



Construction of a chert cap over run of mine overburden is intended to prevent problematic selenium concentrations in the overlying surface ecosystem including the vegetation and runoff. Past testing at Smoky Canyon has shown the chert to be low in selenium content, while other shale overburden can be seleniferous. Covering seleniferous overburden with a 4-foot thick layer of chert and 1 to 2 feet of topsoil would isolate the proposed seleniferous overburden fills from surface weathering, erosion and offsite transport in runoff.

The maximum rooting depths for the grass and forb species initially seeded during reclamation are generally less than one meter (Nobel 1991) and would be largely contained within the topsoil and chert cover above the run of mine overburden. Much of the root mass of trees and shrubs is also within the upper feet of growth medium but the maximum rooting depths of shrubs and trees are greater than grass and forbs. The mean maximum rooting depth from multiple studies of herbaceous plants is about 8.5 feet (Canadell et al. 1996). Stone and Kalisz (1991) reviewed multiple studies and found the maximum rooting depths of quaking aspen were from about 5 to 10 feet , 4 to 11 feet for lodgepole pine, and 5 to 13+ for subalpine fir.

Most of the annual precipitation falling on the cap would be removed from the site by runoff and evapotranspiration (evaporation plus water taken up and given off by plants) from the soil and plants without coming in contact with seleniferous overburden. A small portion of the annual precipitation would eventually percolate out the bottom of the overburden fills into the underlying ground and groundwater.

Figure 2.5-1
Overburden Cap Design
Smoky Canyon Mine Panels F and G