OPENCHANNELFLOW

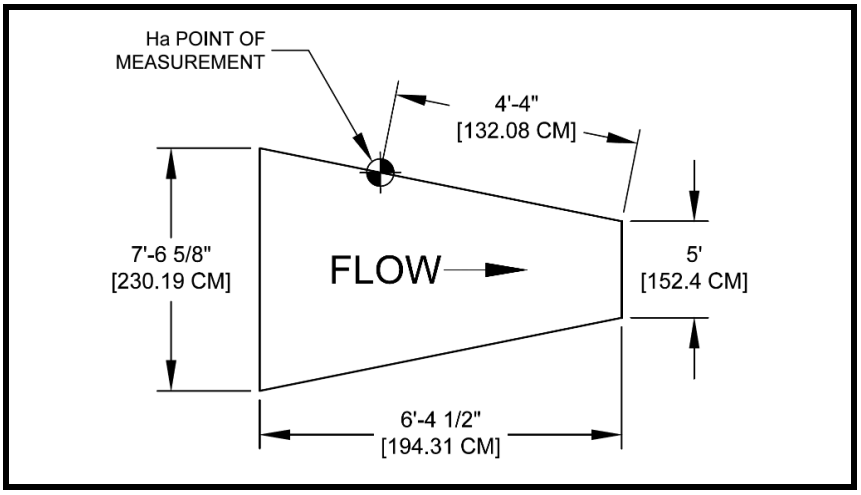
60-Inch Montana Flume Discharge Table

No Submergence ±3-5% Accuracy

Formulas (H in feet): $CFS = 20\ H_{ft.}^{1.587}$ $GPM = 8976\ H_{ft.}^{1.587}$ $MGD = 12.93\ H_{ft.}^{1.587}$

Formulas (H in meters): $L/S = 3732\ H_{m}^{1.587}$ $M3/HR = 13440\ H_{m}^{1.587}$

FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.01	0.12	0.0030	Excessive error due to fluid-flow properties and boundary conditions				
0.02	0.24	0.0061					
0.03	0.36	0.0091					
0.04	0.48	0.0122					
0.05	0.60	0.0152					
0.06	0.72	0.0183					
0.07	0.84	0.0213					
0.08	0.96	0.0244					
0.09	1.08	0.0274					
0.10	1.20	0.0305					
0.11	1.32	0.0335					
0.12	1.44	0.0366					
0.13	1.56	0.0396					
0.14	1.68	0.0427					
0.15	1.80	0.0457					
0.16	1.92	0.0488					
0.17	2.04	0.0518					
0.18	2.16	0.0549					
0.19	2.28	0.0579					
0.20	2.40	0.0610	1.555	697.9	1.005	44.04	158.5
0.21	2.52	0.0640	1.680	754.1	1.086	47.59	171.2
0.22	2.64	0.0671	1.809	811.9	1.169	51.23	184.3
0.23	2.76	0.0701	1.941	871.3	1.255	54.98	197.8
0.24	2.88	0.0732	2.077	932.1	1.342	58.82	211.6
0.25	3.00	0.0762	2.216	994.5	1.432	62.76	225.8
0.26	3.12	0.0792	2.358	1058	1.524	66.79	240.3
0.27	3.24	0.0823	2.504	1124	1.618	70.91	255.1
0.28	3.36	0.0853	2.653	1190	1.714	75.12	270.3
0.29	3.48	0.0884	2.805	1259	1.813	79.42	285.8
0.30	3.60	0.0914	2.960	1328	1.913	83.81	301.6



Sources: Water Measurement Manual, 3rd Edition, United States Department of the Interior, Bureau of Reclamation

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Formulas (H in meters): L/S = 3732 $H_{m}^{1.587}$ M3/HR = 13440 $H_{m}^{1.587}$

FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.31	3.72	0.0945	3.118	1399	2.015	88.29	317.7
0.32	3.84	0.0975	3.279	1471	2.119	92.85	334.1
0.33	3.96	0.1006	3.443	1545	2.225	97.50	350.8
0.34	4.08	0.1036	3.610	1620	2.333	102.23	367.8
0.35	4.20	0.1067	3.780	1696	2.443	107.04	385.2
0.36	4.32	0.1097	3.953	1774	2.555	111.94	402.8
0.37	4.44	0.1128	4.128	1853	2.668	116.91	420.7
0.38	4.56	0.1158	4.307	1933	2.783	121.97	438.9
0.39	4.68	0.1189	4.488	2014	2.901	127.1	457.3
0.40	4.80	0.1219	4.672	2097	3.019	132.3	476.1
0.41	4.92	0.1250	4.859	2181	3.140	137.6	495.1
0.42	5.04	0.1280	5.048	2266	3.263	143.0	514.4
0.43	5.16	0.1311	5.240	2352	3.387	148.4	534.0
0.44	5.28	0.1341	5.435	2439	3.513	153.9	553.8
0.45	5.40	0.1372	5.632	2528	3.640	159.5	573.9
0.46	5.52	0.1402	5.832	2617	3.769	165.2	594.3
0.47	5.64	0.1433	6.035	2708	3.900	170.9	614.9
0.48	5.76	0.1463	6.240	2800	4.033	176.7	635.8
0.49	5.88	0.1494	6.447	2894	4.167	182.6	657.0
0.50	6.00	0.1524	6.657	2988	4.303	188.5	678.4
0.51	6.12	0.1554	6.870	3083	4.440	194.6	700.0
0.52	6.24	0.1585	7.085	3180	4.579	200.6	721.9
0.53	6.36	0.1615	7.302	3277	4.719	206.8	744.1
0.54	6.48	0.1646	7.522	3376	4.862	213.0	766.5
0.55	6.60	0.1676	7.744	3476	5.005	219.3	789.2
0.56	6.72	0.1707	7.969	3576	5.150	225.7	812.0
0.57	6.84	0.1737	8.196	3678	5.297	232.1	835.2
0.58	6.96	0.1768	8.425	3781	5.445	238.6	858.5
0.59	7.08	0.1798	8.657	3885	5.595	245.2	882.2
0.60	7.20	0.1829	8.891	3990	5.746	251.8	906.0
0.61	7.32	0.1859	9.127	4096	5.899	258.5	930.1
0.62	7.44	0.1890	9.366	4203	6.053	265.2	954.4
0.63	7.56	0.1920	9.607	4312	6.209	272.1	978.9
0.64	7.68	0.1951	9.850	4421	6.366	279.0	1004
0.65	7.80	0.1981	10.10	4531	6.525	285.9	1029
0.66	7.92	0.2012	10.34	4642	6.685	292.9	1054
0.67	8.04	0.2042	10.59	4754	6.846	300.0	1079
0.68	8.16	0.2073	10.84	4867	7.009	307.1	1105
0.69	8.28	0.2103	11.10	4981	7.173	314.3	1131
0.70	8.40	0.2134	11.36	5096	7.339	321.6	1157
0.71	8.52	0.2164	11.61	5212	7.506	328.9	1183
0.72	8.64	0.2195	11.87	5329	7.675	336.3	1210
0.73	8.76	0.2225	12.14	5447	7.844	343.7	1237
0.74	8.88	0.2256	12.40	5566	8.016	351.2	1264
0.75	9.00	0.2286	12.67	5686	8.188	358.8	1291
0.76	9.12	0.2316	12.94	5807	8.362	366.4	1318
0.77	9.24	0.2347	13.21	5928	8.537	374.1	1346
0.78	9.36	0.2377	13.48	6051	8.714	381.8	1374
0.79	9.48	0.2408	13.76	6175	8.892	389.6	1402
0.80	9.60	0.2438	14.04	6299	9.071	397.5	1430

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Formulas (H in meters): $L/S = 3732\ H_{m}^{1.587}$ $M3/HR = 13440\ H_{m}^{1.587}$

FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.81	9.72	0.2469	14.32	6425	9.252	405.4	1459
0.82	9.84	0.2499	14.60	6551	9.434	413.4	1487
0.83	9.96	0.2530	14.88	6678	9.617	421.4	1516
0.84	10.08	0.2560	15.17	6806	9.802	429.5	1545
0.85	10.20	0.2591	15.45	6935	9.987	437.6	1575
0.86	10.32	0.2621	15.74	7065	10.17	445.8	1604
0.87	10.44	0.2652	16.03	7196	10.36	454.1	1634
0.88	10.56	0.2682	16.33	7328	10.55	462.4	1664
0.89	10.68	0.2713	16.62	7460	10.74	470.8	1694
0.90	10.80	0.2743	16.92	7594	10.94	479.2	1724
0.91	10.92	0.2774	17.22	7728	11.13	487.7	1755
0.92	11.04	0.2804	17.52	7863	11.32	496.2	1785
0.93	11.16	0.2835	17.82	8000	11.52	504.8	1816
0.94	11.28	0.2865	18.13	8136	11.72	513.4	1847
0.95	11.40	0.2896	18.44	8274	11.92	522.1	1879
0.96	11.52	0.2926	18.75	8413	12.12	530.9	1910
0.97	11.64	0.2957	19.06	8552	12.32	539.7	1942
0.98	11.76	0.2987	19.37	8693	12.52	548.5	1974
0.99	11.88	0.3018	19.68	8834	12.72	557.4	2006
1.00	12.00	0.3048	20.00	8976	12.93	566.4	2038
1.01	12.12	0.3078	20.32	9119	13.13	575.4	2070
1.02	12.24	0.3109	20.64	9263	13.34	584.5	2103
1.03	12.36	0.3139	20.96	9407	13.55	593.6	2136
1.04	12.48	0.3170	21.28	9552	13.76	602.8	2169
1.05	12.60	0.3200	21.61	9699	13.97	612.0	2202
1.06	12.72	0.3231	21.94	9846	14.18	621.3	2235
1.07	12.84	0.3261	22.27	9993	14.39	630.6	2269
1.08	12.96	0.3292	22.60	10142	14.61	640.0	2303
1.09	13.08	0.3322	22.93	10292	14.82	649.4	2337
1.10	13.20	0.3353	23.27	10442	15.04	658.9	2371
1.11	13.32	0.3383	23.60	10593	15.25	668.4	2405
1.12	13.44	0.3414	23.94	10745	15.47	678.0	2440
1.13	13.56	0.3444	24.28	10897	15.69	687.6	2474
1.14	13.68	0.3475	24.62	11051	15.91	697.3	2509
1.15	13.80	0.3505	24.97	11205	16.14	707.1	2544
1.16	13.92	0.3536	25.31	11360	16.36	716.8	2579
1.17	14.04	0.3566	25.66	11516	16.58	726.7	2615
1.18	14.16	0.3597	26.01	11672	16.81	736.5	2650
1.19	14.28	0.3627	26.36	11830	17.04	746.5	2686
1.20	14.40	0.3658	26.71	11988	17.26	756.5	2722
1.21	14.52	0.3688	27.07	12147	17.49	766.5	2758
1.22	14.64	0.3719	27.42	12307	17.72	776.6	2794
1.23	14.76	0.3749	27.78	12467	17.95	786.7	2831
1.24	14.88	0.3780	28.14	12628	18.19	796.9	2867
1.25	15.00	0.3810	28.50	12790	18.42	807.1	2904
1.26	15.12	0.3840	28.86	12953	18.65	817.4	2941
1.27	15.24	0.3871	29.23	13117	18.89	827.7	2978
1.28	15.36	0.3901	29.59	13281	19.13	838.0	3015
1.29	15.48	0.3932	29.96	13446	19.36	848.5	3053
1.30	15.60	0.3962	30.33	13612	19.60	858.9	3091

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FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
1.31	15.72	0.3993	30.70	13778	19.84	869.4	3128
1.32	15.84	0.4023	31.07	13945	20.08	880.0	3166
1.33	15.96	0.4054	31.45	14114	20.32	890.6	3204
1.34	16.08	0.4084	31.82	14282	20.57	901.2	3243
1.35	16.20	0.4115	32.20	14452	20.81	911.9	3281
1.36	16.32	0.4145	32.58	14622	21.06	922.7	3320
1.37	16.44	0.4176	32.96	14793	21.30	933.5	3359
1.38	16.56	0.4206	33.34	14965	21.55	944.3	3398
1.39	16.68	0.4237	33.73	15137	21.80	955.2	3437
1.40	16.80	0.4267	34.11	15310	22.05	966.1	3476
1.41	16.92	0.4298	34.50	15484	22.30	977.1	3516
1.42	17.04	0.4328	34.89	15659	22.55	988.1	3555
1.43	17.16	0.4359	35.28	15834	22.80	999.2	3595
1.44	17.28	0.4389	35.67	16010	23.06	1010	3635
1.45	17.40	0.4420	36.07	16187	23.31	1021	3675
1.46	17.52	0.4450	36.46	16365	23.57	1033	3716
1.47	17.64	0.4481	36.86	16543	23.82	1044	3756
1.48	17.76	0.4511	37.26	16722	24.08	1055	3797
1.49	17.88	0.4542	37.66	16902	24.34	1067	3838
1.50	18.00	0.4572	38.06	17082	24.60	1078	3878
1.51	18.12	0.4602	38.47	17263	24.86	1089	3920
1.52	18.24	0.4633	38.87	17445	25.12	1101	3961
1.53	18.36	0.4663	39.28	17627	25.38	1112	4002
1.54	18.48	0.4694	39.68	17811	25.65	1124	4044
1.55	18.60	0.4724	40.09	17994	25.91	1135	4086
1.56	18.72	0.4755	40.51	18179	26.18	1147	4128
1.57	18.84	0.4785	40.92	18364	26.45	1159	4170
1.58	18.96	0.4816	41.33	18550	26.71	1171	4212
1.59	19.08	0.4846	41.75	18737	26.98	1182	4254
1.60	19.20	0.4877	42.17	18924	27.25	1194	4297
1.61	19.32	0.4907	42.59	19112	27.52	1206	4339
1.62	19.44	0.4938	43.01	19301	27.79	1218	4382
1.63	19.56	0.4968	43.43	19491	28.07	1230	4425
1.64	19.68	0.4999	43.85	19681	28.34	1242	4468
1.65	19.80	0.5029	44.28	19871	28.62	1254	4512
1.66	19.92	0.5060	44.70	20063	28.89	1266	4555
1.67	20.04	0.5090	45.13	20255	29.17	1278	4599
1.68	20.16	0.5121	45.56	20448	29.45	1290	4643
1.69	20.28	0.5151	45.99	20641	29.72	1303	4687
1.70	20.40	0.5182	46.43	20836	30.00	1315	4731
1.71	20.52	0.5212	46.86	21030	30.29	1327	4775
1.72	20.64	0.5243	47.29	21226	30.57	1339	4819
1.73	20.76	0.5273	47.73	21422	30.85	1352	4864
1.74	20.88	0.5304	48.17	21619	31.13	1364	4909
1.75	21.00	0.5334	48.61	21816	31.42	1377	4953
1.76	21.12	0.5364	49.05	22015	31.70	1389	4998
1.77	21.24	0.5395	49.50	22213	31.99	1402	5044
1.78	21.36	0.5425	49.94	22413	32.28	1414	5089
1.79	21.48	0.5456	50.39	22613	32.56	1427	5134
1.80	21.60	0.5486	50.83	22814	32.85	1440	5180

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FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
1.81	21.72	0.5517	51.28	23015	33.14	1452	5226
1.82	21.84	0.5547	51.73	23218	33.43	1465	5272
1.83	21.96	0.5578	52.18	23420	33.73	1478	5318
1.84	22.08	0.5608	52.64	23624	34.02	1491	5364
1.85	22.20	0.5639	53.09	23828	34.31	1504	5410
1.86	22.32	0.5669	53.55	24033	34.61	1516	5457
1.87	22.44	0.5700	54.01	24238	34.90	1529	5503
1.88	22.56	0.5730	54.47	24444	35.20	1542	5550
1.89	22.68	0.5761	54.93	24651	35.50	1555	5597
1.90	22.80	0.5791	55.39	24858	35.80	1569	5644
1.91	22.92	0.5822	55.85	25066	36.10	1582	5691
1.92	23.04	0.5852	56.32	25274	36.40	1595	5739
1.93	23.16	0.5883	56.78	25484	36.70	1608	5786
1.94	23.28	0.5913	57.25	25694	37.00	1621	5834
1.95	23.40	0.5944	57.72	25904	37.30	1635	5882
1.96	23.52	0.5974	58.19	26115	37.61	1648	5929
1.97	23.64	0.6005	58.66	26327	37.91	1661	5978
1.98	23.76	0.6035	59.13	26539	38.22	1675	6026
1.99	23.88	0.6066	59.61	26752	38.53	1688	6074
2.00	24.00	0.6096	60.08	26966	38.83	1702	6123
2.01	24.12	0.6126	60.56	27180	39.14	1715	6171
2.02	24.24	0.6157	61.04	27395	39.45	1729	6220
2.03	24.36	0.6187	61.52	27611	39.76	1742	6269
2.04	24.48	0.6218	62.00	27827	40.07	1756	6318
2.05	24.60	0.6248	62.49	28044	40.38	1770	6367
2.06	24.72	0.6279	62.97	28261	40.70	1783	6417
2.07	24.84	0.6309	63.46	28479	41.01	1797	6466
2.08	24.96	0.6340	63.94	28698	41.33	1811	6516
2.09	25.08	0.6370	64.43	28917	41.64	1825	6566
2.10	25.20	0.6401	64.92	29137	41.96	1839	6616
2.11	25.32	0.6431	65.41	29358	42.28	1853	6666
2.12	25.44	0.6462	65.91	29579	42.60	1866	6716
2.13	25.56	0.6492	66.40	29800	42.91	1880	6766
2.14	25.68	0.6523	66.90	30023	43.23	1894	6817
2.15	25.80	0.6553	67.39	30246	43.56	1909	6867
2.16	25.92	0.6584	67.89	30469	43.88	1923	6918
2.17	26.04	0.6614	68.39	30693	44.20	1937	6969
2.18	26.16	0.6645	68.89	30918	44.52	1951	7020
2.19	26.28	0.6675	69.39	31144	44.85	1965	7071
2.20	26.40	0.6706	69.90	31370	45.17	1979	7122
2.21	26.52	0.6736	70.40	31596	45.50	1994	7174
2.22	26.64	0.6767	70.91	31823	45.83	2008	7225
2.23	26.76	0.6797	71.42	32051	46.16	2022	7277
2.24	26.88	0.6828	71.92	32279	46.48	2037	7329
2.25	27.00	0.6858	72.43	32508	46.81	2051	7381
2.26	27.12	0.6888	72.95	32738	47.14	2066	7433
2.27	27.24	0.6919	73.46	32968	47.48	2080	7485
2.28	27.36	0.6949	73.97	33199	47.81	2095	7538
2.29	27.48	0.6980	74.49	33430	48.14	2110	7590
2.30	27.60	0.7010	75.01	33662	48.48	2124	7643

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OPENCHANNELFLOW

60-Inch Montana Flume Discharge Table

No Submergence ±3-5% Accuracy

Formulas (H in feet): CFS = 20 $H_{ft.}^{1.587}$ GPM = 8976 $H_{ft.}^{1.587}$ MGD = 12.93 $H_{ft.}^{1.587}$

Formulas (H in meters): L/S = 3732 $H_{m}^{1.587}$ M3/HR = 13440 $H_{m}^{1.587}$

FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
2.31	27.72	0.7041	75.52	33895	48.81	2139	7696
2.32	27.84	0.7071	76.04	34128	49.15	2154	7749
2.33	27.96	0.7102	76.56	34362	49.48	2168	7802
2.34	28.08	0.7132	77.09	34596	49.82	2183	7855
2.35	28.20	0.7163	77.61	34831	50.16	2198	7908
2.36	28.32	0.7193	78.13	35067	50.50	2213	7962
2.37	28.44	0.7224	78.66	35303	50.84	2228	8015
2.38	28.56	0.7254	79.19	35539	51.18	2243	8069
2.39	28.68	0.7285	79.72	35777	51.52	2258	8123
2.40	28.80	0.7315	80.25	36015	51.86	2273	8177
2.41	28.92	0.7346	80.78	36253	52.21	2288	8231
2.42	29.04	0.7376	81.31	36492	52.55	2303	8286
2.43	29.16	0.7407	81.84	36732	52.90	2318	8340
2.44	29.28	0.7437	82.38	36972	53.24	2333	8394
2.45	29.40	0.7468	82.92	37213	53.59	2348	8449
2.46	29.52	0.7498	83.45	37454	53.94	2363	8504
2.47	29.64	0.7529	83.99	37696	54.28	2379	8559
2.48	29.76	0.7559	84.53	37938	54.63	2394	8614
2.49	29.88	0.7590	85.07	38181	54.98	2409	8669
2.50	30.00	0.7620	85.62	38425	55.33	2425	8724

Sources: Water Measurement Manual, 3rd Edition, United States Department of the Interior, Bureau of Reclamation

ASTM D 1941-91 (2007): Standard Test Method for Open Channel Flow Measurement of Water with Parshall Flume