1006-54-110 **W. T. Ingram** and **William S. Mahavier*** (`wsm@mathcs.emory.edu`), Department of Mathematics and CS, Emory University, Atlanta, GA 30322. *Inverse Limits of Upper Semi-continuous Set Valued Functions.*

The inverse limit of an inverse sequence $(X_1, f_1), (X_2, f_2), (X_3, f_3), \ldots$ is normally defined when each X_i is a compact Hausdorff space and each f_i is a map from X_{i+1} into X_i. We extend this definition to include the case where each f_i is an upper semi-continuous function from X_{i+1} into 2^{X_i}. Or, equivalently, we consider the inverse limit of a sequence of closed subsets of $X_{i+1} \times X_i$. We establish generalizations of standard theorems about inverse limits, including conditions under which the inverse limit is a Hausdorff continuum. We give examples to show that some properties of inverse limits do not extend to our setting. We also give examples to illustrate some of the inverse limits one can obtain in the special case where each X_i is the interval $[0, 1]$. (Received February 10, 2005)