

# AMERICAS SILVER CORPORATION TECHNICAL REPORT ON THE GALENA COMPLEX, SHOSHONE COUNTY, IDAHO, USA

NI 43-101 Report

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## 1 SUMMARY

#### 1.1 Executive Summary

Americas Silver Corporation ("Americas Silver" or the "Company") prepared this Technical Report on the Galena Complex ("Galena", "Galena Property" or the "Project"), a silver-copper-lead mining and milling operation located in the Coeur d'Alene Mining District in Shoshone County, Idaho, USA. The purpose of this report is to disclose Mineral Resource and Mineral Reserve estimates for the operation, as at December 31, 2015. This Technical Report conforms to National Instrument 43-101 Standards of Disclosure for Mineral Projects ("NI 43-101").

Americas Silver is a silver, copper, lead and zinc producer with operations in the United States and Mexico. The Company, then known as Scorpio Mining Corporation ("Scorpio"), merged with U.S. Silver & Gold Inc. in December 2014. A predecessor of U.S. Silver & Gold Inc. acquired the Galena Complex effective June 2006. Americas Silver currently operates Galena through its wholly owned subsidiary, U.S. Silver–Idaho Inc. ("U.S. Silver").

The Galena Complex is located in the Coeur d'Alene Mining District in Shoshone County, Idaho, a prolific silver producing district since the mid-1800s. The Galena Complex consists of the operating Galena Mine with two shafts (Galena and #3), the Galena processing plant, the idle Coeur Mine with one shaft (Coeur), the Coeur processing plant (currently on care and maintenance), and the Caladay exploration property with one shaft (Caladay). The Galena Mine has operated since 1885, and between 1953 and 2015 the Galena Complex has yielded approximately 230 million ounces of silver along with associated amounts of lead and copper. Galena produces a nominal 550 tons per day ("stpd") ore. The flotation processing plant located at Galena has a capacity of 700 stpd. It is configured to produce a single flotation concentrate (either silver-lead or silver-copper concentrates. Total metal production for 2015 was 1,489,736 ounces of silver, 17,436,671 pounds of lead and 304,753 pounds of copper.

Proven and Probable Mineral Reserves total 1.546 million tons, at grades of 11.5 ounces per ton ("opt") Ag, 5.13% Pb and 0.21% Cu. A life of mine plan ("LOMP") for Galena forecasts 7 years of mining at similar production rates to 2015 production rates. The transition from mining and processing silver-copper ore to silver-lead ore was completed in 2015. However, the silver-copper ore at Galena remains an important part of the Mineral Reserves, Mineral Resources and LOMP.



# 1.2 Technical Summary

Americas Silver's Galena Property includes the Galena Mine, the Coeur Mine, two processing plants, multiple shafts and the Osburn tailings storage facility. In general, the term "Galena Complex" or other terms defined above include areas formerly referred to separately as the Galena Mine, the Coeur Mine and the Caladay property. Mineral Resources and Mineral Reserves for the Galena Complex are discussed and reported as a whole.

## 1.2.1 Property Description and Location

The Galena Complex is located in the Coeur d'Alene Mining District in Shoshone County, Idaho, a prolific silver-producing district since the mid-1800s. The property is located two miles west of the town of Wallace. Spokane, Washington is about 75 miles to the west and Missoula, Montana is about 110 miles to the east. The property is about 1 mile south of Interstate Highway I-90.

The property covers 8,915 acres, over an area about 9 miles long east to west, and 2 miles wide north to south. The Galena Shaft is located near the center of the property and lies at 47°28'39" N latitude and 115°58'01" W longitude, with a collar elevation of 3,042 feet above sea level.

#### 1.2.2 Land Tenure and Ownership

Americas Silver, a Canadian public company, amended its articles to change its name from Scorpio Mining Corporation effective May 19, 2015. Scorpio had recently acquired the Galena Property when it merged with U.S. Silver and Gold Inc. on December 23, 2014. U.S. Silver & Gold Inc. was the owner of the Galena Property prior to the merger through a wholly owned subsidiary. In connection with the merger, U.S. Silver & Gold Inc. was de-listed from the Toronto Stock Exchange ("TSX").

The Company's land position at the Galena Complex has changed since the previous Technical Report due to the sale of part of holdings on the western end of the property. The property is a combination of patented, unpatented and fee lands that are owned or leased by Americas Silver. The total area covered by all the land owned, controlled or leased by Americas Silver is 8,915 acres. All properties are in good standing with respect to title and current taxes. Net smelter return royalty agreements exist on some leased properties, but no production has been realized from any of the leased claims, and none is contemplated in the



LOMP. All necessary operating and environmental permits are current. All production, reserves and resources are on patented mining claims owned by Americas Silver.

## 1.2.3 Physiography

The Coeur d'Alene District lies in the Bitterroot Mountains, a part of the Northern Rocky Mountains. The Galena area is one of high relief and rugged terrain, with many slopes at angles of 30% or greater. Valley flats are restricted to the main stream and the lower reaches of some major tributaries; in only a few places do the flats exceed half a mile in width. Ridge crests range in altitude from 6,000 to 7,000 feet. Thus the maximum relief between valley floors and adjacent ridge crests and peaks ranges from 3,000 to 4,000 feet. The climate of the Coeur d'Alene District is strongly seasonal with warm summers and hard winters. Mining and exploration activities take place year round.

# 1.2.4 Existing Infrastructure

Americas Silver has established necessary sources of water, power, waste disposal and tailings storage for current and planned operations. Americas Silver has the necessary processing facilities and holds sufficient surface rights to conduct operations. The surface and underground infrastructure at the Galena Complex include the following:

- Galena processing facility
- Galena and #3 shafts equipped for hoisting
- Coeur processing facility
- Coeur shaft equipped for hoisting
- Caladay shaft for ventilation only
- A tailings storage facility located near the town of Osburn
- Shops, offices, warehouse facilities and a mine dry
- Inter-connected level development connecting the 4 shafts

#### 1.2.5 History

The Galena Complex is situated in the center of the Coeur d'Alene Mining District of North Idaho. Placer gold was first discovered in the district in 1858. By 1860, the gold-rush prospectors had also discovered the silver-lead veins in the district.

Prior to Americas Silver, companies owning all or part of the Galena Complex properties at various times since 1887 have included Killbuck Mining, Galena Mining, Callahan Mines,



Federal Mining and Smelting, Vulcan, ASARCO, Day Mines, Coeur d'Alene Mines, U.S. Silver, and U.S. Silver and Gold Inc.

Since 1953, the Galena and Coeur Mines have yielded approximately 230 million ounces of silver, 159 million pounds of copper and 69 million pounds of lead from 11.8 million tons of combined silver-copper and silver-lead ore. More than 80% of the total silver has come from the Galena Mine.

The Galena Mine has a long history dating back to 1887, but the modern history and mining commenced in 1947 under the management of ASARCO. From 1953 to 2013 the Galena Mine primarily mined silver-copper ore with minor production of silver-lead ore. Beginning in 2014, silver-lead ore became the predominant ore type.

Total production from the Galena Mine from 1953 to the end of 2015 was approximately 189.5 million ounces of silver from 9.3 million tons of ore. Average grade of the silver-copper ore was 21.3 opt Ag and 0.72% Cu. Average grade of the silver-lead ore was 5.1 opt Ag and 6.0% Pb. This excludes production from the Coeur Mine, which is now part of the Galena Complex.

The Coeur Mine shaft was collared in 1963 by Coeur d'Alene Mines. The mine produced continuously from 1976 through 1991, and again from 1996 through 1997. The total production from the Coeur Mine sent to the process plants was approximately 40.5 million ounces of silver from 2.5 million tons of ore. Average ore grades were 16.5 opt Ag and 0.67% Cu.

The Coeur Mine was put on care and maintenance from 1997 to 2007, when work was begun to rehabilitate the Coeur Mine 3400 Level and later the Coeur shaft. The Coeur mill was re-started in September 2007 to process silver-lead ore from the Galena Mine. By early 2008 silver-lead ore was trammed from the Galena Mine 3700 Level to the Coeur Shaft (Coeur 3400 Level) and was hoisted up the Coeur shaft for processing at the Coeur mill. During 2012, the Coeur Mine was rehabilitated for mining, which started in September 2012 but underground work ceased in 2014.

The Caladay property began in the mid-1960s as a joint venture involving Callahan Mining, ASARCO, and Day Mines. The joint venture sank a 5,100 foot shaft during the early 1980s on the east end of the Coeur d'Alene Silver Belt, just east of the Galena Property. From the 4900 Level of the Caladay shaft an exploration drift was developed east and west. The western drift intersects the Galena Mine's 4900 Level.



The joint venture was purchased by Coeur d'Alene Mines Corp in the 1980s. The Caladay shaft and workings are currently used as ventilation exhaust for the Galena workings.

After the 1980s no exploration was undertaken on the Caladay property until 2012, when U.S. Silver and Gold Inc. drilled several thousand feet and defined Mineral Resources as discussed in Section 14.

## 1.2.6 Geology and Mineralization

The Galena Complex and most other deposits of the Coeur d'Alene Mining District are hosted by metamorphosed Precambrian sedimentary rocks which are part of the Belt Supergroup. The strata are composed primarily of fine-grained quartz and clay (the clay now metamorphosed to fine-grained white mica, or sericite). Three major rock types are generally recognized; vitreous quartzite, which is primarily metamorphosed fine-grained quartz sand, siltite-argillite, which is silt-sized quartz grains that are completely separated from each other by a large proportion of sericite, and sericitic quartzite which contains intermediate proportions of quartz and sericite.

Mineralization at the Galena Complex occurs in steeply dipping fissure filling veins, and in wide disseminated zones, all occurring near four major fracture systems and three major faults. The veins generally strike east-west and northeast-southwest, and range in thickness from a few inches to over fifteen feet.

The vein mineralization is of two distinct types: silver-copper mineralization containing tetrahedrite and lesser chalcopyrite as the principal economic minerals; and silver-lead mineralization dominated by argentiferous galena. Gangues in both types are mainly siderite, with varying amounts of pyrite and quartz. The silver-lead mineralization occurs both as well-defined, steeply-dipping, relatively narrow veins, and as wider zones of disseminated and stringer mineralization. The latter type occurs predominately in the eastern part of the property, in the Caladay Zone, on and adjacent to the former Caladay property.

#### 1.2.7 Mineral Resources

The 2015 Mineral Resource estimates for the Galena Complex were developed by Americas Silver's geology staff using a combination of resource block modeling and the accumulation method for vein-style mineralization. The Mineral Resources exclusive of Mineral Reserves are summarized in Table 1-1. The effective date is December 31, 2015.



Americas Silver generated the resource assumptions, input parameters, geological interpretation, and modelling procedures and is of the opinion that the Mineral Resource estimate is appropriate for the style of mineralization and that the resource model is reasonable and acceptable to support the updated 2015 Mineral Resource and Mineral Reserve estimates.

Americas Silver is not aware of any environmental, permitting, legal, title, taxation, socioeconomic, marketing, political, or other modifying factors that could materially affect the Mineral Resource and Mineral Reserve estimates.



# TABLE 1-1SUMMARY OF MINERAL RESOURCE EXCLUSIVE OF MINERAL<br/>RESERVES – DECEMBER 31, 2015<br/>Americas Silver Corporation – Galena Complex

Measured Contained Contained Contained Tonnage Grade Grade Grade Metal Metal Metal Zone (000 tons) (opt Ag) (% Cu) (% Pb) (000 oz Ag) (MIbs Cu) (MIbs Pb)									
Silver-Lead	79	9.4	-	8.70	744	-	13.8		
Total	431	11.6	0.53	1.60	4,994	4.6	13.8		

#### Indicated

Zone	Tonnage (000 tons)	Grade (opt Ag)	Grade (% Cu)	Grade (% Pb)	Contained Metal (000 oz Ag)	Contained Metal (MIbs Cu)	Contained Metal (MIbs Pb)
Silver-Copper	863	13.3	0.57	-	11,456	9.8	-
Silver-Lead	1,604	5.1	-	5.44	8,219	-	174.5
Total	2,467	8.0	0.20	3.54	19,676	9.8	174.5

#### Measured + Indicated

Zone	Tonnage (000 tons)	Grade (opt Ag)	Grade (% Cu)	Grade (% Pb)	Contained Metal (000 oz Ag)	Contained Metal (MIbs Cu)	Contained Metal (MIbs Pb)
Silver-Copper	1,214	12.9	0.59	-	15,706	14.4	-
Silver-Lead	1,684	5.3	-	5.59	8,964	-	188.3
Total	2,898	8.5	0.25	3.25	24,670	14.4	188.3

#### Inferred

Zone	Tonnage (000 tons)	Grade (opt Ag)	Grade (% Cu)	Grade (% Pb)	Contained Metal (000 oz Ag)	Contained Metal (MIbs Cu)	Contained Metal (MIbs Pb)
Silver-Copper	507	13.4	0.83	-	6,783	8.4	-
Silver-Lead	1,786	5.4	-	5.82	9,685	-	207.8
Total	2,293	7.2	0.18	4.53	16,468	8.4	207.8

Notes:

1. CIM Definition Standards were followed for Mineral Resources.

2. Mineral Resources are estimated at a Ag equivalent cut-off grade of 9 opt for vein-style mineralization and 3 opt for disseminated mineralization at Galena.

3. Mineral Resources are estimated using a long-term silver price of US\$16.00 per ounce, copper price of US\$2.40 per pound and a lead price of US\$0.85 per pound.

4. Mineral Resources are exclusive of Mineral Reserves.

5. Unrecoverable and sterilized material in exploited mining areas has been excluded from the Mineral Resource.

6. Numbers may not add due to rounding.



#### 1.2.8 Mineral Reserves

Mineral Reserves were estimated by Americas Silver personnel, based on mine designs applied to Measured and Indicated Resources, with dilution and extraction factors applied. Mineral Reserves are summarized in Table 1-2. The effective date is December 31, 2015.

# TABLE 1-2 SUMMARY OF MINERAL RESERVES – DECEMBER 31, 2015 Americas Silver Corporation – Galena Complex

Proven										
Zone	Tonnage (000 tons)	Grade (opt Ag)	Grade (% Cu)	Grade (% Pb)	Contained Metal (000 oz Ag)	Contained Metal (MIbs Cu)	Contained Metal (MIbs Pb)			
Silver-Copper	254	14.4	0.43	-	3,660	2.2	-			
Silver-Lead	269	8.4	-	9.82	2,254	-	52.7			
Total	523	11.3	0.21	5.04	5,914	2.2	52.7			

#### Probable

Zone	Tonnage (000 tons)	Grade (opt Ag)	Grade (% Cu)	Grade (% Pb)	Contained Metal (000 oz Ag)	Contained Metal (MIbs Cu)	Contained Metal (MIbs Pb)
Silver-Copper	448	15.9	0.48	-	7,127	4.3	-
Silver-Lead	575	8.3	-	9.21	4,765	-	105.9
Total	1,024	11.6	0.21	5.17	11,892	4.3	105.9

Proven and Probable								
Category	Tonnage (000 tons)	Grade (opt Ag)	Grade (% Cu)	Grade (% Pb)	Contained Metal (000 oz Ag)	Contained Metal (MIbs Cu)	Contained Metal (MIbs Pb)	
Proven	523	11.3	0.21	5.04	5,914	2.2	52.7	
Probable	1,024	11.6	0.21	5.17	11,892	4.3	105.9	
Proven and Probable	1,546	11.5	0.21	5.13	17,806	6.4	158.6	

Notes:

1. CIM Definition Standards were followed for Mineral Reserves.

2. Mineral Reserves are estimated at a Ag equivalent cut-off grade of 9 opt for vein-style mineralization and 3 opt for disseminated mineralization at Galena. Silver equivalent cut-offs were calculated using recent operating results for recoveries, off-site concentrate costs and on-site operating costs.

3. Mineral Reserves are estimated using a long-term silver price of US\$16.00 per ounce, copper price of US\$2.40 per pound and a lead price of US\$0.85 per pound.

4. A minimum mining width of 4 to 6 feet was used for conventional stopes depending on ground conditions and a minimum width of 6 to 8 feet was used for mechanized stopes depending on the ground conditions and equipment size.

5. Numbers may not add due to rounding.



# 1.2.9 Mining Methods

The current mining methods used at the Galena Complex are conventional cut and fill and mechanized cut and fill. Conventional cut and fill is done using the overhand method, utilizing hydraulically placed tailings ("sand fill") as backfill, typically without the addition of cement. Mechanized cut and fill is done using both overhand and underhand methods. In the case of the overhand method, sand fill is used as backfill, typically without the addition of cement. For the underhand method, cement is typically added to the sand fill in order to provide the required strength to work underneath the placed backfill. Ore is hauled to either the Galena or #3 shafts via tracked locomotives and rail cars. Ore is loaded into the rail cars directly via ore chutes in stopes, pneumatic cavos, or in mechanized stoping areas, by diesel scooptrams/Load Haul Dump ("LHD") equipment. Waste associated with primary and secondary development is typically kept underground and placed as fill in old headings and open stopes. As needed, it can be hauled to the shaft, skipped to surface and placed on the existing surface waste rock storage facility. Ore is currently skipped to surface from several levels of the mine using either the #3 or Galena hoists. The Coeur Mine and shaft is currently on care and maintenance. The Coeur shaft is used for ventilation purposes and provides an alternative means of egress.

# 1.2.10 Mineral Processing

The Galena Complex consists of two processing plants, Galena and Coeur. The Coeur plant has been on care and maintenance since April 2016. The Galena processing plant follows a conventional flowsheet:

- Crushing and Screening
- Grinding and Cycloning
- Flotation Concentration
- Concentrate Dewatering
- Tailings Pumping for Sand Fill
- Tailings Pumping for Osburn Tailings Storage Facility

The Galena processing plant has a nameplate capacity of 250,000 stpa or 700 stpd. Overall recoveries achieved in 2015 production at the Galena processing plant were approximately 95% for silver, 90% for lead and 96% for copper while processing ore from both the silver-lead and silver-copper zones. Although only a silver-lead concentrate is currently produced, the LOMP does include future mining from the silver-copper veins, at which time a silver-copper concentrate will be produced again.



## 1.2.11 Project Infrastructure

The Galena Complex has produced for 130 years with only minor interruption. There are four shafts on the property of which the Galena, #3 and Coeur are equipped for hoisting. The #3 shaft currently serves as the main production hoist while the Galena shaft serves as the primary personnel, equipment and supply hoist.

Surface facilities other than the processing plants at both the Galena and Coeur Mines include compressor houses, mine dry, mine and administrative offices, warehouses, timber framing yard, parking areas, hoist houses and headframes, a core storage facility, electrical power lines and substations for both mines and a modern telecommunications system.

Primary utilities for the Galena Complex include fixed installations for main and auxiliary ventilation, water pumping systems, electrical distribution and a clean water supply. In addition, there are mine and surface water treatment circuits

The tailings storage facility, known as the Osburn Tailings Impoundment, is located adjacent to the town of Osburn, approximately 2 miles from the Galena processing plant.

#### 1.2.12 Markets

The principal commodities at the Galena Complex are freely traded, at prices that are widely known, so that prospects for sale of any production are virtually assured, subject to achieving product specifications.

As per industry norms for silver-lead and silver-copper concentrates, penalty charges are incurred for various deleterious elements when above specified levels. There are no known "hard caps" currently in place with any of the existing off-take agreements that would result in the concentrates not being readily saleable.

#### 1.2.13 Environmental, Permitting and Social Considerations

The Company has all material permits required to operate the mines, processing plants and tailing storage facility comprising the Galena Complex as currently contemplated.

#### 1.2.14 Capital and Operating Cost Estimates

Capital cost estimates for the Galena Complex are based on stated reserves. The sustaining capital costs total \$36 million over the 7 year mine life, including mine development,



mine/plant infrastructure, equipment costs, plant costs and tailings management. Galena has a demonstrated history of resource conversion and exploration success.

In addition to sustaining capital costs, reclamation and closure costs are estimated at \$2.84 million. This estimate covers reclamation and closure of the Osburn Tailings Impoundment, re-sloping and vegetation of the waste dumps and other surface disturbances and ongoing site monitoring.

Operating costs in the LOMP are based on recent operating history and average approximately \$29 million per year. Unit rates are summarized in Table 1-3:

Item	Units	LOMP Average
Mining	\$/ton milled	80.00
Processing	\$/ton milled	12.00
Exploration	\$/ton milled	2.00
G&A	\$/ton milled	53.00
Total	\$/ton milled	147.00

# TABLE 1-3UNIT OPERATING COSTSAmericas Silver Corporation – Galena Complex

# 1.2.15 Conclusions

- The Mineral Resource estimates have been prepared using acceptable estimation methodologies. The classification of Measured, Indicated and Inferred Resources conform to Canadian Institute of Mining, Metallurgy and Petroleum Definition Standards for Mineral Resources and Mineral Reserves dated May 10, 2014 ("CIM Definition Standards").
- The Mineral Reserve estimates have been prepared using acceptable estimation methodologies and the classification of Proven and Probable Reserves conform to CIM Definition Standards.
- Protocols for drilling, sampling, analysis, security, and database management meet industry accepted practices. The drillhole databases were verified and are reasonable for supporting a resource model for use in Mineral Resource and Mineral Reserve estimation.
- Americas Silver is not aware of any environmental, permitting, legal, tile, taxation, socio-economic, marketing, political or other modifying factors which could materially affect the underground Mineral Resource estimates.



- Measured and Indicated Mineral Resources, exclusive of Mineral Reserves, for silverlead zones total 1.7 million tons, grading 5.3 opt Ag and 5.59% Pb, containing 9.0 million ounces Ag and 188.3 million pounds Pb.
- Measured and Indicated Mineral Resources, exclusive of Mineral Reserves for silvercopper zones total 1.2 million tons, grading 12.9 opt Ag and 0.59% Cu, containing 15.7 million ounces Ag and 14.4 million pounds Cu.
- Inferred Mineral Resources for silver-lead zones total 1.8 million tons, grading 5.4 opt Ag and 5.82% Pb, containing 9.7 million ounces Ag and 207.8 million pounds Pb.
- Inferred Mineral Resources for silver-copper zones total 0.5 million tons, grading 13.4 opt Ag and 0.83% Cu, containing 6.8 million ounces Ag and 8.4 million pounds Cu.
- Proven and Probable Reserves for silver-lead zones total 0.8 million tons, grading 8.3 opt Ag and 9.40% Pb, containing 7 million ounces Ag and 158.6 million pounds Pb.
- Proven and Probable Reserves for silver-copper zones total 0.7 million tons, grading 15.4 opt Ag and 0.46% Cu, containing 10.8 million ounces Ag and 6.4 million pound Cu.
- Mineral Reserves are estimated at metal prices of US\$16.00 per ounce Ag, US\$2.40 per pound Cu and US\$0.85 per pound Pb.
- Recovery and cost estimates are based on actual operating data and engineering estimates.
- Economic analysis of the Galena LOMP generates a positive cash flow and meets the requirements for statement of Mineral Reserves. In addition to the Mineral Reserves in the LOMP, there are Mineral Resources that represent opportunities for the future.
- All requisite permits have been obtained and/or renewed in the ordinary course for mining and continued development of the Galena Property as currently contemplated and are in good standing in all material respects.

# 1.2.16 Recommendations

There are no recommendations at this time as Galena is a fully operational mine. Galena continuously reviews and improves operating practices as a matter of course.



# 2 INTRODUCTION

Americas Silver Corporation ("Americas Silver" or the "Company") prepared this Technical Report on the Galena Complex ("Galena", "Galena Property" or the "Project"), a silver-copper-lead mining and milling operation located in the Coeur d'Alene Mining District in Shoshone County, Idaho, USA. The purpose of this report is to disclose Mineral Resource and Mineral Reserve estimates for the operation, as at December 31, 2015. This Technical Report conforms to NI 43-101 Standards of Disclosure for Mineral Projects.

Americas Silver is a silver, copper, lead and zinc producer with operations in the United States and Mexico. The Company, then known as Scorpio Mining Corporation ("Scorpio"), merged with U.S. Silver & Gold Inc. in December 2014. A predecessor of U.S. Silver & Gold Inc. acquired the Galena Complex effective June 2006. Americas Silver currently operates Galena through its wholly owned subsidiary, U.S. Silver–Idaho Inc. ("U.S. Silver").

The Galena Complex is located in the Coeur d'Alene Mining District in Shoshone County, Idaho, a prolific silver producing district since the mid-1800s. The Galena Complex consists of the operating Galena Mine with two shafts (Galena and #3), the Galena processing plant, the idle Coeur Mine with one shaft (Coeur), the Coeur processing plant (currently on care and maintenance), and the Caladay exploration property with one shaft (Caladay). Galena produces a nominal 550 tons per day ore. The flotation processing plant located at Galena has a capacity of approximately 700 tons per day. It is configured to produce a single flotation concentrate (either silver-lead or silver-copper). Total production for 2015 was 1,489,736 ounces of silver, 17,436,671 pounds of lead and 304,753 pounds of copper.

Proven and Probable Mineral Reserves total 1.546 million tons, at grades of 11.5 opt Ag, 5.13% Pb and 0.21% Cu. A LOMP for Galena forecasts 7 years of mining at similar production rates to 2015 production rates. The transition from mining and processing silver-copper ore to silver-lead ore was completed in 2015. However, the silver-copper ore at Galena remains an important part of the Mineral Reserves, Mineral Resources and LOMP.

# 2.1 Qualified Persons

Site visits were carried out by Americas Silver Qualified Persons (QPs) James R. Atkinson, P.Geo., and Daren Dell, P.Eng., on numerous occasions throughout 2015 and 2016. Daniel H. Hussey, CPG, was the Chief Geologist at the time the resource and reserve estimate was completed and a full time employee at the operation. Mr. Atkinson and Mr. Dell visit the property on a routine basis.



Mr. Atkinson was responsible for reviewing and supervising the preparation of the Mineral Resource models for the mines and prepared Sections 4 through 12 and 14 of the Technical Report. Mr. Hussey was responsible for the LOMP design and schedule and prepared Sections 15, 16 and 18 of the Technical Report. He also supervised the preparation of the Mineral Resource estimates and contributed to the preparation of Section 14. Mr. Dell was responsible for metallurgical and environmental aspects, and prepared Sections 13, 17 and 20 of the Technical Report. Mr. Atkinson bears overall responsibility for the Technical Report, and prepared Sections 19, and 21 through 24. All authors share responsibility for Sections 1, 2, 3, 25, 26, 27 and 29 of the Technical Report.

## 2.2 Sources of Information

Information in this report is derived from discussions held with and data provided by site personnel:

- Mr. Corey Millard, General Manager
- Mr. Leland Page, Director of Technical Services
- Mr. Aaron Gross, Chief Geologist
- Mr. Mark Bren, Chief Engineer
- Ms. Cheri Bayer, Accounting Director
- Mr. Kerry James, Maintenance Superintendent
- Mr. Matt Drews, Environmental Superintendent
- Previous Technical Report on the Galena Mine
- Reports prepared by Americas Silver to disclose mineral resources and reserves in 2015
- Drillhole and underground sample databases compiled by Americas Silver technical staff
- Other information gathered by Americas Silver staff

The documentation reviewed, and other sources of information, are listed in Section 27 References.



# 2.3 List of Abbreviations

Units of measurement used in this report conform to the imperial system. All currency in this report is US dollars (US\$) unless otherwise noted.

a	annum	kWh	kilowatt-hour
A	ampere	L	litre
bbl	barrels	lb L (a	pound
btu °C	British thermal units	L/s	litres per second
	degree Celsius	m	metre
C\$	Canadian dollars	M m²	mega (million); molar
cal cfm	calorie	m <sup>3</sup>	square metre
	cubic feet per minute centimetre		cubic metre micron
cm cm <sup>2</sup>		μ MASL	
	square centimetre		metres above sea level
d	day	μg m3/h	microgram
dia	diameter	m³/h	cubic metres per hour
dmt	dry metric tonne	mi	mile
dwt °F	dead-weight ton	min	minute
	degree Fahrenheit	μm	micrometre
ft ft <sup>2</sup>	foot	mm	millimetre
	square foot	mph	miles per hour
ft <sup>3</sup>	cubic foot	MVA	megavolt-amperes
ft/s	foot per second	MW MWh	megawatt
g G	gram		megawatt-hour
Gal	giga (billion) Imperial gallon	OZ	Troy ounce (31.1035g)
g/L	gram per litre	oz/st, opt	ounce per short ton part per billion
Gpm	Imperial gallons per minute	ppb	part per billion
g/t	gram per tonne	ppm psia	pound per square inch absolute
gr/ft <sup>3</sup>	grain per cubic foot	psia	pound per square inch absolute
gr/m <sup>3</sup>	grain per cubic root	RL	relative elevation
ha	hectare	S	second
hp	horsepower	st	short ton
hr	hour	stpa	short ton per year
Hz	hertz	stpd	short ton per day
in.	inch	t	metric tonne
in <sup>2</sup>	square inch	tpa	metric tonne per year
J	joule	tpd	metric tonne per day
k	kilo (thousand)	US\$	United States dollar
kcal	kilocalorie	USg	United States gallon
kg	kilogram	USgpm	US gallon per minute
km	kilometre	V	volt
km <sup>2</sup>	square kilometre	W	watt
km/h	kilometre per hour	wmt	wet metric tonne
kPa	kilopascal	wt%	weight percent
kVA	kilovolt-amperes	yd <sup>3</sup>	cubic yard
kW	kilowatt	yr	year



# 3 RELIANCE ON OTHER EXPERTS

In the preparation of the Technical Report, the Qualified Persons relied on information provided by internal Americas Silver counsel for the discussion of applicable legal matters in Sections 4, 19 and 20, in addition to a title report dated December 15, 2016 by Jeanine Feriancek of Holland & Hart LLP, a law firm in Denver, Colorado.

Except for the purpose legislated under provincial securities law, any other use of this report by any third parties is at that party's sole risk.



# 4 PROPERTY DESCRIPTION AND LOCATION

There have been some minor changes in the Galena Complex property since the previous Technical Report by Chlumsky, Armbrust & Meyer, LLC, 2013 (CAM 2013), primarily related to the sale and non-renewal of particular mining claims.

#### 4.1 **Property Location**

Americas Silver's Galena Property is located in the eastern part of the Coeur d'Alene Mining district, one of the preeminent silver, lead and zinc producing areas in the world, near the base of the panhandle of northern Idaho, USA. The property is located two miles west of the town of Wallace and one mile south of Interstate Highway I-90. Spokane, Washington is approximately 75 miles to the west and Missoula, Montana is approximately 110 miles to the east (Figure 4-1).

The property covers 8,915 acres, over an area about 9 miles long east to west, and 2 miles wide north to south. The Galena Shaft is located near the center of the property and lies at  $47^{\circ}28'39"$  N latitude and  $115^{\circ}58'01"$  W longitude, with a collar elevation of 3,042 feet above sea level.



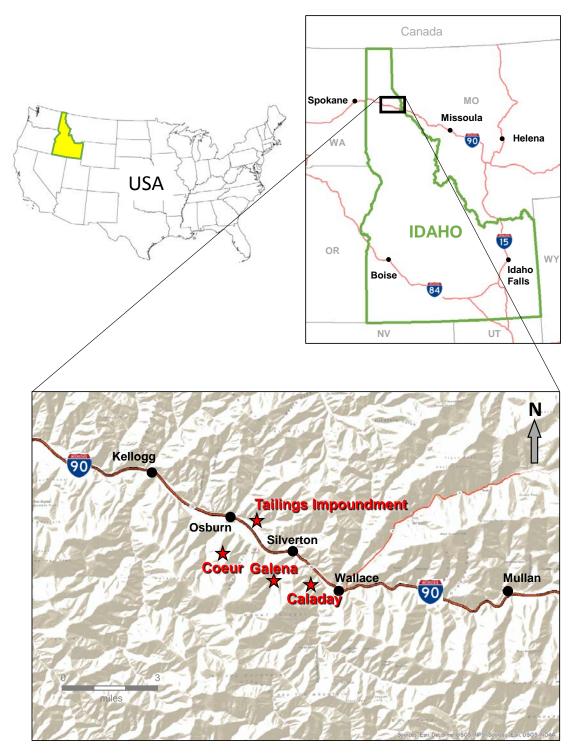


FIGURE 4-1 LOCATION MAP



# 4.2 Ownership

Americas Silver, a Canadian public company, amended its articles to change its name from Scorpio Mining Corporation effective May 19, 2015. Scorpio had recently acquired the Galena Property when it merged with U.S. Silver and Gold Inc. on December 23, 2014. U.S. Silver & Gold Inc. was the owner of the Galena Property prior to the merger through a wholly owned subsidiary. In connection with the merger, U.S. Silver & Gold Inc. was de-listed from the TSX.

United States Silver Inc., a predecessor company to, and current subsidiary of, Americas Silver purchased the Galena Complex on June 1, 2006 from Coeur d'Alene Mines Corporation ("Coeur"). The property includes the Galena Mine, the Coeur Mine, the Caladay property and leases on numerous other properties for a total of 8,915 acres (collectively the "Properties"). There are currently no underlying royalties to be paid on current production areas. The Galena Complex property was formerly known as Coeur Silver Valley under Coeur's ownership. Figure 4-2 outlines the current ownership structure of the Properties through certain of the Company's principal subsidiaries, together with the place of incorporation/governing law of each subsidiary:





FIGURE 4-2 OWNERSHIP STRUCTURE

# 4.3 **Property Description**

The Galena Complex property covers 8,915 acres over an approximate area of 9 miles long east-west and 2 to 3 miles wide north-south. The Complex contains four shafts, all connected by deep underground workings. The Galena and #3 shafts are near the center of the property, while the Coeur shaft is approximately 1.5 miles northwest of the Galena shaft and the Caladay shaft is approximately 1.5 miles southeast of the Galena shaft.

The Galena Complex (former Galena and Coeur Mines) is an operating mine, utilizing four shafts in various capacities. An operating flotation processing plant, maintenance shop, carpenters shop, office, and dry facilities are adjacent to the Galena and #3 shafts. The Galena shaft is primarily used for moving personnel, equipment and supplies to the various levels of the mine but is capable of hoisting ore and waste and is approximately 5,540 feet deep. The #3 shaft is the primary production hoist from the Galena Mine and is approximately 5,850 feet deep.



The Coeur Mine, now part of the Galena Complex, was on care and maintenance from 1997 to 2011. Work started in 2011 to re-open the Coeur Mine for production of silver-copper ores, with production resuming in September 2012 and terminating in Q4 of 2015. It is serviced by an operational three compartment shaft with a double drum hoist that goes to 4,100 feet below the surface. The workings are connected underground by a track haulage drift on the Galena 3700 Level (Coeur 3400 Level). The Coeur shaft serves as an exhaust ventilation shaft for the Galena and Coeur workings. A flotation processing plant, a maintenance shop, office, and dry facility are located on the surface adjacent to the Coeur shaft.

The Caladay shaft is serviced by a double drum hoist and goes 5,100 feet below the surface. The hoist has not been operational since 2008. It is connected to the Galena workings on the 4900 Level of the Galena Mine. The Caladay surface facilities include a maintenance shop, warehouses, and office. The Caladay shaft currently serves as an exhaust ventilation shaft for the Galena Complex.

## 4.4 **Property Parcels**

Americas Silver's land position is a combination of patented, unpatented and fee lands that are either owned by Americas Silver or leased (Table 4-1 and Figure 4-3). The claims have been legally surveyed and are in good standing with U.S. Bureau of Land Management. Americas Silver owns 1,164 acres of fee ground, 125 patented claims for 2,179 acres, and 137 unpatented claims for 2,147 acres. Americas Silver leases 239 unpatented claims for 3,425 acres. Eight of the leases were initiated in 1997 and 1998, and have 20-year terms, with the right to extend for another 20 years. One lease initiated in 1970, has a 99-year term. No back-in clauses are in any leases. Net smelter return royalties could be payable on some leased claims, but no production prior to the end of 2015 has been realized on any of the leased claims, and none is contemplated in the Mine Plan. Also, Mineral Resources are all within owned or controlled land and no Mineral Resources are located within any leased claims.



#### TABLE 4-1 LAND PACKAGES Americas Silver Corporation – Galena Complex

Category	Acres
Owned or Controlled Land	
Fee Land	1,164
Patented Mining Claims	2,179
Unpatented Mining Claims	2,147
Subtotal	5,490
Leased Lands	
Patented Mining Claims	0
Unpatented Mining Claims	3,425
Subtotal	3,425
Total All Lands	8,915

Ownership by Americas Silver of the parcels described in this section were confirmed in a title opinion dated June 14, 2016 (covering certain key properties) and a title report dated December 15, 2016 (covering the remainder of the parcels), both from Jeanine Feriancek of Holland & Hart LLP, a law firm in Denver, Colorado. Maintenance fees on unpatented claims and property taxes on patented parcels were paid-up as of the date of this report.

Americas Silver controls three other past producing mines in the district. Two of these properties are held by lease agreements and one property was purchased. These properties consist of patented and unpatented claims, none of which are contiguous with the Galena Complex. These properties are considered exploration projects at this time and are not currently producing, without any plans to put them into production in the near future. In addition, Americas Silver has staked approximately 300 unpatented claims in the district, outside the Galena Complex.



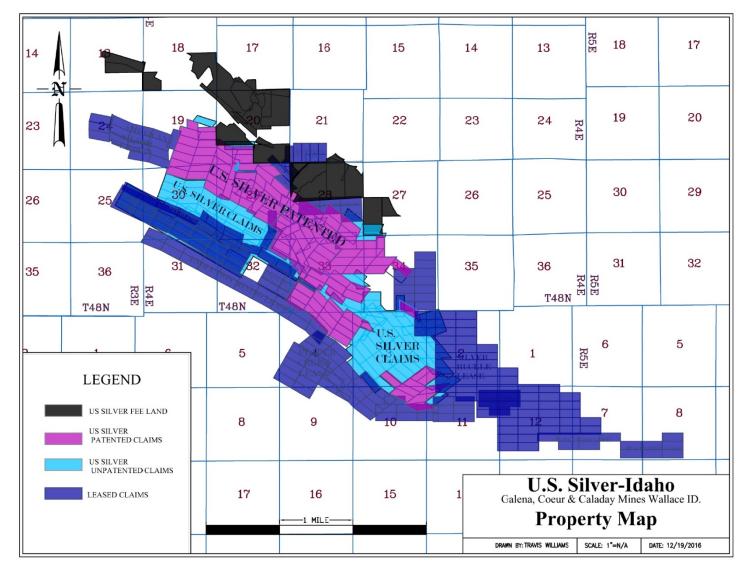


FIGURE 4-3 PROPERTY AND CLAIM POSITION



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

#### 5.1 Access

Americas Silver's land position lies immediately south of I-90, between the towns of Wallace, Idaho and Osburn, Idaho. Wallace is approximately 2 miles east of the Galena Mine and the city of Kellogg, Idaho is approximately 10 miles west of the Galena Complex.

All the centers of population and Americas Silver's property are accessible by main highways, hard surfaced roads or well-graded gravel roads. Many miles of U.S. Forest Service and private logging roads allow access to most areas of the property.

#### 5.2 Climate

The climate of the Coeur d'Alene District is strongly seasonal and typical of the climate of the western slope of the Northern Rocky Mountains. Daytime temperatures in the summer are usually moderate and average from 70 to 80 degrees Fahrenheit. Daytime temperatures in the winter average near or below freezing at 32 degrees Fahrenheit. Average annual precipitation in Wallace, Idaho, is 38 inches a year and average annual snowfall is 80 inches. Mining and exploration activities take place year round.

#### 5.3 Local Resources

The Galena Complex is located in the Coeur d'Alene Mining District which is commonly called the Silver Valley. Mining activity in the Silver Valley has been ongoing for 150 years and total historical production of over one billion ounces ranks the Silver Valley as one of the world's most prodigious silver producing districts. Given the long history of mining in the area, there is a good supply of local labor, mine contractors and suppliers. The mine enjoys the support of the local communities as it is one of the largest employers in the area.

#### 5.4 Infrastructure

Americas Silver has established necessary sources of water, power, waste disposal and tailings storage for current and planned operations. Americas Silver has the necessary processing facilities and holds sufficient surface rights to conduct operations. The surface and underground infrastructure at the Galena Complex include the following:

- Galena processing facility
- Galena and #3 shafts equipped for hoisting



- Coeur processing facility
- Coeur shaft equipped for hoisting
- Caladay shaft for ventilation only
- A tailings pond located near the town of Osburn
- Shops, offices, warehouse facilities and a mine dry
- Inter-connected level development connecting the 4 shafts

Other surface facilities located on the property include concentrate storage areas, a cement silo, a sandfill backfill plant, a core storage facility, and a modern telecommunications system.

#### 5.5 Physiography

The Coeur d'Alene District (and the Galena Complex) lies within what is generally called the Bitterroot Mountains, a part of the Northern Rocky Mountains, adjacent to the South Fork of the Coeur d'Alene River. The river and its numerous tributaries drain most of the district. The area is one of high relief and generally rugged terrain, with narrow valley flats restricted to the main stream and the lower reaches of some major tributaries. The ridge crests and peaks range in altitude from 6,000 to 7,000 feet. Thus the maximum relief between valley floors and adjacent ridge crests and peaks ranges from 3,000 to 4,000 feet.

Vegetation is abundant, although only a few small areas remain of the original coniferous forest that once covered the district. The conifers are Douglas fir (the most common), western white pine, fir, hemlock, larch, cedar, and spruce. Deciduous trees, mainly willow, alder, and black cottonwood, are restricted principally to the valley flats and perennial stream courses, plus some aspen on high, open slopes.



# 6 HISTORY

The description of the history of the Properties has been modified from the previous Technical Report.

As of the beginning of 2013, all the contiguous Americas Silver properties are referred to as the Galena Complex, with distinction no longer always made among the former Galena, Coeur, and Caladay properties. These former property names are sometimes mentioned for historical continuity.

The Galena and Coeur Mines are situated in the center of the Coeur d'Alene Mining District of North Idaho. Placer gold was first discovered in the district in 1858. By 1860, the goldrush prospectors had also discovered the silver-lead veins in the district.

Companies owning all or parts of the Galena Complex properties at various times since 1887 have included Killbuck Mining, Galena Mining, Callahan Mines, Federal Mining and Smelting, Vulcan, ASARCO, Day Mines, Coeur d'Alene Mines, and U.S. Silver, a wholly owned subsidiary of Americas Silver.

Since 1953, the Galena and Coeur Mines have together yielded approximately 230 million ounces of Silver, 159 million pounds of copper and 69 million pounds of lead from 11.8 million tons of combined silver-copper and silver-lead ore. More than 80% of the total silver has come from the Galena Mine.

### 6.1 Galena Mine History

The Galena Mine has a long history dating back to 1887, but the modern history and mining commenced in 1947 under the management of ASARCO. Since 1953 the Galena Mine has primarily mined silver-copper ore with lesser production of silver-lead ore.

A landmark event occurred in February, 1953, when the tetrahedrite-bearing Silver Vein was encountered on the 3000 Level. This discovery changed the major focus of mining from galena-dominated silver-lead ores, to tetrahedrite-dominated silver-copper ores.

From mid-1992 to mid-1997, Galena operations were suspended due to the low price of silver. During this period, ASARCO and Coeur d'Alene Mines acquired the Galena and Coeur Mines, under the name of Silver Valley Resources. In 1999 Coeur d'Alene Mines



became 100% owners of the Galena Complex, and the name of the operating company was changed to Coeur Silver Valley.

Effective June 1, 2006, United States Silver Inc. acquired the Galena Mine, the Coeur Mine, the Caladay exploration property, and the adjoining properties. Production of silver-copper ores continued. Production of silver-lead ore resumed at Galena in 2007, in addition to silver-copper ore. Silver-lead ores were milled at the Coeur mill, while silver-copper ores were processed at the Galena mill.

In 2010 the Galena Shaft was repaired and returned to service, restoring continuous access from surface to the 5,500-foot level.

During 2011, exploration and development was resumed at the Coeur Mine. In 2012, exploration resumed in the eastern part of the Galena Mine, adjacent to the Caladay property.

U.S. Silver and Gold Inc., a Canadian public company, was formed in mid-2012 by a combination of U.S. Silver Corp. and RX Gold & Silver Inc., with the latter company being delisted from stock exchanges in Canada as of August 14, 2012, while U.S. Silver Corp. changed its name to U.S. Silver & Gold Inc., and began trading on August 15, 2012. U.S. Silver Corp. was the former owner of the Galena Complex.

Americas Silver owns 100% of the subsidiaries U.S. Silver and Gold Inc., U.S. Silver Corporation and United States Silver, Inc., which in turn owns 100% of U.S Silver-Idaho, Inc., a Delaware corporation which owns the subject properties.

Total production from the Galena Mine sent to the process plants from 1953 to the end of 2015 was approximately 189.5 million ounces of silver from 9.3 million tons of ore. Average grade of the silver-copper ore was 21.3 opt Ag and 0.72% Cu. Average grade of the silver-lead ore was 5.1 opt Ag and 6.0% Pb. This excludes production from the Coeur Mine, which is now part of the Galena Complex.

# 6.2 Coeur Mine History

The Coeur Mine shaft was initiated in 1963 by Coeur d'Alene Mines. The mine produced continuously from 1976 through 1991, and again from 1996 through 1997. Total production from the Coeur Mine sent to the process plants was approximately 40.5 million ounces of silver in 2.5 million tons of ore. Average ore grades were 16.5 opt Ag and 0.67% Cu.



The mine was on care and maintenance from 1997 to 2007, when work was begun to rehabilitate the Coeur Mine 3400 Level and later the Coeur Shaft. The Coeur mill was restarted in September 2007 to process silver-lead ore from the Galena Mine. By early 2008 silver-lead ore was being trammed from the Galena Mine 3700 Level to the Coeur Shaft (Coeur 3400 Level) and hoisted up the Coeur shaft for processing at the Coeur mill. During 2012, the Coeur Mine was rehabilitated for mining, which started in September 2012. Underground work ceased in 2014, as discussed Section 22.

## 6.3 Caladay Property History

The Caladay property began in the mid-1960s as a joint venture among Callahan Mining, ASARCO, and Day Mines. The joint venture sank a 5,100 foot shaft during the early 1980s on the east end of the Coeur d'Alene Silver Belt, just east of the Galena Property. From the 4900 Level of the Caladay shaft an exploration drift was run east and west, the western drift intersecting the Galena Mine's 4900 Level.

The joint venture was bought out by Coeur d'Alene Mines Corp in the 1980s.

After the 1980s no exploration was undertaken on the Caladay property until 2012, when Americas Silver drilled several thousand feet and defined Mineral Resources as discussed in Section 14. The Caladay shaft and workings are currently used as ventilation exhaust for the Galena workings.



#### 7 GEOLOGICAL SETTING AND MINERALIZATION

#### 7.1 Regional Geology

The Galena Complex and the Coeur d'Alene District are hosted almost entirely within rocks of the Belt Supergroup, a sequence of sedimentary rocks of Middle Proterozoic Age, deposited 1.47 to 1.40 billion years ago, occurring primarily in western Montana, Idaho, and southeastern British Columbia. The sequence totals at least 21,000 feet in thickness in the Coeur d'Alene District.

Rocks of the Belt Supergroup are clastic sediments, with a minor component of chemical and algal dolomites. The clastic facies are dominantly clean to argillic quartzites and quartzose siltites, and argillites. These units are variously colored white, grey, purple, and black. Units are generally laterally persistent.

The Belt Supergroup is regionally subdivided into four units, from youngest to oldest as shown in Table 7-1.

Group	Formation	Lithology	Comments
MISSOULA	Various	quartzite, siltstone, argillite	Not present on Property
	Wallace	quartzite, argillite, minor carbonates	Minor ore in old, shallow workings
PIEGAN	St. Regis	siltite-argillite	Minor ore in old, shallow workings
	Revett	quartzite and siltite	Most of Galena Complex ore
RAVALLI	Burke	siltite-argillite	Occurs in Revett
		siltite with quartzite in upper part	None at Galena
PRE-RAVALLI or	Prichard	argillite, slate and	Not present on Property
LOWER BELT	FIIGHAIU	greywacke-quartzite	

# TABLE 7-1 STRATIGRAPHY OF THE BELT SUPERGROUP IN NORTH IDAHO Americas Silver Corporation – Galena Complex

Belt strata have been subdivided into a number of widely mappable formations, each several hundred to thousands of feet thick. Nomenclature used to define these formations has changed slightly over the past 30 years. Descriptions of formations as redefined by Harrison and others (1986) are given as follows from oldest to youngest.



*Burke Formation:* The predominant rock type is thinly layered siltite. Vitreous and sericitic quartzites in the upper part of the formation host important ore bodies, but none have been mined in many years, and exploration of this rock type has been minimal.

*Revett Formation:* This is the most important host formation for ore in the district; 75% of ore production to date has come from the Revett, primarily from the upper members. Overall, the Revett Formation is composed of roughly equal proportions of siltite-argillite, sericitic quartzite, and vitreous quartzite. Both the upper and lower Revett are characterized by hard and soft subunits of relatively uniform strata that commonly range from 50 to 200 feet thick. Hard subunits are typically composed of vitreous quartzite and hard sericitic quartzite with thin seams of siltite-argillite. Soft subunits contain soft sericitic quartzite and siltite-argillite. The middle Revett is dominated by siltite-argillite.

*St. Regis Formation:* This formation is most characterized by purplish siltite-argillite. Historically, the upper portion of the upper member of the Revett Formation has locally been included as part of the St. Regis.

*Wallace Formation:* The Wallace contains two distinct lithologies. The Middle Wallace is characterized by layers of coarse-grained sericitic quartzite 2 to 8 inches thick separated by thinner (2 to 4 inches) interbeds of black argillite. The Lower Wallace rock type typically is green argillite.

#### 7.2 Local and Property Geology

Belt Series strata are composed primarily of fine-grained quartz and original clay (now metamorphosed to fine-grained white mica, or sericite). These strata vary in several sedimentological features, including grain size, grain sorting, thickness, and bed form. These features are reflected in variations in strength, hardness, and physical anisotropy. Differences in mechanical properties among strata are largely dependent on highly variable proportions of fine-grained quartz and sericite.

Although the composition of these metasediments varies widely, three major rock types are generally recognized. These rock type definitions were first applied in the district to the Revett Formation (White and Wilson, 1982) but have since been used in describing other Belt formations as well. The rock types are; vitreous quartzite, which is primarily metamorphosed fine-grained quartz sand, siltite-argillite, which is silt-sized quartz grains that are completely separated from each other by a large proportion of sericite, and sericitic quartzite which contains intermediate proportions of quartz and sericite.



## 7.2.1 Vitreous Quartzite

Vitreous quartzite is a hard metasandstone with no more than 8% sericite. Some sericite is present at some grain boundaries but not enough to interfere materially with the silica cementing of quartz grains into a hard coherent rock. Such cementing is apparently responsible for the stiff, brittle nature of this rock type. The brittle nature is evident in the discrete chips or splinters created when the rock is struck with a hammer.

Vitreous quartzite beds most commonly range from 1.5 to 3 feet thick and tend to be internally uniform in appearance. Sedimentary lamination is present within these quartzite beds, and beds sometimes separate along these laminations. Subtle variations in appearance among individual beds are believed to result from slight differences in the amount of sericite. The purest vitreous quartzite is nearly white and translucent.

Vitreous quartzite may be abundantly microfractured (particularly at the Lucky Friday Mine, which is about 10 miles east of the Galena Complex). In addition, short, non-persistent fractures are seen locally. These microfractures, as well as clouds of larger fractures, provide pathways for fluid flow, which is reflected in the relatively high permeability of vitreous quartzite strata compared to more sericitic strata.

#### 7.2.2 Sericitic Quartzite

Sericitic quartzite differs from vitreous quartzite primarily in being non-glassy, noticeably softer (it can be scratched with a steel point) and normally darker. These differences reflect the presence of a larger proportion of interstitial sericite (greater than about 8%). The increased amount of sericite apparently limits quartz grain intergrowth, affecting both the appearance and hardness of this rock type. The separations of grains by sericite evidently serve to buffer, but not prevent, interaction between quartz grains. The result is a softer, weaker, but still substantial rock.

Sericite in sericitic quartzite generally displays a preferred orientation, reflecting either original sedimentary layers or metamorphic foliation, depending on structural setting and history. The soft sericite promotes a plastic mode of deformation not available to vitreous quartzite.

#### 7.2.3 Siltite-Argillite

As sericite content approaches 50%, quartz grains are sufficiently isolated from each other so as to prevent any kind of mechanical interaction between grains. At this point, the rock



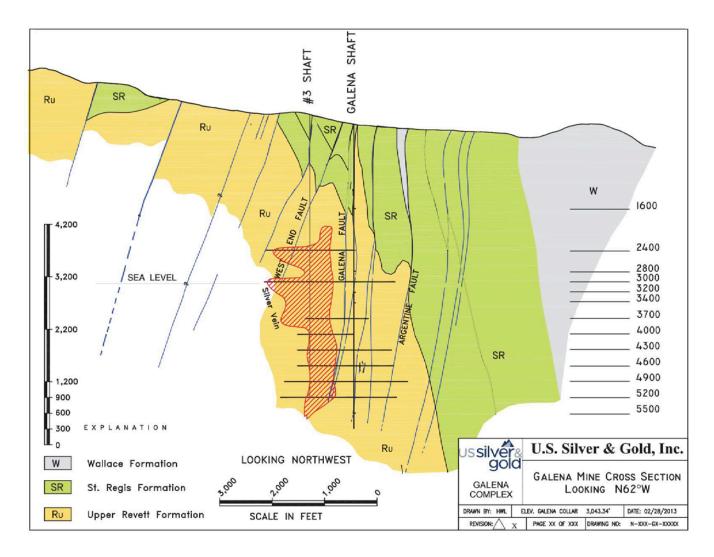
takes on the soft and weak plastic behavior that typifies siltite-argillite. This category includes a wide range of thinly layered (millimeters to centimeters) siltite and argillite. Argillite layers are typically interlayered with siltite layers in highly variable proportions.

#### 7.2.4 Structure

The Coeur d'Alene District lies within the west-central part of a regional tectonic lineament known as the Lewis and Clark line that trends in a N070°W direction from Missoula, Montana to Coeur d'Alene, Idaho. The major regional expression of the Lewis and Clark Line in the vicinity of the Galena Complex is the N75°W trending Osburn Fault, which has a right-lateral offset of several miles within the Coeur d'Alene District. Other major northwesterly faults include the Polaris Fault, the Argentine, Silver Standard, Silver Summit, Big Creek, and Placer Creek faults, all of which are probably tectonically related to the Osburn Fault.

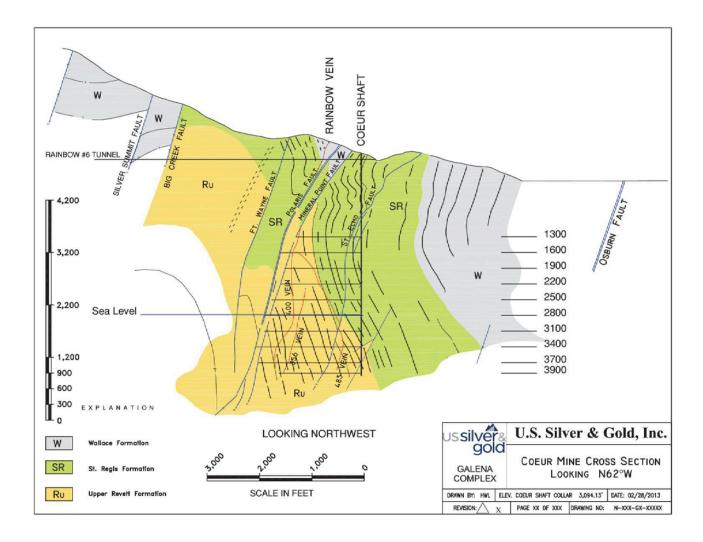
The principal fold at the Galena Complex is the Big Creek Anticline, the crest of which passes just south of the Galena Shaft. The rocks are strongly folded, and generally strike northwesterly. Bedding dips steep to the north and faults dip steep to the south (Figures 7-1 and 7-2).





# FIGURE 7-1 CROSS-SECTION THROUGH GALENA MINE AREA





# FIGURE 7-2 CROSS-SECTION THROUGH COEUR MINE AREA



### 7.3 Mineralization

A striking feature of the Galena Complex mineralization is that two entirely distinct vein types of utterly different ore mineralogy occur within the mineralized envelope. These are 1) silver-copper veins, dominated by tetrahedrite, and 2) silver-lead veins, dominated by galena. The two ore types require beneficiation processes.

During the past several decades, mine workings have been below the limit of surficial oxidation, and the mineralization has been entirely in sulfides. Shallow oxide mineralization is not discussed in this report, and does not comprise any of the Mineral Resources or Reserves.

The Galena Complex has historically produced from discrete veins, carrying relatively highgrade silver-lead or silver-copper mineralization. However, during 2012, significant areas of disseminated silver-lead mineralization were drilled in the eastern part of the property, on what was formerly the Caladay property and the eastern part of the former Galena Property. Some silver-copper mineralization was also located in this area.

The vein-type and disseminated styles of mineralization are discussed separately below. The mineral species of the silver-copper and silver-lead types are shown in Table 7-2; the relative abundances of the species are similar for each type, whether vein-like or disseminated.



# TABLE 7-2 MINERALS OF ECONOMIC INTEREST IN THE GALENA MINE Americas Silver Corporation – Galena Complex

Mineral	Formula	Abundance Ag-Cu Type	Abundance Ag-Pb Type
Ore Minerals and O	ther Sulfides		
GALENA	PbS	sparse	abundant
TETRAHEDRITE	(Cu,Fe,Zn,Ag)12Sb4S13	abundant	sparse
CHALCOPYRITE	CuFeS2	common	sparse
PYRITE	FeS2	common	common
SPHALERITE	ZnS	trace	trace
ARSENOPYRITE	FeAsS	trace	trace
PYRRHOTITE	Fe1-xS2	trace	trace
Gangues			
SIDERITE	FeCO3	abundant	abundant
QUARTZ	SiO2	abundant	abundant
ANKERITE- DOLOMITE	Ca(Mg,Fe)(CO3)2	sparse	sparse
CALCITE	CaCO3	sparse	sparse
BARITE	BaSO4	sparse	sparse

### 7.3.1 Vein Mineralization

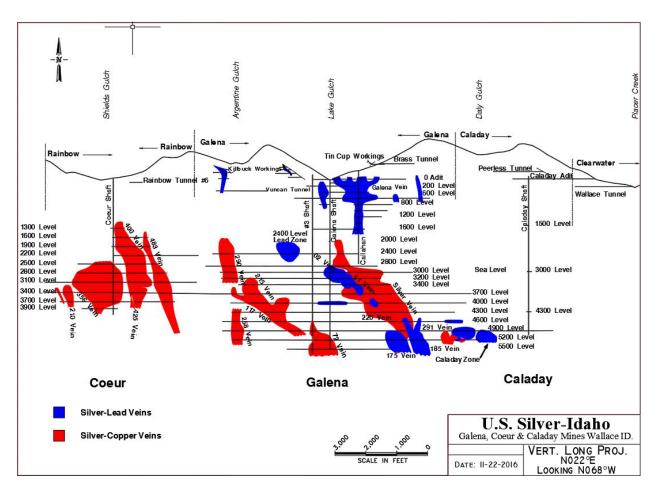
Vein mineralization is dominant in the central and western parts of the Galena Complex; i.e. the former Galena and Coeur properties. The Caladay area hosts mainly galena-dominated veins with significant disseminated silver-lead mineralization. Between 2012 and 2014, exploration drilling extended this disseminated silver-lead mineralization further east, to the western part of the Caladay area. As of year-end 2015, the silver-lead ores comprise 55% of the entire Galena Complex ore reserve tons and 40% of the silver ounces in reserves.

In the Galena Mine alone, tabulated Mineral Resources and/or Mineral Reserves occur in 148 numbered or named veins, with approximately 15 more in the Coeur Mine. Thirty-eight of those veins are silver-lead veins and 110 are silver-copper. During 2015, mining occurred on 22 Ag-Pb Veins and 13 Ag-Cu veins.

Mineralization at the Galena Mine is typified by structurally controlled veins that can extend for a few thousand feet of depth and hundreds of feet of strike. The general strike is N 50 W, with steep dips to the south, but there are many local variations. Due to the complex threedimensional arrangement of the numerous veins, which include NW, NE and N-S trends, a two-dimensional graphic presentation is difficult.



The veins principally contain silver, lead, copper and zinc in relatively simple mineralogy. Silver is the primary economic metal at the Galena Mine. Historically, the "silver-copper" veins, containing argentiferous tetrahedrite have been the focus of production at Galena. The silver-copper ratio averages 30 to 35 ounces per percent copper. Typically, the silver-lead ratio of silver-lead ore at the Galena Mine is about 0.9 opt Ag per 1.0% Pb. Some of the more important veins are shown on Figure 7-3.



# FIGURE 7-3 LONG SECTION OF THE GALENA COMPLEX – LOOKING NE

The mineralized veins at the Galena Mine occur along four major fracture systems and three major faults (South Argentine, Argentine, and Polaris). The veins generally strike east-west to northeast-southwest, and dip vertically to steeply to the south. Thickness ranges from a few inches to over fifteen feet. Grades of the silver-copper veins range from a few ounces of silver to over a thousand ounces of silver per ton, and since 1953 the ore mined has averaged over 21 ounces per ton silver. Copper grades in the silver-copper ores range from tenths of a percent to over two percent and from 1953 to 2015 averaged 0.72 percent.



The vein fillings are a gangue of siderite with variable amounts of pyrite and quartz as blebs and stringers. The ore bearing sulfides are predominately galena, tetrahedrite and chalcopyrite, with pyrite.

Wall rocks for the vein mineralization are not significantly mineralized except, where cut by narrow unnamed veins or stringers.

The Silver Vein at the Galena Mine is one of the widest and most productive veins in the history of the mine. The vein cuts through quartzites and siltites of the Revett Formation for over 3,600 vertical feet with an average strike length of 1,000 feet. It can be as narrow as 1.0 foot and as wide as 15.0 feet but typically averages about 4 feet wide. The Silver Vein consists of massive siderite with pods of quartz and chalcopyrite and scattered blebs and stringers of tetrahedrite.

The 185 Vein in the Galena Mine strikes east-west within a hard quartzite unit and consists of zones strongly enriched in silver bearing galena. Common accessory minerals are pyrite, ankerite, barite, and quartz. Only trace amounts of tetrahedrite are typically found within the vein.

The fault-bounded veins are found within three major structures that cross through the Galena Mine. These veins include the 31, 72, 133, and 164 Veins hosted by the Polaris fault, the 117 Vein hosted by the South Argentine fault, and the 123 Vein hosted by the Argentine fault. The wall rocks encompassing these fault-controlled "veins" vary throughout the mine from soft siltite-argillites to very hard quartzite.

The Polaris fault is a major fault and strikes west-northwest to east-southeast and cuts through the middle of the Galena Mine, and south of the Coeur Mine. The Argentine and South Argentine faults are smaller east-west striking faults that lie north of the Polaris fault.

The 72 Vein is a silver-enriched narrow vein bounded by the Polaris fault. It strikes at approximately N 75 degrees W and dips to the SW at -70 degrees. The genesis of the 72 Vein ore body is hypothesized to be the result of left lateral oblique movement along the Polaris fault that produced dilation zones in brittle quartzite units creating openings for silver concentrations from metal-rich metamorphic fluids. The ore-bearing quartzites are bounded by more ductile siltite units that according to drill data cut off the mineralization along strike and up-dip. At the current drill limits the 72 Vein exhibits an ore grade strike length of 1,200 feet and a down-dip length of 900 feet. However, drill data between the 5500 and 5800 elevations reveals that the 72 Vein ore body is open down dip, showing increasing Ag grades within a thickening quartzite package.



Mineralogically the 72 Vein is composed primarily of massive siderite veins that contain variable amounts of tetrahedrite, chalcopyrite, pyrite, and trace galena. These siderite veins and stringers are commonly found as brecciated angular to sub-rounded clasts set in a fault gouge matrix. Tetrahedrite is not always visible and can appear as black powder.

The 117 Vein is hosted by the South Argentine fault. It is a strong siderite vein with small tetrahedrite blebs and parallel stringers. Hard quartzite in the hanging wall and siltite and argillite in the footwall bound the vein. Silver-bearing tetrahedrite mineralization appears to rake flatly up dip to the northwest at about 40 degrees. The vein varies in width from 2 to 12 feet. In certain areas of the mine the vein will pinch out and only a black mineralized fault is present.

The 123 Vein is a narrow siderite vein with small parallel tetrahedrite stringers. The vein is found within the Argentine fault, north of the Polaris fault and the 117 Vein. The hanging wall of the 123 Vein is a barren soft argillite while the footwall is a mineralized siltite-quartzite. The vein averages 2 to 4 feet wide and during mining the soft argillites in the hanging wall are found to be not competent which can cause dilution.

#### Coeur Mine

The Coeur Mine, northwest of the Galena Mine, contains a Mineral Resource which is dominantly within the 425 Vein, the 400 Vein and the 356 Vein with Measured, Indicated and Inferred Resources on 12 other veins. The Coeur Mine had been idle since 1997 until Americas Silver rehabilitated the mine and resumed production in the second half of 2012 in the 425 Vein. Production ceased in 2014 due to low prices and the focus changed to silver-lead mineralization.

The Coeur Mine mineralization generally resembles the Galena Mine, in containing a complex vein set controlled largely by the pattern of faults, and the geology of the Revett quarzitic and argillitic units. Pre-1997 workings at Coeur attained a depth of 4,225 feet below surface (3900 Level), and were mostly in the 356, 400, and 483 Veins.

It has been noted that the tetrahedrite of the Coeur Mine has a lower silver/copper ratio than that in the Galena Mine, about 15-20 ounces of silver per percent of copper.

#### 7.3.2 Disseminated Mineralization

Significant volumes of disseminated mineralization were encountered by drilling during 2012 in the eastern part of the Complex, primarily on the 4900 and 5200 Levels. Some of the drilling was in the same area in the Caladay property as the historic drilling in what is now



called the 49-350 Zone. Most of the disseminated mineralization is galena-dominated. The disseminated mineralization consists of small stringers and disseminations of galena in wall rock sediments. This style of mineralization is locally termed "blue rock".

Disseminated galena mineralization mainly occurs in thicker bedded, relatively more siliceous stratigraphic intervals. The disseminated mineralization ranges from narrow, weak zones less than a foot thick, to strongly mineralized zones which are several tens of feet thick. Disseminations vary from mottling and streaking to completely pervasive. Disseminated galena commonly follows lamination, where present, in siliceous rock. Galena grains in "blue rock" are usually quite fine, but variable. Blebs and pods of galena up to about ½ inch comprise a minor part of the disseminated mineralization. Pyrite is often present in minor amounts. Very low copper assays show that tetrahedrite is usually totally absent from "blue rock". Siderite alteration, which is very wide-spread around veins, in general, is conspicuously absent in most "blue rock". The host intervals for disseminated mineralization are silicified, and the mineralogy seems to consist almost entirely of quartz, galena, and possibly pyrite. Siderite stringers and alteration increases where disseminated mineralization becomes weaker.

In the Caladay Zone, the disseminated zone occurs in thick bedded quartzite just stratigraphically below a contact to thinner bedded siltite with increasing argillite couplets. Approaching the "blue rock" mineralization from the southwest, the contact is gradational, with increasing lead stringers, veins, and the first appearance of weak disseminated galena. This contact zone is in thick bedded quartzite. The stratigraphically higher contact is less gradational, disseminated mineralization tending to increase in grade over about ten to twenty feet, then ending rather sharply as argillite couplets increase. More argillaceous intervals, usually less than one foot thick, occur within the disseminated zone, and mineralization is weaker or nearly absent in such intervals. In drillholes where argillaceous intervals are thicker within the Caladay Zone, the decrease in disseminated galena is striking.

Disseminated mineralization is usually strong (greater than 6% Pb) around major lead veins. Major lead veins are mainly on the southwest (stratigraphically lower), side of the Caladay Zone. These veins, typically about 2 feet thick, may carry more than 40% Pb and relatively high pyrite (greater than 20%). The stronger intervals of "blue rock" in general contain galena-bearing stringers and pods. Stringers up to about 0.2 foot or 0.3 foot in width average roughly one per two to four feet in the strongest "blue rock". These stringers consist of quartz, galena, pyrite, and siderite. Very high-grade stringers carrying more than 40% Pb are present.



## 7.4 Exploration Potential

The history of the Galena Complex since 1958 indicates that the net increase or decrease in the year-end reserve base is proportional to the amount of exploration activity conducted during the year. It is believed that the exploration potential is very good, with many areas still remaining with untested favorable geology.

Americas Silver recently assessed the exploration potential of the Caladay Zone in the Galena Complex, which largely lies within the Galena Mine property, and partially on the Caladay property.

A large volume was defined within the mineralized trend between the Galena 2400 Level and the 5200 Level, shown on Figure 7-3. The Caladay Zone rakes from west to east as it plunges from the highest known elevation at the 2400 Level to the lowest at the 5200 Level, a horizontal distance of about 6,000 feet. The greatest strike length of the zone at any elevation is about 2,000 feet. This volume includes the area of a historical estimate of tonnage described in Section 6 above, and contains limited historical drilling with incomplete assay results by Callahan on the Caladay property, as well as some historical drilling by ASARCO and Coeur on the Galena property, and a few recent holes by Americas Silver.

A block model was run on this volume in 2012 by Americas Silver and was based on an ellipsoidal search radius, and simple search criteria, using 20-foot cubic blocks. Based on the block model, the exploration potential for the Caladay Zone can be expressed as 10 to 30 million tons, grading 5 to 6 opt Ag, for a potential of 50 to 180 million ounces Ag. No economic or recovery considerations were included in this estimate.

Americas Silver feels the exploration potential estimate was a reasonable assessment of the ultimate exploration potential of that area. However, the potential quantity and grade is conceptual in nature. There has been insufficient exploration to define a Mineral Resource and it is uncertain if further exploration will result in the target being delineated as a Mineral Resource.



## 8 DEPOSIT TYPES

The Coeur d'Alene District mineralization does not readily fall into the well-known categories of epithermal, mesothermal lodes, porphyry, volcanogenic, sedimentary-exhalative ("sedex"), or skarn systems, and has long been recognized as being different from other North American silver-base-metal districts. A genesis by metamorphic remobilization of original sediment-hosted deposits in Proterozoic rocks has long been mooted. The sandstone-hosted copper-silver mineralization of the Troy (Montana) type, and the sedex lead-zinc deposits of Sullivan (British Columbia) type are the preferred pre-metamorphic analogs, but do not readily satisfy the Coeur d'Alene characteristics.

The current consensus is that veins of the Coeur d'Alene District were formed during Cretaceous or early Tertiary time. Ore forming fluids were driven by regional-scale metamorphic-hydrothermal systems associated with Cretaceous or early Tertiary deformation and plutonism that included the Idaho and Kiniksu batholiths and their precursors. These fluids scavenged metals from the Proterozoic strata of the Belt Supergroup that may include concentrations of syngenetic silver-lead-zinc deposits, with significant copper and gold as well (Fleck et al., 2002; Hobbs, et al., 1965).

The greater Coeur d'Alene District of Idaho has produced over one billion ounces of silver and millions of tons of lead, zinc and copper since 1880 from more than a dozen major mines and many smaller mines. There is a significant variation from mine to mine, but in general the metals are hosted in metamorphosed Belt Supergroup, and are usually vein-like in morphology with relatively simple mineralogy, as is the case at the Galena Complex.



# 9 EXPLORATION

Since the early 1950s, year-end reserves at the Galena Complex have only indicated a life of mine ranging from three to nine years. Diamond drilling combined with sound geologic interpretation and development must be ongoing to replace ore reserves as they are mined.

### 9.1 Geologic Mapping

All underground workings are routinely mapped at a scale of 1 inch = 20 feet. Until recently, mapping was compiled on 20 scale (1:240 scale) Mylar and linen plates on file in the geology office. The 20 scale geology plates are still located in the geology office. Current practice now is to transfer the mapping from field sheets to 8  $1/2 \times 11$  inch office copies that are scanned and stored digitally.

### 9.2 Chip Samples

Chip samples are taken from underground headings on a daily basis by geologists. Samples are taken by collecting chips in a horizontal channel across the face. Samples are collected perpendicular to the mineralized structure. Multiple samples are taken across a face based on changes in mineralization intensity or composition. Samples are a maximum of 5 feet in length. After samples are collected, the geologists carry them to the surface where they are inventoried and transported to the assay lab the same day.

#### 9.3 Exploration Program

The objectives of the current exploration program at the Galena Complex are to discover new high-grade veins and ore shoots in areas that already have nearby development, explore for new large veins in unexplored or under explored areas, and to systematically replace reserves as they are mined. At the present time the majority of the effort and budget is being put into the Galena Mine. As silver-lead ore has historically been less-emphasized by previous operators, there is very good potential to add to resources and reserves by exploring for silver-bearing galena veins. Recent drilling on the 3200 and 3400 Levels has discovered significant vein swarms of Ag-Pb mineralization. These areas are being developed and mined. This mineralization will be further explored along strike and up-dip.

Significant silver-rich tetrahedrite veins have also been discovered in recent years. These include the 72 Vein, the 220 Vein on the 4600, 4900 and 5200 Levels, the 291 Vein on the 5200 Level and the 145, 148, 171, 173 and 175 Veins on the 2400 Level.



#### 10 DRILLING

#### 10.1 Drilling progress

Drilling for exploration, delineation and development has been performed with diamond core drills for many years. In 2015, all drilling was undertaken using in-house drilling equipment and drillers. Americas Silver operates a small-diameter Bazooka drill for delineation drilling, as well as CP-65, Termite and Gopher drills underground.

Diamond drilling logs completed since the early 1950s are on file at the geology office located at the Galena Mine. Drill logs are kept as paper logs and data from the paper logs is also entered into an electronic database for use in mine planning software.

Exploration drilling at the Galena Complex during 2015 totaled 26,971 feet of diamond drilling. Also, 7,598 feet of exploration development, i-drifting and raise mining took place. This compares to 25,167 feet of underground diamond drilling and 6,851 feet of exploration and development drifting completed during 2014. Exploration was undertaken in the former Coeur, Galena and Caladay portions of the Complex, mainly below the 3400 Level.

# TABLE 10-1 ANNUAL EXPLORATION DIAMOND DRILLING FOOTAGE Americas Silver Corporation – Galena Complex

Year	Total Drilling (feet)
2013	61,710
2014	25,167
2015	26,971

The Galena Complex had 3,471 diamond drillholes completed as of December 31, 2015. The database contains more than 43,000 samples with assay values from the diamond drillholes. The database also includes 18,289 channel sample locations with 40,870 individual samples

The 2014 exploration drilling at the Galena Complex focused on identifying easily developed resources and defining high grade areas close to existing infrastructure. Drilling for the year focused mainly on the 2400, 3200, 4600, 4900, and 5500 Levels, in support of Galena's transition to silver-lead dominant production.

Exploration drilling in 2015 focused on adding resources. To this end, drilling was mainly concentrated in the Upper Country Silver Lead (UCSL) zone on the 3400 and 3200 Levels, the 175 and 291 Veins on the 4900 and 5200 Levels and the 186 and 168-164 Veins on the



5200 Level. These areas contributed to the overall resources of the Galena Mine. Other areas including; the Polaris Fault Zone on the 4300 Level and the 220 Vein area on the 4600 Level area were also explored with mixed results.

At the Galena Complex, the Caladay Zone is considered to be a zone of primarily silver-lead mineralization which extends from the 2400 Level of the Galena Mine and rakes down from west to east to the 5200 Level of the Caladay property (Figure 7-2). The Caladay Zone is open-up dip and at depth. The mineralization varies from distinct galena veins a few feet wide with minor small pods and blebs of tetrahedrite (2800 Level) to predominantly disseminated galena with veinlets of galena. These zones range from tens of feet up to 200 feet thick. This is discussed in Section 7 and Section 14 of this report.

#### 10.2 Drilling procedures

Core diameters range from 1.197 inches (AQTK) to 1.432 inches (BQ). As core is removed from the hole it is placed in wooden boxes for transport to the surface logging facility. All drill core is logged by geologists and data is recorded on hard-copy forms.

The veins and enough adjacent wall rock are sampled, to ensure that the minimum mining width is sampled. Sample lengths are a minimum of 0.1 feet and a maximum of 5 feet. Metal grades are visually estimated during drill core logging. In general, the mineralogy, host lithologies, and structure are well-defined, and can be confidently logged. Payable metals (Ag, Pb and Cu) are usually contained within galena, tetrahedrite and chalcopyrite and can be closely estimated visually.

Prior to 2000, most core was sampled by splitting with a mechanical splitter and then the entire hole was usually skeletonized at a ratio of retaining 20% and throwing away 80%. The skeletonized core is stored in various facilities off the mine site. Since 2000, all core has been digitally photographed and images are downloaded onto the local network. Sampling is done utilizing the entire core which is sent for analysis, with all sample pulps being saved for no less than two years. The remaining core is disposed of after logging.

Down-hole directional surveys are conducted, normally every 50 feet, since hole deviation is quite common. A Reflex EZ-AQ electronic multi-shot downhole survey instrument is used for deviation surveys.

Core recovery is generally very good, usually exceeding 95%. Core recovery can be difficult in certain faulted or sheared areas. When a sheared zone is expected, the diamond drillers will change from wireline tools to conventional tools. This will usually improve core recovery.



All drillhole and sample information is stored in an Access database for reporting purposes and in a Surpac database for three dimensional evaluation and resource modeling. When diamond drillhole samples are used for polygonal or accumulation resource modeling, they are calculated back to true horizontal thickness. Diamond drillholes are designed to intersect mineralization as close to perpendicular as possible.

Current drilling and sampling procedures are outlined below.

- 1. Drilling methods, core logging and sampling are conducted according to industry standards and require no revisions.
- 2. Sampling and assaying of core in areas where bulk mining is anticipated is done from the beginning of mineralization to the end of mineralization, including internal waste sections.
- 3. A minimum sample interval of 0.5 feet is maintained when sampling veins.

#### 10.3 Drilling Results

The exploration programs since the previous Technical Report have resulted in new reserve additions in excess of the reserves mined.

Americas Silver will complete approximately 20,000 feet of underground diamond drilling during 2016. This was done mostly using the company owned drills and manpower but some longer holes were completed by a contractor. No surface drilling will be completed in 2016. A complete analysis of these drill results has not been completed as of the date of this report.



## 11 SAMPLE PREPARATION, ANALYSES AND SECURITY

Both drill samples and underground channel samples are used in resource estimation. This section includes a discussion of bulk density.

#### 11.1 Channel Samples

Face mapping and sampling of active stopes and i-drifting is conducted by mine geologists, every third cut or approximately every 6 to 10 feet along strike. The minimum channel sample length is 0.2 feet, the maximum is 5 feet, and the average is 3 feet. Chips are collected to fill at least half of a 5 inch by 7 inch sample bag and weigh approximately 4 to 5 pounds. Sampling protocol for channel samples is to collect separate samples from the mineralized structure or vein and from wall rock on both sides of the vein. Channels are cut as perpendicular to the vein strike as possible. Due to the discontinuous nature of the veins, ore grade samples may include internal waste.

Chip samples are brought out of the mine daily by the geologist who collected them, and delivered to a holding area on surface. Each sample is recorded on a submittal form and then transported to the assay laboratory. Each mine geologist logs his own chip samples before the end of the shift into the database and onto the laboratory sample submittal form using Excel.

Each day geologists update the AutoCAD maps (cut maps) for each working face by entering the mining progress along the stope and the samples collected at the face.

When access issues occur, samples are collected along the back, perpendicular to the long axis of the stope. Where development drifts encounter mineralized veins, rib samples are collected in the same manner as face samples.

In 2015 over 1700 channel samples were obtained. Throughout the Galena Complex to the end of 2015 over 31,000 channels have been sampled, comprising approximately 72,000 individual assayed samples.

The process of face mapping and sampling conforms to industry standards and needs no revision. The geological level plans are updated regularly, in addition to the daily or near-daily updating of face maps.



#### 11.2 Diamond Drill Samples

Drilling done at the Galena Mine for resource estimation is done with diamond core drills. Since 2000, the core has been logged and photographed in a dedicated surface facility. Core samples are collected through the vein or structure. Additional core on both sides of the mineralized zone are sampled to characterize waste dilution. No samples taken for assaying are greater than five feet in length, and long zones are broken into increments of five feet or less. When core is lost through a mineralized zone the total drill thickness of the zone is used for volume estimation.

In areas of newly-discovered disseminated mineralization - geologists are now sampling and assaying all drill core obtained through the zone. Assays through the internal lower grade material will provide a more accurate understanding of the zones as this material would not have been sampled using normal vein sampling protocols.

The portion of a drillhole used to estimate the reserve for a given vein must be corrected to account for the true thickness of the vein at that point. Typically the downhole length of the intercept is multiplied by the sine of the angle of the vein to the core axis. This is done prior to resource estimation.

#### 11.3 Bulk Density Determination

#### 11.3.1 Measurements

Prior to 2010, resource and reserve estimates for the Galena Complex were carried out using historical bulk-density (specific gravity) and tonnage-factor values that had been in use for 60 years, with no surviving documentation to verify the methodology. The tonnage factors used varied from 7.5 to 12.3 cubic feet per ton, depending on the vein, the amount of siderite, tetrahedrite and galena present and the amount of barren wall rock dilution included. The historic and current tonnage factors are shown in Table 11-1.



# TABLE 11-1 TONNAGE FACTORS FOR RESOURCES Americas Silver Corporation – Galena Complex

Rock Type	Constituents	Historic (Pre- 2010) Tonnage Factor (ft³/ton)	2015 Estimation Tonnage Factor (ft <sup>3</sup> /ton)
	w Siderite Gangue	8.5	-
Silver-copper (Tetrahedrite Veins)	w Quartz Gangue	12.0	-
	All, Including Dilution	-	10.0
Silver Vein (Tetrahedrite)	Diluted	9.5	9.3
117 and 290 Veins (Tetrahedrite)	Diluted	8.9	10.0
	175 and 185 Veins	7.5	8.5
Silver-lead (Galena) Veins	UCSL Veins	7.5	9.0
	Waste	-	11.8
Silver-lead Disseminations (Galena)	Sulfide in Sediments	-	8.5
Revett Fm. Host Rock	Quartz & Argillite	12.3	Not separately tabulated
Fault Zones or Others	Varied	12+	Not separately tabulated

During 2012, an additional 108 bulk-density measurements were made. The average grade of the silver-lead samples was 10.5% Pb and 17.0 opt Ag. These grades are higher than the average lead and silver grades of the resources and reserves in this report. Because the density is mainly a function of the Pb content, the samples appear to be over estimating the density of the ore. The average grade of the silver-copper samples was 1.7% Cu and 76 opt Ag, which is several times higher than the grades of the current resources and reserves. Because the density of silver-copper mineralization is not strongly dependent on metal grades, the samples appear to be suitable. Future bulk-density measurements should include more samples closer to the average resource and reserve grades, especially for silver-lead mineralization.

All determinations were on air-dried core or hand samples. Oven-drying could result in a slight decrease in density due to further loss of water. This potential effect should be investigated.

# 11.3.2 Analysis of Bulk-Density Measurements

Scatter diagrams of tonnage factor versus metal content were prepared by CAM from 108 density measurements made in 2012. There was a total of 56 measurements from silver-lead veins, 51 after cutting measurements over 29% Pb and 27 containing Ag values after cutting measurements above 80 opt Ag. There was a total of 52 measurements from silver-



copper veins and only 38 after cutting measurements over 100 opt Ag. Scatter diagrams for the silver-lead measurements are shown below in Figures 11-1 and 11-2.

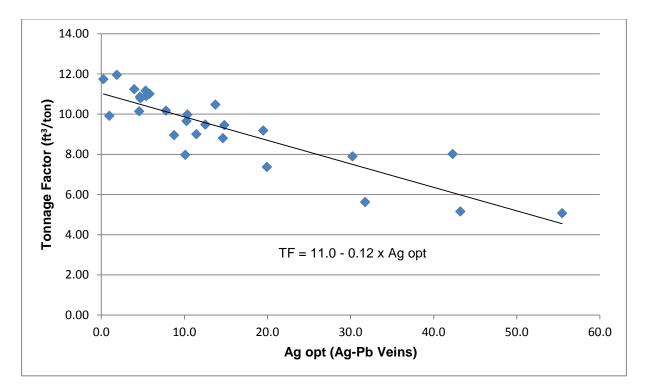
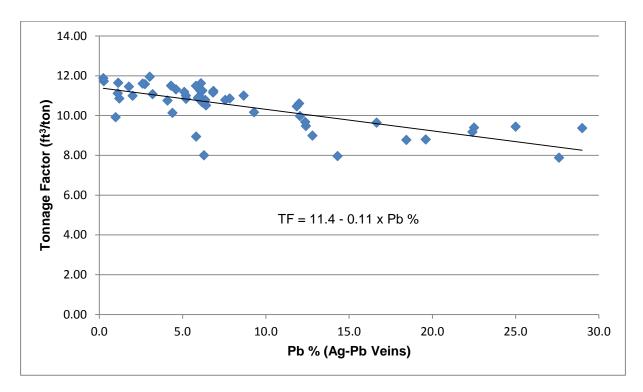


FIGURE 11-1 TONNAGE FACTOR OF Ag-Pb VEINS AS A FUNCTION OF Ag





# FIGURE 11-2 TONNAGE FACTOR OF Ag-Pb VEINS AS A FUNCTION OF Pb

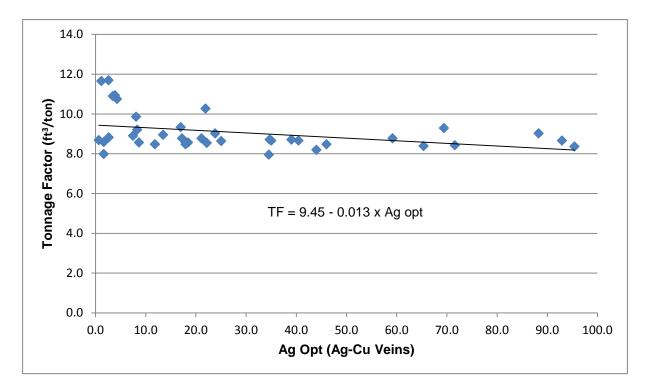
Not surprisingly, there is a significant correlation of tonnage factor Ag and with Pb grades in these samples. Silver is mainly hosted in galena at a ratio which varies within the Complex, but is on the order of 0.9 opt Ag per 1% Pb. In the silver-lead veins, galena is the dominant sulfide mineral, and its specific gravity of 7.6 is much higher than that of wall rocks or other minor sulfides such as pyrite (specific gravity 5.0).

As more measurements are performed it should be possible to use functions of Pb or Ag to derive densities of silver-lead vein material. The density of dilution material in each block will have to be added into the calculation process.

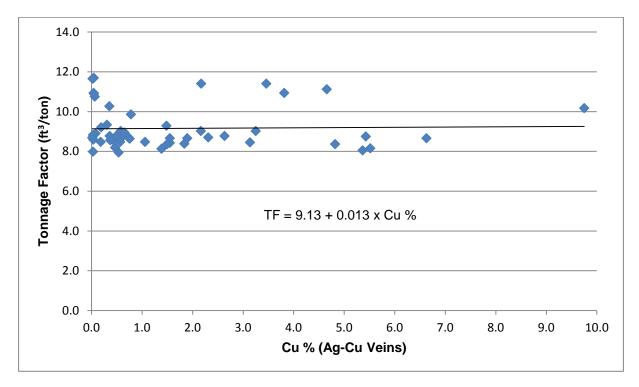
At the Ag and Pb grades typical of resource blocks in the Galena Complex the tonnage factors derived from the scatter diagrams are slightly higher (i.e. slightly lower density) at around 10.5, than the average value of 9.0 used in estimation by the accumulation method, as shown in Table 11-1. However, the differences are not significant given the amounts of dilution figured into the minimum mineable widths used in estimation of resources, and the even larger amounts of dilution factored into Mineral Reserves.

Plots made for silver-copper veins were quite different, with no usable correlation existing between tonnage factor and metals grade, as shown below in Figures 11-3 and 11-4. The situation here is quite different, with correlations not obvious.





# FIGURE 11-3 TONNAGE FACTOR OF Ag-Cu VEINS AS A FUNCTION OF Ag



# FIGURE 11-4 TONNAGE FACTOR OF Ag-Cu VEINS AS A FUNCTION OF Cu



In both of the silver-copper vein cases, the tonnage factor is close to the values used. All silver-copper vein tonnage factors are 10.0 except for the Silver Vein which is 9.3. All of the silver-lead vein tonnage factors are 9.0 except the 175 Vein area, which includes the 185 Vein, where 8.5 was used. Silver in the silver-copper veins occurs mainly in tetrahedrite, which has a specific gravity of 4.6 to 5.2, depending on the composition of this highly-variable mineral. This is a relatively small contrast with accompanying sulfides such as pyrite (SG 5.0), chalcopyrite (SG 5.2) or even the gangue mineral siderite (SG 3.7 to 3.9). Tetrahedrite density thus does not contrast nearly as much as galena's with the other vein constituents.

In 2012 for the first time, estimation was performed by a block model method on areas of disseminated silver-lead mineralization: the 3400-25, 4000-116, 4900-375, and 4900-390 bodies. For this estimation, a tonnage factor of 11.1 cubic feet per ton was used, based on various values in Table 11-1. It is expected that additional data from this type of mineralization will become available, and an analysis can be undertaken similar to that for the vein-style mineralization, above.

In 2015, the disseminated silver-lead resources were included unchanged from the work done in 2012. Block modeling of other silver-lead veins and disseminated lead mineralization is ongoing and will be included in future resource estimates once validated.

Americas Silver concludes that the tonnage factors used in the 2015 resource and reserve estimates are geologically reasonable to support these estimates.

#### 11.4 Analytical Facilities

Most samples are sent to American Analytical Services (AAS) in Osburn, Idaho. AAS assays on a contract basis for Galena and other clients (including mining/exploration companies), and owns the laboratory building and the assaying equipment. AAS is independent of Americas Silver.

There is no sample preparation (except core splitting) or laboratory facility at the Galena Mine. No officer or director or employee of Americas Silver is involved in AAS's operations or in sample preparation or assaying, after the samples arrive at the assay laboratory.

The AAS laboratory is an ISO-17025 accredited Laboratory (similar to ISO-9000, but with an added level of quality management). Standardized written procedures are used by AAS, and commercially-prepared standard pulps are used.



## 11.5 Sample Preparation

The procedures used at AAS are described below. In 2015, 162 check samples were sent to ALS Laboratory in Winnemucca and Elko, Nevada. ALS is accredited to ISO 17025, and their procedures are described on their website at - <u>www.alsglobal.com/en/Our-Services/Minerals</u>.

The core samples, rock chip, channel and select samples are placed in bags with identification tags and are tied closed at the sample site. The samples are placed in a designated area in the mine yard until they are transported to the assay lab. The samples and a submittal sheet are transported daily by mine employee to the AAS laboratory. The sample tags in the bags and the submittal sheet indicate a unique number for each sample and the elements that are to be analyzed.

The AAS laboratory has a capacity of about 200 samples per day, but the Galena Complex typically generates fewer than 100 samples per day. Typically, Galena Complex samples are received at the lab late in the day, placed in the oven for overnight drying then assayed beginning early the following morning, so that results are available in the afternoon.

Upon arrival at the lab, samples are compared to the submittal sheet and placed in drying ovens to dry overnight at a temperature of approximately 65 degrees Celsius. Samples are emptied from sample bags into the jaw crusher, then run through a second time resulting in a sample size of approximately 1.2 inches. The sample is then run through a cone crusher reducing the size to about 50% passing a 10 mesh screen. The sample is then split using a Jones riffle splitter until a sample of approximately 200 grams is obtained. The rejected portion of sample is returned to original sample bag. The 200 gram sample is ring pulverized (8 inch bowl) for 45 seconds, the resulting pulp usually passes a 140 mesh screen at about 90%. About 125 grams of pulp is placed in a sample envelope and sent to the fire assay room. The ring pulverizer is cleaned between each sample with silica sand to prevent contamination. Barren rock is run through the crushers once a day and this sample is assayed as a sample blank. A second split is made on one sample for every twenty that are prepared and this is assayed as a prep duplicate.

# 11.6 Assaying

Galena samples sent to AAS are analyzed primarily by atomic absorption (AA) and occasionally by induced coupled plasma (ICP) techniques to determine silver, copper, and lead, using aqua regia for pulp digestion. Occasionally other elements are analyzed including zinc, antimony, and iron values. Those measuring over 40 opt Ag are also fire-assayed for silver, and the fire assays are used in calculations in preference to AA results for



the same sample. Higher grade lead samples are re-assayed using titration techniques. Occasionally gold determinations are made using fire assay.

For fire assay at AAS, one-half assay ton of channel sample or drill core sample is weighed into a 30 gram crucible with approximately 100 grams of standard flux mixture and a litharge cover. Twenty samples are fired at a time, which includes a pulp duplicate and a control sample. Lead buttons are cupelled in either composite or bone ash cupels. Dore beads are weighed and then parted with (1 to 3) nitric acid, decanted, washed with a weak ammonia wash, annealed and weighted.

After samples have been assayed, they are boxed with proper identification and stored for two months at the laboratory. Pulps from diamond drill core are collected by Galena staff and stored for no less than 2 years at a separate storage area.

### 11.7 Quality Assurance/Quality Control

Galena has a QA/QC regimen which for the most part meets industry standards, in the opinion of the author. In 2015, Americas Silver submitted 5,991 chip samples and 1,452 diamond drill samples for assay (7,443 samples in total). Of the samples submitted, 240 (3.2%) were certified standards; 14 silver-copper, 141 silver-lead, and 35 blanks.

The QA/QC program does not include blind submittal of duplicate core or channel samples. This is due to the fact that the drill core samples are submitted as full core (i.e. not split) and the extra time required to collect duplicate channel samples is not considered to be worthwhile for the minor improvement of results.

The results of the QA/QC program at Galena for 2015 are discussed below.

# 11.7.1 Standard Reference Materials

The Galena Mine utilized four certified commercial standard reference materials (SRMs) in 2015. The analytical standards were made from Galena Mine vein material by Bondar Clegg (Ag-Cu in 2000), CDN Labs in Langley, B.C. (Ag-Pb in 2008) and CDN Labs in Vancouver, B.C. (Ag-Pb, Ag-Cu in 2015).

The SRMs consist of one low-grade Ag-Pb standard (relative to average mine grade) called LGPB, one average grade Ag-Pb standard (MGPB), one high-grade Ag-Pb standard (HGPB), and one high-grade Ag-Cu standard (HG-1). All standards went through round-robin analysis and were originally certified by Kenneth Lovstrom (Ag-Cu in 2000 standard), and Barry Smee (Ag-Pb in 2008 and 2015 standards). One standard is submitted to the



assay lab for every twenty samples submitted. At least two standard samples (one on which may be a blank) are submitted each day. Standards are submitted as pulps, along with the drill core or chip samples.

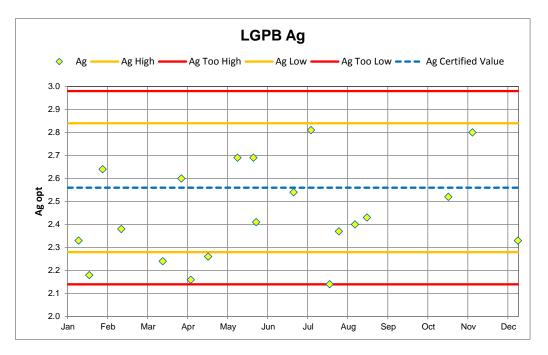
Table 11-2 is summary of the acceptable ranges and the results for standards used through December 31, 2015.

Standard	Ag (opt)	Pb (%)
Low Grade Lead Standard (LGPB)		
Certified Value	2.56	3.77
95% Confidence Limit	2.00 - 3.12	2.99 - 4.55
Mean AAS Lab Result	2.37	3.74
Average Grade Lead Standard (AGPB)		
Certified Value	7.69	10.68
95% Confidence Limit	6.33 -9.05	8.82 - 13.54
Mean AAS Lab Result	7.15	10.38
High Grade Lead Standard (HGPB)		
Certified Value	26.57	24.46
95% Confidence Limit	23.29 - 29.85	23.80 - 25.12
Mean AAS Lab Result	25.29	24.60
High Grade Copper Standard (HGS-1)	Ag (opt)	Pb (%)
Certified Value	69.20	1.56
95% Confidence Limit	66.20 - 72.20	1.40 - 1.72
Mean AAS Lab Result	69.00	1.62

# TABLE 11-2CERTIFIED ASSAYED STANDARDS IN 2015Americas Silver Corporation – Galena Complex

Below are the control charts found in Figures 11-5 to 11-12 for the assay results from standards submitted to AAS in 2015. The red lines represent the acceptable range of values for the various standards: i.e. three standard deviations from the certified value, which is the blue dashed line. The orange line represents two standard deviations from the certified value. The ordinate chart units are ounces per ton silver, percent copper or percent lead.







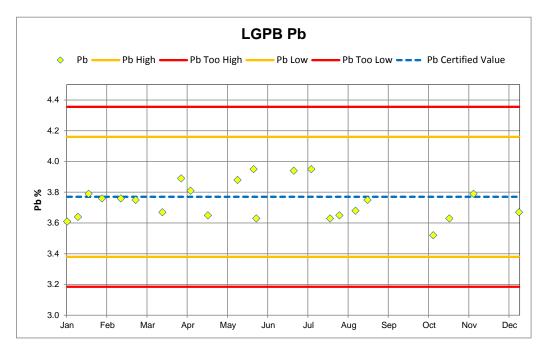
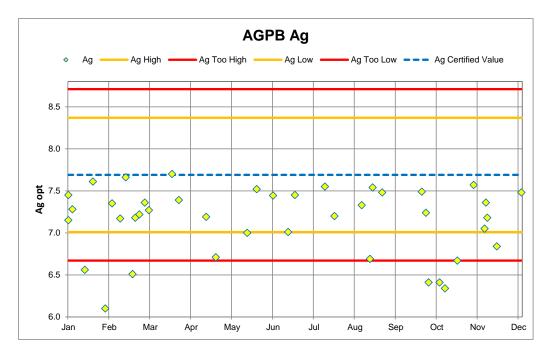


FIGURE 11-6 Pb RESULTS FOR LGPB STANDARDS IN 2015







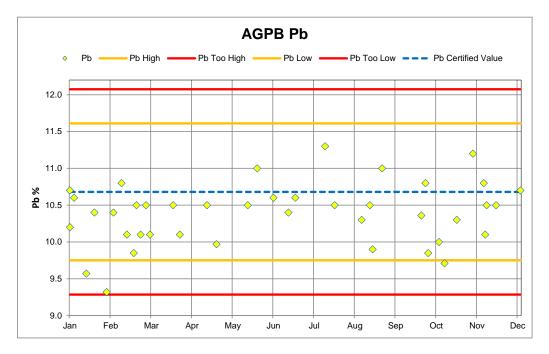
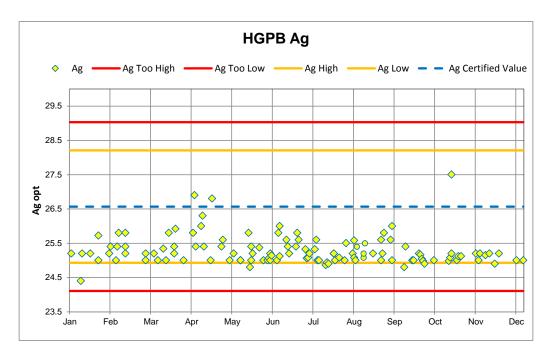


FIGURE 11-8 Pb RESULTS FOR AGPB STANDARDS IN 2015







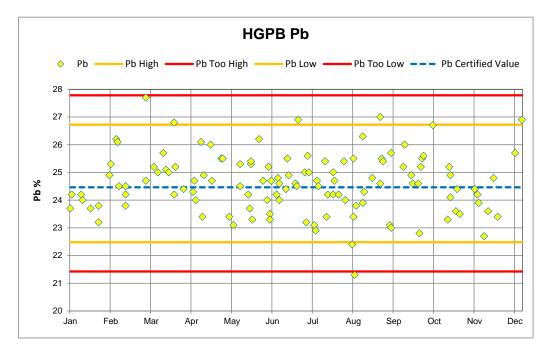
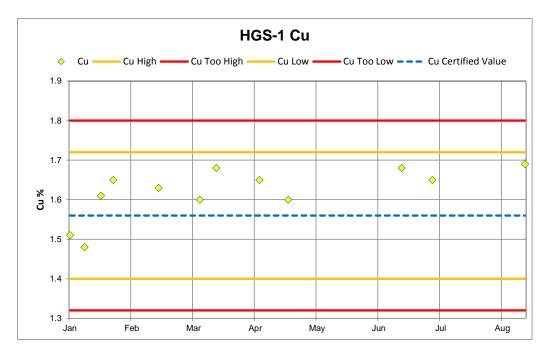


FIGURE 11-10 Pb RESULTS FOR HGPB STANDARDS IN 2015







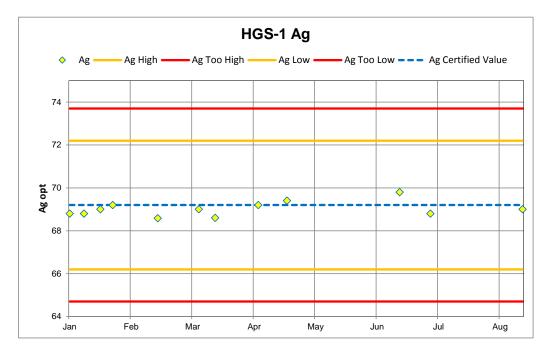


FIGURE 11-12 Cu RESULTS FOR HGS-1 STANDARDS IN 2015



The concordance of the AAS mean results with the certified standards is acceptable with rare failures for Ag in the LGPB and MGPB standards. It should be noted that although within acceptable limits the silver values for both LGPB and MGPB standards tend to be on the low side and the rare failures for Ag also occur on the low side. This is a consistent trend and should be monitored with the laboratory.

# 11.7.2 Blank Samples

Blank samples have been prepared from silica sand or barren core from the Galena Mine quartzite or silitie). These are submitted as pulps with core or chip samples, at least one per sample batch of 20 to 40 samples. Figures 11-12 and 11-13 show the results for the blank samples, most of which are at AAS's limit of analytical detection by atomic absorption for Ag (0.50 opt Ag), and Pb (0.1% Pb). The ordinate units on the chart are ounces per ton for silver, and percent for lead, while the abscissa represents time during 2015.

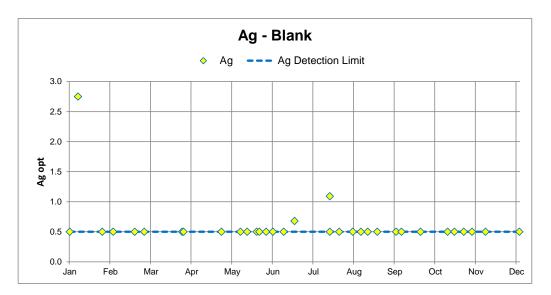


FIGURE 11-13 RESULTS OF ASSAYS FOR Ag IN BLANKS IN 2015



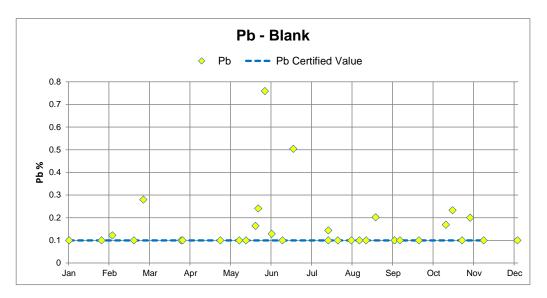


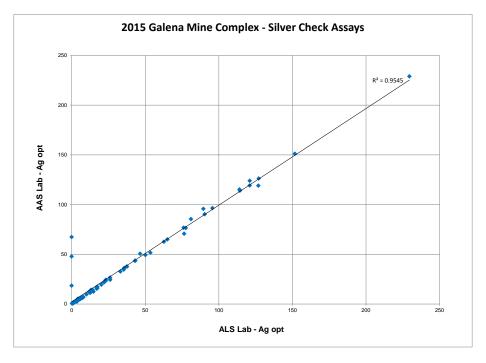
FIGURE 11-14 RESULTS OF ASSAYS FOR Pb IN BLANKS IN 2015

During the year, spurious assays were reported on rare occasions for silver and often for lead; some of the results many times above the detection limits. This suggests that the blanks were contaminated during processing, either at the mine or at the lab. The problem apparently does not lie in the assaying, because there is no corresponding rise in discrepancies of assays on standards (see Section 11.7.1, above). It is possible, especially for lead, that the blank material contained low levels of lead. Going forward, mine staff should order the re-assay of samples in any batch which has results above the detection limit for either silver or lead.

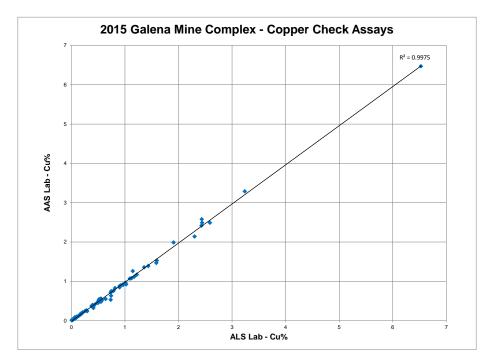
# 11.7.3 Duplicate Pulp Samples

Approximately one sample pulp in 20 returned from AAS are randomly selected, checked to ensure they are representative both spatially and with respect to assay grades, and submitted to an umpire laboratory for check assay every 3 to 6 months. These samples were sent to ALS Chemex in Winnemucca, Nevada to have the check assay performed. Shown below are scatter plots of 2015 check pulp assays comparing the results from AAS and ALS laboratories.













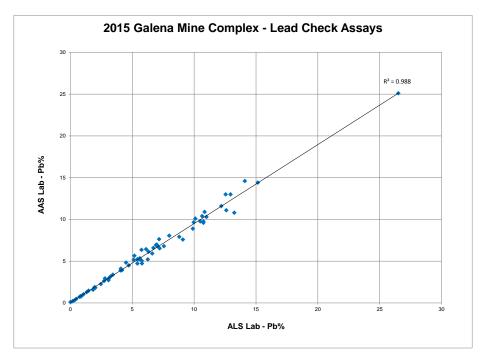


FIGURE 11-17 CHECK ASSAYS FOR 2015 – AA Pb

The check assay results between AAS and ALS Laboratories are reasonably close in the region where most metals values occur, and indicate that the AAS results are comparable with the ALS check values with correlation coefficients of between 95% and 98%.

# 11.8 Summary and Recommendations for Sampling, Preparation, and Assaying

The security and sample preparation are of acceptable quality for generation of data for use in resource and reserve estimation, subject to the minor qualifications stated in each subsection above.

The following comments and recommendations are the result of the current evaluation of the QA/QC program in place at the Galena Mine.

The submittal of duplicate drill core samples in not possible since whole core is submitted for assay.

A test program of duplicate channel samples should be implemented to evaluate whether or not this could improve accuracy. As mentioned above the additional incremental increase in accuracy may not be justified by the additional time requirements of duplicate sampling but the collection of duplicate channel samples could identify any major issues and highlight areas for improvement. This could also be a factor in the reconciliation of projected and actual grades obtained in mining.



The blank material used in the assay stream should be carefully selected to ensure that it does not contain trace amounts of mineralization. A thorough examination of the causes of failure in the analyses of the blank samples should be undertaken each time it is detected in the results. All failures of blank samples should result in the re-assaying of the batch containing the failures.

Galena staff should continue to monitor and report on the success (or failure) of the analytical laboratory. Quarterly reports, at a minimum, should be prepared and submitted to management for review and comment.



# 12 DATA VERIFICATION

As discussed in Sections 10 and 11, the authors reviewed the sampling and assaying procedures for samples used in resource estimation and found them to be satisfactory.

Staff at the Galena Complex currently perform the following data verification steps prior to finalization of the data:

- Collar surveys conducted by in-house personnel are entered in a spreadsheet, transformed to mine coordinates and checked by the project geologist.
- Geological logs are entered into a spreadsheet by the geologist responsible for logging the hole. When complete the geologist checks and adds the data into the database.
- Results received from the labs are subject to QA/QC which is reviewed by the chief geologist
- Data entered into the database is subject to numerous controls to identify gaps, double-entry, overlaps, duplication and absent values.

The authors of this report are of the opinion that the database is suitable to support Mineral Resource and Mineral Reserve estimations.



# 13 MINERAL PROCESSING AND METALLURGICAL TESTING

The Galena Complex has been in continuous production for several years, and has an overall operating history spanning more than a century. Mineral processing is discussed in Section 17.



# 14 MINERAL RESOURCE ESTIMATES

### 14.1 Basis

The Mineral Resources disclosed in this report were estimated using the Canadian Institute of Mining, Metallurgy and Petroleum ("CIM") Definition Standards on Mineral Resources and Mineral Reserves, prepared by the CIM Standing Committee on Reserve Definitions and adopted by CIM Council on May 10, 2014 ("CIM Definition Standards"). The estimates contained in the Technical Report incorporate assay results and geologic interpretations available through December 31, 2015.

The resource estimate was developed by the Galena staff under the supervision of Daniel H. Hussey CPG, Chief Geologist at the time. James R. Atkinson P.Geo., a Qualified Person and employee of Americas Silver reviewed the database and methodology used for estimates by the "accumulation" method for vein-style mineralization.

### 14.2 Mineral Resource Definitions

**Mineral Resource:** A Mineral Resource is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade or quality, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling. Material of economic interest refers to diamonds, natural solid inorganic material, or natural solid fossilized organic material including base and precious metals, coal, and industrial minerals.

**Measured Mineral Resource:** A Measured Mineral Resource is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit. Geological evidence is derived from detailed and reliable exploration, sampling and testing and is sufficient to confirm geological and grade or quality continuity between points of observation. A Measured Mineral Resource has a higher level of confidence than that applying to either an Indicated Mineral Resource or an Inferred Mineral Resource. It may be converted to a Proven Mineral Reserve or to a Probable Mineral Reserve.

**Indicated Mineral Resource:** An Indicated Mineral Resource is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics



are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit. Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade or quality continuity between points of observation. An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Mineral Reserve.

**Inferred Mineral Resource:** An Inferred Mineral Resource is that part of a Mineral Resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade or quality continuity. 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.

# 14.3 Resource Classification Criteria for the Galena Complex

Resource classification or levels of confidence are divided into three categories; Measured, Indicated and Inferred, as defined above.

**Measured Resource:** Resources classified as Measured and estimated by the accumulation method have channel samples collected on at least two sides of the resource block. Resources can be classified as Measured when only one side of the resource block has been sampled if the block is a continuation or projection of a mined ore shoot. The classification projection distance from a drillhole composite, drift or raise samples, for a Measured resource, is no more than one half the strike length of the block, or a maximum of 75 feet.

**Indicated Resource:** Resources classified as Indicated and estimated by the accumulation method are either a continuation of mineralization outward from a Measured block, or an isolated block of mineralization. The classification projection distance for Indicated from a Measured block is equal to or less than the distance used for the Measured classification on the same block. If the block is an isolated block, not a continuation of a known ore shoot, it should have channel samples collected on at least one side of the resource block. The classification projection distance from a drillhole composite, drift or raise samples, for an Indicated Resource, for an isolated block is no more than one half the strike length, up to a maximum of 100 feet.



**Inferred Resource**: Resources classified as Inferred and estimated by the accumulation method can be a continuation of mineralization outward from an Indicated block or an isolated block of mineralization. An Inferred block may have channel samples and/or drillholes collected on one or more sides of the resource block but the vein continuity is uncertain. A block may also be classified as Inferred if the distance being projected from a strong continuous vein is beyond the range established for Measured and Indicated. Isolated zones of mineralization identified by channel samples or drillholes that require additional sampling or drilling to confirm continuity are classified as Inferred. Projections for the Inferred classification should not exceed 150 feet from samples or the edge of an Indicated block.

# 14.4 Geologic Interpretation

Geologic continuity of the veins at the Galena Complex has been interpreted in two ways. Generally veins have been interpreted by utilizing geologic plan maps, cross sections, long sections, drill core logs, and other available information to identify the limits of the vein structure and areas with potentially economic mineralization. All interpretations account for wall rock lithology, vein thickness, strike, dip, grade trend, and faults. Some veins or areas within the mine have been interpreted using Surpac software. This methodology is used particularly in those areas where the resources will be estimated using block modeling.

# 14.5 Grade and Tonnage Estimation

In 2015, resource estimation was carried out by the accumulation method used for mineralized veins as described in the following sections.

# 14.5.1 Mineralized Veins

The mining methods in use at the Galena Complex are conventional cut and fill, mechanized overhand cut and fill, and mechanized underhand cut and fill. These methods are very appropriate for the narrow, near-vertical, veins that exist at the Galena Mine. The same mining methods have been in use for decades in the numerous similar mines that have operated in the Silver Valley.

Resources in the mineralized veins were estimated by the accumulation method. Calculations for all blocks are on file in the geology office at the Galena Mine, where they were reviewed by Mr. Daniel H. Hussey, a Qualified Person who was Chief Geologist at the mine during the time of the estimation.



The accumulation method has been the accepted standard for estimating resources in narrow vein-type deposits for over 50 years at the Galena Mine. The method calculates the metal content of an area by using the product of the vein thickness times the length of influence of the sample (channel or drillhole), times the corresponding diluted grade value. The quantity of metal associated with each sample is proportional to the sample thickness, length of influence, and the grade. The length of influence is generally one-half the distance to adjacent samples, but no further than the distances described in Section 14.1.

When a diamond drillhole intersects an ore block, the true thickness of the intercept is calculated and appropriate dilution if necessary is factored into the intercept. Dilution is determined by the standard minimum stope widths for each mining method: 4 feet for jackleg/slusher veins, 6 feet for narrow, mechanized veins utilizing 1-cubic-yard Load Haul Dump ("LHD") units, and 8 feet for wider, mechanized veins utilizing 2-cubic-yard LHDs.

Diamond drillhole intercepts are generally given a strike length of influence of up to 50 feet for the purpose of weight-averaging the grade of the ore block. Channel samples are used to calculate average grades for an assumed mining width that includes dilution.

After dilution factors have been applied, the average grade for each drift and raise is calculated. If a large grade difference exists between different sections of a drift or raise, the size of the block can be adjusted to match the grade variation. Additional dilution is applied when resources are converted to reserves, as discussed in Section 15.

# 14.5.2 Disseminated Mineralization

A resource block model for the Caladay Zone was generated in 2012 by Galena staff. The software used was Amine<sup>™</sup>, which is a CAD based block modeling software for underground mining operations, produced by Flairbase, Inc. of Montreal, Quebec. Prior to 2012, Amine had not been used in resource estimation at the Galena Mine.

In March 2013, CAM independently verified the Caladay Zone model using MicroModel software. The resource estimate numbers generated by the two software systems were within industry standards. The database used for the estimation is that described above in Section 12.

Search ellipsoid parameters were developed to characterize four disseminated mineralized zones in the Caladay Zone, and to classify blocks within these zones as Measured, Indicated, or Inferred. Ellipsoid parameters were designed to make conservative estimates, based on geological interpretation and drillhole spacing. Locations of the disseminated zones (34-025, 40-116, 49-375, and 49-390) are shown in Figure 16-1.



The search ellipsoid long axis was oriented parallel to the strike direction of the Caladay Zone mineralization. The search criteria to define Measured resource blocks uses a search criteria of 50 feet on the long axis, 25 feet on the median axis, and 25 feet on the minor axis. The search criteria for Indicated resource blocks uses the same search ellipsoid orientation, but increases the search dimensions by 50%, to 75 feet on the long axis, 37.5 feet on the median axis and 37.5 feet on the minor axis. The search criteria for Inferred resource blocks uses the same search ellipsoid orientation, but increases the search ellipsoid orientation, but increases the search ellipsoid orientation, but increases the search dimensions by 100%, to 100 feet on the long axis, 50 feet on the median axis and 50 feet on the minor axis. An octant search with a minimum of three, and a maximum of seven samples per octant were used to model Caladay Zone mineralization. A minimum of six samples, and a maximum of thirty samples were used. Inverse distance squared was used for all block model estimates, and the block size was 3 by 3 by 3 feet.

Because there had been no prior production from the disseminated mineralization in the Caladay Zone, resources initially classified as Measured were downgraded to Indicated. When mine production data is obtained, the resource model parameters should be revised to match mill reconciled production data.

# 14.6 Tonnage Estimation

# 14.6.1 Block Shapes

Typically, regular mining shapes, consistent with deposit parameters and the selected mining method(s), are drawn around the potentially-economic resource blocks or stopes. These shapes may include some sub-economic material (dilution) that must be included in the stope design. In addition, some of the blocks may have to be dropped due to their location outside of the regular mining shapes, or due to excessive development requirements to access the ore blocks. Stope widths are then adjusted to allow for mining equipment widths, which adds additional internal dilution. The tons and grades within the planned mining shapes are then recalculated and factors for mining external dilution (due to overbreak in the drilling and blasting sequence), and mine recovery are applied to arrive at the final proven and probable minable reserve.

# 14.6.2 Dilution and Mining Recovery

Resource blocks have already been shaped and widened, to accept anticipated mining equipment for extracting the ore. Standard minimum stope widths for each mining method are set at: 4 feet for jackleg/slusher veins, 6 feet for narrow, mechanized veins utilizing 1-cubic-yard LHDs, and 8 feet for wider, mechanized veins utilizing 2-cubic-yard LHDs.



Calculations for the conversion of resources to reserves at the Galena Complex are principally based upon maps ("cut sheets") of stope development or production, at a scale of 20 feet per inch. Diamond-drill assays typically provide minimal influence to the reserve, with grade calculations based mainly on channel samples across the face during development and production.

Cut sheets are generated for all new development, and for all production stopes, for every third horizontal mining cut. Additional cut sheets are completed immediately prior to the reserve/resource estimations at year-end, to capture the latest information. During cut sheet compilation, each stope or development round face of advance is channel sampled and mapped by a geologist. Upon completion of the development or production cut, the channel assays in the stope's cut sheet are compiled, and a plan view geology map is generated.

Mineral Resources in veins are estimated on the basis of the optimal mining width, since the expected dilution during mining may change, depending upon the mining method, ground conditions encountered nearby, miner skills, and other factors which are determined only during development and reclassification as reserves.

The mining methods applied to the Galena veins result in a very high ore recovery, with very small ore losses around stope accesses, and the occasional pillar that must be left for utility or safety. However, these are accounted for in the dilution calculations. Therefore no ore loss is calculated.

In the disseminated resource blocks, no dilution or mining recovery loss has been taken into account, except that inherent in the block-model search process itself. The disseminated deposits have not been previously mined at Galena, and future experience will be required to develop parameters for dilution and ore loss.

# 14.7 Tabulation of Mineral Resources

The Mineral Resources, exclusive of Mineral Reserves, are shown in Table 14-1. The Galena Complex resources are contained in 583 calculated blocks within 148 named or numbered veins. The vein counts include footwall or hanging wall splays when calculated separately from the main vein.

Mineral Resources which are not Mineral Reserves do not have demonstrated economic viability. The estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing or other relevant issues.



# TABLE 14-1 SUMMARY OF MINERAL RESOURCES EXCLUSIVE OF MINERAL RESERVES – DECEMBER 31, 2015 Americas Silver Corporation – Galena Complex

			Mea	sured			
Zone	Tonnage (000 tons)	Grade (opt Ag)	Grade (% Cu)	Grade (% Pb)	Contained Metal (000 oz Ag)	Contained Metal (MIbs Cu)	Contained Metal (MIbs Pb)
Silver-Copper	352	12.1	0.65	-	4,250	4.6	-
Silver-Lead	79	9.4	-	8.70	744	-	13.8
Total	431	11.6	0.53	1.60	4,994	4.6	13.8

			Indi	cated			
Zone	Tonnage (000 tons)	Grade (opt Ag)	Grade (% Cu)	Grade (% Pb)	Contained Metal (000 oz Ag)	Contained Metal (MIbs Cu)	Contained Metal (MIbs Pb)
Silver-Copper	863	13.3	0.57	-	11,456	9.8	-
Silver-Lead	1,604	5.1	-	5.44	8,219	-	174.5
Total	2,467	8.0	0.20	3.54	19,676	9.8	174.5

#### Measured + Indicated

Zone	Tonnage (000 tons)	Grade (opt Ag)	Grade (% Cu)	Grade (% Pb)	Contained Metal (000 oz Ag)	Contained Metal (MIbs Cu)	Contained Metal (MIbs Pb)
Silver-Copper	1,214	12.9	0.59	-	15,706	14.4	-
Silver-Lead	1,684	5.3	-	5.59	8,964	-	188.3
Total	2,898	8.5	0.25	3.25	24,670	14.4	188.3

#### Inferred

Zone	Tonnage (000 tons)	Grade (opt Ag)	Grade (% Cu)	Grade (% Pb)	Contained Metal (000 oz Ag)	Contained Metal (MIbs Cu)	Contained Metal (MIbs Pb)
Silver-Copper	507	13.4	0.83	-	6,783	8.4	-
Silver-Lead	1,786	5.4	-	5.82	9,685	-	207.8
Total	2,293	7.2	0.18	4.53	16,468	8.4	207.8

Notes:

1. CIM Definition Standards were followed for Mineral Resources.

2. Mineral Resources are estimated at an Ag equivalent cut-off grade of 9 opt for vein-style mineralization and 3 opt for disseminated mineralization at Galena.

3. Mineral Resources are estimated using a long-term silver price of US\$16.00 per ounce, copper price of US\$2.40 per pound and a lead price of US\$0.85 per pound.

4. Mineral Resources are exclusive of Mineral Reserves.

5. Unrecoverable and sterilized material has been excluded from the Mineral Resource.

6. Numbers may not add due to rounding.



# 14.8 Comparison with Previous Resource Estimates

The resources in the Galena Complex have changed substantially over the past few years. The Mineral Resource inventory is in a constant state of flux, due to several factors:

- Changes in cut-off grade due to metal prices, which changes resources.
- Exploration success.
- Mining of material from outside of classified reserves.
- Resource conversion through drilling and development.

In aggregate, these modifications resulted in an increase in contained silver ounces, from December 31, 2014 to December 31, 2015. There was a net 19.3% increase in contained silver ounces in Measured and Indicated resources and a net 7.9% increase in contained silver ounces in Inferred resources, on a year-over-year basis. The increases in lead are 81.5% for the Measured and Indicated resources and 19.1% for Inferred Resources. The global silver grade decreased about 25% relative for Measured and Indicated, and decreased 25% relative for Inferred. The decrease in silver grade is due to the focus on silver-lead mineralization which tend to have a lower silver content than silver-copper veins.



# 15 MINERAL RESERVE ESTIMATES

### 15.1 Basis

The Mineral Reserves were estimated using the CIM Definition Standards. The CIM definitions of Mineral Reserves are set forth in Section 15.2, below.

The Mineral Reserve estimates for the Galena Complex were developed by the Galena Complex staff under the supervision of Daniel H. Hussey, CPG, Chief Geologist at the time. The resource and reserve estimates contained in the Technical Report incorporate assay results and geologic interpretations available through December 31, 2015.

The December 31, 2015 reserve estimations employ metal prices of \$16.00 per ounce of silver, \$2.40 per pound of copper, and \$0.85 per pound of lead. No credit was taken for other metals. Revenues were adjusted for recoveries. Overhead costs were proportioned against all the potential mine blocks.

The reserves are estimated on the basis of actual expected mining widths, and the reserves are fully diluted. While the Mineral Resource blocks are diluted as described above in Section 14.6.2, the cut-sheet channel-sample calculations are sometimes adjusted by the mine's engineering staff to the expected as-built widths, based on the mining method, ground conditions, and miner skills. This accounts for rib slabbing during the mining cycle, thus capturing the true amount of dilution. The year-end 2015 reserves are based on full expected dilution.

# 15.2 Mineral Reserve Definitions

**Modifying Factors:** Considerations used to convert Mineral Resources to Mineral Reserves. These include, but are not restricted to, mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental factors.

**Mineral Reserve:** The economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at Pre-Feasibility or Feasibility level as appropriate that include application of Modifying Factors. Such studies demonstrate that, at the time of reporting, extraction could reasonably be justified. The reference point at which Mineral Reserves are defined, usually the point where the ore is delivered to the processing plant, must be stated. It is important that, in all situations where the reference



point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.

**Probable Mineral Reserve:** The economically mineable part of an Indicated, and in some circumstances, a Measured Mineral Resource. The confidence in the Modifying Factors applying to a Probable Mineral Reserve is lower than that applying to a Proven Mineral Reserve.

**Proven Mineral Reserve:** A Proven Mineral Reserve is the economically mineable part of a Measured Mineral Resource. A Proven Mineral Reserve implies a high degree of confidence in the Modifying Factors.

# 15.3 Cut-off Parameters

In order to estimate the Mineral Reserve portion of the Measured and Indicated resource, it is first necessary to identify that part of the resource that can be economically extracted.

The economic portion of the resource is typically determined by the application of a breakeven cut-off grade, or value, that considers the total operating cost (mine, plant and administration), metal prices, process recoveries, applicable royalties, and forward costs for concentrate freight, insurance, smelting and refining. These parameters are equated to determine the minimum grade, grade equivalent, or value, of metal(s) that will produce the revenue needed to cover these total operating costs. Currently, the Galena Mine is primarily producing silver-lead ores with a minor amount of silver-copper ore. Both ore types are processed together to produce a single concentrate. Therefore, it is easier to express the breakeven cut-off either as a silver equivalent grade, or a net smelter return ("NSR") value that will equal, or exceed, the total operating cost.

Since the breakeven cut-off grade represents the minimum grade, or value, that will be mined, the average grade, or value, delivered to the mill, will always be higher. This increment, between the breakeven cut-off grade and the head grade, provides the return of capital investment and profit.

Other cut-off grades (incremental cut-off) may be employed later in the mine planning process by the mine planners/management, to handle situations where mineralized material, with a value below the economic cut-off grade, must be mined in order to reach ore, or to optimize the cash flow. However, these incremental cut-off grades are not normally used in determining the initial, breakeven cut-off grade used to establish mineable reserves.



The following formula illustrates the relationship between the various parameters, to calculate the breakeven cut-off silver equivalent (AgEq) grade:

 $Ag_{eq} = \frac{Total \, Operating \, Cost \, (Mine, Mill, G\&A)}{(Ag \, price \, per \, oz \, \times Ag \, Recovered) + Credits - Fwd \, Costs}$ 

Payable metal credits and forward costs are typically expressed in equivalent silver ounces. Forward costs typically include land and rail freight, smelter treatment and refining charges, smelter recoveries and penalty charges.

In determining the economic portion of the Galena resources, a silver equivalent cut-off grade is generally used. If the grade of a given block exceeds the cut-off grade, the block will be considered economic to mine.

At Galena, the parameters in Table 15-1, are based on the 2015 actual operating cost and production data, and were used to estimate the breakeven cut-off grade used in determining the 2015 year end mineral reserve estimate.

Description	Value
Mining Cost (\$/ton)	\$98
Processing Cost (\$/ton)	\$16
G&A Cost (\$/ton)	\$62
Total Operating Costs	\$176
Silver Recovery (%)	94.6
Copper Recovery (%)	95.6
Lead Recovery (%)	90.5
Silver Price (\$/oz)	\$16.00
Copper Price (\$/lb)	\$2.40
Lead Price (\$/lb)	\$0.85
Royalty (\$/oz)	none
By-product Credits (Cu+Pb, \$/oz Ag)	\$7.32
Concentrate TC/RCs, Freight, other (\$/oz Ag)	\$3.10

# TABLE 15-1 MINERAL RESERVE CUT-OFF GRADE PARAMETERS Americas Silver Corporation – Galena Complex

Using the parameters above, results in the following breakeven silver equivalent grade:

 $Ag_{eq} = \frac{\$175.82/ton}{(\$16.00 \times 0.946) + \$7.32 - \$3.10} = 9.08oz Ag_{eq} \quad (use \ 9.0 \ oz \ Ag_{eq})$ 



Mineral Resources are estimated on the basis of the optimal mining width (i.e. not fullydiluted), since the expected full dilution will depend upon the mining method, ground conditions, miner skills and other factors which are determined only during development and re-classification of the resources as reserves. However, Mineral Reserve estimates must take into account all expected sources of dilution and ore loss. The mining methods applied at the Galena Mine result in a very high ore recovery; therefore no ore loss is assumed or calculated.

# **15.4 Tabulation of Mineral Reserves**

Application of the methodology and parameters described above results in the definition of the Mineral Reserves shown in Table 15-2. Mineral Reserves are not included in the Mineral Resources tabulated in Section 14.



# TABLE 15-2 SUMMARY OF MINERAL RESERVES – DECEMBER 31, 2015 Americas Silver Corporation – Galena Complex

			Pro	oven			
Zone	Tonnage (000 tons)	Grade (opt Ag)	Grade (% Cu)	Grade (% Pb)	Contained Metal (000 oz Ag)	Contained Metal (MIbs Cu)	Contained Metal (MIbs Pb)
Silver-Copper	254	14.4	0.43	-	3,660	2.2	-
Silver-Lead	269	8.4	-	9.82	2,254	-	52.7
Total	523	11.3	0.21	5.04	5,914	2.2	52.7

#### Probable

Zone	Tonnage (000 tons)	Grade (opt Ag)	Grade (% Cu)	Grade (% Pb)	Contained Metal (000 oz Ag)	Contained Metal (MIbs Cu)	Contained Metal (MIbs Pb)
Silver-Copper	448	15.9	0.48	-	7,127	4.3	-
Silver-Lead	575	8.3	-	9.21	4,765	-	105.9
Total	1,024	11.6	0.21	5.17	11,892	4.3	105.9

#### **Proven and Probable**

Category	Tonnage (000 tons)	Grade (opt Ag)	Grade (% Cu)	Grade (% Pb)	Contained Metal (000 oz Ag)	Contained Metal (MIbs Cu)	Contained Metal (MIbs Pb)
Proven	523	11.3	0.21	5.04	5,914	2.2	52.7
Probable	1,024	11.6	0.21	5.17	11,892	4.3	105.9
Proven and Probable	1,546	11.5	0.21	5.13	17,806	6.4	158.6

Notes:

1. CIM Definition Standards were followed for Mineral Reserves.

2. Mineral Reserves are estimated at an Ag equivalent cut-off grade of 9 opt for vein-style mineralization and 3 opt for disseminated mineralization at Galena. Silver equivalent cut-offs were calculated using recent operating results for recoveries, off-site concentrate costs and on-site operating costs.

3. Mineral Reserves are estimated using a long-term silver price of US\$16.00 per ounce, copper price of US\$2.40 per pound and a lead price of US\$0.85 per pound.

4. A minimum mining width of 4 to 6 feet was used for conventional stopes depending on ground conditions and a minimum width of 6 to 8 feet was used for mechanized stopes depending on the ground conditions and equipment size.

5. Numbers may not add due to rounding.



### 16 MINING METHODS

#### 16.1 Background

The Galena Mine has produced since 1917, except for shutdowns due to low metals prices during 1931-1936 and 1992-1997. Mining has been underground since the earliest years, originally exploiting silver-lead (galena-dominated) veins, and since 1953, silver-copper (tetrahedrite-dominated) veins. By 2015, silver-lead veins were the predominant ore type mined and processed.

Since 1953, the Galena and Coeur Mines together have yielded 11.8 million tons of ore containing approximately 230 million ounces of silver, 159 million pounds of copper and 69 million pounds of lead. More than 80% of the silver has come from the Galena Mine.

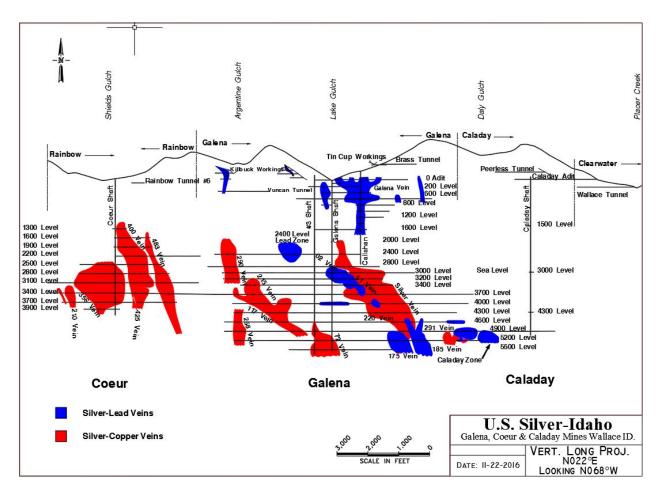
The Galena Mine surface infrastructure includes a processing facility with a nominal throughput of 700 stpd, a compressor house, mine and administrative offices, timber framing yard, parking areas, hoist houses and headframes for the #3 Shaft and the Galena Shaft.

The Coeur Mine, which has been a producer in the past, has not been mined since 2014. The Coeur mill is idle.

Figure 16-1 depicts the Galena #3 shaft, and lateral level development, as it relates to the Coeur and Caladay shafts. The Caladay shaft and lateral development are used for ventilation in the Galena Mine.

Current Mineral Reserves at Galena extend the life of mine through 2022. The Company continues to pursue opportunities to convert resources to reserves, through development and exploration drilling and to conduct exploration to discover new mineralization, in order to extend the life of mine beyond 2022. Based on historic discoveries and resource conversion, this is a reasonable expectation.







# 16.2 Mining Methods

The #3 Shaft is currently the primary mine access shaft and has been developed to a depth of 5,850 feet. It is a three-compartment shaft, equipped with a 1,750 hp Nordberg, 12 ft. dia. double drum hoist, which raises 8-ton skips in balance. Lateral development, off of the #3 and Galena shafts, includes work on 12 levels. For several years prior to 2010, the #3 Shaft hoisted all of the silver-copper ore produced in the Galena Mine, as well as all men and materials entering the mine. The #3 hoist drive and control system were upgraded in April 2012.

The Galena Shaft was repaired and updated in 2009-2012, and was placed in service again in early 2011. The Galena Shaft currently serves as the primary shaft for moving personnel, equipment and supplies into and out of the mine. It is 5,540 feet deep, with a three-compartment timber shaft equipped with a 900 hp Nordberg hoist. Although additional work in the Galena shaft is still on-going for pocket installations, the completed repairs have allowed hoisting in this shaft to resume between the 5200 Level and surface.



The Coeur shaft is a three-compartment shaft, 4,100 feet deep, which is used for exhaust ventilation and when needed for hoisting of silver-lead ore from the Galena Mine and silver-copper ore from the Coeur Mine. The two mines are connected on the Coeur 3400/Galena 3700 Level.

Lateral development from the shafts is generally spaced about 300 feet apart, vertically. Level development historically has been conducted by track drifting and rail haulage. Since 1999, the Galena Mine has developed seven areas with rubber-tired diesel equipment. Lateral track drifts extend for thousands of feet out from the shafts in an east-west direction. The levels provide access to over 100 veins that are currently producing, or have produced in the past.

Currently, most ore production is coming from mechanized cut and fill stopes. However, over the years, the Galena Mine has utilized three mining methods to extract ore from underground veins. These are:

- Conventional "overhand" cut and fill stoping, using hydraulically-placed mill tailings for backfill. Typically, the backfill for overhand stoping does not include cement for added strength.
- Mechanized "overhand" cut and fill stoping, using hydraulically-placed mill tailings for backfill. Typically, the backfill for overhand stoping does not include cement for added strength.
- Mechanized "underhand" cut and fill stoping, using hydraulically-placed mill tailings for backfill. Typically, the backfill for overhand stoping includes cement for added strength.

In the conventional overhand stoping, the veins are accessed by crosscuts developed from drifts that are driven along the vein structure. Final development of the vein is accomplished by driving vertical, timbered, three-compartment raises along the vein from one level to the level above. A typical stope extends 100 to 200 feet along the vein, on either side of the raise. A typical cut, 9 feet in height, over the length of the stope, is mined, using jackleg drills and pneumatic/electric slushers, which move the broken ore to the ore passes at the stope access raise. After all of the broken ore has been removed from the stope, the void is filled with slurry of mill tailings. After the sand fill process is complete, the cut above is mined in the same sequence. Some advantages to this method are its ability to extract narrow (less than 5 feet wide structures) without causing excessive dilution, and that all development subsequent to the initial crosscutting is in ore material.

In mechanized overhand cut and fill stoping, all drilling, and ore loading is performed with rubber-tired, diesel equipment. Drilling utilizes one boom electric-hydraulic jumbos, and ore



loading is performed using 1-cubic yard and 2.5-cubic yard LHDs. Access to these veins is in the same manner as in the conventional cut and fill stopes, via track haulage development. Final development of the stopes is accomplished by driving a 10 foot by 10 foot (+15%) inclined ramp in the hanging wall of the structure. The vein is then accessed from the main ramp by running temporary attack ramps. A typical stope extends 200 to 400 feet along the vein on either side of the main ramp/stope intersection. A cut of ore, 10 feet in height, is mined over the entire length of the stope with the trackless equipment. After muck removal, the stope is backfilled as in the conventional stopes, and the sequence proceeds upward.

In mechanized underhand cut and fill stoping, crosscuts and drifts also initially access the veins. Final development of the vein is accomplished by driving a 10 by 10-foot (-15%) declined main ramp, approximately 100 feet in the hanging-wall of the structure, and then finally accessing the vein by running temporary attack ramps from the main decline to the vein. A typical stope extends 200 to 400 feet along the vein on either side of the attack ramp entry point to the stope. A cut of ore, 10 feet in height, is mined over the length of the stope with the use of electric jumbo drills and diesel LHDs. After all the broken ore is removed from the stope, the void is filled with a slurry of mill tailings, cement and water. After these cemented tailings harden, typically 7 days, the cut directly below is mined in the same sequence. The two main advantages with this method are its ability to extract ore from levels below the current shaft bottom (avoiding some capital development), and its proven ability to minimize hazards associated with rock bursting.



# 17 RECOVERY METHODS

# 17.1 Milling

Mine production over the past few years has been from both silver-copper and silver-lead ores, with recent production coming mostly from silver-lead ores. Currently, ore is treated in the Galena plant to produce a lead concentrate that is shipped by truck to Teck Metals Limited's, Trail Smelter, located in British Columbia, Canada. The current terms and conditions regarding the sale of the concentrate are defined under a 2016 contract, which runs through March 31, 2017.

The Galena plant was originally constructed in 1922, with a capacity of 100 tons per day (stpd). ASARCO expanded the mill capacity to 385 stpd in 1955, and then to 440 stpd in 1959, and finally to the present day capacity of 700 stpd in 1969. The grinding and flotation circuits were renovated in 1981 and 1986. Recent production statistics for the Galena plant are presented in Table 17-1.

Item	2014	2015
Total Tons Milled	159,584	166,966
Tons Silver-Copper Milled	72,784	27,172
Ag Grade (opt)	14.17	19.23
Cu Grade (%)	0.42	0.58
Ag Recovery (%)	96.1	96.7
Cu Recovery (%)	95.9	96.7
Tons Silver-Lead Milled	86,800	139,794
Ag Grade (opt)	7.69	7.54
Pb Grade (%)	5.75	6.89
Ag Recovery (%)	94.5	93.4
Pb Recovery (%)	91.7	90.5
Total Ag Production (oz)	1,621,765	1,489,736
Total Cu Production (lb)	586,190	304,753
Total Pb Production (lb)	9,143,751	17,436,671

### TABLE 17-1 SUMMARY OF PRODUCTION – GALENA PLANT Americas Silver Corporation – Galena Complex

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The basic Galena plant flowsheet is illustrated in Figure 17-1. The various processes are described in the following sections.



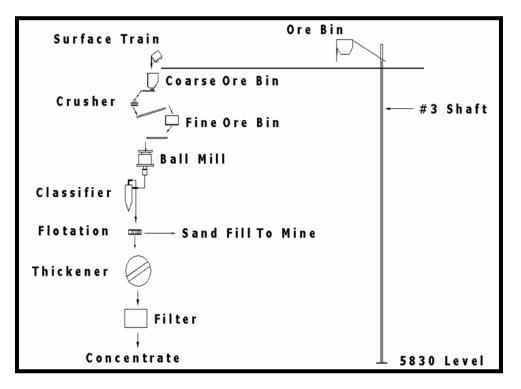


FIGURE 17-1 GALENA PLANT FLOWSHEET

During 2015, the Galena plant treated 166,966 tons. The mill feed consisted of 27,172 tons of silver-copper ore, at a grade of 19.2 opt Ag and 0.58% Cu and 139,794 tons of silver-lead ore, at a grade of 7.5 opt Ag and 6.89% Pb.

Ore from the mine is hauled in 5-ton cars and directly tipped into a 400-ton coarse ore bin located adjacent to the plant. A Pioneer pan feeder feeds material to a 2-foot by 3-foot Kue Ken jaw crusher. The secondary crushing circuit consists of a 3 foot standard cone crusher in closed circuit with a 4-foot by 12-foot vibrating single deck horizontal screen. Minus 5/8" product is conveyed to a 300-ton fine ore bin.

Ore is fed to a 9-foot by 12-foot ball mill, after passing over a weightometer. Grab samples are taken from the conveyor to determine daily moisture content. Ball mill discharge passes over a 3-foot by 6-foot vibrating screen prior to cyclone classification. Cyclone underflow returns to the ball mill while overflow goes to a bank of four 100 cubic foot Denver flotation cells for rougher flotation.

Rougher tails continue to a scavenger circuit of four 100 cubic foot Denver flotation cells. Scavenger tails go to either the tailings facility or are used for underground backfill. Scavenger concentrate is returned to the rougher bank.



Rougher concentrate is cleaned in two stages using Denver Sub-A flotation cells. Cleaner concentrate is sampled and pumped to a 10 foot high by 20 foot diameter concentrate thickener. Thickened concentrate is pumped to parallel drum filters. Filter cake is regularly loaded onto trucks for shipment to the smelter.

# 17.2 Coeur Mill

The Coeur processing plant, which has a capacity of approximately 550 stpd, was constructed in 1976. It is located approximately five miles by road from the Galena site. The mill flow sheet for the Coeur mill is similar to the Galena mill. The Coeur processing plant is currently on care and maintenance.

# 17.3 Tailings Disposal

Approximately 55% of the Galena plant tails is returned to the mine as backfill. The remainder of the tailings is sent to the tailings storage facility near Osburn, Idaho. The dam is raised annually in 3 foot lifts. The permit for the tailings impoundment area will accommodate at least 25 years of storage capacity at the current production rate.



# 18 PROJECT INFRASTRUCTURE

### 18.1 Labor

The composition of the Galena workforce is summarized in Table 18-1.

Area	Company	Contractor	Total
Mining	149	0	149
Plant	21	0	21
Maintenance	35	0	35
Technical Services	13	1	14
Administration	10	0	10
Total	228	1	229

# TABLE 18-1WORKFORCE SUMMARYAmericas Silver Corporation – Galena Complex

The hourly workforce at the property is represented by a labor union, and all mine production employees participate in an incentive bonus plan. The current labor contract with the United Steel Workers of America was re-negotiated in 2014 and will continue until June 28, 2017.

# 18.2 Equipment

Most of the tracked and trackless underground mining equipment at the Galena Mine is well used, but has been maintained in good operating condition. Tracked equipment includes battery locomotives, rail cars, pneumatic mucking machines, electric and pneumatic slushers, and utility rail cars. Trackless equipment includes small, electric-hydraulic jumbos, small scoop-trams (LHDs), and diesel utility vehicles.

Underground maintenance shops are used for minor and major repairs, such as component replacements. Shops on the 2400, 3700, 4600, 4900, and 5200 Levels maintain trackless equipment that is being used on those levels.

Table 18-2 lists the major underground equipment at the Galena Mine.



# TABLE 18-2MAJOR EQUIPMENT LISTAmericas Silver Corporation – Galena Complex

Description	Model	Number
Tracked		
Battery Locomotives - 5 to 10 ton	Various	16
Battery Locomotives - 1.5 ton	Various	4
Slushers - Electric 15 to 30 hp	Joy/Others	37
Slushers - Air 7.5 to 15 hp	Joy/Others	26
Muckers	Eimco 12B	6
Muckers	Eimco 21 and 22	15
Rail Cars - 50 to 70 ft <sup>3</sup>	Various	70
Rail Utility Cars	Various	48
Man Coaches	Various	3
Trackless		
Jumbos	Montabert	5
Jackleg Drills	Various	195
1.5 yd <sup>3</sup> LHD	Jarvis Clark	6
2.5 yd <sup>3</sup> LHD	MTI	7
4.0 yd <sup>3</sup> LHD	MTI	1
10 Ton Haul Truck	RDH	1
StopeMate Drill	Boart	2

This equipment is appropriate for the projected production rates, multi-level mining and mining methods that exist at the Galena and Coeur Mines.

# 18.3 Utilities and Inputs

A primary electrical feed of 13.2 KVA supplies the mine. Total monthly consumption is approximately 4,600 MWh as shown in Table 18-3.

Area	MWh
Caladay	37
Galena Mill	453
Galena Mine	3,866
Coeur Mill (care and maintenance)	28
Coeur Mine (vent fans and pumps, etc.)	210
Total	4,594

# TABLE 18-3MONTHLY POWER CONSUMPTIONAmericas Silver Corporation – Galena Complex



The Galena Mine is relatively dry given the depth and extent of workings. Pumping from the mine averages about 650 gallons per minute (gpm), over an average 13.5 hours per day. Mine water is collected by secondary air and electric pumps and sent to pump stations on the 5200 and 5500 Levels. From here water is sent to a primary pump station located on the 4900 Level and then another on the 2400 Level.

Ventilation air enters the mine through the #3, Galena, and Callahan shafts at a rate of approximately 220,000 cfm. After circulating through the mine it exhausts through the Caladay shaft (approximately 120,000 cfm) and Coeur shaft and borehole (approximately 100,000 cfm). Primary exhaust fans are located on the 3700 Level (Galena), leading to the Coeur shafts, and on the 4900 Level, leading to the Caladay shaft.

The mine backfill plant is located on the surface adjacent to the Galena mill. Typically, tailings that go underground as backfill are de-slimed and slurried to 65 to 70% solids. Up to 15% cement is added to the slurry at the surface for additional strength when underhand stopes are being filled. A dry backfill storage facility is located above the mine. This material can be re-pulped and sent into the mine when needed. Uncemented backfill can be worked upon in as little as two days. Cemented fill requires approximately five days before work can begin under it.



### **19 MARKET STUDIES AND CONTRACTS**

Americas Silver currently sells its silver-lead concentrate to Teck Metals Limited's Trail Smelter, located in British Columbia, Canada, under a 2016 contract, which lasts through March 31, 2017. The contract is negotiated on an annual basis and there are no issues expected during the next negotiation period that would be expected to prevent the extension of the contract. Concentrates are delivered by truck from the Galena processing plant to the Trail Smelter. Silver and lead, are the payable metals.

Galena does not currently produce a silver-copper concentrate. When production of this concentrate resumes in the future, it is expected that the material will be sold under standard industry terms and conditions at that time.

The terms contained within the refining contracts and sales contracts are typical and consistent with standard industry practice. As per industry norms for silver-lead and silver-copper concentrates, penalty charges are incurred for various deleterious elements when above specified levels. There are no known "hard caps" currently in place with any of the existing off-take agreements that would result in the concentrates not being readily saleable.

The Company has not had any problems collecting payments from concentrate purchasers in a reliable and timely manner and expects no such difficulties in the foreseeable future. However, this cash flow is dependent on continued mine production which can be subject to interruption for various reasons including fluctuations in metal prices and concentrate shipment difficulties. Additionally, unforeseen cessation in smelter provider capabilities could severely impact the Company's capital resources. Although the Company sells its concentrate to a limited number of customers, it is not economically dependent upon any one customer as there are other markets throughout the world for the Company's concentrate.



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

Americas Silver has all required operating and environmental permits to operate the Galena Complex. Key permits are shown in Table 20-1. There are no known environmental, permitting, socio-economic, political, or other relevant issues that could materially affect the operation of the mine as currently contemplated.

A National Pollutant Discharge Elimination System (NPDES) permit was issued to Americas Silver in July 2007, in effect for a period of five years, a renewal was applied for in December, 2011, and in accordance with applicable regulation, the NPDES permit remains current as administratively extended during the ongoing application process. No air permits are required for the Galena Complex. The Galena Complex is considered a Conditionally Exempt Small Quantity Generator (CESQG) in terms of hazardous waste. The Osburn Tailings Impoundment has been designed to handle tailings from both mills at full capacity until approximately 2040. A certificate of deposit of \$115,000 is in place with the Idaho Department of Water Resources for this impoundment.

Permit Name	Permit #	Agency
Galena/Coeur NPDES	ID-000002-7	US EPA
Caladay NPDES	ID-002542-9	US EPA
Storm Water MSGP - Galena	IDR05C298	US EPA
Storm Water MSGP - Coeur	IDR05C299	US EPA
Storm Water MSGP- Caladay	IDR05C300	US EPA
Clean Air Act	Exempt	US EPA
Hazardous Material Certificate	051409550073RT	US DOT
Emergency Planning and Community Right-To-Know Act - EPCRA - Tier II	N/A	US Dept. of Homeland Security
Osburn Tailings Impoundment	N/A	Idaho Dept. Water Res.

# TABLE 20-1 OPERATING AND ENVIRONMENTAL PERMITS Americas Silver Corporation – Galena Complex



# 21 CAPITAL AND OPERATING COSTS

# 21.1 Operating Costs

Operating costs in the LOMP are based on recent operating history and average approximately \$29 million per year. The unit operating costs estimates for the LOMP are shown below in table 21-1.

Item	Units	LOMP Average
Mining	\$/ton milled	80.00
Processing	\$/ton milled	12.00
Exploration	\$/ton milled	2.00
G&A	\$/ton milled	53.00
Total	\$/ton milled	147.00

# TABLE 21-1 UNIT OPERATING COSTS Americas Silver Corporation – Galena Complex

# 21.2 Capital Costs

Sustaining capital costs are expected to total approximately \$36M over the reserve life of 7 years. Table 21-2 provides a breakdown of the anticipated capital expenditures associated with development, processing/tailings, exploration and fixed assets.

# TABLE 21-2 ESTIMATED LOMP CAPITAL EXPENDITURE Americas Silver Corporation – Galena Complex

Cost Center	LOMP Total (\$M)
Development	\$29.0
Process/Tailings	\$2.5
Exploration	\$1.1
Fixed Assets	\$3.6
Other	\$0.1
Total Capital Expenditure	\$36.4

#### 21.3 Taxes

Americas Silver is obligated to file United States Federal and Idaho State income tax documents on an annual basis. Tax rates are calculated on an annual basis and are within industry norms in the United States. At this time the Galena Complex does not pay any royalties.



Americas Silver's net effective tax rate is nominally 43.4% of profits. This is based on the Idaho state corporate tax rate of 7.4%, the Idaho mine license (net profits) tax of 1%, and the U.S. Federal corporate tax rate of 35%. The latter varies according to annual income, and allows for deductions of state taxes, resulting in the overall net rate of 43.4%. Loss carry-forwards are available and will be used to the extent possible. The Idaho mine license tax of 1% continues to be payable in all years on net profits.



# 22 ECONOMIC ANALYSIS

As defined in NI 43-101, a producing issuer may exclude the information required for Item 22 - Economic Analysis on properties currently in production, unless the Technical Report prepared by the issuer includes a material expansion of current production. Americas Silver is a producing issuer, the Galena Complex is currently in production, and a material expansion is not included in the current LOMP. Americas Silver has performed an economic analysis of the Galena Complex using the estimates presented in this report and confirms that the outcome is a positive cash flow that supports the statement of Mineral Reserves.



# 23 ADJACENT PROPERTIES

There are two mining operations in the general vicinity of the Galena Complex:

- Lucky Friday Mine, owned and operated by Hecla Mining Company, located approximately 9 miles from the Galena Complex, and
- Sunshine Mine, owned by Sunshine Silver Mining and Refining, located approximately 7 miles away (currently under care and maintenance).

Neither operation would be reasonably expected to materially impact the operation of the Galena Complex.



# 24 OTHER RELEVANT DATA AND INFORMATION

The authors are not aware of any addition relevant information or explanation necessary to make this Technical Report understandable and not misleading.



# 25 INTERPRETATION AND CONCLUSIONS

### 25.1 Mineral Resource Estimation

Mineral Resource estimates have been prepared using acceptable estimation methodologies. The classification of Measured, Indicated and Inferred Resources conform to CIM Definition Standards.

Protocols for drilling, sampling, analysis, security and database management meet industry accepted practices. The drillhole databases were verified and are reasonable for supporting a resource model for use in Mineral Resource and Mineral Reserve estimation.

Americas Silver is not aware of any environmental, permitting, legal, title, taxation, socioeconomic, marketing, political, or other modifying factors which could materially affect the Mineral Resource estimates.

- Measured and Indicated Mineral Resources, exclusive of Mineral Reserves, for silverlead zones total 1.7 million tons, grading 5.3 opt Ag and 5.59% Pb, containing 9.0 million ounces Ag and 188.3 million pounds Pb.
- Measured and Indicated Mineral Resources, exclusive of Mineral Reserves for silvercopper zones total 1.2 million tons, grading 12.9 opt Ag and 0.59% Cu, containing 15.7 million ounces Ag and 14.4 million pounds Cu.
- Inferred Mineral Resources for silver-lead zones total 1.8 million tons, grading 5.4 opt Ag and 5.82% Pb, containing 9.7 million ounces Ag and 207.8 million pounds Pb.
- Inferred Mineral Resources for silver-copper zones total 0.5 million tons, grading 13.4 opt Ag and 0.83% Cu, containing 6.8 million ounces Ag and 8.4 million pounds Cu.
- The resource estimate cut-off grade is 9 opt Ag equivalent for vein-style mineralization and 3 opt Ag for disseminated mineralization.

#### 25.2 Mining and Mineral Reserves

The Mineral Reserve estimate has been prepared using acceptable estimation methodologies and the classification of Proven and Probable Reserves conform to CIM Definition Standards.

• Proven and Probable Reserves for silver-lead zones total 0.8 million tons, grading 8.3 opt Ag and 9.40% Pb, containing 7 million ounces Ag and 158.6 million pounds Pb.



- Proven and Probable Reserves for silver-copper zones total 0.7 million tons, grading 15.4 opt Ag and 0.46% Cu, containing 10.8 million ounces Ag and 6.4 million pound Cu.
- Mineral Reserves are estimated at metal prices of US\$16.00 per ounce Ag, US\$2.40 per pound Cu and US\$0.85 per pound Pb.
- Recovery and cost estimates are based on actual operating data and engineering estimates.
- Economic analysis of the Galena Complex LOMP generates a positive cash flow and meets the requirements for statement of Mineral Reserves. In addition to the Mineral Reserves in the LOMP, there are Mineral Resources that represent opportunities for the future.

# 25.3 Mineral Processing

- The Galena Complex currently operates the Galena processing plant, consisting of crushing, grinding, and flotation concentration where silver, lead and copper are recovered and sold as both silver-lead and silver-copper concentrates.
- Operating results from the last two years (2014 and 2015) have demonstrated the following:
  - The operation has a sound basis of consistent production data
  - Total average Ag recoveries were 95%
  - Total average Pb recoveries were 91%
  - Total average Cu recoveries were 96%

The Galena Complex continues to be a viable operation, with more than acceptable levels of data capture, resource/reserve estimation, and mine planning. Significant improvements have been made in understanding the exploration potential, including advances toward realizing the potential in the Caladay Zone on the east end of the property.



# 26 **RECOMMENDATIONS**

There are no recommendations at this time as the Galena Complex is a fully operational mine.



# 27 REFERENCES

The following reports were referred to in the production of this Technical Report, in addition to many other internal documents of Americas Silver:

AMEC, 2013. "US Silver Galena Mine - Resource Estimation Process Gap Analysis." Reno, Nevada.

CAM, 2013. "*Technical Report, Galena Complex, Shoshone County, Idaho.*" Lakewood, Colorado.

CAM, 2012. "Bulk-Density Determinations in Mining Exploration." Lakewood, Colorado.

Coeur d'Alene Mines Corp., 2000. "Silver-Lead Resource at Caladay."

Feriancek, Jeanine of Holland & Hart LLP, June 14, 2016. "Limited Title Opinion - Patented Mining Claims comprising the "Key Properties," Shoshone County, Idaho."

Feriancek, Jeanine of Holland & Hart LLP, December 16, 2016. "Title Report - Galena Complex Mining Property in Shoshone County, Idaho Owned and Leased by U.S. Silver-Idaho, Inc. (excluding Key Properties)."

Fleck, R.J., Criss, R.E., Eaton, G.F., Wavra, C.S., and Bond, W.D., 2002. "Age and Origin of Base and Precious Metal Veins of the Coeur D'Alene Mining District, Idaho, Economic Geology, v. 97."

Hobbs, S. Warren, et al, 1965. "*Geology of the Coeur d'Alene District Shoshone County Idaho:* U. S., Geological Survey Professional Paper 478."

Leach, D. L., et al., 1988. "Metamorphic origin of the Coeur d'Alene base- and preciousmetal veins in the Belt Basin, Idaho and Montana: Geology, volume 16."

Reid, R. R., et al., 1995. "Constriction Fracture Flow: A Mechanism for Fault and Vein Formation in the Coeur d'Alene District, Idaho: Economic Geology, volume 90."



# 28 DATE AND SIGNATURE PAGE

This report titled Technical Report on the Galena Complex, Shoshone, Idaho, USA and dated December 23, 2016 was prepared and signed by the following authors:

	(Signed & Sealed) "James R. Atkinson"
Dated at Toronto, ON	
December 23, 2016	James R. Atkinson, P.Geo.
	Vice President of Exploration
Dated at Toronto, ON	(Signed & Sealed) "Daniel H. Hussey"
December 23, 2016	Daniel H. Hussey, CPG
	Former Chief Geologist
Detect of Taxanta, ON	(Signed & Sealed) "Daren Dell"
Dated at Toronto, ON	
December 23, 2016	Daren Dell, P.Eng.
	Chief Operating Officer



# 29 CERTIFICATE OF QUALIFIED PERSON

#### JAMES R. ATKINSON

I, James R. Atkinson, P.Geo., as an author of this report entitled "Technical Report on the Galena Complex, Shoshone County, Idaho, USA", prepared for Americas Silver Corporation, and dated December 23, 2016, do hereby certify that:

- I am employed by, and carried out these assignments for Americas Silver Corporation, whose address is at 145 King Street West, Suite 2870, Toronto, ON, M5H 1J8, in the capacity of Vice President, Exploration.
- 2. I am a graduate of Brock University, St. Catherines, Ontario, Canada, in 1972 with a Bachelor of Science degree in Geology and the University of Toronto, Toronto, Ontario, Canada, in 1992 with a Master of Science in Geology in.
- 3. I am a member in good standing of the Ontario Association of Professional Geoscientists, P.Geo. Registration number 1086. I have worked in the mining industry for a total of 44 years since my graduation. My relevant experience for the purpose of the Technical Report is:
  - Reviews and reports on geological aspects at a number of mining operations and projects for due diligence and regulatory requirements.
  - Senior Geologist on numerous base and precious metals projects for international mining companies supervising exploration and mining projects, resource estimation, QA/QC, database management and preparation of Technical Reports.
  - Management and operational experience of all aspects of exploration and mining geological programs at several Canadian and U.S. exploration programs and mining operations focused on precious, base metals, tin, tungsten, and industrial minerals.
- 4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
- 5. I visited the property which is the subject of the Technical Report most recently in December 2016.
- I am responsible for the overall preparation of the Technical Report and for Sections 4 through 12 and 14, and I share responsibility with my co-authors for Sections 1, 2, 3, 25, 26, 27, 28, and 29 of the Technical Report.
- 7. I am not independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
- 8. Other than in my capacity as an employee of Americas Silver, I have had no prior involvement with the property that is the subject of the Technical Report.

I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.



9. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 23<sup>rd</sup> day of December 2016.

(Signed & Sealed) "James R. Atkinson"

James R. Atkinson, P.Geo.



# DANIEL H. HUSSEY

I, Daniel H. Hussey, CPG, as an author of this report entitled "Technical Report on the Galena Complex, Shoshone County, Idaho, USA", prepared for Americas Silver Corporation, and dated December 23, 2016, do hereby certify that:

- I was a consultant and carried out these assignments for Americas Silver Corporation, whose address is at 145 King Street West, Suite 2870, Toronto, ON, M5H 1J8.
- 2. I am a graduate of the Whitworth College, Spokane, Washington, USA, in 1980 with a Bachelor of Science degree in Earth Science, and Camborne School of Mines, Cornwall, England, in 1984 with a Master of Science degree in Mining Geology.
- 3. I am a member in good standing of the American Institute of Professional Geologists, Certified Professional Geologist (CPG) Registration number 11022. I have worked in the mining industry for a total of 36 years since my graduation. My relevant experience for the purpose of the Technical Report is:
  - Reviews and reports on mining and geological aspects at a number of mining operations and projects for due diligence and regulatory requirements.
  - Senior Geologist on numerous base and precious metals studies for several international mining companies.
  - Management and operational experience at several U.S. base and precious metals mining operations.
- 4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
- 5. I visited the property which is the subject of the Technical Report most recently in December 2016.
- 6. I am responsible for Sections 15, 16 and 18, and I share responsibility with my coauthors for Sections 1, 2, 3, 25, 26, 27, 28, and 29 of the Technical Report.
- 7. I am not independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
- 8. Other than in my capacity as a former employee of Americas Silver, I have had no prior involvement with the property that is the subject of the Technical Report.
- 9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.



10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 23<sup>rd</sup> day of December 2016.

(Signed & Sealed) "Daniel H. Hussey"

Daniel H. Hussey, CPG



# Daren Dell

I, Daren Dell, P.Eng., as an author of this report entitled "Technical Report on the Galena Complex, Shoshone County, Idaho, USA", prepared for Americas Silver Corporation, and dated December 23, 2016, do hereby certify that:

- I am employed by, and carried out these assignments for Americas Silver Corporation, whose address is at 145 King Street West, Suite 2870, Toronto, ON, M5H 1J8, in the capacity of Chief Operating Officer.
- 2. I am a graduate of the Queen's University, Kingston, Ontario, Canada, in 1992 with a Bachelor of Applied Science in Metallurgical Engineering.
- 3. I am a member in good standing of the Professional Engineers Ontario, P.Eng. Registration number 90428202. I have worked in the mining industry for a total of 24 years since my graduation. My relevant experience for the purpose of the Technical Report is:
  - Reviews and reports on metallurgical aspects at a number of mining operations and projects for due diligence and regulatory requirements.
  - Senior Metallurgist/Project Manager on numerous base metals and precious metals studies for several international mining companies.
  - Management and operational experience at several Canadian and U.S. mining and milling operations treating various metals, including base and precious metals.
- 4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
- 5. I visited the property which is the subject of the Technical Report most recently in November 2016.
- 6. I am responsible for Sections 13, 14 and 20, and I share responsibility with my coauthors for Sections 1, 2, 3, 25, 26, 27, 28, and 29 of the Technical Report.
- 7. I am not independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
- 8. Other than in my capacity as an employee of Americas Silver, I have had no prior involvement with the property that is the subject of the Technical Report.
- 9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.



10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 23<sup>rd</sup> day of December 2016.

(Signed & Sealed) "Daren Dell"

Daren Dell, P.Eng.