

**ROYAL NETHERLANDS EMBASSY  
NEW DELHI**

**ENVIRONMENTAL IMPACT ASSESSMENT**

**ANDHRA PRADESH  
SURFACE WATER  
LIFT IRRIGATION SCHEMES**

**APLIFT**

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# **ANNEXURES**

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# **CHAPTER I**



### Annexure 1.1

#### Legal and Institutional aspects

##### **Legislation**

India has a long tradition of environmental conservation, it is one of the countries in the world that have made specific reference in their constitution of the need for promoting ecological security; the Indian constitution lays down in the section on Directive Principles of State Policy, the following duties for the State and the citizens (article 48):

"The state shall endeavour to protect and improve the environment and to safeguard the forests and wild life of the country."

Furthermore article 51-a states that:

"It shall be the duty of every citizen of India to protect and improve the natural environment, including forests, lakes, rivers and wildlife, and to have compassion for the living resources."

However, the problems related to the environment only received Government attention in a planned manner with the beginning of the Fourth Five Year Plan, which made mention of the introduction of an environmental dimension into the development planning process. In 1972 a Committee on Environmental coordination was set up to look into the environmental problems and suggest departments. In January 1980 another committee was formed to review the existing legislative measures and administrative machinery. On the recommendations of this high powered committee the Department of Environment was formed by the government in 1980. This department served as the focal point in the administrative structure of the Central Government for planning, promotion and coordination of environmental programmes. In 1985 the new Ministry of Environment and Forests was created and the new Department of Environment, Forests and Wild Life was set up. The Department has ample tasks, among others monitoring the protection of the environment, environmental appraisal of development projects, education, creation of awareness, etc. etc.

At present there are about 30 major enactments related to the protection of the environment being administered by the Central and State Government. The most prominent ones among these enactments are discussed briefly below.

The Water (prevention and control of pollution) Act of 1974 was passed into law by the Parliament in March 1974 and was followed by a number of Rules. Subsequently, after observing the functioning of the enactment at the Central level as well as in the States, the Government of India came forward to amend both the Act and the Rules.

The amendments covered, inter alia, the constitution of the Central and State Pollution Control Boards, definitions of terms, provision of penalties for contravening the Act etc.. To prevent functional difficulties between the Central Board and the State Boards (especially with regard to finances), the Cess act was promulgated in 1977.

The Air (prevention and control of pollution) Act was passed into law by the Parliament in 1981. In 1987 a suitable amendment to this Act, "Noise Pollution' has been included, because noise was considered to be hazardous and injurious to health. The "Environmental Protection Act 1986" is an umbrella act aiming at providing a clear focus of authority to prevent or limit damage to the environment and at plugging loop holes in the existing acts. Important features are: it provides powers to the Central Government, it enables persons to complain to the courts regarding any violation of the it enables persons to complain to the court regarding any violation of the provisions of the Act, it obligates responsible persons to report discharges of pollutants in excess of the standards to the prescribed authorities, it prescribes penalties for violations for the provisions of the Act and the jurisdiction of Civil courts is barred under the Act. Table 1 gives an overview of the environment related legislation on Central level in India. Besides these central enactments a number of state enactments exist in the various Indian States.

Specific laws to regulate the use of ground - water resources are under debate but have not yet materialised. ....!!! Add any relevant information on laws and regulations regarding groundwater use and irrigation.

#### **Environmental Impact Assessment**

In India it is now recognized that projects should not only be evaluated on their economic returns and technical feasibility, but also on possible undesired environmental consequences. To incorporate environmental issues in development projects from the project formulation stage on, an Environmental Impact Assessment procedure has been introduced. Government approval towards investment decisions and selection of sites for projects in various sectors,

including is accorded on the basis of the river valley projects environmental impact assessment and clearance thereof.

Impact assessment of a development project is carried out by the Ministry of Environment and Forests, with the help of inter-ministerial Appraisal Committees, comprising of experts from various, project related, disciplines. The feasibility reports along with an Environmental Management Plan and/or an Environmental Impact Statement, as provided by the project authorities, are scrutinized by these Expert Groups. To help the project authorities, the Ministry of Environment has developed guidelines and questionnaires indicating the environmental issues that have to be addressed in the Environmental Management Plan or Environmental Impact Statement.

#### **Guidelines and questionnaire for EIA of**

Guidelines and a questionnaire for environmental impact assessment of river valley and Hydro-Electric projects have been issued by Ministry of Environment and Forest of the Government of India in 1985 and 1989 respectively GOI,. Ministry of Environment and Forests, 1985, 1989). The questionnaire aims at serving as a bench mark for studying the environmental impacts and has been used as such in this study.

According to the guidelines only major irrigation projects, covering 10,000 ha and above require an Environmental Impact Assessment.

#### **Administrative arrangements**

The present arrangements for environmental protection are often inadequate. This has to do with both weaknesses in the legislation (and its implementation) as well as with weaknesses in the supporting administrative systems. Some very general major problems include the following:

- poor (or non-existent) coordination between Government Departments.
- a similar lack of coordination and cooperation in the environment related interactions between Central and State Government on the one hand and between states that share a common resource on the other hand.
- lack of a comprehensive mechanism to ensure that environmental considerations find a place in plans and projects at a sufficiently early stage of the project.

- support to State Environment Committees, Pollution Control Boards etc. is inadequate in relation to their responsibilities.
- no clearly identified authority at the Centre or in the States, to oversee environmental planning, monitoring, protection etc., exists.
- a severe shortage of specialized personnel, trained for multi disciplinary tasks required for environmental studies
- a lack of control of gathered and analysed data of the results is erroneous base of information
- storage and publication of data of the not will co-ordinated, leading to a difficulties in data acquisition.

**Table 1.1 Selective list of environment related legislation**

| Central Enactments  |
|---|
| <b>1. Water Pollution</b>   |
| 1.1 The River Boards Act, 1956  |
| 1.2 The Merchant Shipping (Amendment) Act, 1970                           |
| 1.3 The Water (Prevention and Control of Pollution) Act, 1974             |
| 1.4 The Water (Prevention and Control of Pollution) Cess Act, 1977        |
| 1.5 The Environmental Protection Act, 1986                                |
| <b>2. Air Pollution</b>   |
| 2.1 The Indian Boiler's Act, 1923   |
| 2.2 The Factories Act, 1948   |
| 2.3 The Industries (development and Regulation) Act, 1951                 |
| 2.4 The Mines and Minerals (Regulation and Development) Act, 1947         |
| 2.5 The Air (Prevention and Control of Pollution) Act, 1981               |
| <b>3. Radiation</b>   |
| 3.1 The Atomic Energy Act, 1962   |
| 3.2 The Radiation Protection Rules, 1971                                  |
| <b>4. Pesticides</b>  |
| 4.1 The Insecticides Act, 1968  |
| 4.2 The Factories Act, 1948   |
| 4.3 The Poison Act, 1919  |
| <b>5. Others</b>  |
| 5.1 The Wild Life (Protection) Act, 1972                                  |
| 5.2 The Indian Forest Act, 1927   |
| 5.3 The Indian Fisheries Act, 1897  |
| 5.4 The Urban Land (Ceiling & Regulation) Act, 1976                       |
| 5.5 The Prevention of Food Adulteration Act, 1954                         |
| 5.6 The Ancient Monuments and Archaeological Sites and Remains Act, 1958. |

**Annex 1.1 Concluded.**

**ANNEXURE 1.2A**  
**MACRO (SCHEME) LEVEL INFORMATION**

**I. VILLAGES**

| SL.<br>NO. | NAME OF THE<br>VILLAGE | TOTAL GEOG.<br>AREA | % IN THE<br>COMMAND AREA |
|------------|------------------------|---------------------|--------------------------|
| 1.         |                        |                     |                          |
| 2.         |                        |                     |                          |
| 3.         |                        |                     |                          |
| 4.         |                        |                     |                          |
| 5.         |                        |                     |                          |
| 6.         |                        |                     |                          |

**II. VILLAGE WISE LANDUSE PATTERN**

| PARTICULARS  | AREA (Hec.) |
|--|-------------|
| 1. Total Geographical area                             |             |
| 2. Area under forests                                  |             |
| 3. Area under submergence                              |             |
| 4. Barren & Uncultivable                               |             |
| 5. Land put to non-agricultural usage                  |             |
| 6. Permanent pastures & other grazing land, trees etc. |             |
| 7. Cultivable waste/permanent fallow                   |             |
| 8. Other fallows                                       |             |
| 9. Current fallow                                      |             |
| 10. Net area sown                                      |             |
| 11. Area sown more than once                           |             |
| 12. Area under irrigation                              |             |
| 13. Area under dry agriculture                         |             |

**III. SCHEME/VILLAGE WISE AREA UNDER DIFFERENT CROPS**

| CROPS | IRRIGATED | DRY |
|-------|-----------|-----|
| 1.    |           |     |
| 2.    |           |     |
| 3.    |           |     |
| 4.    |           |     |
| 5.    |           |     |
| 6.    |           |     |

**IV. PHYSICAL CHARACTERSTICS**

|         | PROPOSED | CONTROL<br>(EXISTING) |
|---------|----------|-----------------------|
| SOILS   |          |                       |
| SLOPE   |          |                       |
| TANKS   |          |                       |
| WELLS   |          |                       |
| TREES   |          |                       |
| STREAMS |          |                       |

**V. LAND HOLDINGS**

| FARMER      | NUMBER | AREA | % TO<br>NUMBER | AREA |
|-------------|--------|------|----------------|------|
| 1. MARGINAL |        |      |                |      |
| 2. SMALL    |        |      |                |      |
| 3. OTHERS   |        |      |                |      |
| 4. TOTAL    |        |      |                |      |

| FARMER    | NUMBER | AREA | % TO<br>NUMBER | AREA |
|-----------|--------|------|----------------|------|
| 1. SC     |        |      |                |      |
| 2. ST     |        |      |                |      |
| 3. OTHERS |        |      |                |      |
| 4. TOTAL  |        |      |                |      |

**VI. DEMOGRAPHY:**

| VILLAGE | MALE | FEMALE | TOTAL | SC | ST | OTHERS |
|---------|------|--------|-------|----|----|--------|
| 1.      |      |        |       |    |    |        |
| 2.      |      |        |       |    |    |        |
| 3.      |      |        |       |    |    |        |
| 4.      |      |        |       |    |    |        |
| 5.      |      |        |       |    |    |        |
| 6.      |      |        |       |    |    |        |

**TOTAL**

**VII NUMBER OF HOUSES:**

| VILLAGE | NO.OF HOUSES | FAMILY SIZE |
|---------|--------------|-------------|
| 1.      |              |             |
| 2.      |              |             |
| 3.      |              |             |
| 4.      |              |             |
| 5.      |              |             |
| 6       |              |             |

**OVERALL**

**VIII. SOURCES OF DRINKING WATER :**

| VILLAGE | SOURCE |
|---------|--------|
| 1.      |        |
| 2.      |        |
| 3.      |        |
| 4.      |        |
| 5.      |        |
| 6.      |        |

**IX. LIVESTOCK :**

| VILLAGE | WHITE<br>CATTLE | BLACK<br>CATTLE | SHEEP | GOAT | PIG | POULTRY |
|---------|-----------------|-----------------|-------|------|-----|---------|
| 1.      |                 |                 |       |      |     |         |
| 2.      |                 |                 |       |      |     |         |
| 3.      |                 |                 |       |      |     |         |
| 4.      |                 |                 |       |      |     |         |
| 5.      |                 |                 |       |      |     |         |
| 6.      |                 |                 |       |      |     |         |

TOTAL

**X. INFRASTRUCTURE / SERVICES :**

ROADS &amp; TRANSPORT

POWER

SCHOOL

HOSPITAL

EXTENSION SERVICES

P &amp; T

SEEDS / AGRO SERVICE CENTRE / SHOPS

FERTILISERS SHOP

MARKET YARD

**XI. PLANNED / PROPOSED AREA:**

| SCHEME   | PLANNED AREA | ACTUAL AREA |
|----------|--------------|-------------|
| PROPOSED |              |             |
| CONTROL  |              |             |

**XII. (A) PROPOSED CROPPING PATTERN (AREA) :**

| CROP | PROPOSED SITE |           |       | CONTROL SITE |           |       |
|------|---------------|-----------|-------|--------------|-----------|-------|
|      | SEASON I      | SEASON II | TOTAL | SEASON I     | SEASON II | TOTAL |
| 1.   |               |           |       |              |           |       |
| 2.   |               |           |       |              |           |       |
| 3.   |               |           |       |              |           |       |
| 4.   |               |           |       |              |           |       |
| 5.   |               |           |       |              |           |       |
| 6.   |               |           |       |              |           |       |
| 7.   |               |           |       |              |           |       |
| 8.   |               |           |       |              |           |       |

**TOTAL****(B) ACTUAL CROPPING PATTERN IN CONTROL SCHEME**

| SL.<br>NO. | CROP | SEASON I | AREA<br>SEASON II |
|------------|------|----------|-------------------|
| 1.         |      |          |                   |
| 2.         |      |          |                   |
| 3.         |      |          |                   |
| 4.         |      |          |                   |
| 5.         |      |          |                   |
| 6.         |      |          |                   |

**(C) REASONS FOR DEVIATION IF ANY,  
BETWEEN PROPOSED AND ACTUAL CROPPING PATTERN**

**XIII. WATER LIFT FOR CONTROL**

**(A) HYDROLOGICAL CLEARANCE AVAILABLE TO LIFT \_\_\_\_\_  
QUANTITY OF WATER.**

**(B) ACTUAL QUANTITY LIFTED**

| YEAR        | KHARIF | RABI | TOTAL |
|-------------|--------|------|-------|
| 1992 - 1993 |        |      |       |
| 1991 - 1992 |        |      |       |
| 1990 - 1991 |        |      |       |
| 1989 - 1990 |        |      |       |
| 1988 - 1989 |        |      |       |
| 1987 - 1988 |        |      |       |

**XIV. ALL INFORMATION ABOUT CONTROL :**

1. Year of Establishment
2. Proposed Command Area
3. Area not irrigable
4. No.of farmers / holdings
5. Distribution system  
-length of the channels
6. Power consumption
7. Power availability
8. Repair status
9. Problems in water distribution and the reasons thereof

**ANNEXURE 1.2b**  
**SOCIOECONOMIC SURVEY-MICRO LEVEL**  
**ENVIRONMENTAL IMPACT ASSESSMENT**

**1.0) IDENTIFICATION:**

District: MAHABOOBNAGAR/ PRAKASHAM

Mandal :

Village :

**2.0) GENERAL:**

**2.1 Name of the Head of the Household:**

**2.1.1. Respondent's Name :**

**2.1.2. Sex : MALE / FEMALE**

**2.1.3. Relationship  
with Head of HH : WIFE/SON/DAUGHTER/OTHERS**

**2.2. Religion : HINDU/MUSLIM/CHRISTIAN/OTHERS**

**2.3. Caste/Ethnic  
Group (Tribe) : SC /ST /OTHERS**

**2.4. Type of Family  
at Present : JOINT/SINGLE**

**3.0 DEMOGRAPHY:**

| Sl.<br>No. | Name | Sex<br>(M/F) | Relation<br>ship with<br>HH | Marital<br>Status | Age | Educa-<br>tion | Occupation<br>Main<br>Sub-<br>sidiary |
|------------|------|--------------|-----------------------------|-------------------|-----|----------------|---------------------------------------|
| 1.         |      | M/F          |                             | UM/M              |     |                |                                       |
| 2.         |      | M/F          |                             | UM/M              |     |                |                                       |
| 3.         |      | M/F          |                             | UM/M              |     |                |                                       |
| 4.         |      | M/F          |                             | UM/M              |     |                |                                       |
| 5.         |      | M/F          |                             | UM/M              |     |                |                                       |
| 6.         |      | M/F          |                             | UM/M              |     |                |                                       |

**4.0. LAND HOLDING PARTICULARS:**

1. How much agricultural land do you own in the project area ?
  
2. Do you own agricultural land outside the project area ?

Yes / No

**5.0 LIVESTOCK:**

| Animal      | Present<br>(Nos.) | Value<br>Rs. |
|-------------|-------------------|--------------|
| Bullock     |                   |              |
| Cows        |                   |              |
| Buffaloes   |                   |              |
| Sheep/Goats |                   |              |
| Poultry     |                   |              |
| Pigs        |                   |              |
| Others      |                   |              |

**6.0) CROPPING PATTERN (LAST YEAR)**

| Crops  | Area (acres) | Yield (quintals) |
|--------|--------------|------------------|
| KHARIF | 1.           |                  |
|        | 2.           |                  |
|        | 3.           |                  |
|        | 4.           |                  |
| RABI   | 1.           |                  |
|        | 2.           |                  |
|        | 3.           |                  |
|        | 4.           |                  |

**7.0 INCOME FROM ALL SOURCES (ANNUAL)**

| SOURCE    | RUPEES |
|-----------|--------|
| Land      |        |
| Livestock |        |
| Business  |        |
| Service   |        |
| Wages     |        |
| Others    |        |
| Total     |        |

**8.0 MIGRATION:**

8.1 Do any of your family migrate in search of employment (Y/N)

8.2 If yes,

| Sl.<br>No. | Name | Sex | No.of days<br>per year | Place | Nature<br>of work | Approx<br>wage<br>rate |
|------------|------|-----|------------------------|-------|-------------------|------------------------|
| 1.         |      | M/F |                        |       |                   |                        |
| 2.         |      | M/F |                        |       |                   |                        |
| 3.         |      | M/F |                        |       |                   |                        |
| 4.         |      | M/F |                        |       |                   |                        |
| 5.         |      | M/F |                        |       |                   |                        |

**9.0 WAGE EARNINGS WITHIN THE VILLAGE:**

| Name | Sex | No.of days<br>per year | Nature<br>of work | Approx<br>wage<br>rate |
|------|-----|------------------------|-------------------|------------------------|
| 1.   |     |                        |                   |                        |
| 2.   |     |                        |                   |                        |
| 3.   |     |                        |                   |                        |
| 4.   |     |                        |                   |                        |

**10.CROP MANAGEMENT: (C & P)**

| Item | Crops |   |   | Remarks |
|------|-------|---|---|---------|
|      | 1     | 2 | 3 |         |

**1. Area under crop**

Single crop

Mixed crop

**2. Preparatory cultivation**

a) Implements used

**3. Seeds**

a) Type ;

Local/ High Yield  
variety

b) Quantity (kg/acre)

Local/ High Yield  
variety

c) Seed Treatment (Y/N)

**4. Intercultural Operations**

a) Implements used of weeding

b) Chemicals used

(i) Quantity (kg/lt)

**5. Manures used**

Quantity (kg)

**6. Fertilizers used**

Quantity (kg)

(a) Urea

(b)

(c)

(d)

(e)

(f)

(g)

| Item | Crops |   |   |   | Remarks |
|------|-------|---|---|---|---------|
|      | 1     | 2 | 3 | 4 |         |

7. Pesticides Used (Y/N)

If Yes Type; and Quantity,

(a)

(b)

(c)

(d)

8. a) Source of Irrigation

b) No.of Irrigations

9. Electricity charges  
paid (if any)

10. Summer ploughing (Y/N)

11. Method of ploughing

12. Method of sowing

13. Method of Fertilizer  
applied

14. Fertilizer dosages

- base

- top dressing

15. Method of pesticide  
application

16. Threshing

17. Storage

**11. CROP YIELDS AND INCOMES (C & P):**

| CROP | YIELD |     |      | PRICES |     |     | TOTAL COST OF CULTIVATION |     |     |
|------|-------|-----|------|--------|-----|-----|---------------------------|-----|-----|
|      | Max   | Min | Opt* | Max    | Min | Opt | Max                       | Min | Opt |
| 1.   |       |     |      |        |     |     |                           |     |     |
| 2.   |       |     |      |        |     |     |                           |     |     |
| 3.   |       |     |      |        |     |     |                           |     |     |
| 4.   |       |     |      |        |     |     |                           |     |     |
| 5.   |       |     |      |        |     |     |                           |     |     |
| 6.   |       |     |      |        |     |     |                           |     |     |
| 7.   |       |     |      |        |     |     |                           |     |     |

\* Opt - Optimum

**11.1 REASONS FOR VARIATIONS: (C & P)**

Yield / Price/ Investment Cost

**12. AGRICULTURAL OUTPUT - USAGE (C & P):**

| Name of the farm Produce | Total Quantum of agricultural produce-produced | Quantity used for household consumption | Quantity sold |
|--------------------------|--|---|---------------|
|--------------------------|--|---|---------------|

1. Paddy

Jowar

2. Castor

any other

3. Pulses (name)

4. Sticks / fuel

5. Dry fodder

6. Green fodder

7. Vegetables

8. Fruits

9. Any other

**13. CROPPING PATTERN (PROPOSED):**

If irrigation is provided what crops would you grow and reasons for that :

| Sl.No. | Crops | Self<br>Reason | Villages<br>as a whole | Reason |
|--------|-------|----------------|------------------------|--------|
| 1.     |       |                |                        |        |
| 2.     |       |                |                        |        |
| 3.     |       |                |                        |        |
| 4.     |       |                |                        |        |
| 5.     |       |                |                        |        |
| 6.     |       |                |                        |        |

**CROPPING PATTERN (CONTROL):**

| Sl.No. | Crops | Self<br>Reason | Villages<br>as a whole | Reason |
|--------|-------|----------------|------------------------|--------|
| 1.     |       |                |                        |        |
| 2.     |       |                |                        |        |
| 3.     |       |                |                        |        |
| 4.     |       |                |                        |        |
| 5.     |       |                |                        |        |
| 6.     |       |                |                        |        |

**14. CONTROL SITE PROBLEMS:**

| Sl.No.                | Problem | Remarks |
|-----------------------|---------|---------|
| 1. Water availability |         |         |
| 2. Water distribution |         |         |
| 3. Repair status      |         |         |
| 4. Power supply       |         |         |

| <b>Sl.No.</b>      | <b>Problem</b>                  | <b>Remarks</b> |
|--------------------|---------------------------------|----------------|
| 5. Water logging   |                                 |                |
| 6. Soil erosion    |                                 |                |
| 7. Water quality   |                                 |                |
| 8. Yields          |                                 |                |
| 9. Prices          |                                 |                |
| 10. Pests/diseases |                                 |                |
| 11. Fertilizer     |                                 |                |
|                    | -Availability                   |                |
|                    | -Quality                        |                |
| 12. Pesticides     |                                 |                |
|                    | -Availability                   |                |
|                    | -Quality                        |                |
| 13. Storage        |                                 |                |
| 14. Transportation |                                 |                |
| 15. Marketing      |                                 |                |
| 16. Credit         |                                 |                |
| 17. Others         |                                 |                |
|                    | -a)                             |                |
|                    | -b)                             |                |
|                    | -c)                             |                |
| <b>15. FUEL</b>    |                                 |                |
|                    | - Type of fuel                  |                |
|                    | - Method of collection of fuel  |                |
|                    | - Quantity of fuel used per day |                |
|                    | - Type of storage               |                |

**STORAGE:**

**MARKETING:**

**PROCESSING:**



## **ANNEXURE 1.3**

### **1.3 OVERVIEW OF SAMPLING**

#### **Water:**

Water bodies have been identified for sampling based on the following criteria

Wells which are being used for drinking water purpose in the villages covered under the scheme have been sampled for the purpose of assessing the drinking water quality status.

Tanks and wells which are being used for irrigation purpose have also been sampled for assessing the irrigation quality of the water.

The sampling of wells has also done based on the gradient of the area, covering upper, middle and lower reaches, wherever wells were existing. These well water samples were analysed for irrigation quality of water

#### **Soil:**

Soil samples were collected depending on the landuse like barren, agricultural use etc. The gradient of the area was also taken into consideration and samples were collected from upper, middle and lower reaches. These samples were analysed for parameters useful irrigation purpose. All the samples collected were in disturbed condition. Apart from physical and chemical parameters the soil samples were analysed for biological characteristics and pesticide residue analysis.

#### **Air:**

Sampling was carried out for assessing the ambient and indoor air quality. Increase in irrigational facilities may rise the farmers economic structure and he may go for LP gas instead of using fuel wood or he may use more cowdung cakes and fire wood because of their easy availability after increase in irrigational facilities.

**Socio-economics:**

Selective random technique is used in collecting primary source information in upper, lower and middle reaches. In addition to this secondary source information is collected to get a general picture of the area.

**Flora and fauna**

Plant samples were collected based on the following criteria

1. To identify prevailing common diseases in the area
2. To identify important plant sp. (endangered, threatened rare etc.)
3. To know type of weeds and its affinity to moisture content

**ANNEXURE 1.4**  
**WATER ANALYSIS**  
**AS PER APHA METHODS - 1983**

**ANALYTICAL PROCEDURES:**

The water samples have been analysed using Standard APHA methods of analysis for water and wastewater samples. A brief summary of the methods of analysis is given below:

**Suspended Solids**

Suspended solids have been determined as the difference between the total solids ( increase of a crucible weight on drying a known aliquot if sample at 105°C) and dissolved solids.

**Dissolved Solids**

The dissolved solids in a samples were determined by filtering the sample through a Whatman 42 filter paper and evaporating a known aliquot of the sample in a beaker at 180°C.

**pH**

pH of a samples was determined using a portable pH meter which has been precalibrated using standard buffers of 8 and 7 pH.

**Total residual Chlorine**

The method used determines total chlorine whether present as free or in combined forms. Free chlorine reacts readily with ammonia to form combined chlorine such as monochloramines. When potassium iodide is added to a sample containing chlorine at a pH less than 4, free iodine is liberated in direct proportion to the

amount of total chlorine present. The iodine is then titrated with sodium thiosulphate. Starch indicator is added to enhance the end point.

#### **Nitrate**

Nitrate is estimated by using Ultraviolet Spectrophotometer at 220 and 275 nm by adding 1 N HCl to prevent organic substances interference.

#### **Metals**

Mercury, Lead, Total Chromium, Manganese, Iron, Boron, Percent Sodium.

Metallic components from the water have estimated using Atomic Absorption Spectrometer and an Inductively Coupled Plasma Emission Spectrometer.

#### **Bromide**

Bromide content is estimated in the presence of Acetate buffer and Phenol red indicator by using Spectrophotometer at 590 nm.

#### **Residual Sodium Carbonate**

Residual sodium carbonate (RSC) can be derived from the following equation:

$$\text{RSC (meq/l)} = (\text{CO}_3^{2-} + \text{HCO}_3^-) - (\text{Ca}^{2+} + \text{Mg}^{2+})$$

Carbonates and Bicarbonates can be calculated from Alkalinity values. Calcium and Magnesium values can be determined from EDTA titrimetric method. The values should however be converted into milliequivalents.

### **Chloride**

Silver nitrate titration method has been used for the estimation of chloride. Here silver nitrate is used as the titrant and potassium chromate as the indicator. Silver nitrate first reacts selectively with the chloride in the sample to produce insoluble white silver chloride. After all the chloride has been precipitated, the silver nitrate reacts with the chromate to form an orange-coloured silver chromate precipitate marking the end point of the titration.

Interferences of iron, sulphite and sulphide have been adequately taken care.

### **Fluoride**

Fluoride has been estimated using an ion-selective electrode(ISE). Fluoride ions are selectively absorbed by the ISE membrane establishing a potential whose magnitude is proportional to the concentration of fluoride in the sample. This potential is compared to the constant potential of a reference electrode. By measuring the potential of known standards, a calibration curve can be constructed for determining the concentration of fluoride in unknown samples.

### **Dissolved Phosphates**

For the determination of dissolved phosphates, the sample should be filtered through 0.45 micron membrane filter and the filtrate is digested with persulphate digestion method. The digested sample reacts with ammonium molybdate and forms complex hetropolyacid (molybdophosphoric acid) which gets reduced to a complex of blue in the presence of  $\text{SnCl}_2$ . The absorption of light by this blue coloured complex and can be measured

at 690 nm to calculate the concentration of dissolved phosphates.

### **Sulphates**

Sulphates ions have been determined gravimetrically. Sulphate ions in the sample react with barium in barium chloride and forms insoluble barium sulphate precipitate which is filtered, dried and weighed.

### **Phenolphthalein Alkalinity**

Phenolphthalein alkalinity has been estimated by using Hydrochloric acid method. Hydrochloric acid is used as titrant and phenolphthalein as indicator.

### **Pesticides**

The pesticides are extracted with a mixed solvent such as hexane. The extract is cleaned over florisil column and concentrated by evaporation and the individual pesticides are determined by a gas chromatography. This method is suitable for the determination of organo chlorine pesticides and chlorinated phenoxy acid herbicides.

### **Total Count of Coliform, Faecal Coliforms, Escherichia Coli and Faecal Streptococci**

Above mentioned microbial parameters were estimated as per IS:1622-1981 (reaffirmed 1987)-Methods of sampling and Microbial Examination of water. The analysis was carried out by most probable number (MPN) method.

**ANNEXURE 1.4.2**  
**S O I L   A N A L Y S I S**

**1. pH**

pH of the soil is determined using pH meter after 1:1 soil water dilution followed by 1hour stirring.

**2. CONDUCTIVITY**

The conductivity of the soil is determined using Conductivity meter with 1: 2.5 soil : water mixture.

**3. TEXTURE (Sand/Silt and Clay)**

The sand, silt and clay were estimated by sieving the samples using appropriate sieves. The textural classification was carried out using the nomogram of US Public Roads Administration.

Soil texture is determined by mechanical sieveing 1405 microns (gravel), 850 microns (coarse sand), 300 microns (fine sand) & 45 microns (silt) sieving.

**4. BULK DENSITY & POROSITY**

Bulk density is obtained by taking the soil in a known volume of cone and finding the weight of soil required to fill the cone. Density is obtained by dividing the mass by volume. Dry density was obtained from the bulk density by dividing it with moisture content plus one.

$$\text{Dry Density} = (\text{Bulk Density})/1 + \text{moisture content}$$

Void ratio/porosity of soil was obtained from the specific gravity and dry density of soil using the requisite formula

$$\text{Void ratio} = \{( \text{Specific gravity} * 9.81 ) / ( 9.81 * \text{dry density} ) \} - 1$$

$$\text{Porosity} = \text{Void Ratio} / (1 + \text{Void Ratio})$$

## **5.0 METAL ANALYSIS**

Two grams of overdried sample was taken to dryness with a mixture of 5ml conc.  $\text{HNO}_3$  and 10ml perchloric acid (70%) with a mixture is repeated and the residue is dissolved in Dil perchloric acid. The digested sample is fed to ICP for Zn, Cd, Pb, G, B & Fe after proper dilutions with respect to the presence of respective metal concentrations.

## **6.0 NITROGEN:**

The available soil nitrogen (%) was estimated by using Wilde et all, 1956 method .

## **7.0 PHOSPHORUS**

The soil phosphorus content is determined using Ammonium molybdate & stannous chloride and analysed colorimetrically at a wave length of 660 mm (piper, 1950)

## **8.CALCIUM**

10 g of soil is extracted with a solution of 50 ml of 1N ammonium acetate. The extract is titrated with EDTA as in case of water analysis

## **9. MAGNESIUM**

10 g of soil is extracted with a solution of 50 ml of 1N ammonium acetate. The extract is titrated with EDTA as in case of water analysis

## **10. SODIUM**

About 10 g soil sample was extracted with 50 ml of ammonium acetate (1N) and the sodium content was determined by using a calibrated flame photometer.

## **11. POTASSIUM**

About 10 g soil sample was extracted with 50 ml of ammonium acetate (1N) and the Potassium content was determined by using a calibrated flame photometer.

## **12. ORGANIC CARBON**

Carbon occurs in mineral form, elemental form, resistant organic residues and freshly added organic residues subject to rapid decomposition in soils. These release the nutrient elements to the crop. The organic carbon is oxidised by potassium dichromate in presence of concentrated sulphuric acid. The dicromate left unreacted is back titrated with ferrous ammonium sulphate solution and carbon calculated.

**ANNEXURE 1.4.3**  
**AMBIENT AIR QUALITY**

**METHODOLOGY OF SAMPLING**

The existing ambient air quality status has been assessed by sampling the air at each village under the proposed scheme. The existing status of air environment was monitored for suspended particulate matter (SPM), Sulphur dioxide ( $\text{SO}_2$ ), Nitrogen Oxides ( $\text{NO}_x$ ) and Carbonmonoxide (CO).

SPM sampling was monitored for eight hours and the sampling of gases like  $\text{SO}_2$  and  $\text{NO}_x$  were monitored on four hourly basis except for CO, which was monitored by grab sampling.

Pre-calibrated high volume samplers have been used for monitoring all the air pollutants. For simultaneous gaseous sampling a tapping is provided in the hopper of the high-volume sampler for creating necessary suction head. The samples of gases are drawn at a flow rate of 1.0 lit/min. and analysed in the laboratory.

Carbonmonoxide detection tubes (MSA India Ltd.) were used to detect the presence of CO. SPM was estimated by knowing the flow rate of high volume sampler and initial weight of the filter paper at the Central Laboratory.

**ANALYTICAL PROCEDURE:**

Samples were analysed for  $\text{SO}_2$  using West-Gaeke method for air samples using spectrophotometer at a wave length of 560 nm.

Samples were analysed for  $\text{NO}_x$  using Jacob Hocheiser modified method, spectrophotometrically at 540 nm.

Whatman GF/A filter paper was used in Hi-Volume samplers for SPM and weighed in Mettler electronic balance and computed as per Standard Methods.

MSA carbon monoxide detection tubes were used for detecting carbon monoxide by grab sampling (sensitivity 0.01 ppm for five squeezes).

## **INDOOR AIR QUALITY**

### **METHODOLOGY OF SAMPLING:**

The existing indoor air quality status in the project has been assessed by sampling the indoor air of Traditional kitchens of rural households in proposed and existing schemes. The existing indoor air environment was monitored for Respirable Suspended Particulate Matter (RSPM), Sulphur dioxide ( $\text{SO}_2$ ), Nitrogen Oxides ( $\text{NO}_x$ ) and Carbonmonoxide (CO) and Hydrocarbons (HC) at the time of cooking.

The sampling for all the parameters was carried out for a period of one hour in the kitchen and the same computed to  $\text{mg}/\text{m}^3$ .

Pre-calibrated portable air samplers have been used for monitoring all the air pollutants. For simultaneous gaseous sampling a tapping is provided in the hopper of the high-volume sampler for creating necessary suction head. The samples of gases are drawn at a flow rate of 0.6 lit/min. and analysed in the laboratory.

Carbonmonoxide detection tubes (MSA India Ltd.) were used to detect the presence of CO. Respirable Suspended Particulate Matter (RSPM) was estimated by a special respirable sampler which eliminates the non-respirable fraction of particulate matter using a cyclone designed for this purpose. The remaining respirable fraction is collected over a preweighted glass fibre filter paper.

**ANALYTICAL PROCEDURE:**

Samples were analysed for SO<sub>2</sub> using West-Gaeke method for air samples using spectrophotometer at a wave length of 560 nm.

Samples were analysed for NO<sub>x</sub> using Jacob Hocheiser modified method, spectrophotometrically at 540 nm.

Whatman GF/A filter paper was used in samplers for RSPM and weighed in Mettler electronic balance and computed as per Standard Methods.

MSA carbon monoxide detection tubes were used for detecting carbon monoxide by grab sampling (sensitivity 0.01 ppm for five squeezes).

Hydrocarbon samples were collected in Mylor coated bags using the pulse pump and analysed at the Central laboratory in gas chromatograph.

**ANNEXURE 1.4.4**  
**FLORA AND FAUNA**

**METHODOLOGY:**

Plant samples are collected in the field by a trained biologist in vasculum and prepared herbarium sheets after noting the field characteristics for enumeration. The samples were later analysed using the existing literature.

Field observations, local information and forest records are used in enumeration of mammals, birds and reptiles.

Soil fertility information was obtained by counting the number of earthworms in 25 x 25 cm quadrats.

**Soil microbial parameters**

Soil samples were analysed for different microbial population. Serial dilution technique and pour plate method were adopted for enumerating Total Heterotrophs, yeasts and molds.

Actinomycetes and nitrogen fixing bacteria. For nitrifying bacteria, serial dilution and MPN method were adopted. Different media employed are as follows:

Total Heterotrophs : Tryptone - yeast extract - Glucose agar

(TYGA)

Total Moulds : Neopeptone - Glucose - Rose Bengal agar

Total Yeasts : Malt extract - Yeast extract - Glucose (MYGA) agar

Actinomycetes : Starch - Casein agar

**Nitrogen fixing bacteria**

Rhizobium : Mannitol - Congo red agar

Azotobacter : Sucrose - Calcium Carbonate agar

Nitrifying bacteria: Ammonium - Calcium Carbonate medium

## **CHAPTER II**



**Annex 2.1 Distribution of Lift Irrigation Schemes and implementation Schedule**

| Sl.No.          | District   | No. of Schemes proposed | Ayacut in Ha  | Cost (Rs)    | 1994-95     |                               | 1995-96     |                               | 1996-97     |                               | 1997-98     |                               | 1998-99     |                               |
|-----------------|------------|-------------------------|---------------|--------------|-------------|-------------------------------|-------------|-------------------------------|-------------|-------------------------------|-------------|-------------------------------|-------------|-------------------------------|
|                 |            |                         |               |              | Amount (Rs) | No. of Schemes to be grounded | Amount (Rs) | No. of Schemes to be grounded | Amount (Rs) | No. of Schemes to be grounded | Amount (Rs) | No. of Schemes to be grounded | Amount (Rs) | No. of Schemes to be grounded |
|                 |            |                         |               |              |             |                               |             |                               |             |                               |             |                               |             |                               |
| 1. Khammam      | 28         | 7,200                   | 114.30        | 12.80        | 5           | 30.50                         | 7           | 27.90                         | 4           | 26.70                         | 12          | 16.40                         | 12          | --                            |
| 2. Adilabad     | 19         | 2,800                   | 44.50         | 05.90        | 5           | 11.90                         | 5           | 11.90                         | 5           | 10.30                         | 4           | 04.50                         | --          | --                            |
| 3. Guntur       | 11         | 3,320                   | 52.70         | --           | --          | 19.20                         | 5           | 13.30                         | 2           | 12.60                         | 4           | 07.60                         | --          | --                            |
| 4. Mahboobnagar | 10         | 3,400                   | 54.00         | --           | --          | 06.30                         | 2           | 17.50                         | 4           | 20.60                         | 4           | 09.60                         | --          | --                            |
| 5. Warangal     | 12         | 2,200                   | 35.00         | --           | --          | 06.70                         | 4           | 11.50                         | 3           | 10.80                         | 5           | 06.00                         | --          | --                            |
| 6. Prakasam     | 19         | 3,600                   | 57.10         | --           | --          | 10.50                         | 6           | 17.30                         | 6           | 20.80                         | 7           | 08.50                         | --          | --                            |
| 7. Kurnool      | 8          | 1,960                   | 31.10         | --           | --          | 09.80                         | 4           | 07.30                         | 2           | 08.90                         | 2           | 05.10                         | --          | --                            |
| <b>TOTAL</b>    | <b>107</b> | <b>24,480</b>           | <b>388.70</b> | <b>18.70</b> | <b>10</b>   | <b>94.90</b>                  | <b>33</b>   | <b>106.70</b>                 | <b>26</b>   | <b>110.70</b>                 | <b>38</b>   | <b>57.70</b>                  | <b>12</b>   |                               |

Financial : Rs. in Million



# **CHAPTER III**



**Annex - 3.1**

**Rainfall - Magnoor Mandal (Mahboobnagar District)**

| Monsoon            | Month     | Rainfall in (mm) |
|--------------------|-----------|------------------|
| North-East Monsoon | June      | 652.5            |
|                    | July      | 72.5             |
|                    | August    | 151.4            |
|                    | September | 55.0             |
| South-West Monsoon | October   | 58.8             |
|                    | November  | 53.6             |
| Winter             | December  | -                |
|                    | January   | -                |
|                    | February  | -                |
| Summer             | March     | -                |
|                    | April     | 45.0             |
|                    | May       | 2.8              |

**Annex 3.2**

**Land Holdings - Magnoor Mandal (Mahboobnagar District)**

| Farmer            | SC        | ST          | Others      | Total       |
|-------------------|-----------|-------------|-------------|-------------|
| Marginal (< 1 Ha) | -         | 234         | 892         | 1126        |
| Small (1- 2 Ha)   | 3         | 268         | 963         | 1234        |
| Others (> 2 Ha)   | 15        | 637         | 3437        | 4089        |
| <b>Total</b>      | <b>18</b> | <b>1139</b> | <b>5292</b> | <b>6449</b> |

**Annex 3.3**

**Season and Crops - Magnoor Mandal (Mahboobnagar District)  
(in Ha)**

| Crops        | Kharif   |          | Rabi     |          | Total |
|--------------|----------|----------|----------|----------|-------|
|              | Wet Land | Dry Land | Wet Land | Dry Land |       |
| 1) Paddy     | 762      | -        | 705      | -        | 1467  |
| 2) Jowar     | -        | 2642     | -        | 735      | 3377  |
| 3) Bajra     | -        | 302      | -        | -        | 302   |
| 4) Red Gram  | -        | 862      | -        | -        | 862   |
| 5) Groundnut | 104      | 1031     | -        | 952      | 2087  |
| 6) Greengram | -        | 942      | -        | -        | 942   |
| Total        | 866      | 5779     | 705      | 1687     | 9037  |

**Annex 3.4**

**Rainfall - Parchur Mandal (Prakasam District)**

| Monsoon            | Month     | Rainfall in (mm) |
|--------------------|-----------|------------------|
| North-East Monsoon | June      | 120.01           |
|                    | July      | 196.07           |
|                    | August    | 161.03           |
|                    | September | 211.07           |
| South-West Monsoon | October   | 216.07           |
|                    | November  | 115.09           |
| Winter             | December  | 27.07            |
|                    | January   | 2.05             |
|                    | February  | 5.00             |
| Summer             | March     | 7.06             |
|                    | April     | 15.01            |
|                    | May       | 83.02            |
|                    |           |                  |

**Annex 3.5**

**Season and crop - Parchur Mandal (Prakasam District)**

| Crops     | Kharif   |          | Rabi     |          | Total |
|-----------|----------|----------|----------|----------|-------|
|           | Wet Land | Dry Land | Wet Land | Dry Land |       |
| 1) Paddy  | 5447     | -        | -        | -        | 5447  |
| 2) Cotton | -        | 13961    | -        | -        | 13961 |
| 3) Others | -        | -        | -        | 1751     | 1751  |
| Total     | 5447     | 13961    | -        | 1751     | 21159 |



# **CHAPTER V**



**Annexure 5.1**

**I. ENVIRONMENTAL IMPACTS CHECKLIST**

**A- Environmental impacts due to project location**

- 1- Disruption of hydrology
- 2- Resettlement
- 3- Encroachment into forests/swamplands
- 4- Impediments of movement of wildlife/cattle/people
- 5- Encroachment on historical/cultural buildings/areas
- 6- Conflicts in water supply rights
- 7- Regional flooding and drainage hazards
- 8- Ecology :

Effects on flora and fauna, particularly endemic and endangered species  
Effects on downstream ecology

**B- Environmental problems related to design**

- 1- Watershed erosion
- 2- Water quality problems :
  - Effects of mineral constituents
  - Return flows
- 3- Suitability of natural water quality for irrigation
- 4- Overpumping of groundwater
- 5- Adequacy of drainage planning
- 6- Land tenure
- 7- Farmer credit limitations
- 8- Feasibility of cooperatives
- 9- Feasibility of water users associations
- 10- Disruption of existing farmer cooperation systems
- 11- Use of agricultural chemicals

Contd.,

**12- Selection of pesticides**

**13- Land use conflicts**

**14- Inequities in water distribution**

**15- Canal maintenance**

**16- Passageways**

**17- Scouring hazards**

**C- Problems during construction stage**

**1- Erosion control**

**2- Other construction hazards**

**3- Monitoring during construction**

**D- Problems related to Operations**

**1- Adequacy of O&M**

**2- Adverse soil modifications**

Water logging

Salinization & Alkalization

Nutrient leaching

Soil texture & fertility

Soil permeability from excessive sodium

**3- Changes in groundwater hydrology**

**4- Water borne diseases**

**5- Hazards of toxic chemicals**

**6- Hazards of fertiliser runoff**

**7- Operations monitoring**

**8- Aquaculture water supply**

**9- Farm pattern changes and institutional requirements**

**10- Air quality**

Indoor air quality

Outdoor quality

**11- Noise**

**E- Project's compatibility with other demands**

**F- Environmental impact review criteria**

- 1- Will the project cause unwarranted losses in precious/irreplaceable natural or other resources
- 2- Will the project make unwarranted accelerated use of scarce resources in favour of short than long term gains
- 3- Will the project adversely affect the national energy/foreign exchange situation
- 4- Will the project result in unwarranted hazards to endangered species
- 5- Will the project tend to decrease undesirable migration
- 6- Will the project enhance the welfare of the poor and vulnerable sectors of society?

**G Indirect benefits**

- 1- Decrease in soil erosion
- 2- Farm diversification - livestock, poultry....,
- 3- Improved farmer nutrition--- health status
- 4- Stabilization of agricultural system
- 5- Improvement in community water supplies
- 6- Upgrading of the socioeconomic situation and quality of life
- 7- Development of secondary and tertiary sector

**Annexure 5.1**

**DATA REQUIREMENTS**

**A ENVIRONMENTAL IMPACTS DUE TO PROJECT LOCATION**

**A1:**

**APlift:**

**Demand of water:**

Source

Location

Amount (crop, season)

Other demands: drinking water

cattle

industrial

ecology (saline water intrusion)

Supply of Water Hydrograph (availability over the year)

**APwell:**

Demand of water: Same as Aplift, except for source

Supply of water: Safe yields (availability over the year)

**A2:**

Land requirements for the scheme (location, ownership:  
private, government, community)

Socio-economic profile of people effected by land acquisition  
(numbers)

**A3:**

Location and extent of forest land to be acquired or affected

**A4:**

Location of roads and tracks

**A5:**

Location of cultural/historical places

**A6:**

Covered in A1

**A7:**

Location and extent of flood prone or waterlogging areas  
type of irrigation  
soil permeability  
slope/topography

Contd.,

A8:

Inventory of flora and fauna, emphasis on endemic and endangered species

Inventory of downstream ecology

## B ENVIRONMENTAL IMPACTS RELATED TO DESIGN

B1:

Existing land use and agricultural practices

Erosion potential:

- soil (erodibility)
- rainfall (erosivity)
- slope (length, steepness)

B2:

Quality of extracted water:

- suspended sediments
- dissolved matter
- pH
- nutrients (N, P)
- heavy metals
- pesticides

Quality of the return flows:

- same as above

Quality of downstream river water

- same as above

B3:

same as B2

B4:

Covered in A1

B5:

Related to A7

Information on system design (irrigation, drainage)

B6:

Land tenure

Land tenure inventory:

- owner cultivated
- tenants
- size of the holdings

B7, B8, B9 and B10: incorporated in the project plan

B11:

Present type, amounts and application methods

Expected changes (depending on crop type, institutional support)

B12:  
Same as B11

B13:  
Current land use pattern  
Expected land use pattern

B14:  
Same as B5

B15:  
Sedimentation (related to watershed erosion)  
Erosion

B16:  
Related to A4

B17:  
Covered in B15

### C IMPACTS DURING CONSTRUCTION STAGE

C1, C2:  
Work breakdown structure  
Location of activities  
Site conditions

C3:  
Network analysis of activities

### D IMPACTS RELATED TO OPERATIONS

D1:  
Project formulation

D2:

Water logging:  
location and extent of existing waterlogged areas  
factors contributing to (permeability, texture, structure,  
drainage, type of irrigation)

Salinization:  
quality of the irrigation water  
soil characteristics (texture, porosity, depth)  
water management practices, including drainage)

Alkalization:  
same as salinization

Soil texture,  
suspended sediment load of the irrigation water erosion rate

**Soil fertility:**  
crop types (including rotation)  
soil characteristics  
nutrient leaching

**D3:**  
Water balance  
Water quality  
Incidence of stagnant water (breeding grounds)  
General health status of the population

**D5:**  
Type, amount and method of application of pesticides

**D6:**  
Type amount and method of application  
Soil characteristics  
Irrigation and drainage practices

**D7:**  
Pumping operations  
Water management

**D8:**  
Related to A1

**D9:**  
Existing farm pattern and institutions  
Expected future farm pattern  
Farm pattern: crops, inputs, management practices, output handling  
Required changes in institutional support

**D10:**  
Present air quality  
Amount, type and method of petro-chemical application  
Type of fuel used, type of cooking device

**D11:**  
Type and location of pumps

## **E PROJECT'S COMPATIBILITY WITH OTHER DEMANDS**

## **F ENVIRONMENTAL IMPACT REVIEW CRITERIA**

**Annexure 5.2**

**ENVIRONMENTAL IMPACT ASSESSMENT WORKSHOP  
(29 November - 1 December 1993)**

**List of Participants**

**ANDHRA PRADESH STATE IRRIGATION DEVELOPMENT CORPORATION**

- 1) S.S. Quadri, Executive Director, Hyderabad
- 2) V. Ramesh, Dy. Executive Engineer, Hyderabad
- 3) T. Sai Prasad, Executive Engineer, Mehaboobnagar
- 4) M. Prabhakara Ramamurthy, Executive Engineer, Hyderabad
- 5) K. Rama Krishnappa, Executive Engineer, Kurnool
- 6) S. Subash Babu, Dy. Executive Engineer, Chirala
- 7) K. V. Subba Reddy, Executive Engineer, Eluru
- 8) N. Challamiah, Executive Engineer, Guntur

**ANDHRA PRADESH GROUND WATER DEPARTMENT**

- 1) B. Sripathi Reddy, Dy. Director, Hyderabad
- 2) K. Ramakrishna Rao, Dy. Director, Hyderabad

**CENTRAL RESEARCH INSTITUTE FOR DRYLAND AGRICULTURE**

- 1) M.V. Padmanabhan, Hydrogeologist, Hyderabad
- 2) K.L. Sharma, Soil Scientist, Hyderabad

**ANDHRA PRADESH STATE REMOTE SENSING APPLICATION CENTRE**

- 1) R.S. Rao, Director, Hyderabad
- 2) M. Venkata Swamy, Scientific Officer, Hyderabad

**ACTION FOR FOOD PRODUCTION**

- 1) Uday Shankar, Regional Director, Hyderabad

**SADGURU WATER & DEVELOPMENT FOUNDATION**

- 1) Harnath Jagavat, Chief Executive, Dahood, Gujarat

**INDO-GERMAN WATERSHED DEVELOPMENT PROGRAM**

- 1) Dr. K.R. Nappis

**VIMTA LABS**

- 1) K.S.M. Rao, Hyderabad
- 2) G. V. Prasad, Hyderabad
- 3) Sujeet Kishen, Hyderabad
- 4) M. Ravi Kiran, Hyderabad
- 5) M. V. Nanda Kumar, Hyderabad
- 6) T. Anand Mohan, Hyderabad

**INSTITUTE FOR RESOURCE DEVELOPMENT AND SOCIAL MANAGEMENT**

- 1) E. Raghava Rao, Hyderabad
- 2) Moinuddin, Hyderabad

# **CHAPTER IV**



## ANNEX 6.1

GOVERNMENT OF ANDHRA PRADESH  
IRRIGATION & C.I.D.C. DEPARTMENT

Proceedings No. G.O./I.C.I.D.C./23 to Page 22

Date: A.P.I.D.C. Limited - Prakasam District - exposes proposals for three L.I. Schemes from Oguru Vaga (Kallamaddi Drain) and Pardur drain - hydrological clearance - do.

- Ref: 1) G.O.Ms No. 420, I.C.I.D.C. (E) Government dt. 31.1.1973.  
 2) Administrator our C.H., R.S. Right Canal, C.I.D.C., Guntur  
 Lt.No.ACM/TA/1.1/4204/68 dt. 1.10.1973.  
 3) G.O.Ms No. 120, dt. 18.11.1975.

\*\*\*

Under the powers delegated in the G.O. 31 cited and based on the Administrator and Chief Engineer, R.S. Right Canal recommendations in the reference 2nd cited, Hydrological clearance to the following three L.I. Schemes for Kharif wet from the K.S.R. regenerated flow pertaining to K.W. Delta as proposed by A.P.I.D.C. Limited, is hereby accorded for a period of 15 years only and subject to conditions stipulated in G.O.Ms No. 120, Irrigation, dated 18.11.1973 and subject to condition that the Drainage Organisation does not guarantee the availability, quantity and quality of water in drain for lifting of 903 c/s of water from Oguru vaga (Kallamaddi drain) and 12 c/s from Pardur drain near Inajolu (v) Adusumelli (v) and Syamalavari village (v) during Kharif season to irrigate an area of 471 acres in Kharif s.a.

| Sl.No. | Name of the L.I. Scheme   | Quantity | No. requested |
|--------|---|----------|---------------|
| 1.     | L.I. Scheme on Oguru vaga<br>(Kallamaddi drain) near<br>Inajolu (v), Pardur (t)<br>Prakasam District. | 1,450    | 30.60 c/s     |
| 2.     | L.I. Scheme on Oguru vaga<br>Kallamaddi drain) near<br>Adusumelli (v), Pardur(t)<br>Prakasam District | 2,600    | 62.40 c/s     |
| 3.     | L.I. Scheme on Pardur<br>drain near Syamalavari<br>Palem (v) Tidongepet (t)<br>Prakasam Dist.         | 500      | 12.00 c/s     |

This communication of the District Collector, Guntur may also be obtained.

Sd/- A. Krishna Rao  
Chief Engineer/Major Irrigation

To

The Vice Chairman and Managing Director,  
A.P.I.D.C. Limited,  
Hyderabad,

Copy to:

- 1) P.S. to Hon'ble Minister for Excise for favour of information.
- 2) Copy submitted to E.O.C. Interstate for information.
- 3) Copy to Administrator our Chief Engineer, R.S.R.C., Guntur.
- 4) Copy to District Collector, Guntur for favour of information.

**DELFT HYDRAULICS**

- 1) M. Vis, Delft, The Netherlands

**WATER AND LAND MANAGEMENT TRAINING AND RESEARCH INSTITUTE**

- 1) P.G. Sastry, Director General  
2) S. Ranga Rao, Executive Engineer

**INTERNATIONAL CROPS RESEARCH INSTITUTE FOR SEMI ARID TROPICS**

- 1) Dr. Awadhwal, Hyderabad

**ADMINISTRATIVE STAFF COLLEGE OF INDIA**

- 1) K.S. Ramesh
- 2) Ramesh Durvasula
- 3) M. Rajagopalan
- 4) S. Satish
- 5) D. Vijaya Sai
- 6) S. Seethalakshmi
- 7) K. Satyanand
- 8) A.V.L.P. Bhaskar Rao
- 9) R. Shailaja
- 10) A. Daniel

Letter from Central Water Commission  
No. 18/2/90(HO)-CE(SCR)/ 362  
Government of India  
Central Water Commission  
Office of the Chief Engineer(SCR)  
\*\*\*\*

H. No. 5-9-201/B&B1,  
Chirag Ali Lane,  
Hyderabad - 500 001.

Dated 19/1 January, 1994.

To —  
Sri Sujeet Kishen  
Assistant Director,  
Vimta Labs Ltd.,  
Central Laboratories,  
Plot No. 142, IDA Phase-II  
Cherlapally,  
Hyderabad - 500 051.

Sub:- Environmental Impact Assessment study for minor irrigation projects in A.P. - Supply of data of River Krishna.

Ref:- VLL/ENV/CWC/93 dated 30.12.1993.

....

Sir,

Reference is invited to your letter cited above. Your requirement of data may be sent through a Government Agency who are dealing with the project with the following details.

1. Name of gauging stations for which data is required.
2. Period for which data is required.
3. Type of data required.
4. Purpose for which data is required.

Yours faithfully,

*S. Nageswara Rao*  
(S. NAGESWARA RAO) 18/1/94  
Deputy Director

APSIDC's Letter to Central Water Commission**Andhra Pradesh State Irrigation Development Corporation Limited**

(A State Government Undertaking)

Regd. off : Maitrivanam, HUDA Complex, Srinivasa Nagar Colony (East), Hyderabad-500 038

N. MADANAMOHAN REDDY, IAS  
 Vice-Chairman and  
 Managing Director.



No. IDC/Irr. MD/P&M/APLIFT/ 1285/

Dated: 25-1-94

To

The Chief Engineer,  
 Central Water Commission,  
H Y D E R A B A D

Sir,

SUB: APSIDC LTD. - Indo Dutch Aid Projects - Environmental Impact Assessment Study being conducted by Administrative Staff College of India, Hyderabad - Reg.

\*\*\*

The A.P.S.I.D.C.Limited have formulated two Project reports for external aid from the Government of Netherlands as detailed below:-

- 1) APWELL for construction of 5,400 Bore wells.
- 2) APLIFT for construction of 107 Lift Irrigation Schemes.

In this context, the Netherlands Government has assigned the work of conducting an Environmental Impact Assessment study to the Administrative Staff College of India, Hyderabad for the implementation of the said Projects.

The Administrative Staff College of India needs flow data on Krishna River which is available with Central Water Commission, Hyderabad. This data is required to assess the Environmental Impact. This has reference to the discussions Dr.S.Satish of A.S.C.I. had with you on the subject.

: 2 :

As such, we request you to kindly arrange to supply the flow data on Krishna River as desired by Administrative Staff College of India, Hyderabad at the earliest.

Yours faithfully,  
for A.P.S.I.D.C.Limited  
(Sd/-K.SANJEEVA RAO)  
Superintending Engineer(LI&A)

*W*  
for Superintending Engineer(LI & A)

*A*  
*25/1*  
Copy to Dr.S.Satish, A&RD Area, Administrative Staff College of India, Hyderabad Bellavista, Hyderabad - 500 049.  
with reference to his letter dt.20.1.1994.

Central Water Commission's final response

No. 18/2/90(HO)-CE(S)/ 582  
Government of India  
Central Water Commission  
Office of the Chief Engineer, WRO  
(South Central Region)

\*\*\*\*

H. No.5-9-201/B & B1,  
Chirag Ali Lane,  
Hyderabad - 500 001.

Dated 31/1 January, 1994.

To  
The Superintending Engineer,  
APSIDC Limited,  
Maitrivanam, HUDA Complex,  
Hyderabad - 500 038.

Sub:- Flow data of River Krishna.

Ref:- Ir, No. IDC/MD/p&M/APLIFF/12851 dated 25.1.1994.

....

Sir,

With reference to your cited above, I am to inform that we have been supplying regularly the water year books of Krishna basin to Deputy Director, Hydrology & Statistics, O.O. Engineer-In-Chief, I&CAD Dept., Erramanzil, Hyderabad, the accredited representative of Government of Andhra Pradesh. The Water Year Book for 1990-1991 is also sent to the above said address vide SE, Krishna Circle letter No.KC/C/22012/12/92-DRS/3422-41 dated 13.10.1993.

You are advised to approach the concerned office of Government of Andhra Pradesh for the required data.

Yours faithfully,

S. Nageswara Rao  
(S. NAGESWARA RAO) 31/1/94  
Deputy Director

**TABLE-7.1.1.1**  
**WATER QUALITY-PHYSICO CHEMICAL PARAMETERS**

| Village                | pH       | Ec   | TSS  | TDS  | Turbidity<br>(NTU) | Total<br>Hardness | Magnesium | Calcium |
|------------------------|----------|------|------|------|--------------------|-------------------|-----------|---------|
|                        | umhos/cm |      |      |      |                    |                   |           |         |
| <b>Adavisattavaram</b> |          |      |      |      |                    |                   |           |         |
| 1.Peda Vagu            | 8.1      | 505  | 46   | 258  | 7                  | 120               | 15        | 24      |
| 2.Open well            | 8.2      | 520  | 26   | 340  | 2                  | 208               | 19        | 34      |
| 3.Tube well            | 6.94     | 4100 | 12   | 3017 | 14                 | 685               | 22        | 100     |
| 4.Mamidala Kunta       | 8.30     | 210  | 96   | 118  | 89                 | 24                | 2         | 6.4     |
| 5.Nalla Cheruvu        | 7.6      | 255  | 60   | 130  | 45                 | 88                | 2         | 30      |
| <b>Punajanoor</b>      |          |      |      |      |                    |                   |           |         |
| 6.Open well            | 7.21     | 529  | 29   | 317  | 2                  | 203               | 15.1      | 56.4    |
| 7.Tube well            | 7.17     | 556  | 10   | 328  | 1                  | 185               | 23.0      | 50.0    |
| 8.Open well            | 7.22     | 562  | 14   | 278  | 2                  | 209               | 18.5      | 53      |
| 9.Open well            | 7.33     | 587  | 18   | 292  | 2                  | 212               | 19.2      | 54      |
| <b>Mandipalli</b>      |          |      |      |      |                    |                   |           |         |
| 10.Open well           | 7.41     | 622  | 26   | 395  | 2                  | 244               | 22.0      | 55.0    |
| 11.Open well           | 7.52     | 462  | 28   | 282  | 2                  | 239               | 34.0      | 59      |
| 12.Open well           | 7.66     | 799  | 30   | 463  | 2                  | 269               | 34.0      | 56.0    |
| 13.Open well           | 7.65     | 712  | 31   | 414  | 4                  | 264               | 30.1      | 56.0    |
| 14.Open well           | 7.55     | 737  | 30   | 398  | 4                  | 244               | 32.1      | 55      |
| 15.Open well           | 7.62     | 721  | 35   | 404  | 4                  | 222               | 26.1      | 55.0    |
| 16.Open well           | 7.92     | 932  | 80   | 508  | 7                  | 310               | 32        | 97      |
| 17.Open well           | 7.10     | 901  | 73   | 498  | 6                  | 388               | 27        | 100     |
| 18.Tube well           | 6.87     | 2955 | 18   | 1773 | 12                 | 771               | 78        | 181     |
| <b>Kolpur</b>          |          |      |      |      |                    |                   |           |         |
| 19.Open well           | 7.44     | 822  | 122  | 422  | 5                  | 235               | 29.2      | 61      |
| 20.Tube well           | 7.0      | 1699 | 10   | 904  | 4                  | 840               | 82        | 152     |
| 21.Hand pump           | 6.84     | 1092 | 10   | 585  | 2                  | 330               | 35        | 74.4    |
| 22.Tank                | 7.28     | 188  | 2894 | 125  | 1680               | 48                | 7.8       | 6.4     |
| 23.Open well           | 7.58     | 382  | 32   | 208  | 6                  | 60                | 8.9       | 10.4    |
| <b>Gajaramdoddi</b>    |          |      |      |      |                    |                   |           |         |
| 24.Open well           | 7.04     | 1011 | 49   | 566  | 10                 | 275               | 26        | 68      |
| 25.Tank                | 7.20     | 379  | 60   | 219  | 30                 | 60                | 10.2      | 4       |
| 26.Open well           | 7.59     | 1350 | 42   | 756  | 4                  | 262               | 25.5      | 66      |
| 27.Hand pump           | 6.98     | 1120 | 12   | 661  | 5                  | 279               | 11.6      | 92.4    |
| 28.Open well           | 8.22     | 1054 | 39   | 672  | 4                  | 288               | 14.0      | 82      |
| 29.Open well           | 8.14     | 1167 | 32   | 682  | 4                  | 280               | 12.0      | 86      |

All the results are expressed in mg/Lt.except pH, Ec and Turbidity

**TABLE-7.1.1.1(contd)**  
**WATER QUALITY-PHYSICO CHEMICAL PARAMETERS**  
**RIVER KRISHNA**

| Village Name                                    | pH   | Ec  | TSS | TDS | Turbidity | Total Hardness | Magnesium | Calcium |
|---|------|-----|-----|-----|-----------|----------------|-----------|---------|
| <b>Mudmal village</b>                           |      |     |     |     |           |                |           |         |
| 1. Upstream<br>(2km from intake point)          | 7.13 | 740 | 110 | 382 | 19        | 212            | 9.7       | 69      |
| 2. Upstream<br>(1 km intake point)              | 7.84 | 744 | 26  | 388 | 7         | 212            | 20.9      | 51      |
| 3. <u>Intake point:1</u>                        | 7.76 | 738 | 23  | 375 | 7         | 215            | 19        | 52.1    |
| 4. Down stream<br>(1km from intake point)       | 7.84 | 780 | 50  | 401 | 8         | 212            | 20.4      | 51.0    |
| 5. Down stream<br>(2 km intake point)           | 7.84 | 782 | 50  | 405 | 7         | 212            | 20.7      | 52.0    |
| 6. Upstream<br>(2 km from intake point)         | 7.64 | 795 | 47  | 405 | 11        | 195            | 28        | 34      |
| 7. Upstream<br>(1 km from intake point)         | 7.86 | 745 | 35  | 380 | 4         | 188            | 16.5      | 445     |
| 8. <u>Intake point-2</u>                        | 7.93 | 780 | 34  | 395 | 4         | 196            | 12.6      | 58      |
| 9. Down stream<br>(1 km from from intake point) | 7.84 | 730 | 35  | 365 | 4         | 189            | 14.6      | 57      |
| 10. Down stream<br>(2 km from intake point)     | 7.88 | 755 | 31  | 385 | 5         | 200            | 18.5      | 50      |
| 11. Upstream<br>(2 km from intake point)        | 7.94 | 764 | 122 | 391 | 10        | 200            | 21        | 48      |
| 12. Upstream<br>(1 km from intake point)        | 7.93 | 788 | 125 | 400 | 10        | 190            | 13.9      | 52      |
| 13. <u>Intake point-3</u>                       | 7.94 | 765 | 129 | 405 | 10        | 201            | 14.5      | 53      |
| 14. Down stream<br>(1 km from intake point)     | 7.80 | 730 | 24  | 380 | 7         | 188            | 20        | 54.9    |

All the results are expressed in mg/L except pH, EC and Turbidity

TABLE-7.1.1.2:WATER QUALITY-CHEMICAL PARAMETERS

| Village                | Sodium | Potassium | P-Alka | M-Alka | Cl  | F   | $\text{NO}_3$ | $\text{SO}_4$ | Br  |
|------------------------|--------|-----------|--------|--------|-----|-----|---------------|---------------|-----|
| <b>Adavisattavaram</b> |        |           |        |        |     |     |               |               |     |
| 1.Peda Vagu            | 77     | 1.05      | NIL    | 234    | 28  | 0.8 | 29            | 33.3          | NIL |
| 2.Open well            | 55     | 2.1       | NIL    | 244    | 24  | 0.9 | 32            | 22.0          | NIL |
| 3.Tube well            | 551    | 360       | NIL    | 385    | 884 | 0.9 | 60            | 384           | NIL |
| 4.Mamidala Kunta       | 40     | 5.4       | NIL    | 75     | 27  | 0.7 | 6             | 12            | NIL |
| 5.Nalla Cheruvu        | 18     | 4.4       | NIL    | 97     | 12  | 0.7 | 34            | 5             | NIL |
| <b>Punajanoor</b>      |        |           |        |        |     |     |               |               |     |
| 6.Open well            | 26     | 0.6       | NIL    | 259    | 16  | 0.9 | 26            | 6.98          | NIL |
| 7.Tube well            | 26     | 0.2       | NIL    | 254    | 16  | 0.9 | 25            | 20.0          | NIL |
| 8.Open well            | 30     | 0.9       | NIL    | 250    | 18  | 0.8 | 24            | 20.0          | NIL |
| 9.Open well            | 35     | 0.6       | NIL    | 255    | 22  | 0.8 | 26            | 25.0          | NIL |
| <b>Mandipalli</b>      |        |           |        |        |     |     |               |               |     |
| 10.Open well           | 40     | 1.2       | NIL    | 283    | 22  | 0.8 | 21            | 30.0          | NIL |
| 11.Open well           | 51     | 1.8       | NIL    | 297    | 50  | 0.9 | 33            | 52            | NIL |
| 12.Open well           | 55     | 1.9       | NIL    | 297    | 50  | 0.8 | 32            | 54.0          | NIL |
| 13.Open well           | 40     | 1.0       | NIL    | 300    | 36  | 0.7 | 37            | 23            | NIL |
| 14.Open well           | 44     | 1.5       | NIL    | 322    | 32  | 0.7 | 44            | 22.0          | NIL |
| 15.Open well           | 49     | 1.9       | NIL    | 312    | 36  | 0.8 | 22            | 33            | NIL |
| 16.Open well           | 40     | 2.5       | NIL    | 429    | 34  | 0.8 | 29            | 39            | NIL |
| 17.Open well           | 36     | 2.0       | NIL    | 390    | 39  | 0.7 | 38            | 41.2          | NIL |
| 18.Tube well           | 210    | 190       | NIL    | 512    | 444 | 0.9 | 175           | 300           | NIL |
| <b>Kolpur</b>          |        |           |        |        |     |     |               |               |     |
| 19.Open well           | 56     | 19        | NIL    | 332    | 52  | 0.8 | 52            | 26.5          | NIL |
| 20.Tube well           | 55     | 8.2       | NIL    | 600    | 150 | 0.9 | 44            | 100           | NIL |
| 21.Hand pump           | 92     | 10        | NIL    | 421    | 80  | 0.9 | 57            | 36.0          | NIL |
| 22.Tank                | 15.2   | 8         | NIL    | 39     | 12  | 0.9 | 16            | 28.0          | NIL |
| 23.Open well           | 53     | 4.1       | NIL    | 110    | 38  | 0.8 | 22            | 22.0          | NIL |
| <b>Gajaramdoddi</b>    |        |           |        |        |     |     |               |               |     |
| 24.Open well           | 120    | 0.6       | NIL    | 342    | 40  | 0.9 | 44            | 150           | NIL |
| 25.Tank                | 61     | 4.8       | NIL    | 101    | 34  | 0.8 | 43            | 25            | NIL |
| 26.Open well           | 180    | 5.1       | NIL    | 384    | 44  | 0.9 | 60            | 240           | NIL |
| 27.Hand pump           | 126    | 6.0       | NIL    | 348    | 85  | 0.9 | 45            | 110           | NIL |
| 28.Open well           | 120    | 5.1       | NIL    | 322    | 93  | 0.9 | 36            | 95            | NIL |
| 29.Open well           | 138    | 4.0       | NIL    | 380    | 81  | 0.8 | 49            | 101           | NIL |

All the results are expressed in mg/Lt.

TABLE-7.1.1.2(CONTD)  
WATER QUALITY-CHEMICAL PARAMETERS  
RIVER KRISHNA

| Village Name                                 | Sodium | Potassium | P-Alka | M-Alka | Cl | F   | $\text{NO}_3$ | $\text{SO}_4$ | Br  |
|--|--------|-----------|--------|--------|----|-----|---------------|---------------|-----|
| <b>Mudmal village</b>                        |        |           |        |        |    |     |               |               |     |
| 1. Upsteam<br>( 2 km from intake point)      | 75.2   | 3.4       | NIL    | 185    | 54 | 0.8 | 16            | 131           | NIL |
| 2. Upstream<br>(1 km from intake point)      | 74     | 3.0       | NIL    | 180    | 55 | 0.8 | 32            | 122           | NIL |
| 3. <u>Intake point-1</u>                     | 75     | 2.8       | NIL    | 178    | 56 | 0.8 | 36            | 114           | NIL |
| 4. Down stream<br>(1km from intake point)    | 84     | 3.4       | NIL    | 190    | 74 | 0.8 | 34            | 104           | NIL |
| 5. Down stream<br>(2 km from intake point)   | 86     | 2.0       | NIL    | 190    | 80 | 0.9 | 46            | 97            | NIL |
| 6. Upstream<br>(2km from intake point)       | 92     | 1.0       | NIL    | 190    | 90 | 0.8 | 55            | 72            | NIL |
| 7. Upstream<br>(1 km from intake point)      | 98     | 3.1       | NIL    | 192    | 88 | 0.8 | 36            | 89            | NIL |
| 8. <u>Intake point-2</u>                     | 100    | 3.0       | NIL    | 195    | 84 | 0.8 | 39            | 99            | NIL |
| 9. Down stream<br>(1km from intake point)    | 86     | 3.0       | NIL    | 192    | 78 | 0.8 | 30            | 101           | NIL |
| 10. Down stream<br>(2 km from intake point)  | 86     | 3.2       | NIL    | 190    | 76 | 0.8 | 32            | 103           | NIL |
| 11. Upstream<br>(2 km from intake point)     | 88     | 3.4       | NIL    | 200    | 79 | 0.9 | 29            | 95            | NIL |
| 12. Upstream<br>(1 km from intake point)     | 90     | 3.6       | NIL    | 201    | 83 | 0.8 | 19            | 91            | NIL |
| 13. <u>Intake point-3</u>                    | 88     | 3.4       | NIL    | 189    | 82 | 0.9 | 24            | 88            | NIL |
| 14. Down stream<br>( 1 km from intake point) | 75     | 2.9       | NIL    | 180    | 59 | 0.8 | 39            | 120           | NIL |

All the results are expressed in mg/L

**TABLE-7.1.1.3**  
**WATER QUALITY-CHEMICAL PARAMETERS**

| Village                | SAR  | RSC  | Cr     | Pb     | Hg     | B     | Fe    | Mn    | PO <sub>4</sub> |
|------------------------|------|------|--------|--------|--------|-------|-------|-------|-----------------|
| <b>Adivisattavaram</b> |      |      |        |        |        |       |       |       |                 |
| 1.Peda Vagu            | 3.22 | 1.4  | <0.007 | <0.005 | <0.001 | 0.07  | 0.218 | 0.02  | 0.005           |
| 2.Open well            | 3.0  | 1.0  | <0.007 | <0.005 | <0.001 | 0.9   | 0.24  | 0.05  | 0.200           |
| 3.Tube well            | 9.64 | NIL  | <0.007 | <0.005 | <0.001 | 0.42  | 0.618 | 0.7   | 0.09            |
| 4.Mamidala Kunta       | 3.55 | 1.51 | <0.007 | <0.005 | <0.001 | 0.06  | 1.01  | 0.04  | 0.003           |
| 5.Nalla Cheruvu        | 0.83 | 0.72 | <0.007 | <0.005 | <0.001 | 0.04  | 0.53  | 0.01  | 0.006           |
| <b>Punajanoor</b>      |      |      |        |        |        |       |       |       |                 |
| 6.Open well            | 0.8  | 0.18 | <0.007 | <0.005 | <0.001 | 0.035 | 0.17  | 0.03  | 0.004           |
| 7.Tube well            | 0.83 | 0.3  | <0.007 | <0.005 | <0.001 | 0.04  | 0.53  | 0.01  | 0.10            |
| 8.Open well            | 0.92 | 0.32 | <0.007 | <0.005 | <0.001 | 0.05  | 0.09  | 0.01  | 0.007           |
| 9.Open well            | 0.85 | 0.30 | <0.007 | <0.005 | <0.001 | 0.04  | 0.07  | 0.02  | 0.001           |
| <b>Mandipalli</b>      |      |      |        |        |        |       |       |       |                 |
| 10.Open well           | 1.0  | 0.3  | <0.007 | <0.005 | <0.001 | 0.03  | 0.05  | 0.02  | 0.003           |
| 11.Open well           | 1.2  | 0.25 | <0.007 | <0.005 | <0.001 | 0.02  | 0.02  | 0.02  | 0.003           |
| 12.Open well           | 1.4  | 0.23 | <0.007 | <0.005 | <0.001 | 0.04  | 0.09  | 0.02  | 0.005           |
| 13.Open well           | 1.1  | 0.24 | <0.007 | <0.005 | <0.001 | 0.03  | 0.09  | 0.08  | 0.005           |
| 14.Open well           | 0.9  | 0.4  | <0.007 | <0.005 | <0.001 | 0.03  | 0.05  | 0.02  | 0.004           |
| 15.Open well           | 0.8  | 0.5  | <0.007 | <0.005 | <0.001 | 0.02  | 0.09  | 0.02  | 0.04            |
| 16.Open well           | 0.9  | NIL  | <0.007 | <0.005 | <0.001 | 0.04  | 0.2   | 0.04  | 0.03            |
| 17.Open well           | 0.8  | NIL  | <0.007 | <0.005 | <0.001 | 0.05  | 0.199 | 0.04  | 0.001           |
| 18.Tube well           | 3.23 | NIL  | <0.007 | <0.005 | <0.001 | 0.2   | 0.190 | 0.06  | 0.05            |
| <b>Kolpur</b>          |      |      |        |        |        |       |       |       |                 |
| 19.Open well           | 1.81 | 0.74 | <0.007 | <0.005 | <0.001 | 0.17  | 1.63  | 0.09  | 0.003           |
| 20.Tube well           | 2.20 | 0.39 | <0.007 | <0.005 | <0.001 | 0.17  | 0.9   | 0.04  | 0.40            |
| 21.Hand pump           | 2.20 | 0.36 | <0.007 | <0.005 | <0.001 | 0.19  | 0.2   | 0.04  | 0.30            |
| 22.Tank                | 0.96 | NIL  | <0.007 | <0.005 | <0.001 | 0.02  | 0.2   | 0.04  | 0.009           |
| 23.Open well           | 0.96 | NIL  | <0.007 | <0.005 | <0.001 | 0.05  | 0.5   | 0.04  | 0.10            |
| <b>Gajaramdoddi</b>    |      |      |        |        |        |       |       |       |                 |
| 24.Open well           | 1.4  | 0.1  | <0.007 | <0.005 | <0.001 | 0.04  | 0.328 | 0.018 | 0.05            |
| 25.Tank                | 1.4  | NIL  | <0.007 | <0.005 | <0.001 | 0.04  | 0.2   | 0.02  | 0.003           |
| 26.Open well           | 1.5  | NIL  | <0.007 | <0.005 | <0.001 | 0.05  | 0.2   | 0.05  | 0.05            |
| 27.Hand pump           | 3.28 | 0.84 | <0.007 | <0.005 | <0.001 | 0.12  | 0.183 | 0.04  | 0.10            |
| 28.Open well           | 1.5  | NIL  | 0.09   | <0.005 | <0.001 | 0.15  | 0.2   | 0.04  | 0.15            |
| 29.Open well           | 1.6  | 0.84 | <0.007 | <0.005 | <0.001 | 0.04  | 0.2   | 0.04  | 0.05            |

All the results are expressed in mg/Lt.

TABLE- 7.1.1.3(CONTD)  
WATER QUALITY-CHEMICAL PARAMETERS  
RIVER KRISHNA

| Village Name                                | SAR  | RSC | Cr     | Pb     | Hg     | B    | Fe   | Mn   | PO <sub>4</sub> |
|---|------|-----|--------|--------|--------|------|------|------|-----------------|
| <b>Mudmal village</b>                       |      |     |        |        |        |      |      |      |                 |
| 1. Upstream<br>(2km from intake point)      | 2.22 | NIL | <0.007 | <0.005 | <0.001 | 0.04 | 0.28 | 0.05 | 0.006           |
| 2. Upstream<br>( 1 km from intake point)    | 2.66 | NIL | <0.007 | <0.005 | <0.001 | 0.07 | 0.09 | 0.04 | 0.007           |
| 3. <u>Intake point-1</u>                    | 2.80 | NIL | <0.007 | <0.005 | <0.001 | 0.05 | 0.11 | 0.06 | 0.004           |
| 4. Down stream<br>( 1 km from intake point) | 2.23 | NIL | <0.007 | <0.005 | <0.001 | 0.11 | 0.19 | 0.04 | 0.003           |
| 5. Down stream<br>( 2 km from intake point) | 2.78 | NI  | <0.007 | <0.005 | <0.001 | 0.08 | 0.15 | 0.05 | 0.006           |
| 6. Upstream<br>( 2 km from intake point)    | 2.76 | NIL | <0.007 | <0.005 | <0.001 | 0.04 | 0.11 | 0.04 | 0.008           |
| 7. Upstream<br>( 1 km from intake point)    | 2.81 | NIL | <0.007 | <0.005 | <0.001 | 0.14 | 0.21 | 0.04 | 0.007           |
| 8. <u>Intake point-2</u>                    | 3.0  | NIL | <0.007 | <0.005 | <0.001 | 0.17 | 0.22 | 0.05 | 0.002           |
| 9. Down stream<br>(1 km from intake point)  | 3.12 | NIL | <0.007 | <0.005 | <0.001 | 0.14 | 0.13 | 0.03 | 0.006           |
| 10 Down stream<br>( 2 km from intake point) | 2.13 | NIL | <0.007 | <0.005 | <0.001 | 0.09 | 0.12 | 0.04 | 0.008           |
| 11.Upstream<br>( 2 km from intake point)    | 2.34 | NIL | <0.007 | <0.005 | <0.001 | 0.12 | 0.12 | 0.03 | 0.003           |
| 12.Upstream                                 | 2.87 | NIL | <0.007 | <0.005 | <0.001 | 0.15 | 0.14 | 0.05 | 0.004           |
| 13.Intake point-3                           | 2.75 | NIL | <0.007 | <0.005 | <0.001 | 0.11 | 0.12 | 0.09 | 0.007           |
| 14.Down stream<br>( 1 km from intake point) | 2.74 | NIL | <0.007 | <0.005 | <0.001 | 0.09 | 0.14 | 0.05 | 0.005           |

All the results are expressed in mg/L

**TABLE-7.1.1.4**  
**WATER QUALITY-BACTERIOLOGICAL PARAMETERS**

| Village                | Coli forms (MPN/100 ml) |        |
|------------------------|-------------------------|--------|
|                        | Total                   | E.coli |
| <b>Adavisattavaram</b> |                         |        |
| 1.Peda Vagu            | 24                      | 5      |
| 2.Open well            | 12                      | 3      |
| 3.Tube well            | 9                       | 2      |
| 4.Mamidala Kunta       | 32                      | 10     |
| 5.Nalla Cheruvu        | 14                      | 9      |
| <b>Punajanoor</b>      |                         |        |
| 6.Open well            | 21                      | 6      |
| 7.Tube well            | 14                      | 4      |
| 8.Open well            | 25                      | 3      |
| 9.Open well            | 14                      | 6      |
| <b>Mandipalli</b>      |                         |        |
| 10.Open well           | 12                      | 4      |
| 11.Open well           | 14                      | 5      |
| 12.Open well           | 22                      | 6      |
| 13.Open well           | 16                      | 4      |
| 14.Open well           | 26                      | 5      |
| 15.Open well           | 32                      | 3      |
| 16.Open well           | 25                      | 2      |
| 17.Open well           | 14                      | 2      |
| 18.Tube well           | 16                      | 2      |
| <b>Kolpur</b>          |                         |        |
| 19.Open well           | 18                      | 3      |
| 20.Tube well           | 11                      | 2      |
| 21.Hand pump           | 9                       | 2      |
| 22.Tank                | 30                      | 9      |
| 23.Open well           | 14                      | 3      |
| <b>Gajaramdoddi</b>    |                         |        |
| 24.Open well           | 19                      | 8      |
| 25.Tank                | 14                      | 6      |
| 26.Open well           | 12                      | 3      |
| 27.Hand pump           | 9                       | 2      |
| 28.Open well           | 10                      | 2      |
| 29.Open well           | 22                      | 4      |

**TABLE-7.1.1.4 (CONTD)**  
**WATER QUALITY- BACTERIOLOGICAL PARAMETERS**  
**RIVER KRISHNA**

| Village Name                                    | Coliforms (MPN/100 ml) |        |
|---|------------------------|--------|
|   | Total                  | E.coli |
| <b>Mudmal</b>                                   |                        |        |
| 1. Upstream<br>(2km from intake point)          | 17                     | 7      |
| 2. Upstream<br>(1 km intake point)              | 15                     | 4      |
| 3. <u>Intake point:1</u>                        | 12                     | 4      |
| 4. Down stream<br>(1km from intake point)       | 19                     | 6      |
| 5. Down stream<br>(2 km intake point)           | 16                     | 4      |
| 6. Upstream<br>(2 km from intake point)         | 12                     | 3      |
| 7. Upstream<br>(1 km from intake point)         | 17                     | 5      |
| 8. <u>Intake point-2</u>                        | 23                     | 6      |
| 9. Down stream<br>(1 km from from intake point) | 16                     | 5      |
| 10. Down stream<br>(2 km from intake point)     | 10                     | 6      |
| 11. Upstream<br>(2 km from intake point)        | 12                     | 5      |
| 12. Upstream<br>(1 km from intake point)        | 27                     | 10     |
| 13. Intake point-3                              | 21                     | 6      |
| 14. Down stream<br>(1 km from intake point)     | 20                     | 5      |
|   | 15                     | 4      |

**TABLE-7.2.1.1**  
**WATER QUALITY-PHYSICO CHEMICAL PARAMETERS**

| Location/<br>Village                  | pH   | EC<br>umhos/cm | TSS | TDS  | Turbidity<br>(NTU) | Total<br>Hardness | Magnesium | Calcium |
|---------------------------------------|------|----------------|-----|------|--------------------|-------------------|-----------|---------|
| <b>NALLAMADA DRAIN (PROPOSED)</b>     |      |                |     |      |                    |                   |           |         |
| 1. Upstream 1 km from intake point    | 8.46 | 738            | 162 | 596  | 17.0               | 130               | 12.15     | 32.0    |
| 2. Upstream 500m from intake point    | 8.6  | 753            | 165 | 608  | 17.3               | 133               | 12.39     | 33.0    |
| 3. Intake Point                       | 8.41 | 756            | 230 | 613  | 21.0               | 120               | 8.5       | 34.0    |
| 4. Down stream 500m from intake point | 8.2  | 778            | 305 | 644  | 31.0               | 139               | 2.33      | 52.0    |
| 5. Down stream 1km from intake point  | 8.3  | 794            | 306 | 657  | 32.0               | 142               | 2.38      | 53.0    |
| 6. Down stream 2km from intake point  | 8.46 | 810            | 318 | 671  | 32.0               | 145               | 2.43      | 54.0    |
| <b>ADUSUMALLI VILLAGE</b>             |      |                |     |      |                    |                   |           |         |
| 7. Adusumalli village tank            | 7.33 | 1267           | 83  | 930  | 9                  | 205               | 17        | 54.0    |
| 8. Drinking water sump                | 8.26 | 320            | 24  | 271  | 3                  | 55                | 2.43      | 18.0    |
| 9. Drinking water tap-Adusumalli      | 7.8  | 304            | 23  | 257  | 2.85               | 52                | 2.31      | 17.1    |
| 10. Open well - A.Milli               | 7.40 | 5140           | 28  | 3829 | 3                  | 510               | 75.33     | 80.0    |
| <b>PALAPARU VILLAGE</b>               |      |                |     |      |                    |                   |           |         |
| 11. Drinking water tap                | 7.4  | 282            | 21  | 239  | 2.64               | 48.4              | 2.14      | 16.1    |
| 12. Tank                              | 8.15 | 801            | 132 | 630  | 15                 | 128               | 15.6      | 25.6    |
| 13. Open well - Palaparru             | 7.59 | 5400           | 205 | 4090 | 19                 | 1095              | 92        | 286     |
| <b>CHINNANANDIPADU VILLAGE</b>        |      |                |     |      |                    |                   |           |         |
| 14. Tank                              | 8.43 | 666            | 132 | 559  | 14                 | 80                | 1.2       | 30      |
| 15. Drinking water tap                | 8.1  | 314            | 23  | 265  | 2.94               | 53.9              | 2.38      | 17.6    |
| 16. Drinking Water Well               | 7.56 | 1856           | 71  | 1391 | 8                  | 196               | 22.4      | 42.0    |

TABLE-7.2.1.2  
WATER QUALITY-CHEMICAL PARAMETERS

| Locations/<br>Village                   |     | Sodium | Potassium | P-Alka | M-Alka | Cl  | F   | $\text{NO}_3$ | $\text{SO}_4$ |
|---|-----|--------|-----------|--------|--------|-----|-----|---------------|---------------|
| <b>NALLAMADA DRAIN (PROPOSED)</b>       |     |        |           |        |        |     |     |               |               |
| 1. Upstream 1 km from intake point      | 100 | 7      | 18        | 190    | 60     | 0.6 | 5.0 | 60.0          |               |
| 2. Upstream 500m from intake point      | 102 | 7.2    | 18.4      | 194    | 61     | 0.6 | 5.0 | 61.0          |               |
| 3. Intake Point                         | 104 | 7.2    | 17        | 195    | 55     | 0.5 | 2.0 | 61.0          |               |
| 4. Down stream 500m from intake point   | 111 | 5.7    | 14.4      | 204    | 72     | 0.6 | 8.0 | 64.0          |               |
| 5. Down stream 1km from intake point    | 114 | 5.8    | 14.7      | 209    | 73     | 0.5 | 8.8 | 65.0          |               |
| 6. Down stream 2km from intake point    | 116 | 6.0    | 15        | 213    | 75     | 0.6 | 9.0 | 67.0          |               |
| <b>ADUSUMALLI VILLAGE</b>               |     |        |           |        |        |     |     |               |               |
| 7. Adusumalli village tank              | 140 | 80     | NIL       | 288    | 195    | 0.5 | 4.0 | 42.0          |               |
| 8. Drinking water sump                  | 42  | 6      | NIL       | 92     | 25     | 0.6 | 0.5 | 28.0          |               |
| 9. Drinking water tap-Adusumalli        | 40  | 5.7    | NIL       | 87     | 24     | 0.5 | 0.4 | 26.0          |               |
| 10. Open well - A.Milli                 | 540 | 650    | NIL       | 500    | 1035   | 0.5 | 313 | 298           |               |
| <b>PALAPARU VILLAGE (SURFACE WATER)</b> |     |        |           |        |        |     |     |               |               |
| 11. Drinking water tap                  | 37  | 5.3    | NIL       | 81     | 22     | 0.5 | 0.4 | 25.0          |               |
| 12. Tank                                | 100 | 7      | NIL       | 200    | 65     | 0.5 | 4.0 | 55.0          |               |
| 13. Open well - Palaparru               | 440 | 500    | NIL       | 742    | 950    | 0.7 | 330 | 352           |               |
| <b>CHINNANANDIPADU VILLAGE</b>          |     |        |           |        |        |     |     |               |               |
| 14. Tank                                | 110 | 6      | 12        | 180    | 60     | 0.7 | 14  | 37.0          |               |
| 15. Drinking water tap                  | 41  | 5.8    | NIL       | 90     | 22     | 0.6 | 0.5 | 27.0          |               |
| 16. Drinking Water Well                 | 320 | 8      | NIL       | 430    | 230    | 0.5 | 16  | 133           |               |

TABLE-7.2.1.3  
WATER QUALITY-CHEMICAL PARAMETERS

| Locations/<br>Village                   | SAR  | RSC  | Cr    | Pb     | Hg    | B    | Fe    | Mn    | P     |
|---|------|------|-------|--------|-------|------|-------|-------|-------|
| <b>NALLAMADA DRAIN (PROPOSED)</b>       |      |      |       |        |       |      |       |       |       |
| 1. Upstream 1 km from intake point      | 3.82 | 1.56 | <0.02 | <0.005 | <0.01 | 0.17 | 0.043 | <0.01 | 0.025 |
| 2. Upstream 500m from intake point      | 3.9  | 1.59 | <0.02 | <0.005 | <0.01 | 0.17 | 0.044 | <0.01 | 0.025 |
| 3. Intake Point                         | 4.13 | 1.84 | <0.02 | <0.005 | <0.01 | 0.17 | 0.026 | <0.01 | 0.073 |
| 4. Down stream 500m from intake point   | 4.0  | 1.5  | <0.02 | <0.005 | <0.01 | 0.18 | 0.06  | <0.01 | 0.012 |
| 5. Down stream 1km from intake point    | 4.1  | 1.6  | 0.023 | <0.005 | <0.01 | 0.18 | 0.06  | <0.01 | 0.012 |
| 6. Down stream 2km from intake point    | 4.20 | 1.66 | 0.024 | <0.005 | <0.01 | 0.17 | 0.064 | <0.01 | 0.013 |
| <b>ADUSUMALLI VILLAGE</b>               |      |      |       |        |       |      |       |       |       |
| 7. Adusumalli village tank              | 4.24 | 1.66 | <0.02 | <0.005 | <0.01 | 0.25 | 0.033 | <0.01 | 0.02  |
| 8. Drinking water sump                  | 2.46 | 0.74 | 0.021 | <0.005 | <0.01 | 0.07 | 0.039 | <0.01 | 0.019 |
| 9. Drinking water tap-Adusumalli        | 2.2  | 0.7  | 0.019 | <0.005 | <0.01 | 0.06 | 0.037 | <0.01 | 0.011 |
| 10.Open well - A.Milli                  | 10.4 | NIL  | 0.022 | <0.005 | 0.036 | 0.20 | 0.063 | <0.01 | 0.018 |
| <b>PALAPARU VILLAGE (SURFACE WATER)</b> |      |      |       |        |       |      |       |       |       |
| 11.Drinking water tap                   | 2.1  | 0.65 | 0.018 | <0.005 | <0.01 | 0.07 | 0.034 | <0.01 | 0.012 |
| 12.Tank                                 | 3.84 | 1.44 | 0.024 | <0.005 | <0.01 | 0.18 | 0.042 | <0.01 | 0.019 |
| 13.Open well - Palaparru                | 5.78 | NIL  | <0.02 | 0.062  | <0.01 | 0.66 | 0.084 | <0.01 | 0.021 |
| <b>CHINNANANDIPADU VILLAGE</b>          |      |      |       |        |       |      |       |       |       |
| 14.Tank                                 | 5.35 | 2.24 | <0.02 | <0.005 | <0.01 | 0.18 | 0.129 | <0.01 | 0.025 |
| 15.Drinking water tap                   | 2.4  | 0.72 | 0.020 | <0.005 | <0.01 | 0.06 | 0.036 | <0.01 | 0.011 |
| 16.Drinking Water Well                  | 9.94 | 4.68 | 0.034 | <0.005 | 0.038 | 0.66 | 0.115 | 0.12  | 0.014 |

**TABLE-7.2.1.4**  
**WATER QUALITY-BACTERIOLOGICAL PARAMETERS**

|   | Total | Coli forms (MPN/100 ml) | E.coli |
|---|-------|-------------------------|--------|
| <b>NALLAMADA DRAIN (PROPOSED)</b>       |       |                         |        |
| 1. Upstream 1 km from intake point      | 12    | 7                       |        |
| 2. Upstream 500m from intake point      | 14    | 9                       |        |
| 3. Intake Point                         | 14    | 6                       |        |
| 4. Down stream 500m from intake point   | 17    | 8                       |        |
| 5. Down stream 1km from intake point    | 16    | 6                       |        |
| 6. Down stream 2km from intake point    | 17    | 7                       |        |
| <b>ADUSUMALLI VILLAGE</b>               |       |                         |        |
| 7. Adusumalli village tank              | 8     | 4                       |        |
| 8. Drinking water sump                  | 4     | 3                       |        |
| 9. Drinking water tap-Adusumalli        | 4     | 3                       |        |
| 10. Open well - A.Milli                 | 5     | 4                       |        |
| <b>PALAPARU VILLAGE (SURFACE WATER)</b> |       |                         |        |
| 11. Drinking water tap                  | 4     | 3                       |        |
| 12. Tank                                | 8     | 4                       |        |
| 13. Open well - Palaparru               | 4     | 5                       |        |
| 14. Tank - Palaparru                    | 5     | 6                       |        |
| <b>CHINNANANDIPADU VILLAGE</b>          |       |                         |        |
| 15. Tank                                | 6     | 4                       |        |
| 16. Drinking water tap                  | 4     | 3                       |        |

**TABLE-7.1.2.1**  
**WATER QUALITY-PHYSICO CHEMICAL PARAMETERS**

| Village Name   | pH   | EC       | TSS | TDS | Turbidity | Total    | Magnesium | Calcium |
|--|------|----------|-----|-----|-----------|----------|-----------|---------|
|  |      | umhos/cm |     |     | (NTU)     | Hardness |           |         |
| <b>Mudmal village</b>                                    |      |          |     |     |           |          |           |         |
| 1. Ag.runoff<br>(V.Rangappa)                             | 6.98 | 819      | 152 | 434 | 7         | 184      | 20        | 40      |
| 2. D <sub>2</sub> Canal                                  | 6.97 | 1603     | 46  | 810 | 2         | 384      | 28.2      | 107     |
| 3. Ag.runoff<br>(Kottapalli Sugappa)                     | 7.11 | 1377     | 59  | 826 | 63        | 344      | 38        | 75.2    |
| 4. Canal water<br>(Kothi Marappa)                        | 6.85 | 1089     | 65  | 653 | 5         | 370      | 27        | 81      |
| 5. Canal water<br>(Lower reach)                          | 7.35 | 893      | 49  | 471 | 8         | 192      | 15.5      | 59.4    |
| 6. Canal water<br>(Middle reach)                         | 7.46 | 815      | 58  | 410 | 7         | 184      | 17.5      | 44.8    |
| 7. Canal water<br>(Starting point D <sub>2</sub> Canal)  | 7.25 | 810      | 51  | 405 | 7         | 178      | 16.0      | 41.2    |
| 8. Ag.runoff<br>(Kadra Anjappa)                          | 7.05 | 1199     | 679 | 602 | 27        | 378      | 11.7      | 128     |
| 9. Canal water<br>(Upper reach)<br>End of cement lining) | 7.20 | 893      | 59  | 505 | 3.5       | 178      | 16.5      | 57.2    |
| 10. Canal water<br>(Middle of D <sub>2</sub> Canal)      | 7.49 | 829      | 66  | 422 | 4.0       | 184      | 25.3      | 32      |
| 11. Canal water<br>(End of D <sub>2</sub> canal)         | 7.6  | 896      | 70  | 517 | 4.0       | 192      | 26.5      | 44.1    |
| 12. Tank Water<br>(Surappa Tank)                         | 8.89 | 871      | 138 | 450 | 15        | 134      | 21.2      | 29      |

All the results are expressed in mg/L except pH, EC and Turbidity

TABLE-7.1.2.1(CONTD)  
WATER QUALITY-PHYSICO CHEMICAL PARAMETERS

| Village Name  | pH   | EC       | TSS  | TDS | Turbidity | Total    | Magnesium | Calcium |
|---|------|----------|------|-----|-----------|----------|-----------|---------|
|   |      | umhos/cm |      |     | (NTU)     | Hardness |           |         |
| 13. Drinking water well<br>(Near Telephone Booth)     | 7.37 | 1173     | 51   | 880 | 4         | 225      | 20.7      | 46      |
| 14. Drinking water well                               | 7.60 | 1377     | 62   | 848 | 5         | 218      | 20.4      | 79.1    |
| 15. Drinking bore well                                | 7.04 | 1242     | 8    | 718 | 4         | 356      | 25.2      | 101     |
| 16. Canal water<br>(Near to Phase II<br>Sump)         | 7.12 | 830      | 44   | 420 | 3         | 192      | 21.3      | 42      |
| <b>Muraharidoddi village</b>                          |      |          |      |     |           |          |           |         |
| 17. Canal water<br>(Upper reach)<br>Kummarai Nagappa) | 7.20 | 1023     | 68   | 595 | 20        | 370      | 10.8      | 91      |
| 18. Canal water<br>(DasariMurthappa)                  | 7.25 | 978      | 69   | 590 | 28        | 372      | 10.5      | 84      |
| 19. Canal water<br>(End of D <sub>3</sub> canal)      | 7.15 | 973      | 55   | 525 | 5         | 198      | 24.3      | 62.1    |
| 20. Ag.runoff<br>(Kummarai Peddanna)                  | 7.27 | 1091     | 110  | 538 | 34        | 200      | 20.4      | 46.4    |
| 21. Ag.runoff<br>(D <sub>1</sub> canal)               | 7.26 | 955      | 1049 | 472 | 45        | 200      | 21.4      | 45.0    |
| 22. Drinking waterwell                                | 7.45 | 943      | 20   | 565 | 2         | 244      | 21.7      | 73      |
| <b>Gudaballur village</b>                             |      |          |      |     |           |          |           |         |
| 23. Ag.runoff<br>(D <sub>1</sub> canal)               | 7.62 | 1036     | 67   | 621 | 4         | 281      | 20        | 70.0    |
| 24. Open well   | 6.84 | 1330     | 29   | 670 | 2         | 552      | 37        | 160     |
| 25. Open well   | 7.35 | 1229     | 27   | 737 | 2         | 309      | 34        | 140     |
| 26. Open well   | 7.34 | 1128     | 30   | 728 | 3         | 259      | 30        | 120     |

All the results are expressed in mg/L except pH, EC and Turbidity

**TABLE-7.1.2.1(CONTD)**  
**WATER QUALITY-PHYSICO CHEMICAL PARAMETERS**  
**RIVER KRISHNA**

| Village Name                               | pH   | EC<br>umhos/cm | TSS | TDS | Turbidity<br>(NTU) | Total<br>Hardness | Magnesium | Calcium |
|--|------|----------------|-----|-----|--------------------|-------------------|-----------|---------|
| <b>Muraharidoddi</b>                       |      |                |     |     |                    |                   |           |         |
| 1. Upstream<br>(3km from intake point)     | 7.14 | 735            | 32  | 385 | 19                 | 216               | 10.0      | 70      |
| 2. Upstream<br>(2 km from intake point)    | 7.87 | 751            | 39  | 389 | 6                  | 216               | 9.1       | 67      |
| 3. Upstream<br>(1 km from intake point)    | 7.76 | 723            | 34  | 388 | 12                 | 191               | 20        | 55.5    |
| 4. <u>Intake point-1</u>                   | 7.81 | 726            | 31  | 391 | 10                 | 224               | 20.6      | 55.1    |
| 5. Down stream<br>(1 km from intake point) | 7.85 | 744            | 34  | 399 | 11                 | 212               | 20.4      | 51.0    |
| 6. Down stream<br>(2 km from intake point) | 7.81 | 776            | 32  | 401 | 9                  | 218               | 21.4      | 55.0    |
| 7. Down stream<br>(3 km from intake point) | 7.64 | 795            | 38  | 405 | 11                 | 195               | 28        | 54      |

All the results are expressed in mg/L except pH, EC and Turbidity

**TABLE-7.1.2.2**  
**WATER QUALITY -CHEMICAL PARAMETERS**

| Village Name  | Sodium | Potassium | P-Alka | M-Alka | Cl  | F   | NO <sub>3</sub> | SO <sub>4</sub> | Br  |
|---|--------|-----------|--------|--------|-----|-----|-----------------|-----------------|-----|
| <b>Mudmal village</b>                                   |        |           |        |        |     |     |                 |                 |     |
| 1. Ag.runoff<br>(V.Rangappa)                            | 94     | 17        | NIL    | 180    | 64  | 0.5 | 55              | 116             | NIL |
| 2. D <sub>2</sub> Canal                                 | 192    | 3.2       | NIL    | 203    | 215 | 0.5 | 58              | 287             | NIL |
| 3. Ag.runoff<br>(Kottapalli Sugappa)                    | 136    | 36        | NIL    | 249    | 112 | 0.5 | 136             | 204             | NIL |
| 4. Canal water<br>(Kothi Marappa)                       | 103    | 4.0       | NIL    | 212    | 125 | 0.7 | 44              | 150             | NIL |
| 5. Canal water<br>(Lower reach)                         | 104    | 3.6       | NIL    | 202    | 104 | 0.8 | 35              | 99              | NIL |
| 6. Canal water<br>(Middle reach)                        | 102    | 3         | NIL    | 236    | 75  | 0.5 | 32              | 80              | NIL |
| 7. Canal water<br>(Starting point D <sub>2</sub> Canal) | 104    | 3.6       | NIL    | 205    | 84  | 0.8 | 39              | 83              | NIL |
| 8. Ag.runoff<br>(Kadra Anjappa)                         | 106    | 4.6       | NIL    | 459    | 97  | 0.6 | 75              | 39              | NIL |
| 9. Canal water<br>(Upper reach<br>End of cement lining) | 105    | 3.0       | NIL    | 190    | 92  | 0.7 | 32              | 130             | NIL |
| 10. Canal water<br>(Middle of D <sub>2</sub> Canal)     | 104    | 5.4       | NIL    | 171    | 70  | 0.7 | 35              | 140             | NIL |
| 11. Canal water<br>(End of D <sub>2</sub> canal)        | 104    | 3.2       | NIL    | 236    | 64  | 0.7 | 30              | 135             | NIL |
| 12. Tank water<br>(Surappa Tank)                        | 125    | 1.5       | NIL    | 158    | 125 | 0.8 | 22              | 105             | NIL |

All the results are expressed in mg/L

TABLE-7.1.2.2(CONTD)  
WATER QUALITY -CHEMICAL PARAMETERS

| Village Name  | Sodium | Potassium | P-Alka | M-Alka | Cl  | F   | $\text{NO}_3$ | $\text{SO}_4$ | Br  |
|---|--------|-----------|--------|--------|-----|-----|---------------|---------------|-----|
| 13. Drinking water well<br>(Near Telephone Booth)     | 165    | 5.4       | NIL    | 268    | 200 | 0.5 | 10            | 72            | NIL |
| 14. Drinking water well                               | 182    | 3.2       | NIL    | 252    | 180 | 0.9 | 40            | 180           | NIL |
| 15. Drinking bore well                                | 114    | 1.5       | NIL    | 483    | 100 | 0.6 | 64            | 75            | NIL |
| 16. Canal water<br>(Near to Phase II<br>Sump)         |        |           |        |        |     |     |               |               |     |
| <b>Muraharidoddi village</b>                          |        |           |        |        |     |     |               |               |     |
| 17. Canal water<br>(Upper reach,<br>Kummarri Nagappa) | 106    | 4.0       | NIL    | 240    | 120 | 0.8 | 44            | 100           | NIL |
| 18. Canal water<br>(DasariMurthappa)                  | 106    | 4.0       | NIL    | 216    | 120 | 0.8 | 40            | 104           | NIL |
| 19. Canal water<br>(End of D <sub>3</sub> canal)      | 101    | 5.2       | NIL    | 220    | 94  | 0.7 | 44            | 136           | NIL |
| 20. Ag.runoff<br>(Kummarri Peddanna)                  | 133    | 38        | NIL    | 151    | 124 | 0.9 | 70            | 178           | NIL |
| 21. Ag.runoff<br>(D <sub>1</sub> canal)               | 110    | 28        | NIL    | 195    | 75  | 0.5 | 90            | 130           | NIL |
| 22. Drinking waterwell                                | 89     | 4.1       | NIL    | 201    | 120 | 0.7 | 10            | 120           | NIL |
| <b>Gudaballur village</b>                             |        |           |        |        |     |     |               |               |     |
| 23. Ag.runoff   | 96     | 40        | NIL    | 194    | 88  | 0.7 | 80            | 163           | NIL |
| 24. Open well   | 48     | 5.4       | NIL    | 221    | 216 | 0.8 | 65            | 120           | NIL |
| 25. Open well   | 55     | 5.4       | NIL    | 271    | 162 | 0.7 | 41            | 120           | NIL |
| 26. Open well   | 60     | 5.5       | NIL    | 255    | 142 | 0.7 | 49            | 100           | NIL |

All the results are expressed in mg/L

TABLE- 7.1.2.2(CONTD)  
WATER QUALITY-CHEMICAL PARAMETERS  
RIVER KRISHNA

| Village Name  | Sodium | Potassium | P-Alka | M-Alka | Cl | F   | $\text{NO}_3$ | $\text{SO}_4$ | Br  |
|---|--------|-----------|--------|--------|----|-----|---------------|---------------|-----|
| <b>Muraharidoddi</b>                                  |        |           |        |        |    |     |               |               |     |
| 1. Upstream<br>( 3 km from intake point)              | 75.2   | 3.4       | NIL    | 188    | 55 | 0.8 | 17            | 134           | NIL |
| 2. Upstream<br>( 2 km from intake point)              | 74.0   | 3.2       | NIL    | 182    | 54 | 0.8 | 23            | 123           | NIL |
| 3. Upstream<br>( 1 km from intake point)              | 71.0   | 3.1       | NIL    | 175    | 55 | 0.8 | 24            | 132           | NIL |
| 4. <u>Intake point-1</u><br>( 1 km from intake point) | 72.0   | 3.0       | NIL    | 172    | 53 | 0.9 | 24            | 130           | NIL |
| 5. Down stream<br>( 1 km from intake point)           | 76     | 2.4       | NIL    | 173    | 60 | 0.8 | 24            | 123           | NIL |
| 6. Down stream<br>( 2 km from intake point)           | 83.3   | 2.1       | NIL    | 186    | 68 | 0.8 | 41            | 122           | NIL |
| 7. Down stream<br>( 3 km from intake point)           | 87.0   | 1.0       | NIL    | 190    | 90 | 0.8 | 55            | 113           | NIL |

TABLE-7.1.2.3  
WATER QUALITY-CHEMICAL PARAMETERS

| Village Name   | SAR  | RSC  | Cr     | Pb     | Hg     | B     | Fe    | Mn   | PO <sub>4</sub> |
|--|------|------|--------|--------|--------|-------|-------|------|-----------------|
| <b>Mudmal village</b>                                    |      |      |        |        |        |       |       |      |                 |
| 1. Ag.runoff<br>(V.Rangappa)                             | 3    | NIL  | <0.007 | <0.005 | <0.001 | 0.136 | 0.025 | 0.01 | 0.99            |
| 2. D <sub>2</sub> Canal                                  | 4.26 | NIL  | <0.007 | <0.005 | <0.001 | 0.128 | 0.025 | 0.01 | 0.04            |
| 3. Ag.runoff<br>(Kottapalli Sugappa)                     | 3.2  | NIL  | <0.007 | <0.005 | <0.001 | 0.136 | 0.033 | 0.01 | 0.8             |
| 4. Canal water<br>(Kothi Marappa)                        | 3.3  | NIL  | <0.007 | <0.005 | <0.001 | 0.132 | 0.029 | 0.02 | 0.03            |
| 5. Canal water<br>(Lower reach)                          | 3.3  | NIL  | <0.007 | <0.005 | <0.001 | 0.136 | 0.042 | 0.01 | 0.07            |
| 6. Canal water<br>(Middle reach)                         | 3.0  | NIL  | <0.007 | <0.005 | <0.001 | 0.139 | 0.050 | 0.01 | 0.07            |
| 7. Canal water<br>(Starting point D <sub>2</sub> Canal)  | 3.3  | NIL  | <0.007 | <0.005 | <0.001 | 0.136 | 0.040 | 0.02 | 0.09            |
| 8. Ag.runoff<br>(Kadra Anjappa)                          | 16.3 | 0.16 | <0.007 | <0.005 | <0.001 | 0.139 | 0.061 | 0.02 | 1.1             |
| 9. Canal water<br>(Upper reach)<br>End of cement lining) | 3.36 | NIL  | <0.007 | <0.005 | <0.001 | 0.139 | 0.02  | 0.01 | 0.02            |
| 10. Canal water<br>(Middle of D <sub>2</sub> Canal)      | 3.34 | NIL  | <0.007 | <0.005 | <0.001 | 0.136 | 0.02  | 0.01 | 0.04            |
| 11. Canal water<br>(End of D <sub>2</sub> canal)         | 3.72 | NIL  | <0.007 | <0.005 | <0.001 | 0.136 | 0.05  | 0.01 | 0.05            |
| 12. Tank water<br>(Surappa Tank)                         | 4.7  | 4.32 | <0.007 | <0.005 | <0.001 | 0.136 | 0.02  | 0.01 | 0.004           |

All the results are expressed in mg/L

TABLE-7.1.2.3(CONTD)  
WATER QUALITY-CHEMICAL PARAMETERS

| Village Name  | SAR  | RSC  | Cr     | Pb     | Hg     | B     | Fe   | Mn   | PO <sub>4</sub> |
|---|------|------|--------|--------|--------|-------|------|------|-----------------|
| 13.Drinking water well<br>(Near Telephone Booth)      | 4.79 | 4.14 | <0.007 | <0.005 | <0.001 | 0.136 | 0.05 | 0.01 | 0.01            |
| 14.Drinking water well                                | 4.80 | NIL  | <0.007 | <0.005 | <0.001 | 0.136 | 0.07 | 0.03 | 0.04            |
| 15.Drinking bore well                                 | 2.63 | 0.8  | <0.007 | <0.005 | <0.001 | 0.136 | 0.09 | 0.04 | 0.04            |
| 16.Canal water<br>(Near to Phase II Sump)             | 3.1  | NIL  | <0.007 | <0.005 | <0.001 | 0.136 | 0.02 | 0.01 | 0.04            |
| <b>Muraharidoddi village</b>                          |      |      |        |        |        |       |      |      |                 |
| 17. Canal water<br>(Upper reach,<br>Kummarri Nagappa) | 3.5  | NIL  | <0.007 | <0.005 | <0.001 | 0.136 | 0.05 | 0.01 | 0.04            |
| 18. Canal water<br>(Dasari Murthappa)                 | 3.35 | NIL  | <0.007 | <0.005 | <0.001 | 0.136 | 0.04 | 0.01 | 0.01            |
| 19. Canal water<br>(End of D <sub>3</sub> canal)      | 0.89 | NIL  | <0.007 | <0.005 | <0.001 | 0.136 | 0.04 | 0.02 | 0.01            |
| 20. Ag.runoff<br>(Kummarri Peddanna)                  | 4.37 | NIL  | <0.007 | <0.005 | <0.001 | 0.136 | 1.60 | 0.05 | 0.08            |
| 21. Ag.runoff<br>(D <sub>1</sub> canal)               | 3.0  | NIL  | <0.007 | <0.005 | <0.001 | 0.136 | 0.50 | 0.01 | 0.90            |
| 22. Drinking waterwell                                | 0.89 | NIL  | <0.007 | <0.005 | <0.001 | 0.136 | 0.90 | 0.01 | 0.50            |
| <b>Gudaballur village</b>                             |      |      |        |        |        |       |      |      |                 |
| 23. Ag.runoff<br>(D <sub>1</sub> canal)               | 2.81 | NIL  | <0.007 | <0.005 | <0.001 | 0.136 | 0.90 | 0.04 | 0.85            |
| 24. Open well   | 0.89 | NIL  | <0.007 | <0.005 | <0.001 | 0.136 | 0.09 | 0.02 | 0.19            |
| 25. Open well   | 0.92 | NIL  | <0.007 | <0.005 | <0.001 | 0.136 | 0.09 | 0.03 | 0.32            |
| 26. Open well   | 0.91 | NIL  | <0.007 | <0.005 | <0.001 | 0.136 | 0.08 | 0.04 | 0.40            |

All the results are expressed in mg/L

TABLE-7.1.2.3(CONTD)  
WATER QUALITY-CHEMICAL PARAMETERS  
RIVER KRISHNA

| Village Name                                | SAR  | RSC | Cr     | Pb     | Hg     | B    | Fe   | Mn   | PO <sub>4</sub> |
|---|------|-----|--------|--------|--------|------|------|------|-----------------|
| <b>Muraharidoddi</b>                        |      |     |        |        |        |      |      |      |                 |
| 1. Upstream<br>( 3 km from intake point)    | 2.25 | NIL | <0.007 | <0.005 | <0.001 | 0.04 | 0.27 | 0.04 | 0.006           |
| 2. Upstream<br>( 2 km from intake point)    | 2.65 | NIL | <0.007 | <0.005 | <0.001 | 0.08 | 0.09 | 0.03 | 0.004           |
| 3. Upstream<br>( 1 km from intake point)    | 2.81 | NIL | <0.007 | <0.005 | <0.001 | 0.06 | 0.12 | 0.05 | 0.004           |
| 4. <u>Intake point-1</u>                    | 2.23 | NIL | <0.007 | <0.005 | <0.001 | 0.11 | 0.19 | 0.04 | 0.003           |
| 5. Down stream<br>( 1 km from intake point) | 2.81 | NIL | <0.007 | <0.005 | <0.001 | 0.08 | 0.15 | 0.05 | 0.006           |
| 6. Down stream<br>( 2 km from intake point) | 2.87 | NIL | <0.007 | <0.005 | <0.001 | 0.03 | 0.11 | 0.03 | 0.005           |
| 7. Down stream<br>( 3 km from intake point) | 2.85 | NIL | <0.007 | <0.005 | <0.001 | 0.12 | 0.17 | 0.06 | 0.007           |

**TABLE-7.1.2.4**  
**WATER QUALITY-BACTERIOLOGICAL PARAMETERS**

| Village Name  | Coliforms (MPN/100 ml) |        |   |
|---|------------------------|--------|---|
|   | Total                  | E.coli |   |
| <b>Mudmal village</b>                                   |                        |        |   |
| 1. Ag.runoff<br>(V.Rangappa)                            | 437                    | 18     | 2 |
| 2. D <sub>2</sub> Canal                                 |                        | 12     | 2 |
| 3. Ag.runoff<br>(Kottapalli Sugappa)                    | 510                    | 32     | 2 |
| 4. Canal water<br>(Kothi Marappa)                       |                        | 14     | 3 |
| 5. Canal water<br>(Lower reach)                         |                        | 18     | 3 |
| 6. Canal water<br>(Middle reach)                        |                        | 16     | 3 |
| 7. Canal water<br>(Starting point D <sub>2</sub> Canal) |                        | 20     | 2 |
| 8. Ag.runoff<br>(Kadra Anjappa)                         | 483                    | 32     | 6 |
| 9. Canal water<br>(Upper reach<br>End of cement lining) |                        | 12     | 3 |
| 10. Canal water<br>(Middle of D <sub>2</sub> Canal)     |                        | 10     | 2 |
| 11. Canal water<br>(End of D <sub>2</sub> canal)        |                        | 9      | 2 |
| 12. Tank water<br>(Surappa Tank)                        |                        | 32     | 9 |

**TABLE-7.1.2.4 (CONTD)**  
**WATER QUALITY-BACTERIOLOGICAL PARAMETERS**

| Village Name   |     | Coliforms (MPN/100 ml) |        |
|--|-----|------------------------|--------|
|  |     | Total                  | E.coli |
| 13. Drinking water well<br>(Near Telephone Booth)    |     | 10                     | 2      |
| 14. Drinking water well                              |     | 9                      | 2      |
| 15. Drinking bore well                               |     | 6                      | 1      |
| 16. Canal water<br>(Near to Phase II<br>Sump)        |     | 14                     | 2      |
| <b>Muraharidoddi village</b>                         |     |                        |        |
| 17. Canal water<br>(Upper reach,<br>Kummari Nagappa) | 139 | 15                     | 3      |
| 18. Canal water<br>(DasariMurthappa)                 | 121 | 10                     | 2      |
| 19. Canal water<br>(End of D <sub>3</sub> canal)     |     | 11                     | 2      |
| 20. Ag.runoff<br>(Kummari Peddanna)                  | 144 | 12                     | 3      |
| 21. Ag.runoff<br>(D <sub>1</sub> canal)              |     | 14                     | 2      |
| 22. Drinking waterwell                               |     | 9                      | 3      |
| <b>Gudaballur village</b>                            |     |                        |        |
| 23. Ag.runoff<br>(D <sub>1</sub> canal)              |     | 32                     | 6      |
| 24. Open well  |     | 26                     | 5      |
| 25. Open well  |     | 24                     | 6      |
| 26. Open well  |     | 14                     | 3      |

**TABLE- 7.1.2.4 (CONTD)**  
**WATER QUALITY-BACTERIOLOGICAL PARAMETERS**  
**RIVER KRISHNA**

| Village Name                               | Survey No | Coliforms<br>Total | (MPN/100 ml)<br>E.coli |
|--|-----------|--------------------|------------------------|
| <b>Muraharidoddi</b>                       |           |                    |                        |
| 1. Upstream<br>(3km from intake point)     |           | 7                  | 4                      |
| 2. Upstream<br>(2 km from intake point)    |           | 10                 | 6                      |
| 3. Upstream<br>(1 km from intake point)    |           | 12                 | 5                      |
| 4. <u>Intake point-1</u>                   |           | 10                 | 3                      |
| 5. Down stream<br>(1 km from intake point) |           | 18                 | 8                      |
| 6. Down stream<br>(2 km from intake point) |           | 12                 | 5                      |
| 7. Down stream<br>(3 km from intake point) |           | 16                 | 3                      |

**TABLE-7.1.3.1**  
**WATER QUALITY-PHYSICO CHEMICAL PARAMETERS**

| Village Name               | pH   | Ec   | TSS | TDS  | Turbidity<br>(NTU) | Total<br>Hardness | Magnesium | Calcium |
|----------------------------|------|------|-----|------|--------------------|-------------------|-----------|---------|
| <b>Panchdevpad village</b> |      |      |     |      |                    |                   |           |         |
| 1.Ag.runoff                | 7.87 | 1168 | 66  | 689  | 7                  | 336               | 40        | 67.2    |
| 2.Canal water              | 7.80 | 860  | 74  | 492  | 9                  | 221               | 23.1      | 49.0    |
| 3.Tubewell                 | 7.66 | 2923 | 4   | 1638 | 2                  | 241               | 84        | 179     |
| 4.Tubewell                 | 7.50 | 2811 | 4   | 1515 | 2                  | 740               | 67        | 186     |
| 5.Canal water (middle)     | 7.77 | 1044 | 61  | 568  | 6                  | 321               | 44.1      | 62.5    |
| <b>Paspula village</b>     |      |      |     |      |                    |                   |           |         |
| 6.Ag.runoff                | 7.67 | 904  | 99  | 478  | 29                 | 204               | 14.6      | 58.0    |
| 7.Canal Water (Main)       | 7.64 | 1010 | 54  | 538  | 5                  | 310               | 41.8      | 60.5    |
| 8.Tube well                | 7.53 | 1649 | 5   | 892  | 5                  | 600               | 44.0      | 147     |
| 9.Tube well                | 7.66 | 1643 | 5   | 878  | 1                  | 588               | 42.0      | 142     |
| 10.Canal water             | 7.64 | 855  | 50  | 438  | 3                  | 196               | 21.4      | 43.2    |
| 11.Canal water             | 7.84 | 894  | 36  | 472  | 3                  | 212               | 27.0      | 40.0    |
| <b>Parevula village</b>    |      |      |     |      |                    |                   |           |         |
| 12.Tank                    | 8.23 | 834  | 30  | 502  | 4                  | 244               | 21.2      | 60.0    |

All the results are expressed in mg/L except pH, EC and Turbidity

**TABLE-7.1.3.1(CONTD)**  
**WATER QUALITY-PHYSICO CHEMICAL PARAMETERS**  
**RIVER KRISHNA**

| Village Name                                | pH   | EC<br>umhos/cm | TSS | TDS | Turbidity<br>(NTU) | Total<br>Hardness | Magnesium | Calcium |
|---|------|----------------|-----|-----|--------------------|-------------------|-----------|---------|
| <b>Paspul village</b>                       |      |                |     |     |                    |                   |           |         |
| 1. Upstream<br>( 3 km from intake point)    | 7.86 | 810            | 35  | 412 | 14                 | 201               | 15.3      | 56      |
| 2. Upstream<br>( 2 km from intake point)    | 7.87 | 812            | 36  | 402 | 12                 | 221               | 16.6      | 57      |
| 3. Upstream<br>( 1 km from intake point)    | 7.84 | 821            | 35  | 414 | 13                 | 226               | 19.0      | 59.0    |
| 4. <u>Intake point-1</u>                    | 7.83 | 804            | 35  | 421 | 14                 | 231               | 20        | 58      |
| 5. Down stream<br>( 1 km from intake point) | 7.78 | 764            | 41  | 391 | 10                 | 200               | 23.0      | 48      |
| 6. Down stream<br>(2 km from intake point)  | 7.94 | 801            | 44  | 400 | 10                 | 205               | 24.0      | 51      |
| 7. Down stream<br>(3 km from intake point)  | 7.94 | 818            | 37  | 409 | 11                 | 213               | 22.5      | 56      |

All the results are expressed in mg/L except pH, EC and Turbidity

**TABLE-7.1.3.2**  
**WATER QUALITY-CHEMICAL PARAMETERS**

| Village Name               | Sodium | Potassium | P-Alka | M-Alka | Cl  | F   | NO <sub>3</sub> | SO <sub>4</sub> | Br  |
|----------------------------|--------|-----------|--------|--------|-----|-----|-----------------|-----------------|-----|
| <b>Panchdevpad village</b> |        |           |        |        |     |     |                 |                 |     |
| 1.Ag.runoff                | 110    | 11        | NIL    | 361    | 122 | 0.8 | 95              | 31.4            | NIL |
| 2.Canal water              | 99     | 3.1       | NIL    | 243    | 81  | 0.8 | 32              | 89              | NIL |
| 3.Tubewell                 | 230    | 140       | NIL    | 498    | 476 | 0.8 | 162             | 231             | NIL |
| 4.Tubewell                 | 241    | 89        | NIL    | 431    | 500 | 0.8 | 68              | 275             | NIL |
| 5.Canal water(middle)      | 81     | 2.9       | NIL    | 300    | 57  | 0.8 | 41              | 160             | NIL |
| <b>Paspula village</b>     |        |           |        |        |     |     |                 |                 |     |
| 6.Ag.runoff                | 100    | 20        | NIL    | 210    | 84  | 0.8 | 75              | 99              | NIL |
| 7.Canal water (Main)       | 80     | 2.9       | NIL    | 228    | 120 | 0.8 | 45              | 100             | NIL |
| 8.Tube well                | 124    | 4.6       | NIL    | 376    | 240 | 0.8 | 30              | 144             | NIL |
| 9.Tube well                | 129    | 5.1       | NIL    | 360    | 231 | 0.9 | 40              | 160             | NIL |
| 10.Canal water             | 104    | 2.8       | NIL    | 207    | 84  | 0.9 | 13              | 120             | NIL |
| 11.Canal water             | 104    | 2.8       | NIL    | 205    | 82  | 0.8 | 25              | 134             | NIL |
| <b>Parevula village</b>    |        |           |        |        |     |     |                 |                 |     |
| 12.Tank                    | 92     | 10.2      | NIL    | 312    | 80  | 0.8 | 26              | 31              | NIL |

All the results are expressed in mg/L.



TABLE- 7.1.3.2(CONTD)  
WATER QUALITY-CHEMICAL PARAMETERS  
RIVER KRISHNA

| Village Name                                | Sodium | Potassium | P-Alka | M-Alka | Cl | F   | $\text{NO}_3$ | $\text{SO}_4$ | Br  |
|---|--------|-----------|--------|--------|----|-----|---------------|---------------|-----|
| <b>Paspul</b>                               |        |           |        |        |    |     |               |               |     |
| 1. Upstream<br>( 3 km from intake point)    | 98     | 3.0       | NIL    | 196    | 88 | 0.8 | 36            | 101           | NIL |
| 2. Upstream<br>( 2 km from intake point)    | 101    | 3.1       | NIL    | 197    | 83 | 0.9 | 33            | 118           | NIL |
| 3. Upstream<br>(1 km from intake point)     | 102    | 3.3       | NIL    | 199    | 89 | 0.8 | 40            | 113           | NIL |
| 4. <u>Intake point-1</u>                    | 103    | 3.0       | NIL    | 207    | 85 | 0.8 | 44            | 116           | NIL |
| 5. Down stream<br>( 1 km from intake point) | 100    | 3.0       | NIL    | 194    | 96 | 0.9 | 43            | 102           | NIL |
| 6. Down stream<br>( 2 km from intake point) | 104    | 3.0       | NIL    | 191    | 85 | 0.8 | 42            | 134           | NIL |
| 7. Down stream<br>( 3 km from intake point) | 105    | 3.7       | NIL    | 208    | 89 | 0.9 | 41            | 123           | NIL |

All the results are expressed in mg/L

TABLE-7.1.3.3  
WATER QUALITY-CHEMICAL PARAMETERS

| Village Name               | SAR  | RSC | Cr     | Pb     | Hg     | B     | Fe   | Mn    | PO <sub>4</sub> |
|----------------------------|------|-----|--------|--------|--------|-------|------|-------|-----------------|
| <b>Panchdevpad village</b> |      |     |        |        |        |       |      |       |                 |
| 1.Aq.runoff                | 2.18 | NIL | <0.007 | <0.005 | <0.001 | 0.098 | 0.12 | 0.032 | 0.8             |
| 2.Canal water              | 3.03 | NIL | <0.007 | <0.005 | <0.001 | 0.14  | 0.14 | 0.05  | 0.05            |
| 3.Tubewell                 | 3.7  | NIL | <0.007 | <0.005 | <0.001 | 0.15  | 0.20 | 0.045 | 0.12            |
| 4.Tubewell                 | 3.4  | NIL | <0.007 | <0.005 | <0.001 | 0.15  | 0.25 | 0.05  | 0.03            |
| 5.Canal water(middle)      | 3.0  | NIL | <0.007 | <0.005 | <0.001 | 0.19  | 0.25 | 0.009 | 0.006           |
| <b>Paspula village</b>     |      |     |        |        |        |       |      |       |                 |
| 6.Aq.runoff                | 3.05 | NIL | <0.007 | <0.005 | <0.001 | 0.12  | 0.14 | 0.05  | 1.10            |
| 7.Canal water (Main)       | 2.9  | NIL | <0.007 | <0.005 | <0.001 | 0.12  | 0.14 | 0.04  | 0.005           |
| 8.Tube well                | 2.2  | NIL | <0.007 | <0.005 | <0.001 | 0.009 | 0.12 | 0.039 | 0.04            |
| 9.Tube well                | 2.1  | NIL | <0.007 | <0.005 | <0.001 | 0.16  | 0.21 | 0.07  | 0.005           |
| 10.Canal water             | 3.2  | NIL | <0.007 | <0.005 | <0.001 | 0.18  | 0.14 | 0.04  | 0.007           |
| 11.Canal water             | 3.12 | NIL | <0.007 | <0.005 | <0.001 | 0.12  | 0.14 | 0.04  | 0.005           |
| <b>Parevula village</b>    |      |     |        |        |        |       |      |       |                 |
| 12.Tank                    | 2.77 | NIL | <0.007 | <0.005 | <0.001 | 0.007 | 0.64 | 0.08  | 0.009           |

All the results are expressed in mg/L

TABLE- 7.1.3.3(CONTD)  
WATER QUALITY-CHEMICAL PARAMETERS  
RIVER KRISHNA

| Village Name                                 | SAR  | RSC | Cr     | Pb     | Hg     | B    | Fe   | Mn   | PO <sub>4</sub> |
|--|------|-----|--------|--------|--------|------|------|------|-----------------|
| <b>Paspul village</b>                        |      |     |        |        |        |      |      |      |                 |
| 1. Upstream                                  | 3.0  | NIL | <0.007 | <0.005 | <0.001 | 0.15 | 0.13 | 0.04 | 0.005           |
| 2. Upstream<br>(2 km from intake point)      | 3.12 | NIL | <0.007 | <0.005 | <0.001 | 0.11 | 0.12 | 0.03 | 0.009           |
| 3. Upstream<br>( 1 km from intake point)     | 2.70 | NIL | <0.007 | <0.005 | <0.001 | 0.08 | 0.09 | 0.03 | 0.002           |
| 4. <u>Intake point-1</u>                     | 2.68 | NIL | <0.007 | <0.005 | <0.001 | 0.08 | 0.09 | 0.03 | 0.005           |
| 5. Down stream<br>( 1 km from inttake point) | 2.71 | NIL | <0.007 | <0.005 | <0.001 | 0.10 | 0.16 | 0.05 | 0.004           |
| 6. Down stream<br>( 2 km from intake point)  | 2.75 | NIL | <0.007 | <0.005 | <0.001 | 0.12 | 0.13 | 0.07 | 0.003           |
| 7. Down stream<br>( 3 km intake point)       | 2.74 | NIL | <0.007 | <0.005 | <0.001 | 0.09 | 0.12 | 0.05 | 0.001           |

All the results are expressed in mg/L

**TABLE-7.1.3.4**  
**WATER QUALITY - BACTERIOLOGICAL PARAMETERS**

| Village Name               | Coliforms (MPN/100 ml) |        |
|----------------------------|------------------------|--------|
|                            | Total                  | E.coli |
| <b>Panchdevpad village</b> |                        |        |
| 1.Ag.runoff                | 18                     | 6      |
| 2.Canal water              | 16                     | 7      |
| 3.Tubewell                 | 9                      | 2      |
| 4.Tubewell                 | 8                      | 2      |
| 5.Canal water (middle)     | 14                     | 3      |
| <b>Paspula village</b>     |                        |        |
| 6.Ag.runoff                | 16                     | 3      |
| 7.Canal water (Main)       | 17                     | 4      |
| 8.Tube well                | 6                      | 2      |
| 9.Tube well                | 8                      | 2      |
| 10.Canal water             | 10                     | 3      |
| 11.Canal water             | 14                     | 3      |
| <b>Parevula village</b>    |                        |        |
| 12.Tank                    | 22                     | 6      |

**TABLE-7.1.3.4 (CONTD)**  
**WATER QUALITY- BACTERIOLOGICAL PARAMETERE**  
**RIVER KRISHNA**

| Village Name                                | Coliforms (MPN/100 ml) |        |
|---|------------------------|--------|
|   | Total                  | E.coli |
| <b>Paspul village</b>                       |                        |        |
| 1. Upstream<br>( 3 km from intake point)    | 11                     | 5      |
| 2. Upstream<br>( 2 km from intake point)    | 12                     | 6      |
| 3. Upstream<br>( 1 km from intake point)    | 14                     | 7      |
| 4. <u>Intake point-1</u>                    | 22                     | 5      |
| 5. Down stream<br>( 1 km from intake point) | 20                     | 5      |
| 6. Down stream<br>(2 km from intake point)  | 17                     | 6      |
| 7. Down stream<br>(3 km from intake point)  | 11                     | 4      |

**TABLE-7.2.2.1**  
**WATER QUALITY-PHYSICO CHEMICAL PARAMETERS**

| Location/<br>Village                  | pH   | EC<br>umhos/cm | TSS  | TDS  | Turbidity<br>(NTU) | Total<br>Hardness | Magnesium | Calcium |
|---------------------------------------|------|----------------|------|------|--------------------|-------------------|-----------|---------|
| <b>ADUSUMALLI VILLAGE</b>             |      |                |      |      |                    |                   |           |         |
| 1. Adusumalli village tank            | 7.33 | 1267           | 83   | 930  | 9                  | 205               | 17        | 54.0    |
| 2. Drinking water sump                | 8.26 | 320            | 24   | 271  | 3                  | 55                | 2.43      | 18.0    |
| 3. Drinking water tap-Adusumalli      | 7.8  | 304            | 23   | 257  | 2.85               | 52                | 2.31      | 17.1    |
| 4. Open well - A.Milli                | 7.40 | 5140           | 28   | 3829 | 3                  | 510               | 75.33     | 80.0    |
| <b>VEERANNAIPALEM VILLAGE</b>         |      |                |      |      |                    |                   |           |         |
| 5. Drinking water tank                | 7.56 | 1687           | 83   | 1280 | 8                  | 144               | 25.3      | 16.0    |
| 6. Tank (household use)               | 7.91 | 1236           | 198  | 980  | 20                 | 180               | 18.23     | 42.0    |
| 7. Well -Veerannapalem                | 7.95 | 2980           | 102  | 2370 | 11                 | 530               | 108       | 34.0    |
| <b>RAMANAIPALEM VILLAGE</b>           |      |                |      |      |                    |                   |           |         |
| 8. Drinking water tank                | 7.4  | 1653           | 81   | 1254 | 7.8                | 141               | 24.8      | 15.7    |
| 9. Tank - domestic use                | 8.5  | 1335           | 214  | 1059 | 22.0               | 194               | 19.7      | 45.4    |
| <b>GARIAPADU</b>                      |      |                |      |      |                    |                   |           |         |
| 10.Drinking water - Tank              | 8.22 | 2690           | 94   | 2220 | 10                 | 220               | 36.5      | 28.0    |
| 11.Tank                               | 8.6  | 2932           | 103  | 2420 | 11.0               | 240               | 39.8      | 30.5    |
| <b>TIKKARAJUPALEM</b>                 |      |                |      |      |                    |                   |           |         |
| 12.Drinking water - Tank              | 7.3  | 1636           | 80   | 1242 | 7.7                | 139               | 25.4      | 15.5    |
| 13.Tank (Domestic use)                | 8.6  | 1347           | 216  | 1068 | 22.0               | 196               | 19.9      | 45.8    |
| <b>BODAVADA</b>                       |      |                |      |      |                    |                   |           |         |
| 14.Drinking water - Tap               | 8.1  | 314            | 23.5 | 266  | 2.9                | 54                | 2.4       | 17.6    |
| <b>OGERU VAGU</b>                     |      |                |      |      |                    |                   |           |         |
| 15.Ogeru vagu at Srinivasa L.I.Scheme | 8.22 | 920            | 175  | 763  | 18                 | 175               | 21.0      | 36.0    |
| 16.Ogeru vagu 1 km upstream           | 7.8  | 745            | 292  | 617  | 29.4               | 133               | 2.24      | 49.7    |
| 17.Ogeru vagu 1 km downstream         | 8.3  | 928            | 179  | 784  | 21.1               | 179               | 18.2      | 34.1    |
| 18.Agricultural Runoff - Rajupalem    | 8.07 | 930            | 126  | 745  | 12                 | 230               | 30.0      | 42.0    |

All the results are expressed in mg/Lt. except pH, EC and Turbidity

**TABLE-7.2.2.2**  
**WATER QUALITY-CHEMICAL PARAMETERS**

| Locations/<br>Village                 | Sodium | Potassium | P-Alka | M-Alka | Cl   | F   | NO <sub>3</sub> | SO <sub>4</sub> |
|---------------------------------------|--------|-----------|--------|--------|------|-----|-----------------|-----------------|
| <b>ADUSUMALLI VILLAGE</b>             |        |           |        |        |      |     |                 |                 |
| 1. Adusumalli village tank            | 140    | 80        | NIL    | 288    | 195  | 0.5 | 4.0             | 42.0            |
| 2. Drinking water sump                | 42     | 6         | NIL    | 92     | 25   | 0.6 | 0.5             | 28.0            |
| 3. Drinking water tap-Adusumalli      | 40     | 5.7       | NIL    | 87     | 24   | 0.5 | 0.4             | 26.0            |
| 4. Open well - A.Milli                | 540    | 650       | NIL    | 500    | 1035 | 0.5 | 313             | 298             |
| <b>VEERANNAIPALEM VILLAGE</b>         |        |           |        |        |      |     |                 |                 |
| 5. Drinking water tank                | 288    | 7         | NIL    | 150    | 350  | 0.5 | 7               | 131             |
| 6. Tank (household use)               | 196    | 7         | NIL    | 127    | 250  | 0.7 | 46              | 88.0            |
| 7. Well -Veerannapalem                | 400    | 96        | NIL    | 523    | 455  | 0.6 | 166             | 175             |
| <b>RAMANAIPALEM VILLAGE</b>           |        |           |        |        |      |     |                 |                 |
| 8. Drinking water tank                | 282    | 6.8       | NIL    | 147    | 343  | 0.5 | 6.8             | 128.0           |
| 9. Tank - domestic use                | 211    | 7.6       | NIL    | 137    | 270  | 0.7 | 49.0            | 95.0            |
| <b>GARIAPADU</b>                      |        |           |        |        |      |     |                 |                 |
| 10.Drinking water - Tank              | 510    | 30        | NIL    | 397    | 460  | 0.5 | 398             | 5               |
| 11.Tank                               | 556    | 32.7      | NIL    | 433    | 501  | 0.5 | 43.4            | 5.5             |
| <b>TIKKARAJUPALEM</b>                 |        |           |        |        |      |     |                 |                 |
| 12.Drinking water - Tank              | 279    | 6.8       | NIL    | 145    | 339  | 0.5 | 6.8             | 127.0           |
| 13.Tank (Domestic use)                | 214    | 7.6       | NIL    | 138    | 272  | 0.7 | 50.0            | 96.0            |
| <b>BODAVADA</b>                       |        |           |        |        |      |     |                 |                 |
| 14.Drinking water - Tap               | 41     | 5.8       | NIL    | 90     | 24   | 0.6 | 0.5             | 26.0            |
| <b>OGERU VAGU</b>                     |        |           |        |        |      |     |                 |                 |
| 15.Ogeru vagu at Srinivasa L.I.Scheme | 126    | 6.2       | NIL    | 215    | 90   | 0.5 | 48              | 78.0            |
| 16.Ogeru vagu 1 km upstream           | 106    | 5.5       | 13.8   | 196    | 69   | 0.5 | 8.3             | 62.0            |
| 17.Ogeru vagu 1 km downstream         | 129    | 6.4       | NIL    | 221    | 93   | 0.5 | 49.0            | 80.0            |
| 18.Agricultural Runoff - Rajupalem    | 116    | 12        | NIL    | 351    | 85   | 0.5 | 12              | 18.0            |

All the results are expressed in mg/Lt.

TABLE-7.2.2.3  
WATER QUALITY-CHEMICAL PARAMETERS

| Locations/<br>Village                 | SAR   | RSC  | Cr    | Pb     | Hg    | B    | Fe    | Mn    | P     |
|---------------------------------------|-------|------|-------|--------|-------|------|-------|-------|-------|
| <b>ADUSUMALLI VILLAGE</b>             |       |      |       |        |       |      |       |       |       |
| 1. Adusumalli village tank            | 4.24  | 1.66 | <0.02 | <0.005 | <0.01 | 0.25 | 0.033 | <0.01 | 0.02  |
| 2. Drinking water sump                | 2.46  | 0.74 | 0.021 | <0.005 | <0.01 | 0.07 | 0.039 | <0.01 | 0.019 |
| 3. Drinking water tap-Adusumalli      | 2.2   | 0.7  | 0.019 | <0.005 | <0.01 | 0.06 | 0.037 | <0.01 | 0.011 |
| 4. Open well - A.Milli                | 10.4  | NIL  | 0.022 | <0.005 | 0.036 | 0.20 | 0.063 | <0.01 | 0.018 |
| <b>VEERANNAIPALEM VILLAGE</b>         |       |      |       |        |       |      |       |       |       |
| 5. Drinking water tank                | 10.44 | 0.12 | 0.029 | <0.005 | <0.01 | 0.31 | 0.060 | <0.01 | 0.017 |
| 6. Tank (household use)               | 6.36  | NIL  | <0.02 | <0.005 | <0.01 | 0.17 | 0.084 | <0.01 | 3.1   |
| 7. Well -Veerannapalem                | 7.56  | NIL  | 0.023 | <0.005 | <0.01 | 0.57 | 0.060 | 0.032 | 1.5   |
| <b>RAMANAIPALEM VILLAGE</b>           |       |      |       |        |       |      |       |       |       |
| 8. Drinking water tank                | 7.4   | NIL  | <0.02 | <0.005 | <0.01 | 0.14 | 0.056 | <0.01 | 0.090 |
| 9. Tank - domestic use                | 11.2  | 0.13 | <0.21 | <0.005 | <0.01 | 0.12 | 0.046 | <0.01 | 0.12  |
| <b>GARLAPADU</b>                      |       |      |       |        |       |      |       |       |       |
| 10.Drinking water - Tank              | 14.96 | 3.54 | 0.024 | <0.005 | <0.01 | 0.41 | 0.039 | <0.01 | 0.015 |
| 11.Tank (Domestic)                    | 16.3  | 3.85 | 0.026 | <0.005 | <0.01 | 0.13 | 0.044 | <0.01 | 0.14  |
| <b>TIKKARAJUPALEM</b>                 |       |      |       |        |       |      |       |       |       |
| 12.Drinking water - Tank              | 7.3   | NIL  | <0.02 | <0.005 | <0.01 | 0.12 | 0.042 | <0.01 | 0.016 |
| 13.Tank (Domestic use)                | 10.8  | 3.61 | 0.025 | <0.005 | <0.01 | 0.11 | 0.041 | <0.01 | 0.14  |
| <b>BODAVADA</b>                       |       |      |       |        |       |      |       |       |       |
| 14.Drinking water - Tap               | 2.41  | 0.71 | <0.02 | <0.005 | <0.01 | 0.09 | 0.032 | <0.01 | 0.24  |
| <b>OGERU VAGU</b>                     |       |      |       |        |       |      |       |       |       |
| 15.Ogeru vagu at Srinivasa L.I.Scheme | 4.14  | 0.8  | <0.02 | <0.005 | <0.01 | 0.16 | 0.045 | <0.01 | 0.039 |
| 16.Ogeru vegu 1 km upstream           | 3.8   | 1.53 | 0.022 | <0.005 | <0.01 | 0.15 | 0.058 | <0.01 | 0.012 |
| 17.Ogeru vegu 1 km downstream         | 4.2   | 0.82 | <0.02 | <0.005 | <0.01 | 0.16 | 0.046 | <0.01 | 0.040 |
| 18.Agricultural Runoff - Rajupalem    | 3.33  | 2.42 | <0.02 | <0.005 | 0.07  | 0.18 | 0.075 | <0.01 | 0.151 |

All the results are expressed in mg/Lt.

**TABLE-7.2.2.4**  
**WATER QUALITY-BACTERIOLOGICAL PARAMETERS**

|                                       | Total | E.coli | Coli forms (MPN/100 ml) |
|---------------------------------------|-------|--------|-------------------------|
| <b>ADUSUMALLI VILLAGE</b>             |       |        |                         |
| 1. Adusumalli village tank            | 8     | 4      |                         |
| 2. Drinking water sump                | 4     | 3      |                         |
| 3. Drinking water tap-Adusumalli      | 4     | 3      |                         |
| 4. Open well - A.Milli                | 5     | 4      |                         |
| <b>VEERANNAPALEM VILLAGE</b>          |       |        |                         |
| 5. Drinking water tank                | 5     | 6      |                         |
| 6. Tank (household use)               | 10    | 5      |                         |
| 7. Well                               | 4     | 3      |                         |
| <b>RAMANAIPALEM VILLAGE</b>           |       |        |                         |
| 8. Drinking water tank                | 9     | 5      |                         |
| 9. Tank - domestic use                | 12    | 4      |                         |
| <b>GARLAPADU</b>                      |       |        |                         |
| 10.Drinking water - Tank              | 4     | 3      |                         |
| 11.Tank                               | 14    | 6      |                         |
| <b>TIKKARAJUPALEM</b>                 |       |        |                         |
| 12.Drinking water - Tank              | 12    | 5      |                         |
| 13.Tank (Domestic use)                | 8     | 4      |                         |
| <b>BODARADA</b>                       |       |        |                         |
| 14.Drinking water - Tap               | 4     | 3      |                         |
| <b>OGERU VAGU</b>                     |       |        |                         |
| 15.Ogeru vagu at Srinivasa L.I.Scheme | 12    | 6      |                         |
| 16.Ogeru vagu 1 km upstream           | 14    | 8      |                         |
| 17.Ogeru vagu 1 km downstream         | 15    | 9      |                         |
| 18.Agricultural Runoff - Rajupalem    | 16    | 9      |                         |

All the results are expressed in mg/Lt.

TABLE-8.1.1.1  
SOIL QUALITY-PHYSICAL CHARACTERISTICS

| S.NO. | Survey No. | Village Name           | landuse | SAND | SILT | CLAY | TEXTURE    | BULK         | HYDRAULIC            |
|-------|------------|------------------------|---------|------|------|------|------------|--------------|----------------------|
|       |            | %                      | %       | %    |      |      | DENSITY    | CONDUCTIVITY |                      |
|       |            |                        |         |      |      |      |            |              |                      |
|       |            | <b>Adavisattavaram</b> |         |      |      |      |            |              |                      |
| 1.    | 22         | Barren                 | 9       | 56   | 35   |      | silty clay | 1.31         | $3.6 \times 10^{-3}$ |
| 2.    | 44/2       | Barren                 | 64      | 17   | 19   |      | sandy loam | 1.21         | $2.3 \times 10^{-3}$ |
| 3.    | 40         | Agriculture            | 66      | 14   | 20   |      | sandy loam | 1.20         | $2.4 \times 10^{-3}$ |
| 4.    | 48         | Agriculture            | 52      | 38   | 10   |      | sandy loam | 1.18         | $1.8 \times 10^{-3}$ |
| 5.    | 69         | Agriculture            | 62      | 20   | 18   |      | sandy loam | 1.19         | $2.1 \times 10^{-3}$ |
| 6.    | 52         | Agriculture            | 61      | 17   | 22   |      | sandy loam | 1.20         | $1.9 \times 10^{-3}$ |
|       |            | <b>Punajanur</b>       |         |      |      |      |            |              |                      |
| 7.    | 69         | Agriculture            | 60      | 20   | 20   |      | sandy loam | 1.20         | $2.0 \times 10^{-3}$ |
| 8.    | 55         | Barren                 | 63      | 21   | 16   |      | sandy loam | 1.19         | $2.2 \times 10^{-3}$ |
| 9.    | 42         | Barren                 | 64      | 16   | 20   |      | sandy loam | 1.21         | $2.4 \times 10^{-3}$ |
| 10.   | 108        | Agriculture            | 56      | 39   | 5    |      | sandy loam | 1.23         | $2.7 \times 10^{-3}$ |
| 11.   | 63         | Agriculture            | 67      | 16   | 17   |      | sandy soil | 1.22         | $2.0 \times 10^{-3}$ |
| 12.   | 62         | Agriculture            | 66      | 15   | 19   |      | sandy soil | 1.21         | $2.1 \times 10^{-3}$ |
| 13.   | 30         | Agriculture            | 66      | 15   | 19   |      | sandy soil | 1.23         | $1.8 \times 10^{-4}$ |
| 14.   | 94         | Barren                 | 68      | 13   | 19   |      | sandy soil | 1.23         | $1.9 \times 10^{-4}$ |
| 15.   | 76         | Agriculture            | 51      | 25   | 24   |      | sandy loam | 1.26         | $2.0 \times 10^{-3}$ |
| 16.   | 49         | Barren                 | 65      | 26   | 9    |      | sandy soil | 1.18         | $1.7 \times 10^{-4}$ |
|       |            | <b>Kolpur</b>          |         |      |      |      |            |              |                      |
| 17.   | 7          | Barren                 | 57      | 29   | 14   |      | sandy loam | 1.19         | $1.6 \times 10^{-4}$ |
| 18.   | 229        | Agriculture            | 57      | 27   | 16   |      | sandy loam | 1.21         | $1.8 \times 10^{-4}$ |
| 19.   | 317        | Agriculture            | 59      | 23   | 18   |      | sandy loam | 1.22         | $2.0 \times 10^{-3}$ |
| 20.   | 314        | Agriculture            | 61      | 21   | 18   |      | sandy loam | 1.23         | $2.4 \times 10^{-3}$ |
| 21.   | 420        | Barren                 | 58      | 29   | 13   |      | sandy loam | 1.17         | $2.6 \times 10^{-3}$ |
| 22.   | 175        | Irrigated              | 56      | 30   | 14   |      | silty loam | 1.19         | $2.1 \times 10^{-3}$ |
| 23.   | 344        | Agriculture            | 54      | 26   | 20   |      | sandy loam | 1.21         | $2.0 \times 10^{-3}$ |
| 24.   | 325        | Agriculture            | 59      | 22   | 19   |      | sandy loam | 1.19         | $2.3 \times 10^{-3}$ |
| 25.   | 30         | Agriculture            | 61      | 22   | 17   |      | sandy loam | 1.17         | $1.8 \times 10^{-4}$ |
| 26.   | 25         | Agriculture            | 60      | 23   | 17   |      | sandy loam | 1.18         | $1.9 \times 10^{-4}$ |

TABLE-8.1.1.1(CONTD)  
SOIL QUALITY-PHYSICAL CHARACTERISTICS

| S.NO.               | Survey No. | Village Name | Landuse     | SAND | SILT | CLAY | TEXTURE    | BULK    | HYDRAULIC            |
|---------------------|------------|--------------|-------------|------|------|------|------------|---------|----------------------|
|                     |            |              |             | %    | %    | %    |            | DENSITY | CONDUCTIVITY         |
|                     |            |              |             |      |      |      |            | g/cc    | cm/sec               |
| 27.                 | 55         | Barren       | Barren      | 64   | 20   | 16   | sandy loam | 1.19    | $2.1 \times 10^{-3}$ |
| 28.                 | 67         | Barren       | Barren      | 63   | 22   | 15   | sandy loam | 1.21    | $2.0 \times 10^{-3}$ |
| 29.                 | 75         | Agriculture  | Agriculture | 58   | 26   | 16   | sandy loam | 1.30    | $2.4 \times 10^{-3}$ |
| 30                  | 301        | Agriculture  | Agriculture | 59   | 27   | 14   | sandy loam | 1.28    | $2.5 \times 10^{-3}$ |
| 31.                 | 115        | Agriculture  | Agriculture | 61   | 28   | 11   | sandy loam | 1.31    | $2.0 \times 10^{-3}$ |
| <b>Mandipalli</b>   |            |              |             |      |      |      |            |         |                      |
| 32.                 | 16         | Agriculture  | Agriculture | 62   | 29   | 9    | sandy loam | 1.12    | $2.5 \times 10^{-3}$ |
| 33.                 | 13         | Agriculture  | Agriculture | 61   | 26   | 13   | sandy loam | 1.40    | $1.6 \times 10^{-4}$ |
| 34.                 | 2          | Agriculture  | Agriculture | 64   | 22   | 14   | sandy loam | 1.13    | $2.5 \times 10^{-3}$ |
| 35.                 | 170        | Agriculture  | Agriculture | 53   | 38   | 9    | sandy loam | 1.70    | $1.7 \times 10^{-4}$ |
| 36.                 | 156        | Agriculture  | Agriculture | 54   | 34   | 12   | sandy loam | 1.19    | $2.4 \times 10^{-3}$ |
| 37.                 | 132        | Barren       | Barren      | 56   | 37   | 7    | sandy loam | 1.24    | $1.6 \times 10^{-4}$ |
| 38.                 | 54         | Barren       | Barren      | 54   | 31   | 15   | sandy loam | 1.18    | $2.0 \times 10^{-3}$ |
| 39.                 | 72         | Barren       | Barren      | 61   | 26   | 13   | sandy loam | 1.32    | $2.4 \times 10^{-3}$ |
| <b>Gajaramdoddi</b> |            |              |             |      |      |      |            |         |                      |
| 40.                 | 35         | Agriculture  | Agriculture | 62   | 24   | 14   | sandy loam | 1.21    | $2.4 \times 10^{-3}$ |
| 41.                 | 18         | Agriculture  | Agriculture | 60   | 22   | 18   | sandy loam | 1.23    | $2.6 \times 10^{-3}$ |
| 42.                 | 45         | Agriculture  | Agriculture | 54   | 32   | 14   | sandy loam | 1.18    | $1.8 \times 10^{-4}$ |
| 43.                 | 20         | Agriculture  | Agriculture | 58   | 28   | 14   | sandy loam | 1.21    | $1.5 \times 10^{-4}$ |
| 44.                 | 50         | Agriculture  | Agriculture | 61   | 26   | 13   | sandy loam | 1.28    | $2.6 \times 10^{-3}$ |
| 45.                 | 29         | Agriculture  | Agriculture | 62   | 28   | 10   | sandy loam | 1.23    | $2.1 \times 10^{-3}$ |
| 46.                 | 21         | Agriculture  | Agriculture | 58   | 26   | 16   | sandy loam | 1.19    | $2.2 \times 10^{-3}$ |
| 47.                 | 69         | Barren       | Barren      | 62   | 24   | 14   | sandy loam | 1.17    | $2.3 \times 10^{-3}$ |
| 48.                 | 76         | Barren       | Barren      | 59   | 25   | 16   | sandy loam | 1.16    | $2.0 \times 10^{-3}$ |
| 49.                 | 98         | Barren       | Barren      | 61   | 24   | 15   | sandy loam | 1.18    | $2.3 \times 10^{-3}$ |
| 50.                 | 18         | Agriculture  | Agriculture | 62   | 21   | 17   | sandy loam | 1.19    | $2.2 \times 10^{-3}$ |

TABLE-8.1.1.2  
SOIL QUALITY-PHYSICO-CHEMICAL CHARACTERISTICS

S.No.Village Name

| S.No.                  | Village Name | Survey No   | Landuse | pH   | EC    | CEC  | ESP | Ca  | Mg  | Na | K   | S  | Fe | Mn  | Cu  | Zn  | Mo  | B |
|------------------------|--------------|-------------|---------|------|-------|------|-----|-----|-----|----|-----|----|----|-----|-----|-----|-----|---|
| <b>Adavisattavaram</b> |              |             |         |      |       |      |     |     |     |    |     |    |    |     |     |     |     |   |
| 1.                     | 22           | Barren      | 6.2     | 0.11 | 4.50  | 24.1 | 75  | 17  | 25  | 33 | 0.9 | 15 | 9  | 1.0 | 1.4 | 0.3 | 1.3 |   |
| 2.                     | 44/2         | Barren      | 7.4     | 0.10 | 4.21  | 28.8 | 67  | 18  | 28  | 23 | 0.7 | 12 | 9  | 1.0 | 1.2 | 0.2 | 1.2 |   |
| 3.                     | 40           | Agriculture | 7.1     | 0.12 | 4.48  | 27.8 | 82  | 19  | 31  | 26 | 0.5 | 12 | 7  | 1.2 | 1.0 | 0.2 | 1.0 |   |
| 8.                     | 48           | Agriculture | 7.0     | 0.13 | 4.28  | 27.4 | 74  | 17  | 27  | 22 | 0.7 | 10 | 5  | 1.0 | 1.0 | 0.1 | 1.0 |   |
| 5.                     | 69           | Agriculture | 6.5     | 0.28 | 4.22  | 26.7 | 87  | 12  | 26  | 17 | 0.6 | 8  | 6  | 1.4 | 1.3 | 0.2 | 1.2 |   |
| 6.                     | 52           | Agriculture | 6.8     | 0.23 | 3.97  | 24.0 | 76  | 16  | 22  | 18 | 0.7 | 10 | 4  | 1.3 | 1.2 | 0.1 | 1.1 |   |
| <b>Punjanur</b>        |              |             |         |      |       |      |     |     |     |    |     |    |    |     |     |     |     |   |
| 7.                     | 69           | Agriculture | 7.7     | 0.26 | 4.44  | 26.3 | 78  | 23  | 27  | 15 | 0.9 | 12 | 6  | 1.3 | 1.0 | 0.2 | 1.0 |   |
| 8.                     | 55           | Barren      | 7.9     | 0.22 | 4.29  | 27.1 | 76  | 26  | 28  | 12 | 0.7 | 18 | 5  | 1.0 | 1.0 | 0.6 | 1.3 |   |
| 9.                     | 42           | Barren      | 7.2     | 0.17 | 5.14  | 26.2 | 87  | 29  | 31  | 17 | 0.9 | 19 | 6  | 1.7 | 1.3 | 0.7 | 1.5 |   |
| 10.                    | 108          | Agriculture | 7.2     | 0.23 | 8.99  | 35.7 | 123 | 56  | 74  | 16 | 1.4 | 21 | 5  | 1.9 | 1.8 | 0.6 | 1.5 |   |
| 11.                    | 63           | Agriculture | 7.3     | 0.27 | 6.98  | 28.6 | 98  | 50  | 46  | 19 | 1.8 | 23 | 6  | 2.2 | 1.0 | 0.9 | 1.8 |   |
| 12.                    | 62           | Agriculture | 8.0     | 0.32 | 11.20 | 34.5 | 145 | 76  | 89  | 23 | 2.0 | 32 | 8  | 2.0 | 1.5 | 1.0 | 1.4 |   |
| 13.                    | 30           | Agriculture | 7.7     | 0.28 | 9.50  | 40.2 | 97  | 68  | 88  | 18 | 2.0 | 27 | 6  | 2.0 | 1.4 | 1.0 | 1.0 |   |
| 14.                    | 94           | Barren      | 7.9     | 0.16 | 6.28  | 31.1 | 67  | 56  | 45  | 14 | 1.4 | 22 | 5  | 2.0 | 1.6 | 0.7 | 1.0 |   |
| 15.                    | 76           | Agriculture | 7.2     | 0.32 | 8.04  | 29.2 | 78  | 23  | 54  | 12 | 1.0 | 15 | 6  | 1.7 | 1.2 | 0.9 | 1.0 |   |
| 16.                    | 49           | Barren      | 8.0     | 0.28 | 8.35  | 34.3 | 90  | 72  | 66  | 11 | 1.4 | 9  | 4  | 1.7 | 1.0 | 0.7 | 0.9 |   |
| <b>Kolpur</b>          |              |             |         |      |       |      |     |     |     |    |     |    |    |     |     |     |     |   |
| 17.                    | 7            | Barren      | 8.0     | 0.27 | 7.99  | 36.4 | 102 | 56  | 67  | 9  | 0.6 | 7  | 4  | 1.6 | 1.0 | 0.6 | 0.8 |   |
| 18.                    | 229          | Agriculture | 8.0     | 0.34 | 16.23 | 44.5 | 223 | 78  | 167 | 10 | 0.9 | 12 | 9  | 2.7 | 1.9 | 0.9 | 1.2 |   |
| 19.                    | 317          | Agriculture | 8.0     | 0.28 | 15.10 | 44.6 | 201 | 76  | 155 | 9  | 0.9 | 13 | 6  | 2.9 | 1.9 | 1.6 | 1.5 |   |
| 20.                    | 314          | Agriculture | 7.6     | 0.31 | 14.00 | 44.7 | 178 | 75  | 145 | 10 | 0.7 | 10 | 6  | 2.0 | 1.6 | 1.6 | 1.7 |   |
| 21.                    | 420          | Barren      | 7.5     | 0.26 | 12.70 | 41.9 | 165 | 74  | 123 | 9  | 0.9 | 11 | 7  | 2.1 | 1.6 | 1.9 | 1.8 |   |
| 22.                    | 175          | Irrigated   | 7.3     | 0.31 | 13.40 | 35.2 | 201 | 83  | 109 | 11 | 0.7 | 13 | 8  | 2.6 | 1.8 | 2.7 | 2.8 |   |
| 23.                    | 344          | Agriculture | 7.0     | 0.34 | 16.10 | 33.6 | 245 | 101 | 125 | 17 | 1.6 | 16 | 9  | 2.8 | 2.3 | 2.9 | 1.4 |   |
| 24.                    | 325          | Agriculture | 7.3     | 0.26 | 11.40 | 33.3 | 156 | 78  | 88  | 21 | 2.9 | 18 | 10 | 2.5 | 2.6 | 3.2 | 1.7 |   |
| 25.                    | 30           | Agriculture | 7.4     | 0.31 | 16.60 | 31.3 | 223 | 132 | 120 | 17 | 2.1 | 15 | 7  | 2.0 | 2.1 | 3.1 | 1.4 |   |
| 26.                    | 25           | Agriculture | 7.8     | 0.26 | 13.80 | 34.4 | 178 | 106 | 110 | 12 | 2.0 | 12 | 8  | 2.1 | 2.1 | 2.7 | 1.2 |   |

All parametres are expressed in mg/100 gm except pH, Ec (m.mhos), CEC (meq/100G), ESP (%)

TABLE-8.1.1.2(CONTD)  
SOIL QUALITY-PHYSICO-CHEMICAL CHARACTERISTICS

Village Name

| Survey No           | Landuse         | pH  | EC   | CEC  | ESP  | Ca  | Mg | Na  | K  | S   | Fe | Mn | Cu  | Zn  | Mo  | B   |
|---------------------|-----------------|-----|------|------|------|-----|----|-----|----|-----|----|----|-----|-----|-----|-----|
| 27.                 | 55 Barren       | 6.9 | 0.27 | 14.2 | 37.5 | 255 | 45 | 123 | 27 | 0.9 | 23 | 15 | 1.9 | 2.1 | 0.9 | 2.0 |
| 28.                 | 67 Barren       | 6.8 | 0.23 | 11.8 | 37.0 | 221 | 34 | 101 | 21 | 0.6 | 18 | 12 | 1.7 | 2.0 | 0.8 | 1.5 |
| 29.                 | 75 Agriculture  | 6.9 | 0.22 | 11.2 | 37.8 | 201 | 36 | 98  | 20 | 0.7 | 21 | 16 | 1.9 | 2.0 | 1.0 | 1.3 |
| 30.                 | 301 Agriculture | 7.1 | 0.19 | 12.0 | 44.2 | 178 | 43 | 123 | 21 | 0.9 | 23 | 13 | 1.6 | 2.0 | 1.3 | 1.6 |
| 31.                 | 115 Agriculture | 7.4 | 0.20 | 13.2 | 44.0 | 189 | 51 | 134 | 23 | 1.2 | 24 | 14 | 1.7 | 2.9 | 1.0 | 1.8 |
| <b>Mandipelli</b>   |                 |     |      |      |      |     |    |     |    |     |    |    |     |     |     |     |
| 32.                 | 16 Agriculture  | 6.6 | 0.32 | 16.7 | 37.6 | 278 | 67 | 145 | 30 | 0.9 | 22 | 16 | 1.9 | 2.6 | 1.5 | 1.4 |
| 33.                 | 13 Agriculture  | 7.6 | 0.29 | 17.6 | 38.3 | 290 | 72 | 156 | 28 | 0.8 | 21 | 15 | 1.8 | 2.2 | 1.0 | 1.2 |
| 34.                 | 2 Agriculture   | 7.1 | 0.26 | 13.0 | 43.8 | 178 | 56 | 132 | 24 | 0.7 | 18 | 12 | 1.7 | 2.0 | 1.3 | 1.0 |
| 35.                 | 170 Agriculture | 6.9 | 0.34 | 13.7 | 45.9 | 245 | 78 | 145 | 23 | 0.9 | 17 | 12 | 2.3 | 2.2 | 1.8 | 1.8 |
| 36.                 | 156 Agriculture | 6.4 | 0.41 | 20.4 | 35.5 | 345 | 98 | 167 | 21 | 1.2 | 18 | 12 | 2.2 | 2.0 | 1.2 | 1.4 |
| 37.                 | 132 Barren      | 6.5 | 0.39 | 19.2 | 40.1 | 321 | 78 | 178 | 12 | 1.8 | 16 | 16 | 2.2 | 2.1 | 1.4 | 1.3 |
| 38.                 | 54 Barren       | 6.7 | 0.32 | 18.7 | 36.2 | 332 | 76 | 156 | 21 | 1.5 | 13 | 13 | 2.3 | 2.0 | 1.2 | 1.5 |
| 39.                 | 72 Barren       | 7.4 | 0.27 | 15.7 | 40.1 | 267 | 56 | 145 | 17 | 1.3 | 12 | 12 | 2.0 | 2.0 | 1.7 | 1.2 |
| <b>Gajaramoddli</b> |                 |     |      |      |      |     |    |     |    |     |    |    |     |     |     |     |
| 40.                 | 35 Agriculture  | 7.5 | 0.21 | 13.7 | 45.7 | 212 | 45 | 145 | 16 | 1.0 | 10 | 10 | 2.1 | 2.1 | 1.9 | 1.3 |
| 41.                 | 18 Agriculture  | 7.9 | 0.54 | 28.1 | 35.7 | 564 | 87 | 231 | 17 | 2.9 | 17 | 18 | 2.1 | 2.0 | 1.9 | 1.8 |
| 42.                 | 45 Agriculture  | 6.6 | 0.34 | 21.2 | 40.3 | 342 | 89 | 198 | 17 | 2.9 | 21 | 18 | 2.2 | 2.0 | 1.9 | 1.8 |
| 43.                 | 20 Agriculture  | 6.9 | 0.30 | 18.3 | 39.5 | 301 | 78 | 167 | 15 | 2.8 | 21 | 16 | 2.1 | 2.0 | 1.8 | 1.5 |
| 44.                 | 50 Agriculture  | 6.9 | 0.28 | 12.1 | 39.4 | 278 | 76 | 156 | 13 | 2.6 | 18 | 17 | 2.1 | 1.8 | 1.6 | 1.8 |
| 45.                 | 29 Agriculture  | 7.2 | 0.26 | 18.2 | 41.8 | 267 | 87 | 176 | 15 | 2.0 | 16 | 14 | 2.0 | 1.2 | 1.2 | 1.5 |
| 46.                 | 21 Agriculture  | 7.1 | 0.32 | 19.0 | 40.0 | 332 | 68 | 176 | 14 | 2.0 | 14 | 13 | 1.9 | 1.0 | 1.9 | 1.5 |
| 47.                 | 69 Barren       | 6.6 | 0.27 | 18.5 | 46.5 | 287 | 56 | 198 | 17 | 2.0 | 14 | 14 | 1.7 | 1.9 | 1.9 | 1.6 |
| 48.                 | 76 Barren       | 6.9 | 0.26 | 17.0 | 45.4 | 267 | 54 | 178 | 16 | 2.5 | 12 | 13 | 1.4 | 1.0 | 1.9 | 1.3 |
| 49.                 | 98 Barren       | 7.2 | 0.24 | 11.9 | 56.7 | 134 | 35 | 156 | 15 | 2.1 | 10 | 12 | 1.2 | 2.1 | 1.9 | 1.2 |
| 50.                 | 18 Agriculture  | 7.2 | 0.27 | 12.3 | 51.1 | 176 | 32 | 145 | 12 | 2.0 | 12 | 10 | 1.0 | 2.0 | 2.3 | 1.0 |

All parametres are expressed in mg/100 gm except pH,EC (m.mhos),CEC (meq/100G), ESP (%)

TABLE-8.1.1.3  
SOIL QUALITY-BIOLOGICAL CHARACTERSTICS

| S.NO.                  | Village Name | Land use    | Organic matter % | Total Heterotrophic count/gm | Total fungal count/gm | Actinomycetes bacteria/gm | Nitrogen fix. bacteria/gm | Nitrifying bacteria/gm |
|------------------------|--------------|-------------|------------------|------------------------------|-----------------------|---------------------------|---------------------------|------------------------|
| <b>Survey No</b>       |              |             |                  |                              |                       |                           |                           |                        |
| <b>Adavisattavaram</b> |              |             |                  |                              |                       |                           |                           |                        |
| 1.                     | 22           | Barren      | 0.3              | $68 \times 10^4$             | $40 \times 10^3$      | $30 \times 10^3$          | 2800                      | 1200                   |
| 2.                     | 44/2         | Barren      | 0.3              | $69 \times 10^4$             | $45 \times 10^2$      | $31 \times 10^2$          | 2900                      | 1300                   |
| 3.                     | 40           | Agriculture | 0.5              | $10 \times 10^5$             | $51 \times 10^2$      | $32 \times 10^2$          | 3100                      | 1300                   |
| 4.                     | 48           | Agriculture | 0.4              | $12 \times 10^5$             | $53 \times 10^3$      | $33 \times 10^4$          | 3200                      | 1200                   |
| 5.                     | 69           | Agriculture | 0.4              | $72 \times 10^4$             | $45 \times 10^2$      | $39 \times 10^2$          | 3300                      | 1200                   |
| 6.                     | 52           | Agriculture | 0.4              | $79 \times 10^4$             | $55 \times 10^2$      | $41 \times 10^2$          | 3500                      | 1300                   |
| <b>Punajanur</b>       |              |             |                  |                              |                       |                           |                           |                        |
| 7.                     | 69           | Agriculture | 0.3              | $87 \times 10^4$             | $49 \times 10^2$      | $36 \times 10^2$          | 3000                      | 1200                   |
| 8.                     | 55           | Barren      | 0.3              | $56 \times 10^4$             | $43 \times 10^2$      | $26 \times 10^2$          | 2200                      | 900                    |
| 9.                     | 42           | Barren      | 0.3              | $45 \times 10^4$             | $32 \times 10^2$      | $25 \times 10^2$          | 2000                      | 800                    |
| 10.                    | 108          | Agriculture | 0.4              | $72 \times 10^4$             | $85 \times 10^2$      | $38 \times 10^2$          | 3000                      | 1300                   |
| 11.                    | 63           | Agriculture | 0.4              | $89 \times 10^4$             | $67 \times 10^3$      | $47 \times 10^2$          | 4000                      | 1600                   |
| 12.                    | 62           | Agriculture | 0.4              | $91 \times 10^4$             | $71 \times 10^3$      | $51 \times 10^2$          | 3100                      | 1700                   |
| 13.                    | 30           | Agriculture | 0.4              | $75 \times 10^4$             | $41 \times 10^3$      | $33 \times 10^2$          | 2800                      | 1300                   |
| 14.                    | 94           | Barren      | 0.3              | $45 \times 10^4$             | $26 \times 10^2$      | $26 \times 10^2$          | 2100                      | 900                    |
| 15.                    | 76           | Agriculture | 0.4              | $50 \times 10^4$             | $41 \times 10^3$      | $31 \times 10^2$          | 2900                      | 1200                   |
| 16.                    | 49           | Barren      | 0.3              | $51 \times 10^4$             | $43 \times 10^2$      | $26 \times 10^2$          | 2300                      | 700                    |
| <b>Kolpur</b>          |              |             |                  |                              |                       |                           |                           |                        |
| 17.                    | 7            | Barren      | 0.3              | $69 \times 10^4$             | $42 \times 10^2$      | $32 \times 10^2$          | 2800                      | 1100                   |
| 18.                    | 229          | Agriculture | 0.4              | $72 \times 10^4$             | $49 \times 10^2$      | $37 \times 10^2$          | 2000                      | 1200                   |
| 19.                    | 317          | Agriculture | 0.4              | $68 \times 10^4$             | $41 \times 10^2$      | $36 \times 10^2$          | 3000                      | 1000                   |
| 20.                    | 314          | Agriculture | 0.4              | $78 \times 10^4$             | $49 \times 10^2$      | $42 \times 10^2$          | 2200                      | 900                    |
| 21.                    | 420          | Barren      | 0.3              | $58 \times 10^4$             | $36 \times 10^2$      | $32 \times 10^2$          | 2100                      | 700                    |
| 22.                    | 175          | Irrigated   | 0.5              | $89 \times 10^4$             | $64 \times 10^4$      | $43 \times 10^3$          | 3200                      | 1600                   |
| 23.                    | 344          | Agriculture | 0.4              | $71 \times 10^4$             | $55 \times 10^3$      | $35 \times 10^3$          | 3200                      | 1400                   |
| 24.                    | 325          | Agriculture | 0.4              | $73 \times 10^4$             | $44 \times 10^2$      | $33 \times 10^2$          | 3000                      | 1200                   |
| 25.                    | 30           | Agriculture | 0.4              | $73 \times 10^4$             | $42 \times 10^2$      | $37 \times 10^2$          | 3400                      | 1400                   |
| 26.                    | 25           | Agriculture | 0.4              | $71 \times 10^4$             | $41 \times 10^2$      | $33 \times 10^2$          | 3000                      | 1400                   |

TABLE-8.1.1.3(CONTD)  
SOIL QUALITY-BIOLOGICAL CHARACTERISTICS

| S.NO.               | Village Name | Land use    | Organic matter<br>Survey No | Total Heterotrophic<br>mg/100 gm | Total fungal<br>count/gm | Actinomycetes<br>count/gm | Nitrogen fix.<br>bacteria/gm | Nitrifying<br>bacteria/gm |
|---------------------|--------------|-------------|-----------------------------|----------------------------------|--------------------------|---------------------------|------------------------------|---------------------------|
| 27.                 | 55           | Barren      | 0.3                         | $68 \times 10^4$                 | $40 \times 10^2$         | $30 \times 10^2$          | 2800                         | 1200                      |
| 28.                 | 67           | Barren      | 0.3                         | $67 \times 10^4$                 | $36 \times 10^2$         | $25 \times 10^2$          | 2200                         | 1000                      |
| 29.                 | 75           | Agriculture | 0.4                         | $77 \times 10^4$                 | $49 \times 10^3$         | $31 \times 10^2$          | 3400                         | 1400                      |
| 30.                 | 301          | Agriculture | 0.4                         | $71 \times 10^4$                 | $41 \times 10^3$         | $32 \times 10^2$          | 2400                         | 1200                      |
| 31.                 | 115          | Agriculture | 0.5                         | $81 \times 10^4$                 | $47 \times 10^3$         | $37 \times 10^2$          | 2600                         | 1000                      |
| <b>Mandipalli</b>   |              |             |                             |                                  |                          |                           |                              |                           |
| 32.                 | 16           | Agriculture | 0.4                         | $68 \times 10^4$                 | $45 \times 10^2$         | $30 \times 10^2$          | 2700                         | 1100                      |
| 33.                 | 13           | Agriculture | 0.3                         | $76 \times 10^4$                 | $43 \times 10^2$         | $31 \times 10^2$          | 2900                         | 1100                      |
| 34.                 | 2            | Agriculture | 0.4                         | $81 \times 10^4$                 | $476 \times 10^2$        | $45 \times 10^2$          | 3500                         | 1700                      |
| 35.                 | 170          | Agriculture | 0.5                         | $68 \times 10^4$                 | $46 \times 10^2$         | $32 \times 10^2$          | 2100                         | 1100                      |
| 36.                 | 156          | Agriculture | 0.4                         | $68 \times 10^4$                 | $45 \times 10^2$         | $38 \times 10^2$          | 2300                         | 1200                      |
| 37.                 | 132          | Barren      | 0.3                         | $68 \times 10^4$                 | $26 \times 10^2$         | $24 \times 10^2$          | 2200                         | 200                       |
| 38.                 | 54           | Barren      | 0.3                         | $55 \times 10^4$                 | $29 \times 10^2$         | $27 \times 10^2$          | 2500                         | 500                       |
| 39.                 | 72           | Barren      | 0.3                         | $71 \times 10^4$                 | $31 \times 10^2$         | $32 \times 10^2$          | 1800                         | 700                       |
| <b>Gajaramdoddi</b> |              |             |                             |                                  |                          |                           |                              |                           |
| 40.                 | 35           | Agriculture | 0.4                         | $68 \times 10^4$                 | $44 \times 10^3$         | $35 \times 10^2$          | 2600                         | 1300                      |
| 41.                 | 18           | Agriculture | 0.4                         | $72 \times 10^4$                 | $45 \times 10^2$         | $37 \times 10^2$          | 2800                         | 1200                      |
| 42.                 | 45           | Agriculture | 0.4                         | $68 \times 10^4$                 | $37 \times 10^2$         | $31 \times 10^2$          | 3000                         | 1000                      |
| 43.                 | 20           | Agriculture | 0.4                         | $67 \times 10^4$                 | $34 \times 10^2$         | $27 \times 10^2$          | 3100                         | 600                       |
| 44.                 | 50           | Agriculture | 0.4                         | $98 \times 10^4$                 | $467 \times 10^2$        | $45 \times 10^2$          | 4000                         | 1200                      |
| 45.                 | 29           | Agriculture | 0.3                         | $78 \times 10^4$                 | $46 \times 10^2$         | $39 \times 10^2$          | 3800                         | 1600                      |
| 46.                 | 21           | Agriculture | 0.4                         | $74 \times 10^4$                 | $44 \times 10^2$         | $33 \times 10^2$          | 2500                         | 1200                      |
| 47.                 | 69           | Barren      | 0.3                         | $55 \times 10^4$                 | $32 \times 10^2$         | $24 \times 10^2$          | 2200                         | 200                       |
| 48.                 | 76           | Barren      | 0.3                         | $61 \times 10^4$                 | $34 \times 10^3$         | $23 \times 10^2$          | 1200                         | 500                       |
| 49.                 | 98           | Barren      | 0.3                         | $45 \times 10^4$                 | $25 \times 10^2$         | $12 \times 10^2$          | 1000                         | 200                       |
| 50.                 | 18           | Agriculture | 0.4                         | $87 \times 10^4$                 | $49 \times 10^4$         | $38 \times 10^3$          | 2800                         | 700                       |

**TABLE-8.1.1.4**  
**SOIL QUALITY-EARTHWORM DENSITY & POPULATION**

| S.NO                   | Village Name<br>Survey No | landuse     | Earthworm<br>density | * Earthworm<br>population<br>0.25 M <sup>2</sup> | Elemental content |       |        |
|------------------------|---------------------------|-------------|----------------------|--|-------------------|-------|--------|
|                        |                           |             |                      |  | Pb                | Cd    | Cu     |
|                        |                           |             |                      |  | mg/100gms         |       |        |
| <b>Adavisattavaram</b> |                           |             |                      |  |                   |       |        |
| 1.                     | 22                        | Barren      | 1.9                  | 19   | <0.1              | <0.02 | <0.003 |
| 2.                     | 44/2                      | Barren      | 1.8                  | 18   | <0.1              | <0.02 | <0.003 |
| 3.                     | 40                        | Agriculture | 0.9                  | 9  | <0.1              | <0.02 | <0.003 |
| 4.                     | 48                        | Agriculture | 1.0                  | 10   | <0.1              | <0.02 | <0.003 |
| 5.                     | 69                        | Agriculture | 1.1                  | 11   | <0.1              | <0.02 | <0.003 |
| 6.                     | 52                        | Agriculture | 1.1                  | 11   | <0.1              | <0.02 | <0.003 |
| <b>Punajanur</b>       |                           |             |                      |  |                   |       |        |
| 7.                     | 69                        | Agriculture | 1.1                  | 11   | <0.1              | <0.02 | <0.003 |
| 8.                     | 55                        | Barren      | 2.0                  | 20   | <0.1              | <0.02 | <0.003 |
| 9.                     | 42                        | Barren      | 2.1                  | 21   | <0.1              | <0.02 | <0.003 |
| 10.                    | 108                       | Agriculture | 0.9                  | 9  | <0.1              | <0.02 | <0.003 |
| 11.                    | 63                        | Agriculture | 1.0                  | 10   | <0.1              | <0.02 | <0.003 |
| 12.                    | 62                        | Agriculture | 1.1                  | 11   | <0.1              | <0.02 | <0.003 |
| 13.                    | 30                        | Agriculture | 1.2                  | 12   | <0.1              | <0.02 | <0.003 |
| 14.                    | 94                        | Barren      | 1.9                  | 19   | <0.1              | <0.02 | <0.003 |
| 15.                    | 76                        | Agriculture | 1.0                  | 10   | <0.1              | <0.02 | <0.003 |
| 16.                    | 49                        | Barren      | 1.6                  | 16   | <0.1              | <0.02 | <0.003 |
| <b>Kolpur</b>          |                           |             |                      |  |                   |       |        |
| 17.                    | 7                         | Barren      | 1.9                  | 19   | <0.1              | <0.02 | <0.003 |
| 18.                    | 229                       | Agriculture | 1.1                  | 11   | <0.1              | <0.02 | <0.003 |
| 19.                    | 317                       | Agriculture | 1.2                  | 12   | <0.1              | <0.02 | <0.003 |
| 20.                    | 314                       | Agriculture | 1.3                  | 13   | <0.1              | <0.02 | <0.003 |
| 21.                    | 420                       | Barren      | 0.9                  | 9  | <0.1              | <0.02 | <0.003 |
| 22.                    | 175                       | Irrigated   | 2.1                  | 21   | <0.1              | <0.02 | <0.003 |
| 23.                    | 344                       | Agriculture | 1.0                  | 10   | <0.1              | <0.02 | <0.003 |
| 24.                    | 325                       | Agriculture | 1.1                  | 11   | <0.1              | <0.02 | <0.003 |
| 25.                    | 30                        | Agriculture | 1.2                  | 12   | <0.1              | <0.02 | <0.003 |
| 26.                    | 25                        | Agriculture | 1.2                  | 12   | <0.1              | <0.02 | <0.003 |

**TABLE-8.1.1.4 (CONTD)**  
**SOIL QUALITY-EARTHWORM DENSITY & POPULATION**

| S.NO                      | Village Name<br>Survey No | landuse     | Earthworm<br>density | *Earthworm<br>population | Elemental content |       |        |  |  |  |  |
|---------------------------|---------------------------|-------------|----------------------|--------------------------|-------------------|-------|--------|--|--|--|--|
|                           |                           |             |                      |                          | Pb                | Cd    | Cu     |  |  |  |  |
| 0.25 M <sup>2</sup> ----- |                           |             |                      |                          |                   |       |        |  |  |  |  |
| mg/100gms                 |                           |             |                      |                          |                   |       |        |  |  |  |  |
| 27.                       | 55                        | Barren      | 1.0                  | 10                       | <0.1              | <0.02 | <0.003 |  |  |  |  |
| 28.                       | 67                        | Barren      | 1.0                  | 10                       | <0.1              | <0.02 | <0.003 |  |  |  |  |
| 29.                       | 75                        | Agriculture | 0.8                  | 8                        | <0.1              | <0.02 | <0.003 |  |  |  |  |
| 30                        | 301                       | Agriculture | 0.8                  | 8                        | <0.1              | <0.02 | <0.003 |  |  |  |  |
| 31.                       | 115                       | Agriculture | 0.6                  | 6                        | <0.1              | <0.02 | <0.003 |  |  |  |  |
| <b>Mandipalli</b>         |                           |             |                      |                          |                   |       |        |  |  |  |  |
| 32.                       | 16                        | Agriculture | 0.7                  | 7                        | <0.1              | <0.02 | <0.003 |  |  |  |  |
| 33.                       | 13                        | Agriculture | 0.6                  | 6                        | <0.1              | <0.02 | <0.003 |  |  |  |  |
| 34.                       | 2                         | Agriculture | 0.7                  | 7                        | <0.1              | <0.02 | <0.003 |  |  |  |  |
| 35.                       | 170                       | Agriculture | 0.8                  | 8                        | <0.1              | <0.02 | <0.003 |  |  |  |  |
| 36.                       | 156                       | Agriculture | 0.9                  | 9                        | <0.1              | <0.02 | <0.003 |  |  |  |  |
| 37.                       | 132                       | Barren      | 1.2                  | 12                       | <0.1              | <0.02 | <0.003 |  |  |  |  |
| 38.                       | 54                        | Barren      | 1.3                  | 13                       | <0.1              | <0.02 | <0.003 |  |  |  |  |
| 39.                       | 72                        | Barren      | 1.4                  | 14                       | <0.1              | <0.02 | <0.003 |  |  |  |  |
| <b>Gajaramdoddi</b>       |                           |             |                      |                          |                   |       |        |  |  |  |  |
| 40.                       | 35                        | Agriculture | 0.9                  | 9                        | <0.1              | <0.02 | <0.003 |  |  |  |  |
| 41.                       | 18                        | Agriculture | 1.0                  | 10                       | <0.1              | <0.02 | <0.003 |  |  |  |  |
| 42.                       | 45                        | Agriculture | 0.9                  | 9                        | <0.1              | <0.02 | <0.003 |  |  |  |  |
| 43.                       | 20                        | Agriculture | 0.8                  | 8                        | <0.1              | <0.02 | <0.003 |  |  |  |  |
| 44.                       | 50                        | Agriculture | 0.8                  | 8                        | <0.1              | <0.02 | <0.003 |  |  |  |  |
| 45.                       | 29                        | Agriculture | 0.9                  | 9                        | <0.1              | <0.02 | <0.003 |  |  |  |  |
| 46.                       | 21                        | Agriculture | 1.1                  | 11                       | <0.1              | <0.02 | <0.003 |  |  |  |  |
| 47.                       | 69                        | Barren      | 1.4                  | 14                       | <0.1              | <0.02 | <0.003 |  |  |  |  |
| 48.                       | 76                        | Barren      | 1.3                  | 13                       | <0.1              | <0.02 | <0.003 |  |  |  |  |
| 49.                       | 98                        | Barren      | 1.2                  | 12                       | <0.1              | <0.02 | <0.003 |  |  |  |  |
| 50.                       | 18                        | Agriculture | 0.9                  | 9                        | <0.1              | <0.02 | <0.003 |  |  |  |  |

TABLE-8.1.1.5  
SOIL QUALITY-PESTICIDE RESIDUES

| S.NO.                  | Village Name | Landuse     | BHC     | BHC     | Lindane | Heptachlor | Aldrin | Heptachloro<br>epoxide | pDDE   | pDDT   | pDDO   | ppDDT  |
|------------------------|--------------|-------------|---------|---------|---------|------------|--------|------------------------|--------|--------|--------|--------|
|                        |              | Survey No   |         |         |         |            |        |                        |        |        |        |        |
| <b>Adavisattavaram</b> |              |             |         |         |         |            |        |                        |        |        |        |        |
| 1. 22                  |              | Barren      | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0001                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 2. 44/2                |              | Barren      | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0001                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 3. 40                  |              | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0002 | 0.0003                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 4. 48                  |              | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0002 | 0.0001                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 5. 69                  |              | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0002                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 6. 52                  |              | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0003 | 0.0001                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| <b>Punajanur</b>       |              |             |         |         |         |            |        |                        |        |        |        |        |
| 7. 69                  |              | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0001                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 8. 55                  |              | Barren      | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0002                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 9. 42                  |              | Barren      | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0001                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 10. 108                |              | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0002                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 11. 63                 |              | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0002 | 0.0001                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 12. 62                 |              | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0003                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 13. 30                 |              | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0003 | 0.0001                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 14. 94                 |              | Barren      | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0002                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 15. 76                 |              | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0002 | 0.0001                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 16. 49                 |              | Barren      | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0003                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| <b>Kolpur</b>          |              |             |         |         |         |            |        |                        |        |        |        |        |
| 17. 7                  |              | Barren      | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0001                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 18. 229                |              | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0001                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 19. 317                |              | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0002 | 0.0004                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 20. 314                |              | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0004 | 0.0001                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 21. 420                |              | Barren      | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0003                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 22. 175                |              | Irrigated   | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0002                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 23. 344                |              | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0004 | 0.0001                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 24. 325                |              | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0002 | 0.0001                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 25. 30                 |              | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0003                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 26. 25                 |              | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0003 | 0.0003                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |

All results are expressed in mg/100 gm

TABLE-8.1.1.5(CONTD)  
SOIL QUALITY-PESTICIDE RESIDUES

| S.NO.               | Village Name | Landuse     | BHC     | BHC     | Lindane | Heptachlor | Aldrin | Heptachloro<br>epoxide | pDDE   | pDDT   | pDDD   | pDDOT  |
|---------------------|--------------|-------------|---------|---------|---------|------------|--------|------------------------|--------|--------|--------|--------|
|                     |              | Survey No   |         |         |         |            |        |                        |        |        |        |        |
| 27.                 | 55           | Barren      | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0001                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 28.                 | 67           | Barren      | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0002                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 29.                 | 75           | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0002                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 30.                 | 301          | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0002 | 0.0002                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 31.                 | 115          | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0002 | 0.0001                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| <b>Mandipalli</b>   |              |             |         |         |         |            |        |                        |        |        |        |        |
| 32.                 | 16           | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0002                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 33.                 | 13           | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0002 | 0.0001                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 34.                 | 2            | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0002 | 0.0002                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 35.                 | 170          | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0003                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 36.                 | 156          | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0003 | 0.0001                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 37.                 | 132          | Barren      | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0002                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 38.                 | 54           | Barren      | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0004 | 0.0001                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 39.                 | 72           | Barren      | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0003                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| <b>Gajaramdoddi</b> |              |             |         |         |         |            |        |                        |        |        |        |        |
| 40.                 | 35           | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0001                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 41.                 | 18           | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0004                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 42.                 | 45           | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0003 | 0.0001                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 43.                 | 20           | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0003                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 44.                 | 50           | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0002 | 0.0001                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 45.                 | 29           | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0002                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 46.                 | 21           | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0004 | 0.0001                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 47.                 | 69           | Barren      | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0003                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 48.                 | 76           | Barren      | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0001                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 49.                 | 98           | Barren      | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0003 | 0.0002                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 50.                 | 18           | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0001                 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |

All results are expressed in mg/100 gm

**TABLE-8.1.1.6**  
**SOIL QUALITY-SOIL NUTRIENTS**

| S.NO.                  | Village Name | Survey No | landuse     | N   | P <sub>2</sub> O <sub>5</sub> | K <sub>2</sub> O |
|------------------------|--------------|-----------|-------------|-----|-------------------------------|------------------|
| (KG/HECTARE)           |              |           |             |     |                               |                  |
| <b>Adavisattavaram</b> |              |           |             |     |                               |                  |
| 1.                     | 22           |           | Barren      | 223 | 9                             | 220              |
| 2.                     | 44/2         |           | Barren      | 238 | 10                            | 234              |
| 3.                     | 40           |           | Agriculture | 518 | 16                            | 310              |
| 4.                     | 48           |           | Agriculture | 325 | 18                            | 341              |
| 5.                     | 69           |           | Agriculture | 330 | 21                            | 336              |
| 6.                     | 52           |           | Agriculture | 323 | 21                            | 416              |
| 7.                     | 69           |           | Agriculture | 395 | 18                            | 456              |
| 8.                     | 55           |           | Barren      | 223 | 9                             | 210              |
| 9.                     | 42           |           | Barren      | 293 | 11                            | 222              |
| 10.                    | 108          |           | Agriculture | 374 | 23                            | 315              |
| 11.                    | 63           |           | Agriculture | 378 | 23                            | 436              |
| 12.                    | 62           |           | Agriculture | 346 | 19                            | 348              |
| 13.                    | 30           |           | Agriculture | 334 | 19                            | 421              |
| 14.                    | 94           |           | Barren      | 236 | 08                            | 226              |
| 15.                    | 76           |           | Agriculture | 323 | 23                            | 421              |
| 16.                    | 49           |           | Barren      | 236 | 12                            | 251              |
| <b>Kolpur</b>          |              |           |             |     |                               |                  |
| 17.                    | 7            |           | Barren      | 410 | 13                            | 220              |
| 18.                    | 229          |           | Agriculture | 378 | 24                            | 416              |
| 19.                    | 317          |           | Agriculture | 391 | 24                            | 436              |
| 20.                    | 314          |           | Agriculture | 336 | 19                            | 520              |
| 21.                    | 420          |           | Barren      | 293 | 13                            | 261              |
| 22.                    | 175          |           | Irrigated   | 506 | 32                            | 612              |
| 23.                    | 344          |           | Agriculture | 391 | 23                            | 421              |
| 24.                    | 325          |           | Agriculture | 361 | 28                            | 435              |
| 25.                    | 30           |           | Agriculture | 310 | 22                            | 426              |
| 26.                    | 25           |           | Agriculture | 395 | 23                            | 435              |

**TABLE-8.1.1.6 (CONTD)**  
**SOIL QUALITY-SOIL NUTRIENTS**

| S.NO.               | Village Name | Survey No   | landuse | N  | P <sub>2</sub> O <sub>5</sub> | K <sub>2</sub> O |
|---------------------|--------------|-------------|---------|----|-------------------------------|------------------|
| (KG/HECTARE)        |              |             |         |    |                               |                  |
| 27.                 | 55           | Barren      | 276     | 10 | 220                           |                  |
| 28.                 | 67           | Barren      | 206     | 13 | 243                           |                  |
| 29.                 | 75           | Agriculture | 349     | 26 | 381                           |                  |
| 30                  | 301          | Agriculture | 378     | 27 | 384                           |                  |
| 31.                 | 115          | Agriculture | 306     | 23 | 421                           |                  |
| <b>Mandipalli</b>   |              |             |         |    |                               |                  |
| 32.                 | 16           | Agriculture | 359     | 24 | 458                           |                  |
| 33.                 | 13           | Agriculture | 319     | 24 | 452                           |                  |
| 34.                 | 2            | Agriculture | 306     | 29 | 384                           |                  |
| 35.                 | 170          | Agriculture | 332     | 36 | 415                           |                  |
| 36.                 | 156          | Agriculture | 315     | 25 | 351                           |                  |
| 37.                 | 132          | Barren      | 241     | 14 | 224                           |                  |
| 38.                 | 54           | Barren      | 215     | 12 | 224                           |                  |
| 39.                 | 72           | Barren      | 389     | 13 | 256                           |                  |
| <b>Gajaramdoddi</b> |              |             |         |    |                               |                  |
| 40.                 | 35           | Agriculture | 374     | 23 | 319                           |                  |
| 41.                 | 18           | Agriculture | 341     | 24 | 421                           |                  |
| 42.                 | 45           | Agriculture | 355     | 26 | 401                           |                  |
| 43.                 | 20           | Agriculture | 355     | 23 | 415                           |                  |
| 44.                 | 50           | Agriculture | 315     | 24 | 418                           |                  |
| 45.                 | 29           | Agriculture | 346     | 25 | 451                           |                  |
| 46.                 | 21           | Agriculture | 361     | 27 | 462                           |                  |
| 47.                 | 69           | Barren      | 246     | 15 | 212                           |                  |
| 48.                 | 76           | Barren      | 219     | 12 | 246                           |                  |
| 49.                 | 98           | Barren      | 233     | 14 | 245                           |                  |
| 50.                 | 18           | Agriculture | 399     | 23 | 398                           |                  |

**TABLE 8.2.1.1 SOIL PHYSICAL CHARACTERISTICS**

| Sampling Location             | Sand | Silt | Clay | Texture    | Bulk density g/cc | Hydraulic Conductivity cm/sec |
|-------------------------------|------|------|------|------------|-------------------|-------------------------------|
|                               | %    |      |      |            |                   |                               |
| <b><u>APLIFT-Proposed</u></b> |      |      |      |            |                   |                               |
| Adusumalli                    | 9    | 32   | 59   | Clay       | 1.96              | $1.58 \times 10^{-5}$         |
| Adusumalli                    | 12   | 28   | 60   | Clay       | 2.04              | $1.62 \times 10^{-5}$         |
| Adusumalli                    | 11   | 26   | 63   | Clay       | 2.12              | $1.42 \times 10^{-5}$         |
| Adusumalli                    | 10   | 31   | 59   | Clay       | 1.94              | $1.61 \times 10^{-5}$         |
| Adusumalli                    | 12   | 34   | 54   | Clay       | 1.86              | $1.72 \times 10^{-5}$         |
| Palaparru                     | 8    | 57   | 35   | Silty Clay | 1.62              | $1.64 \times 10^{-4}$         |
| Palaparru                     | 23   | 48   | 29   | Clay loam  | 1.51              | $1.72 \times 10^{-4}$         |
| Palaparru                     | 21   | 27   | 52   | Clay       | 1.85              | $1.46 \times 10^{-4}$         |
| Palaparru                     | 16   | 27   | 57   | Clay       | 1.93              | $1.41 \times 10^{-4}$         |
| Palaparru                     | 29   | 43   | 28   | Clay loam  | 1.58              | $1.49 \times 10^{-4}$         |
| Chinnadhipadu                 | 7    | 54   | 39   | Silty clay | 1.66              | $1.62 \times 10^{-4}$         |
| Chinnadhipadu                 | 13   | 23   | 64   | Clay       | 2.14              | $1.41 \times 10^{-5}$         |
| Chinnadhipadu                 | 20   | 22   | 58   | Clay       | 1.95              | $1.54 \times 10^{-5}$         |
| Chinnadhipadu                 | 14   | 18   | 68   | Clay       | 2.18              | $1.32 \times 10^{-5}$         |
| Rajupalem(Intake)             | 19   | 52   | 29   | Silty clay | 1.52              | $1.69 \times 10^{-4}$         |

**Table 8.2.1.2**  
**Soil physico-chemical characteristics of APLIFT scheme**

| Sampling Location      | Ca      | Mg  | Na  | K   | CEC | ESP | pH   | Ec         | O.C  | N   | P <sub>2</sub> O <sub>5</sub> | K <sub>2</sub> O | Fe | S | Mn | Cu  | Zn | Mo  | B       |
|------------------------|---------|-----|-----|-----|-----|-----|------|------------|------|-----|-------------------------------|------------------|----|---|----|-----|----|-----|---------|
|                        | mg/100g |     |     | %   |     |     |      | umhos/cm % |      |     | Kg/Hectare                    |                  |    |   |    |     |    |     | mg/100g |
| <b>APLIFT-Proposed</b> |         |     |     |     |     |     |      |            |      |     |                               |                  |    |   |    |     |    |     |         |
| Adusumalli             | 460     | 120 | 230 | 90  | 45. | 22. | 8.41 | 1200       | 1.6  | 560 | 16                            | 220              | 12 | 3 | 2  | 1.0 | 12 | 0.2 | 1.2     |
| Adusumalli             | 410     | 111 | 240 | 106 | 42. | 24. | 7.97 | 1000       | 1.7  | 610 | 17                            | 260              | 14 | 4 | 3  | 1.0 | 9  | 0.2 | 1.3     |
| Adusumalli             | 520     | 115 | 250 | 114 | 49. | 22. | 8.5  | 1000       | 1.65 | 590 | 22                            | 280              | 12 | 3 | 7  | 0.4 | 11 | 0.1 | 1.2     |
| Adusumalli             | 480     | 110 | 210 | 90  | 44. | 20. | 8.11 | 1000       | 1.5  | 520 | 17                            | 220              | 15 | 6 | 4  | 0.4 | 12 | 0.2 | 1.2     |
| Adusumalli             | 410     | 100 | 190 | 98  | 39. | 20. | 8.24 | 1100       | 1.51 | 540 | 18                            | 240              | 12 | 3 | 8  | 0.9 | 10 | 0.4 | 1.3     |
| Palaparru              | 390     | 95  | 192 | 127 | 39. | 21. | 7.69 | 900        | 1.52 | 580 | 24                            | 310              | 12 | 3 | 9  | 1.2 | 9  | 0.2 | 1.3     |
| Palaparru              | 495     | 125 | 210 | 147 | 48. | 18. | 7.84 | 800        | 1.53 | 590 | 31                            | 360              | 14 | 3 | 4  | 1.3 | 12 | 0.1 | 1.2     |
| Palaparru              | 460     | 115 | 190 | 143 | 44. | 18. | 8.16 | 1200       | 1.72 | 690 | 32                            | 360              | 12 | 2 | 5  | 1.3 | 9  | 0.2 | 1.1     |
| Palaparru              | 480     | 120 | 190 | 90  | 44. | 18. | 7.93 | 900        | 1.7  | 610 | 36                            | 350              | 14 | 2 | 6  | 1.2 | 11 | 0.1 | 1.2     |
| Palaparru              | 510     | 125 | 210 | 82  | 47. | 19. | 7.96 | 900        | 1.3  | 500 | 16                            | 220              | 12 | 3 | 7  | 1.1 | 19 | 0.1 | 1.0     |
| Chinnadhipedu          | 520     | 130 | 210 | 82  | 48. | 18. | 8.13 | 1300       | 1.31 | 510 | 14                            | 200              | 11 | 5 | 7  | 1.4 | 8  | 0.1 | 1.1     |
| Chinnadhipedu          | 490     | 120 | 212 | 90  | 46. | 20. | 8.12 | 1200       | 1.33 | 510 | 14                            | 200              | 10 | 2 | 8  | 1.1 | 12 | 0.1 | 0.5     |
| Chinnadhipedu          | 400     | 97  | 190 | 98  | 38. | 21. | 8.16 | 1200       | 1.33 | 550 | 18                            | 220              | 9  | 2 | 8  | 1.1 | 11 | 0.1 | 1.5     |
| Chinnadhipedu          | 420     | 103 | 185 | 110 | 40. | 19. | 8.12 | 1100       | 1.72 | 570 | 20                            | 240              | 12 | 1 | 9  | 1.1 | 12 | 0.1 | 1.6     |
| Rajupalem(Intake)      | 425     | 105 | 190 | 116 | 41. | 20. | 8.01 | 1000       | 1.73 | 610 | 22                            | 290              | 11 | 4 | 7  | 1.1 | 13 | 0.1 | 1.7     |

**TABLE 8.2.1.3**  
**EARTHWORM DENSITY AND ELEMENTAL CONTENT**

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| Sampling Location<br>density  | Earthworm Elemental content (mg/100g) |      |       |        |
|-------------------------------|---------------------------------------|------|-------|--------|
|                               | Pb                                    | Cd   | Cu    |        |
| <b><u>APLIFT-Proposed</u></b> |                                       |      |       |        |
| Adusumalli                    | 1.2                                   | <0.1 | <0.02 | <0.003 |
| Adusumalli                    | 1.1                                   | <0.1 | <0.02 | <0.003 |
| Adusumalli                    | 0.7                                   | <0.1 | <0.02 | <0.003 |
| Adusumalli                    | 1.1                                   | <0.1 | <0.02 | <0.003 |
| Adusumalli                    | 0.9                                   | <0.1 | <0.02 | <0.003 |
| Palaparru                     | 1.2                                   | <0.1 | <0.02 | <0.003 |
| Palaparru                     | 1.1                                   | <0.1 | <0.02 | <0.003 |
| Palaparru                     | 0.8                                   | <0.1 | <0.02 | <0.003 |
| Palaparru                     | 1.4                                   | <0.1 | <0.02 | <0.003 |
| Palaparru                     | 1.1                                   | <0.1 | <0.02 | <0.003 |
| Chinnadhipadu                 | 1.0                                   | <0.1 | <0.02 | <0.003 |
| Chinnadhipadu                 | 0.9                                   | <0.1 | <0.02 | <0.003 |
| Chinnadhipadu                 | 1.1                                   | <0.1 | <0.02 | <0.003 |
| Chinnadhipadu                 | 1.0                                   | <0.1 | <0.02 | <0.003 |
| Rajupalem(Intake)             | 0.8                                   | <0.1 | <0.02 | <0.003 |

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TABLE 8.2.1.4 SOIL QUALITY-APLIFT SCHEME  
BIOLOGICAL CHARACTERISTICS

| Village                | Organic matter(%) | T.Heterotrophic count/gm | T.fungal count/gm | Actinomycetes count/gm | Nitrogen fix. bacteria/gm | Nitrifying bacteria/gm |
|------------------------|-------------------|--------------------------|-------------------|------------------------|---------------------------|------------------------|
| <u>APLIFT-Proposed</u> |                   |                          |                   |                        |                           |                        |
| Adusumalli             | 1.6               | $81 \times 10^4$         | $46 \times 10^2$  | $36 \times 10^2$       | 2500                      | 600                    |
| Adusumalli             | 1.7               | $82 \times 10^4$         | $48 \times 10^2$  | $38 \times 10^2$       | 2600                      | 800                    |
| Adusumalli             | 1.65              | $65 \times 10^4$         | $31 \times 10^2$  | $37 \times 10^2$       | 1900                      | 400                    |
| Adusumalli             | 1.5               | $62 \times 10^4$         | $30 \times 10^3$  | $32 \times 10^3$       | 1800                      | 1100                   |
| Adusumalli             | 1.51              | $63 \times 10^4$         | $31 \times 10^3$  | $33 \times 10^2$       | 1800                      | 900                    |
| Palaparru              | 1.52              | $68 \times 10^4$         | $36 \times 10^3$  | $33 \times 10^3$       | 1800                      | 600                    |
| Palaparru              | 1.53              | $69 \times 10^4$         | $35 \times 10^2$  | $34 \times 10^2$       | 2100                      | 500                    |
| Palaparru              | 1.72              | $75 \times 10^4$         | $41 \times 10^2$  | $37 \times 10^2$       | 2200                      | 600                    |
| Palaparru              | 1.7               | $69 \times 10^4$         | $34 \times 10^2$  | $37 \times 10^2$       | 2000                      | 300                    |
| Palaparru              | 1.3               | $81 \times 10^4$         | $46 \times 10^2$  | $36 \times 10^2$       | 2500                      | 600                    |
| Chinnadipedu           | 1.31              | $82 \times 10^4$         | $48 \times 10^2$  | $38 \times 10^2$       | 2600                      | 800                    |
| Chinnadipedu           | 1.33              | $65 \times 10^4$         | $31 \times 10^2$  | $37 \times 10^2$       | 1900                      | 400                    |
| Chinnadipedu           | 1.33              | $62 \times 10^4$         | $30 \times 10^3$  | $32 \times 10^3$       | 1800                      | 1100                   |
| Chinnadipedu           | 1.72              | $63 \times 10^4$         | $31 \times 10^3$  | $33 \times 10^2$       | 1800                      | 900                    |
| Rajupalem(Intake)      | 1.73              | $68 \times 10^4$         | $36 \times 10^3$  | $33 \times 10^3$       | 1800                      | 600                    |

TABLE-8.2.1.5  
SOIL QUALITY-APLIFT SCHEME  
PESTICIDE RESIDUES

| Village                | BHC     | BHC     | Lindane | Heptachlor | Aldrin | Heptachlor | pDDO   | pDDT   | pDD    | ppDDT  |
|------------------------|---------|---------|---------|------------|--------|------------|--------|--------|--------|--------|
| <u>APLIFT-Proposed</u> |         |         |         |            |        |            |        |        |        |        |
| Adusumalli             | <0.0001 | <0.0001 | <0.0001 | 0.0120     | 0.0123 | 0.0003     | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| Adusumalli             | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0143 | 0.0004     | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| Adusumalli             | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0051 | 0.0005     | 0.0001 | 0.0001 | 0.0001 | 0.0003 |
| Adusumalli             | <0.0001 | <0.0001 | <0.0001 | 0.0214     | 0.0064 | 0.0005     | 0.0002 | 0.0002 | 0.0001 | 0.0002 |
| Adusumalli             | <0.0001 | <0.0001 | <0.0001 | 0.0254     | 0.0111 | 0.0005     | 0.0002 | 0.0002 | 0.0001 | 0.0003 |
| Palaparru              | <0.0001 | <0.0001 | <0.0001 | 0.0256     | 0.0063 | 0.0005     | 0.0004 | 0.0002 | 0.0001 | 0.0002 |
| Palaparru              | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0075 | 0.0005     | 0.0004 | 0.0002 | 0.0001 | 0.0003 |
| Palaparru              | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0056 | 0.0005     | 0.0004 | 0.0003 | 0.0001 | 0.0003 |
| Palaparru              | <0.0001 | <0.0001 | <0.0001 | 0.0052     | 0.0044 | 0.0005     | 0.0004 | 0.0003 | 0.0001 | 0.0003 |
| Palaparru              | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0044 | 0.0004     | 0.0003 | 0.0003 | 0.0001 | 0.0003 |
| Chinnadipadu           | <0.0001 | <0.0001 | <0.0001 | <0.0234    | 0.0023 | 0.0003     | 0.0003 | 0.0002 | 0.0001 | 0.0003 |
| Chinnadipadu           | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0053 | 0.0002     | 0.0003 | 0.0002 | 0.0001 | 0.0003 |
| Chinnadipadu           | <0.0001 | <0.0001 | <0.0001 | <0.0421    | 0.0032 | 0.0001     | 0.0003 | 0.0002 | 0.0001 | 0.0003 |
| Chinnadipadu           | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0021 | 0.0001     | 0.0002 | 0.0002 | 0.0001 | 0.0002 |
| Rajupalem(Intake)      | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0025 | 0.0001     | 0.0002 | 0.0002 | 0.0001 | 0.0001 |

TABLE-8.1.2.1  
SOIL QUALITY-PHYSICAL CHARACTERISTICS

| S.NO.                | Village Name<br>Survey No. | landuse     | SAND | SILT | CLAY | TEXTURE         | BULK            | HYDRAULIC              |
|----------------------|----------------------------|-------------|------|------|------|-----------------|-----------------|------------------------|
|                      |                            |             | %    | %    | %    |                 | DENSITY<br>g/cc | CONDUCTIVITY<br>cm/sec |
| <b>Mudmal</b>        |                            |             |      |      |      |                 |                 |                        |
| 1.                   | 510                        | Irrigated   | 39   | 52   | 9    | silty clay loam | 1.42            | $2.82 \times 10^{-5}$  |
| 2.                   | 581                        | Agriculture | 49   | 32   | 19   | sandy loam      | 1.24            | $1.72 \times 10^{-5}$  |
| 3.                   | 558                        | Agriculture | 47   | 38   | 15   | sandy loam      | 1.21            | $1.62 \times 10^{-4}$  |
| 4.                   | 122                        | Agriculture | 48   | 36   | 16   | sandy loam      | 1.22            | $1.82 \times 10^{-4}$  |
| 5.                   | 519                        | Agriculture | 66   | 18   | 16   | sandy loam      | 1.21            | $1.92 \times 10^{-3}$  |
| 6.                   | 526                        | Agriculture | 12   | 56   | 32   | silty clay      | 1.62            | $2.6 \times 10^{-5}$   |
| 7.                   | 513                        | Agriculture | 52   | 36   | 12   | sandy loam      | 1.22            | $1.82 \times 10^{-4}$  |
| 8.                   | 519                        | Agriculture | 53   | 34   | 13   | sandy loam      | 1.23            | $1.9 \times 10^{-4}$   |
| 9.                   | 552                        | Agriculture | 56   | 32   | 12   | sandy loam      | 1.21            | $1.8 \times 10^{-4}$   |
| 10.                  | 139                        | Agriculture | 58   | 29   | 13   | silty clay      | 1.52            | $2.6 \times 10^{-5}$   |
| 11.                  | 118                        | Irrigated   | 10   | 58   | 32   | silty clay      | 1.41            | $2.82 \times 10^{54}$  |
| 12.                  | 561                        | Agriculture | 38   | 52   | 10   | sandy loam      | 1.19            | $1.6 \times 10^{-4}$   |
| 13.                  | 95                         | Agriculture | 54   | 39   | 7    | sandy loam      | 1.19            | $2.7 \times 10^{-4}$   |
| 14.                  | 93                         | Agriculture | 51   | 33   | 16   | sandy loam      | 1.21            | $1.52 \times 10^{-4}$  |
| 15.                  | 92                         | Barren      | 64   | 19   | 17   | sandy loam      | 1.18            | $1.82 \times 10^{-3}$  |
| 16.                  | 107                        | Barren      | 62   | 21   | 17   | sandy loam      | 1.19            | $1.92 \times 10^{-3}$  |
| <b>Muraharidoddi</b> |                            |             |      |      |      |                 |                 |                        |
| 17.                  | 136                        | Agriculture | 58   | 22   | 20   | sandy loam      | 1.22            | $1.22 \times 10^{-4}$  |
| 18.                  | 144                        | Agriculture | 61   | 21   | 18   | sandy loam      | 1.21            | $1.21 \times 10^{-3}$  |
| 19.                  | 142                        | Agriculture | 59   | 20   | 21   | sandy loam      | 1.23            | $1.23 \times 10^{-4}$  |
| 20.                  | 154                        | Agriculture | 62   | 18   | 20   | sandy loam      | 1.21            | $1.21 \times 10^{53}$  |
| 21.                  | 12                         | Barren      | 58   | 17   | 25   | sandy loam      | 1.28            | $1.28 \times 10^{-4}$  |
| 22.                  | 3                          | Agriculture | 36   | 52   | 12   | silty loam      | 1.21            | $1.21 \times 10^{54}$  |
| 23.                  | 519/b                      | Irrigated   | 11   | 58   | 31   | sandy loam      | 1.42            | $1.42 \times 10^{-4}$  |
| 24.                  | 524                        | Irrigaated  | 13   | 59   | 28   | silty clay      | 1.38            | $1.38 \times 10^{-5}$  |
| 25.                  | 508                        | Irrigated   | 14   | 59   | 27   | silty clay      | 1.36            | $1.36 \times 10^{-5}$  |

TABLE-8.1.2.2  
SOIL QUALITY-PHYSICO-CHEMICAL CHARACTERISTICS

| S.No.                | Village Name | Survey No   | Landscape | pH   | EC   | CEC  | ESP | Ca | Mg  | Na | K   | S  | Fe | Mn  | Cu  | Zn   | Mo  | B |
|----------------------|--------------|-------------|-----------|------|------|------|-----|----|-----|----|-----|----|----|-----|-----|------|-----|---|
| <b>Mudmal</b>        |              |             |           |      |      |      |     |    |     |    |     |    |    |     |     |      |     |   |
| 1.                   | 510          | Irrigated   | 7.3       | 0.6  | 19.5 | 49.0 | 321 | 31 | 220 | 26 | 0.8 | 32 | 28 | 2.1 | 2.1 | 0.2  | 2.0 |   |
| 2.                   | 581          | Agriculture | 8.3       | 0.6  | 18.2 | 54.9 | 280 | 21 | 229 | 19 | 0.8 | 38 | 22 | 2.0 | 2.8 | 0.3  | 2.2 |   |
| 3.                   | 558          | Agriculture | 9.5       | 0.5  | 17.5 | 53.8 | 290 | 12 | 218 | 15 | 0.9 | 29 | 26 | 1   | 2.4 | 0.1  | 2.0 |   |
| 4.                   | 122          | Agriculture | 6.9       | 0.04 | 5.0  | 21.8 | 125 | 12 | 25  | 11 | 0.5 | 21 | 6  | 0.5 | 5.2 | 0.6  | 2.0 |   |
| 5.                   | 519          | Agriculture | 8.3       | 0.04 | 6.58 | 24.4 | 175 | 11 | 37  | 6  | 1.0 | 34 | 18 | 2.2 | 3.2 | 0.6  | 2.3 |   |
| 6.                   | 526          | Agriculture | 8.4       | 0.13 | 3.46 | 36.3 | 75  | 5  | 29  | 5  | 1.0 | 12 | 7  | 0.4 | 2.4 | <0.1 | 1.9 |   |
| 7.                   | 513          | Agriculture | 7.9       | 0.13 | 5.44 | 21.5 | 100 | 24 | 27  | 31 | 0.7 | 34 | 18 | 1.0 | 2.6 | 0.3  | 3.0 |   |
| 8.                   | 519          | Agriculture | 8.3       | 0.20 | 7.53 | 21.9 | 140 | 32 | 38  | 42 | 0.5 | 43 | 20 | 2.0 | 3.4 | 0.7  | 3.0 |   |
| 9.                   | 552          | Agriculture | 8.1       | 0.71 | 7.03 | 25.3 | 162 | 15 | 41  | 23 | 0.7 | 25 | 21 | 2.0 | 3.1 | 0.9  | 2.0 |   |
| 10.                  | 139          | Agriculture | 7.5       | 0.81 | 8.16 | 18.6 | 210 | 18 | 35  | 26 | 0.8 | 21 | 18 | 2.0 | 3.1 | 0.9  | 2.2 |   |
| 11.                  | 118          | Irrigated   | 6.4       | 0.60 | 7.11 | 14.6 | 200 | 12 | 24  | 23 | 0.8 | 13 | 6  | 0.3 | 1.7 | 0.1  | 1.8 |   |
| 12.                  | 561          | Agriculture | 8.1       | 0.65 | 5.66 | 23.8 | 110 | 22 | 31  | 26 | 0.6 | 17 | 10 | 0.3 | 1.9 | 0.3  | 2.0 |   |
| 13.                  | 95           | Agriculture | 7.1       | 0.06 | 9.84 | 25.1 | 85  | 21 | 28  | 25 | 0.9 | 29 | 27 | 1.0 | 1.7 | 0.2  | 1.5 |   |
| 14.                  | 93           | Agriculture | 8.2       | 0.40 | 4.63 | 31.8 | 65  | 20 | 34  | 28 | 0.6 | 34 | 22 | 1.9 | 1.3 | 0.4  | 1.6 |   |
| 15.                  | 92           | Barren      | 7.7       | 0.11 | 4.36 | 23.9 | 75  | 16 | 24  | 31 | 1.0 | 19 | 8  | 1.0 | 2.6 | 0.1  | 1.5 |   |
| 16.                  | 107          | Barren      | 6.9       | 0.07 | 5.40 | 19.2 | 95  | 28 | 24  | 33 | 1.0 | 19 | 9  | 1.0 | 2.4 | 0.2  | 1.3 |   |
| <b>Muraharidoddi</b> |              |             |           |      |      |      |     |    |     |    |     |    |    |     |     |      |     |   |
| 17.                  | 136          | Agriculture | 8.0       | 0.09 | 3.93 | 21.0 | 58  | 23 | 19  | 28 | 0.8 | 23 | 12 | 1.5 | 2.2 | 0.3  | 1.7 |   |
| 18.                  | 144          | Agriculture | 7.3       | 0.30 | 4.61 | 19.8 | 81  | 24 | 21  | 27 | 0.3 | 21 | 17 | 2.1 | 2.0 | 0.5  | 1.9 |   |
| 19.                  | 142          | Agriculture | 8.2       | 0.40 | 3.72 | 31.2 | 45  | 21 | 27  | 22 | 0.7 | 34 | 13 | 2.8 | 2.0 | 0.8  | 1.2 |   |
| 20.                  | 154          | Agriculture | 8.8       | 0.24 | 7.76 | 43.6 | 132 | 12 | 78  | 23 | 0.9 | 67 | 45 | 1.9 | 7.8 | 3.0  | 0.9 |   |
| 21.                  | 12           | Barren      | 8.1       | 0.32 | 6.90 | 49.1 | 90  | 14 | 78  | 27 | 0.9 | 51 | 35 | 2.8 | 2.2 | 3.1  | 1.2 |   |
| 22.                  | 3            | Agriculture | 8.1       | 0.27 | 3.70 | 30.5 | 45  | 21 | 26  | 23 | 0.7 | 41 | 31 | 2.3 | 2.3 | 2.9  | 1.4 |   |
| 23.                  | 519          | Irrigated   | 8.3       | 0.22 | 6.26 | 26.3 | 120 | 12 | 38  | 44 | 0.9 | 38 | 21 | 2.0 | 3.2 | 0.7  | 3.3 |   |
| 24.                  | 524          | Irrigated   | 8.1       | 0.26 | 5.09 | 29.8 | 90  | 18 | 35  | 23 | 0.6 | 32 | 21 | 1.7 | 3.6 | 0.9  | 2.1 |   |
| 25.                  | 508          | Irrigated   | 7.4       | 0.70 | 7.88 | 30.8 | 125 | 35 | 56  | 35 | 0.8 | 34 | 23 | 2.8 | 2.2 | 0.9  | 2.9 |   |

All parameters are expressed in mg/100 gm except pH, EC (mmhos), CEC (meq/100G), ESP (%)

TABLE-8.1.2.3  
SOIL QUALITY-BIOLOGICAL CHARACTERSTICS

| S.NO.                | Village Name | Land use    | Organic matter % | Total count/gm   | Heterotrophic count/gm | Total fungal count/gm | Actinomycetes count/gm | Nitrogen fix. bacteria/gm | Nitrifying bacteria/gm |
|----------------------|--------------|-------------|------------------|------------------|------------------------|-----------------------|------------------------|---------------------------|------------------------|
| <b>Survey No</b>     |              |             |                  |                  |                        |                       |                        |                           |                        |
| <b>Mudinal</b>       |              |             |                  |                  |                        |                       |                        |                           |                        |
| 1.                   | 510          | Irrigated   | 0.5              | $72 \times 10^5$ | $40 \times 10^4$       | $32 \times 10^3$      | 3000                   | 1200                      |                        |
| 2.                   | 581          | Agriculture | 0.4              | $65 \times 10^4$ | $42 \times 10^3$       | $27 \times 10^3$      | 2600                   | 800                       |                        |
| 3.                   | 558          | Agriculture | 0.4              | $71 \times 10^4$ | $38 \times 10^4$       | $26 \times 10^3$      | 2100                   | 700                       |                        |
| 4.                   | 122          | Agriculture | 0.4              | $12 \times 10^4$ | $8 \times 10^3$        | $62 \times 10^3$      | 2100                   | 500                       |                        |
| 5.                   | 519          | Agriculture | 0.5              | $76 \times 10^4$ | $35 \times 10^3$       | $25 \times 10^3$      | 2500                   | 600                       |                        |
| 6.                   | 526          | Agriculture | 0.4              | $60 \times 10^4$ | $31 \times 10^3$       | $27 \times 10^3$      | 2600                   | 600                       |                        |
| 7.                   | 513          | Agriculture | 0.2              | $71 \times 10^4$ | $37 \times 10^3$       | $27 \times 10^3$      | 2100                   | 1000                      |                        |
| 8.                   | 519          | Agriculture | 0.4              | $87 \times 10^5$ | $45 \times 10^4$       | $36 \times 10^3$      | 2700                   | 900                       |                        |
| 9.                   | 552          | Agriculture | 0.3              | $77 \times 10^4$ | $45 \times 10^3$       | $34 \times 10^3$      | 3100                   | 1100                      |                        |
| 10.                  | 139          | Agriculture | 0.2              | $56 \times 10^5$ | $28 \times 10^3$       | $22 \times 10^3$      | 2100                   | 600                       |                        |
| 11.                  | 118          | Irrigated   | 0.5              | $86 \times 10^4$ | $56 \times 10^4$       | $34 \times 10^3$      | 3000                   | 1000                      |                        |
| 12.                  | 561          | Agriculture | 0.3              | $69 \times 10^4$ | $36 \times 10^4$       | $26 \times 10^3$      | 2200                   | 800                       |                        |
| 13.                  | 95           | Agriculture | 0.3              | $70 \times 10^4$ | $33 \times 10^3$       | $32 \times 10^3$      | 2000                   | 500                       |                        |
| 14.                  | 96           | Agriculture | 0.4              | $66 \times 10^5$ | $36 \times 10^3$       | $22 \times 10^3$      | 2700                   | 300                       |                        |
| 15.                  | 92           | Barren      | 0.3              | $45 \times 10^4$ | $26 \times 10^3$       | $17 \times 10^2$      | 1800                   | 500                       |                        |
| 16.                  | 93           | Barren      | 0.3              | $46 \times 10^3$ | $28 \times 10^3$       | $19 \times 10^2$      | 2000                   | 500                       |                        |
| <b>Muraharidoddi</b> |              |             |                  |                  |                        |                       |                        |                           |                        |
| 17.                  | 136          | Agriculture | 0.3              | $65 \times 10^5$ | $53 \times 10^3$       | $23 \times 10^3$      | 2500                   | 600                       |                        |
| 18.                  | 144          | Agriculture | 0.4              | $54 \times 10^4$ | $34 \times 10^3$       | $25 \times 10^3$      | 2200                   | 400                       |                        |
| 19.                  | 142          | Agriculture | 0.3              | $55 \times 10^4$ | $41 \times 10^3$       | $25 \times 10^3$      | 3000                   | 800                       |                        |
| 20.                  | 154          | Agriculture | 0.4              | $89 \times 10^4$ | $41 \times 10^3$       | $37 \times 10^3$      | 3000                   | 1200                      |                        |
| 21.                  | 12           | Barren      | 0.3              | $41 \times 10^4$ | $28 \times 10^3$       | $18 \times 10^3$      | 1700                   | 900                       |                        |
| 22.                  | 3            | Agriculture | 0.4              | $34 \times 10^5$ | $24 \times 10^4$       | $20 \times 10^3$      | 2200                   | 800                       |                        |
| 23.                  | 519          | Irrigated   | 0.5              | $56 \times 10^5$ | $45 \times 10^4$       | $32 \times 10^4$      | 3100                   | 1200                      |                        |
| 24.                  | 524          | Irrigated   | 0.5              | $72 \times 10^5$ | $40 \times 10^4$       | $32 \times 10^3$      | 3000                   | 1200                      |                        |
| 25.                  | 508          | Irrigated   | 0.6              | $71 \times 10^4$ | $44 \times 10^4$       | $37 \times 10^3$      | 2600                   | 1000                      |                        |

**TABLE-8.1.2.4**  
**SOIL QUALITY-EARTHWORM DENSITY & POPULATION**

| S.NO                 | Village Name<br>Survey No | landuse     | Earthworm           | Earthworm   | Elemental content |       |        |
|----------------------|---------------------------|-------------|---------------------|-------------|-------------------|-------|--------|
|                      |                           |             | density             | population* | Pb                | Cd    | Cu     |
|                      |                           |             | 0.25 M <sup>2</sup> | -----       | mg/100gms         |       |        |
| <b>Mudmal</b>        |                           |             |                     |             |                   |       |        |
| 1.                   | 510                       | Irrigated   | 4.1                 | 41          | <0.1              | <0.01 | <0.003 |
| 2.                   | 581                       | Agriculture | 2.6                 | 26          | <0.1              | <0.01 | <0.003 |
| 3.                   | 558                       | Agriculture | 2.4                 | 24          | <0.1              | <0.01 | <0.003 |
| 4.                   | 122                       | Agriculture | 2.3                 | 23          | <0.1              | <0.01 | <0.003 |
| 5.                   | 519                       | Agriculture | 2.2                 | 22          | <0.1              | <0.01 | <0.003 |
| 6.                   | 526                       | Agriculture | 2.4                 | 24          | <0.1              | <0.01 | <0.003 |
| 7.                   | 513                       | Agriculture | 2.1                 | 21          | <0.1              | <0.01 | <0.003 |
| 8.                   | 519                       | Agriculture | 2.1                 | 21          | <0.01             | <0.01 | <0.003 |
| 9.                   | 552                       | Agriculture | 2.1                 | 21          | <0.1              | <0.01 | <0.003 |
| 10.                  | 139                       | Agriculture | 2.1                 | 21          | <0.1              | <0.01 | <0.003 |
| 11.                  | 118                       | Irrigated   | 3.9                 | 39          | <0.1              | <0.01 | <0.003 |
| 12.                  | 561                       | Agriculture | 2.6                 | 26          | <0.1              | <0.01 | <0.003 |
| 13.                  | 95                        | Agriculture | 2.6                 | 26          | <0.1              | <0.01 | <0.003 |
| 14.                  | 96                        | Agriculture | 2.3                 | 23          | <0.1              | <0.01 | <0.003 |
| 15.                  | 92                        | Barren      | 3.2                 | 32          | <0.1              | <0.01 | <0.003 |
| 16.                  | 93                        | Barren      | 3.1                 | 31          | <0.1              | <0.01 | <0.003 |
| <b>Muraharidoddi</b> |                           |             |                     |             |                   |       |        |
| 17.                  | 136                       | Agriculture | 2.6                 | 26          | <0.1              | <0.01 | <0.003 |
| 18.                  | 144                       | Agriculture | 2.3                 | 23          | <0.1              | <0.01 | <0.003 |
| 19.                  | 142                       | Agriculture | 2.4                 | 24          | <0.1              | <0.01 | <0.003 |
| 20.                  | 154                       | Agriculture | 2.5                 | 25          | <0.1              | <0.01 | <0.003 |
| 21.                  | 12                        | Barren      | 3.2                 | 32          | <0.1              | <0.01 | <0.003 |
| 22.                  | 3                         | Agriculture | 2.6                 | 26          | <0.1              | <0.01 | <0.003 |
| 23.                  | 519                       | Irrigated   | 3.6                 | 36          | <0.1              | <0.01 | <0.003 |
| 24.                  | 524                       | Irrigated   | 3.9                 | 39          | <0.1              | <0.01 | <0.003 |
| 25.                  | 508                       | Irrigated   | 3.6                 | 36          | <0.1              | <0.01 | <0.003 |

TABLE-8.1.2.5  
SOIL QUALITY-PESTICIDE RESIDUES

| S.NO.                | Village Name | Landuse     | BHC     | BHC     | Lindane | Heptachlor | Aldrin  | Heptachlor | pDDE    | pDDT    | pDDD    | ppDDT   |
|----------------------|--------------|-------------|---------|---------|---------|------------|---------|------------|---------|---------|---------|---------|
|                      |              | Survey No   |         |         |         |            |         |            |         |         |         | epoxide |
| <b>Mudrial</b>       |              |             |         |         |         |            |         |            |         |         |         |         |
| 1.                   | 510          | Irrigated   | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001    | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 2.                   | 581          | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001    | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 3.                   | 558          | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001    | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 4.                   | 122          | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001    | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 5.                   | 519          | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001    | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 6.                   | 526          | Agriculture | <0.0004 | <0.0075 | <0.0100 | <0.2360    | <0.0480 | <0.0015    | <0.0240 | <0.0005 | <0.0025 | <0.1255 |
| 7.                   | 513          | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001    | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 8.                   | 519          | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001    | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 9.                   | 552          | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001    | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 10.                  | 139          | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001    | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 11.                  | 118          | Irrigated   | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001    | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 12.                  | 561          | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001    | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 13.                  | 95           | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001    | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 14.                  | 96           | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001    | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 15.                  | 92           | Barren      | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001    | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 16.                  | 93           | Barren      | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001    | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| <b>Muraharidoddi</b> |              |             |         |         |         |            |         |            |         |         |         |         |
| 17.                  | 136          | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001    | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 18.                  | 144          | Agriculture | <0.0001 | <0.0005 | <0.0001 | <0.0231    | <0.0048 | <0.0008    | <0.0005 | <0.0005 | <0.0001 | <0.1485 |
| 19.                  | 142          | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001    | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 20.                  | 154          | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001    | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 21.                  | 12           | Barren      | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001    | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 22.                  | 3            | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001    | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 23.                  | 519          | Irrigated   | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001    | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 24.                  | 524          | Irrigaated  | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001    | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 25.                  | 508          | Irrigated   | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001    | <0.0001 | <0.0001 | <0.0001 | <0.0001 |

**TABLE-8.1.2.6**  
**SOIL QUALITY-SOIL NUTRIENTS (Kg/Hect) .**

| S.NO.                | Village Name | Survey No   | landuse | N  | P <sub>2</sub> O <sub>5</sub> | K <sub>2</sub> O |
|----------------------|--------------|-------------|---------|----|-------------------------------|------------------|
| <b>Mudmal</b>        |              |             |         |    |                               |                  |
| 1.                   | 510          | Irrigated   | 524     | 56 | 616                           |                  |
| 2.                   | 581          | Agriculture | 432     | 32 | 526                           |                  |
| 3.                   | 558          | Agriculture | 457     | 33 | 533                           |                  |
| 4.                   | 122          | Agriculture | 467     | 28 | 426                           |                  |
| 5.                   | 519          | Agriculture | 456     | 26 | 486                           |                  |
| 6.                   | 526          | Agriculture | 436     | 29 | 492                           |                  |
| 7.                   | 513          | Agriculture | 437     | 34 | 456                           |                  |
| 8.                   | 519          | Agriculture | 388     | 33 | 489                           |                  |
| 9.                   | 552          | Agriculture | 387     | 39 | 452                           |                  |
| 10.                  | 139          | Agriculture | 346     | 33 | 489                           |                  |
| 11.                  | 118          | Irrigated   | 613     | 58 | 652                           |                  |
| 12.                  | 561          | Agriculture | 421     | 29 | 524                           |                  |
| 13.                  | 95           | Agriculture | 412     | 32 | 501                           |                  |
| 14.                  | 93           | Agriculture | 415     | 34 | 489                           |                  |
| 15.                  | 92           | Barren      | 323     | 12 | 296                           |                  |
| 16.                  | 107          | Barren      | 344     | 09 | 221                           |                  |
| <b>Muraharidoddi</b> |              |             |         |    |                               |                  |
| 17.                  | 136          | Agriculture | 266     | 24 | 421                           |                  |
| 18.                  | 144          | Agriculture | 366     | 28 | 425                           |                  |
| 19.                  | 142          | Agriculture | 346     | 33 | 481                           |                  |
| 20.                  | 154          | Agriculture | 354     | 36 | 491                           |                  |
| 21.                  | 12           | Barren      | 234     | 15 | 226                           |                  |
| 22.                  | 3            | Agriculture | 333     | 34 | 431                           |                  |
| 23.                  | 519          | Irrigated   | 534     | 65 | 598                           |                  |
| 24.                  | 524          | Irrigated   | 534     | 68 | 645                           |                  |
| 25.                  | 508          | Irrigated   | 612     | 53 | 625                           |                  |

TABLE- 8.1.3.1  
SOIL QUALITY-PHYSICAL CHARACTERISTICS

| S.NO.             | Survey No. | Village Name Landuse | SAND | SILT | CLAY | TEXTURE    | BULK    | HYDRAULIC            |
|-------------------|------------|----------------------|------|------|------|------------|---------|----------------------|
|                   |            |                      | %    | %    | %    |            | DENSITY | CONDUCTIVITY         |
|                   |            |                      |      |      |      |            | g/cc    | cm /sec              |
| <b>Parevula</b>   |            |                      |      |      |      |            |         |                      |
| 1.                | 140        | Agriculture          | 62   | 26   | 12   | sandy loam | 1.32    | $1.8 \times 10^{-3}$ |
| 2.                | 43         | Agriculture          | 58   | 26   | 16   | sandy loam | 1.28    | $1.6 \times 10^{-3}$ |
| 3.                | 67         | Agriculture          | 64   | 26   | 10   | sandy loam | 1.32    | $1.7 \times 10^{-3}$ |
| 4.                | 25         | Agriculture          | 63   | 28   | 9    | sandy loam | 1.32    | $1.9 \times 10^{-3}$ |
| 5.                | 43         | Agriculture          | 58   | 29   | 13   | sandy loam | 1.32    | $1.6 \times 10^{-3}$ |
| 6.                | 27         | Agriculture          | 59   | 24   | 17   | sandy loam | 1.32    | $1.6 \times 10^{-3}$ |
| 7.                | 269        | Agriculture          | 7    | 63   | 30   | silty loam | 1.83    | $1.0 \times 10^{-3}$ |
| 8.                | 60         | Barren               | 58   | 31   | 11   | sandy clay | 1.32    | $1.4 \times 10^{-3}$ |
| 9.                | 42         | Barren               | 57   | 29   | 14   | sandy loam | 1.32    | $1.4 \times 10^{-3}$ |
| <b>Pachdevpad</b> |            |                      |      |      |      |            |         |                      |
| 10.               | 42         | Agriculture          | 54   | 28   | 18   | sandy loam | 1.32    | $1.6 \times 10^{-3}$ |
| 11.               | 31         | Agriculture          | 58   | 29   | 13   | sandy loam | 1.32    | $1.7 \times 10^{-3}$ |
| 12.               | 56         | Agriculture          | 62   | 26   | 12   | sandy loam | 1.32    | $1.8 \times 10^{-3}$ |
| 13.               | 54         | Agriculture          | 59   | 24   | 17   | sandy loam | 1.32    | $1.7 \times 10^{-3}$ |
| 64.               | 47         | Barren               | 64   | 27   | 9    | sandy loam | 1.32    | $1.5 \times 10^{-3}$ |
| 15.               | 106        | Irrigated            | 38   | 51   | 11   | silty loam | 1.32    | $1.3 \times 10^{-3}$ |
| 16.               | 29         | Irrigated            | 14   | 55   | 31   | silty clay | 1.42    | $1.1 \times 10^{-3}$ |
| 17.               | 132        | Irrigated            | 18   | 65   | 17   | silty clay | 1.32    | $1.2 \times 10^{-3}$ |
| 18.               | 1          | Agriculture          | 59   | 22   | 19   | sandy loam | 1.32    | $1.6 \times 10^{-3}$ |
| 19.               | 32         | Agriculture          | 62   | 26   | 12   | sandy loam | 1.32    | $1.6 \times 10^{-3}$ |
| 20.               | 128        | Agriculture          | 61   | 22   | 17   | sandy loam | 1.32    | $1.5 \times 10^{-3}$ |
| <b>Paspul</b>     |            |                      |      |      |      |            |         |                      |
| 21.               | 145        | Irrigated            | 16   | 62   | 22   | silty clay | 1.42    | $2.4 \times 10^{-3}$ |
| 22.               | 171        | Agriculture          | 58   | 24   | 18   | sandy loam | 1.34    | $1.9 \times 10^{-3}$ |
| 23.               | 139        | Agriculture          | 59   | 25   | 16   | sandy loam | 1.33    | $1.4 \times 10^{-3}$ |
| 24.               | 106        | Irrigated            | 23   | 55   | 22   | silty clay | 1.32    | $1.4 \times 10^{-3}$ |
| 25.               | 37         | Irrigated            | 24   | 56   | 20   | silty clay | 1.32    | $1.5 \times 10^{-3}$ |

TABLE-8.1.3.2  
SOIL QUALITY-PHYSICO-CHEMICAL CHARACTERISTICS

| S.No.             | Village Name | Survey No   | landuse | pH   | EC   | CEC  | ESP    | Ca     | Mg     | Na     | K       | S       | Fe      | Mn | Cu | Zn | Mo | B |
|-------------------|--------------|-------------|---------|------|------|------|--------|--------|--------|--------|---------|---------|---------|----|----|----|----|---|
| <b>Parevula</b>   |              |             |         |      |      |      |        |        |        |        |         |         |         |    |    |    |    |   |
| 1.                | 140          | Agriculture | 6.7     | 0.11 | 12.3 | 36.6 | 241 34 | 104 16 | 0.8 22 | 11     | 1.7 1.8 | 0.3 1.7 |         |    |    |    |    |   |
| 2.                | 43           | Agriculture | 6.9     | 0.13 | 13.5 | 36.8 | 271 35 | 115 15 | 0.7 23 | 11     | 2.1 2.0 | 0.3 1.9 |         |    |    |    |    |   |
| 3.                | 67           | Agriculture | 6.9     | 0.16 | 15.9 | 42.5 | 287 39 | 156 16 | 0.7 22 | 14     | 1.9 1.9 | 0.3 1.5 |         |    |    |    |    |   |
| 4.                | 25           | Agriculture | 6.6     | 0.12 | 12.7 | 41.4 | 234 31 | 121 13 | 0.6 24 | 12     | 1.6 2.1 | 0.2 1.6 |         |    |    |    |    |   |
| 5.                | 43           | Agriculture | 6.7     | 0.11 | 13.1 | 37.6 | 255 34 | 114 17 | 0.7 24 | 16     | 2.0 1.7 | 0.2 1.7 |         |    |    |    |    |   |
| 6.                | 27           | Agriculture | 6.8     | 0.14 | 13.9 | 33.8 | 298 35 | 109 15 | 0.8 22 | 13     | 2.0 1.8 | 0.2 1.9 |         |    |    |    |    |   |
| 7.                | 269          | Agriculture | 7.1     | 0.25 | 19.1 | 37.2 | 378 45 | 164 28 | 0.6 29 | 17     | 2.1 1.7 | 0.2 2.0 |         |    |    |    |    |   |
| 8.                | 60           | Barren      |         | 6.5  | 0.12 | 12.1 | 28.6   | 221 32 | 108 25 | 0.7 25 | 13      | 2.0 1.8 | 0.2 2.0 |    |    |    |    |   |
| 9.                | 42           | Barren      |         | 6.5  | 0.12 | 12.2 | 42.7   | 206 30 | 120 24 | 0.6 22 | 12      | 1.6 1.4 | 0.2 1.6 |    |    |    |    |   |
| <b>Pachdevpad</b> |              |             |         |      |      |      |        |        |        |        |         |         |         |    |    |    |    |   |
| 10.               | 42           | Agriculture | 7.4     | 0.26 | 15.7 | 36.9 | 321 33 | 134 22 | 0.7 22 | 12     | 1.6 1.6 | 0.2 1.8 |         |    |    |    |    |   |
| 11.               | 31           | Agriculture | 7.0     | 0.22 | 14.5 | 43.2 | 256 32 | 145 22 | 0.8 23 | 15     | 2.0 2.0 | 0.3 1.7 |         |    |    |    |    |   |
| 12.               | 56           | Agriculture | 7.2     | 0.19 | 13.4 | 42.7 | 235 33 | 132 18 | 0.7 22 | 15     | 2.0 1.7 | 0.3 1.6 |         |    |    |    |    |   |
| 13.               | 54           | Agriculture | 6.7     | 0.11 | 13.9 | 34.5 | 301 30 | 111 15 | 0.6 22 | 12     | 2.0 2.0 | 0.3 1.8 |         |    |    |    |    |   |
| 14.               | 47           | Barren      |         | 6.9  | 0.12 | 14.9 | 35.7   | 300 35 | 123 27 | 0.6 28 | 17      | 2.2 1.9 | 0.2 1.9 |    |    |    |    |   |
| 15.               | 106          | Irrigated   |         | 7.0  | 0.12 | 15.6 | 36.7   | 311 37 | 132 23 | 0.5 27 | 15      | 1.9 1.8 | 0.2 1.9 |    |    |    |    |   |
| 16.               | 29           | Irrigated   |         | 7.3  | 0.16 | 17.1 | 39.0   | 332 39 | 154 23 | 0.7 25 | 15      | 1.7 1.9 | 0.3 2.0 |    |    |    |    |   |
| 17.               | 132          | Irrigated   |         | 7.7  | 0.23 | 19.3 | 34.6   | 387 56 | 154 27 | 0.8 23 | 15      | 2.0 1.9 | 0.2 2.0 |    |    |    |    |   |
| 18.               | 1            | Agriculture |         | 7.1  | 0.16 | 15.8 | 39.4   | 305 34 | 144 24 | 0.7 22 | 11      | 1.9 1.5 | 0.2 2.0 |    |    |    |    |   |
| 19.               | 32           | Agriculture |         | 7.7  | 0.32 | 18.3 | 38.9   | 335 56 | 164 21 | 0.7 26 | 16      | 1.8 1.7 | 0.2 1.8 |    |    |    |    |   |
| 20.               | 128          | Agriculture |         | 6.7  | 0.14 | 16.9 | 39.5   | 331 34 | 154 22 | 0.8 22 | 13      | 2.0 1.9 | 0.2 1.9 |    |    |    |    |   |
| <b>Paspul</b>     |              |             |         |      |      |      |        |        |        |        |         |         |         |    |    |    |    |   |
| 21.               | 145          | Irrigated   |         | 7.3  | 0.23 | 21.2 | 38.3   | 410 56 | 187 22 | 0.8 24 | 18      | 1.8 2.2 | 0.3 2.0 |    |    |    |    |   |
| 22.               | 171          | Agriculture |         | 7.3  | 0.22 | 14.3 | 31.4   | 301 45 | 104 20 | 0.7 22 | 15      | 1.9 1.9 | 0.4 1.7 |    |    |    |    |   |
| 23.               | 139          | Agriculture |         | 6.5  | 0.17 | 12.1 | 37.2   | 234 30 | 104 22 | 0.8 23 | 13      | 1.9 2.2 | 0.2 2.2 |    |    |    |    |   |
| 24.               | 106          | Irrigated   |         | 7.5  | 0.26 | 16.4 | 32.6   | 361 36 | 123 22 | 0.8 22 | 12      | 2.0 2.2 | 0.3 2.0 |    |    |    |    |   |
| 25.               | 37           | Irrigated   |         | 6.9  | 0.21 | 16.3 | 35.0   | 334 41 | 132 24 | 0.6 24 | 15      | 1.8 2.1 | 0.3 1.8 |    |    |    |    |   |

All parametres are expressed in mg/100 gm except pH, Ec (m.mhos), CEC (meq/100G), ESP (%)

TABLE-8.1.3.3  
SOIL QUALITY-BIOLOGICAL CHARACTERSTICS

| S.NO.             | Village Name | Land use    | Organic matter % | Total count/gm   | Heterotrophic count/gm | Total fungal count/gm | Actinomycetes count/gm | Nitrogen fix. bacteria/gm | Nitrifying bacteria/gm |
|-------------------|--------------|-------------|------------------|------------------|------------------------|-----------------------|------------------------|---------------------------|------------------------|
|                   | Survey No    |             |                  |                  |                        |                       |                        |                           |                        |
| <b>Parevula</b>   |              |             |                  |                  |                        |                       |                        |                           |                        |
| 1.                | 140          | Agriculture | 0.4              | $72 \times 10^4$ | $40 \times 10^3$       | $32 \times 10^3$      | 3100                   | 400                       |                        |
| 2.                | 43           | Agriculture | 0.4              | $56 \times 10^4$ | $45 \times 10^3$       | $43 \times 10^3$      | 2300                   | 400                       |                        |
| 3.                | 67           | Agriculture | 0.4              | $65 \times 10^4$ | $52 \times 10^3$       | $31 \times 10^3$      | 2700                   | 500                       |                        |
| 4.                | 25           | Agriculture | 0.4              | $87 \times 10^4$ | $45 \times 10^3$       | $33 \times 10^3$      | 2400                   | 500                       |                        |
| 5.                | 43           | Agriculture | 0.5              | $89 \times 10^4$ | $34 \times 10^3$       | $25 \times 10^2$      | 2600                   | 600                       |                        |
| 6.                | 27           | Agriculture | 0.4              | $89 \times 10^4$ | $45 \times 10^3$       | $43 \times 10^3$      | 2400                   | 500                       |                        |
| 7.                | 269          | Agriculture | 0.5              | $67 \times 10^4$ | $37 \times 10^3$       | $25 \times 10^3$      | 2400                   | 600                       |                        |
| 8.                | 60           | Barren      | 0.3              | $46 \times 10^4$ | $34 \times 10^3$       | $24 \times 10^2$      | 1200                   | 400                       |                        |
| 9.                | 42           | Barren      | 0.5              | $58 \times 10^4$ | $43 \times 10^3$       | $25 \times 10^2$      | 1400                   | 400                       |                        |
| <b>Pachdevpad</b> |              |             |                  |                  |                        |                       |                        |                           |                        |
| 10.               | 42           | Agriculture | 0.4              | $72 \times 10^4$ | $40 \times 10^3$       | $32 \times 10^3$      | 1100                   | 400                       |                        |
| 11.               | 31           | Agriculture | 0.2              | $81 \times 10^4$ | $46 \times 10^3$       | $34 \times 10^3$      | 2400                   | 500                       |                        |
| 12.               | 56           | Agriculture | 0.4              | $78 \times 10^4$ | $43 \times 10^3$       | $31 \times 10^3$      | 2300                   | 600                       |                        |
| 13.               | 54           | Agriculture | 0.4              | $72 \times 10^4$ | $43 \times 10^3$       | $33 \times 10^3$      | 2400                   | 600                       |                        |
| 14.               | 47           | Barren      | 0.2              | $56 \times 10^4$ | $34 \times 10^3$       | $21 \times 10^3$      | 2100                   | 500                       |                        |
| 15.               | 106          | Irrigated   | 0.6              | $97 \times 10^5$ | $56 \times 10^3$       | $34 \times 10^3$      | 2300                   | 500                       |                        |
| 16.               | 29           | Irrigated   | 0.5              | $67 \times 10^5$ | $34 \times 10^3$       | $23 \times 10^3$      | 2300                   | 500                       |                        |
| 17.               | 132          | Irrigated   | 0.4              | $71 \times 10^5$ | $45 \times 10^3$       | $32 \times 10^3$      | 2100                   | 600                       |                        |
| 18.               | 1            | Agriculture | 0.4              | $67 \times 10^4$ | $45 \times 10^3$       | $31 \times 10^3$      | 2400                   | 600                       |                        |
| 19.               | 32           | Agriculture | 0.3              | $63 \times 10^4$ | $41 \times 10^3$       | $21 \times 10^3$      | 1700                   | 600                       |                        |
| 20.               | 128          | Agriculture | 0.4              | $72 \times 10^4$ | $78 \times 10^3$       | $45 \times 10^3$      | 3400                   | 231                       |                        |
| <b>Paspul</b>     |              |             |                  |                  |                        |                       |                        |                           |                        |
| 21                | 145          | Irrigated   | 0.5              | $85 \times 10^5$ | $43 \times 10^3$       | $34 \times 10^3$      | 1200                   | 600                       |                        |
| 22.               | 171          | Agriculture | 0.5              | $64 \times 10^4$ | $32 \times 10^3$       | $32 \times 10^3$      | 2100                   | 500                       |                        |
| 23.               | 139          | Agriculture | 0.3              | $69 \times 10^4$ | $37 \times 10^3$       | $23 \times 10^2$      | 2300                   | 600                       |                        |
| 24.               | 106          | Irrigated   | 0.5              | $95 \times 10^5$ | $46 \times 10^3$       | $34 \times 10^3$      | 2500                   | 900                       |                        |
| 25.               | 37           | Irrigated   | 0.4              | $76 \times 10^4$ | $42 \times 10^4$       | $31 \times 10^3$      | 2400                   | 400                       |                        |

**TABLE-8.1.3.4**  
**SOIL QUALITY-EARTHWORM DENSITY & POPULATION**

| S.NO              | Village Name<br>Survey No | landuse     | Earthworm<br>density | Earthworm<br>population<br>0.25 M <sup>2</sup> | Elemental content<br>in earth worm<br>Pb Cd Cu<br>-----<br>mg/100gms |
|-------------------|---------------------------|-------------|----------------------|--|--|
| <b>Parevula</b>   |                           |             |                      |  |  |
| 1.                | 140                       | Agriculture | 2.1                  | 21   | <0.1 <0.01 <0.003  |
| 2.                | 43                        | Agriculture | 2.0                  | 20   | <0.1 <0.01 <0.003  |
| 3.                | 67                        | Agriculture | 2.4                  | 24   | <0.1 <0.01 <0.003  |
| 4.                | 25                        | Agriculture | 2.9                  | 29   | <0.1 <0.01 <0.003  |
| 5.                | 43                        | Agriculture | 2.7                  | 27   | <0.1 <0.01 <0.003  |
| 6.                | 27                        | Agriculture | 2.5                  | 25   | <0.1 <0.01 <0.003  |
| 7.                | 269                       | Agriculture | 2.0                  | 20   | <0.1 <0.01 <0.003  |
| 8.                | 60                        | Barren      | 1.7                  | 36   | <0.1 <0.01 <0.003  |
| 9.                | 42                        | Barren      | 1.5                  | 35   | <0.1 <0.01 <0.003  |
| <b>Pachdevpad</b> |                           |             |                      |  |  |
| 10.               | 42                        | Agriculture | 2.6                  | 26   | <0.1 <0.01 <0.003  |
| 11.               | 31                        | Agriculture | 2.5                  | 25   | <0.1 <0.01 <0.003  |
| 12.               | 56                        | Agriculture | 2.4                  | 24   | <0.1 <0.01 <0.003  |
| 13.               | 54                        | Agriculture | 2.0                  | 20   | <0.1 <0.01 <0.003  |
| 14.               | 47                        | Barren      | 3.6                  | 36   | <0.1 <0.01 <0.003  |
| 15.               | 106                       | Irrigated   | 4.1                  | 41   | <0.1 <0.01 <0.003  |
| 16.               | 29                        | Irrigated   | 4.4                  | 44   | <0.1 <0.01 <0.003  |
| 17.               | 132                       | Irrigated   | 4.4                  | 44   | <0.1 <0.01 <0.003  |
| 18.               | 1                         | Agriculture | 2.9                  | 29   | <0.1 <0.01 <0.003  |
| 19.               | 32                        | Agriculture | 2.6                  | 26   | <0.1 <0.01 <0.003  |
| 20.               | 128                       | Agriculture | 2.6                  | 26   | <0.1 <0.01 <0.003  |
| <b>Paspul</b>     |                           |             |                      |  |  |
| 21.               | 145                       | Irrigated   | 4.1                  | 41   | <0.1 <0.01 <0.003  |
| 22.               | 171                       | Agriculture | 2.6                  | 26   | <0.1 <0.01 <0.003  |
| 23.               | 139                       | Agriculture | 2.3                  | 23   | <0.1 <0.01 <0.003  |
| 24.               | 106                       | Irrigated   | 4.2                  | 42   | <0.1 <0.01 <0.003  |
| 25.               | 37                        | Irrigated   | 4.2                  | 42   | <0.1 <0.01 <0.003  |

TABLE-8.1.3.5  
SOIL QUALITY-PESTICIDE RESIDUES

| S.NO.             | Village Name | Landuse     | BHC     | BHC     | Lindane | Heptachlor | Aldrin  | Heptachlor epoxide | pDDE    | pDDT    | pDDD    | pDDT    |
|-------------------|--------------|-------------|---------|---------|---------|------------|---------|--------------------|---------|---------|---------|---------|
|                   |              | Survey No   |         |         |         |            |         |                    |         |         |         |         |
| <b>Parevula</b>   |              |             |         |         |         |            |         |                    |         |         |         |         |
| 1.                | 140          | Agriculture | <0.0001 | <0.0001 | <0.0001 | 0.0236     | 0.0048  | <0.0015            | 0.024   | 0.0005  | 0.0025  | 0.1000  |
| 2.                | 43           | Agriculture | <0.0001 | <0.0001 | <0.0001 | 0.0236     | <0.0001 | <0.0001            | 0.054   | 0.0005  | <0.0001 | 0.1255  |
| 3.                | 67           | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001            | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 4.                | 25           | Agriculture | <0.0001 | <0.0001 | <0.0001 | 0.0236     | <0.0001 | <0.0001            | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 5.                | 43           | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001            | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 6.                | 27           | Agriculture | <0.0001 | <0.0001 | <0.0001 | 0.0236     | <0.0001 | <0.0001            | 0.024   | <0.0001 | <0.0001 | 0.1000  |
| 7.                | 269          | Agriculture | <0.0001 | <0.0001 | <0.0001 | 0.0236     | <0.0001 | <0.0001            | 0.024   | <0.0001 | <0.0001 | 0.1255  |
| 8.                | 60           | Barren      | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001            | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 9.                | 42           | Barren      | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001            | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| <b>Pachdevped</b> |              |             |         |         |         |            |         |                    |         |         |         |         |
| 10.               | 42           | Agriculture | <0.0001 | <0.0001 | <0.0001 | 0.0236     | <0.0001 | <0.0001            | 0.024   | <0.0001 | <0.0001 | 0.1000  |
| 11.               | 31           | Agriculture | <0.0001 | <0.0001 | <0.0001 | 0.0236     | <0.0001 | <0.0001            | 0.054   | <0.0001 | <0.0001 | 0.1255  |
| 12.               | 56           | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001            | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 13.               | 54           | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001            | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 14.               | 47           | Barren      | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001            | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 15.               | 106          | Irrigated   | <0.0001 | <0.0001 | <0.0001 | 0.0236     | <0.0001 | <0.0001            | 0.054   | <0.0001 | <0.0001 | 0.1255  |
| 16.               | 29           | Irrigated   | <0.0001 | <0.0001 | <0.0001 | 0.0236     | <0.0001 | <0.0001            | 0.054   | <0.0001 | <0.0001 | <0.0540 |
| 17.               | 132          | Irrigated   | <0.0001 | <0.0001 | <0.0001 | 0.0236     | <0.0001 | <0.0001            | 0.054   | <0.0001 | <0.0001 | <0.0001 |
| 18.               | 1            | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001            | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 19.               | 32           | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001            | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 20.               | 128          | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001            | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| <b>Paspul</b>     |              |             |         |         |         |            |         |                    |         |         |         |         |
| 21.               | 145          | Irrigated   | <0.0001 | <0.0001 | <0.0001 | 0.0236     | <0.0001 | <0.0001            | 0.025   | <0.0001 | <0.0001 | <0.0001 |
| 22.               | 171          | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001            | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 23.               | 139          | Agriculture | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001            | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 24.               | 106          | Irrigated   | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001            | 0.025   | <0.0001 | <0.0001 | <0.0001 |
| 25.               | 37           | Irrigated   | <0.0001 | <0.0001 | <0.0001 | <0.0001    | <0.0001 | <0.0001            | 0.025   | <0.0001 | <0.0001 | <0.0001 |

All results are expressed in mg/100gm

**TABLE-8.1.3.6**  
**SOIL QUALITY-SOIL NUTRIENTS (KG/HECTARE)**

| S.NO.               | Village Name | Survey No | landuse     | N   | P <sub>2</sub> O <sub>5</sub> | K <sub>2</sub> O |
|---------------------|--------------|-----------|-------------|-----|-------------------------------|------------------|
| <b>Parevula</b>     |              |           |             |     |                               |                  |
| 1.                  | 140          |           | Agriculture | 334 | 23                            | 421              |
| 2.                  | 43           |           | Agriculture | 345 | 29                            | 436              |
| 3.                  | 67           |           | Agriculture | 323 | 34                            | 521              |
| 4.                  | 25           |           | Agriculture | 434 | 39                            | 431              |
| 5.                  | 43           |           | Agriculture | 467 | 33                            | 412              |
| 6.                  | 27           |           | Agriculture | 424 | 36                            | 416              |
| 7.                  | 269          |           | Agriculture | 434 | 34                            | 418              |
| 8.                  | 60           |           | Barren      | 266 | 15                            | 395              |
| 9.                  | 42           |           | Barren      | 246 | 17                            | 310              |
| <b>Panchadevpad</b> |              |           |             |     |                               |                  |
| 10.                 | 42           |           | Agriculture | 497 | 33                            | 421              |
| 11.                 | 31           |           | Agriculture | 321 | 32                            | 431              |
| 12.                 | 56           |           | Agriculture | 371 | 37                            | 441              |
| 13.                 | 54           |           | Agriculture | 345 | 45                            | 412              |
| 14.                 | 47           |           | Barren      | 235 | 12                            | 298              |
| 15.                 | 106          |           | Irrigated   | 543 | 53                            | 598              |
| 16.                 | 29           |           | Irrigated   | 543 | 58                            | 624              |
| 17.                 | 132          |           | Irrigated   | 543 | 64                            | 616              |
| 18.                 | 1            |           | Agriculture | 432 | 34                            | 498              |
| 19.                 | 32           |           | Agriculture | 432 | 36                            | 418              |
| 20.                 | 128          |           | Agriculture | 423 | 37                            | 415              |
| <b>Paspul</b>       |              |           |             |     |                               |                  |
| 21.                 | 145          |           | Irrigated   | 532 | 58                            | 498              |
| 22.                 | 171          |           | Agriculture | 432 | 39                            | 412              |
| 23.                 | 139          |           | Agriculture | 432 | 43                            | 425              |
| 24.                 | 106          |           | Irrigated   | 546 | 62                            | 565              |
| 25.                 | 37           |           | Irrigated   | 632 | 68                            | 589              |

**TABLE 8.2.2.1 SOIL PHYSICAL CHARACTERISTICS**

| Sampling Location | Sand | Silt | Clay | Texture    | Bulk density<br>g/cc | Hydraulic Conductivity<br>cm/sec |
|-------------------|------|------|------|------------|----------------------|----------------------------------|
|                   | %    |      |      |            |                      |                                  |
| <u>Existing</u>   |      |      |      |            |                      |                                  |
| Garlapadu         | 6    | 56   | 38   | Silty clay | 1.61                 | $1.61 \times 10^{-4}$            |
| Garlapadu         | 11   | 57   | 32   | Silty clay | 1.59                 | $1.72 \times 10^{-4}$            |
| Garlapadu         | 14   | 34   | 52   | Clay       | 1.84                 | $1.44 \times 10^{-4}$            |
| Veerannapalem     | 10   | 36   | 54   | Clay       | 1.86                 | $1.43 \times 10^{-4}$            |
| Veerannapalem     | 12   | 55   | 33   | Silty clay | 1.59                 | $1.76 \times 10^{-4}$            |
| Veerannapalem     | 6    | 57   | 37   | Silty clay | 1.62                 | $1.81 \times 10^{-4}$            |
| Ramanaihpalem     | 12   | 32   | 56   | Clay       | 1.92                 | $1.41 \times 10^{-5}$            |
| Ramanaihpalem     | 10   | 33   | 57   | Clay       | 1.94                 | $1.42 \times 10^{-5}$            |
| Ramanaihpalem     | 13   | 29   | 58   | Clay       | 1.96                 | $1.38 \times 10^{-5}$            |
| Adusumalle        | 14   | 54   | 32   | Silty clay | 1.54                 | $1.69 \times 10^{-4}$            |
| Adusumalle        | 15   | 52   | 33   | Silty clay | 1.55                 | $1.68 \times 10^{-4}$            |
| Tikkarajupalem    | 14   | 55   | 31   | Silty clay | 1.54                 | $1.72 \times 10^{-4}$            |
| Tikkarajupalem    | 13   | 52   | 35   | Silty clay | 1.56                 | $1.59 \times 10^{-4}$            |
| Bodavada          | 12   | 30   | 58   | Clay       | 1.95                 | $1.37 \times 10^{-5}$            |
| Bodavada          | 14   | 56   | 30   | Silty clay | 1.52                 | $1.64 \times 10^{-4}$            |

**Table 8.2.2.2**  
**Soil physico-chemical characteristics of APLIFT scheme**

| Sampling Location      | Ca      | Mg  | Na  | K   | CEC | ESP | pH   | Ec  | O.C        | N   | P <sub>2</sub> O <sub>5</sub> | K <sub>2</sub> O | Fe | S | Mn | Cu  | Zn | Mo      | B   |
|------------------------|---------|-----|-----|-----|-----|-----|------|-----|------------|-----|-------------------------------|------------------|----|---|----|-----|----|---------|-----|
|                        | mg/100g |     |     |     |     |     | %    |     | unhos/cm % |     | Kg/Hectare                    |                  |    |   |    |     |    | mg/100g |     |
| <b>APLIFT Existing</b> |         |     |     |     |     |     |      |     |            |     |                               |                  |    |   |    |     |    |         |     |
| Garlapedu              | 430     | 108 | 190 | 131 | 42. | 19. | 7.6  | 900 | 1.74       | 640 | 24                            | 285              | 9  | 3 | 8  | 1.1 | 12 | 0.3     | 1.2 |
| Garlapedu              | 450     | 115 | 192 | 106 | 43. | 19. | 7.82 | 800 | 1.71       | 620 | 21                            | 320              | 11 | 2 | 4  | 2.1 | 9  | 0.1     | 1.1 |
| Garlapedu              | 440     | 110 | 190 | 114 | 42. | 19. | 7.91 | 800 | 1.8        | 600 | 24                            | 260              | 10 | 5 | 5  | 2.4 | 11 | 0.1     | 1.2 |
| Veerannapalem          | 430     | 108 | 192 | 131 | 42. | 19. | 7.96 | 800 | 2          | 560 | 26                            | 280              | 7  | 4 | 5  | 2.4 | 10 | 0.1     | 1.0 |
| Veerannapalem          | 420     | 105 | 193 | 135 | 41. | 20. | 7.93 | 800 | 2          | 680 | 27                            | 320              | 9  | 3 | 4  | 2.4 | 9  | 0.1     | 1.1 |
| Veerannapalem          | 440     | 110 | 190 | 129 | 42. | 19. | 7.92 | 800 | 2          | 680 | 32                            | 330              | 9  | 2 | 5  | 2.5 | 5  | 0.2     | 1.1 |
| Ramanaihpalem          | 445     | 110 | 185 | 106 | 42. | 19. | 7.82 | 800 | 1.6        | 590 | 22                            | 316              | 9  | 4 | 4  | 2.7 | 6  | 0.1     | 1.2 |
| Ramanaihpalem          | 420     | 105 | 185 | 98  | 40. | 19. | 7.71 | 700 | 1.4        | 510 | 21                            | 260              | 8  | 3 | 4  | 2.7 | 9  | 0.1     | 1.1 |
| Ramanaihpalem          | 435     | 112 | 165 | 106 | 40. | 17. | 7.92 | 700 | 1.6        | 530 | 22                            | 240              | 8  | 5 | 3  | 2.3 | 11 | 0.1     | 0.9 |
| Adusumalle             | 440     | 110 | 174 | 106 | 41. | 18. | 7.95 | 700 | 2.1        | 500 | 23                            | 260              | 6  | 5 | 6  | 2.4 | 8  | 0.2     | 1.1 |
| Adusumalle             | 425     | 112 | 174 | 106 | 40. | 18. | 7.21 | 700 | 2.2        | 620 | 22                            | 260              | 10 | 2 | 6  | 2.5 | 9  | 0.4     | 1.2 |
| Tikkarajupalem         | 440     | 110 | 154 | 106 | 40. | 16. | 7.32 | 700 | 2.3        | 640 | 26                            | 260              | 12 | 2 | 7  | 2.2 | 7  | 0.2     | 1.1 |
| Tikkarajupalem         | 390     | 96  | 175 | 114 | 38. | 20. | 7.36 | 700 | 2.2        | 660 | 27                            | 280              | 12 | 2 | 7  | 2.5 | 11 | 0.2     | 1.1 |
| Bodavada               | 210     | 54  | 175 | 118 | 25. | 29. | 7.32 | 700 | 2.1        | 660 | 24                            | 290              | 11 | 3 | 8  | 2.2 | 9  | 0.2     | 1.2 |
| Bodavada               | 215     | 55  | 175 | 127 | 26. | 29. | 7.36 | 700 | 1.3        | 620 | 24                            | 310              | 9  | 3 | 6  | 2.3 | 5  | 0.4     | 1.1 |

**TABLE 8.2.2.3**  
**EARTHWORM DENSITY AND ELEMENTAL CONTENT**

| Sampling Location | Earthworm density | Elemental content (MG/100G) |       |        |
|-------------------|-------------------|-----------------------------|-------|--------|
|                   |                   | Pb                          | Cd    | Cu     |
| <u>Existing</u>   |                   |                             |       |        |
| Garlapadu         | 0.8               | <0.1                        | <0.02 | <0.003 |
| Garlapadu         | 1.2               | <0.1                        | <0.02 | <0.003 |
| Garlapadu         | 1.2               | <0.1                        | <0.02 | <0.003 |
| Veerannapalem     | 0.8               | <0.1                        | <0.02 | <0.003 |
| Veerannapalem     | 0.7               | <0.1                        | <0.02 | <0.003 |
| Veerannapalem     | 0.7               | <0.1                        | <0.02 | <0.003 |
| Ramanaihpalem     | 0.9               | <0.1                        | <0.02 | <0.003 |
| Ramanaihpalem     | 1.2               | <0.1                        | <0.02 | <0.003 |
| Ramanaihpalem     | 1.3               | <0.1                        | <0.02 | <0.003 |
| Adusumalle        | 1.2               | <0.1                        | <0.02 | <0.003 |
| Adusumalle        | 1.1               | <0.1                        | <0.02 | <0.003 |
| Tikkarajupalem    | 0.9               | <0.1                        | <0.02 | <0.003 |
| Tikkarajupalem    | 0.8               | <0.1                        | <0.02 | <0.003 |
| Bodavada          | 0.6               | <0.1                        | <0.02 | <0.003 |
| Bodavada          | 0.5               | <0.1                        | <0.02 | <0.003 |

TABLE 8.2.2.4 SOIL QUALITY-APLIFT SCHEME  
BIOLOGICAL CHARACTERISTICS

| Village         | Organic matter% | T.Heterotrophic count/gm | Total fungal count/gm | Actinomycetes count/gm | Nitrogen fix. bacteria/gm | Nitrifying bacteria/gm |
|-----------------|-----------------|--------------------------|-----------------------|------------------------|---------------------------|------------------------|
| <u>Existing</u> |                 |                          |                       |                        |                           |                        |
| Garlapedu       | 1.74            | $69 \times 10^4$         | $34 \times 10^2$      | $37 \times 10^2$       | 2000                      | 300                    |
| Garlapedu       | 1.71            | $81 \times 10^4$         | $46 \times 10^2$      | $36 \times 10^2$       | 2500                      | 600                    |
| Garlapedu       | 1.8             | $82 \times 10^4$         | $48 \times 10^2$      | $38 \times 10^2$       | 2600                      | 800                    |
| Veerannapalem   | 2               | $94 \times 10^4$         | $51 \times 10^2$      | $38 \times 10^2$       | 2700                      | 400                    |
| Veerannapalem   | 2               | $94 \times 10^4$         | $50 \times 10^3$      | $36 \times 10^3$       | 2600                      | 1100                   |
| Veerannapalem   | 2               | $93 \times 10^4$         | $51 \times 10^3$      | $36 \times 10^2$       | 2500                      | 900                    |
| Ramnaihpalem    | 1.6             | $77 \times 10^4$         | $46 \times 10^3$      | $30 \times 10^3$       | 2600                      | 600                    |
| Ramnaihpalem    | 1.4             | $73 \times 10^4$         | $45 \times 10^2$      | $32 \times 10^2$       | 2300                      | 500                    |
| Ramnaihpalem    | 1.6             | $77 \times 10^4$         | $43 \times 10^2$      | $30 \times 10^2$       | 2300                      | 600                    |
| Adusumalle      | 2.1             | $91 \times 10^4$         | $51 \times 10^2$      | $41 \times 10^2$       | 3000                      | 600                    |
| Adusumalle      | 2.2             | $92 \times 10^4$         | $53 \times 10^2$      | $42 \times 10^2$       | 3500                      | 800                    |
| Tikkarajupalem  | 2.3             | $93 \times 10^4$         | $55 \times 10^2$      | $43 \times 10^2$       | 3600                      | 900                    |
| Tikkarajupalem  | 2.2             | $92 \times 10^4$         | $51 \times 10^2$      | $42 \times 10^2$       | 3900                      | 600                    |
| Bodavada        | 2.1             | $91 \times 10^4$         | $51 \times 10^3$      | $41 \times 10^3$       | 3800                      | 1400                   |
| Bodavada        | 1.3             | $64 \times 10^4$         | $31 \times 10^3$      | $33 \times 10^2$       | 1800                      | 1000                   |

**TABLE-8.2.2.5**  
**SOIL QUALITY-APLIFT SCHEME**  
**PESTICIDE RESIDUES**

| Village                | BHC     | BHC     | Lindane | Heptachlor | Aldrin | Heptachlor | pDDE   | pDDT   | pDD    | ppDDT  |
|------------------------|---------|---------|---------|------------|--------|------------|--------|--------|--------|--------|
| <b><u>Existing</u></b> |         |         |         |            |        |            |        |        |        |        |
| Garlapedu              | <0.0001 | <0.0001 | <0.0001 | 0.0021     | 0.0064 | 0.0004     | 0.0002 | 0.0001 | 0.0001 | 0.0001 |
| Garlapedu              | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0074 | 0.0004     | 0.0003 | 0.0001 | 0.0002 | 0.0002 |
| Garlapedu              | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0045 | 0.0003     | 0.0002 | 0.0001 | 0.0001 | 0.0001 |
| Veerannapalem          | <0.0001 | <0.0001 | <0.0001 | 0.0024     | 0.0066 | 0.0002     | 0.0002 | 0.0001 | 0.0001 | 0.0001 |
| Veerannapalem          | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0054 | 0.0002     | 0.0002 | 0.0001 | 0.0001 | 0.0001 |
| Veerannapalem          | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0054 | 0.0003     | 0.0002 | 0.0001 | 0.0001 | 0.0001 |
| Ramanaihpalem          | <0.0001 | <0.0001 | <0.0001 | 0.0345     | 0.0045 | 0.0002     | 0.0002 | 0.0001 | 0.0001 | 0.0002 |
| Ramanaihpalem          | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0034 | 0.0003     | 0.0002 | 0.0001 | 0.0001 | 0.0001 |
| Ramanaihpalem          | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0043 | 0.0003     | 0.0002 | 0.0001 | 0.0002 | 0.0002 |
| Adusumalle             | <0.0001 | <0.0001 | <0.0001 | 0.0543     | 0.0213 | 0.0004     | 0.0002 | 0.0001 | 0.0001 | 0.0001 |
| Adusumalle             | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0004     | 0.0002 | 0.0001 | 0.0001 | 0.0001 |
| Tikkarajupalem         | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0023 | 0.0004     | 0.0003 | 0.0001 | 0.0002 | 0.0002 |
| Tikkarajupalem         | <0.0001 | <0.0001 | <0.0001 | 0.0333     | 0.0001 | 0.0003     | 0.0002 | 0.0001 | 0.0001 | 0.0001 |
| Bodavada               | <0.0001 | <0.0001 | <0.0001 | <0.0001    | 0.0001 | 0.0003     | 0.0002 | 0.0001 | 0.0001 | 0.0001 |
| Bodavada               | <0.0001 | <0.0001 | <0.0001 | 0.0432     | 0.0032 | 0.0003     | 0.0002 | 0.0001 | 0.0001 | 0.0001 |

TABLE-9.1.1.1

## AMBIENT AIR QUALITY

| Village            |                 | 10.00 to 14.00 Hrs. | 14.00 to 18.00 Hrs<br>ug/Nm <sup>3</sup> |
|--------------------|-----------------|---------------------|--|
| 1. Adavisattavaram | SPM             | ----- 94 -----      |  |
|                    | SO <sub>2</sub> | 5                   | 5  |
|                    | NO <sub>x</sub> | 4                   | 5  |
|                    | CO              | BDL                 | BDL                                      |
| 2. Punjanur        | SPM             | -                   | 89                                       |
|                    | SO <sub>2</sub> | 6                   | -  |
|                    | NO <sub>x</sub> | 5                   | -  |
|                    | CO              | BDL                 | BDL                                      |
| 3. Kolpur          | SPM             | -                   | 98                                       |
|                    | SO <sub>2</sub> | 6                   | -  |
|                    | NO <sub>x</sub> | 5                   | -  |
|                    | CO              | BDL                 | BDL                                      |
| 4. Mandipalli      | SPM             | -                   | 93                                       |
|                    | SO <sub>2</sub> | 5                   | -  |
|                    | NO <sub>x</sub> | 4                   | -  |
|                    | CO              | BDL                 | BDL                                      |
| 5. Gajaramdoddi    | SPM             | -                   | 92                                       |
|                    | SO <sub>2</sub> | 6                   | -  |
|                    | NO <sub>x</sub> | 5                   | -  |
|                    | CO              | BDL                 | BDL                                      |
| 6. Mudmal          | SPM             | -                   | 93                                       |
|                    | SO <sub>2</sub> | 6                   | -  |
|                    | NO <sub>x</sub> | 5                   | -  |
|                    | CO              | BDL                 | BDL                                      |

BDL : Below Detectable Limits

TABLE-9.1.1.2

## INDOOR AIR QUALITY

INDOOR CONCENTRATIONS ( $\text{mg}/\text{m}^3$ ) OF DIFFERENT POLLUTANTS

| VILLAGES/      | RSP | $\text{SO}_2$ | $\text{NO}_x$ | CO | HC | LIMITS |         |       |       | TYPE OF FUEL | TYPE OF<br>KITCHEN |
|----------------|-----|---------------|---------------|----|----|--------|---------|-------|-------|--------------|--------------------|
|                |     |               |               |    |    | -----  | -----   | ----- | ----- |              |                    |
| VILLAGERS NAME | RSP | $\text{SO}_2$ | $\text{NO}_x$ | CO | HC | USED   | KITCHEN |       |       |              |                    |

## Adavisattavaram:

|                      |     |     |     |     |       |       |       |     |       |           |     |
|----------------------|-----|-----|-----|-----|-------|-------|-------|-----|-------|-----------|-----|
| 1. Imam Saheb        | 1.5 | 0.7 | 0.6 | 0.4 | 0.002 | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD | MUD |
| 2. Hanumanthu        | 0.8 | 0.7 | 0.4 | 0.3 | 0.020 | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD | MUD |
| 3. C.Narasingappa    | 1.3 | 0.8 | 0.7 | 0.5 | NIL   | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD | MUD |
| 4. H.Narasimulu      | 1.3 | 0.8 | 0.3 | 0.4 | 0.002 | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD | MUD |
| 5. P.Lingareddy      | 1.2 | 0.8 | 0.3 | 0.3 | 0.005 | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD | MUD |
| 6. T.Bhagvanth Reddy | 0.9 | 0.8 | 0.3 | 0.3 | 0.005 | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD | MUD |
| 7. D.Hanumanth Reddy | 1.4 | 0.8 | 0.3 | 0.2 | 0.010 | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD | MUD |

## Punjancor:

|                    |     |     |     |     |       |       |       |     |       |                |           |
|--------------------|-----|-----|-----|-----|-------|-------|-------|-----|-------|----------------|-----------|
| 8. Polappa         | 1.5 | 0.8 | 0.3 | 0.2 | 0.002 | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD/ MUD | COW DUNG. |
| 9. K.Sidappa       | 0.9 | 0.8 | 0.6 | 0.3 | NIL   | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD/ MUD | COW DUNG. |
| 10. Surappa        | 0.7 | 0.8 | 0.5 | 0.3 | 0.004 | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD      | MUD       |
| 11. Ramulu         | 0.6 | 0.7 | 0.3 | 0.2 | 0.005 | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD      | MUD       |
| 12. Narsinha Reddy | 0.7 | 0.8 | 0.5 | 0.3 | 0.006 | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD      | MUD       |
| 13. Hanumanna      | 0.8 | 0.8 | 0.5 | 0.2 | 0.010 | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD      | MUD       |

## Kolpur:

|                       |     |     |     |     |       |       |       |     |       |           |     |
|-----------------------|-----|-----|-----|-----|-------|-------|-------|-----|-------|-----------|-----|
| 14. Jitender Rao      | 1.3 | 0.8 | 0.3 | 0.4 | NIL   | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD | MUD |
| 15. J.Mallikarjun Rao | 1.2 | 0.8 | 0.3 | 0.5 | NIL   | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD | MUD |
| 16. Timma Reddy       | 0.9 | 0.8 | 0.3 | 0.4 | 0.004 | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD | MUD |
| 17. T.Narsimlu        | 1.4 | 0.7 | 0.3 | 0.4 | 0.002 | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD | MUD |
| 18. V.Gajilappa       | 1.3 | 0.8 | 0.3 | 0.5 | 0.001 | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD | MUD |
| 19. N.Kurumaiah       | 1.2 | 0.7 | 0.4 | 0.4 | 0.002 | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD | MUD |
| 20. B.Krishna Reddy   | 1.5 | 0.8 | 0.3 | 0.4 | 0.001 | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD | MUD |
| 21. Baleappa          | 1.2 | 0.8 | 0.5 | 0.3 | Nil   | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD | MUD |

TABLE-9.1.1.2(contd)

INDOOR CONCENTRATIONS ( $\text{mg/m}^3$ ) OF DIFFERENT POLLUTANTS

| VILLAGES/            | RSP | $\text{SO}_2$ | $\text{NO}_x$ | CO  | HC    | LIMITS |               |               |       | TYPE OF<br>FUEL | TYPE<br>OF<br>KITCHEN |
|----------------------|-----|---------------|---------------|-----|-------|--------|---------------|---------------|-------|-----------------|-----------------------|
|                      |     |               |               |     |       | RSP    | $\text{SO}_2$ | $\text{NO}_x$ | CO    |                 |                       |
| VILLAGERS NAME       |     |               |               |     |       |        |               |               |       | USED            |                       |
| <b>Mandipalli</b>    |     |               |               |     |       |        |               |               |       |                 |                       |
| 22. Chinna Timanna   | 0.9 | 0.8           | 0.3           | 0.4 | 0.001 | <1.35  | <0.32         | <30           | <0.12 | FIRE WOOD       | MUD                   |
| 23. G.Yellappa       | 0.8 | 0.8           | 0.3           | 0.5 | 0.002 | <1.35  | <0.32         | <30           | <0.12 | FIRE WOOD       | MUD                   |
| 24. M.Narasappa      | 0.8 | 0.5           | 0.8           | 0.4 | 0.002 | <1.35  | <0.32         | <30           | <0.12 | FIRE WOOD       | MUD                   |
| 25. G.Gokrappa       | 1.4 | 0.5           | 0.3           | 0.4 | 0.001 | <1.35  | <0.32         | <30           | <0.12 | FIRE WOOD/ MUD  | COWDUNG               |
| 26. G.Achappa        | 1.0 | 0.8           | 0.8           | 0.3 | 0.02  | <1.35  | <0.32         | <30           | <0.12 | FIRE WOOD/ MUD  | COWDUNG               |
| 27. G.Venkat Reddy   | 1.2 | 0.8           | 0.3           | 0.3 | 0.01  | <1.35  | <0.32         | <30           | <0.12 | FIRE WOOD/ MUD  | COWDUNG               |
| 28. Achappa          | 1.0 | 0.8           | 0.8           | 0.3 | 0.02  | <1.35  | <0.32         | <30           | <0.12 | FIRE WOOD/ MUD  | COWDUNG               |
| <b>Gajrandoddi</b>   |     |               |               |     |       |        |               |               |       |                 |                       |
| 29. Hanumantha Reddy | 0.9 | 0.7           | 0.7           | 0.3 | 0.03  | <1.35  | <0.32         | <30           | <0.12 | FIRE WOOD/ MUD  | COWDUNG               |
| 30. Linga Reddy      | 0.8 | 0.6           | 0.3           | 0.4 | 0.01  | <1.35  | <0.32         | <30           | <0.12 | FIRE WOOD/ MUD  | COWDUNG               |
| 31. Hanimi Reddy     | 0.7 | 0.6           | 0.8           | 0.5 | 0.02  | <1.35  | <0.32         | <30           | <0.12 | FIRE WOOD/ MUD  | COWDUNG               |
| 32. Mala Hanumanthu  | 0.7 | 0.6           | 0.7           | 0.4 | 0.05  | <1.35  | <0.32         | <30           | <0.12 | FIRE WOOD       | MUD                   |
| 33. K.Narsimhulu     | 0.9 | 0.6           | 0.5           | 0.5 | 0.002 | <1.35  | <0.32         | <30           | <0.12 | FIRE WOOD       | MUD                   |
| 34. M.Bala Reddy     | 0.8 | 0.8           | 0.3           | 0.4 | 0.05  | <1.35  | <0.32         | <30           | <0.12 | FIRE WOOD       | MUD                   |
| 35. Bhagavanth Reddy | 1.2 | 0.9           | 0.3           | 0.5 | 0.005 | <1.35  | <0.32         | <30           | <0.12 | FIRE WOOD       | MUD                   |

**TABLE-9.2.1.1**  
**AMBIENT AIR QUALITY-PROPOSED SCHEME (ADUSUMALLI)**

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|                |                          |                    |
|----------------|--------------------------|--------------------|
| <b>Village</b> | 10.00 to 14.00 Hrs.      | 14.00 to 18.00 Hrs |
|                | <b>ug/Nm<sup>3</sup></b> |                    |

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|                    |                 |                |     |     |
|--------------------|-----------------|----------------|-----|-----|
| 1. Adusumalli      | SPM             | -----115 ----- |     |     |
|                    | SO <sub>2</sub> | 6              |     | 6   |
|                    | NO <sub>x</sub> | 5              |     | 7   |
|                    | CO              | BDL            |     | BDL |
| <hr/>              |                 |                |     |     |
| 2. Chinnanandipadu | SPM             | -              | 94  | -   |
|                    | SO <sub>2</sub> | 5              | -   | 6   |
|                    | NO <sub>x</sub> | 5              | -   | 5   |
|                    | CO              | BDL            | -   | BDL |
| <hr/>              |                 |                |     |     |
| 3. Palaparru       | SPM             | -              | 100 | -   |
|                    | SO <sub>2</sub> | 5              | -   | 6   |
|                    | NO <sub>x</sub> | 6              | -   | 6   |
|                    | CO              | BDL            | -   | BDL |

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**BDL : Below Detectable Limits**

TABLE-9.2.1.2  
INDOOR AIR QUALITY - AP LIFT SCHEME : ADUSUMALLI (PROPOSED)  
INDOOR CONCENTRATIONS ( $\text{mg}/\text{m}^3$ ) OF DIFFERENT POLLUTANTS

| VILLAGES/      | RSP | $\text{SO}_2$ | $\text{NO}_x$ | CO | HC | LIMITS |               |               |    |    | TYPE OF FUEL | TYPE OF |
|----------------|-----|---------------|---------------|----|----|--------|---------------|---------------|----|----|--------------|---------|
|                |     |               |               |    |    | RSP    | $\text{SO}_2$ | $\text{NO}_x$ | CO | HC | USED         | KITCHEN |
| VILLAGERS NAME |     |               |               |    |    |        |               |               |    |    |              |         |

**ADUSUMALLI:**

|                    |     |     |     |     |      |       |       |     |       |                |
|--------------------|-----|-----|-----|-----|------|-------|-------|-----|-------|----------------|
| 1. N.Nageswara Rao | 0.8 | 0.6 | 0.8 | 0.4 | 0.03 | <1.35 | <0.32 | <30 | <0.12 | LPG            |
| 2. N.Amera Babu    | 0.6 | 0.5 | 0.4 | 0.5 | 0.02 | <1.35 | <0.32 | <30 | <0.12 | LPG            |
| 3. Kotla Jaipal    | 0.8 | 0.7 | 0.9 | 0.4 | 0.02 | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD/ MUD |

**PALAPARRU:**

|                    |     |     |     |     |       |       |       |     |       |                |
|--------------------|-----|-----|-----|-----|-------|-------|-------|-----|-------|----------------|
| 4. Nagur Saheb     | 1.2 | 0.7 | 0.2 | 0.3 | 0.002 | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD/ MUD |
| 5. J.Venkateswarlu | 1.0 | 0.8 | 0.7 | 0.3 | NIL   | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD/ MUD |
| 6. G.Kasim Saheb   | 0.8 | 0.9 | 0.6 | 0.4 | 0.004 | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD MUD  |
| 7. M.Srinivas      | 0.7 | 0.6 | 0.4 | 0.3 | 0.005 | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD MUD  |

**CHINANANDIPADU:**

|                     |     |     |     |     |       |       |       |     |       |               |
|---------------------|-----|-----|-----|-----|-------|-------|-------|-----|-------|---------------|
| 8. K.Sriram Murthy  | 1.2 | 0.7 | 0.4 | 0.5 | NIL   | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD MUD |
| 9. K.Subba Rao      | 1.0 | 0.7 | 0.4 | 0.6 | NIL   | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD MUD |
| 10. K.Sambasiva Rao | 1.1 | 0.8 | 0.2 | 0.5 | 0.005 | <1.35 | <0.32 | <30 | <0.12 | FIRE WOOD MUD |

**TABLE-9.1.2.1**

**AMBIENT AIR QUALITY**

| Village        |                 | 10.00 to 14.00 Hrs | 14.00 to 18.00 Hrs |     |
|----------------|-----------------|--------------------|--------------------|-----|
|                |                 | ug/Nm <sup>3</sup> |                    |     |
| 1. Mudmal      | SPM             | -                  | ----- 93 -----     |     |
|                | SO <sub>2</sub> | 6                  | -                  | 5   |
|                | NO <sub>x</sub> | 5                  |                    | 6   |
|                | CO              | BDL                |                    | BDL |
| 2. Muraridoddi | SPM             | -                  | 99                 | -   |
|                | SO <sub>2</sub> | 6                  | -                  | 6   |
|                | NO <sub>x</sub> | 5                  | -                  | 5   |
|                | CO              | BDL                | -                  | BDL |
| 3. Gudaballur  | SPM             | -                  | 100                | -   |
|                | SO <sub>2</sub> | 7                  | -                  | 8   |
|                | NO <sub>x</sub> | 6                  | -                  | 5   |
|                | CO              | BDL                | -                  | BDL |

**BDL : Below Detectable Limits**

TABLE-9.1.2.2

## INDOOR AIR QUALITY

INDOOR CONCENTRATIONS (mg/m<sup>3</sup>) OF DIFFERENT POLLUTANTS

| VILLAGES/          | RSP | SO <sub>2</sub> | NO <sub>x</sub> | CO  | HC    | LIMITS |                 |                 |           | TYPE OF<br>FUEL<br>USED |
|--------------------|-----|-----------------|-----------------|-----|-------|--------|-----------------|-----------------|-----------|-------------------------|
|                    |     |                 |                 |     |       | RSP    | SO <sub>2</sub> | NO <sub>x</sub> | CO        |                         |
| VILLAGERS NAME     |     |                 |                 |     |       |        |                 |                 |           |                         |
| <b>Muraridoddi</b> |     |                 |                 |     |       |        |                 |                 |           |                         |
| 1. G.Chindappa     | 1.2 | 1.0             | 0.8             | 0.4 | 0.02  | <1.35  | <0.32           | <30 <0.12       | FIRE WOOD |                         |
| 2. Thimanna        | 1.3 | 0.8             | 0.4             | 0.5 | 0.002 | <1.35  | <0.32           | <30 <0.12       | FIRE WOOD |                         |
| 3. Bhimanna        | 1.2 | 0.8             | 0.6             | 0.5 | 0.004 | <1.35  | <0.32           | <30 <0.12       | FIRE WOOD |                         |
| 4. Ramappa         | 1.3 | 0.8             | 0.4             | 0.5 | 0.005 | <1.35  | <0.32           | <30 <0.12       | FIRE WOOD |                         |
| 5. Siddu Ramappa   | 1.4 | 0.7             | 0.4             | 0.5 | Nil   | <1.35  | <0.32           | <30 <0.12       | FIRE WOOD |                         |
| 6. Jindappa        | 1.5 | 0.8             | 0.4             | 0.4 | 0.005 | <1.35  | <0.32           | <30 <0.12       | FIRE WOOD |                         |
| <b>Gudaballur</b>  |     |                 |                 |     |       |        |                 |                 |           |                         |
| 7. M.N.Narasimha   | 0.8 | 0.5             | 0.3             | 0.2 | 0.005 | <1.35  | <0.32           | <30 <0.12       | FIRE WOOD | COWDUNG                 |
| 8. Ramappa         | 1.2 | 0.7             | 0.8             | 0.3 | 0.004 | <1.35  | <0.32           | <30 <0.12       | FIRE WOOD | COWDUNG                 |
| 9. Narashimayya    | 0.9 | 0.8             | 0.3             | 0.3 | 0.005 | <1.35  | <0.32           | <30 <0.12       | FIRE WOOD | COWDUNG                 |
| 10. Vabanna        | 0.8 | 0.8             | 0.5             | 0.3 | 0.02  | <1.35  | <0.32           | <30 <0.12       | FIRE WOOD | COWDUNG                 |
| 11. Rasul Saheb    | 0.9 | 0.8             | 0.3             | 0.3 | 0.004 | <1.35  | <0.32           | <30 <0.12       | FIRE WOOD |                         |
| <b>Mudmal</b>      |     |                 |                 |     |       |        |                 |                 |           |                         |
| 12. Satyanarayana  | 1.2 | 0.8             | 0.4             | 0.3 | 0.02  | <1.35  | <0.32           | <30 <0.12       | FIRE WOOD |                         |
| 13. Rajiv Desmuk   | 0.9 | 0.7             | 0.4             | 0.3 | 0.05  | <1.35  | <0.32           | <30 <0.12       | FIRE WOOD |                         |
| 14. Murappa        | 0.8 | 0.4             | 0.5             | 0.4 | 0.07  | <1.35  | <0.32           | <30 <0.12       | FIRE WOOD |                         |
| 15. Siddappa       | 0.8 | 0.8             | 0.4             | 0.3 | 0.02  | <1.35  | <0.32           | <30 <0.12       | FIRE WOOD |                         |
| 16. Ramanna        | 1.2 | 0.4             | 0.5             | 0.4 | 0.006 | <1.35  | <0.32           | <30 <0.12       | FIRE WOOD |                         |
| 17. Ramaswamy      | 1.2 | 0.8             | 0.7             | 0.4 | 0.006 | <1.35  | <0.32           | <30 <0.12       | FIRE WOOD |                         |
| 18. Jayakrishna    | 1.0 | 0.8             | 0.8             | 0.4 | 0.002 | <1.35  | <0.32           | <30 <0.12       | FIRE WOOD |                         |

**TABLE-9.1.3.1**

**AMBIENT AIR QUALITY**

| Village         | 10.00 to 14.00 Hrs |     | 14.00 to 18.00 Hrs |     |
|-----------------|--------------------|-----|--------------------|-----|
|                 |                    |     | ug/Nm <sup>3</sup> |     |
| 1. Panchadevpad | SPM                | -   | ----- 98 -----     |     |
|                 | SO <sub>2</sub>    | 8   | -                  | 6   |
|                 | NO <sub>x</sub>    | 5   |                    | 5   |
|                 | CO                 | BDL |                    | BDL |
| 2. Chityal      | SPM                | -   | 95                 | -   |
|                 | SO <sub>2</sub>    | 7   | -                  | 7   |
|                 | NO <sub>x</sub>    | 5   | -                  | 5   |
|                 | CO                 | BDL | -                  | BDL |
| 3. Paspul       | SPM                | -   | 91                 | -   |
|                 | SO <sub>2</sub>    | 4   | -                  | 4   |
|                 | NO <sub>x</sub>    | 4   | -                  | 4   |
|                 | CO                 | BDL | -                  | BDL |

**BDL : Below Detectable Limits**

TABLE-9.1.3.2

## INDOOR AIR QUALITY

INDOOR CONCENTRATIONS (mg/m<sup>3</sup>) OF DIFFERENT POLLUTANTS

| VILLAGES/             | RSP | SO <sub>2</sub> | NO <sub>x</sub> | CO  | HC    | LIMITS |                 |                 |       | TYPE OF<br>FUEL<br>USED |
|-----------------------|-----|-----------------|-----------------|-----|-------|--------|-----------------|-----------------|-------|-------------------------|
|                       |     |                 |                 |     |       | RSP    | SO <sub>2</sub> | NO <sub>x</sub> | CO    |                         |
| <b>VILLAGERS NAME</b> |     |                 |                 |     |       |        |                 |                 |       |                         |
| Panchadevpad          |     |                 |                 |     |       |        |                 |                 |       |                         |
| 1. Aradhana           | 1.5 | 0.8             | 0.3             | 0.4 | 0.02  | <1.35  | <0.32           | <30             | <0.12 | FIRE WOOD               |
| 2. Sesadhri           | 0.3 | Nil             | 0.05            | Nil | Nil   | <1.35  | <0.32           | <30             | <0.12 | BIOGAS                  |
| 3. Ananthasain Rao    | 0.5 | Nil             | 0.02            | Nil | Nil   | <1.35  | <0.32           | <30             | <0.12 | BIOGAS                  |
| 4. D.Kurumanna        | 1.5 | 0.8             | 0.5             | 0.5 | 0.006 | <1.35  | <0.32           | <30             | <0.12 | FIRE WOOD               |
| 5. V.Hanumanth        | 1.2 | 0.8             | 0.5             | 0.4 | 0.02  | <1.35  | <0.32           | <30             | <0.12 | FIRE WOOD               |
| 6. Grin Laxman        | 0.2 | Nil             | 0.02            | Nil | Nil   | <1.35  | <0.32           | <30             | <0.12 | BIOGAS                  |
| Chityal               |     |                 |                 |     |       |        |                 |                 |       |                         |
| 7. Abdul Hussain      | 0.2 | 0.05            | 0.05            | Nil | Nil   | <1.35  | <0.32           | <30             | <0.12 | BIOGAS                  |
| 8. Laxmanappa         | 1.2 | 0.7             | 0.3             | 0.3 | 0.02  | <1.35  | <0.32           | <30             | <0.12 | FIRE WOOD               |
| 9. Narasingappa       | 1.2 | 0.8             | 0.3             | 0.3 | 0.005 | <1.35  | <0.32           | <30             | <0.12 | FIRE WOOD               |
| 10. P.Hanumanna       | 1.3 | 0.8             | 0.5             | 0.2 | 0.02  | <1.35  | <0.32           | <30             | <0.12 | FIRE WOOD               |
| 11. Narasimha Goud    | 0.9 | 0.8             | 0.4             | 0.3 | 0.005 | <1.35  | <0.32           | <30             | <0.12 | FIRE WOOD               |
| Paspul                |     |                 |                 |     |       |        |                 |                 |       |                         |
| 12. Linga Reddy       | 1.4 | 1.0             | 0.8             | 0.4 | 0.005 | <1.35  | <0.32           | <30             | <0.12 | FIRE WOOD               |
| 13. Vara Reddy        | 1.3 | 1.0             | 0.5             | 0.5 | 0.004 | <1.35  | <0.32           | <30             | <0.12 | FIRE WOOD               |
| 14. Aasanna           | 1.2 | 0.8             | 0.6             | 0.5 | 0.005 | <1.35  | <0.32           | <30             | <0.12 | FIRE WOOD               |
| 15. Ramulu            | 1.4 | 0.9             | 0.5             | 0.4 | 0.008 | <1.35  | <0.32           | <30             | <0.12 | FIRE WOOD               |
| 16. Dattu             | 1.2 | 0.8             | 0.4             | 0.4 | 0.004 | <1.35  | <0.32           | <30             | <0.12 | FIRE WOOD               |
| 17. Srinivasa Reddy   | 0.4 | 0.1             | Nil             | Nil | Nil   | <1.35  | <0.32           | <30             | <0.12 | BIOGAS                  |

**TABLE-9.2.2.1**  
**AMBIENT AIR QUALITY-EXISTING SCHEME (SRINIVASA LIFT)**

| Village           |                 | 10.00 to 14.00 Hrs | 14.00 to 18.00 Hrs |
|-------------------|-----------------|--------------------|--------------------|
|                   |                 | ug/Nm <sup>3</sup> |                    |
| 1. Garlapadu      | SPM             | -                  | ----- 85 -----     |
|                   | SO <sub>2</sub> | 5                  | - 4                |
|                   | NO <sub>x</sub> | 4                  | 5                  |
|                   | CO              | BDL                | BDL                |
| 2. Tikkarajapalem | SPM             | -                  | 88 -               |
|                   | SO <sub>2</sub> | 6                  | - 6                |
|                   | NO <sub>x</sub> | 4                  | 6                  |
|                   | CO              | BDL                | BDL                |
| 3. Adusumalli     | SPM             | -                  | 115 -              |
|                   | SO <sub>2</sub> | 6                  | - 6                |
|                   | NO <sub>x</sub> | 5                  | 7                  |
|                   | CO              | BDL                | BDL                |
| 4. Bodavada       | SPM             | -                  | ----- 98 -----     |
|                   | SO <sub>2</sub> | 6                  | - 5                |
|                   | NO <sub>x</sub> | 5                  | 7                  |
|                   | CO              | BDL                | BDL                |
| 5. Veerannapalem  | SPM             | -                  | 89 -               |
|                   | SO <sub>2</sub> | 5                  | - 5                |
|                   | NO <sub>x</sub> | 6                  | 5                  |
|                   | CO              | BDL                | BDL                |
| 6. Ramanaipalem   | SPM             | -                  | 89 -               |
|                   | SO <sub>2</sub> | 5                  | - 6                |
|                   | NO <sub>x</sub> | 5                  | 6                  |
|                   | CO              | BDL                | BDL                |

**BDL : Below Detectable Limits**

TABLE-9.2.2.2  
INDOOR AIR QUALITY - AP LIFT SCHEME : SRINIVASA LIFT (EXISTING)  
INDOOR CONCENTRATIONS ( $\text{mg}/\text{m}^3$ ) OF DIFFERENT POLLUTANTS

| VILLAGES/             | RSP | $\text{SO}_2$ | $\text{NO}_x$ | CO  | HC    | LIMITS |               |               |       | TYPE OF FUEL | TYPE OF KITCHEN |
|-----------------------|-----|---------------|---------------|-----|-------|--------|---------------|---------------|-------|--------------|-----------------|
|                       |     |               |               |     |       | RSP    | $\text{SO}_2$ | $\text{NO}_x$ | CO    |              |                 |
| VILLAGEERS NAME       |     |               |               |     |       |        |               |               |       |              |                 |
| <b>GARLAPADU</b>      |     |               |               |     |       |        |               |               |       |              |                 |
| 1. Nageswara Rao      | 1.1 | 0.8           | 0.4           | 0.5 | 0.002 | <1.35  | <0.32         | <30           | <0.12 | FIRE WOOD    | MUD             |
| 2. G.Veeraih          | 0.9 | 0.5           | 0.4           | 0.6 | 0.002 | <1.35  | <0.32         | <30           | <0.12 | LPG          |                 |
| 3. I.V.Subramanyam    | 1.0 | 0.6           | 0.7           | 0.5 | 0.002 | <1.35  | <0.32         | <30           | <0.12 | FIRE WOOD    | MUD             |
| 4. M.Sambasiva Rao    | 1.1 | 0.6           | 0.4           | 0.5 | 0.001 | <1.35  | <0.32         | <30           | <0.12 | FIRE WOOD/   | MUD             |
| <b>TIKKARAJUPALEM</b> |     |               |               |     |       |        |               |               |       |              |                 |
| 5. M.Sankara Rao      | 1.1 | 0.8           | 0.8           | 0.4 | 0.03  | <1.35  | <0.32         | <30           | <0.12 | FIRE WOOD/   | MUD             |
| 6. K.Krishna Rao      | 0.9 | 0.7           | 0.5           | 0.5 | 0.01  | <1.35  | <0.32         | <30           | <0.12 | FIRE WOOD/   | MUD             |
| 7. C.Subba Rao        | 0.8 | 0.6           | 0.7           | 0.4 | 0.02  | <1.35  | <0.32         | <30           | <0.12 | FIRE WOOD/   | MUD             |
| 8. G.Nagaraju         | 0.7 | 0.7           | 0.8           | 0.4 | 0.05  | <1.35  | <0.32         | <30           | <0.12 | FIRE WOOD    | MUD             |
| <b>ADUSUMALLI</b>     |     |               |               |     |       |        |               |               |       |              |                 |
| 9. N.Nageswara Rao    | 1.1 | 0.6           | 0.6           | 0.4 | 0.03  | <1.35  | <0.32         | <30           | <0.12 | LPG          |                 |
| 10. N.Amara Babu      | 0.9 | 0.5           | 0.4           | 0.5 | 0.02  | <1.35  | <0.32         | <30           | <0.12 | LPG          |                 |
| 11. Kotla Jaipal      | 0.7 | 0.6           | 0.8           | 0.5 | 0.02  | <1.35  | <0.32         | <30           | <0.12 | FIRE WOOD/   | MUD             |
| <b>BODAVADA</b>       |     |               |               |     |       |        |               |               |       |              |                 |
| 12. P.Nagi Reddy      | 0.9 | 1.1           | 0.7           | 0.4 | 0.03  | <1.35  | <0.32         | <30           | <0.12 | FIRE WOOD/   | MUD             |
| 13. K.Jangi Reddy     | 0.8 | 0.6           | 0.4           | 0.5 | 0.02  | <1.35  | <0.32         | <30           | <0.12 | LPG          |                 |
| 14. H.Papi Reddy      | 0.8 | 0.7           | 0.8           | 0.6 | 0.02  | <1.35  | <0.32         | <30           | <0.12 | FIRE WOOD/   | MUD             |

Contd.....

TABLE-9.2.2.2(CONTD)  
 INDOOR AIR QUALITY - AP LIFT SCHEME : SRINIVASA LIFT (EXISTING)  
 INDOOR CONCENTRATIONS ( $\text{mg}/\text{m}^3$ ) OF DIFFERENT POLLUTANTS

| VILLAGES/             | RSP | $\text{SO}_2$ | $\text{NO}_x$ | CO  | HC   | LIMITS  |               |               |       | TYPE OF<br>FUEL | TYPE<br>OF<br>KITCHEN |
|-----------------------|-----|---------------|---------------|-----|------|---------|---------------|---------------|-------|-----------------|-----------------------|
|                       |     |               |               |     |      | RSP     | $\text{SO}_2$ | $\text{NO}_x$ | CO    |                 |                       |
| VILLAGEERS NAME       |     |               |               |     |      |         |               |               |       |                 |                       |
| <b>VEERANNAIPALEM</b> |     |               |               |     |      |         |               |               |       |                 |                       |
| 15. S.Narasimha Rao   | 0.9 | 0.8           | 0.7           | 0.4 | 0.03 | <1.35   | <0.32         | <30           | <0.12 | FIRE WOOD/ MUD  |                       |
| 16. M.Veeraih         | 0.7 | 0.6           | 0.4           | 0.4 | 0.02 | * <1.35 | <0.32         | <30           | <0.12 | FIRE WOOD/ MUD  |                       |
| 17. P.Subba Rao       | 0.7 | 0.7           | 0.8           | 0.5 | 0.02 | <1.35   | <0.32         | <30           | <0.12 | FIRE WOOD/ MUD  |                       |
| <b>RAMANAIPALEM</b>   |     |               |               |     |      |         |               |               |       |                 |                       |
| 18. P.Subba Reddy     | 1.0 | 0.5           | 0.8           | 0.4 | 0.02 | <1.35   | <0.32         | <30           | <0.12 | FIRE WOOD       | MUD                   |
| 19. P.Nagi Reddy      | 1.2 | 0.6           | 0.4           | 0.4 | 0.02 | <1.35   | <0.32         | <30           | <0.12 | FIRE WOOD/ MUD  |                       |
| 20. K.Nagi Reddy      | 1.1 | 0.8           | 0.9           | 0.3 | 0.02 | <1.35   | <0.32         | <30           | <0.12 | FIRE WOOD/ MUD  |                       |

**TABLE 11.1.1 ENUMERATION OF FLORA: MUDMAL**

| <b>Technical Name</b>         | <b>Telugu/Hindi Name</b> |
|-------------------------------|--------------------------|
| <i>Acacia catechu</i>         | Sundra, Khair            |
| <i>Acacia ferruginea</i>      | Wal-sundra               |
| <i>Acacia leucophloea</i>     | Tellatumma               |
| <i>Aegle marmelos</i>         | Maredu, Bhelphal         |
| <i>Albizia lebbek</i>         | Siris                    |
| <i>Albizia odoratissima</i>   | Chinduku                 |
| <i>Anogeissus latifolia</i>   | Tirman                   |
| <i>Annona squamosa</i>        | Sithaphalam              |
| <i>Bassia latifolia</i>       | Ippa, Mohwa              |
| <i>Bauhinia recemosa</i>      | Ari                      |
| <i>Butea frondosa</i>         | Palas                    |
| <i>Chloroxylon swietenia</i>  | Satin, Billudu           |
| <i>Cassia fistula</i>         | Rela, Amaltas            |
| <i>Diospyros melanoxylon</i>  | Abnus, Tuniki            |
| <i>Eugenia jambolana</i>      | Neredu, Jamun            |
| <i>Ficus benghalensis</i>     | Marri, Bad               |
| <i>Grewia tiliifolia</i>      | Tada                     |
| <i>Mangifera indica</i>       | Mamidi, Mango            |
| <i>Melia azadirachta</i>      | Vepa, Neem               |
| <i>Mimusops hexandra</i>      | Khirni                   |
| <i>Ocimum sanctum</i>         | Kala tulasi              |
| <i>Phyllanthus emblica</i>    | Usiri, Amla              |
| <i>Pterocarpus marsupium</i>  | Bijasal                  |
| <i>Polyalthia cerosoides</i>  | Chika Duddi              |
| <i>Mangefera indica</i>       | Mamidi                   |
| <i>Pongamia glabra</i>        | Kanuga, Karanj           |
| <i>Tamarindus indica</i>      | Chinta, Imli             |
| <i>Vitex negundo</i>          | Vavili, Shabalu          |
| <i>Zizyphus jujuba</i>        | Gangaregu                |
| <i>Zizyphus zylophora</i>     | Gotti                    |
| <i>Capparis sepiaria</i>      | Nallauppi                |
| <i>Cassia auriculata</i>      | Tangedu                  |
| <i>Helicteres isora</i>       | Nulthada                 |
| <i>Strebulus asper</i>        | Bajra danti, Barekha     |
| <i>Abrus precatorius</i>      | Gumchi                   |
| <i>Bauhinia vahli</i>         | Addatiga                 |
| <i>Butea superba</i>          | Belpalas                 |
| <i>Cuscuta reflexa</i>        | Passitiga                |
| <i>Lantana camara</i>         | Nakshartralapuvvu        |
| <i>Loranthus sp.</i>          | --                       |
| <i>Zizyphus Oenoplia</i>      | Parika                   |
| <b>GRASSES</b>                |                          |
| <i>Andropogon contortus</i>   | Yedagaddi                |
| <i>Aristida adscensionis</i>  | Pillipesaragaddi         |
| <i>Aristida settecae</i>      | Chipuru gaddi            |
| <i>Chloris incompleta</i>     | Cantharagaddi            |
| <i>Chrysopogon montanus</i>   | Kondabursa gaddi         |
| <i>Cyanodon dactylon</i>      | Gareka gaddi             |
| <i>Dendrocalamus strictus</i> | Kanaka veduru            |
| <i>Eragrostis unioloides</i>  | Udara gaddi              |
| <i>Saccharum spontaneum</i>   | Rellugaddi               |
| <i>Themeda quadrivalvis</i>   | Molvagaddi               |

TABLE 11.1.2 ENUMERATION OF FAUNA

| Name of the animal         | Scientific name                  | Telugu/Hindi name |
|----------------------------|----------------------------------|-------------------|
| <u>Wild animals</u>        |                                  |                   |
| 1. Jungle cat              | <i>Felis chaus</i>               | Janglipilli       |
| 2. Wolf                    | <i>Canis lupus</i>               | Thodelu           |
| 3. Jackal                  | <i>Canis aureus</i>              | Guntanakka        |
| 4. Indian fox              | <i>Valpes bengalensis</i>        | Nakka             |
| 5. Wild dog                | <i>Cuon alpinus</i>              | Resukukka         |
| 6. Hyeana                  | <i>Hyeana hyeana</i>             | Dommulagonda      |
| 7. Mangoos                 | <i>Mangooses herpestes</i>       | Mangoos           |
| 8. Gaint Indian squirrel   | <i>Lutufa indica</i>             | Beetu udutha      |
| 9. Palm squirrel           | <i>Funambulus paslmarum</i>      | Udutha            |
| 10 Black buck              | <i>Antilope cervicapra</i>       | Krishna jinka     |
| 11 Wild boar               | <i>Susscrofa</i>                 | Adavipandi        |
| <u>Reptiles</u>            |                                  |                   |
| 1. Monitar lizard          | <i>Varanus bengalensis</i>       | Udumu             |
| 2. Chemellion              | <i>Chanealeon zeylaincus</i>     | Usaravalli        |
| 3. Common lizard           | <i>Calotes vericolor</i>         | Thonda            |
| 4. Cobra                   | <i>Naja naja</i>                 | Nagupamu          |
| 5. Russels viper           | <i>Vipera russeli</i>            | Podapamu          |
| 6. Common krait            | <i>Bangarus caeruleus</i>        | Katlapamu         |
| 7. Banded krait            | <i>Bangarus fasciatus</i>        | Katlapamu         |
| 8. Rat snake               | <i>Ptyas mucosus</i>             | Jerripothu        |
| <u>Aves</u>                |                                  |                   |
| 1. Ashy wren warbler       | <i>Prinia socialis</i>           | Phutki            |
| 2. Ashy cronned finchlasrk | <i>Eremptgeryx geises</i>        | --                |
| 3. Alpine swift            | <i>Apus melba</i>                | --                |
| 4. Bar headed goose        | <i>Inser indicus</i>             | Hans              |
| 5. Brahminy duck           | <i>Tadorna ferruginea</i>        | Surkhab           |
| 6. Black winged kite       | <i>Elanus caeruleus</i>          | Masunwa           |
| 7. Black winged stilt      | <i>Himantopus himatopus</i>      | Gaz-paun          |
| 8. Blossom headed parakeet | <i>Psittacular cyanocephala</i>  | Tuiya tota        |
| 9. Brahminy mynah          | <i>Starus pegodarus</i>          | Bammani myna      |
| 10 Babul redvented         | <i>Pyenonotus cafer</i>          | Babul             |
| 11 Babler Deccan scimitar  | <i>Pomatorhinus horsfieldii</i>  | -                 |
| 12 Brown fly catcher       | <i>Muscicapa latirostris</i>     | -                 |
| 13 Black naped fly catcher | <i>Hypothymis azurea</i>         | -                 |
| 14 Bly's read wasbler      | <i>Acrocephalus dumetorum</i>    | -                 |
| 15 Black red start         | <i>Phoenicurus ochrurus</i>      | -                 |
| 16 Blue rock-thrush        | <i>Monticola solitarius</i>      | -                 |
| 17 Black capped blackbird  | <i>Turdus merula nigropileus</i> | Kasturi           |
| 18 Common myna             | <i>Acridotheres tristis</i>      | Desimyna          |
| 19 Collared scops-owl      | <i>Otus bakkamoena</i>           | Tharkavi chogh    |
| 20 Crow pheasant           | <i>Centropus sinensis</i>        | Mahoka            |

CONTD.....

| Name of the animal           | Scientific name                 | Telugu/Hindi name |
|------------------------------|---------------------------------|-------------------|
| 21 Crested cuckoo            | <i>Clasnator jacobinus</i>      | Papiya            |
| 22 Common coot               | <i>Fulica atra</i>              | Aari              |
| 23 Common pea fowl           | <i>Paco cristata</i>            | Mor               |
| 24 Common swallow            | <i>Hirando rustica</i>          | Ahab              |
| 25 Cotton teal               | <i>Nettapus coromandelianus</i> | Gurgurra          |
| 26 Great grey shrike         | <i>Lanius excutor</i>           | Safed latora      |
| 27 Green bee-eater           | <i>Merops orientalis</i>        | Basdas patringa   |
| 28 Golden beeked wood pecker | <i>Dinopium benghalensis</i>    | Kathpora          |
| 29 Grey jungle fowl          | <i>Gallus sonneratiae</i>       | Murgee            |
| 30 Gargency                  | <i>Anus querquengula</i>        | Khira             |
| 31 House sparrow             | <i>Passer domesticus</i>        | Gauriyya          |
| 32 Indian pipit              | <i>Anthus novaiseelandiae</i>   | Charihari         |
| 33 Indian pitta              | <i>Pitta braechynchos</i>       | Jangli kawa       |
| 34 Jungle crow               | <i>Corvusmacrerhynchos</i>      | Janglikawa        |
| 35 Koel                      | <i>Eucynamis scolopaceus</i>    | Kokila            |
| 36 Little egret              | <i>Egretta alba</i>             | Karchia           |
| 37 Long billed vulture       | <i>Gyps indicus</i>             | Gidh              |
| 38 Large Indian parakeet     | <i>Psittacual cuptria</i>       | Hiramana-tota     |
| 39 Pariah kite               | <i>Milvus migrans</i>           | Cheel             |
| 40 White headed babler       | <i>Turdoides straitus</i>       | Bhujanga          |
| 41 Wood sand piper           | <i>Trianga glareola</i>         | Chupka            |

| Technical Name                | TABLE 11.2.1 ENUMERATION OF FLORA<br>Telugu/Hindi Name |
|-------------------------------|--|
| <i>Azadirachta indica</i>     | Neem   |
| <i>Acacia catechu</i>         | Sundra, Khair  |
| <i>Acacia ferruginea</i>      | Wal-sundra   |
| <i>Acacia leucophloea</i>     | Tellatumma   |
| <i>Albizia lebbek</i>         | Siris  |
| <i>Albizia odoratissima</i>   | Chinduku   |
| <i>Anogeissus latifolia</i>   | Tirman   |
| <i>Annona squamosa</i>        | Sithaphalam  |
| <i>Bassia latifolia</i>       | Ippa, Mohwa  |
| <i>Bauhinia recemosa</i>      | Ari  |
| <i>Butea frondosa</i>         | Palas  |
| <i>Chloroxylon swietenia</i>  | Satin, Billudu   |
| <i>Cassia fistula</i>         | Rela, Amaltas  |
| <i>Cassia auriculata</i>      | Sema   |
| <i>Diospyros melanoxylon</i>  | Abnus, Tuniki  |
| <i>Eugenia jambolina</i>      | Neredu, Jamun  |
| <i>Ficus benghalensis</i>     | Marri, Bad   |
| <i>Grewia tiliifolia</i>      | Tada   |
| <i>Mangifera indica</i>       | Mamidi, Mango  |
| <i>Mymusops hexandra</i>      | Khirni   |
| <i>Ocimum sanctum</i>         | Kala tulasi  |
| <i>Phyllanthus emblica</i>    | Usiri, Amla  |
| <i>Pterocarpus marsupium</i>  | Bijsal   |
| <i>Polyalthia cerosoides</i>  | Chika Duddi  |
| <i>Pongamia glabra</i>        | Kanuga, Karanj   |
| <i>Tamarindus indica</i>      | Chinta, Imli   |
| <i>Vitex negundo</i>          | Vavili, Shabalu  |
| <i>Zizyphus jujuba</i>        | Gangaregu  |
| <i>Zizyphus zylophora</i>     | Gotti  |
| <i>Capparis sepiaria</i>      | Nallauppi  |
| <i>Cassia auriculata</i>      | Tangedu  |
| <i>Helicteres isora</i>       | Nulthada   |
| <i>Strebulus asper</i>        | Bajra danti, Barekha                                   |
| <i>Abrus precatorius</i>      | Gumchi   |
| <i>Bauhinia vahli</i>         | Addatiga   |
| <i>Butea superba</i>          | Belpalas   |
| <i>Cuscuta reflexa</i>        | Passitiga  |
| <i>Lantana camara</i>         | Nakshartralapuvvu                                      |
| <i>Loranthus sp.</i>          | --   |
| <i>Zizyphus Oenoplia</i>      | Parika   |
| <b>GRASSES</b>                |  |
| <i>Andropogon contortus</i>   | Yedagaddi  |
| <i>Aristida adscensionis</i>  | Pillipesaragaddi                                       |
| <i>Aristida setteccae</i>     | Chipuru gaddi  |
| <i>Chloris incomleta</i>      | Cantharagaddi  |
| <i>Chrysopogon montanus</i>   | Kondabursa gaddi                                       |
| <i>Cyanodon dactylon</i>      | Gareka gaddi   |
| <i>Dendrocalamus strictus</i> | Kanaka veduru  |
| <i>Eragrostis unioloides</i>  | Udara gaddi  |
| <i>Saccharum spontaneum</i>   | Rellugddi  |
| <i>Themeda quadrivalvis</i>   | Molvagaddi   |

TABLE 11.2.2 ENUMERATION OF FAUNA

| No. | English Name       | Technical Name                |
|-----|--------------------|-------------------------------|
| 1.  | Buffalo            | <i>Bubalus bubalis</i>        |
| 2.  | Common dolphin     | <i>Delphinus delphis</i>      |
| 3.  | Common house rat   | <i>Rattus rattus</i>          |
| 4.  | Common yellow bat  | <i>Scotophilus heathi</i>     |
| 5.  | Dog                | <i>Canis familiaris</i>       |
| 6.  | Domestic cat       | <i>Felis domesticus</i>       |
| 7.  | Cow                | <i>Bos indicus</i>            |
| 8.  | Donkey             | <i>Equus caballus</i>         |
| 9.  | Fruit bat          | <i>Rousettus leschenaulti</i> |
| 10. | Goat               | <i>Capra sp.</i>              |
| 11. | Horse              | <i>Equus caballus</i>         |
| 12. | House mouse        | <i>Mus musculus</i>           |
| 13. | Rat                | <i>Bandicoota indica</i>      |
| 14. | Sheep              | <i>Ovis sp.</i>               |
| 15. | Small Indian civet | <i>Viverricula indica</i>     |
| 16. | Chemellion         | <i>Chanealeon zeylaincus</i>  |
| 17. | Common lizard      | <i>Calotes versicolor</i>     |
| 18. | Cobra              | <i>Naja naja</i>              |
| 19. | Russells viper     | <i>Vipera russeli</i>         |
| 20. | Common krait       | <i>Bangarus caeruleus</i>     |
| 21. | Banded krait       | <i>Bangarus fasciatus</i>     |
| 22. | Rat snake          | <i>Ptyas mucosus</i>          |

Aves

|     |                         |                                |
|-----|-------------------------|--------------------------------|
| 1.  | Brahminy duck           | <i>Tadorna ferruginea</i>      |
| 2.  | Black winged kite       | <i>Elanus caeruleus</i>        |
| 3.  | Black winged stilt      | <i>Himantopus himatopus</i>    |
| 4.  | Blossom headed parakeet | <i>Psittacula cyanocephala</i> |
| 5.  | Brahminy mynah          | <i>Starus pegodarus</i>        |
| 6.  | Black red start         | <i>Phoenicurus ochrurus</i>    |
| 7.  | Blue rock-thrush        | <i>Monticola solitarius</i>    |
| 8.  | Common myna             | <i>Acridotheres tristis</i>    |
| 9.  | Collared scops-owl      | <i>Otus bakkamoena</i>         |
| 10. | Crow pheasant           | <i>Centropus sinensis</i>      |
| 11. | Crested cuckoo          | <i>Clasnator jacobinus</i>     |
| 12. | Common coot             | <i>Fulica atra</i>             |
| 13. | Common swallow          | <i>Hirundo rustica</i>         |
| 14. | Great grey shrike       | <i>Lanius excutor</i>          |
| 15. | Grey jungle fowl        | <i>Gallus sonneratiae</i>      |
| 16. | House sparrow           | <i>Passer domesticus</i>       |
| 17. | Indian pipit            | <i>Anthus novaeelandiae</i>    |
| 18. | Indian pitta            | <i>Pitta brachynchlos</i>      |
| 19. | Koel                    | <i>Eucynamis scolopaceus</i>   |