INVENTORY OF SOIL & LAND RESOURCES MAPPING OF MEDAK DISTRICT OF TELANGANA STATE USING REMOTE SENSING TECHNIQUES

ABSTRACT

1.	**Survey Area**	:	Medak district, Telangana State
2.	**Geographical Extent**	:	17^0 35' and 18^0 4' of North Latitude and 77^0 26' to 79^0 7' East Longitude
3.	**Agro-climatic Region**	:	Southern Plateau and Hills region-X
4.	**Total Geographical Area**	:	972030 ha
5.	**Kind of Survey**	:	Soil Resource Mapping (SRM) using Remote Sensing Techniques
6.	**Base Maps**	:	(i) Survey of India Toposheets (scale 1:50,000) (ii) Geology Map (scale 1:2,50,000) of Geological Survey of India (iii) Satellite Imagery (scale 1:50,000) of LISS-III (IRS-1D)
7.	**Scale of Mapping**	:	1:50,000 Scale
8.	**Period of Survey**	:	December, 2013 and 22th Feb. to 27th March, 2014

9. Mapping unit wise soil association and their extent.

S No.	Mapping Units	Soil Association	AREA(Ha.)
1	ALb1a1	Arepalli - Jublee	27654
2	BAr5d1	Nagwar - Kankol	627
3	BAu4d1	Kankol –Nagwar -Singtam	8057
4	BAv2a1	Lingampalli - Halagiri	12207
5	BAv2a2	Kaveli - Halagiri	54246
6	BAv2d1	Kankol - Singtam	18102
7	BAv3d1	Singtam - Kankol	21131
8	BAw2a1	Khusnur	37289
9	DLu4d1	Pegudapalli	1209
10	GRn6c1	Bhimaram	10526
11	GRu4c1	Kurmapalli - Jillela	21070
12	GRu4d1	Jillela - Kurmapalli	6106
13	GRv2a1	Gundi - Gollapalli	109204
14	GRv2a2	Paidipalli - Saidapur	61818
15	GRv2a3	Pathipaka - Pragnapur	12533
16	GRv2a4	Thimmapur – Gollapalli - Gundi	85635
17	GRv2a5	Suraram - Thimmapur	54967
18	GRv2b1	Birur	14597
19	GRv2d1	Gajwel - Kistapur	72375
20	GRv2d2	Kistapur - Kondapalli	4810
21	GRv3a1	Thimmapur - Bollaram	9146
22	GRv3c1	Thotapalli - Kurmapalli	47719
23	GRv3d1	Maddimilla - Thimmapur	50925
24	GRw1a1	Isojipeta – Rajakkapalli - Manakondur	100138
25	LAr5d1	Guntepalli	15
26	LAu4d1	Ganeshpur	3357
27	LAv2a1	Govindpur - Kohir	11251
28	LAv2a2	Kohir - Mannapur	6435
29	LAv2d1	Digwal - Nallapalli	13727
30	LAv3c1	Shekapur - Chintalghat	2850
31	LAv3d1	Nallapalli - Digwal	16457
32	Reservoir		13436
33	River		9229
34	Tank		33566
35	ROC		1474
36	Hab.		18142
	Grand Total		**972030**

10. Distribution of the area under different landscapes/geology

The district falls in five major landscape/geology classes, these are Alluvium, Basalt, Dolorite, Granite, and Laterite. Most of the area in Medak district comes under Granite landscape accounting 68.1 percent followed by basalt (15.6%), laterite (5.6%) and alluvium accounting 2.8 percent. The distribution of area under different geology/landscape of the district is depicted in the given table below.

S No.	Geology/Landscape	Area (Ha)	Area (%)
1	Alluvium	27654	2.8
2	Basalt	151659	15.6
3	Dolorite	1209	0.1
4	Granite	661569	68.1
5	Laterite	54092	5.6
6	Reservoir	13436	1.4
7	River	9229	0.9
8	Tank	33566	3.5
9	ROC	1474	0.2
10	Hab.	18142	1.9
	Total	**972030**	**100.0**

11. Distribution of the area under different physiography classes

The district comprises of following physiography listed below with their percentage of area with respect to the total area of the district.

The major area is under upper pediplains occupying 6,80,135 ha accounting 69.97 percent, lower pediplain occupying 1,37,427 ha accounting 14.14 percent followed by pediments (4.09 percent), alluvial plains (2.84 percent) and hill side slopes (1.08 percent).

S No.	Physiography Classes	Area (Ha)	Area (%)
1	Alluvial Plain	27654	2.84
2	Hill Side slopes	10526	1.08
3	IsolatedHills/Hillocks	642	0.07
4	Pediment	39799	4.09
5	Upper Pediplain	680135	69.97
6	Lower Pediplain	137427	14.14
7	Reservoir	13436	1.4
8	River	9229	0.9
9	Tank	33566	3.5
10	ROC	1474	0.2
11	Hab.	18142	1.9
	Total	**972030**	**100.00**

13. Distribution of the area under different land use classes

Majority of the area of the district is under agriculture followed by forest and open scrub. The percentage with area is depicted in the table below.

S No.	Land Use Classes	Area(Ha)	Area(%)
1	Agriculture	582523	59.9
2	Plantation	14597	1.5
3	Forest	82165	8.5
4	Open scrub	216898	22.3
5	Reservoir	13436	1.4
6	River	9229	0.9
7	Tank	33566	3.5
8	ROC	1474	0.2
9	Hab.	18142	1.9
	Total	**972030**	**100**

14. Distribution of the area under different depth classes

The soils of the district are mostly very deep soils followed by shallow to moderately deep and deep soils. The percentage along with the area is depicted in the table below.

S No.	Depth classes	Area(Ha)	Area(%)
1	Very Shallow	25141	2.59
2	Very Shallow to shallow	27176	2.80
3	Shallow	71609	7.37
4	Shallow to moderately deep	356904	36.72
5	Moderately deep to deep	23458	2.41
6	Deep	28785	2.96
7	Deep to very deep	112789	11.60
8	Very deep	250321	25.75
9	Reservoir	13436	1.4
10	River	9229	0.9
11	Tank	33566	3.5
12	ROC	1474	0.2
13	Hab.	18142	1.9
	Total	**972030**	**100.00**

15. Distribution of the area under different erosion classes

The district is prone to severe erosion hazard for mere 4.27 percent with 50 percent under moderate erosion hazard and 22.78 percent under moderate to severe erosion. The percentage

with area is depicted in the table below.

S No..	Erosion Classes	Area(ha)	Area(%)
1	Slight erosion	137427	14.14
2	Slight to moderate erosion	9146	0.94
3	Moderate erosion	486589	50.06
4	Moderate to severe erosion	221471	22.78
5	Severe erosion	41550	4.27
6	Reservoir	13436	1.4
7	River	9229	0.9
8	Tank	33566	3.5
9	ROC	1474	0.2
10	Hab.	18142	1.9
	Total	**972030**	**100.00**

SALIENT FEATURES:

- Agriculture is dominant land use in the district occupying 5,82,523 ha (59.9%) followed by open scrub area of 216898 ha (22.3%), forest 8.5 percent and plantation a mere 1.5 percent.
- Out of the total area, about 60 per cent area is suitable for cultivation and is classified as moderately good to good land with moderate limitations.
- As per the Land capability classification, LCC class II dominated accounting to 31.79 per cent followed by III- IV (23.50%) and III (16.04%).
- As per the Soil irrigation potential, 32.45 per cent area has moderate soil limitations for sustained use under irrigation; whereas 29.18 per cent lands that have severe soil limitations and 0.4 per cent lands under very severe soil limitation for sustained use under irrigation.
- As per the Land Irrigability Class, 27.6 per cent lands have severe limitations for sustained use under irrigation followed by 31.6 per cent lands have moderate limitations with 20.9 per cent lands are marginally suitable for sustained use under irrigation due to very severe limitation.
- Most of the area taxonomically classified under soil order Inceptisols followed by Entisols, Vertisols and Alfisols respectively.
- The area under shallow to moderately deep soils is 36.72 per cent followed by very deep soils is 25.75 percent of the total area of the district.

HOW TO USE SOIL RESOURCE MAPPING REPORT

This report embodies the results of the Soil Resource Mapping of Medak district of Telangana state and furnishes information on the geographical setting of the state vis-à-vis location, extent, physiography, relief, drainage, climate, geology, natural vegetation, agriculture, land use and soils.

The report contains information on interpretative grouping of soils and land resources which includes land capability classification providing suggestive management related guidelines; soil suitability groupings and crop recommendations which in turn provides a scientific database for horticulture, forest, forage and grassland development; water harvesting, water storage and water management. The soils of the area have also been differentiated as per soil characteristics based on Soil Taxonomy (USDA) to enable the users for scientific land use planning.

Medak District spreads over an area of 972030 ha and is covered by twenty four Survey of India toposheets on 1:50,000 scale and the same have been used as reference maps for the survey. Satellite data (NRSC Imagery) has been used for image interpretation and soil mapping. In the report each soil mapping unit is marked by a symbol i.e. GRu4c1 (Granite Geology; pediment, 10-25 per cent slope; forest land use; soil series association. Each soil association is restricted to a maximum of three soil series found within concerned soil mapping unit.

For the use of the soil resource mapping report, first user needs to locate the area of interest on the map and note down the soil mapping units. Permanent features such as road, stream, lakes and village habitation etc. shown on the map will help user to locate the area of interest on the map. For the detailed information on soil mapping unit in respect of soil series in the area of interest, its extent, present and proposed land uses reference may be made to chapter:-4, 5 and Appendix-I and II.

The symbols used in the soil mapping unit represents the five levels of mapping i.e. GRu4c1 may be referred as follows:

GR	Granite	:	Landscape
u	Pediment	:	Physiography
6	10-25 % Slope	:	Slope classes
d	Forest	:	Land use
1	*Soil series association of* ***Kurmapalli - Jillela***		

Any comments and/or suggestions on the report are welcome. For any additional information and clarification, further correspondence or personal contact may be established with:

The Chief soil Survey Officer, Soil and Land Use Survey of India IARI Buildings, New Delhi 110 012 Phone: +91-11-25841263 / 25849486 Fax : +91-11-25843811 Email: csso-slusi@nic.in	The Soil Survey Officer Soil and Land Use Survey of India Mrida Sarvekshan Bhavan, Rajendranagar Hyderabad-500030 Tel. 040- 24010051/42 Fax : 040-24010051, Email:ssohyderabad-slusi@nic.in
Log on to: http://slusi.dacnet.nic.in	