

7. LAMPIRAN

Lampiran 1. Analisa Normalitas

UJI NORMALITAS

Explore

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Fe	48	100.0%	0	.0%	48	100.0%
Cu	48	100.0%	0	.0%	48	100.0%
Pb	48	100.0%	0	.0%	48	100.0%
Cd	48	100.0%	0	.0%	48	100.0%

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Fe	.119	48	.085	.960	48	.103
Cu	.211	48	.000	.813	48	.000
Pb	.086	48	.200*	.956	48	.068
Cd	.153	48	.007	.933	48	.009

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Explore

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
LG_CU	48	100.0%	0	.0%	48	100.0%
LG_CD	48	100.0%	0	.0%	48	100.0%

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
LG_CU	.325	48	.468	.687	48	.781
LG_CD	.185	48	.268	.905	48	.895

a. Lilliefors Significance Correction

Lampiran 2. Analisa Data Two Way Anova Sampel Sayung

UJI HIPOTESIS

A. Univariate Analysis of Variance (Fe)

Between-Subjects Factors

		Value Label	N
Jarak	1.00	0 km	16
	2.00	0,5 km	16
	3.00	1 km	16
Posisi	1.00	Utara	24
	2.00	Selatan	24

Descriptive Statistics

Dependent Variable: Fe

Jarak	Posisi	Mean	Std. Deviation	N
0 km	Utara	47.1038	6.24553	8
	Selatan	42.2363	10.13657	8
	Total	44.6700	8.51300	16
0,5 km	Utara	37.2063	10.16159	8
	Selatan	39.7100	9.24285	8
	Total	38.4581	9.47239	16
1 km	Utara	28.8338	18.03533	8
	Selatan	36.7200	17.12812	8
	Total	32.7769	17.47244	16
Total	Utara	37.7146	14.15909	24
	Selatan	39.5554	12.32331	24
	Total	38.6350	13.16392	48

Tests of Between-Subjects Effects

Dependent Variable: Fe

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1500.939 ^a	5	300.188	1.898	.115
Intercept	71647.835	1	71647.835	452.946	.000
JARAK	1132.322	2	566.161	3.579	.037
POSISI	40.664	1	40.664	.257	.615
JARAK * POSISI	327.953	2	163.977	1.037	.364
Error	6643.632	42	158.182		
Total	79792.406	48			
Corrected Total	8144.571	47			

a. R Squared = .184 (Adjusted R Squared = .087)

Post Hoc Tests Jarak

Multiple Comparisons

Dependent Variable: Fe

LSD

(I) Jarak	(J) Jarak	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
0 km	0,5 km	6.2119	4.44665	.170	-2.7618	15.1856
	1 km	11.8931*	4.44665	.011	2.9194	20.8668
0,5 km	0 km	-6.2119	4.44665	.170	-15.1856	2.7618
	1 km	5.6812	4.44665	.208	-3.2925	14.6550
1 km	0 km	-11.8931*	4.44665	.011	-20.8668	-2.9194
	0,5 km	-5.6812	4.44665	.208	-14.6550	3.2925

Based on observed means.

*. The mean difference is significant at the .05 level.

B. Univariate Analysis of Variance (Pb)

Between-Subjects Factors

		Value Label	N
Jarak	1.00	0 km	16
	2.00	0,5 km	16
	3.00	1 km	16
Posisi	1.00	Utara	24
	2.00	Selatan	24

Descriptive Statistics

Dependent Variable: Pb

Jarak	Posisi	Mean	Std. Deviation	N
0 km	Utara	11.7400	4.18338	8
	Selatan	9.9925	3.12485	8
	Total	10.8662	3.67943	16
0,5 km	Utara	5.3563	3.52654	8
	Selatan	5.3763	2.66795	8
	Total	5.3663	3.02085	16
1 km	Utara	7.5638	4.12022	8
	Selatan	6.0863	3.36126	8
	Total	6.8250	3.71171	16
Total	Utara	8.2200	4.64651	24
	Selatan	7.1517	3.58818	24
	Total	7.6858	4.14213	48

Tests of Between-Subjects Effects

Dependent Variable: Pb

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	280.733 ^a	5	56.147	4.486	.002
Intercept	2835.458	1	2835.458	226.552	.000
JARAK	259.785	2	129.892	10.378	.000
POSISI	13.696	1	13.696	1.094	.302
JARAK * POSISI	7.253	2	3.626	.290	.750
Error	525.659	42	12.516		
Total	3641.850	48			
Corrected Total	806.392	47			

a. R Squared = .348 (Adjusted R Squared = .271)

Post Hoc Tests Jarak

Multiple Comparisons

Dependent Variable: Pb

LSD

(I) Jarak	(J) Jarak	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
0 km	0,5 km	5.5000*	1.25078	.000	2.9758	8.0242
	1 km	4.0412*	1.25078	.002	1.5171	6.5654
0,5 km	0 km	-5.5000*	1.25078	.000	-8.0242	-2.9758
	1 km	-1.4587	1.25078	.250	-3.9829	1.0654
1 km	0 km	-4.0412*	1.25078	.002	-6.5654	-1.5171
	0,5 km	1.4587	1.25078	.250	-1.0654	3.9829

Based on observed means.

*. The mean difference is significant at the .05 level.

C. Univariate Analysis of Variance (Cu)

Between-Subjects Factors

	Value Label	N	
Jarak	1.00	0 km	16
	2.00	0,5 km	16
	3.00	1 km	16
Posisi	1.00	Utara	24
	2.00	Selatan	24

Descriptive Statistics

Dependent Variable: LG_CU

Jarak	Posisi	Mean	Std. Deviation	N
0 km	Utara	.7412	.08850	8
	Selatan	.7521	.10278	8
	Total	.7466	.09283	16
0,5 km	Utara	.1642	.63560	8
	Selatan	.4866	.51391	8
	Total	.3254	.58265	16
1 km	Utara	-.2584	.69246	8
	Selatan	.8097	.06454	8
	Total	.2756	.72799	16
Total	Utara	.2157	.66815	24
	Selatan	.6828	.32485	24
	Total	.4492	.57081	48

Tests of Between-Subjects Effects

Dependent Variable: LG_CU

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	7.123 ^a	5	1.425	7.304	.000
Intercept	9.687	1	9.687	49.668	.000
JARAK	2.143	2	1.071	5.493	.008
POSISI	2.619	1	2.619	13.427	.001
JARAK * POSISI	2.361	2	1.181	6.054	.005
Error	8.191	42	.195		
Total	25.000	48			
Corrected Total	15.314	47			

a. R Squared = .465 (Adjusted R Squared = .401)

Post Hoc Tests Jarak

Multiple Comparisons

Dependent Variable: LG_CU

LSD

(I) Jarak	(J) Jarak	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
0 km	0,5 km	.4212*	.15614	.010	.1061	.7363
	1 km	.4710*	.15614	.004	.1559	.7861
0,5 km	0 km	-.4212*	.15614	.010	-.7363	-.1061
	1 km	.0498	.15614	.751	-.2653	.3649
1 km	0 km	-.4710*	.15614	.004	-.7861	-.1559
	0,5 km	-.0498	.15614	.751	-.3649	.2653

Based on observed means.

*. The mean difference is significant at the .05 level.

D. Univariate Analysis of Variance (Cd)

Between-Subjects Factors

		Value Label	N
Jarak	1.00	0 km	16
	2.00	0,5 km	16
	3.00	1 km	16
Posisi	1.00	Utara	24
	2.00	Selatan	24

Descriptive Statistics

Dependent Variable: LG_CD

Jarak	Posisi	Mean	Std. Deviation	N
0 km	Utara	-.4265	.21209	8
	Selatan	-.4898	.21337	8
	Total	-.4582	.20810	16
0,5 km	Utara	-.5075	.21305	8
	Selatan	-.6530	.22430	8
	Total	-.5802	.22429	16
1 km	Utara	-.5298	.23990	8
	Selatan	-.4050	.22229	8
	Total	-.4674	.23253	16
Total	Utara	-.4879	.21696	24
	Selatan	-.5159	.23506	24
	Total	-.5019	.22422	48

Tests of Between-Subjects Effects

Dependent Variable: LG_CD

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	.311 ^a	5	.062	1.272	.294
Intercept	12.093	1	12.093	247.483	.000
JARAK	.148	2	.074	1.512	.232
POSISI	.009	1	.009	.193	.663
JARAK * POSISI	.154	2	.077	1.571	.220
Error	2.052	42	.049		
Total	14.455	48			
Corrected Total	2.363	47			

a. R Squared = .132 (Adjusted R Squared = .028)

Post Hoc Tests

Jarak

Multiple Comparisons

Dependent Variable: LG_CD

LSD

(I) Jarak	(J) Jarak	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
0 km	0,5 km	.1220	.07815	.126	-.0357	.2798
	1 km	.0092	.07815	.907	-.1485	.1669
0,5 km	0 km	-.1220	.07815	.126	-.2798	.0357
	1 km	-.1128	.07815	.156	-.2705	.0449
1 km	0 km	-.0092	.07815	.907	-.1669	.1485
	0,5 km	.1128	.07815	.156	-.0449	.2705

Based on observed means.



Lampiran 3. Analisa Data One Way Anova Sampel Meteseh + Sayung

Descriptives

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Fe								
0 km, utara	8	47.1038	6.24553	2.20813	41.8824	52.3251	36.10	55.02
0 km, selatan	8	42.2363	10.13657	3.58382	33.7619	50.7106	22.26	51.10
0,5 km, utara	8	37.2063	10.16159	3.59266	28.7110	45.7015	26.59	59.38
0,5 km, selatan	8	39.7100	9.24285	3.26784	31.9828	47.4372	25.63	52.10
1 km, utara	8	28.8338	18.03533	6.37645	13.7558	43.9117	3.08	59.14
1 km, selatan	8	36.7200	17.12812	6.05570	22.4005	51.0395	6.82	61.87
tembalang	8	1.4625	1.44008	.50914	.2586	2.6664	.01	3.19
Total	56	33.3246	17.90594	2.39278	28.5294	38.1199	.01	61.87
Cu								
0 km, utara	8	5.6040	1.02689	.36306	4.7455	6.4625	3.61	6.84
0 km, selatan	8	5.7785	1.19825	.42364	4.7767	6.7802	3.42	7.25
0,5 km, utara	8	2.9899	2.78068	.98312	.6652	5.3146	.29	6.12
0,5 km, selatan	8	4.4492	2.56262	.90602	2.3068	6.5916	.28	6.53
1 km, utara	8	1.7199	2.60848	.92224	-.4608	3.9007	.12	6.53
1 km, selatan	8	6.5137	.94179	.33297	5.7263	7.3010	5.20	7.67
tembalang	8	.0400	.06325	.02236	-.0129	.0929	.00	.18
Total	56	3.8707	2.84033	.37956	3.1101	4.6314	.00	7.67
Pb								
0 km, utara	8	11.7400	4.18338	1.47905	8.2426	15.2374	7.38	20.83
0 km, selatan	8	9.9925	3.12485	1.10480	7.3801	12.6049	5.14	13.40
0,5 km, utara	8	5.3563	3.52654	1.24682	2.4080	8.3045	1.42	9.93
0,5 km, selatan	8	5.3763	2.66795	.94326	3.1458	7.6067	1.42	8.71
1 km, utara	8	7.5638	4.12022	1.45672	4.1192	11.0083	2.87	14.01
1 km, selatan	8	6.0863	3.36126	1.18838	3.2762	8.8963	2.82	12.69
tembalang	8	.0425	.05776	.02042	-.0058	.0908	.00	.13
Total	56	6.5939	4.68462	.62601	5.3394	7.8485	.00	20.83
Cd								
0 km, utara	8	.4113	.17324	.06125	.2664	.5561	.15	.60
0 km, selatan	8	.3562	.15250	.05392	.2288	.4837	.15	.59
0,5 km, utara	8	.3425	.15545	.05496	.2125	.4725	.12	.64
0,5 km, selatan	8	.2500	.12895	.04559	.1422	.3578	.14	.43
1 km, utara	8	.3338	.16017	.05663	.1998	.4677	.15	.50
1 km, selatan	8	.4338	.17848	.06310	.2845	.5830	.14	.71
tembalang	8	.1179	.14168	.05009	-.0006	.2363	.01	.35
Total	56	.3208	.17857	.02386	.2729	.3686	.01	.71

Lampiran 4. Perhitungan MCL

A. MCI Cd

$$\begin{aligned} \text{MTWI laki-laki} &= 7 \mu\text{g/kg/minggu} \times 65 \text{ kg} & \text{MTWI Perempuan} &= 7 \times 55 \text{ kg} \\ &= 455 \mu\text{g/minggu} & &= 385 \mu\text{g/minggu} \end{aligned}$$

MCL Cd (Maximal)

Laki-laki	Perempuan
Sayung Utara = $\frac{455}{0,60} = 758,33 \text{ g/minggu}$	Sayung Utara = $\frac{385}{0,60} = 641,66 \text{ g/minggu}$
Sayung Selatan = $\frac{455}{0,71} = 64,08 \text{ g/minggu}$	Sayung Selatan = $\frac{385}{0,71} = 542,25 \text{ g/minggu}$
Meteseh = $\frac{455}{2,40} = 189,58 \text{ g/minggu}$	Meteseh = $\frac{385}{2,40} = 160,41 \text{ g/minggu}$

MCL Cd (Minimal)

Laki-laki	Perempuan
Sayung Utara = $\frac{455}{0,12} = 3791,66 \text{ g/minggu}$	Sayung Utara = $\frac{385}{0,12} = 3208,33 \text{ g/minggu}$
Sayung Selatan = $\frac{455}{0,14} = 3250 \text{ g/minggu}$	Sayung Selatan = $\frac{385}{0,14} = 2750 \text{ g/minggu}$
Meteseh = $\frac{455}{0,01} = 455 \times 10^2 \text{ g/minggu}$	Meteseh = $\frac{385}{0,01} = 385 \times 10^2 \text{ g/minggu}$

B. MCL Cu

ULSR Laki-laki = 12 mg/hari

$$= 12 \times 7 = 84 \text{ mg/minggu}$$

ULSR Perempuan = 10 mg/hari

$$= 10 \times 7 = 70 \text{ mg/minggu}$$

MCL Cu (Maximal)

Laki-laki

$$\text{Sayung Utara} = \frac{84}{6,84} = 12,28 \text{ g/minggu}$$

$$\text{Sayung Selatan} = \frac{84}{7,67} = 10,95 \text{ g/minggu}$$

$$\text{Meteseh} = \frac{84}{0,18} = 466,66 \text{ g/minggu}$$

Perempuan

$$\text{Sayung Utara} = \frac{70}{6,84} = 10,23 \text{ g/minggu}$$

$$\text{Sayung Selatan} = \frac{70}{7,67} = 9,12 \text{ g/minggu}$$

$$\text{Meteseh} = \frac{70}{0,18} = 388,88 \text{ g/minggu}$$

MCL Cu (Minimal)

Laki-laki

$$\text{Sayung Utara} = \frac{84}{0,12} = 700 \text{ g/minggu}$$

$$\text{Sayung Selatan} = \frac{84}{0,28} = 300 \text{ g/minggu}$$

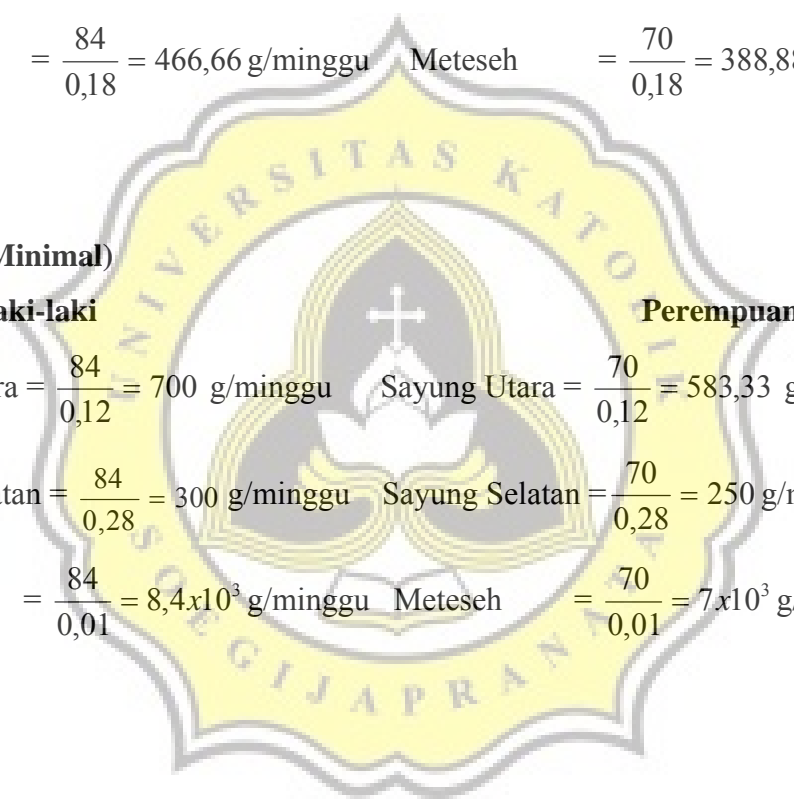
$$\text{Meteseh} = \frac{84}{0,01} = 8,4 \times 10^3 \text{ g/minggu}$$

Perempuan

$$\text{Sayung Utara} = \frac{70}{0,12} = 583,33 \text{ g/minggu}$$

$$\text{Sayung Selatan} = \frac{70}{0,28} = 250 \text{ g/minggu}$$

$$\text{Meteseh} = \frac{70}{0,01} = 7 \times 10^3 \text{ g/minggu}$$



C. MCL Pb

$$\begin{aligned} \text{MTWI Laki-laki} &= 25 \mu\text{g} \times 65 \text{ kg} \\ &= 1625 \mu\text{g/minggu} \end{aligned}$$

$$\begin{aligned} \text{MTWI Perempuan} &= 25 \mu\text{g} \times 55 \text{ kg} \\ &= 1375 \mu\text{g/minggu} \end{aligned}$$

MCL Pb (Maximal)

Laki-laki

Perempuan

$$\text{Sayung Utara} = \frac{1625}{20,83} = 78,01 \text{ g/minggu} \quad \text{Sayung Utara} = \frac{1375}{20,83} = 66,01 \text{ g/minggu}$$

$$\text{Sayung Selatan} = \frac{1625}{13,40} = 121,26 \text{ g/minggu} \quad \text{Sayung Selatan} = \frac{1375}{13,40} = 102,61 \text{ g/minggu}$$

$$\text{Meteseh} = \frac{1625}{0,13} = 12,5 \times 10^3 \text{ g/minggu} \quad \text{Meteseh} = \frac{1375}{0,13} = 105,76 \times 10^3 \text{ g/minggu}$$

MCL Pb (Minimal)

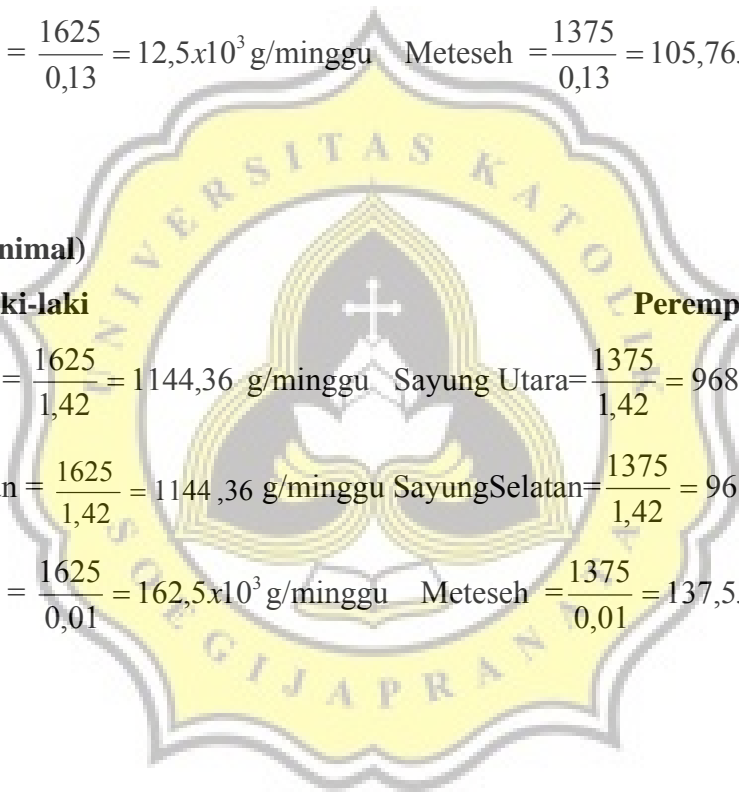
Laki-laki

Perempuan

$$\text{Sayung Utara} = \frac{1625}{1,42} = 1144,36 \text{ g/minggu} \quad \text{Sayung Utara} = \frac{1375}{1,42} = 968,30 \text{ g/minggu}$$

$$\text{Sayung Selatan} = \frac{1625}{1,42} = 1144,36 \text{ g/minggu} \quad \text{Sayung Selatan} = \frac{1375}{1,42} = 968,30 \text{ g/minggu}$$

$$\text{Meteseh} = \frac{1625}{0,01} = 162,5 \times 10^3 \text{ g/minggu} \quad \text{Meteseh} = \frac{1375}{0,01} = 137,5 \times 10^3 \text{ g/minggu}$$



Lampiran 5. Lampiran Hasil Analisa Kualitas Air Sungai

Lampiran Hasil Analisa Kualitas Air Sungai
laboratorium Lingkungan Bapedalda kota Semarang
Lokasi Pengambilan Contoh : Sungai Babon Semarang
tgl penerimaan Contoh : 3 April 2008
Jam : 11.40 WIB

No	Parameter	Hasil analisa	Acuan metode	Baku mutu air			
				Kelas			
1	Cd (kadmium)	<0,04	APHA 3500-Cd, 1998	I 0,01	II 0,01	III 0,01	IV 0,01
2	CU (tembaga)	<0,05	SNI 06- 6989.6- 2004	0.02	0.02	0.02	0.02
3	Fe (besi)	<0,06	APHA 2005;3500 Fe-B	0.3	-	-	-
4	Zn (seng)	<0,05	SNI 06- 6989.7- 2004	0.05	0.05	0.05	1
5	Pb (timbal)	<0,08	APHA 3500-Pb- B, 1998	0.03	0.03	0.03	1