

2.6 Soils

The soils descriptions, identifications, and locations provided for the 1981 Trapper Mine permit document, as shown on Map 29 and discussed in this section, were determined by an order 1 Soil Survey of the proposed mine plan area in the Summer of 1979 by Western Ecological Services Company.

An Order I soil survey was performed on the 795.71 acre Trapper Permit PR-7 Mine Expansion Area in 2014 to satisfy the requirements of Rule 2.04.9 of the Regulations of the Colorado Mined Land Reclamation Board for Coal Mining (Map 29A). The Natural Resources Conservation Service (NRCS) published a soil survey report for Moffat County in 2004 titled Soil Survey of Moffat County Area, Colorado. The NRCS soil survey was completed as a high intensity Order II survey. The 2014 survey of the PR-7 Mine Expansion Area relies on the soil classifications of the 2004 NRCS report and, due to the addition of new soil nomenclature, soil types for the PR-7 area do not match previous soil types identified for areas to the west as part of the 1981 permit document (see letter from Darrell Schroeder dated January 14, 1986, pages 2-184a and b of the Trapper permit document). Information on the soils in the PR-7 Mine Expansion Area as well as a discussion of the testing completed for the soils is contained in Section 2.6.3.

Soils were mapped at an Order I level for the 137.08 acres within the PR-11 mine expansion area in 2021. Section 2.6.4 details this mapping effort.

The principal geologic units that occur in the proposed mine plan area and that have influenced soil development are the three most common ones of the Mesaverde group, i.e. the Lewis Shale, the Williams Fork Formation and the Iles Formation, all of which are Cretaceous (refer to Section 2.7.1).

The Lewis Shale is composed of dark gray homogenous marine shale which lies unconformably on top of the Williams Fork Formation. It is located in the north-western portion of the proposed mine plan area. The Williams Fork Formation is composed of light brown to white sandstone, gray shale and coal beds. It is the upper bedrock unit of the Mesaverde Group and occurs in the southern and eastern portion of the proposed mine plan area. The Iles Formation is the older of the two formations comprising the Mesaverde Group and is lithologically similar to the Williams Fork Formation. It occurs in the southwestern corner of the proposed mine plan area.

Aeolian (wind-blown) material is a significant factor in terms of quaternary geology as it imparts a finer texture to the soils in the study area.

Areas of glacial erratics were also noted on knolls within the survey boundaries, but their aerial distribution was too small to be mapped out.

2.6.1 Soil Features

Most of the soils developed in the proposed permit area are deep (40 to 60 inches) and develop from colluvium and some alluvium derived from interbedded sandstone. Effective soil rooting depths, in the western portion of the proposed