R.O. (Raisra) / P.O. (H) :

Annexure-1: Comparison of proposals received from expert agencies for carrying out Matheran study regarding impact of horse in Hon'ble NGT matter O.A. 210/2024

Parameter for comparison	1. BVIEER (Bharati Vidyapeeth), Pune	2. Fergusson College, Pune	3. BATU, Raigad
Qualification & Experience	1991: B.Sc. (Botany), MES Garware College, University of Pune, 1991 1993: M.Sc. (Environment Science), School of Environment Science, University of Pune 2009: Post graduate Diploma in Geoinformatics, Centre for Advanced Computing (CDAC), an autonomous body of the Government of India under Ministry of Electronics and Information technology 2011: Ph.D. (Environment Science) 27 years	M.Sc M. Phil. Ph. Dd Environmental Microbiology, Toxicology Solid waste management	1. Dr Akanksha (M Tech environment engg) 2. Dr Patki (PhD and Mtech environment engg) 3. One PhD and Two Mtech students.
Components & Output expected	Soil: Maps and analysis of soil degradation and contamination zones. Water: Water quality gradients highlighting pollution sources and stress zones. Air: Air quality profiles showing	Expected outcomes- - Detailed report on the extent and nature of environmental damage caused by horse activities in Matheran - Practical recommendations for reducing environmental impact without adverse socio-economic effects	Objective: - To measure ammonia (NH₃), methane (CH₄), volatile organic compounds (VOCs), and particulate matter (PM₁₀ and PM_{2.5}) emissions from horse dung in Matheran - To assess nutrient overload (nitrogen, phosphorus), microbial

	particulate and gaseous pollution. • Dung: Quantitative data on generation, composition, and spatial accumulation. • Vegetation: Maps of vegetation degradation due to horse activity. • Trail Capacity: Preliminary carrying capacity for sustainable horse usage. • Stakeholder Insights: Qualitative understanding of waste management practices and challenges.	3. Best practiced and actionable plan for eco-friendly horse dung mgmt. 4. Increased awareness and stakeholder engagement for sustainable tourism and environmental conservation.	contamination (<i>E. coli</i> , <i>Salmonella</i> spp.), and heavy metals in soils affected by horse dung. 3. To monitor nutrient leaching (nitrates, phosphates), microbial contamination (<i>E. coli</i> , <i>Salmonella</i> spp.), and chemical contamination (heavy metals, antibiotics) in water bodies near horse activity zones.
Prior experience in court/ NGT matters	Some experience	No experience	Good experience
Timeline for study	9 weeks	8 weeks	8 weeks
Total Budget	Rs. 7 Lakhs + GST	Rs. 15.5 Lakhs + GST	Rs. 13.65 Lakhs+ GST

 Outlook

Re: Fw: Request Submission of Proposal

From Thirunavukkarasu Elangovan <e.thirun@nic.in>

Date Tue 17 Dec 2024 4:08 PM

To SRO Raigad 2 <sroraigad2@mpcb.gov.in>

Mam

After examining the proposal and the presentations made by the three institutes, I prefer BATU for the preparation of the Impact Study for Matheran with respect to OA 210 of 2024. This preference is based on the study components, the number of samples, and the qualifications and experience presented etc.,

Regards

E.THIRUNAVUKKARASU, Scientist 'E'
Regional Office
M/o Environment, Forest and Climate Change
New Secretariat Building, Civil Line
Nagpur- 440 001

---- On Wed, 11 Dec 2024 12:03:11 +0530 **SRO Raigad 2** <sroraigad2@mpcb.gov.in> wrote ---

Sir,

Please find enclosed herewith the presentation for Environmental impact of horse related activities in Matheran ESZ received from BATU.

This is submitted for information please.

Regards,

(Rutuja Bhalerao)
Sub Regional Officer, Raigad-2
Maharashtra Pollution Control Board.

From: Sachin Pore <smp.struct.audit@gmail.com>

Sent: Wednesday, 11 December 2024 11:26 am

To: SRO Raigad 2 <sroraigad2@mpcb.gov.in>

Cc: mcomatheran@gmail.com <mcomatheran@gmail.com>

Subject: Re: Request Submission of Proposal

Dear Madam,

Please find attached herewith the copy of proposal as presented in meeting on 10/12/24

Hope to hear from you soon.

Regards

Dr Sachin Pore

Professor in Civil Engineering

DBATU Lonere

On Wed, Dec 4, 2024 at 2:26 PM SRO Raigad 2 <sroraigad2@mpcb.gov.in> wrote:

Dear Sir/ Madam,

Thank you for providing your detailed proposal for the study.

You are requested to present your technical Presentation about the proposal at **10.30 AM on 10/12/2024 in Online mode**, before the Joint Director (Air Pollution Control), MPCB and the Joint Committee constituted by Hon'ble NGT in this matter.

The Technical Presentation shall include-

1. Minimum number of sample to be collected including control samples [Soil, Water, Air etc.,]
2. Details of parameters to be analyzed in Soil, Water and Air
3. Likely health issues expected from horse dung/ urine vis-a vis health status of Matheran Public
4. Storm water flow especially from the horse staples, road side parking with Contour details
5. Estimation of dung generation during both peak days and ordinary days
6. Measures required for prevention of storm water carrying Horse dung and urine to low lying areas/ water bodies
7. Carrying capacity on horse movement
8. Possible On site/ Offsite measures for managing the horse dung and urine with details of area, facility, budget etc.
9. Trial run of suggested/ selected measures
10. Cost break up - Component wise Cost [Air, Soil, Water, Consultancy]

The link for the meeting is as follow-

https://teams.microsoft.com/l/meetup-join/19%3ameeting_NTZkNzk1MzYtM2M0MS00NTcxLTlhNGYtNDgwZTliYmM5MzRi%40thread.v2/0?context=%7b%22Tid%22%3a%228940ba96-6696-4ae0-9961-6f604093928f%22%2c%22Oid%22%3a%22c3363b42-52d6-4a93-b703-b4a0051f909f%22%7d

Regards,

(Rutuja Bhalerao)

Sub Regional Officer, Raigad-2

Maharashtra Pollution Control Board.

From: SRO Raigad 2

Sent: Thursday, 14 November 2024 3:17 pm

To: smpore@dbatu.ac.in <smpore@dbatu.ac.in>; hodenvsci@unipune.ac.in <hodenvsci@unipune.ac.in>; environmentalscience@fergusson.edu <environmentalscience@fergusson.edu>; bvuniversity@bharativedyapeeth.edu <bvuniversity@bharativedyapeeth.edu>

Cc: RO Raigad <rorraigad@mpcb.gov.in>; e.thirun@nic.in <e.thirun@nic.in>; MUNICIPAL_CO MATHERAN <mcomatheran@gmail.com>

Subject: Request Submission of Proposal

Sir/Madam,

Please find enclosed herewith the request for submission of proposal vide order dtd. 25/10/2024 in O.A. 210/2024 (WZ) wrt Sunil Ramchandra Shinde & Anr. Vs. State of Maharashtra & Ors.

You are requested to furnish your technical proposal for aforesaid Terms of Reference and provide financial quotation for this study, within 5 days, as the committee is required to submit report to Hon'ble NGT in time bound manner.

Regards,

(Rutuja Bhalerao)

Sub Regional Officer, Raigad-2

Maharashtra Pollution Control Board.

MAHARASHTRA POLLUTION CONTROL BOARD**REGIONAL OFFICE - RAIGAD**

Tel. No. 2757 6034

Fax No. 2756 2132

Email: rorraigad@mpcb.gov.inVisit us at: mpcb.gov.in

"Your Service is our Duty"

Raigad Bhavan, 6th Floor,
Sec-11, C.B.D. Belapur, Navi
Mumbai 400 614.

MPCB/ROR/TB/2025- 2806

Date: 09.01.2025

To,
The Dean (R&D) and Professor,
Department of Civil Engineering,
Dr. Babasaheb Ambedkar Technological University (BATU),
Village:- Lonere, Tal:- Mangaon, Dist.- Raigad- 402103.

Subject: - To carry out work as per order passed by the Hon'ble National Green Tribunal (WZ) dated 25.10.2024 in Original Application No. 210 / 2024 (WZ), (Matheran Horse related matter)

Reference: 1. Order passed by the Hon'ble NGT in OA No. No. 210/2024 (WZ), (Matheran Horse related matter)
2. Your proposal dated 24.11.2024.
3. Presentation held on before joint committee dtd. 10.12.2024
4. Office Note submitted by the Sub-Regional Officer, Raigad-II on 27.12.2024, which was duly approved by the competent authority of the Board.

Sir,

The Hon'ble National Green Tribunal (WZ) has issued an order on 25.10.2024 in Original Application No. 210/2024 (WZ), Ramchandra Shinde & Anr. Vs. State of Maharashtra & Ors. As per the order passed by Hon'ble NGT, the Joint Committee was constituted. This committee consisting of One representative of the Ministry of Environment, Forest & Climate Change (MoEF&CC); One representative of the Matheran Hill Station Municipal Council; and One representative of the Maharashtra Pollution Control Board (MPCB).

Accordingly, Presentation was held on 10.12.2024 vide ref no.3. Further, MPC Board has decided to award works of "to carrying out work as per Order Dated 25.10.2024 Passed by Hon'ble NGT in Original Application No. 210/2024 (WZ)", with following Objectives, Scope of Work and Deliverables with payment terms and conditions: -

A. Objectives:

- i. Assessment of the environmental damage caused by movement of horses, horse dung at the Matheran
- ii. Recommend measures for minimizing impact thereof on environment
- iii. Recommend the best eco-friendly practices for the management of Horse dung.

B. Scope & Methodology of work:

The decomposition of horse dung in sensitive ecological zones, such as Matheran in Maharashtra, poses significant challenges to environmental sustainability. Horse dung contributes to air pollution through the emission of methane and ammonia, soil pollution via nutrient overload, and water pollution through leaching of nitrates and pathogens. This review synthesizes findings from 15 research studies to explore the impacts of horse dung on air, soil, and water quality.

C. Sampling Plan.**1. Air Sampling Plan:**

Objective: To measure ammonia (NH_3), methane (CH_4), volatile organic compounds (VOCs), and particulate matter (PM_{10} and $\text{PM}_{2.5}$) emissions from horse dung in Matheran.

Sampling Locations:

- Sampling Sites: 5 different areas with high horse activity (e.g., stables, trekking routes) and 5 areas with minimal horse activity (controls) will be selected.
- Number of Samples per Site: 2–3 samples per site to ensure spatial variation.
- Height: Collect samples at 1.5 m (human breathing zone)

2. Soil Sampling Plan :

Objective: To assess nutrient overload (nitrogen, phosphorus), microbial contamination (*E. coli*, *Salmonella* spp.), and heavy metals in soils affected by horse dung.

Sampling Locations:

- Sampling Sites:
- 5 stables or manure dumping areas such as horse movement routes
- 5 control sites away from horse activity.
- Number of Samples per Site: 5 samples/site (5 subsamples pooled into one per site).

3. Water Sampling Plan :

Objective: To monitor nutrient leaching (nitrates, phosphates), microbial contamination (*E. coli*, *Salmonella* spp.), and chemical contamination (heavy metals, antibiotics) in water bodies near horse activity zones.

4. Sampling Locations:

- 5 runoff areas near horse routes.
- 5 control locations upstream or unaffected by horse activity.
- Number of Samples per Site: 2–3 water samples/site for spatial variability

5. Sampling Summary Table :

Parameter	Air (25 Samples)	Soil (25 Samples)	Water (25 Samples)
Objective	Gaseous emissions, PM levels	Nutrient, microbial, and heavy metals	Nutrient, microbial, and heavy metals
Sites	10 sites (5 affected, 5 control)	10 sites (5 affected, 5 control)	10 sites (5 affected, 5 control)
Sample Count	25 total	25 total	25 total
Key Analysis	NH ₃ , CH ₄ , PM ₁₀ , PM _{2.5}	N, P, microbes, heavy metals	N, P, microbes, heavy metals, antibiotics
Storage	Filters	Plastic/sterile bags	Acid-preserved bottles, sterile bottles

This comprehensive sampling plan ensures robust data collection for evaluating the environmental impacts of horse dung on air, soil, and water quality.

C. Project Duration:

- The time duration of the project shall be 08 weeks from receipt of the work order. The final report along with recommendations shall be submitted within 15 days from the date of completion of the whole project.

D. Support from MPC Board:

- Representative from MPCB for guidance and technical co-ordination. MPCB shall take the review of the work progress on monthly basis.

E. Payment Terms:**1. Air Sampling Costs :**

Item	Unit Cost (₹)	Quantity	Total Cost (₹)
Gas analysers (NH ₃ and CH ₄)	5,000/day	5 days	25,000
High-volume air samplers (PM ₁₀ /PM _{2.5})	5000/day/unit	5 days	25,500
Filters for PM analysis	500/filter	50	25,000
Laboratory analysis (PM ₁₀ /PM _{2.5})	1,500/sample	25	37,500
Subtotal (Air Sampling)			1,12,500
Add Contingencies		Lumpsum	17,500
		Total	1,30,500/-

2. Soil Sampling Costs :

Item	Unit Cost (₹)	Quantity	Total Cost (₹)
Soil auger rental	5,000/day	3 days	15,000
Sample bags	60/bag	50	3,000
Laboratory analysis (nutrients)	1,500/sample	25	37,500
Laboratory analysis (microbial)	2,000/sample	25	50,000
Laboratory analysis (heavy metals)	2,500/sample	25	62,500
Subtotal (Soil Sampling)			1,68,000
Add Contingencies		Lumpsum	12,000
		Total	1,80,000/-

3. Water Sampling Costs :

Item	Unit Cost (₹)	Quantity	Total Cost (₹)
Polyethylene/glass bottles	100/bottle	50	5,000
Sterile bottles	150/bottle	25	3,750
Field filtration units	500/day/unit	5 days	2,500
Laboratory analysis (nutrients)	1,500/sample	25	37,500
Laboratory analysis (microbial)	2,000/sample	25	50,000
Laboratory analysis (heavy metals)	2,500/sample	25	62,500
Laboratory analysis (antibiotics)	3,000/sample	25	75,000
Subtotal (Water Sampling)			2,36,250
Add Contingencies		Lumpsum	13,7750
		Total	2,50,000/-

4. Consultancy Charges :

Item	Unit Cost (₹)	Quantity	Total Cost (₹)
Environmental consultant (site visits)	10,000/day	5 days	50,000
Data analysis and report writing	20,000/report	1	20,000
Expert review and recommendations	15,000/review	1	15,000
One time consultancy charges of expert/s		Lumpsum	5,00,000
Subtotal (Consultancy)		Total	5,85,000/-

5. Total Cost Estimate:

Category	Cost (₹)
Air Sampling	1,30,500/-
Soil Sampling	1,80,000/-
Water Sampling	2,50,000/-
Consultancy Charges	5,85,000/-
Total	11,45,500/-
(+ GST 18%)	2,06,100/-
Grand Total	13,51,100/-

- 25% along with work order
- 25% on submission of Interim Report
- 50% on submission of Final Report

In view of the above, you are hereby requested to start the work on issuance of this work order and submit a report after completion of the work in a timely manner.

This is issued with the approval of the Competent Authority of the Board.

**For AND ON BEHALF OF
M.P.C. BOARD,**


**(Sanjay R. Bhosale)
Regional Officer, Raigad.**

Copy for favor of information to :-

1. The PA to Hon'ble Chairman, MPC Board, Mumbai.
 2. The PA to Hon'ble Member Secretary, MPC Board, Mumbai
 3. The Joint Director (APC), MPC Board, Mumbai
 4. The Chief Account Officer, MPC Board, Mumbai
- You are requested to release payment in favor of M/s. BATU, Lonere, Raigad.

Copy for necessary action to:-

1. The Sub-Regional Officer, Raigad-II
- You are directed to assist the M/s. BATU, Lonere, Raigad team during the studies carried out in the field.

**Dr. Babasaheb Ambedkar Technological University Lonere****Department of Civil Engineering****"Vidyavihar", LONERE 402103, Dist. Raigad, Maharashtra, India****Prof. (Dr.) Sachin M. Pore**

No. SMP/NPM-MPCB/ 06

Dean (R&D) and Professor, Department of Civil Engineering

Date: 08/06/2026

To,

Mrs. Rutuja Bhalerao

Sub-Regional Officer, Raigad-2

Maharashtra Pollution Control Board

Raigad Bhavan, 6th Floor, Sec-11, C.B.D. Belapur, Navi Mumbai 400 614

Reference: 1) Your letter Ref No: MPCB/SROR-2/ 241114-FTS-0113 of 14/11/24 and Telephonic discussion on 08/11 and 22/22/2024 regarding Environmental Impact Analysis of Horse-dung presence in Matheran

2) Your letter (Work-Order) Ref No: MPCB/ROR/TB/2025/2806, Dt. 09/01/2025

3) Your email dated **08/06/2026** regarding points raised by the Respondent no. 5-7**Subject:** Request to note the opinion towards points raised by the Respondent no. 5-7....**Dear Madam,**

Sincere thanks for extending opportunity to submit our credentials for knowledge of your esteemed organization. Dr. Babasaheb Ambedkar Technological University Lonere (DBATU) is established by Government of Maharashtra vide Maharashtra Act No. XXII of 1989 and XXIX of 2014 as state technological University.

In my previous communications, I have brought to your notice that DBATU offers UG, PG and PhD programs in various disciplines in engineering & technology, pharmacy, architecture and HMCT. I wish to bring it to your kind notice that we are working as Technical Consultant for many projects of State and Central Government. We routinely undertake expert opinion studies in various cases, structural design, quality control services and proof checking of projects

Depending up on the scope of activities involved in the project, we form the team of requisite expertise. The basic qualifications of all teammates is graduation in civil engineering which is sufficient to carry out required activities in subdomain of civil engineering. Qualification in subdomain is only one of the criteria towards involvement of team members. In addition to subdomain qualifications, the seniority and exposure to coordinate and work across subdomains is considered as equally important.

As per our discussion in reference, the current proposal involves working in association with NP Matheran and MPCB. Accordingly, two faculty members from DBATU affiliated institute NKOCET, Solapur possessing higher qualifications in environmental engineering are included in the team since beginning.

Please note that as per the reference no. 02 above, the objectives outlined & stated below are covered on pages mentioned below in final report submitted by us as:

Objective No. 1: Assessment of the environmental damage caused by movement of horses, horse dung at the Matheran	Pg. No. 04 to 98, 120,121,124
Objective No. 2: Recommend measures for minimizing impact thereof on environment	Pg. No. 98 to 100, 104 to106, 122, 124
Objective No. 3: Recommend the best eco-friendly practices for the management of Horse dung	Pg. No. 113 to 119, 122, 123,124

This clearly indicates that we have fully achieved the expected quality delivery. The submitted report duly attends the expected deliverables.

I wish to bring it to your notice that as per the initial agreement between us, the **total 75 tests** were to be conducted. However, after conducting few tests, it was felt necessary by me that testing need to include the seasonal variation in trends of parameters involved. The issue was discussed at length with my teammates and considering social importance associated with the horsedung issue we unanimously among us decided to widen the scope of our activities to cover all the three seasons and **conducted 263 tests**. We have not expected the additional charges for the widened scope of work. A detailed note towards this is included prior to the statement on conclusions in the enclosed draft.

I have included herewith detailed say towards points raised by the Respondent no. 5-7. I am of opinion that, we as a team have done our duties most ethically and by putting in the latest professional information and knowledge.

Thanking You! Looking forward for your reply.

Yours truly,



Dr. Sachin M. Pore
B.E. (Civil), M.E. (Structures)
Ph.D. (Structural Dynamics – Earthquake Engineering)

I. Technical Structure of the Study and Role of the Investigation Team

The affidavit proceeds on an incorrect assumption that the environmental assessment was undertaken solely on the basis of the expertise of a single Principal Investigator. Such an assumption is factually incorrect.

The Matheran Environmental Assessment Project was conceived and executed through a multidisciplinary team consisting of experts possessing complementary expertise in environmental engineering, pollution monitoring, environmental impact assessment, water resources, air quality assessment, soil quality analysis and environmental management.

The study was undertaken under the joint participation of:

- Dr. Sachin M. Pore, DBATU, Lonere;
- Dr. V. K. Patki, NKOCET, Solapur;
- Dr. S. S. Jahagirdar, NKOCET, Solapur;
- Laboratory analysts;
- Field investigators;
- Guidance of Maharashtra Pollution Control Board officials.

The responsibilities within the project were clearly distributed as follows:

Investigator	Major Role in Project
Dr. Sachin M. Pore (DBATU)	Conceptualization of study framework, preparation of project methodology, identification of monitoring strategy, development of seasonal assessment protocol, formulation of monitoring locations, environmental assessment framework, interpretation structure and overall technical design of the study.
Dr. V. K. Patki (NKOCET)	Environmental monitoring, seasonal investigation planning, air quality assessment, water quality assessment, environmental data analysis, pollution interpretation, environmental engineering assessment and preparation of technical findings.
Dr. S. S. Jahagirdar (NKOCET)	Environmental monitoring, soil quality assessment, environmental impact assessment, seasonal comparative analysis, pollution hotspot identification, environmental interpretation, regulatory assessment and preparation of environmental management recommendations.

Thus, the overall design & framework of the study was conceptualised by Dr. S. M. Pore, whereas the extensive field investigations, environmental monitoring, seasonal analysis, pollution assessment and interpretation of

environmental data were undertaken by Dr. V. K. Patki and Dr. S. S. Jahagirdar, both of whom possess qualifications in Environmental Engineering. Dr. Pore though possesses higher qualifications in field of structural engineering, he possesses required training in environmental engineering at graduate level which is sufficient for the scope of activities of project leader, i.e., to understand and evaluate the outcome of activities of fellow teammates and issue necessary guidance to discharge the anticipated work. Dr. Pore and Dr. Patki are jointly supervising Ph.D. level research work in field of Environmental Engineering.

The final conclusions are outcome of joint efforts Dr. Pore, Dr. Patki & Dr. Jahagirdar towards interpretation of assessment of environmental data.

Accordingly, the objection attempting to assess the study solely on the basis of the expertise of one investigator is fundamentally misconceived and ignores the multidisciplinary nature of the investigation.

II. Environmental Expertise of Dr. V. K. Patki

Dr. V. K. Patki is a Professor of Civil Engineering having a Ph.D. in Civil-Environmental Engineering from the National Institute of Technology Karnataka (NITK), Surathkal, with more than 27 years of professional experience in environmental engineering, water quality management, wastewater treatment, air pollution assessment and environmental consultancy.

His research interests include:

- Water and wastewater treatment;
- Air pollution control;
- Solid waste management;
- Environmental modelling;
- Artificial Intelligence applications in Environmental Engineering.

Dr. Patki has successfully completed and coordinated several major government-funded environmental projects, including:

Project	Funding Agency	Amount (₹)	Role
Performance Evaluation of Onsite Integrated Greywater Treatment System	DBATU	3.00 Lakhs	PI
Utilization of Industrial Solid Wastes in Burnt Clay Bricks	MPCB	4.00 Lakhs	PI

Project	Funding Agency	Amount (₹)	Role
National Ambient Air Quality Monitoring Programme (Solapur, Barshi, Pandharpur, Osmanabad)	MPCB/CPCB	84.00 Lakhs	Project Coordinator
National Ambient Air Quality Monitoring Programme	MPCB	35.00 Lakhs	Project Coordinator
National Ambient Air Quality Monitoring Programme	MPCB	35.00 Lakhs	Project Coordinator
National Ambient Air Quality Monitoring Programme	MPCB/CPCB	70.00 Lakhs	Project Coordinator
Environmental Investigation of Spent Wash Contamination at Loknete Baburao Patil Agro Industries	IIT Bombay	10.44 Lakhs	PI
Mission Amrit Sarovar	AICTE	2.00 Lakhs	PI

Dr. Patki has published numerous peer-reviewed papers in SCI, SCIE, ESCI, Scopus and Web of Science indexed journals on water quality assessment, artificial intelligence applications in environmental engineering, environmental monitoring and pollution management. His work on Water Quality Index modelling using Fuzzy Logic, ANN and ANFIS is internationally recognized.

III. Environmental Expertise of Dr. S. S. Jahagirdar

Dr. S. S. Jahagirdar possesses a Ph.D. in Civil-Environmental Engineering from the National Institute of Technology Karnataka (NITK), Surathkal and is currently serving as Professor and Dean (Research and Development), NKOCET, Solapur. He secured First Rank in B.E. Civil Engineering, First Rank in M.E. Environmental Engineering and achieved All India Rank 167 in GATE.

Dr. Jahagirdar has more than 23 years of academic, research and consultancy experience in:

- Environmental Engineering;
- Environmental Impact Assessment;
- Water and Wastewater Engineering;
- Solid Waste Management;
- Air Pollution Assessment;

- Environmental Sustainability;
- Environmental Regulatory Compliance.

His major environmental projects include:

Project	Funding Agency	Amount (₹)	Role
Utilization of Industrial Solid Wastes in Burnt Clay Bricks	MPCB	4.00 Lakhs	Principal Investigator
National Ambient Air Quality Monitoring Programme	MPCB	84.00 Lakhs	Project Coordinator
National Ambient Air Quality Monitoring Programme	MPCB	35.00 Lakhs	Project Coordinator
National Ambient Air Quality Monitoring Programme	MPCB	35.00 Lakhs	Project Coordinator
National Ambient Air Quality Monitoring Programme	MPCB	51.00 Lakhs	Project Coordinator
Detailed Investigation of Biodigester Accident and Environmental Impact Assessment at Loknete Sugar Factory, Angar (with IIT Bombay)	IIT Bombay	10.44 Lakhs	Principal Investigator
Design and Development of Agro-Biomass Fired Cremation Chamber	DBATU	3.00 Lakhs	Principal Investigator
National Ambient Air Quality Monitoring Programme	MPCB	51.00 Lakhs	Project Coordinator

In addition to funded projects, Dr. Jahagirdar has authored books on Environmental Engineering, Wastewater Engineering and Advanced Environmental Engineering and has published research papers on textile sludge reuse, environmental pollution control, water quality assessment, greywater treatment, sustainable environmental technologies and environmental management.

IV. Collective Expertise of the Team

It is therefore evident that the present investigation was carried out by a team comprising:

- An IIT Roorkee doctoral expert responsible for overall study design and framework;

- Two Environmental Engineering doctorates from NITK Surathkal responsible for environmental monitoring, pollution assessment, seasonal investigations and environmental interpretation;
- Supporting laboratory and field investigation teams.

Collectively, the investigators have executed environmental projects worth several crores of rupees funded by MPCB, CPCB, DBATU, AICTE, IIT Bombay and other government organizations and have extensive experience in air quality monitoring, water quality assessment, soil pollution studies, environmental impact assessment and environmental consultancy.

Reply to Allegation Regarding Absence of Ecological, Hydrological and Soil Assessment

Respondent Nos. 5–7 have alleged at Page 645 (Point No. 4) that the Joint Committee Monitoring Report is unreliable and that the issue requires assessment by ecological experts, geologists and hydrologists. It has further been contended that the report does not address the aspects mentioned at Page 646 (Points I to III).

The said contention is factually incorrect.

The Final Consolidated Environmental Monitoring Report has specifically addressed the environmental pathways and impacts associated with horse movement and horse dung accumulation through detailed investigations covering air, water and soil environments across Pre-Monsoon, Monsoon and Post-Monsoon seasons.

Point I – Ecological Impacts

The ecological concerns raised by Respondent Nos. 5–7 are addressed throughout the report through assessment of:

- Nutrient enrichment due to horse dung and urine;
- Nitrate and phosphate loading in soil and water bodies;
- Eutrophication risks in Charlotte Lake and associated water bodies;
- Faecal contamination indicators including *E. coli*;
- Ecosystem degradation resulting from continuous organic loading;
- Environmental carrying-capacity concerns;
- Sustainable tourism and Eco-Sensitive Zone protection requirements.

The report specifically discusses the ecological implications of pollutant accumulation and identifies environmental hotspots, pollution pathways and long-term ecosystem risks. The study design itself was developed to evaluate ecological consequences arising from excessive equine activity within the Eco-Sensitive Zone. The preamble and integrated environmental assessment sections of the Final Report clearly address these issues.

Point II – Hydrological Assessment

The hydrological aspects referred to by Respondent Nos. 5–7 have also been examined in detail.

The report includes monitoring and assessment of:

- Charlotte Lake;
- Simpson Tank;
- Feeder streams;
- Runoff channels;
- Drainage pathways;
- Waterfalls and stagnant water bodies.

The study evaluates:

- Runoff-mediated transport of pollutants;
- Nutrient migration through stormwater pathways;
- Sediment transport and erosion processes;
- Seasonal hydrological variations;
- Source-to-sink movement of contaminants;
- Monsoon flushing effects;
- Contamination of receiving water bodies during rainfall events.

The Final Report specifically explains how horse dung-derived contaminants are transported through runoff and drainage systems into sensitive water bodies, thereby incorporating hydrological assessment relevant to the environmental issues under consideration.

Point III – Soil / Land Environment Assessment

The report also contains extensive soil quality investigations and land-environment assessment covering:

- Soil pH;
- Electrical Conductivity;
- Organic Carbon;
- Nitrogen;
- Phosphorus;
- Potassium;
- Sulphur;
- Boron;
- Zinc;
- Iron;
- Copper;
- Manganese.

In addition, the report evaluates:

- Nutrient accumulation from horse dung;

- Soil contamination pathways;
- Soil quality deterioration;
- Soil compaction;
- Erosion susceptibility;
- Sediment transport mechanisms;
- Reduction in infiltration capacity.

The findings clearly demonstrate assessment of land degradation processes and environmental impacts associated with equine activities.

Comparison of Proposed Sampling Plan vs Actual Sampling Conducted in Matheran Environmental Study

Environmental Component	Proposed Sampling Plan (Initial Proposal)	Actual Sampling Conducted	Remarks
Air Quality	25 air samples	3 Air Monitoring Stations (AS1–AS3) monitored during three seasons. Each seasonal campaign generated 48 observations (PM10, PM2.5, SO2, NO2), totaling approximately 144 analytical observations over the study period.	Seasonal monitoring increased data depth.
Water Quality	10 Locations (5 horse-affected runoff sites + 5 control sites), approximately 25 water samples	Phase I = 5 samples (WS1–WS5); Phase II = 28 samples (WS1–WS28); Phase III = 28 samples (WS1–WS28). Total = 61 water samples.	Actual sampling substantially exceeded proposed water sampling.
Soil Quality	10 Locations (5 horse-affected + 5 control sites), approximately 25 soil samples	Phase I = 7 samples (SS1–SS7); Phase II = 23 samples (SS1–SS23); Phase III = 28 samples (SS1–SS28). Total = 58 soil samples.	Actual soil sampling greatly exceeded proposed sampling.

Summary of Proposed vs Actual Sampling

Component	Proposed Samples	Actual Samples/Monitoring Points
Air Quality	25	3 Stations × 3 Seasons (≈144 analytical observations)
Water Quality	25	61 Samples
Soil Quality	25	58 Samples
Total	75 Samples	263 Environmental Samples/Observations

Phase-wise Actual Sampling Details

Phase	Air Monitoring Stations	Water Samples	Soil Samples
Phase I (Pre-Monsoon)	3 (AS1–AS3)	5 (WS1–WS5)	7 (SS1–SS7)
Phase II (Monsoon)	3 (AS1–AS3)	28 (WS1–WS28)	23 (SS1–SS23)
Phase III (Post-Monsoon)	3 (AS1–AS3)	28 (WS1–WS28)	28 (SS1–SS28)
Total	3 Stations monitored seasonally	61	58

Key Observation

The original proposal envisaged approximately **75 environmental samples** (25 each for air, water, and soil). However, the actual investigation was significantly expanded during execution. The final study covered **three seasonal phases (pre-monsoon, monsoon, and post-monsoon)** and generated **61 water samples, 58 soil samples, and continuous air quality monitoring at 3 representative stations**, resulting in approximately **263 environmental observations/samples**, thereby providing a far more comprehensive scientific assessment of environmental conditions within the Matheran Eco-Sensitive Zone than originally proposed

Additional Submission Regarding Scope of Work

It is respectfully submitted that the original proposal envisaged approximately 75 environmental samples comprising air, water and soil monitoring.

However, considering the ecological sensitivity of Matheran and the need for scientifically reliable conclusions, the study was expanded to include comprehensive monitoring during Pre-Monsoon, Monsoon and Post-Monsoon seasons.

As a result, the actual work carried out was substantially greater than originally proposed and included seasonal monitoring, additional sampling, laboratory analysis, environmental risk assessment, hotspot identification and preparation of phase-wise as well as consolidated reports.

Despite this significant increase in workload, field investigations and analytical efforts, no additional financial demand was made upon MPCB or the Joint Committee. The investigators undertook the expanded scope of work in the larger public interest and in discharge of their professional responsibility towards protection of the Matheran Eco-Sensitive Zone and compliance with the directions of the Hon'ble National Green Tribunal.

The enhanced investigations have strengthened the scientific reliability, comprehensiveness and credibility of the Final Environmental Monitoring Report.

Conclusion

Therefore, the allegation that ecological, hydrological and land-environment aspects were not considered is factually incorrect. The Final Consolidated Report specifically incorporates all three aspects through phase-wise environmental monitoring, laboratory-supported analysis, seasonal investigations and integrated environmental interpretation.

The issue before the Hon'ble Tribunal relates to environmental impacts arising from horse movement and horse dung accumulation. The Final Report adequately addresses the ecological, hydrological and soil-environment consequences of these activities and provides scientifically supported findings based on field observations, monitoring data and laboratory analysis.

Accordingly, the objection raised by Respondent Nos. 5–7 is without scientific basis and does not identify any environmental parameter that has remained unassessed in the Final Report.

The report comprehensively evaluates ecological impacts arising from horse dung accumulation and equine activity, including nutrient enrichment, nitrate and phosphate loading, eutrophication risks in Charlotte Lake and associated water bodies, microbial contamination, ecosystem degradation, environmental carrying capacity and implications for the protection of the Matheran Eco-Sensitive Zone. The report further identifies pollution hotspots and ecological risk pathways based on field observations and laboratory-supported environmental monitoring.

Similarly, hydrological aspects have been extensively addressed through three-season investigations conducted during pre-monsoon, monsoon and post-monsoon periods. The study covered Charlotte Lake, Simpson Tank, streams, runoff channels, waterfalls, stagnant water bodies and drainage pathways. The report specifically analyses pollutant transport through surface runoff, stormwater movement, nutrient migration, sediment transport, monsoon flushing effects and seasonal variations in water quality. The mechanisms through which horse dung-derived contaminants reach water bodies have been scientifically explained and assessed.

The report also contains detailed soil and land environment assessment covering soil pH, electrical conductivity, organic carbon, nitrogen, phosphorus, potassium and micronutrient status. The study evaluates nutrient enrichment due to horse dung, soil contamination pathways, deterioration of soil quality, erosion processes and sediment transport mechanisms.

Therefore, the report clearly incorporates ecological, hydrological and soil-environment assessments relevant to the issues before the Hon'ble Tribunal. The contention that such aspects were not considered is without factual or scientific basis and is liable to be rejected.

Dr. S. S. Jahagirdar

Dr. V. K. Patki

Dr. S. M. Pore

	Name: Dr.Vinayak K. Patki	
	Designation: Professor	
	Qualification: Ph.D. (Civil- Environmental)	
	Email-id : vinayakpatki@orchiddengg.ac.in	
	Mobile No.: 9552529325	
	Age: 49	
	Total Experience:	27 Years
	Teaching	26 Years
	Industry	01 Years
Area of Interests: Water and Waste water treatment, Artificial Intelligence and its applications in Environmental Engg.		
Masters: M.E. (Environmental Engg.) WCE, Sangli		Ph.D.- Civil-Environmental (NIT, Surathakal)
Date of Joining this Institution (NKOCET):		20/06/2008
Subjects Taught		
1. Environmental Engineering –I	9.Physicochemical Processes for Water and Wastewater Treatment	
2. Environmental Engineering –II	10. Solid waste Management	
3. Basic Civil Engineering	11. Systems Engineering.	
4. Optimization Technique	12.Air Pollution and Control	
5. Fluid Mechanics	13.Industrial Waste Treatment	
6. Basic Civil Engineering		
7. Engineering Management –I		
8. Engineering Management –II		
Project Guided		
Total Projects: 46		
Conferences / STTP /FDP/ Workshops		Total-20
Awards & Recognition		
- Recognised Ph.D guide in Civil Engineering DBATU, Lonere, Raigad. - BOS member Civil Engg, Dept-DBATU Lonere - Academic Council Member- Khandesh College Education Societys College of Engineering, Jalgaon. - BOS member Civil Engg, Dept -Deogiri College of Engineering, Sambhajinagar. - BOS member Civil Engg, Dept -Dr.J.J.Magdum College of Engg., Jaysingpur. - Recognized as PG teacher in Civil Engineering for Solapur University, Solapur. - Awarded as the best faculty member of Civil Engineering Department for academic Year 2011-12.		

- Awarded as the best faculty member of Civil Engineering Department for academic Year 2020-21. - Reviewer for various Journals of Elsevier, Springer, Taylor and Francis .	
Association with Professional bodies	
1) Life Member of Indian Society for Technical Education (ISTE). 2) Associate member of Institute of Engineers (IEI)	
Research and Publications	
International Journals - 30	Conferences - 07
Achievements (if any)	
Reviewer for various Journals of Elsevier, Springer and Taylor and Francis.	

Publication Details:

A) Details of Papers Published

- **V. K. Patki, S. Shrihari, B. Manu and Paresh Chandra Deka (2015)** “Fuzzy system modeling for forecasting water quality index in municipal distribution system” in Urban Water Journal, (Taylor and Francis, SCI, SCIE, SCOPUS/WOS DOI: 10.1080/1573062X.2013.820333, Aug 2015.)
- **V. K. Patki, J.G.Nayak , L.G.Patil (2020)** “Development of water quality index for Godavari River (India) based on fuzzy inference system ” Groundwater and Sustainable Development, Vol.10 ,100350. (Elsevier, ESCI, Scopus Indexed, <https://doi.org/10.1016/j.gsd.2020.100350>.)
- **V.K.Patki, Jyotiprakash G. Nayak, L. G. Patil (2021)** Artificial Neural Network Based Water Quality Index (WQI) for River Godavari (India), Materials Today, Available online 2 April 2021. (Elsevier, Scopus/WOS indexed) <https://doi.org/10.1016/j.matpr.2021.03.100>)
- **V.K.Patki, Madhuri Ingale, Umakant Chanshetti (2021)** Nanofibers Synthesized from Jawar Stem (Agro-Waste) for Removal of Cr (VI) from Aqueous Solution, International Journal of Environmental Analytical Chemistry. (July 2021, Taylor and Francis, SCI, SCIE, SCOPUS/WoS indexed)Page1-14, <https://doi.org/10.1080/03067319.2021.1966425>)
- **Vinayak Patki , Abolfazl Mehbodniya , Julian L. Webber b , Arulmani kuppusamy , Mohd anul ha , Anil kumar , Sathishkumar Karupusamy (2022)** Improving the Geo-Drone-Based Route for Effective Communication and Connection Stability Improvement in the Emergency Area AD-hoc Network, Sustainable Energy Technologies and Assessment (July 2022, (Elsevier, SCI, Scopus/WoS Indexed, Impact factor 7.6, <https://doi.org/10.1016/j.seta.2022.102558>)
- **Jahagirdar S.S, V.K. Patki , Nikhil More, Saurabh Shirsi, Satish More, Girish Kulkarni & Mahesh Sonawane S. (2024).** Roadside Dust-Amended Novel Burnt Clay Brick. In: Sivakumar Babu, G.L., Mulangi, R.H., Kolathayar, S. (eds) Technologies for Sustainable Transportation Infrastructures. SIIOC

2023. Lecture Notes in Civil Engineering, vol 529. (Springer, Scopus Indexed
https://doi.org/10.1007/978-981-97-4852-5_70)

- **Patil Y. M., V.K.Patki, Shrikant Jahagirdar, Rahul Karle (2021)** Greywater Treatment by Vegetated Vermifilter: A low-cost option for Rural Sanitation in India, Materials Today Proceedings, 45, 6946-6950. (Elsevier, Scopus indexed, <https://doi.org/10.1016/j.matpr.2021.01.395>).
- **Rahul Karle, Patil Y. M., V.K.Patki, Shrikant Jahagirdar, Girish Kulkarni (2021)** Degradation Of Personal Care Product 2-Chloropyrine Detected In Surface Water Bodies., Materials Today Proceedings, Available online 27 March 2021 (Elsevier, Scopus indexed) <https://doi.org/10.1016/j.matpr.2021.02.820>.)
- **Shrikant Jahagirdar, V.K.Patki, Patil Y. M., Rahul Karle (2021)** Reuse Of Textile Mill Sludge in Different Grades of Concrete. Materials Today Proceedings, Available online 2 April 2021 (Elsevier, Scopus indexed) <https://doi.org/10.1016/j.matpr.2021.03.181>.)
- **Patki V.K., Vijay Babu P.V., Palase A. (2022)** On-Site Grey Water Treatment Integrated with Constructed Wetland for Household Appliance. In: Kolathayar S., Mondal A., Chian S.C. (eds) Climate Change and Water Security. Lecture Notes in Civil Engineering, vol 178. Springer, Singapore. https://doi.org/10.1007/978-981-16-5501-2_32 Journal as a Book Chapter) (Springer, Scopes Indexed)
- **Jahagirdar S.S., Patki V.K., Kulkarni G.J., More S.B. (2022)** Impacts of Temple Waste on the Environment and Its Mitigation. In: Pal I., Kolathayar S. (eds) Sustainable Cities and Resilience. Lecture Notes in Civil Engineering, vol 183. Springer, Singapore. https://doi.org/10.1007/978-981-16-5543-2_22 (Springer, Scopes Indexed)
- **J. G. Nayak, Vinayak K.Patki, Rashmi J. Nayak, Ramgopal Sahu, Mithun B. Patil, Yashwant Patil, (2024)** Adaptive Neuro Fuzzy Inference System based Water Quality Index for Godavari River (India) , The International Journal of Multiphysics: Vol. 18 No. 3, 1002-1011.(ESCI/WoS Indexed)
- **S.S.Jahagirdar, V.K.Patki, (2019)** “Evaluation of Physical and Chemical Properties of OPC and PPC Cement” International Journal of Recent Technology and Engineering, Volume-8, Issue-2S11, September. (Scopus Indexed- ISSN: 2277-3878)
- **V. K. Patki, S.S.Jahagirdar, (2020)** “Urban Water Distribution Network Failure Prediction Using Artificial Intelligence” Test Engineering and Management, Vol.82(1) ,8355-8362. (Scopus Indexed ISSN 0193-4120).
- **V. K. Patki, R.N.Patil, A.R.Kshirsagar (2020)** “Six Sigma: Literature Review

and Methodologies to Improve Implementation” Test Engineering and Management, Vol.83 (1) ,71-79. (Scopus Indexed ISSN 0193- 4120).

- **V. K. Patki, A.R.Kshirsagar, G.N.Samleti (2019)** “ Anti-Glare Headlamp a Safe Option for Better Vision to the Rider” International Journal of Innovative Technology and Exploring Engineering, Volume-8, Issue- 9S2, July 2019 (Scopus Indexed ISSN: 2278-3075).
- **Vinayak K. Patki, S. Shrihari and B. Manu (2013)** “Water Quality Index in Municipal Distribution System for Solapur city, Maharashtra State, India” Journal of Environmental Protection, Vol. 30 Iss. 6, PP. 16-23, June 2013.
- **Vinayak K. Patki, S. Shrihari and B. Manu (2013)** “Water Quality Prediction in Distribution System Using Cascade Fed Forward Neural Network” International Journal of Advanced Technology in Civil Engineering. 2(1), 88-91.
- **Dr. G.R. Munvalli and V.K.Patki (2009)** “ A Comparative Study of Defluoridation Techniques” Journal of the Indian Public Health Engineering, India, Vol. 2009-10,No.2,36-43.
- **Dhiraj Badde, Anil Kumar Gupta and V.K.Patki (2013)** “Cascade and Feed Forward Back Propagation Artificial Neural Network Models for Prediction of Compressive Strength of Ready Mix Concrete” in IOSR Journal of Mechanical and Civil Engineering, ISSN: 2218-1684, pp 1-6.
- **Dhiraj Badde, Anil Kumar Gupta and V.K.Patki (2013)** “Comparison of Fuzzy Logic and ANFIS for Prediction of Compressive Strength of RMC” in IOSR Journal of Mechanical and Civil Engineering (Special Issue), ISSN: 2278-1687, pp. 7-15.

B) Details of Papers Presented

- Presented Paper on Field Assessment and optimization of biomass briquettes in cremation Practices, NICHE ICEMS, MIT, Manipal, 12 Dec 2024.
- Presented Paper on Utilization of Biomass Briquettes for Environmentally Sustainable Cremation Practices(Part-I) , NICHE ICEMS, MIT, Manipal, 12 Dec 2024.(Sp
- Presented Paper on Utilization of Paper Cup waste in Paver Blocks, NICHE ICEMS, MIT, Manipal, 12 Dec 2024.
- Prof. V.K. Patki presented a paper on “Soft Computing for Water Quality” in the 27th National Convention of Environmental Engineers held at Manglore on 24 & 25 Jan. 2012.
- Prof. V.K. Patki presented a paper on “Water Quality Prediction in Distribution System Using Cascade Feed Forward Neural Network” in the second international conference on recent trends in engineering and technology held

C) Details of Book Published:

Published a book on Basic Civil Engineering for Solapur University, Solapur.
(Shradha Publishers)

D) Patents:

- Intelligent Data Analytics for fuel Optimization in GPS Satellite Launch Vehicles Using Deep Learning (Indian Utility Patent- ID202441095848) Published on 5/12/2024).
- An apparatus for monitoring and Controlling Wandering animals to Enhance road safety (South African Design Patent- 2023/11555).

- **Details of Research Grant Received**

Sr. No.	Topic	Amount	Grant Received from	Year	Role
1.	Performance Evaluation of onsite Integrated Greywater Treatment System	3,00,000/-	Dr.Babasaheb Ambedkar Technological University	2018-19	PI
2	Utilization of solid wastes generated from textile mill, granite marble cutting, foundry and stone crusher industries in burnt clay bricks	4,00,000 (duration 2 years)	Maharashtra Pollution Control Board, Mumbai	2020-22 (2 Years)	PI
3	National Ambient Air Quality of Solapur, Barshi, Pandharpur and Osmanabad. (Project Received Under NAMP/SAMP) Funding Agency Maharashtra Pollution Control Board, Mumbai CPCB&MPCB	84,00,000/-	MPCB	2020-22 (2 Years)	Project Coordinator
		35,00,000/-	MPCB	2022-23	
		35,00,000/-	MPCB	2023-24	
		70,00,000/-	MPCB & CPCB	2024-25	
4	Preparation of DPR for Loknete Bburao Patil Agro Industries Ltd. Angar, Mohol, Dist- Solapur for the site contaminated due	10,44,000	IIT, Bombay	Sept 2021 to May 2022 (1 year)	PI

	spillage of spent wash from Biodigester		1309		
5	Mission Amrit Sarovar-Jal Dharohar Sanrakshan – AICTE-NEAT Platform for Student Internship	2,00,000/-	AICTE, Delhi	July2022	PI
6	Pollution studies due to Horse-Dung in Matheran	11,00,000/-	MPCB	JAN2025	PI

• **Guiding Ph.D. Research Scholars:**

Sl.No.	Name of Research Scholar	Year of Registration	Topic	Status
1	Mahesh Bankar	Dec 2022	Artificial Intelligence for Prediction and Assessment of Air Quality	Ongoing
2	Shekhar Patil	Dec 2022	Deep Learning-Driven Prediction of Strain Capacity in Ultra-High-Performance Concrete for Enhanced Structural Performance	Ongoing

RESUME

Name : - Dr. Shrikant Sitaram Jahagirdar

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Netaji Subhash Nagar,
Bijapur Road,
Solapur-413004**

Phone no. : - 9423920067 9552529267 (Mobile)

**E-mail ID : -shrikantjahagirdar@orchidengg.ac.in
shrikjahagirdar@gmail.com**

Date of Birth : - 26/9/1977

Educational Qualification: -

Sr. No.	Exam/Degree	Year of Passing	Board/ University	% Marks Obtained	Remark
1	PhD	October 2015	NITK, Surathkal	-	
2	ME (Environment)	Jan 2001	Shivaji	71.86	Distinction
3	BE (Civil)	July 1999	Shivaji	80.12	Distinction
4	GATE-2000	March 2000	IIT's	96.87*	AIR 167

*- Percentile

Institutes: -

Sr. No.	Course	Institute
1	BE(Civil)	Walchand Institute of Technology, Solapur
2	ME(Environment)	Walchand College of Engineering, Sangli
3	PhD (Civil- environmental)	NITK, Surathkal

Academic Achievements: -

Sr. No.	Exam	Achievement
1	BE Civil	First University Rank
2	ME Environment	First in ME Environment
3	GATE-2000	All India Rank-167
4	PhD course work	CGPA- 10

Experience: -

Sr. No.	Name of College	Designation	Date of Joining	Date of Leaving	Experience in Years
1	Amritvahini College of Engg, Sangamner	<i>Lecturer in Civil Engg</i>	26/12/2001	9/03/2002	3 months
2	SVPM's College of Engg, Malegaon(Bk)	<i>Lecturer in Civil Engg</i>	11/03/2002	30/9/2007	5 years 6 months
3	SVPM's College of Engg, Malegaon(Bk)	<i>Senior Lecturer in Civil Engg</i>	1/9/2007	18/6/2009	1 year 9 months
4	A G Patil institute of technology, Solapur	<i>Asst Prof in civil engg</i>	19/6/2009	5/8/2009	2 months
5	NKOCET, Solapur	<i>Assistant Prof in civil engg</i>	6/8/2009	18/6/2012	6 years
6	NKOCET, Solapur	<i>Associate Prof in civil engg</i>	19/6/2012	30/6/2017	4 years
7	NKOCET, Solapur	<i>Head of Civil Engg. Dept.</i>	1/12/2015	1/8/2018	2 year 9 months
8	NKOCET, Solapur	<i>Professor in Civil Engg</i>	1/7/2017	Till date	6.5 years
9.	NKOCET, Solapur	<i>Dean R and D</i>	2/8/2018	Till date	6.5 year
Total experience					23+ yrs

Books published: -

Sr. No.	Name of book	Publisher	Year of publication
1	<i>Foundation Engineering BE (Civil), Pune university</i>	<i>Nirali Prakashan Pune</i>	<i>2007</i>
2	<i>Basic Civil Engineering FE, Solapur university</i>	<i>Shraddha Prakashan, Solpaur</i>	<i>2009</i>
3	<i>Environmental Engineering</i>	<i>Nirali Prakashan Pune</i>	<i>2019</i>
4	<i>Waste Water Engineering</i>	<i>Nirali Prakashan Pune</i>	<i>2021</i>

5	<i>Advance environmental Engineering</i>	<i>Nirali Prakashan Pune</i>	<i>2022</i>
6	<i>Building construction and drawing (Marathi version – reviewer) AICTE</i>	<i>In Process</i>	<i>2023</i>

Memberships of Professional Bodies: -

Sr. No.	Name of Professional Body	Nature of Membership	Membership Number
1	ISTE	Life Member	LM-33866
2	ISRM TT	Life Member	LM- 1593
3	Institution of Bridge Engineers	Associate Member	LAM-611
4	Institution of Engineers	Life member	A/535884/2

Papers Published/Presented/Accepted: -

Separate sheet attached

Seminars/Workshops/STTP Programmes Attended: -

Sr. No.	Title	Organising Body	Duration	Year	Remark
1.	Communication Skills for Engg. Teachers	AVCOE, Sangamner	1 day	Jan 2002	Seminar
2.	Essential Properties and Requirements of Concrete	Ambuja cement	1 day	July 2002	Seminar
3.	Valuation Techniques	Council of Architecture	1 week	Dec-Jan 2002-03	STTP
4.	Correct Steps in Concrete Making	Ambuja cement	1 day	March 2003	Seminar
5.	Air Pollution control	IISc Bangalore	1 week	April 2003	STTP
6.	Engg. Mechanics – Effective Teaching Methodology	AISSMS's COE, Pune	2 days	Jan 2004	Workshop
7.	Effective Teaching Skills	AISSMS's COE, Pune	2 days	Feb 2004	Workshop
8.	Biomangement Of Waste For Environmental Upgradation	AICTE-ISTE	2 weeks	June-July 2004	STTP
9.	Municipal Solid Waste Management	IISc, Bangalore	1 Week	Aug 2004	QIP
10.	Syllabus revision of BE Civil	KK Wagh COE, Nashik	2 days	Jan-2006	Workshop
11.	Conquering Concrete	Ambuja cement	1 day	Jan 2007	Seminar

12.	Staff development programme	COE, Malegaon (bk)	1 week	Jan 2008	Workshop
13.	GIS and Remote sensing in environmental management	IISc , Bangalore	1 Week	Feb-Mar 2008	QIP
14.	Syllabus revision of FE (BCEE)	GH Rasoni COE, Wagholi	1 day	April 2008	Workshop
15.	Syllabus drafting of SE (civil)	AISSM's COE, Pune	1 day	Dec 2008	Workshop
16.	Patents	MAE, Alandi	1 day	Oct 2009	Seminar
17.	Syllabus revision of BE Civil	WIT Solapur	1 day	Nov 2009	Workshop
18.	Environmental systems optimization	VNIT, Nagpur	2 weeks	Nov-Dec 2009	QIP
19.	Green buildings	VVP Solapur	1 day	April 2010	Workshop
20.	Structural audit of existing buildings	ISSE-SLC	1 day	March 2011	Workshop
21.	Mission 10X	WIPRO	1 week	August 2011	Workshop
22.	Mission 10X advanced level	WIPRO	2 days	Dec-2011	Workshop
23.	Accreditation process as per January, 2013 format of NBA	Halkatti college of engineering	2 days	April 2013	workshop
24.	National Convention on Green technology	IEI Mangalore	2 days	Jan 2012	Conference
25.	Nano technology of rural development	SVERI's COE, Pandharpur	2 days	June 2014	Workshop
26.	Coordinators workshop for 'Environmental studies'	IIT bombay	1 week	March 2015	Workshop
27.	Stake holders workshop for air quality in 10 cities of Maharashtra	NEERI, IITB and MPCB	2 days	April 2017	Workshop
28.	Shudhha hawa sankalp -2022	MPCB, Mumbai	1 day	Aug 2017	
29.	Lead Auditor – Environmental Management system	LRQA mumbai	5 day	Dec 2017	Certification course
30.	NBA Accreditation	NITTTR, Kolkata	5 day	April 2019	STTP
31.	Rural development through technical institution	NITTTR, Kolkata	5 day	July 2019	STTP

32.	Innovation Ecosystem	IIM Lucknow	5 day	March 2020	Workshop
33.	Universal Human values	AICTE	5 day	June 2021	Workshop
34.	Special Topics in industrial Applications	DBATU	1 day	Feb 2020	FDP
35.	Intellectual Property rights	SSW COE, Solapur	3 day	Feb 2020	Workshop

LIST OF PUBLICATIONS/CONFERENCES

a) Papers Published in International Journals

1. Kulkarni, G. J., Dwivedi, A.K., **Jahagirdar, S.S.** (2012). "Textile Mill Sludge as Fine Aggregate in Concrete". *Global Journal of Research In Engineering*, Vol.12, issue 2, pp 20-26.
2. **Jahagirdar, S. S.**, Shrihari, S. and Manu, B. (2012). "Reuse of textile mill sludge in cement based solid blocks". *International Journal of Engineering. Research and Industrial Applications. (IJERIA)*. ISSN 0974-1518, Vol.5, No. III, pp 203-214.
3. **Jahagirdar, S. S.**, Shrihari, S. and Manu, B. (2013). "Utilization of textile mill sludge in burnt clay bricks". *International Journal of Environmental Protection*, Vol. 3, Issue. 5, pp. 6-13 ISSN: 2226-6437 (Print) ISSN: 2224-7777 (Online).
4. **Jahagirdar, S. S.**, Shrihari, S. and Manu, B. (2013). "Reuse of textile mill sludge in burnt clay bricks". *International Journal of Advanced Technology in Civil Engineering*. Vol. (2) No. (1), pp 96-99.
5. **Jahagirdar, S. S.**, Shrihari, S. and Manu, B. (2015). "Reuse of Incinerated Textile Mill Sludge as Adsorbent for Dye Removal". *KSCE Journal of Civil Engineering*. pISSN 1226-7988, eISSN 1976-3808 www.springer.com/12205, pp 1-5. (**Scopus indexed**)
6. **Dr. Jahagirdar, S. S.**, Dr. Patki, V., K., and Thavare, R., M. (2015). "Comparative Study of Water Quality Parameters of Different Brands of Soft Drinks". *IOSR Journal of Mechanical and Civil Engineering, Innovation in engineering science and technology (NCIEST-2015) special issue*, pp 142-149.
7. **Jahagirdar S S**, Patki V K, Metan S S (2019). "Evaluation of Physical and Chemical Properties of OPC and PPC Cement, *International Journal of Recent Technology and Engineering (IJRTE)*, Vol-8, issue 9S11, 840-845 (**Scopus Indexed ISSN 0193-4120**).

8. Diwan N C , **Jahagirdar S S** , Gawande S.M (2019). “Assessment of Water Quality Index for Hipparga Lake in Solapur City”. The International Journal of Innovative Research in Science, Engineering and Technology (IJIRSET), 8(6), 7364-7369.
 9. Patki V K , **Jahagirdar S S** , Metan S S (2020). “Urban Water Distribution Network Failure Prediction using Artificial Intelligence”. *TEST Engineering & Management*, Vol- 82(1), 8355-8362. (Scopus Indexed ISSN 0193-4120).
 10. **Jahagirdar, Shrikant S., Vinayak K. Patki, Rahul S. Karale, Yashwant Sadashiv Patil and Girish Kulkarni, (2021).** “Recycle of textile mill sludge in different grades of concrete.” *Materials Today: Proceedings*, 81 -256-260
 11. **Rahul Karale, Y.M. Patil, Shrikant Jahagirdar, Vinayak Patki, Girish Kulkarni, (2021)** “Degradation of personal care product 2-chloropyrine detected in surface water”. *Materials Today: Proceedings*, ISSN 2214-7853, <https://doi.org/10.1016/j.matpr.2021.02.820>.
 12. **S S Jahagirdar, V K Patki, G J Kulkarni, S B More (2022).** “Impacts of Temple Waste on the Environment and Its Mitigation”. *Sustainable Cities and Resilience: Select Proceedings of VCDRR 2021*, 265-274
 13. **Y.M. Patil, Vinayak K. Patki, Shrikant Jahagirdar, Rahul Karale, Vaishnavi Angathekar, (2021).** “Greywater treatment by vegetated vermifilter: A low cost material for rural sanitation in India”, *Materials Today: Proceedings*, Volume 45, Part 7,2021, Pages 6946-6950,ISSN 2214-7853,<https://doi.org/10.1016/j.matpr.2021.01.395>. (Scopus Indexed)
 14. **S More, AP Patil, Shrikant Jahagirdar, G Kulkarni (2023).** “Improving the bearing capacity of soil by incorporating waste tyre” - AIP Conference Proceedings, 2023. (Scopus indexed)
 15. **Jahagirdar Shrikant S., Vinayak K. Patki,S B More and Girish Kulkarni, (2023).** “ Roadside Dust amended Novel Burnt Clay bricks”, Under publication process,. NITK Conference- Springer nature publishing (Scopus Indexed)
(4 more papers under scopus publication)
- b) Papers Presented at National/International Conferences**
- **Jahagirdar, S. S., Shrihari, S. and Manu, B. (2012)** “Reuse of textile mill sludge in building materials”. *Proceedings of the Twenty-Seventh National Convention of*

Environmental Engineers, the Institution of Engineers (India), Mangalore, 24-25 January, 62.

- **Jahagirdar, S. S.,** Shrihari, S. and Manu, B. (2013). “Reuse of textile mill sludge in burnt clay bricks”. *Second International Conference on Recent Trends in Engineering and Technology (ICERT 2013)* held at SNJB’s Late Sau. Kantabai Bhavalaji Jain College of Engineering in Feb.2013, Chandwad, Nashik, Maharashtra, India, 22-24.

University Level Statutory Responsibilities

1. Worked in capacity of chairman and university Expert on Local Inquiry Committees
2. Subject expert for university interview panels
3. Referee for reviewing research proposals of university funding schemes.
4. Paper setter for various subjects
5. PhD research guide

Other outstanding achievements

1. Worked as Environmental subject expert for Town planning Department for Solapur district.
2. Resource person for FDPs on research grants

Portfolios handled at NKOCET, Solapur

1. Firefighting coordinator.
2. CC
3. Media and Publicity in charge
4. HOD (Civil)
5. Dean Rand D
6. IIC president since last 6 years
7. ICC member

Resource person for Research oriented FDPs in Engineering colleges

Research Grants received

Topic	Amount	Sanctioning Authority	Role
Utilization of solid wastes generated from textile mill, granite marble cutting, foundry	4,00,000 (Duration 2 years)	Maharashtra Pollution Control Board, Mumbai	Principal Investigator

and stone crusher industries in burnt clay bricks			
National Ambient Air Quality of Solapur, Barshi, Pandharpur, and Osmanabad cities. (Manual stations)	84,00,000* (Duration 2 years)	Maharashtra Pollution Control Board, Mumbai	Project Coordinator
Detailed investigation of biodigester accident occurred at Loknete sugar factory Anagar in Collaboration with IIT Bombay	12,00,000	IIT Bombay	Principal Investigator
National Ambient Air Quality of Solapur, Barshi, Pandharpur, and Osmanabad cities. (Manual stations)	35,00,000* + 35,00,000 (Duration 2 years)	Maharashtra Pollution Control Board, Mumbai	Project Coordinator
Design and Development of Agro biomass-fired dead body cremation chamber	3,00,000 (Duration 2 years)	DBATU VC funding	Principal Investigator
National Ambient Air Quality of Solapur, Barshi, Pandharpur, and Osmanabad cities. (Manual stations)	53,00,000* (Duration 1 years)	Maharashtra Pollution Control Board, Mumbai	Project Coordinator
EIA of Matheran City (In association with DBATU)	11,50,000	MPCB	Co-investigator along with Dr Pore and Dr Patki
National Ambient Air Quality of Solapur, Barshi, Pandharpur, and Osmanabad cities. (Manual stations)	53,00,000* (Duration 1 years)	Maharashtra Pollution Control Board, Mumbai	Project Coordinator

*- Department of Civil Engineering, NKOCET, Solapur



Dr. S. S. Jahagirdar