



MasterDrain
SW

Muir Associates (UK) Limited

www.muir-associates.co.uk

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Job No.	20-1110		
Sheet no.	1		
Date	11/09/20		
By	M	Checked	Reviewed

Project **Pacific Park Wrexham**

Title **Hydrograph Storage Analysis 1 in 100 Year + 30% CC**

Data:-

Location = WREXHAM
M5-60 (mm) = 18
Soil index = 0.45
Return period = 100
UCWI = 0.0

Grid reference = SJ3349
r = 0.32
SAAR (mm/yr) = 800
WRAP = 4
Climate change = +30%

Clayey, or loamy over clayey soils with an impermeable layer at shallow depth.

Percentage runoff = 95.0% (manual setting)

Imperv. area = 4997 m²
Total area = 4997 m²
Total runoff = 485.8 m³

Pervious area = 0 m²
Equiv area = 4747 m² (Tot. area x % runoff).
Discharge rate = 5.000 l/s

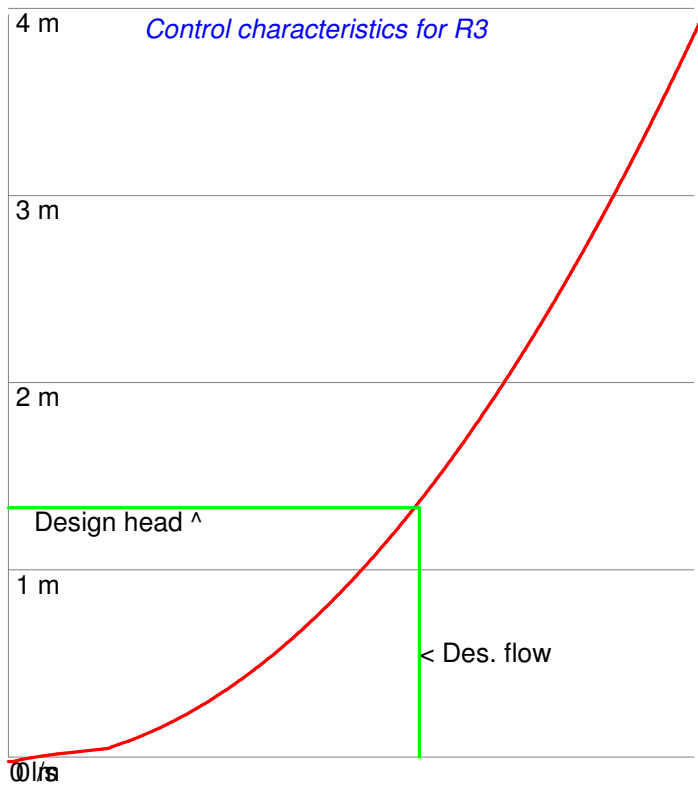
Design Head = 1.4m
Control device = R3
Max. calc. depth = 1.4 m

Peak flow = 4.98 l/s
Orifice diam = 57.5 mm
Available depth = 0.0 m³

Pipeline storage = 0.0 m³
Offline storage = 0.0 m³
Total storage = 351.0 m³

Available MH storage = 0.0 m³

Peak input flow = 22.49 l/s



Head (m)	Flow (l/s)	Head (m)	Flow (l/s)
0.01	0.05	2.01	5.99
0.05	0.60	2.05	6.05
0.10	1.34	2.10	6.12
0.15	1.64	2.15	6.20
0.20	1.89	2.20	6.27
0.25	2.11	2.25	6.34
0.30	2.31	2.30	6.41
0.35	2.50	2.35	6.48
0.40	2.67	2.40	6.55
0.45	2.83	2.45	6.61
0.50	2.99	2.50	6.68
0.55	3.13	2.55	6.75
0.60	3.27	2.60	6.81
0.65	3.41	2.65	6.88
0.70	3.54	2.70	6.94
0.75	3.66	2.75	7.01
0.80	3.78	2.80	7.07
0.85	3.90	2.85	7.13
0.90	4.01	2.90	7.20
0.95	4.12	2.95	7.26
1.00	4.23	3.00	7.32
1.05	4.33	3.05	7.38
1.10	4.43	3.10	7.44
1.15	4.53	3.15	7.50
1.20	4.63	3.20	7.56
1.25	4.72	3.25	7.62
1.30	4.82	3.30	7.68
1.35	4.91	3.35	7.73
1.40	5.00	3.40	7.79
1.45	5.09	3.45	7.85
1.50	5.18	3.50	7.91
1.55	5.26	3.55	7.96
1.60	5.35	3.60	8.02
1.65	5.43	3.65	8.07
1.70	5.51	3.70	8.13
1.75	5.59	3.75	8.18
1.80	5.67	3.80	8.24
1.85	5.75	3.85	8.29
1.90	5.82	3.90	8.35
1.95	5.90	3.95	8.40
2.00	5.98	4.00	8.45

Calculation data provided by Crown Water Ltd, SL5 7NT



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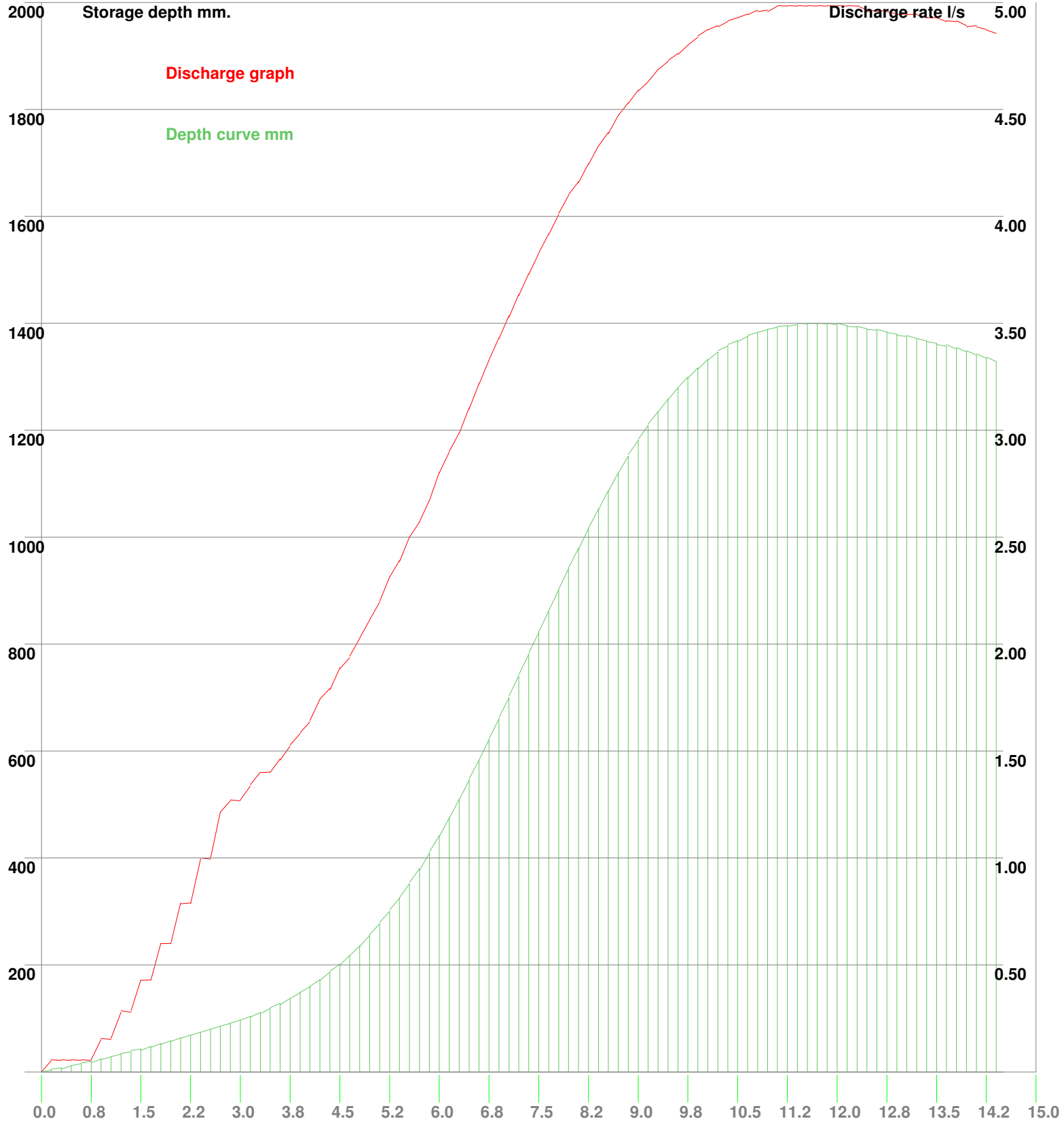
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Title **Hydrograph Storage Analysis 1 in 100 Year + 30% CC**

Storage curves for a 15 hours storm.





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Incremental rainfall figures.

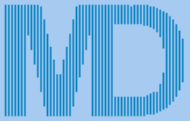
Storm Mins	Storage Depth mm	Control Flow l/s	Storm Mins	Storage Depth mm	Control Flow l/s
9.0	3.9	0.05	459.0	861.7	3.92
18.0	7.6	0.05	468.0	901.5	4.01
27.0	11.6	0.05	477.0	940.9	4.10
36.0	15.5	0.05	486.0	979.4	4.16
45.0	19.7	0.05	495.0	1016.7	4.25
54.0	24.0	0.15	504.0	1052.7	4.33
63.0	28.4	0.15	513.0	1087.2	4.39
72.0	33.1	0.28	522.0	1120.2	4.47
81.0	37.7	0.28	531.0	1151.6	4.53
90.0	42.7	0.43	540.0	1181.4	4.59
99.0	47.8	0.43	549.0	1209.1	4.63
108.0	53.1	0.60	558.0	1234.6	4.69
117.0	58.2	0.60	567.0	1258.0	4.72
126.0	63.5	0.79	576.0	1279.6	4.76
135.0	68.7	0.79	585.0	1299.2	4.80
144.0	74.4	1.00	594.0	1316.6	4.84
153.0	79.8	1.00	603.0	1332.3	4.87
162.0	85.4	1.22	612.0	1346.0	4.89
171.0	90.9	1.27	621.0	1357.6	4.91
180.0	96.9	1.27	630.0	1367.4	4.93
189.0	103.7	1.34	639.0	1375.8	4.95
198.0	111.1	1.40	648.0	1382.7	4.96
207.0	119.1	1.40	657.0	1388.3	4.96
216.0	128.1	1.46	666.0	1392.5	4.98
225.0	137.7	1.52	675.0	1395.6	4.98
234.0	148.2	1.58	684.0	1397.6	4.98
243.0	159.7	1.64	693.0	1398.9	4.98
252.0	172.5	1.74	702.0	1399.2	4.98
261.0	186.4	1.79	711.0	1398.8	4.98
270.0	201.5	1.89	720.0	1397.5	4.98
279.0	217.8	1.94	729.0	1395.5	4.98
288.0	235.7	2.03	738.0	1392.9	4.98
297.0	255.6	2.11	747.0	1390.0	4.96
306.0	277.2	2.20	756.0	1386.8	4.96
315.0	300.1	2.31	765.0	1383.5	4.96
324.0	325.0	2.39	774.0	1379.8	4.95
333.0	351.6	2.50	783.0	1375.7	4.95
342.0	379.8	2.57	792.0	1371.4	4.95
351.0	409.7	2.67	801.0	1367.0	4.93
360.0	441.5	2.80	810.0	1362.4	4.93
369.0	475.0	2.90	819.0	1357.4	4.91
378.0	509.9	2.99	828.0	1352.1	4.91
387.0	545.9	3.11	837.0	1346.5	4.89
396.0	583.0	3.22	846.0	1340.6	4.89
405.0	621.2	3.33	855.0	1334.6	4.87
414.0	660.3	3.43	864.0	1328.3	4.86
423.0	700.2	3.54	873.0	1321.9	4.86
432.0	740.7	3.64	882.0	1315.5	4.84
441.0	781.1	3.73	891.0	1309.0	4.82
450.0	821.5	3.83	900.0	1302.5	4.82

Using the Get Max button causes the program to step through a series of storm durations until a maximum volume is obtained.

Each duration is sampled 600 times and the results recorded. The storm durations (hrs) are:-

0.25, 0.5, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 18, 20, 24, 30, 36, 42, 48, 54, 60, 66, 72, 84, 96, 120, 150, 175, 200, 250, 300, 375, 500, 750, 1000, 1250, 1500, 1570, 2000, 2500, 3000, 3500, 4000

It should be noted that the six hour storm frequently requested rarely demonstrates the worst case for storage.



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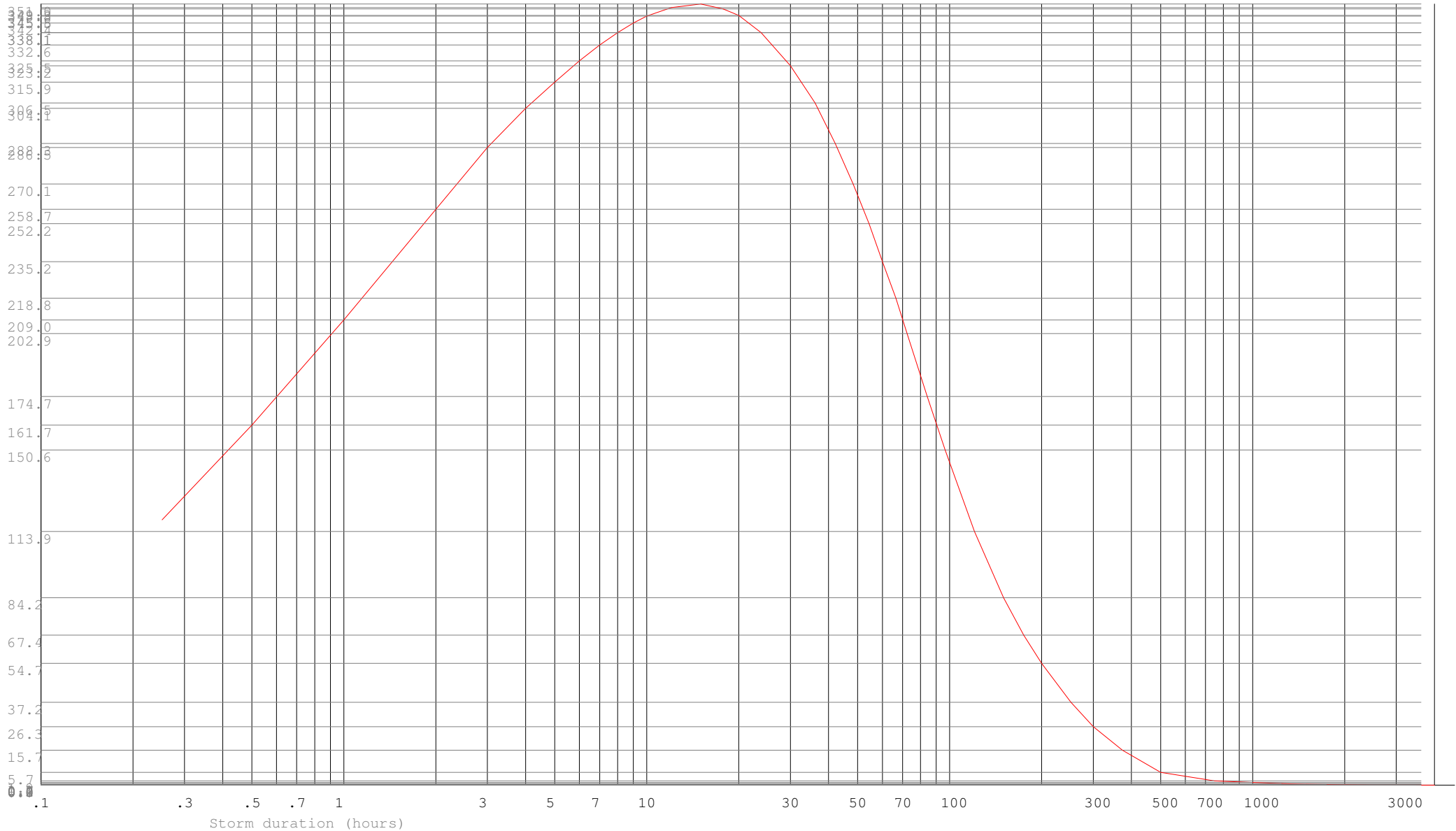
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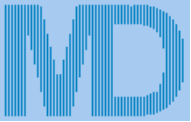
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Sequential storage volume at specific storm durations.

m³





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