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DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER
Executive Director

Division of Oil, Gas and Mining

JOHN R. BAZA
Division Director

May 5, 2015

Carl Winters, Mine Manager
Canyon Fuel Company, LLC
HC 35 Box 380
Helper, Utah 84526

Subject: Reduce Macroinvertebrate & Fish Monitoring, Task ID #4817, Canyon Fuel Company, LLC, Skyline Mine, C/007/0005

Dear Mr. Winters:

The Division reviewed the application received on March 19, 2015 to reduce macro-invertebrate and fish monitoring on Eccles, Woods Canyon and Winter Quarters Creeks. After consultation with the United States Forest Service, Utah Division of Wildlife Resources, and Utah Department of Environmental Quality – Water Quality Division, the Division has determined that macroinvertebrate and fish monitoring remain necessary as a protective measure in Eccles Creek. The removal of monitoring in Eccles Creek is not consistent with the requirements under R645-301-333, because the creek has undergone changes due to the increase in flow from mine discharge since 2001. The increased water has modified the morphology of the stream from pre-mining conditions. Existing data confirms changes in stream biology and monitoring should continue to identify trends and potential impacts to Eccles Creek. If impacts are identified in Eccles Creek, mitigation should be implemented. It would be prudent to propose potential mitigation measures while monitoring changes are being made to the MRP.

The Division does approve the reduction of fish and macroinvertebrate monitoring on Winter Quarters and Woods Canyon Creeks, if Canyon Fuel Company will commit to resuming monitoring should mine water discharge be added or surface disturbance causes impacts to the creeks. The attached findings document provides further details on how the application might be revised.

The plans as submitted are denied. Please resubmit the entire application. If you have any questions, please call me at (801) 538-5325.

Sincerely,

Daron R. Haddock

Daron R. Haddock
Coal Program Manager

DRH/LR/PWB/ss
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Technical Analysis and Findings

Utah Coal Regulatory Program

May 5, 2015

PID: C0070005
TaskID: 4817
Mine Name: SKYLINE MINE
Title: REDUCE MACROINVERTEBRATE & FISH MONITORING

Summary

On March 19, 2015, the Division received an application from Skyline Mine requesting the reduction of the macroinvertebrate and fish monitoring on Woods, Winter Quarters, and Eccles Creeks. As required in their approved Mining and Reclamation Plan, Skyline has committed to monitor ""for a period determined by Canyon Fuel Company, LLC, The Division, USFS, and the DWR, to be long enough to provide data to establish population trends."" Skyline Mine proposes that 1) sufficient data has been collected to determine the benthic community is predominantly affected by climatic influences; 2) streams not potentially impacted by mine-water discharge do not need benthic monitoring; and 3) other monitoring methods adequately address the potential impacts to the streams.

Deficiencies Details:

lreinhart

Environmental Resource Information

Fish and Wildlife Resource Information

Analysis:

Skyline proposes that sufficient data has been collected to determine the benthic communities of Woods Canyon Creek, Winter Quarters Creek, and Eccles Creek are not significantly impacted from mining operations. Therefore, they propose to discontinue Macroinvertebrate and fish monitoring as required in 2.8.1 of the MRP.

The Division solicited comments from USFS and DWR and has incorporated those comments into this analysis. The Division also consulted with Department of Environmental Quality since they have expertise in the subject matter and are involved with the UPDES from the discharge into Eccles Creek.

The United States Forest Service and Utah Division of Wildlife Resources provided written comments that did not oppose the proposal as long as water quality testing continues on the creeks and under the condition that if mine water discharge is added or surface disturbance causes impacts to the creeks, biological surveys should be re-evaluated.

Eccles Creek:
This creek receives the most direct impacts from the mining operation. As such, and identified by the conclusions of the report provided, the biota in the creek continue to undergo change. Additionally, a recent UPDES permit application reveals

mine discharge may increase in the near future. It was discussed in the report the significance of increased mine discharge affecting the physical, chemical, and biological components of Eccles Creek.

Macroinvertebrate monitoring shows the effects of short-and long term pollution events and may show impacts from habitat loss not detected by traditional water quality assessments. The report fails to provide adequate data to support a trend analysis of stream health which warrants the elimination of macroinvertebrate and fish monitoring in Eccles Creek.

Woods Canyon Creek and Winter Quarters Creek:
Since no mine water is discharged, the existing water quality and quantity monitoring activities are sufficient to determine impacts to stream health to macroinvertebrates and fish. However, if in the future any mine water is discharged into Woods Canyon Creek or Winter Quarters Creek, then macroinvertebrate and fish monitoring shall resume.

Deficiencies Details:

In accordance with R645-301-333, the Division has determined that protective measures for fish and wildlife are provided for by macroinvertebrate and fish monitoring and requests monitoring on Eccles Creek continue as long as the mine is modifying the morphology of the creek due to the mine water discharge.

Fish monitoring shall continue every third year as described in the MRP to continue monitoring effects to fish, specifically Cutthroat Trout, in Eccles Creek. Reports should compare data with earlier collection records and adequately illustrate present fish population conditions. The Division approves the elimination of fish monitoring in Winter Quarters and Woods Canyon Creeks if Canyon Fuel Company will commit to resuming the monitoring if mine water discharge is added or surface disturbance causes impacts to the creeks.

The Division requests the macroinvertebrate monitoring continue on Eccles creek but be modified so that monitoring occurs annually every fall (rather than fall and spring every three years) using the Standard Operating Procedure for Aquatic Benthic Macroinvertebrate Collection in Rivers and Streams. This operating procedure is provided by Utah Department of Environmental Quality, Division of Water Quality and can be found at the following website:
http://www.deq.utah.gov/Compliance/monitoring/water/docs/2014/06June/SOP_StreamBMI_5.1.14_Rev0.pdf
The Division approves the elimination of macroinvertebrate monitoring on Winter Quarters and Woods Canyon Creeks if Canyon Fuel Company will commit to resuming the monitoring if mine water discharge is added or surface disturbance causes impacts to the creeks.

lreinhart

Operation Plan

Fish and Wildlife Protection and Enhancement Plan

Analysis:

Analysis:
The application to reduce macroinvertebrate and fish monitoring in Eccles Creek does not meet the minimum biology requirements as per the Coal Program rules R645-301-300. Monitoring in Eccles Creek shows a highly variable and sensitive ecosystem that has experienced changes in the number of taxa, individual taxa densities, etc. through the last two monitoring cycles of 2007-2008 and July 2011. The Permittee suggests the current water quality monitoring conducted and submitted to the Division will be able to accurately quantify change within the creek. However, the water monitoring data does not accurately monitor the health of the stream with regard to fish and macroinvertebrates.

The water quality monitoring of dissolved oxygen levels in Eccles Creek are not accurately quantifying the diurnal oxygen cycle of the creek. Dissolved oxygen (DO) levels in forest streams are heavily influenced by the amount of algae growth within the stream. With a lot of algae growth in these typically low nutrient availability streams, the algae can cause wide fluctuations in DO levels in a 24 hour period. Algae raises DO levels during the daytime as it photosynthesizes and releases oxygen to the surrounding water, and it causes low oxygen levels during the nighttime as dead organic matter of the plant breaks down and absorbs oxygen from the water column. The Permittee has not captured this diurnal fluctuation of the DO cycle within Eccles Creek because water quality samples measuring DO have typically been taken in the mid-day. In fact, in the past 35 years of monitoring, no pre-dawn samples have been taken that would capture the low point in the DO cycle of the creek. DO is extremely critical for fish habitat and aquatic insects. Stream observations show there is significant algae growth within Eccles Creek that is likely driven by nutrient loading. The high density algae growth is most likely drives large fluctuation in the DO cycle in Eccles Creek. Given fish die-off typically occurs when DO levels are at their lowest in the stream during the pre-dawn hours, water quality sampling will not accurately monitor the health of the stream

with regard to the fish in the stream. See Figure 1 showing sampling time vs. DO.

As previously mentioned, algae growth is driven by increased nutrient loading within a stream. Typically, forest streams like Eccles Creek, will have naturally low nutrient levels that limit the growth of algae. Current water quality monitoring measures nitrate levels in Eccles Creek, however the sampling regimen does not accurately quantify the diurnal cycle of nitrate levels within the creek. Water sampling times have measured nitrate levels when absorption from algae is highest during the daytime.

The Permittee cannot use water quality monitoring as a substitute for macroinvertebrate and fish monitoring because the water quality monitoring program has not captured the full picture of the health of the ecosystem. Thus, the Division is unable to determine if negative effects from mining have impacted and harmed fish and macroinvertebrates within Eccles Creek.

Findings:
The application to end macroinvertebrate and fish monitoring in Eccles Creek does not meet the minimum biology requirements as per the Coal Program rules R645-301-300.

kstorrar

Fish and Wildlife Protection and Enhancement Plan

Analysis:

On March 19, 2015 the Division received and amendment from Canyon Fuel Companies Skyline mine to amend their macroinvertebrate and fish sampling monitoring programs. This memo will include a review of that information.
The macroinvertebrate monitoring is described in section 2.8 of volume 1A of the approved MRP. The reach of Eccles creek that is currently sampled for fish and macroinvertebrates is below the mine and above the loadout. In order to accurately assess potential impacts to the health of Eccles creek from mining activities plate 2.8.1-1 needs to be revised to include macroinvertebrate and fish sampling locations above the mine and below the loadout and the text in the appropriate section(s) of section 2.8 of the MRP need(s) to be revised to include references to the two additional sampling locations.

Deficiencies Details:

The information in the application is not adequate to meet the requirements of this section of the regulations. Prior to approval the following information is required in accordance with R645-301-333;

In order to accurately assess potential impacts to the health of Eccles creek from mining activities plate 2.8.1-1 needs to be revised to include macroinvertebrate and fish sampling locations above the mine and below the loadout and;

The text in the appropriate section(s) of section 2.8 of the MRP need(s) to be revised to include references to the two additional sampling locations.

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