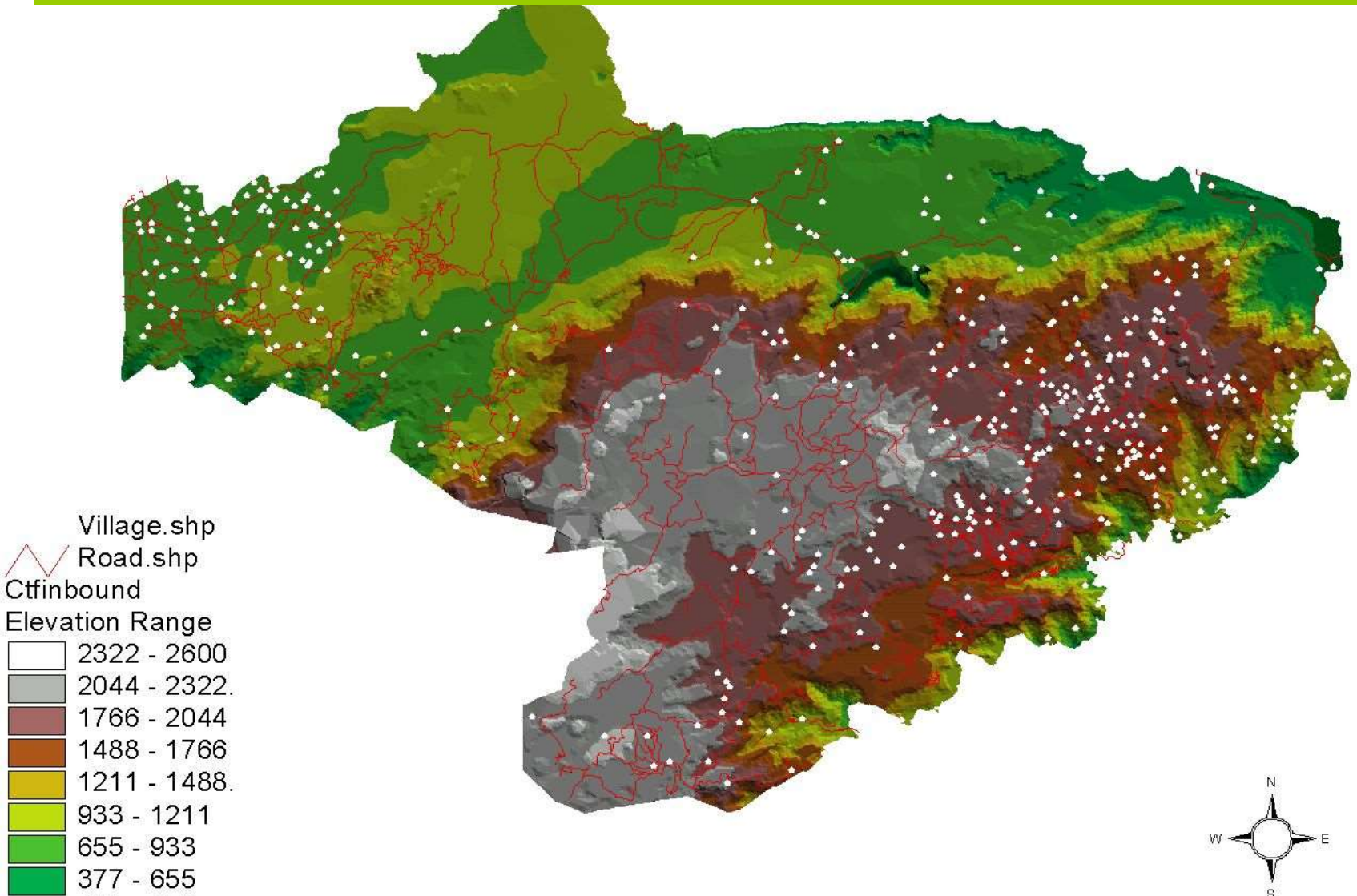
HILL WATER RESOURCES & LIVELIHOODS



Nilgiri Water Resources - 2002

- Covered the entire district – all 4 river basins : Bhavani, Chaliyar, Kabini & Moyar
- Sampled 55 villages covering 71,566 persons from 13 distinct communities
- Identified 120 water sources
- Observed 291 water extraction structures
- Large Dams & Reservoirs are mainly for Electricity Generation to the State
- 4 river basins contribute to water in 3 states

Types of Nilgiris Water Resources

Natural Sources

- River
- Shola
- Spring
- Stream
- Swamp
- Water hole

Man Made structures

- Check dam
- Wells
- Canal
- Tank
- Dam

Major Issues

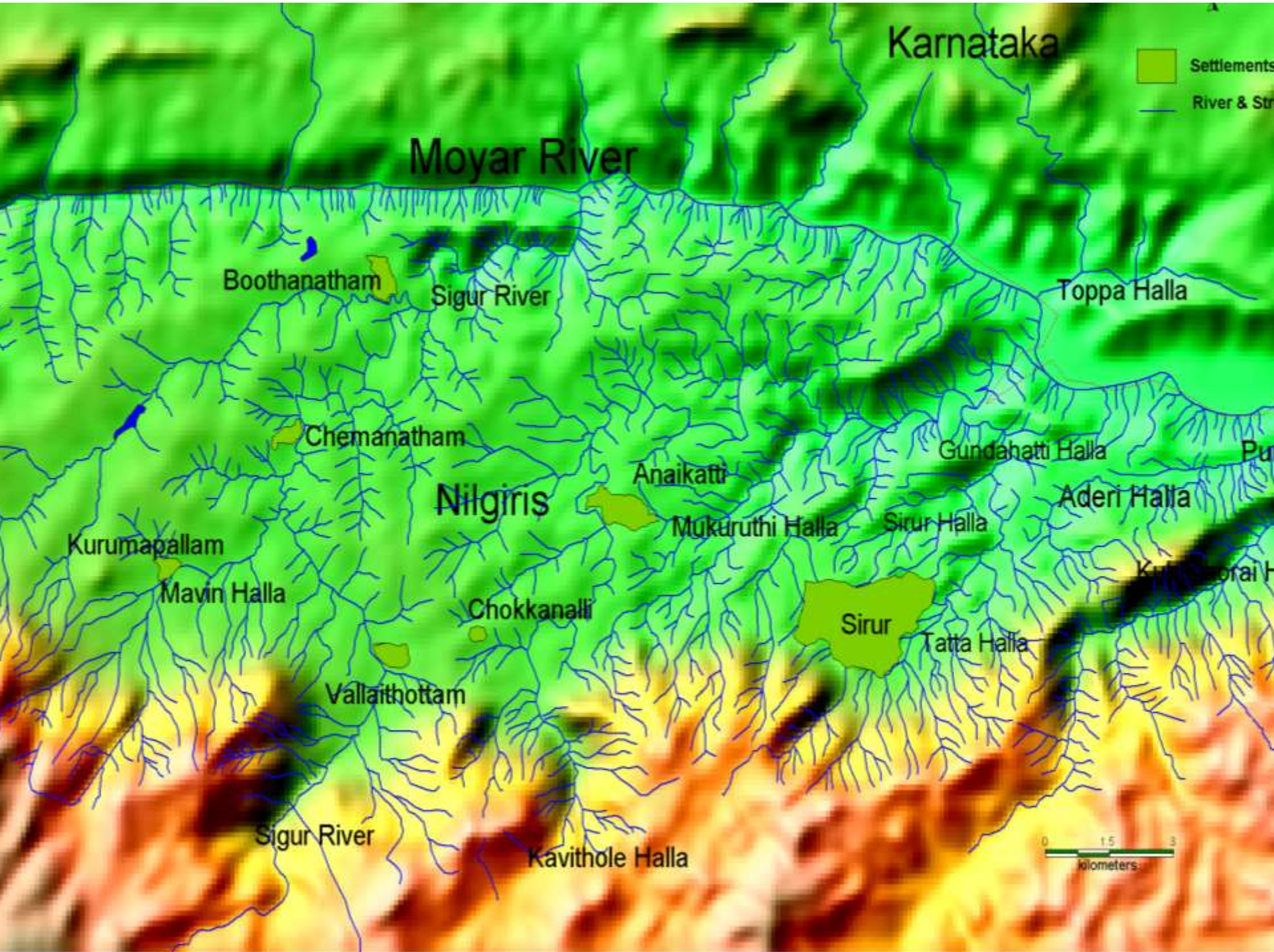
- Dwindling Domestic Water Sources
- Community Water Management Systems are weak
- Areas of tea cultivation also have springs where chemical inputs are in large quantity
- Reducing Sholas remain crucial in water retention and spring habitat

Sigur Water Resources

- Average altitude is 900 m
- Is situated north of The Nilgiris plateau
- Rainfall – average rainfall on the Sigur plateau ranges from 1000mm in the western portions to 500mm towards the eastern region.
- Vegetation – varies from dry deciduous in the west to scrub jungle towards the eastern region.
- Terrain gently undulating & consists of foothill hydrology system
- The area under study is approximately 387 Sq.kms.

Background to the initiative

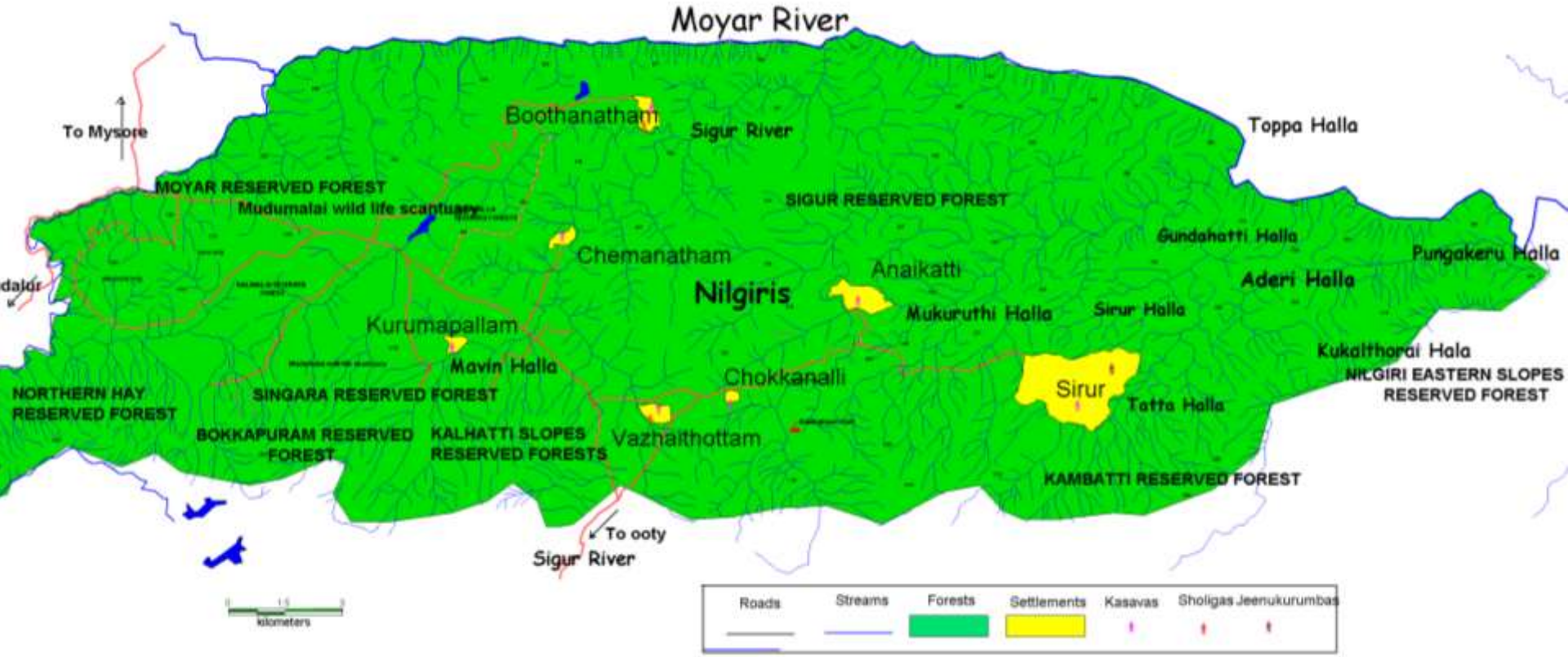
- Breakdowns in water system – maintenance problem in villages
- Little cooperation among villagers
- More cooperation needed from Panchayat, FD, etc.
- Technical pipeline distribution problems
- Need to develop village institutions


Karnataka
Settlements
River & Str
Moyar River
Boothanatham
Sigur River
Toppa Halla
Chemanatham
Gundahatti Halla
Anaikatti
Nilgiris
Aderi Halla
Mukuruthi Halla
Sirur Halla
Kurumapallam
Mavin Halla
Chokkanalli
Sirur
Tatta Halla
Vallaithottam
Sigur River
Kavithole Halla
0
1.5
3
kilometers

Objectives of the Sigur Project

- History and use of water in Sigur
- Water Resources Audit
- Community institutions – Water User's Groups
- Future needs and sustainability
- Peoples' regional water management plan , e-portal

- 7 Villages - Boothanatham, Semanatham, Kurumbapallam, Vazhaithottam, Chokkanalli, Anaikatti & Siriyur.
- Diverse targeted indigenous people – Kasavas, Irulas, Kattunaickens and Jenu Kurumbas



Planned Activities

- Document Water usage of the region and collect Socio Economic data
- Create and operationalise Water User's Groups to sustain future water needs of indigenous communities
- Conduct quality testing of drinking water
- Implementation Activities
- Prepare e-portal for information dissemination
- Conduct research studies on water issues
    - Land Use Survey
    - GIS based mapping
    - Hydro geological Survey
    - Boothanatham Case Study
    - Coonoor River Walk

Activity 1- Survey on water Resources

- Except for Sigur river & Kedar Halla, all are seasonal streams
- Only few springs found
- Rainfall erratic in this region – not more than 750mm in average.
- Few vegetation spp. to support water holding & water retention
- Conducted water transects
- Borewell depths in Sigur area – 250 to 300 feet and depleting
- Improper filtering structure at check dams
- Silting of existing check dams
- Downstream flow is blocked for agricultural purpose in the upper areas
- Pollution of streams in the upper catchments

Kurumbarpallam Survey

Anaikatti Channel Survey

Activity 2- Water User's Groups

- Water User's Group meetings – every month at the village
- WUG's members are updated during the meetings
- A contribution is made by the group members for the WUG fund every month.
- A federation of the WUGs is formed namely the Sigur Seemai Water User Group.
- Water Users Group meetings discuss about – savings, problems, repairs & maintenance work in all the villages

Sigur Seemai Water User's Group Fund

WATER USER GROUP

	Sep.05	Oct.05	Nov.05	Dec.05	JA.06	Feb.06	Ma.06	Apr.06	May.06	Jun.06	Jul.06	Aug.06	Sep.06	Oct.06	Nov.06	Dec.06	TOTAL
!.Boothanathan	60	60	30	40	0	65	40	0	0	50	40	0	65	15	40	40	545
2.Chemmanatham	0	0	0	0	60	0	0	0	0	0	0	0	0	55	200	70	385
3.Chokkanalli	0	95	50	45	75	100	0	0	5	75	40	0	40	5	0	90	620
4.Vazhaithottam	0	0	0	0	0	0	0	0	0	0	15	40	0	65	50	55	225
5.Kuramberpallam	0	0	0	55	85	60	60	60	60	60	0	120	60	0	240	60	920
6.Siriyur	0	0	60	65	60	110	50	50	60	80	75	70	65	70	50	95	960
7.Anaikatty	20	35	0	0	10	25	10	10	25	70	15	70	180	145	140	110	865
8.Kanniyakumari													35	60	30	65	190
															TOTAL		4710

Water User's Groups Meetings

Activity 3- Water Quality Testing

- The water samples are tested for 13 parameters

(Ph, Temperature, Dissolved Oxygen, Residual Chlorine, Turbidity, Chloride, Nitrates, fluoride, Phosphorous, Iron, Hardness, Ammonia, Coliform bacteria)

- A water quality testing lab has been set up, at Vazhaithottam field station
- Water testing is carried out , every alternative month, for all , seven villages.,
- Two woman community & water users group , coordinators, Trained to conduct tests.

Test Results for the month of January 2007

Parameters (mg/l)

Name of Village	pH/6.5-8	Temp C*	DO-500	RC - 0	TU - 5-	Cl-250-10	Nitrate-45	Flouride	P-10-30	Fe - 0	HRD- 30	NH3 >	Coli - Y/N
Vazhaithottam	8	not taken	11mg/l	0.2	15	106.5	10mg/l	0.6mg/l	0.2	0.3	160mg/l	1	not done
Chokkanalli	9	not taken	12mg/l	0.2	16	88.625	10mg/l	0.6mg/l	0.2	0.3	304mg/l	1	not done
Anaikatti	8	not taken	18mg/l	0.2	20	709	10mg/l	0.6mg/l	0.2	0.3	200mg/l	1	not done
Siriyur	8	not taken	11mg/l	0.2	15	77.99	10mg/l	0.6mg/l	0.2	0.3	220mg/l	1	not done
Chemmanatham	8	not taken	11.2mg/	0.2	15	77.99	10mg/l	0.6mg/l	0.2	0.3	120mg/l	1	not done
Kurumbarpallam	8	not taken	15mg/l	0.2	15	302	10mg/l	0.6mg/l	0.2	0.3	280mg/l	1	not done
Boothanatham	6	not taken	12mg/l	0.2	10	85.08	10mg/l	0.6mg/l	0.2	0.3	160mg/l	1	not done

Note:- The p H values are above & below at Chokkanalli & Boothanatham respectively.
Dissolved Oxygen is very much low in all the villages - reason not known.
Chloride & Nitrate is also low in all the villages
Hardness is also low except for Chokkanalli
Temperature was not taken due to non availability of thermometer & Coliform test not conducted.

Activity 3 - Interventions

- Siriyur – Indranagar – 255 mtrs hose pipe from temple GLR for Kattunaickens , earlier they had to walk 250 meters to fetch water
- A hand pump with hose & accessories for the people of Chokkanalli – when there is any sudden breakdown of electric motor, people used to draw water from the open well through ropes in an unsafe manner
- The water distribution pipelines for Kurumbarpallam & Siriyur was completed.

An example of flawed water distribution problems

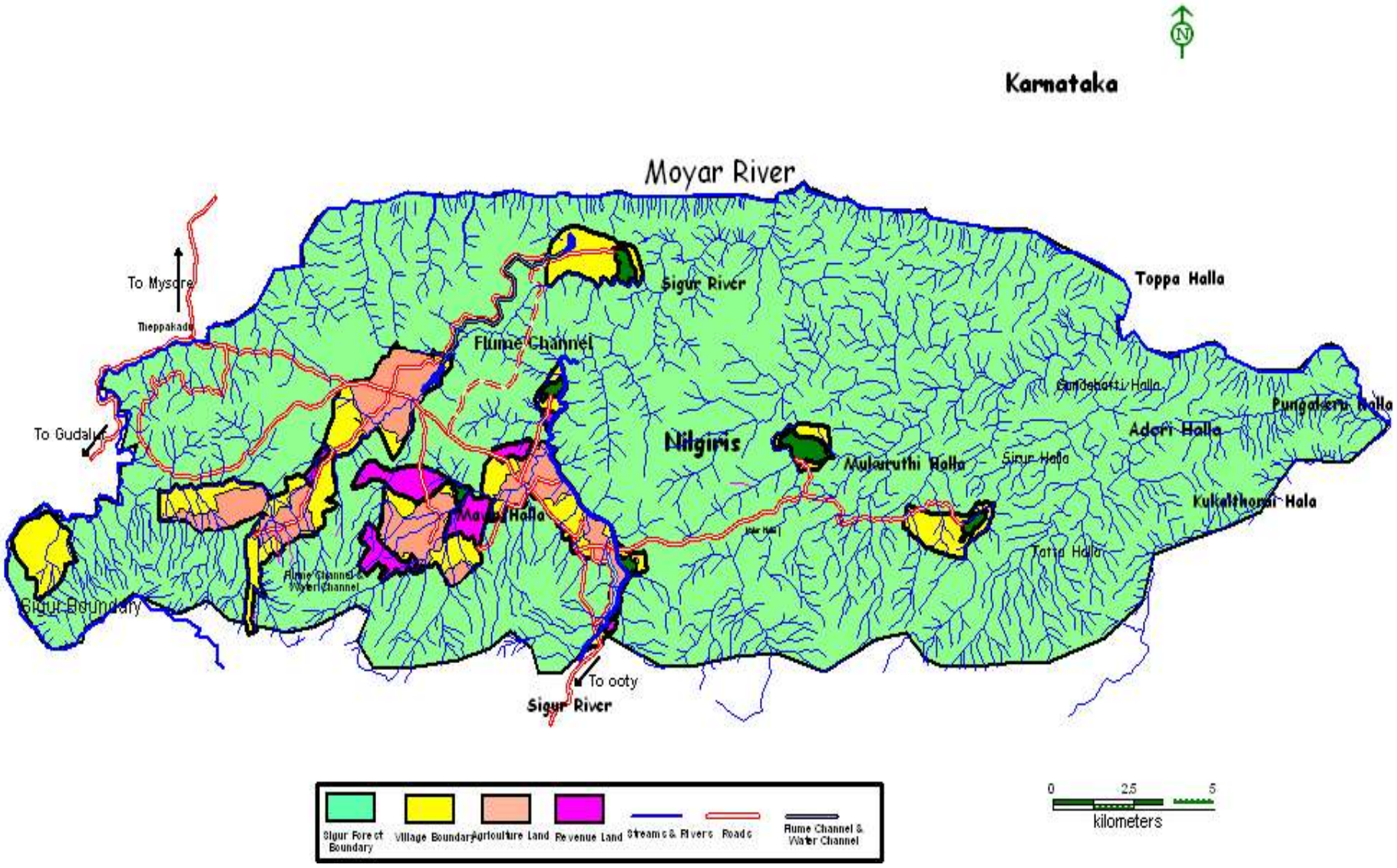
Activity 5- e Portal

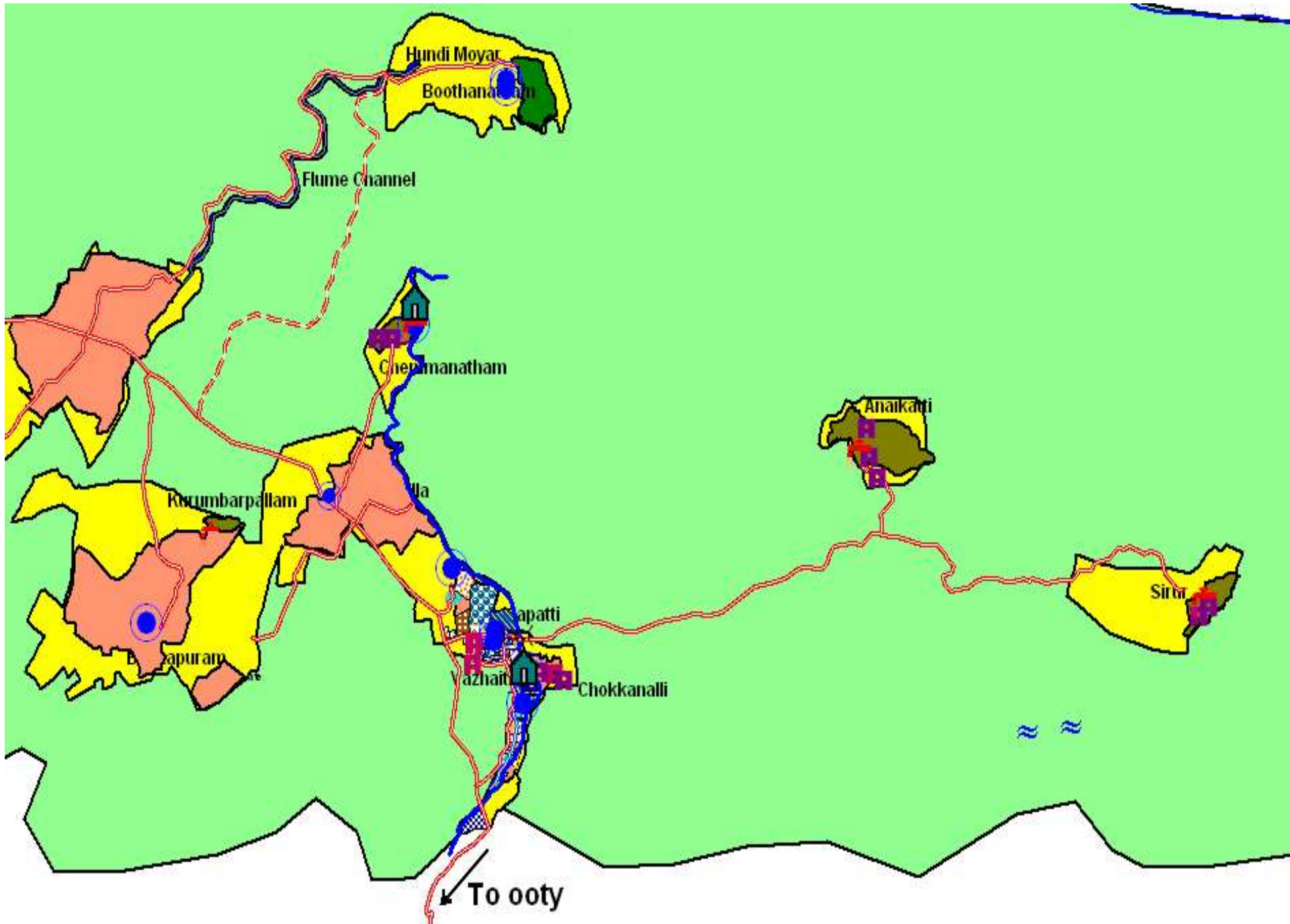
Activity 6.1- Land Use Survey

- Secondary data from the FD, TWAD has been collected for the water resources audit.
- Rainfall data from FD has been collected. Mr. Javaranna of Hydro Metric Services (HMS) from EB has given data for 13 years of rainfall data.
- Rainfall data has been collected from Mr. Arumugam after getting approval from Mr. Sukumar of IISc for 15 years.
- Northern Hay estate has given data for 6 years.

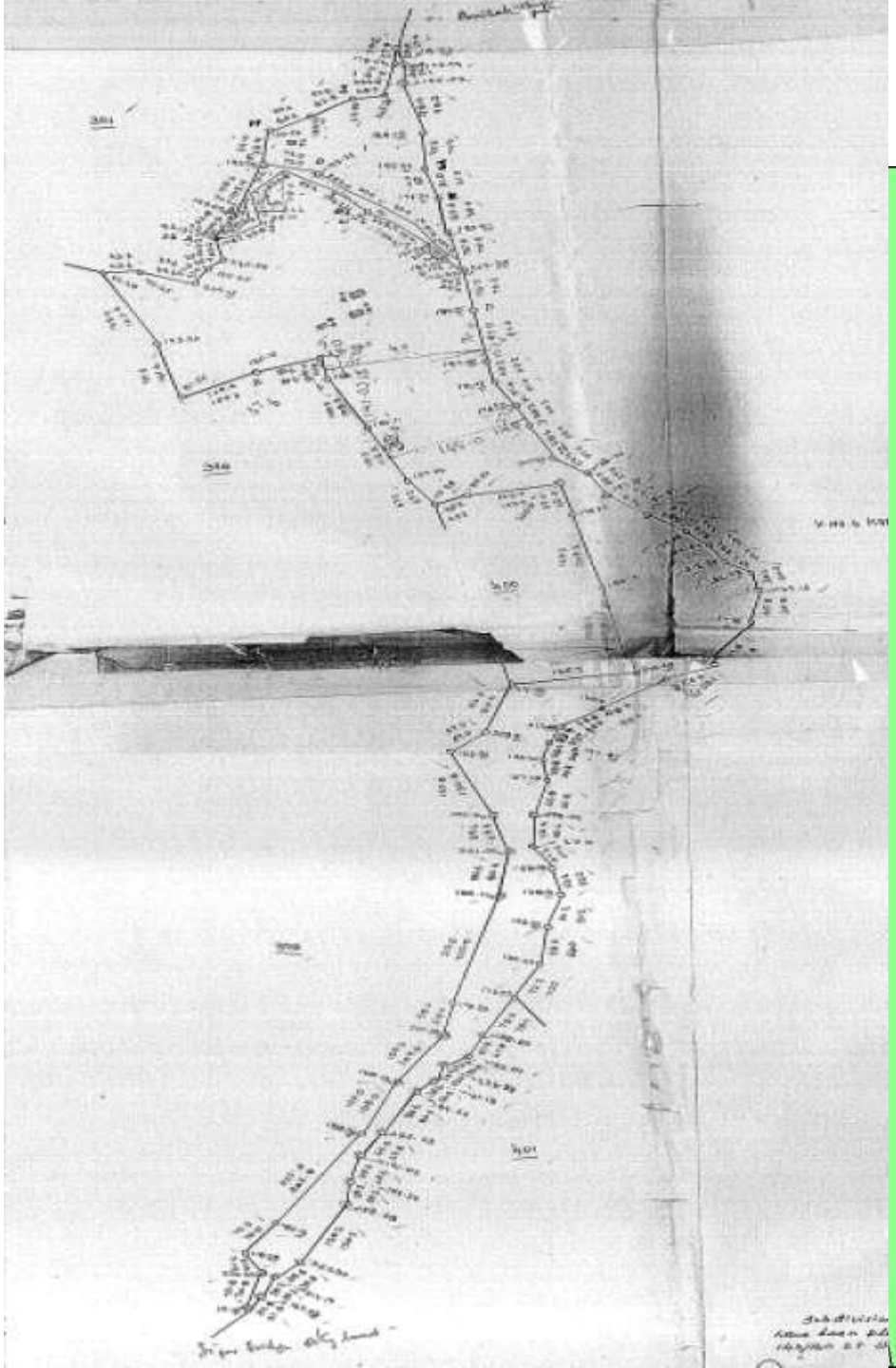
Landholding survey at Sigur

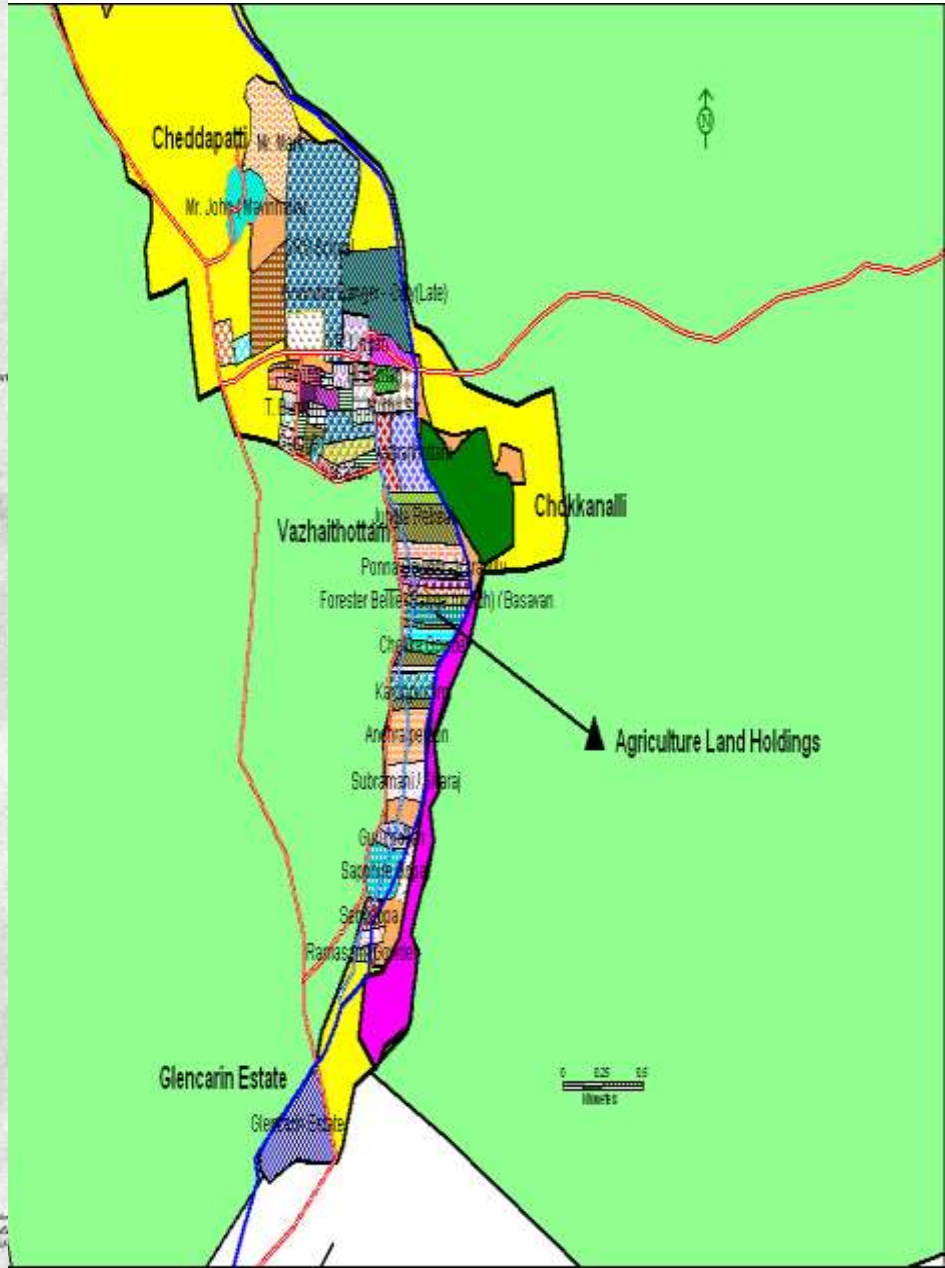
Land Use Survey




Hundi Moyar
Flume Channel
Anaikatti
To ooty

Cadastral Map & Land Holding Map



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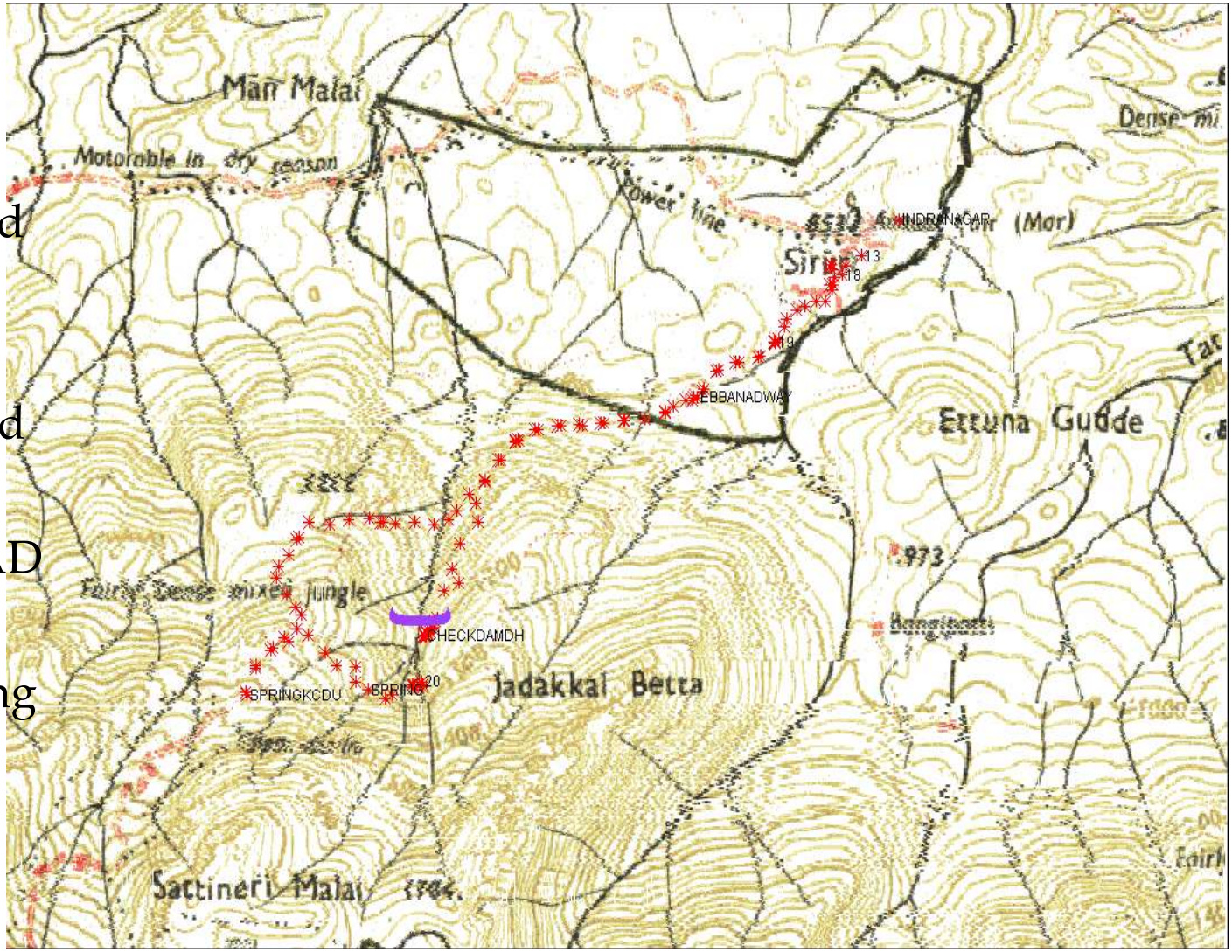
திட்டம் மதிப்பீடு - 144.50 இலட்சம்


STERIFLO
PATENT PENDING
ON SITE SODIUM HYPOCHLORITE GENERATOR
WITH DOSING ROOM. MASINAGUDI

Activity 6.2- GIS based mapping

- Drainage map of Sigur
- All perimeters of the villages surveyed using GPS
- Secondary information collected from the Forest Department & TWAD board
- Resource mapping & PRA has been completed



Activity 6.3- Hydrogeological Study

- Geology
  - Structural geology fracturing, joint patterns
- Water
  - Watersheds
  - Water Balance and Climatic classification
  - Study of Sources and Conservation Structures
- Interpretation
  - Interpretation from yields of wells
  - Interpretation from yields of borewells

Activity 6.4- Boothanatham – a case study

- Solar pump installed to bring water for agriculture
- Ensured income generation & food security
- Social dimension changed
- Capacity has been built to the villagers to handle & operate solar pump & motor by themselves

Activity 6.5- Coonoor River Walk

- Carried out a river transect walk in Coonoor
- Dates……..