# Prioritisation of Micro-watersheds of 3B2E1-3 Watersheds of Brahmaputra Basin Districts Darrang, Golaghat, KarbiAnglong, Marigaon, Nagaon and Sonitpur of Assam using Remote Sensing Techniques

## ABSTRACT



| | | | |
|---|---|---|---|
| 1. | **Survey Area** | : | 3B2E1-3 Watersheds of Brahmaputra Basin district Darrang, Golaghat, Karbi Anglong, Marigaon, Nagaon and Sonitpur of Assam |
| 2. | **Geographical Extent** | : | $26^0$ 10′ to $26^0$ 46′ North latitude and $91^0$ 55′ to $93^0$ 40′East longitude |
| 3. | **Agro Climatic Region** | : | Eastern Himalayan Region II (as per planning commission 1989) |
| 4. | **Total area of the district** | : | **320648 ha.** |
| 5. | **Type of Survey** | : | Rapid Reconnaissance Survey using Remote Sensing Techniques |
| 6. | **Base map** | : | a) IRS – ID Geocoded Satellite Imagery (1: 50,000 scale) b) SOI –toposheet (1:50,000 scale) |
| 7. | **Scale of Mapping** | : | 1 : 50000 |
| 8. | **Period of Survey** | : | January to February, 2010 |

**9. Areal Extent of different Runoff Potential Mapping Units**

| Sl. No. | RPMU | Runoff Potential Value | Area (ha.) | Area (%) |
|---|---|---|---|---|
| 1. | **AC01** | 57 | 3114 | 0.97 |
| 2. | **AC02** | 54 | 2578 | 0.80 |
| 3. | **AC03** | 63 | 985 | 0.31 |
| 4. | **AC04** | 59 | 259 | 0.08 |
| 5. | **AL01** | 56 | 64101 | 19.99 |
| 6. | **AL02** | 57 | 8155 | 2.54 |
| 7. | **AL03** | 54 | 2727 | 0.85 |
| 8. | **AL04** | 57 | 7849 | 2.45 |
| 9. | **AL05** | 59 | 12979 | 4.05 |

| | | | | |
|---|---|---|---|---|
| 10. | **AL06** | 57 | 14515 | 4.53 |
| 11. | **AL07** | 52 | 33349 | 10.40 |
| 12. | **AL08** | 59 | 1857 | 0.58 |
| 13. | **AL09** | 57 | 2897 | 0.90 |
| 14. | **AL10** | 59 | 2372 | 0.74 |
| 15. | **AL11** | 60 | 25827 | 8.05 |
| 16. | **AL12** | 56 | 5988 | 1.87 |
| 17. | **GN01** | 66 | 27 | 0.01 |
| 18. | **GN02** | 63 | 1318 | 0.41 |
| 19. | **GN03** | 75 | 4295 | 1.34 |
| 20. | **GN04** | 82 | 11429 | 3.56 |
| 23. | **GN07** | 66 | 9593 | 2.99 |
| 24. | **GN08** | 76 | 4501 | 1.40 |
| 25. | **GN09** | 73 | 1169 | 0.36 |
| 26. | **GN10** | 64 | 8167 | 2.55 |
| 27. | **GN11** | 65 | 317 | 0.10 |
| 28. | **GN12** | 68 | 468 | 0.15 |
| 30. | **GN14** | 58 | 1252 | 0.39 |
| 31. | **GN15** | 58 | 216 | 0.07 |
| 32. | **GN16** | 69 | 6742 | 2.10 |
| 33. | **SH04** | 60 | 116 | 0.04 |
| 34. | **Brickkiln** | 0 | 258 | 0.08 |
| 35. | **HS** | 0 | 19345 | 6.03 |
| 36. | **River** | 0 | 55410 | 17.28 |
| 37. | **TANK** | 0 | 49 | 0.02 |
| 38. | **WB** | 0 | 6424 | 2.00 |
| **Grand Total** | | | **320648** | **100** |

**10.** ***Hydrological Divisions***

Water Resource Region (3)
Basin (3B)
Catchment (3B2)
Subcatchment (3B2E)
Watersheds (3B2E 1, 2, …..)
Subwatersheds (3B2E 1a,.b, .c.....,)
Microwatersheds (3B2E 1a1..., 3B2E 2a1, ...)

**11. Watershed wise distribution of Area (ha) under different Priority Category**

| Priority Category | 3B2E1 | 3B2E2 | 3B2E3 | Area (ha) | Area (%) |
|---|---|---|---|---|---|
| Very High (above 70) | - | - | 21822 | 21822 | 6.81 |
| High (66-70) | 1825 | | 21292 | 23117 | 7.21 |
| Medium (61-65) | 2132 | 2097 | 14694 | 18923 | 5.90 |
| Low (56-60) | 66869 | 48895 | 63167 | 178931 | 55.80 |
| Very Low (55 & below) | 49505 | 21589 | 6761 | 77855 | 24.28 |
| **Grand Total** | **120331** | **72581** | **127736** | **320648** | **100.00** |

**12. District wise Priority Categorization**

| Priority Category | Darrang | Golaghat | Karbi Anglong | Marigaon | Nagaon | Sonitpur | Area (ha) | Area (%) |
|---|---|---|---|---|---|---|---|---|
| Very High | - | 1724 | 19761 | - | 337 | - | 21822 | 6.81 |
| High | 1194 | 1397 | 16813 | 631 | 2780 | 302 | 23117 | 7.21 |
| Medium | 580 | 3550 | 6639 | 1552 | 4517 | 2085 | 18923 | 5.90 |
| Low | 2046 | 41438 | 623 | 61798 | 41662 | 31364 | 178931 | 55.80 |
| Very Low | 3236 | 3373 | 12 | 27433 | 38548 | 5253 | 77855 | 24.28 |
| **GrandTotal** | **7056** | **51482** | **43848** | **91414** | **87844** | **39004** | **320648** | **100.00** |

**13.** ***Area under different Priority Categories***

| Sl. No. | Priority Category | No. of Microwatersheds | Area (ha.) | Area (%) |
|---|---|---|---|---|
| 1. | Very High (above 70) | 32 | 21822 | 6.81 |
| 2. | High (66-70) | 34 | 23117 | 7.21 |
| 3. | Medium (61-65) | 24 | 18923 | 5.9 |
| 4. | Low (56-60) | 214 | 178931 | 55.8 |
| 5. | Very Low (55 & below) | 92 | 77855 | 24.28 |
| | **Grand Total** | **396** | **320648** | **100** |

## Salient Features:

- 3B2E1-3 watershed has been subdivided into 396 micro-watersheds following the delineation and codification method outlined in Watershed Atlas of India (1:1 M scale), 2012.

- Out of 320648 hectares of surveyed area, 21822 ha. (6.81%) covered by 32 micro-watersheds only have been categorized under very high priority and 23117 ha. (7.21%) covered by 34 micro-watersheds have been categorized under high priority area which needs immediate

attention for suitable soil-water conservation measures under Integrated Watershed Development Programme.

- In Assam, about 19761 ha. area of Karbi Anglong district is under very high priority followed by Golaghat and Nagaon district and about 16813 ha. of Karbi Anglong district comes under high priority followed by 2780 ha. of Nagaon district which needs immediate attention for soil and water conservation measures.

- Among the watersheds, 3B2E3 watershed is more vulnerable followed by 3B2E1 watershed which needs immediate attention for soil water conservation measures.

- About 30238 ha (9.46%) area of the survey area is unmanaged, 15751ha. (4.91%) area is unmanaged to poorly managed and 43207 ha (13.5%) area is poorly managed.

# HOW TO USE SOIL SURVEY REPORT

This report on Prioritisation of Micro-watersheds of 3B2E1-3 Watersheds of Brahmaputra Basin Districts Darrang, Golaghat, Karbi Anglong, Marigaon, Nagaon and Sonitpur of Assam using Remote Sensing Techniques aims at identifying the micro-watersheds which are relatively more prone to flooding and seasonal water logging and need the flood control measures. Further, it furnishes information on general characteristics of the catchments with particular reference to their location and extent, physiography, relief and drainage, geology, climate, land use and soils of the area also.

The sub-catchment is delineated and codified following the codification system of Watershed Atlas of India (WAI) published by Soil & Land Use Survey of India in September, 1990. The surveyed area comprises 3 watersheds (3B2E1-3) of WAI which are subdivided into 87 sub-watersheds and finally into 396 micro-watersheds. Sub-watersheds are codified by suffixing small case English alphabets with the watershed code e.g. 3B2E1a, 3B2E1b etc and micro-watersheds are codified by affixing Arabic numerical with the sub-watershed code, e.g., 3B2E1a1, 33B2E1b1 etc. Within a micro-watershed, Runoff Potential Mapping Units (RPMUs) are demarcated and symbolized with alphanumeric codes viz. AL01, AL02, AC01, AC02, GN01, GN02 etc. The Runoff Potential Mapping Units (RPMU) is established by visual interpretation of False Color Composites (FCC) of IRS-P6 LISS-III followed by field verification. The RPMUs represent the landscape, physiography, slope, soil characteristics, existing soil conservation status, land use and severity of erosion of each mapping unit. These Runoff Potential mapping units are described in the **Table 6** on 'Legend to Runoff Potential Mapping Units'. Each of these units is assigned its runoff potential (RP) value which indicates the potential runoff from the micro-watershed. Differentiating morphological characteristics of the Run-off Potential Mapping Units have been depicted in the **Table 7**.

Based on Run-off Potential (RP) value and the extent of RPMU in a micro-watershed, the Runoff Potential Index (RPI) values of all micro-watersheds are computed which is given in the **ANNEXURE-I**. The relative priorities are assigned based upon the Runoff Potential Index (RPI) of the micro-watersheds. Higher the value of Runoff Potential Index (RPI) indicates higher priority whereas the lower value indicates lower priority. The list of micro-watersheds under different priority categories are given in **ANNEXURE-II**.

Micro-watersheds categorized under very high and high priority are to be selected for management of flood prone area under FPR Scheme. Both treatable and non-treatable lands are occupied by each priority (very high or high category) micro-watershed. The ratio of treatable and non-treatable lands in a priority micro-watershed varies with the kind, degree and extent of the degraded lands occupied by the same micro-watershed.

Each map sheets on 1:50,000 scale depicting the drainage network, hydrological units, runoff potential mapping units and administrative boundaries are appended with this report.

For any further clarification, information or comments contact may be made to:


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