Langkah-langkah Perhitungan Garis Pantai		
No	**Urutan kerja**	**Dihitung**
1.	Masukkan nilai X dengan jarak spasi 50 m	**X (m)**
2.	Urutkan Pias Berdasarkan tiap jarak spasi	**Pias**
3.	Masukkan nilai Y untuk data awal garis pantai "X"	**Yawal (m)**
4.	Hitung nilai tangen **ai**	**Tan ai**
5.	Hitung nilai tangen **ab** (dengan nilai ao sudah diketahui)	**Tan ab**
6.	Cari nilai **ab**	**ab**
7.	Hitung nilai **sin ab**	**Sin ab**
8.	Hitung nilai **cos ab**	**Cos ab**
9.	Carilah nilai **P1**	**P1 (ton m/s/m)**
10.	Carilah nilai **QS**	**Qs (m3/hr)**
11.	Carilah nilai **DY**	**DY(i)**
12.	Hitunglah nilai Yakhir	**Yakhir (m)**

Rumus
X= 0, 50, 100, …, 4500
Pias ke-1 untuk X=0, Pias ke-2 untuk X=50, dst
Y1= 1374, Y2= 1367, dst
tan ai =(Yi - Yi+1) / Dx
tan ab =(tan ai + tan a0)/(1 + (tan a0 x tan ai))
ab = arc tan ab
P1 = (r x g x Hb2 x Cb x sin ab x cos ab)/8
QS =0.401 x P1
DY = (Dt) x (-1/db) x (Qs/DX)
Yakhir = Yawal + DY

ao =	50	degree
tan ao =	1.1917535	
Dx =	50	m
Dt =	5	tahun
g =	9.81	m/s
Hb =	0.78	m
db =	1.192	m
r =	1.025	t/m3
Cb =	3.4195785	m/s

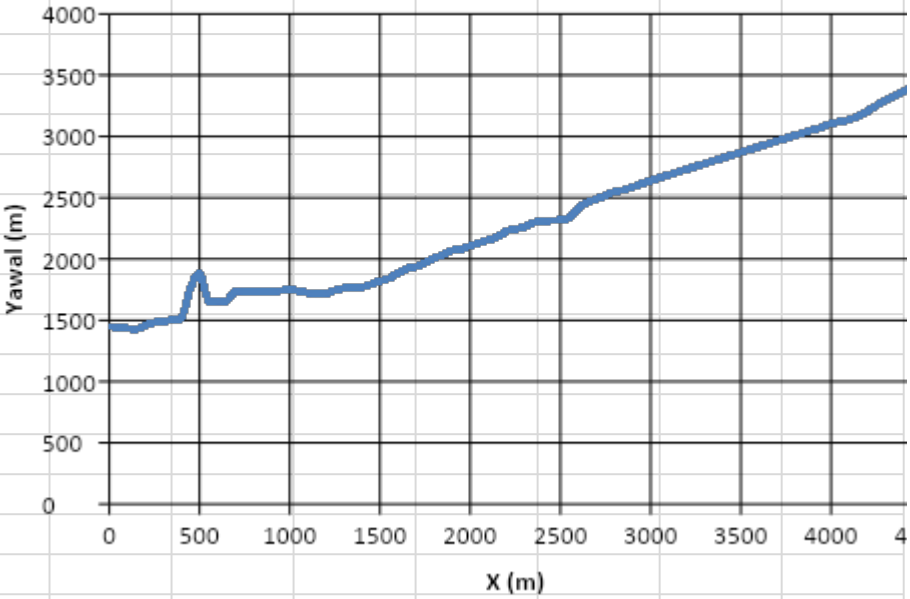
Formula :

P1 =	**(r x g x Hb2 x Cb x sin ab x cos ab)/8**
QS =	**0.401 x P1**
V =	**1.17 x (g x Hb)0.5 x sin ab x cos ab (m/s)**
tan ai =	**(Yi - Yi+1) / Dx**
tan ab =	**(tan ai + tan a0)/(1 + (tan a0 x tan ai))**
DY =	**(Dt) x (-1/db) x (DQ/DX)**

Dimana :

ab :	sudut datang gelombang pecah
P1 :	komponen fluks energi gelombang sepanjang pantai pada saat pec
QS :	angkutan sedimen sepanjang pantai (m3/hari)
V :	kecepatan arus sejajar pantai (m/s)
Dx :	jarak antar pias (m)
Cb :	kecepatan rambat gelombang di area breaking wave

X (m)	Yawal (m)
0	1449
50	1442
100	1435
150	1429
200	1460
250	1481
300	1491
350	1507
400	1520
450	1762
500	1878
550	1661
600	1662
650	1660
700	1741
750	1731
800	1729
850	1730
900	1731
950	1742
1000	1753
1050	1739
1100	1725
1150	1714
1200	1719
1250	1744
1300	1763
1350	1762
1400	1770
1450	1794
1500	1820
1550	1843
1600	1883
1650	1923
1700	1939
1750	1970
1800	2007
1850	2037
1900	2071
1950	2079
2000	2108
2050	2131
2100	2155
2150	2179
2200	2226
2250	2244

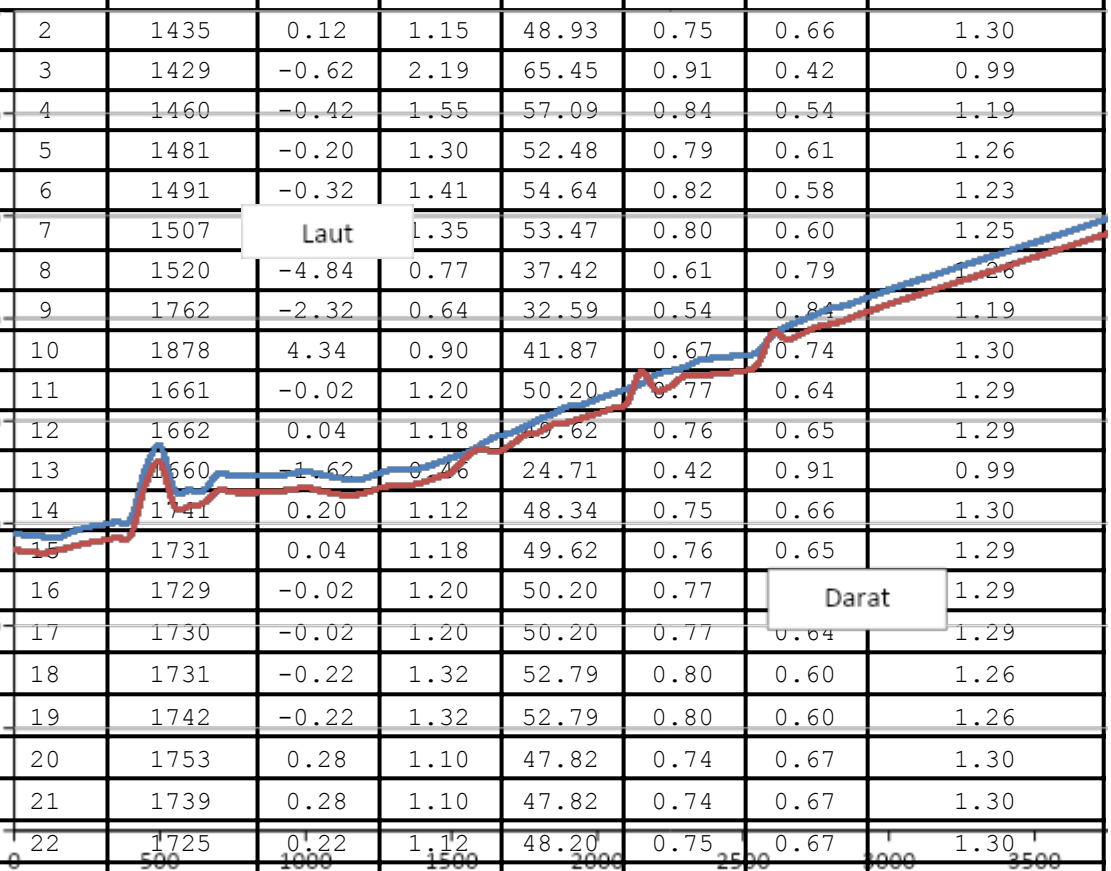



1500

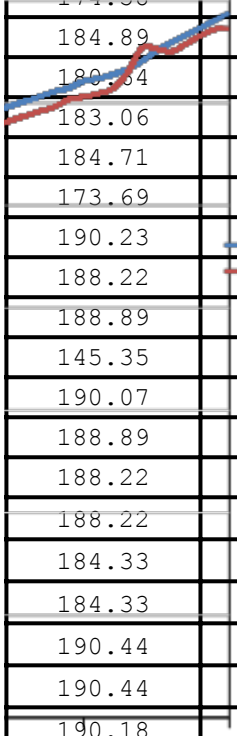
2300	2261
2350	2298
2400	2306
2450	2314
2500	2319
2550	2336
2600	2417
2650	2460
2700	2490
2750	2519
2800	2549
2850	2563
2900	2587
2950	2615
3000	2639
3050	2664
3100	2687
3150	2710
3200	2733
3250	2756
3300	2779
3350	2802
3400	2825
3450	2848
3500	2871
3550	2894
3600	2917
3650	2940
3700	2963
3750	2986
3800	3009
3850	3032
3900	3055
3950	3074
4000	3107
4050	3120
4100	3139
4150	3165
4200	3205
4250	3252
4300	3295
4350	3331
4400	3367
4450	3404
4500	3440

Perubahan Garis Pantai Untuk 25 Tahun

X (m)	Pias	Yawal (m)	Tan ai	Tan ab	ab	Sin ab	Cos ab	P1 (ton m/s/m
0	0	1449	0.14	1.14	48.78	0.75	0.66	1.30
50	1	1442	0.14	1.14	48.78	0.75	0.66	1.30
100	2	1435	0.12	1.15	48.93	0.75	0.66	1.30
150	3	1429	-0.62	2.19	65.45	0.91	0.42	0.99
200	4	1460	-0.42	1.55	57.09	0.84	0.54	1.19
250	5	1481	-0.20	1.30	52.48	0.79	0.61	1.26
300	6	1491	-0.32	1.41	54.64	0.82	0.58	1.23
350	7	1507	-0.20	1.30	53.47	0.80	0.60	1.25
400	8	1520	-4.84	0.77	37.42	0.61	0.79	1.26
450	9	1762	-2.32	0.64	32.59	0.54	0.84	1.19
500	10	1878	4.34	0.90	41.87	0.67	0.74	1.30
550	11	1661	-0.02	1.20	50.20	0.77	0.64	1.29
600	12	1662	0.04	1.18	49.62	0.76	0.65	1.29
650	13	1660	-1.62	0.96	24.71	0.42	0.91	0.99
700	14	1741	0.20	1.12	48.34	0.75	0.66	1.30
750	15	1731	0.04	1.18	49.62	0.76	0.65	1.29
800	16	1729	-0.02	1.20	50.20	0.77	0.64	1.29
850	17	1730	-0.02	1.20	50.20	0.77	0.64	1.29
900	18	1731	-0.22	1.32	52.79	0.80	0.60	1.26
950	19	1742	-0.22	1.32	52.79	0.80	0.60	1.26
1000	20	1753	0.28	1.10	47.82	0.74	0.67	1.30
1050	21	1739	0.28	1.10	47.82	0.74	0.67	1.30
1100	22	1725	0.22	1.12	48.20	0.75	0.67	1.30
1150	23	1714	-0.10	1.24	51.10	0.78	0.63	1.28
1200	24	1719	-0.50	1.71	59.71	0.86	0.50	1.14
1250	25	1744	-0.38	1.48	56.02	0.83	0.56	1.21
1300	26	1763	0.02	1.18	49.80	0.76	0.65	1.29
1350	27	1762	-0.16	1.27	51.89	0.79	0.62	1.27
1400	28	1770	-0.48	1.66	58.98	0.86	0.52	1.15
1450	29	1794	-0.52	1.77	60.49	0.87	0.49	1.12
1500	30	1820	-0.46	1.62	58.31	0.85	0.53	1.17
1550	31	1843	-0.80	8.41	83.22	0.99	0.12	0.31
1600	32	1883	-0.80	8.41	83.22	0.99	0.12	0.31
1650	33	1923	-0.32	1.41	54.64	0.82	0.58	1.23
1700	34	1939	-0.62	2.19	65.45	0.91	0.42	0.99
1750	35	1970	-0.74	3.83	75.35	0.97	0.25	0.64
1800	36	2007	-0.60	2.08	64.29	0.90	0.43	1.02
1850	37	2037	-0.68	2.70	69.67	0.94	0.35	0.85
1900	38	2071	-0.16	1.27	51.89	0.79	0.62	1.27
1950	39	2079	-0.58	1.98	63.22	0.89	0.45	1.05
2000	40	2108	-0.46	1.62	58.31	0.85	0.53	1.17
2050	41	2131	-0.48	1.66	58.98	0.86	0.52	1.15
2100	42	2155	-0.48	1.66	58.98	0.86	0.52	1.15
2150	43	2179	-0.94	-2.09	-64.47	-0.90	0.43	-1.02



Qs (m3/hr)	DY(i)	Yakhir (m)
189.71	-79.58	1369.42
189.71	-79.58	1362.42
189.57	-79.52	1355.48
144.63	-60.67	1368.33
174.58	-73.23	1386.77
184.89	-77.55	1403.45
180.64	-75.77	1415.23
183.06	-76.79	1430.21
184.71	-77.48	1442.52
173.69	-72.86	1689.14
190.23	-79.79	1798.21
188.22	-78.95	1582.05
188.89	-79.23	1582.77
145.35	-60.97	1599.03
190.07	-79.73	1661.27
188.89	-79.23	1651.77
188.22	-78.95	1650.05
188.22	-78.95	1651.05
184.33	-77.32	1653.68
184.33	-77.32	1664.68
190.44	-79.88	1673.12
190.44	-79.88	1659.12
190.18	-79.77	1645.23
187.04	-78.46	1635.54
166.70	-69.93	1649.07
177.39	-74.41	1669.59
188.68	-79.15	1683.85
185.86	-77.96	1684.04
169.02	-70.90	1699.10
164.09	-68.83	1725.17
171.09	-71.77	1748.23
44.89	-18.83	1824.17
44.89	-18.83	1864.17
180.64	-75.77	1847.23
144.63	-60.67	1878.33
93.66	-39.29	1930.71
149.61	-62.76	1944.24
124.69	-52.30	1984.70
185.86	-77.96	1993.04
153.96	-64.58	2014.42
171.09	-71.77	2036.23
169.02	-70.90	2060.10
169.02	-70.90	2084.10
-148.85	62.44	2241.44



ao =	50	degree
tan ao =	1.1917535	
Dx =	50	m
Dt =	25	tahun
g =	9.81	m/s
Hb =	0.78	m
db =	1.192	m
r =	1.025	t/m3
Cb =	3.4195789	m/s

2200	44	2226	-0.36	1.46	55.53	0.82	0.57	1.22
2250	45	2244	-0.34	1.43	55.07	0.82	0.57	1.23
2300	46	2261	-0.74	3.83	75.35	0.97	0.25	0.64
2350	47	2298	-0.16	1.27	51.89	0.79	0.62	1.27
2400	48	2306	-0.16	1.27	51.89	0.79	0.62	1.27
2450	49	2314	-0.10	1.24	51.10	0.78	0.63	1.28
2500	50	2319	-0.34	1.43	55.07	0.82	0.57	1.23
2550	51	2336	-1.62	0.46	24.71	0.42	0.91	0.99
2600	52	2417	-0.86	-13.32	-85.71	-1.00	0.07	-0.20
2650	53	2460	-0.60	2.08	64.29	0.90	0.43	1.02
2700	54	2490	-0.58	1.98	63.22	0.89	0.45	1.05
2750	55	2519	-0.60	2.08	64.29	0.90	0.43	1.02
2800	56	2549	-0.28	1.37	53.84	0.81	0.59	1.25
2850	57	2563	-0.48	1.66	58.98	0.86	0.52	1.15
2900	58	2587	-0.56	1.90	62.23	0.88	0.47	1.08
2950	59	2615	-0.48	1.66	58.98	0.86	0.52	1.15
3000	60	2639	-0.50	1.71	59.71	0.86	0.50	1.14
3050	61	2664	-0.46	1.62	58.31	0.85	0.53	1.17
3100	62	2687	-0.46	1.62	58.31	0.85	0.53	1.17
3150	63	2710	-0.46	1.62	58.31	0.85	0.53	1.17
3200	64	2733	-0.46	1.62	58.31	0.85	0.53	1.17
3250	65	2756	-0.46	1.62	58.31	0.85	0.53	1.17
3300	66	2779	-0.46	1.62	58.31	0.85	0.53	1.17
3350	67	2802	-0.46	1.62	58.31	0.85	0.53	1.17
3400	68	2825	-0.46	1.62	58.31	0.85	0.53	1.17
3450	69	2848	-0.46	1.62	58.31	0.85	0.53	1.17
3500	70	2871	-0.46	1.62	58.31	0.85	0.53	1.17
3550	71	2894	-0.46	1.62	58.31	0.85	0.53	1.17
3600	72	2917	-0.46	1.62	58.31	0.85	0.53	1.17
3650	73	2940	-0.46	1.62	58.31	0.85	0.53	1.17
3700	74	2963	-0.46	1.62	58.31	0.85	0.53	1.17
3750	75	2986	-0.46	1.62	58.31	0.85	0.53	1.17
3800	76	3009	-0.46	1.62	58.31	0.85	0.53	1.17
3850	77	3032	-0.46	1.62	58.31	0.85	0.53	1.17
3900	78	3055	-0.38	1.48	56.02	0.83	0.56	1.21
3950	79	3074	-0.66	2.49	68.13	0.93	0.37	0.90
4000	80	3107	-0.26	1.35	53.47	0.80	0.60	1.25
4050	81	3120	-0.38	1.48	56.02	0.83	0.56	1.21
4100	82	3139	-0.52	1.77	60.49	0.87	0.49	1.12
4150	83	3165	-0.80	8.41	83.22	0.99	0.12	0.31
4200	84	3205	-0.94	-2.09	-64.47	-0.90	0.43	-1.02
4250	85	3252	-0.86	-13.32	-85.71	-1.00	0.07	-0.20
4300	86	3295	-0.72	3.32	73.25	0.96	0.29	0.72
4350	87	3331	-0.72	3.32	73.25	0.96	0.29	0.72
4400	88	3367	-0.74	3.83	75.35	0.97	0.25	0.64
4450	89	3404	-0.72	3.32	73.25	0.96	0.29	0.72

178.58	-74.91	2151.09
179.66	-75.36	2168.64
93.66	-39.29	2221.71
185.86	-77.96	2220.04
185.86	-77.96	2228.04
187.04	-78.46	2235.54
179.66	-75.36	2243.64
145.35	-60.97	2275.03
-28.57	11.99	2428.99
149.61	-62.76	2397.24
153.96	-64.58	2425.42
149.61	-62.76	2456.24
182.33	-76.48	2472.52
169.02	-70.90	2492.10
157.78	-66.18	2520.82
169.02	-70.90	2544.10
166.70	-69.93	2569.07
171.09	-71.77	2592.23
171.09	-71.77	2615.23
171.09	-71.77	2638.23
171.09	-71.77	2661.23
171.09	-71.77	2684.23
171.09	-71.77	2707.23
171.09	-71.77	2730.23
171.09	-71.77	2753.23
171.09	-71.77	2776.23
171.09	-71.77	2799.23
171.09	-71.77	2822.23
171.09	-71.77	2845.23
171.09	-71.77	2868.23
171.09	-71.77	2891.23
171.09	-71.77	2914.23
171.09	-71.77	2937.23
171.09	-71.77	2960.23
177.39	-74.41	2980.59
132.31	-55.50	3018.50
183.06	-76.79	3030.21
177.39	-74.41	3045.59
164.09	-68.83	3070.17
44.89	-18.83	3146.17
-148.85	62.44	3267.44
-28.57	11.99	3263.99
105.60	-44.29	3250.71
105.60	-44.29	3286.71
93.66	-39.29	3327.71
105.60	-44.29	3359.71

	4500	90	3440	68.80	0.84	40.14	0.64	0.76	1.29

188.62	-79.12	3360.88				
Erosi rata - rata		-64.120				
	Erosi	62.438				
	Sedimentasi	-79.884				