

June 12, 2003

TO: Internal File

FROM: Gregg Galecki, Hydrologist / Environmental Scientist III

RE: JC-3 Well in the PHC, Canyon Fuel Company, Skyline Mine, C/007/005-AM03D

SUMMARY:

On February 18, 2003 the Division received an amendment (AM03A) containing a description of a new well to be drilled in James Canyon. The well is designated JC-3. The amendment was returned to Canyon Fuel Company (Operator) on March 11, 2003, with deficiencies. Subsequently, the Division issued a Division Order on March 28, 2003, to adequately address the drilling of JC-3. The Operator submitted amendment AM03C that addressed the drilling and completion of Well JC-3 which was approved for incorporation into the Mine and Reclamation Plan (MRP) on April 4, 2003. On April 8, 2003, the Division received the current amendment that addresses the affects on the hydrologic regime of operating the JC-3 well. Along with the current submittal, the Operator officially withdrew amendment AM02A. Per Division requests, additional information for the MRP and PHC was submitted on June 6, 2003. The current review addresses only the hydrologic aspects of the regulations germane to the amendment. The addition of the JC-3 well does not represent any net increase in the amount of water discharging from the mine, only a change in the point of diversion. Water from JC-3 is being pumped to the surface from the mine workings. Information updated in the amendment is adequate to meet the requirements of the regulations. The amendment can be approved based on the hydrologic information provided.

TECHNICAL MEMO

TECHNICAL ANALYSIS:

GENERAL CONTENTS

ENVIRONMENTAL RESOURCE INFORMATION

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

HYDROLOGIC RESOURCE INFORMATION

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

General:

The Applicant has done a good job of providing the necessary information for approval of the proposed amendment. Due to the complexity of the hydrology involved, many outside studies (contained in the appendices and addendum) continue to be conducted and updated. The applicant has spent significant time both updating the MRP and relevant appendices/studies that outline, in detail, the newest and most pertinent information.

Analysis:

Baseline Information

In Section 2.3 of the MRP, the text clearly illustrates that the specific yields, and hydraulic conductivities of the rock strata surrounding the Mine are typically very low (yields of 0.2 to 0.7 percent). However, it also states that conditions encountered in the southern portion of the mine in August 2001 clearly changed this. A detailed analysis of these conditions are discussed in the 'July 2002 Addendum to the PHC', and was updated with the current amendment.

Section 2.3.1 -This section adequately describes both the general/common geologic setting of the groundwater system, and briefly describes the unique situation encountered in the southern portion of the mine since 1999. A brief discussion of the James Canyon production wells (JC-1 through JC-3) is provided, and a complete discussion is referenced in the July 2002 Addendum to the PHC.

Section 2.3.4 - Aquifer Characteristics has been updated to include a discussion of current conditions encountered in Mine #2. Drawing 2.3.4-2 has been updated and modified to illustrate the conditions encountered since 1999. For other updated water level data and a detailed discussion, the reader is referred to July 2002 Addendum to the PHC. The information provided adequately addresses the aquifer characteristics.

Baseline Cumulative Impact Area Information

In Section 2.5.3 - Alternative Water Supply, the Applicant has identified they currently own approximately 556 acre-feet of water rights in the Scofield Reservoir. In Section 2.5.3 the Applicant also commits to “correct any material damage resulting from subsidence caused to surface lands (which includes water rights), to the extent technologically and economically feasible, by restoring the land to a condition capable of maintaining the value and reasonably foreseeable uses that it was capable of supporting before subsidence damage”. Additional commitments include, “Restoration of water flows to impacted sources will be accomplished using the Best Technology Currently Available (BTCA)”. As a final alternative, the mine will “explore the transferring of water rights to the injured party in flow equal to the determined loss and /or monetary reimbursement for proven material damages”. The statements made in this section adequately identify alternative water supplies and the methodology that will be implemented for water replacement should any damage occur. No additional information is requested from the Division at this time.

Modeling

In Section 2.5.2 - Mining Impact on Water Quantity, the Permittee provides a brief discussion of modeling that has been initiated to better understand the hydrologic system and the water within the Star Point Sandstone. “The model will endeavor to delineate the possible areal extent of the aquifer, the volume of water contained in the aquifer, and the potential sources and discharge locations of the aquifer”. A preliminary presentation of the modeling of the groundwater system, conducted by HCI Consultants, Inc. for Canyon Fuel Company, was presented to the Division on May 21, 2003, and an interim report was submitted to the Division on June 6, 2003. Preliminary boundaries set on the model indicate the area providing water to the mine is delineated by the following geologic controls: the Fish Creek graben to the north, the Pleasant Valley fault to the east, the Gooseberry fault to the west, and an east-west line cutting through the Huntington reservoir and south of the Electric Lake dam to the south.

The preliminary report indicates the groundwater flow model calibrates very well to pre-mining water levels. The transient calibration closely matches local drawdown of water levels, and mine-inflow rates. The modeling consultants believe the current model provides accurate characterization of the groundwater flow in the vicinity of the mine.

However, it should be noted that the accuracy of the model is limited by the information available/used to construct the model. The preliminary simulations have shown the groundwater flow around the south end of Electric Lake to be very sensitive to the location of the southern boundary. Additional information is required to better define the southern boundary, which is currently being collected. The current model grid consists of 13 layers, 32 hydrogeologic units,

TECHNICAL MEMO

and covers 88 square miles. The preliminary report indicates a final report of the model findings will be prepared by September 30, 2003.

Probable Hydrologic Consequences Determination

As evaluated in detail in earlier technical reviews, the Applicant has made an adequate demonstration that minimal impacts to the hydrologic regime (both surface- and ground-water) have been observed, but continue to be stringently monitored. In the current application, text modifications have been made to both Section 2.5 of the MRP (Hydrological Impacts of Mining Activities), and the July 2002 Addendum to the PHC (including updates to ongoing studies) to include the operation of JC-3.

Modifications in the MRP address primarily the location of the well, its intended use, the location of where the water is being extracted from the mine, and its anticipated pumping rates. Text indicates the discharge is having a positive effect on the surface waters receiving the discharge due to drought conditions currently being encountered. Also, text notes that the pumping of JC-3 does not represent any net-increase in the amount of water discharging from the mine, only a change in the point of diversion for a portion of the water encountered.

Modifications to the July 2002 Addendum to the PHC include: 1) numerous text changes to reflect updates to the current mine inflow conditions; 2) mine dewatering changes with the addition of JC-3; 3) observations from selected groundwater wells; 4) comments on updated tritium (age-dating) analysis; 5) updates to Total Dissolved Solids (TDS) concentrations going to Eccles Creek; 6) a discussion of water quality restrictions to JC-3; 7) an update of Plate PHC A-2 outlining current mine inflows; 8) updated flow and water level elevation graphs and tables; and interim reports, added as Appendices H and I, that updates information concerning continued groundwater modeling and a dye-monitoring program. Canyon Fuel Company uses this information as continued supportive evidence in the following studies (PHC appendices):

- Appendix A, Spring Flow to PHDI comparison graphs
- Appendix A, Discharge to Eccles Creek and Electric Lake Tables
- Appendix A, Cumulative Monthly Discharge Tables
- Appendix G, Investigation of Fault-related Groundwater Inflows at Skyline Mine.
- Appendix H, HCI modeling for Skyline Mine memo.
- Appendix I, Peterson Hydrologic preliminary dye tracing study report.

Although not updated with this submittal, other information that supports minimal impacts to the surface hydrologic system include:

- Appendix C - Progress Report No. 2 (Updated Conceptual Hydrogeology)
- Appendix D - Eccles and Mud Creek Channel Stability Study
- Appendix F - Expected Water Inflow Rates

In Section 2.5.1 - Potentially Affected Water Rights, the Permittee provides a discussion of the water being encountered beneath the Huntington drainage, and how data and analysis indicate there is no significant connection between the surface waters and waters encountered in the mine.

Studies indicate the Star Point Sandstone does not transmit water easily, does not have a significant discharge point located immediately down gradient of the mine, and age-dating of the water suggests it takes thousands of years to move through the aquifer despite the high transmissivity of the fractures within the sandstone. The majority of inflow enters the mine through the floor along north-south trending fault (Diagonal Fault) and fracture zones within the Star Point Formation. Of the eight (8) significant inflows currently encountered in the mine since 1999, five (5) of the inflows are currently flowing at approximately 1/3 of the rate when first encountered and one is flowing at approximately 52 percent of the original flow. The inflow at 10 Left has dropped from approximately 6200 gpm to 3200 gpm (52 percent), and represents 39 percent of the total inflow into the mine. The 10 Left inflow and JC-1, both in proximity to the Diagonal Fault, are the only mine inflow sites that have any components of 'modern' water based on tritium analysis. On page PHC A-19 recently collected tritium analysis suggests between 6 and 22 percent of the water being pumped from the JC-1 well has a component of modern water. At a pumping rate of 3900 gpm (JC-1), it is possible that a maximum of 858 gpm could be contributed from the Blackhawk Formation. When JC-3 is online, a total of approximately 8600 gpm will be pumped from the mine. Assuming the 3200 gpm from the 10 Left area and 3900 gpm from the JC-1 area represent the maximum potential for water with a modern component, approximately 1560 gpm could be modern water (7100 gpm multiplied by 22 percent). This represents approximately 18 percent of the water being pumped to the surface from the two wells.

The water is stored in the Star Point Sandstone under considerable potentiometric head, which indicates it is a confined aquifer. Being under considerable head also suggests the recharge area is not in the immediate vicinity (Star Point Sandstone mapped to the east of the permit area, but separated by significant fault offsets (Connelville and O'Conner Faults) to the east. In addition, all the water rights in the upper Huntington drainage are well and springs that issue from the Blackhawk Formation, which is hydraulically disconnected from the Star Point Sandstone by impermeable siltstones and shales. All the mine workings are located at least 400-ft below the level of Electric Lake. If the overlying Blackhawk were saturated and draining into the mine, the Division would anticipate the majority of fractures would continue to flow into the mine with modern water. Evidence indicates water being encountered in the mine is generated from 'ancient' water residing below the mine workings. The Mine analysis of the water quality (both of surface and in-mine flows), mine geology, drilling, and groundwater well data indicate the majority of the large inflows to the mine are not similar to water found in Electric Lake, and likely originate from deep within the Star Point Sandstone and are transported to the mine through faults and fractured sandstone from well below the mine. This is based on temperature,

TECHNICAL MEMO

solite water chemistry, and isotopic differences between water found within the Blackhawk Formation at the surface and water encountered within the mine. Skyline continues to monitor spring and stream flows in the Winter Quarters, Eccles, Mud Creek and Huntington drainages to identify impacts. Should conditions change, adequate monitoring of the inflows into the mine, and surface monitoring of springs and streams will document any mitigation that should take place.

To address the effects on water quantity discharged into Eccles Creek / Mud Creek a study was initiated in November 2001, a work plan was revised in July 2002, work was conducted in Aug 2002, and additional follow studies will continue in the summer of 2003. The objective of the study is to characterize the physical characteristics of the stream channels, through both bank stability and vegetation, and through ongoing monitoring determine whether undesirable impacts are occurring along the stream due to excessive discharge from the mine. This is outlined briefly in Section 2.3.7 - Groundwater Monitoring Program of the MRP (pg. 2-35a) and in detail in Volume 2.12 - Land Use (Attachment 3) of the MRP. Should any adverse impacts occur related to discharge, the monitoring program, as outlined should be able to identify and quantify any damages.

Beginning on page PHC A-10 a brief discussion identifies the springs, seeps, and streams monitored within the Huntington drainage basin and indicates the shallow ground water aquifers are controlled by the fluctuations in yearly precipitation or drought cycles, as supported by the graphs available in Appendix A.

Findings:

The information provided adequately addresses the minimum requirements of the Environmental Resource Information - Hydrologic Resource Information section of the regulations.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

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

Analysis:

Coal Resource and Geologic Information Maps

No modifications to the geologic coverage were necessary to Plate 2.2.1-1 - Surface Geology, which provides a good illustration of the regional surface geology. Coverage from east to west includes the Pleasant Valley fault and the Gooseberry fault; and north to south includes the Fish Creek graben area and the Electric Lake dam. The Star Point formation has also been

mapped to help identify the anticipated discharge/recharge areas of the water being encountered in the southern portion of the current permit area. Quaternary-aged sediments have also been included in the lower reaches of the streams to help in the Alluvial Valley Floor (AVF) determination. On a regional scale when looking at fault alignments, the orientation in the southern portion of the permit area is south-southwest to north-northeast, while the orientation of the faults in the northern portion of the permit area is generally west-northwest to east-southeast. The central portion of the permit area is also truncated by a series of igneous intrusions (dikes). The geologic maps support the mine information indicating different geologic conditions exist throughout the permit area.

In addition, Drawings 2.3.4-1A through -1C have been provided to give a graphic representation of the geology in cross-section. Drawing 2.3.4-1A provides a north-south cross section through the approximate center of the permit area; 2.3.4-1B runs east-west through the southern portion of the North Lease area; and 2.3.4-1C runs east-west through the southern portion of the current permit area, respectively. These drawings help illustrate the doming effect in the approximate middle of the property, the southwest to northwest dipping of the beds, and the thinning and pinching out of coal beds to the north. No additional geologic information is requested from the Division at this time.

Subsurface Water Resource Maps

Drawing 2.3.4-2 has been updated to include the potentiometric surface based on information acquired from the mine through November 2002. The drawing helps illustrate the lack on connectivity of groundwater between the North Lease area and the southern portion of the existing mine. It also helps illustrate that water is being drawn to the well along distinct flow paths; the most apparent being along a north-south trending fault centered on the 10-Left mine panel, and a series of northeast-southwest trending faults extending from the 14-Left mine panel and paralleling Boulger Canyon.

Also included with the current amendment is an update of Drawing PHC A-2 that outlines updated inflows into the mine, and illustrates how many of the inflows have decreased in volume over time. No additional subsurface water resource information is requested from the Division at this time.

Findings:

The information provided meets the minimum requirements of the Environmental Resource Information - Maps, Plans, and Cross Sections of Resource Information section of the regulations.

TECHNICAL MEMO

OPERATION PLAN

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:

Groundwater Monitoring

Mine in-flows, as initially outlined in July 2002 PHC Addendum (Mine Inflow Map PHC A-2, Appendix F, and Appendix G) have been decreasing with time in most cases. This is illustrated in the modifications made to Drawing PHC A-2 that shows the inflow locations, the initial inflow rates, and the current inflow rate. Also, continued solute and isotopic water analysis of the mine in-flows have continued to be monitored to adequately demonstrate water being encountered in the mine is different from the water at the surface and in Electric Lake. Specifically, Table 2 from Appendix G (Petersen -Fault-related Groundwater Inflows) has been updated to include isotopic analysis through February 2003. Table 2 adequately illustrates that site JC-1 is the only monitoring site with low to moderately increased levels of tritium, an indicator of having a modern component. Monitoring of the potentiometric head in the Star Point Sandstone continues to be monitored with the available groundwater wells in the area. Table 1 (Water levels in Monitoring Wells in the Skyline Mine area) from Appendix G has also been updated as part of this amendment to illustrate the Star Point formation is recharging at a slow rate.

The addition of the JC-3 well does not represent any net increase in the discharge from the mine; only a routing modification. Water that was encountered in the vicinity of JC-3 in the mine were previously routed through the mine and discharged into Eccles Creek. Water quality at JC-3 will be closely regulated, as illustrated in the UPDES requirements. No tritium testing is being conducted on the water discharging from JC-3. This is impractical since JC-3 represents a combined discharge of various mine inflows and potential contamination due to exposure to mine workings. It is however, being analyzed as part of a Dye-tracer study, to evaluate whether any of the water reporting to the well is coming from Electric Lake. Mr. Chris Hansen (CFC personnel) confirmed that Pacificorp personnel initiated a dye-tracer study in Electric Lake in mid-February 2003, with additional dye (both Fluorescein and Eosine) being injected on April 1, 2003. Peterson Hydrologic (per CFC request) initiated a dye-monitoring program on March 5, 2003. An outline of the program and preliminary results of the study are outlined in Appendix I of the July 2002 Addendum to the PHC. To date, preliminary data indicates confirmed traces of dye are being reported below Electric Lake Dam ('confirmed' meaning sample met all lab criteria for positive dye recovery). Other traces have been found in Eccles Creek above South

Fork, and in Crandall Creek below Electric Lake Dam, but these results were 'flagged' because they did not meet all the lab criteria for positive results. Of 20 total samples collected (10 Fluorescein / 10 Eosine) in mine, one (1) preliminary sample showed traces of Fluorescein dye, and it was also flagged for not meeting all the criteria for a positive dye recovery.

The water pumped from JC-3 will be routed through a pipe shared by Well JC-1 and discharged directly into Electric Lake. The combined flow of JC-1 and JC-3 will be reported to the Division database as site ELD-1. Both sites will also be sampled separately for water quality analysis. Table 2.3.7-3 has been modified to include additional monitoring with the addition of the JC-3 well and discharge point ELD-1.

To better monitor the water being discharged to Eccles Creek, water-monitoring site SRD-1 has also been added to the monitoring program. The addition of this site enables the viewing of the total mine discharge into Eccles Creek as opposed to summing the respective UPDES Mine Discharge points.

Table PHC A-2 is a well summary data table that has been provided in this submittal that outlines wells in the groundwater monitoring plan, the formation the wells are screened in, the screen elevation, and the historic water level within the well. This table provides valuable information in understanding the groundwater and with the continued monthly water-level information, provides insights into the affects on the Star Point Sandstone due to the continued pumping. A brief discussion of Well W2-1 (98-2-1) has been provided which briefly outlines current conditions within the southern portion of the permit area. Since the well is located along a major fault and fracture zone, the water level within the well has been drawn down through pumping 200-ft. (as of November 5, 2002) from historic levels (11/5/02 elev. 910.81 ft.). This same response however, is not seen in groundwater wells not directly connected with a fault system. For a complete discussion of the groundwater potentiometric surface, the reader is referred to the July 2002 Addendum to the PHC.

Surface Water Monitoring

No modifications to the Surface Water Monitoring program is required as part of the addition of Well JC-3. Surface water monitoring continues as outlined in 2.3.7 of the MRP.

During 2002, CFC attempted to study the reservoirs in proximity to Electric Lake (Scofield, Cleveland, Huntington, Gooseberry, etc.) to evaluate water levels, storage comparisons and determine whether Electric Lake is disproportionately losing water (Electric Lake is unique due to having a power plant as a downstream user there is a constant discharge). However, the study was not formally conducted because the surrounding reservoirs were lacking reliable inflow, discharge, and stage elevation records. Also, gauging stations to monitor both inflow and outflow from the reservoirs were necessary. With only calculated numbers, the study could not be conducted with reasonable accuracy.

TECHNICAL MEMO

In August 2002, Canyon Fuel Company (CFC) made an attempt to assess the potential impacts to the surface waters in proximity to the mine. CFC instructed HCI Consultants to conduct an evaluation of the water balance of Electric Lake. A DRAFT COPY of the technical memorandum suggests, when using a generalized water balance equation that uses the entire drainage above the dam (not solely the flume in Huntington Creek), any long-term water imbalance is due to a systematic loss of water from the Electric Lake reservoir itself. Variables considered in the equation include precipitation, evapotranspiration (*Et*), discharge, lake storage and evaporation, and unmeasured water. As stated in the memo, "It must be recognized, however, that all parameter values used to arrive at the average loss rate contains some uncertainty. Evapotranspiration, which has not been measured directly, contains the highest uncertainty. Based on the range of *Et* rates described above (15.4 - 18.1 inches/year). The average imbalance could range from 11 cfs to 5 cfs."

The above studies illustrate that although some studies have not been finalized and submitted, surface-water monitoring is actively taking place.

Water-Quality Standards And Effluent Limitations

In Section 2.5.2 - Mining Impacts on Water Quantity (page 2-51a - 2-51b), a discussion outlines that the unanticipated discharges currently being generated greatly exceed the UPDES permit that was written when the mine was opened. Flows were expected to be less than 1,000 gpm and the limits on total dissolved solids (TDS) were created based on that volume. The initial flow increases encountered from 1999 through 2001 had problems with the toxicity caused by nickel concentrations and high TDS. With the significant inflow to the mine from the 10 Left area and changes of how water is handled underground resulted in a decline in TDS and dissolved nickel over time. With the mine discharge currently at approximately 8,500gpm (November 2002), a 7.1 ton/day limit of TDS (as currently assigned) is being exceeded on a continual basis. The daily tonnage is being exceeded due to the volume being discharged, however the water being discharged has TDS concentrations of less than 500 mg/l. The Mine and the Utah Division of Water Quality worked together to modify the Mine's UPDES discharge permit to limit the water discharged to a 500 mg/l concentration of TDS and no total ton-per-day limit. This change to this UPDES permit received final approval in May 2003. The Division has also required additional water monitoring sites in Eccles, Mud and Clear Creeks to include flow, TDS, TSS, and total phosphorus to monitor this issue.

The Division has received a copy of the UPDES permit that has been issued to PacifiCorp for JC-3. Minor Facility Permit UT0025534 was approved following a public comment period and became effective June 1, 2003. Water will be pumped to the lake through the existing buried 16-inch HDPE pipe into Electric Lake. The well is identified in the permit as a 'mine dewatering well'. Should the use change in the future, the change in use would need to be evaluated and approved by the Division of Water Rights. Because the water is being pumped

from an abandoned portion of the mine, and into Electric Lake (pristine waters) the Utah Division of Water Quality has added additional requirements: 1) Oil and grease will be limited to 10mg/l daily maximum concentration; 2) Total and dissolved trivalent arsenic, cadmium, trivalent chromium, copper, iron, lead, mercury, nickel, selenium, silver, zinc, and various nutrient parameters will be sampled in at least two locations in the lake; and 3) Total Dissolved Solids is limited to 255 mg/l.

From a regulatory standpoint, PacifiCorp is likened to a contractor engaged by the mine to do other work in the mine permit area and the mine disturbed area. Unless transfer of ownership of the wells occurs, the Division must look at the situation in this perspective. Skyline Mine remains responsible for the hydrologic impacts due to pumping their wells in their permit area and removal of water from their mine.

Findings:

The information provided adequately addresses the minimum requirements of the Operation Plan - Hydrologic Information section of the regulations.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

Analysis:

Monitoring and Sampling Location Maps

Map 2.3.6-1 - Location of Hydrologic Monitoring Stations has been modified to include sites ELD-1 and SRD-1. Both sites will be monitored for flow only. Both sites are monitored regularly however, it is only reported to the Division on a quarterly basis.

Plate 2.3.6-1 has been updated to include proposed additional monitoring of surface and groundwater sites based on the addition of the combined discharges into both Electric Lake and Eccles Creek. These sites provide no new information, however it allows parties to view the Division database and easily gather information on the amount of water leaving the mine. Otherwise, it wouldn't be obvious which discharges need to be added together to get the total flow. The map will also be updated again in the near future with the addition of additional groundwater monitoring station (springs/seeps) located within the Star Point Sandstone below Electric Lake.

Mining Facilities Maps

TECHNICAL MEMO

Plate 3.4-1, James Canyon Disturbed Area Map, has been modified to include the location of the new well JC-3 and its support facilities.

Findings:

The information provided adequately addresses the minimum requirements of the Operation Plan - Maps, Plans, and Cross Sections of Mining Operations section of the regulations.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

Regulatory Reference: 30 CFR Sec. 784.14; R645-301-730.

Analysis:

Unique geologic conditions have resulted in difficult mining conditions at the Skyline Mine. Records indicate that from January 1999 through May 2003, 37,489 acre-feet have been pumped to relieve water inflows to the mine. Of the 37,489 acre-feet being pumped, 30,409 acre-feet have been discharged to Eccles Creek and 7,079 acre-feet have been discharged to Electric Lake, respectively. As of May 31, 2003, approximately 9,600 gpm were discharged to Eccles Creek and approximately 3,900 gpm were discharged to Electric Lake. JC-1 pumps water from a fault or fracture located below the mine, while JC-3 will pump water from sealed the mine workings. Together these two wells are expected to pump approximately 8,600 gpm of groundwater. That converts to 12,904 ac ft per year (as a comparison, Electric Lake Storage Capacity is 31,500 acre feet). This will reduce the amount of water discharged to Eccles Creek. Concerns for impacts to the hydrologic regime remain at a high level, while the potential long-term impacts are still being evaluated.

The Permittee has provided sufficient information for the Division to make a determination of the impacts to the cumulative hydrologic regime by adding the JC-3 Well to the current Skyline Mine permit area. The Division has determined the projected discharge of groundwater from the JC-3 well will be conducted to minimize disturbance to the hydrologic balance within the permit area and adjacent areas, and to prevent material damage to the hydrologic balance outside the permit area. This determination is based on the following provided information:

- The addition of the JC-3 well represents no net increase in the amount of water being discharged from the mine, only a change in the point of diversion for a portion of the water.
- Monitoring of the surface- and ground waters potentially affected by the dewatering of the mine is ongoing and follows stringent guidelines determined by the Division.

TECHNICAL MEMO

- Skyline Mine has made adequate demonstration that a maximum of 18 percent (approximately 1560 gpm) of the water entering the mine could be of modern origin.
- Mine-inflows have been reduced significantly. Of the five (5) major inflows encountered prior to 2002, flows have decreased by 67 percent. Of the eight (8) total major inflows encountered, flows have decreased by 45 percent.
- Both Skyline mine and the Division continue to evaluate and assess the situation with continued water analysis of both surface- and groundwater
- Initial dye-tracer water monitoring, age-dating analysis, and solute water analysis all indicate there is not a direct connection between surface water and water encountered within the mine
- Continued modeling is trying to identify the source area of the water to reduce any future impacts
- Mining is anticipated to slow down dramatically or cease by 2nd quarter 2004

Findings:

The information provided in the submittal adequately addresses the minimum requirements of the regulations, enabling the Division to make its Cumulative Hydrologic Impact Assessment (CHIA) of adding the JC-3 Well to the current Skyline Mine permit. The Division's CHIA document is currently being modified based on the recently submitted information.

RECOMMENDATIONS:

The proposed amendment can be approved in its current form.