

## Inventory of Soil Resource of Kheda District, Gujarat Using Remote Sensing and GIS Techniques

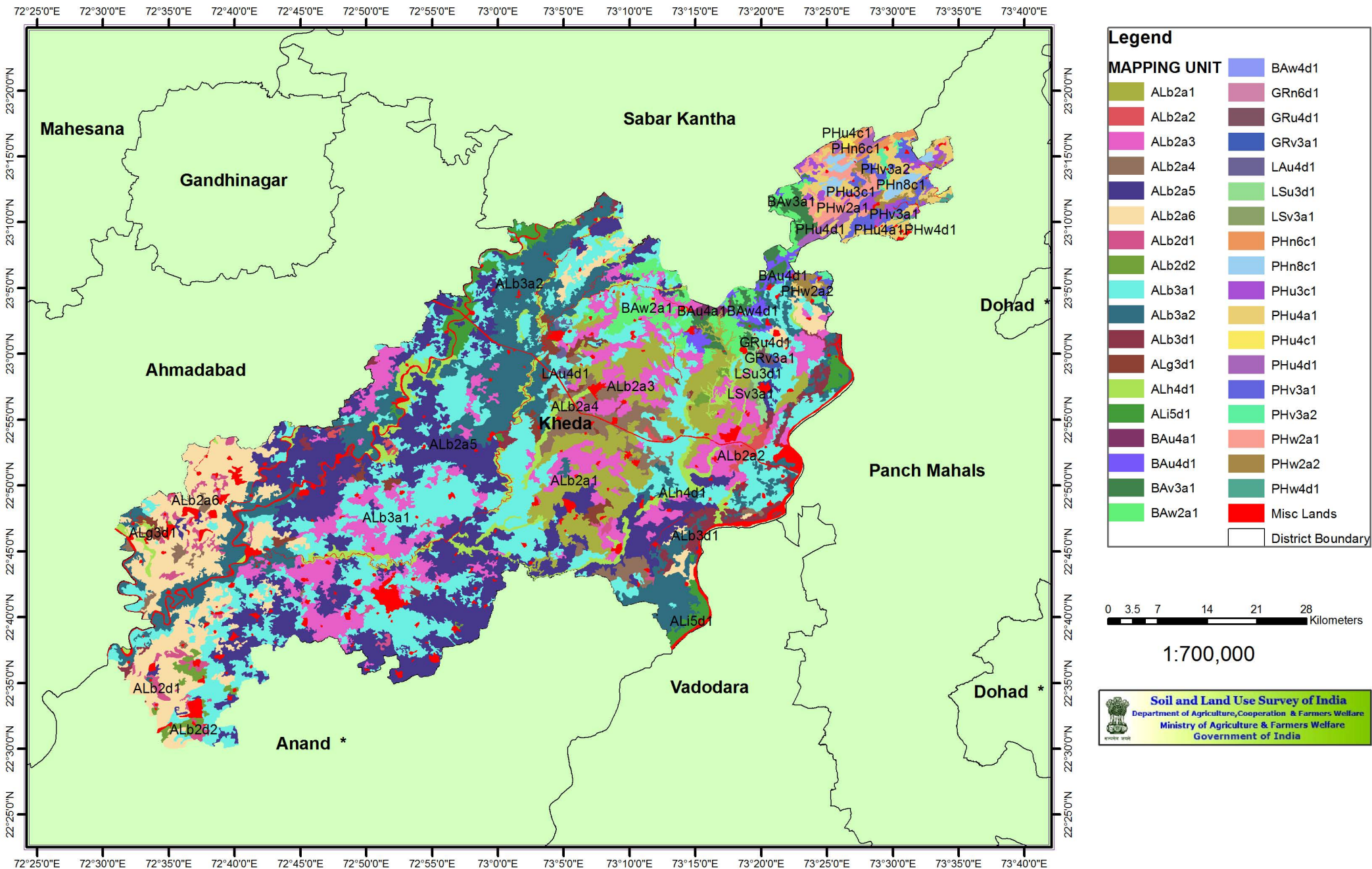
### ABSTRACT

1.	Survey Area	Kheda district, Gujarat
2.	Geographical Extent	72°-30' to 73°25' - East Longitude and 22°30' to 23° 10' - North Latitude
3.	Agro Climate Region	Semi Arid
4.	Total Area of the District	430264.87 ha.
5.	Kind of Survey	Soil Resource Mapping using Remote Sensing Techniques.
6.	Base Map	(a) IRS-D Geo-coded Satellite Imagery (1:50000 Scale ) (b) SOI –Toposheet ( 1:50,000 scale )
7.	Scale of Mapping	1: 50,000
8.	Period of Survey	April, 2009-2010

### Soil Series association mapped and their respective area.

Mapping Unit	Mapping Symbol	Soil Association	Area (ha)	Area (%)
ALb2a1	A02	Sajod-Varnol	25165.13	5.85
ALb2a2	A03	Varnol-Sajod	1946.96	0.45
ALb2a3	A04	Latipura	42790.54	9.95
ALb2d1	A05	Sojod- Kawa	4502.66	1.05
ALb2d2	A06	Sojod-Kawa	2526.24	0.59
ALg3d1	A07	Malitha-Rumalpuraa	4224.91	0.98
ALb2a4	A08	Sajod-Latipura	10667.66	2.48
ALh4d1	A09	Mulad-Rumalpuraa	16109.64	3.75
ALi5d1	A10	Malitha-Rumalpuraa	6830.14	1.59
ALb2a5	A11	Latipura	70600.19	16.41
ALb3a1	A12	Bariya-Latipura	87218.57	20.27
ALb3a2	A13	Borsad-Bariya	48740.69	11.33
ALb3d1	A14	Borsad-Rumalpuraa	7176.19	1.67
ALb2a6	A15	Varnol-Thasra	35342.85	8.22
BAu4a1	B08	Jambar	597.40	0.14
BAu4d1	B09	Jambar	2850.20	0.66
BAv3a1	B10	Chandravan-Kadba	4620.34	1.07
BAw2a1	B11	Sagbara-Chandeliya	8638.86	2.01
BAw4d1	B13	Kabirgaon	144.20	0.03
GRn6d1	G04	Dhanpur	174.86	0.04
GRu4d1	G07	Surkheda-Panvad	272.02	0.06
GRv3a1	G09	Od	452.85	0.11
LAu4d1	L01	Dungri	645.23	0.15

LSu3d1	LS03	Chhayan-Minakayar	1711.48	0.40
LSv3a1	LS04	Prachi	343.46	0.08
PHn8c1	PH04	Phulpur-Punakota	2028.88	0.47
PHn6c1	PH05	Punakota-Phulpur	1299.14	0.30
PHu4d1	PH07	Sudhiya- Lakhapur	1925.21	0.45
PHu4c1	PH08	Sudhiya-Dabhda	330.95	0.08
PHu4a1	PH09	Lakhanpur - Dabhda	7157.34	1.66
PHu3c1	PH10	Sudhiya-Dabhda	2186.57	0.51
PHv3a1	PH11	Liliamba -Wakota	3729.38	0.87
PHw2a1	PH12	Wakota-Ved	3799.54	0.88
PHw2a2	PH13	Ved-Wakota	2072.13	0.48
PHw4d1	PH14	Lakhanpur-Liliamba	277.04	0.06
PHv3a2	PH15	Chamariya	794.93	0.18
	C	-	1046.01	0.24
	H	-	6537.80	1.52
	PS	-	694.38	0.16
	R	-	7403.88	1.72
	Rq	-	185.19	0.04
	SW	-	83.25	0.01
	T	-	4419.98	1.03
	<b>Total</b>		<b>430264.87</b>	<b>100</b>



**Fig No-1 Soil Map of Kheda District**

## Salient Features:

- Total 31 soil series have been mapped in Kheda district of Gujarat.
- Soils of the district are mostly shallow to very deep.
- Soils of Kheda district, Gujarat mainly under eight physiography
  - Hill side slopes - 3502.88 ha. (0.81%)
  - Pediments - 17676.4 ha. (4.11%)
  - Upper pediplains- 9940.96 ha. (2.31%)
  - Lower pediplains- 14510.53 ha. (3.38%)
  - Alluvial plains- 336677.68 ha. (78.25%)
  - Stream bank- 4646.15(1.08%) ha
  - Ravinous lands - 6830.14 ha. (1.59%)
  - Dissected stream banks -16109.64 ha (3.74%)
- Soils of the district falls in five slope classes
  - Nearly level to very gently sloping (0-3%) 208052.76 ha. (48.36%)
  - Very gently to gently sloping (1-5%) - 161199.37 ha. (37.47%)
  - Gently to moderate sloping (3-10%) - 30309.23 ha. (7.04%)
  - Moderately sloping to strongly sloping (5-15%) - 6830.14 ha. (1.59%)
  - Strong sloping to moderately steep slopes (10-25%) 1474.00 - ha. (0.34%)
  - Steep slopes to very steep slopes (25-50%) – 2028.88 ha. (0.47%)
- Various land use / Land cover classes of the district are as under.
  - Cultivated lands - 354678.82 ha. (82.43%)
  - Forest lands – 5514.59 ha. (1.28%)
  - Open scrub - 49700.98 ha. (11.56%)
  - Miscellaneous lands - 20370.48 ha. (4.73%)
- Soils of the area are taxonomically classified in to four orders that are Alfisols, Entisols, Inceptisols and Vertisols. All the 31 soils series identified in the area are further classified in to 7 suborders, 7 great groups, 11 sub groups and 20 families
- About 75.26% of total geographic area of district having none to slight soil erosion, whereas about 11.68% suffers from slight to moderate & 8.33% area of district of suffers due to severe water erosion hazards.
- About 47.59% area of district categorized under class II shown capability to produce good crop under favorable management practices & 35.07% area shown under II-III have faire productive potential under favorable improved agricultural cultivation practices.
- About 8.90% area of district marginally suitable for cultivation whereas 2.43% area is found to be suitable for pasture / plantation.

## HOW TO USE SOIL RESOURCE MAPPING REPORT

This report embodies the results of the soil resource mapping of Kheda district of Gujarat providing information on the geographical setting of the district such as location, extent, physiography, relief, drainage, climate, geology, natural vegetation, agriculture, land use & soils.

The report contains other information on interpretative grouping of soils such as Land Capability Classes; Land Irritability Classes, Soil Suitability Grouping and Hydrological Grouping and also recommendation for crops; horticulture development; forest, forage and grasslands development; water harvesting, water storage and water management that are essential for soil land resource management. The genesis and classification of the soils are also discussed in **Chapter-5**.

Kheda district of Gujarat is spread over an area of 4,30,264.87 ha. The district is covered by seven SOI topographical sheets on the scale of 1:50,000 which are used as base material along with satellite imageries.

Each soil mapping unit is marked by mapping unit i.e. ALb1a1 (Alluvium, alluvial plain; 0-3% slope; agriculture land use; soil series association, describing Sajod – as dominant series in association with Varnol & Latipura series). Each soil association is restricted to maximum of three soil series.

For the use of the soil resource mapping report, first locate the area of your interest on the map. For the detailed information on soil mapping unit in respect of soil series of the area of interest, its extent, present and proposed land uses, and reference may be made to **Chapter-4, Appendix I and II**.

The mapping unit used in soil mapping represents the five levels of mapping i.e. ALb1a1 may be referred as follow:

AL	- Alluvium	- Landscape
b	- Alluvium plain	- Physiography
1	- 0-3 %	- Slope class
a	- Agriculture land	- Land use
1	- Association of soil series with erosion and management soil unit.	

Any comment and suggestion on the report would be welcome. For any further enquiry / or clarification, correspondation or personal contact may be established, with the

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