

LAMPIRAN

Lampiran 1. Tabel Pengamatan

Tabel 1. Pengamatan hasil analisa kesadahan sebelum perlakuan ion exchanger

No	Nama Sampel	Volume EBT (tetes)	Volume EDTA (ml)	pH	Nilai Kesadahan (ppm)	Perubahan warna (TAT)
1.	Air Danau Tlogosari	1	4	5	160	Merah Muda – Biru

Tabel 2. Tabel Pengamatan Hasil Analisa Kesadahan pada Tangki Kation

No	Bukaan valve	Volume EBT (tetes)	Volume EDTA (ml)	pH	Nilai Kesadahan (ppm)	Perubahan warna (TAT)
1.	1/3	1	1,6	6	64	Merah Muda – Biru
2.	2/3	1	1,3	6	52	Merah Muda – Biru
3.	3/3	1	1,1	6	44	Merah Muda – Biru

Tabel 3. Tabel Pengamatan Hasil Analisa Kesadahan pada Tangki Anion

No	Bukaan valve	Volume EBT (tetes)	Volume EDTA (ml)	pH	Nilai Kesadahan (ppm)	Perubahan warna (TAT)
1.	1/3	1	1,5	6	60	Merah Muda – Biru
2.	2/3	1	1,0	6	40	Merah Muda – Biru
3.	3/3	1	0,8	6	32	Merah Muda – Biru

Tabel 4. Tabel Pengamatan Hasil Analisa Kesadahan pada Tangki Karbon Aktif

No	Bukaan valve	Volume EBT (tetes)	Volume EDTA (ml)	pH	Nilai Kesadahan (ppm)	Perubahan warna (TAT)
1.	1/3	1	1,1	6	4,4	Merah Muda – Biru
2.	2/3	1	0,8	6	32	Merah Muda – Biru
3.	3/3	1	0,5	6	20	Merah Muda – Biru

Tabel 5. Tabel Pengamatan pH Inlet dan Outlet

No	Bukaan valve	pH Inlet	pH Outlet	Δ pH
1.	1/3	5	6	1
2.	2/3	5	6	1
3.	1	5	6	1

Lampiran 2. Perhitungan

1. Perhitungan EDTA 0,01 M

$$M = \frac{\text{gr}}{\text{Mr}} \times \frac{1000}{v}$$

$$0,01 = \frac{x}{372} \times \frac{1000}{100\text{ml}}$$

$$X = 0,372 \text{ gr}$$

2. Perhitungan NaOH 0,1 N

$$N = \frac{\text{gr}}{\text{Mr}} \times \frac{1000}{v} \times \text{ekuivalen}$$

$$0,1 = \frac{x}{40} \times \frac{1000}{100} \times 1$$

$$X = 0,4 \text{ gr}$$

3. Perhitungan Kesadahan Sebelum Perlakuan Ion Exchanger

$$\text{Kesadahan / kadar CaCO}_3 = \frac{\text{volume EDTA} \times M \text{ EDTA} \times 100\text{gr/L}}{\text{volume sampel}}$$

$$\text{Kesadahan} = \frac{4 \times 100 \times 0,01 \times 1000\text{ml}}{25\text{ml}} = 160 \text{ ppm}$$

4. Perhitungan Kesadahan pada Tangki Kation

$$\text{Kesadahan (1/3)} = \frac{1,1 \times 100 \times 0,01 \times 1000\text{ml}}{25\text{ml}} = 44 \text{ ppm}$$

$$\text{Kesadahan (2/3)} = \frac{1,3 \times 100 \times 0,01 \times 1000\text{ml}}{25\text{ml}} = 52 \text{ ppm}$$

$$\text{Kesadahan (3/3)} = \frac{1,6 \times 100 \times 0,01 \times 1000\text{ml}}{25\text{ml}} = 64 \text{ ppm}$$

5. Perhitungan Kesadahan pada Tangki Anion

$$\text{Kesadahan (1/3)} = \frac{0,8 \times 100 \times 0,01 \times 1000\text{ml}}{25\text{ml}} = 32 \text{ ppm}$$

$$\text{Kesadahan (2/3)} = \frac{1,0 \times 100 \times 0,01 \times 1000\text{ml}}{25\text{ml}} = 40 \text{ ppm}$$

$$\text{Kesadahan (3/3)} = \frac{1,5 \times 100 \times 0,01 \times 1000\text{ml}}{25\text{ml}} = 60 \text{ ppm}$$

6. Perhitungan Kesadahan pada Tangki Karbon Aktif

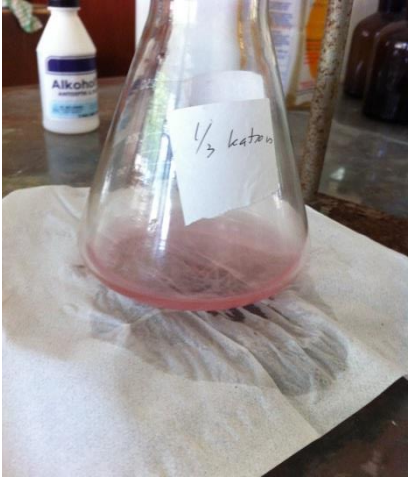
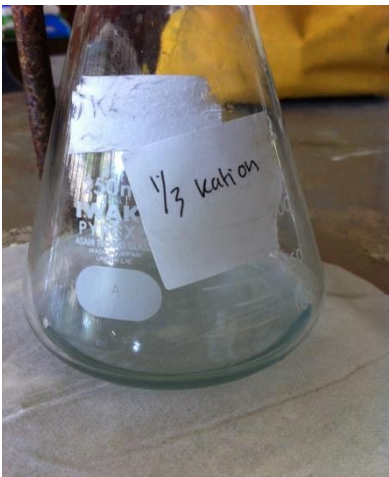
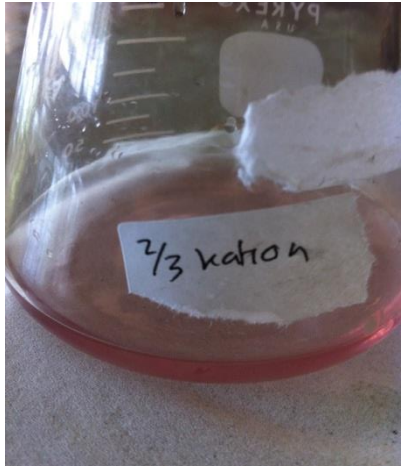
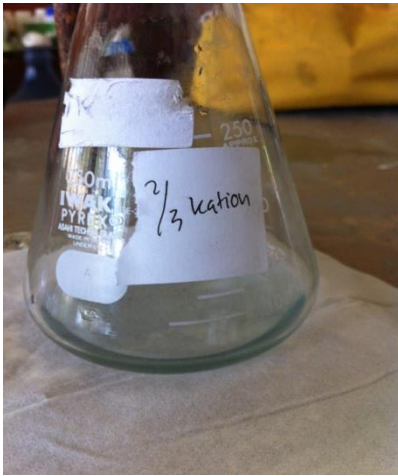
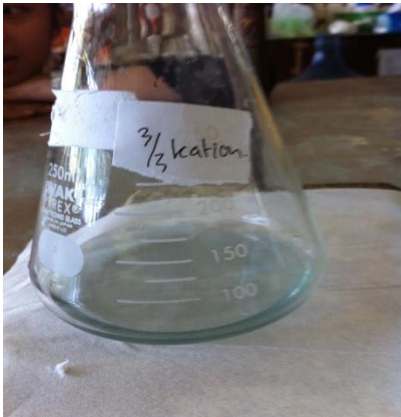
$$\text{Kesadahan (1/3)} = \frac{0,5 \times 100 \times 0,01 \times 1000\text{ml}}{25\text{ml}} = 20 \text{ ppm}$$

$$\text{Kesadahan (2/3)} = \frac{0,8 \times 100 \times 0,01 \times 1000\text{ml}}{25\text{ml}} = 32 \text{ ppm}$$

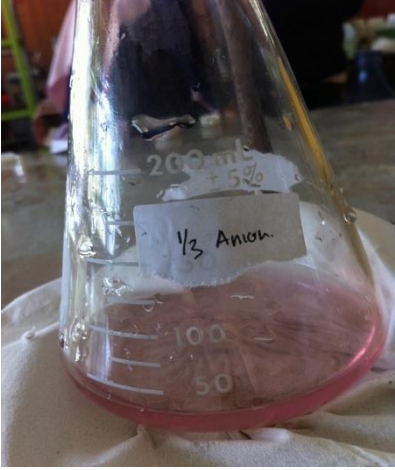
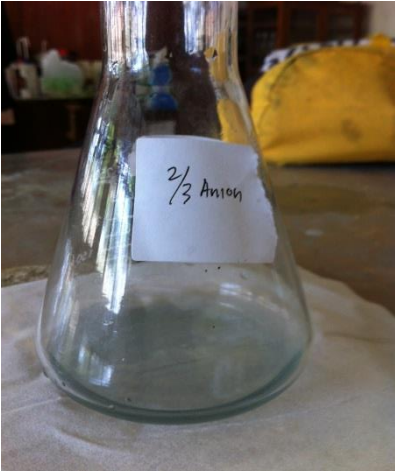
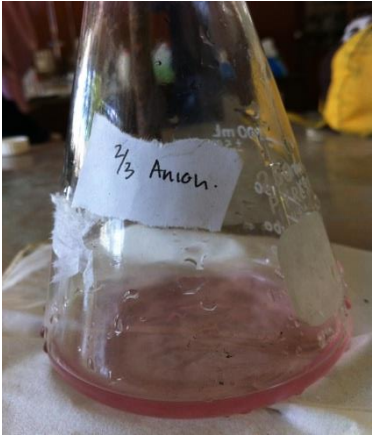
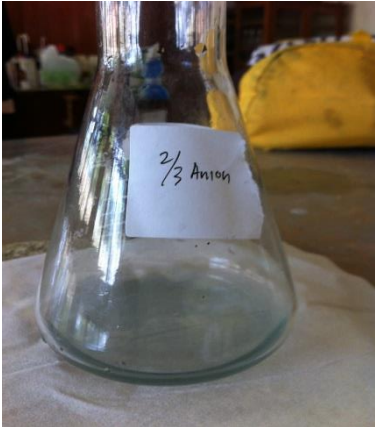
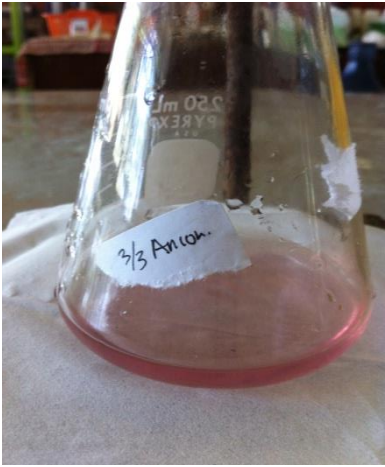
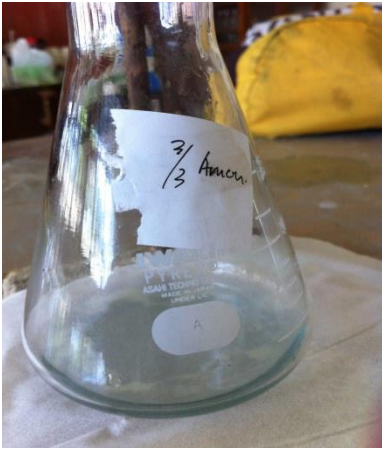
$$\text{Kesadahan (3/3)} = \frac{1,1 \times 100 \times 0,01 \times 1000\text{ml}}{25\text{ml}} = 44 \text{ ppm}$$

Lampiran 3. Foto

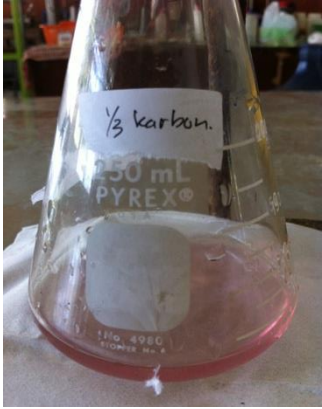
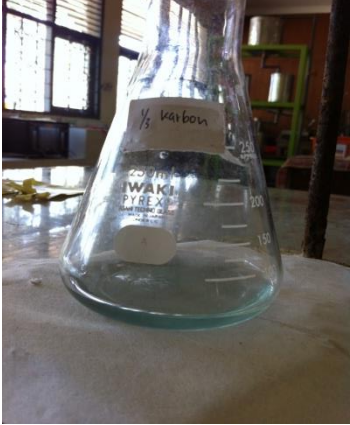
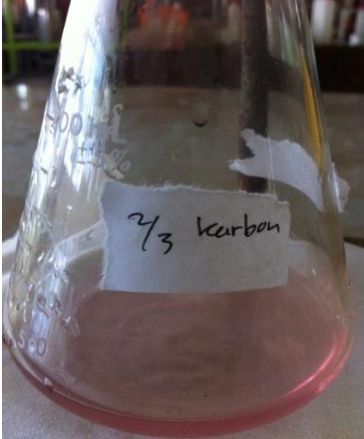
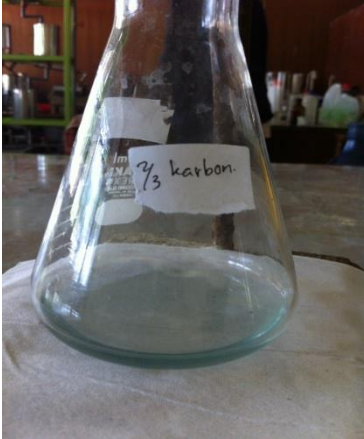
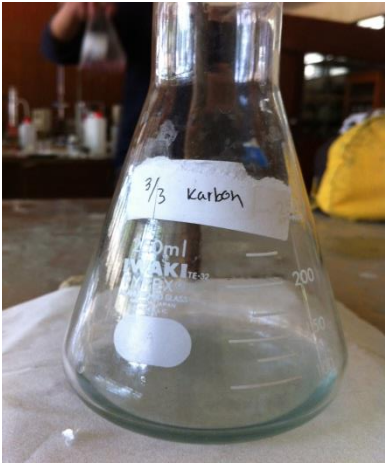
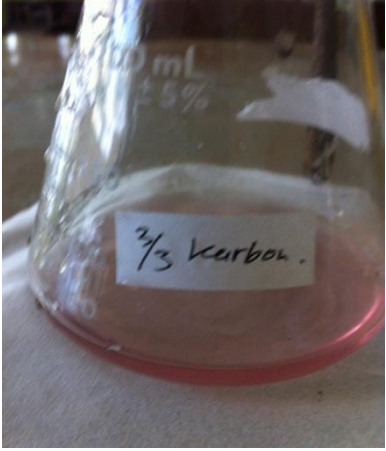
ANALISA KESADAHAN PADA TANKI KATION

Sebelum	Sesudah
	
	
	

ANALISA KESADAHAN PADA TANKI ANION

Sebelum	Sesudah
 A 250 mL Erlenmeyer flask containing a pink liquid. The label on the flask reads "1/3 Anion".	 A 250 mL Erlenmeyer flask containing a clear liquid. The label on the flask reads "2/3 Anion".
 A 250 mL Erlenmeyer flask containing a pink liquid. The label on the flask reads "2/3 Anion".	 A 250 mL Erlenmeyer flask containing a clear liquid. The label on the flask reads "2/3 Anion".
 A 250 mL Erlenmeyer flask containing a pink liquid. The label on the flask reads "3/3 Anion".	 A 250 mL Erlenmeyer flask containing a clear liquid. The label on the flask reads "3/3 Anion".

ANALISA KESADAHAN PADA TANKI KARBON AKTIF

Sebelum	Sesudah
 A 250 mL Pyrex Erlenmeyer flask containing a pink liquid. The label on the flask reads "1/3 karbon." and "250 mL PYREX®".	 A 250 mL Pyrex Erlenmeyer flask containing a clear liquid. The label on the flask reads "1/3 karbon." and "250 mL PYREX®".
 A 250 mL Pyrex Erlenmeyer flask containing a pink liquid. The label on the flask reads "2/3 karbon." and "250 mL PYREX®".	 A 250 mL Pyrex Erlenmeyer flask containing a clear liquid. The label on the flask reads "2/3 karbon." and "250 mL PYREX®".
 A 250 mL Pyrex Erlenmeyer flask containing a clear liquid. The label on the flask reads "3/3 karbon." and "250 mL PYREX®".	 A 250 mL Pyrex Erlenmeyer flask containing a pink liquid. The label on the flask reads "3/3 karbon." and "250 mL PYREX®".