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State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Norman H. Bangerter
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355 West North Temple
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Salt Lake City, Utah 84180-1203
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May 15, 1992

Mr. Val Payne, Sr. Environmental Engineer
PacifiCorp Electric Operations
P.O. Box 1005
Huntington, Utah 84528

Dear Mr. Payne:

Re: Probable Hydrologic Consequence (PHC) Review, Des-Bee-Dove Mine, ACT/015/017, Deer Creek Mine (Including Rilda Canyon Lease Extension), ACT/015/018, Cottonwood/Wilberg Mine, ACT/015/019, Folder #2, Emery County, Utah

Enclosed please find the Division's review of the Probable Hydrologic Consequence information submitted March 25, 1992 for all three PacifiCorp Mines, including the proposed Rilda Canyon Lease Extension. Issues included in this review pertain to the East Mountain cumulative hydrologic impact area. Resolution of these PHC issues will have an impact on future permitting decisions, including the proposed Rilda Canyon Lease Extension. This review does not include any comments from other state or federal agencies.

The Division would be happy to meet with you to clarify any questions regarding this review. Please call me to arrange this meeting. Please submit the required information by July 15, 1992.

Sincerely,

Pamela Grubaugh-Littig
Permit Supervisor

Enclosure
cc: Tom Munson
Hugh Klein
Ken Wyatt
Lowell P. Braxton
George Morris, Manti-LaSal, USFS

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May 15, 1992

TO: Pamela Grubaugh-Littig, Permit Supervisor

FROM: Tom Munson, Hugh Klein, Ken Wyatt, Reclamation Specialists

RE: Probable Hydrologic Consequences (PHC) Review, PacifiCorp Electric Operations, Des-Bee-Dove Mine, ACT/015/017, Deer Creek Mine (Including the Proposed Rilda Canyon Lease Tract), ACT/015/018, Cottonwood/Wilberg Mine, ACT/015/019, Folder #2, Emery County, Utah

SYNOPSIS

The PacifiCorp PHC document (Volume #9) was reviewed for technical data adequacy relative to the requirements of the PHC rules. The rules requiring baseline ground-water and surface-water data collection have been pointed out in previous submittals. The primary focus of this review is the hydrologic balance within the permit and adjacent area. Proposed monitoring of any potential impacts to the hydrologic balance is also of concern. Subsequently, the Division is considering the contents of this document to determine if the information presented is sufficient to ascertain whether the proposed coal mining operation has been designed to prevent material damage to the hydrologic balance outside the permit area.

ANALYSIS

The operator provided summary tables of hydrologic data in Volume #9, but these tables are not adequate to describe seasonal variation. PacifiCorp must include sufficient water-quality information in this permit application to adequately describe seasonal variation.

The following review of this document will be a page by page assessment of statements and commitments by the operator and a comment regarding their adequacy to the applicable rules in the Utah Coal Regulatory Program. The operator must submit complete and adequate responses to address these questions.

PAGE	ASSESSMENT STATEMENT
5	"Locally, the Starpoint sandstone exhibits aquifer characteristics." References to the Starpoint Aquifer as a localized aquifer do not agree with the fact it is considered by many to be a regional aquifer. Please clarify this statement.
8	Please provide a discussion of the interaction between the perched aquifers in the Blackhawk Formation and the Star Point Formation because these formations have been considered and accepted as one aquifer system by the USGS and others.
13	"PacifiCorp commits to measure long-term, area specific changes in discharge where possible." The operator must supply an explanation of what is meant by the phrase "where possible".
13	"It appears that the **water source** is being dewatered since mined out areas of the mine do not continue to produce water indefinitely." This **water source** is considered a resource and dewatering must be considered as an impact to the hydrologic balance within the Permit Area. Baseline conditions must be identified and a post-mining monitoring plan established to evaluate recovery. Please submit this information.
15	"In reviewing the dewatering curve and the initial head differential, ground water produced from the interception of the water producing fracture was a function of storage and recharge to the fault limited." The operator references the dewatering of ground water from storage in a variety of places in the document. However, the operator has not quantified this impact and/or monitored it to describe the magnitude of drawdown from storage. A discussion of how the localized, regional drawdown, and related cones of depression from this dewatering of storage could impact springs and other surface expressions is appropriate and must be included. Please submit this information.

PAGE	ASSESSMENT STATEMENT
20	Reference is made to drawdown calculated from a ground-water model. The model used and accompanying information from the model must be included in the PHC Also the Roan Canyon springs are mentioned here but are said to be disassociated with the aquifers. A discussion of their relationship association with the fault and graben system is appropriate and must be included.
21	". . . further confirming that PacifiCorp's hydrologic model that the majority of intercepted groundwater is in the form of storage and not recharge." What other tests have been performed and what else has been documented to determine this water is from storage? This statement contradicts a statement found on page 18 which states, "The oxidation, at the depth of 2000 feet below the surface through the fractures, suggesting that there is good hydraulic connection between the channel sandstones at the depth of the rock tunnels and the recharge at the surface, primarily through fractures." Tests such as water dating and microbial analysis could be performed to verify conclusions regarding the age of the ground water and any surface water connection or existing water sources in-mine and/or wells. Please elaborate and clarify these statements.
27	Data from the drill holes that indicate a blanket deposit of mudstone occurs throughout the East Mountain Area must be included in the PHC to support this conclusion. How is water migrating through fractures and faults so readily, as referenced by the presence of oxidized sandstones in the case of the Roan's Canyon Fault System? These are contradictory and confusing statements. Please elaborate and provide supporting documentation.
72	The baseline information section of the permit application needs to be expanded to describe the seasonal variation and water quality characteristics associated with surface water and ground water.
79	The statement is made, "The geologic structure of the area is fairly simple." This statement is not correct and should be deleted. The geology contained in this section is a repeat of the geology found on pages 3-22. It seems that the repetitiveness of this information could be referenced and included in only one section of the document.

PAGE	ASSESSMENT STATEMENT
86	The Hec-6 model simulation run was mentioned but no information about the input data or the run are included in the PHC for review. Please provide this information.
88	"At the end of a one-year period, a comprehensive report will be developed by PacifiCorp to determine the overall impacts related to Huntington Creek from the Deer Creek Mine water discharge." This report must be included in this PHC since it has been over one year after the assessment of the overall impacts began. Please state the present status of the NPDES permit review for the mine water discharge?
93	No Figure HF-5A was found. Please provide this figure.
95	"Many springs have been identified where sandstone channels intersect the land surface." Please identify specific springs which have been inventoried where sandstone channels intersect the land surface.
106 - 107	Based on an analysis of the data in Volume #9, impacts to the Rilda Canyon Springs are identified. PacifiCorp must discuss the significance of these impacts and a mitigation plan.
118	". . . changes in the plan were instituted to reduce the potential for intercepting groundwater." Please provide a discussion of what changes were implemented and how are they being monitored.
119	"For verification purposes, PacifiCorp has monitored select areas of the mine to formulate discharge recession curves over time, enabling a better understanding of the ratio of initial discharge rates and long-term post mining discharge values." These areas must be identified and the data included in the permit application. Please submit this information.

PAGE	ASSESSMENT STATEMENT

Appendix E

3 Reference is made to long term data regarding water-producing zones, but no data has been included in the PHC. Please submit this information.

4 "As documented in the Annual Hydrologic Monitoring reports, water level in the wells has remained constant even in areas of longwall extraction." Please identify these wells, how they were completed, and where they are located for inclusion in Volume 9.

5 Four drill holes are proposed to monitor the down gradient hydrologic effects of mining (two in-mine and two in the Cottonwood Creek drainage). The operator has failed to propose any drill holes in the area between the Roan's Canyon Graben and the Straight Canyon Syncline. The drill hole locations proposed are north of the Roan's Canyon Graben. At least one of these holes should penetrate the entire Star Point aquifer in the above location, with packer tests run on all three tongues to determine hydrologic gradients and properties.

The Division received a citizens complaint in August, 1991, regarding the loss of flow from the Roan's Canyon Spring in Cottonwood Creek. This complaint is still open and the operator has failed to mention anything about this issue in the PHC. Due to the fact that this spring is included in the CIA, a discussion of this spring must be included in this PHC

RECOMMENDATIONS

Information required to address the above issues described in the page by page assessments above must be provided. The PHC document is a public document which is available for public inspection and reading. Many of the statements and conclusions that appear in the PHC reference previously submitted reports. The operator should compile these data, drawings, etc. which support statements and conclusions and include these with the text portions of the PHC instead of sending the reader on a document chase for previously submitted data.

The entire data does not need to be reproduced, but where conclusions are made, the supporting data should accompany these statements.

As part of the CHIA process, the Division will utilize the OSM/TIPS Geologic Surface Modeling software to model the hydrogeology of East Mountain CHIA area. In order to perform this task, the Division needs to input geologic surfaces; locations of streams, springs, and seeps; and mine workings. We respectfully request drill logs, and AutoCad drawing files of mine workings. Other useful data would include springs, seeps, stratigraphy, and all geologic structures which are within the East Mountain CHIA region.

To date a hydrogeologic model of this nature has not been developed in Utah. This information would be very useful in developing the hydrogeologic model for the East Mountain CHIA region and one that PacifiCorp could play an integral part in developing by providing the above information.

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DRPHC