1

K212+752.91

G108

2017

4172

G5

2

2019 5 6

[2019]332

3

1.041km 0.731km 0.31km

60km/h 20m -

64m/1 1/100

1/50 4 6 1 1

$7.67hm^2$ $6.99hm^2$

“ ”

2021 12 2022 7

2022 8 12

2017 365

2018 887

2018 135

2023 2

			1.041km 0.731km 0.31km 1 1 1
		2019 7 22 [2019]51	
		2020 3 ~2021 10 20	
			806t
			558.7t
			8.32hm²
			7.67hm²

	%	97		%	97.94
		1.0			1.12
	%	89		%	99.32
	%	95		%	99.50
	%	96		%	97.94
	%	22		%	24.77

目录

1 1

1.1 1

1.2 6

2 9

2.1 9

2.2 9

2.3 9

2.4 11

3 12

3.1 12

3.2 13

3.3 14

3.4 15

3.5 17

3.6 24

4 27

4.1 27

4.2 30

4.3 41

4.4 43

5 44

5.1 44

5.2 44

5.3 47

6 49

6.1 49
6.2 49
6.3 49
6.4 50
6.5 53
6.6 55
6.7 55
6.8 55
7 56
7.1 56
7.2 57
8 58
8.1 58
8.2 58

60km/h 20m

55.9m 4 6

8m 20m

3.5m

2.75m +3.5 +3.5 +0.5m +3.5

+3.5 +2.75m =20m

1 100

1 1 1.25 8 10m

2m

0

8 1 1.5 8 20 1 1.75 2m

4 4m

2m

U

2%

0.3%

5m

L1K0+515~L1K0+620 205m

1.5m 2.0m 1.8m 2.5m 2.0 3.0m

4~6m

4

BZZ 100 15

30

2

LK0+772 LK0+836 3

16m

K0+489.785 1 7.5m K0+993.737 1

6.5m

3

1 1 1

1

10 4.5 45

/ /

3522m^2

0.3MPa

4

5

1

0.67hm² 1

- - 1

1

- .

- . -

1

1580 2500m

920m

2

2015 2016 6 1

0.30g 0.45s

3

35 -5

16.2 6-10 7-9

1092.7mm 2088h 300d 69%

955.5Pa 1.80m/s N NW

1875mm

64.96km^2 1.5%

408.5 m^3 41.4 m^3 1.4 m^3

326km 99

13 2724km^2

62% 123m^3/s 7.95m^3/s 1400m^3/s

4000m

1968m 24km 120.70km^2 3.14m^3/s

4

5 7 23 71

181 4 6 19 71

1 1 4

334 73

1 172

35%

- . .

1

[2013]188 <

> [2017]482

2015-2030

500t/km a

2

2020

842.63km^2 19.05% 552.09km^2

65.52% 165.75km^2 19.67%

87.99km^2 10.44% 30.44km^2

3.61% 6.36km^2 0.75%

3

1399t/km^2 a

•

. -

2020 8 3

[2020]396

2020 11 30

[2020]21

. .

2019 7

2019 7 22

[2019]51

.

1

2

3

4

1

<

> 2016 65

2.3-1

. - . -2 21

2016 65			
1			
2 30%	8.32hm^2	7.67hm^2	7.81%
3 30%	30.28 m^3	15.27 m^3	49.57%
4 300m 20%	1.125km 0.906km 0.019km	1.041km 0.731km 0.31km	300m 20%
5 20%			
6 20			
1 30%	6232m^3	5520m^3	11.42%
2 30%	2.08hm^2	1.94hm^2	6.73%
3			
1 20%		1 0.67hm^2 9.6m	10
2		1	

. 0

-

- -

2019 7 22

[2019]51

8.32hm^2

- .

7.67hm^2

0.65hm^2

1

3.36hm^2

2.85hm^2

0.51hm^2

2

0.09hm^2

0.09hm^2

3

4.87hm^2 4.06hm^2

0.81hm^2

4

0.67hm^2

0.67hm^2

2.47 m^3

3.1-1

- - hm²

			+ -
	3.36	2.85	-0.51
	0.09	0.09	0
	4.87	4.06	-0.81
	0	0.67	+0.67
	8.32	7.67	-0.65

•

. -

• •

1

1 5

3.2-1 3.2-2

. -

		hm²		m³	m	
1#	AK0+420	0.67	0.67	2.47	9.6	5
		0.67	0.67	2.47		

. .

1#			AK0+420 1km 130m	AK0+420

•

“ ”

3.2-4

. 0

1

GB51018-2014

3.2-5

. 1

	GB51018-2014		
	1 2 3 1:1	1 1 2 3	

0 -

385m

385m 1 2685m^3 2685m^3 2021 3
2022 3

170m 165m
1670m^3 1340m^3 2020 4 2021 9
2

3.5-1

1 -

			m	842	586	-256	2020 7 ~9
			m	842	586	-256	2020 7 ~9
				1	2	+1	2020 8
			m^3	2786	1155	-1631	2020 3 ~5
			m^3	2786	1010	-1776	2021 1 ~2
			m^3	30	10	-20	2020 5
			m^3	30	10	-20	2020 9
			m	219	385	+166	2021 9
			m	219	385	+166	2021 4 ~5
				3	1	-2	2021 4
			m^3	3416	2685	-731	2021 3
			m^3	3416	2685	-731	2022 3
			m	175	170	-5	2020 4
			m	170	165	-5	2020 4 ~5
			m^3	2010	1670	-340	2020 4
			m^3	2010	1340	-670	2021 9

1 0

1

245m^2

382m 2021 2 2021 3

0.01hm^2 2021

2 2021 3

1430m^2

215m 1.08hm^2 2021 4 2022 6

6714m^2 2021

9 2022 4

2

3.5-2

1 .

			m^2	539	245	-294	2021 2 ~3
			m	846	382	-464	2021 2 ~3
			hm^2	0.01	0.01	0	2021 2 ~3
			m^2	372	1430	1058	2021 4 ~5
			m	219	215	-4	2021 4 ~5
			hm^2	1.08	1.08	0	2022 4 ~2022 6
			m^2	6714	6714	0	2021 9 ~10 2022 4

1 1

1

295m 3

264m 4350m^2 2020 4 2020 12

130m^2 2020 5 2020 6

380m

3 410m 4600m^2 2021 3 2019 5

6500m^2 2021 9 ~10 2022 4

2

3.5-3

1

			m	334	295	-39	2020 4 ~6
				3	3	±0	2020 4 ~5
			m	351	264	-87	2020 6 ~9
			m^2	4095	4350	+255	2020 4 ~12
			m^2	44	130	+86	2020 5 ~6
			m	410	380	-30	2021 4 ~5
				4	3	-1	2021 4 ~5
			m	430	410	-20	2021 3 ~4
			m^2	4782	4600	-182	2021 4 ~2022 4
			m^2	6700	6500	-200	2022 4

1 2

2

2 -

1126.16

973.32 152.84

20.26 0.01 75.45

7.95 29.07 9.29 10.82

1035.65

920.57 115.08 13.11

0.01 17.10 20.64 51.30

10.82 3.6-1

3.6-2

2 -

				+ -
		152.84	115.08	-37.76
		973.32	920.57	-52.75
		1126.16	1035.65	-90.51

2 .

				+ -
		936.25	874.19	-62.06
1		737.17	553.91	-183.26
2		0.11	0.04	-0.07
3		198.97	268.92	+69.95
4		0	51.32	+51.32
		57.34	59.50	+2.16
1		17.53	8.60	-8.93
2		0.01	0.01	0
3		39.81	50.52	+10.71
4		0	0.37	+0.37
		7.95	19.20	+11.25
		75.45	20.64	-54.81
1		8.97	8.21	-0.76
2		0.02	0.08	+0.06
3		66.05	10.07	-55.98
4		0	2.28	+2.28
5		0.41	0	-0.41
		29.07	51.30	+22.23
1		2.07	0	-2.07
2		4.00	19.20	+15.2
3		15.00	15.00	0
4		8.00	17.10	+9.1
		1106.06	1024.83	-81.23
		9.29	0	-9.29
		10.82	10.82	0
		1126.16	1035.65	-90.51

2 .

90.51

1 874.19 62.06

2 59.50 2.16

3 9.10

4

22.23

5 9.29

6

0

0 -

0 - -

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“ ”

0 - .

“

”

0 -

0 - 0

2005 4

0 .

0 . -

1

GB/T22490-2008

“ ”

0 . -

		1	1		1	1	50m 1	6		80% 50%
					1	1	50m 1	6		

33 0.47998

1

1 1

2

50% 50%

80% 30%

30%

SL336-2006

6 7 16

4.2-2

0. .

		1	1		1	1	100m 1	1		30% 30%
		1	1		1	1	100m 1	3		30% 30%
		1	1		1	1	1hm² 1	1		50% 50%
		1	1		1	1	100m 1	6		30% 30%
		1	1		1	1	1hm² 1	2		50% 50%
		1	1		1	1	100m 1	2		30% 30%
		1	1		1	1	1hm² 1	1		50% 50%
			6			7		16		

3

80% 50%

30% 30%

SL336-2006

4 10 35

4.2-3

0 .

					1	1	50 100m 1	3		30% 30%
					1	1	10 30m³ 1	1		
		1	1		1	1	50 100m 1	3		80% 50%
					1	1	100 1000m² 1	5		30% 30%
		1	1		1	1	100 1000m² 1	1		30% 30%
					1	1	50 100m 1	5		30% 30%
					1	1	10 30m³ 1	1		
		1	1		1	1	50 100m 1	4		80% 50%
					1	1	100 1000m² 1	5		30% 30%
		1	1		1	1	100 1000m² 1	7		30% 30%
			4			10		35		

0 . .

0 . . -

1

1 100%

2

100%

2

1

100% 2

100%

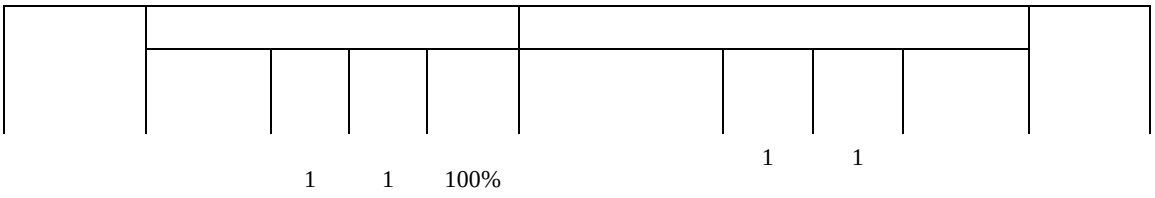
3

2

100% 4

100%

0 .



1 1 100%

1 1

80% 85% 80%

4

1 100%

1

100%

70% 80% 70%

0．0

		1	1	100%		1	1	100%	80%	85%	80%	
		1	1	100%		1	1	100%	80%	85%	80%	
		1	1	100%		1	1	100%	80%	85%	80%	
		1	1	100%		1	1	100%	80%	85%	80%	
		1	1	100%		1	1	100%	80%	85%	80%	
						1	0	0	\	\	\	\
		1	1	100%		1	1	100%	70%	80%	70%	
		6	6	100%		7	6	85.71%				

0 . .

0

GB51018-2014

1 5

2017 365

AK0+420

0.67hm^2 2.47 m^3 9.6m 1km

130m

1 2.5

3.5m

0 -

				hm²			m				
					m³						
	1	AK0+420	5	0.67	2.47	7.41	9.6		AK0+420 1km		
				0.67	2.47						

0 0

1

2

1

1 -

1

2

3

1 .

1 . -

1

7.67hm^2

7.67hm^2

7.63hm^2

97.94% 97%

5.2-1

1 . -

	hm^2	hm^2	hm^2	hm^2	hm^2			%
	2.85	2.85	2.80	0.05	0.05	0.00	0.05	100
	0.09	0.09	0.08	0.01	0.01	0.00	0.01	100
	4.06	4.06	2.85	1.21	1.19	0.00	1.19	98.35
	0.67	0.67	0.00	0.67	0.65	0.00	0.65	97.01
	7.67	7.67	5.73	1.94	1.90	0.00	1.90	97.94

2

500t/km^2·a

446.9t/km^2·a

1.12 1.0

5.2-2

1 . .

	(hm^2)	t/km^2·a	t/km^2·a	
	2.85	420.0	500	1.19
	0.09	450.0	500	1.11
	4.06	446.3	500	1.12
	0.67	450.0	500	1.11
	7.67	446.9	500	1.12

3

2.95 m^3

2.93 m^3 99.32%

89% 5.2-3

1 .

	2.95
	2.93
	99.32%

4

0.55 m^3

0.55 m^3

1．2

	hm²	hm²	%
	2.85	0.05	1.75
	0.09	0.01	11.11
	4.06	1.19	29.31
	0.67	0.65	97.01
	7.67	1.90	24.77

1 2022 9 2

0.2 0.2

0.4 0.4

1 . .

5.2-7

1．3

%	97	97.94	
	1.0	1.12	
%	89	99.32	
%	95	99.50	
%	96	97.94	
%	22	24.77	

1

GBT22490-2008

15

30-40 1 40-50 2 50 12 10 5

5.3-1

1 -

		30-40		40-50		50		
	15	1		2		12	10	5
		12		2		1		
			%		%		%		%
		13	86	2	14				
		15	100						
		15	100						
		15	100						
		15	100						

2

2 -

2 .

“ ”

2

2 0

2 0 -

2021 7

GPS

2021 8

2019 7 4

2 0 .

2021 7 2022 12

18

2 0

2 1

1 6.4-1

2 0 -

1#				
2#				
3#				
4#				

2 0 0

SL277-2002

GB/T51240-2018

1

2

3

4

2 0 1

GB/T51240-2018

2021 7

2022 12

2 0 2

2 0 3

2 0 4

97.94%

1.12 99.32% 99.50% 97.94%

24.77%

[2020]161

95.2

2 0 5

2 1

2 1 -

2 1 .

3

2 1

2 1 0

1

2

3

2 1 1

2 2

2 3

2019 9 23

10.82

2 4

1

2

3

3

3 -

1

2

3

4

97.94%

1.12 99.32% 99.50% 97.94%

24.77%

5

3 .

1

2

4

4 -

1

2

[2019]332

3

[2019]51

4

[2020]396

[2020]21

5

6

7

8

[2018]492

9

10

11 [2019]532

4 .

1

2