

Appendix 2_4C Streamflow statistics for site S10 estimated using a drainage-area-ratio method and historical streamflows (Olson. S.A., and Mack.T.J., 2011, Technique for estimation of streamflow statistics in mineral areas of interest in Afghanistan: U.S. Geological Survey Open-File Report 2011-1176)
[km², square kilometer; mm, milimeter; m, meter; m³/s, cubic meter per second; The streamgage, listed with Afghan identification number, is the historical site used for the ungaged site estimate.]

Basin Characteristics:

Drainage area:	7664.14 km ²	Basin percent above 3000 m:	65.8
Basin slope percent:	37.04	Mean October precipitation:	15.8 mm
Centroid elevation:	3311.42 m	Mean November precipitation:	31.7 mm
Basin percent irrigated:	1.74	Mean December precipitation:	37.6 mm
		Mean January precipitation:	41.6 mm

Drainage area ratio technique:

(Olson and Mack, 2011)

Streamgage: Balkh at Rabat-i-Bala 12-0.000-1M

Drainage area, km²: 18067

Results

Streamgage data:		Ungaged site estimate:		area exponent
7Q10:	21.5 m ³ /s	8.10 m ³ /s		1.14
7Q2:	30.1 m ³ /s	12.45 m ³ /s		1.03
90% flow duration:	28.0 m ³ /s	9.62 m ³ /s		1.25
80% flow duration:	31.1 m ³ /s	11.32 m ³ /s		1.18
Mean annual discharge:	49.2 m ³ /s	20.22 m ³ /s		1.04
October mean monthly discharge:	36.6 m ³ /s	14.29 m ³ /s		1.10
November mean monthly discharge:	36.9 m ³ /s	14.56 m ³ /s		1.09
December mean monthly discharge:	35.8 m ³ /s	14.21 m ³ /s		1.08
January mean monthly discharge:	34.5 m ³ /s	13.88 m ³ /s		1.06
February mean monthly discharge:	34.8 m ³ /s	14.73 m ³ /s		1.00
March mean monthly discharge:	39.6 m ³ /s	17.99 m ³ /s		0.92
April mean monthly discharge:	59.4 m ³ /s	27.49 m ³ /s		0.90
May mean monthly discharge:	101 m ³ /s	41.19 m ³ /s		1.05
June mean monthly discharge:	95.3 m ³ /s	34.72 m ³ /s		1.18
July mean monthly discharge:	47.7 m ³ /s	18.87 m ³ /s		1.08
August mean monthly discharge:	35.8 m ³ /s	14.44 m ³ /s		1.06
September mean monthly discharge:	35.3 m ³ /s	13.83 m ³ /s		1.09
October minimum monthly discharge:	22.7 m ³ /s	8.11 m ³ /s		1.20
November minimum monthly discharge:	26.0 m ³ /s	9.37 m ³ /s		1.19
December minimum monthly discharge:	27.1 m ³ /s	9.81 m ³ /s		1.18
January minimum monthly discharge:	25.5 m ³ /s	9.00 m ³ /s		1.21
February minimum monthly discharge:	27.9 m ³ /s	10.24 m ³ /s		1.17
March minimum monthly discharge:	28.9 m ³ /s	11.82 m ³ /s		1.04
April minimum monthly discharge:	42.1 m ³ /s	17.36 m ³ /s		1.03
May minimum monthly discharge:	52.4 m ³ /s	19.18 m ³ /s		1.17
June minimum monthly discharge:	29.9 m ³ /s	9.84 m ³ /s		1.30
July minimum monthly discharge:	19.8 m ³ /s	6.79 m ³ /s		1.25
August minimum monthly discharge:	19.8 m ³ /s	6.57 m ³ /s		1.29
September minimum monthly discharge:	20.8 m ³ /s	7.03 m ³ /s		1.27

In basin interpolation

Streamgage: Balkh at Rabat-i-Bala

Streamgage: Balkh River at Nayak

Drainage area, km²: 18067

Drainage area, km²: 1453.4

Streamgage data:		Streamgage data:		computed exp
7Q10:	21.5 m ³ /s	7Q10:	1.86 m ³ /s	0.97
7Q2:	30.1 m ³ /s	7Q2:	2.86 m ³ /s	0.93
90% flow duration:	28.0 m ³ /s	90% flow duration:	2.79 m ³ /s	0.92
80% flow duration:	31.1 m ³ /s	80% flow duration:	3.27 m ³ /s	0.89
Mean annual discharge:	49.2 m ³ /s	Mean annual discharge:	5.26 m ³ /s	0.89
October mean monthly discharge:	36.6 m ³ /s	October mean monthly discharge:	3.81 m ³ /s	0.90
November mean monthly discharge:	36.9 m ³ /s	November mean monthly discharge:	3.68 m ³ /s	0.92
December mean monthly discharge:	35.8 m ³ /s	December mean monthly discharge:	3.55 m ³ /s	0.92
January mean monthly discharge:	34.5 m ³ /s	January mean monthly discharge:	3.55 m ³ /s	0.90
February mean monthly discharge:	34.8 m ³ /s	February mean monthly discharge:	3.47 m ³ /s	0.91
March mean monthly discharge:	39.6 m ³ /s	March mean monthly discharge:	3.87 m ³ /s	0.92
April mean monthly discharge:	59.4 m ³ /s	April mean monthly discharge:	6.41 m ³ /s	0.88
May mean monthly discharge:	101 m ³ /s	May mean monthly discharge:	13.6 m ³ /s	0.80
June mean monthly discharge:	95.3 m ³ /s	June mean monthly discharge:	10.7 m ³ /s	0.87
July mean monthly discharge:	47.7 m ³ /s	July mean monthly discharge:	4.95 m ³ /s	0.90
August mean monthly discharge:	35.8 m ³ /s	August mean monthly discharge:	3.78 m ³ /s	0.89
September mean monthly discharge:	35.3 m ³ /s	September mean monthly discharge:	3.91 m ³ /s	0.87
October minimum monthly discharge:	22.7 m ³ /s	October minimum monthly discharge:	2.39 m ³ /s	0.89

November minimum monthly discharge:	26.0 m ³ /s	er minimum monthly discharge:	2.43 m ³ /s	0.94
December minimum monthly discharge:	27.1 m ³ /s	er minimum monthly discharge:	2.44 m ³ /s	0.96
January minimum monthly discharge:	25.5 m ³ /s	ry minimum monthly discharge:	2.27 m ³ /s	0.96
February minimum monthly discharge:	27.9 m ³ /s	ry minimum monthly discharge:	1.87 m ³ /s	1.07
March minimum monthly discharge:	28.9 m ³ /s	ch minimum monthly discharge:	2.17 m ³ /s	1.03
April minimum monthly discharge:	42.1 m ³ /s	ril minimum monthly discharge:	2.93 m ³ /s	1.06
May minimum monthly discharge:	52.4 m ³ /s	ay minimum monthly discharge:	6.83 m ³ /s	0.81
June minimum monthly discharge:	29.9 m ³ /s	ne minimum monthly discharge:	3.44 m ³ /s	0.86
July minimum monthly discharge:	19.8 m ³ /s	ly minimum monthly discharge:	2.96 m ³ /s	0.75
August minimum monthly discharge:	19.8 m ³ /s	ist minimum monthly discharge:	2.73 m ³ /s	0.79
September minimum monthly discharge:	20.8 m ³ /s	er minimum monthly discharge:	2.47 m ³ /s	0.85

Logarithmic interpolated data

(Olson and Mack, 2011)

Streamgage: Balkh River at Nayak

Drainage area, km²: 1453.4

Streamgage data:		Results	
		Ungaged site estimate:	area exponent
7Q10:	1.86 m ³ /s	9.35 m ³ /s	0.97
7Q2:	2.86 m ³ /s	13.51 m ³ /s	0.93
90% flow duration:	2.79 m ³ /s	12.78 m ³ /s	0.92
80% flow duration:	3.27 m ³ /s	14.45 m ³ /s	0.89
Mean annual discharge:	5.26 m ³ /s	23.40 m ³ /s	0.90
October mean monthly discharge:	3.81 m ³ /s	17.45 m ³ /s	0.92
November mean monthly discharge:	3.68 m ³ /s	16.90 m ³ /s	0.92
December mean monthly discharge:	3.55 m ³ /s	15.93 m ³ /s	0.90
January mean monthly discharge:	3.55 m ³ /s	16.24 m ³ /s	0.91
February mean monthly discharge:	3.47 m ³ /s	16.09 m ³ /s	0.92
March mean monthly discharge:	3.87 m ³ /s	16.81 m ³ /s	0.88
April mean monthly discharge:	6.41 m ³ /s	24.09 m ³ /s	0.80
May mean monthly discharge:	13.6 m ³ /s	57.69 m ³ /s	0.87
June mean monthly discharge:	10.7 m ³ /s	47.57 m ³ /s	0.90
July mean monthly discharge:	4.95 m ³ /s	21.82 m ³ /s	0.89
August mean monthly discharge:	3.78 m ³ /s	16.13 m ³ /s	0.87
September mean monthly discharge:	3.91 m ³ /s	17.09 m ³ /s	0.89
October minimum monthly discharge:	2.39 m ³ /s	10.55 m ³ /s	0.89
November minimum monthly discharge:	2.43 m ³ /s	11.61 m ³ /s	0.94
December minimum monthly discharge:	2.44 m ³ /s	11.95 m ³ /s	0.96
January minimum monthly discharge:	2.27 m ³ /s	11.20 m ³ /s	0.96
February minimum monthly discharge:	1.87 m ³ /s	11.12 m ³ /s	1.07
March minimum monthly discharge:	2.17 m ³ /s	11.98 m ³ /s	1.03
April minimum monthly discharge:	2.93 m ³ /s	17.00 m ³ /s	1.06
May minimum monthly discharge:	6.83 m ³ /s	26.20 m ³ /s	0.81
June minimum monthly discharge:	3.44 m ³ /s	14.33 m ³ /s	0.86
July minimum monthly discharge:	2.96 m ³ /s	10.37 m ³ /s	0.75
August minimum monthly discharge:	2.73 m ³ /s	10.09 m ³ /s	0.79
September minimum monthly discharge:	2.47 m ³ /s	10.07 m ³ /s	0.85