OPENCHANNELFLOW

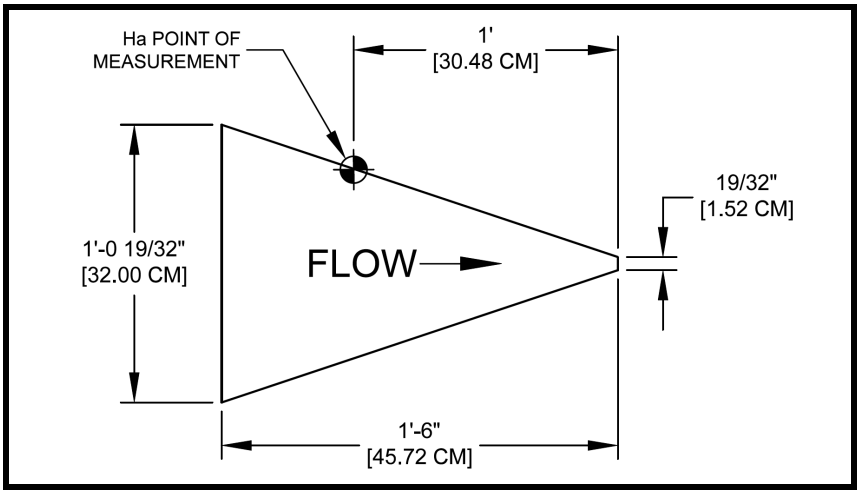
1.0-Foot HS Flume Discharge Table

25-30% Submergence Transition ±2-5% Accuracy

Formulas (H in feet): $CFS = -0.000047 - 0.00087\ H_{ft}^{0.5} + 0.177919\ H_{ft}^{1.5} + 0.643331\ H_{ft}^{2.5}$

Formulas (H in meters): $L/S = -0.00133089 - 0.04462278\ H_{m}^{0.5} + 29.93951584\ H_{m}^{1.5} + 355.1746494\ H_{m}^{2.5}$

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	0.00037	0.1661	0.0002	0.0105	0.0377
0.03	0.36	0.0091	0.00083	0.3725	0.0005	0.0235	0.0846
0.04	0.48	0.0122	0.00141	0.6328	0.0009	0.0399	0.1437
0.05	0.60	0.0152	0.00209	0.9380	0.0014	0.0592	0.2130
0.06	0.72	0.0183	0.00290	1.302	0.0019	0.0821	0.2955
0.07	0.84	0.0213	0.00384	1.723	0.0025	0.1087	0.3913
0.08	0.96	0.0244	0.00489	2.195	0.0032	0.1385	0.4983
0.09	1.08	0.0274	0.00606	2.720	0.0039	0.1716	0.6175
0.10	1.20	0.0305	0.00736	3.303	0.0048	0.2084	0.7500
0.11	1.32	0.0335	0.00882	3.958	0.0057	0.2498	0.8988
0.12	1.44	0.0366	0.0103	4.623	0.0067	0.2917	1.050
0.13	1.56	0.0396	0.0120	5.386	0.0078	0.3398	1.223
0.14	1.68	0.0427	0.0137	6.149	0.0089	0.3880	1.396
0.15	1.80	0.0457	0.0157	7.046	0.0101	0.4446	1.600
0.16	1.92	0.0488	0.0177	7.944	0.0114	0.5013	1.804
0.17	2.04	0.0518	0.0198	8.886	0.0128	0.5607	2.018
0.18	2.16	0.0549	0.0221	9.918	0.0143	0.6259	2.252
0.19	2.28	0.0579	0.0245	11.00	0.0158	0.6938	2.497
0.20	2.40	0.0610	0.0270	12.12	0.0175	0.7646	2.751
0.21	2.52	0.0640	0.0297	13.33	0.0192	0.8411	3.026
0.22	2.64	0.0671	0.0325	14.59	0.0210	0.9204	3.312
0.23	2.76	0.0701	0.0355	15.93	0.0229	1.005	3.617
0.24	2.88	0.0732	0.0386	17.32	0.0249	1.093	3.933
0.25	3.00	0.0762	0.0418	18.76	0.0270	1.184	4.259
0.26	3.12	0.0792	0.0452	20.29	0.0292	1.280	4.606
0.27	3.24	0.0823	0.0488	21.90	0.0315	1.382	4.973
0.28	3.36	0.0853	0.0525	23.56	0.0339	1.487	5.350
0.29	3.48	0.0884	0.0563	25.27	0.0364	1.594	5.737
0.30	3.60	0.0914	0.0603	27.06	0.0390	1.708	6.145



Curve fitted equation accurate to within 1.5%

Notes: Discharge is calculated to top of flume

Source: Field Manual for Research in Agricultural Hydrology, Agriculture Handbook No. 224, U.S. Department of Agriculture, February 1972

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Formulas (H in meters): $L/S = -0.00133089 - 0.04462278\ H_{m}^{0.5} + 29.93951584\ H_{m}^{1.5} + 355.1746494\ H_{m}^{2.5}$

FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.31	3.72	0.0945	0.0645	28.95	0.0417	1.827	6.573
0.32	3.84	0.0975	0.0688	30.88	0.0445	1.948	7.011
0.33	3.96	0.1006	0.0733	32.90	0.0474	2.076	7.469
0.34	4.08	0.1036	0.0779	34.96	0.0503	2.206	7.938
0.35	4.20	0.1067	0.0827	37.12	0.0534	2.342	8.427
0.36	4.32	0.1097	0.0877	39.36	0.0567	2.484	8.937
0.37	4.44	0.1128	0.0929	41.69	0.0600	2.631	9.467
0.38	4.56	0.1158	0.0981	44.03	0.0634	2.778	9.996
0.39	4.68	0.1189	0.1040	46.68	0.0672	2.945	10.60
0.40	4.80	0.1219	0.1090	48.92	0.0704	3.087	11.11
0.41	4.92	0.1250	0.1150	51.61	0.0743	3.257	11.72
0.42	5.04	0.1280	0.1210	54.30	0.0782	3.427	12.33
0.43	5.16	0.1311	0.1270	57.00	0.0821	3.597	12.94
0.44	5.28	0.1341	0.1340	60.14	0.0866	3.795	13.65
0.45	5.40	0.1372	0.1400	62.83	0.0905	3.965	14.27
0.46	5.52	0.1402	0.1470	65.97	0.0950	4.163	14.98
0.47	5.64	0.1433	0.1540	69.12	0.0995	4.361	15.69
0.48	5.76	0.1463	0.1610	72.26	0.1041	4.560	16.41
0.49	5.88	0.1494	0.1680	75.40	0.1086	4.758	17.12
0.50	6.00	0.1524	0.1760	78.99	0.1137	4.984	17.93
0.51	6.12	0.1554	0.1830	82.13	0.1183	5.183	18.65
0.52	6.24	0.1585	0.1910	85.72	0.1234	5.409	19.46
0.53	6.36	0.1615	0.1990	89.31	0.1286	5.636	20.28
0.54	6.48	0.1646	0.2080	93.35	0.1344	5.891	21.20
0.55	6.60	0.1676	0.2160	96.94	0.1396	6.117	22.01
0.56	6.72	0.1707	0.2250	101.0	0.1454	6.372	22.93
0.57	6.84	0.1737	0.2330	104.6	0.1506	6.599	23.74
0.58	6.96	0.1768	0.2430	109.1	0.1571	6.882	24.76
0.59	7.08	0.1798	0.2520	113.1	0.1629	7.137	25.68
0.60	7.20	0.1829	0.2610	117.1	0.1687	7.392	26.60
0.61	7.32	0.1859	0.2710	121.6	0.1751	7.675	27.61
0.62	7.44	0.1890	0.2810	126.1	0.1816	7.958	28.63
0.63	7.56	0.1920	0.2910	130.6	0.1881	8.241	29.65
0.64	7.68	0.1951	0.3010	135.1	0.1945	8.524	30.67
0.65	7.80	0.1981	0.3120	140.0	0.2016	8.836	31.79
0.66	7.92	0.2012	0.3220	144.5	0.2081	9.119	32.81
0.67	8.04	0.2042	0.3330	149.5	0.2152	9.431	33.93
0.68	8.16	0.2073	0.3440	154.4	0.2223	9.742	35.05
0.69	8.28	0.2103	0.3550	159.3	0.2294	10.05	36.17
0.70	8.40	0.2134	0.3670	164.7	0.2372	10.39	37.40
0.71	8.52	0.2164	0.3790	170.1	0.2449	10.73	38.62
0.72	8.64	0.2195	0.3910	175.5	0.2527	11.07	39.84
0.73	8.76	0.2225	0.4030	180.9	0.2605	11.41	41.07
0.74	8.88	0.2256	0.4160	186.7	0.2689	11.78	42.39
0.75	9.00	0.2286	0.4280	192.1	0.2766	12.12	43.61
0.76	9.12	0.2316	0.4410	197.9	0.2850	12.49	44.94
0.77	9.24	0.2347	0.4540	203.8	0.2934	12.86	46.26
0.78	9.36	0.2377	0.4680	210.0	0.3025	13.25	47.69
0.79	9.48	0.2408	0.4810	215.9	0.3109	13.62	49.01
0.80	9.60	0.2438	0.4950	222.2	0.3199	14.02	50.44

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FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.81	9.72	0.2469	0.5090	228.4	0.3290	14.41	51.87
0.82	9.84	0.2499	0.5240	235.2	0.3387	14.84	53.40
0.83	9.96	0.2530	0.5380	241.5	0.3477	15.24	54.82
0.84	10.08	0.2560	0.5530	248.2	0.3574	15.66	56.35
0.85	10.20	0.2591	0.5680	254.9	0.3671	16.09	57.88
0.86	10.32	0.2621	0.5830	261.7	0.3768	16.51	59.41
0.87	10.44	0.2652	0.5990	268.8	0.3871	16.96	61.04
0.88	10.56	0.2682	0.6140	275.6	0.3968	17.39	62.57
0.89	10.68	0.2713	0.6300	282.7	0.4072	17.84	64.20
0.90	10.80	0.2743	0.6460	289.9	0.4175	18.29	65.83
0.91	10.92	0.2774	0.6630	297.6	0.4285	18.78	67.56
0.92	11.04	0.2804	0.6800	305.2	0.4395	19.26	69.29
0.93	11.16	0.2835	0.6970	312.8	0.4505	19.74	71.02
0.94	11.28	0.2865	0.7140	320.4	0.4615	20.22	72.76
0.95	11.40	0.2896	0.7310	328.1	0.4724	20.70	74.49
0.96	11.52	0.2926	0.7490	336.2	0.4841	21.21	76.32
0.97	11.64	0.2957	0.7670	344.2	0.4957	21.72	78.16
0.98	11.76	0.2987	0.7850	352.3	0.5073	22.23	79.99
0.99	11.88	0.3018	0.8030	360.4	0.5190	22.74	81.83

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