Approximate TDS in snowmelt runoff due to anti-icing operations

Jan. 4, 2006

Assumptions:	1. Water content of snow is 10%		
	2. Brine is applied once per storm at a rate of 15 gal per lane-mile with a salt concentration of 23%		
	3. Each application of salt consists of 250 lbs per lane-mile		
	4. Salt will be spread at the beginning of a snow storm and again for every 3 inches of additional snowfall.		
	5. All salt applied is dissovled in snowmelt runoff from pavement and tributary vegetated areas within the Right of Way (RoW).		
	6. Brine and salt are applied to traffic lanes and auxillary lanes only.		
	7. Runoff Coefficient for pavement = 0.9		
	8. Runoff Coefficient for vegetated RoW = 0.25		
	9. Specific Gravity(Unit weight of salt) = 2.165(135 pcf), Dry bulk density of rock salt for de-icing = 80 pcf		
	10. One cubic foot of rock salt is approx. 60% salt by volume		
	Note: Values in **Red** are required input variables.		
Storm Event:	**Total Snow fall Depth =**	**6**	inches
Anti Icing:	**# of Brine Applications =**	1	
	# of Road Salt Applications =	2	
Roadway Data:	**Total Inside Paved Shoulder Width =**	**5**	feet
	Total # of Traffic Lanes & Aux. Lanes =	**4**	lanes
	Total Outside Paved Shoulder Width =	**12**	feet
	Total Tributary Vegetated Width Within RoW =	**20**	feet
Salt Applied:	**Salt Quantity due to Brine =**	1.84	cu ft per mile
	Salt Quantity due to Spreader =	15.00	cu ft per mile
	Total Salt Applied =	16.84	cu ft per mile
Runoff:	**Runoff from snowmelt =**	16764	cu ft per mile
Results:	**Approx. TDS in snowmelt runoff due to anti-icing =**	**1005**	**ppm**
WQ Standards:	Utah Primary Drinking Water Standard for TDS =	2000	ppm
	Utah Water Quality Standards for TDS:		
	Irrigation =	1200	ppm
	Stock Watering =	2000	ppm
	EPA Secondary Standard for TDS =	500	mg/l