

MaineDOT Culvert Hydrology Summary Sheet

Town: Winslow WIN (or Region): 23803.00

Route: 100A Local Road Name: Clinton Ave

Stream: unnamed trib to Sebecook River

Lat: 44.55899 Long: -69.5811

Asset ID: LC-93710 Also Known As: n.a.

Existing Structure: 72" diam x 80 ft long CMP; invert is lined with riprap and cobble
outlet is hung 1 to 2 feet

Watershed Area: 0.3 sq. mi. NWI Wetlands: 48.9 %

Wbf - calculated: 6.3 feet Wbf - measured (if known): 5 feet

Q50: 70.0 cfs

Q100: 80.0 cfs

Preliminary Pipe Size*:

At a minimum, maintain existing capacity if permit allows sizing for hydrology only

* Note: this size may NOT meet fish passage regulatory requirements. Consult with ENV staff for guidance.

Comments:

WS < 0.5 sq. mi. -- used Lombard method to estimate flows using Rational Equation

Use 8 ft diam CMP if streambed required to meet fish passage requirements

By: MEG
Date: 8/9/2018
Revised: MRL 8/13/2018

ver: *ver. 2018 Ju*

StreamStats Report-Winslow_23803

Region ID: ME

Workspace ID: ME20180810135400503000

Clicked Point (Latitude, Longitude): 44.55896, -69.58124

Time: 2018-08-10 09:54:16 -0400



WIN

23803.00 Town

Winslow, Rt 100A

Rational Calculations using Lombard time-lag equation

A 192 ac 0.3 mi²
 C 0.4 (preliminary est for agricultural watershed)

T (yr)	P _{15 T} (in)	T _L (hr)	T _c (min)	i _T (in/hr)	Q
2	0.535	2.31	230.8	0.40	31.0
10	0.854	2.12	212.1	0.64	48.8
25	1.050	2.04	204.3	0.79	60.6
50	1.210	1.99	199.1	0.91	70.0
100	1.360	1.95	195.0	1.04	80.0

Enter data in blue cells only; orange cells are calculated.
 Copy Atlas 14 DDF & IDF tables from generated CSV files.

LAG TO PEAK EQUATION IN U.S. CUSTOMARY UNITS

Equation for estimating lag to peak for small basins in Maine with drainage areas from 0.3 to 30 square miles and for storms with maximum 15-minute maximum rainfall depths between 0.04 to 1.45 inches are presented here in U.S. Customary units:

$$\hat{T}_L = 3.7 \cdot DA^{0.486} \cdot MaxRainDepth^{-0.1809}$$

where

T_L is the estimated lag to peak at a site based on the fixed component only, in hours,

DA is the drainage area at a site, in square miles,

$MaxRainDepth$ is the maximum 15-minute rainfall depth for a design storm at a site, in inches of rain.

$$T_c = T_L/0.6 - \text{from NRCS unit hydrograph method}$$

Previous Version:

$$\hat{T}_L = 3.626 \cdot DA^{0.48174} \cdot MaxPptInt^{-0.18586}$$

where \hat{T}_L is the estimated lag to peak at a site based on the fixed component only, in hours,

DA is the drainage area at a site, in square miles,

$MaxPptInt$ is the maximum 15-minute precipitation intensity for a design storm at a site, in inches of rain.

WIN:	23803.00
Town:	Winslow
Route No.:	100A
Asset ID:	LC-93710
Lat:	44.55899
Long:	69.58105

Project Name:	0
Stream Name:	unnamed trib to Seabasticook River
Bridge Name:	0
Analysis by:	MEG
Date:	8/9/2018

DO NOT ENTER ANY DATA ON THIS PAGE; EVERYTHING IS CALCULATED

MAINE MONTHLY MEDIAN FLOWS and HYDRAULIC GEOMETRY BY USGS REGRESSION EQUATIONS (2004, 2013, 2015)

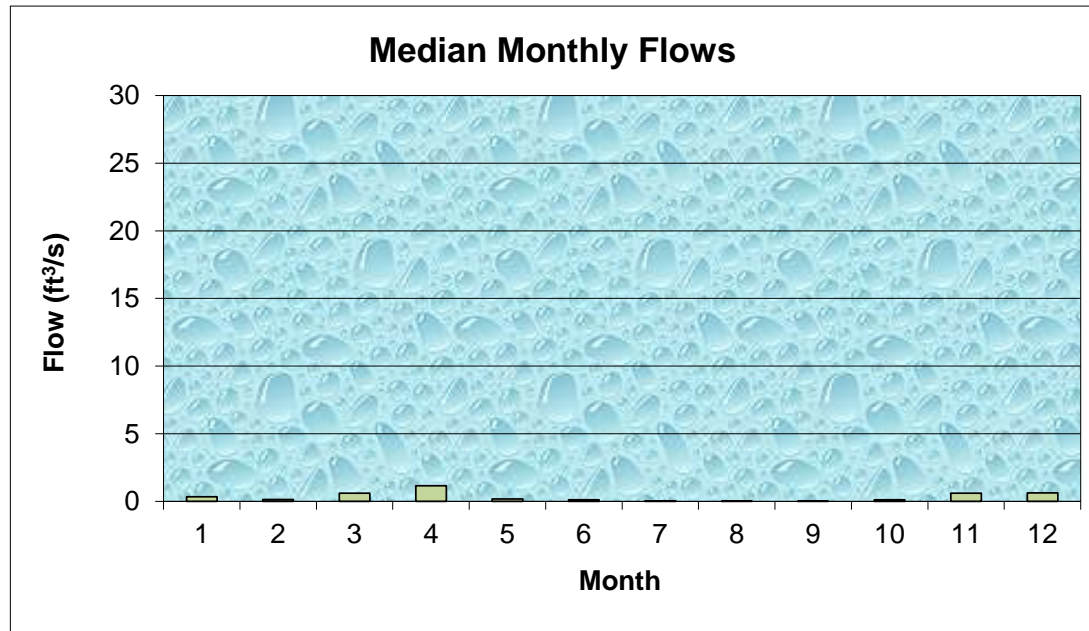
	Value	Variable	Explanation
	0.30	A	Area (mi ²)
453178.5	4934262	P _c	Watershed centroid (E,N; UTM; Zone 19; meters)
	70.43	DIST	Distance from Coastal reference line (mi)
	41.7	pptA	Mean Annual Precipitation (inches)
	0.00	SG	Sand & Gravel Aquifer (decimal fraction of watershed area)

Month	Q _{median} (ft ³ /s)	(m ³ /s)
Jan	0.35	0.0099
Feb	0.14	0.0039
Mar	0.61	0.0174
Apr	1.16	0.0328
May	0.17	0.0049
Jun	0.11	0.0031
Jul	0.03	0.0007
Aug	0.01	0.0002
Sep	0.01	0.0003
Oct	0.11	0.0032
Nov	0.60	0.0170
Dec	0.63	0.0178

Q _{bf}	1.5
ann avg	0.7
ann med	0.3
Q _{1.002}	1.4
Q _{1.01}	1.8
Q _{1.05}	2.3
Q _{bf}	9.9

assume v = 4ft/s

W _{bf}	6.3	estimated bankfull width (ft)
d _{bf}	0.4	estimated bankfull depth (ft)
A _{bf}	1.6	estimated bankfull flow area (ft ²)



References

- Dudley, R.W., 2013. FY2013 Progress Report - Phase 1 ..., USFWS QRP Project
- Dudley, R.W., 2004. Estimating Monthly Streamflows ... , SIR 2004-5026
- Dudley, R.W., 2015. Regression Equations for Monthly and Annual Mean..., USGS S

Daily Average Flow Distribution

