In 1974, Soare proved that the maximal sets form an orbit under the automorphism group of $\mathcal{E}$, the set of computably enumerable sets under inclusion. In 1992, Downey and Stob showed that the hemimaximal sets, nontrivial splits of maximal sets, also form an orbit. Here, we examine the $D$-maximal sets, a further generalization of the maximal sets that encompasses the hemimodal sets as well. Let $D(A)$ consist of the c.e. sets disjoint from $A$. A set is $D$-maximal if the quotient $L(A)/D(A)$ is the two element boolean algebra. We develop a classification of the $D$-maximal sets and show that they break into infinitely many orbits. This work is joint with Peter Cholak and Peter Gerdes.