0002

CYPRUS PLATEAU MINING CORPORATION
A Cyprus Amax Company

Cyprus Plateau Mining Corporation
Post Office Drawer PMC
Price, Utah 84501
(801) 637-2875

December 1, 1997

USDI-BLM PRICE OFFICE
RECEIVED
DEC -2 '97

	INITIALS	DATE
MGR		
ASST MGR		
ASST MGR		
COAL		
MINERALS		
REC/CULT		
SUPPORT		
RANGELAND		
LANDS		
LAWENFORCE		
COPY ALL EMP		
B BOARD		

Copy Mary, Arnie, Dave

ACT/007/006 #2

Ms. Janette S. Kaiser
Forest Supervisor
Manti-La Sal National Forest
599 West Price River Drive
Price, Utah 84501

RE: Star Point Mine Longwall

Dear Ms. Kaiser:

Enclosed is a copy of our Environmental Consultant's (Hansen, Allen & Luce, Inc.) evaluation of the hydrogeologic and environmental impacts resulting from the abandonment of the mechanical longwall equipment within Panel 42 of the Castle Valley Ridge Coal Lease Tract. Also enclosed is a Field Service Report from Barney Pennell (Joy Mining Machinery) where he inspected the longwall and noted that all fluids have been drained from the longwall.

After your review of the aforementioned, should you have any questions please do not hesitate to contact me at (435) 472-4741 or Art Palm at (435) 636-2205.

Sincerely,

Johnny Pappas
Sr. Environmental Engineer

Enclosures

Chrono: JP971203.LTR

cc: BLM

JOY MINING MACHINERY
A Harnischfeger Industries Company

Report No. 101

Field Sales and Service Report

Page 1 of 1

☐ Repetitive Problem

Company: Cypress Amax	Date of Call: November 15 1997
Mine Name: Plateau	Report by: Barney Pennell
Location: Price Utah 84501	Region: West, USA

Person(s) Interviewed (& Title): Max Davis		
Model: 3 LS	Serial No: LWS 225	Delivery Date:
In Service Date:	Tonnage:	Hourmeter:

☐ New Machine ☒ Rebuilt Machine

☐ Action Request From:

Report Quick References

☐ Sales/Commerical	☐ Warranty/PRP	Group Function:	Assembly:
☐ Competition	☐ Performance		
☒ Other:			

REPORT DETAILS

This letter is in reference to the 3Lslongwall shearer to be left on the face at Cypress Amax Plateau mine. On November 15 1997 I was accompanied to the longwall face by Mr. Max Davis to inspect this shearer to check if all the (oil) had been drained from this piece of equipment. Upon entering the longwall face I checked the H./G. ranging arm,H./G. haulage, T./G. haulage, T./G. ranging arm gear cases and found all gearcases to be drained and the drain plugs left open. I also checked the hyd. Oil tank and found it to be drained as well with the drain left open.

HANSEN ALLEN & LUCE inc

SALT LAKE AREA OFFICE
6771 South 900 East
Midvale, Utah 84047
Phone: (801) 566-5599

November 18, 1997

Mr. Johnny Pappas
Cyprus Plateau Mining Company
P.O. Drawer PMC
Price, Utah 84501

RE: Hydrogeologic Issues Related to Longwall Abandonment Within Castle Valley Ridge.

Dear Johnny:

As requested, we have completed our evaluation of the hydrogeologic and Environmental impacts resulting from the proposed abandonment of the mechanical longwall equipment within Panel 42 of the Castle Valley Ridge Coal Lease Tract. Factors identified and evaluated follow:

Water Level History

Initial hydrogeologic investigations of the Gentry Ridge Coal tract completed in the late 1980's and early 1990's projected a southward trending groundwater gradient which would be intercepted by mining within a short distance south of the Graben Crossing. Further clarification regarding where the water might be encountered during mining was made following the completion of drill holes P92-01-WD, P92-02-WD and P92-04-WD. Water was subsequently encountered within the 3rd South Mains just south of 1st Right (see Figure 1 attached).

The potentiometric surface completed in 1993 showed that overall ground water movement was to the south-southwest. It was concluded at that time that mining conducted south of 1st Right would generally be beneath the local water table and would require pumping. Mining north of 1st Right would be above the water table and would likely only encounter occasional perched or isolated water. These conditions have been verified during mining.

It was further concluded that mining south within Gentry Ridge would lower the local water table as water was pumped eastward across the graben, and that once mining was complete, it would make a partial recovery. The impacts of this pumping have been documented through data collected and submitted to the Division of Oil, Gas & Mining.

Attached graphs for in-mine wells P92-01A-WD, P92-01B-WD, P92-01C-WD, P92-02-WD, and P92-04-WD show a consistent decline in water levels as mining advanced southward. The graphs

for wells P92-01C-WD, P92-02-WD, and P92-04-WD also show a partial recovery of water level following termination of mining. Graphs for wells P92-01A-WD and P92-01B-WD show little or no recovery to date.

The overall lack of water entering the mine from northern mine sections is also verified through a review of pumping data collected from the Graben Goose pump. As shown in the attached figure, pumping levels declined substantially during the mid 1990's when mining retreated from the Gentry Ridge area and moved northward into Castle Valley Ridge. As shown in the figure, pumping subsequent to this move reduced from an all time high of 1,398 gpm to a current flow of approximately 50 gpm.

Current/Future Water Table

The in-mine ponded water level noted on November 4, 1997 was found at the intersection of Cross-Cut 82 with the #3 Entry, and at the intersection of Cross-Cut 83 with the #2 Entry as shown on the attached figure. As shown on Figure 1, the current water level is below (south) of the dry/wet interface noted during mine development. Current data taken from the monitoring wells identified above shows an approximate overall net decline in water level (depending upon well location) to be between 25 and 118 feet. Overlaying 1993 water level data over mine workings containing the abandoned Longwall unit shows that the water level is in excess of 210 feet below the mine workings. Current water levels would be greater than 210 feet deep since local water levels have dropped since 1993 as documented above. Since long term water levels can not rise to the pre-mining levels noted on Figure 1 (due to tunnel diversions), there is no possibility of the mine being flooded with base groundwater.

It is unlikely that future water levels will ever rise to the historic water level recorded during mine development. Mining has created large voids which have the capability of not only moving water more freely (with less resistence), but to store large volumes of water. This large reservoir of water appears to be enhancing the movement of ground water by providing a direct recharge source to local north-south trending faults and fractures. The impacts of historic and post mining of the Gentry Ridge tract are well documented by CPMC and Castle Valley Special Services District (CVSSD). Records show that current post mining flows in the Tie Fork well system are higher than pre mining flows. The increased flow noted at the Tie Fork wells would tend to indicate that water has either been re-routed, or is moving more freely. The decreased water levels within the mine are believed to indicate that decreased resistance is the main driving force for increased Tie Fork flows.

Some concern has been raised about the possibility of inundating the abandoned Longwall Unit through either mine seepage or a rising water table. It has been determined following our in-mine site visit, and after a review of mine maps, that water could not back up into Castle Valley Ridge to the point where it would inundate the Longwall unit. The strike and dip of mined coal sections

will redirect any in-mine flows southward without the possibility of significant damming, or without the possibility of discharging from any mine portal. Portal discharge is highly unlikely since there are numerous in-mine routes that the water would take prior to backing up sufficiently to drain from a portal location. This is an obvious conclusion which can be reached by reviewing in-mine well data within Gentry Ridge.

The Longwall unit is located near the extreme north end of the abandoned mine workings, and is itself located just west of a natural ridge. As shown on Figure 1, any water found within the mains just north and east of the Longwall will move east, then southward. Similarly, any water found north and west of the Longwall, will move within the gob area to the south and west. Any pooling which could occur within the gob area behind the Longwall unit will overtop down gradient tunnel intersections and continue to move southward away from the abandoned section. A small floor seep located approximately midway along the Longwall unit is discussed hereafter.

Longwall Unit

The Longwall unit has been abandoned within Panel 42 (the northernmost panel) beneath the Castle Valley Ridge. Mining was terminated and the Longwall unit abandoned when a sandstone unit began "pinching out" the coal seam. At the time of abandonment, this sandstone unit accounted for an approximate 25% of the active coal face. Roof conditions in the Longwall gob were also found to be very unstable.

Potential Water Impacts

One small seep was found in the vicinity of the Longwall unit. This seep was located approximately midway along its length, and amounted to an approximate 1/4 gpm. The seep was found to flow parallel to the Longwall unit for a few feet before moving westward into the gob area. No other seeps were found to enter, or have the potential to enter the longwall face area. It is believed that the natural hydrogeology of the area precludes substantial flows beneath the Castle Valley Ridge. The natural strike and dip of the local coal seem will effectively divert any potential anticipated flows around the longwall face.

Potential Humidity and Gas Impacts

According to mine personnel, the oxygen content within the abandoned mine section is anticipated to drop to an approximate 5 to 10 percent of current levels. Although of some significance, air content is not the major factor in the deterioration of metals. According to Dr. Free from the University of Utah Metallurgical Department, the greatest cause of metal deterioration is humidity. Sulfur gas emissions also have some increased corrosion effect. Dr. Free also indicated that corrosion rates are significantly reduced when high strength metals are used

The discussion lead to the overall conclusion that the metals will likely deteriorate over a significant length of time. However, even though the metals *may* deteriorate, the Longwall unit itself will have little to no potential impact upon the local hydrogeology. This conclusion is reached based on the facts that 1) without a transport mechanism (ie: water flow), the metals can not be transported, and 2) even if some water were to move through the area, the quantity and rate of deterioration would be so small that the impact would in all likelihood be non detectible.

Potential Impact from Operating Fluids

The potential for impact from leaking operating fluids is minimal. The total amount of hydraulic and operating fluids which were contained within the Longwall unit and their status are provided in the following table. Small quantities of fluid may remain within some equipment that can not be fully drained due to the configuration of the compartment itself. The potential for impact from any fluids remaining is believed to be insignificant for the following reasons.

- Only a small volume remains in the combined equipment.
- Any future corrosion and release of the remaining fluids would be gradual.
- The coal seam would likely adsorb any fluids which could potentially leak from a the abandoned unit.

No impacts from hydraulic fluids associated with longwall operations have been noted in culinary water sources including Tie Fork wells. Furthermore, no impacts are anticipated as a result of Longwall abandonment.

STATUS OF EQUIPMENT TO BE ABANDONED IN-PLACE

EQUIPMENT ITEM	TYPE OF FLUID	NORMAL CAPACITY (GALLONS)	STATUS
Head drive 650 fluid coupler for face conveyor (gearbox is removed)	Dextron II ATF	12	Drained
Stage Loader 487 fluid coupler	Dextron II ATF	5	Drained
Stage Loader Gearbox	Century PowerGear 150 320+	8	Drained
Crusher 487 Fluid Coupler	Dextron II ATF	5	Drained

EQUIPMENT ITEM	TYPE OF FLUID	NORMAL CAPACITY (GALLONS)	STATUS
Crusher Gearbox	Century PowerGear 150 320+	6.5	Drained
Shearer Ranging Arms (2)	Century PowerGear 150 320+	24	Drained
Shearer Hydraulics	Chevron 150 68	55	Drained
Shields	Water*	2-5%	Drained

- According to mine personnel during our in-mine site visit, shields ran with water only last 10 days of operation.

Safety

According to mine personnel, one of the reasons that the Longwall has been abandoned at its current location is due to roof instability. Roof conditions immediately behind the Longwall unit were found to be highly friable and the area was noted by Longwall operators during mining to cave rapidly. Several access tunnels were noted in our in-mine site review to have caved. Attempts were required within the main tunnels located just south of the abandoned Longwall unit to prevent the roof structure from caving into the ongoing mining operation. It is believed that there would be a significant safety issue should attempts be made to remove the Longwall from its current location.

Potential Monitoring Locations

A review of overall hydrogeologic conditions would indicate that hydrologic monitoring of the abandoned mine area is not needed. Furthermore, there are only two existing locations which could be used as long term "indicator" sites for monitoring. The first and most obvious are the Tie Fork wells since these sources are monitored as part of the CVSSD water supply on a regular basis. CVSSD collects and analyzes this data. To date, mining impacts upon these water supplies have been limited to a temporary reduction of flow. No quality impacts have yet been observed.

Although believed infeasible, a second long term monitoring location may be Surface Well 92-10-01. This well is located west-southwest of the Panel 42 gob area and *may* be within the "general" flow path of water exiting the area containing the abandoned Longwall unit. Sampling from this source would however be difficult since 1) the site is relatively isolated requiring foot or

helicopter access, 2) the well is only a two inch diameter well thereby making the taking of samples difficult, and 3) the well is deep thereby limiting pumping options.

Summary, Conclusions and Recommendations

Based on our review of in-mine conditions, information gained from mine personnel, from personal hydrogeologic knowledge of the site and vicinity, and from a review of mine mapping, it is concluded that the abandonment of the Longwall unit within Panel 42 of the Castle Valley Coal Lease Tract has a low probability of having any long term hydrogeologic impact potential to either the subsurface environment or local culinary water supplies. Because of the conditions found with the mine, it is therefore recommended that the Longwall unit be abandoned "in place". It is further recommended that Tie Fork wells be referenced as the "indicator" source for any mining impacts resulting from mining within the Gentry and Castle Valley Coal Lease Tracts. CPMC should be advised immediately by CVSSD should any deterioration of water quality be noted.

Please call should you have and comments, questions or concerns regarding the material submitted herein.

Sincerely,

David E. Hansen, Ph.D., P.E.
Principal - Project Manager