
17 June 2024

Cochrane Hill Diamond Drill Program Update

Gold Results Returned from Diamond Drill Program

Highlights

- All three diamond drill holes from the Cochrane Hill Deeps exploration program in Nova Scotia intersected visible gold in multiple locations. Assays received from the three exploration drill holes indicates gold mineralisation extends a further 80 m to 175 m down dip from previous drilling.
 - Screen Fire assay results have been received for all three Cochrane Hill Deeps diamond drill holes and include:
 - **CH-24-358: 31 m @ 2.5 g/t Au from 387 m, including 2 m @ 14.2 g/t Au from 411 m; and**
 - **CH-24-360: 27 m @ 1.9 g/t Au from 395 m, and 7 m @ 5.1 g/t Au from 431 m.**
 - The Cochrane Hill East and Cochrane Hill West diamond drill programs have sterilised the near surface potential of the shear zone along strike to the east and west of the Cochrane Hill deposit and now updated mine and infrastructure planning will proceed on the existing 690 Koz Cochrane Hill Mineral Resource.
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St Barbara Limited (“**St Barbara**” or the “**Company**”) (ASX: SBM) is pleased to announce that final assays have now been received for the 20 hole diamond drill program for 3,853 m completed at Cochrane Hill, Nova Scotia between January and March 2024.

Managing Director and CEO Andrew Strelein said “Screen fire assays for the three Cochrane Hill Deeps holes confirmed the down dip extensions to more than 100 metres below the previously known mineralisation depth. The overall tenor of these Deeps intercepts suggest however that there is only limited potential to extend the Mineral Resource at depth”.

“The Cochrane Hill East and West diamond drill programs were testing along strike along the Cochrane Hill shear zone before advancing an updated mine and infrastructure design. While surprise intercepts would have been most welcome, as expected, the areas along strike are now confirmed to be available for infrastructure design planning.”

“Cochrane Hill is St Barbara’s northeastern project in Nova Scotia and remains an attractive development proposition with the deposit containing Mineral Resources of 690,000 ounces and Ore Reserves of 510,000 ounces.”

The Cochrane Hill Deeps exploration program comprised three holes for 1,422 m. The program tested the potential down dip extension to the known mineralisation over a 130 m strike length between 80 m and 175 m below previous drilling conducted in 2018 and 2019.

The Cochrane Hill East and Cochrane Hill West drill programs were designed to test the prospective Cochrane Hill shear zone along strike to the east and west of the Cochrane Hill deposit to determine whether any significant mineralisation occurred near surface or if the areas could be considered sterilised for infrastructure design purposes.

The Cochrane Hill East drill program comprised nine holes for 1,437 m and successfully tested a 1 km strike length of the shear zone. The Cochrane Hill West drill program comprised eight holes for 994 m and successfully tested a 600 m strike length of the shear zone.

The Cochrane Hill deposit is St Barbara's northeastern most Mineral Resource (see Figure 1). The Cochrane Hill Project is comprised of nine tenements (EL51476, EL51477, EL10249, EL55625, EL09259, EL56059, EL56287, EL56285 and EL55571). The project encompasses a section of the northeast-trending Cochrane Hill anticline that locally forms an overturned, tight isoclinal fold, with both limbs dipping to the north, between 55 to 80 degrees. Lithologies in the area have been metamorphosed to amphibolite (staurolite) facies with development of biotite schists, after argillite protoliths, and porphyroblastic textures in fine-grained greywacke and argillite. Mineralisation at Cochrane Hill occurs within a strike-parallel sheeted quartz vein system on the southern overturned limb of the Cochrane Hill anticline. Gold is hosted both within quartz veins and disseminated through the intervening metasediments.

Cochrane Hill Deeps

All three Cochrane Hill Deeps exploration diamond drill holes (CH-24-358, 359 and 360) intersected gold mineralisation between 80 m and 175 m down dip below the limits of previous drilling conducted in 2018 and 2019 and outside the current pit optimisation.

Hole CH-24-358 intersected mineralisation between a depth of 389 m and 428 m downhole (refer to ASX release on 27 February 2024 titled "*Significant Visible Gold Intersected*"). The intercept is located at the expected down dip location around 115 m below the deepest previous drill hole on section. Mineralisation is characterised by an increase in shearing and the presence of abundant bedding parallel quartz veins, coarse-grained arsenopyrite porphyroblasts and pyrrhotite. Visible gold was observed at eight locations (389.5 m, 410.6 m, 410.8 m, 413.0 m, 413.45 m, 413.5 m, 413.6 m and 427.7 m depth) within the mineralised interval and is hosted within quartz veins. The mineralised zone contains up to 35% quartz veining and 5% arsenopyrite per metre.

Hole CH-24-359 intersected a primary zone of mineralisation between a depth of 379 m and 405 m downhole. The intercept is located at the expected down dip location around 80 m below the deepest previous drill hole on section. Visible gold was observed at two locations at 385.15 m and 399.53 m within the primary zone of mineralisation and is hosted within quartz veins. The primary mineralised zone contains between 0% and 33% quartz veining per metre and between trace and 1% arsenopyrite. Visible gold was also observed at 359.25 m in the hanging wall and 418.72 m, 427.52 m, and 444.80 m in the footwall, associated with less well developed veining and arsenopyrite. The mineralised zone contains between 0% and 33% quartz veining per metre and between trace and 1% arsenopyrite.

In hole CH-24-360, quartz veining with associated arsenopyrite was encountered at the targeted depth between 378 m and 419 m down hole and between 434 m and 439 m downhole. The intercept is located at the expected down dip location around 175 m below the deepest previous drill hole on section. Visible gold was observed at five locations (400.13 m, 407.48 m, 407.54 m, 409.36 m, and 411.79 m depth) within the primary mineralised zone hosted within quartz veins. Visible gold was also observed at three locations (434.51, 434.62 m and 444.85 m) in the footwall associated with bedding parallel pyrrhotite rich quartz veins. The mineralised zone contains between 0% and 33% quartz veining per metre and between trace and 3% arsenopyrite.

Screen Fire assay results have been received for all three Cochrane Hill Deeps diamond drill holes and include:

- **CH-24-358: 31 m @ 2.5 g/t Au from 387 m, including 2 m @ 7.8 g/t Au from 392 m and 1 m @ 9.3 g/t Au from 403 m, 2 m @ 14.2 g/t Au from 411 m, and 2 m @ 1.8 g/t Au from 427 m;**
- **CH-24-359: 7 m @ 0.7 g/t Au from 361 m, 4m @ 0.8 g/t Au from 376 m, 12 m @ 1.2 g/t Au from 384 m, and 1 m @ 6.7 g/t Au from 427 m; and**
- **CH-24-360: 5 m @ 1.2 g/t Au from 378 m, 27 m @ 1.9 g/t Au from 395 m, including 1 m @ 14.5 g/t Au from 397 m and 1 m @ 9.2 g/t Au from 421 m, and 7 m @ 5.1 g/t Au from 431 m, including 1m @ 29.9 g/t Au from 434 m.**

The assays were initially completed on half core using 50g Fire Assay / AAS finish (Au-AA26 method) at ALS, Vancouver. Subsequently, screen fire assays (Au-SCR24 method) were completed on coarse residue material for mineralisation intersected in holes CH-24-358, CH-24-359 and CH-24-360 (reported in this release) to further investigate and better understand the nature of the coarse gold.

Cochrane Hill East and West

The Cochrane Hill East exploration diamond drill program comprising nine holes for 1,437 m successfully tested a 1 km strike length of the shear zone located in the overturned southern limb of the anticline. Despite intersecting good visual arsenopyrite and quartz veining in sheared argillite, no significant gold intercepts were received. As a result the area tested has been sterilised for near surface gold mineralisation.

The Cochrane Hill West exploration diamond drill program comprising eight holes for 994 m successfully tested a 600 m strike length of the shear zone. All holes intersected a subtle zone of mineralisation characterised by the presence of arsenopyrite and quartz veining. Visible gold was observed associated with quartz veins at downhole depths of 120.5 m in hole CHW-24-007 and 154.5 m in hole CHW-24-008.

Fire assay results have been received for all eight Cochrane Hill West diamond drill holes and include:

- **CHW-24-001: 1 m @ 49.3 g/t Au from 91 m; and**
- **CHW-24-007: 1 m @ 19.9 g/t Au from 120 m.**

Despite returning two narrow, high-grade gold intercepts, the results are insufficient to warrant follow-up near surface drilling at this time.

Explanatory Notes

Figure 1 shows the location of the three Cochrane Hill drill programs relative to the St Barbara Limited tenement holding in Nova Scotia, Canada.

Figure 2 highlights the location of the 20 diamond drill holes for 3,853 m at Cochrane Hill Deeps, Cochrane Hill East and Cochrane Hill West. The location of a long section and three Cochrane Hill Deeps cross sections are also outlined on the figure. Previous, near surface, historical significant drill intercepts at Cochrane Hill West that were followed-up in this drill program included: CHC-07-019: 8m @ 12.2 g/t Au from 4m; CHC-07-020: 4m @ 10.5 g/t Au from 17m; and CHC-07-018: 4m @ 6.6 g/t Au from 11m.

Figure 3 is a long section through the Cochrane Hill gold deposit looking north and highlights a high-grade core to the deposit with an approximate 250 m strike length. Previous drilling completed between 2018 and 2019 returned some significant intercepts located in the core zone at the bottom of the current Cochrane Hill drilling. The location of selected historical significant drill intercepts are shown in addition to the location of the the current pit design. The recent drilling was designed to test for high-grade, down plunge extensions to the Cochrane Hill gold deposit, outside the current pit design. The location of the Cochrane Hill Deeps drill hole pierce points are shown with their significant gold intercepts. The Cochrane Hill Deeps exploration diamond drill holes (CH-24-358, 359 and 360) intersected gold mineralisation between 80 m and 175 m down dip below the limits of previous drilling.

Figures 4 to 6 represent cross sections through the Cochrane Hill deposit (looking west) which highlights the limits of previous resource drilling, the current pit design and the location of the Cochrane Hill Deeps exploration drill holes CH-24-358, CH-24-359 and CH-24-360. The cross sections show the location of the isoclinal, overturned anticline with both limbs dipping moderate to steeply to the north. The mineralisation is located in the overturned southern limb of the Cochrane Hill anticline. The significant gold intercepts are associated with quartz veining and arsenopyrite (described above).

Figure 1. Location of Cochrane Hill Drill Programs, Northeast Nova Scotia.

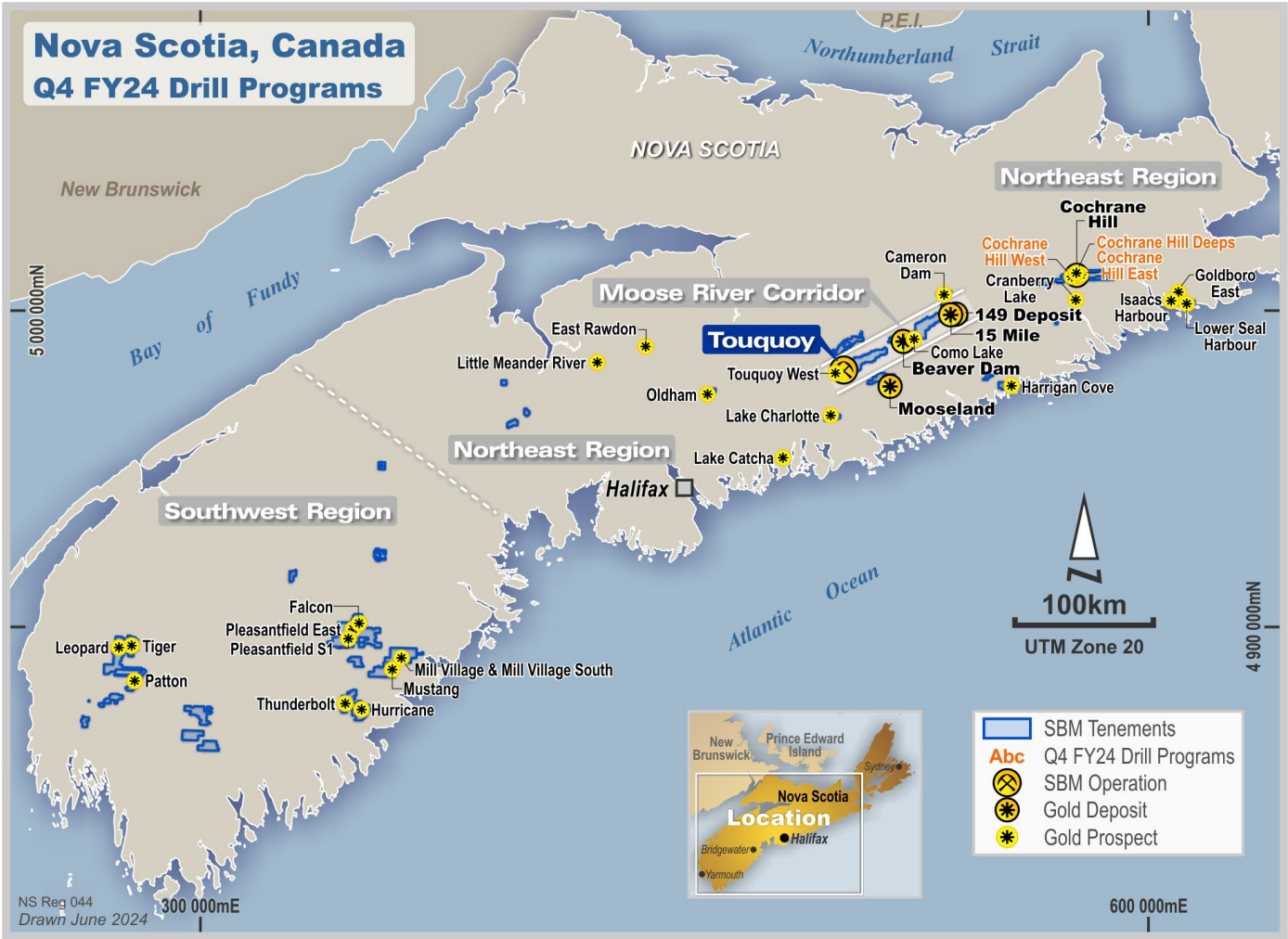


Figure 2. Cochrane Hill Diamond Drilling and the Location of the Cochrane Hill Deeps Holes.

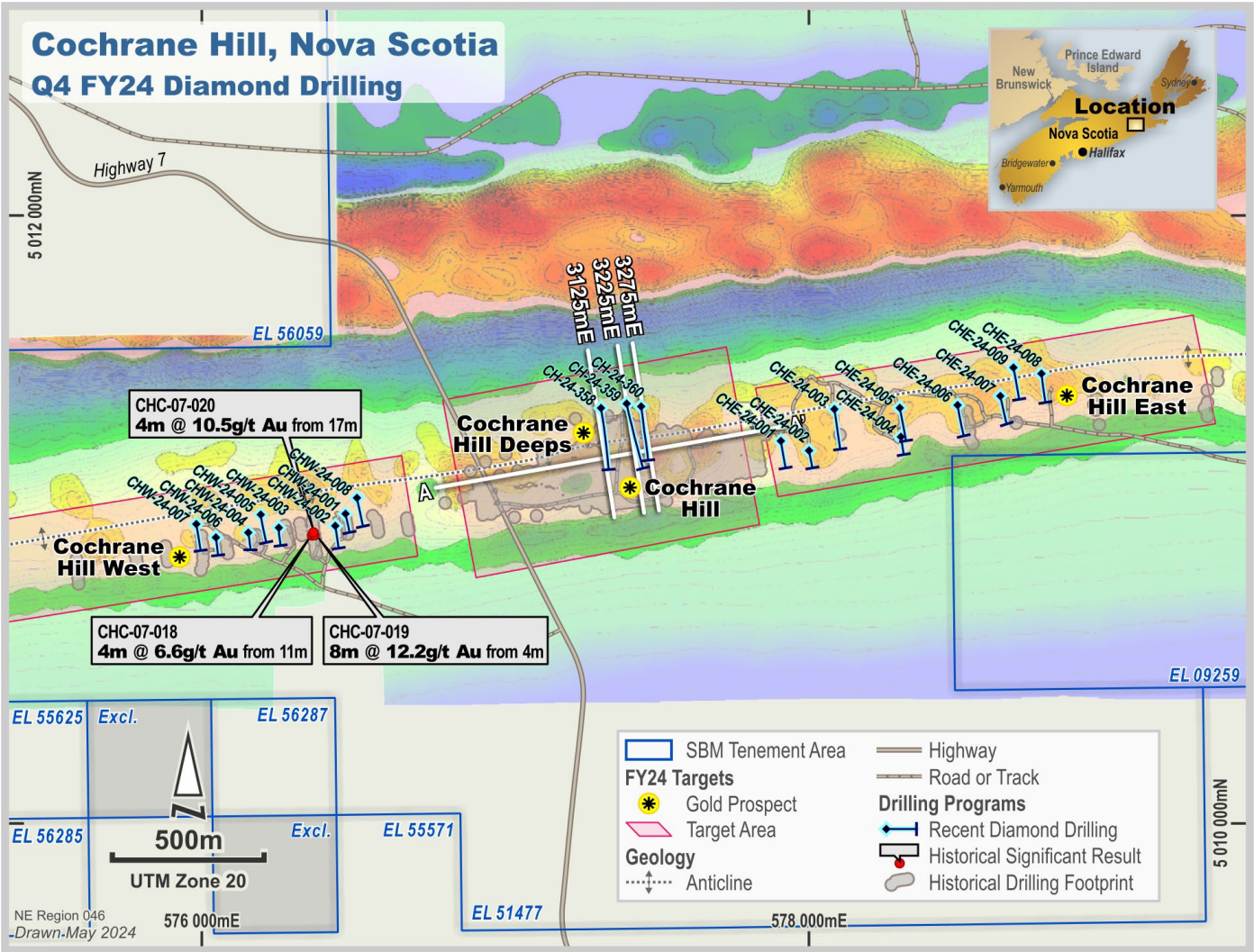


Figure 3. Cochrane Hill Long Section (Looking North) Showing the Cochrane Hill Deeps Drill Hole Pierce Points and Significant Intercepts.

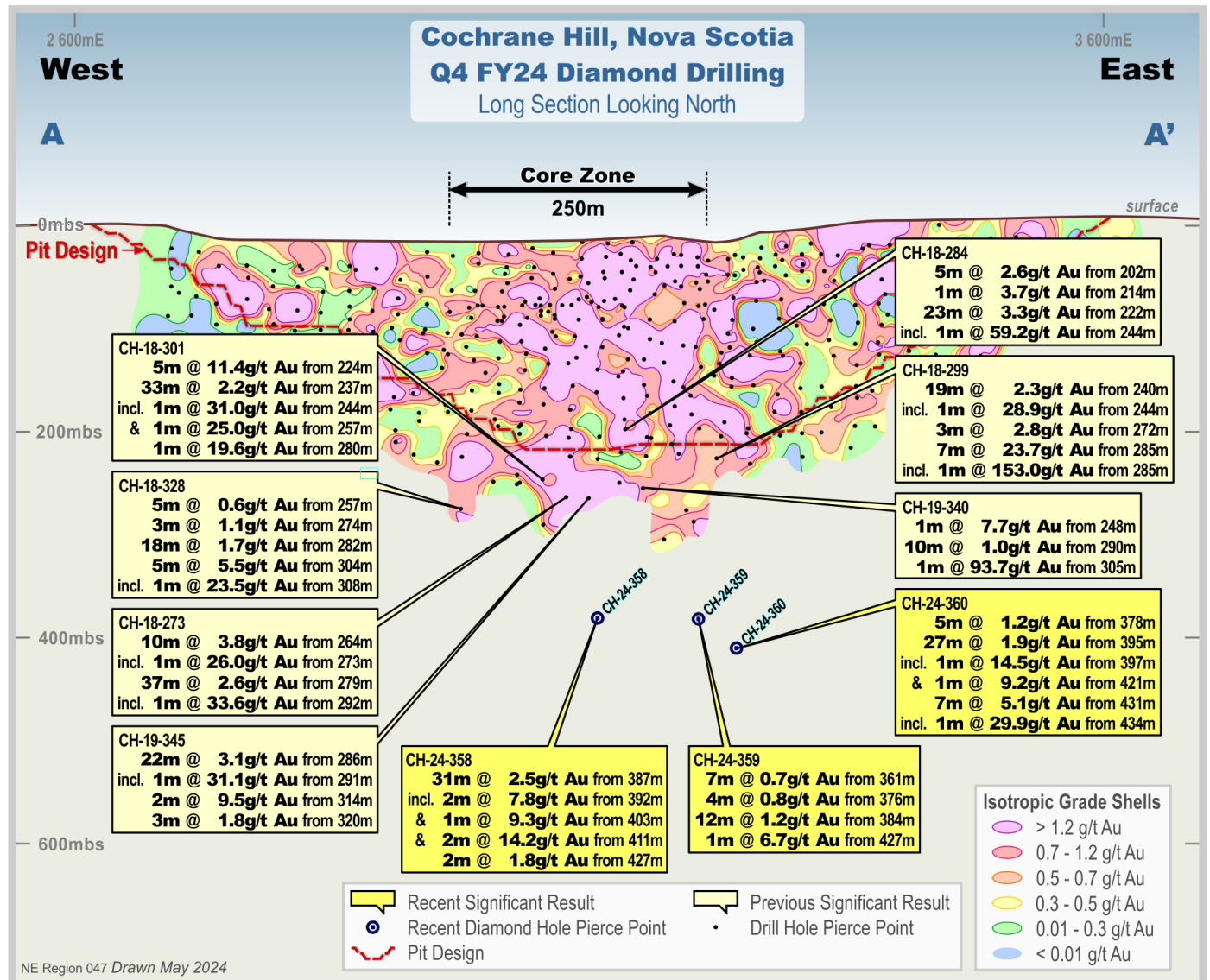


Figure 4. Cochrane Hill Cross Section 3,125 mE (Looking West) Showing the Location of CH-24-358.

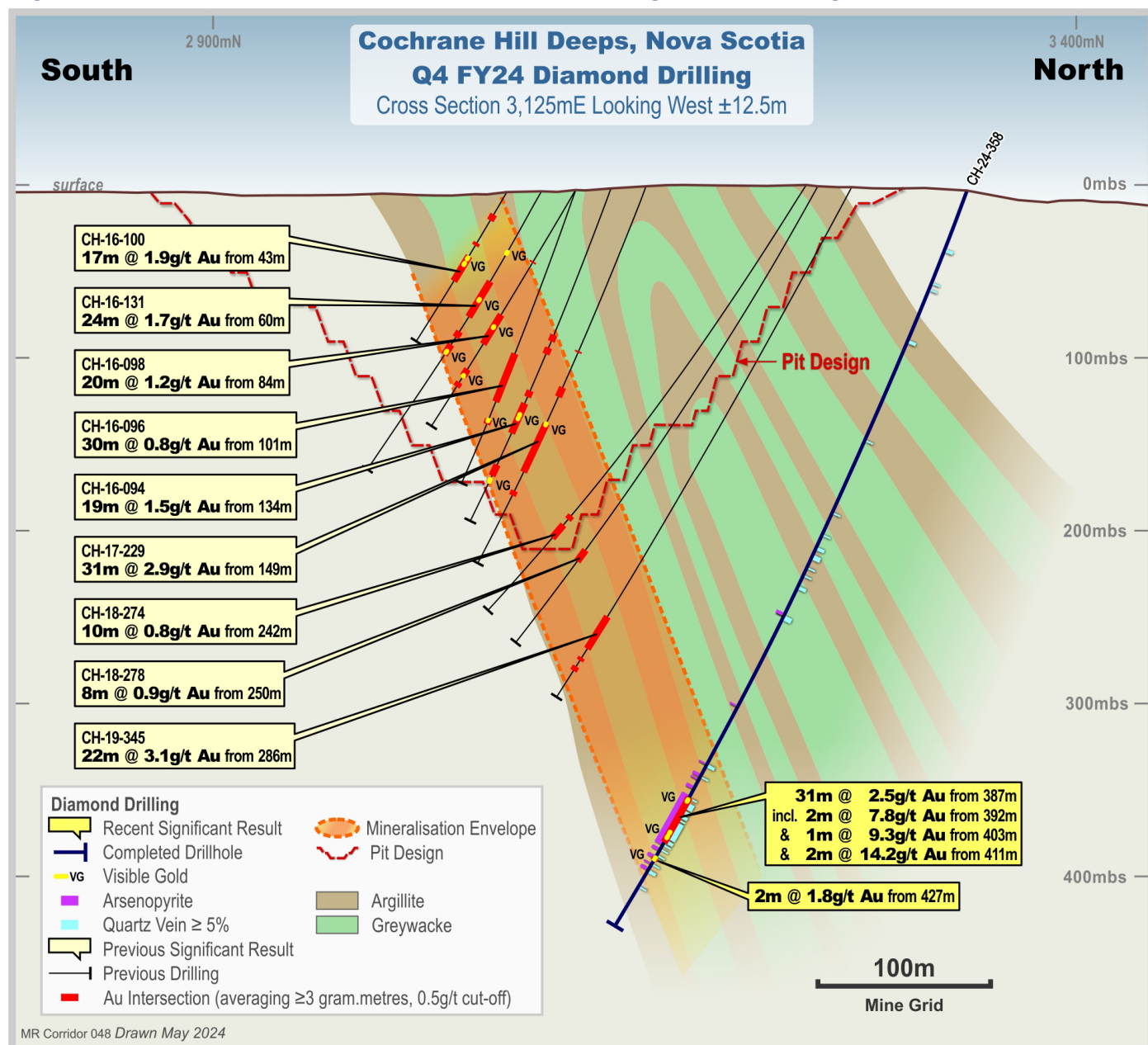


Figure 5. Cochrane Hill Cross Section 3,225 mE (Looking West) Showing the Location of CH-24-359.

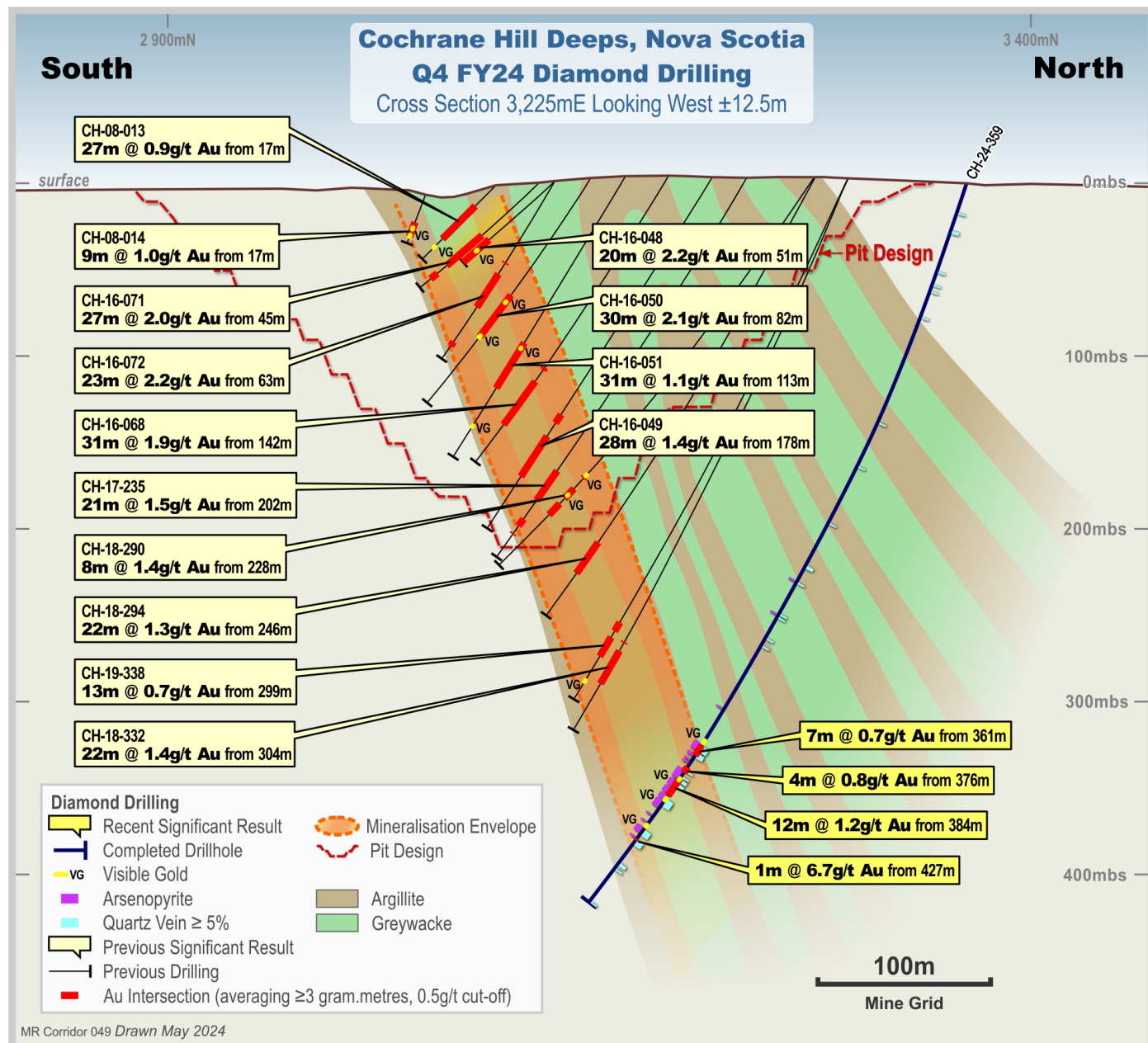


Figure 6. Cochrane Hill Cross Section 3,275 mE (Looking West) Showing the Location of CH-24-360.

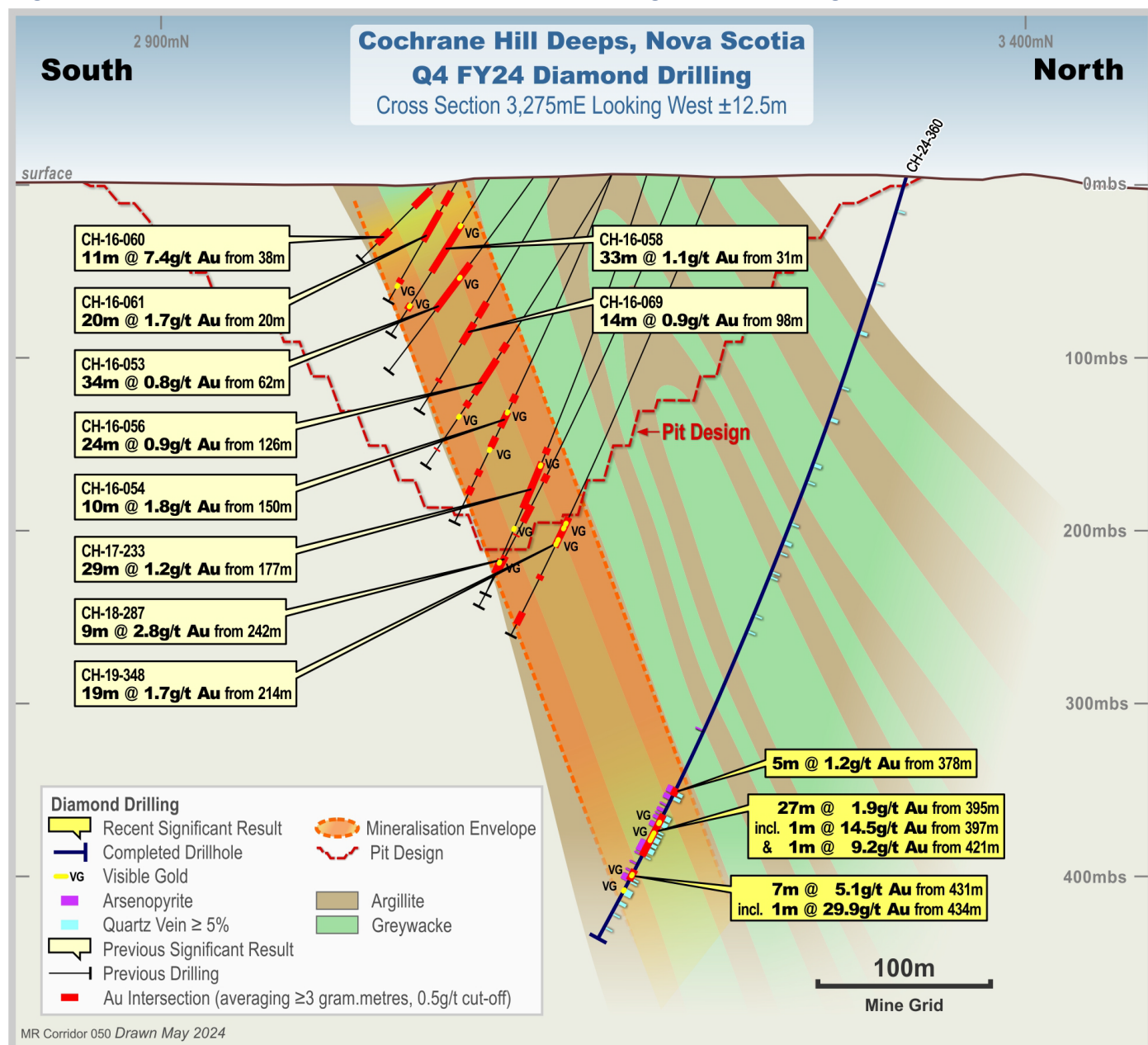


Table 1: Cochrane Hill Project Diamond Drilling Significant Intercepts – Nova Scotia, Canada

Hole ID	North	East	RL	Dip / Azimuth	Total Depth	Down-hole Mineralised Intersection			
	m	m	m	degrees	m	From	To	Interval	Gold grade
						m	m	m	g/t Au
CH-24-358	3,340	3,135	117.88	-70 / 171	473.0	387.0	418.0	31.0	2.5
<i>including</i>						392.0	394.0	2.0	7.8
<i>and</i>						403.0	404.0	1.0	9.3
<i>and</i>						411.0	413.0	2.0	14.2
						427.0	429.0	2.0	1.8
CH-24-359	3,340	3,225	120.59	-72 / 171	473.0	361.0	368.0	7.0	0.7
						376.0	380.0	4.0	0.8
						384.0	396.0	12.0	1.2
						427.0	428.0	1.0	6.7
CH-24-360	3,330	3,275	125.46	-72 / 171	476.0	378.0	383.0	5.0	1.2
						395.0	422.0	27.0	1.9
<i>including</i>						397.0	398.0	1.0	14.5
<i>and</i>						421.0	422.0	1.0	9.2
						431.0	438.0	7.0	5.1
<i>including</i>						434.0	435.0	1.0	29.9
CHW-24-001	2,250	3,120	147.0	-55 / 171	110.0	92.0	93.0	1.0	49.3
CHW-24-002	2,200	3,095	146.1	-50 / 171	113.0	No Significant Results			
CHW-24-003	2,025	3,120	147.8	-55 / 171	101.0	No Significant Results			
CHW-24-004	1,930	3,120	147.3	-55 / 171	101.0	15.0	16.0	1.0	3.2
CHW-24-005	1,975	3,165	144.5	-55 / 171	149.0	No Significant Results			
CHW-24-006	1,820	3,120	151.3	-55 / 171	101.0	No Significant Results			
CHW-24-007	1,775	3,165	148.6	-55 / 171	155.0	120.0	121.0	1.0	19.9
CHW-24-008	2,300	3,170	145.4	-55 / 171	164.0	No Significant Results			
CHE-24-001	3,700	3,130	140.1	-55 / 171	152.0	No Significant Results			
CHE-24-002	3,800	3,085	143.6	-55 / 171	101.0	No Significant Results			
CHE-24-003	3,900	3,200	141.8	-55 / 171	230.0	No Significant Results			
CHE-24-004	4,100	3,090	152.4	-55 / 171	101.1	No Significant Results			
CHE-24-005	4,100	3,170	149.7	-55 / 171	185.0	No Significant Results			
CHE-24-006	4,300	3,160	158.2	-55 / 171	170.0	No Significant Results			
CHE-24-007	4,450	3,165	161.9	-55 / 171	161.0	No Significant Results			
CHE-24-008	4,600	3,200	160.0	-55 / 171	161.0	No Significant Results			
CHE-24-009	4,500	3,250	160.0	-55 / 171	176.0	No Significant Results			

Note: Hole coordinates quoted in local grid.

Authorised by

Andrew Strelein
Managing Director and CEO

For more information**Investor Relations**

David Cotterell
General Manager Business Development & Investor Relations

info@stbarbara.com.au

T: +61 3 8660 1959

M: +61 447 644 648

Media Relations

Paul Ryan / Michael Weir

Morrow Sodali

M: +61 409 296 511 / +61 402 347 032

Competent Persons Statement

The information in this report that relates to Exploration Results is based on information compiled by Dr Roger Mustard, who is a Member of The Australasian Institute of Mining and Metallurgy. Dr Mustard is a full-time employee of St Barbara and has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Dr Mustard consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

JORC Table 1 Checklist of Assessment and Reporting Criteria

Section 1 Sampling Techniques and Data – Cochrane Hill

Criteria	Commentary
Sampling techniques	<ul style="list-style-type: none"> Drill holes were sampled in their entirety, in nominal meter intervals. Core samples have been processed as sawn to half core using a diamond-tipped core saw with nominal 1m half-core sample intervals. Samples were dispatched from Atlantic's core facility in Moose River, directly to ALS in Moncton, NB.
Drilling techniques	<ul style="list-style-type: none"> Diamond drilling comprised NQ core recovered using 3 m barrels. Drilling was completed by Logan Drilling.
Drill sample recovery	<ul style="list-style-type: none"> Diamond drilling recovery percentages were measured by comparing actual meters recovered per drill run versus meters measured on the core blocks. Recoveries averaged over >90% with increased core loss present in fault zones.
Logging	<ul style="list-style-type: none"> Diamond holes are qualitatively geologically logged for lithology, structure and alteration and qualitatively and quantitatively logged for veining and sulphides. Whole core was photographed when dry and wet. Core recovery and rock quality designation (RQD) were measured for each hole at the same metre-by-metre intervals. All holes are fully logged and photographed. Core is re-assembled using cleavage for a qualitative core orientation.
Sub-sampling techniques and sample preparation	<ul style="list-style-type: none"> Sawn half-core samples were submitted to ALS Chemex facility where each sample was dried, finely crushed to better than 70% passing a 2mm screen. A split up to 1,000g was taken using a Boyd rotary splitter and pulverized to better than 85% passing a 75µm screen.
Quality of assay data and laboratory tests	<ul style="list-style-type: none"> A subsample of 50g was analysed by ALS Vancouver via 50g Fire Assay with AAS finish (ALS method Au-AA24). Screen fire assays (Au-SCR24 method) were completed on coarse residue material for mineralisation intersected in Cochrane Hill Deeps holes CH-24-358, CH-24-359 and CH-24-360. Diamond drilling QC included randomized insertion of four OREAS certified reference materials (1 in 20) and insertion of in-house blank control material (1 in 20). QAQC results were assessed monthly. Results indicate good quality in laboratory sample preparation and analysis procedures. Pulverised duplicates were prepared and analysed on every tenth original sample. ALS inserted certified standards, blanks and lab repeats.
Verification of sampling and assaying	<ul style="list-style-type: none"> Sampling data is recorded electronically which ensures only valid non-overlapping data can be recorded. Assay and downhole survey data are subsequently merged electronically. All drill data is stored in an SQL database on secure company server.
Location of data points	<ul style="list-style-type: none"> All drill collars were surveyed by in-house surveyors using DGPS. Drill collars were surveyed initially by handheld GPS and by DGPS after hole completion. All holes were downhole surveyed using a Reflex EZ-Trac at least 6m below casing and 30m increments to the bottom-of-the hole.
Data spacing and distribution	<ul style="list-style-type: none"> As a first past program to follow-up on interpretations, drill hole spacing is irregular and ranges from 50-100 meters spaced east-west.
Orientation of data in relation to geological structure	<ul style="list-style-type: none"> Where surface mapping and sampling has contributed to understanding of outcropping geological structures, drilling and sampling has been undertaken perpendicular (orthogonal where possible as near vertical/steeply dipping ore bodies makes this difficult) to the mapped structure. Sampling will be completed top to bottom in nominal 1 m samples and one side of the halved core is taken consistently.
Sample security	<ul style="list-style-type: none"> Only company personnel or approved contractors are allowed on drill sites; drill core is only removed from drill site to secure work site trailer; core is promptly logged and shipped to Moose River Core Facility, where it is cut and prepped. The samples sent to ALS are stored in locked and guarded storage facilities until receipted at the Laboratory. Third party trucking service is hired for direct transport from Core Facility to ALS facility.
Audits or reviews	<ul style="list-style-type: none"> Regular internal audits are carried out on the sampling procedure, through to shipping and database capture.

JORC Table 1 Checklist of Assessment and Reporting Criteria

Section 2 Reporting of Exploration Results – Cochrane Hill

Criteria	Commentary
Mineral tenement and land tenure status	<ul style="list-style-type: none"> SBM has 100 % ownership of the tenements over the Cochrane Hill deposit (EL51476, EL51477, EL10249, EL55625, EL09259, EL56059, EL56287, EL56285 and EL55571) and are kept in good standings.
Exploration done by other parties	<ul style="list-style-type: none"> Massval Mine, Northumberland Mines, Scominex, NovaGold, Acadian, Pan East, Seabright, MRRRI, Aurogin, Scorpio have all previously worked in vicinity of, or directly within the areas reported in this section.
Geology	<ul style="list-style-type: none"> The Cochrane Hill gold deposit is contained within metasedimentary rocks of the Meguma Group, a c. 16 km-thick sequence of mainly flyshoid metasedimentary rocks divided into the Cambrian to Early Ordovician Goldenville Formation greywacke and shales and the Early Ordovician Halifax Formation shale. Cochrane Hill is hosted by an interbedded sequence of biotite schist and psammite (representing argillite and greywacke protoliths) of the Goldenville Formation. The deposit is located on the southern limb of the NE-SW- to ENE-WSW-trending Cochrane Hill anticline, a tight to isoclinal fold that can be traced for at least 28 km. The Cochrane Hill gold deposit is spatially coincident with an overturned, ENE-WSW-trending section of the Cochrane Hill anticline where both limbs dip to the N at angles between 55° and 80°. Gold mineralisation is generally associated within a tabular shear zone (a thickness of up to c. 70 m (> 0.8 g/t Au ore varies in thickness from 5 m to 30 m), and a down-dip extend of at least 320 m) containing quartz veining and minor sulphides, gold is found disseminated throughout the host rock as well as in higher grade quartz veins.
Drill hole information	<ul style="list-style-type: none"> Drill hole information is included in intercept table outlining collar position obtained by DGPS pickup, (or in some cases listed as original handheld GPS layout if they haven't been picked up by DGPS survey at time of report), hole dip and azimuth, composited mineralised intercepts lengths and depth as well as hole depth. All collar locations are quoted in local grid.
Data aggregation methods	<ul style="list-style-type: none"> For Cochrane Hill, broad down hole intercepts are reported as length weighted averages using a cut-off of 0.5 g/t Au and a minimum grade*length of 3 gmpt. Such intercepts may include material below cut-off but no more than 3 sequential meters of such material and except where the average drops below the cut-off. Single assay intervals are reported only where ≥ 3.0 g/t Au.
Relationship between mineralisation widths and intercept lengths	<ul style="list-style-type: none"> For Cochrane Hill, down hole length is reported for all holes. Holes drilled were inclined to the south (azimuth 171°) at angles between 50° and 72° from horizontal. Mineralisation is confined to a tabular zone or envelope that dips to the north at approximately 70° such that drill holes intersect the mineralisation at angles of between 41° and 61° respectively and down-hole mineralized intercepts are exaggerated over true widths by between 1.1 and two times.
Diagrams	<ul style="list-style-type: none"> Diagrams show all drill holes material and immaterial to Exploration Results.
Balanced reporting	<ul style="list-style-type: none"> Details of all holes material to Exploration results will be reported in intercept tables, and all other drill holes drilled during the reporting period are highlighted on diagrams included in the report.
Other substantive exploration data	<ul style="list-style-type: none"> Included in the body of the report. Core is routinely measured for bulk density determinations to be used for potential future resource modelling.
Further work	<ul style="list-style-type: none"> Included in the body of the report.

End of report