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BEFORE THE EXECUTIVE DIRECTOR
UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF WATER QUALITY

In the Matter of: Red Leaf Southwest # 1 Mine, Ground Water Discharge Permit No. UGW470002	:	REQUEST FOR AGENCY ACTION
	:	**January 21, 2014**

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1. Pursuant to Utah Code §§ 19-1-301.5 and 63G-4-201(1)(b), (3) and Utah Admin. Code R305-7-203, Living Rivers, the Southern Utah Wilderness Alliance (SUWA), Grand Canyon Trust, Great Old Broads for Wilderness and Sierra Club (collectively "Living Rivers"), hereby file this Request for Agency Action with Amanda Smith, Executive Director of the Utah Department of Environmental Quality and Walt Baker, Director of the Utah Division of Water Quality.

2. This Request for Agency Action seeks review and remand of the Ground Water Discharge Permit issued to Red Leaf Resources, Inc. (Red Leaf) for its Southwest # 1 Mine, Permit Number: UGW470002, dated December 20, 2013 and signed and authorized by Walt Baker, the Director of the Utah Division of Water Quality, as well as an order revoking and invalidating the ground water discharge permit. This Request for Agency Action is further supported by the September 27, 2013 Living Rivers Comments and the exhibits attached thereto,

the Petition to Intervene, Statement of Standing and declarations of members of petitioner organizations, filed herewith.

Agency File Number and Date of Mailing

3. This Request for Agency Action seeks review, revocation and remand of the Ground Water Discharge Permit issued to Red Leaf for its Southwest # 1 Mine, Permit Number: UGW470002, dated December 20, 2013 (Permit) and issued by Walt Baker, the Director of the Utah Division of Water Quality. Living Rivers refers to the Director of the Division of Water Quality and the Division of Water Quality collectively as "the Director."

4. This Request for Agency Action was timely hand-delivered to the Director of the Division of Water Quality and the Administrative Proceedings Record Officer on January 21, 2014. Utah Code § 19-1-301.5(6) & (7)(b); Utah Admin. Code R305-7-203(5).

Reference, Incorporation and Attachment of Comments

5. Living Rivers hereby references, incorporates and attaches its September 27, 2013 Comments on the draft Red Leaf ground water discharge permit. Exhibit B, attached. Living Rivers will refer to those comments and the exhibits attached thereto as "Living Rivers Comments." Living Rivers hereby references, incorporates and attaches the exhibits attached to its September 27, 2013 Living Rivers Comments. Exhibits C & D attached. By referencing, incorporating and attaching the Living Rivers Comments and exhibits hereto, Living Rivers states and restates herein all that the organization stated in those comments, attachments and exhibits.

Legal Authority and Jurisdiction

6. The Executive Director of the Utah Department of Environmental Quality (Executive Director) has jurisdiction over this Request for Agency Action pursuant to Utah Code Ann. § 19-

1-301.5 and § 63G-4-101 *et seq*. The legal authority for this Request for Agency Action is found in the Utah Constitution, and the Utah Water Quality Act, Utah Code 19-5-101 *et seq*., and its implementing regulations, Utah Admin. Code Title R317. This Request for Agency Action and Living Rivers Comments on the Permit add additional legal authority for the organizations' claims.

Statement of Relief and Action

7. Living Rivers requests an order setting aside, vacating, voiding and/or modifying the Permit; that the Director otherwise fulfill his obligations under state law; and/or that the permit be remanded with instructions that the Director objectively and independently review the data and analysis provided by Living Rivers and that any determinations flowing from this review be supported by substantial evidence and documented in the record. Living Rivers requests any other or additional remedy the Executive Director deems appropriate.

Statement Demonstrating Compliance with 19-1-301.5(4)

8. Living Rivers has met the requirements of Section 19-1-301.5(4) by timely submitting Living Rivers Comments. These comments provided the basis for Living Rivers' legal arguments, and also provided comments on the technical inadequacies of the Permit. To further address the inadequacies of the Permit, Living Rivers submitted technical comments of Jim Kuipers and Elliott Lips, attached to Living Rivers Comments. Living Rivers also hereby attaches and incorporates supplemental technical comments from Elliott Lips submitted in response to the Director's response to comments issued along with the Permit. Those comments are attached as Exhibit A. In addition to, and in clarification of those comments, Living Rivers sets forth the reasons for its Request for Agency Action below.

9. Living Rivers also hereby incorporates and references any and all comments submitted

by any other person or party on the Permit.

10. In accordance with the requirements of R305-7-202(1)(b) and R305-7-203(3)(h), Living Rivers' Comments and the exhibits attached thereto provided sufficient information and documentation to enable the Director to fully consider the substance and significance of the issues being raised in this Request for Agency Action. Where applicable, Living Rivers provided relevant legal standards and noted instances in which the Director failed to comply with the mandates of the Utah Water Quality Act (Act) and the Ground Water Quality Protection Regulations (Regulations). The Director's own responses to Living Rivers Comments indicate that the comments were sufficient to enable the Director to respond to the substance of each issue raised. *See* December, 2013 Director Comment Response Summary (Response).

Statement of Facts and Reasons

11. Representing citizens of Utah, the local, regional and national environmental groups bring this Request for Agency Action, challenging the Director's issuance of a ground water discharge permit for the Red Leaf Southwest # 1 mine, located approximately 55 miles south of Vernal, in Uintah County, Utah. As specified below, in authorizing the ground water discharge permit, the Director has failed in his legal obligations under the Utah Water Quality Act and the Ground Water Quality Protection Regulations. As a result, Living Rivers asks that the Permit be revoked and remanded and the Director be ordered to comply with the law and issue a legally adequate permit before any action is taken to begin construction on the mine.

Permitting Background.

12. Red Leaf first submitted an application for a ground water discharge permit for the Southwest # 1 mine on December 20, 2011 (December 2011 Application). Attached as Exhibit E. The December 2011 Application corresponded with, and in some ways supplements, Red

Leaf's submission of a Notice of Intent to Commence Large Mining Operations (NOI) to the Utah Division of Oil, Gas, and Mining (DOGM) on September 1, 2011 and approved by DOGM. Attached as Exhibit F.

13. In the December 2011 Application, Red Leaf proposed to process oil shale using what the company refers to as the EcoShale In-Capsule Technology. December 2011 Application at 1. The capsule design called for the construction of a series of 500 by 900 foot capsules, initially approximately 136 feet in height. *Id*. at 7. Although the December 2011 Application did not specify the number of capsules, Figure 3 of the NOI depicts the construction of 118 capsules.

14. Red Leaf subsequently submitted a new ground water discharge permit for the Southwest # 1 mine on June 24, 2013 (Application). The 2013 Application supplemented the December 2011 Application by adding details on the construction of a single Early Production System (EPS), or prototype, capsule that is approximately 385 by 695 feet long, is 80 feet high at the edges and is 176 feet high at the top of the capsule crown. Application at 5.

15. In the Application Red Leaf specifies that it plans to build all of its capsules based on the EPS design, or on changes that it makes to that design based on the EPS performance. This design includes the use of a 3-foot layer of bentonite-amended shale (BAS) surrounding the top, bottom, sides and ends of each capsule. *Id*. at 4. Inside the BAS layer is a 13-foot thick layer of gravel intended to serve as insulation to protect the BAS from thermal breakdown. *Id*. A metal liquids collection pan is to be installed above this bottom insulating layer in order to collect the liquid hydrocarbons released during the heating process. *Id*.

16. Above the metal collection pan, ore is to be placed into the capsules in lifts interspersed with heating pipes. *Id*. The pipes are designed to heat the oil shale to a temperature of 725 degrees for approximately three months with the goal of liberating both the liquid and gaseous

components of kerogen. *Id*. During and after the heating process, the 136 foot tall capsules are expected to settle to approximately 97 feet. December 2011 Application at 7; *see also* Statement of Basis (SOB) at 2 (noting that the EPS is expected to settle 30 feet or more as a result of the retorting process.) At full development, the company plans to produce 9,500 barrels per day of oil. Application at 4.

17. Following receipt of the December 2011 Application, the Director issued a Completeness Review and Request for Information in response to Red Leaf's application on February 10, 2012. Attached as Exhibit G. Included in the Director's review was a request for additional modeling, as well as requests for information related to engineering design. *Id*.

18. After DOGM's tentative approval of Red Leaf's NOI, Living Rivers filed a protest with DOGM's Director of that decision. An informal hearing process related to Living Rivers' protest was held and, on March 9, 2012, DOGM issued final approval of the NOI. On March 19, 2012, Living Rivers challenged DOGM's tentative approval of the NOI by filing a Request for Agency Action with the Board of Oil, Gas and Mining. *See* Living Rivers' BOGM RAA, attached as Exhibit H. On May 25, 2012, pursuant to the Board's Order Regarding Pre-Hearing Procedures, Living Rivers filed two expert reports with the Board, questioning the veracity of Red Leaf's claims that ground water in the area of the mine would not be impacted by the mining operation, as well as the company's claims that the capsule design was technologically feasible. *See* Living Rivers' Expert Reports, attached as Exhibit I.

19. On June 26, 2012, prior to commencement of the Board of Oil, Gas and Mining hearing, Red Leaf, DOGM and Living Rivers submitted a stipulated motion to stay the proceedings, which was approved by the Board on June 27, 2012. Joint Motion for Stay, attached as Exhibit J. In that motion, the parties agreed to stay the proceedings until after the Director of DWQ had

issued a discharge permit, at which point DOGM would issue a decision whether the NOI required modification based on the decision by the Director or on any new hydrologic information provided by Red Leaf. *Id*. at 2.

20. Subsequent to that stay, on March 5, 2013, Red Leaf filed an updated Ground Water Permit Application with the Director for the construction of a single EPS prototype. Red Leaf filed the revised application on June 24, 2013 – the Application referenced above – and it is on the Application, along with several supplemental documents contained within the record submitted after publication of the draft permit, that the Director based his final permit decision.

Stated Purpose of Ground Water Permit

21. As the Director notes in the Statement of Basis, "the purpose of construction of the EPS capsule is to evaluate the capsule design for suitability in the construction of future capsules for commercial production." SOB at 7. This is consistent with Red Leaf's statement that "[t]he development of the full-scale mining and oil-production operation will begin with a single, capsule, which is termed the early production system or EPS capsule." Application at 3. In line with this concept, the Permit notes that transition to commercial-scale operations will consist of a major modification of the Permit, rather than the issuance of a separate permit. Permit at 2. Importantly, the Permit states that "[t]he issuance of this permit is part of an evaluation phase that will be used to test assumptions and factors related to ground water protection and capsule performance that are still not completely known," SOB at 7, with the results derived from the monitoring outlined in the Permit used "to determine if any potential discharge to subsurface or waters of the State may result from large-scale production at the mine." Permit at 2.

22. By these plain terms, the Permit has a dual purpose. First, the Permit must ensure that the EPS, by itself, does not contaminate subsurface Waters of the State. Second, the Permit must

ensure that monitoring and analysis of the EPS testing is sufficient to provide a basis for the Director to make an informed decision regarding whether commercial-scale production using the EcoShale technology should be allowed under provisions of the Utah Water Quality Act and the Ground Water Quality Protection Regulations. The permit does neither.

The Record is Replete with Evidence of Ground Water at the Mine Site that the Director is Legally Obligated to Protect.

23. Living Rivers preserved the issue of the presence of ground water at the mine site by raising this in its comments on the draft permit. *See* Living Rivers Comments at 6-9; Lips at 1, 4-7, 9-11.

24. There is clear evidence in the record that ground water, as defined in both the Utah Water Quality Act (Act) and the Ground Water Quality Protection Regulations (Regulations) is present immediately below the mine site. SOB at 5-7; Response at 1-2, 4, 6, 7, 11, 20, 21, 37, 38, 42, 43; Application at 23-26, Figures 7 & 8, Appendix E, F & G. Therefore, the Director is required by law to protect this water from contamination.

25. The Utah Legislature made it clear that "all" Waters of the Wtate, including "all" accumulations of groundwater, must be protected from contamination. Specifically, the Act defines Waters of the State as:

> All streams, lakes, ponds, marshes, watercourses, waterways, wells, springs, irrigation systems, drainage systems, and **all other bodies or accumulations of water, surface and underground**, natural or artificial, public or private, which are contained within, flow through, or border upon this state or any portion of this state.

Utah Code Ann. § 19-5-102(23)(a) (emphasis added). The Act further specifies that "it is unlawful for any person to discharge a pollutant into **waters of the state**…or to place…any wastes in a location where there is probable cause to believe it will cause pollution." Utah Code Ann. §19-5-107(1)(a) (emphasis added).

26. A discharge "means the addition of any pollutant to **any** waters of the state," Utah Code Ann. § 19-5-102(7) (emphasis added), and pollution is defined as "any man-made or man-induced alteration of the chemical, physical, biological, or radiological integrity of **any** waters of the state[.]" Utah Code Ann. § 19-5-102(13) (emphasis added). The Act further directs the Utah Water Quality Board (Board) to develop programs to protect all Waters of the State, including "all…accumulations" of groundwater, from the discharge of pollutants. Utah Code Ann. § 19-5-104(3)(a) (the Board "shall…develop programs for the prevention, control, and abatement of new or existing pollution of the waters of the state[.]"); §19-5-106(2)(a) (same). Pursuant to that authority, the Regulations define groundwater as "subsurface water in the zone of saturation including perched ground water." Utah Admin. Code R317-6-1.19; *see also* R317-6-1.47 (mirroring the Act's definition of "waters of the state" as "all…accumulations of water, surface and underground").

27. However, in violation of his responsibilities under the law, the Director has chosen to disregard the requirement to protect ground water at Red Leaf's mine site because he has decided that these Waters of the State are unworthy of protection. For instance, in his response to Living Rivers' comments on the draft Permit, the Director states:

> A key factor in DWQ's determination that the criteria in Rule 317-6-6.4(A) have been met is that there is no shallow aquifer immediately beneath the mine site, or impairment of present and future beneficial uses of ground water. The water that was found in the wells immediately beneath the mine is static and does not contain sufficiently saturated permeable material to yield usable quantities of water to wells and springs so as to meet the definition of aquifer, and no springs are threatened.

Response at 2-3. Thus, the Director acknowledges that the ground water beneath the mine flows into wells. However, because in his mind the water beneath the mine site would not yield "usable quantities" of ground water, the Director does not consider that water as entitled to

protection. The Director further limits his protection of ground water by stating that "[n]ot all subsurface water in the mine area meets the definition of ground water" in spite of the definition within the Regulations noting that "Ground Water" means subsurface water in the zone of saturation including perched ground water, which clearly does exist at the mine site. Response at 4, fn 9; *see also* R317-6-1.19.

28. The Director is wrong to equate Waters of the State with "usable" quantities of ground water, as doing so conflicts with the broad definition of "waters of the state," and the relevant regulations, as well as the purpose and policy behind that definition and those regulations.

29. Moreover, the Director offers no guidance and has published no policy on what he deems to be a "usable" quantity of ground water, or on what the ground water must be used for in order to qualify for protection. Further, the Board of Water Quality has not conducted rulemaking narrowing the Act's protection to only usable ground water and further defining what constitutes a usable quantity.

30. Because there is no legal basis for the Director to limit his protection of Waters of the State in this manner, the Director has exceeded his authority under the Act and its implementing regulations and his actions limiting his protection to only ground water he deems to be in "usable" quantities is arbitrary, capricious and a violation of the law. In addition, the record does not support his decision.

Because of His Conclusion that the Ground Water Beneath the Mine Site is Not Worthy of Protection, the Director has Chosen to Improperly Limit His Protection of that Water.

31. The Director stated for the first time in his Response "that there is no shallow aquifer immediately beneath the mine site, or impairment of present and future beneficial uses of ground

water." *See i.e.*, Response at 2.[1] Therefore, this Request for Agency Action contains, for the first time, Living Rivers' response to these statements.

32. The Director has concluded that Red Leaf's proposed technology, along with site conditions, are sufficient for him to conclude that construction of the EPS capsule will not degrade beneficial uses of ground water. SOB at 7. The Director further concludes that there is an "unlikely possibility that the capsule will cause a discharge of contaminants to the subsurface." *Id*. He reaches these conclusions in spite of his acknowledgment that "assumptions and factors related to ground water protection and capsule performance are still not completely known." *Id*.

33. In fact, it is not an exaggeration to state that assumptions and factors related to ground water protection and capsule performance are completely unknown. As Mr. Kuipers notes in his expert report, "[t]he capsule proposal is without precedence from an engineering standpoint and therefore has inherent risks. It is not known how a three-foot thick bentonite liner will perform under the proposed conditions." Kuipers at 7. Mr. Kuipers states that in his best professional judgment, because of the significant chemical and physical demands placed on the BAS liner, there is a high likelihood of significant failures and the release of materials from the capsule. *Id*. Given that the EPS is a first-of-a-kind prototype, the Director has no basis in the record for concluding that the capsule will perform as asserted by the company, and no basis for concluding that beneficial uses of ground water at the site will not be degraded or that there will not be a discharge of pollution into that ground water.

34. Given the lack of data in the record, the Director has no basis to minimize Mr. Kuipers' concerns regarding capsule design and probable failure. *See* Response at 28-29. It is improper

[1] There are statements throughout the Response substantially similar to this or that explain the Director's reasoning for reaching such a conclusion.

for the Director to dismiss out of hand Mr. Kuipers' observation of the high likelihood of failure of the EPS as "irrelevant" or "unfounded due to an erroneous comparison of Red Leaf's operation to a heap leach facility." Response at 35. Even a cursory reading of Mr. Kuipers' report indicates that he did not compare the EPS to a heap leach facility, but merely notes that the capsule "in some respects" is comparable to heap leaching methods, and uses that analogy only as illustrative of his points. Kuipers at 2. Mr. Kuipers is very precise in his description of the process and technology that Red Leaf intends to use and is very precise in his analysis on the probable performance – and failure – of the capsule. Rather than closely examining the substance of Mr. Kuipers' remarks and responding to them, the Director instead chooses to create a straw man argument and spends a great deal of time outlining why the Red Leaf process is different from heap leach mining. Obviously it is different from heap leach mining – it is a retorting process – and even a cursory reading of Mr. Kuipers' analysis makes it clear he knows the difference between the two.

35. Equally unhelpful is the Director's comment that "the discussion of 'deleterious materials' [in Mr. Kuipers' analysis] is misplaced" because no such term is found in the R317-6 regulations. Response at 33. That the term "deleterious materials" is not a term of art within the Utah Water Quality Protection Regulations is of no consequence. Mr. Kuipers is an expert on mining and in his opinion there is a "high likelihood" that the EPS capsule will fail and result in the release of "liquid products containing deleterious materials outside the capsule." Kuipers at 7. This expert opinion, of course, is highly relevant to the validity of the Permit and whether it will prevent the discharge of pollution into ground water in the area of the mine.

36. The Merriam-Webster dictionary defines "deleterious" as "damaging or harmful" and

"harmful often in a subtle or unexpected way."[2] Regarding the use of the word, the dictionary notes the example: "The chemical is deleterious to the environment." As synonyms for the word, the dictionary notes: "adverse, bad, baleful, baneful, damaging, dangerous, harmful, detrimental, evil, hurtful, ill, injurious, mischievous, nocuous, noxious, pernicious, prejudicial, wicked." Surely within that context, the Director should have been able to deduce Mr. Kuipers' intended use of the word.

37. Substituting any of the synonyms above, it is clear that the meaning of Mr. Kuipers' remarks is that it is highly likely that contaminants in the form of liquid hydrocarbons will be released into the environment. Given the undisputed fact that there are significant quantities of ground water in the area of the mine, the only reasonable conclusion that can be drawn from Mr. Kuipers' remarks is that it is highly likely that, in violation of Utah law, the EPS will result in the discharge of contaminants or pollution into Waters of the State.

38. In an attempt to justify his actions, the Director states that "[t]he Ground Water Rules are based on an anti-degradation strategy for ground water protection as opposed to non-degradation; therefore, discharge of contaminants to ground water may be allowed provided that current and future beneficial uses of the ground water are not impaired and the other requirements of Rule 317-6-6.4.A are met." Response at 3, citing the Preamble to the Ground Water Quality Protection Regulations of the State of Utah, Sec. 2.1, August 1989. This approach contradicts EPA's finding that "States use the terms "nondegradation" and "antidegradation" interchangeably; there does not appear to be a consistent distinction between the two." State Ground-Water Antidegradation Issues, EPA Office of Emergency and Remedial Response, July 1990, http://www.epa.gov/superfund/policy/remedy/pdfs/92-34211fs.pdf. Thus, the Director's

[2] http://www.merriam webster.com/dictionary/deleterious.

contention conflicts with the law, which equates anti-degradation with non-degradation. Regardless of the terminology the Director chooses to use, he is obligated to comply with the provisions of the Utah Water Quality Act which prohibits contamination of Waters of the State and the discharge of pollutants into those waters.

39. As outlined in detail below, there is no justification for the Director's conclusion that there are no significant quantities of ground water resources immediately beneath the mine site, or that this ground water is not connected to area seeps and springs. In spite of this, the Director has made it clear that this water is not worthy of protection. For instance, the Director's statement that "[t]he lower BAS liner is not a critical component to insure the conditions for issuing a ground water discharge permit are met" ignores his obligations under the law.

40. Equally troubling is the Director's statement that the liners are mainly intended for product containment, rather than protection of the environment. Response at 25. While from a strictly profit-maximization perspective it might be understandable for the company to have such a jaded perspective of the function of the liners, it is absolutely unacceptable for the agency tasked with protection of the state's precious ground water resources to take this approach. This statement by the Director indicates that it is his position that the lower BAS liners are a superfluous component of commercial-scale production by Red Leaf.

41. Again, these statements, while troubling on their face, reveal that the Director has lost sight of one of the primary purposes of the EPS capsule – to gather the information necessary to determine whether commercial-scale use of the EcoShale capsules will be protective of ground water, regardless of the geological formations present at a particular mine site. It is, of course, necessary to protect shallow ground water aquifers in the area of this mine site from contamination from the EPS capsule, but it is also arbitrary and capricious to completely ignore

one of the stated purposes for conducting this testing.

42. Further, the Director goes on to note that, while the company represents the capsule design as a zero discharge facility, "a zero discharge is not necessary for permit issuance because of the site conditions." Response at 16. Far from being concerned about the possible release of liquid hydrocarbons or other pollutants from the capsule, the Director states that "discharge from an unlined, uncapped pile of spent shale would not seep through and impair underlying aquifers of higher quality than the leachate, even if some seepage occurred." *Id*. It is difficult to reconcile these statements with the Director's legal obligations to protect ground water.

43. Because the Director has chosen to disregard his responsibility to protect all Waters of the State, including ground water resources in the area of the mine, and because he has chosen to completely ignore credible expert testimony pointing to the possible technological challenges inherent in the design of the EPS capsule, the Director's actions in approving this ground water permit are not supported by the record and are arbitrary and capricious and a violation of the law.

The Director's Conclusions Regarding the Quantity and Quality of the Aquifers Immediately Beneath the Mine Site are Incorrect.

44. The Director stated for the first time in his Response that the quantity and the quality of the shallow aquifers beneath the mine site were such that the ground water contained within those aquifers did not qualify for protection against contamination from the mine. *See i.e.*, Response at 2-4.[3] Therefore, this Request for Agency Action contains, for the first time, Living Rivers' response to these statements.

45. In his Response, the Director outlined his reasoning for concluding that the ground water in the aquifers immediately beneath the mine site did not warrant protection from contamination.

[3] There are statements throughout the Response that explain the Director's reasoning for reaching such a conclusion.

Specifically, he said that

> There are three main, relevant site conditions related to potential ground water contamination in this permit. First, the rocks immediately underlying the capsule construction site are lower-grade oil shale with extremely low permeability. In other words, the shale provides a protective barrier that would prevent discharges, if any, from Red Leaf's operations from impairing ground water. Second, the limited quantities of water encountered in Red Leaf's monitor wells in this geologic unit do not constitute an aquifer as defined under R317-6-1(1.1). In other words, the water flow is small and the water is unusable. Third, the water in the monitoring wells is extremely saline (Class 4, low quality), so discharges, if any, from Red Leaf's operations are unlikely to cause impairment even if there were sufficient quantities of water to be usable.

Response at 6.

46. Initially, and as discussed in detail above, the Director does not have the discretion to arbitrarily determine that ground water contained in the perched aquifers immediately beneath the mine site does not qualify for protection under the law because he has determined that it is not "usable." The Director is legally obligated to protect all accumulations of ground water, including Class IV waters, from contamination. Moreover, his statement that the ground water is not found in usable quantities is not based on the record.

47. Second, the Director is not justified in concluding that the water in the monitoring wells is strictly comprised of Class IV ground water, and that Red Leaf's operation is unlikely to impair this water. Response at 4. As noted above, there is a high likelihood that the EPS will fail and release harmful – deleterious – pollutants into the environment, thus contaminating area ground water and violating the law. Further, the data provided by Red Leaf shows that Class III ground water, as defined by R317-6-3.6, is present in the area of the mine. Lips Supplemental Report (Lips Supplemental),[4] attached as Exhibit A at 4; *see also* Response at 6; Application at 26 & Appendix G. Pursuant to the provisions of R317-6-4.6, the Director is obligated to protect

[4] To distinguish Lips Supplemental with Mr. Lips initial report filed with Living Rivers Comments, citations to the initial report are hereinafter "Lips at X."

this Class III ground water as a potential source of drinking water, as well as a source of water for industry or agriculture. In contrast to this, the Director has wrongly concluded that the water beneath the mine is comprised strictly of Class IV water that requires minimal, if any, protection. Response at 3-4.

48. Third, the Director decided that "[g]round water monitoring is not feasible at this site due to the very low permeability of the shales that underlie it, [and] therefore ground water protection levels will not be established for this permit." Permit at 2. In his response to Living Rivers, the Director asserts without justification that this is because the water beneath the mine does not circulate and is therefore unconnected to other area aquifers or to local seeps and springs. Response at 4. In his supplemental report, Mr. Lips addresses this contention, noting that because Red Leaf did not conduct hydraulic testing on the flow rates within the aquifers,[5] there is no quantitative data on the hydraulic conductivity for the aquifers immediately beneath the mine and therefore no support for the Director's conclusion that the water does not circulate. Lips Supplemental at 2-4. Mr. Lips concludes that based on the tests that *were* run, the evidence in the record indicates that water in the aquifers immediately beneath the mine does in fact circulate. Lips at 3. Therefore, the Director's conclusion that ground water in the aquifers beneath the mine does not circulate is incorrect.

49. The Director suggests for the first time in his Response that there is an insignificant quantity of ground water beneath the mine to qualify for protection under the Regulations. *See i.e.*, Response at 2. However, because the company failed to conduct pump tests on the aquifer directly beneath the mine, there is no basis in the record for such a conclusion. Lips

[5] Mr. Lips uses the term "aquifers" in describing the zones of saturation containing ground water immediately beneath the mine because in his professional opinion this is the appropriate term to describe these zones of saturation.

Supplemental at 2. Based on the tests that were conducted, evidence in the record indicates that significant quantities of ground water are present beneath the mine. The volumes of water ranged from 6 to 62 gallons during the recovery period, and one well recovered 100 percent of its pre-pumping water level. Lips at 3, Application at Appendix E. Further, during the pumping of two of the wells, there was more water pumped from the wells than the initial volume of water in storage. *Id*. This data indicates that water was being pumped from the surrounding aquifer. Lips at 3.

50. Because the record does not justify the Director's conclusions that the aquifers immediately beneath the mine do not circulate, only contain high-salinity Class IV water, and are not significant in quantity, his conclusion that this water is not worthy of protection is not supported by the record and his decision to approve this permit is arbitrary, capricious and not in keeping with the law.

51. Moreover, the law prohibits any discharge of any pollutant into any ground water and the evidence in the record establishes that it is highly likely that this will occur as a result of the Red Leaf operations. Therefore, the Director is wrong to issue a permit that allows or fails to prevent such a discharge.

There is No Basis for the Conclusion that Area Seeps and Springs Will Not be Impacted by the Mine.

52. Living Rivers preserved the issue of the impacts to area seeps and springs from the mine in its comments on the draft permit. *See* Living Rivers Comments at 6-9; Lips at 1, 4-6, 9-10. The Director stated for the first time in his Response that the area springs are not hydraulically connected to the ground water immediately beneath the mine, Response at 11, and that the springs represent a ground water flow system contained in unconsolidated surficial deposits and weathered bedrock. Response at 26. Therefore, this Request for Agency Action contains, for the

first time, Living Rivers' response to these statements.

53. Because the application and the permit fail to identify the source of the water that feeds the eight springs in the area of the mine, and because these documents do not address the question of whether these springs could be impacted by the mine, there is no justification in the record for the Director to conclude that monitoring of these springs is unnecessary. As Mr. Lips notes in his supplemental report, there is no basis for the Director's conclusion that springs cannot be hydraulically connected to the mine site. Lips Supplemental at 5. Further, the Director only assumes, without evidence, that the source of water from the springs is from unconsolidated deposits and weathered bedrock. *Id*. There is no evidence in the record that supports the conclusion that shallow aquifers at the mine site do not contribute water to these springs. *Id*. More importantly, Red Leaf and the Director fail to address the fact that the eight springs identified by Red Leaf are down-gradient from the mine site and that it is distinctly possible that these springs could be impacted by mining operations. *Id*. For these reasons, the Director is obligated to require Red Leaf to monitor the springs for possible impacts from the mine. Because he failed to do so, his decision to approve the Permit as written is not supported by the record and is arbitrary, capricious and in violation of the law.

The Director Has Not Required Adequate Sampling and Analysis Planning as Part of the Permit.

54. Living Rivers preserved the issue of the inadequate sampling and analysis planning in its comments on the draft permit. *See* Living Rivers Comments at 2-4, 9; Lips at 2, 9-10; Kuipers at 5-6.

55. In his response to Living Rivers' comments, the Director states that the "monitoring plan, sampling and reporting requirements are satisfied because Red Leaf has evaluated which contaminants may be leached from spent shale in contact with rainwater or snowmelt."

Response at 4. The Director also cites R317-6-6.4(A) for the proposition that he is allowed to issue a ground water discharge permit if the monitoring plan, sampling and reporting requirements are adequate to determine compliance with applicable requirements. Response at 3. However, the Director has deferred the submission and approval of the sampling and analysis plan, the plan to obtain samples of spent shale and the plan to test the adequacy of the upper BAS layer until, in some cases, two years from the commencement of testing of the completed capsule. As a result, the Permit is inadequate on its face and violates the provisions of R317-6-6.3 and R317-6-6.4.

56. Further, the Director did not require the company to submit its sampling and analysis planning as part of the permit application. Therefore, the Director has violated the provisions of R317-6-6.5 by depriving the public of the opportunity to meaningfully comment on how the company intends to meet this regulatory requirement.

57. First, the Director does not require Red Leaf to submit a sampling and analysis plan for monitoring drainage from the metal collection pan and other sampling locations until 90 days after completion of the construction of the EPS. Permit at 6. As Living Rivers noted in its comments, this violates the provisions of R317-6-6.3 and R317-6-6.4 and by not requiring Red Leaf to submit a sampling and analysis plan at the permit application stage, the Director is depriving the public of the opportunity to meaningfully comment on such a plan. Further, this approach by the Director also deprives the public of the opportunity to challenge the sampling and analysis plan should the public deem the plan inadequate.

58. Second, the Director does not require Red Leaf to submit a plan for obtaining and analyzing representative samples of the spent shale – including residual hydrocarbons – until nearly two years after cessation of capsule heating. Permit at 6. As with the sampling and

analysis plan associated with the monitoring sites, this violates the provisions of R317-6-6.3 and R317-6-6.4 and the Director is depriving the public of the opportunity to meaningfully comment on such a plan. Further, this approach by the Director also deprives the public of the opportunity to challenge the plan to collect representative samples of the spent shale should the public deem the plan inadequate.

59. Third, the Director does not require Red Leaf to submit a plan to evaluate the hydraulic conductivity of the upper BAS liner until nearly two years following cessation of capsule heating. Permit at 7. In limiting such testing to only the upper BAS liner, the Director is ignoring the importance of the lower BAS liner for containment of any liquids that have bypassed the metal collection pan, or the possibility that either the side or the bottom BAS liners may have failed during the extreme and lengthy heating process. Such testing is critical to fulfilling the Permit's stated purpose of providing DWQ with the information the agency needs to make an informed decision on possible commercial-scale production, as well as on the impacts of the prototype capsule on ground water.

60. As with the sampling and analysis plan associated with the monitoring sites and the plan to collect spent shale, this violates the provisions of R317-6-6.3 and R317-6-6.4 and the Director is depriving the public of the opportunity to meaningfully comment on such a plan. Further, this approach by the Director also deprives the public of the opportunity to challenge the plan to test the conductivity of the BAS liner should the public deem the plan inadequate.

61. In response to Living Rivers' comments that deferring the submission of these sampling and analysis plans until some indefinite time in the future violates the plain language of R317-6-6.3 and R317-6-6.4, and deprives the public of the opportunity under R317-6-6.5 to meaningfully comment on how the agency intends to require the company to meet these

regulatory obligations, the Director states that it is not necessary that a sampling and analysis plan be completed entirely before permit issuance. Response at 11.

62. In addition to his failure to address Living Rivers' concerns regarding the public's inability to meaningfully comment on the permit terms and conditions, the Director takes the position that the sampling and analysis outlined in the permit is adequate to determine permit compliance. *Id*. at 10. In support of his position, the Director claims his conclusions are based on "factual, scientific and technical data," and that there is no justification for increasing monitoring or sampling in this situation because the "the risk to ground water at the site is minimal due to natural conditions." *Id*. at 11. As further reason for his decision, the Director states that water immediately beneath the mine is not hydrologically connected to the regional aquifers, is of very poor quality and is chemically different from water in the Douglas Creek aquifer located beneath the mine and the isolated springs found in the area. *Id*.

63. As another reason for deferring Red Leaf's submission of sampling and analysis plans to a future date, the Director claims that Red Leaf has not yet designed and installed the sample ports to be used for collecting any "leachate" from the metal collection pan and the top of the lower BAS liner. Response at 14. Again, in making this statement the Director is missing the point. While there is the long-term concern of leachate accumulating in the capsule and migrating through the BAS into the environment, the more immediate concern is the possibility of a failure in the capsule design and the release of liquid hydrocarbons into the environment during and after the heating process. Is it not necessary to have the port design finalized in order to delineate adequate permit terms and conditions. Alternatively, if no sampling or analysis plans can be drafted until the port design is final, the Director must wait for this information before he can issue a legally adequate permit. In any case, the Director was obligated to require

the company to complete its sampling and analysis plans and submit these plans for approval as part of the permitting process. Further, the Director was obligated to allow the public an opportunity to comment on the adequacy of those plans.

64. Contrary to the Director's contention, the record contains no "factual, scientific and technical data" justifying his decision to defer the submission of the plans. To date, none of Red Leaf's capsules has been constructed, and Red Leaf has been unable to offer proof of any kind of that the technological assumptions associated with the EcoShale concept are valid. Further, as established above, there is no justification for the Director's conclusion that "the risk to ground water at the site is minimal due to natural conditions."

65. Therefore, because his decision to approve the Permit as written violates the provisions of R317-6-6.3 and R317-6-6.4 and deprives the public of the opportunity under R317-6-6.5 to meaningfully comment on how the company intends to meet this regulatory requirement, the Director's decision to approve the Permit as written is not supported by the record and is arbitrary, capricious and a violation of the law.

The Director is Not Requiring Adequate Monitoring of Possible Discharges from the EPS.

66. Living Rivers preserved the issue of the inadequate monitoring of possible discharges from the EPS in its comments on the draft permit. *See* Living Rivers Comments at 2-5, 8-9; Lips at 2, 9-11; Kuipers at 5 & 7.

67. The permit does not require complete and accurate information that shows that discharges from the EPS can be controlled as required by R317-6-6.3(G) and R317-6-6.4. In the Statement of Basis, the Director assumes, without basis in the record, that "[d]ischarge of contaminants to the subsurface related to the oil shale retorting process would only occur as a result of precipitation infiltrating into the closed capsules and reacting with the spent shale remaining

after extraction of hydrocarbon liquids and gases." SOB at 3. In reaching such a conclusion, and contrary to the record, the Director fails to address the very real possibility that the containment system will not operate as intended and that discharges to the environment of contaminants is highly likely. Kuipers at 7 ("Given similar technological developments it is likely that initial efforts to capture and contain liquid petroleum containing products will not be successful as it is highly likely that unexpected forces will be exerted in terms of liquid head or saturation within the pile resulting in the additional potential for loss of liquid products containing deleterious materials outside the capsule;" "My best professional judgment is that because this is a novel concept involving significant chemical and physical demands upon the proposed BAS containment system there is a high likelihood there will be significant failures resulting in the release of deleterious materials.")

68. In spite of the credible expert testimony of Mr. Kuipers and without basis in the record, the Director states that "[t]he unlikely possibility that the capsule would cause a discharge of contaminants to the subsurface, in combination with the low permeability of the rocks underneath the capsule and the poor quality of ground water contained in them, lead DWQ to conclude that monitoring ground water quality at this site would not provide useful information to evaluate Red Leaf's compliance with the Ground Water Quality Protection Regulations." SOB at 7. Such a statement ignores the distinct possibility that the capsule will not perform as expected, as noted by Mr. Kuipers, and that the results of the monitoring required by the Director are intended to serve as a basis for future permitting of Red Leaf's process at a commercial scale.

69. As part of the compliance monitoring requirements outlined in the Permit, beginning six months following shutdown of the retorting operations, the Director requires Red Leaf to monitor drainage from the metal collection pan, the top of the lower BAS layer and the six

channels constructed underneath the EPS for water or liquid hydrocarbons discharging from the capsule. Permit at 5. If water is found in these areas in quantities large enough to sample, the Director requires Red Leaf to analyze the water for several contaminants. *Id*. While the Director claims that liquid hydrocarbons draining from the metal collection pan may not be discharged into the environment, there is no basis in the record for this claim. Moreover, the Director does not address the possibility that liquid hydrocarbons might be present on top of the lower BAS layer, or within the channels underneath the capsule and therefore that these contaminants might be discharged into ground water. *Id*. Further, the permit only requires Red Leaf to remove all liquid hydrocarbons flowing from the capsule drains, and makes no mention of liquid hydrocarbons that might be present in other locations. *Id*. While the Director states that he is going under the assumption that Red Leaf intends to collect all of the oil produced by the EPS process, such an assumption does not apply to liquid hydrocarbons that unintentionally discharge from the capsule and that contaminate ground water. Response at 13.

70. In his response to comments, the Director notes that Living Rivers does not distinguish liquid hydrocarbons from liquid water when stating that the company should be required to aggressively monitor the collection of liquids emanating from the capsule. Response at 13. This is intentional. Unless there are unusual circumstances, the immediate concern associated with containment failure is the discharge of liquid hydrocarbons from the capsule other than through the collection ports, and therefore any monitoring performed by the company must account for this possibility. While the monitoring of leachate discharging from the capsule is also a concern, such discharges are not likely to occur until some time after the completion of testing.

71. An additional concern is that liquid hydrocarbons detected on the upper BAS are an indication that these liquids have bypassed the metal collection pan. Such a situation must be

closely monitored. Further, if liquid hydrocarbons are detected beneath the capsule, this is an indication that the seals from either the collection ports or the heating ports have failed, or that the BAS liner has failed, or both. In either case, adequate monitoring is not a matter of regulating Red Leaf's production, as the Director states, it is a matter of detecting the discharge of contaminants – any contaminants – from the capsule in a timely fashion. Response at 13. The Director's statement that "[j]ustification for increasing monitoring or sampling in this case would have to be directly related to the likelihood of a discharge and that the discharge would harm the current and future beneficial uses of ground water at the site" is misguided. Response at 14. The Director's approach reveals that he has chosen to ignore the very real possibility of a capsule failure and the resultant release of contaminants into the environment. As established above, the Director is obligated to prevent the discharge of any pollutant into any groundwater, therefore he is obligated to account for – and protect against – the possibility of capsule failure and the resultant release of pollutants into ground water that would result from such an event.

72. As further justification for minimizing the monitoring requirements, the Director makes the statement that "the capsule contents will be under unsaturated conditions and will not impose significant hydraulic head on the lower liner." This is in direct contrast to Mr. Kuipers' comment that "it is likely that initial efforts to capture and contain liquid petroleum containing products will not be successful as it is highly likely that unexpected forces will be exerted in terms of liquid head or saturation within the pile resulting in the additional potential for loss of liquid products containing deleterious materials outside the capsule." Kuipers at 7. There is nothing in the record to cast any doubt on Mr. Kuipers' expert opinion.

73. Moreover and without basis in the record, the Director merely assumes, where all evidence suggests otherwise, that all will go as planned with the capsule and that the only

concern related to releases of contaminants through the BAS liner would be the result of leachate under hydraulic head on the lower liner. Such an assumption is faulty for a number of reasons.

74. First, this assumption fails to address the very real possibility that the heavily weighted metal collection pan, subjected to great heat, will fail, resulting in a substantial buildup of liquid hydrocarbons on the lower BAS liner. Kuipers at 4 ("It is highly likely that the metal sheet will be affected by the heating and pressurization process as well as the weight and settling of the material and will cause warping and weld failures in the metal sheet which will result in the sheet allowing solution to pass through the sheet and in turn result in increased reliance on the BAS liner to accomplish capture and to prevent solution discharge.")

75. Second, this assumption does not consider the probability that the lower liner will also fail, resulting in a direct release of liquid hydrocarbons into the environment and result in a discharge to ground water. *See* Kuipers at 7 ("My best professional judgment is that because this is a novel concept involving significant chemical and physical demands upon the proposed BAS containment system there is a high likelihood there will be significant failures resulting in release of deleterious materials.")

76. Third, this assumption does not reflect the very real possibility that the BAS liner may fail on the sides or the ends, and not just the bottom, resulting in a direct release of contaminants into the environment and therefore in a discharge to ground water. *See* Kuipers at 7.

77. The Director's statement that "[m]onitoring beneath the capsule is not critical to insure control of discharge" again shows that he is ignoring the possibility of a BAS liner failure. Response at 15. By only considering the possibility of the "very unlikely event that leachate builds up within the closed capsule," *id*., and neglecting to address the probability that a BAS failure will result in the direct discharge of liquid hydrocarbons into the environment and ground

water, the Director is disregarding the two stated purposes of the Permit: namely to ensure that the EPS testing does not result in contaminants being released into ground water; and to ensure that sufficient information is gathered during the EPS testing process to enable the Director to make an informed decision whether production using the EcoShale capsules on a commercial scale would protect ground water resources.

78. As outlined above, there is no basis for the Director's conclusion that low permeability within the geological features beneath the mine makes ground water monitoring infeasible. See ¶¶ 48-49. Further, there is no basis for his conclusion that area springs are not hydrologically connected to the mine, and therefore there is no need to monitor those springs for impacts from mining operations. Because of the distinct possibility that a failure of the BAS liner will result in release of contaminants into the environment and in a discharge into ground water, and because the permit fails to demonstrate that these discharges from the capsule can be controlled as required by R317-6-6.3(G) and R317-6-6.4, the Director is required to monitor area ground water resources for possible impacts. In failing to do so, the Director's decision to approve this permit is not supported by the record and is arbitrary, capricious and in violation of the law.

The Permit Must Require Red Leaf to Install an Impermeable Barrier Beneath the EPS and Monitor that Barrier for Leaks Coming from the Capsule.

79. Living Rivers preserved the issue of the need to install in impermeable barrier beneath the EPS and to monitor that barrier for leaks coming from the capsule in its comments on the draft permit. *See* Living Rivers Comments at 6; Lips at 11; Kuipers at 7.

80. Because the permit does not demonstrate that discharge from the capsule can be controlled pursuant to the provisions of R317-6-6.3(G) and R317-6-6.4, and because of the high likelihood of failure of the BAS liner and the release of liquid hydrocarbons into the environment, the Director must require Red Leaf to install an impermeable barrier as a secondary

containment system, with leak detection and a recovery system beneath the EPS.

81. In his expert analysis of the EPS capsule, Mr. Kuipers notes that "it is highly likely that unexpected forces will be exerted in terms of liquid head or saturation within the pile resulting in the additional potential for loss of liquid products containing deleterious materials outside the capsule" and that "because this is a novel concept involving significant chemical and physical demands upon the proposed BAS containment system there is a high likelihood there will be significant failures resulting in the release of deleterious materials." Kuipers at 7. Because of this, Mr. Kuipers recommends that the Director require installation and monitoring of a secondary leachate collection system in order to determine how the BAS liner has performed. *Id*. Mr. Lips also states that it is imperative that the capsule be constructed on a liner system that consists of an HDPE – or equivalent – liner along with a leak detection and leachate recovery system between the capsule and the HDPE liner. Lips at 11.

82. In spite of the high possibility of a BAS failure – resulting in direct discharge of liquid hydrocarbons into the environment and threatening ground water – the Director does not addressed potential BAS failure, stating that "[s]tability of the capsule is important from a safety and operational perspective but not from a ground water quality permitting perspective." Response at 16. In his response to Mr. Kuipers' concerns regarding capsule stability, the Director simply notes that a thorough review of stability analysis was "inadvertently not provided," and that on November 22, 2013, some three months after he made his initial permit decision, Red Leaf provided this documentation. Response at 31. The Director offers no justification for his original permit decision in the absence of such documentation, nor does he address the adequacy of the documentation provided in November in the context of a BAS failure. Instead, the Director makes the unjustified claim, without basis in the record, that "the

time frame for any liquid to discharge from the capsule is on the order of hundreds of years." Response at 16.

83. By focusing on leachate resulting from precipitation, the Director fails to address the more immediate concern of the release of liquid hydrocarbons from the capsule. Further, his assumption that liquid discharge of either leachate or hydrocarbons from the capsule is on the order of hundreds of years has no basis in the record. *See* Response at 16. Capsules using the BAS concept have never been built, let alone subjected to several months of 725 degree temperatures, along with the chemical and physical demands confirmed by Mr. Kuipers. *See* Kuipers at 7. It would not require a complete failure of the BAS capsule for there to be a release of a significant amount of contaminants into the environment. However, under the current sampling and analysis plan, the Director has failed to account for this possibility in any way.

84. In addition, ground water contamination is often a slow process. Therefore, there is no basis to suggest that the Director is only responsible for protecting ground water in the immediate future and that he does not have a legal obligation to protect ground water from future discharges of pollutants.

85. Because the permit fails to demonstrate that discharges from the capsule can be properly controlled in violation of R317-6-6.3(G) and R317-6-6.4, the Director must require the company to install a liner system that consists of an HDPE – or equivalent – liner along with a leak detection and leachate recovery system between the capsule and the HDPE liner. Because he has not, the Director's decision to approve this permit is not supported by the record and is arbitrary, capricious and in violation of the law.

The Permit Fails to Require an Adequate Analysis of the Test Results Through Post-Processing Excavation.

86. Living Rivers preserved the issue of the need to require an analysis of the test results

through post-processing excavation in its comments on the draft permit. *See* Living Rivers Comments at 5-6; Kuipers at 7.

87. In his analysis of Red Leaf's Application, Mr. Kuipers notes that excavation into the decommissioned EPS is necessary in order to examine the impacts that the heating process will have on the BAS and on such critical components as the metal collection sheet. Kuipers at 4. He notes that "[w]ithout such excavation and examination of the potential degradation of the buffer and liner system and examination of its integrity relative to the EPS test conditions, there is no way for the company or regulatory agencies to properly evaluate the results of the testing process." *Id*.

88. In contrast to this observation, and in direct contradiction of the stated purpose of using the test results of the EPS as a basis for permitting commercial-scale production, the Director simply concludes that "[e]xcavation of the decommissioned capsule is not necessary," and as justification of this decision, states that "[g]round water is protected by site conditions, not the lower BAS liner." Response at 18. In ignoring Mr. Kuipers' concerns regarding the high likelihood "that unexpected forces will be exerted in terms of liquid head or saturation within the pile resulting in the additional potential for loss of liquid products containing deleterious materials outside the capsule," Kuipers at 7, the Director takes the position that significant hydraulic head will not build up within the capsule and specifically upon the lower BAS layer. Response at 18.

89. By stating that "[t]he lower BAS liner is not a critical component to insure the conditions for issuing a ground water discharge permit are met," and thus not requiring the excavation of the decommissioned capsule, the Director is failing in his obligation to protect area ground water from contamination from the capsule and is neglecting one of the primary functions of the EPS

testing – to serve as a baseline for commercial-scale production. Response at 18. Instead, the Director's focus is limited to ensuring that the upper BAS cap remains intact. Response at 17. While, admittedly, the integrity of the upper BAS cap is critical to limiting the infiltration of water into the capsule, and thus the exfiltration of leachate out of the capsule, in the long-term, it does not address the integrity of the remainder of the capsule during and after the heating period for the purposes of preventing the discharge of liquid hydrocarbons or leachate into the environment and in a manner that would result in a discharge to ground water.

90. That the Director is requiring Red Leaf to reinstall a second BAS cap on the upper portions of the capsule if necessary, *id*., while completely ignoring the integrity of the lower portions of the EPS capsule, is inexplicable. Without the information that would be derived from post-processing excavation, the Director is completely disregarding the stated purpose of the Permit – namely, to gather the information necessary to make an informed decision on possible impacts to ground water on development at a commercial scale. Further, without a basis in the record, the Director is discounting the likelihood that liquid hydrocarbons or leachate will discharge into the environment from the EPS capsule. Because of this, the Director's decision to approve the Permit as written is not supported by the record and is arbitrary, capricious and a violation of the law.

There is No Justification for the Director to Conclude that the EPS Represents Best Available Technology.

91. The Director stated for the first time in his Response that the EPS constituted Best Available Technology based on site conditions and what is known about the nature of the potential discharge. Response at 24. Therefore, this Request for Agency Action contains, for the first time, Living Rivers' response to these statements.

92. There is no justification – legal or in the record – for the Director to conclude that the

proposed design for the EPS capsule is Best Available Technology based on site conditions "and what is known about the nature of the potential discharge." Response at 24. Nothing is known about the nature of the potential discharge. This technology has never been utilized and there is no basis for the Director to conclude that it is safe and that no contaminants will be discharged from the capsule. It is equally improper for the Director to take the position that the ground water that he admits is present in the area of the mine is not entitled to protection under the law.

93. In the absence of protective measures to ensure that any failure of the EPS is captured through a secondary containment and leak detection system, and in the absence of any data showing how the EPS will perform under testing conditions, the Director is unjustified to conclude that the EPS capsule represents Best Available Technology as defined in R317-6-1.3 and as required by R317-6-4(A)(3). Because of this, the Director's decision to approve the Permit as written is not supported by the record and is arbitrary, capricious and a violation of the law.

The Director Must Require a Closure and Post-Closure Management Plan.

94. Living Rivers preserved the issue of the need to require a Closure and Post-Closure Management Plan in its comments on the draft permit. *See* Living Rivers Comments at 9-10; Kuipers at 6.

95. The Director is unjustified to brush aside the fact that there are no provisions for operational shut-down and subsequent drain-down and handling of liquid hydrocarbons remaining within the capsule, or that have discharged from capsule as required by R317-6-6.3(S) and R317-6-6.4. The required Closure and Post-Closure Management Plan is especially important in the case of an unplanned mine closure. Kuipers at 6. If Red Leaf were to abandon the site during operations, it is likely that the state would have to dispose of significant quantities

of liquid hydrocarbons. Rather than comply his regulatory obligations, the Director has deferred to the Utah Division of Oil, Gas and Mining should such a situation occur. Because there is no mention of a closure and post-closure plan in the Application or the Permit as the law requires, the Director's failure to address this deficiency is not supported by the record and is arbitrary, capricious and a violation of the law.

Relief

96. Each and every paragraph in this Request for Agency Action is referenced and incorporated into each and every section of this Request for Agency Action. No statement of relief is intended to limit the request for relief stated in any paragraph of this Request for Agency Action and every request for relief is applicable to any specific claim or statement or allegation herein.

97. As a general matter, in issuing the Permit, the Director has violated the law and made a permitting decision that is not adequately based on the record.

98. The Director failed to acknowledge that ground water resources as defined in the Act and in the Regulations exist immediately beneath the mine site and therefore the Director has failed to adequately protect that ground water. The Director has stated that, in his estimation, the ground water contained in aquifers immediately beneath the mine is not of sufficient quantity or quality to qualify for protection against contamination from the EPS capsule. As a result, he is, as a matter of law and a matter of fact, improperly limiting protection of this ground water by authorizing the release of contaminants into this ground water in violation of the law and by failing to address, mitigate and minimize or prohibit the release of pollutants into ground water and Waters of the State.

99. Further, in approving this Permit, the Director has failed to require the suite of

monitoring and testing necessary to fulfill one of the primary stated purposes of the Permit – to gather the information necessary to make an informed decision whether Red Leaf's capsules are protective of ground water resources at a commercial scale. He has also failed to protect ground water from the prototype capsule and to prevent a likely discharge of pollutants into ground water and Water of the State.

100. Because of his unsupported conclusion that ground water immediately beneath the mine is isolated and does not circulate, the Director has concluded, improperly and without basis in the record, that area seeps and springs will not be impacted by Red Leaf's mining operations. Therefore, he has incorrectly concluded that there is no need for the company to monitor or protect these surface manifestations of local ground water.

101. Because of his unsupported conclusion that ground water immediately beneath the mine is isolated and does not circulate, the Director has concluded, improperly and without basis in the record, that ground water monitoring in the area of the mine would not provide useful information to evaluate Red Leaf's compliance with the Regulations. Therefore, he has incorrectly concluded that there is no need for the company to monitor or protect these aquifers.

102. The Director did not require Red Leaf to submit detailed sampling and analysis plans and has instead deferred the submission and approval of any testing until some undetermined date in the future. In the process of doing this, he has violated the provisions of R317-6-6.3 and R317-6-6.4 and deprived the public of the opportunity under R317-6-6.5 to meaningfully comment on how the company intends to meet this regulatory requirement.

103. The Director has improperly ignored credible and uncontroverted analysis of Red Leaf's proposal that points to the high likelihood of catastrophic failure of the EPS in his decision not to require adequate monitoring of possible discharges of liquid hydrocarbons from the EPS, to

include ground water monitoring. In addition, the Director's focus has been on leachate discharges from the capsule, which he claims could take hundreds of years. While leachate discharges are indeed an area of concern, he has wrongly neglected the probability of short-term discharges of liquid hydrocarbons from the capsule.

104. Ignoring the stated purpose of the Permit as gathering the information necessary to make an informed decision regarding the possible impacts to ground water resulting from commercial-scale development of these capsules, the Director improperly fails to require adequate analysis of the EPS through post-processing excavation.

105. Further, because he has no basis in the record to conclude that the EPS capsule will perform as expected and because he is incorrect to conclude that the ground water in the area of the mine is not worthy of protection under the law, the Director has no basis for concluding that EPS constitutes Best Available Technology.

106. The Director also failed to require the company to provide a Closure and Post-Closure Management Plan in violation of R317-6-6.3(S) and R317-6-6.4. In doing so, the Director improperly discounts the possibility that Red Leaf's claims regarding its technology are incorrect and that the state may be placed in a position where it will have to remediate the site.

107. Based on the above and the other deficiencies identified throughout this Request for Agency Action, Living Rivers asks that the Permit be immediately revoked and remanded, that authorization for ground water discharge from the EPS capsule be withdrawn, that any and all construction on the EPS be ordered to be halted and that the Director be required to issue a Permit for the EPS, if the law permits it, that is based on the record and the law and corrects the failings identified herein and that protects Waters of the State.

Notice

On **January 21, 2014**, copies of this Request for Agency Action were **hand delivered** to:

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Salt Lake City, Utah 84114-4820

Administrative Proceedings Records Officer
Environment Division
Utah Attorney General's Office
195 North 1950 West, Second Floor
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and served by mail, on:

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Respectfully submitted this 21th day of January, 2014.

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