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PRESS RELEASE

DENISON REPORTS COMPLETION OF HIGHLY SUCCESSFUL 2019 ISR FIELD TEST AT THE PHOENIX DEPOSIT AND INITIATION OF ISR METALLURGICAL TESTING

Toronto, ON – December 18, 2019. Denison Mines Corp. ("Denison" or the "Company") (DML: TSX, DNN: NYSE American) is pleased to report the completion of the highly successful 2019 In-Situ Recovery ("ISR") field test program within the high-grade Phoenix uranium deposit ("Phoenix") at the Company's 90% owned Wheeler River Uranium Project ("Wheeler River"), located in northern Saskatchewan, Canada. The Company is also pleased to announce the initiation of the next phase of ISR metallurgical laboratory testing for uranium recovery (as outlined below), which will utilize the mineralized drill core recovered through the installation of various test wells during the ISR field test program.

The ISR field test program was designed to validate the permeability of Phoenix, and to collect an extensive database of hydrogeological data to further evaluate the ISR mining conditions present at Phoenix. This data is of critical importance to the advancement of Phoenix as an ISR mining operation – it is expected to de-risk the ISR requirements related to permeability and is to be further incorporated into a detailed ISR mine plan as part of the completion of a future Feasibility Study ("FS"). The ISR field test program included preliminary hydrogeological tests completed by using a series of small diameter and large diameter test wells to move water through two test areas defined within the Phoenix ore zone (see Figure 1). Measurements of the movement of water (hydraulic pressure changes) within the ore zone provide evidence of the hydraulic conditions present and are indicative of the potential movement of mining solution flow in an ISR mining operation. Additional supportive test work completed during the program included permeability and porosity tests conducted either downhole or on mineralized drill core recovered during the test program.

The ISR field test successfully achieved each of the program's planned objectives, and is highlighted by several key de-risking accomplishments, including the following:

Confirmation of significant hydraulic connectivity within the Phoenix ore zone:

- 85% of test wells located within Test Area 1 and Test Area 2 of the Phoenix deposit showed hydraulic connectivity with another test well (see Figure 2 and Figure 3);
- Hydraulic connectivity was observed over 77% of the total strike length tested in Test Area 1 and Test Area 2 combined, and over 100% of the total across-strike length tested;
- Taken together, the extent of hydraulic connectivity observed during the ISR field test program is supportive of the permeability of the ore zone and the potential suitability for ISR mining.

Installation of the Athabasca Basin's first Commercial Scale Wells ("CSWs") for ISR:

- ISR mining of the Phoenix deposit is expected to require the installation of approximately 300 large-diameter/commercial-scale vertical wells into and surrounding the Phoenix deposit at approximately 400 metres below surface;
- The installation of CSW1 (GWR-031) and CSW2 (GWR-032) represent a historic milestone for the advancement of ISR mining within the Athabasca Basin – as the first wells to have been installed for the purpose of ISR mining (see Figure 2 and Figure 3);
- Completion of these wells represents a notable de-risking accomplishment for the project, as it confirms the ability to drill the large-diameter holes and install the materials necessary for ISR mining in a complex and highly altered geological setting that has not previously been tested for the suitability of the installation of ISR wells.

Confirmation of limited hydraulic connectivity within the underlying basement units:

- During preliminary tests in Test Area 1 and Test Area 2, negligible hydraulic responses were observed in the observation wells situated in the basement rock units underlying the Phoenix deposit;

- This result is indicative of the basement units having relatively low permeability and is supportive of the PFS design for the Phoenix ISR operation, which relies on the basement units providing containment of the ISR mining solution in conjunction with the planned freeze dome.

Demonstration of the effectiveness of MaxPERF to increase CSW access to existing permeability:

- The MaxPERF Drilling Tool was successfully deployed in CSW1 and CSW2 to create a series of lateral drill holes (penetration tunnels) roughly 0.7 inches (1.78 centimetres) in diameter, which extend up to 72 inches (1.83 metres) from the CSW;
- Initial short-duration hydrogeological tests confirmed increased flow rates in Test Area 1 following the completion of the MaxPERF drilling (see Denison's press release dated August 27, 2019). In Test Area 2, initial short-duration hydrogeological tests confirmed similar flow rates both before and after the completion of the MaxPERF drilling (described in this press release);
- These results confirm that the MaxPERF Drilling Tool can be deployed successfully within a CSW to mechanically engineer increased access to the existing permeability of the ore formation. This tool could be of significant utility in areas of the Phoenix deposit where natural permeability is challenged.

David Bronkhorst, Denison's Vice President Operations, commented, *"We are pleased to have safely and successfully completed this first-of-its-kind ISR testing program at Phoenix – as Denison advances its industry leading efforts to pioneer ISR mining in the Athabasca Basin. The positive technical results obtained from the ISR field tests align with the Company's expectations that the Phoenix ore zone has significant permeability and is suitable for ISR mining. Considerable operational milestones have also been achieved during the field test program, including the installation of the first Commercial Scale Wells designed for ISR mining in the Athabasca Basin, which are expected to meet environmental and regulatory standards. Additionally, the successful testing of the MaxPERF Drilling Tool, to increase access to existing permeability, introduces the prospect of normalizing geological variations in a production environment.*

With the successful completion of the ISR field testing program, and the recovery of significant mineralized drill core from the Phoenix ore zone, our focus has now shifted to advancing the metallurgical test work required to support our leachability reports in the PFS, and to collect additional specialized metallurgical test data to facilitate the completion of a future Feasibility Study"

Completion of the 2019 ISR Field Test Program

Following the operational update provided in Denison's press release dated October 31, 2019, the Company successfully completed the remaining planned field test work and safely concluded operations on site at Wheeler River for the year. The field activities associated with the 2019 ISR field test program were completed over a period of approximately 23 weeks (starting in June and completed in late November), and required the support of roughly 40 Denison employees and contractor staff.

The objectives of the program were extensive, and the scope of the work completed on site during the program was considerable. The key components of field work completed as part of the 2019 ISR field test program are summarized in Table 1 below.

The extensive hydrogeological data sets collected during the 2019 field program will be incorporated into the hydrogeological model being developed for Phoenix, which will facilitate detailed mine planning as part of a future FS. The hydrogeological testing and modelling are being undertaken by Petrotek Corporation ("Petrotek") – specialists in the technical evaluation and field operation of subsurface fluid flow and injection projects, including significant ISR experience in various jurisdictions. Denison expects the hydrogeological model and final report to be completed in Q1 2020, which will allow for detailed planning for further ISR field testing and will ultimately support the completion of a future FS.

Raw data has been received for all the supportive permeability and porosity test work completed and is currently undergoing QA/QC and processing. Final data will be analyzed and integrated into the hydrogeological model to better define areas of the deposit contributing to fluid flows.

Metallurgical Laboratory Test Program:

Utilizing the mineralized drill core recovered from the 2019 ISR field test program, the Company has commenced the next phase of ISR metallurgical laboratory testing for uranium recovery. The metallurgical

laboratory test program builds upon the laboratory tests completed for the recovery of uranium as part of the PFS and is expected to increase the overall confidence of the application of ISR. The results are expected to facilitate detailed mine and process plant planning as part of a future FS, and will provide key inputs for the Environmental Assessment ("EA") process. The laboratory work is being carried out at the Saskatchewan Research Council ("SRC") Mineral Processing and Geoanalytical Laboratories under the supervision of Mr. Chuck Edwards (P.Eng., FCIM). Significant components of the metallurgical laboratory test program include core leach tests, column leach tests, bench-scale tests and metallurgical modelling, as summarized in Table 2 below.

Table 1: Summary of work completed as part of the 2019 ISR field test.
✓ Installation of 4 small-diameter pump/injection ("P/I") wells with a 2.5-inch diameter PVC pipe and slotted well-screen set within the ore zone of Test Area 1 and Test Area 2.
✓ Installation of 5 small-diameter observation wells with a 1.5-inch diameter PVC pipe and slotted well-screen set at various depths within the ore zone of Test Area 1 and Test Area 2.
✓ Installation of 6 small-diameter observation wells with a 1.5 inch diameter PVC pipe and slotted well-screen set at various depths outside of the ore zone of Test Area 1 and Test Area 2, including wells situated in the basement formation below Phoenix and in the sandstone above and adjacent to Phoenix.
✓ Installation of 2 test wells containing Vibrating Wire Piezometers ("VWPs") in each of Test Area 1 and Test Area 2, equipped with pressure transducers at five different depth locations – including the overburden (1 transducer), overlying sandstone (2 transducers), ore zone (1 transducer), and underlying basement (1 transducer).
✓ Installation of 12 small-diameter regional observation wells with a 1.5 inch diameter PVC pipe and slotted well-screen set at various depths and located approximately between 100 metres and 700 metres outside of the boundaries of the ore zone at Phoenix, for the purposes of environmental monitoring and baseline data collection.
✓ Installation of 1 re-charge well with a 2.5-inch diameter PVC pipe and slotted well-screen set within the ore zone horizon for the purposes of recharging formation test waters.
✓ Completion of a series of short-duration preliminary hydrogeological tests, using the P/I wells to pump water from or inject water into the ore zone to collect hydrogeological data and identify hydraulic connectivity between test wells – validating the ability to move water, and the existence of significant permeability, within the Phoenix ore zone.
✓ Installation of 2 large-diameter CSWs within the ore zone – one located in each of Test Area 1 and Test Area 2 and both designed to meet expected regulatory and environmental requirements such that they can ultimately form part of the production ISR well field at Phoenix.
✓ Completion of a series of short-duration preliminary hydrogeological tests, using the CSWs to pump water from or inject water into the ore zone to collect further hydrogeological data and assess the extent of permeability prior to testing the MaxPERF Drilling Tool.
✓ Deployment of the MaxPERF Drilling Tool in each of CSW1 and CSW2 to complete an array of lateral drill holes (penetration tunnels) designed to enhance access from each CSW to the existing permeability within the ore zone.
✓ Completion of a further series of short-duration preliminary hydrogeological tests, using each of CSW1 and CSW2 to pump water from or inject water into the ore zone following the deployment of the MaxPERF Drilling Tool – indicating potential increased flow rates following the application of the MaxPERF drilling.
✓ Completion of long-duration hydrogeological tests, using each of CSW1 and CSW2 to pump water from or inject water into the ore zone for an extended period of time, to collect further detailed hydrogeological data designed to simulate fluid flow under conditions similar to an envisioned commercial production environment.
✓ Completion of approximately 23 individual hydraulic conductivity tests (downhole packer testing) in 15 boreholes at various depths within and adjacent to the ore zone of Test Area 1 and Test Area 2 – including hydraulic conductivity tests within the underlying basement formation below Phoenix and in the sandstone above and adjacent to Phoenix.
✓ Completion of downhole geophysics including nuclear magnetic resonance, dual neutron, and cement-bond log in CSW2 and dual neutron in GWR-001, GWR-010, GWR-019 and GWR-022.
✓ Recovery of approximately 100 metres of mineralized drill core in 14 individual drill holes from the installation of P/I and observation wells, as well as CSWs, within Test Area 1 and Test Area 2 – subject to detailed on-site geological and geotechnical logging as well as permeability (permeameter) testing, prior to portions of the core being preserved for laboratory-based metallurgical test work.
✓ Completion of extensive permeameter testing in the field, utilizing a portable nitrogen gas probe permeameter adapted for testing whole drill core pieces. Permeameter measurements were taken on core at approximate 10 centimetre intervals, resulting in a total of over 1,200 measurements collected from the 2019 ISR field test program.

Table 2: Significant components of the metallurgical laboratory test program.
Core Leach Tests: These specialized tests involve the testing of intact mineralized core samples, representative of the in-situ conditions at Phoenix, to evaluate uranium recovery specifically for the ISR mining method. Mineralized core samples of between 0.75 metres and 1.5 metres in length were obtained from the 2019 ISR field test program. A triple-tube method of core recovery was employed to ensure the core could be recovered with minimal breakage and would be representative of the in-situ Phoenix ore. Core samples were collected to represent the various ore types and grade ranges (~1% to 60% U_3O_8) at Phoenix. Specialized laboratory apparatus will be utilized to completely seal the outer diameter of the intact mineralized core and then allow for leach testing through an intact core sample (25 centimetres to 50 centimetres in length). The tests are expected to utilize concentrations of mining solutions and injection pressures similar to those envisaged during commercial ISR operations. The tests are expected to provide detailed metallurgical recovery data for the start-up, steady state, and closure of ISR wells.
Column Leach Tests: Additional core samples in the same grade ranges (~1% to 60% U_3O_8) were obtained from the 2019 ISR field test program and preserved for metallurgical tests. These samples will be crushed and packed into test columns at the test facility in order to complete traditional column leach tests utilizing the same mining solutions as the Core Leach Tests. The testing is expected to provide additional data on the recovery of uranium, and any other metals, from the various ore types and grade ranges associated with the Phoenix deposit under the envisaged ISR mining conditions. The purpose of the Column Leach Tests is to correlate data from the specialized Core Leach Tests to the traditional ISR laboratory testing methods used during the PFS. Additionally, the Column Leach Tests are able to generate uranium bearing solutions in larger quantities for further laboratory testing of the process plant flowsheet.
Bench-Scale Tests: Upon completion of the Core Leach Tests and Column Leach Tests (together, the "Leach Tests"), Bench-Scale Tests of each unit operation in the proposed flowsheet is planned. These tests are expected to use the uranium-bearing solution produced from the Leach Tests. The data from the Bench-Scale Tests will provide key details to proceed with the next stage of process plant design for impurity removal, uranium precipitation, solid liquid separation, reagent usage and water treatment.
Metallurgical Modelling: Concurrent with these tests, Denison is building a metallurgical simulation model with the basic parameters for mass, energy and water balances. The data from all laboratory tests will be incorporated into a model update once testing is completed.

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 approximately 305,000 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 66.51% 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 Denison Environmental Services division and is the manager of Uranium Participation Corp., a publicly traded company which invests in uranium oxide and uranium hexafluoride.

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Qualified Persons

The hydrogeological results and interpretations thereof contained in this release were prepared by Mr. Errol Lawrence, PG (Senior Hydrogeologist), and Mr. Aaron Payne, PG (Senior Hydrogeologist) at Petrotek, independent Qualified Persons in accordance with the requirements of NI 43-101.

Description of the metallurgical test program contained in this release was reviewed by Mr. Chuck Edwards, P. Eng., FCIM, Principal at Chuck Edwards Extractive Metallurgy Consulting, 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. Dale Verran, MSc, P.Geo, Pr.Sci.Nat., Denison's Vice President, Exploration, 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 field test program (including drilling) and evaluation interpretations, activities, plans and objectives; the current and continued use and availability of third party technologies, such as MaxPERF, as applicable; 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. 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 12, 2019 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 news 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, the United States Securities and Exchange Commission ("SEC") does not recognize them. '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.*** *The estimates of mineral reserves in this news release have been prepared in accordance with NI 43-101. The definition of probable mineral reserves used in NI 43-101 differs from the definition used by the SEC in the SEC's Industry Guide 7. Under the requirements of the SEC, mineralization may not be classified as a "reserve" unless the determination has been made, pursuant to a "final" feasibility study that the mineralization could be economically and legally produced or extracted at the time the reserve determination is made. Denison has not prepared a feasibility study for the purposes of NI 43-101 or the requirements of the SEC. Accordingly, Denison's probable mineral reserves disclosure may not be comparable to information from U.S. companies subject to the reporting and disclosure requirements of the SEC.*

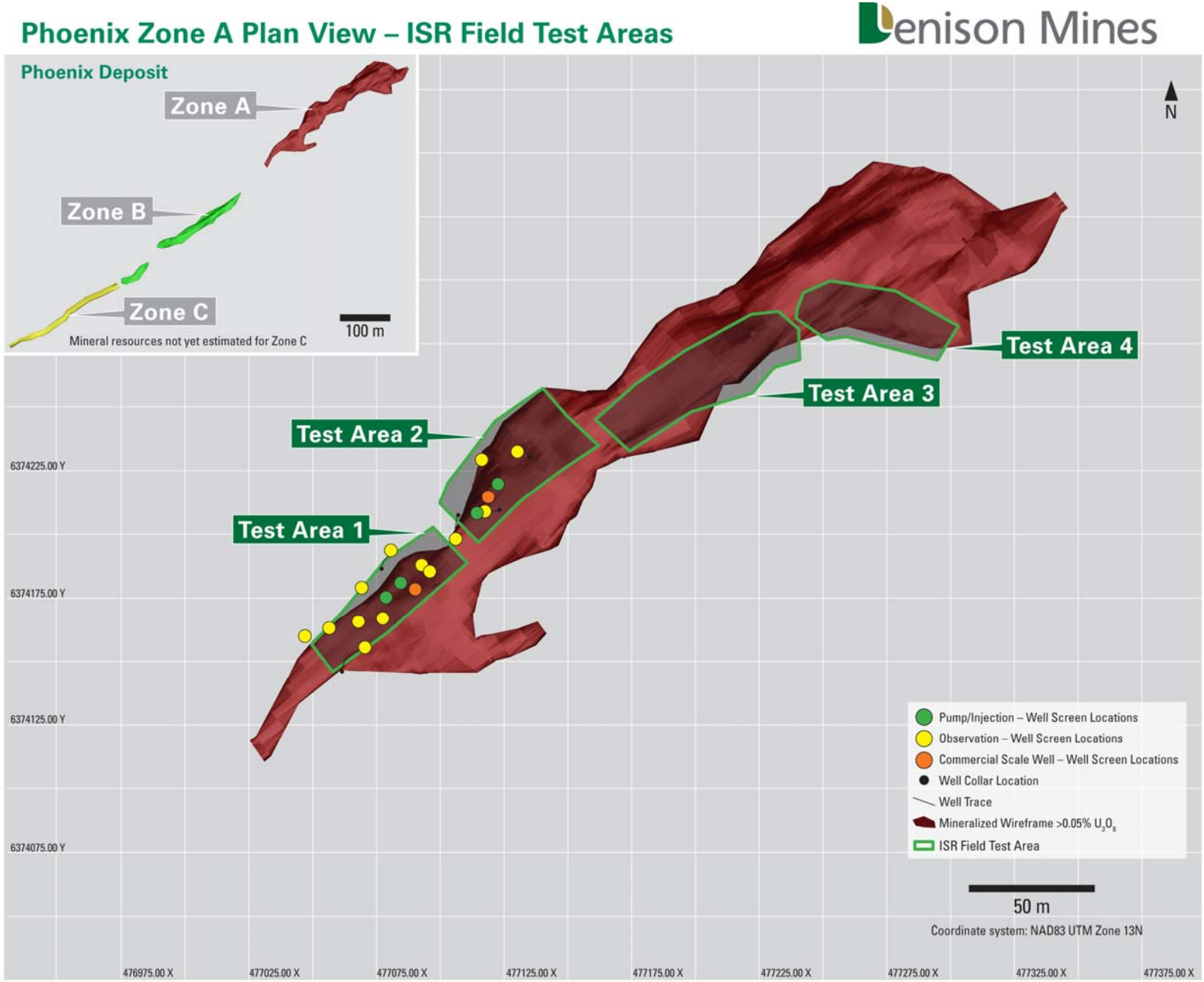

Figure 1: Phoenix Zone A plan view showing Test Areas and well installations completed during 2019.

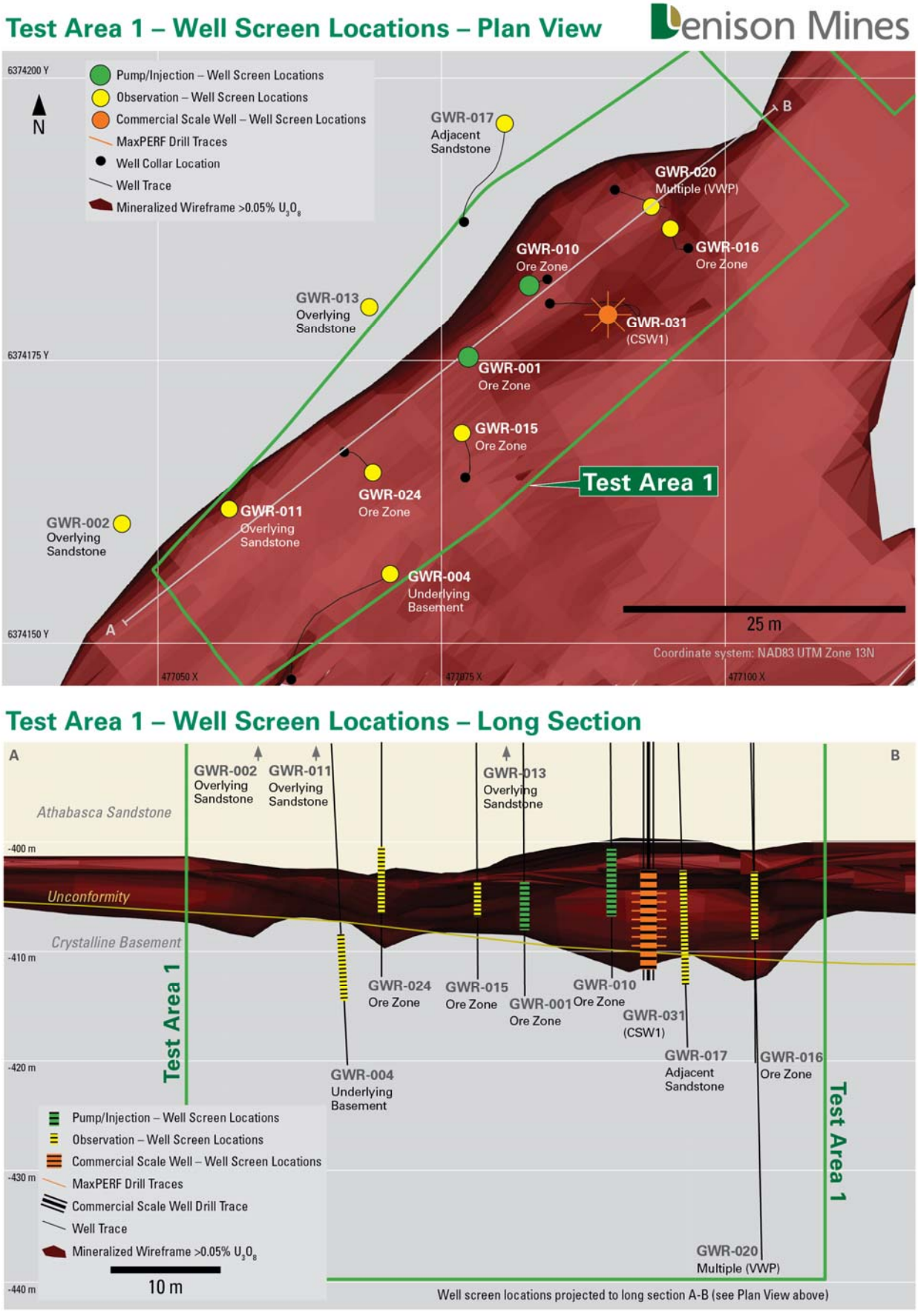

Figure 2: Plan map and long section showing Pump/Injection wells, Observation wells and CSW1 completed for ISR field testing in Test Area 1.

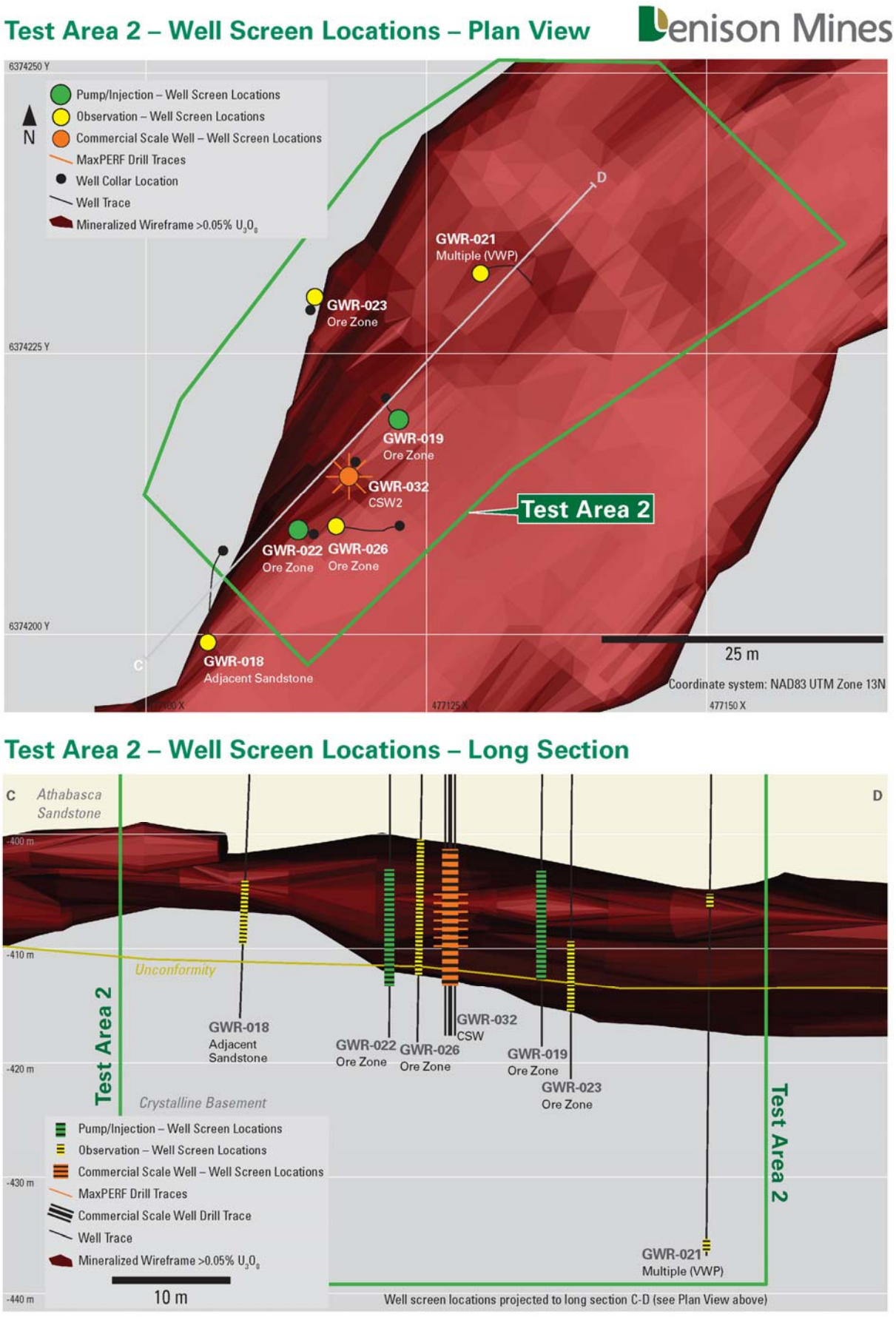

Figure 3: Plan map and long section showing Pump/Injection wells, Observation wells and CSW2 completed for ISR field testing in Test Area 2.