

into areas covered by the Grazing Management Plan should receive proper management and declining range condition and trend should be reversed.

This grazing management plan for reclaimed land units is a program of action designed to achieve specific objectives. The following objectives were considered during the development of this plan: 1) secure proper and sustained utilization of the forage resource; 2) avoid unnecessary impacts to related resources (wildlife, soils, watersheds, aesthetics); 3) insure compatibility with existing native resources, the management skills of operators and existing classes of livestock; 4) obtain uniform use of the forage resource through proper distribution of livestock; 5) provide for a stable forage supply (quantity and quality) throughout the grazing season; and 6) improve range condition on adjacent native ranges through reduced grazing pressure. Coordination between the various agencies, proper stocking, and the deferred rotation grazing system described herein should insure that the objectives are being met. Theoretically, the plan (with any necessary modifications or adjustments) should be functionally accurate for an indefinite period of time if properly administrated.

#### Postmining Water Sources

Pre-existing water sources for livestock and wildlife are shown on Drawing 85322. A description of these water sources and an assessment of mining related impacts is contained in Chapters 15, 17, 18, and 23.

Five types of water sources for wildlife and livestock will exist or are being proposed in the postmining landscape. They include pre-existing springs, wells (pre-existing and replacement), pre-existing intermittent reaches of ephemeral washes, public water standpipes, and ponds. The ponds include pre-existing surface water structures, existing pre-law internal impoundments, existing and proposed postlaw internal impoundments, and existing and proposed sediment control structures. The water sources are shown on Drawing 85324. This section discusses the adequacy of these water sources (water availability, distribution, and viability) to support the proposed postmining land uses.

The locations, sources, yields, and assessments of water quality for the springs existing within or adjacent to the leasehold are discussed in Chapter 15, Hydrologic Description, and Chapter 17, Protection of the Hydrologic Balance. Annual Hydrology Reports present monitoring data collected each year at several springs within and adjacent to the leasehold, as well as assessments of water quality trends and suitability for livestock and wildlife. The water quality information

for many of the springs identified is qualitative in nature and is the only information available from the period when these springs flowed. With the possible exceptions of springs DM-20 and 8A-144 or 8A-145, these springs are currently dry or exist only as damp spots. This is not surprising as springs are sensitive to climatic and ground-water fluctuations. Springs DM-20 and 8A-144 or 8A-145 probably correspond to PWCC monitoring site numbers NSPG140 and NSPG91, respectively. A discussion of the springs currently monitored on the leasehold is contained in the 2010 Annual Hydrology Report (AHR). Only two of the eleven springs monitored during 2010 produced water of sufficient quantity and quality for livestock use (PWCC, 2010). Past evaluations of the suitability of springs identified within and adjacent to the leasehold (Chapter 15, AHR's prior to 2010) support the 2010 assessments. Therefore, the springs shown on Drawing 85324 are relatively poor sources for livestock drinking water due to: 1) variable or diffuse discharge (short term); 2) inconsistent discharge (long term); and 3) marginal water quality.

Pre-existing well water quality and quantity is dependent upon the aquifer(s) penetrated. Aquifer water quality and yield, and local well completion information are discussed in Chapter's 15 and 17. To Peabody's knowledge, none of the local wells on the leasehold are operable with the possible exception of Well 8T-504. This well is known to be completed in the Toreva formation. The Toreva formation yields good water quality at a sufficient rate for livestock use. The replacement wells that Peabody has proposed will also be completed in the Toreva formation and will yield adequate amounts and quality of water for livestock use. Well 4T-402, located between the east and west leasehold tracts, is completed in the Dakota aquifer and is currently operable. The status of the other off-lease local wells shown on Drawing 85324 is unknown, but it is assumed they are still operable. The remaining local wells (see Drawing 85324) cannot be considered viable livestock drinking water sources because they are inoperable, or do not exist. Those completed in the alluvium and Wepo aquifer would also possess marginal water quality and yield, should they be made operable.

Water quality and discharge information related to the intermittent reaches of the washes is discussed in Chapter's 15 and 17. The intermittent reaches are caused primarily from daylighting of the alluvial ground water. Certain chemical parameters in the alluvial ground water and in stream baseflows exceed Tribal livestock drinking water limits from time to time, which would render the water marginal or unsuitable for livestock use. However, recent water quality data collected at alluvial monitoring wells and stream baseflow indicate these potential water sources are generally suitable for livestock use. The 2010 Annual Hydrology Report presents comparisons of recent and historic baseflow water quality measured at several stream monitors where baseflow

occurs, as well as alluvial ground water quality, and the comparisons support this observation. Based upon Peabody's period of record pertaining to the extent and fluctuations of the intermittent reaches (see Drawing 85324) and the available water quality data (Annual Hydrology Reports from 1986 through 2010), it appears that these water sources are viable. Occasional use of these sources by livestock has been observed on the leasehold, reflecting upon their relative importance.

The public water standpipes (see Drawing 85324) provide sources of drinking, general use and livestock water. Water is routinely hauled to local residences for use in troughs at the corrals and sheep pens. This water is available on a 24-hour basis and is potable.

Peabody has no information regarding the water quality or viability of pre-existing surface water structures. These structures were built on very small watersheds, and their water holding capacity is slight. Water quality is presumed to be sufficient for livestock uses during the short durations that these structures impound water.

Nineteen permanent internal impoundments currently exist that are available for livestock and/or wildlife use as a part of the postmining landscape (Drawing 85324). Two livestock and wildlife sources (N2-RB and N2-RC) and one wildlife habitat area (N2-RA) are previously approved, permanent internally draining ponds located in the N-2 coal resource area. Sixteen are pre-law internal impoundments located in the J-3 coal resource area (J3-G and five other unnamed impoundments), J-1 coal resource area (J1-RA and J1-RB), N-8 coal resource area (N8-RA), and N-1 coal resource area (N1-RA and six unnamed impoundments). Additional pre-law depressions exist that hold water from time to time. However, they are not considered reliable water sources due primarily to restricted watersheds.

The water chemistry at the N2-RA impoundment is principally controlled by the N-2 mining area spoil aquifer water quality as the pond intercepts a portion of the spoil aquifer. As a result, total dissolved solids concentrations in the pond frequently exceeds the recommended livestock drinking water limit of 6999 mg/l; although, interception of ground water provides excellent water quantity and persistence. The perennial water supply provides valuable resting and feeding habitat for migratory birds. Such conditions did not exist in this area prior to mining. For these reasons, N2-RA is designated for wildlife habitat use and not livestock use. The immediate area of the pond has been fenced to prevent livestock access.

Peabody is also proposing to build one additional internal impoundment in the J-19 coal

resource area (J19-RB). This structure is intended to improve the distribution of postmining water sources in that area of the leasehold (see Drawing 85324).

Peabody also proposes the retention of 31 existing and future sediment control structures (ponds) to provide surface water bodies for livestock and wildlife in addition to those previously identified. The proposed facilities include nine existing MSHA structures, which include J7-DAM, J7-JR, J2-A, J16-L, J16-A, N-14H, N14-G, N14-F, and N14-D. Twenty smaller existing sediment control structures are also proposed. They include J3-D, J3-E, J7-R, N11-G, N6-L, N11-A, J21-A1, J21-C, J27-RA, J27-RB, J27-RC, N5-A, TPF-D, TPF-E, N7-D, J16-G, N7-E, N10-A1, N10-D, and N12-C. Two sediment ponds scheduled for construction during the remaining life-of-mining activities are also proposed, and they are N10-G and J21-I. These existing and proposed ponds all meet or will be upgraded to meet the permanent pond design criteria. Their size, configuration, and upstream watersheds indicate persistent water retention (see the discussion of Permanent Impoundments, Chapter 6 and Appendix E). Monitoring of water quality will provide sufficient information to demonstrate the suitability of these sources to support the intended postmining land uses.

Based upon the previous discussion and comparison of Drawings 85322 and 85324, it can be seen that considerably more water sources with much greater viability will exist in the postmining landscape. The distribution of the viable pre-existing sources will be greatly enhanced with the addition of replacement ponds and wells, public water standpipes, and enhancement ponds.

#### Land Use Summary

In summary, the postmining land uses of livestock grazing and wildlife habitat represent no change from the premining land uses. The postmining land uses will be achieved through implementation of the reclamation plan discussed in detail elsewhere in this document. The management plan for postmining lands consists of the reclamation plan including revegetation maintenance activities. No formal land use plans or policies have been developed by land management agencies specific to the Black Mesa leasehold. Therefore, the reclamation plan has been designed to produce lands which will be compatible with and will support the existing land uses. The reclamation plan has been previously approved by the Bureau of Indian Affairs and the Navajo and Hopi Tribes (see Permit Application Approval Packages for Permits AZ-0001, AZ-0001D and AZ-0001E).