

**ILLINOIS FIRE SERVICE INSTITUTE**  
University of Illinois at Urbana-Champaign  
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**IFSI Mobile Water Supply Operations**

**Preplanning Formulas**

Needed Fire Flow (NFF):

NFA Formula:

$$\text{NFF} = \left[ \frac{\text{Length} \times \text{Width}}{3} \right] \times \% \text{ Involvement}$$

Iowa Formula:

$$\text{NFF} = \frac{\text{Length} \times \text{Width} \times \text{Height}}{100}$$

The Iowa formula doesn't take into consideration the percent of involvement, only the needed fire flow if fully involved.

Water Supply Available per Tender Formula:

$$\text{Flow (GPM)} = \frac{\text{Tank Capacity} - 10\%}{\text{Load} + \text{Dump} + \text{Round Trip Times}}$$

Remember we are hoping that each tender will supply at least 100 GPM to the mobile water supply operation.