

Program OperasiWaduk;

Uses Crt;

Var

```
Rerata, Stdev, KoVar, KoSkew, KoSer      : array [1..12] of
real;
RanVar, Qal                             : array[1..25,1..12]
of real;
Nt, i, j, Th, Bl                         : integer;
Draft, R, P, T, Pembilang, Penyebut, Qawal,
KoDr, Q1, Q2, Q3, Voll, Vol             : real;
Filin, Filot                             : text;
NFile, NFlin, NFlot                      : string[14];
Buf                                       : array[0..10240] of
char;
```

Procedure BacaFile;

begin

```
ClrScr; textcolor (yellow); gotoxy(20,6);
write('PROGRAM O P E R A S I W A D U K'); gotoxy(20,7);
write(' oleh :'); textcolor(white+blink);
write('FX EKO SUJIANTO [93.12.1135]'); textcolor(white);
gotoxy (20, 14); writeln('                PERHATIAN');
gotoxy (13, 15); writeln('1. Data disimpan dlm file dg ekstsi
.ROP');
gotoxy (13, 16); writeln('2. Hasil prog. disimpan dlm file
dengan');
gotoxy (13, 17); writeln('    nama file yang sama');
gotoxy (13, 18); writeln('    - Metode Hasil --->[Nama].EKO');
textcolor (cyan);
gotoxy (20, 11); write('Nama file data anda [.ROP] : ');
readln (NFile);
NFlin := NFile + '.ROP' ;
NFlot := NFile + '.EKO' ;
Assign(Filin, NFlin); Reset(Filin);
Assign(Filot, NFlot); SetTextBuf(Filot, Buf); Rewrite(Filot);
textcolor(blue+blink); gotoxy(24,22);
write('Tekan sembarang tombol !'); readkey;
```

end;

Procedure BacaData;

begin

```
Readln(Filin); Readln(Filin); Readln(Filin);
Read(Filin, Nt); Readln(Filin, KoDr);
Readln (Filin);
For j:=1 to 12 do
begin
Read (Filin, Rorata [j], StDev [j], KoVar [j], KoSkew [j]);
Readln (Filin, KoSer [j]);
end;
Readln (Filin); Close (Filin);
```

end;

Procedure RandomGen;

begin

```
R := Random(10000); P := R/10000;
```

```

if P > 0.50 then P := 1-P;
T := Sqrt(ln(1/Sqr(P)));
Pembilang := 2.515517 + 0.802853*T + 0.010328*Sqr(T);
Penyebut := 1 + 1.432788*T + 0.189269*Sqr(T) +
0.001308*T*T*T;
RanVar [i,j] := T - Pembilang/Penyebut;
if R > 5000 then RanVar [i,j] := -RanVar[i,j];
end;

Procedure BangkitData;
begin
  Randomize;
  i := 1; Voll := 0;
  Qawal := Rerata[12];
  Repeat
    j := 1;
    repeat
      RandomGen; Q1 :=Rerata[j];
      if (i=1) and (j=1) then
        Q2 := KoSer [j] *StDev[j] *(Qawal-
          Rerata[12])/StDev[12]
      else if (i>1) and (j=1) then
        Q2 := KoSer [j] *StDev[j] *(Qal[i-1,12]-
          Rerata[12])/StDev[12]
      else
        Q2 := KoSer [j] *StDev[j] *(Qal[i,j-1] Rerata
          [j-1])/StDev[j-1];
      Q3 := RanVar[i,j] *StDev[j] *Sqrt(1-sqr(KoSer[j]));
      Qal[i,j] := Q1 + Q2 + Q3;
      Writeln; Writeln (Filot);
      Writeln('CATATAN :');Writeln (Filot, 'CATATAN :');
      Writeln(' -Random Variabel tidak berdimensi');
      Writeln(' -Qal dalam m3/detik');
      Writeln(Filot, ' -Random Variabel tidak berdimensi');
      Writeln(Filot, ' -Qal dalam m3/detik');
    until j > 12;
    i := i+1;
  until i > Nt;
end;

Procedure Kepala;
begin
  ClrScr; Gotoxy(6,1); textcolor(yellow);
  write('HASIL PROGRAM OPERASI WADUK [RIPPLE] oleh :');
  textcolor(cyan+blink); writeln('FX. EKO SUJIANTO
  [93.12.1135]');
  textcolor(white);
  writeln('-----');
  writeln('Tahun Bulan RanVar Qal ');
  writeln('-----');
  writeln(Filot, 'HASIL PROGRAM OP. WADUK oleh FX. EKO SUJIANTO
  [93.12.1135]');
  writeln(Filot);
  writeln(Filot, 'ANALISIS KAP.WADUK DGN DATA
  BANGKITAN', Nt:4, 'THN');
  writeln(Filot, '=====');

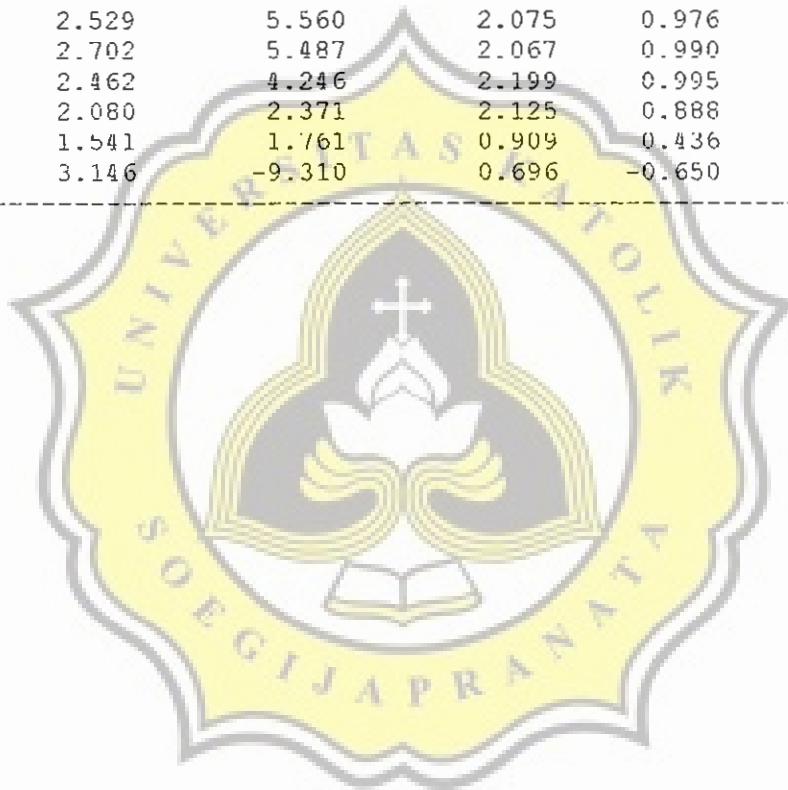
```

```
writeln(Filot);  
writeln(Filot, '-----');  
writeln(Filot, 'Tahun      Bulan      RanVar      Qal ');  
writeln(Filot, '-----');  
window(1,5,80,25);  
end;  
  
BEGIN  
  ClrScr; BacaFile; BacaData; BangkitData;  
  readkey; Close (Filot);  
END.
```



DATA UNTUK MASUKKAN PROGRAM
Oleh : FX. EKO SUJIANO {93.12.1135}

```
=====
25          0.7          ; Nt, Draft
--Rerata---StDev---KoVar---KoSkew---KoSer--
10.488      5.709      12.750      -0.508      0.689
 8.410      4.050       5.873      -0.090      0.460
 9.500      3.960       5.990       0.750      0.670
 7.333      2.536       0.926      -0.350      0.427
 3.992      1.027       1.524       0.247      0.651
 3.378      2.734       5.416       1.298      0.940
 2.213      2.529       5.560       2.075      0.976
 2.278      2.702       5.487       2.067      0.990
 1.890      2.462       4.246       2.199      0.995
 1.858      2.080       2.371       2.125      0.888
 2.292      1.541       1.761       0.909      0.436
 4.743      3.146      -9.310       0.696     -0.650
=====
```



HASIL PROGRAM OP. WADUK oleh FX. EKO SUJIANTO [93.12.1135]
 ANALISIS KAP.WADUK DGN DATA BANGKITAN 25THN

Tahun	Bulan	RanVar	Qal
1	1	0.827	13.911
1	2	-0.099	9.171
1	3	-0.186	9.453
1	4	0.572	8.631
1	5	-0.128	4.234
1	6	-1.057	2.996
1	7	0.395	2.088
1	8	-0.323	2.022
1	9	0.973	1.897
1	10	-1.235	0.682
1	11	-0.648	1.013
1	12	-0.120	6.152
2	1	-1.543	5.864
2	2	-0.993	3.331
2	3	1.321	10.056
2	4	0.265	8.092
2	5	-0.757	3.602
2	6	0.770	1.684
2	7	0.378	0.891
2	8	0.226	0.966
2	9	1.678	1.113
2	10	1.067	2.296
2	11	0.463	3.076
2	12	-0.186	3.258
3	1	0.623	11.209
3	2	0.555	10.641
3	3	0.061	11.141
3	4	0.226	8.299
3	5	-0.107	4.163
3	6	-1.512	2.397
3	7	1.653	2.238
3	8	1.265	2.786
3	9	-0.228	2.295
3	10	0.202	2.355
3	11	0.507	3.155
3	12	-0.077	3.414
4	1	0.349	10.271
4	2	1.685	14.400
4	3	0.972	16.281
4	4	1.337	12.254
4	5	-0.242	5.101
4	6	-1.895	4.385
4	7	-0.274	2.972
4	8	0.227	3.167
4	9	-0.840	2.489
4	10	0.279	2.575

4	11	-0.075	2.419
4	12	0.497	5.762

5	1	-0.052	11.549
5	2	-1.898	1.932
5	3	-0.322	4.311
5	4	-1.241	3.068
5	5	-1.583	1.633
5	6	2.807	0.094
5	7	1.486	0.066
5	8	0.102	0.046
5	9	0.690	0.036
5	10	0.097	0.560
5	11	0.449	2.495
5	12	-0.246	2.884

6	1	3.036	21.976
6	2	0.876	15.310
6	3	-1.013	11.043
6	4	0.899	9.817
6	5	1.149	5.042
6	6	-0.684	6.620
6	7	0.451	5.388
6	8	-0.546	5.427
6	9	0.735	4.926
6	10	0.788	4.889
6	11	-0.966	1.931
6	12	-1.281	2.159

7	1	-0.922	3.443
7	2	1.244	10.584
7	3	-1.034	7.005
7	4	1.370	10.033
7	5	-0.938	3.972
7	6	0.532	3.826
7	7	-0.221	2.496
7	8	0.219	2.660
7	9	1.006	2.484
7	10	-1.889	0.497
7	11	-0.876	0.638
7	12	-0.357	6.085

8	1	1.353	17.766
8	2	-0.496	9.001
8	3	1.403	14.013
8	4	1.341	11.642
8	5	0.025	5.148
8	6	-0.780	5.542
8	7	-0.331	3.984
8	8	-0.389	4.003
8	9	0.726	3.632
8	10	-0.070	3.098
8	11	0.697	3.660
8	12	0.529	4.194

9	1	-1.231	4.706

9	2	-1.019	2.859
9	3	-0.743	3.679
9	4	0.297	6.423
9	5	-0.755	3.164
9	6	-0.590	0.756
9	7	0.726	0.246
9	8	1.439	0.746
9	9	1.802	0.944
9	10	-0.039	1.111
9	11	1.427	4.030
9	12	-0.641	0.964

10	1	0.124	6.201
10	2	-0.436	5.442
10	3	-0.099	7.263
10	4	0.267	7.335
10	5	0.133	4.101
10	6	0.850	4.943
10	7	-0.907	2.675
10	8	1.035	3.162
10	9	1.983	3.179
10	10	-1.647	1.249
10	11	1.007	3.490
10	12	0.664	3.164

11	1	0.758	14.273
11	2	-0.004	9.632
11	3	1.044	13.369
11	4	-0.328	6.493
11	5	-1.260	2.788
11	6	1.403	1.675
11	7	0.410	0.961
11	8	-0.643	0.645
11	9	-0.598	0.263
11	10	0.289	0.913
11	11	-0.118	1.823
11	12	0.700	3.621

12	1	-0.753	6.058
12	2	-0.098	6.648
12	3	0.346	9.362
12	4	2.024	11.937
12	5	2.334	7.026
12	6	0.011	10.980
12	7	1.819	10.078
12	8	0.069	10.623
12	9	-0.186	9.410
12	10	-1.185	6.366
12	11	-1.228	2.046
12	12	-0.953	2.792

13	1	1.456	14.071
13	2	-0.094	9.240
13	3	-1.727	4.966
13	4	1.870	10.380
13	5	-1.989	3.245

13	6	0.067	1.572
13	7	0.412	0.809
13	8	-0.217	0.710
13	9	-0.190	0.422
13	10	-0.212	0.554
13	11	0.024	1.904
13	12	0.279	5.925

14	1	0.753	15.080
14	2	-0.910	6.636
14	3	-0.640	6.457
14	4	-0.799	4.669
14	5	-1.125	2.413
14	6	1.510	0.835
14	7	0.598	0.247
14	8	2.331	1.087
14	9	1.262	1.120
14	10	-0.810	0.506
14	11	0.719	2.852
14	12	0.561	5.342

15	1	-1.216	6.207
15	2	-1.420	1.908
15	3	1.989	11.086
15	4	0.435	8.764
15	5	-1.112	3.502
15	6	-0.554	1.635
15	7	-0.976	0.102
15	8	1.144	0.481
15	9	0.785	0.454
15	10	-0.222	0.568
15	11	-0.004	0.760
15	12	0.222	7.306

16	1	0.330	15.060
16	2	0.052	10.090
16	3	0.515	12.113
16	4	-0.134	7.740
16	5	0.410	4.419
16	6	-0.392	4.081
16	7	-0.889	2.358
16	8	0.033	2.444
16	9	-0.792	1.046
16	10	1.717	3.467
16	11	-1.638	0.540
16	12	-1.279	4.011

17	1	-0.157	8.922
17	2	-0.777	5.105
17	3	0.361	8.395
17	4	-0.629	5.589
17	5	-0.493	3.148
17	6	0.830	2.041
17	7	-0.471	0.746
17	8	-0.718	0.453
17	9	-0.323	0.156

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22	17	10	0.148	0.698
22	17	11	0.103	2.060
22	17	12	-0.920	2.852

22	18	1	-1.456	2.098
22	18	2	-1.011	2.038
22	18	3	1.016	8.311
22	18	4	-0.214	6.518
22	18	5	-0.091	3.706
22	18	6	-0.512	2.185
22	18	7	-0.519	0.850
22	18	8	0.491	1.024
22	18	9	-2.026	0.255
23	18	10	0.739	1.338
23	18	11	-0.352	1.636
23	18	12	-0.101	5.373

23	19	1	0.999	15.410
23	19	2	-1.895	3.203
23	19	3	-0.992	3.172
23	19	4	-0.031	5.533
23	19	5	0.735	4.090
23	19	6	0.296	3.900
23	19	7	1.307	3.404
23	19	8	0.154	3.596
23	19	9	0.018	3.081
24	19	10	1.650	4.330
24	19	11	0.916	4.361
24	19	12	0.617	3.472

24	20	1	-1.181	4.014
24	20	2	-1.512	0.060
24	20	3	1.030	7.581
24	20	4	0.854	8.767
24	20	5	-0.142	4.259
24	20	6	-1.808	2.359
24	20	7	1.397	0.524
24	20	8	0.071	0.518
24	20	9	1.401	0.639
25	20	10	0.822	1.706
25	20	11	-1.136	0.667
25	20	12	-1.289	3.817

25	21	1	0.844	12.820
25	21	2	1.763	15.510
25	21	3	0.880	16.738
25	21	4	-2.032	4.653
25	21	5	-0.666	2.766
25	21	6	1.222	1.450
25	21	7	1.207	1.137
25	21	8	-0.507	0.946
25	21	9	-0.316	0.605
25	21	10	0.172	1.059
25	21	11	-0.112	1.879
25	21	12	0.670	6.894

CATATAN
-Ranc
-Qal

```
Program BehaviourAnalysis;
Uses Crt;
```

```
Var
  Qal, Vol, Z           : array[1..25,1..12]
                        of real;
  Kapa, Draft, Loss, Kegagalan, Sukses : real;
  i, j, Nt, Gagal      : integer;
  Filin, Filot         : text;
  NFlin, NFlot, Ket    : string[14];
  Buf                  : array[0..1000] of
                        char;
```

```
Procedure BacaFile;
begin
```

```
  Clrscr; textcolor (yellow); gotoxy(18,6);
  write('PROGRAM B E H A V I O U R ANALYSIS'); gotoxy(20,7);
  write('      olch :'); textcolor(white+blink); gotoxy(20,10);
  writeln('EX. EKO SUJANTO [93.12.1135]'); textcolor(white);
  gotoxy(20,11);write('Nama file data anda      ');
  readln( NFlin );
  gotoxy(20,12);write('Nama file hasil anda      ');
  readln(NFlot);
  Assign(Filin, NFlin); Reset(Filin);
  Assign(Filot, NFlot); SetTextBuf(Filot,Buf);Rewrite(Filot);
  textcolor(blue+blink); gotoxy(24,22);
  write('Tekan sembarang tombol !');readkey;
  textcolor(white);
```

```
end;
```

```
Procedure BacaData;
begin
```

```
  Readln(Filin);Readln(Filin);Readln(Filin);
  Readln(Filin, Nt);
  Read(Filin, Kapa); Read(Filin, Draft); Readln(Filin, Loss);
  Readln(Filin);
  For i:= 1 to Nt do
    For j:=1 to 12 do
      Read(Filin, Qal[i,j]);
  Readln(Filin); Close(Filin);
```

```
end;
```

```
BEGIN
```

```
  ClrScr; BacaFile; BacaData; ClrScr; textcolor (yellow+blink);
  gotoxy(20,1);writeln('BEHAVIOUR ANALYSIS UNTUK OPERASI WADUK');
  textcolor(white);
```

```
writeln('=====');
  writeln('Tahun Bulan Qbulanan Vbulanan Draft Tampungnan
Keterangan');
```

```
writeln('-----');
  writeln(Filot, 'BEHAVIOUR ANALYSIS UNTUK OPERASI WADUK');
```

```
writeln(Filot, '=====');
```

```

writeln(Filot,'Tahun Bulan Qblnan Vblnan Draft Tampunguan
Keterangan');
writeln(Filot,'-----');
window(1,5,80,25);
Z[1,1] := Kapa; {asumsi waduk penuh}
Gagal := 0;
For i:=1 to Nt do
begin
  For j :=1 to 12 do
  begin
    Vol[i,j] := Qal[i,j]*30*24*3600/1000000;
    if (i=1) and (j=1) then
      z[i,j] := Kapa
    else if (i<>1) and (j=1) then
      z[i,j] := z[i-1,12] + Vol[i-1,12] - Draft - Loss
    else
      z[i,j] := z[i,j-1] + Vol[i,j-1] - Dratt - Loss;
    if z[i,j] <= 0 then begin
      z[i,j] := 0;
      Ket := 'Gagal';
      Gagal := Gagal + 1;
    end
    else
      Ket := ' ';
    if z[i,j] > Kapa then begin
      z[i,j] := Kapa;
      Ket := 'Limpas'
    end;
    writeln(i:6, j:6, Qal[i,j]:12:3, Vol[i,j]:12:3,
    Draft:11:3,
    z[i,j]:12:3, Ket);
    writeln(Filot,i:6, j:6, Qal[i,j]:12:3, Vol[i,j]:12:3,
    Draft:11:3, z[i,j]:12:3, Ket);
  end;
  readkey;
end;
writeln(' ');
writeln(Filot,'-----');
Kegagalan := Gagal/(Nt*12)*100; writeln; writeln(Filot);
Sukses := 100 - Kegagalan;
writeln('Kapasitas waduk = ', Kapa:9:3, ' juta m3');
writeln('Probabilitas kegagalan = ', Kegagalan:9:3, ' %');
writeln('Probabilitas sukses = ', Sukses:9:3, ' %');
writeln(Filot,'Kapasitas waduk = ', Kapa:9:3, 'juta m3');
writeln(Filot,'Probabilitas kegagalan = ', Kegagalan:9:3, ' %');
writeln(Filot,'Probabilitas sukses = ', Sukses:9:3, ' %');
window(1,1,80,25); readkey; Close(Filot);
ClrScr;
END.

```

DATA MASUKKAN UNTUK PROGRAM BEHAVIOR ANALYSIS

oleh : FX. EKO SUJANTO

=====				
25	; Nt {jumlah tahun }			
17.816	12.47	0.25	; Kapasitas, Draft, Losses	
-----Q bulanan (m3/dtk)-----				
13.911	9.171	9.453	8.631	4.234
2.998	2.088	2.022	1.897	0.682
1.013	6.152	5.864	3.331	10.056
8.092	3.692	1.684	0.891	0.966
1.113	2.296	3.076	3.258	11.209
10.641	11.141	8.299	4.163	2.397
2.238	2.786	2.295	2.355	3.155
3.414	10.271	14.400	16.281	12.254
5.101	4.385	2.972	3.167	2.489
2.575	2.419	5.762	11.549	1.932
4.311	3.068	1.633	0.094	0.066
0.046	0.036	0.560	2.495	3.884
21.976	15.310	11.043	9.817	5.542
6.620	5.388	5.427	4.926	4.889
1.931	2.159	3.443	10.584	7.885
10.033	3.972	3.826	2.496	2.660
2.484	0.497	0.638	6.085	17.766
9.001	14.013	11.642	5.148	5.542
3.984	4.003	3.632	3.098	3.660
4.194	4.706	2.859	3.679	6.423
3.164	0.756	0.246	0.746	0.944
1.111	4.030	0.904	6.201	5.442
7.263	7.335	4.101	4.443	2.675
3.162	3.179	1.249	3.492	5.264
14.273	9.632	13.369	6.493	2.788
1.675	0.901	0.645	0.263	0.913
1.823	3.691	6.058	6.648	9.362
11.937	7.026	10.980	10.078	10.623
9.410	6.366	2.046	2.792	14.071
9.240	4.966	10.380	3.245	1.572
0.809	0.710	0.422	0.554	1.904
5.925	15.080	6.636	6.457	4.669
2.413	0.835	0.247	1.087	1.120
0.506	2.852	5.342	6.207	1.908
11.086	8.764	3.502	1.635	0.102
0.481	0.454	0.560	0.760	7.306
15.060	10.090	12.113	7.740	4.419
4.081	2.358	2.444	1.846	3.467
0.540	4.011	8.922	5.105	8.395
5.589	3.148	2.041	0.746	0.453
0.156	0.698	2.060	2.852	2.098
2.038	8.311	6.518	3.706	2.185
0.850	1.024	0.255	1.338	1.636
5.373	15.410	3.203	3.172	5.533
4.090	3.900	3.404	3.596	8.081
4.330	4.361	3.472	4.014	0.860
7.581	8.767	4.259	2.359	0.524
0.518	0.639	1.706	0.667	8.817
12.820	15.510	16.738	4.653	2.766

1.450	1.137	0.946	0.605	1.059
1.879	6.894	13.321	9.981	10.457
6.615	2.503	0.918	0.028	0.239
0.555	0.667	1.385	7.603	15.361
11.401	7.929	3.960	2.989	0.571
0.423	0.198	0.141	0.642	2.433
6.142	13.273	10.262	11.119	9.591
3.998	2.470	2.107	2.040	1.779
1.360	2.381	5.130	2.208	3.589
11.763	9.018	5.714	7.868	6.198
5.851	5.182	6.160	4.172	2.396



BEHAVIOUR ANALYSIS UNTUK OPERASI WADUK

Tahun	Bulan	Qblnan	Vblnan	Draft	Tampungan	Keterangan
1	1	13.911	36.057	12.470	17.816	
1	2	9.171	23.771	12.470	17.816	Limpas
1	3	9.453	24.502	12.470	17.816	Limpas
1	4	8.631	22.372	12.470	17.816	Limpas
1	5	4.234	10.975	12.470	17.816	Limpas
1	6	2.998	7.771	12.470	16.171	
1	7	2.088	5.412	12.470	11.321	
1	8	2.022	5.241	12.470	4.113	
1	9	1.897	4.917	12.470	0.000	Gagal
1	10	0.682	1.768	12.470	0.000	Gagal
1	11	1.013	2.626	12.470	0.000	Gagal
1	12	6.152	15.946	12.470	0.000	Gagal
2	1	5.864	15.199	12.470	3.326	
2	2	3.331	8.634	12.470	5.905	
2	3	10.056	26.065	12.470	1.919	
2	4	8.092	20.974	12.470	15.365	
2	5	3.602	9.336	12.470	17.816	Limpas
2	6	1.684	4.365	12.470	14.532	
2	7	0.891	2.309	12.470	6.277	
2	8	0.966	2.504	12.470	0.000	Gagal
2	9	1.113	2.885	12.470	0.000	Gagal
2	10	2.296	5.951	12.470	0.000	Gagal
2	11	3.076	7.973	12.470	0.000	Gagal
2	12	3.258	8.445	12.470	0.000	Gagal
3	1	11.209	29.054	12.470	0.000	Gagal
3	2	10.641	27.581	12.470	16.434	
3	3	11.141	28.877	12.470	17.816	Limpas
3	4	8.299	21.511	12.470	17.816	Limpas
3	5	4.163	10.790	12.470	17.816	Limpas
3	6	2.397	6.213	12.470	15.986	
3	7	2.238	5.801	12.470	9.580	
3	8	2.786	7.221	12.470	2.760	
3	9	2.295	5.949	12.470	0.000	Gagal
3	10	2.355	6.104	12.470	0.000	Gagal
3	11	3.155	8.178	12.470	0.000	Gagal
3	12	3.414	8.849	12.470	0.000	Gagal
4	1	10.271	26.622	12.470	0.000	Gagal
4	2	14.400	37.325	12.470	14.002	
4	3	16.281	42.200	12.470	17.816	Limpas
4	4	12.254	31.762	12.470	17.816	Limpas
4	5	5.101	13.222	12.470	17.816	Limpas
4	6	4.385	11.366	12.470	17.816	Limpas
4	7	2.972	7.703	12.470	16.562	
4	8	3.167	8.209	12.470	11.645	
4	9	2.489	6.451	12.470	7.234	
4	10	2.575	6.674	12.470	1.066	
4	11	2.419	6.270	12.470	0.000	Gagal
4	12	5.762	14.935	12.470	0.000	Gagal
5	1	11.549	29.935	12.470	2.315	
5	2	1.932	5.008	12.470	17.816	Limpas
5	3	4.311	11.174	12.470	10.204	
5	4	3.068	7.952	12.470	8.758	

5	5	1.633	4.233	12.470	4.090
5	6	0.094	0.244	12.470	0.000 Gagal
5	7	0.066	0.171	12.470	0.000 Gagal
5	8	0.046	0.119	12.470	0.000 Gagal
5	9	0.036	0.093	12.470	0.000 Gagal
5	10	0.560	1.452	12.470	0.000 Gagal
5	11	2.495	6.467	12.470	0.000 Gagal
5	12	3.884	10.067	12.470	0.000 Gagal
6	1	21.976	56.962	12.470	0.000 Gagal
6	2	15.310	39.684	12.470	17.816 Limpas
6	3	11.043	28.623	12.470	17.816 Limpas
6	4	9.817	25.446	12.470	17.816 Limpas
6	5	5.542	14.365	12.470	17.816 Limpas
6	6	6.620	17.159	12.470	17.816 Limpas
6	7	5.388	13.966	12.470	17.816 Limpas
6	8	5.427	14.067	12.470	17.816 Limpas
6	9	4.926	12.768	12.470	17.816 Limpas
6	10	4.889	12.672	12.470	17.816 Limpas
6	11	1.931	5.005	12.470	17.816 Limpas
6	12	2.159	5.596	12.470	10.201
7	1	3.443	8.924	12.470	3.177
7	2	10.584	27.434	12.470	0.000 Gagal
7	3	7.885	20.438	12.470	14.814
7	4	10.033	26.006	12.470	17.816 Limpas
7	5	3.972	10.295	12.470	17.816 Limpas
7	6	3.826	9.917	12.470	15.491
7	7	2.496	6.470	12.470	12.788
7	8	2.660	6.895	12.470	6.638
7	9	2.484	6.439	12.470	0.913
7	10	0.497	1.288	12.470	0.000 Gagal
7	11	0.638	1.654	12.470	0.000 Gagal
7	12	6.005	15.772	12.470	0.000 Gagal
8	1	17.766	46.049	12.470	3.152
8	2	9.001	23.331	12.470	17.816 Limpas
8	3	14.013	36.322	12.470	17.816 Limpas
8	4	11.642	30.176	12.470	17.816 Limpas
8	5	5.148	13.344	12.470	17.816 Limpas
8	6	5.542	14.365	12.470	17.816 Limpas
8	7	3.984	10.327	12.470	17.816 Limpas
8	8	4.003	10.376	12.470	15.523
8	9	3.632	9.414	12.470	13.278
8	10	3.098	8.030	12.470	10.072
8	11	3.660	9.407	12.470	5.482
8	12	4.194	10.871	12.470	2.349
9	1	4.706	12.198	12.470	0.600
9	2	2.859	7.411	12.470	0.178
9	3	3.679	9.536	12.470	0.000 Gagal
9	4	6.423	16.648	12.470	0.000 Gagal
9	5	3.164	8.201	12.470	4.028
9	6	0.756	1.960	12.470	0.000 Gagal
9	7	0.246	0.638	12.470	0.000 Gagal
9	8	0.746	1.934	12.470	0.000 Gagal
9	9	0.944	2.447	12.470	0.000 Gagal
9	10	1.111	2.880	12.470	0.000 Gagal
9	11	4.030	10.446	12.470	0.000 Gagal
9	12	0.904	2.343	12.470	0.000 Gagal

10	1	6.201	16.073	12.470	0.000	Gagal
10	2	5.442	14.106	12.470	3.453	
10	3	7.263	18.826	12.470	4.939	
10	4	7.335	19.012	12.470	11.144	
10	5	4.101	10.630	12.470	17.537	
10	6	4.443	11.516	12.470	15.546	
10	7	2.675	6.934	12.470	14.443	
10	8	3.162	8.196	12.470	8.756	
10	9	3.179	8.240	12.470	4.332	
10	10	1.249	3.237	12.470	0.000	Gagal
10	11	3.492	9.051	12.470	0.000	Gagal
10	12	5.264	13.644	12.470	0.000	Gagal
11	1	14.273	36.996	12.470	1.024	
11	2	9.632	24.966	12.470	17.816	Limpas
11	3	13.369	34.652	12.470	17.816	Limpas
11	4	6.493	16.830	12.470	17.816	Limpas
11	5	2.788	7.226	12.470	17.816	Limpas
11	6	1.675	4.342	12.470	12.422	
11	7	0.901	2.335	12.470	4.144	
11	8	0.645	1.672	12.470	0.000	Gagal
11	9	0.263	0.682	12.470	0.000	Gagal
11	10	0.913	2.366	12.470	0.000	Gagal
11	11	1.823	4.725	12.470	0.000	Gagal
11	12	3.691	9.567	12.470	0.000	Gagal
12	1	6.058	15.702	12.470	0.000	Gagal
12	2	6.648	17.232	12.470	3.082	
12	3	9.362	24.266	12.470	7.694	
12	4	11.937	30.941	12.470	17.816	Limpas
12	5	7.026	18.211	12.470	17.816	Limpas
12	6	10.980	28.460	12.470	17.816	Limpas
12	7	10.078	26.122	12.470	17.816	Limpas
12	8	10.623	27.535	12.470	17.816	Limpas
12	9	9.410	24.391	12.470	17.816	Limpas
12	10	6.366	16.501	12.470	17.816	Limpas
12	11	2.046	5.303	12.470	17.816	Limpas
12	12	2.792	7.237	12.470	10.499	
13	1	14.071	36.472	12.470	5.116	
13	2	9.240	23.950	12.470	17.816	Limpas
13	3	4.966	12.872	12.470	17.816	Limpas
13	4	10.380	26.905	12.470	17.816	Limpas
13	5	3.245	8.411	12.470	17.816	Limpas
13	6	1.572	4.075	12.470	13.607	
13	7	0.809	2.097	12.470	5.062	
13	8	0.710	1.840	12.470	0.000	Gagal
13	9	0.422	1.094	12.470	0.000	Gagal
13	10	0.554	1.436	12.470	0.000	Gagal
13	11	1.904	4.935	12.470	0.000	Gagal
13	12	5.925	15.358	12.470	0.000	Gagal
14	1	15.080	39.087	12.470	2.738	
14	2	6.636	17.201	12.470	17.816	Limpas
14	3	6.457	16.737	12.470	17.816	Limpas
14	4	4.669	12.102	12.470	17.816	Limpas
14	5	2.413	6.254	12.470	17.298	
14	6	0.835	2.164	12.470	10.933	
14	7	0.247	0.640	12.470	0.477	
14	8	1.087	2.818	12.470	0.000	Gagal

14	9	1.120	2.903	12.470	0.000	Gagal
14	10	0.506	1.312	12.470	0.000	Gagal
14	11	2.852	7.392	12.470	0.000	Gagal
14	12	5.342	13.846	12.470	0.000	Gagal
15	1	6.207	16.089	12.470	1.226	
15	2	1.908	4.946	12.470	4.695	
15	3	11.086	28.735	12.470	0.000	Gagal
15	4	8.764	22.716	12.470	16.115	
15	5	3.502	9.077	12.470	17.816	Limpas
15	6	1.635	4.238	12.470	14.273	
15	7	0.102	0.264	12.470	5.891	
15	8	0.481	1.247	12.470	0.000	Gagal
15	9	0.454	1.177	12.470	0.000	Gagal
15	10	0.568	1.472	12.470	0.000	Gagal
15	11	0.760	1.970	12.470	0.000	Gagal
15	12	7.306	18.937	12.470	0.000	Gagal
16	1	15.060	39.036	12.470	6.317	
16	2	10.090	26.153	12.470	17.816	Limpas
16	3	12.113	31.397	12.470	17.816	Limpas
16	4	7.740	20.062	12.470	17.816	Limpas
16	5	4.419	11.454	12.470	17.816	Limpas
16	6	4.081	10.578	12.470	16.650	
16	7	2.358	6.112	12.470	14.608	
16	8	2.444	6.335	12.470	8.100	
16	9	1.846	4.785	12.470	1.815	
16	10	3.467	8.986	12.470	0.000	Gagal
16	11	0.540	1.400	12.470	0.000	Gagal
16	12	4.011	10.397	12.470	0.000	Gagal
17	1	8.922	23.126	12.470	0.000	Gagal
17	2	5.105	13.232	12.470	10.506	
17	3	8.395	21.760	12.470	11.118	
17	4	5.509	14.407	12.470	17.816	Limpas
17	5	3.148	8.160	12.470	17.816	Limpas
17	6	2.041	5.290	12.470	13.356	
17	7	0.746	1.934	12.470	6.026	
17	8	0.453	1.174	12.470	0.000	Gagal
17	9	0.156	0.404	12.470	0.000	Gagal
17	10	0.698	1.809	12.470	0.000	Gagal
17	11	2.060	5.340	12.470	0.000	Gagal
17	12	2.852	7.392	12.470	0.000	Gagal
18	1	2.098	5.438	12.470	0.000	Gagal
18	2	2.038	5.282	12.470	0.000	Gagal
18	3	0.311	21.542	12.470	0.000	Gagal
18	4	6.518	16.895	12.470	8.922	
18	5	3.706	9.606	12.470	13.197	
18	6	2.185	5.664	12.470	10.183	
18	7	0.850	2.203	12.470	3.226	
18	8	1.024	2.654	12.470	0.000	Gagal
18	9	0.255	0.661	12.470	0.000	Gagal
18	10	1.338	3.468	12.470	0.000	Gagal
18	11	1.636	4.241	12.470	0.000	Gagal
18	12	5.373	13.927	12.470	0.000	Gagal
19	1	15.410	39.943	12.470	1.307	
19	2	3.203	8.302	12.470	17.816	Limpas
19	3	3.172	8.222	12.470	13.498	
19	4	5.533	14.342	12.470	9.100	

19	5	4.090	10.601	12.470	10.822
19	6	3.900	10.109	12.470	8.803
19	7	3.404	8.823	12.470	6.292
19	8	3.596	9.321	12.470	2.495
19	9	3.081	7.986	12.470	0.000 Gagal
19	10	4.330	11.223	12.470	0.000 Gagal
19	11	4.361	11.304	12.470	0.000 Gagal
19	12	3.472	8.999	12.470	0.000 Gagal
20	1	4.014	10.404	12.470	0.000 Gagal
20	2	0.860	2.229	12.470	0.000 Gagal
20	3	7.581	19.650	12.470	0.000 Gagal
20	4	8.767	22.724	12.470	7.030
20	5	4.259	11.039	12.470	17.134
20	6	2.359	6.115	12.470	15.553
20	7	0.524	1.358	12.470	9.048
20	8	0.518	1.343	12.470	0.000 Gagal
20	9	0.639	1.656	12.470	0.000 Gagal
20	10	1.706	4.422	12.470	0.000 Gagal
20	11	0.667	1.729	12.470	0.000 Gagal
20	12	3.817	9.894	12.470	0.000 Gagal
21	1	12.820	33.229	12.470	0.000 Gagal
21	2	15.510	40.202	12.470	17.816 Limpas
21	3	16.738	43.385	12.470	17.816 Limpas
21	4	4.653	12.061	12.470	17.816 Limpas
21	5	2.766	7.169	12.470	17.257
21	6	1.450	3.759	12.470	11.806
21	7	1.137	2.947	12.470	2.944
21	8	0.946	2.452	12.470	0.000 Gagal
21	9	0.605	1.568	12.470	0.000 Gagal
21	10	1.059	2.745	12.470	0.000 Gagal
21	11	1.879	4.870	12.470	0.000 Gagal
21	12	6.894	17.869	12.470	0.000 Gagal
22	1	13.321	34.528	12.470	5.249
22	2	9.981	25.871	12.470	17.816 Limpas
22	3	10.457	27.105	12.470	17.816 Limpas
22	4	6.615	17.146	12.470	17.816 Limpas
22	5	2.503	6.488	12.470	17.816 Limpas
22	6	0.918	2.379	12.470	11.684
22	7	0.028	0.073	12.470	1.443
22	8	0.239	0.619	12.470	0.000 Gagal
22	9	0.555	1.439	12.470	0.000 Gagal
22	10	0.667	1.729	12.470	0.000 Gagal
22	11	1.385	3.590	12.470	0.000 Gagal
22	12	7.603	19.707	12.470	0.000 Gagal
23	1	15.361	39.816	12.470	7.087
23	2	11.401	29.551	12.470	17.816 Limpas
23	3	7.929	20.552	12.470	17.816 Limpas
23	4	3.960	10.264	12.470	17.816 Limpas
23	5	2.969	7.747	12.470	15.460
23	6	0.571	1.480	12.470	10.588
23	7	0.423	1.096	12.470	0.000 Gagal
23	8	0.198	0.513	12.470	0.000 Gagal
23	9	0.141	0.365	12.470	0.000 Gagal
23	10	0.642	1.664	12.470	0.000 Gagal
23	11	2.433	6.306	12.470	0.000 Gagal
23	12	6.142	15.920	12.470	0.000 Gagal

24	1	13.273	34.404	12.470	3.300
24	2	10.262	26.599	12.470	17.816 Limpas
24	3	11.119	28.820	12.470	17.816 Limpas
24	4	9.591	24.860	12.470	17.816 Limpas
24	5	3.998	10.363	12.470	17.816 Limpas
24	6	2.470	6.402	12.470	15.559
24	7	2.107	5.461	12.470	9.341
24	8	2.040	5.288	12.470	2.182
24	9	1.779	4.611	12.470	0.000 Gagal
24	10	1.360	3.525	12.470	0.000 Gagal
24	11	2.381	6.172	12.470	0.000 Gagal
24	12	5.130	13.297	12.470	0.000 Gagal
25	1	2.208	5.723	12.470	0.677
25	2	3.589	9.303	12.470	0.000 Gagal
25	3	11.763	30.490	12.470	0.000 Gagal
25	4	9.018	23.375	12.470	17.816 Limpas
25	5	5.714	14.811	12.470	17.816 Limpas
25	6	7.868	20.394	12.470	17.816 Limpas
25	7	6.198	16.065	12.470	17.816 Limpas
25	8	5.851	15.166	12.470	17.816 Limpas
25	9	5.182	13.432	12.470	17.816 Limpas
25	10	6.160	15.967	12.470	17.816 Limpas
25	11	4.172	10.814	12.470	17.816 Limpas
25	12	2.396	6.210	12.470	16.010

Kapasitas waduk = 17.816juta m3
 Probabilitas kegagalan = 38.667 %
 Probabilitas sukses = 61.333 %

UNIVERSITAS KATOLIK
SOEGIJAPRANATA





UNIKA

SOE GIJAPRANATA

Semarang

Fakultas teknik

JUDUL TUGAS AKHIR

ANALISA SIMULASI WADUK

DI SUNGAI KREO

GAMBAR

PETA LOKASI POS DUGA AIR

JAWA TENGAH

SKALA

1:3.250.000

01

LEMBAR

DIKERJAKAN

01. F.X. EKO SUJANTO (93.12.1135)
02. E.VI DIAN SAFITRI (93.12.1144)

DIPERIKSA

01. IR. BUDI SANTOSO, MT
02. IR. BAMBANG S, MSi

KETERANGAN

SUMBER DARI :
DINAS PU. PENGAIRAN
KODYA SEMARANG





UNIKA
SOEGIJAPRANATA

Semarang
Fakultas teknik

JUDUL TUGAS AKHIR

ANALISA SIMULASI WADUK
DI SUNGAI KREO

GAMBAR

PETA LOKASI DAERAH
TANGKAPAN

SKALA

1:10.000

LEMBAR

02

DIKERJAKAN

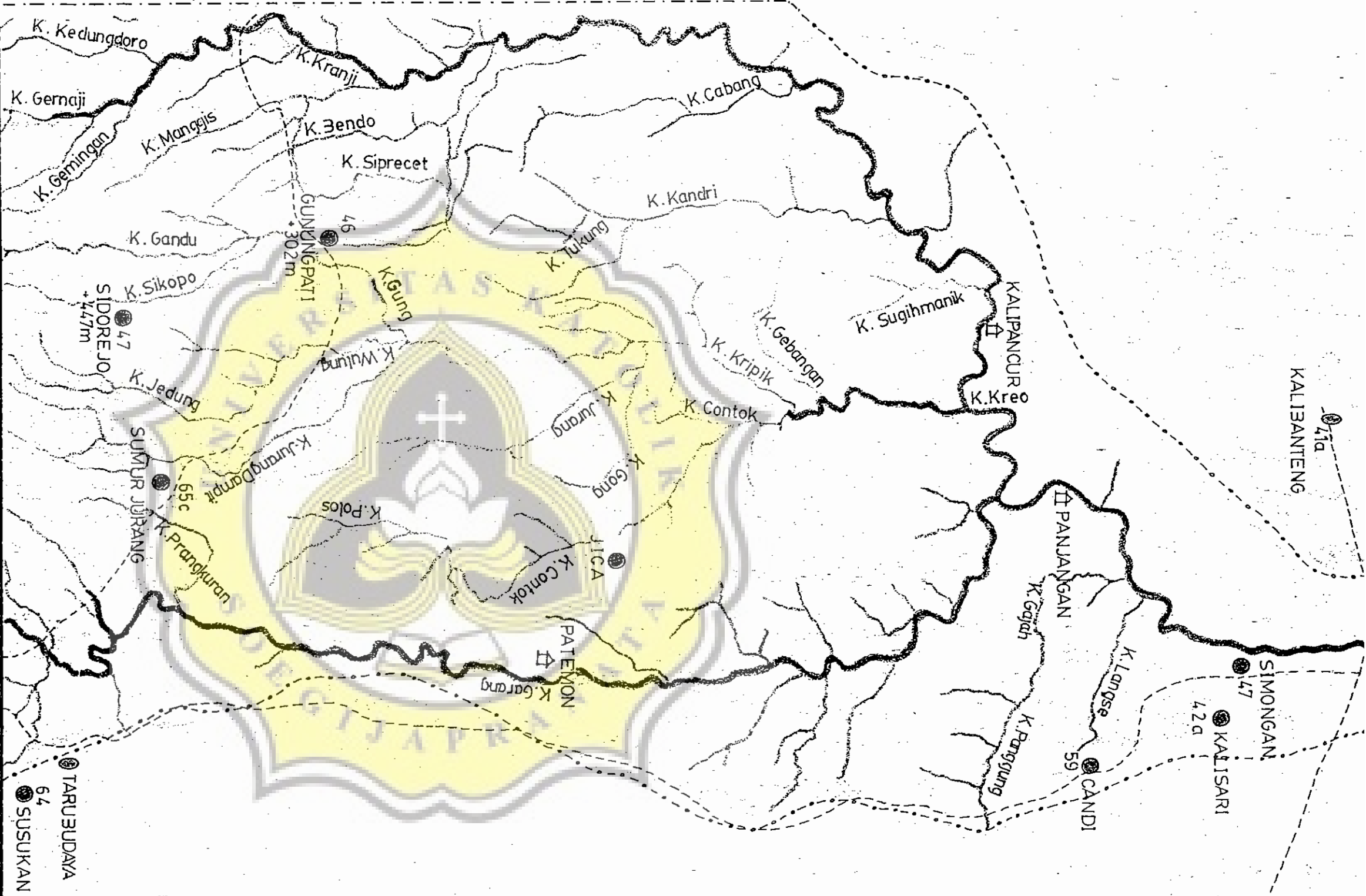
01. FX. EKO SUJANTO (93.12.1135)
02. EVI DIAN SAFITRI (93.12.1144)

DIPERIKSA

01. IR. BUDI SANTOSO, MT
02. IR. BAMBANG S. MSI

KETERANGAN

SUMBER DARI:
DINAS PU. PENGAIRAN
KODYA SEMARANG





UNIKA
SOEGIJAPRANATA
Semarang
Fakultas teknik

JUDUL TUGAS AKHIR

ANALISA SIMULASI WADUK
DI SUNGAI KREO

GAMBAR

PETA TOPOGRAFI WADUK

SKALA

1:10.000

LEMBAR

03

DIKERJAKAN

01. F.X. EKO SUJANTO (9312.1135)
02. EVI DIAN SAFITRI (9312.1144)

DIPERIKSA

01. IR. BUDI SANTOSO, MT
02. IR. BAMBANG S, MSi

KETERANGAN

SUMBER DATA :
DINAS TATA KOTA KODYA
SEMARANG

