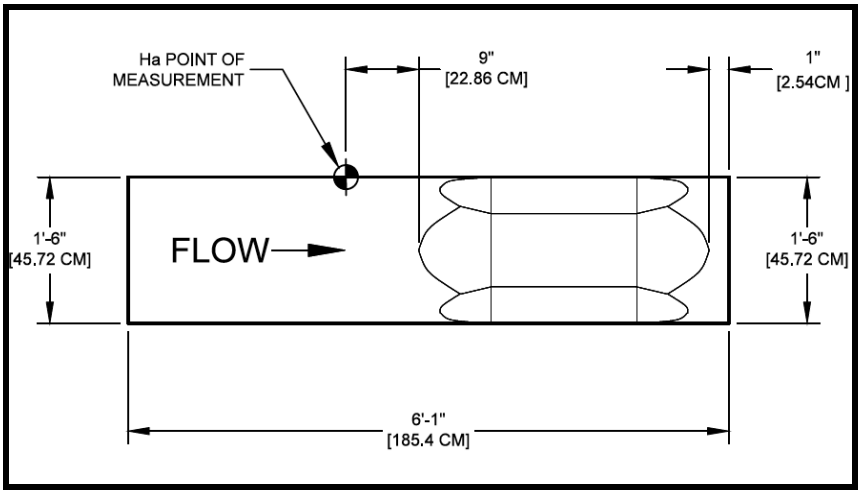
18-Inch Palmer-Bowlus Flume Discharge Table

85% Submergence Transition

Formulas (H in feet): CFS = 4.23 $H_{ft.}^{1.9}$ GPM = 1898 $H_{ft.}^{1.9}$ MGD = 2.73 $H_{ft.}^{1.9}$

Formulas (H in meters): L/S = 1179.22 $H_m^{1.9}$ M3/HR = 4096 $H_m^{1.9}$

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	0.1557	69.88	0.1006	4.409	15.87
0.17	2.04	0.0518	0.1727	77.51	0.1116	4.891	17.60
0.18	2.16	0.0549	0.1904	85.45	0.1231	5.392	19.40
0.19	2.28	0.0579	0.2089	93.75	0.1350	5.916	21.29
0.20	2.40	0.0610	0.2281	102.4	0.1474	6.460	23.24
0.21	2.52	0.0640	0.2480	111.3	0.1603	7.023	25.27
0.22	2.64	0.0671	0.2687	120.6	0.1737	7.610	27.38
0.23	2.76	0.0701	0.2900	130.2	0.1874	8.213	29.55
0.24	2.88	0.0732	0.3119	140.0	0.2016	8.833	31.78
0.25	3.00	0.0762	0.3346	150.2	0.2163	9.476	34.10
0.26	3.12	0.0792	0.3579	160.6	0.2313	10.14	36.47
0.27	3.24	0.0823	0.3818	171.4	0.2468	10.81	38.91
0.28	3.36	0.0853	0.4064	182.4	0.2627	11.51	41.41
0.29	3.48	0.0884	0.4316	193.7	0.2789	12.22	43.98
0.30	3.60	0.0914	0.4574	205.3	0.2956	12.95	46.61



Note: Formulas fit data within 1% of full scale

Sources: Isco Open Channel Flow Measurement Handbook, 6th Edition

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Formulas (H in meters): L/S = 1179.22 $H_m^{1.9}$ M3/HR = 4096 $H_m^{1.9}$

FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.31	3.72	0.0945	0.4839	217.2	0.3127	13.70	49.31
0.32	3.84	0.0975	0.5110	229.3	0.3303	14.47	52.07
0.33	3.96	0.1006	0.5387	241.8	0.3482	15.26	54.89
0.34	4.08	0.1036	0.5670	254.5	0.3665	16.06	57.78
0.35	4.20	0.1067	0.5960	267.5	0.3852	16.88	60.73
0.36	4.32	0.1097	0.6256	280.8	0.4043	17.72	63.75
0.37	4.44	0.1128	0.6559	294.4	0.4239	18.58	66.84
0.38	4.56	0.1158	0.6868	308.2	0.4439	19.45	69.98
0.39	4.68	0.1189	0.7184	322.4	0.4643	20.35	73.20
0.40	4.80	0.1219	0.7506	336.9	0.4851	21.26	76.49
0.41	4.92	0.1250	0.7835	351.6	0.5064	22.19	79.84
0.42	5.04	0.1280	0.8171	366.7	0.5281	23.14	83.26
0.43	5.16	0.1311	0.8514	382.1	0.5503	24.11	86.76
0.44	5.28	0.1341	0.8864	397.8	0.5729	25.10	90.32
0.45	5.40	0.1372	0.9221	413.8	0.5960	26.11	93.96
0.46	5.52	0.1402	0.9586	430.2	0.6195	27.15	97.7
0.47	5.64	0.1433	0.9958	446.9	0.6436	28.20	101.5
0.48	5.76	0.1463	1.034	464.1	0.6683	29.28	105.4
0.49	5.88	0.1494	1.072	481.1	0.6928	30.36	109.2
0.50	6.00	0.1524	1.112	499.1	0.7187	31.49	113.3
0.51	6.12	0.1554	1.152	517.0	0.7445	32.62	117.4
0.52	6.24	0.1585	1.193	535.4	0.7710	33.79	121.6
0.53	6.36	0.1615	1.235	554.3	0.7982	34.98	125.8
0.54	6.48	0.1646	1.278	573.6	0.8260	36.19	130.2
0.55	6.60	0.1676	1.322	593.3	0.8544	37.44	134.7
0.56	6.72	0.1707	1.366	613.1	0.8828	38.69	139.2
0.57	6.84	0.1737	1.412	633.7	0.9126	39.99	143.9
0.58	6.96	0.1768	1.458	654.4	0.9423	41.29	148.6
0.59	7.08	0.1798	1.505	675.4	0.9727	42.62	153.4
0.60	7.20	0.1829	1.553	697.0	1.004	43.98	158.3
0.61	7.32	0.1859	1.602	719.0	1.035	45.37	163.2
0.62	7.44	0.1890	1.652	741.4	1.068	46.78	168.3
0.63	7.56	0.1920	1.703	764.3	1.101	48.23	173.5
0.64	7.68	0.1951	1.754	787.2	1.134	49.67	178.7
0.65	7.80	0.1981	1.807	811.0	1.168	51.17	184.1
0.66	7.92	0.2012	1.861	835.2	1.203	52.70	189.6
0.67	8.04	0.2042	1.915	859.5	1.238	54.23	195.1
0.68	8.16	0.2073	1.971	884.6	1.274	55.82	200.8
0.69	8.28	0.2103	2.028	910.2	1.311	57.43	206.7
0.70	8.40	0.2134	2.085	935.7	1.348	59.05	212.5
0.71	8.52	0.2164	2.144	962.2	1.386	60.72	218.5
0.72	8.64	0.2195	2.203	988.7	1.424	62.39	224.5
0.73	8.76	0.2225	2.264	1016	1.463	64.12	230.7
0.74	8.88	0.2256	2.325	1043	1.503	65.84	236.9
0.75	9.00	0.2286	2.387	1071	1.543	67.60	243.2
0.76	9.12	0.2316	2.451	1100	1.584	69.41	249.8
0.77	9.24	0.2347	2.515	1129	1.625	71.22	256.3
0.78	9.36	0.2377	2.580	1158	1.667	73.07	262.9

Note: Formulas fit data within 1% of full scale

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Formulas (H in meters): L/S = 1179.22 $H_m^{1.9}$ M3/HR = 4096 $H_m^{1.9}$

FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.79	9.48	0.2408	2.6460	1188	1.710	74.93	269.6
0.80	9.60	0.2438	2.7130	1218	1.753	76.83	276.5
0.81	9.72	0.2469	2.7810	1248	1.797	78.76	283.4
0.82	9.84	0.2499	2.8490	1279	1.841	80.68	290.3
0.83	9.96	0.2530	2.9190	1310	1.887	82.67	297.4
0.84	10.08	0.2560	2.9890	1341	1.932	84.65	304.6
0.85	10.20	0.2591	3.0600	1373	1.978	86.66	311.8
0.86	10.32	0.2621	3.1320	1406	2.024	88.70	319.2
0.87	10.44	0.2652	3.2050	1438	2.071	90.77	326.6
0.88	10.56	0.2682	3.2780	1471	2.119	92.83	334.0
0.89	10.68	0.2713	3.3520	1504	2.166	94.93	341.6
0.90	10.80	0.2743	3.4270	1538	2.215	97.05	349.2
0.91	10.92	0.2774	3.5030	1572	2.264	99.20	357.0
0.92	11.04	0.2804	3.5790	1606	2.313	101.4	364.7
0.93	11.16	0.2835	3.6550	1640	2.362	103.5	372.4
0.94	11.28	0.2865	3.7330	1675	2.413	105.7	380.4
0.95	11.40	0.2896	3.8110	1710	2.463	107.9	388.3
0.96	11.52	0.2926	3.889	1745	2.513	110.1	396.3
0.97	11.64	0.2957	3.968	1781	2.565	112.4	404.3
0.98	11.76	0.2987	4.047	1816	2.616	114.6	412.4
0.99	11.88	0.3018	4.127	1852	2.667	116.9	420.5
1.00	12.00	0.3048	4.207	1888	2.719	119.1	428.7
1.01	12.12	0.3078	4.288	1924	2.771	121.4	436.9
1.02	12.24	0.3109	4.369	1961	2.824	123.7	445.2
1.03	12.36	0.3139	4.450	1997	2.876	126.0	453.5
1.04	12.48	0.3170	4.532	2034	2.929	128.3	461.8
1.05	12.60	0.3200	4.614	2071	2.982	130.7	470.2

Note: Formulas fit data within 1% of full scale

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