0014

Document Information Form

Mine Number: C/015/004

File Name: Internal

To: DOGM

From:

Person N/A

Company N/A

Date Sent: March 11, 1976

Explanation:

Environmental Impact Analysis.

cc:

File in:
C/ 015 , 004 , **Internal**
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Environmental Impact Analysis for the

Swisher Coal Company Proposed Huntington

Canyon No. 4 Underground Coal Mine -

Coal Lease SL 064903

Existing Environment

Water Resources

Surface Water

The area of the proposed Huntington Canyon No. 4 underground coal mine drains to Huntington Creek and to Mill Fork, a tributary of Huntington Creek. Average annual gaged runoff in Huntington Creek about five miles downstream from the mouth of Mill Fork was 70,130 acre-feet for 58 years between 1910 and 1973 (data from Utah Power and Light Co.). Mill Fork is not gaged, but reportedly flows less than 1 ft^3/s, and is intermittent at its mouth. Average annual runoff from the coal lease area is estimated from the water yield maps of Bagley and others (1964) to be about 20 acre-feet, or about .03 percent of the average annual gaged runoff in Huntington Creek below Mill Fork.

Chemical quality of surface water in the general area of the coal lease is good. Discharge weighted average concentrations of total dissolved solids in streamflow are estimated to range from 250 to 500 mg/l (milligrams per litre) (Hagen and others, 1971). Water samples collected by Utah Power and Light Co. in recent years from Huntington Creek upstream from the Huntington Canyon Power Plant contained less than 300 mg/l of dissolved solids; chemical analyses of those samples indicate the water is chemically suitable for culinary use and most other common uses.

Total annual sediment yield in the Huntington Creek drainage basin above the mouth of Mill Fork is estimated to be on the order of 50 acre-feet (based on an unpublished potential sediment yield map compiled by the U.S. Soil Conservation Service). Annual sediment yield in the lease area does not exceed .03 acre-feet according to the above cited map. Huntington Creek, in the reach immediately below the coal lease area, is relatively free of sediment (reflecting the low sediment yield) except during periods of seasonal high runoff and cloudburst flooding.

Ground Water

Some ground water occurs in all of the strata that underlie the coal lease area. The strata that have been deeply incised by Huntington Creek and Mill Fork (including the coal-bearing strata that would be mined) contain only perched, thin discontinuous bodies of water (perched aquifers). The depth to the regional water table (top of the main zone of saturation and principal aquifers) in this area is estimated to range from only a few feet along the floors of Huntington Creek and Mill Fork Canyons to more than 1,600 feet near the northwest corner of the lease area.

Ground-water recharge in this area is derived from precipitation that falls on the area. In the coal lease area, normal annual (1931-60) precipitation is about 18 inches (U.S. Weather Bureau, 1963), or about 240 acre-feet. Most of this precipitation is consummed at or near the place of fall by sublimation from snowpack or by evapotranspiration. Only about 10 percent, or 24 acre-feet per year seeps deep enough into the rocks to become ground-water recharge. Considering the numerous shale strata in the Blackhawk Formation that impede downward percolation of water, very little, if any, of this recharge reaches the main zone of saturation. Recharge to aquifers in the main zone of saturation beneath the coal lease area most likely occurs from precipitation that falls west and northwest of the coal lease area.

The perched ground water in the coal lease area discharges in widely scattered seeps and springs. Most of the springs are reported to be small and intermittent. Base flow of Huntington Creek and Mill Fork, and the perennial flow of springs along the canyons of Huntington Creek and Mill Fork is apparently derived from aquifers in the main zone of saturation.

According to Hagen and others (1971) the dissolved-solids concentration of ground water in the coal lease area ranges from about 250 to 1,000 mg/l. A water sample collected September 5, 1957 from a spring in Little Bear Canyon, and analyzed by the Utah Division of Health, contained 288 mg/l of dissolved solids. That spring apparently discharges from the Star Point Sandstone and is part of the City of Huntington public water supply system.

Potential Impacts on

Water Resources

Surface Water

Not more than 10 acres of land would be disturbed by construction and use of surface facilities for the proposed mine. Average annual runoff from the areas that would be disturbed is estimated to be less than an acre-foot, or less than 0.001 percent of the average annual gaged runoff in Huntington Creek below the mouth of Mill Fork. Therefore, any increase or decrease in runoff from the areas that would be disturbed by the proposed project would have a negligible effect on runoff in Huntington Creek.

Annual sediment yields in the areas that would be disturbed for the surface facilities are estimated to be less than .003 acre-foot, or less than .006 percent of the estimated total annual sediment yield in the Huntington Creek drainage basin above the mouth of Mill Fork. Therefore, any increase or decrease in sediment yields in the areas that would be disturbed by the proposed action would have a negligible impact on sediment yields in the Huntington Creek drainage basin, or on sediment loads in Huntington Creek.

Subsidence of the land surface above the mined-out area (maximum subsidence estimated to be less than 5 feet) would accelerate headward erosion by streams, and probably alter drainage patterns slightly. However, this would occur over a period of many years, and the effects, if any, on annual runoff and sediment yields in Huntington Creek would be negligible.

Ground Water

Available data indicate that only the perched aquifers in and above the coal-bearing beds in the Blackhawk Formation would be affected by the mining and subsequent land subsidence. The land subsidence could create local sinkholes (shallow basins), which would pond some of the precipitation. These sinkholes would function as recharge basins, and would, therefore, tend to increase ground-water recharge to the perched aquifers. Rock fracturing associated with the subsidence would create hydraulic interconnections between some of the aquifers and would enhance downward movement of ground water to progressively deeper aquifers. There are insufficient data to make a quantitative evaluation of these potential changes in the ground-water system on the supply and chemical quality of the ground water. However, it can be assumed that the total ground-water supply in the perched aquifers would be augmented by the added recharge; and the ground-water quality probably would not be seriously degraded because the water in all the aquifers that would be affected apparently is fresh. Aquifers in the main zone of saturation, which support the base flow of Huntington Creek and Mill Fork (as well as the flow of perennial springs along those streams) are more than 200 feet below the base of the coal-bearing beds that would be mined. Therefore, it is unlikely that the mining or subsequent subsidence would affect those aquifers or natural ground-water discharge from them.

The spring in Little Bear Canyon (which is part of the Huntington City water supply system) discharges at a point that is also about 200 feet below the base of the coal-bearing beds that would be mined. The aquifer that supports the flow of this spring apparently receives all of its recharge from the area west and northwest of the lease area. Therefore, it is unlikely that the flow of the spring would be affected by the mining or subsequent subsidence.

Don Price
3-10-76

References Cited

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