LAMPIRAN

Lampiran 1. Data Pengujian Filter ∆h=3cm

	Liter ke-	Kekeruhan (NTU)	Penurunan (%)
Day-1	Inlet	523.00	
	1	5.48	98.95
	2	6.77	98.71
	3	14.70	97.19
	4	15.30	97.07
	5	17.00	96.75
Day-2	Inlet	512.00	
	1	3.74	99.27
	2	3.90	99.24
	3	5.52	98.92
	4	6.06	98.82
	5	7.91	98.46
Day-3	Inlet	522.00	
	1	2.62	99.50
	2	3.44	99.34
	3	5.18	99.01
	4	5.19	99.01
	5	8.76	98.32
Day-4	Inlet	519.00	
	1	4.85	99.07
	2	7.14	98.62
	3	7.25	98.60
	4	8.45	98.37
	5	10.00	98.07
Day-5	Inlet	530.00	
	1	3.81	99.28
	2	4.66	99.12
	3	5.05	99.05
	4	6.33	98.81
	5	6.89	98.70
Day-6	Inlet	527.00	
	1	4.10	99.22
	2	4.22	99.20
	3	4.83	99.08
	4	6.61	98.75
	5	7.15	98.64

Lampiran 2. Data Pengujian Filter ∆h=14cm

	Liter ke-	Kekeruhan (NTU)	Penurunan (%)
Day-1	Inlet	508.00	
	1	5.78	98.86
	2	16.30	96.79
	3	19.90	96.08
	4	21.70	95.73
	5	23.70	95.33
Day-2	Inlet	504.00	
	1	5.61	98.89
	2	5.64	98.88
	3	9.32	98.15
	4	9.36	98.14
	5	9.71	98.07
Day-3	Inlet	501.00	
	1	4.71	99.06
	2	5.86	98.83
	3	8.76	98.25
	4	8.96	98.21
	5	10.10	97.98
Day-4	Inlet	514.00	
	1	12.30	97.61
	2	12.80	97.51
	3	12.90	97.49
	4	13.10	97.45
	5	15.30	97.02
Day-5	Inlet	522.00	
	1	7.72	98.52
	2	8.27	98.42
	3	8.82	98.31
	4	10.30	98.03
	5	10.60	97.97
Day-6	Inlet	524.00	
	1	3.36	99.36
	2	6.28	98.80
	3	6.46	98.77
	4	6.49	98.76
	5	7.01	98.66

Lampiran 3. Data Pengujian Filter ∆h=19cm

	Liter ke-	Kekeruhan (NTU)	Penurunan (%)
Day-1	Inlet	520.00	Penurunan
	1	9.56	98.16
	2	12.10	97.67
	3	15.30	97.06
	4	20.00	96.15
	5	25.00	95.19
Day-2	Inlet	527.00	
	1	6.00	98.86
	2	6.54	98.76
	3	6.75	98.72
	4	8.06	98.47
	5	8.76	98.34
Day-3	Inlet	516.00	
	1	4.01	99.22
	2	4.05	99.22
	3	5.15	99.00
	4	7.31	98.58
	5	8.00	98.45
Day-4	Inlet	519.00	
	1	3.63	99.30
	2	4.81	99.07
	3	4.96	99.04
	4	7.24	98.61
	5	8.75	98.31
Day-5	Inlet	523.00	
	1	6.55	98.75
	2	3.59	99.31
	3	2.66	99.49
	4	2.48	99.53
	5	2.05	99.61
Day-6	Inlet	521.00	
	1	2.64	99.49
	2	1.91	99.63
	3	1.81	99.65
	4	1.72	99.67
	5	1.67	99.68

Lampiran 4. Lapisan *Schmutzdecke*

Lapisan *Schmutzdecke* Filter Δh=3cm

Kedalaman (cm)	Berat (gr)	
	Pasir (gram)	Silika (gram)
2	253.97	20.21
4	231.36	0.98
6	245.96	0.33
8	313.87	0.49
10	291.37	0.43

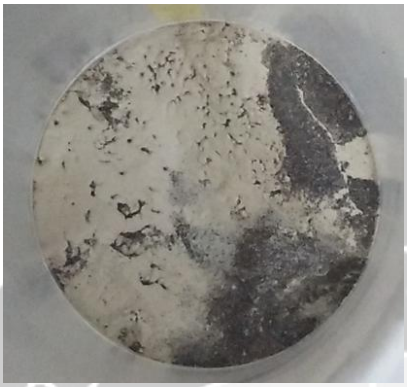
Lapisan *Schmutzdecke* Filter Δh=14cm

Kedalaman (cm)	Berat (gr)	
	Pasir (gram)	Silika (gram)
2	257.12	41.33
4	238.21	3.19
6	179.36	0.43
8	184.21	0.26
10	305.74	0.11

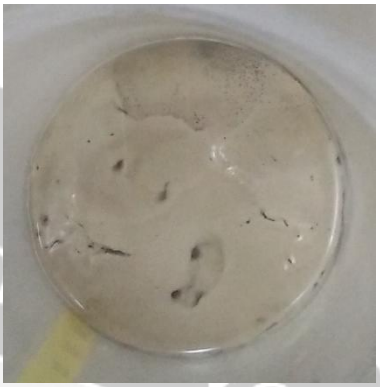
Lapisan *Schmutzdecke* Filter Δh=19cm

Kedalaman (cm)	Berat (gr)	
	Pasir (gram)	Silika (gram)
2	242.43	40.26
4	205.39	1.83
6	270	1.07
8	233.37	0.56
10	266.89	0.68

Lampiran 5. Perbandingan lapisan *schmutzdecke*



(a)



(b)

(c)

Gambar (a) Δh=3cm, (b) Δh=14cm, (c) Δh=19cm

Lampiran 6. Distribusi ukuran butiran untuk D_{10}=0.25

No. *sieve*	Diameter Butiran (mm)	% lolos	% tertahan	1000 g		7000 gr
				lolos	tertahan	tertahan
4	4.75	100	0	1000	0	0
10	2	100	0	1000	0	0
20	0.85	100	0	1000	0	0
40	0.425	44.64	55.4	446.4	553.6	3875.5
60	0.25	10	45.4	44.6	401.7	2812.1
140	0.106	4.24	41.1	1.9	42.7	299.2
200	0.075	3	38.1	0.1	1.8	12.9

Lampiran 7. Korelasi kekeruhan dengan *silica powder*

Konsentrasi *silica powder* (gram/liter)	Kekeruhan (NTU)
3	131
4	177
5	186
10	406
11	422
13	457
15	490
17	551
20	658

Lampiran 8. Perhitungan nilai *flow rate* (v) filter Δh=3cm

		V (cm3)	L (cm)	A (cm^2)	Δh (cm)	t (menit)	t (detik)	k (cm/detik)	k (m/h)	i	v (m/h)
Day-1	k awal	600	50	84.95	95	1	60	0.062	2.230	1.90	4.24
	1	1000	50	84.95	3	50	3000	0.065	2.354	0.06	0.14
	2	1000	50	84.95	3	45	2700	0.073	2.616	0.06	0.16
	3	1000	50	84.95	3	43	2580	0.076	2.738	0.06	0.16
	4	1000	50	84.95	3	40	2400	0.082	2.943	0.06	0.18
	5	1000	50	84.95	3	38	2280	0.086	3.098	0.06	0.19
Day-2	6	1000	50	84.95	3	70	4200	0.047	1.682	0.06	0.10
	7	1000	50	84.95	3	70	4200	0.047	1.682	0.06	0.10
	8	1000	50	84.95	3	70	4200	0.047	1.682	0.06	0.10
	9	1000	50	84.95	3	70	4200	0.047	1.682	0.06	0.10
	10	1000	50	84.95	3	70	4200	0.047	1.682	0.06	0.10
Day-3	11	1000	50	84.95	3	60	3600	0.054	1.962	0.06	0.12
	12	1000	50	84.95	3	60	3600	0.054	1.962	0.06	0.12
	13	1000	50	84.95	3	60	3600	0.054	1.962	0.06	0.12
	14	1000	50	84.95	3	45	2700	0.073	2.616	0.06	0.16
	15	1000	50	84.95	3	45	2700	0.073	2.616	0.06	0.16
Day-4	16	1000	50	84.95	3	70	4200	0.047	1.682	0.06	0.10
	17	1000	50	84.95	3	40	2400	0.082	2.943	0.06	0.18
	18	1000	50	84.95	3	40	2400	0.082	2.943	0.06	0.18
	19	1000	50	84.95	3	40	2400	0.082	2.943	0.06	0.18
	20	1000	50	84.95	3	40	2400	0.082	2.943	0.06	0.18
Day-5	21	1000	50	84.95	3	70	4200	0.047	1.682	0.06	0.10
	22	1000	50	84.95	3	65	3900	0.050	1.811	0.06	0.11
	23	1000	50	84.95	3	45	2700	0.073	2.616	0.06	0.16
	24	1000	50	84.95	3	45	2700	0.073	2.616	0.06	0.16
	25	1000	50	84.95	3	45	2700	0.073	2.616	0.06	0.16
Day-6	26	1000	50	84.95	3	60	3600	0.054	1.962	0.06	0.12
	27	1000	50	84.95	3	60	3600	0.054	1.962	0.06	0.12
	28	1000	50	84.95	3	55	3300	0.059	2.140	0.06	0.13
	29	1000	50	84.95	3	55	3300	0.059	2.140	0.06	0.13
	30	1000	50	84.95	3	55	3300	0.059	2.140	0.06	0.13

Lampiran 9. Perhitungan nilai *flow rate* (v) filter Δh=14cm

		V (cm3)	L (cm)	A (cm^2)	Δh (cm)	t (menit)	t (detik)	k (cm/detik)	k (m/h)	i	v (m/h)
Day-1	k awal	600	50	84.95	95	1	60	0.062	2.230	1.90	4.24
	1	1000	50	84.95	14	25	1500	0.028	1.009	0.28	0.28
	2	1000	50	84.95	14	25	1500	0.028	1.009	0.28	0.28
	3	1000	50	84.95	14	15	900	0.047	1.682	0.28	0.47
	4	1000	50	84.95	14	15	900	0.047	1.682	0.28	0.47
	5	1000	50	84.95	14	15	900	0.047	1.682	0.28	0.47
Day-2	6	1000	50	84.95	14	30	1800	0.023	0.841	0.28	0.24
	7	1000	50	84.95	14	25	1500	0.028	1.009	0.28	0.28
	8	1000	50	84.95	14	25	1500	0.028	1.009	0.28	0.28
	9	1000	50	84.95	14	25	1500	0.028	1.009	0.28	0.28
	10	1000	50	84.95	14	20	1200	0.035	1.261	0.28	0.35
Day-3	11	1000	50	84.95	14	30	1800	0.023	0.841	0.28	0.24
	12	1000	50	84.95	14	30	1800	0.023	0.841	0.28	0.24
	13	1000	50	84.95	14	30	1800	0.023	0.841	0.28	0.24
	14	1000	50	84.95	14	25	1500	0.028	1.009	0.28	0.28
	15	1000	50	84.95	14	15	900	0.047	1.682	0.28	0.47
Day-4	16	1000	50	84.95	14	30	1800	0.023	0.841	0.28	0.24
	17	1000	50	84.95	14	30	1800	0.023	0.841	0.28	0.24
	18	1000	50	84.95	14	30	1800	0.023	0.841	0.28	0.24
	19	1000	50	84.95	14	25	1500	0.028	1.009	0.28	0.28
	20	1000	50	84.95	14	25	1500	0.028	1.009	0.28	0.28
Day-5	21	1000	50	84.95	14	20	1200	0.035	1.261	0.28	0.35
	22	1000	50	84.95	14	20	1200	0.035	1.261	0.28	0.35
	23	1000	50	84.95	14	20	1200	0.035	1.261	0.28	0.35
	24	1000	50	84.95	14	20	1200	0.035	1.261	0.28	0.35
	25	1000	50	84.95	14	15	900	0.047	1.682	0.28	0.47
Day-6	26	1000	50	84.95	14	20	1200	0.035	1.261	0.28	0.35
	27	1000	50	84.95	14	20	1200	0.035	1.261	0.28	0.35
	28	1000	50	84.95	14	20	1200	0.035	1.261	0.28	0.35
	29	1000	50	84.95	14	20	1200	0.035	1.261	0.28	0.35
	30	1000	50	84.95	14	20	1200	0.035	1.261	0.28	0.35

Lampiran 10. Perhitungan nilai *flow rate* (v) filter Δh=19cm

		V (cm3)	L (cm)	A (cm^2)	Δh (cm)	t (menit)	t (detik)	k (cm/detik)	k (m/h)	i	v (m/h)
Day-1	k awal	600	50	84.95	95	1	60	0.062	2.230	1.90	4.24
	1	1000	50	84.95	19	15	900	0.034	1.239	0.38	0.47
	2	1000	50	84.95	19	15	900	0.034	1.239	0.38	0.47
	3	1000	50	84.95	19	15	900	0.034	1.239	0.38	0.47
	4	1000	50	84.95	19	15	900	0.034	1.239	0.38	0.47
	5	1000	50	84.95	19	15	900	0.034	1.239	0.38	0.47
Day-2	6	1000	50	84.95	19	15	900	0.034	1.239	0.38	0.47
	7	1000	50	84.95	19	15	900	0.034	1.239	0.38	0.47
	8	1000	50	84.95	19	15	900	0.034	1.239	0.38	0.47
	9	1000	50	84.95	19	15	900	0.034	1.239	0.38	0.47
	10	1000	50	84.95	19	15	900	0.034	1.239	0.38	0.47
Day-3	11	1000	50	84.95	19	15	900	0.034	1.239	0.38	0.47
	12	1000	50	84.95	19	15	900	0.034	1.239	0.38	0.47
	13	1000	50	84.95	19	15	900	0.034	1.239	0.38	0.47
	14	1000	50	84.95	19	15	900	0.034	1.239	0.38	0.47
	15	1000	50	84.95	19	15	900	0.034	1.239	0.38	0.47
Day-4	16	1000	50	84.95	19	15	900	0.034	1.239	0.38	0.47
	17	1000	50	84.95	19	15	900	0.034	1.239	0.38	0.47
	18	1000	50	84.95	19	15	900	0.034	1.239	0.38	0.47
	19	1000	50	84.95	29	10	600	0.034	1.218	0.58	0.71
	20	1000	50	84.95	29	10	600	0.034	1.218	0.58	0.71
Day-5	21	1000	50	84.95	95	20	1200	0.005	0.186	1.90	0.35
	22	1000	50	84.95	95	20	1200	0.005	0.186	1.90	0.35
	23	1000	50	84.95	95	20	1200	0.005	0.186	1.90	0.35
	24	1000	50	84.95	95	20	1200	0.005	0.186	1.90	0.35
	25	1000	50	84.95	95	20	1200	0.005	0.186	1.90	0.35
Day-6	26	1000	50	84.95	95	20	1200	0.005	0.186	1.90	0.35
	27	1000	50	84.95	95	20	1200	0.005	0.186	1.90	0.35
	28	1000	50	84.95	95	20	1200	0.005	0.186	1.90	0.35
	29	1000	50	84.95	95	20	1200	0.005	0.186	1.90	0.35
	30	1000	50	84.95	95	20	1200	0.005	0.186	1.90	0.35