MaineDOT Culvert Hydrology Summary Sheet

Town:	Eagle Lake		WIN (d	or Region): 24269.00		
Route:	Sly Brook Rd	Local R	oad Name:			
Stream:	trib to Eagle L	ake				
Lat:	47.09522	Long:	68.57939			
Asset ID:	180935	Also	Known As:			
Existing St	Existing Structure: 3'D cmp					
*******	*****	*****	****	*****		
Watershe	d Area:	0.4 sq. mi.	NWI Wetlands:	2.5 %		
Wbf - calc	ulated:	7.4 feet	Wbf - measured (if ki	nown): 8.5 <i>feet</i>		
Q50: Q100:	94.4 110.3	cfs cfs				
Preliminaı	ry Pipe Size*:					

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

Comments:

CSH
7/29/2019
1120/2010

WIN:	24269.00	Project Name:	
Town:	Eagle Lake	Stream Name:	trib to Eagle Lake
Route No.	Sly Brook Rd	Bridge Name:	
Asset ID:	180935	Analysis by:	CSH
Lat:	47.09522 Long: 68.57939	Date:	7/29/2019

Peak Flow Calculations by USGS Regression Equations (Hodgkins, 1999 & Lombard/Hodgkins, 2015)

mean basin elevation (ft) mean basin slope (%) maximum basin elevation (ft)

mean annual precipitation

	Enter data km ²	<i>in blue cell</i> mi ²	ls only! ac		Enter data in Imi ² 1		ver. 2018 Jul 09 Worksheet prepared by:
Α	1.14	0.44	281.6	5	Watershed Area DRNAREA		Charles S. Hebson, PE
W	0.03	0.0	7.0)	Wetlands area (by NWI)		Environmental Office
				-			Maine Dept. Transportation
Pc	532744	5215208			watershed centroid (E, N; UTM 19N; meters	s)	Augusta, ME 04333-0016
County	Aroostook S				choose county from drop-down menu		207-557-1052
pptA					mean annual precipitation (inches; by look-	(qu	Charles.Hebson@maine.gov
A (km²)	1.14	(Conf Lvl	0.67		References:	
W (%)	2.47				NWI Wetlands % STORNWI	Hodgkins, G.A., 1999.	
						Estimating the magnitude of peak	flows for streams

percent of drainage basin land cover classified as open water

sand & gravel aquifer as decimal fraction of watershed A mean basin percentage of hydrological soil group A distance from the coast (mi)

Watershed Characteristics for Monthly & Daily Flows

EAVG	850.5	
SLOPE	13.6	
EMAX	1207.9	
WATER	0	
PRECIP	37.8	
SG	0.08	
HGA	0	
DIST	197.00	

Ret Pd	Peak Flow Estimate				
T (yr)	Lower	Q _T (m ³ /s)	Upper		
1.1		0.41			
2		0.86			
5		1.37			
10		1.74			
25		2.27			
50		2.67			
100		3.12			
500		4.25			

Q _T (ft ³ /s)	
	14.5
	30.5
	48.2
	61.4
	80.0
	94.4
	110.3
	150.0

Lombard, P.J. & G.A. Hodgkins, 2015. Peak flow regression equations for small, ungaged streams in Maine - Comparing map-based to field-based variables *SIR 2015-4059*, USGS, Augusta, ME

in Maine for selected recurrence intervals *WRIR* 99-4008, USGS Augusta, ME

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



WIN:	24269.00	Project Name:	0
Town:	Eagle Lake	Stream Name:	trib to Eagle Lake
Route No.	Sly Brook Rd	Bridge Name:	0
Asset ID:	180935	Analysis by:	CSH
Lat:	47.09522 Long: 68.57939	Date:	7/29/2019

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
	0.44	Α	Area (mi ²)
532744	5215208	Pc	Watershed centroid (E,N; UTM; Zone 19; meters)
	196.02	DIST	Distance from Coastal reference line (mi)
	37.8	pptA	Mean Annual Precipitation (inches)
	0.00	SG	Sand & Gravel Aquifer (decimal fraction of watershed area)



d_{bf} 0.4 estimated bankfull depth (ft)

A_{bf} 2.2 estimated bankfull flow area (ft²)

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 SIR 2015-5151



Eagle Lake 24269 Sly Brook Rd 180935

 Region ID:
 ME

 Workspace ID:
 ME20190729235659782000

 Clicked Point (Latitude, Longitude):
 47.09522, -68.57939

 Time:
 2019-07-29 19:57:21 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.4	square miles
STORNWI	Percentage of storage (combined water bodies and wetlands) from the National Wetlands Inventory	2.47	percent
SANDGRAVAF	Fraction of land surface underlain by sand and gravel aquifers	0.084	dimensionless
ELEV	Mean Basin Elevation	850.5	feet
BSLDEM10M	Mean basin slope computed from 10 m DEM	13.6	percent
CENTROIDX	Basin centroid horizontal (x) location in state plane coordinates	532743.69	feet
CENTROIDY	Basin centroid vertical (y) location in state plane units	5215208.47	feet
COASTDIST	Shortest distance from the coastline to the basin centroid	197	miles
ELEVMAX	Maximum basin elevation	1207.9	feet
LC06WATER	Percent of open water, class 11, from NLCD 2006	0	percent
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	0	percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	0	percent
PRECIP	Mean Annual Precipitation	37.8	inches
SANDGRAVAP	Percentage of land surface underlain by sand and gravel aquifers	8.39	percent
STATSGOA	Percentage of area of Hydrologic Soil Type A from STATSGO	0	percent

Peak-Flow Statistics Parameters [Statewide Peak Flow DA LT 12sqmi 2015 5049]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.4	square miles	0.31	12

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
STORNWI	Percentage of Storage from NWI	2.47	percent	0	22.2

Peak-Flow Statistics Flow Report [Statewide Peak Flow DA LT 12sqmi 2015 5049]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
1.01 Year Peak Flood	8.6	ft^3/s	38
2 Year Peak Flood	28.2	ft^3/s	34
5 Year Peak Flood	44.6	ft^3/s	35
10 Year Peak Flood	56.8	ft^3/s	37
25 Year Peak Flood	74	ft^3/s	39
50 Year Peak Flood	87.3	ft^3/s	41
100 Year Peak Flood	102	ft^3/s	42
250 Year Peak Flood	117	ft^3/s	44
500 Year Peak Flood	139	ft^3/s	47

Peak-Flow Statistics Citations

Lombard, P.J., and Hodgkins, G.A.,2015, Peak flow regression equations for small, ungaged streams in Maine- Comparing map-based to field-based variables: U.S. Geological Survey Scientific Investigations Report 2015-5049, 12 p. (http://dx.doi.org/10.3133/sir20155049)

Flow-Duration Statistics Parameters[Statewide Annual SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.4	square miles	14.9	1419

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
SANDGRAVAF	Fraction of Sand and Gravel Aquifers	0.084	dimensionless	0	0.212
ELEV	Mean Basin Elevation	850.5	feet	239	2120
Flow-Duration Statistics Disclaimers[Statewide Annual SIR 2015 5151]					
One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors					
Flow-Duration Statistics Flow Report[Statewide Annual SIR 2015 5151]					
Statistic		Value		Unit	
1 Percent Duration		0.001	42	ft^3/s	
5 Percent Duration		0.008	47	ft^3/s	
10 Percent Duration		0.023	8	ft^3/s	
25 Percent Duration		0.129		ft^3/s	
50 Percent Duration		0.452		ft^3/s	
75 Percent Duration		1.08		ft^3/s	
90 Percent Duration		2.43		ft^3/s	
95 Percent Duration		3.97		ft^3/s	
99 Percent Duration		12.8		ft^3/s	

Flow-Duration Statistics Citations

Dudley, R.W.,2015, Regression equations for monthly and annual mean and selected percentile streamflows for ungaged rivers in Maine: U.S. Geological Survey Scientific Investigations Report 2015–5151, 35 p. (http://dx.doi.org/10.3133/sir20155151)

Annual Flow Statistics Parameters[Statewide Annual SIR 2015 5151]					
Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.4	square miles	14.9	1419
SANDGRAVAF	Fraction of Sand and Gravel Aquifers	0.084	dimensionless	0	0.212
ELEV	Mean Basin Elevation	850.5	feet	239	2120
Annual Flow Statistics Disclaimers[Statewide Annual SIR 2015 5151]					
One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors					
Annual Flow Statistics Flow Report[Statewide Annual SIR 2015 5151]					
Statistic		Valu	le	Unit	
Mean Annual Flow		1.09		ft^3/s	
Annual Flow Statistics Citations					

rivers in Maine: U.S. Geological Survey Scientific Investigations Report 2015–5151, 35 p. (http://dx.doi.org/10.3133/sir20155151)

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Application Version: 4.3.8