



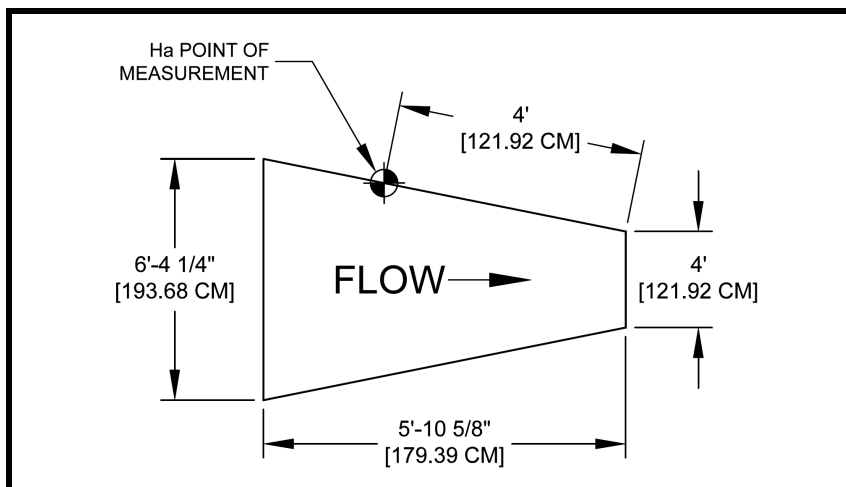
48-Inch Montana Flume Discharge Table

No Submergence ±3-5% Accuracy

Formulas (H in feet): $CFS = 16 H_{ft}^{1.578}$
 Formulas (H in meters): $L/S = 2954 H_m^{1.578}$

$GPM = 7181 H_{ft}^{1.578}$ $MGD = 10.34 H_{ft}^{1.578}$
 $M3/HR = 10630 H_m^{1.578}$

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	1.262	566.5	0.8158	35.75	128.6
0.21	2.52	0.0640	1.363	611.8	0.8811	38.61	138.9
0.22	2.64	0.0671	1.467	658.4	0.9482	41.55	149.5
0.23	2.76	0.0701	1.574	706.3	1.017	44.57	160.4
0.24	2.88	0.0732	1.683	755.3	1.088	47.66	171.5
0.25	3.00	0.0762	1.795	805.6	1.160	50.83	182.9
0.26	3.12	0.0792	1.910	857.0	1.234	54.08	194.6
0.27	3.24	0.0823	2.027	909.6	1.310	57.40	206.5
0.28	3.36	0.0853	2.147	963.4	1.387	60.79	218.7
0.29	3.48	0.0884	2.269	1018	1.466	64.25	231.2
0.30	3.60	0.0914	2.393	1074	1.547	67.78	243.9



Sources:

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FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.31	3.72	0.0945	2.521	1131	1.629	71.38	256.8
0.32	3.84	0.0975	2.650	1189	1.713	75.05	270.0
0.33	3.96	0.1006	2.782	1248	1.798	78.78	283.5
0.34	4.08	0.1036	2.916	1309	1.885	82.58	297.1
0.35	4.20	0.1067	3.053	1370	1.973	86.45	311.1
0.36	4.32	0.1097	3.191	1432	2.063	90.38	325.2
0.37	4.44	0.1128	3.332	1496	2.154	94.37	339.6
0.38	4.56	0.1158	3.476	1560	2.246	98.43	354.2
0.39	4.68	0.1189	3.621	1625	2.340	102.5	369.0
0.40	4.80	0.1219	3.769	1691	2.436	106.7	384.0
0.41	4.92	0.1250	3.918	1759	2.532	111.0	399.3
0.42	5.04	0.1280	4.070	1827	2.631	115.3	414.7
0.43	5.16	0.1311	4.224	1896	2.730	119.6	430.4
0.44	5.28	0.1341	4.380	1966	2.831	124.0	446.3
0.45	5.40	0.1372	4.538	2037	2.933	128.5	462.4
0.46	5.52	0.1402	4.698	2109	3.037	133.1	478.8
0.47	5.64	0.1433	4.861	2181	3.141	137.7	495.3
0.48	5.76	0.1463	5.025	2255	3.248	142.3	512.0
0.49	5.88	0.1494	5.191	2330	3.355	147.0	529.0
0.50	6.00	0.1524	5.359	2405	3.464	151.8	546.1
0.51	6.12	0.1554	5.529	2482	3.574	156.6	563.4
0.52	6.24	0.1585	5.701	2559	3.685	161.5	581.0
0.53	6.36	0.1615	5.875	2637	3.797	166.4	598.7
0.54	6.48	0.1646	6.051	2716	3.911	171.4	616.6
0.55	6.60	0.1676	6.229	2796	4.026	176.4	634.7
0.56	6.72	0.1707	6.409	2876	4.142	181.5	653.0
0.57	6.84	0.1737	6.590	2958	4.259	186.6	671.5
0.58	6.96	0.1768	6.773	3040	4.378	191.8	690.2
0.59	7.08	0.1798	6.959	3123	4.497	197.1	709.1
0.60	7.20	0.1829	7.146	3207	4.618	202.4	728.1
0.61	7.32	0.1859	7.334	3292	4.740	207.7	747.4
0.62	7.44	0.1890	7.525	3377	4.863	213.1	766.8
0.63	7.56	0.1920	7.718	3464	4.988	218.6	786.4
0.64	7.68	0.1951	7.912	3551	5.113	224.1	806.2
0.65	7.80	0.1981	8.108	3639	5.240	229.6	826.2
0.66	7.92	0.2012	8.305	3727	5.368	235.2	846.3
0.67	8.04	0.2042	8.505	3817	5.497	240.9	866.6
0.68	8.16	0.2073	8.706	3907	5.627	246.6	887.1
0.69	8.28	0.2103	8.909	3998	5.758	252.3	907.8
0.70	8.40	0.2134	9.113	4090	5.890	258.1	928.7
0.71	8.52	0.2164	9.320	4183	6.023	263.9	949.7
0.72	8.64	0.2195	9.528	4276	6.158	269.8	970.9
0.73	8.76	0.2225	9.737	4370	6.293	275.8	992.2
0.74	8.88	0.2256	9.949	4465	6.430	281.7	1014
0.75	9.00	0.2286	10.16	4561	6.568	287.8	1035
0.76	9.12	0.2316	10.38	4657	6.706	293.9	1057
0.77	9.24	0.2347	10.59	4754	6.846	300.0	1079
0.78	9.36	0.2377	10.81	4852	6.987	306.2	1102
0.79	9.48	0.2408	11.03	4950	7.129	312.4	1124
0.80	9.60	0.2438	11.25	5050	7.272	318.6	1146

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FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.81	9.72	0.2469	11.47	5149	7.416	324.9	1169
0.82	9.84	0.2499	11.70	5250	7.561	331.3	1192
0.83	9.96	0.2530	11.92	5352	7.707	337.7	1215
0.84	10.08	0.2560	12.15	5454	7.854	344.1	1238
0.85	10.20	0.2591	12.38	5556	8.002	350.6	1262
0.86	10.32	0.2621	12.61	5660	8.151	357.2	1285
0.87	10.44	0.2652	12.84	5764	8.301	363.7	1309
0.88	10.56	0.2682	13.08	5869	8.452	370.3	1333
0.89	10.68	0.2713	13.31	5975	8.604	377.0	1357
0.90	10.80	0.2743	13.55	6081	8.757	383.7	1381
0.91	10.92	0.2774	13.79	6188	8.911	390.5	1405
0.92	11.04	0.2804	14.03	6295	9.066	397.3	1429
0.93	11.16	0.2835	14.27	6404	9.222	404.1	1454
0.94	11.28	0.2865	14.51	6513	9.379	411.0	1479
0.95	11.40	0.2896	14.76	6622	9.537	417.9	1504
0.96	11.52	0.2926	15.00	6733	9.696	424.9	1529
0.97	11.64	0.2957	15.25	6844	9.856	431.9	1554
0.98	11.76	0.2987	15.50	6955	10.02	438.9	1579
0.99	11.88	0.3018	15.75	7068	10.18	446.0	1605
1.00	12.00	0.3048	16.00	7181	10.34	453.1	1630
1.01	12.12	0.3078	16.25	7294	10.50	460.3	1656
1.02	12.24	0.3109	16.51	7409	10.67	467.5	1682
1.03	12.36	0.3139	16.76	7524	10.83	474.8	1708
1.04	12.48	0.3170	17.02	7639	11.00	482.0	1734
1.05	12.60	0.3200	17.28	7755	11.17	489.4	1761
1.06	12.72	0.3231	17.54	7872	11.34	496.8	1787
1.07	12.84	0.3261	17.80	7990	11.51	504.2	1814
1.08	12.96	0.3292	18.07	8108	11.68	511.6	1841
1.09	13.08	0.3322	18.33	8227	11.85	519.1	1868
1.10	13.20	0.3353	18.60	8346	12.02	526.7	1895
1.11	13.32	0.3383	18.86	8466	12.19	534.2	1922
1.12	13.44	0.3414	19.13	8587	12.37	541.9	1950
1.13	13.56	0.3444	19.40	8708	12.54	549.5	1977
1.14	13.68	0.3475	19.68	8830	12.72	557.2	2005
1.15	13.80	0.3505	19.95	8953	12.89	564.9	2033
1.16	13.92	0.3536	20.22	9076	13.07	572.7	2061
1.17	14.04	0.3566	20.50	9200	13.25	580.5	2089
1.18	14.16	0.3597	20.78	9324	13.43	588.4	2117
1.19	14.28	0.3627	21.05	9449	13.61	596.2	2145
1.20	14.40	0.3658	21.33	9575	13.79	604.2	2174
1.21	14.52	0.3688	21.62	9701	13.97	612.1	2203
1.22	14.64	0.3719	21.90	9828	14.15	620.1	2231
1.23	14.76	0.3749	22.18	9955	14.34	628.2	2260
1.24	14.88	0.3780	22.47	10083	14.52	636.3	2289
1.25	15.00	0.3810	22.75	10212	14.71	644.4	2319
1.26	15.12	0.3840	23.04	10341	14.89	652.5	2348
1.27	15.24	0.3871	23.33	10471	15.08	660.7	2377
1.28	15.36	0.3901	23.62	10601	15.27	668.9	2407
1.29	15.48	0.3932	23.91	10732	15.45	677.2	2437
1.30	15.60	0.3962	24.21	10864	15.64	685.5	2467

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FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
1.31	15.72	0.3993	24.50	10996	15.83	693.9	2497
1.32	15.84	0.4023	24.80	11129	16.03	702.2	2527
1.33	15.96	0.4054	25.09	11262	16.22	710.6	2557
1.34	16.08	0.4084	25.39	11396	16.41	719.1	2587
1.35	16.20	0.4115	25.69	11530	16.60	727.6	2618
1.36	16.32	0.4145	25.99	11665	16.80	736.1	2649
1.37	16.44	0.4176	26.29	11801	16.99	744.7	2679
1.38	16.56	0.4206	26.60	11937	17.19	753.3	2710
1.39	16.68	0.4237	26.90	12074	17.39	761.9	2741
1.40	16.80	0.4267	27.21	12211	17.59	770.6	2773
1.41	16.92	0.4298	27.52	12349	17.78	779.3	2804
1.42	17.04	0.4328	27.82	12488	17.98	788.0	2835
1.43	17.16	0.4359	28.13	12627	18.18	796.8	2867
1.44	17.28	0.4389	28.45	12766	18.38	805.6	2899
1.45	17.40	0.4420	28.76	12907	18.59	814.4	2930
1.46	17.52	0.4450	29.07	13047	18.79	823.3	2962
1.47	17.64	0.4481	29.39	13189	18.99	832.2	2994
1.48	17.76	0.4511	29.70	13330	19.20	841.2	3027
1.49	17.88	0.4542	30.02	13473	19.40	850.2	3059
1.50	18.00	0.4572	30.34	13616	19.61	859.2	3091
1.51	18.12	0.4602	30.66	13759	19.81	868.2	3124
1.52	18.24	0.4633	30.98	13903	20.02	877.3	3157
1.53	18.36	0.4663	31.30	14048	20.23	886.5	3190
1.54	18.48	0.4694	31.62	14193	20.44	895.6	3223
1.55	18.60	0.4724	31.95	14339	20.65	904.8	3256
1.56	18.72	0.4755	32.28	14485	20.86	914.0	3289
1.57	18.84	0.4785	32.60	14632	21.07	923.3	3322
1.58	18.96	0.4816	32.93	14779	21.28	932.6	3356
1.59	19.08	0.4846	33.26	14927	21.50	941.9	3389
1.60	19.20	0.4877	33.59	15076	21.71	951.3	3423
1.61	19.32	0.4907	33.92	15225	21.92	960.7	3457
1.62	19.44	0.4938	34.26	15374	22.14	970.1	3491
1.63	19.56	0.4968	34.59	15524	22.36	979.6	3525
1.64	19.68	0.4999	34.93	15675	22.57	989.1	3559
1.65	19.80	0.5029	35.26	15826	22.79	998.6	3593
1.66	19.92	0.5060	35.60	15977	23.01	1008	3628
1.67	20.04	0.5090	35.94	16129	23.23	1018	3662
1.68	20.16	0.5121	36.28	16282	23.45	1027	3697
1.69	20.28	0.5151	36.62	16435	23.67	1037	3732
1.70	20.40	0.5182	36.96	16589	23.89	1047	3767
1.71	20.52	0.5212	37.31	16743	24.11	1057	3802
1.72	20.64	0.5243	37.65	16898	24.33	1066	3837
1.73	20.76	0.5273	38.00	17053	24.56	1076	3872
1.74	20.88	0.5304	38.34	17209	24.78	1086	3907
1.75	21.00	0.5334	38.69	17365	25.01	1096	3943
1.76	21.12	0.5364	39.04	17522	25.23	1106	3978
1.77	21.24	0.5395	39.39	17680	25.46	1116	4014
1.78	21.36	0.5425	39.75	17838	25.69	1126	4050
1.79	21.48	0.5456	40.10	17996	25.92	1136	4086
1.80	21.60	0.5486	40.45	18155	26.14	1146	4122

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FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
1.81	21.72	0.5517	40.81	18314	26.37	1156	4158
1.82	21.84	0.5547	41.16	18474	26.60	1166	4195
1.83	21.96	0.5578	41.52	18635	26.84	1176	4231
1.84	22.08	0.5608	41.88	18796	27.07	1186	4268
1.85	22.20	0.5639	42.24	18957	27.30	1196	4304
1.86	22.32	0.5669	42.60	19119	27.53	1206	4341
1.87	22.44	0.5700	42.96	19281	27.77	1217	4378
1.88	22.56	0.5730	43.33	19444	28.00	1227	4415
1.89	22.68	0.5761	43.69	19608	28.24	1237	4452
1.90	22.80	0.5791	44.05	19772	28.47	1248	4489
1.91	22.92	0.5822	44.42	19936	28.71	1258	4527
1.92	23.04	0.5852	44.79	20101	28.95	1268	4564
1.93	23.16	0.5883	45.16	20267	29.19	1279	4602
1.94	23.28	0.5913	45.53	20433	29.42	1289	4639
1.95	23.40	0.5944	45.90	20599	29.66	1300	4677
1.96	23.52	0.5974	46.27	20766	29.90	1310	4715
1.97	23.64	0.6005	46.64	20933	30.15	1321	4753
1.98	23.76	0.6035	47.02	21101	30.39	1332	4791
1.99	23.88	0.6066	47.39	21270	30.63	1342	4829
2.00	24.00	0.6096	47.77	21439	30.87	1353	4868
2.01	24.12	0.6126	48.15	21608	31.12	1364	4906
2.02	24.24	0.6157	48.52	21778	31.36	1374	4945
2.03	24.36	0.6187	48.90	21948	31.61	1385	4983
2.04	24.48	0.6218	49.29	22119	31.85	1396	5022
2.05	24.60	0.6248	49.67	22291	32.10	1407	5061
2.06	24.72	0.6279	50.05	22462	32.35	1417	5100
2.07	24.84	0.6309	50.43	22635	32.60	1428	5139
2.08	24.96	0.6340	50.82	22807	32.84	1439	5178
2.09	25.08	0.6370	51.20	22981	33.09	1450	5218
2.10	25.20	0.6401	51.59	23154	33.34	1461	5257
2.11	25.32	0.6431	51.98	23329	33.59	1472	5297
2.12	25.44	0.6462	52.37	23503	33.85	1483	5336
2.13	25.56	0.6492	52.76	23679	34.10	1494	5376
2.14	25.68	0.6523	53.15	23854	34.35	1505	5416
2.15	25.80	0.6553	53.54	24030	34.61	1516	5456
2.16	25.92	0.6584	53.94	24207	34.86	1528	5496
2.17	26.04	0.6614	54.33	24384	35.11	1539	5536
2.18	26.16	0.6645	54.73	24562	35.37	1550	5577
2.19	26.28	0.6675	55.12	24740	35.63	1561	5617
2.20	26.40	0.6706	55.52	24918	35.88	1572	5658
2.21	26.52	0.6736	55.92	25097	36.14	1584	5698
2.22	26.64	0.6767	56.32	25277	36.40	1595	5739
2.23	26.76	0.6797	56.72	25456	36.66	1606	5780
2.24	26.88	0.6828	57.12	25637	36.92	1618	5821
2.25	27.00	0.6858	57.53	25818	37.18	1629	5862
2.26	27.12	0.6888	57.93	25999	37.44	1641	5903
2.27	27.24	0.6919	58.33	26181	37.70	1652	5944
2.28	27.36	0.6949	58.74	26363	37.96	1664	5986
2.29	27.48	0.6980	59.15	26546	38.23	1675	6027
2.30	27.60	0.7010	59.56	26729	38.49	1687	6069

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No Submergence ±3-5% Accuracy

Formulas (H in feet): $CFS = 16 H_{ft}^{1.578}$
 Formulas (H in meters): $L/S = 2954 H_m^{1.578}$

$GPM = 7181 H_{ft}^{1.578}$ $MGD = 10.34 H_{ft}^{1.578}$
 $M3/HR = 10630 H_m^{1.578}$

FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
2.31	27.72	0.7041	59.97	26912	38.76	1698	6110
2.32	27.84	0.7071	60.38	27096	39.02	1710	6152
2.33	27.96	0.7102	60.79	27281	39.29	1721	6194
2.34	28.08	0.7132	61.20	27466	39.55	1733	6236
2.35	28.20	0.7163	61.61	27651	39.82	1745	6278
2.36	28.32	0.7193	62.03	27837	40.09	1757	6320
2.37	28.44	0.7224	62.44	28024	40.36	1768	6363
2.38	28.56	0.7254	62.86	28211	40.62	1780	6405
2.39	28.68	0.7285	63.27	28398	40.89	1792	6448
2.40	28.80	0.7315	63.69	28586	41.16	1804	6490
2.41	28.92	0.7346	64.11	28774	41.44	1816	6533
2.42	29.04	0.7376	64.53	28962	41.71	1828	6576
2.43	29.16	0.7407	64.95	29151	41.98	1840	6619
2.44	29.28	0.7437	65.38	29341	42.25	1851	6662
2.45	29.40	0.7468	65.80	29531	42.53	1863	6705
2.46	29.52	0.7498	66.22	29721	42.80	1875	6748
2.47	29.64	0.7529	66.65	29912	43.08	1888	6792
2.48	29.76	0.7559	67.08	30104	43.35	1900	6835
2.49	29.88	0.7590	67.50	30295	43.63	1912	6879
2.50	30.00	0.7620	67.93	30488	43.90	1924	6922

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