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### ST ANDREW GOLDFIELDS LTD.

### TECHNICAL REPORT ON THE CLAVOS PROJECT IN THE TIMMINS AREA, NORTHEASTERN ONTARIO, CANADA

NI 43-101 Report

Qualified Persons: Chester M. Moore, P.Eng. David A. Ross, P.Geo.

> October 12, 2012 Re-addressed December 31, 2012

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#### **Report Control Form**

Document Title	Technical Report or Northeastern Ontar		Project in	the Timmins	Area,
Client Name & Address	St Andrew Goldfield 20 Adelaide Street Toronto, Ontario M5C 2T6		500,		
Document Reference	Project #1577	Status Issue N		Version	0
Issue Date	December 31, 2012	2			
Lead Author	Chester M. Moore		(Signed)	)	
Peer Reviewer	Wayne Valliant		(Signed)	)	
Project Manager Approval	Chester M. Moore	(Signed)			
Project Director Approval	Wayne Valliant		(Signed)	)	
Report Distribution	Name			No. of Copies	

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### **1 SUMMARY**

#### **EXECUTIVE SUMMARY**

#### INTRODUCTION

Roscoe Postle Associates Inc. (RPA) was retained by Sage Gold Inc. (SGX) to prepare an independent Technical Report on the Clavos Project located in the Timmins area in northeastern Ontario, Canada. The purpose of the report is to support public disclosure of a Mineral Resource estimate effective October 12, 2012 for the Clavos deposit. This Technical Report conforms to NI 43-101 Standards of Disclosure for Mineral Projects. RPA visited the property in March 2007 and more recently on June 15, 2011.

This report has been re-addressed to St Andrew Goldfields Ltd. (SAS). SAS and SGX formed the Clavos Joint Venture in August 2012 to advance the Clavos Project. SAS has a 40% interest in the Clavos Joint Venture, with the remaining 60% interest held by SGX. SGX is implementing the exploration program on behalf of the Clavos Joint Venture. Both SAS and SGX are Canadian exploration and development companies with land positions in Timmins, northern Ontario, and corporate offices in Toronto, Ontario. Both companies are reporting issuers in Canada.

RPA has previously completed Mineral Resource estimates and NI 43-101 technical reports on the Clavos deposit in April 2003, September 2003, October 2006, and April 2007 (unpublished).

#### CONCLUSIONS

An updated Mineral Resource estimate was completed on the Clavos Project based on surface and underground diamond drilling and chip sampling results by previous owners. The SGX surface drill results, completed in 2010 to 2012, were also included in the estimation data.

Table 1-1 lists the Mineral Resources in the Clavos deposit.



#### TABLE 1-1 SUMMARY OF MINERAL RESOURCES – OCTOBER 12, 2012

#### St Andrew Goldfields Ltd. – Clavos Project

Category	Cut-off Grade (g/t Au)	Tonnage	Grade (g/t Au)	Contained Metal (oz Au)
Indicated				
	4.0	635,500	6.25	127,700
	3.0	1,115,300	5.06	181,400
	2.75	1,258,400	4.81	194,600
	2.5	1,399,100	4.59	206,500
	2.0	1,618,100	4.28	222,500
Inferred				
	4.0	394,000	6.2	78,000
	3.0	674,000	5.0	109,000
	2.75	796,000	4.7	120,000
	2.5	866,000	4.5	126,000
	2.0	994,000	4.2	136,000

Notes:

1. CIM definitions were followed for Mineral Resources.

2. RPA recommends that a cut-off grade of 2.75 g/t Au is used for economic evaluations.

3. Mineral Resources are estimated using a long-term gold price of US\$1,600 per ounce and a US\$/C\$ exchange rate of 1:1.

4. A minimum mining width of 1.5 m was used.

5. Bulk density is 2.76 t/m<sup>3</sup>.

6. Numbers may not add due to rounding.

The sample preparation, security, and assay procedures at the Clavos Project are completed to industry standards and the data from the 2010 to 2012 drill program are suitable for use in resource estimation.

Data collection and entry, and database verification procedures for the Clavos Project comply with industry standards and the compiled database is suitable for the estimation of Mineral Resources.

The potential to expand the known mineralization exists along the strike and down dip directions at Clavos. Further drilling is warranted.

#### RECOMMENDATIONS

The Clavos Joint Venture plans to continue surface drilling in 2013. The 960 Zone will be targeted. Approximately 3,300 m of drilling is proposed at a planned cost of \$450,000.



Details of the planned expenditure are listed in Table 1-2. RPA agrees with the planned drilling program.

# TABLE 1-2 PROPOSED SURFACE DRILLING PROGRAM St Andrew Goldfields Ltd. – Clavos Project

Target Area	Drilling (m)	Budget (C\$)
960 Zone – 13 drill holes	3,365	450,000

A Preliminary Economic Assessment (PEA) is the next logical step following the completion of the resource estimate. The Clavos Joint Venture is working on a PEA at the present time and expects it to be completed in early 2013 at an estimated cost of \$100,000. RPA concurs with the completion of a PEA for the Clavos Project.

The Clavos Joint Venture has proposed an underground exploration program of drifting and drilling starting on the 250 level should the mine workings be dewatered to that depth. The purpose of the program is to complete exploration and detailed delineation of the main mineralized zones eastward from the Main Zone out to and including the 960 Zone. The drift will be positioned in the hangingwall of the zones and drilling will initially be completed on 60 m sections at 60 m spacings on the projected position of the Hangingwall Zone. A second phase of infill drilling on 30 m spacings would follow up on targets developed in Phase 1. Details of the proposed expenditure are listed in Table 1-3. The drifting budget includes drill stations cut on 60 m centres and the drilling includes mobilization, sampling, and assaying. RPA agrees with the underground exploration program.

# TABLE 1-3 PROPOSED UNDERGROUND EXPLORATION PROGRAM St Andrew Goldfields Ltd. – Clavos Project

Description	Length (m)	Budget (C\$)
Drifting (including drill stations)	1,050	5,800,000
Drilling (Phase 1)	15,750	2,200,000
Drilling (Phase 2)	7,500	1,000,000
Total		9,000,000



#### **TECHNICAL SUMMARY**

#### PROPERTY DESCRIPTION, LOCATION, AND LAND TENURE

The Clavos Project is located in German, Stock, and Clergue townships 50 km east of the City of Timmins. The property comprises 59 patented or leased mineral claims covering 1,605 ha plus 14 unpatented mineral claims with an area of 935 ha for an aggregate total area of 2,540 ha. The claims are all 60% owned by SGX and 40% owned by St Andrew Goldfields Ltd. (SAS) except for the three claims in Clergue Township. These claims are controlled by a SAS/Goldcorp Inc. joint venture, with SAS having a 40% interest in the claims.

The unpatented claims are in good standing and do not require further work credits until May 17, 2014.

No mining activities are being carried out at the present time on the property and the former underground mine workings are flooded. Since the ore from the previous operation was processed at an adjacent property, the environmental liabilities are well documented and are considered minimal.

An amended closure plan for the mine site, inclusive of financial assurance was filed in July 2012. The Notice of Project Status was submitted to the Ministry and identified the Clavos JV Mine Site as being in a State of Mine Production (& Development).

An amendment to the Environmental Compliance Permit has been issued which included the approval of the replacement of the discharge water weir device in the effluent monitoring structure. The Ontario Ministry of Environment also granted the taking of water permit from the mine workings for the purpose of mine dewatering.

Initial results from a surface waste rock stockpile leach testing program indicate there is only minimal leaching of arsenic.

Ground water testing was completed with the results confirming that the ground water is in compliance with the regulatory criteria established with the Ministry of Environment.





#### EXISTING INFRASTRUCTURE

Clavos is a former underground mining operation serviced by a ramp. Broken ore was trucked to the surface and transported to the nearby Stock mill for treatment.

Current infrastructure on site includes:

- Power to site (5 kV from Finn Road)
- Surface ventilation system (two 150 hp fans)
- Site septic system upgrades were recently performed (100 man capacity)
- Tapered waste pile
- Surface waste water facility (twin pond arrangement with flow meter, twin settling tanks)
- 15 ft x 30 ft compressor building (new Quonset building)
- 30 ft x 60 ft generator building (Quonset building) complete with twin diesel generators
- 40 ft x 100 ft cold storage building
- 12 ft x 50 ft office/security trailer
- 12 ft x 50 ft core shack trailer
- 40 ft x 100 ft shop complex

#### HISTORY

Exploration on the Clavos property dates back to 1939. Clavos Porcupine Mines first discovered gold in 1946. Exploration activity appears to have ceased throughout the 1950s and 1960s but resumed in 1973, when Noranda Inc. carried out a modest drill program. This program was followed in 1983 by Bruneau Mining Corporation, which drilled six drill holes. Canamax Resources Inc. gained an interest in the property in 1983, and for the next four years, carried out extensive exploration which included drilling 241 holes totalling 45,874 m, geophysical surveys, and a pre-feasibility study. United Tex-Sol Mines Inc. (UTX) acquired the property in 1996 and drilled an additional 23,585 m. From 1999 to 2001, Kinross Gold Corporation (Kinross) held the property under option from UTX, and conducted diamond drilling, geophysical surveys, surface surveying, and line-cutting. Kinross drilled a total of 30,433 m.

Kinross dropped the option on the property on December 31, 2001, and no further exploration work was done until SAS purchased about 30% of UTX in July 2002. In January 2003, SAS amalgamated with UTX and Royal Victoria Minerals Ltd. and obtained a 100% interest in the Clavos property.



In February 2004, SAS started the development of a decline ramp to provide access to the Clavos deposit. During 2005, 4,237 m of underground development were completed on the 100 m, 150 m, 175 m, 200 m, 225 m, and 250 m levels. Drill stations were established and a total of 62,582 m was drilled from June 2004 to the end of December 2006.

In 2003 and 2004, thirteen diamond drill holes aggregating 4,180 m were drilled from surface by SAS. No further surface drilling was carried out until 2010 when SGX optioned the property.

By the end of June 2006, approximately 2,000 m of decline had been excavated and the ramp had reached a vertical depth of 300 m below the surface. During this period, a total of 7,822 m of drifting was also completed.

Mineral Resources were last disclosed for the Clavos Project by SAS as of August 31, 2006. The estimate was a joint effort of SAS staff and Scott Wilson RPA (a predecessor of RPA), and comprised Measured plus Indicated Resources of 143,000 tonnes grading 8.07 g/t Au and Inferred Resources of 529,000 tonnes grading 6.5 g/t Au.

The processed production from the Clavos Project from the beginning of 2006 until shutdown of operations in 2007 totalled 120,746 tonnes grading 4.3 g/t Au containing 16,745 ounces of gold.

#### **GEOLOGY AND MINERALIZATION**

The Clavos Project is centrally located in the Abitibi greenstone belt in the Superior Province of the Canadian Shield. The Abitibi Belt is a 750 km long by 250 km wide strip of deformed and metamorphosed volcanic and sedimentary rocks and granitoid batholiths ranging in age from approximately 2,745 to 2,680 Ma.

The Abitibi Belt in Ontario has been interpreted to contain at least nine lithostratigraphic assemblages. The oldest assemblages (2,745 to 2,700 Ma) are predominantly felsic to mafic metavolcanic rocks with local minor oxide, silicate, and sulphide chemical sedimentary rocks and clastic sedimentary rocks, intruded by ultramafic to granodioritic bodies. Widespread felsic plutonism comprising granodiorites, granites, quartz feldspar porphyries, and syenite bodies took place between 2,700 and 2,680 Ma. Younger sedimentary rocks are contained in the Porcupine assemblages dated at 2,698 Ma and the Timiskaming assemblage at 2,685



Ma. The metamorphic grades within the supracrustal rocks are generally sub-greenschist to greenschist facies and to amphibolite facies near intrusive bodies.

A number of major, steeply dipping, east-west striking, and brittle to ductile deformation zones transgress these supracrustal rocks, with the Porcupine-Destor Fault Zone (PDFZ) being the most significant in the Timmins area. The PDFZ was active relatively late in the history of the belt and many of the gold deposits are closely associated with it and Timiskaming sediments found along its strike length. The Pipestone Fault that hosts the Clavos deposit is a splay off the PDFZ.

The Clavos property straddles the contact between Porcupine Group sedimentary rocks (2,689 to 2,680 Ma) to the south and ultramafic volcanic rocks of the Kidd-Munro Assemblage (2,718 to 2,710 Ma) to the north. The unconformity represented by this east-west trending ultramafic-sedimentary contact defines the location of the Pipestone Fault, a major regional structure in the Timmins mining camp. In general, the contact dips steeply south, although shallow south to steep north dips occur locally and may be fold or fault related.

The mineralization at Clavos is located within an envelope of highly altered ultramafic flows and volcaniclastic fragmental rocks referred to as the DL zone. The DL zone, which lies approximately 10 m north of the sedimentary-volcanic contact, varies in thickness from 30 m to 60 m, is cored by several semi-concordant, east-west trending, steeply dipping and shallow east-plunging feldspar porphyry bodies of up to 20 m in thickness. The shallow easterly plunge is regional in character and is overprinted by local structures.

There are five gold-bearing zones for which mineral resources have been estimated. These are the Hangingwall Zone (HW Zone), the Footwall Zone (FW Zone), the Contact Zone, the Sediment Zone, and a group of miscellaneous intersections listed as Other Mineralization. Of these zones, the HW Zone has been the main target of past mining activities.

The HW Zone and FW Zone represent the majority of the mineralization at Clavos and vary from 1.5 m to more than 3.0 m in horizontal thickness along the south and north contacts of the feldspar porphyry bodies respectively. These zones consist of quartz and quartz-carbonate veins and stringers hosted within a sulphide-rich package of fuchsite and sericite altered ultramafic volcanic rocks. Up to 10% sulphides consisting of pyrite, arsenopyrite,



galena, gersdorffite (nickel arsenide), and rarely chalcopyrite occur as disseminated grains in the altered host rock and within narrow fractures/veinlets within the quartz veins. Gold occurs as coarse nuggets predominantly within the quartz veins but occasionally within the volcanic host, and also as inclusions within the sulphide grains.

#### **EXPLORATION STATUS**

A total of 513 diamond drill holes totalling 113,434 m had been drilled from surface on the Clavos property prior to 2010. A total of 799 underground holes totalling 62,582 m were drilled from June 2004 to the end of December 2006.

Due to the large amount of previous work on the property and accrued knowledge of the geology and mineralization, SGX has concentrated its current exploration activities on surface diamond drilling.

#### 2010-2012 SGX DRILL PROGRAM

SGX drilled a total of 31 surface diamond drill holes and two abandoned holes totalling 9,539 m on the Clavos property from 2010 to 2012. All but one of the holes were oriented along north-south section lines, primarily drilled in a northerly direction and at angles between 50° and 65°. All of these holes are included in the database used for the resource estimate.

Drill collar locations were surveyed by a qualified land surveyor using total station and/or differential GPS survey instruments. Downhole orientation surveys for each drill hole were collected at 40 m to 60 m intervals during drilling using a Reflex EZTRAK instrument.

Drill core was placed in core trays at the drill site by the drill helper. The filled core trays were transported to the core logging area at the end of each drill shift by the drill team. The core was placed in a locked core facility if no authorized personnel were present to receive it.

The drill core was logged by the project geologists who recorded geological observations including major and minor lithologies, alteration, mineralization, and structural features. Structural measurements included mineral foliations, banding, lithologic contacts, dykes, and veins. Overall, core recoveries were found to average greater than 95%.

Prior to core sampling, digital core photos were taken of each core tray for future reference.



RPA is of the opinion that the logging and recording procedures are comparable with industry standards.

#### MINERAL RESOURCES

RPA prepared a Mineral Resource estimate for the Clavos property using digital drill hole data provided by SGX. A lithological model was prepared by SGX and wireframe solids of the gold mineralization were prepared by RPA. Pertinent statistics and variograms were determined for the deposit and grades were interpolated into the blocks using Inverse Distance Cubed (ID<sup>3</sup>) methodology. The Mineral Resources were classified as Indicated and Inferred Mineral Resources based on the distance to the nearest assay information.

Mineral Resources potentially mined by underground methods are reported in Table 1-1.



### **2 INTRODUCTION**

Roscoe Postle Associates Inc. (RPA) was retained by Sage Gold Inc. (SGX) to prepare an independent Technical Report on the Clavos Project located in the Timmins area in northeastern Ontario, Canada. The purpose of this report is to support public disclosure of a Mineral Resource estimate for the Clavos deposit effective October 12, 2012. This Technical Report conforms to NI 43-101 Standards of Disclosure for Mineral Projects.

This report has been re-addressed to St Andrew Goldfields Ltd. (SAS). SAS and SGX formed the Clavos Joint Venture in August 2012 to advance the Clavos Project. SAS has a 40% interest in the Clavos Joint Venture, with the remaining 60% interest held by SGX. SGX is implementing the exploration program on behalf of the Clavos Joint Venture. Both SAS and SGX are Canadian exploration and development companies with land positions in Timmins, northern Ontario, and corporate offices in Toronto, Ontario. Both companies are reporting issuers in Canada.

RPA has previously completed Mineral Resource estimates and NI 43-101 technical reports on the Clavos deposit in April 2003, September 2003, October 2006, and April 2007 (unpublished).

#### SOURCES OF INFORMATION

A site visit to the Clavos Project was carried out by Chester Moore, P.Eng., Principal Geologist with RPA, on June 15, 2011. Although the underground mine workings were flooded, he visited drill sites, reviewed logging and sampling methods, inspected core from drill holes, and independently sampled five mineralized intervals. Mr. Moore previously visited the Clavos site and underground operations on March 13 and 15, 2007.

In preparation of this report, technical documents and reports were supplied by SGX. Technical documents reviewed included project reports, assay certificates, drill logs, and cross sections. The key technical documents reviewed by RPA for this report are "Technical Report on the Taylor, Clavos, Hislop, and Stock projects, in the Timmins Area, Northeastern Ontario" dated October 2, 2006 (Roscoe and Gow 2006), and "Technical Report on the Clavos Project in the Timmins Area, Northeastern Ontario" dated April 6, 2007 (Moore 2007).



Discussions were held with personnel from SGX:

- Mr. Nigel Lees, President and CEO, SGX
- Mr. William Love, VP Business Development, SGX
- Mr. David Glidden, P. Geo., Consulting Geologist, Glider Geoservices Inc.
- Mr. Pat Pope, P. Geo., Consulting Geologist, Glider Geoservices Inc.
- Mr. Peter Hubacheck, Consulting Geologist, W.A. Hubacheck Consultants Ltd.

Mr. Moore is responsible for all sections in this report except those parts of Section 14 completed by Mr. Ross. RPA Principal Geologist Mr. David Ross, M.Sc., P.Geo., is responsible for parts of Section 14 including geological interpretation, wireframe models, and grade estimation for the Mineral Resource of the Technical Report.

The documentation reviewed, and other sources of information, are listed at the end of this report in Section 27 References.



#### LIST OF ABBREVIATIONS

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

а	annum	kWh	kilowatt-hour
A		L	litre
bbl	ampere barrels	lb	pound
	British thermal units	L/s	1
btu ∘C		m	litres per second metre
	degree Celsius		
C\$	Canadian dollars	M m <sup>2</sup>	mega (million); molar
cal	calorie	m m <sup>3</sup>	square metre
cfm	cubic feet per minute	m	cubic metre
cm	centimetre	μ	micron
cm <sup>2</sup>	square centimetre	MASL	metres above sea level
d	day	μg m³/h	microgram
dia	diameter	m /h	cubic metres per hour
dmt	dry metric tonne	mi	mile
dwt	dead-weight ton	min	minute
٥F	degree Fahrenheit	μm	micrometre
ft	foot	mm	millimetre
ft <sup>2</sup>	square foot	mph	miles per hour
ft <sup>3</sup>	cubic foot	MVA	megavolt-amperes
ft/s	feet per second	MW	megawatt
g	gram	MWh	megawatt-hour
G	giga (billion)	oz	Troy ounce (31.1035g)
Gal	Imperial gallon	oz/st, opt	ounce per short ton
g/L	grams per litre	ppb	parts per billion
Ğpm	Imperial gallons per minute	ppm	parts per million
g/t	grams per tonne	psia	pounds per square inch absolute
gr/ft <sup>3</sup>	grains per cubic foot	psig	pounds per square inch gauge
gr/m <sup>3</sup>	grains per cubic metre	RL	relative elevation
ĥa	hectare	S	second
hp	horsepower	st	short ton
hr	hour	stpa	short tons per year
Hz	hertz	stpd	short tons per day
in.	inch	t	metric tonne
in <sup>2</sup>	square inch	tpa	metric tonnes per year
J	joule	tpd	metric tonnes per day
k	kilo (thousand)	ÚS\$	United States dollar
kcal	kilocalorie	USg	United States gallon
kg	kilogram	USgpm	US gallons per minute
km	kilometre	V	volt
4 km <sup>2</sup>	square kilometre	W	watt
km/h	kilometres per hour	wmt	wet metric tonne
kPa	kilopascal	wt%	weight percent
kVA	kilovolt-amperes	yd <sup>3</sup>	cubic yard
kW	kilowatt	yr	year
			•



### **3 RELIANCE ON OTHER EXPERTS**

This report has been prepared by Roscoe Postle Associates Inc. (RPA) for St Andrew Goldfields Ltd. (SAS). The information, conclusions, opinions, and estimates contained herein are based on:

- Information available to RPA at the time of preparation of this report,
- Assumptions, conditions, and qualifications as set forth in this report, and
- Data, reports, and other information supplied by SGX and other third party sources.

For the purpose of this report, RPA has relied on ownership information provided by SGX. The client has relied on an opinion by Cassels Brock & Blackwell LLP, effective October 31, 2012, entitled Sage Gold Inc. Unpatented Mining Claims and Sage Gold Inc. Patented Land, and this opinion is relied on in Sections 2, 4 and the Summary of this report. RPA has not researched property title or mineral rights for the Clavos Project and expresses no opinion as to the ownership status of the property.

RPA has relied on SGX for guidance on applicable taxes, royalties, and other government levies or interests, applicable to revenue or income from the Clavos Project.

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



### **4 PROPERTY DESCRIPTION AND LOCATION**

The Clavos Project is located in German, Stock, and Clergue townships (Figures 4-1 and 4-2) 50 km east of the City of Timmins. The property comprises 59 patented or leased mineral claims covering 1,605 ha plus 14 unpatented mineral claims with an area of 935 ha for an aggregate total area of 2,540 ha. The property is centred at about 514000E and 538400N, NAD 83, Zone 17 in UTM coordinates. The claims are owned 60% by SGX and 40% by SAS except for the three claims in Clergue Township. These claims are controlled by a SAS/Goldcorp Inc. joint venture, with SAS having a 40% interest in the claims.

#### LAND TENURE

A list of the claims is included in Table 4-1.

The unpatented claims are in good standing and do not require further work credits until May 17, 2014.





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Claim	Parcel	PIN	Clavos JV Ownership (%)	Rights	Township	Area (ha)	Royalty
CP2433	5748sec	65362-535	100	SMR	German	73.963	1,4,5
CP4379	17702sec	65363-186	100	SRO	Stock	15.653	nil
CP4379	17703sec	65363-180	100	SRO	Stock	16.045	nil
CP4384	17704sec	65363-187	100	SRO	Stock	17.010	nil
CP4384	17705sec	65363-179	100	SRO	Stock	16.988	nil
CP4990	22593sec	65362-305	100	MRO	German	75.588	9
CP6499	23144sec	65362-311	100	MRO	German	60.782	1,2,5,6
CP6633	22093sec	65362-154	100	SRO	German	53.806	nil
CP6634	17709sec	65362-298	100	SRO	German	71.333	nil
CP6635	22094sec	65362-155	100	SRO	German	16.941	nil
CP6638	17711sec	65362-156	100	SRO	German	15.051	nil
CP6638	17712sec	65362-157	100	SRO	German	15.512	nil
CP6638	17713sec	65362-299	100	SRO	German	84.314	nil
CP6640	22095sec	65363-158	100	SRO	Stock	63.893	nil
CP6663	17715sec	65363-159	100	SRO	Stock	17.613	nil
L37438	9238sec	65363-199	100	MRO	Stock	15.653	1,5,6
L37439	9239sec	65363-200	100	MRO	Stock	16.045	1,5,6
L37440	9250sec	65363-184	100	SMR	Stock	14.864	1,5,6,10
L37441	9249sec	65363-182	100	SMR	Stock	15.205	1,5,6
L37442	9240sec	65363-185	100	SMR	Stock	17.578	1,5,6
L37443	9243sec	65363-181	100	SMR	Stock	18.392	1,5,6
L37454	9241sec	65363-201	100	MRO	Stock	17.010	1,5,6
L37455	9242sec	65363-202	100	MRO	Stock	16.988	1,5,6
L42605	12837sec	65363-211	100	MRO	Stock	17.613	1,5,6
L42606	12821sec	65363-212	100	MRO	Stock	14.364	1,5,6
L42607	12821sec	65363-212	100	MRO	Stock	17.618	1,5,6
L42608	12822sec	65363-183	100	SMR	Stock	17.035	1,5,6
L42609	12821sec	65363-212	100	MRO	Stock	16.536	1,5,6
L42729	12822sec	65363-183	100	SMR	Stock	16.560	1,5,6,10
L43304	12821sec	65363-212	100	MRO	Stock	15.463	1,5,6
L46943	12823sec	65363-246	100	MRO	Stock	14.517	1,5,6
L46944	12823sec	65363-246	100	MRO	Stock	16.182	1,5,6
L476976	8724sec	65363-218	100	MRO	Stock	71.02	1,5,6
NP2564	667sec	65362-297	100	SMR	German	67.14	8

## TABLE 4-1CLAVOS CLAIM LISTSt Andrew Goldfields Ltd. – Clavos Gold Project

Claim	Parcel	PIN	Clavos JV Ownership (%)	Rights	Township	Area (ha)	Royalty
NP5348	1184sec	65362-551	100	MRO	German	67.37	1,3,5,6
P28977	12819sec	65362-300	100	SMR	German	21.54	1,5,6
P28978	12815sec	65362-301	100	MRO	German	16.46	1,5,6
P28979	12815sec	65362-301	100	MRO	German	18.00	1,5,6
P28980	12815sec	65362-301	100	MRO	German	19.08	1,5,6
P28981	12815sec	65362-301	100	MRO	German	17.80	1,5,6
P29600	12819sec	65362-300	100	SMR	German	19.78	1,5,6,10
P29601	12819sec	65362-300	100	SMR	German	22.34	1,5,6
P29602	20811sec	65362-154	100	SMR	German	17.04	1,5,6
P29603	12814sec	65362-507	100	MRO	German	17.88	1,5,6
P29604	12817sec	65362-505	100	MRO	German	15.05	1,5,6
P29605	12818sec	65362-504	100	MRO	German	15.51	1,5,6
P29895	12819sec	65362-300	100	SMR	German	20.66	1,5,6,10
P30683	12816sec	65362-506	100	MRO	German	16.94	1,5,6
P30684	12814sec	65362-507	100	MRO	German	18.89	1,5,6
P30685	12814sec	65362-507	100	MRO	German	18.18	1,5,6
P32143	12820sec	65362-503	100	SMR	German	19.53	1,5,6
P32144	12820sec	65362-503	100	MRO	German	20.47	1,5,6
P723319	1763LC	65363-001	100	MRO	German	19.12	1,5,6
P723320	1763LC	65363-001	100	MRO	German	16.50	1,5,6
P724525	1763LC	65363-001	100	MRO	Stock	15.60	1,5,6
P724526	1763LC	65363-001	100	MRO	Stock	13.97	1,5,6
TP738	10046sec	65363-188	100	SRO	Stock	33.38	nil
TP738	5901sec	65363-189	100	SRO	Stock	31.04	nil
TP748	6281sec	65363-223	100	MRO	Stock	62.46	1,5,6
1212954	UPC	n/a	100	MRO	German	66.82	nil
1212957	UPC	n/a	100	MRO	German	16.99	nil
1213708	UPC	n/a	100	MRO	German	65.10	nil
1245302	UPC	n/a	40	MRO	Clergue	129.27	11
1245323	UPC	n/a	40	MRO	Clergue	95.62	11
1245324	UPC	n/a	40	MRO	Clergue	64.51	11
3010679	UPC	n/a	100	MRO	Stock	260.39	7
3010680	UPC	n/a	100	MRO	Stock	33.21	7
3010703	UPC	n/a	100	MRO	Stock	51.37	7
3011212	UPC	n/a	100	MRO	Stock	16.77	nil
3011213	UPC	n/a	100	MRO	Stock	17.07	nil
3011216	UPC	n/a	100	MRO	Stock	15.40	nil

Claim	Parcel	PIN	Clavos JV Ownership (%)	Rights	Township	Area (ha)	Royalty
3011217	UPC	n/a	100	MRO	Stock	16.21	nil
3011221	UPC	n/a	100	MRO	German	86.80	nil
						2,540.4	
otes: Royalties							
1	Jubilee Gold Inc.	1983	0-4% NSR				
*2	Kangas	1984	\$1.00/ton				
*3	Lahti	1984	\$0.50/ton				
*4	Suhonen	1987	\$0.50/ton				
**5	Teck Resources Inc.	1995	2% NSR or	1% NSR + \$1.5	50/tonne		
***6	Nighthawk North	1996	1% NSR				
7	Robitaille et al	2003	2% NSR				
8	Desrochers	2004	2% NSR				
9	Lund, Lundgren	2005	2% NSR				
9	Teck Resources Inc.	2005	2% NSR				
10	Franco Nevada	2007	1% NSR				
*	Royalties referred to as "2	2,3 and 4" are s	subject to adjustments	using the same	epercentage		
	of change as to the CPI of	of Canada. Bas	e 1984 being 1981=100	)			
**	If payable under the "Clavos" agreement royalty is 2% NSR, if not is 1% NSR + \$1.50/tonne						
***	Nighthawk North (subsidiary of "UTX") - NSR dissolved						
Definitions							
MRO	Mineral Rights Only						
SMR	Surface and Mineral Rights						
SRO	Surface Rights Only						
NSR	Net Smelter Return						
NPI	Net Profits Interest						
UPC	Unpatented Mining Claim	า					
CPI	Consumer Price Index						
SAS	St. Andrew Goldfields						
GCC	Goldcorp Canada						
n/a	Not Applicable						

Note: 11 Forty percent interest in claims to be transferred to SGX (24%) and SAS (16%) from Goldcorp.



#### ENVIRONMENTAL CONSIDERATIONS AND PERMITS

No mining activities are being carried out at the present time on the property and the former underground mine workings are flooded. Since the ore from the previous operations was processed at an adjacent property, the environmental liabilities are well documented and are considered minimal. The closure bond is sufficient to cover reclamation.

The main issues to be considered when the mine is reopened are:

- Crown Pillar to be monitored.
- Arsenic mobility very close to regulatory limit and will meet standards with the addition of ferric sulphate.
- Effluent toxicity due to ammonia from blasting agent the polishing pond, combined with the use of emulsion type blasting agent, and an ammonia control program will suffice to maintain ammonia levels, and prevent effluent toxicity (to rainbow trout and daphnia magna).

An amended Closure Plan for the Clavos JV Mine Site, inclusive of financial assurance was filed in July 2012. The Notice of Project Status was submitted to the Ministry and identified the Clavos JV Mine Site as being in a State of Mine Production (& Development).

An amendment to the Environmental Compliance Permit has been issued by the Ontario Ministry of Environment for sewage works encompassing collection, transmission, treatment and disposal of effluent from the Clavos JV mining operations. This amendment included the approval of the sewage works for the replacement of the discharge water weir device in the effluent monitoring structure. The Ontario Ministry of Environment also granted the taking of water (PTTW) permit from the mine workings for the purpose of mine dewatering.

The process of treatment of the settling pond effluent using ferric sulfate, and if required  $CO_2$ , will occur prior to discharging these waters into the polishing pond receiver. Routine regulatory monitoring and reporting will take place on the polishing pond discharge effluent.

A surface waste rock stockpile leach testing program was commissioned by RPC Science and Technology of New Brunswick to assess the potential for arsenic mobility contributing to waste rock stockpile contamination. Initial results indicate there is only minimal leaching of arsenic. A waste rock management plan was drafted.



Ground water testing was completed with the results confirming that the ground water is in compliance with the regulatory criteria established with the Ministry of Environment. A water monitoring plan was established enabling assessment and reporting on an ongoing basis.

Environmental requirements for notification of ownership change have been submitted to the Ministry of Environment.

Consultation with First Nations is underway.

The Clavos Joint Venture holds the required permits to carry out drilling and exploration on the property at the current time.



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

#### ACCESSIBILITY

The Clavos property is located east of Timmins in northeastern Ontario. From Timmins, year-round access to the Clavos property is via Highway 101 to Highway 67, north on 67 to Finn Road, and eastward along Finn Road for approximately five kilometres.

There is regular daily air service between Timmins and Toronto.

#### CLIMATE

The mean annual temperature for the area is slightly above the freezing point at 1.3°C. Average July temperature is 17.4°C, and average January temperature is -17.5°C.

According to the 1961-2000 precipitation data, the average annual precipitation is 831 mm. Rain precipitation is highest in September, averaging 91.5 mm of water. Snow precipitation is registered between October and May, but its peak falls on the period between December and March, when its monthly average reaches 52.7 cm.

#### LOCAL RESOURCES

The area has been primarily developed for logging, mining, and farming. The nearby major mining centres of Timmins, Kirkland Lake, and Rouyn-Noranda can provide all supplies, services, and labour needed in the operation of a gold mine.

#### INFRASTRUCTURE

Clavos is a former underground mining operation serviced by a ramp. Broken ore was trucked to the surface and transported to the nearby Stock mill (now owned by Brigus Gold Corporation) for treatment.

Current infrastructure on site includes:

- Power to site (5 kV from Finn Road)
- Surface ventilation system (two 150 hp fans)



- Site septic system upgrades were recently performed (100 man capacity)
- Tapered waste pile
- Surface waste water facility (twin pond arrangement with flow meter, twin settling tanks)
- 15 ft x 30 ft compressor building (new Quonset building)
- 30 ft x 60 ft generator building (Quonset building) complete with twin diesel generators
- 40 ft x 100 ft cold storage building
- 12 ft x50 ft office/security trailer
- 12 ft x 50 ft core shack trailer
- 40 ft x 100 ft shop complex

Figure 5-1 is a map of the surface and underground development at the Clavos site.

#### PHYSIOGRAPHY

Continental ice sheets glaciated Northern Ontario at least four times during the Pleistocene. Following the most recent glaciation, the Laurentide of Wisconsinan age, ice receded northeast through the area and deposited a variety of surficial materials including extensive till. Glaciolacustrine sediments were deposited over the till. The area was probably ice-free some 9,000 years ago. Recent organic terrain developed mainly in poorly drained depressions. Overburden depths range from less than three metres to well over 60 m.

The Clavos property covers flat lying to gently rolling terrain with little topographic relief. Elevations range from approximately 270 MASL to 280 MASL in the property area.





### **6 HISTORY**

The description of "History" is largely taken from the report titled "Technical Report on the Taylor, Clavos, Hislop, and Stock projects in the Timmins Area, Northeastern Ontario" by W. E. Roscoe and N. N. Gow, dated October 2, 2006, which is filed on SEDAR, www.sedar.com.

#### **EXPLORATION AND DEVELOPMENT HISTORY**

Exploration on the Clavos property dates back to 1939. Clavos Porcupine Mines first discovered gold in 1946. Exploration activity appears to have ceased throughout the 1950s and 1960s but resumed in 1973, when Noranda Inc. carried out a modest drill program comprising nine AQ-size holes. This program was followed in 1983 by Bruneau Mining Corporation, which drilled six BQ-size holes. Canamax Resources Inc. (Canamax) gained an interest in the property in 1983, and for the next four years, carried out extensive exploration which included drilling 241 BQ holes totalling 45,874 m, geophysical surveys, and a pre-feasibility study. United Tex-Sol Mines Inc. (UTX) acquired the property in 1996 and drilled an additional 100 BQ holes, totalling 23,585 m.

From 1999 to 2001, Kinross Gold Corporation (Kinross) held the property under option from UTX, and conducted diamond drilling, geophysical surveys, surface surveying, and linecutting. Kinross drilled a total of 30,433 m in 103 BQ- and NQ-size holes. Work done during this period also included magnetometer, induced polarization (IP), seismic (for overburden depth) surveys, and metallurgical studies.

Kinross dropped the option on the property on December 31, 2001, and no further exploration work had been done until SAS purchased about 30% of UTX in July 2002. In January 2003, SAS amalgamated with UTX and Royal Victoria Minerals Ltd. and obtained a 100% interest in the Clavos property.

In November 2003, SAS commenced an underground exploration program at the Clavos deposit, by installing surface infrastructure and facilities. In February 2004, SAS started the development of a decline ramp to provide access to the Clavos deposit. During 2005, 4,237 m of underground development were completed on the 100 m, 150 m, 175 m, 200 m, 225 m,



and 250 m levels. Drill stations were established and a total of 799 underground holes totalling 62,582 m were drilled from June 2004 to the end of December 2006. Both BQ and AQ core sizes were utilized. All underground core drilling was completed in-house by SAS, using three company-owned drills: an Atlas Copco Diamec U6 Electric Drill, a Boyles VAG air drill, and an air driven bazooka drill. All holes, with the exception of those drilled by the Bazooka drill (which was used exclusively to aid in locating vein structures while sill drifting), were surveyed with a Reflex EZ-Shot digital survey instrument.

In 2003 and 2004, thirteen diamond drill holes aggregating 4,180 m were drilled from surface by SAS. No further surface drilling was carried out until 2010 when SGX optioned the property.

By the end of 2005, the Clavos decline had reached a depth of approximately 250 m below the surface. By the end of June 2006, approximately 2,000 m of decline had been excavated and the ramp had reached a vertical depth of 300 m below the surface. During this period, a total of 7,822 m of drifting was carried out, providing access for diamond drilling, geological mapping, and stoping operations to ascertain the continuity and characteristics of the Clavos mineralization.

#### PREVIOUS RESOURCE ESTIMATES

Mineral Resources were last disclosed for the Clavos Underground Project by SAS as of October 2, 2006 (Table 6-1). Scott Wilson RPA (a predecessor of RPA) worked with SAS staff to develop the methodology for resource estimation at Clavos and reviewed and accepted the Mineral Resource estimate. A cut-off grade of 4 g/t Au was used for reporting of Mineral Resources. High gold assays were cut to 60 g/t Au. Uncut average grades are also shown in Table 6-1 for comparison. The cut grades were used for reporting.

The Mineral Resource estimate in Table 6-1 is superseded by the Mineral Resource estimate in Section 14 of this report.



Resource	Tonnoo	Grade (g	g/t Au)	<b>Contained Ounces</b>		
Category	Tonnes	Cut (60 g/t)	Uncut	Cut (60 g/t)	Uncut	
Measured						
HW Zone	26,000	7.83	11.06	6,600	9,300	
Indicated						
HW Zone	117,000	8.12	10.09	30,500	37,900	
Total M+I	143,000	8.07	10.27	37,100	47,200	
Inferred						
HW Zone	241,000	6.23	6.70	48,200	51,800	
FW Zone	207,000	7.39	7.39	49,100	49,100	
Contact Zone	81,000	4.96	4.96	13,000	13,000	
Total Inferred	529,000	6.49	6.70	110,300	114,000	

#### TABLE 6-1 2006 MINERAL RESOURCE ESTIMATE St Andrew Goldfields Ltd. - Clavos Project

Notes:

- 1. CIM definitions were followed for Mineral Resources.
- 2. Mineral Resources estimated at a cut-off grade of 4 g/t Au.
- High gold assays cut to 60 g/t Au.
   Mineral Resources estimated using an average long-term gold price of US\$500 per ounce.
   A minimum horizontal thickness of 1.5 m used.
- 6. Some figures may not add due to rounding.

Production continued at the project until May 2007 after the resources were published.

#### PAST PRODUCTION

The processed production from the Clavos Project from 2006 until shutdown of operations in 2007 is listed in Table 6-2.

#### TABLE 6-2 PAST PRODUCTION St Andrew Goldfields Ltd. - Clavos Project

Period	Tonnes	Grade (g/t Au)	Contained Gold (oz)
Quarter 1, 2006	22,517	5.0	3,620
Quarter 2, 2006	25,156	4.3	3,478
Quarter 3, 2006	21,743	5.8	4,055
Quarter 4, 2006	25,503	3.6	2,952
Quarter 1, 2007	18,216	3.3	1,923
Quarter 2, 2007	7,701	2.9	718
Total	120,746	4.3	16,745



# 7 GEOLOGICAL SETTING AND MINERALIZATION

The description of "Geological Setting and Mineralization" is largely taken from the report titled "Technical Report on the Taylor, Clavos, Hislop, and Stock projects in the Timmins Area, Northeastern Ontario" by W. E. Roscoe and N. N. Gow, dated October 2, 2006, which is filed on SEDAR, <u>www.sedar.com</u>.

#### **REGIONAL GEOLOGY**

The Clavos Project is centrally located in the Abitibi greenstone belt in the Superior Province of the Canadian Shield. The Abitibi Belt is the largest Archean belt of its kind in the world, and one of the most prolific in terms of mining production. It is a 750 km long by 250 km wide belt of deformed and metamorphosed volcanic and sedimentary rocks and granitoid batholiths ranging in age from approximately 2,745 to 2,680 Ma.

The Abitibi Belt in Ontario has been interpreted to contain at least nine lithostratigraphic assemblages (Table 7-1) identified on the basis of geochronological and lithological criteria (Ayer et al., 1999).

Assemblage	Age (Ma)	Rock Types
Timiskaming	2685-2680	Conglomerates, sandstones, alkaline and calc-alkaline volcanic rocks
Porcupine	2698-2690	Turbidites and minor conglomerates
Blake River	2701-2698	Calc-alkaline and tholeiitic volcanic rocks
Kinojevis	2703-2701	Tholeiitic and minor felsic rocks
Tisdale	2708-2703	Tholeiites, komatiites, calc-alkaline felsic to intermediate volcanic rocks, and iron formations
Kidd-Munro	2717-2712	Tholeiites, komatiites, calc-alkaline felsic to intermediate volcanic rocks
Stoughton- Roquemaure	2722-2720	Tholeiitic, komatiitic, and minor calc-alkaline felsic volcanic rocks
Deloro	2730-2725	Calc-alkaline mafic to intermediate volcanic rocks, tholeiites and iron formations
Pacaud	2745-2730	Calc-alkaline mafic to intermediate volcanic and tholeiitic rocks

# TABLE 7-1 ABITIBI BELT LITHOSTRATIGRAPHIC ASSEMBLAGES St Andrew Goldfields Ltd. – Clavos Project

Source: Ayer et al., 1999



The oldest assemblages (2,745 to 2,700 Ma) are predominantly felsic to mafic metavolcanic rocks with local minor oxide, silicate, and sulphide chemical sedimentary rocks and clastic sedimentary rocks, intruded by ultramafic to granodioritic bodies. Widespread felsic plutonism comprising granodiorites, granites, quartz feldspar porphyries, and syenite bodies took place between 2,700 and 2,680 Ma. The younger sedimentary rocks are in the Porcupine assemblages dated at 2,698 Ma and the Timiskaming assemblage at 2,685 Ma. The metamorphic grades within the supracrustal rocks are generally sub-greenschist to greenschist facies and to amphibolite facies near intrusive bodies.

A number of major, steeply dipping, east-west striking, brittle to ductile deformation zones transgress these supracrustal rocks, with the Porcupine-Destor Fault Zone (PDFZ) being the most significant in the Timmins area. Gold deposits are commonly localized within and close to the PDFZ along its 200 km length from west of Timmins through the Matheson area and eastward beyond the Destor area of Québec. The PDFZ was active relatively late in the history of the belt and many of the gold deposits are closely associated with it and Timiskaming sediments found along its strike length. The Pipestone Fault that hosts the Clavos deposit is a splay off the PDFZ.

The regional geology in the Clavos area is shown in Figure 7-1 which shows the location of the PDFZ, and the Pipestone Fault.





#### LOCAL AND PROPERTY GEOLOGY

The Clavos Property straddles the contact between Porcupine Group sedimentary rocks (2,689 to 2,680 Ma) to the south and ultramafic volcanic rocks of the Kidd-Munro Assemblage (2,718 to 2,710 Ma) to the north (Figure 7-2). The unconformity represented by this east-west trending ultramafic-sedimentary contact defines the location of the Pipestone Fault, a major regional structure in the Timmins mining camp. In general, the contact dips steeply south, although shallow south to steep north dips occur locally and may be fold or fault related.

The mineralization at Clavos is located within an envelope of highly altered ultramafic flows and volcaniclastic fragmental rocks referred to as the DL zone. The DL zone, which lies approximately 10 m north of the sedimentary-volcanic contact, varies in thickness from 30 m metres to 60 m, is cored by several semi-concordant, east-west trending, steeply dipping and shallow east-plunging feldspar porphyry bodies of up to 20 m in thickness. The shallow easterly plunge is regional in character and is overprinted by local structures.

#### 960 ZONE

Three distinct types of intrusive rocks controlling the gold mineralization have been identified, consisting of feldspar porphyry, quartz-feldspar porphyry, and intermediate to mafic intrusive. They occur primarily within the DL alteration envelope, less commonly within the sedimentary and talc-chlorite ultramafic rocks.

The feldspar porphyry type is generally grey-green, with vague one millimetre to five millimetre white feldspar phenocrysts in a fine-grained groundmass of feldspar and chlorite. These porphyries occur as narrow dikes or sills ranging from five centimetres up to six metres in core length, primarily within the hangingwall to central part of the DL zone and less commonly within the sediments. The feldspar porphyry is weakly to moderately foliated, typically has a grey tinge, with weak carbonate, and less commonly sericite or albite alteration. Hangingwall (HW) type veining is variably developed within the unit, ranging from 2% to 70%, and consists primarily of the quartz-ankerite type (less common quartz-albite), with styles varying from early grey, late white, extension, and stylolitic.

The quartz-feldspar porphyry type varies dramatically in colour due to variable alteration. It ranges from apple green in sections of strong sericite to mottled grey-brown and pink-white


in areas of strong silica and/or albite alteration. This type contains vague to well-defined one millimetre to three millimetre white feldspar phenocrysts and local one millimetre to three millimetre grey quartz phenocrysts in a very fine-grained intensely altered groundmass. It occurs as narrow dikes or sills ranging from 40 cm up to five metres in core length, primarily within the central to footwall part of the DL zone, less commonly within the sediments and talc-chlorite ultramafic rocks. The sericite alteration within the quartz-feldspar porphyry appears to be overprinted by variable moderate to strong silica and albite alteration, often with chlorite stringers. The Footwall (FW) Zone vein density ranges from 2% to 70%, and consists primarily of the quartz-albite type with the style dominated by late white extension veins or stockworks, with less common early grey and stylolitic vein styles.

The intermediate to mafic type is generally grey-green, with wispy one millimetre to 20 mm mafic/chlorite clasts in a fine-grained groundmass of feldspar and chlorite. Locally it contains vague one millimetre to five millimetre feldspar phenocrysts. It occurs as narrow dikes or sills ranging from five centimetres up to three to four metres in core length, primarily within the footwall part of the DL zone. Veining is generally poorly developed within the unit, ranging from 2% to 5%, and consists primarily of the quartz-ankerite/calcite type, with the style dominated by the late white to grey extension veins.

In general, the best veining within the DL alteration envelope occurs close to the contacts of all three intrusive types. Deformed early grey, ribbon or stylolitic veining, with pyrite and arsenopyrite in stylolites and near vein margins, appears to be related to the best gold values.

The lens geometry of the HW and FW type mineralization in the 960 Zone appears to be controlled by a box fold hinge. The sediment/ultramafic contact reverses from north facing to south facing between the 1,150 m elevation and the 1,100 m elevation.





#### STRUCTURAL SETTING

A structural study of the underground workings (Rhys 2005) produced the following conclusions:

- Shallow easterly plunging L3 elongation lineation in the Clavos workings is supportive of the previous interpretation that mineralized zones at Clavos will have a first order overall shallow easterly plunge. Subsidiary steep westerly plunges orthogonal to the shallow east plunge may also be developed, aligning along the trace of steeply dipping extension vein sets.
- 2. Two late phases of crenulation cleavage development are apparent in the Clavos working, which may affect the local orientation and morphology of lithologic contacts and mineralized vein systems. S5 foliation is a flat crenulation cleavage associated with open folds (F5) that cause changes in dip of lithologies, and may be responsible for fold-related embayments or areas of anomalous shallow south dipping and steep north dipping contact orientation apparent on several cross sections. F5 folds are responsible for local variations in S3 foliation and lithologies to moderate north or south dips. The second crenulation cleavage, S6, is a north trending, steeply dipping crenulation cleavage responsible for open warps in the trend of lithologic contacts in plan view.
- 3. Post-mineralization faults comprise mainly northwest-trending chloritic clay gougefilled faults, and local clay gouge seams that exploit older vein-related structures. While shear sense indicators in the faults were not generally consistent or determinable, offset markers (veins, alteration zones, dykes) suggest that the northwest trending faults accommodate an apparent dextral (right lateral) shear sense.
- 4. A significant, moderate to shallow north dipping fault containing chloritic clay gouge and post-mineralization pink carbonate-quartz vein material is also present along the main ramp. Shallow east dipping slickensides, if representative of bulk displacement on this structure, suggest displacement may be mainly lateral (i.e., top to the east or west). Based on its style and thickness in comparison to other faults in the region, displacement probably does not exceed 30 m.
- 5. Feldspar porphyry and mafic intrusions form a narrow corridor of sills and semiconcordant dykes that is coincident with the 30 m to 60 m wide DL alteration zone, located 20 m to 70 m north of the ultramafic-sedimentary contact (Pipestone Fault). Individual intrusive masses of both types are lenticular, boudinaged lenses which are wrapped by S3 foliation. Where observed underground, these lenses have moderate to shallow easterly plunges, parallel to, or slightly steeper than L3 lineation. Rapid changes in thickness and continuity on cross section may consequently be related to rod-shaped morphology of intrusive bodies, and also potential east-plunging folding of some, which may cause anomalous thickening.
- 6. As discussed above, quartz vein arrays and narrow shear veins may be preferentially developed along contacts of, or obliquely cross, porphyry and mafic dykes and sills. The low carbonate content in sericite-carbonate alteration in the DL zone in current underground exposures does not form a sufficiently rheologically competent host to preferentially allow the development of quartz veining within altered areas, as is the



case in the Aquarius and Stock deposits, where pervasive pre-veining magnesitedolomite alteration and contained dykes are host to intense networks of auriferous quartz veining.

- 7. The earliest veins at Clavos comprise narrow grey quartz veins that are crosscut by younger white to pale grey quartz extension veins associated with the main stage veining event. These early veins observed in the current areas of underground development are too small to host any significant tonnage and assay plans suggest erratic grades, however, their presence suggests the potential for more continuous veins of this type in the resource blocks at depth.
- 8. Complex networks of white to pale grey quartz-carbonate extension veins, sigmoidal vein arrays, and narrow fault hosted veins, with linking vein sets, form the main stage of veining in the Clavos working and the main hosts to gold mineralization. Generally, areas where mining has occurred and many of the higher grade assays encountered in the workings occur in en echelon, sigmoidal vein arrays which trend west-northwest to east-northeast, and which record minor increments of right lateral and left-lateral displacement, respectively. The vein arrays typically have short strike lengths of 5 m to 20 m, with the largest and most continuous array (45 m strike length) developed in the current workings in the west-northwest trending vein system that was stoped on 100 level west.
- 9. Quartz extension veins which fringe, and join sigmoidal vein arrays and synmineralization faults, typically trend north with steep west dips. They are orthogonal to L3 lineation and S3 foliation; this geometry and their low strain state suggests that they formed late during D3 in response to stretching parallel to L3. Since these veins trend north, they will be sub-parallel to drill holes with northerly azimuths, and holes may either pass between or produce anomalously thick vein intersections when passing through sets of these veins. Consequently, core axis angles should be carefully considered when joining vein intersections on cross section, so north trending, anomalously thick extension vein intersections are not joined to more continuous east-west vein systems that occur at higher angles to the drill holes.
- 10. The style of sigmoidal vein arrays observed at Clavos is comparable to main stage vein arrays in the central Timmins camp, which comprise much of the ore historically mined from the Hollinger Main zone and Dome Dacite orebodies. Although comparable in general style, the continuity and abundance of the veins at Clavos are lower than in these deposits, and auriferous pyrite-sericite-carbonate alteration present in vein envelopes and between en echelon veins in orebodies at Hollinger and at Dome are not present in the chloritic wall rocks to veins at Clavos.
- 11. Since the veins form complex networks within which significant gold grades can occur anywhere, the entire width of the vein system should be included in the compositing of assays to obtain representative grades in the vein system, and not just selected parts of the vein system that contain significant grade. Selective joining of higher only assays as representative of vein grade will consequently ultimately result in significant dilution during mining due to a) the discontinuous nature of individual veins within vein arrays, and b) the necessity of mining non-auriferous wallrock slivers between veins.
- 12. To better trace and model the vein systems and enhance cross section interpretation in current areas of definition drilling, the following is recommended:



- a) Document vein abundance (vein %) and vein density (number of veins) present in drill holes, so areas of more intense veining can be traced on section. Vein counts and vein % estimates could be made per metre, or more practically over wider intervals where veining density/abundance is consistent. Densities/vein abundance can then be correlated on cross section.
- b) Note type of quartz intersected and core axis angles. It is important to note whether veining comprises sheeted extension veins (not linked), sigmoidal extension vein arrays, ribboned fault hosted shear veins, or early grey quartz veins.
- c) Level plan interpretations may allow another dimension to tracking discordant vein networks in addition to the cross sectional work.
- d) Incorporate underground mapping (position of major faults, ultramaficsedimentary contact, vein systems) into cross sections.

### MINERALIZATION

There are five gold-bearing zones for which mineral resources have been estimated. These are the Hangingwall Zone (HW Zone), the Footwall Zone (FW Zone), the Contact Zone, the Sediment Zone, and scattered mineralization collectively named "Other". Of these zones, the HW Zone has been the main target of past mining activities.

The Contact, HW, and FW zones are hosted in sericite-carbonate (ankerite) altered and intensely deformed rocks of ultramafic composition named as the DL alteration envelope. The fragmental appearance of the sericite-carbonate and fuchsite altered rocks appear to be the result of intense strain deformation of the polygonal jointing/polysuturing textures observed in the talc-chlorite altered ultramafic volcanic rocks bounding the DL alteration envelope. The DL alteration envelope, varying in thickness from 60 m to 100 m, is stratigraphically bounded by the south dipping sediment assemblage and the fragmental volcanic flow sequence to the north.

The HW Zone and FW Zone vary from 1.5 m to more than 4.0 m in horizontal thickness and are located along the south and north contacts of the feldspar porphyry bodies respectively. These zones consist of quartz and quartz-carbonate veins and stringers hosted within a sulphide-rich package of fuchsite and sericite altered ultramafic volcanic rocks. Up to 10% sulphides consisting of pyrite, arsenopyrite, galena, gersdorffite (nickel arsenide), and rarely chalcopyrite occur as disseminated grains in the altered host rock and within narrow fractures/veinlets within the quartz veins. Gold occurs as coarse nuggets predominantly within the quartz veins but occasionally within the volcanic host, and also as inclusions within the sulphide grains.



The Contact Zone lies along the contact between the sedimentary rocks but, unlike the HW Zone and FW Zone, consists of gold-bearing white (bull) quartz veins and veinlets in both weak to moderately sericitized ultramafic volcanic rocks and also with the sedimentary rocks.

The Sediment Zone is characterized by moderate to strong sericite, ankerite alteration with 20% contorted/boudinaged grey quartz-ankerite veins, emplaced sub-parallel to foliation. Minor white quartz-calcite stringers crosscut the earlier grey veins. These veins are locally brecciated with 3% to 10% pyrite mineralization concentrated in siltstone/greywacke bands as disseminated blebs and stringers. Spotty 3% to 5% arsenopyrite mineralization occurs as acicular needles and rhombohedral shaped aggregates replacing breccias clasts.

Significant gold grades have also been encountered within the porphyry bodies, primarily along the contacts with the HW Zone and FW Zone, however, the gold mineralization lacks continuity and thus cannot be mined as a distinct zone.

Arsenic is common for deposits of this type and the gold is unevenly distributed within the veins. Numerous occurrences of visible gold have been noted in drill core from the property and there are a number of very high grade assays in the database, measuring in tens and hundreds of g/t Au.



# 8 DEPOSIT TYPES

The description of "Deposit Types" is taken from the report titled "Technical Report on the Taylor, Clavos, Hislop, and Stock Projects in the Timmins Area, Northeastern Ontario" by W. E. Roscoe and N. N. Gow, dated October 2, 2006, which is filed on SEDAR, www.sedar.com.

Gold mineralization occurs in a series of quartz and quartz-carbonate veins which are interpreted from the drilling to be steeply dipping and east-west striking, roughly parallel to the PDFZ. The veins, while appearing to be consistent in orientation from section to section, are observed in the drill core to occur in a wide variety of orientations. In RPA's opinion, it is highly likely that many of these veins are not tabular, but irregular in shape, similar to others observed in the gold deposits of the Timmins area.

The quartz veins occur most often in the mafic volcanic rocks, usually in proximity to porphyry intrusions. There is a fairly persistent zone of quartz veining associated with the sedimentary-volcanic contact, and there are some very wide vein intercepts to the south of the contact, but these tend to be weakly mineralized.





## **9 EXPLORATION**

Due to the large amount of previous work on the property and accrued knowledge of the geology and mineralization, SGX has concentrated its exploration activities on diamond drilling as described in Section 10.

The only other exploration initiative completed was a lithogeochemical study of the host units at Clavos (Barrett 2012) to produce a chemically based classification system to allow consistent identification of the precursor rocks in the DL zone, many of which are strongly altered and/or sheared. Identification of specific units can be used to assist lateral correlations on sections and along strike. Such units are identified on the basis of immobileelement ratios together with the composition of least-altered samples. These ratios stay the same during most types of alteration, particularly if the alteration fluids are near-neutral, which is clearly the case for shear zone-hosted gold deposits in the Abitibi greenstone belt that contain stable feldspar and carbonate. Using this approach, specific units can be recognized even where the rocks are hydrothermally altered and the protolith is visually unrecognizable. Identification of such units, which can be volcanic, sub-volcanic, and even sedimentary, can also aid in structural interpretations (e.g., definition of large-scale folds or thrust repetitions).

A second objective of the study was to determine if the gold zones and flanking host rocks show chemical changes due to hydrothermal alteration (apart from the obvious additions of sulphur and carbon).

The chemical classification of the host rocks of the Clavos gold deposit is based on 243 whole-rock analyses of drill core assay pulps. The sampled rocks extend up to 200 m to the north of the east-west-striking Pipestone Fault and include four main units: komatiites, mafic porphyries, felsic porphyries, and, furthest to the north, rhyolites. The komatiites and rhyolites, which are tholeiitic, probably belong to the Kidd-Munro Assemblage (2719 to 2710 Ma) based on regional correlation and the rhyolite chemistry. The mafic and felsic porphyries are alkaline and probably of Timiskaming age (2680 to 2670 Ma) based on structural position and chemistry, both similar to porphyries in the Timmins to Kirkland Lake gold belt.



Three different felsic porphyries and at least two mafic porphyries are present at Clavos, although komatiites make up the bulk of the drilled sequence. The porphyries typically range from one metre to ten metres in drilling thickness.

Eight main chemical groups have been identified on the basis of the primary chemical features. The rock groups are generally well defined and separated, although each shows some internal variation due mainly to contamination caused by unintentional inclusion of a small percentage of a different lithology in some samples (slivers of mafic intrusive up to five centimetres were observed in logging), and to a small amount of primary magmatic fractionation. From felsic to mafic, the main chemically defined groups are:

- 1) Rhyolite of tholeiitic to near-tholeiitic affinity.
- 2) Felsic porphyry A of alkaline affinity.
- 3) Felsic porphyry B of alkaline affinity.
- 4) Dacite porphyry of alkaline affinity.
- 5) Mafic A porphyry of near-alkaline affinity (this group includes some "andesites").
- 6) Mafic B porphyry of near-alkaline affinity.
- 7) Mafic C porphyry of transitional affinity.
- 8) Komatiite suite of tholeiitic affinity (unless contaminated).

Gold enrichments occur mainly in the porphyries or within a few metres of their margins, although a few zones of moderate gold content occur in the komatiites, probably along fault splays. Gold enrichments are accompanied by anomalous values of total sulphur, arsenic, and antimony, with the antimony anomaly extending up to 10 m from the porphyries. Notable addition of potassium is present in only two of the mineralized mafic porphyry intervals.

Moderate gold and antimony enrichments can occur in the komatiites even where total sulphur contents are rather low (<0.6 %). The general relations between metals and sulphur suggest that two end-member assemblages are present: one is higher in sulphur and arsenic, while the other is higher in antimony, although both can carry gold. The first assemblage, which is associated with the mafic porphyries, contains more arsenopyrite, while the second assemblage, which appears to be associated with the komatiites, may contain traces of nickel-bearing phases such as gersdorffite (NiAsS) and ullmannite (NiSbS) due to the higher primary nickel content of komatiites.



# **10 DRILLING**

SGX drilled a total of 31 surface diamond drillholes and two wedge cuts totalling 9,539 m on the Clavos property from 2010 to 2012. All but one of the holes were oriented along north-south section lines, primarily drilled in a northerly direction and at angles between 50° and 65°. All of these holes are included in the database used for the resource estimate.

SGX's 2010 to 2012 drill programs were contracted to Denis Crites Drilling Ltd. or North Star Drilling Ltd., which drilled NQ core (47.6 mm diameter) size in all holes.

The drill rigs were positioned on prepared drill sites over a pegged collar location marked by a land surveyor (Talbot Surveys Ltd.) or a technician using a GPS instrument. Alignment was assured using one front sight and two back sights. The drill head was then set to the desired inclination and the entire set-up checked by the drill foreman and geological technician. Upon completion of the hole, the hole was plugged and the steel casing was extracted unless it was stuck in the hole or badly worn. Wooden stakes tagged with the hole number were used to mark the hole location.

Drill collar locations were surveyed by a qualified land surveyor using total station and/or differential GPS survey instruments. Downhole orientation surveys for each drill hole were collected at 40 m to 60 m intervals during drilling using a Reflex EZTRAK instrument. The EZTRAC instrument is a solid state, electronic, magnetic-based instrument with multishot capability which measures the earth's magnetic field strength using a triaxial fluxgate magnetometer and dip direction through a triaxial servo accelerometer.

Drill core was placed in core trays at the drill site by the drill helper. The filled core trays were transported to the core logging area at the end of each drill shift by the drill team. The core was placed in a locked core facility if no authorized personnel were present to receive it.

The drill core was logged by the project geologists who recorded geological observations including major and minor lithologies, alteration, mineralization, and structural features. Structural measurements included mineral foliations, banding, lithologic contacts, dykes, and veins. Overall, core recoveries were found to average greater than 95%. Lower core recoveries were occasionally noted in localized areas of faulted and broken core.



Prior to core sampling, digital core photos were taken of each core tray for future reference.

RPA is of the opinion that the logging and recording procedures are comparable with industry standards.

Selected intersections from the SGX drilling are listed in Table 10-1. The intersections represent core lengths and are not true widths.

Drill Hole	From (m)	To (m)	Core Length (m)	Gold (g/t)
CL 11-15	436.6	437.6	1.0	6.74
	450.0	451.0	1.0	13.6
CL 11-16	436.0	436.8	0.8	18.5
CL 11-21	210.8	213.0	2.2	3.66
	229.4	232.5	3.1	2.92
CL 11-22	124.4	132.7	8.3	2.16
Incl.	132.0	132.7	0.7	8.3
CL 11-25*	126.4	131.0	4.6	14.53
Incl.*	128.3	129.4	1.1	52.96
CL 11-28	205.5	207.8	2.3	3.47
	228.8	230.9	2.1	7.68
	344.5	345.1	0.6	15.03
CL 11-29	170.6	172.6	2.0	5.48
	176.5	178.6	2.1	1.78
	198.5	202.7	4.2	6.38
	242.0	244.0	2.0	12.11

# TABLE 10-1 SELECTED DRILL INTERSECTIONS St Andrew Goldfields Ltd. – Clavos Project

\* Cut to 60 g/t Au



## 11 SAMPLE PREPARATION, ANALYSES AND SECURITY

## SAMPLING METHODS

Prior to the SAS acquisition of the property, all of the samples at Clavos were from core taken during diamond drilling programs. For the most part, the samples were collected on 5.0 ft (earlier programs), 1.5 m, or 1.0 m intervals, and depending on the program, split with a hand splitter, a hydraulic splitter, or diamond saw. The samples were analyzed via fire assay with a gravimetric finish, and, more recently, fire assay with an atomic absorption (AA) finish. A relatively modest number of samples were subject to pulp metallics assay.

Samples collected by SAS from 2004 to 2007 include surface and underground core samples as well as underground chip samples and muck samples. Drill core samples were collected at intervals of 1.5 m or less (lithology dependent). Core from all surface diamond drill holes was sawn with a diamond saw and half of the core was sent for assay. The remainder of the core was stored at the Stock Mine site. Underground core samples were whole-ground, with pulps and rejects stored at the Stock mill complex. All holes were photographed prior to sampling.

Chip samples were collected on sill development faces every one or two rounds. Chip sample lengths are generally 1.5 m or less in size and are lithology specific. As back-up to chip sampling, two to three muck samples were also collected per development round.

#### SGX DRILL PROGRAM

For the 2010-2012 drill program, the drill core was delivered by the drill contractor to the logging facility located inside the fenced mine site. The core was logged and SGX collected samples over a one metre interval adjusted to lithological contacts. The minimum sample length was 0.3 m. The entire DL zone was sampled with three metre to five metre bracket samples above and below the contacts. All core was sawn with a diamond saw and half of the core was sent for assay. Blanks, certified reference standards, and reject duplicates were included with the sample shipments to the assay laboratory for quality control purposes.



All samples were submitted to the ALS Chemex Labs Ltd. (ALS) sample preparation facility in Timmins, Ontario. Samples were delivered to the preparation laboratory by SGX representatives in rice bags that had been sealed with security tags to ensure no tampering of the samples occurred.

## SAMPLE PREPARATION

The vast majority of samples collected by SAS (including muck samples, chip samples, and underground core samples) were processed at the in-house laboratory located at the Stock mill complex. The underground core samples were whole core samples and the core was photographed prior to sampling.

The sample preparation protocols observed in the SAS laboratory were as follows:

- Samples were delivered to the bucking room and dried.
- The samples passed through a series of crushers to reduce particle size to about 0.3 mm.
- Riffles were used to separate about 250 g to 300 g.
- The sample was pulverized in a ring and puck pulverizer for about 120 seconds.
- The samples were put through a 20 mesh screen to break them up and then "matted" about 20 times to achieve a homogeneous blend.

#### SGX SAMPLES

Standard drill core sample preparation procedures consisted of crushing the samples to 70% minus 9 mesh (2 mm), pulverizing a 500 g sub-sample to 85% minus 200 mesh (75  $\mu$ m), then splitting a 30 g sub-sample for analysis. At the suggestion of the laboratory, the procedure was modified in May 2011 to include pulverization of a 1,000 g sub-sample, rather than a 500 g sub-sample.

For highly mineralized samples with visible gold, each sample was put through the initial jaw crusher and blank material was crushed between these samples. When these samples were pulverized in the puck mill, silica sand was used to clean the pulverizer twice prior to pulverizing the next sample. Care was taken to ensure that samples were not flipped in their trays.



Metallic screen assay sample preparation procedures consisted of crushing the entire sample to 70% minus 9 mesh (2 mm), pulverizing the entire samples to 85% minus 200 mesh (75  $\mu$ m), then splitting a 1,000 g sub-sample of the pulp. The pulp was washed through a 200 mesh (75  $\mu$ m) screen to separate any coarse (+75  $\mu$ m) material. Any +75  $\mu$ m material remaining on the screen was dried, weighed, and sent for analysis in its entirety. The -75  $\mu$ m fraction was dried and homogenized.

## ANALYTICAL PROCEDURES

SAS samples were analyzed via fire assay with an AA finish. A relatively modest number of samples, as well as assay check samples, were processed at Swastika Laboratories, Ontario. The protocols observed in the SAS laboratory were as follows:

- A 1 assay-ton sample was treated by fire assay.
- The bead was dissolved and gold was determined by AA. High grade samples were retreated using a gravimetric finish.

The SAS laboratory was not certified, but RPA is of the opinion that the sample preparation and analysis for the core and chip samples were generally completed to industry standards and are acceptable for resource estimation.

#### SGX SAMPLES

Pulp sub-samples were forwarded to ALS Val d'Or until April 29, 2011, when all sample analysis was moved to the ALS Vancouver facility at the request of SGX. Both the ALS Val d'Or and Vancouver analytical facilities are certified to standards within ISO 9001:2008 and have received accreditation to ISO/IEC 17025:2005 from the Standards Council of Canada for fire assay gold by atomic absorption and gold by gravimetric finish. Analyses were completed to an accuracy of 0.001 g/t Au, for samples assaying less than 5 g/t Au. Analyses of all samples assaying greater than 5 g/t Au by the first method were routinely repeated from the remaining pulp, using a fire assay method with a gravimetric finish.

The metallic screen assay protocol required duplicate sub-samples to be analyzed using the standard fire assay procedures. The gold values for both +75  $\mu$ m and -75  $\mu$ m fractions were reported together with the weight of each fraction, as well as the calculated total gold content of the sample.



## QUALITY CONTROL AND QUALITY ASSURANCE

#### 2011 QA/QC PROGRAM

SGX retained Denise Saunders, P. Geo., to compile and review the procedures followed, and the results obtained for the quality control and quality assurance (QA/QC) samples during the 2011 drill program. The Saunders (2012a) report is summarized in the following subsections.

A total of 4,680 samples (276 batches) were submitted to ALS in 2011 for routine fire assay analysis. Another 61 samples (12 batches) were submitted for metallic screen assay analysis.

Quality control (QC) measures utilized in the 2011 program to validate the assay results included insertion and monitoring of blind certified standards to evaluate accuracy, blind blank reference samples to evaluate contamination, as well as pulp and reject duplicate analysis to evaluate precision or sampling error. In addition, 5% of the samples were sent to Activation Laboratories (Actlabs) in Timmins, Ontario, for independent check assay analysis.

#### SUMMARY

The blind QC program detected a high bias on the results being returned from the ALS Val d'Or laboratory in early 2011. The standard results from the Val d'Or facility exhibited a high percentage of failures (13%) and warnings (33%) from the 69 batches that were analyzed. The laboratory means ranged between 3% and 7.5% higher than the certified means for standards having more than five results. Because of this, a decision was taken in late April 2011 to move all subsequent analyses to the ALS Vancouver facility. This decision was further supported by the later independent check assaying analyses. A marked improvement was noted in the accuracy of the results from the ALS Vancouver laboratory.

In order to compensate for the bias, all assay values received from the Val d'Or facility were cut by 10% before being placed in the resource database. Only a small number of assays in the resource estimate were affected by this cut.

Evaluation of results from the blind and internal reference standards and from the independent check assaying indicates that the results from ALS Vancouver analytical facility



fall within reasonable tolerance limits and are deemed to be acceptable for resource estimation.

Evaluation of other QC measures on the program indicated that there did not appear to be any significant sample contamination issues at the ALS Timmins preparation facility at the time that these samples were processed.

Precision on the pulp and reject duplicate samples were within expected tolerances for both ALS analytical facilities, although the Thompson-Howarth precision on the reject samples analyzed at the Vancouver laboratory did tend to be significantly lower than expected. This phenomenon warrants further investigation but could reflect the nugget nature of the gold mineralization.

Collectively, precision analysis of the various sets of duplicate samples did not indicate any glaring problems or biases in the results. From this, one could conclude that there do not appear to be any problems with the sampling protocols utilized on the 2011 Clavos drill program.

#### REFERENCE STANDARDS

Ten blind standards were submitted for analysis with the blind QA/QC program. Figure 11-1 contains examples of the control charts for the standards used. The standard results from the Val d'Or facility exhibited a high percentage of failures (13%) and warnings (33%) from the 69 batches that were analyzed. It was established that a high bias appeared to be present at the Val d'Or facility. This was determined both through comparison of the laboratory mean to the certified mean for each of the standards, as well as the majority of the standard failures and warnings were reported in relation to the upper tolerance limits.

SGX and RPA note that the drill holes sampled in 2010 and early 2011 contained relatively few values above the resource cut-off grade. In order to compensate for the bias, all assay values received from the Val d'Or facility were cut by 10% before being placed in the resource database. A total of 45 assays within the block modelled volume required this corrective action, out of which 17 values were above the cut-off grade.





Northeastern Ontario, Canada

Control Charts for Certified Standards

December 2012

Source: Sage Gold Inc., 2012.



Of the nine batches that failed, one was not re-assayed because despite an anomalously high result for the standard, there were no significant assays in the batch. In this case, a geological override was applied and the assays were approved. In all other cases, the batches were re-assayed until acceptable results were received.

At the Vancouver facility, laboratory performance on the blind standards was better, with 8% of the 207 batches that were analyzed, having the blind standards assaying outside the warning limits and 3% outside the control limits.

Two of the failed batches were not re-assayed because, despite an anomalously high result for the standard, there were no significant assays in the batch. In this case, a geological override was applied and the assays were approved. One batch failure at the Vancouver laboratory occurred because the laboratory released an assay certificate containing the regular sample assay results but no results for any of the blind QC samples. This batch was re-assayed from the reserved pulps.

#### INTERNAL LABORATORY STANDARDS

The Val d'Or laboratory utilized eight different certified standards for their internal, non-blind laboratory checks on the assaying results for the Clavos samples analyzed in their facility. Of particular note is the consistent 2% high bias on five out of six of their own non-blind standards in the 0.5 g/t Au to 8 g/t Au range, which remained uncorrected throughout the course of the program, despite many inquiries into the blind standard failures. This was a contributing factor to the decision to move the assaying to the Vancouver facility.

The Vancouver laboratory used seven different certified standards for their internal, non-blind quality control checks on the Clavos samples. The means for the laboratory results were consistently maintained at less than 1% difference from the certified mean values for the standards.

#### **BLANK SAMPLES**

Results for the blank samples (Figure 11-2) showed that there were not any significant issues related to sample cross contamination at the ALS preparation facility. In all, four samples returned anomalous results (>0.2 g/t Au). In one of the batches, there were no samples of significant grade near the blank sample to provide a source of contamination. It was determined that the anomalous result for the blank could have been attributed to an



undetected low-grade mineralization in the greywacke sample that had been used for the blank.

Three of the failed batches were re-assayed from the reject material. Subsequent reanalysis of two of the batches returned blank values. This suggests that there may have been minor transfer between samples in the pulverization stage of sample preparation. The third failed blank returned a comparable value when re-assayed, suggesting either that there may have been some cross contamination of the sample in the crushing stage, or that there was a very low inherent gold mineralization in the sample. Because the re-assay value was just at the contamination tolerance limit, the batch was accepted.







#### COARSE CRUSH DUPLICATES

Statistical plots, Sign test and T-test analyses, and Thompson-Howarth precision plots for the blind reject duplicate sample analyses indicated that good precision was obtained for the reject duplicate samples at both facilities. A total of 51 reject duplicate samples were analyzed at ALS Val d'Or and 184 at ALS Vancouver. Both sets of data exhibited excellent repeatability of the assay results from the reject duplicate samples, with unbiased regression lines having perfect linear correlation (linear correlation coefficient is 1 for both laboratories). At both laboratories, the descriptive statistics are very similar, with very comparable means and interquartile ranges.

#### SECONDARY LABORATORY ANALYSES

A total of 216 regular samples (5%) were selected from the 2011 drill program and submitted to the Actlabs facility in Timmins for check assay analysis. Sample selection was designed to provide a suite of samples that was representative of all grade ranges encountered in the drill program.

The check pulp samples were taken from the witness split, which consists of 100 g to125 g of pulp split from the bulk master pulp at the time of the original sample pulverization. Standard project specific assaying procedures were followed. Blind QA/QC samples were inserted in the sample stream to validate the check assay results and investigate potential lab-to-lab bias.

Analysis of the check assay results indicated that a systematic bias was present, particularly the ALS Val d'Or facility, were systematically higher than those from the check laboratory (Actlabs). Because this was apparent on the standard control charts as well as on the duplicate statistics charts, it appeared that the bias was likely due to differences in equipment calibration between the laboratories. Although a systematic bias was also recognized in the comparison of the results between the ALS Vancouver and Actlabs facilities, the magnitude of the difference was less than 5%, and was partly attributable to a slight high bias from ALS Vancouver and partly to a slight low bias at Actlabs (based on the standard analyses). For these reasons, the results from the ALS Vancouver facility were considered to be acceptable for resource modelling.



#### 2012 QA/QC PROGRAM

Peter Hubacheck, P. Geo. of W.A. Hubacheck Consultants Ltd., was retained by SGX in 2012 to complete the logging and sampling of five drill holes maintaining the QC program established during the previous year. A total of 836 half core samples were collected from drill holes CL-11-21, 26, 27, 28, and 29 submitted for fire assay. The sample intervals represent 10% of the core recovered from a total of 2,107 m.

In 2012, 461 samples were analyzed by the ALS Vancouver facility and a second shipment totalling 515 samples was analyzed by Cattarello Assayers Inc. (Cattarello), located in Timmins. Cattarello is a non-accredited facility. Samples submitted for fire assay were submitted to the laboratory in batches of 20, each batch containing one blind standard, one reject duplicate, and one blank core sample. Routine sample batches contained 17 regular samples, plus the three quality control samples.

Cattarello followed the same sample preparation procedures as ALS. At the request of RPA, a batch of 51 coarse rejects were submitted to Cattarello and re-run as checks. In addition, 25 pulps were submitted to Goldcorp's Porcupine Gold Mine (PGM) Lab facility in Timmins and re-run as checks. These measures were taken to provide further assurance of quality control.

A total of 10% of the coarse rejects was selected for re-check analysis by Cattarello including representative blanks, standards, and gravimetric analyses. Comparisons of analytical results for the reject samples as well as the standards, checks, and blanks show excellent reproducibility (Figure 11-3). It is observed that all the check analyses compared to the gravimetric analyses report slightly lower values, which is to be expected.

A total of 5% of the pulp samples was selected for analysis at Goldcorp's PGM Lab in Timmins including representative blanks, standards, and gravimetric analyses. Comparisons of analytical results for the pulp samples as well as the standards, checks, and blanks show excellent reproducibility (Figure 11-4).











In RPA's opinion, the sample preparation, sample security, and analytical procedures are completed to industry standards and the data from the 2010 to 2012 drill programs are suitable for use in resource estimation.



## **12 DATA VERIFICATION**

RPA carried out a data validation and verification study on the Clavos drilling database as part of its 2003 Mineral Resource estimate (Rennie 2003) and for the October 2006 Technical Report (Roscoe and Gow 2006). It was concluded from this study that the quality of the database was quite good, and that very few transcription errors existed. In RPA's opinion, the database appeared to be of acceptable quality for mineral resource estimation.

RPA (then Scott Wilson RPA) reviewed the project database again in 2006. It was noted that all Clavos underground drill core, chip samples, and muck samples were assayed at the SAS laboratory at the Stock mill. The laboratory at the Stock mill was not certified. The laboratory sent samples to Swastika Laboratories as a form of external quality control. Internally, a blank, a reference sample, and a duplicate were included in each sheet of assays (25 samples/page).

Clavos Project staff inserted a standard sample into the stream of underground core samples at the rate of one per drill hole. Blanks were inserted on an irregular basis. Duplicates were not inserted by the project staff.

For the 2006 Technical Report, Scott Wilson RPA reviewed the laboratory internal QC assays results and had the following comments.

- SAS Stock laboratory internal checks:
  - Lab pulp duplicates there is some scatter, but in general most duplicates are within acceptable limits.
  - Lab blank samples approximately 7% of the blanks had assays greater than 0.05 g/t Au, with less than 1% with values greater than 0.5 g/t Au. These results suggest suitable sample preparation with only occasional excessive sample contamination.
  - Lab Standard samples assays of standard samples are reasonably good for standards less than 8 g/t Au. For standards over 8 g/t Au, the Stock lab assays are generally low.
  - Lab coarse reject duplicates Of the 31 samples, about two-thirds of the check assays gave reasonable reproducibility, and one-third gave poor reproducibility. The scatter in the results is expected for the style of mineralization at Clavos.
- SAS Stock laboratory external pulp checks at Swastika Laboratories:



 Only a small number of external pulp checks were completed at an outside lab. The results show the Stock lab is generally returning higher values for samples over a wide range of Au values, but more analyses are needed to form a reliable judgement.

Overall, it was Scott Wilson RPA's opinion that the SAS surface and underground drill hole and underground chip sample results were acceptable for mineral resource estimation, although some possible problem areas, such as the number of external pulp checks, needed to be addressed.

The current resource database was reviewed by RPA for accuracy of transcription from the assay certificates. Approximately 70% of the assays from the 2010-2012 drill program contained within the block modelled volumes was compared to the original assay certificates without finding an error. No extreme length samples or excessive assay values were found. Visual confirmation of drill hole positions revealed no significant errors. The standard GEMCOM validations for overlapping intervals, hole lengths, etc. also returned no errors.

While on site in 2011, RPA checked the positions of drill collars for several new holes drilled to that point in time. As well, drill logs for seven drill holes were compared to the core on site. It was determined that the logging and sampling were completed to industry standards.

## **RESAMPLING OF HISTORIC CORE**

A program of re-logging and re-sampling of selected intersections of historical core was implemented to validate historical assay results for inclusion into the NI 43-101 resource estimate.

Clavos Project geology staff selected mineralized zones from the project's historical drilling for re-logging and re-sampling. Selection criteria were designed to include drill core from historical drill campaigns carried out by three different companies: Canamax (1987, BQ), UTX (1996-97, BQ), and Kinross (1999-2000, NQ). The intersections selected for re-sampling included intersections from six different mineralized zones, including Sediment (2), Contact (4), HW (3), Porphyry (1), FW (5), and 960 Zone FW (1).

All historical assaying was completed at Swastika Laboratories, where samples were analyzed using a standard 30 g fire assay with a gravimetric finish or AA finish. A small



number of samples were subject to "pulp and metallics" (metallic screen) assay. The resampling procedure involved sampling the remaining half core (BQ or NQ) in its entirety, to ensure that the re-sample size was comparable to the historical sample. From the 16 mineralized zones sampled, a total of 204 regular samples and 16 metallic screen samples, accompanied by an additional 44 QA/QC samples, were submitted to the ALS for analysis. The samples were prepared at the ALS Timmins facility, and pulps were shipped to the ALS Vancouver analytical facility. When reasonable, samples were analyzed using the same analytical method used for the historical samples, i.e., a 30 g fire assay with an AA finish. Samples returning results greater than 5 g/t Au were analyzed again using a 30 g fire assay with a gravimetric finish. When it could be determined that the original samples were analyzed using "pulp and metallics" assay, the core duplicate samples were submitted for a metallic screen assay.

Of the 15 batches submitted, one had to be re-assayed because of a standard failure. The entire batch was re-analyzed and the original results for that batch were replaced by the re-assay analyses.

The finalized assay results of the duplicate sampling program were analyzed by Denise Saunders, P. Geo. The Saunders (2012b) report is summarized in the following paragraphs.

The database of core duplicate results was broken down into several subsets for analysis to try to identify any potential issues related to different analytical methods or individual company results. Insufficient data was available to warrant analysis of core duplicates from individual mineralized zones. The following datasets were examined:

- All data
- Samples analyzed by fire assay
- Samples analyzed by metallic screen assay
- Samples from 1986 Canamax drilling
- Samples from 1996-1997 UTX drilling
- Samples from Kinross drilling

Each subset of data was reviewed on a series of statistical charts to assess the results, including scatter plots, quantile-quantile (Q-Q) plots, box plots, relative difference plots, mean of pairs vs. difference plots, and Thompson-Howarth precision plots. Descriptive statistics were summarized on each plot, and Sign test and T-test analyses were performed for each dataset.



#### ALL DATA

After removal of one very erratic outlier, the results show a broad scattering of data about an unbiased regression line, suggesting that overall, no significant bias is present in the results. The descriptive statistics for the datasets are very similar with comparable means, and interquartile ranges. The variability in the results is also illustrated on the relative difference plots, where the percent difference in the results is seen to range between -175% and +175%, but more commonly is in the  $\pm$  25% range. Both Sign test and T-test analyses indicate that no significant bias was detected on the overall results. Thompson-Howarth precision analysis indicates that the precision for the complete dataset is 38% and practical detection limit is 0.410 g/t Au. These values are within expected ranges for core duplicate samples from coarse gold deposits in the Timmins area.

#### SAMPLES ANALYZED BY FIRE ASSAY

No major differences were noted in the correlation for this dataset. After removal of one erratic outlier, the linear correlation is better than that for the entire dataset (0.85), although it is not visually apparent from broad scattering of the data about the regression line.

#### SAMPLES ANALYZED BY METALLIC SCREEN ASSAY

The metallic screen results was the smallest dataset and showed the greatest variability in results, as would be expected, for high grade assays. On the log scale Q-Q plot and the relative difference plots, the results below 10 g/t Au (and certainly below 6 g/t) indicate that the historical assays tend to be higher than the re-sample assays. The dataset is too small to state this with any degree of certainty, but this could indicate a sampling bias in the historical data. Because of the small number of assays and variable nature of high grade gold occurrences at Clavos, RPA does not consider any potential bias to be significant.

#### SAMPLES FROM 1986 CANAMAX DRILL PROGRAM

Samples from the Canamax drill program tend to exhibit higher values for the historical samples in the 0.5 g/t Au to 2 g/t Au range. The mean of the datasets is notably different, with the historical samples at 1.05 g/t Au and the core duplicates at 0.88 g/t Au. The relative difference plots indicate that the historical assays in this range tend to be 75% to 125% higher than the re-sample values. Note that the Sign test and T-test analyses both indicate that there is no systematic bias in this dataset.



#### SAMPLES FROM THE 1996-1997 UNITED TEX-SOL DRILL PROGRAM

Means of these data are very similar. Q-Q plots and relative difference plots indicate that between 10 g/t Au and 20 g/t Au, there are three samples that assayed higher for the re-samples than for the historical samples. Below 10 g/t Au, the historical samples tended to run marginally higher than the re-samples.

#### SAMPLES FROM THE KINROSS DRILL PROGRAM

After removal of one erratic outlier, the means of these data are comparable, although on scatter plots, Q-Q plots, and relative difference plots for samples assaying more than 3 g/t Au, the historical samples tend to be marginally higher than the re-assay samples.

#### CONCLUSIONS

Analysis of the core duplicate sample assay database shows that overall there is a good correlation between the historical sample results and the core duplicate re-samples analyzed in this study. Although there is a fairly broad scattering of assay results about an unbiased regression line, indicating that the inherent variability in the samples is fairly high, the means and interquartile ranges for the data pairs are very similar. The Thompson-Howarth precision for the dataset was 38%, which is within expected ranges for core duplicate samples from a coarse gold deposit.

Analysis of the entire dataset did not detect any overall sampling bias in the historical results. However, when individual drill campaigns were scrutinized separately, some grade ranges did appear to exhibit a possible sampling bias in the historical data (e.g., Canamax 0.5 g/t Au to 2.0 g/t Au), however, it is unclear as to whether this phenomenon represents a true sampling bias, or if it is merely the result of insufficient data to give the full picture. Further re-sampling, targeting specific historical drill campaigns, along with compilation of any previous re-sampling data would more definitively answer questions of bias.

RPA concurs with the good correlation between the original and resampled core duplicate results and does not recommend further re-sampling of historical core.



### **INDEPENDENT SAMPLING BY RPA**

RPA collected five independent samples in 2011 from recent diamond drill holes and sent them to SGS Canada Inc. for independent assays using the same analytical techniques as those employed for the original SGX samples. The samples consisted of the second half of the sampled core retained at the project site selected over a range of gold grades and drill holes. A comparison of the assays is listed in Table 12-1.

Drill Hole	From (m)	To (m)	Length (m)	SGX Assay (g/t Au)	RPA Assay (g/t Au)
CL 11-01	139.0	139.5	0.5	1.42	0.89
CL 11-02	203.0	203.4	0.4	2.07	2.28
CL 11-06	127.5	128.0	0.5	11.0	9.93
CL 11-07	123.5	124.0	0.5	6.26	4.16
CL 11-15	436.6	437.0	0.4	15.0	2.88
Length Weighted Average			2.3	7.03	4.15
(without CL 1	1-15 sample)		1.9	5.35	4.42

# TABLE 12-12011 INDEPENDENT CORE SAMPLESSt Andrew Goldfields Ltd. – Clavos Project

The results of the check assays confirmed the presence of gold in the core from the Clavos property. RPA notes that most of the check samples assayed lower than the originals. These results give the impression that a sampling bias may exist, however, in RPA's opinion the number of samples is too small to confirm this. Removal of the one outlier (sample from CL 11-15) from the dataset results in an acceptably similar average gold content for the two sample groups, especially considering the short sample lengths and the high degree of variability common for deposits with coarse gold, such as those in the Timmins Camp.

It is RPA's opinion that the database is of acceptable quality for the estimation of Mineral Resources.



## 13 MINERAL PROCESSING AND METALLURGICAL TESTING

When the Clavos Mine was operating, development and stope muck was trucked 10 km to the Stock mill, near Timmins, Ontario, for processing. In 2006, the metallurgical recoveries calculated for this material varied from 86% to 90% and averaged 88%, as shown in Table 13-1.

Month	Tonnes Milled	Head Grade (g/t Au)	Ounces Produced	Recovery (%)
January	8,272	8.92	2,333	88.71
February	6,362	3.79	643	83.07
March	7,883	3.99	832	82.35
April	9,535	3.49	924	86.43
Мау	8,490	5.06	1,230	88.75
June	8,372	7.08	1,680	89.59
July	4,752	6.49	893	90.20
August	8,009	5.28	1,241	86.75
September	7,518	5.87	1,298	91.47
October	9,507	5.15	1,427	90.07
November	8,037	4.84	1150	87.93
December	7,700	3.04	816	88.16
TOTAL	94,437	5.11	14,386	88.17

# TABLE 13-12006 MILLED PRODUCTIONSt Andrew Goldfields Ltd. – Clavos Project

The Clavos Project is a joint venture between SGX and SAS and it is anticipated that mined material will be trucked to a local mill for processing.

A metallurgical test program on the Clavos mineralization is currently underway at RPC Science and Engineering in New Brunswick.



# **14 MINERAL RESOURCE ESTIMATE**

### SUMMARY

RPA prepared a Mineral Resource estimate for the Clavos Project using digital drill hole data provided by SGX. A lithological model was prepared by SGX and wireframe solids of the gold mineralization were prepared by RPA. Pertinent statistics and variograms were determined for the deposit and grades were interpolated into the blocks using Inverse Distance Cubed (ID<sup>3</sup>) methodology. The Mineral Resources were classified as Indicated and Inferred Mineral Resources based on the distance to the nearest assay information.

# TABLE 14-1 SUMMARY OF MINERAL RESOURCES – OCTOBER 12, 2012 St Andrew Goldfields Ltd. – Clavos Project

Cut-off Grade (g/t Au)	Tonnage	Grade (g/t Au)	Contained Metal (oz Au)
4.0	635,500	6.25	127,700
3.0	1,115,300	5.06	181,400
2.75	1,258,400	4.81	194,600
2.5	1,399,100	4.59	206,500
2.0	1,618,100	4.28	222,500
4.0	394,000	6.2	78,000
3.0	674,000	5.0	109,000
2.75	796,000	4.7	120,000
2.5	866,000	4.5	126,000
2.0	994,000	4.2	136,000
	(g/t Au) 4.0 3.0 2.75 2.5 2.0 4.0 3.0 2.75 2.5 2.5	(g/t Au)         Tonnage           4.0         635,500           3.0         1,115,300           2.75         1,258,400           2.5         1,399,100           2.0         1,618,100           4.0         394,000           3.0         674,000           2.75         796,000           2.5         866,000	Image         Tonnage         (g/t Au)           4.0         635,500         6.25           3.0         1,115,300         5.06           2.75         1,258,400         4.81           2.5         1,399,100         4.59           2.0         1,618,100         4.28           4.0         394,000         6.2           3.0         674,000         5.0           2.75         796,000         4.7           2.5         866,000         4.5

Notes:

- 1. CIM definitions were followed for Mineral Resources.
- 2. RPA recommends that a cut-off grade of 2.75 g/t Au is used for economic evaluations.
- 3. Mineral Resources are estimated using a long-term gold price of US\$1,600 per ounce and a US\$/C\$ exchange rate of 1:1.
- 4. A minimum mining width of 1.5 m was used.
- 5. Bulk density is  $2.76 \text{ t/m}^3$ .
- 6. Numbers may not add due to rounding.



## **RESOURCE DATABASE**

RPA received header, survey, assay, and lithology digital data from SGX. This data comprised 551 surface diamond drill holes for all of the Clavos area drilling totalling 124,021 m for an average drill hole length of 225 m. A total of 837 underground drill holes with a combined length of 64,225 m and an average length of 77 m were also provided. As well, 2,525 underground chip samples taken over a total length of 2,530 m and an average length of 1.0 m were also available.

Analytical results were available for 48,489 samples. For the area comprising the estimation, 842 of the drill holes and 2,525 chip samples intersected the 3D solids, containing 5,891 samples.

## GEOLOGICAL DATABASE AND 3D SOLIDS

Drill hole data, including all lithological and assay data, provided the basis for the interpretation of the mineralized zones and estimation of grades into resource blocks. Strings were constructed, at 30 m spaced north-south cross sections, around mineralization grouping assay data greater than approximately 2.0 g/t Au. Length-weighted compositing of the gold assays was employed to determine inclusion of assay intervals in the various grade groupings. Some lower grade material was included on occasion to provide geological continuity to the solids. These strings were then swept together to create 3D solids, using Gemcom software. Figure 14-1 provides a view of the Clavos solids in the various estimation domains. Figure 14-2 is a cross section through the Main Zone and Figure 14-3 is a cross section through the 960 Zone.














## DATA ANALYSIS

Gold assay statistics are provided in Table 14-2.

Zone	Number	Mean	Standard Deviation	Minimum	Maximum	Coefficient of Variation
Main						
Hangingwall	3,589	5.51	38.73	0.00	2,015.0	7.02
Footwall	1,090	4.16	10.91	0.00	156.5	2.62
Contact	766	7.08	36.71	0.00	656.8	5.18
Sediment	122	4.71	6.69	0.00	45.4	1.42
Other	117	4.81	7.11	0.00	42.6	1.48
All Zones	5,684	5.43	33.97	0.00	2,015.0	6.25
960						
Hangingwall	95	4.36	6.21	0.00	44.01	1.42
Footwall	71	3.27	3.59	0.00	18.72	1.10
Sediment	15	4.39	5.46	0.02	18.11	1.24
All Zones	181	3.93	5.27	0.00	44.01	1.34

# TABLE 14-2ASSAY STATISTICSSt Andrew Goldfields Ltd. – Clavos Project

#### **GRADE CAPPING**

The grade distribution of the gold assays from the drill core samples and the chip samples were reviewed and found to be highly skewed. Grade capping was considered necessary. RPA used a percentile analysis to determine the capping level for the samples. The amount of gold represented in the highest grade samples is examined and those assays are cut until no more than 10% of the gold is carried by the 99<sup>th</sup> percentile of the assay population (Figure 14-4). This analysis determined that a 60 g/t Au cap was appropriate for both the core samples and the chip samples.







#### COMPOSITE LENGTH

It was decided to composite each drill hole and set of chip samples into single composites because of the narrow and erratic nature of the gold mineralization.

After studying the mineralization in the underground exposures at Clavos, D. Rhys (2005) recommended the same procedures for grade control practices.

#### CAPPED AND COMPOSITED ASSAY STATISTICS

The effects of capping higher gold grades across the various zones are seen in Tables 14-3 and 14-4. After capping and compositing, most of the coefficients of variation are in a reasonable range considering the type of mineralization at Clavos.

# TABLE 14-3 CAPPED ASSAY STATISTICS St Andrew Goldfields Ltd. – Clavos Project

Zone	Number	Mean	Standard Deviation	Minimum	Maximum	Coefficient of Variation
Main						
Hangingwall	3,589	4.27	9.11	0.00	60.0	2.13
Footwall	1,090	3.85	8.18	0.00	60.0	2.12
Contact	766	4.74	9.92	0.00	60.0	2.09
Sediment	122	4.71	6.69	0.00	45.4	1.42
Other	117	4.81	7.11	0.00	42.6	1.48
All Zones	5,684	4.28	8.97	0.00	60.0	2.10
960						
Hangingwall	95	4.36	6.21	0.00	44.0	1.42
Footwall	71	3.27	3.59	0.00	18.7	1.10
Sediment	15	4.39	5.46	0.02	18.1	1.24
All Zones	181	3.93	5.27	0.00	44.0	1.34



#### TABLE 14-4 COMPOSITED ASSAY STATISTICS

Zone	Number	Mean	Standard Deviation	Minimum	Maximum	Coefficient of Variation
Main						
Hangingwall	936	4.02	5.38	0.00	60.0	1.34
Footwall	317	3.47	4.85	0.00	60.0	1.40
Contact	224	5.35	8.52	0.00	60.0	1.59
Sediment	34	4.36	2.56	0.00	10.4	0.59
Other	44	4.09	4.73	0.00	22.5	1.16
All Zones	1,555	4.11	5.80	0.00	60.0	1.41
960						
Hangingwall	14	4.14	1.83	1.62	7.64	0.44
Footwall	10	3.15	1.58	1.37	6.47	0.50
Sediment	4	4.78	2.23	3.30	8.10	0.47
All Zones	28	3.88	1.83	1.37	8.10	0.47

St Andrew Goldfields Ltd. – Clavos Project

In order to determine the effect of the uncapped assays versus capped assays on the amount of gold in the resource estimate, estimates were run using uncapped and capped values. At a 3.0 g/t Au cut-off grade, the uncapped resource contained approximately 26,800, or 8.5%, more ounces of gold.

#### **BULK DENSITY**

The tonnage factor of 2.76 t/m<sup>3</sup> is based on density determinations made by Kinross when it held an option on the Clavos property. More recent test work by SAS supports this figure. RPA considers the tonnage factor of 2.76 t/m<sup>3</sup> to be reasonable.

# VARIOGRAPHY, INTERPOLATION PARAMETERS, AND BLOCK MODELS

The assays in a subset of drill holes covering the mineralized zones in the Clavos Project were selected from the property-wide database. Attempts to create reliable variograms were not successful due to the spread of information over a large distance. Instead, a search



strategy based on drill hole spacing was used and the search ellipsoid was manually fitted to the main strike, dip, and plunge directions in the deposit.

All grades were estimated using a three-dimensional model with a block size of 10 m x 2 m x10 m for each zone. The grade estimates were bounded by three-dimensional wireframes. The grade estimation was carried out in four passes, with each successive pass using more liberal composite selection parameters than the previous one. The first pass was done using a search ellipsoid measuring 40 m along strike, 20 m along dip, and 20 m across strike, oriented parallel to the principal axes of the zones. The second pass was done using a search ellipsoid measuring 80 m along strike, 40 m along dip, and 40 m across strike, oriented parallel to the principal axes of the zones. For the third pass, the search ellipsoid was increased to 120 m x 60 m x 60 m and for the final pass, the search ellipsoid was increased to 200 m x 100 m x 100 m. A minimum of two composites (intersections) and a maximum of 12 composites per block were set for the first three passes. In the fourth pass, the minimum number of composites is set to one. Approximately 55% of the blocks were filled in the first pass and 32% in the second pass.

Interpolation of variables into the blocks was completed using ID<sup>3</sup>. An estimate was also generated using nearest neighbour (NN) methodologies as a check on the ID<sup>3</sup> totals. Results were as expected, with the NN method returning less tonnes and slightly higher grade.

#### CUT-OFF GRADE

A cut-off grade of 2.75 g/t Au was chosen for inclusion of mineralized lenses in the resource estimate. The 2.75 g/t Au threshold appears to be close to natural cut-off that defines the mineralized lenses and separates them from much lower grade material. A 2.75 g/t Au cut-off grade is also derived using the following assumptions:

- Operating cost of C\$125 per tonne
- Metallurgical recovery of 88%
- Gold price of US\$1,600 per ounce
- Exchange rate of US\$1.00 = C\$1.00

Metal prices used for reserves are based on consensus, long term forecasts from banks, financial institutions, and other sources. For resources, metal prices used are slightly higher than those for reserves.



### **CLASSIFICATION OF MINERAL RESOURCES**

The Mineral Resources have been classified as Indicated and Inferred (Figures 14-5 to 14-

- 8). The classification is based on the following criteria:
  - Indicated Mineral Resources are those parts of a mineralized lens defined by at least two drill hole or chip sample intersections within 30 m of a block.
  - Inferred Mineral Resources are all or parts of a mineralized lens defined by at least two drill hole or chip sample intersections within 60 m of a block.

Due to the uncertain survey positions of the mined areas and incomplete records from the previous operation, no resources are classified as Measured.



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### SUMMARY OF MINERAL RESOURCE ESTIMATE

Table 14-5 lists the Clavos Mineral Resources by zone.

	Indica	ated Resour	ces	Infe	rred Resourd	ces
Location	Tonnes	Grade (g/t Au)	Ounces Gold	Tonnes	Grade (g/t Au)	Ounces Gold
Main Zone						
Hangingwall	595,900	4.92	94,300	119,000	5.6	21,000
Footwall	267,000	5.11	43,900	162,000	4.2	22,000
Contact	237,800	4.45	34,000	0	-	-
Sediment	66,400	5.07	10,800	243,000	4.2	33,000
Other	0	-	-	112,000	6.0	22,000
Total	1,167,100	4.88	183,000	636,000	4.8	97,000
960 Zone						
Hangingwall	69,900	4.04	9,100	77,000	5.0	12,000
Footwall	10,200	3.91	1,300	51,000	3.5	6,000
Sediment	11,200	3.51	1,300	32,000	4.7	5,000
Total	91,300	3.99	11,700	160,000	4.5	23,000
Grand Total	1,258,400	4.81	194,600	796,000	4.7	120,000

#### TABLE 14-5 MINERAL RESOURCES – OCTOBER 12, 2012 St Andrew Goldfields Ltd. – Clavos Project

Notes:

1. CIM definitions were followed for Mineral Resources.

2. A cut-off grade of 2.75 g/t Au was used for the resource estimate.

3. Mineral Resources are estimated using a long-term gold price of US\$1,600 per ounce and a US\$/C\$ exchange rate of 1:1.

4. A minimum mining width of 1.5 m was used.

- 5. Bulk density is 2.76 t/m<sup>3</sup>.
- 6. Numbers may not add due to rounding.

## MINERAL RESOURCE VALIDATION

Validation of the Mineral Resources was completed using the following methods:

- Visual verification of block grades and drill hole assays and composites, on crosssections.
- Comparison of length-weighted average assay grades, composite grades, and block grades (Table 14-6) at a zero grade gold cut-off.



• Comparison of NN estimate totals with the ID<sup>3</sup> estimate totals (Table 14-7) at the 2.75 g/t Au cut-off grade.

#### TABLE 14-6 COMPARISON OF AVERAGE GRADES

#### St Andrew Goldfields Ltd. – Clavos Project

Average Assay Grade (g/t Au)	Average Composite Grade (g/t Au)	Average Block Grade (g/t Au)
3.95	3.84	4.02

# TABLE 14-7COMPARISON OF INDICATED ESTIMATESSt Andrew Goldfields Ltd. – Clavos Project

Methodology	Tonnes	Grade (g/t Au)	Ounces Gold
1D <sup>3</sup>	1,258,400	4.81	194,600
NN	1,114,800	5.48	196,400

In RPA's opinion, the validation exercises show that the resource estimate is a reasonable representation of the resources at the Clavos Project.

RPA is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors which may materially affect the Mineral Resource estimate.



## **15 MINERAL RESERVE ESTIMATE**

There are no Mineral Reserves at the Clavos Project at the present time.



## **16 MINING METHODS**



## **17 RECOVERY METHODS**



## **18 PROJECT INFRASTRUCTURE**



## **19 MARKET STUDIES AND CONTRACTS**



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



## **21 CAPITAL AND OPERATING COSTS**



## **22 ECONOMIC ANALYSIS**



## **23 ADJACENT PROPERTIES**

RPA has no information on exploration activities on adjacent properties at this time.



# 24 OTHER RELEVANT DATA AND INFORMATION

No additional information or explanation is necessary to make this Technical Report understandable and not misleading.



## **25 INTERPRETATION AND CONCLUSIONS**

An updated Mineral Resource estimate has been completed on the Clavos Project based on surface and underground diamond drilling and chip sampling results by previous owners. The SGX surface drill results, completed in 2010 to 2012, were also included in the estimation data.

Table 25-1 lists the Mineral Resources in the Clavos deposit.

Category	Cut-off Grade (g/t Au)	Tonnage	Grade (g/t Au)	Contained Metal (oz Au)
Indicated				
	4.0	635,500	6.25	127,700
	3.0	1,115,300	5.06	181,400
	2.75	1,258,400	4.81	194,600
	2.5	1,399,100	4.59	206,500
	2.0	1,618,100	4.28	222,500
Inferred				
	4.0	394,000	6.2	78,000
	3.0	674,000	5.0	109,000
	2.75	796,000	4.7	120,000
	2.5	866,000	4.5	126,000
	2.0	994,000	4.2	136,000

# TABLE 25-1SUMMARY OF MINERAL RESOURCES – OCTOBER 12, 2012St Andrew Goldfields Ltd. – Clavos Project

Notes:

- 1. CIM definitions were followed for Mineral Resources.
- 2. RPA recommends that a cut-off grade of 2.75 g/t Au is used for economic evaluations.
- 3. Mineral Resources are estimated using a long-term gold price of US\$1,600 per ounce and a US\$/C\$ exchange rate of 1:1.
- 4. A minimum mining width of 1.5 m was used.
- 5. Bulk density is 2.76 t/m<sup>3</sup>.
- 6. Numbers may not add due to rounding.

The sample preparation, security, and assay procedures at the Clavos Project are completed to industry standards and the data from the 2010 to 2012 drill program are suitable for use in resource estimation.



Data collection and entry, and database verification procedures for the Clavos Project comply with industry standards and the compiled database is suitable for the estimation of Mineral Resources.

The potential to expand the known mineralization exists along the strike and down dip directions at Clavos. Further drilling is warranted.



## **26 RECOMMENDATIONS**

The Clavos Joint Venture plans to continue surface drilling in 2013. The 960 Zone will be targeted. Approximately 3,300 m of drilling is proposed at a planned cost of \$450,000. Details of the planned expenditure are listed in Table 26-1. RPA agrees with the planned drilling program.

## TABLE 26-1 PROPOSED SURFACE DRILLING PROGRAM St Andrew Goldfields Ltd. – Clavos Project

Target Area	Drilling (m)	Budget (\$)
960 Zone – 13 drill holes	3,365	450,000

A Preliminary Economic Assessment (PEA) is the next logical step following the completion of the resource estimate. The Clavos Joint Venture is working on a PEA at the present time and expects it to be completed in early 2013 at an estimated cost of \$100,000. RPA concurs with the completion of a PEA for the Clavos Project.

The Clavos Joint Venture has proposed an underground exploration program of drifting and drilling starting on the 250 level should the mine working be dewatered to that depth (Figure 26-1). The purpose of the program is to complete exploration and detailed delineation of the main mineralized zones eastward from the Main Zone out to and including the 960 Zone. The drift will be positioned in the hangingwall of the zones and drilling will initially be completed on 60 m sections at 60 m spacings on the projected position of the Hangingwall Zone. A second phase of infill drilling on 30 m spacings would follow up on targets developed in Phase 1. Details of the proposed expenditure are listed in Table 26-2. The drifting budget includes drill stations cut on 60 m centres and the drilling includes mobilization, sampling, and assaying. RPA agrees with the underground exploration program.



# TABLE 26-2 PROPOSED UNDERGROUND EXPLORATION PROGRAM St Andrew Goldfields Ltd. – Clavos Project

Description	Length (m)	Budget (\$)
Drifting (including drill stations)	1,050	5,800,000
Drilling (Phase 1)	15,750	2,200,000
Drilling (Phase 2)	7,500	1,000,000
Total		9,000,000





## **27 REFERENCES**

- Barrett, T. J., 2012, Lithogeochemical Features of Host Rocks at the Clavos Gold Mine property, Timmins Region, Ontario, prepared by Ore Systems Consulting for St. Andrews Goldfields Limited, January 31, 2012.
- Hubacheck, P., 2012, Quality Assurance/Quality Control Report for the 2012 Diamond Drill Core Sampling on the Clavos Property, Ontario, Canada, prepared by P. Hubacheck, P. Geo., for Sage Gold Inc., November 22, 2012.
- Moore, C. M., 2007, Technical Report on the Clavos Project in the Timmins Area, Northeastern Ontario (DRAFT), prepared by Scott Wilson Roscoe Postle Associates Inc. for St Andrew Goldfields Limited, April 6, 2007.
- Rennie, D., 2003, Update of the Report on the Mineral Resource Estimate on the Clavos Property, prepared by Roscoe Postle Associates Inc. for United Tex-Sol Mines Inc., April 4, 2003.
- Rhys, D., 2005, Structural Evaluation of the Clavos Underground Workings, with Assessment of the Style and Controls on Gold Mineralization, prepared by Panterra Geoservices Inc., for St. Andrews Goldfields Limited March 27, 2005.
- Roscoe, W. E., et al., 2003, Report on the Clavos, Stock Mine, Taylor, Central Timmins, and Golden Reward Properties in the Timmins Area of Northeastern Ontario, prepared by Roscoe Postle Associates Inc. for St Andrew Goldfields Limited, September 24, 2003.
- Roscoe, W. E., and Gow, N. N., 2006, Report on the Taylor, Clavos, Hislop and Stock Projects in the Timmins Area, Northeastern Ontario, Canada, prepared by Roscoe Postle Associates Inc. for St Andrew Goldfields Limited, October 2, 2006.
- Saunders, D., 2012a, Quality Assurance/Quality Control Report for the 2011 Diamond Drill Core Sampling on the Clavos Property, Ontario, Canada, prepared by D. Saunders, P. Geo., for Sage Gold Inc., February 8, 2012.
- Saunders, D., 2012b, Analysis of Results from 2011 Re-sampling (Core Duplicate) Results for the Clavos Project, prepared by D. Saunders, P. Geo., for Sage Gold Inc., January 18, 2012.



## **28 DATE AND SIGNATURE PAGE**

This report titled "Technical Report on the Clavos Project in the Timmins Area, Northeastern Ontario, Canada", and dated October 12, 2012, as re-addressed on December 31, 2012, was prepared and signed by the following authors:

(Signed & Sealed) "Chester M. Moore"

Dated at Toronto, ON December 31, 2012 Chester M. Moore, P. Eng. Principal Geologist

(Signed & Sealed) "David A. Ross"

Dated at Toronto, ON December 31, 2012 David A. Ross, P. Geo. Principal Geologist



## 29 CERTIFICATE OF QUALIFIED PERSON

#### CHESTER M. MOORE

I, Chester M. Moore, P. Eng., as an author of this report titled "Technical Report on the Clavos Project in the Timmins Area, Northeastern Ontario, Canada" prepared for St Andrew Goldfields Ltd. and dated October 12, 2012, as re-addressed on December 31, 2012, do hereby certify that:

- 1. I am Principal Geologist with Roscoe Postle Associates Inc. of Suite 501, 55 University Ave Toronto, ON, M5J 2H7.
- 2. I am a graduate of the University of Toronto, Toronto, Ontario, Canada in 1972 with a Bachelor of Applied Science degree in Geological Engineering.
- 3. I am registered as a Professional Engineer in the Province of Ontario (Reg. #32455016). I have worked as a geologist for a total of 40 years since my graduation. My relevant experience for the purpose of the Technical Report is:
  - Mineral Resource and Reserve estimation, feasibility studies, due diligence, corporate review and audit on exploration projects and mining operations world wide
  - Various advanced exploration and mine geology positions at base metal and gold mining operations in Ontario, Manitoba and Saskatchewan
  - Director, Mineral Reserve Estimation and Reporting at the corporate offices of a major Canadian base metal producer
- 4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
- 5. I visited the Clavos Project on June 15, 2011 and March 13 and 15, 2007.
- 6. I am responsible for all sections of the Technical Report except for the work completed by my co-author in Section 14.
- 7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
- 8. I have previously reviewed the Mineral Resource estimates for the Clavos Project in April 2007.
- 9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.



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

Dated this 31<sup>st</sup> of December 2012

#### (Signed & Sealed) "Chester M. Moore"

Chester M. Moore, P.Eng.



#### DAVID A. ROSS

I, David A. Ross, P. Geo., as an author of this report titled "Technical Report on the Clavos Project in the Timmins Area, Northeastern Ontario, Canada" prepared for St Andrew Goldfields Ltd. and dated October 12, 2012, as re-addressed on December 31, 2012, do hereby certify that:

- 1. I am a Principal Geologist with Roscoe Postle Associates Inc. of Suite 501, 55 University Ave., Toronto, ON, M5J 2H7.
- 2. I am a graduate of Carleton University, Ottawa, Canada, in 1993 with a Bachelor of Science degree in Geology and Queen's University, Kingston, Ontario, Canada, in 1999 with a Master of Science degree in Mineral Exploration.
- 3. I am registered as a Professional Geologist in the Province of Ontario (Reg. #1192). I have worked as a geologist for a total of 19 years since my graduation. My relevant experience for the purpose of the Technical Report is:
  - Review and report as a consultant on numerous mining and exploration projects around the world for due diligence and regulatory requirements
  - Exploration geologist on a variety of gold and base metal projects in Canada, Indonesia, Chile, and Mongolia.
- 4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
- 5. I have not visited the Clavos Project.
- 6. I am responsible for parts of Section 14 including geological interpretation, wireframe models, and grade estimation for the Mineral Resource of the Technical Report.
- 7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
- 8. I have had no prior involvement with the property that is the subject of the Technical Report.
- 9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
- 10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 31<sup>st</sup> of December 2012

#### (Signed & Sealed) "David A. Ross"

David A. Ross, M.Sc., P.Geo.