3.5 BACKFILLING AND GRADING

3.5.1 Methods and Equipment

Dragline Only Pits. Backfilling of the mined-out pits is accomplished primarily with the draglines as progressive cut by cut mining takes place. Overburden and interburden material from the cut being excavated is used to backfill the previous adjacent cut. A variety of dragline stripping techniques are used to strip overburden and interburden. Backfilling is accomplished by casting waste material into the previously stripped cut. Ash from the power plant may also be used as backfill material (refer to Section 4.3.4).

Occasionally, dozers, scrapers, backhoes, front end loaders and trucks may be used in addition to the dragline for backfilling. Backfilling by dozers shall be done by pushing adjacent material into the mined out pit. If scrapers or trucks are used, they will either haul material directly into the pit, place material in approved permanent fills or place the material adjacent to the pit. In the latter case, the material may then be pushed into the pit with a dozer or similar equipment.

After the pit has been backfilled and the overburden stripping operation has progressed several cuts, regrading operations begin. Regrading operations shape the backfilled areas to approximately the configuration shown on the Postmining Topography Map, Map M12. Backfilling and grading operations commence as soon as feasibly possible following coal extraction. The approximate areas to be backfilled and graded each year are shown on Map M10A, Mining and Regrade.

Truck/Loader Pits with Dragline Assist. Following the massive landslide that occurred in Trapper's East Panel mining area, mining methods changed rather dramatically. Large front-end-loaders and a fleet of large haul trucks were employed to mine through the slide area and into adjacent pit areas. These pits are typically wider and more dispersed than the traditional dragline pit on the site. This new mining method requires that large quantities of spoil be stored in temporary storage areas until such time that the material is needed to fill in final pit areas. Thus, large areas of disturbance cannot be reclaimed for extended periods of time. In some areas these stored spoils cannot be regraded until the final closure of the last pit cuts.

Recontouring begins with "rough" grading. Dozers, graders or similar equipment are commonly used, but occasionally, the dragline is also used. Dragline grading work occurs either when the dragline is devoted to specialty backfilling and grading or in conjunction with pit stripping operations.

Revision: PR-12
Submitted: 10-10-2024

Spoil peaks are leveled and depressions are filled. The area is graded to the approximate original contour and blended into adjacent areas. All temporary diversions and associated structures are removed, regraded and reclaimed when they are no longer needed.

After the rough grading has been completed, it is inspected by the Engineering and Environmental Departments. If the area is approved with respect to grade and contour, it is final graded. Final grading is performed on the contour unless slope or ground conditions make operation of equipment across the slope hazardous to men or machinery. Dozers, graders or similar equipment are used.

In accordance with TR-69 recommendations, precaution will be taken when reclaiming an open pit when several of the following adverse conditions for slope stability might be present:

- A slope of the reclaimed pit is steeper than 1:4 (V:H);
- Shallow (15-25 feet) overburden composed mostly of clays;
- Mined coal floor composed of shales, and dipping parallel with the reclaimed slope; and,
- Potential for higher than normal infiltration of surface runoff or presence of ground water within the replaced spoils.

If some of the above conditions are present, special procedures will be taken during the pit reclamation. Although these procedures should be site-specific, the following remedial measures could be applied:

- Slopes steeper than 1:5 should have better than normal compaction of the reclaimed spoils material;
- The coal floor shale strata could be scarified at regular intervals to disturb the potential slide surface;
- Slopes with higher potential for surface runoff should be well drained by additional perimeter ditches; and,
- Areas of potential infiltration of surface water or areas with a potentially high ground water table should be provided with French drains. The drains should be located to effectively drain the potential accumulation of water at the top of the bedrock.

The proposed remedial measures should assure safe slope conditions even during above-normal precipitation and/or snowmelt.

Where areas are being reclaimed to cropland, a dozer pulling a drag or a similarly effective procedure is used to further level the area so that a uniform depth of topsoil can be laid down.

3.5.2 Timing

Due to the length of some of the pits at the Trapper Mine, most cuts will remain active longer than 180 days. In many mining areas, the dragline is required to make two passes per cut in order to effectively uncover two or more coal seams. The first pass is done to remove overburden material over the first coal seam. The dragline then moves across the pit to the spoil ridge created from the overburden removal and strips the interburden material to the second seam of coal. Since the dragline is positioned on the spoil side of the cut, the interburden material is cast as far as the second and third spoil rows. Depending upon the thickness of the interburden material, dozers or similar equipment may aid in the removal of the interburden. When excavating with trucks and excavators, backfilling will occur as soon as direct haul to the open cuts is possible. The timing of these activities will be governed by geotechnical and other considerations that insure the safety of personnel and equipment.