1 1
1.1 1
1.2 2
1.3 3
1.4 4
1.5 4
2 5
2.1 5
2.2 9
2.3 10
2.4 12
2.5 17
2.6 23
2.7 23
3 26
3.1 26
3.2 30
3.3 36
3.4 37
3.5 58
3.6 63
4 64
4.1 64
4.2 64
4.3 70
4.4 70
4.5 72

4.6 75
4.7 77
4.8 78
4.9 78
5 79
5.1 79
5.2 87
5.3 98
5.4 100
5.5 126
6 128
6.1 128
6.2 132
7 135
7.1 135
7.2 138
7.3 141
7.4 148
7.5 149
7.6 154
8 155
8.1 155
8.2 157
9 184
9.1 184
9.2 191
9.3 193
9.4 200
9.5 208

1

2

3

4

1

2

3

4

5

6

7

1

2

3

4

5

1

1.1

60%

“ ”

2016 12

1#

9# 10000t/a

14000t/a 1 1

3531.52m^2

15000t/a 20400t/a 6000

6000

2015 1

2016 9

682

2021 “81

398 ”

1.2

103 77134.7m^2 63#

67# 63# 67# 63-1# 64#

66#

69# 70# 1 1

10000t/a

360t/a

2021 2 25

[2021]14 2

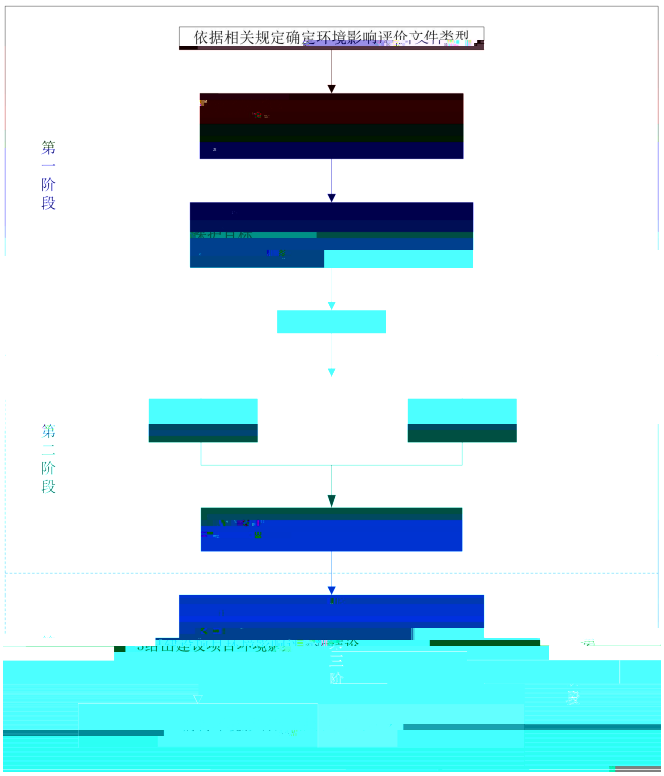
“

”

1.3

2021 8

2021 8 4



2

2.1

2.1.1

1 2015 1 1

2 2018 12 29

3 2018 10 26

4 2018 1 1

5 2016 7 2

6 2018 12 29

7 2020 9 1

8 2019 1 1

9 2011 3 1

10 2017 2017 682

11 2021

12 2021

13 2019 2020 1 1

14 2012 7 3

15 2005 11 28

16 2005 11 28

17 [2013]37 2013 9 10

18 [2015]17

2015 4 2

19

[2013]77

4 2016-2020

[2015]53

5 2017 6 1

6 DB43/023-2005

7

[2016]176

8

[2006]23

9

[2014]22

10

2018 10 29

11 <

2018-2020 > [2018]17 2018 6 18

12 < >

([2017]4 2017 1 23)

13 “ ” 2016 25

14

15

16 2013 4 1

17 2017 1 1

18 < > 2020 7

1

19 < >

[2013]7 2013 1 22

20 “ ”

[2020]12 2020 6 30

21 < “ ”

> 2020 11 10

2.1.3

1 HJ2.1-2016

2 HJ2.3-2018

3 HJ610-2016

4 HJ2.2-2018

5 HJ2.4-2009

6 HJ 19-2011

7 HJ964-2018

8 HJ169-2018

9 [2001]199

10 HJ2000-2010

11 GB18218-2018

12 2017

43

13 HJ819-2017

14 HJ942-2018

15 HJ1035-2019

2.1.4

1

2

[2017]54

3 ( ) ( )

4

8000 23000 [2019]42

5

[2020]32

6 ( )

7 2020 4

8

9

[2013]296

10

2.2

2.2.1

1

2

3

2.2.2

1

2

3

2.3-1

2.3.2

2.3-2

2.4

12	1,1-	3	9
13	1,2-	0.52	5
14	1,1-	12	66
15	-1,2-	66	596
16	-1,2-	10	54
17		94	616
18	1,2-	1	5
19	1,1,1,2-	2.6	10
20	1,1,2,2-	1.6	5.8
21		11	53
22	1,1,1-	701	840
23	1,1,2-	0.6	2.8
24		0.7	2.8
25	1,2,3-	0.05	0.5
26		0.12	0.43
27		1	4
28		68	270
29	1,2-	560	560
30	1,4-	5.6	20
31		7.2	28
32		1290	1290
33		1200	1200
34	+	163	570
35		222	640
36		34	76
37		92	260
38	2-	250	2256
39	[a]	5.5	15
40	[a]	0.55	1.5
41	[b]	5.5	15
42	[k]	55	151
43		490	1293
44	(a,h)	0.55	1.5
45	(1,2,3		

4-8

GB 73-2015 1

GB/T31962-2 1

GB8978-1996 4

2.4-8 **mg/L**

	pH	SS	COD	BOD_5	NH_3-N	
	6~9	100	200	/	40	6
	2	0.5	1	1	400	500

B8901 -1011

P_i 10% $D_{10\%}$ P_i

$$P_i=C_i/C_{oi}\times100\%$$

P_i—— i %

C_i—— i mg/m^3

C_{oi}—— i mg/m^3

2.5-1

	Pmax≥10%
	1%≤Pmax<10%
	Pmax<1%

A AERSCREEN

2.5-2

		$\mu g/m^3$	%	m
G66-1		0.2757	0.09	382
	VOCs	0.068925	0.01	
G66-2		0.005508	0.002	79
		0.002203	0.000044	
	VOCs	0.165243	0.01	
G66-3		0.21946	0.07	79
G63-1		4.1254	2.06	379
		0.72692	0.08	
G63-2		0.290768	0.32	398
		0.145384	0.48	
G63-3		0.012026	0.000040	453
G67-1		2.7922	1.4	357

G67-2		0.16363	0.08	325
G67-3		0.63987	0.07	333
		0.255948	0.28	
		0.127974	0.43	
G67-4		0.006122	0.000020	305
G63-1-1		4.1824	2.09	375
G63-1-2		0.87919	0.1	343
		0.351676	0.39	
		0.175838	0.59	
G63-1-3		0.012842	0.000043	365
G64-1		5.319	2.66	304
G64-2		0.51376	0.06	507
		0.205504	023	
		0.102752	0.34	
G64-3		0.005282	0.000018	25
63#		0.76068	0.38	46
		1.2678	0.14	
		0.50712	0.56	
		0.25356	0.85	
		0.025356	0.01	
67#		0.81738	0.41	49
		1.3623	0.15	
		0.54492	0.61	
		0.27246	0.91	
		0.207246	0.01	
63-1#		0.7296	0.36	49
		1.216	0.14	
		0.4864	0.54	
		0.2432	0.81	
		0.02432	0.01	
64#		0.67638	0.34	49
		1.1273	0.13	
		0.45092	0.5	
		0.22546	0.75	
		0.022546	0.01	
66#		0.088999	0.04	75
	VOCs	0.0445	0.000037	
		0.02225	0.04	

2

HJ2.2-2018

5km

2.5.2

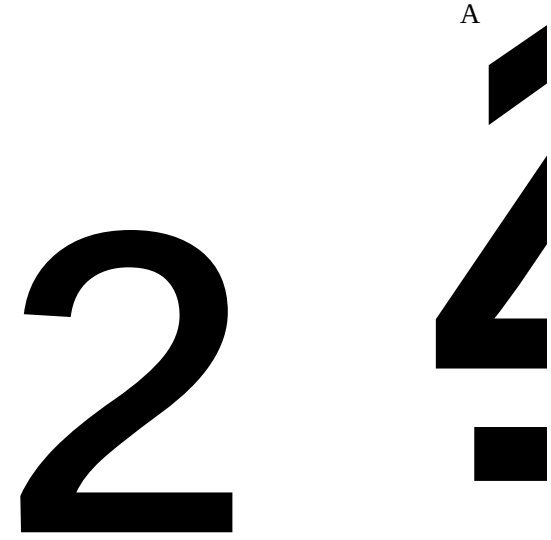
1

HJ2.3-2018

2.5-3

	Q(m^3/d) W( )
	Q≥20000 W≥600000
A	Q<200 W<6000
B	-

1 A



2

3

4

5

6

7 ≥500 m3/d

500 m3/d

8

A

B 10 B

HJ2.3-2018

B

2

500m 4500m

5km

2.5.3

— HJ610-2016 A—

“ ” “

”

2.5-4

2.5.4

1

HJ2.4-2009

2.5-5

	3
	<3dB A

2

200m

2.5.5

1

2km^2

HJ19-2011

2

200m

2.5.6

1

HJ/T169-2018

2.5-6

	IV IV+	III	II	I

HJ169-2018

II

5km

500m 4500m 5km

2.5.7

-

HJ964-2018

2.5-7

									——
								——	——
“____”									

— HJ964-2018 A

50hm^2

“ ” “ ”

200m

2.6

1

2

3

4

5

2.7

1

2.7-1

	X	Y					
1	112.587488611	28.329421575			280m		GB3095-2012
2	112.592301723	28.340773160			1500~2300m	820	
	112.589038005	28.327847245			320~400m	80	
3	112.590399346	28.331410402			730 m	500	
4	112.595717629	28.332512205			420m~1300m	90	
5	112.65899294	28.321171100			1800m	300	
6	112.592033502	28.317191178			680~1400m	200	
7	112.600223740	28.315066392			1000m~2200m	180	
8	112.566020211	28.311686809			2400m	2400	
9	112.570140084	28.309068973			2150m	538	
10	112.575955113	28.328702743			520m~1500m	482	
11	112.579903324	28.339109714			1300~2000m	246	
12	112.591790875	28.333723838			730-900m	900	
					4500m		GB3838-2002 III
					500m		
					3200m	2.5 m^3/d	-
							GB/T14848-2017
							GB36600-2018

3

3.1

2016 12 26 2017 6

2017

8 21 2017 54

2018

12 1

2018 12 19

201843012400000441

2017 6 2018 9 2019 8

2019 8

28 2019 3

2019 10 29 [2019]42

8000

23000 [2019]43

2020 7 31 [2020]31

2020 7 31 [2020]32

2021 1 19 [2021]4

2021 8

3.1-1

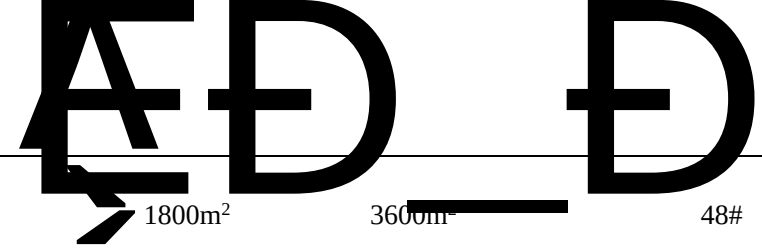
300	300

3.2

3.2-1

1#	1	8000t/a		1	3
			19.95m		
2#	1	4000t/a			
	15000t/a		1	3	19.95m
9#	1	4000t/a			
	15000t/a		1	3	19.95m
			15000t/a		
8#		1	12.15m		
				2000t/a	
				1000t/a	
5#				2000kW	
			2500kVA		

32-2



52#	1800m²	3600m²	48#
43#	3107m²	6214.6m²	

			H1 H2 +15m H3 H4 + + +15m	
		6000	H5 H6 +15m H7 H8 + + +15m	
			H9 H10 +15m + + +15m H11 H12	
		10000	H13 H14 +15m H15 H16 + + +15m	
			MVR H17 + +15m	
			GB/T19923-2005	
		MVR		
			120 m³	
			2 530m³/d 1 550m³/d 21# 17# 530m³/d	

31# 32-1# 32-2#
32-3# 34# 31#
pH 32-2#

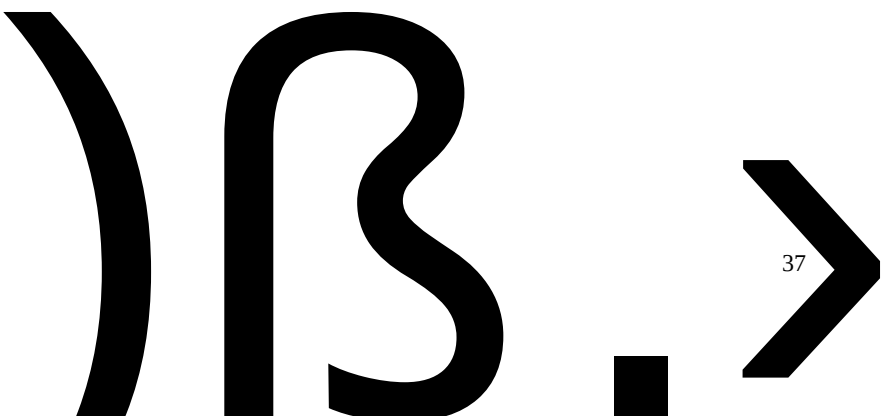
			45# 47# 55# 1 200m^2	
			45# 47# 55# 1 50m^2	
	1		1000 m^3	
	2		4200m^3 1 5800m^3 1 4000m^3	
			2 10000m^3	
			200m^3	
			100m^3	

3.3

3.3-1

			t/a			
1			30000		25kg/	
2			10000		25kg/	
3			1000		25kg/	
4			2000		25kg/	
			15000		25kg/	
			16000		25kg/	
8			162537.31		Φ3500*5500	
9			11174		Φ3500*5500	
10			4284.8		Φ3500*5500	
11			6000			
12			16000			
13			3912			

14	2220	
15	70000	25kg/
16	16040	25kg/
	36033	25kg/
	12840	25kg/
20	3283.59	25kg/
21	233	25kg/
22		



3.4.1

MVR

SO2 NOx

MVR

HCl سمآ

3.4-1

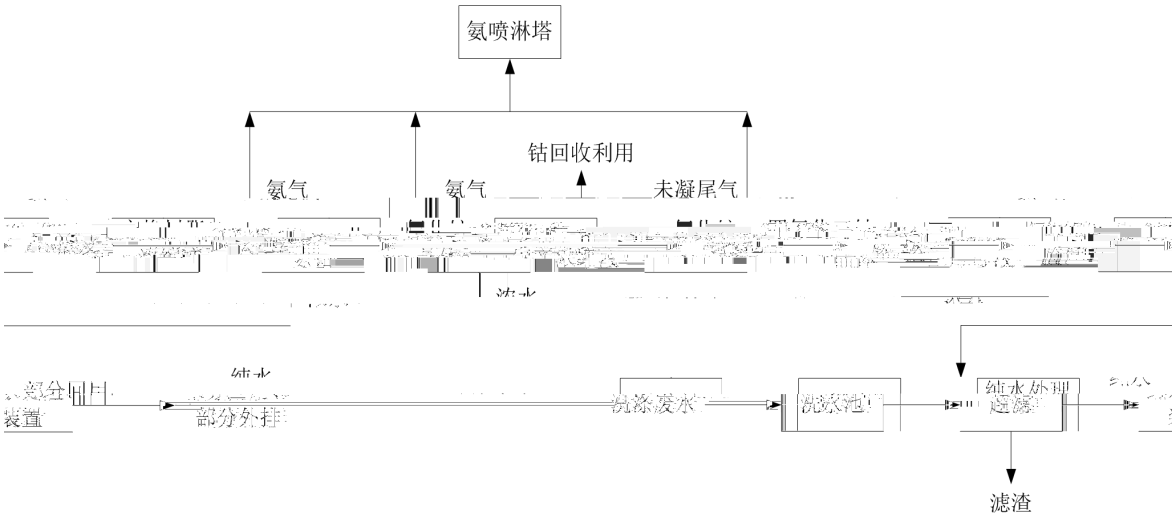
1#	3	G1-1	1	15m	0.7m
		G1-2	3	15m	0.7m
		+ G1-3	1	15m	0.7m
2#	6	G2-1 G2-2 G2-3	6	20m	0.7m
	2	+ G2-4 G2-5	2	20m	0.7m
9#	6	G9-1 G9-2 G9-3	6	20m	0.7m
	2	+ G9-4 G9-5	2	20m	0.7m
3#		G3-1	1	15m	4

		+ + G20-2	1	15m	0.8m
20#		G20-3	1	15m	1.0m
	3	+ + G20-4	1	15m	0.8m
21#		G21-1	1	15m	0.8m
		+ G21-2	1	15m	0.6m
17#		G17-1	1	15m	0.6m
		+ G17-2	1	15m	0.6m
15#		+ G15-1	1	18.5m	0.5m
		+ G15-2	1	18.5m	0.5m
23-1#		G23-1-1 G23-1-2	2	15m	0.8m
		+ G23-1-3 G23-1-4	2	15m	0.6m
32-2#		+ G23-2-1	1	15m	0.6m
6#		G6-1	1	15m	0.8m
		G39-1	1	15m	1.0m
		G40-1	1	15m	0.6m
		G40-2	1	15m	0.3m
		G54-1 G54-2	2	15m	0.8m

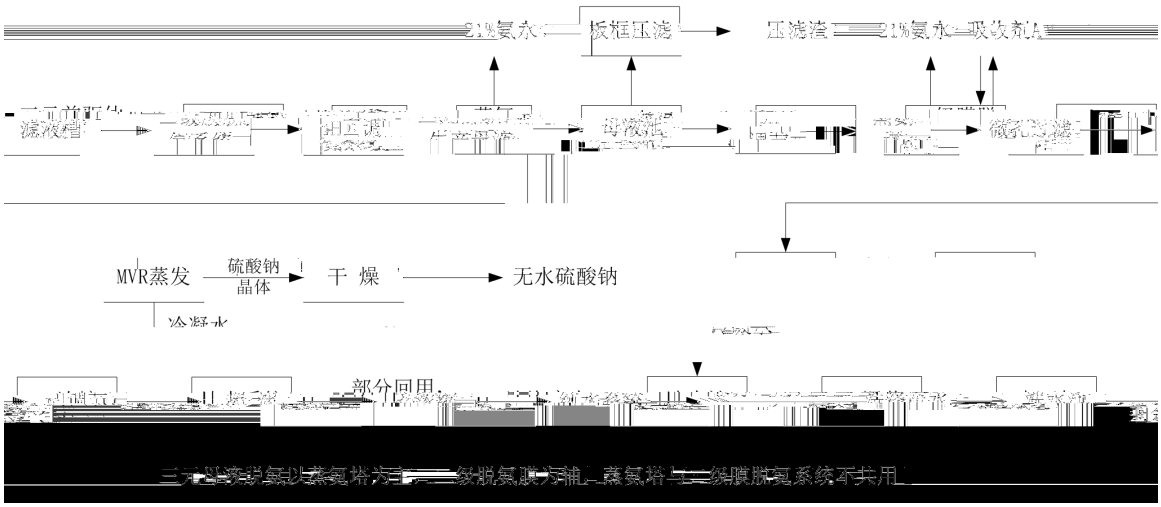
3.4-2

		98mg/m^3;17.3t/a	9.38mg/m^3;1.56t/a
		60mg/m^3;3.0t/a	7.2mg/m^3;0.30t/a
		9mg/m^3;0.47t/a	3.2mg/m^3;0.14t/a
		1000 mg/m^3	100 mg/m^3
		120mg/m^3;28.72t/a	15.8mg/m^3;1.88t/a
		86mg/m^3;11.60t/a	8mg/m^3;0.53t/a
		0.74mg/m^3;0.45t/a	0.326mg/m^3;0.06t/a
		2.63mg/m^3;0.34t/a	0.386mg/m^3;0.05t/a
		0.005mg/m^3;0.001t/a	0.0026mg/m^3;0.0006t/a
		500 mg/m^3	50 mg/m^3
		200mg/m^3;3t/a	8mg/m^3;0.21t/a
		231mg/m^3;19.44t/a	12.5mg/m^3;0.61t/a
		85mg/m^3;10.16t/a	8.5mg/m^3;0.22t/a
		2.30mg/m^3;16.56t/a	0.44mg/m^3;0.30t/a
		7.93mg/m^3;0.056t/a	7.93mg/m^3;0.056t/a
		14.6mg/m^3;2.02t/a	0.44mg/m^3;0.30t/a
		137.52mg/m^3;18.86t/a	137.52mg/m^3;18.86t/a
		155.62mg/m^3;26.62t/a	3.11mg/m^3;0.532t/a
20#		135.04mg/m^3;11.69t/a	1.34mg/m^3;0.116t/a
		2.0mg/m^3;8.58t/a	0.5mg/m^3;0.085t/a
		75mg/m^3;6.197t/a	0.75mg/m^3;0.062t/a
		135.04mg/m^3;11.69t/a	1.34mg/m^3;0.117t/a
20#		43.4mg/m^3;3.751t/a	0.44mg/m^3;0.038t/a
		17mg/m^3;1.51t/a	0.17mg/m^3;0.015t/a
		25mg/m^3;2.12t/a	0.25mg/m^3;0.021t/a
		134.23mg/m^3;11.62t/a	1.34mg/m^3;0.116t/a
		252mg/m^3;21.92t/a	2.53mg/m^3;0.22t/a
21#		81mg/m^3;7.033t/a	0.81mg/m^3;0.07t/a
		32mg/m^3;2.84t/a	0.32mg/m^3;0.028t/a
		50mg/m^3;3.98t/a	0.5mg/m^3;0.04t/a
17#		133mg/m^3;22.93t/a	2.67mg/m^3;0.46t/a
		133mg/m^3;11.17t/a	6.67mg/m^3;0.56t/a
15#	VOCs	0.5mg/m^3;0.036t/a	0.1mg/m^3;0.007t/a
23-1#		11.62	1.34mg/m^3;0.116t/a
		21.915	2.53mg/m^3;0.22t/a

	7.033	0.81m


氨喷淋塔
钴回收利用
氨气
氨气
未凝尾气
纯水
部分外排
洗涤废水
洗水池
纯水处理
滤渣

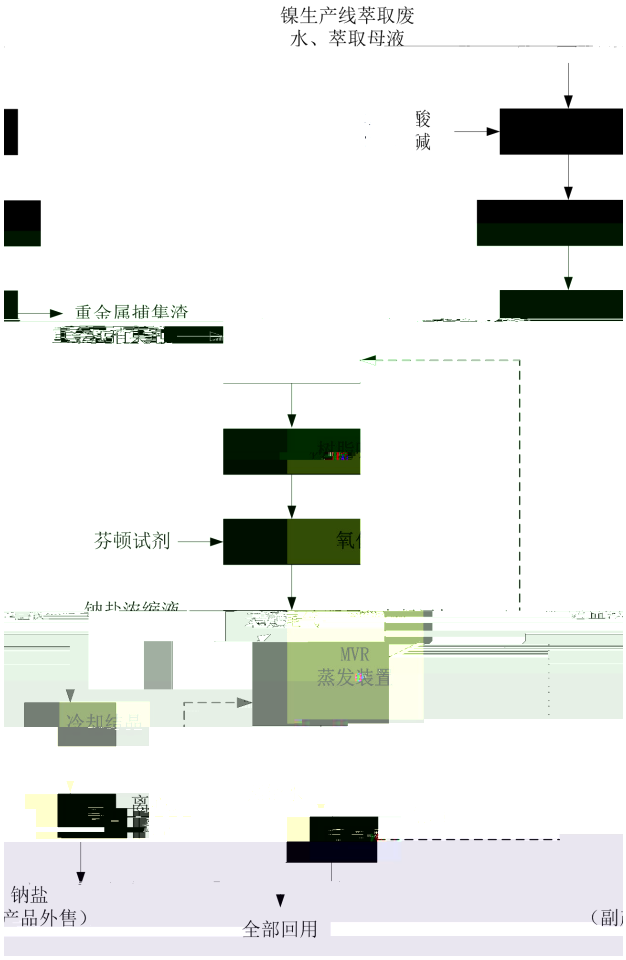
3.4-1


21%氨水
板框压滤
压滤渣
21%氨水吸收剂
滤液槽
MVR蒸发
硫酸钠
晶体
干 燥
无水硫酸钠
冷凝水
部分回用

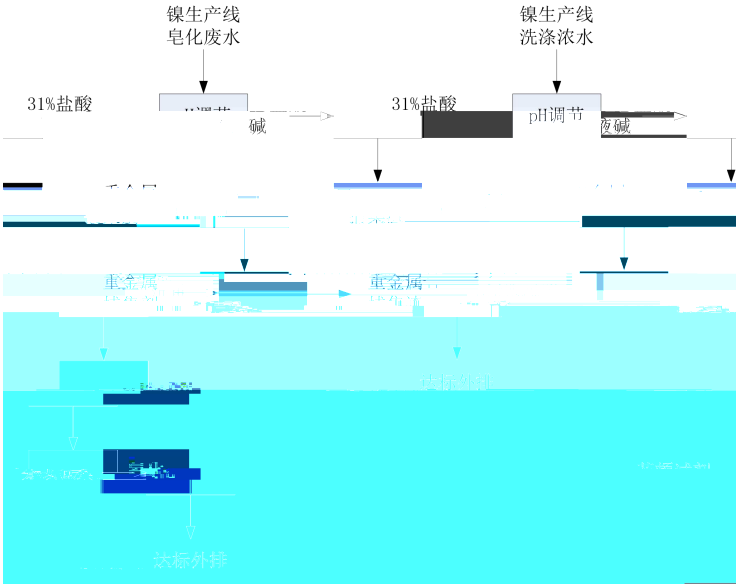
3.4-2

2

Ä


镍生产线萃取废
水、萃取母液
碱
重金属捕集渣
芬顿试剂
MVR
蒸发装置
钠盐
全部回用

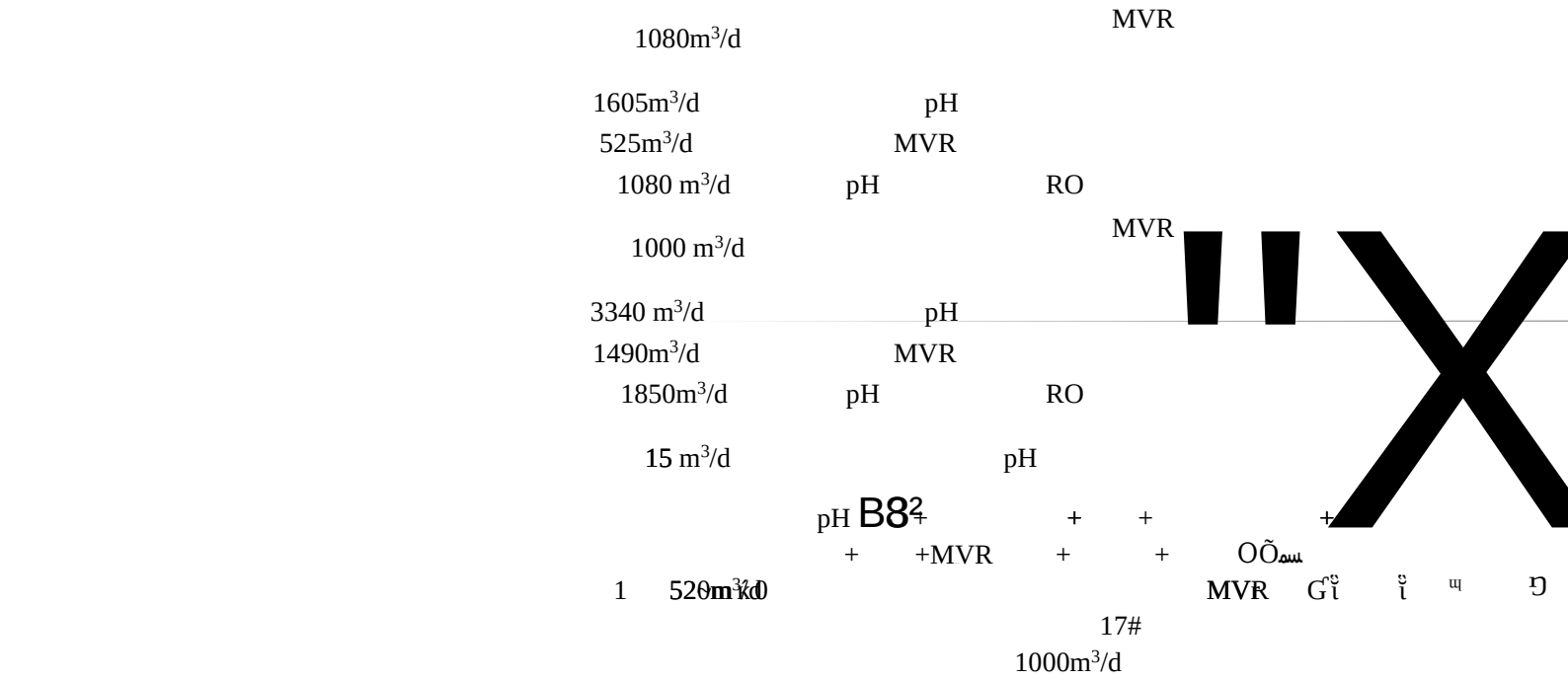
3.4-4


镍生产线
皂化废水
镍生产线
洗涤浓水
31%盐酸
碱
31%盐酸
pH调节
碱
重金属
重金属
达标外排

3.4-5

+

3.4-3


MVR
1080m³/d
1605m³/d
pH
525m³/d
MVR
1080 m³/d
pH
RO
MVR
1000 m³/d
3340 m³/d
pH
1490m³/d
MVR
1850m³/d
pH
RO
15 m³/d
pH
pH
+
+
+
+
+
+MVR
+
+
MVR
17#
1000m³/d

6000

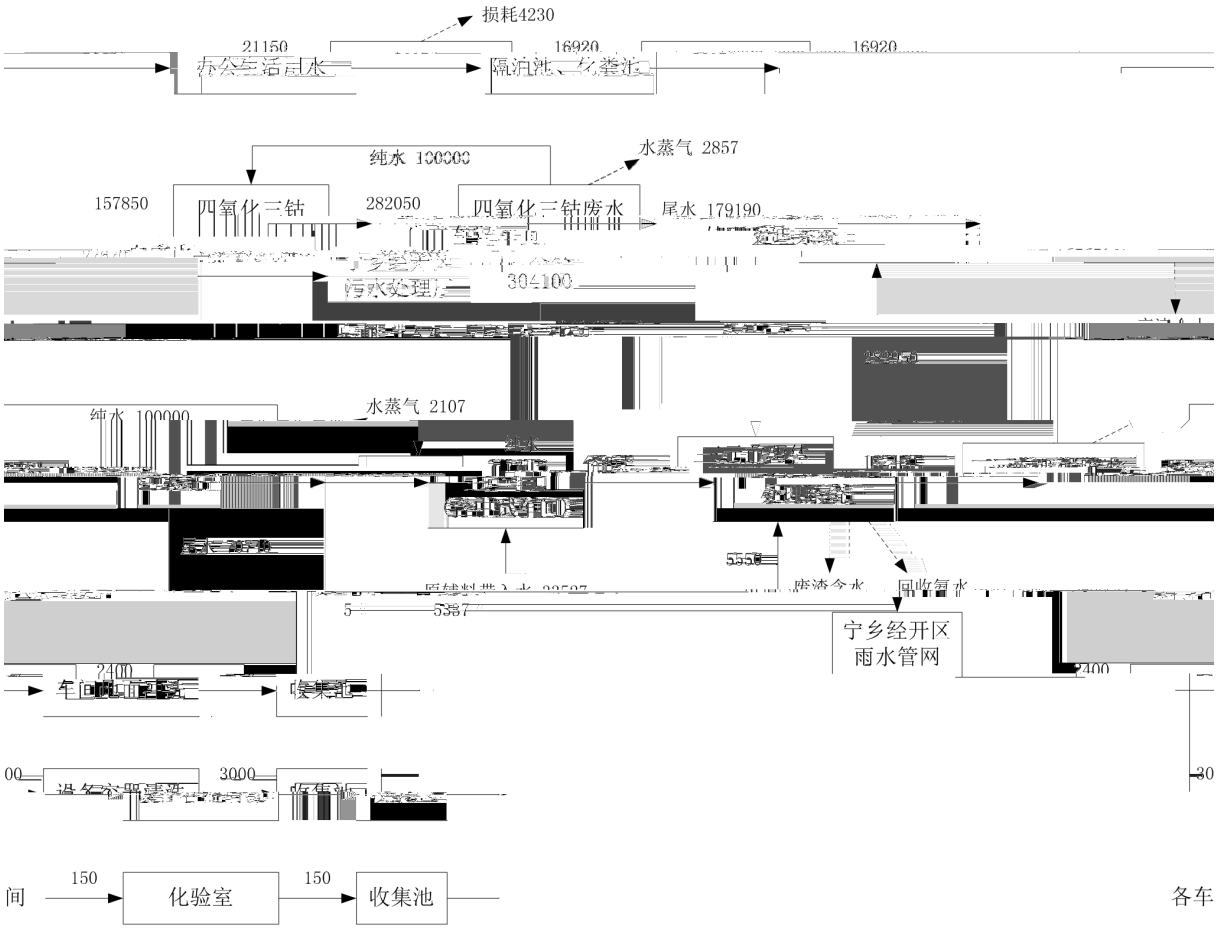
3.7.2.2

1

276701m^3/a

179190m^3/a

80591m^3/a 16920 m^3/a



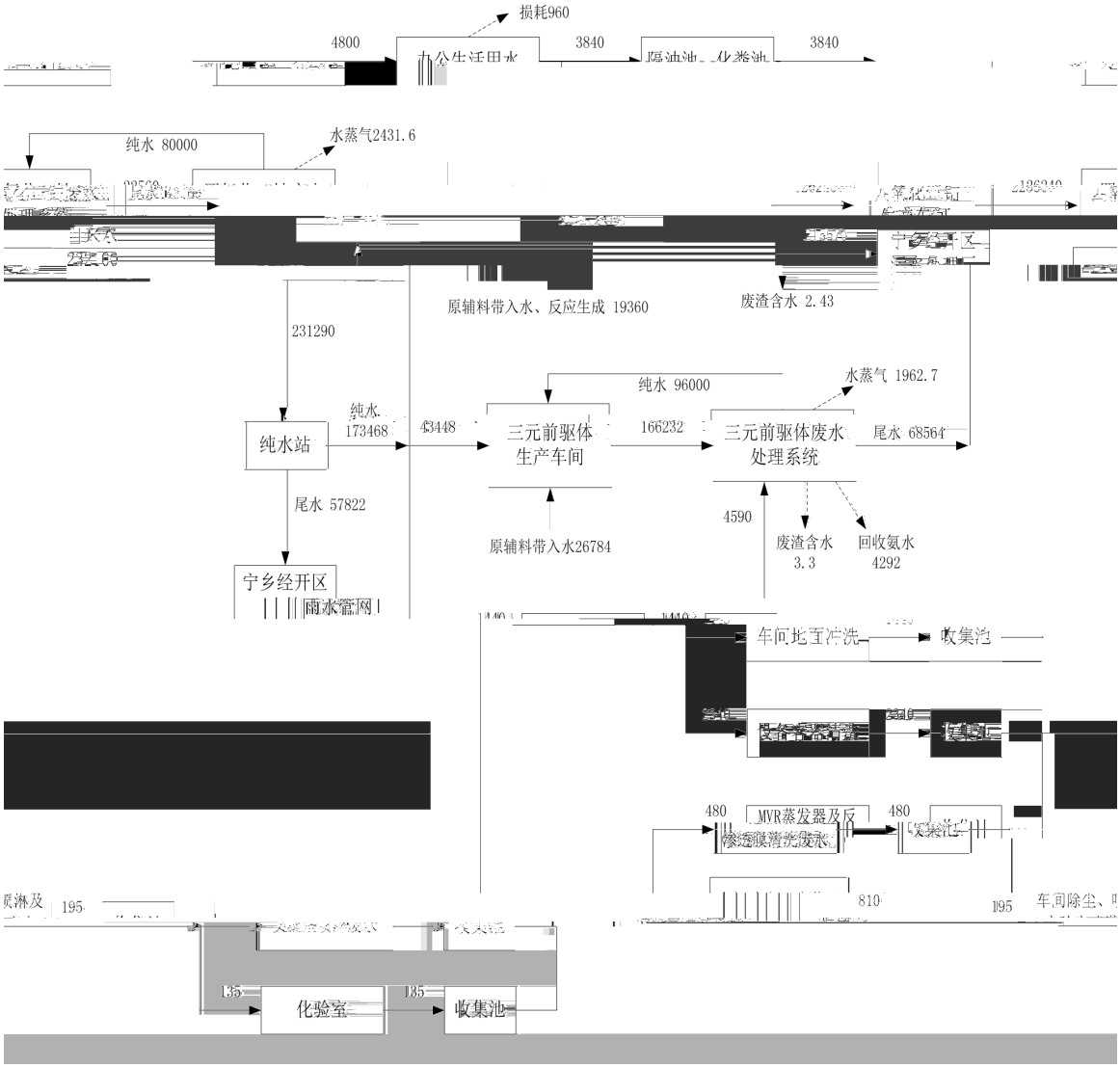
3.4-6

2

215570m^3/a

143166m^3/ a 63974m^3/a

4590m^3/a 3840m^3/a


损耗960
4800
3840
3840
纯水 80000
水蒸气2431.6
原辅料带入水、反应生成 19360
废渣含水 2.43
231290
纯水 96000
水蒸气 1962.7
纯水
173468
43448
三元前驱体
生产车间
166232
三元前驱体废水
处理系统
尾水 68564
纯水站
尾水 57822
原辅料带入水26784
4590
废渣含水
3.3
回收氨水
4292
宁乡经开区
雨水管网
车间地面冲洗
收集池
480
MVR蒸发器及反
480
195
810
195
车间除尘、
195
化验室
收集池

3.4-7

原辅料带入水

3.4-8 **m3/a**

3

18586.2m^3/a

7108.52m^3/a 10013m^3/a 1465.2m^3/a

2845m^3/a 6000 /

55200m^3/a 10000 /

92200m^3/a

10800m


100
冷凝水42
主副产品带出57015
固废带出265
69410
水蒸气3800
主副产品带出57223
固废带出283
浓水
64470
自来水
365800
203345
300
300
损耗 6600
0
25800
3240
229145
污水

3.4-10

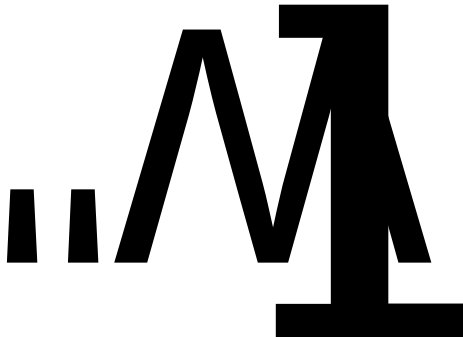
3.7.2.3

( )

pH 7.75~7.88

12 \ 29mg/L

/



3.4-4

mg/L pH

							/	
				1	2	3		
W2		2020.01.02	pH	7.81	7.84	7.75	7.75-7.84	6~9
		2020.01.03		7.88	7.84	7.73	7.73-7.88	
		2020.01.02		27	29	25	27	200
		2020.01.03		28	25	26	26	
		2020.01.02		8.13	8.35	7.96	8.15	-
		2020.01.03		8.25	7.84	8.08	8.06	
		2020.01.02		19	16	18	18	100
		2020.01.03		13	16	18	16	
		2020.01.02		1.23	1.33	1.56	1.37	40
		2020.01.03		1.45	1.41	1.37	1.41	
		2020.01.02		0.06L	0.06L	0.06L	0.06L	-
		2020.01.03		0.06L	0.06L	0.06L	0.06L	
		2020.01.02		13.7	13.8	12.5	13.3	60
		2020.01.03		12.5	12.1	12.7	12.4	
		2020.01.02		0.16	0.11	0.13	0.13	2
		2020.01.03		0.17	0.15	0.14	0.15	
		2020.01.02		0.03L	0.03L	0.03L	0.03L	0.5
		2020.01.03		0.03L	0.03L	0.03L	0.03L	
		2020.01.02		0.01L	0.01L	0.01L	0.01L	1
		2020.01.03		0.01L	0.01L	0.01L	0.01L	
		2020.01.02		0.01	0.01	0.01	0.01	1
		2020.01.03		0.01	0.01	0.01	0.01	
		2020.01.02		6.98	6.87	6.91	6.92	400
		2020.01.03		7.12	7.03	7.27	7.14	
		2020.01.02		9.78	9.22	9.45	9.48	500
		2020.01.03		9.45	9.67	9.44	9.52	

3.4-5

		0.102	0.119	-	0.119
		0.051	0.059	-	0.059
		0.071	0.082	-	0.082

3.4.3

70 100dB(A)

3.4-7

		Leq		Leq	
1 ▲1	2019.2.21	58.2		42.2	
	2019.2.22	57.9		42.6	
1 ▲2	2019.2.21	61.4		45.5	
	2019.2.22	61.9		45.9	
1 ▲3	2019.2.21	60.9		45.6	
	2019.2.22	62.5		44.2	
1 ▲4	2019.2.21	62.6		43.7	
	2019.2.22	61.7		44.8	
1 ▲5	2019.2.21	51.7		42.4	
	2019.2.22	51.3		42.1	
1 ▲6	2019.2.21	50.4		41.8	
	2019.2.22	52.0		41.4	
	65dB(A)		55dB(A)		

(GB12348-2008) 3

3.4.4

3.4-8

t/a

16.8	20.24	0.5	-		
2.5	3.11	3	-		
50	50	6	3		HW46
75	38	25	-	600	
25	25	-	-	20	HW13
2	2	2	-	10	HW08
	2.39	-			HW06
-	1.03	=	-	50	HW49
-	-		3.3		HW49
-	-		3516.59		HW49
-			-	2868	
-			-	287	

	COD	34.85
	NH_3-N	1.74
		0.119
		0.059
		0.082
		8.286
		4.763
		0.3576
		0.768
		0.3706
	SO_2	0.38
		5.086
		1.93
	VOCs	1.968
		2868
		287
		37.54
		8.61
		738
		109
		70
		16
		2.39
		51.03
		3.3
		3516.59
		44

( )

( )

3.5-1

[2020]32

1

(GB14554-93) (031573-2015) 5

-

(DB12/524-2014) 2

(GB14554-93)

5 (GB12348-2008) 3

4

(GB12348-2008) 3

4

“

”

“

”

(GB18597-2001)

6 “

(GB18599-2001 2013

(GB16889-2008

	1 4200m^3 1 5800m3		
8			
9	CD≤35.580t/a ≤1.780t/a S02≤0.380t/a V0Cs≤1.968t/a 0.120t/a		
10	100m 50m 10000 / .	10000 /	
11			

3.6

4

4.1

	66#	3692.05m² 6866.66m²	
	69#	3383.47m² 9290.18m²	
	31#	4217.3m² 9131.55m²	
	32-2	4195.24m² 7159.19m² 1080m³/d 336m³/d MVR	
	34#	3035.57m² 6973.62m² RO 1 3090m³/d 1 4200m³/d MVR 1 6m³/h 1 5m³/h	
	65#	3531.52m² 6230.20m² 1220m³/d	
	70#	1038.96m² 1038.96m²	
		0.30Mpa MVR	
		1 10kv	
	63#	+20m +20m + +20m	
	67#	+20m +20m +20m + +20m	
	63-1#	+20m +20m + +20m	

4.2-3

1	37#	1 170m³ 1 240m³ 1 240m³ 2 500m³ 4 1400m³ 1 6	1 170m³ 1 240m³ 1 240m³ 2 500m³ 4 1400m³		
2		40m²	40m²		
3		45# 47# 55# 50m²	45# 47# 55# 50m²		
4					
5		31# 32-2 1 960m³/d MVR 65# 1220m³/d	31# 32-2 1080m³/d 336m³/d MVR 65# 1220m³/d	31# 32-2 65#	
6		1 2 10000m³ 2 5800m³ 4200m³ 4000m³ 3	1 2 10000m³ 2 5800m³ 4200m³ 4000m³ 3	1 400m³ 1 300m³ 4200m³	

		2020 3	2020 3	5800m³ 4200m³ 2 10000m³	

4.3

4.3-1

4.3-1

				t/a			
1			8	10000		25kg/	8
2				15264		25kg/	5
3			5	10000		25kg/	
4				15082		25kg/	
5				1131.7032 120.86	--	--	--
6				918.3978 86.1388	--	--	--
7				1406.0342 132.43	--	--	--
8				189.9437 16.88	--	--	--

4.4

4.4-1

1	PPH	PPHφ2500/12.5m^3		15
2	PPH	PPHφ2000/7.5m^3		9
3	PPH	PPHφ2500/10m^3/		9
4	PPH	PPHφ1400/2m^3		45
5	PPH	PPHφ1400/2m^3/		6
6	PPH	PPHφ1200/1m^3		6
7	PPH	PPHφ1800/5m^3/		6
8	PPH	PPHφ1800/5m^3		90
9	PPH	PPHφ1400/2m^3		6
10	PPH	PPHφ2200/10m^3		75
11	PPH	PPHφ2500/20m^3		30
12	PPH	PPHφ3000/30m^3		6
13	PPH	PPHφ2500/10m^3		6
14	PPH	PPHφ2500/30m^3		9

15	PPH	PPHφ3000/20m^3/

6		H_2SO_4 98.08 (kPa) 0.13/145.8 1.83 10.5 330		LD50 2140mg/kg

4.5-4

	Ni mg/L	Co mg/L
	55	600
MT/	11	110

4.5-5

	Co	Mn	Ni	Cu	Fe	Al	Ca	Mg	H_2O
%	71.62	0.01	0.34	0.0247	0.0031	0.495	0.1135	0.0315	0.125

4.5-6

Co Mn Ni Cu Fe Al Ca Mg Zn

%

4.6.2

10kV 10kV

S11

GCS

4.6.3

4.6.4

15m

DN200

4.6.5

70# 37#

4.6-1 **t**

1		1000			
2		800			

3		800			
4	32%	1400			37#
5	21%	240			37#
6	27.5%	195			37#
7	31%	240			37#
8	98%	500			37#
9		25			
10		25			
11		--		--	--
12	D116	--			
13		--			
14	P204	--			
15	P507	--			

4.6-2 37#

		× m		m³	t	
	40%	5.8×6.5 304L	1	170	195	
		6.5×7.2	1	240	312	
		6.5×7.2	1	240	312	
	30%	6.5×7.2	1	240	265	
	21%	6.5×7.2	1	240	220	
	98%	8×10	2	500	990	
		8.5×12.5	2	700	910	
	30%	12×12.4	4	1400	1890	
		8.5×12.5	2	700	700	

4.7

1

300

12 7200

2

200

4.8

1

2021 12 2022 9

10 20

2

3

4

4.9

63# 67# 63# 67#

63-1# 64# 66#

69# 70# 1

1

3

5

5.1

5.1.1

1

5 8

8 $Ni_{0.8}Co_{0.1}Mn_{0.1}(OH)_2$ 5

$Ni_{0.5}Co_{0.2}Mn_{0.3}(OH)_2$ 8 5

2

NaOH

2

5.1-1

110g/L

8 8:1:1

5 5:2:3

32% 21%

50 90

99.5% OH^-

80ppm

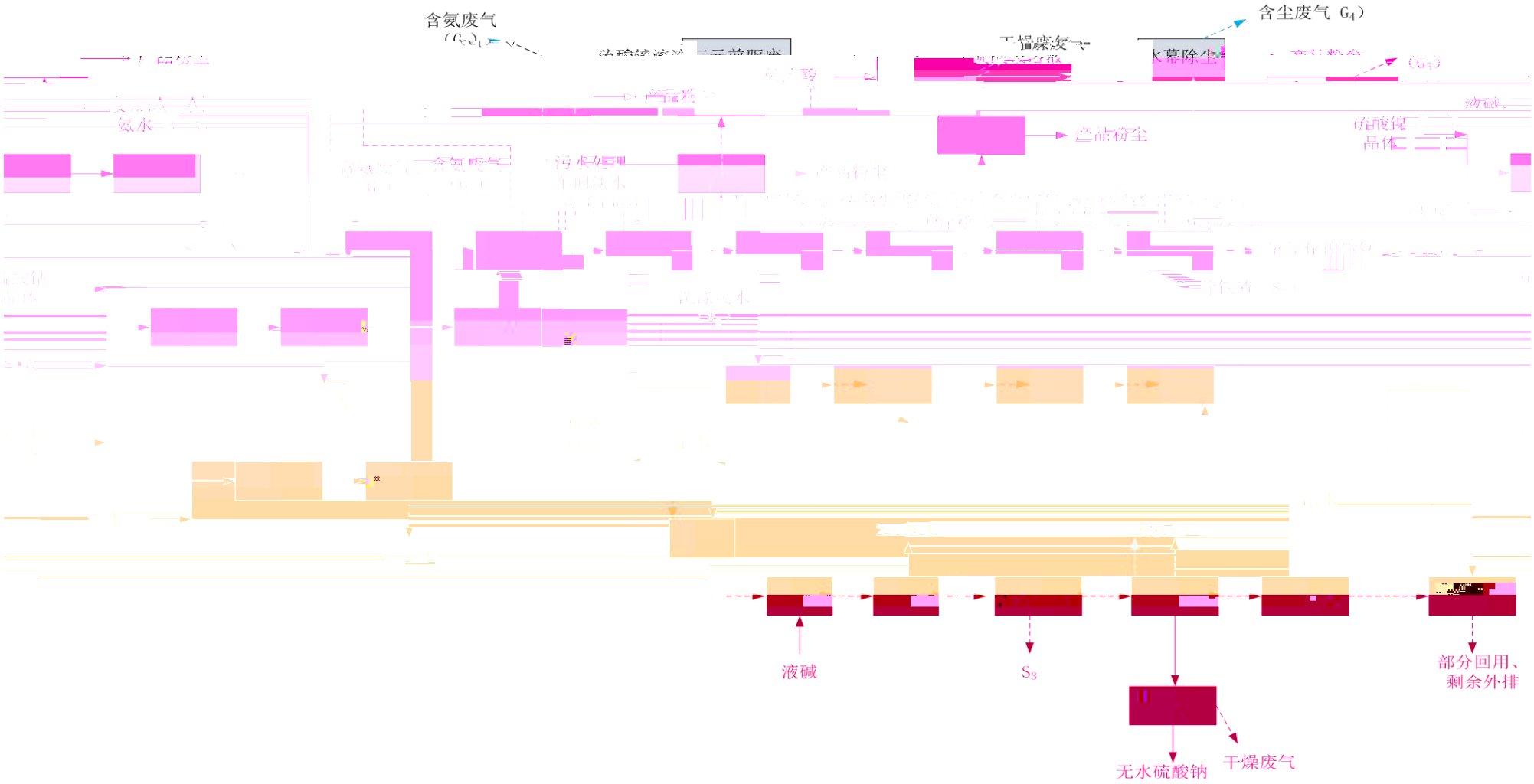
10 20h pH

$$MeSO_4 + 2NaOH \xrightarrow{NH_4OH} Me(OH)_2 \downarrow + Na_2SO_4$$

$Me = Ni_xCo_yMn_{(1-x-y)}$

98%

0.5 ~1h 50 60



5.1-1

5.1.2

1

D116 D116 15%

45%

$$\overline{\overline{RH}} + NH_4^+ \quad \overline{\overline{RNH_4}} \quad H \qquad 1$$

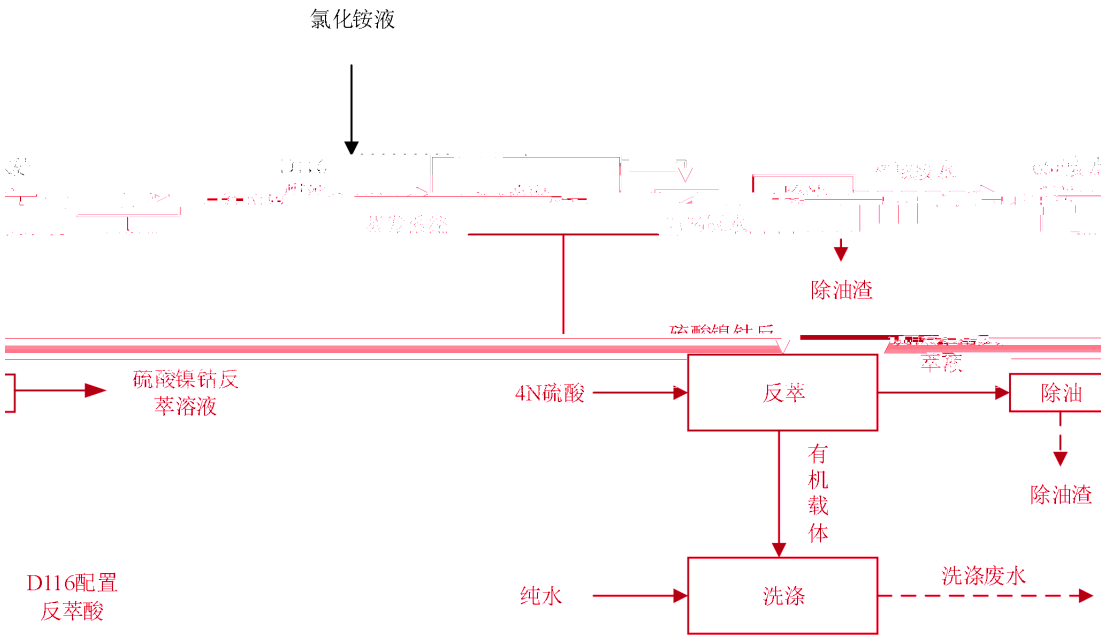
Ni Co Co

$$2\,\overline{\overline{RNH_4}} + Co^{2+} \quad \overline{\overline{R\,2Co}} \quad 2\,NH_4 \qquad 2$$

4N

$$\overline{\overline{R\,2Co}} + 2\,H^+ \quad 2\overline{\overline{RH}} \quad Co^2 \qquad 2$$

2



5.1-2

5.1.3

1

pH 2.0

pH 4.5~5.0

$2Fe^{2}$ H_2O_2 $2H$ $2Fe^{3}$ $2H_2O$ 3

Fe^{3} $2H_2O$ $FeOOH$ $3H$ 4

Fe^{3} $3H_2O$ $Fe(OH)_3$ $3H$ 5

NaOH H H_2O Na 6

P204 P204 P204

Na^+ H^+

30

Ca^{2+} Zn^{2+} Na^+

$2CuCl_2+2\ (NH_4)_2CO_3+H_2O= CuCO3\cdot Cu\ (OH)_2\downarrow+4NH_4Cl+CO_2\uparrow$

$CaCl_2+\ (NH_4)_2CO_3 = CaCO_3\downarrow+2NH_4Cl$

P204 P204

Na^+

H^+ P204 30

Mn^{2+} Na^+

4N

P507 P507

Na^+ H^+

P204 30

Co^{2+} Ni^{2+} Na^+

MBP P507

P204 Ca Zn Ca

$$2\,\overline{\overline{R}}\,\overline{\overline{Na}} + Ca^{2+} \quad \overline{\overline{R}}\,\overline{\overline{2Ca}} \quad 2\,Na \qquad 7$$

$$\overline{\overline{R2Ca}} + 2H^{2+} \quad 2\overline{\overline{RH}} \quad Ca^{2} \qquad 8$$

$$\overline{\overline{RH}} + Na^{+} \quad \overline{\overline{RNa}} \quad H \qquad 9$$

P204 Mn Cu

$$2\,\overline{\overline{R}}\,\overline{\overline{Na}} + Mn^{2+} \quad \overline{\overline{R}}\,\overline{\overline{2Mn}} \quad 2\,Na \qquad 10$$

$$\overline{\overline{R}}\,\overline{\overline{2Mn}} + 2\,H^{2+} \quad 2\overline{\overline{RH}} \quad Mn^{2} \qquad 11$$

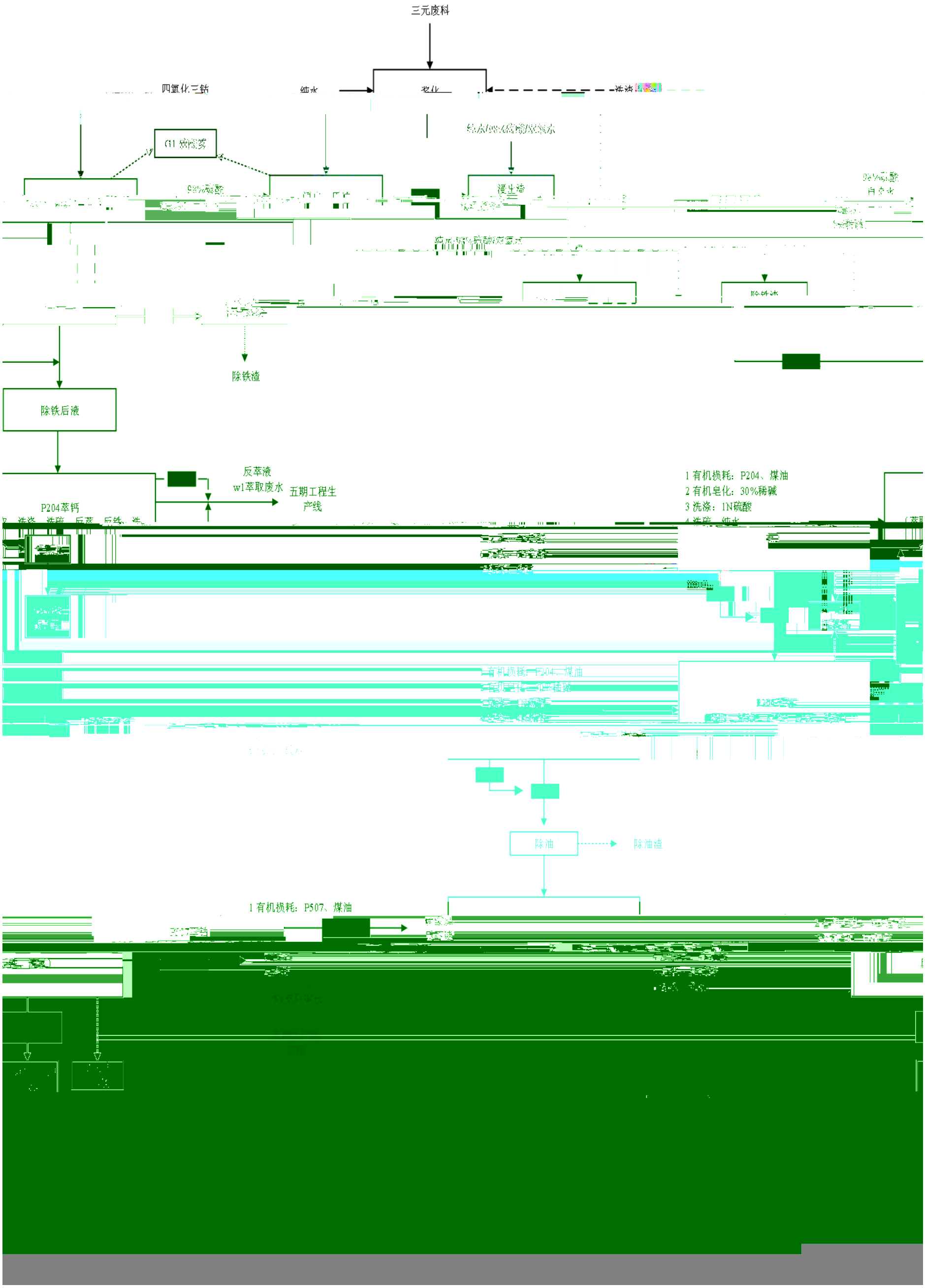
$$\overline{\overline{RH}} + Na^{+} \quad \overline{\overline{RNa}} \quad H \qquad 12$$

P507 Co

$$2\,\overline{\overline{R}}\,\overline{\overline{Na}} + Co^{2+} \quad \overline{\overline{R}}\,\overline{\overline{2Co}} \quad 2\,Na \qquad 13$$

$$\overline{\overline{R2Co}} + 2H^{2+} \quad 2\overline{\overline{RH}} \quad Co^{2} \qquad 14$$

$$\overline{\overline{RH}} + Na^{+} \quad \overline{\overline{RNa}} \quad H \qquad 15$$


三元废料
除铁渣
除铁后液
反萃液
w1萃取废水
五期工程生
产线
P204萃钙
1 有机损耗：P204、煤油
2 有机皂化：30%稀碱
3 洗涤：1N硫酸
除油
除油渣
1 有机损耗：P507、煤油

5.1-2

5.2

5.2.1

1

8

8

5.2-1 8

	t/t-	t/a			t/a
	2.28	22800	8		10000.00
	0.31	2100			22.18
	0.1835	1835			15263.67
	4.13	41300		21%	6846.67
	3.10	31000			72146.45
21%	0.69	6900			37.04

MVR

2

5.2-3

	t/a		t/a
	220000		221342
D116	0.33		1132
	1.87		0.878
21%	1344		0.322
98%	123		
	1006		
	222475.2		222475.2

3

5.2-4

	t/a		t/a
	242.5		918.39
	167.55		1406.03
98%	806		189.94
27.5%	144		11032
32%	1094		727.155
31%	13		0.345
	9583		
	2219		
P204	0.48		
P507	0.72		
	3.61		
	14273.86		14273.86

5.2.2

1

8

1

22800

22.34% 8 $Ni_{0.8}Co_{0.1}Mn_{0.1}(OH)_2$ 10000t/a

50.85% 8

5.2-5 8

t/a	t/a	
5093.52		5085
		0.048
		8.472
5093.52		5093.52

32.09% 5

5.2-8 5

t/a		t/a	
	3216.96		3209
			0.048
			7.912
	3216.96		3216.96

2

6200

20.98% 5 $Ni_{0.5}Co_{0.2}Mn_{0.3}(OH)_2$ 10000t/a

12.95% 5

5.2-9 5

t/a		t/a	
	1300.76		1295
			0.02
			5.74
	1300.76		1300.76

3

5600

32.54% 5 $Ni_{0.5}Co_{0.2}Mn_{0.3}(OH)_2$ 10000t/a

18.15% 5

5.2-10 5

t/a t/a

1822.24 1815

2

1é Wi Å Ä

			109.5
			0.4
	110		110

2

5.2-12

t/a		t/a	
	11		0.04
			10.46
			0.5
	11		11

3

1

5.2-13

t/a		t/a	
9 Ê [Jä	16.1		0
	120		132.43
			0
			3.31
			0.36

			16.88
			0.22
			0.11
	17.21		17.21

5.2.3

5.2.2.1

1

MVR

54000m^3/a 72147m^3/a

42.81%

5.2-16

t/a		t/a		
	47028		72147	
	54000		54000	
	33086		5367	
			2600	
	134114		134114	

2

MVR

5.2-17

t/a		t/a		
	1006		1006	--
	210399		210399	--

	211405		211405	

3

5.2-18

t/a		t/a		
	11802		1892	--
	1122		11032	
	1440		1440	
	14364		14364	--

5.2.2.2

1

$4m^3/d$

2 MVR

MVR

MVR

$60m^3/$ $2m^3/d$

MVR $2m^3/d$

3

$3m^3/d$

8

1%

33.3m^3/d 1 /

80m^3/ 800m^3/a

5.2.3.3

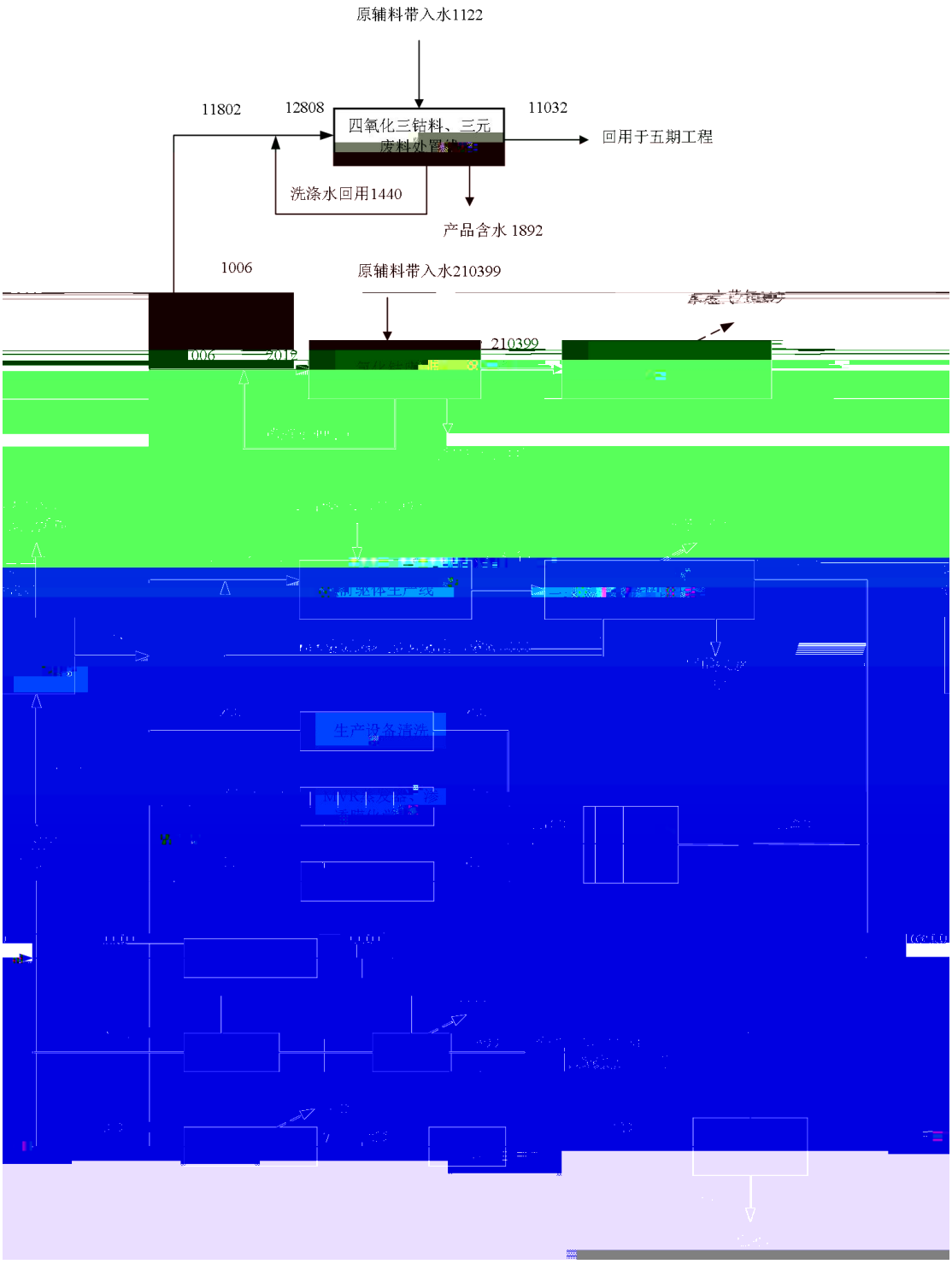
MVR

82447m^3/a

72147m^3/a

3100m^3/a 7200m^3/a

5.2-1



5.2-1 **m^3/a**

5.2.2.5

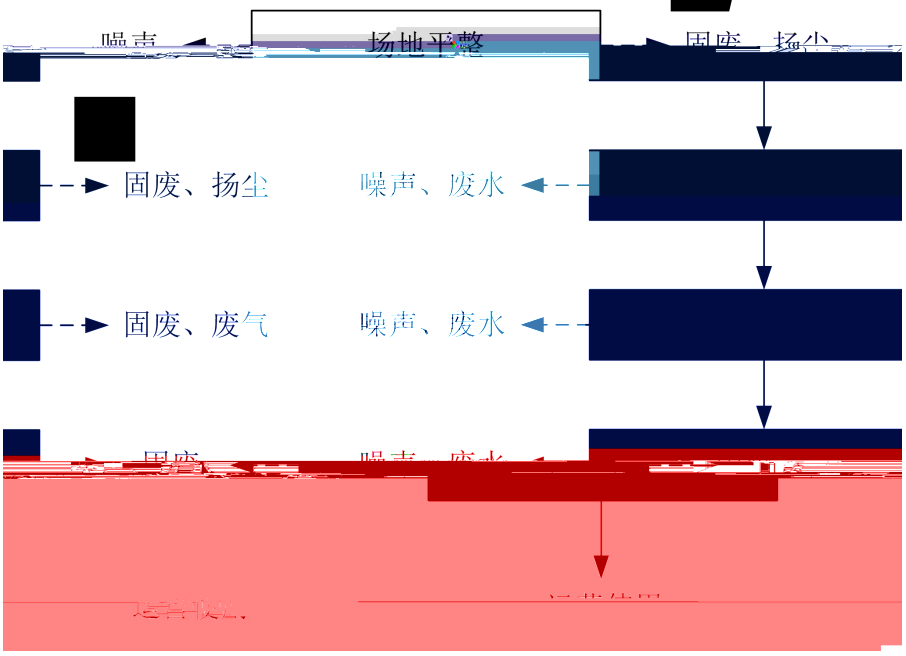
282251m^3/a

64400m^3/a 215570m^3/a

63974m^3/a 8000t/a 22200

m^3/a 18586.2m^3/a

394598m^3/a



5.3-1

5.3.1

1

5.3.2

1

SS

500L/ 20

10m^3/d

2

20

50L 1m^3/d

0.8m^3/d COD BOD_5 NH_3-N SS

5.3.3

75 100dB

A

5.3-1

		dB A
1		96
2		89
3		86
4		92
5		85

5.3.4

a G1

63-1# NH_3 363t/a G1

NH_3 0.5% NH_3 1.815t/a

b G2

63# NH3 2142t/a 63-1#

G2 NH_3 0.05% NH_3 0.182t/a

Ni G3

Ni

203t/a Co 36t/a

+ 20m

26580m^3/h

95% 85%

99%

3.713t/a 0.516kg/h

22.615mg/m^3

800m^3/h x 90%

0.01t/a 0.001kg/h 1.805mg/m^3

0.18mg/m^3 0.0001kg/h

0.001t/a GB31573-2015

3 20mg/m^3

2

63# ⊖3-1# ⊖3-2

⊖2-3# ⊖2-2# ⊖2-1#

▲

⊖2# ⊖3#

5.4-1 63#

						0.0002
					0.001	0.002
					0.001	0.002
					0.002	0.012
					0.002	0.038
					0.003	0.02

a G1

63-1# NH_3 363t/a G1

NH_3 0.5% NH_3 1.815t/a

b G2

63# NH3 2142t/a 63-1#

G2 NH_3 0.05% NH_3 0.182t/a

99%

7900m^3/h 2600m^3/h

MVR

15m

90%

1.797t/a 0.275kg/h

31.59mg/m^3 3.159mg/m^3

0.025kg/h 1.095t/a

GB31573-2015 3 20 mg/m^3

GB14554-93 2

0.18t/a 0.025kg/h

9.625mg/m^3 0.963mg/m^3

0.003kg/h 0.018t/a

GB31573-2015 3 20 mg/m^3

GB14554-93 2

1000

100

GB14554-93 2 15m

2000

0.01mg/m^3 0.0001kg/h 0.0005t/a

GB31573-2015 3

20mg/m^3

5.4-2 66#

		t/a	kg/h				
				m^2	m	m	m
	66#	0.003	0.0004	3692.05	148	24	18
VOCs		0.002	0.0002				
		0.001	0.0001				
		0.003	0.0003				

5.4.1.6

5.4-3

					t/a	kg/h			mg/m^3	kg/h	t/a	mg/m^3	kg/h
		G66-1			0.279	0.039	+	D-0.8m h-18m T-30	0.185	0.004	0.028	20	--
			VOCs		0.043	0.006	21000m^3/h		0.057	0.001	0.009	40	1.2
		G66-2			0.005	0.0007	+	D-0.45m h-18m T-30	0.01	0.0001	0.0005	20	--
					0.004	0.0004	6800m^3/h		0.006	0.00004	0.0004	10	--
			VOCs		0.095	0.013			0.39	0.003	0.019	40	1.2
		G66-3			0.453	0.057	10000m^3/h	D-0.5m h-18m T-30	0.42	0.005	0.004	20	--
		G63-1			1.977	0.275	22800m^3/h	D-0.8m h-20m T-30	1.204	0.027	0.198	20	4.9
		G63-2			3.713	0.516	+	D-0.9m h-20m T-30	0.226	0.005	0.037	10	-
					1.191	0.165	26580m^3/h		0.062	0.002	0.012	4	-

							800m^3/h	T-30					
		G63-1-1			1.977	0.275	22800m^3/h	D-0.8m h-20m T-30	1.204	0.027	0.198	20	4.9
		G63-1-2			3.713	0.516	+ 26580m^3/h	D-0.9m h-20m T-30	0.226	0.005	0.037	10	-
					1.191	0.165			0.062	0.002	0.012	4	-
					0.481	0.067			0.025	0.001	0.005	5	-
					0.674	0.094			0.035	0.001	0.007	5	-
		G63-1-3			0.01	0.001	800m^3/h	D-0.2m h-20m T-30	0.18	0.0001	0.001	20	--
		G64-1			1.977	0.275	22800m^3/h	D-0.8m h-20m T-30	1.204	0.027	0.198	20	4.9
		G64-2			3.713	0.516	+ 26580m^3/h	D-0.9m h-20m T-30	0.226	0.005	0.037	10	-
					1.191	0.165			0.062	0.002	0.012	4	-

					0.481	0.067			0.025	0.001	0.005	5		-
					0.674	0.094			0.035	0.001	0.007	5		-
		G64-3			0.01	0.001	800m^3/h	D-0.2m h-20m T-30	0.18	0.0001	0.001	20		--

5.4-4

	t/a	kg/h	m	m	m	t/a	kg/h	mg/m^3
	0.02	0.003				0.02	0.003	0.3
	0.038	0.005				0.038	0.005	1.0
63#	0.012	0.002	80	45	18	0.012	0.002	0.02
	0.005	0.001				0.005	0.001	0.005
	0.007	0.001				0.007	0.001	0.015
	0.0005	0.0001				0.0005	0.0001	0.3
	0.02	0.003				0.02	0.003	0.3
67#	0.038	0.005	83	34	18	0.038	0.005	1.0
	0.012	0.002				0.012	0.002	0.02
	0.005	0.001				0.005		

		0.007	0.001				0.007	0.001	0.015
		0.0005	0.0001				0.0005	0.0001	0.3
63-1#		0.02	0.003	89	45	18	0.02	0.003	0.3
		0.038	0.005				0.038	0.005	1.0
		0.012	0.002				0.012	0.002	0.02
		0.005	0.001				0.005	0.001	0.005
		0.007	0.001				0.007	0.001	0.015
		0.0005	0.0001				0.0005	0.0001	0.3
64#		0.02	0.003	72	64	18	0.02	0.003	0.3
		0.038	0.005				0.038	0.005	1.0
		0.012	0.002				0.012	0.002	0.02
		0.005	0.001				0.005	0.001	0.005
		0.007	0.001				0.007	0.001	0.015
		0.0005	0.0001				0.0005	0.0001	0.3
66#		0.003	0.0004	148	24	18	0.003	0.0004	0.3
	VOCs	0.002	0.0002				0.002	0.0002	10.0
		0.001	0.0001				0.001	0.0001	0.03
		0.003	0.0003				0.003	0.0003	0.3

5.4.2

1

126147m^3/a

72147m^3/a 240.49m^3/d 54000^3/a

180m^3/d

GB/T19923-2005

72147m^3/a

2

223877m^3/a

11032m^3/a 36.77m^3/d 2446m^3/a

8.15m^3/d 210399m^3/a 701.33m^3/d

MVR

2 MVR

MVR 600m^3/a

2m^3/d

+

3

1200m^3/a 4m^3/d

+

4

1000m^3/a 3.3m^3/d

+

5

300m^3/a 1m^3/d

+

6

24m^3/d 7200m^3/a

SS COD BOD_5 NH_3-N

7

5.4-5

										(mg/L)	
		m^3/a		(mg/L)	(t/a)		m^3/a		(mg/L)	(t/a)		
		72147	pH	11~12	——	pH + + +MVR +	72147	pH	6~9	——	6~9	,
			COD	40	2.886			COD	40	2.886	200	
			SS	100	7.215			SS	20	1.443	100	
			NH_3-N	11000	793.617			NH_3-N	5	0.361	40	
			Ni	40	2.886				10	0.721	400	
			Co	30	2.164			——				
			Mn	10	0.721							
				112000	8080.464							
		54000	pH	11~12	——	+ + + MVR						
			COD	40	2.16							
			SS	50	2.7							
			NH_3-N	1200	64.8							
			Ni	10	0.54							
			Co	7	0.378							
			Mn	3	0.162							
				10000	540							
		210399	pH	7~8	--	MVR	0	——				MVR
			COD	300	63.120							
			SS	200	42.080							
			NH3-N	24000	5049.576							

Ni	50	10.520
Co	20	4.208
Mn	0.5	0.105
Cu	0.15	0.032
Zn	0.02	0.004
	30	6.312
	60000	12623.94

		60000	661.92						
		78000	860.496						
	pH	7~8	--			pH			
	SS	200	0.288			SS			
	Ni	2	0.003			Ni			
1440	Co	0.2	0.0003		0	Co		--	
	Mn	0.2	0.0003			Mn			
		400	0.576						
		500	0.72						
	pH	8~10	——			pH	6~9	——	6~9

+

3100 3100

		/	
GB8978-1996	GB31573-2015 1 GB/T31962-2015 1A		

5.4-6

			mg/L		
	mg/L	t/a		mg/L	t/a
	82447m³/a				
COD	53.974	4.45	200	30	2.473
NH_3-N	7.017	0.5785	40	1.5	0.124
	9.109	0.751	400	-	0.751
GB31573-2015 1 GB/T31962-2015 1A GB3838-2002					

5.4.3

70 100dB(A)

5.4-7

	dB(A)	dB(A)	dB(A)
1	90~95	20~30	65
2	90 95	20~30	65
3	80 85	15~25	60
4	80 85	15~25	60
5	80 85	15~25	60
6	80 85	15~25	60
7	75 80	15~25	55

504t/a

3

0.33t/a 2021

HW46-

4

223.565t/a 2021

HW46-

5

16.67t/a

2021

HW46-

6

3 18t 6t/a 2021

HW49-

7

2021 HW08-

2t/a

8

		1t/a
HW49-		

		4	/	
		60	/	

5.4.5

5.4-9

		6	6	0
		1	1	0
		2	2	0
		2	2	0
		4	4	0
		60	60	0

5.4.6 **“ ”**

“ ”

5.4-10 **t/a**

“ ”

m3/a	116.17	8.24	0	124.41	+8.24
COD	34.85				

		0	0	0	0	0
		0	0	0	0	0
		0	0	0	0	0
		0	0	0	0	0
		0	0	0	0	0
		0	0	0	0	0

5.5

5.5.1

“ ”

COD NH_3-N SO_2 NO_X

5.5.2

5.5-1

“ ” 5.5-2

COD	34.85	2.473	12.05	25.273
	1.74	0.124		

6.1.3

20 16.8

40.6 -12.0 1 4.5

7 29.9 276 10

5300.3 1362.3 1384.2

81% 1714.7 10 107.78-112.3 /

2.4m/s 24m/s

16.8

101216.7Pa

1362.3mm

NNW

S

2.4m/s

26.4

35kg/m^2

6.1.4

144km 98km 2447km^2

46.6m^3/s 6.0 6.5m^3/s

DB43/023-2005

26.4km

GB3838-2002

2.0km

GB3838-2002

4.5km

GB3838-2002

53.8km 200

GB3838-2002

6.1.5

5 14 52 142

58.8 2.1

27.1 2.2 4

1.21 / 34.9 /

1.29 / 1.23 / 17.63 /

4.38 / 97.1 /

7.44 /100 956.24

1267.02 190.13

43.6%

6.1-1

		23#		
		2020.10		
		28.320381		
		112.591892		
		0 0.5m	0.5 1.5m	1.5 3m
		10%	10%	10%
	pH	7.67	4.51	6.78
	cmol+/kg	10.3	8.3	9.4
	mV	663	559	589
	/ cm/s	0.0010	0.0011	0.0009
	/ kg/m^3	910	868	895
	%	54.1	55.9	53.8
				

6.1.6

-

6.2

6.2.1

319 25km

45km

6.2.2

1998 2002

10km^2 2006

11.11km^2

21.11km^2

2007

2008 6 [2008]71

2010 11 “

” 2013

21.11km^2

60km^2 2013 1

2013 12

[2013]296

6.2.3

“ ”

$60km^2$

10mg/L

7.1-3

		mg/m^3	mg/m^3	%	%
HCl	1	0.05	0.02	-	0
	1	0.3	0.005-0.008	2.67	0
VOCs	8	0.6	0.046-0.052		

	1	2	3	4	
	0.11	0.23	0.25	0.27	
2019.2.25	0.12	0.21	0.28	0.30	0.30
	0.14	0.28	0.20	0.21	
	0.12	0.20	0.21	0.25	
2019.2.26	0.10	0.23	0.27	0.22	0.27
	0.15	0.27	0.24	0.27	
	1.3ug/m^3	2.7ug/m^3	2.2ug/m^3	3.8ug/m^3	
2019.2.25	1.4 ug/m^3	2.8 ug/m^3	2.6 ug/m^3	2.8 ug/m^3	3.8ug/m^3
	1.3 ug/m^3	2.1 ug/m^3	2.5 ug/m^3	3.0 ug/m^3	
	0.9 ug/m^3	1.8 ug/m^3	1.4 ug/m^3	1.6 ug/m^3	
2019.2.26	0.7 ug/m^3	1.3 ug/m^3	1.5 ug/m^3	1.7 ug/m^3	1.8 ug/m^3
	0.8 ug/m^3	1.8 ug/m^3	1.6 ug/m^3	1.2 ug/m^3	
	<0.2ug/m^3	<0.2ug/m^3	<0.2ug/m^3	<0.2ug/m^3	
2019.2.25	<0.2ug/m^3	<0.2ug/m^3	<0.2ug/m^3	<0.2ug/m^3	<0.2ug/m^3
	<0.2ug/m^3	<0.2ug/m^3	<0.2ug/m^3	<0.2ug/m^3	
	<0.2ug/m^3	<0.2ug/m^3	<0.2ug/m^3	<0.2ug/m^3	
2019.2.26	<0.2ug/m^3	<0.2ug/m^3	<0.2ug/m^3	<0.2ug/m^3	<0.2ug/m^3
	<0.2ug/m^3	<0.2ug/m^3	<0.2ug/m^3	<0.2ug/m^3	
	0.064ug/m^3	0.914ug/m^3	0.854ug/m^3	0.943ug/m^3	
2019.2.25	0.224ug/m^3	0.853ug/m^3	0.974ug/m^3	0.608ug/m^3	1.09ug/m^3
	0.141ug/m^3	1.09ug/m^3	0.690ug/m^3	0.538ug/m^3	
	0.228ug/m^3	1.10ug/m^3	0.394ug/m^3	0.713ug/m^3	
2019.2.26	0.327ug/m^3	3.69ug/m^3	0.221ug/m^3	0.670ug/m^3	3.69ug/m^3
	0.231ug/m^3	2.96ug/m^3	0.302ug/m^3	0.289ug/m^3	
	<0.02	<0.02	<0.02	<0.02	
2019.2.25	<0.02	<0.02	<0.02	<0.02	<0.02

7.1-6 **mg/m³**

		0.125	17.4μg/m³	<0.2μg/m³*	481ng/m³	<0.005*	<0.02*	0.12
	2019.	/	/	/	/	<0.005*	<0.02*	0.19
	2.23	/	/	/	/	<0.00*5	<0.02*	0.15
		/	/	/	/	/	/	0.13
		0.120	16.2μg/m³	<0.2μg/m³*	678ng/m³	<0.005*	<0.02*	0.12
○5	2019.	/	/	/	/			
	2.24							

		2500m	

2

2020 5 9 ~11 3

1

3

7.2-2

3 pH COD NH_3-N

GB3838-2002 1

GB3838-2002 2 3

GB5084-2005 1

7.2-2 **mg/L pH**

		pH	COD															
GB3838-2002		6-9	20	1.0	0.2	1.0	0.05	1.0	0.005	0.05	0.05	0.0001	0.02	1.0	0.1	250	250	1000
W1		7.35	15	0.894	0.13	0.00134	0.00024	0.00362	<0.00005	0.00506	<0.004	<0.00002	0.00150	<0.02	0.09	29	24.8	286
		7.18	13	0.839	0.12	0.00127	0.00020	0.00346	<0.00005	0.00480	<0.004	<0.00002	0.00144	<0.02	0.09	26	22.8	263
		-	14	0.866	0.13	0.00132	0.00022	0.00353	<0.00005	0.00493	<0.004	<0.00002	0.00147	<0.02	0.09	27	23.7	274
	(%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W2		7.41	12	0.678	0.08	0.00131	0.00054	0.00246	<0.00005	0.00285	<0.004	<0.00002	0.00111	<0.02	0.07	24	14.4	224
		7.24	11	0.642	0.07	0.00111	0.00049	0.00215	<0.00005	0.00265	<0.004	<0.00002	0.00100	<0.02	0.07	21	12.9	210
		-	12	0.655	0.08	0.0012	0.00052	0.00232	<0.00005	0.00277	<0.004	<0.00002	0.00107	<0.02	0.07	23	13.6	216
	(%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W3		7.48	14	0.174	0.07	0.00172	0.00052	0.00294	<0.00005	0.00369	<0.004	<0.00002	0.00190	<0.02	0.03	41	15.8	214
		7.32	12	0.144	0.05	0.00166	0.00049	0.00283	<0.00005	0.00342	<0.004	<0.00002	0.00173	<0.02	0.03	39	15.1	200
		-	13	0.159	0.06	0.00170	0.00050	0.00287	<0.00005	0.00358	<0.004	<0.00002	0.00180	<0.02	0.03	40	15.4	208
	(%)	0	0	0	0	0	0	0	0	0	0	0	0					

7.3

7.3.1

·0ᵍ

1 4 1~ 4

2 pH

3 2 / 2

4

7.3-1 **mg/L**

			2020.02.14		2020.02.15		
			1	2	1	2	
	pH		7.28	7.23	7.27	7.35	6.5-8.5
		mg/L	1.24	1.30	1.18	1.26	≤3.0
		mg/L	0.136	0.141	0.131	0.144	≤0.50
		mg/L	0.009L	0.009L	0.009L	0.009L	≤1.00
		mg/L	0.001	0.001	0.001	0.001	≤1.00
		mg/L	0.086	0.086	0.088	0.084	≤0.10
1# U 1		mg/L	3.00×10-4L	3.00×10-4L	3.00×10-4L	3.00×10-4L	≤0.01
		mg/L	0.004L	0.004L	0.004L	0.004L	≤0.05
		mg/L	5.0×10-4L	5.0×10-4L	5.0×10-4L	5.0×	

		mg/L	2.5×10^{-3} L	2.5×10^{-3} L	2.5×10^{-3} L	2.5×10^{-3} L	≤0.05
		mg/L	5.76	5.45	5.52	5.68	≤250
		mg/L	148	155	146	159	≤450
		mg/L	3.16	3.85	3.92	4.08	≤250
	pH		7.06	7.11	7.08	7.10	6.5-8.5
		mg/L	1.04	1.12	1.08	1.10	≤3.0
		mg/L	0.110	0.122	0.115	0.104	≤0.50
		mg/L	0.009L	0.009L	0.009L	0.009L	≤1.00
		mg/L	0.03	0.03	0.03	0.03	≤1.00
		mg/L	0.087	0.090	0.091	0.092	≤0.10
		mg/L	3.00×10^{-4}L	3.00×10^{-4}L	3.00×10^{-4}L	3.00×10^{-4}L	≤0.01
							≤0.05
2# U 2		mg/L	5.0×10^{-4} L	5.0×10^{-4} L	5.0×10^{-4} L	5.0×10^{-4} L	≤0.005

mg/L	0.152	0.160	0.157	0.146	≤0.50
mg/L	0.009L	0.009L	0.009L	0.009L	≤1.00
mg/L	0.04	0.0.1			

				L	L	L	L	5	
			mg/L	2.5×10^{-3} L	2.5×10^{-3} L	2.5×10^{-3} L	2.5×10^{-3} L	≤0.01	
			mg/L	0.006L	0.006L	0.006L	0.006L	≤0.02	
			mg/L	2.5×10^{-3} L	2.5×10^{-3} L	2.5×10^{-3} L	2.5×10^{-3} L	≤0.05	
			mg/L	7.33	7.14	7.23	7.28	≤250	
			mg/L	186	175	172	182	≤450	
			mg/L	5.83	5.54	5.63	5.68	≤250	
GB/T 14848-2017 1 GB/T 14848-2017 2									

GB/T 14848-2017 III

7.3.2

1

pH

2

4

7.3- Â

7.3-3 **mg/L pH**

		pH													
GB14848-2017		6.5~8.5	3.0	0.50	250	250	1.00	0.01	1.00	0.005	0.01	0.02	0.05	0.1	0.05	0.0001
D1		6.76	0.87	0.03	57	19.4	0.00925	0.00211	0.0319	<0.00005	0.00019	0.00261	<0.02	0.03	<0.004	<0.00002
		6.72	0.80	0.02	11	17.8	0.00919	0.00207	0.0305	<0.00005	<0.00012	0.00255	<0.02	0.02	<0.004	<0.00002
		-	0.84	0.03	27	18.4	0.00921	0.00209	0.0313	<0.00005	0.00014	0.00258	<0.02	0.03	<0.004	<0.00002
	(%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D2		6.71	0.46	0.03	11	18.4	0.00045	<0.00009	0.0396	0.00006	<0.00012	0.00210	<0.02	0.04	<0.004	<0.00002
		6.52	0.41	<0.02	9	16.8	0.00039	<0.00009	0.0378	0.00006	<0.00012	0.00207	<0.02	0.04	<0.004	<0.00002
		-	0.44	0.02	10	17.6	0.00042	<0.00009	0.0384	0.00006	<0.00012	0.00208	<0.02	0.04	<0.004	<0.00002
	(%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D3		6.65	1.22	0.15	12	16.6	0.00733	<0.00076	0.0336	0.00006	0.00026	0.00189	<0.02	0.07	<0.004	<0.00002
		6.60	1.14	0.12	9	15.1	0.00695	<0.00070	0.0333	0.00006	<0.00012	0.00180	<0.02	0.07	<0.004	<0.00002
		-	1.17	0.13	10	15.8	0.00720	<0.00073	0.0335	0.00006	0.00020	0.00184	<0.02	0.07	<0.004	<0.00002
	(%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D4		6.58	0.02	0.02	8	15.8	0.0249	0.00122	0.0905	0.000011	<0.00012	0.00303	<0.02	0.06	<0.004	<0.00002
		6.55	<0.02	<0.02	7	13.6	0.0242	0.00120	0.0886	0.000011	<0.00012	0.00291	<0.02	0.06	<0.004	<0.00002
		-	0.02	0.02	7	14.5	0.0244	0.00121	0.0898	0.000011	<0.00012	0.00298	<0.02	0.06	<0.004	<0.00002

7.4

1 5

2

A L_{Aeq}

3

2021 7 27~28 2

2

(GB3096-2008)3 (GB

3096-2008)2

5

7.4-1 **dB**

		2020-5-9	2020-5-10		
1m N1		56	55	65	
		45	46	55	
1m N2		57	54	65	
		43	45	55	
1m N3		56	55	65	
		46	44	55	
1m N4		53	55	65	
		45	46	55	
1m N5		57	56	60	
		45	44	50	

7.5

7.5.1

8000 23000

1

7.5-1

T323#	0m-0.6m
T5	0m-0.2m
T6	0m-0.2m

2

pH *

1,1- 1,2- 1,1- -1,2- -1,2-

1,2- 1,1,1,2- 1,1,2,2-

1,1,1- 1,1,2- 1,2,3-

1,2- 1,4- +

2- a a b

k a,h 1,2,3-cd

2018 07 20

3

GB 36600-2018 1

GB 36600-2018

2

7.5-2 **mg/kg**

35		1.3×10^{-3}L	1.3×10^{-3}L	1.3×10^{-3}L	640
36		0.09L	0.09L	0.09L	76
37		ND	ND	ND	260
38	2-	0.06L	0.06L	0.06L	2256
39	[a]	0.1L	0.1L	0.1L	15
40	[a]	0.1L	0.1L	0.1L	1.5
41	[b]	0.2L	0.2L	0.2L	15
42	[k]	0.1L	0.1L	0.1L	151
43		0.1L	0.1L	0.1L	1293
44	(a,h)	0.1L	0.1L	0.1L	1.5
45	(1,2,3-cd)	0.1L	0.1L	0.1L	15
46		0.09L	0.09L	0.09L	70
47	pH	6.17	6.35	6.56	——

7.5.2

1 Å#S n X$ P 2…Yc P 0 4

7.5.3

T1	63#	pH	
T2	67#		
T3	66#		
T4	63#	1 45 pH	

2

pH .g Ã *

1,1–

k a,h 1,2,3-cd

2021 07 27

3

GB 36600-2018

4

GB36600-2018

7.5.4 **mg/kg**

			0-0.5m	0.5-1.5m	1.5-3.0m		
2021.7.27	63#	pH	7.5	7.8	7.9	--	--
			0.084	0.075	0.045	38	
			25.2	13.6	18.8	60	
			67	54	64	800	
			31	24	25	18000	
			0.5L	0.5L	0.5L	5.7	
			95	51	41	900	
			0.23	0.14	0.23	65	
			121	103	102	--	--
			165	117	99	--	--
			845	458	444	--	--
			15.9	13.3	13.5	--	--
			43.2	42.4	45.5	--	--
			427	426	429	--	--
	67#	pH	7.2	7.3	7.4	--	--
			0.038	0.080	0.054	38	
			27.6	32.7	22.3	60	
			64	71	65	800	
			30	29	30	18000	
			0.5L	0.5L	0.5L	5.7	
			43	40	46	900	
			0.15	0.18	0.14	65	
			93	90	98	--	--
			232	149	223	--	--
			214	232	233	--	--
			2.61	1.18	6.91	--	--

		41.1	42.7	43.8	--	--
		398	424	415	--	--
	pH	7.8	7.6	7.8	--	--
		0.130	0.102	0.035	38	
		25.3	19.8	21.0	60	
		84	65	91	800	
		33	35	32	18000	
		0.5L	0.5L	0.5L	5.7	
66#		130	66	108	900	
		0.19	0.17	0.24	65	
		106	116	114	--	--
		213	165	191	--	--
		712	914	546	--	--
		7.89	11.7	13.8	--	--
		41.8	41.7	38.8	--	--
		401	403	411	--	--

			0.009L	2.8	
		1,2,3-	0.02L	0.5	
			0.26	0.43	
			0.01L	4	
			0.005L	270	
		1,2-	0.02L	560	
		1,4	0.008L	20	
			0.006L	28	
			0.06	1200	
		/	0.01	570	
		+	0.02L	640	
			0.09L	76	
			0.09L	260	
		2-	0.06L	2256	
		[a]	0.1L	15	
		[a]	0.1L	1.5	
		[b]	0.2L	15	
		[k]	0.1L	151	
		[a,h]	0.1L	1.5	
		[1,2,3-cd]	0.1L	15	
			0.1L	1293	
			0.09L	70	
			16.8	/	--
			38.2	/	--
			427	/	--

7.6

8

65#

8.1

8.1.1

1

20mg/m^3~50mg/m^3 50m TSP

0.487mg/m^3 150m

2

10 20m

8.1.2

1

COD SS 25 200mg/L 10 30mg/L 500

4000mg/L 5m^3/d

SS

2

2m^3/d

COD

BOD5 SS

GB18918-2002 A

8.1.3

75 100dB

A

8.1-1 **dB A**

8.1.5

1

2

3

8.2

8.2.1

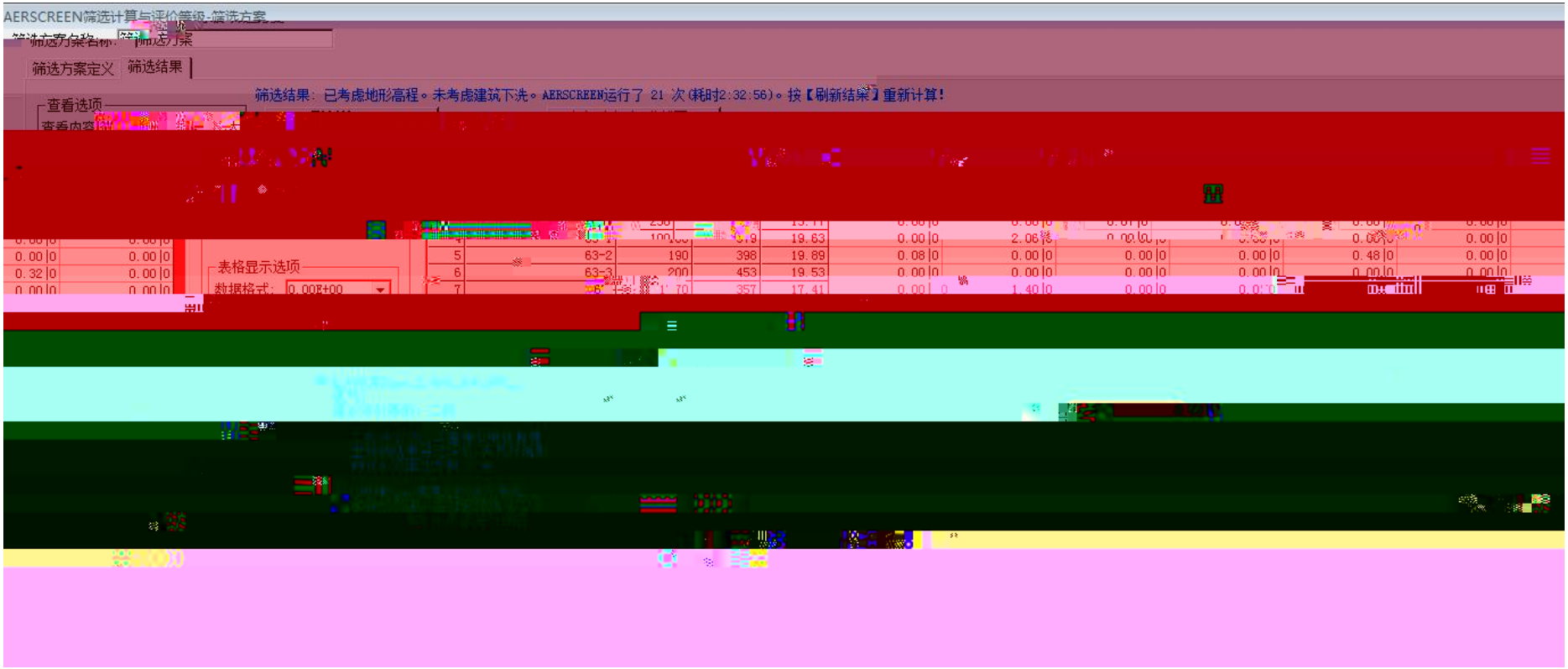
8.2-1

			m^3/h	kg/h	m	m	K
	G66-1		21000	0.004	18	0.8	303
		VOCs		0.073			
	G66-2		6800	0.0001	18	0.45	303

				0.00004			
		VOCs		0.003			
	G66-3		10000	0.005	18	0.5	303
	G63-1		22800	0.027	20	0.8	303
				0.005			
63#	G63-2		26580	0.002 0.001	20	0.9	303
				0.001			
	G63-3		800	0.0001	20	0.2	303
	G67-1		7900	0.025	20	0.45	303
	G67-2		2600	0.003	20	0.25	303
				0.005			
67#	G67-3		26580	0.002 0.001	20	0.8	303
				0.001			
	G67-4		800	0.0001	20	0.2	303
	G63-1-1		22800	0.027	20	0.8	303
				0.005			
63-1#	G63-1-2		26580	0.002 0.001	20	0.9	303
				0.001			
	G63-1-3		800	0.0001	20	0.2	303
	G64-1		22800	0.027	20	0.8	303
				0.005			
64#	G64-2		26580	0.002 0.001	20	0.9	303
				0.001			
	G64-3		800	0.0001	20	0.2	303

8.2-2

	m	m	m	t/a	kg/h	mg/m^3
63#						
	80					


AERSCREEN筛选计算与评价等级-筛选方案
筛选方案名称:
筛选方案
筛选方案定义
筛选结果
筛选结果：已考虑地形高程。未考虑建筑下洗。AERSCREEN运行了 21 次(耗时2:32:56)。按【刷新结果】重新计算!
查看选项
查看内容
表格显示选项
数据格式:
0.00E+00
5 63-2 190 398 19.89 0.08 0 0.00 0 0.00 0 0.00 0 0.48 0 0.00 0
6 63-3 200 453 19.53 0.00 0 0.00 0 0.00 0 0.00 0 0.00 0 0.00 0
7 70 357 17.41 0.00 0 1.40 0 0.00 0 0.00 0

8.2-4

		μg/m^3	%	m
G66-1		0.2757	0.09	382
	VOCs	0.068925	0.01	
G66-2		0.005508	0.002	79
		0.002203	0.000044	
	VOCs	0.165243	0.01	
G66-3		0.21946	0.07	79
G63-1		4.1254	2.06	379
G63-2		0.72692	0.08	398
		0.290768	0.32	
		0.145384	0.48	
G63-3		0.012026	0.000040	453
G67-1		2.7922	1.4	357
G67-2		0.16363	0.08	325
G67-3		0.63987	0.07	333
		0.255948	0.28	
		0.127974	0.43	
G67-4		0.006122	0.000020	305
G63-1-1		4.1824	2.09	375
G63-1-2		0.87919	0.1	343
		0.351676	0.39	
		0.175838	0.59	
G63-1-3		0.012842	0.000043	365
G64-1		5.319	2.66	304
G64-2		0.51376	0.06	507
		0.205504	023	
		0.102752	0.34	
G64-3		0.005282	0.000018	25
63#		0.76068	0.38	46
		1.2678	0.14	
		0.50712	0.56	
		0.25356	0.85	
		0.025356	0.01	
67#		0.81738	0.41	49
		1.3623	0.15	
		0.54492	0.61	
		0.27246	0.91	

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

Cm— mg/m^3

L— m

R— m

S m^2

A B C D—

Qc—

		0.003	50
66#		0.032	50
	VOCs	0.002	50
		0.032	50
		0.014	50

GB/T3840-91

100m 50m 100m 1000m

100m 1000m 200m

50m

GB/T3840-91 “7.5 Q_c/C_m

Q_c/C_m

” 100m

100m

8.2.1.4

1

8.2-6

(mg/m^3) kg/h A/ĥ .v,

7	G67-1	3.159	0.025	0.18
8	G67-2	0.963	0.003	0.018
9	G67-3	0.226	0.005	0.037
		0.062	0.002	0.012
		0.025	0.001	0.005
		0.035	0.001	0.007
10	G67-4	0.18	0.0001	0.001
11	G63-1-1	1.204	0.027	0.198
12	G63-1-2	0.226	0.005	0.037
		0.062	0.002	0.012
		0.025	0.001	0.005
		0.035	0.001	0.007
13	G63-1-3	0.18	0.0001	0.001
14	G64-1	1.204	0.027	0.198
15	G64-2	0.226	0.005	0.037
		0.062	0.002	0.012
		0.025	0.001	0.005
		0.035	0.001	

8.2-7

1.0	0.038
0.02	0.012
0.005	0.005
0.015	0.006

	0	MVR
	0	
	1200	+
MVR	600	
	1000	
	300	
	7200	
	-	
	82447	

8.2.2.2

4	NH_3-N	45	5.64
5		400	10
			GB/T31962-2015 1A

$2.5\times10^4m^3/d$

$274.823m^3/d$ $82447m^3/a$

8.2.2.3

8.2-11

	mg/L	t/a	mg/L	mg/L	t/a
				$82447m^3/a$	
COD	53.974	4.45	200	30	2.473
NH_3-N	7.017	0.5785	40	1.5	0.124

GB31573-2015 1

GB/T31962-2015 1A

GB3838-2002

8.2-12

8.2-13

		/ m^3/a						/ mg/L
1	DW01	7.21			-		SS	10
							COD	30
2	DW03	0.72			-		NH_3-N	1.5

8.2-14

					mg/L
1	DW01	pH	GB31573-2015	1	6~9
2		COD			200
3		SS			100
4		NH_3-N			40
5	DW02		GB/T31962-2015	1A	400
6		pH		GB8978-1996	6~9
7		COD			500
8		SS			400
9		NH_3-N			——

0.432m/d

0.05

$V \quad K \quad J$

V

K

J

0.0216m/d

2

5%

1

100 1000 10 50m 100m 150m 200m 300

2

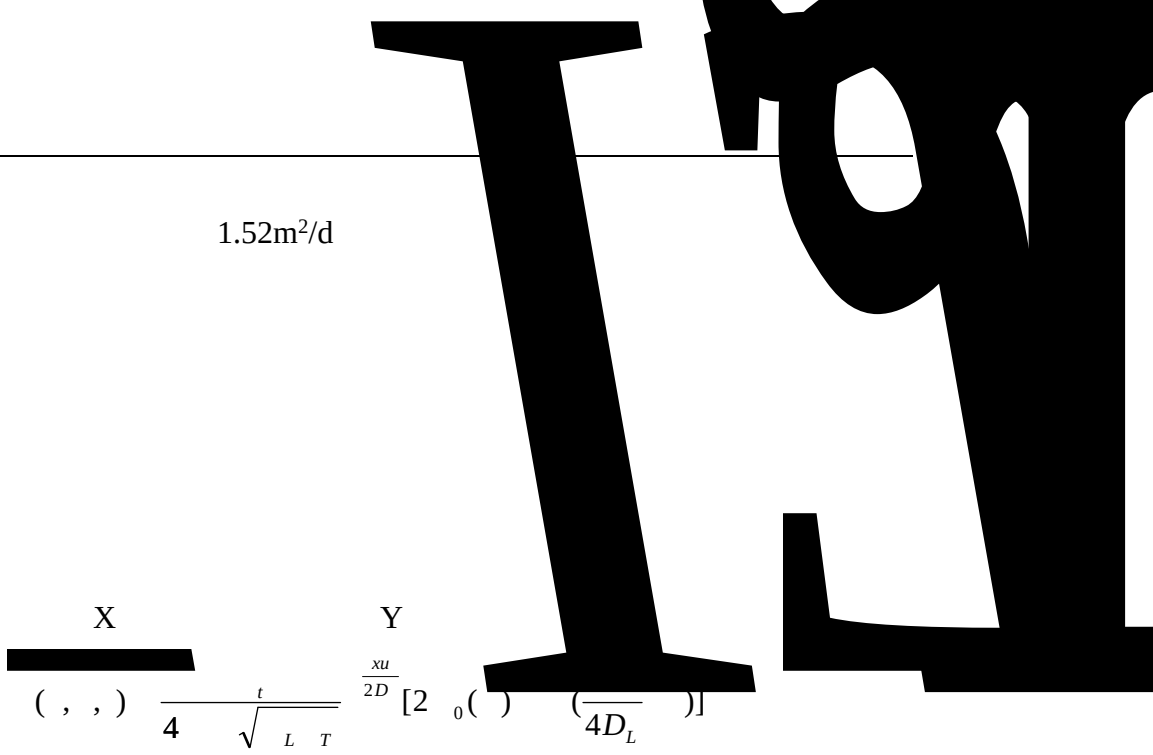
82447m^3/a 5%

8.2-16

		(m^3/d)	(mg/L)		
		16	10	50	1

$6.69 m^2/d$ $1.52 m^2/d$

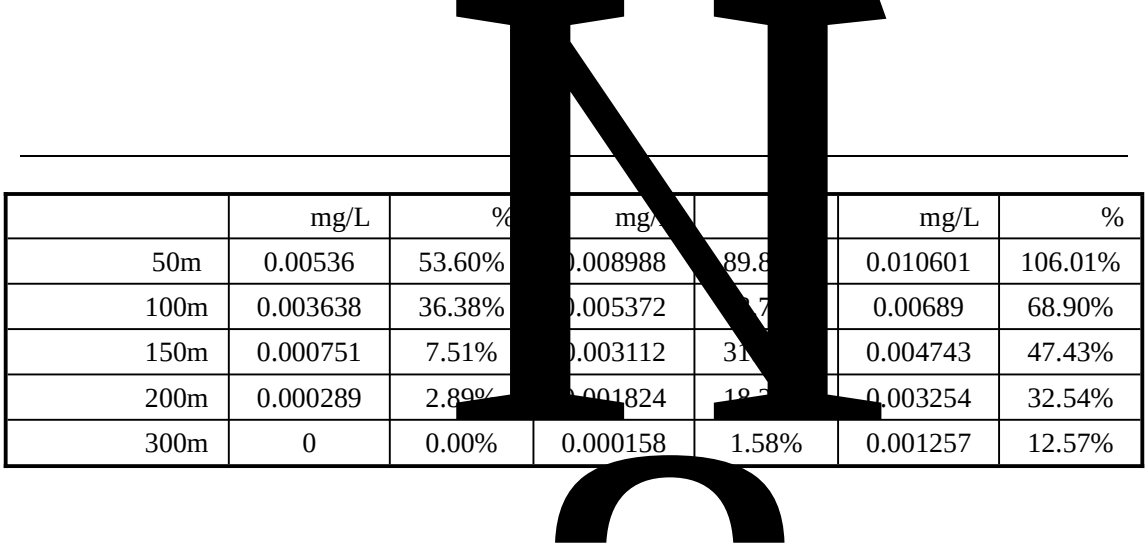
3



X Y

$$(, ,) \quad \frac{t}{4 \sqrt{\quad}} \quad {}^{\frac{xu}{2D}} [2 \quad {}_0( ) \quad (\frac{}{4D_L} \quad)]$$

$L \quad T$



	mg/L	%	mg/		mg/L	%
50m	0.00536	53.60%	.008988	89.8	0.010601	106.01%
100m	0.003638	36.38%	.005372	7	0.00689	68.90%
150m	0.000751	7.51%	.003112	31	0.004743	47.43%
200m	0.000289	2.89%	.001824	18	0.003254	32.54%
300m	0	0.00%	0.000158	1.58%	0.001257	12.57%

100 50

1000

10 GB/T14848-2017

Ni Co Mn 0.02 mg/L 0.05mg/L 0.1mg/L

Li— i

LA—

8.2-22

1	g	96000	40000
2	m^2	240000	
3	m/s)	0.007	
4		30	
5	kg	64800000	

8.2.6.5

8.23 **mg/kg**

	95	0.45	95.45	900	
	15.9	0.02	15.92	70	

30

GB36600-2018

HJ964-2018

2017 2019

GB36600-2018

9

9.1

9.1.1

9.1.1.1 P

1 Q

HJ169-2018 B Q

$$Q \quad \frac{q_1}{Q_1} \quad \frac{q_2}{Q_2} \quad \cdots \quad \frac{q_n}{Q_n}$$

$q_1, q_2, ..., q_n$— t

$Q_1, Q_2, ..., Q_n$— t

Q < 1

Q≥1 Q

1≤Q < 10

10≤Q <100

Q≥100

8 5

HJ169-2018 B.1

Q

9.1-1 Q

		CAS	q_n/t	Q_n/t	Q
1		-	7	0.25	28
2		-	164	0.25	656
3		-	256	0.25	1024
4		7786-81-4	220	0.25	880
5		-	2	2500	0.0008
6	31%	7647-01-0	240	7.5	32
7	98%	7664-93-9	500	10	50
8	20%	1336-21-6	240	10	24
Q					2694.0008

Q=2694.0008 Q≥100

2 M

M

9.1-2

		10/		0
		5/		0
		5/		0
/	/	10		0
		10		0
		5		0

9.1-3

M		
M 20	M1	
10 M≤20	M2	
5 M≤10	M3	

M=5	M4	M=0

M M4

3 P

P

9.1-4 P

Q	M			
	M1	M2	M3	M4
Q≥100	P1	P1	P2	P3
10≤Q <100	P1	P2	P3	P4
1≤Q < 10	P2	P3	P4	P4

P P3

9.1.1.2 E

E1 E2 E3

1

9.1-5

E1	5 5 500 1000 200m 200
E2	5 1 5 500 500 1000 200m 100 200
E3	5 1 500 500 200m 100

500 500 5

1 5 E2

2

9.1-6

F1	24h
F2	24h
F3	

F3

9.1-7

S1	10km
S2	10km
S3	10km 1 2

10km S1

S2 S3

9.1-8

	F1	F2	F3
S1	E1	E1	E2
S2	E1	E2	E3
S3	E1	E2	**E3**

F2 S3

E3

3

9.1-9

G1	
G2	
G3	

G3

9.1-10

D3	Mb≥1.0m K≤1.0×10^{-6}cm/s
D2	0.5m≤Mb 1.0m K≤1.0×10^{-6}cm/s Mb≥1.0m 1.0×10^{-6}cm/s K≤1.0×10^{-4}cm/s
D1	“D2” “D3”

0.5m≤Mb<1.0 1.0×10^{-6}cm/s<K≤1.0×10^{-4}cm/s

D2

9.1-11

	G1	G2	G3
D1	E1	E1	E2
D2	E1	E2	**E3**
D3	E1	E2	E3

G3 D2

E3

9.1.1.3

HJ169-2018

9.1-12

E	P			
	P1	P2	P3	P4
E1	+			
E2				
E3				
+				

9.1-13

	E	P	
	E2	P3	
	E3	P3	
	E3	P3	

9.1.2

1

HJ169-2018

9.1-14

	+			

2

5km

500m 5000m

5.5km

9.1-15

5km

	m	
1	130m	-
2	1300~2100m	820
	110~600m	80
3	520 m	500
4	120~1000m	90
5	1500m	300
6	300~1000m	200
7	600~1800m	180
8	2200m	2400
9	1930m	538
10	920~1900m	482
11	1400~2200m	246
12	520-720m	900
13	3200~4240m	316
14	4000m	3200
15	4550m	100
16	3900~4400m	2850
17	3500~3900m	2000
18		

		500 m			370
		5 km			17442
		E			
					/l
	1		S3		4500
	2		S3		800
		E			E3
					/m
	1			D3	-
		E			E3

9.2

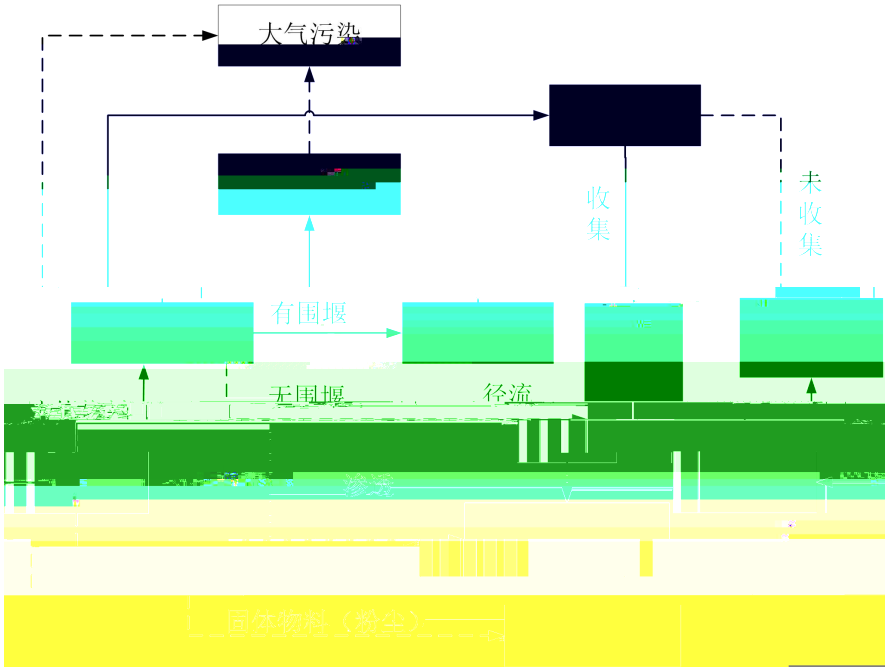
1

/

2

3

					/	1B	
					/	1	
5	31%	2507	7647-01-0		-		3
					-		2
6	98%	1302					



9.2-1

/ /

/ / SO_2 CO

9.3

9.3.1

1

2

3

HCl

4

9.3.2

1

HJ169-2018 E——

9.3-1

ReferenceManualBeviRiskAssessments
* InternationalAssociationofOil&GasProducers
RiskAssessmentDataDirectory(2010,3)

9.3-2

		λmin	λmax
1		5.0×10^{-6}	5.0×10^{-5}
2		1.0×10^{-6}	1.0×10^{-4}
3		9.5×10^{-6}	9.0×10^{-5}
4		5.5×10^{-7}	1.0×10^{-5}
5		5.5×10^{-6}	5.0×10^{-5}
6		7.0×10^{-7}	1.0×10^{-5}

1949-1982 13440

17

19

13440 261 (1.94%) 1056 (7.86%)

505 (3.76%) 828 (6.16%) 6165

(45.87%) 1076 (8.00%) 651 (4.84%)

784 (5.83%) 138 (1.03%) 40 (0.29%)

57 (0.42%)

95 1987 20--25

47.8% 27.6% 18.8%

8.2% 33.0% 23.1%

34.2% 34.2% 22.8%

90

Q_3

$$O \quad p \frac{M}{R \ T_0} u^{(2 \ n)(2 \ n)} r^{(4 \ )/(2 \ )}$$

Q_3— kg/s

α n—

p— Pa

R— J/mol·K

T_0— K

u— m/s

r— m

19.82kg/s 0.0209kg/s

17.84kg/s 0.066kg/s

3

HJ169-2018

H 1 2

1 1h

2

1h

-1 770mg/m^3 -2 110mg/m^3

HJ169-2018 G

9.3-3

		25	**1.5m/s**
		50%	**F**
60		7.5686E+01	
160		2.7486E+01	
260		1.5226E+01	
360		1.0375E+01	
460		7.4621E+00	
560		5.4678E+00	
660		4.2135E+00	
760		3.3022E+00	
2.302E+00			

9.4.2

9.4.2.1

1

2

1

2

9.4.2.2

1 4200m^3 1 5800m^3

U » u"• > G × Ä U » u"• FJ
)àÓ À 2

10000m^3

1 200m^3 1 1800m^3

1 300m^3

1

2 /

3 /

4

5

6

7

8

9

10

11

12

9.4.3.2

1

2

11

9.5

10

10.1

10.1.1

1

2

3

õ ê ˆ

4

5

10.1.2

1

10.2.1

10.2.1.1

VOCs

10.2-1

G66-1	+ 21000m^3/h	D-0.8m h-18m T-30
G66-2	+ 6800m^3/h	D-0.45m h-18m T-30
G66-3	10000m^3/h	D-0.5m h-18m T-30
G63-1	22800m^3/h	D-0.8m h-20m T-30

		G63-1-3	800m^3/h	D-0.2m h-20m T-30
		G64-1	22800m^3/h	D-0.8m h-20m T-30
		G64-2	+ 26580m^3/h	D-0.9m h-20m T-30
		G64-3	800m^3/h	D-0.2m h-20m T-30

1

90%

HCl

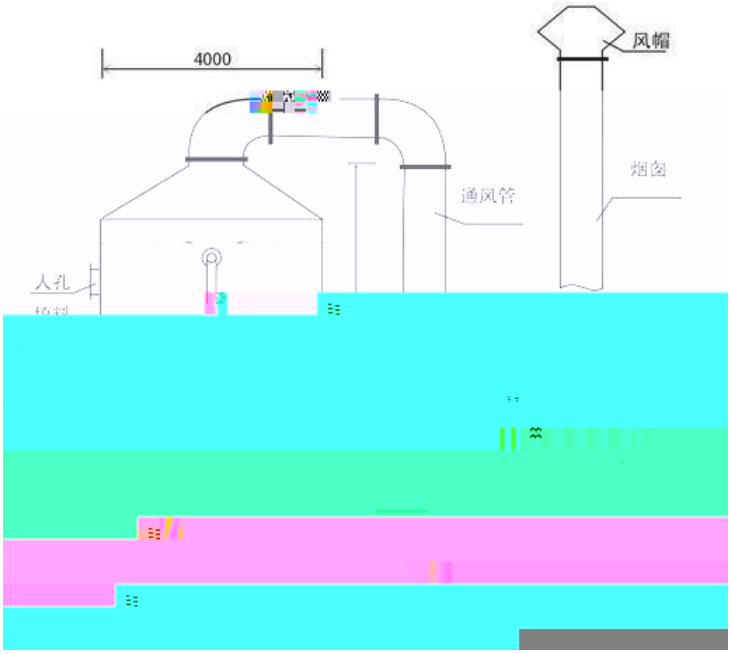
GB31573-2015 3

HCl

2

90%

GB14554-93 2



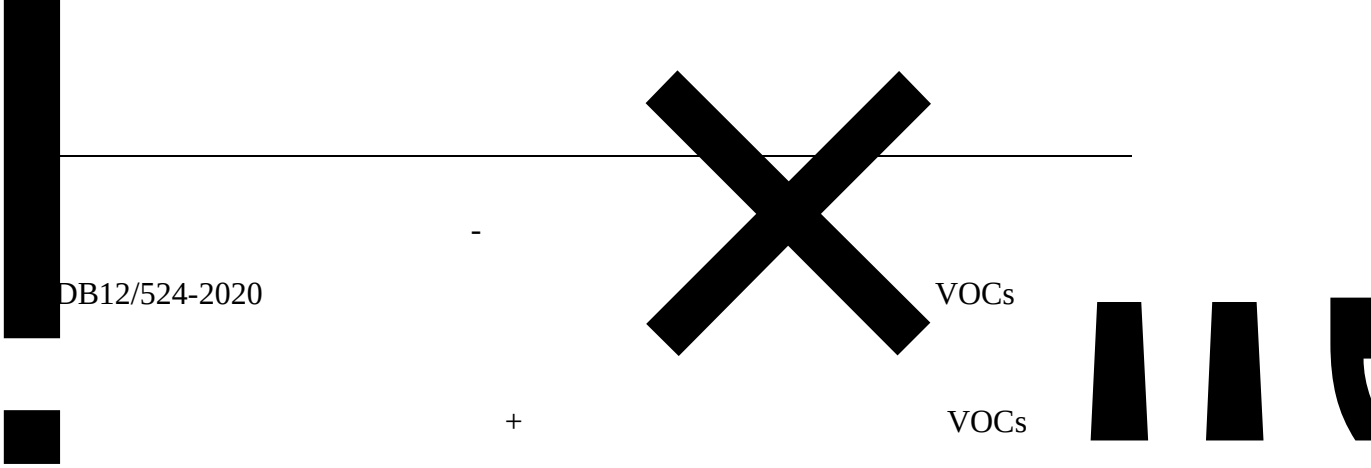
10.2-1

3

/VU

10.2-2

VU



-

DB12/524-2020 VOCs

+ VOCs

4

80% 1μm

a

$ HPÏ %BBA%

0.1μm

b

99.9%

c

99.9%

0.1μm

0.05μm

10.2-3

	%							
	≥99							
	≥99					300		
	≥99							
-								

5μm

+

80% 1μm

+

+

GB31573-2015 4

10 mg/m^3

/ +

10.2.2

10.2.2.1

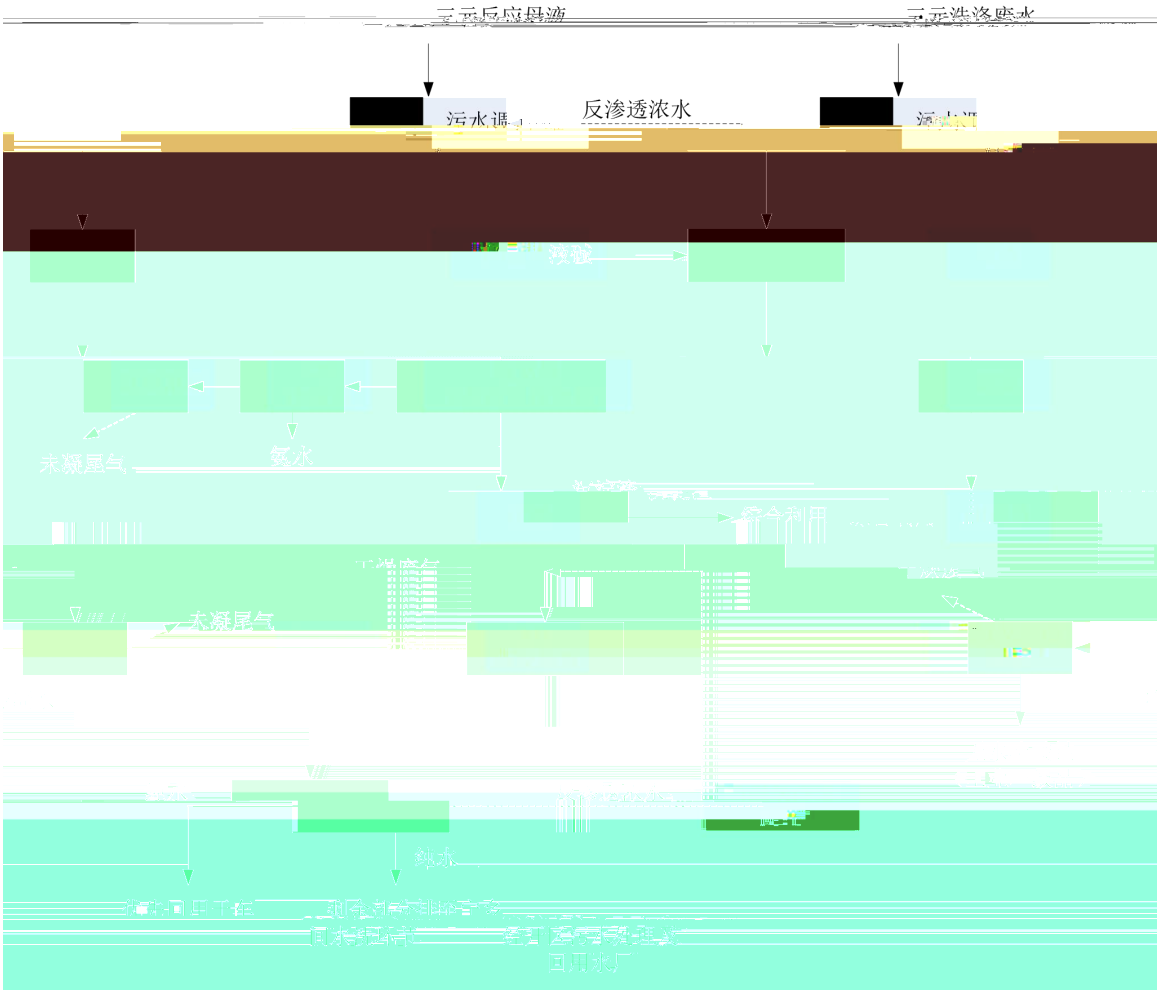
10.2-3

10.2.2.2

1

10.2-5

	pH			%
	11 12	9000-11000 mg/L	Ni Co Mn≤80ppm	15 20
	11 12	600-1500 mg/L	Ni Co Mn≤20ppm	0.6 1.5



10.2-2

1 pH

50~80ppm

pH pH 12

2

NH_3-N

NH^{4+} NH^{3+}

PH PH PH

PH

PH

3

5ppm

4 MVR

27%

5 MVR

MVR TDS 200ppm

80% TDS<5ppm

6

pH

MVR

10.2-6 MVR

MVR

1		m^3/h
2	pH	-

b_H

10.2-8

												mg/L	pH
		pH											
		8.68	15	56	11.7	35.9	39.0	0.62	0.50	<0.05	0.05	0.0336	2.52	1.91
		8.88	19	63	13.1	35.3	39.3	0.64	0.51	<0.05	0.05	0.0329	2.55	1.91
	2019.	8.54	21	59	12.3	35.5	38.1	0.62	0.49	<0.05	0.07	0.0284	2.49	1.94
	2.21	8.28	16	61	12.7	36.2	39.5	0.63	0.50	<0.05	0.06	0.0273	2.53	1.89
		/	18	60	12.5	35.7	39.0	0.63	0.50	<0.05	0.06	0.0306	2.52	1.91
		8.52	18	57	11.9	36.1	38.3	0.66	0.51	<0.05	0.06	0.0297	2.54	1.92
1		8.47	16	66	13.8	35.9	39.6	0.61	0.51	<0.05	0.04	0.0329	2.52	1.95
	2019.	8.66	19	65	13..									
	2.22													

10.2-9

10m^3/h 240m^3/d

10.2-10

	m^3/d	
	240	
	180	

10.2.2.3

1

GB31573-

GB/T31

GB31573-2015 6

HJ/T91-2002

GB/11912-89

0.05mg/L

HJ957-2018 0.05mg/L

GB/T11906-89 0.05mg/L

2

GB31573-2015 1

“ ”

“ ”

10.2.2.4

1

300m^3 1 4200m^3

2 10000m^3

2

50m^3

10.2.3

“

”

2

$40m^2$ $30m^2$

GB18597-2001

1

2

3

4

5

6

7

8

9 - GB15562.2

10

”

“

”

1

2

“

”

11.5 “ ”

“ ”

2020 11

1

2

3

4

“ ”

11.6

3

12

12.4

13

“ ”

13.1

13.1.1

“ ”

13.1.2

1

13.1.3

1

“ ”

2

3

13.2

13.2-1

	1 2		

13.3

13.3.1

1

2

3

4

13.3.2

1

13.3-1

		HCl NH_3 VOCs		GB14554-93	
		pH SS COD		GB31573-2015	
		A		GB12348-2008	3

2

13.3-2

	G1	HCl NH_3 VOCs				
	G2 500m					
	T1 63#	pH				
	T2 66#					
	T3					
	D1	pH				
	D2					
	D3					
	D4					
	D5					

13.3.3

1

Ã

2

3

13.3.4

31

[2013]81

13.4

—

“ ”

1

100mm

2

3

150mm

3

13.5

[2017]4

“

13.3-1

	63#	+20m +20m + +20m	
	67#	+20m +20m +20m + +20m	
	63-1#	+20m +20m + +20m	
	64#	+20m +20m + +20m	
	66#	+ +18m +18m +	

		+18m	
			--
		300m^3 400m^3 50m^3	

14

14.1

14.1.1

103 77134.7m^2 63#
67# 63# 67# 63-1# 64#
66#
70# 1 1
10000t/a
360t/a

14.1.2

1
2020
HCl
GB 31573-2015 5
HCl VOCs
HJ2.2-2018 D

2

3 pH COD NH_3-N

GB3838-2002 1

GB3838-2002 2 3

GB5084-2005 1

3

GB/T14848-2017

4

GB3096-2008 3

5

GB36600-2018

GB15618-2018

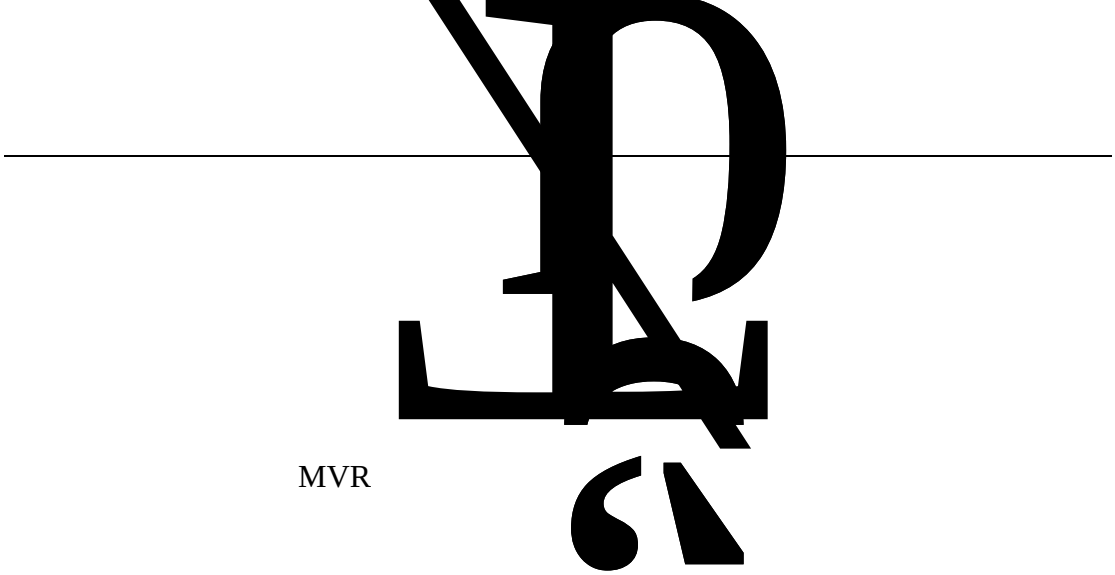
6

14.1.3

1

HCl NH_3 VOCs

2



MVR

14.1.4

HJ169-2018 B

Q Q≥100

14.2

1

“ ”

2 —

3

4

5

6

7

8