# US DOE URANIUM/VANADIUM LEASES JD-6, JD-7, JD-8, AND JD-9 MONTROSE COUNTY, COLORADO, USA

# MINERAL RESOURCE TECHNICAL REPORT NATIONAL INSTRUMENT 43-101

PREPARED FOR: Anfield Energy Inc.

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# **SECTION 1: SUMMARY**

This report titled US DOE Uranium/Vanadium Leases JD-6, JD-7, JD-8, AND JD-9, Montrose County, Colorado, USA, NI 43-101 Mineral Resource Technical Report, was prepared in accordance with National Instrument 43-101, Standards of Disclosure for Mineral Projects (NI 43-101), and in accordance with Canadian Institute of Mining (CIM) Best Practice Guidelines for the Estimation of Mineral Resources and Mineral Reserves (CIM Standards) and has an effective date for mineral resources and pertinent data of April 10, 2022. The effective date of the Technical Report is April 10, 2022.

The report was prepared for Anfield Energy Inc. (TSX-V: AEC).

The US Department of Energy (US DOE) Uranium Leases, JD-6, JD-7, JD-8, and JD-9 (or the Project) are brownfield sites which have been extensively explored and partially mined in the past. On-site infrastructure includes adits, an open pit, and underground and surface infrastructure. All of the four leases experienced underground mining activity over a 30-year period. Meanwhile the JD-7 lease also had significant open pit stripping performed to within less than 100 feet of the top of mineralization. Mineral Resource estimates for the four other leases, JD-6, JD-7, JD-8, and JD-9, were completed for and are the subject of this Technical Report.

This report includes disclosure of mineral resources which are reported in Section 14 of this report. While no formal economic evaluation, Preliminary Economic Assessment (PEA), Preliminary Feasibility study (PFS), or Feasibility Study (FS) has been completed and while mineral resources are not mineral reserves and do not have demonstrated economic viability, reasonable prospects for future economic extraction were applied to the mineral resource estimate herein through consideration of grade and GT cutoffs and by screening out areas of isolated mineralization which would not support the cost of conventional mining under current and reasonably foreseeable conditions.

#### 1.1 **Project Overview**

The Project is located within the Uravan Mineral District of southwestern Colorado, approximately 10 miles west of Naturita, Colorado (see Figure 4.1), within Sections 16 to 22, 29, 30, T46N, R17W, 6<sup>th</sup> P.M., of Montrose County, Colorado. The Project consists of four adjacent US DOE Mineral Leases, JD-6, JD-7, JD-8, and JD-9, that were previously developed and mined by Cotter Corporation from the late 1970s to early 2000s. All the four leases experienced underground mining activity over the 30-year period. In addition, the JD-7 lease also had significant open pit stripping performed to within less than 100 feet of the top of mineralization. Mineral Resource estimates for the four leases, JD-6, JD-7, JD-8, and JD-9, were completed for and are the subject of this Technical Report.

The uranium mineralization is present as uranium oxides and uranium/vanadium mineral assemblages. Mineralization is sandstone-hosted, and channel-bound into tabular and lenticular deposits within the Salt Wash member of the Jurassic Morrison Formation.

Uranium and Vanadium have been previously recovered from these deposits primarily by random room and pillar underground mining methods. The mined material was processed through Cotter Corporation's Canon City mill, a conventional acid leach uranium/vanadium mill.

#### **1.2 Project Description and Overview**

The current Project includes four contiguous US DOE leases: JD-6, JD-7, JD-8, and JD-9.

- JD-6 Lease (DE-RO01-19LM0254: effective July 6, 2020) Consists of 325 acres, located within Sections 21 and 22, T46N, R17W, 6<sup>th</sup> P.M.
- JD-7 Lease (DE-RO01-19LM0255: effective July 6, 2020) Consists of 320 acres of the main mineable lease and an adjacent lease, JD-7A, which is intended for placement of overburden extracted from the open-pit. The Lease is located within Sections 16, 17, 21, and 22, T46N, R17W, 6<sup>th</sup> P.M.
- JD-8 Lease (DE-RO01-19LM0256: effective July 6, 2020) Consists of 813 acres, located within Sections 18, 19, and 20, T46N, R17W, 6<sup>th</sup> P.M.
- JD-9 Lease (DE-RO01-19LM0257: effective July 6, 2020) Consists of 897 acres, located within Sections 19, 29, and 30, T46N, R17W, 6<sup>th</sup> P.M.

#### **1.3** Development Status

The US DOE Leases have been previously mined. From the 1950s to early 2000s, extensive mineral exploration by drilling defined significant uranium and vanadium resources on the four leases. Considerable mine-related infrastructure was built by Cotter Corporation on the leases, including adits and underground stopes, an open-pit, and associated underground and surface infrastructure. More than 1.3 million pounds of uranium ( $U_3O_8$ ) and 6.6 million pounds of vanadium ( $V_2O_5$ ) were produced from the leases and adjacent lode mining claims (Behre Dollbear, 2007).

#### 1.4 History

#### 1.4.1 US DOE Leases' History

The US DOE Leases were first made available to mining companies in the 1950s, following exploration by the US Geological Survey (USGS) on behalf of the US Atomic Energy Commission (US AEC, now US DOE). Extensive exploration by drilling was completed by the mining companies and extensive uranium and vanadium mineralization was delineated. Underground mining was completed on each of the leases, with an open pit partially developed on the JD-7 lease, where stripping of overburden ceased prior to reaching the mineralized deposits.

Table 1.1 summarizes the past production on the leases. Note: the production totals for each lease includes that extracted from adjacent, unpatented lode mining claims as the individual totals were not separated in the historical records.

DOE Lease and Lode Mining	Acres	Past Production Leases & Claims (Pounds U <sub>3</sub> O <sub>8</sub> ) (Pounds V <sub>2</sub> O <sub>5</sub> )				
Claims		1977-2002	2003-2006	Total		
JD-6	325	279,902	68,223	348,125		
Mineral Joe claims	120	1,910,463	396,630	2,307,093		
JD-7	320					
JD-7A,	120	46,280	-	46,280		
Palmer Ranch	240	125,410	-	125,410		
Sugar claims	120					
JD-8	813	-	35,704	35,704		
Doagy, Opera Box claims	35	-	151,501	151,501		
JD-9	897	128,584	98,127	226,711		
Lasso claims	40	701,553	512,433	1,213,986		
Project Total		<b>454,766</b> 2,737,426	<b>202,054</b> 1,060,564	<b>656,820</b> <i>3,797,990</i>		

Table 1.1 Historical Mineral Production on the US DOE Leases

Source: Behre Dolbear, 2007

#### 1.4.2 Anfield Acquisition of US DOE Leases

On February 20, 2020, Anfield signed a binding agreement with Cotter, whereby Cotter issued a Letter of Credit as required by applicable Government entities to facilitate Anfield obtaining Replacement Surety Bonds (Bonds) for US\$2,400,000 (Principal) in connection to the US DOE leases (including 6 others in the greater area). On or before the one-year anniversary of the agreement date, Anfield was required to pledge sufficient security under the Bonds to obtain the release of the Letter of Credit and pay US\$360,000, equal to 15% of the principal owed to Cotter. During the six months ended June 30, 2021, Anfield lifted the Letter of Credit issued by Cotter by making a cash collateral payment of US\$1,200,000 to cover the entirety of the reclamation bond amount and US\$360,000 payment for the Replacement Fee.

On March 1, 2019, Anfield reported the acquisition of nine, past-producing US DOE uranium/vanadium leases in southwestern Colorado, and the Charlie in-situ project in northeastern Wyoming, from Cotter Corporation, a wholly owned subsidiary of General Atomics. The subject US DOE leases in this report, JD-6, 7, 8, and 9, were included in this transaction. Cotter received 11,051,775 common shares of Anfield Energy. Cotter retained a royalty in the amount of 15% on uranium and vanadium produced form the DOE leases including, JD-6, 7, 8, and 9. In addition to the Cotter royalties, the DOE leases are subject to yearly royalty, and a production royalty of mined material (per dry ton), payable to the US DOE and varies by lease as summarized in Table 1.2.

Lease No.	Yearly Royalty Payment	Royalty bid payments due upon mining
JD-6 (DE-RO01-19LM70254)	\$28,300	19.92%
JD-7 (DE-RO01-19LM70255)	\$87,100	16.86%
JD-8 (DE-RO01-19LM70256)	\$13,600	15.02%
JD-9 (DE-RO01-19LM70257)	\$21,800	16.26%

Table 1.2 US DOE Lease Annual Payments and Royalties

The annual royalty payments shall be credited against the royalty bid payments upon successful mineral extraction from the individual leases.

#### 1.5 Regulatory Status

Current permitting status is active for each of the four leases, with 3 years to perform final reclamation. Cotter currently inspects each of the leases on a weekly basis, as required by the lease agreements. Monthly stormwater inspections are conducted on the four leases, with precipitation data collected at the JD-7 and JD-9 rain gauge monitoring sites. Quarterly monitor wells samples are collected at the JD-9 lease. Quarterly lysimeter readings are collected at JD-6, JD-8, and JD-9 leases. Quarterly water depth readings on vent holes are completed at the JD-7 and JD-9 leases.

#### 1.6 Geology and Mineralization

The host for known uranium mineralization, present as uranium and vanadium oxides, is sandstone-hosted and channel-bound tabular and lenticular deposits within the Salt Wash member of the Jurassic Morrison Formation. The uranium and vanadium bearing minerals occur as fine-grained coatings in detrital grains filling pore spaces between the sand grains and replacing carbonaceous material and some detrital grains (Weeks *et al.*, 1956).

#### 1.7 Indicated Uranium Mineral Resources

For this technical report, data was available for 2,198 drill holes, totaling approximately 1,250,370 feet drilled. Mineral resources were estimated using the Grade times Thickness (GT) Contour method. The primary data modeled used were uranium equivalent grades as determined by downhole geophysical logging and reported as eU<sub>3</sub>O<sub>8</sub>. A radiometric disequilibrium factor of 1 was applied to the resource estimate. The minimum uranium grade included in the estimate was 0.05% eU<sub>3</sub>O<sub>8</sub>. Mineral resources are reported at a minimum grade thickness (GT) value of 0.30.

While no formal economic evaluation, Preliminary Economic Assessment (PEA), Preliminary Feasibility study (PFS), or Feasibility Study (FS) has been completed and while mineral resources are not mineral reserves and do not have demonstrated economic viability, reasonable prospects for future economic extraction were applied to the mineral resource estimate herein through consideration of grade and GT cutoffs and by screening out areas of isolated mineralization which would not support the cost of conventional mining under current and reasonably foreseeable conditions.

The drill spacing in most areas is sufficient to support a higher level of mineral resource classification, however, due to the historical nature of the drill data with no recent confirmatory drilling, the uranium mineral resource estimates reported here are considered Indicated Mineral

Resources. Estimated Indicated Mineral resources for uranium are reported at a GT cutoff of 0.30 with a minimum grade of 0.05% eU<sub>3</sub>O<sub>8</sub> as summarized on Table 1.3 which follows. Detailed estimates for each area are provided in Section 14.

Uranium Indicated Mineral Resource	GT Cutoff (ft%)	AVG. Thickness (ft)	AVG. Grade (%eU3O8)	Tons	Pounds (eU3O8)
JD6 Lease	0.3	2.9	0.229	52,000	238,000
JD7 Lease	0.3	5.9	0.196	865,000	3,385,000
JD8 Lease	0.3	4.0	0.197	306,000	1,202,000
JD9 Lease	0.3	4.4	0.193	144,000	556,000
Mineral Resource	0.3	5.2	0.197	1,367,000	5,381,000

Table 1.3 Total Indicated Mineral Resources Uranium

Pounds and tons as reported are rounded to the nearest 1,000

#### **1.8 Inferred Vanadium Mineral Resources**

Vanadium grade was estimated using the historical results of mining and comparative review of the limited number of intercepts assayed for vanadium content for each of the lease tracts. In general, the ratio of vanadium to uranium (V:U) in the Uravan mineralized deposits is typically 5:1 to 7:1. Past production from the JD6 through JD9 leases shows a V;U ratio of 5.8:1 Vanadium resources were estimated using a more conservative 5:1 ratio.

It was industry practice when these leases were developed to estimate vanadium mineral resources and control vanadium grade during mining based on the uranium grade with only limited vanadium assays. Whereas there are limited vanadium assays available for vanadium mineral resource estimation, the mineral resource estimate is considered as an Inferred Mineral Resource for vanadium.

Table 1.4 provides a summary of inferred vanadium mineral resources based on the uranium grade and GT cutoffs and reasonable prospects for economic extraction applied to the estimated uranium mineral resource.

Table 1.4 Total Infe	rred Mineral I	Resources V	<b>'anadium</b>
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Vanadium Inferred Mineral Resource	AVG. Grade %V2O5	Tons	Pounds (V <sub>2</sub> O <sub>5</sub> )
JD6 Lease	1.147	52,000	1,189,000
JD7 Lease	0.979	865,000	16,923,000
JD8 Lease	0.985	306,000	6,012,000
JD9 Lease	0.963	144,000	2,782,000
<b>Mineral Resource</b>	0.984	1,367,000	26,906,000

Pounds and tons as reported are rounded to the nearest 1,000

#### 1.9 Summary of Risks

It is the authors' opinion that the risks associated with this project are moderate as there has been past mining on the leases and the mine workings generally remain open and accessible. In addition, mining permits are in place although they would need to be updated. However, there are risks similar in nature to other mining projects in general and uranium mining projects specially, i.e., risks common to mining projects include:

- risks associated with mineral reserve and resource estimates, including the risk of errors in assumptions or methodologies;
- risks associated with estimating mineral extraction and recovery, forecasting future price levels necessary to support mineral extraction and recovery;
- uncertainties and liabilities inherent to conventional mineral extraction and recovery;
- geological, technical and processing problems, including unanticipated metallurgical difficulties, less than expected recoveries, ground control problems, process upsets, and equipment malfunctions;
- risks associated with labor costs, labor disturbances, and unavailability of skilled labor;
- risks associated with the availability and/or fluctuations in the costs of raw materials and consumables used in the production processes;
- risks associated with environmental compliance and permitting, including those created by changes in environmental legislation and regulation, and delays in obtaining permits and licenses that could impact expected mineral extraction and recovery levels and costs;
- actions taken by regulatory authorities with respect to mineral extraction and recovery activities;

The Project should anticipate some specific risks as follows.

- Based on the experience of other proposed mines in the Uravan district, some level of public opposition given its geographical location. However, Anfield controls the Shootaring Canyon (Ticaboo) mill near Ticaboo, Utah. The mill has a source material license from the State of Utah. The mill would require updating and revision of permits to allow operations and the mill would require refurbishment, but it is considered reasonable to presume mined material from the Project could ultimately be processed at Ticaboo.
- The combined royalty burden from both Cotter and the DOE is considered excessive in comparison to typical industry practice and may inhibit the development of the Project.

#### 1.10 Recommendations

The recommended project development program, summarized in Section 26, includes collection of core samples from select areas across the project in a manner representative of the overall resource area and/or complete test mining to obtain a bulk sample of mineralized material.

- Analyze the samples for uranium, vanadium, and radium to evaluate disequilibrium and the ratio of vanadium to uranium.
- Complete bench scale testing of mechanical sorting of the mined material prior to mineral processing to upgrade the mined material.
- Complete bench scale metallurgical testing of the bulk sample for anticipated mill processing alternatives including conventional milling, vat and heap leaching.
- Completion of a PEA or PFS.
- Total estimated expenditures of \$750,000 (US dollars)

# **SECTION 2: INTRODUCTION**

#### 2.1 **Purpose of Report**

This report was prepared on behalf of Anfield for its US DOE uranium/vanadium project in Montrose County, Colorado, in compliance with the requirements of Canadian National Instruments 43-101 and 43-101F. This technical report addresses the US DOE leases' geology, uranium mineralization, historical resource estimates, and historical exploration and mine development work. In addition, this report includes the results of new mineral resource estimates that follow the Canadian Institute of Mining (CIM) standards for reporting to the Canadian Securities Administration.

#### 2.2 Terms of Reference

Units of measurement, unless otherwise indicated, are feet (ft), miles, acres, pounds (lbs), and short tons (2,000 lbs). Uranium oxide is expressed as % U<sub>3</sub>O<sub>8</sub>, the standard market unit. Uranium values reported for historical resources and the new mineral resources reported herein are % eU<sub>3</sub>O<sub>8</sub> (equivalent U<sub>3</sub>O<sub>8</sub> by calibrated geophysical logging unit). Vanadium oxide is expressed as % V<sub>2</sub>O<sub>5</sub>. Unless otherwise indicated, all references to dollars (\$) are reported as United States currency. Additional units of measurement are tabulated as follows:

URANIUM SPECIFIC TERMS AND ABBREVIATIONS								
Grade		Parts Per Million		ppm U <sub>3</sub> O <sub>8</sub>	Weight Percent		%U3O8	
Radiometric Equivaler	nt Grade			ppm eU <sub>3</sub> O <sub>8</sub>			% eU <sub>3</sub> O <sub>8</sub>	
Thickness		meter	`S	М	Fe	et	Ft	t
Grade Thickness Prod	uct	grade	x meters	GT(m)	gra	ade x feet	G	T(Ft)
	GENE	RAL T	<b>TERMS AND</b>	ABBREVIA	ΓΙΟ	NS		
	METI	RIC		US				Metric: US
	Term		Abbreviation	Term		Abbreviation	1	Conversion
Area	Square Me	eters	$m^2$	Square Fee	et	Ft <sup>2</sup>		10.76
	Hectare		На	Acre		Ac		2.47
Volume	Cubic Me	ters	m <sup>3</sup>	Cubic Yards		Су		1.308
Length	Meter		m	Feet		Ft		3.28
	Meter		m	Yard		Yd		1.09
Distance	Kilometer		km	Mile		mile		0.6214
Weight	Kilogram		kg	Pound		Lb		2.20
	Metric To	nne	Tonne	Short Ton		Ton		1.10

#### Table 2.1 Terms and Abbreviations

#### 2.3 Sources of Information and Data

This technical report is based upon unpublished factual data including drill-hole maps, mineralized intercept data, gamma-logs, resource calculations, underground mapping, and other information from the original files and records of Cotter Corporation.

#### 2.4 Extent of Authors' Field Involvement

From August 3 to 5, 2021, Terrence Osier, PG, of BRS Inc. visited the office of Cotter Corporation in Nucla, Colorado, at the direction of the principal author Douglas Beahm. Mr. Osier reviewed the available database for the JD-6, JD-7, JD-8, and JD-9 properties. A portion of the available data was transported to the BRS office in Riverton, Wyoming for digitization and more extensive review. On August 5, 2021, Mr. Osier visited each of the lease tracts as BRS' representative, accompanied by Scott Pottorff, site manager for Highbury Resources Inc., a subsidiary of Anfield Energy ("Highbury"). During the site visit, Mr. Osier observed and photographed the remaining surface infrastructure and mine portals at each of the leases, and the open-pit intended for access to a portion of the uranium and vanadium mineralization at the JD-7 lease. Underground access was not available. Mineralized materials were noted at each of the sites, as exposed in mine dump areas. Mr. Osier brought the physical data to BRS' office in Riverton, Wyoming where it has been secured. Mr. Osier reported the findings of his field visit to the authors of this report and was under the direct supervision of the principal author Douglas Beahm.

#### 2.5 Extent of Authors' Past Education, Qualification, and Experience

Douglas L. Beahm, P.E., P.G.: The principal author of this report, Mr. Beahm, is both a Professional Geologist and a Professional Engineer, and a Registered Member of the US Society of Mining, Metallurgy, and Exploration Inc. (SME Inc.). Mr. Beahm is a Qualified Person and independent of Anfield Energy, using the test set out in Section 1.5 of NI 43-101. Mr. Beahm is experienced with uranium exploration, development, and mining including past employment with Homestake Mining Company, Union Carbide Mining and Metals Division, and AGIP Mining USA. In addition, as a consultant and principal engineer of BRS Inc., Mr. Beahm has provided geological and engineering services related to the development of mining and reclamation plans for a variety of uranium projects. Mr. Beahm's professional experience dates to 1974. Mr. Beahm has worked previously within the Colorado Plateau and has extensive work experience with similar sandstone-hosted uranium deposits. Mr. Beahm did not make a recent site visit due to concerns related to the Covid pandemic but relied on the site visit by Mr. Osier who was employed by BRS at the time and under Mr. Beahm's direct supervision. Mr. Beahm is the primary author, responsible for all sections of the report.

Coauthors Carl Warren and Joshua Stewart are both Registered Professional Engineers and Professional Geologists and both have at least 5 years of experience performing mineral resource modeling and estimation for sandstone hosted uranium deposits under the direction of the principal author, Douglas Beahm. Mr. Warren has over 15 years of experience in the mining and geology industries including underground and open pit mining and reclamation, ore control, mineral exploration, core logging, and resource modelling. Mr. Stewart has 7 years of experience as a project engineer with BRS. The coauthors were primarily responsible for assembling the drillhole database and completing the mineral resource estimates as discussed in Section 14 of this report.

# **SECTION 3: RELIANCE ON OTHER EXPERTS**

The location, extent, and terms relating to Mineral Tenor were provided by Corey Dias, CEO, of Anfield Energy, and Scott Pottorff, site manager of Highbury. They were fully relied upon as defining the mineral holdings of Anfield in development of this report.

The terms of Anfield's Asset Purchase Agreement with Cotter Corporation were provided by Corey Dias, CEO, Anfield Energy, and were fully relied upon in the development of this report.

The status of environmental and operating permits and current bond requirements, as discussed in herein, was provided to the Authors by Anfield from Scott Pottorff of Highbury, 08 November 2021, and was fully relied upon in the development of this report.

The Authors have reviewed the information provided by Anfield with respect to mineral tenor, the Asset Purchase Agreement, and status of environmental permits and find the provided information to be appropriate for inclusion in this report.

# **SECTION 4: PROPERTY DESCRIPTION**

The Project is located within the Uravan Mineral District of southwestern Colorado, approximately 10 miles west of Naturita, Colorado (see Figure 4.1), within Sections 16 to 22, 29, 30, Township 46 North, Range 17 West, 6<sup>th</sup> Principal Meridian, Montrose County, Colorado. The Project consists of four adjacent US DOE Mineral Leases, JD-6, JD-7, JD-8, and JD-9, that were previously developed and mined by Cotter Corporation from the late 1970s to early 2000s. All of the four leases experienced underground mining activity over the 30-year period. Meanwhile the JD-7 lease also had significant open pit stripping performed to within less than 100 feet of the top of mineralization. Mineral Resource estimates for the four other leases, JD-6, JD-7, JD-8, and JD-9, were completed for and are the subject of this Technical Report.

#### 4.1 US DOE Leases' Royalties and Encumbrances

On March 1, 2019, Anfield reported the acquisition of nine, past-producing uranium and vanadium properties in southwestern Colorado, and the Charlie in-situ project in northeastern Wyoming. The subject US DOE Leases of this report, JD-6, 7, 8, and 9, were included in this transaction. Cotter received 11,051,775 common shares of Anfield Energy. Cotter retained a royalty in the amount of 15% on uranium and vanadium produced from the properties.

On February 20, 2020, Anfield signed a binding agreement with Cotter, whereby Cotter issued a Letter of Credit as required by applicable Government entities to facilitate Anfield obtaining Replacement Surety Bonds (Bonds) for US\$2,400,000 (Principal) in connection to the US DOE leases (including 6 others in the greater area). On or before the one-year anniversary of the agreement date, Anfield was required to pledge sufficient security under the Bonds to obtain the release of the Letter of Credit and pay US\$360,000, equal to 15% of the principal owed to Cotter. During the six months ended June 30, 2021, Anfield lifted the Letter of Credit issued by Cotter by making a cash collateral payment of US\$1,200,000 to cover the entirety of the reclamation bond amount and US\$360,000 payment for the Replacement Fee.

In addition to the overriding royalty to Cotter, a yearly royalty, and a production royalty of mined material (per dry ton), is payable to the US DOE and varies by lease as follows:

Lease No.	Yearly Royalty	Royalty bid payments
	Payment	due upon mining
JD-6 (DE-RO01-19LM70254)	\$28,300	19.92%
JD-7 (DE-RO01-19LM70255)	\$87,100	16.86%
JD-8 (DE-RO01-19LM70256)	\$13,600	15.02%
JD-9 (DE-RO01-19LM70257)	\$21,800	16.26%

#### Table 4.1 DOE Lease Royalties

The annual royalty payments shall be credited against the royalty bid payments upon successful mineral extraction from the individual leases.

**Figure 4.1- Property Location Map** 



#### 4.2 **Permitting**

Each of the sites within this project have had past mining and each have mining permits through the Colorado Department of Reclamation and Mining and Safety (DRMS).

- The JD-6 lease consists of 325 acres, and the DRMS reclamation permit for the lease applies to 2.48 acres of the lease tract.
- The JD-7 lease consists of 320 areas on the DOE mining lease and 120 acres on the JD-7A lease, which is used for overburden placement from the open-pit mine. The DRMS reclamation permit for the JD-7 mine specifies an area of no greater than 650 acres of the lease tract may be disturbed.
- The JD-8 lease consists of 813 acres, and the DRMS reclamation permit applies to 20.96 acres of the lease tract.
- The JD-9 lease consists of 897 acres, and the DRMS reclamation permit applies to 11.1 acres of the lease tract.

At the time the leases were mined the mined material was shipped to Cotter's Canon City, Colorado mill for processing. The Cotter mill no longer processes mined material and mined material from the Project would have to be processed at another facility. Anfield controls the Shootaring Canyon (Ticaboo) mill near Ticaboo, Utah. The mill has a source material license from the State of Utah which would require updating and revision to allow operations. The mill would require refurbishment, but it is considered reasonable to presume mined material from the Project could ultimately be processed at Ticaboo.

Future development would require a range of different permits and licenses for mining and/or mineral processing. Similarly, a variety of environmental studies would be required depending the development options.

The mines have current permits for underground mining and in the case of JD7 open pit mine operations. These permits would need to be updated along with appropriate BLM Plan of Operations. These are the primary mining permits however additional permits will likely include but would not be limited to, air quality (emissions and fugitive dust), water quality (erosion control and discharge permits), land use and construction permits.

#### 4.3 Environmental Liabilities

Current mine permit bonds are \$1.82 million \$ US. Future development whether mining or mineral processing would require adequate decommissioning and reclamation bonds for the life of the planned operations.

#### 4.4 State and Local Taxes

Mineral severance taxes in Colorado are at a rate of 2.38% of gross value. Property tax would apply in Utah if the Ticaboo mill. Current annual taxes are approximately \$20,000. These would likely increase if the mill were refurbished.

#### 4.5 Encumbrances and Risks

To the authors' knowledge there are no other forms of encumbrance or specific risks to the Project other than those aforementioned.

# SECTION 5: ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

#### 5.1 Access

The US DOE Leases can be reached by taking Colorado Highway 141 west approximately 1.5 miles from Naturita, turning south on State Highway 90, and then proceeding approximately 9 miles west. There, heading south on a maintained gravel road to Monogram Mesa accesses the JD-6, JD-8, and JD-9 Lease tracts. The JD-7 Lease is accessed by another gravel road, which heads south from State Highway 90, approximately 1.5 miles west from the Monogram Mesa access road.

#### 5.2 Topography, Elevation, and Vegetation

The Project area is typical of the mesa and canyon topography of southwest Colorado. Monogram Mesa dominates the setting, lying immediately south of Paradox Basin. The four lease tracts are located along the flanks of Monogram Mesa.

Vegetation is typical of a semi-arid, southern climate and generally sparse to fair. Flora consists of juniper and piñon pines along with sage and other brush, forbs, grasses, and cacti typical of a semi-arid, southern climate.

#### 5.3 Climate

The Property climate is semi-arid to arid and receives annual precipitation of 7-12 inches with most precipitation falling in the form of spring rains and late autumn to early spring snows. The summer months are usually hot, dry, and clear except for infrequent, monsoonal rains. Due to the dry climate, all streams in the area are ephemeral to low flow, fed by storm runoff and the occasional groundwater seep. Temperatures range from approximately 70 to 90°F in the summer season, and 10 to 40°F in the winter season.

#### Figure 5.1 - Average Climate in Naturita, CO





https://www.city-data.com/city/Naturita-Colorado.html

#### 5.4 **Property Infrastructure**

There is limited infrastructure remaining onsite. Each lease has at least one adit for accessing the underground workings, and associated ore load outs. Surface infrastructure includes buildings and ventilation systems. At the JD-7 Lease, an open-pit was partially stripped above the mineralized horizon. Additionally, storm water catchments for run-off have been constructed and a storm water pollution prevention plan is in place.

#### 5.5 Land Use

Historically and currently, the land is used for livestock grazing.

#### 5.6 Surface Rights and Local Resources

The surface rights to the four lease tracts are controlled by the US DOE. Adjacent lands are controlled by the US Bureau of Land Management or are other US DOE lease tracts.

Although there are no sources of goods and services in the immediate vicinity of the project, there are adequate supplies of equipment, services, and work force at the city of Grand Junction, approximately 90 miles to the north. The nearby towns of Naturita and Nucla provide limited goods and services for exploration drilling activities. Skilled labors for mining and mining contractors are available in the area.

## **SECTION 6: HISTORY**

#### 6.1 History of the DOE Lease Properties

Beginning in the 1950s, the leases were explored by the US Atomic Energy Commission (US AEC, now US DOE). Later, the leases were obtained by Cotter Corporation which extensively explored them by surface drilling methods. Extensive mineralized deposits were delineated, and underground mining was completed on each of the leases from the late 1970s to early 2000s. The JD-7 Lease also underwent surface mining, with preliminary stripping of an open-pit completed to within 100 feet of the top of mineralization. Previous mineral resource estimates are provided in Table 6.1. Past production on the leases, including from adjacent lode mining claims is detailed below in Table 6-2.

#### 6.1.1 Previous Mineral Resource Estimates

#### Cotter Corporation Estimates

Behre Dolbear (2007) reported a "global resource estimate" for the four lease tracts from an inhouse estimate generated by Cotter Corporation (Table 6.1). The estimate applied a 50-foot area of influence around each drill hole using intercepts of greater than 0.05% eU<sub>3</sub>O<sub>8</sub>. V<sub>2</sub>O<sub>5</sub> values were not considered, but resource estimates for V<sub>2</sub>O<sub>5</sub> were likely based on the average V<sub>2</sub>O<sub>5</sub>:U<sub>3</sub>O<sub>8</sub> ratio (typically 5:1 to 7:1 in the Uravan district) from past mining at each individual lease tract. The following resources were estimated by Russell:

	Resources – In-Place						
Lease Tract	Tons and Pounds in Millions (Intercents greater than 0.05% eU <sub>2</sub> O <sub>2</sub> )						
		U <sub>3</sub> O <sub>8</sub> V <sub>2</sub> (					
	Tons	Grade %	Pounds	Grade %	Pounds		
JD-6	0.16	0.15	0.48	0.75	2.4		
JD-7	0.77	0.26	4.0	1.1	17.0		
JD-8	0.31	0.24	1.5	1.3	7.9		
JD-9	0.23	0.29	1.1	1.2	5.7		
TOTAL	1.47	0.24	7.08	1.12	33.0		

#### Table 6.1 Historic Remaining Resources of US DOE Lease Properties

Source: Behre Dolbear (2007)

#### Cautionary Statement on Historical Resource Estimates

The resource estimates cited above are based on data and reports prepared by the previous operator of the project. These resource estimates are of a historic nature. Work necessary to independently verify the classification of the mineral resource estimates in accordance with National Instrument 43-101, verified by a qualified person, and in compliance with CIM standards has not been completed. This historical estimate should not be relied upon.

BRS staff has evaluated the quality and quantity of the historical assay data for the project and has prepared an updated mineral resource estimate for the four US DOE leases, as discussed in Section 14 of this report.

#### 6.2 Past Production

Each of the four lease tracts were the subject of underground mining. Lease JD-7 was also partially developed by open-pit mining. However, overburden stripping ceased within 100 feet of the top of mineralized materials and no open-pit mineral production was completed. Table 6.2 details the recovered pounds of uranium and vanadium from each of the leases. The total recovered pounds include those from adjacent lode mining claims, the totals of which were not differentiated in the reported production numbers:

DOE Lease and Lode	Acres	Past Production Leases & Claims (Pounds U <sub>3</sub> O <sub>8</sub> ) (Pounds V <sub>2</sub> O <sub>5</sub> )		
Mining Claims		1977-2002	2003-2006	Total
JD-6	325	279,902	68,223	348,125
Mineral Joe claims	120	1,910,463	396,630	2,307,093
JD-7	320			
JD-7A,	120	46,280	-	46,280
Palmer Ranch	240	125,410	-	125,410
Sugar claims	120			
JD-8	813	-	35,704	35,704
Doagy, Opera Box claims	35	-	151,501	151,501
JD-9	897	128,584	98,127	226,711
Lasso claims	40	701,553	512,433	1,213,986
Project Total		454,766	202,054	656,820
		2,737,426	1,060,564	3,797,990

Table 6.2 Past Production by Leases and Claims

Source: Behre-Dolbear, 2007

# **SECTION 7: GEOLOGICAL SETTING AND MINERALIZATION**

#### 7.1 Regional Geological Setting

The Project is in the Uravan Mineral Belt of the Colorado Plateau which is a physiographic province spanning southwestern Colorado and southeastern Utah. The Colorado Plateau is a block of continental crust that has been tectonically stable since the early Paleozoic. This extended period of stability allowed for thick deposition of clastic, carbonate, and evaporitic sediments. Beginning approximately 25-30 million years ago, the Plateau was subjected to extensive uplift of 4,000 to 6,000 feet. The uplift was related to changing plate motions and stress directions due to basin and range development to the west of the Colorado Plateau in central Utah and Nevada. Over the past 6-9 million years, rapid uplift caused extensive downcutting by streams, resulting in the canyonlands topography of today.

Sedimentary strata within the Plateau hosts numerous uranium and vanadium deposits. Most of these mineralized deposits are within the Pennsylvanian Hermosa Formation, the Permian Cutler Formation, the Triassic Chinle Formation, and the Jurassic Morrison Formation; the latter being the host rock of mineralization at the Project. The overwhelming majority of past uranium and vanadium production in the Uravan district was from the Salt Wash member of the Morrison Formation.

The Morrison Formation is recognized as an aggrading, terrigenous, fan-shaped fluvial sequence of sediments. The provenance of the sediments was likely from uplifted terrane in the present-day areas of south-central Utah and north-central Arizona.

During the Jurassic, rising salt domes, which caused anticlinal and synclinal folding, were the positive topographic features that dictated the direction of river systems flowing from the highlands to the southwest. This resulted in a pattern of high sandstone to mudstone ratios in synclinal valleys that flanked the elongated salt domes at the time. The high ratio of sandstone to mudstone allowed for increased permeability and porosity. This permitted increased fluid flow, which later influenced the formation of the uranium and vanadium deposits. Thicker sequences of sandstone were generally more conducive for development of the mineralized zones of uranium and vanadium.

#### 7.2 Local Geology and Property Geology

The uranium and vanadium mineralization at the Property is hosted within the Jurassic Morrison Formation. The Morrison Formation is separated into two members: the upper Brushy Basin member and the lower Salt Wash member. The Brushy Basin member consists of reddish-brown and greenish-gray mudstone, siltstone, sandstone, and conglomerate. The Salt Wash member is the primary host for known mineralization of uranium and vanadium at the Project, and is composed of fluvial sandstone and mudstone, averaging 350 feet thick. The Salt Wash member is further sub-divided into three parts, the upper, middle, and lower units. The upper, and lower units are composed of nearly continuous layers of sandstone interbedded with thin layers of mudstone, and the middle unit is primarily mudstone and siltstone, with discontinuous lenses of sandstone.

**Figure 7.1 – Geologic Setting** 



In the 1950s, the USGS, on behalf of the Raw Materials Division of the US AEC, conducted extensive exploration throughout the Uravan mineral district. As early as 1952, the USGS had determined that the following four geologic characteristics were indicative of favorable grounds for a uranium/vanadium deposit (Weir, 1952):

- Most mineralized deposits are in or near thicker, central parts of sandstone lenses, and, in general, the thickness of the sandstone decreases moving away from the deposits. Sandstone less than 40-ft thick is generally not favorable for large, mineralized deposits.
- Sandstone in the vicinity of the mineralized deposit is colored light brown, but an increasing proportion of sandstone, moving away from the deposit, has a reddish color which is indicative of unfavorable ground.
- The mudstone in the mineral-bearing sandstone near and immediately below the deposit changes from a red to gray color. The amount of altered mudstone decreases further outward from the mineral deposit.
- Sandstone in the immediate vicinity of the mineral deposit contains more carbonized plant fossils than similar beds further form the mineral deposit. This suggests that a mineral deposit is localized in the vicinity of abundant carbonaceous material.

#### 7.2.1 Structure

The geologic structure in the Project area varies, depending on location. On the eastern flank of Monogram Mesa (JD-6, JD-7, JD-8) there are numerous synthetic and antithetic faults striking NW-SE that drop down mostly to the east, toward the basin center of Paradox Valley. Small horst blocks were also developed between opposing faults. Atop Monogram Mesa and on its western side (JD-9), the bedding is mostly flat to very shallow dipping. The uranium/vanadium mineralization pre-dates the structural history that created the numerous small faults (Carter, 1954), and in the mineralization at the JD-7 Lease, faulting can be observed to cut across mineralized zones.

#### 7.2.2 Stratigraphy

The surficial geology of the Project area is quite variable, depending on topography and location along the flank of Monogram Mesa. Extensive light-red sandy, silty wind-blown, and reworked material mantles the mesa tops. The flanks of the leases near JD-6 and JD-7 are comprised of talus slopes of varying rock types, and landslide deposits predominantly from the Brushy Basin mudstone. In the valley bottom of Paradox Basin, the wind-blown materials are intermixed with disintegrated slope wash deposits (Carter, 1954).

Figure 7.2 – Type Log



#### 7.2.3 Mineralization

The uranium and vanadium bearing minerals occur as fine-grained coatings in detrital grains. These minerals fill pore spaces between the grains and replace carbonaceous material and some detrital grains.

The primary uranium mineral is uraninite, with minor amounts of coffinite. Montroseite is the primary vanadium mineral, along with vanadium clays and hydromica. Metal sulfides occur in trace amounts. The mineralization typically occurs in the tabular to lenticular bodies within sedimentary bedding but may also cut across sedimentary bedding to form highly irregular shapes (see Figures 8.1 and 8.2 in Section 8 Deposit Types). The mineralized bodies have an average thickness of 2 to 4-ft, and range in size from a few feet wide to several hundred feet wide. The length of the deposits varies from several feet to hundreds of feet. See Figures 7.3 to 7.6 for drill hole and cross section location maps and Figures 7.7 to 7.10 for cross sections by lease area.



Figure 7.3 – JD-6 LEASE: DH and X-Section Location Map



Figure 7.4 - JD-7 LEASE: DH and X-Section Location Map



Figure 7.5 - JD-8 LEASE: DH and X-Section Location Map



Figure 7.6 - JD-9 LEASE: DH and X-Section Location Map

Figure 7.7 - JD-6 LEASE: X-Sections



Figure 7.8 - JD-7 LEASE: X-Sections



A' А 77-155 Burro Canyon Forma Manison Formatio During Bandr Monthen 2000 Upper 2010 conter Holeon Planka Soc Rim Revolup Lint Oster Herter 40 40 Jo Ja LIT INDICATED RESOURCE BURRO CANYON FORMATION MORRISON FORMATION В B' - UPPER INTERBEDDED SS/MS UNIT BRUSHY BASIN MEMBER-LOWER INTERBEDDED SS/MS UNIT TOP RIM FORMING UNIT SALTWASH MEMBER MIDDLE RIM FORMING UNIT BOTTOM RIM FORMING UNIT Selwars Denter See Renverzieg Use Stears to rear Manufactures ANFIELD - US DOE URANIUM & VANADIUM LEASES Zatawilla Lo 43-101 TECENICAL REPORT ax on do do ax ou n de se se de de se de de se de se de de se se de de de de de de de se de de se est MONTROSE COUNTY, COLORADO da en DRAWING NAME: C-JD-8 CROSS SECTIONS DRAWNO NUMBER CHECKED HYS DATE LAST PLOT: FIGURE 7.9

Figure 7.9 - JD-8 LEASE: X-Sections

Figure 7.10 - JD-9 LEASE: X-Sections



# **SECTION 8: DEPOSIT TYPES**

There has been much debate concerning the formation of mineralized deposits in the Uravan district, but there is general agreement in the literature of several contributing factors:

- The Brushy Basin and Salt Wash members contain significant concentrations of detrital volcanic materials, which is strongly suspected as the source of uranium and vanadium.
- Compaction and dewatering of the host sediments during their burial created permeability and porosity conditions in the transmissive sand units of the Morrison Formation forming preferential pathways for groundwater.
- Uranium and vanadium in solution encountered a reduced environment, locally caused by an abundance of plant remains identified in the reduced green mudstone found within the Salt Wash member. This environment favored precipitation of uranium along an interface between oxidized alkaline solutions and a strongly reduced acidic environment.

The physical expressions of the deposits formed at the solution interface have a variety of shapes and sizes. In the following excerpt from page 19 of USGS Professional Paper 576-F, D. R. Shawe provides an excellent summary of deposit morphology in the Uravan mineral belt, of which the Uravan district is a part. The summary is reflective of the mineralized deposits and setting at the Project:

Two general forms of mineralization are common in the Morrison Formation in the district, one tabular, and the other so-called "roll". Some deposits are tabular and others are dominantly of roll bodies, though both forms display elements of the other. In many places tabular bodies are continuous with roll bodies. Some deposits have both types significantly developed. The two types were deposited by the same general process and at the same time. The differences in their forms were dictated by the local differences in the lithology that controlled fluid movement [in the host sandstone].

Note: The term "roll" was used locally by miners to describe how the mineralization cuts across sedimentary bedding boundaries. The term does not imply a similar geochemical process involved in forming "roll-front" deposits indicative of Wyoming and south Texas uranium districts.

In the Uravan district, the uranium/vanadium deposits of the Morrison Formation are mainly tabular to lenticular, and elongate parallel to sedimentary trends. Tabular trends are localized in massive sandstones where clay and mudstone are interstitial and found in discontinuous lenses. The roll deposits are typically narrow, elongate, and curve shaped. The roll deposits usually cross bedding planes and appear to be confined to sandstone where clay and mudstone are well indurated. Mineralization in either case, tabular or roll deposits, averages about 0.25% eU<sub>3</sub>O<sub>8</sub> and 1.5% V<sub>2</sub>O<sub>5</sub> within the host sandstones. The mineralized bodies are typically 2 to 4-feet thick and range in size from a few feet to several hundred feet in width and length.

Figure 8.1 – Diagrammatic cross section of Typical Roll-Tabular Uranium-Vanadium Mineralization in the Uravan Uranium Belt (adopted from Shawe 2011, fig. 15)



Figure 8.2 – Perspective view of part of a roll ore deposit typical of the Uravan Uranium Belt (adopted from Shawe 2011, fig. 14)


## **SECTION 9: EXPLORATION**

Anfield Energy has not performed any exploration activities or drilling on the subject DOE Leases; all the data used to define the mineralization and utilized to generate the mineral resource is historical in nature.

Data verification is discussed in Section 12.

## **SECTION 10: DRILLING**

Anfield Energy has not carried out any drilling at the Project to define or otherwise evaluate the uranium deposits outlined by the previous operators of the US DOE Lease project. The most recent exploration drilling occurred in the early 2000s, by Cotter Corporation.

## **10.1 Drilling Methods and Data**

The main operator of the Leases was Cotter Corporation, following limited exploration drilling in the 1950s by the USGS on behalf of the US AEC.

All the drilling was vertical and utilized truck-mounted rotary drill rigs. Upon completion the holes were logged with a geophysical tool that recorded spontaneous potential, resistivity, and natural gamma. The holes were also logged to determine the extent and direction of drift during drilling of the hole. Natural gamma logs were calibrated using the standard DOE (Formerly AEC) calibration facilities in Grand Junction, Colorado. The data used for the estimation uranium mineral resources is based on the equivalent uranium grade and thickness interpolated from the downhole geophysical logging.

The authors have reviewed the original geophysical logs. They are complete with standard calibration factors. The interpolation of the logs has been verified as discussed in Section 12.

Vanadium was sampled and assayed to a limited extent. The estimation of vanadium mineral resources is based on the observed ration of vanadium to uranium from mining on the Project and in the region.

The authors consider the available drill data suitable for the estimation of mineral resource for the purposes of this report

## 10.2 Drill Data

Drill data was available for 2,198 drill holes, totaling approximately 1,250,370 feet drilled.

The current drill hole database consists of:

- JD-6 Lease; 403 drill holes in total of which 188 were barren
- JD-7 Lease; 705 drill holes in total of which 214 were barren
- JD-8 Lease; 537 drill holes in total of which 245 were barren
- JD-9 Lease; 553 drill holes in total of which 259 were barren

The locations of the drill holes are shown on Figures 7.3 through 7.6 for the JD6, JD7, JD8, and JD9 leases, respectively.

Cross sectional representations of the drill data are provided on Figures 7.7 through 7.10 for the JD6, JD7, JD8, and JD9 leases, respectively.

## SECTION 11: SAMPLE PREPARATION, ANALYSES, AND SECURITY

The database used in the report is historical in nature. Anfield has not performed any exploratory activities on the Property. The primary assay data for the Project is downhole geophysical logging. Historically, the mineralized uranium intercepts from the gamma-logs were calculated by Cotter Corporation's in-house geophysical logging and geology department, creating a printout of the gamma-ray logs, and outlining the mineral intercepts at various cutoffs. Each downhole log typically consisted of gamma-ray, resistivity, and spontaneous potential curves plotted by depth. BRS created a digital database from this information including the hole location, elevation, downhole drift, and mineralized intercepts. The digital data was checked and compared to available drill hole maps.

Interpretation of radiometric equivalent uranium grades was verified by re-interpretation of a representee portion of the original geophysical logs, as discussed in Section 12.

The resistivity and spontaneous potential curves are mainly used to identify and correlate the sandstones and mudstones. The gamma-ray curves are used to measure the equivalent amounts of uranium oxide ( $eU_3O_8$ ) present in the rock. The logging equipment was regularly calibrated at test pits operated by the Department of Energy (previously the Atomic Energy Commission) at Grand Junction, Colorado in accordance with industry standards at the time.

Additional data includes limited vanadium chemical assays of cored intervals or drill cuttings. The vanadium assay data complimented the historical mineral production records to determine the ratio of vanadium to uranium. Production records show a vanadium : uranium ratio of 5.8:1 for the project (Behre Dolbere, 2007). The mineral resource estimates use a lower vanadium : uranium ratio of 5:1 as a conservative measure as described in Section 14.

## **SECTION 12: DATA VERIFICATION**

## 12.1 Drill Data

The primary assay data for the Project is downhole geophysical log data, all of which is historical in nature; Anfield has yet to drill on the Property. The author has examined the geophysical logs in possession of the Company for the US DOE lease tracts, explored during the 1950s by the USGS on behalf of the US AEC, and later from the 1970s to early 2000s by Cotter Corporation. The Company also owns an extensive library of geophysical, geological, and mine permitting and development documents and data that served as a basis for evaluating the Project.

The historical data meets the standards employed by the uranium exploration and mining industry in the United States at the time it was collected. Cotter Corporation was a significant explorer and developer of uranium deposits in the western United States. The data collected was generated professionally and is considered adequate for the calculation of new mineral resources.

BRS personnel generated a digital database from the original files of Cotter Corporation. The file included: Drill hole ID, northing and easting coordinates (NAD-27, Colorado South state plane), collar elevation, depth drilled, drift direction and distance (if recorded), total depth drilled, and depth, thickness, and grade %eU<sub>3</sub>O<sub>8</sub>. When posted, vanadium grade % was also entered in the excel file. However, vanadium grade % is very limited in scope in the Cotter database. For the estimates of contained vanadium in the mineral resources, the average ratio of the mined material (vanadium to uranium) from past mineral production at each lease tract, was utilized. Typically, this is a 5:1 to 7:1 ratio, vanadium to uranium, in the Uravan district. For those posted intercepts in the historical database, with both uranium and vanadium grade %s, a comparison of their ratios was overall similar to those reported from past production.

## 12.1 Data Verification

Radiometric equivalent data for the depth, thickness and grade of uranium was available in the original files from the Cotter Corporation for each drill hole used in the mineral resource calculation.

The AEC published information the calibration standards for geophysical logging and on gamma log interpretation methods (Dodd and Droullard, 1967). The standard manual log interpretation method was the half-amplitude method (Century, 1975). The AEC and its successor agency the Energy Research and Development Administration (ERDA) conducted workshops on gamma-ray logging techniques and interpretation as did private companies including Century Geophysical. The principal author, Mr. Beahm attended the geophysical log interpretation workshop conducted by Century Geophysical. On November 19, 1976 the author received certification in geophysical log interpretation from Century after attending their short course.

For verification purposes, 33 drill holes containing 51 mineralized intercepts were selected representing the range of mineralization observed from each of the four JD leases in rough portion to the numbers of drill holes within each lease. The Author re-calculated the mineralized intercepts for each drill holes to verify the original log interpretation. Mineralization in the verification drill holes ranged from a high GT value of 9.10 to a low value of 0.14. Barren holes were examined but not included in the analysis.

Verification by the principal author, Mr. Beahm, confirmed that the drill hole database reasonably reflects the depth, thickness and radiometric equivalent uranium grade from the original geophysical logs. The only discrepancy noted was the omission of isolated mineralized intercepts of lower grade and thickness which were not included in the data. The author concurs with the omission of these intercepts as they would not be included in a mineral resource calculation based on reasonable prospects of economic extraction.

Re-calculation by the author shows the original interpretation of radiometric equivalent uranium grade is approximately 5% less the re-calculated values by linear regression analysis. Thus, use of the original interpolated radiometric equivalent values would be conservative.

Figure 12.1 is a comparison of the drill hole database values to those re-calculated by the Author using the standard half-amplitude log interpolation method. The linear regression analysis shows a strong correlation ( $R^2$  value of 0.98) between the original and current data interpretations.



Figure 12.1 – Database Comparison

Note: By linear regression analysis the Database GT values are 5% less than the re-interpreted GT values. By comparison of the sum of the GT values in the Database GT values are 6% less than the re-interpreted GT values.

## 12.2 Bulk Density

Bulk density data is available for the Project from previous technical reports and studies completed by Cotter Corporation, resulting in 14.5 cubic feet per ton (2.21 tonnes per cubic meter) for the mineralized, host sandstone. This was the typical tonnage factor used by the mining companies across the greater Uravan mineral district. The author recommends a density factor of 14.5 cubic feet per ton (2.21 tonnes per cubic meter) be used for the mineral resource calculations, based on available data and personal mining experience in similar sandstone-hosted deposits.

## **12.3** Downhole Deviation

All historical drilling on the Project was completed vertically. The dip of the formation is relatively flat, 1-3° to the west, except in the fault zone along the eastern flank of Monogram Mesa in the JD-6 and JD-7 leases. Following gamma logging, a deviation tool was lowered down the hole, resulting in a graphical plot showing horizontal distance from vertical and the drift direction at the select intervals recorded. The drift was typically plotted on drill hole location maps as a straight line (e.g., 100 feet at N45°W), when in fact the drift plots can be rather erratic, reflective of the true nature of how the drill bit penetrated the substrata. The Author elected to utilize the surface plot of the drill holes to reflect the same usage of Cotter Corporation, and direct comparison to the historical drill hole and underground maps.

Each lease tract had varying amounts of drift data collected. A total of 403 drill holes were completed in the JD-6 lease tract, 705 in the JD-7 lease, 537 in the JD-8 lease and 553 in the JD-9 lease tract. Of these totals the JD-6 and JD-8 leases had the highest percentages of drift data gathered covering 95% and 91% of drill holes, respectively. This compares to JD-7 Lease at the low end of 8% of total drill holes with drift data and JD-9 having 53%.

The variation in level of drift data collection was dependent upon the depth to mineralization, date range of the holes drilled, and the amount of drift expected by the operating engineer where their assessment would be based upon drilling depth and geology. The leases with the deepest drill holes generally experience the largest drifts. The JD-7 lease drill holes were the shallowest of the data set, having an average depth of 341 feet and the least average linear drift of 1.3 feet. Conversely, drill holes in the JD-6 and JD-8 leases were deeper having average total depths of 745 feet and 634 feet, respectively. As such the average linear drifts of JD-6 and JD-8 were larger at 21.4 feet and 35.2 feet, respectively. Please see Table 12.1 for a summary of drifting data per DEO lease area.

	Total Percent with		Average Total Depth Drilled	Average Drift (feet)			
Lease	Lease Drillholes	Drift Data	(feet)	Northing	Easting	Linear Total	
JD-6	403	95%	745	4.0	-21.0	21.4	
JD-7	705	8%	341	1.3	0.4	1.3	
JD-8	537	91%	634	31.4	15.9	35.2	
JD-9	553	53%	667	-19	7	20.2	

## Table 12.1 Downhole Deviation Summary by Lease

All the available drift data was used when modelling the Indicated Mineral Resource.

# SECTION 13: MINERAL PROCESSING AND METALLURGICAL TESTING

Specific metallurgical reports for the project were not located by the authors during their review of available data. Each of the sites within the project were mined and the mined material processed at the Cotter Corporation's Canon City, Colorado mill during the period of 1977 through 2006. It is reported that some 1.3 million pounds of uranium and 6.6 million pounds of vanadium were recovered from the material mined on the JD leases. The mill is no longer operational but was a conventional acid leach mill (Behre Dolbear, 2007).

The authors conclude that the mineralized material from the project can be recovered by conventional milling. It is recommended that representative samples of mineralized material either form coring or small scale mining be obtained for metallurgical testing via conventional milling, heap leaching, and vat leaching.

## **SECTION 14: MINERAL RESOURCE ESTIMATES**

## 14.1 Mineral Resource Estimation

This technical report provides estimates of mineral resources at the US DOE Leases. Drill data was available for 2,198 drill holes, totaling at least 1,250,370 feet drilled. The effective date of the mineral resource estimate is April 9, 2022. Mineral resources were estimated using the Grade times Thickness (GT) Contour method. The primary data modeled are equivalent uranium values as determined by downhole geophysical logging and reported as eU<sub>3</sub>O<sub>8</sub>. Radiometric equilibrium was evaluated, and a disequilibrium factor of 1 was used; no chemical enrichment was applied to the resource estimate. The minimum uranium grade included in the estimate was 0.05% eU<sub>3</sub>O<sub>8</sub>. While no formal economic evaluation, Preliminary Economic Assessment (PEA), Preliminary Feasibility study (PFS), or Feasibility Study (FS) has been completed and while mineral resources are not mineral reserves and do not have a demonstrated economic viability, reasonable prospects for future economic extraction were applied to the mineral resource estimate herein through consideration of grade and GT cutoffs and by screening out areas of isolated mineralization which would not support the cost of conventional mining under current and reasonably foreseeable conditions.

The drill spacing in most areas is sufficient to support a higher level of mineral resource classification, however, due to the historical nature of the drill data with no recent confirmatory drilling, the uranium mineral resource estimates reported here are considered Indicated Mineral Resources.

Indicated Mineral resources for uranium are reported at a cutoff of 0.30 GT in Table 14.1 which follows.

Uranium Indicated Mineral Resource	GT Cutoff (ft%)	AVG. Thickness (ft)	AVG. Grade (%eU3O8)	Tons	Pounds (eU3O8)
JD6 Lease	0.3	2.9	0.229	52,000	238,000
JD7 Lease	0.3	5.9	0.196	865,000	3,385,000
JD8 Lease	0.3	4.0	0.197	306,000	1,202,000
JD9 Lease	0.3	4.4	0.193	144,000	556,000
Mineral Resource	0.3	5.2	0.197	1,367,000	5,381,000

## Table 14.1 Total Indicated Mineral Resources Uranium

Pounds and tons as reported are rounded to the nearest 1,000

## 14.2 Vanadium Mineral Resources

Vanadium grade was estimated using the historical results of mining and comparative review of the limited number of intercepts assayed for vanadium content for each of the lease tracts. In general, the ratio of vanadium to uranium (V:U) in the Uravan mineralized deposits is typically 5:1 to 7:1. Past production from the JD6 through JD9 leases shows a V;U ratio of 5.8:1 Vanadium resources were estimated using the more conservative 5:1 ratio. It was industry practice when these leases were developed to estimate mineral resources and control grade during mining based on the uranium grade with only limited vanadium assays. Whereas there are limited vanadium assays

available for vanadium mineral resource estimation, the mineral resource estimate is considered as an Inferred Mineral Resource for vanadium.

While no formal economic evaluation, Preliminary Economic Assessment (PEA), Preliminary Feasibility study (PFS), or Feasibility Study (FS) has been completed and while mineral resources are not mineral reserves and do not have demonstrated economic viability, reasonable prospects for future economic extraction were applied to the mineral resource estimate herein through consideration of grade and GT cutoffs and by screening out areas of isolated mineralization which would not support the cost of conventional mining under current and reasonably foreseeable conditions.

Vanadium Inferred Mineral Resource	AVG. Grade %V2O5	Tons	Pounds (V <sub>2</sub> O <sub>5</sub> )	
JD6 Lease	1.147	52,000	1,189,000	
JD7 Lease	0.979	865,000	16,923,000	
JD8 Lease	0.985	306,000	6,012,000	
JD9 Lease	0.963	144,000	2,782,000	
Mineral Resource	0.984	1,367,000	26,906,000	

 Table 14.2 Total Inferred Mineral Resources Vanadium

Pounds and tons as reported are rounded to the nearest 1,000

## 14.2.1 Definitions

A mineral resource is defined as a concentration of an occurrence of natural, solid, inorganic, or fossilized organic material in or on the Earth's crust in such form and quantity and of such a grade or quality that it has reasonable prospects for economic extraction. The location, quantity, grade, geological characteristics, and continuity of a mineral resource are known, estimated, or interpreted from specific geologic evidence and knowledge (CIM, 2014). Mineral resource estimates are classified as Measured, Indicated, or Inferred based on the level of understanding and definition of the mineral resource.

## 14.2.2 Methodology

## Geologic Model

Geologic interpretation of the mineralized host sands was used, along with the intercepts that met the minimum cutoff grade and thickness, to develop a geologic framework or model to estimate the mineral resources at the Project. Each intercept was evaluated based on its geophysical log expression and location relative to adjacent intercepts. Whenever possible, geophysical logs were used to correlate and project intercepts between drill holes. The mineralized envelope was created by using the top and bottom of each intercept that was within the geologic horizon. Total downhole drift was applied to all intercepts which had that data available. The intercepts that were used to make this envelope were then used to construct the resource model via inverse distance squared GT contour method. Drill spacing in JD-7, JD-8, and JD-9 varies and was completed on roughly 200-foot centers overall. The nominal average spacing between drill holes in the resource areas is necessarily smaller at approximately 100 feet. Drill spacing in JD-6 area varies from roughly 200-foot to 300-foot centers, with the nominal average drill spacing within the mineral resource areas at approximately 100 feet. Drilling depths varied across the four leases with the shallowest being in JD-7 averaging about 340 feet and the deepest in JD-6 with 750 feet on average. JD-8 and JD-9 averaged 630 feet and 670 feet, respectively.

The current geologic and resource model reflects multiple sand zones over the stratigraphic thickness of approximately 350 feet thickness over the mid to lower portion of the Brushy Basin and upper portion of the Salt Wash member of the Jurassic-age Morrison Formation. Multiple normal faults in JD-7 split the resource into four zones for modelling. In JD-6, JD-8, and JD-9, three to four discrete mineralized zones of the fluvial sandstone were identified for modelling. The mineralized bodies are elongated, tabular, horizontal pods or trends. An anisotropy favoring the general direction of the trend of the deposits was applied to model for each of the areas. The general direction of the mineralized trend had an azimuth of 300 degrees.

Following the removal of intercepts which did not meet the grade cutoff criteria of 0.05% <sub>e</sub>U<sub>3</sub>O<sub>8</sub>, the remaining intercept data was separated by zone discrete zone and grade thickness (GT). To establish an initial geologic limit to the projection of mineralization within each zone, an elliptical area of influence was applied to each drill hole interval location which met the 0.10 ft% GT cutoff. Each ellipse was located with its center drillhole collar location or the linearly drifted location of total depth when it the drift data was available.

The major axis of each ellipse of influence were oriented parallel to the direction of mineral anisotropy. The major radius of influence was 200 feet from each drill hole parallel to the mineralization anisotropy and 100 feet perpendicular to that anisotropy. From this basis of influence the GT contour method was then employed constructing major contours using geologic interpretation of each intercept compared to the intercepts immediately adjacent to one another. Refinement of the geologic limit and projection of mineralization along trend was then based on specific correlation and interpretation of geophysical longs on a hole-by-hole basis.

#### GT Contour Method Resource Calculation

The mineral resource estimate was completed using the inverse distance squared GT (Grade x Thickness) Contour Modeling method for each of the individual mineralized zones of the deposit. The Contour Modeling Method, also known as the Grade x Thickness (GT) method, is a well-established approach for estimating uranium resources and has been in use since the 1950's in the US. The technique is most useful in estimating tonnage and average grade of relatively planar bodies where the lateral extent of the mineralized body is much greater than its thickness, as was observed with the data at Leases JD-6 to JD-9.

For tabular style deposits the GT method provides a clear illustration of the distribution of the thickness and average grade of uranium mineralization. The GT method is particularly applicable to the four lease areas as it can be effective in reducing the undue influence of high-grade or thick intersections as well as the effects of widely spaced, irregularly spaced, or clustered drill holes.

This method also makes it possible for the geologist to fit the contour pattern to the geologic interpretation of the deposit.

For each zone within the lease areas of the project, limits of mineralization were determined by interpretation of the drill data. Within these limits the GT and T (Grade x Thickness and Thickness) were contoured. Although an automated contouring program was used to produce the model surface itself, 3-dimensional (3D) limits were established where appropriate to constrain the estimate. For example, drill holes with GT values several times the average were limited in their area of influence by manually constructing a set of breaklines in the model. The volume of the 3D model is then calculated using CAD program software. To that volume, a bulk unit weight of 14.5 cubic feet per ton (2.21 tonnes per cubic meter) is applied to calculate the pounds of eU<sub>3</sub>O<sub>8</sub>. Similarly, the tons of resource are estimated using the same methodology for constructing a 3D model of mineral Thickness (T) withing the same area. Grade is then calculated by dividing GT model eU<sub>3</sub>O<sub>8</sub> pounds by T model calculated resource tons.

The GT contour method is used as common practice for Mineral Reserve and Mineral Resource estimates for similar sandstone-hosted uranium projects. It is the opinion of the author that the GT contour method, when properly constrained by geologic interpretation, provides an accurate estimation of contained pounds of uranium.

The current drill hole database consists of:

- JD-6 Lease; 403 drill holes in total of which 188 were barren
- JD-7 Lease; 705 drill holes in total of which 214 were barren
- JD-8 Lease'; 537 drill holes in total of which 245 were barren
- JD-9 Lease; 553 drill holes in total of which 259 were barren

For the estimate of contained vanadium, individual assay results were limited. Thus, the historical average (ratio of vanadium to uranium) of mining results from the individual leases is 5.8:1. This ratio is in the range of the Uravan district (typically 5:1 to 7:1), vanadium to uranium. For the estimation of vanadium, a vanadium/uranium ratio of 5:1 was used as a conservative measure.

## 14.3 Key Assumptions and Parameter 14.3.1 Cutoff Criteria

A minimum GT cutoff of 0.30 ft% and a minimum grade cutoff of 0.05% eU<sub>3</sub>O<sub>8</sub> was applied to the data. At this uranium grade the estimated vanadium grade would be 0.25% V<sub>2</sub>O<sub>5</sub>. Current uranium futures exceed \$60 per pound and the current price for vanadium is approximately \$12 per pound. Under these assumptions a ton of mined material would have a gross value of approximately \$120 dollars. The authors have recently estimated underground mine costs for similar types of deposits in the range of \$60 to \$90 per ton, leaving a margin for mineral processing.

Uranium price as of April 8, 2022, is reported at \$63.50 per pound  $U_3O_8$ . Vanadium price as of April 8, 2022, is reported at \$12.00 per pound  $V_2O_5$ .

(https://tradingeconomics.com/commodity/uranium) (https://www.vanadiumprice.com/)

#### 14.3.2 Reasonable Prospects for Economic Extraction

In addition to the application of minimum cutoff grade and minimum GT values, isolated areas of mineralization which were estimated to contain less than 10,000 pounds were excluded from mineral resource summary on the basis reasonable prospects for future economic extraction by screening out areas of isolated mineralization which would not support the cost of conventional mining under current and reasonably foreseeable conditions.

### 14.3.3 Bulk Density

The historic density expressed as a tonnage factor from mine records and past experience of the author is 14.5 cubic feet per ton (2.21 tonnes per cubic meter).

## 14.3.4 Radiometric Equilibrium

Radioactive isotopes decay until they reach a stable non-radioactive state. The radioactive decay products are of two general categories: the first being the sub-atomic energy generating product (i.e., the radiation) and the second being the atomic isotope. Decay product isotopes are referred to as daughters and occur down what is known as a decay chain. When all the decay products are maintained in close association with the primary uranium isotope  $U_{238}$  for the order of a million years or more, the decay chain will reach equilibrium with the parent isotope; meaning that the daughter isotopes will be decaying in the same quantity as they are being created (McKay, 2007).

An otherwise equilibrated decay system may be put into a state of disequilibrium when one or more decay products are mobilized and removed from the system because of differences in solubility between uranium and its daughter isotopes. In addition, both the primary isotope of uranium U<sub>238</sub> and its daughters emit different forms of radiation as they decay. The primary field instruments for the indirect measurement of uranium, either surface or down-hole probes, measure gamma radiation. Within the uranium decay the gamma emitting elements are primarily Radium<sub>226</sub>, Bismuth<sub>214</sub>, and Uranium with Radium<sub>226</sub> being the dominant source of gamma radiation.

Disequilibrium is considered positive when there is higher proportion of uranium present compared to daughters and negative where daughters are accumulated, and uranium is depleted. The disequilibrium factor (DEF) is determined by comparing radiometric equivalent uranium grade eU3O8 to chemical uranium grade. Radiometric equilibrium is represented by DEF of 1, positive radiometric equilibrium by a factor greater than 1, and negative radiometric equilibrium by a factor of less than 1.

Negative disequilibrium occurs when uranium is separated from its daughters specifically Radium. This occurs when the uranium mineralization is oxidized liberating the uranium but leaving the radium in place. The uranium mineralization within the project is complexed with vanadium and is located within reduced sandstone horizons. These geologic factors inhibit the oxidation of uranium. While site specific radiometric equilibrium data is not available to the authors at this time it is recommended that a radiometric equilibrium of 1.0 be assumed for the %eU<sub>3</sub>O<sub>8</sub> grade of mineralized intercepts.

It is recommended that representative samples of the mineralization be collected either by core or small scale mining for metallurgical testing. Such samples should also be used to evaluate radiometric equilibrium conditions.

### 14.4 Mineral Resource Summary

Mineral resources were estimated by zone or horizon, based on geologic interpretation and correlation. Mineral resources are reported at various cutoff grades for Indicated Mineral Resources, to illustrate the effect of varying cutoff on the mineral resource. The preferred cutoff of 0.30 ft% GT is shaded in the respective tables.

#### 14.4.1 Indicated Mineral Resources, JD-6 Lease

The mineral resource estimate for the JD-6 Lease Area of the Project is presented in Table 14.3. See Figures 14.1 and 14.2 for the JD-6 Lease GT and T resource models at the 0.30 ft% GT Cutoff. The JD-6 Lease has four discrete mineralized zones distributed across the area and is focused primarily within the Lower Brushy Basin and upper Saltwash members of the Morrision Formation. All four mineralized zones contain drill hole intercepts which met initial grade cutoff criteria and were modelled at the 0.1 ft% GT Cutoff. However only two of the four mineralized zones (Zones B and C) meet the preferred scenario 0.3 ft% GT cutoff criteria for reporting.

Zone	GT Cutoff (ft%)	AVG. Thickness (ft)	AVG. Grade (%eU₃O <sub>8</sub> )	Tons	Pounds (eU3O8)
^	0.10	3.0	0.052	13,000	14,000
А	0.30	-	-	-	-
р	0.10	2.7	0.140	28,000	77,000
В	0.30	3.4	0.207	14,000	56,000
C	0.10	2.0	0.150	101,000	304,000
C	0.30	2.7	0.237	38,000	182,000
D	0.10	2.2	0.082	39,000	64,000
D	0.30	-	-	-	-
Б	0.10	2.2	0.084	36,000	61,000
E	0.30	-	-	-	-
T - 4 - 1	0.10	2.2	0.120	217,000	520,000
Iotal	0.30	2.9	0.229	52,000	238,000

 Table 14.3 Indicated Mineral Resources Uranium, JD-6 Lease

Pounds and tons as reported are rounded to the nearest 1,000



Figure 14.1 - JD-6 LEASE: Area B GT Banding & T Contours



Figure 14.2 - JD-6 LEASE: Area C GT Banding & T Contours

#### 14.4.2 Indicated Mineral Resources, JD-7 Lease

The mineral resource estimate for the JD-7 Lease Area of the Project are presented in Table 14.4. See Figures 14.3 to 14.6 for the JD-7 Lease GT and T resource models at the 0.30 ft% GT Cutoff. The JD-7 Lease has four discrete mineralized zones distributed across the area and is focused primarily within the Lower Brushy Basin and upper Saltwash members of the Morrision Formation. All four mineralized zones contain drill hole intercepts which met initial grade cutoff criteria and were modelled at both 0.1 ft% GT and the 0.3 ft% GT Cutoffs. The average difference in the 0.1 ft% to 0.3 ft% GT cutoff criteria is an increase in thickness and grade of 44% and 22%, respectively. Sensitivity to the increase in GT cutoff from the 0.1 to 0.3 ft% also causes and average decrease in Indicated Mineral Resource in the JD-7 Lease tons insitu resource and pounds eU3O8 of 28% and 12%, respectively.

Zone	GT Cutoff (ft%)	AVG. Thickness (ft)	AVG. Grade (%eU3O8)	Tons	Pounds (eU3O8)
^	0.10	2.9	0.090	155,000	280,000
А	0.30	4.4	0.132	62,000	163,000
D	0.10	3.9	0.460	155,000	438,000
D	0.30	5.3	0.169	109,000	368,000
C	0.10	3.0	0.146	246,000	720,000
C	0.30	4.4	0.211	135,000	568,000
р	0.10	5.5	0.188	638,000	2,399,000
D	0.30	6.8	0.204	559,000	2,286,000
T ( )	0.10	4.1	0.161	1,194,000	3,837,000
1 otal	0.30	5.9	0.196	865,000	3,385,000

Table 14.4 Indicated Mineral Resources Uranium, JD-7 Lease

Pounds and tons as reported are rounded to the nearest 1,000



Figure 14.3 - JD-7 LEASE: Area A GT Banding & T Contours



Figure 14.4 - JD-7 LEASE: Area B GT Banding & T



Figure 14.5 - JD-7 LEASE: Area C GT Banding & T Contours



Figure 14.6 - JD-7 LEASE: Area D GT Banding & T Contours

#### 14.4.3 Indicated Mineral Resources, JD-8 Lease

The mineral resource estimate for the JD-8 Lease Area of the Project are presented in Table 14.5. See Figures 14.7 to 14.9 for the JD-8 Lease GT and T resource models at the 0.30 ft% GT Cutoff. The JD-8 Lease has three discrete mineralized zones distributed across the area and is focused primarily within the mid to lower Brushy Basin and upper Saltwash members of the Morrision Formation. All three mineralized zones contain drill hole intercepts which met initial grade cutoff criteria and were modelled at both 0.1 ft% GT and the 0.3 ft% GT Cutoffs. The average difference in the 0.1 ft% to 0.3 ft% GT cutoff criteria is an increase in thickness and grade of 21% and 60%, respectively. Sensitivity to the increase in GT cutoff from the 0.1 to 0.3 ft% also causes and average decrease in Indicated Mineral Resource in the JD-8 Lease tons insitu resource and pounds eU3O8 of 55% and 28%, respectively.

Zone	GT Cutoff (ft%)	AVG. Thickness (ft)	AVG. Grade (%eU3O8)	Tons	Pounds (eU3O8)
٨	0.10	4.5	0.065	299,000	390,000
А	0.30	5.4	0.113	90,000	203,000
р	0.10	2.1	0.136	50,000	135,000
В	0.30	2.2	0.480	7,000	62,000
C	0.10	2.8	0.173	333,000	1,153,000
C	0.30	3.6	0.224	209,000	937,000
Tatal	0.10	3.3	0.123	682,000	1,678,000
Total	0.30	4.0	0.197	306,000	1,202,000

Table 14.5 Indicated Mineral Resources Uranium, JD-8 Lease

Pounds and tons as reported are rounded to the nearest 1,000



Figure 14.7 - JD-8 LEASE: Area A GT Banding & T Contours



Figure 14.8 - JD-8 LEASE: Area B GT Banding & T Contours



Figure 14.9 - JD-8 LEASE: Area C GT Banding & T Contours

#### 14.4.4 Indicated Mineral Resources, JD-9 Lease

The mineral resource estimate for the JD-9 Lease Area of the Project are presented in Table 14.6. See Figure 14.10 for the JD-9 Lease GT and T resource models at the 0.30 ft% GT Cutoff. The JD-9 Lease has three discrete mineralized zones distributed across the area and is focused primarily within the upper Saltwash member of the Morrision Formation. Only one of the three mineralized zones contain drill hole intercepts which met initial grade cutoff criteria and were modelled at both 0.1 ft% GT and the 0.3 ft% GT Cutoffs. The average difference in the 0.1 ft% to 0.3 ft% GT cutoff criteria is an increase in thickness and grade of 69% and 52%, respectively. Sensitivity to the increase in GT cutoff from the 0.1 to 0.3 ft% also causes and average decrease in Indicated Mineral Resource in the JD-9 Lease tons insitu resource and pounds eU308 of 60% and 39%, respectively.

Zone	GT Cutoff (ft%)	AVG. Thickness (ft)	AVG. Grade (%eU <sub>3</sub> O <sub>8</sub> )	Tons	Pounds (eU3O8)
٨	0.10	0.0	0.000	-	-
А	0.30	0.0	0.000	-	-
D	0.10	0.0	0.000	-	-
В	0.30	0.0	0.000	-	-
C	0.10	2.6	0.127	359,000	909,000
C	0.30	4.4	0.193	144,000	556,000
Tatal	0.10	2.6	0.127	359,000	909,000
Total	0.30	4.4	0.193	144,000	556,000

Table	14.6	Indicated	Mineral	Resources	Uranium,	<b>JD-9</b> Lease
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Pounds and tons as reported are rounded to the nearest 1,000



## Figure 14.10 - JD-9 LEASE: Area C GT Banding & T Contours

## 14.4.5 Mineral Resource Summary

Indicated Mineral resources for the US DOE uranium/vanadium leases project are summarized in the following Table 14.7 which follows. Mineral resources are reported at both 0.10 and 0.30 ft% GT cutoff (uranium) to show the effect of cutoff; however, the authors recommend the use of the 0.30 ft% GT cutoff for reporting as it is optimized for uranium deposits developed by conventional underground mining methods.

The average difference of all the Indicated Mineral Resources within the DOE lease in the 0.10 ft% to 0.30 ft% GT cutoff criteria is an increase in thickness of 44% and grade of 39%. Sensitivity to the increase in GT cutoff from the 0.10 to 0.30 ft% also causes and average decrease in insitu Indicated Mineral Resource tons and pounds eU3O8 of 44% and 23%, respectively.

Uranium Indicated Mineral Resource	GT Cutoff (ft% eU <sub>3</sub> O <sub>8</sub> )	AVG. Thickness (Feet)	AVG. Grade %V2O5	Tons	Pounds (eU3O8)
	0.10	2.2	0.120	217,000	520,000
JD6 Lease	0.30	2.9	0.229	52,000	238,000
JD7 Lease	0.10	4.1	0.161	1,194,000	3,837,000
	0.30	5.9	0.196	865,000	3,385,000
	0.10	3.3	0.123	682,000	1,678,000
JD8 Lease	0.30	4.0	0.197	306,000	1,202,000
	0.10	2.6	0.127	359,000	909,000
JD9 Lease	0.30	4.4	0.193	144,000	556,000
Tatala	0.10	3.6	0.142	2,452,000	6,944,000
Totals	0.30	5.2	0.197	1,367,000	5,381,000

Table 14.7 Total Indicated Mineral Resources Uranium

Pounds and tons as reported are rounded to the nearest 1,000

Inferred mineral resources for the US DOE uranium/vanadium leases project are summarized in the following Table 14.8. The historical average ratio of vanadium to uranium typical for the Uravan district is 5:1 to 7:1. The 5:1 ratio of vanadium to uranium was applied for each of the four lease tracts to provide a conservative estimate of vanadium contained within the 0.30 ft% GT model limits for eU<sub>3</sub>O<sub>8</sub>. Mineral resources are reported at both 0.10 and 0.30 ft% GT cutoff (relative to uranium) to show the effect of cutoff; however, the authors recommend the use of the 0.30 ft% GT cutoff scenario for reporting.

The average difference of all the Inferred Mineral Resources within the DOE lease in the 0.10 ft% to 0.30 ft% GT cutoff criteria mirrors exactly the Indicated mineral resource as it is directly calculated from the Indicated Mineral Resource.

Vanadium Inferred Mineral Resource	GT Cutoff (ft% eU <sub>3</sub> O <sub>8</sub> )	AVG. Thickness (Feet)	AVG. Grade %V2O5	Tons	Pounds (V <sub>2</sub> O <sub>5</sub> )
ID6 Loogo	0.10	2.2	0.598	217,000	2,601,000
JD0 Lease	0.30	2.9	1.147	52,000	1,189,000
	0.10	4.1	0.803	1,194,000	19,180,000
JD/ Lease	0.30	5.9	0.979	865,000	16,923,000
	0.10	3.3	0.616	682,000	8,388,000
JDo Lease	0.30	4.0	0.985	306,000	6,012,000
ID0 Lanca	0.10	2.6	0.633	359,000	4,544,000
JD9 Lease	0.30	4.4	0.963	144,000	2,782,000
Tatal	0.10	3.6	0.708	2,452,000	34,713,000
Total	0.30	5.2	0.984	1,367,000	26,906,000

**Table 14.8 Total Inferred Mineral Resources Vanadium** 

Pounds and tons as reported are rounded to the nearest 1,000

## SECTION 15: MINERAL RESERVE ESTIMATES

# **SECTION 16: MINING METHODS**

# **SECTION 17: RECOVERY METHODS**

# **SECTION 18: PROJECT INFRASTRUCTURE**

# **SECTION 19: MARKET STUDIES AND CONTRACTS**

# SECTION 20: ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

# SECTION 21: CAPITAL AND OPERATING COSTS
## SECTION 22: ECONOMIC ANALYSIS

This section is not applicable.

## **SECTION 23: ADJACENT PROPERTIES**

Significant mine development and recovery of uranium and vanadium products has occurred in the Uravan Mineral Belt. The mining history dates from the early 1900's for vanadium and to the 1940's for uranium.

## **SECTION 24: OTHER RELEVANT DATA AND INFORMATION**

The authors are not aware of additional data or information pertaining to this project which would materially change the conclusions of this report.

## **SECTION 25: INTERPRETATIONS AND CONCLUSIONS**

Each of the four subject mineral leases, JD-6, JD-7, JD-8, and JD-9, have been mined successfully in the past by conventional underground methods. A portion of the JD-7 resource was partially stripped with the intent of mining open-pit excavation. The current mineral resource estimates are based on development of the resources in a similar manner. Uranium and vanadium mineralization is found in the Salt Wash member of the Jurassic Morrison Formation. The mineralization is tabular in nature, based on available data and descriptions of the deposits and interpretation of the drill data.

Drill data was available for 2,198 drill holes. Mineral resources were estimated using the Grade times Thickness (GT) Contour method. The primary data modeled are equivalent uranium values as determined by downhole geophysical logging and reported as eU<sub>3</sub>O<sub>8</sub>. A radiometric disequilibrium factor of 1 was used.

While no formal economic evaluation, Preliminary Economic Assessment (PEA), Preliminary Feasibility study (PFS), or Feasibility Study (FS) has been completed and while mineral resources are not mineral reserves and do not have demonstrated economic viability, reasonable prospects for future economic extraction were applied to the mineral resource estimate herein through consideration of grade and GT cutoffs and by screening out areas of isolated mineralization which would not support the cost of conventional mining under current and reasonably foreseeable conditions.

The drill spacing in most areas is sufficient to support a higher level of mineral resource classification, however, due to the historical nature of the drill data with no recent confirmatory drilling, the uranium mineral resource estimates reported here are considered Indicated Mineral Resources.

Estimated Indicated Mineral resources for uranium are reported at a GT cutoff of 0.30 with a minimum grade of 0.05% eU<sub>3</sub>O<sub>8</sub> as summarized on Table 1.3 which follows.

Uranium Indicated Mineral Resource	GT Cutoff (ft%)	AVG. Thickness (ft)	AVG. Grade (%eU3O8)	Tons	Pounds (eU3O8)
JD6 Lease	0.3	2.9	0.229	52,000	238,000
JD7 Lease	0.3	5.9	0.196	865,000	3,385,000
JD8 Lease	0.3	4.0	0.197	306,000	1,202,000
JD9 Lease	0.3	4.4	0.193	144,000	556,000
Mineral Resource	0.3	5.2	0.197	1,367,000	5,381,000

 Table 1.3 Total Indicated Mineral Resources Uranium

Pounds and tons as reported are rounded to the nearest 1,000

#### 25.1 Inferred Vanadium Mineral Resources

Vanadium grade was estimated using the historical results of mining and comparative review of the limited number of intercepts assayed for vanadium content for each of the lease tracts. In general, the ratio of vanadium to uranium (V:U) in the Uravan mineralized deposits is typically 5:1 to 7:1. Past production from the JD6 through JD9 leases shows a V;U ratio of 5.8:1 Vanadium resources were estimated using the more conservative 5:1 ratio.

Whereas there are limited vanadium assays available for vanadium mineral resource estimation, the mineral resource estimate is considered as an Inferred Mineral Resource for vanadium.

Table 1.4 provides a summary of inferred vanadium mineral resources based on the uranium grade and GT cutoffs and reasonable prospects for economic extraction applied to the estimated uranium mineral resource.

Vanadium Inferred Mineral Resource	AVG. Grade %V2O5	Tons	Pounds (V <sub>2</sub> O <sub>5</sub> )
JD6 Lease	1.147	52,000	1,189,000
JD7 Lease	0.979	865,000	16,923,000
JD8 Lease	0.985	306,000	6,012,000
JD9 Lease	0.963	144,000	2,782,000
<b>Mineral Resource</b>	0.984	1,367,000	26,906,000

Table 1.4 Total Inferred Mineral Resources Vanadium

Pounds and tons as reported are rounded to the nearest 1,000

#### 25.2 Summary of Risks

It is the authors' opinion that the risks associated with this project are moderate as there has been past mining on the leases and the mine workings generally remain open and accessible. In addition, mining permits are in place although they would need to be updated. However, there are risks similar in nature to other mining projects in general and uranium mining projects specially, i.e., risks common to mining projects include:

- risks associated with mineral reserve and resource estimates, including the risk of errors in assumptions or methodologies;
- risks associated with estimating mineral extraction and recovery, forecasting future price levels necessary to support mineral extraction and recovery;
- uncertainties and liabilities inherent to conventional mineral extraction and recovery;
- geological, technical and processing problems, including unanticipated metallurgical difficulties, less than expected recoveries, ground control problems, process upsets, and equipment malfunctions;
- risks associated with labor costs, labor disturbances, and unavailability of skilled labor;
- risks associated with the availability and/or fluctuations in the costs of raw materials and consumables used in the production processes;
- risks associated with environmental compliance and permitting, including those created by changes in environmental legislation and regulation, and delays in obtaining permits and licenses that could impact expected mineral extraction and recovery levels and costs;
- actions taken by regulatory authorities with respect to mineral extraction and recovery activities;

The Project should anticipate some specific risks as follows.

- Based on the experience of other proposed mines in the Uravan district, some level of public opposition given its geographical location. However, Anfield controls the Shootaring Canyon (Ticaboo) mill near Ticaboo, Utah. The mill has a source material license from the State of Utah which would require updating and revision to allow operations and the mill would require refurbishment, but it is considered reasonable to presume mined material from the Project could ultimately be processed at Ticaboo.
- The combined royalty burden from both Cotter and the DOE is considered excessive in comparison to typical industry practice and may inhibit the development of the Project.

## **SECTION 26: RECOMMENDATIONS**

The following recommendations assume that Anfield will chose to complete data verification, metallurgical and other studies necessary to support a Preliminary Economic Assessment (PEA) for the project prior reaching a production decision for the Project.

The recommended project development program, summarized in Table 26.1, with total estimated expenditures of \$750,000 (US dollars) includes:

- Collect core samples from select areas across the project in a manner representative of the overall resource area and/or complete test mining to obtain a bulk sample of mineralized material.
- Analyze the samples for uranium, vanadium, and radium to evaluate disequilibrium and the ratio of vanadium to uranium.
- Complete bench scale testing of mechanical sorting of the mined material prior to mineral processing to upgrade the mined material.
- Complete bench scale metallurgical testing of the bulk sample for anticipated mill processing alternatives including conventional milling, vat and heap leaching, or other options.
- Completion of a PEA or PFS.

Expense Category	Scope of Services	Estimated Cost
Core Drilling or Test Mining	Complete 10 core holes representative of the mineralization across the project	\$ 250,000
Sample Assays	Chemical assays for uranium and other metals and constituents. Physical testing for porosity and permeability.	\$ 50,000
Test Mechanical Sorting	Mechanical sorting may include radiometric sorting or sizing of the mineralized material to upgrade the mineralized material.	\$ 50,000
Metallurgical Testing	Metallurgical testing including bench scale to optimize leach parameters followed by bulk testing of material based for including conventional milling, vat and heap leaching.	\$ 200,000
PEA	Complete a PEA including preliminary mine and mill designs and cost estimation.	\$ 200,000
Total Estimated Cost		\$ 750,000

Table 26.1 Phase 1 Recommendations

## **SECTION 27: REFERENCES**

#### Previous Reports:

Behre Dolbear and Company (USA) Inc., 2007, Technical Report on Nine Properties Held by Cotter Corporation in Montrose and San Miguel Counties, Colorado, USA, 80p.

#### Publications Cited:

Carter, F.W., Jr., 1954, Geologic Map of the Bull Canyon Quadrangle, Colorado, USGS Geological Quadrangle Map 33, 1 plate, 1:24,000 scale.

Dodd, P. H., and Droullard, R. F., "Borehole logging methods for exploration and evaluation of uranium deposits", U.S. Atomic Energy Commission, 1967.

McKay, A. D. et al, "Resource Estimates for In Situ Leach Uranium Projects and Reporting Under the JORC Code", Bulletin November/December, 2007.

Weeks, A.D., 1956, Mineralogy and Oxidation of the Colorado Plateau Uranium Ores, US Geological Survey Paper 300, p. 187-193.

Weir, D.B., 1952, Geologic Guides to Prospecting for Carnotite Deposits on the Colorado Plateau, *in* U.S. Geological Survey Bulletin 988-B, P. 15-27.

West, J., "Uranium Logging Techniques", Cent

Shawe, D. R et. Al, 2011 "Uranium-Vanadium Deposits of the Slick Rock District, Colorado," USGS Professional Paper 576-F, p. 19-20, 27.

Website Links Cited:

https://www.city-data.com/city/Naturita-Colorado.html

(https://tradingeconomics.com/commodity/uranium)

(https://www.vanadiumprice.com/)

# SECTION 28: SIGNATURE PAGE AND CERTIFICATION OF QUALIFIED PERSON

### SIGNATURE PAGE AND CERTIFICATE OF QUALIFIED PERSON

#### DOUGLAS BEAHM

I, Douglas L. Beahm, P.E., P.G., do hereby certify that:

- 1. I am the Principal Engineer and President of BRS, Inc., 1130 Major Avenue, Riverton, Wyoming 82501.
- I am the principal author of the amended and restated technical report titled "US DOE Uranium/Vanadium Leases JD-6, JD-7, JD-8, AND JD-9, Montrose County, Colorado, USA, NI 43-101 Mineral Resource", dated February 25, 2022, with an effective date of April 10, 2022 (the "Technical Report").
- 3. I graduated with a Bachelor of Science degree in Geological Engineering from the Colorado School of Mines in 1974. I am a licensed Professional Engineer in Wyoming, Colorado, Utah, and Oregon, a licensed Professional Geologist in Wyoming and a Registered Member of the Society for Mining, Metallurgy, and Exploration.
- 4. I have worked as an engineer and a geologist for over 48 years. My work experience includes uranium exploration, mineral resource estimation, reserves estimation, mine production, and mine/mill decommissioning and reclamation. Specifically, I have worked as an exploration geologist, chief geologist, chief mine engineer and consultant with numerous uranium projects hosted in sandstone environments in the Western US.
- 5. I have visited the site previously but did not make a current site visit as discussed in the report.
- 6. I am responsible for all sections of the report of the Technical Report.
- 7. I am independent of the issuer in accordance with the application of Section 1.5 of NI 43-101. I have no financial interest in the property and am fully independent of Anfield. I hold no stock, options or have any other form of financial connection to Anfield, Anfield is but one of many clients for whom I consult.
- 8. I do not have prior work experience on the project.
- 9. I have read the definition of "qualified person" set out in National Instrument 43-101 and certify that by reason of my education, professional registration, and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
- 10. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with same.
- 11. As of the date of this report, to the best of my knowledge, information and belief, the parts of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

April 10, 2022 "Original signed and sealed" /s/ Douglas L. Beahm

## SIGNATURE PAGE AND CERTIFICATE OF QUALIFIED PERSON

#### CARL DAVID WARREN

I, Carl David Warren, P.E., P.G., do hereby certify that:

- 1. I am a Project Engineer for BRS Engineering, located in Riverton Wyoming, at 1130 Major Ave.
- 2. I am a contributing author of the Technical Report "US DOE Uranium/Vanadium Leases JD-6, JD-7, JD-8, AND JD-9, Montrose County, Colorado, USA, NI 43-101 Mineral Resource", dated February 25, 2022, with an effective date of April 10, 2022 (the "Technical Report").
- 3. I graduated with a Bachelor of Science in Geological Engineering from the Colorado School of Mines in 2009 and have a Master of Science Degree in Nuclear Engineering from the Colorado School of Mines in 2013. I am Licensed Professional Engineer in the State of Wyoming.
- 4. I have worked as both an engineer and a geologist for a cumulative 12 years and have over 15 years of working experience in the mining industry. My relevant work experience includes underground mining, ore control, geological mapping, core logging and data management, uranium exploration, and uranium resource modelling.
- 5. I have not visited the site.
- I am independent of the issuer in accordance with the application of Section 1.5 of NI 43-101. I have no financial interest in the property and am fully independent of Anfield. I hold no stock, options or have any other form of financial connection to Anfield.
- 7. I am responsible for portions of Section 14 of the Technical Report.
- 8. I do not have prior working experience on the property.
- 9. I have read the definition of "qualified person" set out in National Instrument 43-101 and certify that by reason of my education, professional registration, and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
- 10. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with same.
- 11. As of the date of this report, to the best of my knowledge, information and belief, the parts of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.
- 12. I consent to the filing of the Technical Report and the Annual Information Form referencing the Technical Report with any stock exchange and/or other appropriate regulatory authority.

April 10, 2022

"Original Signed and Sealed"

Carl David Warren P.E. P.G.

## SIGNATURE PAGE AND CERTIFICATE OF QUALIFIED PERSON

#### JOSHUA C. STEWART

I, Joshua C. Stewart, P.E., P.G., do hereby certify that:

- 1. I am a Project Engineer for BRS, Inc., located at 1130 Major Avenue, Riverton, Wyoming 82501.
- 2. I am a contributing author of the Technical Report "US DOE Uranium/Vanadium Leases JD-6, JD-7, JD-8, AND JD-9, Montrose County, Colorado, USA, NI 43-101 Mineral Resource", dated February 25, 2022, with an effective date of April 10, 2022 (the "Technical Report").
- 3. I graduated from the Colorado School of Mines with a Bachelor of Science degree in Geological Engineering in 2014 and a Master of Science in Geological Engineering in 2016. I am a licensed Professional Engineer in the State of Wyoming.
- 4. I have worked as an engineer and a geologist for 7 years with BRS. During this time, under the direction of the principal author, Douglas Beahm, I have 5 or more years direct experience in the estimation of mineral resources for sandstone uranium deposits.
- 5. I have not visited the site.
- 6. I am responsible for portions Section 14 of the report.
- I am independent of the issuer in accordance with the application of Section 1.5 of NI 43-101. I have no financial interest in the property and am fully independent of Anfield. I hold no stock, options or have any other form of financial connection to Anfield.
- 8. I do not have prior working experience on the property as stated in the report.
- 9. I have read the definition of "qualified person" set out in National Instrument 43-101 and certify that by reason of my education, professional registration, and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
- 10. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with same.
- 11. As of the date of this report, to the best of my knowledge, information and belief, the parts of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.
- 12. I consent to the filing of the Technical Report and the Annual Information Form referencing the Technical Report with any stock exchange and/or other appropriate regulatory authority.

#### April 10, 2022

"Original signed and sealed"

/s/ Joshua C. Stewart