

Watershed Management On Small Scale Map By Using GIS and RS

Prof. Milind Darade¹, Deshmukh Dhananjay², Biradar Vivek³, Swami Ravikiran⁴, Jadhav Ramchandra⁵, Pisal Harshal⁶.

Dr. D Y Patil School of Engineering and Technology

¹ Prof, Department of Civil Engineering, Dr D Y Patil SOET, Pune, India
^{2,3,4,5,6} Student, Department of Civil Engineering, Dr D Y Patil SOET, Pune, India

ABSTRACT

In the present study an honest attempt has been made for selection of suitable site for water harvesting structure of the area. The criteria selecting watershed Size depend upon the objective and slope terrain. The study area of project is 604 hec. At Gondegaon Latur, Maharashtra and rural area around in Latur taluka, Latur District of Maharashtra State. This area lies in between Latitude 17°52"N & 18°42"N and Longitude 76°18"E & 76°34"E using GIS & RS (In this area drinking water demand is increase by fast growing industrial area.)

The catchment area is carried out by using survey of India and Geo-referencing the topo-sheet. A soil map of 1:50000 Scale is obtained by national bureau of soil survey and land use planning in pune. From the study various ground water recharge and water storage structure are suggested after doing benefit cost analysis.

Keywords : *Small watershed management water conservation techniques. Suitable water harvesting structure, geographical information system remote sensing system.*

1. INTRODUCTION

Watershed management of the particular area with help of remote sensing and geographical information system. Water resources between various sector such as make it vital component. Using software to Q GIS with help of finding streams. The structure may differ with diff parameter viz. location, slope of land, soil type, intensity of rainfall, land cover and settlement.

The rampant growth of population and advancements in life style have tremendously increased the demands for food, fuel, fodder, fiber, shelter, communication, etc. These growing demands are putting the resilience of the natural resource base under threat. To ensure food and water security, the vertical and horizontal expansion of production, has to be effective without degrading productivity. The rain fed agriculture contributes 58 per cent to world's food basket from 80 per cent agriculture lands (Raju et al. 2008).

2. OBJECTIVE BEHIND THIS PROJECT

- 1) Demarking of watershed using gis and rs..
- 2) Study the pattern of land use.
- 3) Study of soil pattern.
- 4) Calculate the erosion of soil.
- 5) Suggest preventive measure for erosion.

3. LITERATURE REVIEW

3.1. UPENDRA R. SAHARKAR (2015)

The aim of this project is to emphasize the important of the water conservation and soil conservation to overcome from shortage of water and degradation of agriculture land. The activities undertaken in this project include soil and water conservation measure like construction of ditch, furrows , recharge basins, bench terracing ,contour bunds, gully plugs, check dams and percolation ponds.

3.2. SUHAS P. WANI, KAUSHAL K. GARG

Select watershed sites where direct need exists in terms of improving soil and water conservation enhancing productivity and improving livelihood.

3.3. GOPAL KUMAR D. R. SENA (2014)

The slight deviation due to poor spatial resolution of elevation data used may be ignored maximum deviation was found in the case of Dharmapur cluster. The main reason for this is the poor quality elevation data for watershed delineation. In plane areas some deviation can be allowed if it is done to facilitate people participation and defining beneficiaries but at the same time it should not be ignore as it define the very basic concept of a watershed.

4. DATA COLLECTION

Site selection of water harvesting structure.

Following criteria followed for making selection of suitable site as per (IMSD)

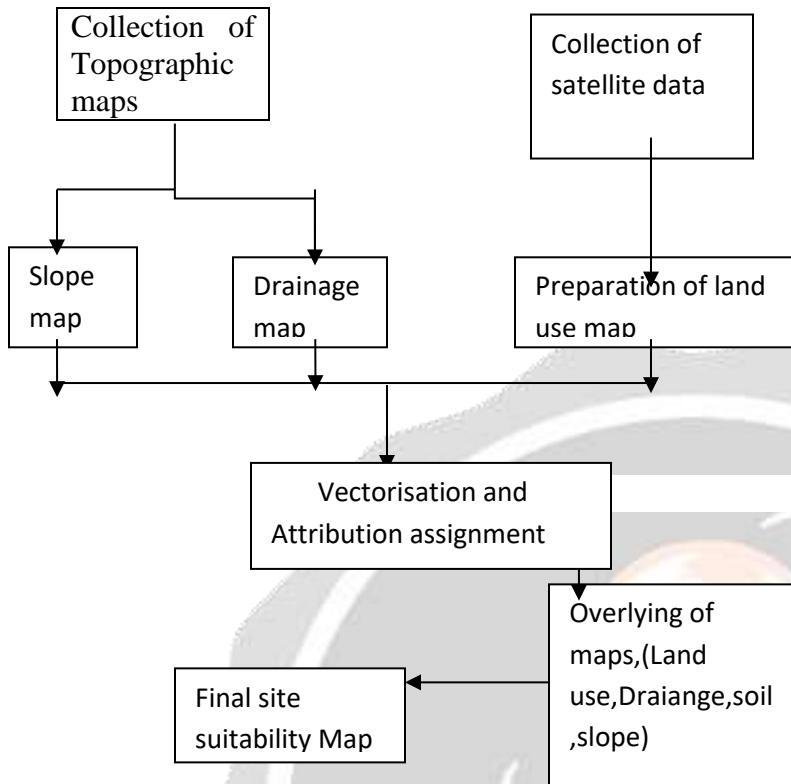
4.1 CHECK FOR DAMS

- 1) Slope should be less than 15%.
- 2) Land use may be river bed .
- 3) Infiltration rate of soil is less.
- 4) Type of soil sandy soil and sandy soil.

4.2 PERCOLATION TANKS AND NALA BUNDS

- 1) Slope should be less than 10%
- 2) Infiltration rate is high or moderately large or high
- 3) Land use may be infertile
- 4) Type of soil should be silt clay

4.3 FLOW CHART



5. GEO REFERANCING AND DIGITIZATION

Geo referencing of scan maps was carried out in quantam gis (Q gis) using contour point establishment on base map.

Latitude and longitude of all 4 Four contour points located on top left and top right In the screen digitization of scanned map was performed in (Q GIS) software and editing accordingly to remove error during digitization.

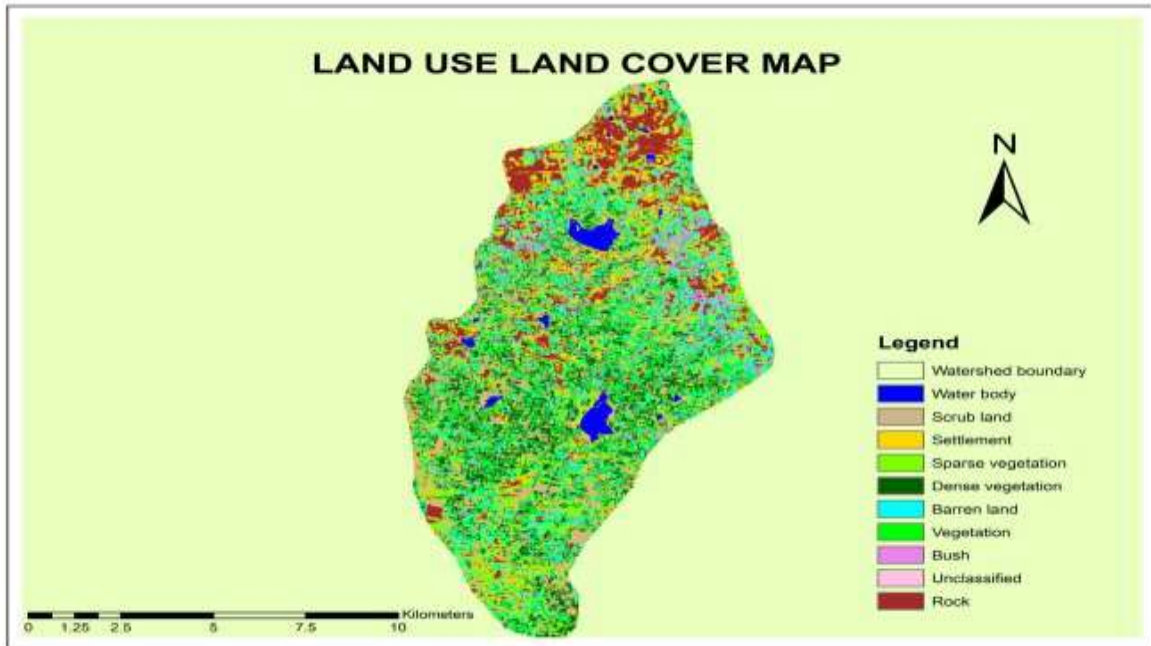


FIG 1. LAND USE LAND COVER MAPS

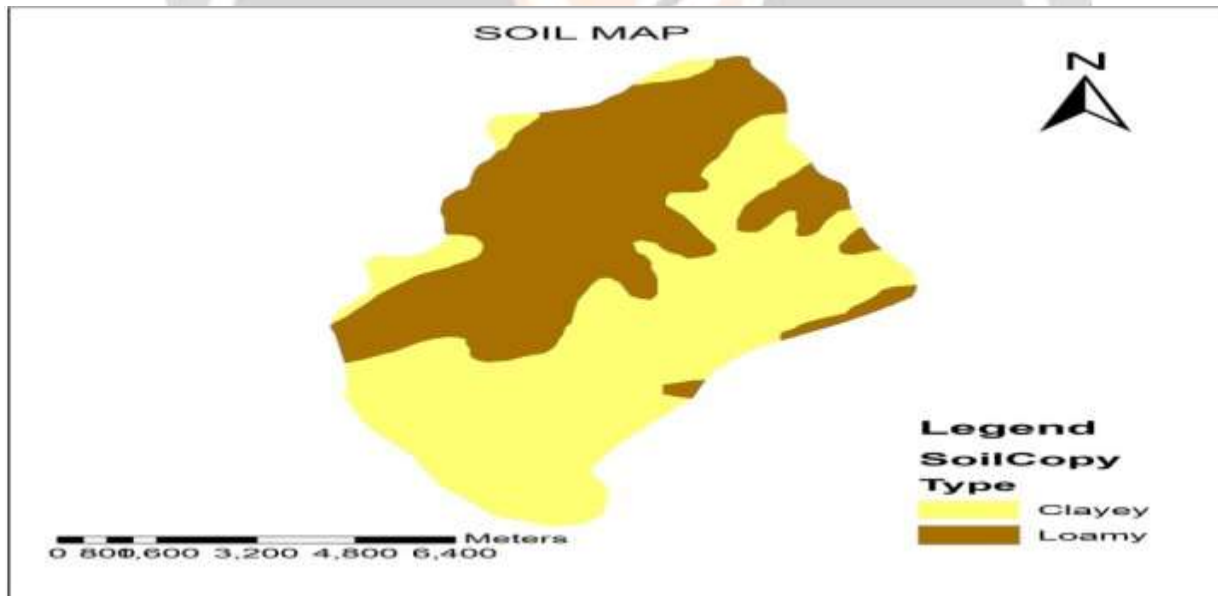


FIG 2. SOIL MAPS

5.1. MAPS

Land use map

- 1) Water body
- 2) Cause of scrub
- 3) Settlement plantation
- 4) Cellular vegetation
- 5) Dense of thickly vegetation

- 6) Rock
- 7) Brushwood

5.2 DRAINAGE MAP

Drainage map prepared by digitizing drainage too survey of india of toposheet (No 56 B/7)

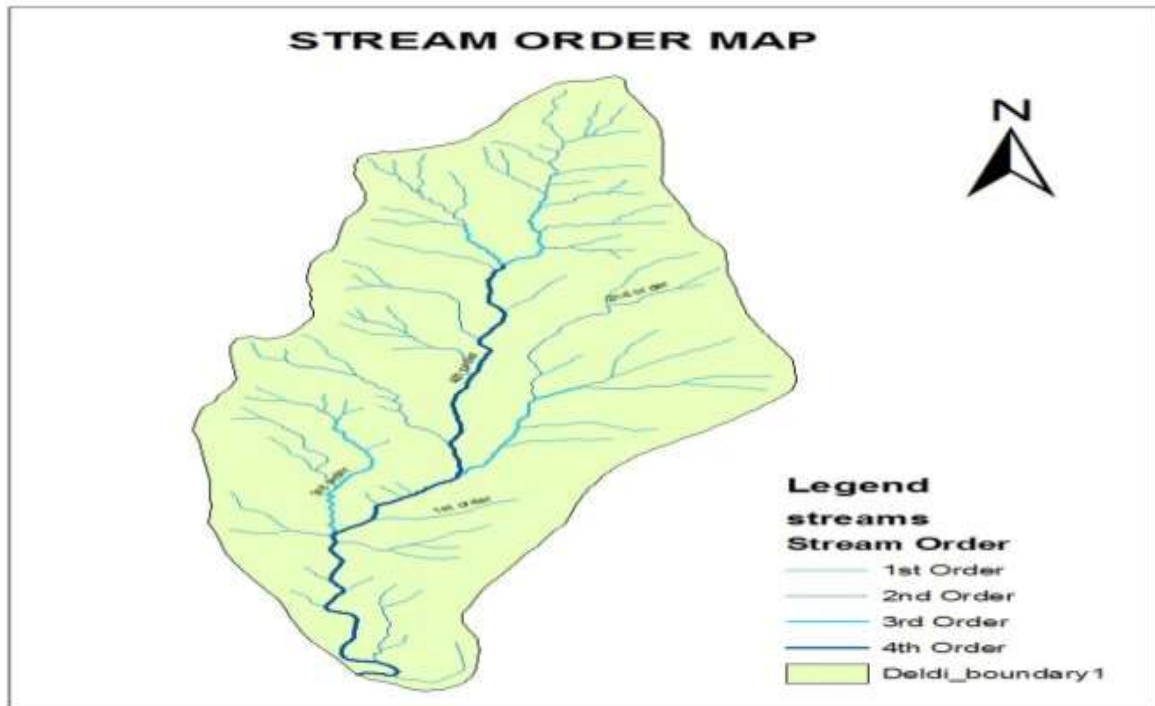


FIG 3. DRAINAGE MAP

6. RESULT AND CONCLUSION

Suitability of water harvesting structure were identified with the application of remote sensing and gis. The contour map, drainage map, land boundry map. Soil map prepared using satellite image and survey of india toposheet of watershed.

The aim of project is importance of water conservation and soil conservation and degradation of agriculture land.

Q GIS software is find out the streams lines, slope direction of topography. If watershed development project implemented then it will result in improving the living standard and economic condition of people in rural area.

Successful implementation of this project the participation of local people. These technique is ecofriendly and the development due to this in future will be sustainable.

To increase the water level of ground following solution can be adopted

- 1)Building check dams or percolation tanks to increase the water table.
- 2) To direct the Strom water to artificial tanks (built)
- 3)Trenching wells can be introduced. Project limitation is to mark the watershed. Only suggestions

only suggestions are given.

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- 10) Upendra R. Saharkar, et.al(2015)-The aim of this project is to emphasize the importance of the water conservation and soil conservation to overcome from shortage of water and degradation of agricultural land. The activities undertaken in this project include soil and water conservation measures like construction of ditch, furrows, recharge basins, bench terracing, contour bunds, gully plugs, nalah bunds, check dams and percolation ponds. Also there are some tanks which are not maintained properly.
- 11) Suhas P. Wani, Kaushal K. Garg- Select watershed sites where dire need exists in terms of improving soil and water conservation, enhancing productivity and improving livelihoods.
- 12) Gopal Kumar D R Sena et.al-The slight deviation due to poor spatial resolution of elevation data used may be ignored. Maximum deviation was found in the case of Dharampur cluster. The main reason for this is the use of poor-quality elevation data for watershed delineation. In plain areas some deviation can be allowed if it is done to facilitate people's participation and defining beneficiaries, but at the same time it should not be ignored as it defies the very basic concept of a watershed.
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8. BIOGRAPHIES.



¹Prof ,Civil Engg,Dr.D.Y.Patil
School of Engineering &
Technology,Lohegaon,Pune-
412105,India.”



²Student,Civil Engg,Dr.D.Y.Patil
School of Engineering &
Technology,Lohegaon,Pune-
412105,India.”



³Student,Civil Engg,Dr.D.Y.Patil
School of Engineering &
Technology,Lohegaon,Pune-
412105,India.”



⁴ Professor,Civil Engg, Dr. D. Y.
Patil School of Engineering &
Technology, Lohegaon, Pune-
412105,India.”



⁵ Professor,Civil Engg, Dr. D. Y.
Patil School of Engineering &
Technology, Lohegaon, Pune-
412105,India.”



⁶Student ,Civil Engg,Dr.D.Y.Patil
School of Engineering &
Technology,Lohegaon,Pune-
412105,India.”

