

## ESTABLISHING WETLAND VEGETATION IN ALKALINE MINE TAILINGS<sup>1</sup>

by

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**Abstract.** Alkaline iron mine tailings present considerable problems with respect to reclamation and revegetation. This study tested the effects of fertilizer and soil amendment applications on survivability and growth of herbaceous and woody vegetation seeded or planted in alkaline tailings. The test planting study was conducted in 1997 in Marquette County, Michigan, prior to developing a planting plan for a large wetland creation project. Fertilizer application rates ranged from 51 pounds of nitrogen and potassium and 96 pounds of phosphorus per acre, to 408 pounds of nitrogen and potassium and 760 pounds of phosphorus per acre. Two types of donor soils were tested as soil amendments. Trees planted in the test plots included tamarack (*Larix laricina*), balsam fir (*Abies balsamea*), and red maple (*Acer rubrum*). A seed mix containing nine herbaceous species was tested for germination success. Of the three tree species, tamarack was the only one that produced new growth during the monitoring period. None of the seeded herbaceous species demonstrated successful germination. The study revealed that the fertilizer treatment delivering 102 pounds of nitrogen and potassium and 190 pounds of phosphorus per acre was most effective at promoting tamarack growth ( $p < 0.001$ ), and also produced the highest average herbaceous cover. In this study, donor soils were not beneficial in establishing new vegetation.

**Additional key words:** wetland creation, donor soils, iron tailings, reclamation, reforestation.

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