

Drainage Analysis

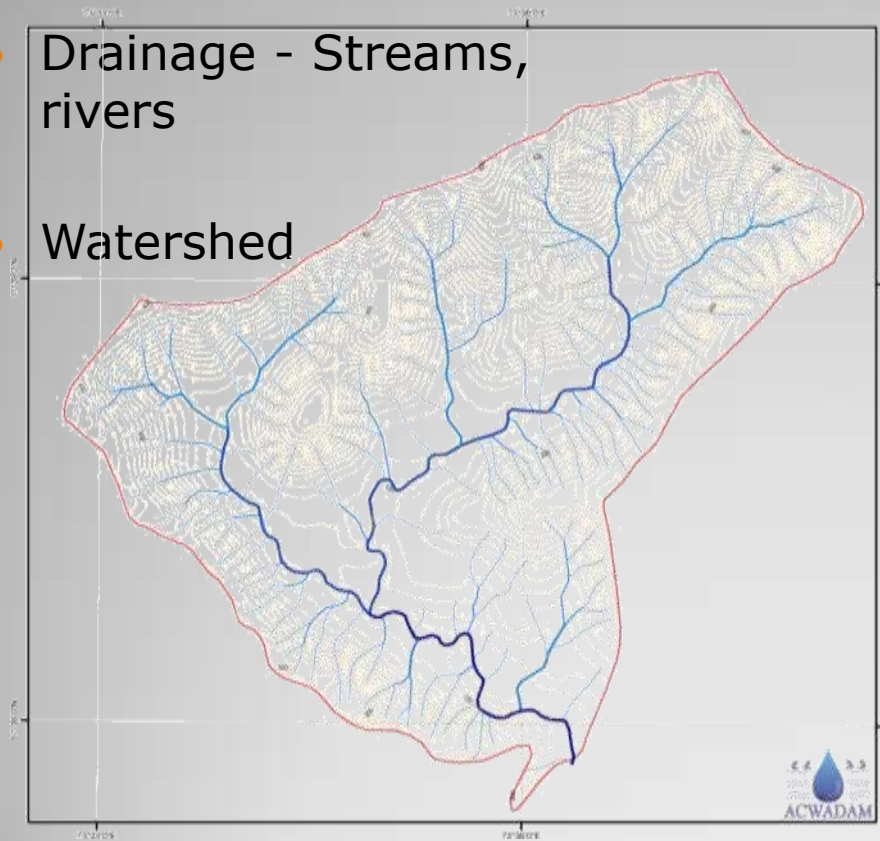
-Concept

ACWADAM
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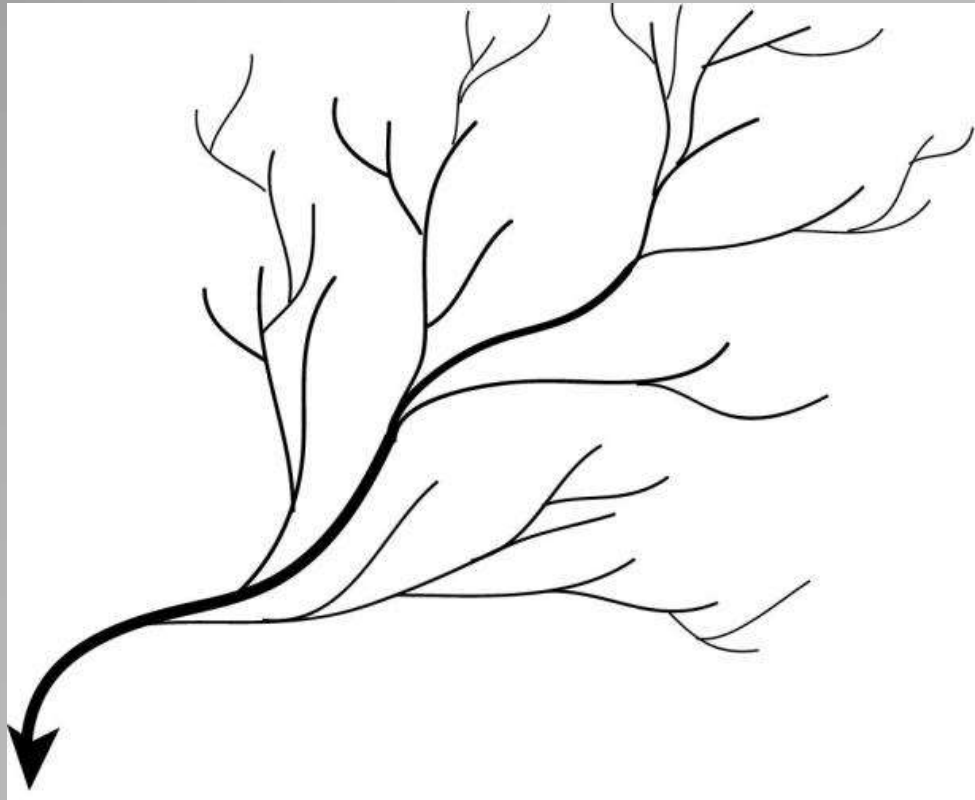
- Water follows the easiest path

- Drainage - Streams, rivers

- Watershed



Drainage and watershed

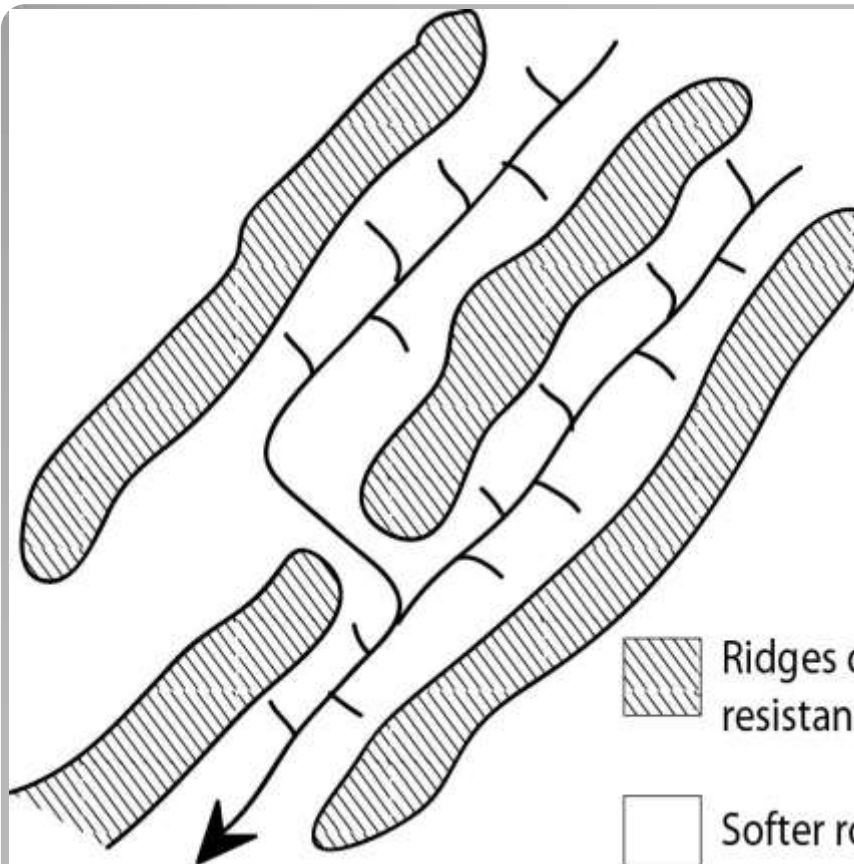


Dendritic

Types of drainage



Source: SA Geography



 Ridges of resistant rock

 Softer rock



Trellis

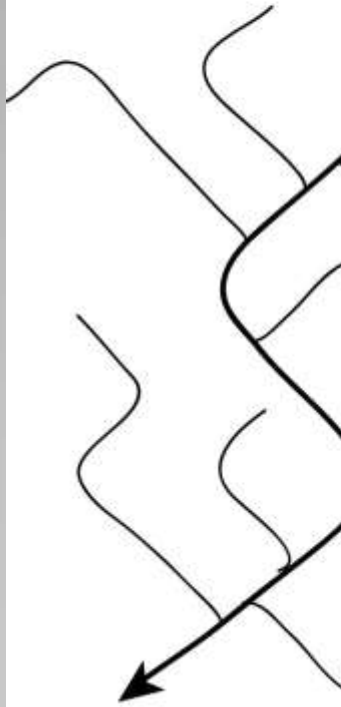
Types of drainage

Source: SA Geography

joint-plane
pattern direction
(rectangular mesh)

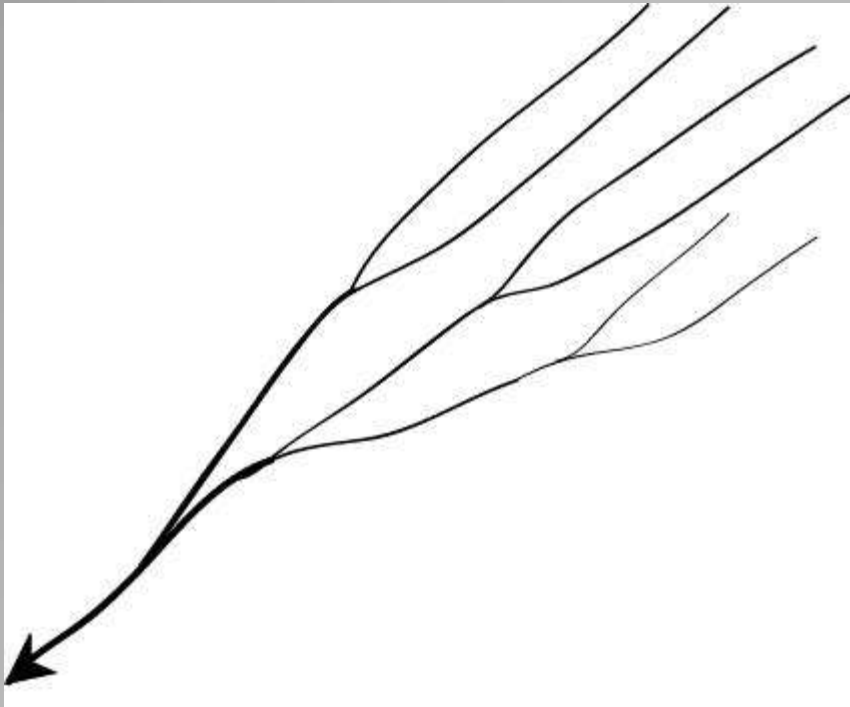


Rectangular



Types of drainage

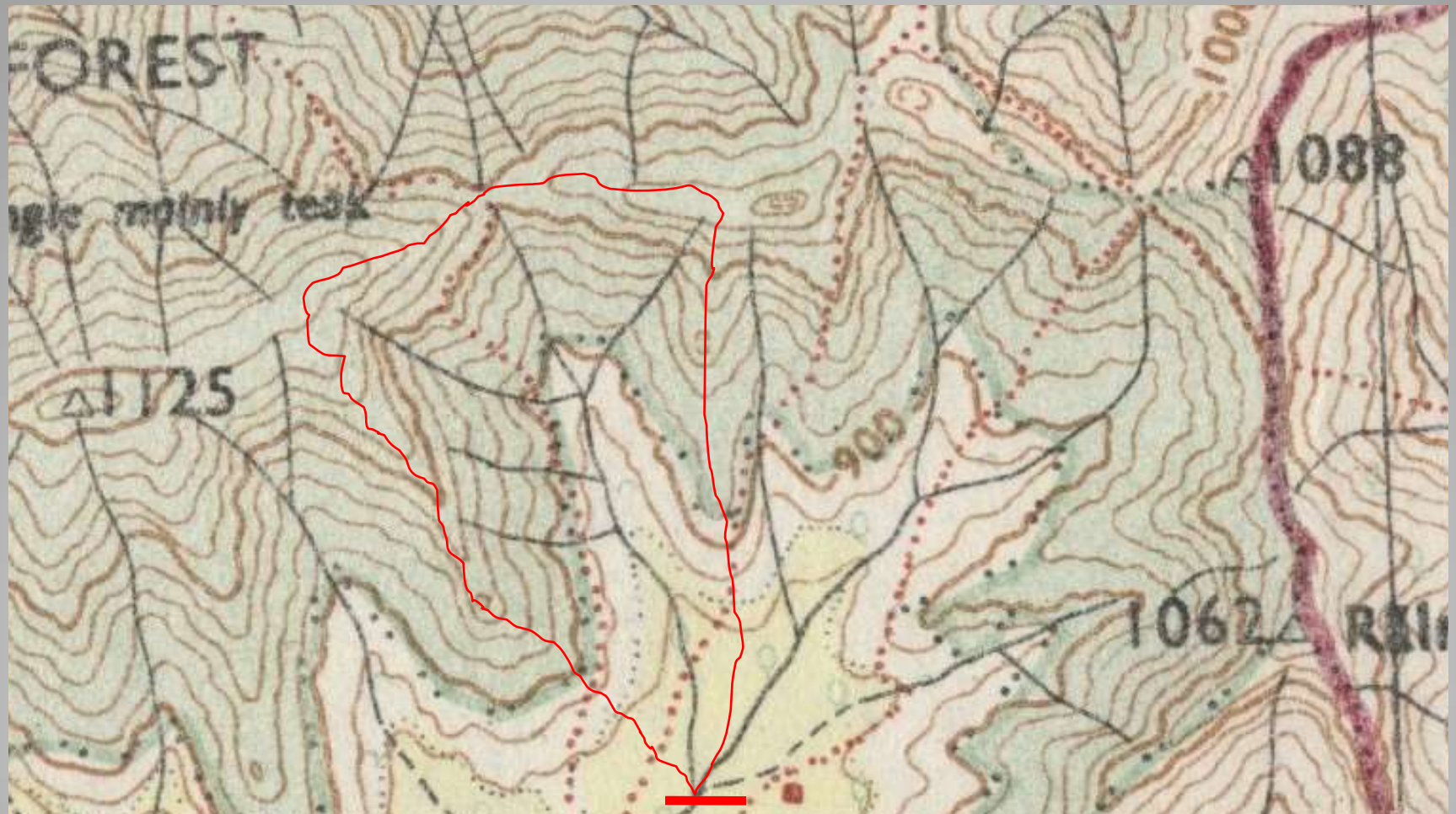
Source: SA Geography



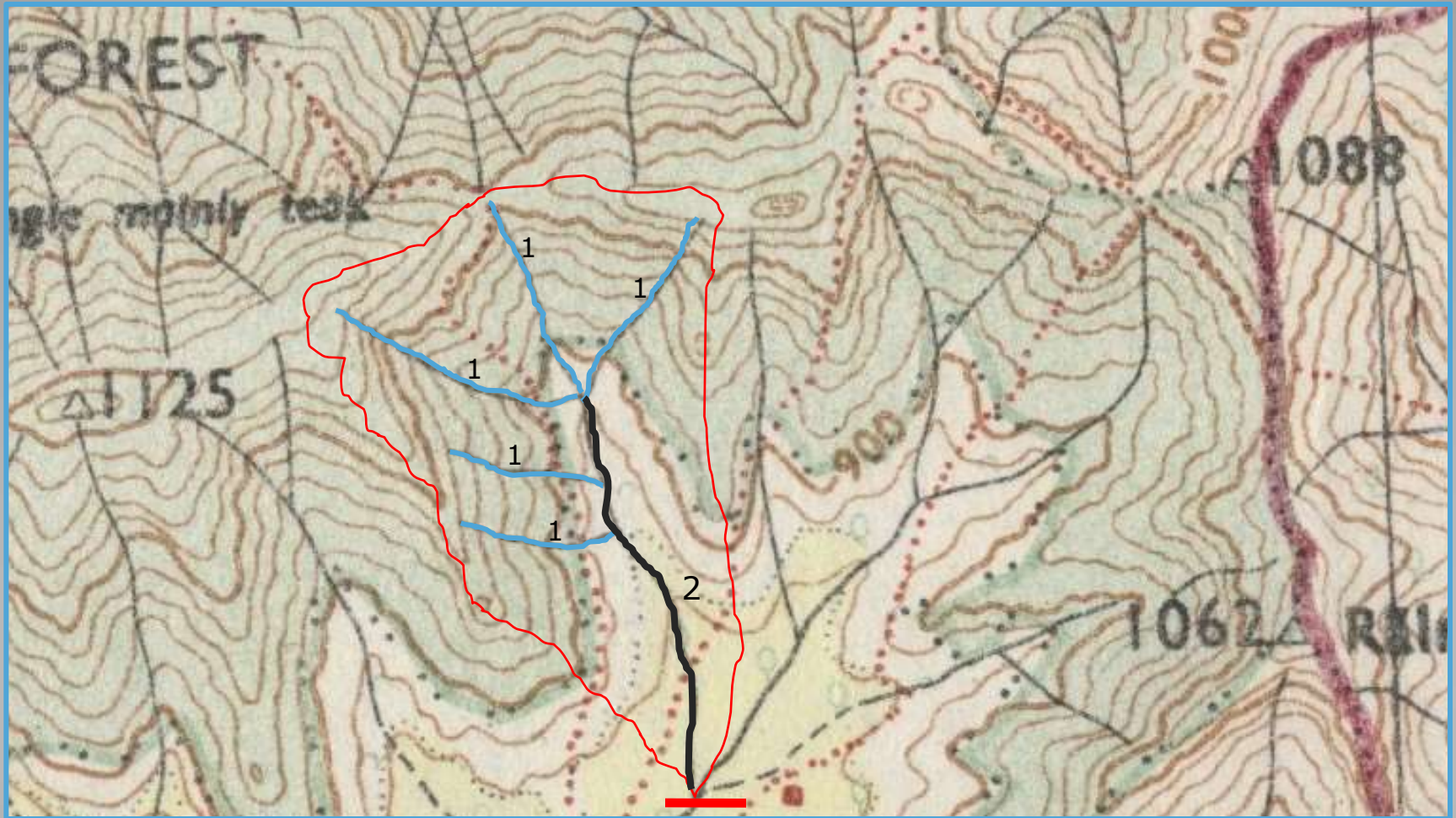
Parallel

Types of drainage

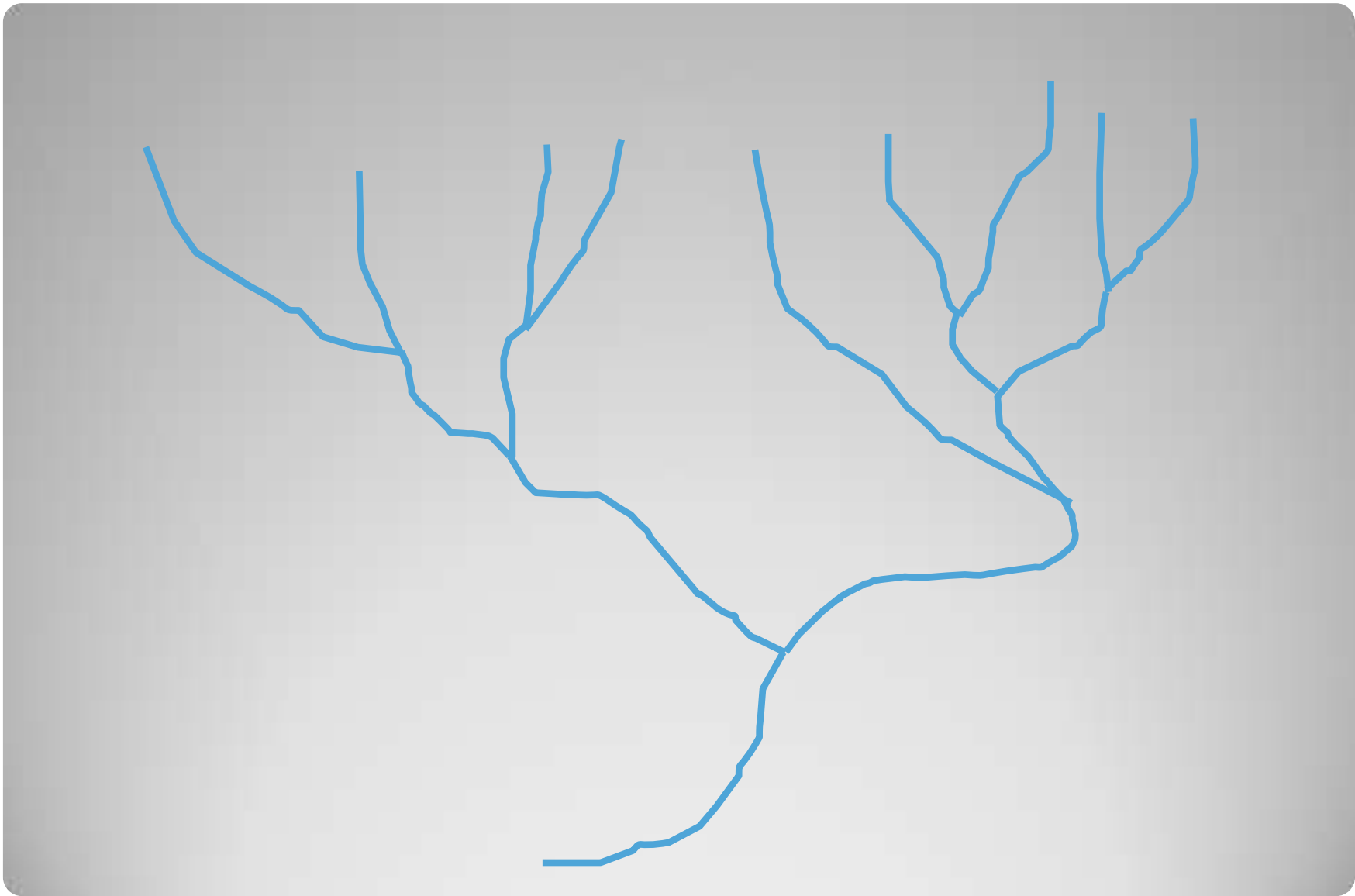
Source: SA Geography

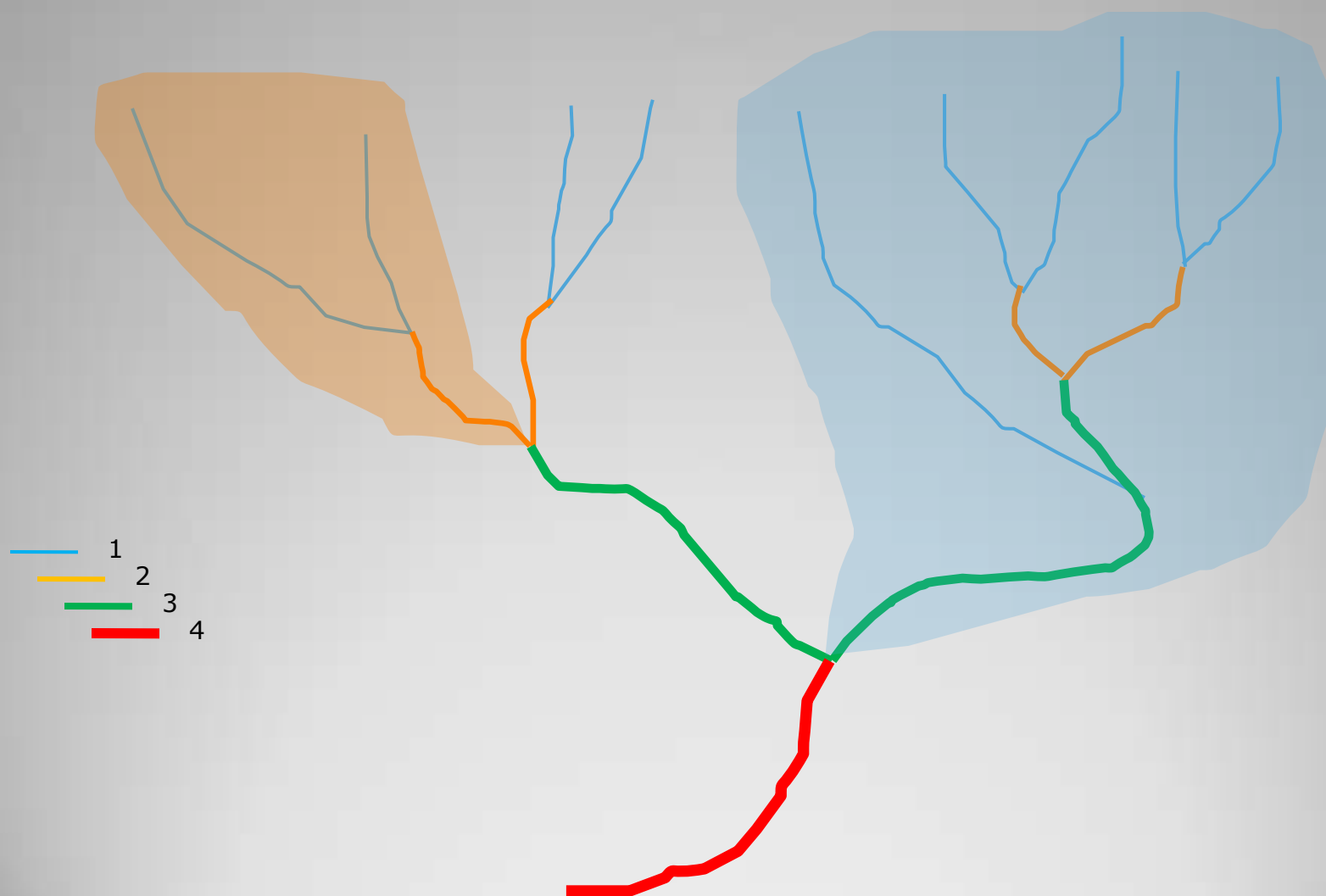


Demarcation of Watershed boundary



Stream Ordering – Strahler's Method





- Parameters required

- Area of watershed
- Stream orders
- Number of streams
- Length of streams

Morphometric analysis / Drainage analysis

- Bifurcation ratio =

No. Of streams of order n / No. Of streams of order (n+1)

- Drainage density =

Σ Stream Length / Area of watershed

- Stream frequency =

No. of streams / Area

Calculations

73°30'0"E

Overlay of contours on the drainage map of the study area

19°00'N

19°00'N

Legend

Contours

Stream Order

1

2

3

4

5

Study area

18°50'0"N

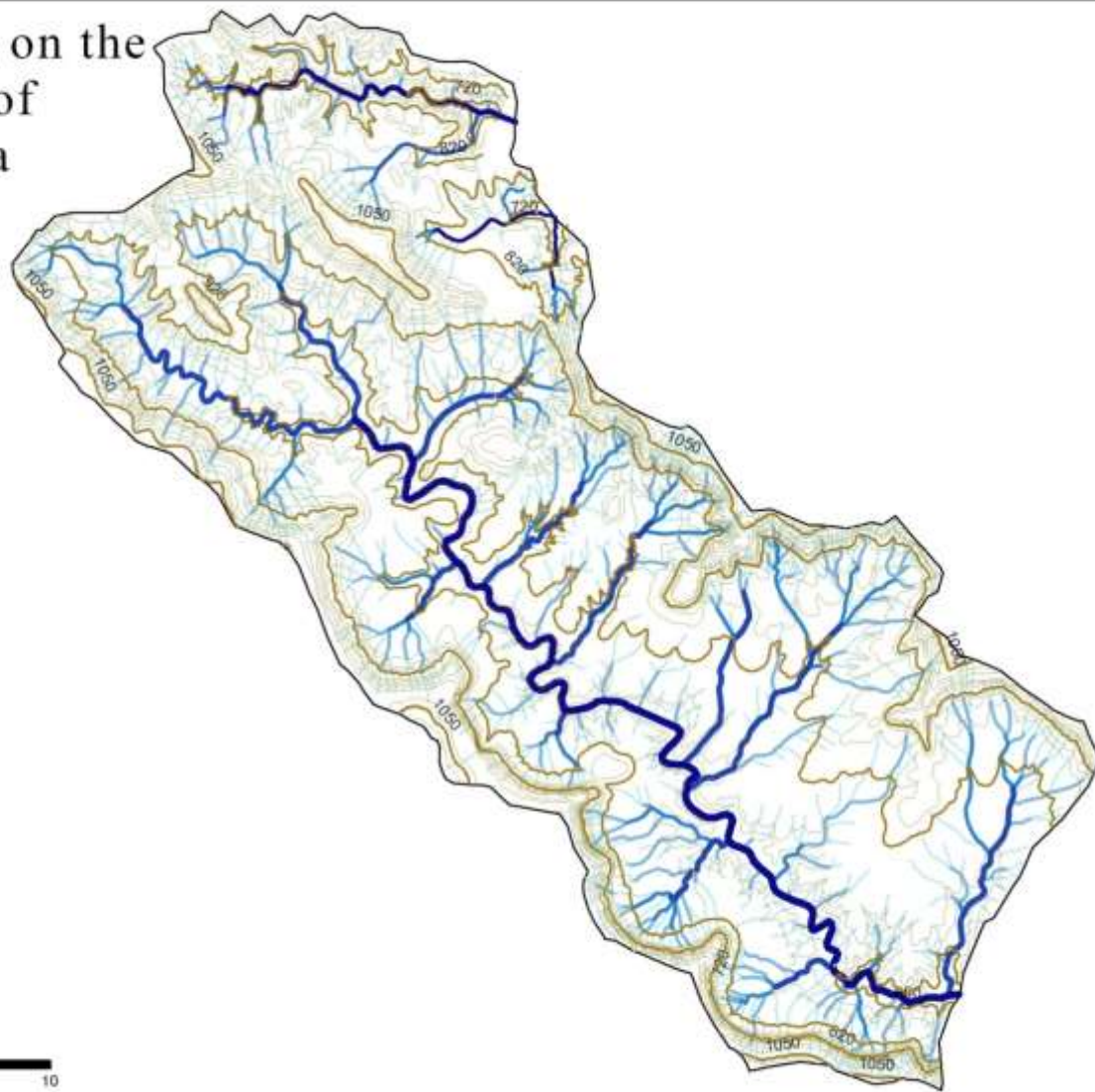
18°50'0"N

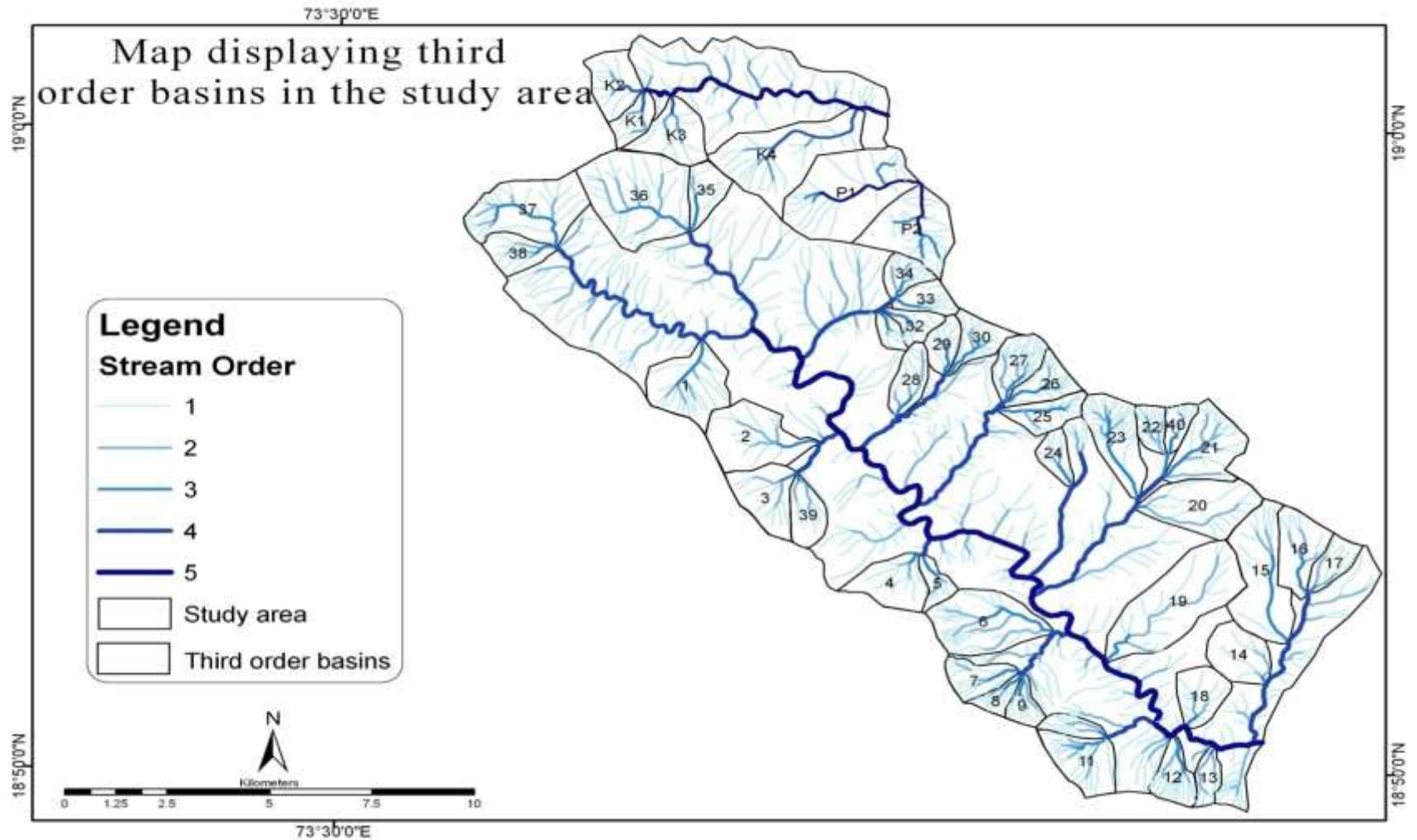


Kilometers

0 1.25 2.5 5 7.5 10

73°30'0"E





Basin Number	Stream Order	Number of Streams	Stream Length (km)	Basin Area (Sq.km)	Bifurcation Ratio
P1	1	19	12.51	5.97	6.33
	2	3	1.75		3.00
	3	1	2.83		N.A.
		23	17.09		
P2	1	26	10.34	3.44	5.20
	2	5	2.45		5.00
	3	1	1.52		N.A.
		32	14.31		
K1	1	5	1.71	0.97	2.50
	2	2	1.26		2.00
	3	1	0.62		N.A.
		8	3.59		
K2	1	10	5.41	1.77	5.00
	2	2	0.89		2.00
	3	1	0.69		N.A.
		13	6.99		

73°30'0"E

Map of drainage overlay on geology for the study area

19°00'N

19°00'N

Legend

Stream Order

- 1
- 2
- 3
- 4
- 5

GEOLOGY

- | | |
|--------------------|-----------------|
| BASALT ABOVE 1151m | VAB 4 |
| CB 5 | Compound flow 2 |
| VAB 7 | Compound flow 1 |
| Compound flow 6 | CB 3 |
| VAB 6 | VAB 3 |
| Compound flow 5 | CB 2 |
| Compound flow 4 | VAB 2 |
| VAB 5 | CB 1 |
| CB 4 | VAB 1 |
| Compound flow 3 | Red Layers |
| Study area | Lineaments |



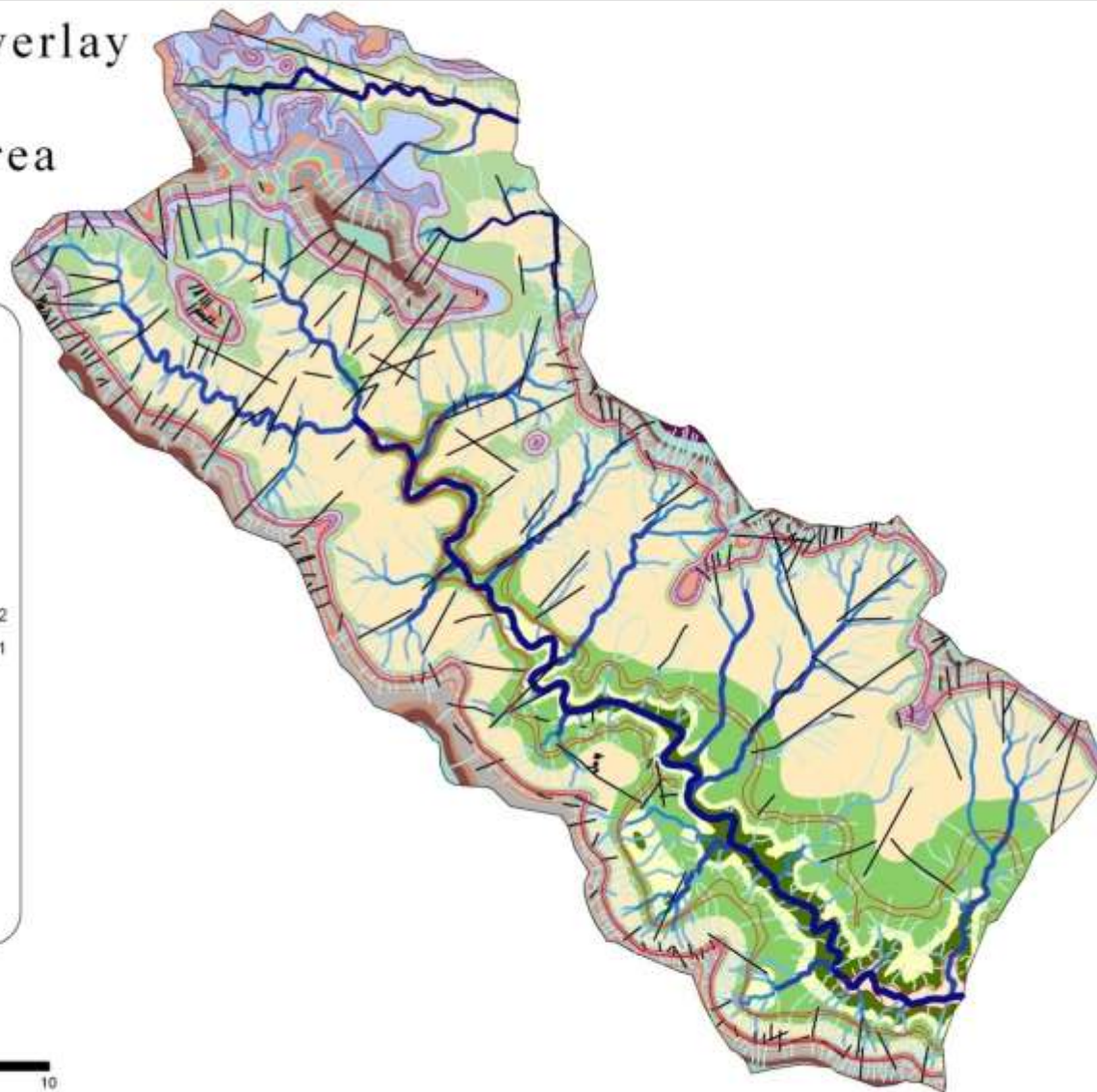
Kilometers

0 1.25 2.5 5 7.5 10

73°30'0"E

18°50'N

18°50'N



Recharge zone map of the study area

Legend

• Village

Drainage

ORDER_

1
2
3
4
5

Third order Basin

Recharge_zone_Grades

1
2
3
Study area



0 1.5 3 6 9 Kilometers

