Denison Announces Independent "Proof of Concept" Achieved for Application of ISR Mining Method at Phoenix and Details of 2020 ISR Field Program

04.06.2020 | CNW

TORONTO, June 4, 2020 - Denison Mines Corp. ("Denison" or the "Company") (TSX: DML) (NYSE American: DNN) is announce that the hydrogeologic model developed by Petrotek Corporation ("Petrotek"), for the high-grade Phoenix ura deposit ("Phoenix), produced demonstration of "proof of concept" for the application of the In-Situ Recovery ("ISR") min at Phoenix, with respect to potential operational extraction and injection rates. The hydrogeologic model was developed the data collected from the ISR field test completed in 2019 ("2019 Field Test") (see press release dated December 18, Based on the positive results from the hydrogeologic model, Denison is also pleased to announce the details of its plan continuation of ISR field testing in 2020, within Phoenix, at the Company's 90% owned Wheeler River Uranium Project River"), located in northern Saskatchewan, Canada. View PDF version.

David Bronkhorst, Denison's Vice President Operations, commented, "Petrotek applied a rigorous process of calibration numerical models developed based on hydrogeologic data collected from 19 test wells installed into the Phoenix depos 2019 Field Test. Based on this site-specific data, the hydrogeologic model allowed for the simulation of an ISR wellfield total of 18 extraction wells and 33 injection wells across Test Area 1 and Test Area 2 of Phoenix. Based on these simul Petrotek concluded that the results demonstrated 'proof of concept' for the use of ISR mining at Phoenix. This result rep significant milestone in the ongoing de-risking of the use of the ISR mining method at Phoenix. Our plans for additional in 2020 are expected to build on our success from 2019, further confirm the hydrogeological model completed by Petro prepare for field tests in future years, which are expected to support a feasibility study – including a potential in-g lixiviant test or ISR demonstration."

Hydrogeologic Modeling

Denison engaged Petrotek to facilitate the design and implementation of ISR field testing at Phoenix in 2019. Petrotek i independent qualified technical specialist firm with unique expertise in the evaluation and field operations of subsurface and injection projects, with experience ranging from feasibility studies to facility operation. The firm has more than 20 y experience in the ISR uranium mining industry and has provided consulting services to each of the ISR uranium miners United States.

Petrotek and Denison designed the 2019 Field Test for the unique geological characteristics of Phoenix. The testing pr aimed to collect hydrogeological data in Test Area 1 and Test Area 2 of Zone A at Phoenix. Data acquired from the 201 was collected and analyzed to support the development of an integrated hydrogeological model to better define areas o deposit contributing to fluid flows and ultimately to facilitate future ISR wellfield designs necessary to support a Feasibil ("FS") and the Environmental Assessment ("EA") process.

Highlights of the hydrogeologic modeling completed by Petrotek include the following:

- Numerical groundwater flow models were developed using site-specific data to evaluate the hydraulic responses zone aquifer observed during hydrogeologic field testing conducted at Phoenix in 2019;
- Multiple models were constructed to address the lateral and vertical variability in hydraulic conductivity (a measur permeability) observed at the site;
- Modeling was limited to the physical flow of water through the groundwater system and did not address any geoc reactions of injected fluids within the aquifer matrix or native groundwater;

- The hydrogeologic model developed for Phoenix consisted of five layers, including one layer for the overlying Ath sandstone above the ore zone, one layer for the underlying paleo weathered unmineralized basement below the and three subdivided layers within the ore zone;
- The uppermost layer of the ore zone represents the upper clay unit, the middle layer represents the more permea unit, and the lower layer represents the lower clay unit. The combined thickness of the three layers is six metres v thickness of the middle layer simulated in multiple models. A two metre interval was assumed to be the most repr the overall in-situ conditions of the deposit, with the resultant model being referred to as the "2M" model.;
- Each model was calibrated to the actual test results from the 2019 Field Test, such that the "head" (defined as a s measurement of liquid pressure vertically above a reference point) changes resulting from simulations in the mod similar to the observed changes in the actual tests;
- The calibrated numerical models were then used to estimate hydraulic responses of the ore zone aquifer under c representative of ISR operations. Single well pattern simulations were run under a variety of scenarios, including and 7-spot well patterns, variable distances between wells (5 to 15 metres), and variable pumping and injection ra
- Results of the single well pattern simulations were used to further investigate the feasibility of ISR for uranium ext developing a wellfield simulation using the 2M model and 5-spot well patterns placed across Test Area 1 and Tes Phoenix at approximate 10 metre spacings between wells – including a total of 18 extraction / recovery we injection wells;
- Test Area 1 extraction wells were simulated at 5 gallons per minute ("GPM") or less, and Test Area 2 extraction w simulated at 7.5 GPM or less, with total extraction for the simulation at 105.5 GPM and total injection of 105.4 GP nearly balanced operational flow;
- The simulation was carried out within test area boundaries, reflecting the proposed freeze walls that are planned encapsulate the ISR wellfield. No attempts were made to optimize operational rates with respect to sweep efficien simulated lixiviant travel time;
- As expected, there was large variability in travel times from injection well to extraction well, with the average flow time estimated at 55 days, with 71% of flow paths being completed in fewer than 55 days;
- A 180-day simulation was completed with approximately 80% of the injected fluids estimated to be captured durin simulation period.

While the results of these simulations (including well patterns, spacing and flow rates) should be viewed as preliminary, not be considered wellfield plans or projections of actual operations, Petrotek's Interim Hydrogeologic Report has drawn following important conclusions:

- The modelling results generally provide a demonstration of "proof of concept" for application of ISR to the Phoeni with respect to potential operational extraction and injection rates; and
- With positive results associated with the various permeability measures and models reported to date, the further a operational parameters (e.g. well spacing, injection pressures, uranium recoveries), along with the engineered en of in-situ permeability (such as MaxPERF drilling - see press release dated December 18, 2019), should allow for significant optimization of the hydrogeologic model in the future.

2020 ISR Field Test Program

During the summer and fall months of 2020, Denison plans to collect additional hydrogeological data as part of an ISR program ("the 2020 Field Test") at Phoenix. The 2020 Field Test is designed to further evaluate and de-risk the ISR min conditions present at Phoenix, by supplementing the extensive dataset acquired as part of the 2019 Field Test. Hydrog data collected as part of the 2020 Field Test is expected to build additional confidence in the Company's understanding pathways within Test Area 1 and Test Area 2, to further validate the hydrogeological model completed by Petrotek, and for field tests in future years, which are expected to support a FS – including a potential in-ground lixiviant test o demonstration.

The 2020 Field Test is expected to utilize existing Commercial Scale Wells ("CSWs") and Small Monitoring Wells ("SMW installed as part of the 2019 Field Test, as well as mineralized and non-mineralized drill core recovered from the 2019 F

Key elements of the 2020 Field Test include:

- Additional pump/injection tests within Test Area 1 and Test Area 2 of the Phoenix deposit
- - To confirm the long-term stability of engineered permeability enhancement tunnels; and
  - Collection of data from additional injection points not previously tested.
- Groundwater sampling
- - Collection of data from various horizons within and above the Phoenix ore zone to characterize the baseline hydrogeochemistry in the deposit area. Understanding of the hydrogeochemistry is expected to be necessa the planning and permitting of a potential field test in future years for an in-ground lixiviant test or ISR demo
  - Groundwater sampling, in conjunction with future column leach test work, is expected to provide data neede reactive transport models (i.e. models that involve kinetically dissolving a mineral in a groundwater system). models may be used to determine the overall dissolution rate of the ore (primarily uraninite) and the flow of through the formation, including residence time, to estimate overall mill feed rate.
- Permeameter analysis
- - Collection of additional matrix permeability data from drill core previously recovered from within Test Area 1 Area 2, to support further refinement of hydrogeological models with an enhanced understanding of both lar small-scale fluid flow pathways.
- Rock mechanics tests
- - Collection of data to aid in evaluating the potential utility of certain permeability enhancement techniques.

The Company previously announced a decision to temporarily suspend the environmental assessment process for the Wheeler River project and other discretionary activities due to the significant social and economic disruption that has emerged as a result of the COVID-19 pandemic and the Company's commitment to ensure employee safety, support public health efforts to limit transmission of COVID-19, and exercise prudent financial discipline. The work related to the 2020 Field Test is not part of the suspended activities, and is included in the Company's evaluation budget contained within the current outlook and operating plan for 2020 (see the Company's Management Discussion and Analysis for the period ended March 31, 2020).

The Company previously indicated that field activities in 2020 could include the expansion of ISR field test work into Test Area 3 and Test Area 4 of Phoenix Zone A; however, since then, field testing of the MaxPERF Drilling Tool validated the potential to normalize the impact of geologic variations throughout the orebody by mechanically increasing access to existing permeability through the installation of lateral penetration tunnels from a CSW. Based on this success, the Company has decided to focus its testing efforts on Test Area 1 and Test Area 2 with the potential to carry out, in future years, an in-ground lixiviant test or ISR demonstration within the existing test areas (rather than expanding testing efforts to Test Area 3 and Test Area 4). This approach is expected to substantially de-risk the application of the ISR mining method at Phoenix and to support a future FS.

Operational planning for the 2020 Field Test is currently in progress, with significant consideration being given to public health guidelines and industry best practices associated with operating a remote mining camp site in northern Saskatchewan amidst the COVID-19 pandemic. In addition to camp operating procedures and physical distancing protocols, transportation and travel protocols are being developed in consultation with various Indigenous and non-Indigenous communities situated between the Wheeler River project site and Saskatoon. The Company is committed to ensuring that the site is a safe operating environment for its staff and contractors and that the Company's field activities do not compromise the health and safety of the residents of northern Saskatchewan. Despite the Company's current intentions, it is possible that the program may not advance as planned, or as described above, owing to the social and economic disruptions associated with the COVID-19 pandemic, which are outside of the control of the Company – for example, the availability of Company or contractor staff to attend to the site, Provincial or local travel restrictions, and changing public health guidelines.

In-Situ Recovery Mining Method

Denison selected the ISR mining method for the future mining of Phoenix in the Pre-Feasibility Study ("PFS") completed for Wheeler River in 2018 (see press release dated October 30, 2018). In an ISR mining operation, a mining solution is injected into the ore zone through a series of injection wells, and then dissolves the uranium as it travels through the ore zone, before the uranium bearing solution ("UBS") is then pumped back to surface via a series of recovery wells. Once on surface, the UBS is sent to a surface processing plant for the chemical separation of the uranium. Following the uranium removal, the mining solution is reconditioned and returned to the wellfield for further production. The ISR mining method accounts for a significant portion of uranium mine production globally and is generally considered the lowest cost uranium mining method in the world – owing to the fact that the method eliminates the surface disturbances and costs associated with physically removing ore and waste from the ground, as well as the

tailings treatment and storage, that are normally associated with underground or open pit mining operations.

The geologic setting of the uranium ore body and the ability of the mining solution to travel through the orebody (permeability) is an important element of an ISR mining operation. Accordingly, much of Denison's work in 2019 was focused on enhancing its assessment of the permeability of Phoenix through the completion of a series of ISR field tests – the positive preliminary results of which have been previously released (see press releases dated December 18, 2019 and February 24, 2020), and the data from which was incorporated into the hydrogeologic modelling described above.

About Wheeler River

Wheeler River is the largest undeveloped uranium project in the infrastructure rich eastern portion of the Athabasca Basin region, in northern Saskatchewan – including combined Indicated Mineral Resources of 132.1 million pounds U_3O_8 (1,809,000 tonnes at an average grade of 3.3% U_3O_8), plus combined Inferred Mineral Resources of 3.0 million pounds U_3O_8 (82,000 tonnes at an average grade of 1.7% U_3O_8). The project is host to the high-grade Phoenix and Gryphon uranium deposits, discovered by Denison in 2008 and 2014, respectively, and is a joint venture between Denison (90% and operator) and JCU (Canada) Exploration Company Limited (10%).

A PFS was completed for Wheeler River in late 2018, considering the potential economic merit of developing the Phoenix deposit as an ISR operation and the Gryphon deposit as a conventional underground mining operation. Taken together, the project is estimated to have mine production of 109.4 million pounds U_3O_8 over a 14-year mine life, with a base case pre-tax NPV of $1.31 billion (8% discount rate), Internal Rate of Return ("IRR") of 38.7%, and initial pre-production capital expenditures of $322.5 million. The Phoenix ISR operation is estimated to have a stand-alone base case pre-tax NPV of $930.4 million (8% discount rate), IRR of 43.3%, initial pre-production capital expenditures of $322.5 million, and industry leading average operating costs of US$3.33/lb U_3O_8. The PFS is prepared on a project (100% ownership) and pre-tax basis, as each of the partners to the Wheeler River Joint Venture are subject to different tax and other obligations.

Further details regarding the PFS, including additional scientific and technical information, as well as after-tax results attributable to Denison's ownership interest, are described in greater detail in the NI 43-101 Technical Report titled "Pre-feasibility Study for the Wheeler River Uranium Project, Saskatchewan, Canada" dated October 30, 2018 with an effective date of September 24, 2018. A copy of this report is available on Denison's website and under its profile on SEDAR at www.sedar.com and on EDGAR at www.sec.gov/edgar.shtml.

About Denison

Denison is a uranium exploration and development company with interests focused in the Athabasca Basin region of northern Saskatchewan, Canada. In addition to the Wheeler River project, Denison's Athabasca Basin exploration portfolio consists of numerous projects covering over 250,000 hectares. Denison's interests in the Athabasca Basin also include a 22.5% ownership interest in the McClean Lake joint venture ("MLJV"), which includes several uranium deposits and the McClean Lake uranium mill, which is currently processing ore from the Cigar Lake mine under a toll milling agreement, plus a 25.17% interest in the Midwest and Midwest A deposits, and a 66.57% interest in the J Zone and Huskie deposits on the Waterbury Lake property. Each of Midwest, Midwest A, J Zone and Huskie are located within 20 kilometres of the McClean Lake mill.

Denison is also engaged in mine decommissioning and environmental services through its Closed Mines group (formerly Denison Environmental Services), which manages Denison's Elliot Lake reclamation projects and provides post-closure mine care and maintenance services to a variety of industry and government clients.

Denison is also the manager of Uranium Participation Corp., a publicly traded company which invests in uranium oxide and uranium hexafluoride.

Qualified Persons

The results and interpretations contained in this release related to the hydrogeological model for Phoenix were prepared by Mr. Errol Lawrence, PG (Senior Hydrogeologist), and Mr. Aaron Payne, PG (Senior Hydrogeologist), at Petrotek, each of whom is an independent Qualified Person in accordance with the requirements of NI 43-101.

The other technical information contained in this release has been reviewed and approved by Mr. David Bronkhorst, P.Eng, Denison's Vice President, Operations, or Mr. Dale Verran, MSc, P.Geo, Pr.Sci.Nat., Denison's Vice President, Exploration, each of whom is a Qualified Person in accordance with the requirements of NI 43-101.

Cautionary Statement Regarding Forward-Looking Statements

Certain information contained in this news release constitutes 'forward-looking information', within the meaning of the applicable United States and Canadian legislation concerning the business, operations and financial performance and condition of Denison.

Generally, these forward-looking statements can be identified by the use of forward-looking terminology such as 'plans', 'expects', 'budget', 'scheduled', 'estimates', 'forecasts', 'intends', 'anticipates', or 'believes', or the negatives and/or variations of such words and phrases, or state that certain actions, events or results 'may', 'could', 'would', 'might' or 'will be taken', 'occur', 'be achieved' or 'has the potential to'.

In particular, this news release contains forward-looking information pertaining to the following: the results of the 2019 Field Test; the hydrogeologic model and its underlying assumptions; the 2020 Field Test, including its intended scope and timing, objectives and evaluation interpretations; the duration and scope of impacts of the COVID-19 pandemic and affiliated operational adjustments; the current and continued use and availability of third party technologies for testing; the results of the PFS and expectations with respect thereto; development and expansion plans and objectives, including plans for a feasibility study; and expectations regarding its joint venture ownership interests and the continuity of its agreements with its partners.

Forward looking statements are based on the opinions and estimates of management as of the date such statements are made, and they are subject to known and unknown risks, uncertainties and other factors that may cause the actual results, level of activity, performance or achievements of Denison to be materially different from those expressed or implied by such forward-looking statements. For example, the results of the 2019 Field Test, hydrogeologic model and/or 2020 Field Test discussed herein may not be maintained after further testing or be representative of actual conditions within the Phoenix deposit. In addition, Denison may decide or otherwise be required to discontinue the 2020 Field Test or other testing, evaluation and development work at Wheeler River if it is unable to maintain or otherwise secure the necessary resources (such as testing facilities, capital funding, regulatory approvals, etc.) or operations are otherwise affected by COVID-19 and its potentially far-reaching impacts. Denison believes that the expectations reflected in this forward-looking information are reasonable but no assurance can be given that these expectations will prove to be accurate and results may differ materially from those anticipated in this forward-looking information. For a discussion in respect of risks and other factors that could influence forward-looking events, please refer to the factors discussed in Denison's Annual Information Form dated March 13, 2020 or subsequent quarterly financial reports under the heading 'Risk Factors'. These factors are not, and should not be construed as being exhaustive.

Accordingly, readers should not place undue reliance on forward-looking statements. The forward-looking information contained in this news release is expressly qualified by this cautionary statement. Any forward-looking information and the assumptions made with respect thereto speaks only as of the date of this news release. Denison does not undertake any obligation to publicly update or revise any forward-looking information after the date of this news release to conform such information to actual results or to changes in Denison's expectations except as otherwise required by applicable legislation.

Cautionary Note to United States Investors Concerning Estimates of Measured, Indicated and Inferred Mineral Resources and Probable Mineral Reserves: This press release may use the terms 'measured', 'indicated' and 'inferred' mineral resources. United States investors are advised that while such terms have been prepared in accordance with the definition standards on mineral reserves of the Canadian Institute of Mining, Metallurgy and Petroleum referred to in Canadian National Instrument 43-101 Mineral Disclosure

Standards ('NI 43-101') and are recognized and required by Canadian regulations, these terms are not defined under Industry Guide 7 under the United States Securities Act and, until recently, have not been permitted to be used in reports and registration statements filed with the United States Securities and Exchange Commission ('SEC'). 'Inferred mineral resources' have a great amount of uncertainty as to their existence, and as to their economic and legal feasibility. It cannot be assumed that all or any part of an inferred mineral resource will ever be upgraded to a higher category. Under Canadian rules, estimates of inferred mineral resources may not form the basis of feasibility or other economic studies. United States investors are cautioned not to assume that all or any part of measured or indicated mineral resources will ever be converted into mineral reserves. United States investors are also cautioned not to assume that all or any part of an inferred mineral resource exists, or is economically or legally mineable. In addition, the terms "mineral reserve", "proven mineral reserve" and "probable mineral reserve" for the purposes of NI 43-101 differ from the definitions and allowable usage in Industry Guide 7. Effective February 2019, the SEC adopted amendments to its disclosure rules to modernize the mineral property disclosure requirements for issuers whose securities are registered with the SEC under the Exchange Act and as a result, the SEC now recognizes estimates of "measured mineral resources", "indicated mineral resources" and "inferred mineral resources". In addition, the SEC has amended its definitions of "proven mineral reserves" and "probable mineral reserves" to be "substantially similar" to the corresponding definitions under the CIM Standards, as required under NI 43-101. However, information regarding mineral resources or mineral reserves in Denison's disclosure may not be comparable to similar information made public by United States companies.

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