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SEC S-K 1300 Technical Report Summary
The Falkirk Mining Company
Underwood, North Dakota

Effective Date: December 31, 2021
Report Date: February 14, 2022

Report Prepared by:

North American COAL

FALKIRK MINE

The Falkirk Mining Company
2801 1st Street SW
Underwood, ND 58576

Signed by Qualified Persons:

Renee Schultz, PE

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0.3.1 CERTIFICATE OF QUALIFIED PERSON, RENEE E. SCHULTZ

(a) I am the Senior Mining Engineer at The Falkirk Mining Company in Underwood, ND; a position I have held since 2018. I have been an engineer at Falkirk since 2002.

(b) This certificate applies to the Technical report Summary titled "SEC S-K 1300 Technical Report Summary, The Falkirk Mining Company, Underwood, ND"

(c) I am a Qualified Person(QP) for the purpose of SEC S-K 1300. My qualifications as a qualified person are as follows:

   a. I am a graduate of Montana Tech School of Mines and Geology in Butte, MT with a Bachelor of Science in Mining Engineering in 2001
   b. I am a Professional Engineer in the state of North Dakota (License Number PE-6256).
   c. My relevant experience of over 20 years, for the purpose of the Technical Report Summary, includes 4 years in Surveying, 3 years in Geology/Modeling, and 13 years in Engineering/Mine Planning
   d. I am currently employed by The Falkirk Mining Company where I conduct personal inspections of each mining area on a regular basis described in this Technical Report Summary.
   e. I am Responsible for the sections listed in Table 0.0 of the Technical Report.
   f. I have read SEC S-K 1300 Technical Report Summary requirements. The part of the Technical Report Summary for which I am responsible has been prepared in compliance with this requirement.
   g. At the effective date of the Technical Reporrt Summary, the the best of my knowledge, information, and belied, the parts of the Technical Report Summary for which I am responsible, contains all scientific and technical information that is required to be disclosed to make the Technical Report Summary not misleading.
   h. I consent to the filing of the Technical Report Summary as an exhibit to NACCO Industries, Inc.'s annual report. I also consent to the use of any quotes of summaries in that annual report to the extent they pertain to the Technical Report Summary sections for which I am responsible.

Dated the 14th day of February, 2022

Renee E. Schultz, PE

The Falkirk Mining Company

The effective date of this Technical Report Summary is December 31, 2021.

QP Name	Sections Responsible For	Signature
Renee E. Schultz	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24	

Table 0.0 QP SECTIONS OF RESPONSIBILITY

1.0 EXECUTIVE SUMMARY

This Technical Report Summary (TRS) was prepared for The Falkirk Mining Company (Falkirk) to report Mineral Resources and Mineral Reserves for the Falkirk Mine in McLean County, North Dakota.

1.1 PROPERTY DESCRIPTION AND OWNERSHIP

NACCO Industries (NACCO), through a portfolio of mining and natural resources businesses, operates under three business segments: Coal Mining, North American Mining and Minerals Management. The Coal Mining segment operates surface coal mines under long-term contracts with power generation companies and an activated carbon producer pursuant to a service-based business model. Coal is surface-mined in North Dakota, Texas, Mississippi and Louisiana. Each mine is fully integrated with its customer's operations.

The Falkirk Mining Company (Falkirk), a wholly-owned subsidiary of North American Coal (NACoal), which is a wholly-owned subsidiary of NACCO, operates the Falkirk Mine in North Dakota. Falkirk is the sole supplier of lignite coal to the CCSPP pursuant to a contract under which Falkirk also supplies approximately 0.3 million tons of lignite coal per year to Spiritwood Station power plant.

The CCSPP and Spiritwood Station are owned by Great River Energy (“GRE”). In May 2020, GRE announced its intent to sell or retire the CCSPP in the second half of 2022 and modify Spiritwood Station to be fueled by natural gas.

On June 30, 2021, GRE entered into an agreement to sell the CCSPP and the adjacent high-voltage direct current transmission line to Bismarck, North Dakota-based Rainbow Energy Center, LLC (“Rainbow Energy”) and its affiliates. The transaction between GRE and Rainbow Energy is subject to the satisfaction of certain conditions, including regulatory approvals associated with the sale of the CCSPP and the related transmission assets and the posting of a performance bond related to final mine reclamation. If the conditions are satisfied, the transaction is expected to close in the first half of 2022.Upon completion of the sale of the CCSPP, the existing Coal Sales Agreement, the existing Mortgage and Security Agreement and the existing Option Agreement between GRE and Falkirk will be terminated. If GRE's efforts to sell the power plant are successful, a new Coal Sales Agreement (“CSA”) between Falkirk and Rainbow Energy will become effective and Falkirk will begin supplying all coal requirements of the CCSPP concurrent with Rainbow Energy’s acquisition of the power plant. Falkirk will no longer make any coal deliveries to GRE’s Spiritwood Station. Falkirk will be paid a management fee and Rainbow Energy will be responsible for funding all mine operating costs and directly or indirectly providing all of the capital required to operate the mine. The CSA specifies that Falkirk will perform final mine reclamation, which will be funded in its entirety by Rainbow Energy. The initial production period is expected to run ten years from the effective date of the CSA, but the CSA may be extended or terminated early under certain circumstances.

For purposes of this TRS, the QP has assumed the transaction with Rainbow Energy occurs. The production period under the new CSA is expected to run ten years from the effective date of the CSA. Although the CSA may be extended or terminated early under certain circumstances, the LOM has been developed assuming a 10-year period.

The Falkirk Mine is located approximately 50 miles north of Bismarck, North Dakota on a paved access road off U.S. Highway 83. Falkirk holds 335 leases granting the right to mine approximately 43,486 acres of coal interests and the right to utilize approximately 24,324 acres of surface interests. In addition, Falkirk owns in fee 40,666 acres of surface interests and 1,789 acres of coal interests. Substantially all of the leases held by Falkirk were acquired in the early 1970s with initial terms that have been further extended by the continuation of mining operations.

1.2 GEOLOGY AND MINERALIZATION

The reserves are located in McLean County, North Dakota, from approximately nine miles northwest of the town of Washburn, North Dakota to four miles north of the town of Underwood, North Dakota. Structurally, the area is located on an intercratonic basin containing a thick sequence of sedimentary rocks. The economically mineable coals in the reserve occur in the Sentinel Butte Formation and the Bullion Creek Formation and are unconformably overlain by the Coleharbor Formation. The Sentinel Butte Formation conformably overlies the Bullion Creek Formation. The general stratigraphic sequence in the upland portions of the reserve area (Sentinel Butte Formation) consists of till, silty sands and clayey silts, main hagel lignite bed, silty clay, lower lignite of the hagel lignite interval and silty clays. Beneath the Tavis Creek, there is a repeating sequence of silty to sand clays with generally thin lignite beds.

1.3 STATUS OF EXPLORATION

Substantial information has been gathered during exploration drilling programs within the region since the 1960s. These data were the fundamental tools used in characterizing substrate composition, geometry, and structure of the Falkirk Mine lignite deposit prior to mining. Exploration programs described in this TRS have considered the stratigraphic nature of the mineralization for the determination of hole spacing, drilling and sampling method, and quality analyses in order to geologically map and evaluate the structural and quality characteristics of the lignite deposit.

The Falkirk Mine lignite deposit is evaluated on a seam-by-seam basis. Drilling exploration data including geologic lithologies, qualities, and hole locations have been compiled in an electronic, geologic database. Drilling exploration programs conducted at the Falkirk Mine have comprised largely of rotary air/mist/mud drilling methods. Drill holes were geophysically logged for natural gamma, density, caliper, and resistivity responses to obtain data related to the subsurface structure. Coal core samples collected for quality analyses were sent to independent commercial laboratories for testing.

1.4 DEVELOPMENT AND OPERATIONS

The Falkirk Mine is a multiple lignite seam surface mining operation which supplies approximately 7.5 to 8.2 million tons of lignite per year to the adjacent CCSPP. Actual annual production is dictated by customer demand. The CCSPP sends the generated electricity to MISO grid to supply electricity to GRE’s member Co-ops.

The lignite at the Falkirk Mine surface mining operation is uncovered using dragline, dozer, and conventional truck and shovel mining methods due to the proximity of the lignite to the surface and the physical characteristics of the deposit. Lignite is mined using electric cable shovels and large front-end loaders to load a fleet of bottom dump haul trucks and is directly shipped to the CCSPP or placed on the lignite stockpile. The overall average Run of Mine (ROM) quality of the mined lignite seams meets the required power plant quality specifications. Therefore, no mineral processing is performed by Falkirk.

The Falkirk Mine delivered its first coal in 1978, with mine development work taking place in the preceding few years. The Falkirk Mine has, or is currently constructing, all supporting infrastructure for mining operations within the permitted areas.

The Falkirk Mine employs a staff and workforce of approximately 400 employees with fluctuations in employment levels for changes in demand at the CCSPP.

1.5 MINERAL RESOURCE ESTIMATE

The Mineral Resources in this TRS have been estimated by applying a series of geologic and physical limits as well as high-level mining and economic constraints. The mining and economic constraints were limited to a level sufficient to support reasonable prospect for future economic extraction of the estimated Mineral Resources. The potential of economic extraction is justified by the terms of the existing (and future) CSA with the CCSPP Owners through 2032.

The QP based the Mineral Resource estimates for the Falkirk Mine on a stratigraphic geologic model generated from the verified drilling exploration data.

Mineral Resources classification distances from point of measurement for each class are as followed: Measured – less than 1,320 feet, Indicated - from 1,320 feet to 2,640 feet, and Inferred – from 2,640 – 5,280 ft.

There are no reported Mineral Resources at the Falkirk Mine. The economically mineable portions of the Measured and Indicated Mineral Resources within the constraints of the CSA and under lease control have been converted to Mineral Reserves.

			Quality			
			Calorific Value	Moisture	Ash	Sulfur
Falkirk Mine	Resource Classification	Tonnage	(Btu/lb)	(%wt)	(%wt)	(%wt)
Underwood Field	Measured	31,599,882	6,417	40.41	7.05	0.57
	Indicated	NA	NA	NA	NA	NA
	Measured + Indicated	31,599,882	6,417	40.41	7.05	0.57
	Inferred	NA	NA	NA	NA	NA
Riverdale Field	Measured	46,820,901	6,614	39.44	6.37	0.58
	Indicated	199,721	6,317	37.10	10.69	0.73
	Measured + Indicated	47,020,623	6,612	39.43	6.39	0.58
	Inferred	NA	NA	NA	NA	NA
Total	Measured	78,420,784	6,534	39.83	6.65	0.57
	Indicated	199,721	6.317	37.10	10.69	0.73
Total	Measured+Indicated	78,620,505	6,534	39.82	6.66	0.57

Table 1.1. Mineral Resource Estimates

1.6 MINERAL RESERVE ESTIMATE

The Mineral Reserves in this TRS were determined to be the economically mineable portion of the Mineral Resources after the consideration of modifying factors related to the mining process which convert Measured Resources to Proven Mineral Resources and Indicated Resources to Probable Mineral Reserves. Inferred Mineral Resources were not considered for Mineral Reserves. A cut-off grade of $2.60/MMBTU has been applied to the Measured and Indicated Resources to upgrade these resources into Proven and Probable Reserves. Mineral Reserves Estimates have been calculated and are shown in Table 1.2.

Parameters for mining dilution, minimum mining thickness, and minimum parting thickness were applied by the QP to the geologic (Mineral Resource) model to create the Mineral Reserve model. Mining pits were projected based on current mining equipment operating parameters and a maximum cumulative stripping ratio of 15:1. Mining pits were then sectioned into blocks; adjusting endwall blocks as necessary. Blocks were reviewed by the QP to ensure quality thresholds were met. Recovery rates were applied to the lignite tonnages by seam and then the blocks were sequenced based on a projected total tonnage delivered to the CCSPP through the LOM plan to determine the Measured Resources that would be converted to Mineral Reserves.

This disclosure of Mineral Reserves is based upon the QP's opinion that the LOM plan and cost estimates has been completed to a Pre-feasibility (PFS) level of accuracy, as defined in 17 Code of Federal Regulations (CFR) Part 229.1300, which includes and supports the QP's determination of Mineral Reserves.

The Falkirk Mine Mineral Reserve, as of December 31, 2021, is shown in Table 1.2.

			Quality			
			Calorific Value	Moisture	Ash	Sulfur
Falkirk Mine	Resource Classification	Tonnage	(Btu/lb)	(%wt)	(%wt)	(%wt)
Underwood Field	Proven	31,599,882	6,417	40.41	7.05	0.57
	Probable	NA	NA	NA	NA	NA
	Total	31,599,882	6,417	40.41	7.05	0.57
Riverdale Field	Proven	46,820,901	6,614	39.44	6.37	0.59
	Probable	199,721	6,317	37.10	10.69	0.73
	Total	47,020,623	6,612	39.43	6.39	0.58
Total Reserves	Proven	78,420,784	6,534	39.83	6.65	0.57
	Probable	199,721	6.317	37.10	10.69	0.73
	Total	78,620,505	6,534	39.82	6.66	0.57

Table 1.2. Mineral Reserve Estimates.

The QP's opinion on risks related to Mineral Reserve estimates include changes in customer demand for any reason, including, but not limited to, dispatch of power generated by other energy sources ahead of coal, fluctuations in demand due to unanticipated weather conditions, regulations or comparable policies which may promote planned and unplanned outages at the CCSPP, economic conditions, including an economic slowdown and a corresponding decline in the use of electricity, governmental regulations and/or inflationary adjustments which could have a material adverse effect on Falkirk's financial condition, results of operations and cash flows.

At the time of this TRS, the QP is not aware of any specific factors that would materially affect the Mineral Reserve estimates.

1.7 ECONOMIC ASSESSMENT

The current delivery requirements included in the LOM plan are based on the most recent projections from the CCSPP owners. All costs were estimated based on the LOM tonnage requirements.

The model used to estimate the operating costs is based on historical costs and performance measures that have been maintained by the Falkirk Mine since its inception. These costs are reviewed and verified on an annual basis to account for changes in site conditions or the operating plan. This information is then used to estimate the projected costs for the LOM plan.

Capital costs include equipment expenditures, land acquisition, and additional mine area development costs. All capital costs incurred by the Falkirk Mine are reimbursed by the CCSPP owners as required under the terms of the CSA. Should the CSA be extended beyond 2032, additional capital costs would be required and funded by the CCSPP owners.

The primary key assumption in economic viability of the Falkirk Mine is the continued operation of the CCSPP and the resultant required annual deliveries. The analysis of economic viability of the Falkirk Mine is supported by the all-requirements CSA's and the life-of-mine plan associated with those contracts. Compensation required under the CSA includes reimbursement of all mine operating costs plus a contractually-agreed fee based on the amount of coal delivered. CCSPP is located directly adjacent to the Falkirk Mine (i.e. a mine-mouth operation) and 100% of the required coal to operate the CCSPP is sourced from the Falkirk Mine. The CSA eliminates the Falkirk Mine's exposure to spot coal market price fluctuations.

1.8 PERMITTING REQUIREMENTS

The Falkirk Mine operates under several permits from the state of North Dakota's Public Service Commission/Reclamation Division under delegated authority of the United States Department of the Interior, Office of Surface Mining Reclamation Enforcement (OSMRE) Surface Mining Control and Reclamation Act (SMCRA). In addition to the mining permit, Falkirk has secured numerous other permit and agreements, including a National Pollutant Discharge Elimination System (NPDES) permit and an Individual Permit issued by the United States Army Corp of Engineers (USCOE). All permits have been secured and continue to be renewed in a timely fashion.

Falkirk currently has all permits in place for the Falkirk Mine to operate and adhere to a mine plan projected through April 2032. Barring any regulatory changes out of Falkirk's control, the QP does not anticipate hurdles for approval of future renewal applications.

1.9 QUALIFIED PERSON'S CONCLUSIONS AND RECOMMENDATIONS

In the QP's opinion, the geological data, sampling, modeling, and estimate are carried out in a manner that both represents the data well and mitigates the likelihood of material misrepresentations for the statements of Mineral Resources. There are currently no recommendations for Mineral Resources.

In the QP's opinion, the operational and mine planning data, LOM Plan, and estimation are carried out in a manner that both represents the data and operational experience and methodology well and mitigates the likelihood of material misrepresentations for the statements of Mineral Reserves. There are currently no recommendations for Mineral Reserves.

2.0 INTRODUCTION

This technical report was prepared for The Falkirk Mining Company (Falkirk) which owns and operates the Falkirk Mine.

The purpose for which this technical report summary was prepared is to report Mineral Resources and Mineral Reserves for the Falkirk Mine located in McLean County, North Dakota.

The sources of information and data contained in the technical report or used in its preparations were supplied by FALKIRK and include data used to produce geologic models, production data, environmental support documents, third-party technical studies, resource and reserve estimates, cost estimates, and economic analyses. A large portion of the technical information is summarized from approved Surface Mining Permits issued by the North Dakota Public Service Commission . Additional references to specific studies and documents are provided in Section 23.0 of this technical report summary (TRS).

Qualified persons (QPs) are employed by FALKIRK and directly oversee the drilling exploration programs, daily operations, and/or financial reports of the Falkirk Mine. As such, inspections are conducted on a regular basis and no individual date of inspection has been identified. Renee E. Schultz is a licensed Professional Engineer, over 20 years of experience in Surveying, Geology/Modeling, and Engineering/Mine Planning, as well as with the economic aspects of each discipline.

This is the first TRS filed to the United States Securities and Exchange Commission (SEC) in accordance with S-K Subpart 1300 regulations, therefore no preexisting technical report summary exists with the SEC. Mineral Resource and Reserve estimations prior to December 31, 2021 were reported in accordance with guidance of Industry Guide 7.

This terms of reference for this TRS include

- US English spelling;
- Imperial units of measure;
- Lignite qualities are presented in weight percent (wt%) and lignite tonnages are present in short tons (2000 lbs);
- Coordinate System is presented in imperial units using the North American Datum 1927 (NAD27), North Dakota State Plane, South Zone;
- Nominal US Dollars as of 2021.

Key Acronyms and definitions for this TRS include:

AR	As-Received Basis
ARO	Asset Retirement Obligation
ASTM	American Society for Testing and Materials
BCY	Bank Cubic Yard
BHTI	Base Horizon Till
BMPs	Best Management Practices
CSA	Coal Sales Agreement
COC	Chain of Custody
COSC	Cost of Severed Coal

CRIRSCO	Committee for Mineral Reserves International Reporting Standards
CCSPP	Coal Creak Station Power Plant
DMRs	Discharge Monitoring Reports
DTM	Digital Terrain Model
EIS	Environmental Impact Statement
FMC	Falkirk Mining Company
FoS	Factor of Safety
GEA	Geotechnical Engineering Associates
GWMP	Ground Water Monitoring Plan
Lbs	Pounds
LOM	Life of Mine
mg/L	Milligrams per Liter
msl	Mean Sea Level
Mt	Million Tons
MVTL	Minnesota Valley Testing Laboratories
ND	North Dakota
NACoal	The North American Coal Corporation
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
OSMRE	United States Department of the Interior, Office of Surface Mining Reclamation Enforcement
QA/QC	Quality Assurance/Quality Control
QP(s)	Qualified Person(s)
R-O-M	Run of Mine
R-O-W	Right of Way
SEC	United States Securities and Exchange Commission
SG	Specific Gravity
S-K 1300	SEC's Subpart S-K 1300 (17 CFR 229.1300)
SPGM	Suitable Plant Growth Material
SPT	Standard Penetration Testing
SWPPP	Storm Water Pollution and Prevention Plan
TDS	Total Dissolved Solids
TRS	Technical Report Summary

TSS	Total Suspended Solids
U.S.	United States
USCS	Unified Soil Classification System
USGS	United States Geological Survey
WOTUS	Waters of the United States

3.0 PROPERTY DESCRIPTION

3.1 PROPERTY LOCATION

The Falkirk Mine is located approximately 4 miles south of Underwood, North Dakota (ND) or approximately 7.5 miles northwest of Washburn, ND, in McLean County, which is approximately 55 miles north of Bismarck, ND. The entrance to the mine is by means of a paved road, 1st Street SW, that is located approximately 2 mile west of Highway 83. The general location of the Falkirk Mine is shown in Figure 3.1 (Location of Falkirk Mine). The CCSPP is adjacent to the Falkirk Mine.

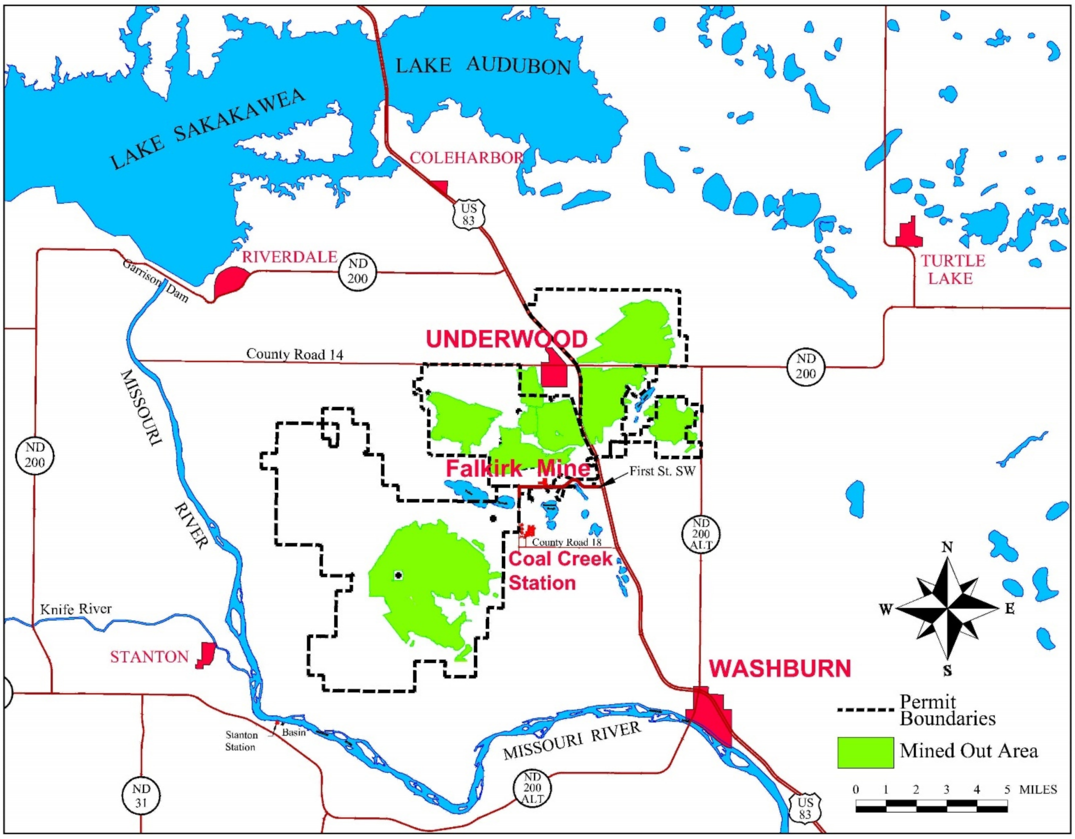


Figure 3.1. Location of the Falkirk Mine.

3.2 PROPERTY AREA

The Falkirk Mine encompasses two Mine Areas – Underwood and Riverdale. The Underwood Mine Area contains mining permits NAFK 8405, 9601, and 8705, while the Riverdale Mine Area contains mining permit NAFK - 9503. The lignite located in each Mine Area that is encompassed in the LOM plan is considered a Mineral Reserve.

Falkirk holds 335 leases granting the right to mine approximately 43,486 acres of coal interests and the right to utilize about 24,324 acres of surface interests. In addition, Falkirk owns in fee about 40,666 acres of surface interests and 1,789 acres of coal interests.

3.3 LEASES AND MINERAL RIGHTS

The name or number and expiration date of each title, claim, mineral right, lease, or option under which Falkirk or an affiliated NACCO company has or will have the right to hold or operate on the property is described on Table 3.1 (Identification of Leases) and Table 3.2 (Identification of Acquisitions).

The leases and deeds are recorded at the McLean County courthouse and are a matter of public record. Substantially all of the leases were acquired in the 1970's and have been replaced with new leases and/or have continuation provisions that generally permit the leases to be continued beyond their fixed terms. The leases obligate Falkirk to make payments based on the amount of lignite mined from the subject property. Most royalty rates range from $.08 - $.16 per ton of lignite mined. A few leases include annual escalator provisions. Payments may also include surface damage payments and advanced or minimum royalty payments. Production royalties are calculated monthly based on surveys and are generally paid on a quarterly basis, although in certain situations royalties are paid monthly.

Table 3.1 Shows The Falkirk Mining Company leases and Table 3.2 shows the Falkirk Mining Company acquisitions.

Table 3.1. Identification of Leases

Lease Id	Lease Type	Lease Date	Lease Expiration Date
3RO-03637	Coal Lease Agreement	9/18/1997	9/17/2017
3RO-03638	Coal Lease Agreement	10/20/1997	10/19/2017
3RO-03639	Coal Lease Agreement	1/29/1998	1/28/2018
3RO-03641	Surface & Coal Lease Agreement	1/6/1999	1/5/2009
3RO-03645	Surface & Coal Lease Agreement	2/11/2003	2/10/2013
3RO-03646	Coal Lease	10/30/2003	10/29/2033
3RO-03647	Coal Lease	10/30/2003	10/29/2033
3RO-03648	Coal Lease	10/30/2003	10/29/2033
3RO-03649	Coal Lease	10/30/2003	10/29/2033
3RO-03650	Coal Lease	10/30/2003	10/29/2033
3RO-03652	Coal Lease	10/30/2003	10/29/2033
3RO-03653	Coal Lease	10/30/2003	10/29/2033
3RO-03654	Coal Lease	10/30/2003	10/29/2033
3RO-03655	Surface & Coal Lease Agreement	6/9/2004	6/8/2044
3RO-03656	Coal Lease Agreement	2/22/2007	2/21/2047
3RO-03657	Coal Lease Agreement	3/9/2007	3/8/2047
3RO-03658	Surface & Coal Lease Agreement	6/11/2007	6/10/2027
3RO-03659	Surface & Coal Lease Agreement	6/11/2007	6/10/2027

3RO-03660	Surface & Coal Lease Agreement	7/10/2007	7/9/2047
3RO-03661	Coal Lease Agreement	10/4/2007	10/3/2047
3RO-03662	Surface & Coal Lease Agreement	12/13/2007	12/12/2047
3RO-03663	Coal Lease Agreement	9/29/2007	9/28/2047
3RO-03664	Surface & Coal Lease Agreement	3/7/2008	3/6/2048
3RO-03665	Coal Lease Agreement	3/8/2008	3/7/2048
3RO-03666	Coal Lease Agreement	3/7/2008	3/6/2048
3RO-03667	Surface & Coal Lease Agreement	3/20/2008	3/19/2048
3RO-03668	Coal Lease Agreement	6/4/2008	6/3/2048
3RO-03669	Coal Lease Agreement	3/28/2008	3/27/2048
3RO-03670	Surface & Coal Lease Agreement	4/2/2008	4/1/2048
3RO-03671	Coal Lease Agreement	5/31/2008	5/30/2048
3RO-03672	Coal Lease Agreement	6/4/2008	6/3/2048
3RO-03673	Coal Lease Agreement	6/19/2008	6/18/2028
3RO-03674	Surface & Coal Lease Agreement	7/3/2008	7/2/2048
3RO-03675	Coal Lease Agreement	7/3/2008	7/2/2028
3RO-03676	Surface & Coal Lease Agreement	7/18/2008	7/17/2048
3RO-03677	Coal Lease Agreement	7/16/2008	7/15/2048
3RO-03678	Coal Lease Agreement	8/26/2008	8/25/2048
3RO-03679	Surface & Coal Lease Agreement	12/13/2008	12/12/2048
3RO-03680	Surface & Coal Lease Agreement	5/5/2009	5/4/2049
3RO-03681	Coal Lease Agreement	12/17/2009	12/16/2049
3RO-03682	Coal Lease	7/29/2010	7/28/2055
3RO-03683	Coal Lease	7/29/2010	7/28/2055
3RO-03684	Coal Lease	7/29/2010	7/28/2055
3RO-03685	Coal Lease	7/29/2010	7/28/2055
3RO-03686	Coal Lease	7/29/2010	7/28/2055
3RO-03687	Coal Lease	7/29/2010	7/28/2055
3RO-03688	Coal Lease Agreement	5/12/2010	5/11/2050
3RO-03689	Coal Lease Agreement	5/12/2010	5/11/2050
3RO-03690	Surface & Coal Lease Agreement	5/12/2010	5/11/2050
3RO-03691	Surface & Coal Lease Agreement	5/12/2010	5/11/2050
3RO-03692	Surface & Coal Lease Agreement	3/25/2010	3/24/2050
3RO-03693	Coal Lease	7/14/2014	7/13/2019
3RO-03694	Coal Lease Agreement	9/11/2017	9/10/2037
3RO-03695	Coal Lease Agreement	8/21/2017	8/20/2037
3RO-03696	Coal Lease Agreement	9/15/2017	9/14/2037
3RO-03697	Coal Lease Agreement	10/4/2017	10/3/2037
3RO-03698	Coal Lease Agreement	10/7/2017	10/6/2037
3RO-03699	Coal Lease Agreement	10/11/2017	10/10/2037
3RO-03700	Coal Lease Agreement	10/13/2017	10/12/2037
3RO-03701	Coal Lease Agreement	10/10/2017	10/9/2037
3RO-03702	Coal Lease Agreement	9/25/2017	9/24/2037
3RO-03703	Coal Lease Agreement	10/20/2017	10/19/2037
3RO-03704	Coal Lease Agreement	10/23/2017	10/22/2037
3RO-03705	Coal Lease Agreement	12/7/2017	12/6/2037
3RO-03706	Coal Lease Agreement	12/14/2017	12/13/2037

3RO-03707	Coal Lease Agreement	1/26/2018	1/25/2038
3RO-03708	Coal Lease Agreement	3/7/2018	3/6/2038
3RO-03709	Coal Lease Agreement	3/9/2018	3/8/2038
3RO-03710	Coal Lease Agreement	3/15/2018	3/14/2038
3RO-03711	Surface & Coal Lease Agreement	4/16/2018	4/15/2043
3RO-03712	Surface & Coal Lease Agreement	4/17/2018	4/16/2043
3RO-03713	Surface & Coal Lease Agreement	4/19/2018	4/18/2043
3RO-03714	Surface & Coal Lease Agreement	4/20/2018	4/19/2043
3RO-03715	Surface & Coal Lease Agreement	4/23/2018	4/22/2043
3RO-03716	Surface & Coal Lease Agreement	5/25/2018	5/24/2043
3RO-03717	Surface & Coal Lease Agreement	5/29/2018	5/28/2043
3RO-03718	Surface & Coal Lease Agreement	8/8/2018	8/7/2043
3RO-03719	Surface & Coal Lease Agreement	11/1/2018	10/31/2043
3RO-03720	Surface & Coal Lease Agreement	11/6/2018	11/5/2043
3RO-03721	Surface Lease Agreement	1/28/2020	1/27/2040
3RV-03255	Exploration Contract & Coal Lease	9/12/1972	9/11/2013
3RV-03261	Exploration Contract & Coal Lease	8/28/1972	8/27/2013
3RV-03280	Exploration Contract & Coal Lease	8/30/1972	8/29/2013
3RV-03281	Exploration Contract & Coal Lease	8/30/1972	8/29/2013
3RV-03283	Exploration Contract & Coal Lease	9/12/1972	9/11/2013
3RV-03284	Exploration Contract & Coal Lease	9/13/1972	9/12/2013
3RV-03285	Exploration Contract & Coal Lease	9/12/1972	9/11/2013
3RV-03310	Coal Lease	8/15/1962	8/14/2002
3RV-03311	Coal Lease	5/24/1962	5/23/2002
3RV-03316	Coal Lease	6/8/1962	6/7/2002
3RV-03317	Coal Lease	2/12/1964	2/11/2004
3RV-03321	Coal Lease	1/25/1962	1/24/2002
3RV-03322	Coal Lease	2/16/1962	2/15/2002
3RV-03323	Coal Lease	1/12/1967	1/11/2017
3RV-03324	Coal Lease	11/21/1969	11/20/1994
3RV-03325	Coal Lease	1/23/1962	1/22/2002
3RV-03326	Coal Lease	9/11/1962	9/10/2002
3RV-03327	Coal Lease	9/25/1962	9/24/2002
3RV-03329	Coal Lease	5/23/1962	5/22/2002
3RV-03330	Coal Lease	2/16/1962	2/15/2002
3RV-03331	Coal Lease	5/29/1962	5/28/2002
3RV-03332	Coal Lease	1/16/1967	1/15/2007
3RV-03337	Coal Lease	1/26/1962	1/25/2002
3RV-03339	Coal Lease	5/29/1962	5/28/2002
3RV-03340	Coal Lease	2/21/1962	2/20/2002
3RV-03341	Coal Lease	5/25/1962	5/24/2002
3RV-03342	Coal Lease	5/22/1962	5/21/2002
3RV-03345	Coal Lease	2/9/1962	2/8/2002
3RV-03347	Coal Lease	12/8/1969	12/7/1994
3RV-03348	Coal Lease	12/16/1970	12/15/2015
3RV-03355	Coal Lease	11/9/1971	11/8/2016
3RV-03356	Coal Lease	11/9/1971	11/8/1996

3RV-03360	Coal Lease	11/11/1971	11/10/2016
3RV-03362	Coal Lease	11/29/1971	11/28/1996
3RV-03363	Coal Lease	1/24/1972	1/23/1997
3RV-03367	Coal Lease	8/22/1972	8/21/1997
3RV-03378	Coal Lease	11/29/1972	11/28/1997
3RV-03382	Coal Lease	3/6/1973	3/5/1998
3RV-03386	Coal Lease	5/11/1973	5/10/1998
3RV-03387	Coal Lease	8/7/1973	8/6/1998
3RV-03392	Coal Lease	4/25/1974	4/24/2014
3RV-03393	Coal Lease	5/7/1974	5/6/2014
3RV-03399	Exploration Contract & Coal Lease	7/27/1971	7/26/2012
3RV-03407	Coal Lease	6/11/1974	6/10/2014
3RV-03408	Coal Lease	5/28/1974	5/27/2014
3RV-03409	Coal Lease	6/11/1974	6/4/2014
3RV-03410	Coal Lease	6/12/1974	6/4/2014
3RV-03411	Coal Lease	6/5/1974	6/4/2014
3RV-03412	Coal Lease	6/14/1974	6/4/2014
3RV-03416	Coal Lease	6/14/1974	6/4/2014
3RV-03417	Coal Lease	6/12/1974	6/11/2014
3RV-03418	Coal Lease	8/30/1974	8/29/2014
3RV-03420	Coal Lease	9/19/1974	9/18/2014
3RV-03421	Coal Lease	10/12/1974	10/11/2014
3RV-03422	Coal Lease	10/11/1974	10/10/2014
3RV-03423	Coal Lease	11/22/1974	11/21/2014
3RV-03424	Coal Lease	12/5/1974	12/4/2014
3RV-03425	Coal Lease	12/9/1974	12/8/2014
3RV-03426	Coal Lease	12/10/1974	12/9/2014
3RV-03427	Coal Lease	12/11/1974	12/10/2014
3RV-03428	Coal Lease	12/31/1974	12/30/2014
3RV-03429	Coal Lease	12/30/1974	12/29/2014
3RV-03430	Coal Lease	12/15/1974	12/14/2014
3RV-03431	Coal Lease	1/2/1975	1/1/2015
3RV-03433	Coal Lease	3/11/1975	3/10/2015
3RV-03436	Exploration Contract & Coal Lease	8/19/1972	8/18/2013
3RV-03437	Exploration Contract & Coal Lease	8/18/1972	8/17/2013
3RV-03439	Exploration Contract & Coal Lease	8/30/1972	8/29/2013
3RV-03442	Exploration Contract & Coal Lease	9/5/1972	9/4/2013
3RV-03444	Exploration Contract & Coal Lease	4/12/1972	4/11/2013
3RV-03447	Exploration Contract & Coal Lease	8/21/1972	8/20/2013
3RV-03450	Exploration Contract & Coal Lease	8/31/1973	8/30/1994
3RV-03451	Exploration Contract & Coal Lease	4/12/1972	4/11/2013
3RV-03452	Exploration Contract & Coal Lease	4/12/1972	4/11/2013
3RV-03454	Exploration Contract & Coal Lease	9/12/1972	9/11/2013
3RV-03455	Exploration Contract & Coal Lease	9/12/1972	9/11/2013
3RV-03456	Exploration Contract & Coal Lease	9/11/1972	9/10/2013
3RV-03457	Exploration Contract & Coal Lease	8/31/1972	8/30/2013
3RV-03458	Exploration Contract & Coal Lease	9/12/1972	9/11/2013

3RV-03459	Exploration Contract & Coal Lease	9/12/1972	9/11/2013
3RV-03460	Exploration Contract & Coal Lease	8/21/1972	8/20/2013
3RV-03461	Exploration Contract & Coal Lease	9/11/1972	9/10/2013
3RV-03465	Exploration Contract & Coal Lease	5/26/1972	5/25/2013
3RV-03472	Coal Lease	8/19/1971	8/18/1996
3RV-03482	Coal Lease	6/25/1974	6/24/2014
3RV-03483	Coal Lease	6/25/1974	6/24/2014
3RV-03484	Coal Lease	6/25/1974	6/24/2014
3RV-03485	Coal Lease	6/25/1974	6/24/2014
3RV-03486	Coal Lease	6/25/1974	6/24/2014
3RV-03501	Exploration Contract & Coal Lease	5/26/1972	5/25/2013
3RV-03504	Exploration Contract & Coal Lease	5/25/1972	5/24/2013
3RV-03523	Exploration Contract & Coal Lease	5/22/1972	5/21/2013
3RV-03526	Exploration Contract & Coal Lease	5/27/1972	5/26/2013
3RV-03528	Exploration Contract & Coal Lease	5/24/1972	5/23/2013
3RV-03529	Exploration Contract & Coal Lease	5/25/1972	5/24/2013
3RV-03532	Exploration Contract & Coal Lease	5/23/1972	5/22/2013
3RV-03539	Exploration Contract & Coal Lease	6/5/1972	6/4/2013
3RV-03542	Exploration Contract & Coal Lease	5/24/1972	5/23/2013
3RV-03543	Exploration Contract & Coal Lease	5/25/1972	5/24/2013
3RV-03547	Exploration Contract & Coal Lease	5/24/1972	5/23/2013
3RV-03550	Exploration Contract & Coal Lease	5/30/1972	5/29/2013
3RV-03554	Exploration Contract & Coal Lease	5/23/1972	5/22/2013
3RV-03568	Exploration Contract & Coal Lease	4/12/1972	4/11/2013
3RV-03569	Exploration Contract & Coal Lease	4/12/1972	4/11/2013
3RV-03600	Exploration Contract & Coal Lease	7/23/1971	7/22/2012
3RV-03601	Exploration Contract & Coal Lease	7/21/1971	7/20/2012
3RV-03609	Exploration Contract & Coal Lease	7/21/1971	7/20/2012
3RV-03611	Exploration Contract & Coal Lease	8/6/1971	8/5/2012
3RV-03624	Coal Lease	1/19/1982	1/18/2022
3RV-03625	Coal Lease	1/19/1982	1/18/2022
3UN-03006	Exploration Contract & Coal Lease	9/23/1971	9/22/2012
3UN-03007	Exploration Contract & Coal Lease	9/23/1971	9/22/2012
3UN-03008	Exploration Contract & Coal Lease	3/3/1973	3/2/2014
3UN-03009	Exploration Contract & Coal Lease	7/23/1971	7/22/2012
3UN-03010	Exploration Contract & Coal Lease	7/22/1971	7/21/2012
3UN-03011	Exploration Contract & Coal Lease	11/22/1972	11/21/2013
3UN-03017	Exploration Contract & Coal Lease	7/22/1971	7/21/2012
3UN-03019	Exploration Contract & Coal Lease	3/3/1973	3/2/2014
3UN-03023	Exploration Contract & Coal Lease	7/22/1971	7/21/2012
3UN-03026	Lease	10/1/1971	9/30/2011
3UN-03027	Exploration Contract & Coal Lease	9/22/1971	9/21/2012
3UN-03032	Exploration Contract & Coal Lease	5/18/1973	5/17/2014
3UN-03035	Exploration Contract & Coal Lease	8/5/1971	8/4/2012
3UN-03040	Exploration Contract & Coal Lease	10/5/1971	10/4/2012
3UN-03041	Exploration Contract & Coal Lease	8/10/1978	8/9/2011
3UN-03043	Exploration Contract & Coal Lease	10/7/1971	10/6/2012

3UN-03045	Exploration Contract & Coal Lease	10/9/1971	10/8/2012
3UN-03050	Coal Lease	8/24/1977	8/15/2027
3UN-03051	Coal Lease	8/24/1977	8/23/2027
3UN-03053	Exploration Contract & Coal Lease	7/29/1971	7/28/2012
3UN-03054	Lease	8/22/1973	8/21/1998
3UN-03057	Exploration Contract & Coal Lease	9/23/1971	9/22/2012
3UN-03058	Exploration Contract & Coal Lease	7/24/1971	7/23/2012
3UN-03059	Exploration Contract & Coal Lease	7/26/1971	7/25/1992
3UN-03060	Exploration Contract & Coal Lease	10/5/1971	10/4/2012
3UN-03061	Exploration Contract & Coal Lease	7/27/1971	7/26/1992
3UN-03066	Exploration Contract & Coal Lease	7/28/1971	7/27/2012
3UN-03067	Exploration Contract & Coal Lease	10/1/1971	9/30/2012
3UN-03071	Exploration Contract & Coal Lease	7/27/1971	7/26/2012
3UN-03077	Exploration Contract & Coal Lease	7/27/1971	7/26/2012
3UN-03079	Exploration Contract & Coal Lease	7/24/1971	7/23/2012
3UN-03082	Exploration Contract & Coal Lease	7/20/1971	7/19/2012
3UN-03083	Exploration Contract & Coal Lease	7/21/1971	7/20/2012
3UN-03084	Exploration Contract & Coal Lease	7/20/1971	7/19/2012
3UN-03085	Exploration Contract & Coal Lease	1/30/1973	1/29/2014
3UN-03088	Exploration Contract & Coal Lease	7/27/1971	7/26/2012
3UN-03096	Exploration Contract & Coal Lease	7/29/1971	7/28/2012
3UN-03102	Exploration Contract & Coal Lease	9/28/1971	9/27/1992
3UN-03114	Exploration Contract & Coal Lease	9/30/1971	9/29/2012
3UN-03115	Exploration Contract & Coal Lease	7/29/1971	7/28/2012
3UN-03117	Exploration Contract & Coal Lease	9/28/1971	9/27/2012
3UN-03123	Exploration Contract & Coal Lease	7/22/1971	7/21/2012
3UN-03126	Exploration Contract & Coal Lease	7/22/1971	7/21/2012
3UN-03128	Exploration Contract & Coal Lease	7/31/1971	7/30/2012
3UN-03129	Exploration Contract & Coal Lease	8/6/1971	8/5/2012
3UN-03130	Exploration Contract & Coal Lease	9/27/1971	9/26/2012
3UN-03132	Exploration Contract & Coal Lease	7/20/1971	7/19/2012
3UN-03135	Exploration Contract & Coal Lease	10/4/1971	10/3/2012
3UN-03137	Exploration Contract & Coal Lease	4/12/1972	4/11/2013
3UN-03139	Exploration Contract & Coal Lease	4/12/1972	4/11/2013
3UN-03140	Exploration Contract & Coal Lease	4/12/1972	4/11/2013
3UN-03141	Exploration Contract & Coal Lease	4/12/1972	4/11/2013
3UN-03142	Exploration Contract & Coal Lease	4/12/1972	4/11/2013
3UN-03143	Exploration Contract & Coal Lease	4/12/1972	4/11/2013
3UN-03154	Exploration Contract & Coal Lease	8/16/1973	8/15/1994
3UN-03155	Exploration Contract & Coal Lease	10/10/1973	1/9/1994
3UN-03191	Coal Lease	5/14/1974	5/13/2014
3UN-03196	Coal Lease	8/19/1971	8/18/1996
3UN-03197	Coal Lease	6/25/1974	6/24/2014
3UN-03198	Coal Lease	6/25/1974	6/24/2014
3UN-03199	Coal Lease	6/25/1974	6/24/2014
3UN-03200	Coal Lease	6/25/1974	6/24/2014
3UN-03201	Coal Lease	6/25/1974	6/24/2014

3UN-03204	Lease	3/27/1980	3/26/1990
3UN-03205	Lease	3/27/1980	3/26/1990
3UN-03206	Lease	3/27/1980	3/26/1990
3UN-03207	Lease	3/27/1980	3/26/1990
3UN-03208	Coal Lease	1/19/1982	1/18/2022
3UN-03209	Coal Lease	1/19/1982	1/18/2022
3UN-03220	Coal Lease	11/15/1972	11/14/1997
3UN-03221	Coal Lease	11/15/1972	11/14/1997
3UN-03230	Coal Lease	4/4/1973	4/3/1998
3UN-03231	Coal Lease	8/21/1973	8/20/1998
3UN-03232	Coal Lease	8/21/1973	8/20/1998
3UN-03233	Coal Lease	8/21/1973	8/20/1998
3UN-03241	Coal Lease	7/28/1997	6/30/2017
3UN-03242	Surface Lease Agreement	11/27/1995	11/26/2035
3UN-03252	Coal Lease	5/1/2003	4/30/2023
3UN-03253	Surface & Coal Lease Agreement	11/11/2005	11/10/2015
3UN-03800	Coal Lease	4/26/2007	4/25/2037
3UN-03801	Coal Lease	4/26/2007	4/25/2037
3UN-03803	Coal Lease	4/26/2007	4/25/2037
3UN-03804	Lease	9/1/1975	12/31/2045
3UN-03805	Coal Lease	1/1/2018	12/31/2037
3UN-03806	Exploration Contract & Coal Lease	4/2/1973	4/1/2014
3UN-03807	Surface & Coal Lease Agreement	5/16/2016	5/15/2036
3UN-03808	Surface & Coal Lease Agreement	11/1/2016	10/31/2036
3UN-03809	Surface & Coal Lease Agreement	11/1/2016	10/31/2036
3UN-03810	Surface & Coal Lease Agreement	11/2/2016	11/1/2036
3UN-03811	Surface & Coal Lease Agreement	11/3/2016	11/2/2036
3UN-03812	Surface & Coal Lease Agreement	10/31/2016	10/30/2036
3UN-03813	Surface & Coal Lease Agreement	1/4/2017	1/3/2037
3UN-03814	Surface & Coal Lease Agreement	12/29/2016	12/28/2036
3UN-03815	Surface & Coal Lease Agreement	3/2/2017	3/1/2037
3UN-03816	Surface & Coal Lease Agreement	4/19/2017	4/18/2027
3UN-03817	Coal Lease Agreement	6/1/2017	1/29/2013
3UN-03818	Coal Lease Agreement	7/14/2017	7/13/2037
3UN-03819	Coal Lease Agreement	7/18/2017	7/17/2037
3UN-03820	Surface & Coal Lease Agreement	6/19/2018	6/18/2038
3UN-03821	Coal Lease Agreement	6/18/2018	6/17/2038
3UN-03822	Coal Lease Agreement	6/18/2018	6/17/2038
3UN-03823	Coal Lease Agreement	7/3/2018	7/2/2038
3UN-03824	Coal Lease Agreement	9/18/2018	9/17/2038
3UN-03825	Surface Lease Agreement	9/18/2018	9/17/2038
3UN-03826	Surface & Coal Lease Agreement	2/5/2019	2/4/2039
3UN-03827	Surface & Coal Lease Agreement	2/12/2019	2/11/2039
3UN-03828	Surface & Coal Lease Agreement	3/21/2019	3/20/2039
3UN-03829	Coal Lease	11/20/2018	11/19/2048
3UN-03830	Coal Lease	11/20/2018	11/19/2048
3UN-03831	Coal Lease	11/20/2018	11/19/2048

3UN-03832	Coal Lease	11/20/2018	11/19/2048
3UN-03833	Coal Lease Agreement	1/9/2020	1/8/2050
3UN-03835	Surface & Coal Lease Agreement	7/20/2020	7/19/2040
3UN-03836	Surface & Coal Lease Agreement	4/22/2020	4/21/2040
3UN-03837	Surface & Coal Lease Agreement	4/14/2020	4/13/2040
3UN-03838	Surface Lease Agreement	12/31/2019	12/30/2039
3UN-03839	Coal Lease	6/12/2020	6/11/2050
3UN-03840	Coal Lease Agreement	8/26/2020	8/25/2040
3UN-03841	Coal Lease Agreement	8/26/2020	8/25/2040
3UN-03842	Coal Lease Agreement	8/27/2020	8/26/2040
3UN-03843	Surface Lease Agreement	12/16/2020	12/15/2040
3UN-03844	Coal Lease Agreement	9/9/2020	9/8/2040
3UN-03845	Coal Lease Agreement	11/28/2020	11/27/2040
3UN-03846	Coal Lease Agreement	11/30/2020	11/29/2040
3UN-03847	Coal Lease Agreement	12/2/2020	12/1/2040
3UN-03848	Coal Lease Agreement	12/2/2020	12/1/2040
3UN-03849	Coal Lease Agreement	12/3/2020	12/2/2040
3UN-03850	Coal Lease Agreement	12/3/2020	12/2/2040
3UN-03851	Coal Lease Agreement	12/5/2020	12/4/2040
3UN-03852	Coal Lease Agreement	12/7/2020	12/6/2040
3UN-03853	Coal Lease Agreement	12/12/2020	12/11/2040
3UN-03854	Coal Lease Agreement	12/16/2020	12/15/2040
3UN-03855	Coal Lease Agreement	1/5/2021	1/4/2041
3UN-03856	Coal Lease Agreement	8/19/2021	8/18/2041
3UN-03857	Coal Lease Agreement	8/24/2021	8/23/2041

Table 3.2 IDENTIFICATION OF ACQUISITIONS

Agreement Id	Agreement Type	Agreement Date	Agreement Expiration Date
3-FKC001	Warranty Deed	8/19/1985	12/31/2099
3-FKC002	Warranty Deed	6/11/1987	12/31/2099
3-FKC003	Warranty Deed	9/16/1988	12/31/2099
3-FKC004	Warranty Deed	12/13/1991	12/31/2099
3-FKC005	Mineral Deed	2/19/1993	12/31/2099
3-FKC006	Mineral Deed	10/25/1993	12/31/2099
3-FKC007	Mineral Deed	1/3/1994	12/31/2099
3-FKC008	Warranty Deed	7/12/1994	12/31/2099
3-FKC009	Warranty Deed	7/15/1996	12/31/2099
3-FKC010	Mineral Deed	1/8/1998	12/31/2099
3-FKC011	Mineral Deed	1/26/1999	12/31/2099
3-FKC012	Warranty Deed	2/24/1999	12/31/2099
3-FKC013	Warranty Deed	11/8/2000	12/31/2099
3-FKC014	Mineral Deed	2/22/2006	2/21/2105
3-FKS001	Warranty Deed	10/6/1975	12/31/2099
3-FKS002	Warranty Deed	8/12/1975	12/31/2099
3-FKS003	Warranty Deed	8/29/1975	12/31/2099

3-FKS004	Warranty Deed	8/29/1975	12/31/2099
3-FKS005	Warranty Deed	10/6/1975	12/31/2099
3-FKS006	Warranty Deed	10/6/1975	12/31/2099
3-FKS007	Warranty Deed	10/6/1975	12/31/2099
3-FKS008	Warranty Deed	10/6/1975	12/31/2099
3-FKS009	Warranty Deed	10/6/1975	12/31/2099
3-FKS010	Warranty Deed	8/4/1976	12/31/2099
3-FKS011	Warranty Deed	4/18/1985	12/31/2099
3-FKS012	Warranty Deed	5/5/1980	12/31/2099
3-FKS013	Warranty Deed	6/20/1980	12/31/2099
3-FKS014	Warranty Deed	7/29/1980	12/31/2099
3-FKS015	Warranty Deed	10/31/1980	12/31/2099
3-FKS016	Warranty Deed	10/31/1980	12/31/2099
3-FKS018	Warranty Deed	2/10/1981	12/31/2099
3-FKS019	Warranty Deed	4/27/1981	12/31/2099
3-FKS020	Warranty Deed	6/29/1981	12/31/2099
3-FKS022	Warranty Deed	3/15/1982	12/31/2099
3-FKS024	Warranty Deed	6/29/1983	12/31/2099
3-FKS025	Warranty Deed	1/28/1986	12/31/2099
3-FKS027	Warranty Deed	5/21/1984	12/31/2099
3-FKS028	Warranty Deed	7/20/1984	12/31/2099
3-FKS029	Warranty Deed	7/25/1984	12/31/2099
3-FKS030	Warranty Deed	8/31/1984	12/31/2099
3-FKS031	Warranty Deed	11/2/1984	12/31/2099
3-FKS032	Personal Representative Deed	11/24/1984	12/31/2099
3-FKS033	Warranty Deed	11/26/1984	12/31/2099
3-FKS034	Warranty Deed	11/30/1984	12/31/2099
3-FKS035	Warranty Deed	2/11/1985	12/31/2099
3-FKS036	Warranty Deed	2/15/1985	12/31/2099
3-FKS037	Warranty Deed	5/31/1985	12/31/2099
3-FKS038	Warranty Deed	8/8/1985	12/31/2099
3-FKS039	Warranty Deed	8/19/1985	12/31/2099
3-FKS040	Warranty Deed	12/3/1985	12/31/2099
3-FKS041	Warranty Deed	12/30/1985	12/31/2099
3-FKS042	Warranty Deed	12/30/1985	12/31/2099
3-FKS044	Warranty Deed	4/17/1986	12/31/2099
3-FKS045	Warranty Deed	6/12/1986	12/31/2099
3-FKS046	Warranty Deed	7/28/1986	12/31/2099
3-FKS047	Warranty Deed	12/19/1986	12/31/2099
3-FKS048	Warranty Deed	12/30/1986	12/31/2099
3-FKS049	Warranty Deed	6/11/1987	12/31/2099
3-FKS050	Warranty Deed	9/9/1987	12/31/2099
3-FKS051	Warranty Deed	10/30/1987	12/31/2099
3-FKS052	Warranty Deed	10/30/1987	12/31/2099
3-FKS053	Warranty Deed	1/9/1988	12/31/2099
3-FKS054	Warranty Deed	9/16/1988	12/31/2099
3-FKS055	Warranty Deed	9/16/1988	12/31/2099

3-FKS056	Warranty Deed	8/26/1989	12/31/2099
3-FKS057	Warranty Deed	8/30/1989	12/31/2099
3-FKS058	Warranty Deed	7/13/1990	12/31/2099
3-FKS059	Warranty Deed	7/13/1990	12/31/2099
3-FKS060	Warranty Deed	12/13/1991	12/31/2099
3-FKS061	Warranty Deed	12/19/1991	12/31/2099
3-FKS063	Warranty Deed	9/17/1992	12/31/2099
3-FKS064	Warranty Deed	9/17/1992	12/31/2099
3-FKS066	Warranty Deed	10/12/1993	12/31/2099
3-FKS067	Warranty Deed	10/12/1993	12/31/2099
3-FKS068	Warranty Deed	12/31/1993	12/31/2099
3-FKS069	Warranty Deed	7/12/1994	12/31/2099
3-FKS070	Warranty Deed	10/22/1994	12/31/2099
3-FKS071	Warranty Deed	11/16/1994	12/31/2099
3-FKS072	Warranty Deed	12/22/1994	12/31/2099
3-FKS073	Warranty Deed	1/9/1995	12/31/2099
3-FKS074	Warranty Deed	1/9/1995	12/31/2099
3-FKS075	Warranty Deed	1/9/1995	12/31/2099
3-FKS076	Warranty Deed	1/9/1995	12/31/2099
3-FKS077	Warranty Deed	3/28/1995	12/31/2099
3-FKS082	Warranty Deed	5/15/1995	12/31/2099
3-FKS083	Warranty Deed	6/16/1995	12/31/2099
3-FKS084	Warranty Deed	7/14/1995	12/31/2099
3-FKS085	Warranty Deed	10/27/1995	12/31/2099
3-FKS086	Warranty Deed	11/15/1995	12/31/2099
3-FKS087	Warranty Deed	11/27/1995	12/31/2099
3-FKS088	Warranty Deed	12/15/1995	12/31/2099
3-FKS089	Warranty Deed	12/12/1995	12/31/2099
3-FKS090	Warranty Deed	2/16/1996	12/31/2099
3-FKS091	Warranty Deed	2/19/1996	12/31/2099
3-FKS093	Warranty Deed	5/15/1996	12/31/2099
3-FKS094	Warranty Deed	6/21/1996	12/31/2099
3-FKS095	Warranty Deed	7/15/1996	12/31/2099
3-FKS096	Warranty Deed	8/9/1996	12/31/2099
3-FKS097	Warranty Deed	8/9/1996	12/31/2099
3-FKS098	Warranty Deed	10/15/1996	12/31/2099
3-FKS099	Warranty Deed	11/27/1996	12/31/2099
3-FKS100	Warranty Deed	3/7/1997	12/31/2099
3-FKS101	Warranty Deed	3/7/1997	12/31/2099
3-FKS102	Warranty Deed	3/7/1997	12/31/2099
3-FKS103	Warranty Deed	3/7/1997	12/31/2099
3-FKS104	Warranty Deed	3/5/1997	12/31/2099
3-FKS105	Warranty Deed	1/7/1999	12/31/2099
3-FKS106	Warranty Deed	7/7/1998	12/31/2099
3-FKS107	Warranty Deed	8/14/1997	12/31/2099
3-FKS108	Warranty Deed	2/29/2000	12/31/2099
3-FKS109	Warranty Deed	1/23/2001	12/31/2099

3-FKS110	Warranty Deed	12/23/1999	12/31/2099
3-FKS111	Warranty Deed	2/24/1999	12/31/2099
3-FKS112	Warranty Deed	11/24/1999	12/31/2099
3-FKS113	Warranty Deed	3/14/2000	12/31/2099
3-FKS114	Warranty Deed	5/10/2000	12/31/2099
3-FKS115	Warranty Deed	11/8/2000	12/31/2099
3-FKS116	Warranty Deed	8/15/2001	12/31/2099
3-FKS117	Warranty Deed	8/15/2001	12/31/2099
3-FKS118	Warranty Deed	9/10/2001	12/31/2099
3-FKS119	Warranty Deed	1/14/2002	12/31/2099
3-FKS120	Warranty Deed	1/17/2002	12/31/2099
3-FKS121	Warranty Deed	2/19/2002	12/31/2099
3-FKS122	Warranty Deed	2/19/2002	12/31/2099
3-FKS123	Warranty Deed	4/18/2002	12/31/2099
3-FKS124	Warranty Deed	6/13/2002	12/31/2099
3-FKS125	Warranty Deed	12/17/2002	12/31/2099
3-FKS126	Warranty Deed	6/23/2003	12/31/2099
3-FKS127	Warranty Deed	2/20/2004	12/31/2099
3-FKS128	Warranty Deed	10/10/2003	12/31/2099
3-FKS129	Warranty Deed	4/10/2003	12/31/2099
3-FKS130	Warranty Deed	3/19/2004	12/31/2099
3-FKS131	Deed of Personal Representative	8/23/2004	12/31/2099
3-FKS132	Warranty Deed	11/10/2004	12/31/2099
3-FKS134	Warranty Deed	8/1/2006	12/31/2099
3-FKS135	Warranty Deed	4/29/2005	12/31/2099
3-FKS136	Warranty Deed	5/16/2006	12/31/2099
3-FKS137	Warranty Deed	10/2/2006	12/31/2099
3-FKS138	Warranty Deed	9/29/2006	12/31/2099
3-FKS139	Warranty Deed	8/21/2006	12/31/2099
3-FKS140	Warranty Deed	9/29/2006	12/31/2099
3-FKS141	Quit Claim Deed	12/6/2005	12/31/2099
3-FKS142	Warranty Deed	5/19/2006	12/31/2099
3-FKS143	Warranty Deed	7/17/2006	12/31/2099
3-FKS144	Warranty Deed	7/18/2006	12/31/2099
3-FKS145	Trustee's Deed	9/1/2006	12/31/2099
3-FKS146	Warranty Deed	12/5/2006	12/31/2099
3-FKS147	Warranty Deed	1/24/2007	12/31/2099
3-FKS148	Warranty Deed	3/9/2007	12/31/2099
3-FKS149	Warranty Deed	3/20/2007	12/31/2099
3-FKS150	Warranty Deed	3/20/2007	12/31/2099
3-FKS151	Warranty Deed	6/15/2007	12/31/2099
3-FKS152	Warranty Deed	7/31/2007	12/31/2099
3-FKS153	Warranty Deed	8/31/2007	12/31/2099
3-FKS154	Warranty Deed	2/8/2008	12/31/2099
3-FKS155	Warranty Deed	1/23/2008	12/31/2099
3-FKS156	Warranty Deed	1/23/2008	12/31/2099
3-FKS157	Warranty Deed	4/25/2008	12/31/2099

3-FKS158	Warranty Deed	6/5/2008	12/31/2099
3-FKS159	Warranty Deed	6/16/2008	12/31/2099
3-FKS160	Warranty Deed	6/17/2008	12/31/2099
3-FKS161	Warranty Deed	1/23/2009	12/31/2099
3-FKS162	Warranty Deed	6/4/2009	12/31/2099
3-FKS163	Warranty Deed	12/17/2009	12/31/2099
3-FKS164	Warranty Deed	4/8/2010	12/31/2099
3-FKS165	Warranty Deed	5/13/2010	12/31/2099
3-FKS166	Warranty Deed	5/12/2010	12/31/2099
3-FKS167	Warranty Deed	5/12/2010	12/31/2099
3-FKS168	Warranty Deed	10/6/2010	12/31/2099
3-FKS169	Warranty Deed	11/1/2010	12/31/2099
3-FKS170	Warranty Deed	11/1/2010	12/31/2099
3-FKS171	Warranty Deed	10/29/2010	12/31/2099
3-FKS172	Warranty Deed	11/24/2010	12/31/2099
3-FKS173	Warranty Deed	12/8/2010	12/31/2099
3-FKS174	Warranty Deed	12/21/2010	12/31/2099
3-FKS175	Warranty Deed	1/27/2011	12/31/2099
3-FKS176	Warranty Deed	1/27/2011	12/31/2099
3-FKS177	Warranty Deed	4/1/2011	12/31/2099
3-FKS178	Warranty Deed	5/20/2011	12/31/2099
3-FKS179	Warranty Deed	5/15/2011	12/31/2099
3-FKS180	Warranty Deed	9/2/2011	12/31/2099
3-FKS181	Warranty Deed	12/16/2011	12/31/2099
3-FKS182	Warranty Deed	12/27/2011	12/31/2099
3-FKS183	Warranty Deed	3/23/2012	12/31/2099
3-FKS184	Warranty Deed	8/31/2012	12/31/2099
3-FKS185	Warranty Deed	12/18/2012	12/31/2099
3-FKS186	Warranty Deed	4/9/2013	12/31/2099
3-FKS187	Warranty Deed	7/8/2014	12/31/2099
3-FKS188	Warranty Deed	8/15/2014	12/31/2099
3-FKS189	Warranty Deed	10/21/2014	12/31/2999
3-FKS190	Warranty Deed	12/23/2014	12/31/2099
3-FKS191	Warranty Deed	5/5/2015	12/31/2099
3-FKS192	Warranty Deed	1/6/2015	12/31/2099
3-FKS193	Warranty Deed	1/30/2015	12/31/2099
3-FKS194	Warranty Deed	8/5/2015	12/31/2099
3-FKS195	Warranty Deed	8/5/2015	12/31/2099
3-FKS196	Warranty Deed	11/4/2015	12/31/2099
3-FKS197	Warranty Deed	12/22/2015	12/31/2099
3-FKS198	Warranty Deed	12/21/2015	12/31/2099
3-FKS199	Warranty Deed	1/11/2016	12/31/2099
3-FKS200	Warranty Deed	5/13/2016	12/31/2099
3-FKS201	Warranty Deed	11/29/2016	12/31/2099
3-FKS202	Warranty Deed	12/8/2017	12/31/2099
3-FKS203	Warranty Deed	12/28/2018	12/31/2099
3-FKS204	Warranty Deed	2/14/2019	12/31/2099

3-FKS205	Warranty Deed	6/5/2019	12/31/2099
3-FKS206	Warranty Deed	11/18/2019	12/31/2099
3-FKS207	Warranty Deed	12/20/2019	12/31/2099
3-FKS208	Warranty Deed	3/9/2020	12/31/2099
3-FKS209	Warranty Deed	1/30/2020	12/31/2099

3.4 SIGNIFICANT ENCUMBRANCES TO THE PROPERTY

The Falkirk Mine currently has no significant encumbrances to the property. No Notice of Violations (NOVs) have been issued at the Falkirk Mine in the past three years. Permitting requirements are discussed in Section 17.0 of this TRS.

3.5 SIGNIFICANT FACTORS AND RISKS

Falkirk has not identified any significant risks that may affect the right or ability to perform work on the property. Each lease and special obligations for each lease are reviewed on an annual basis to ensure there is no lapse in lease continuation or payments. If a lease expires or a payment lapses, the landowner may choose not to release this property for mining.

3.6 REGISTRANT ROYALTIES AND INTERESTS

Discussed in Section 3.3 of this TRS.

4.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

4.1 PHYSIOGRAPHY, TOPOGRAPHY AND VEGETATION

The Falkirk Mine, located in McLean County, North Dakota (ND) occurs in the physiographic region of North Dakota known as the "Coteau Slope" and is dominated by landforms that are primarily glacial in origin. Glacial sediments or drift belonging to the Coleharbor Formation were deposited over the land comprising this area during the Wisconsin Age. The maximum relief of the Falkirk Mine is approximately 360 feet (msl), with the elevation ranging from 1720 feet (msl) in the Missouri River Watershed drainage to the south to nearly 2080 feet (msl) in the Lake Audubon Watershed drainage to the north. Topographic features of the Falkirk Mine are shown on Figure 4.1 in the Supplemental Figures Attachment (Pre-mining Topography).

The Soil Survey of McLean County indicates that 95 percent of the acreage is in farms and the land-use is approximately 73 percent cultivated cropland. Vegetative baseline studies of the permitted areas further indicate the prominent vegetation of the Falkirk Mine to be cropland Other vegetative designations include native grassland, tame pastureland, shelterbelts, fish and wildlife habitat and wetlands.

4.2 ACCESSIBILITY

Local access to the Falkirk Mine is by way of Highway 83 between Washburn, ND and Underwood, ND. The mine access road, 1st Street SW, connects to Highway 83 and is approximately 2 miles long.

Travel to the Falkirk Mine by air is possible using the Bismarck Airport in Bismarck, ND, approximately 55 miles south of the mine, and then using ground transportation, traveling via Highway 83.

The main railway systems near the Falkirk Mine are Canadian Pacific, BNSF, and Dakota Missouri Valley & Western (DMVW). DMVW crosses through the Falkirk Mine Reserve.

4.3 CLIMATE

The climate at the Falkirk Mine can be characterized as continental with a semi-arid moisture regime. The region receives about 16 inches of moisture annually, 75% of which occurs as rain during the spring, summer and fall months, with the remaining 25% occurring as snow during the winter months. The average length of the growing season is about 130 days. Temperatures throughout the region range from a mean of 7º F. during January, which is the coldest month of the year, to a mean of 69º F. during July, which is typically the warmest month of the year.

4.4 LOCAL RESOURCES AND INFRASTRUCTURE

The towns of Washburn and Underwood are within a 10-mile radius of the Falkirk Mine, the towns of the Riverdale and Turtle Lake are within a 25-mile radius and the towns of Bismarck, Mandan and Minot are within a 60-mile radius. These communities provide a vast portion of the employment base at the Falkirk Mine and the CCSPP.

The Falkirk Mine sources power for mine office facilities and operations from the CCSPP. Water for the mine main office facilities also comes from the CCSPP, but Falkirk's East shift change building receives water from McLean-Sheridan Rural Water. Fuel for equipment is supplied by Dale's Petroleum Services, Inc., Enerbase Cooperative Services, Farstad Oil, Inc., and Marthon Petoleum Cooperation. These companies are located in Bismarck, Fargo and Minot, ND. The Falkirk Mine has all supporting infrastructure for mining operations. See Section 15.0 for further detail pertaining to the mine specific infrastructure.

5.0 HISTORY OF THE PROPERTY

The general information provided below is summarized in the Falkirk Mine North Dakota State Mining Permits. Insert permit information

5.1 PREVIOUS OPERATIONS

The Falkirk Mining Company is the owner and operator of the Falkirk Mine.

Construction of the Falkirk Mine began in 1975 and deliveries began in October 1978 to the CCSPP owned by Great River Energy.

There were several small underground mines and one small surface mine, all operated and closed in the mid 1900's, on Falkirk Mine property.

5.2 EXPLORATION AND DEVELOPMENT HISTORY

The Falkirk Mine's initial reserve base began with a coal field known as the Underwood Coalfield. The Underwood Coalfield is roughly a circular deposit ranging from 6 to 8 miles in diameter with the City of Underwood near the center. The Paleocene lignite deposits of the field are bounded by buried Pleistocene glacial channels.

The presence of coal around the City of Underwood has been known since the early pioneer days when farmers dug lignite by hand from erosional banks. Later, small to medium underground mines developed to exploit the resource. The last of the underground mines closed in the early 1950s.

Combined with these old coal mines, there were numerous groundwater wells reporting coal of some thickness. In fact, the coal seams of the Underwood Coalfield are local groundwater aquifers. This lead to government and university studies that began to define the lignite coal geology of the area.

In the late 1960s and early 1970s, The North American Coal Corporation conducted exploration drilling programs to define the lignite resources in the area. These drillholes were mostly rotary holes drilled with air/mist, while some were drilled with mud. These early holes were very widely spaced; however, the data was sufficient to show the existence of a very large lignite coal reserve.

Based on the early drilling data, The North American Coal Corporation developed a contract with a utility to build a mine adjacent to a new power plant on the site. The power plant and mine facilities were located on the southern glacial channel so as to not cover up any of the coal reserve. Extensive drilling and coring programs were also initiated in 1974 and 1975 to more accurately define the coal resources of the area. In general, these drill holes were on a 2-mile spacing; with some further and some closer apart.

The 1974 and 1975 drilling and coring data was used to determine the initial mine plan and was the basis for a 20-year cost of coal study. With this engineering study, an area was defined for a state permit application; requiring additional drilling and analysis of overburden and coals. This permit drilling was conducting in 1976 and 1977. The 1977 drilling also began to fill in the drill hole spacings in future mining areas. Since then, the Falkirk Mine has conducted annual drilling programs with 3 primary objectives:

1. Drill and core on the required 40-acre (1,320 foot) spacing for mining permit applications. Mining permits have a maximum term of 5-years.
2. Drill and core areas to help improve mining efficiency. These areas include buried sub-crop lines, weathered coal areas, and high sulfur and/or sodium areas.
3. Continue to reduce the grid spacing in future mine areas to further define the coal.

Throughout the 50+ year history of the Falkirk Mine's coalfield, The North American Coal Corporation has always used policies, protocols and procedures to ensure the accuracy and integrity of the drilling and coring data. Experienced geologists have always been on the drill rigs or supervising the engineers and/or students on the drill rigs. However, technologies and understandings change. Prior to 1976, the Falkirk Mine did not have a survey grid established. Hence, drill hole locations and elevations were read from USGS topographic quadrangle maps. Also, prior to 1975, geophysical logging on shallow coal exploration holes was not a common practice. This caused errors and deviations in locations, elevations and depths, especially as compared to more modern methods with higher levels of control. Consequently, all drilling data prior to 1976 has been deleted from Falkirk Mine's databases and is no longer used for modeling and reserve-resource estimates. It was good information at the time, but it has all been replaced by more accurate and controlled data. In addition, Falkirk has developed drilling, logging, and laboratory analysis contracts to help control data accuracy and integrity. Internal documents have also been developed that spell out step by step details of how drilling and sampling will be conducted.

Construction of the Falkirk Mine began in 1975. Coal removal began in 1978 and the CCSPP (2-units , each at 550 MW's) started Unit #1; Unit #2 started in 1979. The North American Coal Corporation made a lease trade with the Consolidated Coal Company (Consol) in the mid-1980s. North American gave Consol underground coal reserves in Ohio and received coal reserves in North Dakota. These North Dakota coal reserves lie immediately south-southwest of the Underwood Coal Field.

The coal reserves from Consol were incorporated into the Falkirk Mine and became known as the Riverdale Coalfield. Falkirk did receive copies of all of Consol's drilling data in the area. However, it was lacking in survey accuracy, geophysical logging, as well as known control systems. Thus, beginning in 1989, the Falkirk Mine began a drilling program to redrill all of Consol's old drill holes and to begin completing drill hole on grids to support mining permit applications and future mine plans. Initial mining of the Riverdale Coalfield began in 1994 .

6.0 GEOLOGICAL SETTING, MINERALIZATION AND DEPOSIT

6.1 REGIONAL AND LOCAL GEOLOGY

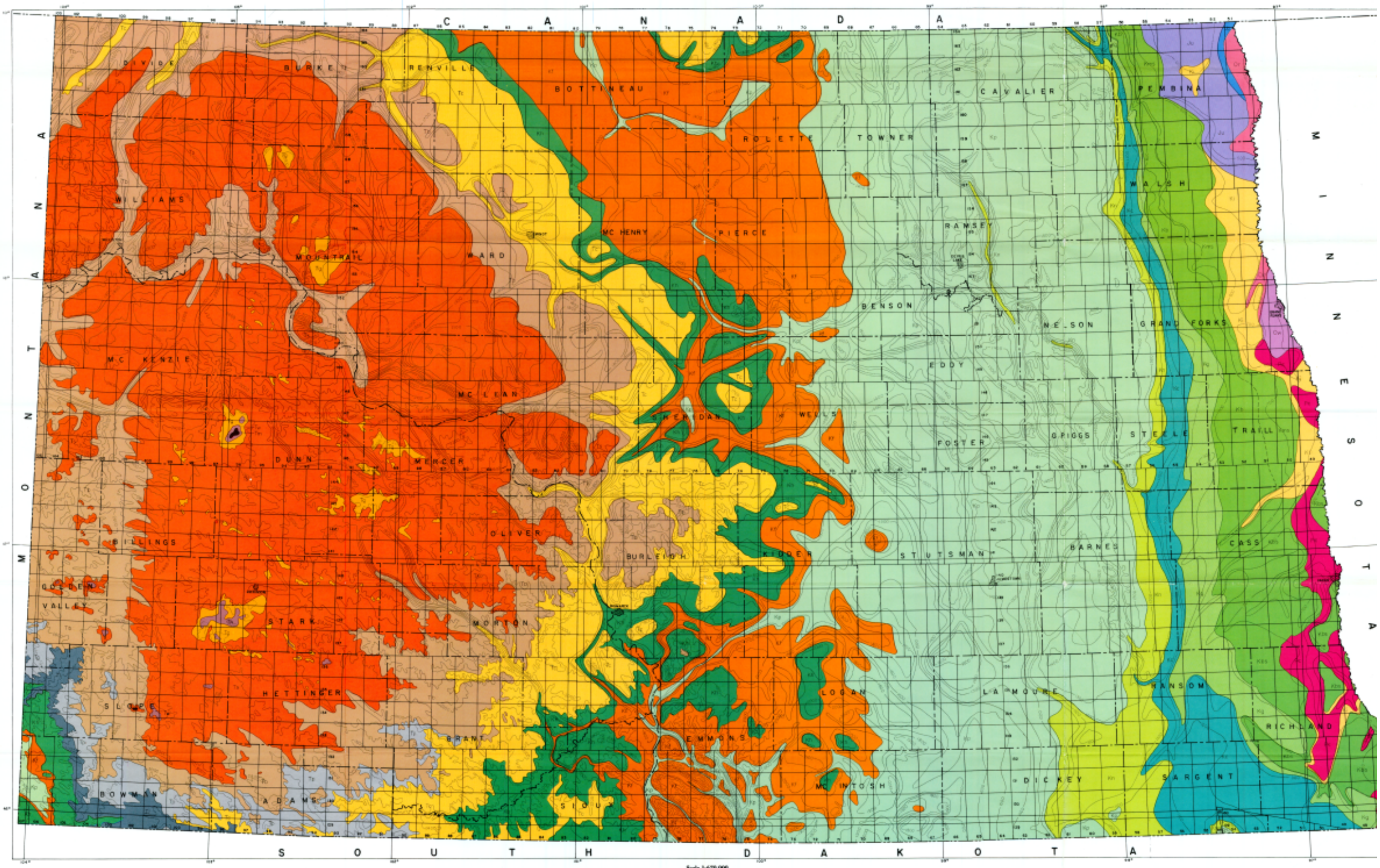
The Falkirk Mine is located in the Sentinel Butte Formation of the Fort Union Group (Figure 6.1) which is one of the most prolific lignite-bearing stratum in the state. Substantial information has been gathered during exploration drilling programs within the region since the late 1960s. These data were the fundamental tools used in characterizing substrate composition, geometry, and structure of the Falkirk Mine lignite deposit prior to mining. Understanding of the local geology has continued with regular, fill-in drilling exploration programs and mining operations.

GEOLOGIC AND TOPOGRAPHIC BEDROCK MAP OF NORTH DAKOTA

Miscellaneous Map 25
1983

By
John P. Bluemle

NORTH DAKOTA GEOLOGICAL SURVEY
Don L. Halvorson, State Geologist



Scale 1:670,000

DISCUSSION

USES OF THE MAP

The following descriptions of the lithologic units are generalized insofar as they refer to the units statewide rather than in the areas of subcrop shown on the map.

	UPPER AND MIDDLE TERTIARY ROCK, UNDIVIDED—Butte caprock consisting of fluvial or lacustrine sandstone or limestone of Oligocene, Miocene, or Pliocene age; may include the White River Group in some areas or the Killdeer Formation (informal unit) on the Killdeer Mountains; as thick as 120 metres (400 feet).
Tw	**WHITE RIVER GROUP (OLIGOCENE)**—Brule Formation: Pinkish siltstone, clay, and sand; river and lake sediment; as thick as 50 metres (150 feet). Chadron Formation: Light-colored sand with quartzite and porphyry pebbles, overlain by dark clay; river and lake sediment; as thick as 30 metres (100 feet).
Tg	**GOLDEN VALLEY FORMATION (EOCENE AND PALEOCENE)**—Upper member: Yellowish-brown micaceous sandstone, sand, silt, and clay; fluvial sediment; as thick as 60 metres (200 feet). Lower member: White or yellow clay, silt, and sand; a weathering zone developed on underlying unit; as thick as 20 metres (65 feet).
Ts	**SENTINEL BUTTE FORMATION (PALEOCENE)**—Grayish-brown silt, sand, clay, sandstone, and lignite; river, lake, and swamp sediment; as thick as 200 metres (600 feet).
Tb	**BULLION CREEK FORMATION (PALEOCENE)**—Yellowish-brown silt, sand, clay, sandstone, and lignite; river, lake, and swamp sediment; as thick as 200 metres (600 feet).
Tp	**SLOPE FORMATION (PALEOCENE)**—Grayish-brown and yellowish-brown silt, sand, clay, sandstone, and lignite; river, lake, and swamp sediment; as thick as 100 metres (300 feet).
Tc	**CANNONBALL FORMATION (PALEOCENE)**—Olive-brown sand, shale, and sandstone; marine shoreline and offshore sediment; as thick as 120 metres (400 feet).
Tl	**LUDLOW FORMATION (PALEOCENE)**—Grayish-brown and yellowish-brown silt, sand, clay, sandstone, and lignite; river, lake, and swamp sediment; as thick as 100 metres (300 feet).
Kh	**HELL CREEK FORMATION (UPPER CRETACEOUS)**—Gray sand, silt, clay, and sandstone; river sediment; as thick as 150 metres (500 feet).
Kf	**FOX HILLS FORMATION (UPPER CRETACEOUS)**—Olive-brown sand, shale, and sandstone; marine shoreline and offshore sediment; as thick as 120 metres (400 feet).
Kp	**PIERRE FORMATION (UPPER CRETACEOUS)**—Dark-gray shale; marine offshore sediment; as thick as 700 metres (2,300 feet).
Kn	**NIOBRARA FORMATION (UPPER CRETACEOUS)**—Light-brown to dark-gray calcareous shale; marine offshore sediment; as thick as 75 metres (250 feet).
Kc	**CARLILE FORMATION (UPPER CRETACEOUS)**—Dark-gray shale; marine offshore sediment; as thick as 120 metres (400 feet).
Kg	**GREENHORN FORMATION (UPPER CRETACEOUS)**—Dark-gray calcareous shale; marine offshore sediment; as thick as 45 metres (150 feet).
Kb	**BELLE FOURCHE FORMATION (UPPER CRETACEOUS)**—Medium- to dark-gray, silty to sandy shale; marine offshore sediment; as thick as 105 metres (350 feet).
Kbs	**BELLE FOURCHE–SKULL CREEK, UNDIVIDED (LOWER TO UPPER CRETACEOUS)**—Belle Fourche Formation (as described above). Mowry Formation: Medium- to dark-gray shale; marine offshore sediment; as thick as 55 metres (180 feet). Newcastle Formation: Light-gray, fine- to medium-grained sandstone; marine shoreline and offshore sediment; as thick as 45 metres (150 feet). Skull Creek Formation: Medium-gray to dark-gray shale; marine offshore sediment; as thick as 40 metres (140 feet).
Kms	**MOWRY–SKULL CREEK, UNDIVIDED (LOWER TO UPPER CRETACEOUS)**—Mowry, Newcastle, and Skull Creek Formations (as described above).
Ki	**INYAN KARA (LOWER CRETACEOUS)**—Light-gray, fine to coarse sandstone and gray shale; river, lake, and nearshore marine sediment; as thick as 135 metres (450 feet).
Ju	**UNDIFFERENTIATED JURASSIC SEDIMENTS**—Dark-gray, greenish, and varicolored shale with local limestone (Swift and Rierdon Formation equivalents); mainly nearshore marine sediments; as thick as 180 metres (600 feet).
Jp	**PIPER FORMATION EQUIVALENT (JURASSIC)**—White to buff, brown, or gray limestone, gypsum, and anhydrite; offshore marine sediments; as thick as 190 metres (625 feet).
Or	**RED RIVER FORMATION (ORDOVICIAN)**—Yellowish- to brownish-gray limestone and dolomite; offshore marine sediment; as thick as 215 metres (700 feet).
Ow	**WINNIPEG GROUP (ORDOVICIAN)**—Light-gray to greenish-gray shale and light-gray sandstone; marine nearshore and offshore sediment; as thick as 125 metres (400 feet).
p€	**PRECAMBRIAN ROCKS**—Greenschists and amphibolites; banded iron formation; stretched pebble conglomerates; metabasalt; serpentinite; felsic tuff; mylonite; intermediate felsic plutonic rocks; migmatite; layered gneiss.

Figure 6.1. Geologic and Topographic Bedrock Map of North Dakota (Bluemle, 1983)

The coal bearing stratigraphy of North Dakota is depicted on Figure 6.2.

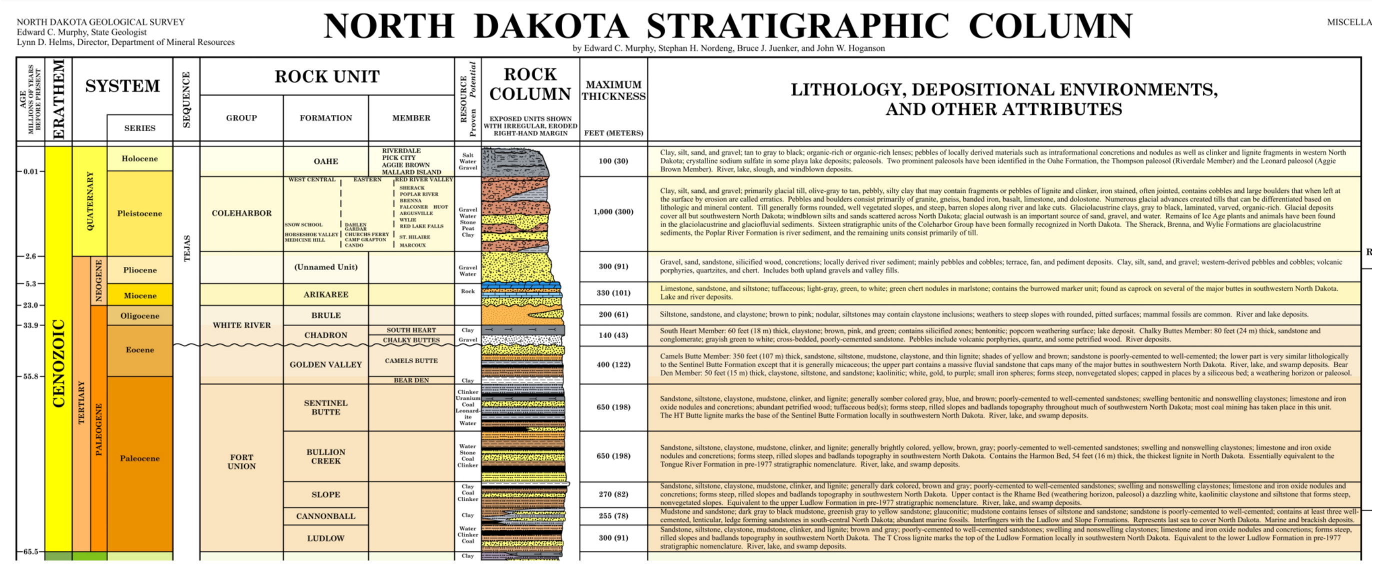


Figure 6.2. Coal Bearing Stratigraphic Column of North Dakota (Murphy, et al, 2009).

Structurally, the area is located on the east flank of the Williston Basin, an intercratonic basin containing a thick sequence of sedimentary rocks. The basin dominates the structural characteristics of much of North Dakota, northwestern South Dakota, eastern Montana, and parts of Manitoba and Saskatchewan. The center of the basin is located near the city of Williston, North Dakota, approximately one hundred twenty-five (125) miles northwest of the reserve. The Williston Basin contains sedimentary rocks of every geologic period from the Cambrian (600 million to 500 million years ago) through the Tertiary (65 million to 3 million years ago).

The stratigraphy of the reserve area has been influenced by the deposition from epicontinental seas and by basinal subsidence. The history of the extensive deposition and subsidence can be divided conveniently into the sequence subdivisions (Sauk, Tippecanoe, Kaskaskia, Absaroka, and Zuni) based on the major unconformities within the preserved section. These epicontinental seas deposited a wide range of sedimentary rocks in the basin, mainly carbonates, evaporites, and shales. Regression of the Zuni Sea and successive episodes of the Laramide Orogeny resulted in the deposition of a continuum of marine and terrestrial (Late Cretaceous - Early Tertiary) sedimentary rocks. The terrestrial strata consist of a sequence of sediment transported eastward from western source areas by Early Tertiary fluvial systems. It is doubtful that positive structures (with the exception of the Black Hills uplift) capable of exerting major influence on the dispersal of sediments were present on the craton, but negative structures did influence sediment accumulation and preservation.

The economically minable coals in the reserve occur in the Sentinel Butte Formation (Paleocene) and the Bullion Creek Formation (Paleocene) and are unconformably overlain by the Coleharbor Formation (Quaternary). The Sentinel Butte Formation conformably overlies the Bullion Creek Formation.Paleocene deposition was initiated by an influx of coarse sediment dispersed eastward and southeastward, in deltaic fashion, across early Bullion Creek swamps. The paleoslope appears to have been variable, both in magnitude and in direction, and reflects Paleocene tectonism to the west and northwest. The elevation of western North Dakota, relative to base level, increased during Sentinel Butte time and probably reflects increased deposition to basinal subsidence. After the close of the Oligocene Epoch (26 million years ago), erosion was the predominant process affecting the existing landscape. This was a time of development of an integrated drainage system over much of the area. The topography of the area in the early Pleistocene was probably similar to the present topography in areas of thin glacial drift.

The area was affected by all four (4) of the major Pleistocene (3 million to 10 thousand years ago) glaciations. Each glacial episode modified the previous landscape through erosional and depositional processes. The area was most recently glaciated during the Wisconsinan stage. During early Wisconsinan (50 thousand years ago) time, the Napolean ice advanced across the area depositing drift on a rolling topography that was mainly bedrock with only a thin veneer of pre-Wisconsinan drift in the topographic lows. Most of the pre-Wisconsinan drift had been removed by erosional processes by the time Napolean ice advanced across the area. The present topography of the general area is mainly stream-dissected bedrock with a veneer of glacial sediments. A few buried glacial meltwater channels are also present.

The reserve area is situated on a glacially modified upland drainage divide of relatively low relief. The reserve is defined on the south and west by the present day Missouri River Valley. The northern and eastern extents of the field are defined by pre-glacial channels that have subsequently been modified by glacial and interglacial activity. The valley to the east is incised by a glacial meltwater channel (Coal Lake Coulee). The valley bisecting the reserve, whose surface is now occupied by the Weller Slough Complex, appears to have been a main tributary of the pre-glacial Knife River. This bisecting valley divides the reserve into two coalfields, locally referred to as the Underwood Coal Field to the north and the Riverdale Coal Field to the south.

The Bullion Creek Formation (Paleocene) underlies much of the reserve area. The Sentinel Butte Formation (Paleocene) conformably overlies the Bullion Creek Formation. Lithologically, the two formations are very similar. Interbedded silts and clays that occur in beds that range in thickness from less than one (1) foot to tens of feet make up about sixty) to eighty percent of the sediment of the Bullion Creek and Sentinel Butte Formations. From fifteen to thirty-five percent of the sediment making up these formations consists of silty, fine-grained to medium-grained sand in beds that range in thickness from one-half (½) to one hundred feet. Lignite is a minor constituent, generally comprising less than five percent of the formations. The lignite occurs in beds ranging in thickness from less than one-tenth) foot to about fifteen feet locally. The Coleharbor Formation (Pleistocene) unconformably overlies the Sentinel Butte and Bullion Creek Formations. It includes all of the unconsolidated sediments resulting from deposition during glacial and interglacial periods. Lithologic types include gravel, sand, silt, clay, and till. The Oahe Formation (Holocene) occurs as a thin veneer of eolian silt sized sediment that blankets upland surfaces in the area. The modified glacial channels that delineate the reserve limits are in-filled with sediments of the Coleharbor Formation. The channel fill systems contain a complex of interbedded glaciofluvial gravels, sands, silts, and clays overlain by till. The coarser gravel and sand beds are generally limited to near the bottom of the channel fill.

The general stratigraphic sequence in the upland portions of the reserve area (Sentinel Butte Formation) consists of till, silty sands and clayey silts, main Hagel (Hagel A) lignite bed, silty clay, lower lignite of the Hagel lignite interval (Hagel B), and silty clays. Both the Hagel A Bed and the Hagel B Bed are split by clay partings in portions of the reserve; although the two beds are not split in the same areas. Where the beds have partings, the splits are refered to as Hagel A1, Hagel A2, Hagel B1, and Hagel B2. There are thinner beds of lignite above the Hagel bed in some areas. These thin lignite beds are part of the Kinneman Creek seam. The Kinneman Creek in most areas is thin, very weathered, and very high in ash. In areas where it is mineable it can reach up to 3.5 feet thick and is lower in ash. Where the Kinneman Creek is parted, it is refered to as the Upper Kinneman Creek and Lower Kinneman Creek.

Near the contact of the Sentinel Butte and Bullion Creek Formations in a complex of sands and thin (less than one (1) foot) lignite beds locally referred to as the C Sand and C Seam. As in the Sentinel Butte, the Bullion Creek Formation consists of till, silty sands and clayey silts, main Tavis Creek lignite bed, silty clay, and silty clays. The Tavis Creek Bed is split by a clay parting in portions of the reserve. Where the bed has a parting, the splits are referred to as Upper Tavis Creek and Lower Tavis Creek. There are thin lignite beds immediately above and/or below the Tavis Creek in many areas. The first of these thinner seams below the Tavis Creek bed is the Coal Lake Coulee seam. The Coal Lake Coulee seam parted in areas of the reserve and the splits are refered to as the Upper Coal Lake Coulee and the Lower Coal Lake Coulee. Below the Coal Lake Coulee seam, there is a repeating sequence of silty to sand clays with generally thin lignite beds.

Geologic cross-sections A-A', B-B', C-C', M-M', and N-N' (Figure 6.3 in the Supplemental Figures Attachment through the Underwood Reserve, were constructed using data compiled from existing drill holes to illustrate the subsurface relationships of the above mentioned stratigraphic units. The compiled data is based on the drill hole data but is in the form of 3D grid files (a geologic model)

Geologic cross-sections A-A', B-B', C-C', D-D', E-E', F-F' and G-G' (Figure 6.4 in the Supplemental Figures Attachment) through the Riverdale Reserve, were constructed using data compiled from existing drill holes to illustrate the subsurface relationships of the above mentioned stratigraphic units. The compiled data is based on the drill hole data but is in the form of 3D grid files (a geologic model).

7.0 **EXPLORATION**

No exploration work other than drilling and associated geophysical logging has been conducted at the Falkirk Mine. Geophysical logging is discussed with drilling in Section 7.1 of this TRS.

7.1 DRILLING EXPLORATION

Data collected during drilling exploration programs at the Falkirk Mine is the sole information available for modeling the lignite deposit for the determination of Mineral Resources. Following coal industry standards, the sampling method used by the Falkirk Mine for modeling quality of the lignite deposit is exclusively core drilling. The Falkirk Mine lignite deposits are evaluated on a seam by seam basis. Drilling exploration data including geologic lithologies, qualities, and hole locations have been compiled in an electronic, geologic database. The information below summarizes the related drilling records.

7.1.1 DRILLING METHODS

Drilling exploration programs conducted at the Falkirk Mine have comprised largely of rotary air/mist or mud drilling methods. For the purpose of this discussion, senior geologist and field geologist refer to qualified representatives of Falkirk and/or NACoal. Historically, Falkirk has contracted independent drilling services and geophysical logging services. Drill holes completed at the Falkirk Mine are vertical in orientation and have been broken into four categories which are described below. A drill hole collar location map for the Falkirk Mine is presented in Figure 7.1 in the Supplemental Figures Attachment

Exploratory drill holes, also referred to as pilot holes, typically range in size 5.0 inches (outer hole diameter, od) and terminate at a minimum of 12-feet below the lowest targeted lignite seam as specified by the senior geologist to allow for proper geophysical logging. Cuttings are recovered by the contracted driller on a 5-foot interval and are described by the field or senior geologist. All pilot holes are geophyscially logged for natural gamma, density, caliper, and resistivity responses.

Coal core holes to collect samples for quality assessment are advanced next to pilot holes at specified locations. Core holes are typically 5.6-inches (outer diameter, od) to the point where coring starts, then through coring 4.6-inches (od) with a respective sample diameter of 3.0-inches (od). Samples are collected with a split double core barrel. Coring intervals are determined by the field geologist and reviewed by the senior geologist based on the pilot hole's geophysical log and cuttings descriptions. Core holes terminate one to two feet below the lowest targeted lignite seam. 90-percent coal core recovery is required such that the field or senior geologist logging the sample can clearly define the roof and floor of the lignite seam (see Section 8.0 for discussion on sample preparation). It is standard practice to only geophysically log the adjacent pilot hole because of its close proximity to the core hole. In unique cases, the core hole may be geophysical logged if there appears to be a discrpency in thickness or elevation between the rotary hole and core hole. with the field logs and quality data for determination of lithologic intervals to be modeled.

Overburden core holes are drilled following the same protocol to the coal cores as described above with the addition of collecting overburden, interburden and underburden samples at five foot intervals. These samples bagged and sent to the lab for textural and geochemacial in addition to lignite, which are shipped to a separate soil lab for geochemical analysis. Data specific to the coal cores collected during these overburden core sampling programs have been reviewed by the QP for inclusion in the geological model.

The fourth, and final, category of drill holes comprise of geotechnical holes and monitoring wells which have been geophysically logged and extend through multiple coal seams. These drill holes follow the parameters outlined for pilot holes and available data has been reviewed by the QP.

7.1.2 GENERAL DRILLING PROCEDURES

Details may vary with each exploration program, however general procedures for drilling at Falkirk Mine include:

- Identification of land control; acquire drilling leases for properties not owned or previously leased.
- Site preparation.
- Rotary wash drilling by an independent drilling contractor; cuttings are collected every 5-feet to final depth.

- Field geologist logs description of cuttings including depth, texture, general color.
- Independent contractor geophysically logs drill hole for natural gamma, density, caliper, and resistivity.
- Field geologist reviews geophysical log.
- Hole determined complete, and abandoned by independent drilling contractor in accordance with regulatory requirements.
- Survey drill hole collar location.

To continue with a coal core hole:

- Coring intervals determined by field or senior geologist from pilot hole geophysical log.
- Coal core drilling by an independent drilling contractor.
- Core extracted from barrel by independent drilling contractor and placed in logging tray.
- Field geologist cleans core sample of drilling mud, measures the core length and identifies the roof and floor. If recovery is less than 90-percent, independent drilling contractor may attempt to retrieve the remaining core from the current hole. If no success, the core run interval will be “re-cored” as an additional core hole.
- Field geologist logs the core including depths, fractures, texture, color, and characteristics of the lignite.
- Field geologist double bags and double tags sample.
- Once all intervals are cored, independent contractor geophysically logs drill hole.
- Field geologist reviews geophysical log.
- Hole determined complete, and abandoned by independent drilling contractor in accordance with regulatory requirements.
- Survey drill hole collar location.

Additional drilling tasks include:

- Maintaining daily drilling report and record of collected samples.
- Proper storage of lignite core samples in secure location of the mine office and transfer to the warehouse to prepare for shipment to laboratory.

7.1.3 DRILLING EXPLORATION PROGRAMS

As previously discussed in Section 5.2 of this document, numerous drilling exploration programs have been conducted at the Falkirk Mine. Over 5,400 exploration holes have been drilled. Approximately 2,100 of those holes were sampled for quality assessment.

As a whole, Falkirk plans exploration activities to attain an average 1,320-foot drilling density for the ten-year projection ahead of active mining operations. Physical constraints such as stream buffers can affect the final drilling density. This spacing allows operations to optimize seam blending efforts to ship a steady fuel quality to the power plant. It should be noted for the purpose of Mineral Resource estimations and Life of Mine (LOM) projections, the QP has determined a high to moderate level of confidence in a minimum drill hole spacing of 1,320-feet. This confidence comes from the continuity of the lignite seams including both lithologic and quality characteristics, as well as the ability to compare modeled seam projections to active and historical mining operations.

7.2 HYDROGEOLOGIC CHARACTERIZATION

7.2.1 GROUNDWATER STUDIES

Falkirk is conducting ground water monitoring over an extensive area. A Ground Water Monitoring Plan (GWMP) was developed for the Underwood and Riverdale Coal fields and implemented at the Falkirk Mine is intended to fulfill the requirements of North Dakota Administrative Code sections 69-05.2-09-12 and 69-05.2-16-14. The purpose behind the design and implementation of the ground water monitoring plan is threefold; investigate and quantify the pre-mining hydrologic conditions of permitted and adjacent areas, monitor impacts on the ground water hydrology of the area due to surface mining operations and climatic conditions, and monitor and quantify post-mining ground water conditions. A sustained program of ground water data collection also serves to substantiate projected impacts to the hydrology of the permit area as outlined in the probable hydrologic consequences section of each permit application.

The current monitoring well inventory for the Falkirk Mine is listed in Section 2.2 (NAFK-8405, NAFK-8705, NAFK-9503 and NAFK-9601) of the Riverdale and Underwood permits, Well Inventory and Monitoring Schedule. This inventory includes active, inactive, and destroyed monitoring wells. Section 2.2 (NAFK-8405, NAFK-8705, NAFK-9503 and NAFK-9601) also lists the frequency at which water levels and water quality samples are taken. In addition to the monitoring schedule, the Completion Details of Monitoring Wells lists the location of the well, top of casing and ground surface elevations, depths to the top and bottom of the well screen, and the stratum in which the monitoring well is located. All available monitoring well installation and construction information is also contained in 2.2 (NAFK-8405, NAFK-8705, NAFK-9503 and NAFK-9601). Information is included for active, inactive, and destroyed wells. As required by NDAC 69-05.2-08-06(1)(d), available lithologic logs, geophysical logs, well construction reports and diagrams, and well completion reports are presented.

Water levels are reported to the North Dakota Public Service Commission quarterly, within 30 days following the close of each quarter. In the event that access to a monitoring well is denied throughout a quarter due to persistent climatic conditions or circumstances beyond Falkirk's control, then documentation to this effect will be submitted with the quarterly monitoring report.

Water quality samples are analyzed, at a minimum, for the parameters required by NDAC 69-05.2-08-06(1)(e). Sample results will be reported to the North Dakota Public Service Commission (NDPSC) annually within 30 days following the fourth calendar quarter. Wells with adequate water production will be sampled after purging, at a minimum, the volume of stale water calculated to exist in the well, or when the water's measured parameters for pH and electrical conductivity have reached stabilization. Low producing wells will be purged, allowed to recover, and sampled within twenty-four hours of purging. Wells with insufficient water volume to allow for collection of a representative sample will be documented to that effect in the annual groundwater quality report, in addition to any other condition that may prevent a well from being sampled.

The post-mining monitoring well network consists of wells existing in undisturbed areas and wells installed in reclaimed areas to monitor the quality and elevation of groundwater flowing into and out of the reclaimed spoils. Installation of reclamation monitoring wells in reclaimed areas will be accomplished after SPGM respread, preferably after the establishment of a viable vegetative cover. Generally, reclamation monitoring wells will be placed in the vicinity of pre-mining well sites with screened intervals placed in the same strata where possible. The replacement of wells at pre-mining well sites will facilitate pre- and post-mining hydrogeologic comparisons. The reclamation well installations will concentrate on screening the base of the spoils, with additional wells placed in the next lower aquifer. Information from these initial well installations will determine the need for additional installations.

Locations of destroyed and existing ground water monitoring wells, along with certified domestic wells and springs are shown on Figure 7.2 in the Supplemental Figures Attachment, Groundwater Map excerpted from Falkirks's Groundwater Monitoring Plan. Many of the destroyed wells were once part of the monitoring program and part of the baseline aquifer testing, but were destroyed due to mining operations or due to being no longer needed.

The major hydrostratigraphic units in the study area consist of glacial till (pebble loam) and glaciofluvial sands and gravels of the Coleharbor Formation; Hagel A Lignite bed (upper split of the Hagel bed), the Hagel B Lignite bed (lower split of the Hagel bed), and the C sand (a sandy-silty zone of stratum below the Hagel B bed) of the Sentinel Butte Formation; and the Tavis Creek Lignite bed, the Coal Lake Coulee Lignite, and the Hensler sand of the Bullion Creek Formation. Above the Hagel bed is a carbonaceous unit that correlates to the Kinneman Creek Lignite bed. Over most of the study area, this unit is primarily carbonaceous clay with thin interbedded lenses of lignite. Locally, the lignite does develop into the dominant lithology and may act as a local aquifer. Because of its usually shallow depth, the Kinneman Creek bed is usually weathered. Within the zone of the C sand there is usually one and sometime several, thin (less than one foot thick) lignite beds locally referred to as the C bed which we currently refer to as the C seam. Below the Tavis Creek bed are additional lignite beds. The first two below the Tavis Creek bed are named the Coal Lake Coulee bed and the Weller Slough bed. There are also sand units below these beds, the most significant being the Hensler sand which lies beneath the Coal lake Coulee bed Strata lying above the Hagel bed are referred to as the Kinneman Creek Interval. Those underlying the Hagel bed but above the Tavis Creek bed are referred to as the Hagel Interval.

Ground water recharge from surface infiltration occurs because of snowmelt and rainfall. Prairie potholes and depressions where surface water accumulates enhance the mechanisms of infiltration into the groundwater system. The quantity of recharge is determined by vertical hydraulic conductivity of the soils, and the depth of the water table. However, the significant aerial extent of the recharge zone is probably the most important factor in determining the volume of water infiltration into the aquifers. Moran and Cherry (1978), in studies performed in the Underwood Coal Field located just north of the Riverdale Coal Field estimated the annual ground water recharge rate for this area of North Dakota to be between 0.86 inches to 1.32 inches. These values of recharge apply to the zones of recharge and cannot be taken as distributed over all of the area. Average aerial depth of ground water recharge measured by Cherry in 1979 rate over a 150-km2 study area was on the order of 1.0 to 4.7 inches per year. The spring of 1979 was the wettest spring of the decade of the 1970's, so the values of recharge rate for 1979 are probably greater than the long-term, average ground water recharge rate (Rehm, et. al. 1980). Geohydrology of the Coleharbor Formation The Coleharbor Formation (Pleistocene) is the shallowest aquifer in the area. It unconformably overlies the Sentinel Butte Formation and includes all of the unconsolidated sediments resulting from deposition during glacial and interglacial periods. Over most of the area, the Coleharbor is a thin formation that locally thickens where it fills valleys in the buried topography. The modified glacial channels that delineate the mining limits north, east, and south of the permit area are in-filled with sediments of the Coleharbor Formation. The channel fill systems contain a complex of interbedded glaciofluvial gravels, sands, silts, and clays. The coarser gravel and sand beds are generally limited to near the bottom of the channel fill.

Groundwater in the Coleharbor Formation accumulates in the discontinuous sand bodies surrounded by clayey sediments. These sand bodies individually can be described as perched aquifers; the sand bodies lack lateral continuity and are generally of limited aerial extent. Consequently, water wells in the Coleharbor Formation typically have very low yields and capacity. They are also very sensitive to changes in precipitation and resultant recharge. Wells in the Coleharbor Formation will react relatively quickly to changes in precipitation: If it rains, the wells produce well, in a drought, the wells have reduced production or even “go dry”. Hydraulic conductivity values from single well response tests average 8.6 feet per day for the Coleharbor channel fill units in the study area (Groenewold, et. al., 1979). The average hydraulic conductivity of the glacial till test is 0.3 feet per day. Some tests indicate that the hydraulic conductivity value of the glacial till could be as low as 10-5 to 10-7 feet per day (Groenewold, et. al., 1979). Pumping tests performed in the central portion of McLean County indicate hydraulic conductivity values of 104 to 6,739 feet per day for the sand and gravel units of the channel fill aquifers (Klausing, 1974). Storage coefficients of the channel fill aquifers obtained from Klausing’s pumping tests range from 0.0001 to 0.00045. One pumping test yielded a specific yield of 0.14. This indicates that the lower sand and gravel strata found in the channel fills are normally confined by the overlying silts and clays.

Stratigraphically, the Hagel A bed is the highest, significant aquifer in the study area. The seam has local undulations that cause variations in the character of this aquifer. In some areas, the Hagel A bed is confined, but in other areas it is under water table conditions. The potentiometric map of the Hagel A bed suggests that water in this aquifer flows radially from surface recharge areas towards the croplines along the Missouri River Valley, the Weller

Slough Trench, and tributaries of the Coal Lake Coulee. Discharge from the Hagel A bed along some outcrops and near surface subcrops is in the form of springs.

Results from single well response tests completed in Hagel A bed are presented in Section 2.2 (NAFK-8405, NAFK-8705, NAFK-9503 and NAFK-9601).The measured hydraulic conductivity of the Hagel A bed ranges from 0.05 feet per day to 4.6 feet per day. However, some monitoring wells exhibited a hydraulic conductivity that was too high to be measured with response tests.

The Hagel B bed lies below the Hagel A bed. The Hagel B bed is in direct hydraulic connection with the Hagel A bed in a few places. A few areas of the Hagel B bed are unsaturated to dry, but is generally confined. Potentiometric levels of the Hagel B bed are normally lower than those of the Hagel A bed except in a few areas where they are in equilibrium. This difference induces leakage from the Hagel A bed to the Hagel B bed.

The hydraulic conductivity measured in response tests Section 2.2 (NAFK-8405, NAFK-8705, NAFK-9503 and NAFK-9601) ranges from less than 0.01 feet per day to 3.45 feet per day Section 2.2 (NAFK-8405, NAFK-8705, NAFK-9503 and NAFK-9601). Recharge of the Hagel B bed is primarily leakage from the Hagel A bed. Groundwater flow in the Hagel B bed is from the high potentiometric areas to discharge areas along the croplines of the coal seam along the Missouri River Valley, the Weller Slough Trench, and tributaries of the Coal Lake Coulee. Some discharge along crops is in the form of springs.

The C sand is the first aquifer below the Hagel B bed. The C sand is an interval of sandy silts to silty sands; it also typically includes one or more thin lignite beds (locally referred to as the C seam). The C sand is a confined aquifer that lies 20 to 30 feet below the Hagel B bed and 60 feet above the Tavis Creek bed.

The general flow direction in the C sand is from the high potentiometric areas towards the Weller Slough Trench, the Missouri River Valley, and the trench of Coal Lake Coulee. Recharge of the C sand is primarily through leakage from the Hagel B bed. The hydraulic conductivity of the C sand, measured in response tests, ranges from less than 0.01 feet per day to 30 feet per day.

The Tavis Creek bed is a lignite bed that lies 60 to 100 feet below the C sand, under a layer of Sentinel Butte Formation clay. The flow in the Tavis Creek bed takes place under confined conditions. Flow in the Tavis Creek bed is from the Weller Slough toward the Missouri River. Recharge of this aquifer appears to be primarily from lateral flow from North of the study area and from Weller Slough and associated filled trench drainages. Some leakage may occur from overlying aquifers. However, the significant thickness of the overlying clays suggests that this leakage ought to be relatively small. The potentiometric surface of the Tavis Creek bed is lower than that of the C sand. The Weller Slough Trench is a source of recharge for the Tavis Creek bed. It appears to have been a main tributary to the pre-glacial valley of the Knife River (Bluemle, 1971). The Weller Slough Trench consists of coarse sediments within the broad depression of the buried channel (Bluemle, 1971). It is hydraulically connected with Lake Sakakawea.

Recharge of the Weller Slough Trench aquifer is from precipitation, discharge from shallow aquifers, and Lake Sakakawea (Klausing, 1974). The bottom of the Weller Slough Trench aquifer reaches 306 feet in depth in well NDSWC 4034 (Klausing, 1974). At this location, the thickness of the coarse sediments is sixteen feet (Klausing, 1971). Pumping tests performed in the central portion of McLean County indicate hydraulic conductivity values of 104 to 6,739 feet per day for the sand and gravel units of the channel fill aquifers (Klausing, 1974). Storage coefficients of the channel fill aquifers obtained from pumping tests range from 0.0001 to 0.00045. One pumping test yielded a specific yield of 0.14. This indicates that the lower sand and gravel strata found in the channel fills are normally confined by the overlying silts and clays. Single well response tests performed in the Tavis Creek bed yielded hydraulic conductivity values of less than 0.01 feet per day to 18 feet per day.

The Coal Lake Coulee lignite bed is under confined conditions located between 15 and 30 feet below the Tavis Creek bed. Flow direction is similar to the Tavis Creek bed and is from the Weller Slough toward the Missouri River.

The main source of recharge for the Coal Lake Coulee bed is from the previously discussed Weller Sough Trench and leakage from the overlying Tavis Creek bed.

The hydraulic conductivity of the Coal Lake Coulee bed, measured in response tests ranges from less than 0.01 feet per day to .32 feet per day.

The Hensler sand is the sand unit monitored as the first aquifer below the Coal Lake Coulee bed. It is part of numerous discontinuous sand units within the Bullion Creek Formation that make up an “aquifer zone” rather than a distinct aquifer (Groenewold, et. al., 1979). The Hensler sand is between just a few feet to more than 30 feet below the Coal Lake Coulee. The flow in the Hensler sand takes place under confined conditions and is from the Weller Slough toward the Missouri River

Recharge of this aquifer appears to be primarily from lateral flow from north of the study area and from leakage from overlying aquifers. The potentiometric surface of the Hensler sand is generally lower than that of the Coal Lake Coulee bed. Single well response tests performed in the Hensler sand yielded hydraulic conductivity values of less than 0.03 feet per day to .25 feet per day.

The Hagel A bed water has calcium-magnesium and sodium as dominant cations. Bicarbonate and sulfate anions are present in the water. The water quality data for the Hagel A bed shows that there is not a predominant type of water. Total dissolved solids range from 777 to 4,838 mg/l and averages 2,082 mg/l. The water is generally very hard.

Water of the Hagel B bed exhibits similar characteristics as the Hagel A bed water. Calcium and magnesium cations are slightly less prevalent, with sodium being the dominant cation in over half of the samples. Dominant bicarbonate anion is more common than dominant sulfate anion type. The water quality data for the Hagel B bed indicates that water type of this aquifer can be quite variable. Total dissolved solids range from 855 to 3,280 mg/l and averages 1,897 mg/l. Water hardness varies from very hard to soft, but is mostly very hard.

The C sand water has a predominant sodium bicarbonate type but sodium sulfate water can also be detected. Calcium and magnesium are less predominant. Total dissolved solids range from 642 mg/l to 3,733 mg/l and averages 1,773 mg/l. Hardness varies from very hard to soft, but is generally soft.

Water of the Tavis Creek bed shows some tendency to the sodium bicarbonate type. However, predominance of the calcium and magnesium cations, and sulfate and bicarbonate anions is observed in some samples. Total dissolved solids are between 450 mg/l and 5,540 mg/l and averages 1,882 mg/l. The water is soft to hard.

The Coal Lake Coulee bed water shows a tendency to be a sodium bicarbonate-sodium sulfate type, but also has major concentrations of calcium and magnesium. Total dissolved solids range from 1550 mg/l to 5,452 mg/l and averages 2,674 mg/l. The water is generally very hard.

The Hensler sand has a predominant sodium bicarbonate type with major concentrations of sulfate. Calcium and magnesium are less predominant. Total dissolved solids range from 743 mg/l to 2,668 mg/l and averages 1,250 mg/l. The water is generally moderately hard, but can range from very soft to very hard.

7.2.2 SURFACE WATER STUDIES

Background surface water studies and data has been collected since 1981 to present on and adjacent to Falkirk permitted lands. Baseline flow and quality data included ephemeral and intermittent streams and quality and elevation data included permanent wetlands. Water quality testing of the samples was conducted by Minnesota Valley Testing Inc., for total suspended solids, total dissolved solids, pH, total iron, manganese, calcium, sodium, magnesium, electrical conductivity, alkalinity (carbonate and bicarbonate), sulfate, and sodium adsorption ratio Baseline flow quality measurements were performed by Falkirk environmental staff using Stevens recorder gauges and Solinst level-loggers (data logging transducers). Using water level data from the gauges and the transducers, a hydrograph was created to determine the flow rate from a stage-discharge curve. Bentley FlowMaster software is used to perform the hydraulic calculations for the stage-discharge curves.

Quantification of the surface water probable hydrologic consequences was conducted using the SCS method and the Corps of Engineers' HEC-1 and HEC-HMS hydrology software. HEC-HMS software was developed in 1995 by the U.S. Army Corps of Engineers Hydrologic Engineering Center and is a Windows-based upgrade to the HEC-1 program. Both software computes the volume of runoff and peak discharges for a given storm event by entering watershed parameters such as the watershed area, weighted curve number, and the time of concentration. These programs will also route flows through a stream channel, culvert, and reservoir, and will combine routed hydrographs to compute peak discharges, time of peak discharges, routed hydrographs, and total runoff volumes. The results of the modeling were used to develop the surface baseline conditions for the permitted areas.

7.3 EARLY GEOTECHNICAL STUDIES

Geotechnical soil drilling has been carried out at the property during several investigations. Studies have been implemented prior to entering a new mining area and periodically throughout the life of the mine when questions arise that warrant further investigation or geotechnical confirmation. The most notable studies concerning geotechnical properties are described below.

In 1976 the intitial Ground Stability Study of the Underwood Coal Field was conducted and reported by Robert L. Zook – Soils / Geological Engieer for the initial mine start up. This was followed in 1981 with a study of the same coal field concentrating on an additional minining unit (Mine Area B) by Barry L. Sutphin – Geotechnical Engineer.

Additional studies for spoil stability and opening the additional mining area in the Riverdale field where completed by J. Lyall Workman, P.E. (Calder & Workman, Inc.) in 1994 and 1995 respectively.

Studies were completed in 1996 and 1998 for moving the 8750 dragline to the Island mining area and the slope stability of that mine area (also by Calder & Workman, Inc.)

In 2009 (Calder & Workman, Inc.), 2010 and 2013 (Barr Engineering) Stability Analyses were completed for highwall stability, site specific clay properties and general spoil stability for both mine areas.

Barr Engineering also completed analysis and impacts of highwall failures and a root cause analysis of the failure around our 8750 dragline in 2015.

To conduct the geotechnical analysis required for the above studies soil data was collected during field investigations and laboratory testing programs. Both conventional continuous overburden coring and cone penetration testing were completed as part of the field investigation.

Laboratory testing included:

- Index properties
    - water content
    - Atterberg Limits
    - grain size distribution
    - dry unit weight
- Shear strength testing
    - uniaxial compression strength
    - direct shear testing
    - undrained triaxial compression testing with pore pressure measurements

The slope stability analysis was conducted using the SLOPE/w module of GeoStudio software package.

The typical laboratory tests performed in the investigations described above were carried out in accordance with the relevant American Society for Testing and Materials (ASTM) standards at independent certified laboratories. The laboratory testing methods completed to determine the geotechnical soil parameters are appropriate for the purpose of detailed geotechnical design.

All of these studies have been used to incorporate best practices and supporting data for our ground control plan that is submitted to MSHA. Guidance for such things as our digging method, depth of prebench highwalls, thickness of and angle of dragline highwalls, spoil height and even the best road building materials have all been gleaned from the information provided in the aforementioned geotechnical studies. Figures 7.3 shows the most recent geotechnical borings completed during a mine-wide study in the Underwood mine area. Figure 7.4 shows the most recent geotechnical boring completed during a mine-wide study in the Riverdale mine area.

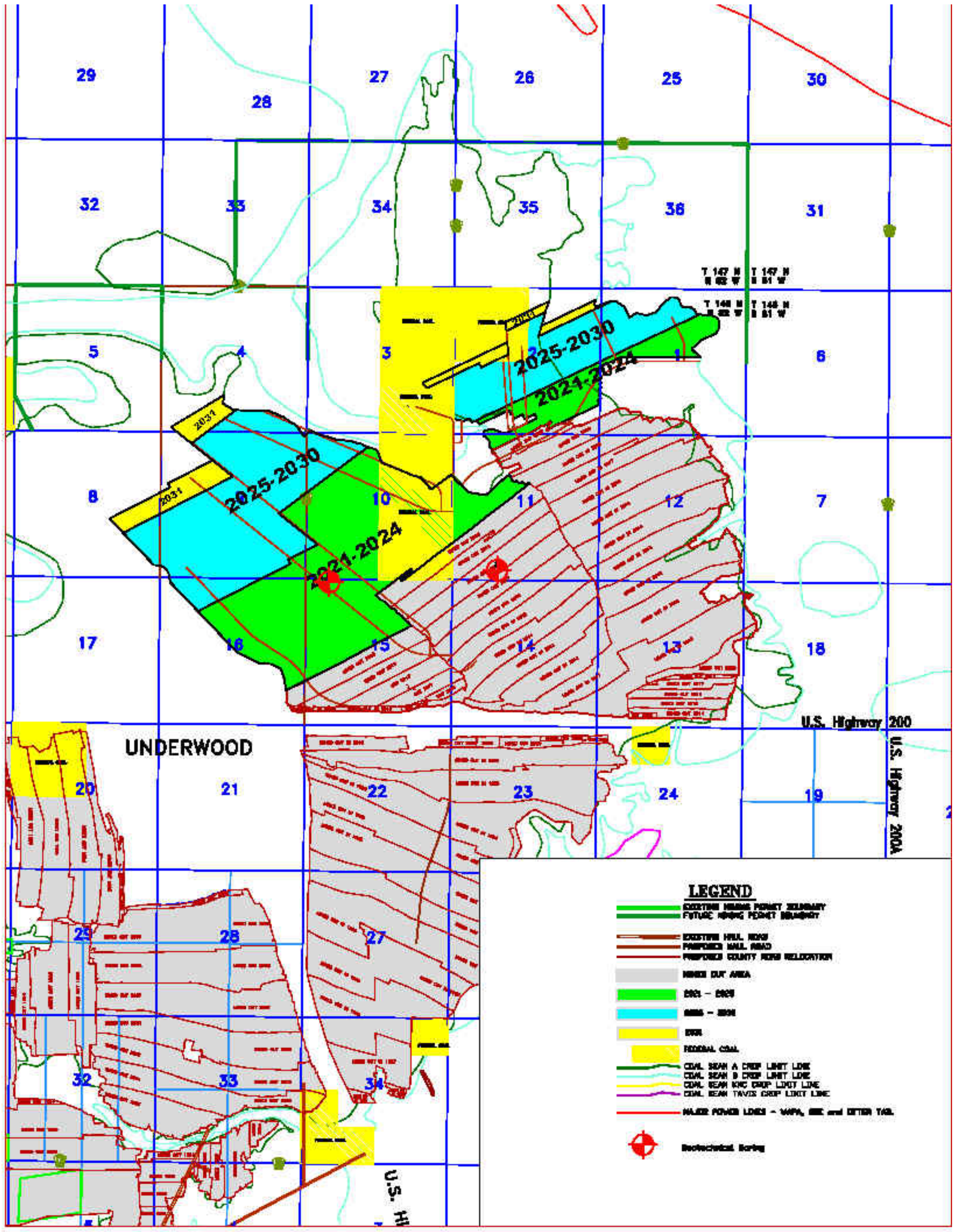


Figure 7.3 Underwood Mine Area Geotechnical Borings

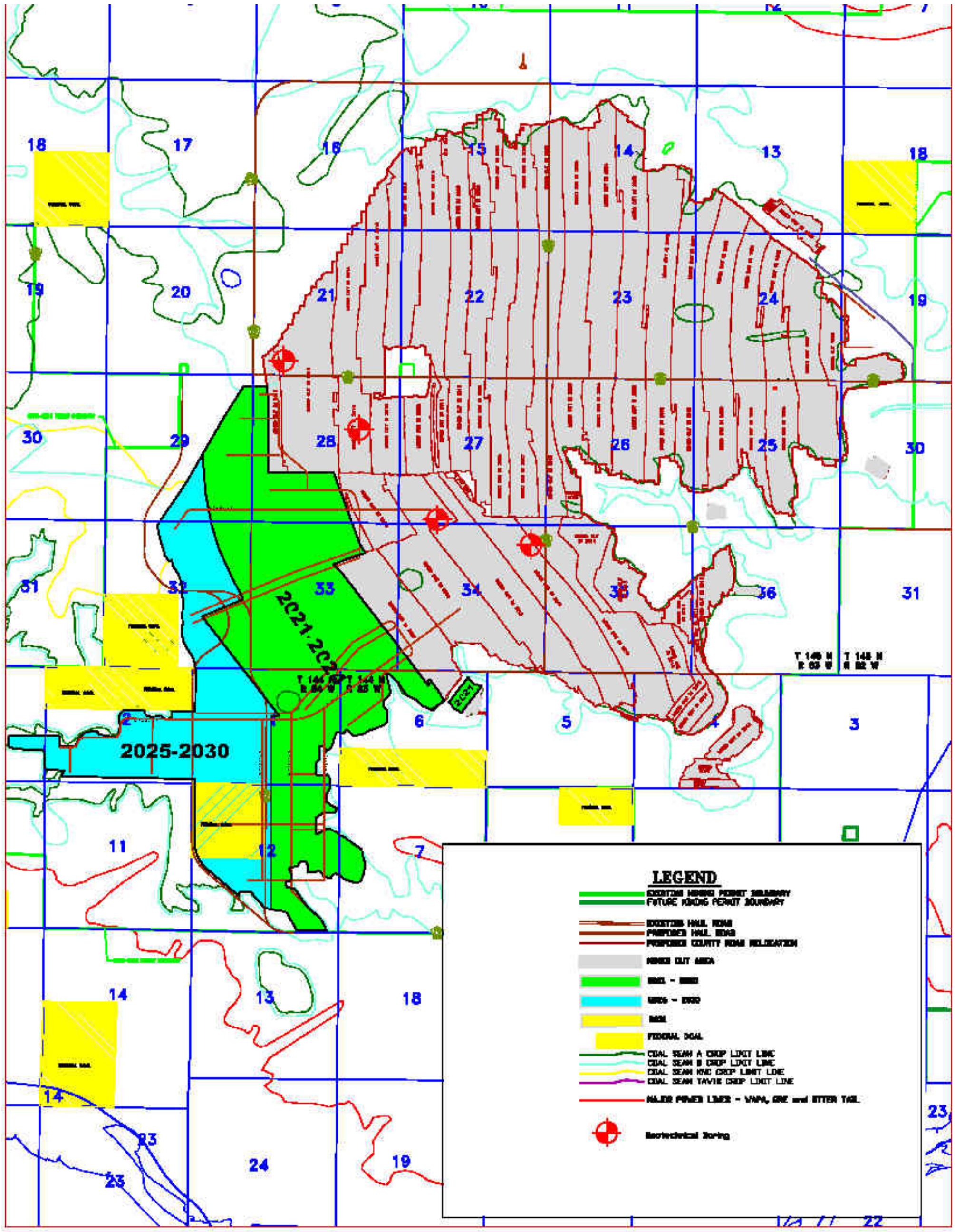


Figure 7.4 Riverdale Mine Area Geotechnical Borings

8.0 SAMPLE PREPARATION, ANALYSES, AND SECURITY

8.1 SAMPLE COLLECTION AND SHIPMENT

The Falkirk Mine lignite deposits are evaluated on a seam by seam basis. As a standard in the coal industry, individual sections of lignite are bagged and sent to the third-party coal testing laboratory. The procedures at the Falkirk Mine for sample collection are summarized below.

Core runs are specified by the senior and/or field geologist by referencing the geophysical log of the pilot hole. Most of the time a single 10-foot core run can typically capture a full lignite seam. In situations where a coal seam, roof and floor are thicker than 10 feet, a 15-foot core barrel is used or multiple runs with the 10-foot barrel is utilized. Once a specified core run is brought to the surface, the field geologist observes the drillers extract the lignite sample from the double barrel core to ensure the integrity of the sample is maintained, and to verify the top and the bottom of the core run. The core sample is transferred from the core barrel directly to a aluminum trough that contains a fix measureing tape. If there is excess drilling mud from on the core sample the field geologist washes with water, verifies the roof and floor of the lignite core is present and checks the expected coal seam thickness referenced from the pilot hole's geophysical log to determine coal core recovery. If 90-percent recovery cannot be verified, the driller may attempt to retrieve the remainder of the lignite core run from the current hole. If no successful attempt is made to recover the remaining lignite, the driller must recore the lost interval in a new adjacent core hole.

Upon verifying full recovery of the core run, the field geologist succinctly, but thoroughly logs the lignite run. A typical log describes:

- "To" and "from" depths of burdens and lignite;
- Joints and fractures at specified depths;
- Characteristics of burden above and below the lignite core;
- Roof and floor of lignite seam (i.e. sharp or gradational);
- Presence of pyrite or petrified wood;
- Observations of clay or sands imbedded in the lignite core; and
- Any other prominent characteristics.

After the field geologist describes the core run, the entire lignite section is double bagged and double tagged. Tags include the date, mine identifier, hole ID, seam ID, and "to" and "from" intervals. Double bagging preserves the moisture of the sample, and double tagging safeguards the identification of the sample from the field through transportation to the third-party laboratory.

Lignite cores may be split into multiple samples for the following reasons:

- Prominent roof, floors, or partings within a continuous seam;
- If visually it appears the quality of the coal good change

Laboratory results for split cores are reviewed by the senior geologist prior to inclusion in the geologic database for modeling. Quality results for all split samples to identify composition concentrations are identified as a continuous seam in the geologic database. The weighted average is computed in the modeling process. Roofs, floors and partings that meet a minable quality are identified as part of the associated seam, and are modeled in the same manner as the split samples described previously. Roofs, floors and partings that do not meet a minable quality are included in the geologic database as a point of record, but are not modeled with a seam identifier, and thus the quality of those splits is not weighted with the associated seam. Total core runs are shipped for analysis following industry standards, thus split samples in the context of a retained sample are not stored at the Falkirk Mine. Lignites tend to be high moisture coals which oxidize rapidly and do not have a long shelf life once removed from the ground. If core splits were retained, they would not be representative of in-situ coal properties over time.

After samples are bagged, they are stored in a dry, shaded area, typically the field geologist's truck, until the geologist returns to the mine office. Core samples are then securely stored in the senior geologist's office until transferred to the warehouse to be shipped to the third-party laboratory. The Falirk Mine office and warehouse is secured with user specified fob access and camera surveillance. In addition, security officers patrol the property around the clock.

Prior to shipping the samples, the senior geologist reviews each sample against the field records and the chain-of-custody (COC). The date, mine identifier, hole ID, seam ID, and "to" and "from" intervals are verified. In addition to the COC included in the physical shipping container, a copy is emailed to the laboratory manager to notify that a shipment is in route. Copies of the COC forms for coal cores shipped from 2015 through 2021 were available for the QP to review. Coal core samples are shipped to the third-party laboratory via insured freight with tracking information.

8.2 SAMPLE PREPARATION AND ANALYSIS

Minnesota Valley Testing Laboratories, Inc. (MVTL) in Bismarck, North Dakota is the third-party laboratory Falkirk Mine uses for coal core analyses. MVTL has provided coal quality analysis following ASTM standards for over 40 years.

Minimum analyses of coal cores include short proximate (moisture, ash, BTU/lb, sulfur, sodium, calcium), and forms of sulfur. These parameters are the primary quality inputs used to model the Falkirk Mine lignite deposit. Additional analyses of coal cores may include full proximate, ultimate, mineral analysis of ash, trace elements, and ash fusion.

MVTL is in operation Monday through Friday from 8 am to 5 pm. The building is kept secure, and all doors remain locked throughout the day, except the main customer entrance where visitors have to check in and check out. No access is allowed to the laboratory without an escort. During non-operational hours the building is kept locked.

8.3 ASTM Standards

Table 8.1 lists the ASTM standards that MVTL references for various coal quality analyses.

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
% Ash	ASTM D7582	Coal	TGA
Calorific Value	ASTM D5865	Coal	Calorimeter
Carbon, Hydrogen, and Nitrogen	ASTM D5373	Coal	Elemental Analyzer
Chlorine	ASTM D6721	Coal	Micro-coulometric Analyzer
Fusibility of Ash	ASTM D1857	Coal	Furnace
Mercury	ASTM D6722	Coal	Direct Combustion Analysis
Mineral Analysis of Ash	ASTM D3682/D5016	Coal	ICP-OES, FIA, Furnace
Oven Dry Moisture	ASTM D7582	Coal	TGA
Air Dry Moisture	ASTM D3302	Coal	Air Dry Ovens
Preparing Samples for Analysis	ASTM D2013	Coal	Crusher / Pulverizer
Sulfur (Total)	ASTM D4239	Coal	Furnace
Sulfur Forms	ASTM D2492	Coal	Gravimetric, AA
Trace Metals	ASTM D6357 Modified	Coal	Microwave Digestion, ICP-MS & ICP-OES
Volatile Matter	ASTM D7582	Coal	TGA

Table 8.1. List of ASTM standards for MVTL.

8.4 SAFETY

Fire extinguishers, eye wash stations, and safety showers are accessible in the lab. Safety glasses are required throughout the lab. Hearing protection and dust masks are also required in the prep room.
Other protective equipment is available to the staff for use as needed. SDS sheets are maintained in the lab. The building is equipped with a fire alarm system and annual fire and tornado drills are conducted. MVTL maintains a business continuity and disaster plan to cover various incidents of business disruption.

8.5 ROUND ROBIN PROGRAMS

MVTL participates in round-robin testing programs with other laboratories to ensure result accuracy. MVTL participates in an Interlab Coal Round Robin Program monthly. In 2020, MVTL also participated in a lignite (coal) specific round robin program with NACoal including 8 independent laboratories, one of which was MVTL, that were used by various NACoal mine locations. The round robin consisted of four samples labeled 2001, 2002, 2003, and 2004. Two samples were sourced from Red Hills Mine and two samples were sourced from another NACoal mine, Coyote Creek Mine, located in North Dakota. The two locations provided a range of samples with variability in moisture, ash, sulfur and sodium. The labs participating in the round robin were provided 8-mesh splits and dried, 60-mesh splits of all 4 samples. The general results are summarized in Figure 8.1. MVTL is labeled “Laboratory #5”.

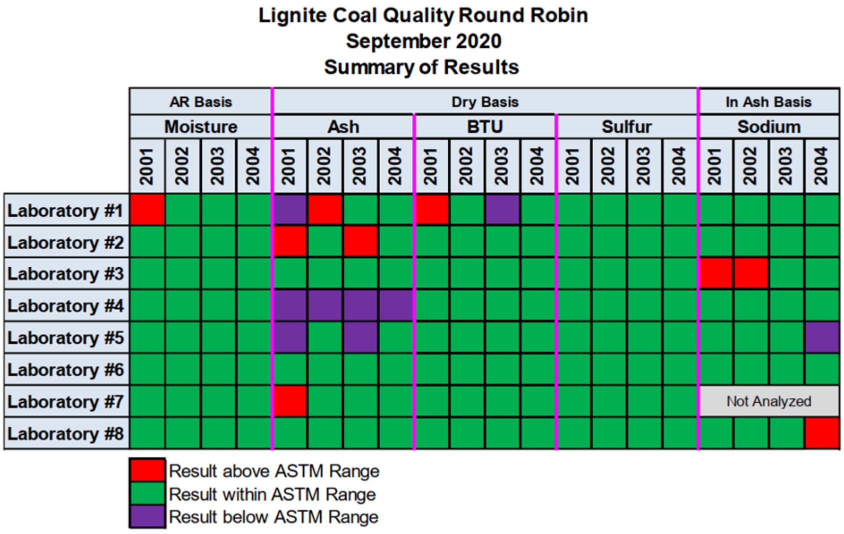


Figure 8.1. NACoal 2020 Round Robin Program Summary. (NACoal, 2020)

8.6 BALANCES

All balances are calibrated and certified annually by a third-party calibration service. Balances are verified daily using certified weights.

8.7 SAMPLE RECEIVING AND STORAGE ROOM

The sample receiving and storage room is climate controlled (ventilated, AC, and heat). Samples are received through various couriers, directly from clients, or from the MVTL Field Service division. The samples are cross referenced with a chain of custody form or other client paperwork and then are logged into the Laboratory

Information Management System (LIMS). Each sample is given a unique lab number used for tracking during analysis and throughout the reporting process.

Samples are stored until they are ready to be crushed in the prep room. There is a slight potential for moisture loss during this storage period. Falkirk acknowledges this potential and, as such, double bags samples in the field to preserve as much in-situ moisture as possible.

Retained pulverized and air-dried 60-mesh samples are also stored in this room. These samples can be reanalyzed within 6 months for selective parameters. MVTL contacts and verifies with the client prior to disposal of retains.

8.8 PREP ROOM

The prep room is a temperature-controlled room (AC and Heat) accessible from the sample receiving and storage room. Within the prep room, samples are crushed to 8-mesh using a crusher and are reduced in volume using a riffler. Two different sized crushers and rifflers are available depending on sample size. Compressed air is used to clean the crusher and riffler after each sample to mitigate contamination.

A riffled split of 8-mesh coal is placed on a sample tray and weighed. The weights are sent electronically to LIMS for use in the moisture calculation. The tray is placed in an air dry oven and dried overnight. The temperature of the air dry ovens is monitored and recorded daily. The temperature monitoring devices are verified annually. Another riffled split is sealed in a Ziploc bag and retained. The client is notified prior to disposal of the coal core splits.

Once air-drying is complete, the samples are weighed and again the weights are sent electronically to LIMS. The samples are pulverized to 60-mesh and split using a riffler. Compressed air is used to clean the pulverizer and riffler after each sample. Samples are stored in glass jars for analysis and the splits are retained in whirl-pak bags.

8.9 LABORATORY TESTING

All of the analyses in the laboratory are performed on the 60-mesh sample or ash prepared from it. The samples are mixed by tumbling prior to each analysis. The lab is climate controlled (AC and heat). Coal analysis results are reviewed prior to reporting. The review includes identification of outliers and comparison of results with historical information by site, if available. The analyses are re-analyzed as needed.

8.10 QP STATEMENT ON THE ADEQUACY OF SAMPLE PREPERATION, SECURITY AND ANALYTICAL PROCEEDURES

For the past several years, the Falkirk Mine has used a formal outline for the process to collect coal samples at the Falkirk Mine. This has provided consistency in core collection from one drilling program to the next has been thoroughly documented. Between thorough records and personal observation of numerous drilling campaings, it is the QP's opinion that historic coal core collection has remained consistent with industry standards. The process of double bagging and tagging the cores in addition to multiple checkpoints to log samples from field to shipment to the lab further ensures the integrity and security of each sample is maintained.

Additionally, the QP feels the methodologies used by MVTL are within industry standards for sample preparation, process of sample splitting and reduction, general quality control, and security of samples to ensure that validity and integrity of samples is upheld.

9.0 DATA VERIFICATION

9.1 DRILLHOLE DATA VERIFICATION

The drilling database for the Falkirk Mine was compiled in an electronic, geologic database. The database encompassed the geologic modeling inputs including lithology picks, total depth of hole, base of oxidation (weathering), hole coordinates, and coal core quality data. This data was organized into three tables related to lithology picks, collar survey, and quality.

The drilling database was saved on the Falkirk network drive which contains the geologic model and has limited access. Files saved on this drive are automatically backed-up daily to a local server.

Once the drilling database was compiled, a series of routine data integrity checks were performed by the QP on the database to check for common errors and omissions. The QP visually inspected the database after updates were made, then ran a second data validation check using Carlson software. The validation checks included, but were not limited to, the following:

- Verified each hole has a unique collar location.
- Verified the total hole depth on the collar table matches the total depth on the lithology table.
- Verified the from and to depths on the lithology table and quality table increase down hole.
- Verified for overlapping intervals in the lithology table based on from and to depths.
- Verified the from and to depths on the quality table match the associated seam depths on the lithology table.

For any errors or omissions reported, the QP reviewed the geophysical logs, field logs, and quality reports related to the specified holes to reconcile the differences.

After the initial checks were performed, the QP person built the initial model. Once modeled, various cross sections and isopach maps were reviewed for anomalies related to structure and/or quality.

It is the QP’s opinion that the analytical results from the coal cores collected during Falkirk’s exploration programs are consistent with actual as-delivered quality from the active mining operations at the Falkirk Mine. This opinion was based on comparison of historical quality projected from the Carlson model for the annual operating plans to actual as-delivered quality indicated by the customer’s (CCSPP) third-party laboratory, MVTL. It is also the QP’s opinion that the modeled structure of the lignite seams is consistent with active mining operations based on comparisons of modeled seam thickness and trends and actual surveyed seam thicknesses and trends.

The QP found the geologic model was a reasonable and reliable representation of the geologic structure and quality of the lignite seams (horizons) at the Falkirk Mine.

The QP compared the Mineral Resource model supporting the Mineral Reserve for projected quality, volumes and lignite tons, and evaluated monthly and annual reconciliations and found the Mineral Resource model to be an accurate representation of the actual findings during mining operations.

Past and ongoing environmental studies including groundwater and surface water studies discussed in Sections 7.2 and 17.3 have been reviewed and it is the QP’s opinion they are thorough, complete, and provide the necessary information for the start up and ongoing operation of the Falkirk Mine. The geotechnical studies discussed in Sections 7.3 and 13.3 have been reviewed and it is the opinion of the QP that the geotechnical data is adequate to support the pit angles used by the Falkirk Mine.

The QP reviewed the dilution assumptions and found them to be reasonable and consistent with realized results from the active mining operation. Recovery rates are continually being compared to actual recoveries for verification.

The QP has reviewed annual historical values for all costs, pricing assumptions and economic analysis to be reasonable for future projections, which are refined and updated using the historical values, to continuously improve accuracy of the projections. These have been used to support parameters used during mine planning.

The QP considers that reconciliations of staffing and workforce requirements, actual equipment capacities and productivities have been appropriately considered while establishing reliable projections of executing the mine plan.

The Falkirk Mine has established internal policies and controls to manage the environmental, regulatory and social or community aspects for the mining operations. These are periodically reviewed by the QP and other managers at the Falkirk Mine and North American Coal Corporate management for their effectiveness in a culture which follows the principle of continuous improvement.

The Mineral Resource model and other data provided as modifying factors, including those of 3rd party firms, were confirmed as adequate for use in Mineral Reserve Estimation for this TRS.

9.2 LIMITATIONS ON DATA VERIFICATION

Although Falkirk has remained consistent with coal core sampling programs following and documenting procedures that align with coal industry standards, there are still some inherent risks in the estimation of Mineral Resources and Reserves. This risk falls in the uncertainty within the earlier drilling.

Throughout the 50+ year history of the Falkirk Mine's coalfield, The North American Coal Corporation has always used policies, protocols and procedures to ensure the accuracy and integrity of the drilling and coring data. Experienced geologists have always been on the drill rigs or supervising the engineers and/or students on the drill rigs. However, technologies and understandings change. Prior to 1976, the Falkirk Mine did not have a survey grid established. Hence, drill hole locations and elevations were read from USGS topographic quadrangle maps. Also, prior to 1975, geophysical logging on shallow coal exploration holes was not a common practice. This caused errors and deviations in locations, elevations and depths, especially as compared to more modern methods with higher levels of control. Consequently, all drilling data prior to 1976 has been deleted from Falkirk Mine's databases and is no longer used for modeling and reserve-resource estimates. Verification of lignite quality and trends with newer drilling data has increased the confidence in the early data, but does not eliminate the inherent risk from lack of QA/QC parameters in this small percentage of data in the areas that have not been mined.

9.3 QP'S STATEMENT OF ADEQUACY OF DATA

Data disclosed in this TRS used for the preparation of geologic models for the purpose of Mineral Resource estimations at the Falkirk Mine have been verified by the QP. The QP has been involved with the verification of these data for the past 17 years and has served as senior mining engineer since 2016. The QP is a registered Professional Engineer in North Dakota; registration number PE-6256. These data include drill hole surveys, geophysical logs, coal core quality, and other relevant test data. Procedures discussed previously in this section follow coal industry standards and were used by the senior geologist and verified by the QP to reconcile any discrepancies upon review of the available data.

It is the QP's opinion that the data provided for this TRS is more than sufficient for the determination of Mineral Resources and Reserves at the Falkirk Mine.

10.0 MINERAL PROCESSING

Processing and metallurgical tests were not conducted on the lignite for the Falkirk Mine. It was known early on that the mine and power plant project would only be economic if a run-of-mine product was used as the fuel source. Therefore, no washability or metallurgical tests were conducted.

11.0 MINERAL RESOURCE ESTIMATES

11.1 BASIS FOR MINERAL RESOURCE ESTIMATE

The basis of the Mineral Resource estimates for the Falkirk Mine deposit and the methods in which they were prepared are summarized for this item. The S-K 1300 regulations (17 CFR 229.1300) define a Mineral Resource as:

“A concentration or occurrence of material of economic interest in or on the Earth’s crust in such form, grade or quality, and quantity that there are reasonable prospects for economic extraction. A Mineral Resource is a reasonable estimate of mineralization, taking into account relevant factors, such as cut-off grade, likely mining dimensions, location, or continuity, that, with the assumed and justifiable technical and economic conditions, is likely to, in whole or in part, become economically extractable. It is not merely an inventory of all mineralization drilled or sampled.”

Following definitions presented in 17 CFR 229.1300 and guidance from the Committee for Mineral Reserves International Reporting Standards (CRIRSCO), Mineral Resources are divided into three categories as listed below and are ranked by increasing level of confidence. Mineral Resources are reported as in-situ tons such that no adjustments have been made to account for mining recovery or losses.

Inferred Mineral Resources are defined as a Mineral Resource for which quantity and quality are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and quality continuity. Inferred Mineral Resources have the lowest level of confidence determined by the QP.

Indicated Mineral Resources are defined as a Mineral Resource for which quantity and quality are estimated on the basis of adequate geological evidence and sampling such that the QP can apply modifying factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit. These Mineral Resources may be converted to a Probable Mineral Reserve. Indicated Mineral Resources have a moderate level of confidence determined by the QP, and could be upgraded to a Measure Mineral Resource with further exploration.

Measured Mineral Resources are defined as a Mineral Resource for which quantity and quality are estimated on the basis of conclusive geological evidence and sampling such that the geologic certainty of the Mineral Resource is sufficient to allow the QP to apply modifying factors in detail to support detailed mine planning and final evaluation of the economic viability of the deposit. Measured Mineral Reserves have the greatest confidence defined by the QP, and may be converted to a Proven Mineral Reserve.

The QP based the Mineral Resource estimates presented in Table 11.4 for the Falkirk Mine on a stratigraphic geologic model generated from the verified drilling exploration data presented in Section 7.0 of this TRS. The choice of stratigraphic modeling is due to the continuous spatial continuity of the lignite seams.

11.2 STRATIGRAPHIC MODEL

The QP managed the developement the stratigraphic geologic model for Mineral Resource estimation using Carlson Mining software. All verified drilling data to date was included in the model. The Falkirk Mine lignite deposit was modeled using U.S. customary units projected to NAD 1983 North Dakota State Plane South coordinate system. Key assumptions, parameters and methods to estimate Mineral Resources are discussed herein.

11.2.1 HORIZONS

The structure of the Falkirk Mine deposit is determined by "to" and "from" depth picks from geophysical logs and field logs correlated the drill hole collar survey. Depth picks represent the roof or floor of a lignite seam which define a horizon or domain.

Table 11.1 presents the stratigraphic Horizons modeled for Mineral Resource estimation. Modeled horizons were required to have quality data in the drilling database to be considered.

HORIZON ID	SEAM NAME
UKNC	Upper Kinneman Creek-Seam
LKNC	Lower Kinneman Creek-Seam
HGA1	Hagel A1-Seam
HGA2	Hagel A2-Seam
HGB1	Hagel B2-Seam
HGB2	Hagel B2-Seam
TRID	Tavis Rider-Seam
UTAV	Upper Tavis-Seam
LTAV	Lower Tavis-Seam
UCLC	Upper Coal Lake Coulee-Seam
LCLC	Lower Coal Lake Coulee-Seam

Table 11.1. Stratigraphic Horizons

In addition to the lignite seam horizons, the pre-mine surface topography, overburden, interburden, parting thickness and the base horizon till (BHTI) depth determined from drill cuttings and geophysical logs.

11.2.2 QUALITY PARAMETERS AND DENSITY DETERMINATION

The quality parameters modeled for determination of Mineral Resources have been modified over the past 38 years by continual evaluations and historical plant performance of the three end users. With the exception of a low BTU value of 5,800 BTU/lb quality parameters aren't specified in the CSA. Modeled quality parameters include calorific value (Btu/lb), moisture (wt%), ash (wt%), sulfur (wt%), and sodium in ash (wt%); typical Short Proximate analysis reported on an as-received (AR) basis. Five quality grids of the above parameters, along with forms of sulfur are modeled for each horizon. Generally, the only quality constraint on the mineability of the lignite at the Falkirk Mine is weathering/oxidation, which causes a substantial decrease in the heat content of the coal. The lignite existence lines consider the weathering limits of the coal. The low BTU coal is removed from the mineable limits and is not considered as a mineral resource or reserve, therefore there are no quality constraints within the mineable limits of the coal field that can't be mitigated by blending during mining to meet the customer needs.

NACoal was actively exploring and developing various coal fields in North Dakota, beginning in the early 1970s. The United States Geological Survey (USGS) and the United States Bureau of Mines had established the average specific gravity (density) of lignite to be 1,750 tons per acre-foot. This density was applied to all the reserve calculations being made by NACoal.

11.2.3 MODELING PROCESS

After the QP verified the drilling data following procedures outlined in Section 9.0 of this TRS, the geologic database including three tables encompassing geologic lithology picks, quality data, and collar surveys was imported into the modeling software.

Once the drilling data was imported, a preliminary topographic surface was created by triangulation of an electronic contour map of the Falkirk Mine and surrounding area. A 200 by 200-foot grid surface was then applied to the triangulated surface. Surveyed drill holes were modeled using inverse distance with a grid cell of 200-feet to create a second topographic grid. Differences in the two modeled topographic surfaces resulted in the designed topographic surface of the mine area.

The lithology and location tables were then referenced by the modeling program and the structural model was developed. The lignite horizons were correlated and modeled using 200-foot grid cells. Missing lithologic data were extrapolated from ten surrounding drill holes using an inverse distance squared calculation. Geologic cross sections were created and correlations checked by the QP. Any errors identified in the lithologic descriptions were reconciled.

Lignite quality was then modeled for the entire deposit. As with the structural model, the quality model uses 200-foot grid cells to model quality of the deposit. Drill holes missing quality data employed an inverse distance squared calculation to assign averaged values from surrounding drill holes.

The lignite existence limits were created by clipping the lignite seams to a model limit. 200-foot grid cells were used to develop this existence model. Next, a limiting quality mask was applied to the modeled horizons. The defined quality limits were applied to the quality grids to remove areas where the lignite quality was not acceptable as a Mineral Resource.

In-situ tonnages for the lignite seams were calculated within Carlson by applying a formula to each horizon by the area, thickness, density, and real/extrapolated quality values (i.e. modeled parameters).

11.2.4 JUSTIFICATION OF MODELING METHODS

Historically, geologic models at the Falkirk Mine have been generated using inverse distance methods. These models were established and used in the development of detailed mine plans, financial projections, landowner tonnage estimates, daily operation plans, and month end reconciliations. The models have proved to be consistent with field conditions (structure and quality), which is attested to the simplified geology of the region as described in Section 6.0 of this TRS. Geologic units are laterally continuous with generally graded quality. Use of inverse distance methods is a coal mining industry standard of geologic modeling. However, to further justify the use of inverse distance modeling methods, the QP along with Carlson software personel, also modeled the drilling data in Carlson software using kriging methods and compared the two model outputs.

Both inverse distance methods and kriging methods resulted in a similar model. The QP did not see a need for Falkirk to alter geologic modeling methods.

11.2.5 QP's REVIEW AND VALIDATION OF MODEL

The QP serves as the senior mine engineer at the Falkirk, reviewed and validated the geological model using various checks between drill hole data and modeled horizons.

Drill hole locations were randomly selected to verify modeled values of each horizon were representative of the imported drill hole data. Additional visual inspection of the model included review of various consecutive cross sections as well as isopach maps of the modeled structure (roofs, floors, and seam thickness) and quality. Newly modeled grids were also compared to previous models. Changes in modeled values were minor and isolated to areas where new drilling data had been included from recent exploration programs. Anomalies, such as spikes in the data were reviewed against the original drill hole data, any errors in the drilling database were reconciled and the model was reconstructed.

The QP feels it is also important to note that the Falkirk Mine is a mining operation actively producing coal. A regular practice in the engineering department is to compare the mined-out pits from the monthly survey data to the geologic model. These comparisons provide a reference for the geologists to verify general trends in the modeled lignite structure.

The QP found the geologic model was a reasonable and reliable representation of the geologic structure and quality of the lignite seams (horizons) at the Falkirk Mine.

11.3 MINERAL RESOURCE ESTIMATES

11.3.1 LIMITS AND CONSTRAINTS ON THE MINERAL RESOURCE ESTIMATES

The Mineral Resources presented in Table 11.4 were estimated by applying a series of geologic and physical limits in addition to high-level mining and economic constraints which meet the level of detail required for an initial assessment (IA). Key constraints used by the QP to determine Mineral Resource estimates are summarized below. Details pertaining to physical constraints are discussed further within sections 3.0 and 17.0 of this TRS. Mining and economic constraints specific to Mineral Resource estimates are discussed herein.

Geologic Constraints:

- Modeled roof and floors of each lignite seam (horizon).
- Base of oxidation assumed to be BHTI or twenty-five feet of overburden unless shown otherwise with drilling

Physical Constraints:

- Topography.
- Lease and fee coal boundaries.
- Offsets from unleased land tracts and occupied dwellings.
- Existing roads and highways, major utilities, and major surface infrastructure without prior agreements for relocation or temporary closure.
- Stream offsets for WOTUS that fall outside of mitigation permits.

Mining and Economic Constraints:

- Resource categorization parameters based on distance from point of observation and drill hole sample count criteria.
- Economics are evaluated annually and compared to market values to determine the economic viability of the mine plan
- Typical quality parameters presented in Table 11.2.

Parameter	Minimum	Maximum
Calorific Value, Btu/lb	5,800	7,000
Moisture, %wt	37.5	37.5
Ash, %wt	5	20
Sulfur, %wt	0.25	2.0
Sodium, %wt	0.5	13

Table 11.2. Typical Quality Parameters (as-received basis).

11.3.2 GENERATION OF PITS SHELLS FOR MINERAL RESOURCE ESTIMATES

Pits were projected to meet the requirements of the existing contract to provide lignite fuel to the CCSPP as described in the CSA and assumes the continuation of the CCSPP under a new Coal Sales Agreement between Falkirk and Rainbow Energy concurrent with Rainbow Energy's acquisition of the power plant which is expected to occur in the first half of 2022.

Basic unit costs presented in Table 11.3 were used to determine the maximum reasonable effective stripping ratio of 15:1 for the Falkirk Mine. The sales price has historically remained fairly steady due to the stripping ratio and delivered tons being fairly consistent. Unit costs were derived from general historic unit costs at the Falkirk Mine.

Parameter	Unit	Cost
Burden Removal *	$/BCY	0.62
Royalty	$/ton	0.31

*Burden Removal unit cost was determined assuming the truck-shovel fleet moves approximately 21% of the burden and draglines move 79%. Fleet unit costs are respectively assumed to be $1.25 and $0.45 per cubic yard.

Table 11.3. Unit Costs – Mineral Resource Estimation Parameters.

The geologic model was used to create a map of the deposit. Recovery of in-situ tonnage was assumed to be 100-percent. No dilution factors were applied. Preliminary pits were determined by the QP based on logical mining units, then modified for any physical constraints. General tonnage for areas were calculated in Carlson with a simple closed polyline assuming vertical walls. Lignite quality grids were then individually loaded into Carlson for the QP's consideration with tonnage estimates to determine a general mine sequence and direction.

Resource pit shells projected through 2032 were used to determine the boundaries for resource estimation.

11.3.3 MINERAL RESOURCE CLASSIFICATION AND CATAGORIZATION

The Mineral Resource categorization applied by the QP includes the consideration of geologic continuity, spatial distribution of drill holes, abundance of data, and quality limits. Mineral Resources presented in this TRS were estimated and categorized under Measured, Indicated, or Inferred categories. The potential of economic extraction is justified by the terms of the existing CSA. Due to the contractual relationship with the customer, it is the QP's opinion that the prospect of economic extraction is clearly defined.

Table 11.1 identified the lignite seams for initial consideration of a Mineral Resource by the QP. The listed seams had a minimum of ten coal core samples for quality estimation, and an average coal core sample quality which fell within the limits provided in Table 11.2. Mineral Resources were then further defined by the identified resource pit shells.

As discussed in Section 7.2 all drill holes within the Falkirk Mine deposit obtained structural data related to the lignite seams, where a portion of these drill holes also included quality data from the collection of coal core samples. As such, the QP determined it appropriate that limits for spatial distribution between Mineral Resource categories were based on the average cartesian distances between drill holes that contained quality data. Defining the drill hole distances by the drill holes containing quality data ensured an appropriate density of the quality data was included in each Mineral Resource category. Additionally, due to the methodology of the fill-in drilling at the Falkirk Mine, a greater density of quality data would naturally encompass a greater density of structural data.

Due to the uniformity of the structure and quality of the Falkirk Mine coal field, drill hole distances that will define the spatial distribution between Mineral Resource Categories are based on the drill hole distances currently utilized by Falkirk As stated in Section 7.2, the minimum drill hole spacing within the controlled tracts within the permit boundary area at the Falkirk Mine is 1,320 feet, and fill in drilling tightens the spacing. This drilling density has reliably predicted coal tonnage and quality for over 40 years.

The defined distance limits of the Mineral Resource categories are presented in Table 11.4.

Mineral Resource Category	Lower Distance (Ft)	Upper Distance (Ft)
Measured	0	1,320
Indicated	1,320	2,640
Inferred	2,640	5,280

Table 11.4. Mineral Resource Category Distances.

Measured Mineral Resources are defined as tonnages which meet the general resource requirements and fall within an area where the average distance between quality drill holes is less than or equal to 1,3200 feet. Much of the structural data has an increased density. All of this drilling data was collected by Falkirk using known sampling methods and surveying methods. Due to the level of control and oversight during collection of this drilling data, the resulting resource estimates have a high level of confidence by the QP and a low level of uncertainty.

Indicated Mineral Resources are defined as tonnages which meet the general resource requirements and fall within an area where the average distance between quality drill holes is greater than 1320 feet and less than or equal to 2,640 feet. Due to the level of control and oversight during collection of this drilling data, the resulting resource estimates have a high level of confidence by the QP and a low level of uncertainty.

Inferred Mineral Resources are defined as tonnages which meet the general resource requirements and fall within an area where the average distance between quality drill holes from 2,640 to 5,280 feet. Modeled values at these distances require a large amount of interpolation between drill holes, however due to the level uniformity of the structure and quality data of the Falkirk Mine coal field along with the high level of control and oversight during collection of nearby drilling data, the resulting resource estimates have a moderate level of confidence by the QP and a moderate level of uncertainty.

11.3.4 MINERAL RESOURCE STATEMENT

The categorized Mineral Resources reported herein are exclusive (or inclusive) of Mineral Reserves. The effective date of Mineral Resource estimates is December 31, 2021.

			Quality			
Falkirk Mine	Resource Classification	Tonnage	Calorific Value (Btu/lb)	Moisture (%wt)	Ash (%wt)	Sulfur (%wt)
Underwood Field	Measured	31,599,882	6,417	40.41	7.05	0.57
	Indicated	NA	NA	NA	NA	NA
	Measured + Indicated	31,599,882	6,417	40.41	7.05	0.57
	Inferred	NA	NA	NA	NA	NA
Riverdale Field	Measured	46,820,901	6,614	39.44	6.37	0.58
	Indicated	199,721	6,317	37.10	10.69	0.73
	Measured + Indicated	47,020,623	6,612	39.43	6.39	0.58
	Inferred	NA	NA	NA	NA	NA
Total	Measured	78,420,784	6,534	39.83	6.65	0.57
	Indicated	199,721	6.317	37.10	10.69	0.73
Total	Measured+Indicated	78,620,505	6,534	39.82	6.66	0.57

Table 11.5. Mineral Resource Estimates.

11.3.5 UNCERTAINTY OF MINERAL RESOURCE ESTIMATES

Due to the contract provisions of the CSA, factors including contract term or likelihood of economic extraction, lignite sales price, and quality parameters/limits have far less risk of being affected than a mineral sold on the open market. Nonetheless some risks still need to be addressed. Additional exploration may positively or negatively affect Mineral Resource estimates. Furthermore, Mineral Resource estimates may be materially affected by a significant change in the assumptions including general mining costs and land control. New regulations may impose additional economic factors, delays to future permit renewals, or restrictions to physical estimation boundaries. Falkirk assumes the CCSPP will to continue to operate after Rainbow Energy's acquisition of the power plant, which is expected to occur in the first half of 2022. Numerous regulatory authorities, along with well-funded political and environmental activist groups, are devoting substantial resources to anti-coal activities to minimize or eliminate the use of coal as a source of electricity generation. As a result of such activities, a prematurely retirement of the CCSPP could have a material adverse effect on the mineral resource estimates. The QP is not aware of any specific factors that would currently materially affect the prospect of economic extraction.

12.0 MINERAL RESERVE ESTIMATES

12.1 BASIS FOR MINERAL RESERVE ESTIMATE

This Item discloses the Mineral Reserve estimates for the Falkirk Mine based on the QP's detailed evaluation of the modifying factors as applied to indicated or measured mineral resources, which demonstrate economic viability of the Falkirk Mine property. The estimated Mineral Reserves are in accordance with the definitions of "Mineral Reserve" as describe by the S-K 1300 regulations (17 CRF 229.1300) as:

"A coal reserve is the economically mineable part of a Measured or Indicated coal resource demonstrated by at least a Preliminary Feasibility Study, which includes information on mining, processing, economic and other relevant factors that demonstrate, at the time of reporting, that economic extraction can be justified."

Following definitions presented in 17 CFR 229.1300, and guidance from the Committee for Mineral Reserves International Reporting Standards (CRIRSCO), Mineral Reserves are divided into two categories as listed below and are ranked by increasing level of confidence.

Probable Mineral Reserve is the economically mineable part of an indicated and, in some cases, a measured mineral resource. The confidence in the Modifying Factors applying to a Probable Mineral Reserve is lower than that applying to a Proven Mineral Reserve.

Proven Mineral Reserve is the economically mineable part of a measured mineral resource and can only result from conversion of a measured mineral resource. A Proven Mineral Reserve implies a high degree of confidence in the Modifying Factors.

Modifying factors were applied to convert Mineral Resources into Mineral Reserves. These include, but are not restricted to, mining, processing, infrastructure, economic, marketing, legal, environmental, social and governmental factors.

The sample system collects a twice daily (12-hour, midnight to midnight) representative sample of the delivered lignite on the same conveyor belt where the certified conveyor belt scale weighs the tons of lignite delivered over the same period. The conveyor belt is located after the truck dump hopper and storage silos.

This disclosure of Mineral Reserves is based upon the qualified person's preliminary feasibility study (pre-feasibility or PFS), as defined in 17 CFR Part 229.1300, which includes and supports the qualified person's determination of Mineral Reserves. A pre-feasibility study was chosen by the qualified person, as opposed to a feasibility study, because the Falkirk Mine has successfully operated for over 40 years and has established a detailed and thorough understanding of the modifying factors that support the conversion of Measured and Indicated Resources to Mineral Reserves for the remaining LOM Plan. The QP does not believe that a feasibility level study is required because of the confidence in the available data.

The mining plans included annual stripping and lignite production qualities and quantities. Annual production costs were estimated based on the mine plan quantities, surface mining methods, equipment fleets in use, and unit prices that have been proven by historical production at the Falkirk Mine. The current mining methods, used at the Falkirk Mine since inception, are planned to continue until enough lignite reserve is depleted to fulfill the contractual obligations of the CSA for fuel supply to the Coal Creek Power Plant.

12.2 MINERAL RESERVE ESTIMATES

12.2.1 KEY ASSUMPTIONS, PARAMETERS, AND METHODS

The following key assumptions, parameters, and methods describe how the QP converted the mineral resources to mineral reserves. All recoverable lignite required to fulfill the contractual obligations of the CSA are contained within the LOM Plan pit extents. The criteria used to estimate the recoverable reserves contained within the LOM pits as estimated by Falkirk include:

- Mining costs on a unit basis remain relatively consistent with historical performance;
- Minimum minable lignite thickness: approximately 2.0 feet;
- Maximum burden depth: approximately 320 feet;
- Recovery rates by seam presented in Table 13.3 and;
- Maintaining economically competitive costs relative to previous years.

The price and other economic assumptions used to estimate the recoverable reserves are supported by the existing all-requirements CSA, the assumption of a new CSA with Rainbow Energy after Rainbow Energy acquires the CCSPP, and the mine plan associated with these contracts. Compensation from GRE and Rainbow Energy under the CSA's includes reimbursement of all mine operating costs plus a contractually-agreed fee based on the amount of coal delivered. The CCSPP is located directly next to the Falkirk Mine (i.e. a mine-mouth operation) and 100% of the required coal to operate the CCSPP is sourced from the Falkirk Mine.

The CSA's eliminate Falkirk's exposure to spot coal market price fluctuations. As a result of the cost-plus nature of the all-requirements CSA's and the mine-mouth location of the CCSPP, factors such transportation costs, location and quality of competing coal reserves, and the ability to compete in the market are not relevant considerations in determining the economic feasibility and viability of the coal reserves associated with the Falkirk Mine.

Criteria for determination of Mineral Reserve estimate are justified in further details in the discussion of run-of-mine tonnages under Section 13.0 of this TRS.

Methods to develop the LOM Plan are as follows:

A workplan forecast is developed to determine the schedule and estimated MMBtu requirements of the CCSPP by month for the first eighteen months of the LOM Plan and then by year until the end of the LOM Plan.

To determine initial tonnages for consideration of Mineral Reserves, modifying factors including the minimum mining thickness and dilution parameters are applied to the geologic model used to define Mineral Resources. Quality limits are reassessed on a seam by seam basis. Falkirk engineers then project mining pits in Carlson Software following pit design parameters discussed under Section 13.0 of this TRS. Projections are directed to the topography from the lowest mineable lignite seam. Highwalls are projected at 55-degrees and endwalls are projected at 55-degrees. Volumetric and tonnage data is utilized by the program to determine production and timing schedules.

This process produces a high-level summary by mining unit including rehandle volumes and projected qualities by period.

The high-level summary includes:

- Equipment mechanical and operational availabilities estimated based on historical production;
- Historic production rates of each piece of equipment;
- Fleet capacity including limiting production factors;
- New and/or retiring equipment and;
- Auxiliary equipment allotments.

The total hours, allotted volumes, tonnages and quality by period are the primary inputs for the Falkirk Mine financial model.

After the metered hours for each applicable equipment are calculated to deliver the required tonnages by period, historical equipment costs/hr are applied to determine the total equipment costs for that period. The staff levels are calculated from the required equipment hours and current wages are applied to determine the total labor costs for that period.

Historical unit costs including actual machine operated costs and hours, materials and supplies, and fuel are the basis of the financial model. The historic unit costs are escalated using indices tables and forward-looking futures. The escalated units are then applied to the input hours, volumes, and tonnages previously sequenced to forecast operating costs. In addition to general operating costs, costs pertaining to stockpile inventory adjustments, reclamation, royalties, mine closure, and capital projects are projected and escalated accordingly.

The resulting lignite schedule from the financial model based on the specified delivery schedule determine the Mineral Resources that carry through to become Mineral Reserves.

12.2.2 MINERAL RESERVE STATEMENT

The effective date of Mineral Resource estimates is December 31, 2021.

			Quality			
			Calorific Value	Moisture	Ash	Sulfur
Falkirk Mine	**Resource Classification**	**Tonnage**	**(Btu/lb)**	**(%wt)**	**(%wt)**	**(%wt)**
Underwood Field	Proven	31,599,882	6,417	40.41	7.05	0.57
	Probable	NA	NA	NA	NA	NA
	Total	31,599,882	6,417	40.41	7.05	0.57
Riverdale Field	Proven	46,820,901	6,614	39.44	6.37	0.59
	Probable	199,721	6,317	37.10	10.69	0.73
	Total	47,020,623	6,612	39.43	6.39	0.58
Total Reserves	Proven	78,420,784	6,534	39.83	6.65	0.57
	Probable	199,721	6.317	37.10	10.69	0.73
	Total	78,620,505	6,534	39.82	6.66	0.57

Table 12.1. Mineral Reserve Estimates.

12.2.3 **QP’S OPINION ON RISK FACTORS THAT COULD MATERIALLY AFFECT MINERAL RESERVE ESTIMATES**

The Falkirk Mine has been in operation for over 40 years. Since this is a well-established operation, the deposit, mining, and environmental aspects of the Project are very well understood. The knowledge for the Falkirk is based on the collective experience of personnel from Falkirks’s site operations and technical disciplines gained during years of lignite mining. This knowledge is supported by years of production data and observations at the Falkirk Mine.

The LOM plan included annual stripping and lignite production qualities and quantities. Annual production costs were estimated based on the mine plan quantities, surface mining methods, equipment fleets in use, and unit prices that have been proven by historical production at the Falkirk Mine. The current mining methods, used at the Falkirk Mine since inception, are planned to continue until enough lignite reserve is depleted to fulfill the contractual obligations of the CSA for fuel supply to Rainbow Energy.

Risks include changes in customer demand for any reason, including, but not limited to, dispatch of power generated by other energy sources ahead of coal, fluctuations in demand due to unanticipated weather conditions, regulations or comparable policies which may promote planned and unplanned outages at the customers plant, economic conditions, including an economic slowdown and a corresponding decline in the use of electricity, governmental regulations and/or inflationary adjustments which could have a material adverse effect on Falkirk's mineral reserve estimates.

At the time of this TRS, the QP is not aware of any specific factors that would currently materially affect the prospect of economic extraction.

The Falkirk Mine Life of Mine Map is shown in Figure 12.1 in the Supplemental Figures Attachment.

13.0 MINING METHODS

13.1 ANNUAL AND TOTAL LIGNITE PRODUCTION

The Falkirk Mining Company's Falkirk Mine is a surface lignite mining operation located near Underwood, North Dakota. This operation is a multiple seam mining operation, which is projected to ultimately produce approximately 7.0 million tons per year through 2031. The lignite coal is shipped by conveyor to the CCSPP, located six miles south of Underwood, North Dakota.

13.2 TYPE AND GENERAL MINING METHOD

The primary coal bed is the "Hagel" which is divided into the Upper Hagel (A-1) and Lower Hagel (A-2). These two seams are coincident throughout most of the permit, but are sometimes separated by a clay parting. The Hagel coal bed is overlain in a portion of the permit area by the Kinneman Creek (KNC) seam. This coal seam averages 2.7' in thickness and ranges from 2.0'-4.3' within the estimated economically minable area. The KNC seam lies an average of 65' above the Hagel seam, but varies greatly, from less than 25' to over 88' above the Upper Hagel seam. Below the Lower Hagel is a layer of interburden and the final minable "B" seam. The Upper Hagel seam averages 8.5', and ranges from 3' - 9' in thickness. The parting varies from 0' - 3' in thickness, and averages less than 1'. Thickness on the Lower Hagel seam ranges from 0' - 5' and averages less than 1' .Throughout most of the present permit area, the parting is absent and the Hagel or A seam averages 8.5' in thickness. Interburden thickness ranges from 5' - 25' and averages 13.5'. The B seam ranges from 1.5' - 4.5' and averages 3.5'. Portions have B seam separated into two seams by a parting layer which renders this seam uneconomical to mine due to quality impacts.

These economically minable coal seams are underlain by numerous other seams. The C bed of the Hagel lignite interval is the stratigraphically lowest seam in the Sentinel Butte Formation. The Tavis Creek, Coal Lake Coulee, and Weller Slough beds all occur in the upper portion of the Bullion Creek Formation. These lower coal seams are not economically recoverable by surface mining methods because of prohibitive overburden thickness. However, in portions of the Riverdale 4th Addition, the Tavis Creek and Coal Lake Coulee beds are economically recoverable and are proposed to be mined.

Topsoil and subsoil removal will precede the stripping of the overburden from the areas to be mined. The topsoil lift will be removed until the color change with subsoil is representatively exposed across the stripping area or in accordance with soil survey recommendations. A sufficient volume of subsoil will be removed to respread 24, 36, 42, or 48" of SPGM as required by spoil sampling analyses. An exception is areas of prime soils affected by mine pits, where a total of 48" will be salvaged. In some areas, gravel and sand lenses have been identified in the soil material. These materials will not be salvaged as SPGM, and may be spoiled or used as haulroad fill. Additional material will generally be available in the same area for salvage as indicated on the soil survey map, to guarantee that sufficient SPGM will be available for respread. Characteristically, this topsoil/subsoil removal and respread or stockpiling operation usually occurs during the summer and fall of the year preceding mining. During the fall topsoil/subsoil removal operation, sufficient SPGM will be removed to allow mining operations to continue until April of the following year. The removal and direct respread or stockpiling of the topsoil/subsoil will be accomplished using 32-yard class tractor-scrapers or a truck\shovel fleet.

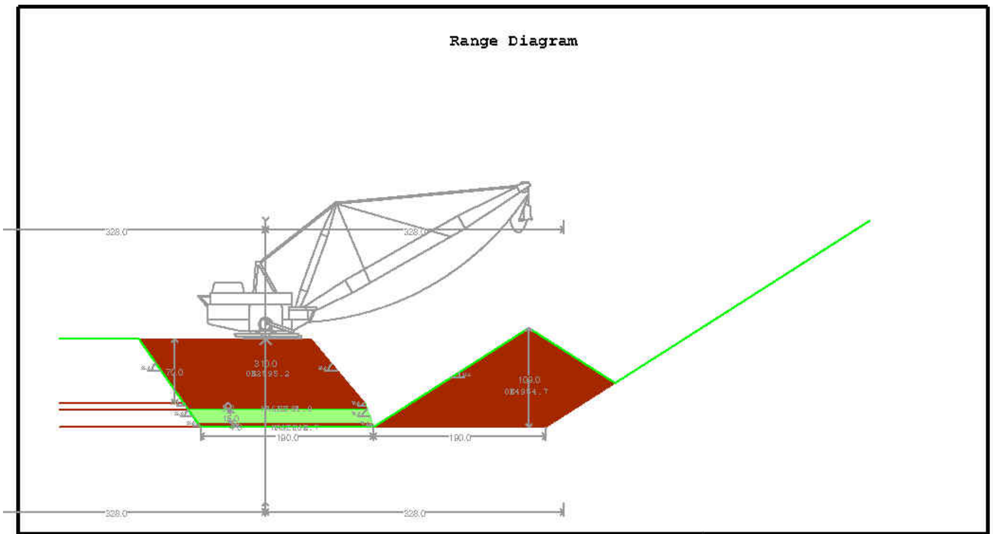
Stockpiling will be in accordance with the methods approved by the Public Service Commission of North Dakota. Volumes will be measured by load count, ground or aerial survey. The stockpiles will be seeded with an approved mixture to help control wind and water erosion and weed infestation. All stockpiling will be identified by a numbering system labeling each stockpile.

First, the truck and shovel fleet remove overburden to an elevation which approximates the first minable lignite seam; usually this will be the H lignite seam. If, however, the I seam is encountered and determined to have economic value based on quality and thickness it may be recovered as well. This overburden material is hauled to fill in the topography to final grade in the reclamation. Truck and shovel operations may be required to remove other interburdens and rehandle material depending on sequencing/production and reclamation planning.

Overburden removal operations will be accomplished by the 8750 and 195M draglines as necessary. The draglines will be scheduled to operate a maximum of 21 shifts per week, 52 weeks per year. The 8750 Dragline and 195M Dragline will be used to remove overburden in a single-pass operation (Figure 13.1), with the pit widths varying from 90’ to 300’, depending on the overburden depth and stability of the material in the areas designated to be mined. The draglines will be assisted by a truck-shovel operation for overburden removal. The angle of repose for the spoil piles will vary from 20º to 40º, depending on the geology of the overburden overlying the coal and the depth of burial of the coal. For mine planning purposes, the angle of repose was assumed to be 37º. The highwall slope will also vary due to pit conditions, and will range from 45º to 70º, with the design slope for planning purposes being 60º.

Usually, the dragline is capable of handling 115’ of overburden before it becomes necessary to rehandle. If spoil stability requires overburden to be rehandled, a variety of spoil handling techniques, including chop-cutting, benching, pre-benching with auxiliary equipment, and others, may be used to solve the problems. The remaining overburden material in the pits will be side cast into the adjacent open pit once the coal has been removed. (Figure 13.2) The initial boxcuts will be excavated with 32-yard class tractor-scrapers a truck\shovel fleet, or with a dragline, depending on the location and depth of the overburden, and the availability of the equipment.

Pits dug by the 195M dragline, can vary in direction and length. The boxcut material will be cast into the out of pit spoil area or onto the succeeding pit area if opened by the 195M Dragline. The boxcut material will be hauled into the out of pit spoil area if removed by scrapers or truck and shovel.



STRATA	THICK	FRONT ANG	BACK ANG	SWELL %	CUT AREA	SPOIL AREA
OB	70.0	50.0	55.0	10.0	13595.2	14954.7
HAGEL A	8.0	70.0	55.0	20.0	1581.9	
IB	15.0	70.0	55.0	20.0	2908.0	
HAGEL B	4.0	70.0	55.0	20.0	762.7	
TOTAL PASS:	1		TOTAL SPOIL AREA:		14954.7	

SCALE: 1" = 100'
Sep 17, 2021 11:07AM.

CARLSON SOFTWARE INC

Figure 13.1 Typical Range Diagram for Dragline Single Pass

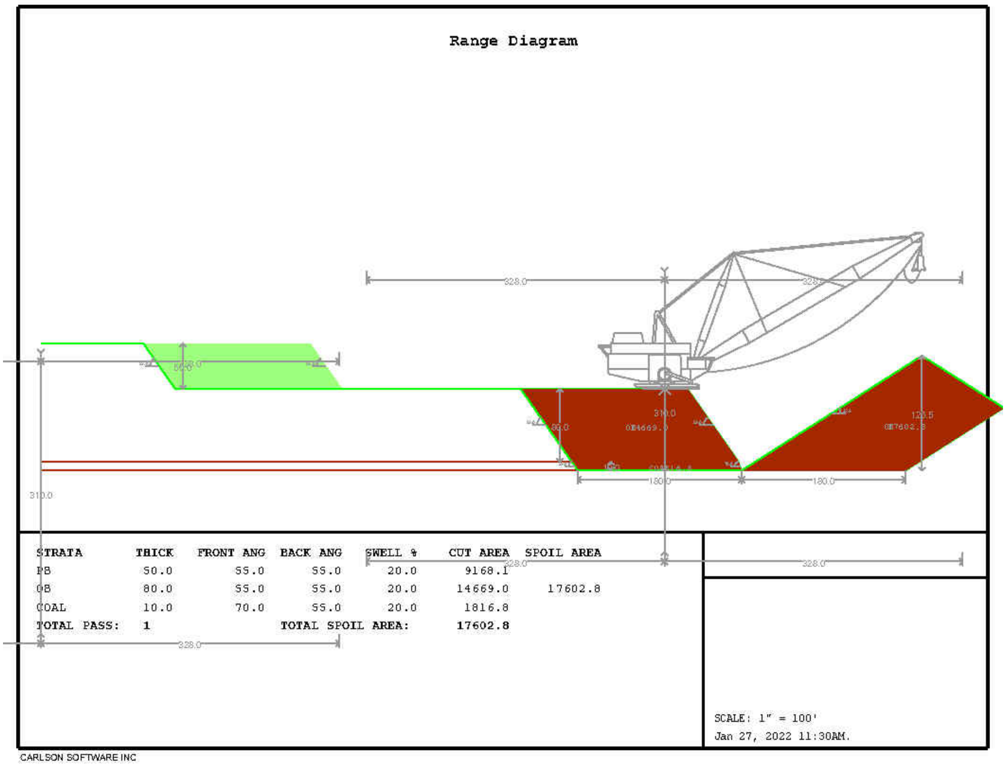


Figure 13.2 Typical Range Diagram for Dragline Single Pass with Truck-Shovel Prebench

13.3 RUN OF MINE TONNAGES

Recoverable Run of Mine (R-O-M) tonnages at the Falkirk Mine meet the following conditions:

- Minimum mining thickness: 2.0 ft;
- Maximum burden depth: approximately 320 feet;
- Average lignite density: approximately 80 lb/ft^3

The average lignite quality through the LOM is projected to be:

Calorific Value (Btu/lb)	6,200
Moisture (%wt)	37
Ash (%wt)	11.5
Sulfur (%wt)	0.50
Sodium (%wt)	3.13

Table 13.1. Projected LOM Quality.

Recovery rates of individual coal seams are presented in Table 13.2 and were determined from various comparisons between surveyed severed tons, haul truck payloads, delivered tons, and modeled tons accounting for dilution and minimum mining thickness.

Seam	Recovery Rate
Hagel A	91%
Hagel B	85 %
Kinneman Creek	80 %
Tavis	91 %
Coal Lake Coulee	75%

Table 13.2. Recovery Rates by Seam.

Mining dilution is determined by an analysis of the geologic model, the coal core data, and the as-delivered coal analyses from the power plant. Roof and floor samples from the coal cores have been periodically collected and analyzed. Statistical analysis has shown that the quality parameters in the roof and floor samples are much more variable than those in the coal seams. Due to this variability, the roof and floor analyses have been used to develop average qualities, with typical distribution ranges.

The geologic model based on the coal core data are interrogated to establish average yearly coal qualities, based on the actual historical yearly mining areas. These yearly coal qualities (from the model) are then compared to the yearly as-delivered analyses from the power plant.

It should be noted that this procedure of estimating mining dilution is also including the sampling bias in the power plant's coal sampling systems and other plant specific variables. This means that the dilution estimates are designed to incorporate the biases and variables within the specific power plant.

Mining dilution presented in Table 13.3 was initially determined from like coal at a neighboring location. Later, the drilling data was compared to actual as-delivered quality data and confirmed that the original dilution parameters remained applicable with only slight adjustments. Dilution parameters are applied to all lignite seams and are outlined herein:

Structural (Roof and Floor)	
Loss thickness (ft)	0.50
Dilution thickness (ft)	0.56

Quality (Roof and Floor)	
CalorificValue(Btu/lb)(MAF)	12,100
Moisture (%wt)	22.50
Ash (%wt)(Dry)	78.8
Sulfur (%wt)(MAF)	0.05
Sodium (%wt)(MAF)	1.45

Table 13.3. R-O-M Dilution Parameters.

13.4 ENGINEERING STUDIES – DESIGN PARAMETERS

13.4.1 PIT DESIGN

To determine highwall stability, a circular arc failure approach has been utilized. A minimum FoS of 1.2 was calculated using the Modified Bishop Method for each highwall configuration that will be encountered by the mine. Due to the depth and multiple seam nature of the lignite deposit, benching will be required to allow for continuous burden removal and lignite mining. For individual slopes less than 80 feet, highwall angle are stable up to 70 degrees. Between 80 and 180 feet, the effective slope angle decreases with a linear relationship from 60 to 40 degrees as follows:

Depth (ft)	Effective Highwall Angle
80 to 110	60 degrees
110 to 145	50 degrees
145 to 180	40 degrees

Table 13.4. Effective highwall angle by depth

For slopes greater than 180 feet, benching is required. Figure 13.4 illustrates the combination of highwall slopes and safety benches that are used to meet the effective slopes outlined above. In general, the prebench level, prepared by the truck and shovel operation is located 150 to 160 feet above the pit floor and naturally creates bench with a minimum width of 150 feet. When benches and offsets are accounted for pits may range from 100 to 210 feet in width. Initial design assumes a 170 foot width.

Low wall or spoil side angles were based on the type of materials found throughout the mine area, an angle-of-repose of 33 degrees was recommended by geotechnical studies.

As a whole, pits are designed with an effective highwall angle of approximately 50 degrees, effective endwall angles of approximately 50 degrees, and effective low wall angles of 33 degrees or less.

Mining has been ongoing at the Falkirk Mine since 1978 and the design methodology for the pit slopes has been satisfactory as evidenced by each successful pit progression. Due to the continuous stratigraphic nature of the geology, which is checked by regular drilling exploration programs ahead of mining, repetition of geologic units leads to consistency in applying geotechnical parameters.

Falkirk engineering have made minor adjustment to the pit design primarily for optimization, whether that be for new equipment specifications or additional ramps to reduce haul distances. Optimization of drainage is another factor that greatly influences the pit design.

13.4.2 SPOIL STABILITY STUDIES

The bulk of geotechnical studies at the Falkirk Mine since 1976 pertain to spoil stability which influence operation plans for production and reclamation. Many studies have been conducted to verify mining method and direct best practices when entering into a new or unknown mine area. Others have been conducted as a result of either highwall or spoil failures that have been observed at the mine. One such failure occurred at the toe of the dragline bench causing the bench to move vertically downward and horizontally outward toward the spoil piles which lead to a Barr Engineering study in 2015. There have been several failure types observed at the mine, including heaving of the pit floor followed by a slump failure of the highwall or spoil, block failure of the clayey glacial till and wedge failures along fault zones. As a result, there have been several spoil studies performed by qualified engineering firms over the years, including the most recent by Barr Engineering in 2013 titled “Spoil and Highwall Slope Stability Study for Riverdale and Underwood Mine Areas – Falkirk Mine”. The laboratory results were summarized and analyzed using several tests including “One-dimensional swell or settlement potential of soils”, “Moisture-Density Relationship”, “Unconfined Compression test” and “Consolidated Undrained Triaxial Test” all of which are ASTM standard tests. Figure

An example of a slope stability analysis done by Barr is presented in Figure 13.3.

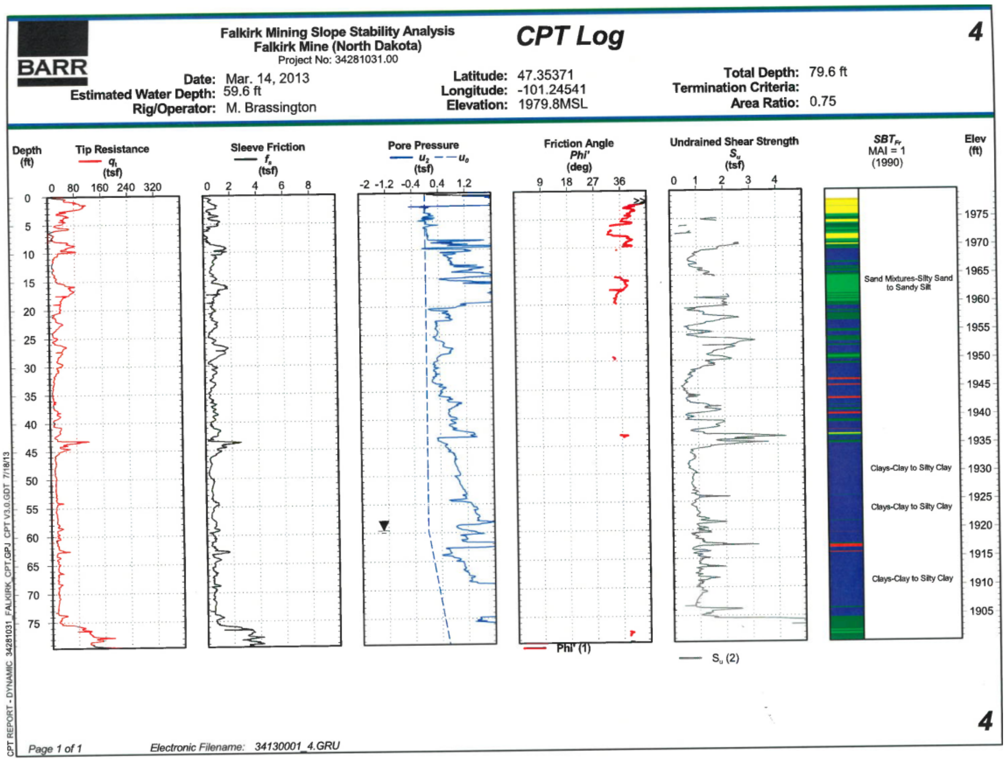


Figure 13.3. Soil Stability Assessment. (Barr Engineering, 2013)

To help remediate the rotational bench failures, the truck-shovel operation does not dump material within the first two spoil peaks, and spoil piles are not to exceed 90-feet in height above the dragline bench. Furthermore, extra attention is given to ensure water is not stored in spoil valleys for a prolonged period. In addition, the work area is inspected by shift supervisors for cracking, heaving, flowing groundwater, or any other abnormal conditions prior to starting work in an area, and following any precipitation or freeze/thaw event. The inspection requirements are specified as part of Falkirk's safeguards under the Ground Control Plan. A certified person must document inspections of the work areas during each shift and after every rain, freeze, or thaw. Dragline operators and groundman are continuously monitoring bench and spoil conditions as they dig and utility workers use constant observation of the highwalls and spoils when working in the pits.

A dewatering system, known as the headerline, is installed ahead of mining to facilitate the removal of groundwater and surface water from the mining areas into predetermined pit water ponds. These ponds area monitored by the dewatering supervisors as well as the environmental specialist at the mine.

13.5 HAUL ROADS, RAMPS AND DRAGLINE WALKWAYS

Haul roads and pit ramps are typically designed to a width of 100 feet to allow for two-way traffic. Ditches are constructed in cut sections consisting of 4H:1V inslopes, 15-foot flat ditch bottom, and 3H:1V or flatter backslopes. Haul roads are surfaced with a minimum of 6 inches of aggregate.

Dragline walkways are typically designed to a width of 200 feet. Ditches are constructed in cut sections consisting of 3H:1V inslopes, 14-foot flat ditch bottom, and 3H:1V backslopes.

Some haul roads may utilize selective fill to improve roadway strength and stability. Two application methods have been employed: application one utilizes 10%-20% selective fill blended uniformly within the road subgrade soil, application two involves subcutting the subgrade and uniformly blending 10%-20% selective fill with the subcut material. Final reclamation of both applications consists of covering any selective fill/soil mixtures with four feet of suitable plant growth material, as well as ensuring any selective fill/soil mixtures are well above the elevation of the expected zone of saturation.

Typical sections for haul roads, pit ramps and dragline walkways are presented in Figure 13.4.

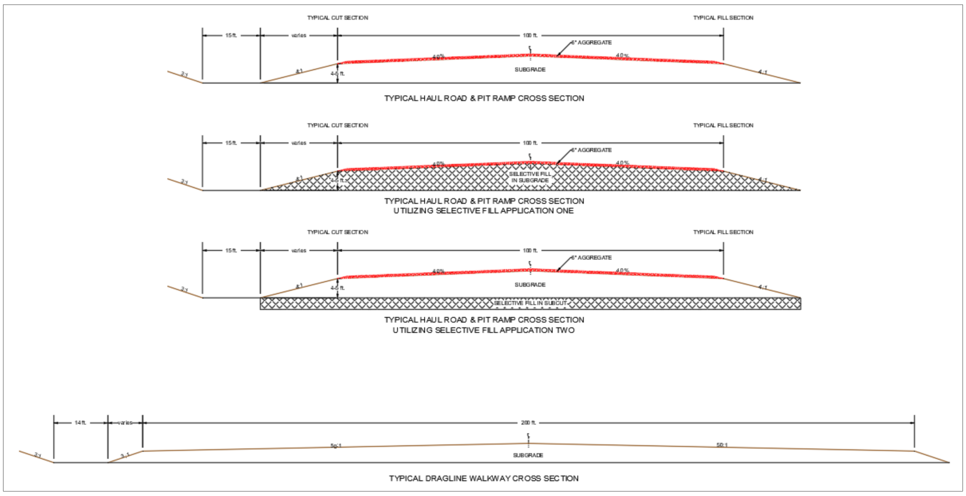


Figure 13.4. Typical sections for roadways.

13.6 PERSONNEL

The Falkirk Mining Company employees approximately 416 full time workforce employees; including maintenance staff and equipment operators; and 70 full time staff employees. In addition to the full time employees, Falkirk employees several seasonal coop and intern employees.

13.7 MAJOR EQUIPMENT

A list of major and auxiliary equipment used at the Falkirk Mine is presented in Table 13.5 and will be used, as needed, for all aspects of the operations.

List of Major Equipment

2 8750 Draglines (125 cubic yard class)
17 Bulldozers, Track
1 Cable Mover
2 195-M Parting-Reclamation Draglines (17 cubic yard class)
2 Loading Shovels (19 cubic yard class)
1 Loading Shovel (46 cubic yard class)
2 Electric Mining Shovel (63 cubic yard class)
2 Front-End Loaders (16 cubic yard class)
1 Front-End Loader (25 cubic yard class)
1 Front-End Loader (6 cubic yard class)
1 Front-End Loader (5 cubic yard class)
1 Front-End Loader (2 cubic yard class)
1 Explosives Truck
1 Coal Drill
4 100-Ton End-Dump Trucks
9 200-Ton End-Dump Trucks
7 240-Ton End-Dump Trucks
11 Coal Hauler (200-ton)
10 Road Graders
7 Water Trucks
2 Dump Truck
1 Gravel Trailer (35 ton)
3 Excavators
7 Hydraulic Backhoes
1 Supply Truck
3 Mobile Cranes
2 Lowboys
1 Electrical Maintenance Truck
2 Welding Trucks
5 Lube/Fuel Trucks
1 Tire Handling Vehicle
4 Field Maintenance Trucks
36 Portable Pit Pumps
15 Personnel Transport Vehicles
64 Pickup Trucks
8 Scrapers (32 cubic yard class)
Miscellaneous Seeding Equipment
30 Portable Pit Lights
3 Rubber-Tired Doze
1 Overburden Drilling Rig
7 Cable Tractors
6 Farm Tractors
3 Emergency Response Vehicles

Table 13.5. Major and auxiliary equipment list.

14.0 PROCESSING AND RECOVERY METHODS

No mineral processing is performed.

15.0 INFRASTRUCTURE

The public utility lines and facilities locations are presented in Figure 15.1 (LOM Infrastructure Map, located in the Supplemental Figures Attachment).

The Falkirk Mine receives power from the CCSPP on circuit breaker feeds 61NB1 and 61NB2. Two parallel 69kv transmission lines run two miles from the CCSPP switch yard to the mine office substation. The line then branches out of the mine office substation to feed the East Mine Area and Riverdale Pits. The line that feeds the East Mine Area pit substation has branch feeders along the way that also supply the New Shop substation, Facility substation and the East Heat Enclosure substation. The line that feeds the Riverdale pit substation has a branch feeder that supplies the Riverdale Heat Enclosure substation. The 69kv distribution line network is comprised of thirty-two miles of powerline across the mine site. The East Mine Area and Riverdale Pit substations are scheduled to be advanced ¾ mile in 2022, to accommodate for future mining in those respective areas.

Potable water is supplied to Falkirk from the CCSPP, after treating the water onsite.

Sanitary waste produced at the main Falkirk Mine office and maintenance facility is pumped to a waste pond administered by the CCSPP. Outlying buildings utilize drain fields.

A registered groundwater well sourced from the Hensler Sand aquifer feeds the equipment wash bay and fire hydrants.

Sedimentation ponds W6-02, W6-04, R26-01, and E34-06 serve as the water source for dust suppression water horses located in Sections 6, 26, and 34.

Lignite will be mined and transported to the Falkirk Coal Handling Facility and placed in one of two hoppers for direct delivery to CCS or on the coal stockpile (west of the mine office facilities), via a system of haul roads, by 200-ton payload haul trucks. Public roads are not used for the transport of lignite. Mine site haul routes are depicted in Figure 12.1 (Life of Mine Map). Coal haulage from the East Mine Area will pass through underpasses for US Highways 83 and 200. Coal from the Riverdale Mine Area will utilize underpasses for County Road 20 and 29th Ave NW (Underwood, ND). There is also an at-grade crossing of 2nd Ave SW (Underwood, ND).

16.0 MARKET STUDIES

16.1 MARKETS

The primary market for the Falkirk Mine lignite is the adjacent the CCSPP for which the mine was developed. The Falkirk Mine's coal quality is such that it is cost prohibitive to transport over long distances. NACoal and Falkirk have made efforts to identify specialty niche markets for the lignite with limited success.

16.1.1 MATERIAL CONTRACTS

The Falkirk Mine is a fully developed and functioning mining operation. All aspects of the mining, haulage and delivery of lignite to the CCSPP are handled by Falkirk. Falkirk is a mine-mouth project where the lignite is delivered directly to the power plant using off highway haul trucks. All production from the mine is delivered to the CCSPP under the existing CSA with GRE and the expected new CSA with Rainbow Energy. Under the CSA, Falkirk receives a contractually-agreed fee based on the amount of lignite delivered. While Falkirk is responsible for all mine operations, the customer (GRE currently and Rainbow Energy when the acquisition of the CCSPP by Rainbow is completed) is responsible for funding all mine operating costs and provides all of the capital required to build and operate the mine. This contract structure eliminates exposure to spot coal market price fluctuations. No other material outside contracts are required to provide this service. No material contracts with affiliated parties are in place. Falkirk is an active operation and all material contracts are in place for the continued operation of the mine.

17.0 ENVIRONMENTAL STUDIES, PERMITTING, AND PLANS, NEGOTIATIONS, OR AGREEMENTS WITH LOCAL INDUVIDUALS OR GROUPS

17.1 PERMITS

The Falkirk Mine is operating under the State of North Dakota Public Service Commission (NDPSC) Surface Coal Mining and Reclamation Operations Permits NAFK-8405, Revision 41 and Renewal #7, NAFK-8705, Revision 39 and Renewal #6, NAFK-9503, Revision 33 and Renewal #5 and NAFK-9601, Revision 17. The permits were issued by the State of North Dakota under delegated authority of the United States Department of the Interior, Office of Surface Mining Reclamation Enforcement (OSMRE) Surface Mining Control and Reclamation Act (SMCRA).

A list of active permits at the Falkirk Mine is provided as Table 17.1 below.

Type of Permit	Name and Address of Issuing Authority	Identification Number	Status
State Coal Mining Permit	North Dakota Public Service Commission 600 East Boulevard, Dept. 408 Bismarck, North Dakota 58505-0480	NAFK-8405 NAFK-8705 NAFK-9503 NAFK-9601	Issued 04/01/21 Issued 05/29/19 Issued 04/01/21 Issued 07/07/21
Mine Identification No.	Mine Safety and Health Administration U.S. Department of Labor P.O. Box 25367, DFC Denver, CO 80225	No. 32-00491	Issued 07/31/75
NDPDES Discharge Permit	North Dakota Department of Environmental Quality 918 E. Divide Avenue Bismarck, ND 58501-1947	No. ND-0024791	Issued 07/02/18
Perfected Water Use Permit	North Dakota State Water Commission 900 East Boulevard Avenue Bismarck, ND 58501-1947	#4759	Issued 03/22/1978
Air Pollution Control Permit to Operate	North Dakota Department of Environmental Quality Gold Seal Center 918 E. Divide Avenue Bismarck, ND 58501-1947	AOP-28093	Issued 04/07/2021 Through 04/07/2026
Coal Lake Coulee Legal Drain Permit	North Dakota State Water Commission 900 East Boulevard Avenue Bismarck, ND 58505	#1402	Issued 02/25/1981

Coal Exploration Permit	North Dakota Geological Survey 600 East Boulevard Bismarck, ND 58505	MCL 55-21-529	Issued 03/01/2021 Through 03/01/2022
Conditional Use Permit	Mclean County Board of Commissioners Mclean County Courthouse Washburn, ND 58577	#40- Case 64	Issued 06/09/1977
Nationwide 404	U.S. Corps of Engineers Omaha District Omaha, NE	Permit #21 Individual Permit No. NOW-2017-1364 -BIS	Issues 11/16/2017 Through 11/16/2047
Stormwater Permit	North Dakota Department of Environmental Quality Gold Seal Center 918 E. Divide Avenue Bismarck, ND 58501-1947	#NDR32-0015	Issued 01/01/2020 Through 12/31/2024
Conditional Use Permit	Mclean County Board of Commissioners Mclean County Courthouse Washburn, ND 58577	Case 65 Falkirk Permit No. 40	Issued 06/09/1977
Conditional Use Permit	Mclean County Board of Commissioners Mclean County Courthouse Washburn, ND 58577	#591 Falkirk Permit NAFK-8405	Issued 03/05/1986
Conditional Use Permit	Mclean County Board of Commissioners Mclean County Courthouse Washburn, ND 58577	#1069 Falkirk Permit NAFK-8405	Issued 04/16/1993
Conditional Use Permit	Mclean County Board of Commissioners Mclean County Courthouse Washburn, ND 58577	#848 Falkirk Permit NAFK-8705	Issued 04/13/1989
Conditional Use Permit	Mclean County Board of Commissioners Mclean County Courthouse Washburn, ND 58577	#1237 Falkirk Permit NAFK-8705	Issued 03/19/1996
Conditional Use Permit	Mclean County Board of Commissioners Mclean County Courthouse Washburn, ND 58577	#1235 Falkirk Permit NAFK-9503	Issued 04/17/1996
Conditional Use Permit	Mclean County Board of Commissioners	#1367	Issued 04/22/1997

	Mclean County Courthouse Washburn, ND 58577	Falkirk Permit NAFK-9503	
Conditional Use Permit	Mclean County Board of Commissioners Mclean County Courthouse Washburn, ND 58577	#1521 Falkirk Permit NAFK-9503	Issued 03/14/2000
Conditional Use Permit	Mclean County Board of Commissioners Mclean County Courthouse Washburn, ND 58577	#1255 Falkirk Permit NAFK-9601	Issued 07/02/1996
Conditional Use Permit	Mclean County Board of Commissioners Mclean County Courthouse Washburn, ND 58577	#1686 Falkirk Permit NAFK-8705	Issued 05/07/2002
Conditional Use Permit	Mclean County Board of Commissioners Mclean County Courthouse Washburn, ND 58577	#1687 Falkirk Permit NAFK-9503	Issued 05/07/2002
User of High Explosives	Federal Explosives Licensing Center Bureau of Alcohol, Tobacco, Firearms and Explosives 244 Needy Road Martinsburg, WV 25401-9431	License #3-ND-055 -33-6G-00045	Issues 07/01/2021 Through 07/01/2024
Conditional Use Permit	Mclean County Board of Commissioners Mclean County Courthouse Washburn, ND 58577	#1951 Falkirk Permit NAFK-9503	Issued 06/06/2024
Conditional Use Permit	Mclean County Board of Commissioners Mclean County Courthouse Washburn, ND 58577	#2144 Falkirk Permit NAFK-8405	Issued 06/19/2006
Conditional Use Permit	Mclean County Board of Commissioners Mclean County Courthouse Washburn, ND 58577	#2210 Falkirk Permit NAFK-8405	Issued 04/23/2007
Conditional Use Permit	Mclean County Board of Commissioners Mclean County Courthouse Washburn, ND 58577	#2622 Falkirk Permit NAFK-9503	Issued 12/22/2010
Conditional Use Permit	Mclean County Board of Commissioners Mclean County Courthouse Washburn, ND 58577	#3547 Falkirk Permit NAFK-8405	Issued 11/21/2017

Temporary Water Use Permit	North Dakota State Water Commission 900 East Boulevard Avenue Bismarck, ND 58505	PermitND2020-20184 Falkirk Permit NAFK-8405	Issued 06/01/2020 Through 05/31/2021
Solid Waste Permit	North Dakota Department of Environmental Quality Gold Seal Center 918 E. Divide Avenue Bismarck, ND 58501-1947	Falkirk Permit No. WH-2463	Issued 01/01/2020 Through 01/01/2030

Table 17.1. List of Active Permits

17.2 ENVIRONMENTAL STUDIES

Baseline studies have been conducted on all Falkirk permitted lands and have been approved through the NDPSC. An Environmental Assessment (EA) was issued on two quarters of Federal Coal in December, 2016. The impacts of the Falkirk Mine were considered during the NDPSC permitting process and the EA process. No impacts were anticipated with mining at the Falkirk Mine. Some of the areas that were evaluated were:

- Air Resources
- Geology
- Soils
- Groundwater Resources
- Surface Water Resources
- Streams and Wetlands
- Alluvial Valley Floors
- Threatened and Endangered Species
- Land Use
- Cultural and Historical Resources
- Transportation Facilities
- Existing Structures
- Hazardous and Solid Waste

17.3 BASELINE STUDIES

17.3.1 GROUNDWATER

There are about 575 groundwater monitoring wells in the Falkirk Mine database. U.S. Office of Surface Mining personnel and others have commented that this is possibly the largest number of monitoring wells at any western US surface coal mine.

The main source of water for the surrounding farmsteads is from private ground water wells. Consequently, Falkirk has been monitoring the ground water in the Underwood Coal Field since 1976 and in the Riverdale Coal Field since 1994. Many farmsteads also receive water from a rural water system. Currently the city of Underwood receives its municipal water from the City of Riverdale. Well certification programs have also been established for the monitoring of production wells in the area.

The analysis of quality, and potentiometric fluctuation patterns has been conducted for the last 30 years of data (1989-2019) for the Underwood Coal Field, and for 26 years in the Riverdale Coal Field based on water level measurements started in 1994.

The Falkirk Mining Company ground water monitoring plans developed for and implemented at the Falkirk Mine is intended to fulfill the requirements of North Dakota Administrative Code sections 69-05.2-09-12 and 69-05.2-16-14. The purpose behind the design and implementation of the ground water monitoring plan is threefold; investigate and quantify the pre-mining hydrologic conditions of permitted and adjacent areas, monitor impacts on the ground water hydrology of the area due to surface mining operations and climatic conditions, and monitor and quantify post-mining ground water conditions. A sustained program of ground water data collection also serves to substantiate projected impacts to the hydrology of the permit area as outlined in the probable hydrologic consequences section of each permit application.

The current monitoring well inventory for the Falkirk Mine is listed in Section 2. (NAFK-8405, NAFK-8705, NAFK-9503 and NAFK-9601). This inventory includes active, inactive, and destroyed monitoring wells. Active and inactive wells are listed first, and destroyed wells are placed toward the end of the inventory. Section 2.2 (NAFK-8405, NAFK-8705, NAFK-9503 and NAFK-9601) also lists the frequency at which water levels and water quality samples are taken. In addition to the monitoring schedule, the Well Inventory and Monitoring Schedule lists the location of the well, top of casing and ground surface elevations, depths to the top and bottom of the well screen, and the stratum in which the monitoring well is located. All available monitoring well installation and construction information is also contained in Section 2.2. (NAFK-8405, NAFK-8705, NAFK-9503 and NAFK-9601). Information is included for active, inactive, and destroyed wells. As required by NDAC 69-05.2-08-06(1)(d), available lithologic logs, geophysical logs, well construction reports and diagrams, and well completion reports are presented.

Water levels are reported to the North Dakota Public Service Commission quarterly, within 30 days following the close of each quarter. In the event that access to a monitoring well is denied throughout a quarter due to persistent climatic conditions or circumstances beyond Falkirk's control, then documentation to this effect will be submitted with the quarterly monitoring report.

Water quality samples will be analyzed, at a minimum, for the parameters required by NDAC 69-05.2-08-06(1)(e). Sample results will be reported to the North Dakota Public Service Commission annually within 30 days following the fourth calendar quarter. Wells with adequate water production will be sampled after purging, at a minimum, the volume of stale water calculated to exist in the well, or when the water’s measured parameters for pH and electrical conductivity have reached stabilization. Low producing wells will be purged, allowed to recover, and sampled within twenty-four hours of purging. Wells with insufficient water volume to allow for collection of a representative sample will be documented to that effect in the annual groundwater quality report, in addition to any other condition that may prevent a well from being sampled.

The post-mining monitoring well network consists of wells existing in undisturbed areas and wells installed in reclaimed areas to monitor the quality and elevation of groundwater flowing into and out of the reclaimed spoils. Installation of reclamation monitoring wells in reclaimed areas will be accomplished after SPGM respread, preferably after the establishment of a viable vegetative cover. Generally, reclamation monitoring wells will be placed in the vicinity of pre-mining well sites with screened intervals placed in the same strata where possible. The replacement of wells at pre-mining well sites will facilitate pre- and post-mining hydrogeologic comparisons. The reclamation well installations will concentrate on screening the base of the spoils, with additional wells placed in the next lowest aquifer below the lowest mined coal bed.

A minimum of two years of baseline ground water data was collected and studied within, and extending a mile beyond, each permit area at the Falkirk Mine. The baseline data collection included water levels, water qualities (alkalinity, hardness, total dissolved solids (TDS), major cation/anions, and select metals), potentiometric head, flow direction, and hydraulic conductivity calculated from pumping tests or single well response (slug) tests. Also, as part of the permitting process, domestic wells and springs within and surrounding the permit areas are certified to determine the well or spring location, well construction details, source aquifer, water chemistry, and pumping or flow rate.

17.3.2 SURFACE WATER

From 1981 through present baseline surface water quality and quantity data has been collected from thirty-five ephemeral and intermittent stream monitoring sites and quality and elevation data on five permanent wetlands. Additional quality samples were taken on approximately twenty-seven developed water resources (dugouts and stock ponds), forty-eight springs and seeps and one hundred forty seasonal and semi-permanent wetlands. Samples were collected by Falkirk environmental staff and contracted environmental professionals in accordance with Section 69-05.2-08-07, NDAC.

The study area encompassed the Falkirk Mine four permitted areas (NAFK-8405, NAFK-8705, NAFK-9503 and NAFK-9601). Water quality parameters tested by a third-party laboratory included but not limited to total suspended solids, total dissolved solids, pH, total iron, manganese, calcium, sodium, magnesium, electrical conductivity, alkalinity (carbonate and bicarbonate), sulfate, and sodium adsorption ratio. Water quality analysis results for Total Dissolved Solids values ranged from 24 to 3800 mg/l, Total Suspended Solid values ranged from <1 to 3760 mg/l, Specific Conductance values ranged from 43 to 4270 umhos/cm and pH values ranging between 6.3 and 9.8. Based on baseline flow data, the average unit runoff for the permit area watersheds ranges from 0.05 to 300 cfs.

17.3.3 GEOCHEMISTRY

A geochemical investigation of the overburden and underburden soils down through and immediately below the lowest seam projected to be mined within the planned mining disturbance boundary of the permitted areas has been completed. Overburden samples were collected from drillholes in each permit area at a minimum density of one drillhole per 40 acres across the projected mining disturbance boundary; equaling at least 16 overburden drillholes per section of land. Overburden samples are collected at 5 foot increments down to the top of target lignite, and then the 5 feet immediately below. Each sample is collected from the drill cuttings, bagged separately, and sent for laboratory analysis. Over the entire Falkirk Mine area, approximately 1,076 individual drillholes sites have had overburden samples collected and analyzed from them. The majority of the overburden samples were analyzed by MVTL or Agvise Laboratories.

17.3.4 ARCHEOLOGY

Evaluation of cultural resources at the Falkirk Mine have been completed with the North Dakota Historical Society per requirements of NDCC 55-03 as authorized to conduct cultural resources investigations in the State of North Dakota.

Archaeological surveys have been conducted on all of the Falkirk Mine approved State Mining Permits (NAFK-8405, NAFK-8705, NAFK-9503, and NAFK-9601). Included was the Class III Cultural Resource Inventory, evaluation testing on the sites that were identified during inventory and final mitigation work approved by the North Dakota State Historic Preservation Officer (NDSHPO).

In Permit NAFK-8405, thirty-six historic sites and fifty-two prehistoric sites were identified. The NDSHPO determined twelve sites were listed as eligible for the National Register and eleven of the sites were mitigated. In Permit NAFK-8705, eighteen historic sites and fifteen prehistoric sites were identified. The NDSHPO determined one site was listed as eligible for the National Register and that one site was mitigated. In Permit NAFK-9503, eighty-eight historic sites and forty-eight prehistoric sites were identified. The NDSHPO determined twenty sites was listed as eligible for the National Register and that one site nineteen were mitigated. In Permit NAFK-9601, eleven historic sites and eight prehistoric sites were identified. The NDSHPO determined two sites were listed as eligible for the National Register and one of the sites was mitigated.

17.3.5 WATERS OF THE US (WOTUS)

The Falkirk Mine received an Individual Permit (NOW-2017-1364-BIS) from the Department of the Army Corps of Engineers, Omaha District in November, 2017. This permit covers all of Falkirk's permitted lands and is authorized until November, 2047.

17.4 WASTE DISPOSAL

No processing of lignite occurs at the Falkirk Mine; therefore, no lignite processing wastes will be generated.

Disposal of waste in the permit area will be restricted to non-coal waste for which an Inert Solid Waste Permit is not required. The non-coal waste including concrete products, plastic material, wood materials, and other non-hazardous materials will be placed and stored in a controlled manner in a designated approved portion of the permit area, in accordance with Section 69-05.2-19-04, NDAC. Disposal of the above referenced non-coal waste will occur in approved mining pits on lands under Falkirk ownership.

17.5 SITE MONITORING

The Falkirk Mine has sampling plans for areas that are required to be monitored on a regular basis including water (ground and surface water) sampling and soil sampling.

17.5.1 WATER SAMPLING

As part of a long-term water monitoring program, groundwater monitoring wells and surface water sampling locations were selected on pre-mining and post-mining lands. Currently, 356 monitoring wells targeting various water bearing units are sampled for quality,13 ephemeral streams and intermittent streams are sampled for surface water quality and flow data and five permanent wetlands are sampled for water quality and elevation data is collected Groundwater and surface water samples are collected, analyzed, and reported to NDPSC and the North Dakota Department of Environmental Quality (NDDEQ) Upon collection, water samples are shipped in coolers to Minnesota Valley Testing Laboratories, Inc. in Bismarck, ND for analysis.

Quality parameters tested during these sampling events include but are not limited to total suspended solids, total dissolved solids, pH, total iron, manganese, calcium, sodium, magnesium, electrical conductivity, alkalinity (carbonate and bicarbonate), sulfate, and sodium adsorption ratio. These data are compared to the baseline groundwater and surface water conditions established from 1981 to present on and adjacent to Falkirk permitted lands.

Upon mine closure, an appropriate post mine groundwater and surface water sampling program that follows regulatory requirements will be outlined with NDPSC and the NDDEQ and followed.

17.5.2 SOIL SAMPLING

Section 69-05.2-15, NDAC, allows for determining SPGM replacement thickness based on regraded spoil characteristics. After the spoil material has been regraded, samples will be collected to a depth of 12 inches on a 400-foot grid. They will be analyzed for SAR and texture. Analytical results supporting the proposed soil respread depth will be submitted with the grade approval request to the North Dakota Public Service Commission.

In accordance with Section 69-05.2-15-05, NDAC, nutrients and soil amendments (in the amounts determined by soil tests) will be applied to the redistributed surface soil layer when necessary so that it supports the approved post-mining land use and meets revegetation requirements. All soil tests will be performed by a qualified laboratory using standard methods. Soil samplings are analyzed by Agvise Laboratories in Northwood, ND.

17.6 WATER MANAGEMENT

Surface runoff from lands disturbed by surface coal mining facilities and activities at the Falkirk Mine are controlled by sedimentation ponds. Discharges from these impoundments are regulated under an individual NDPDES permit, Permit Number ND-0024791, issued by the NDDEQ. The NDPSC performance standards for dams and embankments are also followed in accordance with section 69-05.2-20, NDAC.

In addition, a Storm Water Pollution and Prevention Plan (SWPPP) dated August 2021 is in place and discusses in detail the water management practices at the Falkirk Mine. Stormwater Best Management Practices (BMPs) for the reduction of erosion and sedimentation are also discussed in the SWPPP. This plan is in place for surface coal mining haulroads that are located outside of a watershed that are controlled by sedimentation pond. The SWPP permit is regulated under NDPDES general permit for stormwater discharges from mining, General Permit Number NDR320000.

Currently, 70 active sedimentation ponds are in use at the Falkirk Mine in all permitted areas for the collection and treatment of surface water runoff within the mine area. Also, the Falkirk Mine has twenty-seven stormwater outfall control sites

Sedimentation ponds at the Falkirk Mine are either discharged by a control valve or are pumped. To comply with the mine site's NDPDES permit for discharges, water samples are collected and analyzed once per month for a pond discharge for total suspended solids and pH and annually for Iron. Daily visual inspections are made during discharges for quality, flow rate and oil and grease. Water samples are shipped in coolers to Minnesota Valley Testing Laboratories, Inc. in Bismarck, ND for analysis. These quality results are reported quarterly via the electronic Discharge Monitoring Reports (DMRs) through NDDEQ.

17.7 RECLAMATION BOND

Falkirk Mine is required to post a reclamation bond in accordance with Section 69-05.2-12-07 of the North Dakota Administrative Code. The reclamation costs for Permits NAFK-8405, NAFK-8705 and NAFK-9503 have been calculated by utilizing the methods and procedures as outlined by the Public Service Commission's "Guideline for estimating reclamation costs for establishing performance bond amounts for permit areas." The current reclamation bond that is in place for Falkirk's active permits is $99,450,000.

17.8 PLANS, NEGOTIATIONS, OR AGREEMENTS WITH LOCAL INDIVIDUALS OR GROUPS

Temporary closures of county roads within the permitted area were reviewed and approved by the Board of County Commissioner of McLean County, North Dakota. Road Closures, relocations and operations within 100' of R-O-W currently approved are listed in Falkirk's approved State Mining Permits.

17.9 MINE CLOSURE PLANS

The current LOM plan assumes closure of the mine in 2031. At that time reclamation and remediation work would begin, including the closure of pits and other mine facilities, respreads of topsoil/subsoil, and revegetation. Monitoring and other costs are included for a ten-year period after the completion of reclamation. The SMCRA permit details post production reclamation activities and long-term management plans for mined lands and all disturbed areas. Financial assurance for the ultimate reclamation of facilities is documented in the reclamation plan, and security for costs that will be incurred to execute site closure is provided by a third-party insurer to the State of North Dakota in the form of a surety bond. The amount of the financial security as of December 31, 2021 is $99,450,000.

17.10 QP's OPINION OF ADEQUECY OF CURRENT PLANS

There are no outstanding permits related to the LOM plan awaiting regulatory approval. The Falkirk Mining Company currently has all permits in place to operate and adhere to the current mine plan. Excluding any regulatory changes out of the Falkirk's Mine control, the QP does not anticipate hurdles for approval of future renewal applications. The QP bases this opinion on the mine's history to meet regulatory requirements. No NOVs have been issued at the Falkirk Mine in the past three years. Proper monitoring plans following QA/QC procedures have been in place at the Falkirk Mine since the mine's inception and are documented through regular reporting to the NDPSC and the NDDEQ. Furthermore, appropriate bonding and closure plans are in place.

17.11 DESCRIPTION OF ANY COMMITMENTS TO ENSURE LOCAL PROCUREMENT AND HIRING

Positions at the Falkirk Mine are posted with North Dakota Job Service and are posted on the North American Coal Website for all job seekers. Falkirk also participates at local college job fairs for student internships.

18.0 CAPITAL AND OPERATING COSTS

18.1 OPERATING COSTS

Annual production costs were estimated in conjunction with the mining methods discussed in Section 13 to satisfy the contractual terms of the CSA. All costs were estimated on the assumption that all lignite would be delivered to the existing truck dump. Costs are escalated at various rates depending on the predicted performance of the Consumer/Producer Price Index with 2021 being the base year.

All costs were estimated to a PFS level of study based on historical costs and performance measures that have been maintained by Falkirk since its inception. These costs are reviewed and verified on an annual basis to account for changes in site conditions or the operating plan. This information was then used to estimate the projected costs for the Life of Mine (LOM). Table 18.1 provides a summary of the assumptions that were used to develop these projected costs.

	Annual Average	
Dragline Overburden*	83,765,000	CY
Truck/Shovel Overburden*	22,297,000	CY
Virgin Stripping Ratio	13.06	
Delivered Tons	8,119,000	Tons
Lignite cost per MMBTU	$2.03	/MMBTU
Quality:		
Heating Value	6,297	BTU/LB
Moisture	37.50%	
Sulfur	0.50%	
Ash	10.76%	

*Includes re-handle

Table 18.1. LOM Cost Assumptions.

All costs including the costs required for mine development, burden removal, severing of the coal, reclamation, delivery of the coal to the power plant along with the necessary maintenance required to keep all equipment operating safely and efficiently are paid by CCSP, as per the CSA. Falkirk is then paid a profit based on delivered tons. All mine closing costs are also required to be paid by CCSPP under the CSA. As mine closing dollars are expended, Falkirk is reimbursed by CCSPP

The total cost of coal over the remaining term of the LSA is shown in Table 18.2. Cost of Coal. Historical data was used to determine the estimated ratio of direct and indirect costs. Indirect costs include; support wages and benefits, medical insurance, power (demand), outside services, short term rentals, miscellaneous, property tax, coal lease maintenance, property and liability insurance, office costs, travel costs, depreciation and amortization, and interest expense. Direct costs include; workforce wages and benefits, supervisory wages and benefits, supplies, fuel, major repairs, power (usage), outside services, short term rentals, royalties, severance tax, federal reclamation fee, stockpile variance, and management fee/profit.

	2022	2023	2024	2025	2026
Direct Costs	**$123,069,123**	**$123,322,482**	**$128,188,119**	**$131,312,456**	**$134,138,655**
Indirect Costs	**$41,204,970**	**$37,971,634**	**$37,977,486**	**$37,988,626**	**$38,804,706**
Total Cost	**$164,274,093**	**$161,294,116**	**$166,165,606**	**$169,301,082**	**$172,943,361**
	2027	**2028**	**2029**	**2030**	**2031**
Direct Costs	**$140,540,077**	**$143,851,003**	**$151,713,715**	**$156,019,253**	**$158,205,299**
Indirect Costs	**$43,401,232**	**$45,089,792**	**$49,307,331**	**$50,768,983**	**$51,806,186**
Total Cost	**$183,941,309**	**$188,940,795**	**$201,021,046**	**$206,788,236**	**$210,011,484**

Table 18.2. LOM Operating Costs.

18.2 CAPITAL COSTS

Captial Costs were estimated to a PFS level of study based on past equipment purchase history and vendor quotes. Captial Costs include equipment expenditures, mine development, mitigation, and land acquisitions. All capital costs incurred by the Falkirk Mine are provided by or reimbursed by the customer as required under the terms of the CSA's. There are risks regarding the capital costs estimates, including escalating costs of raw materials, equipment availability and timing due to either production delays or supply chain gaps. Future capital costs included in the LOM plan are expected to total approximately $59.0 MM. The estimated annual capital costs are summarized in Table 18.3. Should the CSA be extended beyond 2031, additional capital costs would be required and funded by CCSPP.

Equipment		$130,766,000.0
Land	$	-
Mine Development	$	-
Total		$130,766,000

Table 18.3. Capital Costs.

19.0 ECONOMIC ANALYSIS

19.1 KEY ASSUMPTIONS, PARAMETERS AND METHODS

The primary assumption for the development of the economic plan is the continued operation of the CCSPP, the existing CSA with GRE and the CSA with Rainbow Energy following the acquisition of the CCSPP by Rainbow Energy that is expected to occur in the first half of 2022 and the resultant required annual deliveries. The analysis of economic viability is supported by the all-requirements CSA's and the LOM plan that supports the CSA's. The CSA's requires the customer to fund all mine operating costs, including final mine reclamation, and provide all of the capital required to build and operate the mine. This contract structure eliminates exposure to spot coal market price fluctuations. As a result of the cost-plus nature of the all-requirements CSA and the mine-mouth location of CCSPP, factors such transportation costs, location and quality of competing coal reserves, and the ability to compete in the market are not relevant considerations in determining the economic feasibility and viability of the coal reserves associated with the Falkirk Mine.

Although the LOM plan assumes mining ceases in 2031, the term may be shortened or extended at the option of the customer. Any tons remaining after mining ceases in 2031 within the LOM plan are considered a resource.

A reduction in dispatch or the premature closure of CCSPP would have a material adverse effect on the economic viability of the Falkirk Mine reserves.

Section 18 outlines the methodology for the generation of the operating cost estimate.

- The LOM production plan is based primarily on dragline operations that project timing for the truck/shovel fleets as well as coal loading operation and reclamation equipment. All using the surface mining methods outlined in the Ground Control Plan. Other key assumptions are as follows:

- Coal production is estimated to run through 2031 and post-mining reclamation through 2046;
- Total number of employees are approximately 416 (could vary with coal demand);
- Diesel price has been estimated at $2.40/gallon and escalated at 2% per year in this projection;
- Wages and benefits were escalated at an annual rate of 3%

19.2 ANNUAL CASH FLOWS

The Net Present Value, Internal Rate of Return and capital payback period is not applicable due to the ongoing nature of this project and cost-plus feature of the CSA. The cost-plus nature of the CSA provides assurance that all costs incurred by Falkirk will be reimbursed by the customer and negates any risk of loss to Falkirk and allows the mine to remain cash flow positive in 2022 and remain so through the end of the CSA. Post-mining reclamation work represents a legal requirement to return the land to its original state following the termination of coal deliveries. During the reclamation period, the customer will reimburse Falkirk for all direct costs incurred related to the reclamation of the minesite.

19.3 SENSITIVITY ANALYSIS

Over the history of the mine, Falkirk has performed numerous LOM studies based on various tonnage requirements requested by the customer. Increased tonnage decreases the overall production cost per ton as fixed costs can be spread over additional tons. For every 100,000 ton annual reduction, costs are estimated to increase approximately $0.10/ton. The inverse has also been shown such that for every 100,000 ton annual increase, the overall cost of production is estimated to be reduced by approximately $0.10/ton. As a result, CCSPP has historically operated at the highest possible production rates.

The Falkirk Mine's profit correlates proportionally with the actual increase or decrease in tonnage required by the customer as compensation under the CSA includes reimbursement of all mine operating costs plus a contractually-agreed fee based on the amount of coal delivered. It was assumed all costs in the LOM are economical based on the customer approval of the LOM plan, which was escalated utilizing the key assumptions outlined previously. One of the largest cost components within the plan that fluctuates is diesel fuel. A cost of $2.40 per gallon for diesel price was assumed. If the cost of diesel goes up 50%, the final average selling price of coal will go from $2.03 per million BTU to $ $2.13 per million BTU, respectively.

20.0 **ADJACENT PROPERTIES**

There are no properties adjacent to the Falkirk Mine. There is no information used in this TRS that has been sourced from adjacent properties. No public drilling information was available or sourced for the development of the geological model.

The drilling and exploration activities at the Falkirk Mine defines the lignite geology, Mineral Resources and Mineral Reserves. Due to this and the relatively simple geology at the Falkirk Mine, material changes to the Mineral Resource estimates and Mineral Reserve estimates are not likely if adjacent property information is included in future estimates.

21.0 OTHER RELEVANT DATA AND INFORMATION

In the QPs opinion, all material information has been stated in the above sections of this TRS.

22.0 INTERPRETATIONS AND CONCLUSIONS

Interpretations and conclusions of the Mineral Resource QP and Mineral Reserve QP are provided herein. This is the first TRS filed with the SEC following S-K Subpart 1300 regulations. Mineral Resource and Reserve estimations prior to December 31, 2021 were reported following guidance of Industry Guide 7.

22.1 GEOLOGY AND MINERAL RESOURCE ESTIMATES

In the QP's opinion, the geological data, sampling, modeling, and estimate are carried out in a manner that both represents the data well and mitigates the likelihood of material misrepresentations for the statements of Mineral Resources. There are currently no recommendations for Mineral Resources.

In the QP's opinion, the operational and mine planning data, LOM Plan, and estimation are carried out in a manner that both represents the data and operational experience and methodology well and mitigates the likelihood of material misrepresentations for the statements of Mineral Reserves. There are currently no recommendations for Mineral Reserves.

23.0 RECOMMENDATIONS

Continue current practices and reconciliations of actual to budget lignite recoveries, qualities, and costs. Update LOM plan projections and economic analyses accordingly.

The QP has no recommendations for additional work outside the scope of the existing LOM plan.

24.0 ADDITIONAL REFERENCES

Bluemle, John P., 1971, Geology of McLean County, North Dakota, North Dakota Geological Survey Bulletin 60, Part 1, 65 pp.

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Moran, Stephen R., Gerald H. Groenewold and John A. Cherry, 1978, Geologic, Hydrologic, and Geochemical Concepts and Techniques in Overburden Characterization for Mined Land Reclamation, North Dakota Geological Survey Report of Investigation No. 63, 152 pp.

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PROPERTY LOCATION

The Falkirk Mine is located approximately 4 miles south of Underwood, North Dakota (ND) or approximately 7.5 miles northwest of Washburn, ND, in McLean County, which is approximately 55 miles north of Bismarck, ND. The entrance to the mine is by means of a paved road, 1st Street SW, that is located approximately 2 mile west of Highway 83. The general location of the Falkirk Mine is shown on Figure 1.0. Coal Creek Station is located just south of the mine.

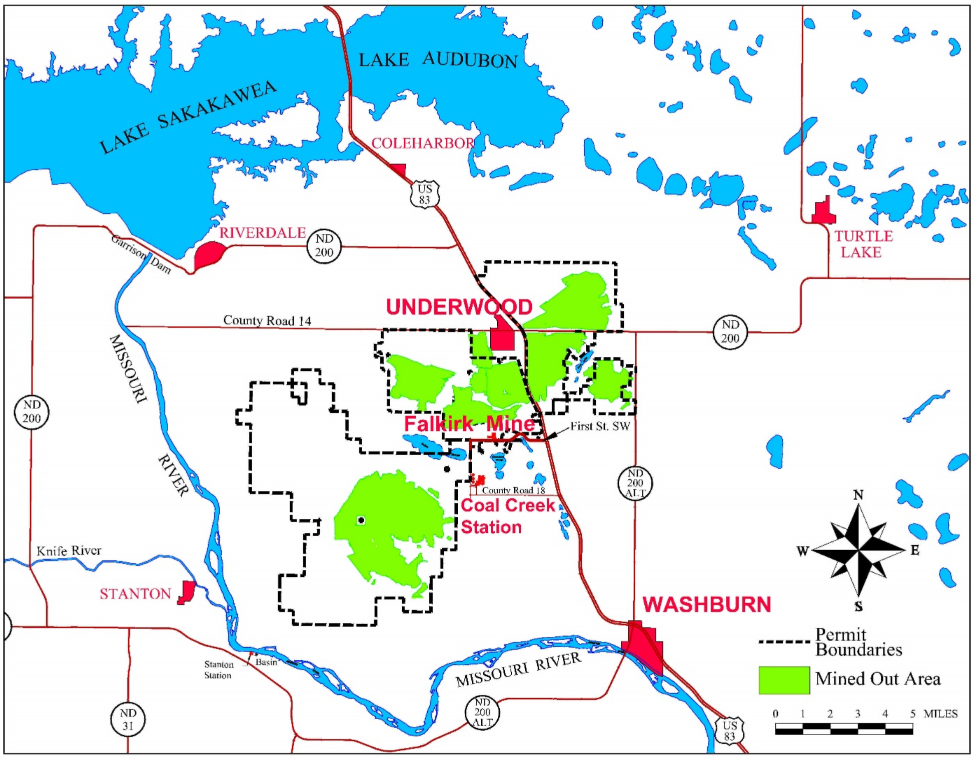

Figure 1.0. Location of the Falkirk Mine.

LOCAL RESOURCES AND INFRASTRUCTURE

The towns of Underwood and Washburn are located within ten miles of the mine, with other small communities also nearby. Numerous employees also reside in Bismarck and Mandan, a distance of about 50 miles.

The Falkirk Mine receives both its power and water from Coal Creek Station. However, Falkirk's East shift change building receives water from McLean-Sheridan Rural Water. Fuel for equipment is supplied by multiple local vendors including: Farstad Oil, Missouri Valley Petroleum, and Enerbase Cooperative Resources.

The main entrance to the Falkirk Mine is accessed by traveling north from Bismarck on State Highway 83 for approximately 50 miles, then going west on the access road, 1st Street SW located four miles south of Underwood. The mine office is located two miles to the west.

Travel to the Falkirk Mine by air is possible using the Bismarck Airport in Bismarck, ND, approximately 55 miles south of the mine, and then using ground transportation, traveling via US Highway 83

The main railway systems near the Falkirk Mine are Canadian Pacific, BNSF, and Dakota Missouri Valley & Western (DMVW). DMVW crosses through the Falkirk Mine Reserve.

LEASES

Falkirk holds 335 leases granting the right to mine approximately 43,486 acres of coal interests and the right to utilize about 24,323 acres of surface interests. In addition, Falkirk owns in fee about 40,666 acres of surface interests and 1,800 acres of coal interests. The leases and deeds are recorded at the McLean County courthouse and are a matter of public record. Substantially all of the leases were acquired in the 1970's and have been replaced with new leases and/or have continuation provisions that generally permit the leases to be continued beyond their fixed terms. The leases obligate Falkirk to make payments based on the amount of lignite mined from the subject property. Most royalty rates range from $.08 - $.16 per ton of lignite mined. A few leases include annual escalator provisions. Payments may also include surface damage payments and advanced or minimum royalty payments. Production royalties are calculated monthly based on surveys and are generally paid on a quarterly basis, although in certain situations royalties are paid monthly.

The Falkirk Mine currently has no significant encumbrances to the property. No Notice of Violations (NOVs) have been issued at the Falkirk Mine in the past three years. Permitting requirements are discussed in Section 17.0 of this TRS.

Falkirk has not identified any significant risks that may affect the right or ability to perform work on the property. Each lease and special obligations for each lease are reviewed on an annual basis to ensure there is no lapse in lease continuation or payments.

Table 1.1 shows The Falkirk Mining Company leases and Table 1.2 shows the Falkirk Mining Company acquisitions.

Table 1.1 The Falkirk Mining Company - Leases

Lease Id	Lease Type	Lease Date	Lease Expiration Date
3RO-03637	Coal Lease Agreement	9/18/1997	9/17/2017

3RO-03638	Coal Lease Agreement	10/20/1997	10/19/2017
3RO-03639	Coal Lease Agreement	1/29/1998	1/28/2018
3RO-03641	Surface & Coal Lease Agreement	1/6/1999	1/5/2009
3RO-03645	Surface & Coal Lease Agreement	2/11/2003	2/10/2013
3RO-03646	Coal Lease	10/30/2003	10/29/2033
3RO-03647	Coal Lease	10/30/2003	10/29/2033
3RO-03648	Coal Lease	10/30/2003	10/29/2033
3RO-03649	Coal Lease	10/30/2003	10/29/2033
3RO-03650	Coal Lease	10/30/2003	10/29/2033
3RO-03652	Coal Lease	10/30/2003	10/29/2033
3RO-03653	Coal Lease	10/30/2003	10/29/2033
3RO-03654	Coal Lease	10/30/2003	10/29/2033
3RO-03655	Surface & Coal Lease Agreement	6/9/2004	6/8/2044
3RO-03656	Coal Lease Agreement	2/22/2007	2/21/2047
3RO-03657	Coal Lease Agreement	3/9/2007	3/8/2047
3RO-03658	Surface & Coal Lease Agreement	6/11/2007	6/10/2027
3RO-03659	Surface & Coal Lease Agreement	6/11/2007	6/10/2027
3RO-03660	Surface & Coal Lease Agreement	7/10/2007	7/9/2047
3RO-03661	Coal Lease Agreement	10/4/2007	10/3/2047
3RO-03662	Surface & Coal Lease Agreement	12/13/2007	12/12/2047
3RO-03663	Coal Lease Agreement	9/29/2007	9/28/2047
3RO-03664	Surface & Coal Lease Agreement	3/7/2008	3/6/2048
3RO-03665	Coal Lease Agreement	3/8/2008	3/7/2048
3RO-03666	Coal Lease Agreement	3/7/2008	3/6/2048
3RO-03667	Surface & Coal Lease Agreement	3/20/2008	3/19/2048
3RO-03668	Coal Lease Agreement	6/4/2008	6/3/2048
3RO-03669	Coal Lease Agreement	3/28/2008	3/27/2048
3RO-03670	Surface & Coal Lease Agreement	4/2/2008	4/1/2048
3RO-03671	Coal Lease Agreement	5/31/2008	5/30/2048
3RO-03672	Coal Lease Agreement	6/4/2008	6/3/2048
3RO-03673	Coal Lease Agreement	6/19/2008	6/18/2028
3RO-03674	Surface & Coal Lease Agreement	7/3/2008	7/2/2048
3RO-03675	Coal Lease Agreement	7/3/2008	7/2/2028
3RO-03676	Surface & Coal Lease Agreement	7/18/2008	7/17/2048
3RO-03677	Coal Lease Agreement	7/16/2008	7/15/2048
3RO-03678	Coal Lease Agreement	8/26/2008	8/25/2048
3RO-03679	Surface & Coal Lease Agreement	12/13/2008	12/12/2048
3RO-03680	Surface & Coal Lease Agreement	5/5/2009	5/4/2049
3RO-03681	Coal Lease Agreement	12/17/2009	12/16/2049
3RO-03682	Coal Lease	7/29/2010	7/28/2055
3RO-03683	Coal Lease	7/29/2010	7/28/2055
3RO-03684	Coal Lease	7/29/2010	7/28/2055
3RO-03685	Coal Lease	7/29/2010	7/28/2055
3RO-03686	Coal Lease	7/29/2010	7/28/2055
3RO-03687	Coal Lease	7/29/2010	7/28/2055
3RO-03688	Coal Lease Agreement	5/12/2010	5/11/2050
3RO-03689	Coal Lease Agreement	5/12/2010	5/11/2050

3RO-03690	Surface & Coal Lease Agreement	5/12/2010	5/11/2050
3RO-03691	Surface & Coal Lease Agreement	5/12/2010	5/11/2050
3RO-03692	Surface & Coal Lease Agreement	3/25/2010	3/24/2050
3RO-03693	Coal Lease	7/14/2014	7/13/2019
3RO-03694	Coal Lease Agreement	9/11/2017	9/10/2037
3RO-03695	Coal Lease Agreement	8/21/2017	8/20/2037
3RO-03696	Coal Lease Agreement	9/15/2017	9/14/2037
3RO-03697	Coal Lease Agreement	10/4/2017	10/3/2037
3RO-03698	Coal Lease Agreement	10/7/2017	10/6/2037
3RO-03699	Coal Lease Agreement	10/11/2017	10/10/2037
3RO-03700	Coal Lease Agreement	10/13/2017	10/12/2037
3RO-03701	Coal Lease Agreement	10/10/2017	10/9/2037
3RO-03702	Coal Lease Agreement	9/25/2017	9/24/2037
3RO-03703	Coal Lease Agreement	10/20/2017	10/19/2037
3RO-03704	Coal Lease Agreement	10/23/2017	10/22/2037
3RO-03705	Coal Lease Agreement	12/7/2017	12/6/2037
3RO-03706	Coal Lease Agreement	12/14/2017	12/13/2037
3RO-03707	Coal Lease Agreement	1/26/2018	1/25/2038
3RO-03708	Coal Lease Agreement	3/7/2018	3/6/2038
3RO-03709	Coal Lease Agreement	3/9/2018	3/8/2038
3RO-03710	Coal Lease Agreement	3/15/2018	3/14/2038
3RO-03711	Surface & Coal Lease Agreement	4/16/2018	4/15/2043
3RO-03712	Surface & Coal Lease Agreement	4/17/2018	4/16/2043
3RO-03713	Surface & Coal Lease Agreement	4/19/2018	4/18/2043
3RO-03714	Surface & Coal Lease Agreement	4/20/2018	4/19/2043
3RO-03715	Surface & Coal Lease Agreement	4/23/2018	4/22/2043
3RO-03716	Surface & Coal Lease Agreement	5/25/2018	5/24/2043
3RO-03717	Surface & Coal Lease Agreement	5/29/2018	5/28/2043
3RO-03718	Surface & Coal Lease Agreement	8/8/2018	8/7/2043
3RO-03719	Surface & Coal Lease Agreement	11/1/2018	10/31/2043
3RO-03720	Surface & Coal Lease Agreement	11/6/2018	11/5/2043
3RO-03721	Surface Lease Agreement	1/28/2020	1/27/2040
3RV-03255	Exploration Contract & Coal Lease	9/12/1972	9/11/2013
3RV-03261	Exploration Contract & Coal Lease	8/28/1972	8/27/2013
3RV-03280	Exploration Contract & Coal Lease	8/30/1972	8/29/2013
3RV-03281	Exploration Contract & Coal Lease	8/30/1972	8/29/2013
3RV-03283	Exploration Contract & Coal Lease	9/12/1972	9/11/2013
3RV-03284	Exploration Contract & Coal Lease	9/13/1972	9/12/2013
3RV-03285	Exploration Contract & Coal Lease	9/12/1972	9/11/2013
3RV-03310	Coal Lease	8/15/1962	8/14/2002
3RV-03311	Coal Lease	5/24/1962	5/23/2002
3RV-03316	Coal Lease	6/8/1962	6/7/2002
3RV-03317	Coal Lease	2/12/1964	2/11/2004
3RV-03321	Coal Lease	1/25/1962	1/24/2002
3RV-03322	Coal Lease	2/16/1962	2/15/2002
3RV-03323	Coal Lease	1/12/1967	1/11/2017
3RV-03324	Coal Lease	11/21/1969	11/20/1994
3RV-03325	Coal Lease	1/23/1962	1/22/2002

3RV-03326	Coal Lease	9/11/1962	9/10/2002
3RV-03327	Coal Lease	9/25/1962	9/24/2002
3RV-03329	Coal Lease	5/23/1962	5/22/2002
3RV-03330	Coal Lease	2/16/1962	2/15/2002
3RV-03331	Coal Lease	5/29/1962	5/28/2002
3RV-03332	Coal Lease	1/16/1967	1/15/2007
3RV-03337	Coal Lease	1/26/1962	1/25/2002
3RV-03339	Coal Lease	5/29/1962	5/28/2002
3RV-03340	Coal Lease	2/21/1962	2/20/2002
3RV-03341	Coal Lease	5/25/1962	5/24/2002
3RV-03342	Coal Lease	5/22/1962	5/21/2002
3RV-03345	Coal Lease	2/9/1962	2/8/2002
3RV-03347	Coal Lease	12/8/1969	12/7/1994
3RV-03348	Coal Lease	12/16/1970	12/15/2015
3RV-03355	Coal Lease	11/9/1971	11/8/2016
3RV-03356	Coal Lease	11/9/1971	11/8/1996
3RV-03360	Coal Lease	11/11/1971	11/10/2016
3RV-03362	Coal Lease	11/29/1971	11/28/1996
3RV-03363	Coal Lease	1/24/1972	1/23/1997
3RV-03367	Coal Lease	8/22/1972	8/21/1997
3RV-03378	Coal Lease	11/29/1972	11/28/1997
3RV-03382	Coal Lease	3/6/1973	3/5/1998
3RV-03386	Coal Lease	5/11/1973	5/10/1998
3RV-03387	Coal Lease	8/7/1973	8/6/1998
3RV-03392	Coal Lease	4/25/1974	4/24/2014
3RV-03393	Coal Lease	5/7/1974	5/6/2014
3RV-03399	Exploration Contract & Coal Lease	7/27/1971	7/26/2012
3RV-03407	Coal Lease	6/11/1974	6/10/2014
3RV-03408	Coal Lease	5/28/1974	5/27/2014
3RV-03409	Coal Lease	6/11/1974	6/4/2014
3RV-03410	Coal Lease	6/12/1974	6/4/2014
3RV-03411	Coal Lease	6/5/1974	6/4/2014
3RV-03412	Coal Lease	6/14/1974	6/4/2014
3RV-03416	Coal Lease	6/14/1974	6/4/2014
3RV-03417	Coal Lease	6/12/1974	6/11/2014
3RV-03418	Coal Lease	8/30/1974	8/29/2014
3RV-03420	Coal Lease	9/19/1974	9/18/2014
3RV-03421	Coal Lease	10/12/1974	10/11/2014
3RV-03422	Coal Lease	10/11/1974	10/10/2014
3RV-03423	Coal Lease	11/22/1974	11/21/2014
3RV-03424	Coal Lease	12/5/1974	12/4/2014
3RV-03425	Coal Lease	12/9/1974	12/8/2014
3RV-03426	Coal Lease	12/10/1974	12/9/2014
3RV-03427	Coal Lease	12/11/1974	12/10/2014
3RV-03428	Coal Lease	12/31/1974	12/30/2014
3RV-03429	Coal Lease	12/30/1974	12/29/2014
3RV-03430	Coal Lease	12/15/1974	12/14/2014
3RV-03431	Coal Lease	1/2/1975	1/1/2015

3RV-03433	Coal Lease	3/11/1975	3/10/2015
3RV-03436	Exploration Contract & Coal Lease	8/19/1972	8/18/2013
3RV-03437	Exploration Contract & Coal Lease	8/18/1972	8/17/2013
3RV-03439	Exploration Contract & Coal Lease	8/30/1972	8/29/2013
3RV-03442	Exploration Contract & Coal Lease	9/5/1972	9/4/2013
3RV-03444	Exploration Contract & Coal Lease	4/12/1972	4/11/2013
3RV-03447	Exploration Contract & Coal Lease	8/21/1972	8/20/2013
3RV-03450	Exploration Contract & Coal Lease	8/31/1973	8/30/1994
3RV-03451	Exploration Contract & Coal Lease	4/12/1972	4/11/2013
3RV-03452	Exploration Contract & Coal Lease	4/12/1972	4/11/2013
3RV-03454	Exploration Contract & Coal Lease	9/12/1972	9/11/2013
3RV-03455	Exploration Contract & Coal Lease	9/12/1972	9/11/2013
3RV-03456	Exploration Contract & Coal Lease	9/11/1972	9/10/2013
3RV-03457	Exploration Contract & Coal Lease	8/31/1972	8/30/2013
3RV-03458	Exploration Contract & Coal Lease	9/12/1972	9/11/2013
3RV-03459	Exploration Contract & Coal Lease	9/12/1972	9/11/2013
3RV-03460	Exploration Contract & Coal Lease	8/21/1972	8/20/2013
3RV-03461	Exploration Contract & Coal Lease	9/11/1972	9/10/2013
3RV-03465	Exploration Contract & Coal Lease	5/26/1972	5/25/2013
3RV-03472	Coal Lease	8/19/1971	8/18/1996
3RV-03482	Coal Lease	6/25/1974	6/24/2014
3RV-03483	Coal Lease	6/25/1974	6/24/2014
3RV-03484	Coal Lease	6/25/1974	6/24/2014
3RV-03485	Coal Lease	6/25/1974	6/24/2014
3RV-03486	Coal Lease	6/25/1974	6/24/2014
3RV-03501	Exploration Contract & Coal Lease	5/26/1972	5/25/2013
3RV-03504	Exploration Contract & Coal Lease	5/25/1972	5/24/2013
3RV-03523	Exploration Contract & Coal Lease	5/22/1972	5/21/2013
3RV-03526	Exploration Contract & Coal Lease	5/27/1972	5/26/2013
3RV-03528	Exploration Contract & Coal Lease	5/24/1972	5/23/2013
3RV-03529	Exploration Contract & Coal Lease	5/25/1972	5/24/2013
3RV-03532	Exploration Contract & Coal Lease	5/23/1972	5/22/2013
3RV-03539	Exploration Contract & Coal Lease	6/5/1972	6/4/2013
3RV-03542	Exploration Contract & Coal Lease	5/24/1972	5/23/2013
3RV-03543	Exploration Contract & Coal Lease	5/25/1972	5/24/2013
3RV-03547	Exploration Contract & Coal Lease	5/24/1972	5/23/2013
3RV-03550	Exploration Contract & Coal Lease	5/30/1972	5/29/2013
3RV-03554	Exploration Contract & Coal Lease	5/23/1972	5/22/2013
3RV-03568	Exploration Contract & Coal Lease	4/12/1972	4/11/2013
3RV-03569	Exploration Contract & Coal Lease	4/12/1972	4/11/2013
3RV-03600	Exploration Contract & Coal Lease	7/23/1971	7/22/2012
3RV-03601	Exploration Contract & Coal Lease	7/21/1971	7/20/2012
3RV-03609	Exploration Contract & Coal Lease	7/21/1971	7/20/2012
3RV-03611	Exploration Contract & Coal Lease	8/6/1971	8/5/2012
3RV-03624	Coal Lease	1/19/1982	1/18/2022
3RV-03625	Coal Lease	1/19/1982	1/18/2022
3UN-03006	Exploration Contract & Coal Lease	9/23/1971	9/22/2012
3UN-03007	Exploration Contract & Coal Lease	9/23/1971	9/22/2012

3UN-03008	Exploration Contract & Coal Lease	3/3/1973	3/2/2014
3UN-03009	Exploration Contract & Coal Lease	7/23/1971	7/22/2012
3UN-03010	Exploration Contract & Coal Lease	7/22/1971	7/21/2012
3UN-03011	Exploration Contract & Coal Lease	11/22/1972	11/21/2013
3UN-03017	Exploration Contract & Coal Lease	7/22/1971	7/21/2012
3UN-03019	Exploration Contract & Coal Lease	3/3/1973	3/2/2014
3UN-03023	Exploration Contract & Coal Lease	7/22/1971	7/21/2012
3UN-03026	Lease	10/1/1971	9/30/2011
3UN-03027	Exploration Contract & Coal Lease	9/22/1971	9/21/2012
3UN-03032	Exploration Contract & Coal Lease	5/18/1973	5/17/2014
3UN-03035	Exploration Contract & Coal Lease	8/5/1971	8/4/2012
3UN-03040	Exploration Contract & Coal Lease	10/5/1971	10/4/2012
3UN-03041	Exploration Contract & Coal Lease	8/10/1978	8/9/2011
3UN-03043	Exploration Contract & Coal Lease	10/7/1971	10/6/2012
3UN-03045	Exploration Contract & Coal Lease	10/9/1971	10/8/2012
3UN-03050	Coal Lease	8/24/1977	8/15/2027
3UN-03051	Coal Lease	8/24/1977	8/23/2027
3UN-03053	Exploration Contract & Coal Lease	7/29/1971	7/28/2012
3UN-03054	Lease	8/22/1973	8/21/1998
3UN-03057	Exploration Contract & Coal Lease	9/23/1971	9/22/2012
3UN-03058	Exploration Contract & Coal Lease	7/24/1971	7/23/2012
3UN-03059	Exploration Contract & Coal Lease	7/26/1971	7/25/1992
3UN-03060	Exploration Contract & Coal Lease	10/5/1971	10/4/2012
3UN-03061	Exploration Contract & Coal Lease	7/27/1971	7/26/1992
3UN-03066	Exploration Contract & Coal Lease	7/28/1971	7/27/2012
3UN-03067	Exploration Contract & Coal Lease	10/1/1971	9/30/2012
3UN-03071	Exploration Contract & Coal Lease	7/27/1971	7/26/2012
3UN-03077	Exploration Contract & Coal Lease	7/27/1971	7/26/2012
3UN-03079	Exploration Contract & Coal Lease	7/24/1971	7/23/2012
3UN-03082	Exploration Contract & Coal Lease	7/20/1971	7/19/2012
3UN-03083	Exploration Contract & Coal Lease	7/21/1971	7/20/2012
3UN-03084	Exploration Contract & Coal Lease	7/20/1971	7/19/2012
3UN-03085	Exploration Contract & Coal Lease	1/30/1973	1/29/2014
3UN-03088	Exploration Contract & Coal Lease	7/27/1971	7/26/2012
3UN-03096	Exploration Contract & Coal Lease	7/29/1971	7/28/2012
3UN-03102	Exploration Contract & Coal Lease	9/28/1971	9/27/1992
3UN-03114	Exploration Contract & Coal Lease	9/30/1971	9/29/2012
3UN-03115	Exploration Contract & Coal Lease	7/29/1971	7/28/2012
3UN-03117	Exploration Contract & Coal Lease	9/28/1971	9/27/2012
3UN-03123	Exploration Contract & Coal Lease	7/22/1971	7/21/2012
3UN-03126	Exploration Contract & Coal Lease	7/22/1971	7/21/2012
3UN-03128	Exploration Contract & Coal Lease	7/31/1971	7/30/2012
3UN-03129	Exploration Contract & Coal Lease	8/6/1971	8/5/2012
3UN-03130	Exploration Contract & Coal Lease	9/27/1971	9/26/2012
3UN-03132	Exploration Contract & Coal Lease	7/20/1971	7/19/2012
3UN-03135	Exploration Contract & Coal Lease	10/4/1971	10/3/2012
3UN-03137	Exploration Contract & Coal Lease	4/12/1972	4/11/2013
3UN-03139	Exploration Contract & Coal Lease	4/12/1972	4/11/2013

3UN-03140	Exploration Contract & Coal Lease	4/12/1972	4/11/2013
3UN-03141	Exploration Contract & Coal Lease	4/12/1972	4/11/2013
3UN-03142	Exploration Contract & Coal Lease	4/12/1972	4/11/2013
3UN-03143	Exploration Contract & Coal Lease	4/12/1972	4/11/2013
3UN-03154	Exploration Contract & Coal Lease	8/16/1973	8/15/1994
3UN-03155	Exploration Contract & Coal Lease	10/10/1973	1/9/1994
3UN-03191	Coal Lease	5/14/1974	5/13/2014
3UN-03196	Coal Lease	8/19/1971	8/18/1996
3UN-03197	Coal Lease	6/25/1974	6/24/2014
3UN-03198	Coal Lease	6/25/1974	6/24/2014
3UN-03199	Coal Lease	6/25/1974	6/24/2014
3UN-03200	Coal Lease	6/25/1974	6/24/2014
3UN-03201	Coal Lease	6/25/1974	6/24/2014
3UN-03204	Lease	3/27/1980	3/26/1990
3UN-03205	Lease	3/27/1980	3/26/1990
3UN-03206	Lease	3/27/1980	3/26/1990
3UN-03207	Lease	3/27/1980	3/26/1990
3UN-03208	Coal Lease	1/19/1982	1/18/2022
3UN-03209	Coal Lease	1/19/1982	1/18/2022
3UN-03220	Coal Lease	11/15/1972	11/14/1997
3UN-03221	Coal Lease	11/15/1972	11/14/1997
3UN-03230	Coal Lease	4/4/1973	4/3/1998
3UN-03231	Coal Lease	8/21/1973	8/20/1998
3UN-03232	Coal Lease	8/21/1973	8/20/1998
3UN-03233	Coal Lease	8/21/1973	8/20/1998
3UN-03241	Coal Lease	7/28/1997	6/30/2017
3UN-03242	Surface Lease Agreement	11/27/1995	11/26/2035
3UN-03252	Coal Lease	5/1/2003	4/30/2023
3UN-03253	Surface & Coal Lease Agreement	11/11/2005	11/10/2015
3UN-03800	Coal Lease	4/26/2007	4/25/2037
3UN-03801	Coal Lease	4/26/2007	4/25/2037
3UN-03803	Coal Lease	4/26/2007	4/25/2037
3UN-03804	Lease	9/1/1975	12/31/2045
3UN-03805	Coal Lease	1/1/2018	12/31/2037
3UN-03806	Exploration Contract & Coal Lease	4/2/1973	4/1/2014
3UN-03807	Surface & Coal Lease Agreement	5/16/2016	5/15/2036
3UN-03808	Surface & Coal Lease Agreement	11/1/2016	10/31/2036
3UN-03809	Surface & Coal Lease Agreement	11/1/2016	10/31/2036
3UN-03810	Surface & Coal Lease Agreement	11/2/2016	11/1/2036
3UN-03811	Surface & Coal Lease Agreement	11/3/2016	11/2/2036
3UN-03812	Surface & Coal Lease Agreement	10/31/2016	10/30/2036
3UN-03813	Surface & Coal Lease Agreement	1/4/2017	1/3/2037
3UN-03814	Surface & Coal Lease Agreement	12/29/2016	12/28/2036
3UN-03815	Surface & Coal Lease Agreement	3/2/2017	3/1/2037
3UN-03816	Surface & Coal Lease Agreement	4/19/2017	4/18/2027
3UN-03817	Coal Lease Agreement	6/1/2017	1/29/2013
3UN-03818	Coal Lease Agreement	7/14/2017	7/13/2037

3UN-03819	Coal Lease Agreement	7/18/2017	7/17/2037
3UN-03820	Surface & Coal Lease Agreement	6/19/2018	6/18/2038
3UN-03821	Coal Lease Agreement	6/18/2018	6/17/2038
3UN-03822	Coal Lease Agreement	6/18/2018	6/17/2038
3UN-03823	Coal Lease Agreement	7/3/2018	7/2/2038
3UN-03824	Coal Lease Agreement	9/18/2018	9/17/2038
3UN-03825	Surface Lease Agreement	9/18/2018	9/17/2038
3UN-03826	Surface & Coal Lease Agreement	2/5/2019	2/4/2039
3UN-03827	Surface & Coal Lease Agreement	2/12/2019	2/11/2039
3UN-03828	Surface & Coal Lease Agreement	3/21/2019	3/20/2039
3UN-03829	Coal Lease	11/20/2018	11/19/2048
3UN-03830	Coal Lease	11/20/2018	11/19/2048
3UN-03831	Coal Lease	11/20/2018	11/19/2048
3UN-03832	Coal Lease	11/20/2018	11/19/2048
3UN-03833	Coal Lease Agreement	1/9/2020	1/8/2050
3UN-03835	Surface & Coal Lease Agreement	7/20/2020	7/19/2040
3UN-03836	Surface & Coal Lease Agreement	4/22/2020	4/21/2040
3UN-03837	Surface & Coal Lease Agreement	4/14/2020	4/13/2040
3UN-03838	Surface Lease Agreement	12/31/2019	12/30/2039
3UN-03839	Coal Lease	6/12/2020	6/11/2050
3UN-03840	Coal Lease Agreement	8/26/2020	8/25/2040
3UN-03841	Coal Lease Agreement	8/26/2020	8/25/2040
3UN-03842	Coal Lease Agreement	8/27/2020	8/26/2040
3UN-03843	Surface Lease Agreement	12/16/2020	12/15/2040
3UN-03844	Coal Lease Agreement	9/9/2020	9/8/2040
3UN-03845	Coal Lease Agreement	11/28/2020	11/27/2040
3UN-03846	Coal Lease Agreement	11/30/2020	11/29/2040
3UN-03847	Coal Lease Agreement	12/2/2020	12/1/2040
3UN-03848	Coal Lease Agreement	12/2/2020	12/1/2040
3UN-03849	Coal Lease Agreement	12/3/2020	12/2/2040
3UN-03850	Coal Lease Agreement	12/3/2020	12/2/2040
3UN-03851	Coal Lease Agreement	12/5/2020	12/4/2040
3UN-03852	Coal Lease Agreement	12/7/2020	12/6/2040
3UN-03853	Coal Lease Agreement	12/12/2020	12/11/2040
3UN-03854	Coal Lease Agreement	12/16/2020	12/15/2040
3UN-03855	Coal Lease Agreement	1/5/2021	1/4/2041
3UN-03856	Coal Lease Agreement	8/19/2021	8/18/2041
3UN-03857	Coal Lease Agreement	8/24/2021	8/23/2041

Table 1.2 The Falkirk Mining Company - Acquisitions

Agreement Id	Agreement Type	Agreement Date	Agreement Expiration Date
3-FKC001	Warranty Deed	8/19/1985	12/31/2099
3-FKC002	Warranty Deed	6/11/1987	12/31/2099
3-FKC003	Warranty Deed	9/16/1988	12/31/2099
3-FKC004	Warranty Deed	12/13/1991	12/31/2099
3-FKC005	Mineral Deed	2/19/1993	12/31/2099
3-FKC006	Mineral Deed	10/25/1993	12/31/2099
3-FKC007	Mineral Deed	1/3/1994	12/31/2099
3-FKC008	Warranty Deed	7/12/1994	12/31/2099
3-FKC009	Warranty Deed	7/15/1996	12/31/2099
3-FKC010	Mineral Deed	1/8/1998	12/31/2099
3-FKC011	Mineral Deed	1/26/1999	12/31/2099
3-FKC012	Warranty Deed	2/24/1999	12/31/2099
3-FKC013	Warranty Deed	11/8/2000	12/31/2099
3-FKC014	Mineral Deed	2/22/2006	2/21/2105
3-FKS001	Warranty Deed	10/6/1975	12/31/2099
3-FKS002	Warranty Deed	8/12/1975	12/31/2099
3-FKS003	Warranty Deed	8/29/1975	12/31/2099
3-FKS004	Warranty Deed	8/29/1975	12/31/2099
3-FKS005	Warranty Deed	10/6/1975	12/31/2099
3-FKS006	Warranty Deed	10/6/1975	12/31/2099
3-FKS007	Warranty Deed	10/6/1975	12/31/2099
3-FKS008	Warranty Deed	10/6/1975	12/31/2099
3-FKS009	Warranty Deed	10/6/1975	12/31/2099
3-FKS010	Warranty Deed	8/4/1976	12/31/2099
3-FKS011	Warranty Deed	4/18/1985	12/31/2099
3-FKS012	Warranty Deed	5/5/1980	12/31/2099
3-FKS013	Warranty Deed	6/20/1980	12/31/2099
3-FKS014	Warranty Deed	7/29/1980	12/31/2099
3-FKS015	Warranty Deed	10/31/1980	12/31/2099
3-FKS016	Warranty Deed	10/31/1980	12/31/2099
3-FKS018	Warranty Deed	2/10/1981	12/31/2099
3-FKS019	Warranty Deed	4/27/1981	12/31/2099
3-FKS020	Warranty Deed	6/29/1981	12/31/2099
3-FKS022	Warranty Deed	3/15/1982	12/31/2099
3-FKS024	Warranty Deed	6/29/1983	12/31/2099
3-FKS025	Warranty Deed	1/28/1986	12/31/2099
3-FKS027	Warranty Deed	5/21/1984	12/31/2099
3-FKS028	Warranty Deed	7/20/1984	12/31/2099
3-FKS029	Warranty Deed	7/25/1984	12/31/2099
3-FKS030	Warranty Deed	8/31/1984	12/31/2099
3-FKS031	Warranty Deed	11/2/1984	12/31/2099

3-FKS032	Personal Representative Deed	11/24/1984	12/31/2099
3-FKS033	Warranty Deed	11/26/1984	12/31/2099
3-FKS034	Warranty Deed	11/30/1984	12/31/2099
3-FKS035	Warranty Deed	2/11/1985	12/31/2099
3-FKS036	Warranty Deed	2/15/1985	12/31/2099
3-FKS037	Warranty Deed	5/31/1985	12/31/2099
3-FKS038	Warranty Deed	8/8/1985	12/31/2099
3-FKS039	Warranty Deed	8/19/1985	12/31/2099
3-FKS040	Warranty Deed	12/3/1985	12/31/2099
3-FKS041	Warranty Deed	12/30/1985	12/31/2099
3-FKS042	Warranty Deed	12/30/1985	12/31/2099
3-FKS044	Warranty Deed	4/17/1986	12/31/2099
3-FKS045	Warranty Deed	6/12/1986	12/31/2099
3-FKS046	Warranty Deed	7/28/1986	12/31/2099
3-FKS047	Warranty Deed	12/19/1986	12/31/2099
3-FKS048	Warranty Deed	12/30/1986	12/31/2099
3-FKS049	Warranty Deed	6/11/1987	12/31/2099
3-FKS050	Warranty Deed	9/9/1987	12/31/2099
3-FKS051	Warranty Deed	10/30/1987	12/31/2099
3-FKS052	Warranty Deed	10/30/1987	12/31/2099
3-FKS053	Warranty Deed	1/9/1988	12/31/2099
3-FKS054	Warranty Deed	9/16/1988	12/31/2099
3-FKS055	Warranty Deed	9/16/1988	12/31/2099
3-FKS056	Warranty Deed	8/26/1989	12/31/2099
3-FKS057	Warranty Deed	8/30/1989	12/31/2099
3-FKS058	Warranty Deed	7/13/1990	12/31/2099
3-FKS059	Warranty Deed	7/13/1990	12/31/2099
3-FKS060	Warranty Deed	12/13/1991	12/31/2099
3-FKS061	Warranty Deed	12/19/1991	12/31/2099
3-FKS063	Warranty Deed	9/17/1992	12/31/2099
3-FKS064	Warranty Deed	9/17/1992	12/31/2099
3-FKS066	Warranty Deed	10/12/1993	12/31/2099
3-FKS067	Warranty Deed	10/12/1993	12/31/2099
3-FKS068	Warranty Deed	12/31/1993	12/31/2099
3-FKS069	Warranty Deed	7/12/1994	12/31/2099
3-FKS070	Warranty Deed	10/22/1994	12/31/2099
3-FKS071	Warranty Deed	11/16/1994	12/31/2099
3-FKS072	Warranty Deed	12/22/1994	12/31/2099
3-FKS073	Warranty Deed	1/9/1995	12/31/2099
3-FKS074	Warranty Deed	1/9/1995	12/31/2099
3-FKS075	Warranty Deed	1/9/1995	12/31/2099
3-FKS076	Warranty Deed	1/9/1995	12/31/2099
3-FKS077	Warranty Deed	3/28/1995	12/31/2099
3-FKS082	Warranty Deed	5/15/1995	12/31/2099
3-FKS083	Warranty Deed	6/16/1995	12/31/2099
3-FKS084	Warranty Deed	7/14/1995	12/31/2099
3-FKS085	Warranty Deed	10/27/1995	12/31/2099

3-FKS086	Warranty Deed	11/15/1995	12/31/2099
3-FKS087	Warranty Deed	11/27/1995	12/31/2099
3-FKS088	Warranty Deed	12/15/1995	12/31/2099
3-FKS089	Warranty Deed	12/12/1995	12/31/2099
3-FKS090	Warranty Deed	2/16/1996	12/31/2099
3-FKS091	Warranty Deed	2/19/1996	12/31/2099
3-FKS093	Warranty Deed	5/15/1996	12/31/2099
3-FKS094	Warranty Deed	6/21/1996	12/31/2099
3-FKS095	Warranty Deed	7/15/1996	12/31/2099
3-FKS096	Warranty Deed	8/9/1996	12/31/2099
3-FKS097	Warranty Deed	8/9/1996	12/31/2099
3-FKS098	Warranty Deed	10/15/1996	12/31/2099
3-FKS099	Warranty Deed	11/27/1996	12/31/2099
3-FKS100	Warranty Deed	3/7/1997	12/31/2099
3-FKS101	Warranty Deed	3/7/1997	12/31/2099
3-FKS102	Warranty Deed	3/7/1997	12/31/2099
3-FKS103	Warranty Deed	3/7/1997	12/31/2099
3-FKS104	Warranty Deed	3/5/1997	12/31/2099
3-FKS105	Warranty Deed	1/7/1999	12/31/2099
3-FKS106	Warranty Deed	7/7/1998	12/31/2099
3-FKS107	Warranty Deed	8/14/1997	12/31/2099
3-FKS108	Warranty Deed	2/29/2000	12/31/2099
3-FKS109	Warranty Deed	1/23/2001	12/31/2099
3-FKS110	Warranty Deed	12/23/1999	12/31/2099
3-FKS111	Warranty Deed	2/24/1999	12/31/2099
3-FKS112	Warranty Deed	11/24/1999	12/31/2099
3-FKS113	Warranty Deed	3/14/2000	12/31/2099
3-FKS114	Warranty Deed	5/10/2000	12/31/2099
3-FKS115	Warranty Deed	11/8/2000	12/31/2099
3-FKS116	Warranty Deed	8/15/2001	12/31/2099
3-FKS117	Warranty Deed	8/15/2001	12/31/2099
3-FKS118	Warranty Deed	9/10/2001	12/31/2099
3-FKS119	Warranty Deed	1/14/2002	12/31/2099
3-FKS120	Warranty Deed	1/17/2002	12/31/2099
3-FKS121	Warranty Deed	2/19/2002	12/31/2099
3-FKS122	Warranty Deed	2/19/2002	12/31/2099
3-FKS123	Warranty Deed	4/18/2002	12/31/2099
3-FKS124	Warranty Deed	6/13/2002	12/31/2099
3-FKS125	Warranty Deed	12/17/2002	12/31/2099
3-FKS126	Warranty Deed	6/23/2003	12/31/2099
3-FKS127	Warranty Deed	2/20/2004	12/31/2099
3-FKS128	Warranty Deed	10/10/2003	12/31/2099
3-FKS129	Warranty Deed	4/10/2003	12/31/2099
3-FKS130	Warranty Deed	3/19/2004	12/31/2099
3-FKS131	Deed of Personal Representative	8/23/2004	12/31/2099
3-FKS132	Warranty Deed	11/10/2004	12/31/2099
3-FKS134	Warranty Deed	8/1/2006	12/31/2099

3-FKS135	Warranty Deed	4/29/2005	12/31/2099
3-FKS136	Warranty Deed	5/16/2006	12/31/2099
3-FKS137	Warranty Deed	10/2/2006	12/31/2099
3-FKS138	Warranty Deed	9/29/2006	12/31/2099
3-FKS139	Warranty Deed	8/21/2006	12/31/2099
3-FKS140	Warranty Deed	9/29/2006	12/31/2099
3-FKS141	Quit Claim Deed	12/6/2005	12/31/2099
3-FKS142	Warranty Deed	5/19/2006	12/31/2099
3-FKS143	Warranty Deed	7/17/2006	12/31/2099
3-FKS144	Warranty Deed	7/18/2006	12/31/2099
3-FKS145	Trustee's Deed	9/1/2006	12/31/2099
3-FKS146	Warranty Deed	12/5/2006	12/31/2099
3-FKS147	Warranty Deed	1/24/2007	12/31/2099
3-FKS148	Warranty Deed	3/9/2007	12/31/2099
3-FKS149	Warranty Deed	3/20/2007	12/31/2099
3-FKS150	Warranty Deed	3/20/2007	12/31/2099
3-FKS151	Warranty Deed	6/15/2007	12/31/2099
3-FKS152	Warranty Deed	7/31/2007	12/31/2099
3-FKS153	Warranty Deed	8/31/2007	12/31/2099
3-FKS154	Warranty Deed	2/8/2008	12/31/2099
3-FKS155	Warranty Deed	1/23/2008	12/31/2099
3-FKS156	Warranty Deed	1/23/2008	12/31/2099
3-FKS157	Warranty Deed	4/25/2008	12/31/2099
3-FKS158	Warranty Deed	6/5/2008	12/31/2099
3-FKS159	Warranty Deed	6/16/2008	12/31/2099
3-FKS160	Warranty Deed	6/17/2008	12/31/2099
3-FKS161	Warranty Deed	1/23/2009	12/31/2099
3-FKS162	Warranty Deed	6/4/2009	12/31/2099
3-FKS163	Warranty Deed	12/17/2009	12/31/2099
3-FKS164	Warranty Deed	4/8/2010	12/31/2099
3-FKS165	Warranty Deed	5/13/2010	12/31/2099
3-FKS166	Warranty Deed	5/12/2010	12/31/2099
3-FKS167	Warranty Deed	5/12/2010	12/31/2099
3-FKS168	Warranty Deed	10/6/2010	12/31/2099
3-FKS169	Warranty Deed	11/1/2010	12/31/2099
3-FKS170	Warranty Deed	11/1/2010	12/31/2099
3-FKS171	Warranty Deed	10/29/2010	12/31/2099
3-FKS172	Warranty Deed	11/24/2010	12/31/2099
3-FKS173	Warranty Deed	12/8/2010	12/31/2099
3-FKS174	Warranty Deed	12/21/2010	12/31/2099
3-FKS175	Warranty Deed	1/27/2011	12/31/2099
3-FKS176	Warranty Deed	1/27/2011	12/31/2099
3-FKS177	Warranty Deed	4/1/2011	12/31/2099
3-FKS178	Warranty Deed	5/20/2011	12/31/2099
3-FKS179	Warranty Deed	5/15/2011	12/31/2099
3-FKS180	Warranty Deed	9/2/2011	12/31/2099
3-FKS181	Warranty Deed	12/16/2011	12/31/2099

3-FKS182	Warranty Deed	12/27/2011	12/31/2099
3-FKS183	Warranty Deed	3/23/2012	12/31/2099
3-FKS184	Warranty Deed	8/31/2012	12/31/2099
3-FKS185	Warranty Deed	12/18/2012	12/31/2099
3-FKS186	Warranty Deed	4/9/2013	12/31/2099
3-FKS187	Warranty Deed	7/8/2014	12/31/2099
3-FKS188	Warranty Deed	8/15/2014	12/31/2099
3-FKS189	Warranty Deed	10/21/2014	12/31/2999
3-FKS190	Warranty Deed	12/23/2014	12/31/2099
3-FKS191	Warranty Deed	5/5/2015	12/31/2099
3-FKS192	Warranty Deed	1/6/2015	12/31/2099
3-FKS193	Warranty Deed	1/30/2015	12/31/2099
3-FKS194	Warranty Deed	8/5/2015	12/31/2099
3-FKS195	Warranty Deed	8/5/2015	12/31/2099
3-FKS196	Warranty Deed	11/4/2015	12/31/2099
3-FKS197	Warranty Deed	12/22/2015	12/31/2099
3-FKS198	Warranty Deed	12/21/2015	12/31/2099
3-FKS199	Warranty Deed	1/11/2016	12/31/2099
3-FKS200	Warranty Deed	5/13/2016	12/31/2099
3-FKS201	Warranty Deed	11/29/2016	12/31/2099
3-FKS202	Warranty Deed	12/8/2017	12/31/2099
3-FKS203	Warranty Deed	12/28/2018	12/31/2099
3-FKS204	Warranty Deed	2/14/2019	12/31/2099
3-FKS205	Warranty Deed	6/5/2019	12/31/2099
3-FKS206	Warranty Deed	11/18/2019	12/31/2099
3-FKS207	Warranty Deed	12/20/2019	12/31/2099
3-FKS208	Warranty Deed	3/9/2020	12/31/2099
3-FKS209	Warranty Deed	1/30/2020	12/31/2099

MINE HISTORY, OPERATIONS AND ENCUMBRANCES

The Falkirk Mining Company (Falkirk), a subsidiary of the North American Coal Corporation (NACoal) is the owner and operator of the Falkirk Mine, an actively producing lignite surface mining operation. The Falkirk Mine generally produces between 7.2 and 8.2 million tons of lignite coal annually. All of the coal produced from the mine is delivered to Coal Creek Station (CCS).

In 1974, United Power Association (UPA) and Cooperative Power Association (CPA) announce their plans to build a 1,100-megawatt (MW) power plant on a 2,500 acre site in McLean County near the town of Underwood. North American Coal controlled reserves of over 300 million tons of lignite coal within a five-mile radius of Underwood, ND and was awarded a 35-year contract to supply coal to CCS. Falkirk has continued to supply Coal Creek Stations coal needs for over 40 years. In 2014, CCS began to deliver Falkirk coal to Spiritwood Station, located near Jamestown, ND.

The Falkirk Mine is broken out into two mine areas, the Underwood Mine Area and the Riverdale Mine Area. NACoal began initially exploring the area in the 1960s and 1970s. Based on the early drilling data, The North American Coal Corporation developed a contract with a utility to build a mine and adjacent power plant on the site. The power plant and mine facilities were located on the southern glacial channel so as to not cover up any of the coal reserve. Extensive drilling and coring programs were also initiated in 1974 and 1975 to more accurately define the coal resources of the area. Falkirk mine started to deliver coal to CCS in 1978.

The North American Coal Corporation made a lease trade with the Consolidated Coal Company (Consol) in the mid-1980s. North American gave Consol underground coal reserves in Ohio and received coal reserves in North Dakota. These North Dakota coal reserves lie immediately south-southwest of the Underwood Coal Field. The coal reserves from Consol were incorporated into the Falkirk Mine and became known as the Riverdale Coalfield. Falkirk did receive copies of all of Consol's drilling data in the area. However, it was lacking in survey accuracy, geophysical logging, as well as known control systems. Thus, beginning in 1989, the Falkirk Mine began a drilling program to redrill all of Consol's old drill holes and to begin completing drill hole on grids to support mining permit applications and future mine plans. Initial mining of the Riverdale Coalfield began in 1994.

Operationally, overburden and interburden removal are accomplished using scrapers, dozers, front end loaders, truck shovel fleets, and draglines. Lignite is mined with front end loaders or hydraulic backhoes, and loaded into haul trucks to transport to the stockpile or directly to the customer via truck dumps and conveyors.

Fill-in drilling programs are routinely conducted by Falkirk for the purpose of refining guidance related to ongoing operations. It is common practice at the Falkirk Mine to tighten the drilling density with-in the three to four-year block ahead of active operations to an average drill hole spacing of 1320-feet. However, additional exploration may also be scheduled in areas farther out to increase confidence in future mine plan projections.

The mine office facilities and original equipment fleets at the Falkirk Mine were constructed, acquired, or purchased new during the development stage of the mine. The facilities and equipment are maintained to allow for safe and efficient operation. The equipment is well maintained, in good physical condition and is either updated or replaced periodically with newer models or upgrades available to keep up with modern technology. As equipment wears out, Falkirk evaluates what replacement option will be the most cost-efficient, including the evaluation of both new and used equipment.

The total cost of the property, plant and equipment, net of applicable accumulated amortization, depreciation and impairment as of December 31, 2021 is $195.3 Million

The Falkirk Mine currently has no significant encumbrances to the property. No NOVs have been issued at the Falkirk Mine in over 10 years. All permitting requirements related to surface coal mining for the projected life-of-mine (LOM) plan are currently in place.

MINERAL RESOURCES AND RESERVES

MINERAL RESOURCES

The Mineral Resources presented in Table 1.3 below have been estimated by applying a series of geologic and physical limits as well as high-level mining and economic constraints. The mining and economic constraints were limited to a level sufficient to support reasonable prospect for future economic extraction of the estimated Mineral Resources. The categorized Mineral Resources reported herein are exclusive of in situ Mineral Reserves.

The effective date of Mineral Resource estimates is December 31, 2021.

			Quality			
			Calorific Value	**Moisture**	**Ash**	**Sulfur**
Falkirk Mine	**Resource Classification**	**Tonnage**	**(Btu/lb)**	**(%wt)**	**(%wt)**	**(%wt)**
Underwood Field	Measured	31,599,882	6,417	40.41	7.05	0.57
	Indicated	NA	NA	NA	NA	NA
	Measured + Indicated	31,599,882	6,417	40.41	7.05	0.57
	Inferred	NA	NA	NA	NA	NA
Riverdale Field	Measured	46,820,901	6,614	39.44	6.37	0.58
	Indicated	199,721	6,317	37.10	10.69	0.73
	Measured + Indicated	47,020,623	6,612	39.43	6.39	0.58
	Inferred	NA	NA	NA	NA	NA
Total	Measured	78,420,784	6,534	39.83	6.65	0.57
	Indicated	199,721	6.317	37.10	10.69	0.73
Total	Measured+Indcated	78,620,505	6,534	39.82	6.66	0.57

Table 1.3. Mineral Resource Estimates

MINERAL RESERVES

The effective date of Mineral Reserve estimates in Table 1.4 is December 31, 2021.

			Quality			
			Calorific Value	Moisture	Ash	Sulfur
Falkirk Mine	**Resource Classification**	**Tonnage**	**(Btu/lb)**	**(%wt)**	**(%wt)**	**(%wt)**
Underwood Field	Proven	31,599,882	6,417	40.41	7.05	0.57
	Probable	NA	NA	NA	NA	NA
	Total	31,599,882	6,417	40.41	7.05	0.57
Riverdale Field	Proven	46,820,901	6,614	39.44	6.37	0.59
	Probable	199,721	6,317	37.10	10.69	0.73
	Total	47,020,623	6,612	39.43	6.39	0.58
Total Reserves	Proven	78,420,784	6,534	39.83	6.65	0.57
	Probable	199,721	6.317	37.10	10.69	0.73
	Total	78,620,505	6,534	39.82	6.66	0.57

Table 1.4. Mineral Reserves Estimates

DISCUSSION OF PRIOR RESOURCE AND RESERVE ESTIMATIONS

Previously, reserves for the Falkirk Mine were reported under Guide 7. All controlled tonnage that met the general mining parameters were considered for reserves. Mineral Resources were not considered. Furthermore, subcategories of Mineral Resources as measured, indicated, or inferred and Mineral Reserves as proven or probable were not considered. Table 1.5 summarizes those reported Mineral Reserves at the end of the last two fiscal years. Table 1.6. summarizes the net difference between 2021 and 2022 reported Mineral Resources and Reserves.

Report Date	Committed Tons*	Uncommitted Tons	Total Tons
1-Jan-21	370,580,372	0	370,580,372
1-Jan-20	375,689,844	0	375,689,844

*Committed tons were defined as controlled tons currently under lease

^ The difference in allotment of tons to each category from 2020 to 2021 was due to mining, lease activity, and new geologic evaluations.

Table 1.5 Summary of Prior Mineral Reserves

Falkirk Mine		**Tonnage**	
Resource Classification	**1-Jan-22**	**1-Jan-21**	**Delta**
Measured	78,420,784	N/A	N/A
Indicated	199,721	N/A	N/A
Measured + Indicated	78,620,505	N/A	N/A
Inferred	NA	N/A	N/A

Reserve Classification	**1-Jan-22**	**1-Jan-21**	**Percent Difference**
Proven	78,420,784	N/A	N/A
Probable	199,721	N/A	N/A
Total	78,620,505	370,580,372	-78.8%

Table 1.6. Net difference between 2021 and 2022 reported Mineral Resources and Reserves

Explanation of discrepancies. The majority of the discrepancy between Mineral Resources and Reserves from January 1, 2021 to the current report date is due to the TRS evaluating only tons that are within the LOM plan, which, due to the current ownership situation, was significantly reduced in scope.

Also, another cause for the variance is due to a change in methodology in categorization of Mineral Resources and Reserves from an interpretation of Guide 7 regulations to following the guidance of the Subpart S-K 1300 regulations. Tighter interpretations and guidance of the S-K 1300 regulations narrowed the basis of Mineral Resources and furthermore Mineral Reserves such that a Mineral Resource is defined as:

"A concentration or occurrence of material of economic interest in or on the Earth's crust in such form, grade or quality, and quantity that there are reasonable prospects for economic extraction. A Mineral Resource is a reasonable estimate of mineralization, taking into account relevant factors, such as cut-off grade, likely mining dimensions, location, or continuity, that, with the assumed and justifiable technical and economic conditions, is likely to, in whole or in part, become economically extractable. It is not merely an inventory of all mineralization drilled or sampled."

Further justification of Mineral Resources and Reserves reported herein is provided in the associated TRS for The Falkirk Mining Company.

A Mineral Reserve is defined as:

"The economically mineable part of a measured or indicated Mineral Resource, which includes diluting materials and allowances for losses that may occur when the material is mined or extracted."

Additional impacts to the variance in reported Mineral Resources and Reserves from the January 1, 2021 report date to the January 1, 2022 report date include:

- Falkirk mined 7,882,135 tons in 2021.
- Falkirk acquired and terminated leases in 2021

MATERIAL ASSUMPTIONS FOR MINERAL RESOURCES AND MINERAL RESERVES

Material assumptions and criteria used in the determination of Mineral Resource and Mineral Reserves reported herein are provided within the filed Technical Report Summary (TRS) for the Falkirk Mine dated February XX, 2022.

Section 11.0 of the TRS describes the key assumptions, parameters, and methods used for the estimation of Mineral Resources. A further description of the verified drilling data used to model the lignite deposit for estimation of Mineral Resources is provided in Section 7.2 Drilling Exploration, 8.0 Sample Preparation, Analyses, and Security, and Section 9.0 Data Verification.

Section 12.0 of the TRS describes the key assumptions, parameters, and methods used for the estimation of Mineral Reserves. Modifying factors including dilution parameters and technical information related to the mining process are described in detail under Section 13.0 Mining Methods. Economic factors to support the Mineral Reserve estimates are described in Section 18.0 Capital and Operating Costs and 19.0 Economic Analyses.

EXPLORATION DRILLING - GENERAL

Independent drilling companies are contracted by The Falkirk Mining Company (Falkirk) to drill/retrieve coal cores for the Falkirk Mine. Falkirk personnel oversee the retrieval of core samples, then log and properly bag those samples for analysis by a certified third-party laboratory, Minnesota Valley Testing Laboratories, Inc. (MVTL) located in Bismarck, North Dakota.

For the purpose of this discussion, senior geologist and field geologist refer to qualified representatives of Falkirk and/or the North American Coal Corporation (NACoal).

QUALITY CONTROL AND QUALITY ASSURANCE PROGRAMS

SAMPLE PREPARATION

Core runs are specified by the senior and/or field geologist by referencing the geophysical log of the pilot hole. Once a specified core run is brought to the surface, the field geologist observes the drillers extract the lignite sample from the split tube core barrel to ensure the integrity of the sample is maintained, and to verify the top and the bottom of the core run. The core sample is transferred from the core barrel to a core trough (i.e. aluminum core trough with a built-in measuring scale). The field geologist verifies the roof and floor of the lignite core is present and checks the expected coal seam thickness referenced from the pilot hole's geophysical log to determine coal core recovery. If 90-percent recovery cannot be verified, the driller may attempt to retrieve the remainder of the lignite core run from the current hole. If no successful attempt is made to recover the remaining lignite, the driller must recore the core run in a new adjacent core hole.

Upon verifying proper recovery of the core run, the field geologist succinctly, but thoroughly logs the lignite run. After the field geologist describes the core run, the entire lignite section is double bagged and tagged. Tags include the date, mine identifier, hole ID, seam ID, and "to" and "from" intervals. Double bagging preserves the moisture of the sample, and tagging on the inside bag safeguards the identification of the sample from the field through transportation to the third-party laboratory, MVTL.

The prep room is a temperature-controlled room (AC and Heat) accessible from the sample receiving and storage room. Within the prep room, samples are crushed to 8-mesh using a crusher and are reduced in volume using a riffler. Two different sized crushers and rifflers are available depending on sample size. Compressed air is used to clean the crusher and riffler after each sample to mitigate contamination.

A riffled split of 8-mesh coal is placed on a sample tray and weighed. The weights are sent electronically to LIMS for use in the moisture calculation. The tray is placed in an air dry oven and dried overnight. The temperature of the air dry ovens is monitored and recorded daily. The temperature monitoring devices are verified annually. Another riffled split is sealed in a Ziploc bag and retained. The client is notified prior to disposal of the coal core splits.

Once air-drying is complete, the samples are weighed and again the weights are sent electronically to LIMS. The samples are pulverized to 60-mesh and split using a riffler. Compressed air is used to clean the pulverizer and riffler after each sample. Samples are stored in glass jars for analysis and the splits are retained in whirl-pak bags.

CONTROLS

Retained samples. Total core runs are double bagged and tagged following industry standards for quality analyses, thus split samples in the context of a retained sample are not stored at the Falkirk Mine. As such, any retained samples, including 8-mesh and 60-mesh, are stored at MVTL, and collected after total core runs have been crushed and mixed. Additionally, it is important to note that lignites tend to be high moisture coals which oxidize rapidly and do not have a long shelf life once removed from the ground. If core splits were retained at Falkirk Mine, they would not be representative of in-situ coal properties over a relatively short period of time.

Duplicate samples. During the lab analyses MVTL runs regular control measures. For calorific value, moisture, ash, volatile matter, sulfur, ash fusion, mineral analysis of ash, carbon, hydrogen, nitrogen, mercury, and chlorine analysis, one duplicate sample is ran for every 10 samples, and a certified reference material (CRM) is analyzed at the beginning and end of each run. For sulfur forms analysis, a laboratory control sample (LCS) and one duplicate analysis is analyzed with each batch. For trace metals, a method blank, laboratory control sample (LCS) and matrix spikes are digested with each batch.

Balances. All balances are calibrated and certified annually by a third-party calibration service. Balances are verified daily using certified weights.

Round Robin Programs and Control Training. MVTL participates in round-robin testing programs with other laboratories to ensure result accuracy. MVTL participates in an Interlab Coal Round Robin Program monthly. In 2020, MVTL also participated in a lignite (coal) specific round robin program with NACoal including 8 independent laboratories, one of which was MVTL, that were used by various NACoal mine locations. The round robin consisted of four samples labeled 2001, 2002, 2003, and 2004. Two samples were sourced from Red Hills Mine and two samples were sourced from another NACoal mine, Coyote Creek Mine, located in North Dakota. The two locations provided a range of samples with variability in moisture, ash, sulfur and sodium. The labs participating in the round robin were provided 8-mesh splits and dried, 60-mesh splits of all 4 samples. The general results are summarized in Figure 1.0. MVTL is labeled “Laboratory #5”.

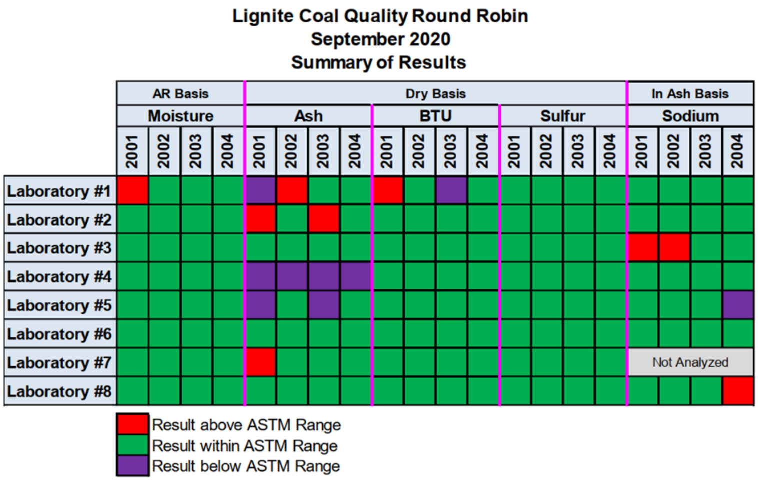

Figure 1.0. NACoal 2020 Round Robin Program Summary. (NACoal, 2020)

CUSTODY

Core samples remain under the supervision of the field geologist until securely stored in the mine warehouse to be shipped to the third-party laboratory, MVTL. The Falkirk Mine office and warehouse facilities are secured with user specified fob access along with 24-hour security personnel and camera surveillance.

Prior to shipping the samples, the senior geologist reviews each sample against the field records and the chain-of-custody (COC). The date, mine identifier, hole ID, seam ID, and “to” and “from” intervals are verified. A copy of the COC is emailed to the laboratory manager. Coal core samples are shipped to the third-party laboratory via insured freight with tracking information.

Once a shipment is received by MVTL, the samples are cross referenced with a chain of custody form or other client paperwork and then are logged into the Laboratory Information Management System (LIMS). Each sample is given a unique lab number used for tracking during analysis and throughout the reporting process.

Once samples are logged they are stored in the receiving room which is climate controlled (ventilation, a/c, and heat) until there is available space in the prep room; typically, a short period. Falkirk acknowledges a slight potential for moisture loss during this storage period and, as such, double bags samples in the field to preserve as much in-situ moisture as possible.

Samples are stored until they are ready to be crushed in the climate controlled prep room. There is a slight potential for moisture loss during this storage period. Falkirk acknowledges this potential and, as such, double bags samples in the field to preserve as much in-situ moisture as possible.

The building is kept secure, and all doors remained locked throughout the day, except the main customer entrance where visitors have to check in and out. No access is allowed to the laboratory without an escort. During non-operational hours the building is kept locked

Once air-drying is complete, the samples are weighed and again the weights are sent electronically to LIMS. The samples are pulverized to 60-mesh and split using a riffler. Compressed air is used to clean the pulverizer and riffler after each sample. Samples are stored in glass jars for analysis and the splits are retained in whirl-pak bags. Retained samples can be reran for analysis within 6-months for selective parameters. MVTL verifies with Falkirk prior to disposal of splits and retained samples.

QUALITY PRECISION AND ACCURACY

Prior to releasing results of requested analyses, MVTL's reviews all analytical results for anomalies and outliers. This includes mis-type or mis-printed information, and comparison with historical coal core data on record with MVTL. Any questionable results are rerun from retained samples.

Once results are received by Falkirk, a visual inspection of results by the senior geologist is followed by a review of summary statistics with the quality of the entire drilling database. Ultimately the results are updated in the geologic model and quality grids are inspected for anomalies. At any point if questionable data is traced back to the laboratory report, the senior geologist may request the lab to rerun a retained sample.

The analytical results from the coal cores collected during Falkirk's exploration programs have proven to be consistent with actual as-delivered quality from the active mining operations at the Falkirk Mine. This consistency is based on comparison of historical quality projected from the geologic model for the annual and monthly operating plans to actual as-delivered quality indicated by the customer's Coal Creek Station Lab.

VERIFICATION OF ANALYTICAL PROCEDURES

The QP visited the third-party laboratory on multiple occasions over the course of the past 15 years. During the visits the laboratory manager provided a tour of the full facility from the main offices through the receiving dock/storage room, prep room, and primary laboratory. The QP noted the facility was well maintained, and clean of residue that may cause concern for contamination, including the prep room where crushing and pulverizing of materials took place. Further details about the laboratory are discussed in section 8.0 of the Technical Report Summary (TRS) for the Falkirk Mine, dated February 14th, 2022.

COMPREHENSIVE RISK INHERENT IN THE ESTIMATION OF MINERAL RESOURCES AND RESERVES

Although Falkirk has remained consistent with coal core sampling programs following and documenting procedures that align with coal industry standards, there are still some inherent risks in the estimation of Mineral Resources and Reserves. This risk falls in the uncertainty within the earlier drilling Throughout the 50+ year history of the Falkirk

Mine's coalfield, The North American Coal Corporation has always used policies, protocols and procedures to ensure the accuracy and integrity of the drilling and coring data. Experienced geologists have always been on the drill rigs or supervising the engineers and/or students on the drill rigs. However, technologies and understandings change. Prior to 1976, the Falkirk Mine did not have a survey grid established. Hence, drill hole locations and elevations were read from USGS topographic quadrangle maps. Also, prior to 1975, geophysical logging on shallow coal exploration holes was not a common practice. This caused errors and deviations in locations, elevations and depths, especially as compared to more modern methods with higher levels of control. Consequently, all drilling data prior to 1976 has been deleted from Falkirk Mine's databases and is no longer used for modeling and reserve-resource estimates. Verification of lignite quality and trends with newer drilling data has increased the confidence in the early data, but does not eliminate the inherent risk from lack of QA/QC parameters in this small percentage of data in the areas that have not been mined.

During the drilling and sampling procedure, a variety of factors could materially affect the accuracy and reliability of the results. Some examples include improper surveying of the drill hole collar location and elevation, improper and un-level drill rig set up, improper zeroing out of the elogging tool before commencing geophysical logging, not being able to obtain an elog due to collapsing drill hole conditions, not obtaining 90% recovery of the coal seam cored, allowing the coal core to be exposed for too long before bagging causing a false reduction in moisture and increase in BTU value, and improper record keeping. Most of these negative factors can be avoided by utilizing skilled and experienced drilling and elogging contractors, having proper QA/QC procedures to follow during sampling, and proper drill hole data verification.