CHAPTER–V
ENVIRONMENTAL MONITORING PROGRAMME

5.0 INTRODUCTION

Post Project Monitoring is an essential part to check the negative impact of any project activity. Hence monitoring of various environmental parameters will be carried out on a regular basis to ascertain the following:

- Status of Pollution within the project site and in its vicinity.
- Generate data for predictive or corrective purpose in respect of pollution.
- Examine the efficiency of pollution control system installed in the plant.
- To assess environmental impacts.

NV Distilleries & Breweries (North East) Pvt. Ltd. will undertake monitoring in the plant as per the norms of SPCB and CPCB.

The various environmental components and pollution sources, which would be monitored under Environmental monitoring programme, would be stack emission, ambient air quality, liquid effluent and noise levels. Details of the Environmental Monitoring programme, which would be undertaken for various environmental components, are detailed below:

TABLE No.: 5.1
POST PROJECT MONITORING

S. No.	DESCRIPTION	FREQUENCY OF MONITORING
1.	Meteorological Data	Daily
2.	Ambient Air Quality at project site	Twice a week
3.	Stack Emissions	Weekly
4.	Water Quality	Quarterly
5.	Noise Level Monitoring	Quarterly
6.	Health Check-up	As per the Factory Act.
7.	Soil Quality	Quarterly

5.1 METHODOLOGY ADOPTED

On the basis of the environmental conditions at the proposed site and the nature of adjoining area, the project site is considered as core zone and the area lying within 10 km radius from the proposed site is considered to be the buffer zone where some impacts may be observed on physical and biological environment. In the Buffer zone slight impact may be observed and that too is occasional.

5.2 DATA COLLECTION

As given in chapter III, the baseline data for the project site and 10 km radius area were collected in accordance with the requirement of guidelines of Ministry of Environment & Forests, New Delhi. Monitoring was done during study period (March - May 2009). Similarly the post project monitoring once project operation phase begins will be done to study the impact of project activity on the surrounding environment and concerned people. The data will be collected on following locations:

TABLE NO.: 5.2
DATA TO BE COLLECTED

S. No.	Description	Location
1.	Ambient Air Quality	Project site, Villages in Buffer Zone
2.	Stack Emissions	Stack
3.	Meteorological data	Project site
4.	Noise Level Monitoring	Project Boundary, Villages in Buffer Zone
5.	Health Check-up	Workers

5.3 POST PROJECT MONITORING

The Post Project Monitoring would include details of any major/ minor impact in the core zone and area within buffer zone for the following parameters: -

- Fauna & flora in this region.
- Sensitive places/ historical monuments and sanctuaries.
- Land use pattern within core zone and buffer zone including the cropping pattern.

- Demography and socio-economic analysis based on last available census data for entire study area.
- Water bodies, hills, roads etc.

5.4 INSTRUMENT TO BE USED

The following instruments will be used for data collection work in the monitoring schedule:

1. Respirable dust collector with attachment for gaseous pollutants, Envirotech APM 460.
2. Digital D.O. Meter model – 831 E.
3. Wind Direction Van – one
4. Dry and Wet Bulb Thermometer.
5. Sound Level Meter Model Sl – 4010
6. Anemometer Model AM – 4201
7. High Volume Sampler
8. GPS

In addition to the above instruments, the data on land use, vegetation and agricultural crops will be collected by the field team by meeting with a large number of local inhabitants in the study area and different government departments / agencies.

5.5 SELECTION OF MONITORING STATIONS

Monitoring will be done in the core and buffer zone of the project site. Sampling stations will be selected according to the preferences and convenience of the project proponent, also changes in the sampling sites might be done if required by MoEF, New Delhi.

5.6 PROCEDURE FOR DETERMINING VARIOUS AIR QUALITY PARAMETERS

The procedure for determining various air quality parameters has been given by MoEF and the same will be used for the post project monitoring of the project.

TABLE NO.: 5.3
TESTING PROCEDURE

Parameters	Testing Procedure
SPM & RSPM	Gravimetric Method using Respirable Dust Sampler Envirotech RDS - APM 460 IS: 5182 (Part-IV)
NO_X	Absorption in dill NaOH and then estimated colorimetrically with sulphanilamide and N (I-Nepthyle) Ethylene diamine Dihydrochloride and Hydrogen Peroxide (CPCB Method).
SO_2	Absorption in Potassium Tetra Chloromercurate followed by Colorimetric estimation using P-Rosaniline hydrochloride and Formaldehyde (IS: 5182 Part - II).

TABLE No.: 5.4
GUIDANCE FOR ASSESSMENT OF REPRESENTATIVENESS AND RELIABILITY OF BASELINE ENVIRONMENTAL ATTRIBUTES

Attributes	Sampling		Measurement Method	Remarks
A. Air Environment	**Network**	**Frequency**		
Meteorological • Wind speed • Wind direction • Dry bulb temperature • Wet bulb temperature • Relative humidity • Rainfall	Minimum 1 site in the project impact area	Regularly in one season by Weather Monitoring Station	Mechanical/automatic weather station Rain gauge As per IMD specifications As per IMD specifications	IS 5182 Part 1-20 Site specific primary data is essential
Pollutants • SPM	8 to 10 locations in the project impact area	24 hourly twice a week (Please refer	Gravimetric (High-Volume)	**Monitoring Network** • Minimum 2 locations in upwind side, more sites in downwind side / impact zone
• RPM		National Ambient Air Quality Standards, CPCB	Gravimetric (High-Volume with Cyclone)	• All the sensitive receptors need to be covered
• SO_2		Notification dated 11th April, 1994)	EPA Modified West & Geake method	Measurement Methods
• NO_x			Arsenite modified Jacob & Hochheiser	As per CPCB standards for NAQM, 1994

Note: *For Rapid Environmental Impact Assessment one complete season data except monsoon is adequate while the comprehensive Environmental Impact Assessment Resources coverage of three seasons.*

5.7 WATER REGIME

The quality of ground water will be studied by collecting water samples from representative Hand pumps and tube wells.

5.7.1 Locations of Water Monitoring Stations & Parameters that will be analyzed

Monitoring will be done in the core and buffer zone of the project site. The parameters that will be analyzed are mentioned in the table given below:

TABLE NO.: 5.5
PARAMETERS TO BE ANALYSED

S. No	Parameters	Permissible limits as per IS: 10500
1.	pH	6.5 – 8.5
2.	Odour	Unobjectionable
3.	Turbidity (NTU)	5 (max 10)
4.	Total hardness as $CaCO_3$ (mg/l)	300(max 600)
5.	Calcium as Ca (mg/l)	75(max 200)
6.	Sulphate as SO_4(mg/l)	200(max 400)
7.	Total dissolved solid (mg/l)	500(max 2000)
8.	Alkalinity as $CaCO_3$ (mg/l)	200(max 600)
9.	Iron as Fe (mg/l)	0.3(max 1.0)
10.	Fluoride as F (mg/l)	1.0(max 1.5)
11.	Magnesium as Mg^{+2} (mg/l)	30 (max.100)
12.	Chloride as Cl, mg/l	250, (max 1000)
13.	Nitrate as NO^3 mg/l	45, (max 100)
14.	Sodium as Na (mg/l)	$
15.	Potassium as K (mg/l)	$

TABLE NO.: 5.6

GUIDANCE FOR ASSESSMENT OF REPRESENTATIVENESS AND RELIABILITY OF BASELINE ENVIRONMENTAL ATTRIBUTES

ATTRIBUTES	SAMPLING	MEASUREMENT FREQUENCY	REMARKS
Water			
Parameters for water quality • pH, turbidity, magnesium hardness, total alkalinity, chloride, sulphate, nitrate, fluoride, sodium, potassium, salinity • Total nitrogen, total phosphorus, DO, BOD, COD, Phenol • Heavy metals • Total coliforms, faecal coliforms • Phyto plankton • Zoo plankton	• Set of grab samples during pre and post-monsoon for ground and surface water for 10 km distance	Diurnal and Season wise	Samples for water quality should be collected and analyzed as per : • IS : 2488 (Part 1-5) methods for sampling and testing of Industrial effluents • Standard methods for examination of water and wastewater analysis published by American Public Health Association.

5.8 NOISE ENVIRONMENT

5.8.1 Base Line Data

Noise levels will be measured in the study area to establish present scenario. Noise monitoring will be done in the core and buffer zone of the project site.

Noise levels standards are presented in table below.

Table No. : 5.7

CPCB NOISE STANDARDS

AREA CODE	CATEGORY OF AREA	LIMITS IN dB (A)	
		DAY TIME	NIGHT TIME
(A)	Industrial area	75	70
(B)	Commercial area	65	55
(C)	Residential area	55	45
(D)	Silence zone	50	40

5.9 SOIL ENVIRONMENT

Soil is the media for supplying the nutrients for plant growth. Nutrients are available to plants at certain pH and pH of soils can reflect by addition of pollutants in it either by air, or by water or by solid waste or by all of these. In order to study the any impact of project activity on soil, samples will be collected from the core and buffer zone of the project site.

5.10 BIOLOGICAL ENVIRONMENT

There are no national parks, wild life sanctuaries / biosphere reserves within 10 km radius of the study area. The soil in the area is low to medium fertile with reference to its agriculture potential. No rare, endangered and critically endangered species have been found during the baseline study for the project, which shows there will not be any significant impact on the biological environment of the area.

The following mitigation measures will be taken up for protection of fauna in the study area:

- Improvement of habitat that includes augmenting water sources, water regime development, eradication of weeds, and development and restoration of grasslands.
- Educate the local people to develop awareness to protect the animals;
- Formulate wild life protection committees in near by villages to control the poaching and hunting;
- Protect and regulate the herbivorous animals in the study area; and
- Formulate a wild life patrolling committee to monitor the wild animal's movement.
- Mitigation of man-animal conflicts,
- Inoculation of domestic cattle against contagious diseases.

5.11 SOCIO–ECONOMIC ENVIRONMENT

There will be only positive impacts on the socio- economic environment of the project area, with the employment opportunities and other activities as Corporate Social Responsibility of the NV Distilleries & Breweries (P) Ltd. However guidelines given by the MoEF, New Delhi for socio- economic analysis will be followed as a part of Post Project Monitoring.

5.12 BUDGET

Capital cost of the project is **Rs 250 Crores. Cost** for Environmental Protection Measures will be **Rs. 25 Crores**.