

OSM-166
171 Summers

TECHNICAL ANALYSIS
OF THE SKYLINE
MINING AND RECLAMATION PLAN

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GAS & MINING

Prepared for
United States Department of the Interior
Office of Surfacing Mining Reclamation and Enforcement

Prepared by



Draft Final Report - Task Order No. 8
Skyline Mine Plan
Contract No. J5191336
Environmental Analyses of Surface Mining and
Reclamation Plan for Federal Coal Leases

May 5, 1980

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FORWARD

This report was prepared by NUS Corporation, Westcentral Environmental Center, Denver, Colorado under OSM Contract Number J5191336. The contract was initiated under the Environmental Analysis of Surface Mining and Reclamation Plans for Federal Coal Leases Program. It is administered under the technical direction of the Branch of Environmental Analysis with Dr. Mark Boster as Technical Project Officer. Mr. Robert A. Carpenter was the contract administrator for the Government. This report is a summary of work recently completed as a part of this contract during the period April 2, 1980 to May 2, 1980. This report was submitted by the Authors on May 5, 1980.

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INTRODUCTION

NUS Corporation conducted a technical analysis of the Skyline Mining and Reclamation Plan (MRP) in accordance with environmental protection performance standards part 816 and the special performance standards part 818 - 828. In the following sections of the report, NUS has presented a brief summary description of each resource, the applicants proposed action relative to each resource and a discussion of the data and information presented relative to regulatory requirements.

NUS project staff have used their professional judgement in preparing the draft comments and recommendations relative to compliance. The determination of compliance and the stipulations as drafted represent the best judgement of the NUS reviewing staff based on materials presented in the (MRP) and the OSM regulations listed above. Final determination of compliance and stipulations for compliance are the sole responsibility of OSM.

A. Description of Existing Environment

Geological environment to 5,000 feet is not known to the writer. Of practical, economic consequence, there are five potentially mineable coal seams that include the following: McKinnon, Upper O'Connor, Lower O'Connor 'B', Lower O'Connor "A", and Flat Canyon Seam. In the proposed Skyline Mine the Upper O'Connor, Lower O'Connor "B" and Lower O'Connor "A" seams will be mined; one mine in each seam. Hence, the underground operation will constitute a multiple seam mine with seams dipping six to 10% to the west and the deepest planned mining reaching 2,000 feet beneath the surface. Based upon the applicant's description, the McKinnon seam occurs only sporadically, hence is not believed to be currently mineable at the site. The deepest seam, the Flat Canyon Seam, may ultimately be mined but not until the planned operations have extracted the three described seams over the 30-33 year mine life. Total inplace reserves of all five seams is shown to be 294,000,000 tons. Current plans will not recover the coal in the McKinnon and Flat Canyon Seams which reduces the mineable reserve to 213,000,000 tons or 72%. Mining procedures are then projected to recover 124,500,000 tons of this or about 42% of the total inplace tonnage. Coal less than 5 feet thick and that portion of seams more than 12 feet thick will not be recovered.

Physically, the mine permit area includes 6,400-acres leasehold in Carbon and Emery County, Ut. The minesite is located 22 miles north of Price, near Scofield. The minesite occupies moderately rugged country with elevations ranging from 8,400 to 9,600 feet. Access to the mine portal site will be made by a 2½ mile access road to be constructed along the Eccles Canyon drainage. A coal loadout facility will be provided at the mouth of Eccles Canyon, adjacent to U.S. Highway 96 and a spur of the Denver and Rio Grande Western Railroad. Coal produced from the mine will be transported by belt conveyor along a route that parallels the access road in Eccles Canyon to be stored in two or more 15,000-ton silos at the loadout facility.

B. Description of Applicant's Proposal

Applicant proposes a multiple seam underground coal mining operation. Three seams are to be mined, each from a separate mine. Planned production is five million tons per year over a 30-35 year mine life, using both room-and-pillar method of extraction as well as longwall mining techniques. Total planned extraction is 124.5 million tons from mineable reserves of 212.8 million tons, or approximately 58 percent extraction of mineable reserves. (see p. 3-19). The quality of the mined coal is expected to run 11,500 BTU/lb with 0.5 percent sulfur. Mined coal will not be mechanically clawed and will be shipped by rail from the coal loadout facility.

C. Evaluation of Compliance

Applicant's proposed action will result in the extraction of three of five potentially mineable coal seams. Of the three seams to be mined, overall extraction of 58 percent appears to be acceptable in view of special complexities that relate to ground control in multiple seam mining, reach of mining machines in thick coal (greater than 12 feet) and other limitations imposed in order to control mine subsidence and to assure the safety of personnel. One seam that will not be mined, the McKinnon, is not widespread within the permit area; and, it would be difficult to gain access to this seam for subsequent development work. The other seam that will not be mined, the Flat Canyon seam, lies beneath the Lower O'Connor "A" seam. This seam occurs in mineable thickness only in the southwest corner of the property (see p. 3-4), and continuity of mineable reserves for this seam has not been established by the applicant.

The applicant has developed a plan to recover the maximum amount of the reserves in the permit area, even agreeing to continue investigation of the two unmineable seams as projected mining progresses. The applicant should address in more detail the selection of 30 feet of interburden for the cutoff for work in adjacent coal seams. Adjustment of the sequence of working in the two seams plus the percentage of removal of coal especially in the top seam may enable the recovery of more of these reserves. The use of recent longwall technology can enhance this work.

By the same token, depending upon the areal extent of those coal seams excluding 12 feet in thickness European applications of "multi-lift" longwall procedures may enable the recovery of that coal now projected to be lost.

These two areas should be more fully addressed by the applicant.

- D. Revisions to Applicants Proposal - (None)
- E. Reanalysis of Compliance - (None)
- F. Proposed Special Stipulations with Justification - (None)
- G. Summary of Compliance - Will comply.
- H. Proposed Departmental Action - (None)
- I. Residual Environmental Impacts of Proposed Department Action

From information in the applicant's proposal, the planned extraction methods will maximize the utilization and conservation of coal while utilizing the best technology currently available to maintain environmental integrity.

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- F. Proposed Special Stipulations with Justification - (None)
- G. Summary of Compliance - Will comply.
- H. Proposed Departmental Action - (None)
- I. Residual Environmental Impacts of Proposed Department Action

From information in the applicant's proposal, the planned extraction methods will maximize the utilization and conservation of coal while utilizing the best technology currently available to maintain environmental integrity.

J. Alternative to Proposed Action

Applicant could be required to mine all mineable portions of the McKinnon and Flat Canyon seams in addition to the planned operations. However, in view of the probable mining economics, apparent lack of continuity for mineable portions in the two aforementioned seams, and difficulties in developing the uppermost McKinnon seam, this alternative proposed action is not recommended. The applicant's proposed action is reasonable and justifiable.

817.61 Explosives

A. Description of Applicant's Proposal

1. Applicant will conduct surface blasting in conjunction with site preparation work (p. 3-27).
2. Blasting will be confined to site-specific cases, hence details relating to blasting agent, pattern, loading, stemming and firing have not been determined.
3. Coal will not be blasted as continuous miners and longwall units will be used to extract coal.
4. Warning signal will be three short blasts from air horn sounded 60 seconds before explosives blast (p. 3-29) and four long blasts to indicate all is clear following a blast. Warning and all-clear signals will be posted at the site.
5. Access: Warning signs will be posted at all entrances to the permit site (p. 3-29).
6. Log: A blasting log will be kept for all blasts, an example being shown in the applicant's permit application (pp. 3-32 through 3-34).
7. Training: Applicant's Safety Director will conduct testing and training to include instructions to assure that all operators understand and observe all applicable rules, regulations and safety standards (p. 3-28).

B. Evaluation of Compliance of Proposal

Applicant's proposal appears to satisfy all requirements as set forth in Section 817.61, 817.62 and 817.67. Deficiencies in the applicant's proposal pertain to Sections 817.65 and 817.68 in the following respects:

1. Section 817.65 Subsection (b) (2) (ii): Applicant does not state that oral notices will be provided to persons within one-half mile of the blasting site; he should further address the publication of his blasting schedule including instructions to residents on the method for requesting blasting survey;
2. Section 817.65 subsection (b)(2)(iii): Applicant does not acknowledge that blasting report may have to be filed within 3 days of night blasting event;
3. Section 817.65 subsection (g): Applicant does not state that flyrock from blasts would be restricted to the regulated access area and would not travel more than one-half the distance to the nearest dwelling or occupied structure; he does not address the method used to control air blast; and,

4. Section 817.68 Subsection (r): Applicant's example blasting report (pp. 3-33 & 3-34) does not include provision for reporting the number of persons in the blasting crew.

C. Revisions to the Applicant's Proposal - (None)

D. Reanalysis of Compliance - (None)

E. Proposed Special Stipulations and Justification

In order that the permit application be made to comply with the regulations in this section, the applicant must agree to abide by these following stipulations:

1. Applicant agrees to give oral notice to persons within one-half mile of the blasting site (notice of blast);

2. In the event of blasting at night, applicant agrees to file a complete written report by the person conducting the surface blasting activities with the regulatory authority not later than three days after the night blasting. The report shall include a description in detail of the reason for the delay in blasting including why the blasting could not be held over to the next day, when the blast was actually conducted, the warning nature given, and a copy of the blast report required by Section 817.68; he should also address methods proposed to control air blast;

3. That for any blast, the applicant agrees to control flyrock, including blasted material traveling along the ground so that neither shall be cast from the blasting vicinity more than one-half the distance to the nearest dwelling or other occupied structure and in no case beyond the line of property owned or leased by the applicant, or beyond the area of regulated access; and,

4. That when filing a blasting report, the applicant include the number of persons in the blasting crew. Also the published blasting schedule should include information to residents relative to procedures for requesting a blasting survey.

F. Summary of Compliance

If the proposed stipulations are implemented this section will be in compliance.

G. Proposed Departmental Action (with necessary stipulations).

Approval of permit with above stipulations.

H. Residual Environmental Impacts of Proposed Departmental Action.

Because blasting will be confined to site preparation work, primarily near the mine portal area, environmental impact from blasting is of a temporary, transient impact and is expected to be of minor or negligible environmental consequence.

I. Alternative to Proposed Action.

An alternative to blasting would be to require that all excavated material be loosened and removed by ripping. However, in view of the remote location and improved stability that can be achieved for rock cuts in the vicinity of the mine portal area by using controlled blasts, the proposed blasting is recommended over ripping.

817.150 Roads/Transportation

A. Description of Existing Environment

Current road development consists of 1.2 miles of improved access road extending from the mouth of Eccles Canyon, after which the unimproved dirt road extends for the remainder of the Canyon's length, ultimately connecting with other unimproved roads in the Huntington Creek and other drainages. The existing Eccles Canyon road will be widened and substantially improved for about 2.5 miles (p. 3-40). The resulting roadway will be 34 feet wide, accommodating two lanes of traffic. The road will be constructed to U.S. Forest Service specifications (p. 3-40).

In addition to the above-described Eccles Canyon Road, a by-pass road will be constructed to bypass the mine facilities in the upper Eccles Canyon, providing public access to the Huntington Canyon area. The bypass road will be 16 feet wide, graveled, and will extend from the south fork of Eccles Canyon (and road) to the Huntington Creek area as shown on Exhibit 3-19, a distance of three miles. The Eccles Canyon road and bypass will not be reclaimed upon cessation of mining, but will remain as permanent public roads for access to public domain. On the other hand, that portion of the Eccles Canyon Road extending from the South Fork to the minesite area (about 2.5 miles) will be reclaimed.

It is not planned to use the Eccles Canyon road to haul coal, as coal will be transported by belt conveyor from the mine to the loadout facility along a route that parallels the Eccles Canyon road. (refer to Volume II). Hence, the foregoing roads are designated as Class II roads. Other transportation improvements that have been proposed by the applicant include the conveyor installation and railroad siding and track re-alignment near U.S. Highway 96 (Exhibit 3-15), this work to be completed by the Denver & Rio Grande Western Railroad Company.

B. Description of Applicants Proposal

1. Personnel Access: Personnel access to the mines will be made by the improved Eccles Canyon road (described above). Miners and presumably most other personnel who work in the mines will, however, park their cars in parking to be provided at the loadout facilities near U.S. Highway 96 (see Exhibit 3-9A). A change house will be constructed at this site. Miners and others will be bussed from this location to the mine portal site (Exhibit 3-8), reducing traffic congestion, dust pollution, etc.

2. Equipment Access: Underground mining equipment and supplies must be hauled to the mine using the improved Eccles Canyon road for access.

3. Coal Haul: As previously mentioned, coal will be conveyed from the crusher site to the loadout facility, a distance of 2.2 miles. No roads will be used to transport coal, at least for ordinary planned mining operations.

4. Destination: All road construction relates to the Eccles Canyon road, improvements to this road to gain access to the mine portal site, and to the Eccles Canyon bypass road. Road layouts, cross sections, and profiles have been illustrated by the applicant's engineer (Kaiser Engineers) in Exhibits contained in Volume 2.

C. Evaluation of Compliance of Proposed Plan

As previously mentioned, all roads are Class II roads and only design standards applicable to Class II roads need be considered.

817.160 Roads Class II: General

Applicant's proposed road construction would meet all general regulations including the following: (1) to minimize erosion, siltation and water pollution; (2) to not damage fish and wildlife; (3) will be regraded and revegetated upon cessation of mining except as described above; (4) will be maintained; are designed to control drainage using ditches and culverts; (5) will not incorporate alternate specification; (6) have been designed in consideration of their specific use; and (7) should meet the specification and approval of the U.S. Forest Service.

817.161 Roads Class II: Design and Construction

The applicant's proposed road designs have been completed by Kaiser Engineers. Details relating to the layout and profile for Eccles Canyon road are illustrated in Exhibits 3-9A through 3-9F. Eccles Canyon By-Pass - road layout and profile are illustrated in Exhibits 3-19 and 3-20. Cross-sectional profiles for both road designs are shown on Exhibit 3-10. The proposed Eccles Canyon road improvement is stated by the applicant to meet U.S. Forest Service specification (p. 3-40). The roads are not located on ridges, the Eccles Canyon road will predominantly follow an existing roadway along the canyon. Portions of this roadway will encroach upon the streambed, but in view of the topography there is no alternative location. There are no stream fords, but culverts will be used where necessary. Downstream sedimentation and flooding are minimized by incorporation of two sedimentation ponds into the facilities construction (p. 3-25 through 3-27).

817.162 Roads Class II: Design and Construction

(a) Vertical Alignment: Road profiles showing grades have been illustrated in the above-described Exhibits. Overall grades do not exceed 10 percent, excepting some relatively short segments on the by-pass road. Frequent changes in grades have been made in both road profiles, and both road profiles closely follow the natural topography without major cuts or fills.

(b) Horizontal Alignment: Horizontal road alignments are also illustrated upon the same Exhibits as previously described. Horizontal alignments are consistent with the existing topography, and have been selected in consideration of their potential use. For example, the Eccles Canyon road has been located for good visibility and relatively fast traffic, which the by-pass road has not been so designed; because, its purpose is to provide access to occasional vehicular traffic, primarily enroute to hunting and fishing areas.

(c) Road Cuts: The applicant states that road cuts will not exceed 1.5h:1v in unconsolidated material, or exceed 1.h:4v in competent rock. (refer to Exhibit 3-10 for typical road cross sections). The applicant does not mention proposed activities to place topsoil or revegetate those embankments that are 1.5h:1v or less steep. Nor does the applicant adequately address those specifications or construction requirements that pertain to these following subsections: 817.162(c)(2); 817.162(c)(3); 817.162(c)(4); 817.162(c)(5); 817.162(c)(6); 817.162(c)(7); 817.162(c)(9); 817.162(c)(11); 817.162(c)(13); and 817.162(c)(14). The foregoing deficiencies probably represent oversight on the part of the applicant or applicant's engineers in describing procedures that relate to embankment construction, compaction, topsoiling, etc.

The foregoing deficiencies should not imply that the applicant's proposed Class II road designs are inadequate. It is merely concluded that certain aspects of the applicant's design should be explained in the permit application.

817.163 Roads: Class II: Drainage

(a) General Objectives: The two Class II roads will include culverts as required, and ditches (see Exhibits 3-10). The two sedimentation ponds and stream diversions constitute part of the drainage control plan that also affects the Eccles Canyon road (pp. 3-25 through 3-27). These last elements have been designed using the 10-year, 24-hour precipitation event.

(b) Ditches and Alternative Measures for Roadbed Erosion: Ditches will be placed on the inside embankments with culverts located as needed (Exhibits 3-10). Surface dips are apparently not planned.

(c) Culverts and bridges: Applicant states that culverts will be used as needed. However, design calculations or basis for culvert selection has not been included with the permit application. Also, details relating to the culvert emplacement have not been illustrated by the applicant.

The most important culvert is probably located at station 132+81 on the Eccles Canyon access road, but other culverts are indicated for this same road. The applicant does not adequately address sections 817.163(c)(1)(i), 817.163(c)(1)(ii), 817.163(c)(1)(iii) and 817.163(c)(1)(iv). Section 817.163(c)(2) is apparently not applicable to the applicants's proposed road design.

817.164 Road: Class II: Surfacing

Applicant has provided for road surfacing; asphalt for the Eccles Canyon access road, and gravel for the by-pass road. Surfacing and subgrade material specifications are given in Exhibit 3-10.

817.165 Road: Class II: Maintenance

Applicant states that roads will be maintained throughout the life of the mine.

817.166 Roads: Class II: Restoration

Applicant has adequately described what portion of roads will be restored and how the restoration will be achieved. Exhibits 3-16, 3-17, and 3-18 illustrate planned restoration of the Eccles Canyon road (although Exhibit 3-17 may not be correct). The Eccles Canyon by-pass road will not be restored as previously discussed.

D. Revisions to Applicant's Proposal - (None)

E. Reevaluation of Compliance - (None)

F. Proposed Special Stipulations with Justification:

817.162(c) Road Cuts: The applicant will, within 90 days of the effective permit date submit calculations, exhibits, and written narrative to the regulatory authority explaining or otherwise addressing the following subsections: 817.162(c)(2); 817.162(c)(3); 817.162(c)(4); 817.162(c)(5); 817.162(c)(6); 817.162(c)(7); 817.162(c)(9); 817.162(c)(11); 817.162(c)(13); and 817.162(c)(14). In no case shall the permittee or his contractor commence construction of any of the proposed Class II roads until the foregoing design requirements have been submitted to the regulatory authority.

817.163(c) Culverts and Bridges

The applicant will, within 90 days of the effective permit date, submit calculations exhibits and/or written narrative explaining or otherwise addressing the following subsections: 817.163(c)(1)(i), 817.163(c)(1)(ii), 817.163(c)(1)(iii) and 817.163(c)(1)(iv). In no case shall the Permittee or his contractor commence construction of any of the proposed Class II roads until foregoing design requirements have been submitted to the regulatory authority.

G. Summary of Compliance

If the proposed stipulations are implemented, this section will be in compliance.

H. Proposed Departmental Action

1. Review the applicant's response to the stipulations listed above so as to not unduly delay road construction. Responses are to be made within 90 days of the effective permit date, and Class II road construction is not to begin until the applicant has submitted to the regulatory authority his written responses to the deficiencies listed above.

2. Approve the Eccles Canyon road alignment, which to some extent, will interfere with the perennial stream channel (which already has been affected by prior road improvements). The current planned road location will not block the natural channel drainage, nor significantly contribute towards degradation of the hydrologic balance, or adversely affect adjoining landowners. Approval of the Eccles Canyon road alignment seems to be advisable and consistent with the provisions of subsection 817.163(d).

I. Residual Environmental Impacts of Proposed Departmental Action

Applicant's proposed Class II road designs appear adequate, but lack explanation and backup calculations primarily relating to embankment, construction-compaction and culvert sizing. Applicant should not be permitted to pursue Class II road construction until it is indicated that the regulations can be complied with.

J. Alternatives to Proposed Action

The regulatory authority could reject a portion of the applicant's proposed Eccles Canyon road alignment, as in places, the road alignment interferes with the perennial stream course. Such alternative action is unreasonable, because of an existing road alignment in Eccles Canyon, and because the rugged topography of the Canyon would render any realignment difficult, possibly resulting in worse problems.

817.121 Subsidence Control

A. Description of Existing Environment

The applicant proposes to mine parts of three seams in a multiple seam mining operation (refer to Volume II, Exhibits 3-1A, 3-1B, and 3-1C). The proposed mining will affect most of the 6400 acre permit area shown in Exhibit 1-1. Although the proposed mining operations will be deep, ranging from 400 to 2000 feet, the seams are relatively thick so that possibly severe subsidence could result. In general, the applicant has adopted mining plans that take into account aspects affecting subsidence, or that would be affected by subsidence. For example, the applicant proposes room-and-pillar mining beneath a gas pipeline where extraction will not exceed 50 percent, to maintain a supporting pillar beneath the pipeline. Width of this pillar has been estimated from mathematical formulae (p. 4-58), and is a function of mining depth (also see Exhibits 3-1A, 3-1B, and 3-1C). Longwall mining panels parallel the north-south faulting, so as to reduce the potentially adverse subsidence that could result were faults to cross such panels.

B. Description of the Applicant's Proposal

Because the permit location is in an unpopulated and relatively isolated area, subsidence-induced damages would be limited to the following: (1) the gas pipeline (refer to Exhibit 1-1); (2) unimproved roads in the area; and (3) Electric Lake reservoir. Surface facilities that will service the proposed mines are located where subsidence can not affect them. The principal aquifers are believed to be located beneath the proposed mining, so that depletion of underground aquifers that may exist above the mining horizons is not believed to represent a serious impact.

C. Evaluation of Compliance of Proposed Plan

817.121 Subsidence Control: General

The applicant has planned underground mining activities so as to prevent subsidence from causing material damage to the surface, at least to the extent that currently appears technologically and economically feasible. Applicant's subsidence plan is discussed in Volume 3, Section 4.17.

817.122 Subsidence Control: Public Notice

The applicant will file annually with the U.S. Forest Service his subsidence control plans (p. 4-61). Dates and locations of future mining have already been identified (see Exhibits 3-1A, 3-1B, and 3-1C). Measures taken to reduce adverse subsidence efforts have been briefly discussed above, and are discussed at length by the applicant in section 4.17 of Volume 3.

817.124 Subsidence Control: Surface Owner Protection

The applicant states that subsidence induced damages that might occur to the pipeline, would be repaired by the applicant or compensation made to the owner for repairs to the pipeline (p. 4-59). The applicant agrees to regrade or repair damages to any of the public roads in the permit area (p. 4-59). However, similar-type claims are not made for damages that might occur to the Electric Lake reservoir. Moreover, the applicant has not shown any bonding to cover the cost of damages that could occur to the preceding entities. The applicant does agree to pump mine-collected waters to restore any depleted subsurface waters that flow naturally from Price River Basin towards Huntington Creek (p. 4-29). In section 817.124(c), the applicant is required to purchase a noncancellable premium paid insurance policy to compensate the owner of any surface structure for subsidence induced damages. In view of the foregoing discussion, the applicant may not be in compliance as no evidence of such bonding or insurance has been indicated in the applicant's permit applicataion.

817.126 Subsidence Control: Buffer Zones

The applciant proposes to mine beneath Huntington Creek and Electric Lake (refer to Volume 2, Exhibit 3-2b). Although the applicant plans to carefully mine these areas, subsidence behavior may not be completely understood or appreciated at this time. Section 817.126(a) states that "Underground mining activities shall not be conducted beneath or adjacent to any perenial stream, or impoundment having a storage volume of 20 acre-feet or more, unless the regulatory authority, on the basis of detailed subsurface information, determines that subsidence will not cause material damage to streams, water bodies and associated structures."

While the applicant plans to mine in these areas in 1988, or later, it is believed that the applicant does not currently possess suficently detailed subsurface information (e.g., subsidence behavior data) to justify mining in these area. The applicant appears to satisfy the remaining requirements in section 817.126(e.g., 817.126(b), 817.126(c), and 817.126(d)).

784.20 Subsidence Control Plan

The applicant has performed a subsidence probablility survey (p. 4-57). Potential damage areas include the Mountain Fuel Supply gasline, a portion of Electric Lake Reservoir, perennial streams in the permit area, and possibly aquifers, springs and recharge areas. Potential damage areas are indicated in Exhibit 3-25.

784.20(a) Both room-and-pillar as well as longwall mining methods will be used to extract coal in a three-seam mining operation. Controlled subsidence has already been discussed (e.g., 50-percent extraction under the gas pipeline, orientation of most longwall panels with respect to north-south faulting, etc.). Because the seams are relatively thick, it is possible that subsidence affects will be severe. However, the applicant hopes to uniformly lower the surface (p. 4-58).

784.20(b) The applicant has planned to extract coal in a manner that should control subsidence. The room-and-pillar mining with 50-percent extraction to support the gas line is an example. As previously discussed, longwall and room-and-pillar mining will advance parallel, or in some cases, perpendicularly across faulting; but in no case will mining advance diagonally across a fault orientation (p. 4-58). The object in this approach is to reduce the probability of zig-zag subsidence; and to promote a uniform lowering of the main roof. Support pillars will be left to protect the main entries. The applicant does not plan to backstow to control mine subsidence. Because of the remote location, structural damage other than already described (e.g., the gas pipeline) is impossible. However, relocation of the pipeline or implementation of special footing is not discussed by the applicant. The applicant will undertake a subsidence monitoring program, including ground surveys, aerial surveys and aerial color photography (pp. 4-60 through 4-61).

784.20(c) As previously discussed, the applicant will repair any subsidence-induced damages (p. 4-59). However, non-cancellable insurance policies have not been purchased.

784.20(d) Measures taken to ascertain material damages, will include surface surveys of monuments that are emplaced above individual mining panels (p. 4-60), aerial color photography, and visual monitoring to be performed biannually (p. 4-61). The applicant does not state how often the aerial photography will be performed.

D. Revisions to the Applicant's Proposal - (None)

E. Reevaluation of Compliance - (None)

F. Proposed Special Stipulations with Justification

1. The applicant should, within 90 days of the effective permit date, submit evidence of non-cancellable insurance policy to cover possible subsidence damages to owners of surface structures (e.g., the Mountain Fuel Supply gas line) to the regulatory authority; or alternatively, the applicant should show reason why such insurance policies should not be required pursuant to sections 817.124(c) and 784.20(c).

2. The applicant will not mine under or adjacent to Electric Lake Reservoir or under any perennial stream (e.g., Huntington Creek) until sufficiently detailed data has been analyzed in relation to subsidence behavior to assure that mining in these areas can progress without damage to these overlying features, and until such detailed data have been submitted to the regulatory authority for approval in a revised mine plan.

3. The applicant will, within 90 days of the effective permit date, revise Exhibit 3-2B and other Exhibits, coal reserve estimates, and applicable narrative text as required to indicate the location of and effect from buffer zones as required in Section 817.126(a).

4. The applicant will agree to annually obtain aerial color photography of those areas that are subject to potential subsidence damage, and to maintain all such photographs for at least three years.

G. Summary of Compliance

If the proposed stipulations are implemented, this section will be in compliance.

H. Proposed Departmental Action

The department should enforce the above listed stipulations.

I. Residual Environmental Impacts of proposed Department Action

The proposed actions, as stipulated, would permit underground mining without an unjustifiable risk to perennial streams or Electric Lake Reservoir. Mining under or near these locations would be permitted when sufficiently detailed information is available to substantiate that mining will not cause permanent subsidence induced damages to these features.

J. Alternate to Proposed Action

The department could approve the applicant's mining plan as submitted. Based upon the lack of detailed subsidence studies and data, this action does not seem advisable at this time.

783.14 Geology Description

A. Description of the Existing Environment

The proposed Skyline coal mine is about 23 miles northwest of Price, Utah, at the northern end of the Wasatch Plateau. The terrain is mountainous, and the proposed portal of the mine is at an elevation of approximately 8700 feet at the head of Eccles Canyon. The coal deposits are in the Blackhawk Formation of the Mesa Verde Group (Upper Cretaceous). The beds dip gently westward and form the western flank of the Clear Creek Anticline. Several north-trending faults of apparently small displacement, the most persistent of which is the Valentine Fault, cut the area.

Fine coal seams exist within the lease area, three of which will be mined. The bottom seam, the Flat Canyon, is 0 to 11 feet thick, lies immediately below the Aberdeen Sandstone, and is not mined due to its limited continuity. The lowest seam to be mined, the Lower O'Conner A Seam, is 0 to 26 feet thick and lies directly on the Aberdeen Sandstone. It ranges between 1000 and 1800 feet in depth below the surface. Twenty to eighty feet above this seam is the 17-foot-thick Lower O'Conner B Seam, followed by the 19-foot-thick Upper O'Conner Seam, 100 feet higher. Finally, about 400 feet above this seam is the 8-foot-thick McKinnon Seam which will not be mined. Individual coal seams do not exist on a mineable basis throughout the entire lease area.

B. Description of Applicant's Proposal

The applicant proposes to construct an underground coal mine designed to produce an estimated 5 million tons per year. Mining will extend throughout an area of about nine square miles. In addition to the underground mine, extensive surface facilities will be required. These will consist of coal storage and other facilities at the mine portal, a conveyor belt in Eccles Canyon, and railroad loading facilities at the lower end of Eccles Canyon where it joins Pleasant Valley.

Geology of the lease area is well described in the application with maps and cross-sections, except for the rather numerous north-south trending faults illustrated on the lease area map. As a result, conclusions regarding the possible effect of these displacements upon mining and reserve recovery are difficult to make.

C. Evaluation of Compliance

1. 783.14(a) Geology Description -- The description shall include a general statement of the geology within the proposed mine plan area down to and including the first aquifer to be affected below the lowest coal seam to be mined.

Applicant's maps and cross-sections adequately illustrate the structure and stratigraphy of the proposed mining area; however, the exaggerated vertical scale of the cross-sections is misleading. Also, the locations of the several cross-sections are not indicated, and the faults shown on the geologic map are not indicated on the cross-sections.

Joints in the mine portal area are adequately described in the Dames and Moore geotechnical report, but throughout most of the area, except for a few random observations recorded on the geologic map, the subject of joints is not addressed.

The number and spacing of drill holes on the property is governed to a large extent by the mountainous terrain. Although drill holes are sparse in certain areas, the overall pattern of holes drilled on the property is regarded as adequate. Drill hole information, including collar elevations and lithologic description of coal seams and overburden, is regarded as adequate. Also, hole to hole correlation of the several stratigraphic units appears to be correct.

Compliance with 783.14(a) is partly achieved.

2. 783.14(a)(2)(I) Location of Subsurface Water

Applicant has not adequately identified areas where water will be intercepted by face-up activiites.

Compliance with 783.14(a)(2)(I) is not achieved.

3. 783.14(a)(2)(I) Depth, Classification, and Geologic Structure of Overburden

Applicant's overburden maps, isopach maps, cross-sections, and descriptions of the lithology of Blackhawk Formation are sufficient for compliance.

Compliance with 783.14(a)(2)(I) is acheived.

4. 783.14(a)(2)(II) Pyritic content and Potential Alkalinity of the Strata Immediately Above and Below the Coal Seams to be Mined, and the Clay Content of the Stratum Immediately Below the Coal Seam to be Mined.

Pyritic content of the strata immediately above and below the coal seams to be mined is not addressed.

The Dames and Moore geotechnical report states that various chemical tests were performed on representative rock samples from the floor and roof of strata immediately adjacent to the coal seams to be mined. These tests were performed on rock samples from two holes in the mine portal area, and consisted of the following determinations: pH and alkalinity; percentage of

water soluble sulfates, bicarbonate, and carbonate; and total solids. Also, tests were made to determine the abundance of several trace elements and heavy minerals. Tests to determine electrical conductivity, sodium absorption ratio, Na, Ca, Mg, and S (org./inorg.) were not made.

The clay content of the strata immediately below the coal seams to be mined is not addressed.

Compliance with 783.14(a)(2)(III) is not achieved.

5. 783.14(a)(2)(IV) Pyrite, Marcasite, and Sulfur Content of the Coal Seams

Applicant's determination of the forms of sulfur occurring in the coal seams is adequate.

Compliance with 783.14(a)(2)(IV) is achieved.

6. 783.25 (c & d) Coal Geology

Applicant's treatment of the depth, thickness, outcrop, strike and dip of the three coal seams to be mined is adequate.

Compliance with 783.25 (c & d) is achieved.

D. Revisions to Applicant's Proposal

1. 783.14(a)(2)(I) Location of Subsurface Water

Reference is made to 2., Hydrology and Geology in applicant's Initial Response to OSM's Apparent Completeness Review. Applicant responded to the question raised by OSM by submitting Attachment 1, a revision of Plate 7 of the original report. Applicant also explained that this map, when used in combination with the structural contour map of the Upper O'Conner Coal Seam (Plate 1) could be used to predict which part of the coal seam lies beneath the water table. Applicant also explained that the permeability of the sandstones within the Blackhawk Formation is very low, hence they should not be regarded as aquifers.

E. Reanalysis of Compliance

1. 783.14(a)(2)(I) Locations of Subsurface Water

Applicant's contour map of ground water surface does not cover the entire proposed mine area. Also, the spatial relation of this surface to the proposed underground workings is not clear.

Compliance with 783.14(a)(2)(I) is partly achieved.

F. Proposed Special Stipulations

1. 783.14(a) Geology Description

The location of several cross-sections should be clearly indicated, preferably on the geologic map. Also, faults prominent enough to be shown on the geologic map should be indicated where appropriate on the corresponding cross-section. Additional data regarding the orientation and spacing of joints throughout the project area should be obtained and discussed in the report

Compliance with 783.14(a) will be achieved when this additional information has been submitted.

2. 783.14(a)(2)(I) Location of Subsurface Water

Applicant should expand map to cover the entire proposed mine area. Also, cross-sections should be included which illustrate the relationship of the ground water surface to the proposed underground workings.

Compliance with 783.14(a)(2)(I) will be achieved when the additional information has been submitted.

3. 783.14(a)(2)(III) Pyritic Content and Potential Alkalinity of Strata Immediately Above and Below the Coal Seams to be Mined and the Clay Content of the Stratum Immediately Below the Coal Seam to be Mined.

Pyritic content of the strata immediately above and below the coal seams to be mined should be determined. Also, electrical conductivity, sodium absorption ratio, Na, Ca, Mg, and S (org./inorg.) for these strata should be determined.

The clay content of the strata immediately below the coal seams to be mined is known to range from nearly 0 to 100 percent. Accordingly, applicant's contention that analyzing these strata for clay content is meaningless is well taken.

Compliance with 783.14(a)(2)(III) will be achieved when this additional information has been submitted.

G. Summary of Compliance

Will comply, with the stipulation that additional information is submitted regarding 783.14(a), 783.14(a)(2)(I) and 783.14(a)(2)(III).

H. Proposed Departmental Action

The geologic part of the application should be approved when the additional information specified under F., Proposed Special Stipulations, has been submitted and found to be adequate.

I. Residual Environmental Impacts of Proposed Departmental Action - (None)

J. Alternative to Proposed Action - (None)

817.41 Hydrologic Balance

A. Description of Existing Environment (Surface Water and Ground Water)

Surface Water - The Skyline Permit Area is located in the headwaters of the Price and San Rafael River Basins (see Figure 1), which are two tributaries of the Green River. Within the Skyline Project area, there are four perennial watersheds: East Eccles Canyon, Green Canyon, Winters Quarters Canyon (all tributaries of Pleasant Valley Creek in the Price River Basin), and the West Huntington Creek (a tributary of the San Rafael River). The streams which compose these watersheds are perennial in nature (Volume 1, P. 2-33), with the primary source of water derived from snowmelt. The only surface water rights recognized in the permit area consist of stockwatering rights.

The climate of the Skyline Mine Area is typical of subalpine areas in the central region of Utah. The average monthly temperatures range from 15°F in January to 60°F in July, with extreme temperatures of about -40°F and 80°F. Average annual precipitation is 25 to 30 inches, mostly in the form of snow from October through May, although 8 inches of rain is typical from May to September. Potential evaporation is less than 18 inches per year.

Water Quality - The quality of surface water in the headwaters region is excellent, with total dissolved solids (TDS) concentrations normally varying between 100 and 400 milligrams per liter. However, this quality deteriorates rapidly as the streams cross the saline Mancos Shale downstream and receive irrigation return flows from Mancos-derived soils. TDS concentrations in the Price and San Rafael Rivers, near their confluence with the Green River, generally vary between 1500 and 4000 milligrams per liter (mg/l). Sediment yields in the two basins experience similar geographic variations, with the bulk of the sediment yielded at the mouths of the two major rivers coming from those areas which are underlain by the highly erodable Mancos Shale.

In the Skyline project area itself, the surface water quality is of a calcium bicarbonate type. Total dissolved solids (TDS) range in concentration from less than 100 mg/l in Huntington Creek during high flow conditions induced by spring snowmelts to greater than 500 mg/l in Pleasant Valley Creek during low flow conditions.

As with the TDS concentrations, total suspended solids (TSS) concentrations vary with the flow rate. As an example, Eccles Canyon has shown natural TSS concentrations of 178 mg/l and 7.7 mg/l at two sampling sites during the period of April through June. During the period of October through December, these same two sites had TSS concentrations of 11.0 mg/l and 6.7 mg/l, respectively. TSS concentrations are naturally higher in Eccles Canyon than in the Huntington Creek Basin.

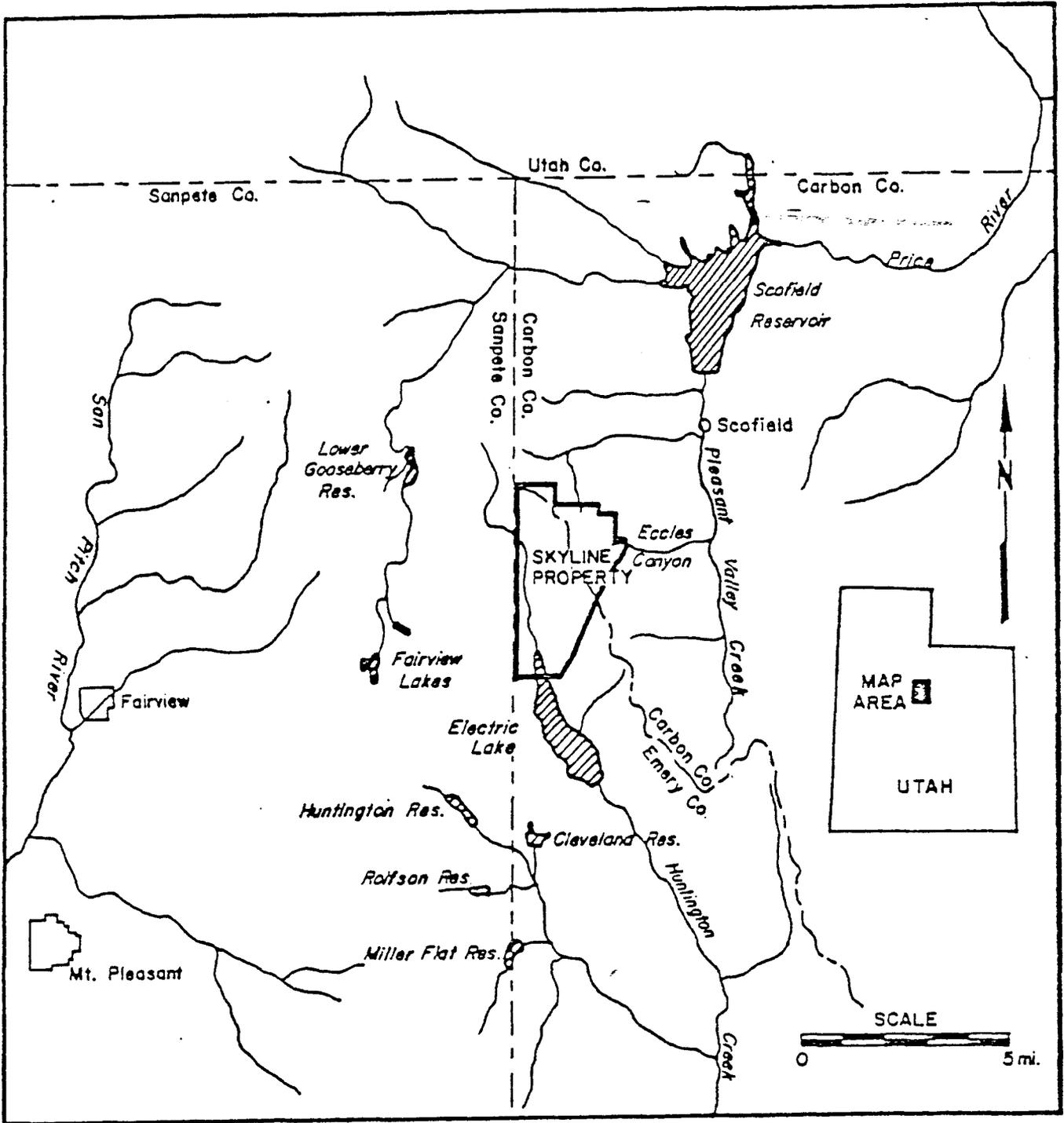


Figure 1 Location of the Skyline project Area

Hydrogen iron activity (pH) tends to be rather constant in the surface waters, normally varying between 7.5 and 8.5. Total iron measurements varied in concentrations from less than .01 mg/l to 5.84 mg/l, whereas dissolved iron was one-fifth to one-tenth of the concurrent total iron concentration. Total manganese concentrations ranged from .02 mg/l to .06 mg/l.

Streamflow - Three different approaches were used to calculate the annual streamflow of the Skyline permit area. These approaches were: the Searcy Method, Ol'dekops Formula, and the Grunsky Formula. The results of these calculations for the annual yield of the permit area were: 16.0 inches/yr., 14.0 inchs/yr, and 13.5 inches/yr, respectively (Volume A-1, Hydrology Section, P. 21). The flood frequency discharge for selected streams on and adjacent to the skyline property were:

	Channel Bar Width, Ft.	25-Year Peak cfs	50-Year Peak cfs
Main Fork, Eccles Creek above South Fork	2.0	11.0	11.7
S. Fork Eccles Creek above Main Fork	2.5	15.6	16.6
Eccles Creek above Pleasant Valley Creek	3.5	26.4	28.2
Huntington Creek above Burnout Canyon	7.0	78.5	84.4

Source: Volume A-1, Hydrologic Section, P. 21

Ground Water - There are two ground water systems present in the Skyline Mine permit area. A shallow system, which is very local in extent and discontinuous, provides water to numerous seeps and springs through thin sandstone layers in the Blackhawk Formation. There is also a deep aquifer system which is present in the saturated rocks surrounding and below the coal. The principle controlling factor affecting the occurrence and availability of ground water in these two systems is the geologic environment. Also, there are a limited number of wells in the area which are used for stockwatering and irrigation (mainly lawns and gardens).

Geologic Controls - All the units exposed on and immediately adjacent to the Skyline Mine permit area are included in the Cretaceous Mesa Verde Group. The stratigraphy and lithology of the units, in ascending order, are: The Star Point Sandstone; a massive, medium-grained sandstone approximately 1000 feet thick; the Blackhawk Formation: a formation of interbedded

sandstone, siltstone, shale, and coal, which is approximately 750 feet thick; and the Castlegate Sandstone: a massive medium to coarse-grained sandstone approximately 240 feet thick. The coal to be mined is located in the Blackhawk Formation.

The Blackhawk Formation plays an important role in the ground water regime due to the heterogenous lithology. The shales in this formation have a large influence on the occurrence of the springs and seeps, which are considered as part of the shallow ground water system, in the project area. A majority of the springs issue from west-facing slopes, often at a sandstone-shale interface considerably above the adjacent stream bed. Apparently, water which infiltrates into the soil and is not consumptively used percolates down until an impeding shale lense is met. It then follows the shale member downdip until an outlet is reached (either the surface or a discontinuous sandstone member).

These shales also have a significant influence on the deep ground water system in that they act as aquitards. This characteristic results in a reduced recharge at slow rate to the deep ground water aquifers. Also, this deep system has little effect on the surface hydrologic regime in the permit area since the water generally flows well below the perennial streams of the permit area (i.e., the water level contours show no connection with permit area streams).

The Skyline Mine permit area lies on the west flank of the Clear Creek anticline. As such, the dip of the strata and, therefore, the ground water movement is predominantly to the west. In addition, fault zones in the permit area have some hydrologic consequences. These faults will only have local hydrologic importance within the Blackhawk Formation because of the high bentonite content in the shale, giving it an ability to rapidly seal. In contrast, faulting within the Star Point Sandstone will probably increase the water yield capacity of the unit through creation of secondary porosity.

Aquifer Parameters - Measurements at a network of observation wells installed in the project study area indicate that ground water flows in the west to southwest direction, generally following the dip of the strata. Flow gradients average approximately 250 feet per mile over most of the project area although a gradient averaging 700 feet per mile was encountered in the southern portion of the lease area. The latter gradient is an anomaly associated with the Valentine Fault zone, which passes through one of the observation well sites.

Drawdown and recovery tests, which were conducted at two different depths in an open test well located in the proposed portal area, indicated that the transmissivity of the Blackhawk Formation is approximately 18 gallons per day per foot. No

significant difference in transmissivity exists between the coal zone and the Aberdeen Sandstone. Discharge rates were measured to be on the order 5 gallons per minute, whereas specific yields in the area were 0.2 to 0.7 percent.

The shallow groundwater system is a source of surface water recharge. This is evident from the measured discharge of ground water into two creeks in the permit area. The annual ground water yield to Huntington Creek above Burnout Canyon was calculated to be 2.43 cfs, or 19 percent of the annual streamflow. The ground water yield to Eccles Creek above Pleasant Valley was calculated to be 3.47 cfs, which accounted for 64 percent of the annual streamflow (Vol. A-1, Hydrologic Section, P. 63).

Ground Water Quality - Inferences on ground water quality were drawn from data collected almost entirely from springs. This is a result of a comparison of water quality data collected from the permit area springs, local mines, and of a well, which indicated that the springs were reliable indices of the quality of the deep ground water system of the area (Hydrologic Inventory Report, P. 88-89, vol. A-1, Appendices).

Almost without exception, the ground water in the area is of a strong calcium bicarbonate type. Although the quality of the deeper groundwater is expected to be more uniform, the data show that three distinctive qualities of spring water can be found in the project area.

Springs issuing near the outcrop of the Castlegate Sandstone in the northwest corner of the project area have very low dissolved solids content (normally less than 100 milligrams per liter). This results from the lack of shaly layers in the Castlegate. Local conditions have probably resulted in the slightly higher concentrations in the springs issuing in the headwaters of Eccles Canyon (dissolved solids concentrations between 300 and 350 milligrams per liter). Springs issuing over the remainder of the project area have dissolved solids content which generally varies from 180 to 260 milligrams per liter, averaging 220 milligrams per liter.

B. Description of Applicant's Proposal - (Surface Water)

784.14 Protection of Hydrologic Balance

Drainage Control Plan - Portions of four perennial watersheds drain the Skyline project area and include the east Eccles Canyon, Green Canyon, Winters Quarters Canyon (all tributaries of Pleasant Valley Creek in the Price River Basin), and the West Huntington Creek (a tributary of the San Rafael River). Both the mine site (portal area) and the coal loadout basin area are in the Eccles Drainage basin.

Three main tributaries merge to form the Eccles Creek within the 36 acre mine site. The applicant proposes to divert these streams under the bench facilities through a system of large diameter culverts. The culverts have been designed to carry the peak runoff from a 100-year, 24-hour precipitation event (Skyline Mine Plan, Page 3-39, Page 4-65).

Runoff from undisturbed areas surrounding the mine site will be fed into diversion channels. These channels will be triangular or trapezoidal (in Treatment Plan). The applicant proposes to use sedimentation ponds to settle out suspended solids from overland flow across the disturbed areas. Mine water encountered at the working face in the mine will be collected and pumped to impoundments located in each mine. The impoundments will allow solids to settle out. Mechanical equipment will be used to remove grease and oil before the water is used for dust suppression, or possibly pumped out of the mine. Any water pumped out of the mine will be further treated in the portal area sediment pond. (Pages 4-38, 4-41, Skyline Mine Plan), pH control and heavy metal treatment will be provided if necessary. (Page 3-42).

In addition to storm runoff treatment in sediment ponds, grease and oil skimmers in the mine, and oil and water separators in maintenance and cleaning areas, sanitary sewage will be treated by an extended aeration package plant. All effluent will be reused in the operations and none will be discharged to Eccles Creek. A containment pond for sewage effluent at the loadout facility will be constructed.

Monitoring Plan - Surface water monitoring programs will be conducted at each of the locations shown on Plate 4 of the Hydrologic Inventory Report. Four locations are shown in the Huntington Creek drainage upstream from Electric Lake. Seven stations are located at Eccles Creek and its tributaries at the vicinity of the mine site and two more monitoring points are on Eccles Creek near the loadout facilities.

During initial phases of construction and mining, surface water stations located in Eccles Canyon will be sampled more frequently than those in Huntington Creek. (See Pages 2-36 and 4-34). Samples will be collected annually during August and analyzed for the parameters listed in Table 2.4-1, Page 2-37 (Table 4.11-1, Page 4-26). In addition to the comprehensive analysis of samples collected annually, stations in Eccles Canyon will be sampled monthly according to the schedule presented in Table 2.4-2, Page 2-39 (Table 4.11-2, Page 4-37). Following the first two years of mining, the frequency will be decreased to seasonal sampling (Page 2-33). As mining progresses toward Huntington Creek, monthly (Page 4-35) or seasonal (Page 2-38) samples will be obtained and analyzed.

Seasonal sampling will continue at all surface water monitoring stations throughout the post-mining period until the reclamation effort is determined successful by the regulatory agency. August sampling will continue at all stations for the comprehensive analyses throughout the post-mining period as well.

In addition to the surface water monitoring program, monitoring of NPDES discharges (from sediment ponds) will be conducted in accordance with the stipulated permit conditions. (Pages 2-38, 4-38).

As required, water quality data collected from surface water monitoring stations will be submitted quarterly to the regulatory authority (Utah Division of Oil, Gas, and Mining, Page 2-38). These reports will normally be submitted within 60 to 90 days of the end of each quarter depending upon the date of the laboratory analysis.

Determination of probably hydrologic consequence. The applicant has determined that there will be no significant adverse hydrologic consequences as a result of the mining operation. Temporary increases in suspended solids levels in the adjacent stream during construction activities may occur; however, they are expected to be quickly normalized. (Page 2-40, Mine Plan).

784.16 Ponds, Impoundments, Banks, Dams, Embankments

Two sedimentation ponds have been designed for the retention of surface water runoff, one for the portal area and one for the coal loadout area. Each retention pond has been designed to provide adequate volume for a theoretical 24-hour detention of runoff resulting from a 10-year, 24-hour precipitation event. Both ponds have been prepared under the direction of a registered professional engineer in the State of Utah. Descriptions, maps, and cross sections of the structure and their locations are included in the mine plan, along with hydrologic information applicable to the design.

The structures do not meet or exceed the size criteria of 30 CFR 77.216(a) according to the design plans submitted in response to the ACR by OSM.

The spillway risers for both ponds will be set at elevations such that the entire volume of runoff from the design event would be retained in the pond with no discharge providing that the water levels in each pond were at or below the sediment storage level prior to the storm. Each pond will be equipped with a dewatering valve at the sediment storage level.

The ponds could also be maintained in an essentially full condition. In this situation runoff from a precipitation event would replace previously clarified water.

The spillway risers will be able to discharge up to 100-year, 24-hour durations precipitation event. The portal area pond discharges into a 72 inch diameter corrugated metal pipe which carries the Eccles Creek drainage beneath the portal facilities.

Discharge risers at each pond will be equipped with a circular trash and oil barrier.

In addition to surface water runoff the portal area pond will also receive water discharge from the mine. This water will normally be routed to a storage tank for eventual return to the mines for dust control. In the event the tank is full the pond will receive the mine water. The volume is said to be by the applicant is significant in terms of the total design volume of the pond.

Both ponds, after excavation and placement of embankments, will be blanketed with a 3-foot layer of selected materials to control or eliminate seepage. Anti-seepage collars will be provided around the discharge pipes. All fill materials are to be properly compacted.

784.22 Diversions

The applicant has designed stream diversions at both the mine site area and the coal loadout area. The confluence area of the three tributaries of Eccles Creek form a crowsfoot drainage pattern at the mine site. One tributary extends in a northerly direction, the second in a northwesterly direction and the third southwesterly. To ensure that the water quality of these streams will not be degraded as a result of mine facilities operation, the stream flow will be diverted into corrugated metal pipe (CMP) culverts located under the mine benches.

These culverts are designed to pass the peak runoff of a 100-year, 24-hour precipitation event. The combined drainage area is 820 acres. Construction would occur during spring runoff (high flow period) to insure that the stream could handle the temporary increase in sediment load. Twenty feet of upstream area will be riprapped. A pool structure will be constructed immediately downstream of the outlet structure. Following completion of mining activities, the culverts will be removed and the stream channel bed will be restored.

In order to provide sufficient area for coal storage facilities at the mouth of Eccles Canyon, approximately 1,500 feet of stream channel will be displaced to the north, next to the Canyon road. It is designed to handle the 100-year, 24-hour precipitation event. The stream channel will be constructed with meanders. The resulting stream will be 112 feet shorter in length and have an increase of two feet vertical drop per 1,000 feet of length. (Page 4-67, Skyline Mine Plan). Log dams will

be placed in the stream. Stream banks will be riprapped only in potential erosion areas with all other streambank areas composed of soil revegetated with grasses, some willows and other scattered trees.

Following completion of the mining operations, the new channel will be left in place to minimize overall impacts.

C. Evaluation of Compliance of Proposed Plan

817.42 Water Quality Standards and Effluent Limitations.

All surface drainage from the two disturbed areas will be passed through sedimentation ponds. One pond will be used for the disturbed area associated with the portal area and one pond will be used to collect runoff from the disturbed area at the coal loadout facilities. Any discharge of water from the underground mine workings will be passed through the portal area sediment pond when the amount exceeds dust control requirements. (Refer to response to ACR question number 7, Skyline Mine Plan).

The application refers to monitoring in accordance with NPDES requirements; however, no mention is made of meeting specific or applicable effluent limitations for sediment pond discharges resulting from dewatering or from precipitation events less than the 10-year, 24-hour event. (Refer to Pages 2-38 and 4-38, Skyline Mine Plan).

Sedimentation ponds and treatment facilities will be maintained until the disturbed area is reclaimed and surface runoff is demonstrated to meet applicable water quality standards (Skyline Mine Plan, Page 3-53). Since the underground water must be pumped to the pond at the portal area, the second part of paragraph (a)(2) of Section 817.42 is not applicable.

Evaluation of design and construction is found in Section 817.46 of this report. There will be no mixture of drainages from disturbed and undisturbed areas.

817.43 Diversions and Conveyance of Overland Flow, Shallow Ground Water Flow, and Ephemeral Streams

As previously discussed, the applicant proposes to use diversion ditches, trapazoidal and V-shaped, to divert overland flow around the disturbed areas of Eccles Creek. Typical cross sectional drawings are provided on Map 3-12A (Drawing 111-C).

Mine Site Diversion Channels - The applicant states that the mine site diversion channels will be designed and constructed to carry the peak flow resulting from 100-year, 24-hour precipitation event. However, the 10-year, 24-hour event is given. It is given to be 1.55 inches, which does not correspond

to other 10-year, 24-hour events in the Mine Plan. Surface runoff and peak flow figures are given with no substantial or direct references. (Page 4-66 Mine Plan)

The typical design and configuration of the channels meet all requirements of this section.

Since they are temporary channels and apparently designed for 10-year, 24-hour runoffs, they should meet the 2-year, 24-hour requirements contained in this section.

Coal Storage Diversion Channel - The same comments apply to this design as in the previous design of the Mine Site Diversion Channels.

Stream Channel Diversion - As described previously there will be stream channel diversions at both the portal area and the coal loadout area. Section 4.19 of the Mine Plan discusses these diversions in detail. The designs of the stream diversion systems are predicted on the surface water hydrology, specifically surface runoff and drainage characteristics, of the contributing area. A brief analysis of the information presented in the Mine Plan is given below:

Mine Site Stream Diversion (Page 4-65 Mine Plan)

1. Identify method used. The applicant does not identify the method used to size the diversion system.

2. Assumptions inherent in method. Assumptions can not be identified since the method is not clear.

3. Review data. The combined drainage area is 820 acres (Page 4-65). The precipitation from a 100-year, 24-hour storm is 2.25 inches. Surface runoff would be 0.12 inches.

4. Check data. Page 12 of the Hydrology Report in the Mine Plan states that 1820 acres drain on the surface primarily to Eccles Creek. The drainage area in total, or for each of the three tributaries cannot be checked on maps. The 100-year, 24-hour precipitation event is said to be 3.6 inches in the Sediment Road Design Description.

5. Describe applicant's method. Apparently the applicant determined a peak flow of 130 cfs from the data presented above and sized the single 72 inch culvert. It is not clear how each of the three smaller culverts were sized, nor how the peak flow was determined. Only results are given.

6. Identify problems. There is a complete lack of documentation and the data presented is not consistent with any other data presented in the mine plan.

Since the respective drainage areas for each of the three tributaries are not given, the culvert sizing cannot be adequately checked. However, the main culvert (72 inch diameter) can be checked since the drainage area is known and the peak flow has been estimated.

Using Mannings Equation and the data supplied in Map 3-14 (Drawing 114-C) the main culvert can pass 422 cfs which is sufficiently greater than the applicant's peak flow estimate of 130 cfs or the 120 cfs calculated herein.

$$V = \frac{1.486}{n} \times r^{2/3} \times s^{1/2}$$

where $n = 0.021$ (SCS Engineering Field Manual)

$$r = \frac{d}{4} = 1.5$$

$s = 0.026$ (Drawing 111-C)

$$V = 14.95 \text{ fps}$$

$$A = AV = (28.27 \text{ ft}^2) (14.95 \text{ fps}) = 422 \text{ cfs}$$

Coal Storage Stream Diversion

1. Identify method used. The method is not identified by the applicant.
2. Assumptions inherent in method. Assumptions cannot be determined.
3. Review data. 1,500 feet of stream channel must be relocated. The new channel is designed for the 100-year, 24-hour precipitation event. The peak flow will be 190 cfs.
4. Check data. The only data presented which can be checked is the stream length of 1,500 feet. Measurements taken from Map 3-44 check out.
5. Describe applicant's method. Based on information contained on Maps 3-44 (Drawing 3-201-C) and 3-14 (Drawing 114-C) the applicant designed a channel to:
 - a) Pass 190 cfs peak flow from a 100-year, 24-hour precipitation event.
 - b) Maintain a channel length close to the original.
 - c) Maintain an elevational change close to the original.

6. Re-evaluate. by applying Mannings Equation to the suggested channel configuration shown in Map 3-14, the following calculations were made:

$$A = \frac{1.486}{n} r^{2/3} x s^{1/2}$$

$$n = 0.045 \text{ (Page 14-27, SCS Engineering Field Man.)}$$

$$r = \frac{a}{p} = 2.09 \text{ (Calculated from Map 3-14)}$$

$$s = 0.024 \text{ (Page 4-67 Mine Plan)}$$

$$Q = \frac{1.486}{0.045} (43.5) (2.09) (0.024)$$

$$= 364 \text{ cfs}$$

Therefore the channel should pass a peak flow of 190 cfs.

817.45 Sediment Control Measures

The applicant has designed several sediment control measures into the overall drainage control plan.

1. Both disturbed areas - mine site and coal loadout - will have runoff diversion ditches constructed upstream to prevent runoff from entering the disturbed area. (Further evaluation is provided in Section 817.43 of this report).
2. The CMP stream diversion system for the portal area will include riprapped sections upstream from the culverts and settling, energy-dissipating pools downstream.
3. Mine drainage will be treated if necessary in underground sumps to settle solids and remove oil and grease.
4. Diversion ditches will be riprapped and/or vegetated.
5. All sediment generated in the disturbed area will be kept within that area.

817.46 Sedimentation ponds

General comments. There are several inconsistencies related to sizing the two sediment ponds. Section 3.2.1 Ponds, Impoundments, and Dams, Page 3-25 through Page 3-27 of the Mine Plan, outlines the locations and design characteristics of both ponds. In response to the ACR, Question No. 7, the applicant provided two new pages for this section (3-26 and 3-27) as well as some attached material outlined, "Skyline Project Sedimentation Pond Design Description", which the applicant says

documents the design of the sedimentation ponds. There are differences in contributing surface areas, 10-year, 24-hour precipitation events, peak runoffs, and volume of water from the mine to be stored. There are typographical and/or calculational errors in Section 3.2.1, Page 3-25 through 3-27 of the Mine Plan. Lastly, the applicant does not reference any methods for determining runoff, peak flows, etc.

The following tables illustrate some of these problems:

Portal Area Pond Criteria

	<u>Mine Plan Section 3.2.1</u>	<u>Attached Design Description</u>
Disturbed Area	30 or 34 acres	36 acres
10-yr, 24-hr precip. event	2.45 inches	2.4 inches
10-yr, 24-hr runoff	1.50 inches	1.44 inches
Runoff Volume	185,000 cu.ft.	188,200 cu. ft.
Sediment volume	130,000 or 148,000 cu.ft.	156,800 cu. ft.
Underground mine water volume	115,000 cu.ft.	0 cu. ft.
Total volumes	365,000 (Page 3-25) 430,000 or 448,000 cu. ft.	345,000 cu. ft.

Load Area Pond Criteria

	<u>Mine Plan Section 3.2.1</u>	<u>Attached Design Description</u>
Disturbed Area	7.0 Acre	5.3 Acre
Runoff Depth	2.45 inches	1.44 inches
Runoff Volume	62,000 cu.ft.	27,700 cu.ft.
Sediment Volume	31,000 cu.ft.	23,100 cu.ft.
Total Volume	93,000 cu.ft.	50,800 cu.ft.

There are also some inconsistencies between the two portions of the "Revised" Mine Plan in Pond elevations.

Portal Area Pond Elevations

	<u>Mine Plan Section 3.2.1</u>	<u>Attached Design Description</u>
Pond bottom	8572 ft.	8560 ft.
Top embankment	8600 ft.	8580 ft.
Pond depth	28 ft.	20 ft.

Sediment Pond Designs - Because of the lack of data, and the lack of documentation, a systematic review of the design could not be performed. However, if the data is assumed correct both pond designs are adequate.

A review of the Mine Site Pond design indicated the following:

1. Sediment Volume was based on 0.1 acre-foot per acre of disturbed area.
2. Runoff depth was determined using a CN = 90.
3. The total runoff volumes were corrected.
4. Peak flow should be around 65 - 75 cfs (SCS Field Manual, Page 2-75) for the 100-year, 24-hour event.
5. The circular weir and discharge pipe discharge approximately 70 cfs.

Using the same method with data from the loadout pond, the pond is adequately sized as is the spillway.

817.47 Discharge Structures

Culvert outlets from each of the two sediment ponds and from the major drainage culvert will consist of 12 inch concrete head walls, minimum six feet deep pools and 15 feet long, side slopes of 1:1, and riprapped all around. See Culvert Outlet Detail 4, Map 3-12A (Drawing 111-C) for details.

Runoff diversion ditches will also discharge to Eccles Creek. At the point of confluence, riprap will be used to reduce the velocity when scouring of Eccles Creek. See Maps 3-42, 3-44, and 3-8 for locations of these structures.

817.48 Acid-Forming and Toxic Forming Materials

The applicant does not anticipate encountering any acid-forming and/or toxic-forming materials during mining. Based on the proposed mine water and surface runoff water treatment facilities, water which can, will be detained and treated prior to discharge.

The applicant has stated that adjacent underground mines have not encountered acid- or toxic- mine drainage (Response to OSM question Number 9).

817.49 Permanent and Temporary Impoundments

There will not be any permanent impoundments associated with the proposed Skyline facilities. The only impoundments will be the two sedimentation ponds.

The evaluation of compliance is in Section 817.46 of this report.

All perimeter interior slopes will be no greater than 2 (horizontal): 1 (vertical) except along the north side of the portal area pond where the slope will be 1:1. In this area rock will be exposed which should provide sufficient slope stability (Skyline Project Sedimentation Ponds Design Description, Page 4).

The applicant states that only minimum maintenance will be required beyond the sediment removal requirements (Skyline Mine Plan, Page 3-53).

No reference is made to vegetating or otherwise stabilizing the embankment slopes after construction.

817.52 Surface and Ground Water Monitoring - (b) Surface Water

The proposed surface water monitoring plan has been summarized in Section 784.14, Monitoring Plan. During the first years of mining samples will be collected from stations in Eccles Canyon on a monthly basis. The following measurements will be made:

Field

- o Discharge
- o pH
- o Specific conductance
- o Temperature, air
- o Temperature, water

Laboratory

- o Ammonia (NH₃ as N)
- o Bicarbonate
- o Calcium
- o Chloride
- o Iron, total

- o Magnesium
- o Manganese, total
- o Phenol
- o Phosphate (PO₄ as P)
- o Potassium
- o Sodium
- o Sulfate
- o Suspended solids
- o Total dissolved solids

Sampling stations are located above the mine site area in each of the three drainages, and below the mine site area at the permit boundary and downstream from the boundary. In addition, one sampling station is located upstream from the loadout area and another downstream at the permit boundary.

As mining proceeds toward Huntington Creek, these same parameters will be monitored on a monthly basis as well, beginning one year prior to any potential underground impact.

Annual samples for complete analyses (Page 4-36) will be taken at all surface water monitoring locations.

Discharges (point source) from the sedimentation ponds will be monitored as required by the NPDES permit.

Surface water flow and quality will be monitored throughout the mining and reclamation operations. Postmining data collection will continue on a quarterly basis at each of the stations until the reclamation effort is deemed successful by the regulatory authority. (Page 4-35, Skyline Mine Plan).

817.54 Water rights and replacement

The applicant has identified potentially affected water rights, (Page 2-40, Skyline Mine Plan) as being almost entirely and directly on the streams for stock watering. Only one spring in the permit area has a field water right.

The applicant owns 248 acre-feet of water rights in the Scofield Reservoir. Water right exchanges have been and will be made for rights from wells to be located in the permit area. (Page 4-34, Skyline Mine Plan). A 30 acre-feet exchange has been approved and a 118 acre-feet exchange is pending. The applicant states that water will be replaced if necessary.

In regards to two springs located adjacent to the northeast corner of the lease area and in response to OSM's ACR comment no. 6, the applicant states that if underground mining by Coastal States is determined to have materially damaged rights associated with these springs, Coastal States will make appropriate reconciliatory action. If necessary, Coastal States will construct a pipeline and pump a comparable flow of water from the portal area to the springs.

817.55 Discharge of Water into an Underground Mine.

There is no reference through the mine plan to discharging water into any underground mine workings. Surface runoff will be controlled on the surface and discharged to surface waters. Underground water encountered during mining will be treated and used in the mine, and pumped to the surface when necessary.

817.56 Postmining Rehabilitation of Sedimentation Ponds, Diversions, Impoundments, and Treatment Facilities

Following cessation of mining operations, the sedimentation pond will remain until the mine site is revegetated, stabilized and surface water is demonstrated to meet applicable water quality standards. After these conditions have been met, the water will be permanently diverted from the pond and the residual water in the pond allowed to evaporate. The pond will be backfilled with topsoil and revegetated following total water evaporation and bottom sediment stabilization. (Page 3-53, Skyline Mine Plan).

The same procedure will be followed for postmining rehabilitation of the coal loadout area sediment pond. (Page 3-53, Skyline Mine Plan).

817.57 Stream Buffer Zones

In the area of the mine site and portals a buffer zone will not be necessary. All three tributaries to Eccles Creek, and Eccles Creek itself, will be passed under the bench facilities through a system of large diameter culverts.

However, in the area of the coal loadout facilities, Eccles Creek is within 100 feet of disturbed areas. According to May 3-44, Coal Storage and R/R Facilities Grading and Drainage Plan, the topsoil storage area is approximately 30 feet from Eccles Creek, the proposed Eccles Creek diversion is about 20 feet from disturbed areas, and downstream the sedimentation pond is 10-30 feet from Eccles Creek.

Since the applicant has stated that Eccles Creek is a perennial stream (Page 2-33, Skyline Mine Plan), the "buffer zone" requirement apparently applies. The applicant has not addressed this issue sufficiently and therefore the mine plan is not in compliance with Section 817.57 (See Stipulations and Justifications).

D. Revisions to Applicants Proposal - (None)

E. Reanalysis of Compliance - (None)

F. Proposed Special Stipulations and Justification

Although it appears that both sedimentation ponds have been sized sufficiently large to meet OSM requirements. There are numerous inconsistencies and conflicts in data. As a result it will be unclear to OSM as to the intended design and subsequent enforcement of the Mine Plan.

Stipulation Number 1

The applicant will review the Mine Plan and Associated responses to the Apparent Completeness Review within 90 days to insure that all inconsistencies and information conflicts are clarified. This applies to the text of the Mine Plan and to the Maps and Drawings.

A review of the stream diversion facilities at both the portal area and the loadout area has shown that the sizing is adequate for the peak flow given. The method for determining peak flows is not clear and therefore could not be verified.

Stipulation Number 2

The applicant will provide clarification for all peak flow determinations for diversion ditches, stream diversions, and sediment pond designs within 90 days.

G. Summary of Compliance

If the proposed stipulations are implemented this section will be in compliance.

H. Proposed Departmental Action

Approve mining plan if stipulations are implemented.

I. Residual Environmental Impacts

The mine plan sufficiently addresses water quality protection measures associated with construction, operation, and removal of surface facilities subject to surface water hydrologic impacts. Based on information presented, there should be no significant residual environmental impacts (surface water quality) which should preclude the mining operation to begin and continue through completion.

J. Alternative to Proposed Action

The proposed action as presented in the Skyline Mine Plan should insure the protection of the hydrologic balance in the area; therefore, no alternatives are suggested.

B. 780.21 Description of Applicant's Proposal (Ground Water)

1. Discussion of hydrology relationships are included in Section A and C. The major movement of ground water appears to be in a generally westerly direction in conformity with the westerly dip (Structural map, Plate 1). Locally the water may move along faults (Plate 5, and Surface Geology map in Response to ACR questions). As the result of this structural control many springs discharge on the east slopes of topographic slopes, from thin discontinuous sandstone strata underlain by perching strata of shale cropout. Relatively little hydraulic interconnection and movement in a vertical direction across strata may be expected because of the presence of relatively impermeable shale and shaly sandstone strata in the geologic column. Faults, except in fractured sandstone sections, also tend to be impermeable due to sealing by clay. The Star Point Sandstone, below the coal zone, is the most productive aquifer. It will probably be the source of a proposed well supply in the portal area. In general, movement of ground water is slow because of relatively low permeabilities. Presumably most recharge occurs at locations of up-dip outcrops of permeable sandstones. Average annual precipitation of 25 to 30 inches probably provides an excess of available water for recharge, thus probably assuring replacement of the small quantities of ground water that can be produced under the prevailing permeability conditions. The plentiful precipitation and apparent lack of soluble mineral constituents probably is responsible for the general high quality (less than 350 mg/l TDS) of natural ground and surface water and provides assurance that impacts of the mining on water quantity and quality will be practically negligible.

2. Being an underground mine the volume of spoil will be small. There are no plans for replacing processing wastes back in the abandoned mine working. Because of the apparent relatively good quality of the earth materials adjacent to the coal, the dilution and rapid runoff due to high precipitation, and the relatively low permeabilities of the surface materials, there appears to be little opportunity for ground water contamination from spoils stored on the surface.

3. Relatively little pumpage of ground water from the mine is expected, therefore, relatively little drawdown may be expected in the vicinity of the mine. Any cone of depression that might occur would probably dissipate rapidly after mining ceases.

4. Water supply for the underground operations will be from seepage into the mine. Relatively little water for surface needs will be pumped from a well.

5. Water will be treated in the mine by settling of solids, and removal of oil and grease before removal from the mine, into storage tanks from which it will be recycled to the mine for dust control or to the mine site sedimentation pond.

Evaluation of Pumping Tests

Drawdown and recovery tests were conducted at two different depths in a test well located in the proposed portal area (see map, Plate 7). The aquifer tests are described in Vol. A-1, Pages 84-88, and briefly in Vol. 1, Section 2.3.4, Page 2-29. Tests were run in the open hole at drilling depths of 200 feet (within the coal zone of the Blackhawk Formation, above the Aberdeen Sandstone) and 300 feet (at the bottom of the Blackhawk Formation, below the Aberdeen Sandstone. Comment: This perhaps should read "in" the Aberdeen Sandstone?) Pumping test data are plotted in Figures 26 and 27.

At the 200 foot depth, transmissivities of 21.0 and 16.6 gallons per day per foot were calculated for the drawdown and recovery tests respectively.

Check Calculations: $T = \frac{264 Q}{\Delta S \text{ or } \Delta t/t'}$
(refer to Figs. 26 and 27 for Q, ΔS and $\Delta t/t'$)

$$T = \frac{264 \times 6.3}{78 \text{ (approx)}} = \text{approx. } 21.3 \text{ for drawdown test}$$

$$T = \frac{264 \times 6.3}{99 \text{ (approx)}} = \text{approx. } 16.8 \text{ for recovery test}$$

At the 300 foot depth, transmissivities of 16.3 and 17.9 gallons per day per foot were calculated for drawdown and recovery test respectively.

Check Calculation:

$$T = \frac{264 \times 4.2}{68 \text{ (approx)}} = 16.3 \text{ (approx) for drawdown test}$$

$$T = \frac{264 \times 4.2}{62 \text{ (approx)}} = 17.9 \text{ (approx) for recovery test}$$

The mine plan concludes: first, the low transmissivities and discharge rates indicate that the Blackhawk Formation is, at best, a poor aquifer; and second, there is not significant difference between the aquifer properties of the coal zone and those of the Aberdeen Sandstone. Thus, the Aberdeen cannot be considered a major water bearing zone.

Commentary

The two conclusions appear to be essentially correct. There is a possibility that the above calculated transmissivity of the Blackhawk may be conservatively high (conservative relative to potentials for inflow of ground water into the mine workings from the Blackhawk Formation): the steepening of the slope

(i.e. greater rate of drawdown) of the 200 feet depth curve on Fig. 26, after about 50 minutes of pumping, may indicate that the aquifer is of limited extent; accordingly any calculations for the steeper slope part of the curve would show a smaller transmissivity than that calculated in the mine plan.

C. Evaluation of Compliance (Ground Water)

1. 817.48 Hydrologic Balance Acid-forming and Toxic-forming Spoil

Chemical analyses of rock cores from above and below the coal seams are presented in the mine plan (Vol. A-4, Geotechnical Report, Page A-12 and in Response No. 4 to OSM questions re. ACR). The mine plan makes reference to the high alkalinity, low acidity of the water in the mine plan area, which "should not permit acid drainage problems" (Vol. 1, Page 2-35, Page 2-41; Vol. A-1, Page 44); this prediction of minimal acid drainage problem is supported by the fact that the coal has low sulfur content (Vol. 1, Page 2-41).

These data imply that the potential for acid or toxic problems from in-situ and spoil earth materials may be minimal, however, a supplemental interpretative discussion of the chemical analyses is needed. This should include identity of constituents that are potentially acid or toxic-forming and their potential mobility in the geochemical environment of the waste and spoil sites. Measures that are planned to meet the requirements of 817.48 (a), (b), and (c) were not found in the mine plan and therefore, should be described. These deficiencies are presented as Stipulations below.

2. 817.50 Hydrologic Balance: Underground Mine Entry and Access Discharges

817.50 (a) As stated in the mine plan the portal area will be substantially above the ground water table (Response to OCM ACR question No. 2). As shown on the map Attachment 1, "Updated Ground Water Piezometric Contour Map" the upper O'Connor seam is above the piezometric surface near Eccles Creek where the portal will be located, thereby, limiting the possibility of gravity discharge from the O'Connor seam. A negative slope of 4 percent (Vol. 3, Sec. 4.11.7, Page 4-41) should further limit discharge. Pumpage will discharge the water that may be encountered in the three mined seams, during the period of mining. Mine entries will be sealed to prevent or minimize post-mining gravity discharge.

817.50 (b) The mine plan does not indicate any need or plan for gravity discharge. Therefore, the mine plan appears to be in compliance with 817.50(b).

If such a discharge were to be needed, it appears that such discharge could meet the requirements of 817.50(b). A NPDES permit will be acquired and monitoring of discharge will be done as required by permit (Vol. 1, Page 2-31). Chemical analytical data for water from the nine monitored springs, nearby O'Conner mine, Belena No. 1 mine, and the Alpine School District well are presented in Vol. A-1, Tables 15 and 16 (Pages 90 and 92) of Hydrologic Inventory. Discussions of the analyses presented on Page 93 indicate that with some few exceptions each chemical parameter of these waters meet the state water quality standards for uses specified for water in the area. These waters also meet the minimum effluent limitations specified in 30 CFR Section 817.42. The high alkalinity, low acidity, and generally basic nature of these waters (Page 92) indicate that acid drainage problems should not develop as a result of the proposed mining. In general the natural waters are of good quality, thus indicating no tendencies for poor quality water which might be aggravated by mining activities.

The mine plan appears to be in compliance with 817.50 (a) and (9b).

817.54 Water Rights and Replacement

The applicant has identified potentially affected water rights, (Page 2-40, Skyline Mine Plan) as being almost entirely and directly on the streams for stock watering. Only one spring in the permit area has a field water right.

The applicant owns 248 acres-feet of water rights in the Scofield Reservoir. Water right exchanges have been and will be made for rights from wells to be located in the permit area. (Page 4-34, skyline Mine Plan). A 30 acre-feet exchange has been approved and a 118 acre-feet exchange is pending. The applicant states that water will be replaced if necessary.

In regards to two springs located adjacent to the northeast corner of the lease area and in response to OSM's ACR comment No. 6, the applicant states that if underground mining by Coastal States is determined to have materially damaged rights associated with these springs, Coastal States will construct a pipeline and pump a comparable flow of water from the portal area to the springs.

817.55 Discharge of Water into an Underground Mine

There are no references through the mine plan to discharging water into any underground mine workings. Surface runoff will be controlled on the surface and discharged to surface waters. Underground water encountered during mining will be treated and used in the mine, and pumped to the surface when necessary.

817.52 Surface and Ground Water Monitoring - Ground Water

(1) Ground water monitoring information will be collected from springs, wells, mines, and streams. The monitoring program is described in Volume 1 of the mine plan, Pages 2-30 and 2-31, and in Volume A-1, Pages 61, 68, 80 and 88.

Water quality data will be collected each year during August from the springs, mines and a proposed water well in the portal area (Vol. 1, P. 2-30). Samples will be analyzed for parameters listed in Table 2.3-1, (Vol. 1, P. 2-31) or on an approved abbreviated schedule (Vol. 1, P. 2-30).

Data from the springs will indicate the mining impact on the primary water source (i.e., springs for stock and wildlife watering). The nine springs that have been chosen for monitoring of ground water quality and quantity are shown on Plate 5. An inventory of springs and seeps on and immediately adjacent to the Skyline Property, was made in low-flow periods, September and October of 1978 and September of 1979 (Vol. A-1, P. 57). During these inventories the springs and seeps were located on a map (Plate 5), estimates of discharge were made, samples were collected, and the specific conductances and temperatures were determined. Certain samples, representative of flow, quality and geographic variation over the property, were sent to the laboratory for analyses of calcium, magnesium, potassium, sodium, bicarbonate, chloride, sulfate and TDS. These analyses are presented in Vol. A-1, Attachment C and summaries are shown diagrammatically on the map, Plate 5.

Several general characteristics of the springs were observed: (a) many springs are on the west facing slopes (strata dip to west) at base of sandstones (perched on underlying shale); (b) the high location of some springs and the discontinuous nature of the sandstone indicates local sources of recharge, i.e., small surface depression on basin near the springs; (c) few springs are fault related (the bentonitic shale of the Blackhawk formation that underlies most of the site area apparently seals faults and fractures); (d) travertine, found at springs, probably results from high calcium bicarbonate type of water being discharged and is not of deep seated origin, and (e) 30% of the sites were seeps, most flowed less than 2 gpm and only 4 flowed more than 10 gpm.

These springs are the sole source of ground water used in the site area. They are the water source for wildlife and sheep. Thus the spring monitoring will provide indications of any mining impact on ground water supplies for these uses. Because of the large number of spring sources (average of one per 40 acres) the applicant believes there will be little impact on availability of water for current uses. (The reviewer concurs; the depth of the mines and presence of intervening relatively

impermeable shale strata of the Blackhawk Formation also tends to preclude hydraulic interference of the mine with near surface water conditions).

The nine springs selected for monitoring, on the basis of flow, quality, and geographic situation, are listed in Table 10, Page 62. Specific characteristics of each spring which lead to its selection is also given. Priority in selection was given to developed and/or high flowing springs, where potential water supply impact might be greater.

Water level monitoring (Vol. 1, P. 2-30) will be conducted at each of the well sites shown on Plate 4 (Vol. A-1, Appendices). Well data also will be collected from the proposed water supply well in the portal area. The data collected from the wells (and mines also) will indicate impacts on the deep ground water system.

High cost of properly developing and constructing the observation wells under existing unstable downhole conditions, preclude the collection of reliable water data from these water-level monitoring wells. Standard well construction practices were not feasible and would have far exceeded the benefits of obtaining a subsurface water quality sample, considering the discontinuous nature of the Blackhawk Formation and the lack of ground water use in the area from wells (Vol. A-1, P. 88).

Water level data (in addition to water quality data, as described above) will be collected (Vol. 1, P. 2-30) during August for each of the wells (five) shown on map, Plate 4. These five locations were selected from among a number of coal exploration sites and converted to observation wells. At each site a 2-inch casing was installed into the Star Point Sandstone (at depth of 60-90 feet below the Lower O'Conner "A" seam, ref. geologic column, Fig. 2, Page 5, Vol. A-1) with the lower 20 feet being perforated, thus providing a measure of the piezometric head in the Star Point Sandstone, which is the most productive of the strata within the geologic column. A shallow hole was drilled nearby, normally above the coal zone, and a 2-inch casing, perforated over the lower 20 feet, was installed. Four of the shallow holes were drilled; a fifth one at deep-hole site W26-1 was not drilled, because of time limitation before USFS permit for drilling operations expired at beginning of the elk hunt.

These pairs of deep and shallow observation wells will provide a measure of vertical hydraulic gradient. If vertical flow should occur in the uncemented annular space outside the casing the vertical gradient will be less. With sloughing of sidewall material and sealing of the annular space the head differences, if any, between the two perforated elevations will become more pronounced.

Ground water contours are presented on the map, Plate 7, and indicate a general down-dip hydraulic gradient toward the west-southwest. This piezometric configuration has been updated (or revised) on the basis of water level information from additional measurement sites; the updated piezometric surfaces are presented on maps, Attachment 1, 3 and 4 (see Apparent Completeness Review Questions and Responses).

(Reviewers comment)

These updated configurations show a north-northwest trending piezometric high crossing the permit area, approximately coincident with the Emory-Carbon County line, which is on the topographic high or divide between the Eccles Creek and Huntington Creek watersheds.

These coincidences of the topographic and piezometric surfaces might normally imply a cause-effect relation, such as recharge to the ground water zone along the topographic high (or conceivably the presence of a permeable high-angle fault along the trend of the topographic high). In view of the apparent relative vertical impermeability of the Blackhawk Formation, even where faulted, which might be expected to preclude appreciable recharge from the surface to deeper zones, how can the piezometric high for the relatively deep aquifers (Attachments 3 and 4) be explained? Is it possible that near surface water can enter and flow down the annular space of the wells and cause the water level in the hole to rise toward the shallow water ground water elevation? Is there a possibility that the original configuration of the ground water contours, Fall 1979, shown on Plate 7, is an approximation of the true deep ground water piezometric surface, with a continuous southwesterly gradient?

It is suggested that the applicant confirm or discuss the validity of the revised piezometric maps relative to the question presented above. Also, if warranted he should discuss any appropriate remedial measures that are feasible from economic and other standpoints including possible self remediation due to expected closure of the annular spaces by expansion of shale derived clays around the casing.

Although not expressly a part of the ground water monitoring system the information from stream monitoring sites along Eccles and Huntington Creek at locations shown on Plate 4, might conceivably indicate gross changes in quantity or quality of the ground water regime. However in view of the very small impact on water quantity and quality that is expected by the applicant, as well as by the reviewer, it appears unlikely that any stream flow or quality impact would be sufficient to provide a sensitive indicator of ground water changes.

Information evaluated in the present review of the mine plan indicates (to the reviewer) that there will be relatively little

or no significant impact of the mining operations on ground water quality or quantity used in or off the mine plan area. The shallow ground water zone that supplies spring water for wildlife and stock watering (the only use on the site) is essentially isolated by the thick intervening series of relatively impermeable sandstone and shales above the coal strata. The high precipitation of about 30 inches per year (Vol. A-1, P. 10) in this area of high groundwater recharge should more than compensate for any minor water losses due to the mine. Possibly as the result of the high precipitation, and continuing leaching of solubles and dilution, essentially all of the surface water and aquifer supplies reported in the area are of high quality (less than 500 ppm). Thus recharge to and discharge from the mine should not be contaminating, nor should the mine operation add appreciable contaminants to the natural waters. Ground water quality data will be submitted to the Utah Division of Oil, Gas and Mining. An NPDES discharge permit will be obtained and all discharges will be monitored in accordance with this permit (Vol. 1, P. 2-32).

It appears that relatively little water will enter the mine because of: the low vertical permeability of both the shale in the Blackhawk Formation that contains the three seams to be mined, and the Aberdeen Sandstone that underlies the lowermost of the three seams (Vol. A-1, Fig. 2, P. 5); the relatively poor transmissive characteristics of the faults due to sealing action of the shales; the plans to avoid interceptions of the mine with faults (e.g., along east boundary of permit area) at the stratigraphic level of major sandstone formations which might be highly permeable; and the apparent discontinuous nature and/or poor recharge and storage characteristics of the sandstone. Any water that enters the mine will not be lost but will be pumped to Eccles Creek.

In summary, the number, type, locations and general objectives of the proposed monitoring installation appear to meet the requirements of 817.52(a)(1), however, there is some question concerning the validity and meaning of water level measurements and corresponding piezometric maps. Clarification is requested under "Stipulations" below. The monitoring program appears to be in compliance with 817.52(a)(2) in that it appears that there will be essentially no appreciable or perhaps detectable adverse impact on water on or off the mine plan area. Under 817.52(a)(3) it is recommended that pumping tests of the proposed water supply well in the portal area be made and that water quality samples be collected from this well periodically and analyzed to indicate present and future quality of deeper aquifers.

817.53 Transfer of Wells

No transfer of exploratory or monitoring wells for further use as a water well is referred to in the mine plan. However, to confirm compliance the applicant should state his plans and any

other information needed to comply with 817.53. This requirement is listed under Sec. F, Necessary Stipulations.

817.54 Water Rights and Replacement

In Section 4.11.1 (Vol. 3, P. 4-34) the Mine Plan states that the applicant presently owns 248 acre-feet of water rights in the Scofield Reservoir. Of these water rights, water sufficient for the applicant's needs will be exchanged for rights from wells to be located near the mine site and at the mouth of Eccles Canyon (a 30 acre-foot exchange has been approved by the State Engineer and an additional 118 acre-feet has been applied for and is pending). "The Applicant will replace the water supply of any landowner, if such a water supply is contaminated, diminished or interrupted as a result of the Skyline mining operation." An additional promise of replacement is in the ACR Response Number 6. In view of the availability of replacement and agreement to replace any damaged supplies, it appears that the mine plan is in compliance with 817.54.

817.55 Discharge of Water into an Underground Mine

No discharge of water into the Skyline Mine is planned, nor is there another mine into which surface or groundwater could be discharged. Thus the mine plan is in compliance with 817.55.

816.13 Casing and Sealing of Drill Holes; General Requirements

The Appendix of Vol. A-5 of the mine plan contains an "application for approval of exploration plan" submitted to U.S. Geological Survey, August 31, 1978. The consequent "Approved Exploration Plan, 1979, Skyline Mines" describes plans for managing drill holes. Mine Plan, Section 4.9 Opening and Sealing Plan, summarizes the approved plan for drill holes, and also discusses shafts and mine entries, as summarized below. Except for an up-dating statement, as stipulated below under 816.14, it appears that the mine plan is in compliance with 816.13.

816.14 Casing and Sealing of Drilled Holes: Temporary

As specified in the approved drilling plan (ref. 816.13 above) all exploratory drilling holes upon abandonment were completely plugged from the bottom to the collar and the drill hole locations appropriately marked (Vol. 3, Sec. 4.9, Page 4-30). The mine plan (Vol. 3, Sec. 4.9, Page 4-30) states that the shafts will be filled from the bottom to collar with non combustible material and will be capped...in compliance with 30 CFR 75.1711-1. A typical cap is illustrated in Figure (map) 3-6C.

Seals will be installed in all entries (Vol. 3, Sec. 4.9, Page 4-30) as soon as the mining is completed and the mine is to be abandoned...in compliance with 30 CFR 75.1711.2.

The applicant apparently was in compliance with the regulations that existed at the time of the drilling operation. However, to be in compliance with 816.14, relative to possible future drilling and temporary management holes, he should include a statement in the mine plan that such compliance is intended. A stipulation is being made to this effect.

816.15 Casing and Sealing of Drilled Holes: Permanent

As discussed immediately above, under 816.13 and 816.14, the exploratory drilling that has been done was apparently in compliance with regulations valid at that time. To be in compliance with current regulations concerning permanent management of drilled holes, the applicant should include a statement in the mine plan that compliance with 816.15 is intended. A stipulation to this effect is presented below.

D. Revisions to Applicants Proposal (Ground Water) - (None)

E. Reanalysis of Compliance - (None)

F. Necessary Stipulations

817.48 Hydrologic Balance Acid-forming and Toxic-forming Spoil

Provide interpretative discussion of the chemical analyses of rock cores from above and below the coal seams. This discussion should include identity of constituents that are potentially acid or toxic forming, their potential mobility from spoils into the hydrologic system (i.e., the potential for water contamination). Also describe measures planned to meet requirements of 817.48 (a), (b), and (c).

817.52 Surface and Ground Water Monitoring - Ground Water

Stipulations.

817.52(a)(1) Conform or discuss the validity of the revised piezometric maps (Attachment 1, 3 and 4, Apparent Completeness Review Questions and Responses) and supporting water level measurements.

As discussed in the Technical Analysis above there does not appear to be any apparent reason for the spatial correlation of the north-northwest trending piezometric high across the permit area, with the similar trend of the topographic high that forms the county line. Normally a piezometric high might correlate with a recharge area, however, this may not be a reasonable

explanation, in this instance especially, because of the reported presence of relatively impermeable shale of the Blackhawk Formation that overlies the stratigraphic levels represented by these maps. The westerly hydraulic gradient away from the piezometric high implies an easterly flow of ground water across the various strata of the Blackhawk Formation. Is it possible that shallow ground water (perhaps the perched water that supplies the springs) could enter the annular spaces of the observation wells and perhaps cause this piezometric high? If this or other extraneous factors do influence the water levels and the shape and elevations of the piezometric surface, discuss any appropriate remedial measures that are feasible from practicable, economic and other standpoints, including self-remediation due to expected closure of the annular spaces by expanding shale or clays.

817.52(a)(3) To augment existing information on deeper water quality and quantity information, in the stratigraphic vicinity of the coal zone, it is recommended that the drilling of the proposed water well be designed to provide a maximum feasible amount of meaningful information during drilling and operation. These data might include pumping tests, water levels, water sampling during construction and periodic sampling during subsequent operation. Prevention of inter-aquifer mixing along the hole would be desirable.

817.53 Transfer of Wells

There does not appear to be any plan for transfer of exploratory or monitoring wells for use as a water well. However, the applicant should confirm this and any other plans needed to comply with 817.53.

816.14 Casing and Sealing of Drilled Holes: Temporary

The applicant apparently was in compliance with the approved drilling plan at the time of the drilling. However to be in compliance with 816.14 relative to possible future drilling, he should note in the mine plan that compliance with 816.14 is intended.

816.15 Provide a statement that compliance with 816.15 is intended.

786.19(c) Protection of the Hydrologic Environment. (As presented on Page 9 of the OSM outline for Technical Analysis of Mine Plans)

According to 786.19(c): The application must demonstrate, and the regulatory authority find, that "The assessment of the probable cumulative impact of all anticipated coal mining in the general area on the hydrologic balance, as described in 30 CFR 784.14(c), has been made by the regulatory authority.....".

To comply with 786.19(c) the mine plan should confirm that this assessment has been made.

G. Summary of Compliance

If the proposed stipulations are implemented this section will be in compliance.

H. Proposed Departmental Action

Approve mining plan based on implementation of stipulations.

I. Residual Environmental Impacts of Proposed Departmental Action

Some change in geologic structure, such as by subsidence and removal of coal will occur. This will have only minimal impact on ground water quality and quantity. In general, it is the reviewers opinion that the proposed mining operation will have relatively little residual impact on the hydrologic balance, including the quantity and quality of ground water and the existing and potential uses thereof.

J. Alternatives to Proposed Action - (None)

786.19(c) Protection of the Hydrologic Balance (Ground Water)

The "General Outline for OSM Technical Analysis of Mine Plans" (OSM-Denver, 1980, Page 7), states that the preparer as part of his Technical Analysis shall find that the TA demonstrates, that an "...assessment of probable cumulative impacts of all mines in the area...(described in 784.14(c)) has been made by the regulatory authority, and the proposed operations have been designed to prevent damage to the hydrologic balance outside the proposed mine plan area."

The present TA of the proposed mining operations does not present any indication that these operations will interact with the existing ground water regime in such a way as to cause any appreciable or detectable adverse impacts on the hydrologic balance outside the mine area. This apparently favorable impact situation will result both from proposed preventive measures and the presence of favorable environmental conditions that tend to minimize adverse impact. For example: the quantity of ground water that is likely to be intercepted may be small due to relatively low geologic permeabilities and plans for avoiding faulted zones of the Starpoint Sandstone which might discharge higher than average volumes of water, at possibly diminishing rates; existing ground water is of relatively high quality and there are no indications that the underground operations will

appreciably change the quality; and the high average annual rainfall of approximately 30 inches per year acts as a buffer (by replenishment and dilution) against any appreciable potential impacts on or off the mine plan area. Furthermore, the scattered and very limited use of water in the region tends to essentially preclude damage to water supplies. Section 4.11 "Protection of Hydrological Balance-Permit and Adjacent Areas" (Vol. 3, Page 4-34) summarizes some of the existing conditions and planned mine site operations that will tend to minimize potential impacts to surface and subsurface water quality and quantity. "Hydrologic impacts of mining activities" (Section 2.5, Vol. 3, Page 2-40 et. seq.) discusses potential impact on water quantity and quality. Based on these considerations, the mine plan appears to comply with the latter part of 786.19(c), (as written on Page 9 of the TA outline) and 784.14(c). However, no reference to an "assessment of cumulative impacts...made by regulatory authority" (first part of 786.19(c), TA outline, Page 9) was found in the mine plan. This deficiency is referred to below under Section F (of the TA) "Necessary Stipulation".

A. Description of Existing Environment

The Skyline Coal Mine permit area is located in Carbon and Emery Counties, Utah, approximately 22 miles northwest of Price. The permit area is near the north end of the Wasatch Plateau, in mountainous terrain, about two miles southwest of Scofield, Utah. The abandoned Eccles Canyon Mine is the only mine within the permit area. Projected production rate of the underground mine is approximately five million tons per year with a maximum projected 5.4 million tons per year. The total production period is expected to be 30 to 33 years. The size of the permit area is about 6,330 acres with 4,000 acres being used for underground mining.

At the proposed minesite, the average monthly temperature ranges from 15°F in January to 60°F in July. Temperature extremes range from -40°F to 80°F. Average annual precipitation is 25 to 30 inches, with the larger total occurring at higher elevations. Prevailing wind direction within the general area of the Skyline Mines site is from the southwest. Meteorological data were collected at two sites, Boardinghouse Peak and Eccles Canyon. The Boardinghouse Peak wind rose (Figure 1) for the January 1 - August 31, 1979 monitoring period reflects prevailing flow from the southwest to west-northwest. The Eccles Canyon data was collected at one site for about five months then the site was moved to a point approximately 40 yards northwest of the former site on May 24. The wind roses for Eccles Canyon (Figures 2 and 3), indicate the influence of drainage flow corresponding to the west to east orientation of the canyon. During months of heavy snow cover, when surface heating is insufficient to create a strong up-valley (east to west) flow, daytime flow at the site will be primarily a combination of regional air flow and channeling effects within the canyon. Nighttime downvalley flow (west to east) is not pronounced during periods of clear skies and light winds.

Surface wind data recovery rates at Boardinghouse Peak were 97.8% for wind direction and 97.2% for wind speed. These rates at Eccles Canyon were 75.4% for both wind direction and wind speed, although the recovery rate during January and March averaged only 35%. An upper-level sounding program was conducted in the Clear Creek, Utah area during the periods of April 8-12, 1979; July 3-7, 1979; and September 19-20, 1979.

B. Air Quality in the Area

1. Air Quality and Meteorological Monitoring

Baseline air quality and meteorological data are contained in the Skyline Mine Federal Mining Permit Application in Volumes I and A-4. Background air quality and meteorological data have been recorded and reduced from January 1, - August 31, 1979. Meteorological parameters were measured at two locations: (1) near the crushing operations at the mine portal site at Boardinghouse Peak, and (2) near the load out facilities at the base of Eccles Canyon. Parameters measured at each site were wind direction, wind speed, and temperature. At Boardinghouse Peak (elevation 9,943 feet) data were collected at 10 meters continuously while at Eccles Canyon (elevation 7,950 feet) data were recorded by a portable mechanical weather station within the boundaries of the site to characterize wind flow patterns in and along the canyon. Total suspended particulate (TSP) data were collected by high-volume samples every third day beginning in June 1979 for a six month period at Boardinghouse Peak. Short-term TSP studies (less than two months) were performed at sites at Eccles Canyon and Clear Creek. Portions of the preoperational meteorological and air quality study will be continued throughout the construction phase and operational life of the mines. The summarized air quality and meteorological data are contained in Volume A-4. The location of the monitoring stations are shown in Figure 4. The Boardinghouse Peak and Eccles Canyon sites are approximately 2.5 miles northwest and 3 miles north of the community of Clear Creek, respectively.

2. Permit Status

Skyline Mines has filed for an application for a Prevention of Significant Deterioration (PSD) permit with the Environmental Protection Agency (EPA) Region VIII office. Also, a Notice of Intent to Construct has been submitted to the Utah Air Conservation Committee. The submitted application for PSD review identified background particulate and fugitive dust emissions as the principal concern in the development of an air pollution control plan specific to the proposed Skyline Mines project. However, as reported in the February 4, 1980, Federal Register (Vol 45, No. 25, p. 7801), a court order saying the Application of PSD Regulations 40 CFR 51.24 and 52.21 is in effect for fugitive emission sources. Based upon the U. S. Court of Appeals decision of December 14, 1979, conditions for a PSD permit could be modified or the need for the permit itself rescinded for specific sources.

3. Fugitive Dust Control Plan

A fugitive dust control plan for the Skyline Mine is part of the overall air pollution control plan contained in Volume III of the mine plan. The major sources of fugitive dust at the proposed mine sites are expected to include Eccles Canyon Road, access roads, ventilation fan areas, topsoil storage piles, and coal handling facilities.

To control particulate emissions water trucks will spray the road surface and shoulders with water and non-toxic chemical dust suppressants throughout the Eccles Canyon Road upgrading process. Upon completion of upgrading, the cut and fill slopes along the road right-of-way will be stabilized with non-toxic chemicals. This practice is considered Best Available Control Technology (BACT) with a control efficiency of approximately 85%. After the road surface is paved (rated as BACT with a control efficiency of 85%-100%), and throughout the remaining project life, water trucks will spray the road surface and shoulders as needed to suppress dust buildup. Coal truck speed will be restricted by State of Utah speed limits and revegetation of disturbed land will occur during the first seasonal opportunity. These practices are considered BACT and are about 75%-85% effective.

Vehicular traffic on infrequently used access roads will be restricted to authorized personnel and maximum vehicle speed will be limited to 20 mph. These roads will be treated with non-toxic chemical dust suppressants. These procedures are considered BACT and are approximately 65% to 85% effective, respectively. For moderately and frequently used access roads the restrictions and maintenance will be similar to that of the infrequently used access roads except the application of non-toxic chemical suppressants to these roads may be more frequent. For all types of access roads a soil stabilization agent will be worked into the upper layer of the roadbed and road graders will periodically remove accumulations of spilled materials from the roadbeds. Revegetation of disturbed areas will occur within one season. These control practices are considered BACT with estimated efficiencies ranging from 75-85%.

Areas within 100 feet of ventilation fans will be cleared of vegetation and combustible material. Cleared areas which expose dust forming debris will be stabilized by compacting and maintaining a stable gravel base. This control method is BACT and about 85% effective. For topsoil storage piles, a non-toxic chemical dust suppressant will be used for stabilization purposes and revegetation of stockpile areas will be initiated following final emplacement of topsoil. The dust control procedures are approximately 85% and 75% effective, respectively.

The principal sources of fugitive dust emissions related to the proposed coal handling facilities are:

- o conveyors
- o portal belt sampling buildings
- o coal storage facilities
- o crusher building
- o overland conveyor
- o railroad load-out

Conveyor belts from the sampling buildings to the run of mine coal storage silo will be fully enclosed in conduits. The mine plan includes two portal belt sampling buildings which will receive coal deliveries via direct discharge from fully covered conveyor belts. Each portal sampling building will be an enclosed structure equipped with a fabric filter baghouse.

Fabric filter baghouse collectors will be installed at the fully covered belt discharge to the silo and in the silo reclaim tunnel. Railroad storage facility silos will utilize similar fugitive dust control measures as those proposed for the run of mine storage silo. The control practices listed above represent BACT with a control of efficiency of 95%-100%.

The crusher building will be totally enclosed and equipped with a fabric filter baghouse. The truck load-out bin will be fully enclosed except for the truck access. A fabric filter baghouse collector will be installed at the bin and conveyor exchange point. Prop distance from the bin to the truck will be minimized by the design of a coal chute. The overland conveyor will be fully covered for its entire length. Transfer points will be totally enclosed and discharge height at each point will be minimized. These control practices are considered BACT and are 95% - 100% effective.

The railroad load-out will be fully enclosed and a fabric filter baghouse collector installed. A telescoping chute will be used to load the railroad cars. Water and/or non-toxic chemical dust suppressants may be used to treat the tops of loaded railroad cars. The above control procedures are BACT and have estimated control efficiencies of 50%-85%.

Temporary coal stockpiles and travel areas around the pile and railroad cars will be sprayed with water and a non-toxic chemical dust suppressant to prevent fugitive dust emissions. This control practice is BACT and about 85% effective. An emergency truck dump hopper will be used when the overland conveyor is out of service. The hopper will be equipped with water sprays activated automatically by truck sensors to control fugitive dust emissions. The emergency coal-storage pile will be reclaimed and deposited into a reclaim hopper which will discharge onto the silo belt. The emergency procedure plans are BACT and approximately 50%-85% effective.

C. Evaluation of Compliance of Proposal

1. The climatological information reported in Volume I and meteorological data in Volume A-4 provide an adequate data base for determining the climatology of the mine site area. The remaining four months of an on-site meteorological data (September-December 1979) should be incorporated into an annual wind rose with the previous eight months of data. Annual wind roses from both the Boardinghouse and Eccles Canyon sites would then represent data obtained on an annual basis and ensure an understanding of dispersion conditions over an entire year.

2. The fugitive dust control program as proposed by the Skyline Mine in Volume III, aside from a few minor deficiencies, is adequate. The map of the monitoring stations (Figure 4) and site vicinity map (Figure 5) show the complexity of the terrain surrounding the proposed mine site. The data from the particulate monitoring program should have listed daily readings for the Boardinghouse Peak station instead of monthly averages to determine if the 24-hour TSP standards are met. A comparison was not made nor data tabulated from the ten sampling days that were reported as coincidental to both the Boardinghouse Peak and Eccles Canyon sites. The coincidental sampling days would allow a comparison of the two sites to be made during various meteorological conditions. The Eccles Canyon particulate sampling site at the proposed portal location is within 60 feet of the dirt road following along the base of Eccles Canyon since the high-volume sampler and portable generator could not be separated further than 60 feet from the dirt road. Although the road is open in summer months and traffic is light, the proximity of the dirt road will most likely have a significant effect on measured TSP levels. The road will eventually be paved which will reduce measured concentrations.

The Eccles Canyon site, based upon only five TSP samples in July 1979, averaged $188 \mu\text{g}/\text{m}^3$ (readings were 180, 286, 179, 197, and $131 \mu\text{g}/\text{m}^3$ respectively), whereas the Clear Creek site averaged $62 \mu\text{g}/\text{m}^3$ from 18 samples in July and August 1979. The Boardinghouse Peak network reported a three month TSP average of $35 \mu\text{g}/\text{m}^3$ (June-August 1979).

The list that follows itemizes the fugitive dust control measures under Part 816.95 (a) (b) of the Office of Surface Mining Permanent Regulatory Program that were not adequately addressed in the Skyline Mine plan:

- (2) The non-toxic chemical dust suppressant to be applied to road surface, topsoil and coal storage piles, and tops of loaded trucks and railroad cars should be identified. Furthermore, the non-toxicity of the chemical and its dilution rate should be specified in the mine plan.

(15) The restriction of areas to be blasted at any one time to reduce fugitive emissions requires more information on blasting requirements and schedules.

3. A copy of permit applications such as PSD, Notice of Intent to Construct, and special use permit applications for the Skyline Mine should be included in the mine plan along with application dates. The mine plan does not state whether the State of Utah Bureau of Air Quality has approved the monitoring sites for the proposed mining area.

4. Since no dispersion modeling analyses were performed for the mine site area, an emission inventory was not presented in the mine plan.

D. Revisions to Applicant's Proposal

More complete information on the fugitive emissions control plan and permit applications are needed as described in Section C, Parts 2 and 3, respectively.

E. Reevaluation of Compliance

None

F. Proposed Special Stipulations with Justification

Additional meteorological data and ambient air quality data should be included from September 1979 through December 1979 to complete one calendar year of monitoring. Annual wind roses from Boardinghouse Peak and Eccles Canyon could then be analyzed for that would not be biased for conditions by seasonal trends

G. Summary of Compliance

If the minor additions on the fugitive dust control plan were completed, more information on the permit applications supplied, and meteorological and ambient air quality data included from September 1-December 31, 1979, this section would be in compliance.

H. Proposed Departmental Action

The ambient air quality and meteorological sites should be approved by the Utah Bureau of Air Quality to obtain official acceptance of the representative of the monitoring data.

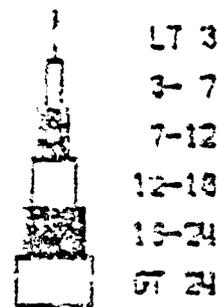
I. Residual Environmental Impacts of Proposed Departmental Action

The impact of the proposed mine site would consist of minor degradation of the local and regional air quality. Once roads are upgraded federal and state TSP primary and secondary standards are expected to be met at the Eccles Canyon site. Visibility will not likely be impaired to any significant degree by the mining operations.

J. Alternatives to Proposed Action

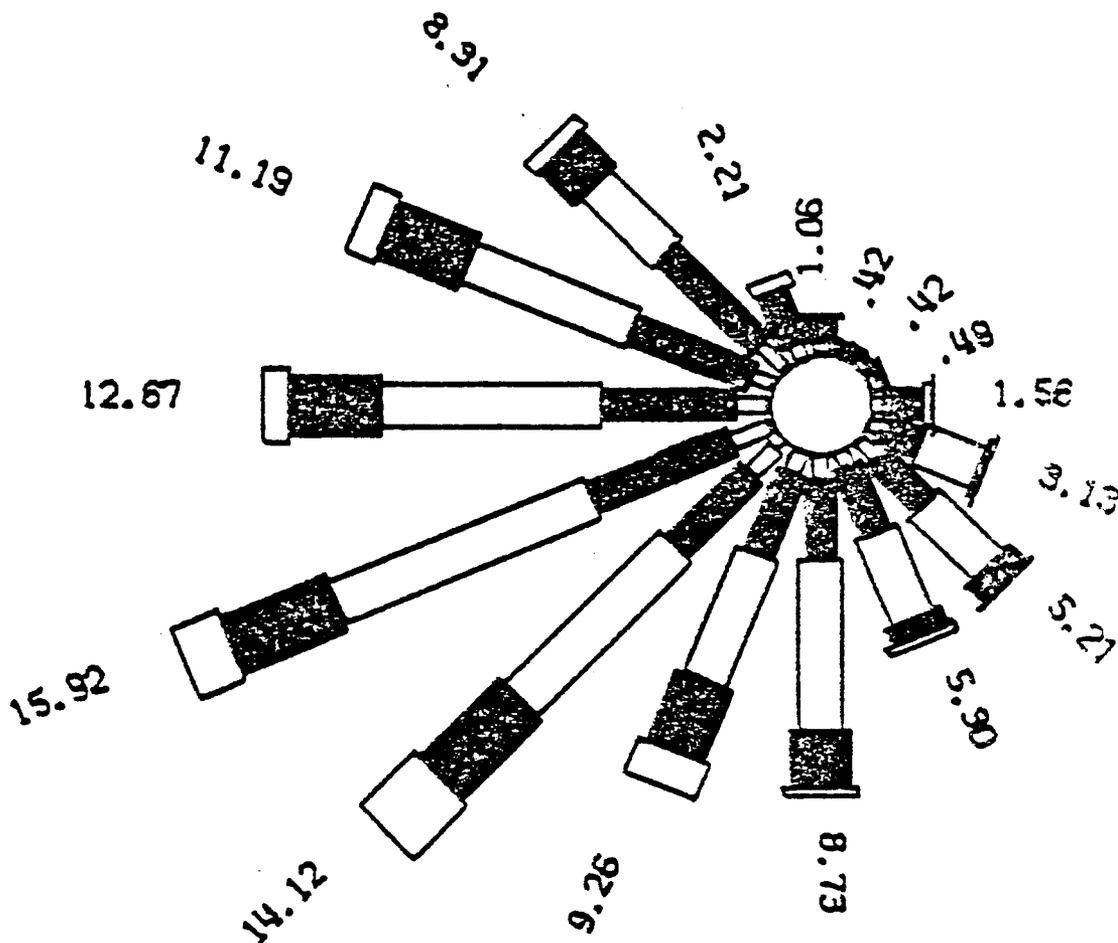
None

WIND SPEED
(MPH)

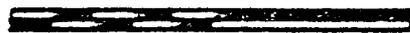


WIND ROSE

JAN 1 - AUG 31, 1979



8
1

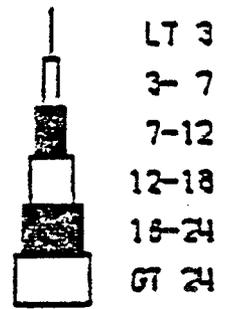


0 5 10

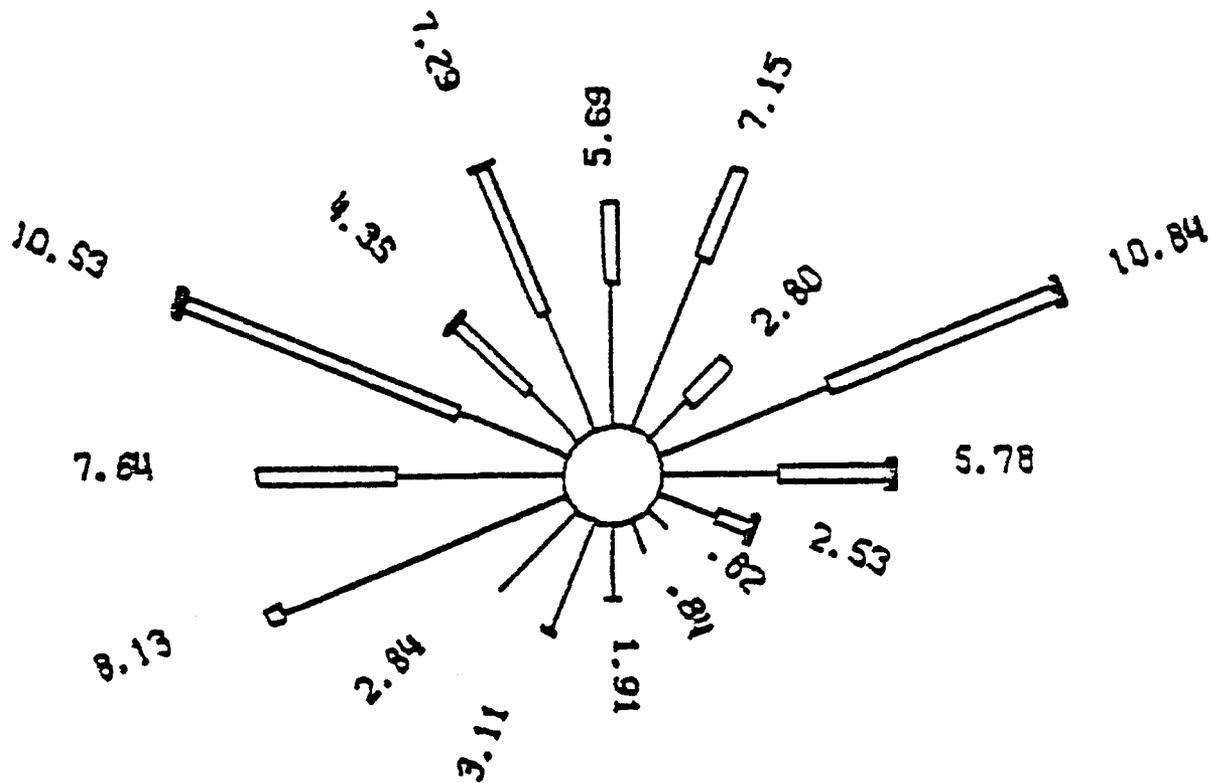
FIGURE 1

BOARDINGHOUSE PEAK - SITE 040

WIND SPEED
(MPH)



WIND ROSE
JAN 1 - MAY 24, 1979



Σ CELMS -
17.95

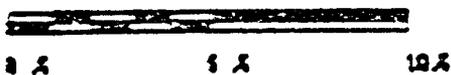


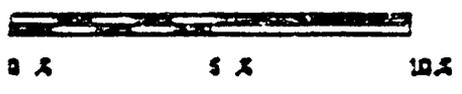
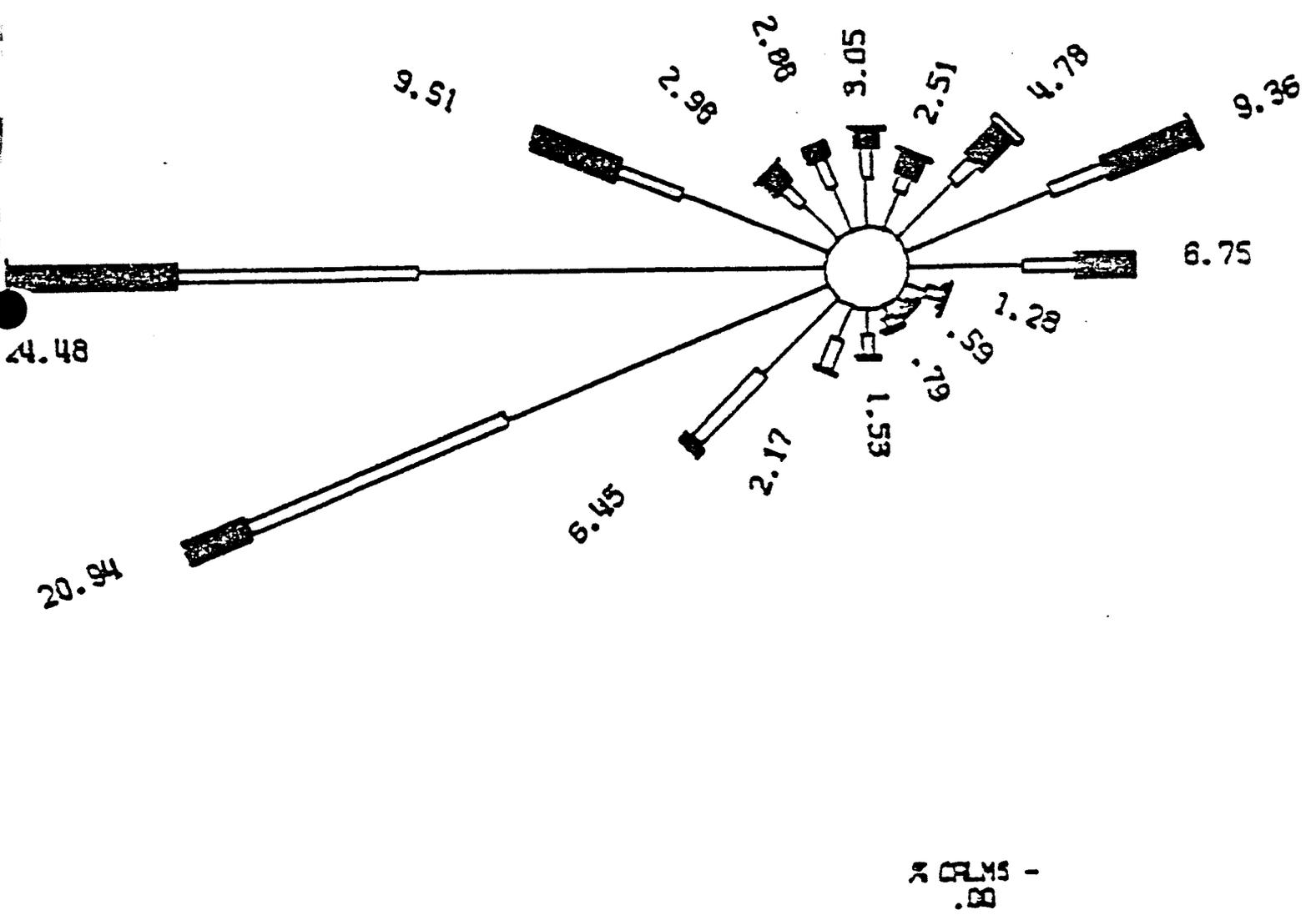
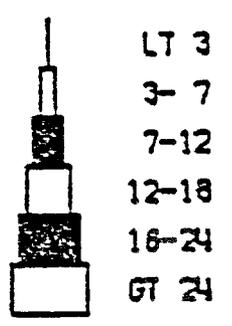
FIGURE 1

ECCLES CANYON

WIND ROSE

MAY 24 - AUG 1, 1979

WIND SPEED
(MPH)



5 COLMS -
10

FIGURE 3
ECCLES CANYON

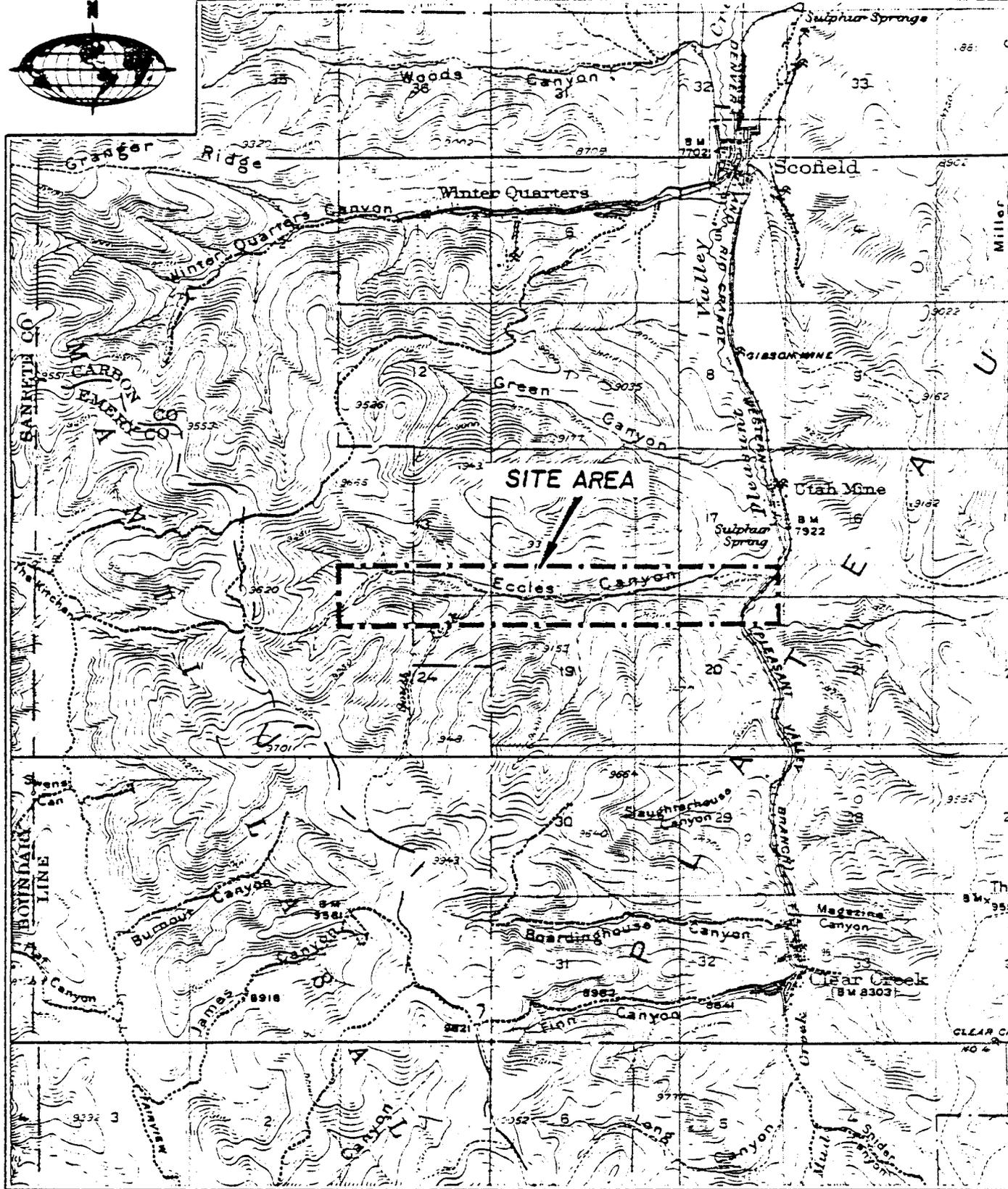


FIGURE 5
VICINITY MAP

water soluble sulfates, bicarbonate, and carbonate; and total solids. Also, tests were made to determine the abundance of several trace elements and heavy minerals. Tests to determine electrical conductivity, sodium absorption ratio, Na, Ca, Mg, and S (org./inorg.) were not made.

The clay content of the strata immediately below the coal seams to be mined is not addressed.

Compliance with 783.14(a)(2)(III) is not achieved.

5. 783.14(a)(2)(IV) Pyrite, Marcasite, and Sulfur Content of the Coal Seams

Applicant's determination of the forms of sulfur occurring in the coal seams is adequate.

Compliance with 783.14(a)(2)(IV) is achieved.

6. 783.25 (c & d) Coal Geology

Applicant's treatment of the depth, thickness, outcrop, strike and dip of the three coal seams to be mined is adequate.

Compliance with 783.25 (c & d) is achieved.

D. Revisions to Applicant's Proposal

1. 783.14(a)(2)(I) Location of Subsurface Water

Reference is made to 2., Hydrology and Geology in applicant's Initial Response to OSM's Apparent Completeness Review. Applicant responded to the question raised by OSM by submitting Attachment 1, a revision of Plate 7 of the original report. Applicant also explained that this map, when used in combination with the structural contour map of the Upper O'Conner Coal Seam (Plate 1) could be used to predict which part of the coal seam lies beneath the water table. Applicant also explained that the permeability of the sandstones within the Blackhawk Formation is very low, hence they should not be regarded as aquifers.

E. Reanalysis of Compliance

1. 783.14(a)(2)(I) Locations of Subsurface Water

Applicant's contour map of ground water surface does not cover the entire proposed mine area. Also, the spatial relation of this surface to the proposed underground workings is not clear.

Compliance with 783.14(a)(2)(I) is partly achieved.

817.21 Topsoil Protection

A. Description of Existing Environment

Soil parent materials appear to be weakly to strongly consolidated sedimentary materials ranging through sandstones, shales, siltstones and a few lenses of almost pure clay (Geology Section). Coal seams have doubtless contributed to the organic carbon content of the soils. The soils report does not discuss soil depths but it may be assumed that the soils range from shallow to deep and are mostly high in coarse fragments. Textures range from sandy loams to loams with a few clay loams. Soil temperatures range from frigid to cryic and moisture regimes are either udic or ustic. Soil genesis appears to be producing at least some argillic horizons in the area, according to the profile descriptions, and most soils appear to have mallic epipedons, many of them overthickened. However, the strong columnar and prismatic structure of the B horizons, as described, may be more imagined than real, considering the low clay percentages. The C horizons are generally not described, making it difficult to be sure of the exact nature of the parent material associated with the described soils.

Soil classification on the majority of the described profiles appears to be at least questionable and indicates a lack of familiarity with the Taxonomy. Family groupings are also in error in some instances. Profile descriptions lack an estimation of coarse fragments in the profile. Wet and dry colors may not be accurate. Horizonation and descriptions of soil structure are inconsistent. There are no erosion estimates.

Vegetation is fully described and ranges from grass-shrubland to spruce-fir and aspen. Several riparian sites are also identified. Vegetation types have been correlated with the different soil units in tables and on two separate maps (Maps C and D, Volume A-5) but the soil sampling locations have not been identified for the reference sites on Map A, Plant Communities Vol. A-5. Apparently it was intended that the soil profile descriptions could be located by correlating the vegetation with the vegetation communities delineated at each reference area on Map A, Vol. A-5. Unfortunately, the vegetation types on the profile descriptions do not always coincide with those on the map. In addition, reference site 1 has two AGFE units with a common boundary and one validation site (Rock Waste Disposal Area) is not on the map at all (unless that happens to be Reference Site D?).

The Portal Yard Area Vegetation Map C does not seem to correlate very well on the north side with the delineated plant communities on Map A.

The Portal Yard Area Soil Map D (Initial submission) has the sampling sites located that are referred to in Table LXVIII, p. 122-123, Vol. A-5 and the taxonomic classifications are on the map units delineated. The soils report (Vol. 2, Section 2.11, p. 2-66) states all soils pits were excavated to the C horizon but that soil samples were restricted to the top six inches in the Portal Yard Area. Thus it is not possible to verify the taxonomic classes given nor is the sampling complete. Further, in an apparent attempt to clarify Map D in the applicants' initial reply to the Initial Completeness Review by OSM, more taxonomic classes have been added to the legend with no explanation, only confusing the issue further.

B. Description of Applicants Proposal

1. The applicant conducted a combined soil and vegetation survey including soil analyses. A soils map was prepared only for the portal yard area (Map D, Vol. A-5) and correlated with plant communities there (Map C, Vol A-5). Soils sampled on the reference sites 1-4, the Rock Waste Disposal Area (Site D?) and the Bypass Access Road were sampled by horizon to C material and described. Soils at the portal yard were not described physically and only sampled to 6 inches deep. Analyses are in Table LXVIII, p. 122-123, Vol. A-5. Many of the horizons were composited and some were not analyzed (no reason given). Penetrometer readings (driving a sharpened steel rod to refusal) were taken along transects and in validation sites.

2. Soils analyses included effervescence (estimate of Ca CO₃ percentage), textural analyses, pH, EC, NO₃-N, %N, and the elements Zn, Cu, Mn, Fe, K, Mg, Ca and P. No specific criteria are given for determining topsoil suitability except for a table listing a comparison of minerals in the lease area with other Western U.S. soils (Table LXX). These deal only with trace elements, N, P, K, and NO₃-N. The textural analyses indicate a possibility of high erosion potential (sandy loams) both from wind and water. Also, coarse fragments volume may be high (see profile descriptions). No SAR's are given (samples not analyzed for Na) and it does appear from the pH's and EC's given that this may not be necessary. However, if any of the waste material (unweathered bedrock) is contemplated being used as soil substitutes, these tests become mandatory.

3. Topsoil stripping depths are discussed in section 4.6, p.4-18, Vol. 3. No volume calculations can be found either in the initial application or in the applicant's response to the completeness review, though they state that the computations have been made. The lack of an acceptable soil survey makes it impossible to determine at this time what the volumes may be.

4. Applicant has stated that vegetation will be removed (Section 4.6, Vol. 3) prior to excavation or other surface disturbance. No timetable is discussed. Soil will be removed

by rubber-tired scrapers (where suitable), bulldozers, front-end loaders and dump trucks. Adequate supervisory personnel will be present to insure proper techniques in topsoil removal.

There will be both long-term and short-term topsoil storage piles. Short-term piles will be redistributed on the mine site upper cuts which will be reclaimed almost immediately. The short-term stockpile will be about 0.1 acre in size. No location is described. The long-term stockpiles consist of one located in a draw on the north side of the site on 0.6 acre and one on the load-out site (could not locate this on mine plan map) on 0.3 acre. The reclamation timetable (Table 4.2-1, Sec. 4, p. 4-4, Vol. 3) lists long-term stockpiles being established and stabilized in 1981-82. Final reclamation will not occur until 2016, using these materials.

5. Prior to redistribution, the topsoil stockpile will be disced using farm tractors or similar equipment to break up the topsoil, insuring a more uniform spreading of the topsoil on disturbed areas. Regraded land will be scarified with a ripper before redistribution occurs. Within a suitable time period to seeding, topsoil will be distributed and allowed to settle. Topsoil will be spread in accordance with the type of vegetation to be established (deeper for aspen and spruce, thinner for sagebrush). Surface compaction will be reduced by using a dryland chisel plow running at a suitable depth. This will prepare a seed bed and reduce wind and water erosion. Following redistribution, the topsoil will be fertilized using a nitrogen-base fertilizer, applied when there is suitable moisture in the soil. If moisture is insufficient, supplemental moisture will be added with the fertilizer.

6. It is stated that the short-term topsoil stockpile will be sprayed with water or temporarily re-vegetated to retard erosion.

Long-term stockpiles will be placed on a stable surface away from active operations. The completed stockpile will have a rough surface to minimize erosion and will be vegetated at once with quick-growing, soil-stabilizing plants. Noxious weeds will be controlled. The long-term stockpiles will not be removed or disturbed until re-distributed. Diversion ditches will be used to divert runoff from the stockpiles. Signs will be posted to prevent accidental use for other purposes than reclamation.

7. No calculations can be found dealing with acreage of disturbed areas by year. The reclamation timetable (Table 4.2-1, Vol. 3) implies that 65.4 acres will be exposed and covered in part by construction roads and conveyor area from 1981-82 to beginning of final reclamation in 2016.

C. Evaluation of Compliance of Proposal

1. 817.21(a) Adequate soil segregation.

Suitable topsoils (A & B horizons) will be segregated from C horizons and placed in stockpiles before excavation. It is estimated that, in general, the A horizon is two to six inches thick and the B horizon is six to 10 inches thick. These estimates may need to be revised pending a new soil survey but at this point the applicant appears to be in compliance with this section.

(b) Redistribution schedule.

The applicant states that soils removed from the mine site, the load-out site and the road and conveyor cut areas at the beginning of construction in 1981 will either be used to reclaim side-hill cuts at the mine site plus access road cuts within 3 years (1981-1984) or will be placed in long-term stockpiles for use at final mine reclamation in 2016.

Applicant appears to be in compliance with this section.

Summary: Complies with 817.21.

2. 817.22 Topsoil Removal

(a) Existing vegetation will be removed and topsoil collection will occur prior to excavation or other surface disturbance operations within the affected areas. Applicant states (Section 3.2 Components of Operation, p. 3-43, Vol. 2) that vegetation occurring at the mine site is of two types: (1) trees, which will be harvested, trimmed and placed in a location prescribed by the U.S. Forest Service, and (2) grasses and bushes. The bushes will be piled and burned. Applicant is in compliance with this section.

(b) Applicant has stated that topsoil (A and B horizons) will be removed and stored. No C material will be used for revegetation purposes (see Section 817.21).

Applicant is in compliance with this section.

(c) The existing, though inadequate, soil survey indicates that some thin topsoil situations may very well occur. Profile descriptions indicate, generally, that soils range from 10 to 20 inches deep in the areas surveyed with some moderately deep and deep on toeslopes and alluvial positions. Descriptions also indicate an abundance of coarse fragments in the profiles. The soil survey to be performed in 1980 by the applicant must include accurate percentages of any very shallow (less than 10 inches deep) inclusions encountered so that this situation may be addressed before any topsoil stripping occurs.

Applicant is technically in compliance with this section at this time but the situation must be reviewed at end of 1980 field season when accurate mapping unit descriptions are submitted by the applicant.

(d) Applicant has stated that A and B horizons will be removed together in one operations and replaced as one unit. Considering the nature of the parent material (as far as can be ascertained at this time) and the generally coarse-loamy textures of the soils, this appears a reasonable method.

Applicant is in compliance with this section at this time.

(e) Applicant does not anticipate using any waste material as a substitute or supplement to topsoil. If, in the future, a substitute is needed, the regulatory authority will be notified of such an intention and information will be provided as specified in this section prior to issuance of any approval.

Applicant is in compliance with this section.

(f) Applicant has stated that all areas to be disturbed by construction will be stripped of topsoil in 1981. This specifically includes the conveyor cut area, which is not scheduled for completion until 1984. A figure of 20 acres for this disturbance is given on page 3-57, Vol. 2. This area will presumably trend downslope over highly erosive materials which will be exposed both during and after construction with no attempt at mulching to control surface runoff. In addition, it appears that this area may be stripped much earlier than is really necessary, to simplify operations.

Applicant needs to clarify this point by establishing a schedule which ties topsoil stripping to actual start of construction activities for each site. Also needs to specify what will be done to control erosion on conveyor belt area, prior to, during and after construction is completed.

Applicant states (Sec. 4.6.4 Topsoil Redistribution, Vol. 3) that topsoil will be distributed at a time of year suitable for seeding permanent vegetation. It will then be allowed to "settle and attain equilibrium with its natural environment."

Applicant must clarify what is meant by a suitable time of year (should not be when soils are frozen) and if the topsoil is to be exposed and allowed to "settle", what protection measures will be taken. Spraying it with water alone will not be acceptable.

With clarification on these points, applicant will be in compliance with this section.

817.23 Topsoil Storage

(a) Applicant has stated that all topsoil will be stockpiled in, either, one short-term stockpile to be redistributed within three years (according to the reclamation timetable (p. 4-4, Vol. 3) or in two long-term stockpiles that will remain until final redistribution upon mine closure in 2016.

Applicant is in compliance with this section.

(b) Areas designated for the long-term stockpiles are (1) in a draw on the north side of the site (Map 3-8, Mine Surface Facilities Plot Plan) and (2) at the load-out site. The draw site may be stable but will subject the stockpile to a large amount of runoff. A diversion is located on the plot plan to channel the runoff and this must be scrupulously inspected and maintained. An effective vegetative cover to control surface runoff on the stockpile must be established and maintained.

The load-out site can not be accurately located at this time, however, such a site does not seem to be an ideal spot for a long-term stockpile. Such a location appears to subject the stockpile to contamination, compaction, and will not contribute to an adequate revegetation of the surface.

It is stated that the short-term stockpile will be sprayed with water or temporarily vegetated to retard erosion. Considering that this stockpile will actually be in place up to three years, it must be revegetated immediately. The steps that have been outlined on page 4-20, Vol. 3 must be followed on all stockpiles. These include a stable location (insofar as is possible considering the terrain), a diversion channel for runoff, immediate revegetation with a quick growing cover crop, protection from contamination and from compaction. It was noted that the applicant intends to use a dust-suppressant on topsoil stockpiles (p. 4-77, Vol. 3). It must be verified that such suppressants will not prevent re-establishment of vegetation.

With clarification, applicant will be in compliance with the above section.

817.24 Topsoil: Redistribution

(a) Prior to topsoil redistribution, regraded land will be scarified by a ripper-equipped tractor. The ground surface will be ripped to a suitable depth in order to reduce surface compaction, provide a roughened surface assuring topsoil adherence and to promote vegetational root penetration.

Applicant is in compliance with this section.

(b) Topsoil redistribution procedures will ensure an approximate uniform thickness consistent with the proposed reclamation plan. Topsoil for the proposed aspen and spruce areas will be spread in relatively deeper layers than for the proposed sagebrush areas due to the vegetational characteristics of each type. Topsoil will be redistributed at a time of the year suitable for seeding permanent revegetation. To minimize compaction of the topsoil following redistribution, travel on reclamation areas will be limited. After topsoil has been applied, surface compaction will be reduced by using a dryland chisel plow running at a suitable depth. This operation will also help prepare a proper seed bed and protect the redistributed topsoil from wind and water erosion.

Applicant's proposal to allow soils to "settle" has been discussed in Section 817.22 Topsoil: Removal and this must be clarified.

Applicant states that necessary measures to ensure stability of topsoil on graded slopes will be employed. What these measures are, such as redistribution on the contour must be clearly stated.

Applicant has not stated exactly how topsoil will be redistributed, whether by scraper, loader, bulldozer, etc. This must be clarified.

Applicant has stated that the area around portal No. 1 will be graded to a 1:2 slope with 8 foot wide benches at 30 foot intervals, as will portals No. 2 and 3. Both appear to be cut in sandstone, shales and siltstones. It is not clear at this point whether any attempts will be made to vegetatively stabilize these areas or whether soil will be spread on the benches.

Planting and revegetation of all disturbed areas will take place during the first appropriate season following grading and topsoil redistribution procedures and will include, as necessary, the addition of remedial soil treatments. A suitable, permanent, diverse vegetative cover, selected on the basis of U.S. Forest Service requirements, will be established on all reclaimed areas.

Applicant has stated that crimped-in-straw mulch will be used prior to seeding on flatter areas to enhance moisture retention. Hydro-mulch and/or burlap matting will be used on steeper (2:1 or 1:2) slopes.

Applicant must specify how soon reseeding will take place and what will be done to prevent soil erosion in the interim. Crimped-in mulch must be used if soils are to be exposed for more than a few days since projected rainfall from May to September is 8 inches on average and probably falls in short-

duration, high-intensity rainstorms. In addition, if soils are to be spread and allowed to settle over-winter, they will be exposed to runoff during snowmelt.

With clarifications applicant will be in compliance with this section.

Summary: Will comply with section 817.24

817.25 Topsoil: Nutrients and soil amendments

The applicant plans to test the topsoil before it is seeded to determine the type and amount of fertilizer or neutralizer required. Soil analyses will measure the following components:

- o Micro-nutrients
- o Potassium, Calcium, Magnesium
- o Phosphorus
- o Nitrogen
- o Soil pH and Salinity
- o Soil Texture

No methods of application were discussed.

Applicant is in compliance with this section.

Summary: Will comply with 817.25

D. Revisions to Applicant's Proposal

To be determined following submission of detailed soil survey following 1980 field season as stipulated in Assumed Completeness Review done by OSM.

E. Reanalysis of Compliance

To be determined following technical analysis of detailed soil survey to be submitted following 1980 field season by applicant.

F. Proposed Special Stipulations and Justifications

817.21 - .25

Stipulation:

Applicant will provide a detailed (Order 1) soil survey on all areas to be disturbed and an Order 3 survey on the remainder of the permit area. This will be done according to the standards of the National Cooperative Soil Survey. Scale of maps used for the Order 1 survey shall be no less than 1:12,000. Scale of map used for the balance of the permit area shall be no less than 1:24,000. This must be done by the end of the 1980 field season

and submitted by no later than November 3, 1980 so that reanalysis of compliance with 817.21 through 25 may be accomplished and adequacy of suitable topsoil for revegetation on disturbed areas may be assessed.

The applicant will provide a list of criteria used for determining topsoil suitability and these criteria will include SAR, pH, EC, saturation percentage, textural analysis, soluble Ca, Mg and Na, organic matter, N,P,K, an estimate of coarse fragment volume and bulk density on disturbed and repacked soil samples. Analysis must be done by major horizon to bedrock or 60 inches from surface. An estimate of the erosion potential must be included for each map unit.

Accurate topsoil volume calculations must be made and submitted, based on new soil survey.

An estimate of the productivity of each named soil by mapping unit in the new survey must be made and submitted with it.

817.22 Topsoil: Removal

(f) 1. Stipulation: Applicant must provide a detailed schedule linking topsoil removal to actual start date and progress of construction. Must also specify what will be done to control erosion on the conveyor belt area from initiation of topsoil removal to final reclamation. These stipulations must be met in order to determine how much exposed surface there is at any one time and whether adequate erosion control methods are being implemented on all areas.

2. Stipulation: Applicant must clarify what is meant by a suitable time of year for redistribution and/or seeding and whether soils will be exposed without mulching or other erosion protection while they "settle". Redistribution of frozen soils will produce uneven settlement and require regrading.

817.23 Topsoil: Storage

Stipulation: Applicant must discuss reason for locating a long-term stockpile at the loadout area and how it will be protected from compaction and contamination.

Stipulation: The short-term stockpile must be revegetated as soon as it is completed or it must be demonstrated that the stockpile will be in continual use for reclamation. If it is actually in place for three years, it must be treated exactly like the other long-term stockpiles and meet the criteria set forth in the mine plan for protecting these stockpiles. The nature of the dust-suppressant must be specified in order to determine whether it will hinder revegetation.

817.24 Topsoil: Redistribution

Stipulation: Applicant must specify how soils will be redistributed (type of equipment to be used, how many lifts will be used, whether redistribution will be on contour and moisture content at time of redistribution). Information is required to determine whether soils will remain in place or slopes and how much compaction will occur.

Stipulation: Applicant must discuss exactly how 1:2 slopes will be treated in reclamation efforts and whether the benches will be reclaimed around the mine portals.

Stipulation: Applicant must establish definite time periods for reseeding of both temporary and permanent cover and how exposed soils will be protected against erosion if seeding is delayed.

G. Summary of Compliance

Unsure, because the following data are lacking: Accurate detailed soil survey and comprehensive laboratory analyses for areas to be disturbed so that volumes and suitability of soils may be assessed for reclamation.

H. Proposed Departmental Action

Provisional approval of applicants' request based on timely submission of requested information. Technical Analysis of new data must be completed before final approval can be issued.

I. Residual Environmental Impacts of Proposed Departmental Action

The proposed action will impact 50.6 acres out of 4839 acres on the permit area, about 1 percent of the total. On a percentage basis, this is a very minor impact. However, the coarse-loamy soil textures, combined with high elevation short-growing seasons, and the potential for runoff associated with high-intensity, short-duration rainstorms and snowmelt does produce the possibility of serious erosion when soils are exposed. Effective erosion control measures are imperative once soils are exposed and exposures must be kept to a minimum.

Soils genesis on several soils exhibiting possible development of argillic horizons and others with high accumulations of organic matter in the surface horizons will be considerably set back. Coarse fragment volumes will increase and be redistributed more evenly throughout the profile. Textures will become more homogenous. In general, the soils will be returned to a relatively young state and rapid vegetative stabilization will be the key to allowing pedogenesis to begin again and restore the diversity of soils now present.

J. Alternatives to Proposed Action

Given the necessity for establishing a portal and associated facilities for underground mining, there appears to be no reasonable alternative to the applicants' proposed general plan for handling and reclamation of the permit area.

823.1 - 823.15 Special Performance Standards-Operations on Prime Farmlands

A. Description of Existing Environment

The proposed permit area is located in Carbon and Emery Counties, Utah in mountainous terrain approximately two miles southwest of Scofield, Utah. The area is at an elevation of approximately 8,000 feet and the climate is one of short growing seasons and a deep snowpack during the winter.

The soils are coarse-textured, have a high coarse fragment volume and are generally located on moderately steep to steep slopes. Narrow areas of alluvial and terrace soils are located in the bottoms of narrow drainageways. These soils exhibit some degree of development and have an accumulations of organic matter on the surface.

Vegetation is aspen, fir and spruce with some cool desert shrubs, mountain brush and riparian representation.

Existing and historical land uses are grazing, recreation, forestry and mining. There is no apparent evidence of an agricultural use, either past or present, and its present location almost totally (99 percent) within Forest Service boundaries would seem to effectively preclude such use.

There is no presently acceptable soil survey in existence on the permit area but SCS has made an on-site inspection of the permit area.

B. Description of Applicant's Proposal

The applicant states that an investigation has been conducted as per 30 CFR 783.27, paragraph (b), items 1 through 5, and a determination was made by them that no prime farmland exists in the Eccles Canyon area. A negative determination of the existence of prime farmland was requested from the SCS and a letter substantiating such a determination was received from Dr. Theron B. Hutchings, State Soil Scientist, Soil Conservation Service, Utah on August 20, 1979 (Volume A-5, Technical Correspondence).

C. Evaluation of Compliance

The permit application is in compliance with 783.27 and a negative determination has been provided by SCS.

D. Revision of Applicant's Proposal - (None)

- E. Reanalysis of Compliance - (None)
- F. Necessary stipulations and Justifications - (No special stipulations are needed).
- G. Summary of Compliance - Will comply.

A. Description of Existing Environment

The Skyline Mine property lies within Carbon and Emery Counties, Utah (T135, R6E). It is 6290 acres with 6220 acres lying in Manti-La-Sal National Forest. The remaining 70 acres are coal rights leased from Carbon County. (Vol A-4, Land Use, p. 1) The elevation ranges from 8500-9500 feet. (Vol A-5, Soils and Vegetation, p.1) The average annual precipitation for the area is 25-30 inches (Vol 1, 2-43).

Spruce-fir and aspen-spruce-fir communities make up 40% of the lease area. the forest floor is frequently shaded, although five forbs, three grasses and a sedge are found there (Vol A-5, Soils and Vegetation, p. 3).

Nine percent of the lease area is aspen, primarily on south facing slopes and ridges. This community type is transitional to aspen-grass-forb-elderberry communities, which make up 33% of the lease area. These communities are the most diverse types in the lease area (Vol A-5, Soils and Vegetation, p. 4).

Sagebrush, fringed sagebrush, and sagebrush-snowberry community types occupy 13% of the lease area, primarily on shallow soils. These types include 90 species of vascular plants between them (Vol A-5, Soils and Vegetation, p. 4).

The riparian type is found along the major drainages, minor tributaries, spring lines, seeps and "perennial wet channels, down slope from minor springs." This community type includes red top, silver sagebrush, sedges, grasses and several forbs (Vol A-5, Soils and Vegetation, p. 5).

Approximately 1% of the lease area consists of sandstone ledges which hold serviceberry, aster, ferns, and other species which are uncommon in the other communities (Vol A-5, Soils and Vegetation, p. 6).

Disturbed land is also found within the permit area, some of which has been revegetated. The pipeline corridor which runs along the ridge dividing the Huntington Creek and Clear Creek drainages has both introduced and native species. The proposed portal yard has also been disturbed but is not reclaimed. crested-wheatgrass, intermediate wheatgrass, smooth brome, orchard grass, tall oatgrass, bulbous wheatgrass and bluegrass are now naturalized in the disturbed areas. There are also several examples of natural re-establishment by yarrow, sagebrush, aster, sedge, rabbitbrush, thistle, penstemon, bluegrass, cinquefoil, western coneflower, red elderberry and horsebrush (Vol A-5, Soils and Vegetation, p. 5).

Eccles Canyon has similar plant communities as the lease area. It also includes some Gambel oak, curl-leaf mahogany, and blue spruce (Vol A-5, Soils and Vegetation, p. 6).

B. Description of Applicant's Proposal

Preliminary studies determined that twenty 2x5 dm plots would be adequate since a 10% increase in this number failed to give a 10% increase in the number of species found. A total of 30 plots were measured in each vegetation type (Vol A-5, Soils and Vegetation, p. 12).

Reference areas were chosen in sites where three exposure differences were available: a ridge summit or south-facing slope in a grass-forb-elderberry community, a south facing slope in aspen, and a north facing slope in spruce-fir-aspen or spruce-fir. Permanent 100 m transects were established in each vegetation type of each reference area (Vol A-5, Soils and Vegetation, p. 7).

Studies were also conducted in areas scheduled for disturbance by mining activities. The proposed portal yard area includes aspen, sagebrush and spruce-fir communities and a transect was placed in each of these types. One transect was placed in an aspen community where the bypass road will be located. An area which has been proposed for a waste rock disposal area consists of aspen, riparian, and spruce-fir communities. A transect was placed in each type. Since the area has not been definitely designated for waste rock disposal, it has been designated Reference Site WD (Vol A-5, Soils and Vegetation, pp. 7-8).

Each site in the grass-forb-elderberry, aspen and riparian types were sampled following Daubenmire (1957) for canopy coverage. The canopy was projected as cover of the ground for each species of forb, grass or shrub. The cover was estimated in six cover classes. Total cover, percent frequency and percent composition were computed for each species in the thirty 2 x 5 dm plots of each transect. These plots were placed at 3 m intervals (Vol A-5, Soils and Vegetation, p. 8).

Spruce-fir and aspen sites were sampled using Curtis' (1956) quarter method. Tree species were also studied by using 5 x 15 m plots to determine size-class distributions for each forest type. A Swedish increment borer was used to determine the ages of trees and the average annual increments of growth in diameter were measured (Vol A-5, Soils and Vegetation, p. 8).

Productivity data for grass and forb species were gathered using the weight estimate method (Range Analysis Handbook, USDA 1970) in which the weight of each species was estimated in ten plots in each forb community. From these data production was determined. Due to shading and "poor representation of species on the forest floor" the spruce-fir communities were assumed to be nonproductive. Therefore, no production data were taken from this type (Vol A-5, Soils and Vegetation, p. 10).

Aspen and grass-forb-elderberry communities were found to include 23-32 species. Spruce-fir had 17-26 species, riparian 15-26 and sagebrush had 10-14 species (Vol. A-5, Soils and Vegetation, p. 9).

Production showed a great deal of variability with aspen and grass-forb-elderberry communities ranging from 451.8 - 835.5 pounds of livestock herbage per acre, sagebrush with as much as 917.1 pounds per acre and riparian with 180.5 and 286 pounds per acre (Vol A-5, Soils and Vegetation, pp. 9-10).

Aspen, spruce and fir all produced an average annual growth increment of 4.2 mm per year. Spruce and fir were found to be three times as dense as aspen. Aspen stands showed a mixture of age and size classes while aspen-spruce-fir stands showed a trend toward conifer dominance. Co-dominance of the two conifer species was seen at Reference Site 3. At the portal site, however, the forest shows dominance by spruce while the more xeric conditons of Reference Sites 1 and 2, have fir showing dominance (Vol A-5, Soils and Vegetation, pp. 10-11).

Similarities between reference areas and proposed disturbances areas is shown by the "congruence of species numbers in each of the types." A diversity in reference area aspen sites of 22-29 species is only slightly higher than in the areas to be disturbed (19-25). Riparian sites in areas to be disturbed had 27-34 species while the sedge community in Burnout Canyon Reference Site 3 had 15-17 and the riparian zone of Reference Site 4 had 17-26 species (Vol A-5, Soils and Vegetation, p. 12).

The total productivity of the areas to be disturbed (839 anima units) will be lost during the operation of the mine. By assuming agrazing period of three months (July-September) the loss was calculated to be nine cow-calf units per year (Vol 5, Soils and Vegetation, p. 12).

No proposed endangered or threatened plant species were found nor have they been recorded from the permit area (Vol A-5, Soils and Vegetation, p. 13).

Revegetation on disturbed areas will be done in the first growing season following grading and topsoil redistribution. The revegetation plan has been set up under Forest Service guidelines (Vol 3, section 4.7, p. 4-23).

On south facing slopes of 33:1 or flatter the following seed mix should be planted at a rate of 12 pounds per acre:

<u>Bromus inermis</u>	Smooth Brome (Lincoln)	3-4 lbs/acre
<u>Phleum pratense</u> or <u>Alopecurus pratensis</u>	Timothy or Meadow Foxtail	1-2 lbs/acre
<u>Melilotus officinalis</u>	Yellow Sweetclover	1-2 lbs/acre
<u>Medicago sativa</u>	Alfalfa (Ladac or Nomad)	1-2 lbs/acre
<u>Linum perenne</u>	Lewis Flax	1-2 lbs/acre
<u>Dactylis glomerata</u>	Orchard Grass	1-2 lbs/acre

(Vol 3, section 4.7, pp. 4-23-4-24)

South facing slopes of 2:1, or 1:2 will be treated to handset plants of sagebrush, (Artemisia tridentata) (Chrysothamnus nauseosus), rabbitbrush, snowberry, or red elderberry at 1 m or larger intervals. The seed mix given above should be seeded around them (Vol 3, Section 4.7, p. 4-23).

North facing slopes will be planted with handset seedlings of Engelman spruce and/or subalpine fir at intervals of 2.5 m in all directions or smaller. Spreading sweet root, heart leaf arnica and grasses may be seeded between them in the following amounts (Vol 3, Section 4.7, pp. 4-23-4-24).

<u>Osmorhiza chilensis</u>	Spreading Sweetroot	1-2 lbs/acre
<u>Arnica cordifolia</u>	Heart-leaf Arnica	1-2 lbs/acre
<u>Bromus inermis</u>	Smooth Brome	3-4 lbs/acre
<u>Bromus ciliatus</u>	Fringed Brome	1-2 lbs/acre
<u>Dactylis glomerata</u>	Orchard Grass	1-2 lbs/acre

Seeding of the south facing flatter slopes will be done with a cyclone spreader. Seeding of 2:1 or 1:2 slopes will be done with a hydro-seeder. Shrubs and trees will be handset (Vol 3, section 4.7, pp. 4-25).

A weed-free straw mulch will be used on all but the steeper slopes. This straw will be crimped into the soil with standard farming equipment before seeding. The steeper slopes (2:1 and 1:2) will require a hydro-mulch and/or burlap matting (Vol 3, Section 4.7, p. 4-25).

Irrigation will be required on a short term basis if lower than average precipitation or irregularities in precipitation distribution occur. Irrigation will also be necessary if the vegetation fails and has to be replaced. The recommended species are known to survive in the region without additional water (Vol 3, Section 4.7, pp. 4-25).

The applicant will check all seeded areas for at least the first five years of reclamation at the end of each growing season. Where successful revegetation is apparent (80% of the original cover during the five year period) the interval of future monitoring will be changed to five years. Areas not achieving 80% of the original cover after five years will be "immediately investigated to determine possible failure cause(s), so that positive steps can be taken to establish the desired permanent vegetation during the next seasonal opportunity." A written

report will given the corrective actions to be taken before the next growing season (Vol 3, Section 4.7, p. 4-26).

The standard methods outlined in Vol A-5, Soils and Vegetation, will be applied to determine the degree of success of the revegetation attempts (Vol 3, Section 4.7, p. 4-26).

Drilling operations will also result in disturbed areas. At the completion of a hole's use, it will be filled, contoured, tagged and revegetated. All associated access roads will also be reclaimed as the drill sites. These areas will then be planted with a mixture of "grass and brush seed native to the area." The following mix will be seeded during the fall at a rate of 13 pounds/acre (Vol A-5, 1979 Exploration Plan, pp. 3-4).

- Manchar Smooth Brome
- Ranger Alfalfa
- Kentucky Blue Grass
- Intermediate Wheat Grass
- Timothy Grass

The cost of revegetation is anticipated to be \$7000/acre (ripping, topsoil addition, fertilization and/or neutralization, seeding and tree planting, moisture retention, maintenance and monitoring) (Vol A-5, Reclamation Calculations, p. 4).

In the reconstruction of the stream, riparian vegetation will be seeded on the stream banks (Vol 3, section 4.12, pp. 4-45).

Evaluation of Compliance
Problem

Possible Stipulation

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| <p>1. Mine plan gives average annual rainfall as 25-30 inches (Vol. 1, p. 2-43) according to pp. 2-43). According to Climates of the States, Volume II-Western States including Alaska and Hawaii, p. 929 (NOAA, 1974. U. S. Department of Commerce) the average annual precipitation is 16-24 inches.</p> | <p>1. Since the difference in rainfall means a difference in the amount of time the company is liable for vegetation, study the need to have something more definitive.</p> |
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Evaluation of Compliance
Problem

2. The method of determining sample adequacy was not given. It is impossible to tell if the sample size was, indeed, large enough.
3. One hundred meter transects were set up, each with 30 2 x 5 cm plots along it (3 m apart). Each of these plots was considered an individual plot for sample adequacy, but no randomization was described for their displacement, so each transect should have been considered a single point.
4. The placement of the transects in the vegetation type was not random.
5. Reference areas were chosen which contained all of the vegetation types of the areas to be disturbed and a single, permanent transect run through.
6. The Daubenmire system for canopy coverage was used. This method tends to overestimate fairly rare organisms and may underestimate abundant ones.
7. Production for grass and forb species were gathered using the weight estimate method (Range Analysis Handbook, USDA 1970). According to the description in the mine plan these data were estimates with no "hard" data for comparison. No information was given on how the ten plots in each community were selected.

Possible Stipulation

2. This method needs to be given.
3. More samples need to be taken to meet sample adequacy prior to disturbance.
4. Transects need to be established randomly and sampled prior to disturbance.
5. Reference areas need to be established for each vegetation community. Sample adequacy standards and randomization of plots must be met (a single transect with evenly spaced points is a single sampling point). Sampling needs to be done prior to disturbances.
6. The cover sampling needs to be redone using another method which gives a more precise estimate.
7. No quantitative data was obtained the productivity information needs to be collected again, prior to disturbance. If quantitative data were collected, these data should be presented. Information on how the productivity plots were selected needs to be supplied.

Evaluation of Compliance
Problem

Possible Stipulation

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| 8. Due to extensive shading and and "poor representation of species on the forest floor" (although the number of species present was higher than the sagebrush community) productivity was assumed to be zero. This was in spite of the understory plants representing 40-70% cover in all but one site (where they made up 20% cover). | 8. Productivity for spruce-fir sites needs to be collected prior to disturbance. |
| 9. Diversity comparisons were made strictly on a number of species here vs. number of species there basis. No statistical methods were used to show whether vegetation types were the same in reference areas as in the disturbed areas. A straight comparison of numbers says very little about the distribution of those species within the community. | 9. More information of a statistical nature needs to be supplied in order to evaluate the similarities between the reference areas and disturbed areas. |
| 10. Production data were missing for several sites besides the spruce-fir. | 10. These data need to be provided for all sites prior to disturbance. |
| 11. The seed mixes which are planned for use rely heavily on introduced species which outcompete natives. There is no supporting justification for this choice. No information was given on whether revegetation is being with the post-mining land use in mine, although the seed mixes don't seem to indicate that it is. | 11. The seed mixes need to be re-evaluated and native grasses and forbs need to be included. The heavy dependence of smooth brome (1/4-1/3 of the seed mix) must be dropped. Consideration needs to be given to grazing and recreation (hunting of large and small game and game birds) as post-mining land uses. |
| 12. There are no proposed proportions of species for the handset seedlings in the south facing shrub areas or north facing spruce-fir areas. | 12. Some plan needs to be made. Alternatives should also be avoided in the event of specific events. |
| 13. Irrigation may be required if less than normal rainfall occurs. No information on how much less. | 13. This information needs to be supplied. |

Evaluation of Compliance
Problem

Possible Stipulation

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| <p>14. The vegetation studies to establish revegetation success are rather, broad and general and state that yearly studies will be done and where 80% of the original cover has not been established after five years the areas should be re-evaluated and revegetation attempted again. Where 80% of the original cover has developed, the sampling interval should be placed at 5 years. The same methods which were used for the baseline data gathering are recommended.</p> <p>15. The type of forestry planned for the post-mining land use phase is not specified. If the area will be managed for timber, it seems to meet the requirements. If it is to be managed for wildlife management (since hunting is the major recreational use) and recreation both the baseline and the revegetation scheme are lacking.</p> <p>16. The seed mix suggested for drill sites (Vol A-5, 1979 Exploration, pp. 3-4) is hardly made up of species "native to the area". It also does not include the rates of each species which will be applied.</p> <p>17. The cost of revegetation was calculated to be \$7000/acre. The plan cites Table 4.3-1 for more information but doesn't say where the table is located in the plan. Information is needed in how the cost-figures were determined.</p> | <p>14. These plans should be modified to fit into the OSM time framework and more definitive, information should be provided on what 80% of the original cover means - is it just something numerical or is it the original species cover? The methods which were used for the baseline data gathering should not be used.</p> <p>15. The type of forestry to be in effect must be defined and if the baseline data collection and plan have not considered this, they need to be re-collected and re-planned.</p> <p>16. The seed mix must be re-evaluated. More of an emphasis on true natives should be made and the rates of application for each given. All revegetation efforts should be covered in plan.</p> <p>17. This information should be provided.</p> |
|---|--|

Evaluation of Compliance
Problem

Possible Stipulation

18. The scale for vegetation map B is not given.

18. The information should be provided.

19. The statement is made that streambank will be seeded with riparian vegetation when the stream is re-constructed, but no mention is made of what types of riparian vegetation will be planted, nor is it included in the overall revegetation plan.

19. This information needs to be provided and all areas which will be revegetated need to be included in a revegetation plan.

20. No reference is made to which species are being planted specifically for wildlife and sheep forage.

20. This information should be provided and if the seed mix does not include such species, it should be revised to do so.

D. Revisions to Applicant's Proposal - (None)

E. Reevaluation of Compliance - Not applicable.

F. Proposed Special Stipulations and Justification

See "C" above.

G. Summary of Compliance

If the proposed stipulations are implemented, this section will be in compliance.

H. Proposed Departmental Action

As the vegetation study and revegetation plan stand currently they will be required to be redone. The applicant has no statistical data which will offer a valid base for comparison at the time of bond release. The study needs to be done using randomization, defined methods of determining sample size, proper reference areas, or more precise cover determination method, and a quantitative production determination method. Productivity needs to be established for all vegetation types and reported for all sites. The new study needs to take place before disturbance.

The revegetation plan will be required to have the seed mixes changed. The applicant has failed to prove that heavy planting of smooth biome allows the re-colonization of native plants in the revegetated area. More emphasis needs to be placed on

native species. All sites which will be revegetated (including drillpads and streambanks) have to be included in the overall revegetation plan. The time frame for revegetation and determination of success need to be adjusted to fit OSM regulations. Information needs to be given on what specific circumstances will result in the use of irrigation. Proportions of species of trees and shrubs which will be handset need to be established as well as how the plants chosen for revegetation fit into the post-mining landuse. The type of forestry which will be conducted after mining needs to be defined and the revegetation plan adjusted to fit with that.

The average annual amount of rainfall which an area receives determines the length of liability for the applicant. The mine plan states that the site area receives 25-30 inches/year (Jeppson, R. W., G. L. Ashcroft, Al Haber, G. U. Skogebol, and J. M. Bagley, 1968. Hydrologic Atlas of Utah. Utah Water Research Laboratory and State of Utah Department of Natural Resources. PRWG35-1, Utah State University, Logn, Utah). A publication by NOAA (Climates of the States, Volume II-Western States including Alaska and Hawaii, 1974. U. S. Department of Commerce, p. 929) gives the average annual precipitation for the area as 16-24 inches. A report to the applicant from Radian Corporation which was included in 1980 supplements to the mine plan states that they feel that the average annual precipitation for the mouth of Eccles Canyon is similar to that of Clear Creek (23.10 inches) and ranges to about 30 inches at higher elevations in the area. These differences need to be sorted out and an acceptable value decided on by OSM.

I. Residual Environmental Impacts of Proposed Departmental Action

If the proposed actions are taken, the applicant will have a plan for revegetation which can be worked with and accomplish the goals of reclamation. Data would be available for comparison at the time of bond release and revegetated areas will be more likely to meet the requirements of OSM.

Determining a value for average annual precipitation will give the applicant and OSM a definite length of time for which the applicant will be liable.

J. Alternatives to Proposed Action - (None)

817.97 Protection of Fish and Wildlife

A. Description of Existing Environment (783.20)

The Skyline Mine Plan area is located on the Wasatch Plateau in central Utah at an elevation of approximately 8,000 feet. The area is dominated by forest vegetation. Common important wildlife species are mule deer, elk, moose and cutthroat trout. A wildlife assessment was conducted by Clyde Pritchett, Duane Smith and others from Brigham Young University. R.N. Winget prepared the initial Aquatic Inventory and site description dated October 10, 1979 and an updated revision dated January 28, 1980. The scope of wildlife studies was identified by the Utah Division of Oil, Gas and Mining in consultation with the U.S. Forest Service and Utah Division of Wildlife Resources.

1. No threatened or endangered species or evidence of their presence has been observed on the mine plan area. In Attachment F, included in the response of Question 1, Dr. Clayton White states that peregrine falcons are known to nest within 20 miles of the mine plan area, but no suitable nesting habitat exists on or within five miles of the mine plan area. Ten to 20 bald eagles winter from November until freeze-up (normally January) on Scofield Reservoir north of the mine plan area, and pass through the mine plan area in migration. No bald eagle nests are known in Utah at present, and locations of all known historical nest sites are greater than 50 miles from the mine plan area. No black-footed ferrets or indications of their presence have been recorded on or near the mine plan area. Golden eagles have been recorded in the mine plan area, but no nests have been reported and none were located during field surveys in 1979.

2. Three big game species (elk, mule deer and moose), two small game species (cottontail and snowshoe hare), two game birds (blue grouse and ruffed grouse) and cutthroat trout occur in the mine plan area.

The Skyline Mine Plan area and adjacent areas are considered high priority habitat year round for moose and the South Fork (of Eccles Canyon) area as crucial critical habitat (Figure 1, response to Question 2).

The entire area is considered high-priority habitat for mule deer (Figure 3, response to Question 2). Twenty-five to 35 animals summer in Pipe Spring Canyon, 20 to 30 in James Canyon, and mule deer are "frequent" in Eccles Canyon (Vol. A-5, Wildlife Assessment, p. 4). Mule deer winter to the east and northeast of the mine plan area (revised Wildlife Assessment, Figure 5).

The mine plan area and adjacent areas are considered high priority habitat for elk (Figure 1, response to Question 2) and elk and elk sign are common throughout the area in summer. The

highest concentrations were in South Fork, and "This area appears to be used as a calving ground because of the number of wapiti with very young calves we observed there" (Vol A-5, Wildlife Assessment, p.3). This herd winters at lower elevations to the east of the mine plan area (Figure 4, Revised Wildlife Assessment).

Cottontail rabbits and snowshoe hares both occur year-round on the mine plan area, although snowshoe hares are generally restricted to spruce-fir habitats. Blue grouse and ruffed grouse both occur in the mine plan area and must be considered "prime species" according to the scope identified by UDOGM. However, these species are not discussed in the Wildlife Assessment or the Revised Wildlife Assessment.

3. Elk and mule deer migrate through the mine plan area between their winter and summer ranges. The Wildlife Assessment identifies eleven game trails which intersect the proposed coal conveyor route. The South Fork area is an elk calving ground and is also an important year-round moose habitat (Revised Wildlife Assessment, p. 18).

Cutthroat trout were found to be successfully reproducing in the vicinity of the confluence of the South Fork and the Main Fork of Eccles Creek (sta. EC03) and downstream for that point. Huntington Creek above Electric Lake in the southwest corner of the mine plan area is considered by the UDWR as a valuable cutthroat recruitment area for Electric Lake.

B. Description of Applicant's Proposal (784.21, 817.97)

1(a). 817.97(a) The applicant will avoid adverse impacts to wildlife by the following means:

1. The applicant will construct seven underpasses and one overpass in places where the coal conveyor system intersects major natural drainages in order to eliminate the barrier effect of the coal conveyor system. (Fish and Wildlife Plan, Vol. 3, p. 4-64, Response to Question 3).
2. The applicant will have posted speed limits and game crossing signs in Eccles Canyon (Fish and Wildlife Plan, Vol 3. P. 4-64).
3. The disturbance of the surface will be limited by the use of underground mining and by locating all utilities in one corridor. (Response to Question 3).
4. The applicant will bus all employees to the mine site, thus reducing the potential for vehicle-wildlife collisions.
5. Construction activities will be coordinated with DWR in order to avoid periods of potential high impact. This has not been positively stated by the applicant (Response to Question 3).

6. DWR recommendations have been included in revegetation plans (Response to Question 3). "The reclaimed habitat will, in many cases, be superior to that found in the pre-construction conditions. A recommended revegetation species list, favorable to wildlife has been incorporated where appropriate" (Response to Question 3). It is not evident in the revegetation plan that either of these statements is true.

7. South Fork will not be mined, thus avoiding disturbance of important elk and moose habitat.

8. The applicant's Fish Habitat Plan does not contain a methods section. Baseline data to support the contention that the land slough has had a serious effect upon the aquatic system is lacking. (pg. 5 & 6). Data from Table 4c shows \bar{d} , diversity, increasing, not decreasing as stated from station EC05 (pg. 8). The author seems to be making a case for the use of CTQ^a that is not there. Noticeable increases in Chironomidae, Simuliidae, Oligochaeta and Elidae are not noticeable in Table 1 and 2 except for the Chironomidae. Oligochaeta are not even listed in the tables. Several statements on page 9; Chironomidae and Baetis dominance indicating seasonal stress; Table 1 and October data indicating man caused stress; need further clarification and proof.

- 1(b).1. A continuing monitoring study involving the applicant and DWR, will investigate the need for additional game crossings (Response to Question 3).
2. Conservation recommendations have been requested from DWR for inclusion into the employee training program (Response to Question 3).
3. The applicant proposes to build culverts up to 1400 feet long under the surface structures at the portal area. It is proposed that aquatic drift will rapidly colonize the downstream area by passing through these culverts. (pg. 3, Revised Fish Habitat Plan).

The applicant proposes to restore the stream reaches that were protected by the culverts by creating a habitat ideal for the macroinvertebrates. (macroinvertebrate Habitat Plan). This is an excellent exercise in stream improvement, however, the applicant has not made a statement as to committal to this program.

The applicant proposes to divert Eccles Creek around the coal handling and loadout facilities. Again the design of the stream diversion is excellent, however, there is no plan to return the stream to its original channel. (pg 8 Revised Fish Habitat Plan).

2. 817.97(c). Electric power lines will be constructed in accordance with REA Bulletin 61-10 and Environmental Criteria for Electric Transmission Systems, USDA, USDI, 1970 (Fish and Wildlife Plan, Vol. 3, p. 4-64).

3. 817.97(a)(1)(2)(3). The mine access road in Eccles Canyon will follow an existing road, thus minimizing disturbance. No mention is made of fencing roadways. Any plans for fencing roadways, or rationale for not doing so, should be presented to the regulatory authority.

4. 817.97(d)(4)(5)(6). The applicant will commit to a reclamation plan for restoration of wildlife habitat and will not disturb critical moose and elk habitat in South Fork. The applicant has referred to a program of stream restoration but has not positively committed to it.

5. 817.97(d)(7). The applicant has not discussed the use of persistent pesticides.

6. 817.97(d)(8). The applicant has not discussed the prevention and control of fires.

7. 817.97(d)(9). The applicant has not shown that the selection of plant species for revegetation is based upon wildlife considerations (see the land use and reclamation section)

C. Evaluation of Compliance of Proposal

1. 817.97(a) and 784.21(a). As presently written the applicant's proposal is not in compliance with these sections because of the lack of positive commitments to design of underpasses for the coal conveyor, stream restoration plans, and acceptable reclamation plan.

2. 817.97(b). The applicant has performed an adequate survey of habitat and possible occurrence of endangered species.

3. 817.97(c). The applicant is committed to acceptable construction of power transmission lines.

4. 817.97(d)(1)(2)(3). The applicant must clarify plans for fencing of roadways, or provide justification for not doing so. Otherwise the applicant is in compliance with this section.

5. 817.97(d)(4)(5)(6). South Fork has been identified as critical range for moose (year-round) and elk (summer and calving ground). The applicant will not disturb this area. The applicant has referred to plans for stream reclamation but has not positively committed to the plans.

6. 817.97(d)(7)(8). The applicant has made no commitment to avoid the use of persistent pesticides or to prevent and control fires.

7. 817.97(d)(9). The applicant has not demonstrated that reclamation plans were developed with adequate consideration given to food and cover for wildlife.

D. Revisions to Applicant's Proposal (None)

E. Reanalysis of Compliance - (Not Applicable)

F. Proposed Stipulations with justification

1. 783.20 The applicant will provide information on the occurrence of blue grouse and ruffed grouse within the mine plan area. This information is needed because these species are "prime species" according to the definition found in the Wildlife Assessment, and the UDOGM requires information on prime species.

The applicant shall provide a complete aquatic sampling methods section to include but not be limited to, the following: description of samplers used; size of sieves used; number of samples taken per station; citations as to the validity of the selected methods, including statistical methods. Without this information a complete and accurate assessment of the existing pre-mining aquatic population cannot be made.

2. 784.21 The applicant will construct seven underpasses and one overpass along the coal conveyor route, according to the following design: (1) "Underpasses" will have a minimum height of 3 m maintained across a span of 5 m; and (2) "Overpasses" or ramps will have a slope no greater than 3:1 and 5 m wide at an angle of 90° to the conveyor and tapering out to 5:1 at points 180° to the conveyor. These crossings will be as natural as possible so that the animals will unnoticingly cross when they get to the structure without really knowing they are there. The slope will be of natural soil and will be vegetated so as to preclude guide fencing. The solid covered platform over the conveyor will be of a permanent material, either concrete or fiberglass. The steep uphill slopes where they occur will be terraced with similarly covered concrete or fiberglass material to provide crossing animals a natural footing for negotiating the uphill climb.

3. 784.21 The applicant will positively commit to the Macroinvertebrate Habitat Plan. The basis for the continued stable macroinvertebrate community below the culverts is based upon the assumption that drift will continue through the culverts. The entire fish habitat plan rests on this assumption. The applicant shall provide citations, or field data, to support the contention that culverts up to 1400 feet long will not affect natural macroinvertebrate drift. A culvert this long is not at all similar to a road culvert. The applicant shall submit a detailed monitoring plan designed to address these contentions, including time period.

4. 816.97(d)(2). The applicant will submit to the regulatory authority plans for fencing roadways, or justification for not doing so.

5. 816.97(d)(4). The applicant shall provide a stream restoration plan for the return of Eccles Creek to its original stream bed in the area of the coal handling and loadout facilities. This stipulation may be waived by the regulatory authority if it is deemed practical to retain the stream diversion as the primary stream bed.

6. 816.97(d)(7). The applicant will not use persistent pesticides unless as part of an approved reclamation management plan.

7. 816.97(d)(8). The applicant will prevent, suppress and control forest, range and coal fires which are not part of an approved management plan.

8. 816.97(d)(9). The applicant will submit information demonstrating that the reclamation plan and seed mixtures were developed with consideration given to wildlife forage and cover.

G. Summary of Compliance

Compliance is unsure because the following data are lacking: Methods sections for the Aquatic Baseline Study. Verification and macroinvertebrate drift will not be affected by a culvert 1400 feet long.

H. Proposed Departmental Action

To approve, with stipulations, the applicant's plan to minimize disturbances and adverse impacts to wildlife caused by the Skyline Mine Operation.

I. Residual Environmental Impacts

Wildlife habitat on the area of disturbance, 75 acres, will be lost for the life of the mine. In addition, some disruption of deer and elk movement patterns may result, although the applicant will make all reasonable attempts to minimize this problem.

J. Alternative to Proposed Action

No reasonable alternatives to the proposed action were identified.

A. Description of Existing Environment

The Skyline property is located at the northern end of the Wasatch Plateau in both Carbon and Emery Counties (T13S, R6E). The lease area is made up of 6290 acres, 6220 acres of which are in the Monti-LaAal National Forest. The remaining 70 acres are coal rights which are leased from Carbon County (Vol. A-4, Landuse p. 1).

There are four sheep allotments which are partially contained within the lease area. These allotments are in use from July-September and involve a total of 2723 sheep over the entire allotment area (Vol A-4, Landuse, p. 3).

Another existing use of the lease area is recreation. This is mainly in the form of hunting big game, small game and gamebirds; fishing in Eccles Canyon below the proposed portal area; sightseeing; and snowmobiling. There is also some limited camping and picnicking in the mouth of Eccles Canyon. The Eccles Canyon Road provides the only direct access from Scofield Reservoir to Huntington Canyon. It is used as an access route to the Scofield Reservoir recreation area as well as recreational areas at higher elevations in the northern end of the Wasatch Plateau (Vol A-4, Landuse, pp. 3-5).

Cutting firewood and fenceposts are the primary forest uses. Occasionally timber is sold from the National Forest lands to salvage insect-killed spruce. A Kitchen Creek drainage sale of 2.5 million board feet was made in 1977. An additional 1.5 million board feet has been opened for bid and should be awarded within a few months (Vol A-4, Landuse, p.5).

Vegetation studies were done to determine the productivity of the area as well as its ability to support grazing and forestry.

The lease area includes the site of the abandoned Eccles Canyon Coal Mine. This mine operated intermittently from 1899 to 1952. The lower O'Connor "A" seam was mined using the room and pillar method. Little is known about the mine's production, but it is estimated to be small (Vol A-4, Landuse, p. 11).

There are also two producing and two abandoned gas wells in the permit area. There are no surface mines in the area (Vol A-4, Landuse, p. 11).

The counties involved have zoned the area for recreation, forestry and mining (Vol A-4, Landuse, p. 12).

B. Description of Applicant's Proposal

Abandonment will involve the sealing of miscellaneous portal openings and ventilation shafts (large diameter openings) with concrete blocks and cement. Remaining openings will be backfilled with dirt. Warning signs will be placed in front of each opening (Vol 3, section 4.12, pp. 4-44).

Small diameter openings (exploratory holes and water wells which are not approved for abandonment monitoring or postmining landuse) will be cased and sealed with a cement plug. A monument will be placed over sealed holes (Vol 3, section 4.12, pp. 4-44).

Ponds will be drained and their soil allowed to dry. Then they will be backfilled (Vol 3, section 4.12, pp. 4-44).

Buildings (office, shop, storage changehouses, treatment buildings, explosive storage) will be removed. Foundations near the surface will be removed or fractured. Deeper foundations will be covered with at least six feet of dirt (Vol 3, section 4.12, pp. 4-44).

Mining equipment, conveyors, power structure and line, and coal processing and handling equipment will be removed. Support structures and foundations will be removed or fractured and covered (Vol 3, section 4.12, pp. 4-44).

All backlog surfaced roads and parking areas from the mine to south Eccles Canyon will be ripped and the blacktop buried (Vol 3, section 4.12, pp. 4-44).

Domestic water systems will be phased out and removed or buried. Solid waste from the abandonment operation will be collected and removed (Vol 3, section 4.12, pp. 4-44, 4-45).

The stream at the mine site will not be returned to the pre-mining channel. All culverts will be removed or filled. The stream will be returned to a horizontal pattern except where it bypasses the silo foundation area. Meanders and drop structures will be added and riparian vegetation will be seeded on the stream banks (Vol 3, section 4.12, pp. 4-45).

Other natural drainages will be returned to a horizontal drainage pattern similar to the original. "The grade of the final drainage in the mine site area will be approximately 30 feet higher than its original elevation" (Vol 3, section 4-12, pp. 4-45).

Operational benches will not be removed. Their surface area will have a .33:1 slope for drainage and their banks will be reduced to a 3:1 slope (Vol 3, section 4.12, pp. 4-45).

Most side hill cuts (whose slopes range between 1:1 and 1:2) will remain after abandonment. Physical systems used to control these cuts and small terraces for stability control will remain. Abandoned roadbanks will be sloped to an average of 1:1 (Vol 3, section 4.12, pp. 4-45).

Rock wind barriers will be constructed from rock accumulate during the mining operation to provide protection from east-west wind. Wind protection will also be provided by the abandonment slopes (Vol 3, section 4.12, pp. 4-46).

Scarification will be used on operational areas to reduce compaction and prevent topsoil slippage. Ripping will be used on steep slope areas which will remain after abandonment in order to allow better soil retention and vegetation establishment. Animal trails will also be ripped at intervals in these banks (Vol 3, section 4.12, pp. 4-46).

Stockpile topsoil will be spread on disturbed areas in a manner to reduce compaction. Soil testing will determine necessary fertilization or neutralization, which will be done according to the plan in Section 4.5 (Vol 3, section 4.12, pp. 4-46).

Vegetation, both woody and herbaceous, will be planted to prevent erosion, optimize the edge effect; provide cover, and feed wildlife. The types, etc., are discussed in the revegetation section (Vol 3, section 4.12, pp. 4-46).

If moisture retention is required several possible methods may be used. Straw may be used on terrace benches, wood mulch may be sprayed on terrace banks, wood fiber held by plastic net may be used on steeper banks or burlap material holding straw may be used on the steepest banks (Vol 3, section 4.12, pp. 4-47).

Operational testing will determine when fencing, irrigation, and weed control are needed. Erosion which may develop in finished areas will be lessened by repeated grading and seeding. Vegetation and water monitoring will continue through the "applicable" period of liability to determine abandonment reclamation success. Revegetation success will then be determined (Vol 3, section 4.12, pp. 4-47).

When the disturbed areas are stabilized and undrained runoff meets the suspended solids standard, the site drainage system will be removed. The areas it occupied will be backfilled and revegetated (Vol 3, section 4.12, pp. 4-47).

The mine access and small support roads will be reclaimed to South Fork Eccles Canyon; culverts and blacktop will be removed and recontouring, ripping, and the addition of cross drains, water bars, topsoil and seed will be done (Vol 3, section 4.12, pp. 4-48).

At the end of the responsibility period and at the time of bond release, the applicant will present compliance documentation (Vol 3, section 4.12, pp. 4-48).

The mine is located on U. S. Forest Service land. The Forest Service has said that the land should be returned to wildlife grazing (rangeland) habitat. The longwall underground mining system is subsidence effects and, therefore, is consistent with this plan. Side hill cuts and operational benches at the mine site will remain. The banks between each bench level will be reduced to 3:1. The final surface drainage channels will include meanders and drop structures to allow energy dissipation (Vol 3, section 4.12, pp. 4-48).

Visual resources will be assessed by the U. S. Forest Service throughout the life of the mine project and its liability period. Concentration will be placed on how effectively drainages and slope patterns fit into the area's general visual resources (Vol 3, section 4.12, pp 4-49).

The U. S. Forest Service will also assess recreational resources. If, during the liability period, it is found that fishing, hunting, camping, hiking, and recreational landuse have been decreased due to the mining operation, corrective action may be taken (Vol 3, section 4.12, pp. 4-49).

Before abandonment, the mineral resources remaining within the Skying permit area will be assessed. "The abandonment assessment will ensure that oil and gas development will be possible at the conclusion of mining." Portal sealing to protect unmined coal will be assessed. No other mineral resources, in commercial quantities, are known (Vol 3, section 4.12, pp. 4-49).

The determination of the pre-mining landuse as a basis for postmining use has not given the amount of time the area has been grazed by sheep, how much hunting (and for what species) has taken place or how much wood is cut annually for firewood and fenceposts.

C. Evaluation of Compliance of Proposal

The mine plan discusses at great length how the land will be shaped, but does not apply this (other than saying that long-wall underground mining reduces subsidence) to the post-operations landuse. No plan has been established for allowing sheep back into the area, nor has any mention been made of how much hunting occurred before mining or how much is anticipated after mining or even what specific animals are hunted (only that big game, small game and gamebird hunting make up a large amount of the recreational use of the area). There is no relation drawn between how the re-contouring and vegetating will specifically aid the wildlife. There also is no relation drawn between the vegetation planted and its sheep grazing potential.

Forestry is included as a pre-mining use of the land, but not mentioned as a post-mining use.

Pre-mining capability of the land to support livestock was based on production data which are incomplete at best.

Determination of the pre-mining landuse needs to be more definitive. Length of time sheep have been grazed in the area, annual amount of hunting and annual amount of wood cutting need to be provided.

D. Revisions to Applicant's Proposal - (None)

E. Reevaluation of Compliance - (Not applicable)

F. Proposed Stipulations with Justification

1. Current landuse information was provided, but no information on the length of time sheep have been grazed there, the amount and type of hunting which occurs annually, or the amount of wood cutting which occurs annually was provided.

Such information should be provided.

2. The statement is made that foundations which are not removed will be fractured, but no mention is made of what will be done with them then.

Such information should be provided.

3. The statement is made that blacktop will be ripped and buried but whether it will be buried in place or moved to a common area is not specified.

Such information should be provided.

4. No mention is made of how the contouring of the land or the revegetation species chosen will benefit the post-mining landuse.

This information should be provided.

5. Both forestry and hunting are listed as premine land uses, but no mention is made of them for post-mining.

They should be considered for the post-mining point of views.

6. No plan is given for re-opening the area to sheep grazing. Such a plan must be developed.

7. The capability of the land to support sheep was based on production data which are incomplete.

The capability needs to be determined again when new production data are collected.

8. No specific data were given on the amount of coal removed from the Eccles Canyon Mine, although it was stated that such information is incomplete.

More information should be supplied on production or what efforts were made to determine production.

9. The mine plan does not state how the determination will be made that the area has reached conditions capable of supporting pre-mine uses.

Such information should be supplied.

G. Summary of Compliance

If the proposed stipulations are implemented, this section will be in compliance.

H. Proposed Departmental Action with Stipulations

OSM should require more information on current landuse to serve as a base for comparison at bond release. The applicant should also be required to answer the questions on what will be done with fractured foundations and where and how blacktop will be buried in order to have a more specific reclamation plan.

The applicant should be required to show how their reclamation processes are going to benefit the post-mining landuse. As the plans stand now, they appear unrelated either to each other or to the postmining landuse.

Hunting is listed as a major pre-mining recreational use and forestry is listed as a pre-mining use. Neither is specifically addressed in the post-mining plan. This should be required of the applicant.

Sheep grazing is listed as a post-mining use, but no plan is included for re-opening the area to them. The applicant should be required to develop such a plan. The capability of the land to support sheep was based on incomplete data and so a sheep grazing plan needs to use data which come from a new study.

No specific data were given on the amount of coal removed from the Eccles Canyon Mine, which is on the Skyline site. Either more production data should be required of the applicant or an explanation of why they cannot provide those data.

The mine plan does not state how the determination will be made that the area has reached conditions capable of supporting pre-

mine uses. The agency should require that the applicant supply this information so that it can decide if such capability can be determined with such methods.

I. Residual Environmental Impacts of Proposed Department Actions

If the proposed actions are implemented the applicant will have a landuse plan which has been given thought prior to the removal of coal. The current scheme does not consider everything as a whole and neglects evaluations of current conditions for later comparisons, by requiring them to do so; they should be able to develop a more cohesive plan.

J. Alternatives to Proposed Action - (None)

A. Description of Existing Environment

A cultural resources study has been prepared for the Coastal States Energy Company proposed Skyline Mine permit area that consists of an archaeological investigation. The information provided by the applicant appears to be complete, except for the fact that the large mine plan area map is inconsistent with the information presented in the Archaeological-Environmental Research Corporation, Bountiful, Utah reports submitted from June 13, 1975 to September 18, 1979. Several drilling sites reported as surveyed are not spotted on the large map and several more drilling sites are inappropriately labeled.

Two historic sites and one archaeological find have been encountered since archaeological surveys began in mid-1975:

- o Historical site AERC 27OU/1, located in the SE 1/4 of the SE 1/4, Section 17, T 13S, R 7E in the ridge top north of the mouth of Eccles Canyon, contains an unworked stone foundation of a multiple room structure.
- o Historical site AERC 27 OU/2, located in the SE 1/4 of the SE 1/4, Section 17, T 13S, R 7E in the ridge top north of the mouth of Eccles Canyon, contains an unworked stone foundation of a single room structure.
- o Drilling site UM 75-22-3, located in the SW 1/4 of the NW 1/4 of the SW 1/4, Section 22, T 13S, R 6E, adjacent to Washington Creek, has associated with it a broken projectile point. The object was retrieved by U.S. Department of Agriculture-Forest Service personnel prior to the archaeological survey. No attempt was made to recover the find for inspection. No additional archaeological remains were observed in a 30 x 30-meter area around the drilling pad; hence, it is concluded that the projectile point is an isolated artifact.

Both historical sites have been deemed ineligible for inclusion on the National Register of Historic Places by the archaeological consultant and this determination has been informally concurred by the Utah Division of State History and the State Historic Preservation Officer. However, formal concurrence has not, as of yet, been obtained from the Utah State Historic Preservation Officer, pursuant to 36CFR800.4.

B. Description of Applicant's Proposal

The archaeological survey, conducted by Archaeological-Environmental Research Corporation, have been conducted over the entire mine plan area. The proposed Skyline Mine is an underground coal mine facility, so there is no need to assess the effects of blasting on sensitive cultural sites located in the area.

Given the fact that there are no important cultural sites located in the mine permit area, no mitigation measures have been proposed. Nevertheless, the archaeological consultant has recommended three stipulations to the applicant:

1. All vehicular traffic, personnel movement, and construction be confined to the locations examined and to access roads leading into these locations.
2. All personnel refrain from collecting individual artifacts or from disturbing any cultural resources in the area.
3. A qualified archaeologist be consulted should cultural remains from subsurface deposits be exposed during construction work or if the need arises to relocate or otherwise alter the construction area.

These recommendations have been reviewed without comment from the State Historic Preservation Officer. The Assistant State Archaeologist has stipulated that should any subsurface cultural materials be unearthed in the course of development, the Utah Division of State History be notified. All recommendations made appear to be sufficient.

C. Evaluation of Compliance

1. Applicant's Compliance

As indicated above, it is believed that there are no National Register of Historic Places sites or sites eligible for listing on the National Register located within the surveyed portions of the Coastal States Energy Company proposed Skyline Mine permit area. Should this be determined after consultation with the Utah State Historic Preservation Officer, then the Office of Surface Mining would seek a "No Effect" determination from the Utah State Historic Preservation Officer pursuant to 36CFR800.4. Such a determination would end the Office of Surface Mining's responsibility under Section 106 of the National Historic Preservation Act of 1966.

The reports and data submissions made in response to an initial Apparent Completeness Review constitute an adequate body of knowledge from which the Office of Surface Mining can begin its discussions with the Utah State Historic Preservation Officer regarding a "No Effect" determination for the Skyline Mine plan area. As stated above, the State Historic Preservation Officer has reviewed the archaeological report for the proposed Skyline Mine for adequacy and has informally concurred with the consultant's findings. The Manti-La Sal National Forest Supervisor's Office has been appraised of the results of the several archaeological surveys. However, there has been no correspondence submitted that indicates their review of the reports or concurrence with the conclusions made.

2. OSM Compliance

The Office of Surface Mining will need to consult with the Manti-La Sal National Forest regarding appropriate mitigation measures and the Utah State Historic Preservation Officer for formal concurrence on the site's proposed "No Effect" determination classification.

D. Revisions to Applicant's Proposal

During the Initial Apparent Completeness Review, the applicant was asked to supply a quantitative estimate of subsidence over the life of the mine. The response provided does not appear to be adequate, so it is expected that if subsidence is a major concern, mitigation measures may have to be proposed which would require another review at a later date.

E. Reevaluation of Compliance

To be determined.

F. Proposed Special Sipulations

If, during the course of mine facilities construction, and operation heretofore previously unidentified cultural resources are discovered, Coastal States Energy Company shall cease work within the vicinity of the find and notify the Office of Surface Mining and the Utah State Historic Preservation Officer. Work will not resume until the property has been assessed for cultural significance and environmental effect, and mitigation measures proposed, approved, and implemented. These procedures will be followed in accordance with 36CFR800.7.

G. Summary of Compliance

To be determined when compliance has been established under Section 106 of the National Preservation Act of 1966.

H. Proposed Departmental Action

Tentative approval with stipulations.

I. Residual Impacts of Proposed Departmental Action

Two unworked stone foundations and a broken projectile point were identified as a result of the various archaeological surveys conducted in the Skyline Mine permit area. Both historical sites are located outside the proposed zone of construction and do not qualify for eligibility in the National Register of Historic Places.

The Utah State Historic Preservation Officer has informally concurred with this finding, but until this determination has been agreed upon by the Office of Surface Mining and State authorities pursuant to 36CFR800.4, these conclusions are only preliminary.

The broken projectile point appears to be an isolated artifact. It is not likely that vandalism and unauthorized collecting will be a concern.

It is possible that there are unidentified cultural resources located in the Skyline Mine permit area. Stipulations have been made to Coastal States Energy Company to prevent the loss of scientific information about these potential sites. Should no other cultural resources be discovered, the residual impacts of the proposed departmental action are expected to be nil.

J. Alternative to the Proposed Action

Given the absence of any known important cultural resources in the mine permit area, it does not appear necessary to propose alternatives to the proposed action.

817.11 Miscellany Compliance Analysis

A. Description of Applicant's Proposal and Evaluation of Compliance

817.11 Signs and Markers

Applicant agrees to post signs and markers including the following: (1) mine and permit identification; (2) perimeter markers (blue steel fence posts); blasting signs; and (3) topsoil markers. Details that relate to sign and marker posting are discussed by the applicant (Section 3.2.8; pp. 3-4 through 3-58). Certain deficiencies in sign postings are noted in the Applicant's proposal, and are discussed below.

817.79 Protection of Underground Mines within 50 Feet

Not applicable

817.89 Disposal of Non-Coal Wastes

Applicant discusses disposal of non-coal wastes in Section 4.8 (pp. 4-28 through 4-29) of the proposal. Temporary storage facility that will be constructed from reinforced concrete will be located in vicinity of the mine portal area (see Exhibits 3-33 and 3-8). Permanent waste will be stored at a sanitary land fill owned by the estate of Mr. Gorge Telonis and operated by the town of Seafield, Utah. (p. 4-28)

817.131 Cessation of Operation - Temporary

The applicant has not addressed the prospect of temporary abandonment in the application; and, the application is deficient in this respect.

817.132 Cessation of Operation - Permanent

Applicant will backfill and grade affected areas (minesite and layout facilities) upon permanent cessation of mining activity (Section 4.4). All surface equipment, structures and other facilities will be removed (Section 3.2.7; pp 3-42 through 3-53).

817.181 Support Facilities and Utility Installations

Applicant's engineers and consultants have located and conceptually designed support facilities in a manner that could reasonably be expected to prevent and control erosion, siltation, water pollution and damage to public or private property. Designs for such facilities are shown in various exhibits contained in volumes 2 and A-4 and with the Applicants' Initial Response to the Office of Surface Mining Apparent Completeness Review.

B. Proposed Special Stipulations with Justification

The Applicant's proposed actions are deficient in 817.131 and stipulations are also needed in 817.11 in order to assure compliance in these repective subsections. These stipulations are as follows:

817.11

1. The Applicant will agree to submit to the OSM, within 90-days of the date of the effective permit date, drawings, exhibits and narrative describing buffer zones, if any, as required by Section 817.57; and, provided there should exist such buffer zones, the Permittee agrees to post markers to identify such buffer zones, if any.

2. The Applicant will, when posting blasting signs incidental to underground mining, use the words 'Warning, Explosives in Use' instead of, or in addition to, the words 'Warning: Blasting Area' as already described by the Applicant (p. 3-54).

817.131

3. The Applicant will agree, in the event of temporary cessation of mining, to submit to the regulatory authority notice as soon as it is known that a temporary cessation will extend beyond 30 days. The notice will include a statement of the exact number of surface acres and the horizontal and vertical extent of the subsurface strata which has been in the permit area prior to cessation or abandonment, the extent and kind of reclamation of surface area which will have been accomplished and identification of the backfilling, regrading, revegetation, environmental monitoring, underground opening closures and water treatment activities that will continue during temporary cessation. The Applicant, or Permittee, will further agree to support or maintain all surface access openings to underground operations, and secure surface facilities in areas in which there are no current operations, but operations are to be resumed. It is further stipulated, that the Applicant acknowledge that temporary abandonment shall not relieve the obligation to comply with any provisions of the approved permit; that such acknowledgement be made in writing to the regulatory authority within 90 days of the effective permit date.

C. Summary of Compliance

If the proposed stipulations are implemented in this section, applicant will be in compliance.

D. Coal Processing Wastes - 817.81-817.88 and 817.91-817.93

Not applicable, because mined coal will not be processed.

E. Proposed Departmental Action

Determine that for those responses requested to be in writing the Applicant has in fact responded.

F. Residential Environmental Impacts of Proposed Departmental Action

Approval of the Applicant's proposed actions together with the above-listed stipulations would be expected to result in safer surface site construction, or working environment. Other environmental impacts are negligible.

G. Alternatives to Proposed Action - (None)

817.101 Backfilling and Grading Excess Spoil (approximate original contour)

A. Description of Existing Environment

Site development is primarily relegated to the mouth of Eccles Canyon where a coal loadout facility is to be constructed; to approximately 2½ miles of the Canyon where an access road will be located, a conveyor installed, and 46-kw powerline extended; and, to the head of Eccles Canyon where mine portals and related facilities will be located. The existing environment is moderately rugged everywhere with slopes approaching 50 percent in the vicinity of the mine portal locations. Elevations within the permit area range from 8300 to 9600 feet. Backfilling and grading will be confined to Eccles Canyon where there is a perennial stream.

The predominant geological formation consists of interbedded sandstones and shales that comprise the 1900 foot thick Blackhawk Formation in the permit area. Five potentially mineable coal seams are located within the permit area that consists of 6400 acres. However, only three seams will be mined; the Upper O'Connor seam, lower O'Connor 'B' seam, and the lower O'Connor 'A' seam. Approximately five million tons of coal will be extracted from three underground mines, one for each seam, over a 30 to 33 year mine life.

Details that relate to topography, physiography, geology, hydrology, etc., are thoroughly described and were illustrated in color photographs that are presented by the applicant in his permit application.

B. Description of Applicant's Proposal

1. Mining sequence and development: As previously explained, three seams will be mined in a multiple seam, underground operation. Each seam will be extracted from what essentially constitutes a separate mine. Seam thickness vary, but in general are thick, ranging up to 25 feet. However, due to limitations in mining methods and machinery, only a maximum thickness of 12 feet of coal will be extracted.

The applicant plans to start site work in June, 1980, with actual facilities construction to begin early in 1981. Production buildup from underground mining development work will start in January 1982; mining will continue through the year 2015. Because of the multiple seam mining, the upper seams will be mined first, allowing at least two years for subsidence and stress readjustment before proceeding to mine the next lower seam. Both longwall and room-and-pillar methods will be used in all three mines to obtain five million tons per year coal production. Total production is planned at 124.5 million tons with the last mining operations in the year 2015.

The mining sequence, scheduling, methods description and equipment requirements are discussed in detail and were illustrated by extensive exhibits in the applicant's permit application (volume 2) which should be consulted for further details and information.

2. Backfilling, grading procedures: Most surface restoration will be confined to the site area at the portal location in upper Eccles Canyon, to a portion of the 2.5 mile access roadway and conveyor route along Eccles Canyon, and to the coal loadout facility at the mouth of Eccles Canyon. However, it is possible that some restorative backfilling, grading or other work may be required as a stipulated condition to the subject permit to correct subsidence induced damages that could occur to any of the following features: (1) the gas pipeline owned by Mountain Fuel Supply Company; (2) the Eccles canyon bypass road (to be constructed by the Permittee), and (3) to land surface in the lower reaches of Huntington Creek near Electric Lake.

3. Swell factors and calculations supporting - Backfilling and grading procedures proposed by the applicant are restricted to reclaiming portions of the access road and conveyor routing and to the mine facilities and loadout facilities as already described. Earthenwork will essentially be relegated to regrading, hence, cut-fill calculations and cognizance of swelling and compactions are not required.

4. Postmining topography - Slope analysis, hydrologic analysis, channel profiles. In general, postmining topography will resemble premining topography. The coal loadout site will be restored to approximately the existing topography as will upper reaches of the Eccles Canyon access. The site area in the vicinity of the mine portals, will not be regraded to conform exactly with the original contoured surface, primarily because steep rock cuts that will be necessary to gain sufficient site area and underground access cannot be practically regraded. The immediate mine site will, however, be regraded to achieve an aesthetically pleasing as well as stable area reducing detrimental effects from erosion. The mine access road in the lower reaches of Eccles Canyon will not be restored as this will connect with the Eccles Canyon road (to be constructed by the Applicant) which will remain as a permanent feature of the post-mining landscape.

The applicant proposes to substantially restore the Eccles Canyon drainage to its pre-mining course. In the minesite restoration, two rock wind break barriers, and four stream drop structures that consist of rip-rap will be constructed (refer to Exhibits 3-16 and 3-39). Stream culverts will be taken out, and sedimentation ponds backfilled (p. 4-2).

5. Excess spoil; deficient spoil, impoundments - Excess or deficient spoils pertain to surface mine restoration and are not

applicable to the restoration proposed in this permit application. There will be no permanent impoundments of any kind.

6. Contemporaneous reclamation - The applicant proposes some contemporaneous reclamation for the embankments at the minesite area near the portals. It is planned to re-establish vegetation in order to stabilize planned embankments, reducing the potential for erosion. Portions of stream diverted channel ways will also be revegetated (see Exhibit 3-14). Most of the reclamation effort will, however, take place upon cessation of mining.

C. Evaluation of Compliance of Proposed Plan

1. 817.101 and 817.102 Backfilling and Grading; General Requirements - The applicant's proposed reclamation plan appears to comply with all requirements as set forth in this section. The minesite area will not be completely restored, as terraces will be left and it would be impractical and inadvisable to backfill exposed rock cuts. According to subsection 817.102(b), suitably designed terraces can be left in place. The access road in lower Eccles Canyon and the Eccles Canyon road will not be restored as these roads will constitute permanent features as part of the approved post-mining land use (Wildlife and Grazing). All other restoration appears to comply with backfilling and grading regulations of Section 817.102 Section 826 (steep slopes) appears to be not applicable to this mining plan.

2. 817.102

(a) Premining, postmining slopes; retain on solid bench, moderate slope ≥ 1.3 ssf. - Generally, with the exception of the above described terrace-like structure, slopes will be backfilled, and regraded to their approximate original contour. Fills will be deposited and compacted in lifts. Dames and Moore, acting as geotechnical consultants to the applicant, have detailed two types of rock cuts to be used in the mine portal area that will be excavated at 1h:1v or 1h:2v, depending upon the actual rock characteristics. Both types of rock cuts will include benches and constitute the previously mentioned terrace structures (see Exhibits 3-8 and p. 3-40 and 3-41). Near and above the portal for Mines No. 2 and 3, bin-type retaining walls will be constructed to help maintain stability (Exhibit 3-12B). Slopes on fills will be graded at 1.5sh:1v. While the geotechnical consultant does not indicate a safety factor for either cut or fill work, these designs do appear adequate. Jointing is not oriented to cause or contribute towards slope failure (see Exhibit 4 in Volume A-4). A series of test pits and drillholes have been used to

investigate soils structure throughout the Eccles Canyon construction site (Exhibits 2A through 3D in Volume A-4), and specifications for foundation design and embankment work have been based upon professional engineering standards or judgments.

- (b) Terraces if Approved - Terrace structure is indicated by the applicant as previously discussed. Benches for these terraces are eight feet wide. The geotechnical consultant did not compute the safety factor; but it is reasonable to expect that such safety factor would exceed 1.3 as required. In view of the limited site area for mine access development, and in view of the rugged terrain, the proposed terrace design should be acceptable to the regulatory authority.
- (c) Small depressions - The applicant does not specifically describe the use of small depressions in his proposed reclamation work, but Exhibit 3-18 would seem to imply that small depressions may result from reclaiming the access road and conveyor bench along the upper Eccles Canyon.
- (d) Grade along contour - The applicant does not state that grading will be performed along the contours, however, because re-grading is severely restricted as a result of the surrounding topography such grading practice appears imperative.

3. 817.103

- (a) Acid or Toxic Material? Cover 4 feet. Coal-cover four feet. Upward migration of salts. Proximity to drainage course. Applicant states that underground wastes will be stored underground and will not be transported to surface for storage (p. 4-56). Therefore, provisions in Section 817.103 are not applicable.

4. 817.71 Disposal of underground development waste and excess spoil. - For reasons stated in above-described comment, provisions contained in Section 817.71 are also not applicable. Applicant, apparently must obtain approval of MSHA for underground storage of mine development waste. (see Section 817.71 (m)). For the same reason presented for underground waste disposal, Section 817.72, 817.73, and 817.74 are not applicable.

5. 817.106 Procedures to monitor for and regrade rills and gullies. - Applicant does not state that gullies or rills deeper than nine inches would be regraded.

D. Revisions to Applicant's Proposal - (None)

E. Reevaluation of Compliance - (None)

F. Proposed Special Stipulations with Justification

1. 817.101 - 817.102

The applicant will within 90 days of the effective permit date, provide written narrative, drawings, and exhibits to clarify an apparent inconsistency regarding reclamation of the access road in the lower Eccles Canyon. As this road is assumed to connect with the Eccles Canyon road and to become a permanent accessway to the Huntington Creek area, then the segment of access road that extends from the mouth of Eccles Canyon to point of confluence with the South Fork of Eccles Canyon should not be reclaimed which is consistent with the concept described in the text (p. 4-2). However, Exhibit appears to indicate regraded contours for reclaiming the Eccles Canyon road.

2. While the cut-fill embankments proposed in the vicinity of the mine portal areas appear to have been adequately designed by professional geotechnical engineers, the applicant will, within 90 days of the effective permit date, submit to the regulatory authority or have his geotechnical consultant submit to the regulatory authority a statement with backup calculations showing that the terrace-like cuts can be expected to equal or exceed a safety factor of 1.3.

3. Applicant states that upon abandonment of the minesite, cut slopes will be reduced to more gradual grade and will be topsoiled and revegetated (p. 3-43; and Exhibit 3-16). However, for some of the steeper rock cuts, such restoration may not be practical and may, in fact result in increased erosion and decreased slope stability. Section 817.102(2)(b) provides that cut-fill terraces may be allowed in the final graded slope. The applicant should, at time of final grading, reduce only those cut or terraced slopes where practical and where increased erosion and reduced stability would not result from regrading. The applicant should place topsoil and revegetate any benches left in the final terraces, upon abandonment or sooner if practical. Whether terrace-like structures are to be regraded or left in place, the applicant will construct animal trails as more-or-less illustrated on Exhibit 3-16 at the time of permanent abandonment.

4. At the time of final grading, the applicant would grade along the contours to the maximum possible extent. Applicant would, upon final grading, backfill exposures of coal with at least four feet of non-combustible materials and incorporate said backfilling into the final graded contours.

5. Applicant will, within 90 days of the effective permit date, submit a statement to the regulatory authority that gullies and rills deeper than nine inches would be regraded and replanted to stabilize any filled or graded areas.

G. Summary of Compliance

If the proposed stipulations are implemented, this section will be in compliance.

H. Proposed Departmental Action

1. The department should approve the reasonable retention of steeper terraced rock cuts in the vicinity of the mine portals as part of the final graded contours. Restoration of steep rock cuts does not appear practical or prudent.

2. Department should verify that the applicant does follow through with the above-listed stipulations especially those stipulations that are to be carried out within 90 days of the effective date for the permit.

I. Residual Environmental Impacts of Proposed Department Action

Approval of the applicant's proposed actions in this section should result in an acceptable mine abandonment and reclamation procedure in the year 2015. Applicant will remove silos, conveyors, loadout facilities and substantially regrade all site work. The lower portion of Eccles Canyon road and by-pass will be left as permanent features to assure compatibility with final land useage (grazing and wildlife).

J. Alternative to Proposed Action

The department could reject the stipulation to include steeper portions of terrace structures into the final regraded topography. Rejection of this stipulation would not appear to be prudent, at least not without a thorough analysis of the alternative to regrade all terrace slopes. Other actions proposed by the applicant do not appear to present reasonable alternatives that justify consideration.

ATTACHMENT I



PROJECT NO. _____
 REVIEWERS *Carlson*
Erica S. Waters

MINE PLAN
 TECHNICAL ANALYSIS
 CHECKLIST
 (UNDERGROUND)
 HYDROLOGY ASPECTS
 OSM ENVIRONMENTAL ASSESSMENT

SKYLINE
 PLAN IDENTIFICATION
 DATE _____
 PROJECT MGR. REVIEW
 PAGE 1 OF 31

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>[733.13 Description of hydrology and geology: General requirements.</p> <p>(a) Each application shall contain a description of the geology, hydrology, and water quality and quantity of all lands within the proposed mine plan area, the adjacent area, and the general area. The description shall include information on the characteristics of all surface and ground waters within the general area, and any water which will flow into or receive discharges of water from the general area. The description shall be prepared according to Sections 733.13-733.16 and conform to the following:</p> <p>(1) Information on hydrology, water quality and quantity, and geology related to hydrology of areas outside the proposed mine plan area and within the general area shall be provided by the regulatory authority, to the extent that this data is available from an appropriate Federal or State agency.</p> <p>(2) If this information is not available from those agencies, the applicant may gather and submit this information to the regulatory authority as part of the permit application.</p> <p>(3) The permit shall not be approved by the regulatory authority until this information is made available in the application.</p> <p>(b) The use of modeling techniques may be included as part of the permit application, but the same surface and ground water information may be required for each site as when models are not used.</p> <p>Note:</p> <p>General Description</p> <ol style="list-style-type: none"> 1. Include all Lands <ol style="list-style-type: none"> a. Within Proposed Mine Plan area b. Adjacent Area c. General Area 2. Surface Waters within general area, water flow into area, water receiving discharges from area 3. Information outside of mine plan area and within general area <p>[733.15 Ground water information.</p> <p>(a) The application shall contain a description of the ground water hydrology for the proposed mine plan and adjacent area, including, at a minimum—</p> <ol style="list-style-type: none"> (1) The depth below the surface and the horizontal extent of the water table and aquifers; (2) The lithology and thickness of the aquifer; (3) The uses of the water in the aquifers and water table; and (4) The quality of subsurface water, if encountered. <p>(b) The application shall contain additional information which describes the recharge, storage, and discharge characteristics of aquifers and the quality and quantity of ground water, according to the parameters and in the detail required by the regulatory authority.</p> <p>Note:</p> <p>Regional Recharge & Discharge Flow Rates Cross-section or Equivalent</p> <p>Map and List: Wells, Springs, Aquifers (733.25(f)), monitoring Stations (733.25(b)), Potentiometric Surface, Identify Uses (Flow Rates, Completion, Owner), Quality, Infiltration/runoff by Geologic Group</p>	<p style="text-align: center;">✓</p>			

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>§783.16 Surface water information.</p> <p>(a) Surface water information shall be described, including the name of the watershed which will receive water discharges, the location of all surface water bodies such as streams, lakes, ponds, and springs, the locations of any water discharge into any surface body of water, and descriptions of surface drainage systems sufficient to identify, in detail, the seasonal variations in water quantity and quality within the proposed mine plan and adjacent areas.</p> <p>(b) Surface water information shall include:</p> <p>(1) Minimum, maximum, and average discharge conditions, which identify critical low flows and peak discharge rates of streams sufficient to identify seasonal variations; and</p> <p>(2) Water quality data to identify the characteristics of surface waters in, discharging into, or which will receive flows of surface or ground water from the affected area within the proposed mine plan area, sufficient to identify seasonal variations, showing--</p> <p>(i) Total dissolved solids in milligrams per liter;</p> <p>(ii) Total suspended solids in milligrams per liter;</p> <p>(iii) Acidity;</p> <p>(iv) pH in standard units;</p> <p>(v) Total and dissolved iron in milligrams per liter;</p> <p>(vi) Total manganese in milligrams per liter; and</p> <p>(vii) Such other information as the regulatory authority determines is relevant.</p> <p>Note:</p> <p>Map: (1:2,400-MPA)</p> <p>Regional Drainage (Named) ✓</p> <p>Stream Classification (WQ) ✓</p> <p>Location of: (783.25(a))</p> <p>Streams, Lakes, Ponds, Springs, ✓</p> <p>Irrigation Ditches, and</p> <p>Monitoring Stations (783.25(b))</p> <p>Water Quantity (Flow)</p> <p>Minimum ✓</p> <p>Maximum ✓</p> <p>Average ✓</p> <p>Flow Recurrence Intervals</p> <p>Water Quality ✓</p> <p>Seasonal Variations</p> <p>TDS, TSS, Acidity, pH,</p> <p>Fe (Total & Dissolved),</p> <p>Mn (Total).</p> <p>-Water Ownership (784.14) ✓</p> <p>Existing Supplies to be ✓</p> <p>Diminished in Quantity or Quality</p>				
<p>§783.17 Alternative water supply information.</p> <p>The application shall identify the extent to which the proposed underground mining activities may proximately result in contamination, diminution, or interruption of an underground or surface source of water within the proposed mine plan or adjacent area for domestic, agricultural, industrial, or other legitimate use. If contamination, diminution, or interruption may result, then the description shall identify the alternative sources of water supply that could be developed to replace the existing sources.</p> <p>Note:</p> <p>Alternative Water Source ✓</p> <p>Information: ✓</p> <p>Source Location, Quantity & Quality, Distribution ✓</p> <p>Scheme, Compatibility w/use & Maint.</p>				
<p>§784.14 Reclamation plan Protection of hydrologic balance.</p> <p>(a) Each plan shall contain a detailed description, with appropriate maps and cross-section drawings, of the measures to be taken during and after the proposed underground mining activities, in accordance with 30 CFR 817, to ensure the protection of:</p> <p>(1) The quality of surface and ground water, both within the proposed mine plan area and adjacent areas, from adverse effects of the proposed underground mining activities;</p> <p>(2) The rights of present users to surface and ground water.</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(3) The quantity of surface and ground water both within the proposed mine plan and adjacent area from adverse effects of the proposed underground mining activities, or to provide alternative sources of water, in accordance with 30 CFR 783.17 and 817.54, where the protection of quantity cannot be ensured and 783.15</p>	✓			
<p>(4) Water quality by locating openings for mines in accordance with 30 CFR 817.10.</p>	✓			
<p>(b) The description shall include— (1) A plan for the control, in accordance with 30 CFR 817, of surface and ground water drainage into, through, and out of the proposed mine plan area;</p>	✓			
<p>(2) A plan for the treatment, where required under Subchapter X of this Chapter and the regulatory program, and surface and ground water drainage from the area to be affected by the proposed activities, and proposed quantitative limits on pollutants in discharges subject to 30 CFR 817.42, according to the more stringent of the following: (i) Subchapter X of this Chapter and the regulatory program; or (ii) Other applicable State and Federal laws.</p>	✓			
<p>(3) A plan for the collection, recording and reporting of ground and surface water quality and quantity data, according to 30 CFR 817.32.</p>	✓			
<p>Note: Monitoring Procedures (Flow & Quantity)</p>				
<p>(c) The description shall include a determination of the probable hydrologic consequences of the proposed underground mining activities, on the proposed mine plan area and adjacent area, with respect to the hydrologic regime and the quantity and quality of water in surface and ground water systems under all seasonal conditions, including the contents of dissolved and total suspended solids, total iron, pH, total manganese, and other parameters required by the regulatory authority.</p>	✓			
<p>(d) Each plan shall contain a detailed description, with appropriate drawings, of permanent entry seals and down-dip barriers designed to ensure stability under anticipated hydraulic heads developed while promoting mine inundation after mine closure for the proposed mine plan area.</p>				N-A
<p>Note: Determination of Consequences (Site specific evaluation & comparisons to appropriate operations)</p>	✓			
<p>Changes in flow characteristics and quality conditions (for both surface & Ground Water)</p>	✓			
<p>§784.16 Reclamation plan Ponds, impoundments, banks, dams, and embankments.</p>				
<p>(a) General. Each application shall include a general plan for each proposed sedimentation pond, water impoundment, and coal processing waste bank, dam, or embankment within the proposed mine plan area. 784.14</p>	✓			
<p>(1) Each general plan shall— (i) Be prepared by, or under the direction of, and certified by, a qualified registered professional engineer or by a professional geologist with assistance from experts in related fields such as land surveying and landscape architecture;</p>	✓			
<p>(ii) Contain a description, map, and cross section of the structure and its location: 784.14</p>	✓			
<p>(iii) Contain preliminary hydrologic and geologic information required to assess the hydrologic impact of the structure survey</p>	✓			
<p>(iv) Contain a survey describing the potential effect on the structure from subsidence of the subsurface strata resulting from past underground mining operations if underground mining has occurred; and</p>	✓			N-A No underground mining on property.
<p>(v) Contain a certification statement which includes a schedule setting forth the dates when any detailed design plans for structures that are not submitted with the general plan will be submitted to the regulatory authority. The regulatory authority shall have approved, in writing, the detailed design plan for a structure</p>	✓			N-A All plans are included

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(2) Each detailed design plan for a structure that meets or exceeds the size or other criteria of the Mine Safety and Health Administration, 30 CFR 77.216(a) shall—</p>				<p><i>N-A All structures do not exceed criteria</i></p>
<p>Note: Large structures geotechnical operation and maintenance timetable for removal</p>				
<p>(i) Be prepared by, or under the direction of, and certified by a qualified registered professional engineer with assistance from experts in related fields such as geology, land surveying, and landscape architecture;</p>				
<p>(ii) Include any geotechnical investigation, design, and construction requirements for the structure;</p>				
<p>(iii) Describe the operation and maintenance requirements for each structure; and</p>				
<p>(iv) Describe the timetable and plans to remove each structure, if appropriate.</p>				
<p>(3) Each detailed design plan for a structure that does not meet the size or other criteria of 30 CFR 77.216(a) shall—</p>				
<p>(i) Be prepared by, or under the direction of, and certified by a qualified registered professional engineer or registered land surveyor except that all coal processing waste dams and embankments covered by 30 CFR 817.91-817.93 shall be certified by a qualified registered professional engineer;</p>	✓			
<p>(ii) Include any design and construction requirements for the structure, including any required geotechnical information;</p>	✓			
<p>(iii) Describe the operation and maintenance requirements for each structure; and</p>	✓			
<p>(iv) Describe the timetable and plans to remove each structure, if appropriate.</p>	✓			
<p>(b) Sedimentation ponds.</p>				
<p>(1) Sedimentation ponds, whether temporary or permanent, shall be designed in compliance with the requirements of 30 CFR 817.46. Any sedimentation pond or earthen structure which will remain on the proposed mine plan area as a permanent water impoundment shall also be designed to comply with the requirements of 30 CFR 817.49.</p>	✓			
<p>(2) Each plan shall, at a minimum, comply with the requirements of the Mine Safety and Health Administration, 30 CFR 77.216-1 and 77.216-2.</p>	✓			
<p>(c) Permanent and temporary impoundments. Permanent and temporary impoundments shall be designed to comply with the requirements of 30 CFR 817.49. Each plan shall comply with the requirements of the Mine Safety and Health Administration, 30 CFR 77.216-1 and 77.216-2.</p>				<p><i>N-A</i></p>
<p>(d) Coal processing waste banks. Coal processing waste banks shall be designed to comply with the requirements of 30 CFR 817.91-817.93.</p>				<p><i>N-A</i></p>
<p>(e) Coal processing waste dams and embankments. Coal processing waste dams and embankments shall be designed to comply with the requirements of 30 CFR 817.91-817.93. Each plan shall comply with the requirements of the Mine Safety and Health Administration, 30 CFR 77.216-1 and 77.216-2, and shall contain the results of a geotechnical investigation of the proposed dam or embankment foundation area, to determine the structural competence of the foundation which will support the proposed dam or embankment structure and the impounded material. The geotechnical investigation shall be planned and supervised by an engineer or engineering geologist, according to the following:</p>				<p><i>N-A</i></p>
<p>(1) The number, location, and depth of borings and test pits shall be determined using current prudent engineering practices for the size of the dam or embankment, quantity of material to be impounded, and subsurface conditions.</p>				
<p>(2) The character of the overburden and bedrock, the proposed settlement sites, and any adverse geotechnical conditions which may affect the particular dam, embankment, or reservoir site shall be considered.</p>				
<p>(3) All springs, seepage, and ground water flow observed or anticipated during wet periods in the area of the proposed dam or embankment shall be identified on each plan.</p>				
<p>(4) Consideration shall be given to the possibility of mudflows, rock-</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(D) If the structure is 20 feet or higher or impounds more than 20 acre-feet, each plan under Paragraphs (b), (c), and (e) of this Section shall include a stability analysis of each structure. The stability analysis shall include, but not be limited to, strength parameters, pore pressures, and long-term seepage conditions. The plan shall also contain a description of each engineering design assumption and calculation with a discussion of each alternative considered in selecting the specific design parameters and construction methods.</p> <p>Note: Coal Processing Wastes Maps and Plans Geotechnical Survey Borings & Test Pits Hydrology Construction Specs Monitoring</p> <p>§ 817.12 Diversion Each application shall contain descriptions, including maps and cross sections, of stream channel diversions and other diversions to be constructed within the proposed permit area to achieve compliance with 30 CFR 817.13-817.14.</p> <p>Note: Descriptions Maps & Cross Sections</p> <p>§ 817.13 Casing and sealing of exposed underground openings: General requirements. Each exploration hole, other drill-hole or borehole, shaft, well, or other exposed underground opening shall be cased, lined, or otherwise managed as approved by the regulatory authority to prevent acid or other toxic drainage from entering ground and surface waters, to minimize disturbance to the prevailing hydrologic balance and to ensure the safety of people, livestock, fish and wildlife, and machinery in the mine plan and adjacent area. Each exploration hole, drill hole or borehole or well that is uncovered or exposed by mining activities within the permit area shall be permanently closed, unless approved for water monitoring or otherwise managed in a manner approved by the regulatory authority. Use of a drilled hole or monitoring well as a water well must meet the provisions of Section 817.33 of this Part. This Section does not apply to holes drilled and used for blasting, in the area affected by surface operations.</p> <p>§ 817.14 Casing and sealing of underground openings: Temporary. (a) Each mine entry which is temporarily inactive, but has a further projected useful service under the approved permit application, shall be protected by barricades or other covering devices, fenced, and posted with signs, to prevent access into the entry and to identify the hazardous nature of the opening. These devices shall be periodically inspected and maintained in good operating condition by the person who conducts the underground mining activities. (b) Each exploration hole, other drill hole or borehole, shaft, well, and other exposed underground opening which has been identified in the approved permit application for use to return underground development waste, coal processing waste or water to underground workings, or to be used to monitor ground water conditions, shall be temporarily sealed until actual use.</p> <p>§ 817.15 Casing and sealing of underground openings: Permanent. When no longer needed for monitoring or other use approved by the regulatory authority upon a finding of no adverse environmental or health and safety effects, or unless approved for transfer as a water well under Section 817.53, each shaft, drift, adit, tunnel, exploratory hole, entryway or other opening to the surface from underground shall be capped, sealed, back-filled, or otherwise properly managed, as required by the regulatory authority in accordance with Sections 817.13 and 817.50 and consistent with 30 CFR 75.1771. Permanent closure measures shall be designed to prevent access to the mine workings by people, livestock, fish and wildlife, machinery and</p>	<p>✓</p>			

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>X §817.41 Hydrologic balance: General requirements.</p> <p>(a) Underground mining activities shall be planned and conducted to minimize changes to the prevailing hydrologic balance in both the mine plan and adjacent areas, in order to prevent long-term adverse changes in that balance that could result from those activities.</p> <p>(b) Changes in water quality and quantity, in the depth to ground water, and in the location of surface water drainage channels shall be minimized so that the approved postmining land use of the permit area is not adversely affected.</p> <p>(c) In no case shall Federal and State water quality statutes, regulations, standards or effluent limitations be violated.</p> <p>(d) Operations shall be conducted to minimize water pollution and, where necessary, treatment methods shall be used to control water pollution.</p> <p>(1) Each person who conducts underground mining activities shall emphasize mining and reclamation practices that prevent or minimize water pollution. Changes in flow shall be used in preference to the use of water treatment facilities.</p> <p>(2) Acceptable practices to control and minimize water pollution include, but are not limited to —</p> <p>(I) Stabilizing disturbed areas through land shaping;</p> <p>(II) Diverting runoff;</p> <p>(III) Achieving quickly germinating and growing stands of temporary vegetation;</p> <p>(IV) Regulating channel velocity of water;</p> <p>(V) Lining drainage channels with rock or vegetation;</p> <p>(VI) Mulching;</p> <p>(VII) Selectively placing and sealing acid-forming and toxic-forming materials;</p> <p>(VIII) Designing mines to prevent gravity drainage of acid waters;</p> <p>(IX) Sealing;</p> <p>(X) Controlling subsidence; and</p> <p>(XI) Preventing acid mine drainage.</p> <p>(3) If the practices listed at Paragraph (d)(2) of this Section are not adequate to meet the requirements of this Part, the person who conducts underground mining activities shall operate and maintain the necessary water treatment facilities for as long as treatment is required under this Part.</p>	<p>✓</p> <p>✓</p> <p>✓</p>			
<p>X §817.42 Hydrologic balance: Water quality standards and effluent limitations.</p> <p>(a)(1) All surface drainage from the disturbed area, including disturbed areas that have been graded, seeded, or planted, shall be passed through a sedimentation pond, a series of sedimentation ponds, or a treatment facility before leaving the permit area. Any discharge of water from underground workings to surface waters which does not meet the effluent limitations of this Section shall also be passed through a sedimentation pond, a series of sedimentation ponds, or a treatment facility before leaving the permit area.</p> <p>(2) Sedimentation ponds and treatment facilities for surface drainage from the disturbed area shall be maintained until the disturbed area has been restored and the vegetation requirements of Sections 817.111-817.117 are met and the quality of the untreated drainage from the disturbed area meets the applicable State and Federal water quality standards requirements for the receiving stream. Sedimentation ponds and treatment facilities for discharges from underground workings shall be maintained until either the discharge continuously meets the effluent limitations of this Section without treatment or until the discharge has permanently ceased.</p> <p>(3) The regulatory authority may grant exemptions from these requirements only in accordance with the following—</p> <p>(4) The person who conducts the underground mining activities demonstrates that sedimentation ponds and treatment facilities are not necessary for the drainage to be exempted to meet the effluent limitations of this Section or the applicable State and Federal water quality requirements for downstream receiving waters; and</p> <p>(4)(A) For drainage from areas affected by surface operations and facilities, an exemption may be authorized only if the disturbed surface drainage area within the total disturbed surface area is small and there is no mixture</p>	<p>✓</p> <p>✓</p> <p>✗</p>			<p>N-A</p> <p>N-A</p> <p>N-A</p>

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(c) Retaining sediment within disturbed areas;</p> <p>(d) Diverting runoff away from disturbed areas;</p> <p>(e) Diverting runoff using protected channels or pipes through disturbed areas so as not to cause additional erosion;</p> <p>(f) Using straw dikes, riprap, check-dams, mulches, vegetative sediment filters, dugout ponds, and other measures that reduce overland flow velocity, reduce runoff volume, or trap sediment;</p> <p>(g) Treating with chemicals; and</p> <p>(h) Treating mine drainage in underground sumps.</p>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>			
<p>§ 817.46 Hydrologic balance: Sedimentation ponds.</p>				N-A
<p>(a) General requirements. Sedimentation ponds shall be used individually or in series and shall -</p>	<p>✓</p>			
<p>(1) Be constructed before any disturbance of the undisturbed area to be drained into the pond and prior to any discharge of water to surface waters from underground mine workings;</p>	<p>✓</p>			
<p>(2) Be located as near as possible to the disturbed area and out of perennial streams, unless approved by the regulatory authority.</p>	<p>✓</p>			
<p>(3) Meet all the criteria of this Section.</p>				
<p>(b) Sediment storage volume. Sedimentation ponds shall provide a minimum sediment storage volume equal to -</p>				
<p>(1) The accumulated sediment volume from the drainage area to the pond for a minimum of 3 years or the life of the pond, whichever is greater. Sediment storage volume shall be determined using the Universal Soil Loss Equation, gully erosion rates, and the sediment delivery ratio converted to sediment volume. Conversions shall use either the sediment density or other empirical methods derived from regional sediment pond studies may be used if approved by the regulatory authority; or</p>				N-A
<p>(2) 0.1 acre-foot for each acre of disturbed area within the upstream drainage area or a greater amount if required by the regulatory authority based upon sediment yield to the pond. The regulatory authority may approve a sediment storage volume of not less than 0.035 acre-foot for each acre of disturbed area within the upstream drainage area, if the person who conducts the underground mining activities has demonstrated that sediment removed by other sediment control measures is equal to the reduction in sediment storage volume; and</p>	<p>✓</p>		<p>✓</p>	
<p>(3) The accumulated sediment volume necessary to retain sediment for 1 year in any discharge from the underground mine passing through the pond.</p>				N-A Insignificant
<p>(c) Detention time. Sedimentation ponds shall provide the required theoretical detention time for the water inflow or runoff entering the pond from a 10-year, 24-hour precipitation event (design event), plus the average inflow from the underground mine. Theoretical detention time is defined as the average time that the design flow is detained in the pond; and is further defined as the time difference between the centroid of the inflow hydrograph and the centroid of the outflow hydrograph for the design event. Runoff diverted under Sections 817.43 and 817.44 away from the disturbed drainage areas and not passed through the sedimentation pond, need not be considered in sedimentation pond design. In determining the runoff volume, the characteristics of the mine site, reclamation procedures, and onsite sediment control practices shall be considered. Sedimentation ponds shall provide a theoretical detention time of not less than twenty-four hours, or any higher amount required by the regulatory authority, except as provided under Paragraphs (1), (2), or (3) of this Subsection.</p>	<p>✓</p>		<p>✓</p>	
<p>(1) The regulatory authority may approve a theoretical detention time of not less than 10 hours, when the person who conducts the underground mining activities demonstrates that -</p>				N-A
<p>(2) The improvement in sediment removal efficiency is equivalent to the reduction in detention time as a result of pond design. Improvements in pond design may include but are not limited to pond configuration, in-flow and out-flow facility locations, baffles to decrease in-flow velocity and short-circuiting, and surface areas; and</p>				N-A
<p>(3) The pond effluent is shown to</p>				N-A

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>817.48 Hydrologic balance: Acid-forming and toxic-forming materials.</p> <p>Drainage from acid-forming and toxic-forming underground development waste and spoil, if any, into ground and surface water shall be avoided by—</p> <p>(a) Identifying, burying, and treating, where necessary, waste and spoil which, in the judgment of the regulatory authority, may be detrimental to vegetation or may adversely affect water quality, if not treated or buried;</p> <p>(b) Preventing water from coming into contact with acid-forming and toxic-forming materials in accordance with Section 817.103, and other measures required by the regulatory authority; and</p> <p>(c) Burying or otherwise treating all acid-forming or toxic-forming underground development waste and spoil within 30 days after they are first exposed on the mine site, or within a lesser period required by the regulatory authority. Temporary storage of such materials may be approved by the regulatory authority upon a finding that burial or treatment within 30 days is not feasible and will not result in any material risk of water pollution or other environmental damage. Storage shall be limited to the period until burial or treatment first becomes feasible. Acid-forming and toxic-forming underground development waste and spoil to be stored shall be placed on impermeable material and protected from erosion and contact with surface water.</p>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>			<p><i>Waste disposal</i></p> <p><i>(Vol. 1 and Geotechnical Plans page A-12)</i></p> <p><i>Identification of potential toxic or acid forming materials, none is there some further discussion regarding potential mobility of some toxic constituents under the proposed and potential for associated environmental impact. These items should be discussed and the items for some needed measures to meet Section 817.48 (c) and a plan be developed.</i></p> <p><i>See stipulation</i></p>
<p>817.49 Hydrologic balance: Permanent and temporary impoundments.</p> <p>(a) Permanent impoundments are prohibited unless authorized by the regulatory authority, upon the basis of the following demonstration:</p> <p>(1) The quality of the impounded water shall be suitable, on a permanent basis, for its intended use, and discharge of water from the impoundment shall not degrade the quality of receiving waters to less than the water-quality standards established pursuant to applicable State and Federal laws.</p> <p>(2) The level of water shall be sufficiently stable to support the intended use.</p> <p>(3) Adequate safety and access to the impounded water shall be provided for proposed water users.</p> <p>(4) Water impoundments will not result in the diminution of the quality or quantity of water used by adjacent or surrounding landowners for agricultural, industrial, recreational, or domestic uses.</p> <p>(5) The design, construction, and maintenance of structures shall achieve the minimum design requirements applicable to structures constructed and maintained under the Watershed Protection and Flood Prevention Act, Pub. L. 83-568 (16 U.S.C. 1006). Requirements for impoundments that meet the size or other criteria of the Mine Safety and Health Administration, 30 CFR 77.216(a) are contained in U.S. Soil Conservation Service Technical Release No. 60, 'Earth Dams and Reservoirs,' June 1978. Requirements for impoundments that do not meet the size or other criteria contained in 30 CFR 77.216(a) are contained in U.S. Soil Conservation Service Practice Standard 378, 'Fonds,' October 1978. The technical release and practice standard are hereby incorporated by reference as they exist on the date of adoption of this Part. Notices of changes made in these publications will be periodically published by OSM in the FEDERAL REGISTER. Technical Release No. 60 and Practice Standard 378 are on file and available for inspection at the OSM Central Office, U.S. Department of the Interior, South Interior Bldg. 1951 Constitution Ave., NW., Washington, D.C. 20240, at each OSM Regional Office, District Office, and Field Office and at the Central Office of the applicable State regulatory authority, if any. Copies of the publications may also be obtained by writing to the above locations. Copies of these publications will also be on file for public inspection at the FEDERAL REGISTER Library, 1100 L' St., N.W. Washington, D.C. Incorporation-by-reference provisions have been approved by the Director of the FEDERAL REGISTER February 7, 1979. The Director's approval of this incorporation by reference expires on Feb. 7, 1980.</p>				<p><i>N/A? Ground water</i></p>

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(6) The size of the impoundment is adequate for its intended purposes.</p> <p>(7) The impoundment will be suitable for the approved postmining land use.</p> <p>(b) Temporary impoundments of water in which the water is impounded in a dam shall meet the requirements of 30 CFR 817.46(e)-(ul).</p> <p>(c) Excavations that will impound water during or after the mining operation shall have perimeter slopes that are stable and shall not be steeper than 2:1H. Where surface runoff enters the impoundment area, the side slope shall be protected against erosion.</p> <p>(d) Slope protection shall be provided to minimize surface erosion at the site and sediment control measures shall be required where necessary to reduce the sediment leaving the site.</p> <p>(e) All embankments of temporary and permanent impoundments, and the surrounding areas and diversion ditches disturbed or created by construction, shall be graded, fertilized, seeded, and mulched to comply with the requirements of 30 CFR 817.111-817.117 immediately after the embankment is completed, provided that the active, upstream face of the embankment where water will be impounded may be wrapped or otherwise stabilized. Areas in which the vegetation is not successful or where rills and gullies develop shall be repaired and revegetated to comply with the requirements of 30 CFR 817.106 and 30 CFR 817.111-817.117.</p> <p>(f) All dams and embankments meeting the size or other criteria of 30 CFR 77.216(a) shall be routinely inspected by a qualified registered professional engineer, or by someone under the supervision of a qualified registered professional engineer, in accordance with 30 CFR 77.216-3.</p> <p>(g) All dams and embankments shall be routinely maintained during the mining operations. Vegetative growth shall be cut where necessary to facilitate inspection and repair. Ditches and spillways shall be cleaned. Any combustible materials present on the surface, other than material such as mulch or dry vegetation used for surface stability, shall be removed and all other appropriate maintenance procedures followed.</p> <p>(h) All dams and embankments that meet or exceed the size or other criteria of 30 CFR 77.216(a) shall be certified to the regulatory authority by a qualified registered professional engineer, immediately after construction and annually thereafter, as having been constructed and/or maintained to comply with the requirements of this Section. All dams and embankments that do not meet the size or other criteria of 30 CFR 77.216(a) shall be certified by either a qualified registered professional engineer or a registered land surveyor, except that all coal processing waste dams and embankments covered by 30 CFR 817.91-817.93 shall be certified by a qualified registered professional engineer. Certification reports shall include statements on—</p> <p>(1) Existing and required monitoring procedures and instrumentation;</p> <p>(2) The design depth and elevation of any impounded waters at the time of the initial certification report or the average and maximum depths and elevations of any impounded waters over the past year for the annual certification reports;</p> <p>(3) Existing storage capacity of the dam or embankment;</p> <p>(4) Any fires occurring in the construction material up to the date of the initial certification or over the past year for the annual certification reports; and</p> <p>(5) Any other aspects of the dam or embankment affecting stability.</p> <p>(i) Plans for any enlargement, reduction in size, reconstruction, or other modification of dams or impoundments shall be submitted to the regulatory authority and shall comply with the requirements of this Section. Except where a modification is required to eliminate an emergency condition constituting a hazard to public health, safety, or the environment, the regulatory authority shall approve the plans before modification begins.</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p><i>GW</i> § 17.50 Hydrologic balance Underground Mine Entry and Access Discharges.</p> <p>(a) Surface entries and accesses to underground workings, including adits and slopes, shall be located, designed, constructed, and utilized to prevent or control gravity discharge of water from the mine.</p> <p>(b) Gravity discharge of water from an underground mine, other than a drift mine subject to Paragraph (c) of this Section, may be allowed by the regulatory authority, if it is demonstrated that—</p> <p>(1)(I) The discharge, without treatment, satisfies the water effluent limitations of 30 CFR 17.42 and all applicable State and Federal water quality standards; and</p> <p>(II) That discharge will result in changes in the prevailing hydrologic balance that are minimal and approved postmining land uses will not be adversely affected; or</p> <p>(2)(I) The discharge is conveyed to a treatment facility in the permit area in accordance with Section 17.42(a);</p> <p>(II) All water from the underground mine discharged from the treatment facility meets the effluent limitations of Section 17.42 and all other applicable State and Federal statutes and regulations; and</p> <p>(III) Consistent maintenance of the treatment facility will occur throughout the the anticipated period of gravity discharge.</p> <p>(c) Notwithstanding anything to the contrary in Paragraphs (a) and (b) of this Section, for a drift mine first used after the implementation of a State, Federal, or Federal lands program and located in acid-producing or iron-producing coal seams, surface entries and accesses shall be located in such a manner as to prevent any gravity discharge from the mine.</p>	<p>✓</p> <p>✓</p> <p>IR Lon.</p> <p>?</p>	<p>?</p> <p>IR Lon.</p> <p>Sealing pipe.</p>		<p>a. Probs have been required to prevent & control discharges from mine. They have a negative slope of 4% (By Vol 3, Section 4.11.7, & for further details see Sec 4.9 Opening and Sealing Plan). The portal area is substantially above the water table" (2) OSM question 2 re. ACR). Also the "isolated groundwater piezometric contour map" (Attached 1; OSM-ACR compliance) indicate the outcrop (and portal area) for the upper coal seam is above the water table.</p> <p>In compliance</p>
<p><i>GW</i> § 17.52 Hydrologic balance Surface and ground water monitoring.</p> <p>(a) Ground water.</p> <p>(1) Ground water levels, infiltration rates, subsurface flow and storage characteristics, and the quality of ground water shall be monitored in a manner approved by the regulatory authority, to determine the effects of underground mining activities on the recharge capacity of reclaimed lands and on the quantity and quality of water in ground water systems in the mine plan and adjacent areas.</p> <p>(2) When underground mining activities may affect ground water systems which serve as aquifers which significantly ensure the hydrologic balance of water use either on or off the mine plan area, ground levels and ground water quality shall be periodically monitored. Monitoring shall include measurements from a sufficient number of wells and mineralogical and chemical analyses of aquifer, overburden, and spoil that are adequate to reflect changes in ground water quantity and quality resulting from those activities. Monitoring shall be adequate to plan for modification of the underground mining activities if necessary to minimize disturbance to the prevailing hydrologic balance.</p> <p>(3) As specified and approved by the regulatory authority, the person who conducts the underground mining activities shall conduct additional hydrologic tests, including drilling, infiltration tests and aquifer tests, and the results shall be submitted to the regulatory authority to demonstrate compliance with Section 17.50 and this Section.</p>	<p>✓</p> <p>(a)(1)</p> <p>✓</p> <p>(a)(2)</p> <p>✓</p> <p>(a)(1)</p>	<p>✓</p> <p>(a)(1)</p> <p>✓</p> <p>(a)(1)</p>		<p>See Stipulation</p> <p>See Stipulation</p>
<p><i>SW</i> (b) Surface water.</p> <p>(1) Surface water monitoring shall be conducted in accordance with the monitoring program submitted under 30 CFR 784.14(b)(3) and approved by the regulatory authority. The regulatory authority shall determine the nature of data, frequency of collection, and reporting requirements. Monitoring shall—</p> <p>(I) Be adequate to measure accurately and record water quantity and quality of discharges from the permit area;</p> <p>(II) All cases in which analytical results of the sample collections indicate noncompliance with a permit condition or applicable standard has occurred shall result in the person who conducts underground mining activities notifying the regulatory authority within 3 days. Where a National Pollutant Discharge Elimination System (NPDES) permit effluent limitation noncompliance has occurred, the person who conducts the underground mining activities shall forward the analytic results concurrently with the</p>				<p>Stipulation</p>

Head

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(18) Result in quarterly reports to the regulatory authority, to include analytical results from each sample taken during the quarter. Any sample results which indicate a permit violation will be reported immediately to the regulatory authority. In those cases where the discharge for which water monitoring reports are required is also subject to regulation by a NPDES permit issued under the Clean Water Act of 1977 (30 U.S.C. Sec. 1251-1378) and where such permit includes provisions for equivalent reporting requirements and requires filing of the water monitoring reports within 90 days or less of sample collection, the following alternative procedure shall be used. The person who conducts the underground mining activities shall submit to the regulatory authority on the same time schedule as required by the NPDES permit, or within 90 days following sample collection, whichever is earlier, either—</p> <p>(A) A copy of the completed reporting form filed to meet NPDES permit requirements; or</p> <p>(B) A letter identifying the State or Federal government official with whom the reporting form was filed to meet NPDES permit requirements and the date of filing.</p> <p>(2) Surface water flow and quality, including discharges to surface waters from the permit area, and receiving waters, shall continue to be monitored after both the cessation of use of underground mine workings and after surface disturbed areas have been regraded and stabilized according to this Part. Data from this monitoring may be used to demonstrate that the quality and quantity of runoff without treatment is consistent with the requirement of this Part to minimize disturbance to the prevailing hydrologic balance and to attain the approved postmining land use. These data may also provide a basis for approval by the regulatory authority for removal of water quality or flow control systems.</p> <p>(3) Equipment, structures, and other devices necessary to measure and sample accurately the quality and quantity of surface water discharges from the surface disturbed area and from underground mine workings shall be properly installed, maintained, and operated and shall be removed when no longer required.</p>				
<p>X § 817.53 Hydrologic balance Transfer of ^{GW} well.</p> <p>(a) An exploratory or monitoring well may only be transferred by the person who conducts underground mining activities for further use as a water well with the prior approval of the regulatory authority. That person and the surface owner of the lands where the well is located shall jointly submit a written request to the regulatory authority for that approval.</p> <p>(b) Upon an approved transfer of a well, the transferee shall—</p> <p>(1) Assume primary liability for damages to persons or property from the well;</p> <p>(2) Plug the well when necessary, but in no case later than abandonment of the well; and</p> <p>(3) Assume primary responsibility for compliance with Sections 817.13-817.15 with respect to the well.</p> <p>(c) Upon an approved transfer of a well, the transferor shall be secondarily liable for the transferee's obligations under Paragraph (b) of this Section, until release of the bond or other equivalent guarantee required by Subchapter J for the area in which the well is located.</p>			<i>GW only</i>	<p><i>See Stipulation proposed</i></p> <p><i>No transfer is referred to - MP Hoovers, to be compliance compliance, the applicant should state his plans plans and any other pertinent info. needed to comply w/ 817.53</i></p>
<p>X § 817.54 Hydrologic balance Water rights and replacement.</p> <p>Any person who conducts underground mining activities shall replace the water supply of an owner of interest in real property who obtains all or part of his or her supply of water for domestic, agricultural, industrial, or other legitimate use from an underground or surface source, where the water supply has been affected by contamination, diminution, or interruption proximately resulting from the underground mining activities.</p>	<i>GW only</i>			<p><i>Replacement agreement is given in Sec 4.11.1 (VLR3) therefore following is voided.</i></p> <p><i>The MP (Reg Vol 1, page 2-42, Section 2.5.4 Alternative Water Supply) is in compliance with Section 783.07 regarding identification of alternative sources of supply supply or water services will result but not with 817.54 which states that he shall replace the supply where the supply is affected affected.</i></p> <p><i>(This may be a case under A.C.R. and T.A. - Regs need for water to be?)</i></p>
<p>X § 817.55 Hydrologic balance Discharge of water into an underground mine.</p> <p>Water from the surface or from an underground mine shall not be diverted or discharged into other underground mine workings, unless the person who conducts the underground mining activities demonstrates to the regulatory authority that the discharge will—</p>	<i>GW only</i>			<p><i>No such discharge ^{to previous mine} is contemplated. There are no other mines in the immediate</i></p>

Hyd.

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(A) Abate water pollution or otherwise eliminate public hazards resulting from underground mining activities.</p> <p>(b) Be discharged as a controlled flow.</p> <p>(c) Meets the effluent limitations of Section 817.42 for pH and total suspended solids, except that the pH and total suspended solid limitations may be exceeded, if approved by the regulatory authority and is limited to —</p> <p>(1) Coal processing waste;</p> <p>(2) Underground mine development waste;</p> <p>(3) Fly ash from a coal-fired facility;</p> <p>(4) Sludge from an acid mine drainage treatment facility;</p> <p>(5) Flue gas desulfurization sludge; or</p> <p>(6) Inert materials used for stabilizing underground mines;</p> <p>(d) Continue as a controlled and identifiable flow and is ultimately treated by an existing treatment facility.</p> <p>(e) In any event, the discharge from underground mines to surface waters will not cause, result in, or contribute to a violation of applicable water quality standards or effluent limitations;</p> <p>(f) Minimizes disturbance to the hydrologic balance; and</p> <p>(g) Meets with the approval of the Mine Safety and Health Administration.</p> <p>§ 817.56 Hydrologic balance: Postmining rehabilitation of sedimentation ponds, diversions, impoundments, and treatment facilities.</p> <p>Before abandoning the permit area, the person who conducts the underground mining activities shall renovate all permanent sedimentation ponds, diversions, impoundments and treatment facilities to meet criteria specified in the detailed design plan for the permanent structures and impoundments.</p> <p>§ 817.57 Hydrologic balance: Stream buffer zones.</p> <p>(a) No surface area within 100 feet of a perennial stream or a stream with a biological community determined according to Paragraph (c), below shall be disturbed by surface operations and facilities, except in accordance with Sections 817.43-817.44, unless the regulatory authority specifically authorizes underground mining activities closer to or through such a stream upon finding —</p> <p>(1) That the original stream channel will be restored; and</p> <p>(2) During and after the mining, the water quantity and quality from the stream section within 100 feet of the underground mining activities shall not be adversely affected.</p> <p>(b) The area not to be disturbed shall be designated a buffer zone and marked as specified in Section 817.11.</p> <p>(c) A stream with a biological community shall be determined by the existence in the stream at any time of an assemblage of two or more species of arthropods or molluscan animals which are —</p> <p>(1) Adapted to flowing water for all or part of their life cycle;</p> <p>(2) Dependent upon a flowing water habitat;</p> <p>(3) Reproducing or can reasonably be expected to reproduce in the water body where they are found; and</p> <p>(4) Longer than 2 millimeters at some stage or part of their life cycle spent in the flowing water habitat.</p> <p>§ 817.53 Coal processing waste banks: Water control measures.</p> <p>(a) A properly designed sub-drainage system shall be provided, which shall —</p> <p>(1) Intercept all ground water sources;</p> <p>(2) Be protected by an adequate filter; and</p> <p>(3) Be covered so as to protect against the entrance of surface water or leachate from the coal processing waste.</p> <p>(b) All surface drainage from the area above the coal processing waste bank and from the crest and face of the waste disposal area shall be diverted, in accordance with Section 817.72(d).</p> <p>(c) Slope protection shall be provided to minimize surface erosion at the site. All disturbed areas, including diversion ditches that are not trapped, shall be vegetated upon completion of construction.</p> <p>(d) Discharges of all water from a coal processing waste bank shall</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>§ 817.31 Coal processing waste: Dams and embankments: General requirements.</p> <p>(a) Sections 817.91-817.93 apply to dams and embankments, constructed of coal processing waste or intended to impound coal processing waste, whether they were completed before adoption of the regulatory program or are intended to be completed thereafter.</p> <p>(b) Waste shall not be used in the construction of dams and embankments unless it has been demonstrated to the regulatory authority that the stability of such a structure conforms with the requirements of 30 CFR 817.93(a). It shall also be demonstrated that the use of waste material shall not have a detrimental effect on downstream water quality or the environment due to acid seepage through the dam or embankment. All demonstrations shall be submitted to and approved by the regulatory authority.</p> <p>§ 817.32 Coal processing waste: Dams and embankments: Site preparation.</p> <p>Before coal processing waste is placed at a dam or embankment site--</p> <p>(a) All trees, shrubs, grasses, and other organic material shall be cleared and grubbed from the site, and all combustibles shall be removed and stockpiled in accordance with the requirements of this Part; and</p> <p>(b) Surface drainage that may cause erosion to the embankment area or the embankment features, whether during construction or after completion, shall be diverted away from the embankment by diversion ditches that comply with the requirements of 30 CFR 817.43. Adequate outlets for discharge from these diversions shall be in accordance with 30 CFR 817.47. Diversions that are designed to divert drainage from the upstream area away from the impoundment area shall be designed to carry the peak runoff from a 100-year, 24-hour precipitation event. The diversion shall be maintained to prevent blockage, and the discharges shall be in accordance with 30 CFR 817.47. Sediment control measures shall be provided at the discharge of each diversion ditch before entry into natural watercourses in accordance with 30 CFR 817.41-817.46.</p> <p>§ 817.33 Coal processing waste: Dams and embankments: Design and construction.</p> <p>(a) The design of each dam and embankment constructed of coal processing waste or intended to impound such waste shall comply with the requirements of 30 CFR 817.49(a)(5), (e), (f), (g), (h), and (i) modified as follows.</p> <p>(1) The design freeboard between the lowest point on the embankment crest and the maximum water elevation shall be at least 3 feet. The maximum water elevation shall be that determined by the freeboard hydrograph criteria contained in the U.S. Soil Conservation Service criteria referenced in 30 CFR 817.49.</p> <p>(2) The dam and embankment shall have a minimum safety factor of 1.5 for the partial pool with steady seepage saturation conditions, and the seismic safety factor shall be at least 1.2.</p> <p>(3) The dam or embankment foundation and abutments shall be designed to be stable under all conditions of construction and operation of the impoundment. Sufficient foundation investigations and laboratory testing shall be performed to determine the safety factors of the dam or embankment for all loading conditions appearing in Paragraph (a)(2) of this Section or the publications referred to in 30 CFR 817.49, and for all increments of construction.</p> <p>(b) Spillways and outlet works shall be designed to provide adequate protection against erosion and corrosion. Inlets shall be protected against blockage.</p> <p>(c) Dams or embankments constructed of or impounding waste materials shall be designed so that at least 90 percent of the water stored during the design precipitation event shall be removed within a 10-day period.</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>§ 817.153 Roads: Class I Drainage.</p> <p>(a) <i>General.</i></p> <p>(1) Each Class I Road shall be designed, constructed, or reconstructed, and maintained to have adequate drainage, using structures, such as, but not limited to, ditches, cross drains, and ditch relief drains. The water-control system shall be designed to safely pass the peak runoff from a 10-year, 24-hour precipitation event or a greater event if required by the regulatory authority.</p> <p>(2) Sediment control shall comply with 30 CFR 817.42 and 817.45.</p> <p>(3) Vegetation shall not be cleared for more than the width necessary for road and associated ditch construction, to serve traffic needs and for utilities.</p> <p>(b) <i>Ditches.</i></p> <p>(1) A ditch shall be provided on both sides of a through-cut and on the inside shoulder of a cut-and-fill section, with ditch relief cross-drains spaced according to grade. Water shall be intercepted before reaching a switchback or large fill and drained safely away in accordance with this Section. Water from a fill or switchback shall be released below the fill, through conduits or in riprapped channels, and shall not be discharged onto the fill. Drainage ditches shall be placed at the toe of all cut slopes formed by the construction of roads.</p> <p>(2) On flat sections of Class I Roads where rolling topography is insufficient to provide natural ditch drainage, the road grade shall be undulated to provide for free flow of water in the ditch section. Road sections may be constructed to elevate the road surface above the original ground surface to facilitate drainage.</p> <p>(c) <i>Culverts and bridges.</i> (1)(X) Culverts with an end area of 35 square feet or less shall be designed to safely pass the 10-year, 24-hour precipitation event without a head of water at the entrance. Culverts with an end area of greater than 35 square feet, and bridges with spans of 30 feet or less, shall be designed to safely pass the 20-year, 24-hour precipitation event. Bridges with spans of more than 30 feet shall be designed to safely pass the 100-year, 24-hour precipitation event, or a larger event as specified by the regulatory authority.</p> <p>(II) Drainage pipes and culverts shall be constructed to avoid plugging or collapse and erosion at inlets and outlets.</p> <p>(III) Trash racks and debris basins shall be installed in the drainage area wherever debris from the drainage area could impair the functions of drainage and sediment-control structures.</p> <p>(iv) All culverts shall be covered by compacted fill to a minimum depth of 1 foot.</p> <p>(v) Culverts shall be designed, constructed, and maintained to sustain the vertical-soil pressure, the passive resistance of the foundation, and the weight of vehicles to be used.</p> <p>(2) Culverts for road surface drainage only, shall be constructed in accordance with the following:</p> <p>(I) Unless otherwise authorized or required under Paragraphs (II) or (III) of this Section, culverts shall be spaced as follows:</p> <p>(A) Spacing shall not exceed 1,000 feet on grades of 0 to 3 percent.</p> <p>(B) Spacing shall not exceed 800 feet on grades of 3 to 6 percent.</p> <p>(C) Spacing shall not exceed 500 feet on grades of 6 to 10 percent.</p> <p>(D) Spacing shall not exceed 300 feet on grades of 10 percent or greater.</p> <p>(II) Culverts at closer intervals than the maximum in Paragraph (c)(2)(X) of this Section shall be installed if required by the regulatory authority as appropriate for the erosive properties of the soil or to accommodate flow from small intersecting drainages.</p> <p>(III) Culverts may be constructed at greater intervals than the maximum indicated in Paragraph (c)(2)(X) of this Section if authorized by the regulatory authority upon a finding that greater spacing will not increase erosion.</p> <p>(iv) Culverts shall cross the road at not less than a 30 degree angle down-grade.</p> <p>(v) Culverts may be designed to carry less than the peak runoff from a 10-year, 24-hour precipitation event if the ditch will not overtop and will remain stable.</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(vi) The inlet end shall be protected by a rock headwall or other material approved by the regulatory authority as adequate protection against erosion of the headwall. The water shall be discharged below the toe of the fill through conduits or in stripped channels and shall not be discharged onto the fill.</p> <p>(d) <i>Natural drainage.</i> Natural-channel drainageways shall not be altered or relocated for road construction or reconstruction without the prior approval of the regulatory authority, in accordance with 30 CFR 817.43 and 817.44. The regulatory authority may approve alterations and relocations only if—</p> <p>(1) The natural-channel drainage is not blocked;</p> <p>(2) No significant damage occurs to the hydrologic balance; and</p> <p>(3) There is no adverse impact on adjoining landowners.</p> <p>(e) <i>Stream crossings.</i> Drainage structures are required for stream channel crossings. Drainage structures shall not affect the normal flow or gradient of the stream, or adversely affect fish migration and aquatic habitat or related environmental values.</p> <p>§ 817.153 <i>Roads Class II: Drainage.</i></p> <p>(a) <i>General.</i></p> <p>(1) Each Class II Road shall be designed, constructed or reconstructed, and maintained to have adequate drainage, using structures such as ditches in wet areas, cross drains in natural drainageways, surface dips, and stream crossings. The water-control system shall be designed to safely pass the peak runoff from a 10-year, 24 hour precipitation event or a greater event if required by the regulatory authority.</p> <p>(2) Sediment control shall comply with 30 CFR 817.42 and 817.45.</p> <p>(b) <i>Ditches and alternative measures for roadbed erosion control.</i> Where required to minimize erosion on the roadbed, ditches shall be designed and constructed in accordance with 30 CFR 817.153(b). In wet areas or where there is free water such ditch sections shall be required. For every segment of a Class II Road without drainage ditches which comply with 30 CFR 817.153(b), drainage shall be provided by surface dips. These drainage dips shall be constructed as undulations in the roadway of sufficient height from the hydraulic bottom to the top of the dip to prevent water from running down the surface of the road. Inloped dips shall discharge into a culvert or drop inlet. Outloped dips shall discharge either onto the natural ground or, onto embankments if a drain is provided. The bottom of the dip shall be rock surfaced to prevent erosion. Dip spacing shall be sufficient to minimize erosion of the road surface.</p> <p>(c) <i>Culverts and bridges.</i></p> <p>(1)(i) Culverts with an end area of 35 square feet or less shall be designed to safely pass the 10-year, 24-hour precipitation event without a head of water at the entrance. Culverts with an end area of greater than 35 square feet, and bridges with spans of 30 feet or less, shall be designed to safely pass the 20-year, 24-hour precipitation event. Bridges with spans of more than 30 feet shall be designed to safely pass the 100-year, 24-hour precipitation event or larger event as specified by the regulatory authority.</p> <p>(ii) Drainage pipes and culverts shall be constructed to avoid plugging or collapse, and erosion at inlets and outlets.</p> <p>(iii) Culverts shall be covered by compacted fill to a minimum depth of 1 foot.</p> <p>(iv) Culverts shall be designed, constructed, and maintained to sustain the vertical soil pressure, the passive resistance of the road foundation, and the weight of vehicles to be used.</p> <p>(2) Culverts or dips for road surface drainage only, shall be constructed in accordance with the following:</p> <p>(i) Unless otherwise authorized or required under Paragraphs (ii) or (iii) of this Section, culverts and dips shall be spaced as follows:</p> <p>(A) Spacing shall not exceed 1,000 feet on grades of 0 to 3 percent.</p> <p>(B) Spacing shall not exceed 600 feet on grades of 3 to 6 percent.</p> <p>(C) Spacing shall not exceed 400 feet on grades of 6 to 10 percent.</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS, SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(D) Spacing shall not exceed 200 feet on grades of 10 percent or greater.</p> <p>(II) Surface dips or culverts at closer intervals than the maximum indicated in Paragraph (c)(2)(I) of this Section shall be installed if required by the regulatory authority as appropriate for the erosive properties of the soil or to accommodate flow from small intersecting drainages.</p> <p>(III) Surface dips or culverts may be constructed at greater intervals than the maximum indicated in Paragraph (c)(2)(I) of this Section if authorized by the regulatory authority upon a finding that greater spacing will not increase erosion.</p> <p>(IV) Culverts and the bottoms of drainage dips shall cross the road at not less than a 30 degree angle down-grade.</p> <p>(V) A culvert may be designed to carry less than the peak runoff from a 10-year, 24-hour precipitation event if the ditch will not overtop and will remain stable.</p> <p>(VI) The inlet end of all culverts shall be protected by a rock headwall or other material approved by the regulatory authority as adequate protection against erosion of the headwall. The water shall be discharged below the toe of the fill, through conduits or in rimped channels and shall not be discharged onto the fill.</p> <p>(d) <i>Natural drainage.</i> Natural-channel drainageways shall not be altered or relocated for road construction or reconstruction without the prior approval of the regulatory authority in accordance with 30 CFR 817.43 and 817.44. The regulatory authority may approve alterations and relocations only if—</p> <p>(I) The natural-channel drainage is not blocked;</p> <p>(II) No significant degradation occurs to the hydrologic balance; and</p> <p>(III) There is no adverse impact on adjoining landowners.</p> <p>(e) <i>Stream crossings.</i> Drainage structures are required for stream-channel crossings. Drainage structures shall not affect the normal flow or gradient of the stream, or adversely affect fish migration or aquatic habitat or related environmental values.</p> <p>PART 819—SPECIAL PERMANENT PROGRAM PERFORMANCE STANDARDS— AUGER-MINING</p> <p>Sec.</p> <p>819.1 Scope.</p> <p>819.2 Objectives.</p> <p>819.11 Auger mining: Additional performance standards.</p> <p>Authority: Secs. 102, 201, 301, 303, 304, 510, 513, 517, 701, Pub. L. 95-87, 91 Stat. 444, 448, 467, 470, 471, 480, 484, 488, 516 (30 U.S.C. 1202, 1211, 1251, 1253, 1254, 1260, 1263, 1267, 1291).</p> <p>§ 819.1 Scope.</p> <p>This Part sets forth environmental-protection performance standards in addition to those of Part 816 for surface mining activities involving auger mining.</p> <p>§ 819.2 Objectives.</p> <p>The objectives of this Part are to—</p> <p>(a) Prevent adverse environmental effects from auger mining; and</p> <p>(b) Prevent any unnecessary loss of coal reserves.</p> <p>§ 819.11 Auger mining: Additional performance standards.</p> <p>(a) Any auger mining associated with surface mining activities shall be conducted to maximize recoverability of mineral reserves remaining after the mining activities are completed. Each person who conducts auger mining operations shall leave areas of undisturbed coal to provide access for removal of those reserves by future underground mining activities, unless the regulatory authority determines that the coal reserves have been depleted or are limited in thickness or extent to the point that it will not be practicable to recover the remaining coal reserves. The regulatory authority shall make such determination only upon presentation of appropriate technical evidence by the operator.</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>Undisturbed areas of coal shall be left in unmined sections which—</p> <p>(1) Are a minimum of 250 feet wide at any point between each group of auger openings to the full depth of the auger hole;</p> <p>(2) Are no more than 2,500 feet apart, measured from the center of one section to the center of the next section, unless a greater distance is set forth in the permit application under 30 CFR 783.20 and approved by the regulatory authority; and</p> <p>(3) For multiple seam mining, shall have a width of at least 250 feet plus 50 feet for each subjacent workable coal seam. The centers of all unmined sections shall be aligned vertically.</p> <p>(b) No auger hole shall be made closer than 500 feet in horizontal distance to any abandoned or active underground mine workings, except as approved in accordance with 30 CFR 816.79.</p> <p>(c) In order to prevent pollution of surface and ground water and to reduce fire hazards, each auger hole, except as provided in Paragraph (d) of this Section, shall be plugged so as to prevent the discharge of water from the hole and access of air to the coal, as follows:</p> <p>(1) Each auger hole discharging water containing toxic-forming or acid-forming material shall be plugged within 72 hours after completion by backfilling and compacting noncombustible and impervious material into the hole to a depth sufficient to form a water-tight seal or the discharge shall be treated commencing within 72 hours after completion to meet applicable effluent limitations and water quality standards under 30 CFR 816.42, until the hole is properly sealed; and</p> <p>(2) Each auger hole not discharging water shall be sealed as in Paragraph (c)(1) of this Section, to close the opening within 30 days following completion.</p> <p>(d) An auger hole need not be plugged, if the regulatory authority finds—</p> <p>(1) Impoundment of the water which would result from plugging the hole may create a hazard to the environment or public health or safety; and</p> <p>(2) Drainage from the auger hole will not pose a threat of pollution to surface water and will comply with the requirements of 30 CFR 816.41-816.42.</p> <p>(e) The regulatory authority shall prohibit auger mining, if it determines that—</p> <p>(1) Adverse water quality impacts cannot be prevented or corrected;</p> <p>(2) Pill stability cannot be achieved;</p> <p>(3) The prohibition is necessary to maximize the utilization, recoverability or conservation of the solid fuel resource; or</p> <p>(4) Subsidence resulting from auger mining may disturb or damage powerlines, pipelines, buildings or other facilities.</p> <p>PART 822—SPECIAL PERMANENT PROGRAM PERFORMANCE STANDARDS—OPERATIONS IN ALLUVIAL VALLEY FLOORS</p> <p>See:</p> <p>822.1 Scope.</p> <p>822.2 Objectives.</p> <p>822.11 Alluvial valley floors: Essential hydrologic functions.</p> <p>822.12 Alluvial valley floors: Protection of farming and water supplies.</p> <p>822.13 Alluvial valley floors: Protection of agricultural uses.</p> <p>822.14 Alluvial valley floors: Monitoring.</p> <p>Attachment: Sections 102, 201, 301, 502, 504, 506, 507, 508, 509, 510, 512, 518, 517, 519 and 701, Pub. L. 95-87, 91 Stat. 448, 449, 467, 470, 471, 473, 478, 480, 484, 495, 498, 516 (30 U.S.C. 1202, 1211, 1251, 1253, 1254, 1256, 1257, 1258, 1259, 1260, 1263, 1264, 1267, 1291).</p> <p>§ 822.1 Scope.</p> <p>This Part sets forth additional requirements for surface coal mining and reclamation operations on or which affect alluvial valley floors in the arid and semi-arid regions of the country.</p> <p>§ 822.2 Objectives.</p> <p>This Part establishes the minimum environmental protection performance, reclamation and design standards, to preserve either the existing or potential agricultural uses and the productivity of alluvial valley floors during and after surface coal mining and reclamation operations.</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>§ 822.11 Alluvial valley floors: Essential hydrologic functions.</p> <p>(a) Surface coal mining and reclamation operations shall be conducted to preserve, throughout the mining and reclamation process, the essential hydrologic functions of alluvial valley floors not within an affected area. These functions shall be preserved by maintaining those geologic, hydrologic and biologic characteristics that support those functions.</p> <p>(b) Surface coal mining and reclamation operations shall be conducted to reestablish, throughout the mining and reclamation process, the essential hydrologic functions of alluvial valley floors within an affected area. These functions shall be reestablished by reconstructing those geologic, hydrologic and biologic characteristics that support those functions.</p> <p>(c) The characteristics that support the essential hydrologic functions of alluvial valley floors are those in 30 CFR 785.19(d)(3) and those other geologic, hydrologic, or biologic characteristics identified during premining investigations or monitoring conducted during the surface coal mining and reclamation operation.</p> <p>§ 822.12 Alluvial valley floors: Protection of farming and water supplies.</p> <p>(a) Surface coal mining and reclamation operations shall not interrupt, discontinue, or preclude farming on alluvial valley floors, unless—</p> <p>(1) The premining land use is undeveloped rangeland which is not significant to farming; or</p> <p>(2) The area of affected alluvial valley floor is small and provides or may provide negligible support for production from one or more farms.</p> <p>(b) If environmental monitoring shows that a surface coal mining operation is interrupting, discontinuing, or precluding farming on alluvial valley floors, the operation shall cease until remedial measures are taken by the person who conducts the operation. The remedial measures shall be approved by the regulatory authority prior to the resumption of mining.</p> <p>(c) Surface coal mining and reclamation operations shall not cause material damage to the quality or quantity of water in surface or underground water systems that supply alluvial valley floors. If environmental monitoring shows that the surface coal mining operation is causing material damage to water that supplies alluvial valley floors, the mining operations shall cease until remedial measures are taken by the person who conducts the operation. The remedial measures shall be approved by the regulatory authority prior to the resumption of mining operations.</p> <p>(d) Paragraphs (a) and (b) of this Section do not apply to those lands which were identified in a reclamation plan approved by the State prior to August 1, 1977 for any surface coal mining and reclamation operation that, in the year preceding August 1, 1977:</p> <p>(1) Produced coal in commercial quantities and was located within or adjacent to an alluvial valley floor, or</p> <p>(2) Obtained specific permit approval by the State regulatory authority to conduct surface coal mining and reclamation operations within an alluvial valley floor.</p> <p>§ 822.13 Alluvial valley floors: Protection of agricultural uses.</p> <p>Surface coal mining and reclamation operations shall be conducted to ensure that the agricultural utility and the level of productivity of alluvial valley floors in affected areas are reestablished.</p> <p>§ 822.14 Alluvial valley floors: Monitoring.</p> <p>(a) An environmental monitoring system shall be installed, maintained and operated by the permittee on all alluvial valley floors during surface coal mining and reclamation operations and continued until all bonds are released in accordance with 30 CFR 807. The monitoring system shall provide sufficient information to allow the regulatory authority to determine that:</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(I) The agricultural utility and production of the alluvial valley floor not within the affected area is being preserved;</p> <p>(II) The potential agricultural utility and production on the alluvial valley floor within the affected area has been reestablished;</p> <p>(III) The important characteristics supporting the essential hydrologic functions of the alluvial valley floor in the affected area have been reestablished after mining; and</p> <p>(IV) the important characteristics supporting the essential hydrologic functions of an alluvial valley floor in areas not affected are preserved during and after mining.</p> <p>(b) Monitoring shall be performed at adequate frequencies, to indicate long-term trends that could affect agricultural use of the alluvial valley floors.</p> <p>(c) Monitoring shall be performed during operations, to identify characteristics of the alluvial valley floor not identified in the permit application and to evaluate the importance of all characteristics.</p> <p>(d) All monitoring data collected and analyses thereof shall routinely be made available to the regulatory authority.</p> <p>PART 824—SPECIAL PERMANENT PROGRAM PERFORMANCE STANDARDS—MOUNTAINTOP REMOVAL</p> <p>Sec.</p> <p>824.1 Scope.</p> <p>824.2 Objectives.</p> <p>824.11 Mountaintop removal Performance standards.</p> <p>Authority: Sections 102, 701, 501, 503, 504, 506, 508, 510, 513, 517, 701 Pub. L. 96-47, 91 Stat. 448, 449, 467, 470, 471, 474, 478, 480, 484, 488, 516 (30 U.S.C. 1202, 1211, 1231, 1233, 1234, 1238, 1239, 1260, 1265, 1287, 1291).</p> <p>§ 824.1 Scope.</p> <p>This Part sets forth special environmental protection performance, reclamation, and design standards for surface coal mining activities constituting mountaintop removal mining.</p> <p>§ 824.2 Objectives.</p> <p>The objectives of this Part are to —</p> <p>(a) Enhance coal recovery;</p> <p>(b) Reclaim the land to equal or higher postmining use; and</p> <p>(c) Protect and enhance environmental and other values protected under the Act and this Chapter.</p> <p>§ 824.11 Mountaintop removal Performance standards.</p> <p>(a) Under an approved regulatory program, surface coal mining activities may be conducted under a variance from the requirement of this Subchapter for restoring affected areas to their approximate original contour, if—</p> <p>(1) The regulatory authority grants the variance under a permit, in accordance with 30 CFR 784.14;</p> <p>(2) The activities involve the mining of an entire coal seam running through the upper fraction of a mountain, ridge, or hill, by removing all of the overburden and creating a level plateau or gently rolling contour with no highwalls remaining;</p> <p>(3) An industrial, commercial, agricultural, residential, or public facility (including recreational facilities) use is proposed and approved for the affected land;</p> <p>(4) The alternative land-use requirements of 30 CFR 816.133 are met;</p> <p>(5) All applicable requirements of this Subchapter and the regulatory program, other than the requirements to restore affected areas to their approximate original contour, are met;</p> <p>(6) An outcrop barrier of sufficient width, consisting of the toe of the lowest coal seam, and its associated overburden, are retained to prevent slides and erosion, except that the regulatory authority may permit an exemption to the retention of the coal barrier requirement if the following conditions are satisfied:</p> <p>(i) The proposed mine site was mined prior to May 3, 1978, and the toe of the lowest seam has been removed; or</p> <p>(ii) A coal barrier adjacent to a head-of-hollow III may be removed after the elevation of a head-of-hollow III attains the elevation of the coal barrier if the head-of-hollow III provides the stability otherwise ensured by the</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(7) The final graded slopes on the mined area are less than 1:2.5, so as to create a level plateau or gently rolling configuration, and the outcrops of the plateau do not exceed 1:2.25 except where engineering data substantiates, and the regulatory authority finds, in writing, and includes in the permit under 30 CFR 723.14, that a minimum static safety factor of 1.5 will be attained.</p> <p>(8) The resulting level or gently rolling contour is graded to drain inward from the outslope, except at specified points where it drains over the outslope in stable and protected channels. The drainage shall not be through or over a valley or head-of-hollow fill.</p> <p>(9) Natural watercourses below the lowest coal seam mined are not damaged.</p> <p>(10) All waste and acid-forming or toxic-forming materials, including the strata immediately below the coal seam, are covered with non-toxic spoil to prevent pollution and achieve the approved postmining land use and</p> <p>(11) Spoil is placed on the mountaintop bench as necessary to achieve the postmining land use approved under paragraphs (a)(3) and (a)(4) of this Section. All excess spoil material not retained on the mountaintop shall be placed in accordance with 30 CFR 816.52 and 816.71-816.74.</p> <p>PART 825—SPECIAL PERMANENT PROGRAM PERFORMANCE STANDARDS—SPECIAL BITUMINOUS COAL MINES IN WYOMING</p> <p>Sec.</p> <p>825.1 Scope.</p> <p>825.2 Objective.</p> <p>825.11 Mines operating before January 1, 1972.</p> <p>825.12 Mines developed after August 3, 1977.</p> <p>825.13 Changes in Wyoming program.</p> <p>AUTHORITY: Sections 102, 201, 301, 502, 504, 508, 510, 513, 527, 701 Pub. L. 95-87, 91 Stat. 448, 449, 487, 470, 471, 478, 480, 484, 513, 516 (30 U.S.C. 1202, 1211, 1251, 1253, 1254, 1258, 1260, 1277, 1281).</p> <p>§ 825.1 Scope.</p> <p>(a) This Part sets forth special requirements for certain bituminous surface coal mining activities located west of the 100th meridian west longitude in Wyoming which existed on January 1, 1972, and for surface coal mining activities immediately adjacent thereto which began development after August 3, 1977, in accordance with Section 527 of the Act.</p> <p>(b) Unless specifically modified by this Part, each performance standard of this Subchapter applies to these mines.</p> <p>§ 825.2 Objective.</p> <p>The objective of this Part is to minimize any adverse environmental effect of certain special bituminous coal mines located west of the 100th meridian west longitude in Wyoming, by—</p> <p>(a) Providing special standards for onsite handling of spoil;</p> <p>(b) Eliminating depressions capable of collecting water;</p> <p>(c) Improving and regrading certain spoils outside the mine pit to approximate original contour; and</p> <p>(d) Retention of certain stable high-walls.</p> <p>§ 825.11 Mines operating before January 1, 1972.</p> <p>(a) This Section applies to those portions of special bituminous coal mines, as defined in 30 CFR 701.3, which—</p> <p>(1) Were approved for operation before January 1, 1972, including the orderly expansion of the mine pit to the extent authorized by State law;</p> <p>(2) Have actually been producing coal since January 1, 1972;</p> <p>(3) Are committed to a mode of operation that warrants an exception to some of the provisions of this Subchapter because of past duration of mining; and</p> <p>(4) Involve the mining of more than one seam, and mining was initiated before August 3, 1977, on the deepest coal seam contemplated to be mined in the current operation.</p> <p>(b) Operations subject to this Section shall, at a minimum, meet the general performance standards of this Subchapter for all operations conducted on the permit area outside the mine pit and for those operations associated with spoil storage areas. All the standards of this Subchapter apply to the mine pit except for requirements for backfilling and grading. Special requirements for backfilling and grading</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(1) In the final mine area, highwalls shall be allowed to remain if found to be stable by the regulatory authority.</p> <p>(2) Benches may be constructed if approved by the regulatory authority in the approved mining plan.</p> <p>(3) The exposed pit floors shall be sloped and graded to provide access to the area.</p> <p>(4) Topsoil shall be replaced in accordance with 30 CFR 816.24.</p> <p>(5) The floor of the pit shall be regraded and seeded according to the requirements of 30 CFR 816.102 and 816.111-816.117.</p> <p>(6) Where water impoundments are included as part of the mine plan, riprap shall be used if necessary to prevent erosion.</p> <p>(7) Spoil piles shall be graded and contoured, with no more than an overall slope of 17 degrees, and terraces may be used to break the slope where it can be shown that terraces will comply with all applicable reclamation requirements. Steeper slopes may be permitted upon approval of the regulatory authority, if it has been demonstrated that such slopes will comply with all applicable reclamation requirements and are consistent with the approved post-mining land use.</p> <p>§ 823.12 Mines developed after August 1, 1977.</p> <p>(a) This Section applies to those special bituminous coal mines, as defined in 30 CFR 701.1, which are developed after August 1, 1977, on lands immediately adjacent to portions of mines subject to 30 CFR 823.11.</p> <p>(b) Operations subject to this Section shall comply with all requirements of Wyoming law.</p> <p>(c) Operations subject to this Section shall, at a minimum, meet the general requirements of this Subchapter for all operations conducted in the permit area outside the mine pit and for the operations associated with spoil storage areas. 30 CFR 816 applies to the mine pit, except for the requirements for backfilling and grading. Special requirements for backfilling and grading the mine pit area are as follows:</p> <p>(1)(I) Slope specifications for the postmining land use shall not exceed the average of the natural slopes measured in the immediate area of the mine site, except in accordance with Paragraph (c)(2) of this Section.</p> <p>(II) Slopes steeper than the average of the natural slopes may be approved by the regulatory authority, if it can be demonstrated that returning the affected area to a slope equal to or less than the average natural slope would greatly increase the amount of disturbed land.</p> <p>(III) Measurements of individual slopes, locations at which measurements are made, and the average natural slope as determined from the individual slope measurements shall be submitted for approval to the regulatory authority in the permit application required under 30 CFR 785.12.</p> <p>(2) For post-mining land uses which do not include permanent water impoundments--</p> <p>(I) The final mine area shall be backfilled, graded, and contoured to the extent necessary to return the land to the use approved by the regulatory authority in accordance with 30 CFR 816.133.</p> <p>(II) All backfilling, grading, and contouring shall preserve the original drainage system or provide substitute drainage systems approved by the regulatory authority.</p> <p>(III) Terraces or benches may be used only if it has been demonstrated to the regulatory authority that contouring methods do not provide the required results. Detailed plans of dimensions and design of the terraces or benches, check dams, erosion-prevention techniques, and slopes of the terraces or benches, and their intervals, shall have been approved by the regulatory authority before construction commences.</p> <p>(IV) Depressions that will accumulate water shall not be allowed, unless they are approved under Paragraph (c)(3) of this Section.</p> <p>(3) For post-mining land uses that include permanent water impoundments--</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(1) The exposed mine pit area shall be sloped, graded, and contoured to blend with the topography of the surrounding terrain and to provide access to the area. Where necessary to prevent erosion, riprap shall be used.</p> <p>(2) If the person who conducts the surface mining activities demonstrates that the pitwall can be stabilized by terracing or other techniques, the regulatory authority may approve leaving the stabilized pitwall along one-half of the proposed impoundment shoreline, as measured along the circumference. The remaining part of the shoreline shall be graded and contoured to blend with the topography of the surrounding terrain and to provide access to the area. Detailed explanations of the techniques to be used to stabilize the pitwall shall have been approved by the regulatory authority before the impoundment is created.</p> <p>§ 224.13 Changes in Wyoming program.</p> <p>In the event of an amendment or revision to the State of Wyoming regulatory program, regulations, or decisions made thereunder, governing special bituminous coal mines, the Secretary shall issue additional regulations as necessary to meet the purposes of the Act.</p> <p>PART 226—SPECIAL PERMANENT PROGRAM PERFORMANCE STANDARDS—OPERATIONS ON STEEP SLOPES</p> <p>Sec.</p> <p>226.1 Scope.</p> <p>226.2 Objective.</p> <p>226.11 Applicability.</p> <p>226.12 Steep slopes: Performance standards.</p> <p>226.13 Steep slopes: Limited variances.</p> <p>226.14 Steep slopes: Multiple seams.</p> <p>Authority: Secs. 102, 201, 301, 302, 504, 508, 510, 513, 701 Pub. L. 98-67, 91 Stat. 448, 449, 467, 470, 471, 478, 480, 484, 518 (U.S.C. 1262, 1311, 1351, 1352, 1354, 1358, 1360, 1362, 1391).</p> <p>§ 226.1 Scope.</p> <p>This Part sets forth special, additional environmental protection performance, reclamation, and design standards for surface coal mining and reclamation operations conducted on steep slopes meaning any slope of 20 degrees or more or as defined in Section 701.5.</p> <p>§ 226.2 Objective.</p> <p>The objective of this Part is to ensure adequate environmental protection during surface coal mining and reclamation operations on steep slopes.</p> <p>§ 226.11 Applicability.</p> <p>(a) Any surface coal mining and reclamation operations on steep slopes shall meet the requirements of this Part.</p> <p>(b) The standards of this Part do not apply to mining conducted on a flat or gently rolling terrain with an occasional steep slope through which the mining proceeds and leaves a plain or predominantly flat area, or to operations covered by 30 CFR 824.</p> <p>§ 226.12 Steep slopes: Performance standards.</p> <p>Surface coal mining and reclamation operations subject to this Part shall comply with requirements of Subchapter G and the following, except to the extent a variance is approved under Section 226.13:</p> <p>(a)(1) The person engaged in surface coal mining and reclamation operations shall prevent the following materials from being placed or allowed to remain on the downslope:</p> <p>(A) Spoil;</p> <p>(B) Waste materials, including waste mineral matter;</p> <p>(C) Debris, including that from clearing and grubbing of haul road construction; and</p> <p>(D) Abandoned or disabled equipment;</p> <p>(2) Nothing in this subsection shall prohibit the placement of material in road embankments located on the downslope, so long as the material used and embankment design comply with the requirements of 30 CFR 316.130-316.180 or 317.150-317.180 and the material is moved and placed in a controlled manner.</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(b) The highwall shall be completely covered with compacted spoil and the disturbed area graded to comply with the provisions of 30 CFR 818.101-818.106 and 30 CFR 817.101-817.102, including, but not limited to, the return of the site to the approximate original contour. The person who conducts the surface coal mining and reclamation operation must demonstrate to the regulatory authority, using standard geotechnical analysis, that the minimum static factor of safety for the stability of all portions of the reclaimed land is at least 1.3.</p> <p>(c) Land above the highwall shall not be disturbed, unless the regulatory authority finds that the disturbance facilitates compliance with the requirements of this Part.</p> <p>(d) Material in excess of that required by the grading and backfilling provisions of paragraph (b) of this Section shall be disposed of in accordance with the requirements of 30 CFR 816.71-816.74 or 817.71-817.74.</p> <p>(e) Woody materials shall not be buried in the backfilled area unless the regulatory authority determines that the proposed method for placing woody material beneath the highwall will not deteriorate the stable condition of the backfilled area as required in Section 826.12(b). Woody materials may be chipped and distributed over the surface of the backfill as mulch, if special provision is made for their use and approved by the regulatory authority.</p> <p>(f) Unlined or unprotected drainage channels shall not be constructed on backfills unless approved by the regulatory authority as stable and not subject to erosion.</p> <p>§ 826.15 Steep slopes Limited variances.</p> <p>Under every Federal program or any approved State program which includes appropriate procedures, persons may be granted variances from the approximate original contour requirements of Section 826.12(b) for steep slope surface coal mining and reclamation operations, if the following standards are met and a permit incorporating the variance is approved under 30 CFR 785.16:</p> <p>(a) The highwall shall be completely backfilled with spoil material, in a manner which results in a static factor of safety of at least 1.3 using standard geotechnical analyses.</p> <p>(b) The watershed control of the area within which the mining occurs shall be improved by reducing the peak flow from precipitation or thaw and reducing the total suspended solids or other pollutants in the surface water discharge during precipitation or thaw. The total volume of flow during every season of the year shall not vary in a way that adversely affects the ecology of any surface water or any existing or planned public or private use of surface or ground water.</p> <p>(c) Land above the highwall may be disturbed only to the extent that the regulatory authority deems appropriate and approves as necessary to facilitate compliance with the provisions of this Part and if the regulatory authority finds that the disturbance is necessary to—</p> <ol style="list-style-type: none"> (1) Blend the solid highwall and the backfilled material; (2) Control surface runoff; or (3) Provide access to the area above the highwall. <p>(d) The landowner of the permit area has requested, in writing, as part of the permit application under 30 CFR 785.16, that the variance be granted.</p> <p>(e) The operations are conducted in full compliance with a permit issued in accordance with 30 CFR 785.16.</p> <p>(f) Only the amount of spoil as is necessary to achieve the postmining land use, ensure the stability of spoil retained on the bench, and meet all other requirements of the Act and this Chapter shall be placed off the mine bench. All spoil not retained on the bench shall be placed in accordance with 30 CFR 816.71-816.74, or 817.71-817.74 and 30 CFR 816.101-102 or 817.101-817.102.</p> <p>§ 826.16 Steep slopes Multiple seam.</p> <p>In multiple-seam steep slope affected areas, spoil not required to reclaim and restore the permit area may be placed on a pre-existing bench, if approved by the regulatory authority.</p>				

HYDROLOGY ASPECTS

PLAN IDENTIFICATION

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>and if the following requirements are met:</p> <p>(a) All excess spoil must be hauled, placed, and retained on the solid bench.</p> <p>(b) The spoil must be graded to the most moderate slope so as to eliminate the existing highwall to the extent possible with the available spoil.</p> <p>(c) The fill must comply with 30 CFR 816.71 or 817.73 and the other requirements of this Subchapter.</p> <p>(d) The bench on which the spoil is to be placed must have been created and abandoned due to coal mining prior to August 3, 1977.</p> <p>PART 827—SPECIAL PERMANENT PROGRAM PERFORMANCE STANDARDS—COAL PROCESSING PLANTS AND SUPPORT FACILITIES NOT LOCATED AT OR NEAR THE MINESITE OR NOT WITHIN THE PERMIT AREA FOR A MINE</p> <p>Sec. 827.1 Scope. 827.11 Applicability. 827.12 Coal processing plants: Performance standards.</p> <p>Approved: Secs. 102, 201, 301, 502, 504, 506, 510, 515, 517, 701. Pub. L. 96-51, 91 Stat. 448, 449, 467, 478, 479, 480, 481, 482, 516 (30 U.S.C. 1202, 1211, 1251, 1252, 1254, 1256, 1261, 1262, 1267, 1268).</p> <p>§ 827.1 Scope.</p> <p>This Part sets forth requirements for coal processing plants and their support facilities not located within the permit area for a mine, to ensure the protection of public property and the environment, in accordance with the Act.</p> <p>§ 827.11 Applicability.</p> <p>Each person who conducts surface coal mining and reclamation operations, which includes the operation of a coal processing plant or support facility which is not located within the permit area for a specific mine, shall obtain a permit in accordance with 30 CFR 785.21 to conduct those operations and comply with Section 827.12.</p> <p>§ 827.12 Coal processing plants: Performance standards.</p> <p>Construction, operation, maintenance, modification, reclamation, and removal activities at operations covered by this Part shall comply with the following:</p> <p>(a) Signs and markers for the coal processing plant, coal processing waste disposal area, and water treatment facilities shall comply with 30 CFR 816.11.</p> <p>(b) Roads, transport, and associated structures shall be constructed, maintained, and reclaimed in accordance with 30 CFR 816.150-816.181.</p> <p>(c) Any stream or channel realignment shall comply with 30 CFR 816.44.</p> <p>(d) If required by the regulatory authority, any disturbed area related to the coal processing plant or associated facilities shall have sediment control structures, in compliance with 30 CFR 816.46 and 816.46, and all discharges from these areas shall meet the requirements of 30 CFR 816.41-816.42 and any other applicable State or Federal law.</p> <p>(e) Permanent impoundments associated with coal processing plants shall meet the requirements of 30 CFR 816.49 and 816.56. Dams constructed of or impounding coal processing waste shall comply with 30 CFR 816.91-816.93.</p> <p>(f) Use of water wells shall comply with 30 CFR 816.53 and water rights shall be protected in accordance with 30 CFR 816.54.</p> <p>(g) Disposal of coal processing waste, solid waste, and any excavated materials shall comply with 30 CFR 816.81-816.88, 816.89, and 816.71-816.74, respectively.</p> <p>(h) Discharge structures for diversions and sediment control structures shall comply with 30 CFR 816.47.</p> <p>(i) Air pollution control measures associated with fugitive dust emissions shall comply with 30 CFR 816.96.</p> <p>(j) Fish, wildlife and related environmental resources shall be protected in accordance with 30 CFR 816.97-816.99.</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(k) Slide areas and other surface areas shall comply with 30 CFR 816.99.</p> <p>(l) Adverse effects upon or resulting from nearby underground coal mining activities shall be minimized by appropriate measures including, but not limited to compliance with 30 CFR 816.55 and 816.79.</p> <p>(m) Reclamation shall include proper topsoil handling procedures, revegetation, and abandonment, in accordance with 30 CFR 816.54, 816.100-816.104, 816.111-816.117, and 816.131-816.133.</p> <p>(n) Conveyors, buildings, storage bins or stockpiles, water treatment facilities, water storage facilities, and any structure or system related to the coal processing plant shall comply with 30 CFR 816.</p> <p>(o) Any coal processing plant or associated structures located on prime farmland shall meet the requirements of 30 CFR 821.</p> <p>PART 828—SPECIAL PERMANENT PROGRAM PERFORMANCE STANDARDS—IN SITU PROCESSING</p> <p>Sec.</p> <p>828.1 Scope.</p> <p>828.2 Objectives.</p> <p>828.11 In situ processing Performance standards.</p> <p>828.12 In situ processing Monitoring.</p> <p>Authority: Sec. 102, 201, 301, 302, 304, 310, 313, 316, 317, 701; Pub. L. 96-47, 91 Stat. 443, 449, 467, 470, 471, 480, 484, 494, 516 (30 U.S.C. 1202, 1211, 1251, 1253, 1254, 1260, 1264, 1266, 1267, 1291).</p> <p>§ 828.1 Scope.</p> <p>This Part sets forth special environmental protection performance, reclamation and design standards for in situ processing activities.</p> <p>§ 828.2 Objectives.</p> <p>This Part is intended to ensure that all in situ processing activities are conducted in a manner which preserves and enhances environmental values in accordance with the Act. This Part provides additional performance, reclamation and design standards to reflect the nature of in situ processing.</p> <p>§ 828.11 In situ processing Performance standards.</p> <p>(a) The person who conducts in situ processing activities shall comply with 30 CFR 817 and this Section.</p> <p>(b) In situ processing activities shall be planned and conducted to minimize disturbance to the prevailing hydrologic balance by:</p> <ol style="list-style-type: none"> (1) Avoiding discharge of fluids into holes or wells, other than as approved by the regulatory authority; (2) Injecting process recovery fluids only into geologic zones or intervals approved as production zones by the regulatory authority; (3) Avoiding angular injection between the wall of the drill hole and the casing; and (4) Preventing discharge of process fluid into surface waters. <p>(c) Each person who conducts in situ processing activities shall submit for approval as part of the application for permit under 30 CFR 785.22, and follow after approval, a plan that ensures that all acid-forming, toxic-forming, or radioactive gases, solids, or liquids constituting a fire, health, safety, or environmental hazard and caused by the mining and recovery process are promptly treated, confined, or disposed of, in a manner that prevents contamination of ground and surface waters, damage to fish, wildlife and related environmental values, and threats to the public health and safety.</p> <p>(d) Each person who conducts in situ processing activities shall prevent flow of the process recovery fluid:</p> <ol style="list-style-type: none"> (1) Horizontally beyond the affected area identified in the permit; and (2) Vertically into overlying or underlying aquifers. <p>(e) Each person who conducts in situ processing activities shall restore the quality of affected ground water in the mine plan and adjacent area, including ground water above and below the production zone, to the approximate premining levels or better, to ensure that the potential for use of the ground water is not diminished.</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>§ 823.12 In situ processing Monitoring.</p> <p>(a) Each person who conducts in situ processing activities shall monitor the quality and quantity of surface and ground water and the subsurface flow and storage characteristics in a manner approved by the regulatory authority under 30 CFR 817.52, to measure changes in the quantity and quality of water in surface and ground water systems in the mine plan and in adjacent areas.</p> <p>(b) Air and water quality monitoring shall be conducted in accordance with monitoring programs approved by the regulatory authority as necessary according to appropriate Federal and State air and water quality standards.</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(9) If fish and wildlife habitat is to be a primary or secondary postmining land use, the operator shall, in addition to the requirements of 30 CFR 816.111-816.117—</p> <p>(i) Select plant species to be used on reclaimed areas, based on the following criteria—</p> <p>(A) Their proven nutritional value for fish and wildlife;</p> <p>(B) Their uses as cover for fish and wildlife; and</p> <p>(C) Their ability to support and enhance fish and wildlife habitat after release of bonds; and</p> <p>(ii) Distribute plant groupings to maximize benefit to fish and wildlife. Plants should be grouped and distributed in a manner which optimizes edge effect, cover, and other benefits for fish and wildlife;</p> <p>(10) Where cropland is to be the alternative postmining land use on lands diverted from a fish and wildlife premining land use, and crop management practices, intersperse the fields with trees, hedges or fence rows throughout the harvested area to break up large blocks of monoculture and to diversify habitat types for birds and other animals; and</p> <p>(11) Where the primary land use is to be residential, public service, or industrial land use, intersperse reclaimed lands with greenbelts, utilizing species of grass, shrubs and trees useful as food and cover for birds and small animals.</p> <p>PART 827—SPECIAL PERMANENT PROGRAM PERFORMANCE STANDARDS—COAL PROCESSING PLANTS AND SUPPORT FACILITIES NOT LOCATED AT OR NEAR THE MINESITE OR NOT WITHIN THE PERMIT AREA FOR A MINE</p> <p>Sec. 827.1 Scope. 827.11 Applicability. 827.12 Coal processing plants Performance standards.</p> <p>APPROVED: Secs. 102, 201, 301, 302, 304, 306, 310, 313, 317, 701 Pub. L. 96-57, 91 Stat. 448, 449, 467, 470, 471, 473, 480, 482, 484, 516, 520 U.S.C. 1202, 1203, 1204, 1205, 1206, 1207, 1208, 1209, 1210, 1211, 1212, 1213, 1214, 1215, 1216, 1217, 1218, 1219, 1221.</p> <p>§ 827.1 Scope.</p> <p>This Part sets forth requirements for coal processing plants and their support facilities not located within the permit area for a mine, to ensure the protection of public property and the environment, in accordance with the Act.</p> <p>§ 827.11 Applicability.</p> <p>Each person who conducts surface coal mining and reclamation operations, which includes the operation of a coal processing plant or support facility which is not located within the permit area for a specific mine, shall obtain a permit in accordance with 30 CFR 783.11 to conduct those operations and comply with Section 827.12.</p> <p>§ 827.12 Coal processing plants Performance standards.</p> <p>Construction, operation, maintenance, modification, reclamation, and removal activities at operations covered by this Part shall comply with the following:</p> <p>(a) Signs and markers for the coal processing plant, coal processing waste disposal area, and water treatment facilities shall comply with 30 CFR 816.11.</p> <p>(b) Roads, transport, and associated structures shall be constructed, maintained, and reclaimed in accordance with 30 CFR 816.130-816.131.</p> <p>(c) Any stream or channel realignment shall comply with 30 CFR 816.44.</p> <p>(d) If required by the regulatory authority, any disturbed area related to the coal processing plant or associated facilities shall have sediment control structures, in compliance with 30 CFR 816.45 and 816.46, and all discharges from these areas shall meet the requirements of 30 CFR 816.41-816.42 and any other applicable State or Federal law.</p> <p>(e) Permanent impoundments associated with coal processing plants shall meet the requirements of 30 CFR 816.49 and 816.56. Dams constructed of or impounding coal processing</p>	<p>Not APPLICABLE</p> <p>Not APPLICABLE</p>	<p>✓</p>	<p></p>	<p>No reference is made in the reclamation section to mines developed at the request of DWR for their value for wildlife cover. The response to question 3 states that DWR recommendations have been incorporated. This needs to be clarified.</p>

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(f) Use of water wells shall comply with 30 CFR 816.53 and water rights shall be protected in accordance with 30 CFR 816.54.</p> <p>(g) Disposal of coal processing waste, solid waste, and any excavated materials shall comply with 30 CFR 816.81-816.88, 816.89, and 816.71-816.74, respectively.</p> <p>(h) Discharge structures for diversions and sediment control structures shall comply with 30 CFR 816.47.</p> <p>(i) Air pollution control measures associated with fugitive dust emissions shall comply with 30 CFR 816.95.</p> <p>(j) Fish, wildlife and related environmental values shall be protected in accordance with 30 CFR 816.97.</p> <p>(k) Slide areas and other surface areas shall comply with 30 CFR 816.99.</p> <p>(l) Adverse effects upon or resulting from nearby underground coal mining activities shall be minimized by appropriate measures including, but not limited to compliance with 30 CFR 816.55 and 816.79.</p> <p>(m) Reclamation shall include proper topsoil handling procedures, revegetation, and abandonment, in accordance with 30 CFR 816.56, 816.100-816.104, 816.111-816.117, and 816.131-816.133.</p> <p>(n) Conveyors, buildings, storage bins or stockpiles, water treatment facilities, water storage facilities, and any structure or system related to the coal processing plant shall comply with 30 CFR 816.</p> <p>(o) ANY coal processing plant or associated structures located on prime farmland shall meet the requirements of 30 CFR 823.</p>		✓		See 817.97
<p>PART 823—SPECIAL PERMANENT PROGRAM PERFORMANCE STANDARDS—IN SITU PROCESSING</p>	NOT APPLICABLE			
<p>See</p> <p>§23.1 Scope.</p> <p>§23.2 Objectives.</p> <p>§23.11 In situ processing: Performance standards.</p> <p>§23.13 In situ processing: Monitoring.</p> <p>Authority: Secs. 102, 201, 501, 502, 504, 510, 515, 516, 517, 701; Pub. L. 95-87, 91 Stat. 448, 449, 467, 470, 471, 480, 484, 488, 516 (30 U.S.C. 1202, 1211, 1231, 1233, 1234, 1240, 1244, 1248, 1249, 1291).</p> <p>§23.1 Scope.</p> <p>This Part sets forth special environmental protection performance, reclamation and design standards for in situ processing activities.</p> <p>§23.2 Objectives.</p> <p>This Part is intended to ensure that all in situ processing activities are conducted in a manner which preserves and enhances environmental values in accordance with the Act. This Part provides additional performance, reclamation and design standards to reflect the nature of in situ processing.</p> <p>§23.11 In situ processing: Performance standards.</p> <p>(a) The person who conducts in situ processing activities shall comply with 30 CFR 817 and this Section.</p> <p>(b) In situ processing activities shall be planned and conducted to minimize disturbance to the prevailing hydrologic balance by:</p> <p>(1) Avoiding discharge of fluids into holes or wells, other than as approved by the regulatory authority;</p> <p>(2) Injecting process recovery fluids only into geologic zones or intervals approved as production zones by the regulatory authority;</p> <p>(3) Avoiding annular injection between the wall of the drill hole and the casing; and</p> <p>(4) Preventing discharge of process fluid into surface waters.</p> <p>(c) Each person who conducts in situ processing activities shall submit for approval as part of the application for permit under 30 CFR 785.22, and follow after approval, a plan that ensures that all acid-forming, toxic-forming, or radioactive gases, solids, or liquids constituting a fire, health, safety, or environmental hazard and caused by the mining and recovery process are promptly treated, confined, or disposed of, in a manner that prevents contamination of ground and surface waters, damage to fish, wildlife and related environmental values, and threats to the public health and safety.</p> <p>(d) Each person who conducts in situ</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(1) Horizontally beyond the affected area identified in the permit; and (2) Vertically into overlying or underlying aquifers.</p> <p>(e) Each person who conducts in situ processing activities shall restore the quality of affected ground water in the mine plan and adjacent area, including ground water above and below the production zone, to the approximate premining levels or better, to ensure that the potential for use of the ground water is not diminished.</p> <p>§ 822.12 In situ processing Monitoring.</p> <p>(a) Each person who conducts in situ processing activities shall monitor the quality and quantity of surface and ground water and the subsurface flow and storage characteristics, in a manner approved by the regulatory authority under 30 CFR 817.12, to measure changes in the quantity and quality of water in surface and ground water systems in the mine plan and in adjacent areas.</p> <p>(b) Air and water quality monitoring shall be conducted in accordance with monitoring programs approved by the regulatory authority as necessary according to appropriate Federal and State air and water quality standards.</p>				

R. J. ...

MINE PLAN
TECHNICAL ANALYSIS
CHECKLIST
(UNDERGROUND)
WILDLIFE ASPECTS
OSM ENVIRONMENTAL ASSESSMENT

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>§ 781.20 Fish and wildlife resources information.</p> <p>(a) Each application shall include a study of fish and wildlife and their habitats within the proposed mine plan area where surface operations will be conducted or facilities located and the portions of the adjacent areas where effects on such resources may reasonably be expected to occur.</p> <p>(b) Prior to initiating such studies, the applicant shall contact the regulatory authority to determine what fish and wildlife resources information will be required.</p> <p>(c) The regulatory authority, in consultation with the appropriate State and Federal fish and wildlife management, conservation, or land management agencies having responsibilities for fish or wildlife or their habitats, shall determine the level of detail and the areas of such studies according to:</p> <p>(1) Published data and other information.</p> <p>(2) Site specific information obtained by the applicant, and</p> <p>(3) Written guidance obtained from agencies consulted.</p> <p>Notes:</p> <p>Up-to-date Baseline Fish & Wildlife Study:</p> <ul style="list-style-type: none"> Species Habitat Migratory Routes Map of MPA showing Habitat and Migratory Routes by species Monitoring Locations Mitigation Facilities 	<p style="font-size: 2em; text-align: center;">A</p>	<p style="text-align: center;">✓</p> <p style="text-align: center;">✓ nothing said about this.</p> <p style="text-align: center;">✓ "</p>	<p>NO METHODS SECTION</p> <p>No methods is - no. of samples</p>	<p>NO METHODS SECTION</p> <p>- Gen. Ag. Res. desc. - pg 586 - what was land slough? what data was available prior to slough? Were the reduced #'s at ECOS¹⁹⁷⁹ due to the slough?</p> <p>pg 8 - data from table 4 shows a diversity increasing not decreasing as stated for ECOS seems to be making a case for CTQA that is not there!</p> <p>- noticeable increases in chir, simuk, sig & simias enduring 1976-8 in Hunt. ck. are not noticeable in Tables 1 & 2 except chir. - Olig. are not even listed.</p> <p>pg 9 - how does chir. & Batis dominance indicate seasonal stress? How does Table 1 + Oct data indicate how caused stresses? Why are the "stresses" not related to Skyline?</p> <p>pg 10 - changes in % for part size do not look sig. to me</p> <p>gave up!</p> <p><u>Stipulation:</u> Complete methods section needed; samplers, sieve sizes, number of samples taken, citations, statistics, etc.</p>
<p>§ 781.21 Fish and wildlife plan.</p> <p>(a) Each application shall contain a fish and wildlife plan, consistent with the performance standards of 30 CFR 817.97 and which provides:</p> <p>(1) A statement of how the plan will minimize disturbances and adverse impacts on fish and wildlife and related environmental values during surface coal mining and reclamation operations, and how enhancement of these resources will be achieved, where practicable. The plan shall cover the portions of the mine plan area and adjacent areas as determined by the regulatory authority pursuant to Section 781.20.</p> <p>(2) If the applicant states that it will not be practicable, in accordance with paragraph (1), to achieve a condition which clearly shows a trend toward enhancement of fish and wildlife resources at the time revegetation has been successfully completed under 30 CFR 817.111-817.117, a statement shall be provided which establishes, to the satisfaction of the regulatory authority, why it is not practicable to achieve such a condition.</p> <p>(b) A statement explaining how the applicant will utilize impact control measures, management techniques, and monitoring methods to protect or enhance the following, if they are to be affected by the proposed activities:</p> <p>(1) Threatened or endangered species of plants or animals listed by the Secretary under the Endangered Species Act of 1973, as amended (16 U.S.C. Sec. 1531 et seq. and their critical habitats);</p> <p>(2) Species such as eagles, migratory birds or other animals protected by State or Federal law, and their habitats; or other species identified through the consultation process pursuant to 781.20; or</p> <p>(3) Habitats of unusually high value for fish and wildlife, such as wetlands, riparian areas, cliffs supporting raptors, areas offering special shelter or protection, reproduction and nursery areas, and wintering areas.</p>	<p style="font-size: 2em; text-align: center;">B</p>	<p style="text-align: center;">✓</p>	<p>Fish Habitat Plan</p>	<p>Fish Habitat Plan</p> <p>pg 2 - States all but N. Fork have excellent macroinverte. comm. but there is no data on N. Fork to base this conclusion - fig. 1 does <u>not</u> show disturbed area</p> <p>pg 3 - states that drift should continue through culverts to maintain food for fish or data to support</p> <p><u>Stipulation:</u> citation that this will indeed occur. These are long sections of culvert (up to 1400') - not at all similar to road culverts. The basis of continued macroinvertebrate community structure downstream and in the fish plan is based on this assumption of unaltered drift patterns.</p> <p>pg 4 - the Macroinvertebrate Habitat Plan is an excellent exercise in stream improvement.</p> <p><u>Stipulation:</u> Definite statement by the applicant as to the actual extent of implementation of the methodologies presented.</p> <p>pg 10 Proposed Monitoring Program</p> <p><u>Stipulation:</u> Statement as to commitment by applicant to the proposed program</p>

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(e) Each person who conducts in situ processing activities shall restore the quality of affected ground water in the mine plan and adjacent area, including ground water above and below the production zone, to the approximate premining levels or better, to ensure that the potential for use of the ground water is not diminished.</p> <p>§ 823.12 In situ processing: Monitoring.</p> <p>(a) Each person who conducts in situ processing activities shall monitor the quality and quantity of surface and ground water and the subsurface flow and storage characteristics, in a manner approved by the regulatory authority under 30 CFR 817.52, to measure changes in the quantity and quality of water in surface and ground water systems in the mine plan and in adjacent areas.</p> <p>(b) Air and water quality monitoring shall be conducted in accordance with monitoring programs approved by the regulatory authority as necessary according to appropriate Federal and State air and water quality standards.</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(16) Restricting activities causing fugitive dust during periods of air stagnation;</p> <p>(17) Extinguishing any areas of burning or smoldering coal and periodically inspecting for burning areas whenever the potential for spontaneous combustion is high;</p> <p>(18) Reducing the period of time between initially disturbing the soil and revegetating or other surface stabilization; and</p> <p>(19) Restricting fugitive dust at spoil and coal transfer and loading points with water sprays, negative pressure systems and baghouse filters, chemicals, or other practices.</p> <p>(c) <i>Additional measures.</i> Where the regulatory authority determines the application of fugitive dust control measures listed in Paragraph (b) of this Section is inadequate, the regulatory authority may require additional measures and practices as necessary.</p> <p>(d) <i>Monitoring.</i> Air monitoring equipment shall be installed and monitoring shall be conducted in accordance with the air quality monitoring plan required under 30 CFR 784.28 and approved by the regulatory authority.</p> <p>PART 827—SPECIAL PERMANENT PROGRAM PERFORMANCE STANDARDS—COAL PROCESSING PLANTS AND SUPPORT FACILITIES NOT LOCATED AT OR NEAR THE MINESITE OR NOT WITHIN THE PERMIT AREA FOR A MINE</p> <p>Sec.</p> <p>827.1 Scope.</p> <p>827.11 Applicability.</p> <p>827.12 Coal processing plants: Performance standards.</p> <p>Authority: Secs. 102, 201, 301, 502, 504, 506, 510, 513, 517, 701 Pub. L. 96-47, 91 Stat. 444, 448, 461, 470, 471, 478, 480, 484, 486, 516 (20 U.S.C. 1502, 1511, 1531, 1533, 1594, 1598, 1599, 1599, 1597, 1591).</p> <p>§ 827.1 - Scope.</p> <p>This Part sets forth requirements for coal processing plants and their support facilities not located within the permit area for a mine, to ensure the protection of public property and the environment, in accordance with the Act.</p> <p>§ 827.11 Applicability.</p> <p>Each person who conducts surface coal mining and reclamation operations, which includes the operation of a coal processing plant or support facility which is not located within the permit area for a specific mine, shall obtain a permit in accordance with 30 CFR 785.21 to conduct those operations and comply with Section 827.12.</p> <p>§ 827.12 Coal processing plants: Performance standards.</p> <p>Construction, operation, maintenance, modification, reclamation, and removal activities at operations covered by this Part shall comply with the following:</p> <p>(a) Signs and markers for the coal processing plant, coal processing waste disposal area, and water treatment facilities shall comply with 30 CFR 818.11.</p> <p>(b) Roads, transport, and associated structures shall be constructed, maintained, and reclaimed in accordance with 30 CFR 818.150-818.181.</p> <p>(c) Any stream or channel reclamation shall comply with 30 CFR 818.44.</p> <p>(d) If required by the regulatory authority, any disturbed area related to the coal processing plant or associated facilities shall have sediment control structures, in compliance with 30 CFR 818.45 and 818.46, and all discharges from these areas shall meet the requirements of 30 CFR 818.41-818.42 and any other applicable State or Federal law.</p> <p>(e) Permanent impoundments associated with coal processing plants shall meet the requirements of 30 CFR 818.49 and 818.50. Dams constructed of or impounding coal processing waste shall comply with 30 CFR 818.91-818.93.</p> <p>(f) Use of water wells shall comply with 30 CFR 818.53 and water rights shall be protected in accordance with 30 CFR 818.54.</p> <p>(g) Disposal of coal processing waste, solid waste, and any excavated materials shall comply with 30 CFR 818.81-818.83, 818.85, and 818.71-818.74, respectively.</p>	<p>✓</p> <p>✓</p> <p>✓</p>			<p>Not applicable</p> <p>Not applicable</p> <p>See 817.95 (b)(2) and (15)</p>

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(h) Discharge structures for diversions and sediment control structures shall comply with 30 CFR 816.47.</p> <p>(i) Air pollution control measures associated with fugitive dust emissions shall comply with 30 CFR 816.96.</p> <p>(j) Fish, wildlife and related environmental values shall be protected in accordance with 30 CFR 816.97.</p> <p>(k) Slide areas and other surface areas shall comply with 30 CFR 816.99.</p> <p>(l) Adverse effects upon or resulting from nearby underground coal mining activities shall be minimized by appropriate measures including, but not limited to compliance with 30 CFR 816.55 and 816.79.</p> <p>(m) Reclamation shall include proper topsoil handling procedures, revegetation, and abandonment, in accordance with 30 CFR 816.56, 816.100-816.104, 816.111-816.117, and 816.131-816.133.</p> <p>(n) Conveyors, buildings, storage bins or stockpiles, water treatment facilities, water storage facilities, and any structure or system related to the coal processing plant shall comply with 30 CFR 816.</p> <p>(o) Any coal processing plant or associated structures located on prime farmland shall meet the requirements of 30 CFR 821.</p> <p>PART 828—SPECIAL PERMANENT PROGRAM PERFORMANCE STANDARDS—IN SITU PROCESSING</p> <p>See 828.1 Scope. 828.2 Objectives. 828.11 In situ processing: Performance standards. 828.12 In situ processing: Monitoring.</p> <p>APPENDIX: Secs. 102, 201, 301, 303, 304, 310, 313, 314, 317, 701; Pub. L. 95-57, 91 Stat. 448, 449, 467, 470, 471, 480, 484, 488, 518 (30 U.S.C. 1202, 1211, 1231, 1251, 1254, 1260, 1266, 1268, 1287, 1291).</p> <p>§ 828.1 Scope.</p> <p>This Part sets forth special environmental protection performance, reclamation and design standards for in situ processing activities.</p> <p>§ 828.2 Objectives.</p> <p>This Part is intended to ensure that all in situ processing activities are conducted in a manner which preserves and enhances environmental values in accordance with the Act. This Part provides additional performance, reclamation and design standards to reflect the nature of in situ processing.</p> <p>§ 828.11 In situ processing: Performance standards.</p> <p>(a) The person who conducts in situ processing activities shall comply with 30 CFR 817 and this Section.</p> <p>(b) In situ processing activities shall be planned and conducted to minimize disturbance to the prevailing hydrologic balance by:</p> <ol style="list-style-type: none"> (1) Avoiding discharge of fluids into holes or wells, other than as approved by the regulatory authority; (2) Injecting process recovery fluids only into geologic zones or intervals approved as production zones by the regulatory authority; (3) Avoiding annular injection between the wall of the drill hole and the casing; and (4) Preventing discharge of process fluid into surface waters. <p>(c) Each person who conducts in situ processing activities shall submit for approval as part of the application for permit under 30 CFR 785.22, and follow after approval, a plan that ensures that all acid-forming, toxic-forming, or radioactive gases, solids, or liquids constituting a fire, health, safety, or environmental hazard and caused by the mining and recovery process are promptly treated, confined, or disposed of, in a manner that prevents contamination of ground and surface waters, damage to fish, wildlife and related environmental values, and threats to the public health and safety.</p> <p>(d) Each person who conducts in situ processing activities shall prevent flow of the process recovery fluid:</p> <ol style="list-style-type: none"> (1) Horizontally beyond the affected area identified in the permit; and (2) Vertically into overlying or underlying aquifers. 				



PROJECT NO. 9905
 REVIEWERS RL

MINE PLAN
 TECHNICAL ANALYSIS
 CHECKLIST
 (UNDERGROUND)

RECLAMATION (SOIL, VEGETATION, LAND USE) ASPECTS
 OSM ENVIRONMENTAL ASSESSMENT

SKYLINE

PLAN IDENTIFICATION
 DATE _____
 PROJECT MGR. REVIEW

PAGE 1 OF 21

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>§7812 General environmental resources information. Each application shall describe and identify— (a) The size, sequence, and timing of the subareas of the mine plan area for which it is anticipated that individual permits for mining will be requested over the estimated total life of the proposed underground mining activities and (b) The nature of cultural and historic resources listed or eligible for listing on the National Register of Historic Places and known archeological sites within the proposed mine plan and adjacent areas. The description shall be based on all available information, including, but not limited to, data of State and local archeological, historic, and cultural preservation agencies.</p> <p>Notes: Map (1:24,000-MPA) Timing of: see also 784.11 Construction, Roads, Soil Stripping, Mining, BF/G, Revegetation Cultural Resources 100% land coverage includes all cultural resources Maps (1:24,000-MPAA) Site Description, Signifi- cance, Avoidance or Mitigation Recommendations, Survey Method, Inventory Method, "Problem Orientation",</p>				
<p>§7819 Vegetation information. (a) The permit application shall, if required by the regulatory authority, contain a map that delineates existing vegetative types and a description of the plant communities within the area affected by surface operations and facilities and within any proposed reference area. This description shall include information adequate to predict the potential for reestablishing vegetation. (b) When a map or aerial photograph is required, sufficient adjacent areas shall be included to allow evaluation of vegetation as important habitat for fish and wildlife for those species of fish and wildlife identified under 30 CFR 779.20.</p> <p>Notes: Narrative: Description of plant Communities within: Permit Area, Reference Area (at Least 2 Ac. in size) Vegetation Baseline Data: Cover (By species or life form) ✓ Production (By species or life form) ✓ Species Density of all vegetation types (Sci names) ✓ Methodology ✓ Soil-Vegetation Association (At least by soil series) ✓ Map of Vegetation Types ✓</p>		✓		<p>Production data see not given for species - 20 under story or for most species etc.</p> <p>Very little area outside of the permit boundaries is included in the vegetation mapping.</p> <p>Descriptions seem to be low but some areas include the 3 veg types found in the portal yard area.</p> <p>Production data not given for understory or spruce fir and most species etc.</p> <p>No randomization, no information on how density of sample number achieved, no info on what, if any, relative used. Used 30 species, 40 plots on 100' transect to 30' square data points. Scale not given for table and map.</p>
<p>§7821 Soil resources information. (a) The applicant shall provide adequate soil survey information on those portions of the permit area to be affected by surface operations or facilities consisting of the following: (1) A map delineating different soils; (2) Soil identification; (3) Soil description; and (4) Present and potential productivity of existing soils. (b) Where the applicant proposes to use selected overburden materials as a supplement or substitute for topsoil, the application shall provide results of the analyses, trials and tests required</p>		✓		<p>ACR requested new soil survey. Shell Oil has agreed to do so.</p>

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>§784.17 Prime farmland investigation.</p> <p>(a) The applicant shall conduct a pre-application investigation of the area proposed to be affected by surface operations or facilities to determine whether lands within the area may be prime farmland.</p> <p>(b) Land shall not be considered prime farmland where the applicant can demonstrate one or more of the following:</p> <ol style="list-style-type: none"> (1) The land has not been historically used as cropland; (2) The slope of the land is 10 percent or greater; (3) The land is not irrigated or naturally subirrigated, has no developed water supply that is dependable and of adequate quality, and the average annual precipitation is 14 inches or less; (4) Other factors exist, such as a very rocky surface, or the land is frequently flooded during the growing season more often than once in 2 years and the flooding has reduced crop yields; or (5) On the basis of a soil survey of the lands within the mine plan area there are no soil map units that have been designated prime farmland by the U.S. Soil Conservation Service. <p>Note:</p> <p>Letter from USDA/SCS and/or Request for Negative Determination ✓ Addressing: History of Use Slope Water Availability Surface Conditions Soil Mapping</p> <p>(c) If the investigation establishes that the lands are not prime farmland, the applicant shall submit with the permit application a request for a negative determination which shows that the land for which the negative determination is sought meets one or more of the criteria in paragraph (b) of this Section.</p> <p>(d) If the investigation indicates that lands within the proposed area to be affected by surface operations and facilities may be prime farmlands, the applicant shall contact the U.S. Soil Conservation Service to determine if these lands have a soil survey and whether the applicable soil map units have been designated prime farmlands. If no such soil survey has been made for these lands, the applicant shall cause such a survey to be made.</p> <ol style="list-style-type: none"> (1) When a soil survey as required in paragraph (d) of this Section contains soil map units which have been designated as prime farmlands, the applicant shall submit application, in accordance with 30 CFR 784.17 for such designated lands. (2) When a soil survey as required in paragraph (d) of this Section contains soil map units which have not been designated, after review by the U.S. Soil Conservation Service, as prime farmland, the applicant shall submit a request for negative determination for non-designated land with the permit application establishing compliance with Paragraph (b) of this Section. <p>§784.13 Reclamation plan General requirements.</p> <p>(a) Each application shall contain a plan for the reclamation of the lands within the proposed permit area, showing how the applicant will comply with Sections 515 and 516 of the Act, Subchapter E of this Chapter, and the environmental protection performance standards of the regulatory program. The plan shall include, at a minimum, all information required under 30 CFR 784.13-784.25.</p> <p>(b) Each plan shall contain the following information for the proposed permit area:</p> <ol style="list-style-type: none"> (1) A detailed timetable for the completion of each major step in the reclamation plan; (2) A detailed estimate of the cost of the reclamation of the proposed operations required to be covered by a performance bond under Subchapter J of this Chapter, with supporting calculations for the estimator; (3) A plan for backfilling, soil stabilization, compacting and grading, with contour maps or cross sections that show the anticipated final surface configuration of the proposed permit area, in accordance with 30 CFR 				<p>no timetable given</p> <p>Would like more information on how cost were determined</p> <p>There is a general description of the river but no information base on how to work some of the things as should be</p>

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>§ 817.21 Topsoil General Requirements.</p> <p>(a) Before disturbance of areas affected by surface operations, topsoil and subsoils to be saved under Section 817.22 shall be separately removed and segregated from other material.</p> <p>(b) After removal, topsoil shall be immediately redistributed in accordance with Section 817.24, stockpiled pending redistribution under Section 817.23, or if the permittee can demonstrate that an alternative procedure will provide equal or more protection for the topsoil, the regulatory authority, may, on a case by case basis, approve an alternative.</p> <p>§ 817.22 Topsoil Removal.</p> <p>(a) Timing. Topsoil shall be removed from areas to be affected by surface operations or major structures, after vegetative cover that would interfere with the use of the topsoil is cleared from portions of those areas that will be disturbed, but before any drilling for blasting, mining, or other surface disturbance of surface lands.</p> <p>(b) Materials to be removed. Topsoil shall be removed in a separate layer from the areas to be disturbed, unless use of substitute or supplemental materials is approved by the regulatory authority in accordance with Paragraph (e) of this Section. If use of substitute or supplemental materials is approved, all materials to be redistributed shall be removed.</p> <p>(c) Material to be removed in thin topsoil situations. If the topsoil is less than 6 inches, a 6-inch layer that includes the A horizon and the unconsolidated materials immediately below the A horizon or the A horizon and all unconsolidated material if the total available is less than 6 inches, shall be removed and the mixture segregated and redistributed as the surface soil layer, unless topsoil substitutes are approved by the regulatory authority pursuant to Paragraph (e) of this Section.</p> <p>(d) Subsoil segregation. The B horizon and portions of the C horizon, or other underlying layers demonstrated to have qualities for comparable root development shall be segregated and replaced as subsoil, if the regulatory authority determines that either of these is necessary or desirable to ensure soil productivity consistent with the approved postmining land use.</p> <p>(e) Topsoil substitutes and supplements.</p> <p>(1) Selected overburden materials may be substituted for, or used as a supplement to, topsoil, if the regulatory authority determines that the resulting soil medium is equal to or more suitable for sustaining the vegetation than is the available topsoil and the substitute material is the best available to support the vegetation. This determination shall be based on:</p> <p>(i) <i>The results of chemical and physical analyses of overburden and topsoil.</i> These analyses shall include determinations of pH, net acidity or alkalinity, phosphorus, potassium, texture class, and other analyses as required by the regulatory authority. The regulatory authority may also require that results of field-site trials or greenhouse tests be used to demonstrate the feasibility of using these overburden materials.</p> <p>(ii) Results of analyses, trials, and tests shall be submitted to the regulatory authority. Certification of trials and tests shall be made by a laboratory approved by the regulatory authority stating that:</p> <p>(A) The proposed substitute material is equal to or more suitable for sustaining the vegetation than is the available topsoil;</p> <p>(B) The substitute material is the best available material to support the vegetation; and</p> <p>(C) The trials and tests were conducted using standard testing procedures.</p> <p>(2) Substituted or supplemented material shall be removed, segregated, and replaced in compliance with the requirements for topsoil under this Section.</p> <p>(3) <i>Limits on topsoil removal area.</i> Where the removal of vegetative material, topsoil, or other materials may result in erosion which may cause air or water pollution—</p> <p>1. The size of the area from which topsoil is removed at any one time shall be limited;</p> <p>2. The surface soil layer shall be redistributed at a time when the physical and chemical properties of topsoil</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>§ 817.112 <i>Revegetation: Use of introduced species.</i> Introduced species may be used if approved by the regulatory authority under the following conditions: (a) After appropriate field trials have demonstrated that the introduced species can establish a diverse, effective, and permanent cover capable of achieving the approved postmining land use; or (b) The species are necessary to achieve a quick, temporary, and stabilizing cover that aids in controlling erosion; and measures to establish permanent vegetation are included in the approved plan; (c) The species are compatible with the plant and animal species of the region; and (d) The species meet the requirements of applicable State and Federal seed or introduced species statutes, and are not poisonous or noxious.</p>	<p>✓</p>	<p>✓ ✓ ✓</p>		<p>Not stated Not stated Not shown</p>
<p>§ 817.113 <i>Revegetation: Timing.</i> Seeding and planting of disturbed areas shall be conducted during the first normal period (or favorable planting conditions after final preparation. The normal period for favorable planting shall be that planting time generally accepted locally for the type of plant materials selected. When necessary to effectively control erosion, any disturbed area shall be seeded, as contemporaneously as practicable, with a temporary cover of small grains, grasses, or legumes until a permanent cover is established.</p>		<p>✓</p>		<p>Vegetation will occur fall following fallow etc. by disturbed area but time frame beyond that not good. Nothing said about cover crops in event there is time between contouring & planting.</p>
<p>§ 817.114 <i>Revegetation: Mulching and other soil stabilizing practices.</i> (a) Suitable mulch or other soil stabilizing practices shall be used on all regraded and topsoiled areas to control erosion, to promote germination of seeds, or to increase the moisture retention of the soil. The regulatory authority may, on a case-by-case basis, suspend the requirement for mulch if the permittee can demonstrate that alternative procedures will achieve the requirements of § 817.113 and do not cause or contribute to air or water pollution. (b) Mulches shall be mechanically or chemically anchored to the soil surface to assure effective protection of the soil and vegetation when required by the regulatory authority. (c) Annual grasses and grains may be used alone, as in situ mulch, or in conjunction with another mulch when the regulatory authority determines they will provide adequate soil erosion control and will later be replaced by perennial species approved for the postmining land use. (d) Chemical soil stabilizers alone or in combination with appropriate mulches may be used in conjunction with vegetative covers approved for the postmining land use.</p>		<p>✓ ✓ ?</p>		<p>Other mulch shown & sprayed before seeded. Not stated when hydro-mulch & for bullock to be used on steep slopes Not mentioned Not mentioned</p>
<p>§ 817.115 <i>Revegetation: Grazing.</i> When the approved postmining land use is range or pasture land, the reclaimed land shall be used for livestock grazing at a grazing capacity approved by the regulatory authority approximately equal to that for similar non-mined lands, for at least the last two full years of liability required under Section 817.113(b).</p>		<p>✓</p>		<p>No schedule, although grazing listed as post-mine land use.</p>
<p>§ 817.116 <i>Revegetation: Standards for success.</i> (a) Success of revegetation shall be measured by techniques approved by the regulatory authority after consultation with appropriate State and Federal agencies. Comparison of ground cover and productivity may be made on the basis of reference areas or through the use of technical guidance procedures published by USDA or USDI for assessing ground cover and productivity. Management of the reference area, if applicable, shall be comparable to that which is required for the approved postmining land use of the mine plan area. (b)(1) The ground cover and productivity of living plants on the revegetated area shall be equal to the ground cover and productivity of living plants on the approved reference area or to the standards in other technical guides approved by the Director for use in the regulatory program. The period of extended responsibility under the performance bond requirements of Subchapter J initiates when ground cover equals the approved standard after the last year of augmented seeding, fertilizing, irrigation</p>		<p>✓ ✓</p>		<p>Same methods proposed for study of success for initial baseline study. Not statistical They can success when reach to 25% of initial cover. Not sure on what 80% of initial cover means (per cent. of cover or spp. composition also?)</p>

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(1) Areas of more than 25.0 inches average annual precipitation and conditions for not less than five years. Ground cover and productivity shall equal the approved standard for the last two consecutive years of the responsibility period or</p> <p>(2) Areas of less than or equal to 25.0 inches average annual precipitation and conditions for not less than ten years. Ground cover and productivity shall equal the approved standard for the last two consecutive years of the responsibility period.</p> <p>(3) For purposes of Paragraph (b)(1) of this Section, the average annual precipitation can be determined either—</p> <p>(i) By interpolation, using standard techniques, from 'Mean Annual Precipitations,' Map, p. 97, The National Atlas of the United States, U.S. Department of the Interior, Geological Survey, 1976; or from 'Climatic Atlas of the United States,' U.S. Dept. of Commerce, National Oceanic and Atmospheric Administration, 1974; or from long-term precipitation averages from 'Climatological Data,' U.S. Dept. of Commerce, National Oceanic and Atmospheric Administration; or from official records; or</p> <p>(ii) Based on 10 years of continuous and reliable precipitation records from stations located in or adjacent to the mine plan area.</p> <p>(3) The ground cover and productivity of the revegetated area shall be considered equal, if they are at least 90 percent of the ground cover and productivity of the reference area with 90 percent statistical confidence, or with 80 percent statistical confidence on shrublands or ground cover and productivity are at least 90 percent of the technical guide approved pursuant to 30 CFR 817.118(b)(1). Exceptions may be authorized by the regulatory authority under the following standards:</p> <p>(i) For previously mined areas that were not reclaimed, or the requirements of this Subchapter, as a minimum the ground cover of living plants shall not be less than can be supported by the best available topsoil or other suitable material in the reaffected area, shall not be less than the ground cover existing before redistribution and shall be adequate to control erosion.</p> <p>(ii) For areas to be developed for industrial or residential use less than 2 years after regrading is completed, the ground cover of living plants shall not be less than required to control erosion; and</p> <p>(iii) For areas to be used for cropland, success in revegetation of cropland shall be determined on the basis of crop production from the mined area as compared to the approved reference areas or other technical guidance procedures. Crop production from the mined area shall be equal to or greater than that of the approved standard for the last two consecutive growing seasons of the 5 or 10 year liability period established in (b)(1) of this Section. The applicable 3 or 10 year period of responsibility for revegetation shall commence at the date of initial planting of the crop being grown. Production shall not be considered equal if it is less than 90 percent of the production of the approved standard with 90 percent statistical confidence.</p> <p>(iv) On areas to be developed for fish and wildlife management or forestland, successful vegetation shall be determined on the basis of tree, shrub or half-shrub stocking and ground cover. The tree, shrub or half-shrub stocking shall meet the standards described in Section 817.117. The area seeded to a ground cover shall be considered acceptable if it is at least 70 percent of the ground cover of the reference areas with 90 percent statistical confidence or if the ground cover is determined to be adequate to control erosion by the regulatory authority. Section 817.116(b) shall determine the responsibility period and the frequency of ground cover measurement.</p> <p>(c) The person who conducts underground mining activities shall:</p> <p>(1) Maintain any necessary fences and proper management practices; and</p> <p>(2) Conduct periodic measurements of vegetation, soils, and water prescribed or approved by the regulatory authority, to identify conditions during the applicable period of liability specified in Paragraph (b) of this Section.</p>		<p>✓</p> <p>✓</p> <p>✓</p>		<p>No definite time since that seems to be the requirements. Do not feel very representative</p> <p>Conclusion about depth 230' / 4.5 - 720" their info apparently from Utah State Univ. study</p> <p>not really known how USL data taken</p> <p>They are talking about 80% ground cover and not saying anything about vegetation</p>
		<p>N/A</p> <p>N/A</p>		<p>Not described as such</p>
<p>(1) Maintain any necessary fences and proper management practices; and</p> <p>(2) Conduct periodic measurements of vegetation, soils, and water prescribed or approved by the regulatory authority, to identify conditions during the applicable period of liability specified in Paragraph (b) of this Section.</p>		<p>✓</p> <p>✓</p>		<p>not mentioned</p> <p>Only methods which are more subjective</p>

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(7) The use or uses will not involve unreasonable delays in reclamation.</p> <p>(8) Necessary approval of measures to prevent or mitigate adverse effects on fish, wildlife, and related environmental values and threatened or endangered plants shall have been obtained from the regulatory authority and appropriate State and Federal fish and wildlife management agencies have been provided a 60-day period in which to review the plan before underground mining activities begin.</p> <p>(9) Proposals to change premining land uses of range, fish and wildlife habitat, forest land, hayland, or pasture to a postmining cropland use, where the cropland would require continuous maintenance such as seeding, plowing, cultivation, fertilization, or other similar practices to be practicable or to comply with applicable Federal, State, and local laws, have been reviewed by the regulatory authority to ensure that—</p> <p>(i) There is a firm written commitment by the person who conducts underground mining activities or by the landowner or land manager to provide sufficient crop management after release of applicable performance bonds under Subchapter J and Sections 817.111-817.117, to assure that the proposed postmining cropland use remains practical and reasonable;</p> <p>(ii) There is sufficient water available and committed to maintain crop production; and</p> <p>(iii) Topsoil quality and depth are sufficient to support the proposed use.</p> <p>§ 817.156 Roads Class I: Restoration.</p> <p>(a) Unless the regulatory authority approves retention of a Class I Road as suitable for the approved postmining land use, immediately after the road is no longer needed for operations, reclamation, or monitoring—</p> <p>(1) The road shall be closed to vehicular traffic;</p> <p>(2) The natural-drainage patterns shall be restored;</p> <p>(3) All bridges and culverts shall be removed;</p> <p>(4) Roadbeds shall be ripped, plowed, and scarified;</p> <p>(5) Fill slopes shall be rounded or reduced and shaped to conform the site to adjacent terrain and to meet natural-drainage restoration standards;</p> <p>(6) Cut slopes shall be shaped to blend with the natural contour;</p> <p>(7) Cross drains, dikes, and water bars shall be constructed to minimize erosion;</p> <p>(8) Terraces shall be constructed as necessary to prevent excessive erosion and to provide long-term stability in cut-and-fill slopes; and</p> <p>(9) Road surfaces shall be covered with topsoil in accordance with 30 CFR 817.24(b) and revegetated in accordance with 30 CFR 817.111-817.116.</p> <p>(b) Unless otherwise authorized by the regulatory authority, all road-surfacing materials shall be removed, hauled or conveyed, and disposed of under 30 CFR 817.89.</p> <p>§ 817.166 Roads Class II: Restoration.</p> <p>(a) Unless the regulatory authority approves retention of a Class II Road as suitable for the approved postmining land use, immediately after a road is no longer needed for operations, reclamation, or monitoring—</p> <p>(1) The road shall be closed to vehicular traffic;</p> <p>(2) The natural drainage patterns shall be restored;</p> <p>(3) All bridges and culverts shall be removed;</p> <p>(4) Roadbeds shall be ripped, plowed, and scarified;</p> <p>(5) Fill slopes shall be rounded or reduced and shaped to conform the site to adjacent terrain and to meet natural drainage restoration standards;</p> <p>(6) Cut slopes shall be reshaped to blend with the natural contour;</p> <p>(7) Cross drains, dikes, and water bars shall be constructed to minimize erosion;</p> <p>(8) Terraces shall be constructed as necessary to prevent excessive erosion and to provide long-term stability in cut-and-fill slopes; and</p> <p>(9) Road surfaces shall be covered with topsoil in accordance with 30 CFR 817.24(b) and revegetated in accordance with 30 CFR 817.111-817.116.</p> <p>(b) Unless otherwise authorized by the regulatory authority, all road-surfacing materials shall be removed, hauled or conveyed, and disposed of</p>	<p>U</p> <p>U</p> <p>U</p> <p>U</p>			

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>§ 817.176 Road Class III Restoration. Immediately after a Class III Road is no longer needed for operations, reclamation, or monitoring— (a) The road shall be closed to vehicular traffic; (b) The natural drainage patterns shall be restored; (c) All bridges and culverts shall be removed; (d) Roadbeds shall be ripped, plowed, and scarified; (e) Fill slopes shall be rounded or reduced and shaped to conform the site to adjacent terrain and meet natural drainage restoration standards; (f) Cut slopes shall be reshaped to blend with the natural contour; (g) Cross drains, dikes, and water bars shall be constructed to control erosion; and (h) Road surfaces from which topsoil has been removed shall be covered with topsoil in accordance with 30 CFR 817.24(b), and the surface shall be revegetated in accordance with 30 CFR 817.111-817.116.</p> <p>PART 822—SPECIAL PERMANENT PROGRAM PERFORMANCE STANDARDS—OPERATIONS IN ALLUVIAL VALLEY FLOORS</p> <p>Sec. 822.1 Scope. 822.2 Objectives. 822.11 Alluvial valley floors: Essential hydrologic functions. 822.12 Alluvial valley floors: Protection of farming and water supplies. 822.13 Alluvial valley floors: Protection of agricultural uses. 822.14 Alluvial valley floors: Monitoring.</p> <p>Authority: Sections 102, 201, 501, 503, 504, 506, 507, 508, 509, 510, 515, 516, 517, 519 and 701, Pub. L. 95-87, 91 Stat. 448, 449, 467, 470, 471, 473, 478, 480, 484, 498, 499, 518 (30 U.S.C. 1202, 1211, 1231, 1233, 1254, 1256, 1257, 1258, 1259, 1260, 1263, 1264, 1267, 1291).</p> <p>§ 822.1 Scope. This Part sets forth additional requirements for surface coal mining and reclamation operations on or which affect alluvial valley floors in the arid and semi-arid regions of the country.</p> <p>§ 822.2 Objectives. This Part establishes the minimum environmental protection performance, reclamation and design standards, to preserve either the existing or potential agricultural uses and the productivity of alluvial valley floors during and after surface coal mining and reclamation operations.</p> <p>§ 822.11 Alluvial valley floors: Essential hydrologic functions. (a) Surface coal mining and reclamation operations shall be conducted to preserve, throughout the mining and reclamation process, the essential hydrologic functions of alluvial valley floors not within an affected area. These functions shall be preserved by maintaining those geologic, hydrologic and biologic characteristics that support those functions. (b) Surface coal mining and reclamation operations shall be conducted to reestablish, throughout the mining and reclamation process, the essential hydrologic functions of alluvial valley floors within an affected area. These functions shall be reestablished by reconstructing those geologic, hydrologic and biologic characteristics that support those functions. (c) The characteristics that support the essential hydrologic functions of alluvial valley floors are those in 30 CFR 785.19(d)(3) and those other geologic, hydrologic, or biologic characteristics identified during premining investigations or monitoring conducted during the surface coal mining and reclamation operation.</p> <p>§ 822.13 Alluvial valley floors: Protection of farming and water supplies. (a) Surface coal mining and reclamation operations shall not interrupt, discontinue, or preclude farming on alluvial valley floors, unless— (i) The premining land use is undeveloped rangeland which is not significant to farming; or (ii) The area of affected alluvial valley floor is small and provides or may provide negligible support for production from one or more farms.</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(b) If environmental monitoring shows that a surface coal mining operation is interrupting, discontinuing, or precluding farming on alluvial valley floors, the operation shall cease until remedial measures are taken by the person who conducts the operation. The remedial measures shall be approved by the regulatory authority prior to the resumption of mining.</p> <p>(c) Surface coal mining and reclamation operations shall not cause material damage to the quality or quantity of water in surface or underground water systems that supply alluvial valley floors. If environmental monitoring shows that the surface coal mining operation is causing material damage to water that supplies alluvial valley floors, the mining operations shall cease until remedial measures are taken by the person who conducts the operation. The remedial measures shall be approved by the regulatory authority prior to the resumption of mining operations.</p> <p>(d) Paragraphs (a) and (b) of this Section do not apply to those lands which were identified in a reclamation plan approved by the State prior to August 3, 1977 for any surface coal mining and reclamation operation that, in the year preceding August 3, 1977:</p> <p>(1) Produced coal in commercial quantities and was located within or adjacent to an alluvial valley floor, or</p> <p>(2) Obtained specific permit approval by the State regulatory authority to conduct surface coal mining and reclamation operations within an alluvial valley floor.</p> <p>§ 822.13 Alluvial valley floors Protection of agricultural uses.</p> <p>Surface coal mining and reclamation operations shall be conducted to ensure that the agricultural utility and the level of productivity of alluvial valley floors in affected areas are reestablished.</p> <p>§ 822.14 Alluvial valley floors Monitoring.</p> <p>(a) An environmental monitoring system shall be installed, maintained and operated by the permittee on all alluvial valley floors during surface coal mining and reclamation operations and continued until all bonds are released in accordance with 30 CFR 807. The monitoring system shall provide sufficient information to allow the regulatory authority to determine that:</p> <p>(i) The agricultural utility and production of the alluvial valley floor not within the affected area is being preserved;</p> <p>(ii) The potential agricultural utility and production on the alluvial valley floor within the affected area has been reestablished;</p> <p>(iii) The important characteristics supporting the essential hydrologic functions of the alluvial valley floor in the affected area have been reestablished after mining; and</p> <p>(iv) the important characteristics supporting the essential hydrologic functions of an alluvial valley floor in areas not affected are preserved during and after mining.</p> <p>(b) Monitoring shall be performed at adequate frequencies, to indicate long-term trends that could affect agricultural use of the alluvial valley floors.</p> <p>(c) Monitoring shall be performed during operations, to identify characteristics of the alluvial valley floor not identified in the permit application and to evaluate the importance of all characteristics.</p> <p>(d) All monitoring data collected and analyses thereof shall routinely be made available to the regulatory authority.</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>PART 823—SPECIAL PERMANENT PROGRAM PERFORMANCE STANDARDS—OPERATIONS ON PRIME FARMLAND</p> <p>See.</p> <p>823.1 Scope.</p> <p>823.2 Objective.</p> <p>823.11 Prime farmland: Special requirements.</p> <p>823.12 Prime farmland: Soil removal.</p> <p>823.13 Prime farmland: Soil stockpiling.</p> <p>823.14 Prime farmland: Soil replacement.</p> <p>823.15 Prime farmland: Revegetation.</p> <p>Appendix: Sections 102, 201, 501, 503, 504, 508, 507, 508, 510, 513, 516, 517, 791 of Pub. L. 95-87, 91 Stat. 448, 449, 449, 449, 470, 471, 473, 478, 489, 489, 496, 496, 516 (30 U.S.C. 1292, 1211, 1251, 1253, 1254, 1254, 1257, 1258, 1280, 1284, 1287, 1291).</p> <p>§ 823.1 Scope.</p> <p>This Part sets forth special environmental protection performance, reclamation, and design standards for surface coal mining and reclamation operations on prime farmland.</p> <p>§ 823.2 Objective.</p> <p>The objective of this Part is to set forth those soil removal, stockpiling, and replacement operational requirements and revegetation and other reclamation standards for prime farmlands to ensure both that the land will have agricultural productive capacity which is equal after mining to pre-mining levels and the land is not lost as an important national resource.</p> <p>§ 823.11 Prime farmland: Special requirements.</p> <p>Surface coal mining and reclamation operations conducted on prime farmland shall meet the following requirements:</p> <p>(a) A permit shall be obtained for those operations under 30 CFR 735.17.</p> <p>(b) Soil materials to be used in the reconstruction of the prime farmland soil shall be removed before drilling, blasting, or mining, in accordance with Section 823.12 and in a manner that prevents mixing or contaminating these materials with undesirable material. Where removal of soil materials results in erosion that may cause air and water pollution, the regulatory authority shall specify methods to control erosion of exposed overburden.</p> <p>(c) Revegetation success on prime farmlands shall be measured upon the basis of a comparison of actual crop production from the disturbed area, compared to the predetermined target level of crop production approved by the regulatory authority in the permit in accordance with 30 CFR 735.17(d)(3).</p> <p>§ 823.12 Prime farmland: Soil removal.</p> <p>(a) Surface coal mining and reclamation operations on prime farmland shall be conducted to —</p> <p>(1) Separately remove the entire A horizon or other suitable soil materials which will create a final soil having an equal or greater productive capacity than that which existed prior to mining.</p> <p>(2) Separately remove the B horizon of the soil, a combination of B horizon and underlying C horizon, or other suitable soil material that will create a reconstructed soil of equal or greater productive capacity than that which existed before mining.</p> <p>(3) Separately remove the underlying C horizons, other strata, or a combination of horizons or other strata, to be used instead of the B horizon. When replaced, these combinations shall be equal to, or more favorable for plant growth than, the B horizon.</p> <p>(b) The minimum depth of soil and soil material to be removed for use in reconstruction of prime farmland soils shall be sufficient to meet the soil replacement requirements of Section 823.14(a).</p> <p>§ 823.13 Prime farmland: Soil stockpiling.</p> <p>If not utilized immediately, the A horizon or other suitable soil materials specified in Section 823.12(a)(1) and the B horizon or other suitable soil materials specified in Sections 823.12(a)(2) and 823.12(a)(3) shall be stored separately from each other and from spoil. These stockpiles shall be placed within the permit area where they are not disturbed or exposed to excessive water or wind erosion before the stockpiled horizons can be redistributed. Stockpiles in place for more</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>§ 823.14 Prime farmland: Soil replacement.</p> <p>Surface coal mining and reclamation operations on prime farmland shall be conducted according to the following:</p> <p>(a) The minimum depth of soil and soil material to be reconstructed for prime farmland shall be 48 inches, or a depth equal to the depth of a subsurface horizon in the natural soil that inhibits root penetration, whichever is shallower. The regulatory authority shall specify a depth greater than 48 inches, wherever necessary to restore productive capacity due to uniquely favorable soil horizons at greater depths. Soil horizons shall be considered as inhibiting root penetration if their densities, chemical properties, or water supplying capacities restrict or prevent penetration by roots of plants common to the vicinity of the permit area and have little or no beneficial effect on soil productive capacity.</p> <p>(b) Replace soil material only on land which has been first returned to final grade and scarified according to 30 CFR 816.101-816.105 or 817.101-817.108, unless site-specific evidence is provided and approved by the regulatory authority showing that scarification will not enhance the capability of the reconstructed soil to achieve equivalent or higher levels of yield.</p> <p>(c) Replace the soil horizons or other suitable soil material in a manner that avoids excessive compaction. Compaction shall be considered excessive if, on more than 10 percent of the replacement area, any layer of reconstructed soil has a moist bulk density of 0.1 gram per cubic centimeter more than the values stated in the approved permit application under 30 CFR 785.17(b)(3) for the equivalent layer of the undisturbed soil.</p> <p>(d) Replace the B horizon or other suitable material specified in Section 823.12 (a)(2) and (a)(3) to the thickness needed to meet the requirements of paragraph (a) of this Section.</p> <p>(e) Replace the A horizon or other suitable soil materials specified in Section 823.12(a)(1) as the final surface soil layer. This surface soil layer shall equal or exceed the thickness of the original soil, as determined in 30 CFR 785.17(b)(1)(ii), and be replaced in a manner that protects the surface layer from wind and water erosion before it is seeded or planted.</p> <p>(f) Apply nutrients and soil amendments as needed to quickly establish vegetative growth.</p> <p>§ 823.15 Prime farmland: Revegetation.</p> <p>Each person who conducts surface coal mining and reclamation operations on prime farmland shall meet the following revegetation requirements during reclamation:</p> <p>(a) Following soil replacement, that person shall establish a vegetative cover capable of stabilizing the soil surface with respect to erosion. All vegetation shall be in compliance with the plan approved by the regulatory authority under 30 CFR 785.17 and carried out in a manner that encourages prompt vegetative cover and recovery of productive capacity. The timing and mulching provisions of Sections 816.113-816.114 or 817.113-817.114 shall be met.</p> <p>(b) Within a time period specified in the permit, but not to exceed 10 years after completion of backfilling and rough grading, any portion of the permit area which is prime farmland must be used for crops commonly grown, such as corn, soybeans, cotton, grain, hay, sorghum, wheat, oats, barley, or other crops on surrounding prime farmland. The crops may be grown in rotation with hay or pasture crops as defined for cropland. The regulatory authority may approve a crop use of perennial plants for hay, where this is a common long term use of prime farmland soils in the surrounding area. The level of management shall be equivalent to that on which the target yields are based.</p> <p>(c) Measurement of success in prime farmland revegetation will be determined based upon the techniques approved in the permit by the regulatory authority under 30 CFR 785.17. As a minimum, the following standards shall be met:</p> <p>(i) Average annual crop production shall be determined based upon a minimum of 3 years data. Crop production shall be measured for the three years immediately prior to release of bond according to 30 CFR 807.</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(II) Adjustment for weather induced variability in the annual mean crop production may be permitted by the regulatory authority.</p> <p>(III) Revegetation on prime farmland shall be considered a success when the adjusted 3 year average annual crop production is equivalent to, or higher than, the predetermined target level of crop production specified in the permit in accordance with 30 CFR 785.17(d)(3).</p> <p>PART 825—SPECIAL PERMANENT PROGRAM PERFORMANCE STANDARDS—SPECIAL BITUMINOUS COAL MINES IN WYOMING</p> <p>Sec.</p> <p>825.1 Scope.</p> <p>825.2 Objective.</p> <p>825.11 Mines operating before January 1, 1972.</p> <p>825.12 Mines developed after August 3, 1977.</p> <p>825.13 Changes in Wyoming program.</p> <p>Authority: Sections 101, 201, 501, 502, 504, 508, 510, 513, 527, 701 Pub. L. 95-87, 91 Stat. 448, 449, 467, 470, 471, 472, 480, 486, 513, 516 (30 U.S.C. 1202, 1211, 1251, 1252, 1254, 1256, 1259, 1277, 1281).</p> <p>§ 825.1 Scope.</p> <p>(a) This Part sets forth special requirements for certain bituminous surface coal mining activities located west of the 100th meridian west longitude in Wyoming which existed on January 1, 1972, and for surface coal mining activities immediately adjacent thereto which began development after August 3, 1977, in accordance with Section 527 of the Act.</p> <p>(b) Unless specifically modified by this Part, each performance standard of this Subchapter applies to these mines.</p> <p>§ 825.2 Objective.</p> <p>The objective of this Part is to minimize any adverse environmental affect of certain special bituminous coal mines located west of the 100th meridian west longitude in Wyoming, by—</p> <p>(a) Providing special standards for onsite handling of spoil;</p> <p>(b) Eliminating depressions capable of collecting water;</p> <p>(c) Improving and regrading certain spoils outside the mine pit to approximate original contour; and</p> <p>(d) Retention of certain stable highwalls.</p> <p>§ 825.11 Mines operating before January 1, 1972.</p> <p>(a) This Section applies to those portions of special bituminous coal mines, as defined in 30 CFR 701.3, which—</p> <p>(1) Were approved for operation before January 1, 1972, including the orderly expansion of the mine pit to the extent authorized by State law;</p> <p>(2) Have actually been producing coal since January 1, 1972;</p> <p>(3) Are committed to a mode of operation that warrants an exception to some of the provisions of this Subchapter because of past duration of mining; and</p> <p>(4) Involve the mining of more than one seam, and mining was initiated before August 3, 1977, on the deepest coal seam contemplated to be mined in the current operation.</p> <p>(b) Operations subject to this Section shall, at a minimum, meet the general performance standards of this Subchapter for all operations conducted on the permit area outside the mine pit and for those operations associated with spoil storage areas. All the standards of this Subchapter apply to the mine pit except for requirements for backfilling and grading. Special requirements for backfilling and grading the mine pit area are as follows:</p> <p>(1) In the final mine area, highwalls shall be allowed to remain if found to be stable by the regulatory authority.</p> <p>(2) Benches may be constructed if approved by the regulatory authority in the approved mining plan.</p> <p>(3) The exposed pit floors shall be sloped and graded to provide access to the area.</p> <p>(4) Topsoil shall be replaced in accordance with 30 CFR 816.24.</p> <p>(5) The floor of the pit shall be regraded and seeded according to the requirements of 30 CFR 816.102 and 816.111-816.117.</p> <p>(6) Where water impoundments are included as part of the mine plan, riprap shall be used if necessary to prevent erosion.</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(7) Spoil piles shall be graded and contoured, with no more than an overall slope of 17 degrees, and terraces may be used to break the slope when it can be shown that terraces will comply with all applicable reclamation requirements. Steeper slopes may be permitted upon approval of the regulatory authority, if it has been demonstrated that such slopes will comply with all applicable reclamation requirements and are consistent with the approved post-mining land use.</p> <p>§ 825.12 Mines developed after August 3, 1977.</p> <p>(a) This Section applies to those special bituminous coal mines, as defined in 30 CFR 701.5, which are developed after August 3, 1977, on lands immediately adjacent to portions of mines subject to 30 CFR 825.11.</p> <p>(b) Operations subject to this Section shall comply with all requirements of Wyoming law.</p> <p>(c) Operations subject to this Section shall, as a minimum, meet the general requirements of this Subchapter for all operations conducted in the permit area outside the mine pit and for the operations associated with spoil storage areas. 30 CFR 818 applies to the mine pit, except for the requirements for backfilling and grading. Special requirements for backfilling and grading the mine pit area are as follows:</p> <p>(1)(i) Slope specifications for the postmining land use shall not exceed the average of the natural slopes measured in the immediate area of the minesite except in accordance with Paragraph (c)(2) of this Section.</p> <p>(ii) Slopes steeper than the average of the natural slopes may be approved by the regulatory authority, if it can be demonstrated that returning the affected area to a slope equal to or less than the average natural slope would greatly increase the amount of disturbed land.</p> <p>(iii) Measurements of individual slopes, locations at which measurements are made, and the average natural slope as determined from the individual slope measurements shall be submitted for approval to the regulatory authority in the permit application required under 30 CFR 733.12.</p> <p>(2) For post-mining land uses which do not include permanent water impoundments—</p> <p>(i) The final mine area shall be backfilled, graded, and contoured to the extent necessary to return the land to the use approved by the regulatory authority in accordance with 30 CFR 816.133.</p> <p>(ii) All backfilling, grading, and contouring shall preserve the original drainage system or provide substitute drainage systems approved by the regulatory authority.</p> <p>(iii) Terraces or benches may be used only if it has been demonstrated to the regulatory authority that contouring methods do not provide the required results. Detailed plans of dimensions and design of the terraces or benches, check dams, erosion-prevention techniques, and slopes of the terraces or benches, and their intervals, shall have been approved by the regulatory authority before construction commences.</p> <p>(iv) Depressions that will accumulate water shall not be allowed, unless they are approved under Paragraph (c)(3) of this Section.</p> <p>(3) For post-mining land uses that include permanent water impoundments—</p> <p>(i) The exposed mine pit area shall be sloped, graded, and contoured to blend with the topography of the surrounding terrain and to provide access to the area. Where necessary to prevent erosion, riprap shall be used.</p> <p>(ii) If the person who conducts the surface mining activities demonstrates that the pitwall can be stabilized by terracing or other techniques, the regulatory authority may approve leaving the stabilized pitwall along one-half of the proposed impoundment shoreline, as measured along the circumference. The remaining part of the shoreline shall be graded and contoured to blend with the topography of the surrounding terrain and to provide access to the area. Detailed explanations of the techniques to be used to stabilize the pitwall shall have been approved by the regulatory authority before the impoundment is created.</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>§ 825.12 Changes in Wyoming program.</p> <p>In the event of an amendment or revision to the State of Wyoming regulatory program, regulations, or decisions made thereunder, governing special bituminous coal mines, the Secretary shall issue additional regulations as necessary to meet the purposes of the Act.</p> <p>PART 826—SPECIAL PERMANENT PROGRAM PERFORMANCE STANDARDS—OPERATIONS ON STEEP SLOPES</p> <p>Sec. 826.1 Scope. 826.2 Objective. 826.11 Applicability. 826.12 Steep slopes Performance standards. 826.13 Steep slopes Limited variances. 826.14 Steep slopes Multiple seams.</p> <p>APPROXIMATE: Secs. 102, 201, 301, 502, 504, 506, 510, 513, 701 Pub. L. 95-47, 91 Stat. 448, 449, 467, 470, 471, 472, 480, 482, 518 (U.S.C. 1202, 1211, 1231, 1233, 1254, 1256, 1260, 1262, 1281).</p> <p>§ 826.1 Scope.</p> <p>This Part sets forth special, additional environmental protection performance, reclamation, and design standards for surface coal mining and reclamation operations conducted on steep slopes meaning any slope of 20 degrees or more or as defined in Section 701.1.</p> <p>§ 826.2 Objective.</p> <p>The objective of this Part is to ensure adequate environmental protection during surface coal mining and reclamation operations on steep slopes.</p> <p>§ 826.11 Applicability.</p> <p>(a) Any surface coal mining and reclamation operations on steep slopes shall meet the requirements of this Part.</p> <p>(b) The standards of this Part do not apply to mining conducted on a flat or gently rolling terrain with an occasional steep slope through which the mining proceeds and leaves a plain or predominately flat area, or to operations covered by 30 CFR 824.</p> <p>§ 826.12 Steep slopes Performance standards.</p> <p>Surface coal mining and reclamation operations subject to this Part shall comply with requirements of Subchapter C and the following, except to the extent a variance is approved under Section 826.15:</p> <p>(A)(1) The person engaged in surface coal mining and reclamation operations shall prevent the following materials from being placed or allowed to remain on the downslope:</p> <p>(A) Spoil;</p> <p>(B) Waste materials, including waste mineral matter;</p> <p>(C) Debris, including that from clearing and grubbing of haul road construction; and</p> <p>(D) Abandoned or disabled equipment;</p> <p>(H) Nothing in this subsection shall prohibit the placement of material in road embankments located on the downslope, so long as the material used and embankment design comply with the requirements of 30 CFR 816.150-816.180 or 817.150-817.180 and the material is moved and placed in a controlled manner.</p> <p>(b) The highwall shall be completely covered with compacted spoil and the disturbed area graded to comply with the provisions of 30 CFR 816.101-816.106 and 30 CFR 817.101-817.106, including, but not limited to, the return of the site to the approximate original contour. The person who conducts the surface coal mining and reclamation operation must demonstrate to the regulatory authority, using standard geotechnical analysis, that the minimum static factor of safety for the stability of all portions of the reclaimed land is at least 1.1.</p> <p>(c) Land above the highwall shall not be disturbed, unless the regulatory authority finds that the disturbance facilitates compliance with the requirements of this Part.</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(d) Material in excess of that required by the grading and backfilling provisions of paragraph (b) of this Section shall be disposed of in accordance with the requirements of 30 CFR 818.71-818.74 or 817.71-817.74.</p> <p>(e) Woody materials shall not be buried in the backfilled area unless the regulatory authority determines that the proposed method for placing woody material beneath the highwall will not deteriorate the stable condition of the backfilled area as required in Section 828.12(b). Woody materials may be chipped and distributed over the surface of the backfill as much as, if special provision is made for their use and approved by the regulatory authority.</p> <p>(f) Unlined or unprotected drainage channels shall not be constructed on backfills unless approved by the regulatory authority as stable and not subject to erosion.</p> <p>§ 828.13 Steep slopes Limited variances.</p> <p>- Under every Federal program or any approved State program which includes appropriate procedures, persons may be granted variances from the approximate original contour requirements of Section 828.12(b) for steep slope surface coal mining and reclamation operations, if the following standards are met and a permit incorporating the variance is approved under 30 CFR 783.16:</p> <p>(a) The highwall shall be completely backfilled with spoil material, in a manner which results in a static factor of safety of at least 1.3 using standard geotechnical analyses.</p> <p>(b) The watershed control of the area within which the mining occurs shall be improved by reducing the peak flow from precipitation or thaw and reducing the total suspended solids or other pollutants in the surface water discharge during precipitation or thaw. The total volume of flow during every season of the year shall not vary in a way that adversely affects the ecology of any surface water or any existing or planned public or private use of surface or ground water.</p> <p>(c) Land above the highwall may be disturbed only to the extent that the regulatory authority deems appropriate and approves as necessary to facilitate compliance with the provisions of this Part and if the regulatory authority finds that the disturbance is necessary to—</p> <p>(1) Blend the solid highwall and the backfilled material;</p> <p>(2) Control surface runoff; or</p> <p>(3) Provide access to the area above the highwall.</p> <p>(d) The landowner of the permit area has requested, in writing, as part of the permit application under 30 CFR 783.16, that the variance be granted.</p> <p>(e) The operations are conducted in full compliance with a permit issued in accordance with 30 CFR 783.16.</p> <p>(f) Only the amount of spoil as is necessary to achieve the postmining land use, ensure the stability of spoil retained on the bench, and meet all other requirements of the Act and this Chapter shall be placed off the mine bench. All spoil not retained on the bench shall be placed in accordance with 30 CFR 818.71-818.74, or 817.71-817.74 and 30 CFR 818.101-102 or 817.101-817.102.</p> <p>§ 828.16 Steep slopes Multiple seam.</p> <p>In multiple-seam steep slope affected areas, spoil not required to reclaim and restore the permit area may be placed on a pre-existing bench, if approved by the regulatory authority and if the following requirements are met:</p> <p>(a) All excess spoil must be hauled, placed, and retained on the solid bench.</p> <p>(b) The spoil must be graded to the most moderate slope so as to eliminate the existing highwall to the extent possible with the available spoil.</p> <p>(c) The fill must comply with 30 CFR 818.71 or 817.73 and the other requirements of this Subchapter.</p> <p>(d) The bench on which the spoil is to be placed must have been created and abandoned due to coal mining prior to August 3, 1977.</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>PART 827—SPECIAL PERMANENT PROGRAM PERFORMANCE STANDARDS—COAL PROCESSING PLANTS AND SUPPORT FACILITIES NOT LOCATED AT OR NEAR THE MINESITE OR NOT WITHIN THE PERMIT AREA FOR A MINE</p> <p>Sec. 827.1 Scope. 827.11 Applicability. 827.12 Coal processing plant Performance standards.</p> <p>Authority: Secs. 102, 301, 301, 301, 304, 308, 310, 315, 317, 701 Pub. L. 96-57, 91 Stat. 448, 449, 467, 470, 471, 473, 482, 484, 488, 518 (30 U.S.C. 1302, 1311, 1331, 1333, 1354, 1358, 1359, 1362, 1367, 1391).</p> <p>§ 827.1 Scope. This Part sets forth requirements for coal processing plants and their support facilities not located within the permit area for a mine, to ensure the protection of public property and the environment, in accordance with the Act.</p> <p>§ 827.11 Applicability. Each person who conducts surface coal mining and reclamation operations, which includes the operation of a coal processing plant or support facility which is not located within the permit area for a specific mine, shall obtain a permit in accordance with 30 CFR 785.21 to conduct those operations and comply with Section 827.12.</p> <p>§ 827.12 Coal processing plant Performance standards.</p> <p>Construction, operation, maintenance, modification, reclamation, and removal activities at operations covered by this Part shall comply with the following:</p> <p>(a) Signs and markers for the coal processing plant, coal processing waste disposal area, and water treatment facilities shall comply with 30 CFR 816.11.</p> <p>(b) Roads, transport, and associated structures shall be constructed, maintained, and reclaimed in accordance with 30 CFR 816.150-816.181.</p> <p>(c) Any stream or channel realignments shall comply with 30 CFR 816.44.</p> <p>(d) If required by the regulatory authority, any disturbed area related to the coal processing plant or associated facilities shall have sediment control structures, in compliance with 30 CFR 816.40 and 816.46, and all discharges from these areas shall meet the requirements of 30 CFR 816.41-816.42 and any other applicable State or Federal law.</p> <p>(e) Permanent impoundments associated with coal processing plants shall meet the requirements of 30 CFR 816.49 and 816.56. Dams constructed of or impounding coal processing waste shall comply with 30 CFR 816.91-816.93.</p> <p>(f) Use of water wells shall comply with 30 CFR 816.53 and water rights shall be protected in accordance with 30 CFR 816.54.</p> <p>(g) Disposal of coal processing waste, solid waste, and any excavated materials shall comply with 30 CFR 816.81-816.84, 816.89, and 816.71-816.74, respectively.</p> <p>(h) Discharge structures for diversions and sediment control structures shall comply with 30 CFR 816.47.</p> <p>(i) Air pollution control measures associated with fugitive dust emissions shall comply with 30 CFR 816.96.</p> <p>(j) Fish, wildlife and related environmental values shall be protected in accordance with 30 CFR 816.97.</p> <p>(k) Slide areas and other surface areas shall comply with 30 CFR 816.99.</p> <p>(l) Adverse effects upon or resulting from nearby underground coal mining activities shall be minimized by appropriate measures including, but not limited to compliance with 30 CFR 816.55 and 816.79.</p> <p>(m) Reclamation shall include proper topsoil handling procedures, revegetation, and abandonment, in accordance with 30 CFR 816.58, 816.100-816.104, 816.111-816.117, and 816.131-816.133.</p>				

REQUIREMENTS	ADEQUATE	INADEQUATE	CALCS. SPOT CHECKED	COMMENTS, CALCULATIONS, RECOMMENDED STIPULATIONS, ETC.
<p>(2) Conveyors, buildings, storage bins or stockpiles, water treatment facilities, water storage facilities, and any structure or system related to the coal processing plant shall comply with 30 CFR 818.</p> <p>(c) Any coal processing plant or associated structures located on prime farmland shall meet the requirements of 30 CFR 823.</p> <p>PART 828—SPECIAL PERMANENT PROGRAM PERFORMANCE STANDARDS—IN SITU PROCESSING</p> <p>Sec.</p> <p>828.1 Scope.</p> <p>828.2 Objectives.</p> <p>828.11 In situ processing: Performance standards.</p> <p>828.12 In situ processing: Monitoring.</p> <p>Authority: Secs. 102, 301, 303, 304, 510, 518, 519, 701; Pub. L. 96-27, 91 Stat. 44, 46, 47, 47, 47, 48, 48, 48, 516 (30 U.S.C. 1202, 1211, 1211, 1223, 1234, 1260, 1264, 1266, 1267, 1291).</p> <p>§ 828.1 Scope.</p> <p>This Part sets forth special environmental protection performance, reclamation and design standards for in situ processing activities.</p> <p>§ 828.2 Objectives.</p> <p>This Part is intended to ensure that all in situ processing activities are conducted in a manner which preserves and enhances environmental values in accordance with the Act. This Part provides additional performance, reclamation and design standards to reflect the nature of in situ processing.</p> <p>§ 828.11 In situ processing: Performance standards.</p> <p>(a) The person who conducts in situ processing activities shall comply with 30 CFR 817 and this Section.</p> <p>(b) In situ processing activities shall be planned and conducted to minimize disturbance to the prevailing hydrologic balance by:</p> <ol style="list-style-type: none"> (1) Avoiding discharge of fluids into holes or wells, other than as approved by the regulatory authority; (2) Injecting process recovery fluids only into geologic zones or intervals approved as production zones by the regulatory authority; (3) Avoiding annular injection between the wall of the drill hole and the casing; and (4) Preventing discharge of process fluid into surface waters. <p>(c) Each person who conducts in situ processing activities shall submit for approval as part of the application for permit under 30 CFR 785.22, and follow after approval, a plan that ensures that all acid-forming, toxic-forming, or radioactive gases, solids, or liquids constituting a fire, health, safety, or environmental hazard and caused by the mining and recovery process are promptly treated, confined, or disposed of, in a manner that prevents contamination of ground and surface waters, damage to fish, wildlife and related environmental values, and threats to the public health and safety.</p> <p>(d) Each person who conducts in situ processing activities shall prevent flow of the process recovery fluid:</p> <ol style="list-style-type: none"> (1) Horizontally beyond the affected area identified in the permit; and (2) Vertically into overlying or underlying aquifers. <p>(e) Each person who conducts in situ processing activities shall restore the quality of affected ground water in the mine plan and adjacent area, including ground water above and below the production zone, to the approximate premining levels or better, to ensure that the potential for use of the ground water is not diminished.</p> <p>§ 828.12 In situ processing: Monitoring.</p> <p>(a) Each person who conducts in situ processing activities shall monitor the quality and quantity of surface and ground water and the subsurface flow and storage characteristics, in a manner approved by the regulatory authority under 30 CFR 817.52, to measure changes in the quantity and quality of water in surface and ground water systems in the mine plan and in adjacent areas.</p> <p>(b) Air and water quality monitoring shall be conducted in accordance with monitoring programs approved by the regulatory authority as necessary according to appropriate Federal and State air and water quality standards.</p>				