

Lampiran



Perhitungan Kecamatan Bawen

Jenis Tanah Andosol Coklat

Pemukiman

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,278$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1620 \text{ m}$$

$$\text{Titik Terendah} = + 690 \text{ m}$$

$$\text{Jarak} = 2317,47 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1620 - 690}{3454,32} \times 100\% = 26,92 \%$$

$$\text{Faktor LS} = 4,25$$

$$CP = 0,6$$

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times LS \times CP \\ &= 893,33215 \times 0,278 \times 4,25 \times 0,6 \\ &= \mathbf{633,283 \text{ Ton/Ha/th}} \end{aligned}$$

Tegalan

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,278$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1620 \text{ m}$$

$$\text{Titik Terendah} = + 690 \text{ m}$$

$$\text{Jarak} = 2317,47 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1620 - 690}{3454,32} \times 100\% = 26,92 \%$$

$$\text{Faktor LS} = 4,25$$

$$\text{CP} = 0,75$$

$$\begin{aligned}\text{Laju Erosi (A)} &= R \times K \times \text{LS} \times \text{CP} \\ &= 893,33215 \times 0,278 \times 4,25 \times 0,75 \\ &= 791,604 \text{ Ton/Ha/th}\end{aligned}$$

Kebun Campuran

$$\begin{aligned}R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h}\end{aligned}$$

$$K = 0,278$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1620 \text{ m}$$

$$\text{Titik Terendah} = + 690 \text{ m}$$

$$\text{Jarak} = 2317,47 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1620 - 690}{3454,32} \times 100\% = 26,92 \%$$

$$\text{Faktor LS} = 4,25$$

$$\text{CP} = 0,4$$

$$\begin{aligned}\text{Laju Erosi (A)} &= R \times K \times \text{LS} \times \text{CP} \\ &= 893,33215 \times 0,278 \times 4,25 \times 0,4 \\ &= 422,189 \text{ Ton/Ha/th}\end{aligned}$$

Sawah

$$\begin{aligned}R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h}\end{aligned}$$

$$K = 0,278$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1620 \text{ m}$$

$$\text{Titik Terendah} = + 690 \text{ m}$$

$$\text{Jarak} = 2317,47 \text{ m}$$

$$\begin{aligned} \text{Kemiringan Lereng (\%)} \\ = \frac{\text{Titik tertinggi-titik terendah}}{\text{jarak}} = \frac{1620-690}{3454,32} \times 100\% = 26,92\% \end{aligned}$$

$$\text{Faktor LS} = 4,25$$

$$\text{CP} = 0,05$$

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times \text{LS} \times \text{CP} \\ &= 893,33215 \times 0,278 \times 4,25 \times 0,05 \\ &= \mathbf{52,773 \text{ Ton/Ha/th}} \end{aligned}$$

Hutan

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,278$$

LS (Kemiringan Lereng %):

$$\text{Titik Tertinggi} = + 1620 \text{ m}$$

$$\text{Titik Terendah} = + 690 \text{ m}$$

$$\text{Jarak} = 2317,47 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi-titik terendah}}{\text{jarak}} = \frac{1620-690}{3454,32} \times 100\% = 26,92\%$$

$$\text{Faktor LS} = 4,25$$

$$\text{CP} = 0,03$$

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times \text{LS} \times \text{CP} \\ &= 893,33215 \times 0,278 \times 4,25 \times 0,03 \\ &= \mathbf{31,664 \text{ Ton/Ha/th}} \end{aligned}$$

Jenis Tanah Mediteran dan Regosol

Pemukiman

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \end{aligned}$$

$$= 893,33215 \text{ N/h}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1620 \text{ m}$$

$$\text{Titik Terendah} = + 690 \text{ m}$$

$$\text{Jarak} = 2317,47 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1620 - 690}{3454,32} \times 100\% = 26,92 \%$$

$$\text{Faktor LS} = 4,25$$

$$\text{CP} = 0,6$$

$$\text{Laju Erosi (A)} = R \times K \times \text{LS} \times \text{CP}$$

$$= 893,33215 \times 0,201 \times 4,25 \times 0,6$$

$$= 457,877 \text{ Ton/Ha/th}$$

Tegalan

$$R = 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)}$$

$$= 234,7 + 2,61 \times 251,315 \text{ cm}$$

$$= 893,33215 \text{ N/h}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1620 \text{ m}$$

$$\text{Titik Terendah} = + 690 \text{ m}$$

$$\text{Jarak} = 2317,47 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1620 - 690}{3454,32} \times 100\% = 26,92 \%$$

$$\text{Faktor LS} = 4,25$$

$$\text{CP} = 0,75$$

$$\text{Laju Erosi (A)} = R \times K \times \text{LS} \times \text{CP}$$

$$= 893,33215 \times 0,201 \times 4,25 \times 0,75$$

$$= 572,346 \text{ Ton/Ha/th}$$

Kebun Campuran

$$R = 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)}$$

$$= 234,7 + 2,61 \times 251,315 \text{ cm}$$

$$= 893,33215 \text{ N/h}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1620 \text{ m}$$

$$\text{Titik Terendah} = + 690 \text{ m}$$

$$\text{Jarak} = 2317,47 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1620 - 690}{3454,32} \times 100\% = 26,92 \%$$

$$\text{Faktor LS} = 4,25$$

$$CP = 0,4$$

Laju Erosi (A) - $R \times K \times LS \times CP$

$$= 893,33215 \times 0,201 \times 4,25 \times 0,4$$

$$= 305,251 \text{ Ton/Ha/th}$$

Sawah

$$R = 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)}$$

$$= 234,7 + 2,61 \times 251,315 \text{ cm}$$

$$= 893,33215 \text{ N/h}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1620 \text{ m}$$

$$\text{Titik Terendah} = + 690 \text{ m}$$

$$\text{Jarak} = 2317,47 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1620 - 690}{3454,32} \times 100\% = 26,92 \%$$

$$\text{Faktor LS} = 4,25$$

$$CP = 0,05$$

Laju Erosi (A) - $R \times K \times LS \times CP$

$$= 893,33215 \times 0,201 \times 4,25 \times 0,05$$

$$= 38,156 \text{ Ton/Ha/th}$$

Hutan

$$R = 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)}$$

$$= 234,7 + 2,61 \times 251,315 \text{ cm}$$

$$= 893,33215 \text{ N/h}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1620 \text{ m}$$

$$\text{Titik Terendah} = + 690 \text{ m}$$

$$\text{Jarak} = - 2317,47 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1620 - 690}{3454,32} \times 100\% = 26,92 \%$$

$$\text{Faktor LS} = 4,25$$

$$\text{CP} = 0,03$$

$$\text{Laju Erosi (A)} = R \times K \times \text{LS} \times \text{CP}$$

$$= 893,33215 \times 0,201 \times 4,25 \times 0,03$$

$$= 22,8938 \text{ Ton/Ha/th}$$

➤ Jadi, jumlah laju erosi pada Kawasan Bawen sebesar

$$\text{Pemukiman} = 633,283 + 457,877 = 1091,16 \text{ Ton/Ha/th}$$

$$\text{Tegalan} = 791,604 + 572,346 = 1363,95 \text{ Ton/Ha/th}$$

$$\text{Kebun Campuran} = 422,189 + 305,251 = 727,44 \text{ Ton/Ha/th}$$

$$\text{Sawah} = 52,773 + 38,156 = 90,93 \text{ Ton/Ha/th}$$

$$\text{Hutan} = 31,664 + 22,893 = 54,558 \text{ Ton/Ha/th} +$$

$$= 3328,039 \text{ Ton/Ha/th}$$

Perhitungan Kecamatan Sumowono

Jenis Tanah Andosol Coklat

Tegalan

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,278$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1950 \text{ m}$$

$$\text{Titik Terendah} = + 1560 \text{ m}$$

$$\text{Jarak} = 1276,64 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1950 - 1560}{1276,64} \times 100\% = 30,548 \%$$

$$\text{Faktor LS} = 4,25$$

$$CP = 0,75$$

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times LS \times CP \\ &= 893,33215 \times 0,3 \times 4,25 \times 0,75 \\ &= 791,604 \text{ Ton/Ha/th} \end{aligned}$$

Kebun Campuran

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,278$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1950 \text{ m}$$

$$\text{Titik Terendah} = + 1560 \text{ m}$$

$$\text{Jarak} = 1276,64 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1950 - 1560}{1276,64} \times 100\% = 30,548 \%$$

Faktor LS = 4,25

CP = 0,3

Laju Erosi (A) = R x K x LS x CP

$$= 893,33215 \times 0,278 \times 4,25 \times 0,3$$

$$= 316,641 \text{ Ton/Ha/th}$$

➤ Jadi, jumlah laju erosi pada Kawasan Sumowono sebesar

Tegalan = 791,604 Ton/Ha/th

Kebun Campuran = 316,641 Ton/Ha/th +

1108,245 Ton/Ha/th



Perhitungan Kecamatan Bergas

Jenis Tanah Mediteran Coklat dan Litosol

Pemukiman

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,188$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1500 \text{ m}$$

$$\text{Titik Terendah} = + 450 \text{ m}$$

$$\text{Jarak} = 5317,216 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1500 - 450}{5317,216} \times 100\% = 19,747 \%$$

$$\text{Faktor LS} = 4,25$$

$$CP = 0,6$$

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times LS \times CP \\ &= 893,33215 \times 0,188 \times 4,25 \times 0,6 \\ &= 428,263 \text{ Ton/Ha/th} \end{aligned}$$

Tegalan

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,188$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1500 \text{ m}$$

$$\text{Titik Terendah} = + 450 \text{ m}$$

$$\text{Jarak} = 5317,216 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1500 - 450}{5317,216} \times 100\% = 19,747 \%$$

$$\text{Faktor LS} = 4,25$$

$$\text{CP} = 0,75$$

$$\begin{aligned}\text{Laju Erosi (A)} &= R \times K \times \text{LS} \times \text{CP} \\ &= 893,33215 \times 0,188 \times 4,25 \times 0,75 \\ &= \mathbf{535,329 \text{ Ton/Ha/th}}\end{aligned}$$

Kebun Campuran

$$\begin{aligned}R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h}\end{aligned}$$

$$K = 0,188$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1500 \text{ m}$$

$$\text{Titik Terendah} = + 450 \text{ m}$$

$$\text{Jarak} = 5317,216 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1500 - 450}{5317,216} \times 100\% = 19,747 \%$$

$$\text{Faktor LS} = 4,25$$

$$\text{CP} = 0,4$$

$$\begin{aligned}\text{Laju Erosi (A)} &= R \times K \times \text{LS} \times \text{CP} \\ &= 893,33215 \times 0,188 \times 4,25 \times 0,4 \\ &= \mathbf{285,509 \text{ Ton/Ha/th}}\end{aligned}$$

Sawah

$$\begin{aligned}R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h}\end{aligned}$$

$$K = 0,188$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1500 \text{ m}$$

$$\text{Titik Terendah} = + 450 \text{ m}$$

$$\text{Jarak} = 5317,216 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi-titik terendah}}{\text{jarak}} = \frac{1500-450}{5317,216} \times 100\% = 19,747\%$$

Faktor LS = 4,25

CP = 0,05

Laju Erosi (A) = R x K x LS x CP

$$= 893,33215 \times 0,188 \times 4,25 \times 0,05$$

$$= \mathbf{35,689 \text{ Ton/Ha/th}}$$

Jenis Tanah Mediteran dan Regosol

Pemukiman

$$R = 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)}$$

$$= 234,7 + 2,61 \times 251,315 \text{ cm}$$

$$= 893,33215 \text{ N/h}$$

K = 0,201

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1500 \text{ m}$$

$$\text{Titik Terendah} = + 450 \text{ m}$$

$$\text{Jarak} = 5317,216 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi-titik terendah}}{\text{jarak}} = \frac{1500-450}{5317,216} \times 100\% = 19,747\%$$

Faktor LS = 4,25

CP = 0,6

Laju Erosi (A) = R x K x LS x CP

$$= 893,33215 \times 0,201 \times 4,25 \times 0,6$$

$$= \mathbf{457,877 \text{ Ton/Ha/th}}$$

Tegalan

$$R = 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)}$$

$$= 234,7 + 2,61 \times 251,315 \text{ cm}$$

$$= 893,33215 \text{ N/h}$$

K = 0,201

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1500 \text{ m}$$

$$\text{Titik Terendah} = + 450 \text{ m}$$

$$\text{Jarak} = 5317,216 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi-titik terendah}}{\text{jarak}} = \frac{1500-450}{5317,216} \times 100\% = 19,747 \%$$

$$\text{Faktor LS} = 4,25$$

$$\text{CP} = 0,75$$

$$\text{Laju Erosi (A)} = R \times K \times \text{LS} \times \text{CP}$$

$$= 893,33215 \times 0,201 \times 4,25 \times 0,75$$

$$= 572,346 \text{ Ton/Ha/th}$$

Kebun Campuran

$$R = 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)}$$

$$= 234,7 + 2,61 \times 251,315 \text{ cm}$$

$$= 893,33215 \text{ N/h}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1500 \text{ m}$$

$$\text{Titik Terendah} = + 450 \text{ m}$$

$$\text{Jarak} = 5317,216 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi-titik terendah}}{\text{jarak}} = \frac{1500-450}{5317,216} \times 100\% = 19,747 \%$$

$$\text{Faktor LS} = 4,25$$

$$\text{CP} = 0,4$$

$$\text{Laju Erosi (A)} = R \times K \times \text{LS} \times \text{CP}$$

$$= 893,33215 \times 0,201 \times 4,25 \times 0,4$$

$$= 305,251 \text{ Ton/Ha/th}$$

Sawah

$$R = 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)}$$

$$= 234,7 + 2,61 \times 251,315 \text{ cm}$$

$$= 893,33215 \text{ N/h}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1500 \text{ m}$$

$$\text{Titik Terendah} = + 450 \text{ m}$$

$$\text{Jarak} = 5317,216 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi-titik terendah}}{\text{jarak}} = \frac{1500-450}{5317,216} \times 100\% = 19,747 \%$$

$$\text{Faktor LS} = 4,25$$

$$CP = 0,05$$

$$\text{Laju Erosi (A)} = R \times K \times LS \times CP$$

$$= 893,33215 \times 0,201 \times 4,25 \times 0,05$$

$$= 38,156 \text{ Ton/Ha/th}$$

Jenis Tanah Andosol Coklat

Pemukiman

$$R = 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)}$$

$$= 234,7 + 2,61 \times 251,315 \text{ cm}$$

$$= 893,33215 \text{ N/h}$$

$$K = 0,278$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1500 \text{ m}$$

$$\text{Titik Terendah} = + 450 \text{ m}$$

$$\text{Jarak} = 5317,216 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi-titik terendah}}{\text{jarak}} = \frac{1500-450}{5317,216} \times 100\% = 19,747 \%$$

$$\text{Faktor LS} = 4,25$$

$$CP = 0,6$$

$$\text{Laju Erosi (A)} = R \times K \times LS \times CP$$

$$= 893,33215 \times 0,278 \times 4,25 \times 0,6$$

$$= 633,283 \text{ Ton/Ha/th}$$

Tegalan

$$R = 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)}$$

$$= 234,7 + 2,61 \times 251,315 \text{ cm}$$

$$= 893,33215 \text{ N/h}$$

$$K = 0,278$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1500 \text{ m}$$

$$\text{Titik Terendah} = + 450 \text{ m}$$

$$\text{Jarak} = 5317,216 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi-titik terendah}}{\text{jarak}} = \frac{1500-450}{5317,216} \times 100\% = 19,747 \%$$

$$\text{Faktor LS} = 4,25$$

$$\text{CP} = 0,75$$

$$\text{Laju Erosi (A)} = R \times K \times \text{LS} \times \text{CP}$$

$$= 893,33215 \times 0,278 \times 4,25 \times 0,75$$

$$= 791,603 \text{ Ton/Ha/th}$$

Kebun Campuran

$$R = 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)}$$

$$= 234,7 + 2,61 \times 251,315 \text{ cm}$$

$$= 893,33215 \text{ N/h}$$

$$K = 0,278$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1500 \text{ m}$$

$$\text{Titik Terendah} = + 450 \text{ m}$$

$$\text{Jarak} = 5317,216 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi-titik terendah}}{\text{jarak}} = \frac{1500-450}{5317,216} \times 100\% = 19,747 \%$$

$$\text{Faktor LS} = 4,25$$

$$\text{CP} = 0,4$$

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times LS \times CP \\ &= 893,33215 \times 0,278 \times 4,25 \times 0,4 \\ &= \mathbf{422,188 \text{ Ton/Ha/th}} \end{aligned}$$

Sawah

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,278$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1500 \text{ m}$$

$$\text{Titik Terendah} = + 450 \text{ m}$$

$$\text{Jarak} = 5317,216 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1500 - 450}{5317,216} \times 100\% = 19,747 \%$$

$$\text{Faktor LS} = 4,25$$

$$CP = 0,05$$

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times LS \times CP \\ &= 893,33215 \times 0,278 \times 4,25 \times 0,05 \\ &= \mathbf{52,773 \text{ Ton/Ha/th}} \end{aligned}$$

➤ Jadi, jumlah laju erosi pada Kawasan Bergas sebesar

$$\text{Pemukiman} = 428,263 + 457,877 + 633,283 = 1519,424 \text{ Ton/Ha/th}$$

$$\text{Tegalan} = 535,329 + 572,346 + 791,603 = 1899,28 \text{ Ton/Ha/th}$$

$$\text{Kebun Campuran} = 285,509 + 305,251 + 422,188 = 1012,949 \text{ Ton/Ha/th}$$

$$\begin{aligned} \text{Sawah} &= 35,689 + 38,156 + \mathbf{52,773} = 126,618 \text{ Ton/Ha/th} + \\ &\mathbf{4558,272 \text{ Ton/Ha/th}} \end{aligned}$$

Perhitungan Kecamatan Limbangan

Jenis Tanah Andosol Coklat

Pemukiman

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,278$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 2010 \text{ m}$$

$$\text{Titik Terendah} = + 1020 \text{ m}$$

$$\text{Jarak} = 3434,89 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{2010 - 1020}{3434,89} \times 100\% = 28,82 \%$$

$$\text{Faktor LS} = 4,25$$

$$CP = 0,6$$

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times LS \times CP \\ &= 893,33215 \times 0,278 \times 4,25 \times 0,6 \\ &= 633,283 \text{ Ton/Ha/th} \end{aligned}$$

Tegalan

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,278$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 2010 \text{ m}$$

$$\text{Titik Terendah} = + 1020 \text{ m}$$

$$\text{Jarak} = 3434,89 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{2010 - 1020}{3434,89} \times 100\% = 28,82 \%$$

$$\text{Faktor LS} = 4,25$$

$$\text{CP} = 0,75$$

$$\begin{aligned}\text{Laju Erosi (A)} &= R \times K \times \text{LS} \times \text{CP} \\ &= 893,33215 \times 0,278 \times 4,25 \times 0,75 \\ &= 791,604 \text{ Ton/Ha/th}\end{aligned}$$

Kebun Campuran

$$\begin{aligned}R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h}\end{aligned}$$

$$K = 0,278$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 2010 \text{ m}$$

$$\text{Titik Terendah} = + 1020 \text{ m}$$

$$\text{Jarak} = 3434,89 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{2010 - 1020}{3434,89} \times 100\% = 28,82 \%$$

$$\text{Faktor LS} = 4,25$$

$$\text{CP} = 0,3$$

$$\begin{aligned}\text{Laju Erosi (A)} &= R \times K \times \text{LS} \times \text{CP} \\ &= 893,33215 \times 0,278 \times 4,25 \times 0,3 \\ &= 316,641 \text{ Ton/Ha/th}\end{aligned}$$

Hutan

$$\begin{aligned}R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h}\end{aligned}$$

$$K = 0,278$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 2010 \text{ m}$$

$$\text{Titik Terendah} = + 1020 \text{ m}$$

$$\text{Jarak} = - 3434,89 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi-titik terendah}}{\text{jarak}} = \frac{2010-1020}{3434,89} \times 100\% = 28,82 \%$$

Faktor LS = 4,25

CP = 0,03

Laju Erosi (A) = R x K x LS x CP

$$= 893,33215 \times 0,278 \times 4,25 \times 0,03$$

$$= 31,664 \text{ Ton/Ha/th}$$

Jenis Tanah Mediteran dan Regosol

Pemukiman

R = 237,4 + 2,61 x Y (curah hujan rata-rata tahunan)

$$= 234,7 + 2,61 \times 251,315 \text{ cm}$$

$$= 893,33215 \text{ N/h}$$

K = 0,201

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 2010 \text{ m}$$

$$\text{Titik Terendah} = + 1020 \text{ m}$$

$$\text{Jarak} = 3434,89 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi-titik terendah}}{\text{jarak}} = \frac{2010-1020}{3434,89} \times 100\% = 28,82 \%$$

Faktor LS = 4,25

CP = 0,6

Laju Erosi (A) = R x K x LS x CP

$$= 893,33215 \times 0,201 \times 4,25 \times 0,6$$

$$= 457,877 \text{ Ton/Ha/th}$$

Tegalan

R = 237,4 + 2,61 x Y (curah hujan rata-rata tahunan)

$$= 234,7 + 2,61 \times 251,315 \text{ cm}$$

$$= 893,33215 \text{ N/h}$$

K = 0,201

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 2010 \text{ m}$$

$$\text{Titik Terendah} = + 1020 \text{ m}$$

$$\text{Jarak} = 3434,89 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi-titik terendah}}{\text{jarak}} = \frac{2010-1020}{3434,89} \times 100\% = 28,82 \%$$

$$\text{Faktor LS} = 4,25$$

$$\text{CP} = 0,75$$

$$\text{Laju Erosi (A)} = R \times K \times \text{LS} \times \text{CP}$$

$$= 893,33215 \times 0,201 \times 4,25 \times 0,75$$

$$= 572,346 \text{ Ton/Ha/th}$$

Kebun Campuran

$$R = 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)}$$

$$= 234,7 + 2,61 \times 251,315 \text{ cm}$$

$$= 893,33215 \text{ N/h}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 2010 \text{ m}$$

$$\text{Titik Terendah} = + 1020 \text{ m}$$

$$\text{Jarak} = 3434,89 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi-titik terendah}}{\text{jarak}} = \frac{2010-1020}{3434,89} \times 100\% = 28,82 \%$$

$$\text{Faktor LS} = 4,25$$

$$\text{CP} = 0,3$$

$$\text{Laju Erosi (A)} = R \times K \times \text{LS} \times \text{CP}$$

$$= 893,33215 \times 0,201 \times 4,25 \times 0,3$$

$$= 228,938 \text{ Ton/Ha/th}$$

Hutan

$$R = 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)}$$

$$= 234,7 + 2,61 \times 251,315 \text{ cm}$$

$$= 893,33215 \text{ N/h}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 2010 \text{ m}$$

$$\text{Titik Terendah} = + 1020 \text{ m}$$

$$\text{Jarak} = 3434,89 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{2010 - 1020}{3434,89} \times 100\% = 28,82 \%$$

$$\text{Faktor LS} = 4,25$$

$$CP = 0,03$$

$$\text{Laju Erosi (A)} = R \times K \times LS \times CP$$

$$= 893,33215 \times 0,201 \times 4,25 \times 0,03$$

$$= 22,893 \text{ Ton/Ha/th}$$

➤ Jadi, jumlah laju erosi pada Kawasan Limbangan sebesar

Pemukiman	$= 633,283 + 457,877 = 1091,16$	Ton/Ha/th
Tegalan	$= 791,604 + 572,346 = 1363,95$	Ton/Ha/th
Kebun Campuran	$= 316,641 + 228,938 = 545,58$	Ton/Ha/th
Hutan	$= 31,664 + 22,893 = 54,558$	Ton/Ha/th +
	3055,249	Ton/Ha/th

Perhitungan Kecamatan Ungaran Barat

Jenis Tanah Mediteran Coklat dan Litosol

Pemukiman

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,188$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1320 \text{ m}$$

$$\text{Titik Terendah} = + 300 \text{ m}$$

$$\text{Jarak} = 5398,35 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1320 - 300}{5398,35} \times 100\% = 18,98\%$$

$$\text{Faktor LS} = 4,25$$

$$CP = 0,6$$

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times LS \times CP \\ &= 893,33215 \times 0,188 \times 4,25 \times 0,6 \\ &= 428,263 \text{ Ton/Ha/th} \end{aligned}$$

Kebun Campuran

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,188$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1320 \text{ m}$$

$$\text{Titik Terendah} = + 300 \text{ m}$$

$$\text{Jarak} = 5398,35 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1320 - 300}{5398,35} \times 100\% = 18,98\%$$

$$\text{Faktor LS} = 4,25$$

$$\text{CP} = 0,3$$

$$\begin{aligned}\text{Laju Erosi (A)} &= R \times K \times \text{LS} \times \text{CP} \\ &= 893,33215 \times 0,188 \times 4,25 \times 0,3 \\ &= 214,132 \text{ Ton/Ha/th}\end{aligned}$$

Sawah

$$\begin{aligned}R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h}\end{aligned}$$

$$K = 0,188$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1320 \text{ m}$$

$$\text{Titik Terendah} = + 300 \text{ m}$$

$$\text{Jarak} = 5398,35 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1320 - 300}{5398,35} \times 100\% = 18,98\%$$

$$\text{Faktor LS} = 4,25$$

$$\text{CP} = 0,05$$

$$\begin{aligned}\text{Laju Erosi (A)} &= R \times K \times \text{LS} \times \text{CP} \\ &= 893,33215 \times 0,188 \times 4,25 \times 0,05 \\ &= 35,689 \text{ Ton/Ha/th}\end{aligned}$$

Tegalan

$$\begin{aligned}R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h}\end{aligned}$$

$$K = 0,188$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1320 \text{ m}$$

$$\text{Titik Terendah} = + 300 \text{ m}$$

$$\text{Jarak} = 5398,35 \text{ m}$$

$$\begin{aligned} & \text{Kemiringan Lereng (\%)} \\ &= \frac{\text{Titik tertinggi-titik terendah}}{\text{jarak}} = \frac{1320-300}{5398,35} \times 100\% = 18,98\% \end{aligned}$$

$$\text{Faktor LS} = 4,25$$

$$\text{CP} = 0,75$$

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times \text{LS} \times \text{CP} \\ &= 893,33215 \times 0,188 \times 4,25 \times 0,75 \\ &= \mathbf{535,329 \text{ Ton/Ha/th}} \end{aligned}$$

Hutan

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,188$$

LS (Kemiringan Lereng %):

$$\text{Titik Tertinggi} = + 1320 \text{ m}$$

$$\text{Titik Terendah} = + 300 \text{ m}$$

$$\text{Jarak} = 5398,35 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi-titik terendah}}{\text{jarak}} = \frac{1320-300}{5398,35} \times 100\% = 18,98\%$$

$$\text{Faktor LS} = 4,25$$

$$\text{CP} = 0,03$$

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times \text{LS} \times \text{CP} \\ &= 893,33215 \times 0,188 \times 4,25 \times 0,03 \\ &= \mathbf{21,413 \text{ Ton/Ha/th}} \end{aligned}$$

Jenis Tanah Mediteran dan Regosol

Pemukiman

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1320 \text{ m}$$

$$\text{Titik Terendah} = + 300 \text{ m}$$

$$\text{Jarak} = 5398,35 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi-titik terendah}}{\text{jarak}} = \frac{1320-300}{5398,35} \times 100\% = 18,98\%$$

$$\text{Faktor LS} = 4,25$$

$$\text{CP} = 0,6$$

$$\text{Laju Erosi (A)} = R \times K \times \text{LS} \times \text{CP}$$

$$= 893,33215 \times 0,201 \times 4,25 \times 0,6$$

$$= 457,877 \text{ Ton/Ha/th}$$

Kebun Campuran

$$R = 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)}$$

$$= 234,7 + 2,61 \times 251,315 \text{ cm}$$

$$= 893,33215 \text{ N/h}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1320 \text{ m}$$

$$\text{Titik Terendah} = + 300 \text{ m}$$

$$\text{Jarak} = 5398,35 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi-titik terendah}}{\text{jarak}} = \frac{1320-300}{5398,35} \times 100\% = 18,98\%$$

$$\text{Faktor LS} = 4,25$$

$$\text{CP} = 0,3$$

$$\text{Laju Erosi (A)} = R \times K \times \text{LS} \times \text{CP}$$

$$= 893,33215 \times 0,201 \times 4,25 \times 0,3$$

$$= 228,938 \text{ Ton/Ha/th}$$

Sawah

$$R = 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)}$$

$$= 234,7 + 2,61 \times 251,315 \text{ cm}$$

$$= 893,33215 \text{ N/h}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1320 \text{ m}$$

$$\text{Titik Terendah} = + 300 \text{ m}$$

$$\text{Jarak} = 5398,35 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1320 - 300}{5398,35} \times 100\% = 18,98\%$$

$$\text{Faktor LS} = 4,25$$

$$CP = 0,05$$

$$\text{Laju Erosi (A)} = R \times K \times LS \times CP$$

$$= 893,33215 \times 0,188 \times 4,25 \times 0,05$$

$$= 35,689 \text{ Ton/Ha/th}$$

Tegalan

$$R = 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)}$$

$$= 234,7 + 2,61 \times 251,315 \text{ cm}$$

$$= 893,33215 \text{ N/h}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1320 \text{ m}$$

$$\text{Titik Terendah} = + 300 \text{ m}$$

$$\text{Jarak} = 5398,35 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1320 - 300}{5398,35} \times 100\% = 18,98\%$$

$$\text{Faktor LS} = 4,25$$

$$CP = 0,75$$

$$\text{Laju Erosi (A)} = R \times K \times LS \times CP$$

$$= 893,33215 \times 0,201 \times 4,25 \times 0,75$$

$$= 572,346 \text{ Ton/Ha/th}$$

Hutan

$$R = 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)}$$

$$= 234,7 + 2,61 \times 251,315 \text{ cm}$$

$$= 893,33215 \text{ N/h}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1320 \text{ m}$$

$$\text{Titik Terendah} = + 300 \text{ m}$$

$$\text{Jarak} = 5398,35 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1320 - 300}{5398,35} \times 100\% = 18,98\%$$

$$\text{Faktor LS} = 4,25$$

$$\text{CP} = 0,03$$

$$\text{Laju Erosi (A)} = R \times K \times \text{LS} \times \text{CP}$$

$$= 893,33215 \times 0,201 \times 4,25 \times 0,03$$

$$= 22,893 \text{ Ton/Ha/th}$$

Jenis Tanah Andosol Coklat

Pemukiman

$$R = 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)}$$

$$= 234,7 + 2,61 \times 251,315 \text{ cm}$$

$$= 893,33215 \text{ N/h}$$

$$K = 0,278$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1320 \text{ m}$$

$$\text{Titik Terendah} = + 300 \text{ m}$$

$$\text{Jarak} = 5398,35 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1320 - 300}{5398,35} \times 100\% = 18,98\%$$

$$\text{Faktor LS} = 4,25$$

$$CP = 0,6$$

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times LS \times CP \\ &= 893,33215 \times 0,278 \times 4,25 \times 0,6 \\ &= \mathbf{633,283 \text{ Ton/Ha/th}} \end{aligned}$$

Kebun Campuran

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,278$$

LS (Kemiringan Lereng %) :

$$\begin{aligned} \text{Titik Tertinggi} &= + 1320 \text{ m} \\ \text{Titik Terendah} &= + 300 \text{ m} \\ \text{Jarak} &= 5398,35 \text{ m} \\ \text{Kemiringan Lereng (\%)} &= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} \times 100\% = \frac{1320 - 300}{5398,35} \times 100\% = 18,98\% \end{aligned}$$

$$\text{Faktor LS} = 4,25$$

$$CP = 0,3$$

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times LS \times CP \\ &= 893,33215 \times 0,278 \times 4,25 \times 0,3 \\ &= \mathbf{316,641 \text{ Ton/Ha/th}} \end{aligned}$$

Sawah

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,278$$

LS (Kemiringan Lereng %) :

$$\begin{aligned} \text{Titik Tertinggi} &= + 1320 \text{ m} \\ \text{Titik Terendah} &= + 300 \text{ m} \\ \text{Jarak} &= 5398,35 \text{ m} \\ \text{Kemiringan Lereng (\%)} & \end{aligned}$$

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1320 - 300}{5398,35} \times 100\% = 18,98\%$$

Faktor LS = 4,25

CP = 0,05

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times LS \times CP \\ &= 893,33215 \times 0,278 \times 4,25 \times 0,05 \\ &= 52,773 \text{ Ton/Ha/th} \end{aligned}$$

Tegalan

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

K = 0,278

LS (Kemiringan Lereng %) :

Titik Tertinggi = + 1320 m

Titik Terendah = + 300 m

Jarak = 5398,35 m

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1320 - 300}{5398,35} \times 100\% = 18,98\%$$

Faktor LS = 4,25

CP = 0,75

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times LS \times CP \\ &= 893,33215 \times 0,278 \times 4,25 \times 0,75 \\ &= 791,603 \text{ Ton/Ha/th} \end{aligned}$$

Hutan

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

K = 0,278

LS (Kemiringan Lereng %) :

Titik Tertinggi = + 1320 m

Titik Terendah = + 300 m

$$\text{Jarak} = 5398,35 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1320 - 300}{5398,35} \times 100\% = 18,98\%$$

$$\text{Faktor LS} = 4,25$$

$$\text{CP} = 0,03$$

$$\text{Laju Erosi (A)} = R \times K \times \text{LS} \times \text{CP}$$

$$= 893,33215 \times 0,278 \times 4,25 \times 0,03$$

$$= 31,664 \text{ Ton/Ha/th}$$

➤ Jadi, jumlah laju erosi pada Kawasan Ungaran Barat sebesar

$$\text{Pemukiman} = 428,263 + 457,877 + 633,283 = 1519,424 \text{ Ton/Ha/th}$$

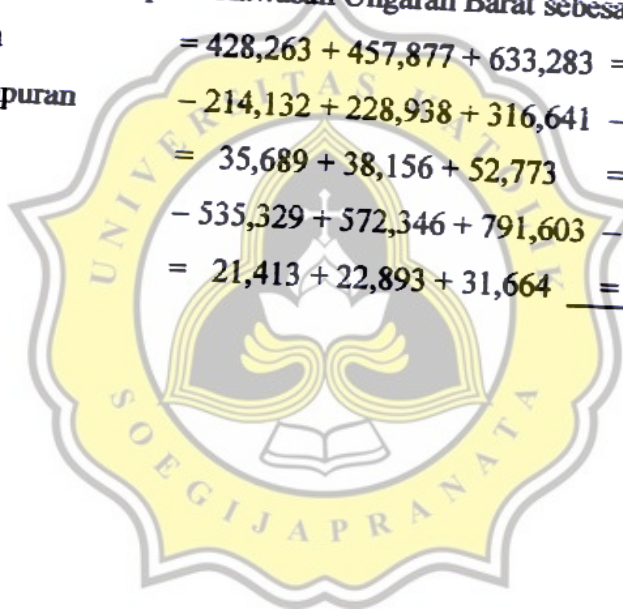
$$\text{Kebun Campuran} = 214,132 + 228,938 + 316,641 = 759,711 \text{ Ton/Ha/th}$$

$$\text{Sawah} = 35,689 + 38,156 + 52,773 = 126,618 \text{ Ton/Ha/th}$$

$$\text{Tegalan} = 535,329 + 572,346 + 791,603 = 1899,28 \text{ Ton/Ha/th}$$

$$\text{Hutan} = 21,413 + 22,893 + 31,664 = 75,971 \text{ Ton/Ha/th} +$$

$$\underline{4381,005 \text{ Ton/Ha/th}}$$



Perhitungan Kecamatan Ungaran Timur

Jenis Tanah Mediteran dan Regosol

Pemukiman

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 570 \text{ m}$$

$$\text{Titik Terendah} = + 300 \text{ m}$$

$$\text{Jarak} = 3743,37 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{570 - 300}{3743,37} \times 100\% = 7,212\%$$

$$\text{Faktor LS} = 1,2$$

$$CP = 0,6$$

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times LS \times CP \\ &= 893,33215 \times 0,201 \times 1,2 \times 0,6 \\ &= 129,283 \text{ Ton/Ha/th} \end{aligned}$$

Kebun Campuran

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 570 \text{ m}$$

$$\text{Titik Terendah} = + 300 \text{ m}$$

$$\text{Jarak} = 3743,37 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{570 - 300}{3743,37} \times 100\% = 7,212\%$$

$$\text{Faktor LS} = 1,2$$

$$\text{CP} = 0,3$$

$$\begin{aligned}\text{Laju Erosi (A)} &= R \times K \times \text{LS} \times \text{CP} \\ &= 893,33215 \times 0,201 \times 1,2 \times 0,3 \\ &= \mathbf{64,641 \text{ Ton/Ha/th}}\end{aligned}$$

Sawah

$$\begin{aligned}R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h}\end{aligned}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 570 \text{ m}$$

$$\text{Titik Terendah} = + 300 \text{ m}$$

$$\text{Jarak} = 3743,37 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{570 - 300}{3743,37} \times 100\% = 7,212\%$$

$$\text{Faktor LS} = 1,2$$

$$\text{CP} = 0,05$$

$$\begin{aligned}\text{Laju Erosi (A)} &= R \times K \times \text{LS} \times \text{CP} \\ &= 893,33215 \times 0,201 \times 1,2 \times 0,05 \\ &= \mathbf{10,773 \text{ Ton/Ha/th}}\end{aligned}$$

Tegalan

$$\begin{aligned}R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h}\end{aligned}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 570 \text{ m}$$

$$\text{Titik Terendah} = + 300 \text{ m}$$

$$\text{Jarak} = 3743,37 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{570 - 300}{3743,37} \times 100\% = 7,212\%$$

Faktor LS = 1,2

CP = 0,75

Laju Erosi (A) = R x K x LS x CP

$$= 893,33215 \times 0,201 \times 1,2 \times 0,75$$

$$= 161,604 \text{ Ton/Ha/th}$$

➤ Jadi, jumlah laju erosi pada Kawasan Ungaran Timur sebesar

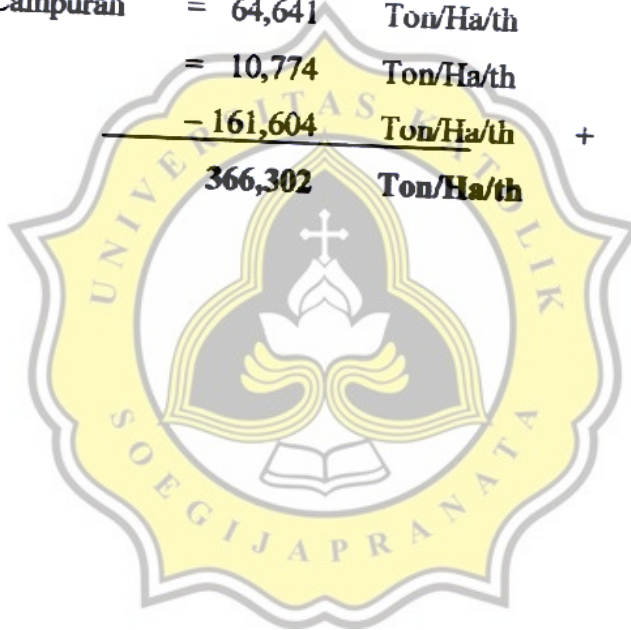
Pemukiman = 129,283 Ton/Ha/th

Kebun Campuran = 64,641 Ton/Ha/th

Sawah = 10,774 Ton/Ha/th

Tegalan = 161,604 Ton/Ha/th +

366,302 Ton/Ha/th



Perhitungan Kecamatan Boja

Jenis Tanah Mediteran dan Regosol

Kebun

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1380 \text{ m}$$

$$\text{Titik Terendah} = + 750 \text{ m}$$

$$\text{Jarak} = 2627,31 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1380 - 750}{2627,31} \times 100\% = 23,978\%$$

$$\text{Faktor LS} = 4,25$$

$$CP = 0,3$$

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times LS \times CP \\ &= 893,33215 \times 0,201 \times 4,25 \times 0,3 \\ &= 228,938 \text{ Ton/Ha/th} \end{aligned}$$

Hutan

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1380 \text{ m}$$

$$\text{Titik Terendah} = + 750 \text{ m}$$

$$\text{Jarak} = 2627,31 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1380 - 750}{2627,31} \times 100\% = 23,978\%$$

$$\text{Faktor LS} = 4,25$$

$$\text{CP} = 0,03$$

$$\begin{aligned}\text{Laju Erosi (A)} &= R \times K \times \text{LS} \times \text{CP} \\ &= 893,33215 \times 0,201 \times 4,25 \times 0,03 \\ &= \mathbf{22,894 \text{ Ton/Ha/th}}\end{aligned}$$

Jenis Tanah Mediteran Coklat dan Litosol

Kebun

$$\begin{aligned}R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h}\end{aligned}$$

$$K = 0,188$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1380 \text{ m}$$

$$\text{Titik Terendah} = + 750 \text{ m}$$

$$\text{Jarak} = 2627,31 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1380 - 750}{2627,31} \times 100\% = 23,978\%$$

$$\text{Faktor LS} = 4.25$$

$$\text{CP} = 0,3$$

$$\begin{aligned}\text{Laju Erosi (A)} &= R \times K \times \text{LS} \times \text{CP} \\ &= 893,33215 \times 0,188 \times 4,25 \times 0,3 \\ &= \mathbf{214,131 \text{ Ton/Ha/th}}\end{aligned}$$

Hutan

$$\begin{aligned}R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h}\end{aligned}$$

$$K = 0,188$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 1380 \text{ m}$$

Titik Terendah = + 750 m

Jarak = 2627,31 m

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{1380 - 750}{2627,31} \times 100\% = 23,978\%$$

Faktor LS = 4,25

CP = 0,03

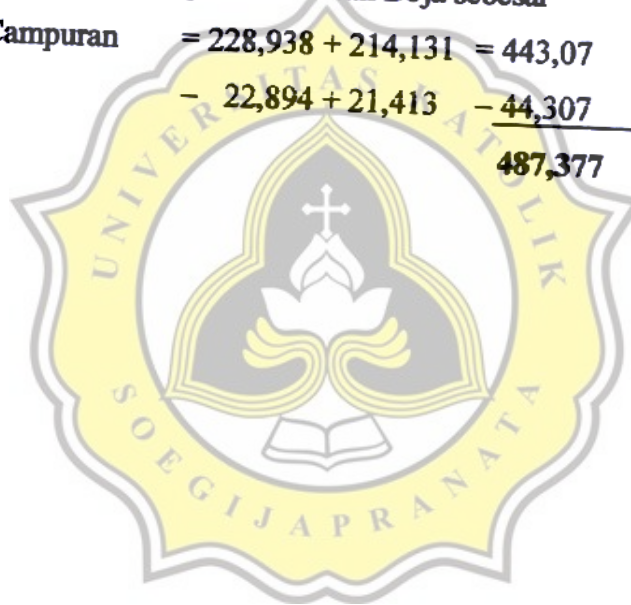
Laju Erosi (A) = R x K x LS x CP

$$= 893,33215 \times 0,188 \times 4,25 \times 0,03$$

$$= \mathbf{21,413 \text{ Ton/Ha/th}}$$

➤ Jadi, jumlah laju erosi pada Kawasan Boja sebesar

Kebun Campuran	= 228,938 + 214,131	= 443,07	Ton/Ha/th
Hutan	- 22,894 + 21,413	- 44,307	Ton/Ha/th +
		487,377	Ton/Ha/th



Perhitungan Kecamatan Gunungpati

Jenis Tanah Grumosol Abu - Abu

Pemukiman

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,176$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 390 \text{ m}$$

$$\text{Titik Terendah} = + 30 \text{ m}$$

$$\text{Jarak} = 9112,06 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{390 - 30}{9112,06} \times 100\% = 3,95\%$$

$$\text{Faktor LS} = 0,25$$

$$CP = 0,6$$

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times LS \times CP \\ &= 893,33215 \times 0,176 \times 0,25 \times 0,6 \\ &= 23,584 \text{ Ton/Ha/th} \end{aligned}$$

Tegalan

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,176$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 390 \text{ m}$$

$$\text{Titik Terendah} = + 30 \text{ m}$$

$$\text{Jarak} = 9112,06 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{390 - 30}{9112,06} \times 100\% = 3,95\%$$

$$\text{Faktor LS} = 0,25$$

$$\text{CP} = 0,75$$

$$\begin{aligned}\text{Laju Erosi (A)} &= R \times K \times \text{LS} \times \text{CP} \\ &= 893,33215 \times 0,176 \times 0,25 \times 0,75 \\ &= 29,480 \text{ Ton/Ha/th}\end{aligned}$$

Kebun Campuran

$$\begin{aligned}R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h}\end{aligned}$$

$$K = 0,176$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 390 \text{ m}$$

$$\text{Titik Terendah} = + 30 \text{ m}$$

$$\text{Jarak} = 9112,06 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{390 - 30}{9112,06} \times 100\% = 3,95\%$$

$$\text{Faktor LS} = 0,25$$

$$\text{CP} = 0,3$$

$$\begin{aligned}\text{Laju Erosi (A)} &= R \times K \times \text{LS} \times \text{CP} \\ &= 893,33215 \times 0,176 \times 0,25 \times 0,3 \\ &= 11,792 \text{ Ton/Ha/th}\end{aligned}$$

Sawah

$$\begin{aligned}R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h}\end{aligned}$$

$$K = 0,176$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 390 \text{ m}$$

$$\text{Titik Terendah} = + 30 \text{ m}$$

$$\text{Jarak} = 9112,06 \text{ m}$$

$$\begin{aligned} & \text{Kemiringan Lereng (\%)} \\ &= \frac{\text{Titik tertinggi-titik terendah}}{\text{jarak}} = \frac{390-30}{9112,06} \times 100\% = 3,95\% \end{aligned}$$

$$\text{Faktor LS} = 0,25$$

$$\text{CP} = 0,05$$

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times \text{LS} \times \text{CP} \\ &= 893,33215 \times 0,176 \times 0,25 \times 0,05 \\ &= \mathbf{1,965 \text{ Ton/Ha/th}} \end{aligned}$$

Jenis Tanah Mediteran dan Regosol

Pemukiman

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,201$$

LS (Kemiringan Lereng %):

$$\text{Titik Tertinggi} = + 390 \text{ m}$$

$$\text{Titik Terendah} = + 30 \text{ m}$$

$$\text{Jarak} = 9112,06 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi-titik terendah}}{\text{jarak}} = \frac{390-30}{9112,06} \times 100\% = 3,95\%$$

$$\text{Faktor LS} = 0,25$$

$$\text{CP} = 0,6$$

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times \text{LS} \times \text{CP} \\ &= 893,33215 \times 0,201 \times 0,25 \times 0,6 \\ &= \mathbf{26,933 \text{ Ton/Ha/th}} \end{aligned}$$

Tegalan

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 390 \text{ m}$$

$$\text{Titik Terendah} = + 30 \text{ m}$$

$$\text{Jarak} = 9112,06 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{390 - 30}{9112,06} \times 100\% = 3,95\%$$

$$\text{Faktor LS} = 0,25$$

$$\text{CP} = 0,75$$

$$\text{Laju Erosi (A)} = R \times K \times \text{LS} \times \text{CP}$$

$$= 893,33215 \times 0,201 \times 0,25 \times 0,75$$

$$= 33,667 \text{ Ton/Ha/th}$$

Kebun Campuran

$$R = 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)}$$

$$= 234,7 + 2,61 \times 251,315 \text{ cm}$$

$$= 893,33215 \text{ N/h}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 390 \text{ m}$$

$$\text{Titik Terendah} = + 30 \text{ m}$$

$$\text{Jarak} = 9112,06 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{390 - 30}{9112,06} \times 100\% = 3,95\%$$

$$\text{Faktor LS} = 0,25$$

$$\text{CP} = 0,3$$

$$\text{Laju Erosi (A)} = R \times K \times \text{LS} \times \text{CP}$$

$$= 893,33215 \times 0,201 \times 0,25 \times 0,3$$

$$= 13,466 \text{ Ton/Ha/th}$$

Sawah

$$R = 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)}$$

$$= 234,7 + 2,61 \times 251,315 \text{ cm}$$

$$= 893,33215 \text{ N/h}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 390 \text{ m}$$

$$\text{Titik Terendah} = + 30 \text{ m}$$

$$\text{Jarak} = 9112,06 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi-titik terendah}}{\text{jarak}} = \frac{390-30}{9112,06} \times 100\% = 3,95\%$$

$$\text{Faktor LS} = 0,25$$

$$CP = 0,05$$

$$\text{Laju Erosi (A)} = R \times K \times LS \times CP$$

$$= 893,33215 \times 0,201 \times 0,25 \times 0,05$$

$$= 2,244 \text{ Ton/Ha/th}$$

Jenis Tanah Mediteran Coklat dan Litosol

Pemukiman

$$R = 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)}$$

$$= 234,7 + 2,61 \times 251,315 \text{ cm}$$

$$= 893,33215 \text{ N/h}$$

$$K = 0,188$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 390 \text{ m}$$

$$\text{Titik Terendah} = + 30 \text{ m}$$

$$\text{Jarak} = 9112,06 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi-titik terendah}}{\text{jarak}} = \frac{390-30}{9112,06} \times 100\% = 3,95\%$$

$$\text{Faktor LS} = 0,25$$

$$CP = 0,6$$

$$\text{Laju Erosi (A)} = R \times K \times LS \times CP$$

$$= 893,33215 \times 0,188 \times 0,25 \times 0,6$$

$$= 25,191 \text{ Ton/Ha/th}$$

Tegalan

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,188$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 390 \text{ m}$$

$$\text{Titik Terendah} = + 30 \text{ m}$$

$$\text{Jarak} = 9112,06 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi-titik terendah}}{\text{jarak}} = \frac{390-30}{9112,06} \times 100\% = 3,95\%$$

$$\text{Faktor LS} = 0,25$$

$$CP = 0,75$$

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times LS \times CP \\ &= 893,33215 \times 0,188 \times 0,25 \times 0,75 \\ &= 31,489 \text{ Ton/Ha/th} \end{aligned}$$

Kebun Campuran

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,188$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 390 \text{ m}$$

$$\text{Titik Terendah} = + 30 \text{ m}$$

$$\text{Jarak} = 9112,06 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi-titik terendah}}{\text{jarak}} = \frac{390-30}{9112,06} \times 100\% = 3,95\%$$

$$\text{Faktor LS} = 0,25$$

$$CP = 0,3$$

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times LS \times CP \\ &= 893,33215 \times 0,188 \times 0,25 \times 0,3 \\ &= \mathbf{12,595 \text{ Ton/Ha/th}} \end{aligned}$$

Sawah

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,188$$

LS (Kemiringan Lereng %):

$$\text{Titik Tertinggi} = + 390 \text{ m}$$

$$\text{Titik Terendah} = + 30 \text{ m}$$

$$\text{Jarak} = 9112,06 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{390 - 30}{9112,06} \times 100\% = 3,95\%$$

$$\text{Faktor LS} = 0,25$$

$$CP = 0,05$$

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times LS \times CP \\ &= 893,33215 \times 0,188 \times 0,25 \times 0,05 \\ &= \mathbf{2,099 \text{ Ton/Ha/th}} \end{aligned}$$

➤ Jadi, jumlah laju erosi pada Kawasan Gunungpati sebesar

Pemukiman	= 23,584 + 26,933 + 25,191 = 75,709	Ton/Ha/th
Tegalan	= 29,480 + 33,667 + 31,489 = 94,637	Ton/Ha/th
Kebun Campuran	= 11,792 + 13,466 + 12,595 = 37,855	Ton/Ha/th
Sawah	= 1,965 + 2,244 + 2,099 = 6,309	Ton/Ha/th +
	214,511	Ton/Ha/th

Perhitungan Kecamatan Banyumanik

Jenis Tanah Mediteran dan Regosol

Pemukiman

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 360 \text{ m}$$

$$\text{Titik Terendah} = + 60 \text{ m}$$

$$\text{Jarak} = 6247,16 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{360 - 60}{6247,16} \times 100\% = 4,802\%$$

$$\text{Faktor LS} = 0,25$$

$$\text{CP} = 0,6$$

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times \text{LS} \times \text{CP} \\ &= 893,33215 \times 0,201 \times 0,25 \times 0,6 \\ &= 26,934 \text{ Ton/Ha/th} \end{aligned}$$

Kebun Campuran

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 360 \text{ m}$$

$$\text{Titik Terendah} = + 60 \text{ m}$$

$$\text{Jarak} = 6247,16 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{360 - 60}{6247,16} \times 100\% = 4,802\%$$

$$\text{Faktor LS} = 0,25$$

$$\text{CP} = 0,4$$

$$\begin{aligned}\text{Laju Erosi (A)} &= R \times K \times \text{LS} \times \text{CP} \\ &= 893,33215 \times 0,201 \times 0,25 \times 0,4 \\ &= \mathbf{17,956 \text{ Ton/Ha/th}}\end{aligned}$$

Tegalan

$$\begin{aligned}R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h}\end{aligned}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 360 \text{ m}$$

$$\text{Titik Terendah} = + 60 \text{ m}$$

$$\text{Jarak} = 6247,16 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{360 - 60}{624,16} \times 100\% = 4,802\%$$

$$\text{Faktor LS} = 0,25$$

$$\text{CP} = 0,75$$

$$\begin{aligned}\text{Laju Erosi (A)} &= R \times K \times \text{LS} \times \text{CP} \\ &= 893,33215 \times 0,201 \times 0,25 \times 0,75 \\ &= \mathbf{33,667 \text{ Ton/Ha/th}}\end{aligned}$$

Sawah

$$\begin{aligned}R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h}\end{aligned}$$

$$K = 0,201$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 360 \text{ m}$$

$$\text{Titik Terendah} = + 60 \text{ m}$$

$$\text{Jarak} = 6247,16 \text{ m}$$

$$\begin{aligned} \text{Kemiringan Lereng (\%)} \\ = \frac{\text{Titik tertinggi-titik terendah}}{\text{jarak}} = \frac{360-60}{6247,16} \times 100\% = 4,802\% \end{aligned}$$

$$\text{Faktor LS} = 0,25$$

$$\text{CP} = 0,05$$

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times \text{LS} \times \text{CP} \\ &= 893,33215 \times 0,201 \times 0,25 \times 0,05 \\ &= \mathbf{2,244 \text{ Ton/Ha/th}} \end{aligned}$$

Jenis Tanah Grumosol Abu - Abu

Pemukiman

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,176$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 360 \text{ m}$$

$$\text{Titik Terendah} = + 60 \text{ m}$$

$$\text{Jarak} = 6247,16 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi-titik terendah}}{\text{jarak}} = \frac{360-60}{6247,16} \times 100\% = 4,802\%$$

$$\text{Faktor LS} = 0,25$$

$$\text{CP} = 0,6$$

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times \text{LS} \times \text{CP} \\ &= 893,33215 \times 0,176 \times 0,25 \times 0,6 \\ &= \mathbf{23,583 \text{ Ton/Ha/th}} \end{aligned}$$

Kebun Campuran

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,176$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 360 \text{ m}$$

$$\text{Titik Terendah} = + 60 \text{ m}$$

$$\text{Jarak} = 6247,16 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{360 - 60}{6247,16} \times 100\% = 4,802\%$$

$$\text{Faktor LS} = 0,25$$

$$\text{CP} = 0,4$$

$$\text{Laju Erosi (A)} = R \times K \times \text{LS} \times \text{CP}$$

$$= 893,33215 \times 0,176 \times 0,25 \times 0,4$$

$$= 15,722 \text{ Ton/Ha/th}$$

Tegalan

$$R = 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)}$$

$$= 234,7 + 2,61 \times 251,315 \text{ cm}$$

$$= 893,33215 \text{ N/h}$$

$$K = 0,176$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 360 \text{ m}$$

$$\text{Titik Terendah} = + 60 \text{ m}$$

$$\text{Jarak} = 6247,16 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{360 - 60}{624,16} \times 100\% = 4,802\%$$

$$\text{Faktor LS} = 0,25$$

$$\text{CP} = 0,75$$

$$\text{Laju Erosi (A)} = R \times K \times \text{LS} \times \text{CP}$$

$$= 893,33215 \times 0,176 \times 0,25 \times 0,75$$

$$= 29,480 \text{ Ton/Ha/th}$$

Sawah

$$R = 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)}$$

$$= 234,7 + 2,61 \times 251,315 \text{ cm}$$

$$= 893,33215 \text{ N/h}$$

$$K = 0,176$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 360 \text{ m}$$

$$\text{Titik Terendah} = + 60 \text{ m}$$

$$\text{Jarak} = 6247,16 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{360 - 60}{6247,16} \times 100\% = 4,802\%$$

$$\text{Faktor LS} = 0,25$$

$$CP = 0,05$$

$$\text{Laju Erosi (A)} = R \times K \times LS \times CP$$

$$= 893,33215 \times 0,176 \times 0,25 \times 0,05$$

$$= 1,965 \text{ Ton/Ha/th}$$

➤ Jadi, jumlah laju erosi pada Kawasan Banyumanik sebesar

Pemukiman	= 26,934 + 23,583	= 50,517	Ton/Ha/th
Kebun Campuran	= 17,956 + 15,722	= 33,678	Ton/Ha/th
Tegalan	= 33,667 + 29,480	= 63,147	Ton/Ha/th
Sawah	= 2,244 + 1,965	= 4,209	Ton/Ha/th +
		151,553	Ton/Ha/th

Perhitungan Kecamatan Gajah Mungkur

Pemukiman

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,176$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 120 \text{ m}$$

$$\text{Titik Terendah} = + 120 \text{ m}$$

$$\text{Jarak} = 0 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{120 - 120}{0} \times 100\% = 0\%$$

$$\text{Faktor LS} = 0,25$$

$$CP = 0,6$$

$$\begin{aligned} \text{Laju Erosi (A)} &= R \times K \times LS \times CP \\ &= 893,33215 \times 0,176 \times 0,25 \times 0,6 \\ &= 23,584 \text{ Ton/Ha/th} \end{aligned}$$

Sawah

$$\begin{aligned} R &= 237,4 + 2,61 \times Y \text{ (curah hujan rata-rata tahunan)} \\ &= 234,7 + 2,61 \times 251,315 \text{ cm} \\ &= 893,33215 \text{ N/h} \end{aligned}$$

$$K = 0,176$$

LS (Kemiringan Lereng %) :

$$\text{Titik Tertinggi} = + 120 \text{ m}$$

$$\text{Titik Terendah} = + 120 \text{ m}$$

$$\text{Jarak} = 0 \text{ m}$$

Kemiringan Lereng (%)

$$= \frac{\text{Titik tertinggi} - \text{titik terendah}}{\text{jarak}} = \frac{120 - 120}{0} \times 100\% = 0\%$$

$$\text{Faktor LS} = 0,25$$

$$CP = 0,05$$

$$\text{Laju Erosi (A)} = R \times K \times LS \times CP$$

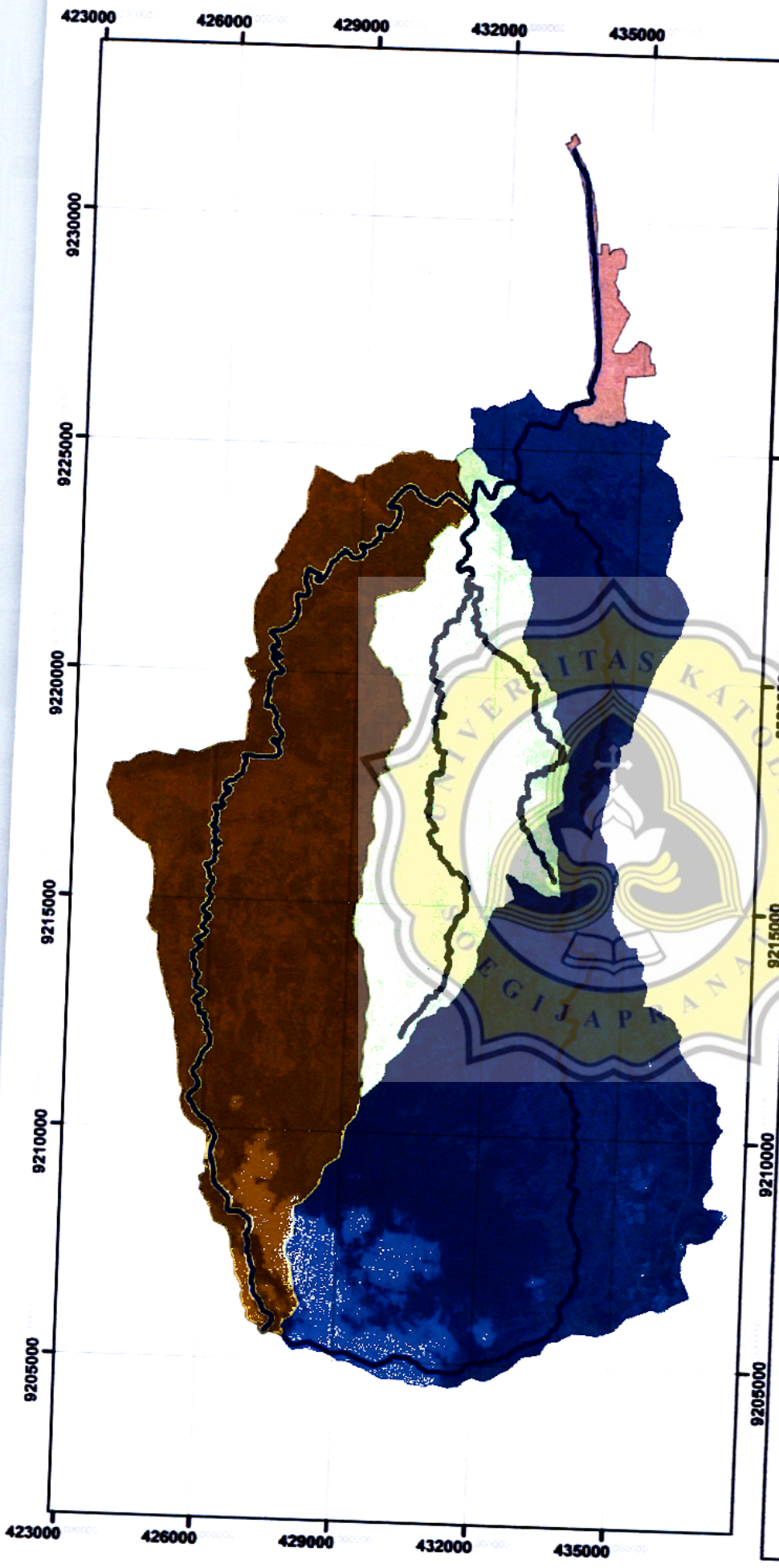
$$= 893,33215 \times 0,176 \times 0,25 \times 0,05$$

$$= 1,965 \text{ Ton/Ha/th}$$

➤ Jadi, jumlah laju erosi pada Kawasan Gajahmungkur sebesar

Pemukiman	= 23,584	Ton/Ha/th	
Sawah	= 1,965	Ton/Ha/th	+
	25,549	Ton/Ha/th	





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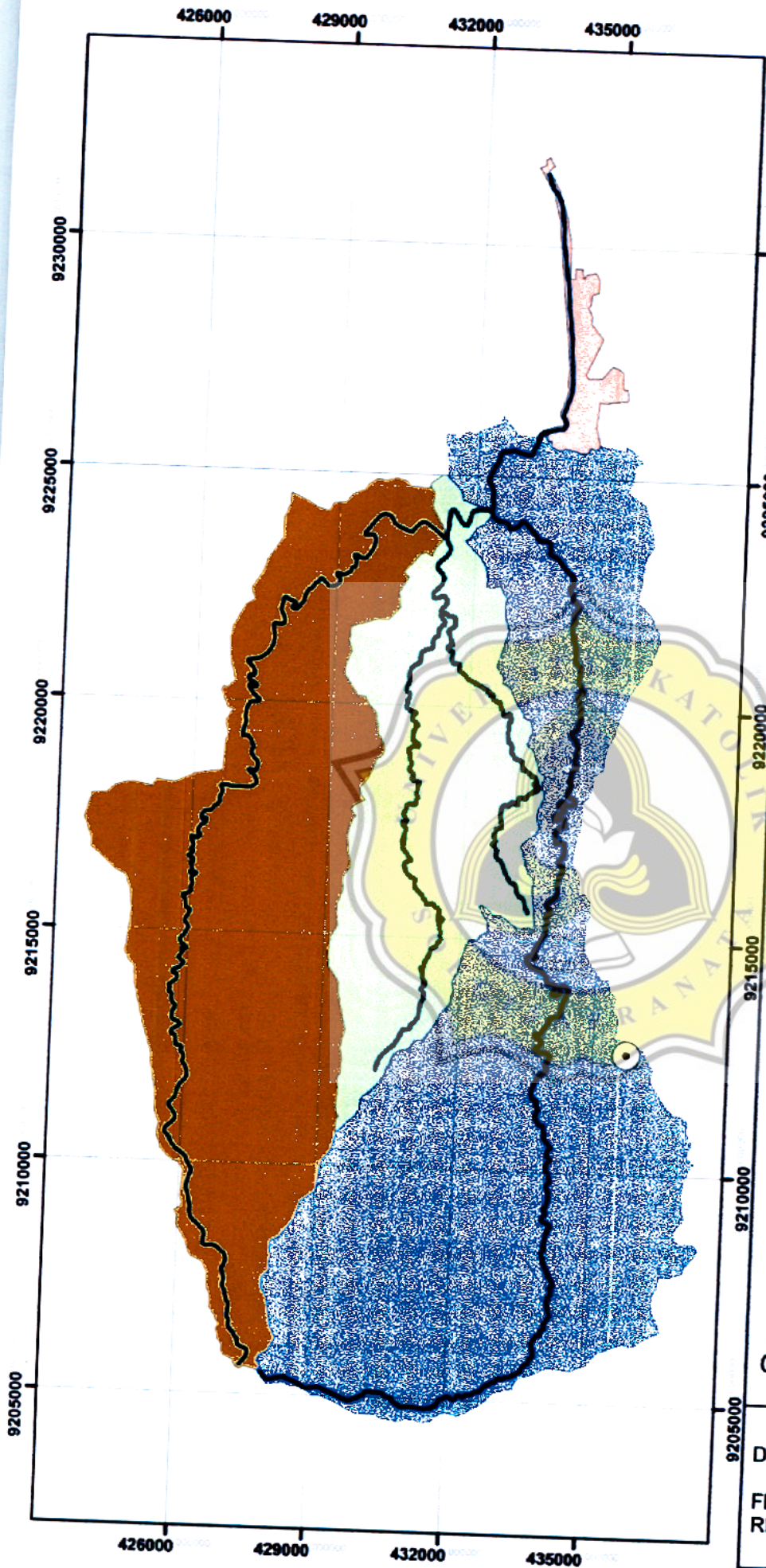
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Legend

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- SUB DAS GARANG
- SUB DAS KRIPIK
- SUB DAS KREO
- SUNGAI UTAMA DAS GARANG

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RILO PAMBUDI	11.12.0025



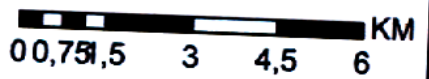
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**PETA
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Legend

- Stasiun Hujan Ungaran
- BANJIR KANAL BARAT
- SUB DAS GARANG
- SUB DAS KRIPIK
- SUB DAS KREO
- SUNGAI UTAMA DAS GARANG



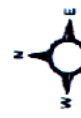
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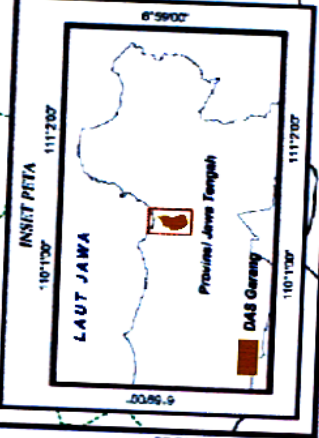
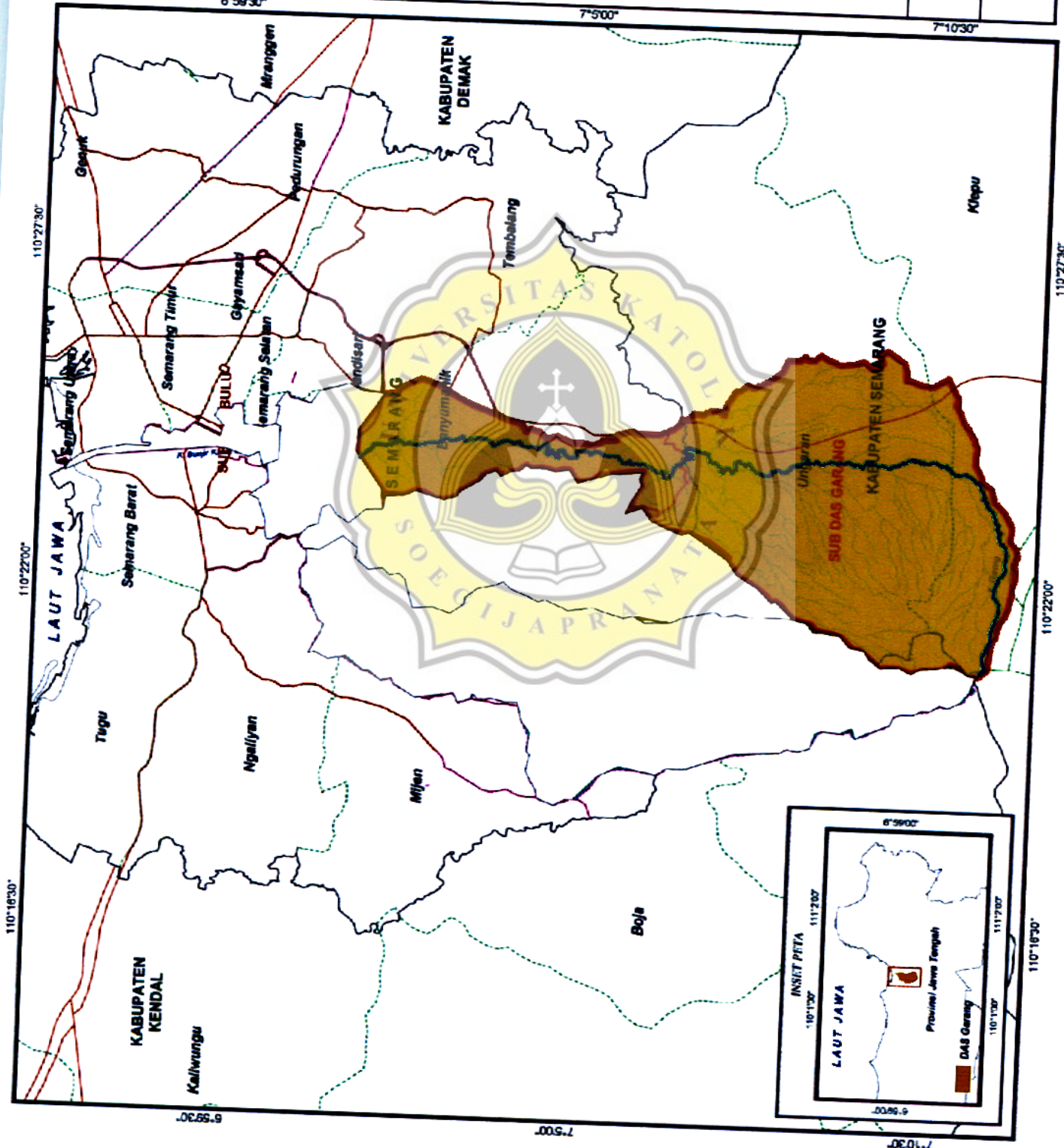
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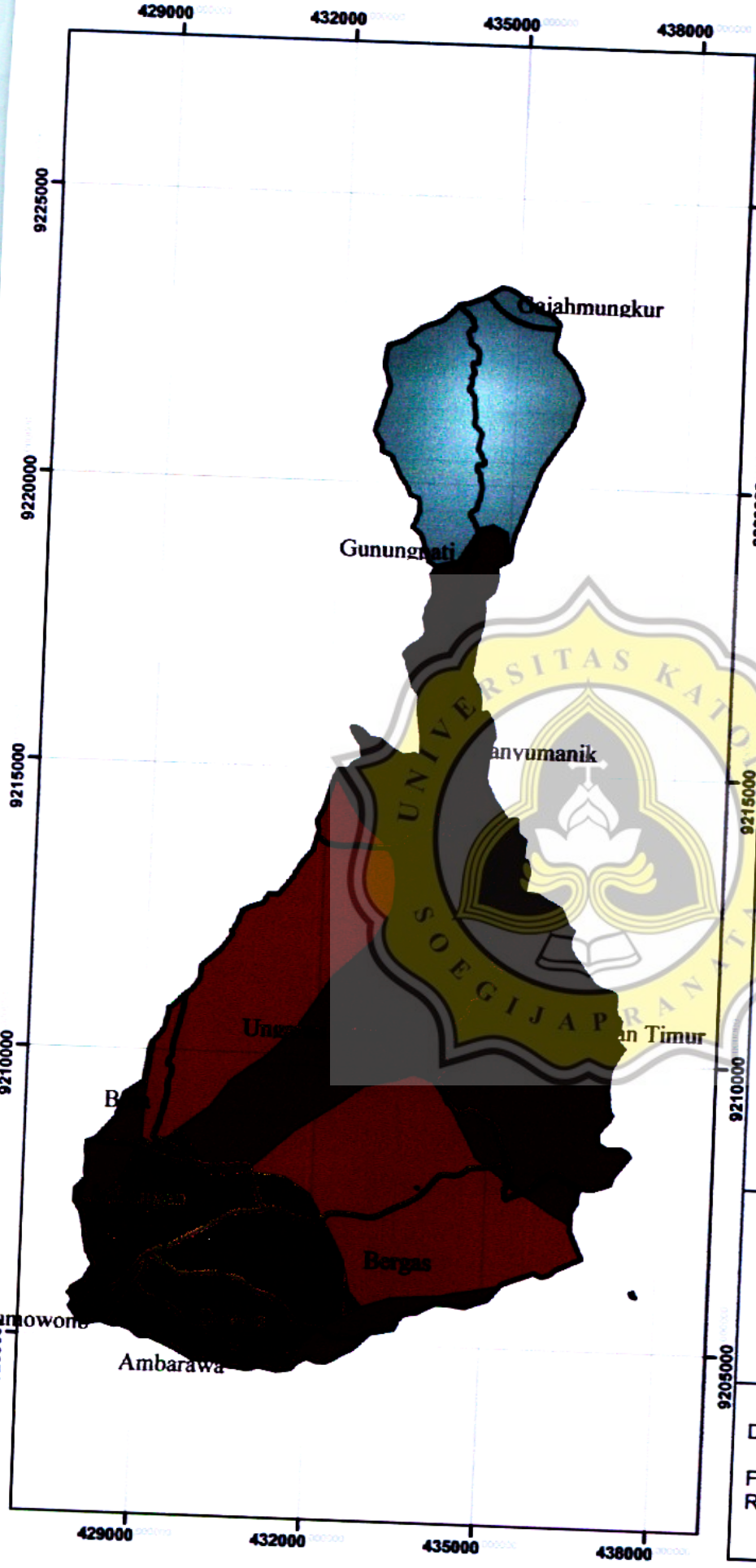
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- Batas Kecamatan
- Batas Daerah Aliran Sungai
- Jalan
- Arteri Primer
- Arteri Sekunder
- Kol. Primer
- Tol
- Sungai



Sistem Koordinat: Geografis
 Datum: WGS 1984
 Sistem Dtd: 1 Geografis
 2 UTM
 3 J. Natural Transverse Mercator

Referensi:
 1. Peta Rupa Bumi BAKOSURTANAL, Tahun 1987
 2. Peta Administrasi Provinsi Jawa Tengah, Indonesia Provinsi, Tahun 2007
 3. Permen PU 11/A, Tahun 2008



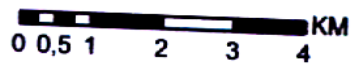


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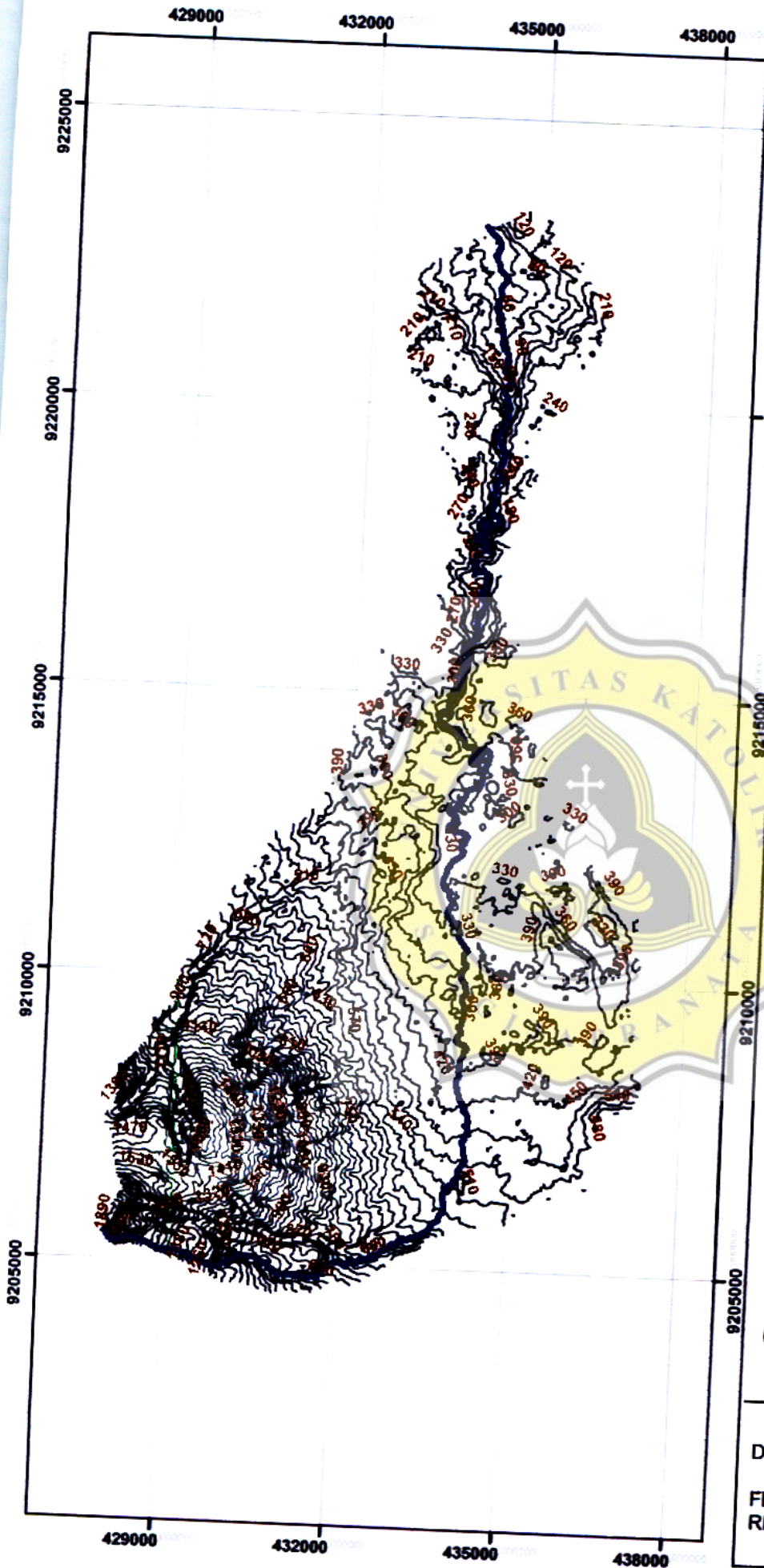
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- Andosol Coklat
- Mediteran Coklat dan Litosol
- Grumosol Abu - Abu
- Tanah Mediteran dan Regosol



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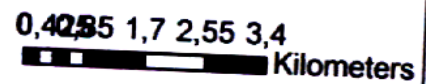
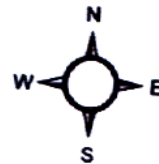
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KONTUR**

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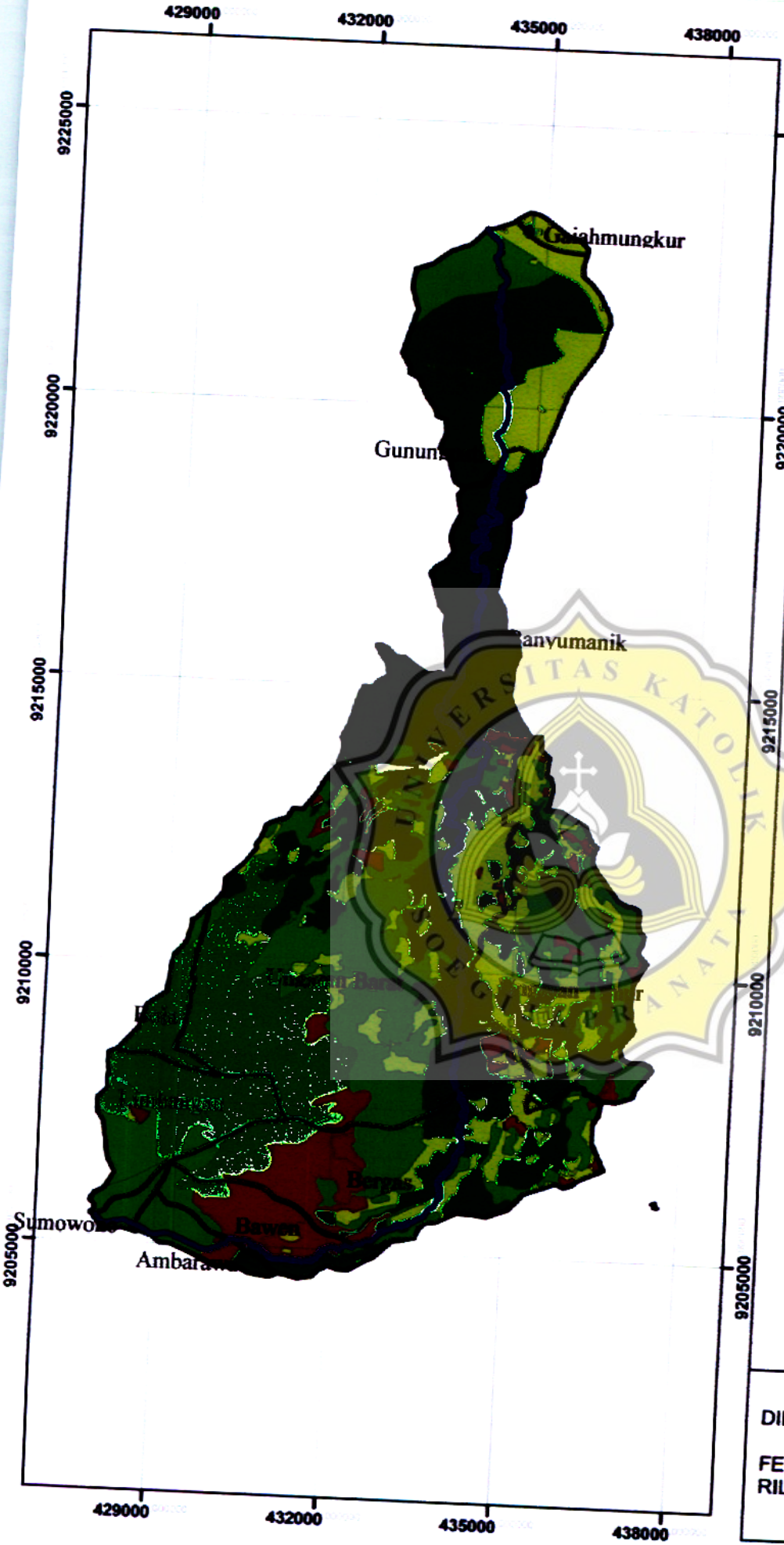
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- kontur_subdas_garang
- kontur
- sungai utama penelitian



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




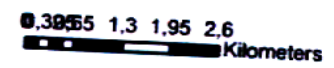
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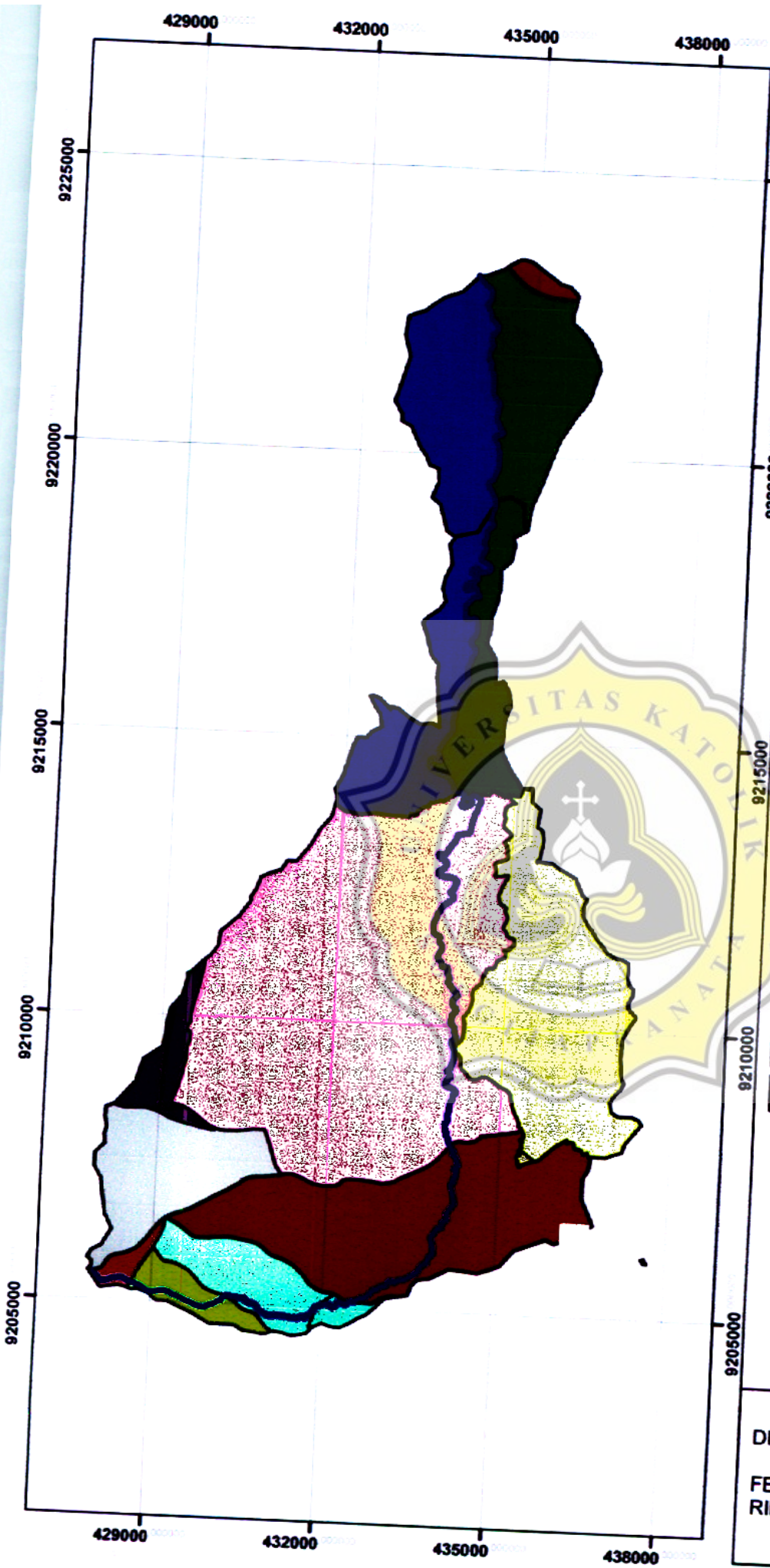
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Legend

-  sungai utama penelitian
-  TEGALAN
-  PEMUKIMAN
-  HUTAN
-  KEBUN CAMPURAN
-  SAWAH IRIGASI



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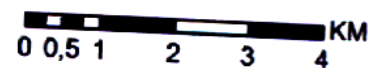


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PEMBAGIAN SUB DAS
PER KECAMATAN**
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Legend

-  Sungai Utama Penelitian
-  Ambarawa
-  Bawen
-  Sumowono
-  Bergas
-  Limbangan
-  Ungaran Barat
-  Ungaran Timur
-  Boja
-  Gunungpati
-  Banyumanik
-  Gajahmungkur



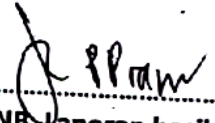
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 RILO PAMBUDI 11.12.0025

FORMULIR SCAN ANTI PLAGIARISME

Nama : Rilo Tambuti
Alamat email : rilo.tambuti1993@gmail.com
Fak. / Prodi : Teknik / T. Sipil NIM : 11.12.0025
berupa (TESIS, TUGAS AKHIR SKRIPSI, SUMMARY, LAPORAN KERJA PRAKTEK)
dengan judul : Patensi Laju Erosi Sub DAS Gunung
Merapi dengan Metode USLE

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Semarang, 2 November 2019
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BAB I

17PENDAHULUAN 1.1 Latar Belakang Indonesia merupakan negara beriklim tropis, yang berarti hanya memiliki dua musim, yakni musim hujan dan musim kemarau.

44Pergantian musim dari musim kemarau ke musim penghujan

menunjukkan bahwa curah hujan yang tinggi dapat mengakibatkan terjadinya banjir, erosi, dan tanah longsor. Hulu sungai berperan menyimpan air untuk kelangsungan hidup seluruh makhluk hidup di dunia. Apabila pada bagian hulu sungai sudah terganggu, maka simpanan air akan berkurang dan berpengaruh pada debit sungai di sekitar lahan, serta akan mengganggu kelangsungan hidup makhluk hidup yang berada di daerah tersebut. Kerusakan yang timbul akibat dari pengalihan fungsi lahan pada bagian hulu menyebabkan pendangkalan pada sungai-sungai disekitarnya. Pendangkalan tersebut karena erosi yang terjadi semakin mengkhawatirkan. Erosi terjadi karena bergantinya fungsi lahan yang tidak terkontrol. Akibat dari proses erosi dapat berupa pendangkalan pada aliran sungai, danau, dan waduk. Erosi yang terjadi dapat disebabkan oleh alam dan aktivitas manusia. Erosi yang disebabkan oleh alam

14terjadi karena proses pembentukan tanah dan proses erosi yang terjadi karena untuk mempertahankan kekuatan tanah secara alami. Sedangkan erosi oleh aktivitas manusia disebabkan karena hilangnya lapisan permukaan tanah akibat penyalahgunaan lahan

karena pengerukan tanah, eksploitasi hutan, penambangan, atau

33pembangunan yang bersifat merusak keadaan fisik tanah. Proses erosi

sendiri tidak terdeteksi dalam jangka waktu yang singkat, tetapi dalam jangka waktu yang cukup lama. Efek dari erosi akan sangat terasa bila sudah dalam jumlah yang berlebih, akibatnya jumlah tampungan air pada sungai akan berkurang, terasa pada saat musim kemarau dimana debit air akan sangat berkurang dan daerah disekitar akan mengalami kekeringan, begitu pula pada saat musim penghujan akan terjadi banjir pada hilir sungai karena sungai pada bagian hulu sudah tidak dapat lagi menampung air. Maka diperlukan penanganan yang tepat terhadap sungai, karena dalam wilayah sungai kita mengenal Daerah Aliran Sungai. Pengelolaan atau konservasi DAS merupakan langkah untuk mewujudkan kesejahteraan masyarakat serta kelestarian ekosistem DAS. Pada tanggal 25 Desember 2006 pernah terjadi banjir bandang menuju hilir DAS Kaligarang melalui sungai garang (lihat gambar 1.1)