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State of Utah  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

bcc  
Ken Wyatt

Michael O. Leavitt  
Governor

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Executive Director

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November 29, 1999

Michael W. Glasson, Resident Agent  
West Ridge Resources  
P.O. Box 902  
Price, Utah 84501

Re: Deficiencies in Water Monitoring Amendment, West Ridge Resources, Inc., West Ridge Mine, ACT/007/041-AM99D, File #2, Carbon County, Utah

Dear Mr. Glasson:

The Division has completed our review of your October 6, 1999 submittal, which was intended to alter the water monitoring requirements at the West Ridge Mine. We have determined that the information that was submitted is not adequate and the submittal cannot be approved at this time. A copy of the Technical Analysis, which details the additional information that is required is enclosed. Please review it carefully to verify the information that is needed. In order for us to keep this in our review process, West Ridge Resources Inc. must provide the required information by no later than December 29, 1999.

Our review of this amendment has also prompted us to again recommend to you the need for submitting water monitoring information to the Division in an electronic format so that it can readily be assimilated into our water monitoring database. Instructions for doing this have previously been sent to you, but if you need assistance in this regard we will be happy to provide any help we can. Ken Wyatt is our representative for this process and he can be reached at (801) 538-5266.

If you have any questions about the requirements or electronic data entry, please call me at (801) 538-5325.

Sincerely,

A handwritten signature in cursive script that reads "Daron R. Haddock".

Daron R. Haddock  
Permit Supervisor

Enclosure

cc: Price Field Office

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November 24, 1999

TO: File

THRU: Daron Haddock, Permit Supervisor *DH*

FROM: James D. Smith, Reclamation Specialist *JDS*

RE: Technical Analysis of Proposed Water-monitoring Amendment, West Ridge Resources, Inc., West Ridge Mine, ACT/007/041-AM99D, File # 2, Carbon County, Utah

**SUMMARY**

A proposed amendment to the West Ridge Mine MRP was received by the Division on October 8, 1999. If approved, the amendment would end monitoring at two stream sites that have had only ephemeral flow during the baseline monitoring period and are in drainages not directly downstream of the surface operations, and would decrease the frequency of monitoring from quarterly to semi-annually at all remaining monitoring sites.

The last TA for this mine was completed in March 1999 when DOGM issued the permit for the West Ridge Mine.

**TECHNICAL ANALYSIS**

**ENVIRONMENTAL RESOURCE INFORMATION**

There are no changes to the Environmental Resource Information section.

**OPERATION PLAN**

**HYDROLOGIC INFORMATION**

**Analysis:**

The proposed amendment is confusing in that it discusses changes that are to take place immediately upon approval of the amendment, plus changes that are anticipated to be proposed for incorporation into the plan in two years.

The proposed amendment to the West Ridge Mine MRP would modify the current operational monitoring plan by:

- dropping stream monitoring sites ST-4 and ST-7, and
- reducing the frequency of monitoring at all remaining sites from quarterly to twice yearly, once during low flow and once during high flow.

Streams, springs, and wells to be monitored are listed and the operational water monitoring schedule is outlined in Table 7-1 of the current MRP. The proposed amendment contains a revised version of this table. Locations are shown on Map 7-7, which has not been revised. The proposed amendment does not revise the parameters to be monitored. Operational surface-water parameters to be monitored at the West Ridge Mine are in Table 7-2 and ground-water parameters are listed in Table 7-3: they correspond with the operational parameters in Tables 3 and 4 of Tech-004.

UDOGM Coal Regulatory Program Directive Tech 004 recommends that water-quality samples be analyzed for baseline parameters every fifth year, either at mid-term review of the permit or the year prior to permit renewal. The proposed amendment maintains the commitment to collect one baseline analytical sample from each spring in the monitoring program during the low flow (fall) sampling and from each stream monitoring site during low flow every five years beginning with the first mid-term review. The five year baseline samples will be repeated every five years until reclamation is complete (p.20).

#### **Ground-water monitoring.**

According to Table 7-1 in the current MRP, well DH-86-2 is to be monitored quarterly for at least two years for water level and operational field and laboratory parameters: water-quality parameters were measured up through June 1999 (with one baseline analysis in May 1999). With the proposed amendment, monitoring frequency would be reduced to twice a year.

When the currently approved MRP was submitted, the permittee selected springs SP-8, SP-12, SP-13, SP-15, SP-16, WR-1, and WR-2 for operational monitoring at the West Ridge Mine. The permittee had three years of baseline data for these springs: data from 1985-1986 were basically field parameters only, but two years of complete baseline data were collected between May 1997 and March 1999 (Attachment 1). Additional baseline data were collected through June 1999, after permit approval but before construction began. Other monitoring had been done at these springs in the years between 1986 and 1997, usually for field parameters plus water-quality parameters similar to the operational parameters listed in Table 4 of Tech 004. The proposed amendment retains all seven springs for operational monitoring, but monitoring frequency would be reduced to twice a year.

The operational ground-water monitoring plan is presented in the text and Table 7-1 in the proposed amendment. The permittee has not demonstrated that, using the criteria of Tech 004, data collected to date support the proposed change from quarterly to twice-yearly monitoring.

#### **Surface-water monitoring.**

When the currently approved MRP was submitted, surface-water monitoring sites ST-3, ST-4,

ST-5, ST-6, ST-6A, ST-7, and ST-8 were selected for operational monitoring. There were flow observations at ST-6 from 1988 and 1989. Baseline surface-water quality data were collected at all seven sites between May 1997 and May - June 1999 (Attachment 2).

As stated in the current MRP, observations at ST-4 during the baseline period were to determine whether lower Bear Creek drainage acted as an intermittent or ephemeral stream channel. Monitoring of ST-4 was discontinued at the end of the baseline period. There will be no surface disturbance in Bear Creek drainage.

Two years of baseline monitoring at A-7 has shown that A Canyon is an ephemeral drainage, with channel flow occurring only following substantial rainfall events. There will be no surface disturbance in A Canyon.

Not mentioned in the amendment is that access to both sites has become much more difficult since construction of the county road and the bordering fences that prevent traffic from leaving the road - personal communication from Jean Semborski.

Although lower Bear Canyon and A Canyon are intermittent drainages under the definitions in the Utah Coal Mining Rules, they are effectively ephemeral drainages at ST-4 and ST-7. Furthermore, there will be no surface disturbance in either drainage, so probable disturbance of and material damage to the hydrologic balance will be minimal, if not non-existent. Continued monitoring at ST-4 and ST-7 will be of little or no value in protecting post-mining uses and water rights.

The proposed amendment retains operational monitoring at ST-3, ST-5, ST-6, ST-6A, and ST-8, and the proposed monitoring plan is presented in Table 7-1. The permittee has not demonstrated that, using the criteria of Tech 004, data collected to date support the proposed change from quarterly to twice yearly monitoring

#### **Criteria for Reducing Monitoring**

Arguments presented in support of reducing monitoring frequency are:

- sufficient data have been collected to characterize the annual discharge recession; and
- monitoring at high-flow and low-flow should provide adequate identification of any mining related impacts to the hydrologic balance.

There is no discussion of discharge recession in the proposed amendment. The adequacy of collected data to characterize flow recession is not examined. There are no analyses, graphics, or statistics to support the assertion that twice-yearly monitoring is adequate to identify any mining related impacts to the hydrologic balance.

By defining terms, stating objectives, and identifying responsibilities, UDOGM Coal Regulatory Program Directive Tech 004 is meant to clarify the Division's position on what constitutes an appropriate monitoring program and provide methodology for consistently amending these monitoring programs. The Division's approval of any reduction in monitoring, present or future, will be based on the permittee demonstrating, through procedures or methods such as those outlined in

section 5E of Directive Tech 004, that the requirements of R645-301-731.214 and -731.224 can be satisfied with the proposed reduced monitoring.

*UDOGM Coal Regulatory Program Directive Tech 004  
Section 5E*

*Amendments to Water Monitoring Programs*

*Amendments to water monitoring programs may be submitted by the permittee and will be approved according to the Division's permit amendment process and as specifically outlined for water monitoring below.*

*Amendments to monitoring programs will be approved on a site specific basis. Quarterly sampling is required at each surface and ground water monitoring location. R645-301-731.200 and Tables 3 and 4 in Appendix A specify the minimum parameters to be analyzed for. The required monitoring may be reduced to field parameters and the parameters identified in R645-301-731.200 on a quarterly basis plus one complete operational sample collected during the low flow (August or September) season if the following criteria are met. Inaccessibility will not be considered an excuse to forego the annual operational sample.*

- 1. Sites above and below a mine's disturbed area and discharge points, public drinking water sources, and other high priority sources must be monitored quarterly in accordance with Tables 1 through 4 in Appendix A.*
- 2. Monitoring requirements for sites not included in 1 (above) may be amended to reduce the parameters based on the following criteria:*
  - a. If the water source is included in a water right, then the surface landowner or water right holder must be notified of the proposed change and be given an opportunity to respond.*

Most water rights in the area do not lie within the permit area; however, the permittee does not own the surface nor hold water rights on any of the springs or streams where monitoring is to be modified. The proposed amendment does not indicate the land owners and water-right holders have been notified of the proposed changes.

Water rights on WR-1 and WR-2 are held by Sunnyside Coal. Water rights on SP-12 are held by SITLA and BLM and on SP-13 by BLM (Table 7-1 in Appendix 7-2 indicates these are rights to water in the stream rather than to springs). Maps 7-3 and 7-6 indicate that there are no water rights on SP-8, SP-15, and SP-16.

There are several surface- and ground-water rights in Bear Canyon drainage above ST-4, even though the streams in the two forks are intermittent. There is one water right on a spring, outside the permit area, approximately 1 mile upstream of ST-7 in A Canyon. Water rights in Grassy Trail Creek are held by several different persons. There are no water rights in B and C drainages.

- b. Appropriate historical quality data has been collected to show that a good cation/anion balance exists with these data.*

The permittee has not demonstrated good cation/anion balance in the data at the West Ridge Mine. Reported cation/anion balances are frequently within 5 %; however, many are between 5 % and 10 %, and at ST-5 measured cations and anions have been out of balance by as much as 60 % to 70 %.

- c. *Historical data can be used in a regression analysis to demonstrate that conductivity correlates to the specific water quality of that site. A good description of this type of analysis is given on pages 66-69 of Study and Interpretation of the Chemical Characteristics of Natural Water, 3rd edition, USGS Water Supply Paper 2254, 1992.*

The permittee has not demonstrated that, using regression analysis, conductivity and specific water quality, as measured by TDS, can be correlated for these West Ridge Mine sites.

- d. *The site is not critical to the ongoing PHC determination.*

The only criterion from section 5E of Tech-004 that appears to have been met at the West Ridge Mine is that the sites are not critical to an ongoing PHC determination.

- e. *Criteria identified in R645-301-731.214 and 731.224.*

The permittee has not demonstrated that:

- The coal mining operation at West Ridge Mine has minimized disturbance to the prevailing hydrologic cycle and prevented material damage to the hydrologic balance outside the permit area; and water quality and quantity are sufficient to support approved post-mining land use; or
- Monitoring of the sites at the Dugout Canyon Mine is no longer necessary to achieve the purposes set forth in the approved monitoring plan.

- f. *Subsidence monitoring information may be used to indicate that further subsidence is not likely and that future mining will not occur in adjacent areas which could affect this water source.*

The permittee has not demonstrated that subsidence monitoring information at the West Ridge Mine is adequate to indicate that further subsidence is not likely nor that future mining in adjacent areas will not affect the monitored water sources.

In the proposed amendment, the permittee refers to recently approved changes in the monitoring plans of the Soldier Canyon and Dugout Canyon Mines as support of the proposed changes to the West Ridge monitoring plan. The amended Soldier Canyon Mine monitoring plan was approved in accordance with the procedure in section 5E of Tech-004, and the monitoring plan at the adjacent Dugout Canyon Mine conforms to the amended monitoring plan approved for the Soldier Canyon Mine. Modifications to the Soldier Canyon and Dugout Canyon Mine monitoring plans vary from Tech 004 in that, in place of the annual water-quality sampling at low flow, weekly flow measurements and quarterly water-quality monitoring will be done during the first "low flow" and "high flow" years. At Dugout Canyon Mine, the reduced monitoring protocol applies to the springs only, and the changes will come into effect only after quarterly collection of two years of operational data: monitoring at both mines will still be done quarterly.

**Findings:**

Operations hydrologic information provided in the PAP is not considered adequate to meet the requirements of this section.

**R645-301-121.200** - Discussion of the possible future change to the monitoring plan, which is a reduction to monitoring of field parameters only and which is to be proposed after two years of operational monitoring, obscures the purpose of the currently proposed amendment, has the potential to make the monitoring plan confusing or difficult to understand, and is irrelevant to the proposed amendment. Discussion on this possible future change to the plan should be removed for clarity.

**R645-301-731.212, -731.223** - The Utah Coal Mining Rules require that surface- and ground-water be monitored and data be submitted at least every three months for each monitoring location.

**R645-301-731.214, -731.224** - UDOGM directive Tech 004 provides methodology for consistently amending monitoring programs. The permittee has not demonstrated that, using the criteria of Tech 004, data collected to date support the proposed change from quarterly to twice yearly monitoring.

## **RECLAMATION PLAN**

Any changes or additions that might effect the Reclamation Plan have been included in the TA of the Operations Plan.

## **RECOMMENDATION**

It's recommended that this proposed amendment to the West Ridge Mine plan not be accepted. Information and discussion in support of the proposed cessation of monitoring at ST-4 and ST-7 are adequate. Information and discussion presented in the proposed amendment are not adequate to support reduction of frequency of monitoring from quarterly to twice-yearly.

Sm  
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# Attachment 1 - Ground-Water Monitoring: Baseline and Operational to December 1999

B: Baseline from UDOGM Tech 004, except no oil-and-grease unless there is a visible sheen  
 O: Operational - Table 7-3 (includes field measurements)  
 O\*: Operational, except no dissolved Mn or Fe (and possibly total Mn for some)  
 O (B?): The text states 1997 data are baseline, but only operational parameters are in the PAP  
 FM: Field measurements - Table 7-2 or Table 7-3

Year	Month	SP-8	SP-12	SP-13	SP-15	SP-16	WR-1	WR-2	DH86-2 (well)
1985	4 <sup>th</sup> quarter	FM	FM		FM	FM		FM	
1986	1								
	2								
	3								
	4								
	5								
	6	FM	FM		FM	FM	O*	O*	
	7						O*	O*	
	8						O*	O*	
	9								
	10						O*	O*	
	11								
	12								
1987	1								
	2								
	3								
	4								O*
	5								
	6						O*	O*	
	7						O*	O*	
	8						O*	O*	
	9						O*	O*	
	10						O*	O*	
	11		O	O	O	O			
	12								
1988	1								
	2								
	3								
	4								
	5						O*	O*	O*
	6	FM	O		O	O	O*	O*	O*
	7						O*	O*	
	8			O			O*	O*	O*
	9						O*	O*	O*
	10								
	11								
	12								
1989	1								
	2								
	3								
	4								
	5								
	6						O*	O*	
	7						O*	O*	
	8	dry	O	O	O	O	O*	O*	O*
	9	dry	O	O	O	O	O*	O*	O*
	10	dry	O	O	O	O	O*		O*
	11	dry	O	O	O	O			O*
	12								
1990	1								
	2								
	3								
	4								
	5								
	6						O*	O*	
	7						O*	O*	
	8						O*	O*	
	9						O*	O*	
	10								
	11								
	12								
1991	1								
	2								
	3								
	4								
	5								
	6						O*	O*	
	7						O*	O*	
	8						O*	O*	
	9						O*	O*	
	10								
	11								
	12								
1992	1								
	2								
	3								
	4								
	5								
	6						O*	O*	
	7						O*	O*	

Year	Month	SP-8	SP-12	SP-13	SP-15	SP-16	WR-1	WR-2	DH86-2 (well)
	9						O*	O*	
	10						O*	O*	
	11								
	12								
1993	no monitoring								
1994	no monitoring								
1995	no monitoring								
1996	no monitoring								
1997	1								
	2								
	3								
	4								
	5	O (B?)			O				
	6								
	7	O (B?)			O				
	8	O (B?)			O				
	9								
	10	O (B?)			O				
	11								
1998	12								
	1								
	2								
	3								
	4								
	5		B	B	B	B			O
	6	B							
	7	B	B	B	B	B			O
	8	B	B	B	B	B			O
	9	B							
	10		B	B	B	B			O
	11								
1999	12								
	1								
	2								
	3								
	4								
	5		B	B	B	B			B
	6	O					B	B	O
	7								
	8		O	O	O	O			
	9	O					O	O	
	10								
	11								
	12								

## Attachment 2 - Surface-Water Monitoring : Baseline and Operational to December 1999

B: Baseline from UDOGM Tech 004, except no oil-and-grease unless there is a visible sheen

O: Operational - Table 7-3 (includes field measurements)

FM: Field measurements - Table 7-2 or Table 7-3

SMCRA: Minimum required by SMCRA

(og) oil and grease not determined, no visible sheen

flow but no sample: usually indicates ISCO and bottle samplers did not capture samples; reasons vary but flow was usually too small

Year	Month	ST-2	ST-3	ST-4	ST-5	ST-6	ST-7	ST-8
				(flow - no flow only)	(ISCO Sampler)	(bottle samplers)	(bottle samplers)	(bottle samplers)
1997	1				no flow	no flow		
	2				no flow	no flow		
	3				no flow	no flow		
	4				no flow	no flow		
	5	inaccessible	B (og)	flow	SMCRA	no flow	flow but no sample	B (og)
	6		B (og)	no flow	SMCRA	no flow	no flow	B (og)
	7	B (og)	flow but no sample	no flow	flow but no sample	no flow	no flow	flow but no sample
	8	B (og)		no flow	flow but no sample	no flow	no flow	B (og)
	9	B (og)	flow but no sample	flow	SMCRA (except pH)	no flow	SMCRA (except pH)	flow but no sample
	10	B (og)		flow	flow but no sample	no flow	no flow	B (og)
	11							
	12							
1998	1							
	2							
	3							
	4	inaccessible	B (og)	flow	no flow	no flow	no flow	B (og)
	5	inaccessible	B (og)	no flow	flow but no sample	no flow	no flow	FM
	6	inaccessible	B (og)	no flow	SMCRA	no flow	no flow	B (og)
	7	inaccessible	B (og)	no flow	flow but no sample	no flow	no flow	FM
	8	B (og)		no flow	flow but no sample	no flow	flow but no sample	B (og)
	9	B (og)		no flow	flow but no sample	no flow	flow but no sample	FM
	10	B (og)		inaccessible	flow but no sample	no flow	no flow	B
	11							
	12							
1999	1							
	2							
	3							
	4		B (og)	flow		construction	no flow	B (og)
	5		B (og)					FM
	6		B (og)					B (og)
	7							
	8		O		O (og)	flow but no sample	flow but no sample	O
	9				O (og)	flow but no sample	flow but no sample	
	10				O (og)	flow but no sample	flow but no sample	
	11							
	12							