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DEPARTMENT OF NATURAL RESOURCES Division of Water Rights

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Executive Director State Engineer/Division Director

ORDER OF THE STATE ENGINEER

For Application to Appropriate Water Number 92-695 (A83862)

MAY 1 2024

Application to Appropriate Water Number 92-695 (A83862) in the name of Blackstone Minerals NV LLC was filed on July 17, 2023, to appropriate 19 cubic feet per second (cfs) of water from points located: (1) Well - South 797 feet and West 402 feet from the NE Corner of Section 22, T21S, R16E, SLB&M (10-inch well, 8000-9000 feet deep); (2) Well - South 342 feet and West 162 feet from the NE Corner of Section 22, T21S, R16E, SLB&M (10-inch well, 8000-9000 feet deep); (3) Well - South 1169 feet and West 234 feet from the NE Corner of Section 22, T21S, R16E, SLB&M (10-inch well, 8000-9000 feet deep); (4) Well - North 963 feet and West 102 feet from the E $\frac{1}{4}$ Corner of Section 27, T21S, R16E, SLB&M (10-inch well, 8000-9000 feet deep); (5) Well - North 1225 feet and East 1028 feet from the S $\frac{1}{4}$ Corner of Section 22, T21S, R16E, SLB&M (10-inch well, 8000-9000 feet deep); (6) Well - South 1205 feet and West 882 feet from the NE Corner of Section 22, T21S, R16E, SLB&M (10-inch well, 8000-9000 feet deep). The water will be returned at the following points: (1) Return point - North 329 feet and East 1216 feet from the SW Corner of Section 14, T21S, R16E, SLB&M; (2) Return point - South 1481 feet and East 271 feet from the N $\frac{1}{4}$ Corner of Section 22, T21S, R16E, SLB&M; (3) Return point - South 205 feet and East 406 feet from the W $\frac{1}{4}$ Corner of Section 23, T21S, R16E, SLB&M; (4) Return point - South 1214 feet and East 246 feet from the NW Corner of Section 26, T21S, R16E, SLB&M; (5) Return point - North 150 feet and East 389 feet from the SW Corner of Section 14, T21S, R16E, SLB&M; (6) Return point - South 1193 feet and East 496 feet from the N $\frac{1}{4}$ Corner of Section 22, T21S, R16E, SLB&M. The water is to be used for the year-round purpose of lithium extraction. The water is to be used in all or portions of Sections 14, 22, 23, 26, & 27, T21S, R16E, SLB&M.

Notice of the application was published in the ETV News on August 16 and 23, 2023 and in The Moab Times-Independent on December 7 and 14, 2023, and protests were received from Holiday River Expeditions, Jeff & Trigg Gerber, Kelly Dunham, Trustee of the Nancy J. Dunham Trust, Gayna Salinas, Living Rivers and the Great Basin Water Network, and the Bureau of Reclamation (BOR). A hearing was held in Green River, Utah on November 14, 2023.

Protestants requested a second hearing but the nature of protests received after the November 14th hearing did not deviate significantly from those received and heard on the 14th and a second hearing was not held.

Action on change applications by the State Engineer is governed by the provisions of Utah Code § 73-3-3, which provides that change applications be limited and conditioned such that impairment of existing rights does not occur. Utah Code § 73-3-8(5)(a) requires the State Engineer follow the same procedures as provided for applications to appropriate water. The approval criteria for such applications are contained in Utah Code § 73-3-8(1), which states:

(1) (a) It shall be the duty of the state engineer to approve an application if there is reason to believe that:

(i) for an application to appropriate, there is unappropriated water in the proposed source;

(ii) the proposed use will not impair existing rights or interfere with the more beneficial use of the water;

(iii) the proposed plan:

(A) is physically and economically feasible, unless the application is filed by the United States Bureau of Reclamation; and

(B) would not prove detrimental to the public welfare;

(iv) the applicant has the financial ability to complete the proposed works;

(v) the application was filed in good faith and not for purposes of speculation or monopoly; ...

(b) If the state engineer, because of information in the state engineer's possession obtained either by the state engineer's own investigation or otherwise, has reason to believe that an application will interfere with the water's more beneficial use for irrigation, municipal and industrial, domestic or culinary, stock watering, power or mining development, or manufacturing, or will unreasonably affect public recreation or the natural stream environment, or will prove detrimental to the public welfare, the state engineer shall withhold approval or rejection of the application until the state engineer has investigated the matter.

(c) If an application does not meet the requirements of this section, it shall be rejected.

The State Engineer has reviewed the application, the information provided in the various submittals prepared in support and in protest of the proposed project, the information provided at the hearing, the written testimony submitted after the hearing, and has conducted additional investigation as directed by statute. The standard by which the State Engineer evaluates applications seeking approval is the "reason to believe standard" outlined in *Searle v. Milburn Irrigation Co.*, 2006 UT 16, 133 P.3d 382.

The proposed project presents some unique circumstances, which has led to significant consideration and study of the issues outlined under the criteria in Utah Code § 73-3-8. The regulation and development of mineral extraction is heavily regulated under State and Federal law. The proposal raises questions related to water availability, impairment of existing water rights, project feasibility, public welfare, the Colorado River Storage Project, and the Green River Block Contract.

All of these issues, along with the State Engineer's analysis are summarized and discussed in the following subsections listed by the individual criterion cited in Utah Code § 73-3-8(1).

Some comments in the written protests and at the hearing were directed towards a possible future filing by the applicant for freshwater uses associated with this project. Because this application is only for the non-consumptive use of brine water for lithium extraction, no analysis or comment

will be made regarding issues related to a possible future filing on freshwater. Any additional applications will be considered based on its own merits. Many other concerns listed in the protests fall outside the jurisdictional authority of the State Engineer to address.

Utah Code § 73-3-8 (1)(a)(i) Unappropriated Water in the Proposed Source

The protests contend the Colorado River, including all its surface and underground tributaries, is over-allocated and over-appropriated, meaning that there is not sufficient unappropriated water in the proposed source to satisfy this application.

The concern of whether or not there is unappropriated water in a source can be raised regarding local water use, within a particular aquifer or drainage, or more broadly such as seen in these protests in regards to the volume of water that can be used by Utah appropriators under interstate compacts and agreements.

Locally, there are currently no water rights approved to use brine water from the geologic stratum identified at this location in this application. Therefore, it is the opinion of the State Engineer that there is unappropriated brine water available in this source.

More broadly, the Colorado River and its tributaries are managed and operated under compacts, federal laws, court decisions, decrees, contracts, and regulatory guidelines collectively known as the "Law of the River." The Colorado River Compact, 1922, apportioned water from the Colorado River basin limiting the amount of water each State can take based on depletion.¹

The applicant has filed for non-consumptive use of brine water to be used for lithium extraction. The protests contend that other similar operations are not fully non-consumptive. The applicant states in response to the protest that they will be metering both the extraction and reinjection of the brine product to confirm the process is non-consumptive. The State Engineer has no reason to believe the applicant has misrepresented their intentions to return 100 percent of the brine to subsurface formations. The applicant is cautioned that if this application is not 100 percent non-consumptive, they may face enforcement action resulting in fines for unauthorized use of the water right. Because this application is non-consumptive, it means there is no depletion and would not be subject to restriction or curtailment under current compacts and agreements.

It is the opinion of the State Engineer that the information reviewed supports a reason to believe that there is currently unappropriated water available for use under this application.

Utah Code § 73-3-8 (1)(a)(ii) Not Impair Existing Rights or Interfere with the More Beneficial Use of Water

Protestants argue that withdrawing brine water in close proximity to the Green River may draw water from the Green River or the underlying aquifers upon which the Green River may be connected which could impair other existing water rights or interfere with the more beneficial use of water. The BOR also questioned whether this application would negatively impact the

¹ Colorado River Compact. (1922), <https://www.usbr.gov/lc/region/pao/pdfiles/crccompct.pdf>

Colorado River Storage Project's water supply. Protestants also questioned whether or not this application would impair federal reserved water rights.

As mentioned previously, there are no existing water rights established in this area drawing brine water from the location identified in this application that could be impaired. Although there are a few water rights established in the Green River area for the use of groundwater from shallow wells, there is very little actual use of groundwater because of existing water quality issues related to contamination from salts in the Mancos Shale layer which underlies much of the region. There are only a few water rights, primarily for agricultural purposes, located on the Green River several miles downstream from the points of diversion identified in this application.

Impairment of existing water rights would only occur if water was in short supply on the Green River and use of the proposed extraction wells caused a drawdown of surface water into the subsurface aquifers and away from downstream users. The applicant submitted a letter from Drummond "Dusty" Earley III, Ph.D., P.G., with D3 Geochemistry, LLC citing a 1982 USGS geologic study² and also a 1999 Utah Geological Survey study³ which provides information that impermeable evaporite (salt) beds, shales, and siltstones, having a total thickness of hundreds of feet, hydraulically confine the deep, brine bearing Paradox clastic beds and separate the Mesozoic and Paleozoic aquifers such that there is no movement of groundwater from one aquifer to the other.

The protests did not offer any explanation of how this application may interfere with federal reserved water rights and because this application is non-consumptive, the State Engineer is of the opinion that no federal reserved water rights will be impaired by this application.

The State Engineer has reason to believe that using wells to withdraw brine water from a depth of 9,000 feet below the ground surface will not impair existing rights or interfere with a more beneficial use of water or negatively affect the CRSP's water supply.

Utah Code § 73-3-8 (1)(a)(iii) Physically and Economically Feasible

Some of the protests revolve around the physical and economic feasibility of the proposed project. The protests are summarized into two general areas of concern which are required permitting and economic feasibility.

The Bureau of Land Management (BLM) submitted a letter of concern stating that the applicant has not received approval to conduct any mineral exploration on BLM-managed public lands, and for the two points of return listed in the application, the applicant has not applied for nor received any land use authorization from the BLM. In response to the BLM's concerns, the applicant submitted a letter on October 24, 2023, amending their application by removing the point of diversion located North 963 feet and West 102 feet from the E¹/₄ Corner of Section 27, T21S, R16E, SLB&M and also removing the points of rediversion located South 205 feet and

² USGS. (1982), <https://pubs.usgs.gov/publication/ofr82107>

³ UGS. (1999), <https://ugspub.nr.utah.gov/publications/circular/c-99.pdf>

East 406 feet from the W¼ Corner of Section 23, T21S, R16E, SLB&M; and South 1214 feet and East 246 feet from the NW Corner of Section 26, T21S, R16E, SLB&M. The remaining points of diversion and rediversion are located on private land.

Several concerns were raised in protest regarding the danger of drilling wells into the Paradox Formation given the high pressures found at depth; concerns related to potential contamination related to leaks, spills or explosions; and concerns related to previous use of the property as an industrial site with existing contamination issues.

The applicant cites a Definitive Feasibility Study (DFS) which contains information that proponents and investors can use to evaluate the viability of the project and whether it is worthwhile to invest more capital in said project. A summary of the DFS⁴ has a section related to required permitting for this project. It lists many of the required permits including permits from Utah Division of Oil, Gas, and Mining, Utah Division of Air Quality, Utah Division of Water Quality, Grand County, Utah School and Institutional Trust Lands Administration (now Trust Lands Administration), and the BLM. Many of the concerns raised in protest to this application fall under the primary jurisdiction of one of these other entities. The Protestants are directed to work with these other entities that have primary jurisdiction and administrative rules governing such activities to address their concerns. No information was presented by the Protestants that conclusively prohibited the applicant from pursuing this project to completion provided they work through the various regulatory requirements for each agency having jurisdiction over this project.

The applicant presented information stating the demand for lithium is strong worldwide. They cite information in the DFS stating that this project proposes producing 13,074 tonnes per annum of high purity Lithium Carbonate over an initial 10-year project life. They also state that historical data for the Paradox Lithium Project area is more robust than many lithium exploration targets due to the long history of oil and gas exploration in the region. The Utah Geological Survey cited a resource estimate for the Paradox Basin reporting there is about 397 million brine tons at 98 ppm lithium, which equates to 205,500 recoverable tons of lithium carbonate equivalent plus byproduct bromine, boron, and iodine.⁵ Anson Resources provided a more detailed and updated assessment to the Utah State Legislature in 2023.⁶

Research completed by the State Engineer shows demand for lithium tripled between 2017 and 2022 while global battery demand for clean energy production increased by two-thirds in 2022.⁷

⁴ Anson Resources. (2022), <https://wcsecure.weblink.com.au/pdf/ASN/02565661.pdf>

⁵ Utah Geological Survey. (2020), <https://geology.utah.gov/map-pub/survey-notes/energy-news/energy-news-increased-battery-demand-spurs-interest-in-utahs-metallic-resources/>

⁶ Anson Resources. (2023), <https://le.utah.gov/interim/2023/pdf/00004804.pdf>

⁷ International Energy Agency. (2023), <https://iea.blob.core.windows.net/assets/afc35261-41b2-47d4-86d6-d5d77fc259be/CriticalMineralsMarketReview2023.pdf>

Anson cites existing infrastructure including a national rail network, interstate road system, gas and electrical power, and access to the Green River as key components in the feasibility of the Green River site.⁸

Based on the information presented by the applicant and research completed by the State Engineer, there is sufficient reason to believe the applicant is aware of the physical and economic challenges associated with this project, believes there is an existing and future demand for the product, and has sufficient knowledge, resources, and technical expertise to advance this project.

Utah Code § 73-3-8 (1)(a)(iv) Financial Ability to Complete the Proposed Works

The application is protested on the grounds that the applicant does not have the financial ability to complete the proposed works.

The applicant provided information stating that they are a wholly-owned subsidiary of Anson Resources, Ltd., a publicly traded Australian company⁹ with a current market capitalization of \$180 million AUD. Information from the company's 2023 Annual Report shows that during that financial year the company completed a capital raise of \$50 million to support the development of this project.¹⁰ Anson reported that in September 2023 they had \$31.1 million cash on hand.¹¹

The applicant stated that they are working with China-based Sunresin New Materials Company to support the development of the project. Information accessed online from Sunresin's website shows that they are an established company with a broad range of interests and products.¹² They are listed on the Shenzhen Stock Exchange.¹³ Sunresin reports that they are a major Direct Lithium Extraction (DLE) sorbent producer with three existing DLE plants, one under construction and are contracted to build another five DLE plants.¹⁴

The applicant has provided sufficient information to provide a reason to believe that they have the financial ability and expertise to advance this project.

Utah Code § 73-3-8 (1)(a)(v) Filed in Good Faith, Not for Speculation or Monopoly

The application is protested on whether or not the application was filed in good faith and not for speculation.

It was reported that the applicant through its parent company, Anson, has paid \$2.4 million to purchase approximately 140 acres in the Green River project area with the intent to construct a

⁸ Anson Resources. (2023), <https://wcsecure.weblink.com.au/pdf/ASN/02711031.pdf>
<https://wcsecure.weblink.com.au/pdf/ASN/02753393.pdf>

⁹ Australian Securities & Investments Commission. (2023), https://connectonline.asic.gov.au/RegistrySearch/faces/landing/SearchRegisters.jspx?_adf.ctrl-state=k7xvdmdb_4

¹⁰ Anson Resources. (2023), <https://wcsecure.weblink.com.au/pdf/ASN/02718370.pdf>

¹¹ Anson Resources. (2023), <https://wcsecure.weblink.com.au/pdf/ASN/02732532.pdf>

¹² Sunresin. (2024), <https://www.seplite.com/>

¹³ Sunresin (2024), <https://www.seplite.com/company/>

¹⁴ Sunresin. (2024), <https://www.seplite.com/direct-lithium-extraction/>