



l ()
 | 02-929-2681
 | E-mail: id1838@korea.ac.kr

가 .

1. _____

가 ,

2.1

< 1>

2001 71,839 km

63.8%

가 44,534 km(105.8 %),

가 13,412 km(39.3 %), 가

13,893 km(38.2 %) .

19.3%

38.2 %

100.0 %,

72.7 %, 55.3 %

가

가 가 100 %

39.0 %,

36.1 %

가

[1]

	(m)	112,567,131	10,015,029	29,245,844	73,306,258
	(m)	71,839,456	10,015,029	21,262,994	40,516,433
	(%)	63.8	100.0	72.7	55.3
	(m)	42,104,434	8,686,868	9,460,622	23,956,944
	(m)	44,534,129	8,686,868	13,879,816	21,967,445
	(%)	105.8	100.0	146.7	91.7
	(m)	36,346,583	818,813	8,889,087	26,638,683
	(m)	13,892,924	818,813	3,465,690	9,608,421
	(%)	38.2	100.0	39.0	36.1
	(m)	34,116,114	509,348	10,896,135	22,710,631
	(m)	13,412,403	509,348	3,917,488	8,985,567
	(%)	39.3	100.0	36.0	39.6

[1] 9

, 9

47.4 %가 가 .

15,466 km 27,305

km 76.5 %가 가

가

m³/d) 300 mm

29,335 km

(7,710

1/2

가

1.0 day

가

, 가

BOD 236 mg/ ,

TKN 73 mg/

(KIST, 1994),

가 BOD 100

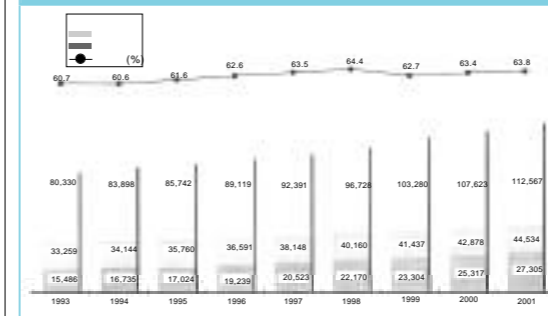
mg/ TKN 21 mg/

BOD 2 ,

3

가

[1]



[2]

1997 (, 1998)

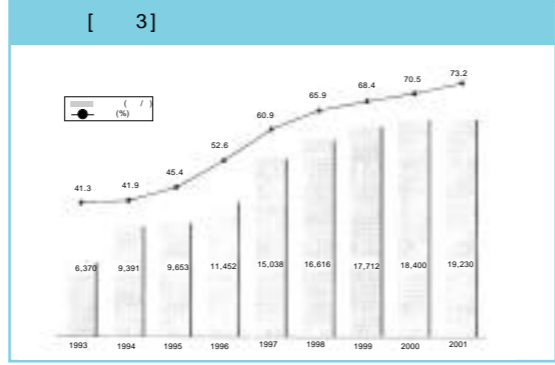
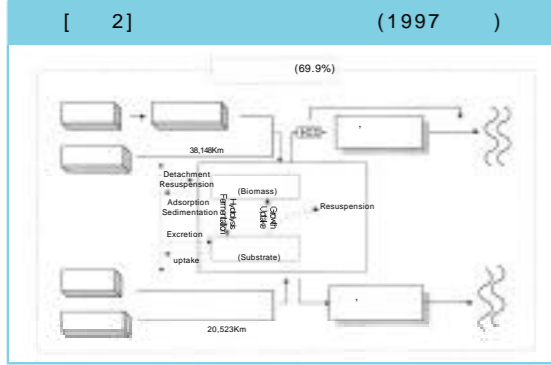
65 %가

, 1

BOD

38 %

50 % 가



biofilm biotransformation
가

biofilm

biofilm metabolism

2.2

2.2.1

2001 184
19,229.75 /

[3] 9
3 가 2

< 2>
가581
m³/ 30.2 %
가611 m³/ 31.8 %, 731
m³/ 38.0 %
가 21.4 %, 26.4 %, 52.2 %

가 1
562 / / ,
479 / / , 290 / /

[2]

()	(%)	(m ³ /)	(%)	1
10,331	21.4	5,810	30.2	562
12,764	26.4	6,112	31.8	479
25,194	52.2	7,308	38.0	290
48,289	100	19,230	100	

2.2.2
< 3> 2001 184

184
1 2 1.1
% , 22 12.0 %
102
[4]
가
가

[3]

()	1 2										
	A/O			A ² /O			SBR				
184 2	102	19	22	12	3	2	3	2	3	2	13
(%) 100	1.1	55.4	10.3	12.0	6.5	1.6	1.1	1.6	1.1	2.2	7.1

[4]

()	1 2										
	A/O			A ² /O			SBR				
184 2	102	19	22	12	3	2	3	2	3	2	17
19,229.7	530.0	17,427.8	30.13	109.12	83.3	11.9	1.2	184	50.0	802.3	
24		13	4	1	1	2					3
8.3		3.83	1.42	0.5	0.4	1.2					0.95
23	5	2	9	4							3
64.4	13.75	2.3	28.3	13.7							6.35
25	8	4	7	3	2						1
163.45	52.95	24	48.9	20.1	11.5						6
55	42	2	4				1	1	5		
1,293	1,106.5	30.5	49.0				40	10	57		
16	14						1	1			
1,022.6	931.6						34	57			
30	2	23					1	1	3		
6,403	530	5,333					110	40	390		
11	10								1		
10,275	9,990								285		

2.2.3
1)
< 5>
. 2001
36 20.8
%, 137
79.2 % . 50 %
35 20.2 %
가

[5]

	()	100% 70 100% 50 70% 50%				
		2000	160	33	62	30
(%)	100	20.6	38.8	18.7	21.9	
2001	173	36	74	28	35	
(%)	100	20.8	42.8	16.2	20.2	

2)
2000
. BOD 139.7mg/
109.5mg/
78.3%, SS 145.7mg/
113.0mg/ 77.9%

[6]

	2000				2001					
	BOD	COD	SS	T-N	T-P	BOD	COD	SS	T-N	T-P
	143.8	-	152.5	-	-	139.7	-	145.4	-	-
(%)	102.4	62.0	110.7	33.9	2.9	109.5	65.6	113.2	32.0	3.0
	71.2	-	72.6	-	-	78.3	-	77.9	-	-

3)

BOD

11.6mg/

가 가

SS가 92.2% 가

, T-N

T-P

2

[8]					
	50	10	20	20	
	km	48,625	32,579	12,448	3,598
	km	6,425	1,433	1,394	3,598
	%	13.2	4.4	11.2	100

3.2

가

[7] (:mg/ ,%)						
		BOD	COD	SS	T-N	T-P
2000	(A)	102.4	62.0	110.7	33.8	2.9
	(B)	11.7	13.3	8.4	21.1	1.2
	(A-B/A)	88.6	78.6	92.4	37.4	57.4
2001	(A)	109.5	65.6	113.2	32.0	3.0
	(B)	11.6	13.4	8.8	21.6	1.3
	(A-B/A)	89.4	79.6	92.2	32.4	56.1

가

3.3

가

3. _____

3.1

가 10

가

20

3.4

13.2% (: 20

)

가

가

가

4.3
4.3.1 / (I/I)
(Infiltration)
가
(Inflow)
가
I/I
1)

2)
가
(
가)
, N
3)
4)
가
가
가

crack,
5)
4.3.2 (CSOs)
가
Overflows, CSOs)
3
가
가
flush)
30
가

(Receiving water body)
(First-flush effect)
,가
(scouring velocity)
,가 가
2
(Dilution effect)
COD TS 가
CSOs
1) CSOs
2)
3)
4) CSOs
5)
6) CSOs monitoring, inspection, reporting
7) CSOs
8) CSOs
4.4
70-

75%

I/I

[4] 40%, 60%

2

가2m

I/I

가

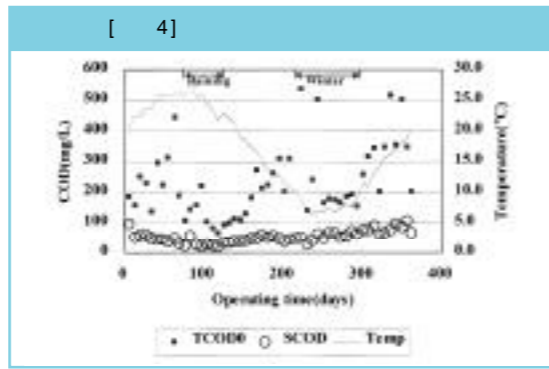
가

가

가

가

[4]



biosystem

DO

가

가

DO

가

PHB

가

가

가

가

biosystem

가

4.5

2000

, Anoxic, Oxic stage

가

pool

PHB

가

IWA activated sludge No.3

가

가

15 30 %

multiphase

가

가