1035-00-163   **Mitch A Phillipson*** (`phillima@uwec.edu`), Department of Mathematics UWEC, 105 Garfield AVE, Eau Claire, WI 54701, and **Simei Tong**. *Shortest paths and optimal solutions for evacuation in emergency situations.* Preliminary report.

Having an efficient evacuation procedure is critical for saving lives in emergency situations such as floods, chemical explosions or fires. The goal of this paper is to create an effective model to evacuate people out of a disaster situation. To create our mathematical model we begin with a map of the city broken down into regions. To determine weights of edges we use the time to each shelter and a damage rating, then use graph theory to find the shortest path from each region to every shelter. Using this information in the simplex method we obtain an optimal solution for transporting the population of the city into shelters. To make this process efficient we have created a program which transforms a city map into a weighted graph. With this information the program produces all of the shortest paths, optimal solution of evacuation and outputs an easy to read description of the results. (Received August 07, 2007)