

四川省环科源科技有限公司

二 一九年九月

1

1.1

" " " "

—

" "

"

"

500t/d

4

1

1842.1 m²/ 14.74 t/a 294.74 /

541.8 m²/ 4.335 t/a 86.69 /

19.0744

2017

" 304

"

" 3042

"

[2019-510311-30-03-376115]FGQB-0158

1

682

"

"

7

1.2

1.2.1

500t/d

4

1

2011

[2019-510311-30-03-376115]FGQB-0158

" "

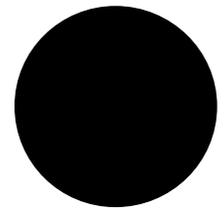
" " "

Low-E

"

" "

E



[2013] 41

” “

50%

”

[2016] 34

”

2020

2017

2013 41

” “

Low-E

500t/d
4 1

20mg/m³ SO₂ 91mg/m³ NOx 150mg/m³
12.02 /

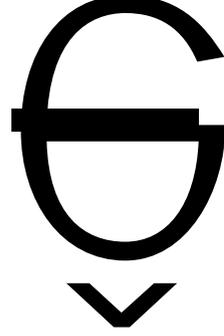
[2019-510311-30-03-376115]FGQB-0158

2011 2015)

2014

2014

1.2.1-1



1. 2 1-2

500t/d

2011

" "

500t/d

"

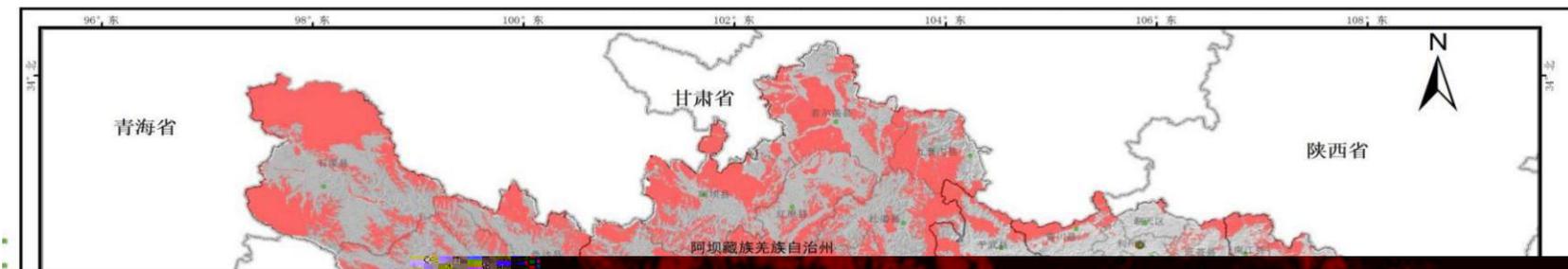
4.			12.02 /	1550kJ/
	GB21340			
		1		
	5000		5000	
5.				
	80%		80%	
6.				
	(GB 15081)			

2018 24 14.80
30.45% “ ” 5
13

2 3 1
1 7 1
1 6 1
3

2018 24

1.2.1-1



1.2 1-1

1.2.2

"

"

" 3.3"

3

1.3

"

"

"

"

1

2

3

4

5

6

1.4

1.4.1

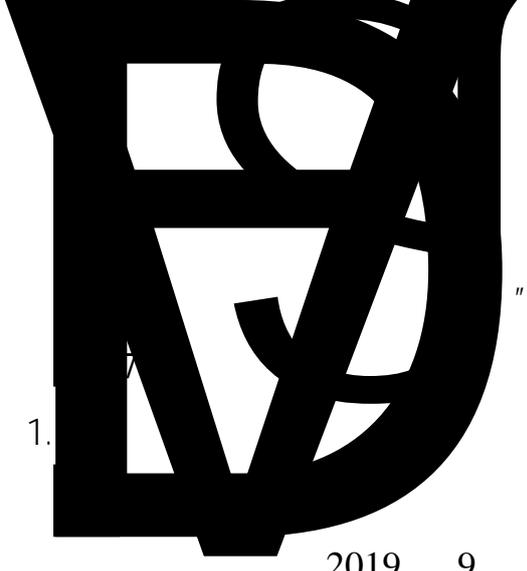
1

2

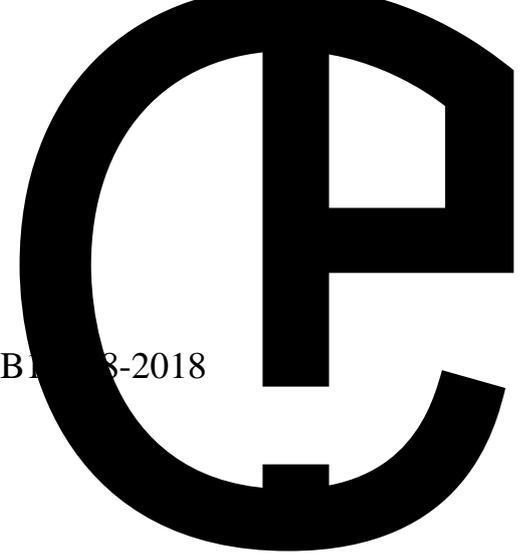
3

4			
5			
6	253		
7		2	
8			
9			
10	591		
1. 4. 2			
1		-	<i>HJ2.1-2016</i>
2		-	<i>HJ2.2-2018</i>
3		-	<i>HJ2.3-2018</i>
4		-	<i>HJ/T2.4-2009</i>
5			<i>HJ169-2018</i>
6		4	
7		[2012]77	
8	[2012]98		
9	[2010]32		
10			
11	[2009]38		
11		-	HJ/T361 2007
12			2014
13			GB26453-2011
14		9	

1.



GBL 13-2018



2019 9

2



[2019-510311-30-03-376115]FGQB-0158

3

4

5

1.5

292

2.9km

40 3.8km

3.3km

7.8km

14km

300m

U

500m~1000m

1.11.2-1

1

2

1. 6

1. 6. 1

pH COD_{Cr} SS BOD₅

K⁺ Na⁺ Ca²⁺ Mg²⁺ CO₃²⁻ HCO₃⁻ pH

SO₂ NO₂ CO O₃ PM₁₀ PM_{2.5}

TVOC

pH 45 8

A

1. 6. 2

COD_{Cr} BOD₅

SO₂ NO₂ PM₁₀ PM_{2.5} TVOC

pH

1. 7

1. 7. 1

1. 7. 1. 1

GB3838-2002

IV

10km

1.7.1-1

1.7.1-1

mg/L

pH

6~9

1

II

	0.2
	0.002
	0.3
	3
	0.5
	0.02
	200
MONh/100ml	3.0
CFUc/100ml	100
CFU/ml	1
	20
	0.05
	1.0
	0.08
	0.001
	0.01
	0.01
	0.005
	0.05
	0.01

1. 7. 1. 2

GB3095-2018

HJ2.2-2018 D

1.7.1-3

1. 7. 1-3

mg/m³

1. 7. 1-3				mg/m ³
SO ₂	0.500	0.150	0.060	GB3095-2012
NO ₂	0.200	0.080	0.040	
PM ₁₀	/	0.150	0.070	
PM _{2.5}	/	0.075	0.035	
O ₃	0.2	0.16 8	/	
CO	10	4	/	
	20	7	/	
HCl	0.05	0.015	/	HJ2.2-2018 D
TVOC	/	0.6 8	/	
NH ₃	0.2	/	/	

1. 7. 1. 3

GB3096-2008 3

1.7.1-4

1.7.1-4

GB3096-2008

	L _{Aeq} (dB)	
3	65	55

1.7.1.5

GB 36600-2018 1

1.7.1-5

1.7.1-5		mg/kg			
1		20	60	120	140
2		20	65	47	172
3		3	5.7	30	78
4		2000	18000	8000	36000
5		400	800	800	2500
6		8	38	33	82
7		150	900	600	2000
8		0.9	2.8	9	36
9		0.3	0.9	5	10
10		12	37	21	120
11	1,1-	3	9	20	100
12	1,2-	0.52	5	6	21
13	1,1-	12	66	40	200
14	-1,2-	66	596	200	2000
15	-1,2-	10	54	31	163
16		94	616	300	2000
17	1,2-	1	5	5	47
18	1,1,1,2-	2.6	10	26	100
19	1,1,2,2-	1.6	6.8	14	50
20		11	53	34	183
21	1,1,1-	701	840	840	840
22	1,1,2-	0.6	2.8	5	15
23		0.7	2.8	7	20
24	1,2,3-	0.05	0.5	0.5	5
25		0.12	0.43	1.2	4.3
26		1	4	10	40
27		68	270	200	1000
28	1,2-	560	560	560	560
29	1,4-	5.6	20	56	200
30		7.2	28	72	280
31		1290	1290	1290	1290
32		1200	1200	1200	1200
33	- + -	163	570	500	570
34	-	222	640	640	640

35		34	76	190	760
36		92	260	211	663
37	2-	250	2256	500	4500
38	[a]	5.5	15	55	151
39	[a]	0.55	1.5	5.5	15
40	[b]	5.5	15	55	151
41	[k]	55	151	550	1500
42		490	1293	4900	12900
43	[a,h]	0.55	1.5	5.5	15
44	[1,2,3-cd]	5.5	15	55	151
45		25	70	255	700

1. 7. 2

1. 7. 2. 1

DB51/2311-2016

1.7.2-1 1.7.2-2

1. 7. 2-1

mg/L

	230	470	298	32	5.42	43.6

1. 7. 2-2

		mg/L	
2	SS	10	DB51/2311-2016
3	COD _{Cr}	40	
4	BOD ₅	10	
6		3	
7		10	
8		0.5	

1. 7. 2. 2

SO₂ NO_x

HCl

GB26453-2011

DB51/2377-2017

1.7.2-3 1.7.2-4

1.7.2-3

mg/m³

		*			
1		50	30	30	
2		1	—	—	
3		400	—	—	
4		30	30	—	
5	F	5	5	—	
6	NO ₂	700	—	—	

* O₂ 8%

8%

$$C = 21.8 \cdot C / 21.0$$

C ——— mg/m³

C ——— mg/m³

O ———

1.7.2-4

mg/m³

1		1.0	TSP 1	HJ/T55
---	--	-----	-------	--------

1.7.2-5

DB51/2377-2017

mg/m³

			mg/m ³	kg/h				
				15m	20m	30m	40m	%
	-	VOCs	80	4.0	8.0	24	42	70%

1.7.2.3

GB12523-

2011 1.7.2-5

1.7.2-5

(GB12523-2011)

dB(A)

	70		55

GB12348-2008 3

1.7.2-6

1.7.2-6

(GB12348-2008)

	L _{Aeq} (dB)	
3	65	55

1.8

1.8.1

48m³/d

DB51/2311-2016

368m³/d

HJ2.3-2018

1.8.1-1

		Q/ m ³ /d	
		W/	
		Q 20000	W 600000
A		Q 200	W 6000
B		-	

1

A

2

3

4

5

6

7
/d

500 m³/d

500 m³

8

A

9

HJ/T2.2-2018

B

a

b

1.8.2

HJ610-2016

IV

IV

1.8.3

HJ2.2-2018

ARESCREEN

Pmax

D_{10%}

SO₂ NO₂

PM₁₀ HCl

VOCs

Pi

1.8.3-1

1.8.3-2

1.8.3-3

1.8.3-1

	Pmax 10%
	1% Pmax 10%
	Pmax 1%

1.8.3-2

/	/	39
	/	41.3
	/	-1.4

	/ m	90
	/ km	/
	/ °	/

PM₁₀

83.54%

-

HJ2.2-2018

1.8.3-3

	()	(m)	SO ₂ D10(m)	NO ₂ D10(m)	PM ₁₀ D10(m)	PM _{2.5} D10(m)	NO _x D10(m)	HCl D10(m)	HF D10(m)	NH ₃ D10(m)	VOC D10(m)
1	60	105	1.81 0	6.12 0	0.40 0	0.40 0	5.44 0	1.96 0	0.00 0	0.11 0	/
2	280	189	/	/	0.73 0	0.73 0	0.00 0	/	/	/	/
3	50	31	/	/	0.54 0	0.54 0	0.00 0	/	/	/	/
4	50	31	/	/	0.33 0	0.33 0	0.00 0	/	/	/	/
5	280	189	/	/	0.66 0	0.66 0	0.00 0	/	/	/	/
6	50	30	/	/	0.31 0	0.31 0	0.00 0	/	/	/	/
7	280	189	/	/	/	/	/	/	/	/	8.65 0
8	-	25	50	/	/	83.54 200	83.54 200	/	/	/	/
9	280	189	/	/	0.06 0	0.06 0	/	/	/	/	/
10	280	189	/	/	0.06 0	0.06 0	/	/	/	/	/
11	280	189	/	/	0.11 0	0.11 0	/	/	/	/	/
12	50	28	/	/	0.02 0	0.02 0	/	/	/	/	/
13	50	28	/	/	0.02 0	0.02 0	/	/	/	/	/
14	50	30	/	/	0.04 0	0.04 0	/	/	/	/	/
15	50	28	/	/	0.01 0	0.01 0	/	/	/	/	/
16	50	28	/	/	0.01 0	0.01 0	/	/	/	/	/
17	50	27	/	/	0.01 0	0.01 0	/	/	/	/	/
18	50	29	/	/	0.18 0	1.82 0	/	/	/	/	/
19	50	29	/	/	0.20 0	0.20 0	/	/	/	/	/
	--	--	1.81	6.12	83.54	83.54	5.44	1.96	0	0.11	8.65

1.8.4

GB3096-2008

3

3dB(A)

-

HJ/2.4-2009

1.8.5

19.47

I

II

III

IV

—

HJ964-2018

A

A

I

II

III

IV

A

II

1.8.5-1

A

" "

0.05km

1.8.6-3

1.8.5

1.8.5-1

1.8.5-1

E	P			
	P1	P2	P3	P4
E1	IV+	IV	III	III
E2	IV	III	III	II
E3	III	III	II	I

IV+

Q

HJ 169-2018

B

Q

Q

Q

$$Q = q_1/Q_1 + q_2/Q_2 + \dots + q_n/Q_n$$

$q_1 \quad q_2 \quad \dots \quad q_n$ — t
 $Q_1 \quad Q_2 \quad \dots \quad Q_n$ — t
 $Q \quad I$
 $Q \quad 1 \quad Q \quad 1 \quad 1 \quad Q \quad 10 \quad 2 \quad 10 \quad Q \quad 100 \quad 3 \quad Q \quad 100$
 NG

1.8.5-2

1.8.5-2

	(t)	(t)	q/Q
1	5	10	0.5
2	2500	880	0.352
3	50	0.5	0.01

Q 1 I
 E
 C c.1 M=5
 M4
 E
 D.1 5km
 5 E E1
 D.2 D.3 D.4 E E3
 D.5 D.6 D.7 E E3
 HJ 169-2018

1.8.5-3

1.8.5-3

IV IV+	III	II	I

1.8.6

275.31 2km²

/
- HJ 19-2011

1. 9
1. 9. 1

1. 9. 2
1

200m

2

1.9.2-1

1. 9. 2-1

	500m 5km
	2.5km
	200m
	0.05km
	3km

1. 10

" "

1. 11
1. 11. 1
1

2

3

4

5

6

1. 11. 2

2

1-17

1. 11. 2. 1

200m

1. 11. 2. 2

500m

5km

200m

3km

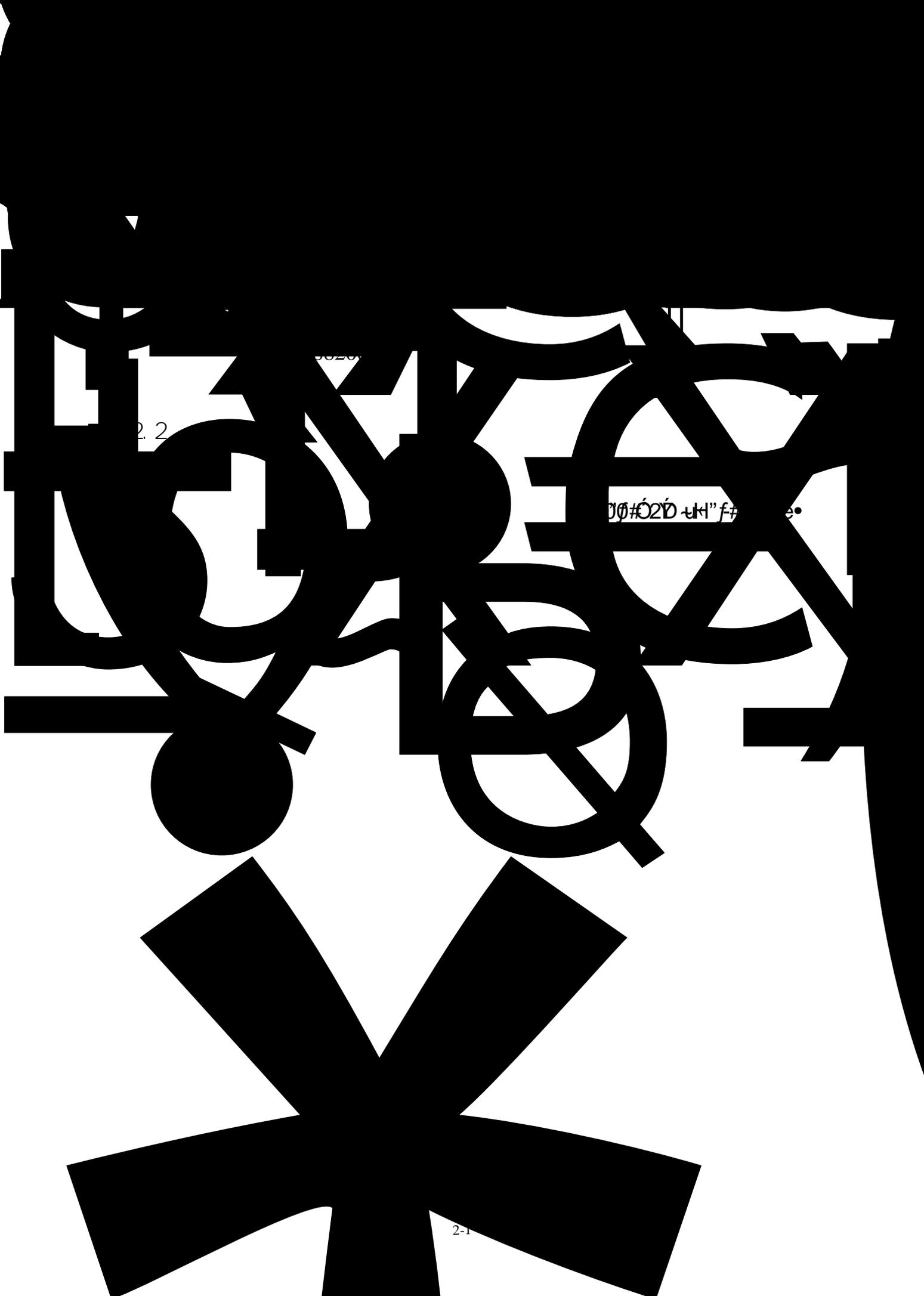
1.11.2-1

1. 11. 2-1

3km

		N	2.8km	39.28
		SE	8km	31
		SE	3.8km	2.1
		SW	4km	3
		NE	2.6km	400
		NE	2.5km	130
		NE	1.7km	300
		NE	2.4km	600
		E	2.2km	130
		SE	2.1km	400
		SE	1.8km	300
		SE	2.4km	200
		SE	3.3km	250
		SE	1.7km	400
		SW	1.5km	400
		S	1.6km	300
		SE	2.4km	600
		SW	1.8km	300
		NW	1.6km	600
		SW	1.1km	150
		W	1.8km	300
		N	80m	50
		N	75m	50
		SW	280m	10
		SW	370m	30
		W	350m	40
		NE	500m	130
		N	740m	100
		NW	1.2km	100
		E	550m	40
		E	600m	90
		E	1.2km	200
		/	/	/
	/	/	/	200m
		N	300	/

		E	2.4km	
		/		
	50m	/	50m	GB36600-2018 1 GB15618-2018



2.2

0020

00#020 uH" f# e•

2-1

3				4.3344	4.3344		541.8 m ² / 86.69 /
				34.5844	19.0744		381.43
	500t/d 4.5625 t/a			85%		95%	=50kg

2.2.2

1

1

GB/T30984.1-2015

JC/T 2001-2009

JC/T2170-2013

2.2.2-1~ 2.2.2-3

2.2.2-1

	/						
	/						
/	/						
	/						
	/						
	/						
	/						
	/mm	L 0.5	0.5 L 1.0	1.0 L 2.0	L 2.0		
	/		5.0× S	3.0× S	0		
	/mm	0.5 L 1.0 W 0.5	1 L 3 W 0.5	L 3	W 0.5		
	/		3.0× S		0		
	/mm	L 5 W 0.2		L 5	W 0.2		
	/		1.0× S		0		
	/mm	0.3 L 1.0			L 1		
	/		2.0× S		0		
				5mm			
			1mm				1/4

2.2.2-2

aa

	500	0 -1
	500 1000	0 -1.5
	1000 2000	0 -2.0
	2000	0 -2.5

2. 2. 2- 3

4.0	± 0.2
4.0	± 0.2
5.0	± 0.3
6.0	± 0.4
8.0	± 0.5
10.0	± 0.6
12.0	± 0.6

0.1%

0.2%

300mm

0.5mm

3mm

91.5%

0.015%

2

" 2.4.1

"

2. 2. 3

500t/d

500t/d

125t/d× 4

4

1

2.2.3-1

2.2.3-1

500t/d
8a
85%
4
1

2683m³/d
/ /
12460.19
kW.h
1804.95 kW.h/ /
10655.23 kW.h/
3214.49 ×
10⁴m³/a //

		44.95 kW·h		/	/
		1 4 ~50m ³ /min 0.75Mpa			
		2 t			
		2 1000m ³ 1 100m ³			
		20m ³ 20%			

2.2.4

87601

25843

61758

25843

2.3

183550m²

275.31

583.4m

316.2m

NG

NG

300~350m

4

500

440

60

8760

24

24

2.4

1

2 500t/d

3

"

"

500t/d

125t/d× 4

3 36m

2 36m

2.4.1

2011 2013 " "

2.4.2-4

1

85% 500t/d 83%

100kg 100kg

1200

2. 4. 3

36

1#~4#

AR

1 36

5#

4

500t/d

AR

AR

620~640

36m

PS

PS

PS

PS

PS

620~640

36m

2.5

2.5.1

2683m³/d

DB51/2311-2016

"

"

12460.19 kW·h

1760 kW·h/

44.95

kW·h/

10655.23 kW·h

35kV/10KV

2.5.2

21600m³/d

4000m³/d

1

800m³/d

2

1 500m³ 32m

22

2.5.3

3214.49 ×

10⁴Nm³

2.5.4

2000m³/d

2.5.5

166m³/min

50m³/min

0.75Mpa

16.7~50.4m³/min

0.75Mpa

2.5.7

1

1

N=6MW

P=2.32MPa

t=415

500t/d

"

"

180

425

2.5.8

2 1000m³

1 100m³

500t/d

85t/d

2.5.9

7000m²

0.75MWp

44.95 kW.h

25

55%

10KV

2.5.10

20%

10m³

2.5.11

0.4~0.8MPa

0.2MPa

2.6.2

2.6.3

1

SiO_2

7

2.65

1-20

1.6

20-200

1.5

KOH

1750

2

$CaMg(CO_3)_2$

CaO

30.4% MgO 21.7%

2.86 3.2mg/m³

3

$CaCO_3$

2.93g/cm³

825

CaO

Ca(OH)₂

4

Na₂CO₃

2.532g/cm³

851

1mol/L (15%)

3.5 35 2.2

pH11.6 25 2.53 851

30

116.6mg/kg

2132K

5

1.5 2 1.48

6

Al(OH)₃

Al(OH)₃

2.40 300

7

306.8

2.257 /

20

8

Sb_2O_3

Sb_2O_5

5.6

2.8

2.8-1

2.8-1

1			5	
2			4	
3			4	
4			2	
5			7	
6			1	
1			1	
2			1	
3			1	
4			8	
5			4	
6			4	
7			4	
8			4	
9			4	
10			6	
11			22	
12			16	
1			8	
2			8	
3			8	
4			8	
5			8	
6		36m)	4	
7			4	
8			2	
9			4	
10			4	
11			4	
1			2	
2			2	
3			2	
4			2	
5			2	
6			2	
7		36m)	1	
8			1	
9			1	
10			1	
11			1	
1			1	
2			1	

2.9

2.9.1

RO

85~95dB

a ㊦

2.9.2-1

" "

		198m ³ /d	48m ³ /d COD 350mg/L NH ₃ -N 30mg/L	
		48m ³ /d COD 400mg/L NH ₃ -N 35mg/L	198m ³ /d	
		91550Nm ³ /h SO ₂ 451.1mg/m ³ 41.3kg/h NO _x 1500mg/m ³ 137.23kg/h 171.8mg/m ³ 15.73kg/h HCl 15.4mg/m ³ 1.41kg/h 5.78mg/m ³ 0.53kg/h	91550Nm ³ /h SO ₂ 91mg/m ³ 8.33kg/h NO _x 150mg/m ³ 13.72kg/h 20mg/m ³ 1.82kg/h 4mg/m ³ 0.371kg/h HCl 10.8mg/m ³ 0.99kg/h	
		45100Nm ³ /h 2000~5000mg/m ³ 199.3kg/h	45100Nm ³ /h 20mg/m ³ 0.9kg/h	/
		10000Nm ³ /h 1000mg/m ³ 10kg/h	10000Nm ³ /h 20mg/m ³ 0.2kg/h	/
		5000Nm ³ /h 800mg/m ³ 4kg/h	5000Nm ³ /h 20mg/m ³ 0.1kg/h	/
		3000Nm ³ /h 800mg/m ³ 2.4kg/h	3000Nm ³ /h 20mg/m ³ 0.06kg/h	/
		9000Nm ³ /h 800mg/m ³ 7.2kg/h	9000Nm ³ /h 20mg/m ³ 0.18kg/h	/
		2700Nm ³ /h 800mg/m ³ 2.16kg/h	2700Nm ³ /h 20mg/m ³ 0.054kg/h	/
		20000Nm ³ /h 3.14mg/m ³ 62.8kg/h	20000Nm ³ /h 0.314mg/m ³ 6.28g/h	/
		39693	32131t/a 4562t/a	/
		424.66		/
		0.05		/
		0.05		/
		1		/
		2.2		/

		0.4		/
		25		/
		9		/
		6000/		/
		0.4		/
		775		/
/		0.5		/
		0.5		/
		183		/

2. 10

2. 10. 1

183540m² 275.31 583.4m
316.2m

2. 10. 2

183540m² 275.31
583.4m 316.2m

NG

NG

300~350m

2.11

2.11.1

4

1

1

1

GB/T30984.1-2015

JC/T 2001-2009

JC/T2170-2013

2.11.2

DCS Distributed Control

Systems

DCS

"

"

2.11.3

2.11.3.1

1

2

3

4

5

6

2.11.3.2

1

2

3

"

"

"

"

4

1

2

3

4

1

2

3

96.7%

01 1530

1 S@

2

3

4

(GB/T17167-2006

2.11.4

2017

" 304

" " 3042 o "

2.11.5 " "

1 SO₂ NO_x "
+ " 70m

2

3

4

5

2.11.6

3%

GB50011-2001 7 53

6

3.3

17.5

18.0 1150 1200

320 330

17.8 18.2

5 8 5

996.9 1101mm

48mm 5% 170mm 16%

240mm 23% 580mm 56%

17.8 18.2

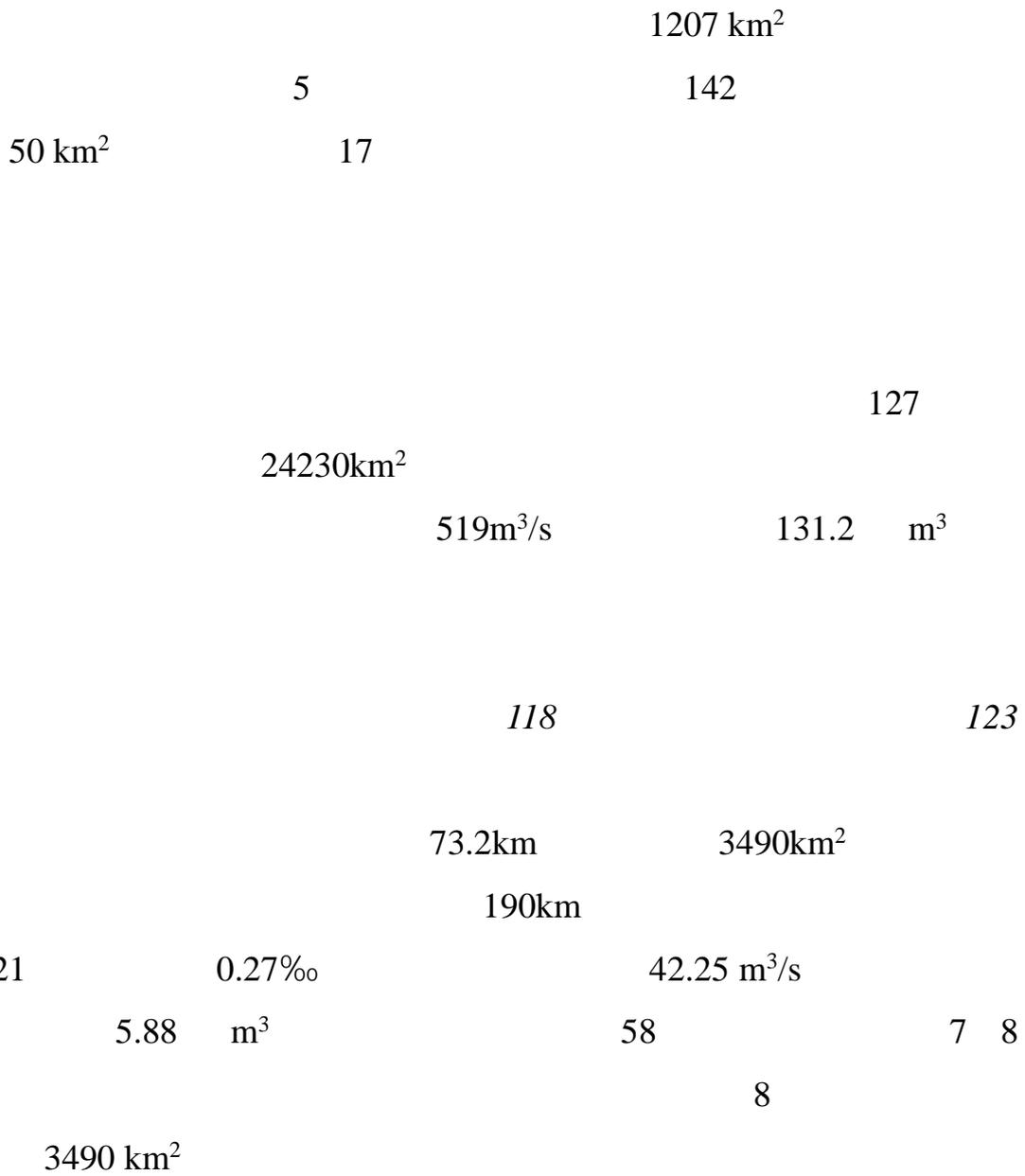
27.1 28.9

7.3 7.5

39.7

3.4

1



2

50

14.79 m³

2.11 m³

558m³ 868 m³

19.6

23.5

3.3

6.4 m³

120.36

P=75%

0.47

P=95%

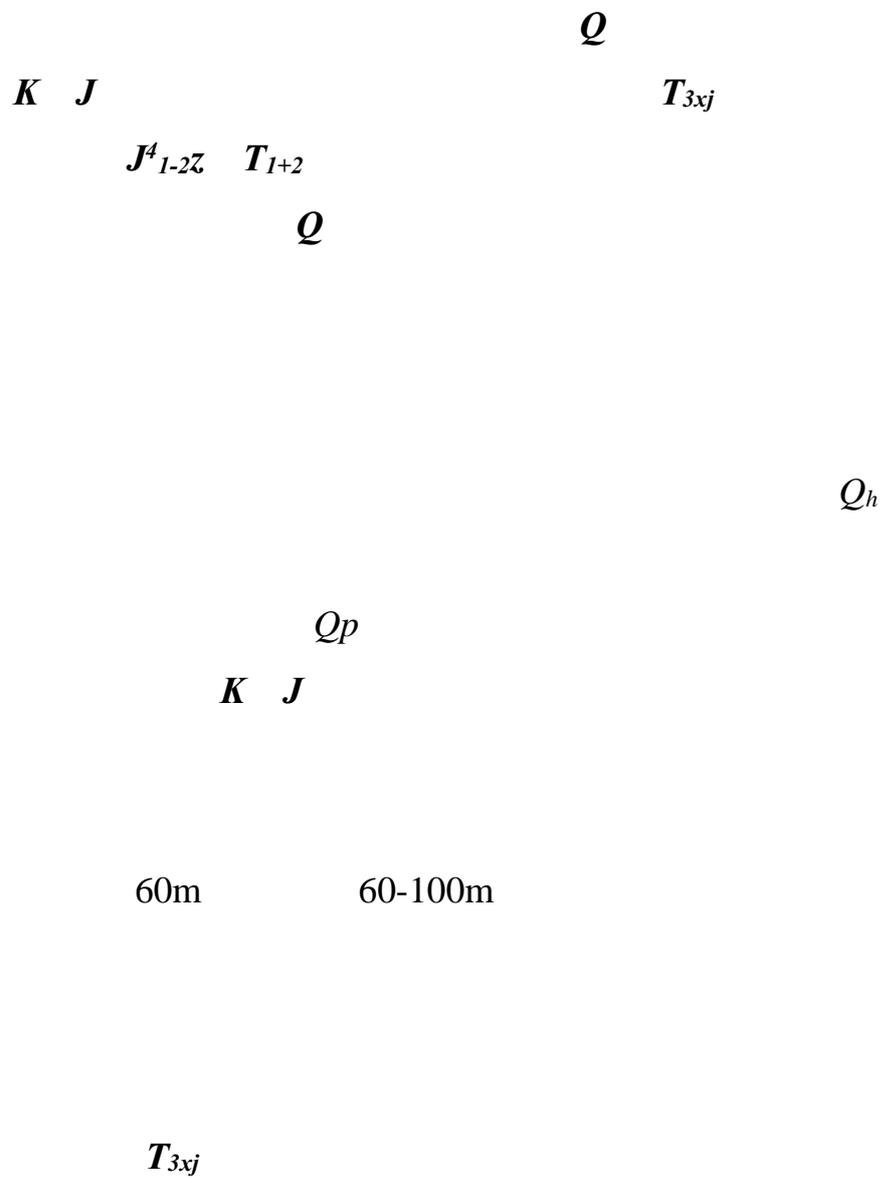
2.36

14.51

5.863

3.5

-



$$T_3^{2 \ 4 \ 6} x_j$$

$$J^A_{1-2z} \ T_{1+2}$$

$$T_1^{sj} \ T_1^{3j}$$

$$T_2^{1-2j} \ T_2^{3j}$$

$$T_1^{4j} \ T_2^{1-1j} \ T_2^2$$

7

3.6

5

9

25

70

34.5%

50.08%

13.73%

0.8%

0.71%

3.7

	1239.82		216.58		
					719.198
		174.638			
		201.88km2		55.98	
		5535 m3			
			100	3	35.7
8300		85			
					1
	113.73 m ³				96.66
m ³		17.67 m ³			336
m3					
	15		16-17 m3		
					20 m3/d
					—
		4163.53			1948.09
	1316.00		899.44		
				2.4	
	J1-2Z1 T3× 6 T3× 4				B+C+D
24.8		1150			
					10

3.8

3.8.1

S305

16.67

16.67km²

800.11

48.0%

48.55%

1

3.24km²

2

3.61km²

3

4.06m²

S305

3.8.2

2017~2030

2017~2020

2021~2030

2020

200

2030

300

3.8.3

3. 8. 4

3.3.4-1

3. 3. 4-1

	1.	2016-2020
	2.	
	3.	
	4.	20%
PM _{2.5} PM ₁₀	1.	2017~2030 2018-2020
	2.	2020
	3.	VOCs
	4.	VOCs
2km		500m
		100m
		VOCs

3. 8. 5

2017-2030

1

2

3

4

5

6

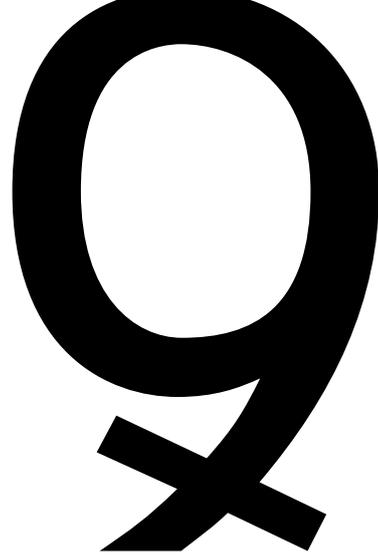
7

8

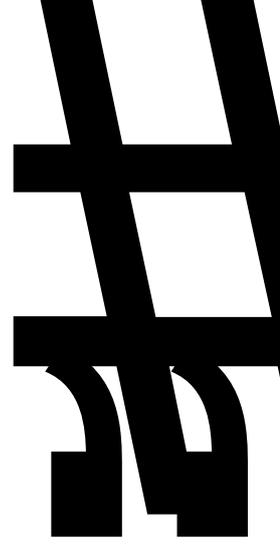
	2011	2013
2015		" "

"
"
+ "
70m "

4 (



2017-2030



4.1

4.1.1

3

BOD₅

COD_{Cr}

COD_{Mn}

COD_{Cr}

>

>

4.1.2

2017-2030

GB3838-2002

4.2

1

16.9km

2018

2018

PM₁₀ PM_{2.5}

GB3095-2012

O₃ PM₁₀ PM_{2.5}

O₃ PM₁₀

PM_{2.5}

"

"

"

"

5

5.1

24

5.1.1

80~95dB

100dB

150m

1

2

GB12523-90

5.1.2

CO

NO_x

5.1.3

pH

COD_{Cr} BOD₅

SS

200 /

16m³/d

5.1.4

5.1.5

5.1.6

5.2

5.2.1

DB51/2311-2016 "

"

61

3.0

$\times 10^4 \text{m}^3/\text{d}$

$1.0 \times 10^4 \text{m}^3/\text{d}$

2018 57

" A²/O+ +

"

DB51/2311-2016

"

"

5.2.2

50m³/d

DB51/2311-2016 "

"

48m³/d

DB51/2311-2016 "

"

+ +

+

" 2.9.2"

COD200mg/L

15mg/L SS500mg/L

+ +

"

"

5.2.1-2		mg/L	
	mg/L	mg/L	
COD _{cr} mg/L	400	40	
BOD ₅ mg/L	150	10	
SS mg/L	300	10	
NH ₃ -N mg/L	30	3	
TP mg/L	4	0.5	
TN mg/L	40	15	

1.0

× 10⁴m³/d

2019

246m³/d

48m³/d

198m³/d

2.46%

1

2

3

COD NH₃-N

5.2.3

500m³

5. 2. 4

1600m³

5. 3

5. 3. 1

496.55

256.4

30-90

350

3-6

4kg/cm²

20-30 70
15—24% 0—15% 25%

J2s
170° 4°

T3xj

95%

0.5 5l/s

0.11/s

T3xj

5. 3. 2

5.3.3

GB50021-2001 2009

205.00~230.90

378.7~379.3

5.3.4

COD NH₃-N

COD NH₃-N

300m

5. 3. 5

5. 4

5. 4. 1

5. 4. 1. 1

				56399
				104.9833
29.1833		306.2		1959 1959

11km

1998-2017

5. 4. 1. 2

				2 05		1.39 /
12		0.95 /				

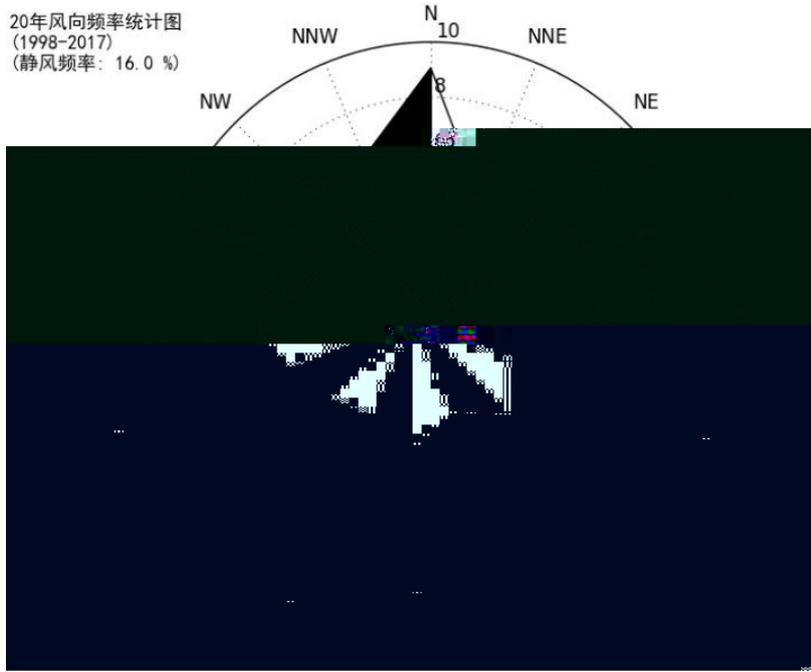
20

1

N	C	NW	NE	39.3		N
---	---	----	----	------	--	---

9.1

20年风向频率统计图
(1998-2017)
(静风频率: 16.0 %)



5. 4. 1-1

16. 0%

20

2006

1.40 / 2010

1.00

/ 6-7

5. 4. 1. 4

07

27.74

01

7.79

20

2006-08-12

41.3

20

2011-01-21 -1.4

20

2013

19.50

2010

17.80

5. 4. 1. 5

06

188.52

12

15.64

20

2012-08-31

157.2

	20		1998
	1470.70	2011	587.50
	4		
5.4.2			
		-	HJ2.2-2018 3
			AERMOD ADMS
CALPUFF			
			11km
	1998~2017		
	16.0%		35%
2018	0.5m/s		72h
	3km		
		CALPUFF	
		AERMOD	
AERMOD			
	AERMIC	AERMET	AERMOD
	AERMAP		AERMET
		AERMOD	
		AERMAP	
	AERMET	AERMAP	AERMOD
	AERMOD		
	-		HJ2.2-2018

5. 4. 3

5. 4. 3. 1

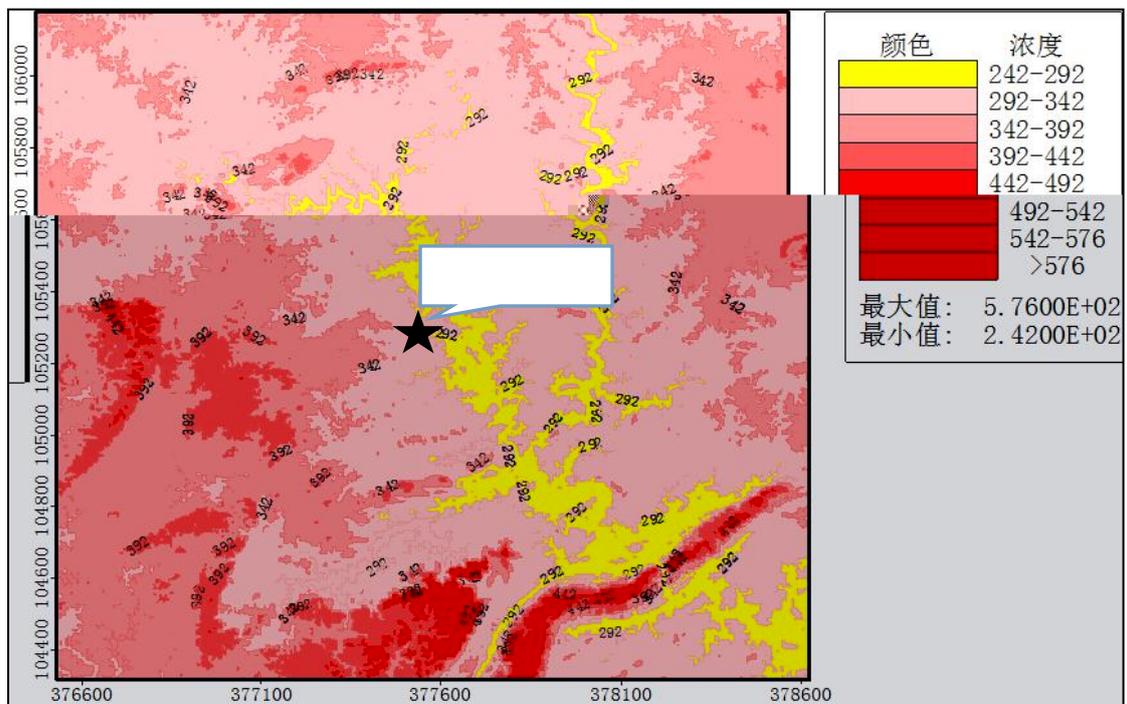
11km
 56399
 104.9833 29.1833 306.2m
 WRF
 189×159
 27km×27km -
 USGS
 NCEP

5. 4. 3. 2

SRTM Shuttle Radar Topography Mission

90m

<http://srtm.csi.cgiar.org>



5. 4. 3-1

5. 4. 3. 3

5. 4. 4

5. 4. 4. 1

2.5km*2.5km

4.6km

6km

6km

6km

6km

(

5.4.4-1)

10%

1-5km

100m 5km

250m

10%

5. 4. 4. 2

70m

20m

GEP

GEP

=H+1.5L

H

m

L

BH

PBW

m

GEP

60m

70m

5. 4. 4. 3

SO₂

NO₂ PM_{2.5}

SO₂ NO₂ PM_{2.5}

5. 4. 4. 4

2018

SO₂

	PM ₁₀	22	-30	303	30	0.45	24	9000	0.18	8760
	PM ₁₀	-148	14	303	30	0.24	24	2700	0.054	8760
	PM ₁₀	-98	110	303	30	0.45	24	10000	0.146t/a	730
	PM ₁₀	-108	126	303	30	0.45	24	10000	0.146t/a	730
	PM ₁₀	-103	126	303	30	0.5	24	12000	0.263t/a	1095
	PM ₁₀	-98	124	303	30	0.2	24	1500	0.022t/a	730
	PM ₁₀	-98	126	303	30	0.2	24	1500	0.022t/a	730
	PM ₁₀	-103	120	303	30	0.25	24	3000	0.0657t/a	1095
	PM ₁₀	-99	126	303	30	0.15	24	1000	0.0146t/a	730
	PM ₁₀	-99	119	303	30	0.15	24	1000	0.0146t/a	730
	PM ₁₀	-99	120	303	30	0.12	24	600	0.0088	730
	PM ₁₀	-99	115	303	30	0.2	24	2000	0.029t/a	730
	PM ₁₀	-99	118	303	30	0.25	24	2500	0.274t/a	1861

5-3.2

			X	Y	m		m	kg/h	
			-81	87	303	0	6	0.91	8760

5-4

		X	Y	m	m	m		Nm ³ /h	kg/h	mg/Nm ³
	NO _x								91.55	1000
	SO ₂	0	0	473	70	1.5	95	91550	16.66	182
	PM ₁₀								3.64	40

5.4.7

3000

5. 4. 7-1. 1

	8m	SO ₂	0.023
2044m ³ /h	100	NO _x	0.28

5. 4. 7-1. 2

	15m	VOCs	0.065
14000m ³ /h	24		
	15m	SO ₂	0.045
1261.2m ³ /h	100	NO _x	0.44
	65m 15m 8m	VOCs	0.0016

5. 4. 7-1. 3

	15m	VOCs	0.41
9000m ³ /h	35		
	16m 15m 15m	VOCs	0.114

5. 4. 7-1. 4

	15m	SO ₂	0.8
100000m ³ /h	100	NO _x	3.74

5. 4. 7-1. 5 30

	15m	SO ₂	0.72
140000m ³ /h	100	NO _x	3.37

5. 4. 2

2019 1
4.6km

2009 10

17 20 3500 2009

4

	m ³ /h					
	36000		mg/m ³	kg/h		
			300	10.8		

5. 4. 4

100%

30%

5. 4. 7. 2

PM₁₀

PM_{2.5} O₃

SO₂ NO₂

PM₁₀ PM_{2.5}

K

$$C_{\text{叠加}(x,y,t)} = C_{\text{本项目}(x,y,t)} - C_{\text{区域削减}(x,y,t)} + C_{\text{拟在建}(x,y,t)} + C_{\text{现状}(x,y,t)}$$

$$C_{x,y,t} \text{ --- } t \quad x,y \quad \mu\text{g}/\text{m}^3$$

$$C_{x,y,t} \text{ --- } t \quad x,y$$

$$\mu\text{g}/\text{m}^3$$

$$C_{x,y,t} \text{ --- } t \quad x,y \quad \mu\text{g}/\text{m}^3$$

$$C_{x,y,t} \text{ --- } t \quad x,y$$

$$\mu\text{g}/\text{m}^3$$

7.4.7.3

1 ;

p p m m

m

$$m=1+ n-1 \times p$$

p— HJ663

24h %

n-1

2017

m— p m

2

HCl HF VOCs

2019 8 7

1

5.4.7.3

PM10 PM2.5

K

K

$$K = \frac{\bar{C}_{\text{本项目(a)}} - \bar{C}_{\text{区域削减(a)}}}{\bar{C}_{\text{区域削减(a)}}}$$

K ——

%

$\bar{C}_{\text{本项目(a)}}$ ——

$\mu\text{g}/\text{m}^3$

$\bar{C}_{\text{区域削减(a)}}$ ——

$\mu\text{g}/\text{m}^3$

1

10%

1-5km

100m 5km

250m

5. 4. 11

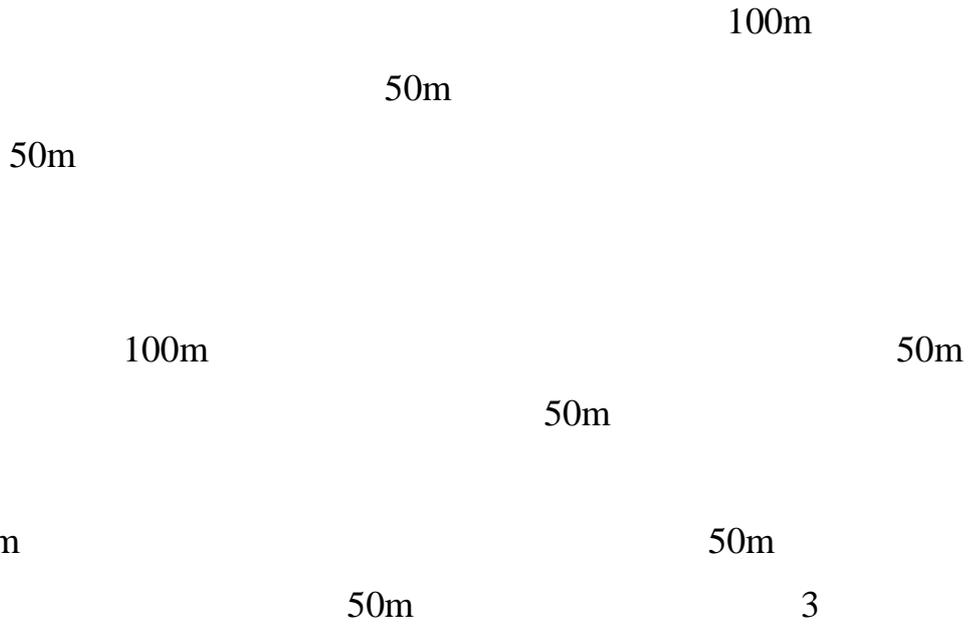
2018

-

HJ2.2-2018
AERMOD

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

C_m — mg/m^3
 Q_c — kg/h
 L — m
 r — m
 A B C D — 5-15



5. 4. 6

5. 5

5. 6

5. 6. 1

70~100dB(A)

5.6.1-1

5. 6. 1-1

					dB A		dB A
1				2	88		73
2				2	70~80		65
3				4	70~80		65
4				2	70~80		65
5				3	90~93		78
6				5	85~95		80
7				8	80~85		70
8				2	85~90		75
9				11	80~85		70
10				2	96		81
11				2	80~85		70
12				3	85~95		80
13				1	80		65
14				2	80~85		70
15				10	80~85		70
16				10	80~85		70
17				6	90~100		85
18				2	80~85		70

19				6	80~85		70
----	--	--	--	---	-------	--	----

5.6.2

1

$$L = 10 \lg \left(\prod_{i=1}^n 10^{0.1 L_i} \right)$$

$$L \text{ --- } \text{dB()}$$

$$L_i \text{ --- } i \text{ --- } \text{dB()}$$

$$n \text{ --- }$$

2

$$L_{A(r)} - L_{A(r_o)} = 20 \lg(r / r_o)$$

$$L(r) \text{ --- } r \text{ --- } \text{dB()}$$

$$L(ro) \text{ --- } ro \text{ --- } \text{dB()}$$

$$r \text{ --- } ro \text{ --- } m$$

5.6.3

5.7

5.7-1

5. 7- 1

		t/a					
		37412		/			32131t/a 2281t/a
		424.66		/			
		0.05		HW17	/		
		0.05			/		
		1			/		
		2.2			HW12	/	
		0.4			HW08	/	
		25		/			
		9		/			
		6000t/ 8 /					
		0.4		/	Ni		
		775		/	CaSO ₄ 84%		
/		0.5		/	/		
		182.5		/	/		
		0.5		HW08	/		
		~38833 6000t/					

5. 8

5. 8. 1

" "

5.8.1.2

5.8.1-3

5.8.1-4

5.8.1-3

	/	√	√
	√	√	√
	-	-	-

5.8.1-4

	/		a		b
			SS	/	
			SO ₂ NO _x HCl HF NH ₃	HCl HF NH ₃	
			PM ₁₀	/	
			PM ₁₀	/	
			PM ₁₀	/	
			VOC	VOC	
			SS	/	

a

b

5.8.2.3

2

”

5m

6.6-1

HJ 964 2018 “

4.09km²

5.8.2

5.8.2.1

5

9

25

70

33.5%

42.6%

23.9%

50.1%

34.6%

0.9%

13.7%

0.7%

<http://www.soilinfo.cn/MAP/index.aspx>

5.8.2.3

Z

5. 8. 4

1

1

SO₂

SO₂

SO₂

2

3

5. 8. 5

5. 8. 5. 1

5. 8. 5. 2

5. 8. 6

5. 8

6

6.1

6.1.1

6.1.1-1

6.1.1-1

E	P			
	P1	P2	P3	P4
E1	IV+	IV	III	III
E2	IV	III	III	II
E3	III	III	II	I

IV+

Q

HJ 169-2018

B

Q

B

10t

5t

2500t

500t

50t

0.5t

Q

Q

$$Q = q_1/Q_1 + q_2/Q_2 + \dots + q_n/Q_n$$

$q_1 \quad q_2 \quad \dots \quad q_n$ — t
 $Q_1 \quad Q_2 \quad \dots \quad Q_n$ — t
 $Q \quad 1 \quad \dots \quad I$
 $Q \quad 1 \quad \dots \quad Q \quad 1 \quad 1 \quad Q \quad 10 \quad 2 \quad 10 \quad Q \quad 100 \quad 3 \quad Q \quad 100$

6.1.1-2

6.1.1-2

		(t)	(t)	q/Q
1		10	5	0.5
2		2500	880	0.352
3		50	0.5	0.01

Q 1

I

E

C c.1

M=5 D

M4

E

D.1 5km

5 E E1

H q

0.5

5

3km

2

6.1.3

GBZ2-2002 MSDS-

CO

6-3

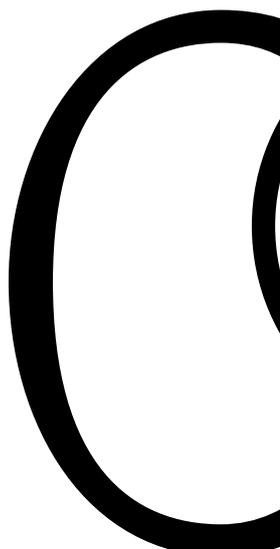
6-3

1	CO	2069mg/m ³	LC ₅₀ 4h
2		1390 mg/m ³	LC ₅₀ 4h

6.1.4

I

C



3

=1 0.91

1.59kPa 20

16% 25% V/V

25% 28%

(wt)20%

35

30mg/m³

6.2

6.2.1

6-4~6-6

6-4

--	--	--	--	--

		5~15%	-188					42% 60min
		-165.1						
		10 22						
			170					
	390		0.82~0.845kg/l					
		=1 0.91	1.59kPa					30mg/m ³
		20	16% 25%					
		V/V						
		25% 28%						

6.2.2

6-7

6-7

					Mpa	/m ³	/	/t	
						1000	2 1 1	500	
						10	1	5	
		NG				1	/	0.5	

6-7

GB50160-2008

6.2.3

6.2.3-1

6.2.3-1

1		.		
2		.		
3		.		
4		.		
5		.		

6-9

6.2.3-2

				/Mpa	/t	
				0.4-0.5	0.5	
				/	5	
				/	500	

6.2.4

6.2.5

3km

6.2.5-1

6-11

6.2.5-1

N	2.8km	39.28
SE	8km	31
SE	3.8km	2.1
SW	4km	

	S	1.6km	300
	SE	2.4km	600
	SW	1.8km	300
	NW	1.6km	600
	SW	1.1km	150
	W	1.8km	300
	N	80m	50
	N	75m	50
	SW	280m	10
	SW	370m	30
	W	350m	40
	NE	500m	130
	N	740m	100
	NW	1.2km	100
	E	550m	40
	E	600m	90
	E	1.2km	200

6. 2. 6

2010 1 7 17 25

303 316

17

1 8

6

6

1

2011 8 29 10

875

29 13 20

" "

6.2.7

/

6.3

6.3.1

8a

880t

6. 4

6. 4. 1

"

"

"

"

"

"

6. 4. 1. 1

6.4.1-1

6. 4. 1-1					
1					30
2					

6. 4. 1. 2

DCS

6. 4. 1. 3

1

2

3

30min

4

5

6

6. 4. 1. 4

6. 4. 1. 5

①

2001

25 L/s

2h

216m³

GBJ16-1987

30 L/s

②

0m³

V = 10qF

q = 30

mm q=157.2mm

F =

ha

q = 157.2mm

85000m² F = 0.85ha

V=1336.2m³

6.4.1-2

6. 4. 1-2

V_1	m^3	1000
V_2	$V_2 \quad Q \quad t \quad m^3$	216
V_3	m^3	1000
V_4	m^3	0
V_5	$V_5 = 10qF$ $q = 30$ $F =$ mm ha	1336.2
V	$V \quad V_1 \quad V_2 \quad V_3 \quad \max \quad V_4+V_5 \quad m^3$	1552.2

6. 4. 1. 7

1
0.3MPa

40

0.1

2

3

4

“ ”

9

3
6. 4. 1. 10

CO₂

6. 4. 1-3

6.4.1-3

1

20

2

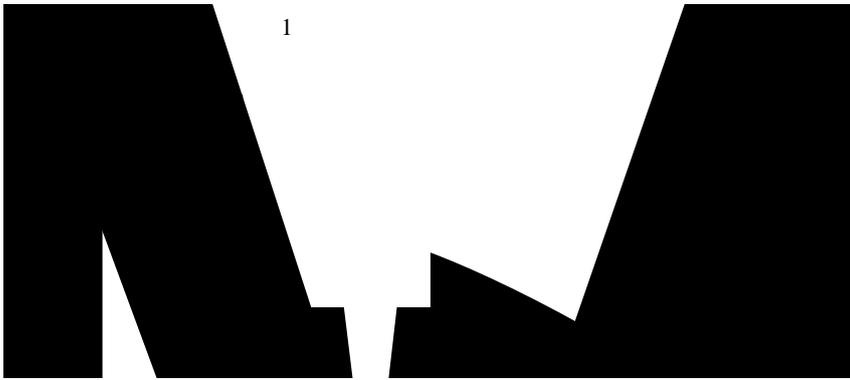
/

3

5

4

5



1

5

1 í

0

6. 5. 2

1

"

" "

"

2

" "

4

5

" " " "

1

6.5.2-2
6.5.2-2

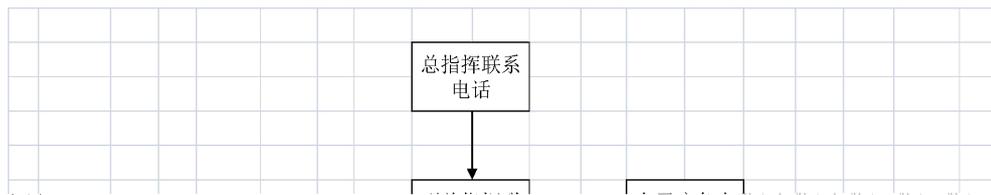
1

m "

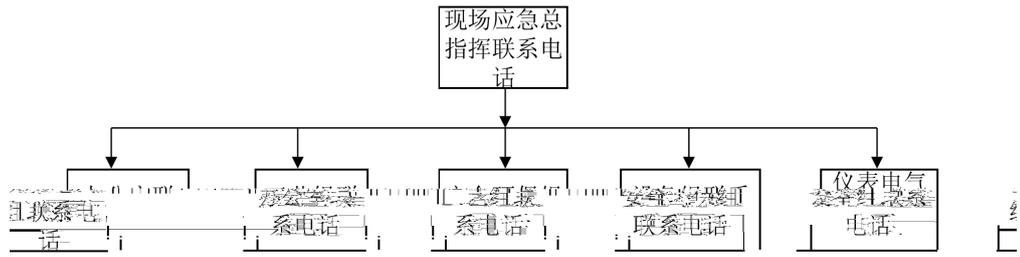
5				
6				
7				
8				
9				
10				

6.5.3

6.5.2-1 6.5.2-2



6.5.2-1



6.5.2-2

6. 5. 4

6.5.4-1

6. 5. 6

6.5.6-1

6.5.6-1

		E	NH ₃ CO	1 /
		S		
		W		
		N		
		N		
		S		
		500m 1500m	COD _{Cr} pH	1 /2
		/	COD _{Mn} pH	1 /2

6.5.7

6. 8. 8

6. 5. 9

6. 6

" "

7.2

7.2.1

G₋₁
G₋₁ G₋₁₁ 500t/d
G₋₂ G₋₅
G₋₁
G₋₁ G₋₂

7.2.2

HCl NH₃ SO₂ NO_x
VOCs
1 500t/d G
-1
" + "
70m
2 G₋₁ G₋₁₁ 500t/d
G₋₂ G₋₅
G_{III-1} G₋₁ 30m
3 G_{IV-2}

7.2.2.1

1300 1400

SO₂ NO_x HCl
NH₃ ~3mg/m³
+

1

—

2

Ca/S~2.5:1

3

PLC

DCS

SO_x

250

8-6

SCR

8-7

7.7.2-5

	25% H ₂ CO		

-

NO_x NH₃

N₂ H₂O

85% NO_x 150mg/m³

GB26453-2011

NO_x 700mg/m³

NH₃ 3mg/m³

99.9%
250~375°C

2~3

70%

900°C

20mg/m³

NO_x SO₂

HF HCl

HCl

30%

HCl

7.2.2.3

1	99.9%		
2		1min m ³	1min
3			

m³

4

5

P84

200

6

20mg/m³

GB26453-2011

99.9%

7.2.2.5

HJ2026-2013

90%

0.314mg/m³

7.2.3

7.2.3.1

NO_x SO₂

HCl

“ +

”

SO₂~91mg/m³ NO_x~150mg/m³

~20mg/m³

~4.05mg/m³ HCl~10.91mg/m³ NH₃~3mg/m³

70m

7.2.3.3

20mg/m³

GB26453-2011

30m

7.2.3.4

7.2.3.5

1

2

3

4

5

6

100m

50m

7.3

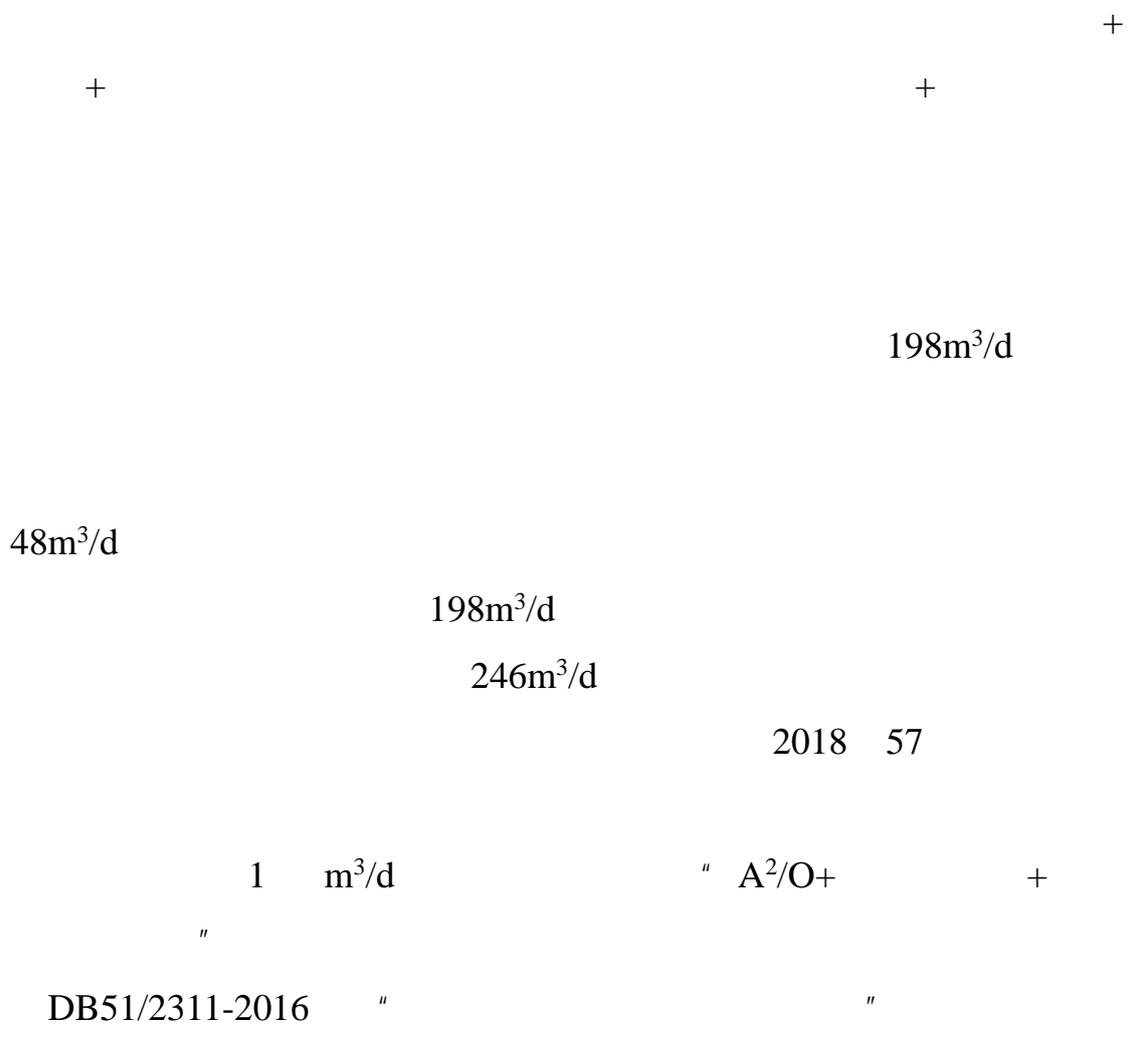
7.3.1

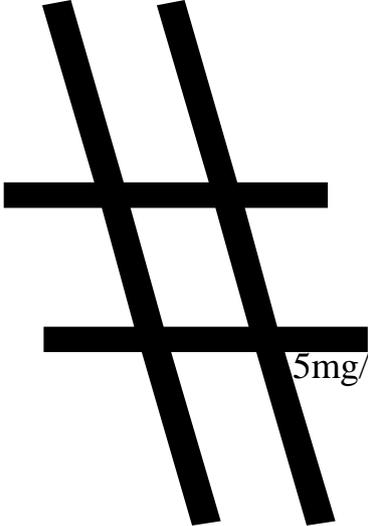
7.3.1-1

7.3.1-1

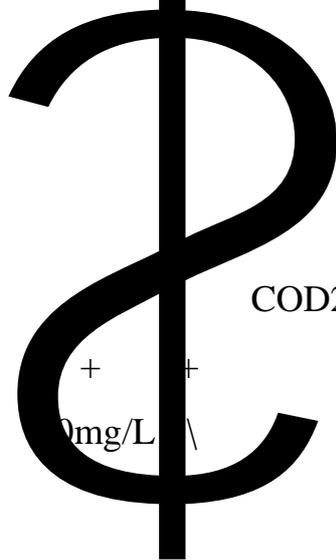
		m ³ /d		m ³ /d	
		700m ³ /d		700m ³ /d COD200mg/L 15mg/L SS500mg/L	+ +
		1000m ³ /d		1000m ³ /d COD 100mg/L 15mg/L SS200mg/L	+
		400m ³ /d		400m ³ /d COD 80mg/L 10mg/L SS100mg/L	+
		:60m ³ /d COD:400mg/L NH ₃ -N:35mg/L		:48m ³ /d COD:350mg/L :30mg/L	
		198m ³ /d			

7.3.2



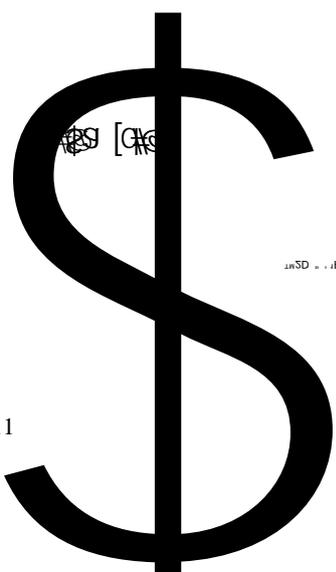
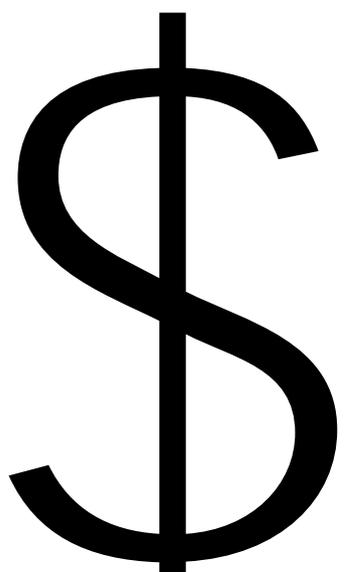


" 2.9.2"
5mg/L SS500mg/L
COD 50mg/L



COD200mg/L

+ +
0mg/L \



ES [C]

unSD - ..b 1 \

4

5

6

7

8

15cm

5‰

(GB18599-2001) II

30mm

P6

10-7cm/s

(GB18598-2001)

+2mmHDPE

30mm P8

10-10cm/s

7.3.4

1600m³

7.3.5

7.4

7.4.1

5

7.5.1-1

7.5.1-1

					dB A		dB A
1				2	88		73
2				2	70~80		65
3				4	70~80		65
4				2	70~80		65
5				3	90~93		78
6				5	85~95		80
7				8	80~85		70
8				2	85~90		75
9				11	80~85		70
10				2	96		81
11				2	80~85		70
12				3	85~95		80
13				1	80		65
14				2	80~85		70
15				10	80~85		70
16				10	80~85		70
17				6	90~100		85
18				2	80~85		70
19				6	80~85		70

7.5.2

7.6

"

"

-

10 /

6000t/

9t/a

-

2 3

2 /

0.8t/

7.7

7.7-1

7.7-1

" "

30 180

500t/d

70m

" " + 2390

30 590

30 50

30

6

100m

50m añ · 0: ci +x f

+ +

+

80

50

				50
	1			
		2	3	
		1600m ³		90
		4		
			SO ₂ NO _x	60
				3546

" "

3546

3.96%

8

8.1

8.2

5

		1842.1	m ² /	14.74	t/a
294.74	/	1083.6	m ² /	8.67	t/a
173.38	/		500t/d		

87601

8-1

8-1

1			87601	
1		/	15.51	
2		/	14.74	
3		/	8.67	
1			183550	
2			149580	
3		%	21.14	
4		%	15.54	
5		/	128	

1			73901.32	
2			57051.79	
3			4259.24	
4			12604.67	
5			3151.17	
6			9453.50	
7		%	19.61	
8		%	14.97	
9		%	35.71	
10			5.83	
11		%	62.71	

73901.32

3151.17

12604.67

8.3

" "

8. 4

8. 4. 1

87601

3546

4.05%

8. 4. 2

2700

8. 4. 3

9

9.1

9.2

5~7

3~5

9.3

9.3.1

" "

9.3.2

1

2

3

4

5

6

7

9.4

HJ988-2018

1

1

2

3

1

2

3

1

COD_{Cr}

pH SS

BOD₅

2

pH

3

2

1

SO₂ NO_x

2

1

SO₂ NO_x

2

3

4

A

4

1

COD_{Mn}

5

e

6

pH
pH
pH
8
45

9-1
9-1

SS CODCr
BOD5

pH

COD

1

pH ê

1 e

€

		3	pH		
			pH	pH	
				8	
				pH	
			45		

9.4

10

10.1

500t/d

15.51 /

4.5625 /

1842.1 m²/

541.8 m²/

19.0744 /

381.43

“ ”

10.2

1

2

3

4

5

SO₂ NO_x