

目 录

	5
1	10
1.1	10
1.2	15
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1.5	18
1.6	18
1.7	22
2	24
2.1	24
2.2	24
2.3	24
2.4	25
2.5	25

4.6

"E

b

7.9	169
7.10	170
8	171
8.1	171
8.2	171
8.3	174
8.4	174
9	175
9.1	175
9.2	176
10	177
10.1	177
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11.4	183
12	184
12.1	184
12.2	184
12.3	185
12.4	186
12.5	187
12.6	187
12.7	187
12.8	188

1968 1970
2018 196.93 355.64 39.63
14.73 2018 500 42 2018
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2.4 ³

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16297-1996

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1				2014	4	24		
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3					2018	10	26	
4					2017	6	27	
5						2016	11	7
6						2018	12	29
7						2012	7	1
8					2011	3	1	
9				2016	7	2		
10					2014	12	1	
11					2016	7	2	
12						2007	11	1
13						2019	1.1	
14						2018	10	26
15					2019	4	23	
1								2017
9	1				2018	4	28	3
	2					2018	4	16
						2019	1	1
	3							2017 6
21					177			2017 10 1
	4							2012 77
	5							2012 98
					2012	8	7	

6			
	2015	4	
7			2017
8		2018	48
9			
	2017	84	
10			
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11		2013	37
12		2015	17
13		2016	31
14		2019	
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16		2019	
17			2018
			22
18			2017
			48
19			2017
43			
20		2020	1
21			
2017	121		
22		2018-2019	
		2018	119
23			
2016	150		
24			2019
			25
25			2019
			53

26	2019-2020								
1		2016	11	1					
2		2018	11	30					
3								2018	
1	13								
4			2018	1	23				
5						2018	1	13	
6					2009	7	24		
7					2019	112			
8		2005	39						
		2006	72						
9									
10									
		2006	60						
11						2016-2020			
		2016	173						
12							2004	120	
13									
2016	141								
14									
		2011	13						
15									
2013	4								
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18									
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20									
				2015	46				
21								()	
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22									
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23							2013-2020		
				2018-2020		2018	199		
24								2018-2020	
25								2018	2020
				2018	166				
1							2.1-2016		
2016	12	8		2017	1	1			
2							2.2-2018		2018
7	31			2018	12	1			
3							2.3-2018		
2018	10	8		2019	3	1			
4							2.4-2009		2009
12	23			2010	4	1			
5							610-2016		
2016	1	7		2016	1	7			
6							169-2018		2018
10	15			2019	3	1			

7		2034-2013	
8			2017 9
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9		18218-2018	
10		819-2017	
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3		2011-2020	
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7	2013-2020		
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4			1040	
5			1070	
6			1150	
7			1150	2138
8			1420	
9			1440	563
10			1530	1971
11			1580	302
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2				
3			300	

1.6-1 1.6-6

	3095-2012	
		—
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	2.2-2018	.1
	3838-2002	
	/ 14848-2017	
	3096-2008	2
	36600-2018	1

1	2	1	0.5	/ 3
		24	0.15	/ 3
2	2	1	0.2	/ 3
		24	0.08	/ 3
3	10	24	0.15	/ 3
4	2.5	24	0.075	/ 3
5		200		/ 3
		8	160	/ 3
6		1	10	/ 3
		24	4	/ 3
7		1	3	/ 3
8		2.0		/ 3
9		20		14554-93 1
				3095-2012
				2.2-2018 .1

	6-9		15
	40		1.0
5	10		0.1
	2.0	/	40000
	0.4		2.0
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	0.2	*	250
*	3838-2002	2	
37/3416.4-2018		4	

		3		—	
	/	200		—	
	/	0.10		/	3.0
		6.5-8.5		/	1.0
	/	0.3		/	450
	/	0.01		/	0.5
	/	250	()	/	0.05
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	()	60 50

1		7440-38-2	60
2		7440-43-9	65
3		18540-29-9	5.7
4		7440-50-8	18000
5		7439-92-1	800
6		7439-97-6	38
7		7440-02-0	900
8		56-23-5	2.8
9		67-66-3	0.9
10		74-87-3	37
11	1,1-	75-34-3	9
12	1,2-	107-06-2	5
13	1,1-	75-35-4	66
14	-1,2-	156-59-2	596
15	-1,2-	156-60-5	54
16		75-09-2	616
17	1,2-	78-87-5	5
18	1,1,1,2-	630-20-6	10
19	1,1,2,2-	79-34-5	6.8
20		127-18-4	53
21	1,1,1-	71-55-6	840
22	1,1,2-	79-00-5	2.8
23		79-01-6	2.8

24	1,2,3-	96-18-4	0.5
25		75-01-4	0.43
26		71-43-2	4
27		108-90-7	270
28	1,2-	95-50-1	560
29	1,4-	106-46-7	20
30		100-41-4	28
31		100-42-5	1290
32		108-88-3	1200
33	, -	108-38-3,106-42-3	570
34	-	95-47-6	640
35		98-95-3	76
36		62-53-3	260
37	2-	95-57-8	2256
38	()	56-55-3	15
39	()	50-32-8	1.5
40	()	205-99-2	15
41	()	207-08-9	151
42		218-01-9	1293
43	(,)	53-70-3	1.5
44	(1,2,3-)	193-39-5	15
45		91-20-3	70

	37/2801.7-2019	1	2
	16297-1996		2
	/ 31962-2015	1	
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	2348-2008		3
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37/2801.7-2019

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1		15	60	3	2	37/2801.7-2019 1

						2
2					16	37/2801.7-2019 2
3		15	190	5.1	12	16297-1996 2

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/ 31962-2015 1

	/	6.5-9.5	45	400	350 500

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12348-2008

3	()	65 55

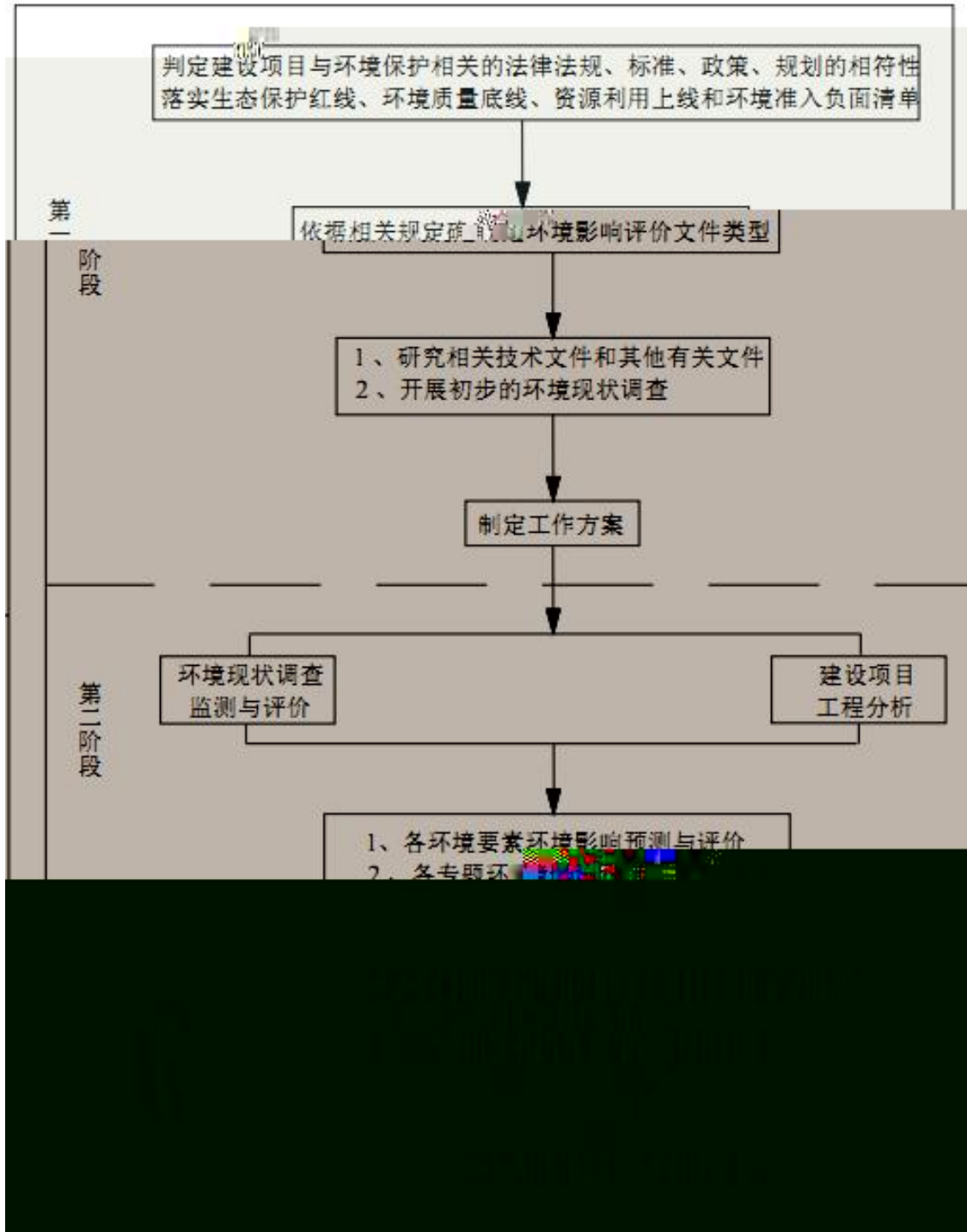
12348-2008

	()	70 55

4

18599-2001

1.7-1



117 47 118 09 37 13 37 36

33

44

697.49

286.0 2.8
66% 8 80% 3
55%
2415 1786.1 6
265.4 12 41.1
20 2.5 /
2 5 28.5 /
61% 54% 2415.2
32
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300
2.1-2
6
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		1997		1400	3
1800	3			3	/
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1/8000	15	3/			
2.1-3					
		6	95	389	96
		100%	53	90%	25
			6	60%	80%
					8
		389			
202					
	10			20	
				1960	
	10	4			
				18306-2001	
	0.05			0.45	
					1.62
				300	
		200			

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3.1-1

	36 / 28 / 8 /	2012 16 2013 121		2019 380600 06
	10 / 12 / 4 / 8 / / 6 /	2011 160		2019 3
8 /	8 /	2012 138		2019 5
/ 10	10 /	2014 71		2019 3
2.4 3	6 4145 3 20 × 13.2 6 6	2019 27		—
7.5 /	7.5 /			
11000 /	11000 /	2014 41		



3.2-1

1 36 / 14 4

2 10 /

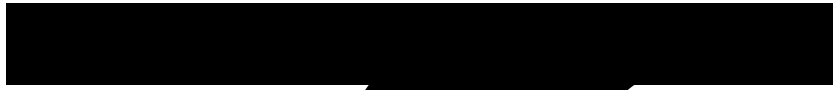
2 1 4 / 1 8 /



1 8 / 4

2 4

1 7.5 /



3 1368 2

1.6 3
B

6
+
*
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78 /

500 3/
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1 250 / 134
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1 -2500/7000 1 100 3 1 50 3
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" " + + +
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17} .47... 55d

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1 ~

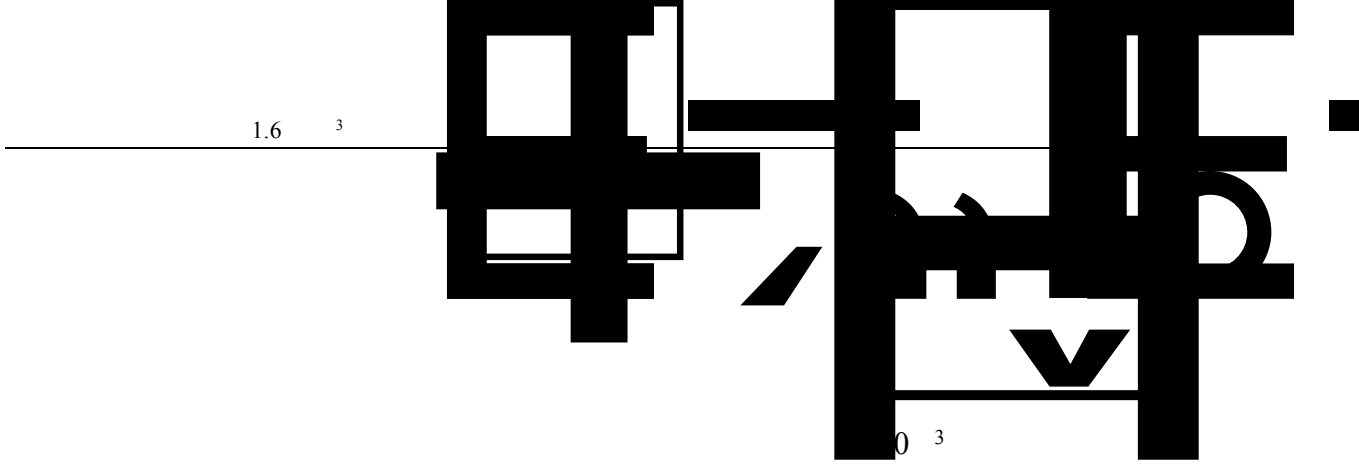
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1			/	100000		
			/	120859		
			/	20751		
			/	60000		
			/	2000		
			/	2000		
		60#	/	8500		
			/	106.29		
			/	4450		
		31%	/	117693.4		
	8	/		80000		
		31%	/	251294.23		
		50#	/	6672.66		
		10%	/	41295.29		
		80#	/	5705.87		
	10	/	98.5% ()	100000		
			()			
		32%	()	/	360000	
				/	306500	
				/	32000	
				/	3000	
				/	4000	
				/	2000	
			/	10000		
			/	7000		
7.5	/		/	75000	—	
			/	21250	—	
			/	411380	—	
2		32%	/	333560		
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		2	³ /	3213		
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			/	15		
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	8	/		/	52593.62	—
			/	122986.12	—	

3.3-2

" "

	2	1.605
		84.31
		2.046 1.14
		0.947 4.3
1		16.877 8.71
		0.656
		0.218 14.95
		7.5
		0.0017
		6260776
2		375.79
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2.2		$\times 10^4$ /	17.86	
2.3		/	1386	
2.4		³ /	80	
3				
3.1		²	10724	
3.2		²	4464.05	
3.3		²	1500	
4				
4.1			3510	
5				
5.1			20	
5.2		/	330	
5.3		/	24	

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2018-2035

4.1-3

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4

4.1-4

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4.2-1

1.6 ³

4.2-2

	13.6			1.87	60	95%	

1		70%
2		6%
3		3%
4		5%
5		
6		5

1.26362

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290.0

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177

1

1

2

3

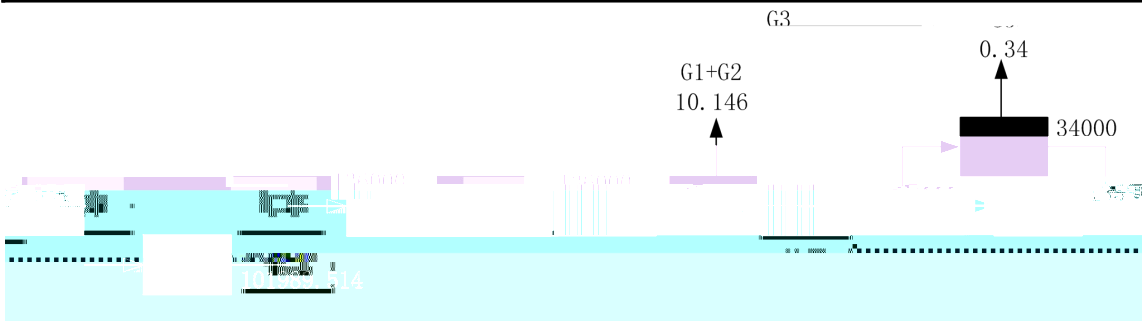
4.3-1

4.3-1

1					1 15
2					
3					

4.3-2 4.3-2

	136000		135989.514
—	—		10.486
	136000		136000



4.4-1

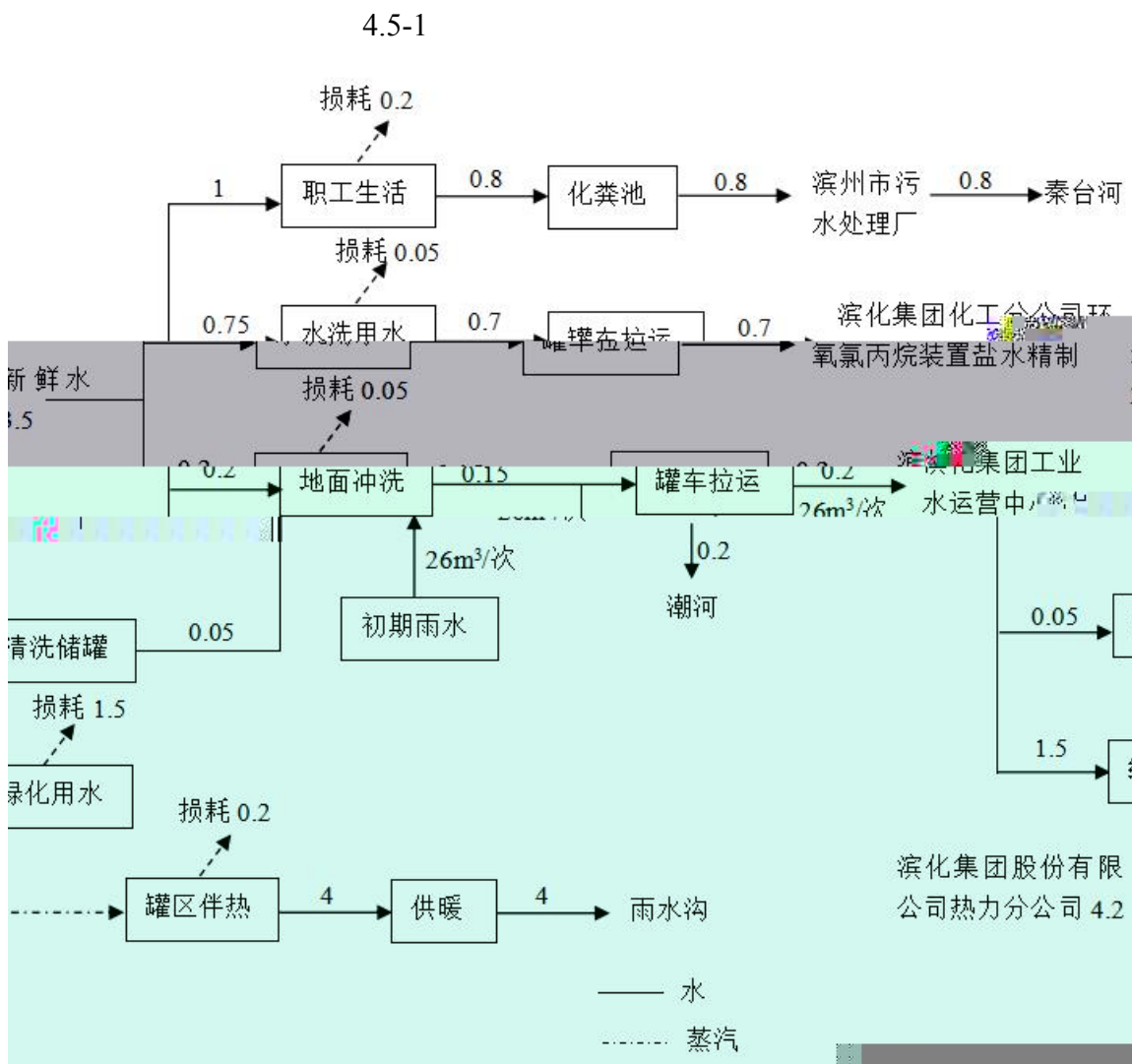
1		20 13.2		4
2		—		4
3		—		2
4		—		1
5				1

20 50 / 1 ^{3/}
 330 ^{3/} 1500 ² 0.001 ^{3/} ²
 150 1.5 ^{3/} 225 ^{3/} 3 ^{3/} 22 /
 66 ^{3/} 15 ³
 0.75 ^{3/} 247.5 ^{3/}
 883.5 ^{3/}

1 80% 0.8 ^{3/} 264 ^{3/}
 / 31962-2015 1

18919-2002 1

2 625.1
 2296.16 ² 26 ^{3/}



17.86

1386 /

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37/3416.4-2018

1600 /

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/ ³

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-0.7026

220

0.26

	13.6	1.26	13.2	9.36	0.786	10.146

3%

10.146 /

0.304 /

1 15

3000 ³/

90%

1.02 / 0.03 /

	3000	10.146	427.02	90%	1.02	0.129	42.93
		0.304	12.79	90%	0.03	0.004	1.26

1 15

37/2801.7-2019

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60 / ³ 3 /

16297-1996

2

190 / ³ 5.1 /

3

3.4 /

11085-89

0.01%

3.4 /

90%

0.34 /

3%

0.34 / 0.043 /

0.01 / 0.001 /

37822-2019

1

15

2

3

4

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6

7

37/2801.7-2019

2

2 / ³

16

16297-1996

2

12 / ³

1

80%

264 ^{3/}

-

450 /

35 /

0.119 /

0.01 /

/ 31962-2015

1

2

63 ^{3/}

4

37/3416.4-2018

700 ^{3/}

400 ^{3/}

		6-12	1600 /	30 /
28000 /	20 /			63 ^{3/}
3	29.17 /	231 /		
			1259.4 /	3544.8 /
				3.89
	29.17 /	231 /		
4				
566.7		6 9		
			15	
		15.873 1 0.78	/	10 ^{0.91}
	1 2			
1		1	10	15
2				15

0.8 0.7 0.8 0.6 0.7

26 ^{3/} 105 ³ 957 ³

2

4.6-3

1			0.8		450 35		
2			0.2		800 400		
			1		520 28 80		—
3			0.7		—		
			26 ^{3/}				

1

70 80 ()

2

1

2

3

4.6-4

1		70-80		2	55-65
2		70-80		2	55-65
3		70-80		2	55-65
4		70-80		2	55-65

	20		-
		0.54 /	
3.564 /			
	43.27 /		
0.01 /			
		15	
			10.146 /
0.304 /			
		4.6-5	
(³ /)	558	231	327
	0.169	0.151	0.018
	0.009	0.00	

" "

1		2	1.605	0	1.605
			84.31	0	84.31
			2.046 1.14	0	2.046 1.14
			0.947 4.3	0	0.947 4.3
			16.877 8.71	0	16.877 8.71
			0.656	0	0.656
			0.218 14.95	1.02 0.34	1.238 15.29
			7.5	0	7.5
			0.0017	0	0.0017
2			6260776	327	6261103
			375.79	0.018	375.808
			62.63	0.003	62.633
3			0 4436.76	0	0 4436.76
			0 294786.6	0 46.844	0 294833.444

60%

4 5 70%

20 50

2

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248 / 393-2007

2010 79

2013-2020

2019 112

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2019 23

100% 100% 100% 100%

100%

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		78-96
		75-88
		85-95
		90-95
		75-88
		90-98
		90-95
		90-98
		82-98

2

4.7-2

	82	72.5	70	66.5	64	62	56	52.5
	74	64.5	62	58.5	56	54	48	44.5
	81	71.5	69	65.5	63	61	55	51.5
	81	71.5	69	65.5	63	61	55	51.5
	74	64.5	62	58.5	56	54	48	44.5
	84	74.5	72	68.5	66	64	58	54.5
	81	71.5	69	65.5	63	61	55	51.5
	84	74.5	72	68.5	66	64	58	54.5

1.6 ³

	84	74.5	72	68.5	66	64	58	54.5
4.7-1								

3

12523-2011

70 () 55 () 4.7-2

30 150

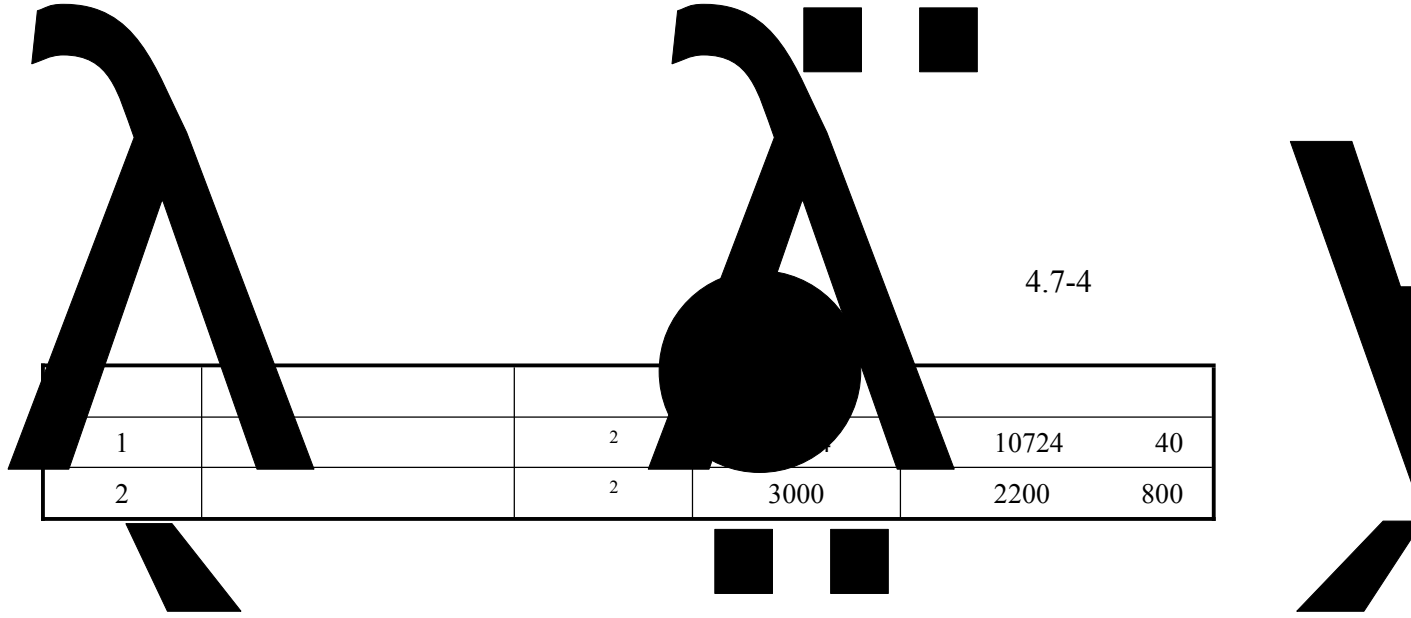
550

200





0.4



4.7-4

1		2		10724	40
2		2	3000	2200	800

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4

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6

2012 77

4.8-1

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			4
		2010 113	
3	" "	50483	

			50483	
4				

2012 77

2013 31

4

2013-2020

4.8-2

	<p>2015 " "</p> <p>2017 2012 2000 2020</p> <p>60%</p>		
		2019	
		2.5 10 3	
		3095-2012	
		2019	
		2019 7	
		2013 138	

2013-2020

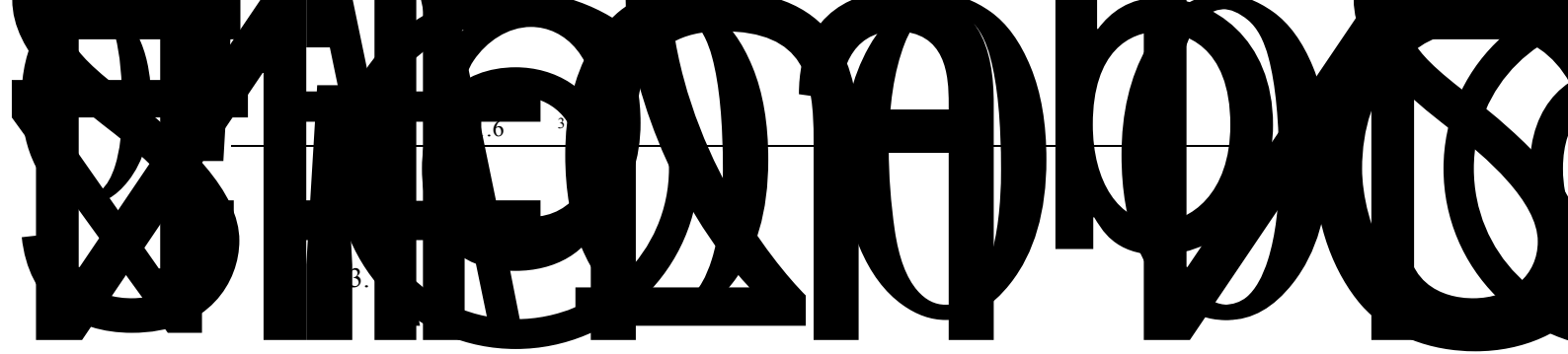
4.8-3

	2017	" " " "	
	20	10	
		10	
		2011	2010
	" "	21	2019

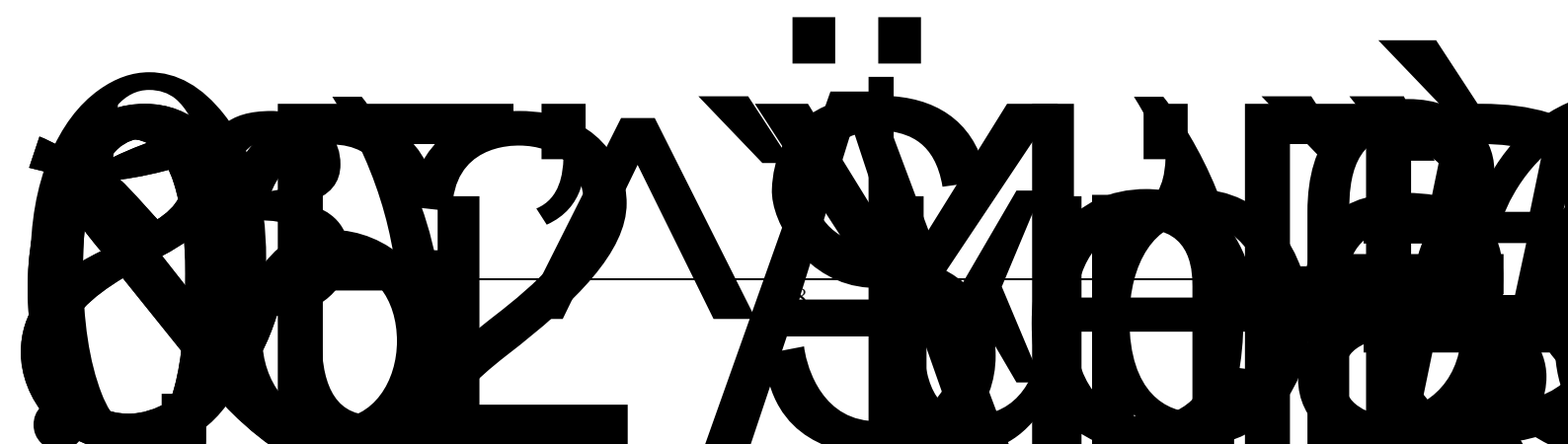
4.8-3

4.8-4

	1.		
	2.		
	2014		
	" 2015	"	
		2017	
	559		



10.4#b€€0«0



	1086 ²	
	5	
	3095-2012	
	3838-2002	
	/ 14848- 2017	
	3096-2008	3
	36600-2018	1
	2019	
	2019 7	
	"	
	"	
	"	
	2020	
	"	
	5990	5720
		2019
	"	"

4.8-1

2018-2035

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200

2011 11 16

2011 143

2014

2014 10 28

2014 131

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0.8

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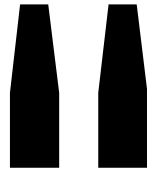
2015

2020

280



WWW.MANMÓ



540

270

4.9-1

	1	4.6	20	1.4	0.4
	1	2.5	8	2.0	0.5
	1	70	40	32	32
	1	5.9	16.7	—	—

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4.9-2

	0.3 0.5	0.6 0.9	2.5 4.0
	-30 110	-30 110	80

/ ²	65-73	90-98	80-83
	/ 0315	-	/ 0413

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2013 37

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264 ^{3/}

18919-2002

50 / 5 /

264 ^{3/} 50 / 10⁻⁶ 0.014 /

264 ^{3/} 5 / 10⁻⁶ 0.002 /

2

63 ^{3/}

4

37/3416.4-2018

60 / 3-

10 /

63 ^{3/} 60 / 10⁻⁶ 0.004 /

63 ^{3/} 10 / 10⁻⁶ 0.001 /

2

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1.02 /
2019 9 2

2019 132

2 2019

2

2.04 /

5.1-1
663-2013

2019

5.1-1

10 3

2.5

2 2 10

3095-2012

					%	
2	/ 3		20	60	33.33	
	/ 3	98%	46	150	30.67	
2	/ 3		39	40	97.5	
	/ 3	98%	76	80	95	
10	/ 3					
	/ 3	95%				
2.5	/ 3		52	75	69.33	
	/ 3	95%				
	/ 3	95%	1.8	4	45	
3	/ 3	90%				

2013-2020

2018-2020

"

"

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"

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2020

2.5

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8.8

5.1-2

5.1-2

1#			1580	
2#		—	—	

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050

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2020 3 23 3 29

7

5.1-3

		7	4		2 00
			8 00	14 00	20 00
		7	4		2 00
			8 00	14 00	20 00

2020.03.23 02 00 7.8 40.1 102.9 1.0 4 1
 08 00 14.2 38.4 102.5 0.8 4 1
 1.8



	20 00	18.1	35.4	102.3		3.0	6	2
2020.03.25	02 00	10.1	37.8	102.7		0.9	4	1
	08 00	16.2	35.4	102.4		1.1	4	1
	14 00	24.7	31.2	102.0		2.9	5	2
	20 00	18.9	33.9	102.2		1.2	5	1
2020.03.26	02 00	6.1	44.3	103.2		1.2	6	2
	08 00	11.4	42.8	102.8		1.0	6	2
	14 00	18.5	39.9	102.5		3.4	5	1
	20 00	9.1	40.2	102.7		1.8	6	1
2020.03.27	02 00	2.1	45.9	103.7		2.7	6	2
	08 00	4.2	43.2	103.5		3.4	6	2
	14 00	10.8	41.8	103.0		3.8	6	2
	20 00	3.9	42.9	103.6		2.0	6	2
2020.03.28	02 00	4.8	43.7	103.4		1.0	4	1
	08 00	8.4	41.2	103.1		1.1	5	1
	14 00	14.3	38.9	102.8		1.6	4	2
	20 00	7.9	40.7	103.2		1.5	4	1
2020.03.29	02 00	7.4	41.4	102.9		1.0	5	1
	08 00	9.0	40.5	102.8		1.1	6	2
	14 00	14.8	39.1	102.2		1.8	6	2
	20 00	8.9	40.2	102.8		1.4	6	2

5

3095-2012 3

5.1-5

			5	
		/ 33-1999	- -010	2 / 3
		/ 14675-1993	—	10
		604-2017	5 - -010	0.07 / 3

6

5.1-6

	02 00	0.30	10
2020.03.23	08 00	0.33	11
	14 00	0.36	10
	20 00	0.35	10

2020.03.2-



	20 00	0.30	12
	02 00	0.34	11
2020.03.24	08 00	0.31	13
	14 00	0.32	12
	20 00	0.35	11
	02 00	0.49	11
2020.03.25	08 00	0.52	13
	14 00	0.60	12
	20 00	0.79	13
	02 00	0.47	11
2020.03.26	08 00	0.49	12
	14 00	0.65	13
	20 00	0.51	13
	02 00	0.51	11
2020.03.27	08 00	0.77	12
	14 00	0.70	12
	20 00	0.56	12
	02 00	0.57	11
2020.03.28	08 00	0.47	13
	14 00	0.66	12
	20 00	0.69	11
	02 00	0.76	11
2020.03.29	08 00	0.70	12
	14 00	0.78	13
	20 00	0.66	12

2		2.0	/ 3	
3		20		14554-93
				1

3

$$S_i = \frac{C_i}{C_{si}}$$

$$S_i \quad i$$

$$C_i \quad i \quad / \quad 3$$

$$C_{si} \quad i \quad / \quad 3$$

$$Pi \quad 1$$

$$Pi \quad 1$$

4

5.1-8

1#		0.33	—		—		—
		0.25-0.55	—	0		0	
		0.15-0.33	—	0		0	
2#		0.33	—		—		—
		0.55-0.65	—	0		0	
		0.14-0.395	—	0		0	
		1 / 3		5			

5.1-8

118° 01' 37° 22'

2001 20 1999-2019 15.9 /

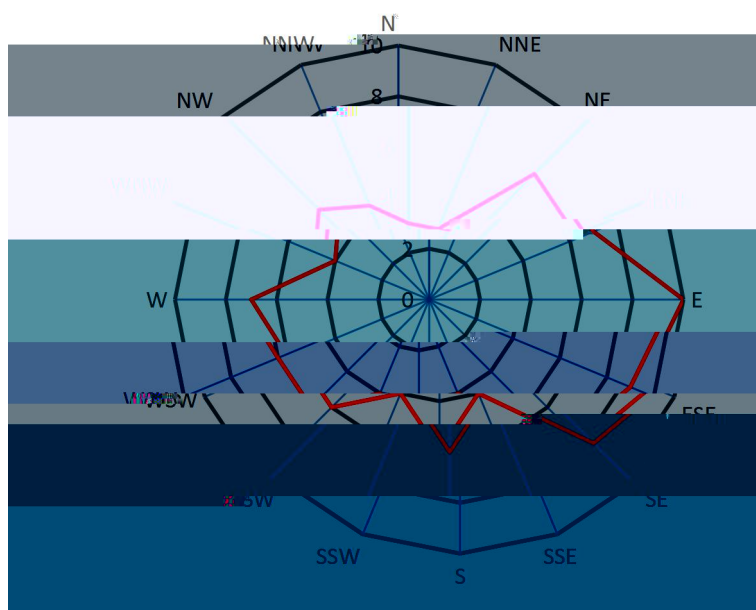
40.7 2005 -16.4 2001

809.0 2003 20 5.1-9

20 5.1-10 5.1-3 20

	1	2	3	4	5	6	7
/	2.3	2.5	2.9	3.1	2.8	2.5	2.2
	-2.4	1.0	2.4	14.4	20.6	25.0	27.0
%	61	59	53	56	60	64	77
	4.7	11.1	9.1	28.2	49.6	77.8	158.7
	154.6	158.9	213.0	229.7	261.6	225.7	180.9
	8	9	10	11	12		
/	2.0	1.9	2.0	2.2	2.2	2.4	
	25.8	21.4	14.6	6.3	-0.3	13.4	
%	80	75	70	67	63	65	
	142.8	44.4	28.8	16.9	4.5	577.2	
	190.1	187.5	178.2	162.1	151.5	2294.3	

	3	3	7	7	10	9	8	4	6
	4	6	6	7	4	5	4	6	



2.3-2018

2019 1 9

5.2-1

2019 10 -12

5.2-2

5.2-1

	1	2	3	4	5	6	7	8	9
	6.2	2.8	11.6	13.2	18.2	29.2	28.8	30.6	27.6
	7.83	7.75	7.72	6.29	7.35	7.99	8.27	7.82	7.74
.	3500	4100	3090	1624	1650	3890	2100	3840	583
/	11	13.3	9.1	9.6	10.6	8.3	11	7.2	8.1
	14	13.3	8.4	14.1	10.7	5.1	6.9	5.9	5.6
s	3.4	2.3	3.2	1.8	3.4	2.7	2.5	1.6	3.7
	0.16		0.66	0.39	0.85	0.3	0.47	0.28	0.19
	0.28	0.12	0.04	0.04	0.04	0.01	0.05	0.03	0.03
	0.0002	0.0002	0.0002	0.0002	0.0022	0.002	0.0002	0.0022	0.0029
	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002
	0.0001	0.0001	0.00026	0.00023	0.00065	0.0033	0.00024	0.002	0.0096
	38	49	31	21	35	2	39	13	24
	6.97	7	5.34	8.91	6.73	6.47	6.15	7.03	3.46
	0.24	0.18	0.14	0.15	0.12	0.1	0.04	0.22	0.16
	0.006	0.012	0.00531	0.00568	0.0005	0.0023	0.0012	0.0028	0.0025
	0.05	0.03	0.0128	0.0057	0.038	0.096	0.003	0.197	0.01
	1.33	1.19	1.14	0.88	1.17	1.1	0.54	1.27	0.96
	0.002	0.0008	0.0002	0.0004	0.0007	0.0011	0.0005	0.0012	0.0016
	0.0009	0.0008	0.0008	0.0019	0.001	0.002	0.003	0.002	0.004
	0.0005	0.0007	0.00009	0.00019	0.000025	0.000025	0.00006	0.000025	0.000025
	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
	0.07	0.08	0.03	0.03	0.1	0.06	0.025	0.07	0.08
	0.002	0.002	0.0025	0.0025	0.003	0.003	0.003	0.003	0.003
	5.2	2.7	3	6.7	5	2.57	1.3	2.48	1.76
	0.16	0.07	0.08	0.03	0.22	0.332	0.106	0.623	0.035

2019.10	7.94	10	22	1.9	1.86		0.04
2019.11	7.31	10.5		1.3			0.08
2019.12	7.8	9.3	36	2.3	0.31		0.07
2019.10		0.00945	0.0205			0.0023	
2019.11		0.0172	0.0973			0.0013	0.08
2019.12		0.013	0.018	1.48		0.0012	0.15
2019.10				0.0015	0.011	0.0019	
2019.11	0.00039			0.00047	0.026		
2019.12				0.0016		0.0013	

2

3838-2002		6 9	40 /	1 /
2 /	10 /	1 /	0.1 /	
0.3 /	0.4 /	2.0 /	0.001 /	0.1 /
2.0 /	1.5 /	0.02 /	0.1 /	0.01 /
0.2 /		15 /	10 /	

	5 /	4 /
10	3 /	6

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10

2020

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7

5.3-1

5.3-1

1#		—	—	
2#			1530	
3#			1150	
4#			550	
5#			850	
6#			1070	
7#				

3

1#-3#

+ + 2+ 2+ 3²⁻ 3⁻

38

4#-7#

2020 3 23 3 24 2 1

4

5.3-2

	776-2015	32	0.05 /
			0.12 /
			0.02 /
			0.003 /
			0.01 /
			0.01 /
			0.04 /
			0.009 /
			0.009 /
3 ²⁻			/ 0064.49-1993
3 ⁻	5 /		
	/ 5750.4-2006(5.1)		—
	535-2009		0.025 /
	/ 5750.5-2006(5.3)		0.15 /
	/ 7493-1987		0.003 /
	/ 5750.5-2006(3.2)		0.75 /
	/ 5750.5-2006(2.1)		1.0 /
	/ 5750.4-2006(7.1)		1.0 /
	/ 5750.5-2006(3.2)		0.1 /
	/ 5750.7-2006(1.2)		0.05 /
	/ 5750.4-2006(8.1)		—
	503-2009	4-	0.0003 /
	/ 5750.5-2006(4.1)	-	0.002 /
	/ 5750.6-2006(6.1)		1.0 /
	/ 5750.6-2006(11.1)		2.5 /

	/ 5750.6-2006(9.1)		0.5 /
	694-2014		0.4 /
	/ 5750.6-2006(8.1)		0.1 /
50	/ 5750.6-2006(10.1)		0.004 /
	/ 5750.12-2006(2.1)		2 /100
	/ 5750.12-2006(1.1)		—
	/ 16489-1996		0.005 /
	/ 7494-1987		0.05 /
	/ 5750.4-2006(1.1)		5
	/ 5750.4-2006	3.1	—
	/ 5750.4-2006(2.1)	(-)	0.5
	/ 5750.4-2006	4.1	—

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5.3-3

5.3-4

2020.03.23		25	5	16.2
2020.03.24	1#	25	5	16.3
2020.03.23		10	5	15.9
2020.03.24	2#	10	5	16.1
2020.03.23		7	4	15.7
2020.03.24	3#	7	4	15.9
2020.03.23		15	5	16.0
2020.03.24	4#	15	5	16.1
2020.03.23				

2020.03.23	7#	25	5	16.1
2020.03.24		25	5	16.3

1	(/)	2.27	2.38
2	(/)	1.36 10 ³	1.33 10 ³
3	(/)	150	148
4	(/)	270	267
5	()	7.39	7.48
6	()		
7	()	0	0
8	()	1.65	1.72
9	(/)		
10	(/)	1.44 10 ³	1.41 10 ³
11	(/)	5.19 10 ³	5.27 10 ³
12	(/)	1.00	0.97
13	(/)	0.359	0.367
14	(/)		
15	(/)	2.29 10 ³	2.25 10 ³
16	(/)	997	1.02 10 ³
17	(/)	0.283	0.299
18	(/)		
19	(/)	0.0009	0.0011
20	(/)	2.42	2.34
21	(/)	4.84	4.84
22	(/)		
23	(/)		
24	(/)		
25	(/)	2.20	2.20
26	(/)	0.02	0.02
27	(/)	0.07	0.07
28	(/)		
29	(/)		
30	(/)	0.027	0.027
31	(/)		
32	(/)		
33	(/)		
34	(/)	67	64

35	(/)		
36	(/)	0.756	0.648
37	3^2 (/)	0	0
38	3^3 (/)	719	695

1	(/)	0.96	0.95
2	(/)	204	209
3	(/)	182	183
4	(/)	237	238
5	()	7.22	7.31
6	()		
7	()	0	0
8	()	2.75	2.48
9	(/)		
10	(/)	$1.43 \cdot 10^3$	$1.44 \cdot 10^3$
11	(/)	$2.41 \cdot 10^3$	$2.37 \cdot 10^3$
12	(/)	0.70	0.64
13	(/)		
14	(/)	0.003	0.004
15	(/)	745	729
16	(/)	389	406
17	(/)	0.325	0.340
18	(/)		
19	(/)		
20	(/)		
21	(/)	4.19	4.19
22	(/)		
23	(/)		
24	(/)		
25	(/)	1.95	1.95
26	(/)	0.02	0.02
27	(/)	0.07	0.07
28	(/)		
29	(/)		
30	(/)	0.023	0.023
31	(/)		

32	(/)		
33	(/)		
34	(/)	98	95
35	(/)		
36	(/)	0.400	0.375
37	3^2 (/)	0	0
38	3^3 (/)	651	674

1	(/)	0.57	0.56
2	(/)	154	146
3	(/)	102	102
4	(/)	97.5	97.0
5	()	7.26	7.37

30	(/)	0.021	0.022
31	(/)		
32	(/)	0.008	0.011
33	(/)		
34	(/)	94	91
35	(/)		
36	(/)	0.413	0.525
37	3 ² (/)	0	0
38	3 ⁻ (/)	685	715

1

+ 2+ 2+ 3²⁻ 3⁻

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/ 14848-2017

5.3-5

		3		—	
	/	200		—	
	/	0.10		/	3.0
		6.5-8.5		/	1.0
	/	0.3		/	450
	/	0.01		/	0.5
	/	250	()	/	0.05
	/	1000		/	250
	/	20.0		/	1.0
	/	0.002		/	0.005
	/	0.1		/	0.02
	/	100		—	
	+ 2+ 2+ 3 ²⁻ 3 ⁻				

3

1

$$S_i = \frac{C_i}{C_{si}}$$

S_i

C_i /

C_{si} /

2

$$S_{pH_j} = \frac{7.0 - pH_j}{7.0 - pH_{sd}} \quad pH_j \leq 7.0$$

$$S_{pH_j} = \frac{pH_j - 7.0}{pH_{su} - 7.0} \quad pH_j > 7.0$$

S_{pH_j} pH

pH_j j pH

pH_{sd} pH

pH_{su} pH

4

5.3-6

	2020	3	23	0.26	0.147	0.173
	2020	3	24	0.32	0.207	0.247
	2020	3	23			
	2020	3	24			
	2020	3	23			
	2020	3	24			
	2020	3	23	0.333	0.233	0.467
	2020	3	24	0.323	0.213	0.513
	2020	3	23	0.566	0.65	0.846

	2020	3	24	0.598	0.68	0.888
	2020	3	23	0.018	0.004	0.004
	2020	3	24	0.018	0.004	0.004
	2020	3	23	0.002	0.003	0.005
	2020	3	24	0.002	0.004	0.006
	2020	3	23			
	2020	3	24			
	2020	3	23			
	2020	3	24			
	2020	3	23	0.756	0.4	0.413
	2020	3	24	0.648	0.375	0.525
	2020	3	23			0.77
	2020	3	24			0.73
	2020	3	23	0.7	0.7	0.9
	2020	3	24	0.7	0.7	0.9
	2020	3	23	0.067	0.067	0.033
	2020	3	24	0.067	0.067	0.033
	2020	3	23	0.04	0.04	0.3
	2020	3	24	0.04	0.04	0.26
	2020	3	23	0.45	0.075	0.075
	2020	3	24	0.55	0.075	0.075
	2020	3	23	0.27	0.23	0.21
	2020	3	24	0.27	0.23	0.22
	2020	3	23	0.125	0.125	0.4
	2020	3	24	0.125	0.125	0.55
	2020	3	23	0.67	0.98	0.94
	2020	3	24	0.64	0.95	0.91
	2020	3	23	0.44	0.39	0.496
	2020	3	24	0.44	0.39	0.482
	2020	3	23	0.484	0.419	0.581
	2020	3	24	0.484	0.419	0.581
	2020	3	23	0.55	0.917	0.963
	2020	3	24	0.55	0.917	0.983
				0.002 /	0.00015 /	0.0025 /
1.25 /				0.075 /	0.0015 /	

+

/ 14848-2017

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2

5.4-1 5.4-1

1		1	1
2		1	1
3		1	1
4		1	1



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()

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2020 3 23-3 24 2

5 /

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3096-2008

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5.4-2

1#		09 53 10 03	56.0	02 27 02 37	48.7
2#		10 16 10 26	54.8	02 45 02 55	46.4
3#		10 32 10 42	57.7	03 11 03 21	45.3
4#		10 49 11 09	54.6	03 28 03 48	48.3
1#		15 13 15 23	54.5	22 01 22 11	48.5
2#		15 30 15 40	53.4	22 19 22 29	46.3
3#		15 44 15 54	53.9	22 40 22 50	47.2
4#		15 58 16 18	57.8	22 51 23 11	45.0
1#		10 06 10 16	53.1	03 40 03 50	46.5
2#		10 23 10 33	54.3	04 00 04 10	46.4
3#		10 39 10 49	55.2	04 19 04 29	48.1
4#		10 54 11 14	53.9	04 32 04 52	46.3
1#		15 17 15 27	56.0	22 10 22 20	45.8
2#		15 35 15 45	53.8	22 28 22 38	47.4
3#		15 48 15 58	54.1	22 44 22 54	47.8
4#		16 06 16 26	55.3	23 00 23 20	47.9

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3096-2008 3

60 ()

50 ()

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5.4-3



2

5.5-1 5.5-1

1#		0 0.2 1
2#		0 0.2 1
3#		0 0.2 1
4#		0 0.2 1

3

36600-2018

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- () () () ()
 (,) (1,2,3-)
 2020 3 20 1 1

4

/ 166-2004 / 17134-1997 / 17141-1997
 / 14550-1993 5.5-2

		/ 22105.1-2008	-9700 - -110	0.002 /
			2550 - -027	2 /

	/	680-2013	/ 32/ -5043 -6000/ -2027	0.01 /
		/ 17141-1997	-7000/ -5044 -1800/ -2033	0.01 /
		491-2019	-7000/ -5044 -1800/ -2033	1 /
		491-2019	-7000/ -5044 -1800/ -2033	10 /
		491-2019	-7000/ -5044 -1800/ -2033	3 /
	/	741-2015	/ 2010 / -5041	0.03 /
	/	741-2015	/ 2010 / -5041	0.02 /
	/	741-2015	/ 2010 / -5041	0.02 /
1,1-	/	741-2015	/ 2010 / -5041	0.02 /
1,2-	/	741-2015	/ 2010 / -5041	0.01 /
1,1-	/	741-2015	/ 2010 / -5041	0.01 /
-1,2-	/	741-2015	/ 2010 / -5041	0.008 /
-1,2-	/	741-2015	/ 2010 / -5041	0.02 /

	/	741-2015	/ 2010 / -5041	0.02 /
1,2-	/	741-2015	/ 2010 / -5041	0.008 /
1,1,1,2-	/	741-2015	/ 2010 / -5041	0.02 /
1,1,2,2-	/	741-2015	/ 2010 / -5041	0.02 /
	/	741-2015	/ 2010 / -5041	0.02 /
1,1,1-	/	741-2015	/ 2010 / -5041	0.02 /
1,1,2-	/	741-2015	/ 2010 / -5041	0.02 /
	/	741-2015	/ 2010 / -5041	0.009 /
1,2,3-	/	741-2015	/ 2010 / -5041	0.02 /
	/	741-2015	/ 2010 / -5041	0.02 /
	/	741-2015	/ 2010 / -5041	0.01 /
	/	741-2015	/ 2010 / -5041	0.005 /
1,2-	/	741-2015	/ 2010 / -5041	0.02 /
1,4-	/	741-2015	/ 2010 / -5041	0.008 /
	/	741-2015	/ 2010 /	0.006 /

			-5041	
	/	741-2015	/ 2010 / -5041	0.02 /
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+	/	741-2015	/ 2010 / -5041	0.009 /
	/	741-2015	/ 2010 / -5041	0.02 /
	-	834-2017	/ - 2020/ -5034 -100 / -2025	0.09 /
	-	834-2017	/ - 2020/ -5034 -100 / -2025	0.09 /
2-	-	834-2017	/ - 2020/ -5034 -100 / -2025	0.06 /
	-	834-2017	/ - 2020/ -5034 -100 / -2025	0.1 /
	-	834-2017	/ - 2020/ -5034 -100 / -2025	0.1 /
	-	834-2017	/ - 2020/ -5034 -100 / -2025	0.2 /

	-	834-2017	/ - 2020/ -5034 -100 / -2025	0.1 /
	-	834-2017	/ - 2020/ -5034 -100 / -2025	0.1 /
	-	834-2017	/ - 2020/ -5034 -100 / -2025	0.1 /
1,2,3-	-	834-2017	/ - 2020/ -5034 -100 / -2025	0.1 /
	-	834-2017	/ - 2020/ -5034 -100 / -2025	0.09 /

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5.5-3

1	20	0467-1- 001	/	0.110
2			/	
3			/	11.2
4			/	0.01
5	26-	2-0101	/	22
6			/	7
7			/	2.7
8	26-	1-0102	/	0.03
9				
10	26-	1-0101	/	0.02
11			/	0.02

12		1,1-	/	0.02
13		1,2-	/	0.01
14		1,1-	/	0.01
15		-1,2-	/	0.008
16		-1,2-	/	0.02
17			/	0.02
18		1,2-	/	0.008
19		1,1,1,2-	/	0.02
20		1,1,2,2-	/	0.02
21			/	0.02
22		1,1,1-	/	0.02
23		1,1,2-	/	0.02
24			/	0.009
25		1,2,3-	/	0.02
26			/	0.02
27			/	0.01
28			/	0.005
29		1,2-	/	0.02
30		1,4-	/	0.008
31			/	0.006
32			/	0.02
33			/	0.006
34		+	/	0.009
35			/	0.02
36			/	0.09
37			/	0.09
38		2-	/	0.06
39			/	0.1
40			/	0.1
41	26- 2-0101		/	0.2
42			/	0.1
43			/	0.1
44		,	/	0.1
45		1,2,3-	/	0.1
46			/	0.09

1	20 0467-1- 002		/	0.144
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3	26- 2-0202		/	0.032

4				
5			/	10.5
6	26-	2-0201	/	25
7			/	7
8			/	3.6
9	26-	1-0202	/	0.03
10			/	0.02
11			/	0.02
12			/	0.02
13		1,1-	/	0.02
14		1,2-	/	0.01
15		1,1-	/	0.01
16		-1,2-	/	0.008
17		-1,2-	/	0.02
18			/	0.02
19		1,2-	/	0.008
20		1,1,1,2-	/	0.02
21		1,1,2,2-	/	0.02
22			/	0.02
23	26-	1-0201	/	0.02
24		1,1,2-	/	0.02
25			/	0.009
26				

46		,	/	0.1
47		1,2,3-	/	0.1
48			/	0.09

1	20	0467-1- 003	/	0.154
2			/	
3			/	11.5
4			/	0.01
5	26-	2-0301	/	20
6			/	5
7			/	3.4
8			/	0.03
9			/	0.02
10			/	0.02
11			1,1-	0.02
12			1,2-	0.01
13			1,1-	0.01
14			-1,2-	0.008
15			-1,2-	0.02
16			/	0.02
17			1,2-	0.008
18			1,1,1,2-	0.02
19			1,1,2,2-	0.02
20			/	0.02
21	26-	1-0301	1,1,1-	0.02
22			1,1,2-	0.02
23			/	0.009
24			1,2,3-	0.04
25			/	0.02
26			/	0.01
27			/	0.005
28			1,2-	0.02
29			1,4-	0.008
30			/	0.006
31			/	0.02
32			/	0.006
33			+	0.009
34			/	0.02
35	26-	2-0301	/	0.09

36			/	0.09
37		2-	/	0.06
38			/	0.1
39			/	0.1
40			/	0.2
41			/	0.1
42			/	0.1
43		,	/	0.1
44		1,2,3-	/	0.1
45			/	0.09

1	20	0467-1- 004	/	0.0237
2			/	
3			/	9.0
4			/	0.01
5	26-	2-0401	/	5
6			/	3
7			/	2.8
8			/	0.03
9			/	0.02
10			/	0.02
11			1,1-	0.02
12			1,2-	0.01
13			1,1-	0.01
14			-1,2-	0.008
15			-1,2-	0.02
16				0.02
17			1,2-	0.008
18	26-	1-0401	1,1,1,2-	0.02
19			1,1,2,2-	0.02
20				0.02
21			1,1,1-	0.02
22			1,1,2-	0.02
23				0.009
24			1,2,3-	0.02
25				0.02
26				0.01
27				0.005
28			1,2-	0.02

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29			/	
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35			/	0.09
36			/	0.09
37		2-	/	0.06
38			/	0.1
39			/	0.1
40	26-	2-0401	/	0.2
41			/	0.1
42			/	0.1
43			/	0.1
44			1,2,3-	0.1
45			/	0.09

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1		7440-38-2	60
2		7440-43-9	65
3		7440-50-8	18000
4		7439-92-1	800
5		7439-97-6	38
6		7440-02-0	900

2

$$S_i = \frac{C_i}{C_{si}}$$

3

5.5-5 5.5-6

	1#	0.187	0.00008	0.0004	0.003	0.003	0.024
	2#	0.175	0.0005	0.0004	0.005	0.004	0.027
	3#	0.192	0.00008	0.0003	0.004	0.004	0.022
	4#	0.15	0.00008	0.0002	0.004	0.001	0.006
	%	100	25	100	100	100	100
	%	0	0	0	0	0	0
		—	—	—	—	—	—

1	/	0.154	0.0237	0.108	0.059
2	/	11.5	9	10.55	1.115
3	/	0.032	0.005	0.012	0.014
4	/	25	5	18	8.907
5	/	7	3	5.5	1.915
6	/	3.6	2.7	3.125	0.443

5.5-6 1# 2# 3# 4#

36600-2018 1

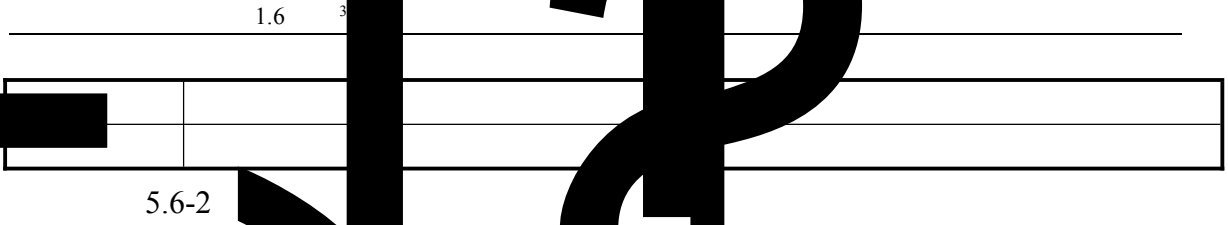
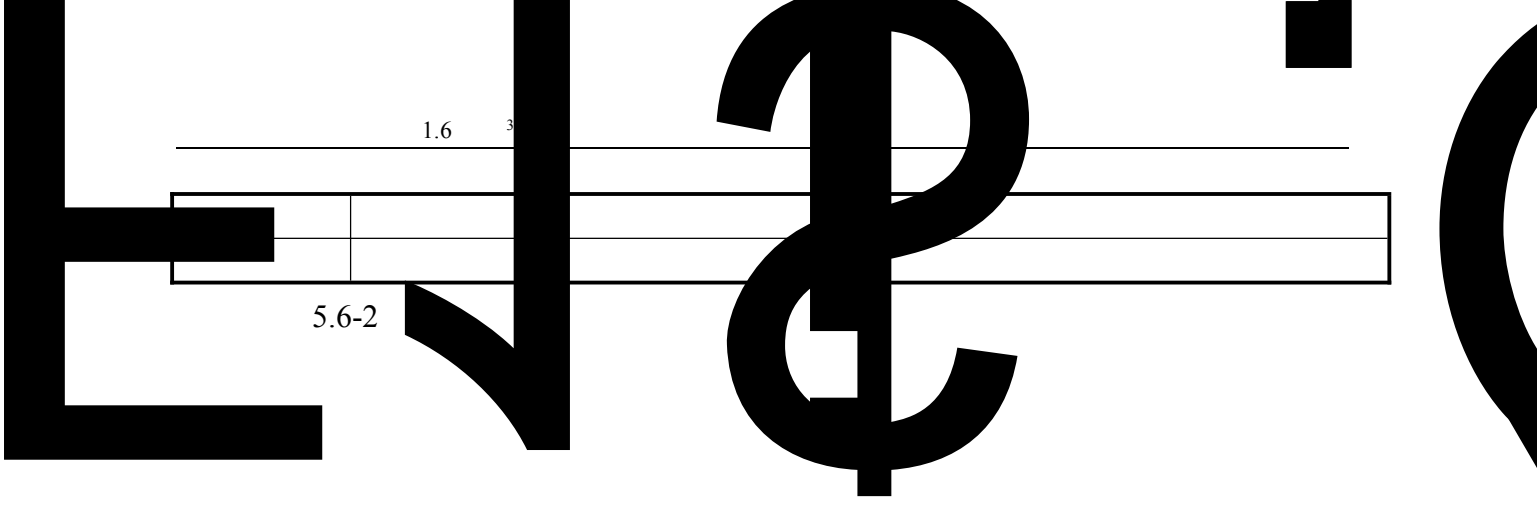
10724 ² 40 ² 13734 ² 3010 ² 10724 ²

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			1.54	0	
			0.03	0	
			9.2	0	
			0.5	0	

10	141.15	7.10	11.7625	0.40
25	183.21	9.20	15.2675	0.50
50	116.87	5.80	9.73917	0.30
75	84.277	4.20	7.02308	0.20
100	66.113	3.30	5.50942	0.20
125	53.429	2.70	4.45242	0.10
150	44.167	2.20	3.68058	0.10
175	37.242	1.90	3.1035	0.10
200	31.935	1.60	2.66125	0.10
225	27.775	1.40	2.31458	0.10
250	24.444	1.20	2.037	0.10
275	21.74	1.10	1.81167	0.10
300	19.51	1.00	1.62583	0.10
325	17.639	0.90	1.46992	0.00
350	16.053	0.80	1.33775	0.00
375	14.705	0.70	1.22542	0.00
400	13.532	0.70	1.12767	0.00
425	12.509	0.60	1.04242	0.00
450	11.611	0.60	0.967583	0.00
475	10.824	0.50	0.902	0.00

500	10.123	0.50	0.843583	0.00
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10	116.28	5.80	7.752	0.30
25	147.31	7.40	9.82067	0.30
50	152.6	7.60	10.1733	0.30
75	119.32	6.00	7.95467	0.30
100	87.778	4.40	5.85187	0.20
125	68.579	3.40	4.57193	0.20
150	56.976	2.80	3.7984	0.10
175	48.362	2.40	3.22413	0.10
200	41.64	2.10	2.776	0.10
225	36.274	1.80	2.41827	0.10
250	31.953	1.60	2.1302	0.10
275	28.402	1.40	1.89347	0.10
300	25.464	1.30	1.6976	0.10
325	23.011	1.20	1.53407	0.10
350	20.915	1.00	1.39433	0.00
375	19.13	1.00	1.27533	0.00
400	17.585	0.90	1.17233	0.00
425	16.243	0.80	1.08287	0.00
450	15.059	0.80	1.00393	0.00
475	14.023	0.70	0.934867	0.00
500	13.1	0.70	0.873333	0.00

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6.1-8

			0.356	1	1
			0.011		

6.1-9

10	0.47805	0.00	0.0147712	0.00
25	33.916	1.70	1.04797	0.00
39	89.166	4.50	2.75513	0.10
50	196.55	9.80	6.07317	0.20
75	280.5	14.00	8.66713	0.30
100	304.5	15.20	9.40871	0.30
125	305.05	15.30	9.4257	0.30
150	299.96	15.00	9.26843	0.30
175	285.79	14.30	8.83059	0.30
200	266.78	13.30	8.2432	0.30
225	246.87	12.30	7.62801	0.30
250	227.76	11.40	7.03753	0.20
275	210.12	10.50	6.49247	0.20
300	194.14	9.70	5.99871	0.20
325	179.76	9.00	5.55438	0.20
350	166.88	8.30	5.1564	0.20
375	155.34			

			68	10	15
		/ ³	0.095	0.116	0.128
		2 / ³	37/2801.7-2019 2		
			68	10	15
		/ ³	0.006	0.008	0.009
		12 / ³	16297-1996		
			2		

37/2801.7-2019 2

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/ 3095-2012

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11.4%

	4 68	7 99	8 339	6 253	0.4 3.5
	22	39	98	54	1.8
	0	0			0

	-31.3%	-2.5%	-10.9%	-15.6%	-30.8%	4.5%
	6.1%	16.2%	23.1%	25.5%	7.4%	21.7%
	150	80	150	75	4	160
	60	40	70	35	-	-

6.1-12

			42.93	0.129	1.02
			1.26	0.004	0.03
			—	0.054	0.425
			—	0.002	0.013

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			2000	/			
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						2.5	
						2.5	
			100%			100%	
			10%			10%	
			30%			30%	
1				100%		100%	
			-20%			-20%	
					0		
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 4 37/3416.4-2018 60 / 10 /
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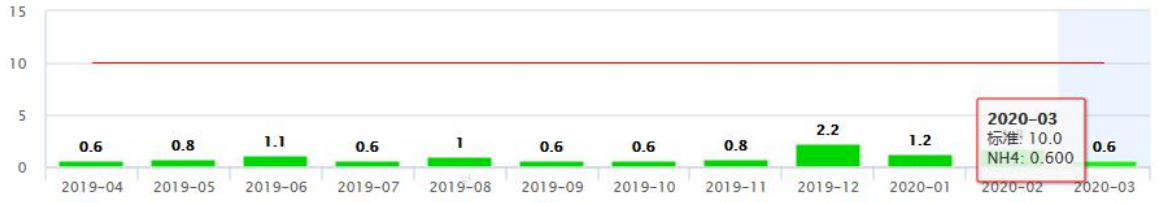


历史数据详情 ×

滨化集团 (G、S)

NH₄ 化学需氧量 单位:毫克/升(mg/l) ■ 正常 ■ 超标

最近12个月浓度统计



2020年03月 日均值

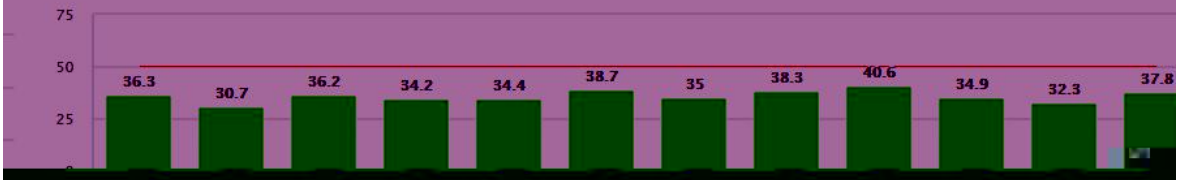


历史数据详情 ×

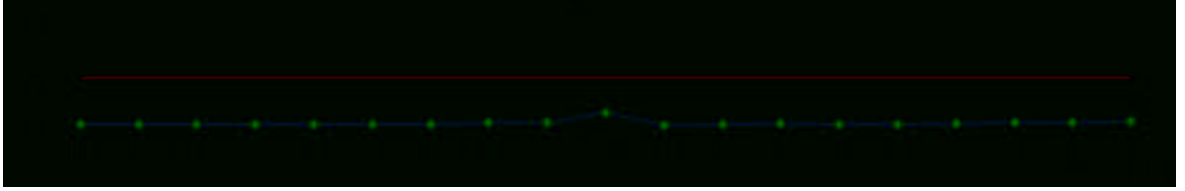
中和水质(出口)G、S

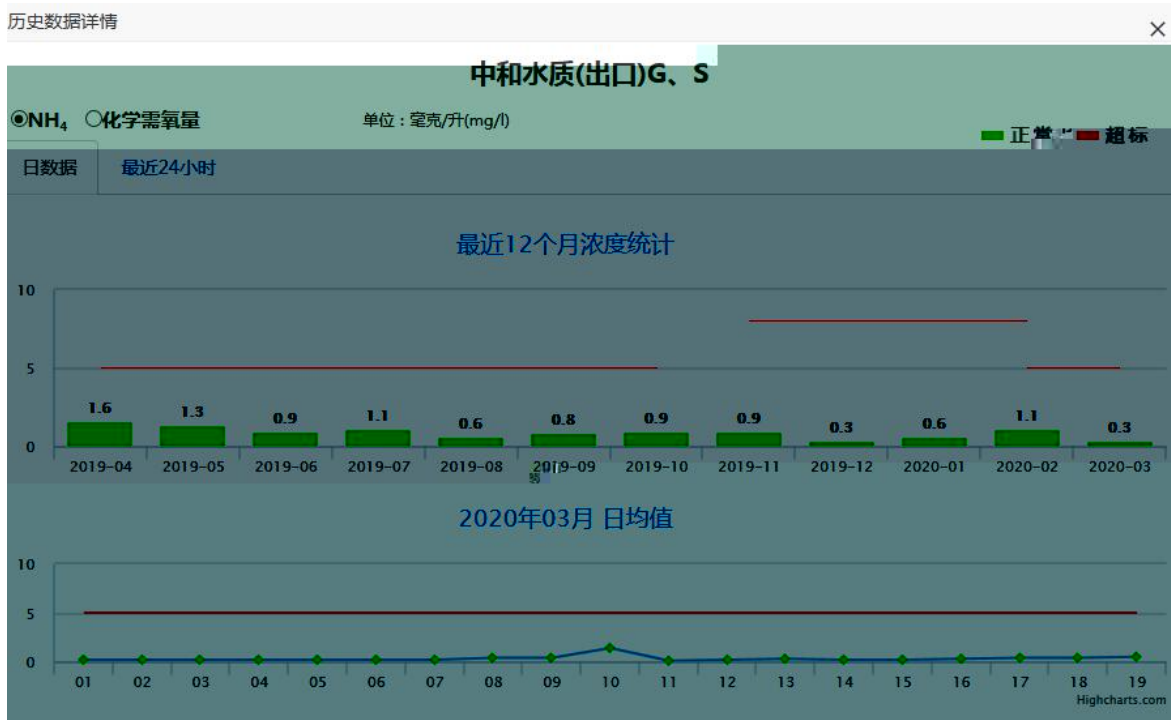
NH₄ 化学需氧量 单位:毫克/升(mg/l) ■ 正常 ■ 超标

最近12个月浓度统计



2020年03月 日均值





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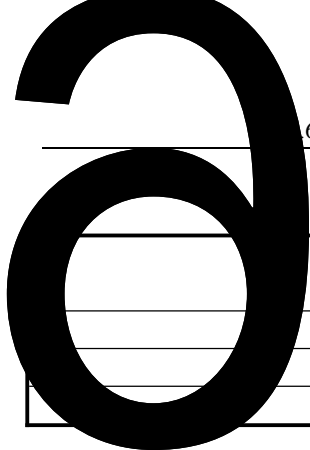
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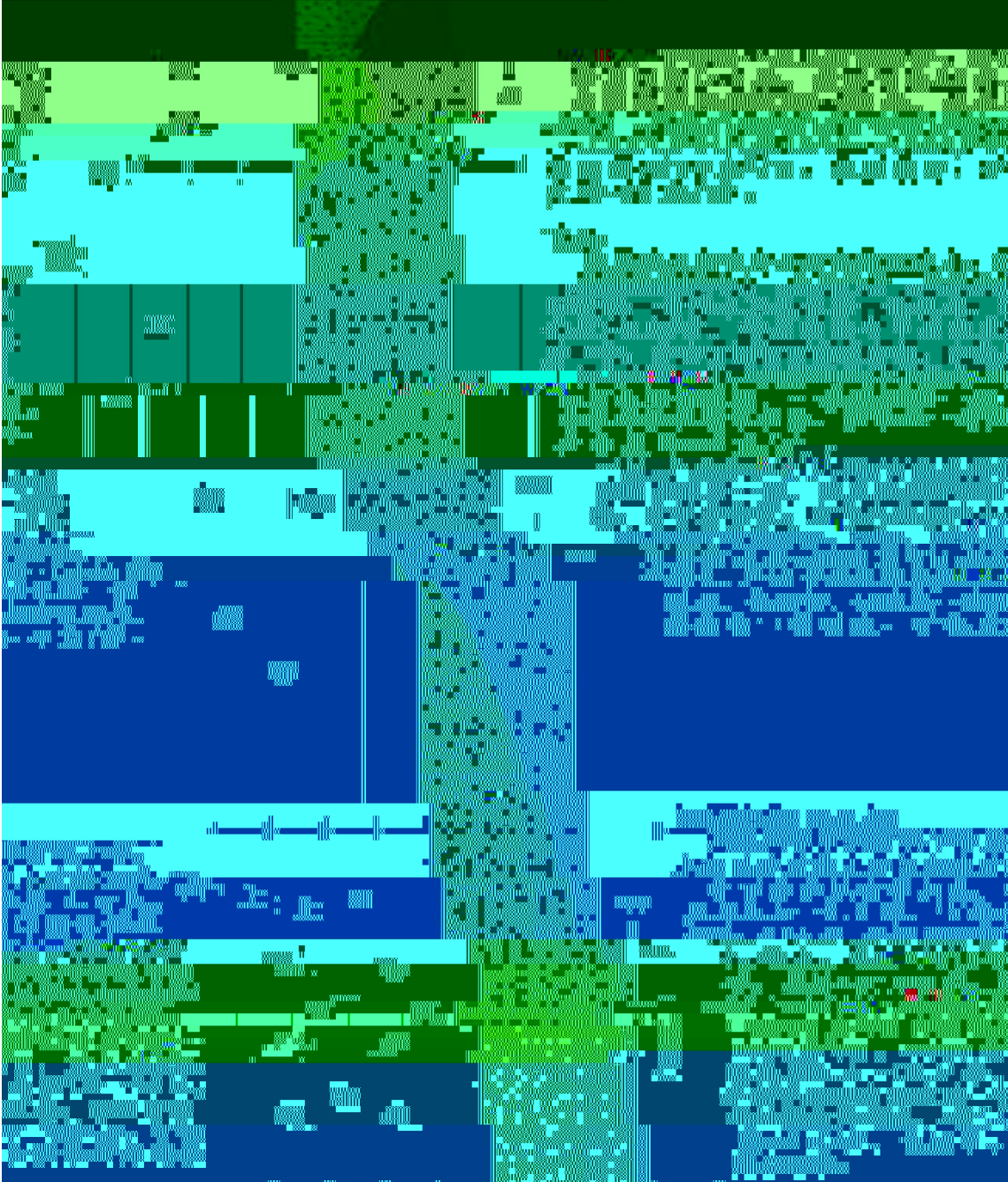
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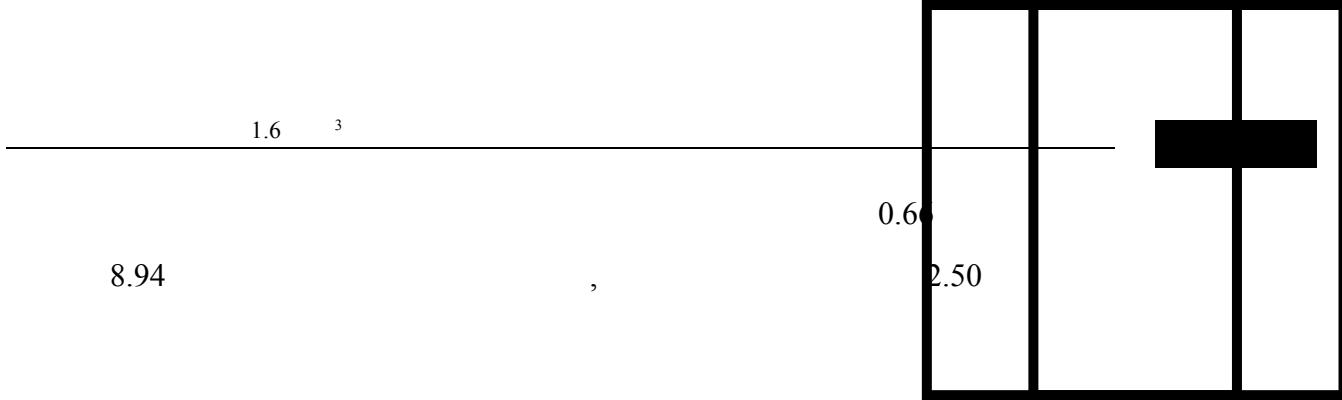


界	系	统	组	符号	柱状图	厚度 (米)	地质—水文地质特征
							浅层淡水(潜水、微承压水)
							

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			0.30	1.50	0.64	8.17	9.38
8.97			0.30	1.50	0.64		
			0.40	2.30	1.01	6.62	8.66
7.96			1.00	3.20	1.65		
			1.20	3.90	2.63		4.54
6.63	5.33		2.90	5.40	4.27		
			1.30	3.10	2.06	2.43	4.53
3.27			5.00	7.40	6.33		
	,		0.30	1.80	0.91		
1.52	3.47	2.37	6.10	8.10	7.23		
			0.60	3.30	1.75		-0.45
1.69	0.65		7.90	10.10	8.96		
						-	
					1.40	5.50	2.35
	-4.24	-1.11	-1.71		10.70	13.80	, 11.31
						,	
			3.20	7.30	6.29		
-9.30	-5.17	-8.12	14.70	18.70	17.74		
			4.00	4.60	, 4.36		
-13.00	-12.32	, -12.79	22.20	22.70	, 22.52		
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	26.7		-38.3	26.7		-28.3
	27.9		-37.1	27.9		-27.1

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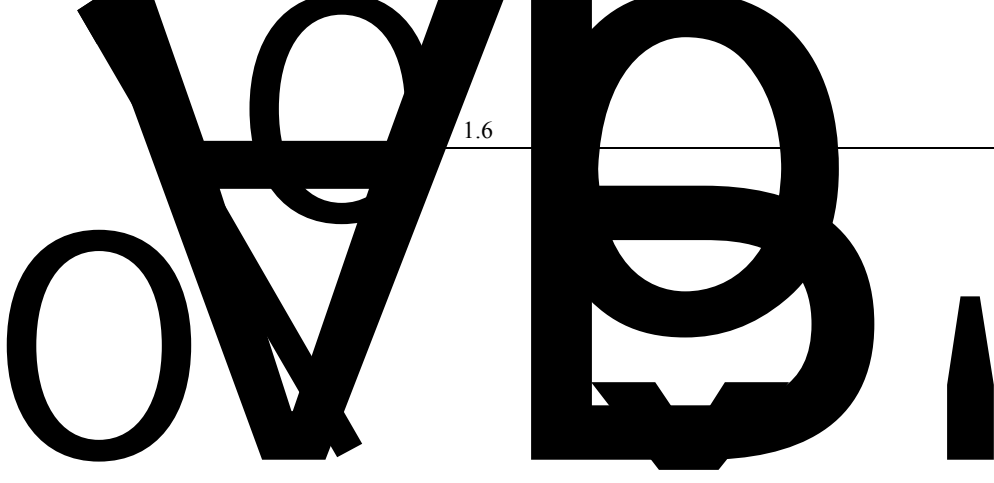
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0.301²

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6.7-1

30 45

16.4

1

2

3

1

1.6³

2

3

1.6³

1.0724²

1.0684²

40²

40²

1

2

3

10724 ²

4

2013 188

700 / ²

1

13734 ² 6.7-2

1		10724
2		3010
		13734

2

50433-2008

2

2020 ⁵

2020

4

4

4

1

2

$$\Delta W = \sum_{j=1}^3 \sum_{i=1}^n (F_{i,j} \times \Delta M_{i,j} \times T_{i,j})$$

2

/ 2.

1 2 3

--- 1 2 3

1

1.3734 ²

2

/ 21010-2007

13734 ²

3

72.37

62.76

6.7-3

.	.					
13734	1	700	4570	9.61	72.37	62.76

72.37

62.76

1

2

3

1

72.37

62.76

2

"

"

"

"

"

"

"

"

"

"

10724 ²

1

" "

2

" "

3

1

2

3

1

2

3

1500 ²

1

13734 ²

10724 ²

3010 ²

1.6 ³

10724 ²

2

3

72.37

62.76

4

169-2018

2012 77

7.1-1

				56-81-5	
	3 8 3			92.09	
	1.3		3.2		18
	370	%	—		177
	1993	%	0.9		290
	18				
	50 31500 / ()				
	20-30				
	1				
	150				

	0	1
--	---	---

7.1-2

1			550	540
2			850	622
3			1030	
4			1040	
5			1070	
6			1150	
7			1150	2138
8			1420	
9			1440	563
10			1530	1971
11			1580	302
1				
2				
3			300	

1

.1



1

1 1



10



2 10

100

3

100

18218-2018

169-2018 0

30000.18

1

2

3

2

18218-2018

169-2018

2015

1

7.4-1

		0.9	177	370		—

2

3

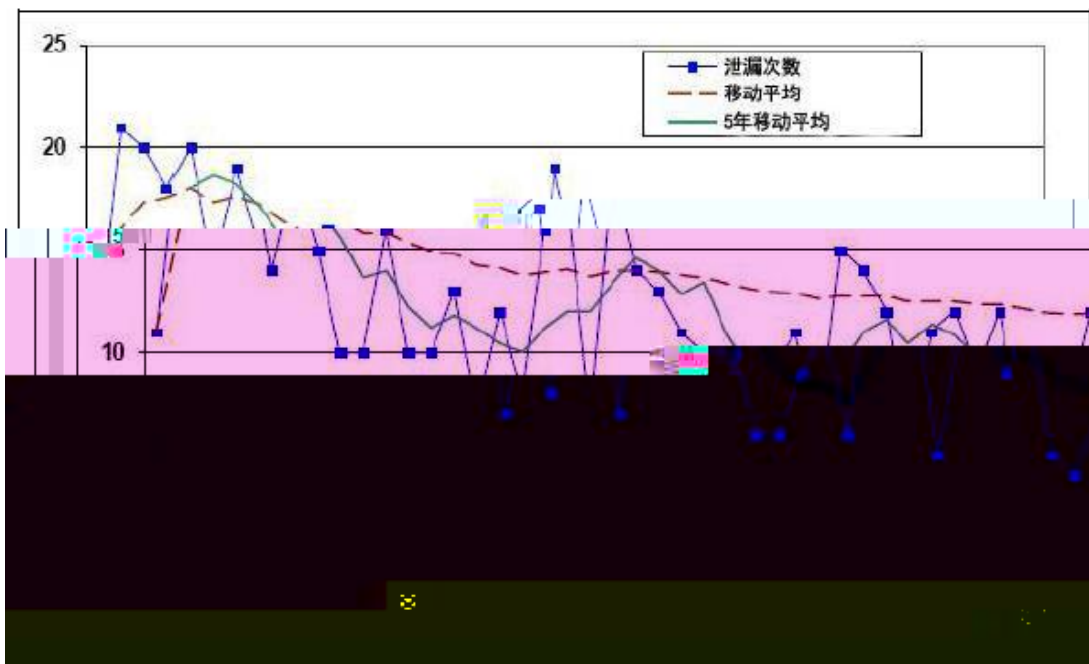
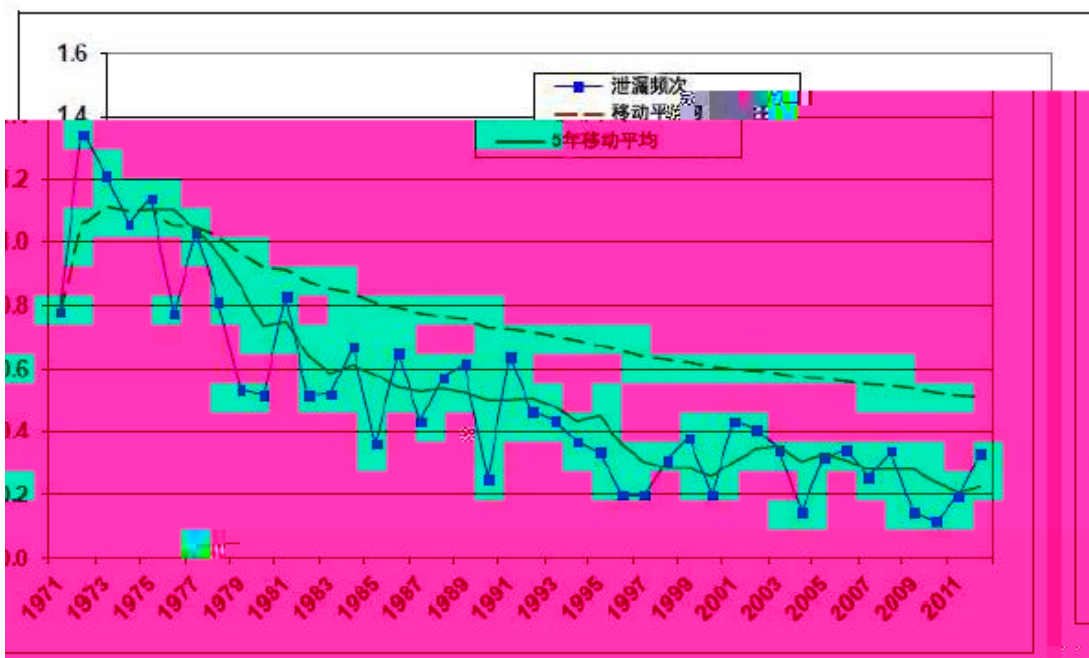
25

7.5-1

1

1971-2012

42			7.5-1	7.5-2			
/1000	5		70		1.1	2012	0.2
/	5		70		18	2012	8.7

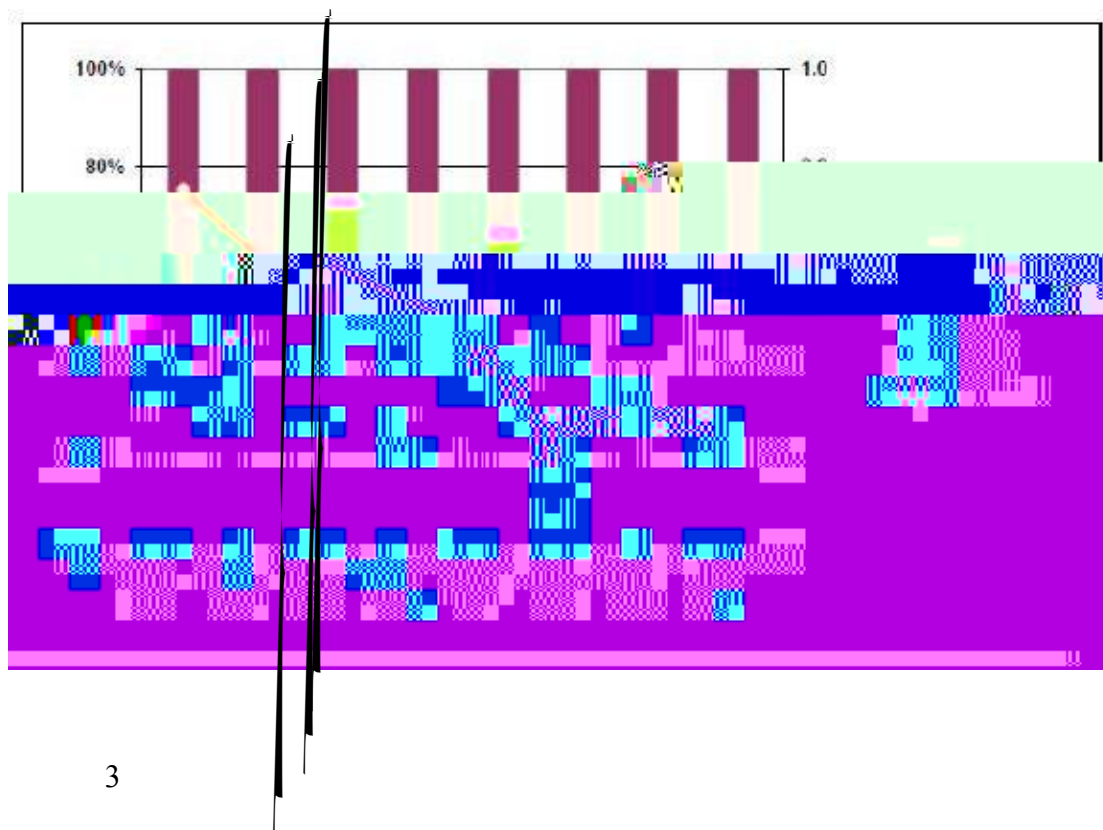


2

5

7.5-2 7.5-3

	42	38	44	44
	5	3	2	1
	16	23	22	17
	7	12	8	2
	30	24	24	36



3

	2	2	
	2+	75	10%
	2+	75	10%
	75+	1000	10%

75 10%

42

7.5-3

45%

28%

70%

	12	33	45	88	51	57	286
%	4	12	16	31	18	20	100
	8	4	14	13	16	7	62
	1	0	1	1	3	4	10
	0	23	11	23	17	5	79
	0	1	2	0	2	2	7
	3	5	17	51	13	39	128
%	76	12	31	15	31	12	22
	8	0	2	1	6	7	3
	0	70	25	26	33	9	28
	0	3	4	0	4	4	2
	25	15	28	58	26	68	45
³	45	49	245	89	242	362	285

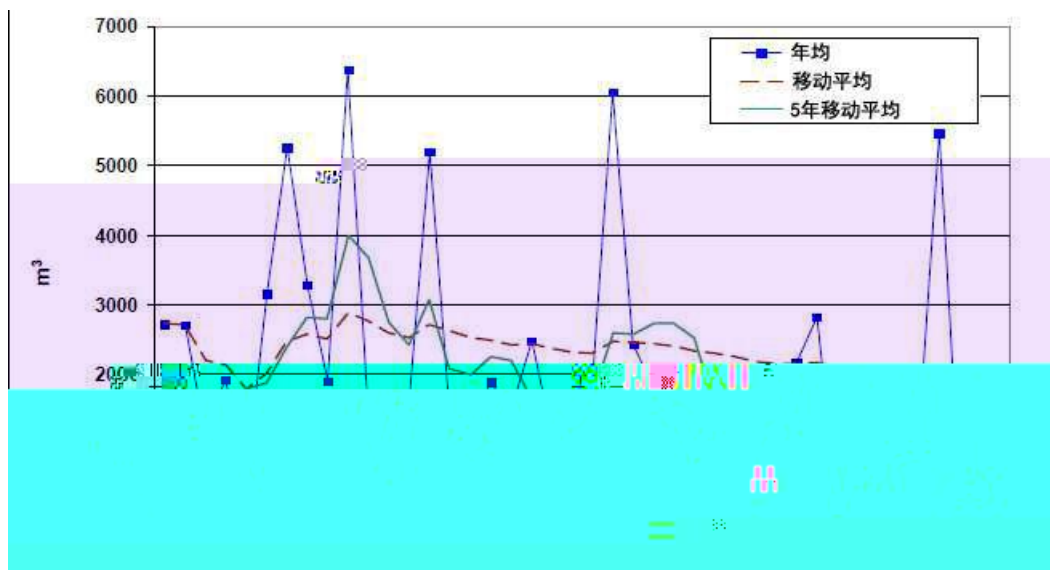
4

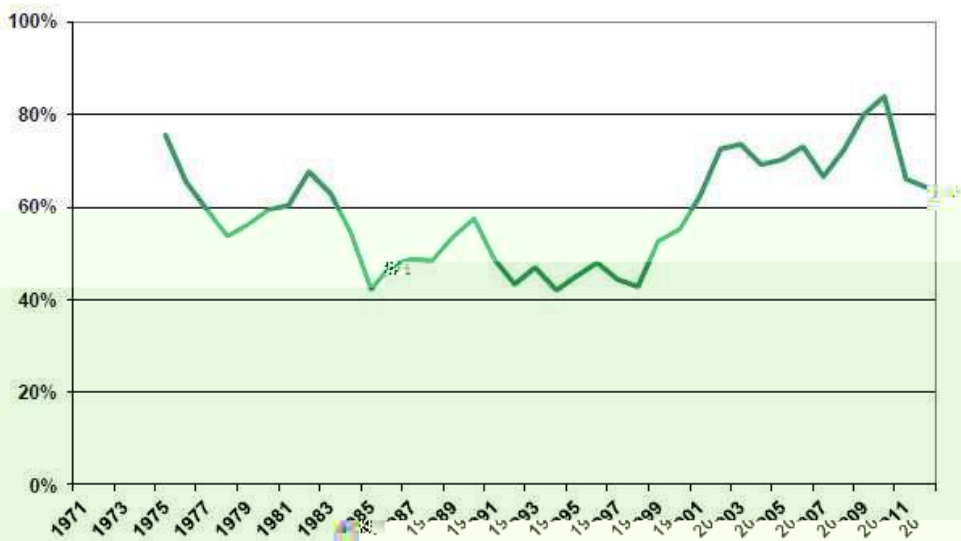
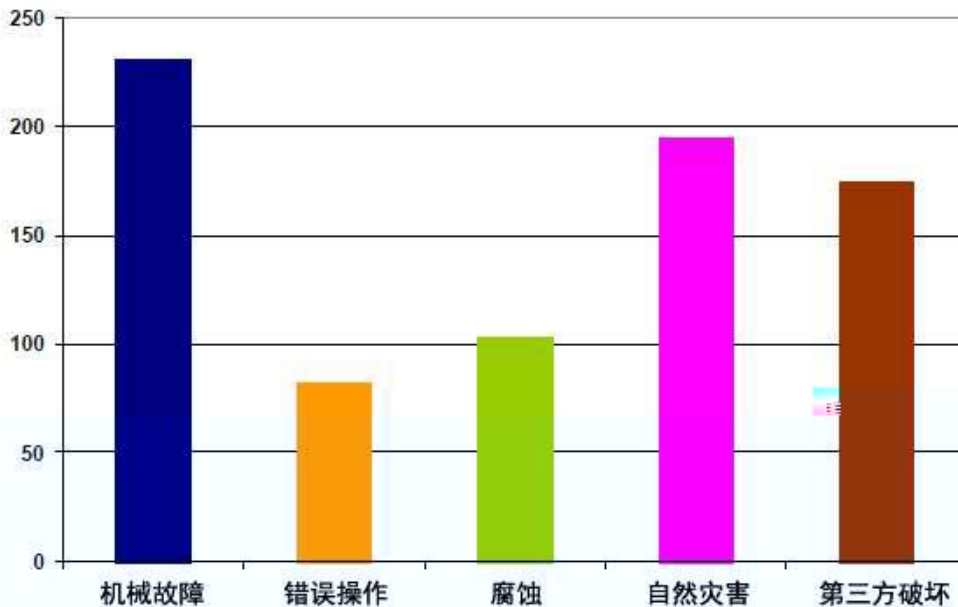
1971 2012

7.5-4

7.5-6

7.5-3





45 ³

362 ³

3

245 ³ 89 ³ 242 ³

285 ³

100 6400 ³ 5

650 4000 ³

232 ³

196 ³

175 ³

104 ³

82 ³

5

42% 85%

5

7.5-4

100 999 ²

100

36.0%

80 ²

1000 9999 ²

66

23.7%

186 ²

²		%	³
10	28	10.0	14
10 99	51	18.3	40
100 999	100	36.0	80
1000 9999	66	23.7	186
10000 99999	32	11.5	760
100000	1	0.5	173
	278	100	1223

/

/

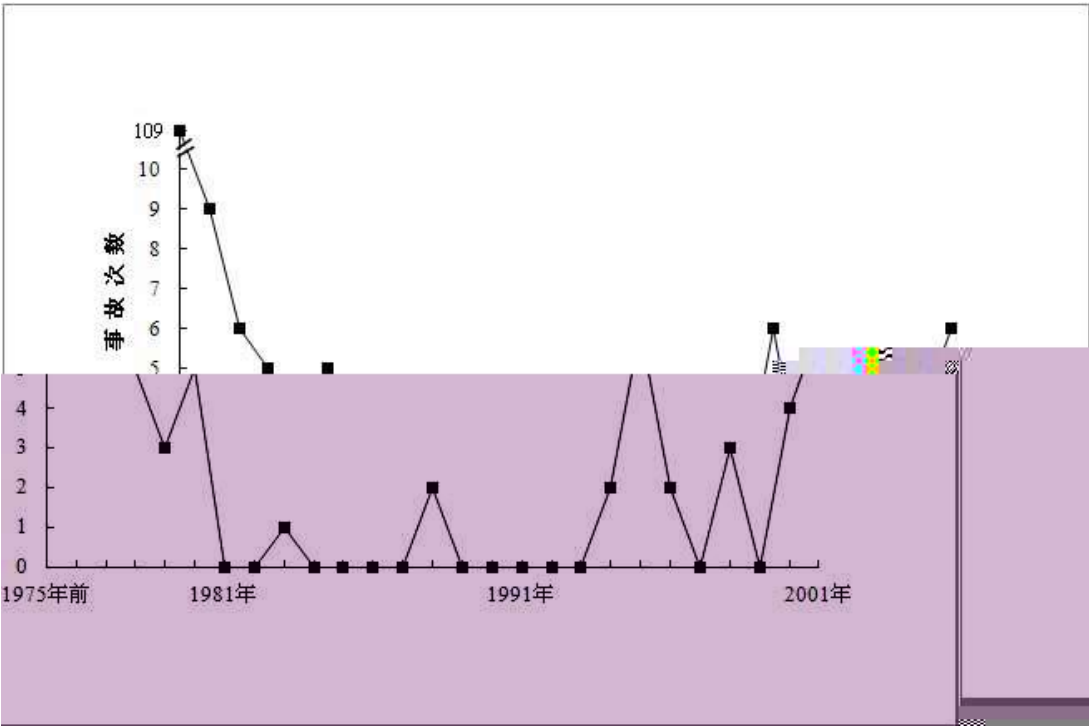
7.5-5

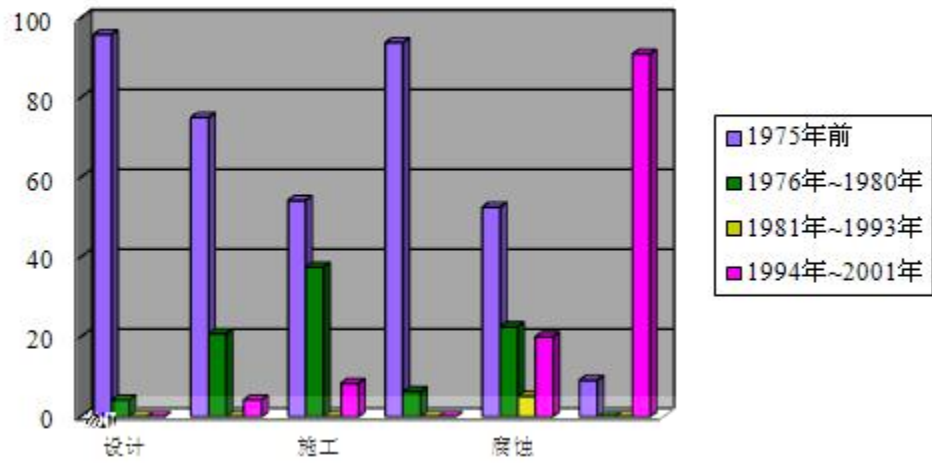
	17	5.1	2	5.9	0	0
	195	58.7	11	32.4	9	15
	28	8.5	3	8.8	3	5
/	79	23.8	17	50	48	80
	9	2.7	0	0	0	0
	3	0.9	0	0	0	0
	1	0.3	1	2.9	0	0
	332	100	34	100	60	100

90

12 46 270
2440 2001
163 7.5-6 7.5-7 7.5-8

1		21	9	0	2	3	4
2		36	8	1	0	2	1
3		13	9	0	0	2	0
4		15	1	0	0	0	0
5		23	1	0	0	0	0
6		1	0	0	0	1	4
		109	28	1	2	8	9





7.5-7

		2010	7	16	
1				50	

2		2010 4 15	
3		2011 7 4	
4	-	2013 11 22 9	
5		2014 6 30 18 30 7 1	

- 1
- 2
- 3

$$Q_L = C_d A \rho \sqrt{\frac{2(P - P_0)}{\rho} + 2gh}$$

Q_L

C_d

0.6-0.64

0.62

A ² 0.002
 ρ / ³ 1260
 P 101325
 P_0 101325
 g 9.8 / ²
 h 10
 21.9 / 30 39420
 7.5-1

	50		90 100
10	50		70 90
1	10		40 60

0.4

40% 15768 3%
 476.04 7.5-2

			21.9	30	178.7

4675

60

2330
 /
 % 39%
 % 5 20% 5%
 45.44 /
 1% 46.75 45
 786.79 /

169-2018

	380 / ³	95 / ³
	9400 / ³	2700 / ³

169-2018

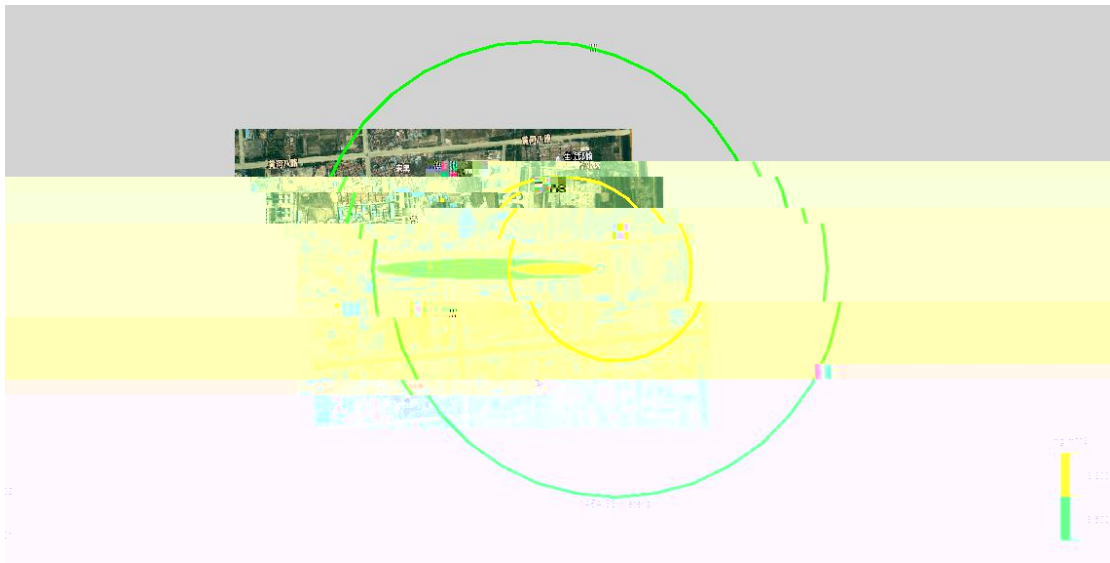
0.0179 1/6

7.6-2

1	1.5		$-2 \ 95 / ^3$	1454.662
2	1.5		$-1 \ 380 / ^3$	584.308
3	1.5		$-2 \ 2700 / ^3$	0
4	1.5		$-1 \ 9400 / ^3$	0

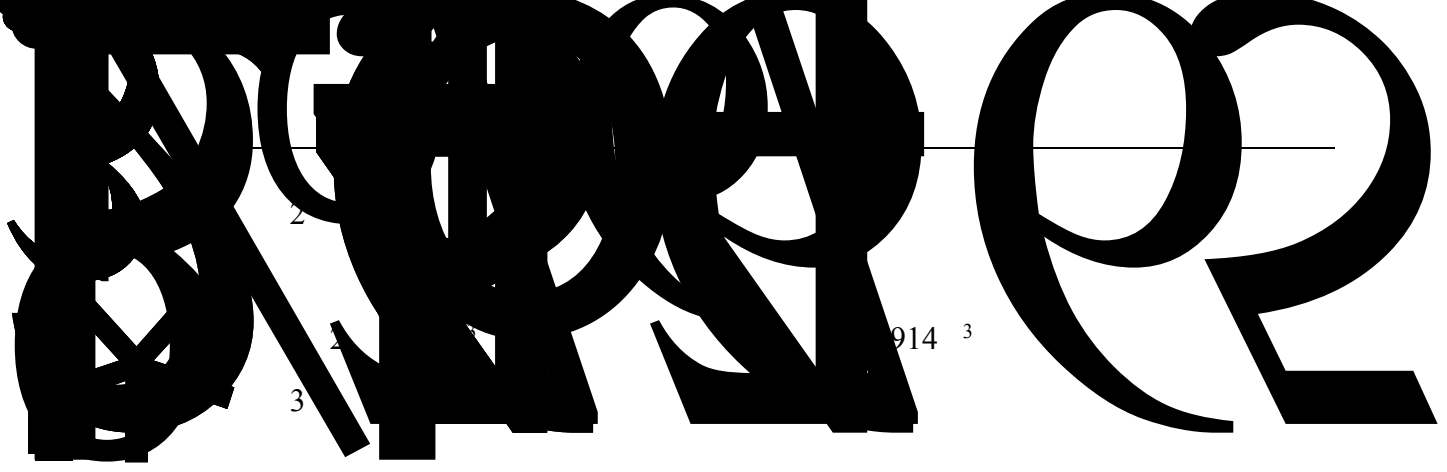
7.6-2

1.5 / -1 -2
 585 1455 1455
 /
 1.5 /
 -1 -2 0



1

4133 ³



1+ 2- 3 + 4+ 5

- 1
- 2
- 3
- 4
- 5

3

3

3

³⁴ * +)

95%

4675 ³ 1



1911.04 ³1914 ³

7.6-1

0.01 0.05 /1000 .

(1-) +

/

/

$$Q_n = C_d f_n d_n^2 \pi / 4 \times \sqrt{\frac{2(P - P_0)}{\rho}}$$

Q / P
 P_0 C_d 0.6 0.64 / ³

7.7-1

1	0 6	0.0504	0.692
2	6 20	0.0112	0.154
3	20 50	0.0096	0.132
4	50	0.0016	0.022
5		0	0

80 5^2 20 $4 \ 5^2$
 4000 5000
 $1 \ 2$ $0.5 \ 2$ 20
 $/ \ 2$ $2 \ 2$
 0
 1677
 $1 \ 2$



" "

1

2

3

4

5



8		10	1	
9		721	1	
10		-25	1	
11		-2	1	
12		-12	2	
13		-2	1	

1			2	
2		-25	1	
3		721	1	
4		- 1	1	
5				

7.10-1

118.066000°

37.39000°

169-2018

1

18218-2018

1 15

90%

95%

1 264 ^{3/}
/ 31962-2015 1

2 63 ^{3/}

1.6

29.1 / 231 /

2007 1

8 7.8

65 50

240 2007 11 2010 11

2010 12

2013

50 3 / 7822 01

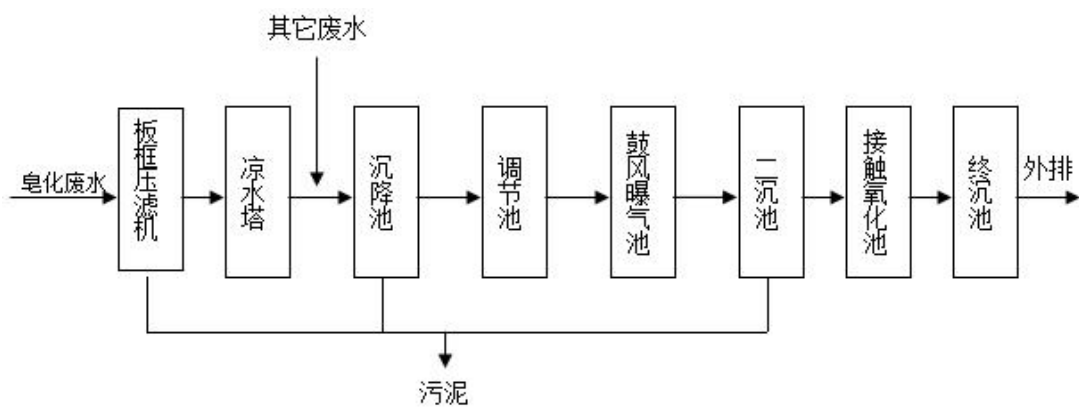
2/ 0 2013 7

2013 46 2014 5

26 2015 2 11

/

37/3416.4-2018



264 ^{3/}

0.8 ^{3/}

1

^{3/}

700 ^{3/}

400 ^{3/}

6-12

1600 /

30 /

28000 /

20 /

63 ^{3/}

1259.4 /

3544.8 /

3.89

29.17 / 231 /

0.5

0.01%

" "

0%

1.6³

8.1-1

1		6	26.67
2		6	26.67
3		0.5	2.22
4		1	4.44
5		8	35.56
6		1	4.44
		22.5	100

22.5

3510

0.64%

6.6 /

8.1-2

1

9.126 / 0.274

2

37/2801.7-2019 1

16297-1996 2

3

37/2801.7-2019 2

3 3 4 1 1

1 /

2

3

4

5

6

7

8

9

10

11

12

13

14

15

1

1

2

3

2

1

96 470

2

3

1

15562.1-1995

10.1-1

2

2



4

1

2

2017

10.2-2

	5	/
/		/

10.3-1

		5		/ 31962-2015	1
					6
				—	
			1 15	37/2801.7-2019	1
				16297-1996	
				2	6
				37/2801.7-2019	2
				16297-1996	
				2	
					0.5
					8
				12348-2008	1
					1
					22.5

1

2

3

4

5

6

7

50323-2014

5

20

10

5

3

1677

-

11.3-1

11.3-1

	200	200	200
	1781	1850	1677
	1) 2)		1) 2) 3)
		360	

1.6³

3

1.6 ³
3510 10724 ² 10724 ²
40 ² 4000 ³ 4 1.6 ³ 1
1677 1.6 ³ 10.2
13.6 3.4

10 2 3 2.5 10 2
3095-2012

3095-2012

2019 2

3838-2002

+

/ 14848-2017

+

3096-2008 ³

1# 4#

36600-2018 1

1

1 15

37/2801.7-2019 1

16297-1996 2

3

37/2801.7-2019 2

16297-1996

2

37/2801.7-2019

2

3

1% 10

9.2% 25

1% 10

/ 31962-2015

1

80 ()

12348-2008 3

4

				"				"
					2020	2	24	
			10		2020	2	27	2020 2
28	2	"	"					10

2019 9 2

2019 132

"

2

"

2019

2

2.04 /

18918-2002 1

0.014 /

0.002 /

4

37/3416.4-2018

0.004 /

0.001 /

