ANNEXURE I
TOR LETTER FROM MOEF

J-13012/118/2009 - IA II (T)
Government of India
Ministry of Environment & Forests

Paryavaran Bhavan, C.G.O. Complex,
Lodi Road, New Delhi -110003.
Dated: March 12, 2010.

To

M/s Lalitpur Power Generation Company Ltd.,
Room No 329, 3rd Floor,
Shakti Bhawan Ext., 14-Ashok Marg,
Lucknow - 226 001.

Sub: ***3x660 MW Coal Based Thermal Power Plant in Mirchwara & Burogaon villages, in Mahroni Tehsil, in Dist. Lalitpur, in Uttar Pradesh - Reg. TOR.***

Sir,

The undersigned is directed to refer to your letter dated 22.01.2010 on the above mentioned subject.

2. It is to inform that the proposal was considered by the Expert Appraisal Committee during its 65th Meeting held during February 12-13, 2010, for determination of the Terms of Reference (TOR) for undertaking detailed EIA study in accordance with the provisions of the EIA notification dated **September 14, 2006.**

3. Based on the information provided by you with regard to the above mentioned project proposal, the Committee has prescribed the following Terms of Reference (TORs) for preparation of the Environmental Impact Assessment (EIA) Report and Environment Management Plan (EMP), in respect of your above mentioned project.

i) Conformity of the site with the prescribed guidelines in terms of distance of 500 m from HFL of the river, highways, railway line shall be shown on the study area map.
ii) The coordinates of the proposed site including location of ash pond shall be submitted along with topo sheet.
iii) Proposed site shall avoid double crop agricultural land. Single crop agricultural land if unavoidable shall be used to the barest minimum.
iv) Ash pond location shall be atleast 500 m away from the national/state highway/ railway lines. Details shall be provided.
v) Detailed hydro-geological study shall be conducted from an institute/ organisation of repute to assess impact of on ground and surface water regime. Specific mitigation measures shall be spelt out and action plan for implementation of the same shall be provided.
vi) Action plan for identification of local employable youth for training in skills relevant to the project for eventual employment in the project itself shall be formulated.
vii) Layout plan indicating break-up of plant, green belt, infrastructure, roads etc. shall be provided.
viii) Land use based on satellite imagery or authenticated map indicating drainage, cropping pattern, water bodies (rivers, nallahs, ponds etc.), location of **nearest**

villages, creeks, rivers, reservoirs, national parks, wildlife sanctuaries, tiger reserves, biosphere reserves, heritage sites etc in the study area shall be provided. Location of any National Park, Sanctuary, Elephant/Tiger Reserve (existing as well as proposed), migratory routes, if any, within 10 km of the project site shall be specified and marked on the map duly authenticated by the Chief Wildlife Warden.

ix) Study on land-use pattern in the study area shall be carried out, including identification of common property resources available for conversion into productive land and action plan for abatement and compensation for damage to agricultural land/ common property land (if any) in the nearby villages, due to proposed project shall be prepared.

x) Detailed socio-economic study shall be carried out for the study area comprising of 10 km from the plant site.

xi) CSR component shall be prepared based on need based assessment study to be carried out in the study area. Income generating measures which can help in upliftment of poor section of society which is consistent with the traditional skills of the people shall be identified. The programme can include activities such as development of fodder farm, fruit bearing orchards, vocational training etc. In addition, vocational training for individuals shall be imparted so that poor section of society can take up self employment and jobs. Separate budget for community development activities and income generating programmes shall be specified. Financial allocation to be taken up under CSR shall be specified taking into consideration that the same shall not be less than 0.4% of capital cost of the project as one time investment for CSR activities and $1/5^{th}$ of this one time investment as recurring cost per annum till the operation of the plant.

xii) Possibility for adopting nearest three villages shall be explored and details of civic amenities such as roads, drinking water, power etc proposed be provided at the company?s expenses shall be submitted.

xiii) Detailed study on the impact on river ecology due to the proposed discharge of treated wastewater into the river shall be carried out and submitted alongwith the EIA Report.

xiv) Land requirement for the project shall be optimized. Item wise break up of land requirement and its availability to be furnished. It should also include land to be acquired, if any, for coal transportation system as well as for lying of pipeline including ROW. It may clearly be confirmed that the land including ROW is free of all encumbrances. The issues relating to land acquisition and R&R should be clearly discussed in the EIA report.

xv) Location of intake and outfall points (with coordinates) should be given. These locations should be selected based on detailed modeling studies. Details of modeling and the results obtained there from should be furnished.

xvi) Topography of the area should be given clearly indicating whether the site requires any filling. If so, details of filling, quantity of fill material required, its source, transportation etc. should be given.

xvii) One season site-specific meteorological data shall be provided.

xviii) One complete season AAQ data (except monsoon) to be given along with the dates of monitoring. The parameters to be covered shall include RSPM (PM10,PM2.5), SO_2, NOx, Hg and Ozone (ground level). The location of the monitoring stations should be so decided so as to take into consideration the pre-dominant downwind direction, population zone and sensitive receptors including reserved forests. There should be at least one monitoring station each in the upwind and in the pre dominant downwind direction at a location where maximum ground level concentration is likely to occur

xix) Detailed plan for raising Green belt of 100 m width and consisting of at least 3 tiers around plant boundary with tree density not less than 2500 trees per acre shall be submitted.

xx) Impact of the project on the AAQ of the area. Details of the model used and the input data used for modelling should also be provided. The air quality contours may be plotted on a location map showing the location of project site, habitation nearby, sensitive receptors, if any. The wind roses should also be shown on this map.

xxi) Fuel analysis to be provided (sulphur, ash content and heavy metals including Pb, Cr, As and Hg). Details of auxillary fuel, if any including its quantity, quality, storage etc should also be given.

xxii) Quantity of fuel required its source and transportation. A confirmed fuel linkage should be provided.

xxiii) Source of water and its availability. Commitment regarding availability of requisite quantity of water from the competent authority shall be provided.

xxiv) Details of rainwater harvesting and proposed utilisation in the plant shall be provided.

xxv) Feasibility of zero discharge shall be examined and detailed justification shall be submitted if in case the same is not possible. Proposed discharge (if any), its quantity, quality and point of discharge, users downstream etc. shall be provided.

xxvi) Optimization of COC for water conservation. Other water conservation measures proposed in the project should also be given. Quantity of water requirement for the project should be optimized.

xxvii) Details of water balance taking into account reuse and re-circulation of effluents.

xxviii) Detailed plan of ash utilization / management shall be provided including examination for setting up of cement grinding unit / brick kiln etc. or provide adequate justification if otherwise.

xxix) Details of evacuation of ash shall be provided including details of HCSD system.

xxx) Details action plan for arresting leachate in ash pond and details of lining proposed for making impermeable the bottom and sides of ash pond including soil analysis report and shall be submitted.

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

xxxii) Impact of the project on local infrastructure of the area such as road network and whether any additional infrastructure would need to be constructed and the agency responsible for the same with time frame.

xxxiii) EMP to mitigate the adverse impacts due to the project along with item wise cost of its implementation.

xxxiv) Risk assessment including fire and explosion issues due to storage and use of fuel should be carried out. It should take into account the maximum inventory of storage at site at any point in time. The risk contours should be plotted on the plant layout map clearly showing which of the proposed activities would be affected in case of an accident taking place. Based on the same, proposed safeguard measures should be provided. Measures to guard against fire hazards should also be provided.

xxxv) Details of litigation pending or otherwise with respect to project in any courts, tribunal etc. shall be provided.

4. Besides the above, the following general points will be followed:

a) All documents to be properly referenced with index, page numbers and continuous page numbering.

b) Where data is presented in the report especially in table, the period in which the data was collected and the source should invariably be indicated.

c) Where the documents provided are in a language other than English, an English translation should be provided.

d) The Questionnaire for environmental appraisal of thermal power projects as devised earlier by the Ministry shall also be filled and submitted.

In addition to the above, information on the following may also be incorporated in the EIA report.

1. Is the project intended to have CDM-intent?

(i) If not, then why?
(ii) If yes, then

a) Has PIN (Project Idea Note) {or PCN (Project Concept Note)} submitted to the ?NCA? (National CDM Authority) in the MoEF?
b) If not, then by when is that expected?
c) Has PDD (Project Design Document) been prepared?
d) What is the Carbon intensity? from your electricity generation projected (i.e. CO_2 Tons/MWH or Kg/KWH)
e) Amount of CO_2 in Tons/year expected to be reduced from the baseline data available on the CEA?s web-site (www.cea.nic.in)

2. Notwithstanding 1(i) above, data on (d) & (e) above shall be worked out and reported.

5. After preparing the Draft EIA (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned issues, the same shall be submitted to the SPCB for conducting the public hearing as per procedure of EIA notification 2006. The issues emerged during public hearing shall be further incorporated in the Draft EIA/EMP report. The final EIA/EMP report along with public hearing report and the requisite documents (*including written objections, if any*) shall be submitted to the Ministry for appraisal by the Expert Appraisal Committee for consideration of awarding environmental clearance under the provisions of Environmental Impact Assessment notification dated September 14, 2006.

Yours faithfully,

(Lalit Kapur)
Director

Copy to:

1. The Secretary, Department of Environment, Govt. of Uttar Pradesh.
2. The Chairman, Uttar Pradesh State Pollution Control Board, IIIrd Floor, PICUP Bhawan, Vibhuti Khand, Gomti Nagar, Lucknow ? 226 010
3. The Chief Conservator of Forests, Ministry of Environment and Forests, Regional Office(CZ), Kendriya Bhawan, 5th Floor, Sector ?H?, Aliganj, Lucknow-226020
4. Guard File.

(Lalit Kapur)
Director

ANNEXURE-II
APPLICABLE ENVIRONMENT STANDARDS

1.0 Ambient Air Quality Standards

National Ambient Air Quality Standards for ambient air has been prescribed by Central Pollution Control Board vide Gazette Notification dated 11th April, 1994. The prescribed Indian Standards are given below in **Table-1**.

TABLE-1
NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Time Weighted Average	Concentration in Ambient Air ($\mu g/m^3$)		
		Industrial Area	Residential, Rural & Other Areas	Sensitive Areas
Sulphur dioxide (SO_2) ($\mu g/m^3$)	Annual Average*	80	60	15
	24 Hours**	120	80	30
Oxides of Nitrogen (NOx) ($\mu g/m^3$)	Annual Average*	80	60	15
	24 Hours**	120	80	30
Suspended Particulate Matter (SPM) ($\mu g/m^3$)	Annual Average*	360	140	70
	24 Hours**	500	200	100
Respirable Particulate Matter (Size less than 10 microns) ($\mu g/m^3$)	Annual Average*	120	60	50
	24 Hours**	150	100	75
Lead (Pb) ($\mu g/m^3$)	Annual Average*	1.0	0.75	0.50
	24 Hours**	1.5	1.0	0.75
Carbon monoxide (CO) ($\mu g/m^3$)	8 Hours	5000	2000	1000
	1 Hour**	10000	4000	2000

Note:

* *Annual arithmetic mean of minimum 104 measurements in a year taken twice a week 24 hourly at uniform interval.*

** *24 hourly/8 hourly values should be met 98% of the time in a year. However 2% of the time, it may exceed but not on two consecutive days.*

2.0 Ambient Noise Standards

Ambient standards with respect to noise have been notified by the Ministry of Environment and Forests vide gazette notification dated 26th December 1989 (Amended on February, 2009). It is based on the A weighted equivalent noise level (L_{eq}). The standards are presented in **Table-2.**

TABLE-2
AMBIENT NOISE STANDARDS

Area Code	Category of Area	Noise Levels dB(A) eq	
		Day time*	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone**	50	40

Note: * *Day time is from 6 am to 10 pm.*

** *Silence zone is defined as area up to 100-m around premises of hospitals, educational institutions and courts. Use of vehicle horns, loud speakers and bursting of crackers are banned in these zones.*

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APPLICABLE ENVIRONMENT STANDARDS

3.0 Noise Standards for Occupational Exposure

Noise standards in the work environment are specified by Occupational Safety and Health Administration (OSHA-USA) which are being enforced by Government of India through model rules framed under Factories Act. These are given in **Table-3** below.

TABLE-3
STANDARDS FOR OCCUPATIONAL EXPOSURE

Total Time of Exposure per Day in Hours (Continuous or Short term Exposure)	Sound Pressure Level in dB(A)
8	90
6	92
4	95
3	97
2	100
3/2	102
1	105
¾	107
½	110
¼	115
Never	>115

Note:

1. *No exposure in excess of 115 dB(A) is to be permitted.*
2. *For any period of exposure falling in between any figure and the next higher or lower figure as indicated in column (1), the permissible level is to be determined by extrapolation on a proportionate scale.*

4.0 Wastewater Discharge Standards

The wastewater discharge standards for "discharge on land for irrigation" are stipulated under the Environment Protection Rules (1993) and are given below in **Table-4.**

TABLE-4
WASTE WATER DISCHARGE STANDARDS

Sr. No.	List of Parameters	Units	Standard (On Land Irrigation)
1	Color and Odor	--	All efforts should be made to remove color and unpleasant odor as far as practicable.
2	Suspended Solids	mg/l	200
3	Particle size of Suspended Solids	--	Shall pass 850 micron IS sieve.
4	pH value	--	5.5 to 9.0
5	Temperature	°C	Not specified.
6	Oil and grease, Max.	mg/l	10.0
7	Total residual chlorine, Max.	mg/l	Not specified
8	Ammonical nitrogen (as N), Max.	mg/l	Not specified
9	Total Kjeldhal nitrogen (as N),Max	mg/l	Not specified
10	Free ammonia (as NH_3), Max.	mg/l	Not specified
11	Biochemical oxygen demand (3 days at 27°C), Max.	mg/l	100.0

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Sr. No.	List of Parameters	Units	Standard (On Land Irrigation)
12	Chemical oxygen demand, Max.	mg/l	Not specified
13	Arsenic (as As), Max.	mg/l	0.2
14	Mercury (as Hg), Max.	mg/l	Not specified
15	Lead (as Pb), Max.	mg/l	Not specified
16	Cadmium (as Cd), Max.	mg/l	Not specified
17	Hexavalent chromium (as Cr^{+6}), Max.	mg/l	Not specified
18	Total chromium (as Cr), Max.	mg/l	Not specified
19	Copper (as Cu), Max.	mg/l	Not specified
20	Zinc (as Zn), Max.	mg/l	Not specified
21	Selenium (as Se), Max.	mg/l	Not specified
22	Nickel (as Ni), Max.	mg/l	Not specified
23	Cyanide (as CN), Max.	mg/l	0.2
24	Fluorides as F	mg/l	Not specified
25	Dissolved phosphates (as P),Max	mg/l	Not Specified
26	Sulphides as (S), Max.	mg/l	Not specified
27	Phenolic compounds (as C_2H_5OH), Max.	mg/l	Not specified
28	Radioactive Materials		
a]	Alpha Emitters, Max.	mC/ml	10^{-7}
b]	Beta Emitters, Max.	mC/ml	10^{-7}
29	Bio-assay test	--	90% survival of fish after 96 hours in 100% effluent.
30	Manganese (as Mn)	mg/l	Not specified
31	Iron (as Fe)	mg/l	Not specified
32	Vanadium (as V)	mg/l	Not specified
33	Nitrate nitrogen	mg/l	Not specified

Note: These standards shall be applicable for industries, operations or processes other than those industries, operations or process for which standards have been specified in Schedule of the Environment Protection Rules, 1989.

5.0 Charter on Corporate Responsibility for Environmental Protection

Thermal Power Plants

1. Implementation of Environmental Standards (emission & effluent) in non-compliant* Power Plants (31 & 27) submission of action plan: June 30, 2003 Placement of order for pollution control equipment: September, 2003 Installation & commission: December 31, 2005
2. For existing thermal power plants, a feasibility study shall be carried out by Central Electricity Authority (CEA) to examine possibility to reduce the particulate matter emissions to 100 mg/Nm^3. The studies shall also suggest the road map to meet 100 mg/Nm^3 wherever found feasible. CEA shall submit the report by March 2004.
3. New / expansion power projects to be accorded environmental clearance on or after 1.4.2003 shall meet the limit of 100 mg/Nm^3 for particulate matter.
4. Development of SO_2 & NOx emission standards for coal based plants by December, 2003. New/expansion power projects shall meet the limit of SO_2 & NOx w.e.f 1.1.2005. Existing power plants shall meet the limit of SO_2 & NOx w.e.f. 1.1.2006.

5. Install/activate opacity meters/continuous monitoring systems in all the units by December 31, 2004 with proper calibration system.

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6. Development of guidelines/standards for mercury and other toxic heavy metals emissions by December, 2003.
7. Review of stack height requirement and guidelines for power plants based on micro meteorological data by June 2003.
8. Implementation of use of beneficiated coal as per GOI Notification: Power plants will sign Fuel Supply Agreement (FSA) to meet the requirement as per the matrix prepared by CEA for compliance of the notification as short term measure.

   Options/mechanism for setting up of coal washeries as a long term measure.

   - Coal India will set up its own washery;
   - State Electricity Board to set up its own washery;
   - Coal India to ask private entrepreneurs to set up washeries for CIL and taking washing charges; and
   - SEBs to select a private entrepreneur to set up a washery near pit-head installation of coal beneficiation plant.

9. Power plants will indicate their requirement of abandoned coal mines for ash disposal and coal India / MOC shall provide the list of abandoned mines by June 2003 to CEA
10. Power plants will provide dry ash to the users outside the premises or uninterrupted access to the users within six months.
11. Power Plants should provide dry fly ash free of cost to the users.
12. State PWDs /construction & development agencies shall also adhere to the specifications/Schedules of CPWD for ash / ash based products utilization. MoEF will take up the matter with State Governments.
13. (i) New Plants to be accorded environmental clearance on or after 1.04.2003 shall adopt dry fly ash extraction or dry disposal system or Medium (35-40%) ash concentration slurry disposal system or Lean phase with hundred percent ash water re-circulation system depending upon site specific environmental situation.
    (ii) Existing plants shall adopt any of the systems mentioned in 13 (i) by December, 2004.
14. Fly ash Mission shall prepare guidelines/manuals for fly ash utilization by March 2004.
15. New plants shall promote adoption of clean coal and clean power generation technologies.

Note: Units will submit bank guarantee to respective State Pollution Control Board*

ANNEXURE-III
WATER ALLOCATION LETTER

उत्तर प्रदेश पावर कारपोरेशन लिमिटेड द्वारा उत्तर प्रदेश के विभिन्न जनपदों में स्थापना हेतु प्रस्तावित नवीन तापीय विद्युत परियोजनाओं को जल उपलब्ध कराये जाने के संबंध में प्रमुख सचिव, सिंचाई की अध्यक्षता में दिनांक 13-08-09 को सम्पन्न बैठक में बनी सहमति पर अभिमत स्थिर किये जाने हेतु प्रमुख सचिव, सिंचाई के कार्यालय कक्ष में दिनांक 22-10-09 को सम्पन्न हुयी बैठक का कार्यवृत्त।

1- बैठक में निम्नलिखित अधिकारी उपस्थित हुए :-

1	श्री नवनीत सहगल	अध्यक्ष एवं प्रबन्ध निदेशक, उ0प्र0 पा0का0 लि0।
2	श्री एल0के0गुप्ता	प्रमुख अभियन्ता, सि0वि0, लखनऊ।
3	श्री सलमान अहमद	प्रमुख अभियन्ता, परि0 एवं नियो0, सि0वि0, लखनऊ।
4	श्री अरुन्द्र भूषण	अपर प्रबन्ध निदेशक, उ0प्र0 पावर कारपोरेशन लि0।
5	श्री राजकमल गुप्ता	विशेष सचिव, ऊर्जा, उ0प्र0 शासन, लखनऊ।
6	श्रीजय प्रकाश नारायण	संयुक्त सचिव, सिंचाई, उ0प्र0 शासन, लखनऊ।
7	श्री वी0के0 वर्मा	मुख्य अभियन्ता, नियोजन, उ0प्र0 पा0का0 लि0।
8	श्री प्रशांत मेहरोत्रा	अधिशासी अभियन्ता, उ0प्र0 पावर कारपोरेशन लि0।
9	श्री एस0पी0 श्रीवास्तव	अधिशासी अभियन्ता, उ0प्र0 पावर कारपोरेशन लि0।
10	श्री एस0ए0फारुकी	अधिशासी अभियन्ता, उ0प्र0 पावर कारपोरेशन लि0।

2- जवाहर तापीय परियोजना-जनपद एटा में 2×660 मेगावाट जवाहर तापीय परियोजना को 53 क्यूसेक जल उपलब्ध कराये जाने हेतु उत्तर प्रदेश पावर कारपोरेशन के अधिकारियों द्वारा सैद्धान्तिक सहमति/अनापत्ति प्रमाण-पत्र का प्रारूप उपलब्ध कराते हुए तत्काल सैद्धान्तिक सहमति/अनापत्ति प्रमाण-पत्र निर्गत किये जाने की आवश्यकता बतायी गयी।

पूर्व में सम्पन्न बैठक दिनांक 13-08-09 में बनी सहमति के क्रम में सिंचाई विभाग सैद्धान्तिक रूप से सहमत है।

(कार्यवाही- ऊर्जा विभाग, उ0प्र0 पावर कार्पोरेशन लि0, प्रमुख अभियन्ता, सिंचाई विभाग)

3- ललितपुर तापीय परियोजना - जनपद ललितपुर में 3×660 मेगावाट ललितपुर तापीय परियोजना को 80 क्यूसेक जल उपलब्ध कराये जाने हेतु उत्तर प्रदेश पावर कारपोरेशन के अधिकारियों द्वारा पूर्व में प्रेषित अपने पत्र के क्रम में तत्काल सैद्धान्तिक सहमति/अनापत्ति प्रमाण-पत्र निर्गत किये जाने की आवश्यकता बतायी गयी।

पूर्व में सम्पन्न बैठक दिनांक 13-08-09 में बनी सहमति के क्रम में सिंचाई विभाग सैद्धान्तिक रूप से सहमत है।

(कार्यवाही- ऊर्जा विभाग, उ0प्र0 पावर कार्पोरेशन लि0, प्रमुख अभियन्ता, सिंचाई विभाग)

4- यमुना तापीय परियोजना - जनपद बुलन्दशहर में यमुना तापीय परियोजना को 80 क्यूसेक जल उपलब्ध कराये जाने हेतु उत्तर प्रदेश पावर कारपोरेशन के अधिकारियों द्वारा सैद्धान्तिक सहमति/अनापत्ति प्रमाण-पत्र का प्रारूप उपलब्ध कराते हुए तत्काल सैद्धान्तिक सहमति/अनापत्ति प्रमाण-पत्र निर्गत किये जाने की आवश्यकता बतायी गयी।

ANNEXURE-III
WATER ALLOCATION LETTER

पूर्व में सम्पन्न बैठक दिनांक 13-08-09 में बनी सहमति के क्रम में सिंचाई विभाग सैद्धान्तिक रूप से सहमत है।

(कार्यवाही- ऊर्जा विभाग, उ0प्र0 पावर कारपोरेशन लि0, प्रमुख अभियन्ता, सिंचाई विभाग)

5- जनपद चित्रकूट (बरगढ़) में 4000 मेगावाट तापीय परियोजना को 160 क्यूसेक जल की आवश्यकता कारपोरेशन के अधिकारियों द्वारा बतायी गयी। उत्तर प्रदेश पावर कारपोरेशन के अधिकारियों द्वारा 80 क्यूसेक जल की संस्तुति केन्द्रीय जल आयोग, भारत सरकार, नई दिल्ली को प्रेषित किये जाने की आवश्यकता बतायी गयी। यदि 80 क्यूसेक अतिरिक्त जल की मांग कारपोरेशन द्वारा किया जाये तो एक बैराज की आवश्यकता होगी, जिसकी अनुमानित लागत लगभग रू0 600.00 करोड़ का वहन उ0प्र0 पावर कारपोरेशन द्वारा किया जाएगा।

6- दोहरीघाट में 2×660 मेगावाट तापीय परियोजना को घाघरा से 53 क्यूसेक जल उपलब्ध कराये जाने हेतु उत्तर प्रदेश पावर कारपोरेशन के अधिकारियों द्वारा कहा गया कि दोहरी घाट में 53 क्यूसेक जल सिंचाई विभाग द्वारा जहां भी उपलब्ध कराया जा सकता हो, उसकी साइट बता दिया जाये। इस पर सिंचाई विभाग सहमत है।

7- सण्डीला तापीय परियोजना 2×660 मेगावाट को उ0प्र0 पावर कारपोरेशन के अधिकारियों द्वारा 53 क्यूसेक जल की आवश्यकता के संबंध में सिंचाई विभाग सैद्धान्तिक रूप से सहमत है।

8- घोला तापीय परियोजना 2×660 मेगावाट को उ0प्र0 पावर कारपोरेशन के अधिकारियों द्वारा 53 क्यूसेक जल की आवश्यकता के संबंध में सिंचाई विभाग सैद्धान्तिक रूप से सहमत है।

9- फर्रुखाबाद में 3×660 मेगावाट तापीय परियोजना को 80 क्यूसेक जल उपलब्ध कराये जाने के संबंध में सिंचाई विभाग द्वारा लाइनिंग करके जल बचत की सम्भावना के बारे में अवगत कराया गया है।

10- बिजनौर तापीय परियोजना 2×660 मेगावाट को 53 क्यूसेक जल उपलब्ध कराये जाने के संबंध में सिंचाई विभाग द्वारा बिजनौर स्थित मध्य गंगा बैराज बनाकर जल दिये जाने की कार्यवाही किये जाने हेतु सैद्धान्तिक सहमति दी गयी।

बैठक के अन्त में प्रदेश के विद्युत आवश्यकता की अपरिहार्यता को दृष्टिगत रखते हुए त्वरित कार्यवाही किये जाने की आवश्यकता बतायी गयी।

(अरुण कुमार सिन्हा)
प्रमुख सचिव

ANNEXURE-III
WATER ALLOCATION LETTER

उत्तर प्रदेश शासन
सिंचाई अनुभाग-4
संख्या-5016/09-27-सिं0-4
लखनऊः दिनांक 29 अक्टूबर, 2009

प्रतिलिपि निम्नलिखित को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषितः-

(1) प्रमुख सचिव, ऊर्जा विभाग, उ0प्र0 शासन।
(2) अध्यक्ष एवं प्रबन्ध निदेशक उ0प्र0 पावर कारपोरेशन लिमिटेड।
(3) प्रमुख अभियन्ता, सिंचाई/परिकल्प नियोजन, सिंचाई विभाग,उ0प्र0
(4) मुख्य अभियन्ता (पश्चिम/पूर्व/परियोजना/जल संसाधन), सिंचाई विभाग, उ0प्र0, लखनऊ।
(5) मुख्य अभियन्ता (गंगा/बेतवा/परियोजना बेतवा/रामगंगा/शारदा सहायक/शारदा),सिंचाई विभाग, उ0प्र0,मेरठ/झाँसी/कानपुर/लखनऊ।
(6) नोडल अधिकारी एवं वरिष्ठ स्टाफ अधिकारी, सिंचाई विभाग, लखनऊ।
(7) गार्ड फाइल।

आज्ञा से,

(जय प्रकाश नारायण)
संयुक्त सचिव

ANNEXURE-IV
EMISSION CALCULATIONS

1.0 General Calculations

- *Area Calculations*

$$\text{Area}(m^2) = \frac{3.142 \quad x \quad (\text{Top Stack Diameter})^2}{4} = 3.14 \text{ X } (5.0)^2/4 = 19.625 \text{ m}^2$$

- *Temperature Correction*

Temperature correction is calculated based on standard ambient temperature of 25° C.

$$Temperature \quad Correction = \frac{273 \ + \ 25^0 \ C}{273 \ + \ StackTemperature^0 \ C} = 298/413 = 0.7215$$

- *Volumetric Flow Rate*

$$Volumetric \ flow \ (\frac{Nm^3}{s}) = Area \ (m^2) \ x \ Exit \ Velocity \ (m/s) \ x \ Temperature \ Correction$$

$$= 19.62 \text{ X } 25 \text{ X } 0.7215 = 354 \text{ Nm}^3/\text{s}$$

1.1 Emission Calculations for Proposed Power Plant at 85% PLF

(a)Sulphur dioxide (SO_2)

Coal Consumption	=	1080 TPH
	=	1080000 kg/hr
Sulphur content in coal	=	0.7%
Sulphur emission factor	=	(0.7/100) x (64/32) = 0.014
SO_2 emission rate	=	Emission factor x consumption of coal in kg/hr
	=	0.014 x 1080000 kg/hr = 15120 kg/hr
	=	4200 g/sec
	=	1400 g/sec/flue

1.1.2 Particulate Matter Emissions

Emission rate = 50 mg/Nm^3 X 617 Nm^3/s X 1/1000 = 30.8 g/s

1.1.3 NOx Emissions

1) NOx emission is calculated based on Design limit of 750 mg/Nm^3

= 750 mg/Nm^3 X 354 Nm^3/s X 1/1000 = 265.5 g/s

2) NOx emission is calculated based on of 9 kg/tonne of coal burnt basis

= 1080 ton/hr X 9 kg/tonne
= 9720 kg/hr
= 2700 g/sec
= 900 g/sec /flue

1.1.4 Mercury (Hg) Emissions

The emission rate is computed based on the design limit of 0.12 mg/kg

Hg emission rate = 0.12 mg/kg X 1080000 kg/hr
= 129600 mg/hr
= 129.6 g/hr
= 0.036 g/sec
= 0.01 g/s/flue

ANNEXURE-V
LANDUSE PATTERN

Sr.No.	Name of Village	Forest Land	Total Irrigated Land	Un-Irrigated Land	Cultivable Waste Land	Area Un Available for Cultivation	Total Area (ha)
0-3 km.	**Mahroni Tahsil**						
1	Burogaon	0	1215	0	171	111	1497
2	Mirchwara	117.83	201.41	861.44	378.83	90.05	1649.56
3	Semrabhag Nagar	0	800	603	180	20	1603
4	Nagara	35.23	165.42	139.48	102.76	81.73	524.62
	Sub Total	**153.06**	**2381.83**	**1603.92**	**832.59**	**302.78**	**5274.18**
3-7 km.	**Mahroni Tahsil**						
5	Jaraoli	0	521	182	170	147	1020
6	Kailoni	11	235	25	25	88	384
7	Udaipura	0	400	50	51	26	527
8	Semara Bujurg	5	334	22	0	0	361
9	Toria	32	202	139	393	181	947
10	Gugarwara	0	70	447	43	86	646
11	Billa	124	1099	0	0	40	1263
12	Bharoni	0	115	150	24	50	339
13	Surikalan	0	260	40	248	289	837
14	Bilata	10	365	77	248	25	725
15	Badokhara	0	442	43	302	73	860
	Talbehat Tahsil						
16	Bachhrawni	9.6	407.6	38	10	5	470.2
17	Dashrara	0	220	0	245	15	480
18	Fadari	24	94	0	11	35	164
19	Bhelonilodh	14	426	42	35	68	585
20	Karmai	0	839	150	12	0	1001
21	Purapachauni	5	456	0	46	8	515
	Sub Total	**234.6**	**6485.6**	**1405**	**1863**	**1136**	**11124.2**
7-10 km.	**Mahroni Tahsil**						
22	Chandawali	6	365	112	150	108	741
23	Bangra	0	150	109	0	54	313
24	Teela	0	117	190	16	25	348
25	Marroli	0	265	50	18	32	365
26	Gahrao	0	164	125	31	91	411
27	Kakdari	0	326	226	168	75	795
28	Pura Dhadkuwa	0	310	219	12	80	621
29	Gangchari	32	340	238	177	110	897
30	Pah	0	637	0	338	80	1055
31	Dangrana	0	950	65	154	35	1204
32	Suri Khurd	0	402	78	139	31	650
33	Kuwagaon	0	760	72	40	60	932
34	Chhilla	0	130	8	51	8	197
35	Khiriqamisar	0	354	0	52	4	410
36	Ajnora	0	435	15	35	15	500
37	Banpur	0	1124	280	2152	205	3761
	Talbehat Tahsil						
38	Bamanguwan	0	79.08	12	22.186	5	118.266
39	Bhujupura	0	100.21	13	11.838	6.76	131.808
40	Bar	84	1473.08	186	81	26	1850.08
41	Gendaura	0	346.4	12	64.94	5.43	428.77
42	Turka	0	215	10	12	125	362
43	Pata Pachaura	0	366	50	100	104	620
44	Kathwar	0	300.32	20	14	3	337.32
45	Khaira	0	206	151	14	123	494
46	Bhawani	0	208	27	39	50	324
47	Bahrawani	26	176	0	0	40	242
48	Todi	8	858	19	58	0	943
49	Dulawan	3.22	596.75	0	125	72	796.97
50	Gadyana	9	1774	115	276	33	2207
	Lalitpur Tahsil						
51	Kachnoda Kalan	91	794	13	283	133	1314
52	Tikra Tiwari	0	163	308	185	27	683
53	Rameshra	10	76	248	85	101	520
54	Khiriya Chhatara	0	413	630	189	80	1312
	Sub Total	**269**	**14974**	**3601**	**5093**	**1947**	**25884**
0-10 km.	**Grand Total**	**657**	**23841**	**6610**	**7789**	**3385.97**	**42283**

ANNEXURE-VI
AMBIENT AIR QUALITY LEVELS

Sr.No	Monitoring Date	PM10	PM2.5	SO_2	Nox	CO			O3	Hg
Units		µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
						I	II	III		
AAQ1 PROJECT SITE NEAR MIRCHWARA										
1	15.03.2010	38.7	13.4	6.1	8.2	113	124	132	<0.1	<0.1
2	16.03.2010	35.4	15.5	5.1	6.4	121	123	141	<0.1	<0.1
3	22.03.2010	31.4	17.1	5.5	7.2	123	125	127	<0.1	<0.1
4	23.03.2010	34.5	14.4	5.7	7.7	118	128	131	<0.1	<0.1
5	29.03.2010	37.3	17.3	5.1	7.8	125	134	136	<0.1	<0.1
6	30.03.2010	34.6	14.4	5.3	6.9	128	129	136	<0.1	<0.1
7	05.04.2010	36.7	16.2	5.1	6.6	134	138	138	<0.1	<0.1
8	06.04.2010	33.5	17.4	5.1	6.2	121	116	128	<0.1	<0.1
9	12.04.2010	34.5	14.2	6.2	8.1	116	131	137	<0.1	<0.1
10	13.04.2010	36.1	13.5	5.5	6.7	108	128	156	<0.1	<0.1
11	19.04.2010	35.2	18.4	5.9	7.3	118	137	142	<0.1	<0.1
12	20.04.2010	35.5	14.1	5.4	6.9	111	119	123	<0.1	<0.1
13	26.04.2010	36.3	15.6	5.7	7.3	131	134	137	<0.1	<0.1
14	27.04.2010	37.3	16.0	5.6	7.1	125	137	142	<0.1	<0.1
15	03.05.2010	33.2	18.6	5.1	6.7	124	144	154	<0.1	<0.1
16	04.05.2010	35.5	13.3	5.8	7.4	115	124	132	<0.1	<0.1
17	10.05.2010	35.4	17.4	5.1	6.4	135	137	144	<0.1	<0.1
18	11.05.2010	34.5	13.7	5.3	6.9	122	147	145	<0.1	<0.1
19	17.05.2010	32.3	17.3	5.6	7.3	106	112	146	<0.1	<0.1
20	18.05.2010	34.4	15.1	5.3	6.7	126	129	144	<0.1	<0.1
21	24.05.2010	39.4	17.5	5.2	6.3	119	122	128	<0.1	<0.1
22	25.05.2010	36.5	13.4	6.3	7.7	133	134	147	<0.1	<0.1
	Min	**31.4**	**13.3**	**5.1**	**6.2**	**106**			<0.1	<0.1
	Max	**39.4**	**18.6**	**6.3**	**8.2**	**156**			<0.1	<0.1
	Avg	**35.4**	**15.6**	**5.5**	**7.1**	**130**			<0.1	<0.1
	98th	**39.1**	**18.5**	**6.3**	**8.2**	**152**			<0.1	<0.1
AAQ2 NE OF PROJECT SITE										
1	15.03.2010	39.9	16.9	5.5	7.4	147	144	153	<0.1	<0.1
2	16.03.2010	41.7	20.7	6.5	7.2	142	146	155	<0.1	<0.1
3	22.03.2010	40.0	19.8	6.5	7.8	134	138	147	<0.1	<0.1
4	23.03.2010	40.9	19.7	5.3	7.4	127	131	142	<0.1	<0.1
5	29.03.2010	39.4	19.7	6.5	7.2	123	124	133	<0.1	<0.1
6	30.03.2010	41.8	19.9	5.6	6.1	131	136	146	<0.1	<0.1
7	05.04.2010	38.5	17.4	6.3	7.7	122	126	135	<0.1	<0.1
8	06.04.2010	33.7	20.4	5.3	6.3	128	133	142	<0.1	<0.1
9	12.04.2010	43.8	20.7	5.9	6.2	142	146	155	<0.1	<0.1
10	13.04.2010	36.7	17.7	6.2	6.5	126	131	141	<0.1	<0.1
11	19.04.2010	38.1	16.8	5.8	7.4	121	126	135	<0.1	<0.1
12	20.04.2010	35.9	17.7	5.2	6.6	126	129	138	<0.1	<0.1
13	26.04.2010	34.0	20.3	5.5	7.4	123	128	136	<0.1	<0.1
14	27.04.2010	35.2	20.7	6.2	7.3	128	136	142	<0.1	<0.1
15	03.05.2010	40.0	17.9	6.1	6.7	136	142	149	<0.1	<0.1
16	04.05.2010	36.5	16.8	5.2	6.5	131	136	146	<0.1	<0.1
17	10.05.2010	38.9	17.6	5.5	7.4	138	143	152	<0.1	<0.1
18	11.05.2010	33.8	17.6	6.3	6.9	126	131	141	<0.1	<0.1
19	17.05.2010	38.2	18.7	5.2	5.8	129	132	142	<0.1	<0.1
20	18.05.2010	36.9	17.1	5.3	7.3	118	121	135	<0.1	<0.1
21	24.05.2010	37.8	17.0	6.2	7.6	124	127	136	<0.1	<0.1
22	25.05.2010	39.5	17.9	6.4	7.3	126	132	141	<0.1	<0.1
	Min	**33.7**	**16.8**	**5.2**	**5.8**	**118**			<0.1	<0.1
	Max	**43.8**	**20.7**	**6.5**	**7.8**	**155**			<0.1	<0.1
	Avg	**38.2**	**18.6**	**5.8**	**7.0**	**135**			<0.1	<0.1
	98th	**43.0**	**20.7**	**6.5**	**7.8**	**154**			<0.1	<0.1

ANNEXURE-VI
AMBIENT AIR QUALITY LEVELS

Sr.No	Monitoring Date	PM10	PM2.5	SO_2	Nox	CO			O3	Hg
Units		µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
AAQ3 UDAYAPURA VILLAGE										
1	15.03.2010	38.1	18.6	6.1	6.8	105	109	115	<0.1	<0.1
2	16.03.2010	33.5	19.0	5.5	7.1	115	115	124	<0.1	<0.1
3	22.03.2010	37.4	20.1	6.9	7.6	112	129	135	<0.1	<0.1
4	23.03.2010	33.2	19.9	6.3	7.2	106	113	122	<0.1	<0.1
5	29.03.2010	31.5	19.3	5.9	7.8	111	113	115	<0.1	<0.1
6	30.03.2010	35.2	18.9	6.8	7.6	111	113	118	<0.1	<0.1
7	05.04.2010	34.9	20.2	6.8	6.3	115	111	117	<0.1	<0.1
8	06.04.2010	33.4	18.3	5.5	7.1	104	123	129	<0.1	<0.1
9	12.04.2010	34.3	18.0	6.9	7.9	117	115	125	<0.1	<0.1
10	13.04.2010	36.1	18.4	7.2	7.6	104	123	129	<0.1	<0.1
11	19.04.2010	32.2	19.8	6.5	7.9	108	117	125	<0.1	<0.1
12	20.04.2010	36.5	19.9	5.9	7.1	111	116	121	<0.1	<0.1
13	26.04.2010	33.2	19.2	6.6	7.4	105	105	115	<0.1	<0.1
14	27.04.2010	35.4	18.6	7.4	7.8	111	111	116	<0.1	<0.1
15	03.05.2010	37.4	20.3	7.7	7.9	112	114	121	<0.1	<0.1
16	04.05.2010	35.9	20.0	6.2	6.8	105	111	121	<0.1	<0.1
17	10.05.2010	41.3	20.6	6.3	7.1	112	112	116	<0.1	<0.1
18	11.05.2010	35.4	19.5	5.8	6.9	115	134	148	<0.1	<0.1
19	17.05.2010	42.8	19.3	6.7	7.7	111	129	135	<0.1	<0.1
20	18.05.2010	31.1	20.6	5.9	7.1	107	121	127	<0.1	<0.1
21	24.05.2010	33.2	19.6	6.1	6.6	109	114	121	<0.1	<0.1
22	25.05.2010	35.1	20.4	6.5	7.8	108	107	113	<0.1	<0.1
	Min	**31.1**	**18.0**	**5.5**	**6.3**	**104**			<0.1	<0.1
	Max	**42.8**	**20.6**	**7.7**	**7.9**	**148**			<0.1	<0.1
	Avg	**35.3**	**19.5**	**6.4**	**7.3**	**116**			<0.1	<0.1
	98th	**42.2**	**20.6**	**7.6**	**7.9**	**135**			<0.1	<0.1
AAQ4 BILATA VILLAGE										
1	15.03.2010	32.5	15.1	7.6	8.3	141	142	147	<0.1	<0.1
2	16.03.2010	38.8	16.2	6.6	6.9	144	151	152	<0.1	<0.1
3	22.03.2010	33.9	16.6	7.3	7.8	147	148	153	<0.1	<0.1
4	23.03.2010	35.3	17.9	6.5	6.7	139	141	145	<0.1	<0.1
5	29.03.2010	37.1	15.8	7.4	7.9	134	135	138	<0.1	<0.1
6	30.03.2010	40.8	15.2	7.9	8.3	125	126	131	<0.1	<0.1
7	05.04.2010	36.2	16.7	7.3	7.7	129	131	136	<0.1	<0.1
8	06.04.2010	34.8	17.5	6.8	7.8	136	138	144	<0.1	<0.1
9	12.04.2010	36.2	16.0	7.4	7.8	127	128	133	<0.1	<0.1
10	13.04.2010	32.5	16.9	7.1	8.8	133	135	141	<0.1	<0.1
11	19.04.2010	33.6	18.5	6.5	7.2	147	148	153	<0.1	<0.1
12	20.04.2010	33.1	19.8	6.4	7.1	131	133	138	<0.1	<0.1
13	26.04.2010	37.2	18.5	6.9	7.3	126	128	133	<0.1	<0.1
14	27.04.2010	38.1	18.7	7.1	7.6	131	131	136	<0.1	<0.1
15	03.05.2010	34.9	18.5	7.6	7.9	128	131	134	<0.1	<0.1
16	04.05.2010	39.8	19.2	7.3	8.1	133	138	142	<0.1	<0.1
17	10.05.2010	39.1	16.9	6.2	7.5	141	142	147	<0.1	<0.1
18	11.05.2010	37.3	17.6	6.4	7.8	135	138	144	<0.1	<0.1
19	17.05.2010	37.5	14.9	5.4	7.7	143	145	151	<0.1	<0.1
20	18.05.2010	34.9	17.6	6.5	7.1	131	133	139	<0.1	<0.1
21	24.05.2010	35.5	16.0	6.4	7.3	134	134	141	<0.1	<0.1
22	25.05.2010	33.7	14.2	6.6	7.9	123	123	128	<0.1	<0.1
	Min	**32.5**	**14.2**	**5.4**	**6.7**	**123**			<0.1	<0.1
	Max	**40.8**	**19.8**	**7.9**	**8.8**	**153**			<0.1	<0.1
	Avg	**36.0**	**17.0**	**6.9**	**7.7**	**137**			<0.1	<0.1
	98th	**40.4**	**19.5**	**7.8**	**8.6**	**153**			<0.1	<0.1

ANNEXURE-VI
AMBIENT AIR QUALITY LEVELS

Sr.No	Monitoring Date	PM10	PM2.5	SO_2	Nox	CO			O3	Hg
Units		µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
AAQ5 NEAR MIRCHWAR RF										
1	15.03.2010	36.9	19.1	6.6	6.9	125	127	131	<0.1	<0.1
2	16.03.2010	34.1	17.8	7.4	7.8	112	136	138	<0.1	<0.1
3	22.03.2010	33.6	16.6	7.6	7.7	108	131	133	<0.1	<0.1
4	23.03.2010	32.9	16.2	7.2	8.3	118	127	134	<0.1	<0.1
5	29.03.2010	32.6	15.9	7.7	8.2	125	126	129	<0.1	<0.1
6	30.03.2010	36.7	18.4	7.3	7.7	108	131	133	<0.1	<0.1
7	05.04.2010	37.6	19.3	6.4	7.5	121	123	126	<0.1	<0.1
8	06.04.2010	32.6	15.9	7.4	7.2	110	132	134	<0.1	<0.1
9	12.04.2010	33.2	16.7	7.8	8.1	118	121	123	<0.1	<0.1
10	13.04.2010	32.8	16.2	7.6	6.9	118	127	129	<0.1	<0.1
11	19.04.2010	32.1	17.3	6.5	7.5	107	129	131	<0.1	<0.1
12	20.04.2010	33.2	16.8	7.6	8.2	128	127	130	<0.1	<0.1
13	26.04.2010	34.8	18.4	7.7	8.0	117	139	142	<0.1	<0.1
14	27.04.2010	39.9	18.6	6.9	7.3	128	151	161	<0.1	<0.1
15	03.05.2010	34.3	16.9	7.2	8.1	123	145	148	<0.1	<0.1
16	04.05.2010	33.4	15.5	7.1	8.1	115	137	142	<0.1	<0.1
17	10.05.2010	35.8	18.5	7.5	8.3	130	131	138	<0.1	<0.1
18	11.05.2010	34.5	18.9	6.3	7.3	118	125	128	<0.1	<0.1
19	17.05.2010	34.7	18.4	6.7	7.7	109	131	137	<0.1	<0.1
20	18.05.2010	33.6	16.6	6.2	8.3	123	145	148	<0.1	<0.1
21	24.05.2010	35.8	18.2	7.2	8.2	107	129	133	<0.1	<0.1
22	25.05.2010	32.2	18.5	7.3	8.4	123	126	128	<0.1	<0.1
	Min	**32.1**	**15.5**	**6.2**	**6.9**	**107**			<0.1	<0.1
	Max	**39.9**	**19.3**	**7.8**	**8.4**	**161**			<0.1	<0.1
	Avg	**34.4**	**17.5**	**7.1**	**7.8**	**128**			<0.1	<0.1
	98th	**38.9**	**19.2**	**7.8**	**8.4**	**150**			<0.1	<0.1
AAQ6 BILLA VILLAGE										
1	15.03.2010	29.7	16.3	6.6	7.4	123	125	127	<0.1	<0.1
2	16.03.2010	31.2	18.5	6.1	7.1	117	121	135	<0.1	<0.1
3	22.03.2010	33.2	19.4	5.6	6.5	123	127	136	<0.1	<0.1
4	23.03.2010	33.9	19.9	7.3	8.9	126	131	144	<0.1	<0.1
5	29.03.2010	30.5	18.5	7.4	7.9	122	124	133	<0.1	<0.1
6	30.03.2010	31.2	18.8	7.2	7.6	146	164	165	<0.1	<0.1
7	05.04.2010	35.2	16.5	5.6	6.8	141	146	155	<0.1	<0.1
8	06.04.2010	31.3	18.7	6.5	7.1	133	138	147	<0.1	<0.1
9	12.04.2010	31.8	19.2	5.4	5.8	126	128	132	<0.1	<0.1
10	13.04.2010	30.5	18.5	6.5	7.3	105	127	132	<0.1	<0.1
11	19.04.2010	34.2	19.9	5.6	7.6	119	141	143	<0.1	<0.1
12	20.04.2010	31.5	18.7	7.1	6.9	118	137	142	<0.1	<0.1
13	26.04.2010	32.2	16.7	6.2	6.8	111	119	123	<0.1	<0.1
14	27.04.2010	31.4	16.3	6.2	6.9	131	134	137	<0.1	<0.1
15	03.05.2010	29.9	16.1	5.7	6.3	125	137	142	<0.1	<0.1
16	04.05.2010	36.1	17.7	6.4	6.7	124	144	154	<0.1	<0.1
17	10.05.2010	34.2	18.9	7.2	7.4	115	124	132	<0.1	<0.1
18	11.05.2010	35.5	18.2	7.6	7.8	125	131	132	<0.1	<0.1
19	17.05.2010	31.2	18.9	7.5	6.8	114	108	134	<0.1	<0.1
20	18.05.2010	33.3	18.2	7.5	7.4	121	123	126	<0.1	<0.1
21	24.05.2010	30.4	18.6	6.9	7.8	108	132	133	<0.1	<0.1
22	25.05.2010	36.2	17.3	5.9	6.3	114	121	123	<0.1	<0.1
	Min	**29.7**	**16.1**	**5.4**	**5.8**	**105**			<0.1	<0.1
	Max	**36.2**	**19.9**	**7.6**	**8.9**	**165**			<0.1	<0.1
	Avg	**32.5**	**18.2**	**6.5**	**7.1**	**130**			<0.1	<0.1
	98th	**36.2**	**19.9**	**7.6**	**8.5**	**161**			<0.1	<0.1

ANNEXURE-VI
AMBIENT AIR QUALITY LEVELS

Sr.No	Monitoring Date	PM10	PM2.5	SO_2	Nox	CO			O3	Hg
Units		µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
AAQ7 BAROKHARA VILLAGE										
1	15.03.2010	36.4	16.3	6.6	6.9	145	151	162	<0.1	<0.1
2	16.03.2010	44.2	19.1	6.1	7.2	137	142	154	<0.1	<0.1
3	22.03.2010	44.9	15.8	6.8	6.9	130	132	139	<0.1	<0.1
4	23.03.2010	35.2	16.5	5.6	7.2	123	125	131	<0.1	<0.1
5	29.03.2010	38.7	16.3	6.7	7.7	125	127	133	<0.1	<0.1
6	30.03.2010	36.3	16.4	6.8	7.2	112	136	144	<0.1	<0.1
7	05.04.2010	39.5	17.4	7.5	7.9	118	125	130	<0.1	<0.1
8	06.04.2010	36.5	16.3	6.8	6.9	128	148	161	<0.1	<0.1
9	12.04.2010	42.1	16.9	6.2	6.8	119	128	139	<0.1	<0.1
10	13.04.2010	47.2	15.9	6.3	7.9	129	135	139	<0.1	<0.1
11	19.04.2010	38.6	17.0	7.1	7.6	117	112	141	<0.1	<0.1
12	20.04.2010	36.2	16.5	6.6	6.9	139	141	145	<0.1	<0.1
13	26.04.2010	43.1	18.8	6.4	7.2	117	128	139	<0.1	<0.1
14	27.04.2010	48.9	15.8	6.5	7.4	124	127	148	<0.1	<0.1
15	03.05.2010	42.2	18.7	7.6	7.9	127	129	134	<0.1	<0.1
16	04.05.2010	36.4	16.5	7.3	7.7	121	125	142	<0.1	<0.1
17	10.05.2010	43.1	18.9	7.6	7.8	109	131	139	<0.1	<0.1
18	11.05.2010	49.5	16.9	7.2	6.7	123	145	152	<0.1	<0.1
19	17.05.2010	38.1	16.9	8.1	8.2	122	141	149	<0.1	<0.1
20	18.05.2010	35.4	16.4	6.3	7.2	114	123	131	<0.1	<0.1
21	24.05.2010	39.9	17.9	6.1	6.5	135	138	144	<0.1	<0.1
22	25.05.2010	44.4	16.9	6.8	7.6	129	141	149	<0.1	<0.1
	Min	**35.2**	**15.8**	**5.6**	**6.5**	**109**			<0.1	<0.1
	Max	**49.5**	**19.1**	**8.1**	**8.2**	**162**			<0.1	<0.1
	Avg	**40.8**	**17.0**	**6.8**	**7.3**	**134**			<0.1	<0.1
	98th	**49.2**	**19.0**	**7.9**	**8.1**	**159**			<0.1	<0.1
AAQ8 BAMHOURI SHANNA VILLAGE										
1	15.03.2010	38.3	17.8	5.9	6.4	115	121	123	<0.1	<0.1
2	16.03.2010	37.9	16.9	5.2	5.9	106	127	132	<0.1	<0.1
3	22.03.2010	36.2	17.1	6.3	6.7	122	141	143	<0.1	<0.1
4	23.03.2010	39.5	18.4	7.1	7.6	104	125	128	<0.1	<0.1
5	29.03.2010	38.4	17.8	5.5	6.2	121	122	123	<0.1	<0.1
6	30.03.2010	36.3	16.8	5.3	5.6	104	125	126	<0.1	<0.1
7	05.04.2010	43.5	19.4	6.4	6.7	125	123	125	<0.1	<0.1
8	06.04.2010	38.6	17.7	6.6	7.3	114	135	137	<0.1	<0.1
9	12.04.2010	36.9	17.6	5.3	6.4	125	146	156	<0.1	<0.1
10	13.04.2010	36.7	16.8	6.5	6.9	122	141	143	<0.1	<0.1
11	19.04.2010	40.3	18.4	5.6	6.5	112	133	135	<0.1	<0.1
12	20.04.2010	39.1	18.6	6.1	6.7	105	126	128	<0.1	<0.1
13	26.04.2010	39.7	19.4	5.5	5.9	118	119	121	<0.1	<0.1
14	27.04.2010	41.4	18.9	6.2	7.3	107	128	129	<0.1	<0.1
15	03.05.2010	37.6	17.5	5.9	6.3	115	117	118	<0.1	<0.1
16	04.05.2010	41.9	19.7	6.7	7.6	115	123	124	<0.1	<0.1
17	10.05.2010	38.4	17.5	5.2	5.7	105	126	128	<0.1	<0.1
18	11.05.2010	41.0	18.9	7.1	7.5	115	123	129	<0.1	<0.1
19	17.05.2010	43.3	19.7	7.4	7.7	122	122	124	<0.1	<0.1
20	18.05.2010	41.3	19.1	6.7	7.2	127	127	133	<0.1	<0.1
21	24.05.2010	46.7	16.7	5.6	6.3	114	135	137	<0.1	<0.1
22	25.05.2010	40.4	18.6	5.3	5.6	108	129	133	<0.1	<0.1
	Min	**36.2**	**16.7**	**5.2**	**5.6**	**104**			<0.1	<0.1
	Max	**46.7**	**19.7**	**7.4**	**7.7**	**156**			<0.1	<0.1
	Avg	**39.7**	**18.2**	**6.1**	**6.6**	**124**			<0.1	<0.1
	98th	**45.4**	**19.7**	**7.3**	**7.7**	**145**			<0.1	<0.1

ANNEXURE-VII
METHODOLOGY ADOPTED FOR SAMPLING AND ANALYSIS

1.0 Meteorology

The methodology adopted for monitoring surface observations is as per the standard norms laid down by Bureau of Indian Standards (IS:8829) and India Meteorological Department (IMD).

1.1 Methodology of Data Generation

The Central Monitoring Station (CMS) equipped with continuous monitoring equipment was installed at site at a height of about 10 m above ground level to record wind speed, direction, relative humidity and temperature. The meteorological monitoring station was located in such a way that it is free from any obstructions and as per the guidelines specified under IS:8829. Cloud cover was recorded by visual observation. Rainfall was monitored by rain gauge.

The continuous recording meteorological instrument of Dynalab, Pune (Model No.WDL1002) has been used for recording the met data. The sensitivity of the equipment is as given in **Table-1**.

TABLE-1
SENSITIVITY OF METEOROLOGY MONITORING STATION

Sr. No.	Sensor	Sensitivity
1	Wind speed Sensor	± 0.02 m/s
2	Wind direction Sensor	± 3 degrees
3	Temperature Sensor	± 0.2°C

Hourly maximum, minimum and average values of wind speed, direction and temperature were recorded continuously with continuous monitoring equipment. All the sensors were connected to filter and then logged on to datalogger. The readings were recorded in a memory module, which was attached to datalogger. The memory module was downloaded in computer through Dynalab software. The storage capacity of memory module was 256 KB. Data was downloaded every fortnight into the computer. The data was recorded continuously. The recovery of data was about 98%. The rest of 2 % data gaps were filled by referring to IMD data and daily weather reports in the local newspapers. However, Relative Humidity and Rainfall were recorded manually.

1.2 Ambient Air Quality

The air samples were analyzed as per standard methods specified by Central Pollution Control Board (CPCB), IS: 5184 and American Public Health Association (APHA).

The techniques used for ambient air quality monitoring and minimum detectable level are given in **Table-3.**

ANNEXURE-VII
METHODOLOGY ADOPTED FOR SAMPLING AND ANALYSIS

TABLE-3
TECHNIQUES USED FOR AMBIENT AIR QUALITY MONITORING

Parameters	Test Method [as per GSR 826(E), Sch-VII]	Minimum Detectable Limit ($\mu g/m^3$)
Particulate Matter, PM10	Gravimetric Method	1.0
Particulate Matter, PM2.5	Gravimetric Method	1.0
Sulphur dioxide (SO_2)	Improved West and Gaeke Method	4.0
Nitrogen dioxide (NO_x)	Modified Jacob and Hochheiser Method	4.0
Carbon Monoxide (CO) (3 x 8 hr)	Gas Monitor	12.5
Ozone (O_3) (3 x 8 hr)	Spectroscopic analysis	0.01 ppm /20 $\mu g/m^3$
Ammonia, NH_3	Indophenol Blue method	4.0
Benzene, C_6H_6	Solvent extraction followed by GC analysis	0.001
Benzo(a)pyrene in Particulate phase	Solvent extraction followed by GC analysis	0.0001
Heavy metals in particulate phase for Arsenic (As), Nickel (Ni), Lead (Pb)	AAS/ICP method	0.0001

1.3 Water Analysis

Samples for chemical analysis were collected in polyethylene carboys. Samples collected for metal content were acidified with 1 ml HNO_3. Samples for bacteriological analysis were collected in sterilized glass bottles. Selected physico-chemical and bacteriological parameters have been analyzed for projecting the existing water quality status in the study area. Parameters like temperature, Dissolved Oxygen (DO) and pH were analyzed at the time of sample collection.

The methodology for sample collection and preservation techniques was followed as per the Standard Operating Procedures (SOP) mentioned in **Table-4**.

TABLE-4
STANDARD OPERATING PROCEDURES (SOP) FOR WATER AND WASTEWATER SAMPLING

Parameter	Sample Collection	Sample Size	Storage/ Preservation
pH	Grab sampling Plastic /glass container	50 ml	On site analysis
Electrical Conductivity	Grab sampling Plastic /glass container	50 ml	On site parameter
Total suspended solids	Grab sampling Plastic /glass container	100 ml	Refrigeration, can be stored for 7 days
Total Dissolved Solids	Grab sampling Plastic /glass container	100 ml	Refrigeration, can be stored for 7 days
BOD	Grab sampling	500 ml	Refrigeration, 48 hrs

ANNEXURE-VII
METHODOLOGY ADOPTED FOR SAMPLING AND ANALYSIS

Parameter	Sample Collection	Sample Size	Storage/ Preservation
	Plastic /glass container		
Hardness	Grab sampling Plastic /glass container	100 ml	Add HNO_3 to pH<2, refrigeration; 6 months
Chlorides	Grab sampling Plastic /glass container	50 ml	Not required; 28 days
Sulphates	Grab sampling Plastic /glass container	100 ml	Refrigeration; 28 days
Sodium, Potassium	Plastic container	100 ml	Not required; 6 months
Nitrates	Plastic containers	100 ml	Refrigeration; 48 hrs
Fluorides	Plastic containers only	100 ml	Not required; 28 days
Alkalinity	Plastic/ glass containers	100 ml	Refrigeration; 14 days
Ammonia	Plastic/ glass containers	100 ml	Add H_2SO_4 to pH>2, refrigeration, 28 days
Hexavalent Chromium, Cr^{+6}	Plastic/ Glass rinse with 1+1 HNO_3	100 ml	Grab sample; refrigeration; 24 hrs
Heavy Metals (Hg, Cd, Cr, Cu, Fe, Zn, Pb etc.)	Plastic/ Glass rinse with 1+1 HNO_3	500 ml	Filter, add HNO_3 to pH>2; Grab sample; 6 months

Source: Standard Methods for the Examination of Water and Wastewater, Published By APHA, AWWA, WEF 19th Edition, 1995

1.3.1 Analytical Techniques

The analytical techniques used for water and wastewater analysis is given in the **Table-5**.

TABLE-5
ANALYTICAL TECHNIQUES
FOR WATER AND WASTEWATER ANALYSIS

Parameter	Method
pH	APHA-4500-H^+
Colour	APHA-2120 C
Odour	IS: 3025, Part-4
Temperature	APHA-2550 B
Dissolved Oxygen	APHA-4500 O
BOD	APHA-5210 B
Electrical conductivity	APHA-2510 B
Turbidity	APHA-2130 B
Chlorides	APHA-4500 Cl^-
Fluorides	APHA-4500 F^-
Total dissolved solids	APHA-2540 C
Total suspended solids	APHA-2540 D
Total hardness	APHA-2340 C
Sulphates	APHA-4500 SO_4^{-2}
Arsenic	APHA-3120 B/ APHA-3114 B/ APHA-3500 As
Calcium	APHA-3120 B/ APHA-3500 Ca
Magnesium	APHA-3120 B/ APHA-3500 Mg
Sodium	APHA-3120 B/ APHA-3500 Na

ANNEXURE-VII
METHODOLOGY ADOPTED FOR SAMPLING AND ANALYSIS

Parameter	Method
Potassium	APHA-3120 B/ APHA-3500 K
Manganese	APHA-3120 B/ APHA-3500 Mn
Mercury	APHA-3112 B/ APHA-3500 Hg
Selenium	APHA-3120 B/ APHA-3114 B/ APHA-3500 Se
Lead	APHA-3120 B/ APHA-3500 Pb
Copper	APHA-3120 B/ APHA-3500 Cu
Cadmium	APHA-3120 B/ APHA-3500 Cd
Iron	APHA-3120 B/ APHA-3500 Fe
Zinc	APHA-3120 B/ APHA-3500 Zn
Boron	APHA-4500 B
Coliform organisms	APHA-9215 D
Alkalinity	APHA-2320 B

1.4 Soil Quality

At each location, soil samples were collected from three different depths viz. 30 cm, 60 cm and 90 cm below the surface and are homogenized. This is in line with IS: 2720 & Methods of Soil Analysis, Part-1, 2nd edition, 1986 of (American Society for Agronomy and Soil Science Society of America). The homogenized samples were analyzed for physical and chemical characteristics. The soil samples were collected and analyzed once in each season.

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

The methodology adopted for each parameter is described in **Table-6**.

TABLE-6
ANALYTICAL TECHNIQUES FOR SOIL ANALYSIS

Parameter	Method (ASTM number)
Grain size distribution	Sieve analysis (D 422 – 63)
Textural classification	Chart developed by Public Roads Administration
Infiltration capacity	Infiltrometer
Bulk density	Sand replacement, core cutter
Porosity	Void ratio
Sodium absorption ratio	Flame colourimetric (D 1428-82)
PH	pH meter (D 1293-84)
Electrical conductivity	Conductivity meter (D 1125-82)
Nitrogen	Kjeldahl distillation (D 3590-84)
Phosphorus	Molybdenum blue, colourimetric (D 515-82)
Potassium	Flame photometric (D 1428-82)
Copper	AAS (D 1688-84)
Iron	AAS (D 1068-84)
Zinc	AAS (D 1691-84)
Boron	Surcumin, colourimetric (D 3082-79)
Chlorides	Argentometric (D 512-81 Rev 85)
Fluorides	Fusion followed by distillation and estimation by Ion selective electrod.

ANNEXURE-VII
METHODOLOGY ADOPTED FOR SAMPLING AND ANALYSIS

1.5 Noise Levels

1.5.1 Method of Monitoring

Noise level monitoring was carried out continuously for 24-hours with one hour interval starting at 0030 hrs to 0030 hrs next day. The noise levels were monitored on working days only and Saturdays, Sundays and public holidays were not monitored. During each hour L_{eq} were directly computed by the instrument based on the sound pressure levels. Lday (Ld), Lnight (Ln) and Ldn values were computed using corresponding hourly Leq of day and night respectively. Monitoring was carried out at 'A' response and fast mode.

Parameters Measured During Monitoring

For noise levels measured over a given period of time interval, it is possible to describe important features of noise using statistical quantities. This is calculated using the percent of the time certain noise levels exceeds the time interval. The notation for the statistical quantities of noise levels is described below:

- Hourly L_{eq} values have been computed by integrating sound level meter.
- L_{day}: As per the CPCB guidelines the day time limit is between 07:00 hours to 22.00 hours as outlined in Ministry of Environment and Forest Notification S.O. 123 (E) dated 14/02/2000.
- L_{night}: As per the CPCB guidelines the night time limit is between 22:00 hours to 07.00 hours as outlined in Ministry of Environment and Forest Notification S.O. 123 (E) dated 14/02/2000.

A rating developed by Environmental Protection Agency, (US-EPA) for specification of community noise from all the sources is the Day-Night Sound Level, (L_{dn}).

L_{dn}: It is similar to a 24 hr equivalent sound level except that during night time period (10 PM to 07 AM) a 10 dB (A) weighting penalty is added to the instantaneous sound level before computing the 24 hr average. This nighttime penalty is added to account for the fact that noise during night when people usually sleep is judged as more annoying than the same noise during the daytime.

The L_{dn} for a given location in a community may be calculated from the hourly L_{eq}'s, by the following equation.

$$L_{dn} = 10Log \frac{[\sum_{i=1}^{15} 10^{(L_{eq}i/10)} + \sum_{i=1}^{9} 10^{(L_{eq}i+10/10)}]}{24}$$

ANNEXURE-VIII
LIST OF FLORA AND FAUNA IN THE STUDY AREA

TABLE-1
LIST OF PLANT SPECIES RECORDED IN STUDY AREA

Sr. No	Technical Name	Family	Life Form
I. Agricultural Crops			
1	*Sorghum vulgare*	Poaceae	Hemicryptophyte
2	*Triticum vulgare*	Poaceae	Hemicryptophyte
3	*Oryza sativa*	Poaceae	Hemicryptophyte
4	*Zea mays*	Poaceae	Hemicryptophyte
5	*Hardium vulgare*	Poaceae	Hemicryptophyte
6	*Saccharam officinarum*	Poaceae	Hemicryptophyte
7	*Pennisetum typoidum*	Poaceae	Hemicryptophyte
II. Commercial Crops			
8	*Glycine max*	Papilionaceae	Hemicryptophyte
9	*Dolicus lab lab*	Papilionaceae	Hemicryptophyte
10	*Phaseolus mungo*	Papilionaceae	Hemicryptophyte
11	*Paseolus aureus*	Papilionaceae	Hemicryptophyte
12	*Cajanus Cajan*	Papilionaceae	Therophyte
13	*Ricinus communis*	Euphorbiaceae	Therophyte
14	*Carum capticum*	Apiaceae	Therophyte
15	*Foeniculum vulgaris*	Apiaceae	Therophyte
16	*Sessamum indicum*	Pedaliaceae	Therophyte
17	*Cicer auretinum*	Papilionaceae	Therophyte
18	*Allium sativum*	Liliaceae	Geophyte
19	*Solanum tuberosum*	Solanaceae	Geophyte
20	*Abelmascus esculentum*	Malvaceae	Therophyte
21	*Colacasea esculentum*	Araceae	Geophyte
22	*Brassica oleracea var capitata*	Brassicaceae	Therophyte
23	*Gossypium herbacium*	Malvaceae	Therophyte
24	*Hibiscus cannabinus*	Malvaceae	Therophyte
25	*Helianthus annulatum*	Asteraceae	Therophyte
26	*Terminalia chebula*	Combretaceae	Phanerophyte
27	*Mangifera indica*	Anacardiaceae	Phanerophyte
28	*Moringa olifera*	Moringaceae	Phanerophyte
29	*Lagenarea vulgaris*	Cucurbitaceae	Therophyte
30	*Luffa accutangula*	Cucurbitaceae	Therophyte
31	*Cucurbita maxima*	Cucurbitaceae	Therophyte
32	*Trichosanthis angula*	Cucurbitaceae	Therophyte
33	*Cucumis sativa*	Cucurbitaceae	Therophyte
34	*Daucus carota*	Umbelliferae	Geophyte
35	*Citrus lemon*	Rutaceae	Therophyte
36	*Citrus medica*	Rutaceae	Phanerophyte
37	*Raphanus sativus*	Cruciferae	Geophyte
38	*Morus alba*	Moraceae	Phanerophyte
39	*Cieba fentandra*	Bombacaceae	Phanerophyte
40	*Jasminum indicum*	Oleaceae	Therophyte
41	*Lycopersicum esculentum*	Solanaceae	Therophyte
42	*Capsicum frutescence*	Solanaceae	Therophyte
43	*Piper betel*	Piparaceae	Therophyte
44	*Areca catechu*	Aracaceae	Phanerophyte
45	*Mimordica charentia*	Cucurbitaceae	Therophyte
46	*Psidium gujuava*	Myrtaceae	Phanerophyte
47	*Rosa indica*	Rosaceae	Therophyte
48	*Ficus glomerata*	Moraceae	Phanerophyte
49	*Annona sqamosa*	Annonaceae	Phanerophyte
III. Plantation/ Road side plants			
50	*Acacia nilotica*	Mimosaceae	Phanerophyte
51	*Acacia leucophlea*	Mimosaceae	Phanerophyte
52	*Acacia aurabica*	Mimosaceae	Phanerophyte
53	*Azadirachta indica*	Meliaceae	Phanerophyte
54	*Ailanthus excelsa*	Semarubiaceae	Phanerophyte
55	*Bauhinia recemosa*	Caesalpiniaceae	Phanerophyte

ANNEXURE-VIII
LIST OF FLORA AND FAUNA IN THE STUDY AREA

Sr. No	Technical Name	Family	Life Form
56	*Bauhinia purpurea*	Caesalpiniaceae	Phanerophyte
57	*Tamarindus indica*	Caesalpiniaceae	Phanerophyte
58	*Leucena leucophlea*	Caesalpiniaceae	Phanerophyte
59	*Pithacalobium dulse*	Mimosaceae	Phanerophyte
60	*Terminalia bellarica*	Combretaceae	Phanerophyte
61	*Terminalia tomentosa*	Combretaceae	Phanerophyte
62	*Terminalia arjuna*	Combreataceae	Phanerophyte
63	*Sygygium cumini*	Myrtaceae	Phanerophyte
64	*Vitex nequndo*	Verbinaceae	Phanerophyte
65	*Ficus benghelensis*	Moraceae	Phanerophyte
66	*Ficus relegiosa*	Moraceae	Phanerophyte
67	*Ficus hispida*	Moraceae	Phanerophyte
68	*Dichrostachis venusta*	Mimosaceae	Phanerophyte
69	*Ficus elastica*	Moraceae	Phanerophyte
70	*Pelltophorum perugenum*	Caesalpiniaceae	Phanerophyte
71	*Polyalthea longifolia*	Annonaceae	Phanerophyte
72	*Albizia lebbeck*	Mimosaceae	Phanerophyte
73	*Albizia oderotissima*	Mimosaceae	Phanerophyte
74	*Sesbanea sesban*	Papilionaceae	Phanerophyte
75	*Calystemon lanceolatus*	Myrtaceae	Phanerophyte
76	*Sterculea urense*	Sterculiaceae	Phanerophyte
77	*Emblica officinalis*	Euphorbiaceae	Phanerophyte
78	*Prosophis julifera*	Mimosaceae	Phanerophyte
79	*Cassia fistula*	Caesalpinaceae	Phanerophyte
80	*Cassia seamea*	Caesalpiniaceae	Phanerophyte
81	*Delonix regea*	Caesalpiniaceae	Phanerophyte
82	*Dalbergea sissoo*	Papilionaceae	Phanerophyte
83	*Diosyros melanoxylon*	Ebanaceae	Phanerophyte
84	*Tectona grandis*	Verbinaceae	Phanerophyte
85	*Albizia procera*	Mimosaceae	Phanerophyte
IV. Natural Vegetation/ Forest Type			
86	*Acacia auriculata*	Mimosaceae	Phanerophyte
87	*Abutilon indicum*	Malvaceae	Therophyte
88	*Alternanthera sessile*	Amaranthaceae	Therophyte
89	*Almunda nudiflora*	Amaranthaceae	Therophyte
90	*Hibiscus micranthus*	Malvaceae	Therophyte
91	*Hibiscus syzopetalus*	Malvaceae	Therophyte
92	*Hibiscus lobatus*	Malvaceae	Therophyte
93	*Alangium salvifolium*	Cornaceae	Phanerophyte
94	*Buchanania lanzan*	Anacardiaceae	Phanerophyte
95	*Hardwickia binata*	Leguminaceae	Phanerophyte
96	*Bauhinia malabarica*	Caesalpiniaceae	Phanerophyte
97	*Flacourtia indica*	Bixaceae	Phanerophyte
98	*Holarrhina antidysenterica*	Apocynaceae	Phanerophyte
99	*Antidesma diandrum*	Euphorbiaceae	Therophyte
100	*Mimosops hexandra*	Sapotaceae	Phanerophyte
101	*Cleome viscosa*	Capparidaceae	Therophyte
102	*Cleome gynandra*	Capparidaceae	Therophyte
103	*Gmelina arborea*	Verbenaceae	Phanerophyte
104	*Cochleospermum religiosum*	Bixaceae	Therophyte
105	*Casearia graveolens*	Somydaceae	Phanerophyte
106	*Tilia spp*	Teliaceae	Therophyte
107	*Grewia hirsuta*	Tiliaceae	Phanerophyte
108	*Elaeodendron glaucum*	Celastraceae	Therophyte
109	*Lannea coramandalica*	Anacardiaceae	Therophyte
110	*Euphorbia nerifolia*	Euphorbiaceae	Therophyte
111	*Wrightia tinctorea*	Apocynaceae	Phanerophyte
112	*Grewia tiliaefolia*	Tiliaceae	Phanerophyte
113	*Anageissus latifolia*	Combretaceae	Phanerophyte
114	*Argemon mexicana*	Papavaraceae	Therophyte
115	*Ruellia tuberosa*	Scropulariaceae	Therophyte
116	*Butea monosperma*	Papilionaceae	Phanerophyte

ANNEXURE-VIII
LIST OF FLORA AND FAUNA IN THE STUDY AREA

Sr. No	Technical Name	Family	Life Form
117	*Erythrina suberosa*	Leguminaceae	Therophyte
118	*Gardenia latifolia*	Rubiaceae	Phanerophyte
119	*Pterocarpus marsupium*	Leguminaceae	Phanerophyte
120	*Phoenix aculis*	Palmae	Phanerophyte
121	*Zizyphus maritiana*	Rhamnaceae	Therophyte
122	*Chloroxylon swietenia*	Meliaceae	Phanerophyte
123	*Semecarpus anacardium*	Anacardiaceae	Phanerophyte
124	*Murraya paniculata*	Rutaceae	Therophyte
125	*Madhuca indica*	Sapotaceae	Phanerophyte
126	*Crotalaria spectabilis*	Leguminaceae	Therophyte
127	*Ocimum sanctum*	Labiatae	Hemicryptophyte
128	*Ocimum bassalicum*	Labiatae	Therophyte
129	*Physalis minima*	Sapindaceae	Therophyte
130	*Millingtonea hartensis*	Bignoniaceae	Phanerophyte
131	*Tecoma stance*	Bignoniaceae	Phanerophyte
132	*Datura stramonium*	Solanaceae	Therophyte
133	*Datura alba*	Solanaceae	Therophyte
134	*Opuntia dellinii*	Cactaceae	Xerophyte
135	*Yucca gloreosa*	Agavaceae	Xerophyte
136	*Sanseverea spp*	Agavaceae	Xerophyte
137	*Serius spp*	Cactaceae	Xerophyte
138	*Indigofera tinctorea*	Leguminaceae	Therophyte
139	*Amaranthus spinosa*	Amaranthaceae	Therophyte
140	*Achyranthus aspera*	Amaranthaceae	Therophyte
141	*Aerva lanata*	Amaranthaceae	Therophyte
142	*Clerodendron viscosum*	Verbenaceae	Therophyte
143	*Euphorbia hirta*	Euphorbiaceae	Therophyte
144	*Euphorbia pulcherima*	Euphorbiaceae	Therophyte
145	*Lawsonea innermii*	Lythraceae	Phanerophyte
146	*Leucas aspera*	Labiatae	Therophyte
147	*Leonatis spp*	Labiatae	Therophyte
148	*Loranthus spp*	Loranthaceae	Epiphyte
149	*Cuscuta reflexa*	Cuscutaceae	Epiphyte
150	*Moringa oliffera*	Moringaceae	Phanerophyte
151	*Hemidesmus indicus*	Asclipiadaceae	Therophyte
152	*Abrus prucatorius*	Leguminaceae	Therophyte
153	*Parthenium histeroporus*	Asteraceae	Therophyte
154	*Acalypha indica*	Amentiferae	Therophyte
155	*Vallaris solanacea*	Apocynaceae	Therophyte
156	*Dichrostachis venusta*	Mimosaceae	Phanerophyte
157	*Mimosa pudica*	Mimosaceae	Therophyte
158	*Pupalia lepasica*	Acanthaceae	Therophyte
159	*Carissa spinarum*	Apocynaceae	Phanerophyte
160	*Randia dumatorum*	Rubiaceae	Phanerophyte
161	*Calotrophis gygantia*	Asclipiadaceae	Therophyte
162	*Tribulus terestris*	Zygophyllaceae	Therophyte
163	*Tephrosea purpurea*	Papilionaceae	Therophyte
164	*Tephrosea hamiltonea*	Papilionaceae	Therophyte
165	*Solanum nigram*	Solanaceae	Therophyte
166	*Sesamum orientole*	Pedaliaceae	Therophyte
167	*Cassia occidentalis*	Caesalpiniaceae	Therophyte
168	*Cassia tora*	Caesalpiniaceae	Therophyte
169	*Cassia auriculata*	Caesalpiniaceae	Therophyte
170	*Cassia absus*	Caesalpiniaceae	Therophyte
171	*Dendrocalamus strictus*	Bombacaceae	Phanerophyte
172	*Corchorus aestivus*	Tiliaceae	Therophyte
173	*Triumpetta romboidis*	Tiliaceae	Therophyte
174	*Duranta plumeli*	Verbenaceae	Therophyte
175	*Prosophis specegera*	Mimosaceae	Therophyte
176	*Commelina benghelensis*	Commelinaceae	Geophyte
177	*Cyanotis speciosus*	Commelinaceae	Therophyte
178	*Clitorea ternata*	Papilionaceae	Therophyte

ANNEXURE-VIII
LIST OF FLORA AND FAUNA IN THE STUDY AREA

Sr. No	Technical Name	Family	Life Form
179	*Milletia auriculata*	Leguminaceae	Therophyte
180	*Antidesma diandrum*	Euphorbiaceae	Therophyte
181	*Hemenodictyon excelsum*	Rubiaceae	Therophyte
182	*Salmalia malabarica*	Malvaceae	Therophyte
183	*Vanda purviflora*	Orchidaceae	Epiphyte
184	*Cissus quadrangularis*	Vitaceae	Therophyte
185	*Selosia argentia*	Acanthaceae	Therophyte
186	*Sida cordifolia*	Malvaceae	Therophyte
187	*Sida acuta*	Malvaceae	Therophyte
188	*Impasense balsamea*	Balsaminaceae	Therophyte
189	*Brayophillum spp*	Araceae	Therophyte
190	*Pennisetum spp*	Poaceae	Therophyte
191	*Seteria intermidica*	Poaceae	Therophyte
192	*Punica granatum*	Punicaceae	Hemicryptophyte
193	*Puthranjeeva raxburghii*	Euphorbiaceae	Phenerophye
194	*Cocculus hirsutus*	Cucurbitaceae	Therophyte
195	*Thespesia papulanea*	Malvaceae	Phanerophyte
196	*Thevesia peruviana*	Apocynaceae	Phanerophyte
197	*Cyperus spp*	Poaceae	Hydrophyte
198	*Nymphea spp*	Nymphiaceae	Hydrophyte
199	*Nelumbo nucifera*	Nelumbiaceae	Hydrophyte
200	*Nerium odoratum*	Apocynaceae	Phenerophyte
201	*Amarphophalus spp*	Araceae	Geophyte
202	*Ipomea aquatica*	Convolvulaceae	Hydrophyte
203	*Hygrophila asiatica*	Acanthaceae	Hydrophyte
204	*Boerhavia diffusa*	Nyctaginaceae	Therophyte
205	*Alisicarpus harmosus*	Papilionaceae	Therophyte
206	*Canna indica*	Cannaceae	Therophyte
207	*Eclipta alba*	Asteraceae	Therophyte
208	*Zizyphus jujuba*	Rhamnaceae	Therophyte
V. Grass Lands			
209	*Chloris barbata*	Poaceae	Therophyte
210	*Cyanodon doctylon*	Poaceae	Geophyte
211	*Cymbopogan martini*	Cyperaceae	Hemicryptophyte
212	*Cymbopogan jwarancusa*	Cyperaceae	Hemicryptophyte
213	*Cyperus rotendrus*	Cyperaceae	Hemicryptophyte
214	*Cenchurus ciliaris*	Poaceae	Hemicryptophyte
215	*Vetevaria zizanoidis*	Poaceae	Hemicryptophyte
216	*Imperata cylindrica*	Poaceae	Therophyte
217	*Themeda quadrivalvis*	Poaceae	Therophyte
218	*Pennisetum alopecures*	Poaceae	Hemicryptophyte
219	*Sorghum hepalens*	Poaceae	Hemicryptophyte

ANNEXURE-VIII
LIST OF FLORA AND FAUNA IN THE STUDY AREA

TABLE-2
LIST OF FAUNA RECORDED IN STUDY AREA

Sr. No.	Technical Name	English Name/ Local Name	Conservation status as per Wild Life Protection Act (1972)
Birds			
1	*Milyus migrans*	Common Kite	Sch-IV
2	*Quills contronix*	Grey quail	Sch-IV
3	*Corvus corvus*	Jungle crow	Sch-IV
4	*Corvus splendens*	House crow	Sch-V
5	*Turdoides striatus*	White headed babler	Sch-IV
6	*Aegithina tiphia*	Iora	Sch-IV
7	*Pycnonotus cafer*	Red vented bulbul	Sch-IV
8	*Saxicoloides fulicata*	Indian robin	Sch-IV
9	*Gallus gallus*	Red Jungle fowl	Sch-IV
10	*Columbus livibus*	Rock Pigeon	Sch-IV
11	*Bubo bubo*	Indian great horned Owl	Sch-IV
12	*Copsychus saularis*	Magpie Robin	Sch-IV
13	*Tchitrea paradisi*	Paradise Fly catcher	Sch-IV
14	*Dicrurus macrocerus*	Black Drongo	Sch-IV
15	*Oriolus oriolus*	Indian Oriole	Sch-IV
16	*Temenuchus pagodarum*	Brahmny Myna	Sch-IV
17	*Acridotheres tristicus*	Common myna	Sch-IV
18	*Ploceus philippines*	Weaver bird	Sch-IV
19	*Uroloncha striata*	Spotted munia	Sch-IV
20	*Passer domisticus*	House Sparrow	Sch-IV
21	*Motacilla cinerea*	Grey wagtail	Sch-IV
22	*Motacilla maderaspatensis*	Large pied wagtail	Sch-IV
23	*Cinnyris lotensis*	Loten's sunbird	Sch-IV
24	*Cinnyris asiatica*	Purple Sunbird	Sch-IV
25	*Megalaima merulinus*	Indian Cuckoo	Sch-IV
26	*Hierococys varius*	Common Hawk uckoo	Sch-IV
27	*Eudynamis scolopaceus*	Koel	Sch-IV
28	*Centropus sinensis*	Crow Pheasant	Sch-IV
29	*Psittacula Krammeri*	Rose ringed parakeet	Sch-IV
30	*Merops orinetalis*	Common Bee Eater	Sch-IV
31	*Alcedo atthis*	Common Kingfisher	Sch-IV
32	*Halcyon mysorensis*	White breasted kingfisher	Sch-IV
33	*Microfus affinis*	House swift	Sch-IV
34	*Caprimulgus asiaticus*	Common Indian jar	Sch-IV
35	*Tylo alba*	Barn Owl	Sch-IV
36	*Haliastur Indus*	Brahmny kite	Sch-IV
37	*Milvus migrans*	Pariah kite	Sch-IV
38	*Chalcophaps indica*	Emerald Dove	Sch-IV
39	*Lobvanella indicus*	Redwattled Lapwing	Sch-IV
40	*Lobpluvia malabaraica*	Yellow wattled lapwing	Sch-IV
41	*Anhinga melanogaster*	Darter	Sch-IV
42	*Egretta garzetta*	Little Egret	Sch-IV
43	*Bubulcus ibis*	Cattle Egret	Sch-IV
44	*Ardeola grayii*	Pond Heron	Sch-IV
45	*Anas acuta*	Common Teal	Sch-IV
Reptiles			
46	*Calotes versicolor*	Garden Lizard	Sch-IV
47	*Chameleon zeylanicus*	Lizard	Sch-IV
48	*Bungarus candidus*	Krait	Sch-IV
Butterflies			
49	*Triodes minos*	Southern Birdwing	Sch-IV
50	*Pachliopta hector*	Crimson rose	Sch-IV
51	*Papilo demoleus*	Lime butterfly	Sch-IV
52	*Graphium agamemnos*	Tailed jay	Sch-IV

ANNEXURE-VIII
LIST OF FLORA AND FAUNA IN THE STUDY AREA

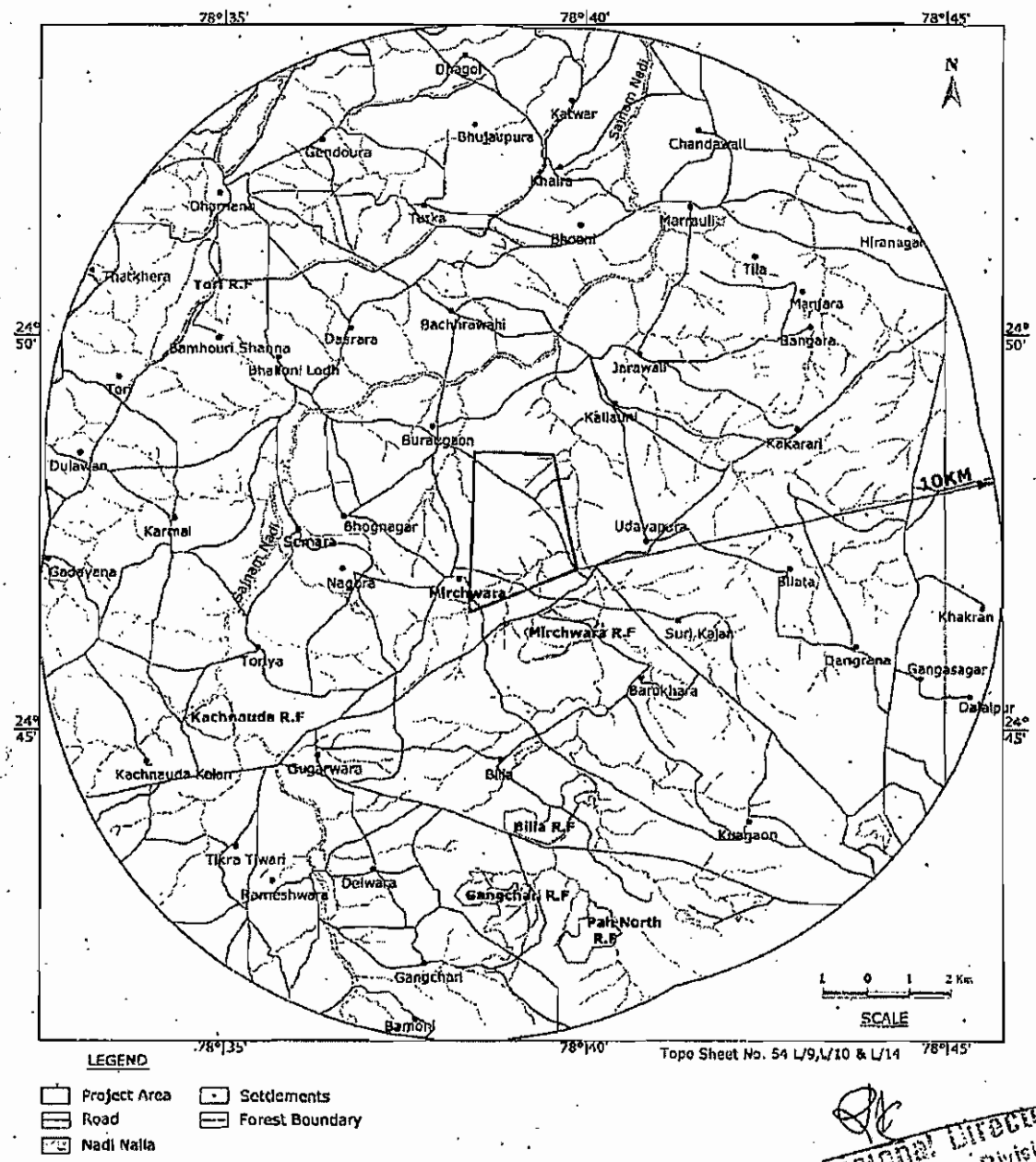
Sr. No.	Technical Name	English Name/ Local Name	Conservation status as per Wild Life Protection Act (1972)
53	*Parantica aglea*	Glassy tiger	Sch-IV
Amphibia			
54	*Rana hexadactyla*	Frog	Sch-IV
55	*Rana tigrina*	Bull frog	Sch-IV
Mammals			
56	*Lepus nigricollis*	Hare	Sch-IV
57	*Hyaena hyaena*	Hyaena	Sch-III
58	*Canis auries*	Jackal	Sch-III
59	*Presbytis entellus*	Langur	Part-II of Sch-II
60	*Macaca mulata*	Monkey	Part-I of Sch-II
61	*Funambulus spp.*	Squirrel	Sch-IV
62	*Funambulus palmarum*	Squirrel	Sch-IV
63	*Sus sucrofa*	Wild pig	Sch-III
64	*Rattus norvegicus*	Field mouse	Sch-V
65	*Herpestes edwardii*	Common mongoose	Part-II of SCh-II
66	*Bandicota indica*	Bandicoot	Sch-V

TABLE-3
LIST OF PLANKTONIC FLORA AND FAUNA FROM STUDY AREA

Phytoplankton	Zooplankton
Gyrosigma sp	*Keratella monospina*
Achananthes affinis	*Brachirous caudatus*
Gyrosigma accuminatus	*Asplancha brighwell*
Pandorina sp	*Colpidium colpoda*
Ankistrodesmus falcatus	*Daphnia sp*
Ankistrodesmus var.tumidus	*Ceriodaphnia reticulata*
Pediastrum boryanum	*Mesocyclops leuckarti*
Scenedesmus bijuga	*Mesocyclops hyalinus*
Melosira granulate	*Coleps hirsutus*
Cyclotella meneghiana	*Arcella sp*
Microcystis sp	*Actinophyros sp*
Navicula gracilis	*Asplancha sp*
Nitzschia gracilis	*Ceriodaphnia sp*
Chroococcus minutus	*Mesocyclops sp*
Spirulina princepes	-
Amphora sp	-
Chlorococcum sp	
Pediastrum duplex	
Pleurosigma sp	
Facus sp	
Euglena sp	

ANNEXURE-VIII
LIST OF FLORA AND FAUNA IN THE STUDY AREA

Authentication from Forest Department



Divisional Director
Social Forestry Divisio
LALITPUR (U. P.)

ANNEXURE-VIII
LIST OF FLORA AND FAUNA IN THE STUDY AREA

List of Fauna found in the study area of 10 km taking Mirchwara as centre

Sr. No.	Common Name	Scientific Name
Mammals		
1.	Bandar/Rhesus macaque	*Macaca mulatta*
2.	Hanuman/ Langur	*Presbytis entellus*
3.	Guldar/Leopard	*Panthera pardus*
4.	Jungli Billi/Jungle cat	*Felis chaus*
5.	Siyar / Jackal	*Canis aureus*
6.	Bhedia / Indian Wolf	*Canis lupus*
7.	Lomdi / Indian Fox	*Vulpes bengalensis*
8.	Lakad Bagga/Hyaena	*Hyaena hyaena*
9.	Newla /Small Indian Mongoose	*Herpestes auropunctatus*
10.	NilGai/ Blue Bull/ Large Indian Antelope	*Boselaphus tragocamelus*
11.	Chittal/Spotted Dear	*Axis axis*
12.	Jungli suwar/ Indian Wild Boar	*Sus scrofa*
13.	Gilhari/Five Stripped Squirrel	*Funambulus pennanti*
14.	Chuha/Rat	*Bandicota indica*
15.	Common House Rat	*Rattus rattus*
16.	House Mouse	*Mus muscurus*
17.	Sahi/Porcupine	*Hystrix indica*
18.	Khargose/Hare	*Lepus nigricollis*
19.	Chachundar/Grey Musk Shrew	*Sancus murinus*
20.	Chamgadhar/Common Yellow Bat	*Scotophilus heathi*
Aves (Birds)		
21.	Kala titar/ black Patrige	*Francolinus francolinus*
22.	Grey Patrige	*Francolinus pondicerianus*
23.	Bater/Common Quail	*Coturnix coturnix*
24.	Lava Bater/ Bush Quail	*Perdicula asiatica*
25.	Kabutar/Blue Rock Pigeon	*Columba livia*
26.	Fhakta/Indian Ring Dove	*Streptopellia decaocto*
27.	Hariyal/Green Pigeon	*Treron phoenicoptera*
28.	Common duck	*Sarkidionis melanotos*
29.	Murgavi/common Teal	*Anas crecca*
30.	Choti Murgavi/small Teal	*Anas querquedula*
31.	Sawan/Bar Headed goose	*Anas indicus*
32.	Sawan/Grey leg goose	*Anser anser*
33.	Karchiya Bagula/Little Egret	*Egretta gargetta*
34.	Bagula/Grey Heron	*Ardea cinerea*
35.	Surkhiya Bagula Cattle Egret	*Bubulcus ibis*
36.	Sarus Crane	*Grus antigona*
37.	Chil/Brahminy kite	*Hallaster Indus*
38.	Koyal	*Eudynamys scolopacea*
39.	Koyal/Kuku	*Cuculus canorus*
40.	Jungli Oulu/Owlet	*Glaucidium radiatum*

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LALITPUR (U. P.)

ANNEXURE-VIII
LIST OF FLORA AND FAUNA IN THE STUDY AREA

Sr. No.	Common Name	Scientific Name
41.	Jungli Oulu/Brown wound Owl	*Strixnleptogrammica*
42.	Chapka/forest Nightjar	*Caprimulgus indicus*
43.	Common Indian Nightjar	*Caprimulgus asiaticus*
44.	Kilkila/White Breasted Kingfisher	*Halcyon amymensis*
45.	Mosrun/Common Kingfisher	*Alcedo atthis*
46.	Nilkant/Indian Roller	*Corocias bengalensis*
47.	Hoopoe	*Upupa epos*
48.	Khatfhodba/golden Woodpecker	*Dinoplum bengalensis*
49.	Khatfhodba/Small Yellow Naped Woodpecker	*Picus chlorlohus*
50.	Khatfhodba/Large Yellow Naped Woodpecker	*Picus flavinucha*
51.	Angarak/ Drongo	*Dicrurus adsimilis*
52.	Angarak/ Asian Babler	*Prinia socialis*
53.	Angarak/Wren Babler	*Prinia silvatica*
54.	Dhyal/magpie Robbin	*Copsychus saularis*
55.	Khanja/ Grey waintail	*Motacilla caspica*
56.	Goraya/House Sparrow	*Passer domesticus*
57.	Jungle Maina	*Acridotheres fuscus*
58.	Jungle Kawua /Jungle Crow	*Corvus macrorhynchos*
59.	Desi kawua/ Common Crow	*Corvus splendense*
60.	Baya/Weiver bird	*Ploceus philippinus*
61.	Lalmunia/ Red Munia	*Estrilda amandya*
62.	Bulbul/Red Vented Bulbul	*Pycnonotus cafer*
63.	Golden Oriole	*Oriolus oriolus*
64.	Totta/ Roser Ringed Parakeet	*Psittacula krameri*
Reptiles		
65.	Kachuwa/Indian Tortowise	*Geochelove elegans*
66.	Ghow/monitor Lizard	*Varanus bengalensis*
67.	Girgit/Garden Lizard	*Calotes versicolor*
68.	Chipkalli/Gecko	*Hemidactylus brooki*
69.	Azgar/Indian Phyton	*Phython molurus*
70.	Karant/Common Krait	*Bungarus caeruleus*
71.	Kalanag/Cobra	*Naja naja* naja
72.	Dhaman/Rat snake	*Ptyas mucosus*
73.	Phursa/ Russell's' viper	*Viperas russelli*
74.	Panipa snap/ Water snake	*Enhydris enhydris*
Pisces (Fishes)		
75.	CalBose	*Labeo calbasu*
76.	Chelwa	*Chela atpar*
77.	Rohu	*Labeo rohita*
78.	Mrirgal	*Cirrhinus mrigala*
79.	Tangra	*Mystus bleekeri*
80.	Magur	*Calarias mangur*
81.	Shor	*Channa marulius*

Divisional Director
Social Forestry Division
Lalitpur (U.P.)

ANNEXURE-IX
DEMOGRAPHIC DETAILS

Sr.No.	Name of Village	No.of House Holds	Total Population	Total Male	Total Female	Population Below 6 Agegroup	Male Below 6 Agegroup	Female Below 6 Agegroup	SC Population	ST Population	Total Literates	Male Literates	Female Literates	Total Workers	Main Workers	Marginal Workers	Non Workers
0-3 km.	**Mahroni Tehsil**																
1	Burogaon	440	2704	1444	1260	550	285	265	704	0	916	663	253	1227	800	427	1477
2	Mirchwara	337	1963	1081	882	413	222	191	160	0	961	612	349	1117	812	305	846
3	Semrabhag Nagar	328	1924	1022	902	388	198	190	287	0	530	433	97	929	718	211	995
4	Nagara	85	636	354	282	108	53	55	188	0	289	191	98	212	170	42	424
	Sub Total	**1190**	**7227**	**3901**	**3326**	**1459**	**758**	**701**	**1339**	**0**	**2696**	**1899**	**797**	**3485**	**2500**	**985**	**3742**
3-7 km.	**Mahroni Tehsil**																
5	Jaraoli	197	1226	679	547	246	136	110	314	0	308	229	79	707	531	176	519
6	Kailoni	94	517	270	247	115	64	51	125	0	81	71	10	257	146	111	260
7	Udaipura	199	1263	690	573	253	143	110	203	0	563	386	177	578	359	219	685
8	Semara Bujurg	77	511	260	251	116	55	61	0	0	206	147	59	165	105	60	346
9	Toria	206	1239	661	578	204	108	96	277	0	383	278	105	614	536	78	625
10	Gugarwara	242	1594	814	780	335	159	176	448	0	460	342	118	913	465	448	681
11	Billa	358	2204	1189	1015	394	217	177	400	0	871	649	222	1344	974	370	860
12	Bharoni	85	442	227	215	94	47	47	123	0	181	117	64	238	187	51	204
13	Surikalan	170	988	547	441	223	131	92	407	0	380	270	110	471	255	216	517
14	Bilata	138	858	459	399	185	94	91	152	0	126	107	19	404	224	180	454
15	Badokhara	245	1388	742	646	317	154	163	492	0	356	284	72	734	276	458	654
	Talbehat Tehsil																
16	Bachhrawni	278	1565	818	747	315	150	165	291	0	455	345	110	914	823	91	651
17	Dashrara	232	1359	716	643	278	143	135	260	0	403	284	119	617	376	241	742
18	Fadari	32	176	98	78	35	20	15	0	0	82	57	25	75	53	22	101
19	Bhelonilodh	251	1606	834	772	329	176	153	485	0	757	536	221	886	574	312	720
20	Karmai	361	2003	1064	939	438	232	206	535	0	687	495	192	1034	775	259	969
21	Purapachauni	113	567	300	267	115	58	57	314	0	232	145	87	296	185	111	271
	Sub Total	**3278**	**19506**	**10368**	**9138**	**3992**	**2087**	**1905**	**4826**	**0**	**6531**	**4742**	**1789**	**10247**	**6844**	**3403**	**9259**
7-10 km	**Mahroni Tehsil**																
22	Chandawali	275	1717	907	810	353	185	168	261	0	488	388	100	872	498	374	845
23	Bangra	92	539	292	247	131	62	69	121	0	128	105	23	298	261	37	241
24	Teela	106	593	306	287	142	75	67	87	0	141	93	48	300	154	146	293
25	Marroli	270	1480	799	681	279	148	131	186	0	443	354	89	865	485	380	615
26	Gahrao	90	557	312	245	107	60	47	59	0	210	137	73	263	167	96	294
27	Kakdari	211	1355	733	622	292	162	130	313	0	375	246	129	584	459	125	771
28	Pura Dhadkuwa	151	923	506	417	206	108	98	433	0	152	136	16	462	228	234	461
29	Gangchari	245	1555	832	723	309	153	156	471	0	351	291	60	1051	575	476	504
30	Pah	384	2260	1229	1031	547	306	241	856	0	808	562	246	1137	696	441	1123
31	Dangrana	407	2456	1285	1171	490	251	239	614	0	734	533	201	1180	879	301	1276
32	Suri Khurd	127	902	457	445	206	98	108	60	0	271	215	56	493	304	189	409
33	Kuwagaon	292	2083	1067	1016	365	170	195	291	0	1039	716	323	1140	593	547	943
34	Chhilla	125	706	379	327	118	62	56	115	0	327	228	99	359	279	80	347
35	Khiriqamisar	84	410	214	196	63	27	36	135	0	238	145	93	204	109	95	206
36	Ajnora	173	841	433	408	154	77	77	110	0	300	210	90	433	414	19	408
37	Banpur	1635	10219	5370	4849	2045	1030	1015	2613	0	4211	2849	1362	4379	2603	1776	5840
	Talbehat Tehsil																
38	Bamanguwan	35	176	95	81	23	15	8	0	0	107	59	48	65	65	0	111
39	Bhujupura	67	402	211	191	79	44	35	19	0	91	69	22	167	113	54	235
40	Bar	1323	7425	3953	3472	1541	793	748	2075	0	3196	2125	1071	2843	2062	781	4582
41	Gendaura	239	1445	791	654	312	167	145	205	0	503	378	125	682	443	239	763
42	Turka	127	830	459	371	176	94	82	149	0	224	186	38	307	236	71	523
43	Pata Pachaura	60	383	215	168	87	53	34	0	0	125	89	36	187	123	64	196
44	Kathwar	74	428	232	196	88	49	39	113	0	151	106	45	209	119	90	219
45	Khaira	132	825	431	394	157	75	82	52	0	280	191	89	478	262	216	347

ANNEXURE-IX
DEMOGRAPHIC DETAILS

Sr.No.	Name of Village	No.of House Holds	Total Population	Total Male	Total Female	Population Below 6 Agegroup	Male Below 6 Agegroup	Female Below 6 Agegroup	SC Population	ST Population	Total Literates	Male Literates	Female Literates	Total Workers	Main Workers	Marginal Workers	Non Workers
46	Bhawani	223	1307	710	597	295	150	145	452	0	341	285	56	816	407	409	491
47	Bahrawani	151	881	471	410	198	115	83	284	0	376	273	103	374	360	14	507
48	Todi	386	2491	1320	1171	571	289	282	307	0	657	522	135	1248	686	562	1243
49	Dulawan	393	2401	1259	1142	533	269	264	365	0	688	533	155	1209	868	341	1192
50	Gadyana	566	3453	1845	1608	711	392	319	680	0	1273	905	368	1543	951	592	1910
	Lalitpur Tehsil																
51	Kachnoda Kalan	448	2841	1487	1354	684	340	344	387	0	534	449	85	1339	820	519	1502
52	Tikra Tiwari	201	1261	682	579	292	161	131	398	0	496	346	150	573	423	150	688
53	Rameshra	128	793	415	378	185	92	93	44	0	218	178	40	374	152	222	419
54	Khiriya Chhatara	429	2576	1366	1210	602	308	294	1051	0	706	503	203	1183	1054	129	1393
	Sub Total	**9649**	**58514**	**31063**	**27451**	**12341**	**6380**	**5961**	**13306**	**0**	**20182**	**14405**	**5777**	**27617**	**17848**	**9769**	**30897**
0-10 km.	**Grand Total**	**14117**	**85247**	**45332**	**39915**	**17792**	**9225**	**8567**	**19471**	**0**	**29409**	**21046**	**8363**	**41349**	**27192**	**14157**	**43898**