

Survey of Pilot Villages

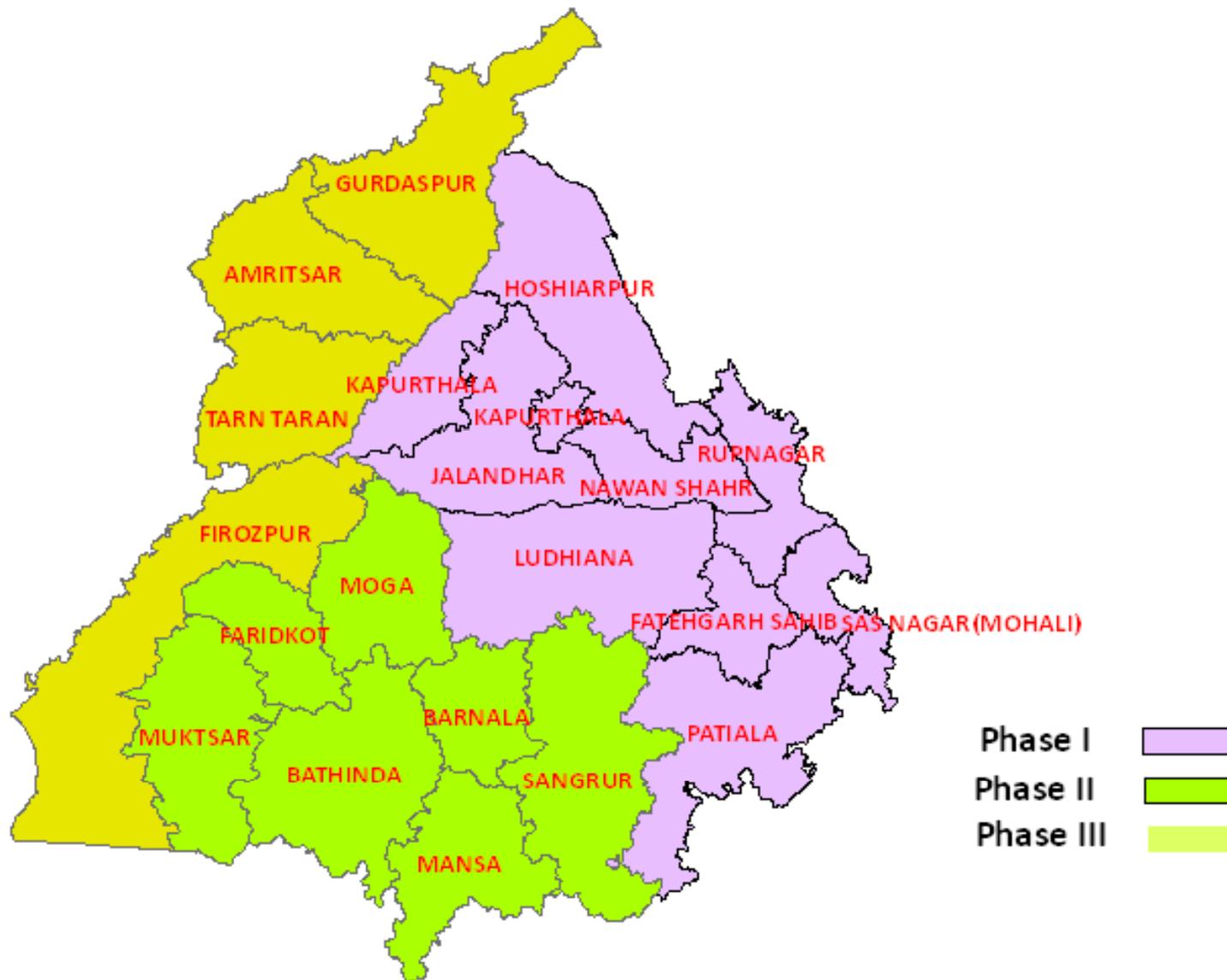
Tuesday, June 29, 2010

Maj Gen Shamsher Singh

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Punjab Land Records has planned to resurvey complete Punjab Land holdings with in a span of 7 years

To achieve this we have divided Punjab into three Phases



Phase I and Phase II by Photogrammetry and Total Station

Phase III By only Total Station

Punjab has a plan to out source this Job to Geo-spatial industry

The Problem with Geospatial Industry and Land Records Departments

- **Since money is at stake, industry resorts to short cuts**
- **Industry is good in GIS techniques but very poor in Surveying Concepts**
- **Industry tackles the problems as one does in topographical Surveys forgetting topographical surveys do not have legal sanctity**

Procedures adopted do not offer checks. Do not Understand the quantum of work involved therefore industry is not able to quote properly.

In case of Land records Authorities they do not Know what do they want

They are very poor in surveying and do not know any thing about GIS therefore industry takes undue advantage of this hence administrators are reluctant to clear the bills of companies. And project fails.

The staff is not willing to adopt the system because they feel it will hurt their financial interest

In Punjab therefore we have taken a decision that procedures and deliverables we will define and companies participating in the bid should work as per our requirement.

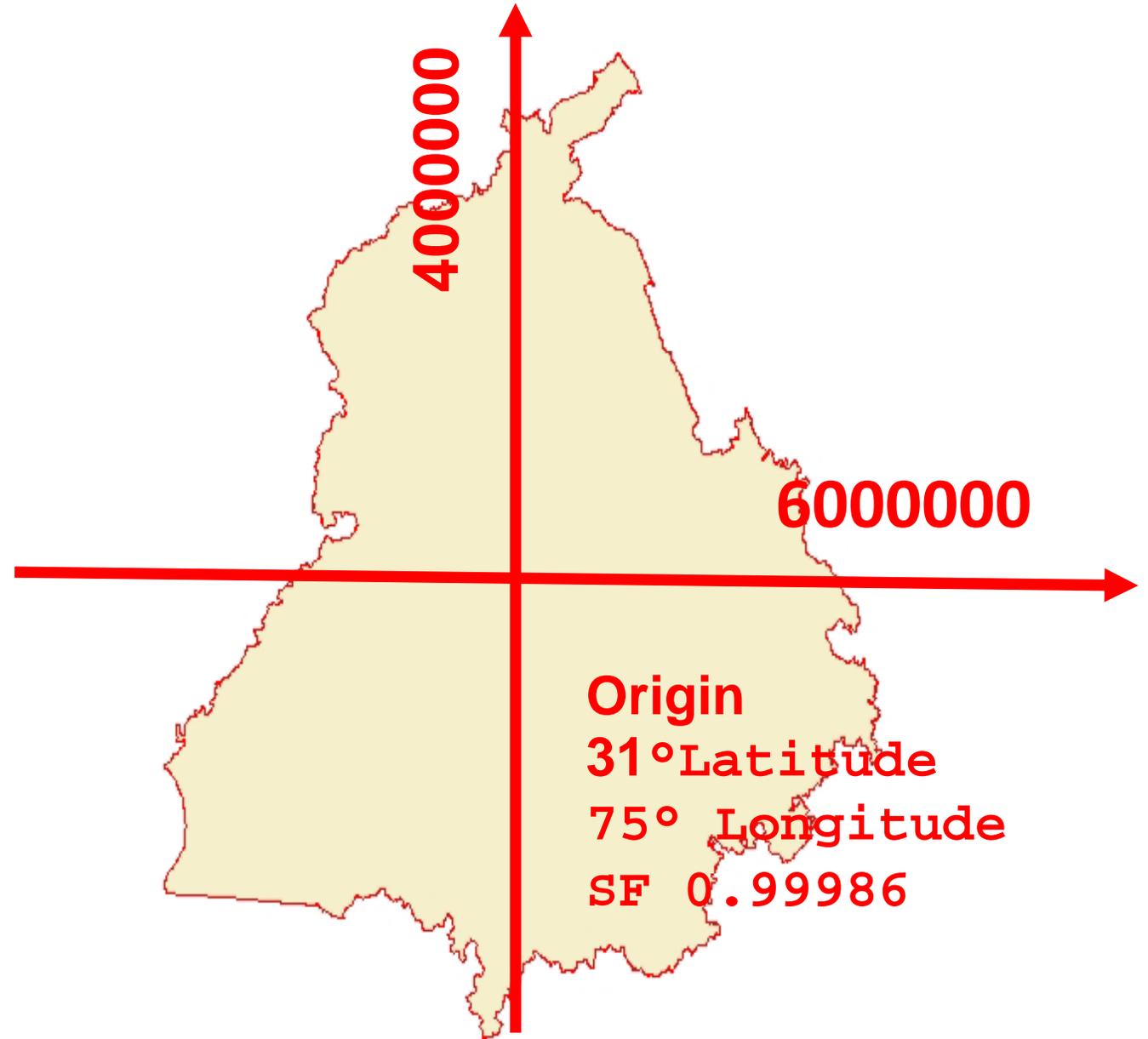
As companies do not understand the effort involved before preparing the tenders therefore due to their business interest they quote less and they fail.

Hence we plan to allot a village to every company participating in the tender provided they full fill certain conditions.

Once you are technically qualified, we would not allow you to further outsource the job therefore if you want to have a consortium that can be done before the pilot

If company is applying for photogrammetric Survey they will have to take two villages **one with total Station Survey** and other by **Photogrammetric means**. In case of Photogrammetric survey Time for technical qualification will be 45 days.

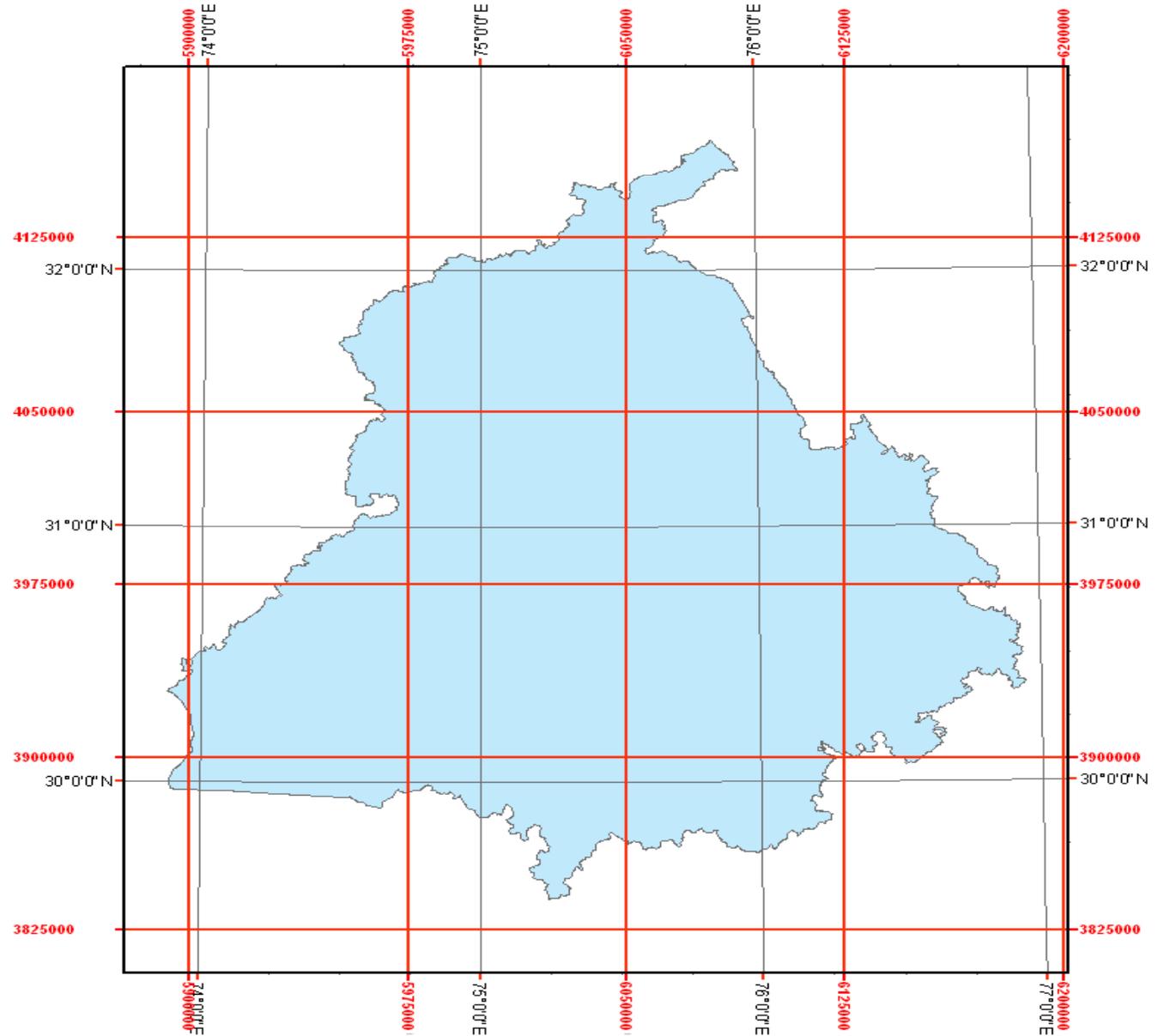
**Grid
Origin**



Punjab Grid

PUNJAB GRID

Origin	Latitude	31 Degree	Datum	WGS 84
	Longitude	75 Degree		
	Scale Factor	0.99986		

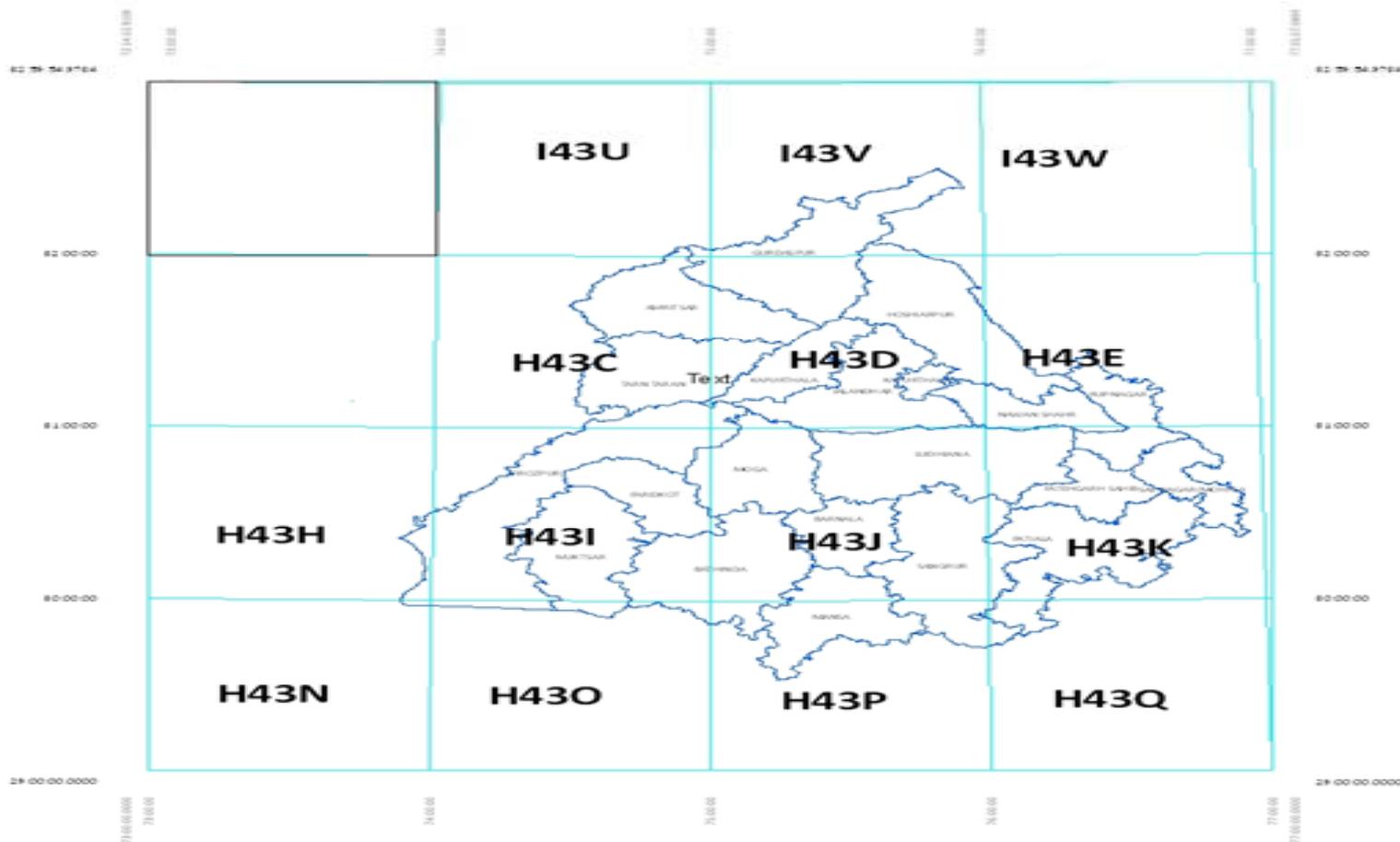


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Sheet Numbering

Punjab has followed the same numbering system as SOI except numbering of 1:1000 Scale sheets

PUNJAB 1 DEGREE GRID



Punjab 15' x 15' Grid for sheet No H43K

76:00:00.4622

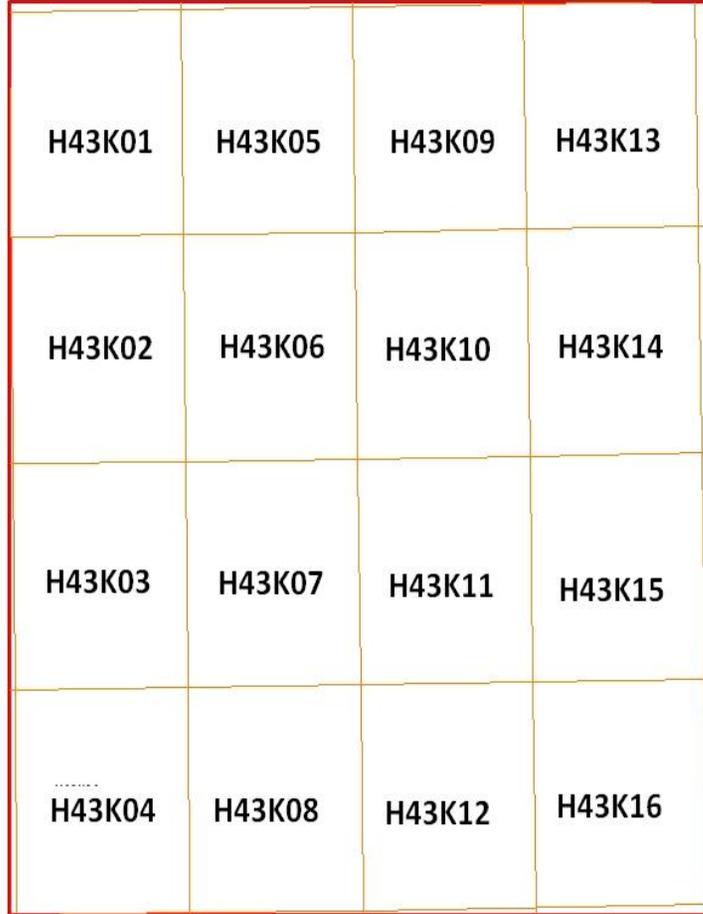
76°15'

76°30'

77°00'

77:01:17.0487

31:59:58



31°45'

31°30'

31°15'

31°00'

75:59:21.8853

76°00'

76°15'

76°30'

76°45'

76:59:59.1274

30:59:18

3' x 3' grid of Sheet No

H43K15

76:45:00.2457

76°48'

76°51'

76°54'

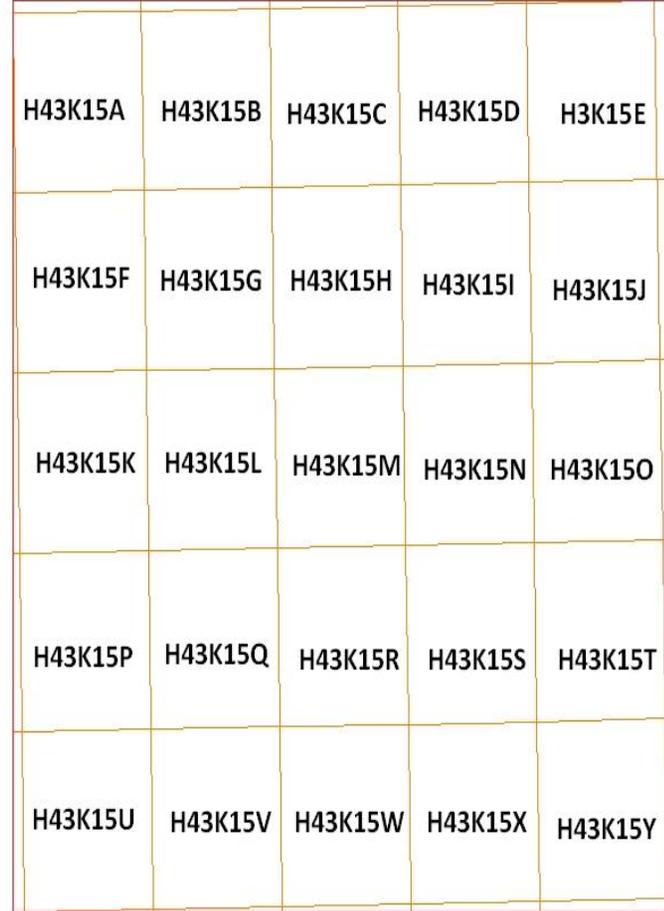
76°57'

77°00'

77:00:19.0907

31:29:

31°30'



31°29'

31°27'

31°24'

31°21'

31°18'

31°15'

31:14:

76°45'

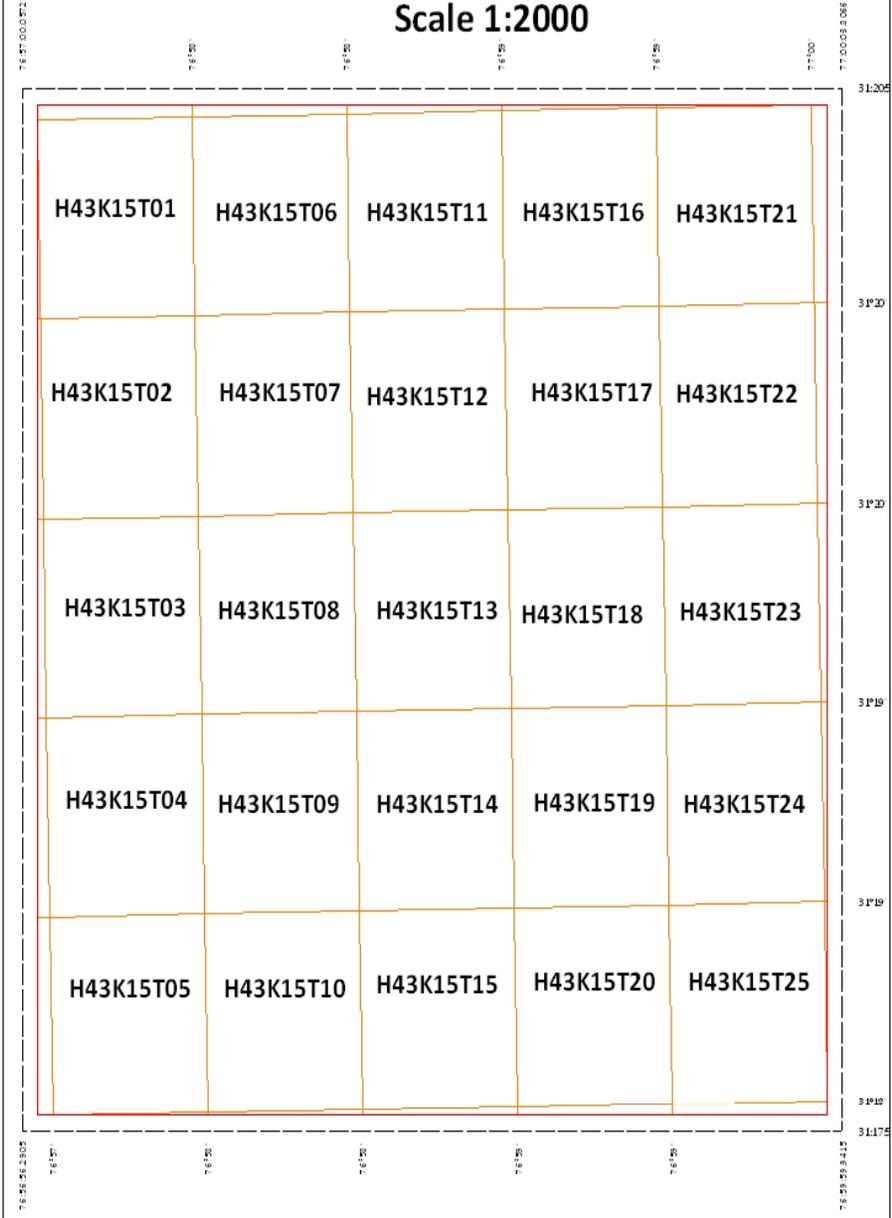
76°48'

76°51'

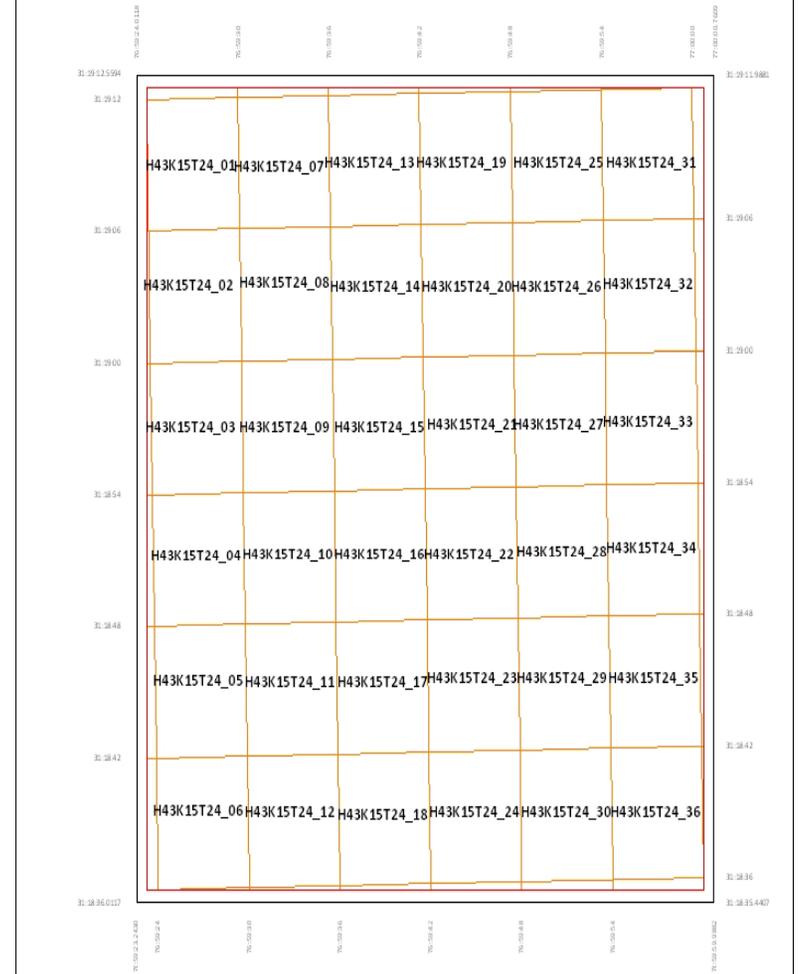
76°54'

76°57'

36" Grid of Sheet No H43K15T Scale 1:2000



6" x 6" Grid of sheet No H43K15T24 Scale 1:1000



Attribute Sheet

Tuesday, June 29, 2010

Punjab Land Record Society, Jalandhar			
Attribute Collection Sheet			
District	Taluk	Village	Locality
Grid Sheet No			
As per Old Records			
Name of the Owner as per LR		Father's Name	
Address as per Records			
House No	Ward No	Locality	Municipality
Old Survey No	Old Sub Div No	Khewat No	Area
As per New Records			
Name of the Owner		Father's Name	
Present Address			
House No	Ward No	Locality	Municipality
Telephone No	Name of 2nd Owner if any	Name of 3rd Owner if any	
Whether tribal <input type="checkbox"/> Yes <input type="checkbox"/> No	Whether SC <input type="checkbox"/> Yes <input type="checkbox"/> No	Passport No	Voter ID
Nature of holding <input type="checkbox"/> Donated <input type="checkbox"/> Inherited <input type="checkbox"/> Patta <input type="checkbox"/> Trust <input type="checkbox"/> others			
Type of Holding <input type="checkbox"/> Private <input type="checkbox"/> Govt		If Govt <input type="checkbox"/> School <input type="checkbox"/> College <input type="checkbox"/> Hospital <input type="checkbox"/> Vet Disp <input type="checkbox"/> Road <input type="checkbox"/> Canal <input type="checkbox"/> Police Stn	
		<input type="checkbox"/> River/stream <input type="checkbox"/> Electric sub Station <input type="checkbox"/> Others	
Source of Irrigation <input type="checkbox"/> Canal <input type="checkbox"/> Stream <input type="checkbox"/> Bore well <input type="checkbox"/> Well		Land Use <input type="checkbox"/> Agriculture <input type="checkbox"/> Residential <input type="checkbox"/> Commercial	
Nature of Agriculture <input type="checkbox"/> Paddy <input type="checkbox"/> Garden <input type="checkbox"/> Barren <input type="checkbox"/> others <input type="checkbox"/> Industrial <input type="checkbox"/> Others			
Commercial <input type="checkbox"/> Small Scale Industry <input type="checkbox"/> Large scale Industry <input type="checkbox"/> Shop <input type="checkbox"/> Shopping Complex			
Whether Building Exists <input type="checkbox"/> Yes <input type="checkbox"/> No		If Yes Building No <input type="checkbox"/> Plinth area <input type="checkbox"/> Water Connection No <input type="checkbox"/>	
Electric Connection No <input type="checkbox"/>		Type of Construction <input type="checkbox"/> Brick/stone <input type="checkbox"/> Mud bricks <input type="checkbox"/> No floors <input type="checkbox"/>	
Water Supply <input type="checkbox"/> Municipal Tap <input type="checkbox"/> Private Well <input type="checkbox"/> Panchayat Well		Whether building is Connected to road <input type="checkbox"/> Yes <input type="checkbox"/> No	
For Official Use			
Temporary Parcel ID <input type="checkbox"/>	Permanent Parcel ID <input type="checkbox"/>	Resurvey Block No <input type="checkbox"/>	
Confirm if attributes agree with the old records <input type="checkbox"/> yes <input type="checkbox"/> No			
Signatures of Survey Officer			



Signature of Surveyor

For Official Use

Temporary Parcel ID

Permanent Parcel ID

Resurvey Block No

Confirm if attributes agree with the old records yes No

Signatures of Survey Officer

Field Survey

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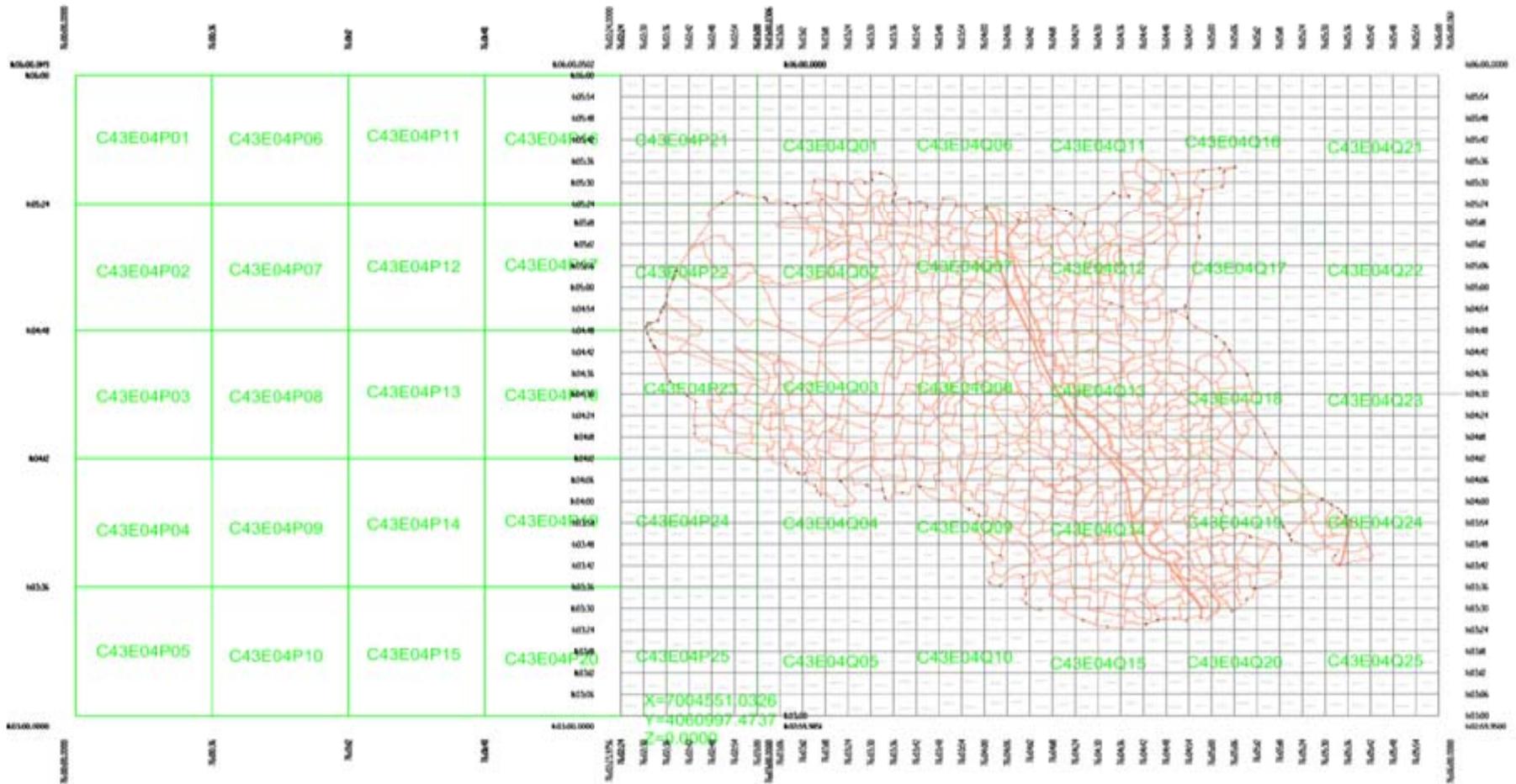
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Field Material Preparation

- 1) Collect old Mussavi of allotted Village
- 2) Collect old attributes already keyed in the SQL servers maintained at Teh HQ.
- 3) Scan and Digitize the Old Mussavis
- 4) Stitch the Mussavis even if you have to introduce error
- 5) Provide Control points in the village at least 2 km apart with GPS and connect these points by carrying out traverse with total station such that traverse closes with in 1: 5000 accuracy. While providing control points few points should be post pointed on Old Mussavi's for Gereferencing.

Contd

Stitched Mussavi



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- 6) Geo reference Old Mussavi and bring it into co-ordinate system.
- 7) Put Punjab Grid over this and convert the data into KML file
- 8) Use internet and go to google.
- 9) Call the village officials to the village camp and project the combined image on projector/Plasma.
- 10) Mark the current boundaries on satellite image confirming from village committee.
- 11) Take a print of min 4 grids. (This will act as location sketch)
- 12) Go on to ground and carryout Survey on 1:1000 Scale
- 13) While carrying out Survey using Total Station each pointing of total station must be plotted in pencil and co-ordinates recorded in ink on field sheet.

- 14) An attribute sheet carried by the surveyor must be filled parcel wise in the field.
- 15) Once Grid is complete, the data is down loaded and parcels are created. The Parcel Created on desk top must match in Toto with grid sheet plotting in the field. If any total station has the facility to join line in the field should be done so in this case the drawing downloaded must agree in Toto with field grid sheet.
- 16) Once parcel created on computer agree with the parcels plotted in the field and their edges are corrected the field grid sheet should be inked.
- 17) Print out of each parcel is taken out on A4 sheet and handed over to the plot owner for checking the dimensions measured by you. Time of 15 days is given to the owner to confirm else it will be presumed the dimensions are correct. The attribute entered by the field hand and by the owner are compared.

- 18) Attributes collected and compared they are keyed in the SQL data base maintained at each Tehsil HQ. or directly they are attached in the Arc S/W Prepare about 8 theme layers.
- 19) Now already stitched Mussavis are unstitched and independently geo referenced.
- 20) Prepare Co relation statement for encroachment of Govt Land
- 21) Prepare Co relation statement of Area
- 22) Prepare Statement of owners. If owners are not matching the separate list should be prepared. The village resolve committee should verify the claims of only these owners.
- 23) Prepare the Land Registers.
- 24) After all records have been sorted out /completed prepare the data for passbook printing.
- 25) Prepare the data for publishing on to the web.
- 25) As 36 grids are completed stitch the volumes as per the

In case of photogrammetric Survey, the features collected have to be brought into the grid sheet and verified and attribute collection is done the same as explained above

In case of Photogrammetric survey, partial lines shall be drawn in such a way that at least 10 % parcels are verified on ground. In case more than 10 % of verified parcels are found not conforming to ground . Complete task of those grids shall have to be repeated using total station.

Deliverables

OUTPUT REQUIRED

A) *Control Volume duly bounded*
Containing

Field sheet filled up for each station constructed /observed

Log sheet for each station

One print out giving co-ordinates of all control points

B) *Soft Copies*

Raw Data on 2 DVD's and third copy on hard disc

Processed data in a Excel sheet

Description of each station on excel sheet

Field Volume (Duly bounded for each block of 36 Grids)

The field volume must contain the following

Field Grid Sheet

Attribute sheet for each holdings

Co-ordinate sheet . The co-ordinates of each node created during field survey

A copy of verification sheet duly verified by the land holder

A print out of a block of 36 Grids

Encroachment statement

Co -relation statement with new and old records

Soft Copy (One copy on DVD and second copy on hard disc)

Raw data of Total Station as well as processed data of Total Station for each grid

Processed and merged Data of each Block

In case of photogrammetry, the complete vector data collected along with data collected by Total Station.

In addition to theme layers, the layer of all the point node, layer of lines joining these nodes and creation of the polygons out of these line feature to create parcels must be separately maintained. While preparing the topology the integrity of these features should not be disturbed.

Complete data prepared on Arc GIS format along with Attributes attached as per data model structure.

In case photogrammetry is used, the following additional information/deliverables shall be required.

Photographs duly scanned on 14 micron

Block adjustments along with RMSE

Feature extracted from photographs in a separate layer

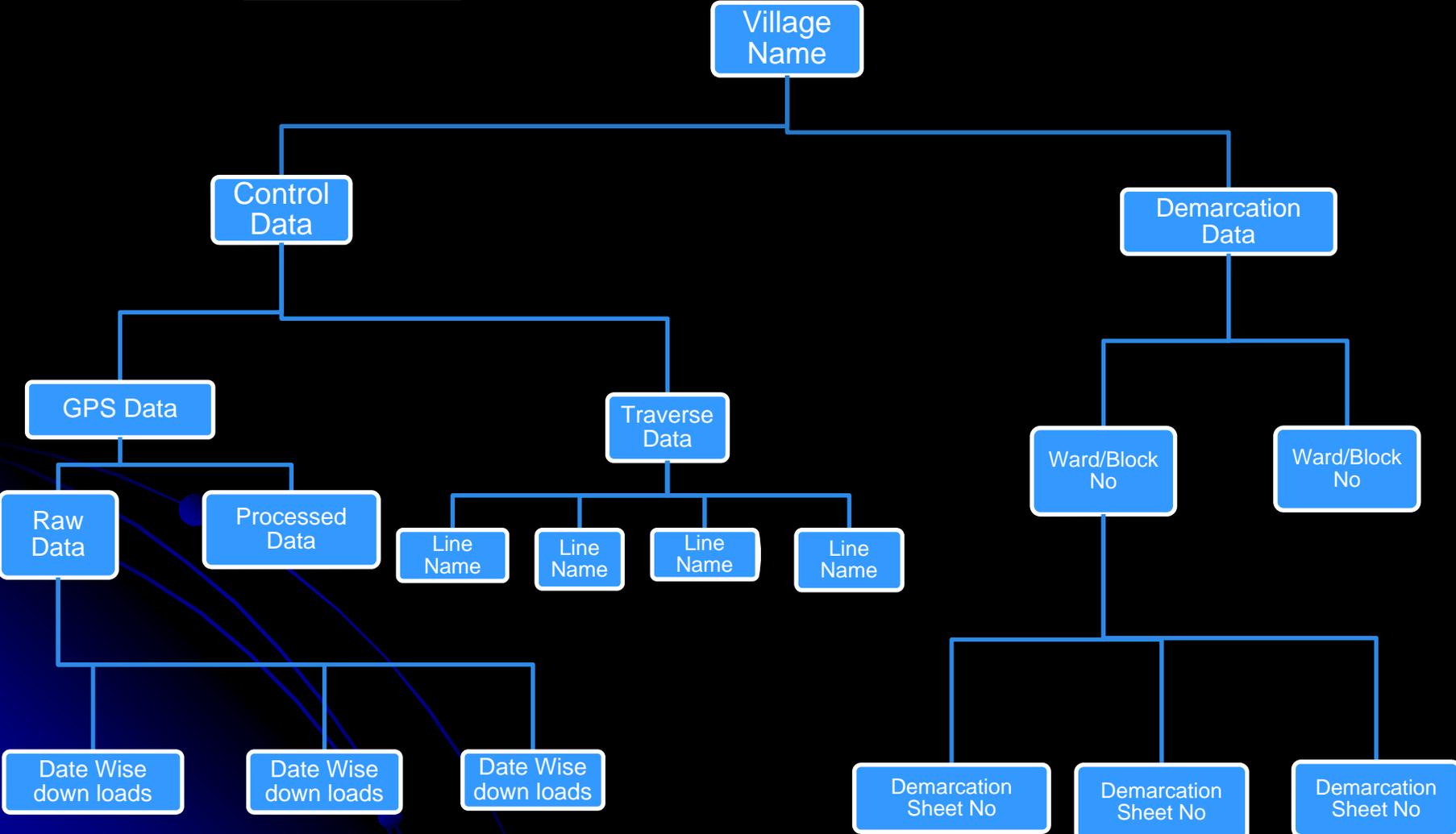
Features added during field verification in a separate layer.

Note: Since photographs are Secret therefore they should not be printed and should be handled with utmost care. Tenderer must ensure that he uses only those workers who are reliable and whenever photographs have to be taken to field they must be carried by the Govt. official. The tenderer is advised to use high resolution satellite images for post pointing and details may be plotted on the computer using Aerial Photographs.

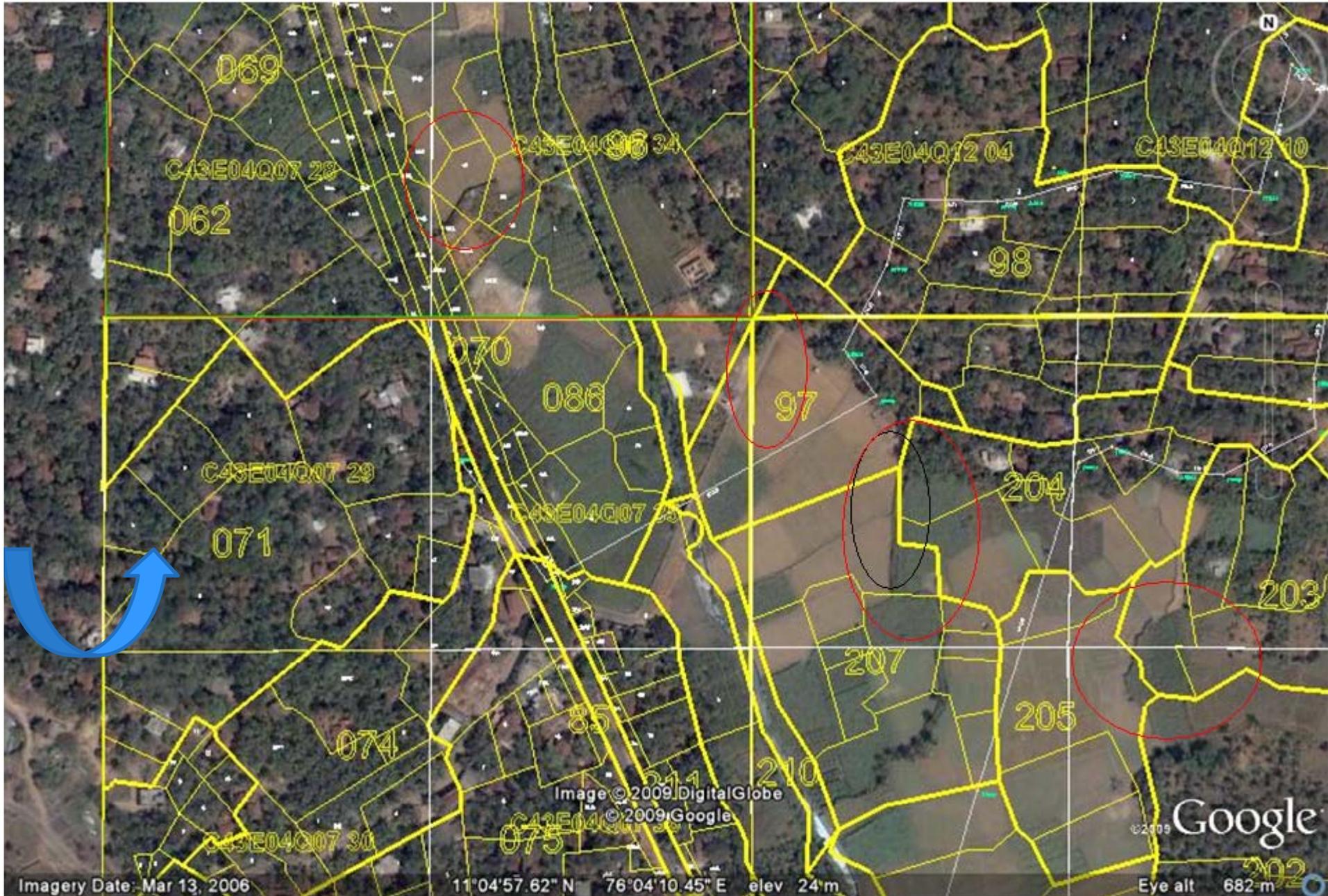
Finally corrected maps may be supplied, one hard copy on paper, one hard copy on transparent media and softcopy on CD / DVD media.

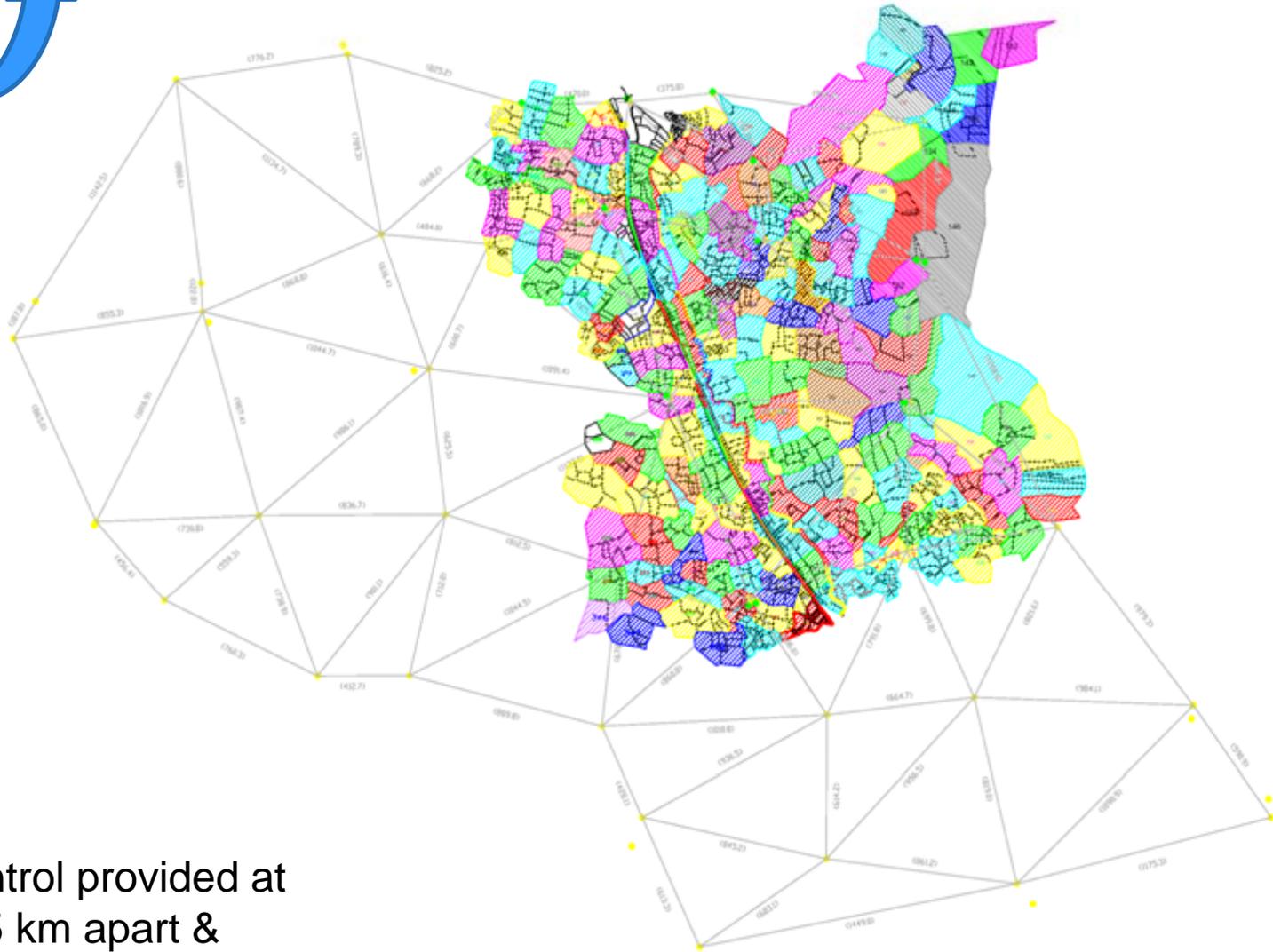
Data Storing folder

Slide 23









GPS Control provided at
about 2.5 km apart &
mussavis placed inside





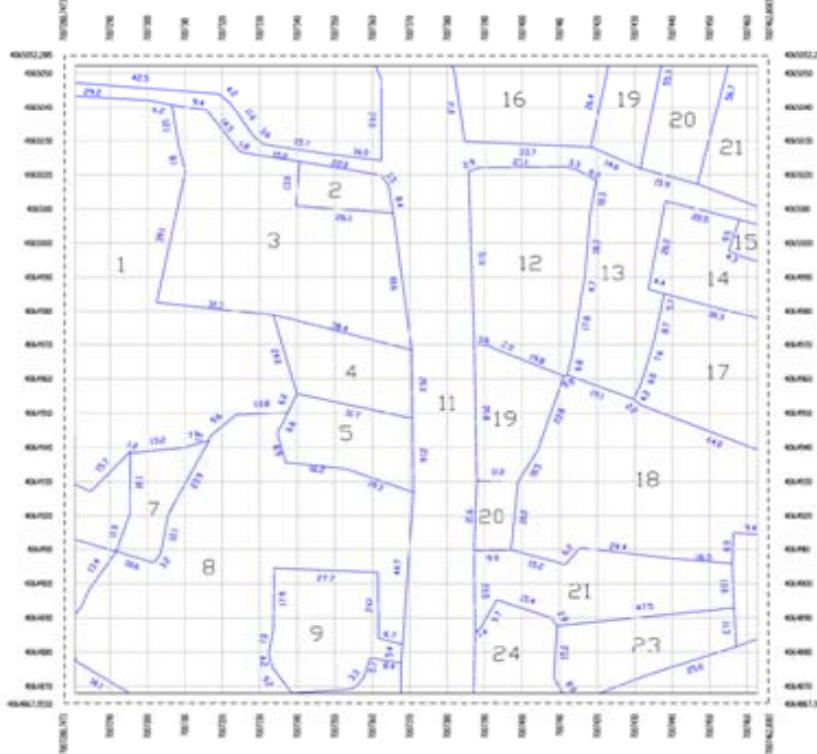
DEMARICATION SURVEY

SCALE 1:1000
FIELD SEASON 2009

DISTRICT MALAPPURAM
TALUK ERNAD

VILLAGE MELMURI

SHEET NO C43E04Q07_26



Commenced on: _____
 Finished on : _____
 Demarcated by: _____
 Prepared by : _____
 Checked by : _____

Sheet Index

C43E04Q07_10	C43E04Q07_20	C43E04Q07_30
C43E04Q07_20	C43E04Q07_26	C43E04Q07_30
C43E04Q07_30	C43E04Q07_30	C43E04Q07_30

Coordinates of control points

Point ID EASTING NORTHING HEIGHT

- Village Boundary rock mark (old)
- Khandam Boundary Rock Mark (old)
- Village Boundary stone (old)
- Khandam Boundary Stone (old)
- Control Points (NEW)



Punjab Land Record Society

Field Sheet

Page No _____

Co-ordinates of Known Points

Easting of Back stn

Northing of Back Stn

Grid Sheet No _____

Easting of Occupied Stn

Northing of Occupied stn

Stn Detail

Point Details

Sl No	Back Stn Name	Occupied Stn Name	Fwd Stn Name	Easting of Fwd Stn	Northing Of Fwd Stn	Pt Code	Parcel ID	Pt Common between Parcel No	Pt Code Given to old Parcel node
	<u>Slide 18</u>								



Dated Signature of Observer _____

Dated Signature of Recorder _____

Verified by _____

Name and signature of village official _____

Note

The Co-ordinates of known points and old Mussavi points should be written in Red Ink.

No duplicate sheet to be prepared if found with any team task can be withdrawn

Thanks for your attention