1		1 P35-P37 2 P32
2	“ ”	1 “ ” P19-P28 2 P34 2-5 P31-P35
3	“ ”	1 P55-P78 P41 P44-P45 P49-P52 2 P55-P56 P67-P68 P66 3 P75-P76 2-1 “ ” P77-P78 P82-P85

4		1 P14 P18 2 P121-P122
5		1 P153-P156 2 P54 3 P166-P173 4 P168-P173 P129-P131 5 P98-P99
6		1 P184-P185 2

5

6

7

8

9

10

11

12

13

1

2 [2018-511825-12-03-249048]FGQB-0025

3 C511825201805713014616 1

4 91511825MA64KMCM73

5

[2018]36

6

[2018]67

7

[2018]28

8

9

10

[2018]135

11

[2019]159

12

13

14

[2019]5

15

16

17

1

10000

“ ” “ ”

“ ” 2018 5 2

C511825201805713014616 1

60 / 0.4448 10

0.4448 60

GB/T 4754-2017

253

“ 137 ” “

” “ ”

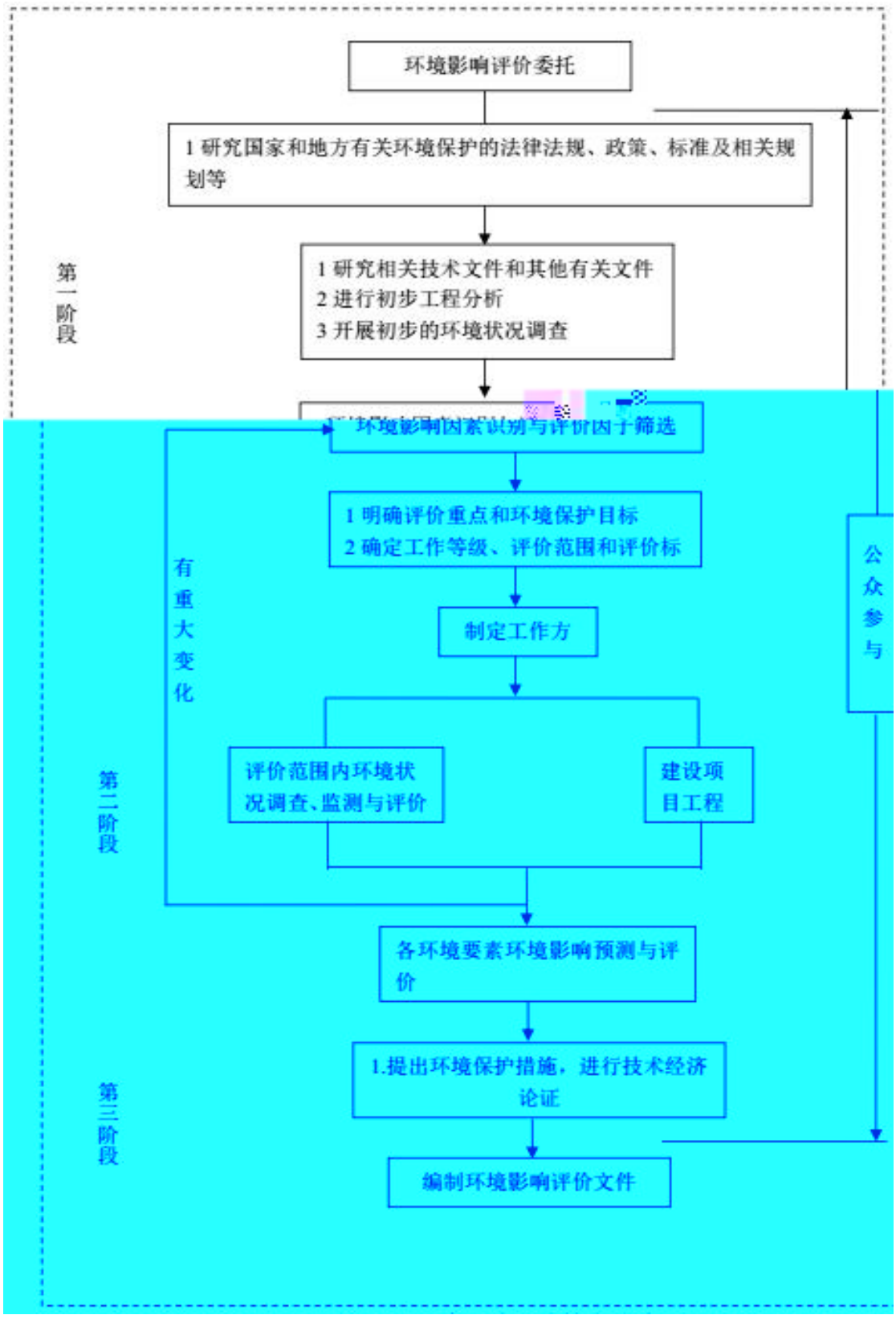
[2018]135

“ ”

“ ”

HJ2.1-2016

1.2-1


环境影响评价委托
1 研究国家和地方有关环境保护的法律法规、政策、标准及相关规划等
第一阶段
1 研究相关技术文件和其他有关文件
2 进行初步工程分析
3 开展初步的环境状况调查
环境影响因素识别与评价因子筛选
1 明确评价重点和环境保护目标
2 确定工作等级、评价范围和评价标
制定工作方
有重大变化
公众参与
第二阶段
评价范围内环境状况调查、监测与评价
建设项目工程
各环境要素环境影响预测与评价
第三阶段
1.提出环境保护措施，进行技术经济论证
编制环境影响评价文件

2013 1

2011 [2005]40

2

3

1

2

3

4

5

“ ”

1 2014 2015 1 1

2 2016 9 1

3 2016 1 1

4 2018 1 1

5 1997 3 1 2018 12 29

6 2016

7 2009 8 29

8 2012

9 2011 3 1

10 682 2017 10 1

11 [2006]28

12 2019 1 1

13 [2000]38 2000 11 26

14 2017 6 29

44 2018 4 28 < >

15 2000.11.16

16 2012 2012 2012.5.23

17 2016 2

18 2015 3

19 1997 1 1

20

2015 61

21 “ ”

1

[2014]30

2 [2015]17

2015.4.2

3 [2007]37

4

[2012]77

5 [2012]98

6

[2010]144

7 592 2011 3 5

8 2012 12 11

9 [2005]39

10 [2008]3

11 [2011]35

12

[2010]33

13 [2001]19

14 [2004]24

15 [2005]109

16

[2012]77

17 2011 2013

21

18 [2013]37

19 [2015]17

20 [2016]31

21

[2018]24

22

23

24 “ ” 2016-2020

25 2016-2020

1 — HJ 2.1-2016

2 — HJ 2.2-2018

3 — HJ 2.3-2018

4 — HJ 610-2016

5 — HJ 2.4-2009

6 — HJ 19-2011

7 HJ 964-2018

8 HJ 169-2018

9 HJ 616-2011

10 GB 18218-2018

11 HJ 192-2015

12 HJ 651-2013

13 GB 50433-2008

1

2 [2018-511825-12-03-249048]FGQB-0025

3 C511825201805713014616l

4 91511825MA64KMCM73

5

[2018]36

6

[2018]67

7

[2018]28

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9

10

[2018]135

11

[2019]159

12

13

14

[2019]5

15

16

17

18

19

“ ”

“ ”

“

”

2.3-1

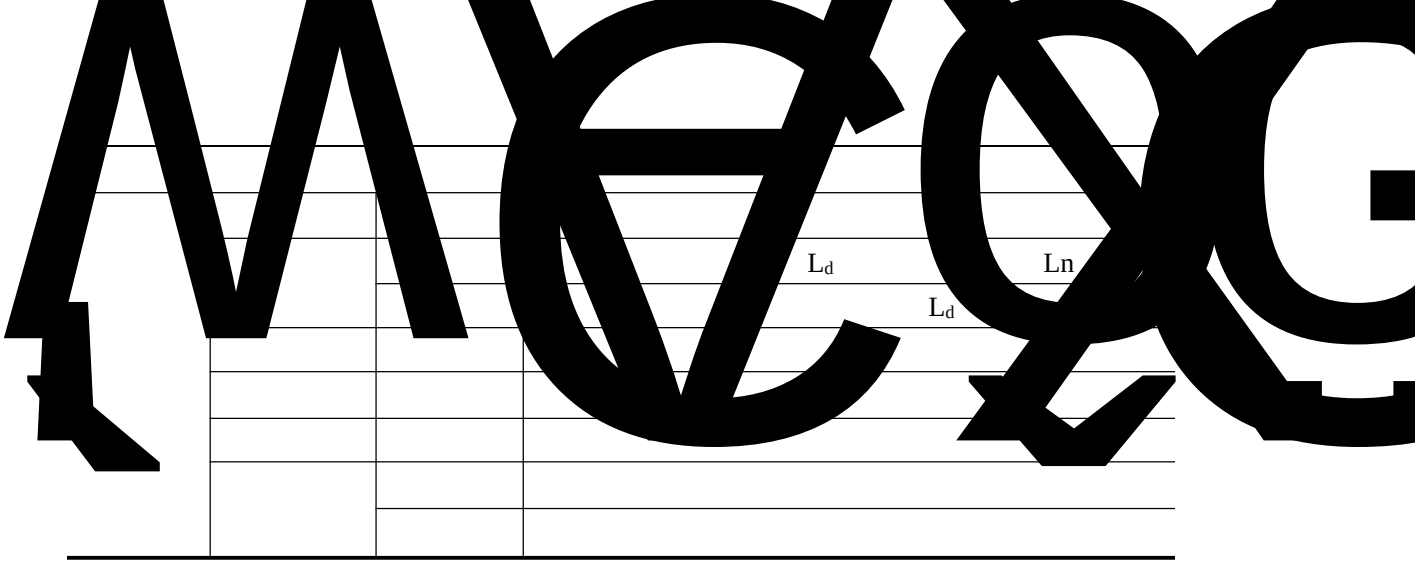
2.3-2

		○					
		○					
		●					
		●					
		●					
					●		
		●	●		●		
		●	●		●		
		●	●		●		
			●				
		●					

/ ○ / / ● /

2.3-3

			SO_2 NO_2 TSP PM_{10} $PM_{2.5}$
			TSP
			pH COD BOD_5 NH_3-N SS
			COD BOD_5 NH_3-N SS
			pH



1

— HJ 2.2-2018

P_i

i 10% $D_{10\%}$

P_i

$$P_i = \frac{C_i}{C_{0i}} \times 100\%$$

P_i— i %

C_i— i mg/m^3

C_{oi}— i mg/m^3 GB3095 1

5.2 1h ʁq ʜ n

a

		900	GB3095-2012

2

- HJ2.2-2018

Aerscreen

/	/	
		/
/		34.8
/		-1.8
		□ √
	/m	/
		□ √
	/km	/
	/ °	/

3

1	10	0.011343	1.26	10	0.027824	3.09
2	25	0.011556	1.28	25	0.0336	3.73
3	50	0.011904	1.32	50	0.043691	4.85
4	75	0.012245	1.36	75	0.051442	5.72
5	100	0.012577	1.4	100	0.052282	5.81
6	125	0.012903	1.43			
7	150	0.013221	1.47	125	0.052679	5.85
8	175	0.013534	1.5	150	0.049338	5.48
9	200	0.013839	1.54	175	0.044965	5.00
10	225	0.014137	1.57	200	0.040241	4.47
11	250	0.014429	1.6	225	0.039878	4.43
12	275	0.014714	1.63	250	0.039779	4.42
13	300	0.014993	1.67	275	0.039369	4.37
14	325	0.015268	1.7	300	0.038761	4.31
15	350	0.015536	1.73	325	0.038007	4.22
16	375	0.015798	1.76	350	0.037144	4.13

17	400	0.016056	1.78	375	0.036204	4.02
18	425	0.016309	1.81	400	0.035262	3.92
19	450	0.016555	1.84	425	0.034256	3.81
20	475	0.016797	1.87	450	0.033269	3.70
21	500	0.017036	1.89	475	0.03231	3.59
22	525	0.017271	1.92	500	0.031339	3.48
23	550	0.017497	1.94	525	0.030396	3.38
24	575	0.017721	1.97	550	0.029495	3.28
25	600	0.017941	1.99	575	0.028612	3.18
26	625	0.018159	2.02	600	0.028105	3.12
27				625	0.027643	3.07
28	650	0.018317	2.04	650	0.02719	3.02
29	675	0.01823	2.03	675	0.026736	2.97
30	700	0.018089	2.01	700	0.026285	2.92
31	725	0.017883	1.99	725	0.025846	2.87
32	750	0.017632	1.96	750	0.025399	2.82
33	775	0.01735	1.93	775	0.024964	2.77
34	800	0.017044	1.89	800	0.024538	2.73
35	825	0.016726	1.86	825	0.024121	2.68
36	850	0.016402	1.82	850	0.023716	2.64
37	875	0.016078	1.79	875	0.023315	2.59
38	900	0.015756	1.75	900	0.022921	2.55
39	925	0.015438	1.72	925	0.022611	2.51
40	950	0.015115	1.68	950	0.022326	2.48
41	975	0.014795	1.64	975	0.022045	2.45
42	1000	0.014486	1.61	1000	0.021761	2.42
43	1025	0.014182	1.58	1025	0.021482	2.39
44	1050	0.013889	1.54	1050	0.021212	2.36
45	1075	0.013604	1.51	1075	0.020945	2.33
46	1100	0.013329	1.48	1100	0.020683	2.30
47	1125	0.013058	1.45	1125	0.020424	2.27
48	1150	0.012795	1.42	1150	0.020168	2.24
49	1175	0.012537	1.39	1175	0.019919	2.21
50	1200	0.01229	1.37	1200	0.019675	2.19

AERSCREEN

P_{max}=2.04%

5km P_{max}=5.9%

5km

— HJ 2.3-2018

2.4-5

		Q≥2000 W≥600000
A		Q<200 W<6000
B		/

1 A

2

3

4

5

6

7 ≥500 m^3/d
500 m^3/d

8
A

9
B

10 B

B

GB/T14848-2017

HJ 610-2016 A“

” “54 ”

HJ2.4-2009

1		GB3096 0 5dB(A) (5dB(A))
2		GB3096 1 2 3dB(A)~5dB(A)(5dB(A))
3		GB3096 3 4 3dB(A)(3dB(A))

GB3096-2008 2

3dB(A)

	2	3dB(A)		

HJ19-2011

[2018]

135

0.4448km^2 2km^2 1.5km

50km

HJ 964-2018

1

	[a]>2.5 <1.5m >4g/kg	pH 4.5	pH 9.0
	>2.5 1.5m 1.8< 2.5 <1.8m >2.5 <1.5m 2g/kg< 4g/kg	4.5<pH 5.5	8.5 pH<9.0
		5.5<pH<8.5	

[a] E601

2

			-

“ - ”

pH

5.5~8.5

A “ ”

HJ 169-2018

A

1

E1				
E2				
E3				

P

B Q

M C P

E

D E

2

P

HJ 169-2018 C

Q

$$Q= q_l/Q_l+q_2/Q_2+……+q_n/Q_n$$

q_l q_2……q_n—— t

Q_1 Q_2……Q_n—— t

Q 1

Q≥1 Q 1 1≤Q 10 2 10≤Q 100 3 Q≥100

54t 1.5t B 2500t

Q 1 C.1

M M4 P P4

E HJ 169-2018

D E3 E3

E3 E3

1

2

3

0.4448km^2 44.48hm^2

500m

200m

HJ

2.2-2018 5km

5km

HJ 2.3-2018

B

1

2

HJ 169-2018

500m 3500m 4km

— HJ 2.4-2009

200m 200m

GB/T 4754-2017

“B1019 ” 2011

2013

[2005]40 “

"

[2018-511825-12-03-2490

48]FGQB-0025

9

[2014]17 “ ”

“ / 30 /

50 / 100 / ”

60

1	1 2 3 4 5		
2	1 2 3 4		
3	1 — — — 2 6 1		

( )

ὐ

3	“ ”	“ ”	
4			
5			
6		-	
7			
8	30cm 20cm 20cm 20cm		

2.6.2

HJ651-2013

“ ”

“ ”

“ ”

1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

2.6-3 “

”

2011

21

[2005]109

HJ651-2013

11.7km

1			
2			

1	2-2 - - 5 0.86 km^2		

2016-2020

2018 24

“ ”

— —

0.63

4.26% 1.30%

2

4 3 3

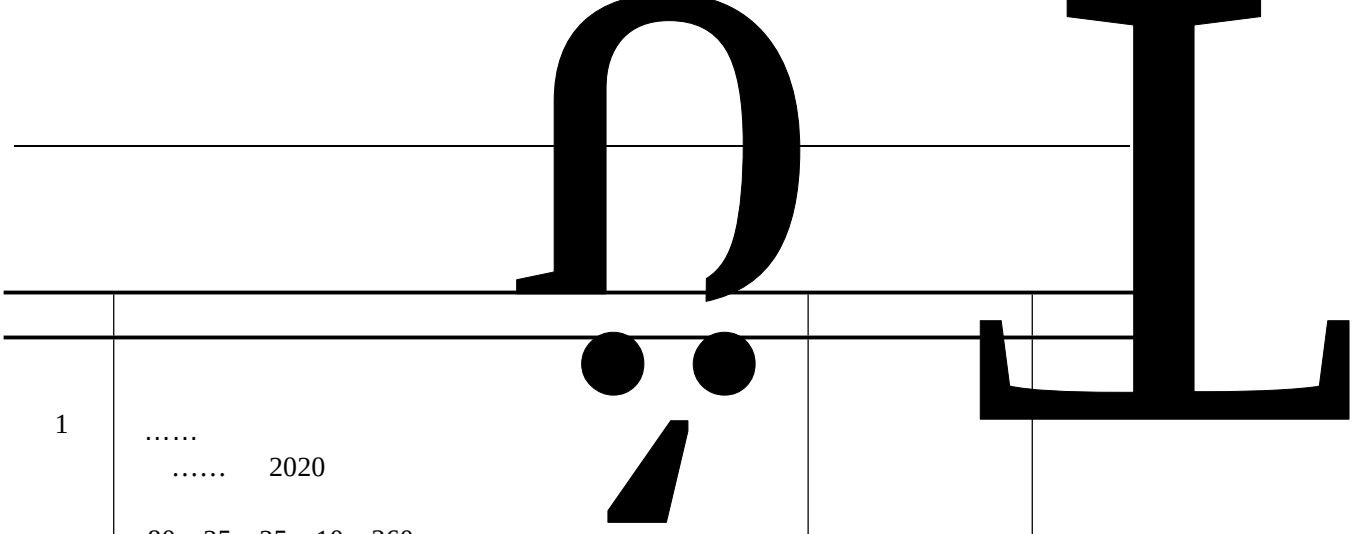
1 1 1 1

[2018]67

[2018]28

[2019]159

2018 24



1	…… …… 2020 80 25 25 10 360 1200 600 700 300 7500		

2016-2020

1			
2			

——— 1

———

——— 1

1600

[2018]67

80

27134

20177

4 12

[2019]159

[2018]28

2018 24 2016-2020

2016-2020

GB

3095–2012 2.8-1

TSP	200	300	/	GB3095-2012
PM_{10}	70	150	/	
$PM_{2.5}$	35	75	/	
SO_2	60	150	500	
NO_2	80	80	200	
CO	/	4	10	
O_3	/	160	200 8	

GB 38

38–2002 2.8-2

1	pH	6~9
2	COD_{Cr}	≤ 20
3	BOD_5	≤ 4
4	NH_3-N	≤ 1.0
5	SS	/
6		≤ 0.2
7		≤ 0.05
8		≤ 0.05
9		≤ 0.05
10		≤ 0.005
11		≤ 0.3

GB/T14848-2017

2.8-3

	pH								
	6.5~8.5	/	≤0.5	≤0.3	≤0.1	≤0.01	≤1.0	≤0.005	≤0.01
	≤0.05	≤1.0	≤250	≤250	≤20	≤1.0	≤450	≤1000	

GB3096–2008 2

2.8-4

2	60	50

GB36600–2018 2.8-5

	pH								
	/	60	65	5.7	/	18000	800	38	900

1

GB 1629

7-1996 2.8-6

		1.0

GB 5084-

2005

1	/ mg/L ≤	60	100	40[a] 15[b]
2	/ mg/L ≤	150	200	100[a] 60[b]
3	/ mg/L ≤	80	100	60[a] 15[b]
4	/ mg/L ≤	5	8	5
5	≤	35		
6	pH	5.5~8.5		
7	/ mg/L ≤	1000[c]	2000[c]	
8	/ mg/L ≤	350		
9	/ mg/L ≤	1		
10	/ mg/L ≤	0.001		
11	/ mg/L ≤	0.01		
12	/ mg/L ≤	0.05	0.1	0.05
13	/ mg/L ≤	0.1		
14	/ mg/L ≤	0.2		
15	/ /100mL ≤	4000	4000	2[a] 1[b]
16	/ /L ≤			

a

b

c

GB

12523–2011

GB 12348–2008 2 2.8-8 2.8-9

70	55

2	60	50

GB18599-2001

2013 36

GB18597-2001

“

[2017]160

1200-

1500m 300m 100-150m

15°-30° 5°-45° 25°

170m

150m 470m

15m

[2018]67

[2018]28

[2019]159

[2018]28

470m

9.28hm^2

15~20cm 1.54 m^3

15~20cm 0.17 m^3 0.06

m^3 0.06 m^3 0.09 m^3

1.92 m^3

0.54hm^2

4m 21600

m^3

<

>

[2012]135

GB18599-2001

1			
2	500m	500m	
3			
4			
5			
6			
7			

1280m

0.39hm^2

HPF1860

B=1200mm L=28m V=2.0m/s H=0m

1257m 1160m

50m

1220m 37m -6 °

B=305mm L=28m

V=2.0m/s H=2m B=75mm L=28m V=2.0m/s H=0m

“ +

”

500m

1

2

3

+1360m

1280m

1

12km

12km 318 318 25km

145km

1200-1500m 300m 100-150m

15°-30° 5°-45°

25°

170m 150m

470m 20 80

580m 30 120 780m

20 80 840m 20 80

115m

2

6.5%

9.75% 15m 5.0m 8m 30cm

3000m 500m 800m

2.62hm^2 1250m 1.08hm^2

1350m

1.21hm^2

3

0.54hm^2 1.5~2.0m

850m

4

1280m

0.39hm^2

750m

2.5km

2.11-1

			470	+140	20	80	
			580	+200	30	120	
			780m	+150	20	80	
			840m	+45	20	80	
			1325m	+215	50	200	GB3095-

			1550m	+200	20	80	2012
			1780m	+70	25	100	
			2130m	+50	12	50	
			1740m	+20	3	12	
	200m			200m			GB3096–2008 2

115m

2.11-2

			115m		GB3838-2002

3km

“

[2017]160

	500 200m	

10000

60

1560m 1170m 390m

891.88

2018 5 2

C5118252018057130146161

60 / 1560m

1170m 390m 0.4448km^2 2018 5

2 2028 5 2 6

	X	Y
1	3317623.00	34565722.00
2	3317535.00	34565935.00
3	3316693.00	34566438.00
4	3316336.88	34566034.83
5	3316766.92	34565955.58
6	3316830.39	34565754.65

185° 10km

1655 1735mm 6

9 465mm -3.5 33 1 5.1 7

24.1 15 33.7 283

860

V

1

D_3s P_1 Q_4

D_3s

P_1l

16 48m

P_1q

P_1m

Q_4

2

1

2

1 0 2 4 4 400m
1200m 6.37 12.74m 8.96m
325° 10°

1 2 3 4 4 400m
1200m 8.24 13.13m 11.08m
325° 10°

2

95% <0.01mm

CaO 47.27 55.75% MgO 0.45 1.61% SiO_2 0.56 1.71%
K_2O 0.01 0.41% Na_2O 0.02 0.46% SO_3 0.01 0.55%

	CaO	47.36	55.21%	MgO	0.36	1.95%	SiO_2	0.56	2.65%	
K_2O	0.02	0.39%	Na_2O	0.01	0.42%	SO_3	0.04	0.81%		

3

4

1 6

1560m 1170m 390m 1402m

120m 60m

1270m 1402m 1270m

132m

“ ”

1

2

1240m

15m

1200m

6.37 12.74m 8.96m

325° 10°

1200m 8.24 13.13m

11.08m 325° 10°

70°

1/4 1/2 5m

8m 2 1

35m

15m 15m

75° 3.80m

110mm 17.08m 1.50m 4.5m 4.0m

1 3

4 2 10 7107.75t

41.61t/m

200m

3

1270m

1390m

47°

431.24 t

465.3m×198.64m

1

“ ”

→ →

→ → →

2

15m

75°

60m

120m

3

1

CM351 110mm

25m 75 2

1 1

1000mm

2

15m 15m

75° 3.80m

110mm 17.08m 1.50m 4.5m 4.0m

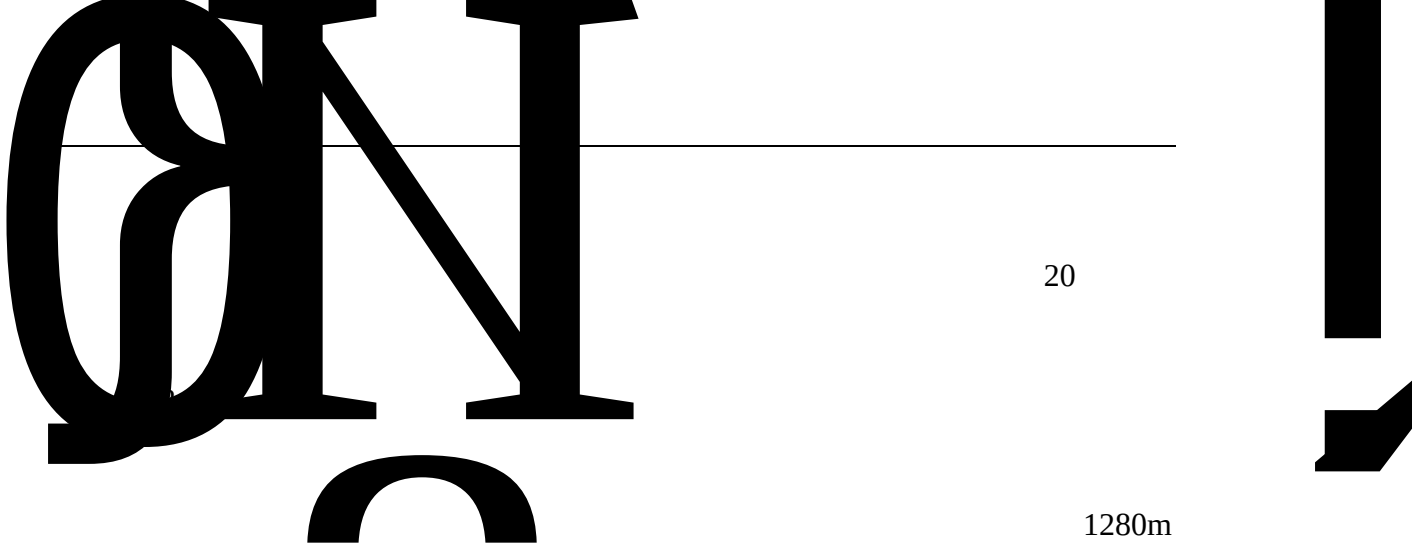
1 3 4

2 10 7107.75t

41.61t/m

1

EC-240B 2.0m^3



20

1280m

1.5km

4

HPF1860

B=1200mm L=28m V=2.0m/s H=0m

1257m 1160m

50m 1220m

37m -6 °

B=305mm L=28m V=2.0m/s H=2m

B=75mm L=28m V=2.0m/s H=0m

1

1

9.28hm^2

15~20cm 1.54 m^3

15~20cm 0.17 m^3 0.06

m^3 0.06 m^3

0.40 m^3

20cm

6~10m 4.60 m^3

1.36 m^3

+1265m +1280m 7.80 m^3

1.65 m^3

2

2014 8

1

1345m 1360 1360m 167.58m 83.24m

1345m 165.6m 65.78m

2

1360m 240073.37m^3

1345m 51567m^3

3

1 694024.72 1.16 1

2 367094.84 0.61

4

18

3.2-2

		2	4	6	8	10	12	14	16	18
1										
2	1360m									
3	1345m									
4										

		2	4	6	8	10	12	14	16	18
5										

1280m

8m 2 1

200m

1 1270m

2 1390m

3 47°

4 75°

5 5m

6 60m

7 431.24 t

8 8m 2 1

9 0.591 $1m^3/m^3$

10 465.3m×198.64m

11 200m

6.5%

9.75% 15m 5.0m 8m 30cm

3000m 500m 800m

2.62hm^2 1250m 1.08hm^2

1350m

1.21hm^2

1280m

0.39hm^2

60.0 t/a 0.15kg/t

90.0t 300.0kg

0.5m 5.0m 144.84 m^3

2014 8

9.28hm^2

15~20cm 1.54 m^3

15~20cm 0.17 m^3 0.06

m^3 0.06 m^3 0.09 m^3

1.92 m^3

0.54hm^2 4m

21600 m^3

1

0.3m 0.3m 1 0.5 1700m

130m

100cm 80cm 1 0.75

C20 20cm

M10

0.4m 0.3m 0.3m 0.2m 5‰

2600m

M10

0.4m 0.2m 0.2m

3.3-1

		0.4448km^2 333 + 334 891.88 t 1560m 1170m 390m 60 t			

			HPF1860			
			1257m HPF1860 B=1200mm L=28m V=2.0m/s H=0m			
			1257m 1160m 50m 1220m 37m -6 ° B=305mm L=28m V=2.0m/s H=2m B=75mm L=28m V=2.0m/s H=0m			
						/
		0.54hm^2 4m 21600 m^3				
		5.5% 7% 15m 4.5m 1.5km				
					/	/
		400mm 200mm 130m^3 100cm 80cm 1 0.75			/	/

		C20 20cm			
				/	/
	/	150m			
		2m^3 5m^3 400mm 200mm 130m^3 100cm 80cm 1 0.75 C20 20cm 10m^3		/	/
		+ 90% +DE 95%		/	/
				/	/
				/	/

		HW08			
				/	/

150m 200

60

2018 7 18 [2018]17

1560m 1170m 390m

1402m

120m

60m 1270m

1402m 1270m 132m

5% 1.1 60.0 t/a

332 + 333 891.88 t 332 333 1

95% 0.591 1m^3/m^3 60.0 t/a

+1360

60 t/a

1000×800×800mm 1000mm

1		CM351 Ø110 mm		2	1
2		/		1	/
3		E750XH 21.2m^3/min 1.38Mpa		2	1
4		EC-240B		2	/
5		EC-240		1	/
6		20		10	/

7		ZL-50B		1	/
8		T-180		1	/
9		/		1	/
10		5		1	/
11		4		1	/
12		HPF1860 200mm		1	/
13		JC1600 CSS=200mm		1	/
14	CD1 10t10m	10 10		1	/
15		GZG125-4		4	/
16		B=1200mm L=28m V=2.0m/s H=0m		1	/
17		B=1200mm L=75m V=2.0m/s H=2m		1	/
18		B=1200mm L=305m V=2.0m/s H=0m		1	/
19	DE	DE1217		1	/

2011 2013

2011

		/a	12000	
		t/a	90	
		t	54	
		/a	5000	
		t/a	13059	

400mm 200mm

100cm 80cm 1 0.75

C20 20cm

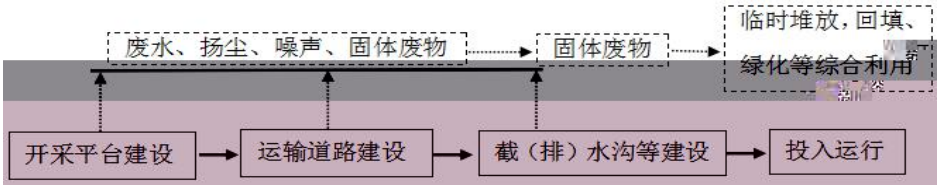
8 300 20

15 5

12.10hm^2 10.88hm^2

1.22hm^2

		9.28		9.28	
		1.09	0.12	1.21	1.08
		0.39		0.39	
		10.76	0.12	10.88	
		0.38	0.16	0.54	
		0.55	0.13	0.68	
		0.93	0.29	1.22	
		11.69	0.32	12.10	



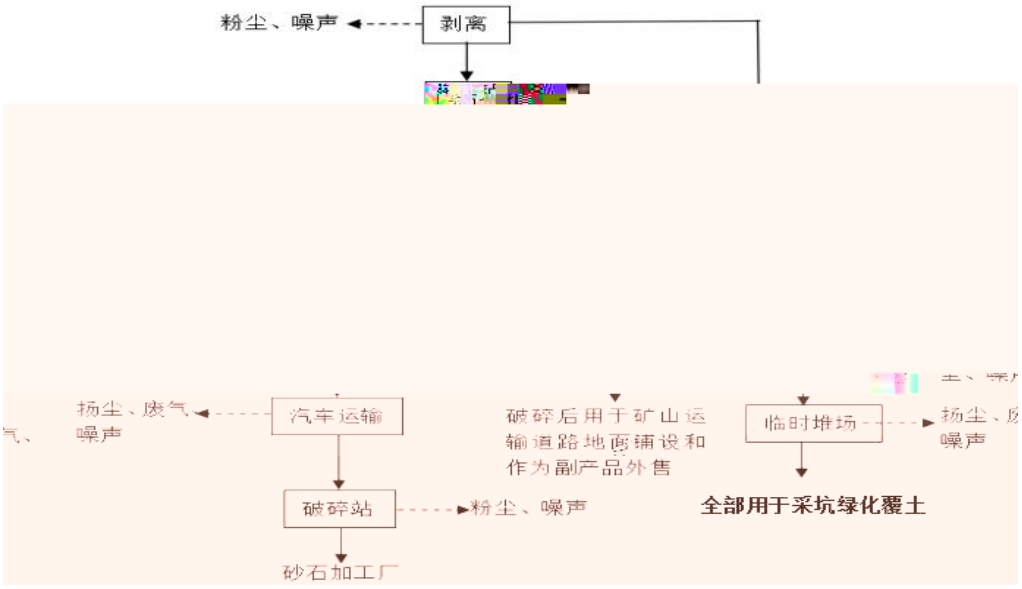
1 CO NO_x

2

3

4

5-1



CM^{3}51 110mm 25m

75°

15m 15m

75° 3.80m 110mm 17.08m

1.50m 4.5m 4.0m 1

3 4 2 10

7107.75t 41.61t/m

1

1000mm

EC-240B 2.0m^3

HPF1860

B=1200mm L=28m V=2.0m/s H=0m

B=305mm L=28m V=2.0m/s

H=2m B=75mm L=28m V=2.0m/s H=0m

9.28hm^2

15~20cm 1.54 m^3

15~20cm 0.17 m^3 0.06

m^3 0.06 m^3 0.09 m^3

1.92 m^3

0.54hm^2

12.10hm^2 16cm

			hm^2	
		1.54		
		0.17		
		0.06		
		0.06		
		0.09		
		1.92		
			9.28	1.54
			1.21	0.17
			0.39	0.06
			0.54	0.06

			0.68	0.09
			12.10	1.92

197.11 m^3

1.92 m^3 3.14 m^3 1.92 m^3

“

”

1

+1345m 1360m 29.15 m^3

0.40 m^3

20cm

6~10m 4.60 m^3

1.36 m^3

+1265m +1280m 7.80 m^3

1.65 m^3

2

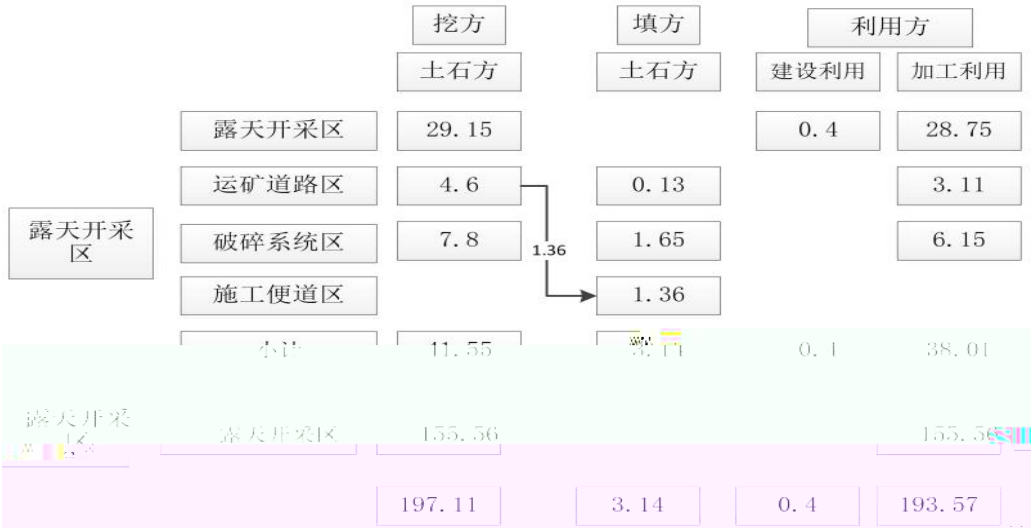
60.00 t/a

184.71 m^3 29.15 m^3

155.56 m^3

		29.15				0.40	28.75	0
		4.60	0.13		1.36		3.11	0
		7.80	1.65				6.15	0
			1.36	1.36				0

		41.55	3.14	1.36	1.36	0.40	38.01	0
		155.56					155.56	0
		197.11	3.14	1.36	1.36	0.40	193.57	0



1

120m 60m

7200m^2 1.5L/m^2· 1

10.8m^3/d

2

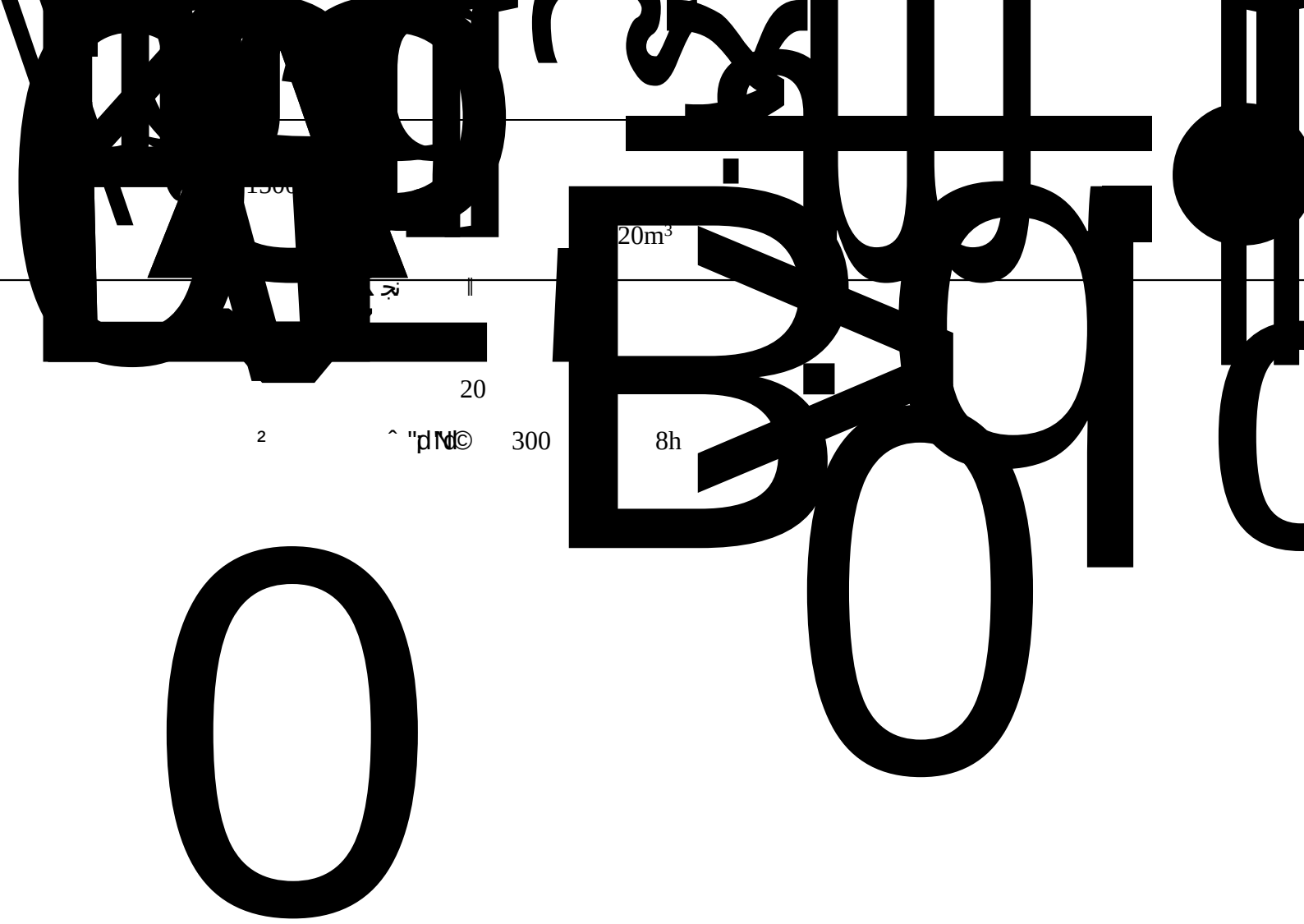
0.018m^3/t

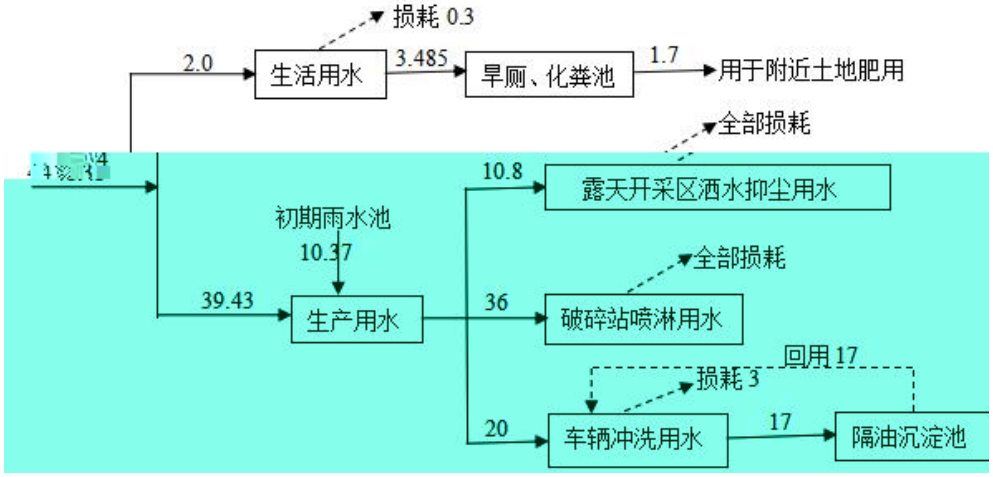
2000t/d 36m^3/d

3

100 /d 0.2m^3/ 20m^3/d

0.85 17m^3/d 5100m^3/a SS


20m3
20
300
8h


损耗 0.3
2.0
生活用水
3.485
旱厕、化粪池
1.7
用于附近土地肥用
全部损耗
10.8
露天开采区洒水抑尘用水
初期雨水池
10.37
39.43
生产用水
36
破碎站喷淋用水
全部损耗
回用 17
损耗 3
20
车辆冲洗用水
17
隔油沉淀池

[2013]32

50m TSP 8.90mg/m^3 100m TSP 1.65mg/m^3 120m TSP

GB16297-1996

2

60%

20km/h 0.63kg/km

3 1km

0.002t

	2	50	11.02	1.0	
		150	5.00		
		200	0.9		

0.94m/s

200m TSP

(GB16297-1996) 200m

(GB16297-1996)

3

CO NOx

1			90
2			85
3			90

1

2

0.2kg 10

2kg/d

1

0.0365kg/t(

0.5m 5.0m

1.54 m^3 1.4t/m^3 2.156 t

0.787t/a

70% 0.236t/a

0.004kg/t 2.4t/a

$$Q = 0.123 \times \ V/5) \times (W/6.8)^{0.85} \times (P/0.5)^{0.75}$$

Q—— kg/km·

V—— km/h

W—— t/

P—— kg/m^2

1500m 100 ·

10t 30t 20km/h

	0.102	0.171	0.232	0.288	0.341	0.391
	0.259	0.437	0.592	0.734	0.866	0.996
	0.361	0.608	0.824	1.022	1.207	1.387

0.3kg/m^2

24.72kg/d 7.416t/a

80%

1.4832t/a

NO_x CO

NO_x 7.1g/kg CO

19.6g/kg 90t NO_x 0.6639t/a CO 1.764t/a

N_2O

CO

2

0.15kg/t 0.30kg/t 0.10kg/t 0.35kg/t

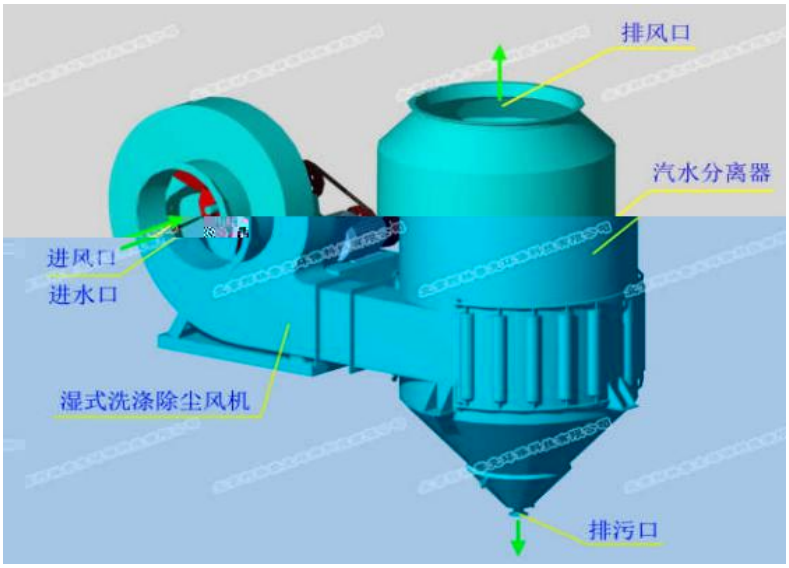
60 t/a 90t/a

“ + ”

70% + 90% +DE

95%

1.215t/a



3

54t GB 17691-2005

III IV V “ IV ”

GB 252-2000

0# 4.3-4

0#	1.5g/L	S×17g/L	2.8g/L	850kg/m^3	0.1%

54t 0.095t/a SO_2

0.0011t/a NO_x 0.178t/a

1

20

300 8h 100L

20L/d 80L/d 2.0m^3/d 0.85

1.7m^3/d 510m^3/a

2m^3

5m^3

2

10 30 min

$$q = 7.622(1 + 0.63\lg P) / \quad t+6.64)^{0.56}$$

$$Q = q \times F \times \Psi$$

q — L/s·hm^2

Q — L/s m^3/h

P — 2

t — min 15min

F — m^2 3600m^2

500m^2

Ψ — 0.3 0.4

q 270.14L/s·hm^2

Q 29.18L/s 105.03m^3/h q

270.14L/s·hm^2 Q 5.4L/s 19.45m^3/h

15min 31.12m^3/

130m^3

3

SS

$$Q_m = C \cdot Q \cdot A \cdot 10^{-3}$$

Q_m—— m^3/a

C—— 0.2

Q—— mm

A—— m^2

5400m^2

1535.6mm 0.2 4.3-4

	m^2	5400
	m^3/a	1658.448
	m^3/d	4.54
m^3		10

1658.448m^3/a 4.54m^3/d

pH 6~9 SS 500~800mg/L 800mg/L

SS 1.327t/a

10m^3

1

4

100 /d 0.2m^3/ 20m^3/d

0.85 17m^3/d 5100m^3/a SS

1500mg/L

20m^3 1

1

80-130dB A

4.3-5

		2	80~85		1
		1	85~95		/
		2	90~95		1
		2	80~85		/
		1	80~85		/
		/	110 ~130		/
		1	90~95		
		1	90~95		
		1	90~110		
		10	80~85		/

A.

B. 22:00 6:00

C.

D.

E.

2

1

9.28hm^2

15~20cm 1.54 m^3

15~20cm 0.17 m^3 0.06

m^3 0.06 m^3 0.09 m^3

1.92 m^3

0.54hm^2

4m 21600 m^3

2

+1345m 1360m 29.15 m^3

0.40 m^3

20cm

6~10m 4.60 m^3

1.36 m^3

+1265m +1280m 7.80 m^3

1.65 m^3

38.01 m^3

3

100t/a

5×5×2m

4

31.12m^3/ SS 1000mg/L

≥80% 24.896kg/ 50 1.245t/a

SS 500~800mg/L 800mg/L

1.327t/a

5

2016

2016

HW08

1.0t/a

$5m^2$ +HDPE

1.5cm $\leq 10^{-10}$cm/s

GB 18597-2001

5

GB18597-2001

A

B

C

A B

C

D

E

F

6

20 0.5kg/d 10kg/d

3t/a

1		1.92 m^3		
2		38.01 m^3		
3		100t/a		5×5×2m
4		2.572t/a		
5		3t/a		
6				
7		5.0t		

“

”

1

2

				+HDPE
	-			1.5cm
				$\leq 10^{-10}$cm/s

		-		10~15cm $\leq 10^{-7}$cm/s
	-			
	-			

1

2

“ ” 4.3-8

7.4241t/a

2.4

		COD BOD_5 SS NH_3-N	1.7m^3/d	
		SS	1.245t/a	
		SS	1.327t/a	
		SS	17m^3/d 5100m^3/a	
			1.92 m^3	
			38.01 m^3	
			100t/a	5×5×2m
			2.572t/a	
			5.0t/a	
			3t/a	
			80-130dB A	
			80-85dB A	
			/	

1

2

3

“

”

1

95%

1

2

3

80-110dB A

GB12348-2008 2

GB3096-2008 2

4

HW08

5

98%

1

2

3

4

5

6

7

4.4-1

مج ; سم Ð Ď

1

2

3

4

5

1

2

70%

60%

70%

CO_2 H_2O CO NO NO_2

+

90% +DE 95%

“ ”

“ ”

“ ”

VOCs

3

“ ”

NO_X

GB18306-2001 2008 6

1 0.15g 0.40s

VII

15.6

34.8 -1.8 928.2hPa

15.5hPa 82.5% 1535.6mm

4.1m/s 0.6m/s 5 0.80m/s

12 0.43m/s ESE 9.7%

0.01m/s 2017

0.90m/s 2010 0.40m/s

7 24.35 1 5.38 20

2017-07-10 36.9 20 016-01-25 -4.4 2013

16.30 2012 15.00 5

8 317.41mm 1 27.55mm 20

2010-08-14 155.3mm 20

2005 1733.60mm 1998

1272.60mm 7 124.38 h 1

42.91h 20 2013

1147.60h 2012 750.80h 2-3

10 86% 5 77%

11 20 2003

86.00% 2015 77.00% 10

109.4km 2047km^2 80.56% 107m^3

33.65 m^3 3590m 50km^2

12 8 4

5km

15km 174.1km^2 2

50km^2

87.8m^3/s 27.7 m^3

5~10 137m^3/s 78.7% 11

4 37.8m^3/s 21.3% 12 3

27.5m^3/s 10.3%

20h

2580m^3/s 626m^3/s

114.02 58.21

49.4 14 55

21.86 37.71

m^3 1576mm 67.14 m^3

900 35%

30 30

20 51% 1%

28.7 2010

143488 1800 m^3

50.23% 90% 259

2400km^2 136922 57730 79192

143488 3741

10

38.5

2018 7 12 2018 490

2019 011

HJ 2.2-2018

2018 1 -2018 12

SO_2 NO_2 PM_{10} $PM_{2.5}$ CO O_3

	9.0	16.8	1.0	119.6	41.5	26.2
	60	40	4	160	70	35

SO_2

NO_2 PM_{10} $PM_{2.5}$ GB3095-2012

CO GB3095-2012

24 O_3 GB3095-2012

8

1

1#

2

SO_2 NO_2 TSP PM_{10}

3

7

SO_2 NO_2 TSP PM_{10}

4

GB3095-2012

5

SO_2	2018.06.26	0.013	0.011	0.009	0.008
	2018.06.27	0.011	0.009	0.007	0.010
	2018.06.28	0.009	0.008	0.006	0.007
	2018.06.29	0.012	0.013	0.008	0.006
	2018.06.30	0.008	0.011	0.011	0.016
	2018.07.01	0.009	0.015	0.012	0.010
	2018.07.02	0.014	0.007	0.010	0.007
NO_2	2018.06.26	0.021	0.024	0.019	0.024
	2018.06.27	0.023	0.023	0.028	0.027
	2018.06.28	0.021	0.026	0.029	0.019
	2018.06.29	0.026	0.025	0.019	0.034
	2018.06.30	0.029	0.029	0.031	0.028
	2018.07.01	0.031	0.033	0.030	0.034
	2018.07.02	0.027	0.028	0.029	0.027
TSP	2018.06.26	0.15			
	2018.06.27	0.17			
	2018.06.28	0.19			
	2018.06.29	0.14			
	2018.06.30	0.09			
	2018.07.01	0.21			
	2018.07.02	0.17			
PM_{10}	2018.06.26	0.035			
	2018.06.27	0.028			
	2018.06.28	0.031			
	2018.06.29	0.034			
	2018.06.30	0.029			
	2018.07.01	0.033			
	2018.07.02	0.037			

1

GB3095-2012

2

$$P_i = \frac{Ci}{Si}$$

P_i——i

C_i——i (mg/Nm^3)

S_i——i (mg/Nm^3)

Pi 1.0

Pi

3

		$P_{i(max)}$			
SO_2	2018.06.26-2018.07.02	0.026	0.5	0	
NO_2		0.17	0.2	0	
TSP		0.7	0.3	0	
PM_{10}		0.247	0.15	0	

SO_2 NO_2 TSP PM_{10} $P_{i(max)}$

1 (GB3095-2012)

1

3 500m

W1 1000m W2

3500m W3

2

pH COD BOD_5 NH_3-N SS 11

3

3 1

4

GB 3838-2002

pH		GB 6920-1986	SX836 PH JBJC201610-14	/
CODcr		HJ 828-2017	YH2016-98951837 COD JBJC201608-40 YH2016-98951864 COD JBJC201608-41	4mg/L
BOD_5		HJ 505-2009	1081281 JBJC201608-15	0.5mg/L
NH_3-N		HJ 535-2009	V722S JBJC201608-64	0.025 mg/L
SS		GB 11901-1989	FA2004B	/

			JBJC201608-10	
		GB11893-89	V722S JBJC201608-64	0.01mg/L
		GB 7475-1987	AA-6880 JBJC201608-03	0.01mg/L
		HJ 694-2014	AFS-9700 JBJC201608-02	0.3μg /L
		GB 7467-87	V722S JBJC201608-64	0.004mg/L
		GB 7475-1987	AA-6880 JBJC201608-03	0.001 mg/L
		GB 11911-89	AA-6880 JBJC201608-03	0.03mg/L

5

	pH	7.44	7.47	7.46	7.47	7.45	7.48	7.44	7.48	7.46
	CODcr	13	15	12	17	19	17	18	16	19
	BOD_5	2.5	2.9	3.1	3.3	3.6	3.4	3.7	3.5	3.8
	NH_3-N	0.17	0.13	0.16	0.22	0.19	0.23	0.24	0.26	0.23
	SS	31	28	25	34	35	32	35	39	32
		0.07	0.10	0.08	0.11	0.13	0.09	0.16	0.14	0.16
		L	L	L	L	L	L	L	L	L
		L	L	L	L	L	L	L	L	L
		L	L	L	L	L	L	L	L	L
		L	L	L	L	L	L	L	L	L
		L	L	L	L	L	L	L	L	L

L

2

1

$$S_{ij} = \frac{C_{ij}}{C_{is}}$$

S_{ij}—— i j

C_{ij}—— i j (mg/L)

C_{si}—— i (mg/L)

pH $S_{pH,k} = \frac{7.0 - pH_j}{7.0 - pH_{sd}}$ $pH_j \leq 7.0$

pH_j 7.0

$$S_{pH,j} = \frac{pH_j - 7.0}{pH_{su} - 7.0}$$

pH_j—— j pH

pH_{sd}—— pH

pH_{su}—— pH

S_{ij} 1.0

S_{ij}

2

		6~9	≤20	≤4	≤1	/	≤0.2
W1	P_i max	0.225	0.9	0.925	0.24	/	0.8
W2	P_i max	0.24	0.95	0.9	0.26	/	0.7
W3	P_i max	0.24	0.95	0.95	0.23	/	0.8
		≤0.05	≤0.05	≤0.05	≤0.005	≤0.3	
W1	P_i max	/	/	/	/	/	
W2	P_i max	/	/	/	/	/	
W3	P_i max	/	/	/	/	/	

GB3838-2002

1

1# 500m 2#

2

pH

17

3

1

4

pH		GB 5750.4-2006	SX836 pH JBJC201610-14)	/
		GB 11892-89	HHS-S6 JBJC201608-42	0.5mg/L
		HJ 535-2009	V722S JBJC201608-64	0.025 mg/L
		GB 11911-89	AA-6880 JBJC201608-03	0.03mg/L
		GB 11911-89	AA-6880 JBJC201608-03	0.01mg/L
		HJ694-2014	AFS-9700 JBJC201608-02	0.3μg /L
		GB 7475-1987	AA-6880 JBJC201608-03	0.05 mg/L
		GB 7475-1987	AA-6880 JBJC201608-03	0.001mg /L
		GB 7475-1987	AA-6880 JBJC201608-03	0.01mg /L
		GB 7467-87	V722S JBJC201608-64	0.004mg/L
		HJ 84-2016	ECO IC JBJC201608-51	0.006mg/L
		HJ 84-2016	ECO IC JBJC201608-51	0.018mg/L
		HJ 84-2016	ECO IC JBJC201608-51	0.007 mg/L
		GB 5750.5-2006	ECO IC JBJC201608-51	0.016 mg/L
		HJ 84-2016	ECO IC JBJC201608-51	0.016 mg/L
		GB 5750.4-2006	0.1ml A /43	1.0mg/L
		GB/T 5750.4-2006	BSA224S JBJC201608-09	/

5

	pH	7.84	7.61
		0.61	0.72
		0.22	0.27
		0.1946	0.2758
		L	L
		L	L
		L	L
		L	L
		L	L
		0.017	0.035
		0.298	0.625
		72.5	61.7
		34.8	9.68
		1.62	2.38
		0.089	L
		309	307
		365	294

L

2

1

$$S_{ij} = \frac{C_{ij}}{C_{sj}}$$

S_{ij}——i j

C_{ij}——i j mg/L

C_{sj}——i mg/L

pH $S_{pH,j} = \frac{7.0 - pH_j}{7.0 - pH_{sd}}$ $pH_j \leq 7.0$

$S_{pH,j} = \frac{pH_j - 7.0}{pH_{su} - 7.0}$ pH_j 7.0

pH_j—— j pH

pH_{sd}—— pH

pH_{su}—— pH

1 1

2

1#	P_i	0.56	/	0.44	0.649	≤0.1	≤0.03	≤0.05	≤0.2	≤1
2#	P_i	0.407	/	0.54	0.919	≤0.1	≤0.03	≤0.05	≤0.2	≤1
1#	P_i	0.34	0.298	0.29	0.139	0.081	0.089	0.687	0.365	
2#	P_i	0.7	0.625	0.247	0.039	0.119	≤0.016	0.682	0.294	

1

GB/T14848-2017

1

1

4 5.2-9

1#		1m	
2#		1m	
3#		1m	
4#		1m	

2

A

3

2018 6 26 6 27 2 1

4

GB3096-2008 -

HJ2.4-2009

2

1

GB3096-2008 2

2

3

5.2-10

1#	56.3	39.2	56.1	39.5	60	50
2#	54.8	37.8	55.3	38.4		
3#	56.2	36.3	56.6	37.1		
4#	54.1	39.4	55.7	40.3		

(GB3096-208) 2

1

1

3 1# 2#

3#

2

pH 9

3

2019 5 21 1

4

5

	pH	6.28	6.35	6.76
		13.7	9.84	7.25
		7.53	10.6	9.61
		2.71	1.05	2.11
		11.5	9.38	10.3
		14.8	11.5	17.2
		5.84	3.66	6.43

2

1

GB36600–2018

2

3

5.2-12

	/	60	65	5.7	/	18000	800	38	900
$P_{i\ max}$	/	0.228	0.042	/	/	0.357×10^{-3}	0.014	0.279	≤0.005

GB36600–2018

“ 7

1.5m^3

SS

CODcr BOD_5 SS

1

TSP

2

SO_2

NO_x CO

3

200m 100m

1km

500m

75~80dB A

6.1-1

1		80	5m
2		79	5m
3		80	5m
4		75	5m

$L_2 = L_1\text{-}20 \lg(r_2 / r_1)$ $(r_2 > r_1)$

$\Delta L = L_1\text{-}L_2 = 20 \lg(r_2 / r_1)$ $(r_2 > r_1)$

ΔL—— dB(A)

r_1 r_2 ——

L_1—— r_1 dB(A)

L_2 —— r_2 dB(A)

6.1-2

1		80.0	74.0	68.0	61.9	60.0	58.4	55.9	54.0	50.5	48.0	44.4
2		79.0	73.0	67.0	60.9	59.0	57.4	54.9	53.0	49.5	47.0	43.4
3		80.0	74.0	68.0	61.9	60.0	58.4	55.9	54.0	50.5	48.0	44.4
4		75.0	69.0	63.0	56.9	55.0	53.4	50.9	49.0	45.5	43.0	39.4

GB12523-2011

70dB A 55dB A 6.1-2

20m 70dB A

100m 55dB(A)

1

2

1

1 3

1 2

1

7 10m

0.1%

2

3

4

1

“ - - ”

2

3

—

15~60m 10~50m

5

1

2

A.

0.05g/(m^2• d

B.

C.

1

1

(HJ2.3-2018)

A

B

$2m^3$

5m^3

B

2

(HJ2.3-2018) 5.3.2.2,

B

A

B

1

2

SS

SS

50%

			pH	
			A B	
		40%	40%	
			pH SS COD BOD_5 NH_3-N	3
		4 km	km^2	
		pH COD BOD_5 NH_3-N SS		

		I II III IV V	
		km ( )km^2	

			/ t/a		/ mg/L	
				/ t/a	/ mg/L	
		)				
		m^3/s m^3/s m^3/s				
		m m m				
“ ” √ “ ” “ ”						

HJ 610-2016 A“

” “54 ”

1

70%

0.787t/a

90%

0.24t/a

25g/m^3 10g/t

60 t/a 6.0t/a

<10μm

1% 10~45μm

40% 2.46t/a

60% 0.984t/a

2000t/d

70%

0.259t/a

1.4832t/a

CO NO_x

2

60 t/a 90t/a

“ + ”

70%

+ 90% +DE

95% 1.215t/a

3

1

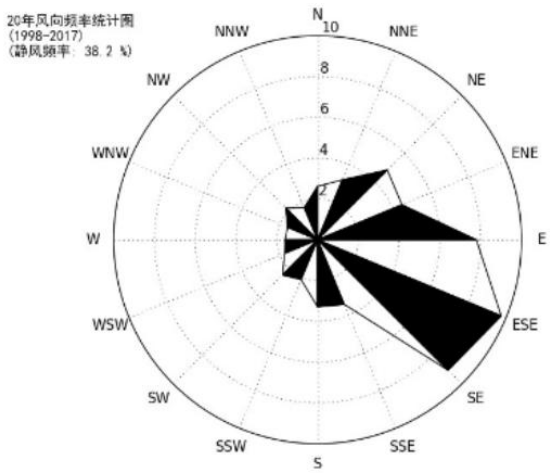
20 1998~2017

15.6 34.8 -1.8

928.2hPa 15.5hPa 82.5%

1535.6mm 4.1m/s

0.6m/s ESE 9.7%



2

		970	375	4	2.011	0.838	0.9
		65	60	8	1.215	0.506	

3

1

		900	GB3095-2012

2

- HJ2.2-2018

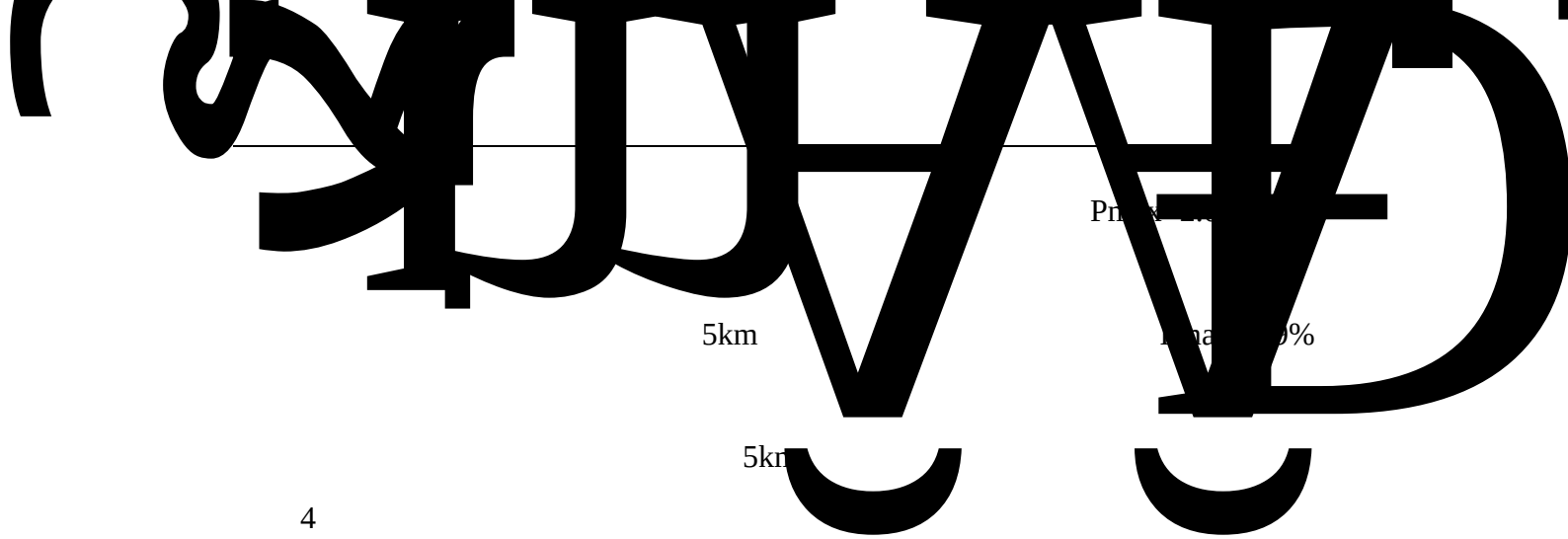
Aerscreen

/	/	
		/
/		34.8
/		-1.8
		□ √
	/m	/
		□ √
	/km	/
	/ °	/

3

1	10	0.011343	1.26	10	0.027824	3.09
2	25	0.011556	1.28	25	0.0336	3.73
3	50	0.011904	1.32	50	0.043691	4.85
4	75	0.012245	1.36	75	0.051442	5.72
5	100	0.012577	1.4	100	0.052282	5.81
6	125	0.012903	1.43			
7	150	0.013221	1.47	125	0.052679	5.85
8	175	0.013534	1.5	150	0.049338	5.48
9	200	0.013839	1.54	175	0.044965	5.00
10	225	0.014137	1.57	200	0.040241	4.47
11	250	0.014429	1.6	225	0.039878	4.43
12	275	0.014714	1.63	250	0.039779	4.42
13	300	0.014993	1.67	275	0.039369	4.37
14	325	0.015268	1.7	300	0.038761	4.31
15	350	0.015536	1.73	325	0.038007	4.22
16	375	0.015798	1.76	350	0.037144	4.13
17	400	0.016056	1.78	375	0.036204	4.02
18	425	0.016309	1.81	400	0.035262	3.92
19	450	0.016555	1.84	425	0.034256	3.81
20	475	0.016797	1.87	450	0.033269	3.70
21	500	0.017036	1.89	475	0.03231	3.59
22	525	0.017271	1.92	500	0.031339	3.48
23	550	0.017497	1.94	525	0.030396	3.38
24	575	0.017721	1.97	550	0.029495	3.28
25	600	0.017941	1.99	575	0.028612	3.18
26	625	0.018159	2.02	600	0.028105	3.12
27				625	0.027643	3.07
28	650	0.018317	2.04	650	0.02719	3.02
29	675	0.01823	2.03	675	0.026736	2.97
30	700	0.018089	2.01	700	0.026285	2.92
31	725	0.017883	1.99	725	0.025846	2.87
32	750	0.017632	1.96	750	0.025399	2.82
33	775	0.01735	1.93	775	0.024964	2.77
34	800	0.017044	1.89	800	0.024538	2.73
35	825	0.016726	1.86	825	0.024121	2.68
36	850	0.016402	1.82	850	0.023716	2.64
37	875	0.016078	1.79	875	0.023315	2.59
38	900	0.015756	1.75	900	0.022921	2.55
39	925	0.015438	1.72	925	0.022611	2.51
40	950	0.015115	1.68	950	0.022326	2.48
41	975	0.014795	1.64	975	0.022045	2.45
42	1000	0.014486	1.61	1000	0.021761	2.42
43	1025	0.014182	1.58	1025	0.021482	2.39
44	1050	0.013889	1.54	1050	0.021212	2.36
45	1075	0.013604	1.51	1075	0.020945	2.33
46	1100	0.013329	1.48	1100	0.020683	2.30
47	1125	0.013058	1.45	1125	0.020424	2.27
48	1150	0.012795	1.42	1150	0.020168	2.24
49	1175	0.012537	1.39	1175	0.019919	2.21
50	1200	0.01229	1.37	1200	0.019675	2.19

AERSCREEN



5km

5km

4

- HJ2.2-2018 “

” ”

1				GB 16297-1996 2	0.9	2.011
2						1.215

1				0.838kg/h	0.5h	4	
2				0.506	1h	2	

HJ 2.2-2018 8.7.5.1 “

. d

18.328μg/m³ 646m

GB16297-1996 1mg/m³

53.091μg/m³ 114m GB162

97-1996 1mg/m³

AERSCREEN 24h

GB3095-2012 TSP300μg/m³

(GB/T13201-91

1

GB/T13201-90

$$\frac{Q_C}{C_m} = \frac{1}{A}\left(BL^C + 0.25r^2\right)^{0.50} L^D$$

C_m—— mg/m³

L—— m

r—— m

A B C D——

Q_c—— kg/h

A	<2	400	400	400	400	400	400	80	80	80
	2~4	700	470	350	700	470	350	380	250	190
	>4	530	350	260	530	350	260	290	190	110
	<2	0.01			0.015			0.015		

B	>2		0.021	0.036	0.036
	<2		1.85	1.79	1.79
C	>2				

	SO_2+NO_x	≥2000t/a□	500~2000t/a□	<500t/a
		SO_2 NO_2 PM_{10} $PM_{2.5}$ O_3 CO		$PM_{2.5}$□ $PM_{2.5}$
			□	D□ □
		□		□
		2018		
		□		□
				□
		□ □	□	□ □
		AERMOD	ADMS□	AUSTAL2000□ EDMS/AEDT□ CALPUFF□ □ □
		≥50km□	5~50km□	=5km
		TSP		$PM_{2.5}$ □ $PM_{2.5}$
		C ≤100%		C >100%□
			C ≤10%□	C >10% □
			C ≤30%	C >30% □
	1h	h	C ≤100%	C >100%□
		C □		C □
		k≤-20%□		k>-20%□
		TSP	□	□
		TSP	1	□
			m	

		SO_2 t/a	NO_x t/a	3.226 t/a	VOC_S t/a
“ □ ”			“ √ ”	“	”

1

	52.4	46.4	40.4
	58.3	52.3	46.3
	50m		

1
2

50m GB12348-2008

2

6.2-13

			470m	19.50	53.3	53.3	60	
			780m	19.74	56.1	56.1	60	

GB3096-2008 2

HJ2.4-2009 A

$$L_{eq} = L_A + 10\lg N - 10\lg(2r \bullet V)$$

Leq—— r dB(A)

L_A—— r_0 V A dB(A)

7.5m L_A=82dB(A)

N—— /h 2000t

200 /d 25 /h

r—— m

V—— m/h 20km/h

	73.0	69.9	68.2	66.9	65.2	63.9	63.0	60.9	59.9	58.2	56.9	55.2	53.9	52.9	52.2	51.5	50.9	50.4	49.9

100m 60dB(A) 1000m 50dB(A)

150m

G318 12km 50m

110 dB(A)~130 dB(A)

GB6722-2003

$$V = K\left(\frac{Q^{1/3}}{R}\right)^{\alpha}$$

V	cm/s	
Q	kg	13.5kg
R	m	
K	150	
α	1.5	

6.2-14 6.2-15

1	0.016	
2	0.016~0.21	
3	0.21~0.64	
4	1.6	
5	1.6	

1	1.0~6.0	
2	7.3	
3	10	
4	10.2~12.7	
5	12~14	
6	16	
7	6.0~20	
8	22.8	

	100	150	160	200	300	400	500	600
	0.551	0.300	0.272	0.195	0.106	0.069	0.049	0.038
	700	800	900	1000	1500	2000	2500	3000
	0.030	0.024	0.020	0.017	0.009	0.006	0.004	0.003

470m

HW08

HJ 964-2018

pH

5.5~8.5

HJ 964-2018

A “ ”

		44.48 hm^2				
		a b c d				
						C

		E F				
		a) b) c) a) b)				
	pH 5.5~8.5 HJ 964-2018 A “ ”					
1 “ ” √ “ ” “ ” 2						

1

15

“ ”

“ ”

1 “ ”

“ ”

0.5m

0.4m

30%

2

3

5 60

“

”

5

“ ”

1 ;

2

3

4

5

1

[2016]21

5

6

20~ 30cm

7

85% 85%

3~5

“

MSDS

+

E1	+			
E2				
E3				
+				

P

B Q

M C P

E

D E

HJ 169-2018

1

	+			
				*

*

A

5km

6.4-3

			470m	20 80	GB3095-2012
			580m	30 120	
			780m	20 80	
			840m	20 80	
			1325m	50 200	
			1550m	20 80	
			1780m	25 100	
			2130m	12 50	
			1740m	3 12	

HJ 169-2018 D

“ 5km

1 500m 500

200m 100 ”

E3

115m

6.4-4

			115m		GB3838-2002

HJ 169-2018 D

F3 S3

E3

HJ 610-2016 A“

” “54 ”

E3

GB12268-2012

GB18218-2009

54t

	Diesel oil		
	C_4H_{100}~$C_{12}H_{26}$		CAS 68334-30-5
	-18	282-338	
		MPa)	
	KPa	KJ/mol 30000—46000	

		1 0.70—0.75		
		75-120	55	
		% V/V 0.6	% V/V 6.5	
		mj	MPa	
		LD50 >5 000mg/kg LC50 >5 000mg/m^3/4h(		
		MAC mg/m^3 TVL-TWA	MAC mg/m^3 TVL-STEL	

GB18218-2018 HJ/T 169-2018

6.4-6 6.4-7

		W5.4 W5.1 W5.2 3	5000t	1.5t	0.0008
					Σpi=0.0008

			2500t	54t	0.0006
					Σ pi=0.0006

6.4-6 6.4-7

GB18218-2018

HJ/T 169-2018 ∑ q_i/Q_i<1

P

HJ 169-2018 C

Q

$$Q= q_l/Q_l+q_2/Q_2+……+q_n/Q_n$$

q_l q_2……q_n—— t

Q_1 Q_2……Q_n—— t

Q 1

Q≥1 Q 1 1≤Q 10 2 10≤Q 100 3 Q≥100

54t 1.5t B 2500t

Q 1 C.1

M M4 P P4

E HJ 169-2018

D E3 E3

E3 E3

2008 8 1 0 45

45 1 492

2011 2 27 6 45

6

2 4 6

10

470m

580m 1

1200m

0.54hm

4m 1.54 m^3

500m

0.5~1.0 $\times 10^{-4}$ / ·

0 20cm

50cm

$20m^2$ $10m^3$

HSE

1

2

3

4

5

6

7

8

9

6.4-8

1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		

1

1

1 3

2

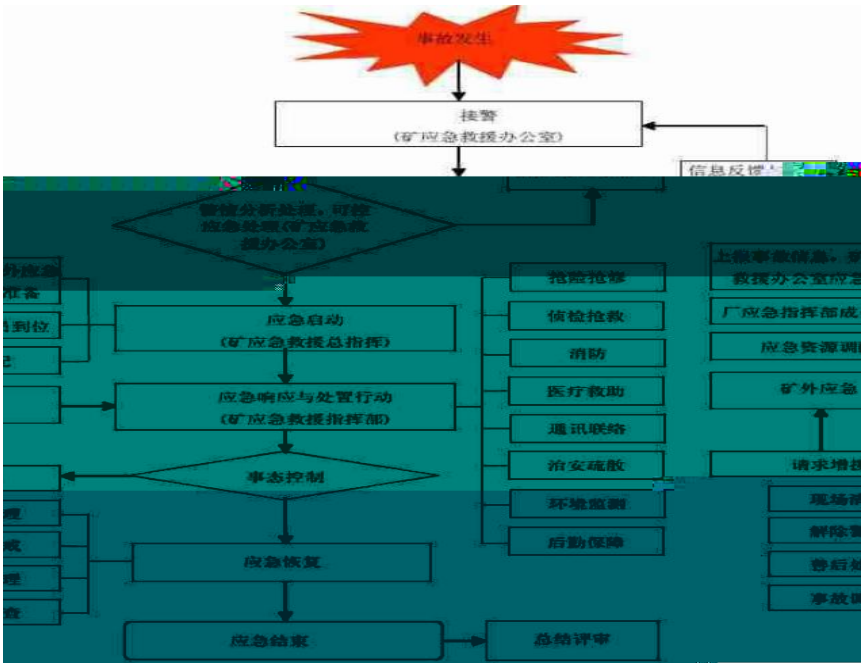
1

2

1

2

6.4-1


事故发生
接警
(矿应急救援办公室)
应急启动
(矿应急救援总指挥)
应急响应与处置行动
(矿应急救援指挥部)
事态控制
应急恢复
应急结束
总结评审
医疗救助
通讯联络
治安疏散
环境监测
后勤保障

52 6.4-9

		50
		2
	/	52

		/t	1.5						
			500m 80			5km 1			
			200m						
					F1	F2		F3	
					S1	S2		S3	
					G1	G2		G3	
					D1	D2		D3	
		Q	Q 1		1 ≤ Q 10	10 ≤ Q 100		Q 100	
		M	M1		M2	M3		M4	
		P	P1		P2	P3		P4	
			E1		E2			E3	
			E1		E2			E3	
			E1		E2			E3	
		+							
					/				

			SLAB	AFTOX	
			-1		_____m
			-2		_____m
		_____		_____h	
		_____d			
		_____		_____d	
“ ” “_____ ”					

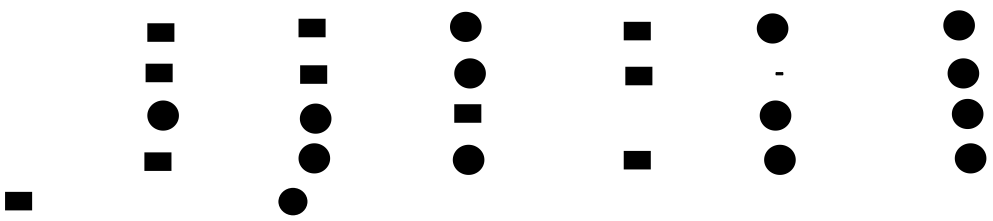
[2018]135

7.1-1

	1			
	2			
	3			
	4			/
	5			/
	6			
	7			

3km

	500 200m	



1

1~2

10m×10m

3m

5m×5m

1m×1m

GPS

2

3

4

5

GPS

6

1

Excel

2

RS GPS GIS

2001.12 “

”

600 1300m

1300 1800m

1800 2300m

2300 2600m

2600 3400m

3400 4400m

1980

1500m —

1500 2000m — 2000 2700m — 2700

3600m — 3600 3900m — 3900 4400m

4400m

1170-1560m

4 7

			1. Form.Itea ilicifolia
			2. Form.Cyclobalanopsis glaucoides
			3. Form.Broussonetia papyrifera
			4. Form.Alnus nepalensis
			5. Form.Carya cathayensis
			6. Form.Quercus variabilis
			7. Form.Tetracentron sinense
			8. Pinus yunnanensis
			9. Form.Keteleeria evelyniana
			10.
			11. Form.Debregeasia longifolia
			12. Form.Litsea rubescens
			13. -
			14. Form.Coriaria nepalensis
			15. Form.Desmodium racemosum
			16. Form.Bauhinia brachycarpa var. microphylla
			17. Form.Pteridium revolutum
			18. Form.Imperata cylindrica
			19. Form.Neyraudia reynaudiana

62

4 12 27 6 15 43 1 3 5 1 3 5

4 6 9

	12	27	62
	1	3	5
	1	3	5
	6	15	43
	4	6	9

1

10cm

2

2m

“ ”

3

13-15cm

Pica pica

;

435 460

4

30 1800

5

1

11.69hm^2

2

3

Ecosystem Productivity

NPP

Miami

Miami

$$Yt = 3000 / \ 1 + e^{1.315 - 0.119t} \qquad Yp = 3000 * \ 1 - e^{-0.000664p}$$

Yt——

t——

Yp——

p——

e——

Miami

Shelford Liebig

	15.6	1535.6	1896.41	1917.82	1896.41	

15.6 Miami

1896.41g/m^2·a 1535.6mm

Miami 1917.82g/m^2·a

4

3

1170-1560m

6~10

1896.41g/m^2·a

1535.6mm

1917.82g/m^2·a

505t/km^2·a

1

2

1

2

36.2 46.5% 27 50.6% 13.9 46.0%
9.1 32.5%

3

3

1

7 10m

0.1%

2

3

4

1

“ - - ”

2

3

——

15~60m 10~50m

5

1

2

A.

$0.05g/(m^2 \cdot d$

B.

C.

1

2

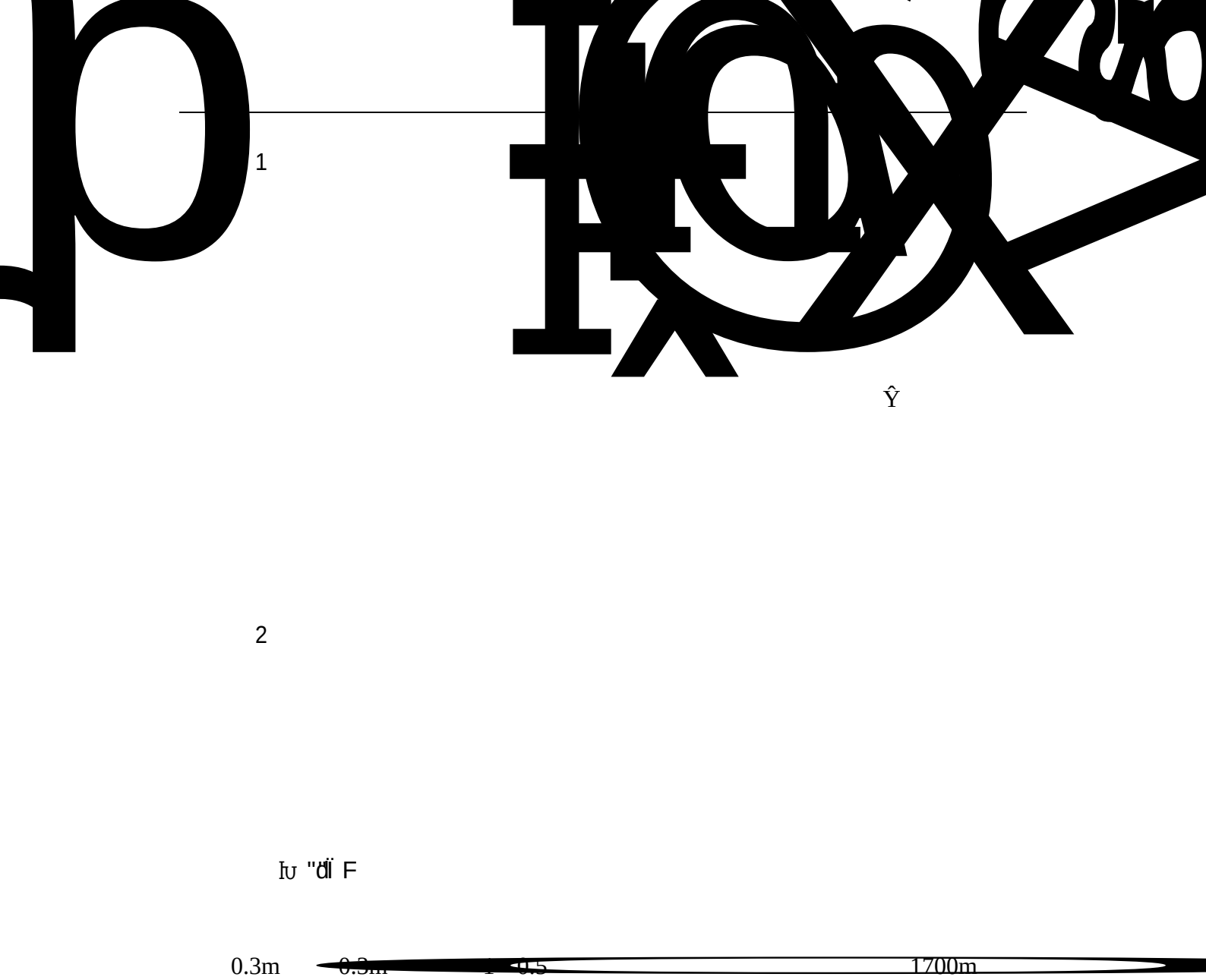
10%

10% 1%

1

2

30-60°



1

Ŷ

2

Ъυ "ďĭ F

0.3m 0.3m 1700m

2600m

M10

0.4m 0.2m 0.2m

1

65 35

1

2

1m

30×30×30cm

2

1

9.28hm^2 1.54 m^3

2

80cm

0.4×0.4×0.4m 3m 111 /hm^2

1:1

80kg/hm^2

3

1

≥ 0.3m 1.21hm^2

2

80cm

0.4×0.4×0.4m 3m 111 /hm^2

1:1

80kg/hm^2

4

1

≥ 0.3m 0.39hm^2

0.39hm^2 0.06 m^3

2

80cm

0.4×0.4×0.4m 3m 111 /hm^2

1:1

80kg/hm^2

5

1

≥ 0.3m 0.54hm^2

0.54hm^2 0.06 m^3

2

80cm

0.4×0.4×0.4m 3m 111 /hm^2

1:1

80kg/hm^2

6

1

≥ 0.3m 0.68hm^2

2

80cm

0.4×0.4×0.4m 3m 111 /hm^2

1:1

80kg/hm^2

1

2

9.28hm^2

3

1.21hm^2

4

0.39hm^2

5

0.54hm^2

6

0.68hm^2

1

1200~1500m

1

“ ”

45m 1.5m

25m 1m

45~120cm

2

“ ”

— —

— —

2~3cm

5 6

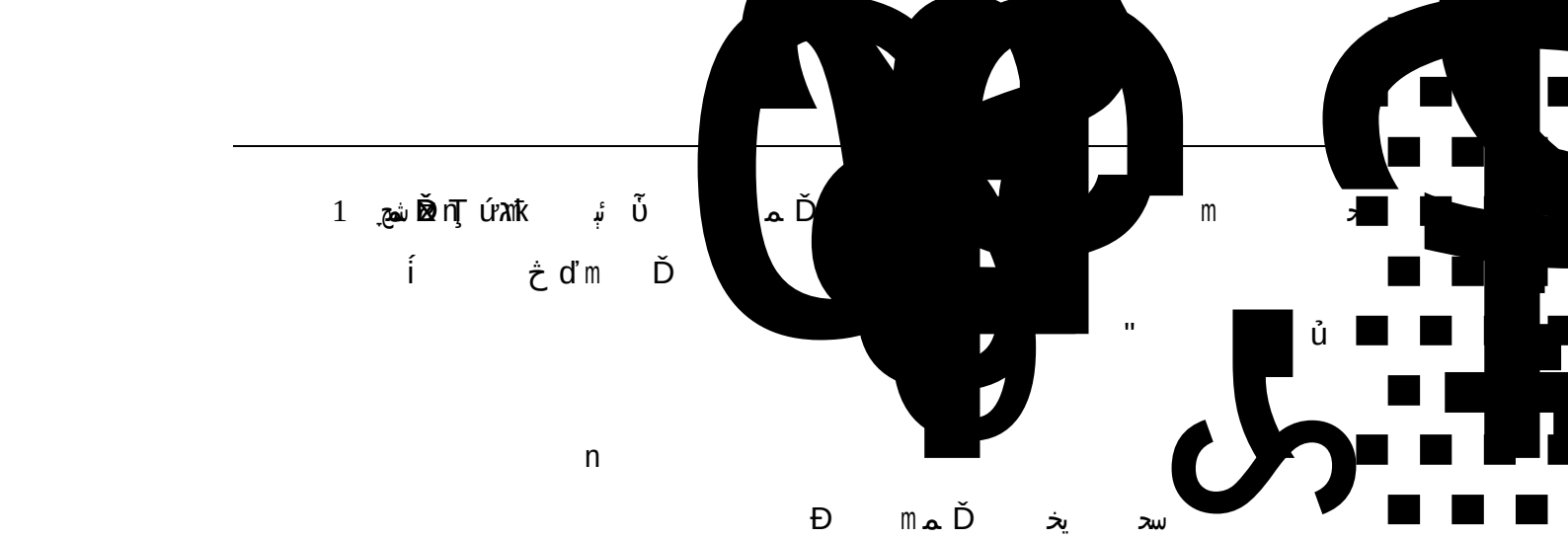
9

2

1000kg/hm^2

“ ”

SO_2 NO_x CO



“ + ”

كا

3

GB16297-1996 1mg/m³

1

20

300 8h 100L

20L/d 80L/d 2.0m³/d 0.85

1.7m³/d 510m³/a 2m³

5m³

150m 30 250

100L/d· 3m³/d 0.8

2.4m³/d 1.7m³/d

4.5m³/d

2

SS

0.3m 0.3m 1 0.5 1700m

130m^3

1

2

SS

10m^3 1

3

100 /d 0.2m^3/ 20m^3/d

0.85 17m^3/d 5100m^3/a SS

1500mg/L

20m^3 1

1

2

SS

SS

50%

1

80-110dB A

GB12348-2008 2

GB3096-2008 2

2

100m

100m

GB3096-2008 2

100m

3

8:00-11:00 3:00-5:00

1

9.28hm^2

15~20cm 1.54 m^3

15~20cm 0.17 m^3 0.06 m^3 0.06 m^3 0.09 m^3 1.92 m^3

0.54hm^2

4m 21600 m^3

2

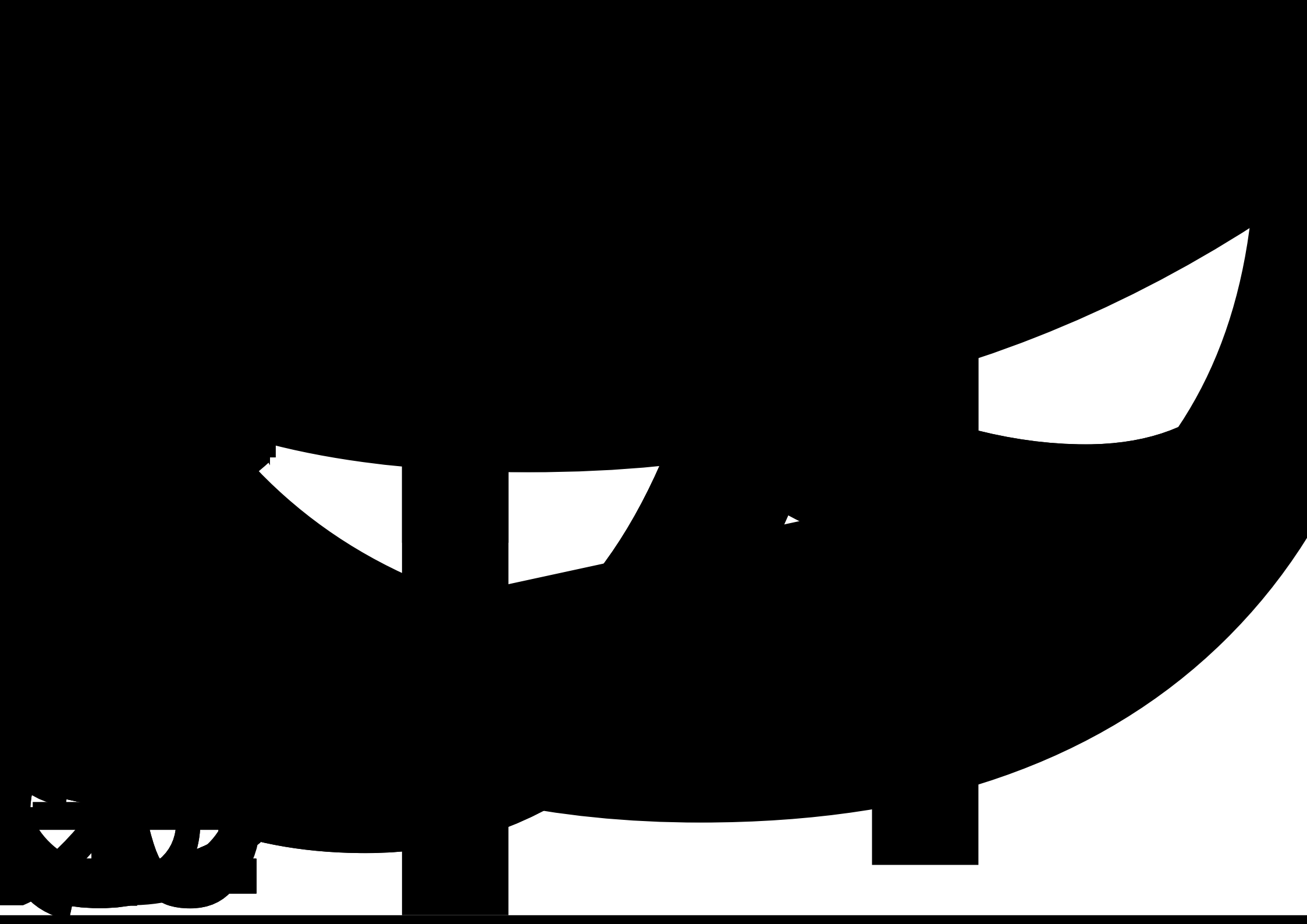
38.01 m^3

3

100t/a

5×5×2m

4



“ ”

1

2 >95%

3

3

“ ”

0.2~0.3m

4

0.3m

10000 145 1.45%

8.4-1

				2.0
				2.0
				5.0
				2.0
				5.0

2011

992.52km^2

41.52% 294.75×104t 2970t/(km^2•a)

1.742mm

49.47% 30.15% 12.23%

8.14%

(SL190-2007)

505t/km^2•a

			°				
		9.28	<25	>90		450	41.76
		1.21	<25	>85		450	5.45
		0.39	<20	>90		450	1.76
		0.54	<10	>50		1000	5.40
		0.68	<10	>50		1000	6.80
		12.1				505	61.16

4.2.1

“

”

29.°73′89.6″

102.°00′36.7″ 12.10hm^2 10.88hm^2

1.22hm^2 9.28hm^2 1.21hm^2

0.39hm^2 0.54hm^2 0.68hm^2

9.3-1

		9.28		9.28	
		1.09	0.12	1.21	1.08hm^2
		0.39		0.39	
		10.76	0.12	10.88	
		0.38	0.16	0.54	
		0.55	0.13	0.68	
		0.93	0.29	1.22	
		11.69	0.41	12.10	

<

> [2014]1723

12.10hm^2

12.10hm^2

	9.28		9.28	

	1.21		1.21	[2014]1723
	0.39		0.39	
		0.54	0.54	
		0.68	0.68	
	10.88	1.22	12.10	

1

2

3

4

5

5 9.3-3

	9.28	
	1.21	
	0.39	
	0.54	
	0.68	
	12.10	

15cm~20cm

1.54 m^3 130m

100cm 80cm

1 0.75 C20 20cm

167m^3 77m^3

0.3m × 0.3m

1 0.5

1700m 425m^3

1.54 m^3

15500 3400 9.28hm^2

M10

0.4m

0.3m 0.3m 0.2m 5‰

2600m 0.17 m^3

6 5m^3

0.8~1.0m^3

0.17 m^3 2020

5160 1.21hm^2

M10

0.4m 0.2m 0.2m

0.06 m^3

2 2m^3 0.8~1.0m^3

0.06 m^3

650 0.39hm^2

1.54 m^3 0.17 m^3

0.06 m^3 0.09 m^3

0.06 m^3 1.92

m^3 4m 1

2 3 0.4m 1.2m 0.6m

0.54hm^2 0.3m×0.3m 1 0.5

0.06 m^3 08m^3 115m^3

0.54hm^2 0.06 m^3 900 0.54hm^2

0.09 m^3 0.09

m^3 0.68hm^2

		0.8×1.0mC20	m	130
			m^3	167
		C20	m^3	77
			m^3	1.54
			hm^2	9.28
				15500
				3400
			m^3	1.54

			m	1700
			m^3	425
		0.3×0.4mM10	m	2600
			m^3	286
		M10	m^3	520
			m	6
			m^3	5
			m^3	0.17
			hm^2	1.21
				2020
				5160
			m^3	0.17
		0.2×0.4mM10	m	230
			m^3	23
		M10	m^3	58
			m	2
			m^3	2
			m^3	0.06
				650
			hm^2	0.39
			m^3	0.06
			m^3	0.06
				900
			hm^2	0.54
			m^3	0.06
			m^3	308
			hm^2	0.54
			m^3	115
			m^3	0.09
			hm^2	0.68
			m^3	0.09

2015 139 2009 187

[2009]187

1

16

2 2000 12

3

2006 16

4 2006 2015 2006 186

5 2015 139

6 GB/T22490-2008

7 SL190-2007

8 GB/T16453.1-16453.6-1996

9 TB/T15774-1995

10 SL342-2006

11

[2009]187

1

2

3

4 6

5

6

1

12.10hm^2

12.10hm^2

1

1		1	
2		1	
3			
4			
		1	
		1	

2

5

1 1#

2 2#

3 3#

4 4#

5 5#

[2018]135

1

2

3

4

5

“ ”

ISO14000

“ ”

“ ”

1

2

3

4

5

6

7

2

1

1 “

”

2

3

4

5

6

7 “

” “ ”

8

9

10

“ ”

1~2

IS014001

1

2

3

9.2-1

1			20m 2	2 /	GB16297-1996
2		A (Leq	4	2 /	GB12348-2008 2

10.2-2

			+ 90% +DE 95%	+ 90% +DE 95%	≤1.0mg/m^3

		2m^3	2m^3	
		20m^3	20m^3	
				≤60dB A ≤50dB A
		HW08	HW08	
		1 2		
	HJ/T394-2007			—

“

145 10000

1.45%

10000 60 t

20 /t 1200 12.2 /t 732

468

1

	120
	588

90

CO_2

(Whittaker

Liken

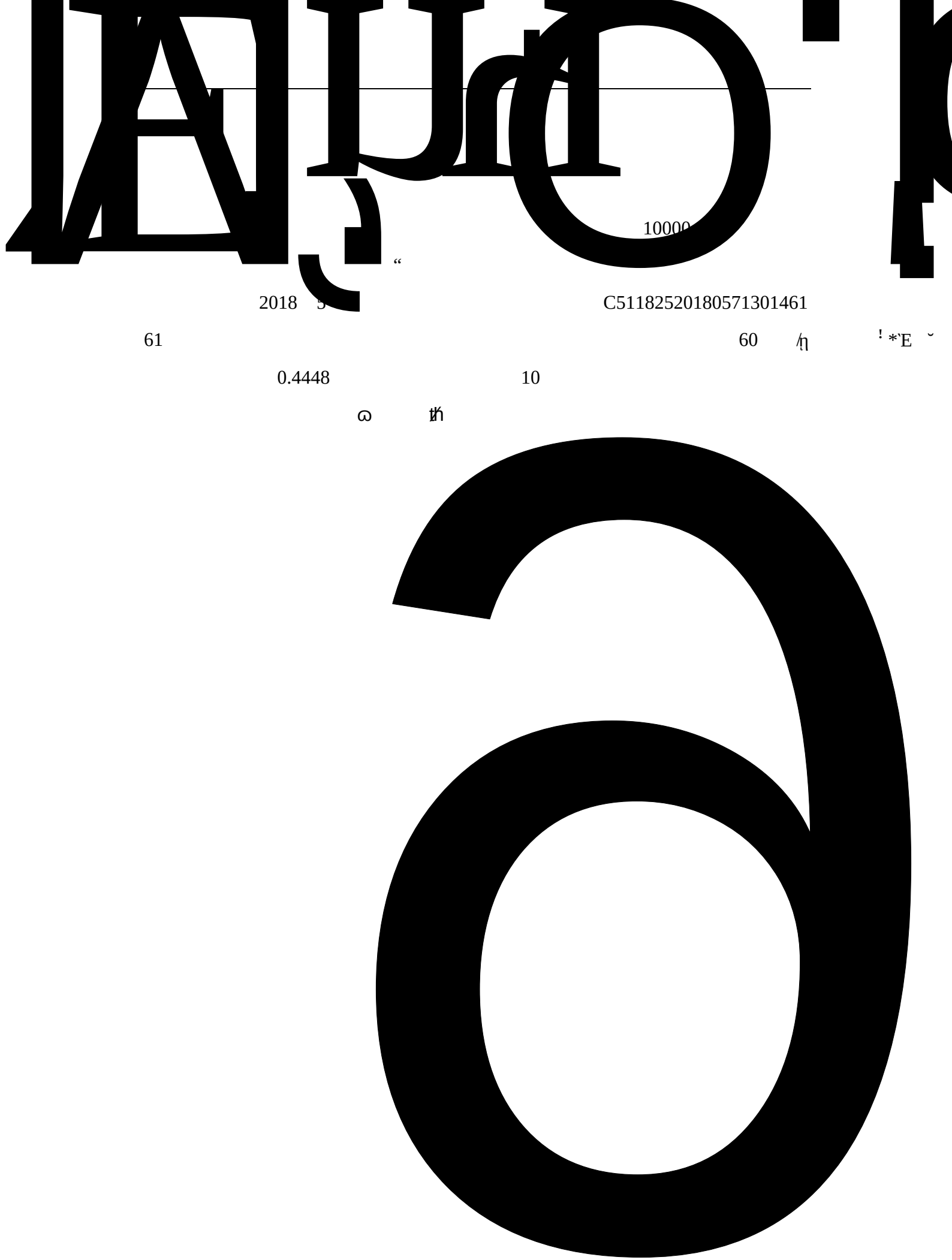
720g/m^2·a

1 60kg

44.48hm^2

720g

=



10000

“

2018 5 C51182520180571301461

61 60 ! *`E ˘

0.4448 10

SO_2 NO_2 TSP PM_{10}

GB3095-2012)

(GB3838-2002)

1 GB/T14848-2017

GB3096-2008 2

1

70%

60%

70%

CO_2 H_2O CO NO NO_2

+

90% +DE 95%

2

3

80-110dB A

GB12348-2008 2

GB3096-2008 2

4

/

95%

“ ”

NO_X

145 1.45%

1

2

3