TECHNICAL REPORT

ZIMAPAN PROPERTY

HIDALGO, MEXICO

Prepared for:

SANTACRUZ SILVER MINING LTD.
Suite 880 - 580 Hornby Street
Vancouver, BC, V6C 3B6, Canada

Prepared by:

Van Phu Bui, P.Geo.
Stephen de Wit, P.Geol.

Effective Date: April 2, 2020
Report Date: August 5, 2020

Report № 16001RT006

CERTIFICATE AND SIGNATURE, Van Phu Bui, P.Geo.

I, Van Phu Bui, of 33086 Hill Avenue, Mission, BC, V2V 2R6, Canada, do hereby certify that;

1. I am a consulting geologist and partner at ARC Geoscience Group Inc., with a business address of 600-1285 West Broadway, Vancouver, BC, Canada V6H 3X8.

2. I am a graduate of the University of British Columbia (2004) with a Bachelor of Science degree in Earth and Ocean Sciences.

3. I am a registered member in good standing of the Association of Professional Engineers and Geoscientists of British Columbia (Member Number 34774) since July 2010.

4. I have practiced my profession continuously since 2004 in the capacity of an exploration and consulting geoscientist in mineral exploration with twelve (12) years of continuous field experience and four (4) years of intermittent field experience in Canada and abroad. I have worked at the Wolverine Volcanic-hosted Massive sulfide (Zn-Ag-Pb-Cu-Au) deposit in the Yukon, Canada; XY Sedimentary Exhalative (Zn-Pb-Ag) deposit in the Yukon, Canada; Table Mountain Mesothermal Vein (Au) project in BC, Canada; Olza Mississippi Valley Type (Zn-Pb-Ag) deposit in Silesia, Poland; and at various other base-metals and precious metals deposits in Australia, USA, and Ireland. I have also visited other precious metals projects in Mexico as a consulting geologist, including the Veta Grande Low-sulfidation Epithermal Vein (Ag-Zn-Pb-Au) project in Zacatecas State and the Picachos Low-sulfidation Epithermal Vein (Au) project in Sinaloa State.

5. I have read the definition of “qualified person” set out in National Instrument 43-101 (“NI 43 -101”) and certify that by reason of education, experience, and affiliation with a professional organization I meet the requirements of a “qualified person” as defined in NI 43-101.

6. This report titled “Technical Report, Zimapan Property, Hidalgo, Mexico” dated effective April 2, 2020 (the “Technical Report”), is based on a study of the data and literature available on the Zimapan property. I am responsible sections 1 through 6, 8, 10, 13 and 14 of this report, and jointly contributed to all other sections of this report. I visited the property on March 22 to March 23, 2017 and on May 2 to May 4, 2017. I have not performed a recent site visit to the property.

7. I have not previously worked on this property.

8. As 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. I have read National Instrument 43-101 and the Technical Report has been prepared in compliance with this National Instrument.

9. I am “independent” of the issuer, the vendor and the property as that term is described in Section 1.5 of NI 43 -101.

10. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public.

Signed and dated this 5th day of August 2020.

[Original Signed and Sealed]

Van Phu Bui, P.Geo

CERTIFICATE AND SIGNATURE, Stephen P. de WIT, P.Geol.

I, Stephen P. de Wit, of 3 Windmill Way Calgary Alberta, Canada,T3Z 1H5 do hereby certify that;

1. I am a consulting geologist at Stephen P. de Wit P.Geol Geological Consultant at 3 Windmill Way Calgary Alberta, Canada T3Z 1H5
2. This report titled "Technical Report, Zimapan Property, Hidalgo, Mexico" dated effective April 2, 2020 (the "Technical Report"), is based on a study of the data and literature available on the Zimapan property. I am responsible sections 7, 11, 15 of this report, and jointly contributed to all other sections of this report. I visited the property on March 30 to April 2, 2020.
3. I am a graduate of the University of Calgary (1991) and hold a Bachelor of Science degree in Geology.
4. I am a registered Professional Geologist in good standing with the Association of Professional Engineers and Geoscientists of Alberta (Member Number 52859) and have been a member since 1995.
5. I have practiced my profession continuously since 1991 in the capacity of an exploration and consulting geologist, and project manager in mineral exploration in Canada, United States, Mexico, Columbia, Chile, Paraguay, and Argentina on projects ranging from regional exploration to operating mines. I have worked on numerous base and precious metal properties in Mexico including exploration for high-sulfidation epithermal gold deposits for Alamos Gold in Mulatos Sonora Mexico, the Jacala Ag-Pb-Zn Cu CRD deposit in Hidalgo, Mexico (north east of Zimapan), the San Pedro Analco Ag-Zn-Pb past producer low sulfidation epithermal deposits in Jalisco, Mexico, the Llluvia de Oro and Tajitos low sulfidation Au-Ag deposits in Jalisco, and many other project evaluation and early stage exploration projects in Chihuahua, Sonora, Nayarit and Jalisco Mexico.
6. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43 -101") and certify that by reason of education, experience, and affiliation with a professional organization I meet the requirements of a "qualified person" as defined in NI 43-101.
7. I have not previously worked on this property.
8. As 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. I have read National Instrument 43-101 and the Technical Report has been prepared in compliance with this National Instrument.
9. I am "independent" of the issuer, the vendor and the property as that term is described in Section 1.5 of NI 43 -101.

10. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public.

Signed and dated this 5th day of August 2020.

[Original Signed and Sealed]

Stephen P. de Wit. P.Geol.

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1 Summary

This report provides a project description of the Zimapan property located in Hidalgo State, Mexico (the Property). This report was prepared for Santacruz Silver Mining Ltd. ("Santacruz" or the "Company") and was prepared in accordance with Form 43-101F1 of the National Instrument 43-101 Standards of Disclosure for Mineral Projects. The effective date of this report is April 2, 2020.

1.1 Property Description and Ownership

The Property is located in the municipality of Zimapan near the town of Zimapan, in the western margins of Hidalgo State, Mexico. The Property is 241 road-km northwest from Mexico City. The local infrastructure includes paved and dirt roads, grid power, underground mine infrastructure at the Carrizal and El Monte mines, and the El Monte mineral processing facility (the "EL Monte Plant"). The Property consists of 34 mining concessions covering an area of 5,138.76 ha. The concessions are wholly owned by Minera Cedros S.A. de C.V. ("Minera Cedro"), a private Mexican company and a subsidiary of Industrias Penoles, S.A.B. de C.V. ("Penoles").

Carrizal Mining entered into an exploration and exploitation lease agreement with Minera Cedros on August 18, 2009. The lease agreement was subsequently renewed to December 31, 2020. On October 4, 2019 Santacruz, through its wholly-owned subsidiary Carrizal Holdings Ltd., purchased 100% shares of PCG, S.A. de C.V. ("PCG"), the parent company to Carrizal Mining. Through the acquisition of PCG, Santacruz became the indirect owner of Carrizal Mining. On July 28, 2020 Carrizal Mining entered into a terms and conditions agreement ("Term and Conditions Agreement") with Minera Cedros to purchase the Zimapan property and related assets for considerations totalling US $20,000,000.00 plus VAT.

Carrizal Mining holds the required surface rights agreements, operating permits and environmental licenses necessary to carry out exploration, mining and mineral processing activities on the Property. Carrizal Mining is actively mining and processing material from the mineral zones described in this report. The authors are unaware of any other significant factors and risks that may affect access, title, or the right or ability to perform work on the Property. .

1.2 History

In 1575, Zimapan was founded by Spanish miners who were extracting silver, lead, and other metals from mines located in the Sierra El Monte and Baranca Toliman.The discovery of the Lomo de Toro mine by Don Lorenzo de Labra in 1632 initiated mining of silver and lead in what is now the Carrizal Mine. Between 1632 and 1920, more than 18 mines were put into production, including the El Monte and Carrizal mines. In 1945, a road was built to the Carrizal mine, which increased mining activity in the area. In 1957, a road was built to the Monte mine, also resulting in an increase in mining activity in the area. In 1964, Penoles became an underlying owner of the Carrizal mine, Monte mine, and the San Francisco beneficiation plant (El Monte plant). The Property operated under various subsidiaries and joint venture partners of Penoles until August 18, 2009 when Carrizal Mining entered into an exploration and exploitation lease agreement with Minera Cedros.

Between January 1, 2011 and December 31, 2018 Carrizal Mining completed approximately 30,005 m of underground core drilling – including 16,539 m completed at the El Monte mine and 13,466 m completed at the Carrizal mine. Drilling primarily focused on delineation of the mineral zones in advance of production.

Approximately 51% of the total drilling has been completed in the Escondida, Dike Concordia, Horizontes and Santa Fe zones. In the same period, Carrizal Mining mined approximately 5.88 million tonnes of mineralized material from the El Monte and Carrizal mines.

1.3 Geology and Mineralization

The Property is located along the margins of the Sierra Madre Oriental physiographic province. The regional geology is comprised of platform and basin sediments that were formed during the Mesozoic era on top of Paleozoic and Precambrian basement rocks. The region has undergone compression resulting in complex folding, faulting and uplift. Mantos and chimney style mineralization are associated with the Horizontes horizon within the La Negra member of the Lower Cretaceous Tamaulipas Formation. Pliocene age intrusions are emplaced into the stratigraphy on a local scale. Locally, the Carrizal mine contains six mineral zones and the El Monte Mine contains eight mineral zones that are hosted in limestone and calcareous shales of the Las Trancas, Tamaulipas, and Soyatal formations. The mineral zones are characterized as high temperature carbonate replacement deposits that consists of silver, lead, zinc and copper rich semi-massive and massive sulfide bodies that occur in proximity to quartz-monzonitic to monzonitic intrusions and monzonitic quartz-feldspar porphyry dikes. Argentite, galena, sphalerite, and chalcopyrite are the dominant economic minerals in the mineral zones.

1.4 Site Inspection

Van Phu Bui conducted a cursory site visit between March 22 to March 23, 2017 and a follow-up site visit between May 2 to May 4, 2017. Assay results of seven chip samples collected from underground exposures of the Dike Concordia and the Santa Fe mineral zones confirmed the presence of silver, lead, zinc, and copper mineralization. Stephen de Wit completed a site visit between March 30 and April 2, 2020. Two active areas underground were visited including the 1790 level of the 1493 Dike at the El Monte mine and the 1330 level of Horizontes zone at the Carrizal mine. During the recent visit, no verification samples were collected and sent to external laboratories due to laboratory closures as part of Mexico's response to the COVID-19 pandemic.

1.5 Conclusions and Recommendations

The characteristics of the Carrizal and El Monte mine mineral zones are best described as high temperature carbonate replacement deposits. The authors are of the opinion that the Zimapan property is a property of merit based on geological and mineral characteristics, pre-existing infrastructure, active mining and mineral processing, and sizeable land package for the application of future exploration work.

The authors maintain the opinion that the Property is an advanced stage project that is currently extracting mineralized material in the absence of modern and conventional studies, including the absence of a feasibility study of mineral reserves demonstrating economic and technical viability.

The identification of new exploration targets in the Property area is the focus of the two-phase recommended work program. The recommended Phase 1 work consists of a property wide airborne geophysical survey using Versatile Time Domain Electromagnetic (VTEM) method to identify shallow sulfide conductors in areas not previously worked or explored. The work includes follow-up ground-truthing, geological mapping, and rock sampling of anomalies identified by the survey. It is anticipated that Phase 1 work can be completed in 4- to 6-weeks for a suggested cost of US $404,500.00.

The Phase 2 work is contingent on Phase 1 results and consists of 2,000 m of exploration drilling in 10 surface drill holes to test exploration targets generated in Phase 1. The suggested cost for Phase 2 work is US $440,000.00.

Additional work is recommended to address QA/QC deficiencies in the geochemical rock sample database. A quality control check sampling exercise is recommended with a suggested cost of US $46,000.000. This work can be completed independent of the two phased exploration programs as described above.

A suggested cost of US $75,000 is recommended for data compilation and 3D modeling work to support future development drilling and to support future mineral resource estimation. This work can also be completed independent of the two phased exploration programs as described above.

2 Introduction

The purpose of this report is to present an independent assessment of the Zimapan property (the "Property") situated in the municipality of Zimapan, Hidalgo state, Mexico. It provides a geological description and summary of previous work for the Property in support of securities regulatory reporting requirements. Santacruz Silver Mining Ltd. ("Santacruz") commissioned Van Phu Bui ("Bui" or the "author") and Stephen de Wit ("de Wit" or the "co-author")(together the "authors") to prepare a technical report for the Property in accordance with National Instrument 43-101 - Standards of Disclosure for Mineral Projects (NI 43-101). The Property is unique in that it is presently extracting mineralized material in the absence of modern and conventional studies, including a feasibility study of mineral reserves demonstrating economic and technical viability. While Sections 15 to Sections 22 are included in this report, the information provided in these sections describes current and historical activities and is not based on conventional studies typical of an advanced project. The effective date of the information presented is April 2, 2020.

2.1 Description of the Issuer

Santacruz is a Mexico focused silver mining company listed on the TSX Venture exchange under the symbol 'SCZ'. The Company's registered office in Canada is located at Suite 880 - 580 Hornby Street, Vancouver, BC, V6C 3B6, Canada. As at the date of this report, Santacruz owns and operates the Rosario Project in San Luis Potosi and the Veta Grande Project in Zacatecas. The Company also owns 100% of Carrizal Mining S.A. de C.V. ("Carrizal Mining"). Carrizal Mining is a private Mexican mining company that holds a 20% working interest in the Company's Veta Grande Project and has the right to operate the Zimapan Mine until December 31, 2020 under a mining lease agreement.

2.2 Qualified Person Site Visit

The author conducted a cursory site inspection between March 22 to March 23, 2017 and a follow-up site inspection between May 2 to May 4, 2017. The site inspections included a review of the Santa Marta, Santa Fe, Escondida and Concordia mineral zones, underground diamond drilling stations, on-site assay laboratory, core processing facility, and the El Monte plant. Assay results of seven chip samples collected from underground exposures of the Dike Concordia and the Santa Fe mineral zones confirmed the presence of silver, lead, zinc, and copper mineralization.

The co-author completed a site visit between March 30 and April 2, 2020. Two active areas underground were visited including the 1790 level of the 1493 Dike at the El Monte mine and the 1330 level of Horizontes zone at the Carrizal mine. Geology, sampling and mapping and QA/QC procedures were reviewed with Carrizal Mining geologists and technicians in both areas. Core handling, logging and sampling procedures were reviewed at the Carizzal Mining's core logging facility in Zimapan, and the core storage facility at the Level 0 portal of the El Monte mine was visited. The laboratory at the El Monte plant facility was visited and toured with Carrizal's lab personnel who outlined the handling of samples from reception at the lab through preparation and analysis.

2.3 Information Sources and References

Information expressed in this report includes the field observations by the authors and information provided by the Carrizal Mining, which includes mining figures, drill hole information, claim ownership documents, material agreements, permits and previous work reports related to the Property. This report also references published material as listed in Section 17.

2.4 Term of Reference

Unless otherwise stated, all units reported are based on the metric International System of Units and the United States dollar (US $). All geographic locations are expressed in Latitude and Longitude coordinates and in degrees-minutes-seconds; or in Universal Transverse Mercator coordinates (UTM) and in Zone 14 North, World Geodesic Datum 1984 (Zone 14N – WGS84). Figures modified or extracted from references are cited accordingly. All other figures were prepared by the authors for the purpose of this report. Symbols and abbreviations expressed in this report are explained by Table 2-1.

Table 2-1: Abbreviations, Acronyms, and Terms of Reference

Abbreviation	Term	Abbreviation	Term
1 troy ounce	31.1034768 grams	HQ	HQ size core
1 troy ounce per short	34.2857 grams per metric tonne	ICP	Inductively Coupled Plasma
1 inch	2.54 centimeters	ISO	International Organization for Standardization
1 foot	0.3048 m	Ma	Million years
1 acre	0.404686 hectares	mm	millimeter(s)
%	percent	MEX $	Mexican Pesos
°	degrees	Mt	million tonnes
°C	degrees Celsius	NAD	North American Datum
AA	atomic absorption	NI 43-101	National Instrument 43-101
Ag	silver	NSR	net smelter royalty return
Ag	silver	Pb	lead
ASL	above sea level	ppm	parts per million
Au	gold	SEMARNAT	Secretaria de Medio Ambiente y Recursos Naturales
BQ	BQ size core	QA/QC	quality assurance/quality control
CIM	Canadian Institute of Mining	TPD	Tonnes per day
cm	centimeter(s)	US $	United States Dollars
Cu	copper	UTM	Universal Transverse Mercator
DMT	dry metric tonnes	VAT	Value Added Tax
g	gram(s)	Zn	zinc
g/t and gpt	grams per tonne	WMT	West metric tonnes
GPS	global positioning system	Zimapan Mine	Carrizal mine, El Monte mine, and the El Monte plant.
ha	hectare(s)		

3 Reliance on Other Experts

The authors have relied fully upon the opinion of Mr. Jose Enrique Rodriguez del Bosque of RB Abogados ("RB Lawyers") for the verification of agreements and royalties (Section 4.2), grant of concession (Section 4.2), taxes and fees (Section 4.4), surface rights (Section 4.6), and environmental liability and permitting (Section 4.7). RB Layers prepared an independent legal title report dated July 3, 2020 for Santacruz Silver Mining Ltd. titled "Legal Title Report".

The authors have also relied fully upon translated and original legal agreements, tax payment receipts, and permits provide by Carrizal Mining in the preparation of Section 4.4, Section 4.6 and Section 4.7.

4 Property Description and Location

4.1 General Description

The Zimapan property is located in the municipality of Zimapan, Hidalgo state, Mexico. The Property is situated 241 road-km north of Mexico City and seven km northwest from the town of Zimapan. The Property consists of 34 mining concessions covering an area of 5,138.76 ha that is centred at longitude 99°25'2.5" W and latitude 20°47'6.5" N (WGS 84) on the 1:250,000 topographic map sheets F14-11 and F14-C58. Included in these concessions are the Carrizal mine, El Monte mine, and the El Monte mineral processing plant ("El Monte plant")(together the "Zimapan Mine").

4.2 Agreements and Royalties

4.2.1 Lease Agreement

On August 18, 2009 Carrizal Mining entered into an exploration and exploitation lease agreement ("the Lease Agreement") with Minera Cedros S.A. de C.V. ("Minero Cedros"), a wholly-owned subsidiary of Grupo Penoles, S.A.B. de C.V. ("Penoles"). The Lease Agreement was valid for an initial five-year term with an expiry date of August 18, 2014 and the option to extend for an additional five-year term upon written request. The Lease Agreement grants Carrizal Mining the rights to explore, develop and exploit materials from 33 mining concessions that total 5,005.56 hectares, and to operate the El Monte plant. In exchange for the rights, Carrizal Mining agreed to pay Minero Cedros three percent (3%) net smelter return ("NSR") on concentrate sales produced at the El Monte plant for calendar year 2010, 2011 and 2012. From calendar year 2013 onward, the NSR is increased to four percent (4%). In addition, Carrizal Mining agreed to pay Minero Cedros minimum monthly payments of US $45,000 to US $60,000 for any month that the NSR payment amount is less than US $45,000. Carrizal Mining is also required to pay Minero Cedros US $3 per tonne for any third-party material processed at the El Monte plant.

Payment obligations outlined in the Lease Agreement includes:

a) US $250,000 plus VAT upon signing the Lease Agreement.

b) Advance twelve (12) m of underground development for every 1,000 tonnes of material mined and processed at the El Monte plant. Failure to comply will result in a penalty payment of US $350 per meter.

c) Complete 200 m of diamond drilling monthly. Failure to comply will result in a penalty payment of US $40 per meter.

d) Pay the amount of US $37,703 monthly for the restoration of the tailings dams No. 4, No. 5, No. 7, No. 8, No. 9, tunnel 1 and tunnel 2, the general drainage tunnel, and the San Miguel stream. Furthermore, it is the Company's obligation to provide maintenance to the aforementioned tailings dams at its own expense and risk.

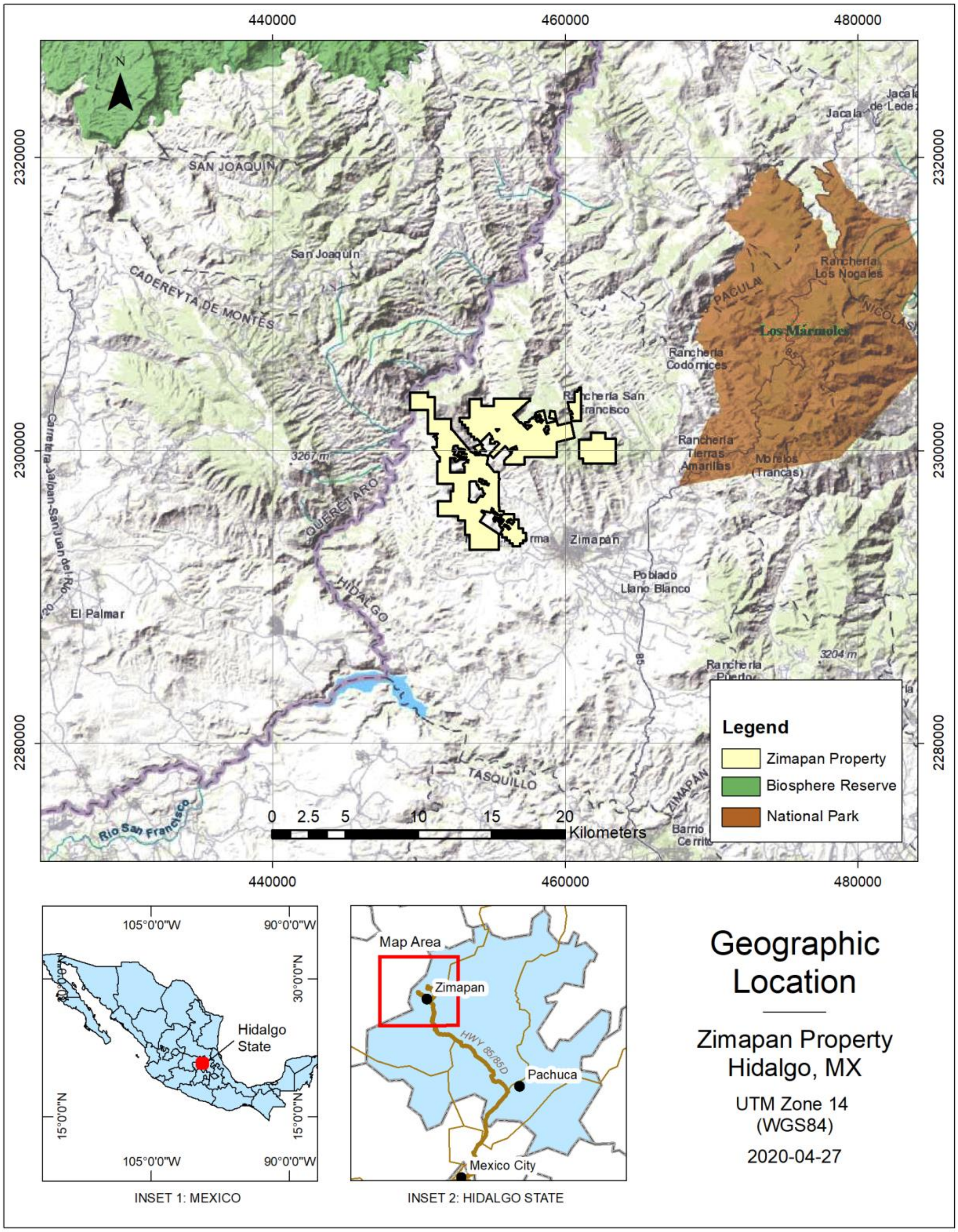


Figure 4-1: Geographic location map

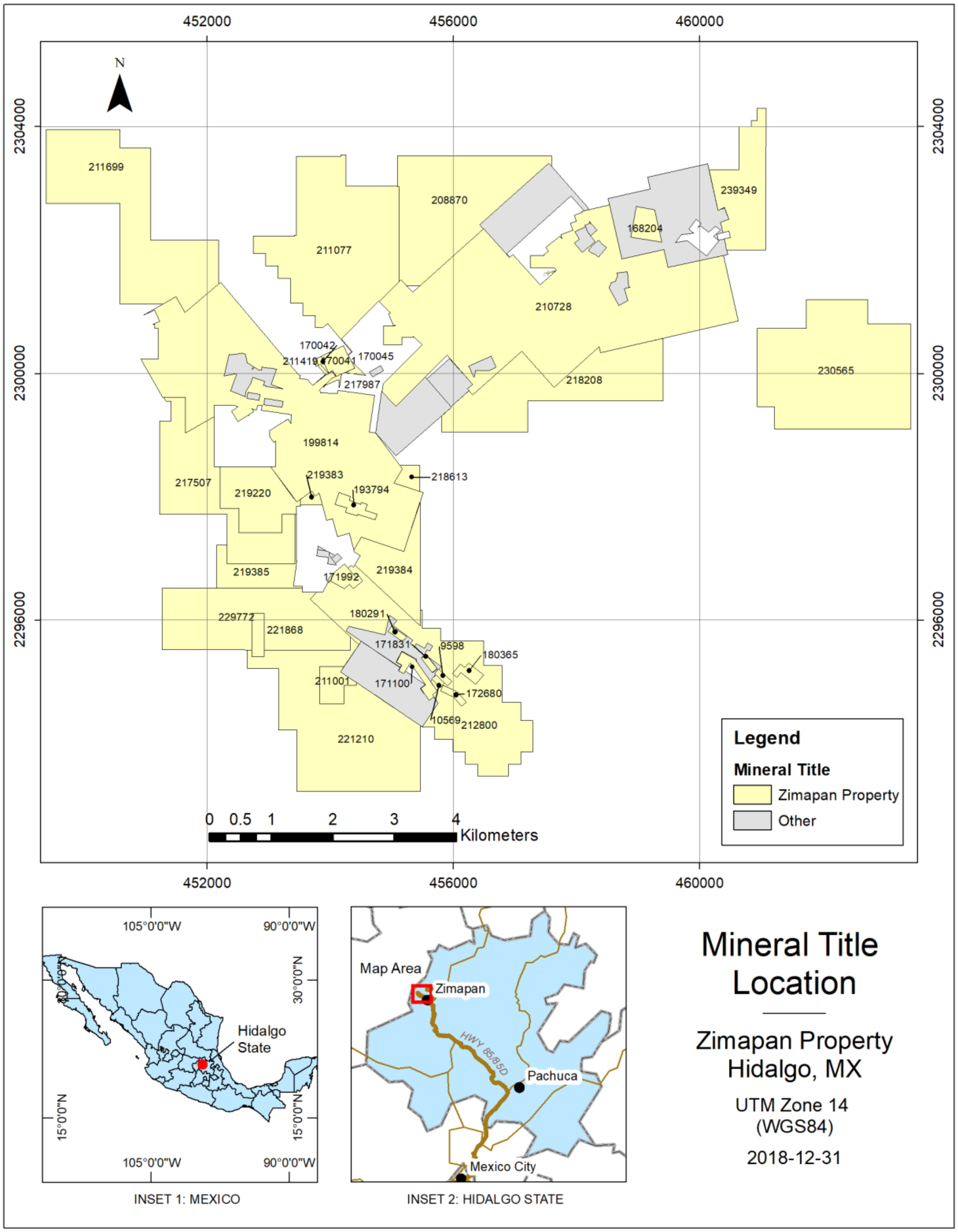


Figure 4-2: Mineral title location map

The Lease Agreement assigns Carrizal Mining the responsibility to acquire and pay for bonds, authorizations, permits and licenses necessary to operate, maintain and reclaim areas affected by the exploration, development and exploitation activities. It also requires Carrizal Mining to sell all concentrate and minerals to Penoles.

On October 2, 2013, Carrizal Mining and Minera Cedros agreed to extend the expiry date of the Lease Agreement to August 18, 2019 (the "First Modifying Agreement").

On May 9, 2018, Carrizal Mining and Minera Cedros amended the Lease Agreement whereby the parties agreed to include mining concession title 239349, which comprise of 133.20 ha. The total number of mining concessions included in the amended Lease Agreement increased to 34 from 33, and the total area of mining concessions increased to 5,138.76 ha from 5,005.56 ha. Carrizal Mining and Minera Cedros also agreed to extend the expiry date of the Lease Agreement to December 31, 2019 (the "Second Modifying Agreement").

On December 9, 2019, Carrizal Mining and Minera Cedros agreed to extend the expiry date of the Lease Agreement to December 31, 2020 (the "Third Modifying Agreement").

4.2.2 Carrizal Mining Acquisition

On July 1, 2019, Santacruz, through its wholly-owned subsidiary Carrizal Holdings Ltd., acquired 50% of the outstanding shares of PCG Mining, S.A. de C.V. ("PCG") (the "Initial PCG Transaction"). PCG is the parent company to Carrizal Mining. The shares of PCG were purchased from one of PCG's shareholders, who was at arm's-length to Santacruz (the "Vendor").

Consideration for the share acquisition was a cash payment on closing by Santacruz to the Vendor of US $500,000 and other consideration in the amount of approximately US $680,000, including the transfer of a life-insurance policy and three vehicles from Carrizal to the Vendor; and the forgiveness of approximately US $301,000 in debt owed by the Vendor to Carrizal.

On May 21, 2019, Santacruz, through its wholly-owned subsidiary Carrizal Holdings Ltd., entered into an agreement to acquire the remaining 50% of the outstanding shares of PCG that were owned by Carlos Silva (the "Silva Acquisition"), Santacruz's chief operating officer. The consideration paid by Santacruz to Mr. Silva with respect to the Silva Acquisition was 30,000,000 shares of Santacruz at a deemed price of CDN$0.05 per share.

As of October 4, 2019, Santacruz owns 100% of the outstanding shares of Carrizal Mining.

4.2.3 Terms and Conditions Agreement to Purchased Zimapan property

On July 28, 2020 Carrizal Mining entered into a terms and conditions agreement ("Term and Conditions Agreement") with Minera Cedros to purchase the Zimapan property and related assets for considerations totalling US $20,000,000 plus VAT. The Term and Conditions Agreement states that the closing of the purchase transaction is to be executed prior to December 15, 2020. A penalty equal to 20% of the total consideration will be applied to the non signing party. Upon completion of the purchase transaction, Minera Cedros will transfer ownership of the following assets:

a) Ownership of fixed assets owned by Minera Cedros, which is currently in possession of Carrizal Mining, including computer equipment, telecommunication equipment, laboratory equipment, machinery and mining equipment.

b) The rights and obligations of the thirty-four mining concessions totalling 5,138.76 ha.

c) The ownership of the seven properties contained in public deed 54,512 that covers the total area of the Zimapán Mine.

d) The ownership of the rights and obligations of the four current temporary occupation agreements to access community lands of the Ejidos Benito Juarez, Xohde, San Francisco and Tadhe.

e) The ownership of water concessions.

f) All environmental responsibility generated by the transfer of ownership of assets, freeing the Minera Cedros, at the time of their respective signature and ratification, of any environmental liability that may be generated by their respective management.

4.3 Grant of Concession

In accordance with the Mexican Mining Law, mining concessions have an expiry date of 50 years from the date of grant. From which point mining concessions can be renewed for another 50 years. The mining concession owner is required to complete minimum annual work requirements and pay semi-annual fees to maintain the concessions in good standing.

4.4 Taxes and Fees

Typically, semi-annual duties are paid in January and July of each year following the submittal of semi-annual work reports. Mining duties are calculated based on the age of the concession within it’s grant period, the concession size, and the annual adjusted quote published by the Official Gazette of the Federation in accordance with Article 59 and Article 60 of the Mexican Mining Law (2014). The quote is adjusted annually for inflation. Mining duties paid to Public Registry of Mines in 2019 by Carrizal Mining totalled MEX $1,700,510.74 plus VAT. In addition, Carrizal paid fees in the amount of MEX $726,511.18 plus VAT for water rights in 2019.

Table 4-1: List of Mining Concessions

Name	Title Number	Owner	Grant Date	Expiry Date	Area (ha)
SANTA ELENA	9598	CEDROS	23/05/1961	22/05/2061	3.00
SANTA GORGONIA	10569	CEDROS	20/10/1961	19/10/2061	2.00
LAS ANIMAS	168204	CEDROS	19/03/1981	18/03/2031	25.00
LA TERCERA	170041	CEDROS	15/03/1982	14/03/2032	15.16
ANA MARIA	170042	CEDROS	15/03/1982	14/03/2032	1.81
EL VAQUERO	170045	CEDROS	15/03/1982	14/03/2032	2.17
EUREKA UNIFICACION	171100	CEDROS	09/08/1982	08/08/2032	14.07
LA ZAPATERA	171831	CEDROS	15/06/1983	14/06/2033	3.00
PODER DE DIOS UNIFICACION	171992	CEDROS	21/09/1983	20/09/2033	11.59
SAN VIRGINIO UNIFICACION	172680	CEDROS	28/06/1984	27/06/2034	4.48
EL CONEJO	180291	CEDROS	24/03/1987	23/03/2037	2.94
SAN PABLO	180365	CEDROS	25/03/1987	24/03/2037	8.00
BELGICA	193794	CEDROS	19/12/1991	18/12/2041	12.00
LOMO DE TORO	199814	CEDROS	12/11/1961	11/11/2061	695.54
EL BARRENO	208870	CEDROS	29/01/1999	28/01/2049	304.88
UNIFICACION EL MONTE	210728	CEDROS	26/11/1999	18/03/2031	919.23
SANTO NIÑO	211001	CEDROS	29/02/2000	28/02/2050	25.90
MONICA	211077	CEDROS	31/03/2000	30/03/2050	380.97
ALEJANDRA	211419	CEDROS	23/05/2000	22/05/2050	1.69
SAN FERNANDO	211699	CEDROS	30/06/2000	29/06/2050	360.48
SANTA GORGONIA 1	212800	CEDROS	31/01/2001	30/01/2051	337.16
SANTA LUCY 2	217507	CEDROS	16/07/2002	15/07/2052	218.99
LA CUÑA II	217987	CEDROS	18/09/2002	17/09/2052	1.68
NUEVA ERA 2	218208	CEDROS	11/10/2002	10/10/2052	267.46
STA. SOCORRO 2	218613	CEDROS	22/11/2002	21/11/2052	13.04
A.T.H.	219220	CEDROS	18/02/2003	17/02/2053	101.86
STA. SOCORRO 1	219383	CEDROS	04/03/2003	03/03/2053	5.56
STA. SOCORRO 3	219384	CEDROS	04/03/2003	03/03/2053	95.89
STA. SOCORRO 4	219385	CEDROS	04/03/2003	03/03/2053	59.55
STA. SOCORRO 5	221210	CEDROS	11/12/2003	10/12/2053	389.98
FATIMA	221868	CEDROS	06/04/2004	05/04/2054	14.00
EL TAHUR	229772	CEDROS	15/06/2007	14/06/2057	254.84
MANIS	230565	CEDROS	20/09/2007	19/09/2057	451.65
E.T.D.	239349	CEDROS	13/12/2011	12/12/2061	133.20
				Total Area (ha)	5,138.76

4.5 Verification of Title Status

The authors have relied upon the legal opinion of Mr. Jose Enrique Rodriguez del Bosque of RB Abogados ("RB Lawyers") in the verification of title status (see Section 3 – Reliance on Other Experts). The result of the legal title opinion confirms title information as shown in Table 4-1.

4.6 Surface Rights

Carrizal Mining is responsible for four temporary occupation agreements with the communities of Tadhe, Xodhe, San Francisco and Benito Juarez. The agreements permit Carrizal Mining to access and use communal land to conduct exploration and mining activities. Annual payments for all four temporary occupation agreements total approximately MEX $163,288.

4.7 Environmental Liability and Permitting

Exploration activities that impact the environment are regulated by the Secretaria del Medio Ambiente y Recursos Naturales (SEMARNAT) under the Ley General de Equilibrio Ecologico y Protection Ambiente (LGEEEPA). The requirements of permitting are determined by the degree of surface disturbance and whether other overriding restrictions such as protected areas exist. For exploration activities such as mapping, geochemical sampling, geophysics, where there is negligible surface or vegetation disturbance, no permitting is required. NOM 120 SEMARNAT-2011 (NOM120) establishes the limits and reporting requirements for exploration activities that require surface disturbance such as trenching and access road building. Under this regulation an "Informe Preventivo" must be submitted to SEMARNAT. The report describes the surface disturbance and work to be completed, specific risks to the environment, plan to mitigate impact, and plans for reclamation following the completion of work. If the surface disturbance is in excess of the limits outlined by, or is in an area not covered by NOM120, an "Manifestación de Impacto Ambiental" (MIA) must be submitted to SEMARNAT. This is an environmental impact statement that must be reviewed and approved by SEMARNAT. In addition, if the mining activity outlined requires the permanent physical disturbance of the surface such as the construction of mine infrastructure, a "Cambio de Uso de Suelo Forestal e Impacto Ambiental" (CUSFI) must be applied for.

As at the date of this report, surface exploration activities are not undertaken at the Property. The Property is clear of federally protected natural areas. Licenses and permits acquired by Carrizal Mining are limited to mining activities, including:

a) Operating License No. 84001 related to the exploitation and mineral processing activities;
b) Environmental Impact Manifest (MIA) No. 32/MP-0170/01/13 and subsequent Land Use License No. 13/DS-0294/03/17 authorizing operation and modification of the remaining 26% of tailings dam No. 9;
c) Tailings Dam Management Plan No. 13-PMM-I-0143-2015;
d) Hazardous Waste Management Plan No. 13-PMG-2871-2018; and
e) While a bond(s) related to the future reclamation of past and present mining activities have not been required by SEMARNAT, Carrizal Mining has paid the Mexican Forest Fund MEX $947,578.32 to be allocated to the reforestation, restoration and maintenance activities in an area of 35.75 hectares of state forest in relation to Land Use License No. 13/DS-0294/03/17.

4.8 Significant Factors and Risk

In addition to the information provided in sections 4.1 to 4.7, the authors are unaware of any other significant factors and risks that may affect access, title, or the right or ability to perform work on the Property.

5 Accessibility, Physiography, Climate, Infrastructure and Local Resources

5.1 Access

The Zimapan property is located in the municipality of Zimapan and is approximately seven km northwest from the town of Zimapan in Hidalgo state, Mexico. Travel to Zimapan from Mexico City is approximately 241 road-km via federal highway 85D and No. 85 through Pachuca. An alternative route from Queretaro City is approximately 141 road-km via federal highway 45 to El Paraiso, federal highway 100 to Ezequiel Montes, and federal highway 120 to Zimapan. Both Mexico City and Queretero City receive international flights daily.

The El Monte mine can be access from Zimapan by paved road by traveling east along Venusliano Carranza-Zimapan road and merging onto federal highway 85. At kilometer 9.9 from Zimapan, a turn-off to a 15.5-kilometer dirt access road leads west to the El Monte mine and El Monte plant. The Carrizal mine can be accessed from Zimapan by paved road by traveling west along Avenda Jorge Preisser Teran road for approximately 4.1 km where it transitions to a dirt road for the remaining 12.4 km to the Carrizal mine entrance. The Carrizal and El Monte mines are connected by a 7.4-kilometer-long underground access tunnel (Lomo de Toro – San Francisco Tunnel).

5.2 Physiography

The Property is located within the El Monte mountain range along the southwestern margins of the Sierra Madre Oriental physiographic province. The topography of the area consists of broad upland valleys with an elevation of 1,600 to 1,700 m above sea level ("ASL"), interspersed with jagged mountain ranges rising to elevations greater than 2,500 m ASL. Locally, sharp and resistive mountain ranges are characterized by steep slopes and deep "V"-shaped valleys – including the Rio Moctezuma and Rio Toliman valleys that drain through the Property.

Local flora in the semi-arid region consists of natural grasses, different varieties of cactus-like plants (nopaleras, maguey, organos, cardones, biznagas, huizaches, hortigas and mezquites), low bushes and tall scrubs. Standing bodies of water are dammed as most streams are intermittent. Local fauna in the region are comprised of wolf, coyote, wild spotted cat, opossum, hare, squirrel, fox, skunk, badger and field mouse. Reptiles include vipers and lizards. Hawk, eagle, crow, badger, owl, and varieties of songbird are also native to the region (Enciclopedia de Los Municipios y Delegaciones de México, 2020).

5.3 Climate

The Zimapan area experiences semi-arid climate. Mean temperature is 21.9°C with average minimum and maximum temperatures ranging between 7.5°C in the January and 34.7°C in July. March is the driest while September is the wettest month of the year. The rainy season begins in May and lasts until October. Annual rainfall is estimated to be approximately 390 mm (Climate-Data.org, 2020). The operating season is year-round.

5.4 Infrastructure and Local Resources

The town of Zimapan is a historical mining center that provides the region with access to medical facilities, local amenities, shipping and transport stations, suppliers and a skilled workforce. Other nearby supply centres include the cities of Pachuca and San Juan del Rio. Grid electrical power at the Carrizal mine, El Monte mine, and El Monte plant is provided by the Mexican Federal Electricity Commission (Comisión Federal de Electricidad or “CFE”). Process water and mining support water are sourced from underground workings and water recovered from the tailing dams. Potable water is transported to site.

6 History

6.1 General History

Information provided in General History is primarily extracted from Simons and Mapes (1956), and Suter (2016). The author has not completed sufficient work to verify this information.

In 1575, Zimapan was founded by Spanish miners who were extracting silver, lead, and other metals from mines located in the Sierra El Monte and Baranca Toliman, near the present day Carrizal mine. The discovery of the Lomo del Toro is attributed to Don Lorenzo de Labra in 1632. Silver and lead production continued in the Zimapan mining district until the Mexican war of independence of 1810. Mining activity was interrupted during the war and resumed in 1870. Between 1890 and 1901, interest in the Lomo de Toro mine was revived and the La Luz mine was developed. Mining activity was again suspended in 1910 due to the Mexican Revolution.

In 1913, mines in the El Monte area resumed operation under the ownership of the Hidalgo Copper Mining and Smelting Company. According to Simons and Maples (1956) 1,742 tons of mineralized rock averaging 21 percent lead and 806 grams per ton of silver was smelted in 1913.

By 1920, approximately 18 mines operated in the district. The Compania Fundidora y Minera de Zimapan operated the Rosario, Santa Gorgonia, La Candelaria, San Geronimo, Poder de Dios, and Las Animas mines. The Hidalgo Copper Mining and Smelting Co. operated the Nevada and Purisima mines. The Preisser family operated the San Francisco and Los Balcones mines. Mineralized material was either roasted in furnaces on-site to extract silver-lead alloys or shipped off-site for processing elsewhere.

In 1929, the San Pascual and La Cruz mines were operated by Compania Minera Mexicana and the Preciosa Sangre and San Jose Maravillas deposits were operated by Negociacion Minera La Aurora. The Lomo de Toro mine resumed production with the reopening of existing workings.

In 1945, new oxide bodies were discovered in the Lomo de Toro mine and an access road to the Carrizal area was built.

In 1948, Fresnillo began exploitation of oxide and sulfide mineralization in the Monte area and continued mining activities from the Monte mine.

In 1949, operators chose to ship raw materials to San Luis Potosi and Zacatecas for smelting rather than smelting in the Zimapan area. Raw materials were shipped by truck to the railhead at Huichapan, located 88 km from Zimapan. Compania Minera La Llave operated the only smelter in the Zimapan area at that time. While raw materials were transported by truck from the Carrizal mining area to Zimapan, raw materials from the El Monte mining area was moved 10.5 km to Zimapan by donkey.

In 1957, a road to the Monte mine was built, stimulating production to reach an average of 2,500 tons per month according to Simons and Maples (1956).

In 1964, Penoles acquired 51% of Fresnillo and 51% of Compania Zimapan. Through Fresnillo, Penoles became the underlying owner of the property and mining operation. In subsequent years Compania Zimapan assigned its concession rights to Fresnillo.

In 1972, the San Francisco mineral processing facility was constructed (the El Monte plant).

In 2004, Fresnillo entered into a mining and exploitation agreement with Compania Minera Nuevo Monte, S.A. de C.V. for an initial term of 60 months: through which the latter acquired the exclusive right to exploit from the Property and operate the El Monte plant.

In 2007, Fresnillo assigned all concession rights and agreements to Minera Cedros.

In 2009, Compania Minera Nuevo Monte suspended operations and cancelled its agreement with Minero Cedros. Carrizal Mining entered into a Lease Agreement with Minera Cedros on August 18, 2009.

6.2 Previous Work by Carrizal Mining

6.2.1 Mining and Production

Between January 1, 2010 and December 31, 2019 Carrizal Mining mined approximately 5.88 million tonnes (MT) of mineralized material, including:

- 3.43 MT at head grades ranging from 72.83 to 100.78 g/t Ag, 0.41 to 0.54 % Pb, 1.85 to 2.79 % Zn, and 0.49 to 0.67 % Cu from the Monte mine; and
- 2.45 MT at head grades ranging from 82.45 to 123.52 g/t Ag, 0.60 to 1.18 % Pb, 2.02 to 4.44 % Zn, and 0.28 to 0.48 % Cu from the Carrizal mine.

Between January 1, 2020 and February 28, 2020 Carrizal Mining mined approximately 101,547 tonnes of mineralized material, including:

- 58,474 tonnes at average head grades of 74.15 g/t Ag, 0.50 % Pb, 2.20 % Zn, and 0.58 % Cu from the Monte mine; and
- 43,072 tonnes at average head grades of 81.43 g/t Ag, 0.91 % Pb, 3.09 % Zn, and 0.43 % Cu from the Carrizal mine.

The author has not completed sufficient work to verify the production figures provided by Carrizal Mining. Mining activities primarily focused on the Escondida, Dike Concordia, Horizontes and Santa Fe mineral zones.

6.2.2 Development Drilling

Between January 1, 2011 and February 28, 2020 Carrizal Mining completed approximately 30,005 m of underground core drilling – including 16,539 m completed at the El Monte mine and 13,466 m completed at the Carrizal mine. Drilling produced 36.5 millimeter core from BQ size holes and 35.3 millimeter core from TT-46 size holes. Carrizal Mining workers carried out drilling and utilized underground drilling equipment owned by Carrizal Mining. Summary tables detailing the m drilled for each zone at each mine area are provided in Table 6-1 through Table 6-4. Approximately 51% of the total m drilled have been dedicated to the Escondida, Dike Concordia, Horizontes and Santa Fe mineral zones.

The author was unable to review all drill core results due to partial geological core descriptions and partial assay records within the drilling database. Downhole surveying was not performed on the drill holes. The Carrizal mine operates on a local metric grid system and the coordinates of the drill hole locations are recorded in this local grid format. Carrizal mining has not completed the necessary work to convert the local mine grid to a standard grid projection. Assay analysis was completed at the El Monte plant laboratory. The laboratory is not independent of Carrizal Mining and is not an ISO accredited laboratory. For these reasons, the author is unable to validate the drill hole data or disclose further information regarding drill hole results.

Table 6-1: Exploration drilling by zone, Monte mine

Zone	Hole Count	Total meters	mean m	median m	Hole ≥150m
FALLA DEL AGUA	1	18.7	18.7	18.7	-
385 DK	2	189.0	94.5	94.5	-
TECOLOTE	2	229.2	114.6	114.6	1
385 NW	3	158.2	52.7	43.7	-
DK 1400	3	216.5	72.2	69.5	-
385 SE	4	120.5	30.1	26.9	-
DK 1414	6	665.0	110.8	121.9	1
ESPERANZA	6	341.9	57.0	56.9	-
385 CPO	9	739.8	82.2	72.3	-
DK 1700	11	1111.3	101.0	91.2	4
DK 1493	18	1450.9	80.6	73.6	-
DK 1600	18	1900.2	105.6	128.1	-
CONCORDIA	34	4671.0	137.4	151.2	17
ESCONDIDA	49	4727.1	96.5	77.5	9
TOTAL	166	16539.2			32

Table 6-2: Exploration drilling by zone, Carrizal mine

Zone	Hole Count	Total meters	mean m	median m	Hole ≥150m
3 ARCANGELES	3	148.6	49.5	50.6	-
ANIMAS	5	262.2	52.4	32.2	-
BALCONES	5	147.2	29.4	26.1	-
DK EL TIRO	12	1378.0	114.8	70.7	2
HORIZONTES	35	3684.2	105.3	58.1	5
JUAN PABLO	6	387.4	64.6	81.3	-
LA CUÑA	2	69.9	34.9	40.0	-
PROMONTORIO	23	1829.7	79.6	76.2	1
SAN BUENAVENTURA	18	1641.4	91.2	70.1	4
SANTA ELENA	5	201.9	40.4	42.8	-
SANTA FE	14	2843.8	203.1	75.2	10
SANTA MARTHA	15	872.0	58.1	74.1	-
TOTAL	143	13466.1			22

Table 6-3: Exploration drilling by year, Monte mine

Year	Hole Count	Total meters
2011	27	2463.9
2012	4	518.7
2013	8	2018.5
2014	-	-
2015	14	756.3
2016	6	1052.6
2017	33	3056.8
2018	40	3678.2
2019	34	2994.2
2020*	-	-
Total	166	16539.2

* 2020 drill hole data was not available to the authors
as at the effective date of this report.

Table 6-4: Exploration drilling by year, Carrizal mine

Year	Hole Count	Total meters
2011	-	-
2012	13	1733.3
2013	8	1227.7
2014	-	-
2015	4	1085.6
2016	9	1771.0
2017	35	3031.3
2018	31	1707.6
2019	36	2440.6
2020*	7	469.2
Total	143	13466.1

* Only drill hole data up to February 2020 was available to the authors
as at the effective date of this report.

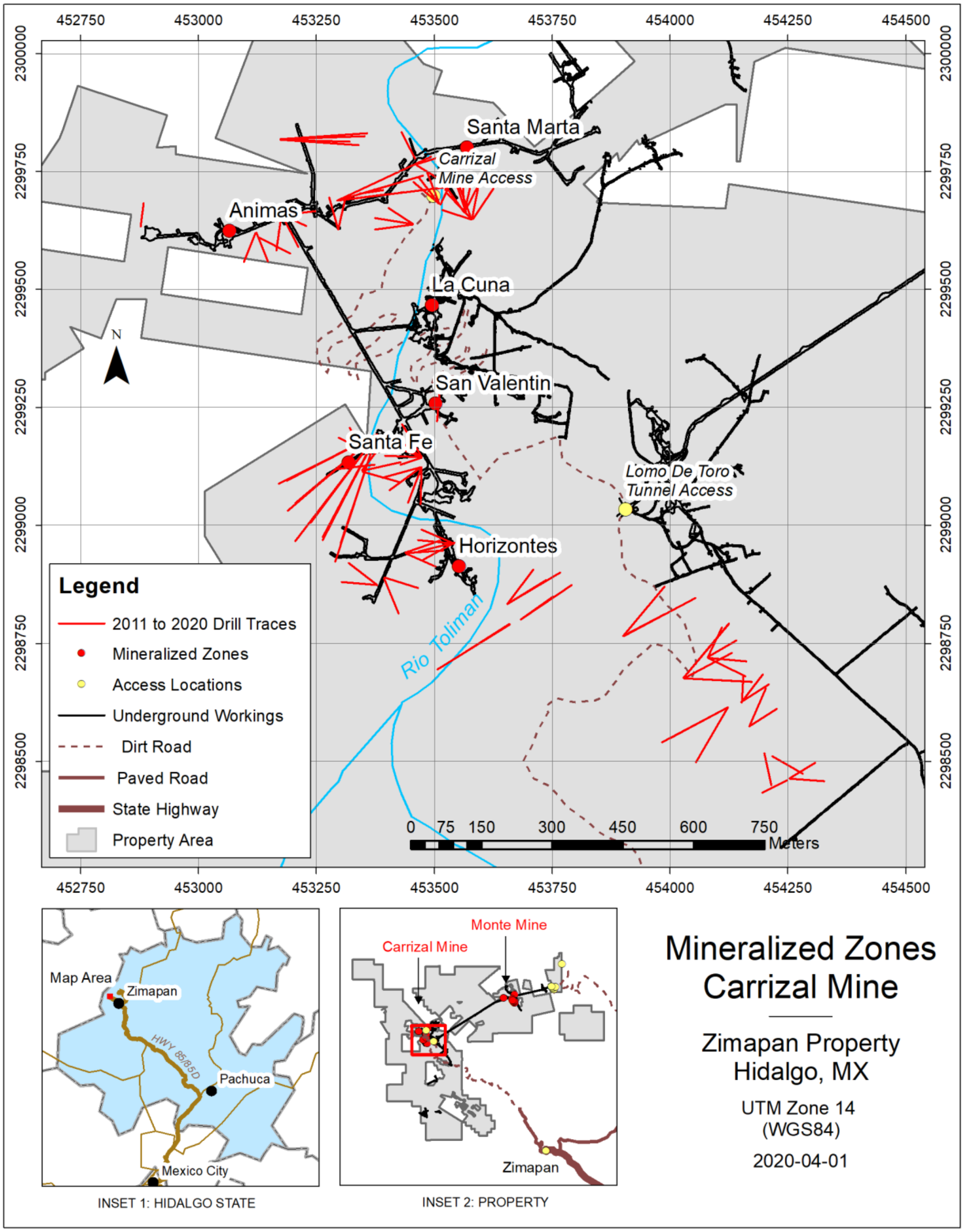


Figure 6-1: Mineralized zones at the Carrizal underground mine.

Modified from Carrizal Mining (2020). Only main underground workings shown.

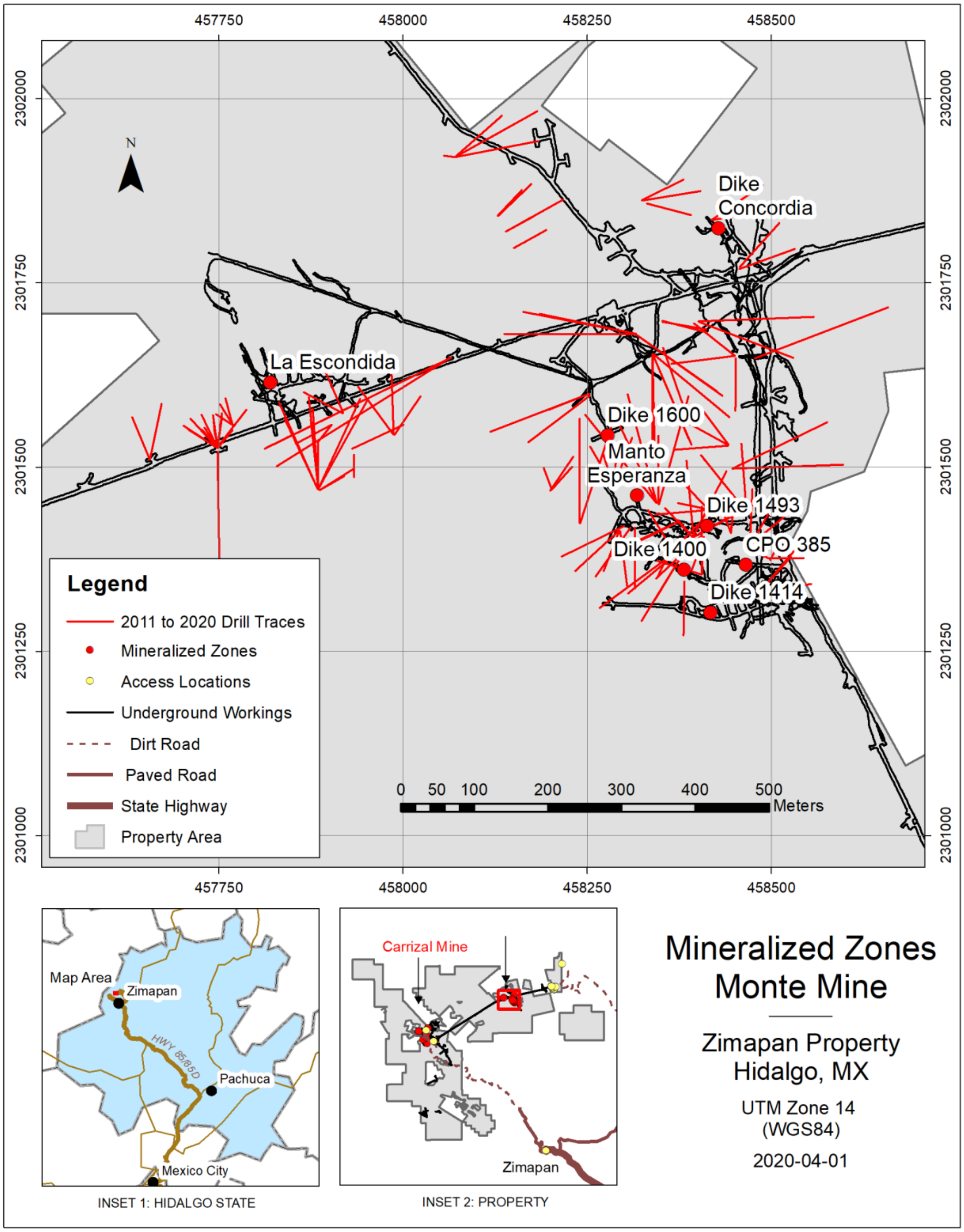


Figure 6-2: Mineralized zones in the El Monte underground mine

Modified from Carrizal Mining (2020). Only main underground workings shown.

7 Geological Setting and Mineralization

7.1 Regional Geology

The Zimapan property is located within the Sierra El Monte range within southern Sierra Madre Oriental physiographic province (Figure 7-1). During the Late Jurassic through the Early Cretaceous the El Doctor and Valles-SLP carbonate platforms formed on the east and west margins, respectively, of the submersed Archean-Jurassic North American continental crust. Between these two carbonate platforms marine basinal carbonates and clastic sediments of the Zimapan Basin ("ZB") were deposited (Figure 7-2). The Zimapan property is located along the margin between the El Doctor carbonate platform and the carbonates and clastic sediments deposited in the Zimapan basin.

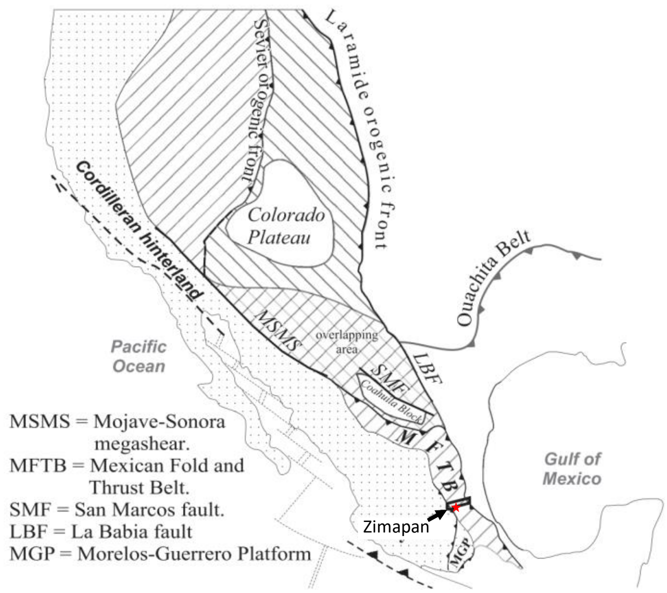


Figure 7-1: Generalized tectonic map of the North American Cordillera

Modified after Fitz-Diaz et el (2014).

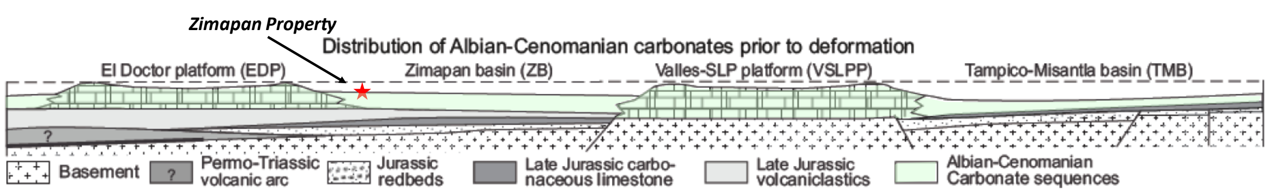


Figure 7-2: Distribution of Late Jurassic – Early Cretaceous carbonates prior to deformation

Modified after Fitz-Diaz et el (2014).

During the late Cretaceous, corresponding to the late collision of the Guerrero Terrane to the southwest coast of North America and the initiation of east dipping subduction of the Faralon Plate; regional uplift to the west began and the carbonate platforms and marine basin were covered by turbiditic sediments of either North American or Guerrero Terrane origin.

The onset of this marked the beginning of the Mexican Orogen began at about ~83 Ma along the western margin of the Mexican Fold and Thrust Belt ("MFTB") (Fitz-Diaz et al.,2012., Martini 2016). Deformation was progressive and episodic, migrating from the west to east. Deformation began to the west of the Property. During the first deformation event (D1 ~84-80 Ma) the Paleozoic basement and resistant carbonate platform rocks of the El Doctor platform were thrust northeastward over the bedded carbonates and shales of the Zimapan basin. The thinly bedded sediments of the Zimapan basin deformed plastically and buckled forming high amplitude folds which resulted in shortening of the basin by 70% and thickening of the basinal sediments multiple times (Fitz-Diaz et al., 2014) (Figure 7-3). The second deformation event (D2 ~77 Ma) deformed the rocks of the Valles-SLP Platform and over-printed D1 deformation to the west. Two other deformation events occurred east of the Valles-SLP platform whose effects are not seen on the Property. The greatest deformation and greatest thickening was to the western edge of the Zimapan basin near the Zimapan property.

Subsequent to the termination of the of the compressional regime responsible for the formation of the MFTB, post ~43 Ma and before ~25 Ma was a period of extension that resulted in minor normal faulting in the MFTB. During this period of extension there was the emplacement of magmatic bodies following the reactivated northwest trending fold axis of the MFTB and the northeast trending normal structures.

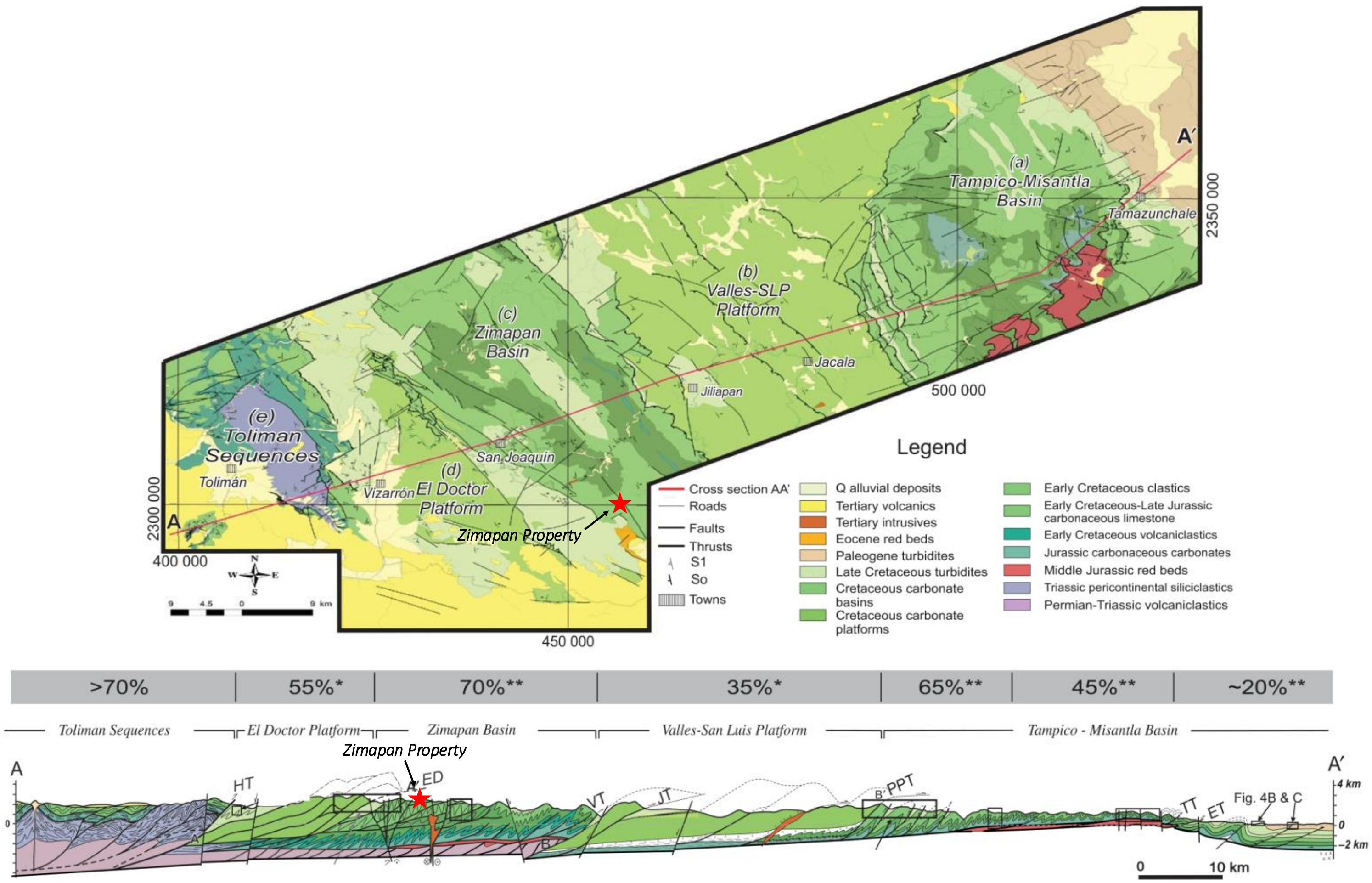


Figure 7-3: Regional Geological Map

Modified from Fitz-Diaz et al (2012).

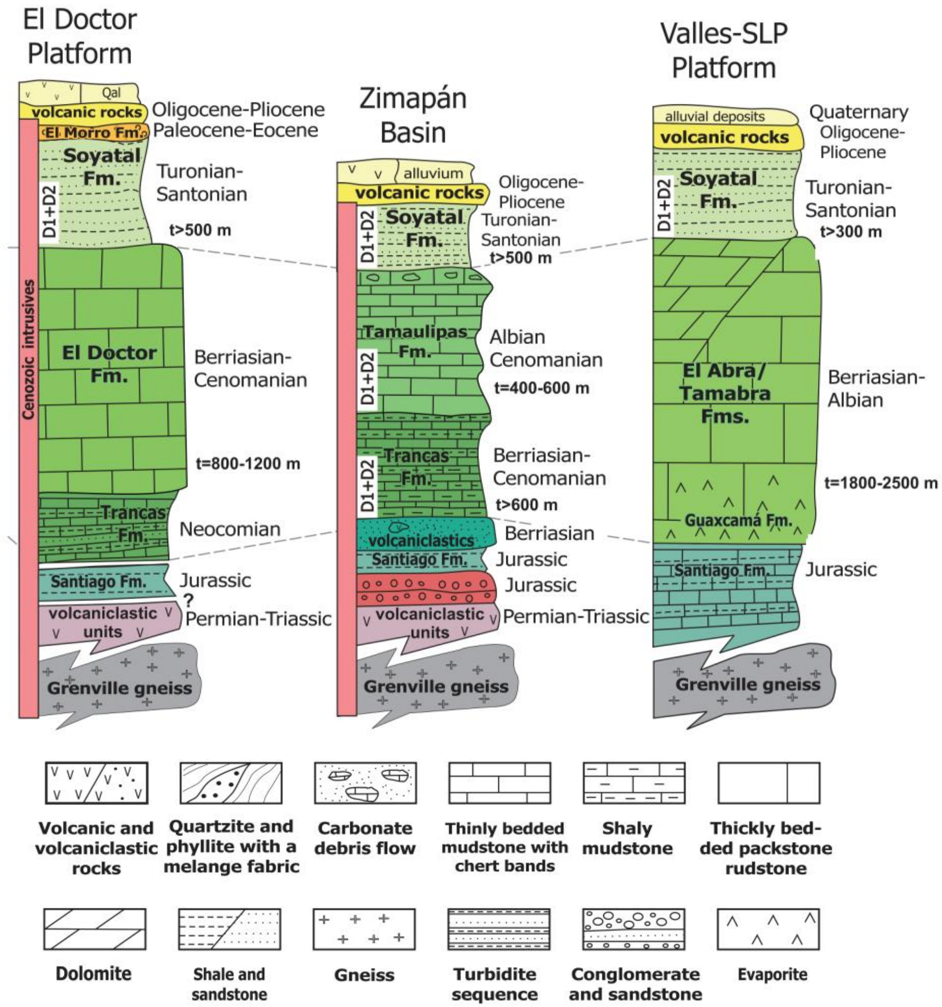


Figure 7-4: Idealized stratigraphic section of the Zimapan Basin.

Modified from Fitz-Diaz et al (2012)

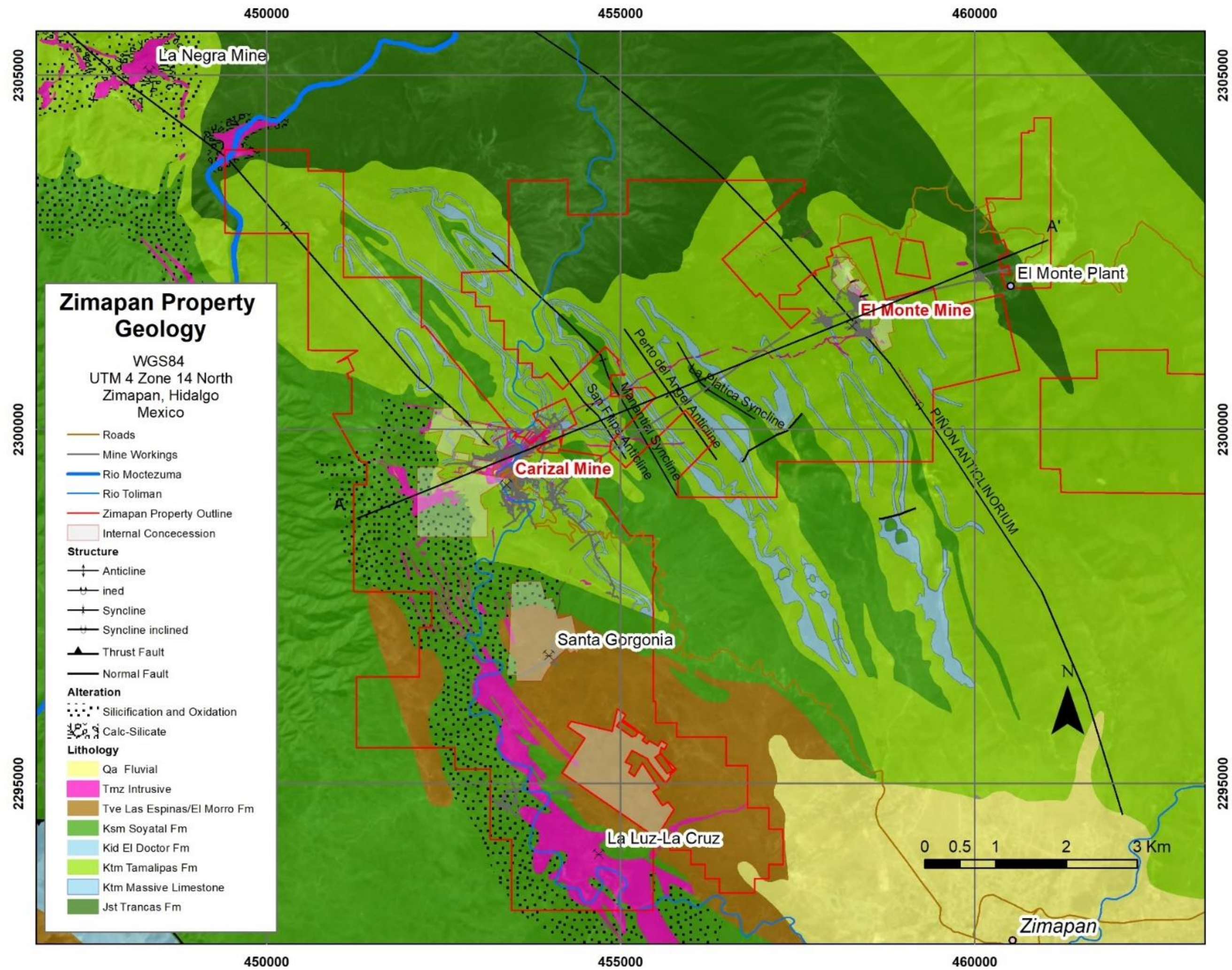


Figure 7-5: Property Geology

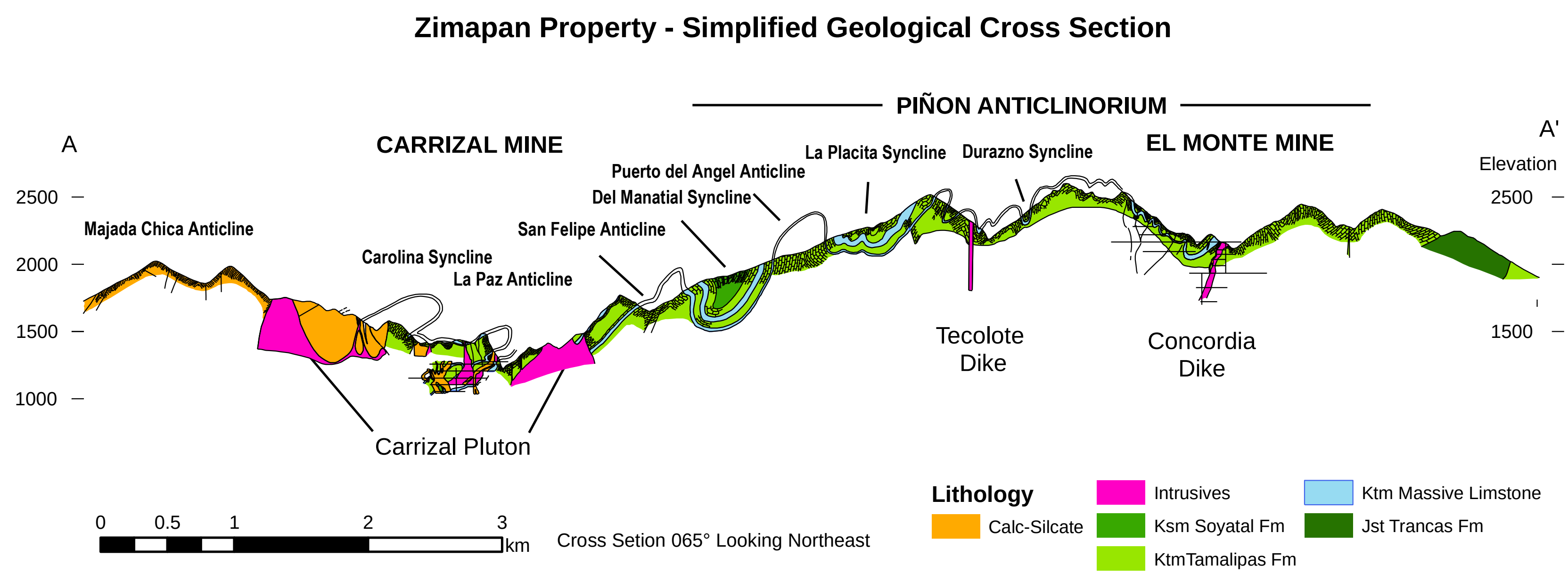


Figure 7-6: Simplified Geological Cross-Section between Carrizal and El Monte Mines

Modified from Carrizal Mining (2018)

7.2 Property Geology

Figure 7-4 presents generalized stratigraphic columns for the Zimapan basin and bounding carbonate platforms. Lithologic units are described below.

7.2.1 Stratigraphy

7.2.1.1 Las Trancas Formation (Late Jurassic-Early Cretaceous, Kimmerigian-Barremian age)

The Las Trancas Formation is the oldest exposed unit on the Zimapan property. It consists of dark grey, thin bedded shiny, slightly phyllitic calcareous shales, siltstones and impure limestones with pyrite nodules. The Trancas Formation is Late Jurassic to Early Cretaceous in age and was deposited in a shallow marine environment on subsiding continental crust. The base of the Trancas Formation has not been observed, but the estimated thickness of the unit is roughly 800 m. The carbonate platform El Doctor-Abra Formation and time equivalent basinal Tamaulipas Formation unconformably overlie the Las Trancas Formation (Carrillo-Martinez, 2001). The Las Trancas Formation is observed along the northern limit of the property and in the north east near the El Monte plant

7.2.1.2 El Doctor, El Abra and Tamaulipas Formation (Early Cretaceous, middle Albian-lower Cenomanian age)

Historically the time-equivalent, Early Cretaceous, formations representing the El Doctor carbonate platform and the basinal sediments of the Zimapan basin have been collectively grouped together as the El Doctor Formation (Sergerstrom, 1962., Garcia and Querol, 1991., Barrios-Rodriquez,1996). Currently the formations are separated into The El Doctor and El Abra formations representing the carbonate platforms to the west and east of the Zimapan Basin and the Tamaulipas Formation that represents the sediments deposited within the Zimapan Basin (Carrillo-Martinez, 2001., Suter et al. 1997., Fitz-Diaz, 2011.) . The El Doctor formation and the El Abra Formations are exposed outside the Zimapan property to west and east respectively.

7.2.1.3 Tamaulipas Formation (Lower Cretaceous. Aptian-Lower Cenomanian Age)

The Tamaulipas Formation represents the basinal sediments deposited within the Zimapan basin. It is divided into two facies based upon the environment of deposition: the basinal facies, and the foreslope facies.

The Foreslope Facies consists of variable thicknesses of lime silt and bioclastic wackestone and packstone, limestone conglomerates. These deposits are wedge shaped thickest, up to 800m, towards the platform and thinning towards the basin where the dominant lithology is fine grained limestone with discontinuous chert lenses and bands. The Foreslope Facies includes the Cerro Ladron and the Sovacon members of Segerstrom,(1962),and Garcia and Querol (1991).

The Basinal Facies consists of deeper water mudstone-wackestone with chert lenses and beds. The Basinal Facies overlies and deposited laterally basin-ward from the Foreslope Facies and includes the San Joaquin and La Negra members of Segerstrom 1962, Garcia and Querol, 1991.,and Barrios-Rodriquez et al., 1996.

The San Joaquin member consists of dark gray, compact, cryptocrystalline thickly bedded (0.5-1.0 m) calcareous mudstones reworked gelatinous chert which solidified to form 2-30cm dark gray chert nodules.

The La Negra member consists of undisturbed medium bedded (10-30 cm) grey very-fine grained cryptocrystalline calcareous mudstone with continuous bands and nodules of dark grey chert. The La Negra member is similar to that of the San Joaquin member but was deposited in a deeper environment that was not disturbed by storms or wave action. Within the La Negra member is the Horizontes horizon a massive thick bedded limestone that forms a barrier and boundary for mineralizing fluid movement. The Horizontes horizons or equivalents have been mapped across the width of the property and play a role in both the Carrizal and El Monte mines. At the Carrizal mine the Horizontes are associated with both manto and chimney mineralization.

7.2.1.4 Soyatal Formation (Upper Cretaceous. Turonian-Campanian Age)

The Soyatal Formation varies gradationally both vertically and laterally. At its base is a gradational contact with the Tamaulipas Formation where it grades from narrow beds of calcareous mudstones (1-3 cm) with discontinuous chert beds intercalated with thick beds of grey shales (2-7 cm) and marls. Chert decreases upward and laterally towards the basin with the decrease in carbonate content. The maximum thickness is roughly 1000 m (Simons and Mapes, 1956). The Soyatal Formation is interpreted to be a turbiditic clastic sediments derived from the uplifted Guerrero terrane to the west or North American crustal rocks to the north. The Soyatal formation that marks the beginning of uplift and compression beginning of the deformation related to the Mexican Orogen and the development of the MFTB. The Soyatal Formation is unconformably overlain by the Morro Fanglomerate or the Espinas Formation volcanic rocks. On the Zimapan property, the Soyatal Formation is observed in the base of synclines between Carrizal and El Monte.

7.2.1.5 El Morro Fanglomerate (Tertiary)

The El Morro Fanglomerate is a poorly sorted, poorly stratified, red to purple-gray fluvio-lacustrine conglomerate with subangular limestone and volcanic clasts and sandy beds interfingering with volcanic agglomerates and flows. The thickness of the El Morrow Fanglomerate is variable with maximum thickness of 350 m. It is deposited unconformably over the Soyatal and Tamaulipas formations and is intercalated with the volcanic rocks of the Las Espinas Formation. The El Morro Formation postdates the Mexican orogeny and the development of the MFTB.

7.2.1.6 Las Espinas Formation (Tertiary)

The Las Espanias Formation consists of dark grey often feldspar porphyritic andesite and basalt flows with lessor agglomerates and tuffs. Thickness vary from zero to 375 m and emplacement is controlled by paleo topography.

7.2.1.7 Tertiary Intrusive Igneous Rocks

In the area of the Carrizal area, the Carrizal pluton is a quartz-monzonite to monzonite that is roughly elongated along a trend 060° and is approximately 900 m x 400 m in dimension. It broadens at depth and bifurcates upwards into many smaller narrow dikes. The Tecolote Dike is mapped on surface as an extension of the Carrizal pluton, can be traced, discontinuously northeast across the Zimapan property to El Monte.

In the El Monte area intrusives consist of monzonite – latite dikes, including the Concordia, the Tecolote and others. The main Concordia dike roughly parallels the regional strike of the Piñon Anticlinorium, but it is cut by later east-west striking normal faults that down drop the northern block by about 200 m.

Collectively, the networks of dikes and sills at El Monte is interpreted to represent a high-level dike swarm above a larger intrusive (Lang et al., 1999). Three age date for the Carrizal mine were determined providing a range of 43.6+1.2 Ma for quartz monzonite and two dates from porphyritic diorite dikes of 40.8±1.0 and 40.8±1.0 Ma (Vassallo, 2017).

7.2.2 Structure

The dominant structural feature observed on the Zimapan property are the ductily deformed, high amplitude, northwest striking, northeastward steeply inclined folds that collectively constitute the Piñon Anticlinorium (Figure 7-5). The absence of brittle thrust faults and ductile fold development is attributed to the thin bed thickness and contrast in strength between resistant limestone and chert layers relative to thin shale beds, allowing the rocks to flex like a deck of cards.

Other important structures on the Property have not been adequately studied. The structures associated with the intrusions in the area appear to be dominated by two trends. First, are the intrusions that follow the northwest striking trend of the MFTB. The main body of the Concordia dike, was emplaced in an orientation that parallels this trend. The second are intrusions that appear perpendicular to the strike of the MFTB. The Carrizal pluton appears to follow an orientation of roughly 060°, similar to the Maconi intrusion near the La Negra Mine. In the Zimapan property geology map from Garcia and Querol, 1991 the orientation of the Carrizal pluton parallels a normal fault that has a foot wall dropping to the north, however there does not appear to be vertical displacement on either side of the structure hosting the Carrizal pluton. It is unclear as to whether the Carrizal pluton was emplaced along planes of weakness or tears associated with the MFTB, post orogenic normal faults, or structures related to flexure related to the emplacement of the intrusion.

Another structural feature that is not well understood are the east-west striking normal faults that displace the Concordia dike. These faults have up to 40 m of left-lateral displacement and down-drop of the northern block by 200 m. There are very few extensional structures mapped on the property, other than those mapped in relation to the Concordia dike, and regionally there is little reference to post orogenic deformation in this part of the MFTB.

7.3 Local Geology

7.3.1 Lithology

Locally, the Carrizal and El Monte mine areas occupy a stratigraphic section comprised of the Las Trancas Formation; overlain by thinly bedded limestone intercalated with chert of the Tamaulipas Formation; and overlain by yellow shales banded with marl and limestone of the Soyatal Formation. Quartz-monzonite to monzonite intrusions and quartz-feldspar porphyry dikes intrude the local stratigraphy at a subvertical orientation. Exoskarn (skarn developed in the host rock to the intrusion) and endoskarn (skarn developed within the intrusion) occur at the dike contact. Mineralization consists of disseminated sulfides, vein filled sulfides, and massive sulfide bodies.

7.4 Alteration and Mineralization

All of the deposits on the Zimapan property are related to the alteration process that resulted from the emplacement of quartz-monzonite and monzonite plutons and dikes into the host limestones and marine clastic sediments, and the alteration and mineralization that resulted. The distribution of mineral deposits on the Zimapan property can be divided by geometry and degree of calc-silicate alteration:

a) Skarn Orebodies: either at a pluton or dike/sill contacts, with disseminated and fine veinlets, also massive sulfide pods. (Image 6).

b) Massive-Sulfide Mantos: parallel to stratigraphic contacts with minor to no calc-silicate alteration

c) Massive Sulfide Chimneys: that cross-cut stratigraphy and contain no calc-silicate alteration. (Image 7 & 8)

This represents a continuum from deposits formed along the direct contact between the intrusion and sedimentary rocks to satellite deposits formed by the interaction of hot fluids from the intrusion reacting with favorable horizons of host sedimentary rocks distally.

The alteration process for the Zimapan property, as described by Lang et al. (1999), is a four stage process which includes: prograde-anhydrous, exoskarn and endoskarn alteration that is barren and predates sulfide mineralization; retrograde-hydrous exoskarn that transitions from barren prograde alteration and is responsible for most sulfide mineralization; and post-ore veining that is barren. Within the intrusions, associated with prograde endoskarn development, K-silicate alteration is developed.

7.4.1 Pre-Mineralization K-Silicate Alteration within Intrusions

K-silicate alteration is predominantly pervasive or selectively pervasive fracture controlled. It is most apparent within larger intrusions where it has not been overprinted by prograde endoskarn alteration near intrusion contacts. Sulfide mineralization is limited to minor disseminated pyrite and trace chalcopyrite. K-silicate alteration is common in dikes at Carrizal. Within the Carrizal Pluton sericitic alteration is characterized by quartz pyrite veins with quartz-sericite envelopes.

7.4.2 Pre-Mineralization Prograde-Anhydrous Exoskarn

The prograde exoskarn is visually recognized as wollastonite and brown garnet banding that is most intense in contact with an intrusion and pervasively decreases in intensity outward. Prograde exoskarn is associated spatially with all CRD sulfide mineral deposits on the Zimapan property. Alteration can be very narrow and may extend outward over 100 m from the intrusion, but usually limited to 10's of m from contacts. Sulfide mineralization is limited to minor disseminated pyrite and/or pyrrhotite and trace chalcopyrite.

7.4.3 Pre-Mineralization Prograde-Anhydrous Endoskarn

The prograde endoskarn consists of pervasive and, fracture-controlled alteration developed along the outer contact of the intrusion, within the intrusion. Alteration minerals are dominated by brown-garnet, vesuvianite, wollastonite and pyroxene. Endoskarn may include minor disseminated pyrite or pyrrhotite.

7.4.4 Syn-Mineralization Stage Retrograde-Hydrous Exoskarn

Retrograde exoskarn alteration represents a continuum of alteration styles that overprinted upon pre-mineralization skarn and other alteration types.

7.4.5 Post-Mineralization Stage Supergene Alteration

Supergene oxide alteration is a weathering process where meteoric water follow fractures and permeability within host rocks to where it reacts with and oxidizes sulfide minerals. Between the time of discovery of mineralization in the Zimapan area in the late 16th century and the mid 20th century supergene oxides were the focus of mining. The principal supergene oxide minerals exploited in the El Monte and Carrizal areas were plumbojarosite, argentojarosite, and cerussite (Simons & Mapes. 1956) with zinc and other oxides left behind as at that time had no economic value. Supergene oxide mineralization was exploited on a large scale in the upper levels of the Las Animas, Balcones, Lomo de Toro (El Claro) at Carrizal; and Concordia mines prior to mid 20th century. No commercially viable deposits of supergene oxide mineralization are currently identified on the Zimapan Property.

A total of 14 mineral zones that have been explored and mined at the Carrizal and El Monte mine area by Carrizal Mining. One mineral zone may consist of one or more mineralized target(s) depending on the number of dikes and skarn occurrences in the zone. Six mineralized zones occur at or near the margins of the Carrizal monzonite intrusion.

In contrast, the Monte mine is characterized by narrow and irregularly oriented monzonitic quartz-feldspar porphyry dikes. A large intrusive body has not yet been encountered in the Monte mine area. Eight mineralized zones occur near these dikes.

Metal zoning occurs vertically through the mineralized body. According to Gonzalez-Partida et al (2003), the zonation comprises of a copper-sulfide rich base; a zinc- and lead-sulfide rich center; a silver-sulfide rich middle to upper zone; and a top devoid of sulfides and composed of fluorite and calcite.

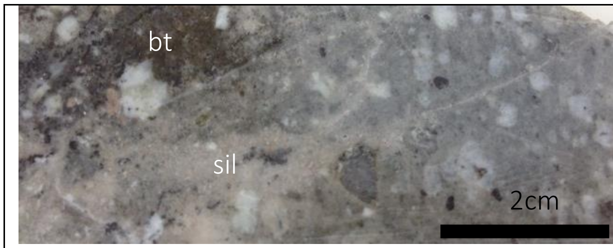


Image 1: Photograph of drill core from drill hole CM-M232-045 at 112.0 m. Quartz-feldspar porphyry dike.

bt = biotite alteration of the groundmass (dark brown). sil = silicification of porphyry groundmass (beige).

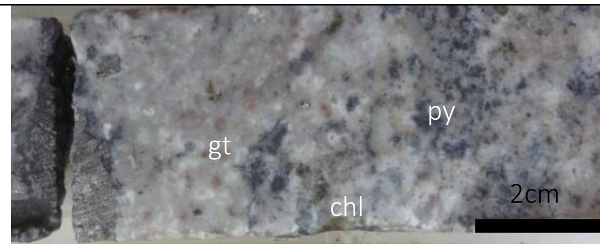


Image 2: Photograph of drill core from drill hole CM-M232-045 at 115.0 m. Quartz-feldspar porphyry dike endoskarn.

gt = sites where 1-2 milimeter sized garnet porphyroblasts have grown within the porphyry matrix (pink). chl = site where chlorite is replacing biotite in the groundmass (dark green). py = site where fine-grained pyrite replaces biotite and other mafic sites in the groundmass (black).

Image 3: Photograph of drill core from drill hole CM-M232-045 at 110.0 m. Quartz-feldspar porphyry dike endoskarn.

trm = tremolite-chlorite alteration of breccia matrix (pale green). sil = silicification of porphyry groundmass (beige).

Figure 7-7: Alteration styles within the porphyry dike

Photographs collected during the author's site visit.

Image 4: Photograph of drill core from drill hole CM-M232-049 at 142.8 m. Garnet-diopside exoskarn within limestone.

gt = large subhedral andradite garnet crystals (red to pink). cal = radiating calcite (or aragonite) crystals (white). sil = silicification of limestone material (grey).

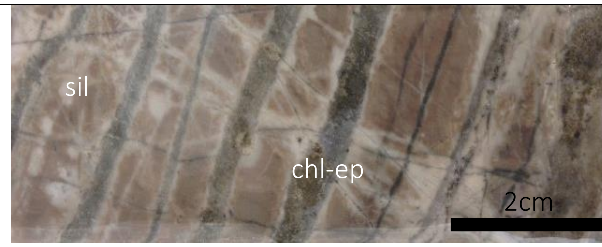


Image 5: Photograph of drill core from drill hole CM-M232-049 at 150.0 m. Chlorite-epidote exoskarn within limestone banded shale.

chl-ep = fine grained chlorite-epidote replacing limestone bands. The dark color indicates fine sulfides may be present (dark green). sil = silicification of the shale bands have caused the rock matrix to be bleached (white to beige).

Figure 7-8: Alteration styles within the host sediments

Photographs collected during the author's site visit.

7.4.6 Structural Controls and Size

Mineralization within each target at the various mineral zones vary greatly in dimension and orientation. Mineralized skarn zones can occur as narrow bodies less then one meter wide to larger bodies, like the skarn bodies at Concordia (Monte mine) and DK del Tiro (Carrizal mine), which can be approximately 20 m wide and extend 100-200 m long along strike. Massive sulfide bodies are discontinuous in their dimensions and can also vary from several centimeters to several m thick.

The importance of primary permeability in the host limestones appears to be limited. The lack of large metasomatic aureoles leading outward from the intrusive bodies would suggest that the host rocks were relatively tight at the time of intrusion and subsequent prograde and retrograde mineralization. Fracturing, brecciation and metasomatism related to the emplacement and cooling of intrusive bodies is likely sufficient to produce permeability necessary for exoskarn mineralization.

Stratigraphic controls on mineralization is evident at the Carrizal and El Monte mines. Much of the host sequence consists of finely bedded units with fine sale rich beds would likely act as self sealing aquitards. Subsequent hydrothermal modification, structural control by folding, fracturing and brecciation along lithological contacts, and geochemical contrasts between different lithologies at a bed contact scale may be important. As mentioned above, mineralization formed preferentially in the La Negra and San Joaquin members of the Tamaulipas Formation. More specifically the upper contact of the Horizontes 1 and Horizontes 2 massive limestone beds in contact with overlying thinly bedded limey shales, limestones and cherts is an important horizon. Contrasts in competency between the massive and bedded limestones create permeable zones of fracturing and brecciation along the Horizontes. The Horizonte 1, Horizonte 2, Santa Fe 1 and Sante Fe 2 mantos are examples. Carbonate replacement mineralization occurs both in the hanging wall and footwall along this contact. Mineralization in these mantos follows bedding contact and geometry and may be controlled in part by fold geometry.

The large massive sulfide chimney deposits appear to be a genetic relative of the manto deposits. The discordant El Claro chimney emanates from the Horizonte 1 manto where the stratigraphy is recumbently folded and highly fractured.

Geochemical controls on carbonate replacement mineralization distal from calc-silicate alteration is not well understood. Lead isotope work by Potra (2009) concluded that metal bearing fluids responsible for mineralization were of magmatic origin, it is less clear how host rock chemistry plays a role in mineralization.

Image 6: Photograph of drill core from drill hole CM-M232-045 at 132.5 m. Disseminated and vein mineralization within quartz-feldspar porphyry dike.
DIS = finely disseminated sulfides, dominated by pyrite and galena, replace mafic sites within the groundmass of the pyrrhotite. VN = quartz-sulfide veins and sulfide veins exploit joints and fractures within the porphyry. Mineralization is generally fine grained.

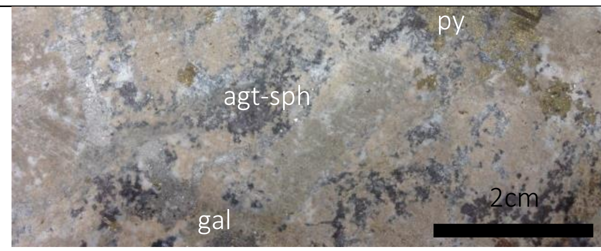


Image 7: Photograph of drill core from drill hole CM-M232-049 at 118.1 m. Weak to moderate replacement mineralization (5-15% total replacement) within garnet-diopside exoskarn.
agt-sph = fine grained sphalerite and argentite. gal = fine grained galena. py = coarse grained pyrite.

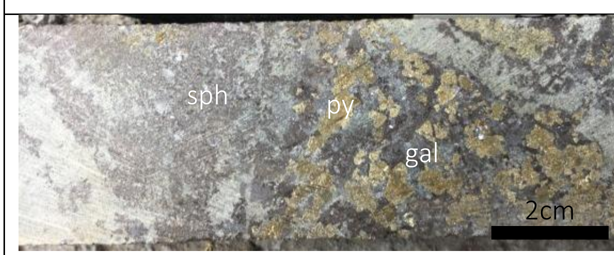


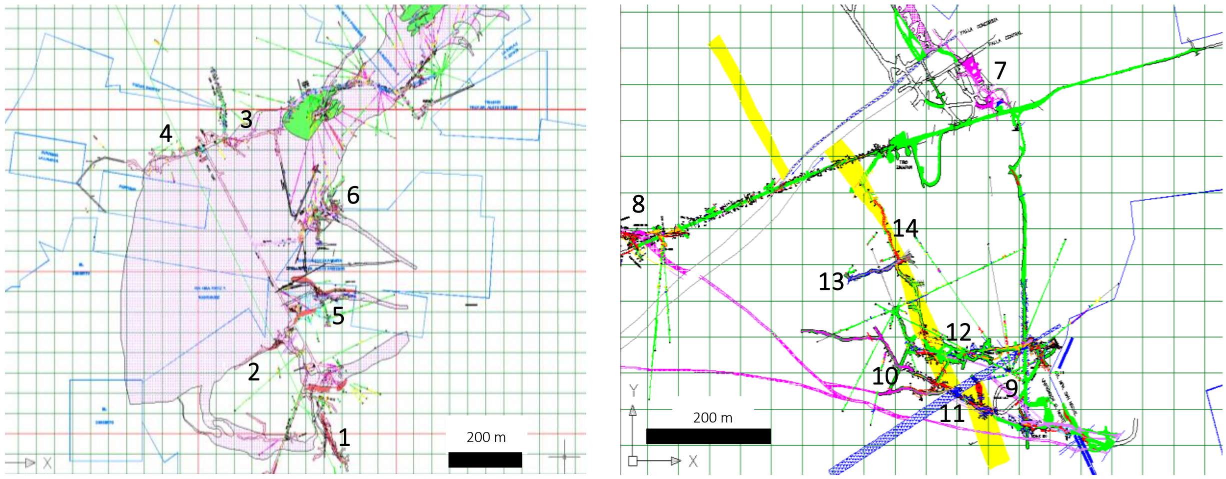
Image 8: Photograph of drill core from drill hole CM-C-025 (core box 15). Photograph of core. Strong replacement mineralization (>30% to <70% total replacement) within garnet-diopside exoskarn. sph = coarse sphalerite (purple). py = coarse pyrite (yellow). Gal = fine galena (metallic color).

Image 9: Photograph of drill core from drill hole CM-C-025 (core box 15). Complete replacement mineralization (80-100% total replacement) within banded limestone. Fine grained pyrite, pyrrhotite and sphalerite are the dominant minerals.

Figure 7-9: General mineralization textures

Photographs collected during the author's site visit.

7.5 Mineral Zones



A) Graphic image of the Carrizal mine area showing mineralized zones in relation to the Carrizal pluton (pink object at the centre of the graphic).

B) Graphic image of the Monte mine area showing mineralized zones in relation to narrow porphyritic dikes (pink objects throughout the graphic).

Figure 7-10: Mineralized zones of the Carrizal and Monte mines

Modified from Carrizal Mining (2018)

Table 7-1: List of targets within the mineralized zones

Map ID in this table refer to numbers within the maps in Figure 7-6.

Map ID	Mine	Zone	Targets	Strike	Dip	Length (m)	Width (m)	Height (m)
1	Carrizal	Horizontes	Horizontes, Promontorio, San Carlos	NW-SE	35°SW	1000	2.00	590
2	Carrizal	Santa Fe	Santa Fe	NW-SE	45°SW	268	5.50	150
3	Carrizal	Santa Martha	Santa Martha, San Buenaventura, Santa Elena	NE-SW	75°SE	215	4.50	350
4	Carrizal	Animas	Animas, DK Del Tiro, Balcones	NE-SW	75°SE	40	5.50	490
5	Carrizal	San Valentin	San Valentin, 3 Arc Angels	E-W	75°S	330	3.50	360
6	Carrizal	La Cuña	La Cuña	NW-SE	60°SW	95	3.50	240
7	Monte	Dike Concordia	Dike Concordia	NW 36°	70°W	430	50	470
8	Monte	La Escondida	San Francisco, Tecomate	E-W NW 33°	75°N 75°SE	300 100	10 7	290
9	Monte	CPO 385	CPO 385	NW 35°	65°SW	60	3.5	130
10	Monte	Dike 1400	Dike 1400	NW 34°	70°SW	162	3.5	60
11	Monte	Dike 1414	Dike 1414	E-W	78°SW	325	3.5	370
12	Monte	Dike 1493	Dike 1493	NW 81°	75°S	424	8	390
13	Monte	Dike 1600	Dike 1600 Dike 1700	SW 78° SW 74°	75°S 70°S	143 44	3	220 40
14	Monte	Manto Esperanza	Manto Esperanza	NW 28°	60°SW	300	8	260

7.5.1 El Monte Mine

The El Monte mine includes the Concordia dike, La Escondida, CPO 385, 1400 dike, 1414 dike, 1493 dike, 1600 dike, and Manto Esperanza deposits. All of the deposits being exploited at El Monte are dike contact skarns that formed within intrusives and in strongly folded and fractured limestones immediately adjacent to intermediate, steeply dipping, variably oriented dikes 1 to 50 m in width. One feature of the El Monte Mine is the high density of dikes with different orientations. Two dominant orientations dominate; northwest trending dikes that roughly parallel the strike of the regional fold axis, and dikes that cross perpendicular to this regional fabric. The intersection of dikes or the point where dikes split appears to be a locus of much of the massive sulfide chimney mineralization.

The Concordia and La Escondida deposits have been the focus of underground development drilling work in recent years and the two deposits are described in further detail below.

7.5.1.1 Concordia

The Concordia mineral zone is mined from the lowermost four of six underground levels – Sublevel 10, 11, 12, and 13. The mineral zone formed adjacent to the Concordia dike, a northwest striking and steeply northeast dipping monzonite dike that is roughly 450 m long and averages 33 m in width (~325°/70°), It narrows bifurcates to the southeast splits into several smaller dikes that interfinger with zones of exoskarn alteration to the northeast. The Concordia dike is cross-cut by three northeast striking oblique normal faults ; two, including the Concordia and Guadalupe faults dip to the southeast (~065°/70°) and the third, the Central fault dips to the northeast (~245°/70°). Cumulative displacement along the dikes is estimated to 40 m of left lateral movement and 200 m the vertical drop to the north (Lang et al., 1999).

Exoskarn alteration form bodies form both in the hanging wall and footwall of the dike. In the hanging wall the exoskarn is thickest ranging up to 15 m in width. Endoskarn alteration parallels contacts of the dike and varies from a few centimeters to 2 m thick

The mineral body associated with the Concordia dike is a tabular body that overlies the Concordia dike in the retrograde exoskarn and within the intrusion as disseminated sulfides and along irregular fractures trending 315° and 055°. The width of the mineralization is 25 m, with 5 m corresponding to the exoskarn and 20 m corresponding with the endoskarn within the dike (Gonzalez-Villalvaso, 1990)

Mineralization consists of disseminated retrograde skarn mineralization thickens to tens of m on the northeast hanging wall of the dike and irregular massive sulfide pods along the outer margins of the exoskarn alteration. Mineralization extends down roughly 300 m where it wedges out against the dike.

7.5.1.2 Escondida

The Escondida mineral zone is mined from eight underground levels – Levels 216-726, 210-ESC, 207-725, 205-725, 196-ESC, 192-573, 191-ESC, and 190-573. It consists of a stockwork of monzonite dikes that intrude intensely folded limestones. Some dikes run parallel to the northwest strike of regional folds, others cut oblique or perpendicular to the regional trend. The dikes are typically 1-5 m wide and run 10-250 m in length.

Mineralization consists of stockworks or sheeted veins within exoskarn and endoskarn mineralization along dikes and as massive sulfide chimney bodies. Best mineralization occurs where dikes bifurcate or the intersections of dikes where the intersections continue vertically forming vertically elongate mineral bodies that average 2 m and expand to tens of m in thickness and extend over 240 m deep.

Peripheral to the mineralization is sinuous discontinuous calcite+/-pyrite veins and disseminated pyrite/pyrrhotite which extends for 10's of m from skarn zones

7.5.2 Carrizal Mine.

At the Carrizal mine, the Carrizal quartz-monzonite to monzonite intrusions and quartz-feldspar porphyry dikes intrude the local stratigraphy at a subvertical orientation. At its widest, the Carrizal monzonite intrusion measures approximately 450 m wide, trends northeast for approximately 1,400 m,. Narrow to irregularly shaped quartz-feldspar porphyry dikes, generally 0.5 to 5 m wide, can extend away from the monzonite intrusion for approximately 400 to 700 m. Exoskarn and endoskarn occur at the dike contact.

The following descriptions are given in the order from northwest to southeast and increasing distance from the Carrizal Pluton. (Table 7-X Styles of mineralization through the Carrizal Mine. Figure Section through the Carrizal Mine)

Table 7-2: Styles of mineralization through the Carrizal Mine

Skarns adjacent to intrusive contacts	Mixed skarn and massive sulfide	Massive sulfide, minor calc-silicates	Massive sulfide mantos without calc-silicates	Massive sulfide chimney without calc-silicates
La Cuña Juan Pablo	San Carlos Las Animas Santa Martha San Valentine Promontorio	Santa Fe 1 & 2	Horizontes 1 & 2	El Claro*
increasing distance from pluton →				

* past producer

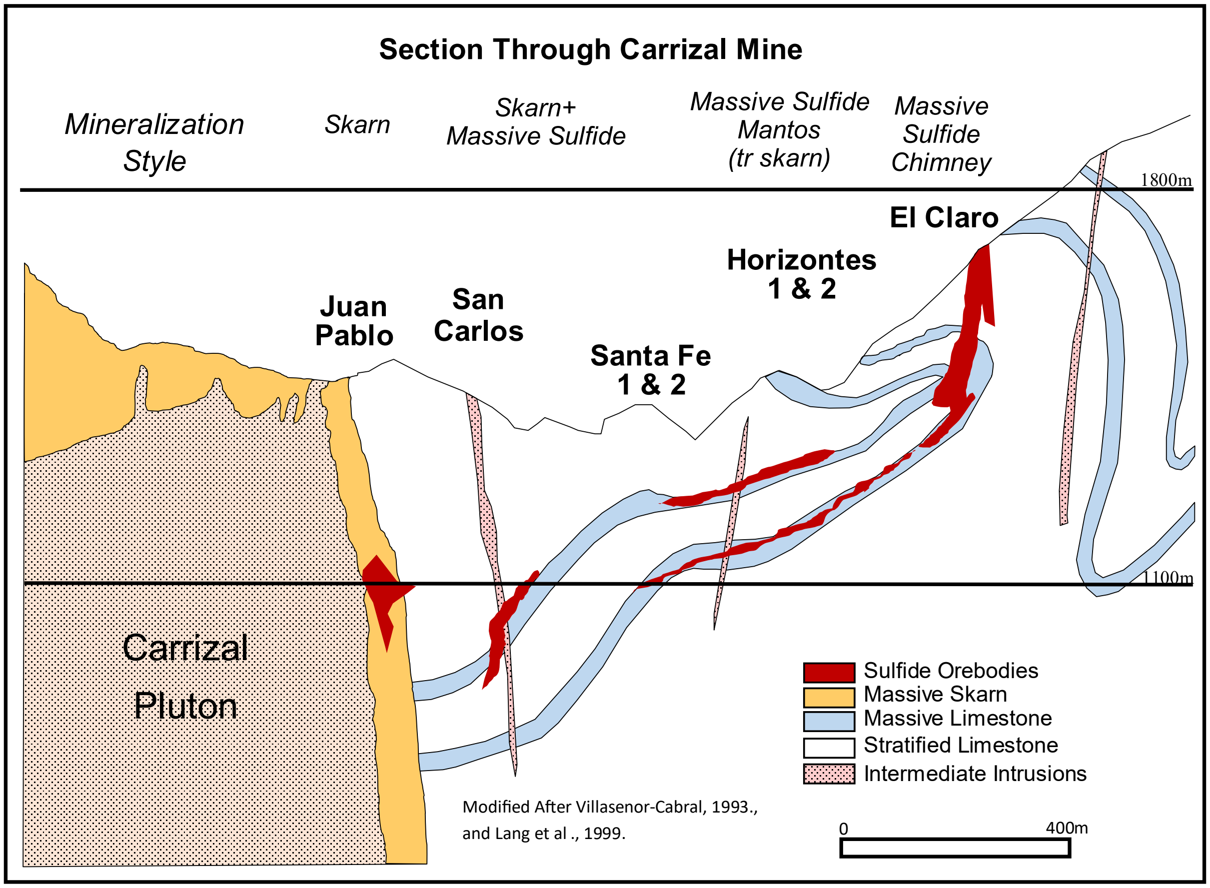


Figure 7-11: Section looking northeast through the Carrizal Mine

(Modified after Lang et al., 1999)

7.5.2.1 Las Animas

The Las Aminas chimney is located on the contact between a monzonite dike (Dique del Tiro) with the Carrizal pluton of similar composition, along the outer edge of the thick exoskarn that marks the boundary between the limestones of the La Negra member and the pluton. The chimney is elliptical in plan measuring 25 m x 100 m, dips 60 °- 80 ° northeast. Its size is highly variable with vertical extension up to 250 m (Villaseñor-Cabral 1993). At its top the chimney bifurcates and transitions into irregular mantos near surface that follows limestone bedding (Simons & Mapes, 1956). At its base the chimney wedges out against skarn and the Carrizal pluton.

Roughly fifty m above the Las Anima chimney divides into two separate chimneys, on either side of the Dike del Tiro with the Las Animas continuing on the inside and Cuerpo 401 on the outside, continuing down 100 m and up 50 m. Cuerpo 401 is essentially part of the Las Animas chimney.

At least five veins parallel the northwest structural grain and dip to the southwest 45°.These veins root in the Carrizal pluton crossing both dikes and sulfides, and decreases in width and sulfide grade and ultimately become quartz-calcite (Villaseñor -Cabral, 1993) veins.

Several mantos extend from the Las Animas chimney following bedding in the host La Negra member limestones. Cuerpo 455 is a cylindrical shaped manto 20 m x 40 m dipping southwestward parallel to bedding. It is partially within the exoskarn. Sulfides present include sphalerite, chalcopyrite and pyrite. (Villaseñor-Cabral, 1993).

7.5.2.2 Horizontes & Santa Fe

The Horizontes and Santafe mineral zones are manto bodies located along the Horizontes 1 and 2 massive limestone horizons. The massive limestone forms the footwall of mineralization and the hangingwall is finely bedded limestone shale and chert. Sulfide mineralization replaces both massive limestone and finely bedded units. Replacement occurs outward from the bedding plane. Mineralization is finely bedded along the contact with the limestone. Calc-silicate alteration is limited to the vicinity of the Promotario dike near the Santa Fe. The Horizontes zone is mined from six underground levels – Level 1180, 1250, 1300, 1330, 1360, and 1370 while the Santa Fe zone is mined from three active levels – Level 1220, 1180, and 1080.

7.5.2.3 El Claro

The El Claro chimney is the most peripheral mineralization the Carrizal Pluton. It was one of the earliest deposits to be discovered and was exploited prior to has been subsequently closed. Currently the old workings are inaccessible. The following description is based upon work by Simons & Mapes, 1956. and, Lang et al., 1999.

The El Claro chimney is a tabular body that was 35 m wide and 65 m long and extends from surface down 105 m. It extends across to the south to the wedge shaped La Mora chimney and manto, down to the La Peidad chimney (19 m x 40 m x 60 m) and further down into the San Pedro Nuevo chimney. The combined but discontinuous, vertical extent is roughly 200 m and along strike 150 m. Mineralization follows the nose of the La Paz Anticline an overturned fold along the contact Horizontes 1 horizon of the La Negra member and the overlying thinly bedded intensely folded and fracture shales limestones and cherts. These chimneys are connected below numerous mantos following the Horizontes 1 horizon.

Remnants of mineralization include plumbojarisite, and it was likely these chimney bodies were altered to oxides throughout. No calc-silicate alteration was observed within these chimneys.

8 Deposit Type

The general characteristics of mineralization at the Zimapan property are consistent with polymetallic replacement deposits as described by Morris (1986) and Cox (1986), published by Bray (1995). The mineral zones are further characterized as high temperature, chimney-style carbonate-replacement Zn-Pb-Ag±Cu±Au (“CRD”) deposits by Lang et al. (2000) in accordance with classification of Megaw et al. (1988) for similar deposits in Northern Mexico.

CRD generally vary in size. They occur in broad sedimentary basins that have undergone moderate deformation and have been intruded by small igneous intrusions. Metal-bearing fluids emanating from volcanic centers and igneous intrusion are localized along structural features (fractures, joints, and fold limbs) and stratigraphic features (karst openings and sedimentary beds).

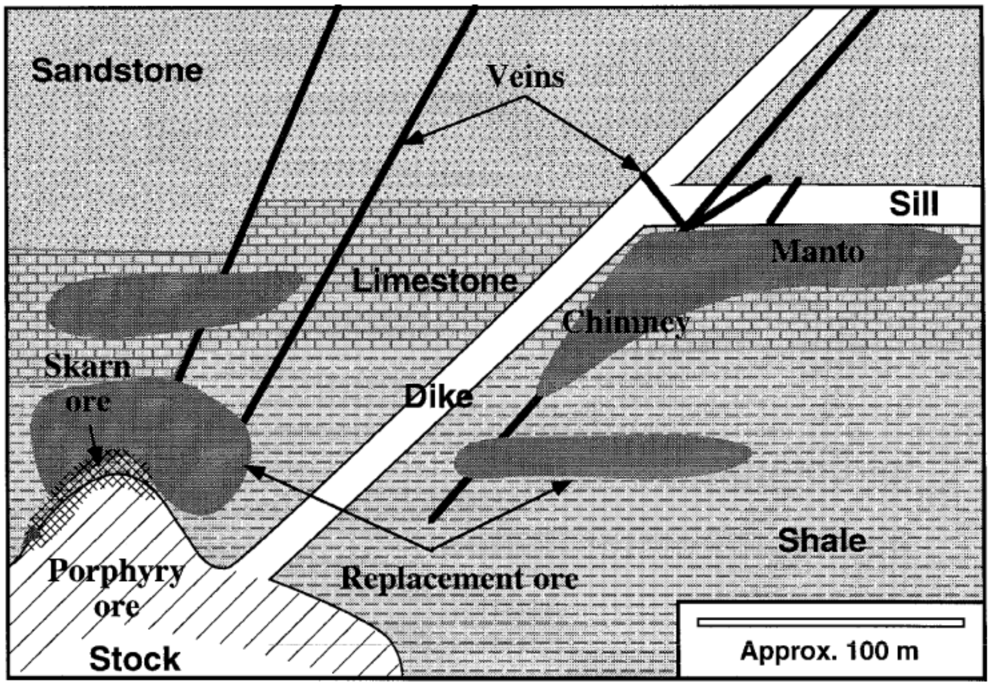


Figure 8-1: Schematic cross-section of an idealized polymetallic replacement deposit

(Bray, 1995)

Different styles of mineralization may occur depending on geometry, host rock and intrusions. Locally, deposits can be subdivided based on geometry and degree of calc-silicate alteration including:

a) Massive sulphide chimneys that cross-cut stratigraphy and which contain minor or no calc-silicate alteration.

b) Massive sulphide mantos which are similar to chimneys but are instead generally parallel to stratigraphic contacts.

c) Skarn orebodies at either pluton or dike/sill contacts.

In addition, vein mineralization may also occur with quartz and/carbonate minerals that have in-filled structural planes.

Alteration can vary considerably. Calc-silicate skarn minerals (epidote, amphibole, garnet, pyroxene, and iron oxide minerals) can form within an igneous intrusion or near sedimentary-igneous intrusion contacts. The host sedimentary rock is commonly recrystallized due to metasomatic processes. The igneous intrusion may experience porphyry-style alteration including argillic and propylitic assemblages.

The occurrence of economic metals is also spatially related to the intrusion. Copper (± gold) rich bodies such as skarns occur within intrusions or at the intrusion and sediment contact. Lead and zinc (± gold and silver) rich bodies such as mantos and chimneys occur away the from the intrusion, and zinc (± silver) rich bodies such as veins occur distal to the intrusion. Minerals associated with a CRD may include pyrite, sphalerite, galena, siderite, quartz, marcasite, rhodochrosite, dolomite, chalcopyrite, pyrrhotite, tetrahedrite, digenite, argentite, electrum, enargite, bornite, and arsenopyrite, hessite, petzite, pyrargyrite, barite, and fluorite. Mineral grains are typically medium to coarse grained and can form as euhedral to massive interlocking texture.

High density, low resistivity, electrically chargeable and high magnetic susceptibility characteristics of the massive sulfide bodies are amenable to exploration geophysics techniques such as airborne or ground-based electromagnetic, direct current resistivity, and induced polarization surveys. In addition, the elevated abundance of Pb-Zn±Cu±Au±Ag±Mo±As±Bi±Sb associated with CRD are amenable to trace element geochemistry surveys such as stream water, silt, soil and rock sampling surveys.

9 Exploration

Santacruz and Carrizal Mining have not performed surface exploration activities due to the Company's focus on the subsurface delineation of the mineral zones. Since 2009, Carrizal Mining has focused upon delineating the limits of mineralization in advance of production. This work consists of two activities. First, drilling to determine the limits of mineralization in advance of planning underground development. Second, detailed underground mapping and sampling in areas of development and production.

Most of the drilling consists of drilling a fan of drill holes made from underground drill-sites within the mine. Because of access is limited by underground infrastructure and large depths from surface, most of the drilling has consisted of short holes drilled from sites located near the targeted mineralization within 10s of m of active production. As a result, the mean drill hole length for holes drilled at the Carrizal mine has been 94 m and at El Monte mine 84 m, with roughly 17% of holes drilled exceeding 150 m.

Underground mapping and sampling is detailed and systematic, but is designed for the collection of data needed for production. Roof mapping of workings was completed at a scale of 1:250 with lithology, alteration and structure recorded on the maps. Sampling in areas of mineralization consists of channel sampling the roof of the workings with channels separated by 3 m. The channel samples are plotted on plans and are surveyed. In the database the channels are recorded like horizontal drill holes with a surveyed start point, azimuth and lengths with sample lengths determined by geology and mineralization.

Although the information collected is modeled using Surfur software, geological interpretation has been limited.

10 Drilling

Underground development drilling performed by Carrizal Mining from 2011 to 2020 is described in Section 6.2 within this report. There are no other known drilling information for the Carrizal and El Monte mine areas.

11 Sample Preparation, Analysis and Security

The sample procedures described below are relevant for the drilling that was completed between 2011 and 2020 as described in Sections 6.3 and 6.4.

Underground rock sampling is the principal method currently used by Carrizal Mining to approximate grade and tonnage of their internal mineral estimates. The internal mineral estimates are not performed in accordance with CIM Definition Standards on Mineral Resources and Reserves.

11.1 Sample Security

The core is transported by Carrizal personnel to the company's core logging facility in Zimapan. The core is laid-out on metal logging racks where the core is examined. Core intervals and recoveries are recorded and marked on the boxes. The geologist logs the core and lays out sample intervals and prepares a sample record sheet which includes insertion points for quality control samples. Only selected mineralized intervals are selected for sampling. The core is taken to be photographed, and specific gravities of key lithologies are measured. The core is then split along its axis using a core saw with one half of the sample placed in a poly bag with the corresponding sample tag and the other half returned to the core box. Duplicate core samples are made by quartering the core and placing the quarter of the core in a sample bag with corresponding sample tag. Coarse blanks and pulp standards are inserted into the sample sequence at predetermined points. Upon completion of a drill hole the samples are transported to the sample laboratory at the El Monte mill by company personnel.

The principal means of underground rock sampling is continuous chip sampling at one meter sample lengths following a line across the width of the roof of the working. Parallel sample lines were separated by three m for the length of the working forming a rib pattern. The geologist lays out the location for sampling and plots the plan for the sample location on a sample plan map. The samples lines are surveyed and plotted like individual horizontal drill holes with a start point and samples recorded over intervals along a vector from the starting point. The samples collected are placed in poly bags with a sample tag and sealed. Field duplicate samples are prepared by homogenizing and splitting the sample on a ground sheet. The samples collected are transported to the lab by company personnel at the end of the shift.

11.2 Sample Preparation and Analysis

The Monte plant laboratory is operated by Carrizal Mining and the facilities are meant to serve the mining operations. Detailed written sample handling, preparation and analytical procedures were provided by Carrizal Mining. The section bellow summarizes these procedures.

Both core and underground chip samples are handled by the lab in a similar manner. The samples when received are laid out with additional coarse blanks inserted into the sample sequence and checked against the requisition form for sample type. At this point coarse blanks are placed into the sample sequence at predetermined intervals.

The samples are dried then crushed using a jaw crusher to <1/4 inch (<7 mm). Subsequently the samples are crushed in a secondary crusher to -10 mesh (<2 mm). The samples are then homogenized and split using a Jones splitter to produce two 300 g samples, one which is archived in the original sample bag and a 300 sample that will be pulverized.

The 300 g sample is pulverized using a ring mill producing a pulp that is screened to >95% -100 mesh (<0.149 mm). The sample is homogenized split with a Jones splitter producing two 150 g samples which are placed in a labeled paper bags. One sample is archived and the second proceeds to the weighing room for weighing and analysis.

During each stage of the crushing process the crushers are cleaned using quartz between samples followed by cleaning with compressed air. The ring mill is cleaned using crushed glass and compressed air.

Pulp blanks, standards and duplicates are inserted into the sequence at this point.

Two aliquots are taken from the sample pulp, one for either multi-element analysis and another for fire-assay analysis. For multi-element analysis a small sample is weighed and placed in a beaker and digested hot Agua Regia hot multi acid digestion followed by multi-element analysis using an Atomic Absorption Spectrometer for silver lead, zinc, and Iron.

For fire-assay a 5 g or 10 g aliquot is weighed out for fire assay followed by gravimetric analysis for gold and silver.

11.3 Quality Assurance Quality Control Samples

The insertion of quality control samples is described in the preceding paragraphs. The number of control samples inserted varies considerably with in the sample sequence. In total between 2% and 14% of the analysis are of control samples. Quality control charts for standards, blanks and duplicates are provided in monthly reports, but no discussion or analysis was completed as part of the process.

The insertion, and more importantly monitoring, of quality control samples has not been consistent over time. For underground rock samples, field inserted coarse blanks and duplicates have been relatively consistent over recent years, but pulp blanks, duplicates and standards have not. For core samples the use of control samples has been less consistent, for many sample batches sent to the lab, standards have not been routinely inserted.

Various methods are used in the analysis of control samples. The coauthor completed a cursory reviewed the 2019 results for control samples and identified problems that include contamination as seen in the analysis of coarse blanks and failures in the analytical results of certified standards where values from analytical results fell outside acceptable levels.

As at the effective date of this report, selected sample pulp, coarse-reject and core re-splits will need to be checked by an external independent laboratory before rock and core sample data can be used in advanced reporting, such as a mineral resource estimation. A detailed audit of the sample database by zone will need to be completed to determine the selection and frequency of samples that need to be sent to an independent laboratory for analysis.

11.4 Opinion

The coauthor is satisfied that results of the sampling is sufficiently representative of the mineralization observed and is sufficient for the purposes of this report.

12 Data Verification

Information related to the location, access, local and mine infrastructure, geological setting and mineralization style were verified by the authors during the site inspections as described below. Supporting documentation including historical sales, historical production records, historical exploration results, were provided by Carrizal Mining. The authors did not engage an independent third party to verify the accuracy and authenticity of the supporting documentation beyond what is described in Section 4.5.

12.1 Site Visit

The author conducted a cursory site visit to the Zimapan property between March 22 to March 23, 2017 and a follow-up visit between May 2 to May 4, 2017. The geographic locations were collected using a Garmin GPSmap 64s handheld GPS. Coordinates were cross-checked with Mexican government sourced topographic maps and Google Earth Imagery (2017). No discrepancies were identified.

The author visited the Escondida and Concordia underground workings within the El Monte mine; the Santa Marta and Santa Fe underground workings within the Carrizal mine; the El Monte plant; tailings pond No. 9, and the mine offices in Monte and Zimapan.

Verification samples were collected by the author from the Santa Fe zone on Level 1080 and from the Dike Concordia zone on Sublevel 13. At the Santa Fe workings a continuous eight-meter chip sample, comprised of four two-meter chip sub-samples, were collected from an eight-meter pillar of galena- and pyrite-rich massive sulfide. At the Concordia underground workings, two sets of samples were collected. The first site location is comprised of four samples and tested mineralization in the Concordia dike, skarn, and altered limestone. The second sample site tested a working face where skarn mineralization was exposed.

Each chip sample and sub-sample was collected from the working face and immediately placed into poly bags. Sample tags were inserted, and each poly bag was secured with a tie strap. Poly bags were then inserted into transport bags that were sealed by security tags. Verification samples were shipped to Activation Laboratory located in Guadalupe, Zacatecas for chemical analysis. Activation Laboratory is a member of the Bureau Veritas Group and is ISO 9001 certified (No. MX14-266). Assay results for the verification samples are provided in Table 12-1.

The co-author completed a site visit between March 30 and April 2, 2020. Two active areas underground were visited including the 1790 level of the 1493 Dike at the El Monte mine and the 1330 level of Horizontes mineral zone at the Carrizal mine. Geology, sampling and mapping and QA/QC procedures were reviewed with Carrizal Mining geologists and technicians in both areas. Core handling, logging and sampling procedures were reviewed at the Carizzal Mining's core logging facility in Zimapan, and the core storage facility at the Level 0 portal of the El Monte mine was visited. The laboratory at the El Monte plant facility was visited and toured with Carrizal's lab personnel who outlined the handling of samples from reception at the lab through preparation and analysis.

During the recent visit, no verification samples were and sent to external laboratories due to laboratory closures as part of Mexico's response to the COVID-19 pandemic.

Table 12-1: Assay results of verification samples collected by the author

Sample	Zone	Description	True Width (m)	Au (g/t)	Ag (g/t)	Pb (%)	Zn (%)	Cu (%)
7638	Santa Fe	Massive sulfide	4.00	0.29	190.07	0.26	0.05	0.41
7642	Dike Concordia	Porphyry dike	0.60	0.14	145.85	0.45	1.13	0.65
7643	Dike Concordia	Garnet skarn	1.60	0.13	207.76	0.77	1.75	0.83
7645	Dike Concordia	Calcareous shale	0.90	0.02	108.23	0.56	0.81	0.18
7646	Dike Concordia	Semi-massive sulfide in skarn	1.20	3.03	117.22	0.20	13.00	0.40
7647	Dike Concordia	Semi-massive sulfide in skarn	1.80	0.76	273.12	2.31	3.05	0.34
7648	Dike Concordia	Semi-massive sulfide in skarn	1.20	0.23	210.91	2.29	3.91	0.14

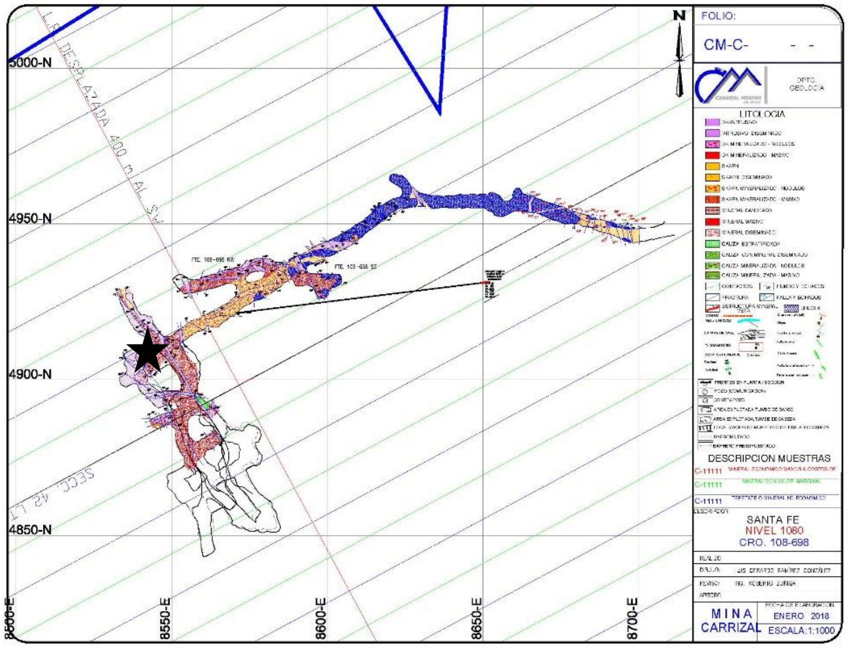


Figure 12-1: Santa Fe Level 1080 & location of verification sample

Sample 7638 (black star)

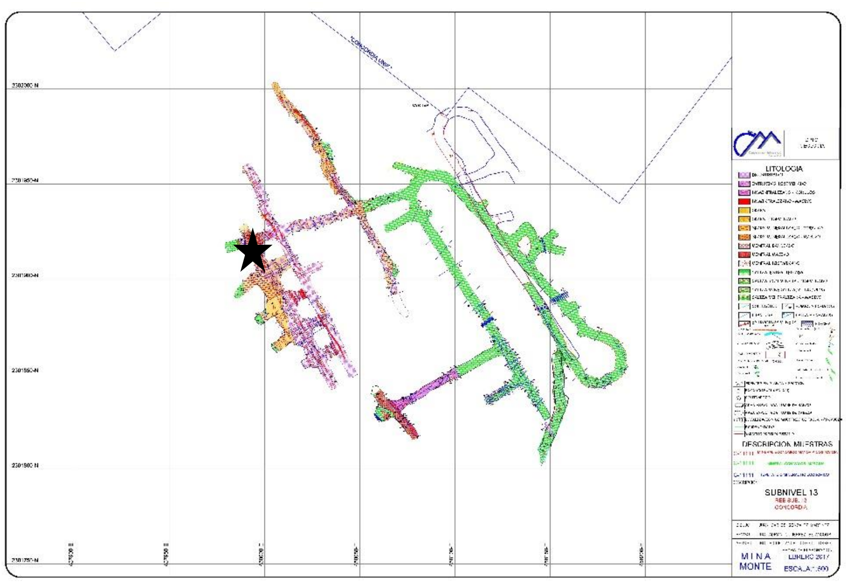


Figure 12-2: Dike Concordia Sublevel 13 & location of verification samples

Samples 7642 to 7648 (black star)

12.2 Opinion

The author has inspected and confirmed the presence of silver, lead, zinc and copper mineralization at the Santa Fe and Concordia mineral zones and has no reason to doubt the presence of mineralization at other similar mineral zones described in this report. Drilling results were performed by Carrizal Mining where not provided in this report for the following reasons:

- the author was provided incomplete drilling information;
- drilling work did not include down hole surveying of the drill holes; and
- the author's limited ability to verify assay results from the El Monte laboratory, which is not ISO certified.

The co-author has inspected and confirmed the presence of sulfide mineralization in active workings at the Horizontes zone of the Carrizal mine and the Dike 1493 at the El Monte mine.

Rock sampling completed underground is best described as grade control sampling as the sampling is directly related to mine planning activities and does not extend beyond areas of active mining.

Most of the drilling completed is related to mine development and is limited to extending known mineralized zones within the mines. The average drill hole length at both Carrizal and El Monte mines has been less than 100m, usually testing for mineralization 10s of m in advance of active workings along strike or down dip towards lower levels.

13 Mineral Processing and Metallurgical Testing

Flotation kinetic testing, granulometric testing and scanning electron microscopy analysis was performed on selected mineralized samples from the Horizontes 1330 stope, Lamosa stope, Santa Elena stope and Cuerpo 1496 stope. The tests were performed in June of 2016, March of 2017 and December of 2019. A total of five reports were issued to Carrizal Mining by Corporacion Quimica Platinum S.A. de C.V. (“Quimica Platinum”), an independent laboratory located in Silao, Guanajuato State.

Metallurgical testing in June of 2016 addressed recovery of copper, lead and silver in varying pH conditions and quantity of zinc suppression reagents added during a 5-cycle test. The test indicated optimal recoveries of 68.5% copper, 77.3% lead and 71.2% silver were obtained with pH 7.7 and pH 8.5, 1000 g/t zinc sulfate and 3 g/t sodium cyanide during flotation. Silver recoveries were obtained from the zinc flotation while copper and lead recoveries were obtained for both lead-copper flotation and zinc flotation. Optimal particle size of 120.9 microns (P80) was achieved by grinding 62% passing 200 mesh. Similar results were obtained in the March 2017 and December 2019 tests.

Conclusions by Quimica Platinum included the following note: Scanning electron microscopy analysis for the Santa Elena sample identified 40-micron inclusions of copper sulfide (chalcopyrite) within the zinc sulfide mineral grain. Similarly, iron sulfide (pyrite) was observed as inclusions within lead sulfide (galena) mineral grain. The mineral boulangerite, a lead antimony sulfide, was identified as potentially contributing to antimony impurities in the lead sulfide. The proportion of these inclusions are minor and does not significantly impact metal recoveries.

In reviewing the Quimica Platinum reports, the author recognized that the samples submitted for testing by Carrizal Mining are selective and not well composited or distributed throughout each mineral zone. As such, the results of the testing, while informative, may not be representative of the entirety of each mineral zone studied. The authors have not completed sufficient work to verify the metallurgical testing presented in this section.

14 Mineral Resource Estimates

The Property presently does not contain a mineral resource estimate that is in accordance with CIM Definition Standards on Mineral Resources and Reserves.

15 Mineral Reserve Estimates

The Property presently does not contain a mineral reserve estimate that is in accordance with CIM Definition Standards on Mineral Resources and Reserves.

16 Mining Methods

Underground open stope mining is the primary method used at the Carizzal and El Monte mines. Variations of this method includes cut-and-fill, long hole stoping, and sub-level stoping for sub-vertical to inclined bodies, and room and pillar mining for sub-horizontal bodies. Sub-level stoping are typically mined in 15.0 m to 20.0 m primary and secondary panels between the main levels. Cross-cuts from the underground workings are typically developed through the footwall waste rock. Material from development headings through waste rock is used to backfill exhausted stopes where required. Typical room and pillar height are approximately 5.0 m.

The dimensions of the access drifts and ramps are approximately 4.5 m high by 4.0 m wide while production drifts are similar or 3.5 m high by 3.0 m wide. Muck piles and waste rock piles are prepared by mechanized drilling and blasting methods and the material is removed from the active stopes by scooptram vehicles. Material is then loaded into 10 to 15-tonne haul trucks and transported to the El Monte plant through the Lomo de Toro access ramp. Mechanized equipment is powered by diesel.

The main workings and access are actively ventilated while cross cuts and stopes are passively ventilated by raises and vent shafts, and actively ventilation if necessary.

17 Recovery Methods

Conventional sulfide flotation is the recovery method used at the El Monte plant. Mineralization extracted from the Carrizal and El Monte mines is combined at a 2:1 ratio and passed through a primary, secondary and tertiary crushing circuit that produces 3/8-inch sized mill feed at a rate of approximately 2,500 tonnes/day ("TPD"). The mill feed is then reduced by three ball mills operating at 38 to 41 tonnes per hour ("TPH"), 24 to 27 TPH and 45 to 50 TPH respectively. The ground material is then mixed with water and collector chemicals and passed through two froth flotation circuits: a lead-copper bulk flotation circuit and a zinc selective flotation circuit. The slurry is then thickened and filtered to produce a lead, a zinc and a copper concentrate. The resulting lead and zinc concentrates are generally 10% in humidity while the copper concentrate is generally 11% in humidity. Approximately 90% of the water utilized in the process is recovered and reused. Tailings are gravity fed down gradient to the existing tailings pond. Table 17-1 summarized the silver, lead and zinc metal recoveries realized by year and the weighted average of the metal recoveries relative to the concentrates produced. Overall, approximately 67% Ag, 64% Pb, 52% Cu and 70% Zn mineral is recovered from the three concentrates.

Table 17-1: Metal recovery realized by year

Year	Ag	Ag	Ag	Pb	Cu	Zn
	Pb Con.	Cu Con.	Zn Con.	Pb Con.	Cu Con.	Cu Con.
2010	17.58%	32.82%	7.62%	33.32%	50.83%	60.56%
2011	31.91%	22.79%	8.99%	53.70%	37.15%	68.60%
2012	27.06%	30.62%	9.30%	56.68%	51.32%	70.57%
2013	21.96%	25.92%	14.23%	48.68%	46.50%	68.19%
2014	40.79%	20.64%	7.12%	72.57%	55.75%	74.10%
2015	42.80%	18.90%	6.91%	70.24%	49.39%	73.67%
2016	32.55%	22.75%	6.51%	59.89%	46.42%	64.38%
2017	42.69%	23.50%	5.83%	77.68%	58.12%	73.19%
2018	41.52%	26.37%	6.25%	78.37%	60.68%	73.87%
2019	37.64%	28.36%	6.91%	76.27%	57.95%	73.61%
Weighted Average	34.46%	24.93%	7.88%	64.31%	51.79%	70.40%

* Con. = Concentrate

18 Project Infrastructure

Road access to the Carrizal and El Monte mines provide year-round access and grid power to the underground workings and the El Monte Plant. Year-round road access also enables the transport of concentrate, workers and materials. The mining operation is supported by an extensive network underground workings at the Carrizal and El Monte mines. The El Monte plant is a conventional grind and sulfide flotation plant with current processing capacity of 75,000 dry metric tonnes ("DMT") per month, utilized based on a 28.5 days per month and 85% capacity. The plant is comprised of crushing, flotation, filtering and drying circuits as well as a preparation and assaying laboratory and mine offices. The plant is situated at the southern margins of nine tailings pond facilities, eight of which have been decommissioned and only one (No. 9) is presently active at the northern extent of the valley. The location of the tailings pond facilities are shown in Figure 18-1 relative to the El Monte underground workings and the El Monte Plant.

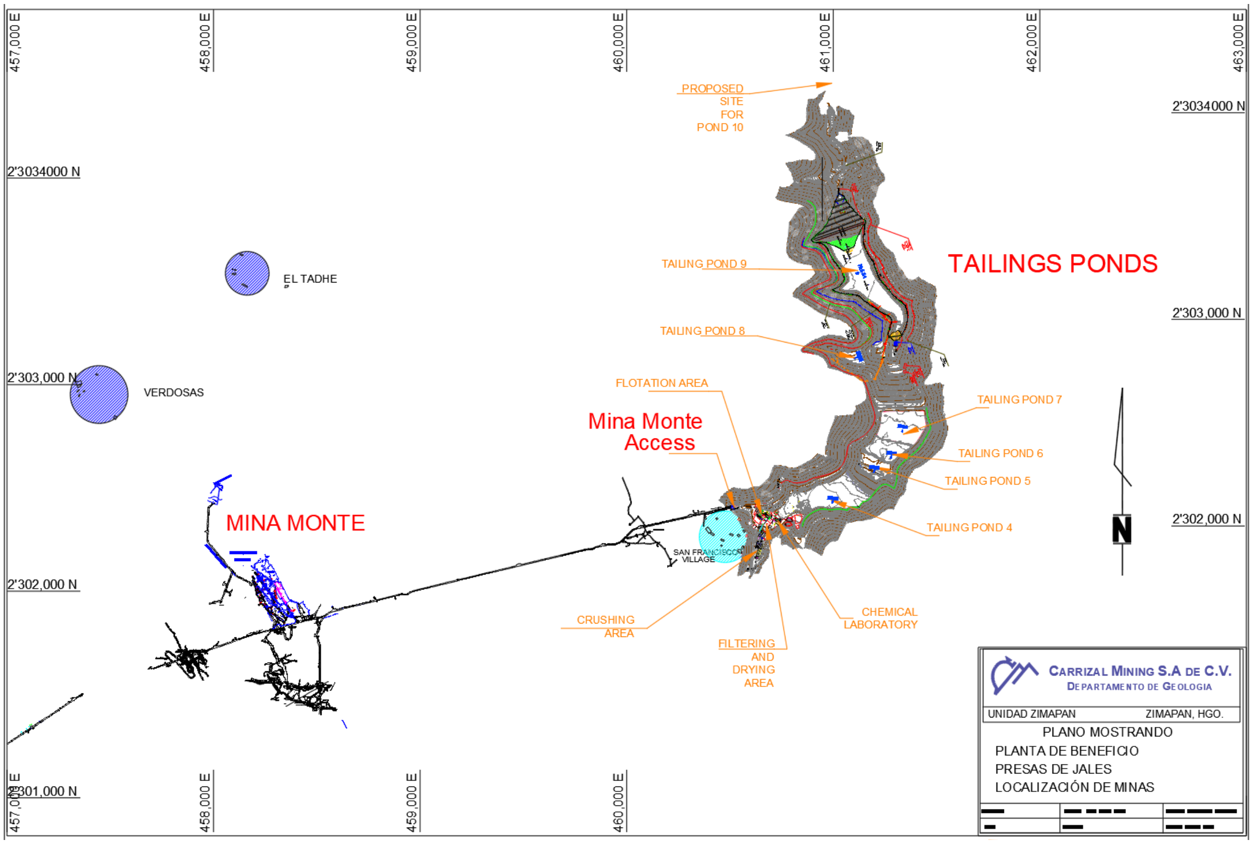


Figure 18-1: Zimapan property mine infrastructure

Figure 18-2: Photographs showing examples of the Zimapan property mine infrastructure

Photo 1 – El Monte Mine portal entrance, located at the Monte Beneficiation Plant.

Photo 2 – Carrizal Mine portal entrnce.

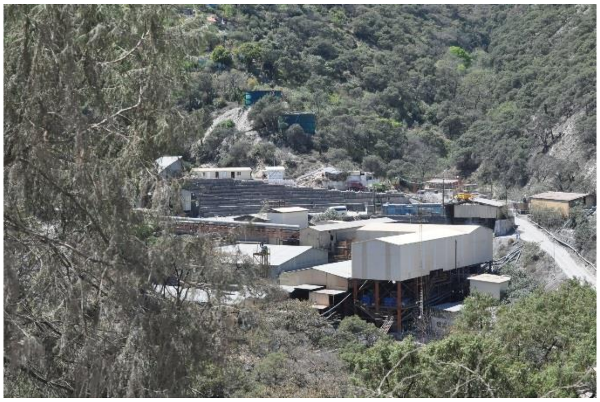


Photo 3 –El Monte Plant.

Photo 4 – Crushing and conveyor circuits.

Photo 5 – Ball mill #1 & #2

Photo 6 –Pb-Cu flotation and conditioner tanks.

Photo 7 – Thickener tanks.

Photo 8 – Example of concentrate filter press (this one is for copper).

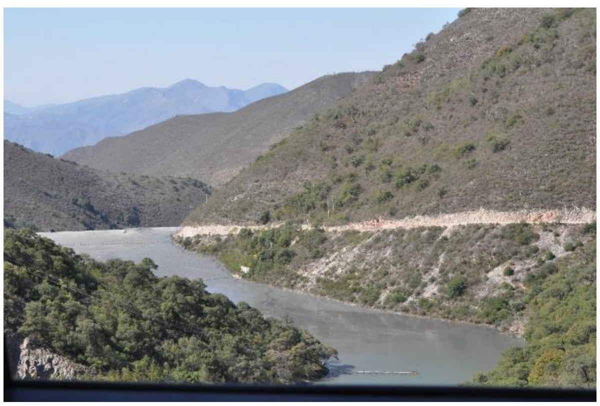


Photo 9 – At divide between tailings pond #7 and #9, looking north at tailings pond #9.

Photo 10 – Tailngs pond #9.

19 Market Studies and Contracts

19.1 Market Studies

There are no known market studies prepared for the Zimapan property.

19.2 Material Contracts

In accordance with the Lease Agreement dated August 18, 2009 between Carrizal Mining and Minera Cedros, Carrizal Mining was obligated to sell all concentrate produced at the El Monte plant to Penoles. Subsequent to the Lease Agreement, Minera Cedros released Carrizal Mining from this concentrate sales obligation in a letter dated October 23, 2013. Within the same letter, Minera Cedros provided permission to Carizzal Mining to sell concentrate to Trafigura Beheer, B.V. ("Trafigura") under the condition that Carrizal Mining reports to Penoles quarterly the dry metric tonnes delivered to Trafigura.

19.2.1 Zinc Concentrate Sales Agreement

On February 23, 2016 Carrizal Mining and Trafigura entered into a sales agreement for the minimum delivery of 1,200 wet metric tonnes (“WMT”) of zinc concentrate. This sales agreement was subsequently amended on April 16, 2019, and again on November 26, 2019. The current version of the agreement outlines terms for the sale of 25,000 DMT of zinc concentrate per year.

19.2.2 Lead Concentrate Sales Agreement

On February 23, 2016 Carrizal Mining and Trafigura entered into a sales agreement for the minimum delivery of 200 WMT of lead concentrate per month, less disbursements and fees as outlined in the sales agreement. This sales agreement was subsequently amended on January 11, 2018 and the amendments consists of changes to payment terms.

19.2.3 Copper Concentrate Sales Agreement

On February 23, 2016 Carrizal Mining and Trafigura entered into a sales agreement for the minimum delivery of 500 WMT of copper concentrate per month, less disbursements and fees as outlined in the sales agreement. This sales agreement was subsequently amended on January 11, 2018 and the amendments consists of changes to payment terms.

The agreements and their subsequent modifying agreements are valid until December 2020. Concentrates are delivered to Trafigura in the port of Mazanillo, State of Colima. The sales agreements also outline provisions for concentrate quality, delivery, penalties and payment. Trafigura pays Carrizal Mining in accordance with the LME Settlement quote as published in the Metal Bulletin for the quote period for lead, copper and zinc content, and less disbursements, penalties and fees sales agreements. In addition, Trafigura pays Carrizal Mining in accordance with the "LBMA Silver Price" quote published in US$ for the quote period, and less disbursements, penalties and fees as outlined in the sales agreements.

20 Environmental Studies, Permitting and Social or Community Impact

20.1 Environmental Studies

As at the effective date of this report, limited environmental studies have been conducted on the Property by Carrizal Mining. In particular, the environmental considerations are limited to the submission and award of the Environmental Impact Manifest (MIA) No. 32/MP-0170/01/13 and subsequent Land Use License No. 13/DS-0294/03/17 authorizing operation and modification of the remaining 26% of tailings dam No. 9. The authors are unaware of any known environmental issues that are considered current that would impact the exploration, development and extraction of minerals on the Property.

20.2 Permitting

Permits acquired by Carrizal Mining to undertake mineral extraction and processing activities are limited to the Operating License No. 84001, which is currently in good standing with SEMERNAT. The Operating License is supplemented by Tailings Dam Management Plan No. 13-PMM-I-0143-2015 and Hazardous Waste Management Plan No. 13-PMG-2871-2018. While a bond(s) related to the future reclamation of past and present mining activities have not been required by SEMARNAT, Carrizal Mining has paid the Mexican Forest Fund MEX $947,578.32 to be allocated to the reforestation, restoration and maintenance activities in an area of 35.75 hectares of state forest in relation to Land Use License No. 13/DS-0294/03/17.

20.3 Social and Community Impact

There are no known adverse social impacts or community negotiations and agreements required of Carrizal Mining other than surface rights agreements as discussed in Section 4.6.

21 Capital and Operating Costs

The capital and operating cost information provided in this section are realized and do not represent or should be used to project future profit and loss associated with mining and extraction activities for the Property, particularly in the absence of mineral resource estimate, mineral reserve estimate, or an economic study.

Table 21-1 summarizes the capital expenditure, annual production, operating cost, and total cost by year incurred by Carrizal Mining for mining and mineral processing activities at the Property. Capital expenditure fluctuations between years includes underground drilling expenses.

Table 21-2 summarizes the net revenue by year in relation to general and administration costs, total concentrate sales, and cost of concentrate sales. The decline in net revenue in 2018 and 2019 were in part affected by lower commodity prices, increased cost of sales and increased general and administration costs.

Table 21-1: Capital expenditure, operating costs and total costs by year

Year	Capital Expenditure (US $)	Annual Production (T) (US $)	Operating Costs ($/T) (US $)	Total Costs ($/T) (US $)
2009	32,396	N/A	N/A	N/A
2010	1,414,231	391,532	32.59	42.04
2011	1,433,507	443,085	46.67	59.94
2012	272,362	577,684	54.59	61.34
2013	97,755	566,796	56.45	62.41
2014	695,233	542,100	50.17	56.54
2015	1,174,788	596,175	44.97	53.80
2016	585,760	682,359	39.66	48.48
2017	1,029,772	684,798	52.68	63.86
2018	2,432,030	727,366	58.08	67.29
2019	1,048,900	671,462	48.59	58.61

Table 21-2: Net revenue by year

Year	Total Sales (US $)	Cost of Sales (US $)	General and Administration (US $)	Net Revenue (Loss) (US $)
2010	19,363,898	12,761,256	3,700,688	2,279,852
2011	31,452,617	20,678,776	5,879,953	4,835,137
2012	37,498,061	31,534,315	3,901,182	2,062,564
2013	32,182,750	31,994,067	3,382,033	(3,193,349)
2014	29,922,406	27,198,894	3,449,592	(726,080)
2015	31,746,026	26,810,335	5,261,782	(326,091)
2016	33,110,811	27,064,597	6,014,080	32,134
2017	47,777,950	36,071,952	7,659,550	4,046,448
2018	48,612,905	42,247,372	6,693,806	(328,273)
2019	34,351,293	32,626,241	6,727,377	(5,002,325)

22 Economic Analysis

The mineral zones exploited at the Carrizal and El Monte mines have an extensive mining history over the past four centuries. At present, the Carrizal Mining has not based their decision to commence production on a feasibility study of mineral reserves demonstrating economic and technical viability. In addition, the Property presently does not contain a mineral resource estimate that is in accordance with CIM Definition Standards on Mineral Resources and Reserves. For these reasons, there is uncertainty and economic and technical risks of failure associated with this production decision.

23 Adjacent Properties

23.1 La Negra Property

The La Negra Property is situated 8.5 km to the northwest of the Carrizal mine in the Maconí Mining District, State of Querétaro, Mexico. AMC Mining Consultants (Canada) Ltd. (AMC) prepared a technical report dated January 16, 2015 for Aurcana Corporation (Mosher,2015), a listed company on the Toronto Stock Exchange who owned rights to the property at the effective date of the La Negra technical report.

The La Negra property is underlain by limestone of the El Doctor Formation that have been recrystallized and altered to skarn next to diorite intrusives and dikes. Mineralization at La Negra is contained within skarn that developed through alteration of El Doctor Formation limestone, forming chimney and mantos style mineralization with massive sulfide domains. AMC reported a mineral resource estimate for eleven mineral zones. The mineral resource estimate was reported in accordance with CIM Definition Standards on Mineral Resources and Reserves (CIM Definition Standards) and National Instrument 43-101 Standards of Disclosure for Mineral Projects at the time. The author notes that since the date of the La Negra mineral resource estimate, metal prices have changed significantly.

The author believes the Zimapan property and the La Negra property share similar characteristics – including geological setting, mineralization and alteration styles and an extensive history of mining activity.

24 Other Relevant Data and Information

Intentionally left blank.

25 Interpretation and Conclusions

The Zimapan property comprises of the Carrizal mine, Monte mine and El Monte Plant. The Carrizal mine contains six mineral zones and the Monte Mine contains eight mineral zones that are characterized as polymetallic replacement mineralization. Silver, lead, zinc and copper minerals have preferentially replaced carbonate host rocks and pre-existing skarn bodies to produce disseminated, semi-massive sulfide and massive sulfide bodies that occur in proximity to and related to monzonitic intrusions and quartz-feldspar porphyry dikes. Previous mining activities at the Carrizal and El Monte mines demonstrate that the mineral zones have the potential to occur in clusters and the potential to have both lateral and vertical continuity.

Based upon a review of the work completed by Carrizal Mining, it is interpreted that Zimapan property has not been systematically explored using modern exploration techniques and much of the Property has not been explored by Carrizal Mining beyond the known mineral zones and the primary focus has been to replace near mine mineral sources through conservative systematic mine development.

Drilling conducted by the Company between 2011 and March 2020 was successful in extending the strike-length and down dip extent to the known mineral zones in the Carrizal and El Monte mines by conducting step-out drilling from access tunnels and production areas, particularly within the Horizontes, Santa Fe, Escondida and Dike Concordia zones. Of the 287 holes drilled between 2011 and March 2020, only 17% of the holes were longer than 150 m with median drill hole length of 98 m. This approach is well suited for extending mineralization incrementally from existing bodies, but is not suited for finding new deposits. Expanding drilling to include longer holes farther out from existing operations is necessary for developing a compliant resource estimate and mine planning.

Core logging, underground mapping and sampling has been done in a consistent manner and at high level of resolution with a focus upon information needed for mine planning and grade control. Sampling of core for geochemical analysis was limited to narrow higher-grade intervals leaving gaps between samples.

The geochemical analysis completed by the mine laboratory is limited to a few elements and is not tailored to evaluating lower grade material. In addition, the mine laboratory is not ISO certified.

In terms of property wide scale exploration, there is no evidence of recent detailed structural, alteration mapping and interpretation being completed. This information would aid greatly in both understanding the controls upon mineralization and exploration for new resources.

Geophysics has not been consistently used as an aid to exploration on the Property. Modern airborne, ground, or borehole surveys have not been conducted on the Property. Because of the petrophysical contrasts between host rocks, skarn related alteration and sulfide mineralization, several different geophysical survey methods would be effective in guiding exploration both on a property and detail scale. Airborne and ground magnetic and electromagnetic surveys could be used to map dikes and intrusive bodies and identify areas of potential mineralization.

Trace-element geochemical rock sampling conducted with detailed structural and alteration mapping would be useful in identifying areas that lack surface exposure of sulfide mineralization

The authors are of the opinion that the Zimapan property is a property of merit based on geological and mineral characteristics, pre-existing infrastructure, active mining and mineral processing, and sizeable land package for the application of future exploration work.

Lastly, the authors maintain the opinion that the Property is an advanced stage project that is currently extracting mineralized material in the absence of modern and conventional studies, including the absence of a feasibility study of mineral reserves demonstrating economic and technical viability.

26 Recommendations

This recommended work program has two objectives: first to identify new exploration targets using modern exploration techniques that have not be utilized on the Property, and second, address the QA/QC defficincies in the Property geochemical database that prevents the use of this data in producing a mineral resource estimate that is in accordance with CIM Definition Standards on Mineral Resources and Reserves. These two work programs can be conducted independently.

26.1 Mine Development and Mineral Resource Estimate

Development focused drilling from underground at Carrizal and El Monte mines have typically been scheduled and funded by routine mining activities to date. The authors do not have reason to doubt this process or recommend work related to mine development. However, there is an urgent need to compile and model in three dimensions (3D) the underground infrastructure, exhausted stopes, known limits of the mineral zones, and the location of development drill holes to better assist with planning future development drilling and the preparation of a mineral resource estimate in accordance with CIM Definition Standards on Mineral Resources and Reserves. The suggested cost for data compilation and 3D modeling work is US $75,000.

26.2 Property Scale Exploration

This exploration program is divided into two phases with the first phase consisting of an integrated program of detailed structural and alteration mapping, lithogeochmical sampling and airborne geophysical surveying.

26.2.1 Phase 1 – Airborne Geophysical Surveying, Mapping.

A property wide airborne geophysical surveying program using Versatile Time Domain Electromagnetic Survey (VTEM) method is recommended for the purpose of identifying shallow sulfide conductors in areas not previously worked or explored. VTEM is typically a helicopter assisted survey that can produce interpreted targets in relatively short time. Geological mapping support personnel is also recommended for field investigation of VTEM derived exploration target locations. The field investigation is intended to provide additional target scale geological information (lithology, alteration, and detailed structural controls) to identify prospectively and ranking of the VTEM results. A suggested cost of US $404,500.00 is anticipated for the completion of this work over a four- to six-week period.

Additional ground geophysics may be required to follow up on the VTEM and geology mapping results.

Table 26-1: Phase 1 Work Recommendations

Work	Rate (US$)	Unit	Quantity	Cost (US$)
VTEM Survey	169.23	$ per line-km	1300	230,000.00
Geology Mapping	3,000.00	$ per day per six-person crew	30	90,000.00
Assaying	75.00	$ per sample for multi-element and fire assay	900	67,500.00
Geological Crew Mobilization	1500	$ per senior geologist including QP	3	4,500.00
Meals and Accommodation	360.00	$ per day per six-person crew	30	10,800.00
Ground Transportation	390.00	$ per day for three field vehicles and fuel	30	11,700.00
			Total	404,500.00

26.2.2 Phase 2 – Exploration Drilling

Phase 2 work is contingent on Phase 1 results. The hypothesis is that VTEM and geological mapping results from Phase 1 work may indicate near surface exploration targets proximal to but not within known mineral zones at El Monte and Carrizal. Drill testing these hypothetical targets is recommended to assess for mineralization and stratigraphic information. The per meter costs of US $155 assumes costs in steep terrain using portable drill road access costs, transportation of water to support drilling. Drill supervision, logging and the use of an external accredited laboratory are extra. A suggested cost of US $440,000.00 and 2,000 m of surface core drilling is anticipated for ten drill holes each completed to a depth of 200 m.

Table 26-2: Phase 2 Work Recommendations

Work	Rate (US$)	Unit	Quantity	Cost (US$)
Surface Drilling	155.00	$ per meter inclusive of support	2000	310,000.00
Core logging and sampling	500.00	$ per day for 2-person crew	30	15,000.00
Assay	75.00	$ per sample	1500	115,000.00
			Total	440,000.00

26.3 Quality Control Check Sampling

The author recommends increasing the reliability of the geological and analytical data collected from the mineral zones. To address the QA/QC deficiencies in the geochemical rock sample database a program of reanalysis of sample pulps, analysis of duplicate core split samples and analysis of duplicate underground chip samples by an external ISO accredited laboratory is recommended.

Because of the large number of samples involved and the fact that many parts of the Carrizal and El Monte mines may not be currently accessible, the initial focus of control sampling should be upon mineralized bodies which are currently under active development or are in the near term mine plan. The initial sample density for any individual mineral body should be in the order of 5% of the pulps from underground channel samples, 5% of all the core drilled, and 5% duplicate channel sampling, sampling. The selection of samples and pulps needs to cover the mineralized body uniformly and include intervals of both low and high grades.

Upon the receipt of the analytical results from the external check lab, comparison of the results to those in the database is completed to determine if the historical can be used and if so what changes in QC sampling are needed before proceeding with subsequent sampling.

The proposed first round of QC sampling, costing $46,000 would cover roughly 3% of the total geochemical database.

Table 26-3: First round of QC sampling

Work	Rate (US$)	Unit	Quantity	Cost (US$)
Underground duplicate chip sampling	300.00	$ per day sampling with 3 person crew	5	1,500.00
Core sampling and relogging	300.00	$ per day for 3 person crew	5	1,500.00
Sample pulp selection, retrieval, and subsampling	200.00	$ per day for 2 person crew	2	400.00
Core and rock sample assay	75.00	$ per sample including prep	400	30,000.00
Pulp assay	60.00	$ per sample	200	12,000.00
QP sample selection planning review and modification of	500.00	$ per day for QP geologist	2	1000.00
			Total	46,000.00

Following the completion of the first round of QC sampling additional work will be required to cover areas where sampling is insufficient for the purpose of resource calculation. This work will include drilling and sampling. The cost of this next phase of work is dependent upon the results of the QC sampling and review of the data.

27 References

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