TECHNICAL REPORT FOR THE WHARF OPERATION PREPARED FOR COEUR MINING, INC.

LEAD, SOUTH DAKOTA, U.S.A.

NI 43-101 TECHNICAL REPORT

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CAUTIONARY STATEMENT ON FORWARD-LOOKING INFORMATION

This technical report contains forward-looking statements within the meaning of United States and Canadian securities laws. Such forward-looking statements include, without limitation, statements regarding Coeur Mining, Inc.'s (Coeur) expectations for the Wharf Operation, including estimated capital requirements, expected production, economic analyses, cash costs and rates of return; mineral reserve and resource estimates; estimates of gold grades; and other statements that are not historical facts. These statements may be identified by words such as "may," "might", "will," "expect," "anticipate," "believe," "could," "intend," "plan," "estimate" and similar expressions. Forward-looking statements address activities, events or developments that Coeur expects or anticipates will or may occur in the future, and are based on information currently available. Although management believes that its expectations are based on reasonable assumptions, there can be no assurance that these expectations will prove correct. Important factors that could cause actual results to differ materially from those in the forward-looking statements include, among others, risks that Coeur's exploration and property advancement efforts will not be successful; risks relating to fluctuations in the price of silver and gold; the inherently hazardous nature of mining-related activities; uncertainties concerning reserve and resource estimates; uncertainties relating to obtaining approvals and permits from governmental regulatory authorities; and availability and timing of capital for financing exploration and development activities, including uncertainty of being able to raise capital on favorable terms or at all; as well as those factors discussed in Coeur's filings with the U.S. Securities and Exchange Commission (SEC), including Coeur's latest Annual Report on Form 10-K and Quarterly Reports on Form 10-Q and its other SEC filings (and Canadian filings on SEDAR at www.sedar.com). Coeur does not intend to publicly update any forward-looking statements, whether as a result of new information, future events, or otherwise, except as may be required under applicable securities laws.

CAUTIONARY NOTE TO U.S. READERS CONCERNING ESTIMATES OF MEASURED, INDICATED AND INFERRED MINERAL RESOURCES

Information concerning the properties and operations of Coeur has been prepared in accordance with Canadian standards under applicable Canadian securities laws, and may not be comparable to similar information for United States companies. The terms "Mineral Resource", "Measured Mineral Resource", "Indicated Mineral Resource" and "Inferred Mineral Resource" used in this Report are Canadian mining terms as defined in accordance with National Instrument 43-101 (NI 43-101) under definitions set out in the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Standards on Mineral Resources and Mineral Reserves adopted by the CIM Council on May 10, 2014 While the terms "Mineral Resource", "Measured Mineral Resource", "Indicated Mineral Resource" and "Inferred Mineral Resource" are recognized and required by

Canadian securities regulations, they are not defined terms under standards of the SEC. Under United States standards, mineralization may not be classified as a "Reserve" unless the determination has been made that the mineralization could be economically and legally produced or extracted at the time the Reserve calculation is made. As such, certain information contained in this Report concerning descriptions of mineralization and resources under Canadian standards is not comparable to similar information made public by United States companies subject to the reporting and disclosure requirements of the United States SEC. An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration. Under Canadian rules, estimates of Inferred Mineral Resources may not form the basis of feasibility or pre-feasibility studies. Readers are cautioned not to assume that all or any part of Measured or Indicated Resources will ever be converted into Mineral Reserves. Readers are also cautioned not to assume that all or any part of an "Inferred Mineral Resource" exists, or is economically or legally mineable. In addition, the definitions of "Proven Mineral Reserves" and "Probable Mineral Reserves" under CIM standards differ in certain respects from the standards of the SEC.

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LIST OF ABBREVIATIONS AND ACRONYMS

AA	atomic absorption
Ag	silver
ARO	asset retirement obligation
Au	gold
BH	blasthole
CPPs	Cumulative Probability Plots
CV	Coefficient of Variation
CWTP	Clean Water Treatment Plant
EDA	Exploratory Data Analysis
FA	Fire Assay
Fm.	Formation
G&A	General and Administrative
ID^3	Inverse distance cubed
ILC	Indirect Lognormal Correction
LOM	life of mine
MI	Measured and Indicated
MMTS	Moose Mountain Technical Services
NI	National Instrument
NNP	Net Neutralizing Potential
NN	Nearest neighbor
NNC	Nearest neighbor corrected
NPDES	National Pollution Discharge Elimination System
NPV	Net Present Value
OK	Ordinary Kriging
POP	Perimeter of pollution
QA	Quality Assurance
QC	Quality Control
QP	Qualified Person
Q-Q	Quantile-Quantile
RC	reverse circulation
ROM	Run of Mine
RQD	rock quality designation
RVTP	Ross Valley Treatment Plant

1. SUMMARY

Coeur Mining, Inc. (Coeur) has prepared this technical report (the Report) on the Wharf Mine (referred to as the Wharf Operation) located in the Black Hills in the southwestern portion of the state of South Dakota, United States. The data presented in this Report are related to the Wharf deposit at the Wharf Operation (also referred to herein as Wharf, the Wharf mine, Wharf mining area or Wharf deposit) and its Mineral Resource and Mineral Reserve estimates. The purpose of this Report is to update the: Mineral Resource and Mineral Reserve estimates, capital and operating cost estimates, and the financial estimate for the Wharf Operation. The information in this Report is effective as of December 31, 2017. All currency is expressed as U.S. dollars, unless otherwise noted.

1.1 Drilling

Drilling by Coeur or its predecessors commenced on the Wharf property in 1979. From 1979 to present, various drill contractors have completed 2,580,859 feet of reverse circulation (RC) and 19,040 feet of diamond core drilling and sampling on the project. Diamond drillholes were completed to test deep mineralized zones in the Precambrian basement rock. Diamond drillholes were logged for lithology, alteration, mineralization, rock quality designation (RQD), and core recovery. RC drilling was completed to define the bulk of the deposit RC samples were logged for lithology, alteration, and mineralization.

1.2 Sample Preparation, Security, and Analyses

During the 2017 drilling and sampling campaign, Wharf Resources used Boart Longyear to collect RC drill samples. Internal security measures were in place for the transport of the samples to Bureau Veritas Laboratories for gold (Au) analyses and to the exploration facility for geologic logging.

During the 2015-2016 drilling and sampling campaign, Wharf Resources used Boart Longyear to collect RC drill samples. Internal security measures were in place for the transport of the samples to the Wharf Operation exploration facility for logging and packaging. All samples were shipped to ALS Minerals for gold (Au) and silver (Ag) analyses.

All sample preparation and analytical analyses before 2015 have been completed at the Wharf Operation laboratory. The Wharf Operation laboratory conducts multiple internal quality control measures as part of the standard operating procedure. Sample preparation and analytical method descriptions are documented by Wharf Resources.

1.3 Data Verification

Historically, the Wharf Operation has conducted QA/QC procedures on exploration and development samples by internal controls established by the Wharf Operation laboratory. The controls include insertion of known control materials and comparison of cold cyanide and fire assay data.

From 2007 to 2014, the Wharf Operation completed umpire analyses on sample pulps using the fire assay method for gold. The umpire analyses were completed at ALS Minerals in Reno, Nevada. ALS Minerals is an accredited laboratory through the Standards Council of Canada for ISO/IEC 17025:2005. Umpire results showed good correlation and limited local bias between the datasets. The umpire dataset did not include certified control samples outside of the laboratory's internal controls.

In 2015, Coeur submitted 1,929 sample pulps from the 2014 drill campaign for umpire analyses. The analyses were completed at Inspectorate, an accredited laboratory in Sparks, Nevada under ISO/IEC 17025:2005. This dataset included certified standards and blanks. The control samples performed well, with low failure rates. The dataset indicated a significant high bias for the Inspectorate results, indicating that the Wharf Operation laboratory may be underreporting fire assay values for grade ranges above the mine cutoff grade. In 2017 the Coeur Wharf laboratory participated in the SMA Round Robin to validate analytical results. Results illustrate good correlation among peer labs, and acceptable precision internally.

Drill sample campaigns conducted from 2015 through 2017 adhered to Coeur internal QA/QC protocols and procedures. Only analytical results which have completed the internal QA/QC process are selected for inclusion in the resource dataset.

It is in the opinion of the QP that the analytical results from 2017 and previous drilling and sampling campaigns are of sufficient quality for use in resource evaluation, and meet the requirements of NI 43-101.

1.4 Status of Development and Mine Operations

The Wharf Operation consists of the American Eagle, Green Mountain, Golden Reward, and Portland Ridgeline pits. Wharf currently operates as a conventional truck and loader heap leach gold mine. The mine has been in continuous operation since 1983 and is expected to continue at similar capacity through 2025. Wharf operates five heap leach pads, which are all load/offload pads. The entire planned mining disturbance falls within the current permitted area.

In-situ ore and waste is blasted prior to mining. Several historic pits that were partially backfilled are being mined again and the backfilled material is considered re-handle that does not require blasting. Waste material removed for access to the ore is taken to one of the rock disposal sites. Rock disposal sites are all designed to fill existing pits and are reclaimed as soon as possible after placement.

1.5 Mineral Resource and Mineral Reserve Estimates

1.5.1 Resource

The mineral resource estimation and methodology for the Wharf Operation is summarized in this Report for the Wharf deposit model (Wharf model). The Golden Reward deposit, discussed in Coeur (2015), was mined out in 2017. The Wharf resource model was completed by Kelly Lippoth and Scott Jimmerson of Coeur, with an effective date of December 31, 2017.

The following table summarizes the total open pit confined resource for the Wharf deposit, exclusive of the Reserves as stated in Section 15 of this report. The confining pit resource uses the December 31, 2017 month end topography and lowest mined out surfaces to define the current surface and the fill material. As defined by NI 43-101, the confining pit is not based on explicit economics but defines a boundary for continuous mineralization with suitable grades and with a reasonable expectation that an engineered plan will produce an economic plan.

There are no known significant environmental, permitting, legal, title, taxation, socio-economic, marketing, political or other factors that could materially affect the resource estimate.

Table 1-1 Wharf Operation Mineral Resources (exclusive of Mineral Reserves), effective December 31, 2017 (Coeur, 2018)

Classification	Tons	Average Au grade (opt)	Contained Ounces Au
Measured	2,150,000	0.025	54,500
Indicated	5,550,000	0.022	122,000
Measured + Indicated	**7,700,000**	**0.023**	**176,500**
Inferred	1,050,000	0.025	26,700

1. Mineral Resources effective December 31, 2017.
2. Qualified Persons for Mineral Resources are Kelly Lippoth and Scott Jimmerson.
3. Mineral Resources are reported exclusive of Mineral Reserves.
4. Mineral Resources do not have demonstrated economic viability.
5. Inferred Mineral Resources are considered too speculative geologically to have the economic considerations applied to them that would enable them to be considered for estimation of Mineral Reserves, and there is no certainty that the inferred Mineral Resources will be realized.
6. Metal price used was $1,400 per Au oz.
7. Resources are exclusive of Precambrian lithologies.
8. Rounding of tons, average grades, and contained ounces may result in apparent discrepancies with total rounded tons, average grades, and total contained ounces.
9. Resource estimate limited to material above 5920-foot elevation.

1.5.2 Reserve

The site was evaluated using economic pit shells generated using Whittle™. Appropriate cost and mining schedules were applied using estimates forecast for the life of mine. A gold price of $1,250 per ounce, based on Coeur's corporate guidance for reserves, was used for the economic shells.

Only blocks classified as Measured and Indicated are included in the reserves. Measured and Indicated mineral resources within the economic pits having a cutoff above 0.012 opt Au are considered as reserves.

Table 1-2 Wharf Operation Mineral Reserves, effective December 31, 2017 (Coeur, 2018)

Classification	Tons	Average Au grade (opt)	Contained Ounces Au
Proven	18,130,000	0.027	483,200
Probable	16,570,000	0.023	386,000
Total	**34,700,000**	**0.025**	**869,200**

1. Mineral Reserves effective December 31, 2017.
2. Qualified Person for Mineral Reserves is Tony Auld.
3. Metal price used was $1,250 per Au oz.
4. Rounding of tons, average grades, and contained ounces may result in apparent discrepancies with total rounded tons, average grades, and total contained ounces.

1.6 Capital and Operating Costs

The Wharf Operation is a mature mining operation. Estimated capital and operating costs are based on 30 years of operations. Capital and operating cost assumptions are sufficient for the planned extraction of the reserves including all manpower, equipment and infrastructure.

1.6.1 Capital Cost Estimates

Capital expenditures for the life of mine (LOM) for the Wharf Operation are estimated at an additional $20.7 million from December 31, 2017 (Table 1-3). Most of the capital expenditures are expected to cover sustaining capital requirements ($19.9 million), and the rest of the capital would be invested in infill drilling.

Table 1-3 Capital expenditures by year (Coeur, 2018)

Period	2018	2019	2020	2021	2022	2023	2024	2025	Total
Total Capital ($M)	4.6	3.8	3.8	3.5	3.0	2.0	-	-	**20.7**

A 10-20% contingency has been added to select capital projects. This contingency is used where project elements have not been fully defined.

Mine capital costs are comprised of sustaining capital items for a mature open pit mine, the cost of which reduces as the mine approaches the end of its life. Wharf Operation capital needs are sustaining in nature, required for the ongoing mining operations, and low in dollar amounts. Capital needs are subject to any changing needs in the mine plan.

1.6.2 Operating Cost Estimates

Operating costs for 2017 are summarized in Table 21-2. The future operating costs, based on actual costs from 2017, are estimated for each major cost center: mining, crushing, pad loading, pad unloading, plant, and General and Administrative (G&A) expenses. Revenue from 2017 is $125.9M, total operating cost is ($68.82M), and net cash flow is $48.23M. Wharf anticipates that the 2017 costs and revenue are indicative of future costs and revenues.

Gold prices used for planning and financial modeling are updated on an annual basis by Coeur's financial department and are typically representative of and no more than a 3-year trailing average of actual market prices. These prices are used in the financial model and in the sensitivity analyses.

1.7 Economic Analysis

1.7.1 Wharf Operation Economic Analysis

Table 1-4 demonstrates that the Mineral Reserves at the Wharf Operation are economically viable based on Coeur's financial model, which was updated with LOM reserve production schedules, metal recoveries, costs and capital expenditures. The costs are budgeted for 2018, based on operating experience in 2017 and expected deviations to those costs.

Table 1-4 Life of mine economic analysis (Coeur, 2018)

	Unit	Five Year Annual Average	LOM Total
Mine Production			
Open Pit Tons	k/ton	3,915	34,413
Ore Au Grade	opt	0.026	0.025
Waste	k/ton	7,923	94,362
Rehandle Ore	k/ton	2,671	25,625
Total Mining	k/ton	14,510	154,400
Pad Loading	k/ton	4,127	34,688
Pad Unloading	k/ton	4,295	31,420
Total Material Moved	k/ton	22,931	220,510
Placed Ore			
Total Placed Ore	k/ton	4,127	34,688
Ore Grade Au	opt	0.026	0.025
Metallurgical Recovery Au	%	80	79.3
Produced Gold	k/oz	84	702
Sold Gold	k/oz	84	702
Revenue			
Gold Price	$/oz	1252	1,250
Gold Sales	$M	106	887
Operating Costs			
Mining	$M	(26)	(252)
Crushing	$M	(8)	(58)
Leaching, Loading & Unloading Ore	$M	(15)	(122)
Indirects / G&A	$M	(9)	(84)
Selling Expenses	$M	(0)	(2)
Royalties	$M	(4)	(43)
Total Operating Cost	$M	(61)	(561)
Cash Flow			
Operating Cash Flow	$M	46	326
Capital	$M	6	20
Explorations and Miscellaneous	$M	1	2
Reclamation	$M	1	20
Total Pre-Tax Cash Flow (Net Cash Flow)	$M	**37**	**284**
Project Pre-Tax NPV (10% discount rate)	$M		**181**
State Taxes	$M	5	32
Federal Income Tax	$M		
Total After-Tax Cash Flow (Net Cash Flow)	$M	**32**	**252**
Project After-Tax NPV (10% discount rate)	$M		**161**

As of December 31, 2017, the Mineral Reserves for the Wharf Operations are estimated to return an after-tax NPV of $161 million at a 10% discount rate, using a gold price of $1,250 per ounce, as illustrated in Table 1-4.

Sufficient tax credits have been generated that the project is not expected to produce taxable income in the foreseeable future.

Table 1-4 depicts the annual production schedule and projected cash flows based on stated Mineral Reserves. Mineral Resources do not have economic viability until they are converted to Mineral Reserves.

1.8 Conclusions and Recommendations

The QPs have visited the project sites and have reviewed all information regarding their relevant scopes of work (see Section 2). Data and assumptions used in the estimation of Mineral Resources and Mineral Reserves summarized in this Report have been reviewed by the QPs, with reliance on other experts, where appropriate (see Section 3), and the QPs believe that the data are an accurate and reasonable representation of the Wharf Operation.

It is the opinion of the QPs for this Report that the Mineral Resource and Mineral Reserve estimates are based on valid data and are reasonably estimated using standard engineering practices. There are no other known environmental, permitting, legal, title, socio-economic, marketing, or political issues not discussed in this Report that could materially affect the Wharf Mineral Reserves.

The Wharf Operation is a mature, operating mine that has demonstrated positive cash flow. The financial analysis and associated assumptions conducted for this Report support the conclusion that the Wharf Operation is expected to continue to be profitable and generate acceptable returns over the anticipated life of the mine.

It is recommended to further advance development and production at the Wharf Operation by continuing to drill the resource in areas with limited drilling; revise the resource models, as required; and, optimize the mine plans with additional mine engineering work.

The QPs recommend:

1.8.1 Geology

- For definition purposes, the exploration program be continued at the Wharf deposit. Cost estimate: $1,000,000.
- Review the existing density determinations in the exploration drillholes and perform additional measurements, where required. Cost estimate: $5,000.

- Review sampling and sample preparation procedures with regards to sample size, sample length, mineral distribution and grain size to evaluate sources of variance and how to best minimize inconsistencies in the results. Cost estimate: $20,000.
- Review sample QA/QC procedures to include the use of coarse blank material. Cost estimate: $1,000 annually.

1.8.2 Resource Modeling

- Continue to update the lithology models when new drillholes are added to the database.
- Review resource classification constraints for Wharf as additional drilling is completed and additional information becomes available on the location of existing underground workings (as a part of the reserve update, below).
- Conduct a drillhole spacing study for the main trachyte ore body.

Additional recommendations for each model and for future reconciliations are summarized below.

- Investigation into the cost, timing, and viability of permitting the denitrification area for potential of the mineralized material beneath this to be included in future resource estimates.
- Verification of historic drilling west of the American Eagle pit through QA/QC procedures, twinned holes and additional in-fill drilling, in order to potentially be able to include mineralized material in this area in future resource estimates.
- Exploration drilling in the American Eagle West area and northward beyond the current model extents. The cost and timing of this endeavor is dependent on results of QA/QC and other recommendations included here.

1.8.3 Reconciliation

- Conduct polygonal reconciliation to compare with bench reconciliation methods.
- Investigate the blasthole and drillhole sampling methods to determine potential loss of fines in the blastholes and/or deviation of drillholes.

1.8.4 Mining

- Annually update Wharf Mineral Reserve model. Cost estimate: $60,000; and,
- Optimize mine designs and plans to maximize economic benefits, annually. Cost estimate: $10,000.

2. INTRODUCTION

2.1 Terms of Reference

This Report was prepared for Coeur by, or under the supervision of, the QPs for Coeur. The purpose of this Report is to update:

- Mineral Reserve and Mineral Resource estimates;
- capital and operating cost estimates; and
- the financial estimate for Wharf Resources.

This Report was prepared in compliance with the National Instrument 43-101 Standards of Disclosure for Mineral Projects and Form NI 43-101F1. As the holder of all the outstanding stock of Wharf Resources, Coeur is the indirect owner of 100% of the Wharf Operation.

2.2 Qualified Persons

This Report has been prepared by a team of Coeur and Wharf Resources employees. The following individuals, by virtue of their education, experience and professional association, as defined in NI 43-101, serve as the QPs for this Report. Table 2-1 lists the division of responsibility for the report.

Table 2-1 Qualified Persons for the Wharf Operation NI 43-101 Technical Report (Coeur, 2018)

Qualified Person	Registration	Title/Company	Sections of Responsibility
Ken Nelson	QP MMSA	General Manager Wharf Resources (USA), Inc	Sections 1*, 2*, 3, 4, 5*, 6*, 7*, 8*, 9*, 10*, 11*, 12*, 13*, 14*, 15*, 16*, 17*, 18*, 19*, 20, 21*, 22*, 23, 24, 25*, 26* and 27*
Tony Auld	RM SME	Mining Manager Wharf Resources (USA), Inc.	Sections 1*, 2*, 5*, 6*, 15*, 16*, 18*, 21*, 22*, 25*, 26*
Lindsay E. Chasten	RM SME	Exploration Geologist Wharf Resources (USA), Inc.	Sections 1*, 2*, 7*, 8*, 9*, 25*, 26*, 27*
Matthew R. Hoffer	RM SME	Manager, Geology Coeur Mining, Inc.	Sections 1*, 2*, 10*, 11*, 12*
John K. Key	RM SME	Process Plant Manager Wharf Resources (USA), Inc	Sections 1*, 2*, 13*, 17*, 18*, 19*, and 25*
Scott J. Jimmerson	RM SME	Manager, Resource Estimation Coeur Mining, Inc.	Section 1*, 2*, 14*, 25*, 26*
Kelly B. Lippoth	CPG AIPG	Senior Resource Geologist Coeur Rochester	Section 1*, 2*, 12*, 14*, 25*, 26*, 27*

*Indicates that portions of this section were developed by another author.

2.3 Site Visits and Scope of Personal Inspection

Ken Nelson, Tony Auld, Lindsay E. Chasten, and John Key are employed directly by Wharf Resources and work regularly at the site. Matthew R. Hoffer and Scott J. Jimmerson are employed directly by Coeur Mining and work at Coeur's Corporate office. Kelly B. Lippoth is employed by Coeur Rochester. Contributors to this Report are senior members of Coeur's corporate and technical staff qualified to assist in preparing certain portions of the Report.

- Ken Nelson is the Mine General Manager at the Wharf Operation. Mr. Nelson has been at Wharf since 1996 and served in various capacities, including Exploration Geologist, Mine Engineering Geologist, Senior Engineer, Engineering Manager/Assay Laboratory Manager and Operations Manager. As General Manager and a QP, Mr. Nelson is responsible for the overall information presented in this Report.
- Tony Auld is the Mine Manager, Wharf Resources. Tony Auld is a mining engineer with over 20 years of experience at open pit heap leach operations. Tony has been at Wharf since 2001 and his roles have included; short/long

range planner, Chief Engineer, and Mine Manager. In his current role he is responsible for the Operations department and Technical Services. As a QP for the Report, he is responsible for any of the sections related to general mine information and the sections relating to reserves, mining methods and economics.

- Lindsay Chasten has been employed by Wharf Resources for eight years as Exploration Geologist. In her current role Lindsay is responsible for RC drilling and sampling, database management and QA/QC, site geology and creation of the geologic model. She has reviewed on-site data, including the drillhole data. As QP for this Report, Ms. Chasten is responsible for the sections of this Report that pertain to geology and mineralization, deposit types and exploration.
- Matthew Hoffer has worked for Coeur for four years. As Manager of Geology at Coeur, his QP scope includes the projects' geological and analytical databases and QA/QC. Mr. Hoffer visited Wharf Resources on May 10th, 2017. Mr. Hoffer is responsible for the drilling, sample preparation, analysis, and data verification sections in this Report.
- Scott Jimmerson has been employed with Coeur since January of 2017 as Manager, Resource Estimation. Mr. Jimmerson made visits to site on February 20-24, 2017, April 03-14, 2017, April 23-28, and May 30 to June 02, 2017. He observed RC drilling, sample handling and preparation, blasthole drilling, density measurements, data entry, the resource estimation process, and he reviewed the geologic model. Mr. Jimmerson shares responsibility with Kelly Lippoth for the resource estimation section in this Report.
- John K. Key is a Metallurgical Engineer with over 15 years of experience in the mining industry, mineral processing, metallurgy and assay/metallurgical laboratory management. In his current role as Process Manager for Wharf Resources, John is responsible for Wharf's Heap Leach and ADR plant operations. He developed the sections for this Report that pertain to mineral processing, metallurgical testing and recovery methods.
- Kelly Lippoth has been employed by Coeur Mining since September 2006 as Senior Geologist and is currently Senior Resource Geologist at Coeur Rochester. Mrs. Lippoth made visits to site on February 20-24, 2017, April 03-14, 2017, April 23-28. She observed pit geology and mining operations, data entry, and completed a review of the data validation and the geologic model and completed the resource estimation process. Mrs. Lippoth shares responsibility with Scott Jimmerson for the resource estimation section in this Report.

2.4 Effective Dates

The following effective dates are applicable to the information provided in this Report:

- The effective date of Wharf in situ drilling used in Mineral Resource estimation is May 7, 2017;
- Date of latest information on mineral tenure, surface rights, and project ownership is December 31, 2017;
- The effective date of the LOM Plan is December 31, 2017;
- The effective date of the financial analysis is December 31, 2017;
- The effective date of the Mineral Resource estimate is December 31, 2017;
- The effective date of the Mineral Reserve estimate is December 31, 2017; and
- The Report filing date is February 7, 2018.

2.5 Information Sources and References

Wharf Resources has used internal reports and spreadsheets to support regulatory filings and this Report. Wharf Resources has also used the information and references cited in Section 27 as the basis for certain portions of the Report. Additional information on the operations was provided to the QPs from other Coeur employees in specialist discipline areas as shown in Section 3.

All figures have been prepared by Wharf Resources, measurements are presented as U.S. standard units, unless otherwise indicated.

2.6 Previous Technical Reports

Coeur published a NI 43-101 Technical Report on the Wharf Operation effective June 1, 2015.

3. RELIANCE ON OTHER EXPERTS

The authors of this Report state that they are the QPs for those areas identified in the appropriate “Certificate of Qualified Person” attached to this Report. The QPs confirm that the information relied upon conforms to standards set out in NI 43-101.

The QPs have not independently reviewed ownership of the Project area and the underlying property agreements. The QPs have fully relied upon, and disclaim responsibility for, information derived from Coeur corporate staff and legal experts retained by Coeur for this information through the following documents:

- Jonathan Ellison, 2017: Land Control Map; GIS Analyst – J. Ellison Consulting Group, LLC; and
- Adam Stellar, 2017: Coeur Corporate Land Manager.

Coeur corporate staff has prepared guidance on applicable taxes, royalties, and other government levies or interests applicable to revenue or income from the Wharf Operation.

4. PROPERTY DESCRIPTION AND LOCATION

4.1 Project Location

Wharf Operations is located in the northern Black Hills of western South Dakota, approximately 9 miles south of Interstate 90 near Spearfish, South Dakota and approximately 3.5 miles south and west of the city of Lead, South Dakota. Legal access is established from Exit 17 from Interstate 90, proceeding on SD Highway 85 South for about 15 miles to the intersection of SD Highway 85 and SD Highway 473, and proceeding west on SD Highway 473 for 3.5 miles.

The Wharf Operation property (Wharf Property) is comprised of two contiguous property groups — the Wharf Group and the Golden Reward Group — owned or controlled by wholly-owned subsidiaries of Coeur (Wharf Resources, or its wholly owned subsidiary, Golden Reward Mining Limited Partnership (Golden Reward LP)). The Wharf Group is generally described as the northern and western portions of the project, while the Golden Reward Group is generally described as the southern and eastern portion of the project.

The Wharf Property is situated within the following sections of land, located within the Black Hills Meridian, Lawrence County, South Dakota:

- Township 04 North, Range 02 East: Sections 01, 02, 03, 04, 10, 11, 12, 13, and 24;
- Township 04 North, Range 03 East: Sections 06, 07, 08, 17, 18, 19, and 20;
- Township 05 North, Range 02 East: Sections 16, 21, 22, 25, 26, 27, 28, 29, 32, 33, 34, 35, and 36; and
- Township 05 North, Range 03 East: 17, 18, 19, 20, 29, 30, 32.

Wharf Property is in the Whitewood Mining District, located on the USGS Lead 7.5' Quadrangle (1961) at:

- 592880mE, 4909639mN in the Universal Transverse Mercator (NAD 83), Zone 13T (Northern Hemisphere); or
- 44°20'03"N Latitude, 103°50'06"W Longitude,

Figure 4-1 shows the general project location.

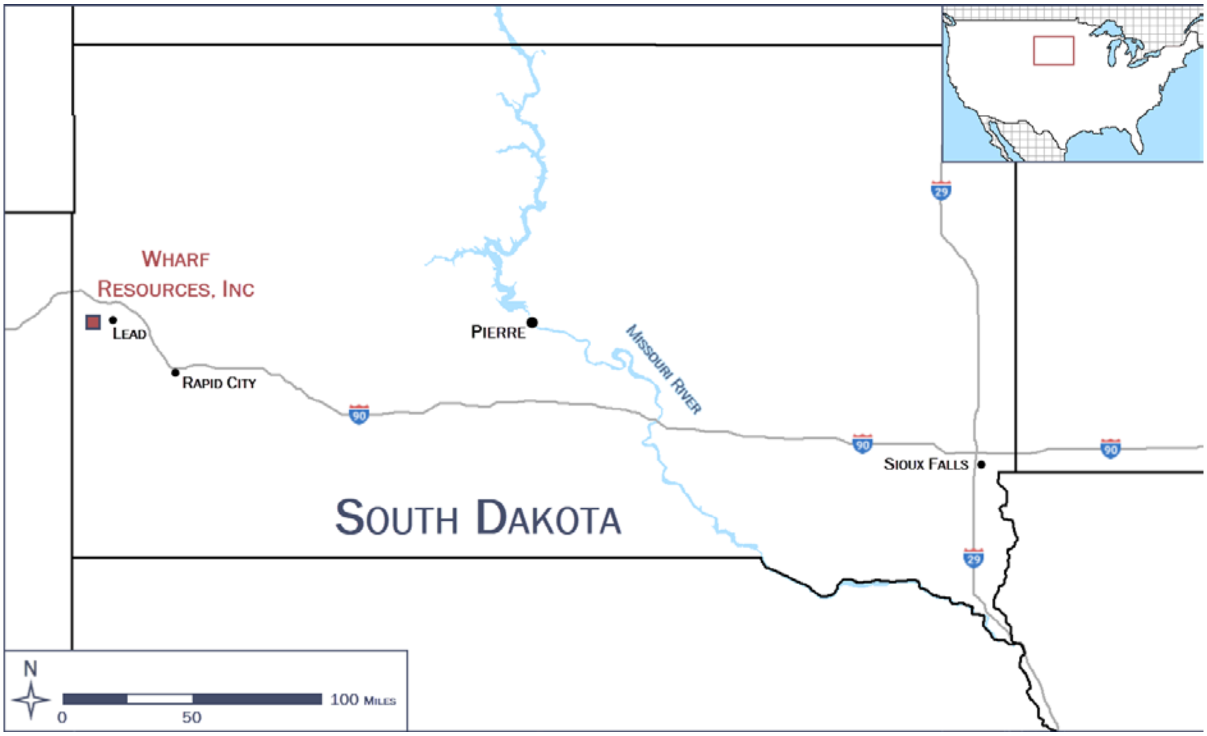


Figure 4-1 General project location (Coeur, 2018)

4.2 Issuer's Interest

On February 20, 2015, Coeur acquired all of the issued and outstanding shares of common stock of Wharf Resources for cash consideration of approximately $99M. As a result of the completion of the acquisition, Coeur owns (directly and indirectly) all of the issued and outstanding shares of Wharf Resources and interests in Golden Reward LP.

4.3 Land Tenure

The Wharf mining area comprises 362 patented lode claims, 35 government lots, 133 subdivided lots, and 59 federal unpatented lode claims, more specifically described as follows, and in detail in the Section 29 Appendix:

- Patented Lands:
  - Surface Estate: approximately 3,599 net acres;
  - Mineral Estate[1]: approximately 652 net mineral acres;
  - Non-Precambrian Mineral Estate[2]: approximately 3,243 net mineral acres; and,

[1] Includes only lands wherein both the Precambrian and younger formations are owned or controlled.
[2] Less and except all the Precambrian formation.

  - o Precambrian Mineral Estate[3]: approximately 1,603 net mineral acres;
- Federal Unpatented Lands:
  - o Federal Unpatented Lode Claims: Appropriating approximately 287 net acres of federal public land.

The Golden Reward mining area encompasses 218 patented lode claims, 14 government lots, 19 subdivided lots, and 34 federal unpatented lode claims, described as follows:

- Patented Lands:
  - o Surface Estate: approximately 1,563 net acres;
  - o Mineral Estate[4]: approximately 2,987 net mineral acres;
  - o Non-Precambrian Mineral Estate[5]: approximately 357 net mineral acres;
  - o Precambrian Mineral Estate[6]: approximately 153 net mineral acres;
- Federal Unpatented Lands:
  - o Federal Unpatented Lode Claims: Appropriating approximately 25 net acres of federal public land.

Figure 4-2 depicts the Wharf Operation surface interest.

The federal unpatented lode claims are maintained by the timely annual payment of claim maintenance fees, which are presently $155 per claim, payable to the United States Department of the Interior, Bureau of Land Management on or before September 1. Should the annual claim maintenance fee not be paid by or before then, the unpatented lode claim(s) are, by operation of law, rendered forfeited. For Assessment Year 2018, $9,145 and $5,270 in claim maintenance fees were paid by Wharf Resources and Golden Reward, respectively. As of December 31, 2017, all such payments were up to date.

The patented lands are private land and therefore not subject to federal claim maintenance requirements. However, as private land, they are subject to ad valorem property taxes assessed by Lawrence County, South Dakota, which may be paid semiannually by April 30 and October 31. Ad valorem taxes are paid in arrears in South Dakota. Accordingly, payments for the 2016 tax year were made by Wharf and Golden Reward in 2017 of which $480,293 and $5,736 were assessed against Wharf

[3] Less and except all formations younger than the Precambrian formation.
[4] Includes only lands wherein both the Precambrian and younger formations, but less and except all Oil, Gas, and associated hydrocarbons, are owned.
[5] Less and except all the Precambrian formation and Oil, Gas, and associated hydrocarbons.
[6] Less and except all formations younger than the Precambrian formation and Oil, Gas, and associated hydrocarbons.

Resources and Golden Reward, respectively. As of December 31, 2017, all such payments were up to date.

A schedule of the Wharf Property is included in Section 29 Appendix, Table 29-1 to Table 29-10. The area described includes the Wharf Group and the Golden Reward Group, comprising surface mining operation areas, ore-processing and metallurgical facilities, ancillary facilities and heap leach pads, spent ore pads, and stockpiles.

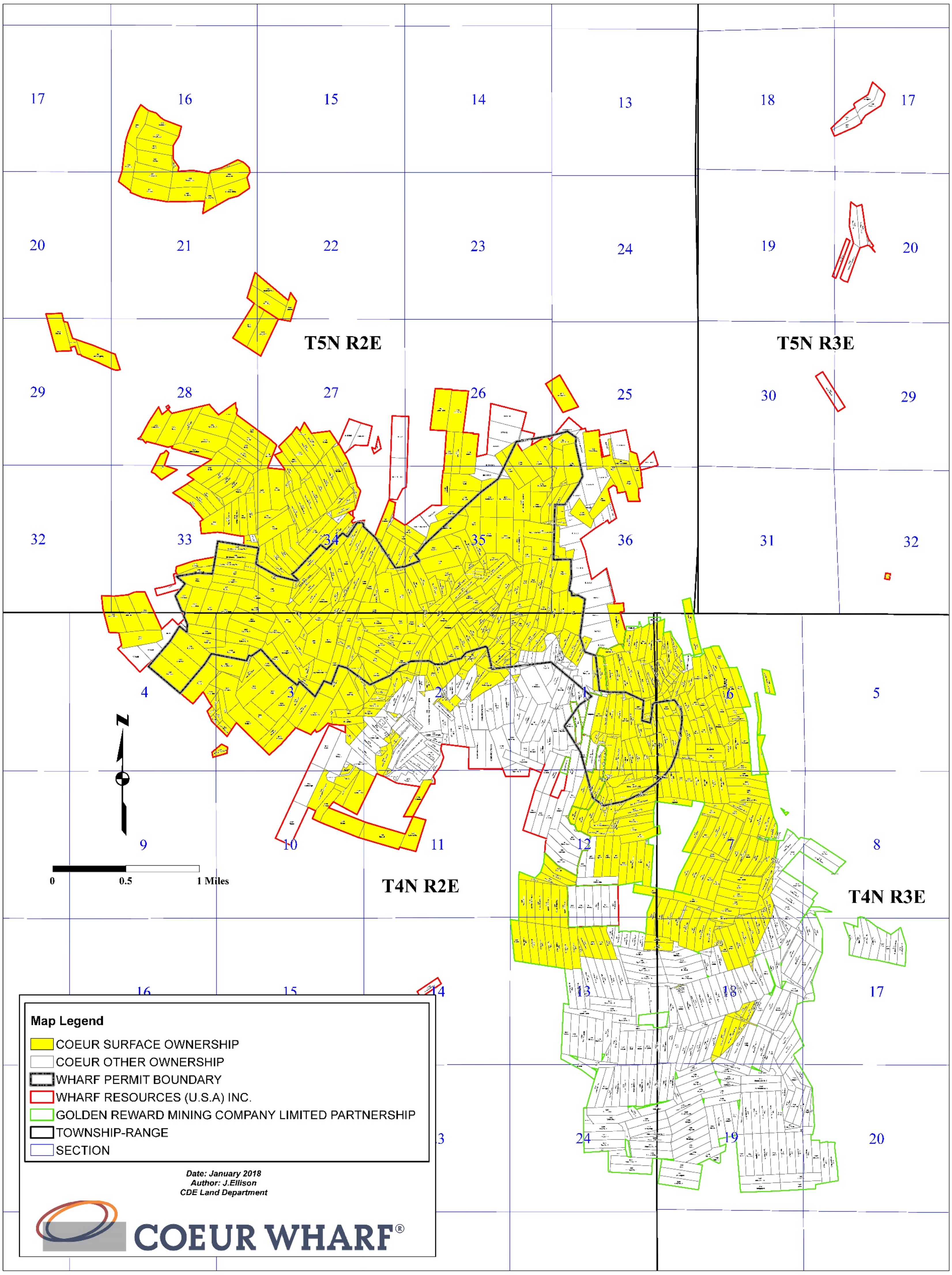


Figure 4-2 Detailed surface interest map - Wharf Operation (Coeur, 2018)

4.3.1 Agreements, Leases, Options

- **John R. Dykes, et al.:** Mineral Lease, as amended, covering the mineral estate of 34 patented lode claims, comprising approximately 291.1 acres. The corresponding surface estate of these patented lode claims is owned by Wharf Resources. Wharf Resources leases the mineral estate, including the Precambrian Mineral Estate, from John R. Dykes, Arlen Jumper, and the estate of Thomas Handley (SunTrust Bank, Trustee). The term of the Mineral Lease is 10 years from July 18, 1979, and shall automatically continue after the end of the term for so long thereafter as the Wharf Resources is actively engaged in exploring, developing or mining the leased premises or in the actual process of developing a producing mine in respect of the leased premises. During the term of the Mineral Lease, the lessors are also entitled to a royalty on production, if any, of 3% of the net smelter returns (NSR) of all silver and gold ores, together with other ores and minerals. In addition, there is an advance minimum royalty due the lessors of $5,000 per year unless and until Wharf Resources identifies and publishes a reserve encompassing the leased premises, at which point the advance minimum royalty increases to $25,000 per year. See Figure 4-3.
- **BHCL 2010 Project Agreement:** Effective December 1, 2010, Wharf Resources entered into an agreement with Black Hills Chair Lift Company (BHCL), as amended, concerning mutual obligations to benefit expansion of the Wharf and Golden Reward mine operations into a new permit area and operation of the Terry Peak Ski Area (2010 Agreement). The 2010 Agreement generally provides that BHCL will support and assist Wharf Resources in obtaining permits and authorizations for the expanded mine operations and will provide consent and access on lands it owns for Wharf Resources' mining activities in exchange for financial support, conveyance of specified parcels, water use, and other consideration, which are set forth under five distinct Phases, of which the remaining phases which are not complete are described below. Under the terms of the 2010 Agreement, Wharf Resources agrees to cooperate "to minimize interference with the Terry Peak Ski Area ski season by only conducting mining activities between April 15 and Thanksgiving of each calendar year, unless other dates are agreed upon by the parties."

1) **Phase 1**

    a) BHCL executed a Promissory Note dated February 18, 2011 and a Mortgage dated February 18, 2011. Pursuant to these agreements, Wharf Resources loaned to BHCL a principal sum of $2,000,000 together with interest at a rate of 1% per annum payable of over a period of 9 years in 2 payments per calendar year to begin on or before April 1, 2011 and be due and payable on or before each November and April 1 thereafter. In the Mortgage, as security for the loan, BHCL mortgaged to Wharf

Resources its interest in certain mining claims, which are in the vicinity of the Terry Peak Ski Area. See Figure 4-3.

b) Wharf Resources is required to commence the processes to obtain release of the former Probably Maximum Precipitation (PMP) pond, former metallurgical processing and administration buildings, and 20 acres around the post and buildings from post-closure liability in order to convey the same to BHCL "as is" and "where is." Wharf Resources has agreed to indemnify and hold BHCL harmless from any and all environmental liabilities, which will be set out in the conveyance to BHCL

c) BHCL is allowed to use water available under Reissued Water Permit No. 1666A-1, except for water required by Wharf Resources for mining and reclamation purposes. Under this provision, the quantity of water made available to BHCL will not be less than 500 gallons per minute. Once the PMP Pond, buildings, and 20 acres have been released from post-closure liability, BHCL will be transferred 500 gallons per minute of Reissued Water Permit No. 1666A-1.

Phase 1 obligations will not be fulfilled until mining at Golden Reward is completed and reclaimed, which is projected to occur between 2017 and 2019. Phases 2 and 3 have been completed.

2) Phase 4

a) After the completion of mining and reclamation in the Golden Reward Mine expansion area, Wharf Resources is required to pay BHCL a total of $2,250,000 in the following amounts for the referenced purposes:

   i. Wharf Resources shall expend $1,000,000 to re-contour lands to extend the Red Chairlift run;

   ii. Wharf Resources shall convey the Dark Horse Parking Lot Land to BHCL "as is, where is." Obligation value assigned: $200,000;

   iii. Wharf Resources shall expend up to $50,000 to gravel a new parking lot in the area of the terminus of the extension of the Red Chairlift if (1) BHCL extends the Red Chairlift on to the Golden Reward Mine property prior to the reclamation of the haul road and tunnel from the Golden Reward Mine to the Wharf Resources Mine, or (2) within 5 years of completion of mining in the Golden Reward Mine expansion area, whichever occurs first;

   iv. Wharf Resources shall convey approximately 100 acres of the Golden Reward Mine site land to BHCL for trails, extended ski runs, and a new lift area "as is, where is". Obligation value assigned: $1,000,000.

Phase 4 obligations are not expected to be fulfilled until 2024, at the latest, due to ongoing reclamation at the Golden Reward mining area.

3) **Phase 5**

   a) Wharf Resources is to pay BHCL $1,000,000 after completion of mining in the "new permit area," which may only be applied towards construction costs of a new ski lodge, provided that Wharf Resources is not required to make this payment "if mining ceases in the new permit area due to lack of profitability, resulting in the execution of less than 90% of the original mine plan in the new permit area. This lack of profitability could be caused by low gold prices, high operating costs, incorrect geological models, or any combination of all three factors."

The Phase 5 obligation is not expected to be fulfilled until 2024, and upon the condition that 90% of the reserves have been mined.

- **BHCL 2011 Lease Agreement:** Under the 2010 Agreement referenced hereinabove, Wharf Resources and BHCL entered into a Lease Agreement dated effective November 1, 2011, concerning Lots 6, 7, and 8 in Block 2, Lost Camp Tract B (Lease), replacing a prior Ground Lease between Golden Reward, as Landlord, and Terry Peak Snowmaking Co. LLC, as Tenant. There is no rent due Wharf Resources under the terms of the Lease. The Lease commenced on November 1, 2011 with a termination date set for April 15, 2012; however, the Lease further provides that it "shall automatically renew for the same term on November 1 of each year, unless either gives to the other party thirty 30 days' written notice of non-renewal." BHCL is required to indemnify and hold Wharf Resources harmless from all penalties, claims, demands, liabilities, expenses, and losses of whatever nature, arising from BHCL's use of the properties, including reasonable attorneys' fees incurred by Wharf Resources for any litigation, or threatened litigation, which arises out of BHCL's use of the properties (see Figure 4-3);
- **BHCL Stock Purchase Agreement and Option:** On September 9, 1987, Golden Reward purchased 800 shares of common stock in the BHCL. BHCL owns and operates the local ski area, adjacent to, and contiguous with the Property Package. Section 4.7 grants Black Hills Chairlift Company the option to purchase lands within a 500-yard radius of the lower terminus of the Red Chair Lift when mining and reclamation of the lands have been completed. This includes 12 patented lode claims and 1 government lot (Figure 4-3);

- **Timber Cutting Agreements:** In November 2013, both Wharf Resources and Golden Reward entered into Timber Cutting Agreements with Neiman Timber Co., L.C. encumbering many patented claims and subdivided lots located outside of the mine corridor. The Timber Cutting Agreements provide a revenue source, reduce the real property taxes, and ensure sustainable timber management. The term of both Timber Cutting Agreements is 10 years and they are renewable;
- **Credit Agreement:** Pursuant to a September 29, 2017 Credit Agreement by and between Coeur, certain subsidiaries of Coeur, and Bank of America, N.A., as administrative agent (the "Credit Agreement"), a Mortgage, Assignment of Production, Assignment of Leases and Rents, Security Agreement, Financing Statement, and Fixture Filing (the "Instrument"), of even date, was executed by Wharf Resources, Wharf Rewards Mines Inc., Wharf Gold Mines Inc., Golden Reward, and Wharf Resources Management Inc., as Mortgagors and Bank of America, N.A., as Beneficiary and Mortgagee. Under the terms of the Instrument, a lien was placed upon the legal and beneficial title in and to the lands comprising the Wharf Property (detailed in Section 29), securing a loan under the Credit Agreement, in an aggregate principal amount of up to $200,000,000. The Instrument has a scheduled final maturity date for outstanding loans under the Credit Agreement of September 29, 2021, subject to the terms and/or the conditions of the Credit Agreement and the other Loan Documents, as defined in the Credit Agreement.

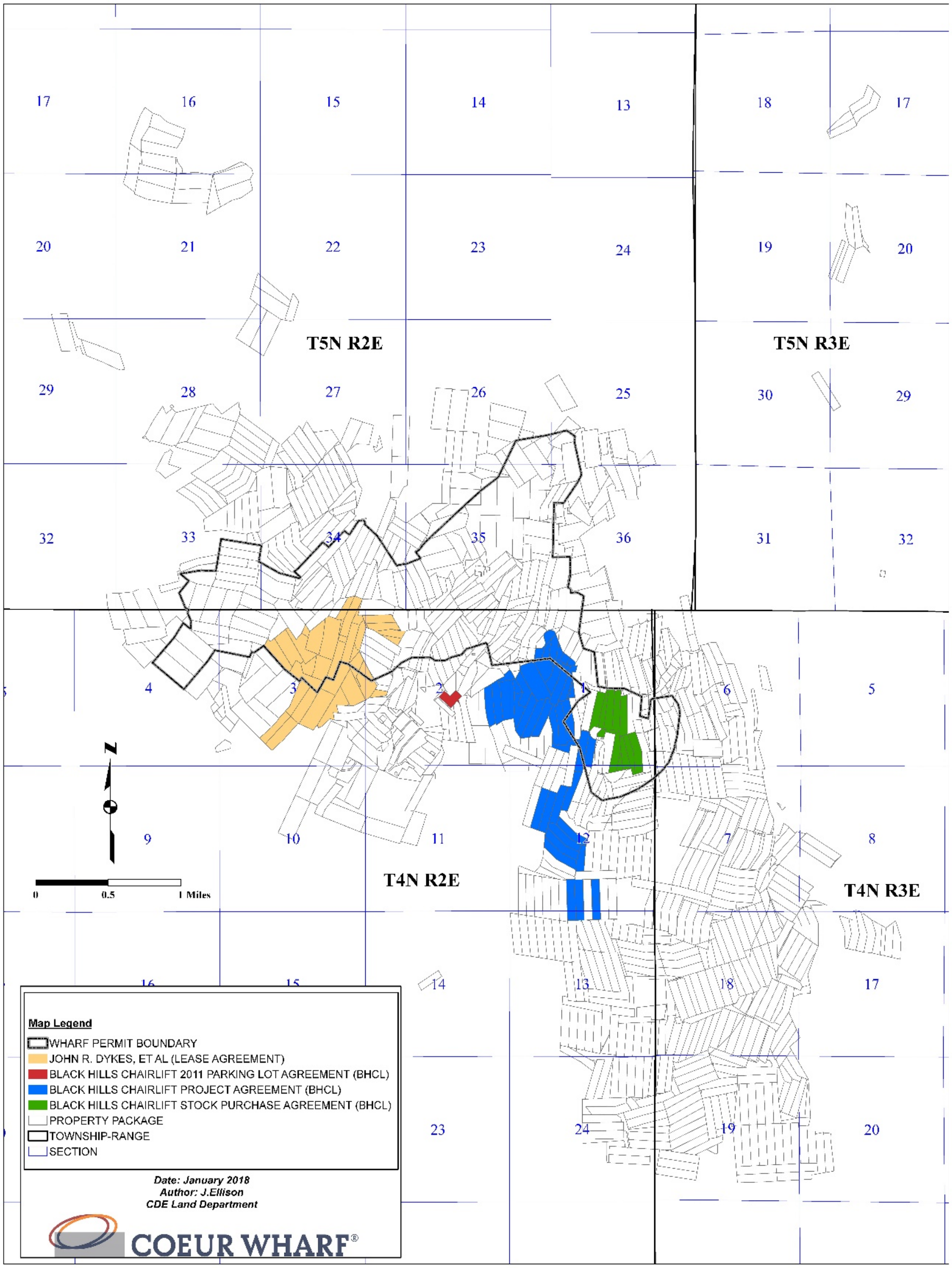


Figure 4-3 Agreements, leases, and options (Coeur, 2018)

4.4 Royalty Interests

- **Alvin R. Carlson:** Pursuant to a June 8, 1999 Minerals Royalty Deed, Wharf Resources conveyed to Alvin R. Carlson a non-participating production royalty of 2% on gold produced from ores mined and delivered to the heap leach pads, from an undivided 1/8th interest in the minerals, including the Precambrian Mineral Estate, within and beneath the following parcels: Lots 1, 2 and 4, Block 5 of Plat #2 Bald Mountain Mining Company, Town of Trojan, being portions of USMS #1226 and USMS #2027, and comprising 2.4 acres, more or less (Figure 4-4);
- **Homestake Mining Company of California:** Pursuant to an April 18, 1986 Quitclaim Deed from Wharf Resources to Homestake Mining Company of California (Homestake), Wharf Resources granted Homestake a sliding scale production royalty on the gross value of all gold in saleable form (see table below) on the mineral estate, including the Precambrian Mineral Estate, of those certain lands owned by John A. Dykes, et al. and leased to Wharf Resources (see Section 4.3.1), together with eleven unpatented lode claims.

Table 4-1 Homestake sliding scale royalty (Coeur, 2018)

Percentage of gross value	Monthly average London PM Gold Fix (per ounce)
0%	Below $350.00
0.5%	$350.00-$399.00
1.0%	$400.00-$499.00
2.0%	$500.00 or more

The severance tax paid to the State of South Dakota on the gross value of production is the only allowable deduction to this royalty (Figure 4-4);

Pursuant to a March 15, 1988 Deed, as amended, from Homestake to Golden Reward, Homestake reserved a 5% NSR royalty on production from materials younger than the Precambrian age within the Bonanza (USMS #516), Plutus (USMS #517A), Buxton (USMS #518), Cheetor (USMS #519), Clarinda (USMS #520), and Clarinda Extension (USMS #1097) patented lode claims, which comprise 50.3 acres, more or less, and are located within the Golden Reward Group. See Figure 4-4;

- **Frank Krejci, and spouse, Rita J. Kane:** Pursuant to a February 18, 1986 Offer and Agreement to Purchase, Wharf Resources, as buyer, agreed to pay Frank Krejci, his wife, Rosina G. Krejci, and Rita J. Kane, as sellers, a contractual, non-participating production royalty of 4%, on any and all minerals, including those from the Precambrian Mineral Estate, from the following undivided interests, in the following four patented lode claims: 100% for the Paddy Ford (USMS #1581), 50% for the Hidden Ore (USMS #1229), and 16.67% for the Saxon and Delancy (USMS #1229). These patented lode claims comprise 33.29 acres, more or less. Pursuant to the terms of the Offer and Agreement to Purchase, this non-participating production royalty is capped at, and therefore limited to, $100,000. See Figure 4-4;

- **James A. Kunz and Marjorie L. Kunz:** Pursuant to a December 31, 1990 Contract for Deed, James A. Kunz, a married man and Marjorie L. Kunz, an unmarried woman, reserved a 5% production royalty on all gold recovered from two patented lode claims, the Wm. B. Allison and Summit Flat (USMS #1516), which encompass 28.07 acres, more or less. This production royalty also encumbers the Precambrian Mineral Estate. See Figure 4-4;
- **Mountain View Heights, Inc.:** Pursuant to a January 19, 2011 Warranty Deed, Mountain View Heights, Inc., excepted and reserved unto itself a production royalty of 1.5% on gold produced from the Dark Horse (USMS #866) patented lode claim, which contains 5.46 acres, more or less. This production royalty also encumbers the Precambrian Mineral Estate. See Figure 4-4;
- **Royal Gold, Inc.:** Pursuant to, and through, five December 21, 1988 Quitclaim Deeds, one February 1, 1989 Quitclaim Deed, and two agreements effectively dated November 1, 1994 and September 1, 1996, Royal Gold, Inc., the successor in interest to Homestake, holds a sliding scale production royalty on the gross value of all gold in saleable form (Table 4-2). This royalty encumbers the majority of the lands comprising the Wharf Group, together with a small portion of the lands encompassing the Golden Reward Group, and wholly excludes the Precambrian Mineral Estate.

Table 4-2 Royal Gold sliding scale royalty (Coeur, 2018)

Percentage of gross value	Monthly average London PM Gold Fix (per ounce)
0%	Below $350.00
0.5%	$350.00-$399.00
1.0%	$400.00-$499.00
2.0%	$500.00 or more

The severance tax paid to the State of South Dakota on the gross value of production is the only allowable deduction to this royalty (see Figure 4-5).

- **Thomas F. Thompson and Charlotte J. Thompson Revocable Trust:** Pursuant to a February 9, 1982 Deed the predecessors in interests to the Thomas F. Thompson and Charlotte J. Thompson Revocable Trust, Dated

September 18, 2001, the holder, reserved a perpetual, non-participating 3% NSR royalty from all ores and minerals produce, sold, and saved from the Clinton (USMS #956) patented lode claim, which comprises 6.1 acres, more or less. See Figure 4-4;

- **Donald D. Valentine, et al.:** Pursuant to two September 27, 1974 Minerals Royalty Deeds, as amended, Wharf Resources' predecessor in interest, Bald Mountain Mining Company conveyed to Donald D. Valentine, et al. (Valentine) a 3% nonparticipating royalty on gold that is produced from ores mined and delivered to heap leach pads or recovered from tailings. This royalty encumbers the mineral estate, including the Precambrian Mineral Estate, of much of the lands comprising the Wharf Group. Wharf Resources holds a right of first refusal to purchase this royalty. See Figure 4-6;

- **White House Congress, Inc.:** Pursuant to two June 1, 1976 conveyances from White House Congress, Inc. (White House) to Wharf Resources' predecessor in interest, Homestake Mining Company, White House reserved a 5% gross production royalty of the recovered value of any metals or minerals produced from the ores extracted from 27 patented lode mining claims, which comprise 318.3 acres, more or less. Proceeds from this gross production royalty, pursuant to the conveyances' reservations, are capped at, and therefore limited to, $200.00 per acre. See Figure 4-4.

Refer to Section 20 for a discussion on environmental, social, and permitting factors related to the Wharf Operation.

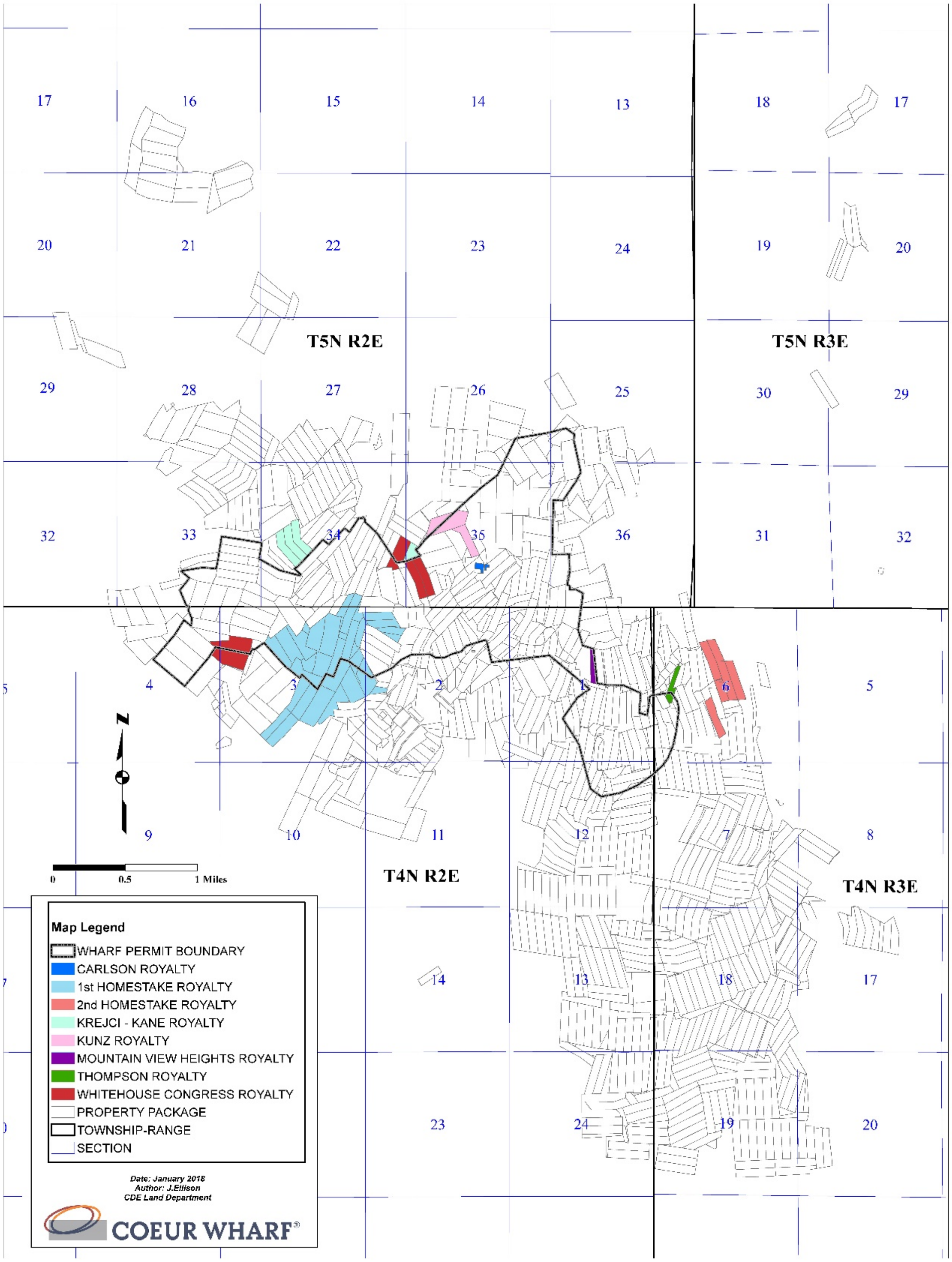


Figure 4-4 Miscellaneous royalties (Coeur, 2018)

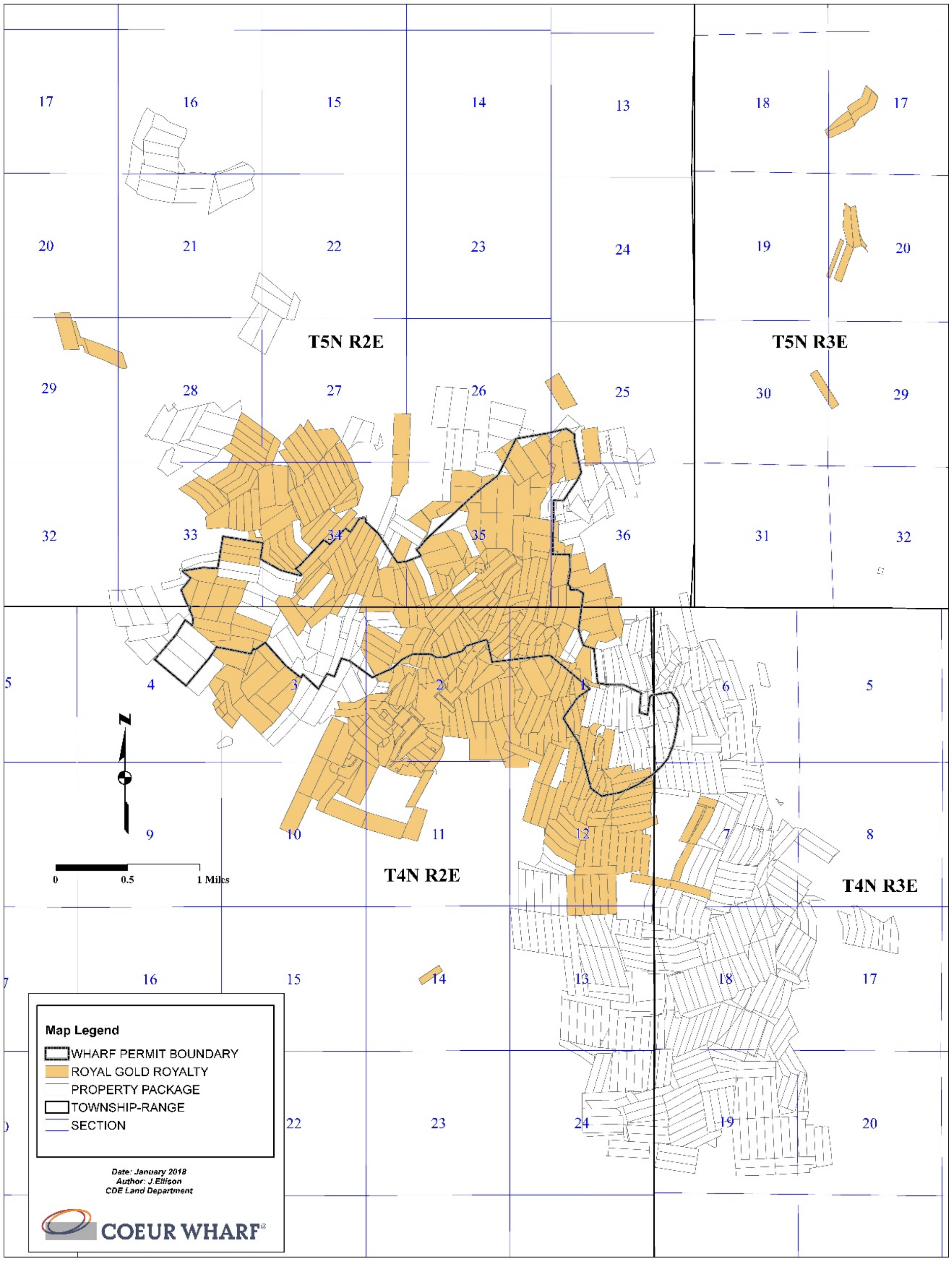


Figure 4-5 Royal Gold royalty (Coeur, 2018)

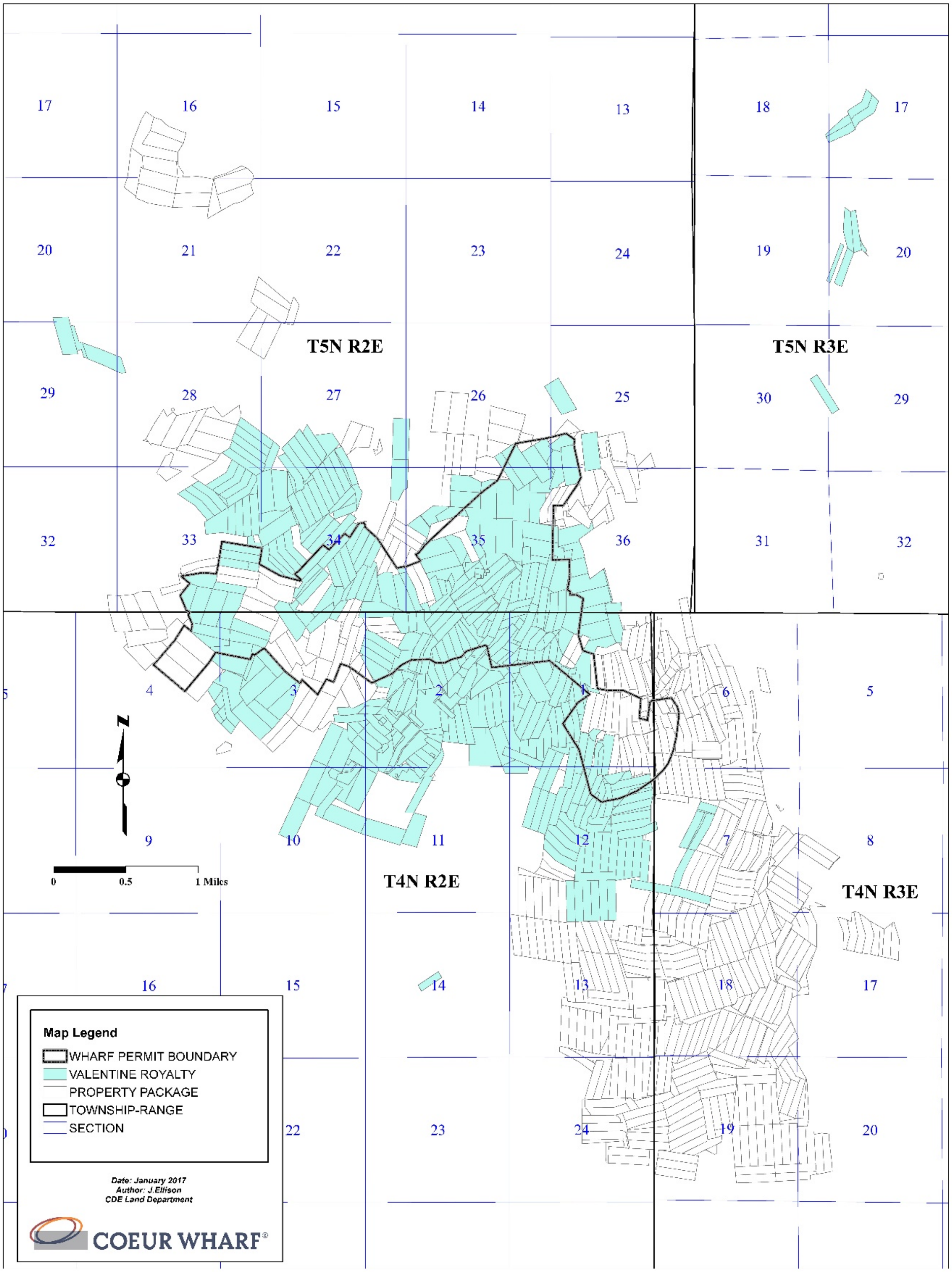


Figure 4-6 Valentine royalty (Coeur, 2018)

4.5 Permits

All of the permits required for the Wharf Operation have been obtained and are listed in Section 20.5 of this Report. The permits that are currently in place are sufficient for continued operations at the Wharf Operation. Permits for exploration drilling are current and sufficient for drilling in 2018.

4.6 Environmental Liabilities

The Wharf Operation is in compliance with all permit conditions and requirements and there are no significant environmental liabilities at this time. See Section 20 for additional detail on the environmental permits.

4.7 Social License

The Wharf Operation is, and has been operated under, the authority of: Lawrence County Conditional Use Permits, South Dakota Large Scale Surface Mine Permits, South Dakota Surface Water Discharge Permits, South Dakota Groundwater Discharge Permits, and South Dakota Air Quality Permits. Each permit and/or permit amendment requires an approval process that engages the public through public notification and the public hearing process at both the county and state level. County Commissioners and state boards appointed by the Governor conduct the hearings to ensure due process to engage and incorporate public comments and concerns during the permitting process.

4.8 Significant Risk Factors

The Wharf Operation is subject to certain risks, including delays in acquiring, or the inability to acquire, additional land due to changes in the projects' mine plans, that are typical of other mining projects in the United States.

There are no known issues with mineral or land tenure that may affect access, title, or the right or ability to perform work on the Wharf Operations property. Surface rights controlled by Wharf Resources and Golden Reward are sufficient to support current and anticipated mining, ore processing and exploration activities in the Wharf Operation.

5. ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

5.1 Accessibility

The Wharf Operation is in Lawrence County, approximately four miles southwest of Lead, South Dakota. Access to the Wharf Property from Lead (the nearest town) is by paved road (Nevada Gulch Road), 4.6 miles to an all-weather gravel road (Wharf Mine Road), and then 2.1 miles to the mine office. Lead is approximately 61 miles from Rapid City, South Dakota, the second largest city in the state and serviced by an all-weather airport.

5.2 Climate

Average annual precipitation rate at the Wharf Operation is 30.5 inches, and the average annual snowfall is 199 inches. Between 1990 and 2014, annual precipitation at the mine ranged from 14.64 to 41.29 inches. Average temperatures range from a high of 71°F to a low of 16°F.

5.3 Local Resources and Infrastructure

Wharf Operation has a well-developed infrastructure and a local workforce with extensive experience in mining operations. The mine site is located four miles west of Lead, Lawrence County, South Dakota. Site is accessed by traveling on public roads to the mine site. There are no property access issues.

Electrical power is supplied by Black Hills Power (BHP) via a 12.47kV transmission line that runs on rights-of-way granted to BHP. See Section 18 for additional details on project infrastructure.

5.4 Physiography

Wharf Operation is in the Black Hills, a small mountain range that is predominantly located in western South Dakota, and extends westward into Wyoming. The Black Hills uplift is the easternmost part of the Rocky Mountains, and as an isolated range, is surrounded by the northern Great Plains. Elevations above sea level range from approximately 3,500 to 7,242 feet at Harney Peak. The area is primarily forested with ponderosa pine, and to a lesser extent, Black Hills spruce.

Within the existing mine permit boundary, the highest elevation is 6,630 feet at Foley Ridge; the lowest is 5,630 feet in the northernmost drainage. The Wharf Operation lies in an area of moderately steep terrain. In general area is cut by two principal drainages;

Squaw Creek, which drains to the north, and Annie Creek, which drains to the southwest. However, there are no live streams in any of the permit areas. Dry gulches on or near the property include Nevada Gulch between Wharf and Golden Reward, and Fantail Gulch at Golden Reward.

South and adjacent to the mine is Terry Peak at 7,064 feet, which is a ski area in use during winters.

5.5 Conclusions

The Wharf property is accessible year-round and the climate allows for year-round mining operations. There are sufficient local resources and infrastructure for Wharf to operate. Based on operational experience the physiography is conducive to mining operations.

6. HISTORY

Gold was discovered in the Black Hills during the 1874 reconnaissance by the Custer expedition. This was also the beginning of European and American settlement in the Black Hills of South Dakota. Settlement in the area was based exclusively on the search for gold and the development of commercial enterprises supporting the mining operations. The first lode claims, on what became the Homestake property, were located in 1875, and fossil placer deposits in basal conglomerate of the Deadwood Formation were found at about the same time (Luoma and Lowe, 2010). The original discovery at Bald Mountain came later by A.J. Smith in 1877. In 1877, following discoveries of alluvial gold in the Black Hills, the first claims were staked over the Wharf Mine. Underground production was recorded along high-angle structures between 1901 and 1959.

The town of Portland was established in 1880 near Terry Peak, resulting in formation of the Bald Mountain Mining District. The local community expanded with the mining operations, and a second town, named Trojan, was developed about 0.5 miles south of Portland. Between 1911 and 1928, the majority of the 15 properties were consolidated into two larger companies: the Bald Mountain Mining Company and the Golden Reward Consolidated Mining and Milling Company. The Bald Mountain Mining Company operated from 1912 until 1923, when operations were suspended for economic reasons. Mining resumed with the increase in gold price from $20.67 to $35.00/ounce in 1934, and continued until 1942 when the mine was closed for the duration of World War II (Miller, 1962). Mining resumed in 1945 and continued until underground mining ceased entirely in the district by 1959, and both towns were abandoned.

In April 1974, exploration companies began to consolidate the district, mainly over the area called Annie Creek. These companies included Taiga Resources, Scholz International Mining, and others. On October 31, 1974, the Bald Mountain 50/50 Partnership was formed between Homestake Mining Company (Homestake Manager) and Taiga Gold Inc. (renamed from Taiga Resources).

Wharf Ltd. drilled 91 holes in 1979 and 1980; permitted the Annie Creek mine for production in 1982; and began construction with first production in 1983, when another 32 holes were drilled. Full-scale production was achieved by May 1984 at Annie Creek. Wharf Resources Partnership formed in 1984 through the merger of Wharf Ltd and Wharf USA Inc.

Expansion of Annie Creek went on to Foley Ridge, which was part of the Bald Mountain 50/50 Partnership.

Mining at the current location commenced in 1983 and surface mine operations included: eight pits, an ore processing area, two spent ore depositories, three barren rock facilities, access and haul roads, historical (relic) mine tailings, and undisturbed land. Historical pits include: Annie Creek, Juno, Foley, Portland, West Portland, Deep Portland, Trojan, and American Eagle. All historical pits and satellites are shown in Figure 6-1. Spent ore disposal areas include Ross Valley and Juno/Foley, which includes the lined 33-Vertical, North Foley, and Polo depositories. Barren rock dumps include Reliance, Trojan, and Cleopatra (Squaw) Creek. Facilities within the ore processing area include a crusher, five heap leach pads, a leachate processing plant, seven lined process ponds, and associated piping, and lined ditches.

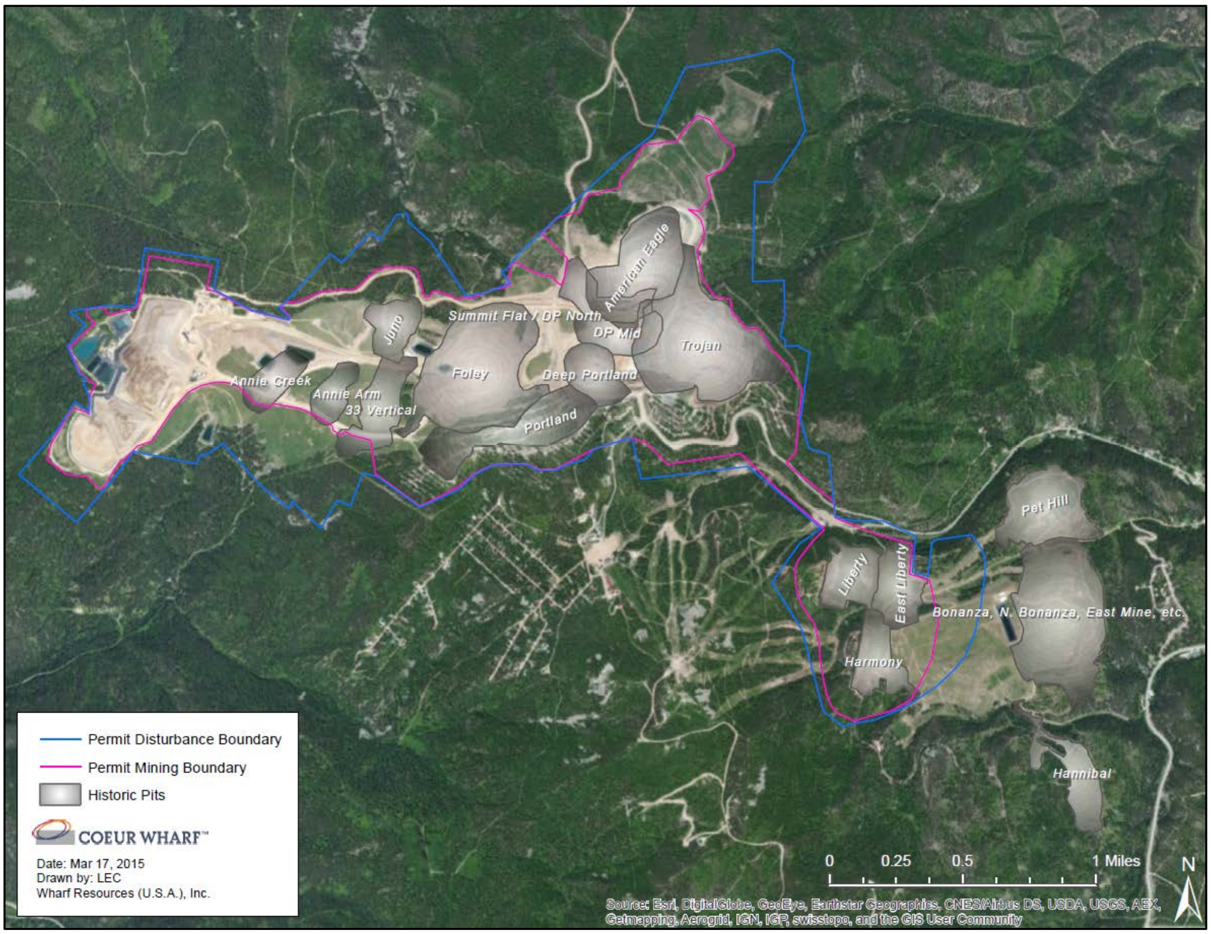


Figure 6-1 Wharf Mine historic pits (Coeur, 2015)

6.1 Wharf Resources

6.1.1 Property Ownership

Wharf Resources independently acquired a land position and initiated exploration in the Annie Creek area in 1979. This work resulted in the definition of a gold deposit that was developed in 1983 as an open pit mine and heap leach recovery operation. Wharf Property ownership is shown below by date:

- 1974 – Taiga Gold Inc. (Taiga Gold), a predecessor of Wharf Resources, acquired a large property position in the area. Taiga Gold and Homestake formed a joint venture to explore the property from below ground. Homestake subsequently dissolved its portion of the partnership. Taiga Gold was granted options to purchase Homestake's 50% interest for $5.5M in its remaining Bald Mountain properties. In consideration of these options, Taiga Gold agreed to grant Homestake warrants to purchase 600,000 common shares of Wharf at $5/share on or before December 31, 1988. Taiga Gold purchased Homestake's interest in the joint venture to add the Foley Ridge and adjacent deposits.
- 1977 – Wharf Resources was formed (then named Goldex Holdings, Inc.).
- 1982 – Taiga Gold, Inc. was merged into Wharf Resources.
- 1987 – Dickenson Mines Limited, based out of Toronto, Canada, acquired the majority of the shares in Wharf Resources.
- 1994 – Goldcorp Inc. (Goldcorp) became the continuing corporation following the amalgamation of Goldcorp, Dickenson Mines Limited, Goldquest Exploration Inc. and CSA Management Limited.
- 1996 – Goldcorp announced a Canadian (C) $86M takeover bid for the 49.7% stake in Wharf Resources that it did not already own, offering either C$9.00 cash or 0.72 of a Goldcorp share for each Wharf share held. Goldcorp had been buying stock in the open market so this deal brought ownership to 100% Goldcorp. Goldcorp acquired remaining interest in Wharf Resources, making Wharf Resources a wholly owned subsidiary.
- 2015 – Coeur acquired 100% of the stock in Wharf Resources from Goldcorp.

6.1.2 Production History

South Dakota issued the first state mining permit to Wharf Resources in 1982 and mining commenced shortly thereafter. Foley Ridge and Annie Arm mining permits were approved in 1985, which extended the original Annie Creek pit. In 1994, Annie Creek was backfilled with spent heap leach material and mining began in the Whiteside and 33 Vertical pits. Mining continued progressing eastward into the Juno and North Foley pits. The Clinton mining permit was approved in 1998, which allowed expanded mining into the Trojan area. In 1999, mining began in the Portland pit and Polo; in 2001, mining began in Trojan Phase 1; in 2012, the mining permit was approved to expand mining into Green Mountain; and, in 2014, mining in Green Mountain began.

6.2 Golden Reward

6.2.1 Property Ownership

The Golden Reward Mining and Milling Company was formed in 1897 from the consolidation of the Golden Reward Gold Mining Company and the Deadwood and Delaware Smelting Company. Operation of the mine and mill ceased in 1918 with little exploration activity (Naething 1938).

The Anaconda Company purchased the holdings of the Golden Reward Mining and Milling Company in 1940, and held them until 1985. After many mergers, MinVen purchased a 100% interest and promptly sold a 60% interest to Wharf Resources. The Golden Reward Mining Limited Partnership was formed in 1992, consisting of subsidiaries of both MinVen and Wharf Resources. Wharf Resources assumed management responsibility of the limited partnership in 1992. Mining at Golden Reward was active from 1989 to 1996. The remainder of the interest in Golden Reward was acquired by Wharf Resources in 1996.

6.3 Wharf Operation Production History

Pre-Wharf Operation production history was compiled from Shapiro and Gries (1970) and Wharf Operation records. This aggregate history, as of December 31, 2017, is provided in Table 6-1.

Table 6-1 Production history (Shapiro, 1970; Coeur, 2018)

Year	Tons (×1000)	Au Grade (oz/ton)	Contained Au (troy ounces)
1877-1959	Approx. 5,000	0.283	1,412,900
1983-1995	29,243	0.035	1,028,479
1996	4,337	0.029	125,590
1997	4,790	0.030	143,600
1998	4,096	0.030	120,993
1999	4,176	0.032	134,550
2000	4,332	0.033	142,914
2001	4,435	0.031	136,237
2002	4,189	0.027	112,361
2003	3,608	0.029	105,766
2004	3,163	0.029	90,803
2005	3,092	0.029	88,468
2006	3,352	0.028	94,072
2007	2,955	0.032	93,432
2008	3,417	0.023	79,214
2009	3,060	0.023	70,451
2010	3,616	0.021	74,484

Year	Tons (×1000)	Au Grade (oz/ton)	Contained Au (troy ounces)
2011	3,383	0.026	86,277
2012	4,380	0.022	95,857
2013	2,355	0.019	44,918
2014	4,190	0.022	93,935
2015	4,180	0.029	121,313
2016	4,750	0.033	154,991
2017	4,125	0.025	101,262
1996-2017	83,981	0.028	2,311,488
Total	**118,224**	**0.04**	**4,752,867**

7. GEOLOGICAL SETTING AND MINERALIZATION

7.1 Regional Geology

The Black Hills in South Dakota and Wyoming are located at the junction of several major terranes that have been the locus of repeated rifting and collisional events (Redden et al., 1990; Dahl et al., 2005; Dahl et al., 2006). The Black Hills are in the Wyoming boundary zone, on the eastern edge of the Wyoming craton (McCormick, 2008). A complex deformational history is preserved in the Laramide age Black Hills uplift which exposes Archean through Oligocene rocks (Figure 7-1).

Laramide age uplift of the Black Hills was accommodated along north and northwest-trending monoclines over deeper thrust faults (Lisenbee and DeWitt, 1993), forming an asymmetrical dome that is exposed over an area 120 miles in length and 60 miles in width. Regional uplift, doming, and subsequent erosion have exposed older, underlying Precambrian rocks in “windows” through the younger, overlying Phanerozoic rocks.

Contemporaneous Tertiary alkalic magmatic intrusive centers occur along a WNW-trending belt across the northern Black Hills (Harris and Paterson, 1996), possibly controlled by a deep crustal structure. The extension of this trend to the WNW also parallels several major faults and lineaments (Duke, 2005). Igneous intrusions are exposed from Devil’s Tower and the Missouri Buttes in Wyoming, through the Wharf mine area to Bear Butte near Sturgis, South Dakota, almost 70 miles along strike. Additional small topographic domes in the region are likely cored by intrusive rocks. Three minor exposures of volcanic rocks are also found within the trend. Intrusive rocks in the belt are mainly alkalic, becoming more silica-undersaturated towards the WNW (Figure 7-1).

Major types of intrusive rocks in this trend include: phonolite, alkali rhyolite, rhyolite, quartz trachyte, trachyte, quartz latite, dacite, and lati-andesite (e.g., Redden and DeWitt, 2008). Minor intrusive rocks include carbonatite in the Bear Lodge Mountains in the northern part of the uplift, and lamprophyre, including an exposure in Squaw Creek north of the mine site. Intrusive rocks in the belt have a dominantly porphyritic texture, with an aphanitic to sometimes fine-grained groundmass (Lisenbee, 1981). $^{40}Ar/^{39}Ar$ dating of several intrusive rocks indicates three or more periods of activity progressing westward and becoming more alkalic and more silica-undersaturated with decreasing age (Duke, 2005). Magmatic activity has been divided into thirteen major centers, which includes a cluster around the Lead-Deadwood window, and the Cutting Stock intrusion (Lisenbee, 1981) which is a Tertiary dome at the northern end of the uplift. The Wharf Operation is at the southwestern edge of this Tertiary dome. Intrusive rocks in the Wharf Operation area have been dated at ~55-54 million years in age (Duke, 2005).

The Lead window is dominated by Paleoproterozoic metasedimentary and metavolcanic rocks. In the Wharf Operation area, the Cambrian Deadwood Formation and overlying sedimentary units overlie the Precambrian formations. Intrusive rocks, primarily sills, inflate the sedimentary section, and dikes and stocks intrude the Precambrian rocks. Wharf is located about 4 miles from the Homestake Mine, a Precambrian iron formation-hosted deposit of over 40 million ounces of gold.

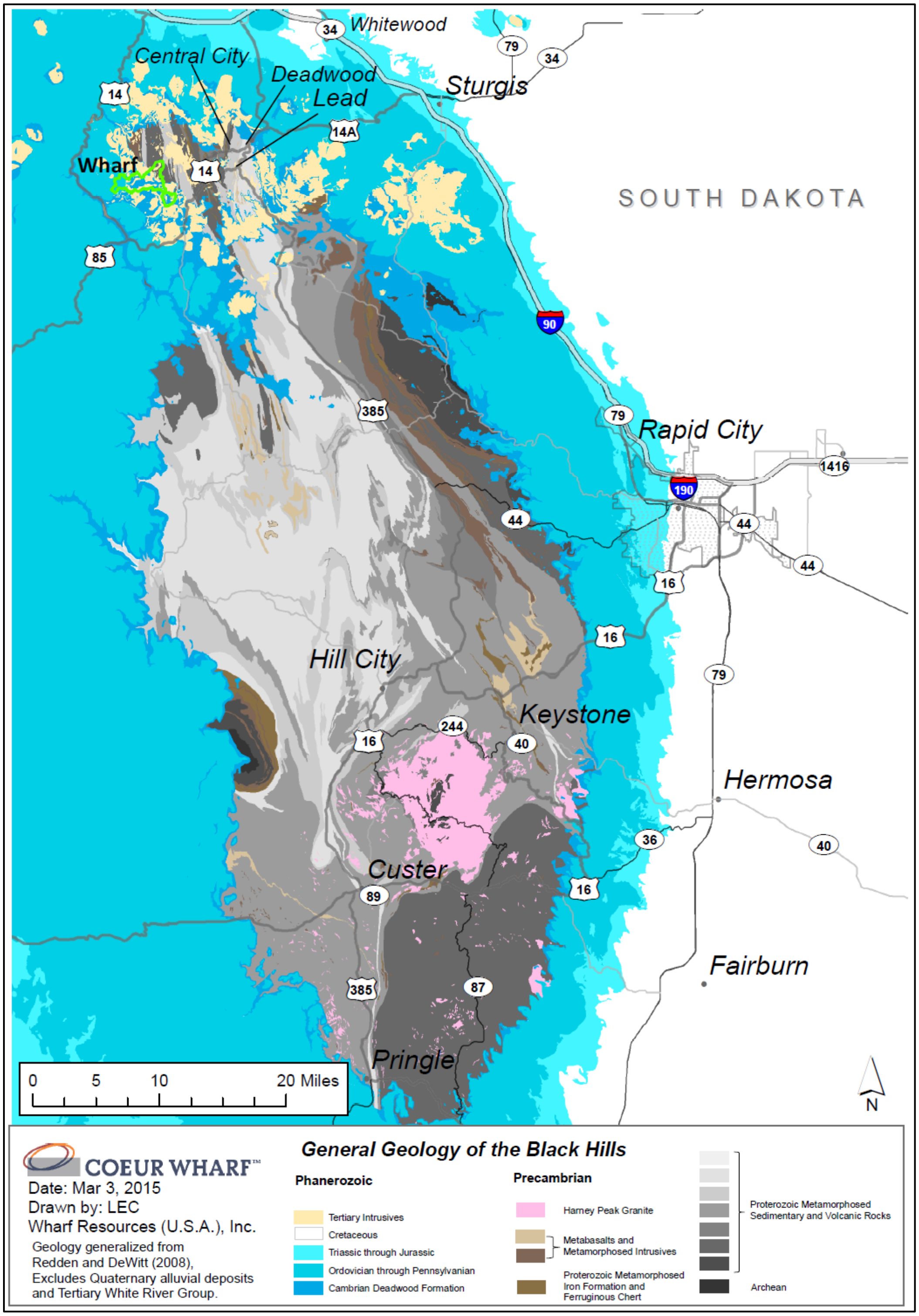


Figure 7-1 Regional geologic map of the Black Hills, showing the Wharf Operation and populated areas (modified from Redden and DeWitt, 2008)

7.2 Site Geology

The Wharf Operation is situated on the southwest side of the Lead-Deadwood dome, a northwest-oriented structure about 5.5 miles long and 3.5 miles wide (Figure 7-2). The dome exposes a Precambrian core of metasedimentary and metavolcanic rocks, flanked by numerous Tertiary porphyritic intrusions and intrusive breccias, ringed outwards by the Paleozoic section, including the Cambrian-Ordovician Deadwood Formation and Mississippian Pahasapa Limestone, which have both been mineralized at different locales.

7.2.1 Stratigraphy

Stratigraphy in the Wharf Operation area is shown in Figure 7-3. Locally, stratigraphy consists of Precambrian to Ordovician sedimentary units.

Precambrian

Precambrian units are not mined at the Wharf Operation, because they cannot be leached using the current process, and frequently contain sulfides that could present acid generation issues. Based on limited drilling, the Precambrian units are less mineralized than the units currently being mined. The Deadwood Formation unconformably overlies several Precambrian units, which are intensely deformed and typically nearly vertically inclined in nearby outcrops. Exposures occur north of Golden Reward along the Highway 473 road cut, and in the Terry Peak Blue Chair parking lot. Precambrian rocks are not exposed in the open pits, as the Deadwood Formation or lower porphyry sills are the lowest mined units. Gently dipping to the southwest away from the Lead-Deadwood dome is the Paleozoic section, which is entirely eroded north of the mine. The Precambrian Flag Rock and Ellison Formations are found at surface north of the mine. Lithologies encountered in outcrop and in drilling include quartzite, biotite/muscovite phyllite and schist, graphitic phyllite, iron formation, meta-tuffs, and other metavolcanic rocks.

Cambrian-Ordovician Deadwood Formation

The mineralized sedimentary host rock for gold is the Cambrian-Ordovician Deadwood Formation, which is in total approximately 350 ft. thick at Foley Ridge (Loomis and Alexander, 1990). It is mainly composed of a near-shore sequence of sandstones, siltstones, intraformational conglomerate, and shales with varying carbonate content. Shale units within the Deadwood Formation are mostly unmineralized, with sandier units acting as the main host.

Emanuel and Walsh (1987) and Emanuel et al. (1990) describe thicknesses observed at Golden Reward. The Deadwood Formation in some places includes a basal conglomerate that is 0 to 40 feet thick, poorly sorted, with clasts of Precambrian rocks that range in size from pebbles to boulders, with a matrix of medium-to coarse-grained sand. This unit was deposited during Cambrian onlap of seas in paleotopographic lows formed in Precambrian phyllite and softer rocks (Redden and DeWitt, 2008). More resistant rocks, such as Precambrian quartzite, formed ridges on which no basal conglomerate was deposited, except for lenses of conglomerate along slopes in some locations (Redden and DeWitt, 2008). Paleotopographic relief of up to 300 feet has been observed in the Nemo area (Redden, 1987); in the Wharf Operation area, paleotopographic relief is minimal, ranging from 5 to 10 ft. within one pit.

Near the mine, shale up to 25 feet thick was intercepted in historical drilling near the Ruby Basin district, as well as north of the mine, at the bottom of the Deadwood Formation (Shapiro and Gries, 1970). Gray shale has also been found in recent drilling at the bottom of the Deadwood Formation in several locations. Within the northern Deep Portland pit, heavily iron-oxide stained clayey material was found beneath the lower sandstone that was exposed in the northeast and southeast corners of the pit.

Above the basal conglomerate is approximately 50 feet of Deadwood Formation sandstone and interbedded sandstone, sandy shale, and dolomite. In mine terminology, the “lower contact” Deadwood Formation includes all Deadwood Formation from the Precambrian contact through these units, and totals 30 to 60 feet thick at Foley Ridge (Loomis and Alexander, 1990). This portion of the Deadwood Formation above the basal conglomerate is composed of quartz arenite grading upwards into sandy shale and dolomite, locally glauconite-bearing in the upper 10 to 30 feet. Primary carbonate has been removed in most mineralized zones. Use of the term “lower contact” originated in the Ruby Basin district, which contains the Golden Reward deposit, where “lower contact” refers to the mineralized Deadwood Formation at the lower contact of the Sugarloaf porphyry sill (Shapiro and Gries, 1970).

The middle portion of the Deadwood Formation is composed of a thick calcareous shale unit and heavily interbedded shale, siltstone, and sandstone, rip-up intraformational conglomerate storm deposits, with varying carbonate and glauconite content. The total thickness of the unit was measured as 150 to 160 feet thick at Foley Ridge (Loomis and Alexander, 1990) and 180 feet thick nearby (Emanuel and Walsh, 1987; Emanuel et al., 1990). Part of the middle Deadwood Formation is a distinctive gray shale, approximately 100 feet thick, overlain and underlain by the interbedded middle Deadwood.

The upper member includes a coarse-grained, heavily glauconitic sandstone (previously known as “the Finlander,” Shapiro and Gries, 1970) that grades into interbedded units below, and upwards into a purer quartz sandstone. The glauconitic sandstone and interbedded units are 130-155 feet at Foley Ridge (Loomis and

Alexander, 1990), and can vary in the area from 50 to 150 feet thick (Shapiro and Gries, 1970). The mine terminology of the “upper contact,” which once referred to Deadwood Formation above the Sugarloaf sill in the Ruby Basin (Shapiro and Gries, 1970), currently is used to describe the uppermost quartz sandstone, approximately 40 feet thick, typically hematitic and orange to pink, and containing distinctive vertical scolithus worm burrows.

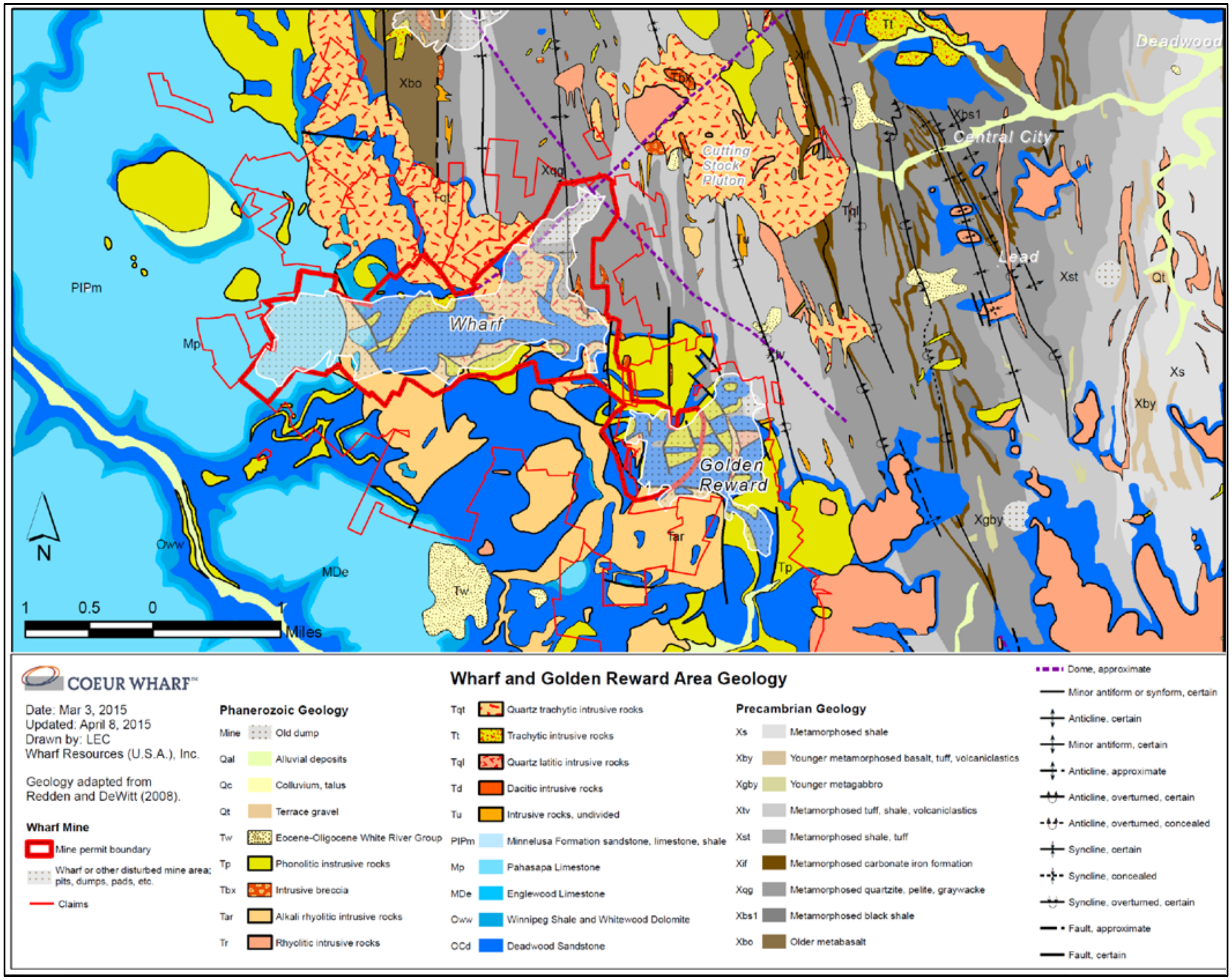


Figure 7-2 Local geologic map, showing the Wharf Operation, including geology by Redden and DeWitt (2008)

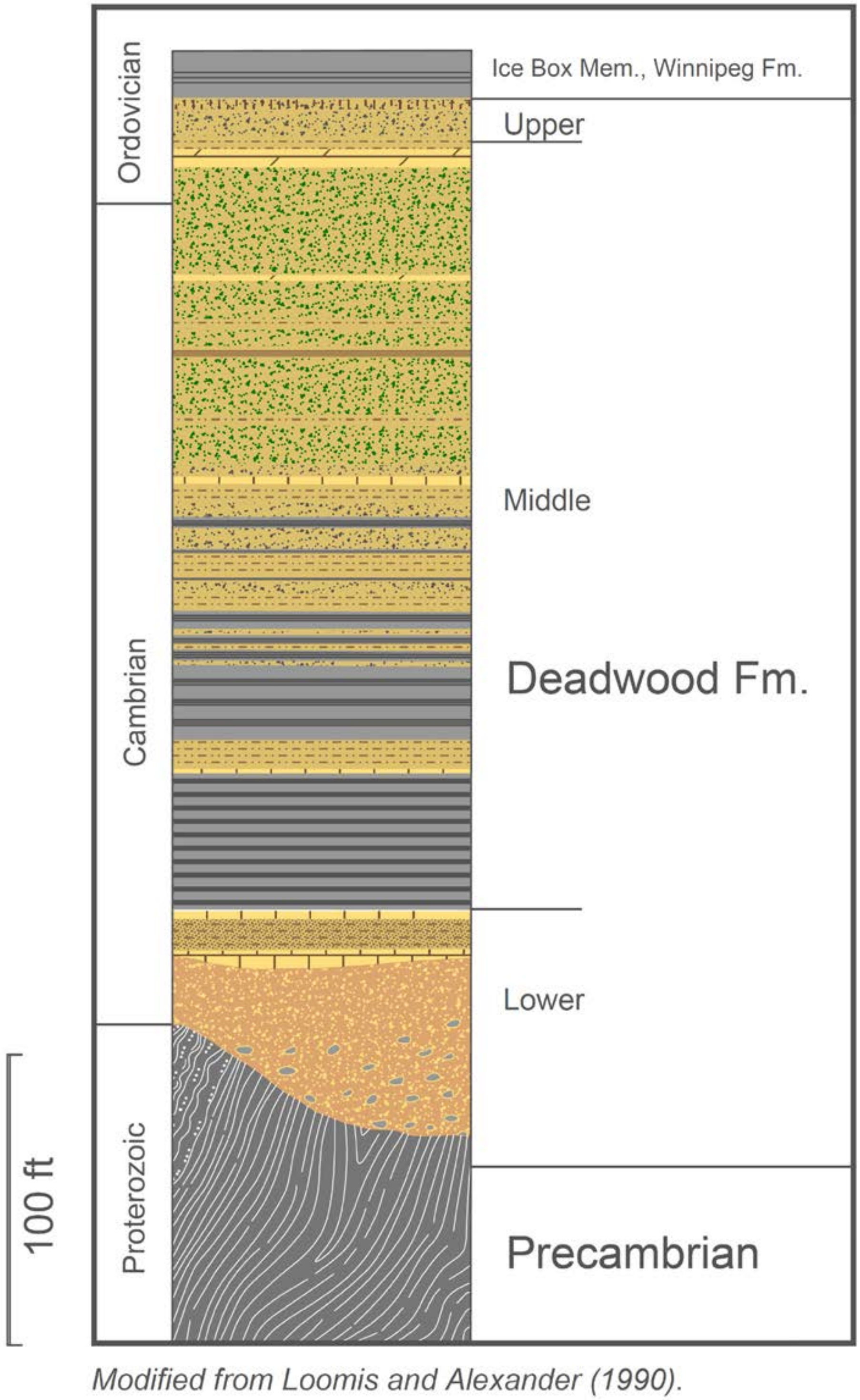


Figure 7-3 Generalized local stratigraphy (Loomis and Alexander, 1990)

Other Paleozoic Units

Exposed at the top of Green Mountain is the gray Icebox Shale of the conformably overlying Ordovician Winnipeg Formation, a gray, to green or red shale approximately 80 feet thick (Loomis and Alexander, 1990). Nearby, the overlying Ordovician Whitewood Formation (dolomite and sandy dolomite), Devonian Englewood Formation (argillaceous limestone), and Mississippian Pahasapa Limestone are present, but are not exposed in the active pit areas.

7.2.2 Tertiary Intrusions

Tertiary (38-62 million year old) magmatic centers of dominantly alkaline porphyry occur in a WNW-trending belt across the northern Black Hills (Harris and Paterson, 1996), and these porphyries become generally more silica-undersaturated to the WNW. Magmatic centers include a cluster around the Lead-Deadwood window and the Cutting Stock (Lisenbee, 1981); this cluster has also been described as one major center and the entire intrusive dome an associated zone of Tertiary mineralization (Shapiro and Gries, 1970). Compositions of igneous bodies flanking the dome include rhyolite, alkali rhyolite, trachyte, quartz trachyte, and phonolite, as well as intrusive breccias (Figure 7-2). Samples from the northern Black Hills, including local samples from Annie and Spearfish Creeks, the Cutting Stock, and Terry Peak, were analyzed and assigned IUGS classification by Duke (2005). The Cutting Stock appears to broadly separate the intrusive rocks into silica-saturated and silica-undersaturated groups along the greater trend (Paterson, 1990). Larsen (1977) mapped and determined the order of intrusion within the composite Cutting Stock, starting with quartz monzonite porphyry, followed by trachyte/trachyte porphyry and monzonite porphyry, then rhyolite porphyry and breccia, and finally phonolite porphyry.

Igneous Petrology

A study at the former Annie Creek and Foley Ridge mines within the Wharf property used modal mineralogy of igneous rocks to identify phonolite, feldspathoid-bearing alkali trachyte, alkali trachyte, quartz alkali trachyte, and alkali rhyolite, in addition to reclassifying to trachyte the rocks previously identified at Wharf as monzonite (Harris and Paterson, 1996). Normative mineralogy of porphyritic rocks corresponds to the observed modal mineralogy, with slight changes in mineralogy due to alteration.

Trachytic rocks are the most mineralized and volumetrically significant igneous rock type in the present Wharf Operation. The American Eagle pit was predominately in a large sill of trachyte up to 250 feet thick, thicker than in previously mined areas. Potassium feldspar is typically the only phenocryst visible in hand samples of the currently mined sills. Trachyte at Annie Creek has been observed to contain anorthoclase, aegirine/augite, hauyne, plagioclase, apatite, titanite, and calcite (Duke, 2005). The Sugarloaf Mountain trachyte, east of Golden Reward, consists of nepheline, aegirine/augite, anorthoclase/sanidine, plagioclase, titanite, apatite, and iron and titanium oxides (Duke, 2005). Biotite phenocrysts are observed in rock chips in small (10-20 foot) intervals of trachyte in drillholes at Wharf. Rutile, titanite, and apatite are accessory minerals found in the trachyte (Emanuel et al., 1990; Harris and Paterson, 1996).

In the quartz alkali trachyte at Annie Creek, phenocrysts are sanidine and albite, with rare pyroxene, and some replacement of phenocrysts by Fe oxides or carbonate; quartz is present as a minor phenocryst (around 5% modal quartz), and the composition likely neared the alkali trachyte field (Harris and Paterson, 1996). Quartz alkali trachyte is the most common igneous rock at Annie Creek.

Alkali rhyolite occurs as a sill in the former Foley pit, as dikes and thin sills in the overlying Winnipeg Formation, and is a significant rock type south of the mine and at Terry Peak (Harris and Paterson, 1996). This alkali rhyolite is described as typically altered and partially mineralized granular potassium feldspar and quartz with trace aegirine needles.

Phonolite is a green-gray porphyritic rock with few phenocrysts of sanidine and pyroxene (aegirine/augite). Phonolite phenocrysts also include sodalite (Duke, 2005) and analcime in the Wharf area (Harris and Paterson, 1996), and nepheline nearby (Emanuel et al., 1990). Biotite has also been observed in phonolite in RC drilling and in-pit. This post-mineral rock type forms a sill on top of Green Mountain, and forms multiple narrow, clay-altered dikes in the Wharf pits.

Other, more minor, intrusive rocks in the Wharf Operation area include a lamprophyre that outcrops in a small portion of Cleopatra Creek, which drains from the mine property. This lamprophyre has been classified as a minette by Kirchner (1979) and possibly vogesite by Duke (2005).

Intrusive breccia is commonly found in areas near fault zones. Exposures of breccia occur in eastern Bald Mountain near a significant fault zone. These include clast-supported heterolithic breccia containing Deadwood Formation, Precambrian phyllite and quartzite, and trachyte and quartz trachyte clasts with an intrusive matrix, grading into crackle breccia of altered, silicified, iron oxide-stained to highly bleached intermediate Deadwood Formation sandstone, with coarsely crystalline smoky quartz veins, some veins with voids filled in with white clay. In Bald Mountain these breccias are unmineralized.

Other breccia zones at Bald Mountain appear to be hydrothermal in origin, with open spaces containing vuggy silica, and a highly silicic, iron-oxide stained matrix. The breccia has a low gold grade, although slightly elevated above background, which may be due to mineralized trachytic clasts. Other breccias associated with the mineralized sub-vertical structures or mineralized fluid-carrying fractures at Annie Creek were "invariably mineralized" (Paterson and Giebink, 1989).

7.2.3 Structural Geology

Local Structural Geology

The Precambrian basement fabric is oriented dominantly N-S in the mine area, with the orientation shifting to the NNW east of the mine area. Multiple Paleoproterozoic deformation and metamorphic events from the complex tectonic history of the Black Hills are recorded in the tightly to isoclinally folded and sheared Precambrian rocks, including the Poorman, Homestake, and Ellison Formations (e.g., Caddey et al., 1991, Terry et al., 2007).

Dominant forms of igneous intrusion are sills and laccoliths which frequently intrude at the level of the Deadwood Formation (Lisenbee, 1981). The Cutting Stock, formed of intrusions with various compositions, is exposed near the center of the Lead-Deadwood dome. Detailed mapping of the Cutting Stock (Noble, 1952; Larsen, 1977) near the core of the dome shows an uneven contact, due to numerous dikes intruding along north to northwest-striking foliation planes in the Precambrian rock (Lisenbee et al, 1981). The dome was formed by wedges of faulting, with the large areas between the faults uplifted by the intrusive magma as it rose (Noble, 1952). Intrusions may change geometry, which is illustrated in the dike swarm of the nearby Homestake open cut, where dikes intruded between Precambrian foliation planes sill out into the lower Deadwood Formation.

Wharf

A fault zone occurs at Bald Mountain, east of the haul road tunnels connecting Wharf to Golden Reward, where Precambrian rock is exposed farther east along the haul road. Evidence of a broad fault zone is supported by exploration drilling, changes in depth to the Precambrian from in-pit drilling, and breccias and dikes seen in this zone. This is shown in Figure 7-2 on the east side of the Wharf property. Zones of intense silicification, clay alteration, and brecciation parallel the fault. This fault continues south to Golden Reward, and parallels north-trending Precambrian structures and is probably reactivation of such an older structure. Breccias occur near this fault zone, and along the same trend within Precambrian rocks to the north of the mine. Other faults with minor offset are present throughout the site and have been viewed in-pit.

Igneous bodies at Wharf are predominantly sills. Dikes are less volumetrically important but occur in most mined areas. The most mineralized intrusion, the lower trachyte sill, is present within several pits at Wharf. This trachyte sill is intruded both beneath and above the lower contact Deadwood Formation. Sill thickness is highly varied; almost the entire depth of the Foley and American Eagle pits were porphyry sills, but other pits intersected the sills where they were 20 to 30 feet thick. A weakly mineralized dike up to 100 feet wide is present in the easternmost Bald Mountain area. Narrow, late phonolite dikes cross-cut trachyte sills in several places in the pits.

Shapiro and Gries (1970) noted that the edges of sills in the northern Black Hills end abruptly, and it was difficult to determine if these sills ended at fault edges, or if only the overlying section was faulted upwards, but both conditions are likely to occur. Wharf RC drillhole data support both occurrences as well. Underlying units are not offset below a sill in the western Portland reclaimed area. The approximate strike of this sill offset (020-042°) also parallels major fracture trends (015-050°) in the area, measured in upper Deadwood Formation by Shapiro and Gries (1970). The faulting of the overlying units likely followed pre-existing structures, and the fracturing here predated the emplacement of the sill. Lisenbee and others (1981) indicate that in some instances where a sill appears to move upwards within the section until it becomes a concordant intrusion again, two sills may have originally been emplaced within different horizons, then coalesced as they grew together, which is believed to be the source of the displacement of a large sill at Two Johns, an exploration area on the north end of the Wharf mine property.

Additionally, sills at Wharf may in places become discordant across thick sequences of stratigraphy, moving up-section gradually, possibly along pre-existing structures. A thin intrusion in west Green Mountain originates at a lower porphyry sill, and continues upwards by forming a low-angle dike with a dip of 15° degrees to the surface, striking approximately parallel to fracture trends at 042°, through the intermediate, glauconitic, and upper sandstone of the Deadwood Formation, for approximately 600 feet of strike length. In Bald Mountain, a sill is offset along with underlying Precambrian units along a younger fault zone that strikes roughly north. Figure 7-4 shows this fault zone and the offset sills on the east end of the section.

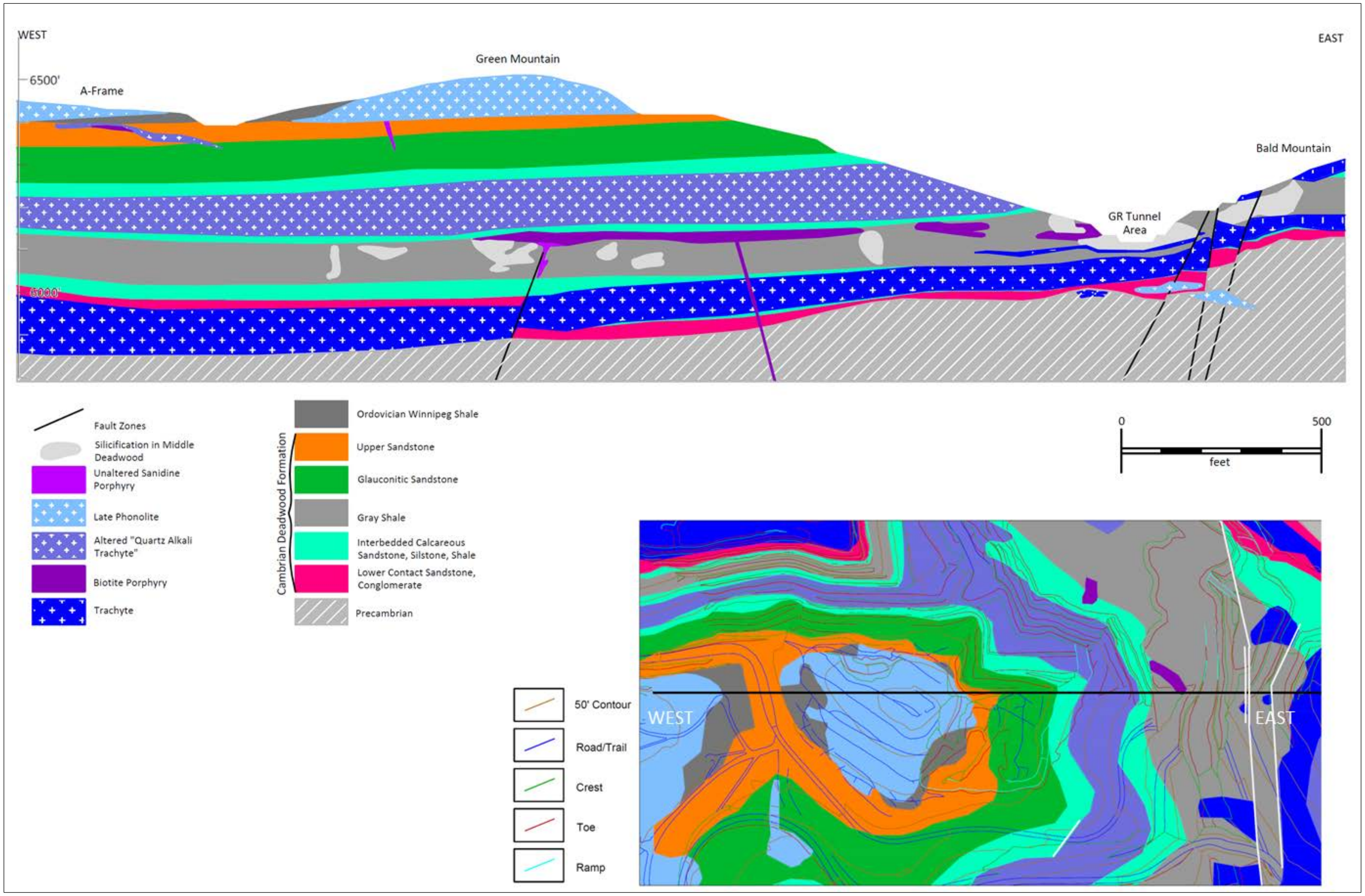


Figure 7-4 The location of this cross-section from the A-Frame to Bald Mountain areas is shown in the inset mine map with geology underlay (Coeur, 2015)

7.2.4 Alteration

Silicic alteration is common in mineralized areas and is expressed as quartz veins, stockworks, and as disseminated quartz with sulfides (Emanuel et al., 1990). Silicification is typically focused around fractures (Loomis and Alexander, 1990). Silicification includes destruction of glauconite in sandstone and porphyritic texture in the intrusions, replacement of dolomite rhombs, and preservation of primary sedimentary structures (Paterson and Giebink, 1989; Loomis and Alexander, 1990). In the Foley sill at Wharf, zones of silicification were observed to be enclosed by decalcified zones, with metal grade decreasing from the zone interior outward (Loomis and Alexander, 1990). Outside of these zones, carbonate replacement and veinlets occur due to remobilization from the mineralized zone (Loomis and Alexander, 1990). Silicification also occurred along structures, such as the Bald Mountain fault zone, at contacts with the igneous intrusions, and along bedding planes and lithologic contacts.

Silicification and decalcification is not necessary ground preparation for mineralization to occur, however. As noted by Shapiro and Gries (1970) in upper contact dolomite, there is remnant carbonate and veins of calcite in mineralized zones at Wharf. Locally, rather than decalcification, original calcareous horizons have been replaced with dolomite (Shapiro and Gries, 1970).

Widespread regional potassic alteration has been identified in the Wharf Operation area. Although it is typically not recognizable in samples, altered and mineralized rocks at Foley are relatively enriched in silica and potassium and contain lower sodium than their unaltered quartz alkali trachyte counterparts, and phenocrysts may be altered to sericite and clay (Harris and Paterson, 1996).

Argillization and subsequent brecciation along strongly mineralized fractures have been observed that are likely conduits for mineralization (Loomis and Alexander, 1990). Prominent clay-altered structures are visible in the pits, but these structures are barren and typically contain a highly altered phonolite dike core. A late stage barren phonolite cap at Green Mountain and along Foley Ridge has similar strong argillic alteration along fractures. Within intrusive rocks, alkali rhyolite alteration with clay or zeolite replacement of alkali feldspars has been seen (Harris and Paterson, 1996). This is likely due to oxidation of disseminated pyrite within the porphyry (Emanuel and Walsh, 1987).

Calcite replacement of phenocrysts in porphyritic rocks occurs in the Wharf area. For example, the middle porphyry sill at Green Mountain contains phenocrysts that were replaced by carbonate and other minerals, possibly clays; this unit has strong iron oxide-staining, making compositional determination of RC samples difficult. Calcite veining is present within some Deadwood Formation in the pit, and is present in some mineralized zones

At Annie Creek there is evidence of weak propylitic alteration suggested by the presence of secondary chlorite (Giebink and Paterson, 1986b). Nearby, chlorite and epidote have been found as veins in trachyte, and sericite and chlorite form replacements in rhyolite (Emanuel et al. 1990). Limited early propylitic alteration is observed as epidote and chlorite replacement of feldspar within porphyry, and replacement of carbonate within calcareous sediments (Emanuel et al., 1987). Propylitic alteration predates silicification and is cross-cut by pyrite and fluorite veinlets. Massive pods to crystalline veins of fluorite are frequently found in mineralized zones, though are not necessarily associated with high-grade mineralization.

7.2.5 Mineralization

Structural Controls

Mineralization is strongly structurally-controlled, and high-angle structures feed mineralized zones. Mineralization at Foley Ridge occurs in zones up to 100 feet from structures, or in manto-like deposits where structures are pervasive (Paterson and Giebink, 1989; Loomis and Alexander, 1990). Manto-like replacement mineralization was noted in some of the sandstone units of the Deadwood Formation intersected by multiple silicified structures (Emanuel and Walsh, 1987). Mineralization within the trachyte sill at Foley Ridge occurred in areas of fracturing, and was especially strong where fracturing was intense, particularly around structural highs and dikes (Loomis and Alexander, 1990).

The main trends of mineralization at Wharf parallel the strike of major joint sets that Shapiro and Gries (1970) measured in upper and lower Deadwood Formation outcrops (Figure 7-5).

Gold or gold-bearing minerals may be disseminated in porphyry, or may be confined to fractures (Paterson and Giebink, 1989; Paterson, 1990). Highly fractured porphyry is known to be the most mineralized. Porphyry near fractures is usually the most oxidized, grading outwards into gray, blocky porphyry with very small (< 0.25 mm) grains of disseminated sulfides.

Lithologic Controls

The main host rock for high-grade mineralization is the sandstone and dolomitic zones of the lower member of the Deadwood Formation, most often where adjacent to significant faults, fractures, or trachytic intrusive rocks (Emanuel et al., 1990). Where mineralized, the lower Deadwood Formation is usually a silica-cemented sandstone that is oxidized to red-brown; in contrast unmineralized sandstone is tan to gray and may contain silica or dolomite cement. High-grade mineralization and extensive manto-like mineralization formed in this horizon probably because the lower Deadwood Formation is highly permeable, had a high carbonate component or cement, or was nearest to the fractures carrying mineralizing fluids from the less-permeable Precambrian units (Paterson and Giebink, 1989).

In the upper Deadwood Formation, rocks with original high carbonate and low quartz content are the most mineralized (Giebink and Paterson, 1986a). Although impermeable horizons such as thick sills and Deadwood Formation shales typically formed barriers to fluid and thus are generally not mineralized, in some areas they were exposed to early silicification and subsequent fracturing. With sufficient ground preparation, sills and shales were mineralized (Emanuel and Walsh, 1987).

Igneous bodies make up the bulk of the mineralized material at Wharf, although typically not the high grade of mineralization found in the lower Deadwood Formation Most of the productive intrusive rocks at Wharf are trachytic in composition, and historically mined sills of quartz alkali trachyte were strongly mineralized at Foley (e.g., Harris, 1991; Harris and Paterson, 1996). At Wharf a trachyte sill is a main host for mineralization, with low-grade disseminated mineralization throughout the body. Late phonolite at Wharf, such as the sill capping Green Mountain, is not observed to be mineralized.

Smaller intrusive bodies of different compositions may also be mineralized. Extensive mineralization has been found in an aegirine nepheline trachyte dike showing argillic alteration and silicification (Emanuel and Walsh, 1987).

Where intrusions are unmineralized, nearby Deadwood Formation sandstone and interbedded units may still host mineralization. Mineralization also occurs near dikes, sills, and in fracture and breccia zones (Emanuel and Walsh, 1987). Dike footwalls at Annie Creek were observed to be mineralized (Paterson and Giebink, 1989).

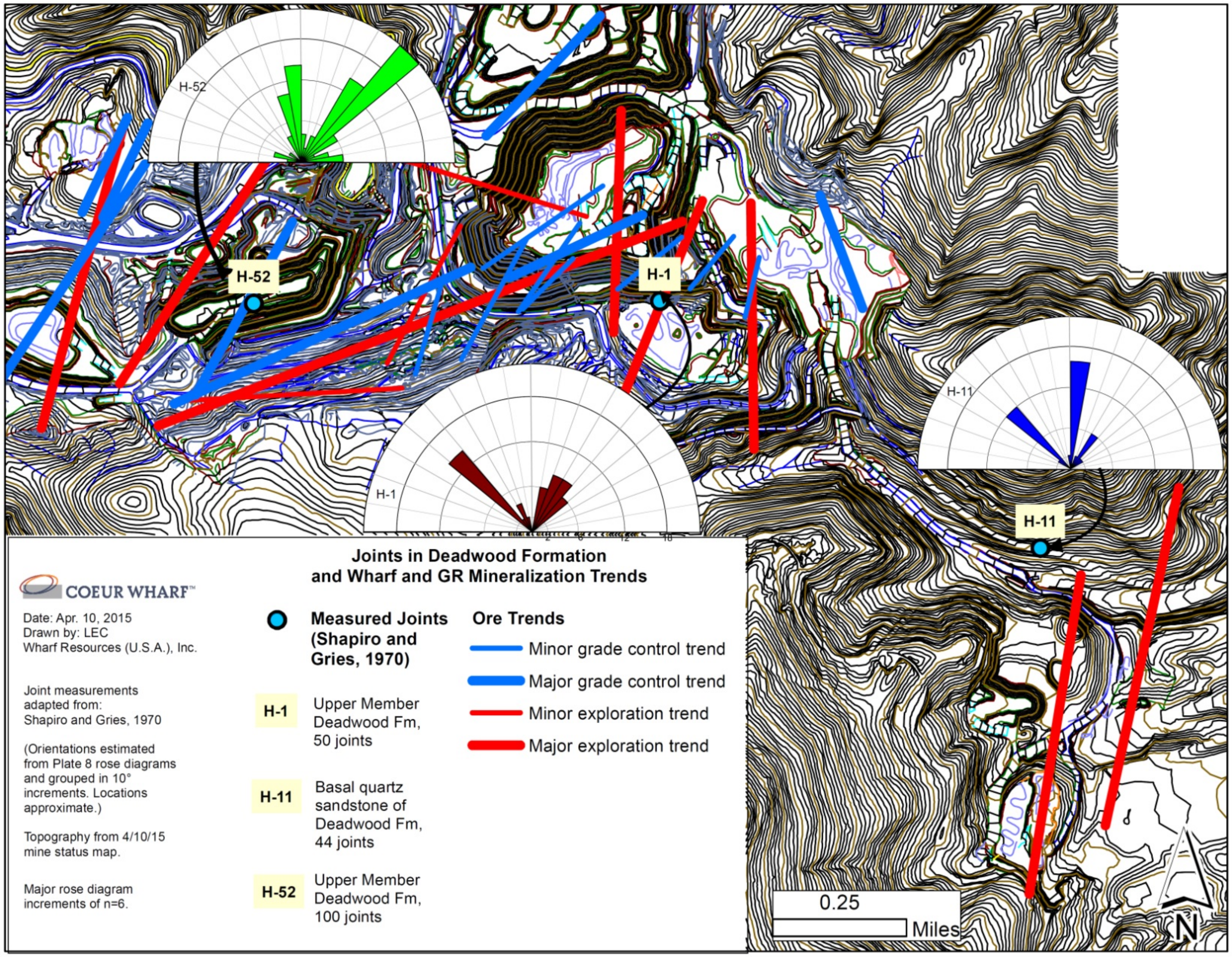


Figure 7-5 Mineralization trends from grade control and exploration, and mine topography. Joint orientations are adapted from Shapiro and Gries (1970)

Mineralogic Associations

Gangue minerals associated with mineralization include quartz, fluorite, sericite, calcite/dolomite, barite, and clays (Emanuel and Walsh, 1987; Emanuel et al., 1990). Hydrothermal quartz found with mineralization at Foley Ridge forms small veinlets to large, up to 1 foot wide, drusy quartz-lined open fractures (Loomis and Alexander, 1990).

Fluorite is frequently noted in mineralized zones, occurring as massive pods, crystalline veins or in cavities, as well as replacing phenocrysts in porphyry and as matrix in breccias. Historically visible gold has been very rarely observed in fluorite veins. Fluorite is also found in unmineralized rock and multiple phases of fluorite mineralization utilized the same conduits as the mineralization event(s). Fluorite is considered a late-stage mineral (Paterson et al., 1989).

Ore Mineralogy and Textures

Presently it is undetermined if the bulk of gold mineralization occurs in disseminated sulfides or in another form. Gold mineralization has been described as Au substitution within sulfides (e.g., Giebink and Paterson, 1986a), similar to occurrences of gold-bearing sulfides in Carlin-type systems. Electron microprobe studies of high-grade samples from Annie Creek/Wharf did not find the location of gold within sulfides (Paterson and Giebink, 1989). The failure to identify the location of the gold may be due to lack of mineralization in the studied slides, or the removal of gold in preparation (Paterson and Giebink, 1989). Despite a lack of positive gold identification, gold-bearing sulfides are still assumed to be the likely host (Emanuel et al., 1990). Historic mining at Two Johns and Golden Reward focused at times on the "blue ores," which are silicified, unoxidized lower Deadwood Formation sandstone. These "blue ores" were milled and roasted to recover gold (Miller, 1962). The benefits of roasting indicate at least a portion of the gold is within sulfides.

High grade mineralization at Annie Creek is associated with clustered, euhedral marcasite with quartz (Giebink and Paterson, 1986a), which, along with quartz, was likely a replacement of dolomite (Paterson and Giebink, 1989). Quartz and marcasite were later rimmed by arsenopyrite and replaced by arsenian pyrite, where arsenian pyrite potentially hosts gold, similar to occurrences in Carlin-type deposits (Giebink and Paterson, 1986a, Paterson and Giebink, 1989). Later generations of slightly larger, disseminated, euhedral pyrite, followed by coarser void fillings of pyrite have been identified (Giebink and Paterson, 1986a). Zoned pyrite and arsenian pyrite rims indicate that there were two or more episodes of sulfide mineralization (Paterson and Giebink, 1989).

Visible native gold observed at Wharf has been only seen twice during current mining activities; one occurrence was found within a fluorite vein. Because fluorite is considered a late-stage mineral (e.g., Paterson et al., 1989), the fluorite-gold occurrence may indicate a later, minor mineralizing event, distinct from earlier, gold-bearing sulfide mineralization. Thin sections of very high-grade (1.173 and 0.615 oz/ton Au) samples from the Annie Creek mine analyzed by Schurer and Fuchs (1991) show native gold associated with hematite, goethite, and jarosite, which forms from oxidation of iron sulfides, and arseniosiderite which forms from oxidation of arsenopyrite; quartz was also associated with gold. A thin section from the lowest-grade sample in this study (0.195 oz/ton Au) showed no native gold, but abundant sulfides, which was assumed to indicate lattice or submicron gold. This suggests that oxidation of arsenic-bearing sulfides may have remobilized gold in an arsenic complex and deposited it as native gold in higher-grade samples (Schurer and Fuchs, 1991).

Telluride minerals have also been reported within the district, but none have been observed at Wharf (Paterson et al., 1989). Rare tellurium compounds were also believed to be associated with mineralization (Emanuel and Walsh, 1987). Telluride mineralization is included with the latest stages of the paragenetic sequence, coeval with fluorite veining (Hummel, 1952; Paterson et al., 1989). The presence of tellurides may be an assumption, and Shapiro and Gries (1970) note that:

> In the early years of mining in the northern Black Hills, it was generally accepted that the major part of the gold and silver in the Deadwood Formation occurred in the form of telluride minerals, predominantly sylvanite (Smith, 1896, 1897; Irving, 1904; O'Harra, 1902; Zeigler, 1914). This view was based on the results of a series of chemical analyses done by Smith (1896, 1897) of samples of ore from a few mines in the Ruby Basin District, rather than by direct observation of tellurides in the ore.

Silver to gold ratios vary throughout the district; at Golden Reward they range from 1:1 to 14:1 (Emanuel et al., 1990) averaging 4:1 during historic mining according to Emanuel and Walsh (1987). At Annie Creek the average ratio is 2.5:1 (Lessard and Loomis, 1990), and the ratio is approximately 2:1 at Foley Ridge (Loomis and Alexander, 1990). Based on recent sampling ratios are approximately 10:1 at Wharf. There is a higher Ag:Au ratio in the mineralized lower Deadwood Formation sandstone than in the porphyry and remaining Deadwood Formation Fire assays from 2009-2014 exploration drilling give Ag:Au of 13.7 for lower Deadwood, 6.3 for all other Deadwood, and 7.4 for porphyries. Miller (1962) noted that the "reason for the greater affinity of the silver for the basal quartzite host is unknown… it is possible that this represents still another stage of mineralization." Native gold in one high-grade sample analyzed by microprobe contained 3.3% to 7.7% silver, and no silver was found in a second sample (Schurer and Fuchs, 1991).

Mineralization and Relative Chronology

In a study at Terry Peak, immediately west of Golden Reward, aegirine from a rhyolite porphyry produced a K-Ar date of 57.1 ± 4.3 Ma (McDowell, 1966; in Lisenbee et al., 1981). $^{40}Ar/^{39}Ar$ dating of anorthoclase in a trachyte sample from Annie Creek provided a date of 54.66 ± 0.19 Ma (Duke, 2005), placing both intrusive samples within the range of error. Based on mineralization and limited cross-cutting relationships, locally intrusive rocks appear to have been intruded at Golden Reward from rhyolite to increasingly alkalic rocks to phonolite (Larsen, 1977). Late trachyte is the most abundantly mineralized intrusive lithology (Emanuel et al., 1990). A more detailed chronostratigraphic analysis was described by Harris and Paterson (1996), showing quartz alkali trachyte and rhyolite intrusion followed by feldspathoid-bearing alkali trachyte, then phonolite (Figure 7-6).

Mineralization is interpreted as having occurred with or after the latest intrusive, or mineralization occurred in pulses throughout the intrusive history. Pulses of mineralization occurring coeval with intrusive activity is supported by the increasing intensity of alteration in older rocks (Harris and Paterson, 1996). This timing, along with evidence of fluorine and tellurium in Golden Reward rocks that corresponds to elevated fluorine and tellurium in the Cutting Stock pluton, is indicative of a magmatic component to the mineralizing fluid (Emanuel and Walsh, 1987). Stable isotope and fluid inclusion studies support the presence of a significant magmatic fluid component in the mineralizing fluid (Paterson et al., 1987, 1988, 1989; Paterson, 1990; Uzunlar, 1993). Although a possible source of gold in the mineralizing fluids has been given as gold-enriched basement Proterozoic rocks containing iron formations (e.g., Norton, 1983; Emanuel and Walsh, 1987), Paterson and others (1988) indicate that due to the small size and low grade of the northern Black Hills deposits, a Precambrian gold source is not necessary.

Mineral paragenesis interpreted at Annie Creek includes: dolomite replacement of marcasite, pyrite, and quartz; followed by other sulfides such as arsenian pyrite; silicification and coarser pyrite; then quartz, calcite, and fluorite veining (Paterson and Giebink, 1989).

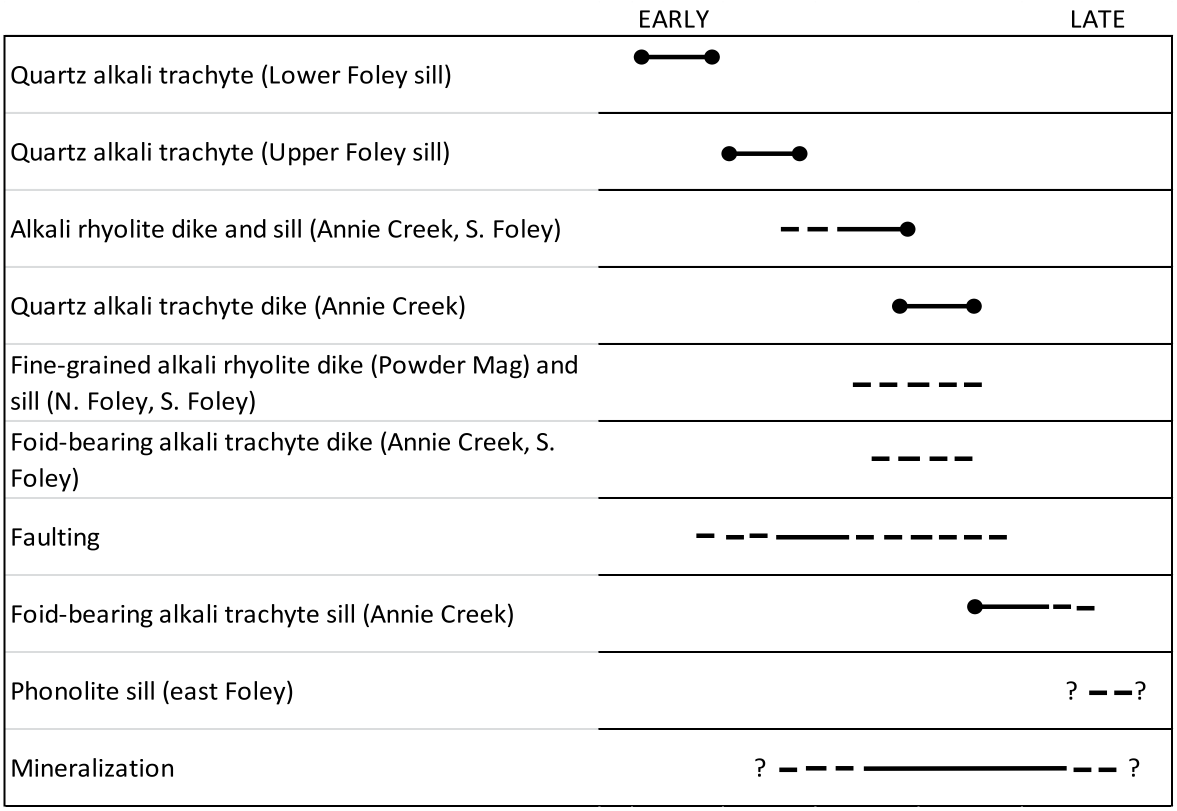


Figure 7-6 Geochronology of igneous and mineralizing events at Annie Creek and Foley Ridge mines (Harris and Paterson, 1996).

Regionally, age of mineralization is constrained for both base and precious metal replacement deposits. DeWitt and others (1986) report:

> Throughout most of the northern Black Hills replacement deposits in Paleozoic rocks are younger than, or the same age as, trachytic to rhyolitic sills emplaced in the strata and older than cross-cutting phonolite bodies. Where dated, the rhyolite and phonolite are approximately the same age. McDowell (1971) obtained a K-Ar biotite date of 58.2±1.7 Ma for a phonolite dike in the Homestake mine and a K-Ar biotite date of 60.3±1.8 Ma for rhyolite from the Gilt Edge mine. Thus, the mineralization appears to have formed in late Paleocene time, or about 59 Ma.

Pressure/temperature conditions at the time of mineralization are given as 140 – 240°C at 1 to 1.5 km depth (Paterson and Giebink, 1989).

7.3 Prospects/Exploration Targets

Recent exploration drilling has been focused within existing permit boundaries. Increased drilling density in these areas can increase confidence in the mineralized zones and allow for a growth in reserves, as well as expand pit boundaries once known ore zones are filled in and the resource model is refined. Exploration drilling has also been completed in the southwest of the mine property within the current Exploration Notice of Intent boundaries in the Astoria area, as well as minimally in the Bald Mountain area east of the previous exploration extents. Near future targets will continue to include infill drilling within current pit designs and just outside of pit boundaries, particularly the A-Frame area between the Green Mountain and Deep Portland pits. Outside of the immediate pit area, plans include the drilling of smaller zones between historic pits in the Juno area that were previously unexplored. In the Bald Mountain area, the drilling planned previously will continue in 2018.

Outside of current permit boundaries and the near-mine area, but within the Wharf Operation claim boundaries, drilling of the Two Johns target is planned to be completed.

8. DEPOSIT TYPES

Tertiary deposits with varying characteristics occur throughout the Black Hills, therefore different deposit type classifications in the literature may represent different depths within one mineralizing hydrothermal system (Paterson et al., 1988; Uzunlar, 1993). Paterson (1990) indicates that classification has been reflective of only the dominant deposit type. Wharf Operation deposits are considered Tertiary epithermal replacement mineralization, both intrusive-hosted and sediment-hosted (Coeur internal report, 2014). Depth of mineralization at the Wharf Operation (~1.5 km; Paterson and Giebink, 1989) is considered deeper than normal for epithermal deposits, but the low temperature of mineralization is consistent with epithermal-type deposits (Paterson, 1990), although these temperatures may represent only one stage of mineralization associated with fluorite.

In the Black Hills, sediment-hosted replacement deposits are veinlet to stockwork or manto-like, with mineralizing fluids having moved through sub-vertical fractures and replacing dolomitic or calcareous horizons in sedimentary units, particularly the upper and lower sandstones of the Deadwood Formation. Intrusion-hosted replacement deposits are primarily in stocks, sills, and breccias with disseminated pyrite and quartz-pyrite-fluorite stockworks; mined deposits are and have been those that are oxidized and native gold-bearing. DeWitt and others (1986) subdivide deposit types based on host rocks, and say that precious-metal deposits in Tertiary alkali rocks generally "resemble porphyry copper stockwork and disseminated deposits in which sulfide minerals are dispersed throughout the stock and concentrated as veins within the stock." This deposit type is described as veins and disseminations, including auriferous pyrite oxidized to auriferous limonite, that occur in small stocks and associated country rock, which have alteration zones similar to porphyry copper deposits. While several types of alteration are present at Wharf, no definitive zonation in relation to mineralization has been identified.

The dome surrounding the Cutting Stock is encircled by Tertiary intrusions and sedimentary-, igneous- and breccia-hosted deposits of gold-silver and other metals including tungsten, lead, and molybdenum (Figure 8-1), which display a rough zonation (Connoly, 1921; Lisenbee, 1981). This zonation supports the relationship of the igneous event and mineralization (Paterson et al., 1987; Paterson, 1990). Timing of mineralization events(s) during or after the mid- to late-stages of intrusive activity is another indicator of the importance of magmatic events to mineralization. Currently no studies have connected fluids associated with mineralization to a specific intrusion (Paterson et al., 1989); however, there is a spatial correlation of mineralization to trachytic rocks.

A deposit model for Annie Creek is described by Paterson and Giebink (1989) as follows:

> For the fluid mixing model, the hydrologic system involved upward migration of hot, saline ore fluid along vertical fractures, and cool, dilute, meteoric water flowing (or ponded) in permeable units (aquifers) of the Deadwood Formation. Preferred sites of ore deposition would be at the intersections of the vertical fractures and the sub-horizontal aquifers. The lithologies of the host rocks may have been locally important in enhancing gold deposition by fluid-rock interaction, but were not critical to ore deposition as evidenced by the occurrence of gold ore in various lithologies including unreactive quartzite in the basal Deadwood Formation. Thus, the permeability of the host rocks may have been the most important control; it is probable that the permeability existed prior to mineralization, and may have been enhanced by removal of carbonate by early fluids. Ore precipitation ultimately resulted in decreased permeability which allowed preservation of the ores by isolation from subsequent fluids.

Paterson and Giebink (1989) conclude that:

> The ore distribution in the Annie Creek mine is clearly controlled by structure (along vertical fractures) and stratigraphy (preferentially carbonate-bearing sandstones and limestones). The gold mineralization occurred at temperatures of 150-240°C, and depths not exceeding 1.5 km, but certainly greater than 200 m. The deposit represents a shallow portion of a composite epithermal-mesothermal system that extends for at least 4 km depth. The high salinities in fluids in other deposits in the northern Black Hills, the disseminated to stockwork nature of mineralization in stocks and sills, and the oxygen isotope signatures, suggest that the mineralization is igneous-hydrothermal. The Annie Creek deposit may be distal to its igneous source, or there may be proximal sources in the large sills emplaced into the Deadwood Formation.

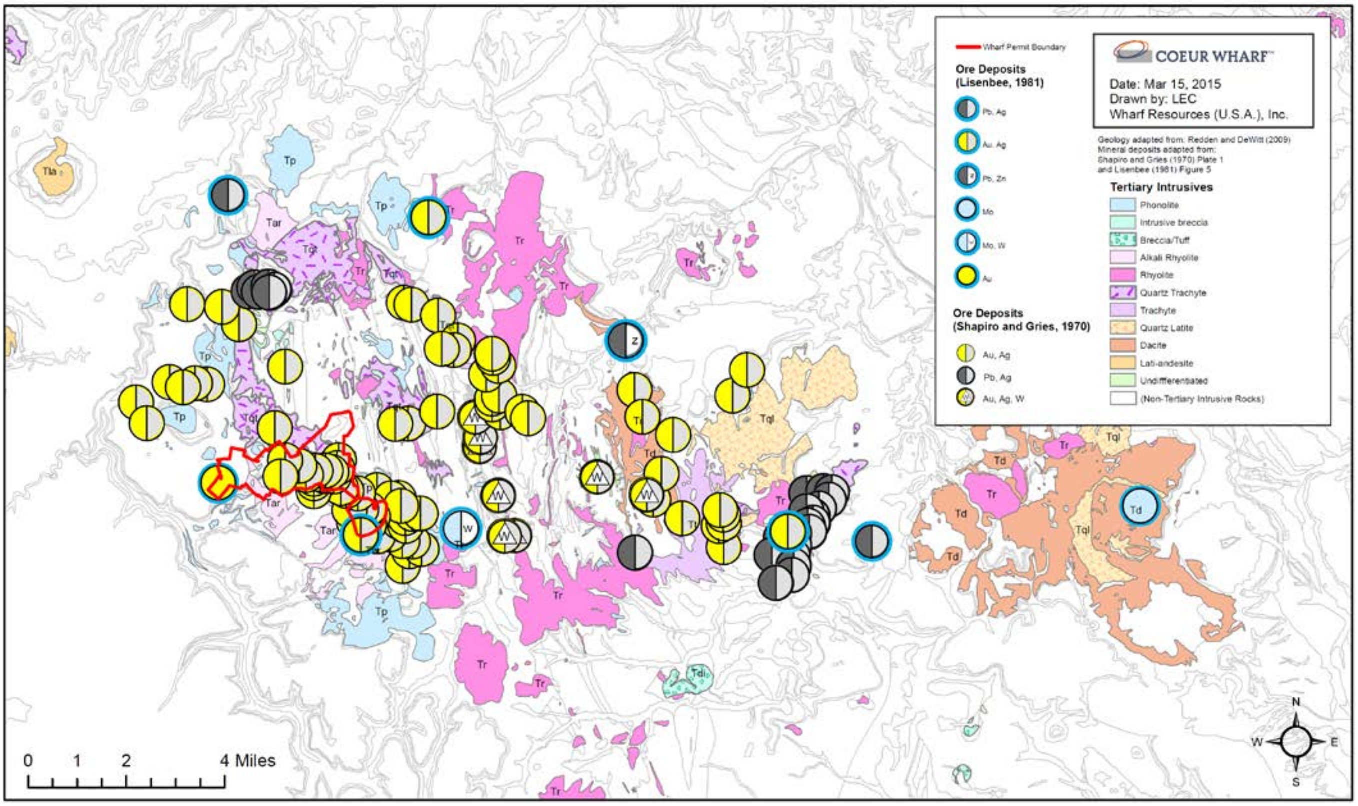


Figure 8-1 Map of northern Black Hills Tertiary deposits and intrusive lithologies. Deposit data compiled from Shapiro and Gries (1970), and Lisenbee (1981), shown with the geology of Redden and DeWitt (2008)

9. EXPLORATION

9.1 Grids and Surveys

All broad-scale topography has been generated from aerial photogrammetry on an approximate biennial frequency, most recently in 2016. Local surveys are generated with RTK GPS high-precision rover survey systems.

The Wharf Operation's local grid system is based on the WGS 1984 coordinate system with a transverse Mercator projection. Northings and eastings have been truncated to reduce the size of coordinates.

9.2 Geological Mapping

Geological maps from Redden and DeWitt (2008) are used on the regional and local scale. Small scale mapping has been performed on a limited basis. No pit highwall or blasthole mapping is done. On a blast pattern basis, general rock type is recorded by engineering personnel as broadly porphyry, lower Deadwood, or general Deadwood lithology.

9.3 Geochemical Sampling

A limited number of drill samples have been analyzed to provide geochemical data for permit requirements. Humidity cells, meteoric water mobility tests, and acid base accounting (ABA) samples were collected and analyzed for permit requirements. ABA sampling is done on an ongoing basis for waste rock characterization.

9.4 Geophysics

A geophysical survey was flown covering both the Wharf and Golden Reward properties in October 1994. Geophysical measurements consisted of total magnetics, apparent resistivity (at 865, 4175, and 33000 Hz), and radiometric measurements (potassium, thorium, and uranium). Resultant maps exist but digital data has not been retained.

9.5 Remaining Exploration Potential

Sections 9.2 and 9.4 are included for reference to previous exploration activity. The main exploration efforts are focused on drilling as described in Section 10.

At present, future exploration activities within the currently permitted mine area are limited. The change in geology, target depth, project economics, and the fact that adjoining areas have been previously mined, restrict areas with the potential for any future expansion. Several smaller targets near the mine, both within and outside of the permit boundaries, have been identified. The bulk of immediate future exploration activities will focus on the perimeter of the designed pit and pit bottom to fully identify economic mineralization.

The Portland Ridge area within the mine permit shows potential for the pit to deepen beyond current designs on the far-western perimeter. In this location, the Deadwood Formation above the lower contact may host mineralization, and the porphyry sill is mineralized east of this area. These units are located below the currently designed pit bottom of this area, and although previous drilling shows weak mineralization, the target has not been sufficiently drilled.

Along the western edge of the A-Frame area, expansion potential is possible if the mineralized zones within the Deadwood units and the main porphyry sill continue between Green Mountain and the Portland Ridge. This could result in a slight pushback of the western highwall, limited by changes in target depth and surface elevation.

A smaller target within the current mine area is Juno. Infrastructure and stockpiles exist in the vicinity, but narrow unmined zones between historic pits are potentially mineralized. Surface outcrops and historic surface workings as well as some prior drill results indicate a small zone of mineralization in the west. The east Juno area will also be examined; historic drilling shows waste-grade intercepts but the target was poorly drilled out.

The potential for an economic deposit within the Precambrian lithologies, which Wharf holds as tenants-in-common with Barrick Gold Corporation is currently considered minor. A Homestake-style deposit, if identified, would have to be exploited through underground mining methods at great depth. Precambrian rock units that underlie most of the permit boundary are not conducive for hosting large-scale disseminated deposits similar to those found in the overlying Paleozoic sediments and Tertiary intrusions. Abundant graphite, sulfides, and fine-grained phyllites of the Precambrian are not amenable to the heap leach process at the Wharf Operation.

Minor expansion potential does exist within the Paleozoic sediments and associated Tertiary intrusions on the margins of the area to the east, in the limited area where such units have not been removed by erosion. Bald Mountain in this area was identified during student research and consulting as the most promising target, and mapping and preliminary drilling was recently conducted. The potential for additional expansion on Bald Mountain is constrained by property to the east that is predominately either Bureau of Land Management (BLM) land or privately held. In addition, Precambrian rock units are exposed to the north of Bald Mountain, and target lithologies abut Precambrian units along several mapped and drilled faults. Overlying units are thick, up to 1,000 feet from the main target lithology to the peak, and if barren would likely make the target uneconomic. Drilling and surface mapping will aid in determining if further work is merited.

Exploration potential at the Golden Reward property is minimal because of its previous mining history and current operational plan. The western highwall of the Liberty and Harmony Pits will not advance to the west because of the Terry Peak Ski area boundary. There is limited exploration potential near the Terry Cemetery location. The Astoria area in the far southeast of the Golden Reward property was drilled in 2017 with very few ore intercepts and abundant sulfides present.

10. DRILLING

Drilling by Coeur's predecessors began on the project area in 1979, and was initiated by a successor to Wharf Resources in the Annie Creek area. This work resulted in the definition of a gold deposit that was developed in 1983 as an open pit and heap leach recovery operation. Subsequent exploration programs successfully delineated several additional ore bodies, including Foley Ridge (including East Foley), Juno Cut, Portland, Trojan, and American Eagle. These ore bodies have been mined to completion, except for American Eagle, which contains the last of the identified economic ore reserves.

Drilling by Coeur's predecessors commenced in the Golden Reward mining area prior to Wharf Resources' involvement. Drilling at Golden Reward targeted the Harmony, Liberty, Crusher, and Cemetery ore bodies.

Table 10-1 summarizes the combined drilling completed as of December 31, 2017 at the Wharf and Golden Reward mining areas by Coeur and their predecessors. Figure 10.1 Depicts the distribution of drill hole collar locations for the project.

Table 10-1 Drill footage by year (Coeur, 2018)

Year	RC (feet)	DDH (feet)
1979-2006	1,988,188	19,040
2007	43,110	
2008	57,310	
2009	19,455	
2010	157,155	
2011	97,181	
2012	49,010	
2013	21,340	
2014	32,260	
2015	35,180	
2016	30,530	
2017	56,190	
TOTAL	**2,587,539**	**19,040**

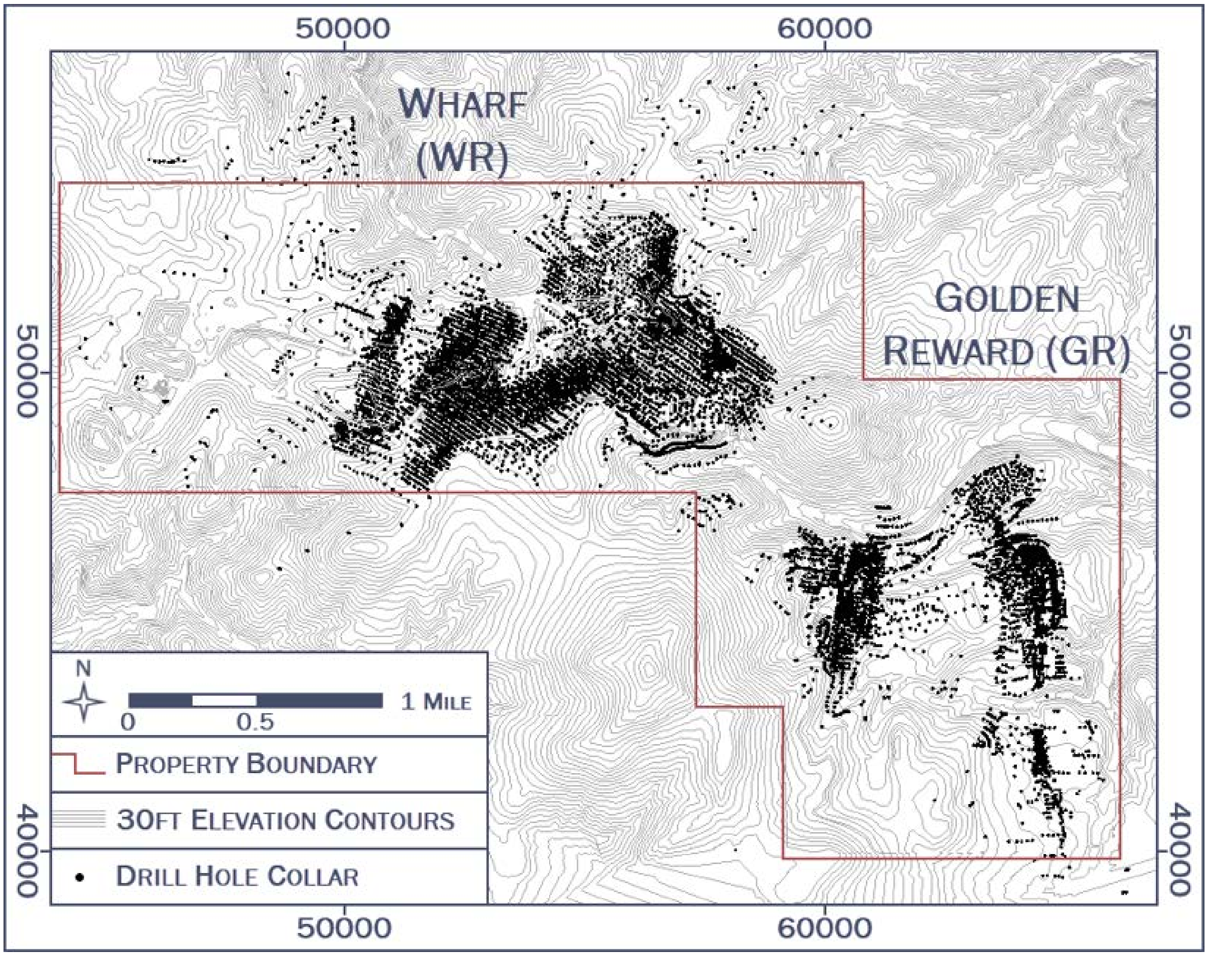


Figure 10.1 Drill hole collar locations at the Wharf Resources (U.S.A.), Inc project (Coeur, 2018)

10.1 Core Drilling and Logging

A limited number of diamond core holes have been completed on the Wharf Operation. The intention and target of these holes was to test for deep mineralized zones within the Precambrian basement rock. Drillholes are designed to intersect mineralization as perpendicular as possible. Mineralized zones in the Wharf Operation are generally horizontal to sub-horizontal and can be adequately drilled with vertical drillholes. A sufficient number of angled drillholes have been completed at Wharf and Golden Reward to test for vertical controls on the mineralization.

Diamond core drilling was logged for lithology, rock type, mineralization, alteration, recovery, and RQD.

10.2 Reverse Circulation Drilling and Logging

Reverse circulation (RC) drilling comprises the bulk of drilling at the Wharf Operation. Prior to 2007, RC drilling was done by various drill contractors (personal communication, Wharf Operation personnel), and limited diamond core drilling was completed by either Boyles Brothers Drilling or Longyear Drilling. Beginning in 2007, drilling was completed using only the RC method. From 2007 to 2013, drilling was contracted to North River Drilling; in 2014, Major Drilling; and from 2015 through 2017, Boart Longyear.

Approximately one pound of sample chips is collected from each interval. These samples are logged on site by a Wharf geologist for lithology, alteration, and mineralization. Historically, geologic data was stored in a spreadsheet database and transferred to a GEMS® database for modeling. Geologic logging data is currently entered directly into a controlled acQuire® database and exported to a GEMS® database for modeling.

10.3 Downhole Surveying

Successful downhole surveys have not been performed on RC drillholes prior to 2014. After 2015 downhole surveys have been completed on all RC drilling regardless of depth. A small subset of surveys were conducted on drilling performed in 2015.

Fourteen diamond core holes, completed prior to 2007, with average depths of ~1,600 ft. have downhole surveys using an unknown method. The results are stored in the acQuire® database.

10.4 Drillhole Collar Locations

Designed drillholes are marked with a Trimble GPS system using coordinates in the local Wharf Operation grid. The drill setup is confirmed by the exploration team (dip, azimuth, collar location). After completion of the hole, the collar is re-surveyed using a Trimble GPS with sub-centimeter accuracy. Historically, the coordinates were written on paper logs and input manually as actuals into the GEMS® database.

10.4.1 Collar Coordinate Verification

Collar coordinates are collected with a highly accurate, sub-centimeter, GPS unit. Surveyed drillholes are reviewed in GEMS® against the designed coordinates and the current topography.

11. SAMPLE PREPARATION, SECURITY, AND ANALYSES

11.1 Sample Collection

11.1.1 Diamond Drill

Limited sampling at Wharf has been conducted by means of diamond core drilling. The diamond core drilling was contracted to Boyles Brothers Drilling or Longyear Drilling. No diamond drilling and sampling has been completed since 2007. Table 11-1 lists historic drilling metadata related to the Wharf and Golden Reward mining areas.

Table 11-1 Drilling at Wharf Resources, 1979-present (Coeur, 2018)

Year	Company	Project	Drilling Company	Drill Type	Drill Size	Feet
1979-2006	Wharf Operation	WR	Various Unknown	DDC	Various	13,887
1979-2006	Golden Reward/Wharf Operation	GR	Various Unknown	DDC	Various	5,153
1979-2006	Wharf Operation	WR	Various Unknown	RVC, PERC	Various	1,495,565.4
1979-2006	Golden Reward/Wharf Operation	GR	Various Unknown	RVC, PERC	Various	473,582.5
2007	Wharf Operation	WR	North River Drilling	RVC	Various	43,110
2008	Wharf Operation	WR	North River Drilling	RVC	Various	57,310
2009	Wharf Operation	GR	North River Drilling	RVC	Various	19,455
2010	Wharf Operation	WR	North River Drilling	RVC	Various	99,935
2010	Wharf Operation	GR	North River Drilling	RVC	Various	57,220
2011	Wharf Operation	WR	North River Drilling	RVC	Various	72,191
2011	Wharf Operation	GR	North River Drilling	RVC	Various	24,990
2012	Wharf Operation	WR	North River Drilling	RVC	Various	48,660
2012	Wharf Operation	GR	North River Drilling	RVC	Various	350
2013	Wharf Operation	WR	North River Drilling	RVC	Various	21,340
2014	Wharf Operation	WR	Major Drilling	RVC	Various	32,260
2015	Wharf Resources (USA), Inc	WR	Boart Longyear	RVC	5.5”	35,180
2016	Wharf Resources (USA), Inc	WR	Boart Longyear	RVC	5.5”	30,530
2017	Wharf Resources (USA), Inc	WR	Boart Longyear	RVC	5.5”	34,700
2017	Wharf Resources (USA), Inc	GR	Boart Longyear	RVC	5.5”	15,540

Water for the Wharf and Golden Reward drilling is supplied by water truck from a pump house on the mine site. The pump house is connected to the mine well water supply.

Surface diamond core holes recovered HQ core. The entire length of the drillhole was sampled. Sample runs averaged 4.4 ft. at Wharf and 5.3 ft. at Golden Reward.

Digital photographs of the core were taken and the core was sawn into halves. One half of the core was delivered to the Wharf laboratory for sample preparation and analysis for gold and silver. All remaining core samples were eventually discarded.

11.1.2 Reverse Circulation (RC)

Sample Collection

RC sampling is performed by drill contractors at the drill rig. Sampling practice from 2007 through 2017 was to sample 10 ft. intervals and collect a 5-10-pound sample of cuttings for analysis. Approximately 1 pound of sample was retained for geological logging. Cuttings from the 5 ½ inch diameter center-return RC drill are directed to a cyclone and collected as underflow from the cyclone in 5-gallon buckets. These samples are then split into two samples, the size of which will depend on drilling return, which is affected by factors such as rock type and underground voids. Historically, when drilling in dry conditions, the entire sample was retained for analysis; however, in wet drilling conditions, the fines had been washed off the sample to reduce water volume. Groundwater was rarely encountered in RC drilling; depth and flow rates were not recorded. Typically, water was used in drilling to improve drilling performance and sample recovery.

Samples are collected into large, numbered, impervious plastic sample bags, with a numbered ID tag attached. One sample is delivered to the assay laboratory, and another is saved for geochemical testing. Only one sample may be collected in areas of insufficient density of testing. The pulverized sample remaining, which was not used for assay, is stored on-site if further analyses are required.

11.2 Sample Storage and Security

RC cuttings are collected in sample bags by the drill crew at the active drill site. Prior to 2014 samples were transported from the site to the Wharf assay laboratory by Wharf exploration or laboratory personnel. In 2014 contract drilling company personnel transported the samples to the mine laboratory facility.

All samples remained at the Wharf laboratory through the entire sample preparation and assay process. All pre-2014 sample material has been discarded. Sample pulps from 2014 drilling are stored at the Wharf Resources exploration facility.

From 2015 to present all samples were transported to the Wharf exploration facility by drill contract personnel. Samples were staged and prepared for shipment to a commercial analytical laboratory. Shipping was conducted via overland transport, with samples secured in palletized super sacks. Chain of custody documentation was maintained throughout the shipping and receiving process. Following analytical test work, samples are stored at the commercial laboratory for 90 days and then returned to Wharf for storage.

11.3 Analyses

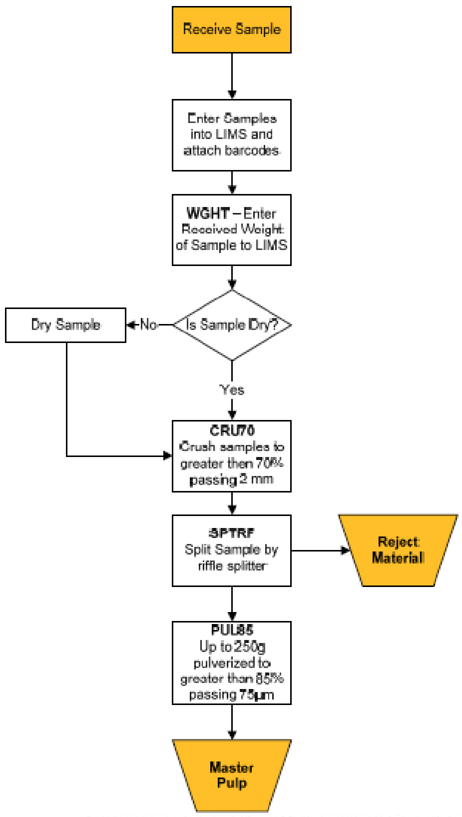
11.3.1 Sample Preparation

11.3.1.1. Wharf Operation Laboratory

Prior to 2015, all exploration and near mine development sample preparation has been completed by the Wharf laboratory located in Lead, South Dakota. RC samples were retrieved by the laboratory crew from drill sites and brought to the laboratory. Samples, were received, and not weighed; only a split from the sample was weighed to ensure that each sample split was 140-160 grams, with the target weight set at 150 grams. These were split using a Jones Riffle Splitter. The splitter was brushed clean between samples. Only dry samples were split; if a wet sample was obtained, the entire sample was dried in a gas-fired drying oven before splitting. Two sample splits were taken: one was tested in-house and the other was saved (unpulverized) for additional analytical testing. The reject of the sample was discarded and the split samples were placed in a drying oven at 225°F for approximately one hour or until samples are completely dry. The dried samples were pulverized to 85%, passing 200 mesh, using the manual ring and puck method of pulverization. As part of the laboratory sample preparation QA/QC, a random sample was taken daily for QA of the pulverized mesh size.

11.3.1.2. Commercial Laboratories

From 2015 to present sample preparation was completed at a commercial laboratory facility, accredited to the ISO/IEC17025:2005 standard. The samples from the 2017 campaign were prepped by Bureau Veritas, laboratory code PRP70-250. Figure 11.1 depicts the method description.



Received samples are entered into the Laboratory Information Management System (LIMS), weighed, dried and crushed to ensure that greater than 70% pass a 2mm sieve. A 250g split of the crushed material is then pulverized to greater than 85% passing a 75µm sieve.

At random intervals and at the start of each shift QC testing is completed on both crushed and pulverized material to ensure that the above specifications are met.

The flowchart to the left describes the standard practice. Additional splits of the pulp or reject may be taken at client request and to prepare internal Prep QC duplicates.

By default if clients have not specified otherwise Master Pulps are retained and storage charges apply. Rejects are stored for 90 days and are then disposed of at the client's cost.

Figure 11.1 Wharf Operation sample preparation flowchart from Bureau Veritas PRP70-250 Methodology (Bureau Veritas, 2017)

11.3.2 Laboratory Analytical Methods

11.3.2.1. Wharf Operation Laboratory as Primary Assayer

All primary exploration and development gold analyses for samples collected by Wharf, following the commencement of mine operations in 1983 through 2014 were analyzed at the Wharf laboratory. Table 11-2 includes the metadata for the analytical methods used. Gold analyses were completed with a cold cyanide shake with an AA finish. Over limit analyses were completed by fire assay with a gravimetric finish. The over limit analyses were completed based on a trigger value from the cold shake cyanide analyses. The trigger varied by year based on variables, such as the mine cutoff grade. In 2014, the over limit was set at 0.012 opt. From 2007 to 2014, the over limit trigger was 0.008 opt.

Table 11-2 Wharf Operation primary assay analytical methods (Coeur, 2015)

Method Code	Element	Units	Method	Finish	Sample Weight (g)	Lower Limit (opt)
Au_WR_CN_opt	Au	opt	Cold-Cyanide Shake	Atomic Absorption	10	0.003
Au_WR_FA_opt	Au	opt	Fire Assay	Gravimetric	29.17	0.005

Umpire analyses for the Wharf were completed from 2009 to 2014 at ALS Minerals in Reno, Nevada. Table 11-3 includes the metadata for analytical methods used at ALS Minerals. Gold analyses were completed by fire assay with an AA finish. Over limit analyses were completed by fire assay with a gravimetric finish. The trigger for the over limit was 0.292 opt Au. The umpire analyses completed at ALS Minerals did not include QC samples inserted by the Wharf. ALS Minerals is an accredited laboratory under ISO/IEC 17025:2005.

Table 11-3 ALS Minerals check assay analytical methods (Coeur, 2015)

Method Code	Element	Units	Method	Finish	Sample Weight (g)	Lower Limit (opt Au)	Upper Limit (opt Au)
Au_ALS_AA23_opt	Au	opt	Fire Assay	AA	30	0.0001	0.292
Au_ALS_GRAV21_opt	Au	opt	Fire Assay	Gravimetric	30	0.001	29.2

Additional umpire analyses were completed by Wharf, following its acquisition by Coeur, in 2015. The umpire checks were completed at Inspectorate Laboratory in Sparks, Nevada, on pulp samples from the 2014 drill campaign. Table 11-4 includes the metadata for analytical methods used by Inspectorate Gold analyses were completed by cold cyanide shake with an AA finish. Gold fire analyses with an AA finish were completed and triggered by cold cyanide analyses ≥0.008 opt Au to match the original procedure completely at the Wharf Operation. An additional higher accuracy fire assay with gravimetric finish was triggered on one sample, at >0.292 opt gold. Inspectorate is an accredited laboratory under ISO/IEC 17025:2005.

Table 11-4 Inspectorate check assay analytical methods (Coeur, 2015)

Method Code	Element	Units	Method	Finish	Sample Weight (g)	Lower Limit (opt Au)	Upper Limit (opt Au)
Au_INS_CN403_opt	Au	opt	Cold Cyanide Shake	AA	30	0.001	1.46
Au_INS_FA430_opt	Au	opt	Fire Assay	AA	30	0.001	0.292
Au_INS_FA530_ppm	Au	ppm	Fire Assay	Gravimetric	30	1	1000

11.3.2.2. Commercial Laboratory as Primary Assayer

From 2015 to present all primary exploration and development gold and silver analyses for samples for inclusion in resource estimation collected by Wharf Resources were analyzed at a commercial laboratory accredited under ISO/IEC 17025:2005. Table 11.5 includes the metadata for the analytical methods utilized in the 2017 sampling campaign. Primary samples were analyzed at Bureau Veritas located in Vancouver BC, CA. Gold analyses were completed with a fire assay with an atomic absorption finish. Results registering greater than the 0.0001 opt lower detection limit (LDL) triggered a cold cyanide shake with and atomic absorption finish. Over limit analyses were completed by fire assay with a gravimetric finish when the initial fire assay results registered greater than 0.29 ounces per ton (opt) gold.

Table 11-5 Bureau Veritas primary assay analytical methods (Coeur, 2018)

Method Code	Element	Units	Method	Finish	Sample Weight (g)	Lower Limit (opt Au)	Upper Limit (opt Au)
Au_BV_FA430_opt	Au	opt	Fire Assay	AA	30	0.0001	0.29
Au_BV_CN401_opt	Au	opt	Cold Cyanide	AA	30	0.001	1.458
Au_BV_FA530_ppm	Au	ppm	Fire Assay	Gravimetric	30	0.026	NA

From 2015 to present all umpire analyses for Wharf were analyzed at a commercial laboratory accredited under ISO/IEC 17025:2005. Table 11-6 includes the metadata for the analytical methods utilized in the 2017 sampling campaign completed at McClelland Labs, Inc, Sparks, Nevada. Gold analyses were completed by fire assay with an AAS finish. Over limit analyses were completed by fire assay with a gravimetric finish. The trigger for the over limit was 0.292 opt Au.

Table 11-6 McClelland Labs assay analytical methods (Coeur, 2018)

Method Code	Element	Units	Method	Finish	Sample Weight (g)	Lower Limit (opt Au)	Upper Limit (opt Au)
Au_MCLD_FA30AA_opt	Au	opt	Fire Assay	AAS	30	0.001	0.292
Au_MCLD_FA30GV_opt	Au	opt	Fire Assay	GRAV	30	0.001	-

11.3.3 Control Samples

Three certified standards and one certified blank were used as control samples inserted into the 2017 sample streams. These certified control samples tested the accuracy of both the primary and secondary commercial laboratories. Previous campaigns utilized similar counts of certified standards and blanks.

11.3.4 Bulk Density Analysis

Densities have been assigned to mineralized and unmineralized varieties of 10 rock types. Density has also been assigned to backfilled material. Density has been determined through laboratory testing and verified using truck factors and scale readings. In 2007, 75 samples were tested to confirm the density values used in the resource model. The test method is unknown. In 2013, additional samples of intrusive rock were tested using method ASTM D 6473-10. These tests resulted in updates to the phonolite and trachyte densities.

12. DATA VERIFICATION

12.1 QA/QC Program (2014)

Following Coeur's acquisition of Wharf Resources, Wharf conducted an umpire analysis campaign on pulp samples from the 2014 sampling campaign. Pulps samples were analyzed at Inspectorate, in Sparks, NV, an accredited laboratory under ISO/IEC 17025:2005. Certified company standards and blanks were inserted to meet the minimum 5% insertion rates recommended by Coeur QA/QC policy and procedure.

12.2 QA/QC Program (Pre-2015)

12.2.1 Cold Cyanide Shake

For each batch of 48 samples, a QC sample of known value is inserted. This control sample must exhibit repeatability and accuracy on every tray. The standard value is programmed into the AA machine and is a repeatable auto sampler function of the machine. The control is a 1 to 999 parts mixture of a 1,000-ppm gold standard and 0.5% NaCN solution. The control fails if it is outside of the ± 0.003 tolerance limit of the AA instrument. Upon failure, the instrument re-zeros, recalibrates, and then re-runs all previous samples following the previous successful QC check. This process is continued until the control sample passes the check.

For each batch of 48 samples, every sample ending in zero analyzed by the cold cyanide method is weighed and digested in duplicate. If the duplicate and parent values are not within the ± 0.003 opt tolerance limit of the instrumentation, the batch is considered a failure. If a failure occurs, the entire batch is re-mixed and re-run. This process is continued until the duplicate in the batch passes the check.

For each batch of 48 samples, a QC sample of known composited material is inserted. This QC check is to ensure proper sample sequencing, analytical accuracy, and repeatability.

12.2.2 Fire Assay

For each batch of 24 samples, a QC sample of known composited material is inserted. This QC check is to ensure proper sample sequencing, analytical accuracy, and repeatability, which can indicate drift.

12.2.3 Sample QA/QC

Documented sample QA/QC at the Wharf, prior to ownership by Coeur, consists solely of umpire analyses completed at a commercial laboratory as a check on the Wharf site laboratory. No certified company standards or blank were inserted into the analytical batches.

12.3 QA/QC Program (2015-2017)

All Wharf drill sampling campaigns from 2015 to present were conducted under the guidance of internal policies and procedures regarding QA/QC requirements. The following protocols were implemented for the insertion of control samples for all exploration and development drilling. One certified reference standard is inserted for every 20 field samples; one certified blank sample is inserted for every 20 field samples; and one sample stage duplicate is collected for every 40 field samples. One crush stage and one pulp stage duplicate are generated by the commercial laboratory for every 40 field samples. Additionally, a minimum of 5% of the primary sample pulps are sent to a secondary commercial laboratory for check analysis.

In 2015, Wharf implemented the acQuire® technology database management solution at Wharf. This solution is used to store and analyze QA/QC datasets. Failure limits are defined in acQuire® for standards by the certified values provided by the certifying laboratory. A standard fails when the value exceeds or falls short of ± three standard deviations of the certified value. A blank fails when the value exceeds five times the lower detection limit of the assay method. Failure of a standard or blank sample requires the re-submission of the pulps on either side of the failure, back to or up to the next passing standard or blank. The original results associated with the failure are entered into the acQuire® database as rejected results. If the results from the re-analysis pass QA/QC, they are entered in the acQuire® database, as approved. All sample re-runs are given precedence over the original results when used in resource estimation; unless repeated analyses of the batch results in failures of the same magnitude. At this point, the geologist may choose to accept the original results. Results are also reviewed quarterly and elements of the QC program are adjusted as necessary.

12.4 QA/QC Program Summary

Coeur QA/QC protocol and procedure targets an overall primary to check sample ratio of 5.7:1. This is inclusive of insertion rate targets of 5% for standards, 5% for blanks, and 2.5% for each sample, crush, and pulp stage duplicate.

Prior to 2007, QC of sample analyses was limited to control measures applied by the Wharf Operation in-house laboratory. There is no record of the use of certified company standards, blanks, and prep duplicates to test the accuracy and precision of the laboratory methods.

From 2007 through 2014, 44,968 exploration and development samples were submitted to the Wharf laboratory. During this time, umpire checks on the fire assay method were completed annually on pulps produced by the Wharf laboratory: 673 pulps were analyzed, representing 1.5% of the total samples. The samples were analyzed at ALS Minerals in Reno, Nevada. ALS Minerals is an accredited laboratory under ISO/IEC 17025:2005. No certified company control samples were inserted into the analytical batches.

In 2015, following the acquisition of Wharf Resources, Wharf submitted 1,929 sample pulps from the 2014 exploration and development drill campaign to Inspectorate, an accredited laboratory under ISO/IEC 17025:2005, for a third party commercial laboratory analysis. This sample selection represents a 61.2% umpire check of the 3,152 original samples submitted for assay in 2014. Coeur used two certified reference standards and one certified reference blank as quality controls on this umpire dataset: 104 standards and 57 blanks were inserted into the sample stream, resulting in a QA/QC insertion percentage of 8.4% and equates to a 12:1 primary to check ratio. This equates to one standard per 19 samples and one blank per 34 samples. This rate ensured two standards and one blank per Inspectorate analytical batch.

From 2015 through 2017 QA/QC measures were completed for all Wharf sampling programs. The programs combined for a total of 194 drill holes for 115,850 feet, and 11,291 primary samples. The QC program includes 2,400 total samples, representing a primary to check sample ratio of 4.7.

Total control sample insertion rates were acceptable for the 2015-2017 sampling programs. Statistically, failures can be expected to occur with 0.3% of the analyzed control samples. Failed control samples and their associated sample batches are re-assayed per the Coeur QA/QC policies and procedures. Only sample batches that have passed the QC measures are included as part of the resource estimation dataset. Refer to 12.5.2 for a discussion of these results.

12.5 QA/QC Program Results and Discussion

12.5.1 QA/QC Discussion (Pre-2015)

Figure 12.1 depicts Quantile-Quantile (Q-Q) plots of the entire population and subsets of grade ranges for umpire checks completed at ALS Minerals from 2009-2014. The entire population in plot A indicates no bias and good correlation between the two datasets. Plot B is a subset of grade near the mine cut-off grades, which vary over time. The plot indicates a stair step feature which is the result of rounding and decimal reporting differences between the two laboratories. There is a low ~2-3% bias to the Wharf Operation laboratory values at this grade range. The grade variance at this percentage is significantly below the detection levels of the analytical methods at this grade range. Plots C and D indicate local grade controlled bias, but overall indicate very good correlation between the datasets. Both the Wharf and ALS Minerals datasets included laboratory quality control measures, and neither included internal certified standards and blanks. The resulting overall correlation and lack of bias in the population supports the quality of the data produced by the Wharf laboratory.

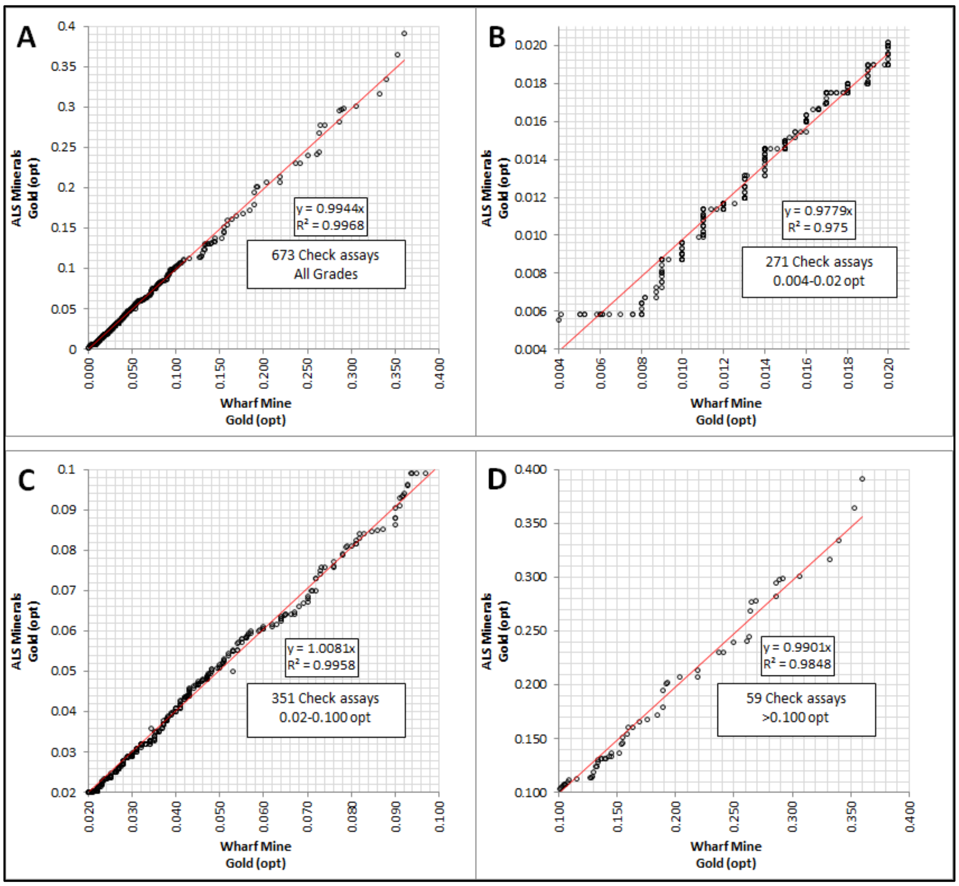


Figure 12-1 Q-Q plot of umpire checks completed from 2009-2014 (Coeur, 2015)

No additional analyses or drillhole sample validation has occurred on pre-2015 samples that are included in the EOY 2015 resource. See Coeur (2015) for details on the pre-2015 data.

12.5.2 QA/QC Discussion (2015-2017)

From 2015 through 2017 a combined total of 11,291 primary samples were analyzed for gold using multiple methods at multiple independent commercial laboratories. These are previously detailed in Section 11 of this report. Overall, the insertion rate for control samples was sufficient for certified company standards, certified company blanks, and duplicates.

Failure rates for certified company standards and blanks analyzed for gold at the primary laboratory are 3.4% and 0.5%, respectively. Moving averages plotted with the certified company standard results indicate no significant bias in the dataset. Currently, all control samples are validated using limits defined by the certifying laboratory.

QA/QC results from drilling completed between 2015-2017 identified 18 failed standards and seven failed blanks. The 25 control samples and the primary samples adjacent to each control sample in the sample stream, have been subjected per Coeur QA/QC policies and procedures. The final valid assay data is stored in the acQuire® database as approved results, and will take precedence over the original data for use in resource calculations. At the time of documentation, all certified company standards in the database have final gold results.

Duplicates have good correlation and low bias for gold at all sampling stages.

12.6 Data Validation

12.6.1 Collar and Survey

In 2017 all collar and downhole surveys in the Wharf mine area (excluding Golden Reward) were reviewed against historic and current topographic surfaces. A number of drill holes were flagged for review against survey information and corrections were implemented. Corrections included entry of missing downhole surveys or re-classification of drill holes from exploration to blasthole. The resulting dataset was determined to be adequate for Mineral Resource estimation.

12.6.2 Reverse Circulation Sampling Protocol

In 2015 an RC paired sampling study was completed on three drill holes. The comparison addressed the potential for systematic bias in sampling regarding the pre-Coeur Mining, Inc, method where fines and water were removed, and the current method of larger bagged samples. 155 samples were analyzed and compared. The grade of the collective population was biased to the current sampling method, but overall is equivocal with respect to potential sources of variance. Additional work was not warranted due to the insignificant impact to the resource.

12.6.3 Wharf Laboratory, Society of Mineral Analysts Round Robin

In 2017 the Wharf laboratory participated in a Society of Mineral Analysts (SMA) Round Robin to validate the procedures and methodologies in use at the laboratory by the Wharf site laboratory. Results indicate good correlation with peer laboratories and good repeatability at the mine laboratory.

12.6.4 Blasthole Dataset

In 2017 AMC Consultants (UK) Limited reviewed the Wharf blasthole dataset as part of a larger study of the regression based data transformation used to correct AA cyanide shake results to FA values. The blasthole database was cleaned and validated statistically resulting in a final dataset containing 896,198 records. This dataset was then used in the analysis of the 2017 resource estimate for verification purposes only. Blasthole data was not used in the interpolation process.

13. MINERAL PROCESSING AND METALLURGICAL TESTING

The Wharf Operation is a mature mining operation. Historical mineral processing and metallurgical test work performed prior to the initiation of mining is not relevant to this Report. The processing plant has been in operation for several decades and produces precious metal electrolytic sludge that is sold to refineries. A summary of the performance of the process plant is provided in Section 17 of this Report. Metal recovery assumptions are derived from the past performance of the process plant. Other than what is stated in Sections 17 and 18, there are no other known processing factors or deleterious elements that could have a significant impact on economic extraction.

13.1 Metallurgical Test Work

The Wharf Operation maintains a continuous testing program on the ore being sent to the heap leach. Composite samples are collected from the crusher product using a cross-belt sampling system. Samples are taken at 50-ton intervals from the combined product conveyor belt.

Exploration metallurgical samples are created by taking a duplicate split of drill cuttings from the exploration drill sites. The samples are composited based on production plans. These composites are retained in the case analysis is required for pad performance. In the case of unexpected physical characteristics or chemical constituents, bottle rolls and column leach tests are utilized to determine leach characteristics.

Random material was selected from each location (Bald Mountain, Green Mountain, and Golden Reward) for further analysis and ICP analysis by ALS Chemex in Reno, Nevada, an accredited assay lab. The focus of the ICP test work was to determine if there were any detrimental elements that would impact the process. Subtle variations between the sample groups were noted, but no significant variations existed.

Metallurgical testing is done at the mine site internal laboratory and periodically through contracting external laboratories. Regular testing includes head analysis for gold and silver using AA and fire assays and column leach testing on an as needed basis. The head assays, final tails assays and the information from the daily solution samples are used to determine the overall percent recovery rate and recovery by size fraction for the material. Sodium cyanide and lime consumption rates are estimated for process. The data from the column testing is used either to predict leach pad performance or reconcile actual leach pad performance.

13.2 Recovery Estimates

Metallurgical performance using laboratory testing suggests that recovery of gold varies by lithology. Lithological recoveries used to estimate overall heap expected recovery for planning purposes are shown in Table 13-1. Actual performance compared to ore-weighted expected recoveries for pads processed since the 2015 published technical report (Coeur, 2015) are shown in Table 13-2.

Table 13-1 Estimated recovery (Coeur, 2018)

Ore Type	% Gold Recovery
Intermediate	80.0%
Lower Contact	76.0%
Porphyry	80.5%

Table 13-2 Expected versus actual recovery (Coeur, 2018)

Pad Loading (pad cycle)	**Est. Geologic Au Recovery (%)**	**Actual Au Recovery (%)**	**Delta (%)**
4.12	79.8%	80.5%	0.7%
5.3	79.8%	79.9%	0.0%
2.13	80.5%	80.8%	(0.3%)
1.13	80.1%	80.4%	0.0%
Pad Average	**80.1%**	**80.3%**	**0.2%**

13.3 Deleterious Elements

Analysis of net acid generating (NAG) potential has identified pockets within the ore body of potential acid generating material. This material is handled by existing protocols depending on if it is waste or ore. Waste material is segregated and placed in controlled locations to neutralize the potential for acid generation. Ore has lime added to the crushed rock that is placed on the leach pad. The amount of lime added is based on ore type, or can be adjusted based on NAG test work. The pH of the process solutions and pad effluents is monitored each day.

None of the deposits contain sufficient quantities of sulfide minerals, organic carbons or silica encapsulation to be categorized as refractory ore.

13.4 Conclusions

Current metallurgical test work confirms the material to be mined as having similar response to the heap leaching process as previously mined ores. Metal recovery assumptions are derived from past performance of the leaching operation. The QP is not aware of any other processing factors or deleterious elements that could have a significant impact on economic extraction.

14. MINERAL RESOURCE ESTIMATES

14.1 Introduction

The mineral resource estimation and methodology for the Wharf Operation is summarized in the following section. The Golden Reward deposit (Coeur, 2015) has been mined out and is no longer included in this Report. The Wharf deposit model was completed by Scott Jimmerson and Kelly Lippoth, both employed by Coeur Mining, Inc. with an effective date of December 31, 2017.

The Wharf model uses an Imperial unit mine grid coordinate system. Figure 14-1 illustrates the Wharf and Golden Reward model areas with the permit boundary indicated in pink. Golden Reward is included in Figure 14-1 for historical reference.

The Wharf deposit model represents an update to the previous resource estimate last reported at mid-year 2015. Since year-end 2015, several important updates to the Wharf Operation database, the Wharf geologic and structural model and the Wharf modeling procedure have been implemented. The updates include:

- On-going review of historic data which includes collar location, hole type, sample quality. Inclusion of exploration drilling results through May 7, 2017.
- Significant updates to the geologic model, including re-interpretation of faults and lithology.
- Update to the location and extent of the 3D model of all known historic underground workings in the resource areas based on additional data recovered from historic archives.
- Changes to classification parameters.
- Cleanup of the blasthole database used for reconciliation against the block model.
- Update of the geologic domains used for EDA, variography and interpolation.
- Change to the process used to model high grade, structurally controlled areas of the deposit.

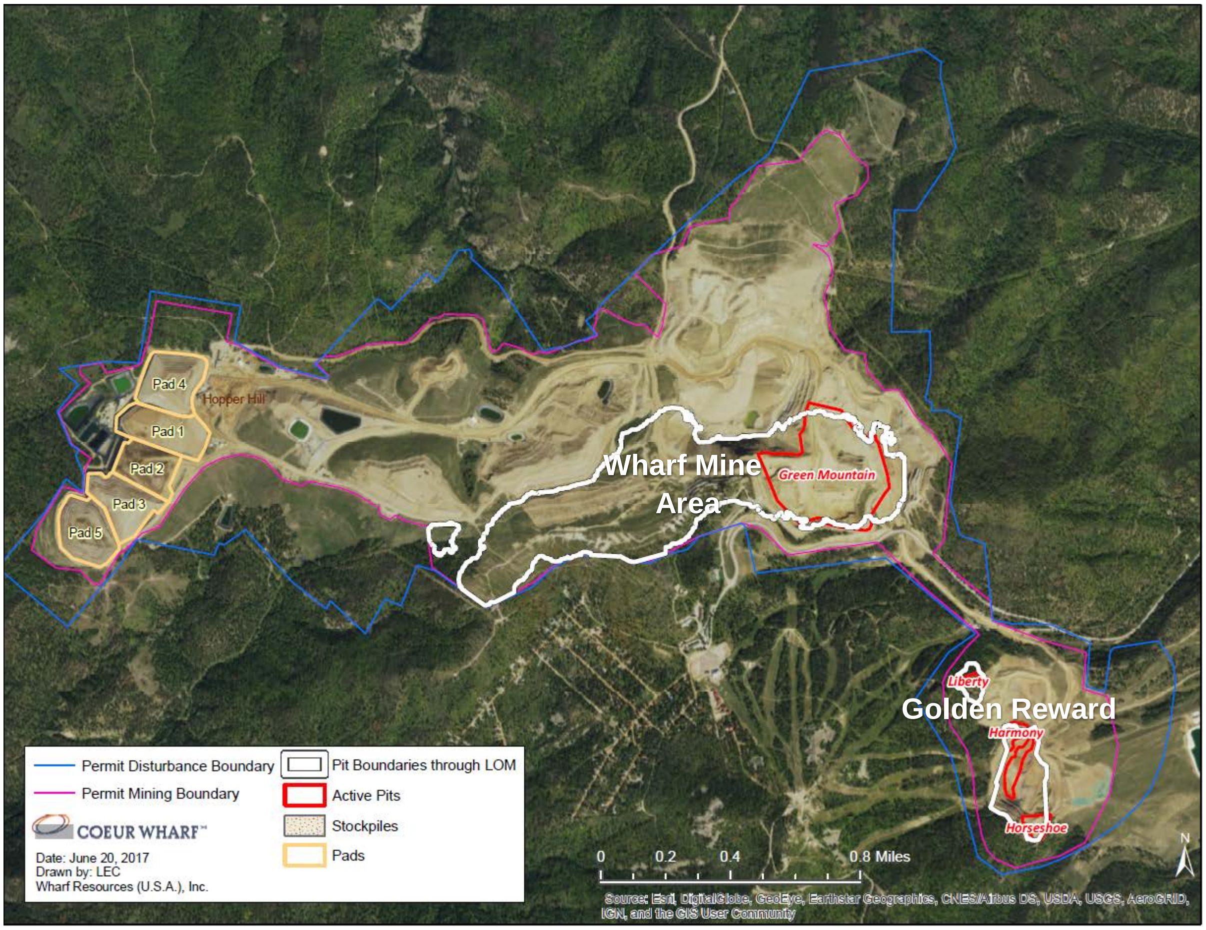


Figure 14-1 Current Wharf pit and permit boundaries (Coeur, 2018)

14.2 Assay Database

Several changes were made to the resource estimate in 2017. A total of 7,557 drillholes representing 1,828,244 feet of drilling were used for the 2017 resource estimate; 106 of the total drillholes, shown in Figure 14-2, were completed in 2015-2016 and are new to the resource estimate. The 2015 MM resource estimate used a total of 8,279 drillholes in the Wharf area. Since the 2015 MM resource model was completed, 553 of the historic drill holes have been re-classified as not of sufficient quality for resource estimation. Drill hole reclassification was based on the data source, drilling method, quality of the results, or lack of metadata.

At some point in the past, assay sample intervals were split to match the geologic model. For the 2017 resource estimate this was considered a potential problem since the geologic model has been updated. Where possible, sample intervals were re-combined as long as consecutive split intervals contained the same Ag/Au opt values and all intervals within a drillhole were determined to have been split. Compositing of the final assays used in this resource estimate was split based on geology. This minimizes smearing of grade between adjacent lithologic units.

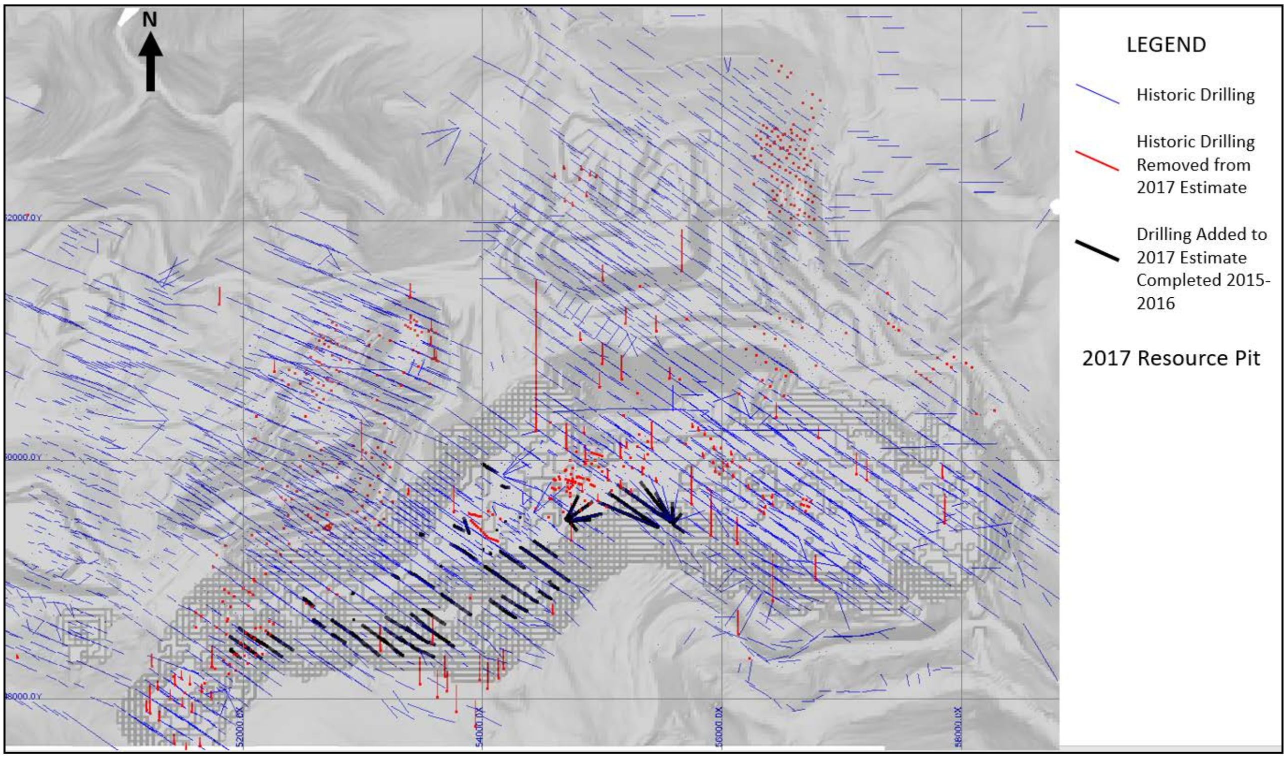


Figure 14-2 May 2017 Wharf Resource estimate area. Drilling completed in 2015-2016 is shown in black, historic drilling shown in blue, pit boundary from 2015 reserve estimate (Coeur, 2018)

The assay database used for the Wharf modeling consists of the following:

- Collar, downhole azimuth, dip and length of each drillholes
- Lithology codes of logged intervals
- Assay data consisting of Au by Cyanide Shake Atomic Absorption finish (CN-AA) and Fire Assay Atomic Absorption finish (FA-AA)
    - 2007-2013: when the CN-AA value was above 0.008 opt Au, a FA was completed
    - 2014: when the Au-AA was above 0.012 opt, a FA was completed
    - 2015: CN-AA on all samples, FA-AA above detection limit
    - 2016: FA-AA on all samples, CN-AA above detection limit

Drilling is primarily RC with limited NX and HQ core drilling. Downhole surveys were completed on 14 core holes. Until 2016 no downhole surveys were completed on RC drilling. The 2016 drilling program was comprised of 50 drillholes all of which utilized a surface recording gyro (SRG) downhole survey technique.

Drill spacing is generally 100 feet along strike and 50 feet perpendicular to the general strike of the mineralization in each model area.

14.3 Density

Density values are assigned to each block according to major rock type as shown in Table 14-1. Densities used for given rock types have been determined through historic testing and verified with experience using truck factors and scale readings. A total of 75 samples were tested in-house to verify the density of the major rock types in 2007. Additional testing was done in 2013-2014 to distinguish the waste phonolite from other porphyry and to better reconcile waste tonnages. Fill density utilizes a 13 percent swell factor.

Table 14-1 Density by rock type (Coeur, 2018)

Lithology	Density Factor (tons/ft^3)
Deadwood Formation (1, 2, 4, 11, 16, 32, 33, 101, 102)	0.0714
Phonolite (7)	0.079
Porphyry (6)	0.0769
Fill	0.0588

14.4 Wharf Model

The Wharf mining area model is built in Geovia Gemcom® (GEMS) software. The 3-D block model covers the extent of the main mineralization at the Wharf Operation with block dimensions summarized in Table 14-2.

Gold in ounces per ton (opt) has been modeled. Silver has not been modeled due to concerns over the methodology used to determine silver assay values, and the fact that silver is estimated to provide less than 3% to the economics.

Table 14-2 Block model dimensions (Coeur, 2018)

	Y Dimension	X Dimension	Z Dimension
Location Min.	46,000	50,000	5,800
Location Max.	53,800	60,000	6,630
Block	25 ft.	25 ft.	10 ft.
Y	Northing	(Rows)	312
X	Easting	(Columns)	400
Z	Elevation	(Benches)	83

14.4.1 Lithology Interpretation

The 2017 Wharf geologic model was built on a combination of lithology logged in drill holes, an analysis of paper log descriptions to evaluate the numeric coding of holes in certain areas (no description available), and known thicknesses of units. Polylines were created in section view by snapping to lithologic intercepts where available, and adjusted where logging issues were identified.

The stratigraphic model was created by joining lithology polylines into surfaces representing the top of each unit. Seamless lithologic solids were then created from surfaces of sedimentary units. Cross-cutting intrusive units composed of phonolite or trachyte were created separately. A major change from the 2015 geologic model is the separation of the phonolite (barren) and trachyte (mineralized) intrusive units. The final lithology units are outlined in Table 14-3. A typical section from the geologic model is shown in Figure 14-3.

Table 14-3 Lithologic units utilized in 2017 Wharf resource estimate (Coeur, 2018)

Code	Lithologic unit
16	Winnipeg Fm., Icebox Shale Member
2	Upper Deadwood Fm. sandstone
1	Glauconitic Deadwood Fm. sandstone
31	Interbedded Deadwood Fm. above shale
32	Interbedded Deadwood Fm. below shale, above 61 sill
33	Interbedded Deadwood Fm. below shale, below 61 sill
4	Deadwood Fm. gray shale
101	Lower Deadwood Fm. above 61 sill
102	Lower Deadwood Fm. below 61 sill
62	Middle altered "quartz alkali trachyte" sill
61	Lower alkali trachyte sill and related intrusions
7	Upper phonolite sill and related intrusions
11	Precambrian

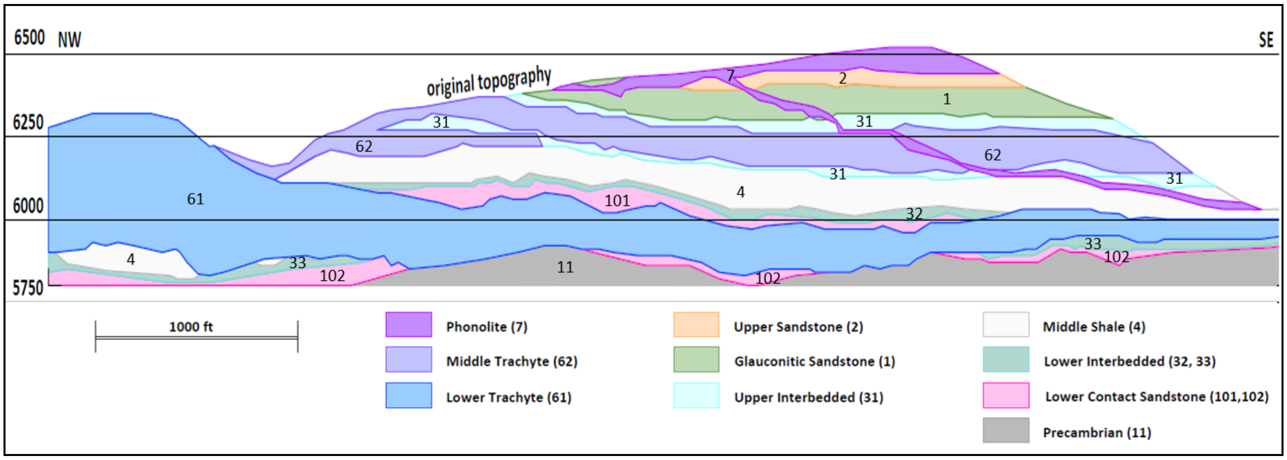


Figure 14-3 Cross section perpendicular to orientation of the mineralization control showing general geologic units (Coeur, 2018)

14.4.2 Domain Definition

Domains have been created based on lithology and changing trends in strike and dip of the major mineralized structures and underground workings that cross cut lithologic units.

Assay data was reviewed for each lithologic unit to determine the style of mineralization and if homogeneity existed between lithologies. Structural trend directions were reviewed and incorporated with the units where obvious high-angle structures control mineralization. Table 14-4 gives the breakdown of each major lithology and the final interpolated domains.

Table 14-4 Compiled Model Domains (Coeur, 2018)

Lith Code	Description	Solid Model Codes	Applied Rockcode	State	Comments	Final Domain
7	Phonolite	7	7	Barren		No model
16	Winn. Icebox Shale	16	16	Barren		No model
2	UpperDwdSS	2	2	Mineralized	High angle structure control, 2nd domain applied	11231
1	Glauc. DwdSS	1	1		Similar statistical distribution for each domain	21231
3	IntbdDwdSS	3	31		Units 2-1-31 Combined and split on mineralized domains	31231
4	GrShMidDwd	4	4	Barren	High angle structure control, 2nd domain applied	No model
3B	IntbddDwdSSNoMin	3B (upper)	32	Mineralized		32
		3B (lower)	33	Mineralized		33
10	LDwd	10T (UPPER)	101	Mineralized		101
		10B (LOWER)	102	Mineralized		102
11	PreCamb	11	11	Mineralized	Not to be modeled at this time	No model
6	Trachyte	6A = (6A, 6J, 6H, 6S)	61	Mineralized	High angle structure control and disseminated	1061
					Unit split based on separation by Trachyte intrusion	2061
		6F = (6F, 6G, 6B, 6F, 6C)	62	Mineralized	High angle structure control and disseminated	62

Raw statistics were reviewed for each lithologic unit to determine if there was any correlation in the mineralization that would allow proposed domains to be combined for compositing and final interpolation. The comparisons were made using general statistics, Q-Q plots, histograms, swath plots, and contact analysis plots for each proposed combination of lithologic units. Only three units were found to have suitably consistent mineralization across contacts. Units 1 and 31 appear very similar statistically, while unit 2 appears to have the same higher grade structural mineralization as 1 and 31.

Lithologic domains were assessed for changes in the strike and dip of near vertical structures. The original work, completed by MMTS in 2015 (Coeur, 2015), was reviewed and compared with blasthole grades, exploration drilling grades and the trend of historic underground workings. Final structural domains used with lithology units 1, 2 and 31 are shown in Figure 14-4.

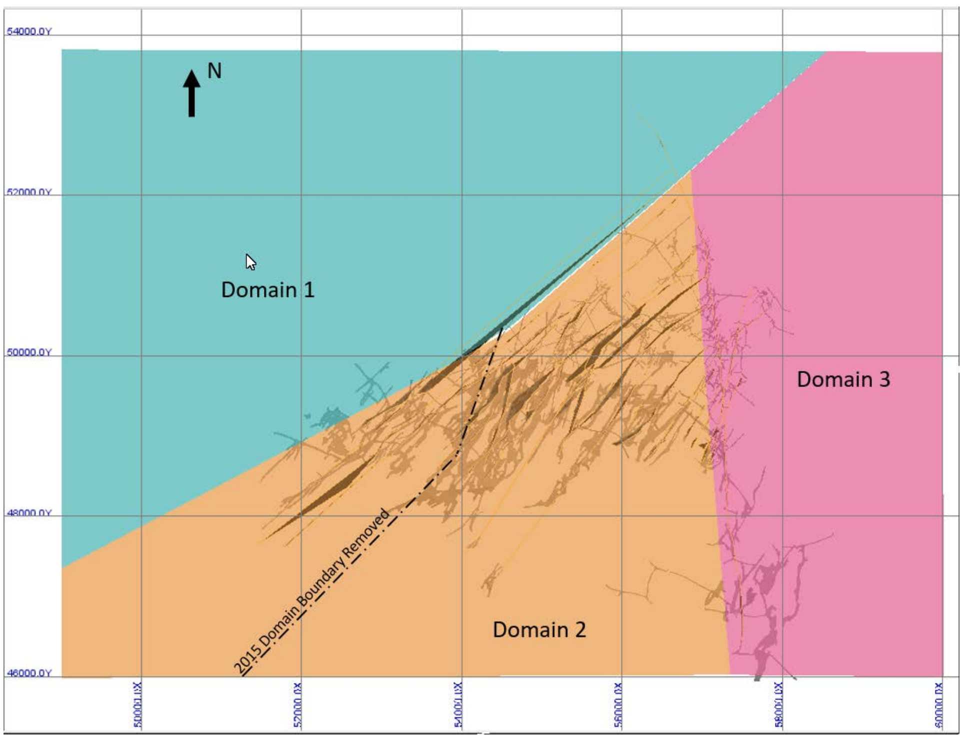


Figure 14-4 Structural domain boundaries applied to lithology units 1, 2, and 31 (Coeur, 2018)

14.5 Assays – Exploratory Data Analysis by Domain

Exploratory Data Analyses (EDA), including cumulative probability plots (CPPs), histograms, contact plots and classic statistical values of the assay data are used to assess the lithology grades and boundaries between units to determine how they should be modeled.

14.6 Contact Plots – Used for Boundary Type

Boundary conditions shown in Figure 14-5 were assessed for each unit using both downhole contact analysis plots and 3-D boundary condition plots.

16	**32**										
32		**33**									
33	s		**101**								
101	s	h		**102**							
102	h	s	s		**1061**						
1061	h	h	h	h		**2061**					
2061	h	h	h	h	s		**11231**				
11231	nc	nc	nc	nc	h			**21231**			
21231	nc	nc	nc	nc	nc	h	s		**31231**		
31231	nc	nc	nc	nc	nc	nc	s	s		**62**	
62	h	nc	nc	nc	s	s	h	h	h		**4**
4	h	h	nc	nc	h	h	h	h	nc	h	

nc=	No Contact
h=	Hard
s=	Soft

Figure 14-5 Boundary conditions applied to mineralized domains (Coeur, 2018)

14.7 Capping of Assays

The capping methodology for 2017 uses cumulative probability plots (CPPs) to determine where abrupt changes in the distribution in the upper 1-2% of the data along with analysis of the coefficient of variance (CV) for the domain. For domains with a CV <2, no capping was applied. Additionally, the domains that were to be estimated using the high-grade (HG) indicator method (discussed in Section 14.4.2) were not capped as the indicator method would be used to control the spread of metal. Thus, only two domains, 32 and 33 were capped. Capping was applied to raw assays prior to compositing. Capping statistics are given in Table 14-5.

Table 14-5 Capping summary statistics for Au opt (Coeur, 2018)

Wharf - CAPPING LEVELS Gold (opt)											
LITH	DOMAIN	VARIABLE	SAMPLES	MINIMUM	MAXIMUM	MEAN	VAR	CV	%MET 90th	%MET 99th	Comment
61	all	AuFA	57034	0.0001	1.2700	0.0130	0.0004	1.48	38.0%	9.9%	
62	all	AuFA	12308	0.0001	0.3320	0.0090	0.0003	1.82			IND, no cap
101	all	AuFA	1672	0.0001	0.4140	0.0286	0.0016	1.40	45.6%	9.8%	
102	all	AuFA	5786	0.0015	0.8050	0.0293	0.0014	1.27	38.6%	9.1%	
32	all	AuFA	3137	0.0001	0.5550	0.0120	0.0010	2.59	62.9%	21.7%	
33	all	AuFA	1082	0.0001	0.7510	0.0164	0.0016	2.43	54.0%	20.0%	
1-2-31	1000	AuFA	15930	0.0015	1.5090	0.0188	0.0017	2.17			IND, no cap
1-2-31	2000	AuFA	25719	0.0001	1.8300	0.0183	0.0027	2.83			IND, no cap
1-2-31	3000	AuFA	926	0.0015	0.4270	0.0219	0.0012	1.55			IND, no cap

LITH	DOMAIN	VARIABLE	SAMPLES	MINIMUM	MAXIMUM	CAP MEAN	VAR	CV	CAP LEVEL	# CAPPED	% CAPPED	METAL REMOVED
61	1000	AuFA										
61	2000-3000	AuFA										
62	all	AuFA										
101	all	AuFA										
102	all	AuFA										
32	all	AuFA	3137	0.0001	0.1500	0.0110	0.0005	2.01	0.15	29	0.92%	8.7%
33	all	AuFA	1082	0.0001	0.2700	0.0155	0.0008	1.85	0.27	4	0.37%	5.4%
1-2-31	1000	AuFA										
1-2-31	2000	AuFA										
1-2-31	3000	AuFA										

14.7.1 Compositing and Composite Statistics

Approximately 90% of the samples used in the 2017 resource estimate are 10 ft. in length as shown in Table 14-6. Since the sedimentary units shown in Figure 14-3 range from 10 to 100 feet in thickness, compositing was done to 10 feet to ensure enough samples were available in the vertical direction for estimation and to avoid over-smoothing prior to variography.

Table 14-6 Sample length distribution (Coeur, 2018)

Sample Length	Number of samples	Percentage of samples
Samples 5- 10 ft.	17,162	9.1%
Samples = 10 ft.	168,516	89.4%
Samples >10 ft.	2780	1.5%

Composite statistics are shown in Table 14-7 and Figure 14-6. Lithology domains 101 and 102 have the highest mean grade. Lithology domains 4, 7, 11, 16, and 62 have the lowest mean and median grades for the deposit. Lithology domains 4, 7, 11, and 16 will not be modeled. Lithology domain 62 has a strong structural trend to the grades and will be modeled.

Table 14-7 Wharf resource composite statistics by lithologic domain for Au (opt) (Coeur, 2018)

Domain	Count	Min	Max	Mean	Total	Variance	StDev	CV	Skewness	Kurtosis	GeomMean	25%	Median	75%
ALL	156357	0	3	0.014	2126	0.00	0.032	2.35	17.24	822.7	0.006	0.003	0.005	0.014
1	19652	0	1.509	0.017	342.3	0.00	0.045	2.59	9.01	160.7	0.006	0.003	0.003	0.012
2	6801	0	1.83	0.029	197.3	0.01	0.072	2.5	8.36	126.9	0.008	0.003	0.006	0.024
4	17976	0	0.906	0.006	109.9	0.00	0.018	2.94	14.4	438.9	0.003	0.002	0.003	0.003
7	7809	0	0.285	0.005	36.5	0.00	0.01	2.11	10.42	178.4	0.003	0.002	0.003	0.003
11	5955	0.001	3	0.011	63.55	0.00	0.045	4.21	51.94	3334	0.005	0.003	0.003	0.011
16	1073	0	0.095	0.004	3.804	0.00	0.006	1.82	8.37	89.01	0.002	0.003	0.003	0.003
31	16122	0	1.478	0.016	250.5	0.00	0.035	2.28	11.37	305.8	0.005	0.003	0.003	0.014
32	3124	0	0.555	0.012	37.64	0.00	0.031	2.58	7.64	81.52	0.004	0.002	0.003	0.009
33	1077	0	0.751	0.016	17.73	0.00	0.04	2.43	10.5	153	0.007	0.003	0.006	0.016
61	57034	0	1.27	0.013	739.9	0.00	0.019	1.48	16.4	670	0.008	0.003	0.008	0.016
62	12308	0	0.332	0.009	110.3	0.00	0.016	1.82	5.99	57.2	0.004	0.003	0.003	0.009
101	1663	0	0.414	0.029	47.73	0.00	0.04	1.4	3.37	17.08	0.013	0.005	0.015	0.036
102	5763	0.002	0.805	0.029	169.2	0.00	0.037	1.27	5.01	54.42	0.016	0.007	0.019	0.038

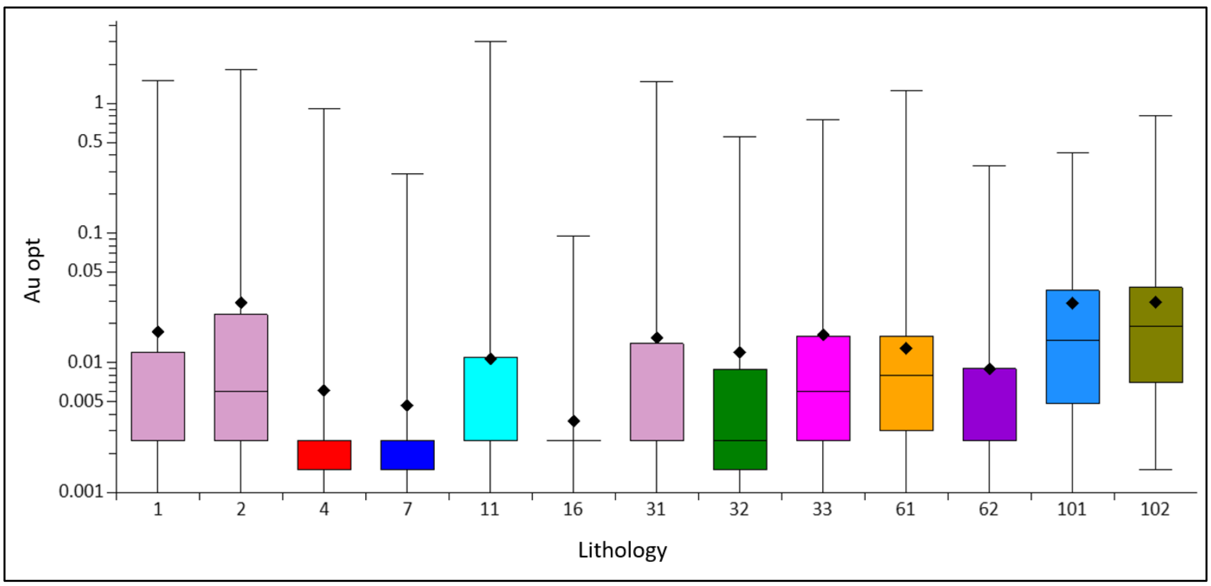


Figure 14-6 Box and whisker plot of Au composites by lithology (Coeur 2018)

14.8 Indicator Parameterization

To reduce smearing of structurally controlled high-grade mineralization (HG), an indicator was applied to the 2017 resource model. In 2015 the influence of HG was controlled using a multi-pass model that applied a restrictive search based on grade ranges.

The four lithologic units thought to contain the most structurally controlled mineralization are units: 62, and the combined units of 1, 2, and 31. From the log probability plots of the combined units 1, 2, and 31, shown in Figure 14-7, these domains exhibit a bimodal distribution (mixed populations). It is not possible to physically model the HG structural zones, so an indicator method was chosen. An indicator threshold of 0.08 was chosen for combined units 1, 2, and 31 while an indicator threshold of 0.03 was used for unit 62.

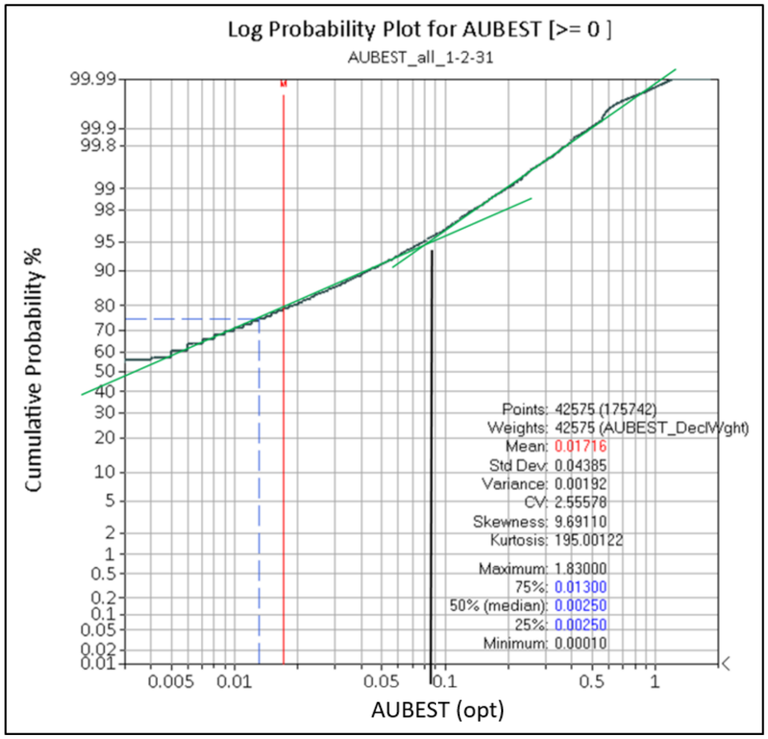


Figure 14-7 Log probability plot illustrating mixed sample populations in combined lithology units 1-2-31 (Coeur, 2018)

Indicator variograms were run on the low-grade (LG) portion of the distribution and on the high-grade (HG). Final search ellipsoids for low-grade were approximately equal to the range at 95% of the sill and for the high-grade the range at 100% of the sill. HG samples were used to estimate a HG Au variable in every block where the sample selection criteria was met using the HG search ellipsoid. A similar estimation was done for the LG into a LG Au variable using the estimation parameters. To determine the proportion of HG and LG to combine into the final Au grade, an indicator estimate was made so that each block has a percent variable of the amount (number of close by samples) of HG. The final estimate is created by combining the proportion of HG multiplied by the HG estimate (if one exists) with the remaining proportion and grade of the LG.

14.9 Variography

In 2017, back-transformed, normal scores (gaussian) variography was completed using Snowden Supervisor® (Supervisor®) software for each of the 10 domains identified in Table 14-5. Usually, the down-hole variogram was used to determine the nugget, but in several cases the downhole variogram was of poor quality and the minor direction variogram was used. Once the variograms were modeled in all three directions, the model was back-transformed and exported using the Gemcom ADA (azimuth-dip-azimuth) format. Figure 14-8 displays an example of the modeled directional variogram and Figure 14-9 shows an ellipsoid plot in plan view with composite Au assay results displayed.

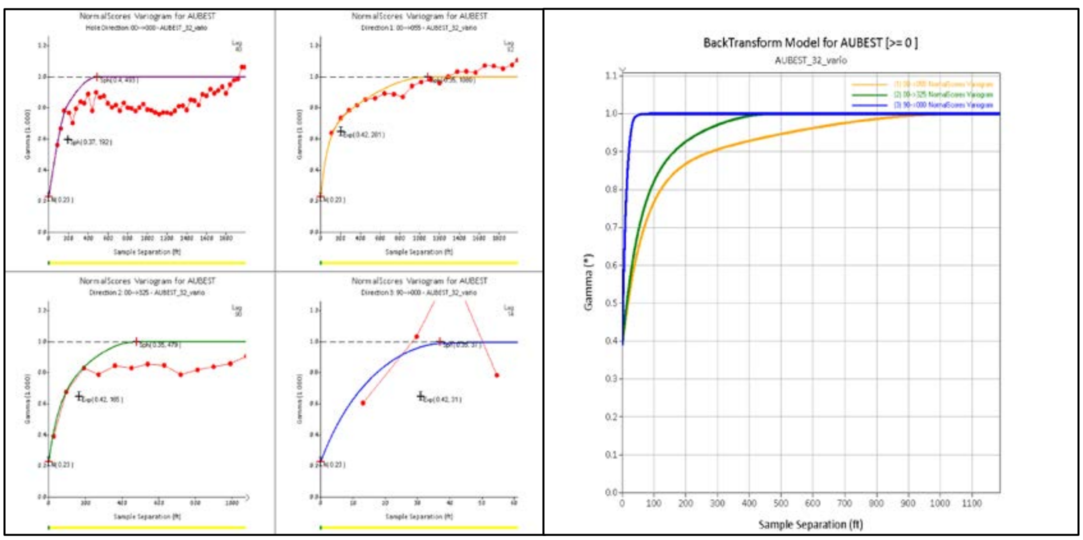


Figure 14-8 Example of directional variograms with model (Coeur, 2018)

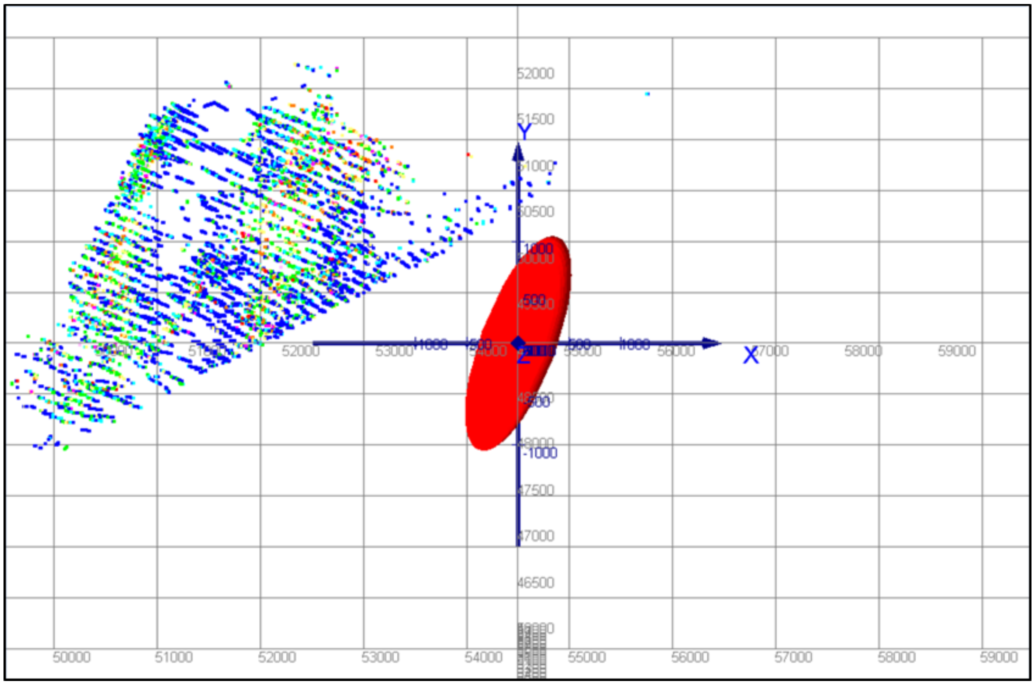


Figure 14-9 Example of variogram ellipsoid with composite Au assays (Coeur, 2018)

For three of the domains, an indicator estimation technique was used. For these domains, indicator variograms were created for the high-grade portion of the data and for the low-grade portion. Those domains will have three variograms for each of the three domains; a high-grade, low-grade, and indicator variogram.

The variogram parameters for each domain are found in Table 14-8. The search orientation and range, along with the estimation parameters by domain, are found in Table 14-9.

Table 14-8 Variogram parameters by domain (Coeur, 2018)

Domain	Axis	Rotation (degrees) (GEMS)		Nugget	Model 1	Sill 1	Range 1 (ft)	Model 2	Sill 2	Range 2 (ft)	Model 3	Sill 3	Range 3 (ft)
	Major	Az	55				201			1080			
32	Semi-major	Dip	0	0.39	EXP	0.46	165	SPH	0.15	479			
	Minor	Az	325				31			37			
	Major	Az	0				122			798			
33	Semi-major	Dip	0	0.44	EXP	0.30	132	SPH	0.26	599			
	Minor	Az	270				32			50			
	Major	Az	70				174			342			
101	Semi-major	Dip	0	0.19	EXP	0.57	61	SPH	0.24	243			
	Minor	Az	340				41			67			
	Major	Az	40.019				148			1158			
102	Semi-major	Dip	4.981	0.29	EXP	0.51	238	EXP	0.20	1009			
	Minor	Az	309.981				81			114			
	Major	Az	29.981				52			355			1200
1061	Semi-major	Dip	-0.435	0.27	EXP	0.53	55	EXP	0.08	392	SPH	0.12	708
	Minor	Az	300.019				67			263			279
	Major	Az	20				88			789			1308
2061	Semi-major	Dip	0	0.33	EXP	0.35	111	SPH	0.19	874	SPH	0.13	1048
	Minor	Az	290				98			103			111
	Major	Az	20				107			135			
62 HG	Semi-major	Dip	0	0.33	SPH	0.29	36	SPH	0.38	66			
	Minor	Az	290				30			46			
62 LG	Major	Az	30				73			106			518
	Semi-major	Dip	0	0.22	EXP	0.30	28	SPH	0.24	66	SPH	0.24	412
62 IND	Minor	Az	300				33			127			218
	Major	Az	300				20			41			
1:1-2-31 HG	Semi-major	Dip	-10	0.27	EXP	0.24	110	SPH	0.49	125			
	Minor	Az	210				16			42			
1:1-2-31 LG	Major	Az	20.019				46			1112			
	Semi-major	Dip	-0.435	0.20	EXP	0.47	49	SPH	0.33	372			
1:1-2-31 IND	Minor	Az	289.981				94			202			
	Major	Az	320				23			54			
2:1-2-31 HG	Semi-major	Dip	0	0.25	EXP	0.46	46	SPH	0.29	101			
	Minor	Az	230				13			55			
2:1-2-31 LG	Major	Az	40.019				21			397			
	Semi-major	Dip	0.435	0.31	EXP	0.47	16	SPH	0.22	212			
2:1-2-31 IND	Minor	Az	309.981				72			132			
	Major	Az	160				121			140			
3:1-2-31 HG	Semi-major	Dip	0	0.33	EXP	0.28	69	SPH	0.39	81			
	Minor	Az	70				18			85			
3:1-2-31 LG	Major	Az	64.619				126			250			
	Semi-major	Dip	-8.649	0.31	EXP	0.25	127	SPH	0.44	379			
3:1-2-31 IND	Minor	Az	335.378				24			50			

Table 14-9 Search ellipse and estimation parameters by domain (Coeur, 2018)

Domain	Major Dist (ft)	Semi Dist (ft)	Minor Dist (ft)	Min Comps	Max Comps	Max/Hole	Octant	Min Octants	Max Cmp/Octant
32	275	150	30	4	10	2	Y	5	3
33	350	250	30	4	10	2	Y	5	3
101	225	150	45	4	10	2	Y	5	3
102	400	350	75	4	10	2	Y	5	3
1061	220	180	80	4	10	2	Y	5	3
2061	500	500	75	4	10	2	Y	5	3
62 HG	200	100	70	2	15	2	N	n/a	n/a
62 LG	520	410	220	2	15	2	Y	5	3
62 Ind	520	410	220	2	15	2	Y	5	3
1:1-2-31 HG	125	40	40	2	15	2	N	n/a	n/a
1:1-2-31 LG	550	200	100	2	15	2	Y	5	3
1:1-2-31 Ind	550	200	100	2	15	2	Y	5	3
2:1-2-31 HG	150	82.5	82.5	2	15	2	N	n/a	n/a
2:1-2-31 LG	300	200	90	2	15	2	Y	5	3
2:1-2-31 Ind	300	200	90	2	15	2	Y	5	3
3:1-2-31 HG	140	80	80	2	15	2	N	n/a	n/a
3:1-2-31 LG	225	150	30	2	15	2	Y	5	3
3:1-2-31 Ind	225	150	30	2	15	2	Y	5	3

14.9.1 Block Model Interpolation

Ordinary Kriging (OK) interpolation was chosen to estimate all lithology units. A single-pass estimation into both HG and LG Au variables was completed on unit 62 and on combined units 1-2-31. Additional models were created for validation including nearest neighbor (NN), average mean grade, and inverse distance power of 2 (ID2). The single-pass estimation in 2017 is different than 2015 where multiple passes (up to four) were completed to inform blocks. Interpolation is restricted by the boundary conditions set in Section 14.6.

Multiple interpolation runs were completed and compared back to the composite statistics, 2015 block model, NN interpolation and ID2 interpolation. Search parameters were altered in iterations to more closely match the composite mean grade when the OK model was thought to predict too high or too low.

14.9.2 Block Model Validation

Validation of the block model was done using several methodologies.

- Visual validation was performed where the OK block grades were compared directly to the 10-foot composite grades.
- Checks for global bias were made by comparing grade-tonnage curves for the OK, ID2, and the NN grades to one another at a 0.00 Au (opt) cutoff grade.
- Local bias comparison was completed by examining swath plots for the block estimates along with the declustered composites.
- Several of the domains were used for a cursory change of support (COS) review to check on the smoothing amount of the OK estimate when compared to the theoretical grade distribution.
- Swath plots and histograms were examined that compare the OK estimate from the current model to a blasthole (BH) model and the previous 2015 OK estimate in common blocks.

The following observations/conclusions were made:

- Globally, there is no difference between declustered BH and RC assay results;
- Some of the domains have fewer pairings between BH and RC, so conclusions drawn from those domains have less influence;
- In general, Domains 1-2-31, 61, and 62 are slightly positive (BH grades > RC grades);
- Domains 32 and 33 are more strongly positive (BH grades > RC grades); and
- Domains 101 and 102 are negative (BH grades < RC grades).

Cross sections were used to visually validate the dataset as shown in the example Figure 14-10. Smoothing of the localized low-grade and high-grade composites can be seen when compared to the estimated block model. Drill results from 2015-2016 campaigns is also shown to expand the first run Whittle pit area.

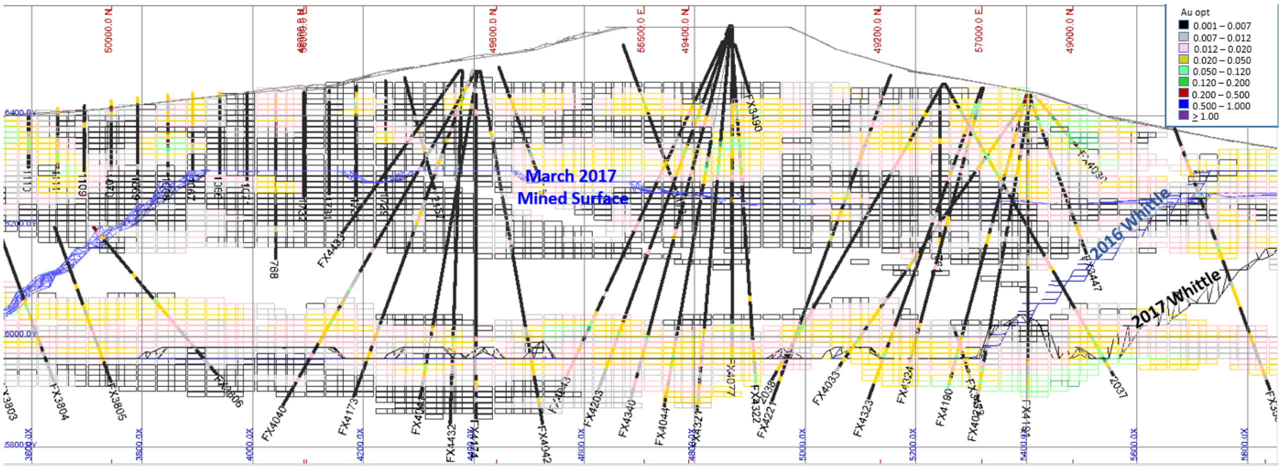


Figure 14-10 Cross section 35PER. 25-foot thick section cut perpendicular to main structural direction, looking northeast (Coeur, 2018)

Comparison of grade – tonnage curves were completed to check for global bias were made by comparing grade-tonnage curves to the OK, ID2, and the NN grades to one another at a 0.000 Au (opt) cutoff grade. As seen in Figure 14-11, the grades are nearly identical at a cutoff of 0.000 Au (opt) which indicates that there is no problem with bias. As is typical, the OK estimate is the smoothest and the NN is the most selective.

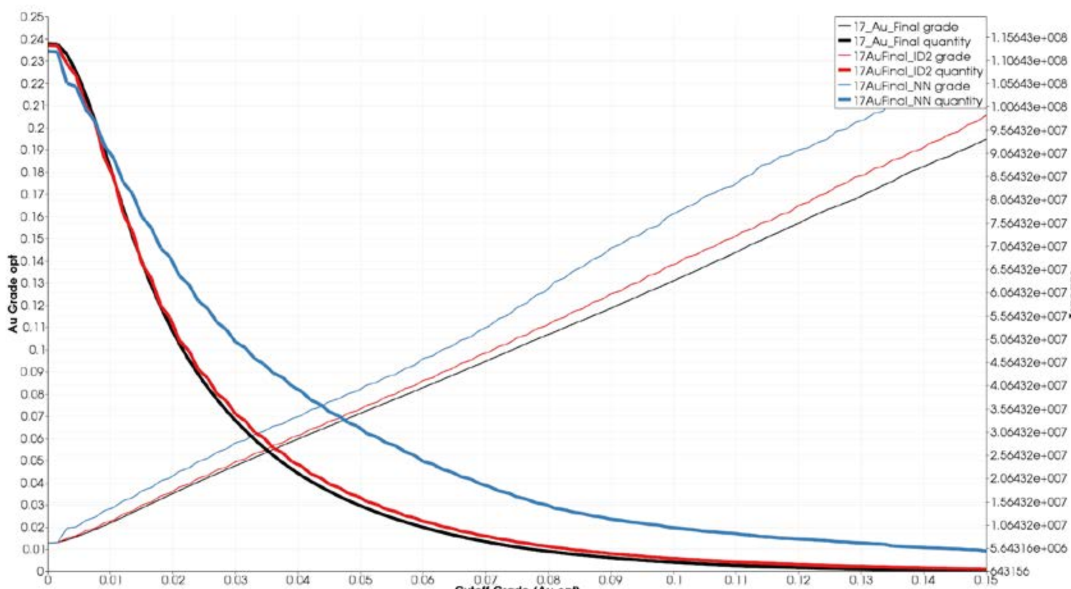


Figure 14-11 Grade-tonnage curve, all domains, all blocks (Coeur, 2018)

Local bias comparison was completed using swath plots for the block estimates (OK-NN-ID2) along with a plot of the de-clustered composites and the 2015 OK model. All blocks from all domains, as well as each domain separately, were compared to de-clustered composites. Figure 14-12 shows an example of the comparison of all blocks from all domains along Easting swaths. The plot showing all blocks, all domains indicates that there is little to no local bias in the model when viewed with all domains.

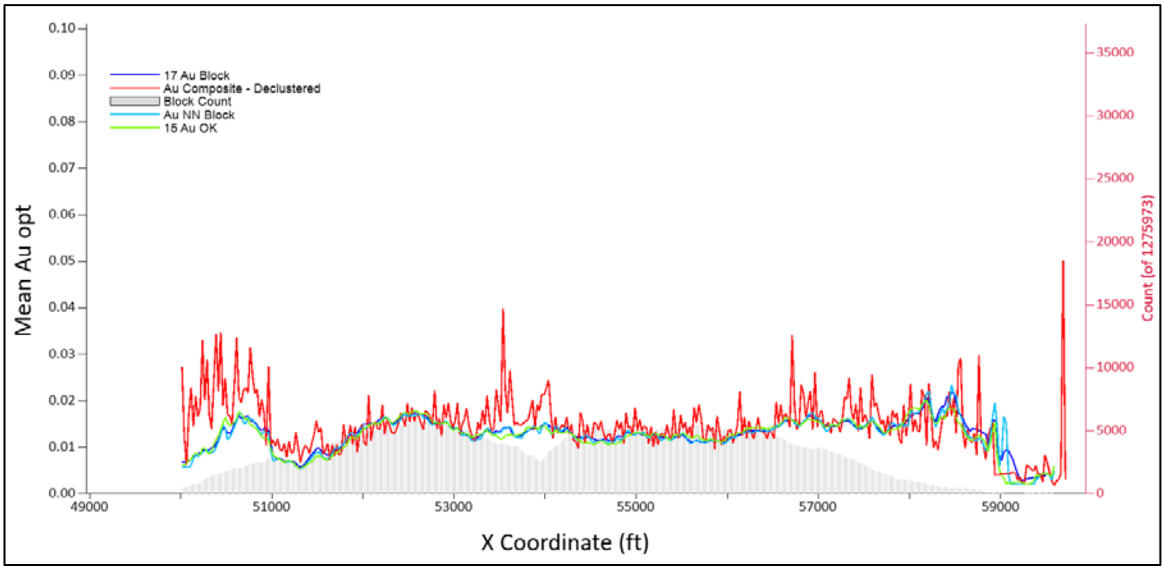


Figure 14-12 Easting swath plot for all domains, all blocks (Coeur, 2018)

14.9.3 Resource Classification Criteria

In 2017, the resource model was classified in a similar manner to the 2015 model by use of the variogram parameters, bench reconciliations, and restrictions on the number of composites and drill holes for the interpolation. The definitions of Measured, Indicated, and Inferred used to classify the resource are in accordance with CIM Definition Standards (CIM, 2014).

Variograms for each domain using exploration data were generated and plotted. The search ranges for each domain at 70% of the sill, 80%, 90%, and 95% were compiled. Like domains (e.g. the three different trachyte domains) were combined where possible and a single average distance for the domain was created. For unique domains, a single range was determined by averaging the major and semi-major axis. As a starting point, Measured used a range at 70% of the sill, Indicated used a range at 80% of the sill, and Inferred used a range at 95% of the sill. With several iterations and analysis, these ranges were adjusted as needed. Each block was then queried for distance to the closest composite, number of composites used in the estimate, and number of holes used in the estimate and a class was assigned.

Variograms for blastholes were also generated and plotted as a way of confirming the exploration data. In general, the maximum range of the blastholes were reasonably close to the ranges from exploration variograms, but the range from blastholes at 70% and 80% of the sill were shorter. When selecting the classification range, this information was considered.

Table 14-10 displays the final domain, distance, composites required, and number of drill holes required for classes Measured and Indicated.

Table 14-10 Final classification parameters by domain (Coeur, 2018)

	Class								
Domain	**Measured**			**Indicated**			**Inferred**		
	Distance (feet)	**# Comps**	**# Holes**	**Distance (feet)**	**# Comps**	**# Holes**	**Distance (feet)**	**# Comps**	**# Holes**
32	65	6	3	125	4	2	480	2	2
33	60	6	3	100	4	2	350	2	2
62	30	6	3	75	4	2	380	2	2
101	70	6	3	125	4	2	240	2	2
102	70	6	3	125	4	2	400	2	2
1061	60	6	3	110	4	2	225	2	2
2061	60	6	3	110	4	2	225	2	2
11231	70	6	3	125	4	2	370	2	2
21231	70	6	3	125	4	2	210	2	2
31231	70	6	3	125	4	2	250	2	2

After the classification script was completed and applied to the 2017 model, the blocks were reviewed in cross section along with the drill hole data. The results showed relic stripes and “spotted dog” patterns in places, so a smoothing routine (dilate-erode) was run on the block model. The intent of the smoothing routine was to remove the striped and spotted patterns in the block model without changing the total percent of blocks within the class categories. The dilate-erode program used a search distance of 50 × 50 × 20 feet in the XYZ directions and the category order is 2, 1, then 3 (Indicated, Measured, then Inferred). Figure 14-13 shows the 6250 bench prior to smoothing and Figure 14-14 displays the bench post smoothing.

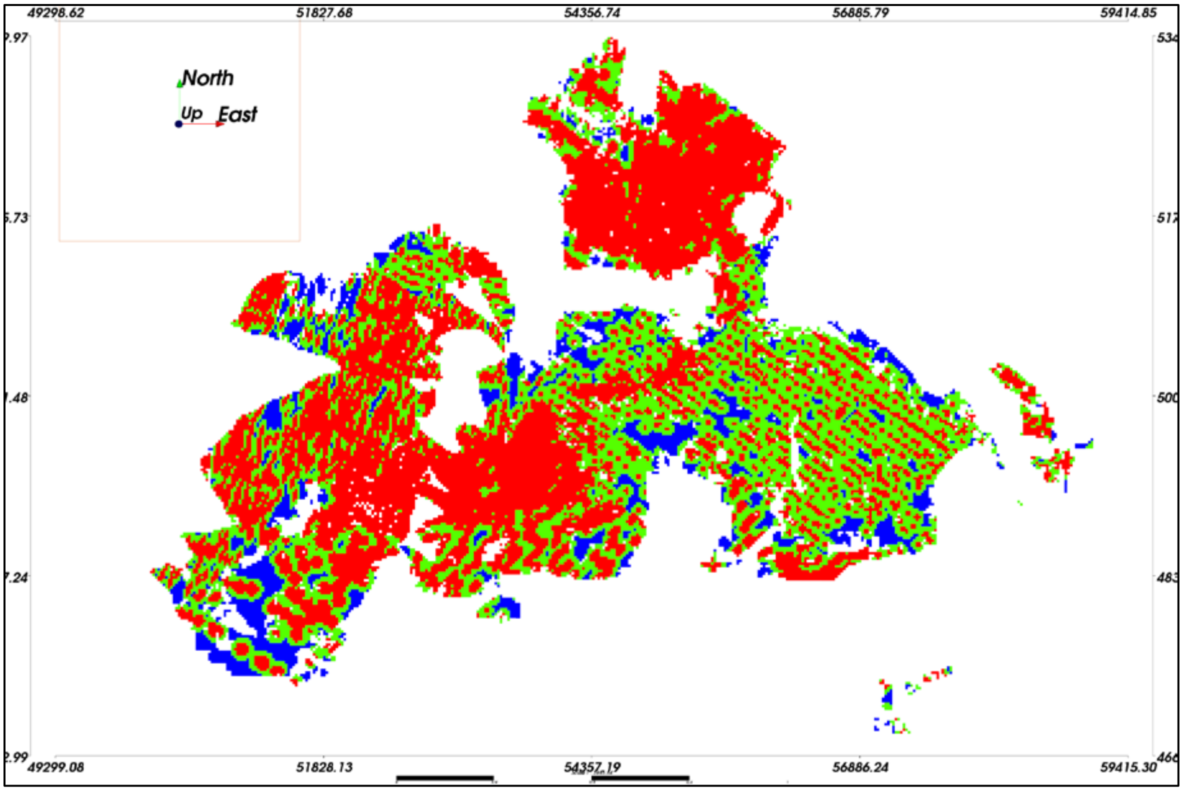


Figure 14-13 6250 bench classification prior to smoothing (Coeur, 2018)

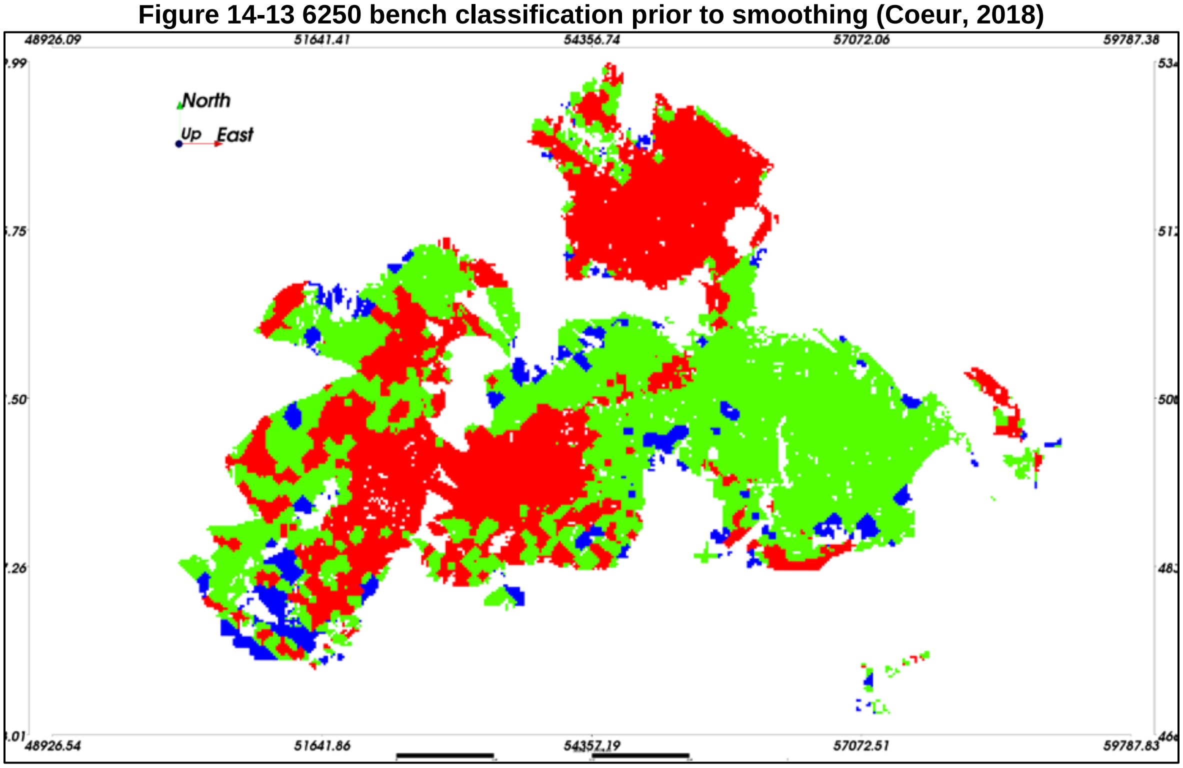


Figure 14-14 6250 bench post-smoothing (Coeur, 2018)

14.9.4 Underground and Lowest Mined Out Surfaces

In 2017 the stope model created in 2015 was re-evaluated. It was decided that some workings were placed in the incorrect lithologic unit, particularly the Interbedded Deadwood Formation shale (4) and that stopes had been over-projected vertically with some stopes in excess of 200 feet. The most significant stope heights encountered during daily mining and in exploration drilling have been ≤30 feet. The underground workings model was re-aligned to the new geologic interpretation and extended to include stope intercepts where voids had been encountered during drilling.

Updates to the stope model were made based on the following:

- Historic hardcopy maps were found in 2017 at the Homestake Adams Research Center (HARC) in Deadwood, SD.
  - The new areas added in 2017 include Foley 3, Clinton, and Mogul stopes.
- Recent claim surveying and mapping efforts. A new claim boundary map involving ground surveys of claims markers was provided to Wharf in 2017 and shows changes that are in some places significant from previous maps; differences in corner locations up to 193 feet were observed, with most between 100-200 feet. The new claim boundaries were used in conjunction with historic location files to further adjust underground workings in 2D space.

Figure 14-15 is an example cross section of the changes to the underground workings and stopes that were made. The green shapes in Figure 14-15 show the new void model whereas the original 2015 model is shown in red outlines.

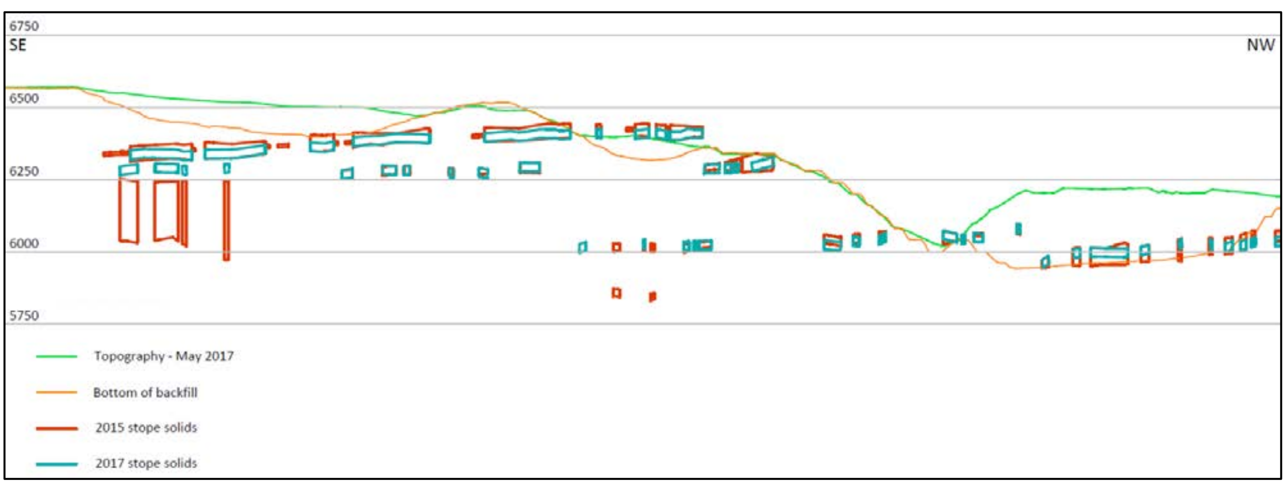


Figure 14-15 Change in underground workings design. 2017 shapes shown in green, 2015 shapes shown in red (Coeur, 2018)

Overall changes to the void model in 2017 are a volumetric decrease of 30% of the void space compared to the 2015 void model. The preceding estimate of change is for all workings including those that have been mined out in open pit operations.

As of 2017 utilizing a $1,250 Whittle shell and end of April 2017 topographic surface, the total change in tons for underground working void space within the Reserve area was a net decrease of 1.6 million tons.

14.10 Reasonable Prospects of Eventual Economic Expansion

Classified blocks for all mineralization amenable to open pit mining methods were assessed for reasonable prospects of eventual economic extraction, by applying open pit mining costs. Costs, together with a Corporate resource metal price guidance of $1,400/oz gold, were applied to a Whittle™ pit optimization, which also considers recoveries, pit slope, current processing, and operating costs. These factors are shown in Table 14-11.

The cut-off for reporting Mineral Resources was calculated based on gold price, associated metallurgical process recoveries and costs, and selling costs outlined in Section 21 of this report. Costs and factors used in the cutoff formula are provided in Section 15 of this report, except for the gold price provided in this subsection.

$$\frac{\text{Cost/ton Ore mined} + \text{Cost/ton Crushing} + \text{Cost/ton Process} + \text{Cost/ton G\&A}}{[\text{Gold Price (\$/oz)} - \text{Refining Cost (\$/oz)}] \times \text{Gold Recovery (\%)}}$$

Table 14-11 Costs and factors used in Whittle™ pit optimization (Coeur, 2018)

Mining Cost		Process Cost	
Drilling	$0.16		
Blasting	$0.23	Crushing	$1.76
Dozing	$0.12	Pad Load	$0.62
*Hauling(Waste)	$0.57	Unload	$0.94
Loading	$0.28	Process	$2.62
Roads & Yards	$0.10	G&A	$2.56
General Mining	$0.21		
Total Mining	$1.66	Wharf Total Process	$8.51
Rehandle Cost	$1.25		
Cutoff Grade (oz/ton Au)	0.012		
Selling Price (Au/oz)	$1,400		
Burden			
Severance and Royalty (Au/oz)	$78		
Pit Slopes by rock type			
Deadwood Fm.	45°		
Porphyry	50°		
Fill	34°		

14.11 Restrictions Applied to Economic Assessment

Several engineering restrictions were included in the generation of the reserve and resource Whittle™ pit. For comparison, unconstrained pits are generated to evaluate large areas not currently in the mine plan, but the cost associated with removing or managing the current restrictions and limitations to the reserve and resource pit are not incorporated.

Horizontally, the mine permit disturbance boundary was used to limit the pit, and has minor influence on the southwestern pit boundary. Additionally, past denitrification pads were used as a boundary. Although material and infrastructure could be moved, there is limited storage capacity on site for spent denitrified ore, and with the current space being reserved for pad unload material, no current locations for transfer of this material are available.

Vertically, the reserve pit was allowed to incorporate a minimum pit bottom of 5,960 feet in elevation, and the resource pit 5,920 feet. These limitations are due to the water that has been encountered at depths below 5,980 feet while mining, and the limited ability to pump water, which has decreased with time and pit area mined. With more material mined out and backfilled area created, a greater amount of free-flowing water fills in pits at this depth, and potential discharge areas for pumping rapidly recharge the backfilled pits and flow into the adjacent open pits again. Though ore is modeled below this depth, significant changes in mining practices would be required to excavate this ore.

14.12 Wharf Mineral Resource Statement

The Mineral Resource estimate is summarized in Table 14-12. The Mineral Resource estimate considers geological, mining, processing, and economic constraints and is classified in accordance with 2014 CIM Definition Standards for Mineral Resources and Mineral Reserves. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

Table 14-12 Mineral Resources, exclusive of Mineral Reserves, and amenable to open pit mining – Wharf Mine, effective December 31, 2017 (Coeur 2018)

Classification	Tons	Average Au grade (opt)	Contained Ounces Au
Measured	2,150,000	0.025	54,500
Indicated	5,550,000	0.022	122,000
Measured + Indicated	**7,700,000**	**0.023**	**176,500**
Inferred	1,050,000	0.025	26,700

1. Mineral Resources effective December 31, 2017.
2. Qualified Persons for Mineral Resources are Kelly Lippoth and Scott Jimmerson.
3. Mineral Resources are reported exclusive of Mineral Reserves.
4. Mineral Resources do not have demonstrated economic viability.
5. Inferred Mineral Resources are considered too speculative geologically to have the economic considerations applied to them that would enable them to be considered for estimation of Mineral Reserves, and there is no certainty that the Inferred Mineral Resources will be realized.
6. Metal price used was $1,400/oz gold for Wharf.
7. Resources are exclusive of Precambrian lithologies.
8. Rounding of tons, average grades, and contained ounces may result in apparent discrepancies with total rounded tons, average grades, and total contained ounces.
9. Resource estimate limited to material above 5920-foot elevation.

14.13 Factors that May Affect the Mineral Resource Estimate

Factors that may affect the conceptual pit shells and geologic models, and therefore, the Mineral Resource estimate include:

- Metal price assumptions and other factors used in generating the Whittle™ pit shells that constrain the open pit estimates;
- Additional drilling, which may change confidence in resource classification in the pit margins from those assumed in the current Whittle™ pit optimization;
- Additional sampling that may redefine the sulfide model interpolation and/or change the projected metallurgical recovery in certain areas of the resource estimation; and

- Additional density analysis on remaining material in the resource area.

14.14 Qualified Person Statement

The QPs have reviewed the data and assumptions used to calculate the Mineral Resource estimate. The QPs believe that the data presented by Wharf are an accurate and reasonable representation of the mineral Project and adequately support the Mineral Resources reported herein.

15. MINERAL RESERVE ESTIMATES

15.1 Reserve Estimates

The Wharf mining area contains the Green Mountain and Portland Ridgeline pits. Pits at the Wharf mining area are all part the same deposit, and represent distinct mining phases

The site was evaluated using economic pit shells generated using Whittle™. Appropriate cost and mining schedules were applied using cost estimates forecast for the life of mine. A gold price of $1,250 was used for the economic shells. Economic and design inputs used to generate the pit shells are shown in Table 15-1. Mineral Reserves are calculated using GEMS mine planning software. Reserves are reported between the detailed pit design and the December 31, 2017 topographic surface. Only blocks classified as measured and Indicated are included in the reserves. Measured and Indicated mineral resources within the economic pits having a cutoff above 0.012 opt Au are considered reserves.

Table 15-1 Economic and design inputs for Whittle™ economic shell (Coeur, 2018)

Mining Cost		Process Cost	
Drilling	$0.16		
Blasting	$0.23	Crushing	$1.76
Dozing	$0.12	Pad Load	$0.62
*Hauling(Waste)	$0.57	Unload	$0.94
Loading	$0.28	Process	$2.62
Roads & Yards	$0.10	G&A	$2.56
General Mining	$0.21		
Total Mining	$1.66	Wharf Total Process	$8.51
Rehandle Cost	$1.25		
Cutoff Grade (oz/ton Au)	0.012		
Selling Price (Au/oz)	$1,250		
Burden			
Severance and Royalty (Au/oz)	$96.00		
Pit Slopes by rock type			
Deadwood Fm.	45°		
Porphyry	50°		
Fill	34°		

15.2 Mineral Reserves Statement

Table 15-2 Proven and probable Mineral Reserves - Wharf Mine, effective December 31, 2017 (Coeur, 2018)

Classification	Deposit	Tons	Average Au grade (opt)	Contained ounces Au
Proven	Stockpile	275,000	0.014	3,900
Proven	Green Mtn./Portland	17,855,000	0.027	479,300
	Total Proven	**18,130,000**	**0.027**	**483,200**
Probable	Green Mtn./Portland	16,570,000	0.023	386,000
	Total Probable	**16,570,000**	**0.023**	**386,000**
Proven + Probable	Green Mtn./Portland	34,700,000	0.025	869,200
	Total Proven + Probable	**34,700,000**	**0.025**	**869,200**

1. Mineral Reserves effective December 31, 2017.
2. Qualified Person for Mineral Reserves is Tony Auld.
3. Metal price used was $1,250 per Au oz.
4. Rounding of tons, average grades, and contained ounces may result in apparent discrepancies with total rounded tons, average grades, and total contained ounces.

The QP is not aware of any other mining, metallurgical, infrastructure, or permitting factors that could materially impact the Mineral Reserve estimates, other than stated herein.

15.2.1 Throughput Rate and Supporting Assumptions

Mining rates are predominantly dictated by the crusher throughput. Average annual throughput of 4.5MT from the crusher is expected. Throughput rates have been established and proven over the more than 30 years of operational history at the site.

15.2.2 Geotechnical Considerations

In practice, due to drilling and highwall safety procedures, and the few areas where the porphyry is continuous enough to triple bench, the standard highwall angle for porphyry is 50 degrees. The safe angle for the Deadwood Formation is 45 degrees.

15.2.3 Hydrogeological Considerations

Water infiltration near the 5,960-foot elevation, has made drill and blast activities below this horizon extremely difficult. Previous mining has advanced benches to the 5,920-foot bench, but currently, no material below the 5,960-foot elevation is included in the reserve at the Wharf Operation.

15.2.4 Dilution and Mine Losses

There was 100% mining recovery and no dilution was applied.

15.2.5 Cutoff Grades

A cutoff grade of 0.012 opt Au was used to determine the material that is economically viable to crush. This is a higher cutoff grade than the calculated break-even grade. Economic and sustaining capital considerations are factors in using a break-even cutoff grade above the economic cutoff. Economic parameters used for the cutoff grade are shown in Table 15.1.

$$\frac{\text{Cost/ton Total Mining + Cost/ton Total Process}}{[\text{Gold Price (\$/oz) - Severance Cost (\$/oz)}] \times \text{Gold Recovery (\%)}}$$

15.2.6 Surface Topography

The December 2017 month-end surface was used as the starting surface.

15.2.7 Density and Moisture

A density value is assigned to each block according to rock type. Densities used for given rock types have been determined through laboratory testing and verified with experience, using truck factors and scale readings. In 2007, a total of 75 samples were tested in-house to verify the density of the major rock types. In 2013-2014, additional testing was conducted to distinguish the waste phonolite from other porphyry, to better reconcile waste tonnages. The results are provided in Table 15-3.

Table 15-3 Density testing by rock type (Coeur, 2018)

Rock type	# Samples used	Density (tons/ft^3)
Porphyry	25	0.0769
Porphyry - phonolite	10	0.0790
Deadwood Fm. lower contact	25	0.0714
Deadwood Fm. all other	25	0.0714

15.3 Reconciliation

Mined to modeled reconciliations over the last 20-year period have shown the resource model to under-estimate tons, and slightly over-estimate grade. This reconciliation is done by comparing the digitized ore control polygons using blastholes to the comparable benches from the exploration model. Overall, the model has under reported ounces by 9.5% during this time. The resource model performed very well during the years 1996 to 2009, with a positive reconciliation within 2.5%; however, recent performance (from 2010 to 2014) has shown a nearly 50% positive reconciliation while mining in the American Eagle and Deep Portland Pits. The modeling parameters were evaluated and changed for 2015. The positive reconciliation was reduced to ~35% for 2015 and 2016 but increased again in 2017 to an average of ~95%.

Table 15-4 Reconciliation between Mineral Reserve and grade control (1996-2017) (Coeur, 2018)

Year	Exploration Model			Grade Control Model			Variance From Exploration
	Tons	Grade	Contained Au	Tons	Grade	Contained Au	
	000's	(oz/ton)	(troy oz)	000's	(oz/ton)	(troy oz)	(%)
1996	3,916	0.028	108,840	4,337	0.029	125,590	15.4%
1997	4,955	0.028	139,770	4,790	0.03	143,600	2.7%
1998	4,653	0.029	134,086	4,096	0.03	120,993	-9.8%
1999	4,269	0.031	133,885	4,176	0.032	134,550	0.5%
2000	4,235	0.034	142,541	4,332	0.033	142,914	0.3%
2001	4,702	0.031	145,331	4,435	0.031	136,237	-6.3%
2002	4,009	0.028	112,814	4,189	0.027	112,361	-0.4%
2003	3,175	0.030	95,910	3,608	0.029	105,766	10.3%
2004	3,023	0.029	86,585	3,163	0.029	85,658	-1.1%
2005	2,715	0.031	83,237	3,092	0.029	90,864	9.2%
2006	2,866	0.030	85,667	3,352	0.028	97,848	14.2%
2007	2,611	0.033	87,283	2,955	0.032	93,432	7.0%
2008	2,658	0.028	75,420	3,417	0.023	83,566	10.8%
2009	2,931	0.025	72,231	3,060	0.023	70,451	-2.5%
2010	2,121	0.022	47,552	3,616	0.021	74,484	56.6%
2011	2,902	0.023	67,664	3,383	0.026	86,277	27.5%
2012	3,092	0.022	69,324	4,380	0.022	95,857	38.3%
2013	1,450	0.018	25,616	2,355	0.019	44,918	75.4%
2014	2,596	0.020	52,674	4,280	0.021	88,515	68.0%
2015	3,155	0.027	86,011	4,263	0.028	119,143	38.5%
2016	3,655	0.034	123,298	4,794	0.034	162,801	32.0%
2017	2,140	0.026	55,361	4,182	0.026	108,030	95.1%
LOM	**71,706**	**0.028**	**2,029,624**	**84,255**	**0.027**	**2,323,855**	**14.5%**

16. MINING METHODS

16.1 Open Pit

Wharf Operation is currently a conventional truck and loader heap leach gold mine. The mine has been in continuous operation since 1983 (see Table 16-1 for operating parameters). The operation is expected to continue at planned capacity through 2024. Wharf Operation consists of five heap leach pads, which are all load/offload pads. The entire planned mining disturbance falls within the current permitted area. The current mining is expected to continue until 2025.

Wharf leases nearly all the earth moving equipment used at the mine. The current earth moving equipment under lease through local equipment dealers includes: (14) 777 trucks, (1) D-10, (4) 993 front end loaders, (2) 16M motor graders, and (2) DM 45 hammer drills. Relationships with local dealers span over 15 years, and the earthmoving equipment is under contract through 2017, with a new contract and larger equipment expected in early 2018. In addition to leased equipment, Wharf owns (1) D-10 Dozer, (4) D-9 Dozers, (2) Water Trucks, (2) CAT MD6290 rotary blasthole drills and (1) Atlas DM45 hammer drill. Wharf also owns numerous pieces of smaller support equipment.

In-situ ore and waste must be blasted prior to removal. Several historic pits that were partially backfilled are being mined again and the backfilled material is considered re-handle and does not require blasting. Waste material removed for access to the ore is taken to one of the rock disposal sites. Rock disposal sites are all designed to fill existing pits and are reclaimed as soon as possible after placement.

Mined ore is either placed in a stockpile or placed directly into the primary crusher ore hopper. Crushed ore is and then conveyed to a final product stockpile. Crushed ore is picked up by loaders and placed in trucks to be dumped in 20-foot lifts on one of the five heap leach pads. The crushing process is described in detail later in this report.

Ore is leached for a specified time and then neutralized and de-nitrified (this process is also described in Section 17). Once the ore has been leached and neutralized, it is considered spent ore. The spent ore is used to backfill pits within defined perimeter of pollution (POP) zones. Within each POP zone, nitrates in the spent ore in specific quantities can be placed. The POP zones are shown in Figure 16-1.

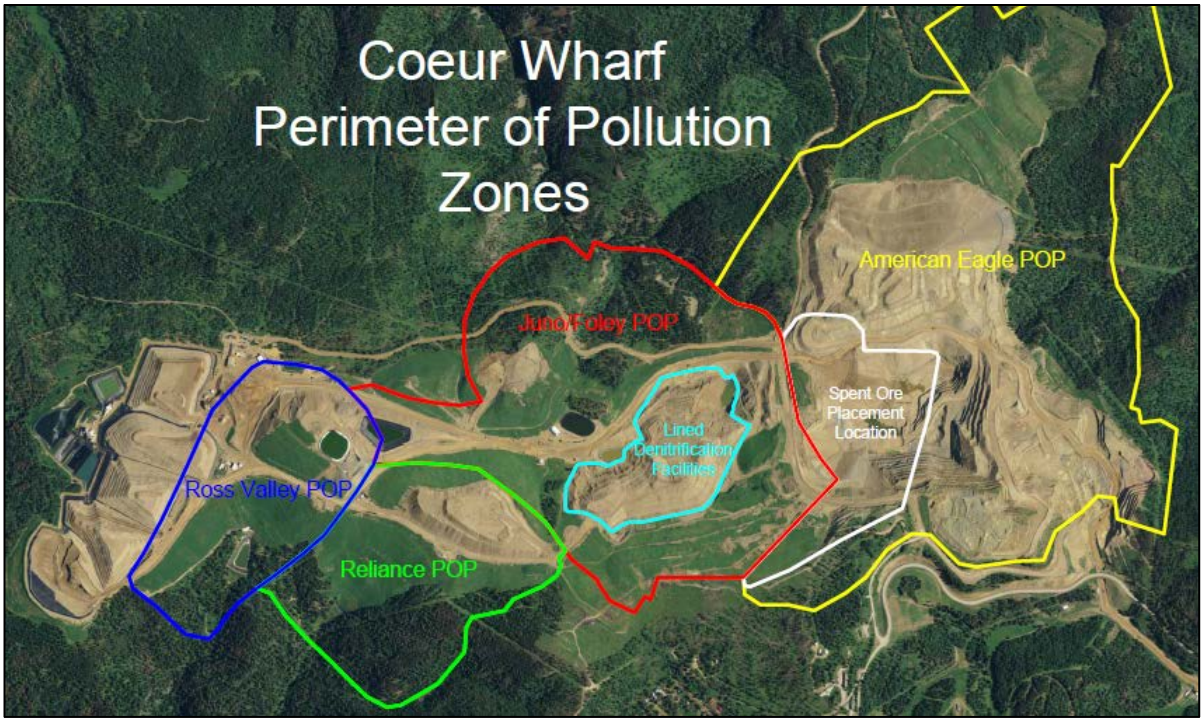


Figure 16-1 Wharf POP boundaries (Coeur, 2018)

Table 16-1 Wharf operating parameters (Coeur, 2018)

<u>Production</u>	
Production rate	60,000 - 90,000 tpd
Crushing rate	10,000 - 20,000 tpd
<u>Equipment</u>	
CAT 993K Front End Loader	4 Units
CAT 777 F Haul Truck	4 Units
CAT 777 G Haul Truck	10 Units
Production Blasthole Drills	3 Units
<u>Schedule</u>	
Operating shifts	2 shifts – 10.5 hrs/shift 14 shifts/wk
Crusher shifts	2 shifts – 10 hrs/shift 13 shifts /wk
Holidays and weather delays	17 days /yr
Scheduled operational delays	1.5 hrs /shift

16.1.1 Pit Design Optimizations

Wharf Mine Area

Pit optimizations were done using the Lerchs-Grossman algorithm using Whittle™ software. Whittle™ software uses the operating and processing costs in conjunction with a range of selling costs for the metal to produce a set of nested pits. Nested pits begin at the lowest metal price and get successively larger as the metal price is increased. If the pits are mined in order, they will generate the maximum value.

The pits are phased by the Wharf Operation engineering staff and consideration is given to mining the highest grade first, while maintaining adequate space for waste advancement in the mined-out portions of the pit. The design criteria are listed in Table 16-2.

Table 16-2 Wharf pit design criteria (Coeur, 2018)

	Deadwood	Porphyry	Fill
Pit Designs			
Bench Height (ft.)	20	20	20
Bench Toe Offset (ft.)	10	7.5	20
Batter Angle (degrees)	63	69	45
Catch Bench (ft.)	20	20	10
Slope (degrees) *-All pit walls are double benched except in the fill areas*	45	49	34
Minimum Mining Width (ft.)	80		
Road Design Width (ft.)	80		
Haul Road Grade (Typical)	10%		
Haul Road Grade (Maximum)	12%		
Leach Pads			
Lift Height (ft.)	20		
Overall Slope	2:1	H:V	
Catch Bench (ft.)	10	per lift	
Maximum Design Height (ft.)	150	above liner	
Cushion Layer (Working Area) (ft.)	10	above liner	

16.1.2 Phase Selection and Design Criteria

Phased laybacks are designed from the nested Whittle™ pit shells for the Wharf mining area. Using appropriate determinations for the annual mining limits based on the estimated crusher production, specific shells are selected as potential laybacks. The Whittle™ operational scenario and schedule graph allows for ore and total material limits to be input, and if the mining limits imposed can be honored, the output will be a series of annual pit shells. After numerous Whittle™ iterations the resulting outputs become the basis of the phase selection used to optimize mining.

Table 16-3 Relative sensitivity using nested Whittle™ shells (Coeur, 2018)

Au Price ($)	Tons (×1000)	Grade Au (opt)	Au ounces (×1000)
$950	20,083	0.0284	578
$1,100	28,346	0.0263	745
$1,250	34,437	0.0252	866
$1,400	36,854	0.0247	910
$1,550	37,843	0.0245	927

16.1.3 Final Design

Final pit is shown in Figure 16-2. The final pit shapes were used to create a life of mine plan using the economic and operational criteria in Table 15-1 and Table 16-1. The results of the economic analysis are shown in Section 22. The annual production from each mining area is shown in Table 16-4.

Figure 16-2 Wharf mining area pits (Coeur, 2018)

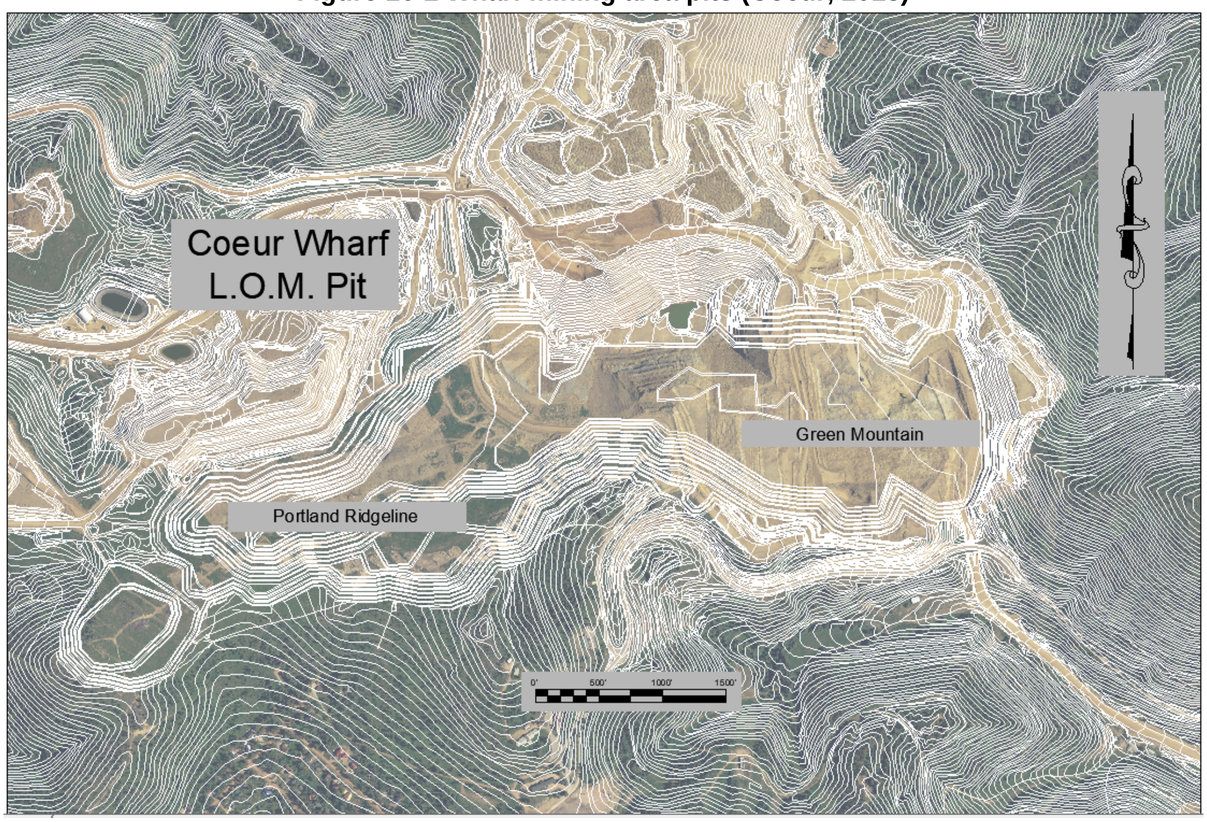


Table 16-4 depicts the estimated annual production schedule based on stated Mineral Reserves. Mineral Resources do not have economic viability until they are converted to Mineral Reserves, thus Mineral Resources are not included in Table 16-4.

Table 16-4 Mine production schedule (Coeur, 2018)

	2018	2019	2020	2021	2022	2023	2024	2025	Total
Mine									
Tons Ore (×1000)	5,336	3,997	4,921	4,972	4,973	5,385	4,124	705	**34,413**
Gold Grade (opt)	0.021	0.024	0.026	0.026	0.026	0.026	0.027	0.033	**0.025**
Mined Gold (×1,000)	110	96	128	129	129	140	110	24	**865**
Tons Rehandle (×1000)	2,940	572	0	0	3,874	4,680	4,367	0	**16,433**
Tons Prestrip (×1000)	0	1,497	3,822	3,874	0	0	0	0	**9,192**
Tons Waste (×1000)	12,683	15,186	12,133	13,277	13,077	12,224	13,845	1,935	**94,360**
Total Material Mined (×1000)	20,959	21,252	20,876	22,122	21,923	22,289	22,336	2,640	**154,398**
Placed Ore									
Tons Ore (×1000)	4,500	4,600	4,700	4,700	4,700	4,700	4,700	2,088	**34,688**
Gold Grade (opt)	0.023	0.022	0.026	0.026	0.026	0.026	0.027	0.022	**0.025**
Placed Gold (×1,000)	102	102	122	124	124	124	126	45	**869**

16.1.4 Pit Sensitivity Analysis

Table 16-3 addresses the nested Whittle™ pit shells. Economic sensitivities are discussed in Section 22.

16.1.5 Geotechnical Considerations

The last geotechnical study was completed in 2007 by Charles Kliche, PhD, P.E. from the South Dakota School of Mines and Technology. This study was a follow up to the original study completed in 1997. The desire was to increase the pit slope angle to 60 degrees in the porphyry rock type. The study concluded that the porphyry is competent enough to support a wall angle of 60 degrees. In practice, due to drilling and highwall safety procedures, and the few areas where the porphyry is continuous enough to triple bench, the standard highwall angle for porphyry is 50 degrees and the safe angle for Deadwood Formation remained at 45 degrees.

17. RECOVERY METHODS

Ore is trucked to the crusher located at the east end of the plant/pad area to be crushed to a nominal size of 80 percent minus ¾-inch passing. The crushing plant can process between 4.2 and 4.6M tons of ore per year, depending on ore hardness. Lime is added to the crushed ore. Once crushed, the ore is trucked to leach pads to be stacked in 20-foot-high lifts.

Stacked ore is then leached with dilute sodium cyanide solution. Gold and silver in the pregnant (metal-bearing) leach solution (PLS) are recovered by adsorption on activated carbon and the barren (non-metal bearing) leach solution is recycled to the heap leach pad. Spent ore is rinsed, neutralized and denitrified and then removed from the leach pad to be placed on a designated spent ore storage area.

Gold and silver is recovered from loaded carbon utilizing a modified pressure Zadra method. The rich electrolyte (RE) from the elution process is then processed by electrowinning, depositing the metals into an electrolytic sludge with 90-98% gold and silver. Precious metals in the electrolytic sludge are further purified by smelting at a commercial refinery.

17.1 Crushing

A single crushing circuit is used to process ore before being transferred to the leach pads. This crushing circuit has undergone numerous modifications over its history to accommodate operational conditions and optimize performance.

Ore is hauled from the pit with CAT 777 and 785 haul trucks that dump directly into a hopper or onto a stockpile adjacent to the hopper. Stockpiled ore is fed into the hopper by a loader at times when a direct ore haul is not available.

Ore is transferred by an apron chain feeder to a vibrating grizzly where oversize rock is diverted in to a Nordberg C140 jaw crusher. The jaw crusher reduces the rock down to a 6-inch nominal size before dropping onto a conveyor belt along with the fines from the grizzly. Powdered lime is added to the ore from a silo as it is conveyed up to the secondary crushing stage. The lime application rate can be adjusted as needed to control solution pH during leaching.

Before being fed into the secondary crusher, the ore passes over a screen deck to remove final product sized material. These fines are conveyed to the final product pile and oversize rock drops into a Nordberg HP 500 cone crusher where it is reduced to 2 ½ inch nominal size. Crushed ore is then conveyed to an adjacent screen plant to remove product size material before being conveyed to the tertiary crushing stage.

Product size rock from the screen plant is conveyed to the final product pile. The system can be set for the ore to bypass the screen plant and be fed directly to the tertiary crushers in the event of a failure or planned maintenance at the screen plant.

The tertiary stage of the crushing system consists of four Nordberg Omnicone 1560 cone crushers. Ore enters the tertiary stage through a diverter that distributes the rock to the four cone crushers. Each cone has its own screen deck to remove product size material before dropping into the crusher. This product size material is conveyed to the final product pile. Rock that is larger than product size falls in the tertiary cones and is crushed down to ¾-inch nominal size. The total crushing system throughput of 750 to 1,000 tons per hour can be achieved with only three of the tertiary cones operating. A fourth cone can be left in standby in the event of a failure or planned maintenance on one of the other cones.

After leaving the tertiary crushers the ore is conveyed back to the screen plant and any material not meeting the final product size is recirculated back into the tertiary cones until it meets specifications. The final product size target is 90 percent passing ¾-inch and 80 percent passing ½-inch.

A detail flow diagram of the entire crushing circuit is shown in Figure 17-1. The maximum system throughput is generally considered to be 1,000 tons per hour, however rock type, moisture content, and weather conditions have a significant impact on actual throughput. Average throughput is approximately 750 tons per hour. The crushing system is operated on 12-hour shifts for 664 shifts per year. Non-operating shifts are used for planned maintenance.

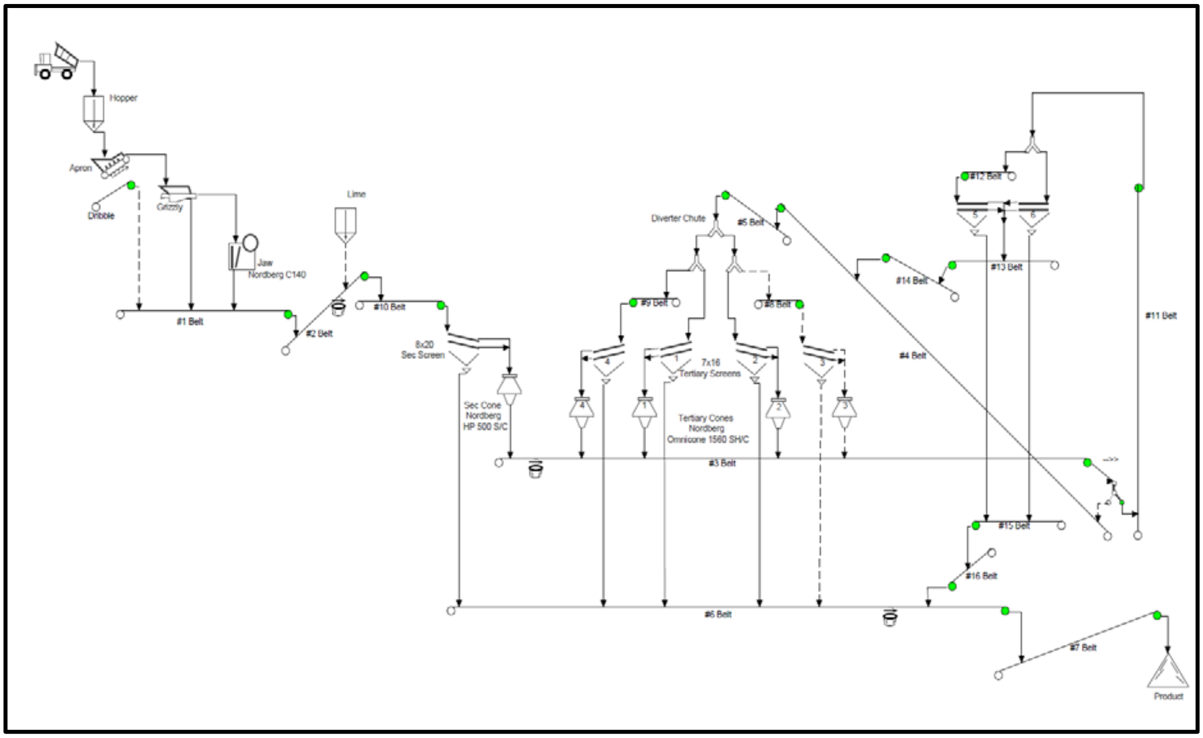


Figure 17-1 Crusher flow diagram (Coeur, 2018)

17.2 Heap Leach

The first reusable heap leach pad process (load/offload) in the United States was permitted at Wharf in 1988. There are currently five on/off heap leach pads used for the leaching cycle; the newest pad (Pad #5) was constructed in 2008. In 2013, Wharf received certification by the International Cyanide Management Institute (ICMI) in recognition of being compliant with the ICMI cyanide code for adhering to the best industry practices for storage, handling, and use of cyanide. ICMI cyanide code re-certification was attained in early 2016.

Each pad is loaded in 20-foot lifts to a maximum of 150 feet above liner. Each lift is wetted with a dilute sodium cyanide solution that is distributed through a series of drip emitters, wobblers, or Rain Bird®-style impact sprays. Drippers are the primary solution distribution method and involve drip lines being placed underneath the pads active ore placement surface to mitigate potential freezing, reduce evaporation and minimize the opportunity for ponding. In the final stages of precious metal recovery from the heap leach, sodium cyanide addition ceases for the rinsing stage. The rinsing stage of leaching recovers the final gold and silver ounces prior to spent ore treatment.

Once the contained gold's full economic recovery from the ore has been achieved, the pad enters the neutralization/denitrification stage. Pad neutralization circuit utilizes hydrogen peroxide to destroy the sodium cyanide in pad effluent to the target levels required for denitrification plant influent. The pad effluent is then processed utilizing CIC carbon columns for metals removal to meet surface water discharge quality. From the CIC carbon columns, the solution is then routed to the denitrification circuit for nitrate destruction. Neutralization continues until CN, pH and metals contents are within required target ranges.

The denitrification system is comprised of (2) biological denitrification plants and a heated pond which acts as a biological reaction cell. The biological denitrification process utilizes bacteria to remove the oxygen from the nitrates and nitrites, chemically reducing them to inert nitrogen gas. Upon completion of nitrate destruction in the solution stream, solution is routed back to the pad through the same piping network, drippers and wobblers that applied the original leach solution. The five-pad system allows for a minimum of one pad to be available for each phase of the processing cycle at any given time. Figure 17-2 shows the rinse flows. The diagram shows pad #5 being neutralized and denitrified.

Denitrification continues until the spent ore meets the criteria for off-loading, the state and Coeur both sample the solutions and verify those results through third party analysis. When the spent ore is approved for removal from the pad, the spent ore is trucked to a spent ore storage area.

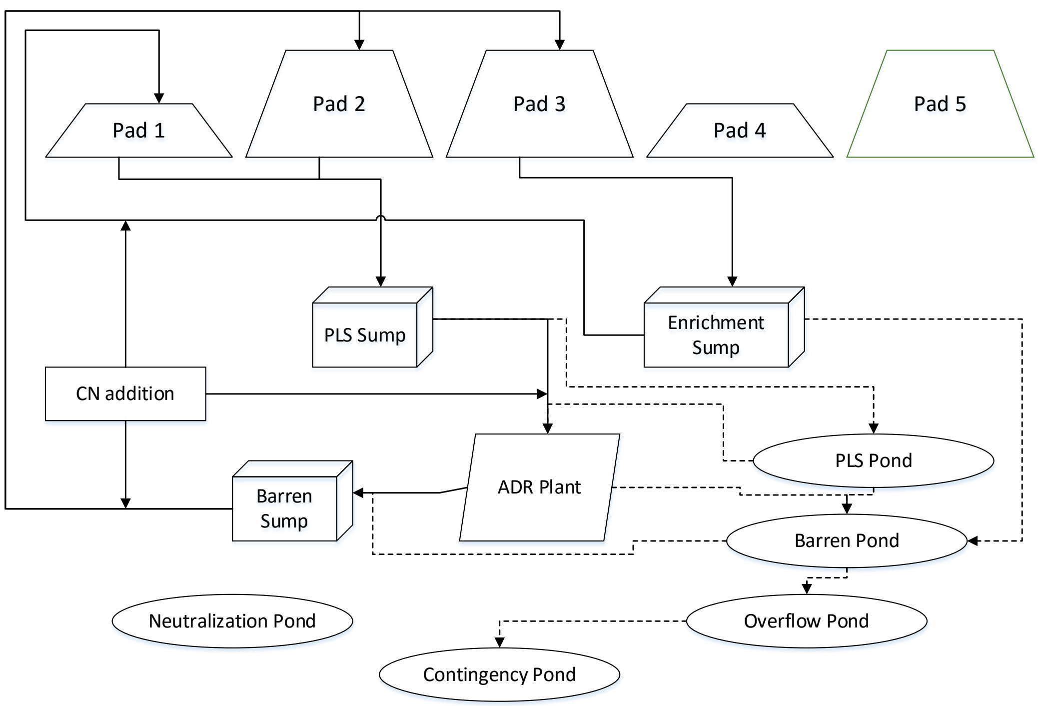


Figure 17-2 Process flow diagram (Coeur, 2018)

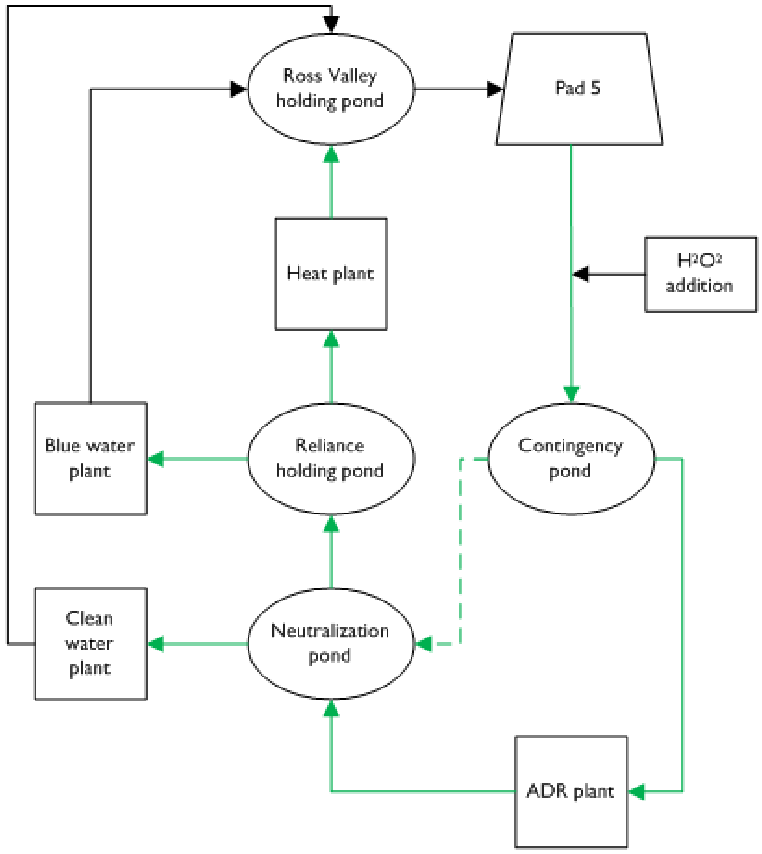


Figure 17-3 Neutralization and denitrification flow diagram (Coeur, 2018)

17.3 ADR Process Facility

In the gold leaching process, barren (non-metal bearing) process solution is pumped to the active leach pads and applied at a target rate of 0.0045 gpm/ft^2. The barren leach solution trickles through the heap leach, chemically extracting precious metals through cyanidation. Pad PLS sodium cyanide target concentrations are 15 to 25 ppm WAD CN (maximum Weak Acid Dissociable (WAD) cyanide value of 50 ppm for CN Code compliance).

The PLS is collected on high density polyethylene (HDPE) liner and routed through a collection of drain pipes under the pad. PLS is directed to the collection dam of the respective pad and through a series of pipes into the pregnant sump. From the sump, the pregnant solution is pumped to the first tank of a series of carbon-in-column (CIC) tanks. There are three (four when neutralization is not required) CIC circuits to process precious metal solutions. Activated coconut shell carbon is used to concentrate the metals. Once the precious metals have been adsorbed on carbon, the loaded carbon is transferred to the elution circuit. The barren solution has additional sodium cyanide added to it and is pumped back to the pads. A safety screen is used to prevent carbon fines loss. If the PLS from the pad is too low in grade due to late stage leaching or rinsing, the PLS is routed to the enrichment sump and returned to another pad.

In the elution circuit, carbon is prepared by acid washing with 15-20% acetic acid, rinsed with soft water and then pH adjusted using liquid caustic. Gold and silver are then stripped from the loaded carbon using a modified Zadra process. Wharf incorporates a heated sodium hydroxide solution under sufficient pressures to keep solution from flashing. This process forces the precious metals back into solution at concentrations up to 40 times what is seen in the PLS plant feed. The rich electrolyte solution is then passed through a series of electrowinning cells where the precious metals are plated producing 90-98% precious metal electrolytic sludge. The electrolytic sludge is harvested, dewatered, retorted, sampled, packaged and shipped to a commercial refinery for further processing. Alternatively, the refinery has the capability to smelt the sludge using a furnace to make doré. Liquid mercury is collected from the retort process and stored. Stripped carbon is reactivated returned to the CIC circuit.

Carbon fines are collected and shipped off site for precious metals removal. Spent environmental carbon for either cyanide or mercury collection is sent off site for disposal.

17.4 Water Treatment Facilities

In the event of a water balance upset or power bumps, the four process ponds (Pregnant, Barren, Overflow, and Contingency) are used to collect either the excess or drain down solution. Surplus in the processing circuit can be routed through the contingency pond whereby the methods defined in Section 17.2 are utilized to route the water to the Ross Valley Holding Pond.

When it has been determined that there is a surplus of water in the system, water is processed out of the system from the Ross Valley Holding Pond containing treated water. Each water treatment facility is operated similar to a municipal water treatment plant. Bacteria are used to reduce contaminants to permitted levels. The effluents of both treatment plants are routed to the Ross Valley Holding Pond where heated raw water is mixed in with nutrients. This process utilizes bacteria in the treatment plant effluents to advance nitrate destruction.

Treated water is then discharged to surface or groundwater, depending on permit and operational requirements. The water treatment facilities consist of the Contingency Pond, CCIX CIC carbon columns, Neutralization Pond, Reliance Holding Pond, Ross Valley Heat Plant, Ross Valley Holding Pond, and Egg pond, the Clean Water Treatment Plant (CWTP) and the Ross Valley Treatment Plant (RVTP). These facilities are utilized to maximize treatment of pad effluents for offload, excess process fluids due to meteoric events, and historic mining fluids from prior operations.

17.5 Process Facility Performance

Silver to gold ratios in the process feed have historically varied from near 1:1 to greater than 40:1. These variations in the ore delivered to the pad have resulted in wide swings in the bullion composition produced by the plant. A Merrill-Crowe circuit would provide better plant performance in high silver situations, but during the early years the gold to silver ratio did not warrant use of the technique. By the time the silver ratios began increasing, the plant was firmly established as an activated carbon adsorption-desorption-recovery (ADR) plant.

Plant gold efficiency during the low silver periods reaches the industry norm of +95% for this type of plant. During periods when the silver concentration begins to climb, silver preferentially loading on the carbon reduces both the plant gold and silver efficiencies. Changes in the plant stripping circuit have improved the ability for the plant to compensate for the additional silver content.

The plant can bring on additional electrowinning cells and can adjust strip cycles to increase the carbon volume processed. During periods of extremely high silver, the retort is used at maximum capacity. Consumption of reagents also increases with additional silver content. Greater amounts of cyanide are consumed by increased silver in leach solutions. Changes in the plant stripping schedule also affect sodium hydroxide and carbon consumption rates.

17.6 Conclusions

The facility has sufficient capacity to process the planned feed material, and sufficient energy, water, and process materials are readily available. The QP is not aware of any other factors that could have a significant impact on economic extraction.

18. PROJECT INFRASTRUCTURE

18.1 Road and Logistics

The Wharf mining area is located four miles west of Lead, South Dakota in Lawrence County. The site is accessed by traveling south of Lead on Highway 85/14A for one mile, then traveling west on Highway 473 to the Stewart Slope Road, and turning left onto the Wharf Access Road. The paved portion of the Stewart Slope Road terminates at the Wharf Access Road. The Wharf Access Road and the Stewart Slope road are maintained for continuous access from Highway 473 to the Wharf security gate in all weather conditions by Wharf Resources. Signage is located along the route to inform and direct the public, visitors, personnel, and deliveries to the site. Various unpaved roads exist on and around the Wharf mine area and are maintained by Wharf Resources to facilitate light vehicle and heavy mobile equipment traffic necessary to execute the daily operations of the mine.

Active mining and processing areas at Wharf are fenced to maintain perimeter safety and security. Gates with locks are used on all tertiary roads that have access on and off the site. The mine is fully supported with electricity, telephone, and radio communications. On-site infrastructure includes a production and monitoring water wells, offices, maintenance, warehouse and various ancillary facilities, open-pit mining areas, rock disposal areas, crushing and conveying facilities, five lined heap leach pads, two water treatment plants and a process facility.

The Golden Reward mine area is located two miles southwest of Lead, South Dakota in Lawrence County. The site is accessed by traveling south of Lead on Highway 85/14A one mile and then traveling west on Highway 473 one quarter mile to Fantail Gulch Road. Fantail Gulch Road leads to the main gate at Golden Reward. Much of Golden Reward is in post closure, so very little maintenance is done to the few existing roads on site.

On-site infrastructure at Golden Reward includes: a production well used to supply Terry Peak with snow-making water; several monitoring wells; a lined pond used for snow making by Terry Peak; a maintenance shop building used by Terry Peak; and, an administration building used by Wharf Resources for cold storage.

18.2 Rock Disposal Facilities

Waste rock is disposed of in designated areas, typically used to backfill existing pits. Current and historic disposal sites are shown in Figure 18-1. A small amount of material has elevated sulfides and has sporadically been encountered during mining. This material is handled according to the ARD mitigation plan approved by the South

Dakota Department of Environment and Natural Resources (DENR). All waste rock facilities are located within the permitted disturbance boundary. Waste facilities are re-contoured to an approximate 3:1 slope, covered with top soil, and revegetated as soon as possible upon completion.

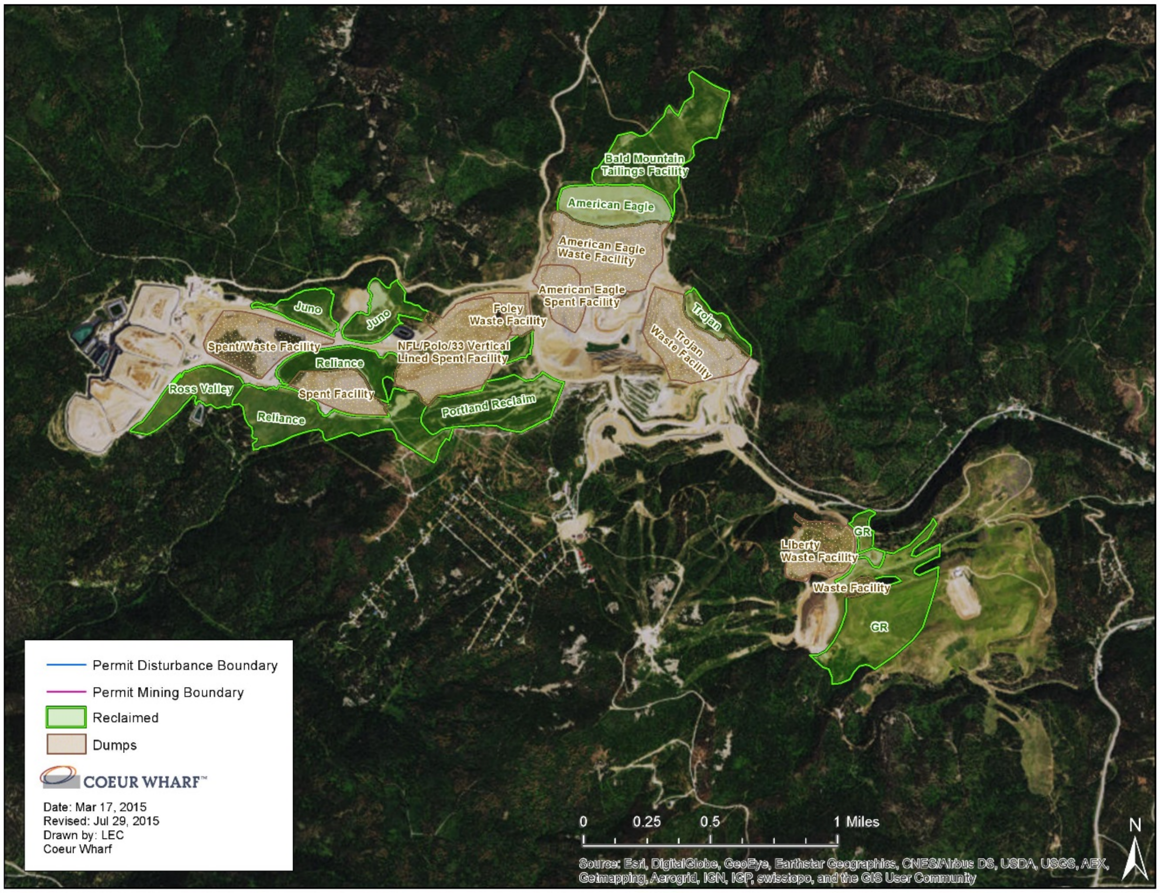


Figure 18-1 Current spent ore and waste facilities (Coeur, 2018)

18.3 Spent Ore Facilities

Once the ore has been leached, neutralized and denitrified, it is considered “spent ore”. Spent ore facilities are permitted by way of a groundwater discharge permit. Currently Wharf Resources has both un-lined and lined spent ore facilities, as shown in Figure 18-1.

South Dakota Department of Environment and Natural Resources has recommended a Perimeter of Operational Pollution (POP) zone for each permit and allows for a variance to groundwater standards within the POP zones. The limiting factor that controls the amount of spent ore that can be placed unlined in each facility under the groundwater discharge plan is nitrate loading. By maintaining the loading limit for nitrate, groundwater quality will be protected. DENR has assigned a loading limit for each permit based on hydrogeological fate and transport models submitted during the permit application process. Wharf is required to monitor the pore water of every neutralized heap prior to off-loading to calculate the nitrate loading within each permit. Wharf is also required to monitor compliance wells located at the edges of the POP zones, and implement a mitigation plan if the nitrate concentration exceeds half of the groundwater standard. When the nitrate loading within each facility approaches the assigned limit, Wharf has the option of placing spent ore on lined facilities or implementing in-situ denitrification. DENR may grant a credit to the loading limit if Wharf can demonstrate successful in-situ denitrification.

18.4 Water Management

With roughly 7.6M square feet of lined surface at the Wharf Operation, the annual accumulation due to precipitation averages approximately 127M gallons. The focus of the water balance program is monitoring and proactive control of the process to maintain solutions at appropriate levels for any given situation. The method is a combination of constant monitoring and a set of “go” – “no go” parameters that, when the conditions are met, trigger a set of actions.

The program is a holistic, comprehensive approach in that it examines daily precipitation, accounts for varying amounts of water inventory and the current routing of flows to various locations. Examples of more common scenarios provide a framework for the decision maker.

Wharf Operation’s water management system is comprised of five major sections: Pads, Ponds, Water Treatment, Discharge System, and Recapture System.

South Dakota requires Wharf Resources to manage for a total pond freeboard to hold a 19.6-inch storm event (Probable Maximum Precipitation) between all of the ponds on site.

Water balance is maintained by monitoring precipitation and using a decision tree to determine how water is transferred between the five sections of the water system and ultimately discharging treated water to permitted surface and groundwater discharge areas.

18.5 Power and Electricity

Electrical power is principally supplied by Black Hills Power (BHP) via a 12.47kV transmission line that runs up Nevada Gulch. This transmission line is shared by Terry Peak Ski Area, Spearfish Canyon, and residential customers. Main power service enters the mine site near the warehouse and administration buildings and is primary metered at the service point. Several small services are fed ahead of the main service and are individually metered (i.e., Candy Cane Gates, Polo Pump Shed, Two Johns well, and the original viewing platform area lighting). Once past the service metering point, the lines divide with one circuit feeding the Crusher and one feeding the rest of the mine site. The Crusher circuit uses pad mount step-down transformers 12.47kV × 4160 volt and 12.47kV × 480 to feed various motor control centers (MCC) and various distribution panels. The other circuit feeding the balance of the mine site, uses various pad mount and various pole mount 12.47kV × 480 volt transformers to serve the loads as required. The loads vary between MCCs and distribution panels. Maintenance of the transformers and 12.47kV lines is contracted to BHP, as needed. The secondary is maintained by the on-site electrical department.

One auxiliary generator is located at the process plant and services the plant exclusively. A second generator is located at the Neutralization building and back feeds the transformer to the rest of the mine site 12.47kV line, excluding the crusher. Isolation from the utility is done by means of a 12.47kV oil switch located at the utility service point. Generators are maintained by the on-site maintenance department. Auxiliary generator fuel is stored in onboard tanks.

18.6 Fuel

The Wharf Operation maintains three 14,500 gallon tanks for storage of #2 dyed diesel: two are located at the Trojan Fueling Station, and one is in the Maintenance Shop Yard. Two companies are available that can deliver, as needed. The average number of fuel deliveries is seven per week at 8,000 gallons each. If necessary, 20 loads or 161,000 gallons can be scheduled per week. Suppliers have access to fuel terminals in Billings, Montana; Cheyenne, Wyoming; Mitchell, South Dakota; New Castle, Wyoming; and Rapid City, South Dakota.

18.7 Water Supply

Potable water is supplied to the Wharf Operation by well PW-2 completed in the Madison limestone aquifer. Well PW-2 can supply approximately 80-100 gpm of quality drinking water. After chlorination treatment, the water enters two 5,000-gallon concrete storage reservoirs prior to distribution to the various mine facilities, which include: the warehouse, administration, shop building, crusher, Ross Valley Treatment Plant, and metallurgical processing plant. Potable water is also supplied to a fill station used to fill portable tanks used for in pit drilling. See Section 20.4 for a list of water rights associated with the Wharf Operation site.

Treated process water is used as-needed for supplementing dust suppression on the haul roads and throughout the mine site.

Terry Peak makes snow with water pumped from the Bonanza well at the Golden Reward property. Water is pumped from the well and combined with water pumped from various wells owned by Terry Peak and stored in a lined pond located at the Golden Reward property for cooling prior to snow making. See Section 20.4 for water rights associated with Golden Reward.

19. MARKET STUDIES AND CONTRACTS

19.1 Market Studies

A market study for gold and silver was not undertaken for this Report. Prices are quoted in U.S. dollars per troy ounce for gold and silver.

19.2 Commodity Price Projections

Prices for the commodities were set based on a review of historical metal prices and industry and analyst price consensus. Metal prices selected reflect Coeur's view of prices.

19.3 Contracts

Wharf Operations produces precious metal concentrates, such as sludge containing gold and silver, which is transported from the mine site to the refinery by a secure transportation provider. Transportation cost, which consists of a fixed charge plus a liability charge based on the declared value of the shipment, equates to approximately $1.150 per ounce of material shipped.

Wharf Resources has a contract with a U.S.-based refiner who refines Wharf Operation's sludge into gold and silver bullion that meet certain benchmark standards set by the London Bullion Market Association, which regulates the acceptable requirements for bullion traded in the London precious metals markets. Terms of these contracts include: a treatment charge based on the weight of the doré bars received at the refinery; a metal return percentage applied to recoverable gold; a metal return percentage applied to recoverable silver; and, penalties charged for deleterious elements contained in the sludge. The total of these charges can range from $1.00 to $1.50 per ounce of sludge based on the silver and gold grades of the sludge, as well as the contained amount of deleterious elements.

In addition to the contracted terms detailed above, there are other uncontracted losses experienced through the refinement of Wharf Operation sludge, namely the loss of precious metal during the sludge melting process as well as differences in assays between Wharf Resources and the refiner. For this Report, we have assumed that uncontracted losses average $2.00 to $4.00 per ounce of sludge received by the refiner.

Coeur sells its payable silver and gold production on behalf of its subsidiaries on a spot or forward basis, primarily to multi-national banks and bullion trading houses.

Markets for both silver and gold bullion are highly liquid, and the loss of a single trading counterparty would not impact Coeur's ability to sell its bullion.

There are numerous contracts in place at the project to support mine development or processing that augment Coeur's and Wharf's efforts. Currently there are contracts in place at Wharf to provide supply for all major commodities used in mining and processing, such as equipment vendors, power, explosives, cyanide, tire suppliers, raise boring, ground support suppliers and drilling contractors.

The terms and rates for these contracts are within industry norms. These contracts are periodically put up for bid or negotiated to ensure the rates remain favorable to Coeur and Wharf.

20. ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

20.1 Baseline Studies

Baseline studies and monitoring have been required for each mine permit obtained. Hydrogeological fate and transport modeling and baseline monitoring were also required for each groundwater discharge plan. Statement of basis analysis was also required during each renewal of National Pollution Discharge Elimination System (NPDES) surface water discharge permits.

The most recent Mine Expansion permit application submitted in 2011 included one year of groundwater and surface water sampling and the following studies:

- A Level III Cultural Resources Inventory for the Black Hills Archaeological Region
- 2010 Baseline Soil Assessment
- Groundwater Characterization Study
- Surface water Characterization Study
- Meteorological Characterization Study
- 2010 Baseline Vegetation Assessment
- Wharf and Golden Reward Wildlife Baseline Report
- Potential and Documented Species Occurrence List
- Summary of Aquatic Monitoring Data for Streams of Wharf and Golden Reward Mines in Lawrence County, SD
- Background Sound Level Study
- Visual Assessment
- Socioeconomic Assessment

The most recent American Eagle Groundwater Discharge Permit application included a hydrogeological study report titled “Potential Impact of Spent Ore Disposal in the American Eagle/Deep Portland Pit”.

20.2 Environmental Issues

Wharf and Golden Reward are in compliance with all current permit conditions and requirements and there are no outstanding environmental issues.

20.3 Hydrology

20.3.1 Surface Water

The east-west-trending Foley Ridge is a major surface water divide at the mine site. Surface water flow north of the ridge drains to Cleopatra Creek and False Bottom Creek, and east to Deadwood Creek. Surface water flow south of the ridge drains to Ross Creek, Annie Creek and Nevada Gulch. Cleopatra Creek and Annie Creek flow into Spearfish Creek, which is the principal surface water drainage for the mine site.

Cleopatra Creek is fed by a spring at the headwaters of the stream. The spring discharges from the toe of the backfill in the Cleopatra Creek Rock Facility, approximately 100 feet upstream of National Pollutant Discharge Elimination System (NPDES) Compliance Point 004. Barren rock was deposited in the Cleopatra Creek Rock Facility from 1987 to 1990 by Wharf Resources. The headwater spring discharges groundwater from a perched zone above the Tertiary intrusive units that underlie the Juno Pit and upper Cleopatra Creek valley. Cleopatra Creek flows northward into Spearfish Creek, which is located 4.5 miles northwest of the mine.

False Bottom Creek originates north of Bald Mountain and runs northward through Lawrence and Butte counties. False Bottom Creek flows into the Redwater River south of Belle Fourche. Deadwood Creek originates east of the Trojan Pit and flows eastward into Whitewood Creek west of Lead. Surface water flow in the creeks is mainly from direct runoff of precipitation and snowmelt, with the remainder base flow from springs and seeps. High flows in the spring typically occur during periods when the surface water drainages receive a combination of snowmelt and precipitation during major storm events.

20.3.2 Groundwater

The primary bedrock aquifer underlying the western portion process area of the mine site is the Madison Formation. Madison Formation is not present under locations where active mining occurs. Madison Formation consists of limestone, sandy limestone and dolomite. Secondary aquifers include the limestones and dolomites of the Englewood and Whitewood Formations. These aquifers are underlain by the relatively low permeability sandstones, siltstones and shales of the Winnipeg and Deadwood Formations. Groundwater flow in the Madison Formation is unconfined and occurs mainly in fractures and small dissolution cavities in the upper part of the formation. Horizontal groundwater flow is generally to the west, and vertical flow is predominantly downward. However, the fractures and solution cavities are not uniformly distributed in the aquifer and they form preferential flow paths that control the direction of groundwater flow locally.

Groundwater recharge occurs primarily through the infiltration of precipitation and surface runoff. Average recharge rate in this area of the Black Hills is estimated to be about 6.8 inches per year.

Hydraulic conductivities of the aquifers vary significantly, and are dependent on the degree of fracturing and dissolution. The primary aquifer, the Madison Formation, has low to moderate hydraulic conductivities, ranging from 1.3×10^{-4} to 7.7×10^{-2} centimeter/second (cm/sec). Well yields range from 10 to 75 gallons per minute (gpm). Measured hydraulic conductivities of the underlying Winnipeg and Deadwood Formations are somewhat lower, ranging from 3.7×10^{-6} to 1.6×10^{-4} cm/sec. Measured hydraulic conductivities of the Tertiary intrusive units are very low, ranging from 1.6×10^{-7} to 5.8×10^{-5} cm/sec.

20.4 Closure Plan

Closure plans for the Wharf mining area are included in the following documents:

- Wharf Expansion Project Mine Permit application
- Wharf Resources Reclamation Performance Criteria 2015 Update
- Wharf Care and Maintenance Idle Down Procedure
- Wharf Operation Cyanide Facilities Decommission Plan

Costs associated with closure and post closure of the Wharf mining area are typically updated every year and included in the annual Wharf asset retirement obligation (ARO) estimate and technical review document.

The Golden Reward mining area was closed in 2009 and placed into Post Closure Status with the state of South Dakota (a portion of the West side of Golden Reward was re-opened in 2012 with State Permit #476). Closure monitoring and maintenance are conducted in accordance with the Golden Reward Post Closure Plan and Financial Assurance document.

Costs associated with closure of the Golden Reward mining area are typically updated every year and included in the Golden Reward ARO estimate and technical review document.

20.5 Permitting

Wharf mining area has been operating since 1982 and has obtained all necessary environmental permits and licenses from the appropriate county, state and federal agencies for the open pit mines, heap leach pads, and all necessary support facilities.

Table 20-1 presents a list of the permits, authorizations and approvals maintained by Wharf Resources for the project area.

Table 20-1 Wharf mining area permits and approvals (Coeur, 2018)

Agency	Permit or Approval
South Dakota Department of Environment and Natural Resources (DENR) Air Quality Program	• Title V Air Quality Permit # 28.1155-09 (under renewal process)
South Dakota DENR Surface Water Program	• Surface Water Discharge Permit # SD-0025852 • Surface Water Discharge Permit # SDG-070867
South Dakota DENR Groundwater Program	• Ross Valley Groundwater Discharge Plan (Permit and Variance) # GWD 1-88 • Reliance Groundwater Discharge Plan (Permit and Variance) # GWD 1-94 • Juno/Foley Groundwater Discharge Plan (Permit and Variance) # GWS 1-98 • American Eagle Groundwater Discharge Plan (Permit and Variance) # GWD 1-11
South Dakota DENR Drinking Water Program	• Public Water System EPA ID # 0933
South Dakota DENR Minerals and Mining Program	• Large Scale Surface Mine Permit # 356 • Large Scale Surface Mine Permit # 434 • Large Scale Surface Mine Permit # 435 • Large Scale Surface Mine Permit # 464 • Large Scale Surface Mine Permit # 476 • Aggregate Mine License # 90-400
South Dakota DENR Waste Management Program	• Construction Demolition Debris Permit # 97-22-054
South Dakota DENR Water Rights Program	• Water Right Permit # 1173-1 • Water Right Permit # 1346-1 • Water Right Permit # 1365-1 • Water Right Permit # 1406-1 • Water Right Permit # 1437-1 • Water Right Permit # 1493-1 • Water Right Permit # 1667-1 • Water Right Permit # 1761-1
Lawrence County, South Dakota	• Conditional Use Permit # 224 • Conditional Use Permit # 398 • Sewage Disposal System Permit # 168 • Sewage Disposal System Permit # 457 • Sewage Disposal System Permit # 497
U.S. Army Corp of Engineers	• Army Nationwide 404 Permit # 14
U.S. Federal Communication Commission	• FCC Radio Station Authorization # WPRM414 • FCC Radio Station Authorization # WQAH357
South Dakota Secretary of State	• Corporate Business License # FB015535 • Corporate Business License # FB015535
U.S. Department of Transportation	• Hazardous Materials Transportation General Permit Reg. #062112 600 032UW; Company ID #051785

Agency	Permit or Approval
U.S. Environmental Protection Agency	• Toxic Release Inventory #57754WHRFRTROJA - Form R's • Hazardous Waste generator ID # SD0000269795

Operational standards and Best Management Practices (BMPs) have been established to maintain compliance with applicable state and federal regulatory standards and permits.

The most recent significant mining permit expansion (Conditional Use Permit (CUP) # 398 and SMP # 476) was approved by the Lawrence County Commission in June 2011, and the South Dakota Board of Minerals and Environment in January 2012. This permit expansion allowed Wharf Resources to expand the mine to Bald Mountain, Green Mountain, the Portland Ridgeline, and the western portion of Golden Reward, which was previously closed and placed into Post Closure Status.

Financial surety sufficient to reclaim mine and processing facilities is up to date and held by the state of South Dakota. The closure bond plan associated with reclamation and post closure surety was updated in 2015. The estimated asset retirement obligation for the project is approximately $57.4M.

Surface mining began in the Golden Reward mining area in 1989. In 1992, Wharf Resources acquired the property and became the operating manager of the mine. The site was actively mined until 1996. The mine received approval for temporary cessation of mining and remained in temporary cessation until the end of 2001, when it entered final reclamation. The South Dakota Board of Minerals and Environment approved the reclamation and released the reclamation liability bond in January 2009. At that time, the Golden Reward mining area went into post closure monitoring and maintenance status. Table 20-2 presents a list of the permits, authorizations, and approvals maintained for the Golden Reward mining area.

Table 20-2 Golden Reward mining area permits and approvals (Coeur, 2018)

Agency	Permit or Approval
South Dakota DENR Surface Water Program	• Surface Water Discharge Permit # SD-0026905
South Dakota DENR Groundwater Program	• Golden Reward Groundwater Discharge Plan (Permit and Variance) # GWD 5-88
South Dakota DENR Minerals and Mining Program	• Large Scale Surface Mine Permit # 450
South Dakota DENR Water Rights Program	• Water Right Permit # 1438-1 • Water Right Permit # 1439-1

Agency	Permit or Approval
	• Water Right Permit # 1440-1 • Water Right Permit # 1666-1 • Water Right Permit # 1666A-1
Lawrence County, South Dakota	• Conditional Use Permit # 132 (expired)
U.S. Environmental Protection Agency	• Class V UIC Program EPA File # SD50000-09794

Financial surety sufficient to conduct monitoring and maintenance during a 30-year post closure period is up to date and held by the state of South Dakota. The estimated asset retirement obligation for the project is approximately $1.1M.

20.6 Considerations of Social and Community Impacts

Wharf Resources currently enjoys a strong relationship with local communities. The entire workforce is local to the area and mining is a historically important activity in Lawrence County.

The Wharf Operation continues to support local businesses and expects strong local community support during permit actions or other activities involving the public.

21. CAPITAL AND OPERATING COSTS

The Wharf Operation is a mature mining operation. The estimated capital and operating costs are based on 30 years of operations experience and the execution of the mining plans outlined in Section 16. Operating and capital cost assumptions are sufficient for the planned extraction of the reserves, including all manpower, equipment and infrastructure.

21.1 Capital Cost Estimate

The capital cost estimate for the Wharf Operations is based on historical costs. Capital expenditures for the LOM for the Wharf Operation are estimated at an additional ($20.7) million from January 1, 2018 through the end of the mine life (Table 21-1). Most of the capital expenditures are expected to cover sustaining capital requirements ($19.9) million, and the rest of the capital would be invested in infill drilling.

Table 21-1 Capital expenditures by year (Coeur, 2018)

Period	2018	2019	2020	2021	2022	2023	2024	2025	Total
Sustaining Capital ($M)	3.8	3.8	3.8	3.5	3.0	2.0	-	-	**19.9**
Drilling Category 3 ($M)	0.9	-	-	-	-	-	-	-	**0.9**
Total Capital ($M)	4.6	3.8	3.8	3.5	3.0	2.0	-	-	**20.7**

The basis of the capital estimates are derived from expected equipment needs and project plans and are determined with the assistance of vendor quotes, previous buying experience and/or experience with construction of similar projects.

Labor assumptions for capital projects are based on third party contractor costs, internal employee wage rates plus benefits, or a combination of the two.

Material costs are based on current prices for consumables with no market or inflation rate assumed.

A 10-20% contingency has been added to select capital projects. This contingency is used where project elements have not been fully defined.

Mine capital costs consist of capital expenditures required to overhaul or replace mining equipment, access or preventative access to the mine property, and crushing plant major repairs and replacements.

Process capital costs are solely capital expenditures required to maintain or increase processing plant capacity and repair or replace pad liners.

Infrastructure capital costs is limited to minor new construction or additions to existing facilities, i.e., employee break rooms, warehouse, offices, etc.

Other capital costs consist of technology related purchases, light vehicles, and other general or administrative expenditure. Finally, exploration drilling capital is estimated for infill drilling costs required to improve estimates for short-range planning purposes. Drilling is based on a quoted cost per foot drilled; the expenditure also includes Wharf Operation salary personnel dedicated to the exploration program, in addition to assaying, supplies and consumables necessary to complete the work.

Mine capital costs comprise typical sustaining capital items for a mature open pit mine the cost of which reduces as the mine approaches the end of its life. The Wharf Operation's capital needs are sustaining in nature, required for the ongoing mining operations, and low in dollar amounts. Capital needs are subject to change with the needs of the mine plan.

21.2 Operating Cost Estimate

Operating costs for 2017 are summarized in Table 21-2. The costs are actual spend for each major cost center: mining, crushing, pad loading, pad unloading, plant, and G&A.

Salvage value, escalation and capital spent prior to January 1, 2018 were not considered for this economic analysis. Cost includes reclamation cost.

The basis used for costs can be derived from a variety of factors including but not limited to: contract price, historical market/actual price, market price plus appropriate rate increase, current wages, cost per unit mined, crushed, produced, hour, utilized, etc.

Gold prices used for planning and financial modeling are updated on an annual basis by Coeur's finance department and are typically representative of a 3-year trailing average of actual market prices. These prices are used in the financial model and in the sensitivity analyses.

21.2.1 Operating Cost Summary

Table 21-2 2017 Actual production and costs (Coeur, 2018)

	Unit	2017 Actual Results
Mine Production		
Mineralized Material Tons	tons	4,125,000
Mineralized Material Au Grade	opt Au	0.025
Mineralized Material Ag Grade	opt Ag	0.194
Crushing/Processing		
Total Mineralized Material Processed	tons	4,560,000
Mineralized Material Au Grade	opt Au	0.027
Mineralized Material Ag Grade	opt Ag	0.210
Metallurgical Recovery Au	%	80.2
Metallurgical Recovery Ag	%	6.5
Revenue		
Gold Price	$/oz	1,268.67
Silver Price	$/oz	17.16
Gross Revenue	$M	125.9
Operating Costs		
Mining	$M	(27.7)
Crushing	$M	(7.66)
Pad Loading	$M	(2.80)
Pad Unloading	$M	(4.97)
Plant	$M	(9.77)
Services	$M	(9.78)
Refining and Shipping	$M	(0.22)
Royalties	$M	(5.13)
Production Taxes	$M	(0.79)
Total Operating Costs*	$M	(68.82)
Cash Flow		
Operating Cash Flow*	$M	57.08
Capital	$M	(8.85)
Total Cash Flow (Net Cash Flow)	$M	48.23

*Excludes the impact of heap leach inventory cost recognition

22. ECONOMIC ANALYSIS

22.1 Wharf Operations Economic Analysis

Table 22-1 demonstrates that the Mineral Reserves at the Wharf Operations are economically viable based on Coeur's financial model, which was updated with LOM reserve production schedules, metal recoveries, costs and capital expenditures.

Table 22-1 Life of mine economic analysis (Coeur, 2018)

	Unit	Five Year Annual Average	LOM Total
Mine Production			
Open Pit Tons	k/ton	3,915	34,413
Ore Au Grade	opt	0.026	0.025
Waste	k/ton	7,923	94,362
Rehandle Ore	k/ton	2,671	25,625
Total Mining	k/ton	14,510	154,400
Pad Loading	k/ton	4,127	34,688
Pad Unloading	k/ton	4,295	31,420
Total Material Moved	k/ton	22,931	220,510
Placed Ore			
Total Placed Ore	k/ton	4,127	34,688
Ore Grade Au	opt	0.026	0.025
Metallurgical Recovery Au	%	80	79.3
Produced Gold	k/oz	84	702
Sold Gold	k/oz	84	702
Revenue			
Gold Price	$/oz	1252	1,250
Gold Sales	$M	106	887
Operating Costs			
Mining	$M	(26)	(252)
Crushing	$M	(8)	(58)
Leaching, Loading and Unloading Ore	$M	(15)	(122)
Indirects / G&A	$M	(9)	(84)
Selling Expenses	$M	(0)	(2)
Royalties	$M	(4)	(43)
Total Operating Cost	$M	(61)	(561)
Cash Flow			
Operating Cash Flow	$M	46	326
Capital	$M	6	20
Explorations and Miscellaneous	$M	1	2
Reclamation	$M	1	20
Total Pre-Tax Cash Flow (Net Cash Flow)	$M	**37**	**284**
Project Pre-Tax NPV (10% discount rate)	$M		**181**
State Taxes	$M	5	32
Federal Income Tax	$M		
Total After-Tax Cash Flow (Net Cash Flow)	$M	**32**	**252**
Project After-Tax NPV (10% discount rate)	$M		**161**

As of December 31, 2017, the Mineral Reserves for the Wharf Operation are estimated to return an after-tax NPV of $161M at a 10% discount rate, using a gold price of $1,250 per ounce, as illustrated in Table 22-1.

Sufficient tax credits have been generated that the project is not expected to produce taxable income in the foreseeable future. As a result, a project payback period has not been calculated.

22.2 Royalties

Royalty payments were appropriately included in the financial analysis model and totals are shown in Table 22-1. The royalties are discussed in detail in Section 4.

22.3 Taxes

Mining companies doing business in South Dakota are primarily subject to U.S. corporate income tax, South Dakota Mineral Severance Tax, South Dakota sales and use tax, County property tax and applicable employer-related payroll taxes. South Dakota has no state corporate income tax.

The South Dakota Mineral Severance Tax is $4 per ounce of gold severed plus additional tax depending on the price of gold (currently an additional $4 per ounce) and 10% on net profits from the sale of precious metals severed in the state. The South Dakota Mineral Severance tax was included in the economic model.

The U.S. corporate income tax rate of 21% was not included in the economic model. Tax is typically not incorporated at the local level and is calculated for all the sites together, however Coeur's U.S. consolidated group has net operating losses that may offset Wharf's taxable income in the foreseeable future.

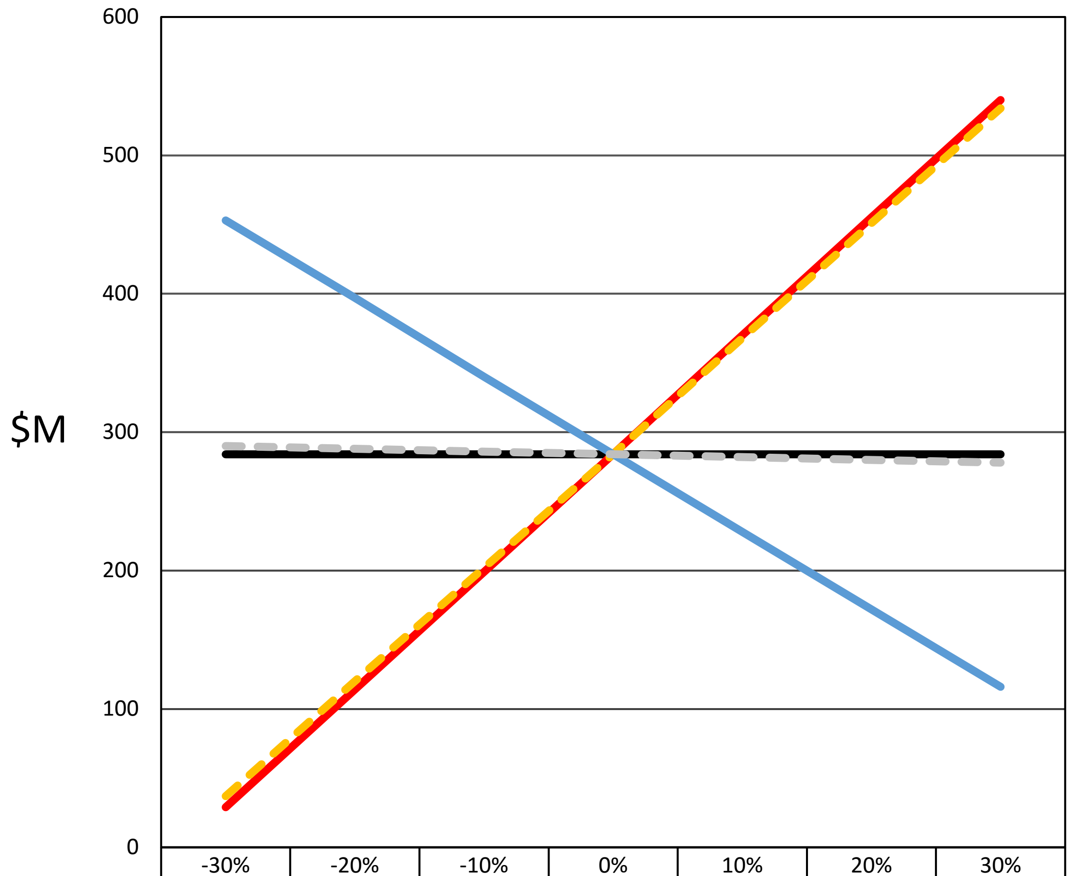
22.4 Closure Costs and Salvage Value

Costs related to reclamation, and long-term closure costs are included in the economic model. Salvage value is not assumed to fund any closure costs.

22.5 Sensitivity Analysis

Figure 22-1 illustrates the financial sensitivity of the project to standalone changes in metal prices and several operating parameters. The base case used to estimate mineral reserves for this Report is shown as the heavy black line on the chart. Net pre-tax cash flow is more sensitive to metal prices, grade, and recovery than operating costs and capital costs.

Figure 22-1 Sensitivity of project performance to gold and silver price and other operating parameters (Coeur, 2018)



	-30%	-20%	-10%	0%	10%	20%	30%
Base	284	284	284	284	284	284	284
Metal Price	29	114	199	284	370	455	540
Grade/Recovery	37	120	202	284	368	451	534
OPEX	453	397	340	284	228	172	116
CAPEX	290	288	286	284	282	280	278

23. ADJACENT PROPERTIES

There are no adjacent properties that are relevant for purposes of this Report.

24. OTHER RELEVANT DATA AND INFORMATION

There is no other relevant data available about the Wharf Operation.

25. INTERPRETATION AND CONCLUSIONS

The Wharf Operation is a mature, operating mine that has demonstrated positive cash flow. Financial analysis and associated assumptions completed for this Report support the conclusion that the Wharf Operation will continue to be profitable and generate acceptable returns over the life of the mine.

It is recommended to further advance development and production at the Wharf operation by continuing to drill the resource in areas with limited drilling; revise the resource models, as required; and, optimize the mine plans with additional mine engineering work.

25.1 Remaining Exploration Potential

At present, future exploration activities and additional expansion are expected to be limited, focused mainly around future pits, between historic pits, and in the Bald Mountain and A-Frame areas. The change in geology, topography, project economics, and mined-out areas, as well as the proximity to recreation and residential sites constrain the potential for expansion. Future exploration activities within the confines of the existing permit boundary will focus on the perimeter of the designed pit and pit bottom to fully identify economic mineralization.

The potential for additional expansion at Bald Mountain is limited due to BLM and private property ownership and thick and potentially barren units overlying the target. However, historic underground mining was conducted on the southeastern flank of Bald Mountain, and drilling is planned to test that area.

Exploration potential at the Golden Reward property is minimal because of its previous mining history within the current permit boundaries. The western highwall of the Liberty and Harmony Pits will not advance to the west because of the Terry Peak Ski area boundary. There is limited exploration potential at the Terry Cemetery due to the sensitivity of this location.

25.2 Drilling

It is the opinion of the QP that pre-Coeur acquisition drilling and logging practices at the Wharf are of sufficient quality for the inclusion of samples and information into the resource evaluation. The QP acknowledges that a limited number of downhole surveys have been completed on the property. The drillhole density and generally shallow drill depths support the inclusion of the drillhole data.

It is the opinion of the QP that pre-Coeur acquisition drilling and logging practices at Wharf are of sufficient quality for the inclusion of samples and information into the resource evaluation.

25.3 Sample Preparation, Security, and Analyses

It is the opinion of the QP that pre-Coeur RC sampling techniques were not always conducted with industry best practices, but are of sufficient quality for the inclusion of samples into the resource evaluation. The historic practice of the removal of fines has the potential to bias the RC sample. This sampling technique is reported to be consistent in recent years prior to the Coeur acquisition. Coeur era RC sampling techniques are conducted with industry best practices and are of sufficient quality for the inclusion of the samples into the resource evaluation. The QP acknowledges that a duplicate study has been completed to compare the historic versus the current RC sampling technique. Results are overall equivocal and indicate no significant impact to the resource.

It is the opinion of the QP that sample security implemented by Wharf is of sufficient quality for inclusion of samples into the resource evaluation.

It is the opinion of the QP that laboratory sample preparation and analytical methods at the Wharf laboratory are of sufficient quality for the inclusion of samples into the resource evaluation. The methods and analyses are documented and are comparable to those of certified commercial laboratories.

It is the opinion of the QP that laboratory sample preparation and analytical methods at the various accredited commercial laboratories, contracted from 2015 through present, are of sufficient quality for the inclusion of samples into the resource evaluation.

25.4 Data Verification

It is the opinion of the QP that the available pre-Coeur acquisition QC data, though very limited in quantity, indicate that the analytical results from the exploration and development sampling programs meet the requirements for NI 43-101. Umpire checks completed from 2007 to 2014 indicate no bias and good correlation with the Wharf laboratory analyses. Umpire checks for the 2015 drilling program indicate a bias to the commercial accredited laboratory in grade ranges above the mine cutoff grade. The results of these analyses indicate that, although bias exists between laboratories, the Wharf laboratory appears to be reporting equally or conservatively in respect to fire assay analyses completed at a commercial accredited laboratory. Quality controls and subsequent documentation are limited, but are in place, and practiced consistently at the laboratory. Additional round robin test work, completed in 2017, further supports the validation of the laboratory procedures.

It is the opinion of the QP that the drill hole sample QC data collected from 2015 through present adheres to Coeur internal QA/QC protocol and procedures which indicates that the analytical results from these exploration and development sampling programs are of sufficient quality for use in resource evaluation and meet the requirements for NI 43-101.

25.5 Mineral Processing and Metallurgical Testing

Current metallurgical test work confirms the material to be mined as having similar response to the heap leaching process as previously mined ores. Metal recovery assumptions are derived from past performance of the leaching operation. The QP is not aware of any other processing factors or deleterious elements that could have a significant impact on economic extraction.

25.6 Mineral Resource and Mineral Reserve Estimate

The mineral resource estimate prepared for this technical report represents an improvement over recent resource estimates because the estimate has been done using updated assumptions and a revised geology model. In the QPs opinion the resource model and resulting Mineral Reserves are appropriate and adequate for the deposit.

25.7 Mining Methods

This is a mature operation with over thirty years of operational experience. Accordingly, no changes are recommended regarding mining methods.

25.8 Recovery Methods

The facility has sufficient capacity to process the planned feed material, and sufficient energy, water, and process materials are readily available. The QP is not aware of any other factors that could have a significant impact on economic extraction.

25.9 Environmental and Permitting

The Wharf Operation is in compliance with all permit conditions and requirements and there are no outstanding environmental issues.

25.10 Capital Costs

The mine capital costs comprise typical sustaining capital items for a mature open pit mine the cost of which reduces as the mine approaches the end of its life. The Wharf Operation's capital needs are sustaining in nature, required for the ongoing mining operations, and low in dollar amounts. Capital needs are subject to change with the needs of the mine plan.

25.11 Operating Costs

The mine has been successfully operated in a variety of metal price environments, including prices much lower than current prices. The costs are in line with industry standard operating costs.

25.12 Economic Analysis

Economic analysis shows that this project is expected to generate cash flow until 2025 for Coeur. The analysis shows a NPV of $161 million at a 10% discount rate.

26. RECOMMENDATIONS

26.1 Drilling

The QP recommends that Wharf design a twin drillhole program to test historic RC drilling for precision and accuracy. Twin drillholes should be diamond core and include full depth downhole surveys.

The QP recommends a drill hole spacing analysis be completed to determine the required drill hole spacing for the lower trachyte unit.

26.2 Sample Preparation, Security, and Analysis

The QP recommends that Wharf scope out solutions for additional sample storage to allow for retention of all coarse rejects and split core accumulated from future drill campaigns.

26.3 Data Verification

The QP recommends that Wharf insert a coarse blank sample as part of the QA/QC control sample procedure. A coarse blank will check the laboratory sample preparation methods.

The QP recommends that Wharf purchase a high grade certified gold standard to validate analytical results that trigger a high grade gravimetric analysis method.

26.4 Geology

Update the surfaces and solids used in both models as new logging information and understanding of geologic controls becomes available. Continue expansion of the geologic model to the east and south of the Wharf and Golden Reward.

26.5 Resource Modeling

Implement density determination sampling and implement with block model. Additional recommendations for each model and for future reconciliations are summarized below.

26.5.1 Wharf Mining Area

Extension of the model to the north to include to the limits of the Permit Boundary.

Updating of known underground workings in the Annie Creek and Juno historic mining areas as well as verification on any additional underground in this area and northward.

Investigation into the cost, timing, and viability of permitting the denitrification area for potential of the mineralized material beneath this to be included in future resource estimates.

Verification of historic drilling west of the American Eagle pit through QA/QC procedures, twinned holes and additional in-fill drilling, to potentially include mineralized material in this area in future resource estimates.

Exploration drilling in the American Eagle West area and northward beyond the current model extents. The cost and timing of this endeavor is dependent on results of QA/QC and other recommendations included here.

26.5.2 Golden Reward Mining Area

At this time, Wharf site management is planning to reclaim this area within the next two years. Expansion of the resource is complicated by the proximity of potential resource to the local ski resort. It is recommended that the community commitments be solidified prior to any additional work in this model area being completed. Based on positive results moving forward, recommendations for future work include:

Investigation, including resource evaluation and sensitivity analyses of mining costs for the material east of the current Golden Reward pit to determine the sensitivity to potential rising costs at depth due to water concerns.

Exploration and in-fill drilling east of the current resource pit to increase confidence in grade, extent of mineralization, and location of any underground workings in the area. Cost of any drill program is dependent on results of sensitivities recommended above.

Investigation into the cost and practicality of removing of the dump material and ARD capping in the Liberty pit area.

26.5.3 Reconciliation

Investigate the blasthole and drillhole sampling methods to determine potential loss of fines in the blastholes and/or deviation of drillholes.

27. REFERENCES

Caddey, S.W., Bachman, R.L., Campbell, T.J., Reid, R.R., and Otto, R.P., 1991, The Homestake gold mine, an early Proterozoic iron-formation-hosted gold deposit, Lawrence County, South Dakota: U.S. Geological Survey Bulletin 1857, 67 p.

Canadian Institute of Mining, Metallurgy and Petroleum, 2003, Estimation of Mineral Resources and Mineral Reserves – Best Practice Guidelines, 55 p.

Canadian Institute of Mining, Metallurgy and Petroleum, 2014, CIM Definition Standards – For Mineral Resources and Mineral Reserves, 9 p.

Coeur, 2015, Technical report for the Wharf Operation – Prepared for Coeur Mining, Inc., Lead, South Dakota, U.S. – NI 43-101 Technical Report, 302 p.

Dahl, P.S., Terry, M.P., Jercinovic, M.J., Williams, M.L., Hamilton, M.A., Foland, K.A., Clement, S.A., and Friberg, L.M., 2005, Electron probe (Ultrachron) microchronometry of metamorphic monazite: Unraveling the timing of polyphase thermotectonism in the easternmost Wyoming Craton (Black Hills, South Dakota): American Mineralogist, v. 90, p. 1712-1728.

Dahl, P.S., Hamilton, M.A., Wooden, J.L., Foland, K.A., Frei, R., McCombs, J.A., and Holm, D.K., 2006, 2480 Ma mafic magmatism in the northern Black Hills, South Dakota: a new link connecting the Wyoming and Superior cratons: Canadian Journal of Earth Sciences, v. 43, p. 1579-1600.

DeWitt, E., Redden, J. A., Wilson, A. B., and Buscher, D., 1986, Mineral resource potential and geology of the Black Hills National Forest, South Dakota and Wyoming: U.S. Geological Survey Bulletin 1580, 135 p.

Duke, Genet I., 2005, Geochemistry and geochronology of Paleocene-Eocene alkalic intrusive rocks, northern Black Hills, South Dakota and Wyoming, Ph.D. Dissertation, South Dakota School of Mines and Technology, 291 p.

Emanuel, K. M., Wagner, J.J., and Uzunlar, N., 1990, The relationship of gold and silver mineralization to alkalic porphyry and breccias, Golden Reward Mine, Lawrence County, South Dakota, *in* Thompson, T., ed., SEG Guidebook Series v. 7, Metallogeny of Gold in the Black Hills, South Dakota.

Emanuel, K.M., and Walsh, J.F., 1987, Alkalic intrusive rocks and gold mineralization at the Golden Reward, Lawrence County, South Dakota, *in* Han, K., and Kliche, C., eds., Proceedings from the Third AIME Western Regional Conference on Precious Metals, Coal, Environment. Rapid City, South Dakota, Sep. 23-26, 1987, p. 73-81.

Giebink, B.G., and Paterson, C.J., 1986a, Stratigraphic controls on sediment-hosted epithermal Au-Ag mineralization, Annie Creek mine, northern Black Hills, South Dakota (Transcript): Geological Society of America Abstracts with Programs, v. 18, p. 613.

Giebink, B.G., and Paterson, C.J., 1986b, Geology and geochemistry of the Tertiary gold mineralization, Annie Creek, northern Black Hills, South Dakota: South Dakota Mining and Mineral Resources Research Institute, Final Report, p. 67-73.

Harris, K., 1991, Petrology, geochemistry, and petrogenesis of the Tertiary igneous intrusions in the Annie Creek and Foley Ridge Mines, Black Hills, South Dakota, and their relationship to the gold-silver mineralization: M.S. Thesis, South Dakota School of Mines and Technology, 112 p.

Harris, K., and Paterson, C.J., 1996, Petrology of the Tertiary igneous rocks, Annie Creek/Foley Ridge Mine, Black Hills, South Dakota, *in* Paterson, C.J., and Kirchner, J.G., Guidebook to the Geology of the Black Hills, South Dakota. South Dakota School of Mines and Technology Bulletin No. 19, p. 150-160.

Hummel, C.L., 1952, The structure and mineralization of a portion of the Bald Mountain mining district, Lawrence County, South Dakota: Rapid City, South Dakota School of Mines and Technology M.S. thesis, 93 p.

Kirchner, J.G., 1979, Petrographic significance of a carbonate-rich lamprophyre from Squaw Creek, northern Black Hills, South Dakota: American Mineralogist, v. 64, p. 986-992.

Larsen, R.K., 1977, Geology, alteration, and mineralization of the northern Cutting Stock, Lawrence County, South Dakota: M.S. thesis, South Dakota School of Mines and Technology, 147 p.

Lessard, J.F., and Loomis, T.A., 1990, Geology of the Annie Creek sediment- and porphyry-hosted gold deposit, *in* Paterson, C.J., and Lisenbee, A.L., eds., Metallogeny of gold in the Black Hills, South Dakota: Guidebook prepared for the Society of Economic Geologists Field Conference, SEG Guidebook Series, v. 7, p. 151-156.

Lisenbee, A.L., 1981, Studies of the Tertiary intrusions of the northern Black Hills uplift, South Dakota and Wyoming: a historical review, *in* Rich, F.J., ed., Geology of the Black Hills, South Dakota and Wyoming: American Geological Institute Field Trip Guidebook for the annual meeting of the Rocky Mountain Section of the Geological Society of America, Rapid City, South Dakota, p. 106-125.

Lisenbee, A.L., and DeWitt, E., 1993, Laramide evolution of the Black Hills uplift. In: Snoke, A.W., Steidtmann, J.R., and Roberts, S.M., eds., Geology of Wyoming: Geological Survey of Wyoming Memoir 5, p. 374-412.

Lisenbee, A., Karner, F., Fashbaugh, E., Halvorson, D., O'Toole, F., White, S., Wilkinson, M., and Kirchner, J., 1981, Field trip #2: geology of the Tertiary intrusive province of the northern Black Hills, South Dakota and Wyoming, *in* Rich, F.J., ed., Geology of the Black Hills, South Dakota and Wyoming, Rich, F.J., ed., Geology of the Black Hills, South Dakota and Wyoming: American Geological Institute Field Trip Guidebook for the annual meeting of the Rocky Mountain Section of the Geological Society of America, Rapid City, SD, p. 33-105.

Loomis, T.A., and Alexander, D.L., 1990, The geology of the Foley Ridge gold mine, *in* Fourth Western Regional Conference on Precious Metals and the Environment, Lead, South Dakota, Sep. 19–22, 1990, Proceedings: AIME, Society for Mining, Metallurgy, and Exploration, Black Hills Section, p. 77–87.

Luoma, G. and J. A. Lowe, 2010, A Level III Cultural Resource Inventory for Wharf Resources (USA) Inc., Wharf Golden Reward Project, Lawrence County, South Dakota, prepared by TRC Environmental Corporation, Laramie, WY, for Wharf Resources (USA) Inc., Lead, SD.

Miller, P.A., 1962, A study of the Bald Mountain mining area, Lawrence County, South Dakota: Mining Engineering Thesis, South Dakota School of Mines and Technology, 124 p.

McCormick, K., 2008, New compilation of the Precambrian basement of South Dakota: American Geophysical Union, Fall Meeting 2008, abstract #H53A-1001.

McDowell, F.W., 1971, K-Ar ages of igneous rocks from the western United States: Isochron/West, v. 2, p. 1-16.

Naething, F.S., 1938, Golden Reward: unpublished due diligence report for Mammoth- St. Anthony Management Corp., Tucson, Arizona, 51 p.

Noble, J.A., 1952, Evaluation of criteria for the forcible intrusion of magma: Journal of Geology, vol. 59, p. 927-940.

Norton, J.J., 1983, Bald Mountain gold mining region, northern Black Hills, South Dakota: U.S. Geological Survey Open-File Report 83-791, 18 p.

Norton, J.J., 1989, Gold-bearing polymetallic veins and replacement deposits – Part I – Bald Mountain gold mining region, Northern Black Hills, South Dakota: U.S. Geological Survey Bulletin 1857-C, p. C1-C13.

Paterson, C.J., 1990, Magmatic-hydrothermal model for epithermal-mesothermal Au-Ag deposits in the northern Black Hills, Proceedings, Fourth Western Regional Conference on Precious Metals and the Environment, Black Hills section, SME, Sep. 19-23, Lead, South Dakota, p. 89-102.

Paterson, C.J., and Giebink, B.G., 1989, Controls on epithermal sediment-hosted (Carlin-type) Au-Ag mineralization, Annie Creek Mine, northern Black Hills, South Dakota: Unpublished company report, Wharf Resources, 23 p.

Paterson, C.J., Uzunlar, N., and Longstaffe, F.J., 1987, Epithermal Au-Ag deposits in the northern Black Hills: a variety of ore-forming fluids, *in* Han, K., and Kliche, C., eds., Proceedings from the Third AIME Western Regional Conference on Precious Metals, Coal, Environment, Rapid City, South Dakota, p. 83-89.

Paterson, C.J., Lisenbee, A.L., and Redden, J.A., 1988, Gold deposits in the Black Hills, South Dakota, *in* Diedrich, R.P., Dyka, M.A.K., and Miller, W.R., eds., Wyoming Geological Association 39th Field Conference Guidebook, Eastern Powder River Basin-Black Hills, p. 295-304.

Paterson, C.J., Uzunlar, N., Groff, J., and Longstaffe, F.J., 1989, A view through an epithermal-mesothermal precious metal system in the northern Black Hills, *in* Keays, R.R., Ramsay, W.R.H., and Groves, D.I., eds., The geology of gold deposits: The perspective in 1988, Economic Geology Monograph 6, p. 564-570.

Redden, J.A., 1987, Early Proterozoic and Precambrian-Cambrian unconformities of the Nemo area, Black Hills, South Dakota. In: Bues, S.S., ed., Centennial field volume: Geological Society of American, Rocky Mountain Section, v. 2, p. 219-225.

Redden, J.A., and DeWitt, E., 2008, Maps showing geology, structure, and geophysics of the central Black Hills, South Dakota: U.S. Geological Survey Scientific Investigations Map 2777, 44 p. pamphlet, 2 sheets.

Redden, J.A., Peterman, Z.E., Zartman, R.E., and DeWitt, E., 1990, U-Th-Pb geochronology and preliminary interpretation of Precambrian tectonic events in the Black Hills, South Dakota, *in* Lewry, J. F., and Stauffer, M. R., eds., The Trans-Hudson orogen: Geological Association of Canada Special Paper 37, p. 229–251.

Schurer and Fuchs Petrography, 1991, Ore mineralogy of three high-grade gold samples from the Annie Creek mine, South Dakota: Internal report to Wharf Resources.

Shapiro, L.H., and Gries, J.P., 1970, Ore deposits in rocks of Paleozoic and Tertiary age of the northern Black Hills, South Dakota: U.S. Geological Survey Open-File Report 70-300, 235 p.

U.S. Geological Survey, Lead Topographic Quadrangle, South Dakota, 1961, photo revised 1971, scale 1:24,000.

Uzunlar, Nuri, 1993, Genesis of Tertiary epithermal-mesothermal gold-silver deposits in the Lead-Deadwood dome, northern Black Hills, South Dakota: Ph.D. Thesis, South Dakota School of Mines and Technology, 261 p.

28. EFFECTIVE DATE AND SIGNATURE PAGE

This Report, titled "Technical Report for the Wharf Operation, Lead, South Dakota, U.S.: NI 43-101 Technical Report", prepared by Coeur Mining, Inc., with an effective date of December 31, 2017 and a Report date of February 7, 2018, was prepared and signed by the following authors:

1. Dated February 7, 2018 — (Signed and Sealed) "Mr. Ken Nelson"

   Mr. Ken Nelson, RM MMSA
   Mine General Manager
   Wharf Resources (U.S.A.), Inc.

2. Dated February 7, 2018 — (Signed and Sealed) "Mr. Tony Auld"

   Mr. Tony Auld, RM SME
   Mining Manager
   Wharf Resources (U.S.A.), Inc.

3. Dated February 7, 2018 — (Signed and Sealed) "Ms. Lindsay E. Chasten"

   Ms. Lindsay Chasten, RM SME
   Exploration Geologist
   Wharf Resources (U.S.A.), Inc.

4. Dated February 7, 2018 — (Signed and Sealed) "Mr. Matthew R. Hoffer"

   Mr. Matthew R. Hoffer, RM SME
   Manager, Geology
   Coeur Mining, Inc.

5. Dated February 7, 2018 — (Signed and Sealed) "Mr. Scott J. Jimmerson"

   Mr. Scott J. Jimmerson, RM SME
   Manager, Resource Estimation
   Coeur Mining, Inc.

6. Dated February 7, 2018 — (Signed and Sealed) "Mr. John K. Key"

   Mr. John K. Key, RM SME
   Process Plant Manger
   Wharf Resources (U.S.A.), Inc.

7. Dated February 7, 2018 — (Signed and Sealed) "Mrs. Kelly B. Lippoth"

   Mrs. Kelly B. Lippoth, CPG AIPG
   Senior Resource Geologist
   Coeur Mining, Inc.

29. APPENDIX

29.1 Wharf Operations Surface and Mineral Tenure

29.1.1 Fee Interests and Patented Mining Claims

The following table lists the fee interests related to the project. The Public Lands Survey System column presents information in the following sequence: country, state, county, township, range, and section.

Table 29-1. Wharf Mine fee interests

Parcel A: Golden Reward Mining Company, LP

Patented Lode Mining Claims

1	Mineral Survey No. 316:	Steward Lode
2	Mineral Survey No. 401:	North Star Lode
3	Mineral Survey No. 411A:	Tract A, being a portion of the Oriole Lode M.S. 411A., located in Section 1, T4N, R2E, BHM, Lawrence County, South Dakota, recorded in Plat Document No. 92-4913
4	Mineral Survey No. 480:	Black Sulfate Lode
5	Mineral Survey No. 516:	Bonanza Lode
6	Mineral Survey No. 517A:	Plutus Lode
7	Mineral Survey No. 518:	Buxton Lode
8	Mineral Survey No. 519:	Cheetor Lode
9	Mineral Survey No. 520:	Clarinda Lode
10	Mineral Survey No. 536:	Richelieu Lode, **EXCEPT** Lot H1 and Lot H2
11	Mineral Survey No. 537:	Patrick Henry Lode
12	Mineral Survey No. 538:	Ruby Bell Lode
13	Mineral Survey No. 539:	Golden Reward Lode
14	Mineral Survey No. 540:	Silver Case Lode
15	Mineral Survey No. 541:	Golden Wedge Lode
16	Mineral Survey No. 542:	Isadorah Fraction Lode
17	Mineral Survey No. 543:	Silver Shower Lode, **EXCEPT** that portion lying within Lots 1-5 of the Oxford Subdivision in Plat Doc. #2005-3473
18	Mineral Survey No. 544:	Smiley and Lundt Lodes
19	Mineral Survey No. 572:	May Flower Lode
20	Mineral Survey No. 573:	Aurora Lode
21	Mineral Survey No. 574:	Lucke Fraction Lode
22	Mineral Survey No. 575:	Rebecca Lode
23	Mineral Survey No. 576:	Motto Lode
24	Mineral Survey No. 577:	Motto Fraction Lode
25	Mineral Survey No. 578:	Point Fraction Lode
26	Mineral Survey No. 579:	Crown Point Lode
27	Mineral Survey No. 600:	Minnie Lode, **EXCEPT** Tract 1 of the Minnie Lode MS 600 as recorded Plat Doc. #90-3950
28	Mineral Survey No. 760:	New Atlantic Lode

29	Mineral Survey No. 761:	Boscobel Lode
30	Mineral Survey No. 763:	Green Point Lode
31	Mineral Survey No. 764:	Ophir Lode, **EXCEPT** that portion lying within Lots 1-5 of the Oxford Subdivision in Plat Doc. #2005-3473
32	Mineral Survey No. 765:	Mikado Lode
33	Mineral Survey No. 766:	Silver Spring Lode
34	Mineral Survey No. 768:	Elizabeth Lode
35	Mineral Survey No. 769:	Fannie Lode
36	Mineral Survey No. 781:	Sunrise Lode
37	Mineral Survey No. 782:	Sunset Lode
38	Mineral Survey No. 784:	Sunshine Lode
39	Mineral Survey No. 785:	Sunday Lode
40	Mineral Survey No. 789:	Tilton Lode
41	Mineral Survey No. 800:	Harmony Lode
42	Mineral Survey No. 801:	Brewery Lode, **EXCEPT** highway right of way
43	Mineral Survey No. 802:	Brewery Fraction Lode
44	Mineral Survey No. 845:	Comit Lode
45	Mineral Survey No. 872:	National Lode
46	Mineral Survey No. 873:	International Lode
47	Mineral Survey No. 880:	Perry, Little Bonanza Fraction and Penny Lodes
48	Mineral Survey No. 896:	Alice May Lode
49	Mineral Survey No. 899:	Sundance, Florence Fraction, Silver Reef, Glencoe, Alta, General Custer and Belle Fourche Lodes
50	Mineral Survey No. 902:	Syndicate, Security, Opitz, Yetter, Hilton, Sarsfield, Pat Clayborne, Scott, Great Scott, Mason, Bacon Rind and Armada Lodes
51	Mineral Survey No. 907:	Oblique Fraction No. 2, Oblique Fraction, Silver Light, Liberty Hill and Nevada Gulch Fraction Lodes
52	Mineral Survey No. 911:	Lansford, Lansford No. 2, Eddie, Schuykill and Monroe Lodes
53	Mineral Survey No. 922:	Roanoke, Ruby Basin Fraction and Hannibal Lodes
54	Mineral Survey No. 923:	Powhattan, Huron, Grove and Rob Roy Fraction Lodes
55	Mineral Survey No. 924:	Carthage, Jimmie Fraction, Plowman Fraction, Clark Fraction, Boston Lodes and Whats Left Fraction**, EXCEPT** that portion of Whats Left Fraction lying easterly and southerly of the centerline of U.S. Highway 14A/85
56	Mineral Survey No. 925:	Mogul and Peabody Lodes, **EXCEPT** that portion of Peabody located in Tract B as shown in Plat Document No. 92-4913; **INCLUDING** Tracts A and B of the Omega Lode Mineral Survey No 925 according to Plat Document No. 77-5432
57	Mineral Survey No. 951:	Axiom, Harrison, Buena Vista, and Clontarf Lodes and Tract A of Powderly Lode, Tract B of Powderly Lode, Tract A of Henry George Lode and Tract B of Henry George Lode all as shown on Plat Document No. 77-5430.
58	Mineral Survey No. 956:	Clinton Lode, **EXCEPT** that portion lying within Lots 1-5 of Oxford Subdivision in Plat Doc. #2005-3473
59	Mineral Survey No. 958:	North Cross, Contact, Hardscrabble No. 2 and Belcher Lodes, **EXCEPT** that portion of Belcher in Tract B as set out in Plat Doc. #92-4913; **INCLUDING** Tract A and Tract B of Hardscrabble No. 3 Lodes and Tract A and Tract B of Hardscrabble No. 4 Lodes as shown in Plat Doc. No. 77-5431.
60	Mineral Survey No. 966:	Aldebaran, Nabob, Northern Crown and Andromeda Lodes
61	Mineral Survey No. 984:	Home, Buckingham, Rubicon, Champion and Peruvian Lodes, EXCEPT Lot 3 of the Champion and Peruvian Lodes in Plat Doc. No. 98-4890 and corrective Affidavit 99-4063.

62	Mineral Survey No. 989:	Yuba and Eldora Lodes **EXCEPT** Plat of Terry Cemetery being a portion of Yuba and Eldora Lodes MS 989 in Plat Doc #2008-7006.
63	Mineral Survey No. 1014:	John Collins, Harry, Little Blanch and Fred Fraction Lodes
64	Mineral Survey No. 1037:	Last Chance Lode **EXCEPT** Lot H-1
65	Mineral Survey No. 1039:	Lot S of the Silver Wave Lode M.S. 1039 as set out in Plat Book 5, Page 157.
66	Mineral Survey No. 1052:	Garland, Spargo and Graham Lodes
67	Mineral Survey No. 1061:	Emma Fraction No. 2 and Emma Lodes
68	Mineral Survey No. 1062:	Silver Hill, Silver Hill Fraction, Rock Bluff, Isadorah, Billy and Jessie Fraction Lodes
69	Mineral Survey No. 1063:	Alpha Lode, **EXCEPT** any portion lying within Lots 1-5 of Oxford Subdivision in Plat Doc. #2005-3473
70	Mineral Survey No. 1064:	Little Bird, Daisy Fraction, Saint Louis, Minnie, Tornado, Big Test Fraction, Silver Fraction and Minnie Fraction Lodes
71	Mineral Survey No. 1065:	Dump Fraction Oxford, Mineral Point and Mohawk Lodes, **EXCEPT** any portion lying within Lots 1-5 of Oxford Subdivision Plat Doc. #2005-3473
72	Mineral Survey No. 1071:	Log Cabin and Bald Eagle Lodes
73	Mineral Survey No. 1072:	Mountain Peak, Ernest, Complement and Mountain Peak Fraction Lodes
74	Mineral Survey No. 1073:	Meadow Lark, Ed R.A., Shaft Fraction, Lone Jack and Lone Pine Lodes, EXCEPT any portion lying within Lots 1-5 of Oxford Subdivision Plat Doc. #2005-3473
75	Mineral Survey No. 1074:	Golden Bar Lode
76	Mineral Survey No. 1075:	Monte Cristo, Mabury and Livingston Lodes
77	Mineral Survey No. 1076:	Comet No. 1 and Comet No. 2 Lodes
78	Mineral Survey No. 1077:	Victory Lode
79	Mineral Survey No. 1078:	Ibex Fraction Lode
80	Mineral Survey No. 1097:	Clarinda Extension Lode
81	Mineral Survey No. 1101:	St. Ives and Some Left Fraction, **EXCEPT** that portion of Some Left Fraction lying easterly and southerly of the centerline of U.S. Highway 14A/85
82	Mineral Survey No. 1102:	Blaine, Cleveland and Dickinson Lodes, **EXCEPT** that portion lying easterly and southerly of the centerline of U.S. Highway 14A/85
83	Mineral Survey No. 1112:	Sunny Lode
84	Mineral Survey No. 1124:	Bertha Lode
85	Mineral Survey No. 1136:	Saw Tooth Fraction, Aztec, Little Crow, Little Crow Fraction, Big Crow, Bayard, Silver Belt No. 1 and Silver Belt No. 2 Lodes, **EXCEPT** that portion of Silver Belt No. 1 lying easterly and southerly of the centerline of U.S. Highway 14A/85; **INCLUDING** Lot 4 of Cuba and Great Western Lodes of MS 1136, as shown on Plat Document No.98-4890
86	Mineral Survey No. 1153:	Cyclone Fraction No. 2 Lode; and Cyclone Fraction and Sioux Lodes, **EXCEPT** that portion of Cyclone Fraction and Sioux lodes lying easterly and southerly of the centerline of US Hwy 14A/85
87	Mineral Survey No. 1158:	Undivided ½ interest in Evangeline No. 7 and Evangeline No. 8 Lodes
88	Mineral Survey No. 1167:	Canyon Lode, EXCEPT Lot H-2 & H-3 and Ruby Belle Fraction Lode, EXCEPT Lot H-1 and H-2
89	Mineral Survey No. 1176:	Harvard and Cleveland Lodes
90	Mineral Survey No. 1197:	Tony and Maggie Fraction Lodes
91	Mineral Survey No. 1200:	Carter, Trial No. 1, Trial No. 2, Trial No. 3 and Trial Fraction, **EXCEPT** those portions lying westerly of the western right of way of Rochford Road and lying easterly and southerly of the centerline of U.S. Hwy 14A/85
92	Mineral Survey No. 1204:	Bismark, Bismark No. 1, Bismark No. 2, Bismark No. 3, Crown Point, Crown Point No. 1, Crown Point No. 2, Crown Point No. 3, Crown Point No. 4, Crown Point No. 5, Hanify, Hanify No. 1, Hanify No. 2, Hanify No. 3, Hanify No. 4, Hanify No. 5, Hanify No. 6 and Hanify No. 7 Lodes

93	Mineral Survey No. 1221:	Foster Fraction, Lovisa, Gamba, Addie and Eva Lodes
94	Mineral Survey No. 1606:	Lot 2B of the Subdivision of Lot 2 of the Augusta Lode of Mineral Survey No. 1606 as set out in Plat Book 7, Page 50.

Table 29-2. Wharf Mine fee interests (Continued)

Parcel A: Golden Reward Mining Company, LP

Subdivision Lots and Government Lots

1	Mineral Survey No. 195:	Decorah Lode
2	Mineral Survey No. 330:	Portland Lode
3	Mineral Survey No. 331:	Gustavus Lode
4	Mineral Survey No. 332:	Paragon Lode
5	Mineral Survey No. 351:	Silver Plume Lode EXCEPT Tract 11 being a portion of Hidden Fraction M.S. 1993, Martin Fraction M.S. 2069, Southerland M.S. 352, Snow Storm M.S. 2075, Silver Plume M.S. 351, Santa Fe M.S. 402 and Star MS 1493 according to Plat Document No. 2004-1723
6	Mineral Survey No. 356:	Folger Lode EXCEPT Lot H3 per plat Doc. #2016-794 deeded for highway use
7	Mineral Survey No. 357:	Empire State Lode
8	Mineral Survey No. 358:	Perserverance Lode EXCEPT Lot H3 per plat Doc. #2016-793 deeded for highway use
9	Mineral Survey No. 359:	Indispensible Lode
10	Mineral Survey No. 360:	Olive Fraction Lode
11	Mineral Survey No. 361:	Trojan Lode
12	Mineral Survey No. 378:	Mark Twain Lode EXCEPT Lot H1 per plat Doc. #2016-792 deeded for highway use Mineral Survey No. 397:
13	Mineral Survey No. 379	Alameda Lode
14	Mineral Survey No. 398:	Alameda Extension Lode EXCEPT Lot H2 per plat Doc. #2016-795 deeded for highway use
15	Mineral Survey No. 402:	Santa Fe Lode EXCEPT Tract 11 being a portion of Hidden Fraction M.S. 1993, Martin Fraction M.S. 2069, Southerland M.S. 352, Snow Storm M.S. 2075, Silver Plume M.S. 351, Santa Fe M.S. 402 and Star MS 1493 according to Plat Document No. 2004-1723 and EXCEPT Tract 5 being portions of Surprise and Little Phill MS 1005, Hidden Fraction MS 1993, Black Moon MS 1704, Santa Fe M.S. 402, Cygnet MS 1705, Putnam MS 1172, Ryan Fraction MS 2001, Northside MS 1173 Kate Putnam MS 1172 according to Plat Doc. #2003-8149
16	Mineral Survey No. 472:	Mound Lode
17	Mineral Survey No. 558:	India Lode
18	Mineral Survey No. 559:	Japan Lode
19	Mineral Survey No. 560:	Pappoose Lode
20	Mineral Survey No. 561:	War Eagle Lode
21	Mineral Survey No. 562:	Yukon Lode
22	Mineral Survey No. 563:	Goodenough Lode
23	Mineral Survey No. 564:	Golden Eagle Lode
24	Mineral Survey No. 565:	Marco Polo Lode
25	Mineral Survey No. 566:	Algoma Lode
26	Mineral Survey No. 675:	General Grant Lode
27	Mineral Survey No. 793:	Dividend, Little Snow Drop and Hector Lodes
28	Mineral Survey No. 866:	Dark Horse Lode

29	Mineral Survey No. 898:	Hardscrabble and Vulger Fraction Lodes EXCEPT Tract B of a portion of Hardscrabble and Vulger Fraction according to Plat Document No. 92-4913
30	Mineral Survey No. 902:	Horseshoe, Horseshoe Fraction and Red Flag lodes
31	Mineral Survey No. 914:	North Lode
32	Mineral Survey No. 915:	Norman, Ashland, Boston and Providence Lodes
33	Mineral Survey No. 916:	Jessie Lee and Leopard Lodes
34	Mineral Survey No. 944:	Baltimore Lode
35	Mineral Survey No. 945:	Reindeer, Ophir (afa Ofer) Fraction and Monday
36	Mineral Survey No. 978:	Beaver Fraction Lode
37	Mineral Survey No. 979:	Burlington Lode Highway Right of way
38	Mineral Survey No. 996:	Apex and Northerly Segregated Burlington Lodes
39	Mineral Survey No. 1013:	Missouri, Goldhill Fraction and Middle Fraction Lodes
40	Mineral Survey No. 1016:	Annie, Annie Fraction, Katy, Josie and Josie Fraction Lodes
41	Mineral Survey No. 1041:	Last Fraction Lode EXCEPT Lot H1 per plat Doc. #2016-791 deeded for highway use
42	Mineral Survey No. 1079:	Keed and Mary Lodes
43	Mineral Survey No. 1095:	Tigres, Euphrat, Allowez, Squaw Creek and Gentle Annie Lodes
44	Mineral Survey No. 1104:	Yukon, Ajax, Ajax No. 2, Orinoco Fraction and Atlas Lodes
45	Mineral Survey No. 1107:	Elk Mountain Group No 1, Elk Mountain Group No. 2 and Elk Mountain Group No. 3 Lodes
46	Mineral Survey No. 1117:	Keystone, Bunker Hill Fraction and Bunker Hill Lodes
47	Mineral Survey No. 1139:	Ground Hog, Buffloe, Foley, Whale and Whale Fraction EXCEPT any portion within Tract A and Tract B of Lost Camp Valley Acreage and EXCEPT Lot W-1 of Whale Lode, and EXCEPT Lot A of Foley and EXCEPT Lot B of MS 1139 and 2066.
48	Mineral Survey No. 1139:	Forest Queen Lode
49	Mineral Survey No. 1141:	Camden, Ford, Georgie and Saganaw Lodes
50	Mineral Survey No. 1172:	Kate Putnam Lode EXCEPT Tract 8 being portions of Kate Putnam MS 1172 and Northside Lode MS 1173 according to Plat Doc. No. 2003-8149 and EXCEPT Tract 10 being portions of Kate Putnam MS 1172 and Northside Lode MS 1173 according to Plat Doc. No. 2004-1723
51	Mineral Survey No. 1173:	Northside Lode EXCEPT Tract 8 being portions of Kate Putnam MS 1172 and Northside Lode MS 1173 according to Plat Doc. No. 2003-8149 and EXCEPT Tract 10 being portions of Kate Putnam MS 1172 and Northside Lode MS 1173 according to Plat Doc. No. 2004-1723; EXCEPT Lot H1 per plat Doc.# 2016-806 deeded for highway use
52	Mineral Survey No. 1175:	Ingham, Winnesheik and File Closer Fraction Lodes
53	Mineral Survey No. 1189:	Rudolph, Costello and Dolphin Lodes
54	Mineral Survey No. 1213:	Lawrence, Golden Wedge, Red Headed Girl, Comstock, Thora, Red Headed Boy, Red Headed Woman, Red Headed Man, Lost Man, Gold King, Silver King, Mill Site, Pluto Fraction, Odin, Lucky Man, Found Fraction, Llewellen Fraction and Connecting Link Lodes
55	Mineral Survey No. 1214:	Peggie Lode
56	Mineral Survey No. 1226:	Red Wing Lode, EXCEPT metes and bounds portion described in Doc. #76-2328
57	Mineral Survey No. 1226:	Wenona, Rutland, Halford, LaSalle and LaSalle Fraction Lodes, EXCEPT metes and bounds of LaSalle Lode in Doc #76-2328
58	Mineral Survey No. 1226:	Tacqua, Huxley, Austin and Austin Fraction Lodes, EXCEPT Lots 1-2-4 Blk 5 Trojan
59	Mineral Survey No. 1229:	Hidden Ore, Saxon, Delancy, Hamden, Walton, Coxey Fraction, Harvey Fraction, Eagle Chief, Maud and High Tariff Lodes EXCEPT Lot A of High Tariff according to Plat Doc. #2005-1007
60	Mineral Survey No. 1233:	General Jackson, Diamond Fraction, Callebogia Fraction and Calabogie Lodes

61	Mineral Survey No. 1272:	Sunset and Rainy Day Lodes
62	Mineral Survey No. 1283:	May, Deadwood, Buffalo and Link Fraction Lodes
63	Mineral Survey No. 1286:	Revenue Fraction No. 2 and Revenue Fraction No. 1 Lodes
64	Mineral Survey No. 1288:	Cardinal Lode
65	Mineral Survey No. 1292:	Gold Bug Fraction and Senator Lodes EXCEPT former railroad right of way thru Senator Lode
66	Mineral Survey No. 1310:	Emma Fraction, Tiger Fraction, Terry Fraction, Leta, Hattie, Lost Camp, Minnesota Maid, Desire No.1, Desire No. 2 and Attraction Lodes EXCEPT any portion including within Tract A of Lost Camp Valley Acreage and Tract B of Lost Camp Valley Acreage
67	Mineral Survey No. 1335:	Emperor Fraction, Belle of Deadwood, Elroy Fraction, Pasha Fraction, Magnolia, Magnolia Fraction No. 2, Transit of Venus, and Gertrude Fraction Lodes
68	Mineral Survey No. 1340:	Ontario Lode
69	Mineral Survey No. 1341:	Apex, Argentine, Golden, and Star Lodes EXCEPT any portion within Tract A of Lost Camp Valley Acreage and any portion in Tract C of Lost Camp Valley Acreage and EXCEPT Lot 1 and 2 of Area B Revised
70	Mineral Survey No. 1349:	James G. Blain Lode
71	Mineral Survey No. 1378:	Long Valley No. 1, Long Valley No. 3, Galena Fraction, Galena, Perry, Little Eagle, Blue Jay, Porcupine, Summit Fraction, Bancroft, Summit, McKenzie, Little Chief, Eclipse, Yantic, Golconda, Berta, Alleta and Tibo Lodes
72	Mineral Survey No. 1384:	Old Iron Sides, On Guard, Al Borak Blue Crow, Moscow, Boulders Ghent, Owls Roost, also known as Owls Roast, Osaka, Cawnpare, Havana, St. Croix, Bath, Sometimes and Sardona Lodes
73	Mineral Survey No. 1404:	Gunnison and Vulcan Lodes EXCEPT Lot 1 of Vulcan
74	Mineral Survey No. 1413:	Spotted Pike, Fair Day, Ohio and Collgarde Lodes
75	Mineral Survey No. 1427:	Gault No. 1, Gault No. 4, Gault No. 5 and Gault No. 6 Lodes
76	Mineral Survey No. 1428:	Wedge, Jim, Joseph, Little Rock and Yellow Boy Fraction Lodes
77	Mineral Survey No. 1429:	Lucy, Tiger, Rehl, and Mono Lodes EXCEPT former railroad right of way thru Mono Lode
78	Mineral Survey No. 1431:	Aztec No. 1, Aztec No.2 and Aztec No. 3 Lodes
79	Mineral Survey No. 1438:	McCullum Millsite
80	Mineral Survey No. 1451:	Blanch E, Nettie C, Ruth, May E. and Nellie M. Lodes
81	Mineral Survey No. 1453:	Dolphin Lode
82	Mineral Survey No. 1468:	Loyd Lode
83	Mineral Survey No. 1472:	Ruby Evans Lode
84	Mineral Survey No. 1475:	Little Darling, Little Robbie, Baby and Little Allen Lodes
85	Mineral Survey No. 1493:	Star Lode EXCEPT Tract 7 of the subdivision of Star Lode according to Plat Doc. #2003-8149 and EXCEPT Tract 11 of the subdivision of Star Lode according to Plat Doc.# 2004-1723
86	Mineral Survey No. 1515:	Wandering Jew Lode
87	Mineral Survey No. 1516:	Summit Flat and Wm. B Allison Lodes
88	Mineral Survey No. 1536:	Rambler, Francis and Madeline Lodes EXCEPT portions lying within Tract C of Lost Camp Valley Acreage and EXCEPT parts deeded in Doc. #77-1743 and Doc. No. 83-3054
89	Mineral Survey No. 1551:	Comerse and Porcupine Lodes
90	Mineral Survey No. 1567:	Daisy No. 1, Daisy No. 2, Giddings, Fargo, Fargo Fraction, Funston, McLaughlin, Frost, Little Eva and Hogarth Lodes
91	Mineral Survey No. 1580:	Juno Lode

92	Mineral Survey No. 1581:	Modoc and Paddy Ford Lodes
93	Mineral Survey No. 1616:	Thusnelda, Grenada, Genesee, Pearless, Phonolite and Trenton Lodes
94	Mineral Survey No. 1643:	Snorter and Snorter Fraction Lodes EXCEPT former railroad right of way
95	Mineral Survey No. 1649:	Orinoco Lode
96	Mineral Survey No. 1659:	Bad Tale Fraction, Telegram, Maid of Erin, Gannon and B&M Fraction Lodes
97	Mineral Survey No. 1667:	Stanley, June and Keystone Fraction Lodes
98	Mineral Survey No. 1668:	Flossie, Copperhead, Copperhead Fraction Lodes
99	Mineral Survey No. 1670:	Denver, Allentown, also known as Allenton, Grainger, also known as Granger, Log Cabin and Camp Bird Lodes
100	Mineral Survey No. 1684:	Plum Fraction Lode
101	Mineral Survey No. 1740:	General Terry and Deadwood Lodes
102	Mineral Survey No. 1756:	Alaska Fraction Lode
103	Mineral Survey No. 1760:	Dump Lode
104	Mineral Survey No. 1768:	Foran Lode
105	Mineral Survey No. 1782:	Bald Hill, Saturday, April and Marco Polo Lodes EXCEPT former railroad right of way
106	Mineral Survey No. 1786:	Acme Lode
107	Mineral Survey No. 1790:	Remo, Russell, Hoctor, Laborn No.1 and Calumet Lodes
108	Mineral Survey No. 1795:	Vickter and Point Lodes
109	Mineral Survey No. 1803:	Texana, Eagle, Eagle Fraction, Bayou, Georgia Fraction, Meteor and Rocket Lodes
110	Mineral Survey No. 1844:	Rochester Lode
111	Mineral Survey No. 1848:	Myrtle Lode
112	Mineral Survey No. 1875:	Norwich, Gossan and Gossan Fraction Lodes EXCEPT that portion deeded to Oakmont Resources in Deed filed as Doc. #88-3510
113	Mineral Survey No. 1937:	Maria Lode
114	Mineral Survey No. 1939:	Plunger, Caesar and Non Plus Ultra Lodes
115	Mineral Survey No. 1942:	Belle Plane, Heratage. Busby and Washington Lodes EXCEPT any portion within Tract C of Lost Camp Valley Acreage in Plat Bk 5 Page 116
116	Mineral Survey No. 1946:	Freshett, Meerschtendals, Slip Fraction No.1, Goldsmith Maid, Montesuma, No Bagatelle, Frankfurt and Bavaria Lodes
117	Mineral Survey No. 1955:	Arizona, Akka, Cornucopia, Water, Harrison, Morton, Wall, Granet Fraction, Prolific and Confidence Lodes
118	Mineral Survey No. 1960:	Sarchfield and Robert Emmett Lodes
119	Mineral Survey No. 1979:	Imperial, Queen, Princess and Crown Lodes
120	Mineral Survey No. 1962:	Silver King Lode
121	Mineral Survey No. 1970:	January, November, July, August and Mollie Dare Lodes
122	Mineral Survey No. 1984:	Star and Hart Lodes
123	Mineral Survey No. 2001:	Ryan and Ryan Fraction Lodes EXCEPT Tracts 8 and 9 Revised according to Plat Document No. 2003-8149 and No. 2004-1723 EXCEPT Lot H5 of Ryan and Lot H3 and H4 of Ryan Fraction per plat Document Nos. 2016-803, #2016-804 & 2016-805 deeded for highway use
124	Mineral Survey No. 2006:	Margurite No. 2 Lode
125	Mineral Survey No. 2021:	Belle Fraction, Rope Fraction, Mother and Little Barefoot, EXCEPT any portion within Tract B of Lost Camp Valley, EXCEPT Tract 1 and 2 of Lot C of Little Barefoot Lode, EXCEPT Lot H1 of Belle Fraction and H1 of Rope Fraction and H2 of Little Barefoot per plats in Doc. #2016-789, #2016-790 and #2016-796 deeded for highway use

126	Mineral Survey No. 2027:	Index (Including Lot A of Index described by metes and bounds in Doc #76-929) and Huxley Lodes EXCEPT Lot H-1 of Huxley
127	Mineral Survey No. 2029:	Alaska and Link Lodes
128	Mineral Survey No. 2036:	Mill and Columbia Fraction
129	Mineral Survey No. 2037:	Reliance Fraction Lode
130	Mineral Survey No. 2044:	Tessa Lode EXCEPT any portion within Tract A of Lost Camp Valley Acreage in Plat Book 2, Page 92 and EXCEPT Tract C of Lost Camp Valley Acreage in Plat Book 5 Page 116 and EXCEPT that portion deeded to Robert and Barbara Blue in Doc. #77-1743.
131	Mineral Survey No. 2050:	Comet and Comet No. 1 Lodes EXCEPT any portion within Tract A of Lost Camp Valley Acreage in Plat Book 2, Page 92 and EXCEPT Tract C of Lost Camp Valley Acreage in Plat Book 5, Page 116
132	Mineral Survey No. 2060:	Pewabic Lode
133	Mineral Survey No. 2066:	Milton Fraction Lodes EXCEPT any portion within Tract A of Lost Camp Valley in Plat Book 2, Page 92 and Tract B of Lost Camp Valley in Plat Book 5, page 62, and EXCEPT Lot B of the Subdivision of MS 1139 and 2066 as shown on Doc. #76-403 and EXCEPT the Skier Solitude Tract in Plat Doc #2007-5883
134	Mineral Survey No. 2074:	Lillie M. and Lillie M. No. 1 Lodes
135	Mineral Survey No. 2075:	Snow Storm Lode EXCEPT Tract 11 being a portion of Hidden Fraction M.S. 1993, Martin Fraction M.S. 2069, Southerland M.S. 352, Snow Storm M.S. 2075, Silver Plume M.S. 351, Santa Fe M.S. 402 and Star MS 1493 according to Plat Document No. 2004-1723
all described by Patents and Plats recorded in Lawrence County, South Dakota.		

Table 29-3. Wharf Mine fee interests (Continued)

Parcel A: Golden Reward Mining Company, LP

Mineral Rights Only (Severed Surface Rights)

1	Mineral Survey No. 762	Mariposa Lode
2	Mineral Survey No. 924	What's Left Fraction Lode lying easterly and southerly of the centerline of U.S. Hwy. 14A/85
3	Mineral Survey No. 984	Lot 3 of the Champion and Peruvian Lodes, as shown on Plat Document No. 98-4890
4	Mineral Survey No. 1058	Carmyllie, Robert Emet, Dr. Flick Fraction, Sol Star, Golden Eagle, Guild and Mose Lyon Fraction Lodes
5	Mineral Survey No. 1101	Some Left Fraction Lode lying easterly and southerly of the centerline of U.S. Highway 14A/85
6	Mineral Survey No. 1102	St. Just, Specie Payment Fraction and Bryan Lodes; Blaine, Cleveland and Dickinson Lodes lying easterly and southerly of the centerline of U.S. Hwy. 14A/85
7	Mineral Survey No. 1131	Overdraft, Cleopatra, Argenta, Daybreak, Midnight, Brandywine, Brandywine Fraction, Georgianna, Florence Fraction Lodes
8	Mineral Survey No. 1132	Wye House, Mix, Stir, Glendale Fraction, Buckeye No. 2, Stone Wall, Blue Ridge, Lloyd Lounds Lodes
9	Mineral Survey No. 1136	Cuba, Cuba Fraction, Great Western Lodes; Silver Belt No. 1 Lode lying easterly and southerly of the centerline of U.S. Hwy 14A/85
10	Mineral Survey No. 1142	CAW, I.M.H., Florence, Stead, Stead No. 1, Stead No. 2, Stead No. 3, Stead No. 4, McLeod, McLeod No. 1, McLeod No. 2, Gertrude, Coppy Fraction, Low, High, Poorman, Elsie, Monmouth, Monmouth No. 1, Monmouth No. 2, Monmouth No.4, December, Bridgeport, Blue Danube, Dr. Late, Lamplighter, West Virginia, Monmouth No. 3, Monmouth No. 5, Monmouth No. 6, Client Fraction, Client Lodes including Lot A of the subdivision of a portion of Client Lode, as shown on Plat Document No. 2005-4348
11	Mineral Survey No. 1151	Sound Money, Boone, Cuba No. 1 Fraction, Colts, Cook, Missing Link, Syracuse, Cuba Fraction, McKinley Fraction, Diorite, Xerxes, Beaver and Linnaeus Lodes

12	Mineral Survey No. 1152	Boston, Welcome, Derby, Tiger, Seagull, Sitting Bull Lodes; Lot D and Lot F, being a subdivision of Dexter, Cliff, Deadwood, Palmetto Lodes, M.S. 1152, as shown on Plat Document No. 76-677
13	Mineral Survey No. 1153	Old Bill, McLeod, Golden Key, Bayard Fraction Lodes, Cyclone Fraction and Sioux Lodes lying easterly and southerly of the centerline of U.S. Hwy. 14A/85
14	Mineral Survey No. 1158	On Time, On Time No. 1, On Time No. 2, On Time No. 3, On Time No. 4, Evangeline No. 1, Evangeline No. 2, Evangeline No. 3, Evangeline No. 4, Evangeline No. 5, Evangeline No. 6, Evangeline No. 7, Evangeline No. 8, Big Four, Big Four No. 1, Big Four No. 2, Big Four No. 3, Big Four No. 4, Square, High Point, Big Foot, Black Thunder, Crow Dog, Bull Eagle, Little Bird Fraction Lodes
15	Mineral Survey No. 1169	Polar Bear, Wedge, Edison, Edison No. 2, Edison No. 3 Lodes
16	Mineral Survey No. 1188	Wild Deer No. 1, Wild Deer No. 2, Wild Fawn Lodes
17	Mineral Survey No. 1200	King, Carter No. 1, Carter No. 2, Carter No. 3, Fay No. 2, Fay No. 3, Ray, Ray No. 1, Ray No. 2, Ray No. 3, Bancroft No. 1, Bancroft No. 2, Bancroft No. 3, Violet No. 1, Violet No. 2, Violet No. 3, Ox, Flat, Rainbow, Albert Steele, Browning, Paragon, Charlie, Ruby Basin, Cunniff, Star, Principal Fraction, Principal Fraction No. 1, Principal No. 1, Principal No. 2, Principal No. 3, Principal No. 4, Sheridan, Annie, Springview, Maggie, Amy, Waukegon, Genevieve, Little Johnny, Llama, Tum-Tum, Lucky Girl, Jay No. 1, Jay No. 2, Jay No. 3, Albert Steel Fraction, Log Cabin, Hazard Lodes; Carter, Trial No. 1, Trial No. 2, Trial No. 3 Lodes lying easterly of the centerline of U.S. Hwy 14A/85
18	Mineral Survey No. 1209	St. George No. 1, St. George No. 2, Monte Carlo, Venus, Jupiter, Deer Mountain, Evarts, Fairview, World's Fair, Bangor Fraction No. 2, Bangor No. 1, Selbie, Transit, First Chance, Chicago, Big Dipper Fraction, Big Dipper No. 1, Big Dipper No. 2, Big Dipper No. 3, Big Dipper No. 4, Big Dipper No. 5 Lodes
19	Mineral Survey No. 1210	Havana No. 1, Havana No. 2, Havana No. 3, Havana No. 4, Havana No. 5, Havana No. 6, Havana No. 7, Havana No. 8, Havana No. 9, Havana No. 10, Connecting, Wabash No. 1, Wabash No. 2, Wabash No. 3, Wabash No. 4, Wabash No. 5 Lodes
20	Mineral Survey No. 1215	Leona Lock, Lone Star, Bengal Tiger, Deposit, B & M Fraction, Gopher No. 1, Gopher No. 2, Gopher No. 3 Lodes
21	Mineral Survey No. 1217	Doze, Doze Fraction, Evening Star (2/3 mineral interest only), Bryan, Belt, Israel, Dolphin (2/3 mineral interest only) Lodes
22	Mineral Survey No. 1984	Star, Hart

Table 29-4. Wharf Mine fee interests (Continued)

Parcel B: Wharf Resources (U. S. A.), Inc.

Patented Lode Mining Claims

1	Mineral Survey No. 195:	Decorah Lode
2	Mineral Survey No. 330:	Portland Lode
3	Mineral Survey No. 331:	Gustavus Lode
4	Mineral Survey No. 332:	Paragon Lode
5	Mineral Survey No. 351:	Silver Plume Lode EXCEPT Tract 11 being a portion of Hidden Fraction M.S. 1993, Martin Fraction M.S. 2069, Southerland M.S. 352, Snow Storm M.S. 2075, Silver Plume M.S. 351, Santa Fe M.S. 402 and Star MS 1493 according to Plat Document No. 2004-1723
6	Mineral Survey No. 356:	Folger Lode EXCEPT Lot H3 per plat Doc. #2016-794 deeded for highway use
7	Mineral Survey No. 357:	Empire State Lode
8	Mineral Survey No. 358:	Perserverance Lode EXCEPT Lot H3 per plat Doc. #2016-793 deeded for highway use
9	Mineral Survey No. 359:	Indispensible Lode
10	Mineral Survey No. 360:	Olive Fraction Lode
11	Mineral Survey No. 361:	Trojan Lode

12	Mineral Survey No. 378:	Mark Twain Lode EXCEPT Lot H1 per plat Doc. #2016-792 deeded for highway use Mineral Survey No. 397:
13	Mineral Survey No. 379	Alameda Lode
14	Mineral Survey No. 398:	Alameda Extension Lode EXCEPT Lot H2 per plat Doc. #2016-795 deeded for highway use
15	Mineral Survey No. 402:	Santa Fe Lode EXCEPT Tract 11 being a portion of Hidden Fraction M.S. 1993, Martin Fraction M.S. 2069, Southerland M.S. 352, Snow Storm M.S. 2075, Silver Plume M.S. 351, Santa Fe M.S. 402 and Star MS 1493 according to Plat Document No. 2004-1723 and EXCEPT Tract 5 being portions of Surprise and Little Phill MS 1005, Hidden Fraction MS 1993, Black Moon MS 1704, Santa Fe M.S. 402, Cygnet MS 1705, Putnam MS 1172, Ryan Fraction MS 2001, Northside MS 1173 Kate Putnam MS 1172 according to Plat Doc. #2003-8149
16	Mineral Survey No. 472:	Mound Lode
17	Mineral Survey No. 558:	India Lode
18	Mineral Survey No. 559:	Japan Lode
19	Mineral Survey No. 560:	Pappoose Lode
20	Mineral Survey No. 561:	War Eagle Lode
21	Mineral Survey No. 562:	Yukon Lode
22	Mineral Survey No. 563:	Goodenough Lode
23	Mineral Survey No. 564:	Golden Eagle Lode
24	Mineral Survey No. 565:	Marco Polo Lode
25	Mineral Survey No. 566:	Algoma Lode
26	Mineral Survey No. 675:	General Grant Lode
27	Mineral Survey No. 793:	Dividend, Little Snow Drop and Hector Lodes
28	Mineral Survey No. 866:	Dark Horse Lode
29	Mineral Survey No. 898:	Hardscrabble and Vulger Fraction Lodes EXCEPT Tract B of a portion of Hardscrabble and Vulger Fraction according to Plat Document No. 92-4913
30	Mineral Survey No. 902:	Horseshoe, Horseshoe Fraction and Red Flag lodes
31	Mineral Survey No. 914:	North Lode
32	Mineral Survey No. 915:	Norman, Ashland, Boston and Providence Lodes
33	Mineral Survey No. 916:	Jessie Lee and Leopard Lodes
34	Mineral Survey No. 944:	Baltimore Lode
35	Mineral Survey No. 945:	Reindeer, Ophir (afa Ofer) Fraction and Monday
36	Mineral Survey No. 978:	Beaver Fraction Lode
37	Mineral Survey No. 979:	Burlington Lode Highway Right of way
38	Mineral Survey No. 996:	Apex and Northerly Segregated Burlington Lodes
39	Mineral Survey No. 1013:	Missouri, Goldhill Fraction and Middle Fraction Lodes
40	Mineral Survey No. 1016:	Annie, Annie Fraction, Katy, Josie and Josie Fraction Lodes
41	Mineral Survey No. 1041:	Last Fraction Lode EXCEPT Lot H1 per plat Doc. #2016-791 deeded for highway use
42	Mineral Survey No. 1079:	Keed and Mary Lodes
43	Mineral Survey No. 1095:	Tigres, Euphrat, Allowez, Squaw Creek and Gentle Annie Lodes
44	Mineral Survey No. 1104:	Yukon, Ajax, Ajax No. 2, Orinoco Fraction and Atlas Lodes
45	Mineral Survey No. 1107:	Elk Mountain Group No 1, Elk Mountain Group No. 2 and Elk Mountain Group No. 3 Lodes
46	Mineral Survey No. 1117:	Keystone, Bunker Hill Fraction and Bunker Hill Lodes

47	Mineral Survey No. 1139:	Ground Hog, Buffloe, Foley, Whale and Whale Fraction EXCEPT any portion within Tract A and Tract B of Lost Camp Valley Acreage and EXCEPT Lot W-1 of Whale Lode, and EXCEPT Lot A of Foley and EXCEPT Lot B of MS 1139 and 2066.
48	Mineral Survey No. 1139:	Forest Queen Lode
49	Mineral Survey No. 1141:	Camden, Ford, Georgie and Saganaw Lodes
50	Mineral Survey No. 1172:	Kate Putnam Lode EXCEPT Tract 8 being portions of Kate Putnam MS 1172 and Northside Lode MS 1173 according to Plat Doc. No. 2003-8149 and EXCEPT Tract 10 being portions of Kate Putnam MS 1172 and Northside Lode MS 1173 according to Plat Doc. No. 2004-1723
51	Mineral Survey No. 1173:	Northside Lode EXCEPT Tract 8 being portions of Kate Putnam MS 1172 and Northside Lode MS 1173 according to Plat Doc. No. 2003-8149 and EXCEPT Tract 10 being portions of Kate Putnam MS 1172 and Northside Lode MS 1173 according to Plat Doc. No. 2004-1723; EXCEPT Lot H1 per plat Doc.# 2016-806 deeded for highway use
52	Mineral Survey No. 1175:	Ingham, Winnesheik and File Closer Fraction Lodes
53	Mineral Survey No. 1189:	Rudolph, Costello and Dolphin Lodes
54	Mineral Survey No. 1213:	Lawrence, Golden Wedge, Red Headed Girl, Comstock, Thora, Red Headed Boy, Red Headed Woman, Red Headed Man, Lost Man, Gold King, Silver King, Mill Site, Pluto Fraction, Odin, Lucky Man, Found Fraction, Llewellen Fraction and Connecting Link Lodes
55	Mineral Survey No. 1214:	Peggie Lode
56	Mineral Survey No. 1226:	Red Wing Lode, EXCEPT metes and bounds portion described in Doc. #76-2328
57	Mineral Survey No. 1226:	Wenona, Rutland, Halford, LaSalle and LaSalle Fraction Lodes, EXCEPT metes and bounds of LaSalle Lode in Doc #76-2328
58	Mineral Survey No. 1226:	Tacqua, Huxley, Austin and Austin Fraction Lodes, EXCEPT Lots 1-2-4 Blk 5 Trojan
59	Mineral Survey No. 1229:	Hidden Ore, Saxon, Delancy, Hamden, Walton, Coxey Fraction, Harvey Fraction, Eagle Chief, Maud and High Tariff Lodes EXCEPT Lot A of High Tariff according to Plat Doc. #2005-1007
60	Mineral Survey No. 1233:	General Jackson, Diamond Fraction, Callebogia Fraction and Calabogie Lodes
61	Mineral Survey No. 1272:	Sunset and Rainy Day Lodes
62	Mineral Survey No. 1283:	May, Deadwood, Buffalo and Link Fraction Lodes
63	Mineral Survey No. 1286:	Revenue Fraction No. 2 and Revenue Fraction No. 1 Lodes
64	Mineral Survey No. 1288:	Cardinal Lode
65	Mineral Survey No. 1292:	Gold Bug Fraction and Senator Lodes EXCEPT former railroad right of way thru Senator Lode
66	Mineral Survey No. 1310:	Emma Fraction, Tiger Fraction, Terry Fraction, Leta, Hattie, Lost Camp, Minnesota Maid, Desire No.1, Desire No. 2 and Attraction Lodes EXCEPT any portion including within Tract A of Lost Camp Valley Acreage and Tract B of Lost Camp Valley Acreage
67	Mineral Survey No. 1335:	Emperor Fraction, Belle of Deadwood, Elroy Fraction, Pasha Fraction, Magnolia, Magnolia Fraction No. 2, Transit of Venus, and Gertrude Fraction Lodes
68	Mineral Survey No. 1340:	Ontario Lode
69	Mineral Survey No. 1341:	Apex, Argentine, Golden, and Star Lodes EXCEPT any portion within Tract A of Lost Camp Valley Acreage and any portion in Tract C of Lost Camp Valley Acreage and EXCEPT Lot 1 and 2 of Area B Revised
70	Mineral Survey No. 1349:	James G. Blain Lode
71	Mineral Survey No. 1378:	Long Valley No. 1, Long Valley No. 3, Galena Fraction, Galena, Perry, Little Eagle, Blue Jay, Porcupine, Summit Fraction, Bancroft, Summit, McKenzie, Little Chief, Eclipse, Yantic, Golconda, Berta, Alleta and Tibo Lodes
72	Mineral Survey No. 1384:	Old Iron Sides, On Guard, Al Borak Blue Crow, Moscow, Boulders Ghent, Owls Roost, also known as Owls Roast, Osaka, Cawnpare, Havana, St. Croix, Bath, Sometimes and Sardona Lodes

73	Mineral Survey No. 1404:	Gunnison and Vulcan Lodes EXCEPT Lot 1 of Vulcan
74	Mineral Survey No. 1413:	Spotted Pike, Fair Day, Ohio and Collgarde Lodes
75	Mineral Survey No. 1427:	Gault No. 1, Gault No. 4, Gault No. 5 and Gault No. 6 Lodes
76	Mineral Survey No. 1428:	Wedge, Jim, Joseph, Little Rock and Yellow Boy Fraction Lodes
77	Mineral Survey No. 1429:	Lucy, Tiger, Rehl, and Mono Lodes EXCEPT former railroad right of way thru Mono Lode
78	Mineral Survey No. 1431:	Aztec No. 1, Aztec No.2 and Aztec No. 3 Lodes
79	Mineral Survey No. 1438:	McCullum Millsite
80	Mineral Survey No. 1451:	Blanch E, Nettie C, Ruth, May E. and Nellie M. Lodes
81	Mineral Survey No. 1453:	Dolphin Lode
82	Mineral Survey No. 1468:	Loyd Lode
83	Mineral Survey No. 1472:	Ruby Evans Lode
84	Mineral Survey No. 1475:	Little Darling, Little Robbie, Baby and Little Allen Lodes
85	Mineral Survey No. 1493:	Star Lode EXCEPT Tract 7 of the subdivision of Star Lode according to Plat Doc. #2003-8149 and EXCEPT Tract 11 of the subdivision of Star Lode according to Plat Doc.# 2004-1723
86	Mineral Survey No. 1515:	Wandering Jew Lode
87	Mineral Survey No. 1516:	Summit Flat and Wm. B Allison Lodes
88	Mineral Survey No. 1536:	Rambler, Francis and Madeline Lodes EXCEPT portions lying within Tract C of Lost Camp Valley Acreage and EXCEPT parts deeded in Doc. #77-1743 and Doc. No. 83-3054
89	Mineral Survey No. 1551:	Comerse and Porcupine Lodes
90	Mineral Survey No. 1567:	Daisy No. 1, Daisy No. 2, Giddings, Fargo, Fargo Fraction, Funston, McLaughlin, Frost, Little Eva and Hogarth Lodes
91	Mineral Survey No. 1580:	Juno Lode
92	Mineral Survey No. 1581:	Modoc and Paddy Ford Lodes
93	Mineral Survey No. 1616:	Thusnelda, Grenada, Genesee, Pearless, Phonolite and Trenton Lodes
94	Mineral Survey No. 1643:	Snorter and Snorter Fraction Lodes EXCEPT former railroad right of way
95	Mineral Survey No. 1649:	Orinoco Lode
96	Mineral Survey No. 1659:	Bad Tale Fraction, Telegram, Maid of Erin, Gannon and B&M Fraction Lodes
97	Mineral Survey No. 1667:	Stanley, June and Keystone Fraction Lodes
98	Mineral Survey No. 1668:	Flossie, Copperhead, Copperhead Fraction Lodes
99	Mineral Survey No. 1670:	Denver, Allentown, also known as Allenton, Grainger, also known as Granger, Log Cabin and Camp Bird Lodes
100	Mineral Survey No. 1684:	Plum Fraction Lode
101	Mineral Survey No. 1740:	General Terry and Deadwood Lodes
102	Mineral Survey No. 1756:	Alaska Fraction Lode
103	Mineral Survey No. 1760:	Dump Lode
104	Mineral Survey No. 1768:	Foran Lode
105	Mineral Survey No. 1782:	Bald Hill, Saturday, April and Marco Polo Lodes EXCEPT former railroad right of way
106	Mineral Survey No. 1786:	Acme Lode
107	Mineral Survey No. 1790:	Remo, Russell, Hoctor, Laborn No.1 and Calumet Lodes
108	Mineral Survey No. 1795:	Vickter and Point Lodes
109	Mineral Survey No. 1803:	Texana, Eagle, Eagle Fraction, Bayou, Georgia Fraction, Meteor and Rocket Lodes
110	Mineral Survey No. 1844:	Rochester Lode

111	Mineral Survey No. 1848:	Myrtle Lode
112	Mineral Survey No. 1875:	Norwich, Gossan and Gossan Fraction Lodes EXCEPT that portion deeded to Oakmont Resources in Deed filed as Doc. #88-3510
113	Mineral Survey No. 1937:	Maria Lode
114	Mineral Survey No. 1939:	Plunger, Caesar and Non Plus Ultra Lodes
115	Mineral Survey No. 1942:	Belle Plane, Heratage. Busby and Washington Lodes EXCEPT any portion within Tract C of Lost Camp Valley Acreage in Plat Bk 5 Page 116
116	Mineral Survey No. 1946:	Freshett, Meerschtendals, Slip Fraction No.1, Goldsmith Maid, Montesuma, No Bagatelle, Frankfurt and Bavaria Lodes
117	Mineral Survey No. 1955:	Arizona, Akka, Cornucopia, Water, Harrison, Morton, Wall, Granet Fraction, Prolific and Confidence Lodes
118	Mineral Survey No. 1960:	Sarchfield and Robert Emmett Lodes
119	Mineral Survey No. 1979:	Imperial, Queen, Princess and Crown Lodes
120	Mineral Survey No. 1962:	Silver King Lode
121	Mineral Survey No. 1970:	January, November, July, August and Mollie Dare Lodes
122	Mineral Survey No. 1984:	Star and Hart Lodes
123	Mineral Survey No. 2001:	Ryan and Ryan Fraction Lodes EXCEPT Tracts 8 and 9 Revised according to Plat Document No. 2003-8149 and No. 2004-1723 EXCEPT Lot H5 of Ryan and Lot H3 and H4 of Ryan Fraction per plat Document Nos. 2016-803, #2016-804 & 2016-805 deeded for highway use
124	Mineral Survey No. 2006:	Margurite No. 2 Lode
125	Mineral Survey No. 2021:	Belle Fraction, Rope Fraction, Mother and Little Barefoot, EXCEPT any portion within Tract B of Lost Camp Valley, EXCEPT Tract 1 and 2 of Lot C of Little Barefoot Lode, EXCEPT Lot H1 of Belle Fraction and H1 of Rope Fraction and H2 of Little Barefoot per plats in Doc. #2016-789, #2016-790 and #2016-796 deeded for highway use
126	Mineral Survey No. 2027:	Index (Including Lot A of Index described by metes and bounds in Doc #76-929) and Huxley Lodes EXCEPT Lot H-1 of Huxley
127	Mineral Survey No. 2029:	Alaska and Link Lodes
128	Mineral Survey No. 2036:	Mill and Columbia Fraction
129	Mineral Survey No. 2037:	Reliance Fraction Lode
130	Mineral Survey No. 2044:	Tessa Lode EXCEPT any portion within Tract A of Lost Camp Valley Acreage in Plat Book 2, Page 92 and EXCEPT Tract C of Lost Camp Valley Acreage in Plat Book 5 Page 116 and EXCEPT that portion deeded to Robert and Barbara Blue in Doc. #77-1743.
131	Mineral Survey No. 2050:	Comet and Comet No. 1 Lodes EXCEPT any portion within Tract A of Lost Camp Valley Acreage in Plat Book 2, Page 92 and EXCEPT Tract C of Lost Camp Valley Acreage in Plat Book 5, Page 116
132	Mineral Survey No. 2060:	Pewabic Lode
133	Mineral Survey No. 2066:	Milton Fraction Lodes EXCEPT any portion within Tract A of Lost Camp Valley in Plat Book 2, Page 92 and Tract B of Lost Camp Valley in Plat Book 5, page 62, and EXCEPT Lot B of the Subdivision of MS 1139 and 2066 as shown on Doc. #76-403 and EXCEPT the Skier Solitude Tract in Plat Doc #2007-5883
134	Mineral Survey No. 2074:	Lillie M. and Lillie M. No. 1 Lodes
135	Mineral Survey No. 2075:	Snow Storm Lode EXCEPT Tract 11 being a portion of Hidden Fraction M.S. 1993, Martin Fraction M.S. 2069, Southerland M.S. 352, Snow Storm M.S. 2075, Silver Plume M.S. 351, Santa Fe M.S. 402 and Star MS 1493 according to Plat Document No. 2004-1723
all described by Patents and Plats recorded in Lawrence County, South Dakota.		

Table 29-5. Wharf Mine Fee Interests (Continued)

Parcel B: Wharf Resources (U. S. A.), Inc.

Subdivision Lots and Government Lots

1	Govt. Lot 7 and Govt. Lot 25, located in Section 1, Township 4 North, Range 2 East, BHM, Lawrence County, South Dakota, EXCEPT Lot H3 per plat Doc. #2016-798 deeded for highway use
2	Govt. Lots 1, 2, 3, 4, 5, 7, 8 and 10 of Section 2, Township 4 North, Range 2 East, BHM, Lawrence County, South Dakota., LESS and EXCEPT any portion of Government Lot 10 underlying Lot 1 Block 2 Tract A Lost Camp Valley Acreage as set forth in Quit Claim Deed recorded in Document No. 2007-4551, EXCEPT Lot H1 of Gov. Lot 5 per plat Doc. #2016-797 deeded for highway purposes.
3	Govt. Lots 1, 2, 3, 4 and 5 of Section 3, Township 4 North, Range 2 East, BHM, Lawrence County, South Dakota.
4	Govt. Lot 6 of Section 4, Township 4 North, Range 2 East, BHM, Lawrence County, South Dakota.
5	Govt. Lots 8, 9, 10, 11, 12, 13, 14, 15 and 16 of Section 34, Township 5 North, Range 2 East, BHM, Lawrence County, South Dakota.
6	Govt. Lots 1, 5, 6, 7, 8, 9, 10 of Section 35, Township 5 North, Range 2 East, BHM, Lawrence County, South Dakota.
7	Govt. Lots 10, 22 and 23 of Section 36, Township 5 North, Range 2 East, BHM, Lawrence County, South Dakota
8	Lot A, Subdivision of the Foley Lode M.S. 1139 located in Section 2, T4N, R2E, BHM, Lawrence County, South Dakota, according to Plat Book 7, Page 27.
9	Lot 1-A and Lot 2-A formerly known as Lots 1 and 2 of Area B Revised, a Subdivision of Last Chance and Bunker Hill M.S. 1205 and Lincoln M.S. 1341 all located in the NW1/4 of Section 2, T4N, R2E, BHM, Lawrence County, South Dakota, according to Plat Document No. 2004-4531.
10	Lots One (1), Two (2) and Four (4) Block No. Five (5) (Plat No. 2 Bald Mountain Mining Co.) Town of Trojan, further described in Book 393, Page 272 being a portion of M.S. 2027 and M.S. 1226.
11	Lot 1 subdivision of Vulcan Lode of M.S. 1404, Section 2, T4N, R2E, BHM, Lawrence County, South Dakota, according to Plat Book 6, Page 86.
12	Lots 1, 2, 3, 4 and 5 of the Subdivision of Lomie Lode M.S. 1616 located in SW1.4 Section 3, T4N, R2E and the SE1/4 Section 4, T4N, R2E, BHM, Lawrence County, South Dakota, according to Plat Document No. 78-4740.
13	Lot A, Subdivision of Clarence Lode M.S. 2021 located in Section 2, T4N, R2E, BHM, Lawrence County, South Dakota, according to Plat Book 7, Page 40, EXCEPT Lot 1 Revised of Lot A Subdivision of Clarence M.S. 2021 shown on Plat Document No. 2005-3472.
14	Lots 6, 7, and 8 of Block 2 a portion of Tract "B", Lost Camp Valley Acreage, including portions of Mineral Survey Nos. 1040, 1119, 1139, 2021, and 2066 all lying in Section 2 T4N, R2E, BHM, Lawrence County, South Dakota, according to Plat Book 5, Page 62.
15	Lots 68 and 69, Block 2, Lost Camp Valley Tract “C” of Lost Camp Valley Acreage, a part of M.S. Nos., 1341, 1536, 1942, 2044, and 2055 in Lawrence County, South Dakota, as set out in Plat Book 5, page 116.
16	Tract F being a portion of Lots 7,8,9,10,13,14 and all of Lots 15, 16, 17, 18, Block 3 of Tract "C" Lost Camp Valley Acreage, being portions of M.S. Nos. 1341, 1536, 1942 2044 and 2050 according to Plat Document No. 95-3807.
17	Tract G being a portion of Lots 11, 12 and 13, Block 3 and all of Lots 34 thru 45, Block 2, of Tract "C" Lost Camp Valley Acreage, being portions of M.S. Nos. 1341, 1536, 1942 2044 and 2050 according to Plat Document No. 95-3807.
18	That parcel of land 50 feet in width, extending approximately 500 feet N 42° 21’ E. from the line connecting Corner No. 9 and Corner No. 10 of the Golden Lode, Mineral Survey No. 1341, along the Northwest boundary of Block 13, Tract “A” Lost Camp Valley Acreage, to the Northeast side of the right of way of Buffalo Trail, Tract “A” Lost Camp Valley Acreage, as illustrated on Plat of Area “B” Revised, Lots 1 and 2 Mineral Survey Nos. 1205 and 1341, Plat Book 6 Page 54 and Plat of Tract “A” Lost Camp Valley Acreage, in Plat Book 2, Page 92.
19	A subdivision of the Huxley Lode, LaSalle Lode and Red Wing Lode, Mineral Survey No. 1226, described by metes and bounds as follows: Starting at Corner No. 1 of the Rutland Lode, M.S. 1226, proceed N. 13° 45’ W. for a distance of 488.50 feet; thence N. 80° 13’ W. for a distance of 15.00 feet to the point of beginning; thence N. 9° 49’ E. for a distance of 100.00 feet; thence N. 13° 48’ W. for a distance of 53.80 feet; thence N. 80° 13’ W. for a distance of 210.00 feet; thence S. 2° 10’ W. for a distance of 150.63 feet; thence S 80° 13’ E. for a distance of 211.50 feet to the point of beginning, the dwelling house situated on said parcel is identified as House No. 58. The above described subdivision includes all of Lots 13 and 14 and a part of Lot 15, Block 1 surface permit Plat No. 2 Bald Mountain Mining Co. near the Town of Trojan, Lawrence County, South Dakota. (See drawing attached to deed recorded in Doc. #78-2328)

20	Lot H-1 of a portion of the Huxley Lode, M.S. 1226, the Confidence Lodes M.S. 1955 and the Huxley Fraction Lode M.S. 2027, Lawrence County, South Dakota, according to Plat Book 5, Page 208.
21	Tract 4 being a portion of the Black Moon Lode M.S .1704 located in Section 2, T4N, R2E, BHM, Lawrence County, South Dakota, as shown by plat recorded in Document No. 2003-8149.

Table 29-6. Wharf Mine Fee Interests (Continued)

Parcel B: Wharf Resources (U. S. A.), Inc.

Patented Mineral Rights Only (Severed Surface Rights)

No.	Mineral Survey No.	Claim Name(s)
1	Mineral Survey No. 351	Silver Plume (pt)
2	Mineral Survey No. 352	Southerland (pt)
3	Mineral Survey No. 378	Mark Twain (pt)
4	Mineral Survey No. 402	Santa Fe
5	Mineral Survey No. 409-A	Welcome
6	Mineral Survey No. 409-B	Welcome Mill Site, Excluding Tract B
7	Mineral Survey No. 410-A	Genoa
8	Mineral Survey No. 410-B	Rinaldo Mill Site
9	Mineral Survey No. 411-A	Oriole, excluding Tract A
10	Mineral Survey No. 412	Marathon
11	Mineral Survey No. 413	Terry’s Peak
12	Mineral Survey No. 414	Magenta
13	Mineral Survey No. 535	North Star #1
14	Mineral Survey No. 791	Ben Hur
15	Mineral Survey No. 881	Maringo
16	Mineral Survey No. 898	Hardscrabble (pt)
17	Mineral Survey No. 900	Blizzard, Silver Peak, Hurricane
18	Mineral Survey No. 902	Alaska, Hudson, Logan, Mohawk, Opher, Terrific, Terror
19	Mineral Survey No. 915	Bristol Fraction
20	Mineral Survey No. 976	Alexander, Badger, Carbonate, Custer, Fairview, Hubble
21	Mineral Survey No. 1040	May Queen (pt)
22	Mineral Survey No. 1089	Car Street
23	Mineral Survey No. 1105	Little Phil, Surprise
24	Mineral Survey No. 1119	Eva No. 2, Monitor (pt), Monitor Fraction, Oak, Oak Fraction (pt)
25	Mineral Survey No. 1120	Singapore
26	Mineral Survey No. 1121	Fulva, Katisha, Lew Wallace, Passiac
27	Mineral Survey No. 1122	Little Hope Fraction, Star, Urgent, White Pine
28	Mineral Survey No. 1139	Ground Hog (pt), Foley (pt), Buffaloe (pt), Lily of the West, Whale, Whale Fraction (pt)
29	Mineral Survey No. 1172	Kate Putnam (pt)
30	Mineral Survey No. 1173	Northside (pt)
31	Mineral Survey No. 1205	Bunker Hill (pt), Last Chance (pt)

32	Mineral Survey No. 1271	Franklin, Hamilton, Tallahasse, Tariff
33	Mineral Survey No. 1279	Hoboe Queen, Tin Pie, Yogo
34	Mineral Survey No. 1310	Desire No. 1 (pt), Desire No. 2 (pt), Emma Fraction (pt), Hattie (pt), Lost Camp (pt), Leta (pt), Attraction, Minnesota Maid (pt), Tiger Fraction (pt), Terry Fraction (pt)
35	Mineral Survey No. 1341	Golden (pt), Star (pt), Lincoln (pt)
36	Mineral Survey No. 1425	Freeport, J.C., Newport, R.G.
37	Mineral Survey No. 1439	Blacktail Chief, Valet Chief, Manning (W/2), Maggie Fraction, Mongrel and Dhoul
38	Mineral Survey No. 1470	Cherry Gulch
39	Mineral Survey No. 1493	Star (pt)
40	Mineral Survey No. 1536	Francis (pt), Rambler (pt), Madeline (pt)
41	Mineral Survey No. 1648	Baltimore
42	Mineral Survey No. 1653	Golden Flag
43	Mineral Survey No. 1704	Black Moon
44	Mineral Survey No. 1705	Cygnet, Sunnyside
45	Mineral Survey No. 1802	Revenue
46	Mineral Survey No. 1942	Busby (pt), Washington (pt), Paris, Maggie, Edinbergh, Angeline Fraction, Rome, Heratage (pt)
47	Mineral Survey No. 1993	Apex, Apex No. 3, Apex No. 4, Missing Link, Snowstorm No. 1, Snowstorm Fraction, Hidden Fraction
48	Mineral Survey No. 2001	Ryan Fraction (pt)
49	Mineral Survey No. 2021	Clarence (pt), Mother (pt), Little Barefoot (pt)
50	Mineral Survey No. 2044	Tessa (pt)
51	Mineral Survey No. 2050	Comet (pt), Comet No. 1 (pt)
52	Mineral Survey No. 2066	Milton (pt)
53	Mineral Survey No. 2069	Martin Fraction
54	Mineral Survey No. 2075	Snowstorm (pt)

The following patented lode mining claims located in T4N, R2E, B.H.M., Lawrence County, SD, B.H.M.:

Table 29-7. Wharf Mine Fee Interests (Continued)

Parcel B: Wharf Resources (U. S. A.), Inc.

Subdivided Lots and Government Lots - Mineral Rights Only (Severed Surface Rights)

	The following described subdivided lots and tracts located in Sections 1, 2, 3, 10 & 11, T4N, R2E, B.H.M., Lawrence County, SD:
No.	**Tracts/Lots**
1	Tracts 1, 2, 3, 5, 6, 7 & 8, including portions of M.S. 1105, 1993, 1704, 402, 1705, 1493, 2001, 1172 & 1173, as shown on Plat Document 2003-8149;
2	Tract 9 Revised, formerly known as Tract 9, and Tracts 10 and 11, including portions of M.S. 2001, 1173, 1172, 1993, 2069, 352, 2075, 351, 402 & 1493, as shown on Plat Document 2004-1723;
3	Lot 1R of Barefoot, being a replat of Lot 1 of Barefoot, Tracts 1 and 2 of Lot C, a portion of Little Barefoot, M.S. 2021, located in Section 2, T4N, R2E, as shown on Plat Document 2004-6945;
4	Lot 1 Revised of Lot A, formerly Lot 1 of Lot A, being a portion of Clarence, M.S. 2021, as shown on Plat Document 2005-3472;
5	Lot B a subdivision of the May Queen, M.S. 1040, Clarence, M.S. 2021, Little Barefoot, M.S. 2021, as shown on Plat Document 77-1639;

6	Lot A of May Queen, M.S. 1040, as shown in Plat Book 7 page 30;
7	Lot B, a subdivision of M.S. 1139 and 2066, as described by Metes and Bounds description in that certain Warranty Deed recorded as Document Number 96-4781;
8	Lot W-1, formerly known as Lot W, as subdivision of the Whale, M.S. 1139 and Last Chance, M.S. 1205, as shown on Plat Document 2004-4531;

	Lost Camp Valley Acreage Subdivision (LCVA):
9	Lots 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, Block 1, Tract A, LCVA, including portions of M.S. 1119, 1139, 1205, 1310, 1341, 2044, 2050, as shown in Plat Book 2 page 92;
10	Lot 3A, formerly Lots 2 and 3 Revised, Block 1, Tract A, LCVA, including portions of M.S. 1119, 1139, 1205, 1310, 1341, 2044, 2050, as shown on Plat Document 2007-6954;
11	Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 16, 17, 18, 19, Block 2, Tract A, including portions of M.S. 1119, 1139, 1205, 1310, 1341, 2044, 2050, as shown in Plat Book 2 page 92;
12	Lots 13A, 14A, 15A, Block 2, Tract A, LCVA, including portions of M.S. 1119, 1139, 1205, 1310, 1341, 2044, 2050, 2066, as shown on Plat Document 2009-2947;
13	Lots 5, 6, 7, 8, 9, 10, 11, Block 3, Tract A, LCVA, including portions of M.S. 1119, 1139, 1205, 1310, 1341, 2044, 2050, as shown in Plat Book 2 page 92;
14	Lot 3A, including Lots 3 & 4, Block 3, Tract A, LCVA, including portions of M.S. 1119, 1139, 1205, 1310, 1341, 2044, 2050, 2066, as shown on Plat Document 2000-4484;
15	Lot M, a replat of Lots 1 and 2, Block 3, Tract A, LCVA, including portions of M.S. 1119, 1139, 1205, 1310, 1341, as shown on Plat Document 91-310;
16	Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 19, 20, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, Block 4, Tract A, LCVA, including portions of M.S. 1119, 1139, 1205, 1310, 1341, 2044, 2050, as shown in Plat Book 2 page 92;
17	Lot 18A, Block 4, Tract A, LCVA, including portions of M.S. 1119, 1139, 1205, 1310, 1341, 2044, 2050, as shown on Plat Document 2007-6954;
18	Lots 21A and 22A, formerly known as Lots 21 & 22, Block 4, Tract A, LCVA, including portions of M.S. 1119, 1139, 1205, 1310, 1341, 2044, 2050, 2066, as shown on Plat Document 2006-7232;
19	Lots 23R and 24R, formerly known as Lots 23 & 34, Block 4, Tract A, LCVA, including portions of M.S. 1119, 1139, 1205, 1310, 1341, 2044, 2050, 2066, as shown on Plat Document 2005-5897;
20	Lot 35 Revised, Block 4, Tract A, LCVA, as shown in Plat Book 6 page 181;
21	Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19, 20, 21, 22, 23, 24, Block 5, Tract A, LCVA, including portions of M.S. 1119, 1139, 1205, 1310, 1341, 2044, 2050, as shown in Plat Book 2 page 92;
22	Lots 1, 2, 3, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, Block 6, Tract A, LCVA, including portions of M.S. 1119, 1139, 1205, 1310, 1341, 2044, 2050, as shown in Plat Book 2 page 92;
23	Lot 4R and Lot 6R, a replat of Lots 4, 5 & 6, Block 6, Tract A, LCVA, including portions of M.S. 1119, 1139, 1205, 1310, 1341, 2044, 2050, as shown on Plat Doc. 84-3375;
24	Lots 1, 2, 3, 4, 5, 6, 7, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, Block 7, Tract A, LCVA, including portions of M.S. 1119, 1139, 1205, 1310, 1341, 2044, 2050, as shown in Plat Book 2 page 92;
25	Lots 8A and 10A, a replat of Lots 8, 9 & 10, Block 7, Tract A, LCVA, including portions of M.S. 1119, 1139, 1205, 1310, 1341, 2044, 2050, as shown on Plat Document 85-2977;

26	Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, Block 8, Tract A, LCVA, including portions of M.S. 1119, 1139, 1205, 1310, 1341, 2044, 2050, as shown in Plat Book 2 page 92;
27	All of Block 9, Tract A, LCVA, including portions of M.S. 1119, 1139, 1205, 1310, 1341, 2044, 2050, as shown in Plat Book 2 page 92, EXCEPT conflict with Govt. Lot 9;
28	All of Block 10, Tract A, LCVA, including portions of M.S. 1119, 1139, 1205, 1310, 1341, 2044, 2050, as shown in Plat Book 2 page 92, EXCEPT conflict with Govt. Lot 9;
29	All of Block 11, Tract A, LCVA, including portions of M.S. 1119, 1139, 1205, 1310, 1341, 2044, 2050, as shown in Plat Book 2 page 92;
30	All of Block 12, Tract A, LCVA, including portions of M.S. 1119, 1139, 1205, 1310, 1341, 2044, 2050, as shown in Plat Book 2 page 92;
31	Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, Block 13, Tract A, LCVA, including portions of M.S. 1119, 1139, 1205, 1310, 1341, 2044, 2050, as shown in Plat Book 2 page 92;
32	Lots 1 and 4, Block 16, Tract A, LCVA, including portions of M.S. 1119, 1139, 1205, 1310, 1341, 2044, 2050, as shown in Plat Book 2 page 92;
33	Lot 2A and 3A, formerly Lots 2 & 3, Block 16, Tract A, LCVA, including portions of M.S. 1119, 1139, 1205, 1310, 1341, 2044, 2050, as shown in Plat Document 2011-4285;
34	Lots 1 and 2, Block 17, Tract A, LCVA, including portions of M.S. 1119, 1139, 1205, 1310, 1341, 2044, 2050, as shown in Plat Book 2 page 92;
35	Lots 1 thru 6, Block 1, Tract B, LCVA, including portions of M.S. 1040, 1119, 1139, 2021, 2066, as shown in Plat Book 5 page 62;
36	Lot 1, Block 2, Tract B, LCVA, including portions of M.S. 1040, 1119, 1139, 2021, 2066, as shown in Plat Book 5 page 62;
37	Lots 2-X1 2-X2, of Lot 2, Block 2, Tract B, LCVA, including portions of M.S. 1040, 1119, 1139, 2021, 2066, as shown on Plat Document 2008-6433;
38	Lot 2Y and Lot 2Z, of Lot 2 Block 2, Tract B, LCVA, including portions of M.S. 1040, 1119, 1139, 2021, 2066 as shown in Plat Book 5 page 73;
39	Lot 5, Block 2, Tract B, LCVA, including portions of M.S. 1040, 1119, 1139, 2021, 2066, as shown in Plat Book 5 Page 62;
40	Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, Block 1, Tract C, LCVA, including portions of M.S. 1341, 1536, 1942, 2044, 2050, as shown in Plat Book 5 page 116;
41	Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 30, 31, 32, 33, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 70, 71, 72, 73, 74, 75, Block 2, Tract C, LCVA, including portions of M.S. 1040, 1119, 1139, 2021, 2066, as shown in Plat Book 5 page 116;
42	Lot 56A, Block 2, Tract C, LCVA, including portions of M.S. 1040, 1119, 1139, 2021, 2066, as shown on Plat Document 2002-2898;
43	Lots 1, 2, 3, 4, 5, 6, 21, Block 3, Tract C, LCVA, including portions of M.S. 1040, 1119, 1139, 2021, 2066, as shown in Plat Book 5 page 116;
44	Tract A, being a portion of Lots 28 & 29, Block 2 Tract C, LCVA, including a portion of M.S. 1942, as shown on Plat Document 95-3807;
45	Tract B, being a portion of Lots 25, 26, 27, Block 2, Tract C, LCVA, including a portion of M.S. 1942, as shown on Plat Document 95-3807;
46	Tract D, being a portion of Lots 26 & 27, Block 2, and Lots 7 & 8, Block 3, Tract C, LCVA, including a portion of M.S. 1942, as shown on Plat Document 95-3807;

47	Tract E, being a portion of Lots 27, 28, 29, Block 2 and Lots 9, 10, 11, Block 3, Tract C, LCVA, including a portion of M.S. 1942, as shown on Plat Document 95-3807;
48	Tracts A, B, C, a subdivision of Pendegraft Tract, being a portion of M.,S. 1942, as shown on Plat Document 2004-3015;
49	Lots A & B, Tract C, LCVA, being a portion of M.S. 1942, as shown on Plat Document 86-876;
50	Lots C-1 & C-2, a subdivision of Lot C, Tract C, LCVA, as shown on Plat Document 2005-5639.

29.1.2 Leases

Mining Lease dated August 9, 1979, from a Partnership consisting of John R. Dykes, Arlen Jumper, Thomas Handley and Helen M. Hayes, for the term of her lifetime estate (Lessor) to Taiga Gold, Inc.

Table 29-8. Wharf Mine leases

1	Mineral Survey No. 1016	Annie, Annie Fraction, Josie, Josie Fraction, Katy
2	Mineral Survey No. 1079	Keed
3	Mineral Survey No. 1117	Keystone, Bunker Hill, Bunker Hill Fraction
4	Mineral Survey No. 1272	Sunset, Rainy Day
5	Mineral Survey No. 1286	Revenue Fraction No. 2
6	Mineral Survey No. 1427	Gault No. 1 (part), Gault No. 4 (part), Gault No. 5 (part), Gault No. 6 (part)
7	Mineral Survey No. 1472	Ruby Evans
8	Mineral Survey No. 1659	Bad Tale Fraction
9	Mineral Survey No. 1667	Stanley, June, Keystone Fraction
10	Mineral Survey No. 1668	Copperhead (part inside CUP boundary)
11	Mineral Survey No. 1946	Freshett, No Bagatelle, Slip Fraction No. 1, Meerschtendals, Goldsmith Maid (part), Montesuma (part), Frankfurt, Bavaria
12	Mineral Survey No. 2036	Mill, Columbia Fraction
13	Mineral Survey No. 2037	Reliance Fraction

29.1.3 Unpatented Mining Claims

34 unpatented lode claims held by Golden Reward Mining Company Limited Partnership situated in Sections 01 and 12, Township 04 North, Range 02 East and in Sections 06, 07 and 18, Township 04 North, Range 03 East, Black Hills Meridian, Lawrence County, South Dakota and further described below.

Table 29-9. Unpatented lode claims held by Golden Reward Mining Co.

BLM Serial No.	Name	Lawrence County Register of Deeds Book/Page/Document No.
MMC125813	MOCO JV-11	86-1157
MMC125814	MOCO JV-12	86-1158
MMC125815	MOCO JV-13	86-1159
MMC132782	BABY	87-1261
MMC132783	MELANIE	87-1262

BLM Serial No.	Name	Lawrence County Register of Deeds Book/Page/Document No.
MMC134347	PATTI #2	87-2223
MMC134349	PATTI #4	87-2225
MMC134350	PATTI #5	87-2226
MMC134351	PATTI #6	87-2227
MMC134352	PATTI #7	87-2228
MMC134353	PATTI #8	87-2229
MMC172950	FRED #1	89-3478
MMC172951	FRED #2	89-3479
MMC172952	FRED #3	89-3480
MMC172953	FRED #4	89-3481
MMC184192	BONESPUR FRACTION	91-507
MMC193034	GREMLIN NO 1	92-4875
MMC193035	GREMLIN NO 2	92-4874
MMC193323	GREMLIN NO 3	93-39
MMC193324	GREMLIN NO 4	93-40
MMC222709	CAITLIN NO. 1	2010-03025
MMC222710	CAITLIN NO. 2	2010-03026
MMC222711	CAITLIN NO. 3	2010-03027
MMC223020	CAITLIN NO. 4	2010-04789
MMC223021	CAITLIN NO. 5	2010-04790
MMC89109	GOLDEN REWARD #2	82-1952
MMC89110	GOLDEN REWARD #4	82-1953
MMC92905	GOLDEN REWARD #5	82-3987
MMC94456	GOLDEN REWARD #15	82-5295
MMC94457	GOLDEN REWARD #16	82-5296
MMC94459	GOLDEN REWARD #18	82-5298
MMC94460	GOLDEN REWARD #19	82-5299
MMC94462	GOLDEN REWARD #25	82-5301
MMC234507	Hattie Clay Lode	2017-03730

Fifty-nine unpatented lode claims held by Wharf Resources (U.S.A.), Inc. situated in Sections 01, 02, 04 and 11, Township 04 North, Range 02 East and in Sections 25, 27, 28, 33, 34, 35, and 36, Township 05 North Range 02 East, Black Hills Meridian, Lawrence County, South Dakota are described below.

Table 29-10. Unpatented lode claims held by Wharf Resources, Inc.

BLM Serial No.	Name	Lawrence County Register of Deeds Book/Page/Document No.
MMC114132	MARCIE	84-2251
MMC114133	FISCHER	84-2250
MMC114134	ANNE	84-2249
MMC114135	CYNTHIA	84-2252
MMC114136	BEANIE	84-2253
MMC117070	KL #5	84-3977
MMC164704	DIRTY DICK	89-294

BLM Serial No.	Name	Lawrence County Register of Deeds Book/Page/Document No.
MMC164705	PEDER DRAGON	89-295
MMC164706	CASEY FRACTION #1	89-296
MMC164707	CASEY FRACTION #2	89-297
MMC164708	CASEY FRACTION #3	89-298
MMC164709	CASEY FRACTION #4	89-299
MMC164710	D. J. K. 1	89-300
MMC164711	D.J.K. 2	89-301
MMC164712	D.J.K. 3	89-302
MMC164713	D.J.K. 4	89-303
MMC164714	D. J. K. 5	89-304
MMC164715	D. J. K. 6	89-305
MMC164716	D. J. K. 7	89-306
MMC164717	D. J. K. 8	89-307
MMC164718	D. J. K. 9	89-308
MMC164719	D. J. K. 10	89-309
MMC164720	D. J. K. 11	89-310
MMC164721	D. J. K. 12	89-311
MMC164722	D. J. K. FRACTION	89-312
MMC164723	D. J. K. FRACTION 1	89-313
MMC164724	D. J. K. FRACTION 2	89-314
MMC164725	D. J. K. FRACTION 3	89-315
MMC164726	D. J. K. FRACTION 4	89-316
MMC173949	BIG MOUTH	89-4429
MMC173950	BIG FOOT	89-4430
MMC173951	BIG LEG	89-4431
MMC173952	BIG HEAD	89-4432
MMC173953	BIG WIG	89-4433
MMC173954	BIG STICK	89-4434
MMC173955	BIG MAMA	89-4435
MMC173956	BIG LAC	89-4436
MMC173957	BIG HILL	89-4437
MMC173958	BIG DEAL	89-4438
MMC173959	BIG SADDLE	89-4439
MMC183350	SPOTTED OWL	890-5499
MMC183447	SQUAW CREEKFRACTION	91-214
MMC183448	M. BEAR	91-213
MMC183449	LACROSSE	91-212
MMC183450	HAWK FRACTION	91-211
MMC183451	GOLD FRACTION	91-210
MMC183452	FALCON	91-209
MMC183453	BALD EAGLE	91-208
MMC183454	ASHLEY	91-207
MMC183455	CAMDEN WEDGE	91-155
MMC183456	VINCENT	91-215
MMC183689	GRAY WOLF	91-431

BLM Serial No.	Name	Lawrence County Register of Deeds Book/Page/Document No.
MMC183693	CHELSEA	91-435
MMC183694	STEALTH	91-436
MMC187939	DUTCHMAN	91-3810
MMC187940	GUIEDO	91-3811
MMC187941	RUFUS	91-3809
MMC98673	INCLINE LODE	83-1269
MMC98674	M & V	83-1270