हर कदम, हर डगर
किसानों का हमसफर
भारतीय कृषि अनुसंधान परिषद

Agrisearch with a human touch

ICAR - NBSS & LUP

Land Resource and Hydrological Inventory of Ivni Sub-watershed for Watershed Planning and Development Chitapur Taluk, Kalaburgi District, Karnataka (AESR 6.2)

Sujala – III
Karnataka Watershed Development Project- II
Funded by World Bank

ICAR - National Bureau of Soil Survey & Land Use Planning, Regional Centre, Bangalore
Watershed Development Department, Govt. of Karnataka, Bangalore

About ICAR-NBSS&LUP

The ICAR-National Bureau of Soil Survey and Land Use Planning (ICAR-NBSS&LUP), Nagpur, a premier Institute of the Indian Council of Agricultural Research (ICAR), was set up during 1976 with the objective to prepare soil resource maps at national, state and district levels and to provide research inputs in soil resource mapping and its applications, land evaluation, land use planning, land resource management, and database management using GIS for optimising land use on different kinds of soils in the country.

The Bureau has been engaged in carrying out soil resource survey, agro-ecological and soil degradation mapping at the country, state and district levels for qualitative assessment and monitoring the soil health towards viable land use planning. The research activities have resulted in identifying the soil potentials and problems, and the various applications of the soil surveys with the ultimate objective of sustainable agricultural development. The Bureau has the mandate to correlate and classify soils of the country and maintain a National Register of all the established soil series. The Institute is also imparting in-service training to staff of the soil survey agencies in the area of soil survey, land evaluation and soil survey interpretations for land use planning. The Bureau in collaboration with Panjabrao Krishi Vidyapeeth, Akola is running post-graduate teaching and research programme in land resource management, leading to M.Sc. and Ph.D. degrees.

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PART-A

Land Resource Inventory of Ivni Sub-watershed for Watershed Planning and Development, Chitapur Taluk, Kalaburagi District, Karnataka (AESR 6.2)

CONTENTS

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How to read and use the Atlas

The Land Resource Inventory of Ivni Sub-watershed (Chitapur taluk, Kalaburagi district) for Watershed Planning (AESR 6.2) was undertaken to provide comprehensive site- specific cadastral level information useful for farm level planning and integrated development of the area under Sujala – III, Karnataka Watershed Development Project- II.

This atlas contains the basic information on kinds of soils, their geographic distribution, characteristics and classification. The soil map and soil based thematic maps derived from soils data on soil depth, soil gravelliness, slope, land suitability for various crops and land use maps are presented on 1:12,500 scale. The maps of fertility status (soil reaction, organic carbon, available phosphorus, available potassium, available sulphur, available calcium, available copper, available manganese, available zinc, available iron, available boron and salinity (EC) on 1:12,500 scale were derived from grid point sampling of the surface soils from the watershed.

The atlas illustrates maps and tables that depict the soil resources of the watershed and the need for their sustainable management.

The user, depending on his/her requirement, can refer this atlas first by identifying his/her field and survey number on the village soil map and by referring the soil legend which is provided in tabular form after the soil map for details pertaining to his/her area of interest.

The atlas explains in simple terms the different kinds of soils present in the watershed, their potentials and problems through a series of thematic maps that help to develop site-specific plans as well as the need to conserve and manage this increasingly threatened natural resource through sustainable land use management. The Land Resource Atlas contains database collected at land parcel/ survey number level on soils, climate, water, vegetation, crops and cropping patterns, socio-economic conditions, marketing facilities *etc.* helps in identifying soil and water conservation measures required, suitability for crops and other uses and finally for preparing a viable and sustainable land use options for each and every land parcel.

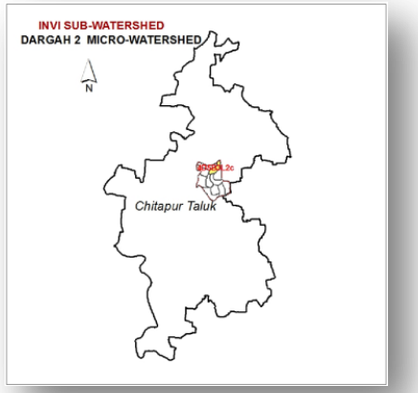
For easy map reading and understanding the information contain in different maps, the physical, cultural and scientific symbols used in the maps are illustrated in the form of colors, graphics and tables.

Physical, Cultural and Scientific symbols used in the Atlas

Each map in the atlas sheet is complemented with the physical, cultural and scientific symbols to facilitate easy map reading.

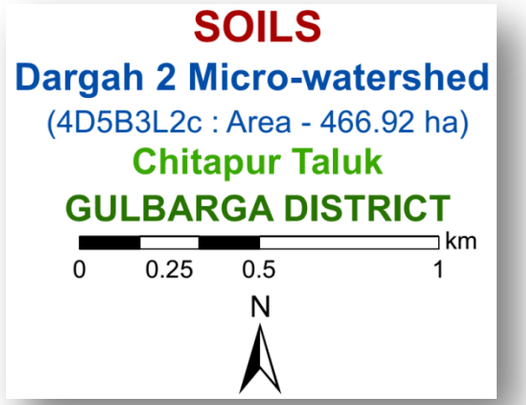
Inset map

Inset provided in each map conveys its strategic location i.e. Taluk, Sub-watershed and Sub-watershed.



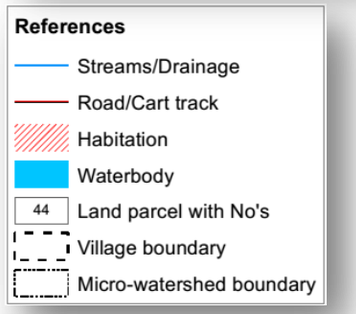
Map title

Map title conveys the relevance of thematic information presented along with a graphical scale, geographical location and watershed details in text form.



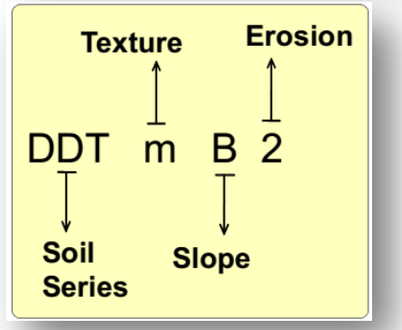
Legends and symbols

*Two legends accompany each map, a **map reference**, which depicts geographic features and a **thematic legend** which portrays spatial information. Picking up the symbol and colour of a particular enables one to go to the legends to obtain the required information.*



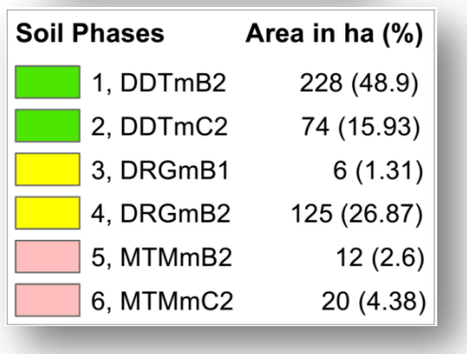
Soil Units

The soil map may be read at different levels. The most detailed level is that of the soil phase. Soil phases are distinguished within soil series mainly based on differences in surface of soil texture, slope, gravelliness , erosion ,etc.



Map colours

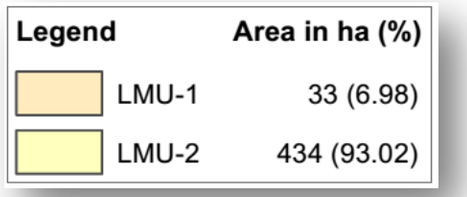
Different shades of colours are used as an aid to distinguish the different classes of soils, crop suitability and other maps.



Soil Phases	Area in ha (%)
1, DDTmB2	228 (48.9)
2, DDTmC2	74 (15.93)
3, DRGmB1	6 (1.31)
4, DRGmB2	125 (26.87)
5, MTMmB2	12 (2.6)
6, MTMmC2	20 (4.38)

Land Management Units (LMU)

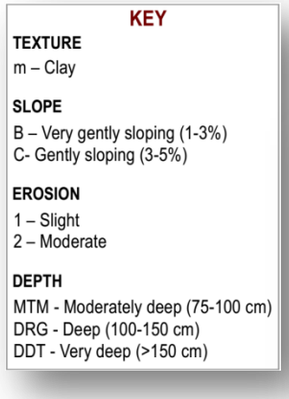
Grouping of similar soil areas based on their soil-site characteristics into management units that respond similarly for a given level of management are designated as land management units

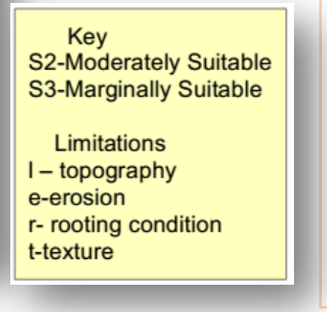


Legend	Area in ha (%)
LMU-1	33 (6.98)
LMU-2	434 (93.02)

Map key

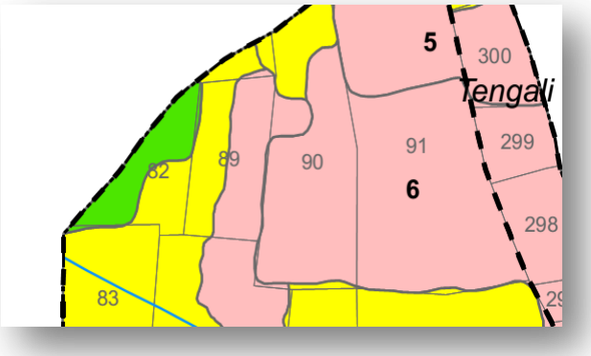
There are many thematic types to be differentiated on the map solely based on colour. Therefore soils and suitability types and their limitations are distinguished by colours with a combination of alpha-numeric characters.





Soil and plot boundaries

Soil units shown on the map are represented by both the color and a numeral. The soil boundaries are superimposed on land parcel with revenue survey number boundaries to visualize its spatial extent.



LAND RESOURCE INVENTORY OF IVNI SUB-WATERSHED FOR PLANNING CHITAPUR TALUK, KALABURAGI DISTRICT

A pilot study by ICAR-NBSS&LUP, Bangalore

INTRODUCTION

Land is a scarce resource and basic unit for any material production. It can support the needs of the growing population, provided they use land in a rational and judicious manner. But what is happening in many areas of the state is a cause for concern to anyone involved in the management of land resources at the grassroots level. In India the area available for agriculture is about 51 per cent of the total area and more than 60 per cent of the people are still relying on agriculture for their livelihood. The limited land area is under severe stress and strain due to increasing population pressure and competing demands of various land uses. Due to this, every year there is a significant diversion of farm lands and water resources for non-agricultural purposes. Apart from this, due to lack of interest for farming among the farmers in many areas, large tracts of cultivable lands are turning into fallows and this trend is continuing at an alarming rate.

The watershed management programs are aimed at designing suitable soil and water conservation measures, productivity enhancement of existing crops, crop diversification with horticultural species, greening the wastelands with forestry species of multiple uses and improving the livelihood opportunities for landless people.

The objectives can be met to a great extent when an appropriate Natural Resources Management (NRM) plan is prepared and implemented. It is essential to have site specific Land Resources Inventory (LRI) indicating the potentials and constraints for developing such a site specific plan. LRI can be obtained by carrying out detailed characterization and mapping of all the existing land resources like soils, climate, water, minerals and rocks, vegetation, crops, land use pattern, socio-economic conditions, infrastructure, marketing facilities and various schemes and developmental works of the government. From the data collected at farm level, the specific problems and potentials of the area can be identified and highlighted, conservation measures required for the area can be planned on a scientific footing, suitability of the area for various uses can be worked out and finally viable and sustainable land use options suitable for each and every land holding can be prescribed to the farmer and other land users of the area.

Gulbarga popularly known as Kalaburgi is located in the Northern part of the state and lies between 17 ^{o} 35’ and 17^{o} 45’ North latitude and between 76 ^{o} 10’ and 77 ^{o} 45’ east longitude. The district is biggest district in the state covering 8.49 % of the area. It has Bijapur district and Sholapur district of Maharastra on the West, Bidar district and Osmanabad district of Maharastra on the North, Raichur district on the South. The district has total geographical area of 16174 sq. kms. Major food crops grown in the district are pigeon pea, sorghum, bajra, and paddy. Commercial crops are sugarcane and cotton. Oilseed crops are groundnut and sunflower. The district economy is dominantly agricultural and nearly 75 per cent of population living in the rural areas are dependent on agriculture. Major geology in the district comprise of Deccan trap (basalt), followed by limestone. Laterite and shale were also noticed in patches.

As a pilot study, **ICAR-NBSS&LUP, Bangalore** carried out the generation of LRI for the Ivni Sub-watershed in Chitapur Taluk, Kalaburagi District. It was selected for data base generation under batch V of Sujala III project. This sub-watershed encompasses of 11 MWs namely, Danduti-1 (4D5B3L1b), Danduti-2 (4D5B3L1c), Danduti-3 (4D5B3L1a), Danduti-4 (4D5B3L1d), Dargah-1 (4D5B3L2f), Dargah-2 (4D5B3L2c), Dargah-3 (4D5B3L2a), Gangurti (4D5B3L2e), Ivni-1 (4D5B3L2g), Ivni-2 (4D5B3L2d) and Ivni-3 (4D5B3L2b) micro watersheds. Land Resource Inventory (LRI) was generated for three among the eleven micro-watersheds.

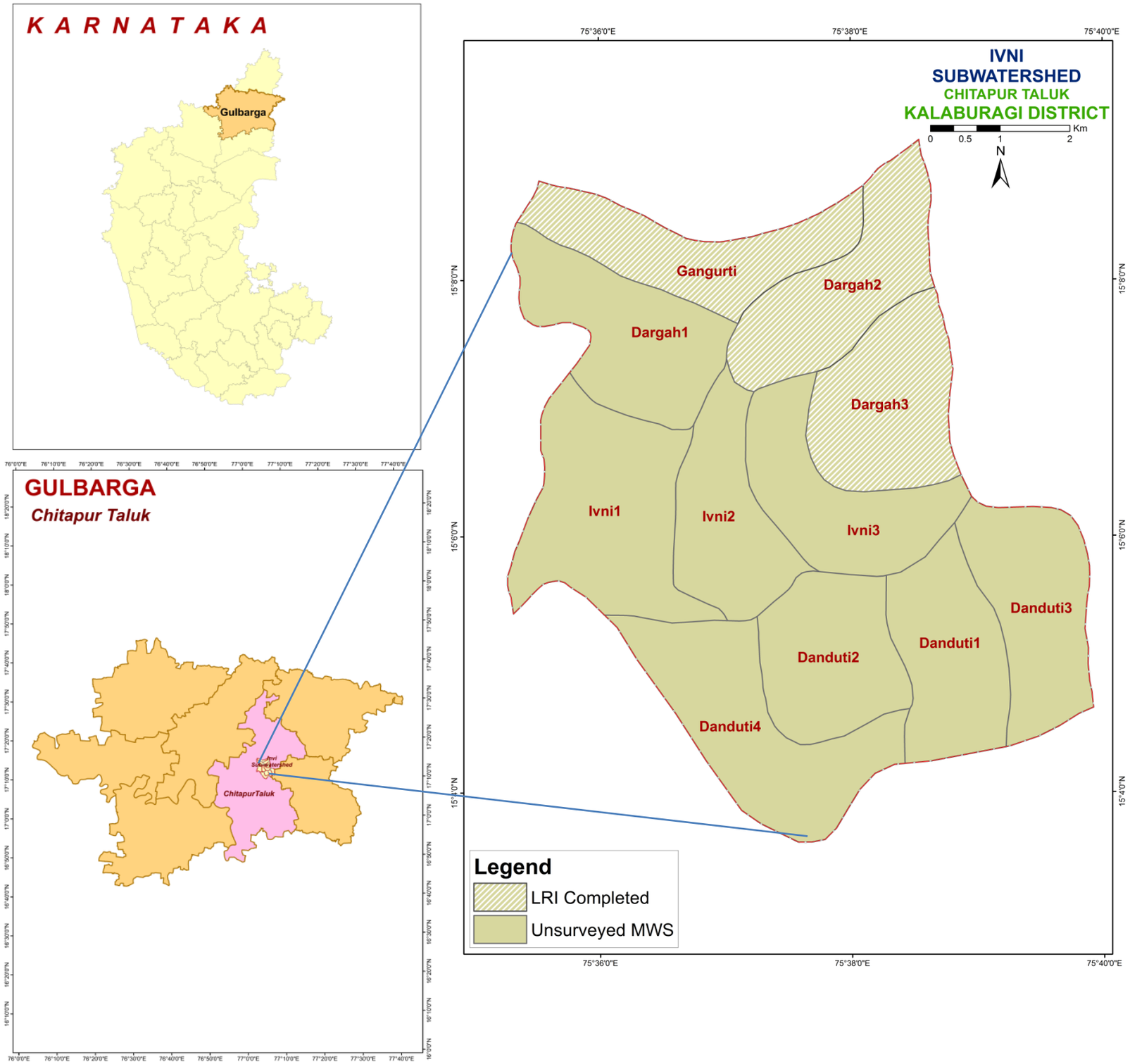
To be continued….

The major landforms identified in the micro-watersheds (Dargah2 - 4D5B3L2c, Dargah3 - 4D5B3L2a, Gundagurti - 4D5B3L2e)of Ivni subwatershed are uplands and low lands. The database was generated by using cadastral map of the village as a base along with high resolution satellite imagery (IRS LISS IV and Cartosat-1). The objectives of the land resource survey, carried out in the Ivni sub-watershed during February-March 2015 are indicated below.

- Detailed characterization of all the land resources like soil, water, land use, cropping pattern and other resources available at parcel level in the village.
- Delineation of homogenous areas based on soil-site characteristics into management units.
- Collection and interpretation of climatic and agronomical data for crop planning.
- Identification of problems and potentials of the area and strategies for their management.
- Assessment of the suitability of land resources for various crops and other uses.
- Establishment of village level digital land resources database in a GIS framework.
- Enable the watershed and other line departments to prepare an action plan for the integrated development of the watershed.

LOCATION AND EXTENT

LOCATION MAP OF IVNI SUB-WATERSHED



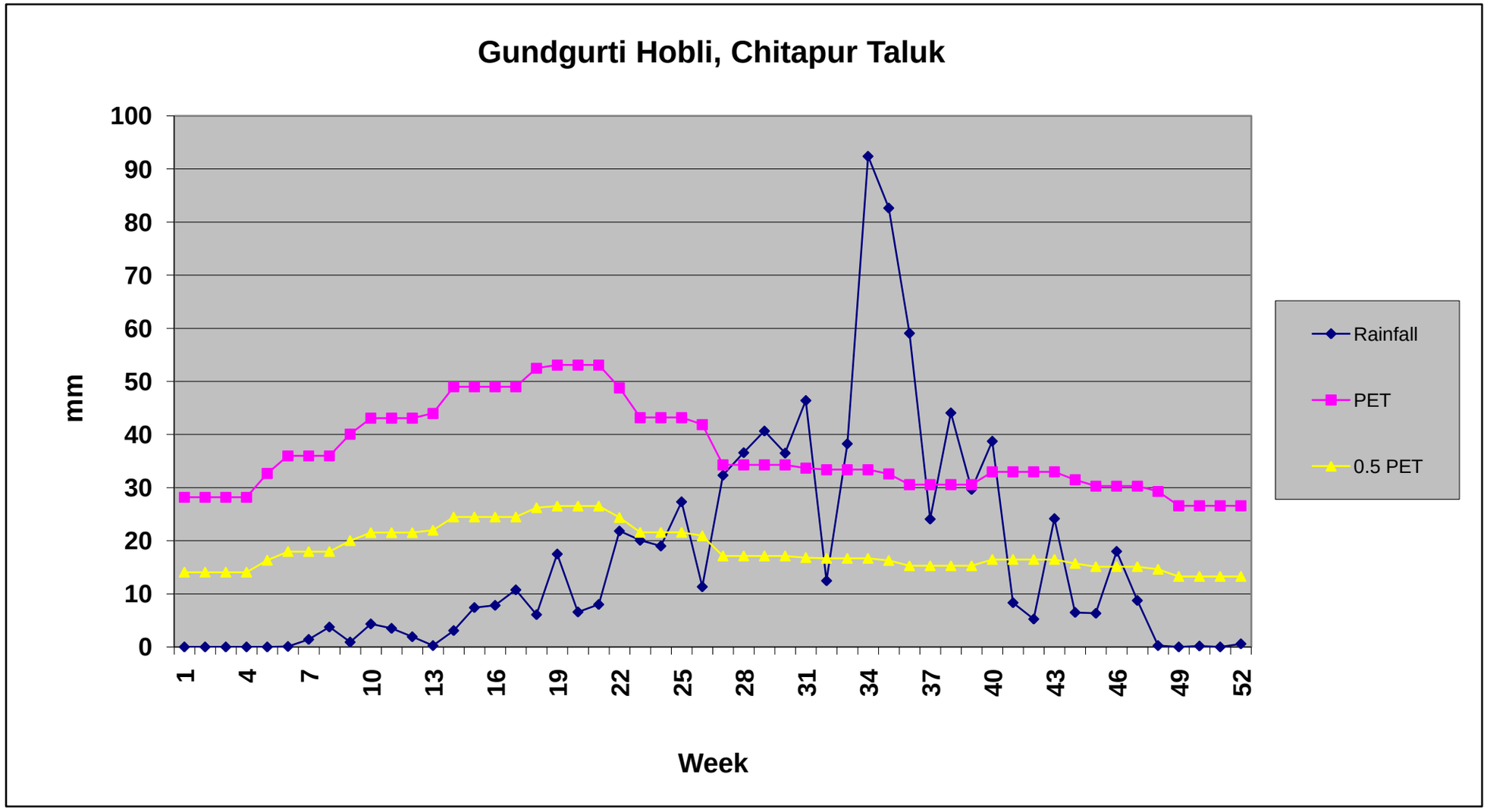
Ivni sub-watershed (Chitapur taluk, Kalaburagi district) is located between $17^0 9'48''$–$17^0 15'24''$ North latitudes and $77^0 3'44''$- $77^0 7'13''$ East longitudes, covering an area of about 5221 ha.

Agro Ecological Sub Region (AESR) 6.2: Central and Western Maharashtra Plateau and North Karnataka Plateau and North Western Telangana Plateau, hot moist semi-arid ESR with shallow and medium loamy to clayey Black soils (medium and deep clayey Black soils as inclusion), medium to high AWC and LGP 120-150 days.

Agro-climatic Zone 2: North-eastern Dry Zone: The total geographic area of this zone is about 1.76 M ha covering 8 taluks of Kalaburagi district and 3 taluks of Raichur. Net cultivated area in the zone is about 1.31 M ha of which about 0.09 M ha are irrigated. The mean elevation of the zone is 300-450 m MSL. The main soil type is deep to very deep soils with small pockets of shallow to medium black soils. The zone is cropped predominantly during rabi due to insufficient rainfall (465-785 mm). The principal crops of the zone are jowar, bajra, oilseeds, pulses, cotton and sugarcane.

Note: In this Sub-watershed, Land Resource Inventory (LRI) was generated for three (Dargah-2 (4D5B3L2c), Dargah-3 (4D5B3L2a) and Gangurti (4D5B3L2e)) among the eleven micro-watersheds.

Climate

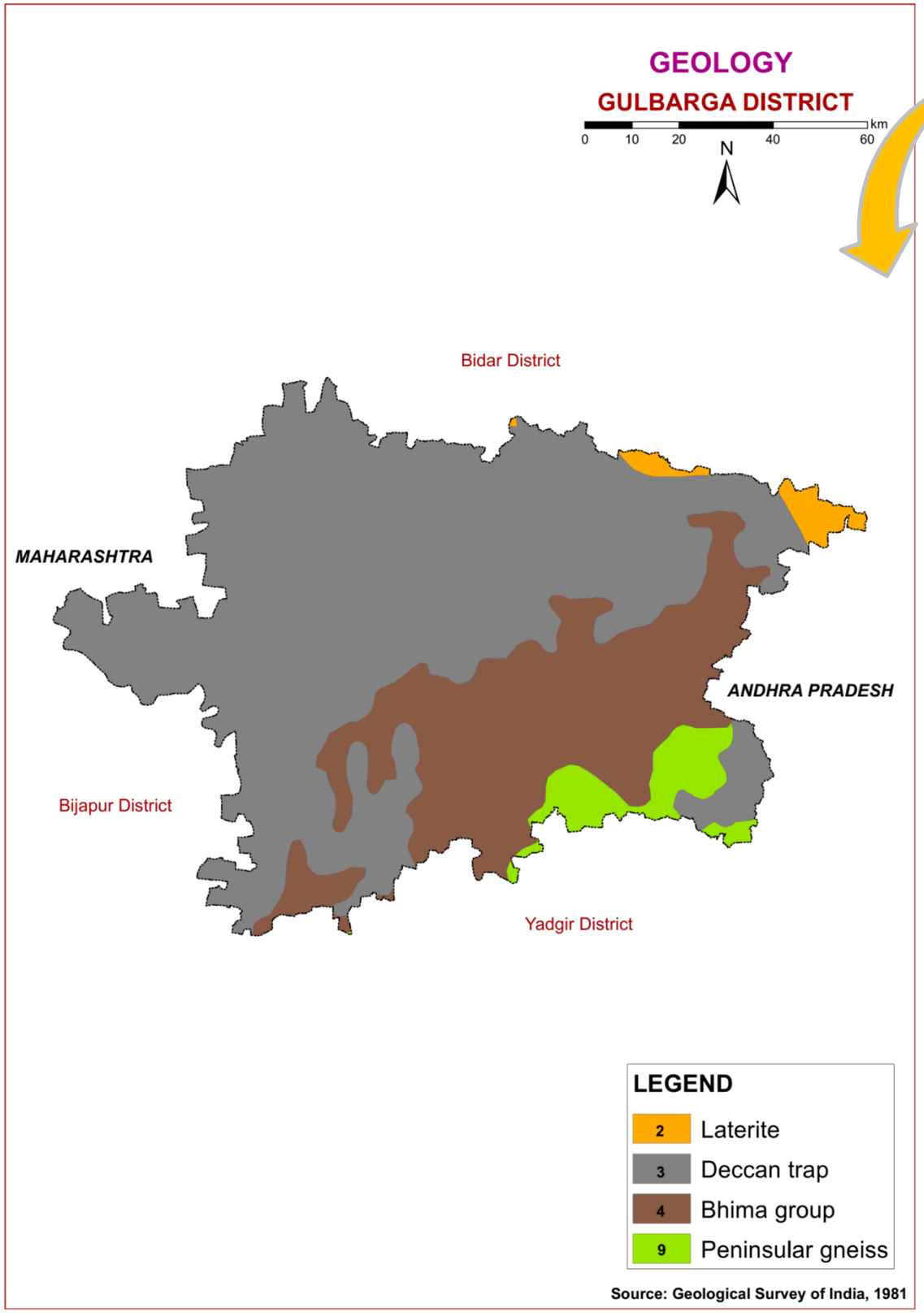


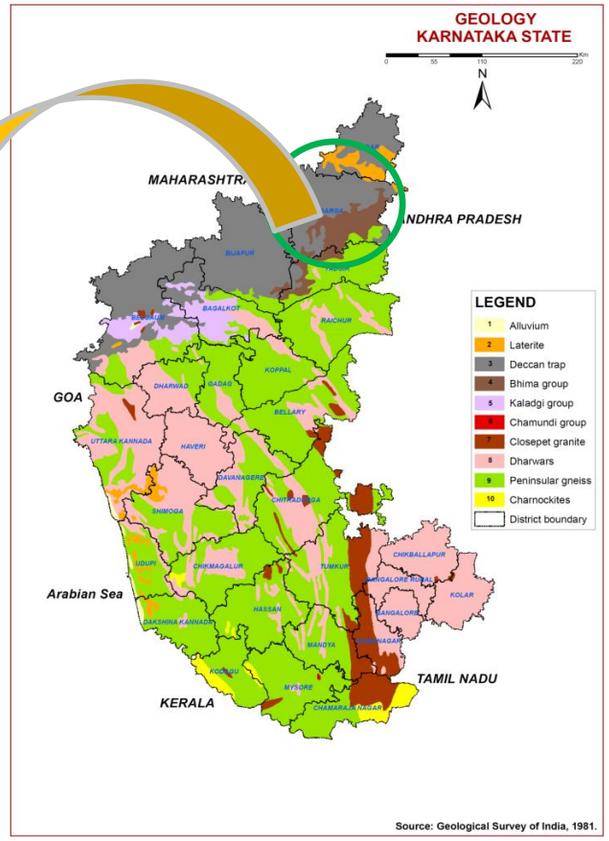
Length of Growing Period (LGP) is varying from June 2nd week to 3rd week of October about 120-150 days and surplus occurs during November which may go either as run off or recharge of ground water

Annual Rainfall : 875 mm. in the Gundgurti hobli, Chitapur taluk

Source: KSNMDC (1980-2011)

Geology





GEOLOGY - KARNATAKA STATE

Karnataka forms part of the Peninsular Shield, which is an ancient stable block of the earth's crust. The shield is composed of geologically ancient rocks of diverse origin. These rocks have undergone various degrees of metamorphism and crushing. Overlying these ancient rocks are Proterozoic, lete Creteceous to Palaeocene, Palaeocene to Recent, and Recent sediments.

In the stratigraphic succession of rocks in Karnataka the Archaean group is the oldest, followed by Proterozoic, Mesozoic and Cainozoic formations.

GEOLOGY - KALABURAGI DISTRICT

Cainozoic Group

The Palaeocene and Recent formations of Karnataka are the laterites and alluvium of marine and riverine origin

Laterite: Laterite is a porous, pitted, clay-like rock with yellow, red, brown, grey and mottled colours, and is composed mainly of hydrated oxides of iron and aluminium.

Mesozoic Group

Towards the end of the Cretaceous Period there was tremendous volcanic activity in the Peninsular part of India with eruption of a series of lava flows which came out through fissures and cracks. This formation is Known as the Deccan Trap.

Deccan Trap: The Deccan Trap covers the whole of Bidar district, and parts of Gulbarga, Bijapur and Belgaum districts, occupying an area of 25,000 sq. km.

Upper Proterozoic Group

Formations of the Upper Proterozoic in Karnataka are closepet granites, Chamundi granites, Kaladgi series and Bhima series.

Bhima series: This series, equivalent to the Kurnool formations, is named after the Bhima river and occurs in Bijapur and Kalaburagi districts.

Archaean Group

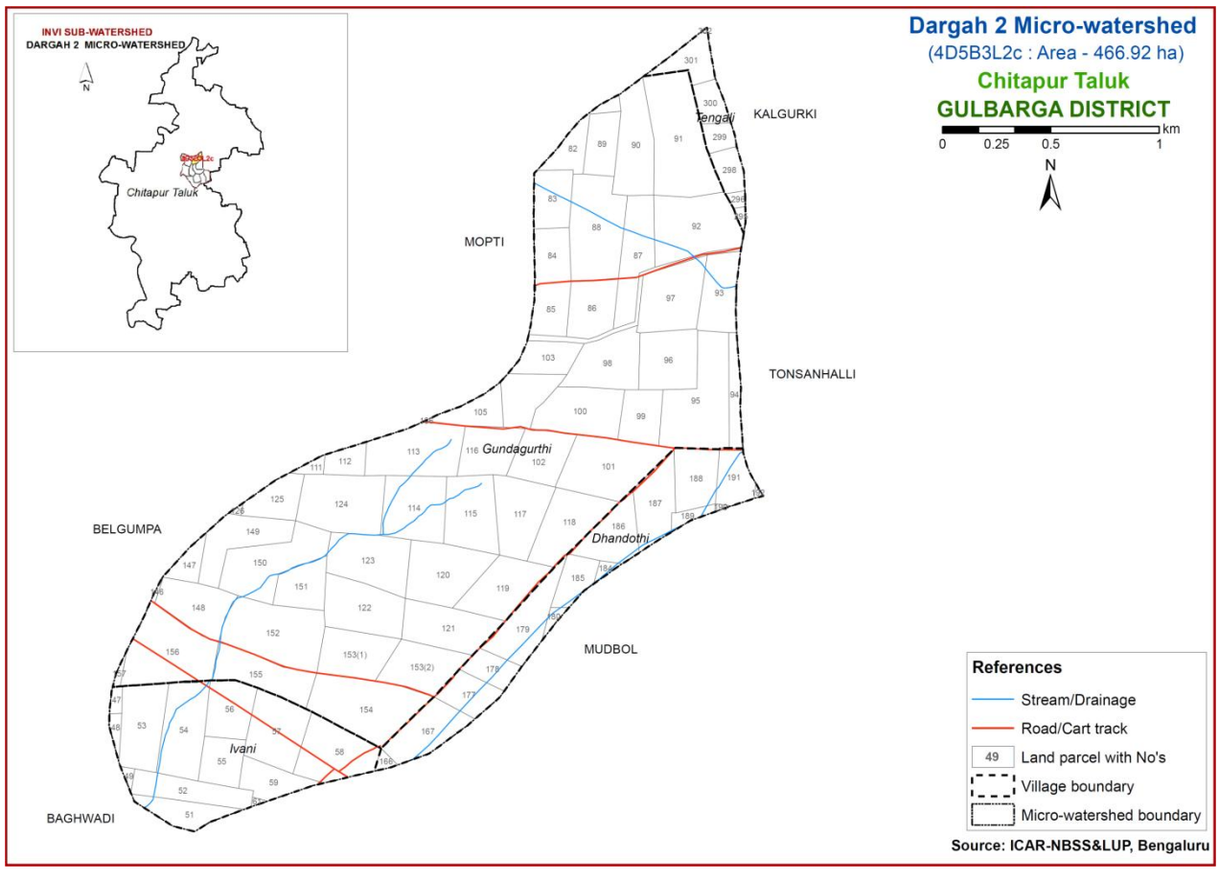
The important formations of this group are Peninsular Gneiss, Dharwar schists, and Charnockites.

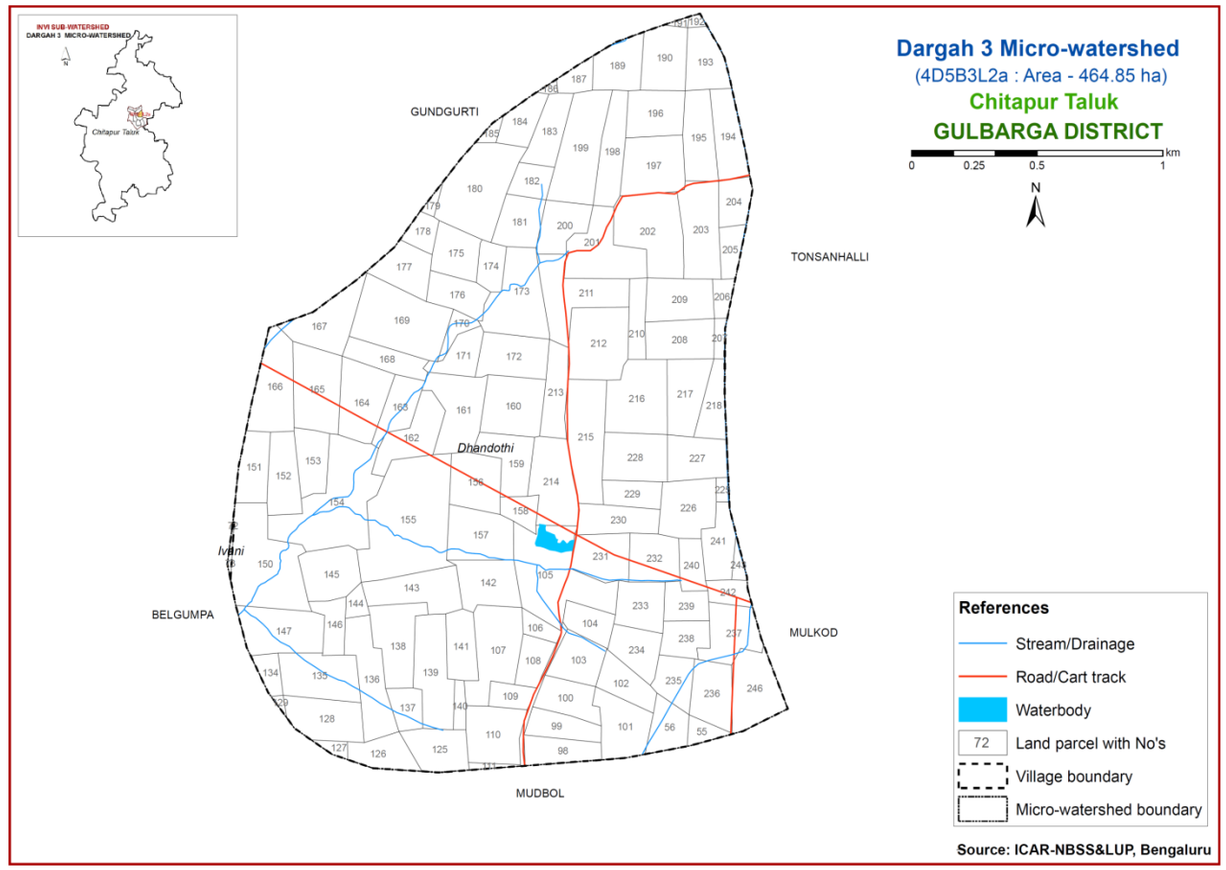
Peninsular Gneiss: Exposed over a large area of Karnataka in all the districts except Bidar is the Peninsular Gneiss which includes granites of all shades with varying composition.

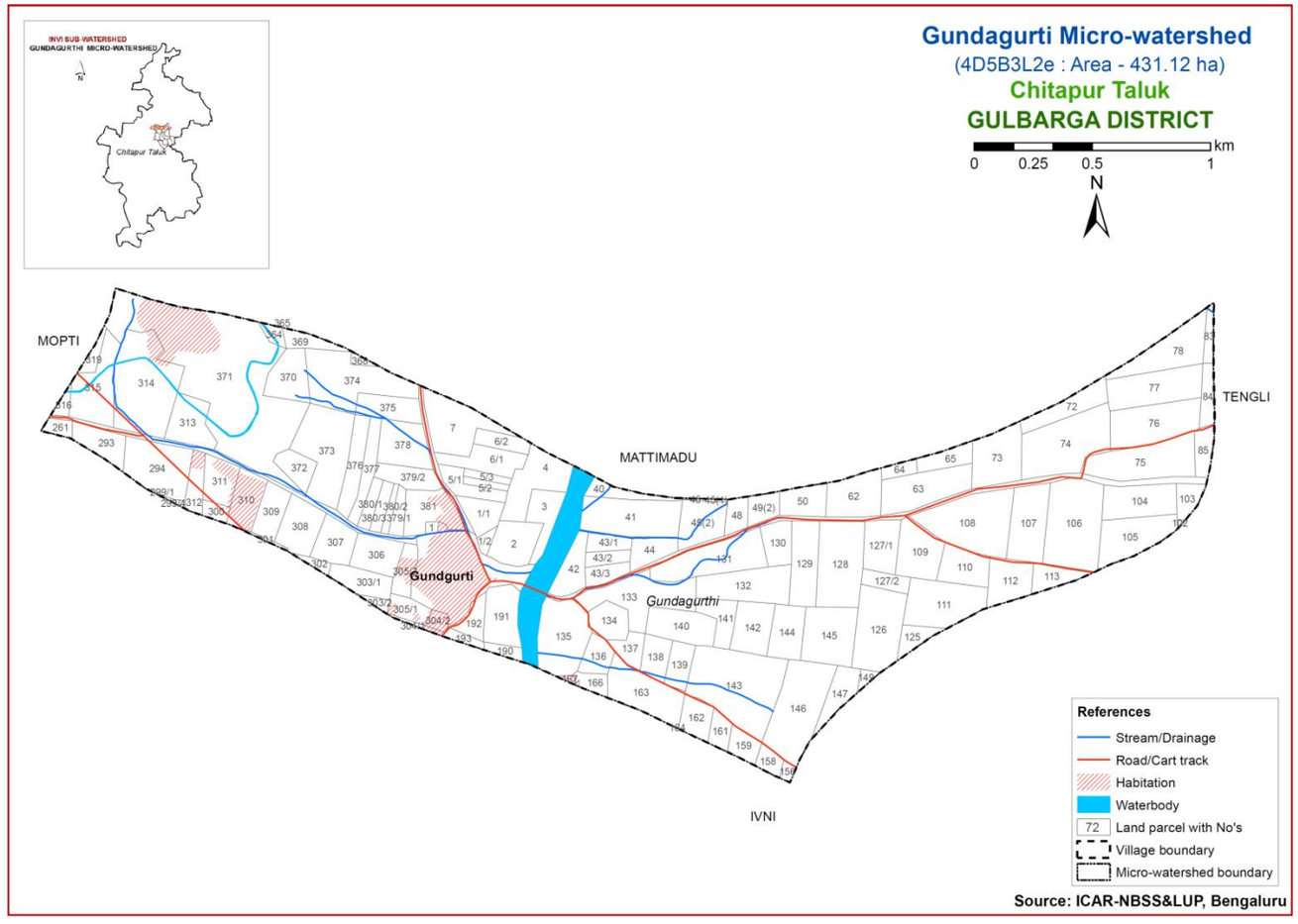
SURVEY METHODOLOGY
Sequence of activities in generation of LRI

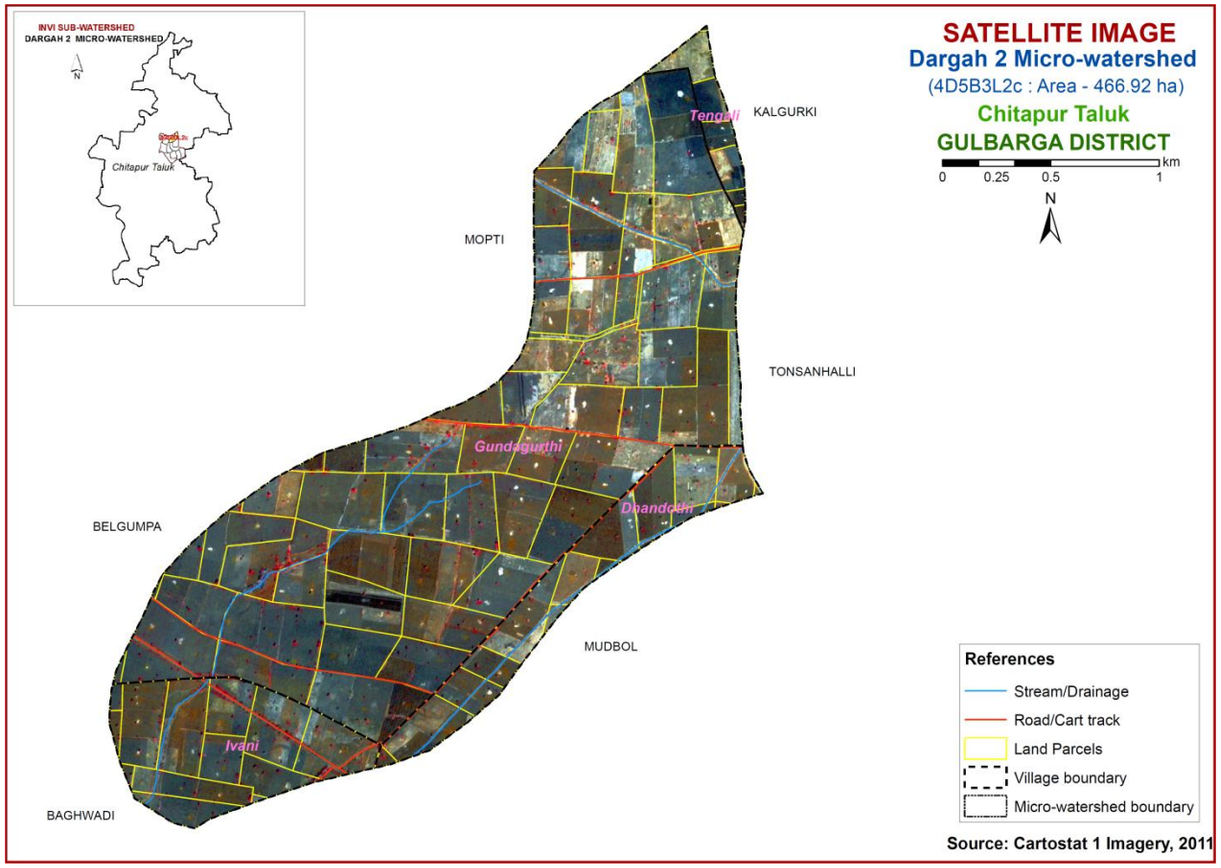
- Traversing the watershed using cadastral maps and imagery as base
- Identifying landforms, geology, land use and other features
- Selecting fields representing land units
- Opening profiles to 2 m depth
- Studying soil and site characteristics
- Grouping similar areas based on their soil-site characteristics into land management units
- Preparation of crop, soil and water conservation plan
- Socio-economic evaluation

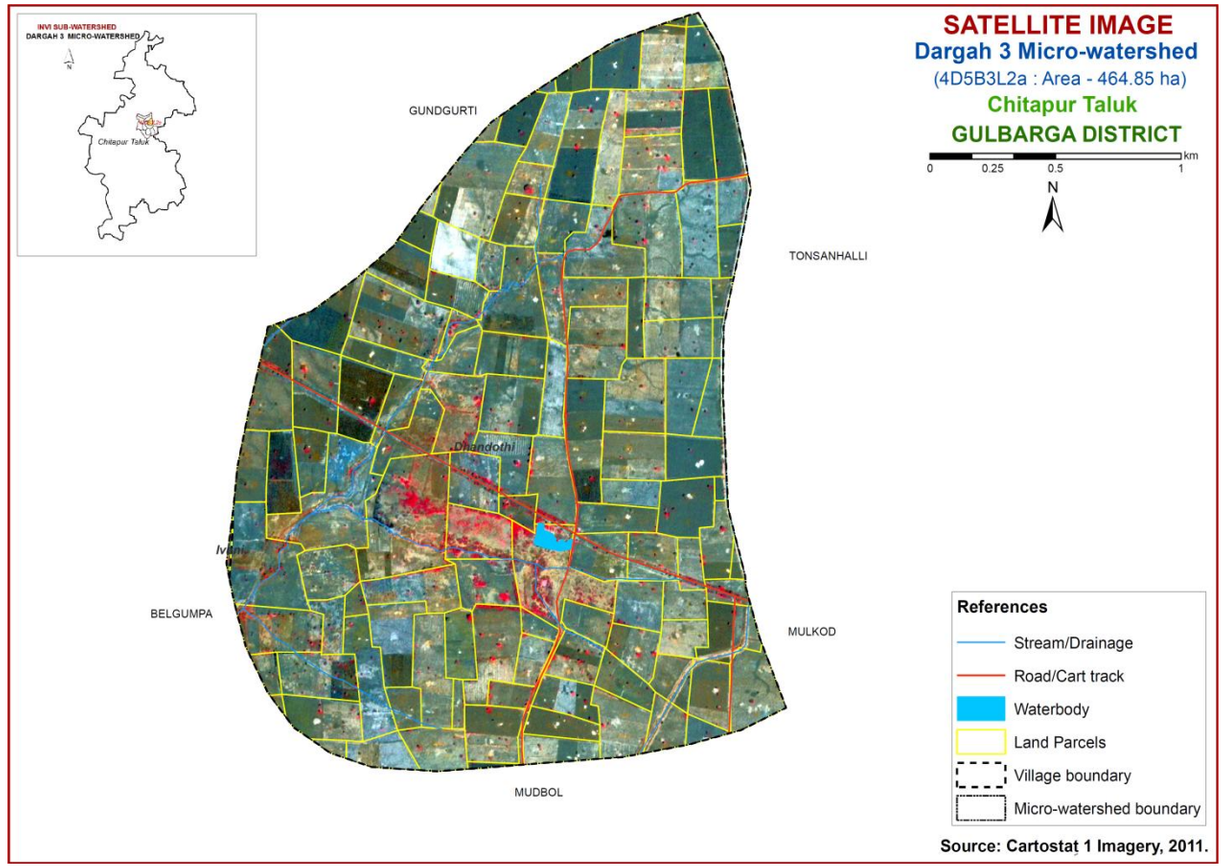
The required site and soil characteristics are described and recorded on a standard proforma by following the protocols and guidelines given in the soil survey manual and field guide. Collection of soil samples from representative pedons for laboratory characterization and collection of surface soil samples from selected fields covering most of the management units for macro and micro-nutrient analysis is being carried out (250m grid intervals). Further processing of data at chemical lab and GIS lab are carried out to generate various thematic maps for each of the study area.

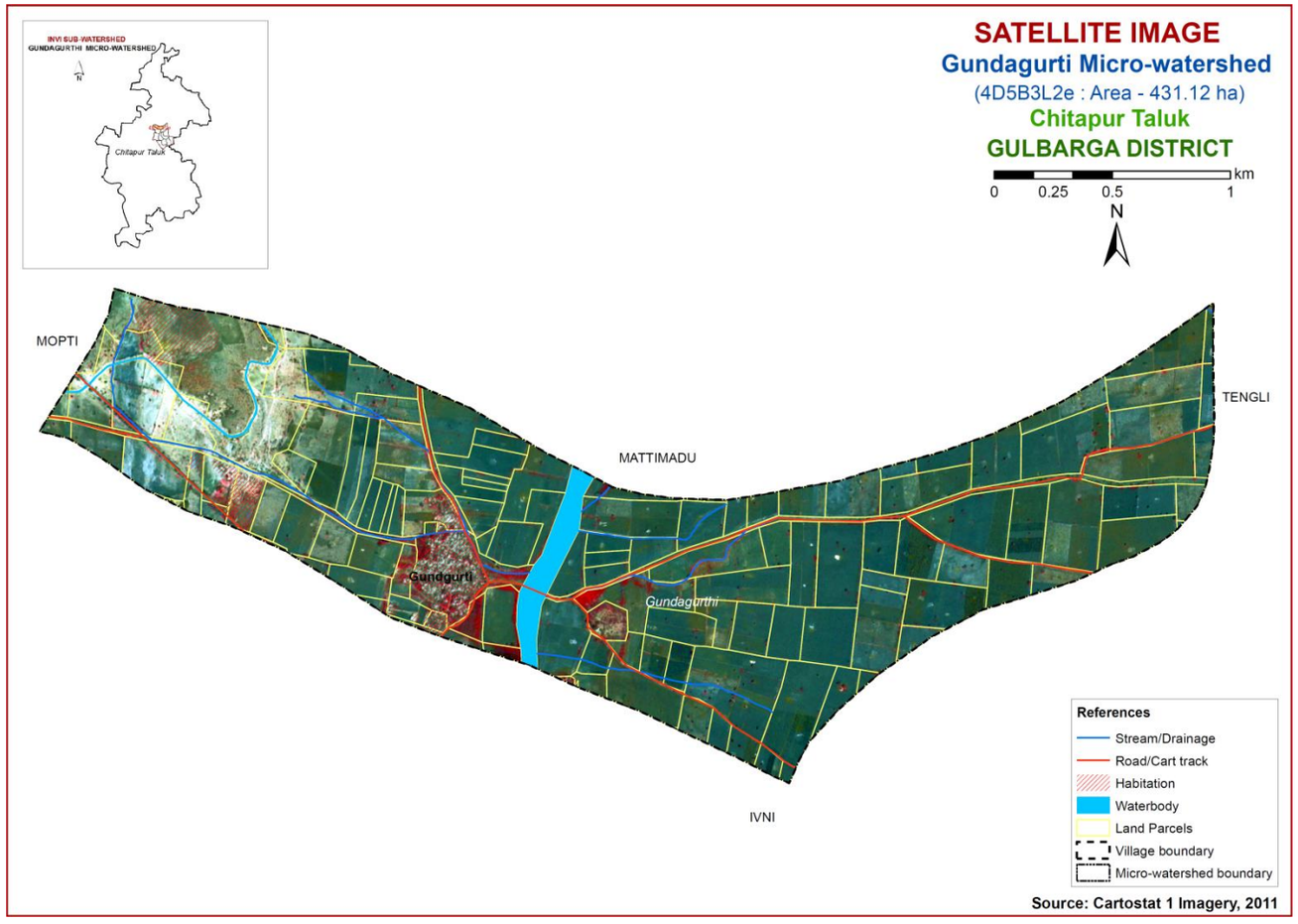

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
Tengali
Gundagurthi
Dhandothi
Ivani
References
Stream/Drainage
Road/Cart track
49 Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru

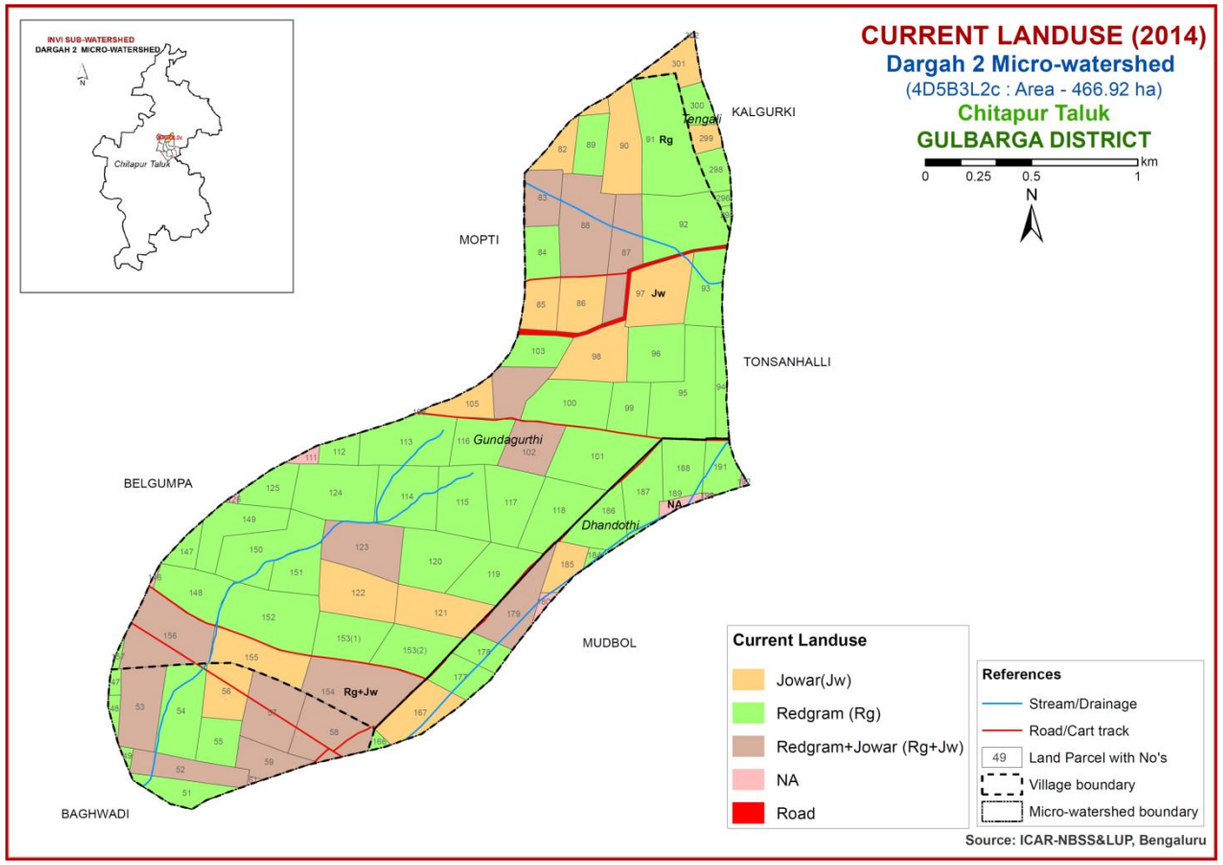

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
Dhandothi
Ivani
References
Stream/Drainage
Road/Cart track
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru

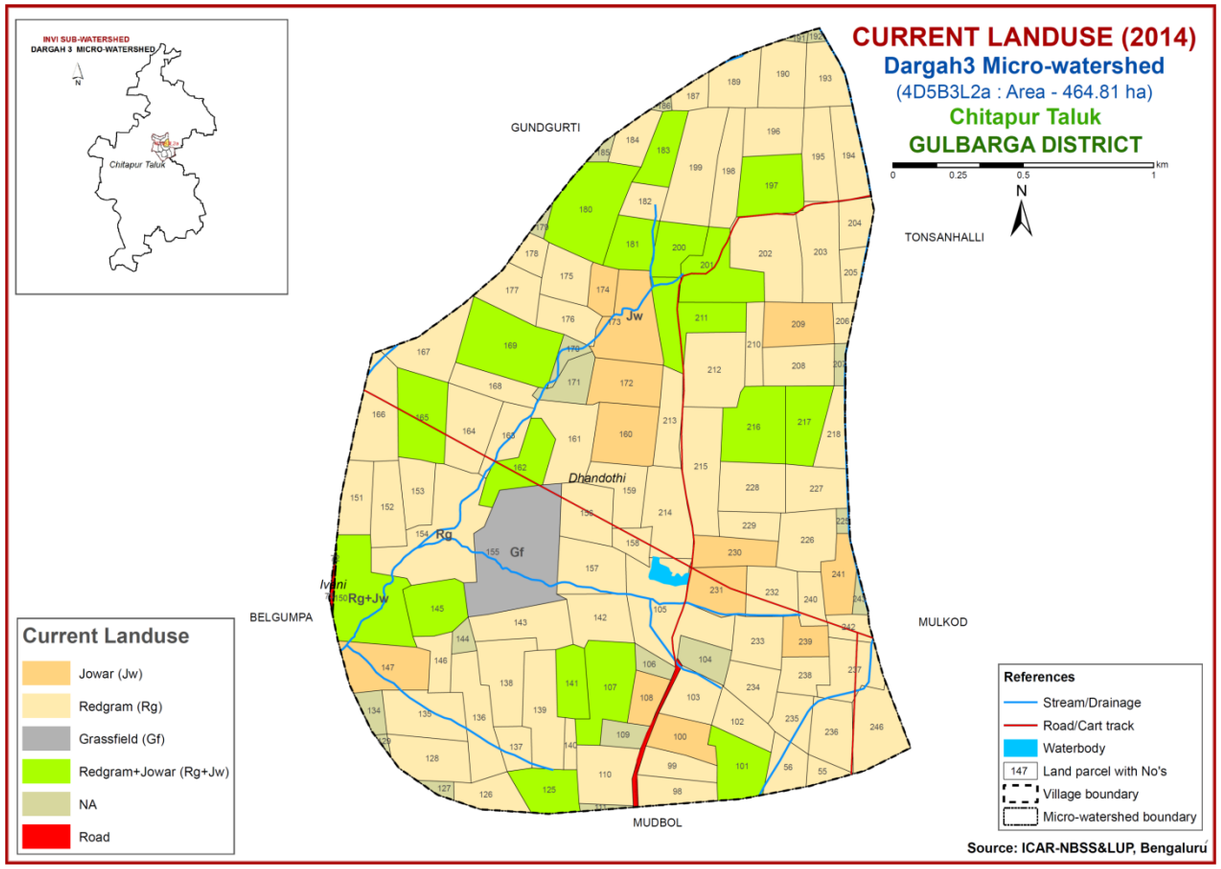

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
IVNI
Gundgurti
Gundagurthi
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru

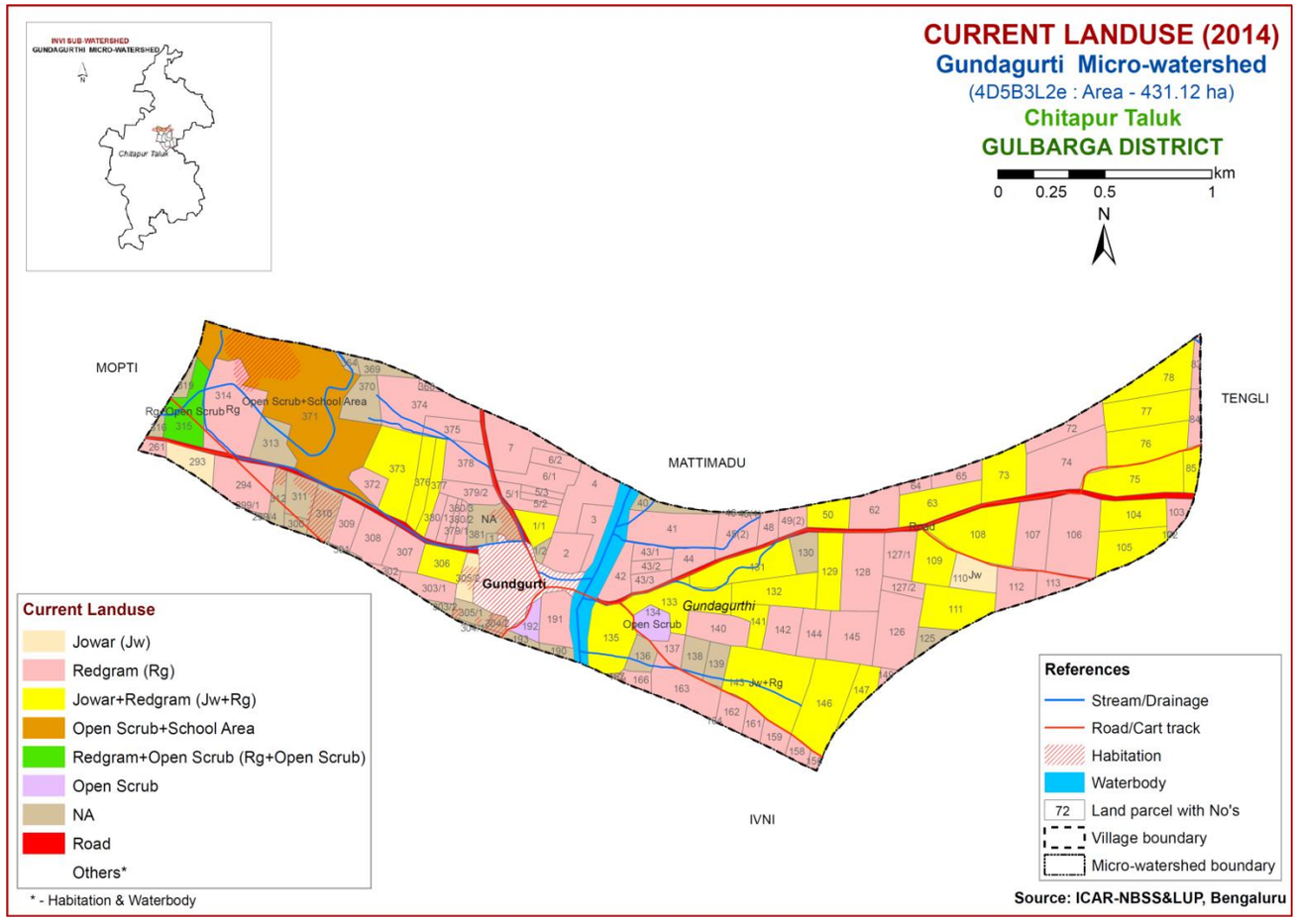

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
SATELLITE IMAGE
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
km
0 0.25 0.5 1
N
Tengali
KALGURKI
MOPTI
TONSANHALLI
Gundagurthi
Dhandothi
BELGUMPA
MUDBOL
Ivani
BAGHWADI
References
Stream/Drainage
Road/Cart track
Land Parcels
Village boundary
Micro-watershed boundary
Source: Cartostat 1 Imagery, 2011


INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
SATELLITE IMAGE
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
km
0 0.25 0.5 1
N
GUNDGURTI
TONSANHALLI
Dhandothi
BELGUMPA
MULKOD
MUDBOL
References
Stream/Drainage
Road/Cart track
Waterbody
Land Parcels
Village boundary
Micro-watershed boundary
Source: Cartostat 1 Imagery, 2011.


INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
SATELLITE IMAGE
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
km
0 0.25 0.5 1
N
MOPTI
TENGLI
MATTIMADU
Gundgurti
Gundagurthi
IVNI
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
Land Parcels
Village boundary
Micro-watershed boundary
Source: Cartostat 1 Imagery, 2011


INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
CURRENT LANDUSE (2014)
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
Tengali
Gundagurthi
Dhandothi
Rg
Jw
Rg+Jw
NA
Current Landuse
Jowar(Jw)
Redgram (Rg)
Redgram+Jowar (Rg+Jw)
NA
Road
References
Stream/Drainage
Road/Cart track
49 Land Parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru


INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
CURRENT LANDUSE (2014)
Dargah3 Micro-watershed
(4D5B3L2a : Area - 464.81 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
Ivani
Dhandothi
Jw
Rg
Gf
Rg+Jw
Current Landuse
Jowar (Jw)
Redgram (Rg)
Grassfield (Gf)
Redgram+Jowar (Rg+Jw)
NA
Road
References
Stream/Drainage
Road/Cart track
Waterbody
147 Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru


INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
CURRENT LANDUSE (2014)
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
IVNI
Gundgurti
Gundagurthi
Open Scrub+School Area
Open Scrub
Rg+Open Scrub
Rg
Jw
Jw+Rg
NA
Road
Current Landuse
Jowar (Jw)
Redgram (Rg)
Jowar+Redgram (Jw+Rg)
Open Scrub+School Area
Redgram+Open Scrub (Rg+Open Scrub)
Open Scrub
NA
Road
Others*
* - Habitation & Waterbody
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru

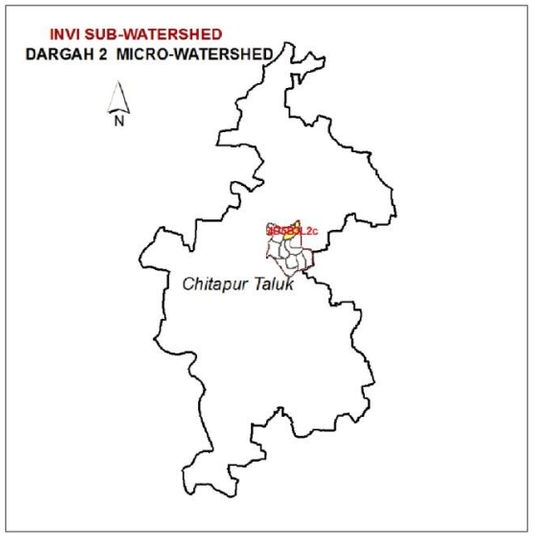
SOILS

Dargah 2 Micro-watershed

(4D5B3L2c : Area - 466.92 ha)

Chitapur Taluk

GULBARGA DISTRICT



KEY

TEXTURE
m – Clay

SLOPE
B – Very gently sloping (1-3%)
C- Gently sloping (3-5%)

EROSION
1 – Slight
2 – Moderate

DEPTH
MTM - Moderately deep (75-100 cm)
DRG - Deep (100-150 cm)
DDT - Very deep (>150 cm)

km
0 0.25 0.5 1
N

Texture Erosion
DDT m B 2
Soil Series Slope

References
- Stream/Drainage
- Road/Cart track
- 49 Land parcel with No's
- Village boundary
- Micro-watershed boundary

Soil Phases	Area in ha (%)
1, DDTmB2	228 (48.9)
2, DDTmC2	74 (15.93)
3, DRGmB1	6 (1.31)
4, DRGmB2	125 (26.87)
5, MTMmB2	12 (2.6)
6, MTMmC2	20 (4.38)

Source: ICAR-NBSS&LUP, Bengaluru

Table 1.Mapping unit description of Dargah 2 (4D5B3L2c) Micro-watershed in Chitapur Taluk, Kalaburagi District

Sl.No	Map unit	Description	Area in ha (%)
1	DDTmB2	Very deep, black clayey soils developed from weathered basalt on very gently sloping uplands, clay surface on 1-3% slope, moderately eroded	228.31 (48.90)
2	DDTmC2	Very deep, black clayey soils developed from weathered basalt on gently sloping uplands, clay surface on 3-5% slope, moderately eroded	74.40 (15.93)
3	DRGmB1	Deep, black clayey soils developed from weathered basalt on very gently sloping uplands, clay surface on 1-3% slope, slightly eroded	6.13 (1.31)
4	DRGmB2	Deep, black clayey soils developed from weathered basalt on very gently sloping uplands, clay surface on 1-3% slope, moderately eroded	125.47 (26.87)
5	MTMmB2	Moderately deep, black clayey soils developed from weathered basalt on very gently sloping uplands, clay surface on 1-3% slope, moderately eroded	12.15 (2.60)
6	MTMmC2	Moderately deep, black clayey soils developed from weathered basalt on gently sloping uplands, clay surface on 3-5% slope, moderately eroded	20.46 (4.38)

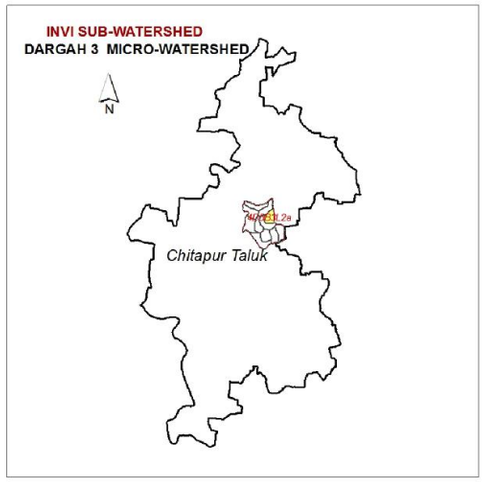
SOILS

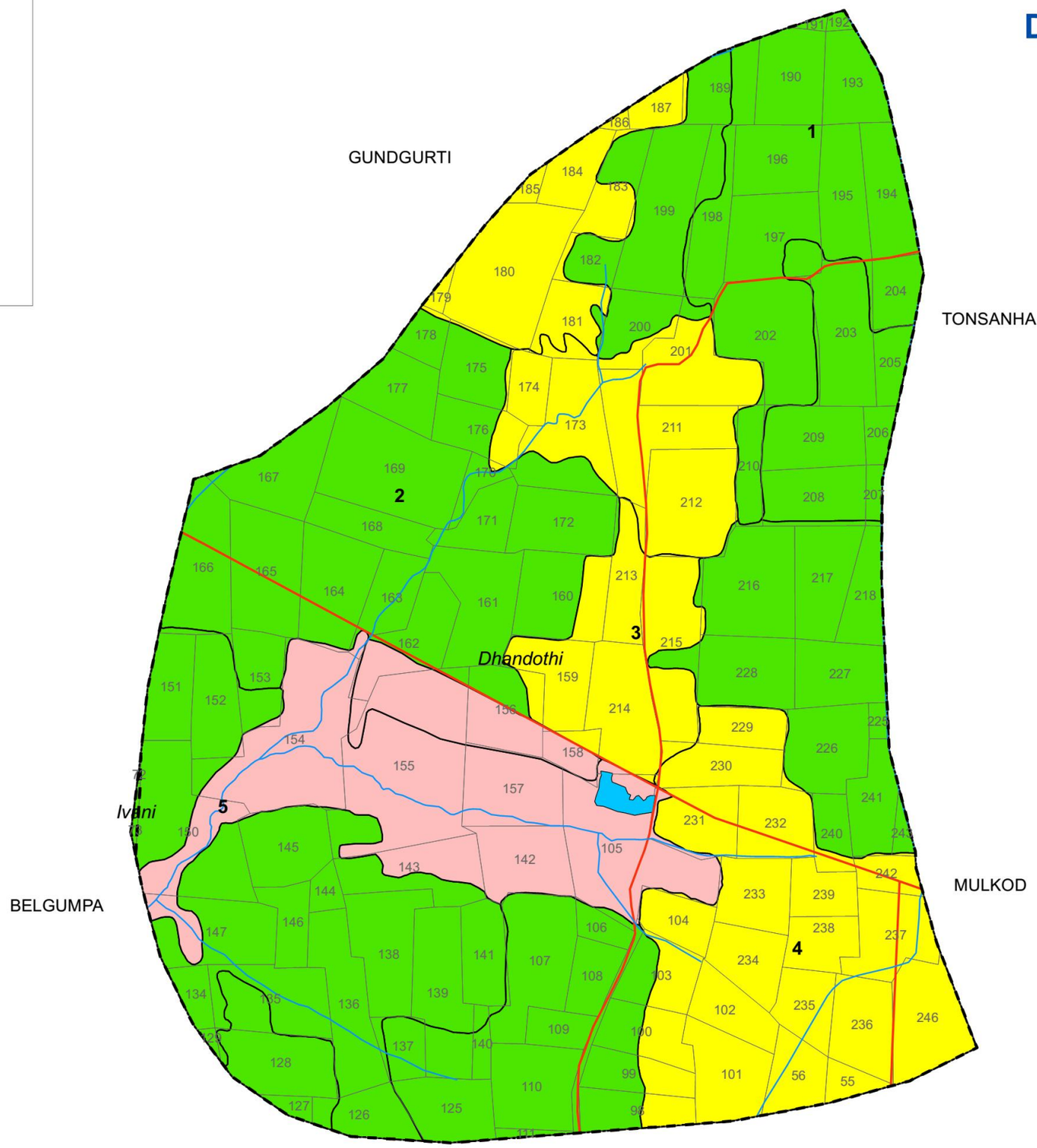
Dargah 3 Micro-watershed

(4D5B3L2a : Area - 464.85 ha)

Chitapur Taluk

GULBARGA DISTRICT





0 0.25 0.5 1 km

N

KEY

TEXTURE
m – Clay

SLOPE
B – Very gently sloping (1-3%)

EROSION
1 – Slight
2 – Moderate

DEPTH
MTM - Moderately deep (75-100 cm)
DRG - Deep (100-150 cm)
DDT - Very deep (>150 cm)

References

- Stream/Drainage
- Road/Cart track
- Waterbody
- 72 Land parcel with No's
- Village boundary
- Micro-watershed boundary

Texture	Erosion
DDT	m B 1
Soil Series	Slope

Soil Phases	Area in ha (%)
1, DDTmB1	114 (24.58)
2, DDTmB2	165 (35.5)
3, DRGmB1	40 (8.64)
4, DRGmB2	90 (19.41)
5, MTMmB2	54 (11.69)
6, Others*	1 (0.19)

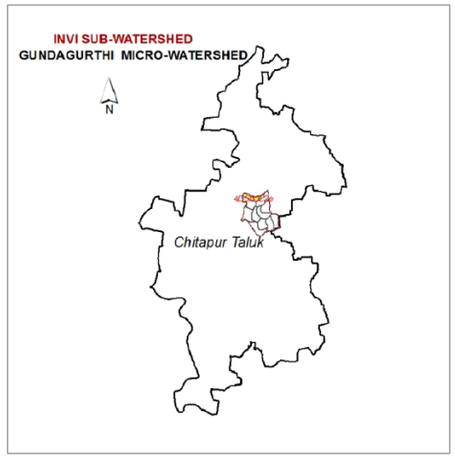
* - Waterbody

Source: ICAR-NBSS&LUP, Bengaluru

Table 2.Mapping unit description of Dargah-3 (4D5B3L2a) Micro-watershed in Chitapur Taluk, Kalaburagi District

Sl.No	Map unit	Description	Area in ha (%)
1	DDTmB1	Very deep, black clayey soils developed from weathered basalt on very gently sloping uplands, clay surface on 1-3% slope, slightly eroded	114.24 (24.58)
2	DDTmB2	Very deep, black clayey soils developed from weathered basalt on very gently sloping uplands, clay surface on 1-3% slope, moderately eroded	165.01 (35.50)
3	DRGMB1	Deep, black clayey soils developed from weathered basalt on very gently sloping uplands, clay surface on 1-3% slope, slightly eroded	40.16 (8.64)
4	DRGMB2	Deep, black clayey soils developed from weathered basalt on very gently sloping uplands, clay surface on 1-3% slope, moderately eroded	90.24 (19.41)
5	MTMmB2	Moderately deep, black clayey soils developed from weathered basalt on very gently sloping uplands, clay surface on 1-3% slope, moderately eroded	54.33 (11.69)

*Soil map unit numbers are continuous for the taluk, not the sub-watershed



SOILS

Gundagurti Micro-watershed

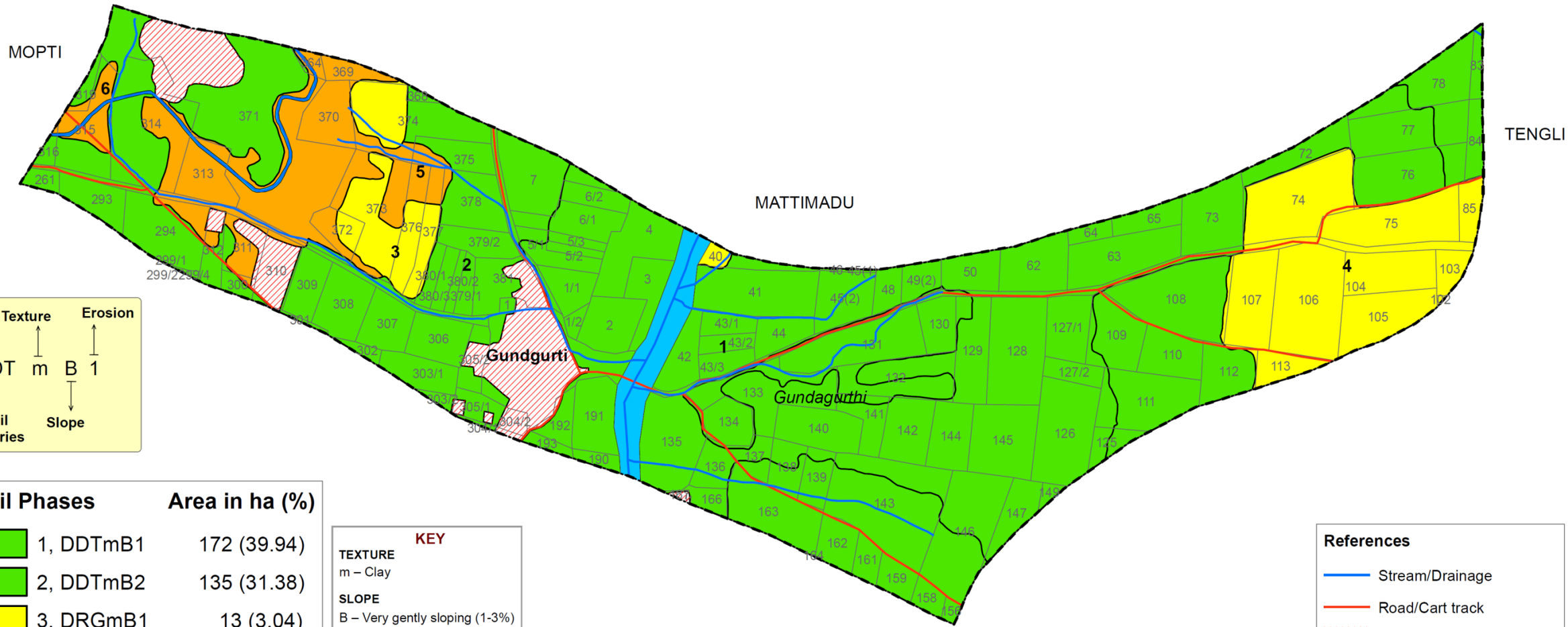
(4D5B3L2e : Area - 431.12 ha)

Chitapur Taluk

GULBARGA DISTRICT

km
0 0.25 0.5 1

N



Soil Phases	Area in ha (%)
1, DDTmB1	172 (39.94)
2, DDTmB2	135 (31.38)
3, DRGmB1	13 (3.04)
4, DRGmB2	44 (10.28)
5, EVNmB2	32 (7.45)
6, EVNmB3	3 (0.65)
7, Others*	31 (7.27)

* - Habitation & Waterbody

KEY

TEXTURE
m – Clay

SLOPE
B – Very gently sloping (1-3%)

EROSION
1 – Slight
2 – Moderate
3 -- Severe

DEPTH
EVN - Very shallow (<25 cm)
DRG - Deep (100-150 cm)
DDT - Very deep (>150 cm)

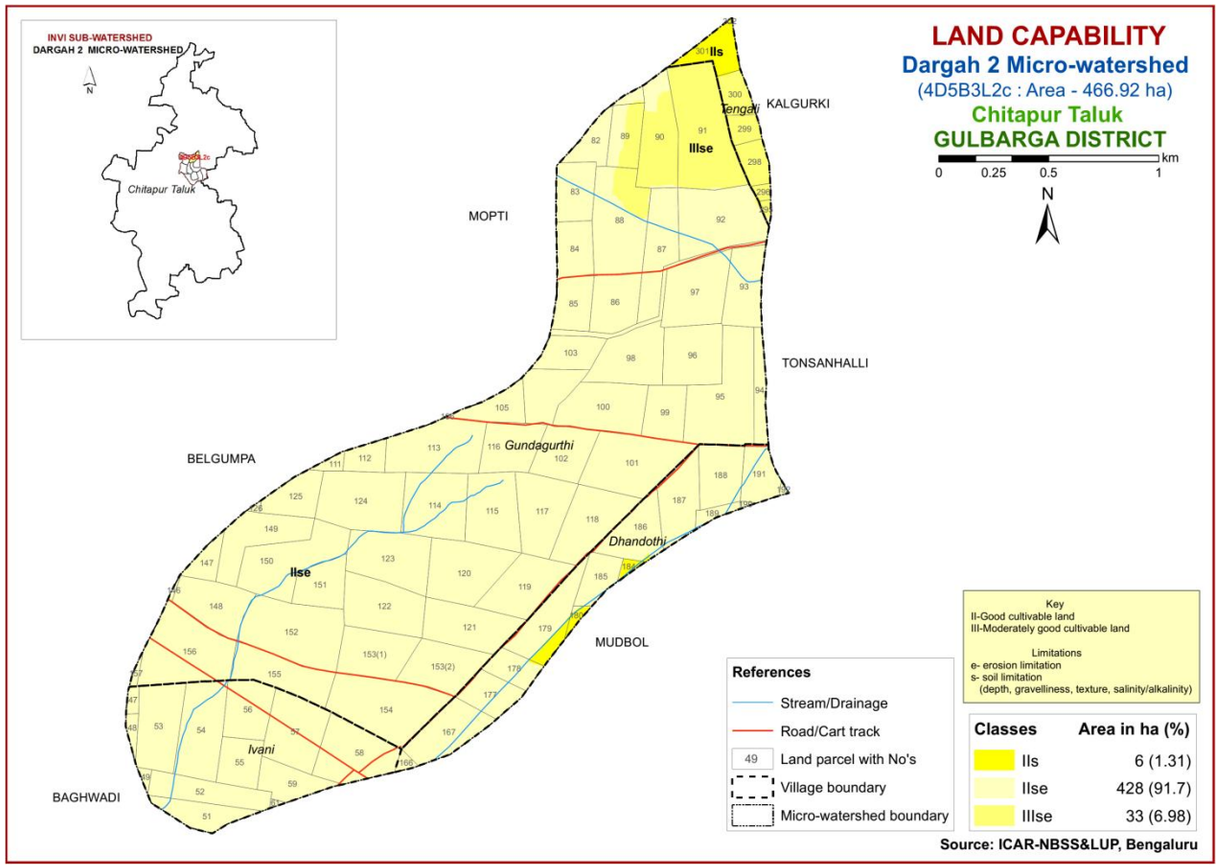
References
- Stream/Drainage
- Road/Cart track
- Habitation
- Waterbody
- 72 Land parcel with No's
- Village boundary
- Micro-watershed boundary

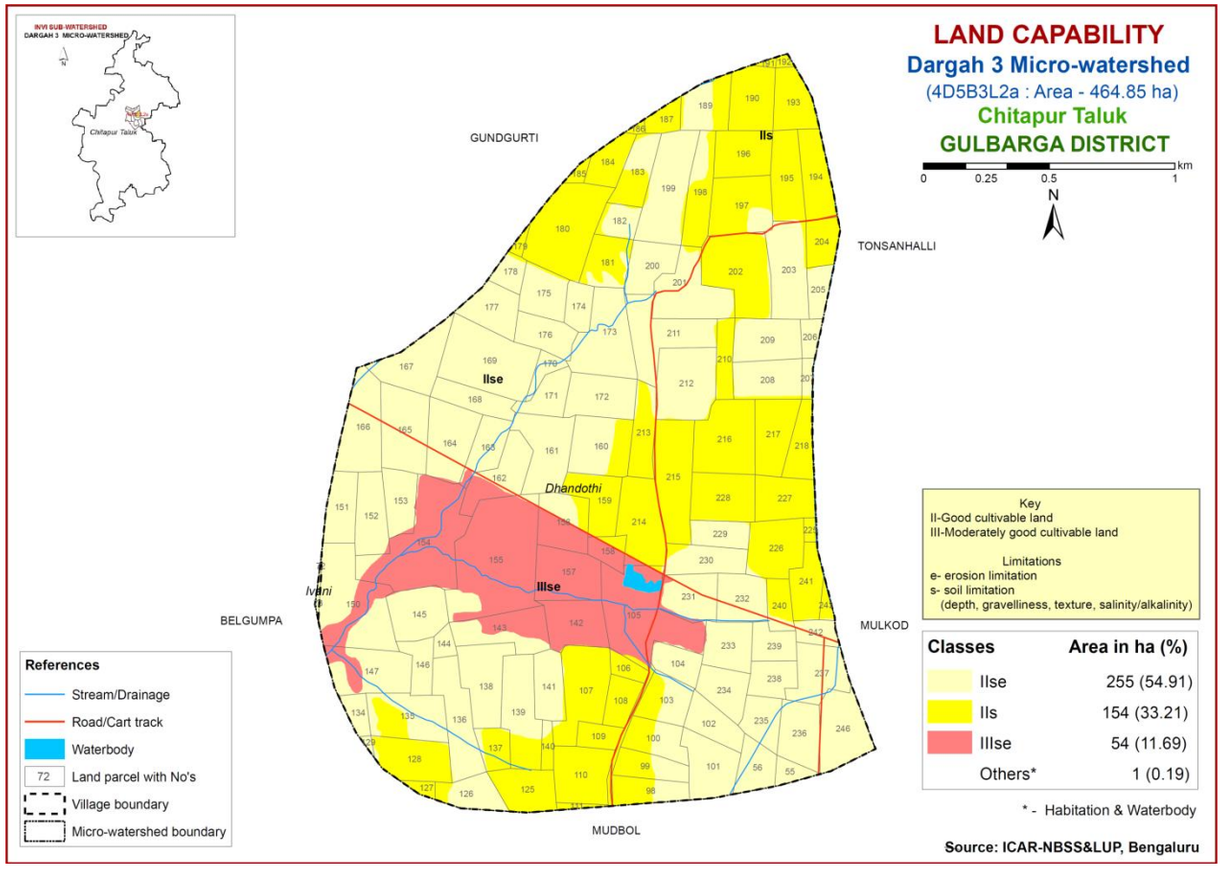
Source: ICAR-NBSS&LUP, Bengaluru

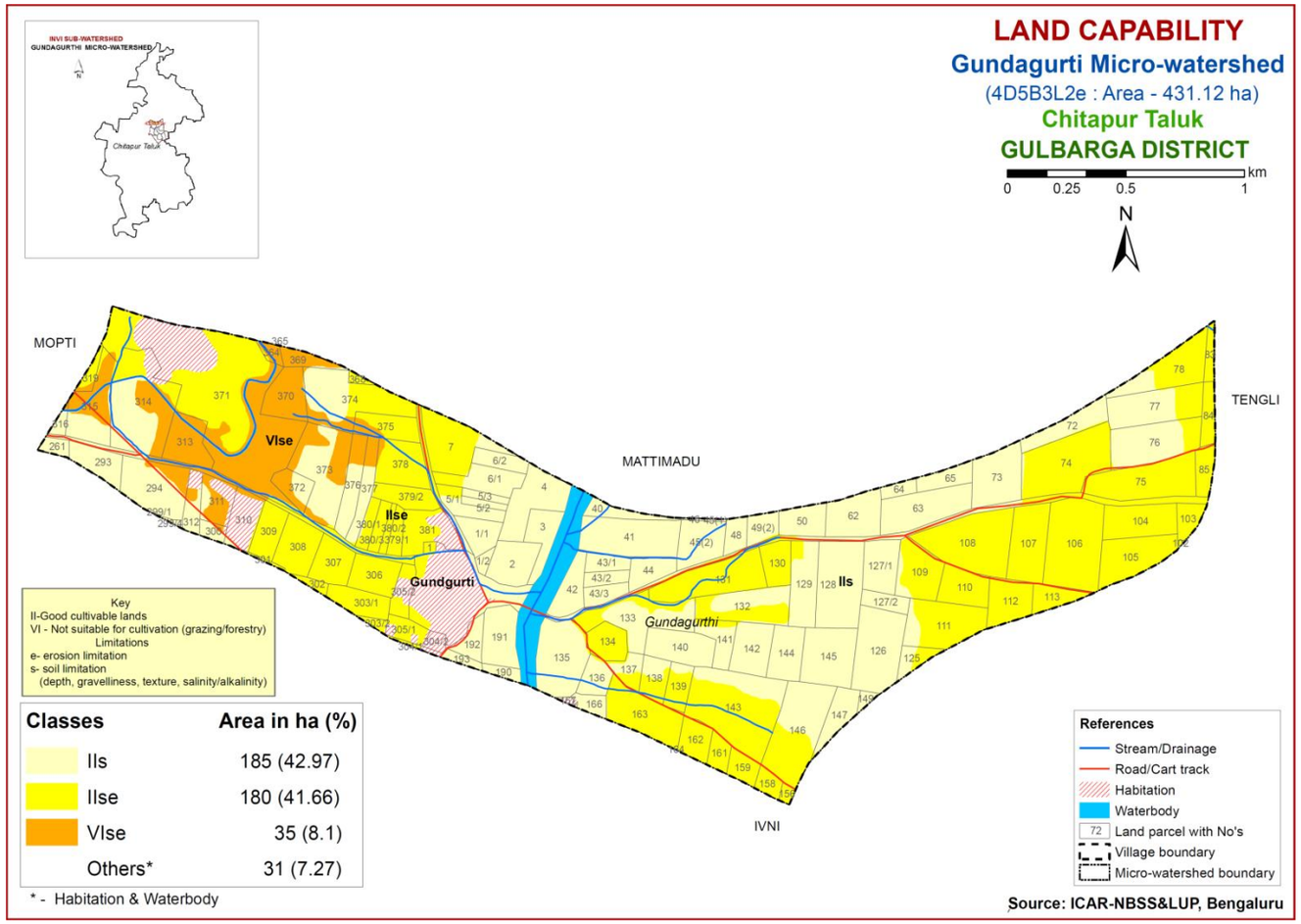
Table 3.Mapping unit description of Gundagurti (4D5B3L2e) Micro-watershed in Chitapur Taluk, Kalaburagi District

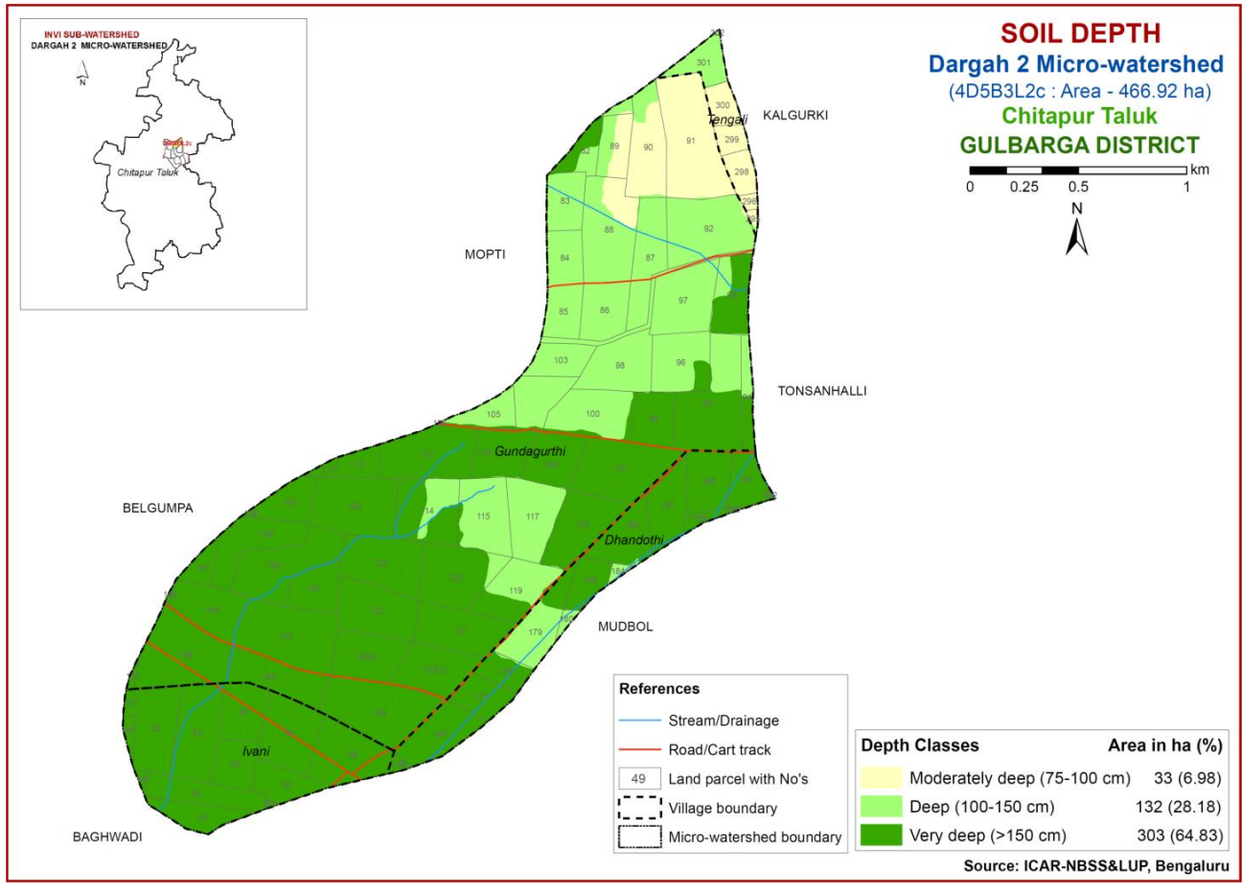
Sl.No	Map unit	Description	Area in ha (%)
1	DDTmB1	Very deep, black clayey soils developed from weathered basalt on very gently sloping uplands, clay surface on 1-3% slope, slightly eroded.	172.17 (39.94)
2	DDTmB2	Very deep, black clayey soils developed from weathered basalt on gently sloping uplands, clay surface on 1-3 % slope, moderately eroded.	135.28 (31.38)
3	DRGmB1	Deep, black clayey soils developed from weathered basalt on very gently sloping uplands, clay surface on 1-3% slope, slightly eroded.	13.09 (3.04)
4	DRGmB2	Deep, black clayey soils developed from weathered basalt on very gently sloping uplands, clay surface on 1-3% slope, moderately eroded.	44.32 (10.28)
5	EVNmB2	Very shallow, black clayey soils developed from weathered basalt on gently sloping uplands, clay surface on 1-3 % slope, moderately eroded.	32.10 (7.45)
6	EVNmB3	Very shallow, black clayey soils developed from weathered basalt on gently sloping uplands, clay surface on 1-3 % slope, severely eroded.	2.80 (0.65)

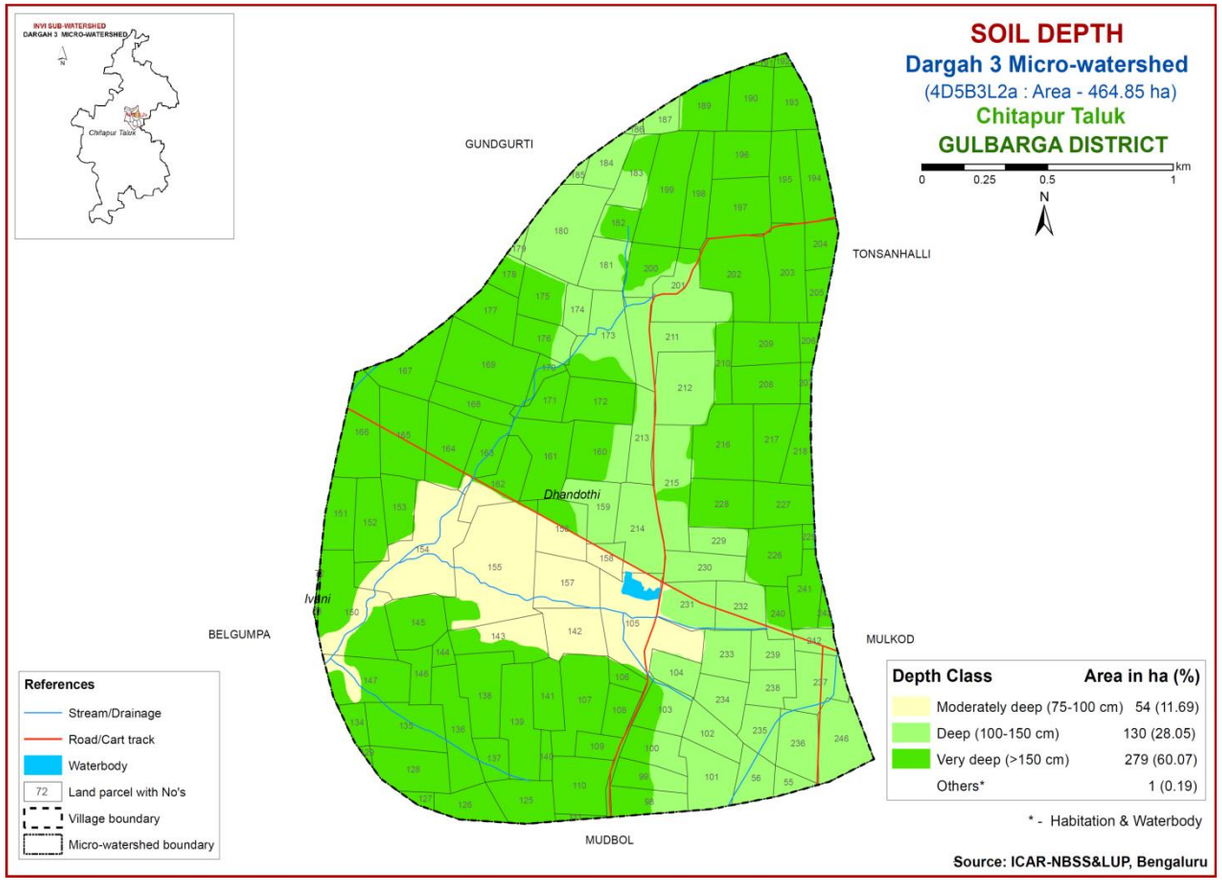
*Soil map unit numbers are continuous for the taluk, not the sub-watershed

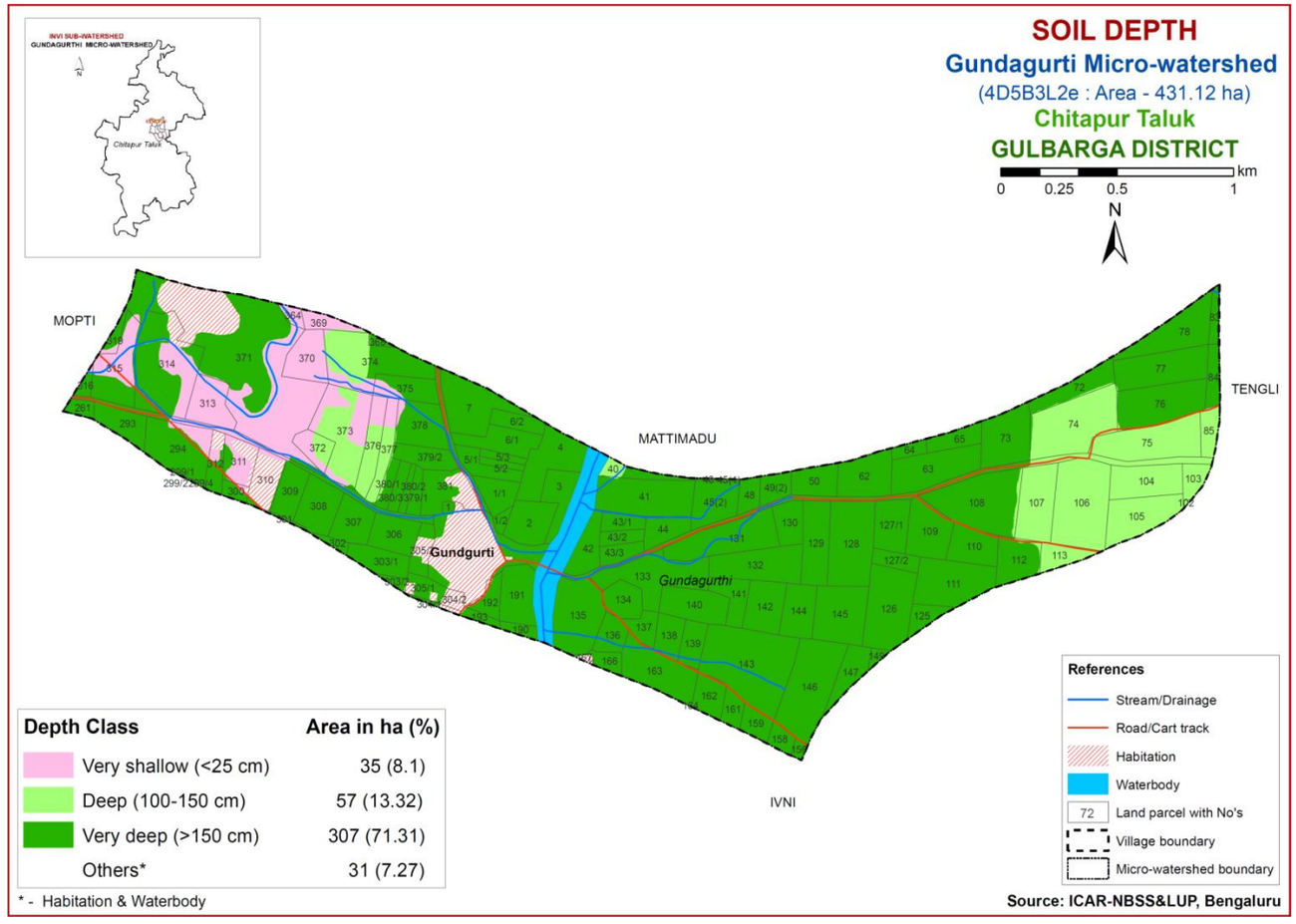

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
LAND CAPABILITY
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
IIs
IIIse
IIse
Tengali
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
Gundagurthi
Dhandothi
MUDBOL
Ivani
BAGHWADI
Key
II-Good cultivable land
III-Moderately good cultivable land
Limitations
e- erosion limitation
s- soil limitation
(depth, gravelliness, texture, salinity/alkalinity)
References
Stream/Drainage
Road/Cart track
Land parcel with No's
Village boundary
Micro-watershed boundary
Classes
Area in ha (%)
IIs 6 (1.31)
IIse 428 (91.7)
IIIse 33 (6.98)
Source: ICAR-NBSS&LUP, Bengaluru

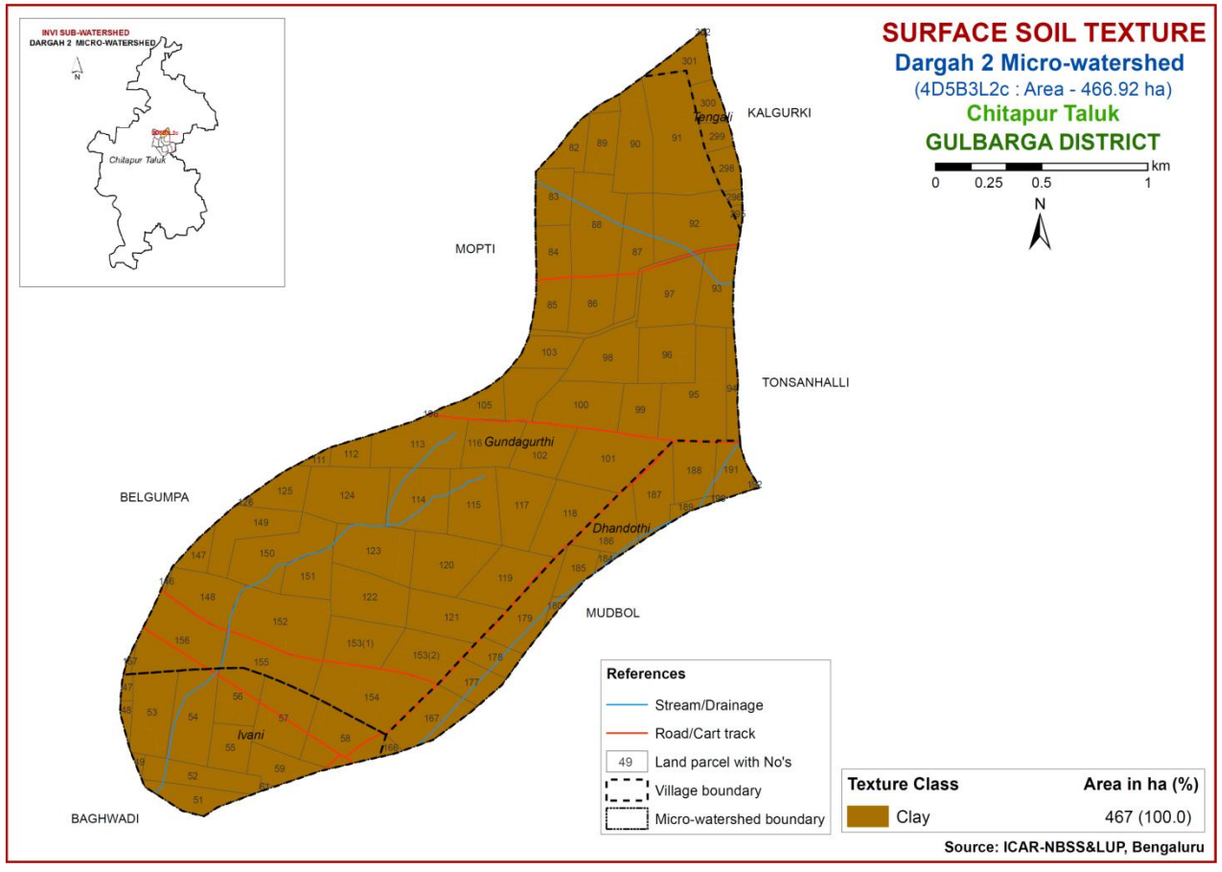

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
LAND CAPABILITY
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
IIs
IIse
TONSANHALLI
Dhandothi
IIIse
Ivani
BELGUMPA
MULKOD
MUDBOL
Key
II-Good cultivable land
III-Moderately good cultivable land
Limitations
e- erosion limitation
s- soil limitation
(depth, gravelliness, texture, salinity/alkalinity)
References
Stream/Drainage
Road/Cart track
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Classes
Area in ha (%)
IIse 255 (54.91)
IIs 154 (33.21)
IIIse 54 (11.69)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

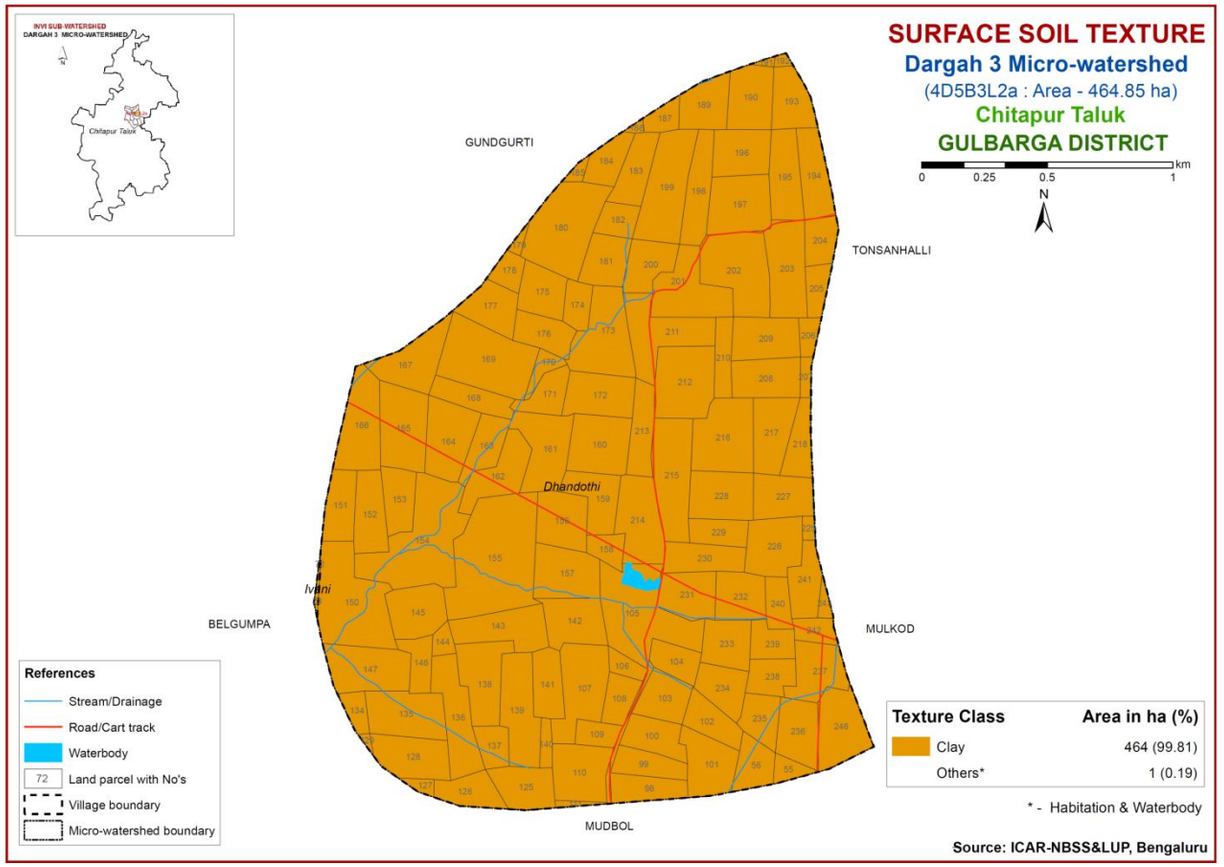

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
LAND CAPABILITY
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
VIse
IIse
Gundgurti
MATTIMADU
Gundagurthi
IIs
TENGLI
IVNI
Key
II-Good cultivable lands
VI - Not suitable for cultivation (grazing/forestry)
Limitations
e- erosion limitation
s- soil limitation
(depth, gravelliness, texture, salinity/alkalinity)
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Classes
Area in ha (%)
IIs 185 (42.97)
IIse 180 (41.66)
VIse 35 (8.1)
Others* 31 (7.27)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

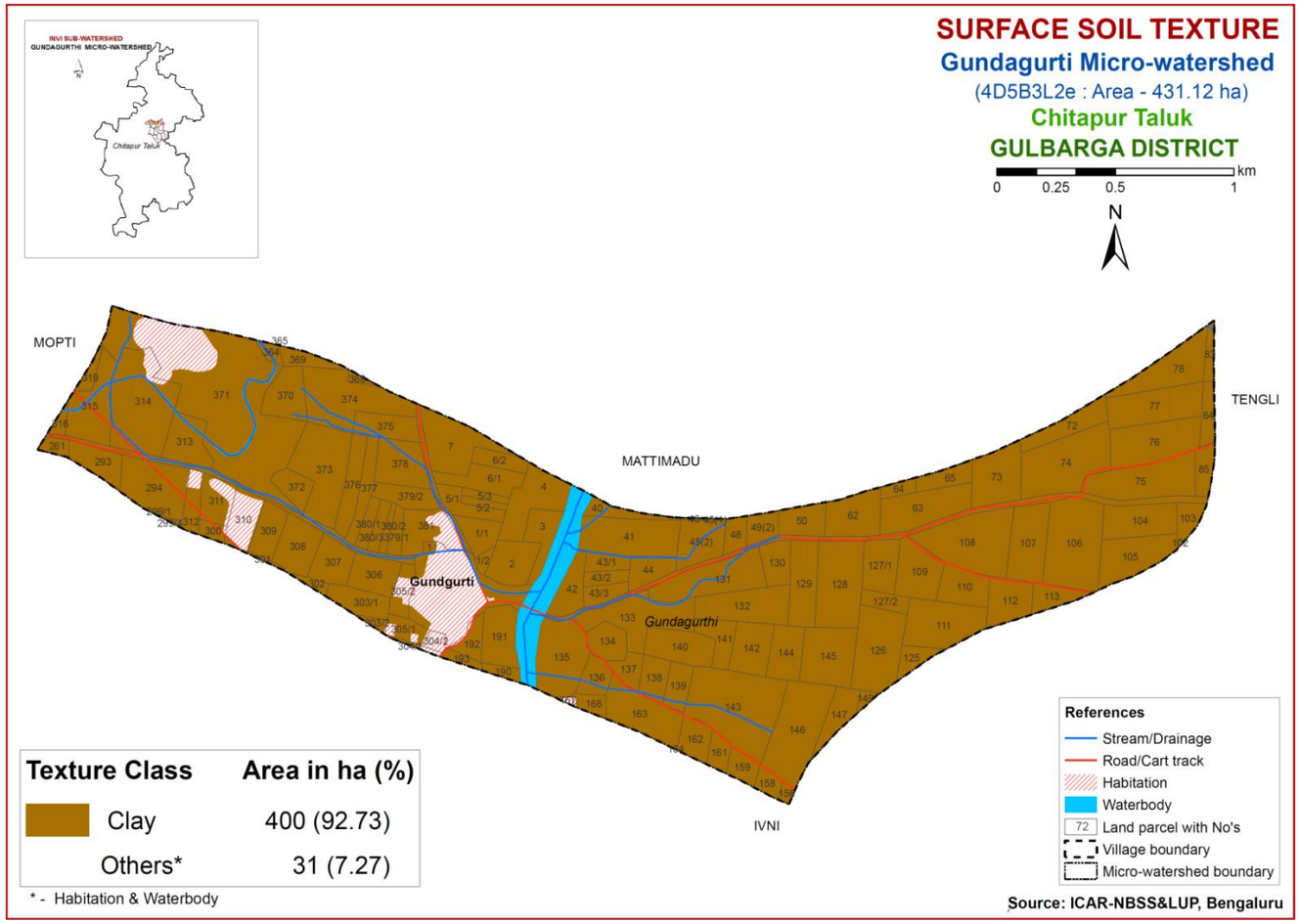

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
SOIL DEPTH
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
KALGURKI
Tengali
MOPTI
TONSANHALLI
Gundagurthi
BELGUMPA
Dhandothi
MUDBOL
Ivani
BAGHWADI
References
Stream/Drainage
Road/Cart track
Land parcel with No's
Village boundary
Micro-watershed boundary
Depth Classes
Area in ha (%)
Moderately deep (75-100 cm) 33 (6.98)
Deep (100-150 cm) 132 (28.18)
Very deep (>150 cm) 303 (64.83)
Source: ICAR-NBSS&LUP, Bengaluru

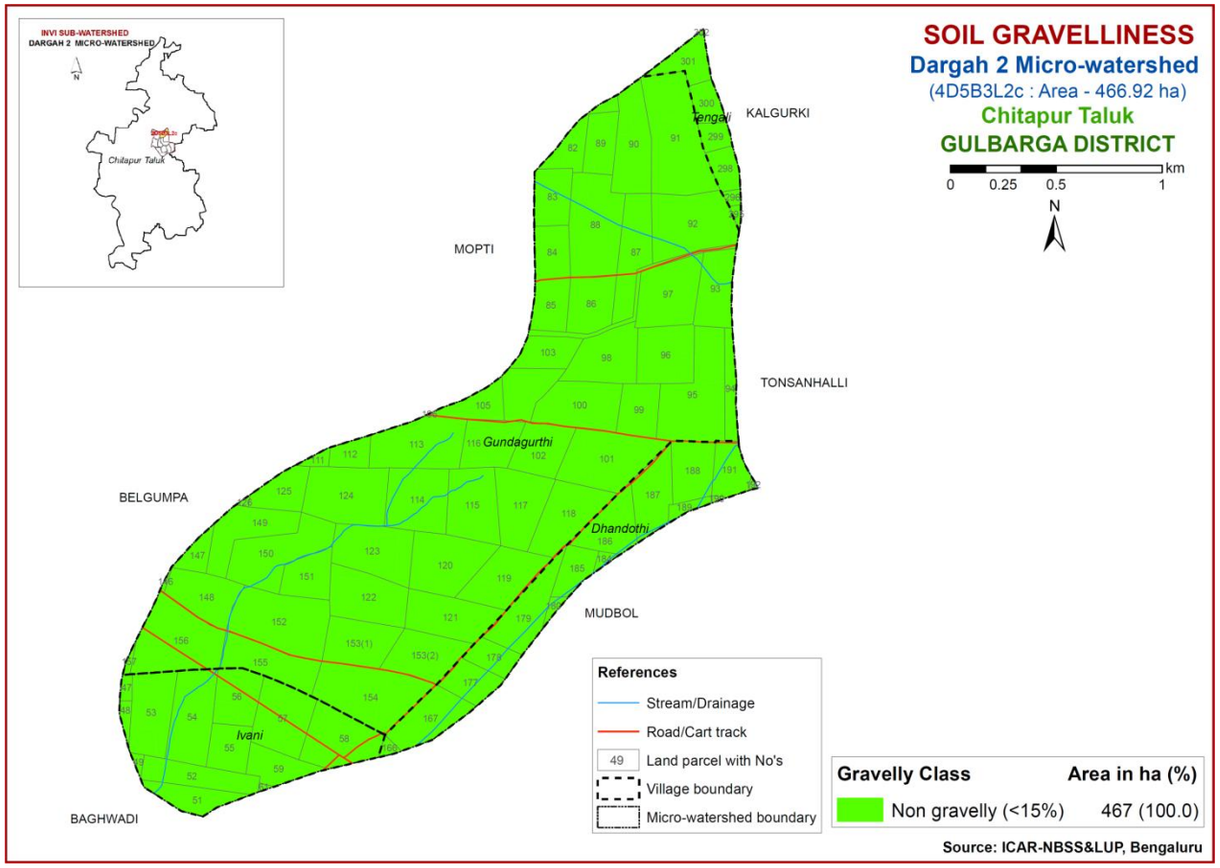

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
SOIL DEPTH
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
Dhandothi
Ivani
BELGUMPA
MULKOD
MUDBOL
References
Stream/Drainage
Road/Cart track
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Depth Class
Area in ha (%)
Moderately deep (75-100 cm) 54 (11.69)
Deep (100-150 cm) 130 (28.05)
Very deep (>150 cm) 279 (60.07)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

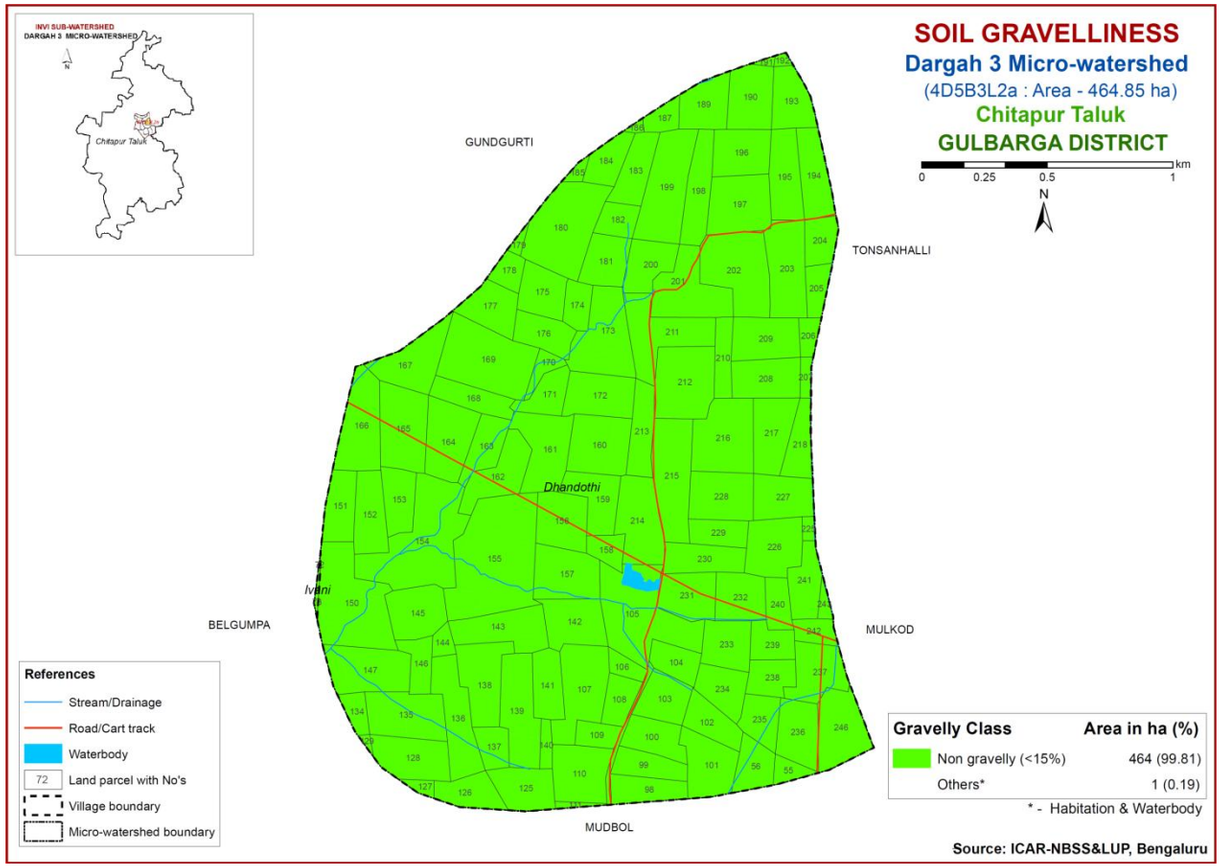

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
SOIL DEPTH
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
Gundgurti
Gundagurthi
IVNI
Depth Class
Area in ha (%)
Very shallow (<25 cm) 35 (8.1)
Deep (100-150 cm) 57 (13.32)
Very deep (>150 cm) 307 (71.31)
Others* 31 (7.27)
* - Habitation & Waterbody
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru

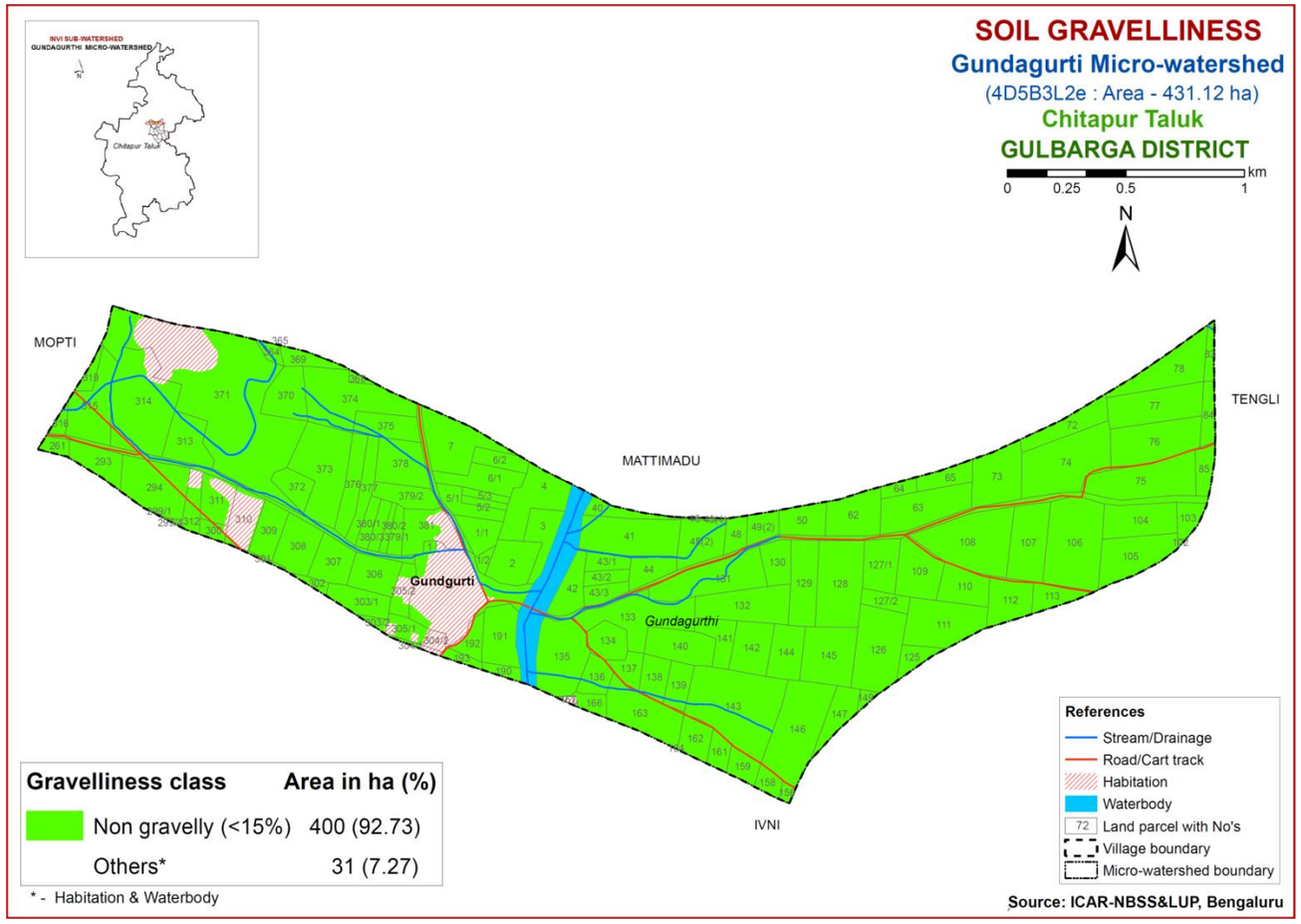

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
SURFACE SOIL TEXTURE
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
Gundagurthi
Dhandothi
Ivani
References
Stream/Drainage
Road/Cart track
49 Land parcel with No's
Village boundary
Micro-watershed boundary
Texture Class
Area in ha (%)
Clay
467 (100.0)
Source: ICAR-NBSS&LUP, Bengaluru

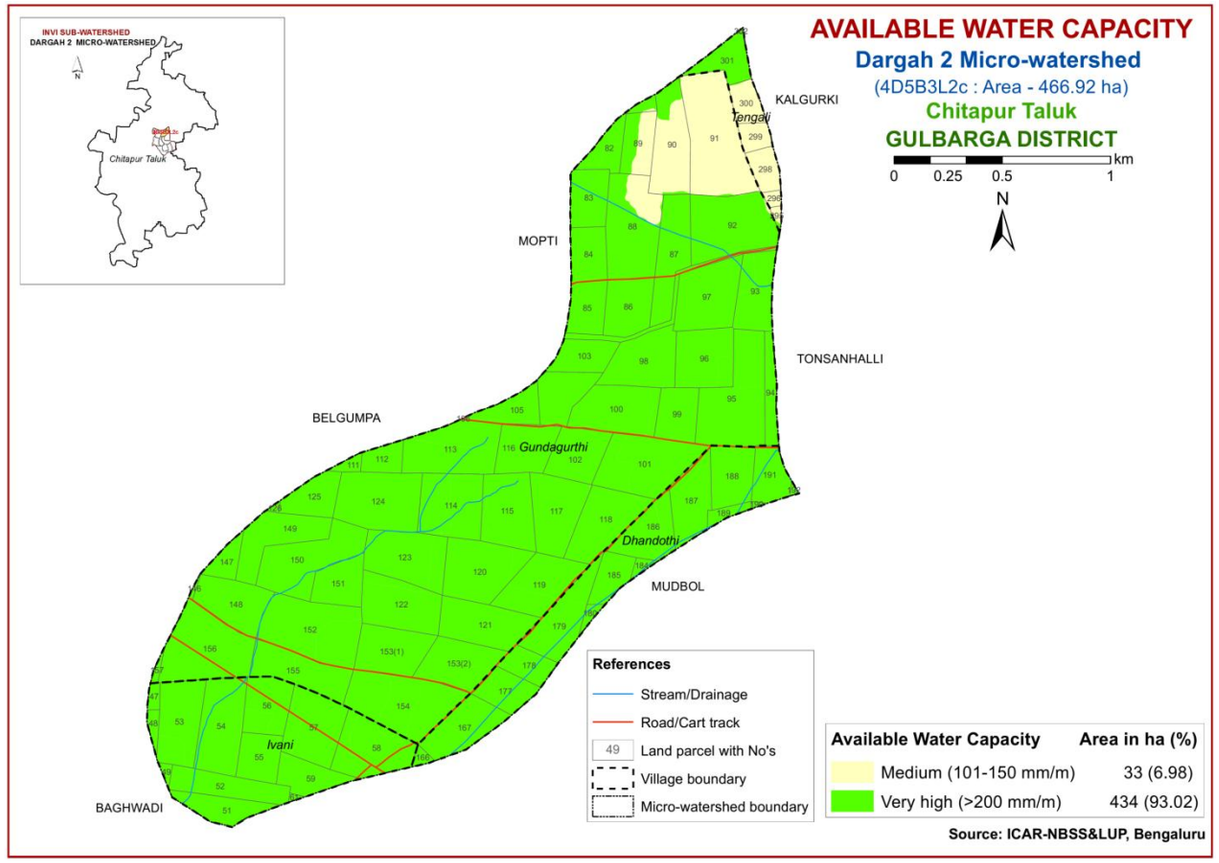

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
SURFACE SOIL TEXTURE
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
Dhandothi
Ivani
References
Stream/Drainage
Road/Cart track
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Texture Class
Area in ha (%)
Clay
464 (99.81)
Others*
1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

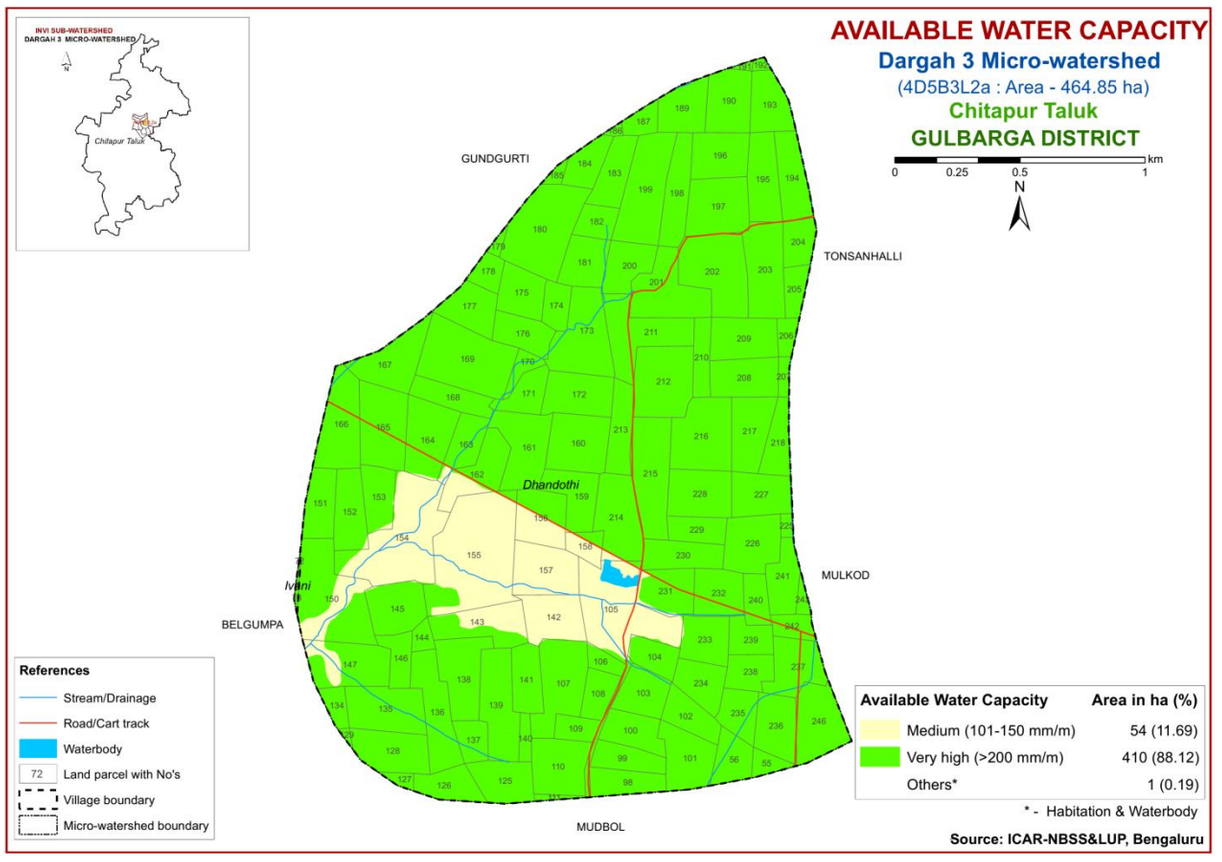

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
SURFACE SOIL TEXTURE
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
TENGLI
MATTIMADU
IVNI
Gundgurti
Gundagurthi
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Texture Class
Area in ha (%)
Clay
400 (92.73)
Others*
31 (7.27)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

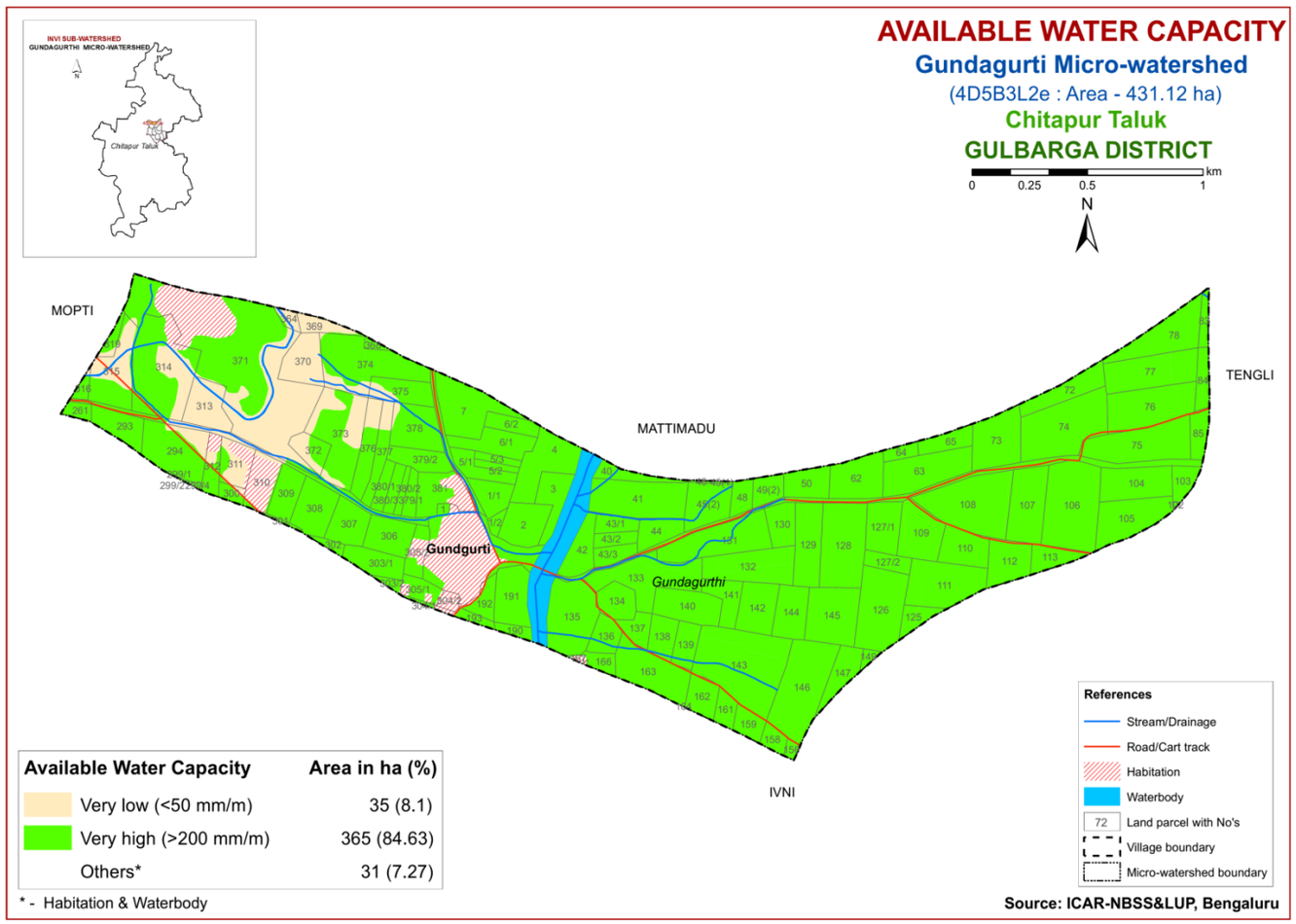

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
SOIL GRAVELLINESS
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
Gundagurthi
Dhandothi
Ivani
References
Stream/Drainage
Road/Cart track
49 Land parcel with No's
Village boundary
Micro-watershed boundary
Gravelly Class
Area in ha (%)
Non gravelly (<15%)
467 (100.0)
Source: ICAR-NBSS&LUP, Bengaluru

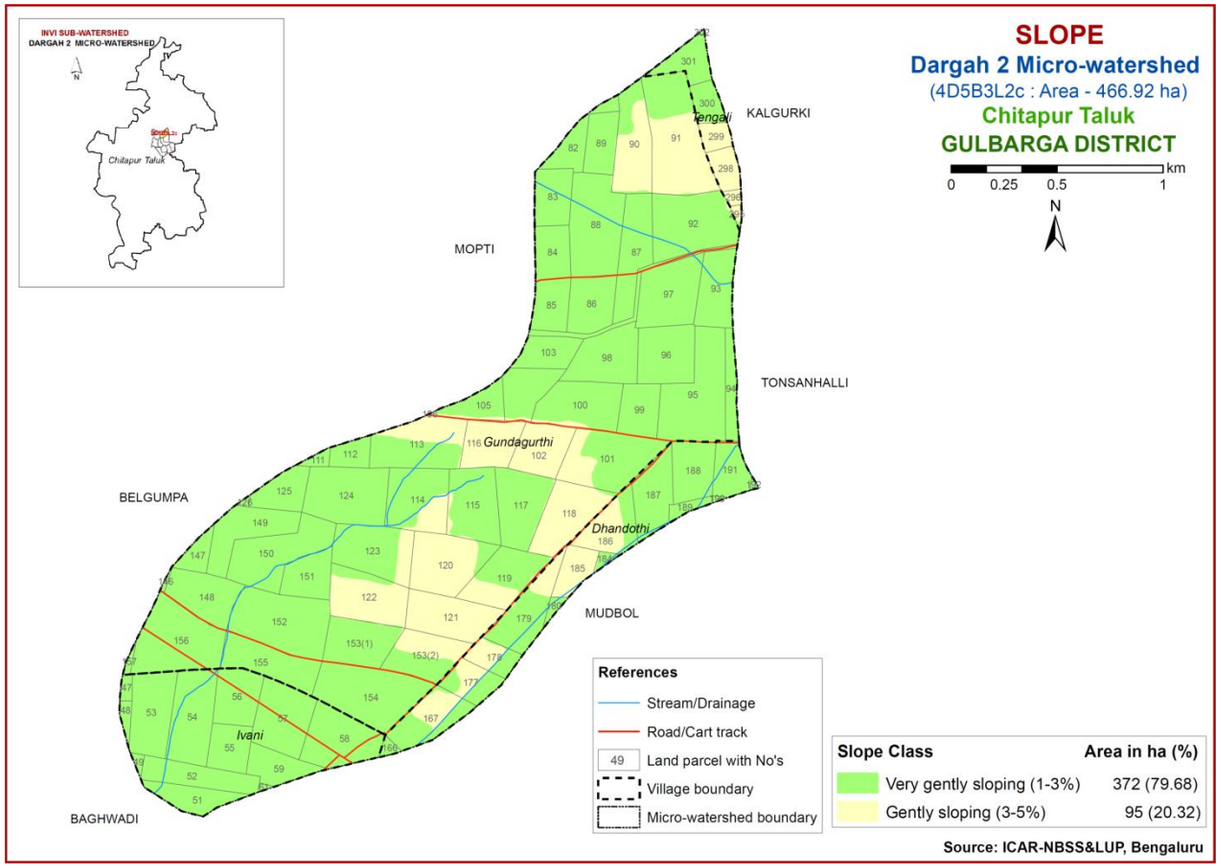

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
SOIL GRAVELLINESS
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
Dhandothi
Ivani
References
Stream/Drainage
Road/Cart track
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Gravelly Class
Area in ha (%)
Non gravelly (<15%)
464 (99.81)
Others*
1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

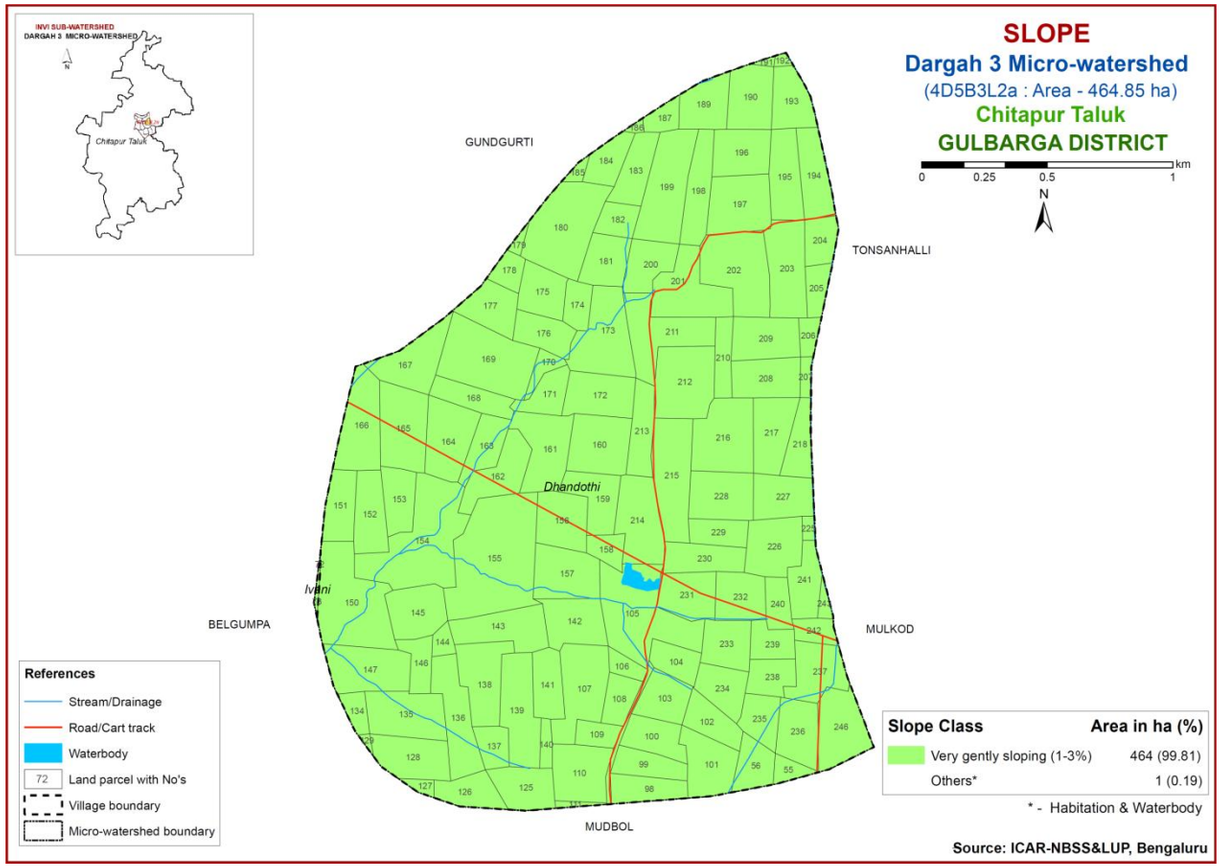

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
SOIL GRAVELLINESS
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
IVNI
Gundgurti
Gundagurthi
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Gravelliness class
Area in ha (%)
Non gravelly (<15%)
400 (92.73)
Others*
31 (7.27)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

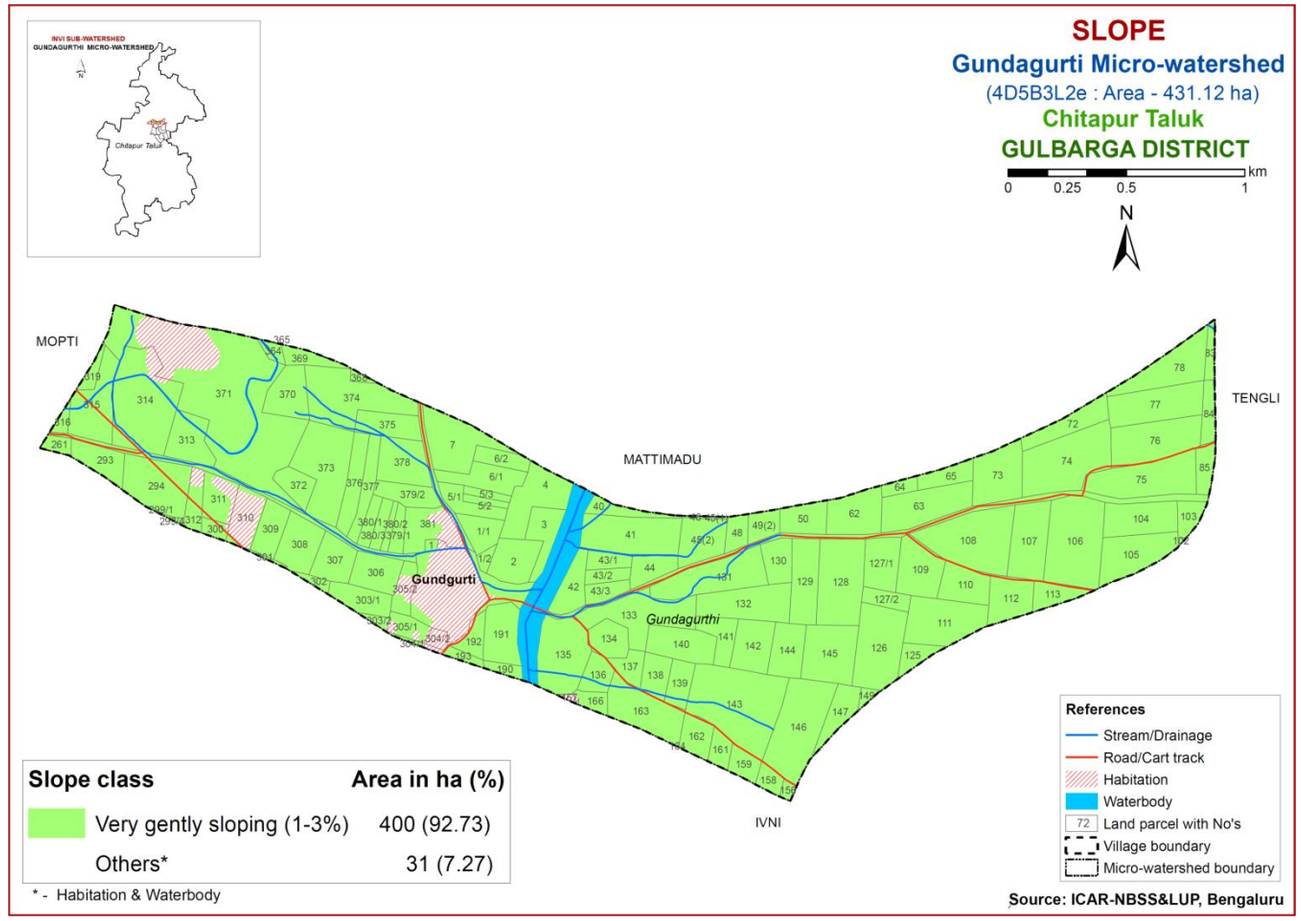

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
AVAILABLE WATER CAPACITY
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
KALGURKI
Tengali
MOPTI
TONSANHALLI
BELGUMPA
Gundagurthi
Dhandothi
MUDBOL
Ivani
BAGHWADI
References
Stream/Drainage
Road/Cart track
49 Land parcel with No's
Village boundary
Micro-watershed boundary
Available Water Capacity | Area in ha (%)
Medium (101-150 mm/m) | 33 (6.98)
Very high (>200 mm/m) | 434 (93.02)
Source: ICAR-NBSS&LUP, Bengaluru

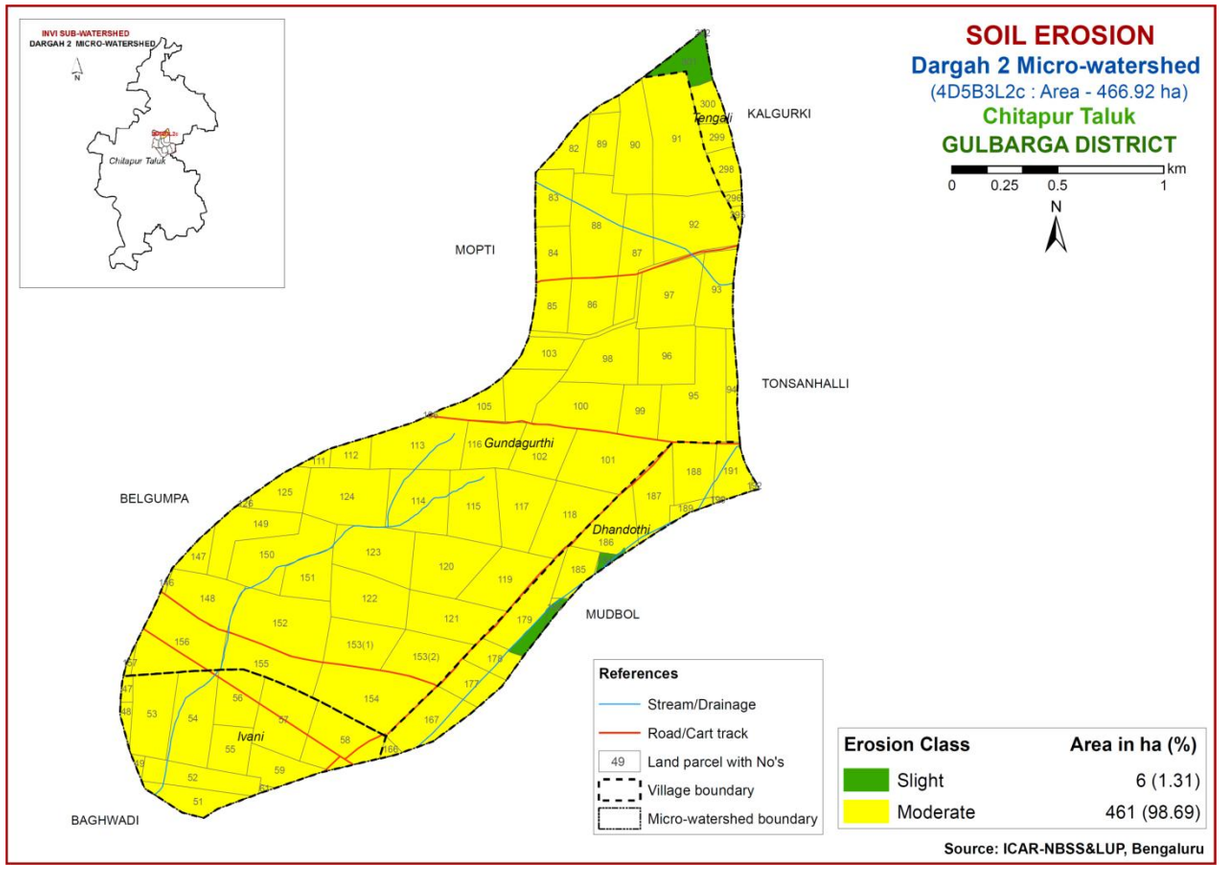

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
AVAILABLE WATER CAPACITY
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
Dhandothi
Ivani
BELGUMPA
MULKOD
MUDBOL
References
Stream/Drainage
Road/Cart track
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Available Water Capacity | Area in ha (%)
Medium (101-150 mm/m) | 54 (11.69)
Very high (>200 mm/m) | 410 (88.12)
Others* | 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

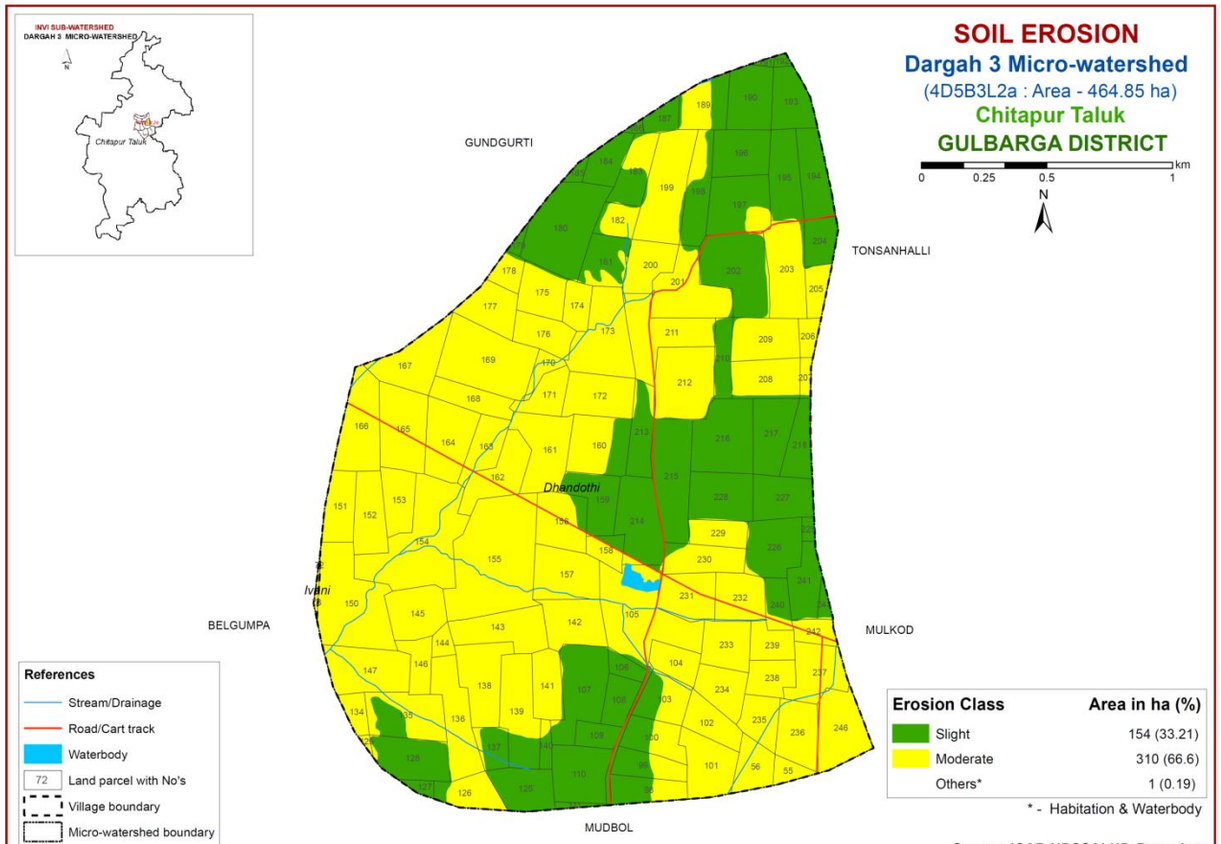

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
AVAILABLE WATER CAPACITY
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
Gundgurti
Gundagurthi
IVNI
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Available Water Capacity | Area in ha (%)
Very low (<50 mm/m) | 35 (8.1)
Very high (>200 mm/m) | 365 (84.63)
Others* | 31 (7.27)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

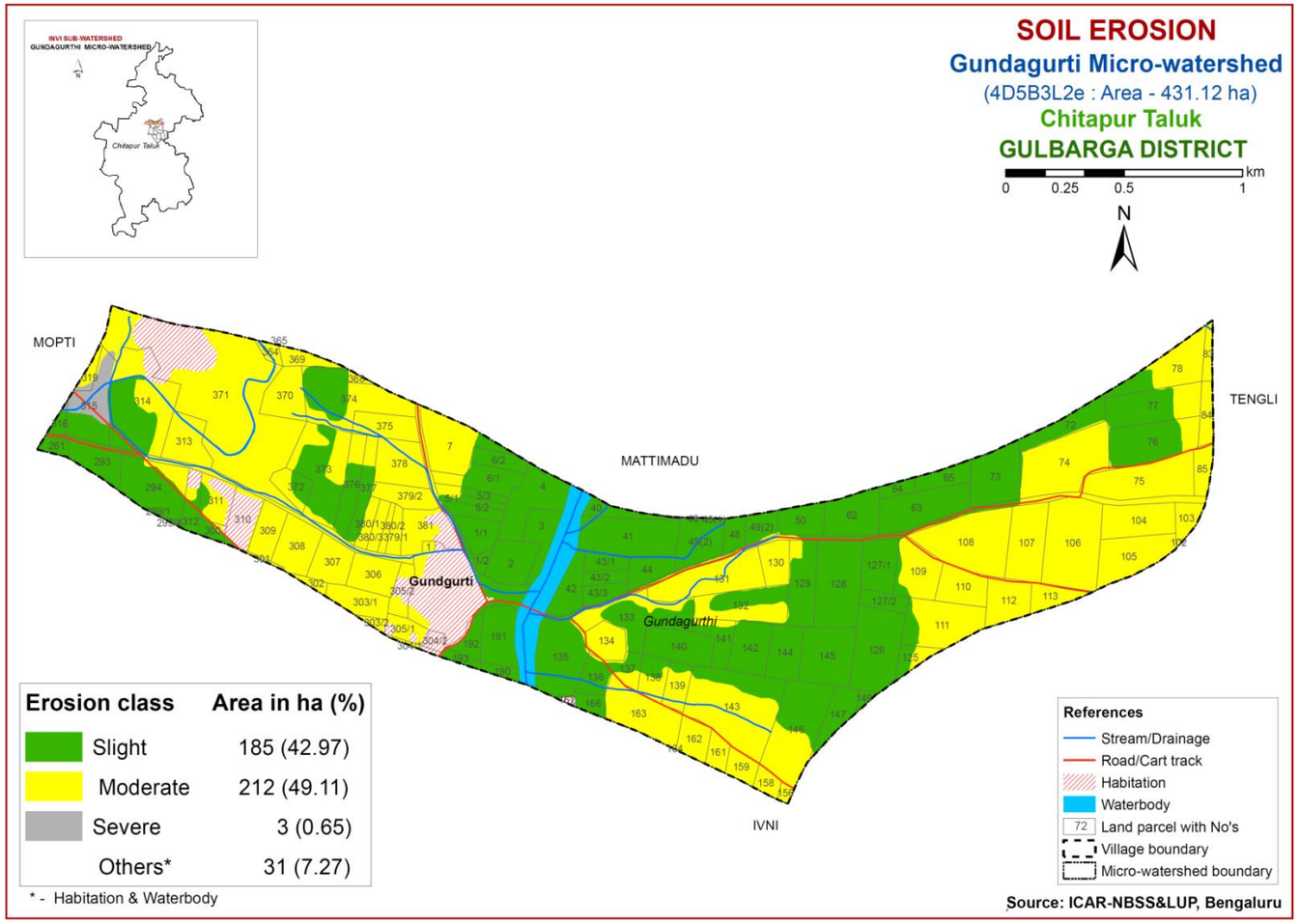

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
SLOPE
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
Tengali
Gundagurthi
Dhandothi
Ivani
References
Stream/Drainage
Road/Cart track
Land parcel with No's
Village boundary
Micro-watershed boundary
Slope Class
Area in ha (%)
Very gently sloping (1-3%) 372 (79.68)
Gently sloping (3-5%) 95 (20.32)
Source: ICAR-NBSS&LUP, Bengaluru

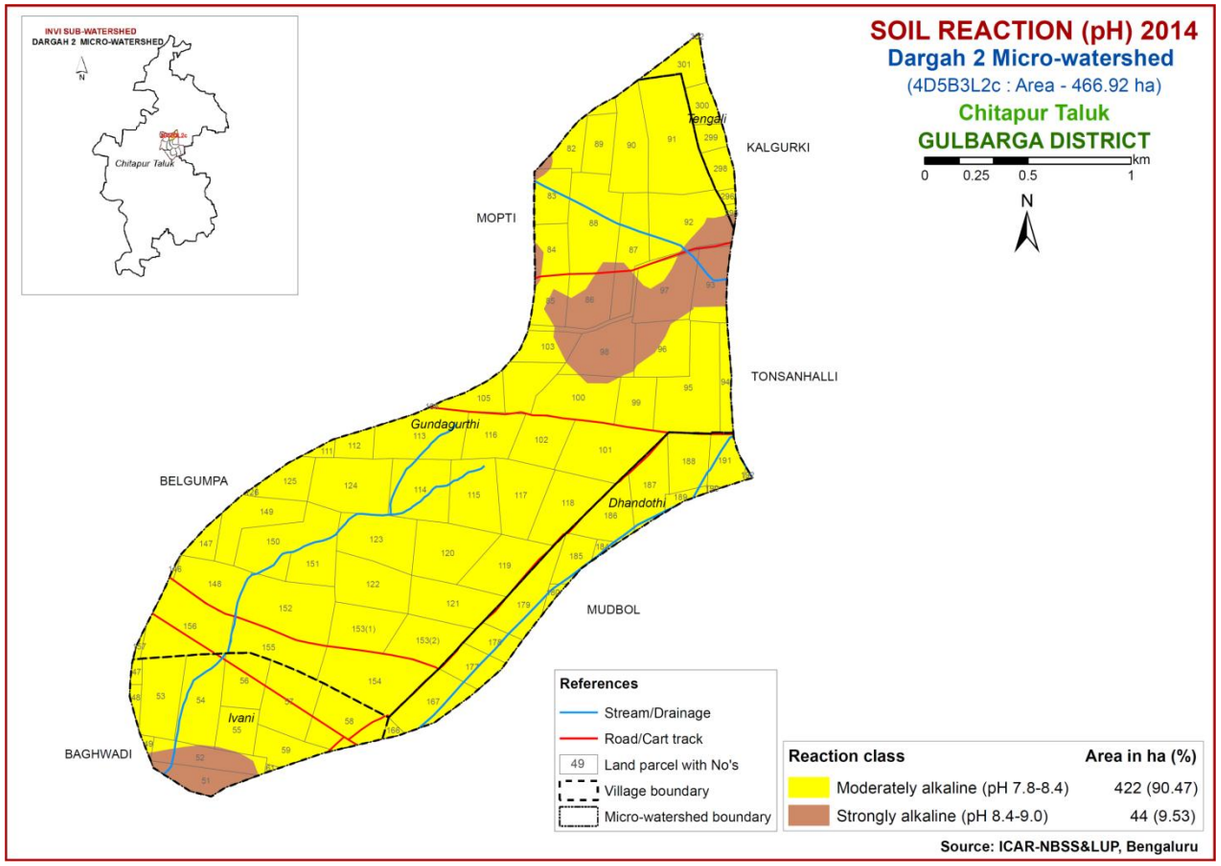

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
SLOPE
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
Dhandothi
Ivani
References
Stream/Drainage
Road/Cart track
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Slope Class
Area in ha (%)
Very gently sloping (1-3%) 464 (99.81)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

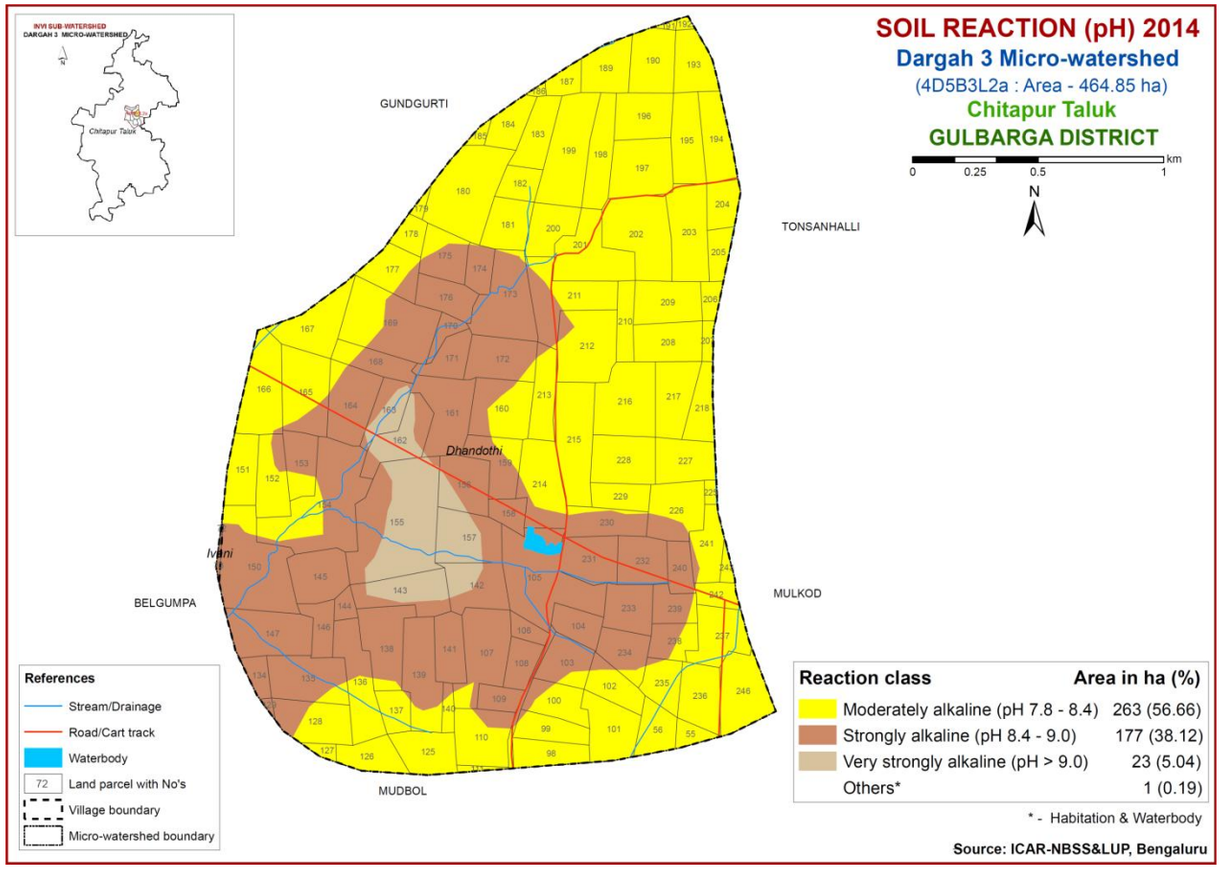

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
SLOPE
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
IVNI
Gundgurti
Gundagurthi
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Slope class
Area in ha (%)
Very gently sloping (1-3%) 400 (92.73)
Others* 31 (7.27)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

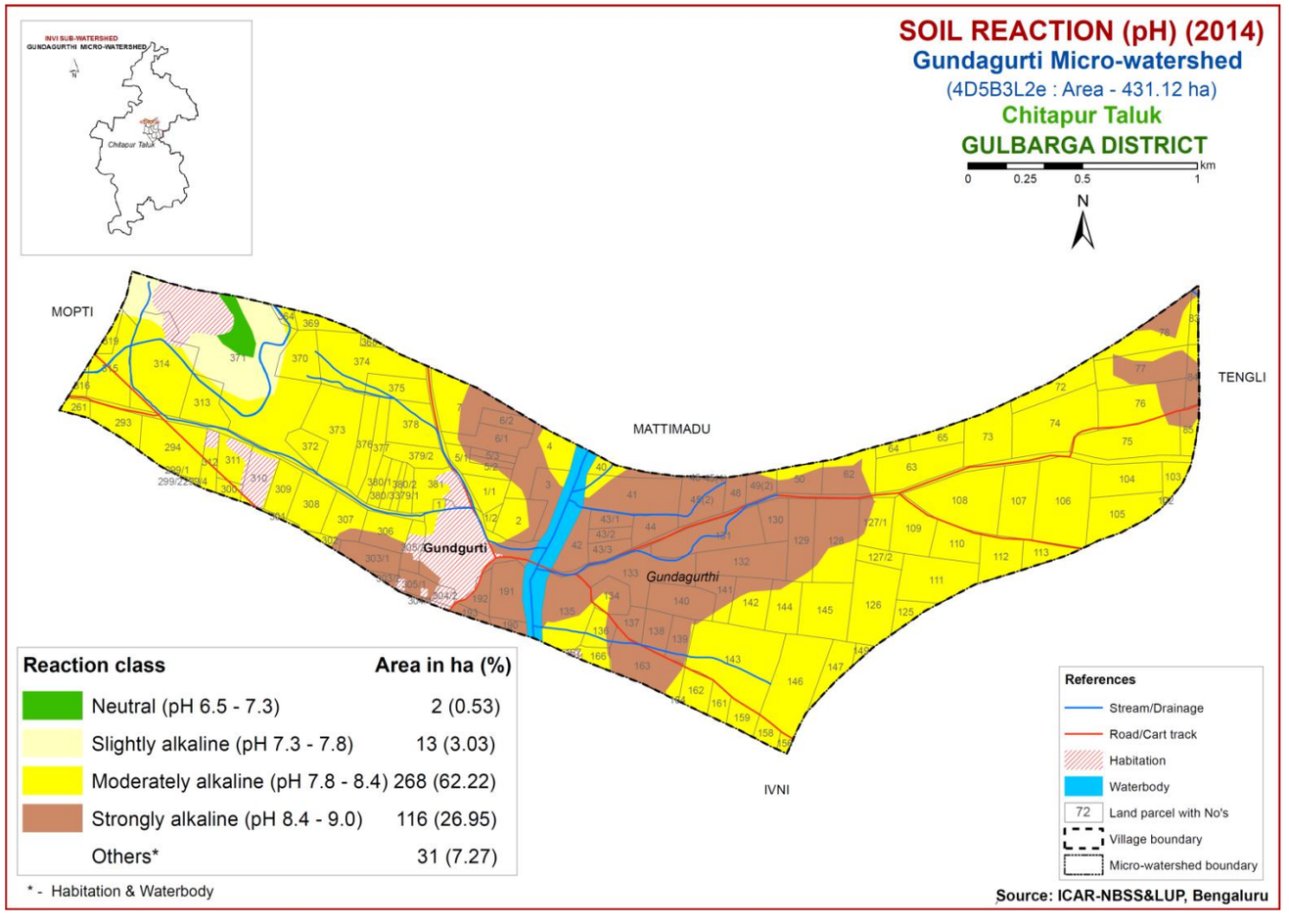

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
SOIL EROSION
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
Gundagurthi
Dhandothi
Ivani
Tengali
References
Stream/Drainage
Road/Cart track
49 Land parcel with No's
Village boundary
Micro-watershed boundary
Erosion Class
Area in ha (%)
Slight
6 (1.31)
Moderate
461 (98.69)
Source: ICAR-NBSS&LUP, Bengaluru

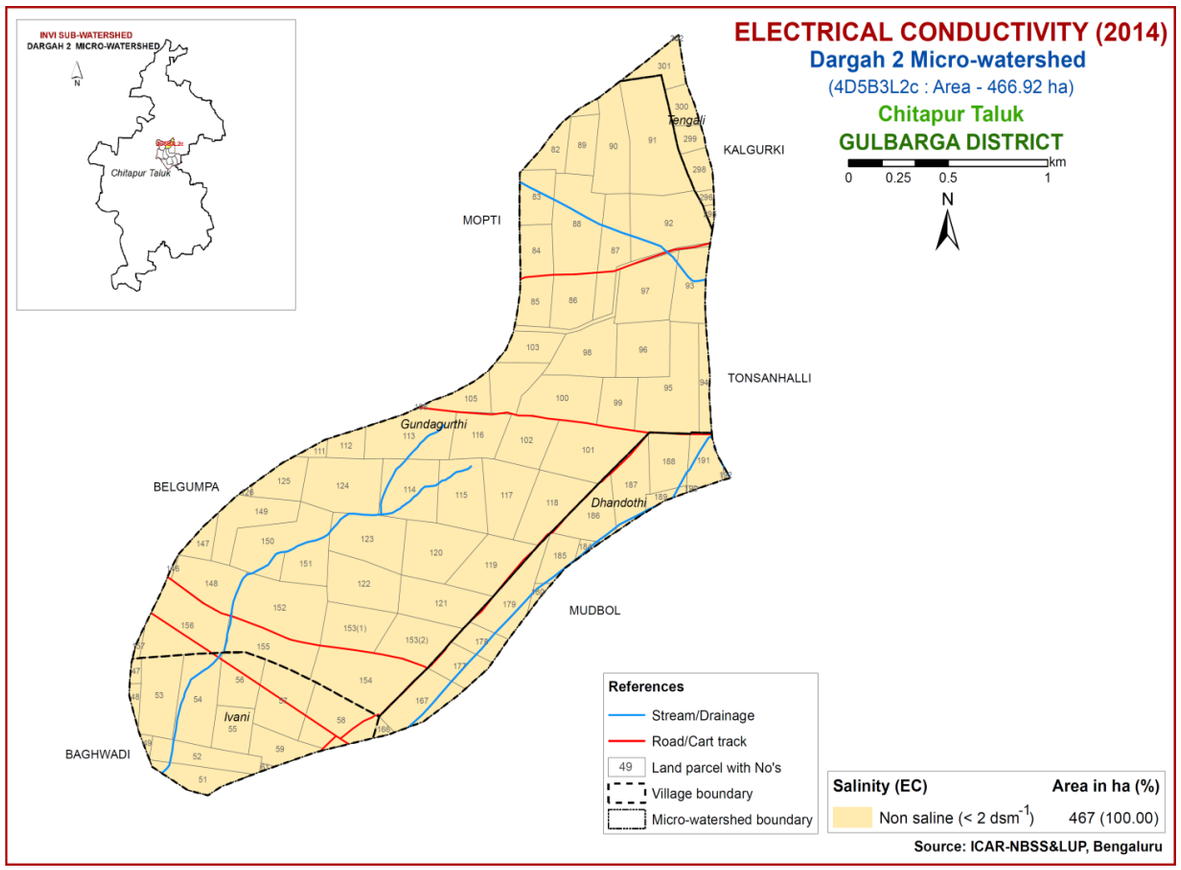

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
SOIL EROSION
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
Dhandothi
Ivani
References
Stream/Drainage
Road/Cart track
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Erosion Class
Area in ha (%)
Slight
154 (33.21)
Moderate
310 (66.6)
Others*
1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

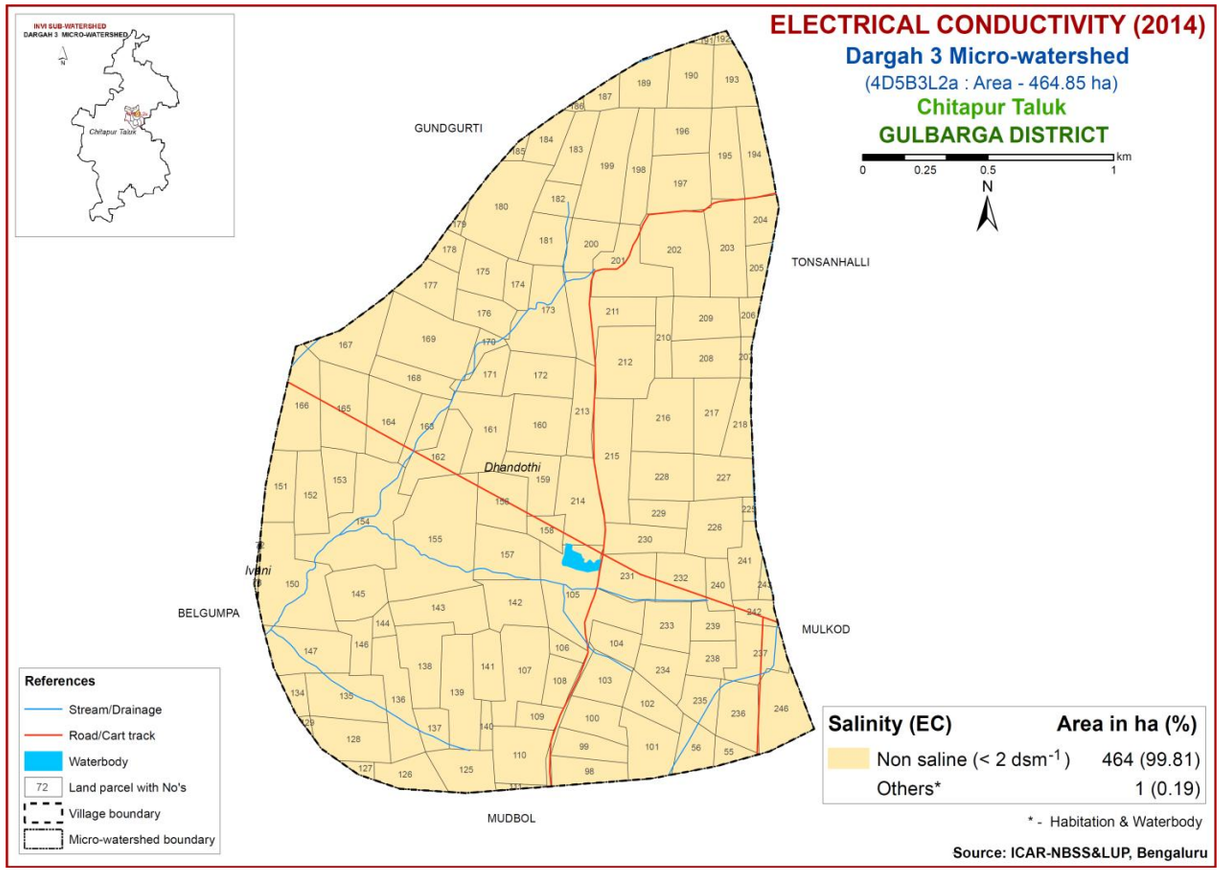

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
SOIL EROSION
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
IVNI
Gundgurti
Gundagurthi
Erosion class
Area in ha (%)
Slight
185 (42.97)
Moderate
212 (49.11)
Severe
3 (0.65)
Others*
31 (7.27)
* - Habitation & Waterbody
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru

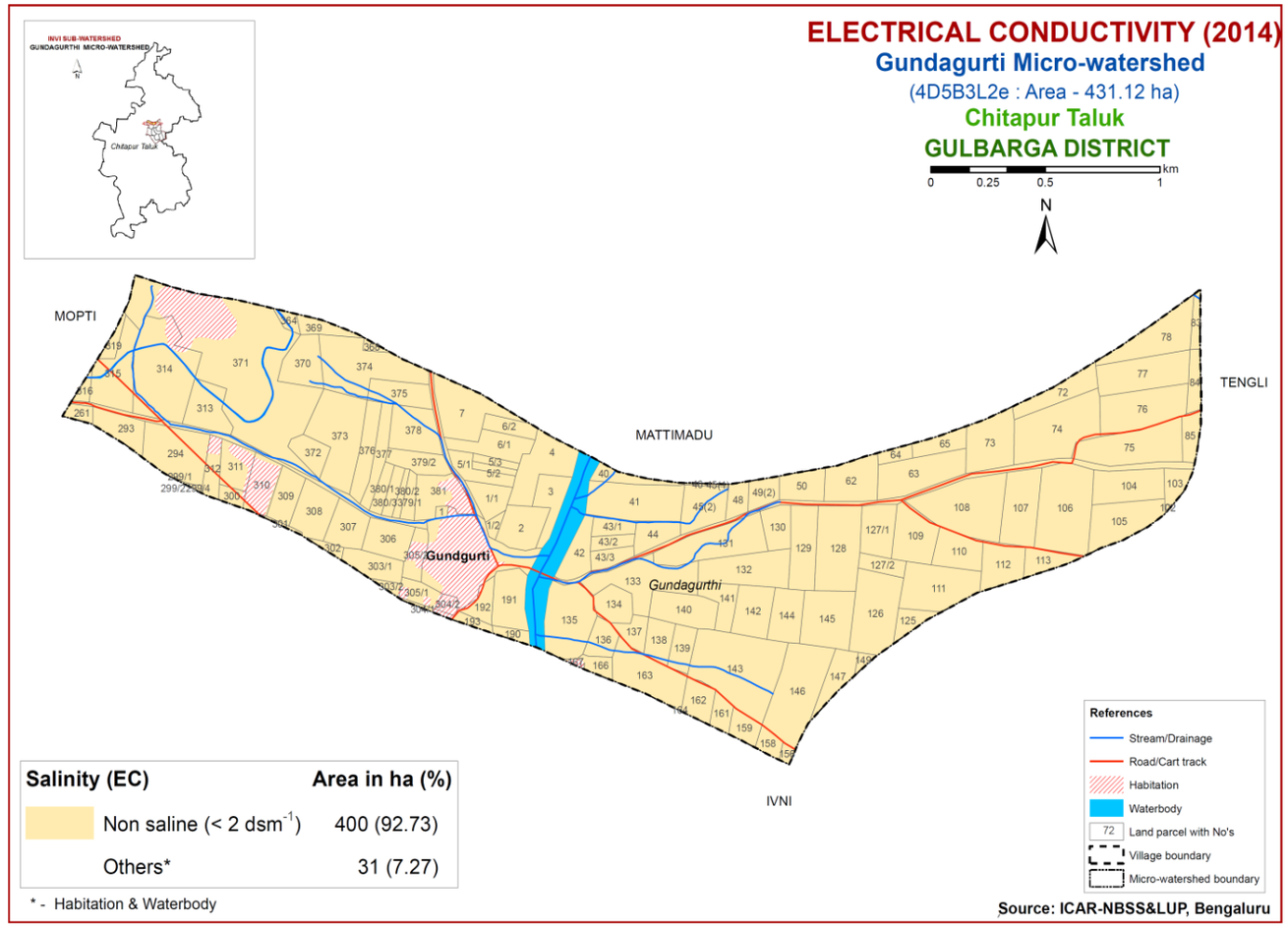

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
SOIL REACTION (pH) 2014
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
Tengali
Gundagurthi
Dhandothi
Ivani
References
Stream/Drainage
Road/Cart track
49 Land parcel with No's
Village boundary
Micro-watershed boundary
Reaction class
Area in ha (%)
Moderately alkaline (pH 7.8-8.4) 422 (90.47)
Strongly alkaline (pH 8.4-9.0) 44 (9.53)
Source: ICAR-NBSS&LUP, Bengaluru

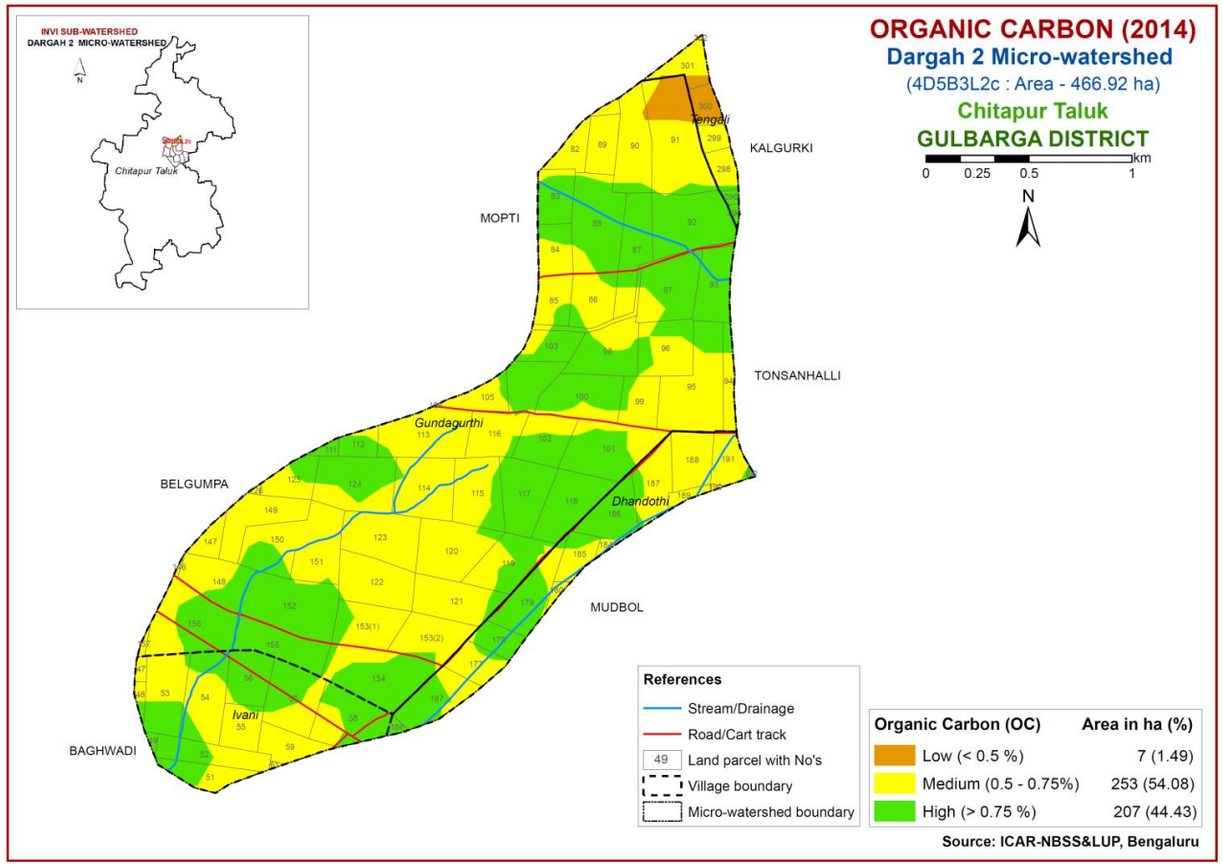

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
SOIL REACTION (pH) 2014
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
Dhandothi
Ivani
References
Stream/Drainage
Road/Cart track
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Reaction class
Area in ha (%)
Moderately alkaline (pH 7.8 - 8.4) 263 (56.66)
Strongly alkaline (pH 8.4 - 9.0) 177 (38.12)
Very strongly alkaline (pH > 9.0) 23 (5.04)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

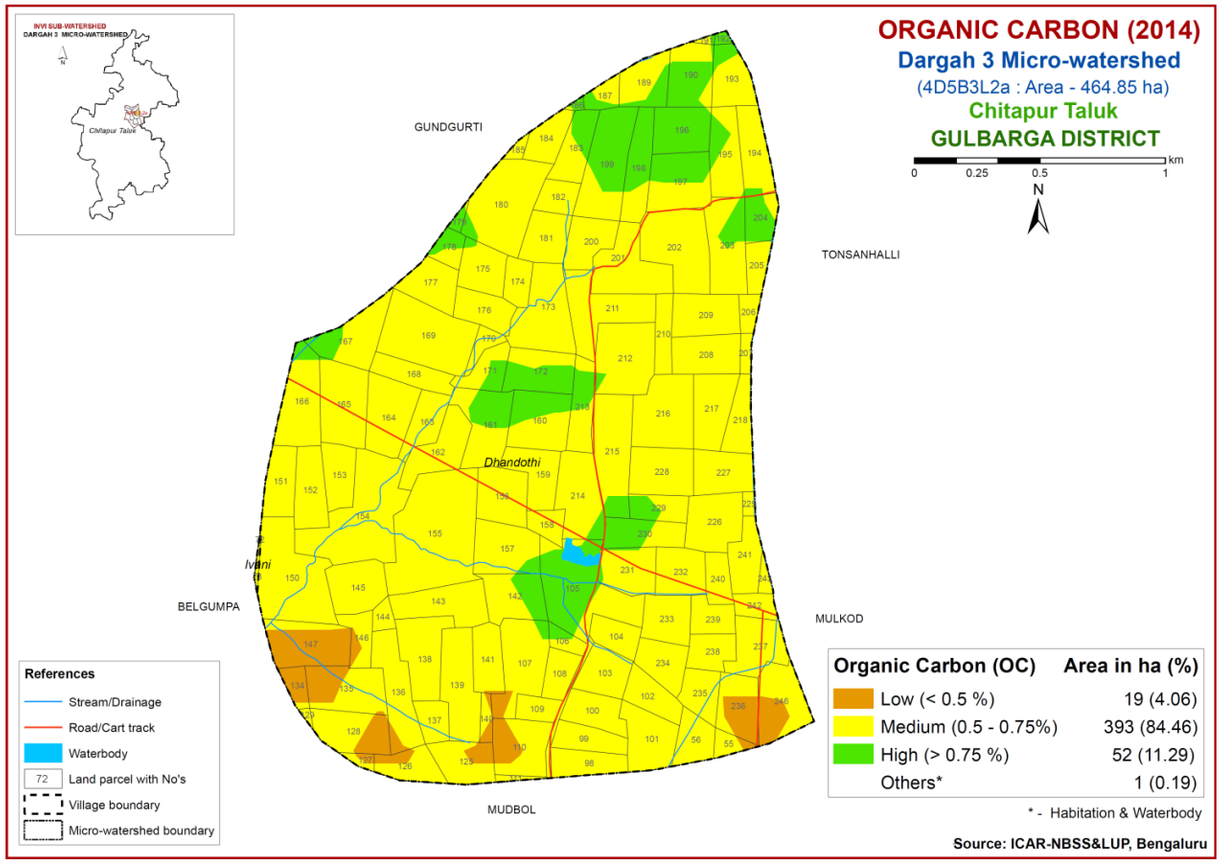

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
SOIL REACTION (pH) (2014)
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
IVNI
Gundgurti
Gundagurthi
Reaction class
Area in ha (%)
Neutral (pH 6.5 - 7.3) 2 (0.53)
Slightly alkaline (pH 7.3 - 7.8) 13 (3.03)
Moderately alkaline (pH 7.8 - 8.4) 268 (62.22)
Strongly alkaline (pH 8.4 - 9.0) 116 (26.95)
Others* 31 (7.27)
* - Habitation & Waterbody
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru

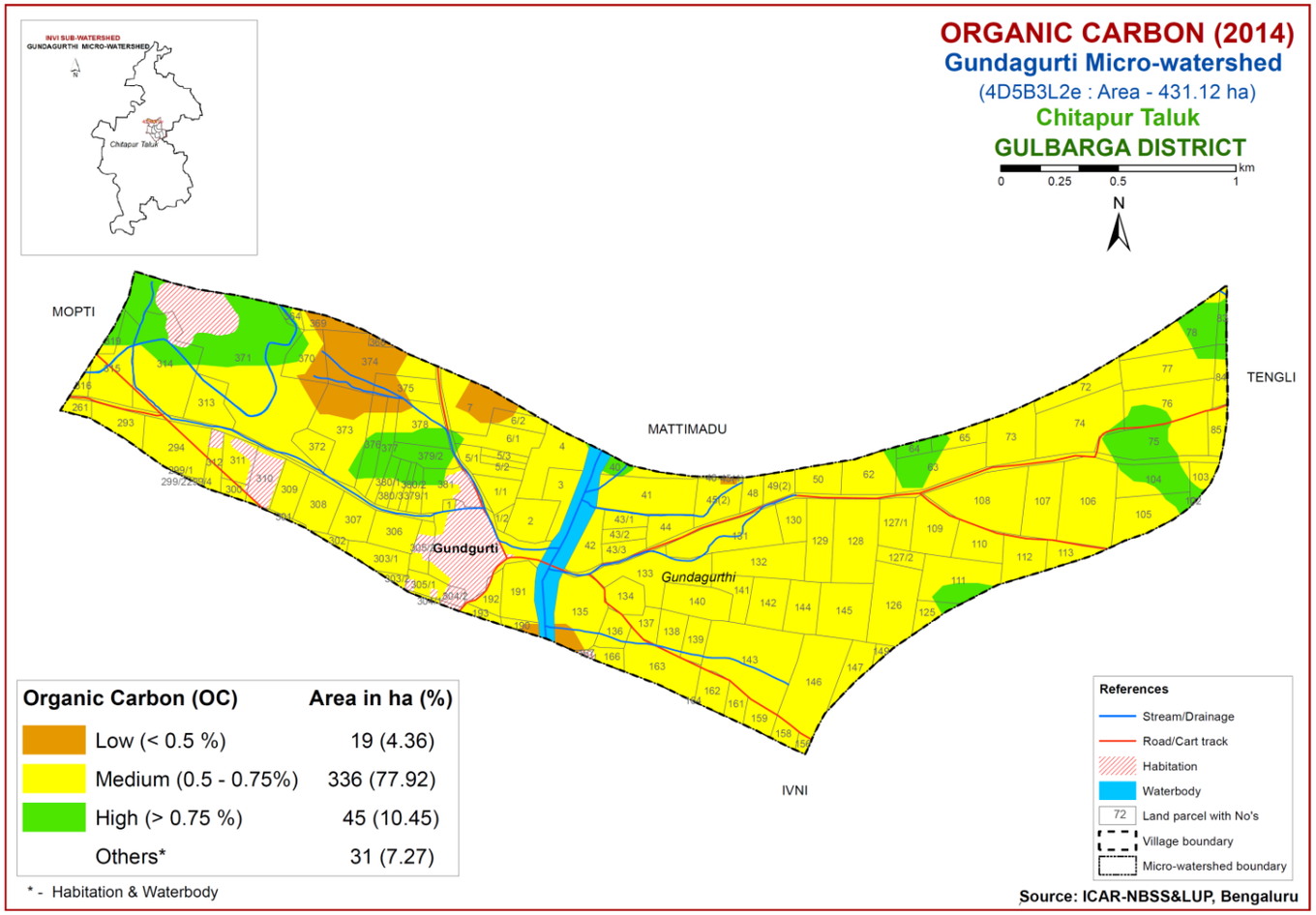

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
ELECTRICAL CONDUCTIVITY (2014)
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
Tengali
Gundagurthi
Dhandothi
Ivani
References
Stream/Drainage
Road/Cart track
Land parcel with No's
Village boundary
Micro-watershed boundary
Salinity (EC) Area in ha (%)
Non saline (< 2 dsm-1) 467 (100.00)
Source: ICAR-NBSS&LUP, Bengaluru

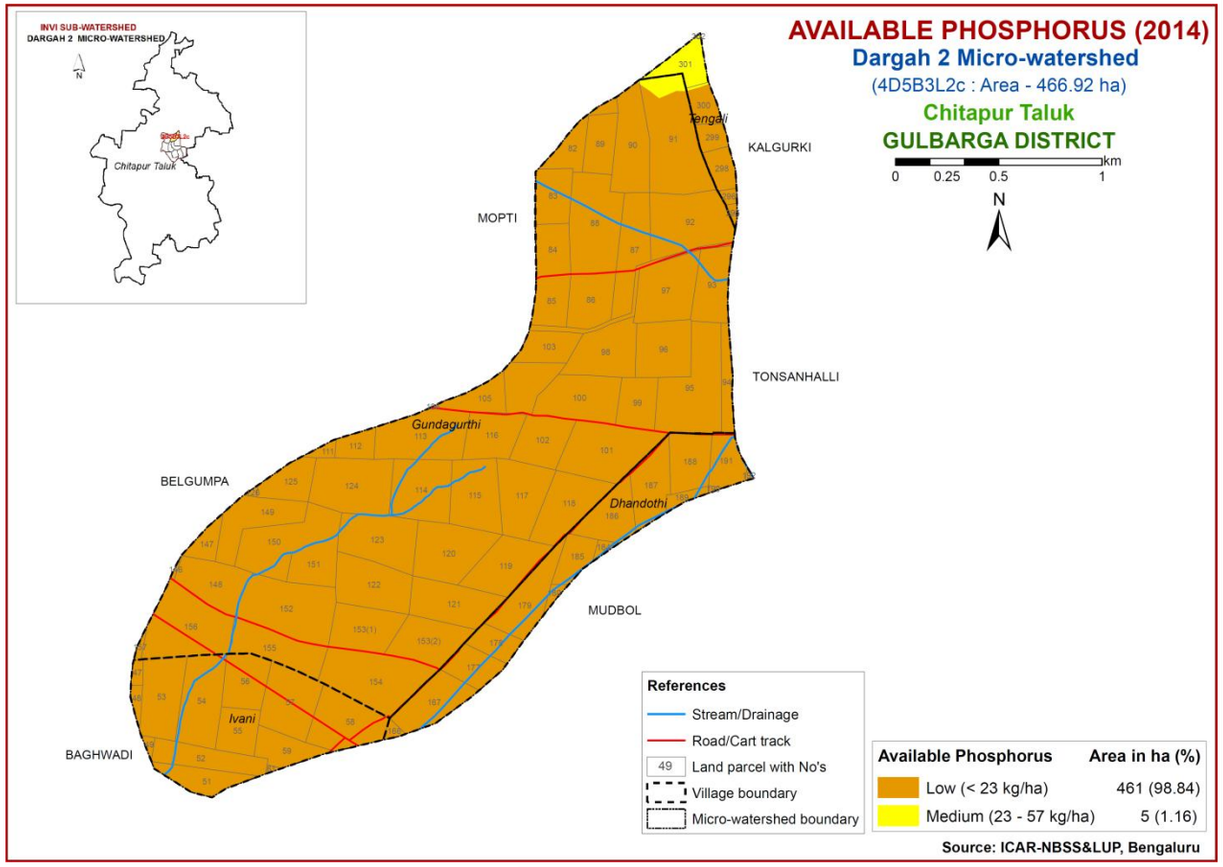

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
ELECTRICAL CONDUCTIVITY (2014)
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
Dhandothi
Ivani
References
Stream/Drainage
Road/Cart track
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Salinity (EC) Area in ha (%)
Non saline (< 2 dsm-1) 464 (99.81)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

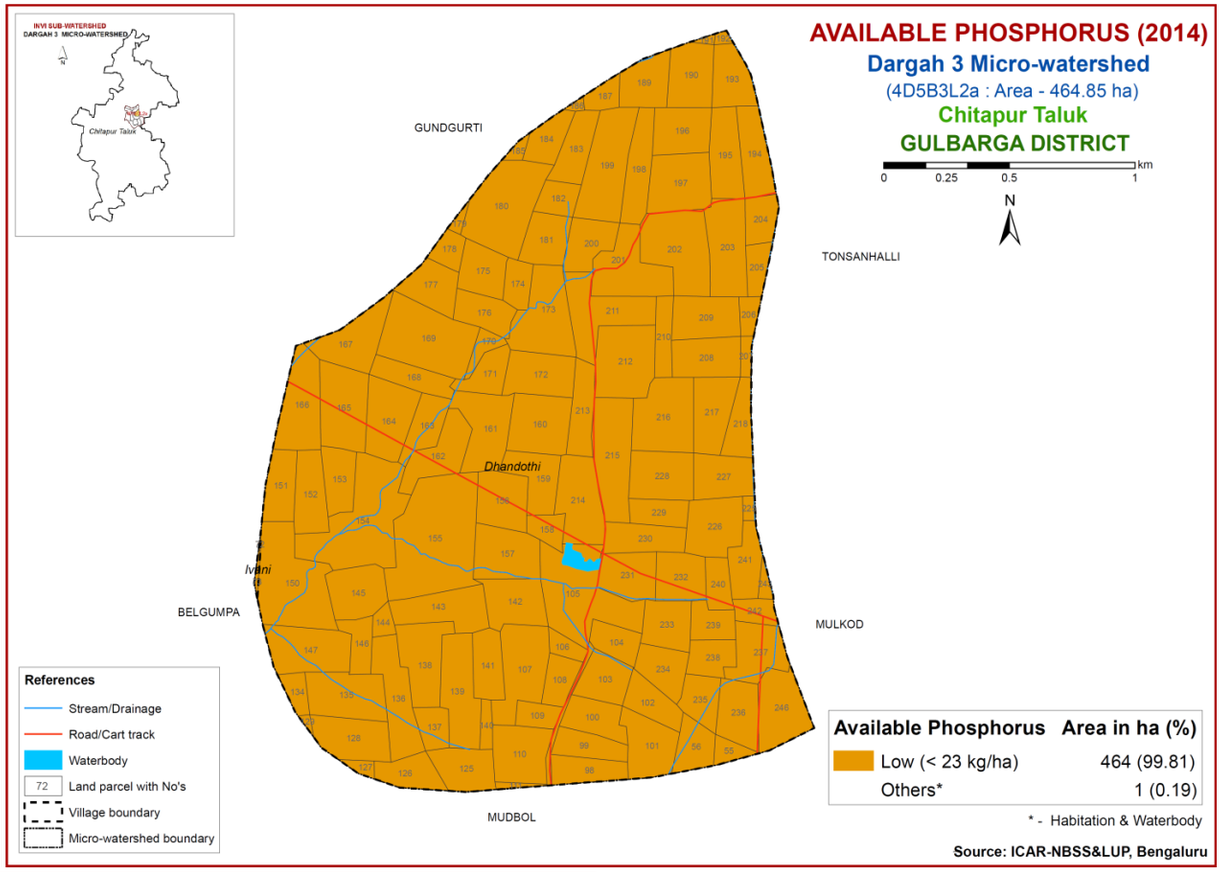

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
ELECTRICAL CONDUCTIVITY (2014)
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
IVNI
Gundgurti
Gundagurthi
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Salinity (EC) Area in ha (%)
Non saline (< 2 dsm-1) 400 (92.73)
Others* 31 (7.27)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

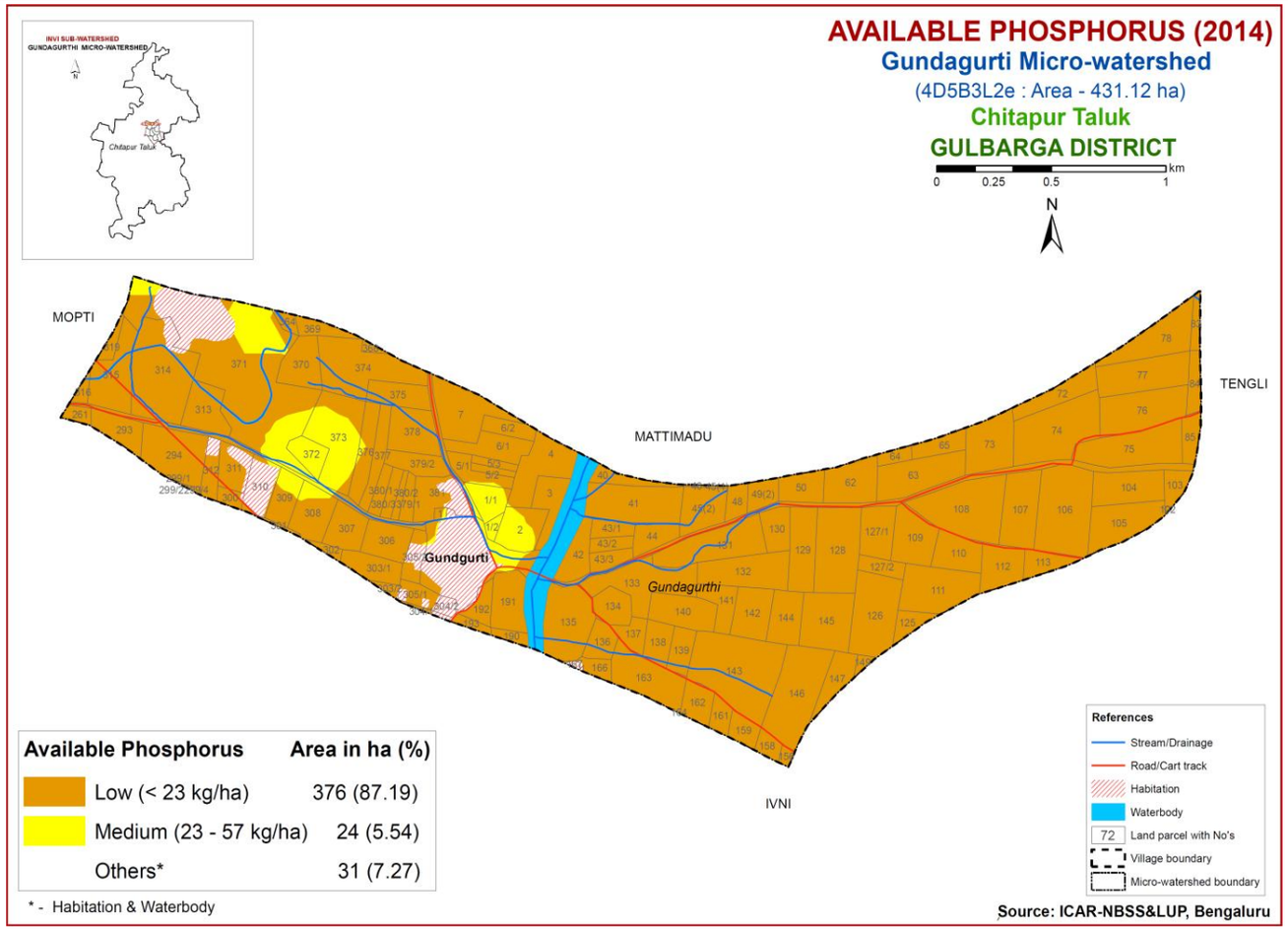

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
ORGANIC CARBON (2014)
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
Tengali
KALGURKI
MOPTI
TONSANHALLI
Gundagurthi
BELGUMPA
Dhandothi
MUDBOL
Ivani
BAGHWADI
References
Stream/Drainage
Road/Cart track
49 Land parcel with No's
Village boundary
Micro-watershed boundary
Organic Carbon (OC) Area in ha (%)
Low (< 0.5 %) 7 (1.49)
Medium (0.5 - 0.75%) 253 (54.08)
High (> 0.75 %) 207 (44.43)
Source: ICAR-NBSS&LUP, Bengaluru

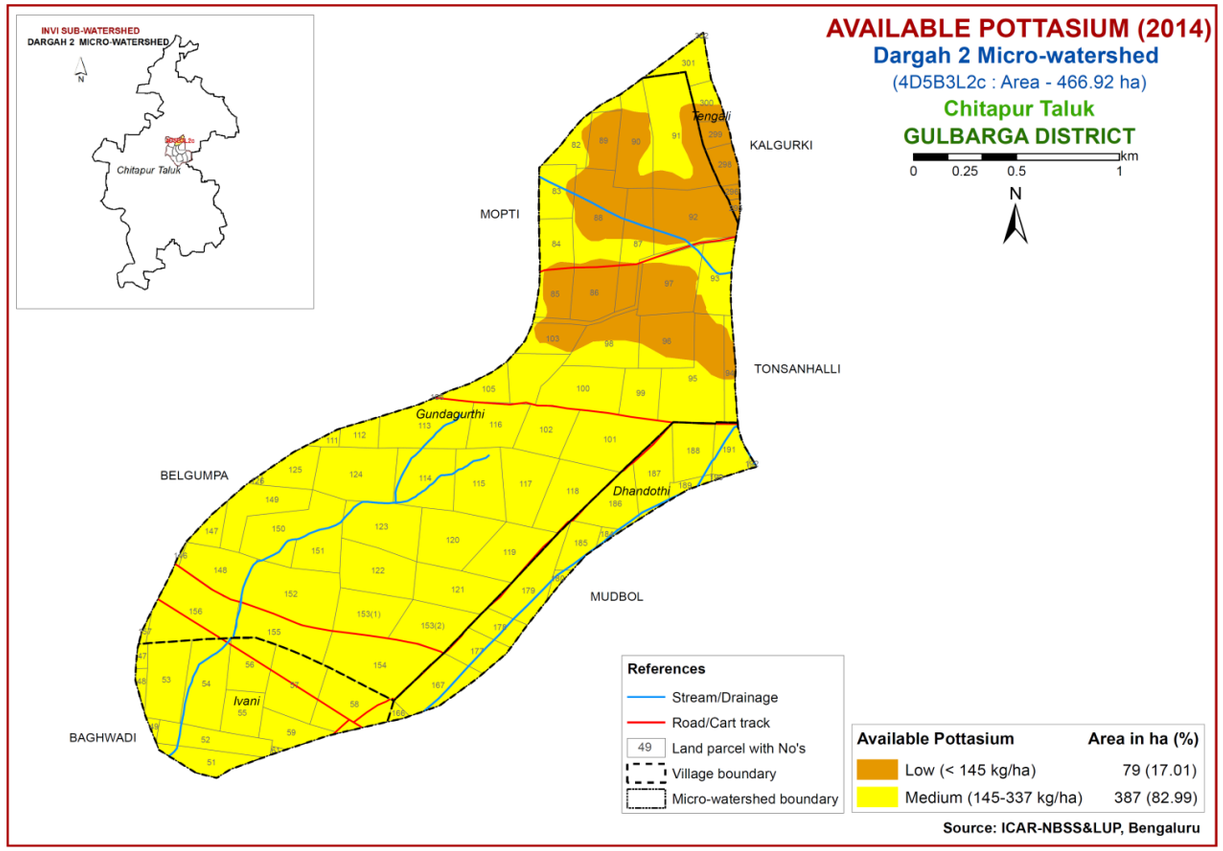

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
ORGANIC CARBON (2014)
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
Dhandothi
Ivani
BELGUMPA
MULKOD
MUDBOL
References
Stream/Drainage
Road/Cart track
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Organic Carbon (OC) Area in ha (%)
Low (< 0.5 %) 19 (4.06)
Medium (0.5 - 0.75%) 393 (84.46)
High (> 0.75 %) 52 (11.29)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

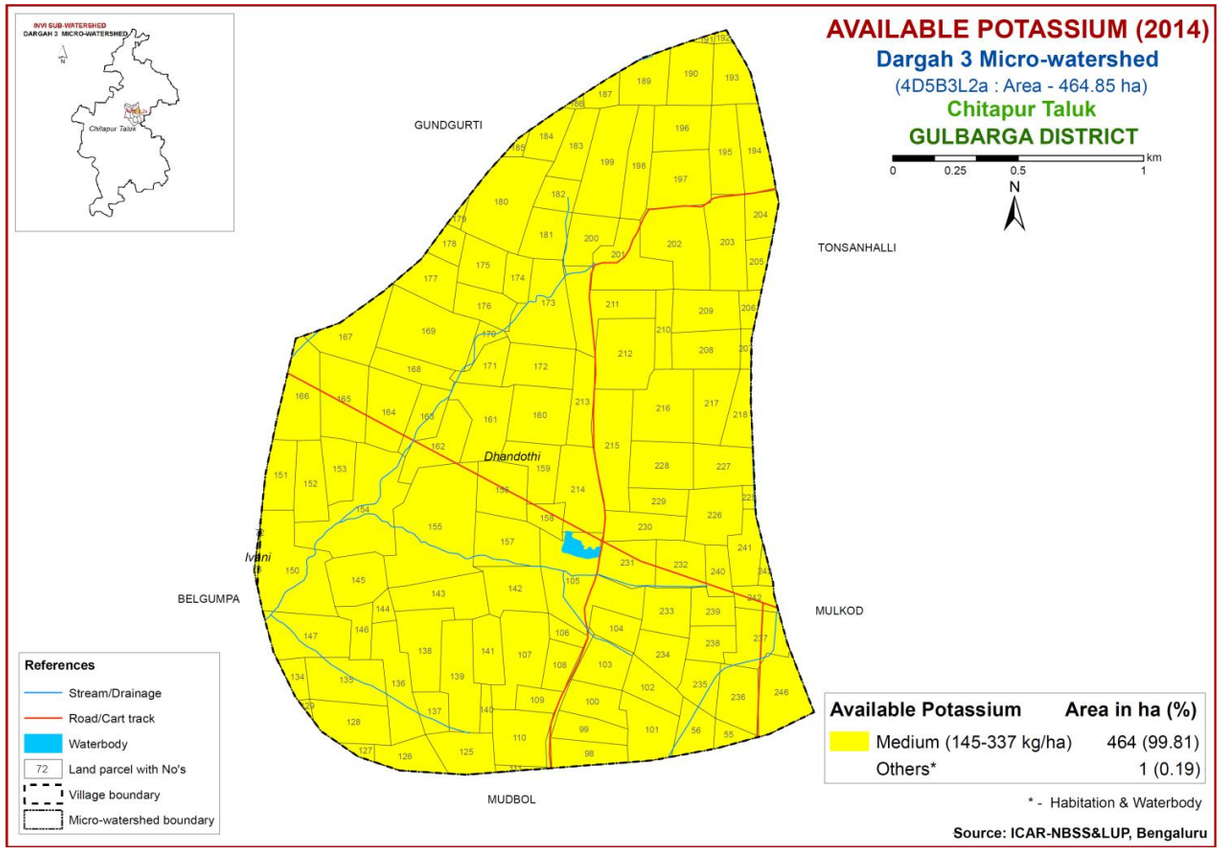

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
ORGANIC CARBON (2014)
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
Gundgurti
Gundagurthi
IVNI
Organic Carbon (OC) Area in ha (%)
Low (< 0.5 %) 19 (4.36)
Medium (0.5 - 0.75%) 336 (77.92)
High (> 0.75 %) 45 (10.45)
Others* 31 (7.27)
* - Habitation & Waterbody
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru

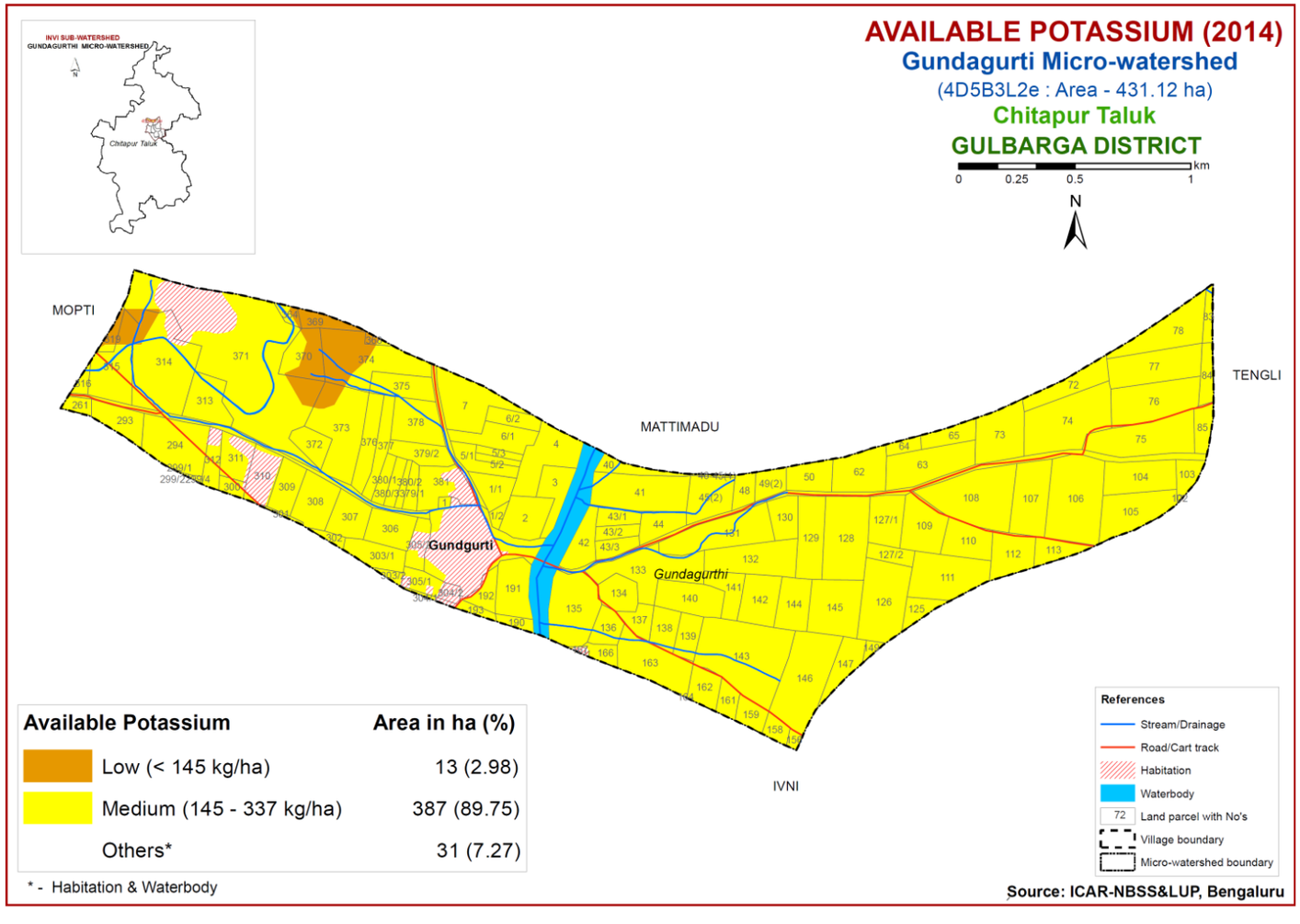

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
AVAILABLE PHOSPHORUS (2014)
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
km
0 0.25 0.5 1
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
Tengali
Gundagurthi
Dhandothi
Ivani
References
Stream/Drainage
Road/Cart track
49 Land parcel with No's
Village boundary
Micro-watershed boundary
Available Phosphorus Area in ha (%)
Low (< 23 kg/ha) 461 (98.84)
Medium (23 - 57 kg/ha) 5 (1.16)
Source: ICAR-NBSS&LUP, Bengaluru

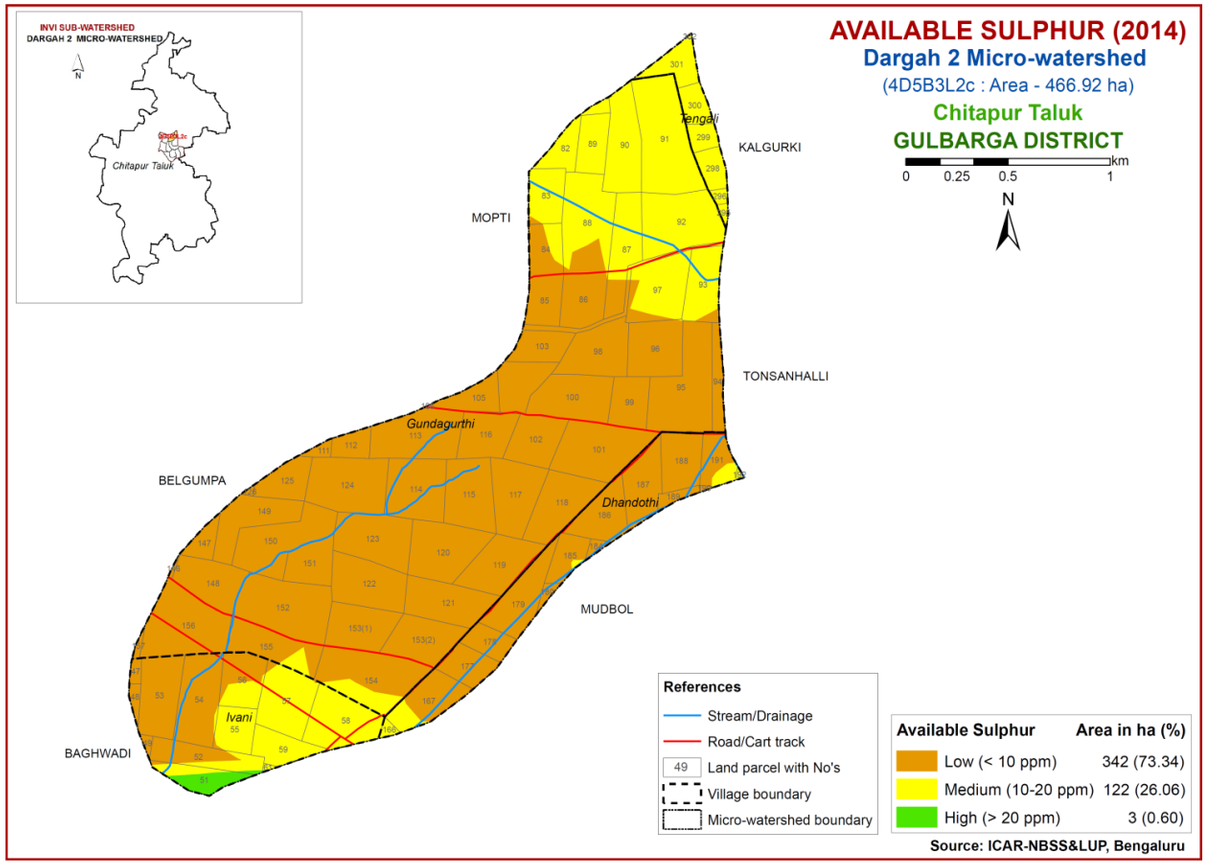

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
AVAILABLE PHOSPHORUS (2014)
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
km
0 0.25 0.5 1
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
Dhandothi
Ivani
References
Stream/Drainage
Road/Cart track
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Available Phosphorus Area in ha (%)
Low (< 23 kg/ha) 464 (99.81)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

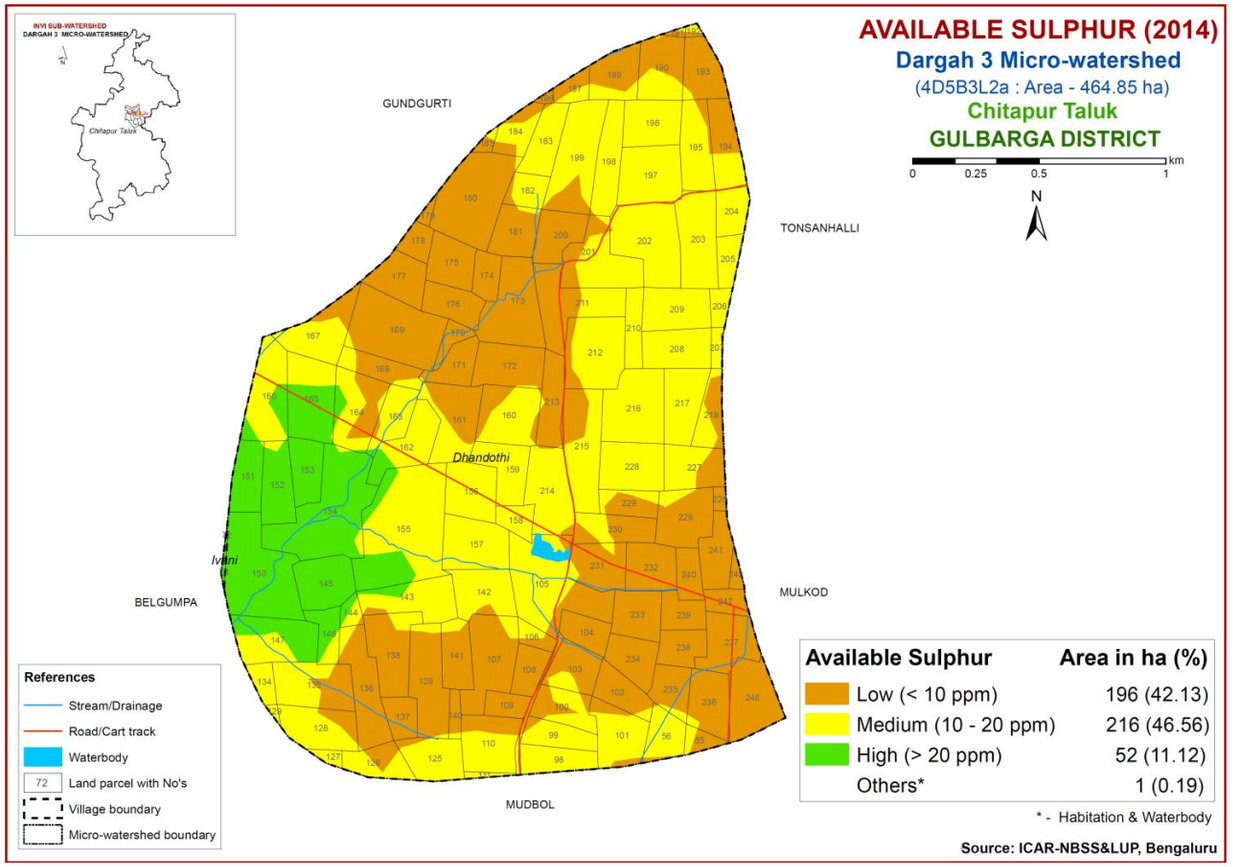

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
AVAILABLE PHOSPHORUS (2014)
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
km
0 0.25 0.5 1
N
MOPTI
MATTIMADU
TENGLI
IVNI
Gundgurti
Gundagurthi
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Available Phosphorus Area in ha (%)
Low (< 23 kg/ha) 376 (87.19)
Medium (23 - 57 kg/ha) 24 (5.54)
Others* 31 (7.27)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

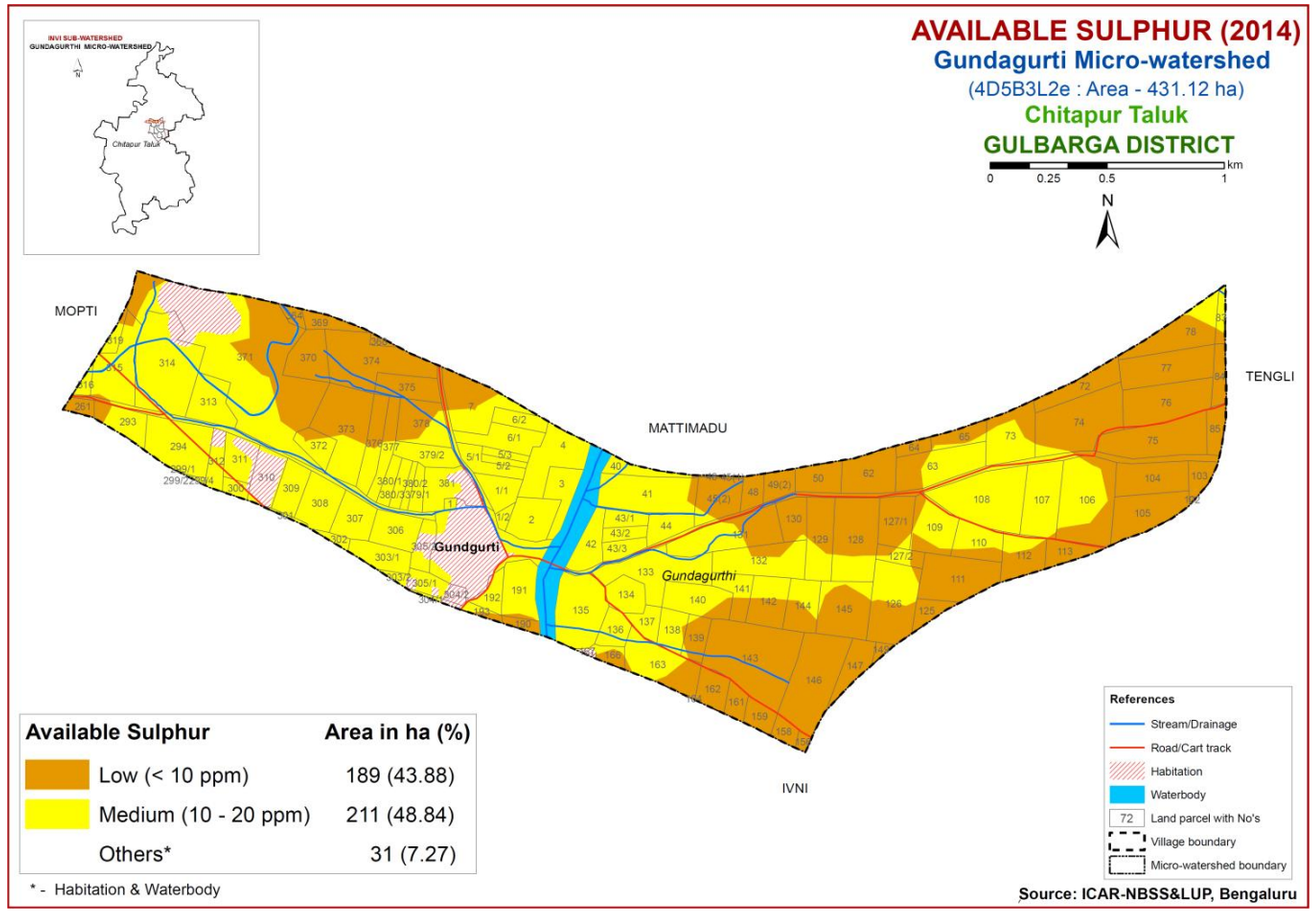

AVAILABLE POTTASIUM (2014)
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
0 0.25 0.5 1 km
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
Tengali
Gundagurthi
Dhandothi
Ivani
References
Stream/Drainage
Road/Cart track
Land parcel with No's
Village boundary
Micro-watershed boundary
Available Pottasium
Area in ha (%)
Low (< 145 kg/ha) 79 (17.01)
Medium (145-337 kg/ha) 387 (82.99)
Source: ICAR-NBSS&LUP, Bengaluru

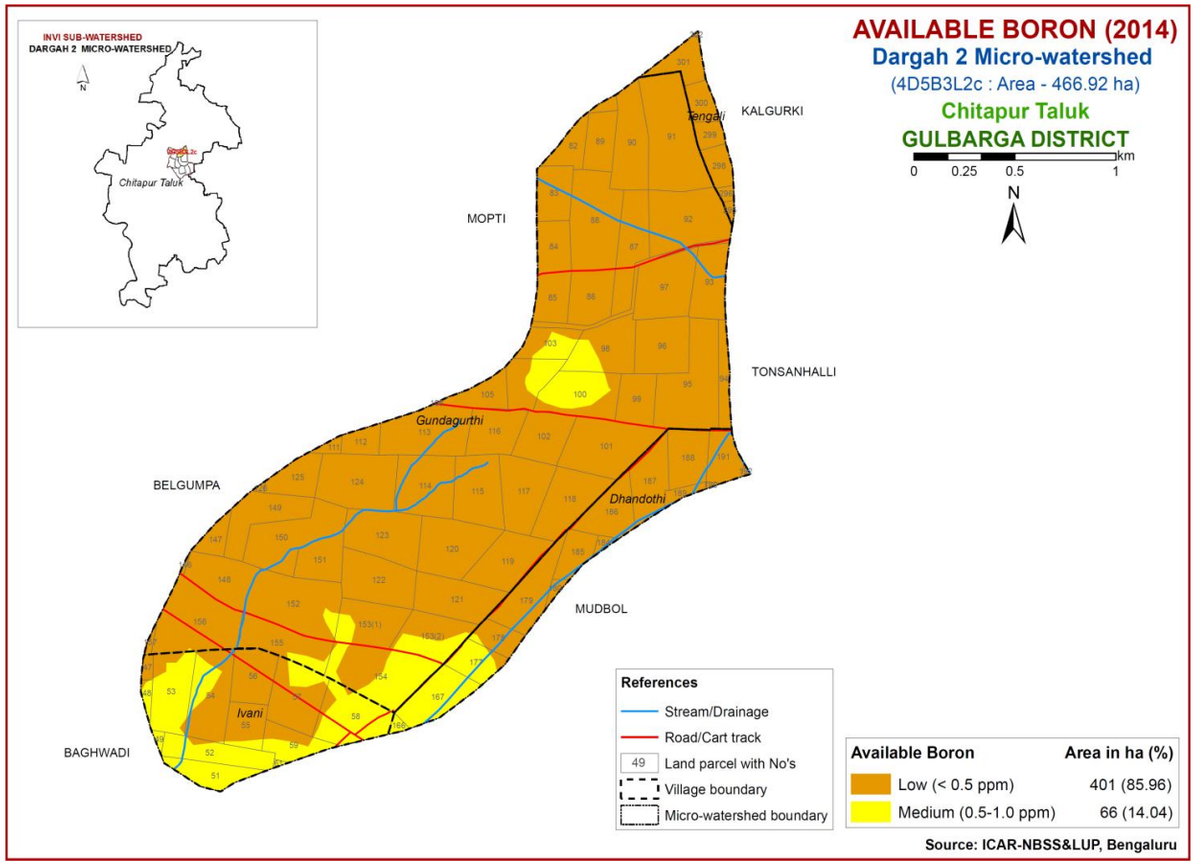

AVAILABLE POTASSIUM (2014)
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
Dhandothi
Ivani
References
Stream/Drainage
Road/Cart track
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Available Potassium
Area in ha (%)
Medium (145-337 kg/ha) 464 (99.81)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

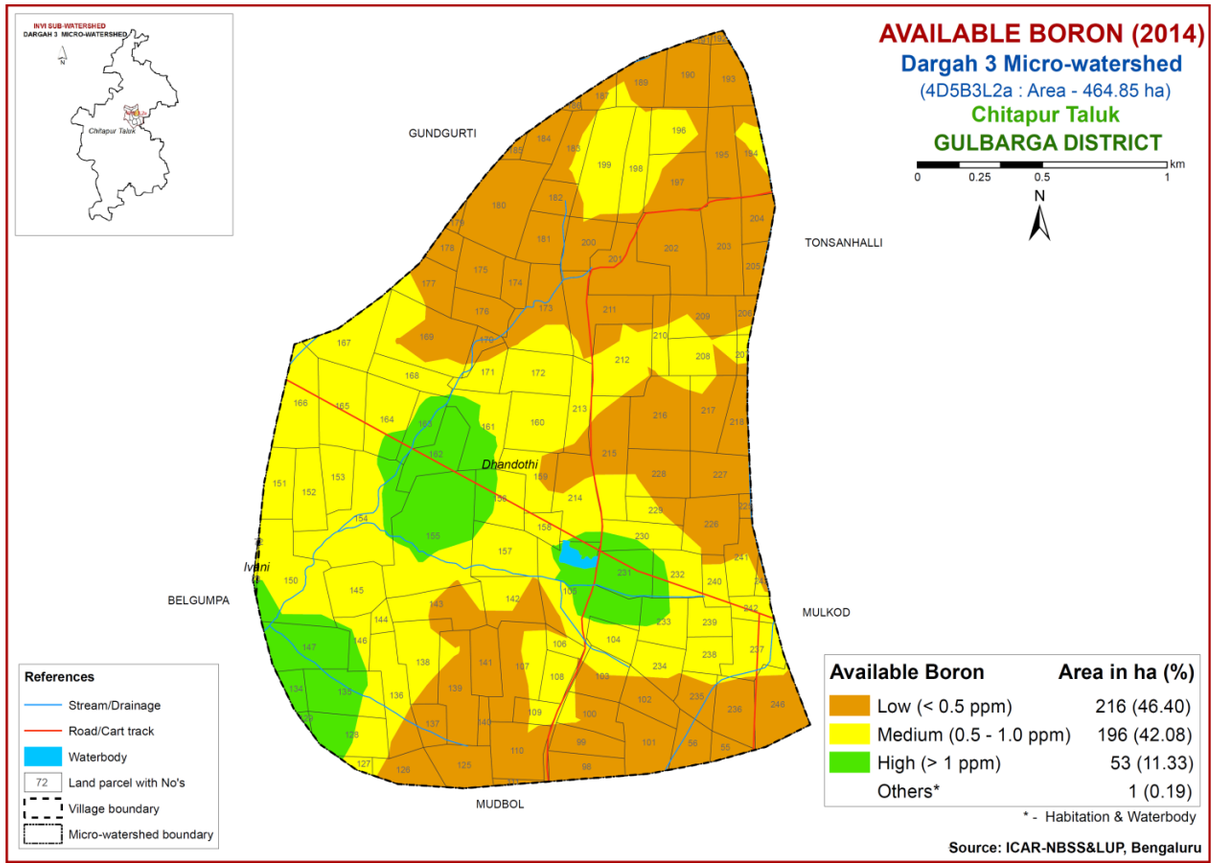

AVAILABLE POTASSIUM (2014)
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
IVNI
Gundgurti
Gundagurthi
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Available Potassium
Area in ha (%)
Low (< 145 kg/ha) 13 (2.98)
Medium (145 - 337 kg/ha) 387 (89.75)
Others* 31 (7.27)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

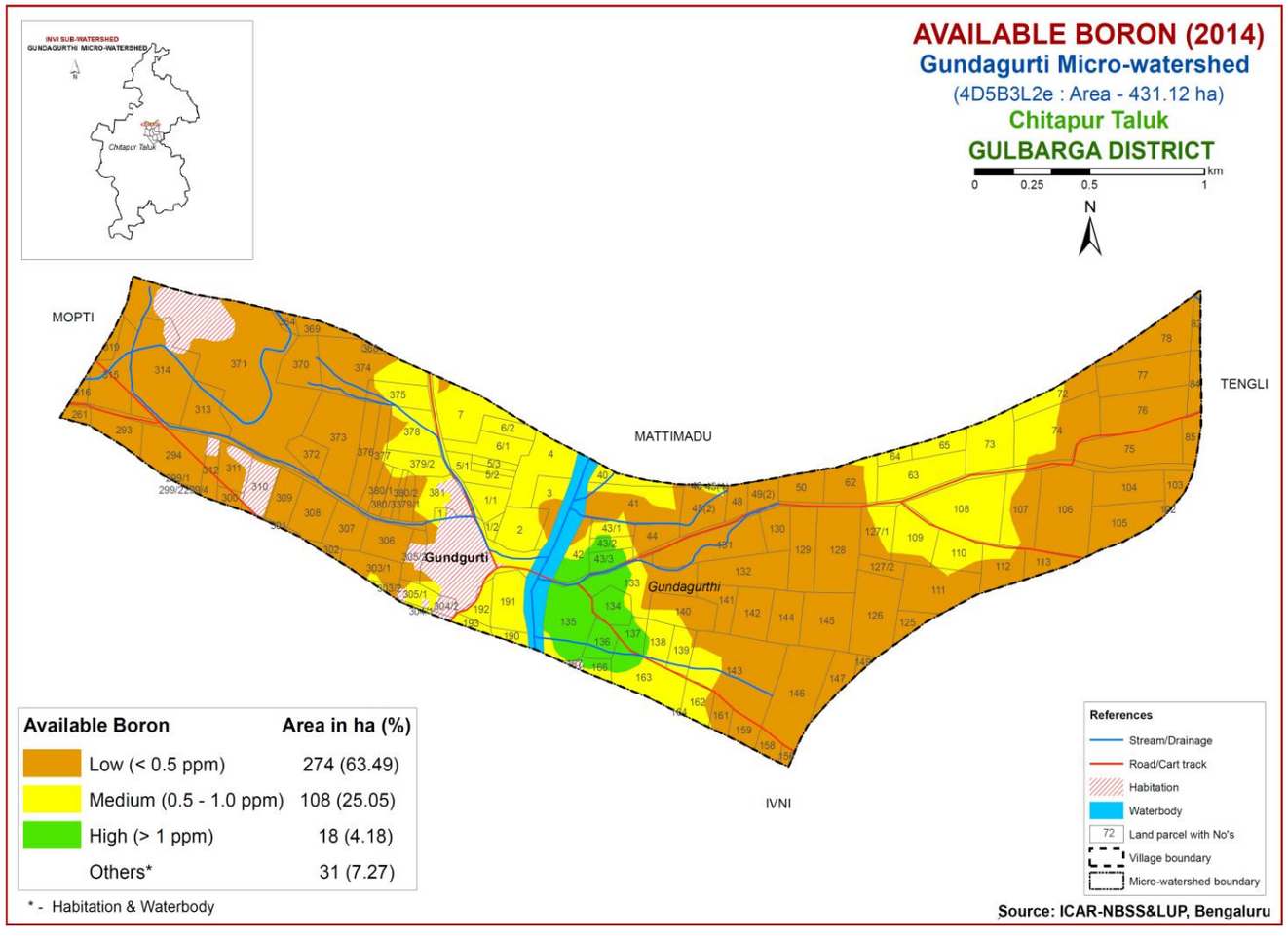

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
AVAILABLE SULPHUR (2014)
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
km
0 0.25 0.5 1
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
Tengali
Gundagurthi
Dhandothi
Ivani
References
Stream/Drainage
Road/Cart track
49 Land parcel with No's
Village boundary
Micro-watershed boundary
Available Sulphur
Area in ha (%)
Low (< 10 ppm) 342 (73.34)
Medium (10-20 ppm) 122 (26.06)
High (> 20 ppm) 3 (0.60)
Source: ICAR-NBSS&LUP, Bengaluru

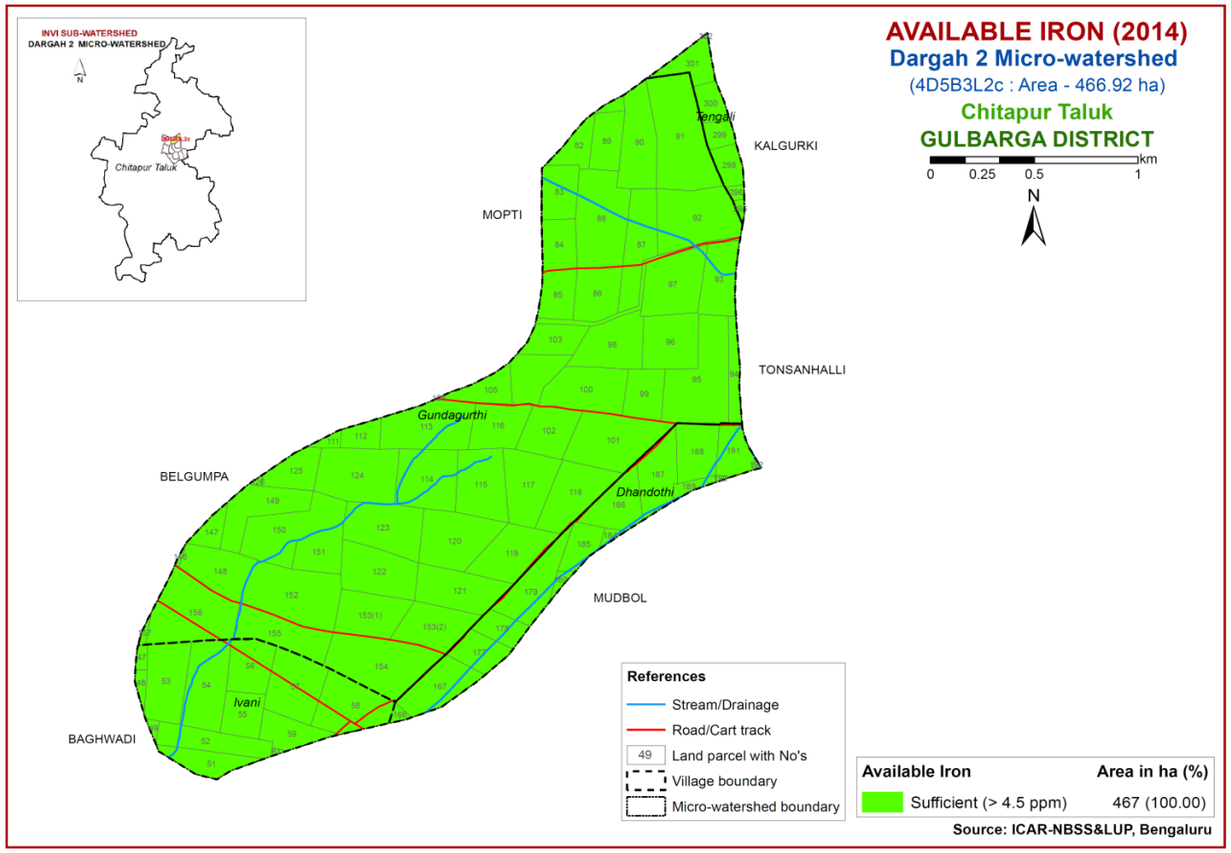

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
AVAILABLE SULPHUR (2014)
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
km
0 0.25 0.5 1
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
Dhandothi
Ivani
References
Stream/Drainage
Road/Cart track
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Available Sulphur
Area in ha (%)
Low (< 10 ppm) 196 (42.13)
Medium (10 - 20 ppm) 216 (46.56)
High (> 20 ppm) 52 (11.12)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

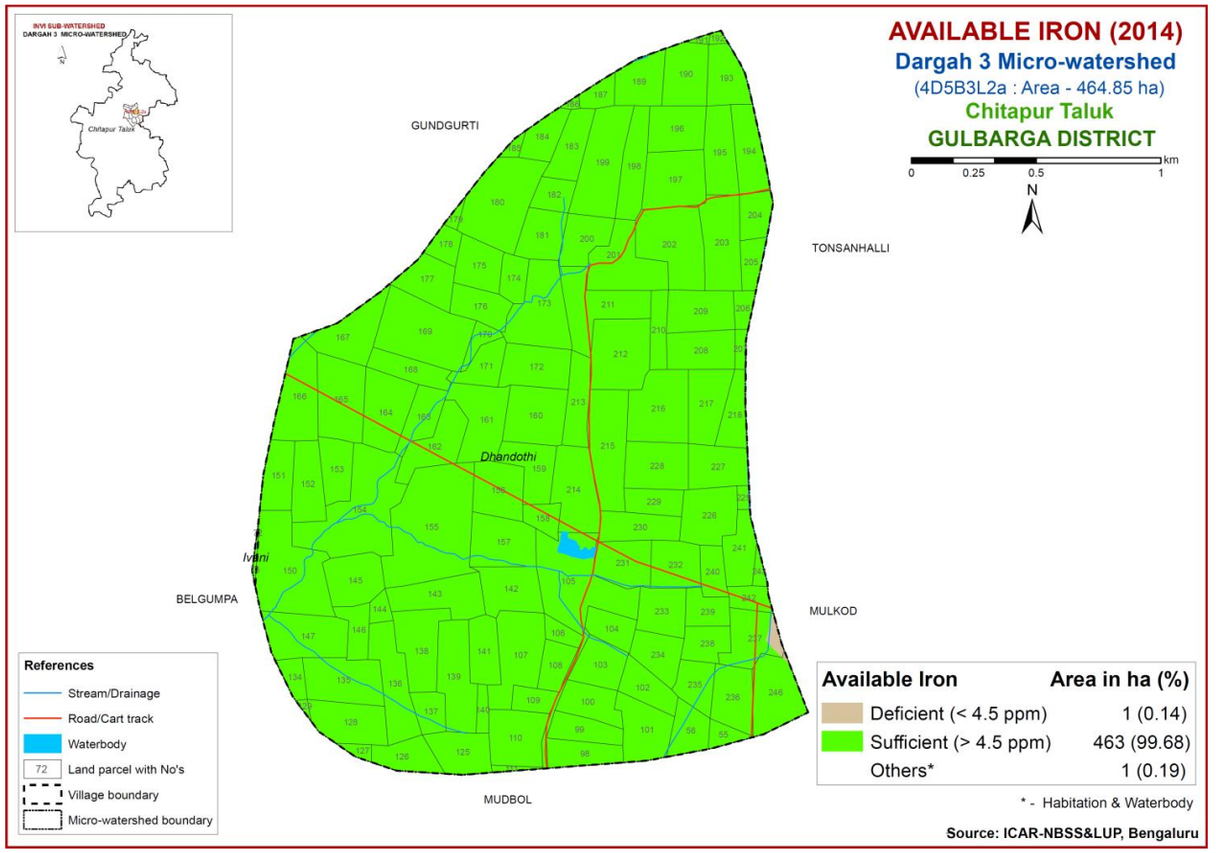

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
AVAILABLE SULPHUR (2014)
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
km
0 0.25 0.5 1
N
MOPTI
MATTIMADU
TENGLI
IVNI
Gundgurti
Gundagurthi
Available Sulphur
Area in ha (%)
Low (< 10 ppm) 189 (43.88)
Medium (10 - 20 ppm) 211 (48.84)
Others* 31 (7.27)
* - Habitation & Waterbody
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru

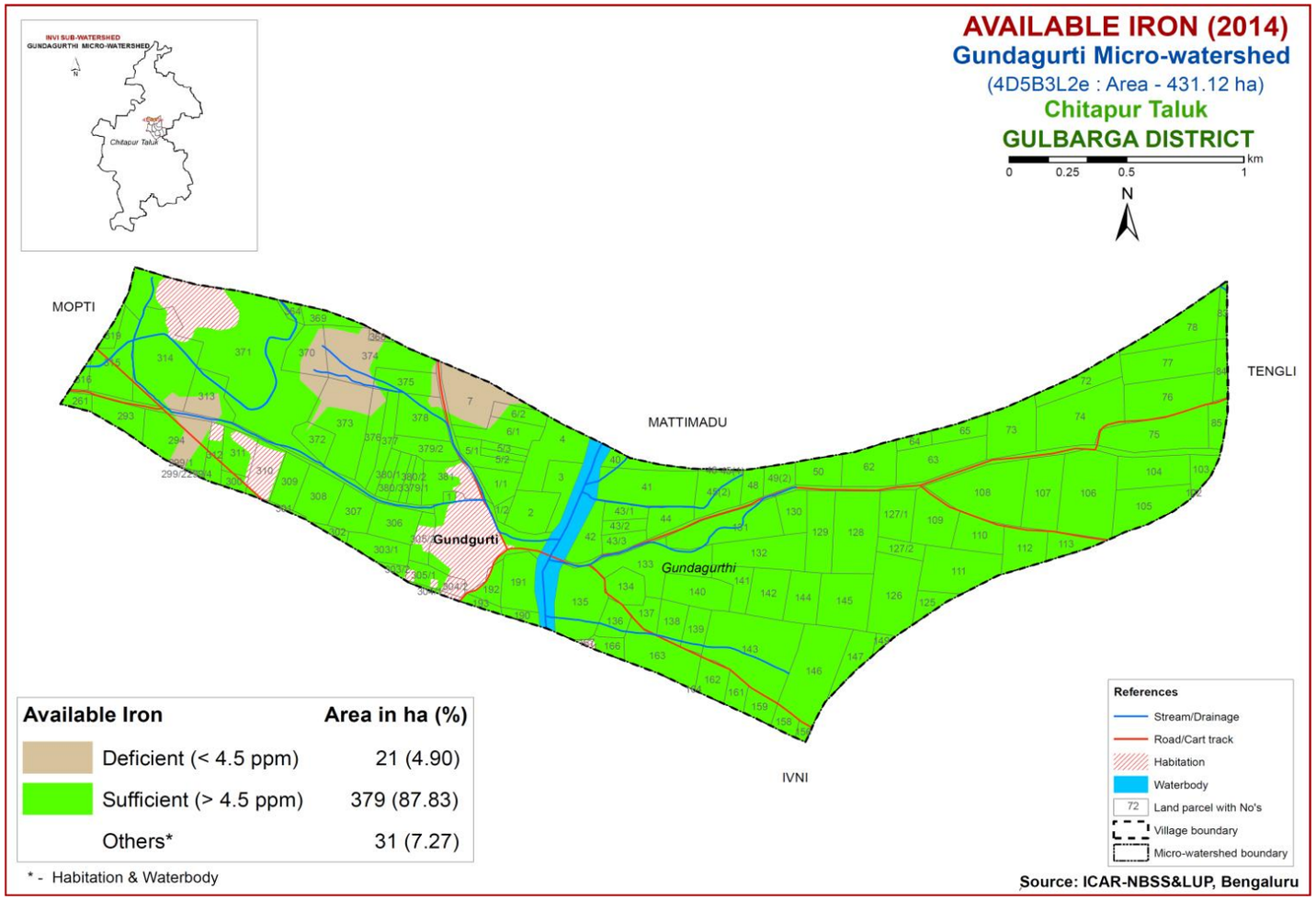

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
AVAILABLE BORON (2014)
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
KALGURKI
Tengali
MOPTI
TONSANHALLI
Gundagurthi
BELGUMPA
Dhandothi
MUDBOL
Ivani
BAGHWADI
References
Stream/Drainage
Road/Cart track
49 Land parcel with No's
Village boundary
Micro-watershed boundary
Available Boron
Area in ha (%)
Low (< 0.5 ppm) 401 (85.96)
Medium (0.5-1.0 ppm) 66 (14.04)
Source: ICAR-NBSS&LUP, Bengaluru

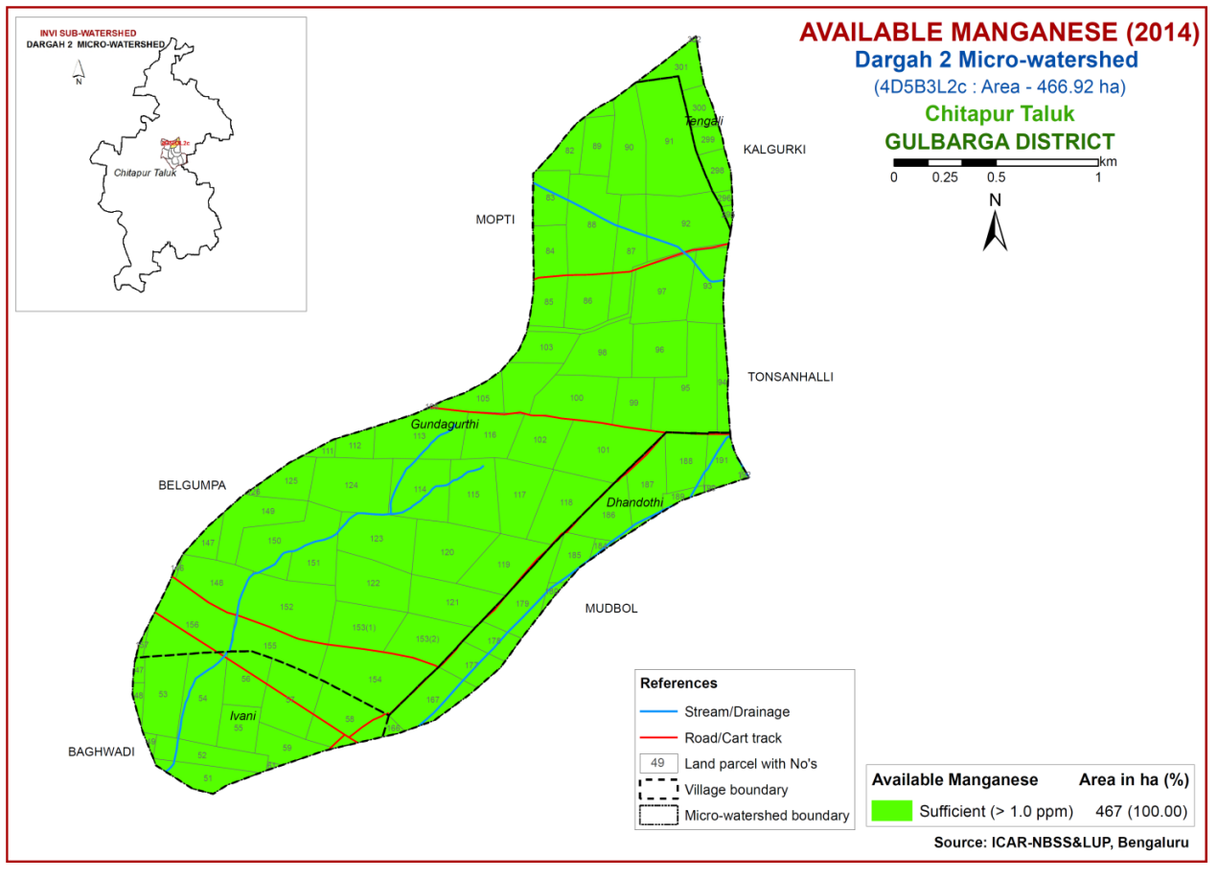

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
AVAILABLE BORON (2014)
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
Dhandothi
Ivani
BELGUMPA
MULKOD
MUDBOL
References
Stream/Drainage
Road/Cart track
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Available Boron
Area in ha (%)
Low (< 0.5 ppm) 216 (46.40)
Medium (0.5 - 1.0 ppm) 196 (42.08)
High (> 1 ppm) 53 (11.33)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

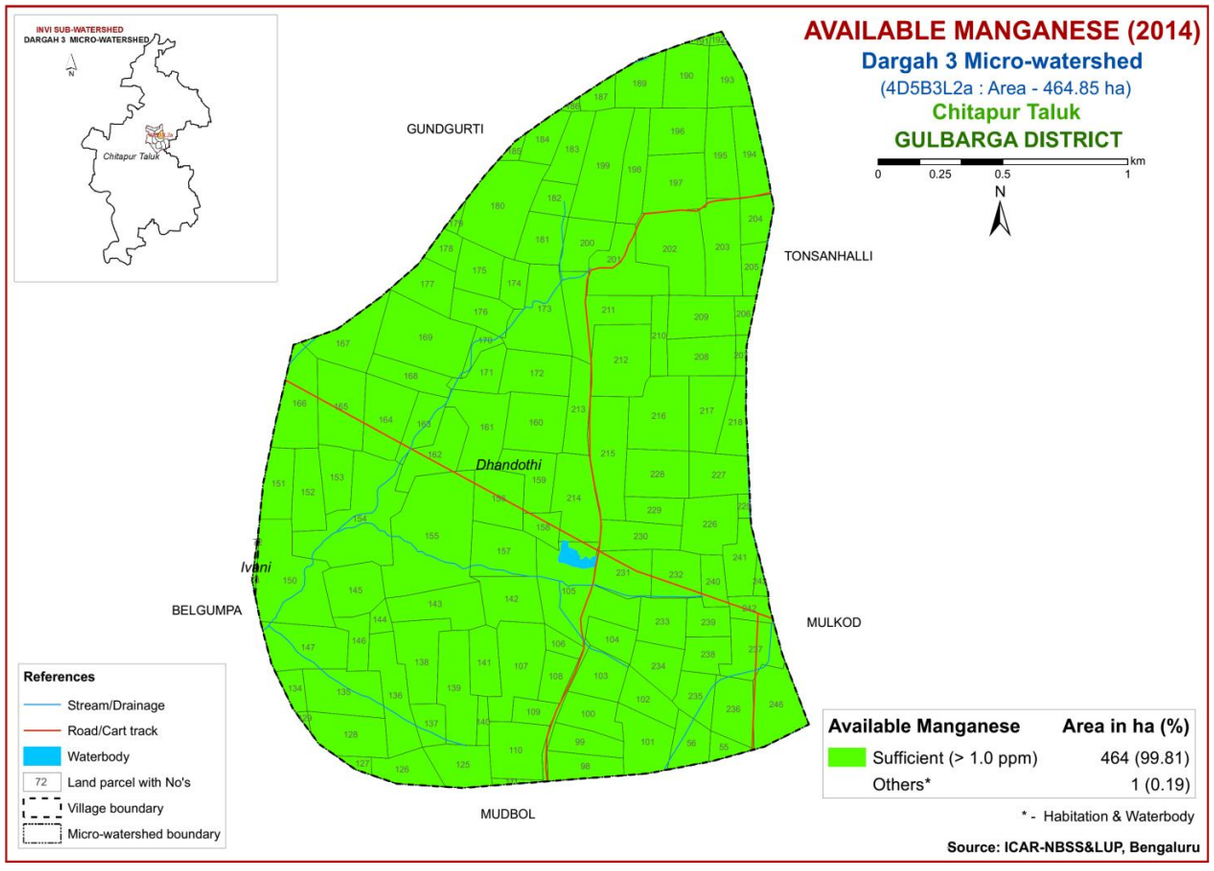

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
AVAILABLE BORON (2014)
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
Gundgurti
Gundagurthi
IVNI
Available Boron
Area in ha (%)
Low (< 0.5 ppm) 274 (63.49)
Medium (0.5 - 1.0 ppm) 108 (25.05)
High (> 1 ppm) 18 (4.18)
Others* 31 (7.27)
* - Habitation & Waterbody
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru


INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
AVAILABLE IRON (2014)
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
Tengali
Gundagurthi
Dhandothi
Ivani
References
Stream/Drainage
Road/Cart track
49 Land parcel with No's
Village boundary
Micro-watershed boundary
Available Iron
Area in ha (%)
Sufficient (> 4.5 ppm)
467 (100.00)
Source: ICAR-NBSS&LUP, Bengaluru

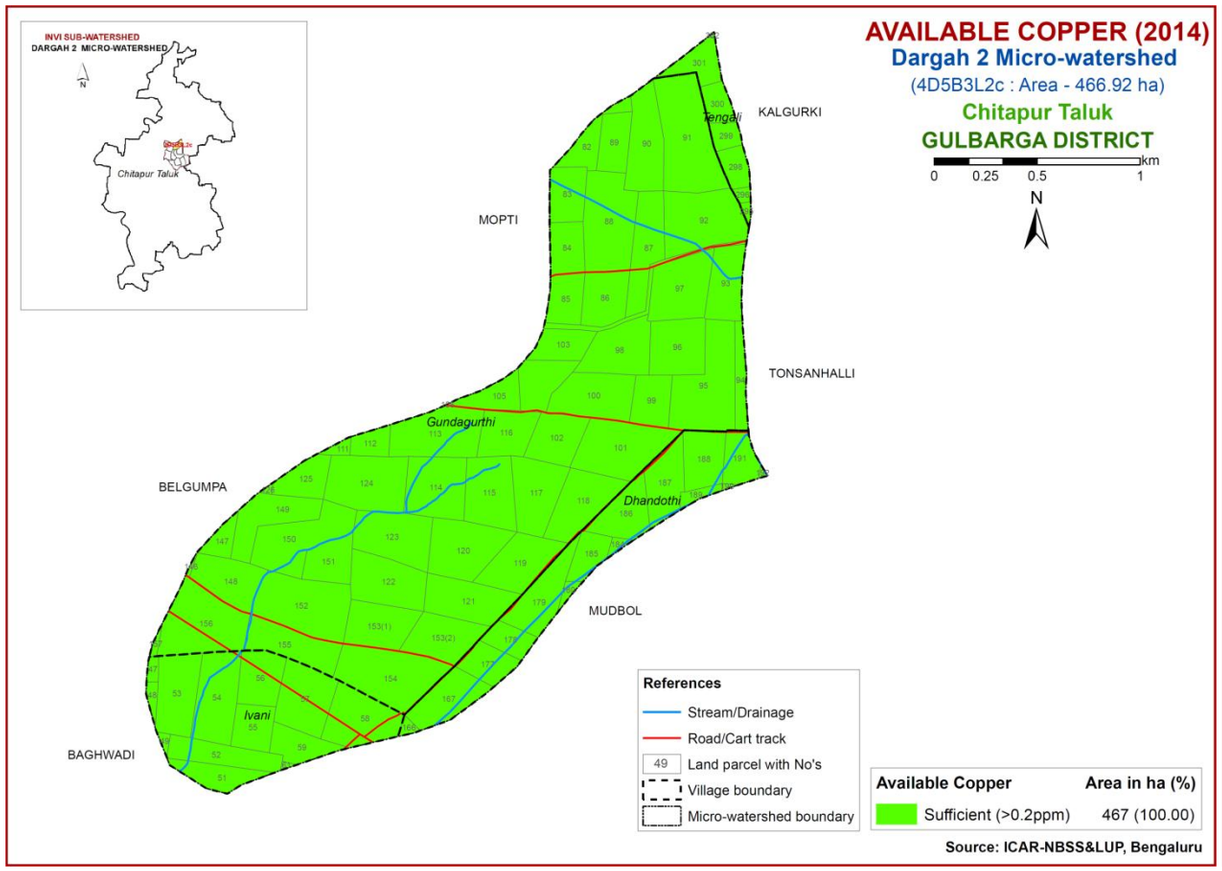

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
AVAILABLE IRON (2014)
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
Dhandothi
Ivani
References
Stream/Drainage
Road/Cart track
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Available Iron
Area in ha (%)
Deficient (< 4.5 ppm)
1 (0.14)
Sufficient (> 4.5 ppm)
463 (99.68)
Others*
1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

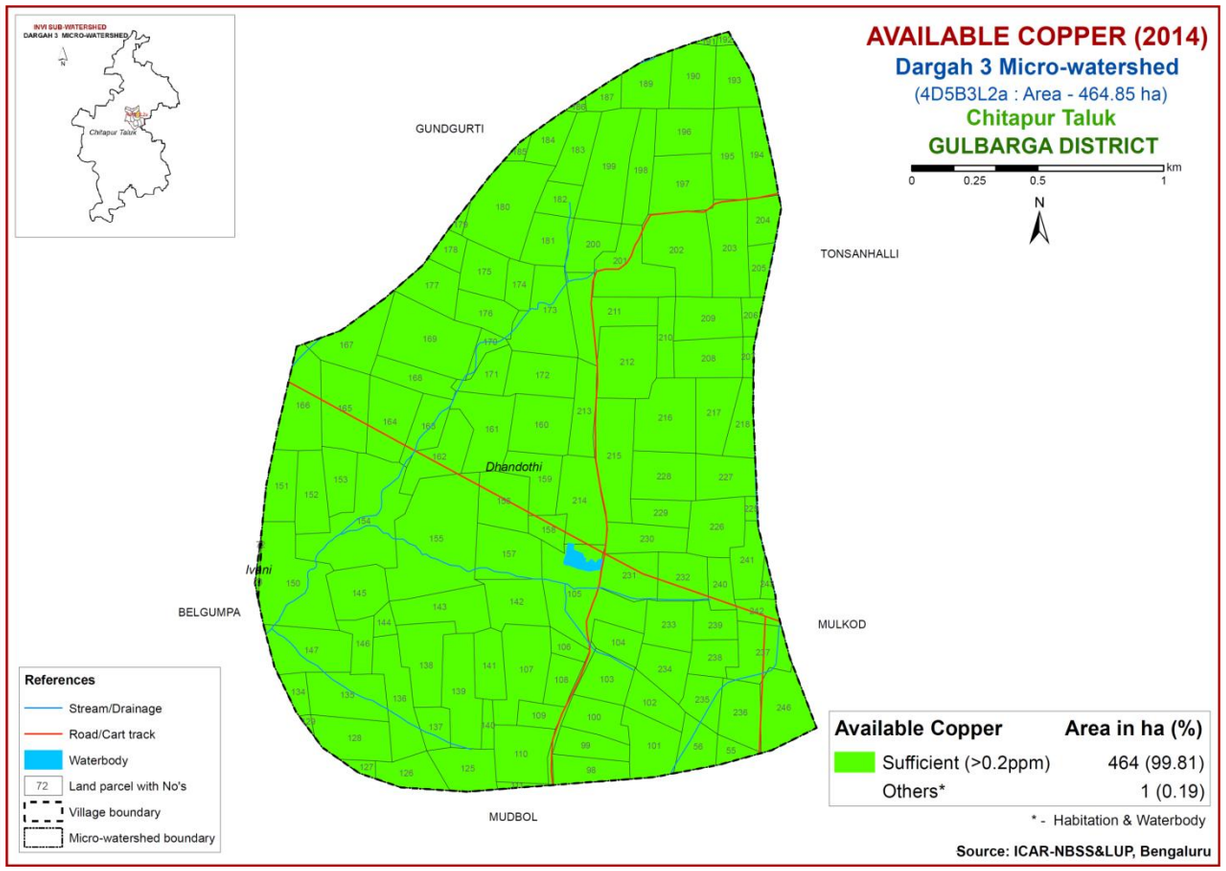

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
AVAILABLE IRON (2014)
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
IVNI
Gundgurti
Gundagurthi
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Available Iron
Area in ha (%)
Deficient (< 4.5 ppm)
21 (4.90)
Sufficient (> 4.5 ppm)
379 (87.83)
Others*
31 (7.27)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru


INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
AVAILABLE MANGANESE (2014)
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
Tengali
KALGURKI
MOPTI
TONSANHALLI
Gundagurthi
BELGUMPA
Dhandothi
MUDBOL
Ivani
BAGHWADI
References
Stream/Drainage
Road/Cart track
49 Land parcel with No's
Village boundary
Micro-watershed boundary
Available Manganese
Area in ha (%)
Sufficient (> 1.0 ppm)
467 (100.00)
Source: ICAR-NBSS&LUP, Bengaluru

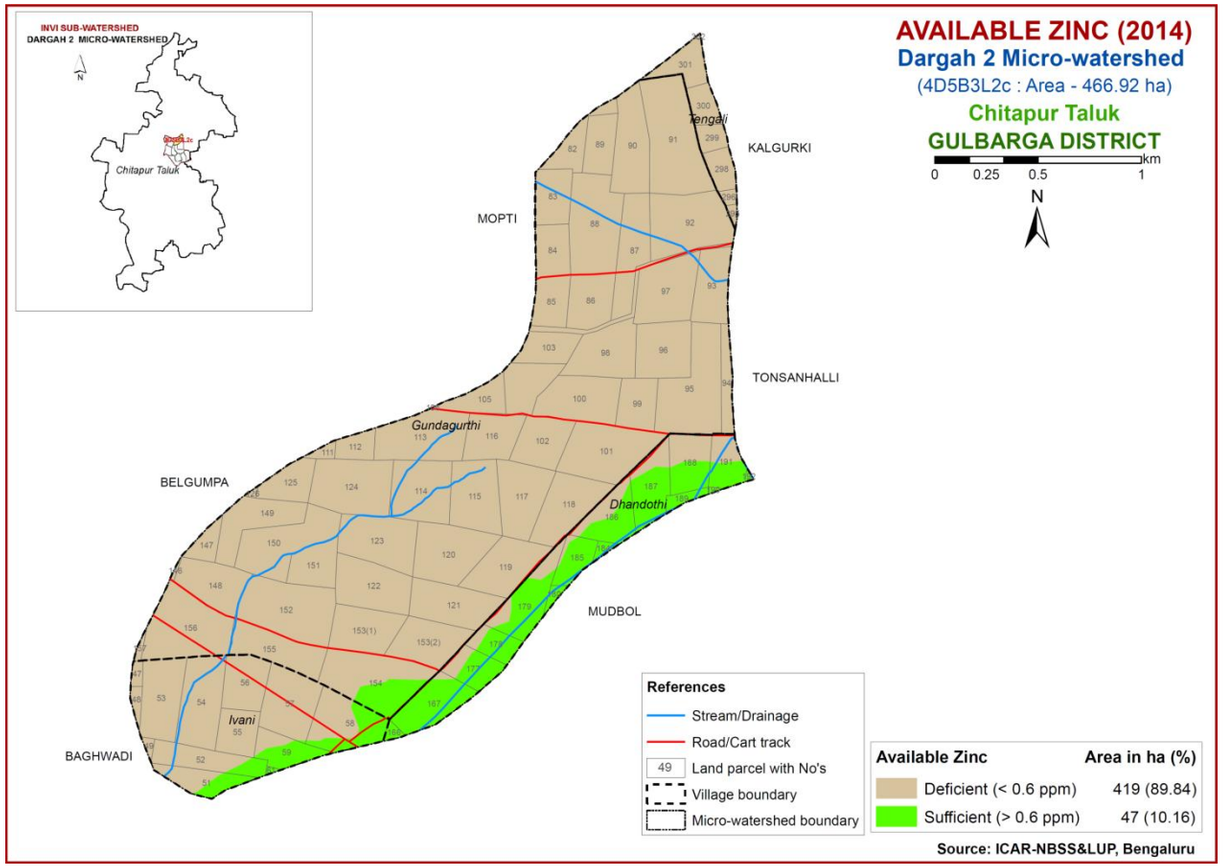

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
AVAILABLE MANGANESE (2014)
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
Dhandothi
Ivani
BELGUMPA
MULKOD
MUDBOL
References
Stream/Drainage
Road/Cart track
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Available Manganese
Area in ha (%)
Sufficient (> 1.0 ppm)
464 (99.81)
Others*
1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

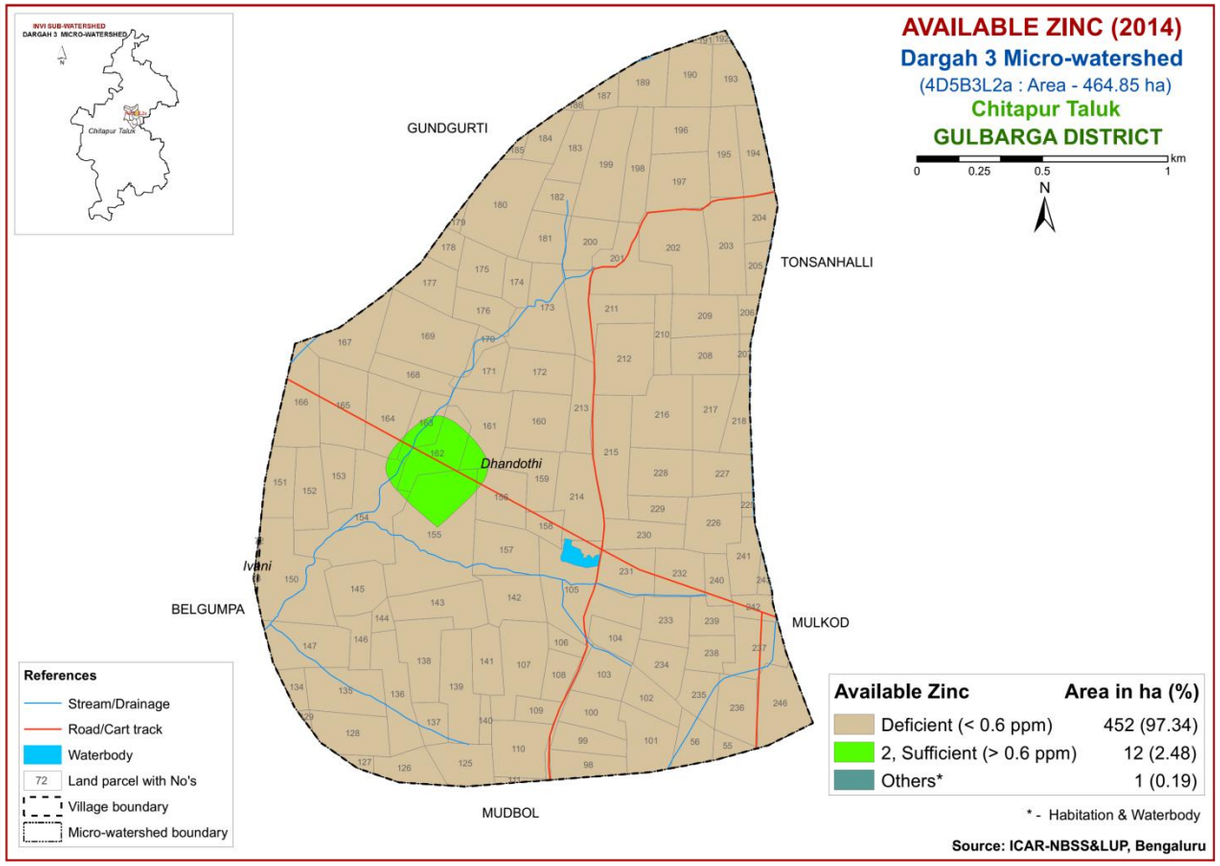

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
AVAILABLE MANGANESE (2014)
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
Gundgurti
Gundagurthi
IVNI
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Available Manganese
Area in ha (%)
Sufficient (> 1.0 ppm)
399.78 (92.73)
Others*
31.35 (7.27)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

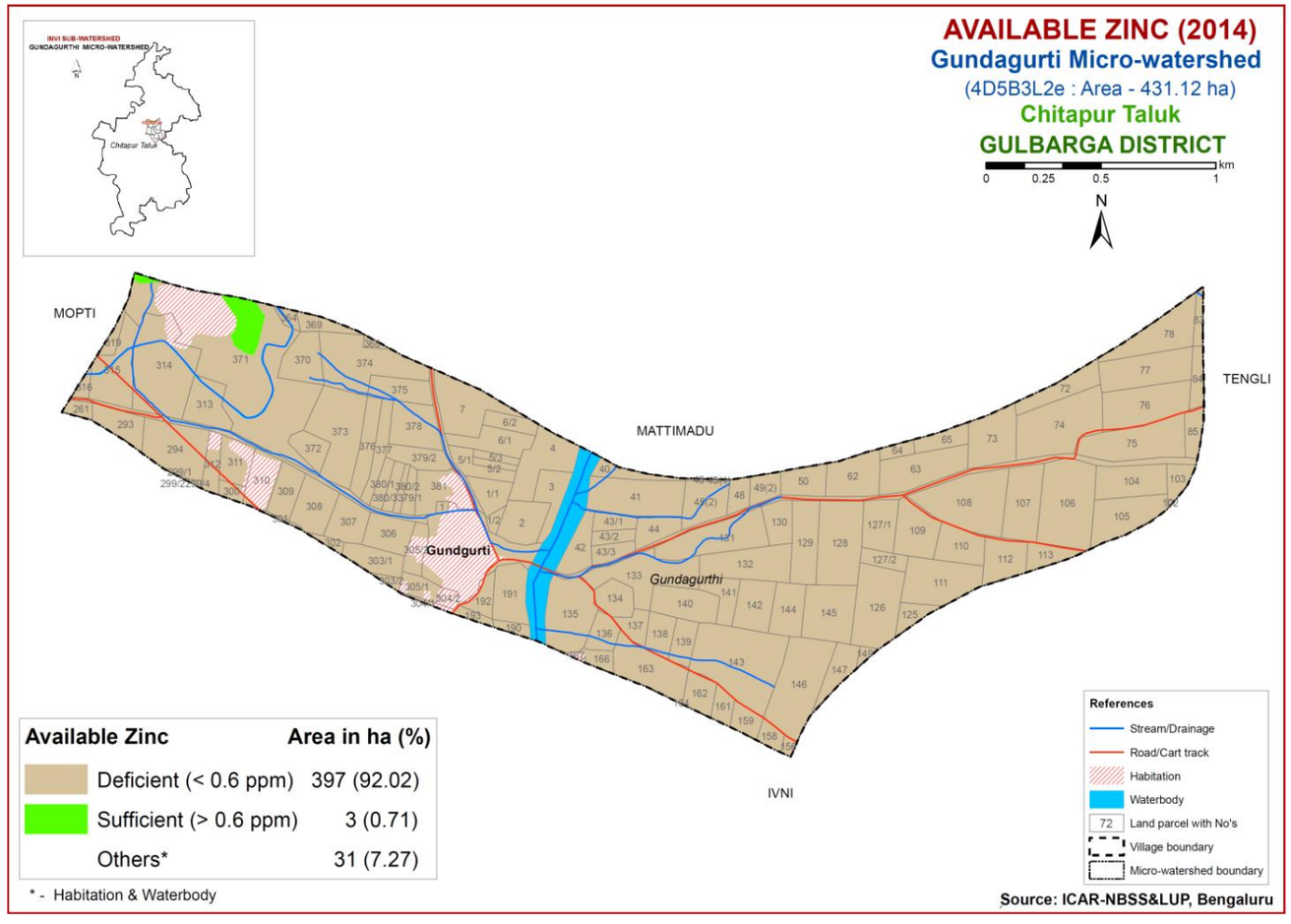

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
AVAILABLE COPPER (2014)
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
Tengali
Gundagurthi
Dhandothi
Ivani
References
Stream/Drainage
Road/Cart track
49 Land parcel with No's
Village boundary
Micro-watershed boundary
Available Copper
Area in ha (%)
Sufficient (>0.2ppm) 467 (100.00)
Source: ICAR-NBSS&LUP, Bengaluru

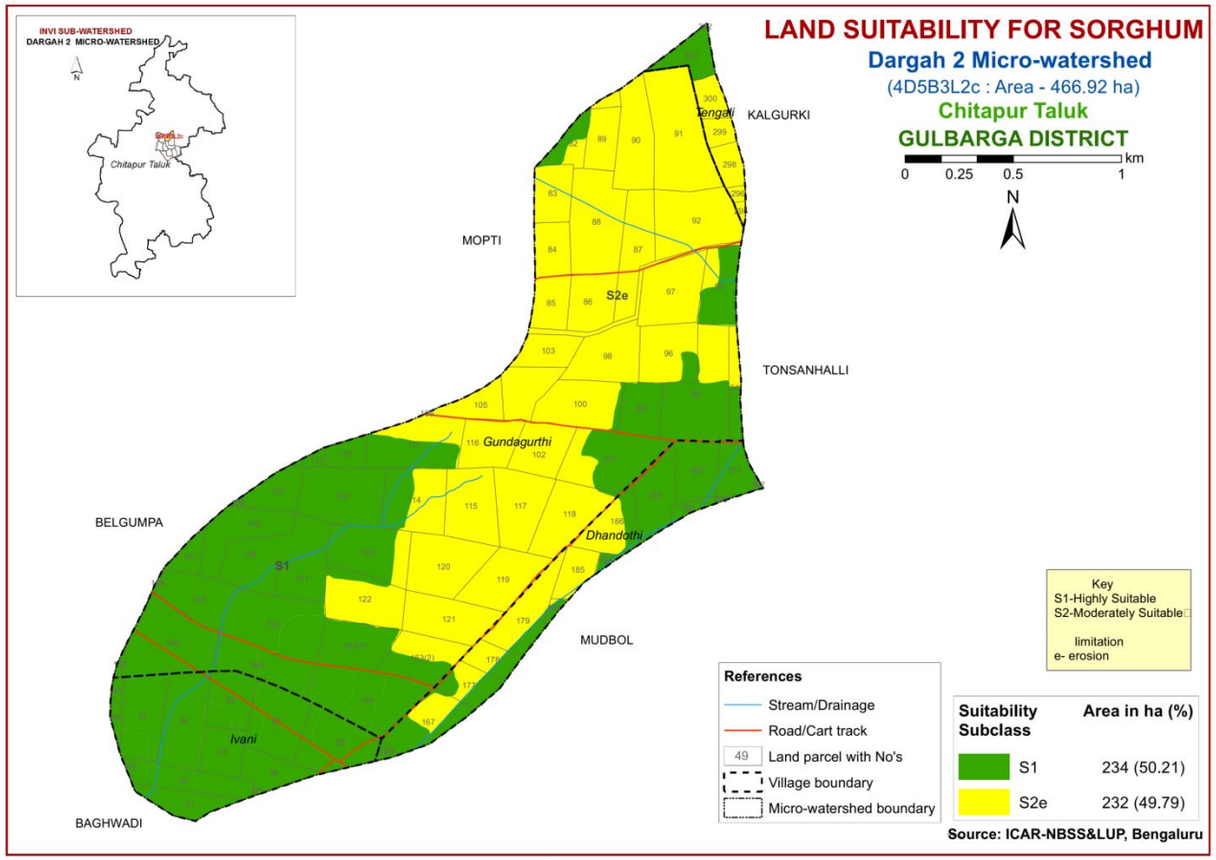

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
AVAILABLE COPPER (2014)
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
Dhandothi
Ivani
References
Stream/Drainage
Road/Cart track
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Available Copper
Area in ha (%)
Sufficient (>0.2ppm) 464 (99.81)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

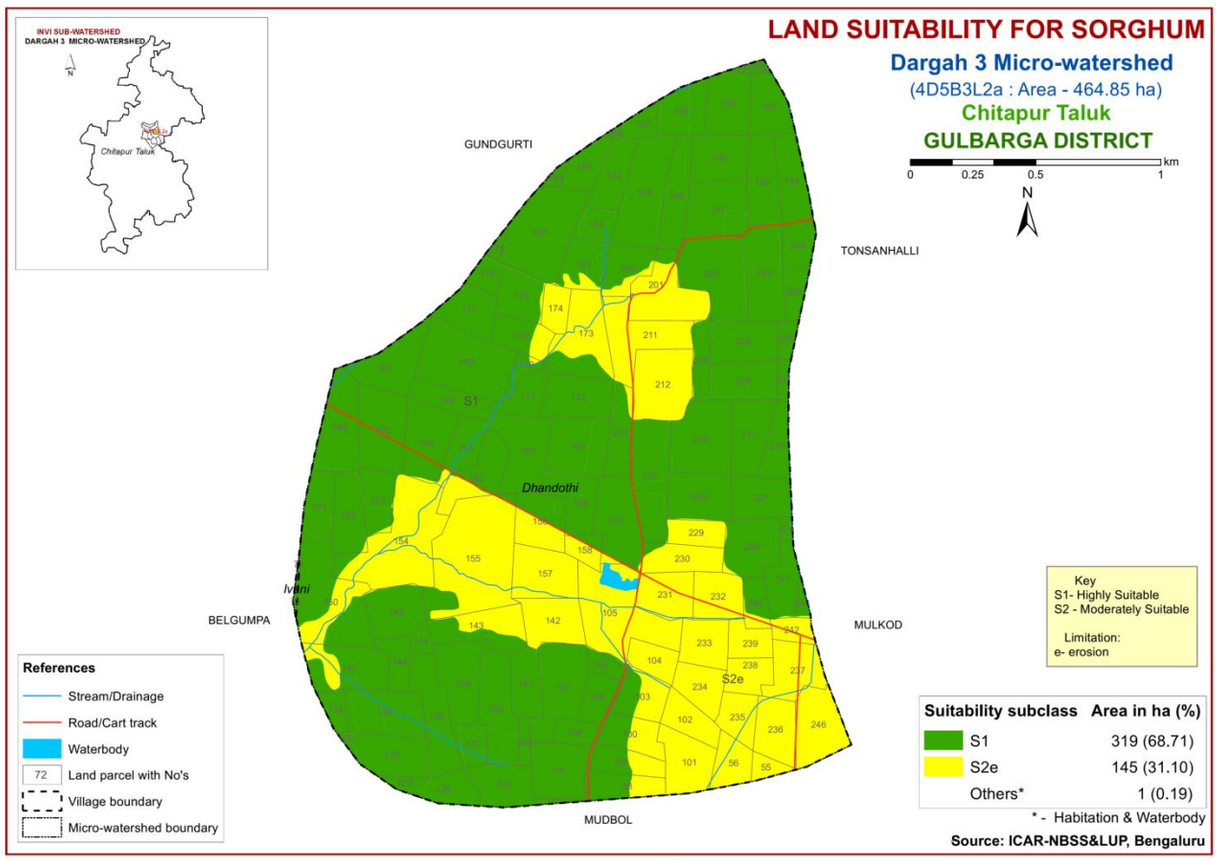

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
AVAILABLE COPPER (2014)
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
IVNI
Gundgurti
Gundagurthi
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Available Copper
Area in ha (%)
Sufficient (>0.2ppm) 400 (92.73)
Others* 31 (7.27)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

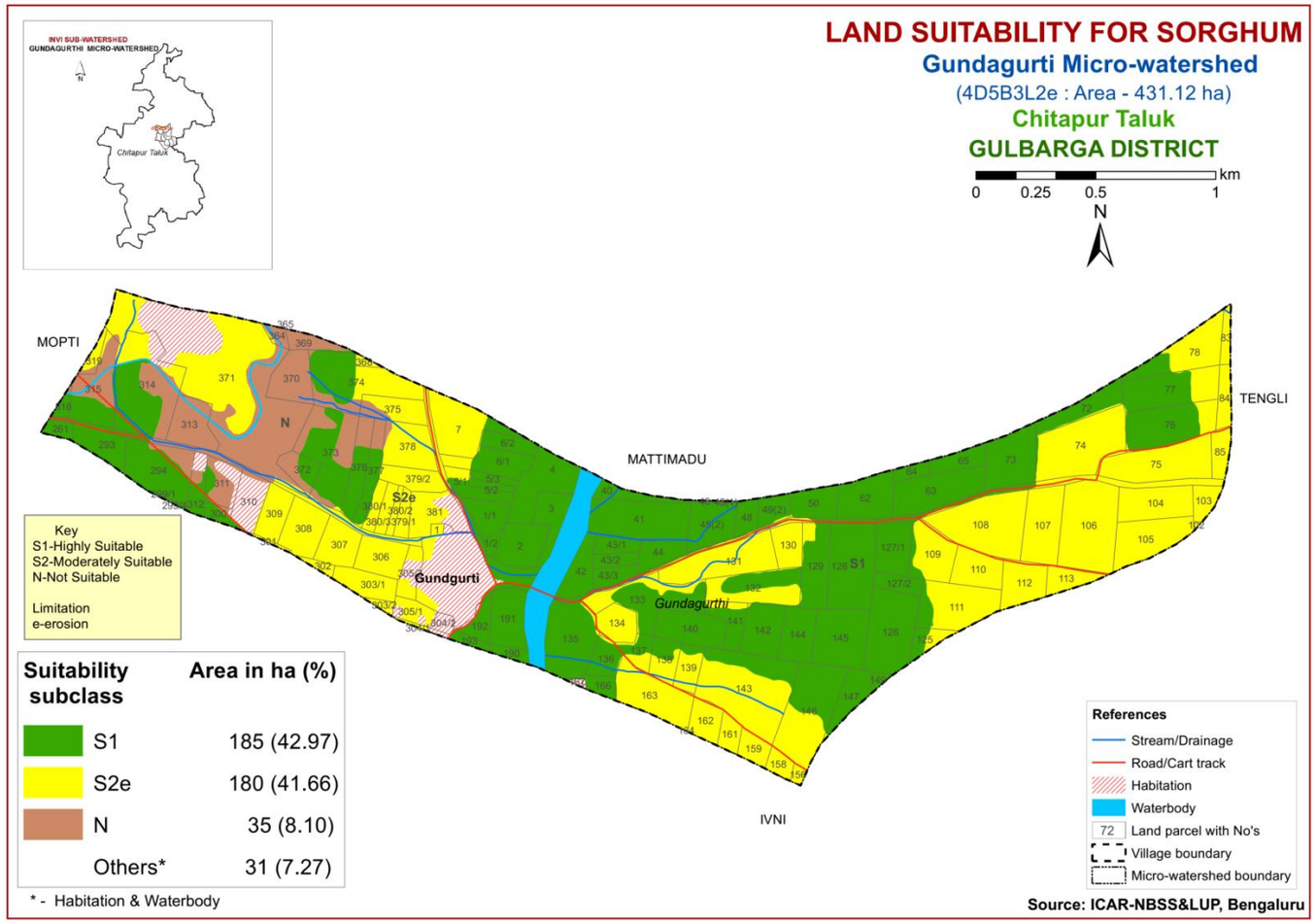

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
AVAILABLE ZINC (2014)
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
Tengali
KALGURKI
MOPTI
TONSANHALLI
Gundagurthi
BELGUMPA
Dhandothi
MUDBOL
Ivani
BAGHWADI
References
Stream/Drainage
Road/Cart track
49 Land parcel with No's
Village boundary
Micro-watershed boundary
Available Zinc
Area in ha (%)
Deficient (< 0.6 ppm) 419 (89.84)
Sufficient (> 0.6 ppm) 47 (10.16)
Source: ICAR-NBSS&LUP, Bengaluru

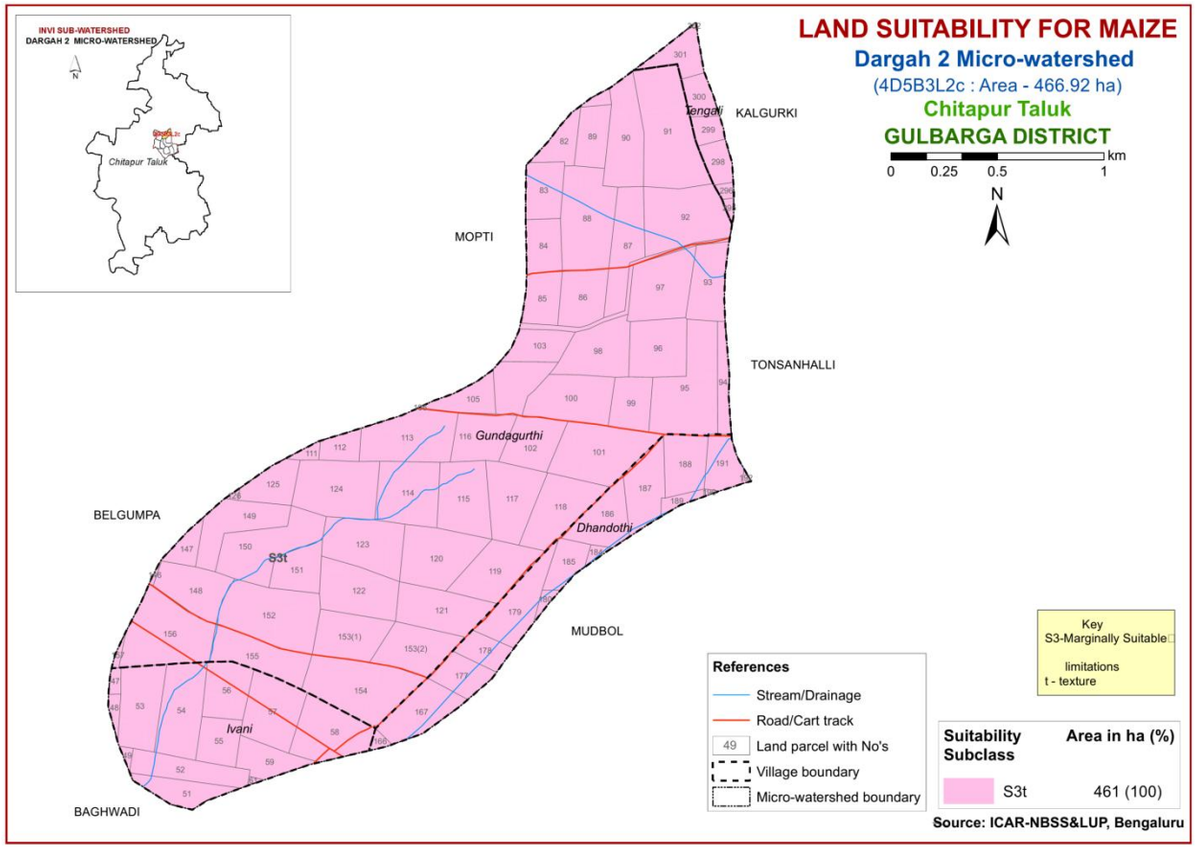

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
AVAILABLE ZINC (2014)
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
Dhandothi
Ivani
BELGUMPA
MULKOD
MUDBOL
References
Stream/Drainage
Road/Cart track
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Available Zinc
Area in ha (%)
Deficient (< 0.6 ppm) 452 (97.34)
2, Sufficient (> 0.6 ppm) 12 (2.48)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

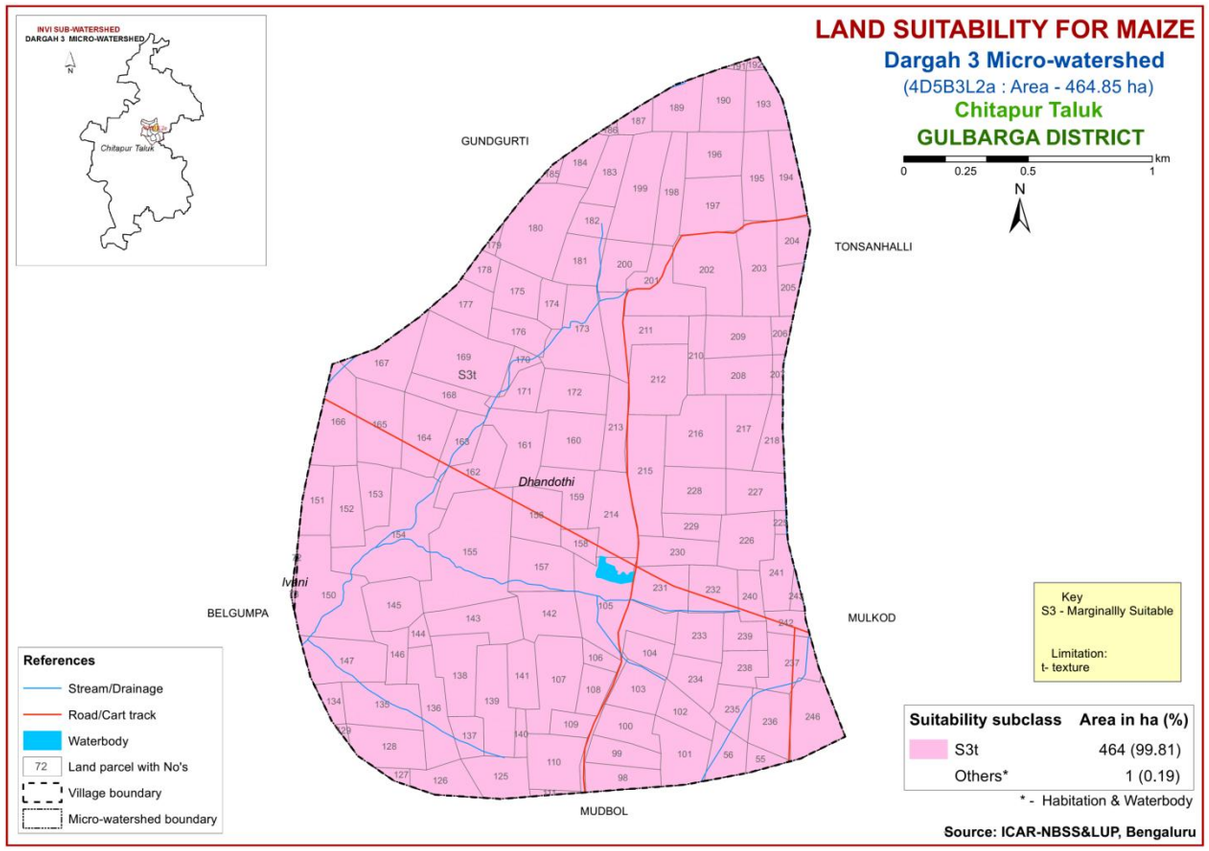

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
AVAILABLE ZINC (2014)
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
Gundgurti
Gundagurthi
IVNI
Available Zinc
Area in ha (%)
Deficient (< 0.6 ppm) 397 (92.02)
Sufficient (> 0.6 ppm) 3 (0.71)
Others* 31 (7.27)
* - Habitation & Waterbody
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru

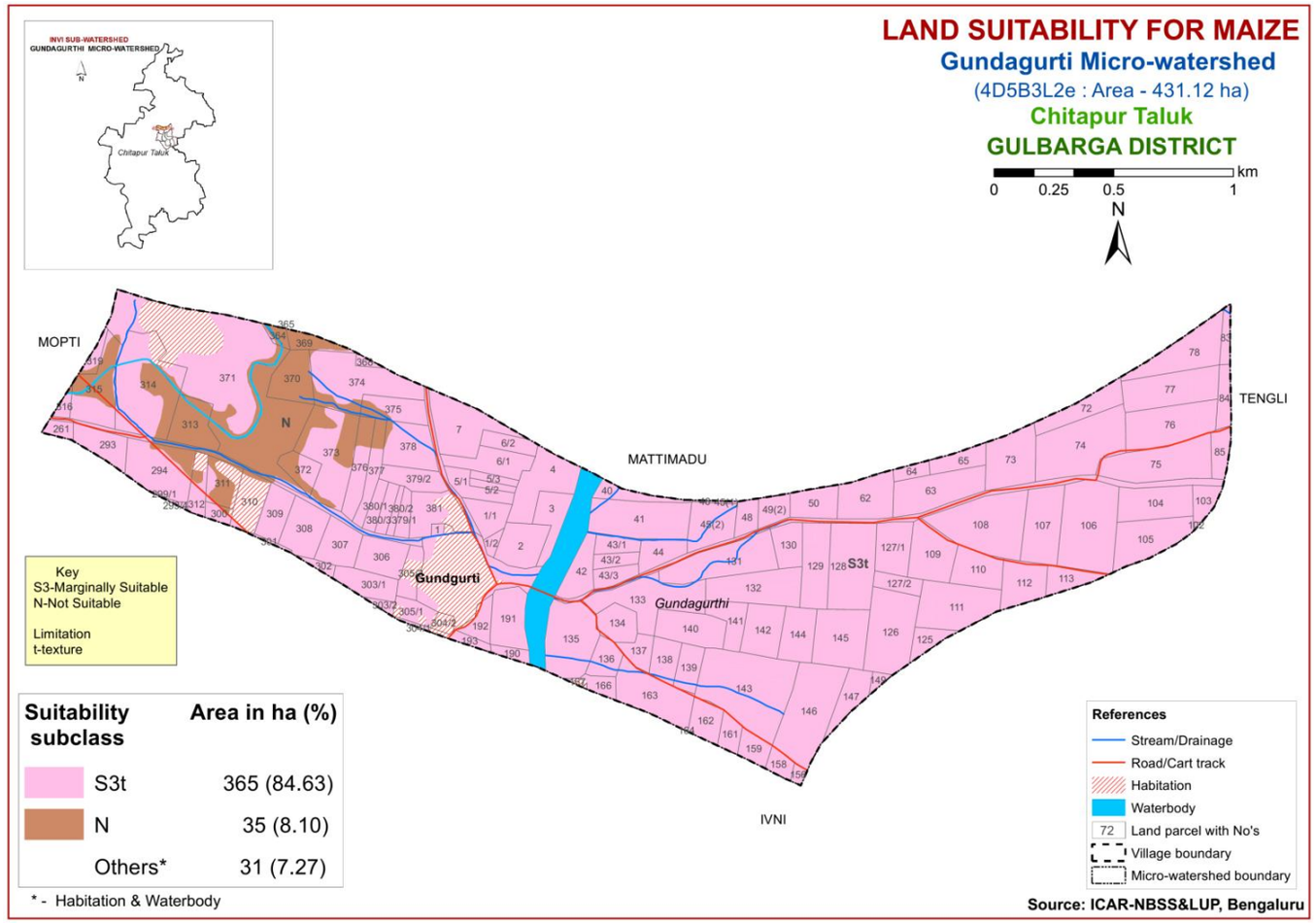

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR SORGHUM
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
Tengali
Gundagurthi
Dhandothi
Ivani
S1
S2e
Key
S1-Highly Suitable
S2-Moderately Suitable
limitation
e- erosion
References
Stream/Drainage
Road/Cart track
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability Subclass
Area in ha (%)
S1 234 (50.21)
S2e 232 (49.79)
Source: ICAR-NBSS&LUP, Bengaluru

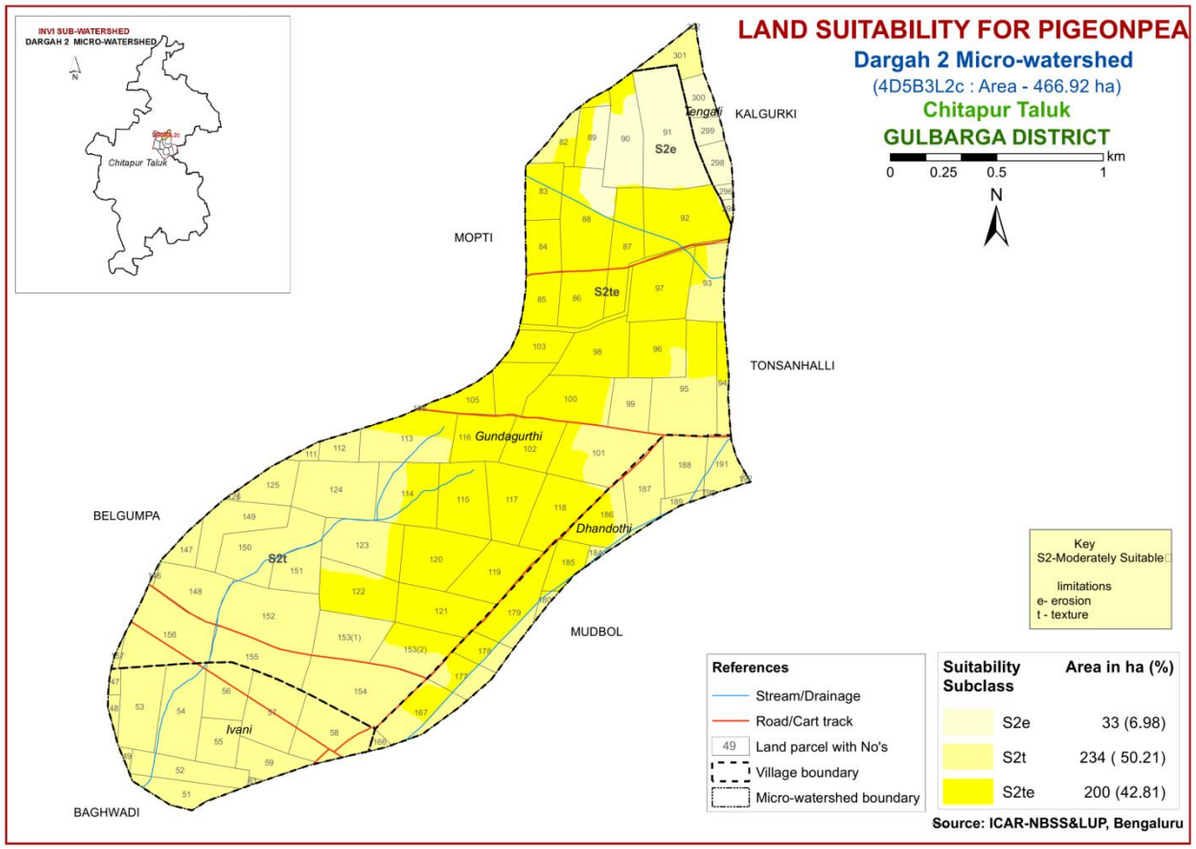

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR SORGHUM
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
Dhandothi
Ivani
S1
S2e
Key
S1- Highly Suitable
S2 - Moderately Suitable
Limitation:
e- erosion
References
Stream/Drainage
Road/Cart track
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability subclass
Area in ha (%)
S1 319 (68.71)
S2e 145 (31.10)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

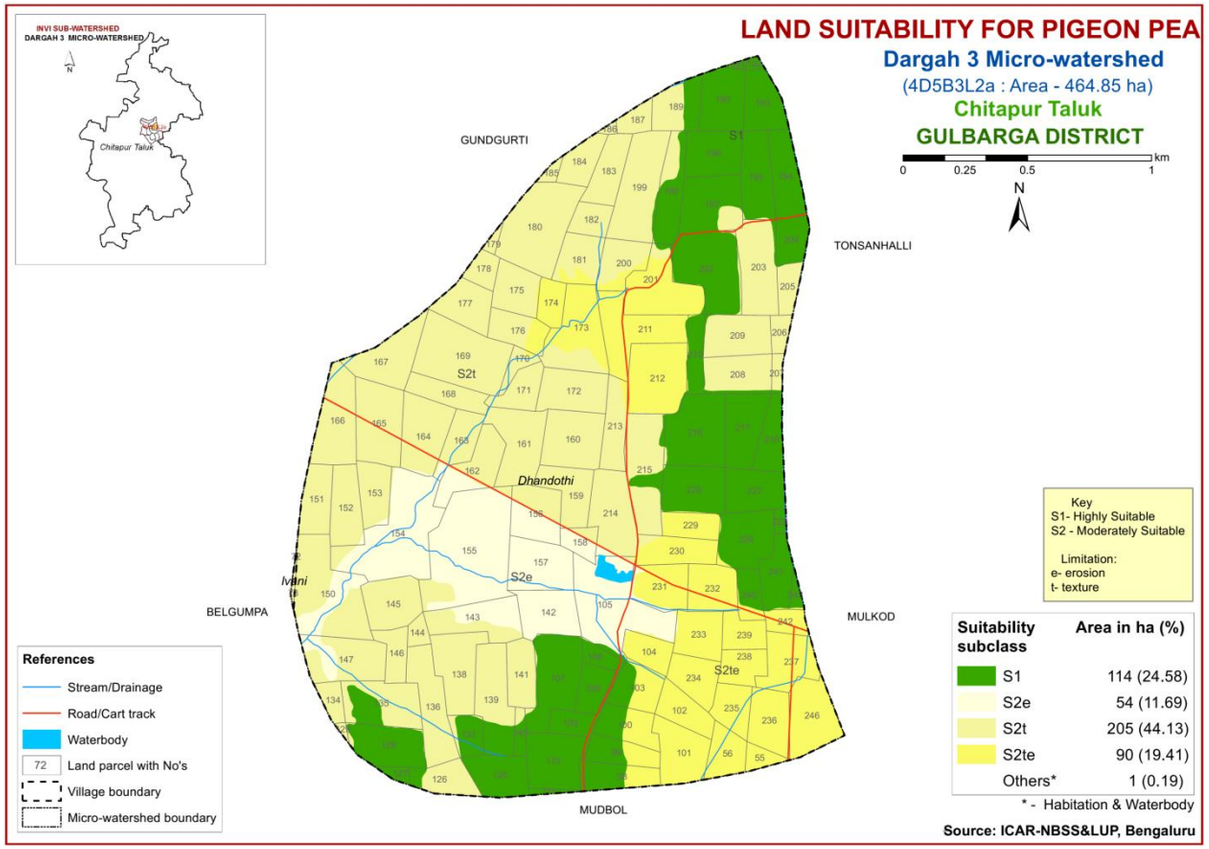

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR SORGHUM
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
IVNI
Gundgurti
Gundagurthi
S1
S2e
N
Key
S1-Highly Suitable
S2-Moderately Suitable
N-Not Suitable
Limitation
e-erosion
Suitability subclass
Area in ha (%)
S1 185 (42.97)
S2e 180 (41.66)
N 35 (8.10)
Others* 31 (7.27)
* - Habitation & Waterbody
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru

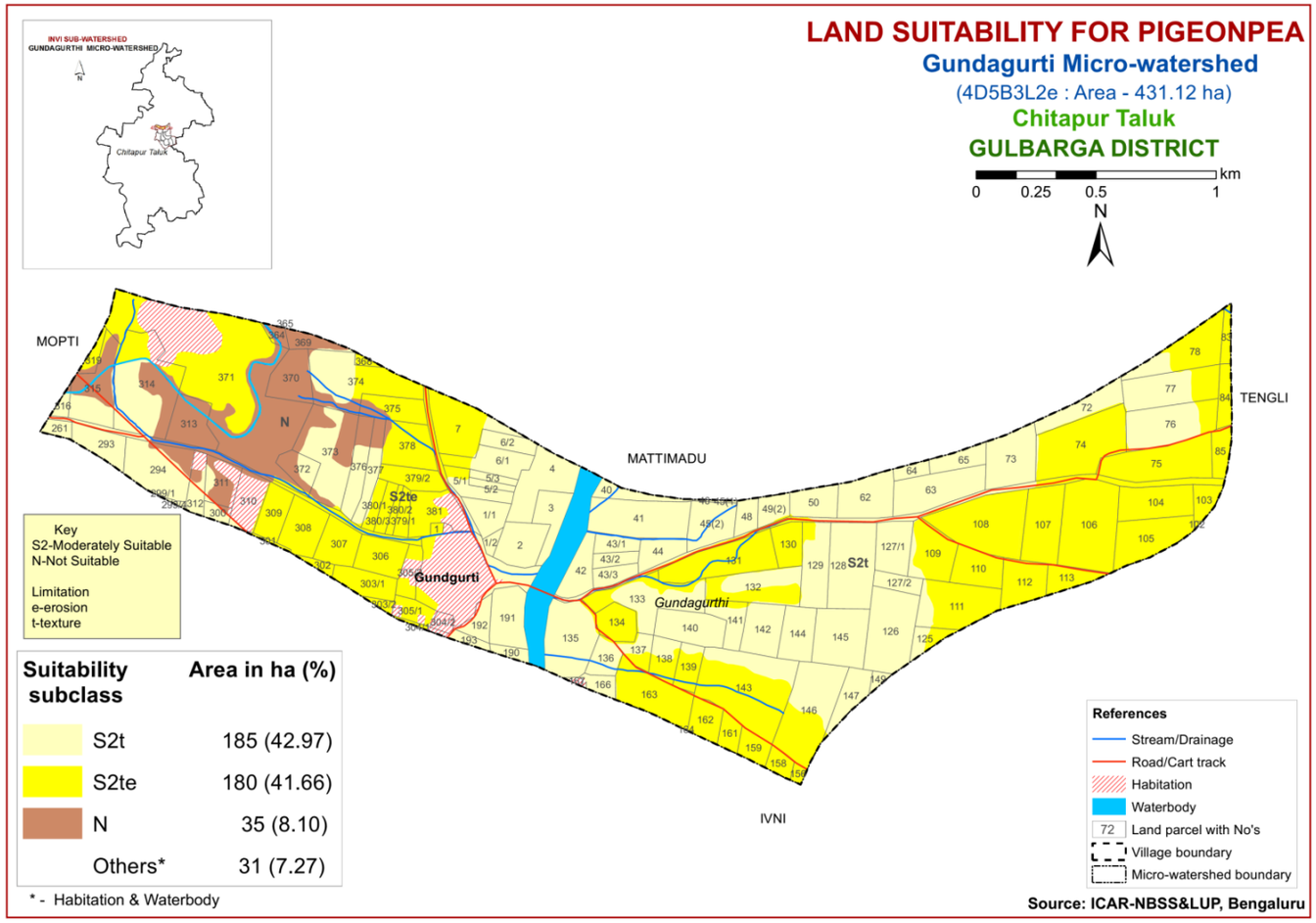

LAND SUITABILITY FOR MAIZE
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
Tengali
Gundagurthi
Dhandothi
Ivani
S3t
Key
S3-Marginally Suitable
limitations
t - texture
References
Stream/Drainage
Road/Cart track
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability Subclass
Area in ha (%)
S3t
461 (100)
Source: ICAR-NBSS&LUP, Bengaluru

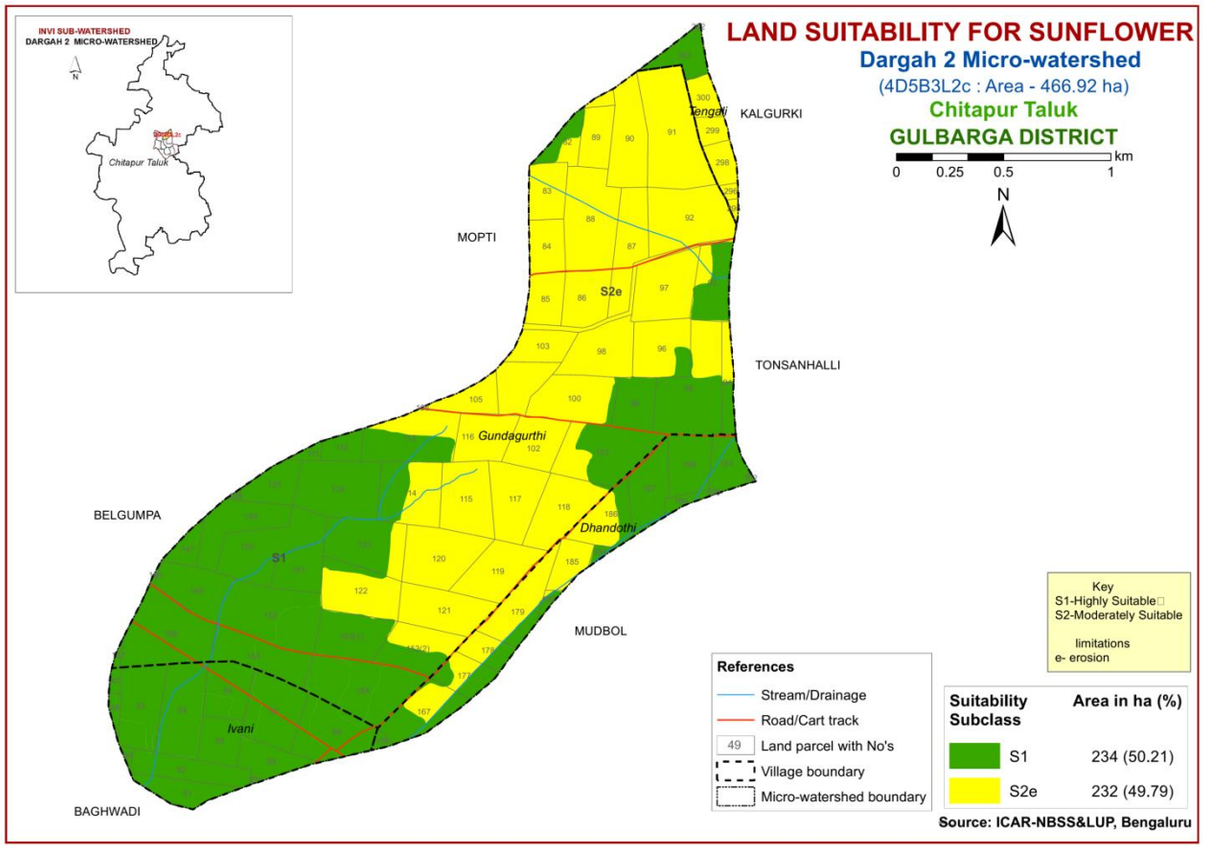

LAND SUITABILITY FOR MAIZE
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
Dhandothi
Ivani
S3t
Key
S3 - Marginallly Suitable
Limitation:
t- texture
References
Stream/Drainage
Road/Cart track
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability subclass
Area in ha (%)
S3t
464 (99.81)
Others*
1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

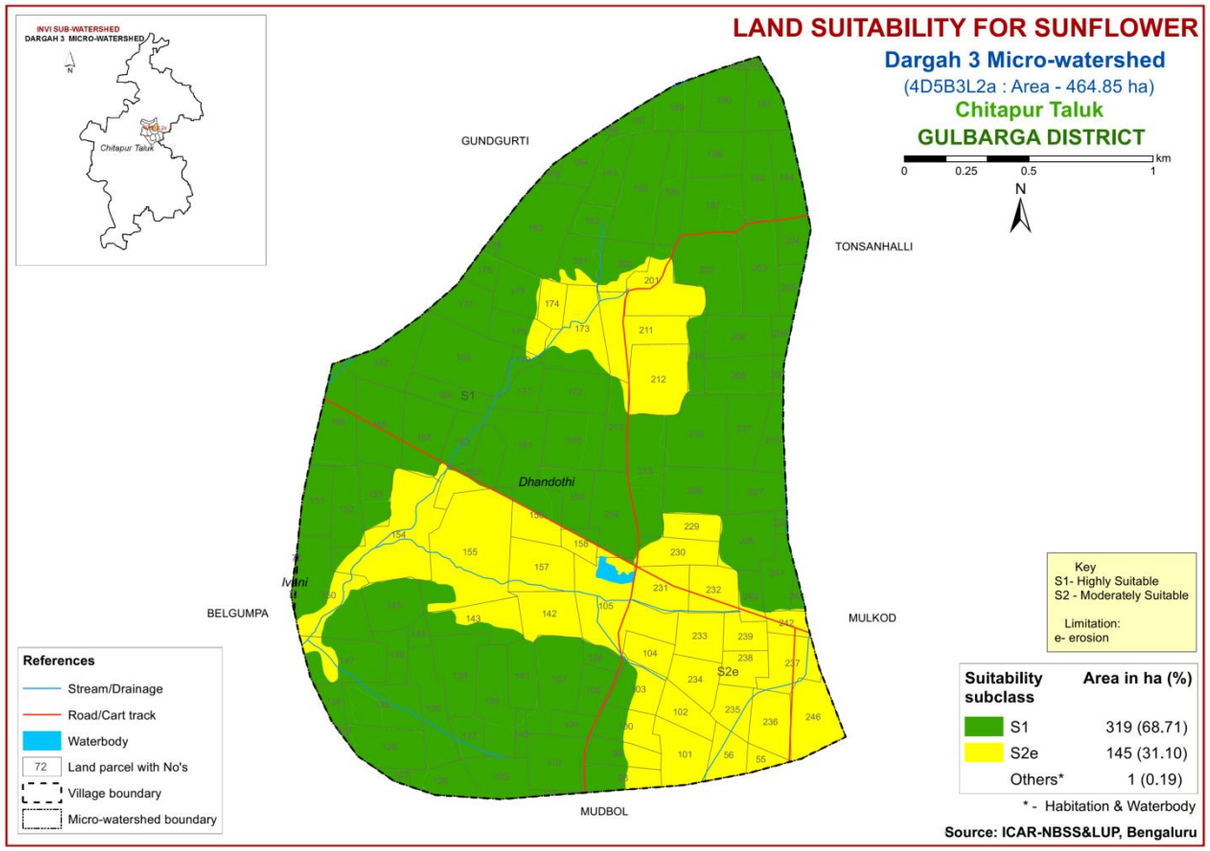

LAND SUITABILITY FOR MAIZE
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
MOPTI
MATTIMADU
TENGLI
IVNI
Gundgurti
Gundagurthi
N
S3t
Key
S3-Marginally Suitable
N-Not Suitable
Limitation
t-texture
Suitability subclass
Area in ha (%)
S3t
365 (84.63)
N
35 (8.10)
Others*
31 (7.27)
* - Habitation & Waterbody
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru

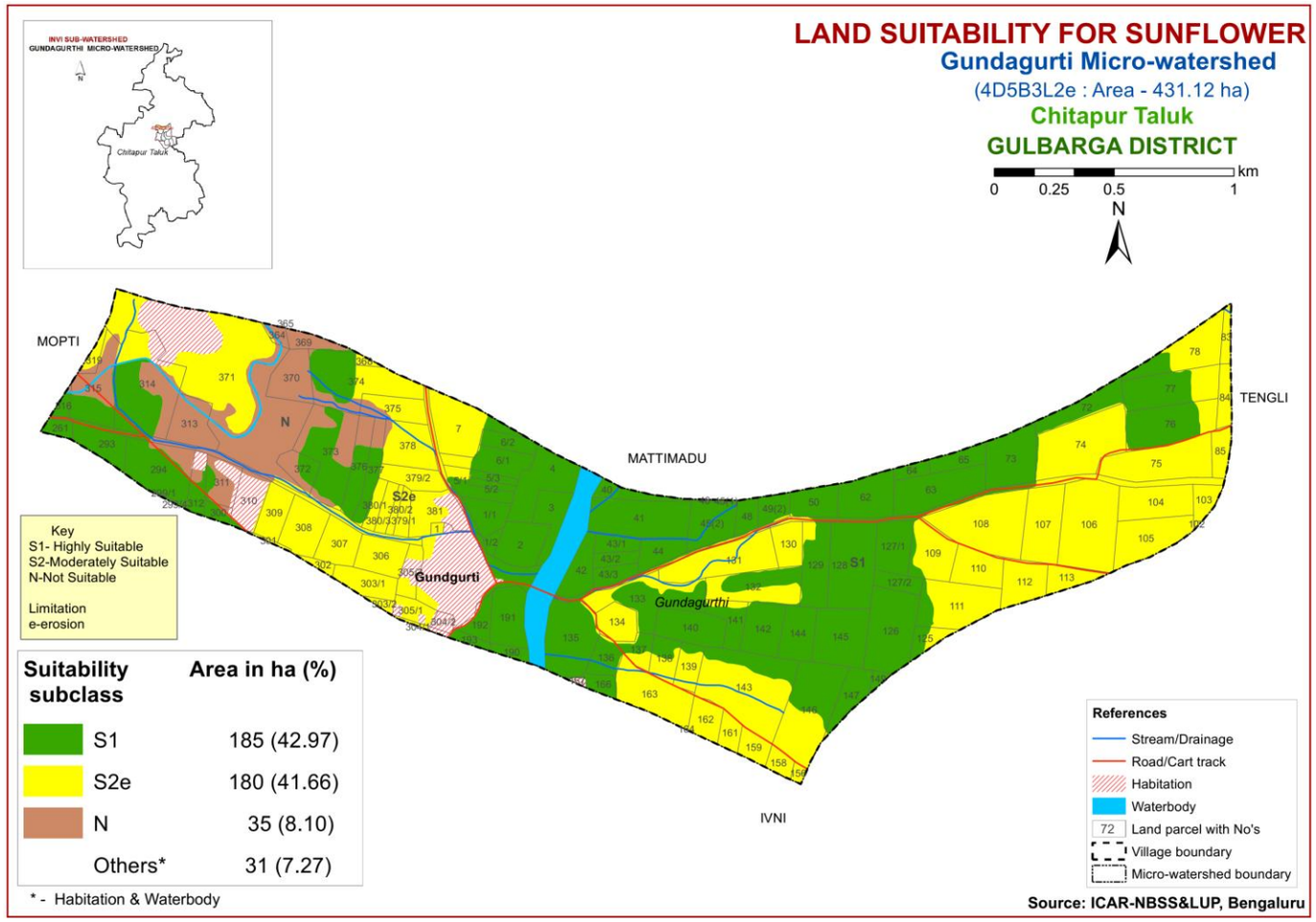

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR PIGEONPEA
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
Gundagurthi
Dhandothi
Ivani
S2e
S2te
S2t
Key
S2-Moderately Suitable
limitations
e- erosion
t - texture
References
Stream/Drainage
Road/Cart track
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability Subclass
Area in ha (%)
S2e 33 (6.98)
S2t 234 (50.21)
S2te 200 (42.81)
Source: ICAR-NBSS&LUP, Bengaluru

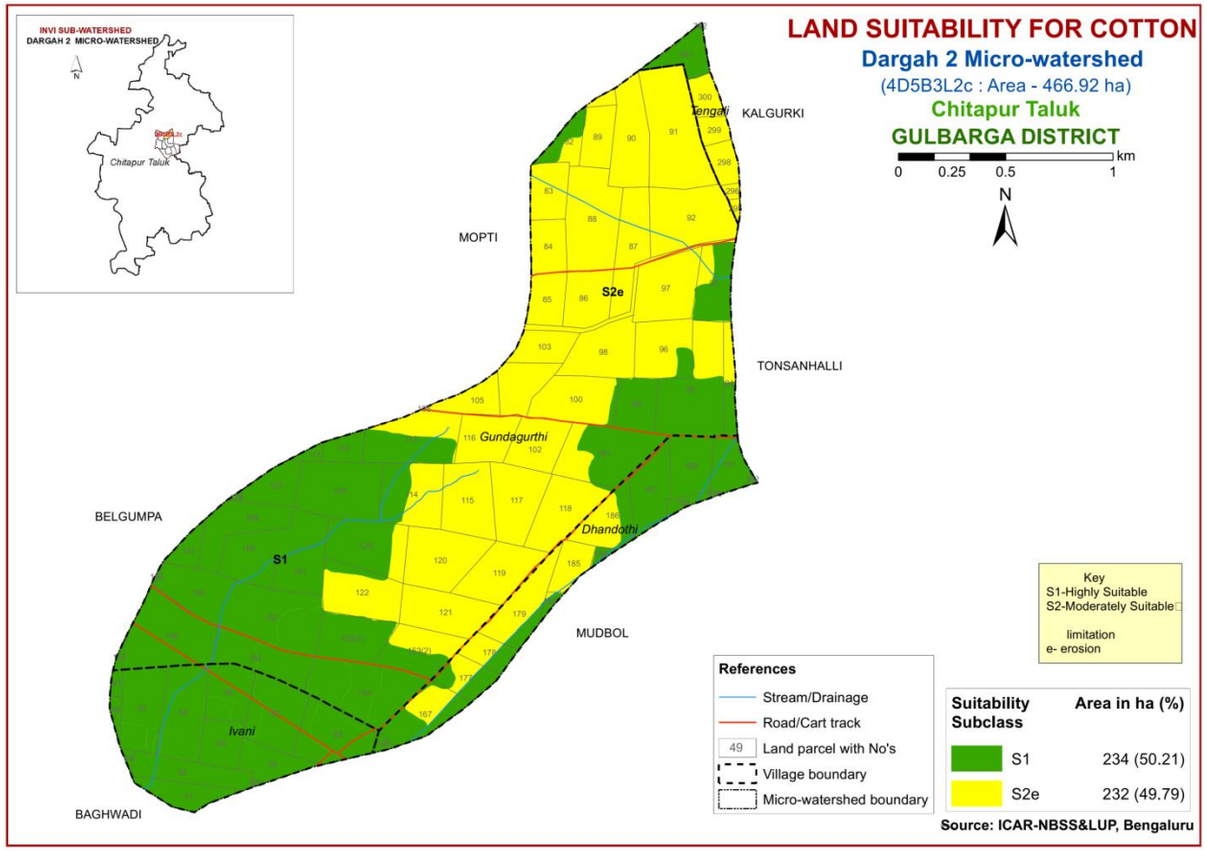

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR PIGEON PEA
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
Dhandothi
Ivani
S1
S2t
S2e
S2te
Key
S1- Highly Suitable
S2 - Moderately Suitable
Limitation:
e- erosion
t- texture
References
Stream/Drainage
Road/Cart track
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability subclass
Area in ha (%)
S1 114 (24.58)
S2e 54 (11.69)
S2t 205 (44.13)
S2te 90 (19.41)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

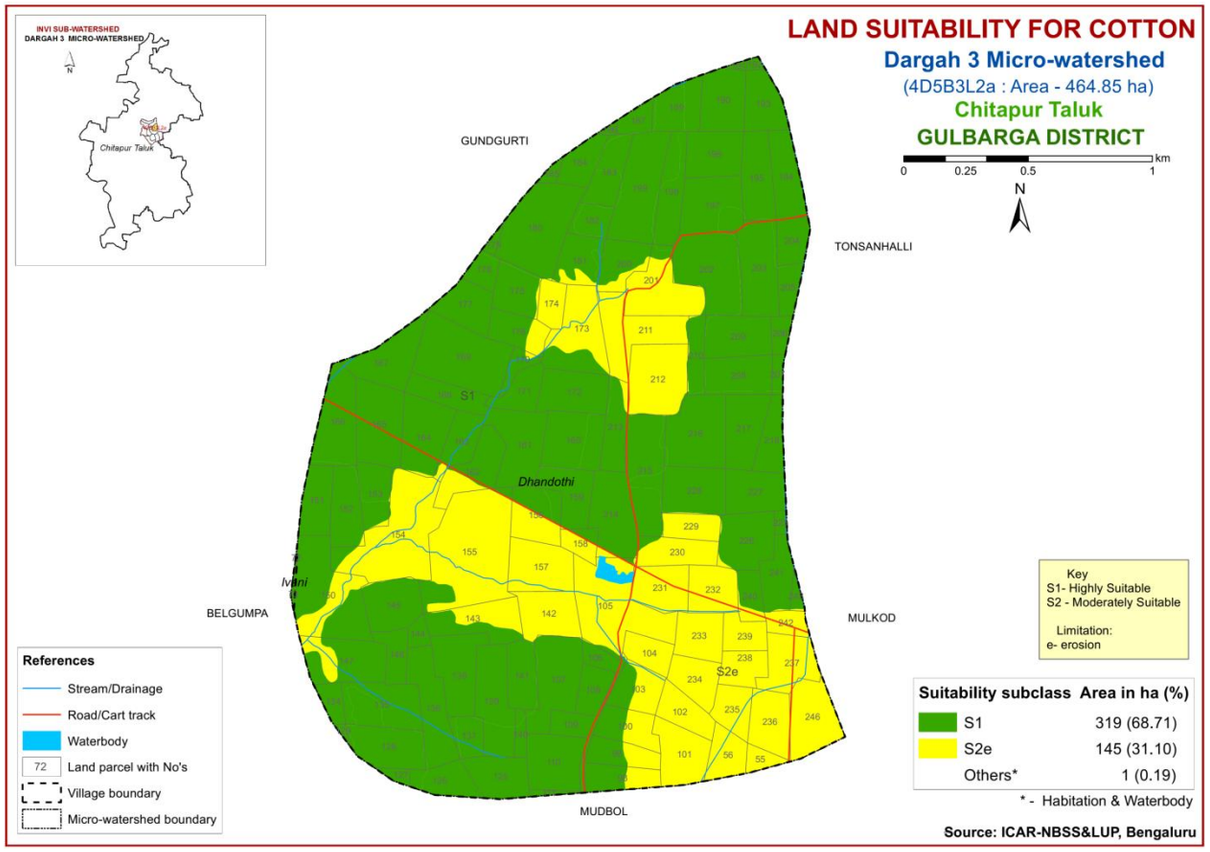

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR PIGEONPEA
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
IVNI
Gundgurti
Gundagurthi
S2te
S2t
N
Key
S2-Moderately Suitable
N-Not Suitable
Limitation
e-erosion
t-texture
Suitability subclass
Area in ha (%)
S2t 185 (42.97)
S2te 180 (41.66)
N 35 (8.10)
Others* 31 (7.27)
* - Habitation & Waterbody
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru

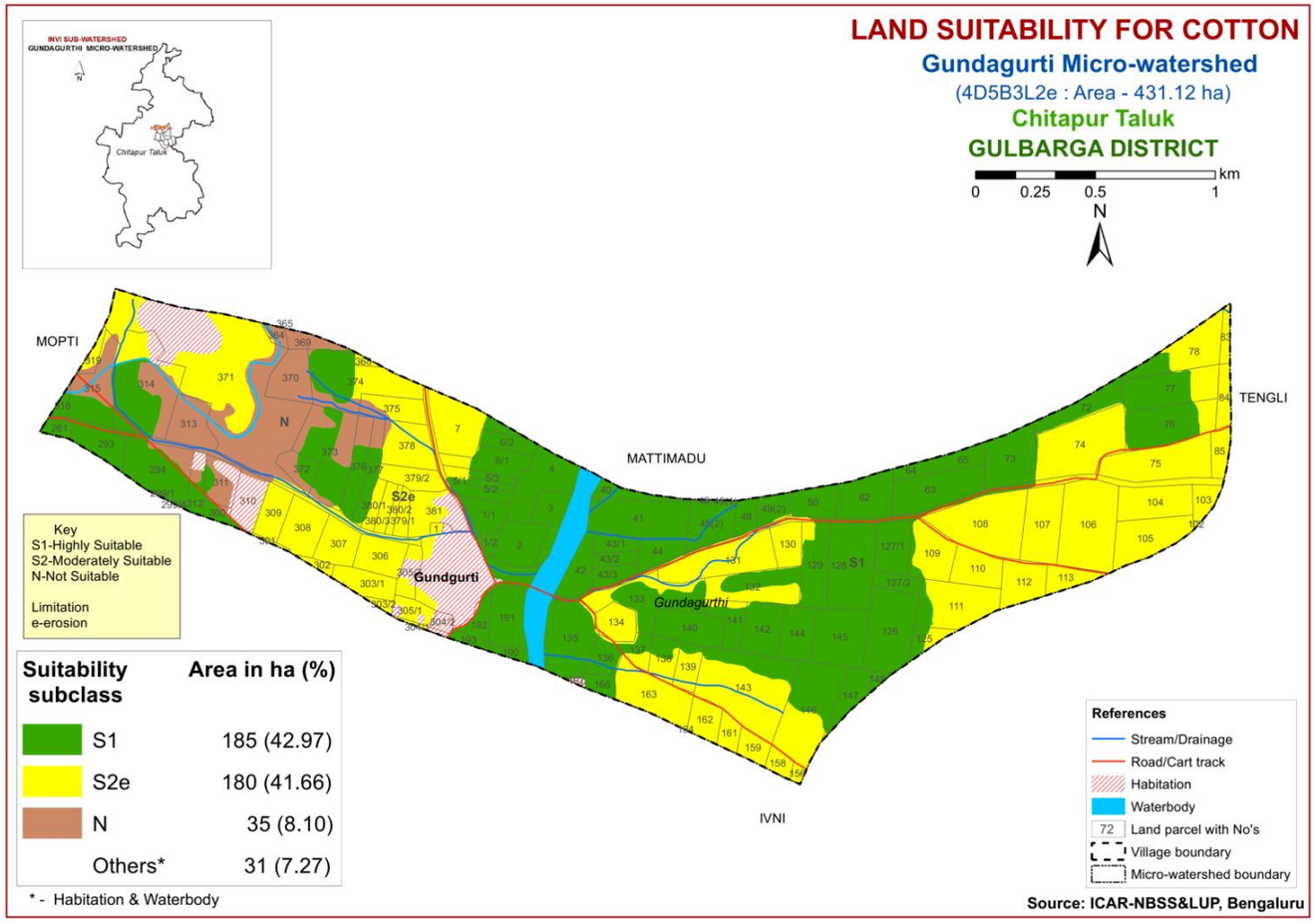

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR SUNFLOWER
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
Tengali
Gundagurthi
Dhandothi
Ivani
S1
S2e
Key
S1-Highly Suitable
S2-Moderately Suitable
limitations
e- erosion
References
Stream/Drainage
Road/Cart track
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability Subclass
Area in ha (%)
S1 234 (50.21)
S2e 232 (49.79)
Source: ICAR-NBSS&LUP, Bengaluru

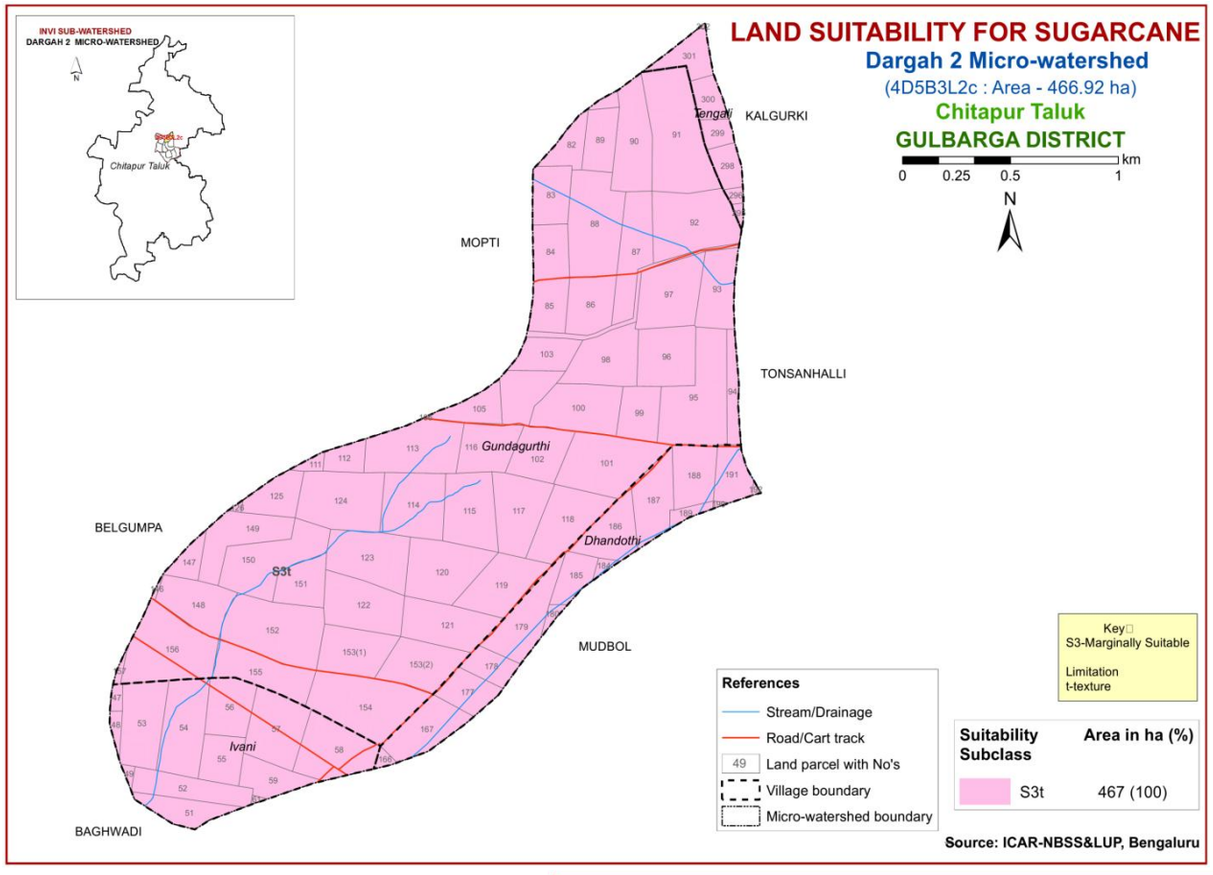

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR SUNFLOWER
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
Dhandothi
Ivani
S1
S2e
Key
S1- Highly Suitable
S2 - Moderately Suitable
Limitation:
e- erosion
References
Stream/Drainage
Road/Cart track
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability subclass
Area in ha (%)
S1 319 (68.71)
S2e 145 (31.10)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

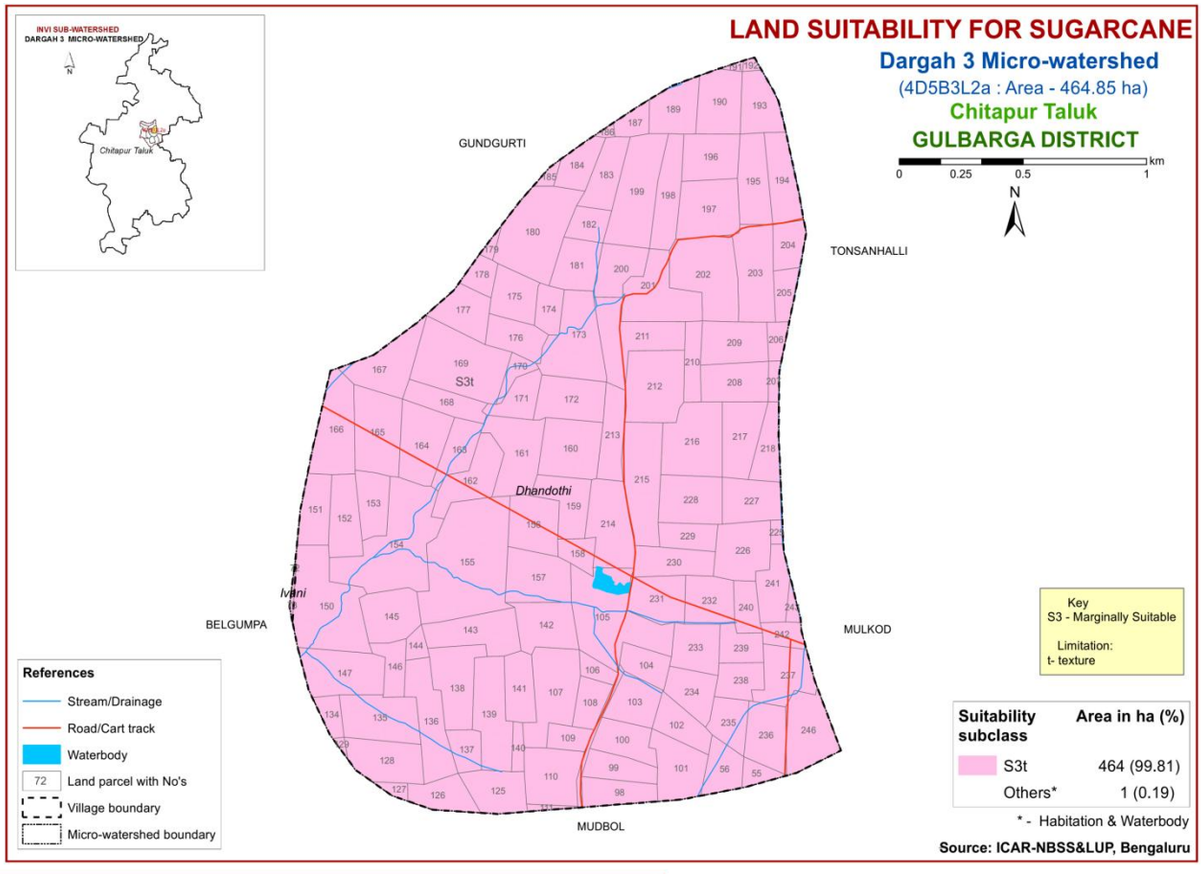

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR SUNFLOWER
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
IVNI
Gundgurti
Gundagurthi
N
S2e
S1
Key
S1- Highly Suitable
S2-Moderately Suitable
N-Not Suitable
Limitation
e-erosion
Suitability subclass
Area in ha (%)
S1 185 (42.97)
S2e 180 (41.66)
N 35 (8.10)
Others* 31 (7.27)
* - Habitation & Waterbody
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru

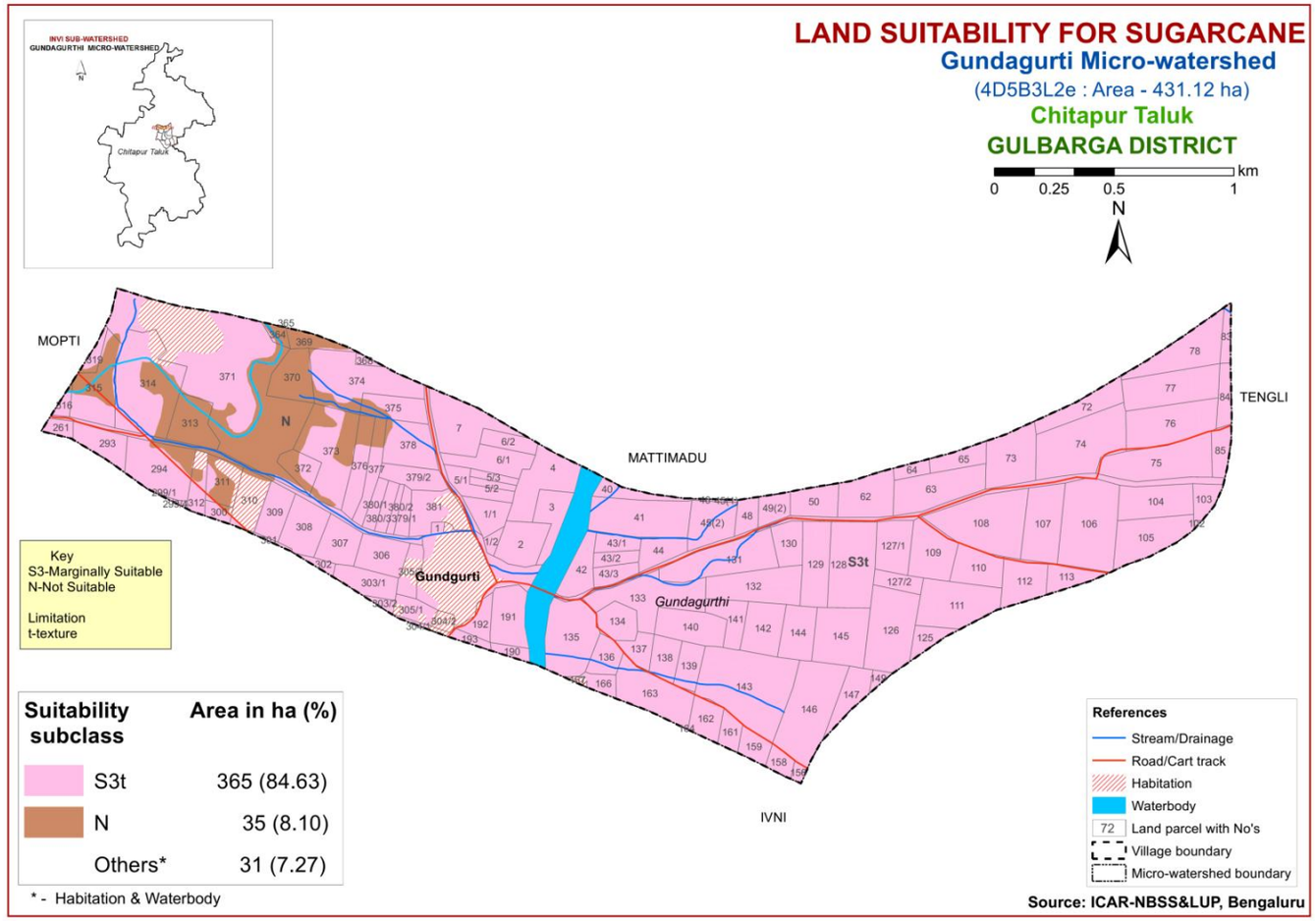

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR COTTON
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
Tengali
Gundagurthi
Dhandothi
Ivani
S1
S2e
Key
S1-Highly Suitable
S2-Moderately Suitable
limitation
e- erosion
References
Stream/Drainage
Road/Cart track
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability Subclass
Area in ha (%)
S1 234 (50.21)
S2e 232 (49.79)
Source: ICAR-NBSS&LUP, Bengaluru

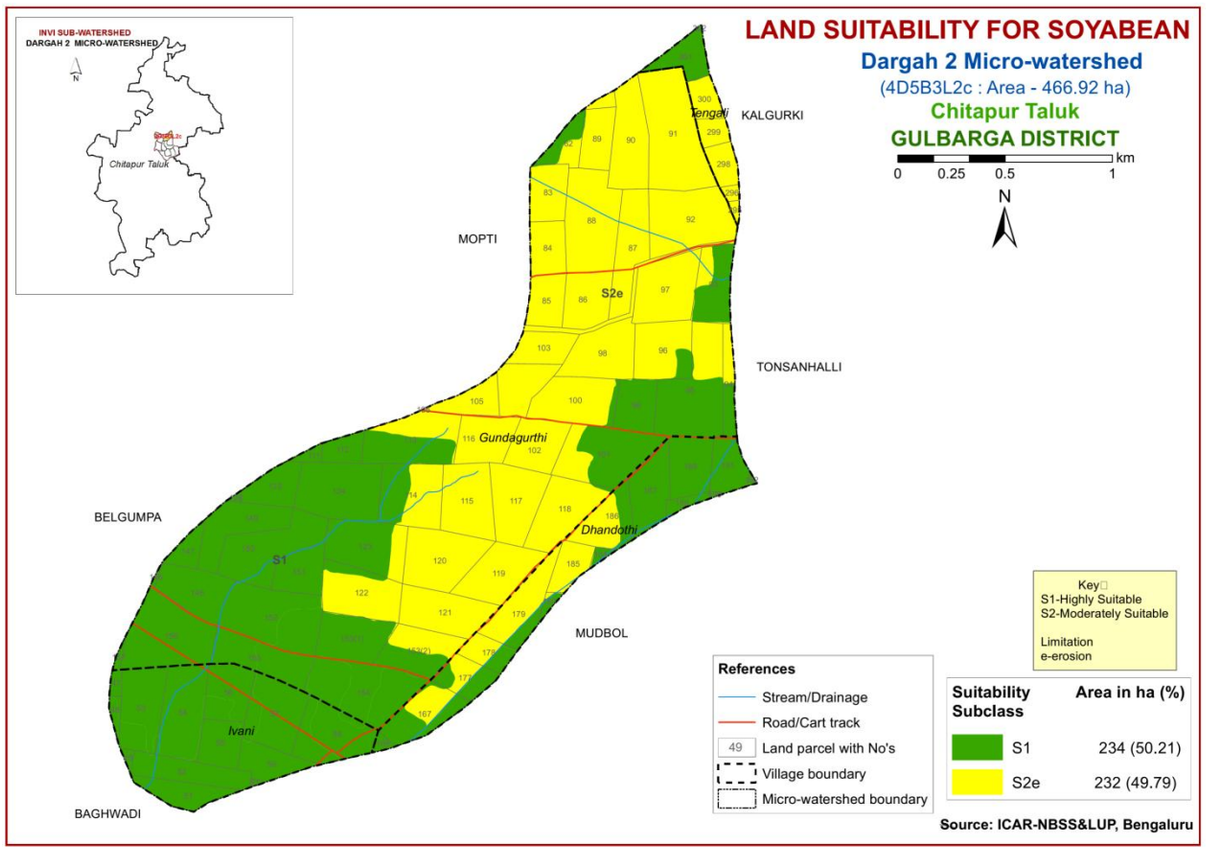

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR COTTON
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
Dhandothi
Ivani
S1
S2e
Key
S1- Highly Suitable
S2 - Moderately Suitable
Limitation:
e- erosion
References
Stream/Drainage
Road/Cart track
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability subclass
Area in ha (%)
S1 319 (68.71)
S2e 145 (31.10)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

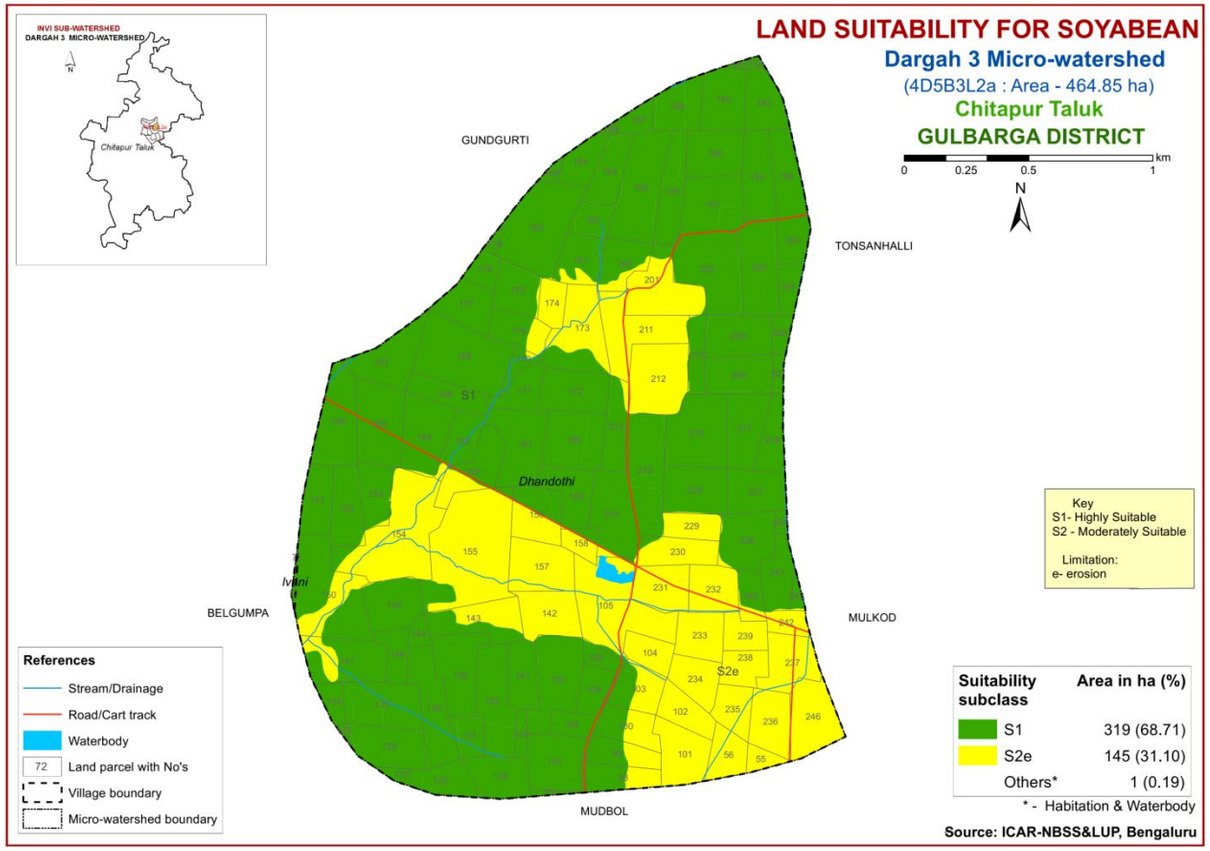

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR COTTON
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
IVNI
Gundgurti
Gundagurthi
S1
S2e
N
Key
S1-Highly Suitable
S2-Moderately Suitable
N-Not Suitable
Limitation
e-erosion
Suitability subclass
Area in ha (%)
S1 185 (42.97)
S2e 180 (41.66)
N 35 (8.10)
Others* 31 (7.27)
* - Habitation & Waterbody
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru

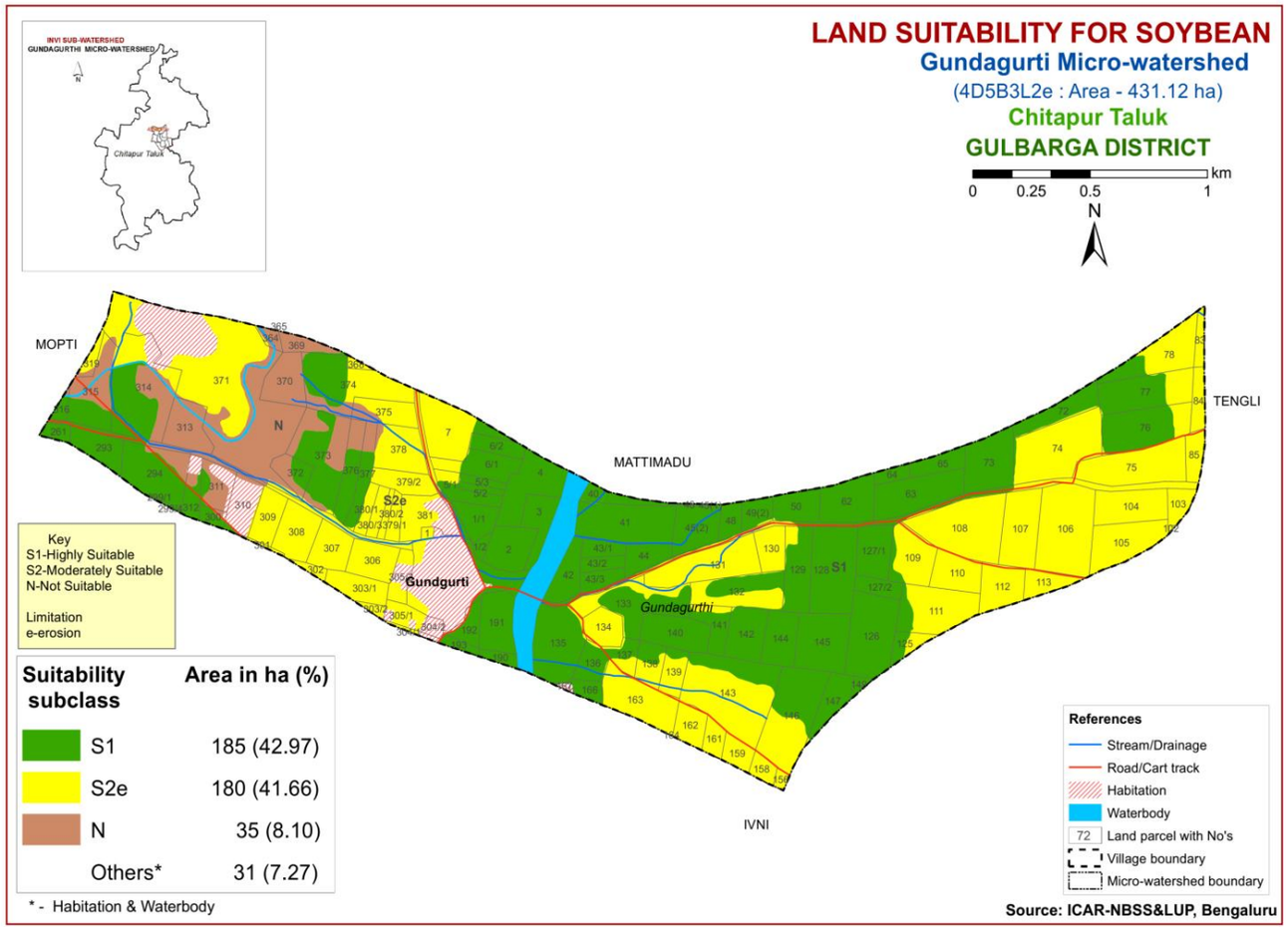

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR SUGARCANE
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
Tengali
Gundagurthi
Dhandothi
Ivani
S3t
Key
S3-Marginally Suitable
Limitation
t-texture
References
Stream/Drainage
Road/Cart track
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability Subclass
Area in ha (%)
S3t
467 (100)
Source: ICAR-NBSS&LUP, Bengaluru

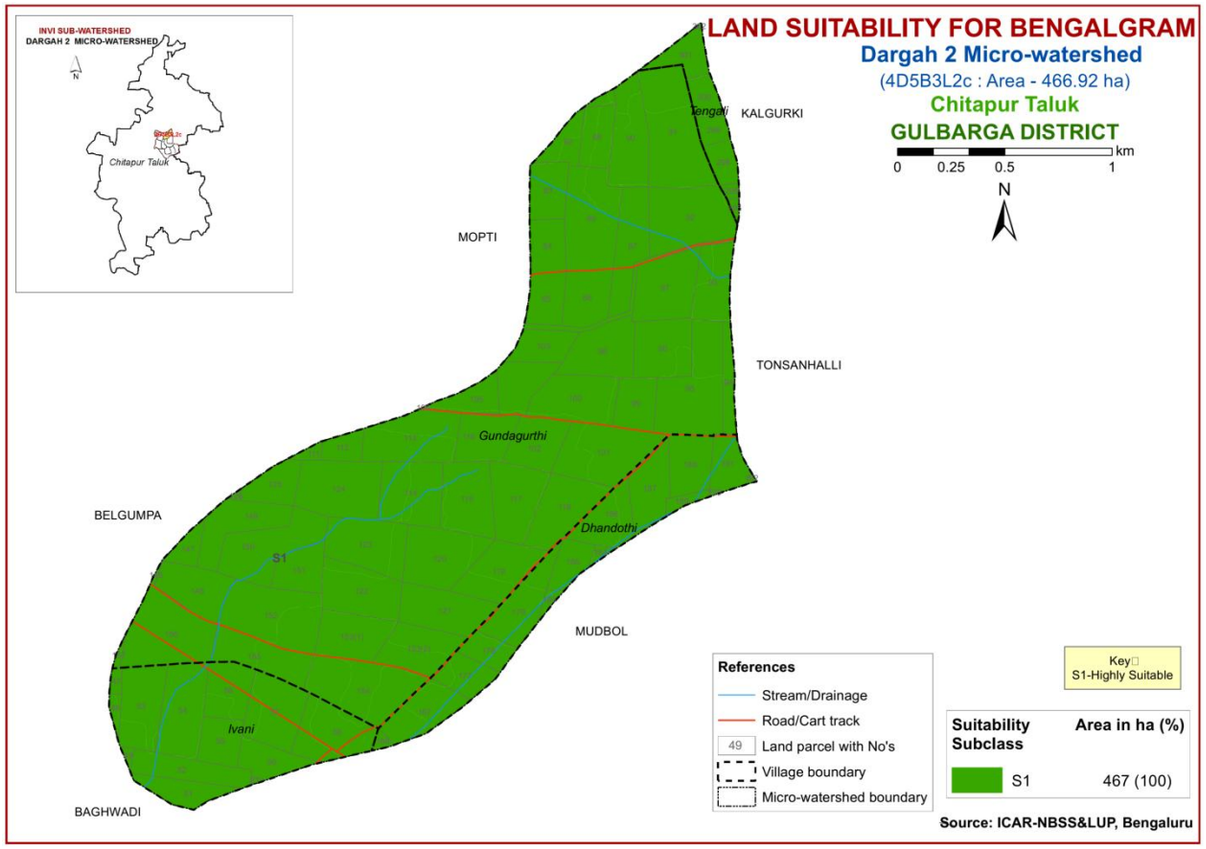

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR SUGARCANE
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
Dhandothi
Ivani
S3t
Key
S3 - Marginally Suitable
Limitation:
t- texture
References
Stream/Drainage
Road/Cart track
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability subclass
Area in ha (%)
S3t
464 (99.81)
Others*
1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

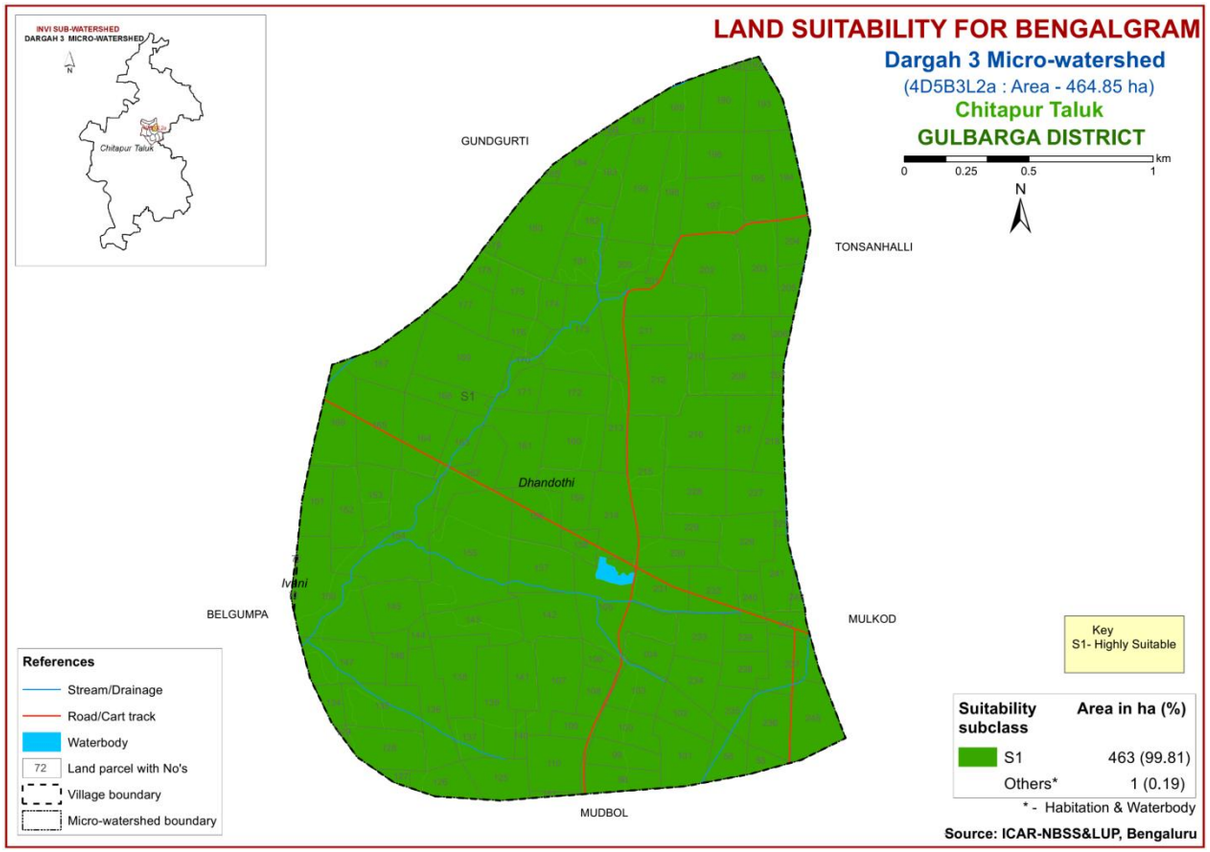

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR SUGARCANE
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
IVNI
Gundgurti
Gundagurthi
S3t
N
Key
S3-Marginally Suitable
N-Not Suitable
Limitation
t-texture
Suitability subclass
Area in ha (%)
S3t
365 (84.63)
N
35 (8.10)
Others*
31 (7.27)
* - Habitation & Waterbody
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru

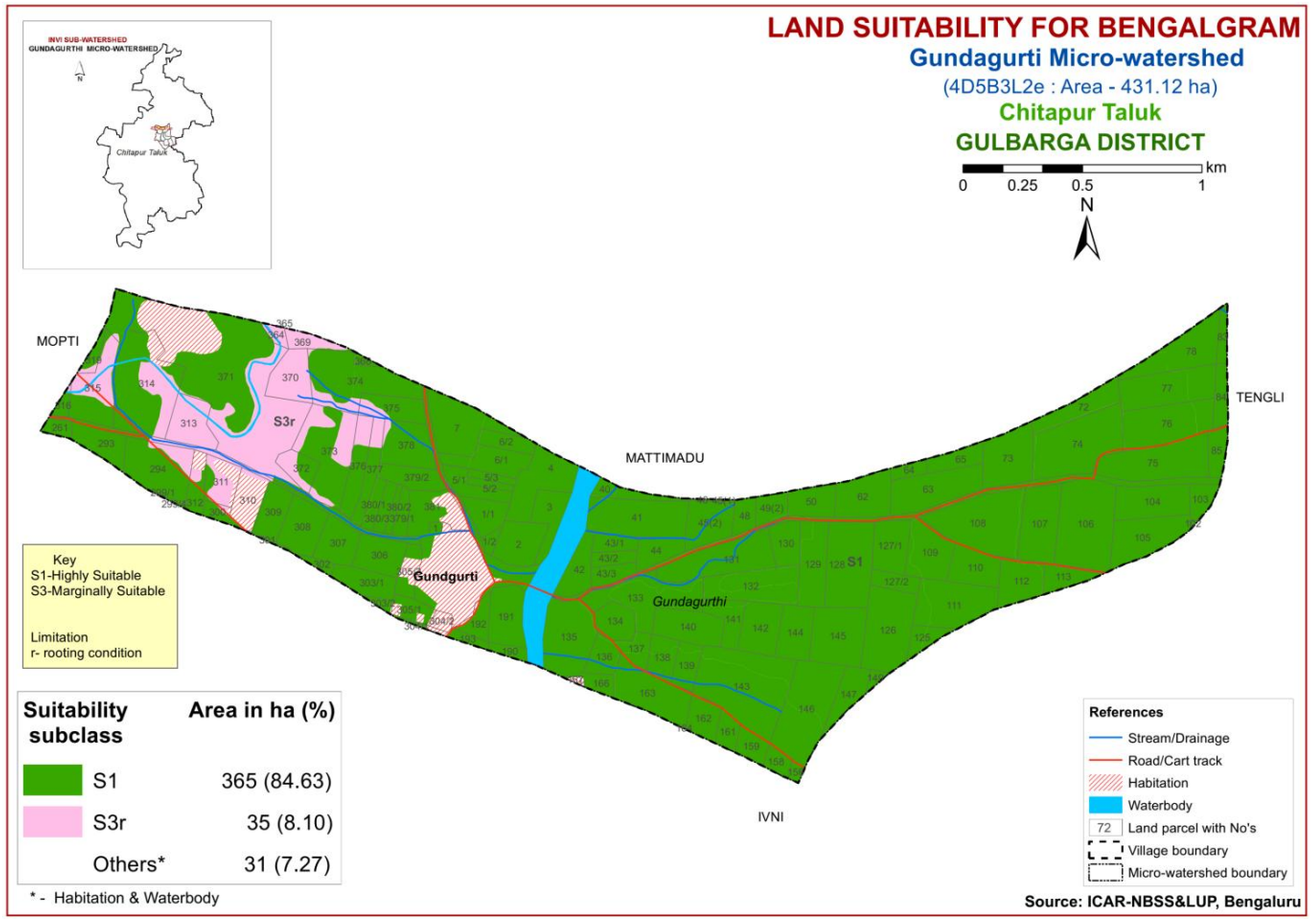

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR SOYABEAN
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
Tengdi
Gundagurthi
Dhandothi
Ivani
S1
S2e
Key
S1-Highly Suitable
S2-Moderately Suitable
Limitation
e-erosion
References
Stream/Drainage
Road/Cart track
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability Subclass
Area in ha (%)
S1 234 (50.21)
S2e 232 (49.79)
Source: ICAR-NBSS&LUP, Bengaluru

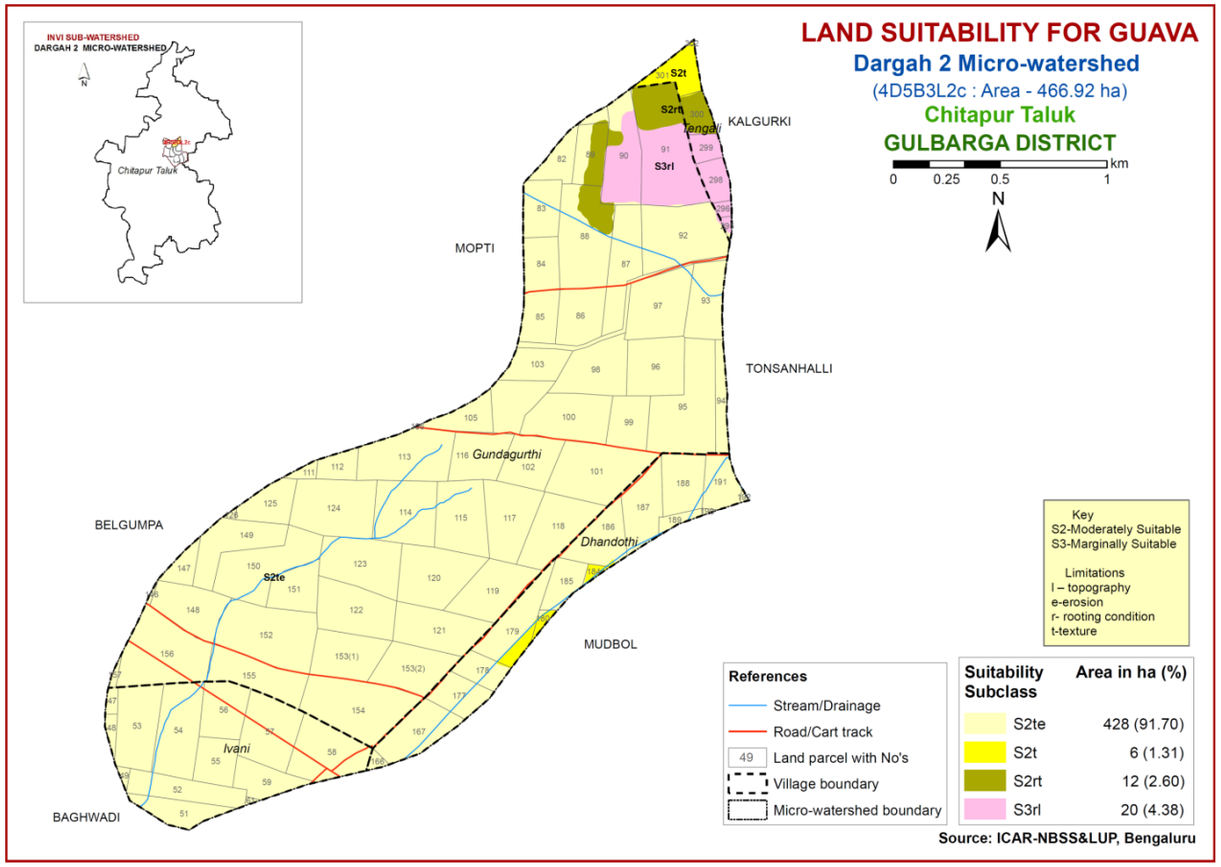

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR SOYABEAN
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
Dhandothi
Ivani
S1
S2e
Key
S1- Highly Suitable
S2 - Moderately Suitable
Limitation:
e- erosion
References
Stream/Drainage
Road/Cart track
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability subclass
Area in ha (%)
S1 319 (68.71)
S2e 145 (31.10)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

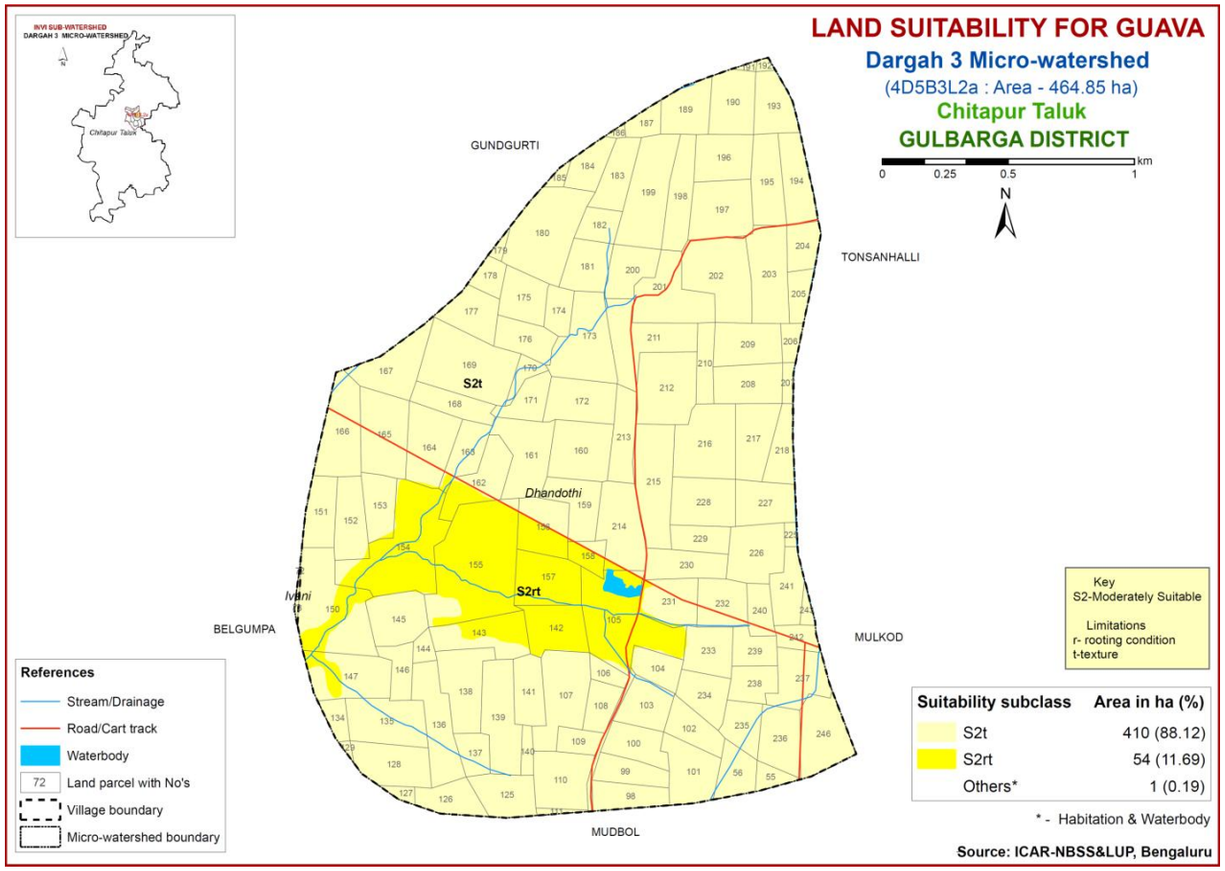

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR SOYBEAN
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
IVNI
Gundgurti
Gundagurthi
S1
S2e
N
Key
S1-Highly Suitable
S2-Moderately Suitable
N-Not Suitable
Limitation
e-erosion
Suitability subclass
Area in ha (%)
S1 185 (42.97)
S2e 180 (41.66)
N 35 (8.10)
Others* 31 (7.27)
* - Habitation & Waterbody
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru

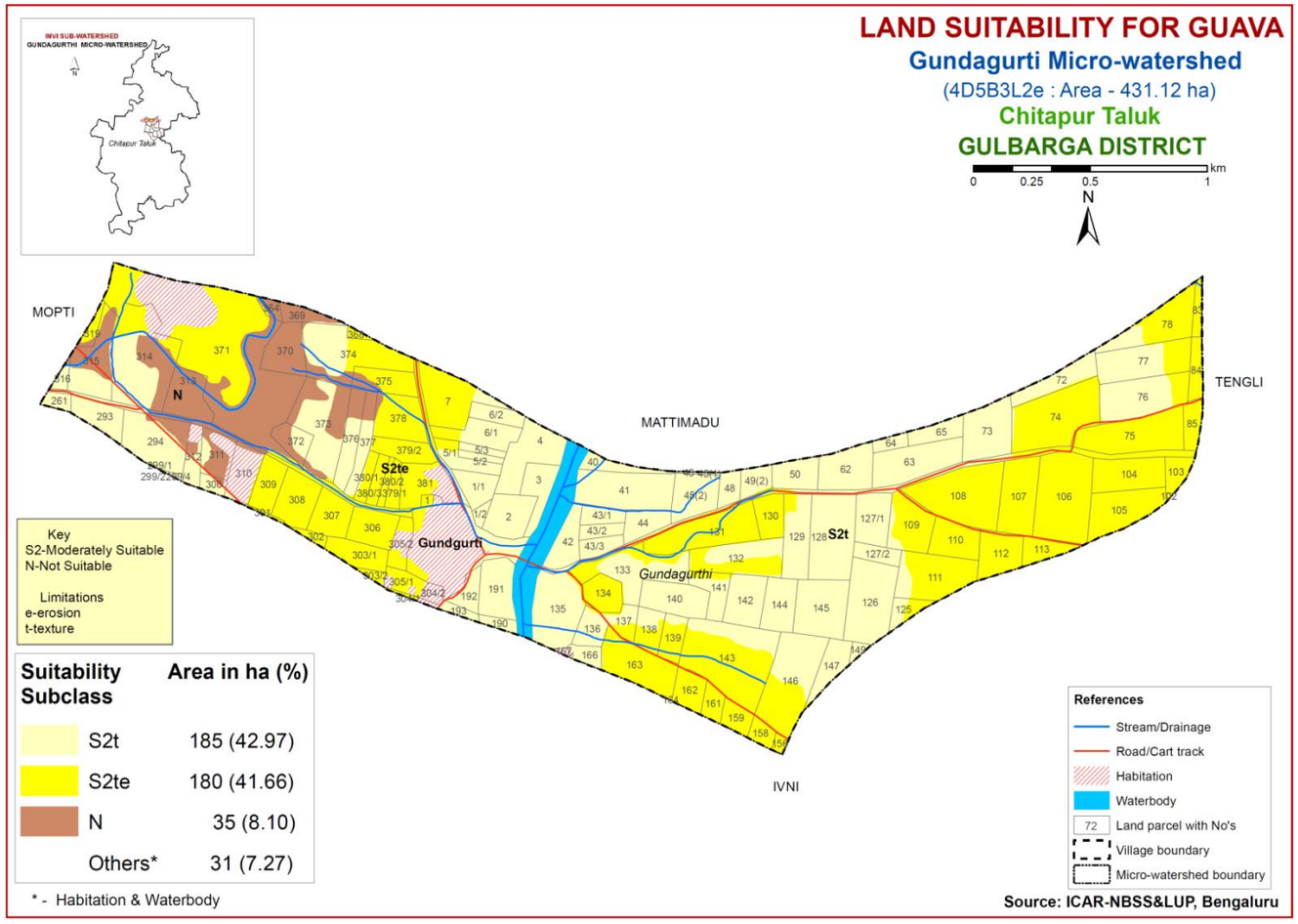

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR BENGALGRAM
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
Tengali
KALGURKI
MOPTI
TONSANHALLI
Gundagurthi
BELGUMPA
Dhandothi
S1
MUDBOL
Ivani
BAGHWADI
References
Stream/Drainage
Road/Cart track
49 Land parcel with No's
Village boundary
Micro-watershed boundary
Key
S1-Highly Suitable
Suitability Subclass
Area in ha (%)
S1
467 (100)
Source: ICAR-NBSS&LUP, Bengaluru

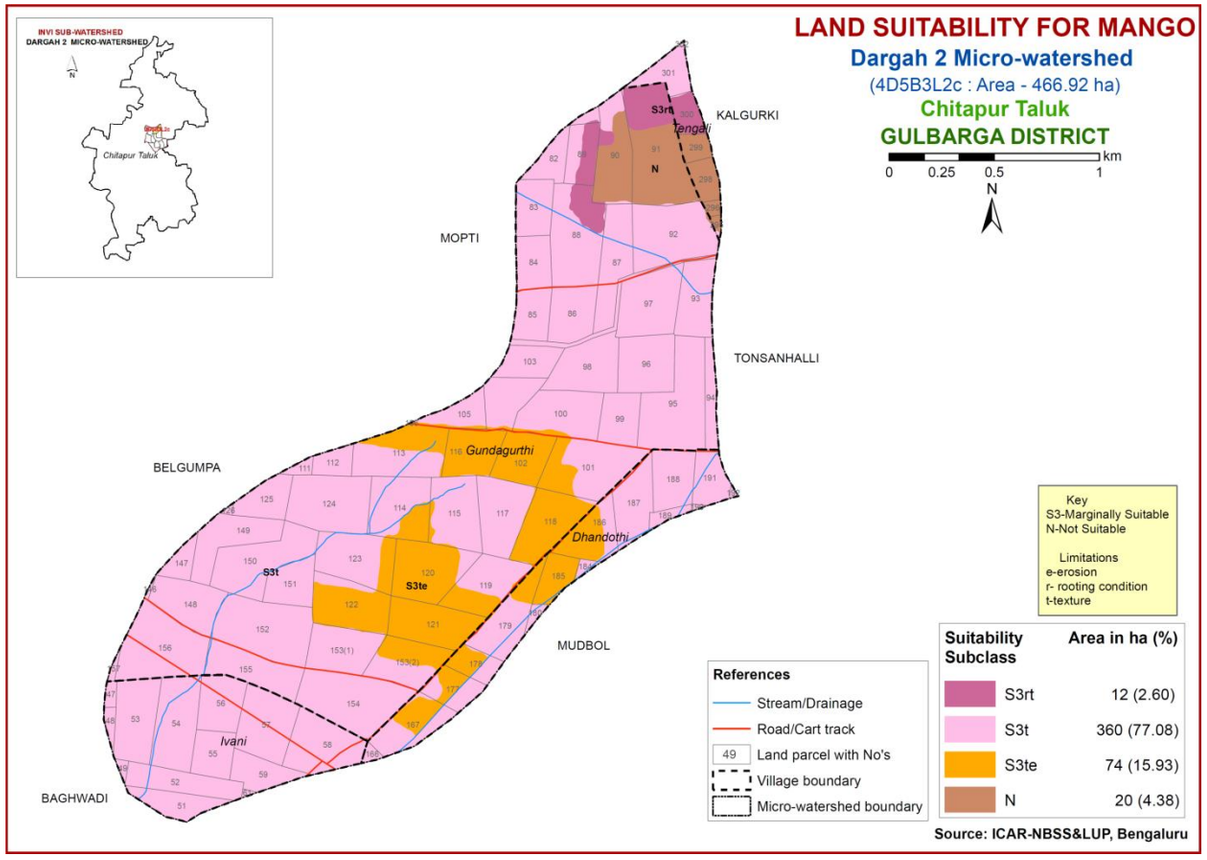

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR BENGALGRAM
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
S1
Dhandothi
Ivani
BELGUMPA
MULKOD
MUDBOL
References
Stream/Drainage
Road/Cart track
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Key
S1- Highly Suitable
Suitability subclass
Area in ha (%)
S1
463 (99.81)
Others*
1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

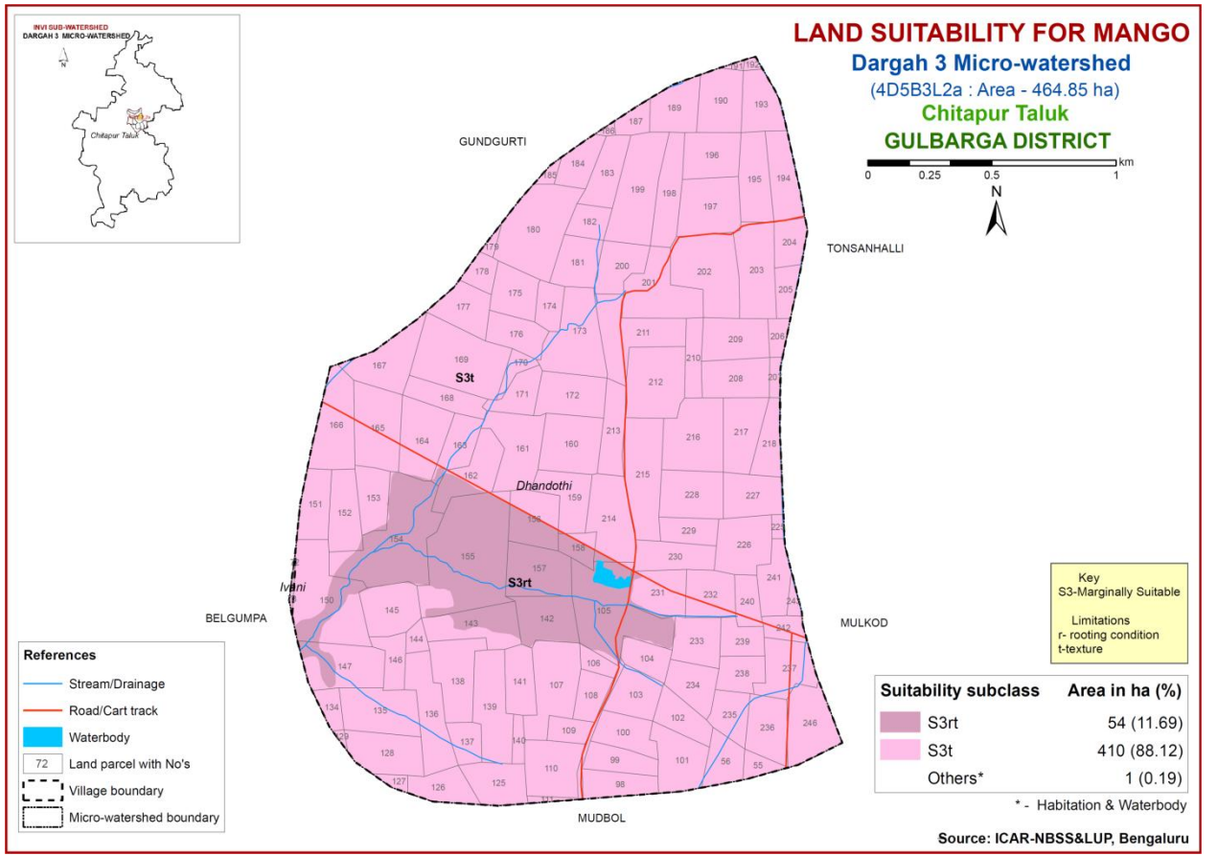

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR BENGALGRAM
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
S3r
MATTIMADU
TENGLI
Gundgurti
Gundagurthi
S1
IVNI
Key
S1-Highly Suitable
S3-Marginally Suitable
Limitation
r- rooting condition
Suitability subclass
Area in ha (%)
S1
365 (84.63)
S3r
35 (8.10)
Others*
31 (7.27)
* - Habitation & Waterbody
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru

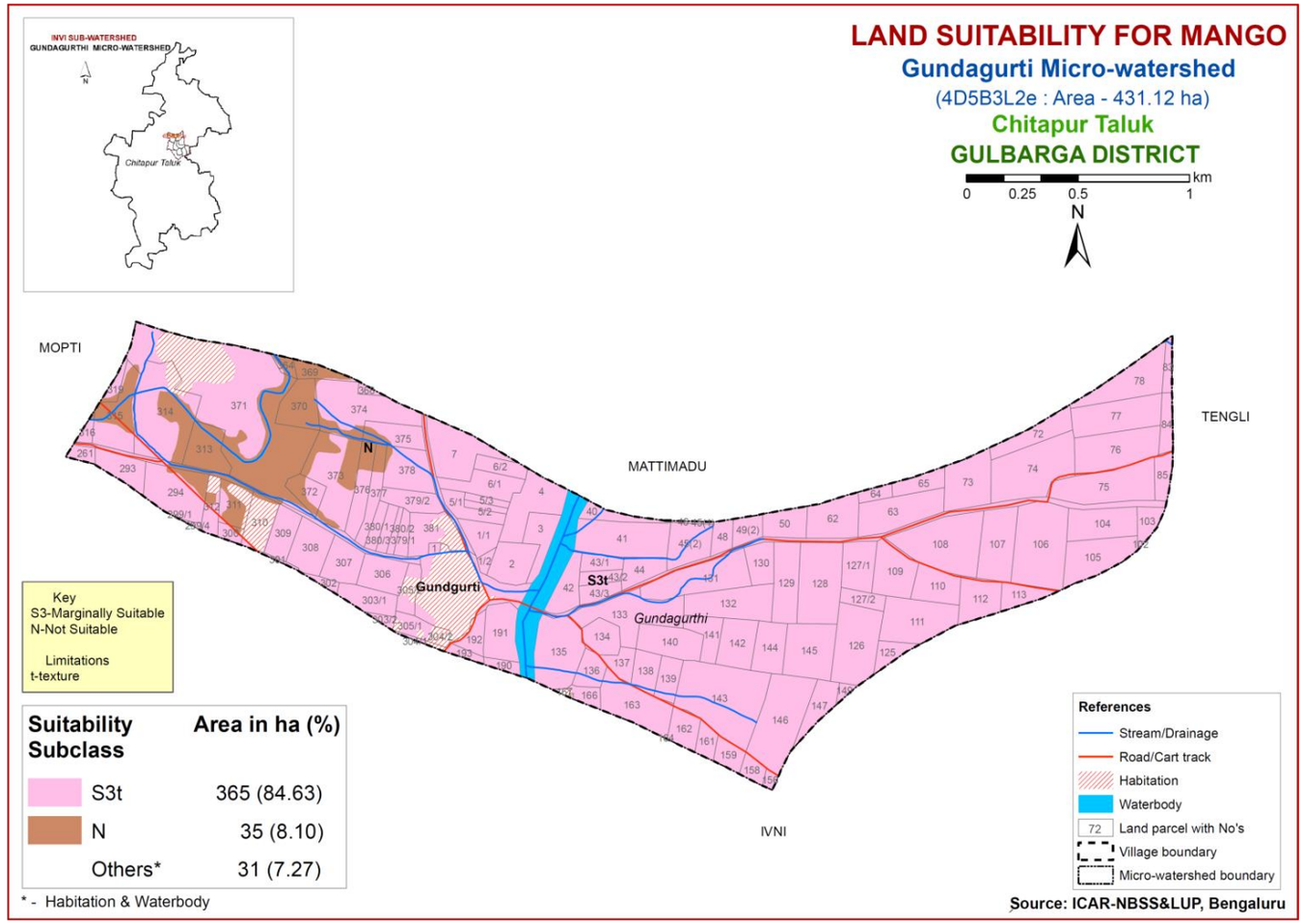

LAND SUITABILITY FOR GUAVA
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
0 0.25 0.5 1 km
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
Gundagurthi
Dhandothi
Ivani
Tengali
S2t
S2rt
S3rl
S2te
Key
S2-Moderately Suitable
S3-Marginally Suitable
Limitations
I – topography
e-erosion
r- rooting condition
t-texture
References
Stream/Drainage
Road/Cart track
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability Subclass
Area in ha (%)
S2te 428 (91.70)
S2t 6 (1.31)
S2rt 12 (2.60)
S3rl 20 (4.38)
Source: ICAR-NBSS&LUP, Bengaluru

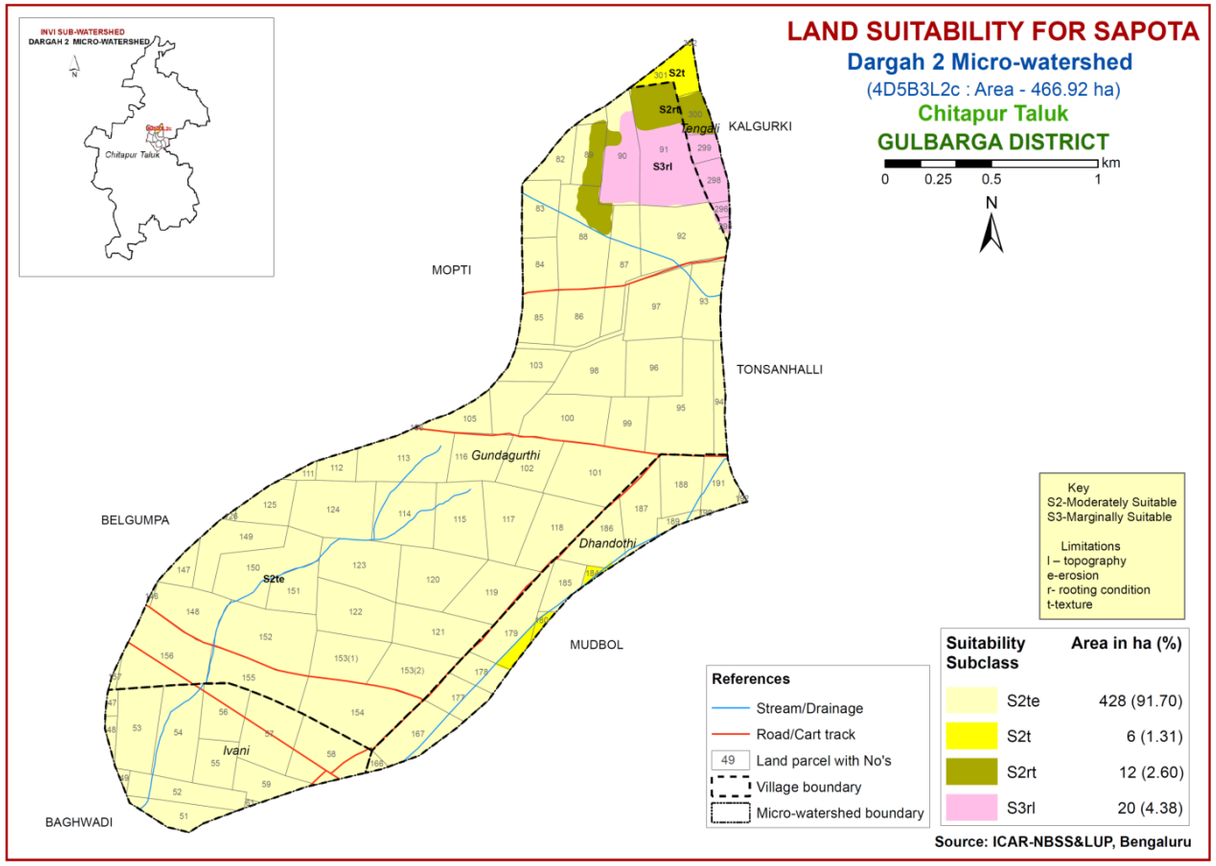

LAND SUITABILITY FOR GUAVA
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
Dhandothi
Ivani
S2t
S2rt
Key
S2-Moderately Suitable
Limitations
r- rooting condition
t-texture
References
Stream/Drainage
Road/Cart track
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability subclass
Area in ha (%)
S2t 410 (88.12)
S2rt 54 (11.69)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

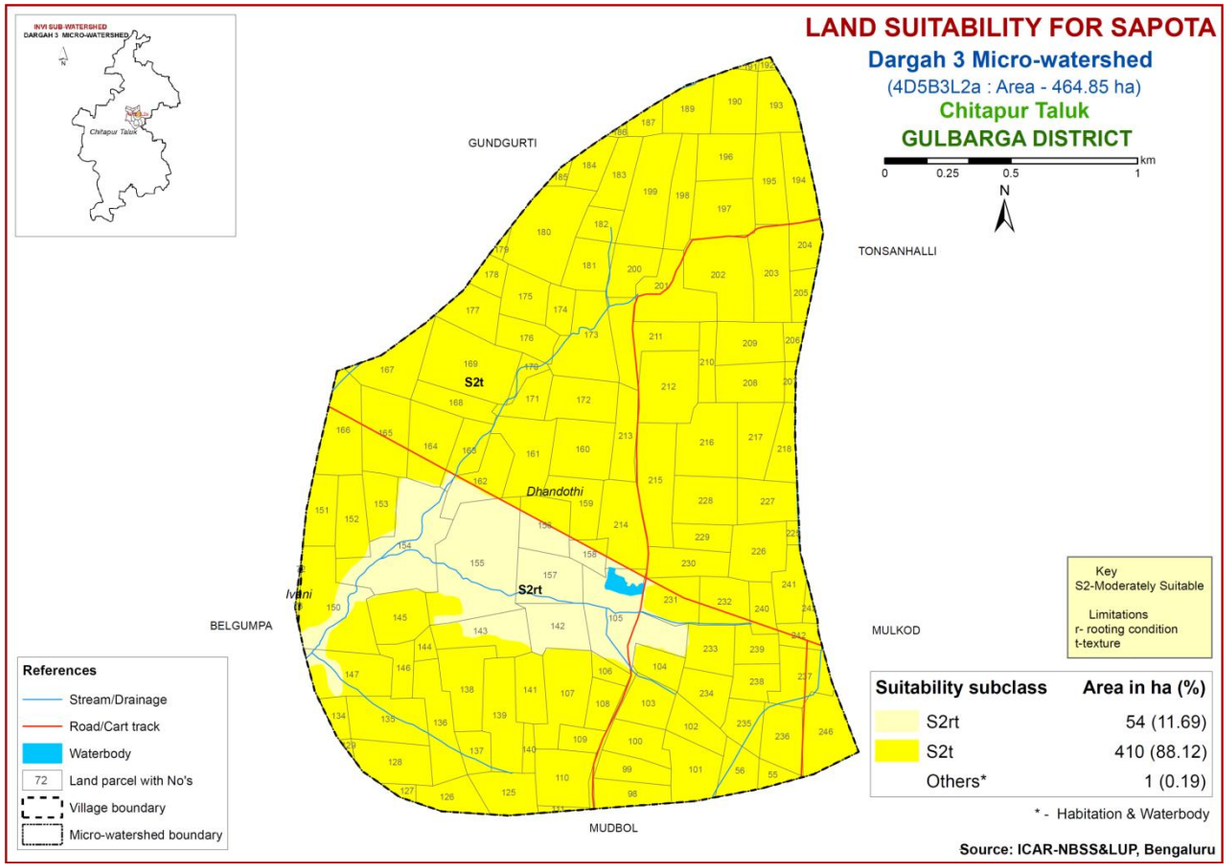

LAND SUITABILITY FOR GUAVA
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
IVNI
Gundagurti
Gundagurthi
S2te
S2t
N
Key
S2-Moderately Suitable
N-Not Suitable
Limitations
e-erosion
t-texture
Suitability Subclass
Area in ha (%)
S2t 185 (42.97)
S2te 180 (41.66)
N 35 (8.10)
Others* 31 (7.27)
* - Habitation & Waterbody
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru

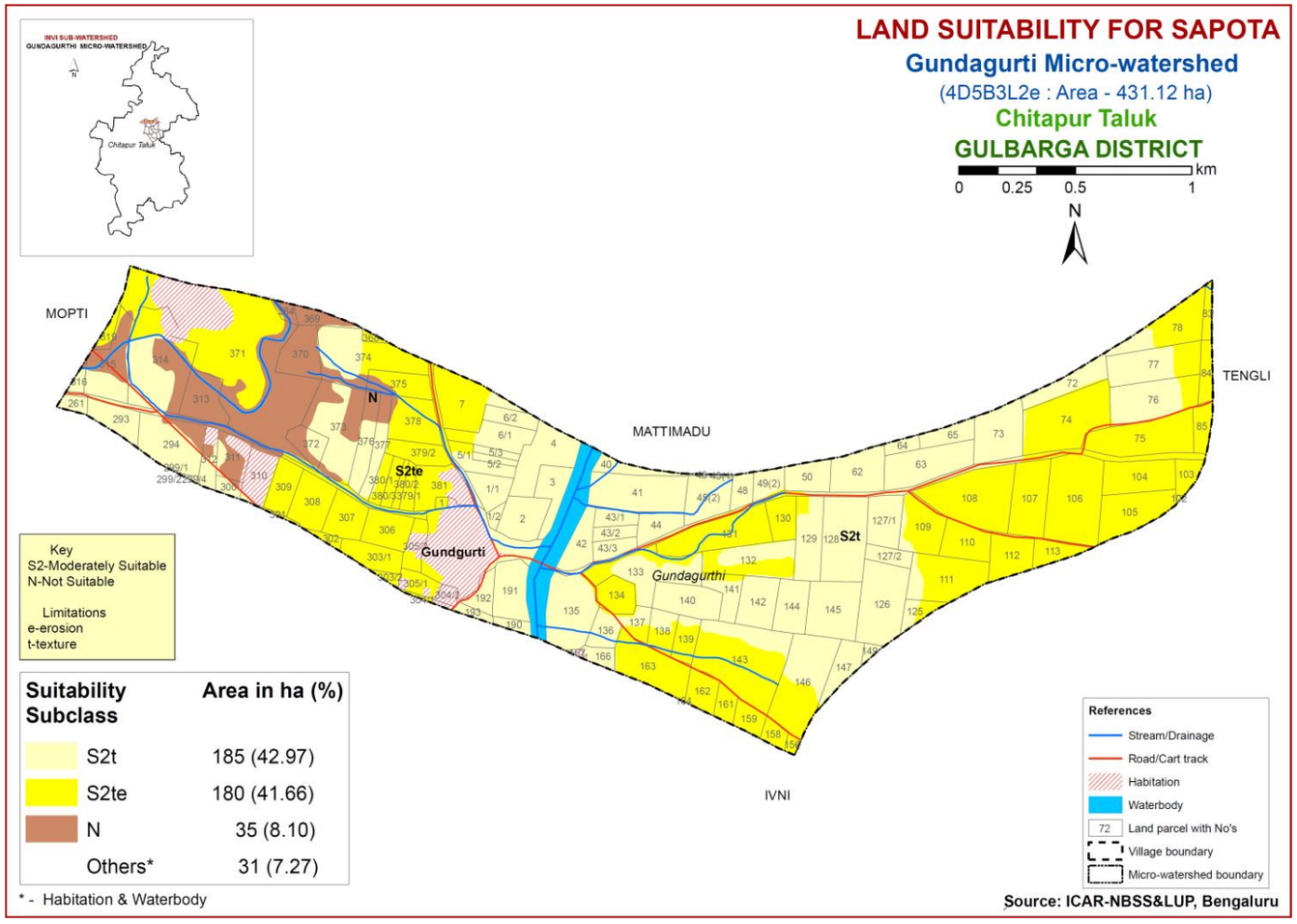

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR MANGO
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
Tengali
Gundagurthi
Dhandothi
Ivani
S3rt
S3t
S3te
N
Key
S3-Marginally Suitable
N-Not Suitable
Limitations
e-erosion
r- rooting condition
t-texture
References
Stream/Drainage
Road/Cart track
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability Subclass
Area in ha (%)
S3rt 12 (2.60)
S3t 360 (77.08)
S3te 74 (15.93)
N 20 (4.38)
Source: ICAR-NBSS&LUP, Bengaluru

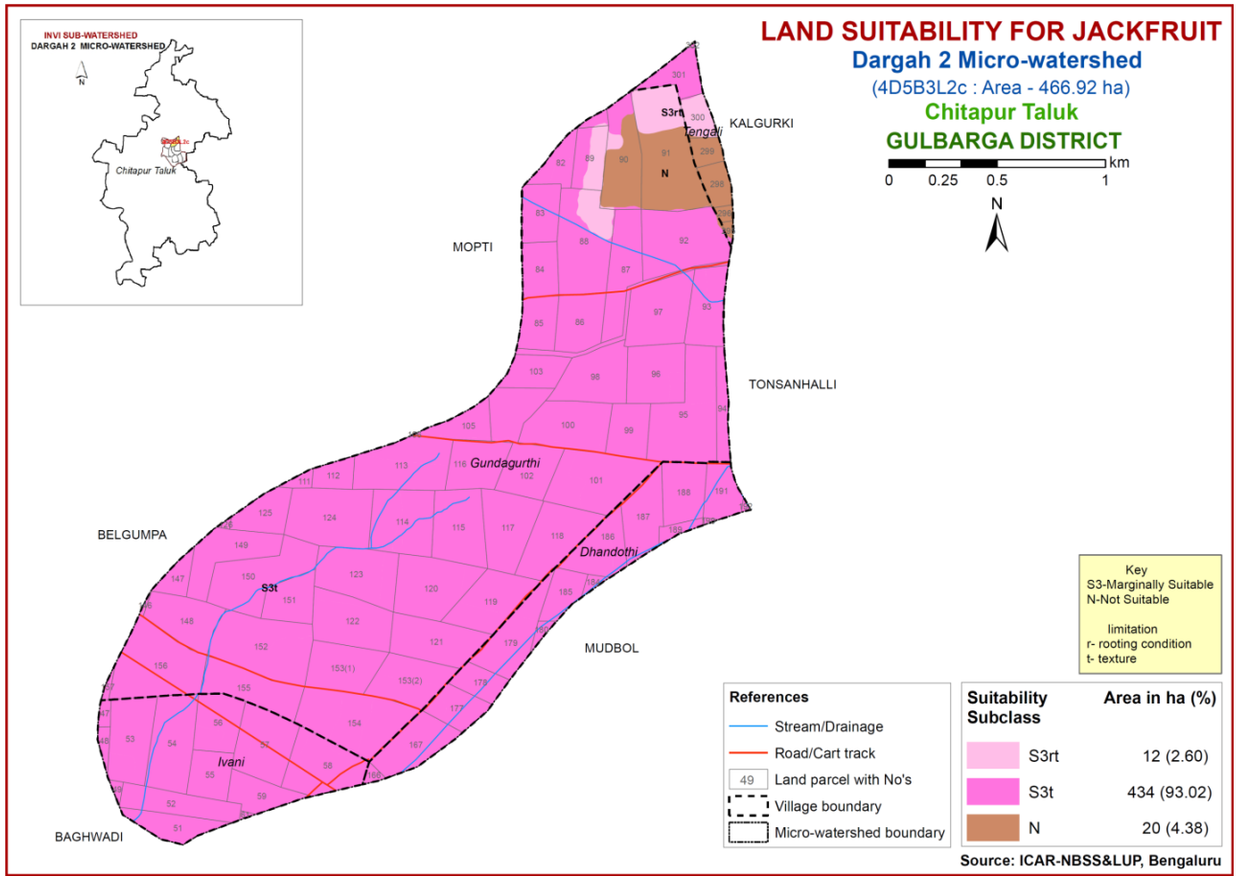

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR MANGO
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
Dhandothi
Ivani
S3t
S3rt
Key
S3-Marginally Suitable
Limitations
r- rooting condition
t-texture
References
Stream/Drainage
Road/Cart track
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability subclass
Area in ha (%)
S3rt 54 (11.69)
S3t 410 (88.12)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

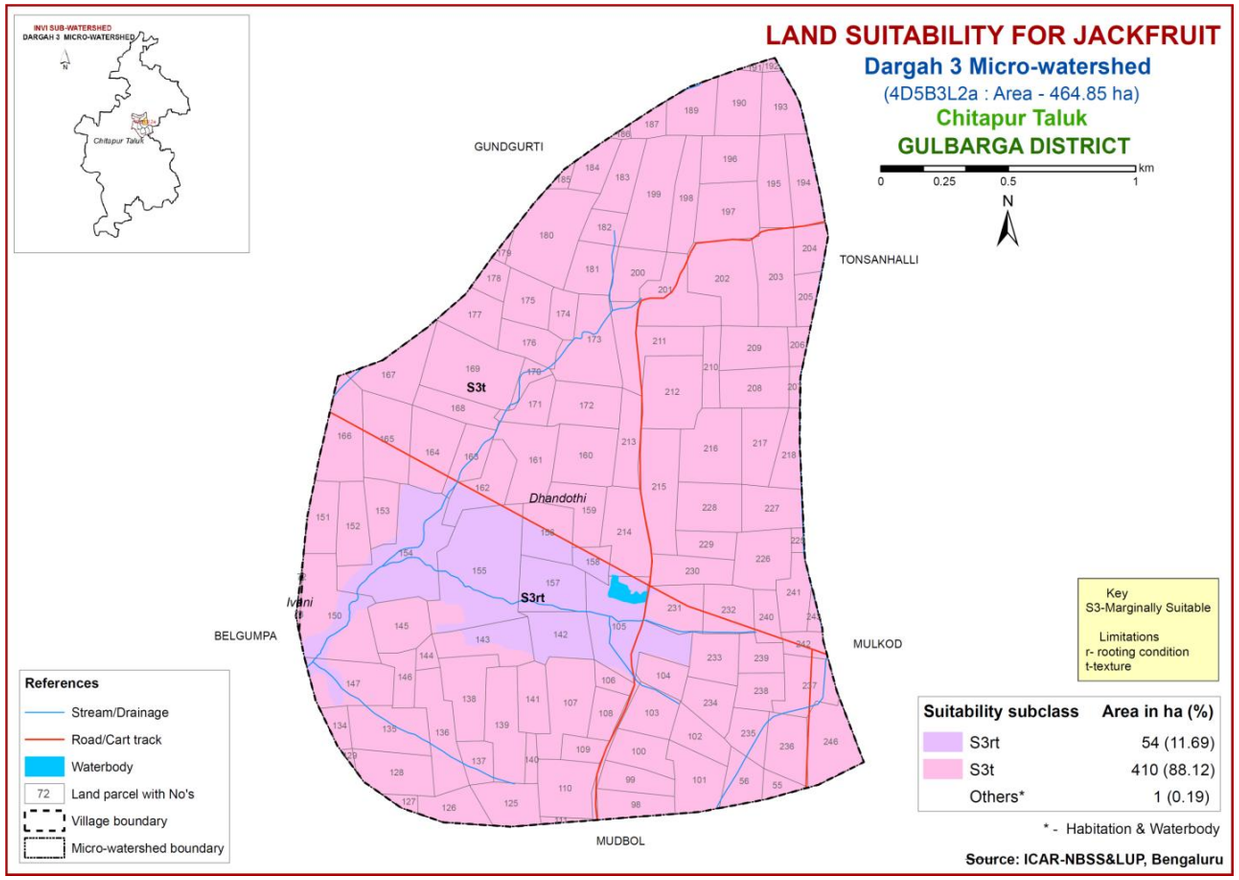

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR MANGO
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
IVNI
Gundgurti
Gundagurthi
S3t
N
Key
S3-Marginally Suitable
N-Not Suitable
Limitations
t-texture
Suitability Subclass
Area in ha (%)
S3t 365 (84.63)
N 35 (8.10)
Others* 31 (7.27)
* - Habitation & Waterbody
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru

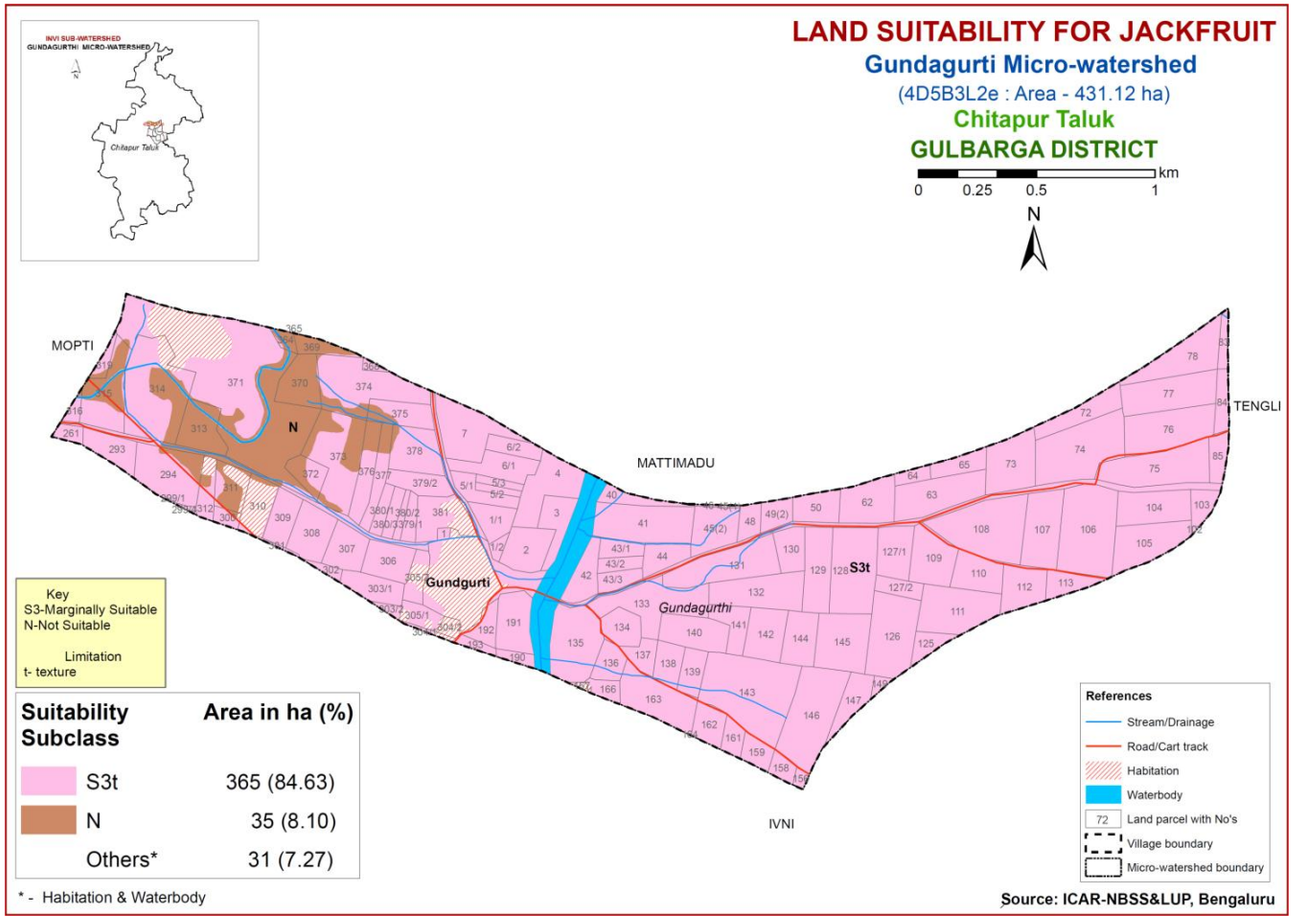

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR SAPOTA
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
KALGURKI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
Gundagurthi
Dhandothi
Ivani
Tengali
S2t
S2rt
S3rl
S2te
Key
S2-Moderately Suitable
S3-Marginally Suitable
Limitations
l – topography
e-erosion
r- rooting condition
t-texture
References
Stream/Drainage
Road/Cart track
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability Subclass
Area in ha (%)
S2te 428 (91.70)
S2t 6 (1.31)
S2rt 12 (2.60)
S3rl 20 (4.38)
Source: ICAR-NBSS&LUP, Bengaluru

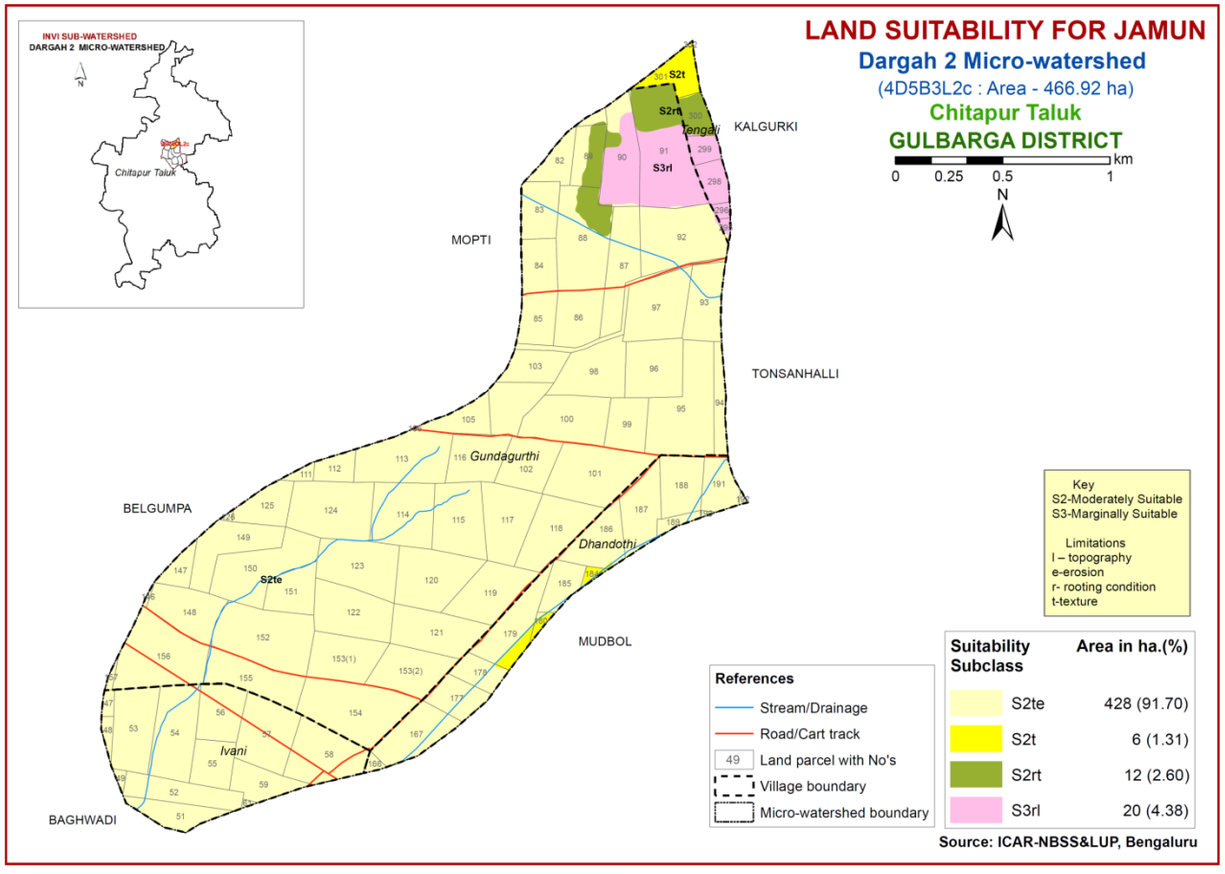

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR SAPOTA
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
Dhandothi
Ivani
S2t
S2rt
Key
S2-Moderately Suitable
Limitations
r- rooting condition
t-texture
References
Stream/Drainage
Road/Cart track
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability subclass
Area in ha (%)
S2rt 54 (11.69)
S2t 410 (88.12)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

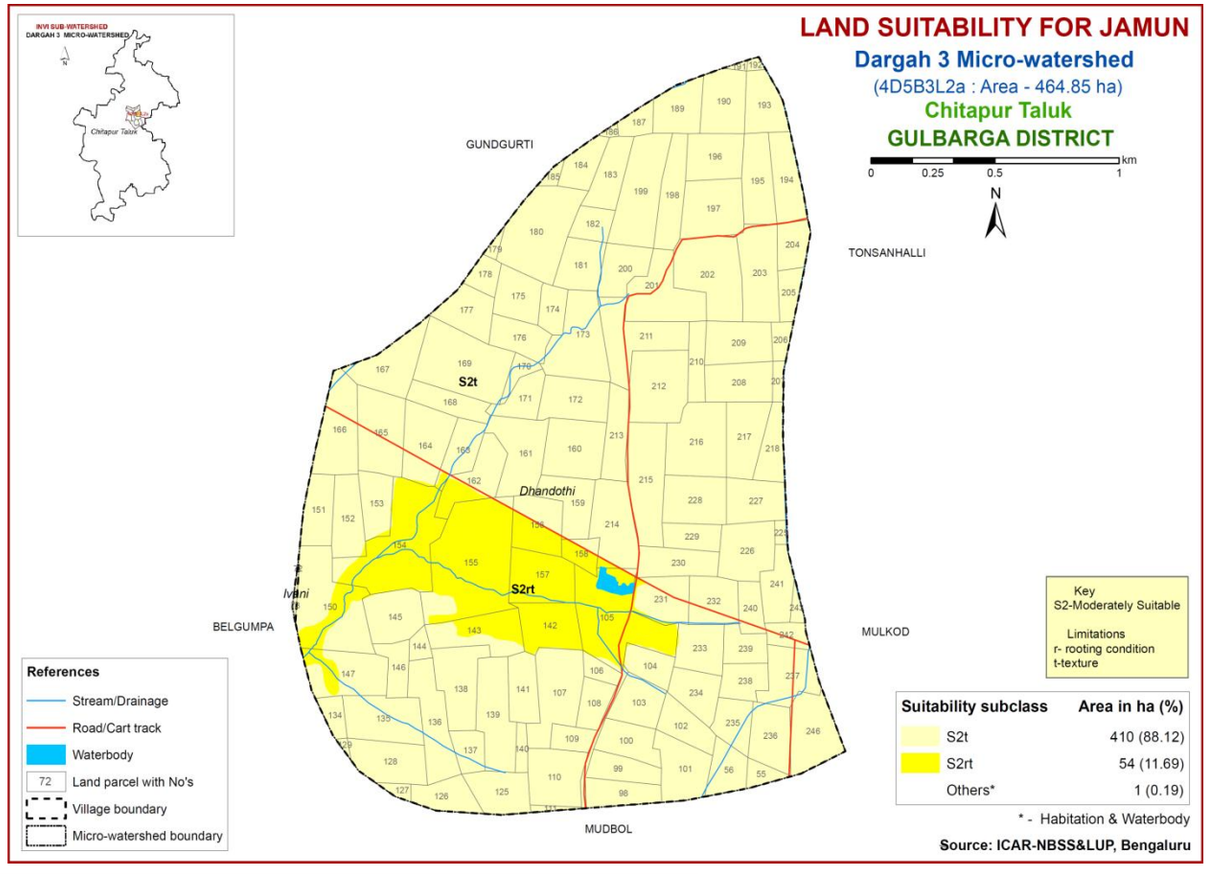

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR SAPOTA
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
IVNI
Gundgurti
Gundagurthi
S2te
S2t
N
Key
S2-Moderately Suitable
N-Not Suitable
Limitations
e-erosion
t-texture
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability Subclass
Area in ha (%)
S2t 185 (42.97)
S2te 180 (41.66)
N 35 (8.10)
Others* 31 (7.27)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

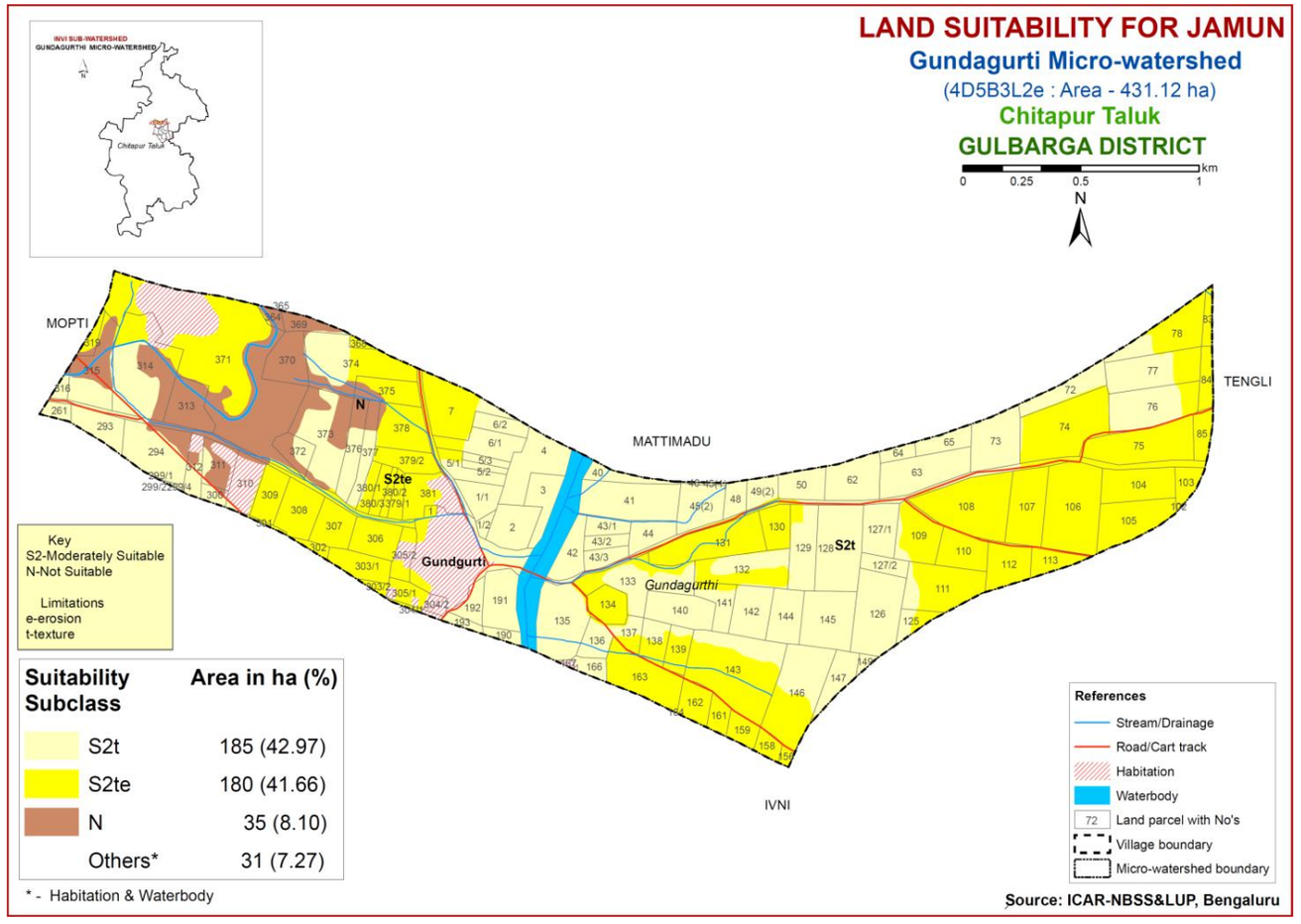

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR JACKFRUIT
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
Tengali
Gundagurthi
Dhandothi
Ivani
S3rt
S3t
N
Key
S3-Marginally Suitable
N-Not Suitable
limitation
r- rooting condition
t- texture
References
Stream/Drainage
Road/Cart track
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability Subclass
Area in ha (%)
S3rt 12 (2.60)
S3t 434 (93.02)
N 20 (4.38)
Source: ICAR-NBSS&LUP, Bengaluru

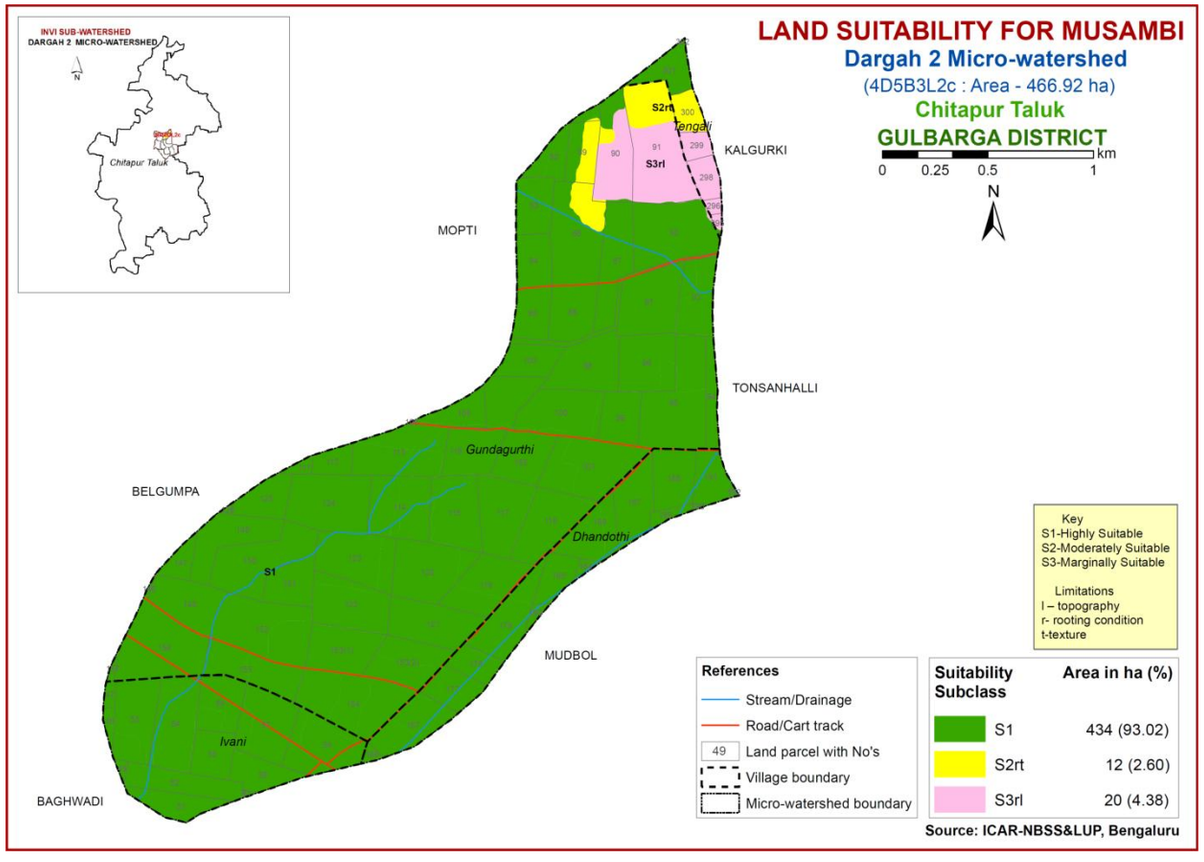

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR JACKFRUIT
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
Dhandothi
Ivani
S3t
S3rt
Key
S3-Marginally Suitable
Limitations
r- rooting condition
t-texture
References
Stream/Drainage
Road/Cart track
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability subclass
Area in ha (%)
S3rt 54 (11.69)
S3t 410 (88.12)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

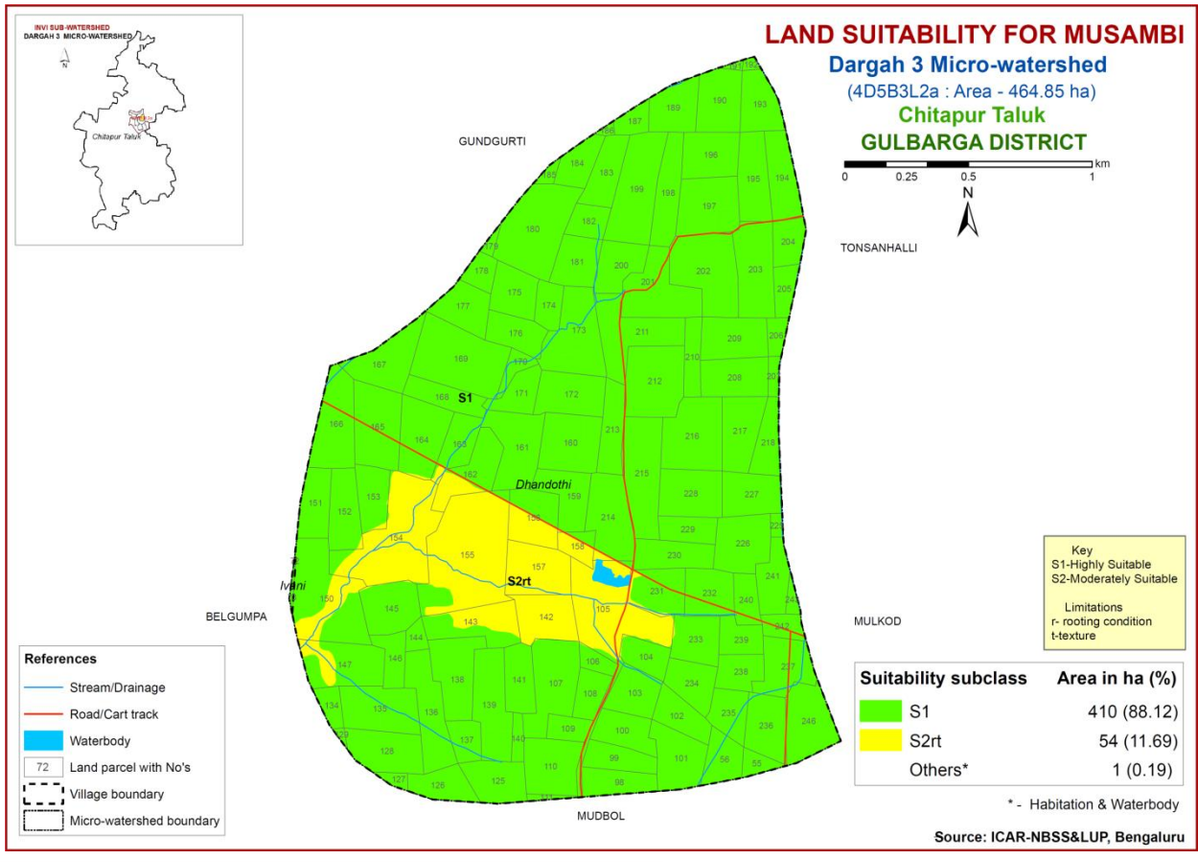

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR JACKFRUIT
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
IVNI
Gundgurti
Gundagurthi
N
S3t
Key
S3-Marginally Suitable
N-Not Suitable
Limitation
t- texture
Suitability Subclass
Area in ha (%)
S3t 365 (84.63)
N 35 (8.10)
Others* 31 (7.27)
* - Habitation & Waterbody
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru

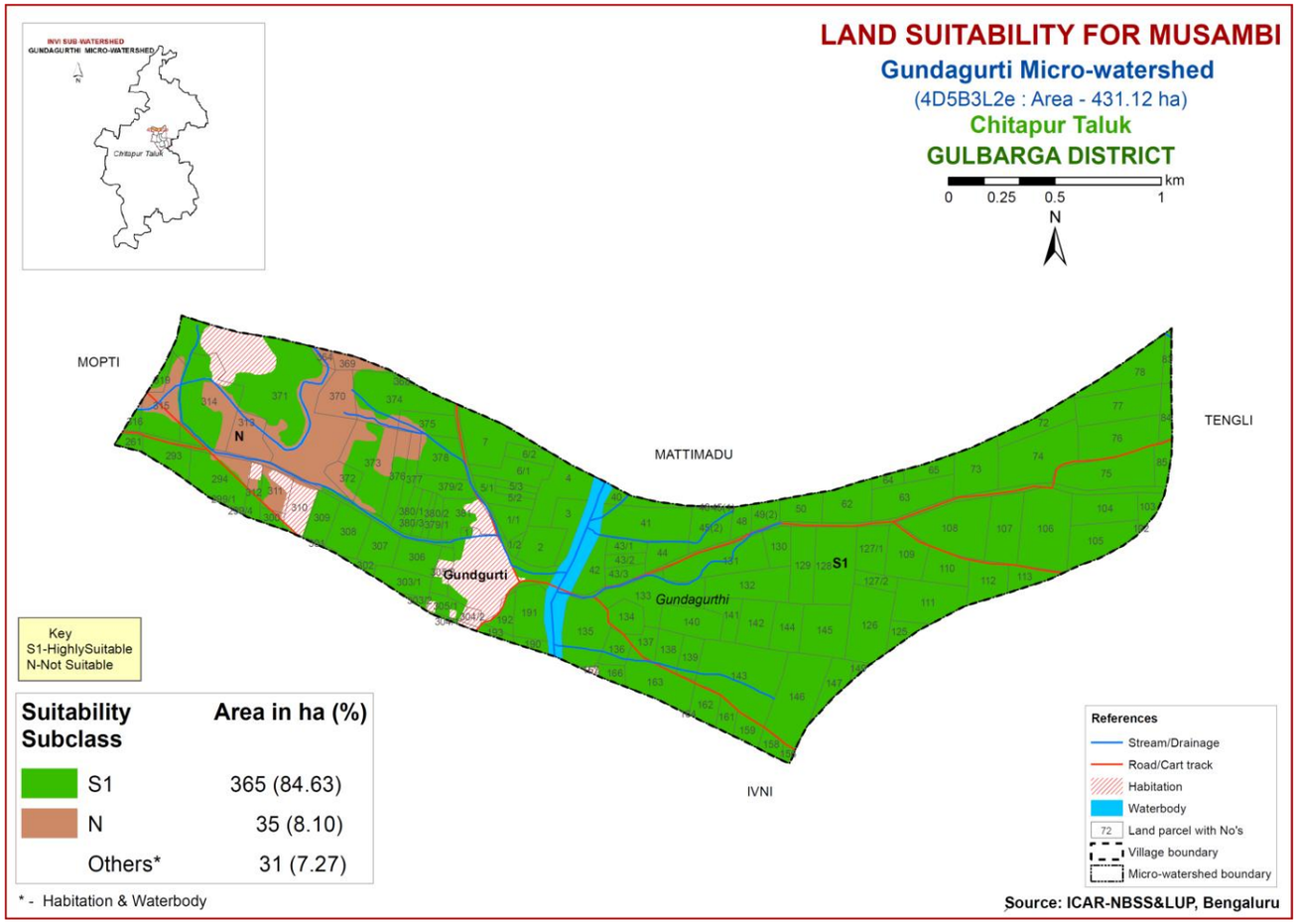

LAND SUITABILITY FOR JAMUN
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
0 0.25 0.5 1 km
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
Gundagurthi
Dhandothi
Ivani
Tengali
S2t
S2rt
S3rl
S2te
Key
S2-Moderately Suitable
S3-Marginally Suitable
Limitations
l – topography
e-erosion
r- rooting condition
t-texture
References
Stream/Drainage
Road/Cart track
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability Subclass
Area in ha.(%)
S2te 428 (91.70)
S2t 6 (1.31)
S2rt 12 (2.60)
S3rl 20 (4.38)
Source: ICAR-NBSS&LUP, Bengaluru

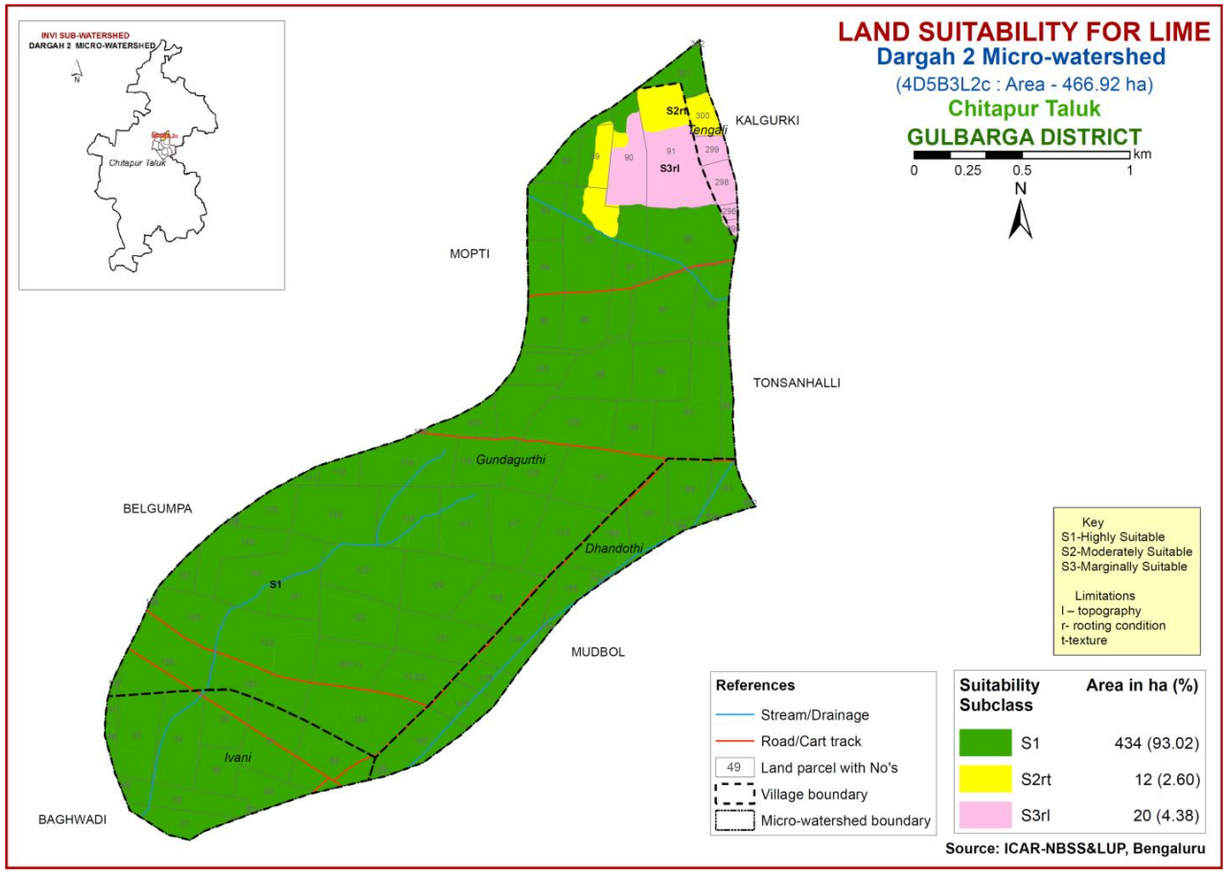

LAND SUITABILITY FOR JAMUN
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
Dhandothi
Ivani
S2t
S2rt
Key
S2-Moderately Suitable
Limitations
r- rooting condition
t-texture
References
Stream/Drainage
Road/Cart track
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability subclass
Area in ha (%)
S2t 410 (88.12)
S2rt 54 (11.69)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

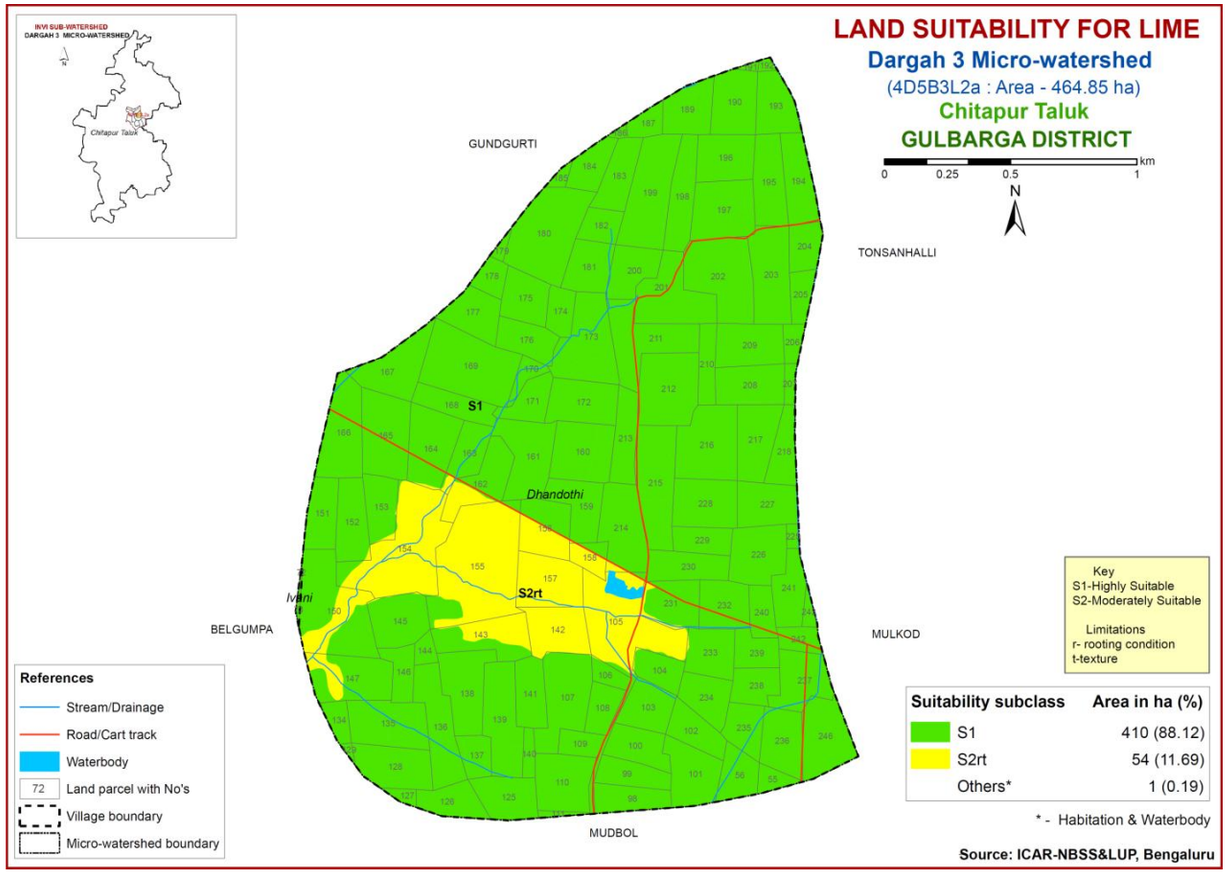

LAND SUITABILITY FOR JAMUN
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
IVNI
Gundgurthi
Gundagurthi
S2te
S2t
N
Key
S2-Moderately Suitable
N-Not Suitable
Limitations
e-erosion
t-texture
Suitability Subclass
Area in ha (%)
S2t 185 (42.97)
S2te 180 (41.66)
N 35 (8.10)
Others* 31 (7.27)
* - Habitation & Waterbody
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru

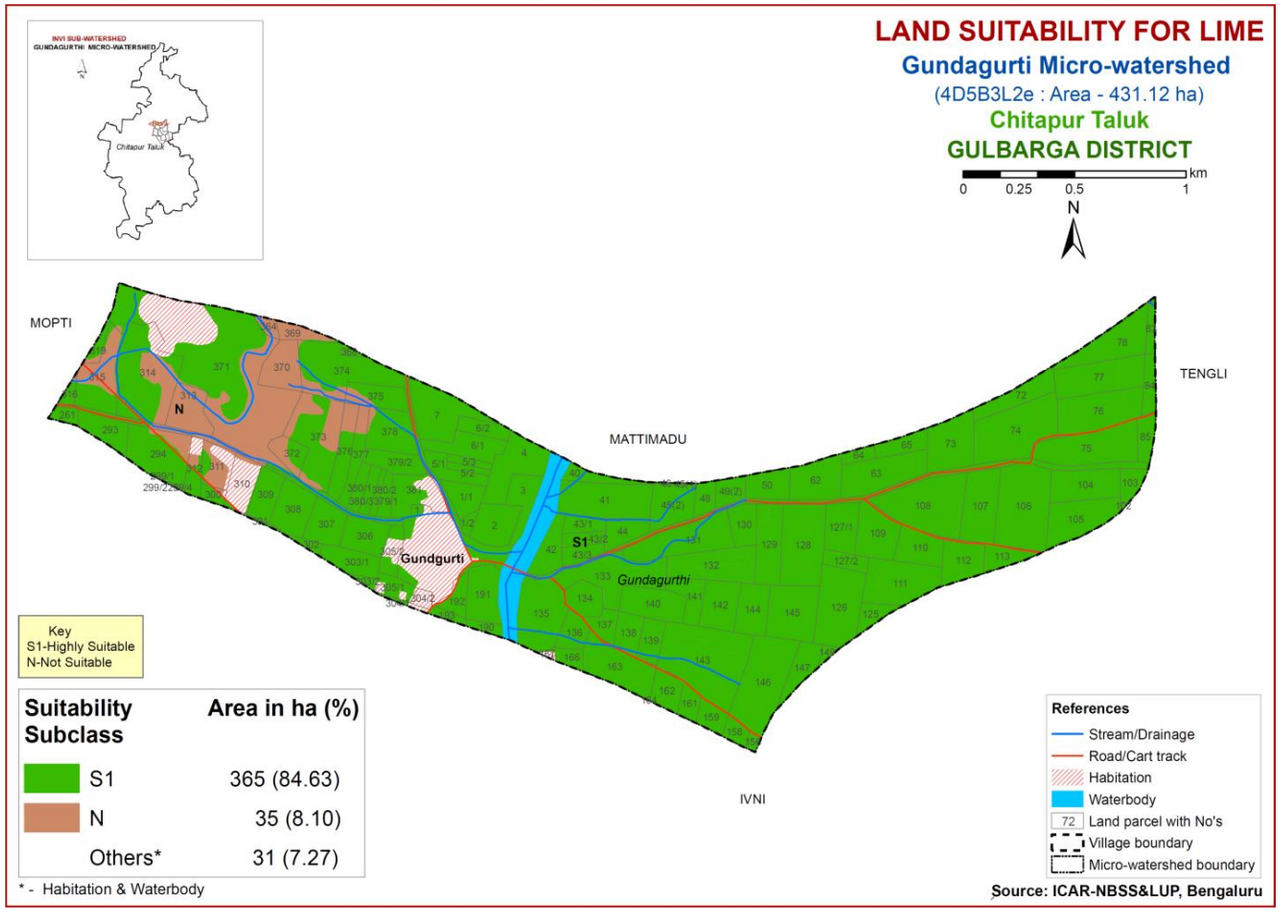

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR MUSAMBI
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
S2rt
S3rl
S1
Tengali
Gundagurthi
Dhandothi
Ivani
Key
S1-Highly Suitable
S2-Moderately Suitable
S3-Marginally Suitable
Limitations
l – topography
r- rooting condition
t-texture
References
Stream/Drainage
Road/Cart track
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability Subclass
Area in ha (%)
S1 434 (93.02)
S2rt 12 (2.60)
S3rl 20 (4.38)
Source: ICAR-NBSS&LUP, Bengaluru

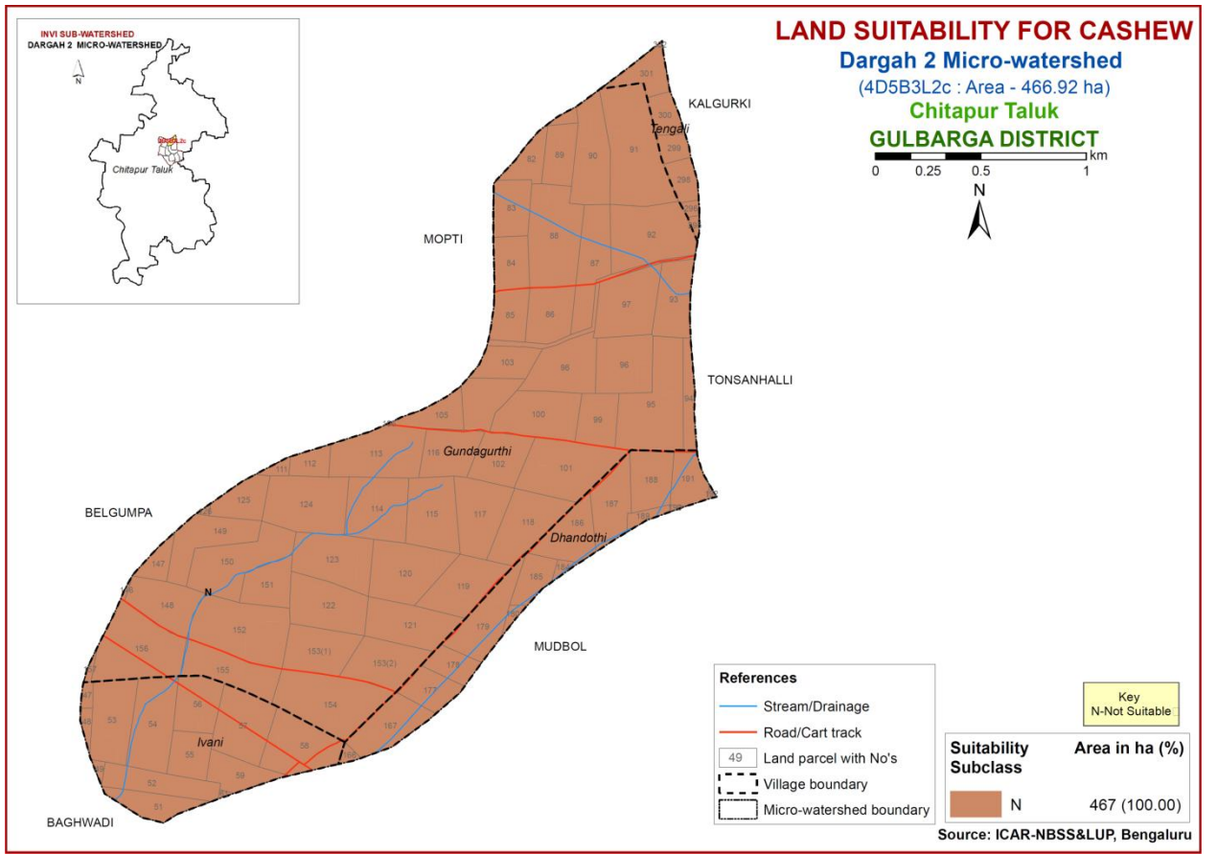

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR MUSAMBI
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
S1
S2rt
Dhandothi
Ivani
Key
S1-Highly Suitable
S2-Moderately Suitable
Limitations
r- rooting condition
t-texture
References
Stream/Drainage
Road/Cart track
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability subclass
Area in ha (%)
S1 410 (88.12)
S2rt 54 (11.69)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

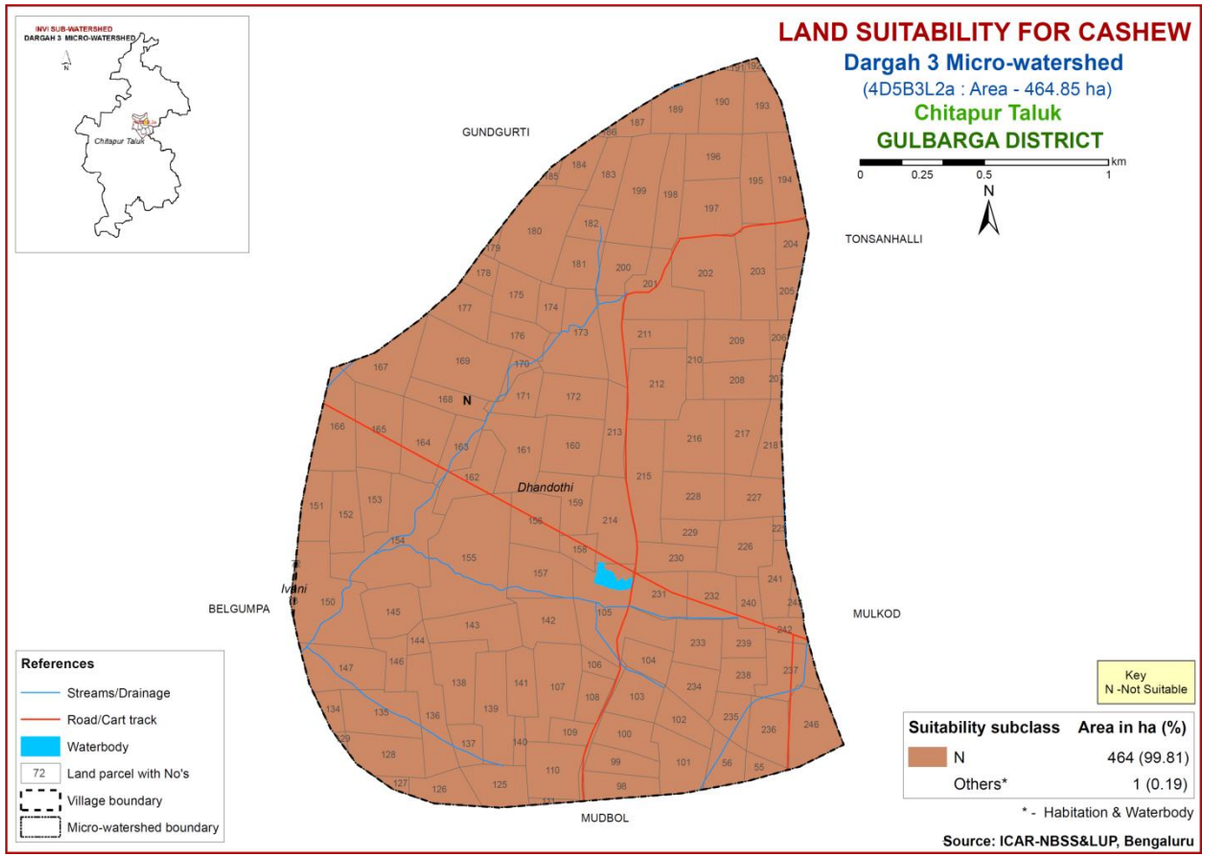

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR MUSAMBI
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
IVNI
N
S1
Gundgurti
Gundagurthi
Key
S1-HighlySuitable
N-Not Suitable
Suitability Subclass
Area in ha (%)
S1 365 (84.63)
N 35 (8.10)
Others* 31 (7.27)
* - Habitation & Waterbody
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru

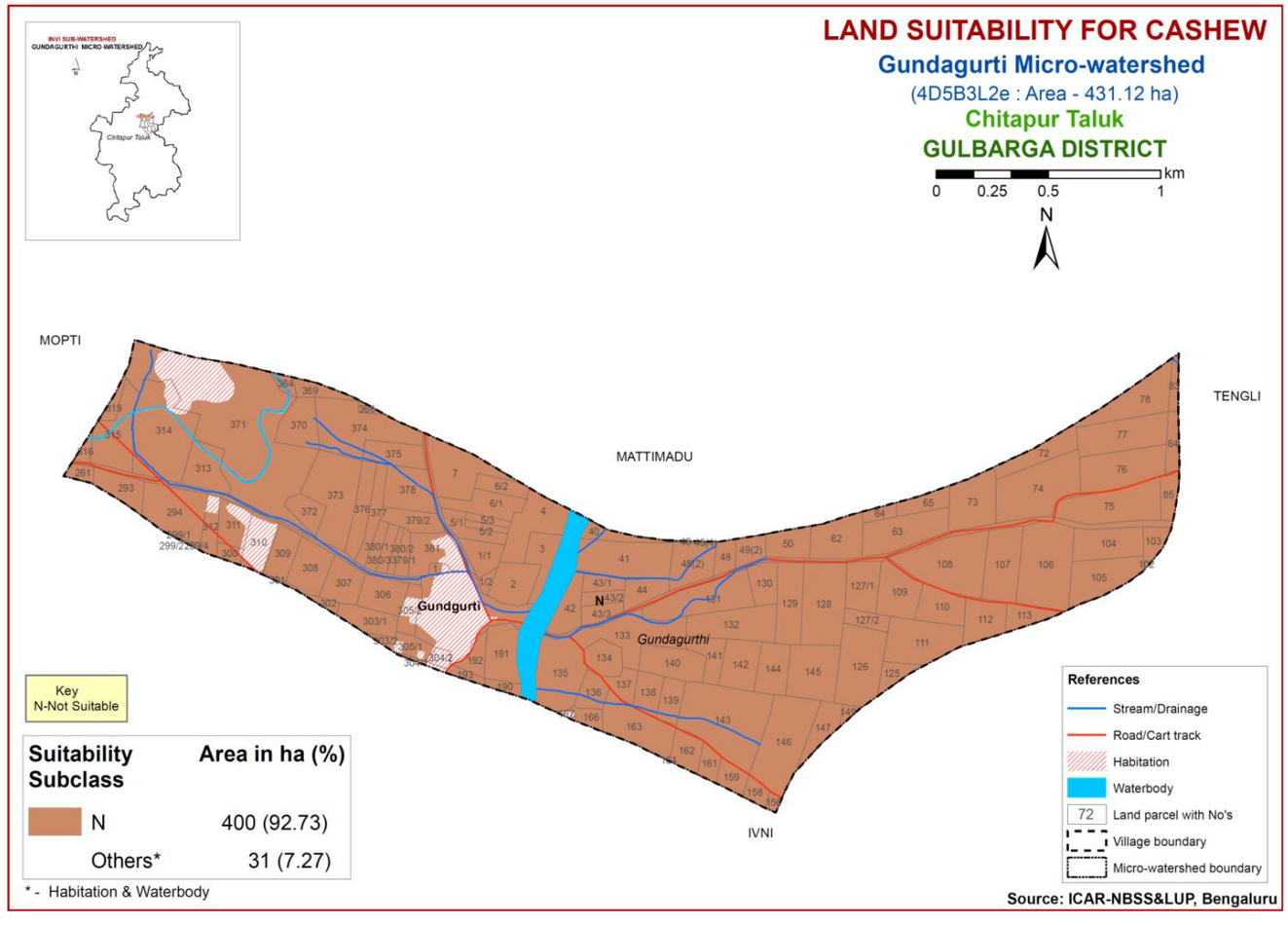

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR LIME
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
S2rt
S3rl
Tengali
KALGURKI
MOPTI
TONSANHALLI
Gundagurthi
BELGUMPA
Dhandothi
S1
MUDBOL
Ivani
BAGHWADI
Key
S1-Highly Suitable
S2-Moderately Suitable
S3-Marginally Suitable
Limitations
l – topography
r- rooting condition
t-texture
References
Stream/Drainage
Road/Cart track
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability Subclass
Area in ha (%)
S1 434 (93.02)
S2rt 12 (2.60)
S3rl 20 (4.38)
Source: ICAR-NBSS&LUP, Bengaluru

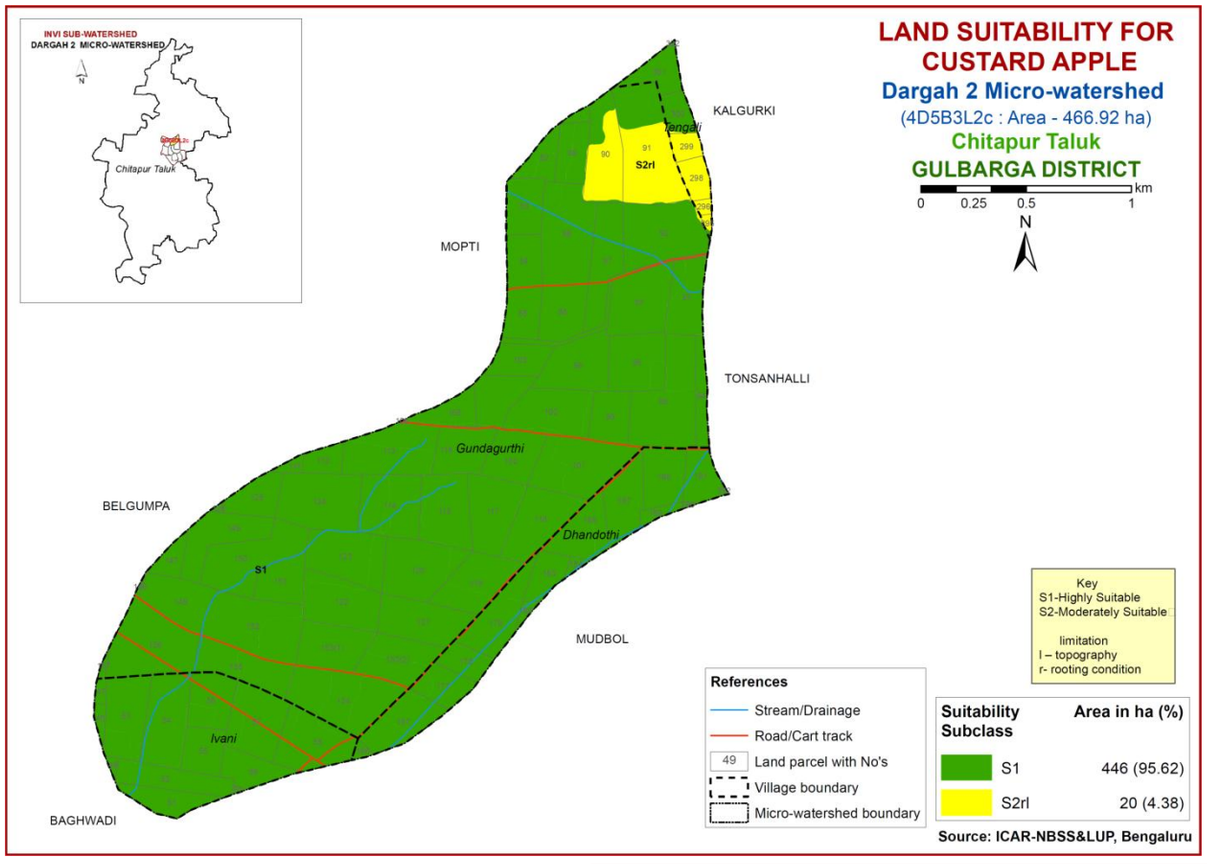

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR LIME
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
S1
Dhandothi
S2rt
Ivani
BELGUMPA
MULKOD
MUDBOL
Key
S1-Highly Suitable
S2-Moderately Suitable
Limitations
r- rooting condition
t-texture
References
Stream/Drainage
Road/Cart track
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability subclass
Area in ha (%)
S1 410 (88.12)
S2rt 54 (11.69)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

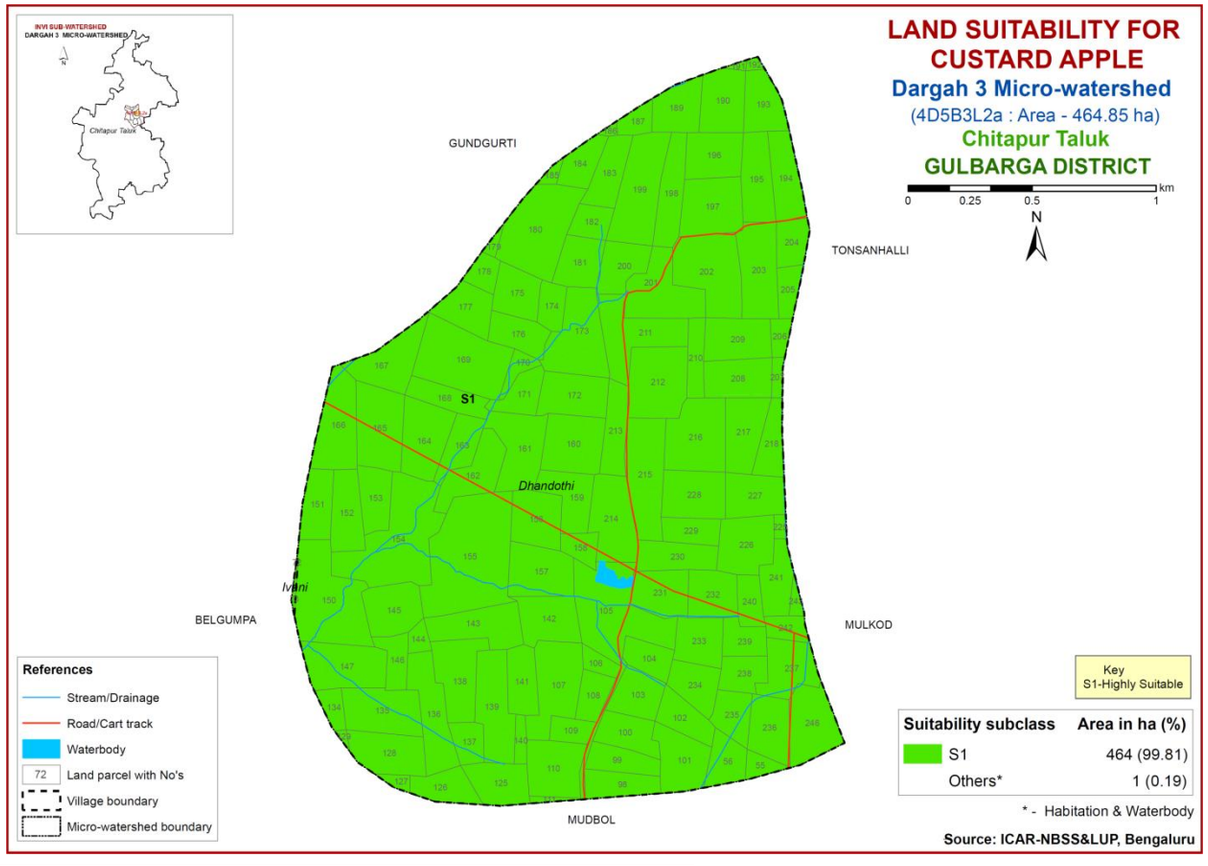

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR LIME
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
TENGLI
MATTIMADU
N
S1
Gundgurti
Gundagurthi
IVNI
Key
S1-Highly Suitable
N-Not Suitable
Suitability Subclass
Area in ha (%)
S1 365 (84.63)
N 35 (8.10)
Others* 31 (7.27)
* - Habitation & Waterbody
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru

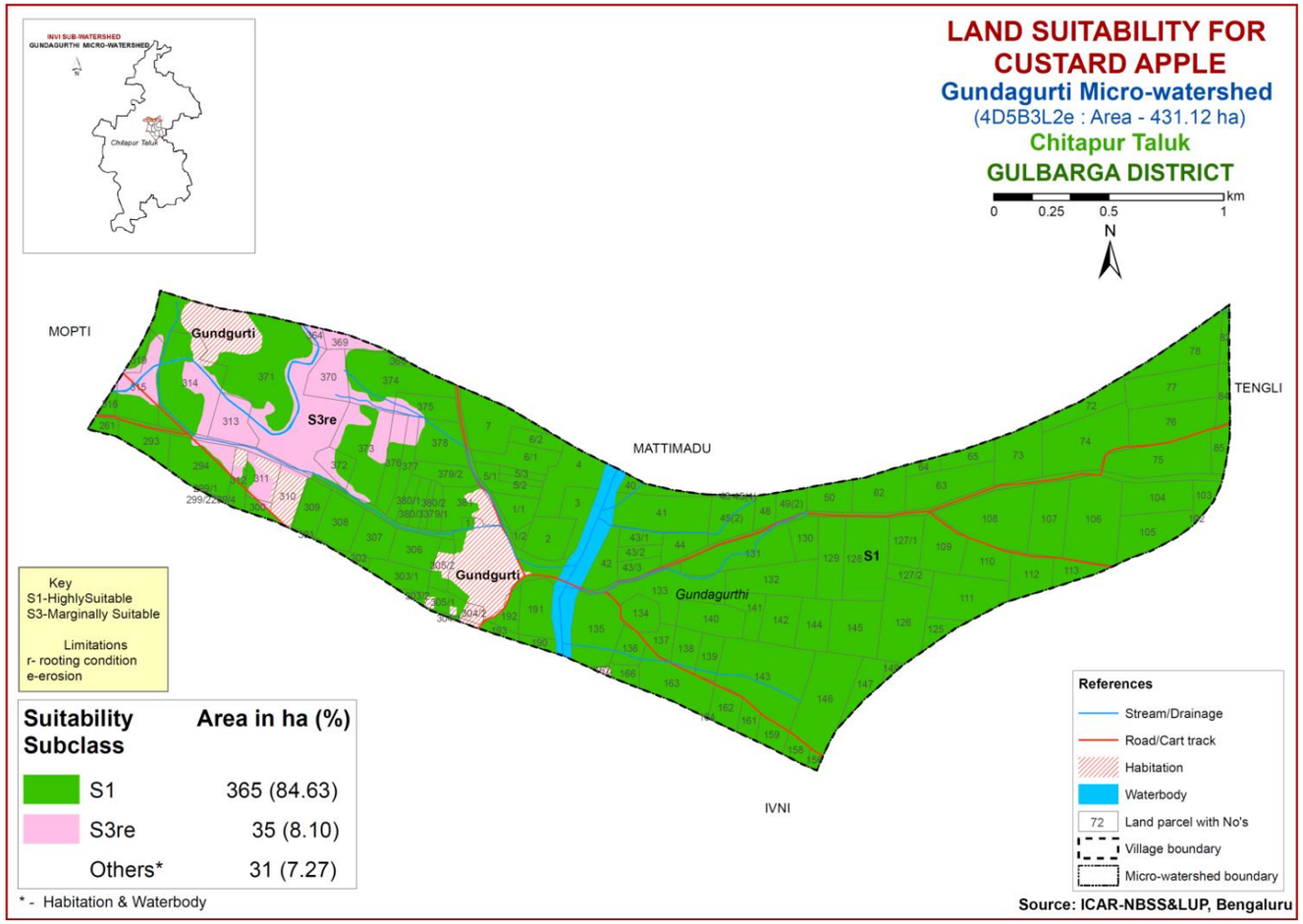

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR CASHEW
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
KALGURKI
Tengali
MOPTI
TONSANHALLI
Gundagurthi
BELGUMPA
Dhandothi
MUDBOL
Ivani
BAGHWADI
References
Stream/Drainage
Road/Cart track
49 Land parcel with No's
Village boundary
Micro-watershed boundary
Key
N-Not Suitable
Suitability Subclass
Area in ha (%)
N
467 (100.00)
Source: ICAR-NBSS&LUP, Bengaluru

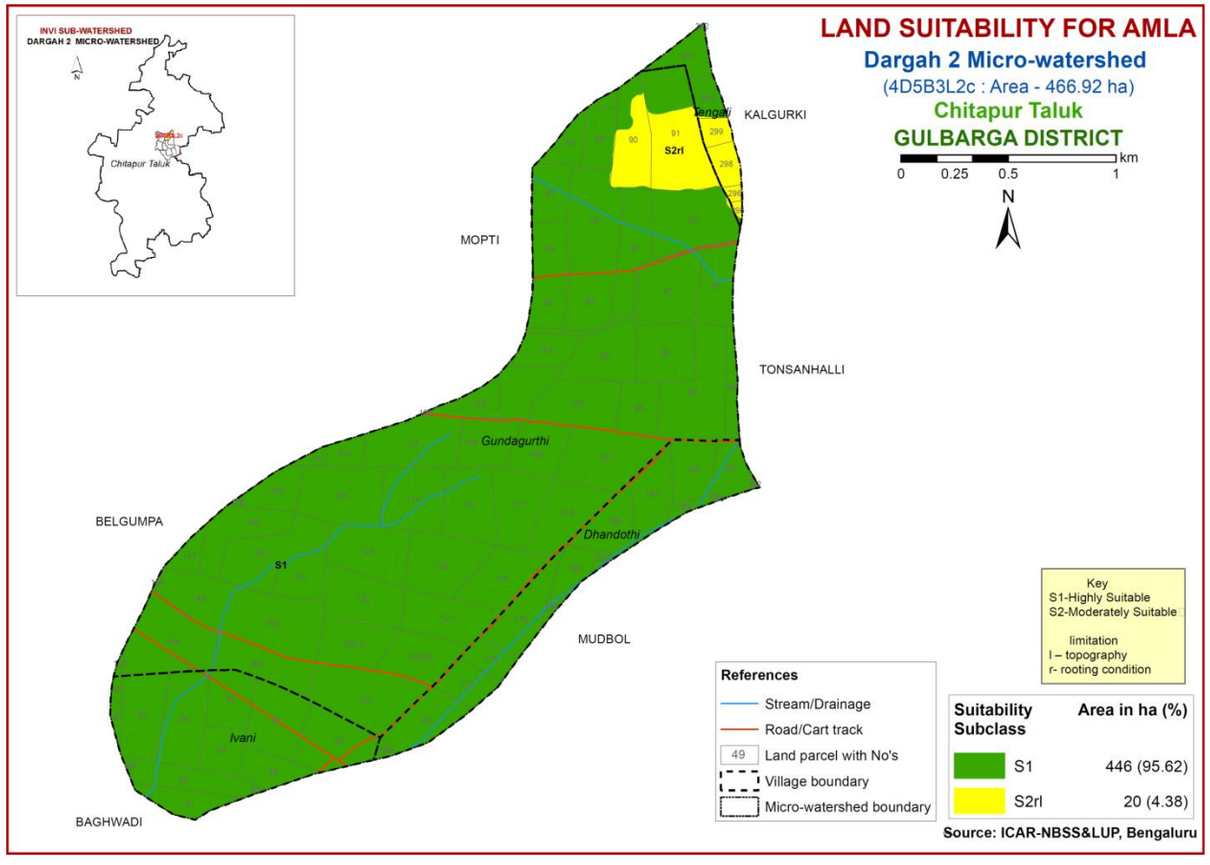

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR CASHEW
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
Dhandothi
Ivani
BELGUMPA
MULKOD
MUDBOL
References
Streams/Drainage
Road/Cart track
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Key
N -Not Suitable
Suitability subclass
Area in ha (%)
N
464 (99.81)
Others*
1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

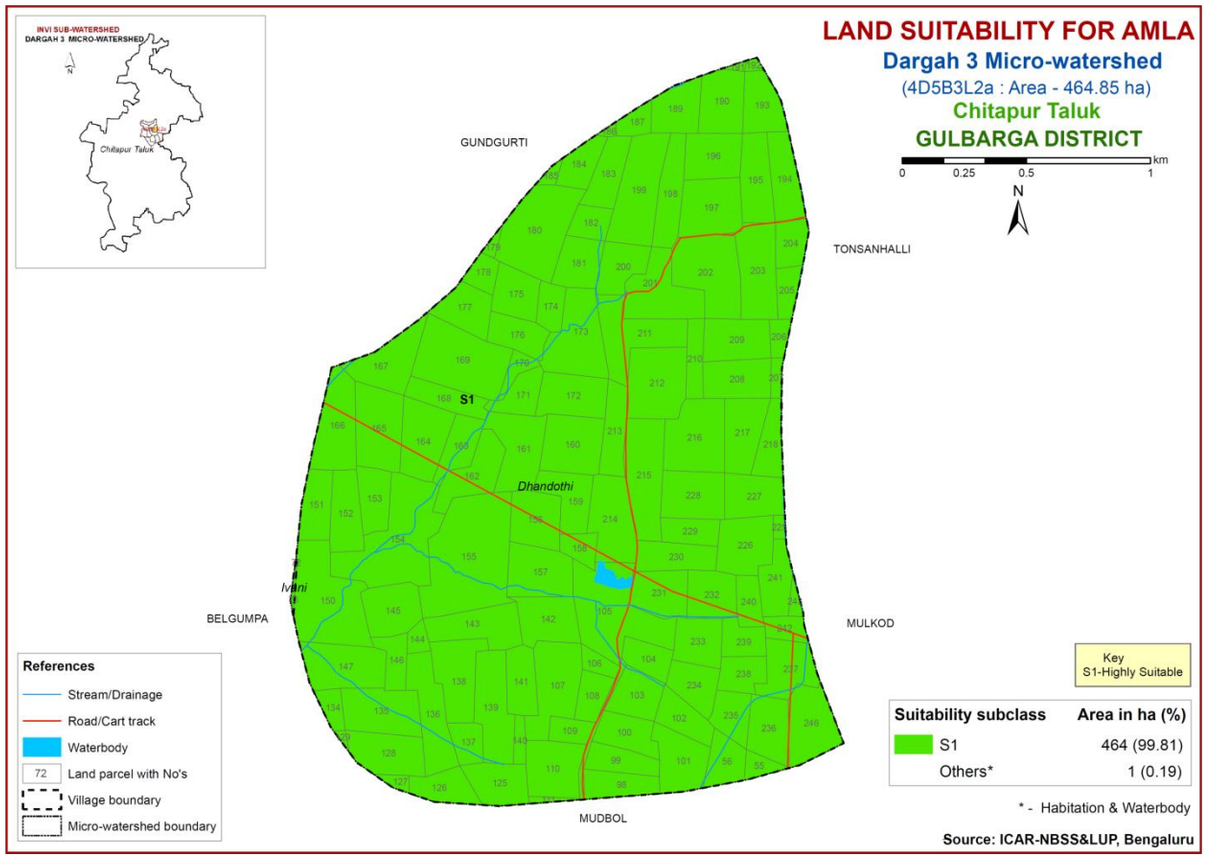

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR CASHEW
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
Gundgurti
Gundagurthi
IVNI
Key
N-Not Suitable
Suitability Subclass
Area in ha (%)
N
400 (92.73)
Others*
31 (7.27)
* - Habitation & Waterbody
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru

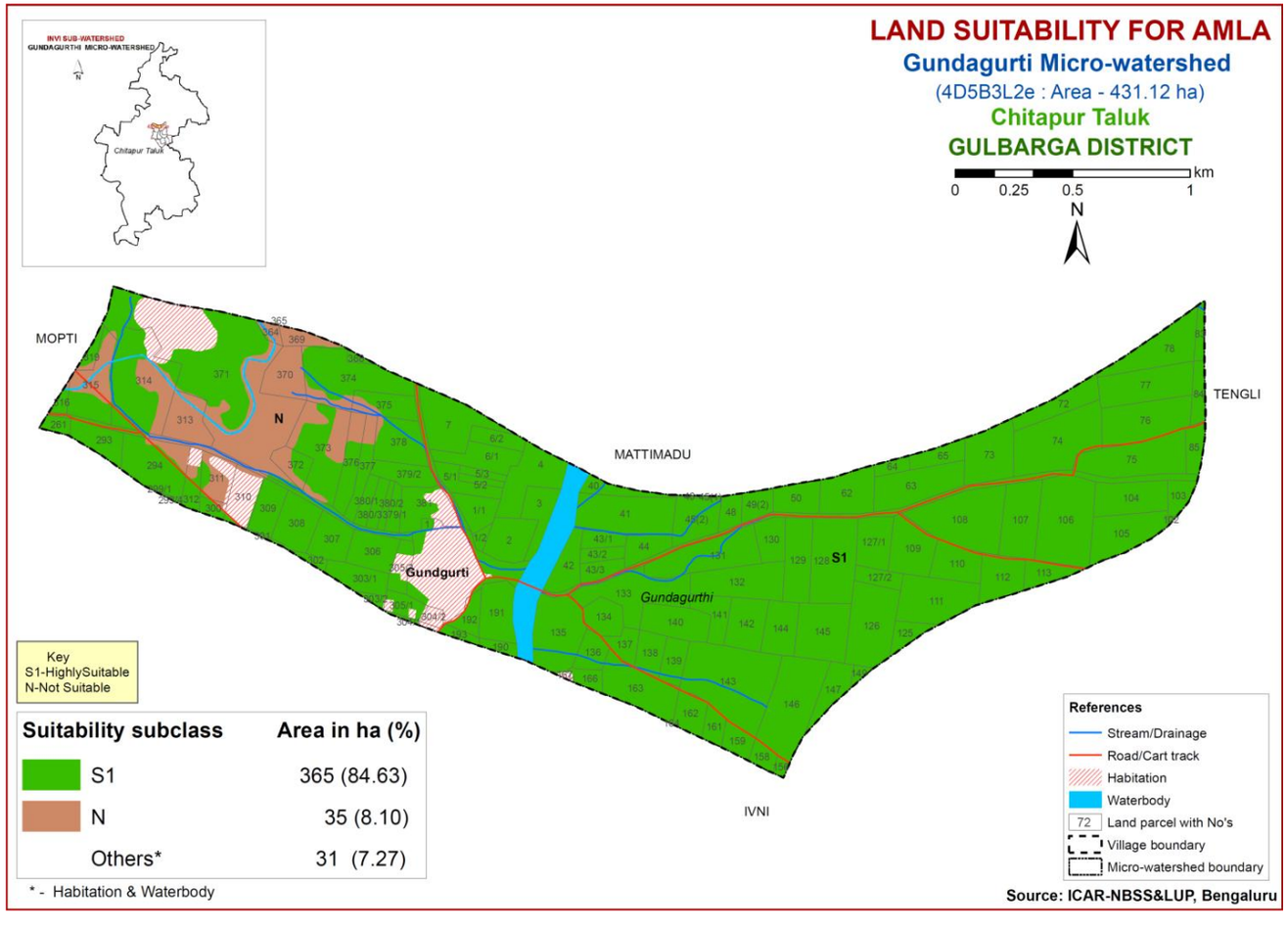

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR CUSTARD APPLE
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
S2rl
S1
Gundagurthi
Dhandothi
Ivani
Key
S1-Highly Suitable
S2-Moderately Suitable
limitation
l – topography
r- rooting condition
References
Stream/Drainage
Road/Cart track
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability Subclass
Area in ha (%)
S1 446 (95.62)
S2rl 20 (4.38)
Source: ICAR-NBSS&LUP, Bengaluru

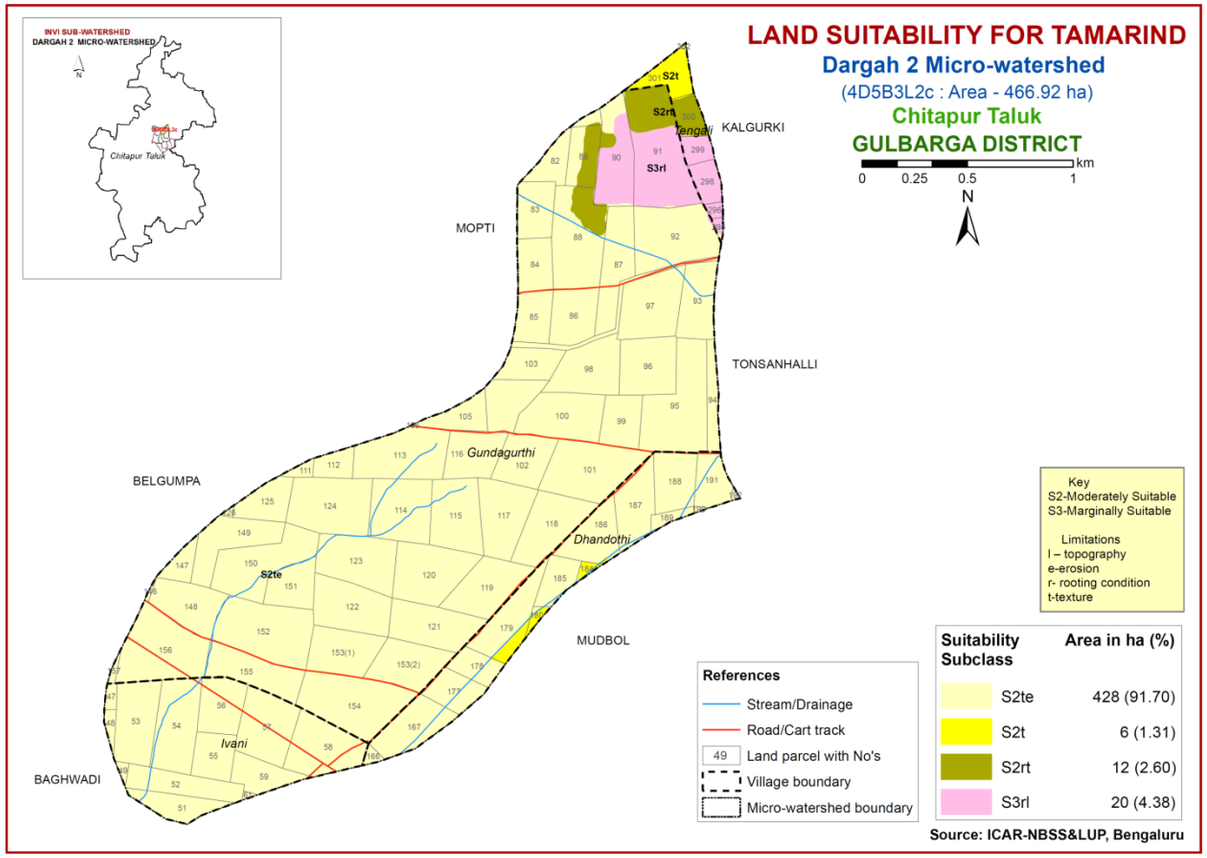

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR CUSTARD APPLE
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
S1
Dhandothi
Ivani
References
Stream/Drainage
Road/Cart track
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Key
S1-Highly Suitable
Suitability subclass
Area in ha (%)
S1 464 (99.81)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

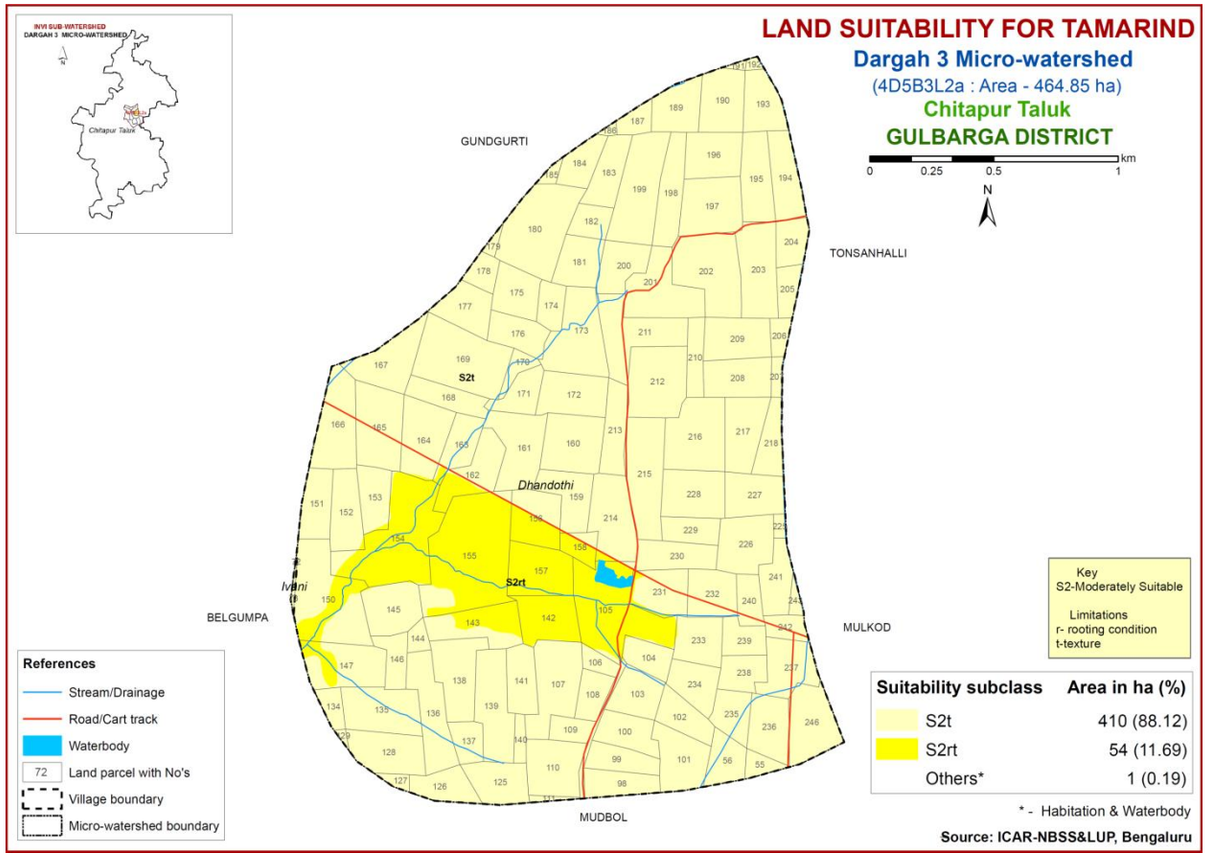

INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR CUSTARD APPLE
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
IVNI
Gundgurti
Gundagurthi
S3re
S1
Key
S1-HighlySuitable
S3-Marginally Suitable
Limitations
r- rooting condition
e-erosion
Suitability Subclass
Area in ha (%)
S1 365 (84.63)
S3re 35 (8.10)
Others* 31 (7.27)
* - Habitation & Waterbody
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru

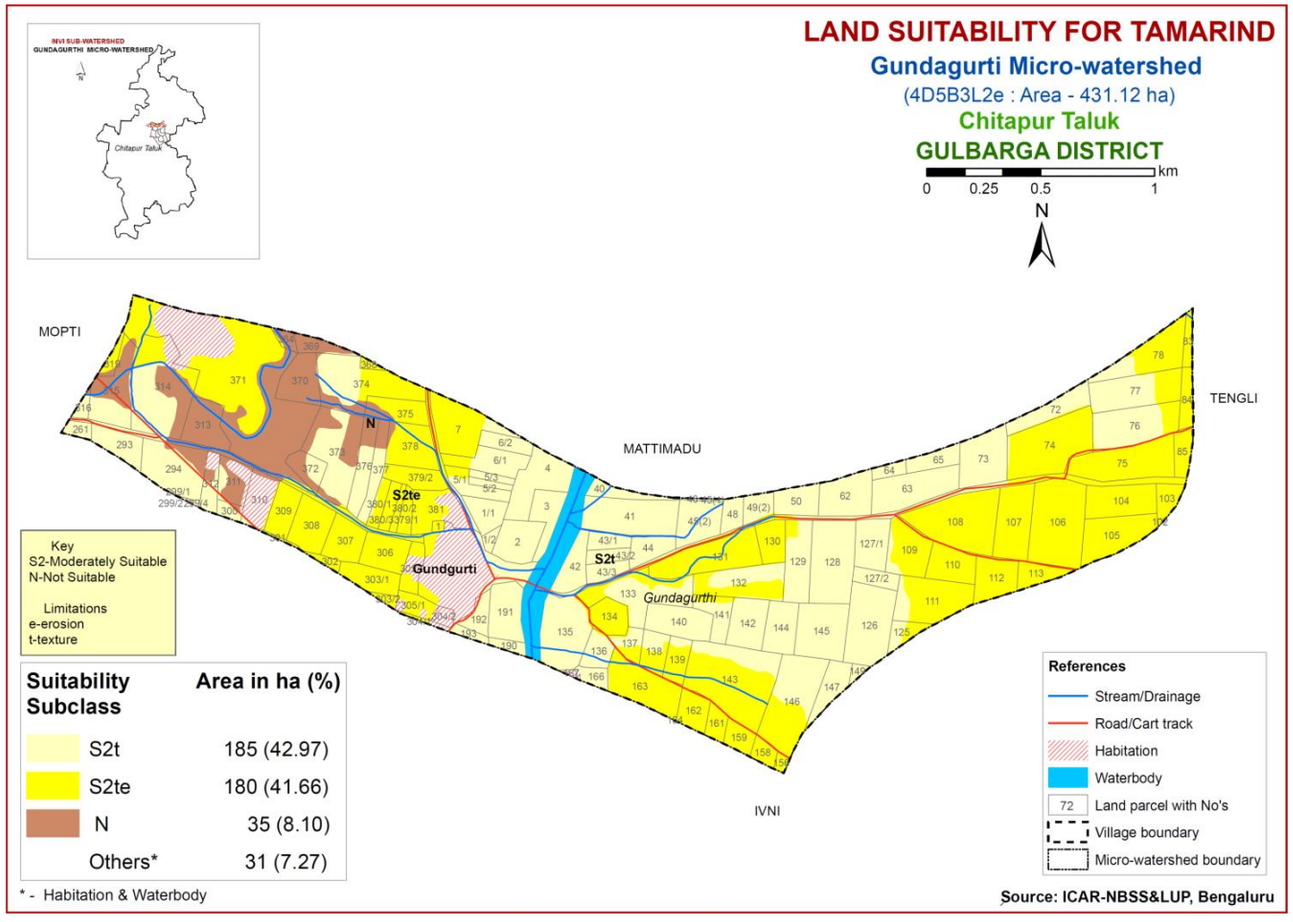

INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR AMLA
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
km
0 0.25 0.5 1
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
S2rl
S1
Gundagurthi
Dhandothi
Ivani
Key
S1-Highly Suitable
S2-Moderately Suitable
limitation
I – topography
r- rooting condition
References
Stream/Drainage
Road/Cart track
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability Subclass
Area in ha (%)
S1 446 (95.62)
S2rl 20 (4.38)
Source: ICAR-NBSS&LUP, Bengaluru

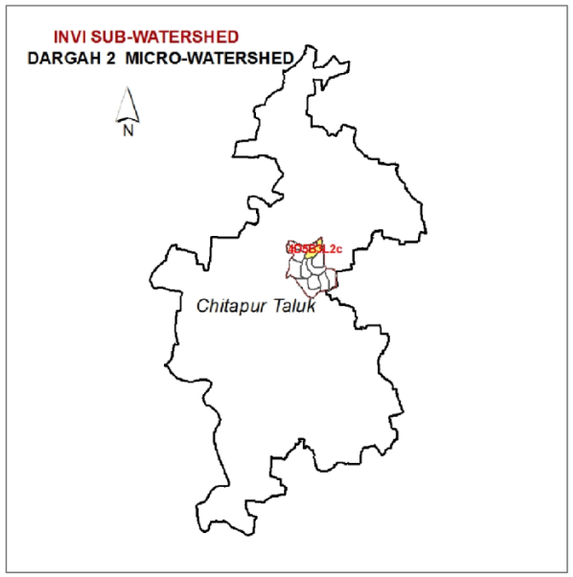

INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR AMLA
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
km
0 0.25 0.5 1
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
S1
Dhandothi
Ivani
References
Stream/Drainage
Road/Cart track
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Key
S1-Highly Suitable
Suitability subclass
Area in ha (%)
S1 464 (99.81)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru


INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR AMLA
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
km
0 0.25 0.5 1
N
MOPTI
MATTIMADU
TENGLI
IVNI
N
S1
Gundgurti
Gundagurthi
Key
S1-HighlySuitable
N-Not Suitable
Suitability subclass
Area in ha (%)
S1 365 (84.63)
N 35 (8.10)
Others* 31 (7.27)
* - Habitation & Waterbody
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Source: ICAR-NBSS&LUP, Bengaluru


INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR TAMARIND
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
KALGURKI
MOPTI
TONSANHALLI
BELGUMPA
MUDBOL
BAGHWADI
Gundagurthi
Dhandothi
Ivani
S2t
S2rt
S3rl
S2te
Key
S2-Moderately Suitable
S3-Marginally Suitable
Limitations
l – topography
e-erosion
r- rooting condition
t-texture
References
Stream/Drainage
Road/Cart track
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability Subclass
Area in ha (%)
S2te 428 (91.70)
S2t 6 (1.31)
S2rt 12 (2.60)
S3rl 20 (4.38)
Source: ICAR-NBSS&LUP, Bengaluru


INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR TAMARIND
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
BELGUMPA
MULKOD
MUDBOL
Dhandothi
Ivani
S2t
S2rt
Key
S2-Moderately Suitable
Limitations
r- rooting condition
t-texture
References
Stream/Drainage
Road/Cart track
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability subclass
Area in ha (%)
S2t 410 (88.12)
S2rt 54 (11.69)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru


INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
LAND SUITABILITY FOR TAMARIND
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
IVNI
Gundgurti
Gundagurthi
S2te
S2t
N
Key
S2-Moderately Suitable
N-Not Suitable
Limitations
e-erosion
t-texture
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
Land parcel with No's
Village boundary
Micro-watershed boundary
Suitability Subclass
Area in ha (%)
S2t 185 (42.97)
S2te 180 (41.66)
N 35 (8.10)
Others* 31 (7.27)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru



LAND MANAGEMENT UNITS

Dargah 2 Micro-watershed

(4D5B3L2c : Area - 466.92 ha)

Chitapur Taluk

GULBARGA DISTRICT

0 0.25 0.5 1 km

N

References

- Stream/Drainage
- Road/Cart track
- 49 Land parcel with No's
- Village boundary
- Micro-watershed boundary

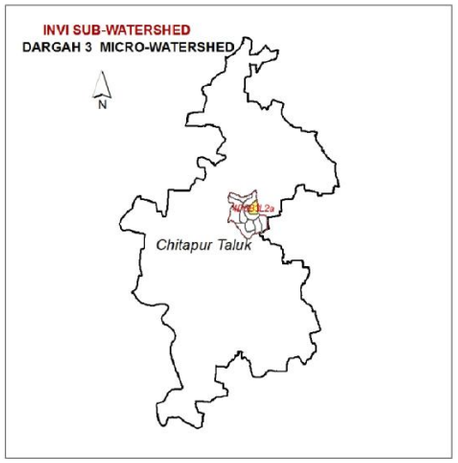
Legend	Area in ha (%)
LMU-1	33 (6.98)
LMU-2	434 (93.02)

Source: ICAR-NBSS&LUP, Bengaluru

NOTE: *Proposed Crop Plan for LMU's are given in Table*

Table 4. Proposed Crop Plan for Dargah 2 Micro-watershed
Chitapur Taluk, Kalaburagi District based on soil-site–crop suitability Assessment

LMU	Mapping unit	Survey No	Characters	Crops proposed				Suitable Intervention
				Field crops	Forestry Crop/Grasses	Horticulture crops (Rainfed Condition)	Horticulture crops with suitable intervention	
LMU-1	5 MTMmB2 6 MTMmC2	**Gundagurthi**: 89,90,91 **Tengali** : 295,296,298,299, 300	Moderately deep black soil (75-100 cm),1-3 % slope, moderately eroded.	Sorghum, Cotton, Red Gram, Black gram, Green gram, Soybean, Sesame, Sunflower, Safflower Rabi: Sorghum, Chickpea Mixed cropping: Red gram-cotton	Subabhul, Neem, Teak	Custard apple, Charoli, Ber, Amla Vegetable: Ladies finger, Brinjal, Cowpea, Flower: Marigold, Chrysanthemum	Custard apple, Charoli, Ber, Amla, Papaya, Banana, Lime, Citrus,sugarcane Vegetable: Onion, Tomato, Brinjal, Chillies, Bhendi Flower: Marigold, Chrysanthemum	Graded bunds, Strengthening of field bunds
LMU-2	1 DDTmB2 2 DDTmC2 3 DRGmB1 4 DRGmB2	**Dhandothi**: 166,167,177,178,179, 180,184,185,186,187, 188,189, 190,191,192 **Gundagurthi**: 82,83,84,85,86,87,88, 92,93,94,95,96,97,98, 99,100,101,102,103, 105,106,111,112,113, 114, 115,116,117,118, 119,120,121,122,123, 124,125,126,146,147, 148,149,150,151,152, 153(1),153(2),154,155, 156,157 **Ivani**: 47,48,49,51,52,53,54, 55,56,57,58,59, 61 **Tengali**: 301,302	Deep to very deep Black soil (100-150 & >150 cm), 1-5 % slope, slight to moderate erosion	Sorghum, Cotton, Red Gram,Black gram, Green gram, Soybean,Sunflower, Safflower, Sesame, Rabi: Sorghum, wheat, Chickpea Mixed cropping: Red gram-cotton Pulses+sorghum	-	Vegetable: Ladies finger, Brinjal, Cowpea, coriander Field crops: Sorghum, Cotton, Red Gram, Sunflower,Safflower, Perennial component: Guava, Tamarind, Sapota, Lime, Mosambi Flower: Marigold, Chrysanthemum	Banana, Papaya, Lime. Mosambi, Guava, Tamrind sugarcane Vegetable: Onion, Tomato, Brinjal, Chillies, Bhendi Flower: Marigold, Chrysanthemum	Graded bunds, Strengthening of field bunds



LAND MANAGEMENT UNITS

Dargah 3 Micro-watershed

(4D5B3L2a : Area - 464.85 ha)

Chitapur Taluk

GULBARGA DISTRICT

km
0 0.25 0.5 1

N

GUNDGURTI

TONSANHALLI

BELGUMPA

MULKOD

MUDBOL

LMU-1

LMU-2

Dhandothi

Ivani

References

- Stream/Drainage
- Road/Cart track
- Waterbody
- 72 Land parcel with No's
- Village boundary
- Micro-watershed boundary

Legend	Area in ha (%)
LMU-1	54 (11.69)
LMU-2	410 (88.12)
Others*	1 (0.19)

* - Habitation & Waterbody

Source: ICAR-NBSS&LUP, Bengaluru

NOTE: *Proposed Crop Plan for LMU's are given in Table*

Table 5. Proposed Crop Plan for Dargah-3 Micro-watershed
Chitapur Taluk, Kalaburagi District based on soil-site–crop suitability Assessment

LMU	Mapping unit	Survey No	Characters	Crops proposed				Suitable Intervention
				Field crops	Forestry Crop/Grasses	Horticulture crops (Rainfed Condition)	Horticulture crops with suitable intervention	
LMU-1	5 MTMmB2	**Dhandothi**: 105,142,143,154, 155_GRASSFIELD,156,157,158	Moderately deep black soil (75-100 cm), 1-3 % slope, moderately eroded.	Sorghum, Cotton, Red Gram, Black gram, Green gram, Soybean, Sesame, Sunflower,Safflower Rabi: Sorghum, Chickpea Mixed cropping: Red gram-cotton	Subabhul, Neem, Teak	Custard apple, Charoli, Ber, Amla Vegetable: Ladies finger, Brinjal, Cowpea, Flower: Marigold, Chrysanthemum	Custard apple, Charoli, Ber, Amla, Papaya, Banana, Lime, Citrus, sugarcane Vegetable: Onion, Tomato, Brinjal, Chillies, Bhendi Flower: Marigold, Chrysanthemum	Graded bunds, Strengthening of field bunds
LMU-2	1 DDTmB1 2 DDTmB2 3 DRGmB1 4 DRGmB2	**Dhandothi**: 55,56,98,99,100,101,102,103, 104,106,107,108,109,110,111, 125,126,127,128,129,134,135, 136,137,138,139,140,141,144, 145,146,147,150,151,152,153, 159,160,161,162,163,164,165, 166,167,168,169,170,171,172, 173,174,175,176,177,178,179, 180,181,182,183,184,185,186, 187,189,190,191,192,193,194, 195,196,197,198,199,200,201, 202,203,204,205,206,207,208, 209,210,211,212,213,214,215, 216,217,218,225,226,227,228, 229,230,231,232,233,234,235, 236,237,238,239,240,241,242, 243, 246 **Ivani**: 72,73	Deep to very deep Black soil (100-150 & >150 cm), 1-3 % slope, slight to moderate erosion	Sorghum, Cotton, Red Gram, Black gram, Green gram, Soybean, Sunflower, Safflower, Sesame, Rabi: Sorghum, wheat, Chickpea Mixed cropping: Red gram-cotton Pulses+ sorghum	-	Vegetable: Ladies finger, Brinjal, Cowpea, coriander Field crops: Sorghum, Cotton, Red Gram, Sunflower, Safflower, Perennial component: Guava, Tamarind, Sapota, Lime, Mosambi Flower: Marigold, Chrysanthemum	Banana, Papaya, Lime. Mosambi, Guava, Tamrind sugarcane Vegetable: Onion, Tomato, Brinjal, Chillies, Bhendi Flower: Marigold, Chrysanthemum	Graded bunds, Strengthening of field bunds

LAND MANAGEMENT UNITS

Gundagurti Micro-watershed

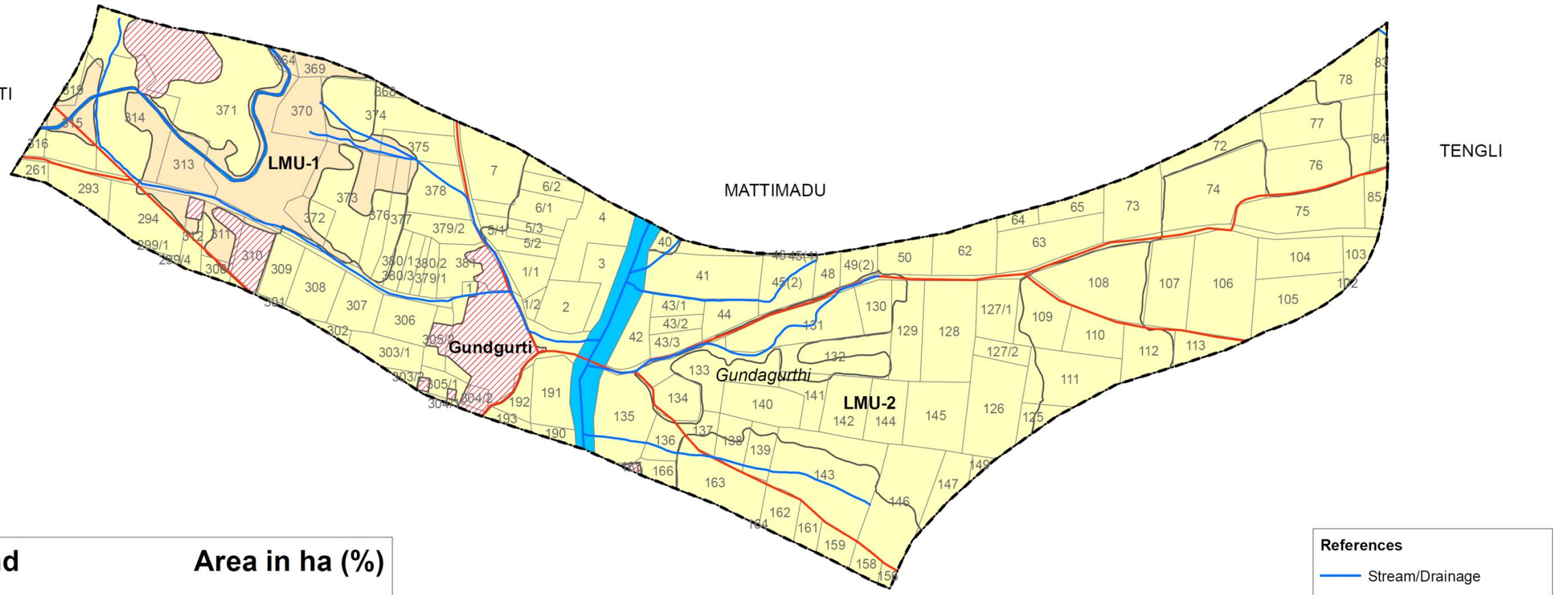
(4D5B3L2e : Area - 431.12 ha)

Chitapur Taluk

GULBARGA DISTRICT

km
0 0.25 0.5 1

N



Legend	Area in ha (%)
LMU-1	35 (8.10)
LMU-2	365 (84.64)
Others*	31 (7.27)

* - Habitation & Waterbody

References

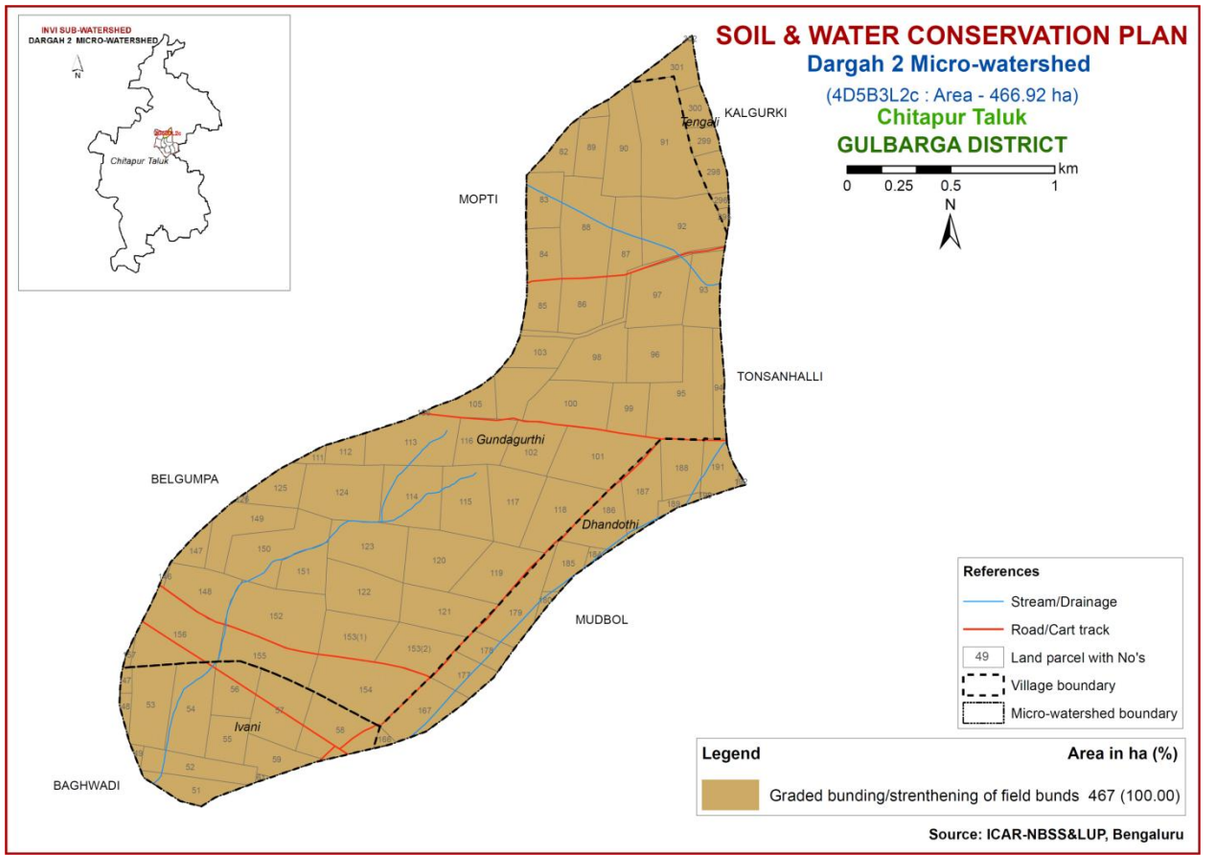
- Stream/Drainage
- Road/Cart track
- Habitation
- Waterbody
- 72 Land parcel with No's
- Village boundary
- Micro-watershed boundary

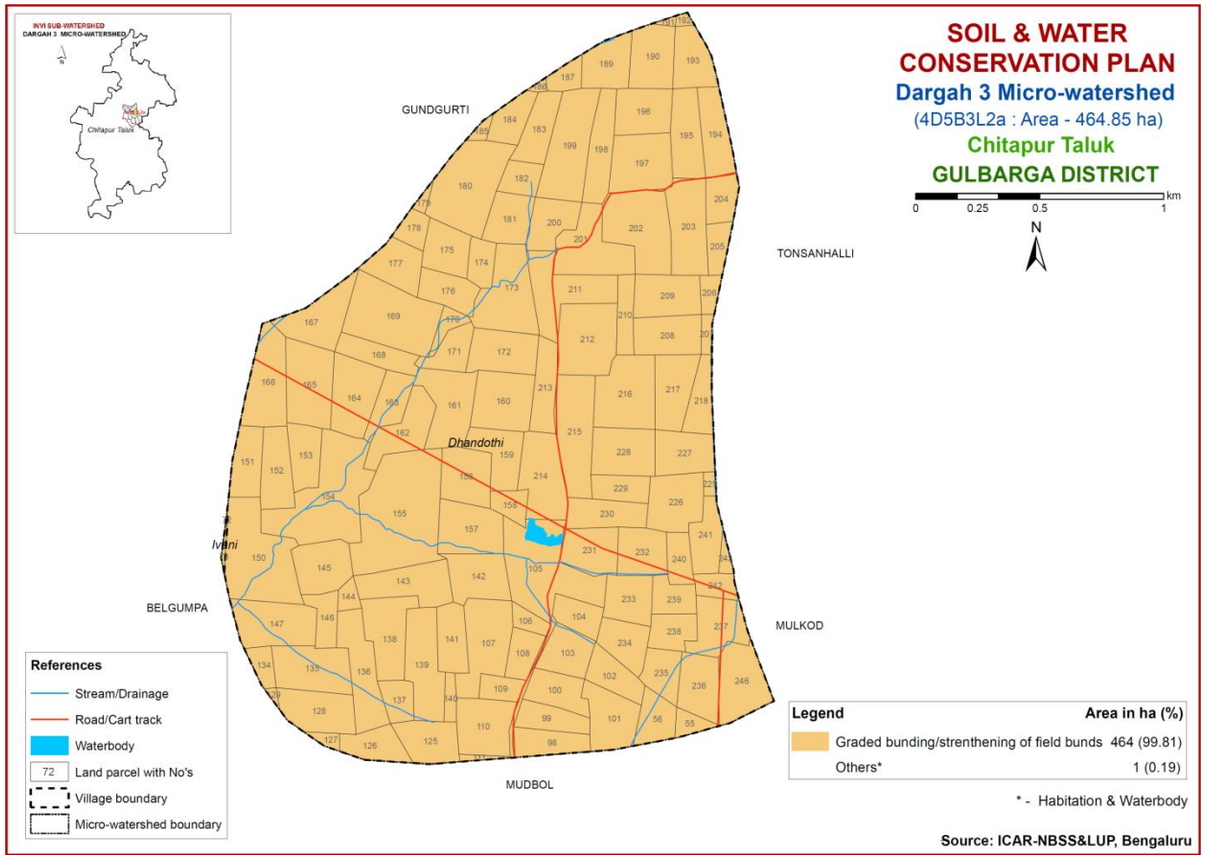
Source: ICAR-NBSS&LUP, Bengaluru

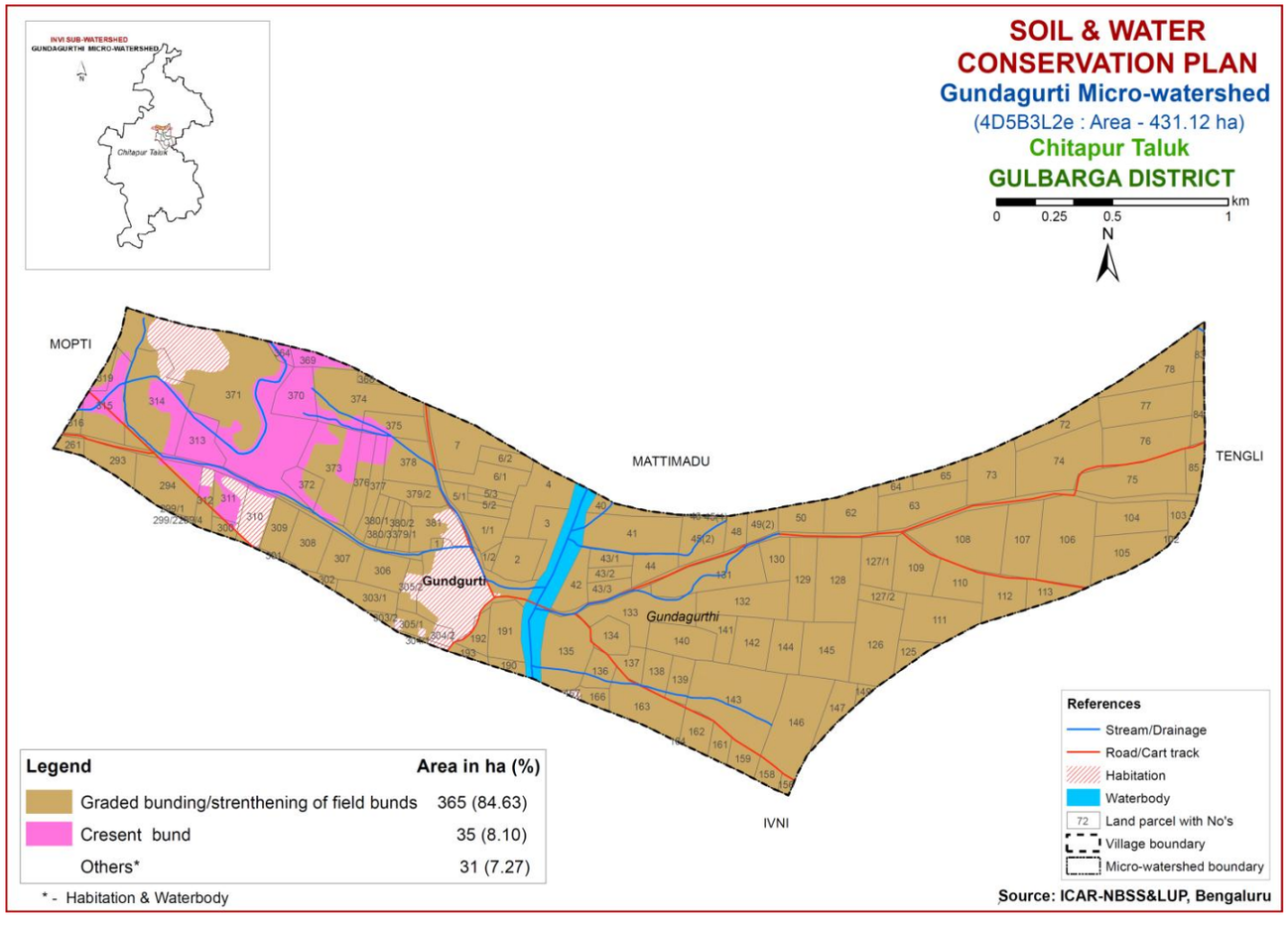
NOTE: *Proposed Crop Plan for LMU's are given in Table*

Table 6. Proposed Crop Plan for Gundagurthi Micro-watershed Chitapur Taluk, Kalaburagi District based on soil-site–crop suitability Assessment

LMU	Mapping unit	Survey No	Characters	Crops proposed				Suitable Intervention
				Field crops	Forestry Crop/Grasses	Horticulture crops (Rainfed Condition)	Horticulture crops with suitable intervention	
LMU-1	5 EVNmB2 6 EVNmB3	**Gundagurthi**: 311,313,315,364, 365,369,370,372	Very shallow soil Depth (<25 cm) Moderately to severely eroded	-	Neem, Glyricydia , Silviculture, Agave, Simaroba	-	Custard apple, Ber	-
LMU-2	1 DDTmB1 2 DDTmB2 3 DRGmB1 4 DRGmB2	**Gundagurthi**: 1,1/1,1/2,2,3,4,5/1,5/2,5/3,6/1, 6/2,7,40,41,42,43/1,43/2,43/3, 44,45(1),45(2),46,48,49(2),50,62 ,63,64,65,72,73,74,75,76,77,78, 83,84,85,102,103,104,105,106, 107,108,109,110,111,112,113, 125,126,127/1,127/2,128,129, 130,131,132,133,134,135,136, 137,138,139,140,141,142,143, 144,145,146,147,149,156,158, 159,161,162,163,164,166,190, 191,192,193,261,293,294,295, 299/1,299/2,299/3,299/4,300, 301,302,303/1,303/2,304/1,305 /1,305/2,306,307,308,309,312, 314,316,319,368,371,373,374, 375,376,377,378,379/1,379/2, 380/1,380/2,380/3,381	Deep to very deep Black soil (100-150 & >150 cm), 1-5 % slope, slight to moderate erosion	Sorghum, Cotton, Red Gram,Black gram, Green gram, Soybean,Sunflower, Safflower, Sesame, Rabi: Sorghum, wheat, Chickpea Mixed cropping: Red gram-cotton Pulses+sorghum	-	Vegetable: Ladies finger, Brinjal, Cowpea, coriander Field crops: Sorghum, Cotton, Red Gram, Sunflower,Safflower, Perennial component: Guava, Tamarind, Sapota, Lime, Mosambi Flower: Marigold, Chrysanthemum	Banana, Papaya, Lime. Mosambi, Guava, Tamrind sugarcane Vegetable: Onion, Tomato, Brinjal, Chillies, Bhendi Flower: Marigold, Chrysanthemum	Graded bunds, Strengthening of field bunds


INVI SUB-WATERSHED
DARGAH 2 MICRO-WATERSHED
Chitapur Taluk
SOIL & WATER CONSERVATION PLAN
Dargah 2 Micro-watershed
(4D5B3L2c : Area - 466.92 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
KALGURKI
Tengeli
MOPTI
TONSANHALLI
Gundagurthi
BELGUMPA
Dhandothi
MUDBOL
Ivani
BAGHWADI
References
Stream/Drainage
Road/Cart track
49 Land parcel with No's
Village boundary
Micro-watershed boundary
Legend
Area in ha (%)
Graded bunding/strenthening of field bunds 467 (100.00)
Source: ICAR-NBSS&LUP, Bengaluru


INVI SUB-WATERSHED
DARGAH 3 MICRO-WATERSHED
Chitapur Taluk
SOIL & WATER CONSERVATION PLAN
Dargah 3 Micro-watershed
(4D5B3L2a : Area - 464.85 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
GUNDGURTI
TONSANHALLI
Dhandothi
Ivani
BELGUMPA
MULKOD
MUDBOL
References
Stream/Drainage
Road/Cart track
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Legend
Area in ha (%)
Graded bunding/strenthening of field bunds 464 (99.81)
Others* 1 (0.19)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru


INVI SUB-WATERSHED
GUNDAGURTHI MICRO-WATERSHED
Chitapur Taluk
SOIL & WATER CONSERVATION PLAN
Gundagurti Micro-watershed
(4D5B3L2e : Area - 431.12 ha)
Chitapur Taluk
GULBARGA DISTRICT
0 0.25 0.5 1 km
N
MOPTI
MATTIMADU
TENGLI
Gundgurti
Gundagurthi
IVNI
References
Stream/Drainage
Road/Cart track
Habitation
Waterbody
72 Land parcel with No's
Village boundary
Micro-watershed boundary
Legend
Area in ha (%)
Graded bunding/strenthening of field bunds 365 (84.63)
Cresent bund 35 (8.10)
Others* 31 (7.27)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

1.WATER BUDGETING DARGAH 2 MICRO-WATERSHED, CHITAPUR TALUK

Dargah 2 Micro-watershed, Chitapur Taluk	(4D5B3L2c : Area - 466.92 ha)

EXAMPLE:

Catchment Details: Area: 466.9 ha.

slope: 1 to 5 %

Average annual Rainfall 723 mm

NO. of Runoff Producing Rains 8

Total Depth of Rain on runoff producing rainy days 99 mm

(Run off producing Rainy day : A day with > 2o mm depth Rain)

A. QUANTITY OF RUNOFF WATER:

= Catchment area (ha.) x Depth of rain water of runoff producing rains(mm) x 10000

3/4 x 1000

= 466.92 x 99 x 10000

= 7 1/4 x 1000

= 250922.81 m^3

B. QUANTITY OF WATER STORED BEHIND GRADED BUNDS (0.3M Crest height in Waste weirs):.

= Bund Length x Cross sectional area of storage (m^2)

= 93384 x 2.24 S / F Where:

= 209180.16 m^3

s = landslope: 2.05 %

F = Fall between bunds 0.6 m

TOTAL QUANTITY OF WATER STORED IN THE PROPOSED STRUCTURES:.

GRADED BUND	TOTAL
209180.16	209180.16

To be continued….

C. BALANCE OF RUNOFF WATER:

= QUANTITY OF RUNOFF WATER - - TOTAL QUANTITY OF WATER STORED IN THE PROPOSED STRUCTURES:.

= 250922.81 - 209180.16

= 41742.65 m^3

NOTE: QUANTITY OF RUNOFF TO BE SET APART FOR THE COMMITMENTS LIKE EXISTING WATER BODIES HAS TO BE TAKEN CARE OF BEFORE FINALISING THE NUMBER AND CAPACITY OF STORAGE/ RECHARGE STRUCTURES

D. ADDITIONAL STORAGE STRUCTURES:

= BALANCE OF RUNOFF WATER/ STORAGE CAPACITY OF PROPOSED STRUCTURE

	STORAGE CAPACITY (m3)				
DIMENSION OF POND(m)	EXCAVATION BY SEGMENTAL METHOD		EXCAVATION BY MECHANICAL MEANS		
L x W x D	QUANTITY (m^3)	NOS.	QUANTITY (m^3)	NOS.	
41742.65 / 319.7	12 X 12 X 3	319.7	131	258	162
	OR				
41742.65 / 530.3	15 X 15 X 3	530.3	79	447	93
	OR				
41742.65 / 794.9	18 X 18 X 3	794.9	53	690	60
	OR				
41742.65 / 1113.5	21 X 21 X3	1113.5	37	987	42

OR CHECK DAMS/NALA BUNDS ON DECIDING THE IDEAL SPOTS FOR RECHARGE

2.WATER BUDGETING DARGAH 3 MICRO-WATERSHED, CHITAPUR TALUK

Dargah 3 Micro-watershed, Chitapur Taluk	(4D5B3L2a : Area - 464.85 ha)

EXAMPLE:

Catchment Details: Area: 464.9 ha.
slope: 1 to 3 %

Average annual Rainfall 723 mm
NO. of Runoff Producing Rains 8
Total Depth of Rain on runoff producing rainy days 99 mm
(Run off producing Rainy day : A day with > 2o mm depth Rain)

A. QUANTITY OF RUNOFF WATER:

= Catchment area (ha.) x Depth of rain water of runoff producing rains(mm) x 10000

3/4 x 1000

= 464.85 x 99 x 10000

= 7 1/4 x 1000

= 252473.56 m^3

B. QUANTITY OF WATER STORED BEHIND GRADED BUNDS (0.3M Crest height in Waste weirs):.

= Bund Length x Cross sectional area of storage (m^2)

= 92770 x 2.3 S / F

= 213371.00 m^3

Where:

s = landslope: 2 %
F = Fall between bunds 0.6 m

TOTAL QUANTITY OF WATER STORED IN THE PROPOSED STRUCTURES:.

GRADED BUND	TOTAL
213371.00	213371.00

To be continued….

C. BALANCE OF RUNOFF WATER:

= QUANTITY OF RUNOFF WATER - - TOTAL QUANTITY OF WATER STORED IN THE PROPOSED STRUCTURES:.

= 252473.56 - 213371.00

= 39102.56 m^3

NOTE: QUANTITY OF RUNOFF TO BE SET APART FOR THE COMMITMENTS LIKE EXISTING WATER BODIES HAS TO BE TAKEN CARE OF BEFORE FINALISING THE NUMBER AND CAPACITY OF STORAGE/ RECHARGE STRUCTURES

D. ADDITIONAL STORAGE STRUCTURES:

= BALANCE OF RUNOFF WATER/ STORAGE CAPACITY OF PROPOSED STRUCTURE

			STORAGE CAPACITY (m3)			
		DIMENSION OF POND(m)	EXCAVATION BY SEGMENTAL METHOD		EXCAVATION BY MECHANICAL MEANS	
		L x W x D	QUANTITY (m^3)	NOS.	QUANTITY (m^3)	NOS.
39102.56	/ 319.7	12 X 12 X 3	319.7	122	258	152
		OR				
39102.56	/ 530.3	15 X 15 X 3	530.3	74	447	87
		OR				
39102.56	/ 794.9	18 X 18 X 3	794.9	49	690	57
		OR				
39102.56	/ 1113.5	21 X 21 X3	1113.5	35	987	40

OR CHECK DAMS/NALA BUNDS ON DECIDING THE IDEAL SPOTS FOR RECHARGE

3.WATER BUDGETING GUNDAGURTI MICRO-WATERSHED, CHITAPUR TALUK

Gundagurti Micro-watershed, Chitapur Taluk				(4D5B3L2e : Area - 431.12 ha)		
EXAMPLE:						
Catchment Details:	Area:	431.1	ha.	Average annual Rainfall	723	mm
	slope:	1 to 3	%	NO. of Runoff Producing Rains	8	
				Total Depth of Rain on runoff producing rainy days	99	mm
				(Run off producing Rainy day : A day with > 2o mm depth Rain)		

A. QUANTITY OF RUNOFF WATER:

	Catchment area (ha.)	x	Depth of rain water of runoff producing rains(mm)	x	10000
			3/4 x	1000	
=	431.12	x	99 x	10000	
=			7 1/4 x	1000	
=	217785.32	m^3			

B. QUANTITY OF WATER STORED BEHIND GRADED BUNDS (0.3M Crest height in Waste weirs):.

	Bund Length	x	Cross sectional area of storage (m^2)		
=	80024	x	2.3	S / F	Where:
=	184055.20	m^3			s = landslope: 2 %
					F = Fall between bunds 0.6 m

TOTAL QUANTITY OF WATER STORED IN THE PROPOSED STRUCTURES:.

GRADED BUND	TOTAL
184055.20	184055.20

C. BALANCE OF RUNOFF WATER:

	QUANTITY OF RUNOFF WATER -	-	TOTAL QUANTITY OF WATER STORED IN THE PROPOSED STRUCTURES:.
=	217785.32	-	184055.20
=	33730.12 m^3		

NOTE: QUANTITY OF RUNOFF TO BE SET APART FOR THE COMMITMENTS LIKE EXISTING WATER BODIES HAS TO BE TAKEN CARE OF BEFORE FINALISING THE NUMBER AND CAPACITY OF STORAGE/ RECHARGE STRUCTURES

To be continued….

D. ADDITIONAL STORAGE STRUCTURES:

= BALANCE OF RUNOFF WATER/ STORAGE CAPACITY OF PROPOSED STRUCTURE

				STORAGE CAPACITY (m3)			
			DIMENSION OF POND(m)	EXCAVATION BY SEGMENTAL METHOD		EXCAVATION BY MECHANICAL MEANS	
			L x W x D	QUANTITY (m^3)	NOS.	QUANTITY (m^3)	NOS.
33730.12	/	319.7	12 X 12 X 3	319.7	106	258	131
			OR				
33730.12	/	530.3	15 X 15 X 3	530.3	64	447	75
			OR				
33730.12	/	794.9	18 X 18 X 3	794.9	42	690	49
			OR				
33730.12	/	1113.5	21 X 21 X3	1113.5	30	987	34

OR CHECK DAMS/NALA BUNDS ON DECIDING THE IDEAL SPOTS FOR RECHARGE

PART - B

Hydrological Inventory of Ivni Sub-watershed, Chitapur Taluk, Kalaburagi District, Karnataka for Watershed Planning and Development

Sujala - III
Karnataka Watershed Development Project-II
Watershed Development Department
Government of Karnataka

THE WORLD BANK

Hydrological Inventory of Ivni Sub-watershed, Chitapur Taluk, Kalaburagi District, Karnataka for Watershed Planning and Development

Prepared by
ICAR-National Bureau of Soil Survey and Land Use Planning
Regional Centre, Hebbal, Bangalore - 560 024

ICAR - NBSS & LUP

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Sh. R.S.Reddy	Consultant
Sh. A.G.Devendra Prasad	Consultant
Smt. K.Karunya Lakshmi	Research Associate
Ms. Seema, K.V.	Senior Research Fellow
Dr. Sekhar Muddu (Reviewed and approved)	Professor & Lead Scientist, Dept. of Civil Engineering & ICWaR, IISc, Bangalore
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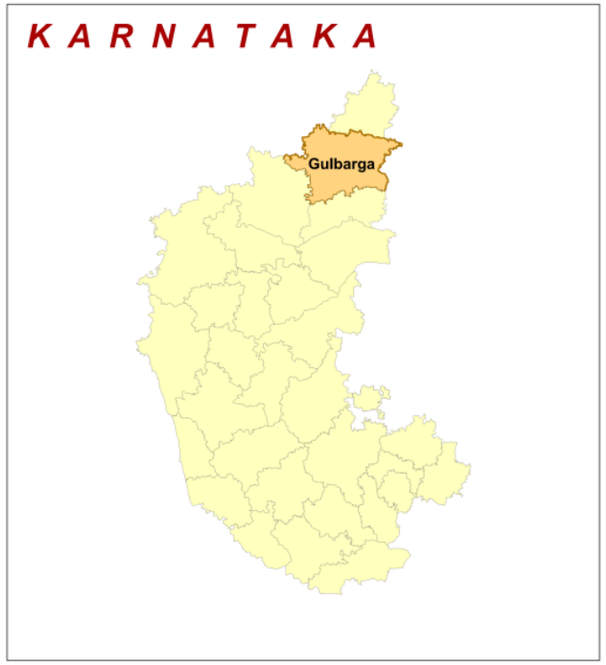
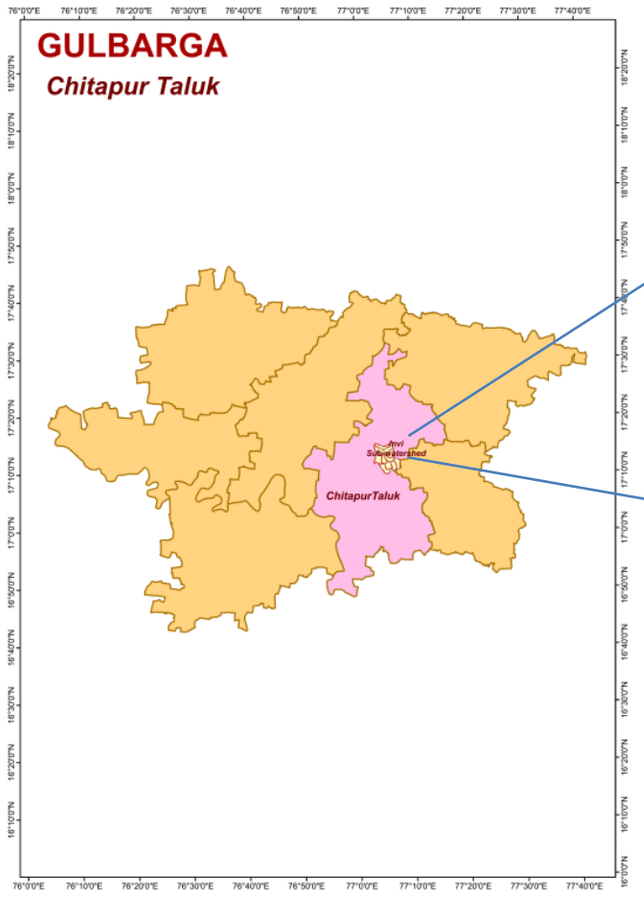
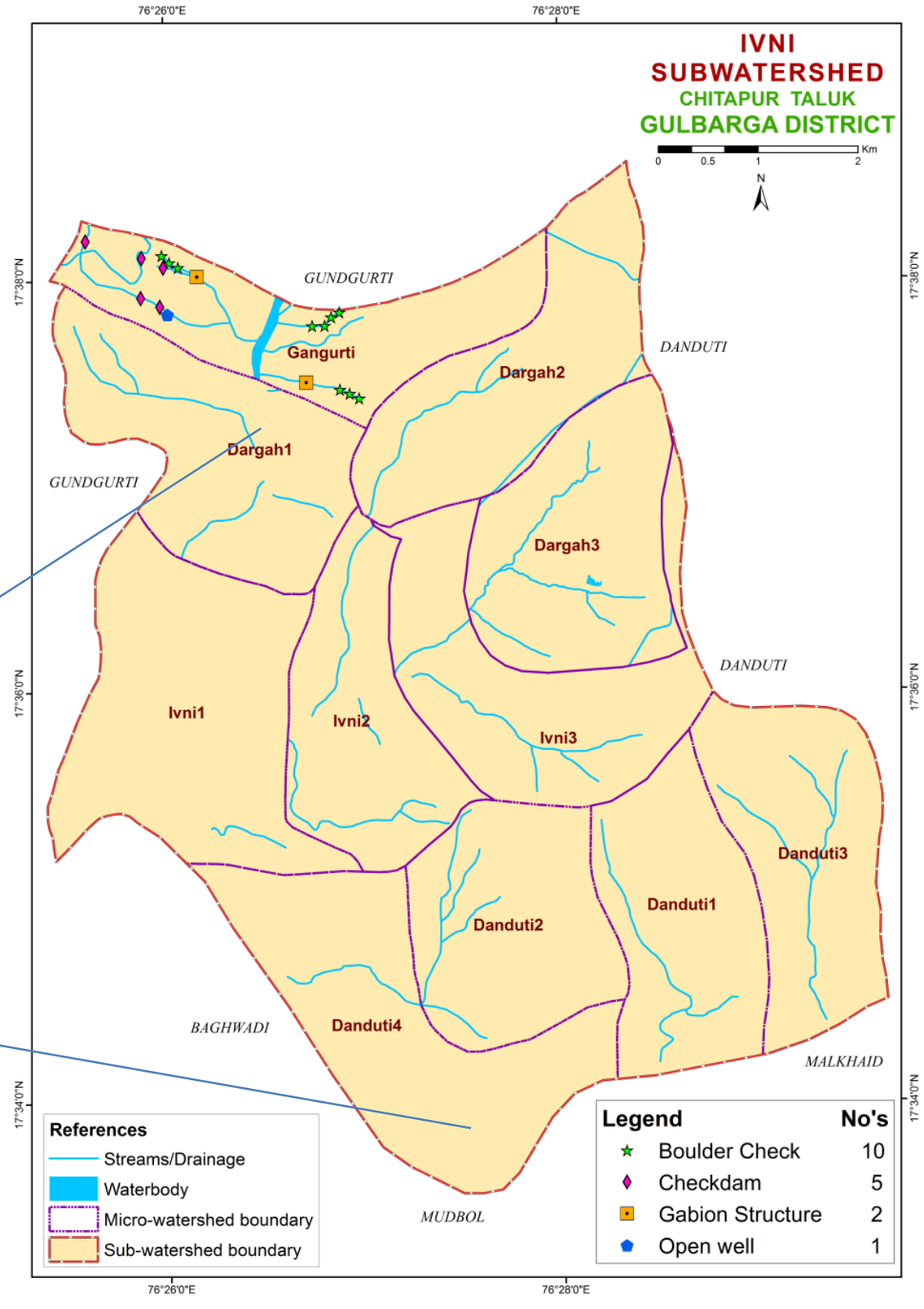
INTRODUCTION

- The inventory and documentation of spatial and temporal changes in hydrological components of Ivni sub-watershed (4D5B3L) in Chitapur taluk, Kalaburagi district, has been undertaken for integrated planning, development and management at the level of soil mapping units.
- Ivni sub-watershed (Chitapur taluk, Kalaburagi district) is located between $17^0$9’48”–17^0 15’24” North latitudes and $77^0$3’44”- $77^0$7’13” East longitudes, covering an area of about 5221 ha.
- This sub-watershed encompasses of 11 MWs namely, Danduti-1 (4D5B3L1b), Danduti-2 (4D5B3L1c), Danduti-3 (4D5B3L1a), Danduti-4 (4D5B3L1d), Dargah-1 (4D5B3L2f), Dargah-2 (4D5B3L2c), Dargah-3 (4D5B3L2a), Gangurti (4D5B3L2e), Ivni-1 (4D5B3L2g), Ivni-2 (4D5B3L2d) and Ivni-3 (4D5B3L2b) micro watersheds. Land Resource Inventory (LRI) was generated for three among the eleven micro-watersheds.
- Average annual rainfall (1960-2014) of the Hobli (Block) pertaining to the sub-watershed is 759 mm.
- In this sub-watershed major *kharif* crops grown are Maize, Soyabean, Red gram, Sugarcane, Sunflower, Cotton and major *rabi* crops are Sorghum and Bengal gram.
- Hydrological components namely rainfall (annual, *kharif*, *rabi* and summer*)*, PET, AET, runoff, surface soil moisture, ground water status and water balance are presented.

LOCATION MAP OF IVNI SUB-WATERSHED

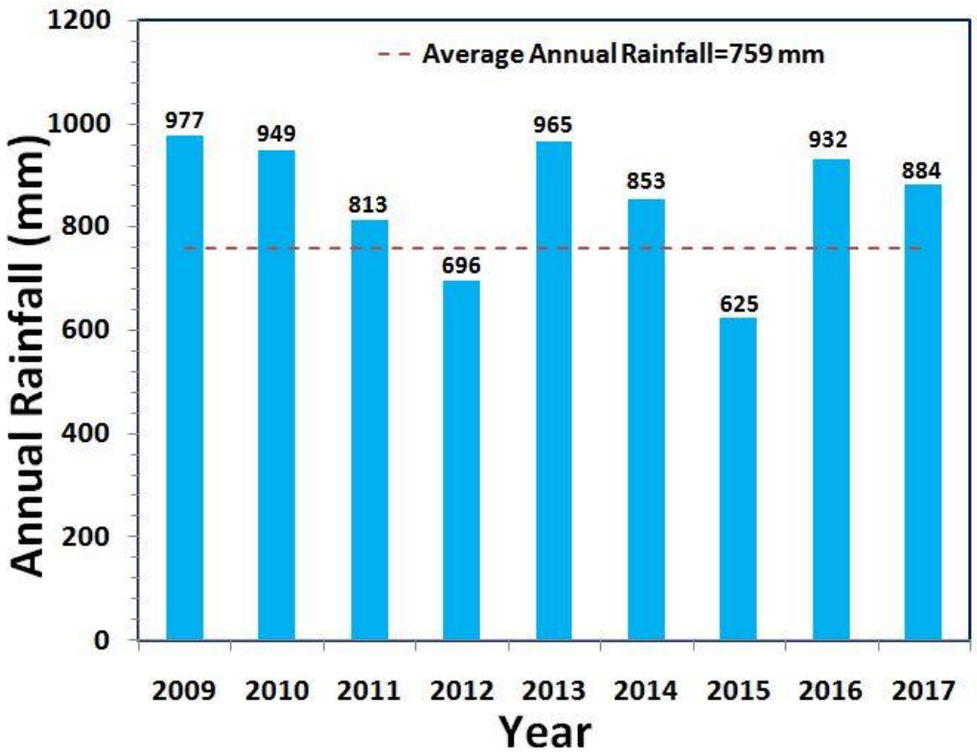






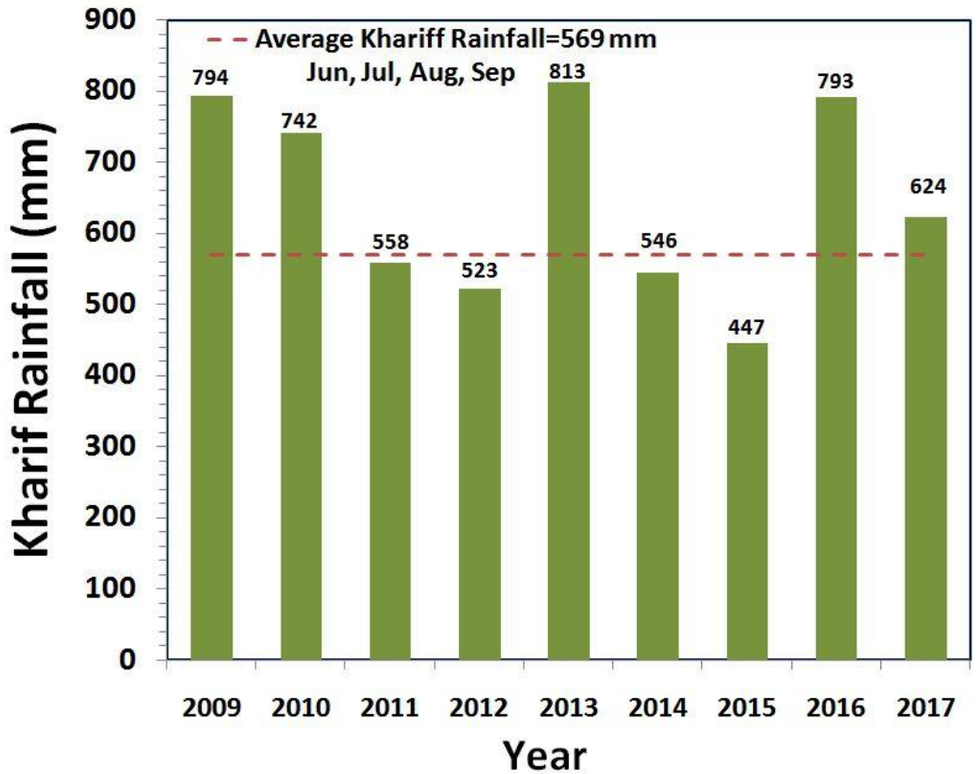
Soil & Water Conservation Structures in Ivni Sub-watershed, Chitapur taluk, Kalaburagi district

RAINFALL INDEX

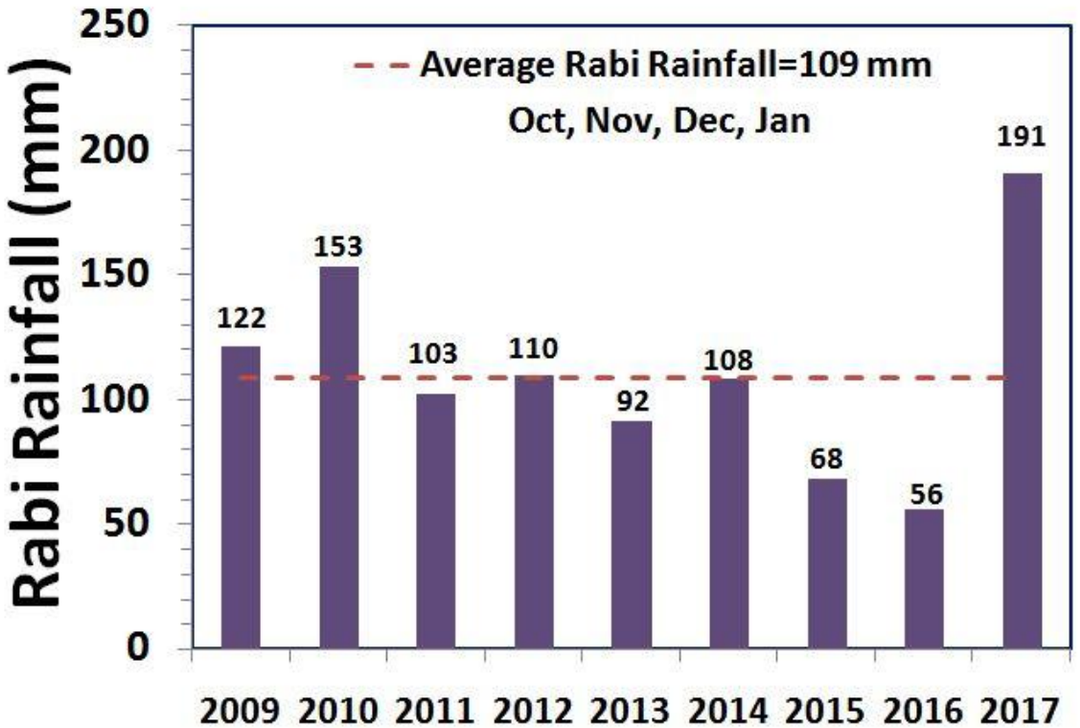


The average annual rainfall (1960-2014) recorded at the Chitapur station in Chitapur taluk of Kalaburagi district is 759 mm. The annual rainfall at Gundgurthi station (Hobli H.Q.) is presented. During the years 2012 and 2015 the annual rainfall was deficient by 8% and 18% respectively.

The *kharif* rainfall (Jun–Sep) is an average about 75% of the annual rainfall and it typically follows the annual rainfall patterns. During the years 2011, 2012, 2014 and 2015 the *kharif* rainfall was deficient by 2%, 8%, 4% and 21% respectively.

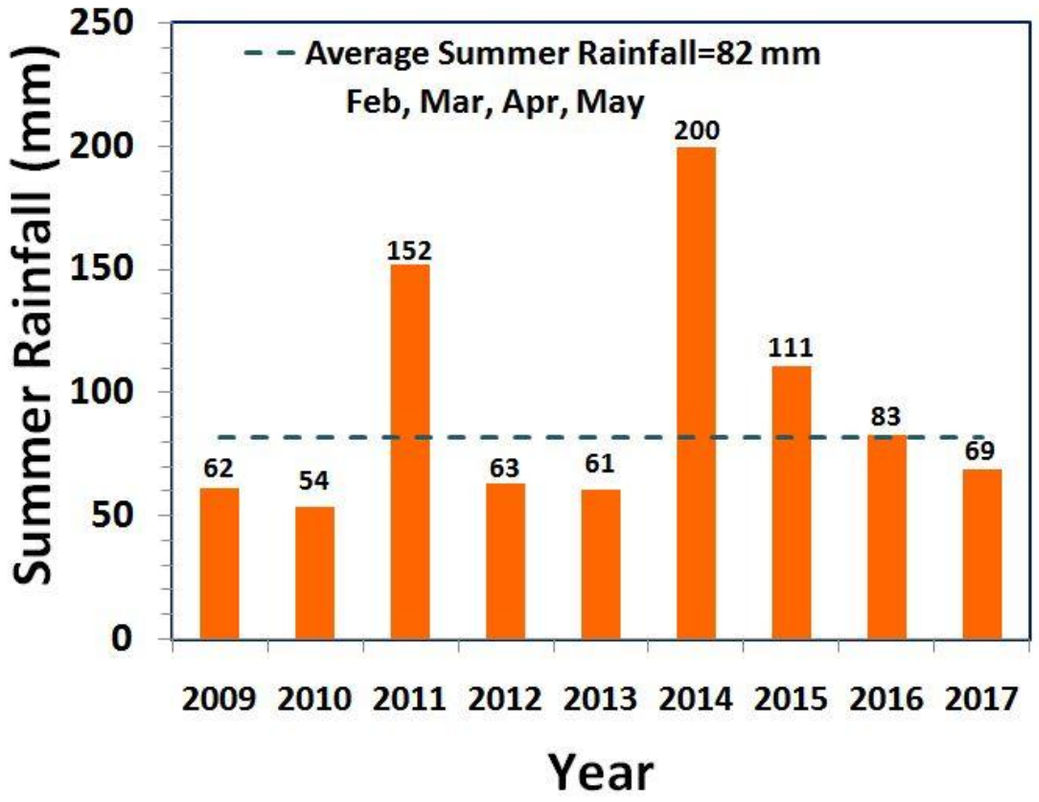


RAINFALL INDEX

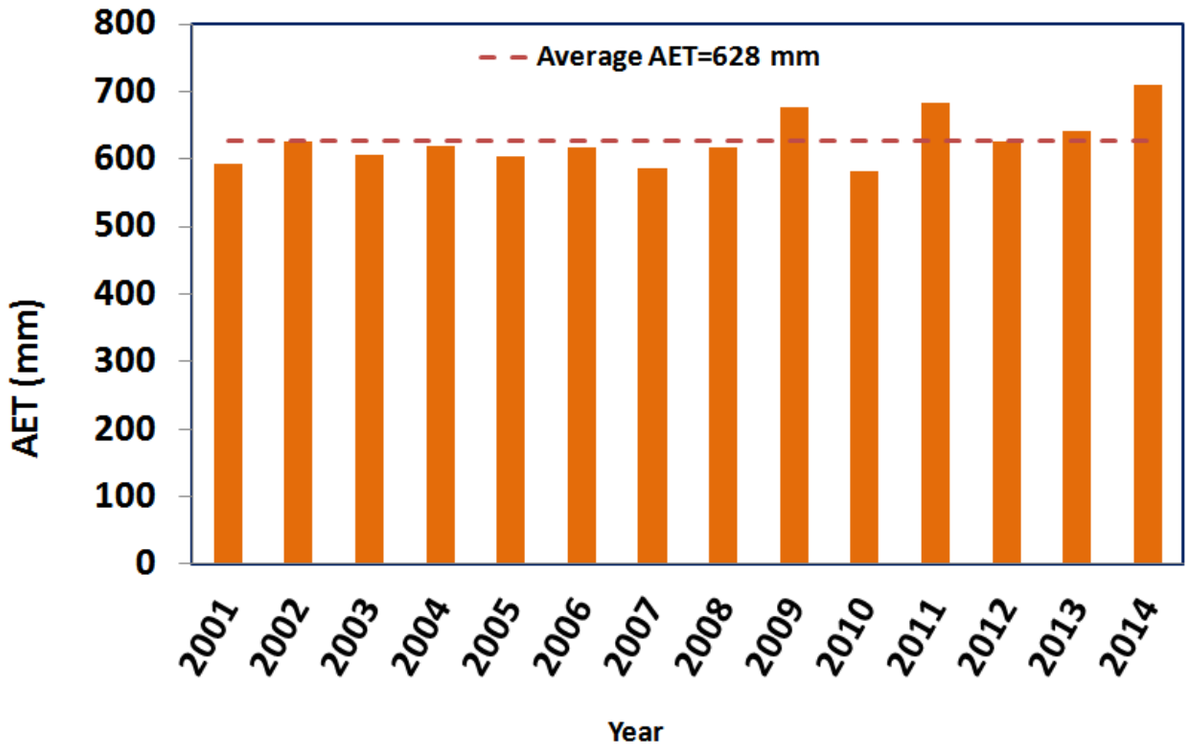


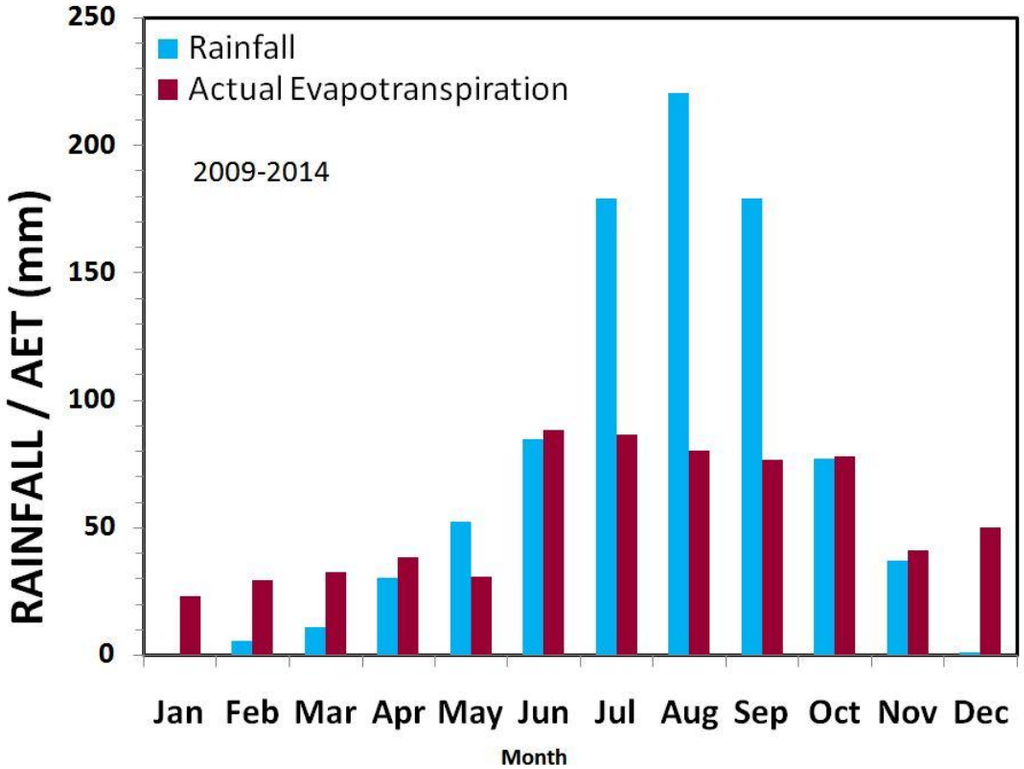
The average *rabi* rainfall (Oct-Jan) is about 13% of the average annual rainfall. During the years 2011, 2013, 2015 and 2016 the *rabi* rainfall was deficient by 6%, 16%, 38% and 49% respectively.

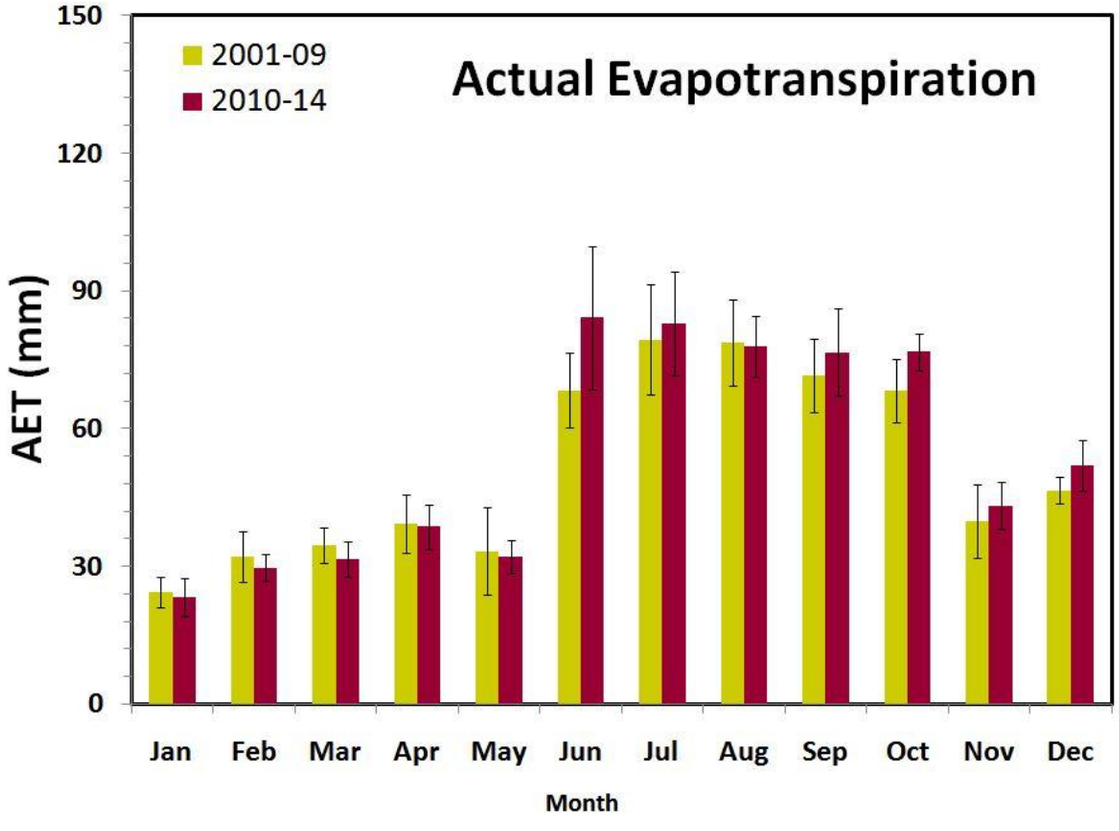
The average summer rainfall (Feb-May) is about 12% of the average annual rainfall.



EVAPOTRANSPIRATION

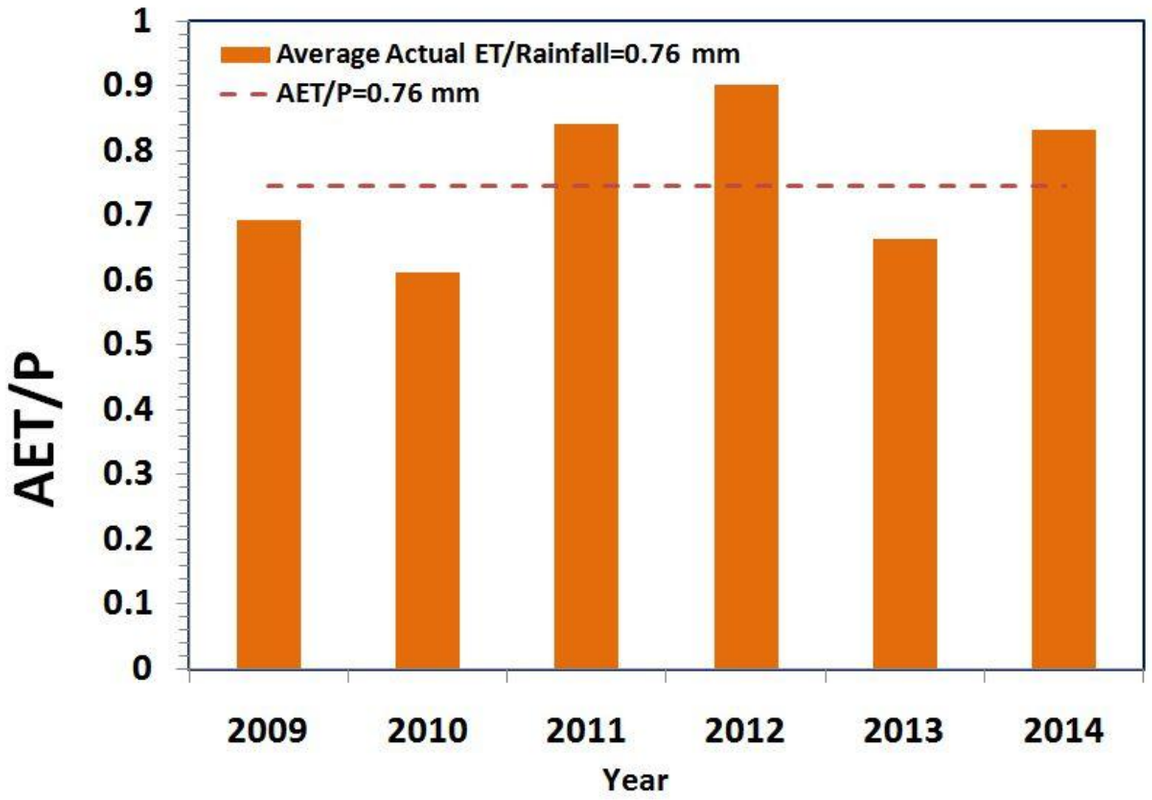


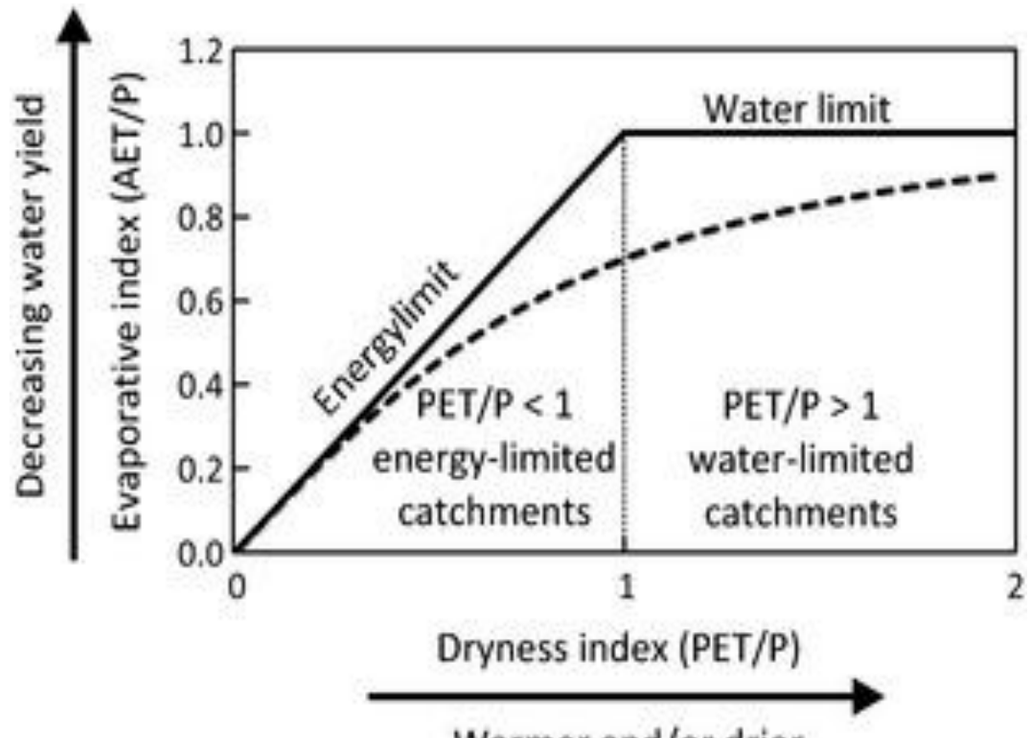




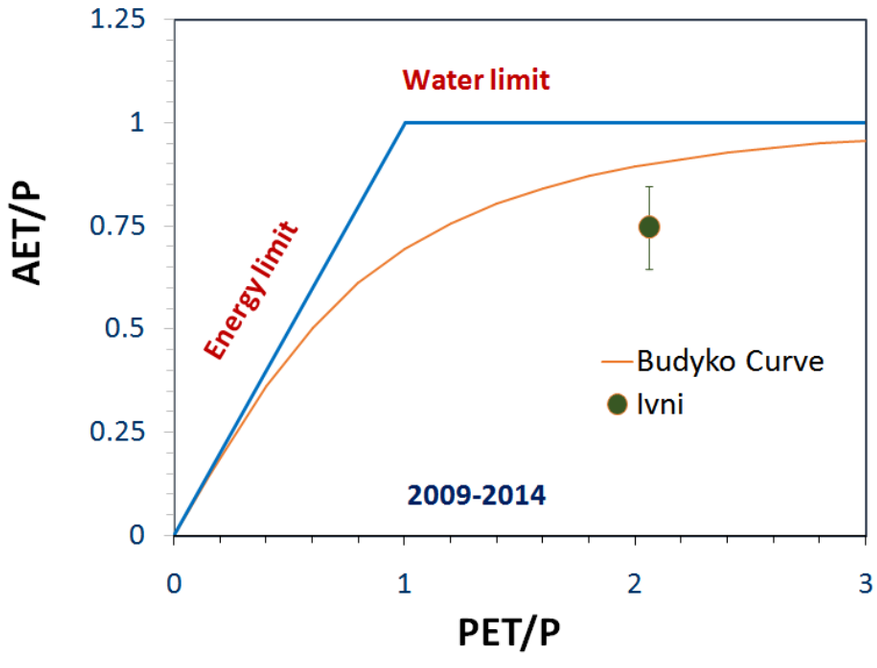
The average annual actual ET is lower than the average rainfall. During *kharif*, average rainfall and ET was found to be 649 mm and 331 mm respectively, whereas in *rabi* it was about 111 mm and 191 mm. In comparison to the 2001-2009, the annual ET increased by 5% during 2010-2014.

EVAPOTRANSPIRATION INDEX

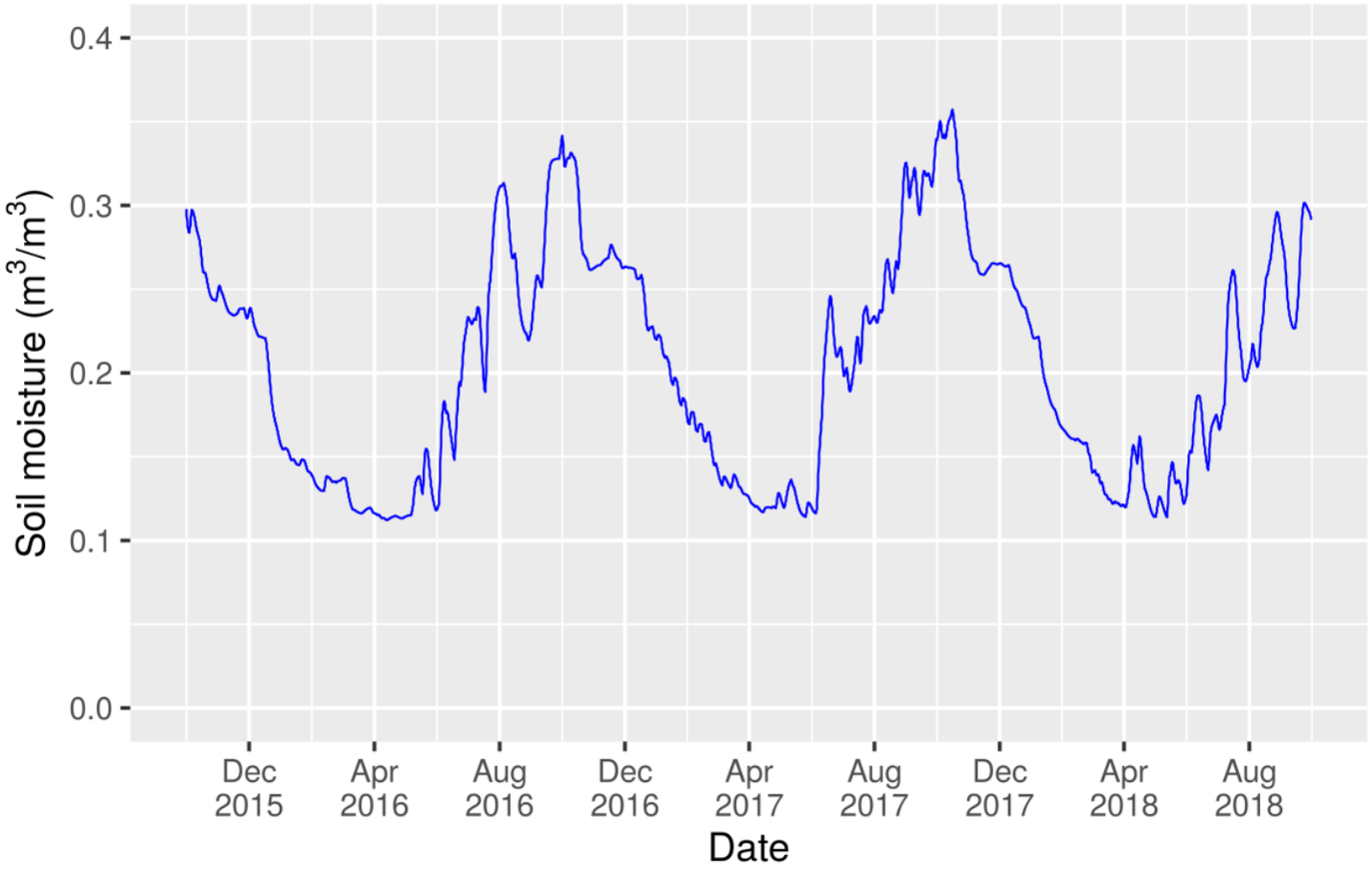




The average AET/P ratio was about 76%, which is lower than the sustainable limit of about 80%.This suggests the watershed is within sustainable limit due to good rainfall during *kharif* season

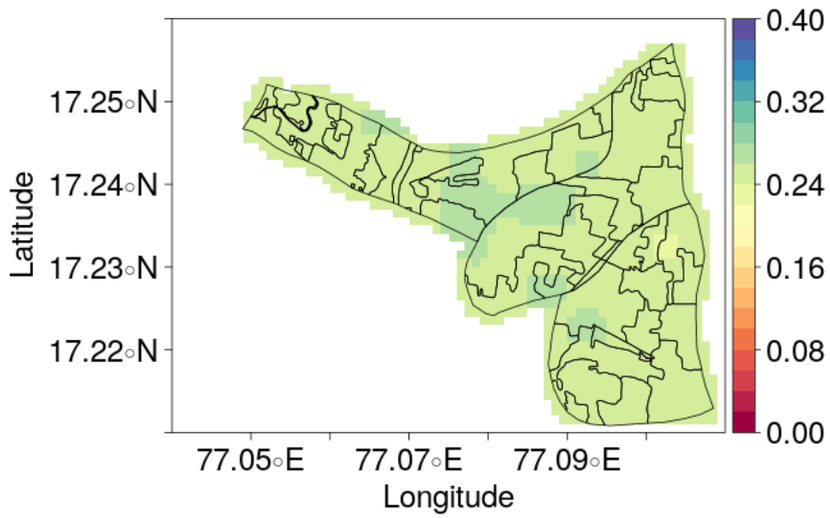


SATELLITE RETRIEVED SOIL MOISTURE

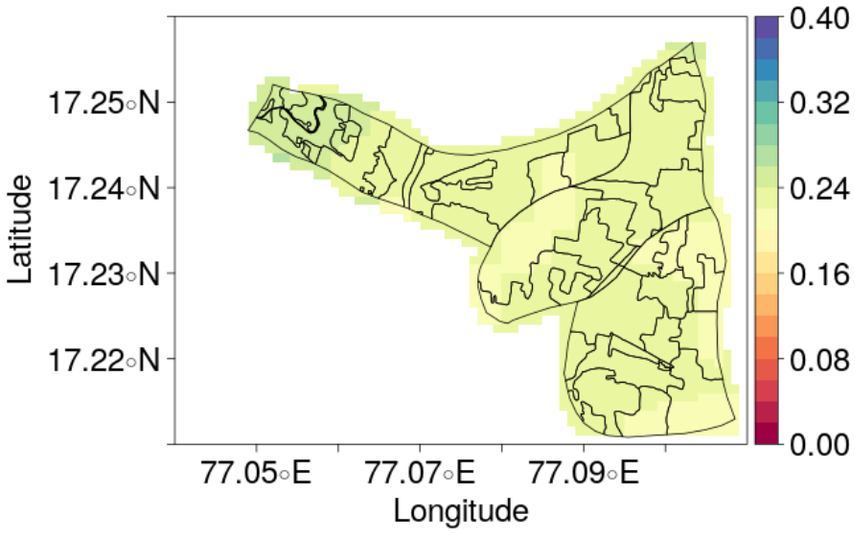


The method developed for retrieving soil moisture from multi-satellite observations allowed to map surface soil moisture behavior in the micro-watershed. The available surface moisture was varied in the range of 12-22 % in *kharif* and 24-34% in *rabi* seasons of 2016 and 12-33 % in *kharif* and 23-35% in *rabi* seasons of 2017.

Ivni– Rabi Soil Moisture



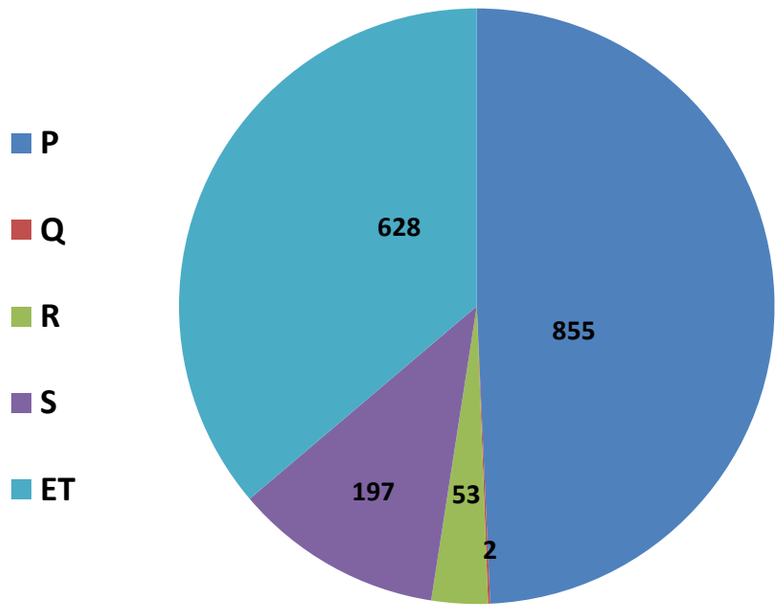
Ivni– Kharif Soil Moisture



WATER BALANCE

$$Q = P - E - R - S$$

- Q = Runoff
- P = Precipitation
- E = Evapotranspiration
- R = Groundwater recharge
- S = Soil moisture storage change

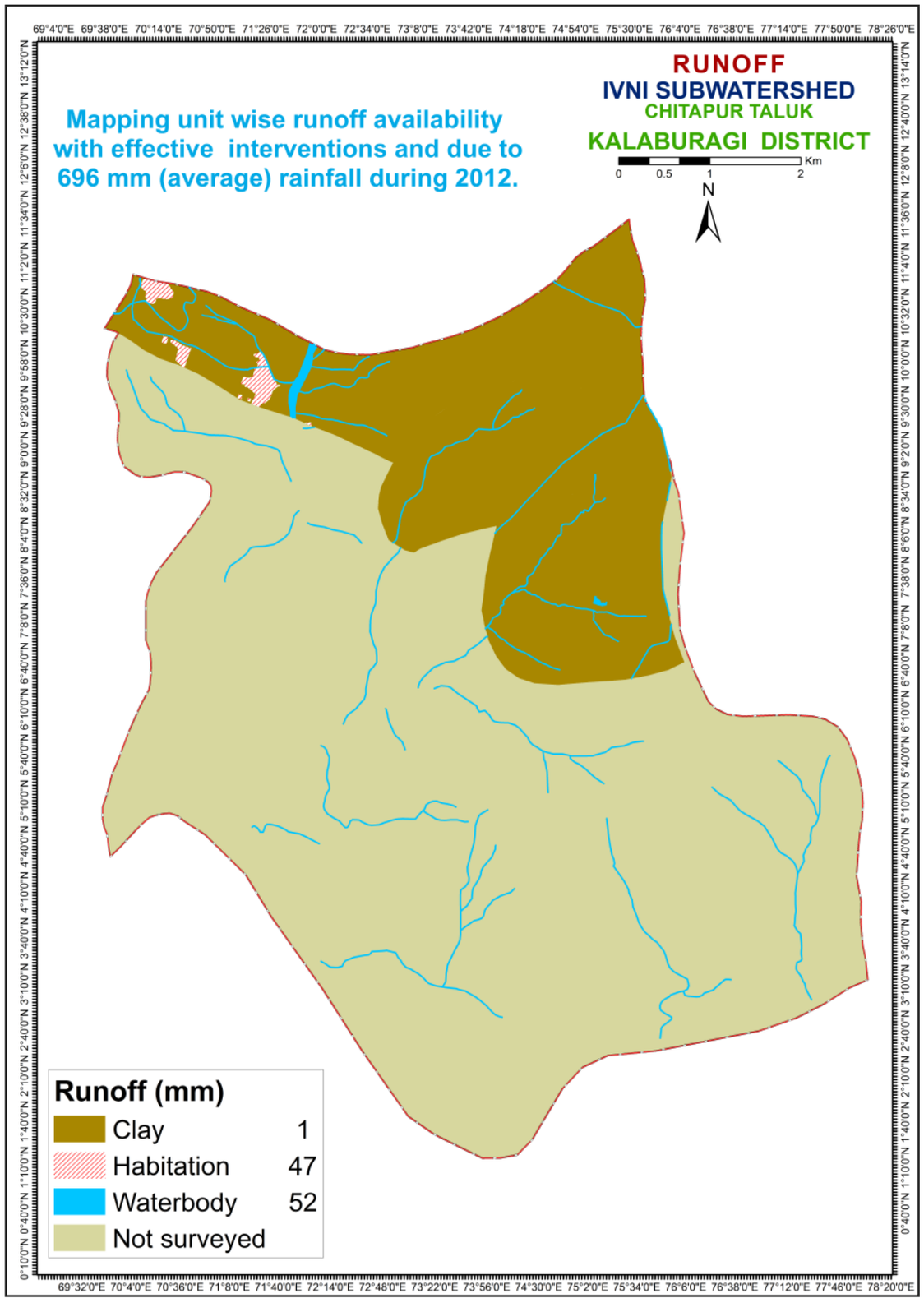


During July-September months, Precipitation is higher than Evapotranspiration.

P = 855 mm (average of 2009-2017) ET = 628 mm R = 53 mm S =197 mm Q = 2 mm

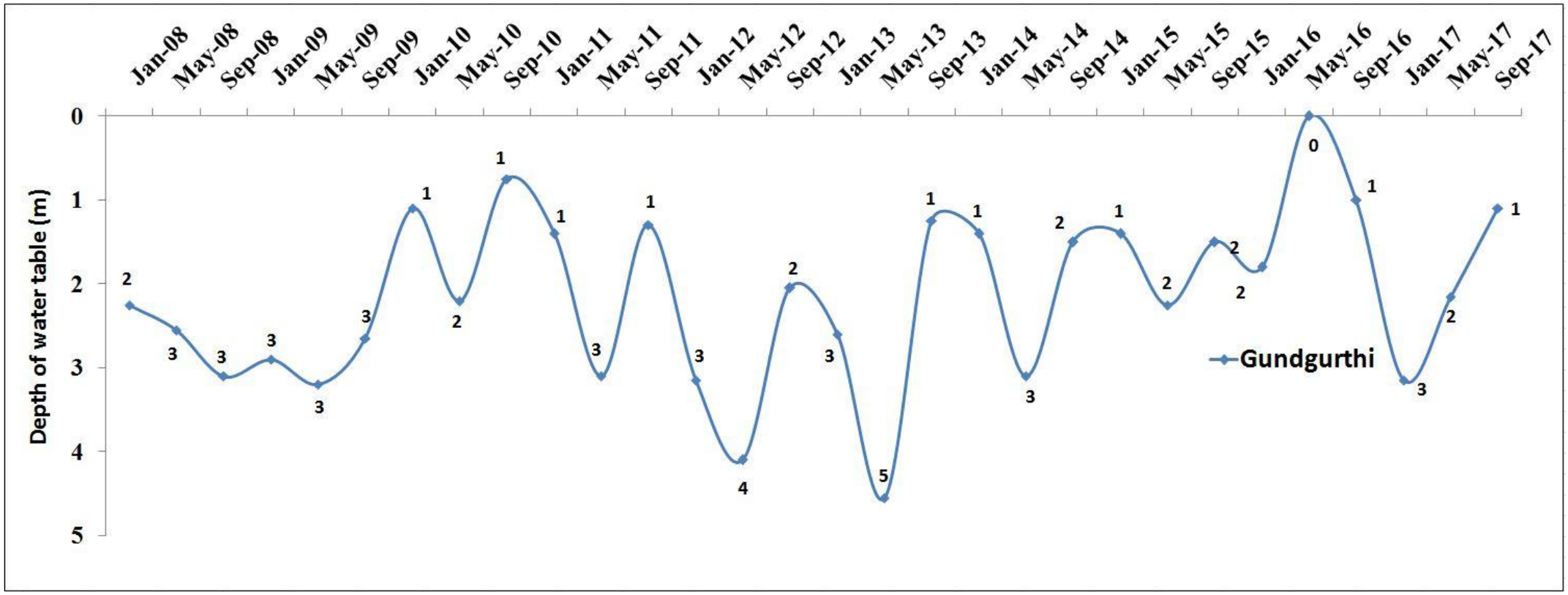
Sl. No.	Parameters	Average_ 2012 (mm)
1.	Rainfall	696
2.	Runoff availability with existing conditions	33
3.	Runoff availability with effective interventions	2.5
4.	Runoff allowed as environmental flow at the outlet	0.45
5.	Runoff excess for harvesting by construction of structures	2

RUNOFF


RUNOFF
IVNI SUBWATERSHED
CHITAPUR TALUK
KALABURAGI DISTRICT
Mapping unit wise runoff availability with effective interventions and due to 696 mm (average) rainfall during 2012.
0 0.5 1 2 Km
N
Runoff (mm)
Clay 1
Habitation 47
Waterbody 52
Not surveyed

GROUND WATER STATUS

GUNDGURTHI STATION



The groundwater level was found from the data obtained from KSNDMC for the nearest station Gundgurthi. The above graph depicts the groundwater levels during the years 2008-2017 was slightly varying except May 2016.

x

SUMMARY

- The average annual rainfall of 759 mm in the Ivni sub-watershed as recorded from the Gundgurthi station data by KSNDMC.

- 75%, 13% and 12% of the annual rainfall occurs during *kharif*, *rabi* and summer seasons respectively and exhibited a higher temporal variability.

- The evapotranspiration estimation tool developed indicates that the watershed water balance is in deficit .The cropping & irrigation choices are not appropriate and need to be altered to shift the deficit water balance.

- The estimated runoff available to use is 2 mm for an average annual rainfall of 855 mm (2009-2017). The utilizable groundwater is 37 mm (70% of 53 mm recharge estimated). This means the total available water resource combining the soil moisture store for kharif & rabi (197 mm) and utilizable runoff plus recharge is 236 (=197+37+2)

- The average actual evapotranspiration estimated in the watershed based on the current land use and irrigation practices for the kharif and rabi seasons is 522 mm. Hence the amount of water use for kharif and rabi seasons may be estimated as 652 mm (i.e 125% of AET). This demand for the two seasons is higher by 416 mm, i.e. (652-236). The AET in June-Sept months is only 50% of rainfall. Hence, there is a good opportunity to harvest the excess water through watershed management practices for utilizing during rabi season.

- The groundwater level was found from the data obtained from KSNDMC for the nearest station Gundgurthi. The groundwater levels during the years 2008-2017 was slightly varying except May 2016.