Document Information Form

Mine Number: C/007/004

File Name: Internal

To: DOGM

From:

Person N/A

Company STATE OF UTAH

Date Sent: September 15, 1995

Explanation:

UTAH COAL REGULATORY PROGRAM: ANALYSIS AND FINDINGS

cc:

File in:
C/ 007, 004, Internal
Refer to:
- ☐ Confidential
- ☐ Shelf
- ☐ Expandable

Date _____ For additional information

Permit Binder

State of Utah
Division of Oil, Gas and Mining
Utah Coal Regulatory Program

Analysis and Findings
Castle Gate
Refuse Removal Project
ACT/007/004 - 95B
September 15, 1995

File in:
- ☐ Confidential
- ☐ Shelf
- ☐ Expandable

Refer to Record No 0019 Date _____
In C/ 007, 004, Internal
For additional information

TABLE OF CONTENTS

ADMINISTRATIVE FINDINGS

IDENTIFICATION OF INTERESTS, VIOLATION INFORMATION, AND RIGHT OF ENTRY INFORMATION

Regulatory Reference: UCA R645-301-112; R645-301-113; R645-301-114

Analysis:

Most information relating to these regulations is in Chapter 2 of the approved mining and reclamation plan. Chapter 12 contains some duplicate information but has additional information relating specifically to this project.

Identification of Interests

The Willow Creek refuse removal site is presently controlled by Amax Coal Company, a subsidiary of Cyprus Amax Coal Company, a subsidiary of Amax Energy Inc., which is wholly owned by Cyprus Amax Minerals Company. Amax Coal Company (Amax) is the applicant and operator, and the resident agent is C. T. Corporation System. Amax will be responsible for payment of the abandoned mine reclamation fee.

The revision shows names of officers and directors of Amax Coal Company, their titles, Social Security Numbers, and the dates they assumed their offices. Chapter 2 of the existing Castle Gate plan contains an organizational chart outlining the sequence of ownership and control for parent companies. Chapter 2 also has a list of other permits issued to Amax Coal Company.

The owner of the surface to be affected by operations is Blackhawk Coal Company. Blackhawk also owns coal rights in the area, but Amax does not intend to mine coal as part of this proposal. The application includes the names and addresses of four entities that own surface land contiguous to the property and four that own mineral rights contiguous to the proposed disturbance. No area within the lands to be affected by surface operations is under a real estate contract.

Violation Information

The application says violation notices received by the applicant during the preceding three years are in Appendix 2-7. Neither the applicant nor any of its subsidiaries, affiliates, or persons controlled by or under common control with the applicant has had a federal or state mining permit suspended or revoked in the last five years, nor forfeited a mining bond or similar security deposited in lieu of bond.

Information in this section of the application is not changed with the revision.

Right of Entry Information

The application says the right of entry is conveyed by Cyprus Amax Minerals Company, then to Amax Coal Company in behalf of Cyprus Western Coal Company its subsidiary. Amax Coal

Company, also a subsidiary of Cyprus Amax Minerals Company, has the right to enter and conduct operations at the Willow Creek site.

According to Section 2.1-4, Amax Coal Co. leased or subleased surface entry and coal extraction rights for the permit area from Blackhawk Coal Co. under the "Lease Transaction Agreement" dated January 31, 1986. The last paragraph of this section gives a general legal description of the area in which the refuse removal project would occur. One section number was left out; the last portion of the description should be NE¼ of Section *1*.

Findings:

This portion of the application is complete and accurate.

UNSUITABILITY CLAIMS

Regulatory Reference: UCA R645-301-115

Analysis:

The application says, to the best of the applicant's knowledge, no portion of the area to be permitted is designated or under study for being designated unsuitable for mining. It says Amax does not intend to conduct coal mining or reclamation operations within 300 feet of any occupied dwelling.

Portions of the operation would be within 100 feet of U. S. Highway 191. A hearing was held May 11, 1995, to determine if the interests of the public and affected landowners would be protected from adverse effects of the coal mining and reclamation operation. No one in attendance at the hearing made a statement. This hearing and the results were documented in a memorandum to file by Lowell Braxton.

Cyprus Plateau Mining has obtained an encroachment permit from the Utah Department of Transportation. A copy is included in Appendix 12-1-1.

Based on the information in the application and the lack of comments received at the public hearing, the Division finds that the interests of the public and affected landowners will be protected from the adverse affects of this proposed mining and reclamation operation on public roads. The public road authority has given approval for the right of way encroachment.

Findings:

The Division finds that the interests of the public and affected landowners will be protected from the adverse affects of this proposed mining and reclamation operation on public roads.

PERMIT TERM, INSURANCE, PROOF OF PUBLICATION, FILING FEE, NOTARIZED SIGNATURE

Regulatory Reference: UCA R645-301-116; R645-301-117; R645-301-118; R645-301-123

Analysis:

The permit term would not change as a result of this revision.

The Division has on file a certificate of insurance for the Castle Gate Mine. The issuing company is the National Union Fire Insurance Company of Pittsburgh, Pennsylvania, and the policy number is GL 3197125. It includes coverage for $6,000,000 aggregate and $2,000,000 each occurrence, and the policy expires July 1, 1996.

The Division has received the proof of publication for the advertisement for this revision. No public comments concerning this revision are in the Division's files.

The application says a permit filing fee of $5.00 was submitted with the application. However, Division Directive ADM-003 says this fee is not required except for initial permit applications.

On March 13, 1995, the Division received a permit change form including a statement with the notarized signature of Lonnie Mills saying he is a responsible official of the applicant and that the information in the application is true and correct to the best of his information and belief.

Findings:

This portion of the application is complete and accurate.

ADMINISTRATIVE FINDINGS

TECHNICAL ANALYSIS

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR Sec. 783., et. al.

GENERAL

Regulatory Reference: 30 CFR Sec. 783.12; R645-301-411, -301-521, -301-721.

Analysis:

Text is used along with maps, cross sections, or plans to describe the baseline ground and surface water hydrologic resources and geologic and climatological information for the proposed permit area and adjacent areas that may be affected or impacted by the proposed refuse removal project.

Findings:

Section 12.7.2 contains descriptions, or refers to locations where the descriptions may be found, of the existing, pre-refuse removal project environmental resources within the proposed permit area and adjacent areas that may be affected or impacted by the proposed refuse removal project.

PERMIT AREA

Regulatory Requirements: 30 CFR Sec. 783.12; R645-301-521.

Analysis:

The location of the permit area is shown on Exhibit 12-5-1. The exhibit has a scale of 1" equals 500'. The locations of the Willow Creek permit boundary and the Castle Gate permit area are shown.

Findings:

The Operator has met the minimum regulatory requirements.

HISTORIC AND ARCHAEOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.12; R645-301-411.

Analysis:

The application says cultural resource information and maps identifying cultural and historical study areas are located in Chapter 5 and Appendix 12-4-1. There are no cemeteries, public parks,

historic places, or units of the National System of Trails or the Wild and Scenic Rivers System located within the permit boundary. Amax agrees to notify the Division and the Utah State Historical Society if previously unidentified cultural resources are discovered in the course of operations and to have these evaluated in terms of National Register of Historic Places eligibility criteria.

Appendix 12-4-1 contains details of a cultural resources survey performed by Sagebrush Archaeological Consultants. In the vicinity of the proposed operation, there are two groups of cultural resources sites that the application indicates may be eligible for listing in the National Register of Historic Places. One consists of three pictograph panels near a vertical sandstone wall. The other is a group of several features associated with the Castle Gate Mine and townsite. The application does not discuss how the proposed operation could affect these sites. However, the Division of State History has determined that this project will have no detrimental effects on sites listed or eligible for listing in the National Register of Historic Places.

Since Appendix 12-4-1 contains information about important cultural sites possibly eligible for listing in the National Register of Historic Places, it needs to be kept separate from the rest of the application and considered confidential. It has been kept separate from the rest of the application which says it is to be considered confidential.

Findings:

This section of the application is complete and accurate.

CLIMATOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.18; R645-301-724.

Analysis:

Information regarding the climatology of the Willow Creek site is in Chapter 11 of the currently approved MRP.

Findings:

The applicant provides climatological information by reference to the currently approved MRP.

VEGETATION RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.19; R645-301-321.

Analysis:

The application says the only major vegetation type identified in the proposed permit area is grassland/sagebrush. This occurs on steep, dry slopes and near some of the lower drainages.

Quantitative vegetation information is in Chapter 9 and is part of a 1981 summary report. This report summarizes data for the Willow Creek grass-sage reference area.

According to the summary in Appendix 9-1, vegetative cover in the Willow Creek reference area was 40%, litter and rock were 34% and bare ground was 27%. Fifty-eight percent of the vegetative cover was big sage, 35% was grasses, mostly western wheatgrass and downy brome. Seventeen species were found in the reference area. Shrub density was 7199 per acre of which sagebrush comprised 92%. Productivity was estimated at 850 to 900 pounds per acre.

Appendix 12-3-2 contains the results of vegetation surveys done for the proposed Willow Creek Mine. Three plant community types were surveyed for this study: 1) Disturbed Plant Community; 2) Reclaimed Plant Community; and 3) Riparian Plant Community.

Total vegetation cover in the disturbed plant community was 26.72%. Ground cover, including vegetation cover and litter, was 46.92%. Dominant plants included Indian ricegrass, downy brome, Salina wild rye, and rubber rabbitbrush. Relative cover by species commonly classified as weeds was 15.4%.

The Reclaimed Plant Community had 28.73% vegetation cover and 48.13% ground cover. Dominant species included pubescent wheatgrass, western wheatgrass, kochia, yellow sweet clover, prostrate kochia, rubber rabbitbrush, and fourwing Saltbush. Relative cover from plants usually classified as weeds was 19.2%.

Sampling methods used for the riparian area were different from those used for the other areas. These methods allow the percentage to be greater than 100%. Four layers of the canopy were measured separately. The total cover from these layers was 70.43%. Nearly half of this total was from coyote willow and redtop. Other important species included Fremont cottonwood, narrowleaf cottonwood, and yellow sweet clover.

The applicant proposes to use the reference area method for judging revegetation success. The information in the application is adequate for using this method. Since 1993-1994 water year precipitation was less than 90% of the long-term average, information in the application cannot be used for the baseline method of judging revegetation success.

Findings:

This section of the application is considered complete and accurate.

FISH AND WILDLIFE RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 784.21; R645-301-322.

Analysis:

Wildlife Information

The application includes mostly general information about area wildlife. Included as Appendix 12-3-1 is a copy of the Wildlife Resources publication "Fauna of Southeastern Utah and Life Requisites Regarding their Ecosystems." Appendix 12-3-3 is a copy of the fish and wildlife information section of the Willow Creek Mine permit application.

Willow Creek is not within the proposed permit area boundary, but there are 67 fish species that could be in the drainage. Willow Creek is classified as a Class IV fishery.

Five amphibian species are believed to potentially inhabit the area, but only three are considered possible inhabitants of the proposed permit area. Eleven reptile species could inhabit the proposed permit area. Three reptile species have been seen in the proposed permit area.

Forty bird species have been sighted in the proposed permit area, and 104 are considered potential inhabitants. Raptor surveys in 1994 and 1995 have located several nests in the general area. One was tended in 1995, but none were active. The application says disturbance to nesting habitat should be minimal because of the small land area associated with the project and the project's limited duration.

Fifty mammal species are possible residents of the proposed permit area of which ten have been sighted. Seventeen species of high interest to the State of Utah are known, likely, or possible in the proposed permit area.

According to the application, the proposed disturbed area contains critical elk winter range. Nearby rangelands also contain critical elk winter range in addition to high priority deer winter range. The proposed project area is used year-round by deer and elk because of the perennial flow in Willow Creek.

The species discussed in the application are those about which Wildlife Resources has expressed the greatest concern. The Division has consulted with Wildlife Resources and believes the baseline information is adequate.

Threatened or Endangered Species

In Section 12.3.2.2.2, the application says no sensitive, rare, endemic, threatened, or endangered plant, fish or wildlife species listed in Tables 12-3-1 and 12-3-2 are known to inhabit the project area. It also says a literature survey indicated no endangered or threatened plant species in adjacent areas. More detailed information is contained in Appendices 12-3- 2 and 12-3-3.

The appendices contain information about searches for rare plants species and about consultations between the Fish and Wildlife Service and the Division's Abandoned Mine Lands Reclamation (AML) program. This includes searches by a consultant for the proposed Willow Creek Mine and by biologists with AML. None of the species looked for were found within the proposed project area. Species included in the surveys or consultations were Uinta Basin hookless cactus (*Sclerocactus glaucus*), Creutzfeldt catseye (*Cryptantha creutzfeldtii*), yellow blanketflower (*Gaillardia flava*), and canyon sweetvetch (*Hedysarum occidentale* var. *canone*).

Water depletions in the Upper Colorado River drainage have the potential of adversely affecting threatened and endangered fish of this drainage basin, including the Green River. The Fish

and Wildlife Service receives one-time mitigation payments for annual depletions in excess of 100 acre feet. The application says about 2.4 acre feet will be retained on the site as part of sediment control. No information is given about other potential water uses, but the primary use would be for dust control. The operation is expected to continue for about 4.5 months. The Air Quality Approval Order requires application of 0.5 gallons of water per square yard every two hours on unpaved roads and operational areas on days when precipitation is below a certain level. Assuming there is no rain during the project, the most water that could be used for dust control on both the Willow Creek road and unpaved portions of the refuse haul road at the preparation plant is 9.6 acre feet. This makes the total potential water depletion 12.0 acre feet, well below the threshold of 100 acre feet.

The only other listed threatened or endangered species included in previous Fish and Wildlife Service correspondence as potentially occurring in the area is the bald eagle. This species is primarily a winter resident, and there are no known nests in the project area. It is unlikely this project will affect bald eagles.

Appendix 12-3-3 says Willow Creek contains potential habitat for two candidate threatened or endangered species, the roundtail chub and leatherside chub. Neither species has been recently collected or observed in Willow Creek, but the leatherside chub has been recently collected in the Price River upstream of the confluence with Willow Creek.

The Division has not received comments on the revision from the Fish and Wildlife Service despite one written and several telephone requests. They were asked to provide a list of all proposed, candidate, and listed threatened or endangered species that could occur in the area. Given the information in the application, including results of direct consultations with the Fish and Wildlife Service when AML reclaimed the area, it is unlikely there will be any adverse effects on threatened, endangered, or candidate species.

Known important habitat in the area includes critical elk and high priority deer winter range. Ben Morris of the Division of Wildlife Resources said the critical elk range is on the plateau rather than in the canyon. However, the proposed disturbed area has the components of critical deer winter range. He said the site is critical for local deer that frequent the area.

Riparian areas are also considered critical habitat. Although Amax does not plan to disturb areas near the stream and although the vegetation map does not show riparian vegetation in the area, the streambank probably had a riparian community before being disturbed by coal mining. The application says that, because of perennial flow in Willow Creek, the area is used year-round by deer, elk, and other wildlife. It therefore provides an important habitat component.

Findings:

This section of the application is complete and accurate. The Division has requested from the Fish and Wildlife Service a list of proposed, candidate, and listed threatened and endangered species that could occur in the project area but has not been provided this information. If the Fish and Wildlife Service identifies species not listed in the application that could occur in the area, Amax will need to identify these species in the application. They will also need to discuss how impacts will be avoided or mitigated.

SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.21, 817.200(c)

Analysis:

The proposed refuse removal project encompasses lands which were previously disturbed by the Blackhawk Coal Company and reclaimed by the Abandon Mine Land Program (AML). The soil survey map for the area is provided in Exhibit 12-2-1. The disturbed area lies predominantly within what was formally the Shupert-Winnetti Complex and the Travesilla-Rock Outcrop-Gerst Complex. Present and potential productivity statements for these soil map units are presented in Table 8-2 of the Willow Creek Permit Application Package. Topsoil storage and handling plans are discussed in Section 12.2.3.4. Topsoil stockpile locations are depicted on Exhibit 12-5-1.

Findings:

Information presented in the plan meets the minimum requirements of this section.

LAND-USE RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.22; R645-301-411.

Analysis:

The surface and subsurface lands in the permit area have historically been used for mining facilities and operations. The first mine in the Willow Creek drainage was opened in 1890. The application discusses several other mining operations and companies in the area.

The application is normally required to contain some details about previous mining activity, such as the coal seams mined, mining methods used, and the extent of coal removed. Although the area was used for previous mining activities, there was little or no coal mined from the actual area to be disturbed. Rather, it was used for surface activities. Also, including this information in the application serves no useful purpose since there will be no actual mining associated with this project.

The application says there is no record indicating what the land may have been used for prior to mining, but the applicant assumes it was wildlife habitat. Adjacent areas are used for grazing, wildlife habitat, recreation, watersheds, and small surface developments to support the mining industry.

The application references Exhibits 3-22, 9-1, 10-1, 12-4-1, 12-4-2, and 12-5-1 for land use information in adjacent areas. These maps show surface and coal ownership, utility corridors, the cemetery, and regional vegetation communities and wildlife habitat.

There is no record indicating what the land in the proposed permit area was used for prior to any mining although the Applicant assumes it was wildlife habitat. Major plant communities are identified in Section 12.3.2.1.1. The area is presently being used for wildlife habitat. Surrounding

areas are used for grazing, recreation, watershed, wildlife, and some small surface developments to support the mining industry.

The vegetation study in Appendix 12-3-2 has production estimates for the three vegetation types proposed to be disturbed. Production was 472 pounds per acre of air dry forage for the disturbed vegetation type, 709 pounds per acre for the reclaimed vegetation type, and 1557 pounds for the riparian area.

Findings:

This portion of the application is complete and accurate.

PRIME FARMLAND

Regulatory Reference: 30 CFR Sec. 785.16, 823; R645-301-221, -302-270.

Analysis:

Figure 8-3 of the Castle Gate mining and reclamation plan contains the results of the 1991 U.S.D.A./Soil Conservation Service Prime Farmland Investigation. The findings of the investigation revealed that prime and/or important farmland does not exist within the permit area.

Findings:

Information presented in the plan meets the minimum requirements of this section.

GEOLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 784.22; R645-301-623, -301-724.

Analysis:

No coal will be mined for this refuse removal project and there are no overlying strata. Chemical analyses for acid- and toxic-forming and alkalinity-producing materials from the material to be moved are in Appendix 12-6-2. Samples were obtained from drill holes, and the logs are in Appendix 12-6-2. With the exception of sample 94-12R, all analyte values fall within the "acceptable" range of values in Table 2 of the Division's Guidelines for the Management of Topsoil and Overburden. The boron value of sample 94-12R is 7.2 mg/Kg, 2.2 mg/Kg in excess of the "acceptable" level. A sample will be collected for boron analysis for each approximately 50,000 cubic yards of material moved or whenever significant changes in the physical characteristics of the waste are observed (p. 12-5-17 and 18). Further analyses at the time of reclamation will identify potential acid- or toxic-forming areas on the refuse pile that will require 4' of cover soil (Section 3.4-4).

The proposed sampling of underground development waste states that samples will be collected "...at a rate of approximately once every 50,000 cubic yards of material moved and when significant changes in the physical characteristics of the waste are observed. The applicant plans to take four samples in addition to the two samples taken in 1994 unless significant change in the waste's physical characteristics require more samples." Samples will be evaluated for Standard Proctor density and analyzed for acid- and toxic-forming and alkalinity-producing properties using the laboratory methods in the Division's " Guidelines for the Management of Topsoil and Overburden for Underground and Surface Mining", Table 6. (pp. 12-2-7 and 12-5-18).

Chapter 6 of the MRP is referenced for information required to make the determination whether or not the reclamation plan can be accomplished as described in Section 5.4. Chapter 6 of the MRP deals mostly with subsidence but contains one page of information on acid- and toxic-forming characteristics of the overburden; however, neither subsidence nor overburden is involved in this refuse removal project. Regional geology, including stratigraphy and structure are discussed in Chapter 6 of the approved MRP.

AMAX states that "after removal of the refuse there should be no acid- or toxic-forming materials remaining at the Willow Creek refuse removal project site." When the site is reclaimed, coal seams exposed by the refuse removal will be covered with a minimum of four feet of noncombustible and nontoxic soil, topsoil, and/or material obtained during grading of the site (p. 12-5-36).

Drill holes have found the water table lies at least 20 feet below the coal refuse material at the Willow Creek site, so removal of the refuse material will not intercept ground water. Neither availability nor quality of ground water should be affected. Removal of the refuse material should actually reduce the possibility of ground water contamination along Willow Creek. The ground water monitoring well, TH-02, has been cased to prevent acid and toxic drainage from entering ground or surface water, to minimize disturbance to the hydrologic balance, and to ensure the safety of people, fish and wildlife, livestock, and machinery. There are no other water wells in the area.

Sediment ponds and traps and diversions will be used to protect surface water quality during relocation of the refuse material and reclamation of the site. Surface water in Willow Creek will be monitored at one station above and one station below the refuse removal area. There will be no alteration of Willow Creek and the channel will maintain its current hydraulic capacity.

Appendix 12-6-2 contains the results chemical analyses performed on underground development waste drill hole samples. However, identification of these data as it relates to source and location is not clear. Identification of the sample site location, sample depth increment and solid matrix classification of the samples collected is necessary for interpretation of the information provided.

Findings:

Information presented in the plan meets the minimum requirements of this section.

The application includes geologic information in sufficient detail to assist in determining the probable hydrologic consequences of the operation upon the quality and quantity of surface and ground water in the permit and adjacent areas, including the extent to which surface and ground

water monitoring is necessary; and determining whether reclamation as required by the R645 Rules can be accomplished and whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

Analysis:

Sampling and analysis.

Analyses of samples collected in the project area have been analyzed according to the methodology in the current edition of "Standard Methods for the Examination of Water and Wastewater".

Sampling and analysis information is found in Section 12.7.2.3. Monitoring sites are shown on Exhibit 12-7-1. In section 12.7.2.3, Amax commits to sampling in accordance with the current addition of "Standard Methods for the Examination of Water and Wastewater" or the methodology outlined in 40 CFR 136 and 434.

Baseline information.

Baseline information is included in Chapter 7 and Chapter 12. Groundwater quantity and quality is found in Section 12.7.2.4.1 and Sections 7.1 and 7.3 beginning on page 12-7-3. Surface water quality and quantity information is found in Section 12.7.2.4.2 beginning on page 12-7-5. Surface water rights are mentioned on page 12-7-5. Geology information is in Chapter 12, Section 12.6 and Climatological information is in Chapter 11 of the MRP. Section 12.7.2.4.5 says that there is no supplemental baseline information, because the other information is adequate. There will be no underground mining in this project so there was no survey of renewable resource lands. Alluvial valley floors are addressed in Chapter 7, Appendix 7-3.

Drill logs are found in Appendix 12-6-1 (located after 12-6-3 in the proposal). Three of the fifteen drill holes had water. There is no water in the refuse. Figure 12-7-1 is a cross section constructed from drill hole data. This data also shows that water flowing under the refuse is moving towards Willow Creek. Water quality samples were collected from point B-27 (shown on Exhibit 12-7-1) at Cross cut No. 3. These samples were collected from March 1985 through April 1992 and are provided in Appendix 12-7-1 and Figure 12-7-2. Iron concentrations at station B-27 ranged from <0.02 mg/L to 12.70 mg/L. Variation of iron and manganese concentrations are thought to be a function of sampling error because the representative water is flowing into the mine and should not be directly influenced by mining. Amax assumes that water quality below the refuse is similar to station B-27.

Normally Willow Creek has the greatest monthly flows in April through June but peak flows can be greatest in the summer because of large localized thunderstorms. Data from Willow Creek sampling projects over the last 15 years are presented in Appendix 12-7-1 and summarized in Figures 12-7-3, 12-7-4 and 12-7-5, and Table 12-7-3. The typical water in Willow Creek is

calcium/magnesium bicarbonate. TDS concentrations average around 600-mg/L. Willow Creek is slightly alkaline with pH values ranging from 7.9 to 8.2 standard units. Iron concentrations range between 12.1 mg/L and 16.2 mg/L.

Ground-water information. A discussion of regional ground water conditions is provided in Chapter 7 of the current MRP. Other than monitoring well TH-02 no wells or springs are known to exist within the project or adjacent areas. Drill holes have revealed that the water table is at least 20 feet below the refuse material that is to be moved.

Water rights have been filed on water found underground in four mines in the area. Locations for the water rights are shown on Exhibit 12-7-2 and ownership and other information are in Table 12-7-1. Water quality and flow have been determined for only one of those points, B-27 in the old Royal mine. Appendix 12-7-1 contains the data, which includes total dissolved solids and specific conductance corrected to 25°C, pH, total iron, total manganese and approximate rates of discharge.

Surface-water information. Regional and local surface water conditions are discussed in Chapter 7 of the current MRP. The locations of surface water rights in the refuse removal area are shown on Exhibit 12-7-2. Ownership and other information are given in Table 12-7-2. Proposed UPDES discharge points in the refuse removal project or adjacent areas are shown on Exhibit 12-7-1. Appendix 12-7-1 contains information on surface-water quality and quantity that demonstrates seasonal variation. Information includes total suspended solids, total dissolved solids and specific conductance corrected to 25°C, pH, total iron, total manganese, and flow. Total alkalinity has also been determined, along with concentrations of several dissolved metals and other constituents. The USGS measured flow at a gaging station approximately 4.2 miles upstream from the site from October 1962 through September 1989.

Baseline cumulative impact area information.

A CHIA (cumulative hydrologic impacts assessment) has been done for the Castle Gate Mine and includes the refuse removal area and the refuse disposal area in Schoolhouse Canyon. No adverse impacts on surface- and ground-water systems are anticipated from the existing and proposed operations. Section 12.7.2.5 and 12.7.2.9 say that a Cumulative Hydrologic Impact Assessment has been prepared for the Willow Creek area.

Modeling.

Modeling techniques, interpolation, or statistical techniques have not been used in the proposed permit revision for the refuse removal project. Section 12.7.2.6 says that the existence of data for ground water and surface water in the area made it so modeling was not necessary.

Probable hydrologic consequences determination.

The Probable hydrologic consequences determination is made in Section 12.7.2.8. Determinations are made that say no damage will be caused to the water quality and quantity. Potential impacts to surface and ground water are identified on Page 12-7-9 as: 1) contamination from acid- and toxic-forming materials, 2) increased sediment yield, 3) increased total dissolved solids, 4) flooding or streamflow alteration, 5) impacts to surface water availability, 6) hydrocarbon

contamination, and 7) contamination of surface water from spillage of refuse during hauling operations.

The application contains a determination of the probable hydrologic consequences (PHC) of the proposed operation based upon the quality and quantity of surface and ground water under seasonal flow conditions. It includes the proposed refuse removal project area and adjacent areas. The existing MRP for the Castle Gate mine area and adjacent areas does not contain a clearly identified PHC but the information and determinations required for a PHC are in the MRP.

The determination of the probable hydrologic consequences (PHC) does not indicate adverse impacts on or off the proposed permit area and supplemental information has not been requested by the Division. The PHC determination is based on baseline hydrologic, geologic, and other information collected for the permit application. The PHC determination includes findings on: whether adverse impacts may occur to the hydrologic balance; whether acid-forming or toxic-forming materials are present that could result in the contamination of surface or ground water supplies; and, what impact the proposed operation will have on sediment yield from the disturbed area; acidity, total suspended and dissolved solids; flooding or streamflow alteration; ground water and surface water availability; and potential hydrocarbon contamination.

Data presented in Section 12.6 show that no acid-forming materials exist within the refuse. However, slight boron toxicity was found. The material will be move to a permitted refuse disposal area at the Castle Gate Refuse Removal Facility which will prevent impact to the hydrologic balance due to this toxicity. Increased total dissolved solids (TDS) will not be a problem because no groundwater will be encountered during this project.

Surface waters will be protected from increased sediment yield by use of sediment-control measures that are or will be installed on the disturbed area. Sediment-control measures will include sediment ponds and sediment traps and will be regularly inspected and maintained. Alternate sediment control measures will be used to protected against increased sediment yield during reclamation of the site. The sediment control devices will also protect against flooding.

The groundwater table lies at least 20 feet below the coal refuse that will be removed during this project. This distance will allow removal or the refuse without encountering the groundwater; therefore, the availability of groundwater will not be effected. Surface water will not be significantly reduced because of the relatively small contribution that the disturbed area provided to the Willow Creek watershed.

Fuels, oils and greases will be used in this project but should not impact the water quality because of the short time that the project will be active and because the economic value of these substances dictate that spills be prevented. Refuse spills will be minimized by not overfilling the trucks used to transport the materials. Accidental spillage of significant quantities may wash into the creek but are not believe to have significant potential to impact the hydrologic balance because of the short termed nature of the project and the minimal amount of coal refuse that would actually reach Willow Creek.

Ground-water monitoring plan.

Ground water monitoring as described in Section 7.5, Chapter 7 of the MRP will continue. Additional ground-water monitoring for the refuse removal project will consist of monthly water level measurements in well TH-02, which is outside of and upgradient of the area to be excavated. Monitoring results will be submitted to the Division at 3 month intervals or at the end of the refuse removal project: the time interval or duration of the project is estimated to be 4.5 months. If the site is reclaimed rather than used for construction of a surface entry, monitoring will continue on a quarterly basis through the post-reclamation period.

The refuse removal project will disturb a small area along a narrow strip adjacent to Willow Creek. The water table is at least 20 feet below the bottom of the refuse and it is unlikely that ground water will be impacted by the refuse removal. The PHC determination and other available information indicate the water-bearing strata in the proposed refuse removal project area and adjacent areas do not serve as an aquifer that significantly ensures the hydrologic balance within the cumulative impact area. Because of the small and confined area to be affected by the project, the short time involved, and the low probability of impacts to the ground water, installation of additional ground water monitoring wells does not appear practical or necessary.

Surface-water monitoring plan.

Surface water monitoring as described in Section 7.5, Chapter 7 of the current MRP will continue for the Castle Gate permit area. Willow Creek is monitored upstream and downstream of the project site, and during operations these two stations will be monitored monthly for pH, total suspended solids, total dissolved solids, total iron, and total manganese. Monitoring results will be submitted to the Division every three months or at the end of the refuse removal project: the time interval or duration of the project is estimated to be 4.5 months. If the site is reclaimed rather than used for construction of a surface entry, monitoring will continue on a quarterly basis through the post-reclamation period.

There are seven UPDES discharge points identified on Exhibit 12-7-1. Three of them, 017, 018, 019 are currently permitted. A modification of the UPDES permit is being requested from Utah Division of Water Quality for the four additional discharge points. Three of these discharge points are downstream of surface water monitoring point B-3, so all waters into which discharge may occur are not monitored, but the requirements of R645-301-731.222 are met by the UPDES monitoring of the three point-source discharges. In the event of a discharge from the sediment pond or any of the sediment traps, water quality samples will be collected in accordance with the UPDES permit requirements. Appendix 12-7-3 presents a copy of the existing UPDES permit that was effective July 1, 1993 and expires April 30, 1998. To date there have been no discharges from the sediment traps, so there are no analysis results.

Alternative water source information.

The PHC, Section 12.7.2.8, determination indicates that the proposed refuse removal project will not result in contamination, diminution, or interruption of an underground or surface source of water that is used for domestic, agricultural, industrial, or other legitimate purpose. Therefore, information on water availability and alternative water sources is not provided in the proposed permit revision.

Findings:

The name, location, and description of streams, existing wells, springs, and other surface and ground water resources are given. Ownership and location for rights to surface and ground water are given. The locations of UPDES discharge points are identified. The proposed permit revision contains sufficient information on surface and ground water quality and quantity to demonstrate seasonal variation and usage. Both surface and ground water quality descriptions include baseline information on total suspended solids (for surface water only), total dissolved solids or specific conductance corrected to 25 degrees C, pH, total iron, and total manganese and additional water quality parameters. Ground water quantity descriptions include water levels for the monitoring well near the proposed refuse removal site and flow rates at underground monitoring site in the old Royal Mine. Alkalinity has been determined for most water samples. The potential for acid drainage from the proposed mining operation is minimal so acidity has not been measured.

Amax has adequate hydrocarbon and coal refuse spill containment and cleanup plans. These plans are considered part of the PHC.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

Analysis:

Included in the operational plan are certified map showing the following features:

Permit Boundaries
Soils
Elk and Deer Range and Fish Ladders
Plant Communities and Reference Areas
Surface Ownership
Coal Ownership
Facilities Area
Reclamation Topography
Geology
Water Monitoring Stations
Water Rights
Operational Hydrology Plan
Reclamation Hydrology

Coal Resource and Geologic Information Maps

Surface geology is shown on Exhibit 12-6-1, a certified map. Elevations and locations of test borings are shown on certified Exhibit 6-2 of the currently approved MRP. Exhibit 12-6-1 shows location of the seven boreholes and gives elevations to within 40 feet (CI): exact elevations are given on the drill logs in Appendix 12-6-1. The coal crop line is shown on Exhibit 6-2 of the currently approved plan. No coal is to be mined during the proposed refuse removal project.

Mine Workings Maps

Location and extent of known workings of active, inactive, or abandoned underground mines beneath Willow Creek are shown on Figure 6-12 and mined out areas are indicated on certified Exhibits 6-3, 6-4, and 6-7 through 6-11 of the currently approved MRP. Mine openings to the surface within the proposed permit and adjacent areas are shown on certified Exhibit 12-7-2.

Monitoring Sampling Location Maps

Elevations and locations of monitoring stations used to gather data on water quality and quantity are on certified Exhibit 12-7-1.

Permit Area Boundary Maps

The boundaries of land within the proposed permit area upon which the applicant has the legal right to enter and begin underground mining activities are shown on certified map Exhibit 12-4-1.

Surface and Subsurface Ownership Maps

Ownership of surface land and subsurface ownership of coal within the proposed permit area are shown on certified map Exhibits 12-4-1 and 12-4-2.

Subsurface Water Resource Maps

Drill Hole Cross Section, Figure 12-7-1 indicates the location and extent of subsurface water within the proposed permit or adjacent areas. Areal and vertical distribution of aquifers and seasonal differences of head have not been portrayed for this proposed revision, but there will be no underground coal mining activities directly involved in the refuse removal project.

Surface Water Resource Maps

Locations of surface water bodies within the proposed permit and adjacent areas are shown on certified map Exhibit 12-7-1. Locations at which surface waters will receive discharges from the proposed refuse removal project are also shown. There is a water right for stock watering on Willow Creek but there are no water supply intakes for current users of surface waters flowing into, out of, or within the proposed refuse removal project area or adjacent areas.

Vegetation Reference Area Maps

The Willow Creek grass-sage vegetation reference area is shown on Exhibit 12-3-2. Amax does not propose fish or wildlife monitoring stations or facilities for protecting and enhancing fish and wildlife and related environmental values. Exhibit 12-3-1 shows elk and deer ranges and the location of the fish ladder in Willow Creek. Maps 6 and 8 are from the Willow Creek Mine permit application and show fish and macroinvertebrate survey locations and vegetation of the proposed mine's facilities area. Exhibit 9-6 shows abandoned mine vegetation reference areas.

Well Maps

No gas or oil wells are located within the proposed refuse removal project area or within the currently approved Castle Gate permit area or adjacent areas.

Findings:

The Operator has supplied the Division with certified copies of the above mentioned maps. The adequacy of the maps will be discussed in the sections to which they pertain.

Cross Sections, maps, and plans show elevations and locations of test borings and core samplings. No coal is to be mined in the refuse removal project but coal crop lines and information on the nature, depth, and thickness of the coal seams and overburden and underburden are shown in the currently approved MRP. There are no gas and oil wells within the proposed permit area or adjacent area.

The location and extent of subsurface water within the proposed refuse removal project area is portrayed on a cross section. Maps show the location of surface water bodies, elevations and locations of monitoring stations used to gather baseline data on water quality and quantity, and location of the only known water well in the permit area and adjacent area.

OPERATION PLAN

MINING OPERATIONS AND FACILITIES

Regulatory Reference: 30 CFR Sec. 784.2, 784.11; R645-301-231, -301-526, -301-528.

The project will involve the removal of underground development waste from the area noted on Exhibit 12-5-1 to the refuse disposal facility. No mining of coal will occur in conjunction with the project.

Topsoil (approximately 15,000 cubic-yards) that was previously placed on the underground development waste will be stripped from the pile before removal of the waste. The stripped topsoil will be placed on the topsoil stockpile near the west end of the site.

It is currently anticipated that the underground development waste will be excavated and loaded at the site predominantly with front-end loaders. If required backhoes and dozers with rippers will also be used to facilitate more efficient excavation and loading of the waste. The waste will be hauled to the refuse disposal facility.

Approximately 450,000 cubic yards of underground development waste will be removed from the site. Removal and transportation of the waste material is anticipated to require a duration of about four and a half months.

Because the project involves the excavation and removal of underground development waste over 4.5 months, many surface facilities normally associated with a mining operation will not be located at the site. Only the existing office trailer will be used during the project as a construction office.

Water pollution control facilities associated with the project will consist of sediment ponds and traps. All water pollution control facilities will be retained following project activities for use in either future mining operations or reclamation operations at the site.

Non-coal mine waste generated during the project will be disposed of by the contractor at a State-approved solid-waste disposal area. Non-coal mine waste will not be disposed of at the refuse disposal facility.

Findings:

The Operator has met the minimum regulatory requirements for describing the operational plan.

EXISTING STRUCTURES:

Regulatory Reference: 30 CFR Sec. 784.12; R645-301-526.

Analysis:

An existing office trailer on a concrete pad at the site will be used as a project office. The site has a telephone and other utility poles, and a substation, these are the property of the corresponding utility companies or the surface owner, Blackhawk Coal Company. The trailer is the only existing structure which belongs to the applicant and will be removed during final reclamation.

Findings:

The Operator has met the minimum regulatory requirements for describing the existing structures.

PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES

3

Regulatory Reference: 30 CFR Sec. 784.17; R645-301-411.

Analysis:

The State Historic Preservation Office has evaluated the location of proposed disturbances in comparison with cultural sites in the area. They have determined the proposed project will have no adverse effects.

Findings:

The Division of State History has found that this project will have no adverse effects on sites listed in or eligible for listing in the National Register of Historic Places.

RELOCATION OR USE OF PUBLIC ROADS

Regulatory Reference: 30 CFR Sec. 784.18; R645-301-521, -301-526.

Analysis:

Operations associated with the project will be conducted within 100 feet of the right-of-way and along that portion of Utah Highway 191 where the waste materials from the site are hauled in route to the refuse disposal facility. Therefore, Amax Coal Company is seeking approval from the Division under R645-103-234.

The Operator plans to use public roads to transport the material to the refuse disposal site. The Division does not have any specific regulations for the use of public roads for transporting coal development waste. All UDOT regulations would apply.

Findings:

The Operator has met the minimum regulatory requirements.

AIR POLLUTION CONTROL PLAN

Regulatory Reference: 30 CFR Sec. 784.26, 817.95; R645-301-244.

Analysis:

Project operations will be conducted in compliance with the requirements of the Clean Air Act and Utah Air Quality regulations. During operations, fugitive dust emissions will be caused by loading, transportation, and redistribution of topsoil and by wind erosion of exposed areas. There will be fugitive dust emissions during reclamation associated with moving topsoil and spoil and during grading and mulching. Emission controls will be limited to watering roads as required for safe and efficient work conditions.

Appendix 12-4-2 of the application contains a July 11, 1995, letter from the Division of Air Quality with a determination that he project does not need an Air Quality Approval Order. However, it does say the operations will need to be conducted in compliance with R307-1-4.5.2 of the Utah Air Conservation Rules which requires spraying of water, chemical stabilization, or other approved techniques for control of fugitive dust emissions.

Findings:

This section of the application is complete and accurate.

COAL RECOVERY

Regulatory Reference: 30 CFR Sec. 817.59; R645-301-522.

Analysis:

No coal will be removed from the site as part of this permit.

Findings:

The Operator has met the minimum regulatory requirements.

SUBSIDENCE CONTROL PLAN

Regulatory Reference: 30 CFR Sec. 784.20, 817.121, 817.122; R645-301-521, -301-525, -301-724.

Analysis:

Subsidence control plan.

There will be no subsurface disturbance associated with this project; therefore, this regulation does not apply.

Performance standards for subsidence control.

No subsidence will occur within the proposed refuse removal project area. No material damage or diminution of reasonably foreseeable use from subsidence can occur. Renewable resource lands will not be impacted by subsidence. The Division agrees with this conclusion and no further information is needed in the application under this section.

Findings:

No subsidence will occur within the proposed refuse removal project area. No material damage or diminution of reasonably foreseeable use from subsidence can occur. Renewable resource lands will not be impacted by subsidence. The Division agrees with this conclusion and no further information is needed in the application under this section.

SLIDES AND OTHER DAMAGE

Regulatory Reference: 30 CFR Sec. 817.99; R645-301-515.

Analysis:

If a slide occurs within the project area that may have potential adverse effect on the public, property, health, safety, or the environment, Amax Coal Company will notify the Division by the fastest available means following discovery of the slide and will comply with any remedial measures required by the Division.

Findings:

The Operator has met the minimum regulatory requirements.

FISH AND WILDLIFE PROTECTION

Regulatory Reference: 30 CFR Sec. 784.21, 817.97; R645-301-322, -301-333, -301-342, -301-358.

Analysis:

Potentially adverse impacts to wildlife and associated environmental values will be avoided or minimized through implementing mitigation measures. Personnel will be restricted to site facilities and strongly discouraged from venturing outside the permit boundary. Access roads will be blocked or locked during non-operational periods. Operations are scheduled to prevent any major disturbances during birthing and early development of wildlife species.

Drivers will be instructed on the danger of animals on the road during dusk and night hours and the need to reduce speed to avoid collisions with animals. Employees will be educated about the value of wildlife resources associated with the permit area.

Existing power lines were surveyed by the Fish and Wildlife Service in 1981 and were found to be either properly constructed or located in a way that they do not pose a threat to perching raptors. Any new power lines will comply with the guidelines of REA Bulletin 61-10.

Without prior approval, construction activities will not be conducted during crucial periods to raptors if their nests are within sight or one-half mile of the operation. Activities within the permit area will be curtailed or ended by December 1.

Although Wildlife Resources personnel say the precise project area does not contain critical elk winter range, it is critical winter range for local deer. Any activity after December 1 would need to be at times of the day when big game animals are not present, such as daylight hours rather than morning or evening. This would need to be coordinated with Wildlife Resources.

Section 12.3.5.8 contains commitments concerning protection of fish, wildlife, and related environmental values. These are mainly commitments to the performance standards. Wildlife in the area will likely have to acclimatize to planned activities. However, the applicant will take measures to ensure safety and ease of movement through the permit area. If fences are built, they will be constructed according to Wildlife Resources' specifications. No hazardous concentrations of toxic materials are expected in the ponds, but ponds will be fenced if they do contain these materials. No new power lines are planned for this project.

Wildlife habitat impacts will be mitigated using methods agreed upon by the applicant and Wildlife Resources. A final mitigation plan will be submitted to the Division before the project is completed.

The applicant has not had time to finalize habitat enhancement plans, but this commitment satisfies regulatory requirements. The regulations require the applicant to use the best technology currently available to enhance wildlife habitat for both reclamation and operational phases. Habitat enhancement opportunities are available both near the site and off-site, such as at the Gordon Creek Wildlife Management Unit. Because the area contains critical deer winter range, Wildlife Resources requests mitigation in the form of habitat enhancement at the rate of about one or two acres enhanced for every acre disturbed for the operational portion of the project. Amax could consider other

enhancement opportunities. This mitigation will serve for enhancement under the proposed Willow Creek Mine as well as the current project.

If the Fish and Wildlife Service identifies any species of particular concern that have not yet been addressed, and if it is determined that this operation could adversely affect them, Amax will need to propose protection plans for these species.

Findings:

This section of the application is complete and accurate.

Additional protection measures could be necessary if the Fish and Wildlife Service identifies any species of particular concern and if it is determined that this operation could adversely affect them.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-232, -301-233, -301-234, -301-242, -301-243.

Analysis:

The applicant plans to utilize existing soil resources to accomplish reclamation at the site. The application states, "Prior to removal of the refuse against the highwall, where practical all topsoil (emplaced by AML) will be removed and stockpiled. Soils from the previously disturbed project surface will be salvaged in two horizons where separate horizons exist, and salvaged to include the majority of the root mass and segregated." The "topsoil" overlying the underground development waste is composed of regolith which was excavated from an area immediately adjacent to the current waste disposal area. This material is considered to be suitable as substitute topsoil since this soil has produced and supported vegetation for the past 5 years. The "topsoil" was placed on top of the coal waste in 1988. There has not be ample time for visually distinguishable soil horizonation to occur so it will be salvaged as one layer.

The Utah AML staff indicates that approximately 15,000 cubic yards of soil material overlies the underground development waste. This equates to approximately 2-3 feet over the underground development waste. Immediately below the waste disposal area, adjacent to the creek the AML ripped the in place regolith and seeded. This procedure was also followed in the vicinity of the proposed topsoil stockpile.

Physical and chemical analysis of the soil material will be performed during collection operations to determine fertilizer requirements. Additional soil samples will be taken from the highwall refuse to be evaluated for acid/toxic forming and alkalinity producing properties which may require special handling.

Findings:

Information presented in the plan meets the requirements of this section.

INTERIM STABILIZATION

Regulatory Reference: R645-301-331

Analysis:

No vegetative disturbance is anticipated beyond the permit and disturbed area boundaries. The applicant will attempt to minimize any disturbance within the permit area during project operation. Mitigation will include dust control. Water quality will be protected by various sediment control measures.

In Section 12.3.5.2, the applications says that, when necessary, small areas will be temporarily vegetated in order to protect soil and hydrologic resources. In areas requiring interim stabilization during operation, the interim seed mix shown in Table 12-3-3 will be used. This mix consists of 100 pounds per acre of annual grain (oats, spring wheat, or barley). These grains grow very quickly and would provide erosion and sediment control for the winter and spring.

Findings:

This section of the application is complete and accurate.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 784.24, 817.150, 817.151; R645-301-521, -301-527, -301-534, -301-732.

Analysis:

Roads to be used within the Willow Creek site area are classified as ancillary roads. This classification is because the waste material associated with the project is neither coal nor spoil. Furthermore, the project will have a duration of less than six months and the project roads in the Willow Creek area will not be retained as part of an approved post-mining land use.

Within the Willow Creek site area, the road used to access the underground development waste and to haul the waste from the site will have a dirt surface and a 30-foot finished width. This dirt road will be upgraded and slightly realigned from an existing dirt road within the project area. The road will be generally at grade or will slope into the hillside, with an undisturbed drainage ditch being present where the road meets the toe of the hill.

The road within the site crosses Willow Creek at an existing culvert installed in a previous project. This culvert is approximately 10 feet in diameter, and consists of smooth steel with a concrete headwall. Steel I-beams have been placed in the interior of the culvert to provide additional strength.

Findings:

The Operator has met the minimum regulatory requirements.

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

Analysis:

Disposal of noncoal waste.

Noncoal waste generated during the refuse removal project will be stored in receptacles provided by a licensed sanitation company and disposed at a State approved solid waste disposal area. Noncoal mine waste will not be disposed at the refuse disposal facility.

Coal mine waste.

The refuse to be removed from the project area includes underground development waste and other coal mine wastes that were transported to the site from several different areas by the Division's AML program. All refuse excavated during this project will be placed in the Castle Gate refuse disposal facility in Schoolhouse Canyon.

Underground development waste associated with the project will be excavated from the site and hauled to the refuse disposal facility. At the refuse disposal site, the waste will be dumped from the trucks and spread using dozers, graders or other suitable equipment.

Refuse piles.

The refuse removal project will produce no refuse piles in the refuse removal project area.

A detailed description of the Castle Gate refuse disposal facility is found in Section 3.4 of the currently approved MRP. Placement will be in a controlled manner to minimize the effects of the leachate and surface water runoff on surface and ground water quality and quantity. No underdrains or rock core chimney drains were required. There are no springs or seeps within the fill area that require special treatment. All surface precipitation falling on the refuse removal facility is channelled to the toe of the facility for treatment in a sedimentation pond. All surface drainage from areas above the facility is diverted around the facility by diversion ditches.

The waste will be spread in lifts that do not exceed 2 feet in thickness and will be compacted to approximately 90 percent of Standard Proctor density. Based on previous data collected at the refuse disposal facility, it is assumed that the underground development waste at the site will have a Standard Proctor density of about 105 to 110 pounds per cubic foot. Compaction of the underground development waste will be verified in the field using a nuclear density gauge.

During placement, the waste material will be crowned and sloped to direct drainage to the channels at the backs and sides of the fill. The slope on the top of the fill will be at least 1 percent but not exceed 3 percent. The grade of the fill face will not exceed 2H:1V. At each increment where the placement of the waste material measures more than 50 feet vertically, a 10- to 15-foot terrace will be constructed.

Impounding structures.

No impounding structures associated with the refuse removal project will be constructed of coal mine waste or used to impound coal mine waste.

Burning and burned waste utilization.

There are no open burning coal mine waste fires in the refuse removal project area. Should a fire occur, a front end loader or other heavy equipment will be used to excavate the hot spot and will spread the material to cool. Water will also be used when necessary and appropriate to extinguish fires. The local fire department will be contacted when necessary.

Return of coal processing waste to abandoned underground workings.

No coal processing waste will be generated and none will be returned to abandoned underground workings.

Excess spoil.

No excess spoil will be generated.

Findings:

The refuse to be moved will be placed in a controlled manner on the Castle Gate refuse disposal facility in Schoolhouse Canyon. It will be done so as to minimize adverse effects of leachate and surface water runoff on surface and ground water quality and quantity. A technical analysis of the refuse disposal facility was done for the Castle Gate Mine permit.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

Water monitoring.

The groundwater and surface water monitoring plans for the Willow Creek Project are outlined in Chapter 12, Section 12.7.3.1.2 and in Chapter 7, Section 7.5. Information in Chapter 7 is regarding the current sampling program. In addition Amax proposes to sample one well in the Willow Creek area and sample Willow Creek above and below the disturbed site. Surface water parameters that will be sampled are total suspended solids, total dissolved solids, total iron, total manganese, and pH. Groundwater levels will be monitored but no quality samples will be taken.

Amax will monitor both surface and groundwater in accordance with their currently approved plan and Chapter 7 of the Castle Gate MRP.

Ground-water monitoring. Ground water monitoring as described in Section 7.5, Chapter 7 of the MRP will continue. Additional ground-water monitoring for the refuse removal project will consist of monthly water level measurements in well TH-02, which is outside of and upgradient of the area to be excavated. Monitoring results will be submitted to the Division at 3 month intervals or at the end of the refuse removal project: the time interval or duration of the project is estimated to be 4.5 months. If the site is reclaimed rather than used for construction of a surface entry, monitoring will continue on a quarterly basis through the post-reclamation period.

The refuse removal project will disturb a small area along a narrow strip adjacent to Willow Creek. The water table is at least 20 feet below the bottom of the refuse and it is unlikely that ground water will be impacted by the refuse removal. The PHC determination and other available information indicate the water-bearing strata in the proposed refuse removal project area and adjacent areas do not serve as an aquifer that significantly ensures the hydrologic balance within the cumulative impact area. Because of the small and confined area to be affected by the project, the short time involved, and the low probability of impacts to the ground water, installation of additional ground water monitoring wells does not appear practical or necessary.

Surface-water monitoring. Surface water monitoring as described in Section 7.5, Chapter 7 of the current MRP will continue for the Castle Gate permit area. Willow Creek is monitored upstream and downstream of the project site, and during operations these two stations will be monitored monthly for pH, total suspended solids, total dissolved solids, total iron, and total manganese. Monitoring results will be submitted to the Division every three months or at the end of the refuse removal project: the time interval or duration of the project is estimated to be 4.5 months. If the site is reclaimed rather than used for construction of a surface entry, monitoring will continue on a quarterly basis through the post-reclamation period.

There are seven UPDES discharge points identified on Exhibit 12-7-1. Three of them, 017, 018, 019 are currently permitted. A modification of the UPDES permit is being requested from Utah Division of Water Quality for the four additional discharge points. Three of these discharge points are downstream of surface water monitoring point B-3, so all waters into which discharge may occur are not monitored, but the requirements of R645-301-731.222 are met by the UPDES monitoring of the three point-source discharges. In the event of a discharge from the sediment pond or any of the sediment traps, water quality samples will be collected in accordance with the UPDES permit requirements. Appendix 12-7-3 presents a copy of the existing UPDES permit that was effective July 1, 1993 and expires April 30, 1998. To date there have been no discharges from the sediment traps, so there are no analysis results.

Acid and toxic-forming materials.

No coal will be mined for this refuse removal project and there are no overlying strata. Chemical analyses for acid- and toxic-forming and alkalinity-producing materials from the material to be moved are in Appendix 12-6-2. Samples were obtained from drill holes, and the logs are in Appendix 12-6-2. With the exception of sample 94-12R, all analyte values fall within the "acceptable" range of values in Table 2 of the Division's Guidelines for the Management of Topsoil and Overburden. The boron value of sample 94-12R is 7.2 mg/Kg, 2.2 mg/Kg in excess of the

"acceptable" level. A sample will be collected for boron analysis for each approximately 50,000 cubic yards of material moved or whenever significant changes in the physical characteristics of the waste are observed (p. 12-5-7). Further analyses at the time of reclamation will identify potential acid- or toxic-forming areas on the refuse pile that will require 4' of cover soil (Section 3.4-4).

Transfer of wells.

When no longer needed for monitoring or other use approved by the Division, and unless approved for transfer as a water supply well, on-site monitoring well TH-02 will be capped, sealed, backfilled, or otherwise properly managed as required by the Division (p. 12-7-35).

According to Section 12.7.3.1.4, no existing well ownerships will be transferred. Before final bond release the monitoring well on the site will be properly sealed in accordance with R645-301-631, R645-301-738, and R645-301-765.

Gravity Discharges into an underground mine.

No discharges will occur from or into underground mine workings in conjunction with the refuse removal project (p. 12-7-16).

Water quality standards and effluent limitations.

Discharges of water from disturbed areas associated with the refuse removal project will be in compliance with all Utah and Federal water quality laws and regulations and with effluent limitations for coal mining as contained in 40 CFR Part 434 (p. 12-7-31). Section 12.7.5.1 says that all discharged water from the disturbed area will meet applicable water-quality standards and effluent limitations.

Diversions.

Diversion design criteria is outlined in Section 12.7.4.2.3 of the proposal. Diversion designs are located in Appendix 12-7-2, and shown on Exhibits 12-5-1 and 12-7-3. Table 12-7-5 is a summary of diversion criteria. Diversions are designed for the 10-year, 6-hour storm event. Only miscellaneous flow will be diverted.

Amax Coal will be constructing or upgrading a crossing of Willow Creek. The stream crossing upgrade calculations are found in Appendix 12-5-1. In Section 12.7.3.2.4, page 12-7-20 the plan says that the road drainage culvert has a diameter of 10 feet and can convey approximately 600 cfs. The plan does not have any information on design peak flows for Willow Creek where it flows through the culvert.

Stream buffer zones.

Stream buffer zone information is provided in Section 12.7.3.1.6. Topsoil and access facilities will be located and some maintenance will occur within 100-feet of Willow Creek. The activities should not cause or contribute to Utah and Federal water standard and should not adversely effect water quality and quantity. No permanent stream channel diversion are proposed as part of this project.

In Section 12.7.3.1.6 Amax says that the stream buffer zones will be protected from hydrologic degradation by operational drainage structures described in Section 12.7.4. This section includes sediment control measures for the area. All drainage will be treated by sediment pond or sediment trap prior to leaving the disturbed area.

Sediment control measures.

Sediment control measures are discussed in Sections 12.7.3.2 through 12.7.3.2.2 and designs for sediment control measures are discussed in Sections 12.7.4.2.1 through 12.7.4.2.3. One sediment pond, sized below the MSHA requirements, and six sediment traps are proposed. The pond is shown on Exhibit 12-5-1 and designs are in Appendix 12-7-2. It will contain the 10-year, 24-hour storm event and will have a spillway that will pass the 25-year, 6-hour event. Some silt fence will be used to complete the sediment control plan.

Five of the six sediment traps are currently existing, though two will require modification. Table 12-7-4 is a summary of the sediment traps at the Willow Creek facility. The outflow from each trap will be nonerosive.

Siltation structures. One sediment pond and six sediment traps will be constructed as part of this project.

Sedimentation ponds. One sediment pond will be constructed as part of this project. The sediment pond is shown on Exhibit 12-5-1 and designs are in Appendix 12-7-2. It will contain the 10-year, 24-hour storm event and will have a spillway that will pass the 25-year, 6-hour event. The sediment traps are designed to contain the 10-year, 24-hour storm event and safely pass the 25-year, 6-hour event and are regulatorily classified as ponds. The sediment ponds will be incised.

Other treatment facilities. No other treatment facilities are proposed.

Exemptions for siltation structures. No exempt areas are proposed.

Discharge structures. The sediment pond is proposed to have a open spillway that will pass the 25-year, 6-hour event. The designs for the spillway are included in Appendix 12-7-2.

Impoundments. The Willow Creek site sediment control plan will consist of one sediment pond and six sediment traps. These are designed and the designs are discussed in Section 12.7.3.2.2. All maps and plans are certified by the registered professional engineer. All impoundments will be inspected quarterly as provided in Section 12.5.1.4.3.

Casing and sealing of wells.

Section 12.7.4.8 covers casing and sealing of wells. The one monitoring well at the Willow Creek site has been case to prevent acid and toxic drainage from entering the ground water. The ground water monitoring well, TH-02, has been cased to prevent acid and toxic drainage from entering ground or surface water, to minimize disturbance to the hydrologic balance, and to ensure the safety of people, fish and wildlife, livestock, and machinery.

Findings:

Amax has adequately shown a plan that would treat sediment laden and contaminated water prior to entering the flow of Willow Creek. This treatment system will prevent operations from degrading or damaging the hydrologic balance. The operations within the stream buffer zone will not cause degradation or damage to the hydrologic balance.

The four sediment traps and one sediment pond have been designed as part of the water quality protection plan. The traps and sediment pond have been adequately designed to treat the 10-year, 24-hour storm events. All sediment traps and the sediment pond meet the design requirements of R645-301-742.220 and following regarding sedimentation ponds.

Amax Coal has included structural designs for an upgraded crossing of Willow Creek. The culvert has existed prior to planning of this project. The plan shows that the culvert can convey approximately 600-cfs, which is much greater than the 2-year, 6-hour design storm event. This design size in nearly large enough to convey the historical maximum flow for the record at the U.S. Geological Survey Willow Creek at Castle Gate site. Because this project is short term and the culvert has existed prior to this project the culvert is adequate even without specific information about the size of the 10-year, 6-hour storm runoff.

Each one of the ponds is fully incised; therefore, Form 69 does not need to be filed with the Division of Water Rights as per the letter dated June 22, 1995 from Mark Page of that division. Amax has procured the appropriate water rights for this project.

SUPPORT FACILITIES AND UTILITY INSTALLATIONS

Regulatory Reference: 30 CFR Sec. 584.30, 817.180, 817.181; R645-301-526.

Analysis:

The Operator did not address the support facilities and utility installations. Because this project involves only the removal of mine development waste support facilities and utility installations will be limited. To avoid confusion the Operator should address this issue.

Support facilities associated with the project will be operated in accordance with the permit issued. Support facilities will be located, maintained, and used in a manner that:

1. Prevents or controls erosion and siltation, water pollution, and damage to public or private property;

2. To the extent possible, using the best technology currently available, minimizes damage to fish, wildlife, and related environmental values, and;

3. Minimizes additional contributions of suspended solids to streamflow or runoff outside the permit area.

If not needed for future mining activities, support facilities will be removed following the project.

All activities in conjunction with the project will be conducted in a manner that minimizes damage, destruction, or dispersion of services provided by electric lines, telephone transmission stations, water lines, and sewer lines that pass over, under, or through the project area. All utility installations will be retained following project activities for use in future mining and reclamation operations at the site.

Since the Operator cannot guarantee that future mining will occur on site, all utilities must be removed unless they are needed for the postmining land use.

Findings:

The Operator has meet the minimum regulatory requirements for support facilities and utility installations.

SIGNS AND MARKERS

Regulatory Reference: 30 CFR Sec. 817.11; R645-301-521.

Analysis:

Mine and permit identification signs associated with the refuse disposal facility have been placed on the road leading to the facility. Each identification sign contains the following information:

Mine name
Company name
Permanent program permit number as obtained for the Division
MSHA identification number
EPA permit number
Federal coal lease numbers pertinent to the operation

These signs will be retained and maintained until after the release of all bonds for the permit area.

A temporary sign will be placed at the location shown on Exhibit 12-5-1 identifying the project. This sign will contain the information noted above.

Perimeter markers will be installed in a location that can be seen from the ground connectively from another marker.

Stream buffer zone markers will be placed next to Willow Creek in the area where excavation activities will occur. Each buffer zone marker will have dimensions of about 12 inches by 18 inches and will be labeled "Stream Buffer Zone - No Disturbing Beyond This Point".

Topsoil markers will be placed on all topsoil stockpiles. These associated with the project. These markers will be labeled "Topsoil Storage Area".

Findings:

The Operator has met the minimum regulatory requirements.

USE OF EXPLOSIVES

Regulatory Reference: 30 CFR Sec. 817.61, 817.62, 817.64, 817.66, 817.67, 817.68; R645-301-524.

Analysis:

The Operator does not anticipate the use of explosive at this site.

Findings:

Since the use of explosive is not anticipated, the Operator does not have to do a pre-blast survey or submit a blasting plan. In the event the explosives are required the Operator shall submit a blasting plan prior to blasting.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.239 R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

Analysis:

Affected area maps.

Monitoring of subsidence from the Castle Gate Mine operations is discussed in Sections 6.2 and 6.3 of Chapter 6 of the currently approved MRP. No mining is presently planned for the refuse removal project site, so no additional subsidence monitoring plan has been developed.

The boundaries of all areas proposed to be affected over the estimated total life of the refuse removal project are shown on certified Exhibit 12-7-2.

Certified Exhibit 12-5-2 shows reclamation topography. The plan for backfilling, soil stabilization, compacting, and grading is in Section 12.5.4.2.2. The topography depicted on Exhibit 12-5-2 is at the end of Phase I of reclamation, with the sediment traps and sedimentation pond still in place. On page 12-5-34 it is stated that no permanent impoundments will be left following reclamation.

Mining facilities maps.

Locations of the facilities to be used in conjunction with the refuse removal project are shown on certified Exhibit 12-5-1. Buildings, utility corridors, roads, topsoil storage, sediment traps and the

sedimentation pond, and facilities to be used in refuse removal operations are shown. There are no coal storage, cleaning, or loading areas. No spoil, coal preparation waste, or underground development waste will be generated. Disposal of noncoal waste will be off-site at a State approved facility. There are no water diversion, collection, conveyance, treatment, storage and discharge facilities and no permanent impoundments. Refuse disposal will be at the refuse disposal facility in Schoolhouse Canyon already approved in the Castle Gate permit. There are no facilities to be used to protect and enhance wildlife related environmental values. Exhibit 12-5-1 does not show the fish ladder shown on Exhibit 12-3-1, but the text indicates the fish ladder will not be disturbed. Explosives will not be used at this site. There is no coal processing waste bank, coal processing water dam and embankment, or disposal areas for underground development waste and excess spoil. The anticipated surface configuration to be achieved for the affected areas during mining operations are shown.

Mine workings maps.

Location and extent of known workings of active, inactive, or abandoned underground mines beneath Willow Creek are shown on Figure 6-12 and mined out areas are indicated on certified Exhibits 6-3, 6-4, and 6-7 through 6-11 of the currently approved MRP. Mine openings to the surface within the proposed permit and adjacent areas are shown on certified Exhibit 12-7-2.

Monitoring and sample location maps.

Elevations and locations of test borings are shown on certified Exhibit 6-2 of the currently approved MRP. Elevations and locations of monitoring stations used to gather data on water quality and quantity are on certified Exhibit 12-7-1.

Monitoring of subsidence from the Castle Gate Mine operations is discussed in Sections 6.2 and 6.3 of Chapter 6 of the currently approved MRP. No mining is presently planned for the refuse removal project site, so no additional subsidence monitoring plan has been developed.

The proposed permit areas contains no fish or wildlife monitoring stations. Elk and deer range are shown on certified Exhibit 12-3-1.

An air monitoring program is not proposed for this site. Activities that will produce fugitive dust emissions 're planned to last only 4.5 months. Fugitive dust emissions during construction activities are usually exempt from emissions controls. During refuse removal operations roads will be watered to control dust but no other measures will be taken to reduce emissions. Fugitive dust from reclaimed surfaces will be temporary until vegetation cover is established.

Findings:

The boundaries of all areas proposed to be affected over the estimated total life of the refuse removal project are shown on certified Exhibit 12-7-2. Exhibit 12-5-2 shows Phase I reclamation, with sediment traps and a reclamation pond with a spillway. On page 12-5-34 of the proposed revision it is stated that no permanent impoundments will be left following reclamation.

RECLAMATION PLAN

GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

Analysis:

It is currently planned that the Willow Creek site will be utilized after the project discussed in this chapter for surface facilities associated with a proposed underground mining operation. Under such a condition, a reclamation plan for this proposed operation will be prepared and submitted to the Division at a future time, accounting for the proposed design of the operation. If the decision is made to not proceed with the proposed designed Willow Creek mining operation, Amax Coal Company will, close, backfill, or otherwise permanently reclaim all effected areas in accordance with R645 regulations after completion of the Willow Creek Removal Project.

Findings:

The Operator has met the minimum regulatory requirements.

POSTMINING LAND USES

Regulatory Reference: 30 CFR Sec. 784.15, 784.200, 785.16, 817.133; R645-301-412, -301-413, -301-414, -302-270, -302-271, -302-272, -302-273, -302-274, -302-275.

Analysis:

The area will be returned to wildlife habitat following mining. This is the use the area is presumed to have had prior to any mining. It is not a change in land use and should be approved by the Division.

Findings

Amax has complied with the requirements of this regulation.

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-270, -301-271, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

Analysis:

The highwall area (AML site) will be backfilled and regraded to approximate original contours. All reasonably available material will be placed against the highwall to assure longterm stability and provide for effective drainage. The slope of the backfill will permit vegetation to become established, thereby ensuring compatibility with the post-mining land use of wildlife habitat. The final surface configuration of the fill will be similar to the pre-project configuration.

Findings:

The Operator has demonstrated that AOC requirements will be met.

BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

Analysis:

The regrading plan for the Willow Creek site was designed to meet the objectives of balancing cut and fill quantities, maintaining geotechnically stable surface configuration, and controlling erosion. Major features of the Willow Creek reclamation plan are:

1. Implementation of interim reclamation sediment-control measures and removal of the operational sediment control structures

2. Backfilling to remove highwalls to the extent possible within the objectives noted above

3. Placement of topsoil on the regraded slope

4. Revegetation of the topsoil areas

The estimate cut quantity for the Willow Creek site is 239,630 cubic yards with an estimated fill quantity of 235,807 cubic yards. The minor difference between the two numbers will be made up in compaction. Fill materials required for reclamation will be obtained from the area immediately next to the highwall. Regrading activities will continue until the final surface configuration defined by Exhibit 12-5-2 has been achieved.

Findings:

The Operator has met the minimum regulatory requirements.

MINE OPENINGS

Regulatory Reference: 30 CFR Sec. 817.13, 817.14, 817.15; R645-301-513, -301-529, -301-551, -301-631, -301-748, -301-765, -301-748.

Analysis:

Monitoring well TH-02 has been cased 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 permit area and adjacent area. The remaining test holes were backfilled to the surface with cuttings.

There will be no mine entry involved in the refuse removal project.

When no longer needed for monitoring or other use approved by the Division upon a finding of no adverse environmental or health and safety effects, or unless approved for transfer as a water well, monitoring well TH-02 will be capped, sealed, backfilled, or otherwise properly managed, as required by the Division.

Findings:

Exploration drill holes and the ground water monitoring well have been managed 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 permit area and adjacent area. The monitoring well will be permanently cased or sealed when no longer needed.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-232, -301-233, -301-234, -301-242, -301-243.

Analysis:

Through communication with AML staff, it has been determined that approximately 15,000 cubic yards of soil material overlies the underground development waste targeted for removal. This equates to approximately 2-3 feet over the underground development waste. Cyprus has committed to remove and stockpile this soil for final reclamation.

Prior to topsoil redistribution, the disturbed area will be regraded to approximate the final reclamation topography. On slopes less than 1h:1.5v, the surface land will be ripped to a depth of 6 inches. Soil will be redistributed to provide a uniform thickness of six inches. To avoid compaction only track mounted equipment will be used to spread the soil and then the soil will be disked and/or ripped. Mulch will be used to stabilize and control erosion after seeding.

Findings:

Information presented in the plan meets the requirements of this section.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 701.5, 784.24, 817.150, 817.151; R645-100-200, -301-513, -301-521, -301-527, -301-534, -301-537, -301-732.

Analysis:

The ancillary access road associated with the project will be regraded to blend with the surrounding topography. Where backfilling of the road will occur, placement and compaction of the backfill material will be as indicated in Section 12.5.2.4.2

Proposed reclamation contours following closure of the ancillary access road are presented in Exhibit 12-5-2. The stream crossing will be retained to permit site access in case maintenance of the reclaimed surface becomes necessary. This culvert will be removed at the end of the reclamation period prior to bond release.

Following regrading of the road, topsoil will be applied to the regraded surfaces and the area will be revegetated. Topsoiling and revegetation activities are discussed in Section 12.2 and Section 12.3 respectively.

Findings:

The Operator has met the minimum regulatory requirements.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Analysis:

The reclamation plan is found in Section 12.5.4. General hydrologic reclamation information is found in Section 12.7.6. Amax does not plan to reclaim the site as part of this project because they plan to use it as an opening into a mine that will be permitted later. However, if reclamation is necessary, there is a prepared plan.

Water Monitoring

The groundwater and surface water monitoring plans for the Willow Creek Project are outlined in Chapter 12, Section 12.7.3.1.2 and in Chapter 7, Section 7.5. Information in Chapter 7 is regarding the current sampling program. In addition Amax proposes to sample one well in the Willow Creek area and sample Willow Creek above and below the disturbed site. Surface water parameters that will be sampled are total suspended solids, total dissolved solids, total iron, total

manganese, and pH. Groundwater levels will be monitored and data submitted at the end of the project.

The site is intended as a surface entry following removal of the existing refuse. The mining activity will be further permitted later. However, if plans change and reclamation is necessary on-site monitoring will continue on a quarterly basis through the post-reclamation period. The data will be submitted to the Division in annual monitoring reports.

Ground water monitoring. Ground water monitoring as described in Section 7.5, Chapter 7 of the MRP will continue. Additional ground-water monitoring for the refuse removal project will consist of monthly water level measurements in well TH-02, which is outside of and upgradient of the area to be excavated. Monitoring results will be submitted to the Division at the end of the refuse removal project. The time interval or duration of the project is estimated to be 4.5 months; Utah Coal Mining Rules require that monitoring reports need to be submitted to the Division every 3 months.

The refuse removal project will disturb a small area along a narrow strip adjacent to Willow Creek. The water table is at least 20 feet below the bottom of the refuse and it is unlikely that ground water will be impacted by the refuse removal. The PHC determination and other available information indicate the water-bearing strata in the proposed refuse removal project area and adjacent areas do not serve as an aquifer that significantly ensures the hydrologic balance within the cumulative impact area. Because of the small and confined area to be affected by the project, the short time involved, and the low probability of impacts to the ground water, installation of additional ground water monitoring wells does not appear practical or necessary.

Surface water monitoring. Surface water monitoring as described in Section 7.5, Chapter 7 of the current MRP will continue for the Castle Gate permit area. Willow Creek is monitored upstream and downstream of the project site, and during operations these two stations will be monitored monthly for pH, total suspended solids, total dissolved solids, total iron, and total manganese. Monitoring results will be submitted to the Division every three months or at the end of the refuse removal project: the time interval or duration of the project is estimated to be 4.5 months. If the site is reclaimed rather than used for construction of a surface entry, monitoring will continue on a quarterly basis through the post-reclamation period.

There are seven UPDES discharge points identified on Exhibit 12-7-1. Three of them, 017, 018, 019 are currently permitted. A modification of the UPDES permit is being requested from Utah Division of Water Quality for the four additional discharge points. Three of these discharge points are downstream of surface water monitoring point B-3, so all waters into which discharge may occur are not monitored, but the requirements of R645-301-731.222 are met by the UPDES monitoring of the three point-source discharges. In the event of a discharge from the sediment pond or any of the sediment traps, water quality samples will be collected in accordance with the UPDES permit requirements. Appendix 12-7-3 presents a copy of the existing UPDES permit that was effective July 1, 1993 and expires April 30, 1998. To date there have been no discharges from the sediment traps, so there are no analysis results.

Acid- and toxic-forming materials.

No coal will be mined for this refuse removal project and there are no overlying strata. Chemical analyses for acid- and toxic-forming and alkalinity-producing materials from the material to be moved ape in Appendix 12-6-2. Samples were obtained from drill holes, and the logs are in Appendix 12-6-2. With the exception of sample 94-12R, all analyte values fall within the "acceptable" range of values in Table 2 of the Division's Guidelines for the Management of Topsoil and Overburden. The boron value of sample 94-12R is 7.2 mg/Kg, 2.2 mg/Kg in excess of the "acceptable" level. A sample will be collected for boron analysis for each approximately 50,000 cubic yards of material moved or whenever significant changes in the physical characteristics of the waste are observed (p. 12-5-7). Further analyses at the time of reclamation will identify potential acid- or toxic-forming areas on the refuse pile that will require 4' of cover soil (Section 3.4-4).

Transfer of wells.

There is no current plan to transfer monitoring well TH-02 to another owner for use as a water supply well or any other use. When no longer needed for monitoring or other use approved by the Division, and unless approved for transfer as a water supply well, on-site monitoring well TH-02 will be capped, sealed, backfilled, or otherwise properly managed as required by the Division (p. 12-7-35). According to Section 12.7.3.1.4, no existing well ownerships will be transferred.

Gravity Discharges into an underground mine.

No discharges will occur from or into underground mine workings in conjunction with the refuse removal project (p. 12-7-16).

Water quality standards and effluent limitations.

Discharges of water from disturbed areas associated with the refuse removal project will be in compliance with all Utah and Federal water quality laws and regulations and with effluent limitations for coal mining as contained in 40 CFR Part 434 (p. 12-7-31). Section 12.7.5.1 says that all discharged water from the disturbed area will meet applicable water-quality standards and effluent limitations.

Diversions.

Diversion design criteria are outlined in Section 12.7.4.2.3 of the proposal. Diversion designs are located in Appendix 12-7-2, and shown on Exhibits 12-5-1 and 12-7-3. Table 12-7-5 is a summary of diversion criteria. Diversions are designed for the 10-year, 6-hour storm event. Only miscellaneous flow will be diverted. All natural drainage patterns will be restored.

Stream buffer zones.

Stream buffer zone information is provided in Section 12.7.3.1.6. Topsoil and access facilities will be located and some maintenance will occur within 100 feet of Willow Creek. The activities should not cause or contribute to Utah and Federal water standard and should not adversely effect water quality and quantity. No permanent stream channel diversions are proposed.

Sediment control measures.

Sediment control measures are discussed in Sections 12.7.3.2 through 12.7.3.2.2 and designs for sediment control measures are discussed in Sections 12.7.4.2.1 through 12.7.4.2.3. One sediment pond and six sediment traps are proposed. The pond is shown on Exhibit 12-5-1 and designs are in Appendix 12-7-2. It will contain the 10-year, 24-hour storm event and will have a spillway that will pass the 25-year, 6-hour event.

Five of the six sediment traps are currently existing, though two will require modification. Table 12-7-4 is a summary of the sediment traps at the Willow Creek facility. The outflow from each trap will be nonerosive.

Siltation structures. One sediment pond will be constructed as part of this project.

Sedimentation ponds. One sediment pond will be constructed as part of this project. The pond is shown on Exhibit 12-5-1 and designs are in Appendix 12-7-2. It will contain the 10-year, 24-hour storm event and will have a spillway that will pass the 25-year, 6-hour event. Sediment ponds will be maintained until removal is approved.

Other treatment facilities. No other treatment facilities are proposed.

Exemptions for siltation structures. No exempt areas are proposed.

Discharge structures. The sediment pond is proposed to have a open spillway that will pass the 25-year, 6-hour event. The designs for the spillway are included in Appendix 12-7-2.

Impoundments. Other than the pond there are no impounding structures proposed.

Casing and sealing of wells.

The ground water monitoring well, TH-02, has been cased to prevent acid and toxic drainage from entering ground or surface water, to minimize disturbance to the hydrologic balance, and to ensure the safety of people, fish and wildlife, livestock, and machinery. When no longer needed for monitoring or other use approved by the Division, and upon a finding of no adverse environmental or health and safety effects, or unless approved for transfer as a water supply well, the on-site monitoring well TH-02 will be capped, sealed, backfilled, or otherwise properly managed as required by the Division (p. 12-7-35). Section 12.7.4.8 covers casing and sealing of wells. The one monitoring well at the Willow Creek site has been case to prevent acid and toxic drainage from entering the ground water.

Findings:

The hydrologic reclamation plan is complete and accurate.

CONTEMPORANEOUS RECLAMATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.100; R645-301-352, -301-553, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

There are no plans for contemporaneous reclamation.

Findings:

This is a short-term project; therefore, there is no need for contemporaneous reclamation.

REVEGETATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.111, 817.113, 817.114, 817.116; R645-301-244, 301-340, -301-353, -301-354, -301-355, -301-356, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

Revegetation Methods

Seeds and seedlings will be planted at the optimum time following disturbance activities. Ideally, all seeding will be done in the fall. Later, the application says seeding will occur in the fall after October 1 and before December 1. Reclamation will take place the following year in areas that cannot be seeded by December 1. Chapter 9 says planting will typically occur after October 15 and before the ground freezes. When necessary, spring planting may occur between March 15 and May 15. Drainages will be planted in April when possible. The plan to plant drainages in April refers to seedlings and cuttings to be planted near drainages. The proposed Chapter 12 says seeding with the interim seed mixture could occur during other seasons to control erosion or soil degradation. The timing of planting operations discussed in the plan and application is consistent with traditional recommendations for this area.

The reclamation timetable and schedule is outlined in Figure 12-5-3. Table 12-3-5 is a reclamation monitoring schedule and is discussed below.

All revegetated areas will be planted with either the interim or final reclamation seed mixture as shown in Tables 12-3-3 and 12-3-4. The seed mixtures in Table 12-3-3 is nearly the same as Species List 1 in Chapter 9. These mixtures comply with the requirements of R645-301-342 and R645-301-353.

The application says revegetation of the site will also include the planting of shrub seedlings if the establishment of shrubs by seeding is insufficient to meet regulatory requirements. Species, rates and planting locations will be determined should seedling planting become necessary as determined by the applicant and the Division.

The application includes a list of six criteria the seed must meet. Many of the requirements are included in the Utah Seed Act. The commitments in this part of the application should help ensure revegetation success.

After the area is graded and prepared, fertilizer will be applied. The disturbed area will then be seeded by drilling or hand broadcasting where drilling is not practical or seed size or consistency requires hand broadcasting. Some seeds in the mixture are very small or chaffy. Separate seeding of these seeds is necessary where drilling is the primary seeding method. Chapter 9 says where a drill is to be used, a broadcast seeder will be attached to the drill or broadcast methods will be used to ensure separate shallow seeding of small seed and fluffy or trashy seeds.

In areas where the seed is hand broadcast, it will be covered by backdragging or raking. This is an important commitment. The application says the seed drill will be set at 1/4 inch to ½ inch depths, but the presence of numerous rocks in the topsoil materials may vary the planting depth and facilitate establishment of all species in the mix.

Native hay mulch or alfalfa will be applied at the rate of two tons per acre. This will be chopped and blown onto the topsoiled areas. With the subsequent action of the seed drill, the mulch and fertilizer will be mixed into the soil surface This is consistent with mulching commitments in Chapter 9.

One of the most successful reclamation treatments used at Utah coal mines is extensive and irregular surface roughening. Roughening helps to increase water availability for germinating and establishing plants. Precipitation is marginal for successful seedling establishment in this area, and proper roughening procedures increase the likelihood that revegetation efforts will be successful. If precipitation is normal or better and if it comes at critical times in the spring, surface roughening may not be necessary. At other times, however, revegetation is unlikely without it. The Division highly recommends surface roughening techniques, such as gouging.

If weeds become a problem, mowing may be utilized where terrain permits. Herbicides may be used in extreme cases. Any necessary insect or rodent control will be guided by the Fish and Wildlife Service, the Utah State Cooperative Extension Service, or the Animal and Plant Health Inspection Service.

Under current regulations, any weed control following seeding will result in restarting the extended responsibility period for revegetation success. Weed control with herbicides is allowable but needs to be done in compliance with label requirements.

Success Standards

Revegetation success and permit area stabilization will be evaluated during the middle of each growing season when cover and composition studies are most feasible. The application says in Section 12.3.4.1.2 that the statistical methods and sample adequacy levels described in the "Vegetation Information Guidelines, Appendix A" will be used for measurements to determine revegetation success.

Sections 12.3.5.3 and 12.3.5.6 contain revegetation success standards. Reclaimed areas would be compared to the Willow Creek grass/sage reference area.

Because the proposed postmining land use is wildlife habitat, a woody plant success standard was established by the Division in consultation with Wildlife Resources. This standard is 4000 woody plants per acre. It is lower than the number in baseline data to allow for greater diversity in the reclaimed areas.

Diversity will be determined by ranking all species within the community by relative cover. The ranking determines the relative importance of each species. The number of species contributing greater than five percent of the relative cover in the reference area designates the number of species, the life forms, and seasonality of the species to be established in the reclaimed area. No one species will make up greater than 50% of the importance value for the reclaimed area.

This method has been used in various forms at other mines. It should ensure there are at least as many major species in the reclaimed area as there are in the reference area.

The revegetation sampling regime shown in Table 12-3-5 includes quantitative sampling for cover, frequency, woody plant density, transplant survival, and productivity. These parameters are to be measured early enough in the extended responsibility period that remedial action will be possible if it is needed. Woody plant density is to be measured in the fourth and eighth years of the extended responsibility period which will allow the determinations required by R645-301-356.232

Erosion will be controlled through the use of properly designed and constructed sediment detention structures, recontouring reclamation soils, planting, soil enhancement, and moisture retention. Should the reclaimed area show signs of excessive erosion, steps will be employed to remedy the situation. In Section 12.2.4.4.3, the application says the applicant will fill, regrade, or otherwise rills or gullies deeper than nine inches that have been regraded and topsoiled. Also, rills or gullies that disrupt the postmining land use, inhibit vegetation establishment, or contribute to water quality degradation will be regraded, topsoiled, and seeded as necessary.

Erosion control is an undefined performance standard in the regulations. Chapter 9 of the current mining and reclamation plan says, "Suitable measures of erosion will be established in consultation with the Division of Oil, Gas and Mining, and such measures will be employed upon approval by that agency." The current application says the success of the methods used to control erosion will be measured by comparing runoff from the reclaimed areas with runoff from an undisturbed adjacent area. Erosion will be controlled such that contributions from the reclaimed areas will be equal to or less than the sediment contributions from the undisturbed area.

Field Trials

Amax commits to comply with any requirements to conduct field tests or greenhouse trials. These would be for the purpose of demonstrating that revegetation can be accomplished as required by the State program.

A need for field trials or greenhouse tests is not anticipated. There is a reasonable amount of vegetation on the site, and revegetation to the success standards discussed in the application (either baseline or reference area) is considered feasible using the methods Amax proposes.

Wildlife

Wildlife enhancement will be created by the development of micro-topographic features, such as swales and rises, during regrading. Also, Amax will establish rock piles and use natural materials, where available, to create snags and roosts.

Amax should consult with Wildlife Resources about the specific placement and use of materials for snags and roosts. The site may not be suitable for these features, but locating them in particular areas may make them more usable.

Plant species in the reclamation seed mixes are consistent with those presently growing in the permit and adjacent area, and the comply with the requirements of R645-301-342.

Amax's commitments for reclamation habitat enhancement appear to be adequate. If additional enhancement opportunities within the regulatory definition of "best technology currently available" become available, they should be incorporated into the plan.

Findings:

This portion of the application is complete and accurate.

BONDING AND INSURANCE REQUIREMENTS

Regulatory Reference: 30 CFR Sec. 800; R645-301-800, et seq.

Analysis:

Information on reclamation costs is listed in Appendix 12-5-4. The Operator has identified those structures that need to be removed and disposed of off-site. The unit costs for removing and disposing the structures are from Means 1995 edition. The Operator used Means for earthwork equipment costs. Equipment productivity was determined by using The Caterpillar Handbook. Earthwork costs determined by the Division were based on The Bluebook equipment rates, and were slightly higher than Means values.

Indirect costs consist of contingencies 10%, overhead and profit 10%, engineering fee 5%, contract management fee 5%, monitoring and maintenance 10% and escalation for the duration of the permit. The escalation rate for 1995 is 2.68% per year. The Division determined that the bond for the refuse removal project should be $2,559,000.

Findings:

The Division determined that the bond for the refuse removal project should be $2,559,000.