

REPORT ON PRIORITIZATION OF MICROWATERSHEDS IN 5A1C1 TO 5A1C8 WATERSHEDS OF 5A1C SUBCATCHMENT (NON-RVP), DISTRICT ALAPPUZHA, ERNAKULAM, IDUKKI, KOTTAYAM AND PATHANAMTHITTA OF KERALA STATE.

ABSTRACT

1. Survey area : 5A1C1 to 5A1C8 watersheds of 5A1C Subcatchment (Non RVP) in Alappuzha, Ernakulam, Idukki, Kottayam and Pathanamthitta districts of Kerala.
2. Location : 76° 14' to 76°58' E Longitude
9°21' to 10° 07' N Latitude
3. Total area surveyed : 517573 ha
4. No. of microwatersheds : 334
5. Agro-climatic region : Zone XII – The West Coast Plain and Ghat Region
6. Type of survey : Rapid Reconnaissance Survey for priority delineation of microwatersheds
7. Period of survey : November 2008 to March 2009
8. Base map : Survey of India toposheets on 1:50,000 scale
9. Topo-sheet : 58B08, 58B16, 58C01, 58C05, 58C06, 58C07, 58C09, 58C10, 58C11, 58C13, 58C14, 58C15
10. Hydrological divisions : a) Region – 5
b) Basin – 5A
c) Catchment – 5A1
d) Subcatchment – 5A1C
e) Watersheds – 5A1C1 to 5A1C8
f) Sub watersheds - 5A1C1a, 5A1C1b
g) Micro-watersheds - 5A1C1a 1, 5A1C1a2...

11. Extent of different Runoff Potential Mapping Unit

Sl.No.	EIMU	Runoff Potential Value	Area in ha.	Area(%)
<i>1</i>	A01	59	43083	8.32%
<i>2</i>	A02	54	6749	1.30%
<i>3</i>	CA01	52	44346	8.57%
<i>4</i>	CA02	55	12149	2.35%
<i>5</i>	CA03	55	61689	11.92%
<i>6</i>	G01	64	6604	1.28%
<i>7</i>	G02	62	6701	1.29%
<i>8</i>	G03	69	36786	7.11%
<i>9</i>	G04	66	2292	0.44%
<i>10</i>	G05	72	10545	2.04%
<i>11</i>	G06	58	5528	1.07%
<i>12</i>	G07	59	4412	0.85%
<i>13</i>	G08	59	88168	17.03%
<i>14</i>	G09	59	4884	0.94%
<i>15</i>	G10	56	37749	7.29%
<i>16</i>	G11	55	2217	0.43%
<i>17</i>	G12	54	1704	0.33%

Sl.No.	EIMU	Runoff Potential Value	Area in ha.	Area (%)
18	G13	60	12327	2.38%
19	G14	54	14639	2.83%
20	G15	54	3534	0.68%
22	G16	58	7156	1.38%
23	G17	57	4448	0.86%
24	G18	53	5516	1.07%
25	LT01	59	13291	2.57%
26	LT02	56	30603	5.91%
27	LT03	56	10556	2.04%
28	LT04	56	1373	0.27%
29	HAB	0	6918	1.34%
30	ROC	0	1812	0.35%
31	RIVER	0	9031	1.74%
33	KAYAL	0	20763	4.01%
Grand Total			517573	100%

12. Priority Categorization:

Sl.No.	Priority Category	No. of Microwatersheds	Area(ha)	Percentage
1	Very High (above 65)	21	27910	5.39
2	High (61-65)	44	65818	12.72
3	Medium (56-60)	185	280674	54.23
4	Low (51-55)	83	142171	27.47
5	Very Low (50 & below)	1	1000	0.19
Grand Total		334	517573	100.00

13. Watershed wise Distribution of area (ha) and number of microwatersheds under different priority categories

Priority / No. of MWS	5A1C1	5A1C2	5A1C3	5A1C4	5A1C5	5A1C6	5A1C7	5A1C8	Total	Percentage
Very High	0	9170	0	15252	0	0	3488	0	27910	5.4
No.of MWS	0	8	0	11	0	0	2	0	21	
High	3702	13541	1735	12142	0	5783	28915	0	65818	12.7
No.of MWS	3	9	1	9	0	5	17	0	44	
Medium	38369	17112	57210	16884	11237	41604	70399	27859	280674	54.2
No.of MWS	25	12	37	11	7	30	45	18	185	
Low	40932	0	27182	0	44925	2544	0	26588	142171	27.5
No.of MWS	28	0	14	0	24	2	0	15	83	
Very Low	0	0	0	0	0	0	0	1000	1000	0.2
No.of MWS	0	0	0	0	0	0	0	1	1	
TOTAL AREA	83003	39823	86127	44278	56162	49931	102802	55447	517573	100.0

14. District wise distribution of area (ha) under different priority categories

Priority Category / No. of MWS	Districts & Area (in ha)					No of Mws	Total Area	Percentage
	Alapuzha	Ernakulam	Idukki	Kottayam	Pathanamthitta			
Very High	0	0	7883	20027	0	0	27910	5.4
No. of MWS	0	0	15	19	0	34		0.0
High	0	6558	31962	25130	2168	0	65818	12.7
No. of MWS	0	6	21	26	4	57		0.0
Medium	5	100517	31614	128285	20253	0	280674	54.2
No. of MWS	1	78	26	95	20	220		0.0
Low	77244	17320	0	42653	4954	0	142171	27.5
No. of MWS	63	16	0	37	5	121		0.0
Very Low	0	1000	0	0	0	0	1000	0.2
No. of MWS	0	0	1	0	0	1		0
Total	77313	125495	71521	216272	27404	433	517573	100.0
Total No. of MWS	64	100	63	177	29	433		

(Note: Since some microwatersheds are falling in more than one district, the total no of MWS may vary in the above table)

15. Distribution of area under different erosion classes

Erosion	Area (ha)	Percentage
None to slight erosion	217340	42.0
Slight to Moderate erosion	52195	10.1
Moderate erosion	159891	30.9
Moderate to Severe erosion	39078	7.6
Severe erosion	10545	2.0
Misc	38524	7.4
Total	517573	100.0

16. Salient features

- Out of 334 micro-watersheds, 21 microwatersheds have been identified as very high priority category with 44 numbers under high, 185 numbers under medium, 83 under low and only one under very low priority category.
- Areawise out of total surveyed area of 517573 ha only 5.4% falls under very high priority category accounting for 27910 ha, followed by 12.7% under high priority category covering 65818 ha, 54 % (280674 ha) under medium priority, 27.5 % (142171ha) under low priority category and only 0.2 % (1000ha) under very low priority.
- Only 2% (10545 ha) of the area is under severe erosion hazards; 7.6 % (39078 ha) under moderate to severe erosion hazard, 30.9% (159891 ha) under moderate erosion, 10.1% (52195 ha) under slight to moderate erosion and 42% (217340 ha) under none to slight erosion hazards.
- Majority of the surveyed area is under Hill side slopes accounting to 34.6% (179211 ha) followed by Coastal Alluvial plains covering to 22.8% (118184 ha), Upper pediplains accounting to 9.8% (50522 ha) , Alluvial plains and Pediments constituting 9.6 % (49832 ha) and 9.1% (46946 ha) respectively of the surveyed area..
- Four landscapes occurring in the area are Alluvium, Coastal alluvium, Granite and Laterite. Granite landscape covers maximum area of 255210 ha (49.3%) of the total area. Alluvium, Coastal Alluvium, and Laterite landscapes occupy an area of 49832 ha (9.6%), 111814 ha (22.8%) and 55823 ha (10.8%) respectively.
- Majority of the area is under cultivation and estates with an area of 140852 ha (27.2%) and 173357 ha (33.5%); whereas forest and orchards cover an area of 62698 ha (12.1%) and 91597 ha (17.7%) respectively. The area of grasslands is limited to two percentage of the surveyed area with an area of 10545 ha only.
- Soils of the survey area are mostly deep to very deep accounting for nearly 51% while very deep soil covers 42% of the whole area.
- Nearly 42% of the area is well managed whereas 31% moderately managed, 10% moderately to well managed and 10% poorly to unmanaged.

HOW TO USE SOIL SURVEY REPORT

The report embodies the results of “Rapid Reconnaissance Survey” which aims at identifying the micro watersheds, which are relatively more prone to soil erosion and need immediate soil and water conservation measures. Further, this report furnishes information on the general characteristics of the catchment such as location and extent, physiography, relief, drainage, geology, climate, land use, agriculture, natural vegetation and soils.

The database on soils and landuse for this report was generated through field traverse during the rapid reconnaissance survey carried out in 5A1C1 to 5A1C8 watersheds of 5A1C subcatchment. The survey area covers an area of 517573-hectare comprising 334 microwatersheds. The priorities are fixed on the basis of “Runoff Potential Index”. Higher value of RPI suggests high priority and vice versa. Demarcated microwatersheds map sheets pertaining to 5A2C subcatchment on 1:50000 scale are appended with this report.

In the maps, each microwatershed has been marked with a code like 5A1C1a1, which is the representative abbreviated microwatershed code. In this code, first numeral ‘5’ indicates water resources region (flowing to Arabian sea); ‘A’ indicates basin (southern western ghats); ‘1’ denotes catchment; ‘C’ for Subcatchment; ‘2’ for watershed , ‘a’ for sub watershed and ‘1’ for microwatershed. Within each microwatershed, runoff potential mapping units (RPMU) are marked according to geological landscapes such as CA01, CA02, and CA03 ...etc. Each RPMU units connotes a set of soil and land characteristics viz. physiography, slope, landform, land use, soil depth, color, texture, stoniness, type of erosion, soil conservation measures. For details, of the legend description of mapping units, reference can be made to Annexure I and Table No.6 of Description of Mapping Units. In Annexure II, Microwatershedwise districtwise distribution of Runoff Potential Mapping Units (RPMUs), their Runoff Potential Index value, Relative priority and priority grading in the descending order of RPI has been given. Annexure-III of the report furnishes information on Micro-watersheds under different priority categories in the descending order of priority classes.

The themes on slope, depth, management, erosion and priority classes appended with this report gives a simple and added information of the database pertaining to these themes. The very high and high priority micro-watersheds shown in the maps are suggestive of the relative severity of runoff problem in the catchment. For any clarification and comment on this report, contact may be made to the following addresses

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