

## HYDROLOGY/HYDRAULIC REPORT

### General

The Mill Bridge carries State Route 131/173 over the St George river in Searsmont

### Hydrology

<b>Summary of Hydrologic Data</b>	
	St George
Drainage Area	37.9 mi <sup>2</sup>
Wetlands Area	8.3 mi <sup>2</sup>

The drainage basin characteristics shown above were used with the USGS Regression Equations (Hodgkins, 1999) to calculate the estimated peak flows shown below

<b>Summary of Peak Flow Estimates</b>	
Return Period (Years)	St George
1.1 (ordinary high water)	273 cfs
50 (design discharge)	1166 cfs
100 (check discharge)	1317 cfs

### Hydraulics

During the public hearing information was gathered from the audience that in the flood of 1987 the water rose to the underside on the T-beams. Also, a dam upstream in Eleven Cellars Mill went out and the existing bridge handled that large flow surge.

The 28' span was selected to closely match the existing hydraulic opening area. The remaining area will be made up with the variable pedestal wall height.

<b>Hydraulic Summary</b>		
	Existing 24' Span	Proposed 28' Span
Area of Opening	336 ft <sup>2</sup>	296 ft <sup>2</sup>
Headwater Elevation (Q1.1)	199.97 ft	199.74 ft
Freeboard	11.53 ft	12.76 ft
Discharge Velocity (Q1.1)	11.09 ft/s	11.70 ft/s
Tail Water Profile Elev (Q1.1)	193.4 ft	
Headwater Elevation (Q50)	204.16 ft	203.54 ft
Freeboard	7.34 ft	8.46 ft
Discharge Velocity (Q50)	18.44 ft/s	17.76 ft/s
Tail Water Profile Elev (Q50)	194.7 ft	
Headwater Elevation (Q100)	204.73 ft	204.07 ft
Freeboard	6.77 ft	7.93 ft
Discharge Velocity (Q100)	19.06 ft/s	18.41 ft/s
Tail Water Profile Elev (Q100)	194.86 ft	

### Fish Passage

The existing structure velocities as compared to the proposed channel velocities will be slightly lower. The existing channel bottom is ledge and proposed channel bottom will be ledge. This stretch of river is listed as spawning and rearing habitat for the Atlantic Salmon. Notice of signoff was received on August 7, 2006. MEDOT should continue to coordinate with the Services, as the situation could change at any point in the future if salmon do start showing up in the river.