Project Name:	Harris Brook	**PIN:**	12681	
Stream Name:	Harris Brook	**Town:**	New Portland	200 ft west of Skow/Nc
Bridge Name:		**Bridge No.**	5336	
Route No.	Rt 16	**USGS Quad:**	New Portland, Embden Pond	
Analysis by:	CSH	**Date:**	11/29/2005	

Peak Flow Calculations by USGS Regression Equations (Hodgkins, 1999)

Enter data in blue cells only!

	km^2	mi^2	ac	*Enter data in [mi^2]*
A	7.89	3.05	1949.7	Watershed Area
W	1.24	0.48	306.4	Wetlands area (by NWI)
P_c				watershed centroid (E, N; UTM 19N; meters)
DIST				distance from Gulf of Maine line
pptA				mean annual precipitation (inches)
SG				sand & gravel aquifer as percentage of watershed area

A (km^2)	7.890	**Conf Lvl**	0.67
W (%)	15.72		

Worksheet prepared by:

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Maine Dept. Transportation
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207-287-1105
Charles.Hebson@maine.gov

Ret Pd	**Peak Flow Estimate**			
T (yr)	**Lower**	**Q_T (m^3/s)**	**Upper**	**Q_T (ft^3/s)**
1.1		1.14		40.1
2	1.68	2.37	3.34	83.6
5	2.65	3.75	5.30	132.2
10	3.33	4.77	6.84	168.5
25	4.25	6.18	9.00	218.3
50	4.95	7.30	10.75	257.6
100	5.69	8.51	12.70	300.4
500	7.43	11.49	17.76	405.6

Reference:

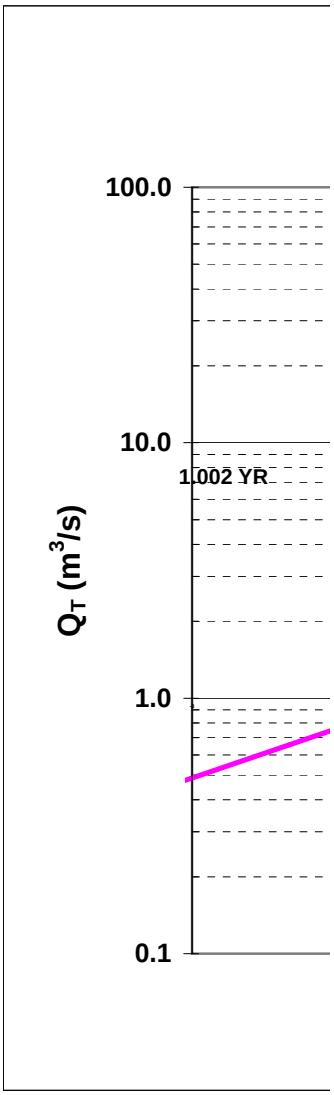
Hodgkins, G., 1999.
Estimating the magnitude of peak flows for streams
in Maine for selected recurrence intervals
Water-Resources Investigations Report 99-4008
US Geological Survey, Augusta, Maine

$Q_T = b \times A^a \times 10^{-wW}$

μ (log)	0.37
s (log)	2.384E-01

Flood Frequency Curve

Ret Pd T	Cum Prob F	Q_T (usgs)	Log-Normal Distn norm std var z	log(Q)	Q
1.001	0.001		-3.091	-0.36	0.43
1.002	0.002		-2.879	-0.31	0.49
1.010	0.010		-2.330	-0.18	0.66
1.050	0.048		-1.668	-0.02	0.95
1.100	0.091		-1.335	0.06	1.14
1.250	0.200		-0.842	0.17	1.49
1.500	0.333		-0.431	0.27	1.87
1.750	0.429		-0.180	0.33	2.14
2	0.500	2.37	0.000	0.37	2.37
5	0.800	3.75	0.842	0.57	3.76
6.300	0.841		1.000	0.61	4.10
10	0.900	4.77	1.282	0.68	4.78
20	0.950		1.645	0.77	5.84
25	0.960	6.18	1.751	0.79	6.19
50	0.980	7.30	2.054	0.86	7.31
100	0.990	8.51	2.326	0.93	8.49
200	0.995		2.576	0.99	9.73
500	0.998	11.49	2.878	1.06	11.49
1000	0.999		3.090	1.11	12.91



Adjust Q_T Vertical Plot Scale to Contain FF Curve

"right click" QT scale and set min, max scale values

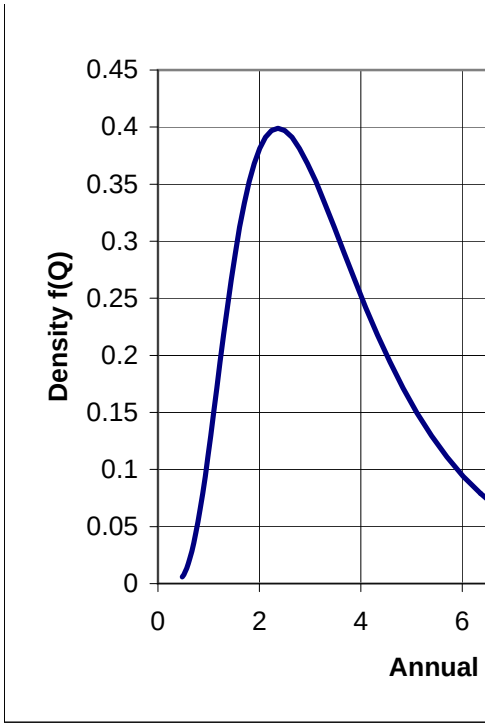
	Min $Q_{1.002}$	Max Q_{500}
Q	0.49	11.49
log(Q)	-0.31	1.06
scale Q	***0.10***	***100.00***

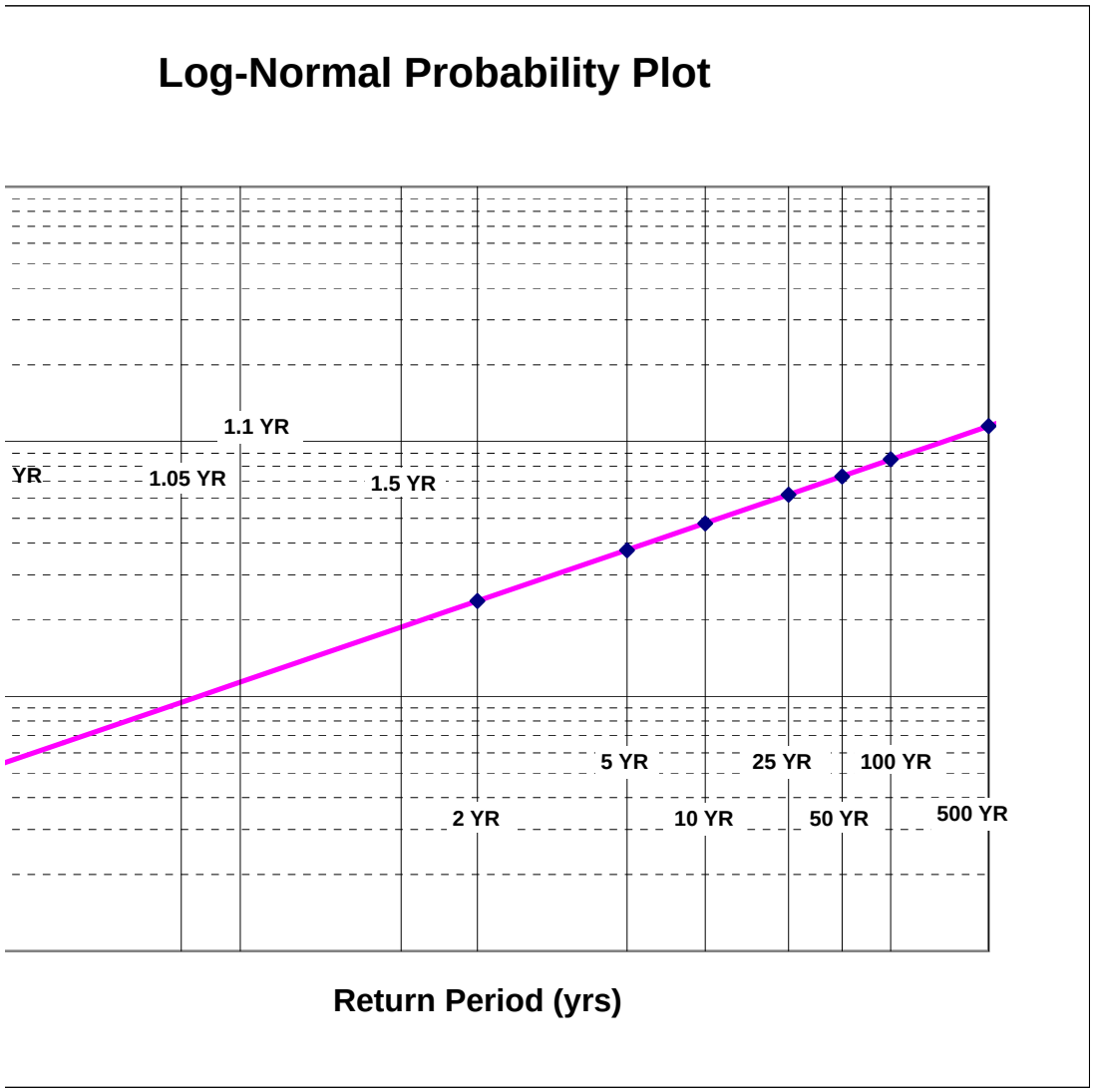
Log Normal Density Curve

z_p	log(Q)	Q	f
-2.9	-0.317	0.48	0.00595
-2.8	-0.293	0.51	0.00792
-2.7	-0.270	0.54	0.01042
-2.6	-0.246	0.57	0.01358
-2.5	-0.222	0.60	0.01753
-2.4	-0.198	0.63	0.02239
-2.3	-0.174	0.67	0.02833
-2.2	-0.150	0.71	0.03547
-2.1	-0.127	0.75	0.04398

Ret Pd Gric	
Q	
	0.1
	100

-2	-0.103	0.79	0.05399
-1.9	-0.079	0.83	0.06562
-1.8	-0.055	0.88	0.07895
-1.7	-0.031	0.93	0.09405
-1.6	-0.007	0.98	0.11092
-1.5	0.016	1.04	0.12952
-1.4	0.040	1.10	0.14973
-1.3	0.064	1.16	0.17137
-1.2	0.088	1.22	0.19419
-1.1	0.112	1.29	0.21785
-1	0.136	1.37	0.24197
-0.9	0.160	1.44	0.26609
-0.8	0.183	1.53	0.28969
-0.7	0.207	1.61	0.31225
-0.6	0.231	1.70	0.33322
-0.5	0.255	1.80	0.35207
-0.4	0.279	1.90	0.36827
-0.3	0.303	2.01	0.38139
-0.2	0.326	2.12	0.39104
-0.1	0.350	2.24	0.39695
0	0.374	2.37	0.39894
0.1	0.398	2.50	0.39695
0.2	0.422	2.64	0.39104
0.3	0.446	2.79	0.38139
0.4	0.469	2.95	0.36827
0.5	0.493	3.11	0.35207
0.6	0.517	3.29	0.33322
0.7	0.541	3.48	0.31225
0.8	0.565	3.67	0.28969
0.9	0.589	3.88	0.26609
1	0.612	4.10	0.24197
1.1	0.636	4.33	0.21785
1.2	0.660	4.57	0.19419
1.3	0.684	4.83	0.17137
1.4	0.708	5.10	0.14973
1.5	0.732	5.39	0.12952
1.6	0.756	5.70	0.11092
1.7	0.779	6.02	0.09405
1.8	0.803	6.36	0.07895
1.9	0.827	6.72	0.06562
2	0.851	7.09	0.05399
2.1	0.875	7.49	0.04398
2.2	0.899	7.92	0.03547
2.3	0.922	8.36	0.02833
2.4	0.946	8.84	0.02239
2.5	0.970	9.34	0.01753
2.6	0.994	9.86	0.01358
2.7	1.018	10.42	0.01042
2.8	1.042	11.01	0.00792
2.9	1.065	11.63	0.00595

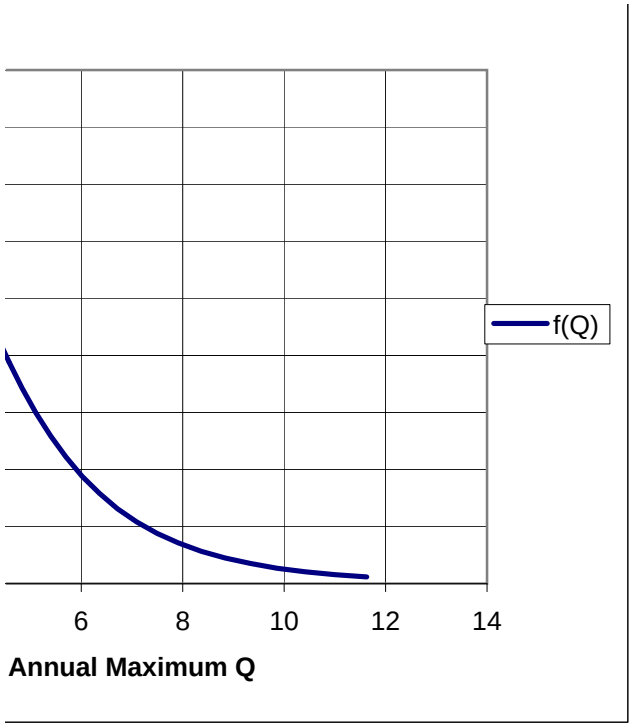




d Lines

1.002	1.05	1.1	1.5	2 yr	5 yr	10 yr	20 yr	25 yr	50 yr
-2.879	-1.668	-1.335	-0.431	0.000	0.842	1.282	1.645	1.751	2.054
-2.879	-1.668	-1.335	-0.431	0.000	0.842	1.282	1.645	1.751	2.054

LN Density Function


f(Q)
6
8
10
12
14
Annual Maximum Q

100 yr	500 yr
2.326	2.878
2.326	2.878

Project Name:	Harris Brook	**PIN:**	##
Stream Name:	Harris Brook	**Town:**	New Portland
Bridge Name:	0	**Bridge No.**	##
Route No.	Rt 16		
Analysis by:	CSH	**Date:**	11/29/2005

Estimating Peak Flows for Ungaged Sites on Streams with One or Two Gages (Hodgkins,

Contact the Hydrology Unit if you need to use this method!! Enter data in blue cells onl

	Upstream Gage 1	Downstream Gage 2	Ungaged Site
USGS gage #	0	0	
	A_{g1}	A_{g2}	A_u
Area (km^2)	0	0	7.89
Weights W_r		X	
	Eqn 7,8	Eqn 7,8	

Enter gaged watershe

Leave A_{g1} or A_{g2} bla

Enter gage peak flows in blue cells (data from Hodgkins, 1999, pp. 7-17):

Not including ungaged single-site regression estimate …

Ret Period T (yr)	Q_w (m^3/s)	Q_{u1} (m^3/s)	Q_w (m^3/s)	Q_{u2} (m^3/s)	***2-gage Weighted Estimates*** Q_{uff} (m^3/s)
2	180.00		250.00		
5	270.00		340.00		
10	330.00		410.00		
25	400.00		500.00		
50	460.00		560.00		
100	510.00		630.00		
500	660.00		800.00		
		Eqn 9		Eqn 9	Eqn 11

Including ungaged single-site regression estimate ...

T (yr)		Q_{uf1} (m^3/s)		Q_{uf2} (m^3/s)	***Ungaged site Regr Q*** Q_r (m^3/s)	Q_{uff} (m^3/s)
2					2.37	
5					3.75	
10					4.77	
25					6.18	
50					7.30	
100					8.51	
500					11.49	
		Eqn 6		Eqn 6	from Q's	Eqn 11