



9-Inch Montana Flume Discharge Table

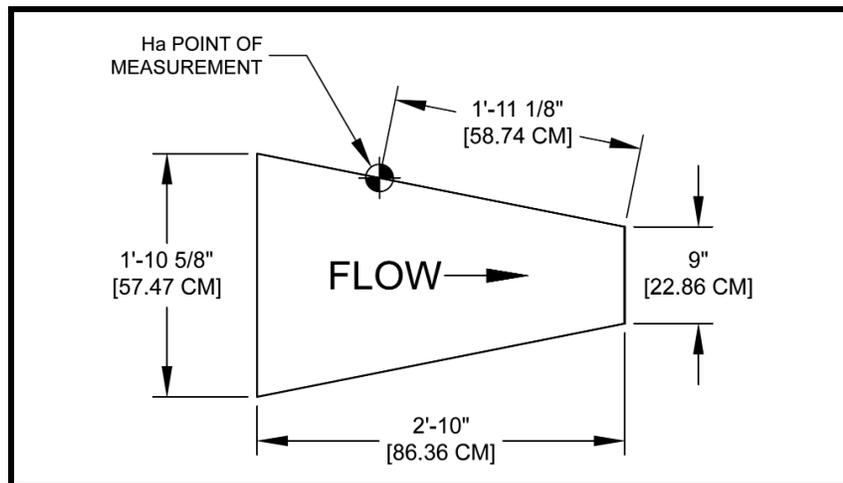
No Submergence ±3-5% Accuracy

Formulas (H in feet): CFS = 3.07 H_{ft.}^{1.53}
 Formulas (H in meters): L/S = 535.4 H_m^{1.53}

GPM = 1378 H_{ft.}^{1.53} MGD = 1.984 H_{ft.}^{1.53}
 M3/HR = 1927 H_m^{1.53}

FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.01	0.12	0.0030					
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	0.0906	40.66	0.0586	2.566	9.232
0.11	1.32	0.0335	0.1048	47.05	0.0677	2.969	10.68
0.12	1.44	0.0366	0.1198	53.75	0.0774	3.391	12.20
0.13	1.56	0.0396	0.1354	60.75	0.0875	3.833	13.79
0.14	1.68	0.0427	0.1516	68.04	0.0980	4.293	15.45
0.15	1.80	0.0457	0.1685	75.62	0.1089	4.771	17.17
0.16	1.92	0.0488	0.1860	83.46	0.1202	5.267	18.95
0.17	2.04	0.0518	0.2040	91.58	0.1319	5.779	20.79
0.18	2.16	0.0549	0.2227	99.94	0.1439	6.307	22.69
0.19	2.28	0.0579	0.2419	108.6	0.1563	6.851	24.65
0.20	2.40	0.0610	0.2616	117.4	0.1691	7.410	26.66
0.21	2.52	0.0640	0.2819	126.5	0.1822	7.984	28.73
0.22	2.64	0.0671	0.3027	135.9	0.1956	8.573	30.85
0.23	2.76	0.0701	0.3240	145.4	0.2094	9.176	33.02
0.24	2.88	0.0732	0.3458	155.2	0.2235	9.794	35.24
0.25	3.00	0.0762	0.3681	165.2	0.2379	10.43	37.51
0.26	3.12	0.0792	0.3909	175.4	0.2526	11.07	39.83
0.27	3.24	0.0823	0.4141	185.9	0.2676	11.73	42.20
0.28	3.36	0.0853	0.4378	196.5	0.2830	12.40	44.61
0.29	3.48	0.0884	0.4620	207.3	0.2986	13.08	47.07
0.30	3.60	0.0914	0.4866	218.4	0.3145	13.78	49.58

Excessive error due to fluid-flow properties and boundary conditions



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



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FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.31	3.72	0.0945	0.5116	229.6	0.3306	14.49	52.13
0.32	3.84	0.0975	0.5371	241.0	0.3471	15.21	54.73
0.33	3.96	0.1006	0.5629	252.6	0.3638	15.94	57.36
0.34	4.08	0.1036	0.5893	264.5	0.3808	16.69	60.04
0.35	4.20	0.1067	0.6160	276.4	0.3981	17.44	62.77
0.36	4.32	0.1097	0.6431	288.6	0.4156	18.21	65.53
0.37	4.44	0.1128	0.6706	301.0	0.4334	18.99	68.34
0.38	4.56	0.1158	0.6986	313.5	0.4515	19.78	71.18
0.39	4.68	0.1189	0.7269	326.2	0.4698	20.59	74.07
0.40	4.80	0.1219	0.7556	339.1	0.4883	21.40	77.00
0.41	4.92	0.1250	0.7847	352.2	0.5071	22.22	79.96
0.42	5.04	0.1280	0.8142	365.4	0.5262	23.06	82.96
0.43	5.16	0.1311	0.8440	378.8	0.5455	23.90	86.00
0.44	5.28	0.1341	0.8742	392.4	0.5650	24.76	89.08
0.45	5.40	0.1372	0.9048	406.1	0.5848	25.62	92.20
0.46	5.52	0.1402	0.9357	420.0	0.6048	26.50	95.35
0.47	5.64	0.1433	0.9670	434.0	0.6250	27.39	98.54
0.48	5.76	0.1463	0.9987	448.2	0.6455	28.28	101.8
0.49	5.88	0.1494	1.031	462.6	0.6662	29.19	105.0
0.50	6.00	0.1524	1.063	477.1	0.6871	30.11	108.3
0.51	6.12	0.1554	1.096	491.8	0.7082	31.03	111.7
0.52	6.24	0.1585	1.129	506.6	0.7296	31.97	115.0
0.53	6.36	0.1615	1.162	521.6	0.7511	32.91	118.4
0.54	6.48	0.1646	1.196	536.7	0.7729	33.87	121.9
0.55	6.60	0.1676	1.230	552.0	0.7949	34.83	125.3
0.56	6.72	0.1707	1.264	567.4	0.8171	35.81	128.8
0.57	6.84	0.1737	1.299	583.0	0.8396	36.79	132.4
0.58	6.96	0.1768	1.334	598.7	0.8622	37.78	135.9
0.59	7.08	0.1798	1.369	614.6	0.8851	38.78	139.5
0.60	7.20	0.1829	1.405	630.6	0.9081	39.79	143.2
0.61	7.32	0.1859	1.441	646.8	0.9314	40.81	146.8
0.62	7.44	0.1890	1.477	663.1	0.9548	41.84	150.5
0.63	7.56	0.1920	1.514	679.5	0.9785	42.88	154.3
0.64	7.68	0.1951	1.551	696.1	1.002	43.92	158.0
0.65	7.80	0.1981	1.588	712.8	1.026	44.98	161.8
0.66	7.92	0.2012	1.626	729.6	1.051	46.04	165.7
0.67	8.04	0.2042	1.664	746.6	1.075	47.11	169.5
0.68	8.16	0.2073	1.702	763.7	1.100	48.19	173.4
0.69	8.28	0.2103	1.740	781.0	1.125	49.28	177.3
0.70	8.40	0.2134	1.779	798.3	1.150	50.38	181.3
0.71	8.52	0.2164	1.818	815.9	1.175	51.48	185.2
0.72	8.64	0.2195	1.857	833.5	1.200	52.60	189.2
0.73	8.76	0.2225	1.897	851.3	1.226	53.72	193.3
0.74	8.88	0.2256	1.937	869.2	1.252	54.85	197.3
0.75	9.00	0.2286	1.977	887.2	1.278	55.99	201.4
0.76	9.12	0.2316	2.017	905.4	1.304	57.13	205.6
0.77	9.24	0.2347	2.058	923.7	1.330	58.29	209.7
0.78	9.36	0.2377	2.099	942.1	1.357	59.45	213.9
0.79	9.48	0.2408	2.140	960.6	1.383	60.62	218.1
0.80	9.60	0.2438	2.182	979.3	1.410	61.80	222.4

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FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.81	9.72	0.2469	2.224	998.1	1.437	62.98	226.6
0.82	9.84	0.2499	2.266	1017	1.465	64.18	230.9
0.83	9.96	0.2530	2.308	1036	1.492	65.38	235.2
0.84	10.08	0.2560	2.351	1055	1.520	66.59	239.6
0.85	10.20	0.2591	2.394	1074	1.547	67.80	244.0
0.86	10.32	0.2621	2.437	1094	1.575	69.03	248.4
0.87	10.44	0.2652	2.481	1113	1.603	70.26	252.8
0.88	10.56	0.2682	2.525	1133	1.632	71.50	257.3
0.89	10.68	0.2713	2.569	1153	1.660	72.74	261.7
0.90	10.80	0.2743	2.613	1173	1.689	74.00	266.3
0.91	10.92	0.2774	2.657	1193	1.718	75.26	270.8
0.92	11.04	0.2804	2.702	1213	1.746	76.53	275.4
0.93	11.16	0.2835	2.747	1233	1.776	77.81	280.0
0.94	11.28	0.2865	2.793	1253	1.805	79.09	284.6
0.95	11.40	0.2896	2.838	1274	1.834	80.38	289.2
0.96	11.52	0.2926	2.884	1294	1.864	81.68	293.9
0.97	11.64	0.2957	2.930	1315	1.894	82.98	298.6
0.98	11.76	0.2987	2.977	1336	1.924	84.30	303.3
0.99	11.88	0.3018	3.023	1357	1.954	85.62	308.1
1.00	12.00	0.3048	3.070	1378	1.984	86.94	312.8
1.01	12.12	0.3078	3.117	1399	2.015	88.28	317.6
1.02	12.24	0.3109	3.164	1420	2.045	89.62	322.5
1.03	12.36	0.3139	3.212	1442	2.076	90.96	327.3
1.04	12.48	0.3170	3.260	1463	2.107	92.32	332.2
1.05	12.60	0.3200	3.308	1485	2.138	93.68	337.1
1.06	12.72	0.3231	3.356	1506	2.169	95.05	342.0
1.07	12.84	0.3261	3.405	1528	2.201	96.42	347.0
1.08	12.96	0.3292	3.454	1550	2.232	97.81	351.9
1.09	13.08	0.3322	3.503	1572	2.264	99.20	356.9
1.10	13.20	0.3353	3.552	1594	2.296	100.6	361.9
1.11	13.32	0.3383	3.601	1616	2.328	102.0	367.0
1.12	13.44	0.3414	3.651	1639	2.360	103.4	372.1
1.13	13.56	0.3444	3.701	1661	2.392	104.8	377.2
1.14	13.68	0.3475	3.751	1684	2.425	106.2	382.3
1.15	13.80	0.3505	3.802	1706	2.457	107.7	387.4
1.16	13.92	0.3536	3.853	1729	2.490	109.1	392.6
1.17	14.04	0.3566	3.904	1752	2.523	110.5	397.8
1.18	14.16	0.3597	3.955	1775	2.556	112.0	403.0
1.19	14.28	0.3627	4.006	1798	2.589	113.5	408.2
1.20	14.40	0.3658	4.058	1821	2.623	114.9	413.5
1.21	14.52	0.3688	4.110	1844	2.656	116.4	418.8
1.22	14.64	0.3719	4.162	1868	2.690	117.9	424.1
1.23	14.76	0.3749	4.214	1891	2.723	119.3	429.4
1.24	14.88	0.3780	4.267	1915	2.757	120.8	434.8
1.25	15.00	0.3810	4.319	1938	2.792	122.3	440.1
1.26	15.12	0.3840	4.372	1962	2.826	123.8	445.5
1.27	15.24	0.3871	4.425	1986	2.860	125.3	451.0
1.28	15.36	0.3901	4.479	2010	2.895	126.8	456.4
1.29	15.48	0.3932	4.533	2034	2.929	128.4	461.9
1.30	15.60	0.3962	4.586	2058	2.964	129.9	467.4

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FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
1.31	15.72	0.3993	4.640	2083	2.999	131.4	472.9
1.32	15.84	0.4023	4.695	2107	3.034	133.0	478.4
1.33	15.96	0.4054	4.749	2131	3.069	134.5	484.0
1.34	16.08	0.4084	4.804	2156	3.105	136.1	489.5
1.35	16.20	0.4115	4.859	2181	3.140	137.6	495.1
1.36	16.32	0.4145	4.914	2205	3.176	139.2	500.8
1.37	16.44	0.4176	4.970	2230	3.212	140.7	506.4
1.38	16.56	0.4206	5.025	2255	3.248	142.3	512.1
1.39	16.68	0.4237	5.081	2280	3.284	143.9	517.8
1.40	16.80	0.4267	5.137	2306	3.320	145.5	523.5
1.41	16.92	0.4298	5.193	2331	3.356	147.1	529.2
1.42	17.04	0.4328	5.250	2356	3.393	148.7	535.0
1.43	17.16	0.4359	5.306	2382	3.430	150.3	540.7
1.44	17.28	0.4389	5.363	2407	3.466	151.9	546.5
1.45	17.40	0.4420	5.420	2433	3.503	153.5	552.3
1.46	17.52	0.4450	5.478	2458	3.540	155.1	558.2
1.47	17.64	0.4481	5.535	2484	3.577	156.8	564.0
1.48	17.76	0.4511	5.593	2510	3.615	158.4	569.9
1.49	17.88	0.4542	5.651	2536	3.652	160.0	575.8
1.50	18.00	0.4572	5.709	2562	3.690	161.7	581.7
1.51	18.12	0.4602	5.767	2588	3.727	163.3	587.7
1.52	18.24	0.4633	5.826	2615	3.765	165.0	593.7
1.53	18.36	0.4663	5.885	2641	3.803	166.7	599.6
1.54	18.48	0.4694	5.944	2667	3.841	168.3	605.6
1.55	18.60	0.4724	6.003	2694	3.880	170.0	611.7
1.56	18.72	0.4755	6.062	2721	3.918	171.7	617.7
1.57	18.84	0.4785	6.122	2747	3.956	173.4	623.8
1.58	18.96	0.4816	6.181	2774	3.995	175.1	629.9
1.59	19.08	0.4846	6.241	2801	4.034	176.8	636.0
1.60	19.20	0.4877	6.301	2828	4.073	178.5	642.1
1.61	19.32	0.4907	6.362	2855	4.112	180.2	648.3
1.62	19.44	0.4938	6.422	2882	4.151	181.9	654.4
1.63	19.56	0.4968	6.483	2910	4.190	183.6	660.6
1.64	19.68	0.4999	6.544	2937	4.229	185.3	666.8
1.65	19.80	0.5029	6.605	2964	4.269	187.1	673.1
1.66	19.92	0.5060	6.667	2992	4.309	188.8	679.3
1.67	20.04	0.5090	6.728	3020	4.348	190.5	685.6
1.68	20.16	0.5121	6.790	3047	4.388	192.3	691.9
1.69	20.28	0.5151	6.852	3075	4.428	194.0	698.2
1.70	20.40	0.5182	6.914	3103	4.468	195.8	704.5
1.71	20.52	0.5212	6.976	3131	4.509	197.6	710.9
1.72	20.64	0.5243	7.039	3159	4.549	199.3	717.3
1.73	20.76	0.5273	7.101	3187	4.590	201.1	723.6
1.74	20.88	0.5304	7.164	3215	4.630	202.9	730.1
1.75	21.00	0.5334	7.227	3244	4.671	204.7	736.5
1.76	21.12	0.5364	7.291	3272	4.712	206.5	742.9
1.77	21.24	0.5395	7.354	3301	4.753	208.3	749.4
1.78	21.36	0.5425	7.418	3329	4.794	210.1	755.9
1.79	21.48	0.5456	7.482	3358	4.835	211.9	762.4
1.80	21.60	0.5486	7.546	3387	4.877	213.7	768.9

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1.81	21.72	0.5517	7.610	3415	4.918	215.5	775.5
1.82	21.84	0.5547	7.674	3444	4.960	217.3	782.0
1.83	21.96	0.5578	7.739	3473	5.002	219.2	788.6
1.84	22.08	0.5608	7.804	3502	5.044	221.0	795.2
1.85	22.20	0.5639	7.869	3532	5.086	222.8	801.8
1.86	22.32	0.5669	7.934	3561	5.128	224.7	808.5
1.87	22.44	0.5700	7.999	3590	5.170	226.5	815.1
1.88	22.56	0.5730	8.065	3620	5.212	228.4	821.8
1.89	22.68	0.5761	8.131	3649	5.255	230.3	828.5
1.90	22.80	0.5791	8.197	3679	5.297	232.1	835.2
1.91	22.92	0.5822	8.263	3708	5.340	234.0	842.0
1.92	23.04	0.5852	8.329	3738	5.383	235.9	848.7
1.93	23.16	0.5883	8.395	3768	5.426	237.8	855.5
1.94	23.28	0.5913	8.462	3798	5.469	239.6	862.3
1.95	23.40	0.5944	8.529	3828	5.512	241.5	869.1
1.96	23.52	0.5974	8.596	3858	5.556	243.4	875.9
1.97	23.64	0.6005	8.663	3888	5.599	245.3	882.8
1.98	23.76	0.6035	8.730	3918	5.642	247.2	889.6
1.99	23.88	0.6066	8.798	3949	5.686	249.2	896.5
2.00	24.00	0.6096	8.866	3979	5.730	251.1	903.4

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