



WESTERN RESOURCE
ADVOCATES

November 18, 2011

Dana Dean
Associate Director of Mining
Division of Oil, Gas & Mining
1594 West North Temple, Suite 1210
Salt Lake City, Utah 84116

Re: Protest of Tentative Decision to Approve a Notice of Intention to Commence Large Mining Operations for the Red Leaf Resources, Southwest #1 Mine M/047/0103

Ms. Dean:

Pursuant to Utah Admin. Code R647-4-116(2) and on behalf of Living Rivers, we hereby submit a written protest of the Division of Oil, Gas & Mining's (DOG M) decision to grant tentative approval of the Notice of Intention (NOI) to commence mining operations at the Red Leaf Southwest #1 mine. The NOI is deficient in four primary ways. First, in violation of DOGM regulations, the NOI fails to account adequately for the possible existence of susceptible ground water resources in the area of the mine. Second, in violation of DOGM regulations, the NOI fails to account for the possible impacts to ground water in the area of the mine. Third, there is no evidence that Red Leaf intends to obtain, or that DOGM intends to require, a ground water permit from the Division of Water Quality (DWQ) as required by DWQ regulations. Fourth, the NOI fails to provide adequate information to show that the design of the EnShale capsules will be sufficient to prevent leakage of petrochemicals into the area surrounding the mine, and specifically into local, perched ground water aquifers. Each of these deficiencies is outlined in detail below.

Living Rivers is a Moab-based nonprofit organization of approximately 300 members and supporters dedicated to restoring river ecosystems by mobilizing public support and involvement for river restoration; to educating and enlisting humanity to protect and restore the quality of the natural river ecosystems; and to using all lawful means to carry out these objectives. The main focus of Living Rivers is restoration of the Colorado River. Living Rivers is a member of the New York-based Waterkeeper Alliance. Living Rivers members use and enjoy public lands in and throughout Utah, including the precise area of Red Leaf's Southwest #1 mine. Living Rivers members use these lands for a variety of purposes, including: recreation, solitude, scientific study, and aesthetic appreciation. Living Rivers members visit and recreate (e.g., study, hunt, camp, bird, sightsee, and enjoy solitude) throughout the lands that will be impacted by this mine, including the Tavaputs Plateau and surrounding public lands and waters. Living Rivers members have a substantial interest in resources affected by this matter, including wildlife, plant communities, night skies, air quality, water quality, and cultural historic sites. Living Rivers members also have a substantial interest in ensuring that the DOGM complies with the terms and requirements of state law and its own regulations.

The NOI Does Not Adequately Account for Local Ground Water Resources.

In approving the Red Leaf NOI, DOGM is violating its regulations that require an applicant to account adequately for the location of ground water resources in the impacted area. Specifically, R647-4-106(8) requires DOGM to ensure that the NOI contains a sufficient description of the location of water resources, as well as a calculation of the depth at which any such resources are found in the area of the mine. As outlined below, this NOI fails to meet those requirements.

The Parachute Creek Member of the Green River Formation is the surface bedrock formation that exists throughout most of the Red Leaf parcels. This formation contains the Mahogany Oil Shale zone from which the raw ore would be extracted. The Douglas Creek Member of the Green River Formation crops in the deeper canyons in and near the two parcels.

The NOI states that it is unlikely that the Parachute Creek and Douglas Creek contain significant quantities of ground water, though its presence in these rocks cannot be ruled out. The NOI provides three lines of evidence in support of the conclusion for the absence of ground water in the Parachute Creek and Douglas Creek. This purported analysis is inadequate.

First, the NOI reports that there are no USGS-mapped springs issuing from either of these formations in or near the parcels. This is insufficient evidence upon which to conclude that there are no aquifers that will be impacted by this mine. Not all springs are mapped by the USGS, and, for this and other reasons, reference to such maps is not the standard for determining the presence or absence of ground water. More importantly, the NOI does not contain the results of a thorough, systematic seep and spring inventory of the parcels and nearby area. If the company never looked, it is not in a position to conclude that there are no seeps or springs issuing from shallow aquifers that will be impacted from its planned strip mining activities.

Second, the NOI contends that exploration drilling by Red Leaf did not encounter ground water. This is also an inadequate basis on which to conclude that there are no aquifers that will be impacted by this mine. The NOI does not contain drill logs, so it is impossible to know what was or was not recorded during the drilling operations. Often, during exploratory drilling, the driller simply does not make observations regarding the presence or absence of ground water. If this were the case here, the lack of observation of ground water does not allow DOGM to conclude that there is an absence of ground water in the areas drilled. In addition, the drilling method often precludes the operator from making observations of ground water unless significant quantities are encountered. If the drilling operation required the addition of drilling mud and water, this would mask the presence of water entering the drill hole from intercepted aquifers. Similarly, air rotary methods have a tendency to dry the air that is used to circulate the cuttings, so any small quantities of water intercepted would go undetected.

Third, the NOI provides a summary of nearby water wells on file with the Utah Division of Water Rights. This provides no pertinent information on the question of aquifers in the parcels to be mined by Red Leaf because there is no information on the location of the wells

(distance from the area of proposed mining), no drill logs, no information on the geologic formations in which the wells were completed, and no information on ground water that was encountered at shallower depths.

In sum, the information presented in the NOI is insufficient to fulfill the requirements of R647-4-106(8) and does not contain a sufficient description of the location of water resources, as well as a calculation of the depth at which any such resources are found in the area of the mine.

The NOI Fails to Adequately Account for Potential Impacts to Ground Water Resources.

In approving Red Leaf's NOI, DOGM is violating its regulations that require an applicant to account for the impacts of a mining operation on local ground water resources. Specifically, R647-4-106(8) and R647-109(1) require the applicant to include in the NOI an adequate description of both the location of, and projected impact to ground water resources in the area of the mine. As outlined below, this NOI fails to meet those requirements.

With regard to projected impacts to ground water, the NOI states that ground water is not susceptible to any impacts from the mining and retorting operations because it is isolated from these operations by several hundred feet of low permeability marlstones. The NOI reports that the first porous unit occurs approximately 50-100 feet below the Mahogany in the Douglas Creek Member.

While the NOI acknowledges that the B-groove (located at the base of the Mahogany Zone) can be a water bearing interval elsewhere in the Piceance Basin, it goes on to say that the B-groove is unsaturated in this area. First, as discussed above, this statement is based on insufficient evidence. Second, the B-groove does not have to be saturated to be properly characterized as an aquifer. As a result, the assertions in the NOI are unsubstantiated.

The bottom line is that Red Leaf failed to conduct an adequate assessment of potential impact to local ground water resources because the company is convinced that the design of its EnShale capsule will prevent ground water contamination of any residual petrochemicals resulting from their retort process. Such assertions do not relieve DOGM of its regulatory responsibilities. Moreover, all parties must acknowledge that this, like all oil shale extraction techniques, is an experimental process – unproven technology, particularly at the scope and scale proposed by the company. As a result, in order to meet its legal mandate, DOGM is required to approach such experimental mining conservatively, is obligated to ensure that the company truly accounts for the possibility of ground water contamination from the capsules and is duty-bound to act on the information provided in the manner dictated by its rules.

Plainly, in developing the NOI, Red Leaf operated on the presumption that ground water resources will not be impacted by this operation. For example, the company recounts that, based on a pre-design conference with the agency, the Division of Water Quality (DWQ) “is satisfied that Red Leaf's project does not impact water” and that “a formal statement from DWQ is pending.” NOI at 33. On the basis of this conjecture, Red Leaf's NOI contains no more than a

cursory overview of ground water resources in the area, and it is clear that the company does not feel compelled to conduct a more thorough inventory.

Rather than take a legally adequate course that recognizes the uncertainties and potential failings of the EnShale process, Red Leaf relied on a best-case scenario to draft the NOI. Not only is such an approach unjustified by the record, but moreover, as a result, the NOI fails to fulfill even the basic requirements of R647-4-106(8) and R647-109(1). In any case, regardless of the company's motivations, the information presented in the NOI is insufficient to meet DOGM's regulatory requirements and inadequate to serve as a reasonable basis for any conclusion regarding whether local ground water resources will be impacted by the proposed mining operation. Thus, under the circumstances, it would be arbitrary and capricious for DOGM to approve the NOI.

The NOI Fails to Contain a Ground Water Permit as Required by DWQ.

Pursuant to DWQ regulation R317-6-6.1(A), Red Leaf has a duty to apply for a ground water discharge permit for its mine. As noted above, the initial draft of the NOI contained a statement that intimated that no such duty exists. This position was stated more definitively in the latest draft of the NOI where Red Leaf's environmental consultant, JBR, states that "Red Leaf Resources has concluded that its proposed facility is not subject to the permit requirements of the Utah Ground Water Quality Protection Rules," and that "[t]he operation of the proposed capsules will not result in discharge of pollutants nor is it probable that discharge would result. Therefore, Red Leaf does not believe that it has a duty to apply for a Ground Water Discharge Permit." NOI at 423-24. This letter was contained in the version of the NOI submitted to DOGM on September 6, 2011. DOGM acknowledged receipt of the revised NOI on September 27, 2011.

The JBR letter repeats much of the information in the NOI. However, as discussed above, the information in the NOI fails to provide an adequate basis for the assertion that there is no potential for mining activities to impact local ground water resources. Moreover, the JBR letter contradicts some of the statements in the NOI, again underscoring the shortcomings of both the NOI and the company's communication with DWQ. For example, JBR reports that the Douglas Creek Member is 500 feet below the floor of the mine, rather than the 50-100 feet noted in the NOI.

On October 6, 2011, the Manager of DWQ's Ground Water Protection Section sent a letter to JBR disagreeing with the consultant's assessment and noting that, "[b]ased on our discussion, DWQ has determined that Red Leaf Resources will need to submit a completed application for a ground water discharge permit." Exhibit A, attached. Thus, not only did DWQ determine that Red Leaf must have a ground water permit, the agency also rejected the basis for Red Leaf's contention that it did not need a permit. DWQ plainly concluded that activities at the mine, including encapsulated processes, did have the potential to impact ground water resources.

In spite of what constitutes an obvious dismissal of an essential component of the NOI – the claim that no discharges to ground water resources would result from mining activities – DOGM issued tentative approval of the NOI on October 20, 2011. However, such an action is not supported by, and is even contrary to the record. In the NOI, Red Leaf asserted, without foundation, that its mining activities would not impact ground water – an assertion that went to the heart of the adequacy of the NOI. A few weeks later, DWQ rejected this contention, recognizing the potential for ground water impacts and, at a minimum, requiring Red Leaf to provide more information before the agency could assess the company’s discharge and request for a permit. As a result, a decision to approve the NOI despite the failure of the document to address the potential for a ground water discharge is not supported by the record.

Thus, it would be arbitrary and capricious for DOGM to approve the NOI at this time. The existing record fails to support such an action. Indeed, the more legally sound approach would be to defer final approval of the NOI until the ground water permit process is complete and to incorporate the information and analysis gleaned as a result of the process, including DWQ’s review of the application, into the NOI.

The NOI Fails to Contain Proof that the EnShale Design is Adequate to Prevent Contamination of Local Ground Water Resources

As indicated above, the NOI’s cursory analysis and contention that the mining operations will not impact ground water is founded in large part on the assessment of the design of the EnShale capsules. The company proposes to recover oil by heating shale in capsules constructed on site. The crushed ore will be placed in the capsules in layers infused with heat-conducting pipes. The oil released will be collected in pipes and in a pan at the bottom of the capsule and directed to a sump. Red Leaf claims that all of the oil and volatile hydrocarbons will be contained in the capsules because the capsules will be constructed using a three-foot layer of bentonite amended soil (BAS), lined with a 13-foot layer of gravel, located between the BAS and the ore. During the heating and extraction process, the ore in the capsules loses approximately 40 to 45 feet in total height (initial thickness of ore in each tier is 100 feet).

The NOI is incomplete because it does not address the details of the construction of the capsules or the loss of integrity of the BAS as a result of the heating and extraction process. The NOI also does not provide adequate evidence that this design worked properly during the experimental design phase or that it will work properly when scaled up to the capsule size outlined in the NOI. Specifically:

1. The ore will be heated to a temperature of 725 °F. The NOI does not discuss the impact this will have on the BAS. In fact, Norwest, one of Red Leaf’s consultants, recommended that this exact issue be evaluated.
2. A loss of 40 to 45 feet in thickness in the ore will exert stresses on the BAS. This is not addressed in the NOI. As the ore loses thickness, the BAS on top of and on the sides of the capsule will likely develop stress cracks that will compromise capsule permeability.

3. As described and shown in drawings in the NOI, the BAS will remain intact during the settling of the ore. It is impossible to reduce the volume of the ore by 40 to 45 feet and not cause displacement of the BAS. This movement of the BAS will compromise its integrity.
4. The NOI does not discuss the potential for differential settlement of the ore in the capsules and the resulting stresses it will apply to the BAS.
5. The NOI does not discuss the affect that the volatile organics will have on the BAS.
6. The NOI does not provide details on the construction of the BAS, specifically the details of the pug mill, the moisture content of the material, the percent bentonite, the method of placement (especially the vertical walls), or compaction of the material. Without this information the anticipated effectiveness of the BAS in containing the oil cannot be fully evaluated.
7. The NOI does not provide details of how the oil will be conveyed from the pipes and/or collection sumps out of the BAS. This will necessitate construction of some piping through the BAS; these pipes, as well as the heat conducting pipes are locations where oil or other contaminants can leak from the capsules.

Under the circumstances, it would be premature for DOGM to approve the NOI. A more appropriate approach would be to defer final approval of the NOI until the company submits sufficient information to address these concerns regarding the capsule design.

We thank you for your attention to this matter and for all that you do to protect Utah's precious lands.

Yours,



ROB DUBUC
JORO WALKER
Attorneys for Living Rivers

Exhibit A



State of Utah

GARY R. HERBERT
Governor

GREG BELL
Lieutenant Governor

Department of
Environmental Quality

Amanda Smith
Executive Director

DIVISION OF WATER QUALITY
Walter L. Baker, P.E.
Director

M104716103

cc: Leslie
Tom

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Walter L. Baker
Executive Secretary

October 6, 2011

Mr. Robert J. Bayer, P.G.
JBR Environmental Consultants, Inc.
8160 Highland Drive
Sandy, Utah 84093

Dear Mr. Bayer:

Subject: Red Leaf Resources Proposed Oil Shale Mining and Hydrocarbon Extraction Project
Request for Information

The Utah Division of Water Quality (DWQ) appreciated the opportunity to discuss the proposed project by Red Leaf Resources to mine and process oil shale ore at their SITLA lease site located approximately 55 miles south of Vernal in Uintah County, Utah. Based on our discussion, DWQ has determined that Red Leaf Resources will need to submit a completed application for a ground water discharge permit. A permit application is available online at <http://www.waterquality.utah.gov/GroundWater/gwPermitAp.htm>. The online application package is a streamlined version of the comprehensive permit application requirements provided in UAC R317-6-6.3 of the Ground Water Quality Protection Rules. Please refer to the full list of application requirements at <http://www.rules.utah.gov/publicat/code/r317/r317-006.htm#T6> to make sure your application is complete. Upon receipt, we will conduct a completeness review of your application and contact you if we need additional information.

If you have any questions, please contact me at (801) 536- 4350 or rherbert@utah.gov.

Sincerely,

Rob Herbert, P.G., Manager
Ground Water Protection Section

RFH:

cc: Scott Hacking, Tri-County District Engineer
Tri-County Health Department
Tom Munson, DOGM

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