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# INITIAL MINERAL RESOURCE ESTIMATE AND TECHNICAL REPORT FOR THE SEAL ZINC DEPOSIT, ASTON BAY PROPERTY, SOMERSET ISLAND, NUNAVUT

**FOR**

**ASTON BAY HOLDINGS LTD.**

**LAT 73° 44’ 17” N LONG 94° 57’ 13” W**
**UTM 15X 438,944mE 8,183,800mN**

**NI-43-101 & 43-101F1**
**TECHNICAL REPORT**

**Eugene Puritch, P.Eng., FEC, CET**
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**Jarita Barry, P.Geo.**
**Yungang Wu, P.Geo.**

**P&E Mining Consultants Inc.,**
**Report 326**

**Effective Date: October 6, 2017**
**Signing Date: January 17, 2018**

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# 1.0 SUMMARY

This Technical Report was prepared by P&E Mining Consultants Inc. ("P&E") at the request of Mr. Thomas Ullrich, CEO of Aston Bay Holdings Ltd., ("Aston Bay"). Aston Bay is a Canadian based, publicly held mining company trading on the TSX Venture Exchange, trading under the symbol "BAY". The purpose of this report is to provide an independent, NI 43-101 Technical Report and Initial Mineral Resource Estimate (the Report) on the Seal Zinc Deposit, Aston Bay Property, Somerset Island, Nunavut, Canada ("the "Project" or "Property").

The Property is located in the Polaris Zn-Pb district on northwestern Somerset Island, Nunavut, Canada, approximately 1,500 km northwest of Iqaluit, the capital of Nunavut and about 1,500 km northeast of Yellowknife, Northwest Territories. The Property comprises 134 contiguous mineral claims, as well as 12 prospecting permits. Aston Bay currently holds 100% interest in all mineral claims and prospecting permits. Commander Resources Ltd. retains a 0.875% Gross Overriding Royalty ("Royalty") on a portion of the minerals claims surrounding the historic Storm Property showings.

Due to the Property's remote location, access is typically by charter air service from Resolute Bay, located 112 km north of the Property. Local resources can be acquired in the nearest community, Resolute Bay, however, food and other supplies can be sourced more cost-effectively from Yellowknife or Ottawa.

Commander Resources Ltd. initially acquired the Property (then called the Storm Property) as three contiguous Prospecting Permits in February 2008. One additional permit was added in February 2010. Most of the area covered by these permits was part of a larger mineral claim package, previously held by Cominco, and later Teck-Cominco Ltd. (now known as Teck Resources Ltd.). The last remnants of the Cominco land package lapsed in 2007. Exploration work in the areas around Aston Bay and the Property has been carried out intermittently since the 1960s. Most of the historical work at the Property was undertaken in the 1990s by, or on behalf of, Cominco, as part of a regional exploration effort to locate ore for their Polaris mining and processing operation on Little Cornwallis Island ~200km north of the Property. The Polaris mine operated from 1992 to 2002, with a total production of 20.1 Mt grading 13.4% Zn and 3.6% Pb (Dewing et al., 2007),

The Aston Bay Property covers a portion of the Cornwallis Fold and Thrust Belt that acted on Cambrian through Early Silurian, primarily carbonate sediments of the Arctic Platform, which had been deposited on a stable, passive continental margin that existed from Late Proterozoic to Late Silurian age. The oldest rocks in the sedimentary sequence are intruded by 1,270 Ma MacKenzie diabase dykes and 623 Ma Franklin diabase dykes.

The Late Silurian to Early Devonian Caledonian Orogeny shed clastic sediments onto the Arctic Platform from the east and created localized, basement-cored uplifts. The most significant basement uplift is the Boothia Uplift, a north-south trending basement feature covering an area 125 km wide by 1,000 km long and possibly comprising the roots of the Sverdrup Basin to the north.

Southward compression during the Ellesmerian Orogeny in Late Devonian to Early Carboniferous time produced a fold and thrust belt north and west of the former continental margin, effectively ending carbonate sedimentation throughout the region. This tectonic event is believed to have generated the metalliferous fluids responsible for Polaris and other Zn-Pb deposits and occurrences in the region.

Historical exploration around the Aston Bay Property has defined two distinct styles of mineralization, each associated with its own specific stratigraphic horizon. The stratabound Seal Zinc Deposit occurs in Early to Middle Ordovician Ship Point Formation rocks. The stratigraphic and structurally controlled Storm Copper Prospect showings occur at least 800 m higher in the stratigraphic column in the Late Ordovician to Late Silurian Allen Bay Formation (Cook and Moreton, 2000). Recent geochronology on the Storm mineralization produced an age of 378.1 ± 1.3 Ma (Stein, 2016), within the range of uncertainty for the age of Polaris at 374 ± 9Ma (Selby et al., 2005; Dewing et al., 2007) and hence linking the Cu and Zn-Pb mineralization to the same regional metalliferous fluid flow event.

Mineralization at the Seal Zinc Deposit is primarily hosted within a quartz arenite unit with interbedded dolostone and sandy dolostone of the Ordovician Ship Point Formation. Mineralization at the Storm Cu showings is epigenetic, carbonate-hosted and lies within an intracratonic rift basin that has been modified by folding and faulting. The mineralization is spatially associated with the north and south boundary faults of the Central Graben. This structure is interpreted as a pull-apart basin developed as a result of translational movement along basement-rooted faults. The basal Aston Formation red beds or the overlying extensive red beds of the Peel Sounds Formation are both plausible sources of metals for the mineralization at both the Seal Zinc Deposit and Storm Copper Prospect showings.

For the current report, Mr. Eugene Puritch, P.Eng., FEC, CET of P&E conducted an independent site visit and verification sampling program on July 3, 2013. P&E has reviewed Aston Bay's sampling and analytical protocols and reviewed QA/QC data. Mr. Puritch's 2013 site visit is considered to be current since no drilling has taken place since then on the Seal Deposit. P&E has declared the data to be satisfactory for use in the current Mineral Resource Estimate.

The Mineral Resource Estimate in this Technical Report was undertaken by Yungang Wu, P.Geo, of P&E from information and data supplied by Aston Bay. The effective date of this Mineral Resource Estimate is October 6, 2017. The Mineral Resource Estimate presented herein is reported in accordance with the Canadian Securities Administrators' National Instrument 43-101 and has been estimated in conformity with generally accepted CIM "Estimation of Mineral Resource and Mineral Reserves Best Practices" guidelines. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. There is no guarantee that all or any part of the Mineral Resource will be converted into a Mineral Reserve. Mineral Resources may be affected by further infill and exploration drilling that may result in increases or decreases in subsequent Mineral Resource Estimates.

In P&E's opinion, the drilling, assaying and exploration work of the Seal Zinc Deposit supporting this Mineral Resource Estimate are sufficient to indicate a reasonable prospect for economic extraction and thus qualify it as a Mineral Resource under the CIM definition standards. The Mineral Resources of the Seal Zinc Deposit were classified as Inferred based on the geological interpretation and drill hole spacing.

All drilling and assay data were provided in the form of Excel data files by Aston Bay. The Geovia GEMS database for this Mineral Resource Estimate, constructed by P&E, consisted of 24 drill holes totalling 4,293.7 metres. The assay table of the database contained a total of 250 assays for Ag, Zn, Cu, Pb etc. P&E conducted data verification for silver and zinc assays contained in the Mineral Resource wireframes against laboratory certificates that were obtained directly from ALS Canada Ltd laboratory in North Vancouver, BC and no errors were found.

The resulting Mineral Resource Estimate is summarized in the Table 1.1. P&E considers that the zinc and silver mineralization of the Seal Zinc Deposit is potentially amenable to underground extraction.

**TABLE 1.1**
**MINERAL RESOURCE ESTIMATE STATEMENT 4.0%ZNEQ CUT-OFF(1-3)**

| Classification | Tonnage kt | Zn % | Contained Zn kt | Ag g/t | Contained Ag koz | ZnEq % |
|---|---|---|---|---|---|---|
| Inferred | 1,006 | 10.24 | 103 | 46.5 | 1,505 | 11.44 |

*(1) Mineral Resources which are not Mineral Reserves do not have demonstrated economic viability. The estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues.*
*(2) The Inferred Mineral Resources in this estimate has a lower level of confidence than that applied to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of the Inferred Mineral Resource could be upgraded to an Indicated Mineral Resource with continued exploration.*
*(3) The Mineral Resources in this report were estimated using the Canadian Institute of Mining, Metallurgy and Petroleum (CIM), CIM Standards on Mineral Resources and Reserves, Definitions and Guidelines prepared by the CIM Standing Committee on Reserve Definitions and adopted by the CIM Council.*

The Mineral Resource Estimate block model was validated using a number of industry standard methods including visual and statistical methods.

P&E recommends that Aston Bay continue to advance the Seal Zinc Deposit with further drilling to extend the Deposit and increase the confidence level of the Mineral Resource. The Property hosts a geological environment that is very favourable for additional base metal discovery and further regional exploration is warranted to identify new areas of mineralization.

The proposed budget for the upcoming 2018 work program totals CAD$2,800,000 and is presented in Table 1.2.

**TABLE 1.2**
**BUDGET FOR PROPOSED 2018 PROGRAM**

| Item | | Cost (CAD$) |
|---|---|---|
| VTEM Survey | 10,000 line km | 600,000 |
| Geology Compilation | | 50,000 |
| Geophysical Modelling | | 50,000 |
| Seal Zinc Deposit Drilling | 500 m @ $500/m | 250,000 |
| Regional Target Drilling | 2,000 m @ $500/m | 1,000,000 |
| Assays and Logging | | 100,000 |
| Camp and Logistics | | 400,000 |
| Air and Freight | | 350,000 |
| | | |
| **Total** | | **$2,800,000** |

# 2.0 INTRODUCTION AND TERMS OF REFERENCE

## 2.1 TERMS OF REFERENCE

The following report was prepared to provide a National Instrument 43-101 ("NI 43-101") initial Technical Report and Mineral Resource Estimate on the Seal Zinc Deposit ("Deposit"), located within the Aston Bay Property ("Property" or "Project") located in Somerset Island, Nunavut, Canada. The Aston Bay property is 100% owned by Aston Bay Holdings Ltd. ("Aston Bay" or the "Company").

This Technical Report was prepared by P&E Mining Consultants Inc. ("P&E") at the request of Mr. Thomas Ullrich, CEO of Aston Bay. Aston Bay is a public, TSXV-listed, mining company trading under the symbol "BAY", with its head office located at:

80 Richmond Street West,
Suite 303,
Toronto, Ontario, M5H – 2A4
Tel: 416 456-3516

This report has an effective date of October 6, 2017.

Mr. Eugene Puritch, P.Eng., FEC, CET, a Qualified Person under of NI 43-101, conducted a site visit to the Property on July 3, 2013.. Independent verification sampling programs were conducted by Mr. Puritch during the site visit.

In addition to the site visits, P&E held discussions with technical personnel from the Company regarding all pertinent aspects of the Project and carried out a review of all available literature and documented results concerning the Property. The reader is referred to those data sources, which are outlined in the References section of this report, for further detail.

The present Technical Report is prepared in accordance with the requirements of NI 43-101F1 of the Ontario Securities Commission ("OSC") and the Canadian Securities Administrators ("CSA").

The Mineral Resource Estimate is considered compliant with the Canadian Institute of Mining, Metallurgy and Petroleum ("CIM"), CIM Standards on Mineral Resources and Reserves, Definitions and Guidelines prepared by the CIM Standing Committee on Reserve Definitions.

The purpose of the current Technical Report is to provide an independent, NI 43-101 Technical Report and Initial Mineral Resource Estimate on the Seal Zinc Deposit, Aston Bay Property. P&E understands that this report may be used to support public equity financings and will be filed as required under relevant regulations.

## 2.2 SOURCES OF INFORMATION

This report is based, in part, on internal company technical reports, maps and technical correspondence, published government reports, press releases and public information as listed in the References section at the conclusion of this report. Several sections from reports authored by other consultants have been directly quoted or summarized in this report, and are so indicated where appropriate.

## 2.3 UNITS AND CURRENCY

Unless otherwise stated all units used in this report are metric. Zinc and silver grades are reported in weight percent (%) and g/t respectively. The CAD$ is used throughout this report unless the US$ is specifically stated. At the time of this Technical Report the rate of exchange between the US$ and the CAD$ is 1 US$ = 0.78 CAD$.

The following list shows the meaning of the abbreviations for technical terms used throughout the text of this report.

| Abbreviation | Meaning |
|---|---|
| "AGAT" | AGAT Laboratories in Mississauga, Ontario |
| "APEX" | APEX Geoscience Ltd. |
| "Aston Bay" | Aston Bay Holdings Ltd. |
| "BHPB" | BHP Billiton Ltd. |
| "CAD" | Canadian |
| "CIM" | Canadian Institute of Mining, Metallurgy and Petroleum |
| "cm" | centimetre(s) |
| "Cominco" | Cominco Ltd. |
| "Commander" | Commander Resources Ltd. |
| "Company" | Aston Bay Holdings Ltd. |
| "CSA" | Canadian Securities Administrators |
| "DDH" | diamond drill hole |
| "Deposit" | Seal Zinc Deposit |
| "ft" | foot |
| "g/t" | grams per tonne |
| "ha" | hectare(s) |
| "ISO" | International Organization for Standardization |
| "km" | kilometre(s) |
| "m" | metre(s) |
| "Ma" | millions of years |
| "NI 43-101" | National Instrument 43-101 |
| "Noranda" | Noranda Inc. |
| "NTS" | National Topographic System |
| "OSC" | Ontario Securities Commission |
| "P&E" | P&E Mining Consultants Inc. |
| "Project" | Aston Bay property |
| "Property" | Aston Bay property |
| "QA/QC" | Quality Assurance/Quality Control |
| "QC" | Quality Control |
| "QP" | Qualified Person as defined by Canadian National Instrument NI 43-101 standards of disclosure for mineral projects |
| "Royalty" | Gross Overriding Royalty |
| "t" | metric tonne(s) |
| "Technical Report" | Initial Resource Estimate and Technical Report for the Seal Zinc Deposit, Aston Bay Property, Somerset Island, Nunavut |
| "Teck-Cominco" | Teck-Cominco Ltd. |
| "Teck Resources" | Teck Resources Ltd. |
| "tpy" | tonnes per year |

## 3.0 RELIANCE ON OTHER EXPERTS

P&E has assumed that all of the information and technical documents listed in the References section of this Technical Report are accurate and complete in all material aspects. While we have carefully reviewed all of the available information presented to us, we cannot guarantee its accuracy and completeness. We reserve the right, but will not be obligated to revise our Technical Report and conclusions if additional information becomes known to P&E subsequent to the date of this Technical Report.

Copies of the tenure documents, operating licenses, permits, and work contracts were not reviewed. Information on tenure was obtained from Aston Bay and confirmed on the Nunavut government website at (https://services.aadnc-aandc.gc.ca/nms-scn/gv/index.html). P&E has relied upon this public information, as well as tenure information from the Mining Recorder in Nunavut, as well as an independent legal opinion conducted by Gowling WLG (Canada) LLP as Aston Bay's legal counsel. P&E has not undertaken an independent detailed legal verification of title and ownership of the Aston Bay property. P&E has not verified the legality of any underlying agreement(s) that may exist concerning the licenses or other agreement(s) between third parties but has relied on, and believes it has a reasonable basis to rely upon Aston Bay to have conducted the proper legal due diligence.

Select technical data, as noted in the report, were provided by Aston Bay and P&E has relied on the integrity of such data.

A draft copy of the report has been reviewed for factual errors by Aston Bay and P&E has relied on Aston Bay's knowledge of the Property in this regard. All statements and opinions expressed in this document are given in good faith and in the belief that such statements and opinions are not false and misleading at the date of this Technical Report.

## 4.0 PROPERTY DESCRIPTION AND LOCATION

### 4.1 LOCATION

The Aston Bay property is located in the general area of Aston Bay, on northwestern Somerset Island, Nunavut, Canada, as shown in Figure 4.1. The nearest community is Resolute Bay, located 112 km north of the Property, on Cornwallis Island. The Property is located approximately 1,500 km northwest of Iqaluit, the capital of Nunavut and about 1,500 km northeast of Yellowknife, Northwest Territories. It is situated in the Qikiqtaaluk Region of Nunavut, within the 1:50,000 scale National Topographic System ("NTS") map sheets 058C10, C11, C13 and C14.

**Figure 4.1 Property Location Map**


(***Source:*** *APEX Geoscience Ltd.*)

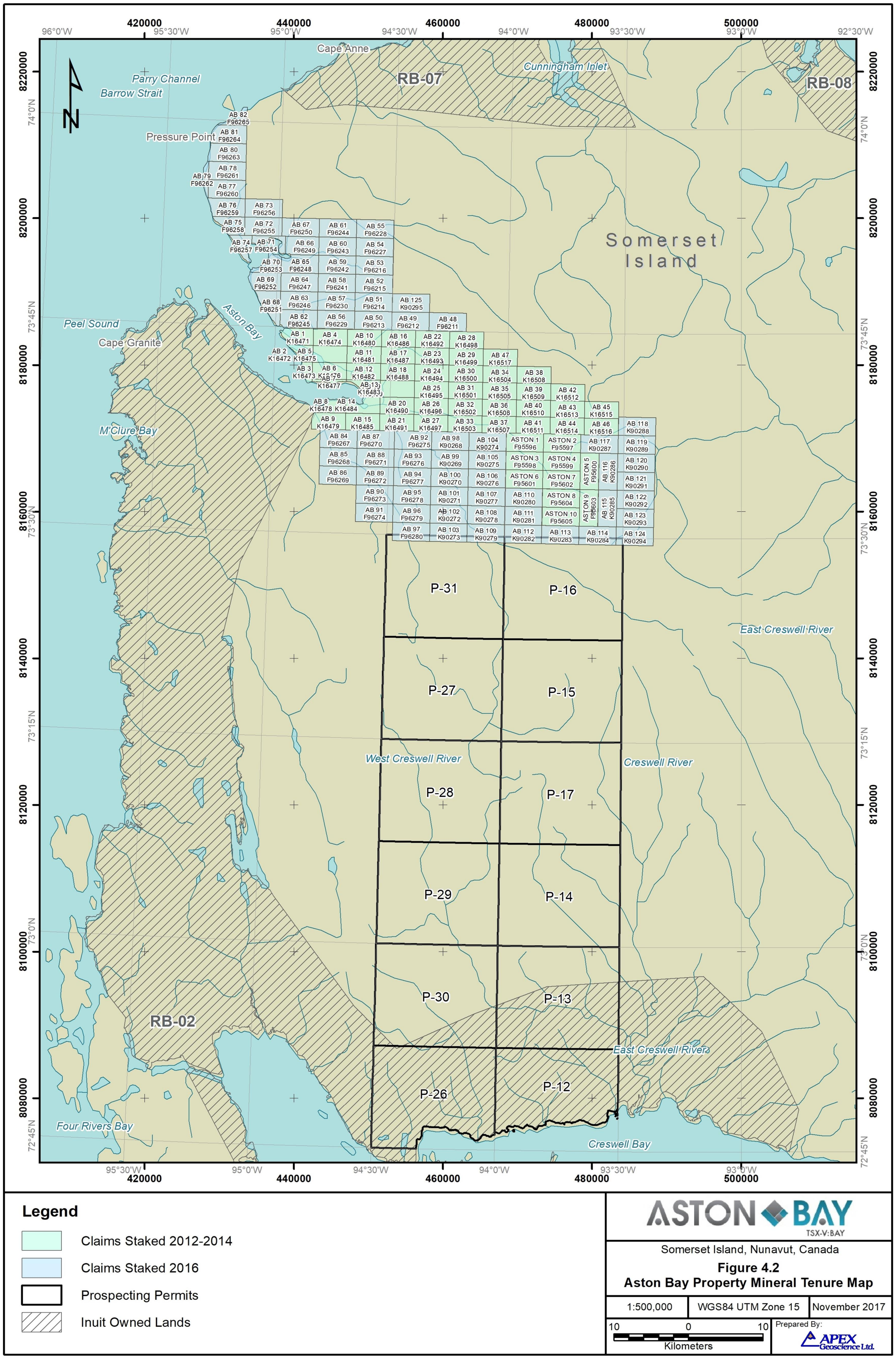
The Property is bound by latitudes 73°30’ N and 73°52.5’ N, and longitudes 93°30’ W and 95°30’ W, is centered at approximately 73°41’ N latitude and 94°30’ W longitude and covers a combined area of 414,537.9 hectares (“ha”).

## 4.2 PROPERTY DESCRIPTION AND TENURE

The Aston Bay property contains the Seal Zinc Deposit, the subject of this Technical Report, and multiple copper-silver showings, collectively known as the Storm Copper Prospect.

The Property comprises 134 contiguous mineral claims, 124 of which are named AB 1 to AB 82, AB 84 to AB 125 and ten of which are named ASTON 1 to ASTON 10, as well as 12 prospecting permits, numbered P-12 to P-17 and P-26 to P-31. Aston Bay currently holds 100% interest in all mineral claims and prospecting permits. Figure 4.2 shows the Property claims and permits and Table 4.1 details the Aston Bay property tenure status.

## Figure 4.2 Aston Bay Property Tenure Map




*(**Source:** APEX Geoscience Ltd.)*

| Table 4.1<br>Aston Bay Property Claims and Permits (Aston & AB) | | | | | |
|---|---|---|---|---|---|
| **Claim Name** | **Claim Number** | **Recording Date** | **Anniversary Date** | **Area (ha)** | **Owner Name (100%)** |
| ASTON 1 | F95596 | 2-Sep-14 | 2-Sep-24 | 1,250.0 | Aston Bay Holdings Inc. |
| ASTON 2 | F95597 | 2-Sep-14 | 2-Sep-24 | 1,250.0 | Aston Bay Holdings Inc. |
| ASTON 3 | F95598 | 2-Sep-14 | 2-Sep-24 | 1,250.0 | Aston Bay Holdings Inc. |
| ASTON 4 | F95599 | 2-Sep-14 | 2-Sep-24 | 1,250.0 | Aston Bay Holdings Inc. |
| ASTON 5 | F95600 | 2-Sep-14 | 2-Sep-24 | 1,250.0 | Aston Bay Holdings Inc. |
| ASTON 6 | F95601 | 2-Sep-14 | 2-Sep-24 | 1,250.0 | Aston Bay Holdings Inc. |
| ASTON 7 | F95602 | 2-Sep-14 | 2-Sep-24 | 1,250.0 | Aston Bay Holdings Inc. |
| ASTON 8 | F95603 | 2-Sep-14 | 2-Sep-24 | 1,250.0 | Aston Bay Holdings Inc. |
| ASTON 9 | F95604 | 2-Sep-14 | 2-Sep-24 | 1,250.0 | Aston Bay Holdings Inc. |
| ASTON 10 | F95605 | 2-Sep-14 | 2-Sep-24 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 1 | K16471 | 12-Sep-12 | 12-Sep-19 | 905.3 | Aston Bay Holdings Inc. |
| AB 2 | K16472 | 12-Sep-12 | 12-Sep-19 | 538.6 | Aston Bay Holdings Inc. |
| AB 3 | K16473* | 12-Sep-12 | 12-Sep-17 | 362.3 | Aston Bay Holdings Inc. |
| AB 4 | K16474 | 12-Sep-12 | 12-Sep-18 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 5 | K16475* | 12-Sep-12 | 12-Sep-17 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 6 | K16476* | 12-Sep-12 | 12-Sep-17 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 7 | K16477* | 12-Sep-12 | 12-Sep-17 | 222.9 | Aston Bay Holdings Inc. |
| AB 8 | K16478* | 12-Sep-12 | 12-Sep-17 | 609.5 | Aston Bay Holdings Inc. |
| AB 9 | K16479* | 12-Sep-12 | 12-Sep-17 | 1,029.9 | Aston Bay Holdings Inc. |
| AB 10 | K16480 | 12-Sep-12 | 12-Sep-18 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 11 | K16481 | 12-Sep-12 | 12-Sep-18 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 12 | K16482 | 12-Sep-12 | 12-Sep-18 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 13 | K16483 | 12-Sep-12 | 12-Sep-20 | 672.2 | Aston Bay Holdings Inc. |
| AB 14 | K16484* | 12-Sep-12 | 12-Sep-17 | 885.9 | Aston Bay Holdings Inc. |
| AB 15 | K16485* | 12-Sep-12 | 12-Sep-17 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 16 | K16486 | 12-Sep-12 | 12-Sep-18 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 17 | K16487 | 12-Sep-12 | 12-Sep-18 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 18 | K16488 | 12-Sep-12 | 12-Sep-22 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 19 | K16489 | 12-Sep-12 | 12-Sep-20 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 20 | K16490 | 12-Sep-12 | 12-Sep-22 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 21 | K16491 | 12-Sep-12 | 12-Sep-18 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 22 | K16492 | 12-Sep-12 | 12-Sep-18 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 23 | K16493 | 12-Sep-12 | 12-Sep-18 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 24 | K16494 | 12-Sep-12 | 12-Sep-22 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 25 | K16495 | 12-Sep-12 | 12-Sep-22 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 26 | K16496 | 12-Sep-12 | 12-Sep-21 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 27 | K16497 | 12-Sep-12 | 12-Sep-20 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 28 | K16498* | 12-Sep-12 | 12-Sep-17 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 29 | K16499 | 12-Sep-12 | 12-Sep-18 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 30 | K16500 | 12-Sep-12 | 12-Sep-20 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 31 | K16501 | 12-Sep-12 | 12-Sep-22 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 32 | K16502 | 12-Sep-12 | 12-Sep-22 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 33 | K16503 | 12-Sep-12 | 12-Sep-22 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 34 | K16504 | 12-Sep-12 | 12-Sep-18 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 35 | K16505 | 12-Sep-12 | 12-Sep-22 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 36 | K16506 | 12-Sep-12 | 12-Sep-22 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 37 | K16507 | 12-Sep-12 | 12-Sep-22 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 38 | K16508 | 12-Sep-12 | 12-Sep-18 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 39 | K16509 | 12-Sep-12 | 12-Sep-18 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 40 | K16510 | 12-Sep-12 | 12-Sep-22 | 1,045.1 | Aston Bay Holdings Inc. |

| **TABLE 4.1**<br>**ASTON BAY PROPERTY CLAIMS AND PERMITS (ASTON & AB)** | | | | | |
|---|---|---|---|---|---|
| **Claim Name** | **Claim Number** | **Recording Date** | **Anniversary Date** | **Area (ha)** | **Owner Name (100%)** |
| AB 41 | K16511 | 12-Sep-12 | 12-Sep-22 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 42 | K16512 | 12-Sep-12 | 12-Sep-20 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 43 | K16513 | 12-Sep-12 | 12-Sep-22 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 44 | K16514 | 12-Sep-12 | 12-Sep-22 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 45 | K16515 | 12-Sep-12 | 12-Sep-20 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 46 | K16516 | 12-Sep-12 | 12-Sep-22 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 47 | K16517 | 12-Sep-12 | 12-Sep-18 | 1,045.1 | Aston Bay Holdings Inc. |
| AB 48 | F96211 | 26-Jul-16 | 26-Jul-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 49 | F96212 | 26-Jul-16 | 26-Jul-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 50 | F96213 | 26-Jul-16 | 26-Jul-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 51 | F96214 | 26-Jul-16 | 26-Jul-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 52 | F96215 | 26-Jul-16 | 26-Jul-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 53 | F96216 | 26-Jul-16 | 26-Jul-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 54 | F96227 | 26-Jul-16 | 26-Jul-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 55 | F96228 | 26-Jul-16 | 26-Jul-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 56 | F96229 | 26-Jul-16 | 26-Jul-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 57 | F96230 | 26-Jul-16 | 26-Jul-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 58 | F96241 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 59 | F96242 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 60 | F96243 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 61 | F96244 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 62 | F96245 | 26-Jul-16 | 26-Jul-18 | 1,234.8 | Aston Bay Holdings Inc. |
| AB 63 | F96246 | 26-Jul-16 | 26-Jul-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 64 | F96247 | 26-Jul-16 | 26-Jul-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 65 | F96248 | 9-Aug-16 | 9-Aug-18 | 1,194.6 | Aston Bay Holdings Inc. |
| AB 66 | F96249 | 9-Aug-16 | 9-Aug-18 | 1,118.0 | Aston Bay Holdings Inc. |
| AB 67 | F96250 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 68 | F96251 | 26-Jul-16 | 26-Jul-18 | 1,030.0 | Aston Bay Holdings Inc. |
| AB 69 | F96252 | 26-Jul-16 | 26-Jul-18 | 1,010.4 | Aston Bay Holdings Inc. |
| AB 70 | F96253 | 26-Jul-16 | 26-Jul-18 | 660.7 | Aston Bay Holdings Inc. |
| AB 71 | F96254 | 26-Jul-16 | 26-Jul-18 | 466.6 | Aston Bay Holdings Inc. |
| AB 72 | F96255 | 26-Jul-16 | 26-Jul-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 73 | F96256 | 26-Jul-16 | 26-Jul-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 74 | F96257 | 26-Jul-16 | 26-Jul-18 | 550.3 | Aston Bay Holdings Inc. |
| AB 75 | F96258 | 26-Jul-16 | 26-Jul-18 | 793.0 | Aston Bay Holdings Inc. |
| AB 76 | F96259 | 26-Jul-16 | 26-Jul-18 | 1,173.2 | Aston Bay Holdings Inc. |
| AB 77 | F96260 | 26-Jul-16 | 26-Jul-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 78 | F96261 | 26-Jul-16 | 26-Jul-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 79 | F96262 | 26-Jul-16 | 26-Jul-18 | 289.4 | Aston Bay Holdings Inc. |
| AB 80 | F96263 | 26-Jul-16 | 26-Jul-18 | 1,249.6 | Aston Bay Holdings Inc. |
| AB 81 | F96264 | 26-Jul-16 | 26-Jul-18 | 1,166.0 | Aston Bay Holdings Inc. |
| AB 82 | F96265 | 26-Jul-16 | 26-Jul-18 | 417.9 | Aston Bay Holdings Inc. |
| AB 84 | F96267 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 85 | F96268 | 10-Aug-16 | 10-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 86 | F96269 | 10-Aug-16 | 10-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 87 | F96270 | 10-Aug-16 | 10-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 88 | F96271 | 10-Aug-16 | 10-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 89 | F96272 | 10-Aug-16 | 10-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 90 | F96273 | 10-Aug-16 | 10-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 91 | F96274 | 10-Aug-16 | 10-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |

| **TABLE 4.1 ASTON BAY PROPERTY CLAIMS AND PERMITS (ASTON & AB)** | | | | | |
|---|---|---|---|---|---|
| **Claim Name** | **Claim Number** | **Recording Date** | **Anniversary Date** | **Area (ha)** | **Owner Name (100%)** |
| AB 92 | F96275 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 93 | F96276 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 94 | F96277 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 95 | F96278 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 96 | F96279 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 97 | F96280 | 10-Aug-16 | 10-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 98 | K90268 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 99 | K90269 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 100 | K90270 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 101 | K90271 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 102 | K90272 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 103 | K90273 | 10-Aug-16 | 10-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 104 | K90274 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 105 | K90275 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 106 | K90276 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 107 | K90277 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 108 | K90278 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 109 | K90279 | 10-Aug-16 | 10-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 110 | K90280 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 111 | K90281 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 112 | K90282 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 113 | K90283 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 114 | K90284 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 115 | K90285 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 116 | K90286 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 117 | K90287 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 118 | K90288 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 119 | K90289 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 120 | K90290 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 121 | K90291 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 122 | K90292 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 123 | K90293 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 124 | K90294 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| AB 125 | K90295 | 9-Aug-16 | 9-Aug-18 | 1,250.0 | Aston Bay Holdings Inc. |
| | | | | | |
| **Claim Total:** | | | | **149,589.8** | |

Claims of interest are highlighted in grey in Table 4.1. The Seal Zinc Deposit lies within claim number AB 1 and the Storm Copper Prospect showings lie within claims AB 32, AB 33, AB 36 and AB 37.

A preliminary check of Property tenure was carried out by P&E via the Mining Recorder's online Nunavut Map Viewer at https://services.aadnc-aandc.gc.ca/nms-scn/gv/index.html. The reader is cautioned that P&E has, in particular, relied on tenure information provided by an independent legal opinion dated October 6, 2017 conducted by Gowling WLG (Canada) LLP, Aston Bay's legal counsel. P&E has not verified the legality of any underlying agreement(s) that may exist concerning mineral tenure but has relied on Aston Bay's legal counsel to have conducted the proper legal due diligence.

**The reader is cautioned that nine (9) of the 134 claims in table 4.1 have an anniversary date that is past due on the Nunavut Map Viewer; however, all 9 claims are listed as “Active”. All 9 claims have one or more work reports that have been filed with the Nunavut Mining Recorder’s Office (“MRO”) to fulfill the outstanding work requirements. The 9 claims described above are indicated by an asterisk in Table 4.1. The Seal Zinc Deposit and the Storm Copper Prospect do not lie inside the boundaries of any of these 9 claims.**

**TABLE 4.2**
**ASTON BAY PROPERTY CLAIMS AND PERMITS (P)**

| Permit Name | Recording Date | Anniversary Date | Area (ha) | Owner Name (100%) |
|---|---|---|---|---|
| P-12 | 1-Feb-15 | 31-Jan-20 | 16854.0 | Aston Bay Holdings Inc. |
| P-13 | 1-Feb-15 | 31-Jan-20 | 22833.7 | Aston Bay Holdings Inc. |
| P-14 | 1-Feb-15 | 31-Jan-20 | 22671.7 | Aston Bay Holdings Inc. |
| P-15 | 1-Feb-15 | 31-Jan-20 | 22347.4 | Aston Bay Holdings Inc. |
| P-16 | 1-Feb-15 | 31-Jan-20 | 22185.1 | Aston Bay Holdings Inc. |
| P-17 | 1-Feb-15 | 31-Jan-20 | 22509.6 | Aston Bay Holdings Inc. |
| P-26 | 1-Feb-16 | 31-Jan-21 | 22996.2 | Aston Bay Holdings Inc. |
| P-27 | 1-Feb-16 | 31-Jan-21 | 22348.0 | Aston Bay Holdings Inc. |
| P-28 | 1-Feb-16 | 31-Jan-21 | 22510.2 | Aston Bay Holdings Inc. |
| P-29 | 1-Feb-16 | 31-Jan-21 | 22672.3 | Aston Bay Holdings Inc. |
| P-30 | 1-Feb-16 | 31-Jan-21 | 22834.3 | Aston Bay Holdings Inc. |
| P-31 | 1-Feb-16 | 31-Jan-21 | 22185.6 | Aston Bay Holdings Inc. |
| | | | | |
| **Claim Total:** | | | **264,948.1** | |
| **Combined Claim and Permit Total:** | | | **414,537.9** | |

Aston Bay announced in a December 17, 2015 news release, that they had entered into an agreement with previous owners Commander Resources Ltd. (“Commander”) to consolidate ownership of the Property. Transfer of ownership was conditional upon the completion of several terms of the agreement, including the issuance of 11,000,000 Aston Bay shares to Commander, upon receipt of shareholder and TSX Venture Exchange approval. At the completion of all terms of the agreement (refer to news release, dated December 17, 2015, available on sedar.com, for further information), Aston Bay would hold a 100% interest in the Property.

In a news release, dated 18 February, 2016, Aston Bay announced the completion of the purchase of 100% of the Storm Copper Property from Commander, upon issuance of 11,000,000 common shares to Commander and approval from the TSX Venture Exchange for the acquisition. Commander retains a 0.875% Gross Overriding Royalty (“Royalty”).

Permits P12, P13, P26 and P30 overlap Surface Inuit Owned Land (IOL) parcel RB-02. The remainder of the permit area and the entire area of the staked mineral claims, lie within Federal Nunavut Lands. Aston Bay does not have any IOL licences or land use permits for the permit areas that overlap IOL parcel RB-02 and these will be required prior to conducting any exploration within these areas.

To the best of the author’s knowledge, there are no agreements, encumbrances or environmental liabilities to which the Property is subject to or any other reasons that would prevent Aston Bay from acquiring the necessary permits to conduct the work described in the ‘Recommendations’ section of this report.

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

The following description has largely been taken from Aston Bay's report titled, "Technical Report on The Exploration History and Current Status of the Storm Project, Somerset Island, Nunavut", dated October 31, 2012.

## 5.1 ACCESS

The Aston Bay property is located on northwestern Somerset Island, in the Canadian Arctic Archipelago. Due to the Property's remote location, access is typically restricted to charter air service from Resolute Bay, located 112 km north of the Property. Resolute Bay has a modern airport facility with a 1,982 m (6,504 ft.) gravel runway. Daily commercial air service to Resolute Bay is available via Iqaluit, with connections from Ottawa or Montreal. Chartered air service can be obtained from either Yellowknife or Iqaluit.

## 5.2 CLIMATE

The Northern Arctic Ecozone, in which Aston Bay is located, is characterized by low mean temperatures and minor precipitation, mainly falling as snow. Daylight hours vary dramatically from 24 hour darkness in the middle of winter to 24 hour direct sunlight at the height of summer. Table 5.1 summarizes historic climate statistics for Resolute Bay, the nearest community. January and February are typically the coldest months, with average temperatures around -35°C. Summers are typically brief, cool, and damp with a mean temperature through July and August of around 3°C. Precipitation in the form of snow during winter months may be minimal, however due to constant northwest winds, drift accumulations can be significant. The entire region is subject to continuous permafrost, extending to depths of 400 to 500 metres.

**TABLE 5.1**
**CLIMATE STATISTICS FOR RESOLUTE BAY, NUNAVUT**

| Climate data for Resolute Bay Airport (1947–present) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Month** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** | **Oct** | **Nov** | **Dec** | **Year** |
| **Temperature** | | | | | | | | | | | | | |
| **Average high °C** | −28.6 | −29.0 | −26.8 | −18.3 | −7.4 | 2.6 | 7.3 | 4.2 | −2.0 | −10.5 | −19.5 | −24.5 | −12.7 |
| **Average low °C** | −35.3 | −35.8 | −33.6 | −25.3 | −13.3 | −1.9 | 1.7 | −0.3 | −6.1 | −16.4 | −25.9 | −31.3 | −18.6 |
| **Daily mean °C** | −32.0 | −32.4 | −30.2 | −21.8 | −10.3 | 0.4 | 4.5 | 2 | −4.1 | −13.4 | −22.7 | −27.9 | −15.7 |
| **Precipitation** | | | | | | | | | | | | | |
| **Average rainfall mm** | 0 | 0 | 0 | 0 | 0.5 | 7.2 | 23.2 | 23.2 | 4.8 | 0.5 | 0 | 0 | 59.5 |
| **Average snowfall cm** | 4.8 | 4.3 | 7.9 | 6.8 | 9.9 | 7.7 | 4.6 | 10.9 | 18.7 | 18.9 | 10.2 | 6.6 | 111.2 |

*Source: Environment Canada*

## 5.3 LOCAL RESOURCES

Aviation Fuel, diesel, hotel accommodations, groceries, camp outfitters, and construction supplies can be acquired locally in Resolute Bay; however, food and other supplies can be sourced more cost-effectively from Yellowknife or Ottawa. There is a health clinic in Resolute Bay, and the closest hospitals are in Iqaluit, 1,500 km southeast, and Yellowknife, 1,500 km southwest of the Property. Local labour is available from surrounding Inuit communities. Industry services are typically contracted out of Yellowknife or southern Canada, with limited services available out of Iqaluit.

## 5.4 INFRASTRUCTURE

Infrastructure at the Aston Bay property includes a new camp and airstrip located along the Aston River approximately 5 km in land from Aston Bay. There is also an unmaintained airstrip, located adjacent to an old Cominco Ltd. ("Cominco") exploration camp site at approximately 73°42' N latitude and 94°43' W longitude, adequate for landing Single or Twin Otter aircraft.

The Aston River camp and airstrip was used during the 2016 and 2017 field programs to support diamond drilling, soil sampling and regional reconnaissance. The camp can accommodate 28 persons and was winterized at the end of the 2017 season in readiness for planned 2018 activities. The 330 m (1,100 ft) Aston River airstrip is suitable for landing Single or Twin Otter aircraft, and could be expanded to handle larger aircraft such as the Dash 7.

Fuel and supplies can be mobilized directly to the Aston River airstrip in the winter/spring months using a Twin Otter on skis. A turbine DC-3 on skis could land on the unprepared sea ice in Aston Bay and supplies could be moved to the camp using snowmobiles. A prepared ice strip on Aston Bay would be able to accommodate larger aircraft such as Dash 7, ATR 72 and C-130J Super Hercules turboprops, and 737 jets.

Fifty kilometres north of the Property at Cunningham Inlet, is Arctic Watch Lodge, a wilderness adventure resort. The lodge maintains a 1,036 m (3,400 ft.) gravel airstrip and is also able to deliver other support services. The Arctic Watch airstrip is capable of handling various turboprop cargo aircraft, such as the Dash 7 and ATR-72, and could be used as a staging area for future exploration programs.

The most efficient and economical means of mobilizing fuel, heavy equipment, and supplies to the Aston Bay property is by sealift. Each year, ocean going ships travel from several southern Canada Ports with a variety of goods ranging from construction materials, vehicles, heavy equipment, house wares and non-perishable items. Typically, sealift takes place between late June and late October each year.

Ocean shipping lanes servicing Resolute Bay and the former Polaris Mine operation run in close proximity to the Aston Bay Property (Figure 4.1). The west end of the Property borders the tidewater of Aston Bay on Peel Sound, part of the Northwest Passage (Figures 4.1 and 4.2). Desgagnés Transarctik Inc. and NEAS offer an annual sea-lift service to a number of coastal northern communities, including Resolute Bay. Since Aston Bay is free of sea ice for 8 to 10 weeks per year, the option of direct offloading at Aston Bay is available. Furthermore, in the future, a protected, deep-water port could be constructed along the northern shore of Aston Bay.

## 5.5 PHYSIOGRAPHY

The Property is located in the Northern Arctic Ecozone consisting of plateau and rocky hills. Coastal areas typically constitute wide plains 'fenced' by boulders carried onshore by sea ice, strong tidal currents and storm waves.

The region characterized by rolling terrain with low relief. The topography initially rises abruptly from sea level to about 100 m, and subsequently levels out eastward, to an average of roughly 200 to 300 m above sea level. The Aston River is the main watercourse in the area and runs east-west through the Aston Bay property, draining into Aston Bay. The Aston River and other major drainages are characterized by steep incised canyons, typically exposing good outcrop along the canyon walls.

Flat areas are dominated by felsenmeer and cryoturbated soils. Cryoturbation produces features such as frost boils, ice-wedge polygons, stone nets and stone stripes.

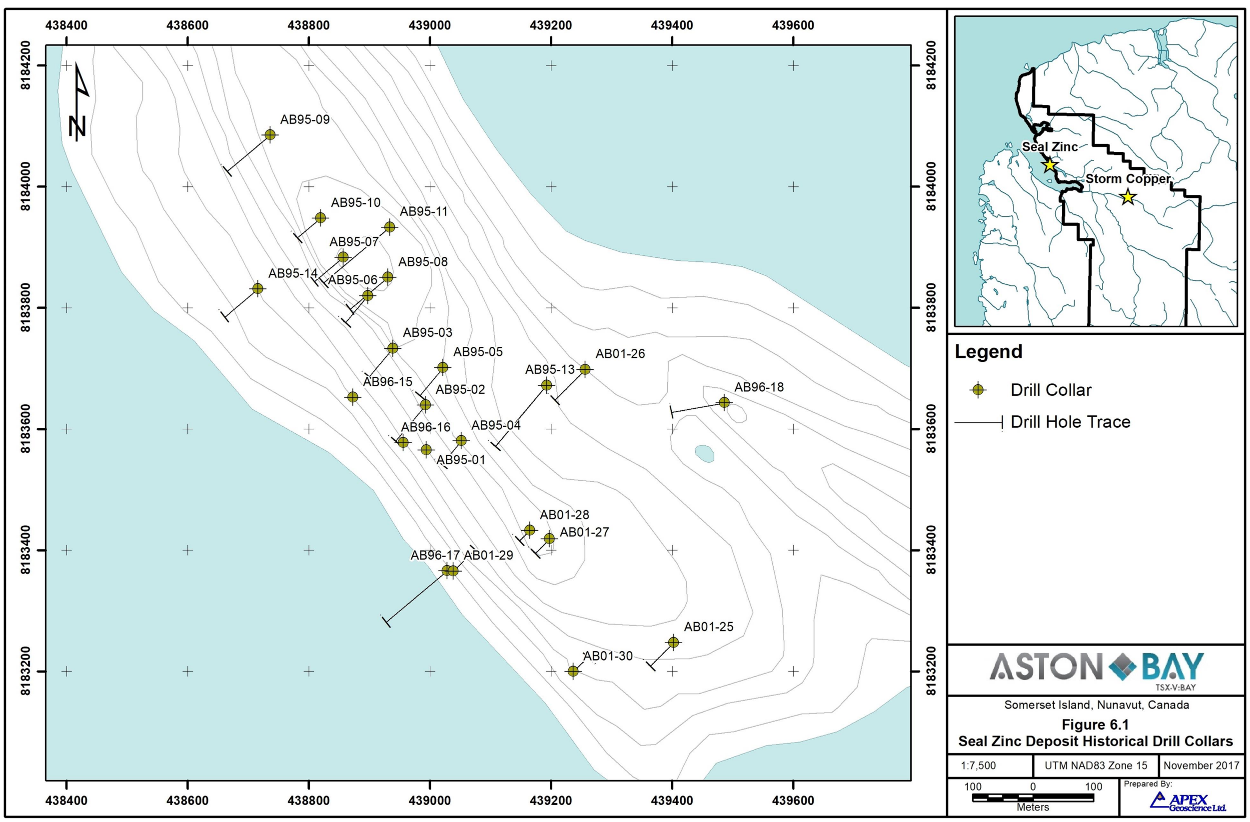
Vegetation at the Property consists mainly of moss, lichens, stunted plants and Arctic grasses. The grasses are typically observed growing at lower elevations in areas associated with river drainage basins. Muskox are commonly observed grazing in these areas. Polar bear, arctic fox, hare, and lemmings have also been noted at the Property. Caribou are rarely observed with the last known sighting on Somerset Island in 2004 (Gunn et al, 2006).

## 6.0 HISTORY

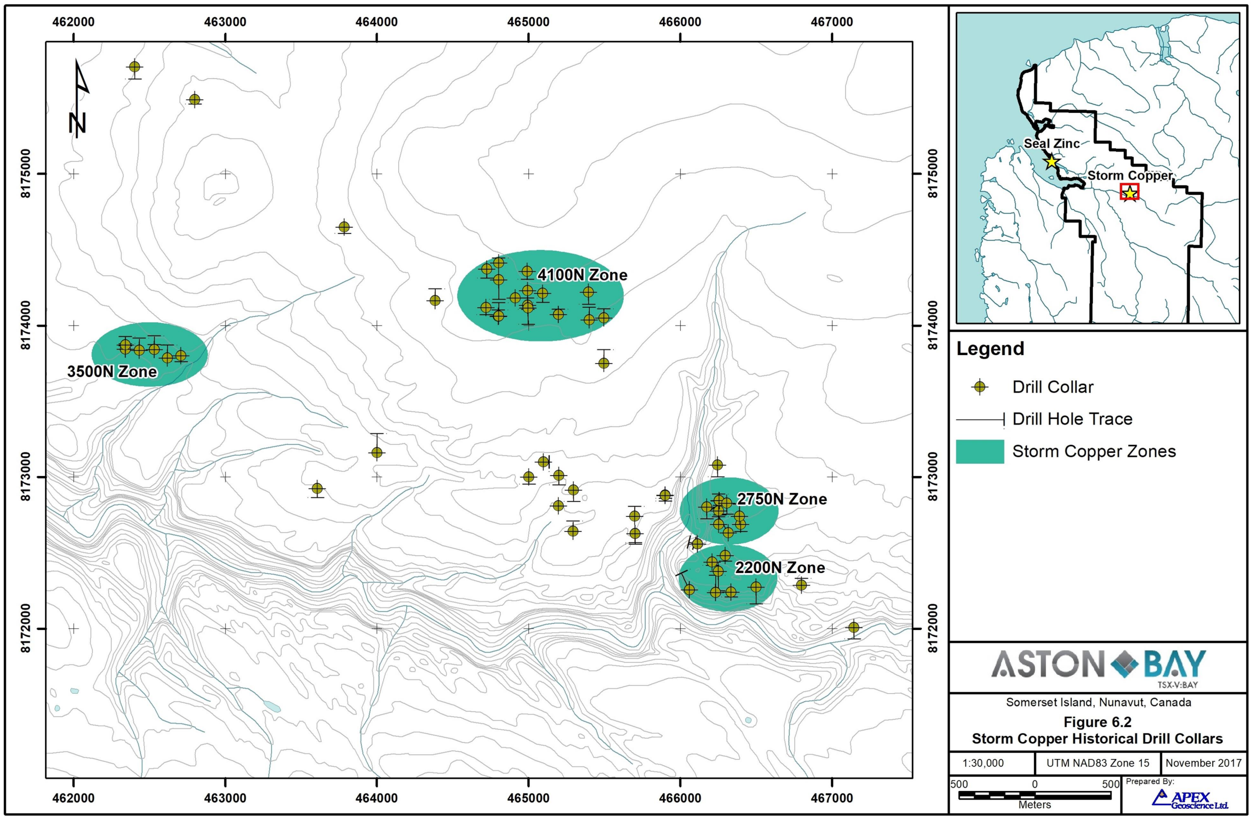
The following description has largely been taken from Aston Bay's report titled, "Technical Report on The Exploration History and Current Status of the Storm Project, Somerset Island, Nunavut", dated October 31, 2012.

Commander Resources Ltd. initially acquired the Property (formerly referred to as the Storm Property) as three contiguous Prospecting Permits in February 2008. One additional permit was added in February 2010. Much of the area covered by these permits was part of a larger mineral claim package, previously held by Cominco, and later Teck-Cominco Ltd. ("Teck-Cominco") (now known as Teck Resources Ltd. ("Teck Resources")). The last remnants of the Cominco land package lapsed in 2007. Exploration work in the areas around Aston Bay (the geographical location of Aston Bay, not the Company) and the Property has been carried out intermittently since the 1960s. Most of the historical work at the Property was undertaken between 1994 and 2001 by, or on behalf of, Cominco. Figures 6.1 and 6.2 illustrate historical exploration drilling at the Seal Zinc Deposit and Storm Copper Prospect respectively. A summary of historical work is provided in Table 6.1.

**Figure 6.1 Seal Zinc Deposit Historical Drill Collars**



## Figure 6.2 Storm Copper Prospect Historical Drill Collars




| TABLE 6.1<br>ASTON BAY PROPERTY HISTORICAL EXPLORATION SUMMARY | | | |
|---|---|---|---|
| **Type of Work** | **Year** | **Target Area** | **Summary** |
| **Diamond Drilling** | 1995 | Seal Zn Zone | 14 holes, 2,465.7 m |
| | 1996 | Seal Zn Zone | 10 holes, 1,828 m |
| | 1996 | Storm Cu Zone | 1 hole, 329 m |
| | 1997 | Storm Cu Zone | 17 holes, 2,784.7 m |
| | 1999 | Storm Cu Zone | 41 holes, 4,593.4 m |
| | 2000 | Storm Cu Zone | 8 holes, 1,348.5 m |
| | 2000 | Typhoon Zn | 3 holes, 537 m |
| | 2001 | Seal Zn Zone | 6 holes, 822 m |
| | 2001 | Typhoon Zn | 1 hole, 371 m |
| **Drill Core Resampling** | 2012 | Seal Zn Zone | 158 samples, 185.2 m |
| | 2012 | Storm Cu Zone | 241 samples, 314.4 m |
| | 2013 | Storm Cu Zone | 183 samples; 252 m |
| **Soil Sampling** | 1973 | Aston Bay | 15 samples |
| | 1994 | Aston Bay | 434 samples North & South Peninsula, & Seal Island |
| | 1995 | Aston Bay | 225 samples from South Peninsula and Seal Island |
| | 1995 | Regional | 1233 samples |
| | 1996 | Storm Cu Zone | 866 samples (grid) |
| | 1996 | Regional | 185 samples |

**TABLE 6.1**
**ASTON BAY PROPERTY HISTORICAL EXPLORATION SUMMARY**

| Type of Work | Year | Target Area | Summary |
|---|---|---|---|
| | 1997 | Storm Cu Zone | 535 samples (grid) |
| | 1997 | Regional | 112 samples |
| | 1998 | Storm Cu Zone | 816 samples (grid) |
| | 1998 | Regional | 1492 samples |
| | 1999 | Storm Cu Zone | 775 samples (grid) |
| | 2014 | Aston Bay Property | 242 samples |
| **Stream Sediment** | 1966 | Regional | Sample density 1 per 6.2 $km^2$ |
| | 1970 | Regional | 198 samples taken on current Property |
| | 1993 | Aston Bay | No data available |
| | 1994 | Regional | 50 heavy mineral samples |
| | 1996 | Regional | 29 samples |
| | 1997 | Regional | 116 samples |
| **Rock Sampling** | 1973 | Aston Bay | Prospecting Seal showing and North Peninsula; no data available |
| | 1993 | Aston Bay | Prospecting in Aston Bay area; no data available |
| | 1994 | Aston Bay | 65 samples North & South Peninsula, & Seal Island |
| | 1996 | Storm Project | 44 samples Storm Zone and Aston Bay |
| | 1997 | Storm Project | 6 samples Storm Zone and Aston Bay |
| | 2012 | Aston Bay | 12 samples North Peninsula & Seal Island |
| | 2012 | Storm Cu Zone | 2 samples |
| | 2013 | Seal Zn Zone | 5 samples |
| | 2014 | Aston Bay Property | 14 samples |
| **Geophysics** | 1994 | Aston Bay | 168 line-km of IP and 62 line-km of gravity |
| | 1995 | Aston Bay | HLEM survey on North Peninsula |
| | 1997 | Storm Cu Zone | 89 line-km of IP and 71.75 line-km of HLEM |
| | 1997 | Aston Bay Property | 10,741 line-km high-resolution aeromagnetic survey |
| | 1998 | Storm Cu Zone | 44.5 line-km of IP |
| | 1999 | Storm Cu Zone | 57.7 line-km of IP |
| | 1999 | Regional Targets | 32.4 line-km of gravity |
| | 1999 | Aston Bay Property | Airborne hyperspectral survey |
| | 2000 | Storm Cu Zone | 77.1 line-km UTEM survey |
| | 2000 | Typhoon Zn | 11 line-km of ground mag, 45.2 line-km of gravity |
| | 2000 | Regional Targets | 21.6 line-km of gravity, 6.5 line-km of HLEM, 31.5 line-km of UTEM |
| | 2000 | Aston Bay Property | 3,260 line-km GEOTEM airborne survey |
| | 2011 | Aston Bay Property | 3,970 line-km VTEM airborne survey |
| | 2015 | Storm Cu Zone, Blizzard & Hurricane | 934 station gravity survey |
| **Geological Mapping** | 1970 | Regional | Photogeological mapping of NW Somerset Island |
| | 1973 | Aston Bay | 1":1/4 mile mapping of North and South Peninsulas |

| Table 6.1<br>Aston Bay Property Historical Exploration Summary | | | |
|---|---|---|---|
| **Type of Work** | **Year** | **Target Area** | **Summary** |
| | 1994 | Aston Bay | Detailed mapping of Seal Island and North and South Peninsulas |
| | 2000 | Storm Cu Zone | Detailed geological mapping |
| | 2014 | Storm Cu Zone | Detailed geological mapping |

1966 Cominco: Stream geochemistry with a sample density of 1 per 2.4 square miles (6.2 square km) was conducted over parts of northwestern Somerset Island; reconnaissance prospecting was also undertaken. Three soil samples were taken from the area of the Seal Zinc Deposit (Whaley, 1975).

1970 J.C. Sproule and Associates Ltd.: Photogeological mapping, limited reconnaissance prospecting, and stream sediment geochemical sampling were conducted (Neale and Campbell, 1970). The geochemical survey included areas of the far eastern side of the former Storm Property and returned some anomalous copper assay values.

1973 Cominco: Geological mapping, prospecting, and soil sampling were carried out in the Aston Bay area as a follow up to 1966 work. Anomalous soil and rock samples were described with zinc values up to 5% in rubble at the main Seal showing. Consequently, claims PAT 1-10 were staked on September 24, 1973 (Whaley, 1974).

1974 Cominco: Geological mapping, prospecting and soil sampling were carried out on the Astec Property (Seal showing), consisting of the PAT 1-10 claim group. Fifteen soil samples were collected and analyzed for zinc and lead (Whaley, 1975).

1978 Esso Minerals: Prospecting, geological mapping, geochemical surveys and an airborne radiometric survey exploring for uranium mineralization were conducted at Aston Bay by Trigg, Woollett & Associates. Geochemical samples of lake and stream sediments were taken in the Aston Bay area (Cannuli and Olson, 1978).

1993 Cominco: Stream sediment geochemistry and prospecting were completed in the Aston Bay area. Nine mineral claims were staked, totalling 23,242.50 acres. Three prospecting permits, totalling 163,602 acres, were applied for (Leigh, 1996).

1994 Cominco: Detailed geological mapping was carried out on Seal Island and the North and South peninsulas of Aston Bay. (The North and South peninsulas refer to the north end and south end of the peninsula on which the Seal Zinc Deposit showing is located). Induced polarization (IP) and gravity geophysical surveys were conducted on Seal Island and the North Peninsula. A total of 168 line-km of IP and 62 line-km of gravity surveying were completed. Soil geochemical sampling was conducted along the Seal Island and North Peninsula geophysical grids. Soil sampling, prospecting, and mapping were done on the South Peninsula. A total of 434 soil samples and 65 rock grab samples were analyzed. Soil sampling highlights included 15 samples with greater than 1% zinc (Zn), including a 1.06% Zn sample from the South Peninsula. Rock sampling highlights included 18 samples from Seal Island and the North Peninsula with greater than 1% Zn. Most of the high-grade samples were found proximal to the Seal main showing; the highest value returned was 8.8% Zn in soils and 40% Zn with 200 grams per tonne (g/t) silver (Ag) in rock samples. Helicopter reconnaissance and heavy mineral sampling were conducted south of Aston Bay. The highest grade observed was 2,230 parts per million (ppm) Zn with 229 ppm lead (Pb). Twelve additional claims (SEAL 1-12), totalling 28,911.7 acres, were staked in the Aston Bay area. Two prospecting permits (1491, 1492), located southeast of Aston Bay, were granted, totalling 108,530 acres (Smith, 1995).

1995 Cominco: Fourteen diamond drill holes (AB95-1 to AB95-14) were completed on the North Peninsula of Aston Bay for a total of 2,465.7 m (Figures 6.1 and 6.2). Drill intersections of up to 10.6% Zn and 29 g/t Ag over 18.8 m core length were obtained for the Seal Zinc Deposit (Table 6.2). A horizontal-loop electromagnetic (HLEM) survey was also conducted on the North Peninsula. Regional scale soil sampling and prospecting was completed on the South Peninsula, Seal Island, and the area south of Aston Bay. Zinc values of up to 850 ppm were recorded in soils on the South Peninsula. All areas returned multiple samples with greater than 100 ppm Zn. Nine adjoining claims (SEAL 13-21) were staked in the Aston Bay area and 16 additional claims were staked to the south of, and adjoining, the prospecting permits (Leigh, 1995).

**TABLE 6.2**
**SEAL ZONE SIGNIFICANT DRILL HOLE INTERSECTIONS**

| Hole ID | From (m) | To (m) | Length (m) | Zn (%) | Ag (g/t) |
|---|---|---|---|---|---|
| AB95-02 | 51.80 | 70.60 | 18.80 | 10.58 | 28.7 |
| Includes | 52.40 | 60.70 | 8.30 | 15.62 | 36.5 |
| And | 66.00 | 70.60 | 4.60 | 13.83 | 46.9 |
| AB95-03 | 76.60 | 98.70 | 22.10 | 6.62 | 27.1 |
| Includes | 76.60 | 81.00 | 4.40 | 11.26 | 51.5 |
| And | 90.50 | 96.40 | 5.90 | 13.38 | 48.6 |
| AB95-06 | 101.50 | 132.30 | 30.80 | 5.11 | 23.0 |
| Includes | 101.50 | 106.40 | 4.90 | 8.51 | 26.3 |
| And | 110.80 | 119.20 | 8.40 | 7.76 | 32.6 |
| And | 128.30 | 132.30 | 4.00 | 8.63 | 57.5 |
| AB95-07 | 118.80 | 137.00 | 18.20 | 3.33 | 21.6 |
| Includes | 133.50 | 137.00 | 3.50 | 15.13 | 91.9 |
| AB95-10 | 137.00 | 147.00 | 10.00 | 1.40 | 21.9 |
| AB95-11 | 191.00 | 206.00 | 15.00 | 1.06 | 25.6 |
| Includes | 204.00 | 206.00 | 2.00 | 4.55 | 111.0 |

1996 Cominco: Ten diamond drill holes (AB96-15 to AB96-24), totalling 1,733.0 m were completed on the North and South peninsulas of Aston Bay (Figures 6.1 and 6.2). Four holes were drilled on the North Peninsula (841.0 m), and five holes were drilled on the South Peninsula (983.2 m). The best results were from the North Peninsula drill holes, including 1.8% Zn with 14 ppm Ag over 0.5 m in hole AB96-17; 2.8% Zn with 10 ppm Ag over 1 m and 2.2% Zn over 1 m in hole AB96-17 (Leigh, 1996b). See Appendix V.

On July 14, 1996, during a regional reconnaissance program, Cominco geologists discovered large chalcocite boulders in Ivor Creek, about 20 km east of Aston Bay, at the subsequently named 2750 Zone at the Storm Copper Prospect. Copper mineralization, hosted by Paleozoic dolostone and limestone, was found over a 7 km structural trend (Cook and Moreton, 2009). A single drill hole (330 m) was completed to test for economic copper mineralization (Smith, 2001). Claims STORM 1-19 were staked (Leigh and Reid, 1998).

1997 Cominco: Sander Geophysics Ltd., on behalf of Cominco, conducted a high-resolution aeromagnetic survey over a 5,000 square kilometre area of northern Somerset Island. A total of 204 SW-NE oriented traverse lines and 21 NW-SE oriented control lines were flown for a total of 10,741 line- km. Traverse lines were spaced at 500 m and control lines were spaced at 2,500 m (O'Connor, 1997). Eighty-nine line-km of IP and 71.75 line-km of HLEM were completed, and 536 soil samples were collected at the Storm Copper Prospect. Seventeen diamond drill holes, for a total of 2,784 m, were completed in the central graben area of the Storm Zone. Assay highlights included: 49.71% copper (Cu) with 17.1 ppm Ag over 0.6 m and 19.87% Cu over 1.1 m in hole ST97-02; 4.67% Cu over 4.8 m and 4.13% Cu over 1.4 m in hole ST97-03; and 14.62% Cu with 23.5 g/t Ag over 1.3 m and 4.41% Cu with 12.4 g/t Ag over 1.4 m in hole ST97-13 (Table 6.3). The present day copper zones at the Storm Copper Prospect were established: the 2200N, 2750N, 3500N, and 4100N zones (Cook and Moreton, 2009). Claims STORM 20- 89 were staked (Leigh, 1998a).

**TABLE 6.3**
**STORM ZONE SIGNIFICANT HISTORICAL DRILL HOLE INTERSECTIONS**

| Hole ID | From (m) | To (m) | Length (m) | Cu (%) |
|---|---|---|---|---|
| **ST97-02** | 0.00 | 19.00 | 19.00 | 3.41 |
| *includes* | 0.00 | 5.10 | 5.10 | 11.84 |
| **ST97-03** | 0.00 | 50.90 | 50.90 | 1.74 |
| **ST97-05** | 28.50 | 38.20 | 9.70 | 1.22 |
| **ST97-08** | 0.00 | 110.00 | 110.00 | 2.45 |
| *includes* | 25.20 | 58.00 | 32.80 | 5.40 |
| **ST97-09** | 62.30 | 86.90 | 24.60 | 2.16 |
| **ST97-13** | 59.80 | 113.00 | 53.20 | 1.34 |
| **ST97-14** | 92.30 | 106.00 | 13.70 | 0.62 |
| **ST97-15** | 48.00 | 51.00 | 3.00 | 1.51 |
| **ST99-19** | 12.20 | 68.50 | 56.30 | 3.07 |
| *includes* | 22.00 | 46.60 | 24.60 | 6.17 |
| **ST99-22** | 44.30 | 58.40 | 14.10 | 1.56 |
| **ST99-31** | 4.60 | 103.20 | 98.60 | 0.81 |
| *includes* | 4.60 | 59.70 | 55.10 | 1.23 |
| **ST99-33** | 3.80 | 29.00 | 25.20 | 0.44 |
| **ST99-34** | 72.60 | 75.60 | 3.00 | 1.97 |
| **ST99-43** | 26.60 | 77.40 | 50.80 | 0.74 |
| *includes* | 41.00 | 52.80 | 11.80 | 1.61 |
| **ST99-47** | 43.40 | 111.00 | 67.60 | 1.33 |
| *includes* | 72.40 | 87.40 | 15.00 | 3.88 |
| **ST99-53** | 17.30 | 43.00 | 25.70 | 1.66 |
| *includes* | 38.60 | 43.00 | 4.40 | 4.62 |
| **ST99-56** | 32.60 | 111.00 | 78.40 | 0.75 |
| *includes* | 52.40 | 104.30 | 51.90 | 0.98 |
| *includes* | 52.40 | 67.80 | 15.40 | 2.48 |
| **ST00-60** | 54.00 | 58.90 | 4.90 | 2.26 |
| **ST00-60** | 73.40 | 76.60 | 3.20 | 3.33 |
| **ST00-60** | 118.10 | 132.70 | 14.60 | 0.63 |
| **ST00-61** | 50.30 | 64.40 | 14.10 | 1.38 |
| **ST00-62** | 60.00 | 111.30 | 51.30 | 1.16 |
| *includes* | 78.80 | 106.00 | 27.20 | 1.87 |
| **ST00-63** | 63.60 | 73.30 | 9.70 | 1.42 |
| **ST00-64** | 56.60 | 76.25 | 19.65 | 1.40 |
| **ST00-66** | 46.00 | 69.60 | 23.60 | 0.83 |

1998 Cominco: A total of 44.5 line-km of IP were completed and 2,308 soil samples were collected at the Storm Cu Project during 1998. Eight hundred sixteen (816) soil samples were collected along the IP grid and 1,238 base-of-slope samples were collected during regional drainage prospecting traverses. An area 700 m by 100 m on the soil grid was found to contain >500 ppm Cu, trending parallel to the graben structure. The highest Cu value attained was 1,920 ppm. The anomalous area is centred over the 3500N Zone. Highlights from the regional soil survey included 458 ppm Cu with 856 ppm Zn and 221 ppm Cu with 508 ppm Zn, both related to rusty limonitic soils (Leigh, 1998b). Regional soil sampling was also conducted on Cominco's SEAL claims. A total of 254 samples were collected, with maximum values of 33 ppm Cu and 108 ppm Zn (Leigh, 1998a and 1998b).

1999 Cominco: A total of 57.7 line-km of IP were completed in the Storm Copper Zone and 32.4 line-km of ground gravity surveying was completed over regional targets. Seven-hundred fifty (775) soil samples were collected at the main Storm grid. The maximum Cu and Zn values achieved in the main grid were 592 ppm and 475 ppm, respectively (Leigh, 1999). Forty-one (41) diamond drill holes, for a total of 4,593.4 m, were completed at the Storm Cu Projects, largely testing IP/Resistivity anomalies. Assay highlights included: 3.07% Cu over 56.3 m in hole ST99-19; 1.23% Cu over 55.1 m hole ST99-31; 1.33% Cu over 67.6 m in hole ST99-47; and 2.48% Cu over 15.4 m in hole ST99-56 (Table 6). As a result of the extensive 1999 drilling, Cominco geologists divided the upper Allen Bay Formation into three main stratigraphic marker units: alternating dolomicrite and dolowackestone (ADMW), brown dolopackstone and dolofloatstone (BPF), and varied stromatoporoid (VSM) (Leigh and Tisdale, 1999).

1999 Noranda Inc.: Noranda Inc. ("Noranda") entered into an option agreement with Cominco whereby Noranda could earn a 50% interest in the Storm property package (48 claims) by incurring exploration expenditures of $7 million over a four year period, commencing in 1999. An airborne hyperspectral survey completed by Noranda identified 26 airborne electromagnetic and magnetic (AEM/MAG) and 266 colour anomalies (MacRobbie et al., 2000).

2000 Noranda Inc.: A 3,260 line-km GEOTEM electromagnetic and magnetic airborne geophysical survey was flown over the Property at 250 m to 300 m line spacing. A total of 29 anomalies of interest were identified, including a conductor coincident with the 4100N Zone. 77.1 line-km of UTEM was completed in the Central Graben area, including a detail grid over the 4100N Zone. Ground geophysical surveys were carried out as a follow up on regional targets, including 31.5 line-km of UTEM, 21.6 line-km of gravity, 11 line-km of magnetics, and 6.5 line-km of HLEM. In addition to the geophysical surveys, geological mapping, prospecting, and soil sampling were carried out to evaluate the 2000 AEM and 1999 hyperspectral anomalies. Eleven diamond drill holes, for a total of 1,885.5 m, were completed; eight of the holes, for a total of 1,348.5 m, were completed within the current Aston Bay Property, mainly within the 4100N Zone showing (MacRobbie et al., 2000). The best results achieved during the 2000 drilling program were in hole ST00-62, which graded 1.16% Cu over 51.3 m of core length.

2001 Noranda: The Aston claims (7 claims) were added to the original option agreement with Cominco. Reconnaissance follow up on selected airborne targets from the 1999 and 2000 airborne surveys was completed. Six diamond drill holes, for a total of 822 m, were completed on the Seal Zinc Deposit showing. Assay highlights for 2001 drilling include: 7.65% Zn with 26.5 g/t Ag over 1.1 m in hole AB01- 29 (Smith, 2001).

2007 The last of the original Cominco property package lapsed.

2008 Commander: Prospecting permits 7547, 7548, and 7549, comprising the former Storm Property, were issued to Commander in February 2008. Scott Wilson Roscoe Postle Associates Inc. ("Scott Wilson RPA") was retained by Commander to prepare an independent Technical Report on the Property (Cook and Moreton, 2009). Field work included traversing geological contacts at the Seal, 2200N, 2750N, and 4100N showings to evaluate the accuracy of previous mapping. Collars for all the holes in the 4100N Zone were examined. Additionally, in order to verify historical drill results, core stored at the former Aston Bay camp site was selectively sampled. Seven holes were sampled, including two from the Seal occurrence and five from the Storm copper showings. Duplicate analyses for the Storm Copper Prospect holes corresponded well with original results. Original certificates of analysis for the Seal holes were not available; however, results confirmed good zinc and silver content in the drill core (Grexton, 2009).

2011 Commander: Geotech Ltd., on behalf of Commander, conducted a helicopter-borne versatile time domain electromagnetic (VTEM plus) and aeromagnetic survey over the former Storm Property. A total of 3,969.7 line-km were flown. The primary VTEM survey flight lines were oriented 030/210 at 150 m spacing with parallel infill lines at 75 m spacing and orthogonal tie lines at 1,500 m spacing. In fall 2011, Intrepid Geophysics Ltd. ("Intrepid") was retained by Commander to provide an advanced interpretation of the geophysical data collected during the 2011 VTEM survey. Post-processing of the airborne data by Intrepid identified significant anomalies coincident with the 2200N, 2750N, and 4100N Zones. The ST97-15 and ST99-34 zones also responded well to the VTEM system. A further nine secondary anomalous areas were identified as possible follow up targets (Dufresne and Atkinson, 2012).

# 7.0 GEOLOGICAL SETTING AND MINERALIZATION

The following description has largely been taken from Aston Bay's report titled, "Technical Report on The Exploration History and Current Status of the Storm Project, Somerset Island, Nunavut", dated October 31, 2012 and from Dewing et al. (2007).

## 7.1 REGIONAL GEOLOGY

The Polaris district and Aston Bay Property are underlain primarily by Cambrian to Devonian strata deposited on a rifted cratonic margin. Carbonates, evaporites and continentally-derived siliciclastics accumulated on a carbonate platform that passed southwards into cratonic sedimentary cover.

The platform was uplifted in Late Silurian to Middle Devonian time by vertical movement along the north-south intracratonic Boothia Uplift, forming a major linear structural feature that extends 1,000 km northward from the Boothia Peninsula into the Arctic Archipelago and ranges from 80 to 125 km wide (Okulitch, et al., 1985; Packard, et al., 1987). The Boothia Uplift was formed by west-directed compressive stresses of the coeval late stages of the Caledonian (Taconic) Orogeny (Okulitch, et al., 1985; de Freitas, et al., 1999). Proterozoic stratigraphy on Victoria Island and Baffin Island shows broad folding indicative of another deformation event that may have affected Somerset Island rocks (Smith, 1995).

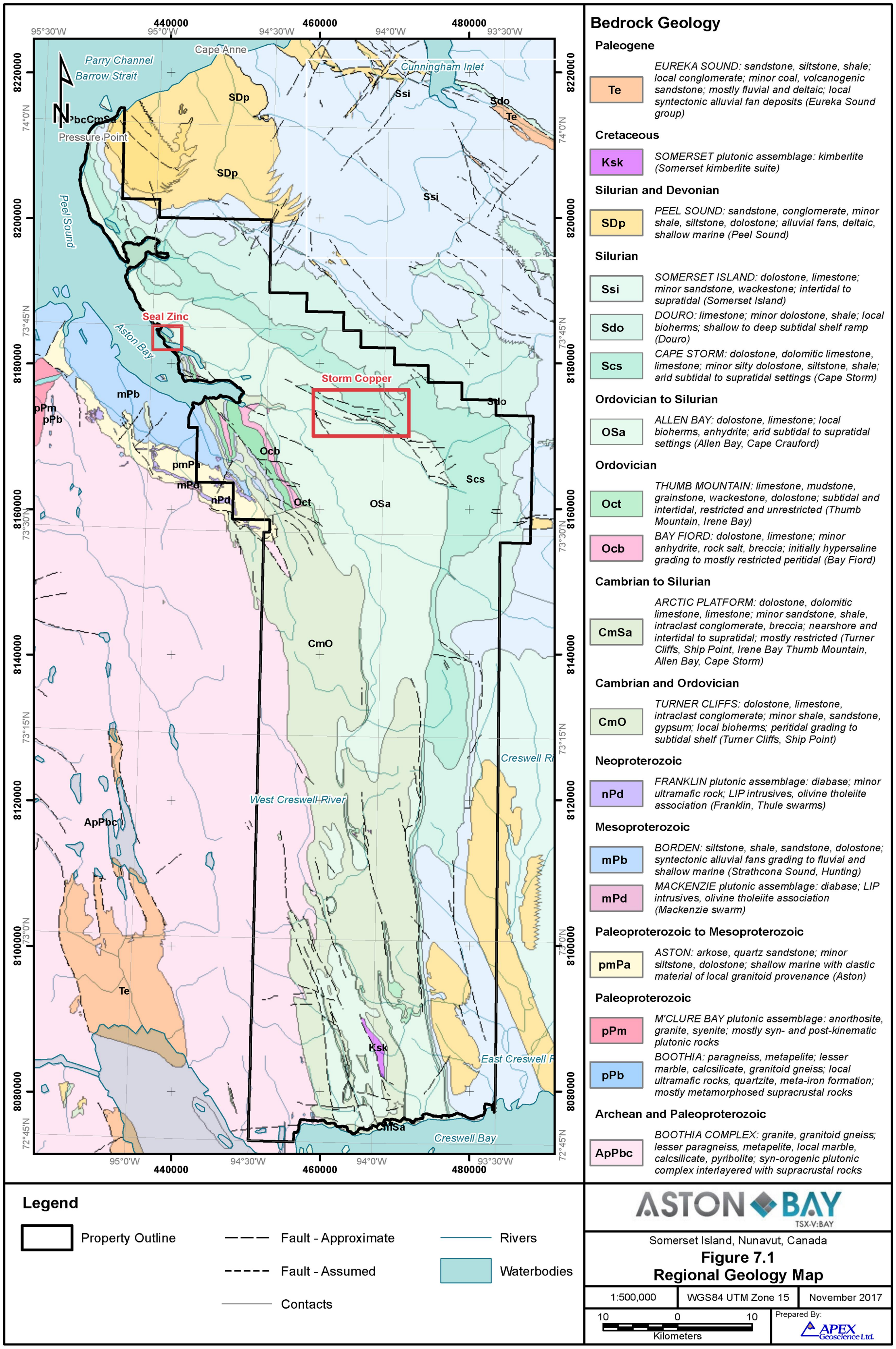
The core of the Boothia Uplift is composed of Archean and Aphebian granulite facies metasedimentary and metavolcanic crystalline rocks with near-vertical bedding and foliation reflecting north – south trending, tight, upright folds. During the closing stages of the Caledonian Orogeny basement and platform rocks were thrust westward during the closing pulses of the Caledonian Orogeny to form the Cornwallis Fold and Thrust Belt (Okulitch, et al., 1985; Smith, 1995). Evaporite units in the stratigraphy may have acted as intermediate decollement zones. Fold structures exposed at surface within the Cornwallis Fold and Thrust Belt are largely broad open anticlines and synclines with north – south axes. The distribution of Paleozoic rocks on Somerset Island defines a large asymmetrical syncline with the youngest strata preserved in the center. Structures related to local block faulting, flexures and gentle folding overprint the main synclinorium. Three dominant fault orientations have been observed on Somerset Island; north – south, northwest – southeast and northeast – southwest.

Compressional stress from the Late Devonian Ellesmerian Orogeny, east of the Boothia Uplift, affected structures on Bathurst Island as well as Cornwallis Island and the Grinnell Peninsula of Devon Island, where basement structures were reactivated to form complex interference patterns in the overlying sedimentary cover. The area south of Barrow Strait acted as a buttress and therefore compressional stresses related to the Ellesmerian Orogeny are not believed to reach as far south as Somerset Island (Okulitch, et al., 1985; Grexton, 2009; Smith, 1995). Re-Os dating of chalcopyrite from the Storm Property yielded an Ellesmerian age (378 ±1 Ma), however, suggesting effects of the orogenic event on Somerset Island.

The last major tectonic event that affected the region was the Tertiary - Eocene Eurekan Orogeny that reactivated older faults via compressional events in the Sverdrup Basin (Cook, et al., 2009; Grexton, 2009), creating north-trending dextral strike-slip and dextral oblique reverse faults (Guest, et al., 2011). Tertiary faulting along the Boothia Uplift resulted in the preservation of Tertiary and older strata by producing fault-bounded grabens (Okulitch, et al., 1985; Smith, 1995).

An interpretation of the regional geologic history of the Property area is shown in Figure 7.1.

**Figure 7.1 Regional Geology Map**




*(Source: APEX Geoscience Ltd.)*

## 7.2 LOCAL GEOLOGY

Proterozoic carbonate rocks are not well exposed on Somerset Island, therefore most of their depositional history is derived from nearby Victoria and Baffin Islands. An 800 m thick sequence of Middle Proterozoic, red weathering fine- to medium-grained hematitic silica cemented sandstone and conglomerate comprising the Aston Formation sits unconformably atop the crystalline basement of Somerset Island (Okulitch et al., 1991). Following a period of uplift, intrusion of the Mackenzie dyke swarm at 1.27 Ga (LeCheminant and Heaman, 1989), and erosion, the Huntington Formation was deposited unconformably atop the Aston Formation.

The Huntington Formation is a 2,100 m thick unit comprised of thin- to medium-bedded, locally stromatolitic dolostone with minor gypsum. The 1,400 m thick Patrick Formation, an informal formation name used by Cominco geologists, is comprised of shallow-water carbonates overlain by black shale, lying conformably over the Huntington Formation. The Patrick Formation is exposed on Seal Island in Aston Bay (Cook, et al., 2009). The Patrick, Huntington and Aston formations show evidence of minor faulting and folding prior to the intrusion of the 723 Ma Franklin diabase dykes and sills (Heaman, et al., 1992).

A sequence of Cambrian to Late Ordovician carbonate and clastic sedimentary rocks, that young to the east, unconformably overlie the Patrick Formation. The 350 m thick Turner Cliffs Formation sits directly atop the rocks of the Patrick Formation. The Turner Cliffs Formation is comprised of an upper massive cherty dolostone layer and a lower interbedded unit of sandy, dolomitic and argillaceous rocks (Miall and Kerr, 1980).

The Ship Point Formation (64 – 250 m thick) sits conformably above the Turner Cliffs Formation and is comprised of pale grey thin- to medium-bedded dolostone with local minor stromatolitic, oolitic, and bioturbated beds (Miall and Kerr, 1980). Dark grey to brownish grey recessive fissile dolostone of the Bay Fiord Formation (6 to 196 m thick) sits conformably upon the Ship Point Formation (Miall and Kerr, 1980).

The fossiliferous 0 – 115 m thick Thumb Mountain Formation consists of pale grey, thinly bedded dolomitic biomicrite that lies unconformably above the Bay Fiord Formation. Interbedded greenish grey recessive argillaceous dolomitic limestone and shales of the Irene Bay Formation (0-34 m thick) sit conformably atop the Thumb Mountain Formation. The Bay Fiord, Thumb Mountain and Irene Bay formations make up the Cornwallis Group.

The Allen Bay Formation, deposited during the Late Ordovician and Early Silurian, sits unconformably atop the Irene Bay Formation and is comprised of a basal unit of massive dolostone containing Arctic Ordovician Fauna and an upper crystalline dolomite unit with common stromatolitic and bioclastic horizons (Miall and Kerr, 1980).

The Silurian Cape Storm, Douro and Cape Crauford Formations constitute a succession which sits conformably upon the Allen Bay Formation. The Cape Storm Formation consists of thinly-bedded, flaggy dolostone and ranges between 120 and 240 m thick. The 170 – 240 m thick Duoro Formation is dominated by nodular, argillaceous, fossiliferous limestone. The Cape Crauford Formation is an equivalent facies to the upper portion of the Allen Bay Formation on central Somerset Island and is comprised of evaporites and dolomites.

During the Late Silurian to Devonian, tectonic movement of the Boothia Uplift resulted in the deposition of a clastic wedge, markedly dolostone and limestone of the Somerset Island and the

Peel Sound Formations, which is preserved in small areas of the northwestern portion of the Property. The clastic wedge lies conformably above the Douro Formation (MacRobbie et al., 2000; Cook & Moreton, 2009).

During the Late Cretaceous (103 Ma – 94 Ma), kimberlite diatremes intruded the northeastern portion of Somerset Island (Wu et al., 2012; Smith et al., 1989). These bodies intruded along the dominant fault orientations in the region, in addition to following apparent dyke swarm orientations.

The Property and surrounding area underwent several distinct periods of major tectonic deformation from the Proterozoic through to the Tertiary, and the rocks within the Property show resultant folding and faulting (Grexton, Assessment Report Storm Property: 2008; Technical Evaluation, 2009; Smith, 1995). The most recent deformation event reactivated older structures and created large grabens during transtensional movement, while preserving Tertiary and older strata (Cook, et al., 2009; Smith, 1995). The Central Graben structure on the Property (Figure 7.1), bounded by north – south trending faults, preserves rocks of the down-dropped Douro Formation, indicating faults likely cut through the full stratigraphic column underlying the Silurian Douro Formation (Cook, et al., 2009).

## 7.3 PROPERTY GEOLOGY

Property-scale geology for the areas of the Seal Zinc Deposit and Storm Copper Prospect is illustrated in Figures 7.2 and 7.3, respectively. Geology unit abbreviations are illustrated on Figures 7.1, 7.2 and 7.3. A stratigraphic column which serves to illustrate and simplify the lithological relationships in the Property area is presented in Figure 7.4 for reference.

The material in this section is summarized from Dewing and Turner (pers. comm., 2012), Leigh (1996), Leigh and Tisdale (1999), MacRobbie et al. (2000), and Smith (2001). The geological information has been gathered from both drill core and limited bedrock exposure throughout the Property, though the focus is on the Seal Zinc Deposit and Storm Copper Prospect mineralized zones.

The rocks of the 200 m thick Turner Cliffs Formation (units uCOtc and ICOtc) were deposited within and proximal to the intertidal zone. The unit consists of a series of interbedded cryptalgal laminates, stromatolites and flat pebble conglomerates. A leached dolostone with chert nodules occurs within the succession. It is described as a pseudobreccia, contains abundant white dolospar and calcite (making up 60% of the zone) with 5-20% of the rock being comprised of cavities. Locally, brown resinous sphalerite is present within the cavities of the pseudobreccia.

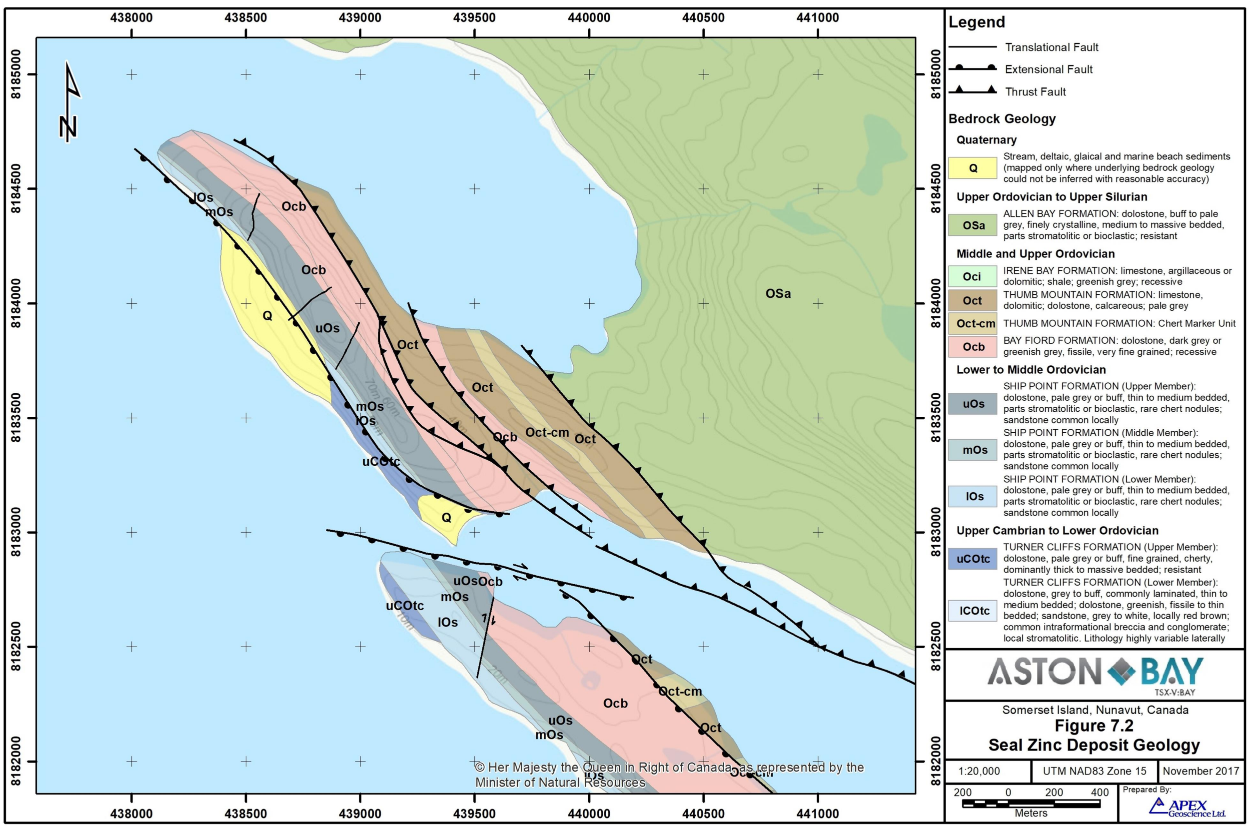
Lying conformably above the Turner Cliffs Formation within the Property are rocks of the Ship Point Formation (Os). The contact between the Turner Cliffs and Ship Point formations is marked by the first occurrence of sandy dolostone and the disappearance of laminated dolomicrite. The Ship Point Formation is a resistant, ridge-forming rock unit that was deposited in a shelf environment and has a distinctive dull grey weathered colour. The base of the Ship Point Formation consists of a 1.5 – 2 m thick sandy dolostone bed that is overlain by a distinctive 8 – 10 m well-sorted quartz arenite with well-preserved planar cross-beds. The sandstone unit is locally pyritic with associated elevated zinc values. The upper 50 m of the Ship Point Formation is comprised of medium-bedded sandy dolostone, bioturbated mottled dolostone, cross-bedded arenaceous sandstone and local oolitic dolostone.

The Bay Fiord Formation (unit Ocb) lies conformably upon the Ship Point Formation and consists of green to grey to brown, thinly-bedded to laminated silty dolostone and shale. Conformably above the Bay Fiord Formation is the Ordovician Thumb Mountain Formation comprised of bioturbated argillaceous dolostone with abundant scattered chert nodules.

In the western portion of the Property the Thumb Mountain Formation (unit Octi) is in fault contact with the overlying Silurian Allen Bay Formation (unit OSa). The Allen Bay Formation is the youngest unit present in the western portion of the Property, to the east it is overlain by younger units.

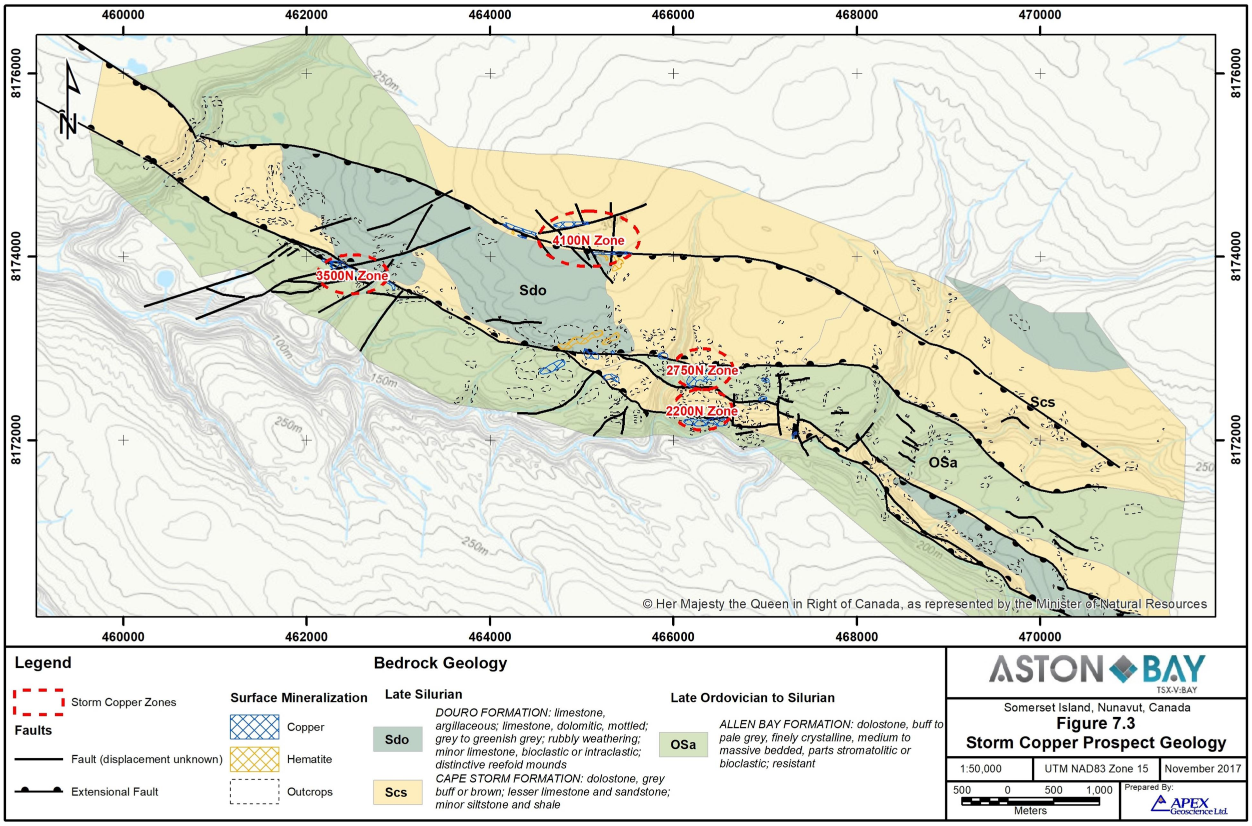
The Allen Bay Formation in general consists of buff dolostone with common chert nodules and vuggy crinoidal dolowackestone along with carbonate muds. The upper Allen Bay Formation has been subdivided into three members. The 150 m plus thick buff to light-grey, lower Varied Stromatoporoid (VSM) unit is comprised of interbedded dolofloatstone, dolorudstone, stromatoporoid boundstone, framestone and thinly-bedded to laminated dolomicrite.

**Figure 7.2 Seal Zinc Deposit Geology**




*(Source: APEX Geoscience Ltd.)*

## Figure 7.3 Storm Copper Prospect Geology




*(Source: APEX Geoscience Ltd.)*

Three marker horizons are present within the VSM: the Oolitic Marker (OP), the Rudstone Chip Marker (RCM) and the Stromatoporoid Boundstone/Framestone Marker (SBFM). The OP occurs 40 m from the top of the VSM and is made up of 1 to 2 reverse-graded oolitic to oncolitic packstone beds. The RCM is less than 1 m in thickness and consists of a coarse mixture of elongate fossil fragments. Five metres above the RCM is the 6 m thick SBFM which occurs near the top of the VSM. The SBFM contains light brown digitate stromatoporoids in growth position.

The 35 m thick middle unit of the upper Allen Bay Formation is termed the Brown Dolopackstone and Dolofloatstone (BPF). The BPF is medium to dark brown comprised of coral-rich dolofloatstone and dolopackstone, with scattered fragmented stromatolites and local dolomicrite interbeds. Chert nodules are common in two horizons within the BPF. Thirty-five to fifty metres of Alternating Dolomicrite and Dolowackestone (ADMW) make up the upper unit of the upper Allen Bay Formation. The ADMW is made up of thickly-bedded to massive dolomicrite with common internal laminations and metre-scale beds of dolowackestone with fossil debris.

The Cape Storm and the Duoro formations conformably overlie the Allen Bay Formation. The Cape Storm Formation (unit ScS) was deposited in a shallow water to emergent environment and is comprised of platy light- to medium-grey dolostone with widely spaced argillaceous interbeds. The dark green colour of the Duoro Formation (unit Sdo) distinguishes this unit from the others within the eastern portion of the Property. The Duoro Formation consists of nodular argillaceous limestone containing fossilized bivalves, rugose and colonial corals.

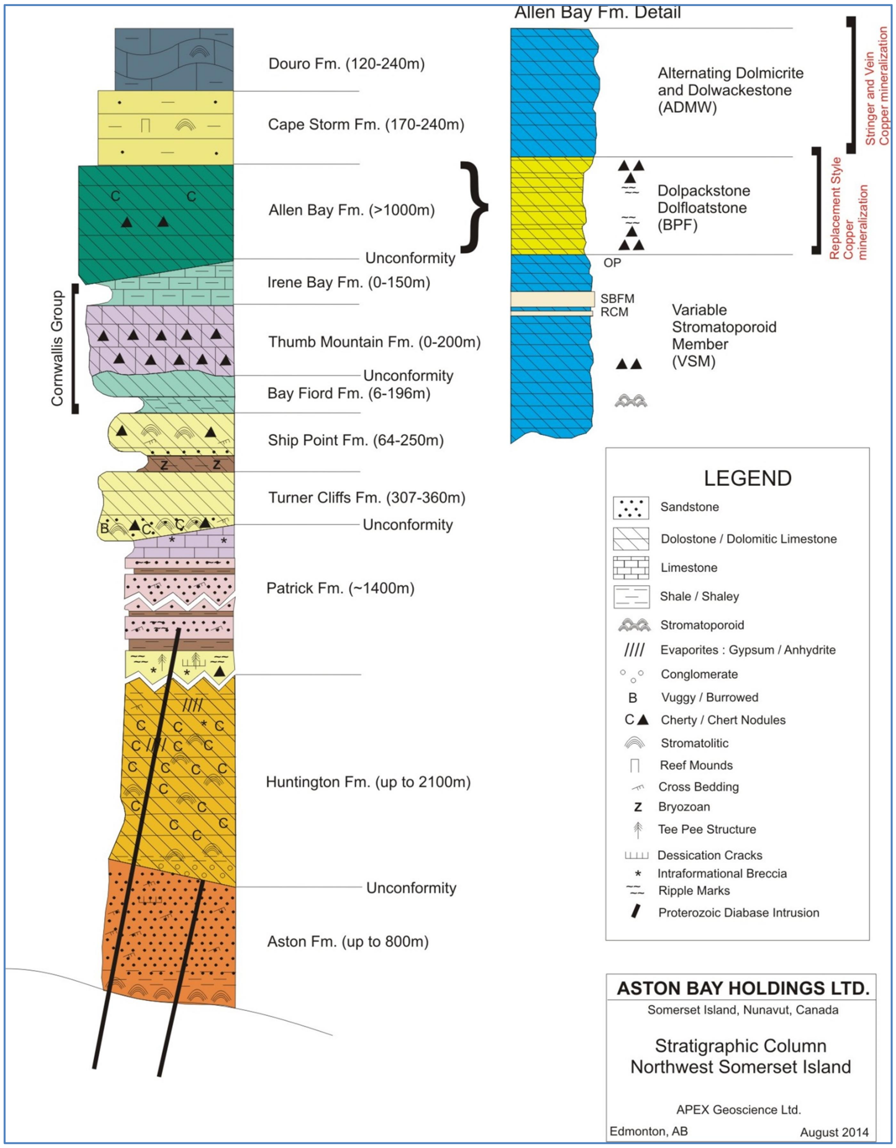
The dominant structural feature in the eastern portion of the Property is the ESE trending Central Graben. It appears that the Storm Copper Prospect mineralization was deposited early in the formation of the graben and later structurally modified.

According to Dewing and Turner (pers. comm., 2012), bedding at the Seal Zinc Deposit showing forms a northeast-dipping monocline. On Aston Peninsula, beds dip 14° closest to the ocean, increasing to 34° in the Thumb Mountain Formation, then decreasing northeastward. The monocline is in faulted contact with the Proterozoic Thumb Mountain Formation and locally folded into anticline-syncline pairs with northeast-trending fold axes and plunges. There are small normal faults that offset rock units on Aston Peninsula and near the Seal showing; however there appears to be no direct correlation between mineralization and these structures.

The Storm Copper Prospect showings are located along faults that define the east-west trending Central Graben. This structure is about 1 km across at the western end, widening to 2 km across where the axis of the graben turns towards a northwest-southeast orientation. The faults are sub-vertical or dip slightly in towards the graben. Local fault juxtaposition of the Allen Bay and Duoro formations indicate a minimum throw of 250 m. In addition to the main graben boundary faults, smaller fault splays and sub-grabens exist (Dewing and Turner, pers. comm., 2012).

The Central Graben is similar to structural sandbox models of pull-apart basins described by Dooley and McLay (1997). The authors modeled a number of releasing bends in strike-slip structural settings. The underlapping, 30° releasing sidestep model in Dooley and McLay (1997) bears a strong resemblance to the Central Graben at the Storm Copper Prospect showing.

## Figure 7.4 Stratigraphic Column Northwest Somerset Island




## 7.4 MINERALIZATION

Significant accumulations of base metal mineralization have been identified to date within the Property in two areas, namely the Seal Zinc Deposit and the Storm Copper Prospect. The Seal Zinc Deposit mineralization occurs within the lower portion of the Early Ordovician Ship Point Formation, proximal to Aston Bay. The Storm Copper Prospect is comprised of four distinct zones surrounding the Central Graben and is hosted within the upper 80 metres of the Late Ordovician to Early Silurian Allen Bay Formation.

A recent study of the Storm Copper Prospect, using a suite of in situ microanalytical techniques on sulphide and gangue minerals, characterized the fluid history of the area (Mathieu, et al., 2017). The study concludes that the ore-stage mineralization at Storm Copper Prospect occurred during the (mid-late) Paleozoic, probably related to the Ellesmerian orogeny. Post-ore-stage mineralization is considered to have occurred in the Cenozoic (during and after the Ellesmerian orogeny). Mineralization at the Storm Copper prospect has also been separately dated at 378 Ma (during the Ellesmerian orogeny) (Aston Bay Corporate Presentation, 2017), supporting the theory that fluids were driven by the same orogenic process that formed other deposits and showings in the Cornwallis Zn-Pb district, including the Polaris Mine.

Fluid inclusion and stable isotope studies (Savard, et al., 1995), to evaluate if regional sulphide occurrences were produced in a similar hydrothermal system as the Polaris deposit, were carried out on ten samples from the Seal deposit in 1995. Cominco collected the ten samples from Seal mineralized zones (eight drill core samples from the main mineralized zone and one surface sample from a psuedobreccia alteration zone containing 40% dolospar and exposed in outcrop and talus) and sent them to INRS, Quebec City, for analyses. Results of fluid inclusion homogenization temperatures and stable isotopes broadly divided the samples into two groups: eight samples (samples 1908 to 1924) were found to differ from the Polaris deposit and two samples (samples 1925 & 1926) were considered similar to the Polaris deposit.

The former eight samples differed in that dolomites (ubiquitous at Polaris) were not observed, homogenization temperatures were lower than that of Polaris and $\delta^{34}S$ values were much higher than the Polaris deposit. The latter two samples were found to be similar to Polaris in that pore-filling dolomite, typical of the Polaris deposit, is present and the replacement dolomite in sample 1925 is petrographically similar to those of the Polaris deposit. Composition, salinities and homogenization temperatures of fluid inclusions in pore-filling dolomite and sphalerite are very similar to those of Polaris deposit; the low salinity high homogenization temperature fluid inclusions found in pore-filling calcite of sample 1926 were also reported in Polaris; O and C isotope of dolomites are similar to those of syn-sulfide dolomites of the Polaris deposit; $\delta^{34}S$ isotopes of sphalerite of sample 1926 are similar to those of the Polaris deposit. The $\delta^{34}S$ of sphalerite in sample 1925 however was observed to be much higher than the Polaris deposit.

The INRS report concluded that the similarity in petrography, fluid inclusions and stable isotopes between samples 1925 & 1926 and the Polaris deposit suggests that these two samples were likely produced under similar hydrothermal conditions as the Polaris deposit. It should also be noted that the alteration zone from which these two samples originate, was intersected in hole AB96-2, 100 m down dip from the surface exposure and in hole AB95-14, under 32 m of colluvium overburden. In both holes, the alteration zone was barren of sulphides (Leigh, 1996a).

### 7.4.1 Seal Zinc Deposit

The Seal Zinc Deposit is located in the northwestern part of the Property at the base of a small peninsula immediately northwest of the Aston Peninsula on Aston Bay. It occurs on a steep, southwest-facing hill as scree, as minor outcrop of disseminated sphalerite in pseudo brecciated Turner Cliffs Formation, and as massive sphalerite and pyrite in the Ship Point Formation. Scattered blocks containing sphalerite occur along the 1,500 m length of this peninsula. The Aston Peninsula proper contains small patches of rusty sandstone and sandy limestone in a similar stratigraphic position, but no sphalerite was found.

Strata on the north side of Aston Bay span the Gallery to Allen Bay formations and consist of the Gallery, Turner Cliffs, Ship Point, Bay Fiord, Thumb Mountain, Irene Bay and Allen Bay formations. Similar rock types in the Thumb Mountain, Irene Bay and Allen Bay formations make differentiating them problematic. For mapping purposes, a recessive weathering interval between the Thumb Mountain and Allen Bay formations was interpreted to be the Irene Bay Formation.

The mineralization is hosted in an 8 to 10 m thick porous and permeable basal quartz-arenite with interbeds of dolostone and sandy dolostone (Cook and Moreton, 2009; Smith, 2001). Zinc mineralization is present in two forms within the Seal Zinc Deposit showing, firstly as coarse-grained, reddish-brown blackjack sphalerite and secondly as honey yellow, colloform sphalerite. The zinc mineralization occurs as local to complete replacement of the sandy dolostone interbeds as well as interstitial disseminations in massive sandstone beds (Cook and Moreton, 2009).

The known mineralization at Seal extends for over 400 m along strike and is approximately 50-100 m in width and upwards of 20 m in thickness, containing an Inferred Resource at a 4.0% ZnEq cut-off of 1,006 kt grading 10.24 % Zn and 46.6 g/t Ag. Fine-grained marcasite is the dominant sulphide with lesser amounts of coarse pyrite associated with the dolostone interbeds. Post-mineralization faulting may have resulted in repetition and thickening of the mineralized zone (Cook and Moreton, 2009). Although the mineralization appears to be lensoid, it is believed to be stratabound.

The footwall of the mineralization is marked by a large hydrothermal alteration zone within the Turner Cliffs Formation. This alteration zone is described as a pseudobreccia and pervasive solution breccia cemented with coarse-grained white dolospar (Leigh, 1996). The northwest-trending alteration zone has a strike length of over 600 m and a stratigraphic thickness of 150 m (Smith, 2001). Minor mineralization is evident within the alteration zone expressed as disseminated sphalerite filling voids and veins and associated with the dolospar cement (Cook and Moreton, 2009).

The pseudobreccia alteration zone has a sharp upper contact with a laminated dolomicrite unit and a sharp lower contact with argillaceous nodular dolostone (Smith, 2001). The upper and lower contacts of the pseudobreccia zone likely represent aquitards focussing the flow of the hydrothermal alteration (Leigh, 1996). Cook and Moreton (2009) suggest that the alteration zone represents the feeder zone for the Seal Zinc Deposit mineralization.

### 7.4.2 Storm Copper Prospect

Three formations are exposed in conformable succession in the vicinity of the Storm Copper Prospect showings: the Allen Bay, Cape Storm and Duoro formations. The Storm Copper Prospect mineralization is hosted within the upper 80 metres of the Allen Bay Formation. The mineralization is located adjacent to, and offset by, the north and south bounding faults of the Central Graben structure and includes four discrete zones of copper mineralization: 2200N, 2750N, 3500N and 4100N. The first three zones outcrop at surface whereas zone 4100N is blind, covered by a veneer of the Cape Storm Formation (Cooke and Moreton, 2009; Grexton, 2008; Leigh and Tisdale, 1999).

The mineralization occurs within an alternating sequence of recrystallized and variably fossiliferous dolostones lying above a thick reef unit (Cook and Moreton, 2009). Copper mineralization is largely located within structurally prepared ground occurring within crackle breccia, solution breccia, solution crackle breccia and tectonic breccias (Cook & Moreton, 2009; Grexton, 2008). Mineralization is most common within crackle breccia horizons. The crackle breccia is monomictic with angular to subangular, centimetre-scale clasts cemented with in situ micritic dolomite, lime mud and calcite with lesser copper and iron sulphides (Cook and Moreton, 2009).

Copper mineralization occurs as breccia cement and fracture fill within brecciated, recrystallized and locally silicified Allen Bay Formation dolostone. Pyrite and marcasite are the principal sulphides; these are locally replaced by copper sulphides. Copper mineralization within the fossiliferous units is typically disseminated, void-filling and net textured replacement of the host, whereas the mineralization in the less porous units is within crackle breccia, stringers and veins (Cook and Moreton, 2009).

Copper mineralization occurs over a five kilometre area in the four main zones referenced by their UTM northings (2200N, 2750N, 3500N and 4100N). The 2200N, 2750N and 3100N zones occur in outcrop. The 4100N zone lies largely beneath the Cape Storm Formation with only minor mineralization noted at surface. Mineralization occurs within the upper 80 m of the Allen Bay Formation. Alteration and minor copper sulphides occur in the Cape Storm and Duoro formations. This alteration includes moderate to intense fracturing, small zones of mosaic packbreccias with calcite, pyrite and subordinate chalcocite cement, pervasive hematite staining and rare malachite/chalcocite in fractures.

The 2200N and 2750N zones show evidence of vertical plumbing and the copper mineralization does not appear to be stratabound. The 4100N zone is also fault proximal and vertically plumbed, however the dominant copper mineralization is stratabound (Cook and Moreton, 2009). The 4100N zone has less pyrite and marcasite than the other Storm Copper Prospect zones.

The 2200N zone is exposed along the Aston River ridge proximal to the 2200N fault. Soil geochemical anomalies extend 600 m with subsurface continuity of mineralization mapped by IP and HLEM surveys. Drilling has defined a 300 m long, 40 m thick and 60 m wide mineralized zone. The dominant styles of mineralization are podform to net-textured chalcocite and bornite occurring as breccia cement and fracture-fill and veins replacing iron sulphides and in situ organic matter (Cook and Moreton, 2009; Grexton, 2008). Semi-massive sulphide zones are separated by wide intervals containing sporadic stringers and veins. Fine-grained, disseminated native copper occurs in near vertical, irregular wavy stringers and net textured veinlets proximal to the 2200N fault (Cook and Moreton, 2009).

The surface exposure of the 2750N zone consists of a 100 m long, east-west trending malachite-stained gossan adjacent to the 2750 Fault (or South Boundary Fault) of the Central Graben. This is also referenced as the Southern Fault of the Central Graben (Cook and Moreton, 2009). Drilling indicates that the mineralized zone continues from surface to 80 m depth, the zone narrows from 50 m width at surface to 25 m at depth, and occurs in an area of complex faulting. Massive chalcocite along with pervasive low abundance of bornite in crackle breccia comprise the mineralization within the 2750N zone. Areas on surface closest to the fault are silicified. Hematite-cemented breccia zones are a common feature of the 2750N zone.

Cook and Moreton (2009) note a progressive zonation of copper minerals both vertically and laterally away from the 2750 fault. A chalcocite-bornite zone dominates from surface to 50 m depth; this gives way locally to a thin chalcopyrite zone. Cook and Moreton (2009) report that a silicified, pervasive solution breccia occurs as a broad envelope beneath the mineralization, whereas hematite cemented crackle breccia occurs marginal to the mineralization and adjacent to the 2750 Zone.

Mineralization at 3500N is expressed as a 300 m rubble and outcrop zone of copper oxides and rusty limonitic recrystallized rocks of the Allen Bay Formation (Leigh and Tisdale, 1999). Drilling indicates that the zone is erratic and discontinuous within an overall strike length of 200 m and is upwards of 75 m thick with an undetermined width (Cook and Moreton, 2009). Mineralization occurs within a complex of intersecting faults that juxtapose the Allen Bay and Duoro formations. Chalcocite and bornite occur as disseminations, stringers and veins within coarsely recrystallized dolostone.

The 4100N zone has a limited surface expression and is located at the intersection of the North Boundary fault with three or more subtle northwest structural lineaments. The mineralized zone defined to date extends over 1000 m strike and 400 m width with the potential for deep extensions to the south of the 4100N fault (Leigh and Tisdale, 1999). The zone is open to the north, east and west (Cook and Moreton, 2009). Previous authors have noted that the zone is irregular though persistent, occurring in a predictable stratigraphic position (Cook and Moreton, 2009, Grexton, 2008).

Copper mineralization in the 4100 Zone is dominated by chalcocite in steeply dipping veins and breccias as well as stratabound disseminations filling voids and replacing organic partings and macrofossils. Copper mineralization extends through 80 metres of stratigraphy from the basal, hematite- altered Cape Storm Formation into the ADMW and BPF units of the upper Allen Bay Formation (Cook & Moreton, 2009; Grexton, 2008). The 4100N occurrence also exhibits a vertical copper mineralization zonation from top to bottom of chalcocite-bornite-chalcopyrite-native copper. In the west end of the 4100N zone an outer lead-zinc zone of galena-sphalerite-chalcopyrite in the footwall adjacent to copper mineralization is present (Cook and Moreton, 2009; Grexton, 2008; MacRobbie et al., 2000).

A genetic link between the Storm Copper Prospect zones and the Central Graben is clearly evident (Cook and Moreton, 2009). Recent geochronology on a sample of chalcopyrite from the 4100 zone returned an age of 378 ± 1.3 Ma (Stein, 2016), within the range of uncertainty for the age of mineralization at Polaris (Dewing et al., 2007). This age corresponds with the Ellesmerian Orogeny and evidently reflects regional-scale metalliferous fluid flow. The Aston Formation Red Beds or the Peel Sound Formation Red Beds may have been the source of metals for both the Seal Zinc Deposit and Storm Copper Prospect mineralized systems.

## 8.0 DEPOSIT TYPES

The following description has largely been taken from Aston Bay's report titled, "Technical Report on The Exploration History and Current Status of the Storm Project, Somerset Island, Nunavut", dated October 31, 2012.

Two types of primary mineralization within the Property have been observed to date, zinc-silver (Zn-Ag) in calcareous sediments and copper – silver (Cu-Ag) also hosted in calcareous sediments. The two types of mineralization are spatially and stratigraphically distinct from each other, but based on a similar age of copper mineralization at Storm to zinc mineralization at the Polaris Mine, are likely genetically linked. The Zn showings identified to date are comparable to Mississippi Valley type deposits with the variation that Seal is hosted within clastic calcareous sandstones. The Cu-Ag showings appear to be similar to mineralization in sediment-hosted stratiform copper deposits.

## 8.1 MISSISSIPPI VALLEY-TYPE LEAD ZINC DEPOSITS

Mississippi Valley Type (MVT) deposits are epigenetic, stratabound deposits that occur in unmetamorphosed platform carbonate rocks and have a particular affinity to dolostones. The majority of the host rocks to MVT deposits are Cambrian – Ordovician and Carboniferous in age, and are believed to have formed as part of the normal evolution of a sedimentary basin. Mississippi Valley Type deposits typically occur at or near basin edges or along arches between basins, though they can also be associated with foreland fold and thrust belts and rift zones (Leach and Sangster, 1993).

Individual MVT deposits typically form in clusters creating mineral districts. Typical alteration associated with MVT deposits includes dolomitization, brecciation, local recrystallization and dissolution (Leach and Sangster, 1993). Mineralizing fluids are low temperature basinal brines: 75 – 200°C, dense, highly saline with 10-30 wt.% salts dominated by Na, Ca (Anderson and Macqueen, 1982). Groundwater is recharged within the orogenic flank during uplift and migrates through the deep portions of the basin via topographically driven fluid flow acquiring heat and leaching metals (Anderson and Macqueen, 1982; Leach and Sangster, 1993). These metals are carried as chloride complexes and precipitate as sulphides.

Ore formation has been attributed to three genetic models, or a combination of the models. The reduced sulphur or "non-mixing" model requires that the metals and reduced sulphur travel together in a single fluid, precipitation of sulphides occurs during cooling, dilution or changes in pH. The sulphate reduction model is a variation of the reduced sulphur model. Again both reduced sulphur and metals are transported in the same fluid, addition of reduced sulphur at the deposition site from the presence of methane or other organic material reduces the sulphate to precipitate sulphides (Leach and Sangster, 1993). The "mixing" model involves the interaction between a metal-rich brine and an $H_2S$-rich fluid at the deposition site (Anderson and Macqueen, 1982; Leach and Sangster, 1993). MVT deposits are typically small (<10 Mt ore) and combined Pb + Zn grades seldom exceed 10%, though their tendency to occur as clusters forming districts greatly aids in the economics (Leach and Sangster, 1993). One relevant exception to this is the Polaris mine which produced 20.1 Mt of ore grading 17% combined lead and zinc.

## 8.2 SEDIMENT-HOSTED STRATIFORM COPPER DEPOSITS

Sediment-hosted stratiform copper deposits occur throughout the world in variable host rocks. Several key features typify the deposit type, including: stratiform configuration of the ore zone; fine- grained, disseminated sulphides forming the ore zone; zonation of metals; and red beds present in the footwall and location within or association with rift basins. Evaporites are commonly present or thought to have been present within the basin, providing a source of salinity for basinal brine which scavenges and transports metals from red beds.

These brines then cross a redox boundary into a typically fine-grained, porous and permeable, sulphur-enriched or otherwise reducing unit such as carbonates with hydrocarbons that cause the metals to precipitate as sulphides (Brown, 1992). As copper is the least soluble base metal it is the first to form sulphides and precipitate, starting with copper-rich phases of chalcocite and bornite and later chalcopyrite. Lead and zinc, being more soluble, are transported further in solution and are precipitated closer to the margins of the ore zone as the brine migrates (Brown, 1992). This results in an overprinting of the syn-diagenetic iron sulphides and sulphates in the host rock by base metal sulphides. Sediment-hosted stratiform copper deposits are related to the normal evolution of a continental rift basin. Major deposits occur both in carbonate (e.g. DRC Copperbelt). and siliciclastic (e.g. Zambian Copperbelt, Kamoa, Kupferschiefer) strata. Reductant may be provided either in situ (carbonaceous or pyritic strata) or in former hydrocarbon reservoirs (e.g methane, sour gas, bitumen). Late, structurally controlled carbonate-hosted deposits may occur in the same basin and can be viewed as hybrids between stratiform copper and MVT deposits (e.g. Kipushi in the DRC Copperbelt).

### 8.2.1 Kupferschiefer-type

Kupferschiefer type deposits are typically hosted in epicontinental, shallow marine-derived sedimentary rocks such as carbonaceous shales, mudstones and siltstones. Red beds, evaporites and lesser rift-related mafic volcanic rocks are associated. The ore zone of Kupferscheifer deposits is hosted within fine-grained clastic rocks, and is typically stratiform and tabular, though it may be irregular in shape and cross cut several lithologies.

The main ore minerals are chalcopyrite, bornite, chalcocite and native copper with minor galena and sphalerite, which are present as fine-grained disseminations or veinlets. There is a lateral and vertical zonation upwards and away from the base of the ore zone. Copper concentrations are elevated at the base of the ore zone with lead and zinc concentrations increasing towards the margin. Silver, cobalt, lead and zinc are all important by-products. Alteration associated with Kupferschiefer deposits is limited to a strong hematite zone at the base of the ore zone. The ore zone is hosted within a reducing lithological unit.

### 8.2.2 Kipushi-type

Kipushi-type deposits are formed along continental margin platforms or within deeper portions of intracratonic basins. Dolomites are the typical host rock for Kipushi deposits. Host rocks have high porosity and permeability due to karst formation or brecciation, and are spatially related to transcurrent rift faults. A regional transition from platform carbonates to basinal shales is evident. The presence of stromatolites or reef complexes is common.

Kipushi type deposits occur proximal to dolomitization fronts with limestone. The formation of these deposits requires a shale or other impermeable layer within the carbonate sequence to trap and focus fluid flow. Kipushi-type deposits are strongly associated with hydrocarbons. The ore zone consists of structurally controlled, stratiform stockwork veins. Within the ore zone there are abundant open vugs resulting in colloform textures and common rosettes and blades.

The main ore minerals are bornite, chalcocite, chalcopyrite, carrolite, sphalerite, galena and tennanite. Surficial supergene malachite and azurite caps are common. A lateral and vertical zonation away from the core of the mineralized zone is evident. The highest concentration of copper is at the core, with lead, zinc and iron concentrations increasing towards the margins. Geochemically, Kipushi-type deposits show high Co/Ni, As/Sb and Ag/Au ratios. Alteration is expressed as dolomitization, sideritization and silicification.

## 9.0 EXPLORATION

### 9.1 2012 EXPLORATION

In 2012 APEX Geoscience Ltd. ("APEX") was retained by Aston Bay to conduct an exploration program on the Property, including prospecting, surface sampling, sampling of existing drill core and a property visit by APEX and Aurora Geosciences personnel. A total of 14 surface samples and 399 drill core samples were collected. Surface samples were taken from Seal Zinc Deposit and the Storm Copper Prospect to verify the location and extent of known zinc and copper mineralization, respectively. Sampling at Storm Copper had the additional objective of ground truthing the VTEM anomalies associated with the known mineralized zones.

The drill core sampling was intended to validate the historical results and infill data missing from the public record. Most of the core samples attempted to replicate the original Cominco sample intervals from the 1995 and 1997 drill programs at Seal and Storm, respectively. The original results from these programs were not claimed for expenditure or made public. Several samples were also collected from previously un-sampled core, generally as shoulder samples around mineralized intervals. The highest values obtained from previously un-sampled Storm Copper core were 0.40% Cu with 25.7 g/t Ag over 1.5 m core length, and 0.30% Cu with 3.2 g/t Ag over 1.0 m core length, both in hole ST97-07. The highest values returned from previously un-sampled Seal Zinc core were 0.57% Zn with 8.7 g/t Ag over 1.0 m core length in hole AB95-11, and 0.36% Zn with 3.3 g/t Ag over 1.2 m core length in hole AB95-06.

On December 28, 2012, Aston Bay entered into an agreement with Teck to acquire a licence to their technical database on the Aston Bay Property, which includes a considerable amount of drilling, geochemical, and geophysical data for the Storm and Seal areas. Much of this data was not claimed for expenditure or made public, including the results from the 1995 and 1997 drill programs. The database included:

- Drill results from >15,000 m of drilling, including:
  - Seal Zinc Deposit: 5,115.7 m over 30 holes
  - Storm Copper Prospect: 9,055.6 m over 67 holes
  - Typhoon Zinc Showing: 908.0 m over 4 holes
- Geochemical sampling results from 1993 to 2001, including:
  - 7467 conventional soil samples
  - 145 MMI soil samples
  - 660 stream sediment samples
  - 509 rock samples
- Airborne and ground geophysical survey data from 1994 to 2001, including:
  - 3,260 line-km GEOTEM airborne survey
  - Regional airborne hyperspectral survey
  - 359.2 line-km of IP
  - 108.6 line-km of UTEM
  - 78.3 line-km of HLEM
  - 161.2 line-km of ground gravity

### 9.2 2013 EXPLORATION

In 2013 APEX was retained by Aston Bay to complete additional drill core sampling and collect mineralized surface material from the Seal Zinc Deposit. A total of 183 drill core samples, totalling 252.0 m core length, were collected from 17 Storm Copper holes. Drill core samples were collected from historical drill holes to infill sampling gaps and/or as shoulder samples around mineralized zones. Nine samples from previously un-sampled core returned anomalous copper values in excess of 0.3%, including 1.61% Cu over 1.1 m core length in drill hole ST99-46.

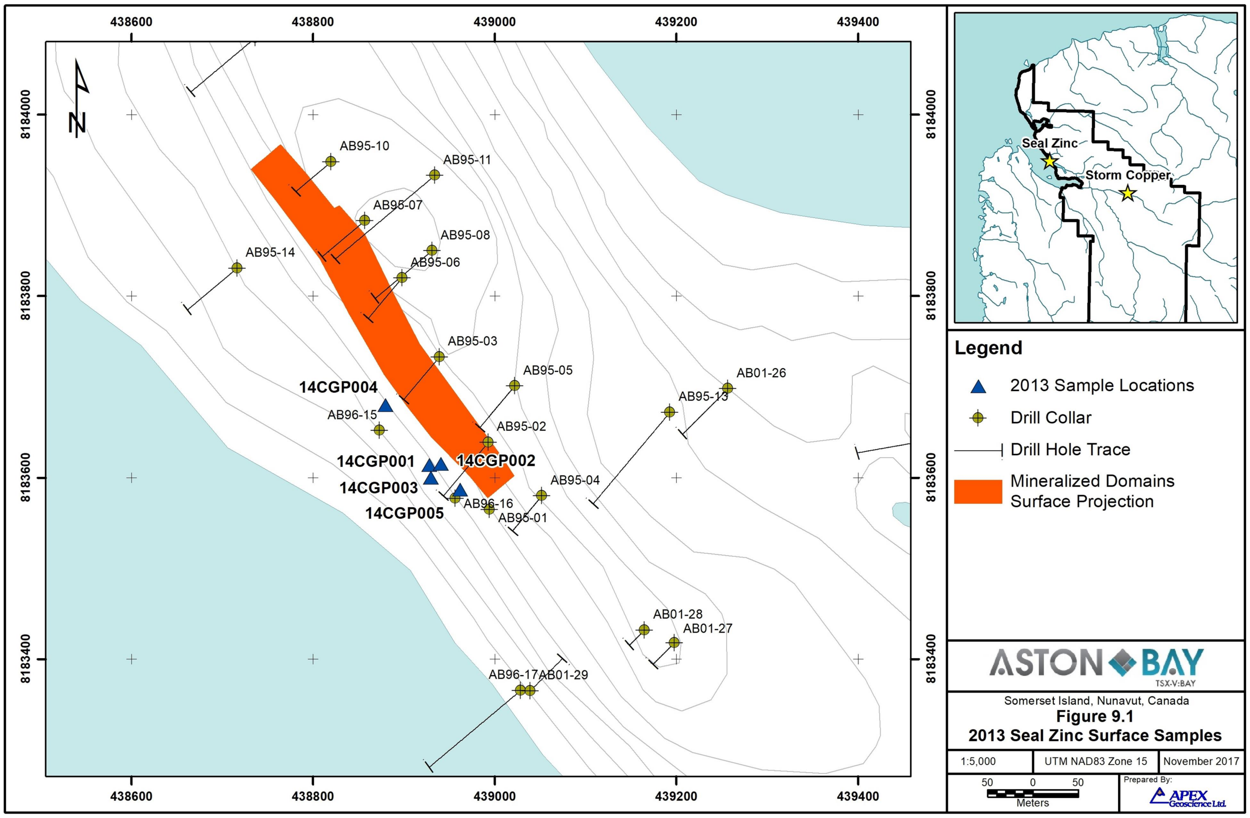
A total of 193 kg of mineralized surface rock was collected from five locations at the Seal Zinc Deposit. The material was collected for use in a future metallurgical study. Geochemical analysis of representative samples from each of the five locations produced values ranging from 1.62% Zn with 6 g/t Ag to 53.94% Zn with 581 g/t Ag (Table 9.1; Figure 9.1).

**TABLE 9.1**
**2013 SEAL ZINC DEPOSIT SURFACE SAMPLE ASSAYS**

| Sample ID | Easting | Northing | Zn (%) | Ag (g/t) |
|---|---|---|---|---|
| 14CGP001 | 438928 | 8183614 | 42.23 | 358 |
| 14CGP002 | 438941 | 8183615 | 43.22 | 231 |
| 14CGP003 | 438930 | 8183600 | 53.94 | 581 |
| 14CGP004 | 438880 | 8183680 | 1.62 | 6 |
| 14CGP005 | 438962 | 8183587 | 52.79 | 348 |

The Seal Zinc surface sampling program targeted the zinc-silver mineralized horizons of the Ship Point Formation dolostones and sandstones, drilled by Cominco in 1995. The area is characterized by replacement style semi-massive to massive sphalerite mineralization, represented by samples 14CGP001 to 14CGP003, and 14CGP005. Sample 14CGS004 represents a zone of disseminated sphalerite mineralization within a highly weathered sandstone unit. The mineralization styles and assay values appear to correspond well with mineralization observed in the historical drill core.

**Figure 9.1 2013 Seal Zinc Deposit Surface Sample Locations**

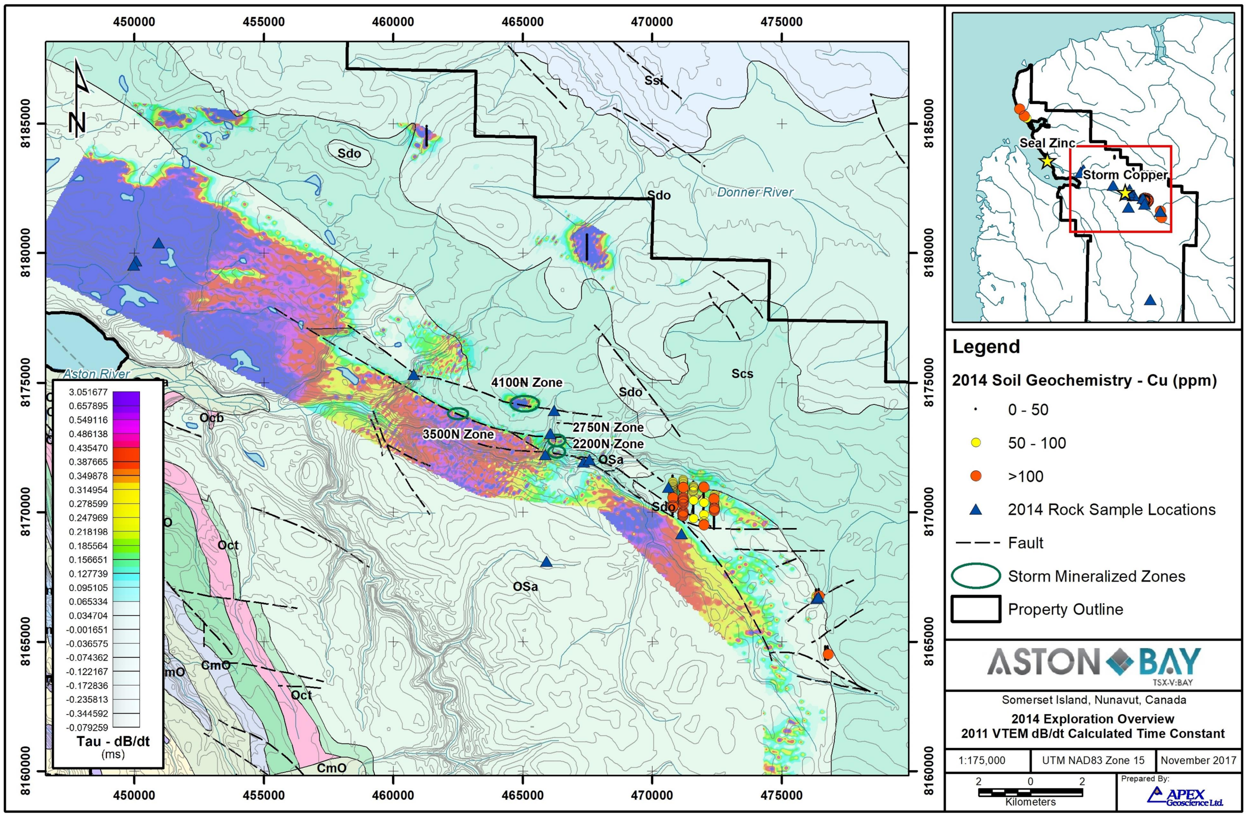



## 9.3 2014 EXPLORATION

Technical professionals from Aston Bay, Antofagasta and APEX carried out the 2014 summer exploration program at the Property, over a three-week period. Work completed at the Project comprised geological mapping of the Central Graben area, including the Storm Copper Prospect, as well as prospecting and soil sampling in areas where little or no mineralization had been previously identified.

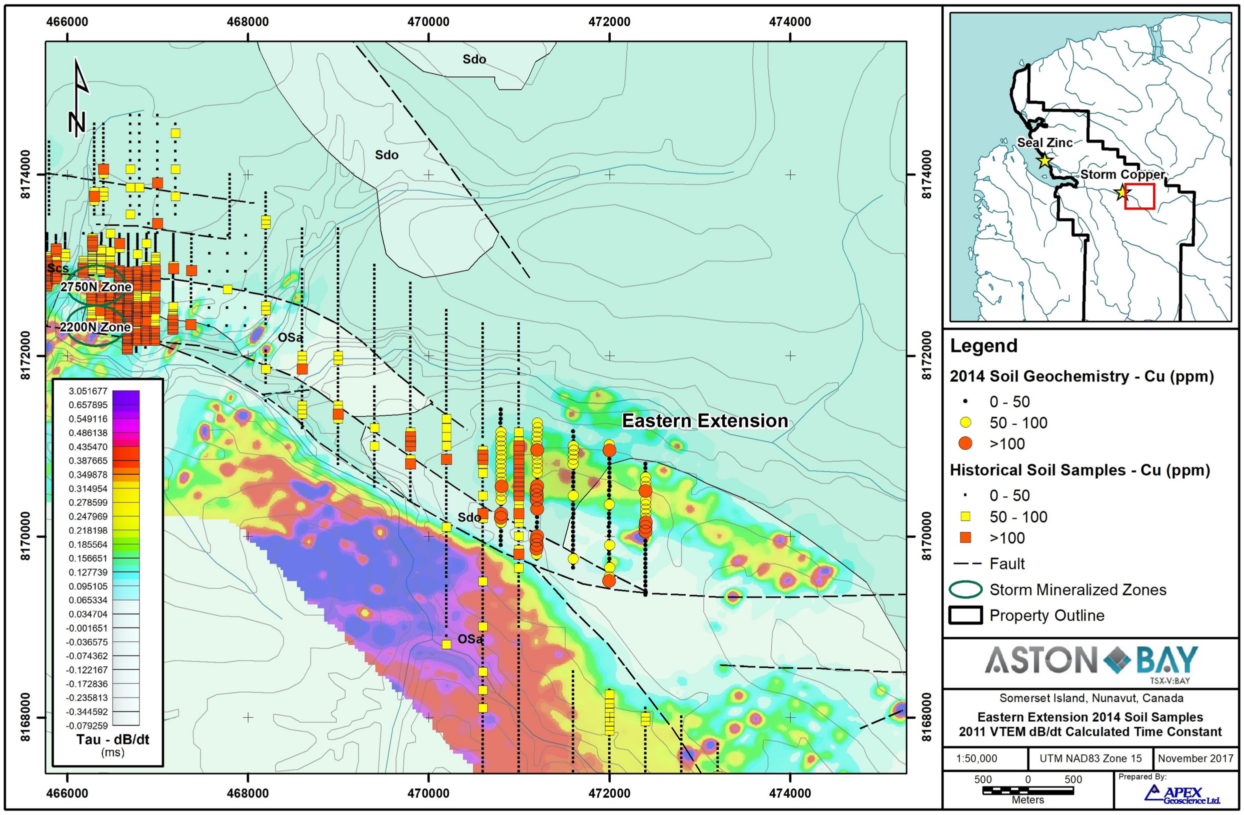
Targeting for the prospecting and soil sampling was driven by results from the 2011 VTEM survey and historical soil sampling results. Copper-bearing minerals, including malachite and chalcocite, were discovered in frost heaved subcrop and float in several areas where no previous drilling or surface sampling had been conducted. Samples of the copper-bearing material were collected and sent for geochemical analysis (see Figure 9.2).

**Figure 9.2 2014 Exploration Overview and 2011 VTEM dB/dt Calculated Time Constant (Tau)**




The majority of soil sampling completed during 2014 focused on an area approximately 5 km southeast of the Storm Copper Prospect, known as the Eastern Extension (now known as the Tornado Target Area). The Eastern Extension is located within a structurally complex zone, with the Allen Bay, Cape Storm and Douro formations juxtaposed, surrounding a sub-graben feature at a bend in the structure (see Figure 9.3). Historical soil sampling outlined a southeast trending linear copper in soil anomaly parallel to the structural trend. A zone of elevated VTEM conductance occurs coincident to, and extends southeast from a strong soil response in the two easternmost lines of the historical survey. The 2014 grid was designed to infill these lines and extend the previous sampling east, following the graben structure and covering the VTEM anomaly. Anomalous samples are clustered around the northern bounding fault of the graben structure, extending the historic anomaly 1.1 km southeast. A distinct, southeast trending copper in soil anomaly occurs in the middle of the grid, coincident with the VTEM high and with previous sampling on the west side of the 2014 grid. The potential to extend the known copper anomalies of the Eastern Extension remains to the south and east of the 2014 grid.

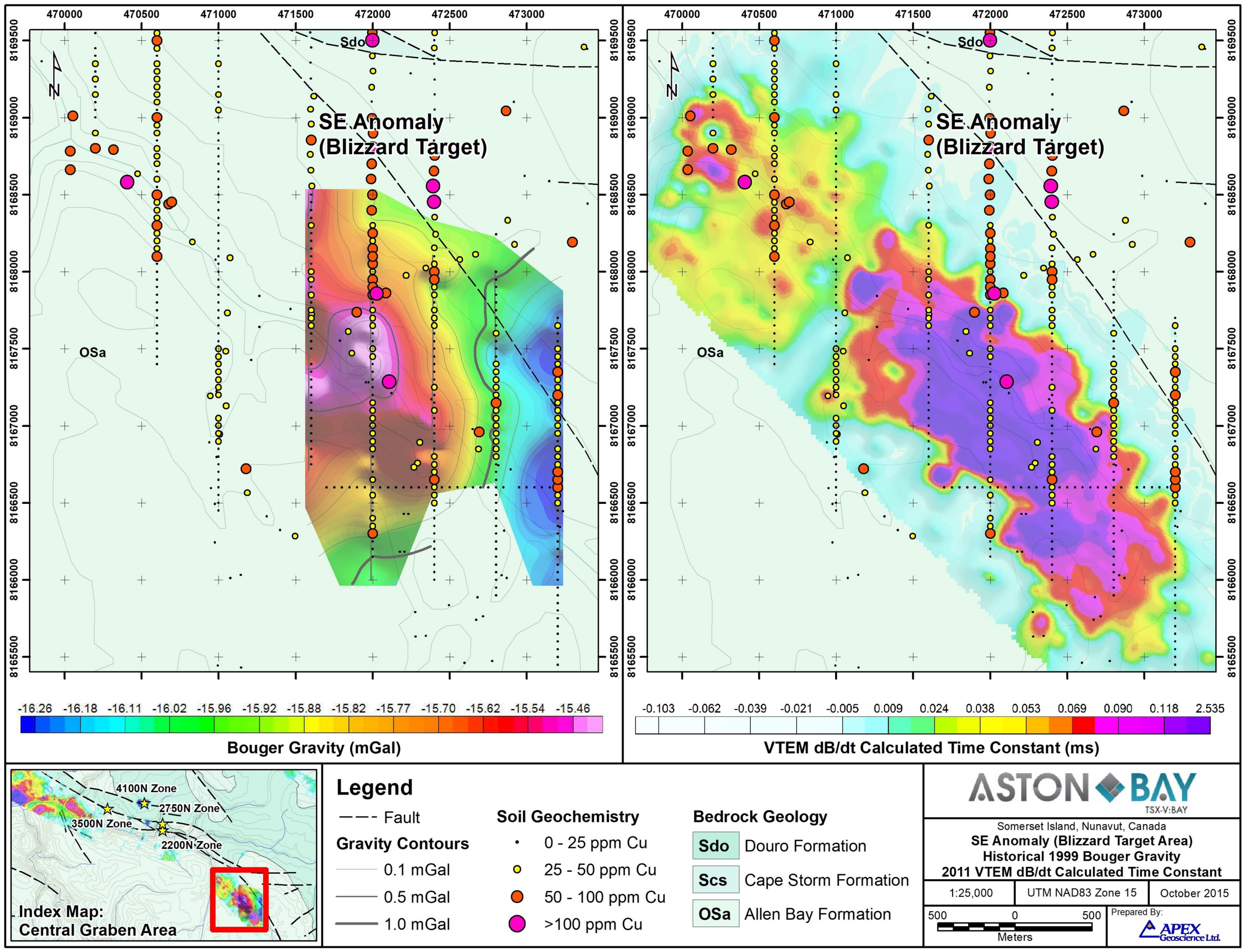
**Figure 9.3 Eastern Extension 2014 Soil Samples and 2011 VTEM dB/dt Calculated Time Constant (Tau)**




Anomalous copper values were also returned from two small soil grids, located 6 to 8 km southeast of the Eastern Extension, targeting historical regional rock or soil samples. Similarly, soil sampling along the coast north of Aston Bay yielded multiple anomalous copper and/or zinc values as a follow up on a regional anomaly. Both areas require further exploration to delineate the geochemical anomalies.

The Company also investigated the SE Anomaly (now known as the Blizzard Target Area) as a prospective target (see Figure 9.4). The SE Anomaly is defined by a broad, oval shaped zone of elevated VTEM conductance with approximate dimensions of 4.0 km x 1.5 km. The target is enhanced locally by elevated levels of copper in rocks and soil, and a coincident historical gravity anomaly. Gravity surveys completed in 2015 expanded coverage and identified an anomaly measuring approximately 1,200 m x 600 m. The SE Anomaly is located along the same structural trend that hosts mineralization at the Storm Copper Prospect.

**Figure 9.4 SE Anomaly (Blizzard Target Area) Historical 1999 Bouguer Gravity and 2011 VTEM dB/dt Calculated Time Constant (Tau)**




## 9.4 2015 EXPLORATION

In the months prior to the 2015 exploration program, Aston Bay's technical team and external consultants undertook a review of the Project database to gain further insight into the untested anomalies identified by the 2011 VTEM survey. The retrieval and analysis of the historical data from the 1999 gravity survey indicated that the broader application of gravity surveys would contribute to the evaluation of the known zones of mineralization, as well as untested airborne conductivity anomalies. In addition, the Company concluded that the unexplored and underexplored areas of the Property might be explored more effectively with combined airborne gravity and time domain electromagnetic surveys.

APEX and Initial Exploration Services Inc. were contracted to conduct ground gravity surveys at the Project. The 2015 exploration plan comprised collecting ground gravity data at four separate targets during the eleven-day program. The purpose of this short program was two-fold:

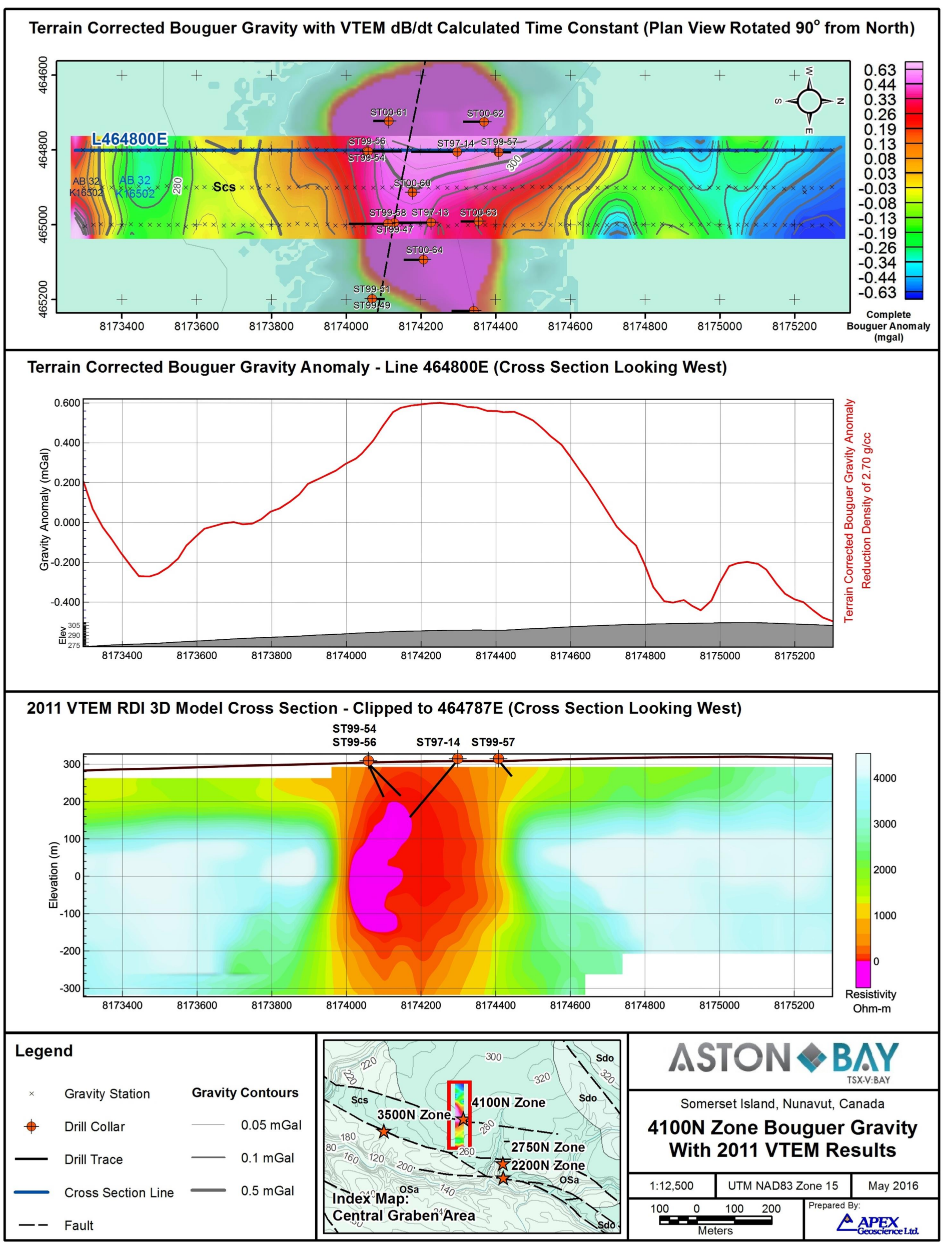
1. To confirm that the known copper mineralization at the Storm Copper Prospect has an identifiable gravity response by collecting data along principal profiles over two of the drill-confirmed zones: 3500N and 4100N.
2. To define potential drill targets for the 2016 field season by conducting gravity surveys over two high-priority exploration targets previously identified by the 2011 VTEM

survey and soil geochemical anomalies: the Blizzard Target Area (formerly the SE Anomaly); and the Tornado Target Area (formerly the Eastern Extension).

A total of 934 primary and 105 QA/QC ground gravity readings were collected on the Property over the course of the field program. Preliminary results were reviewed in the field on a daily basis and used to guide the remaining program.

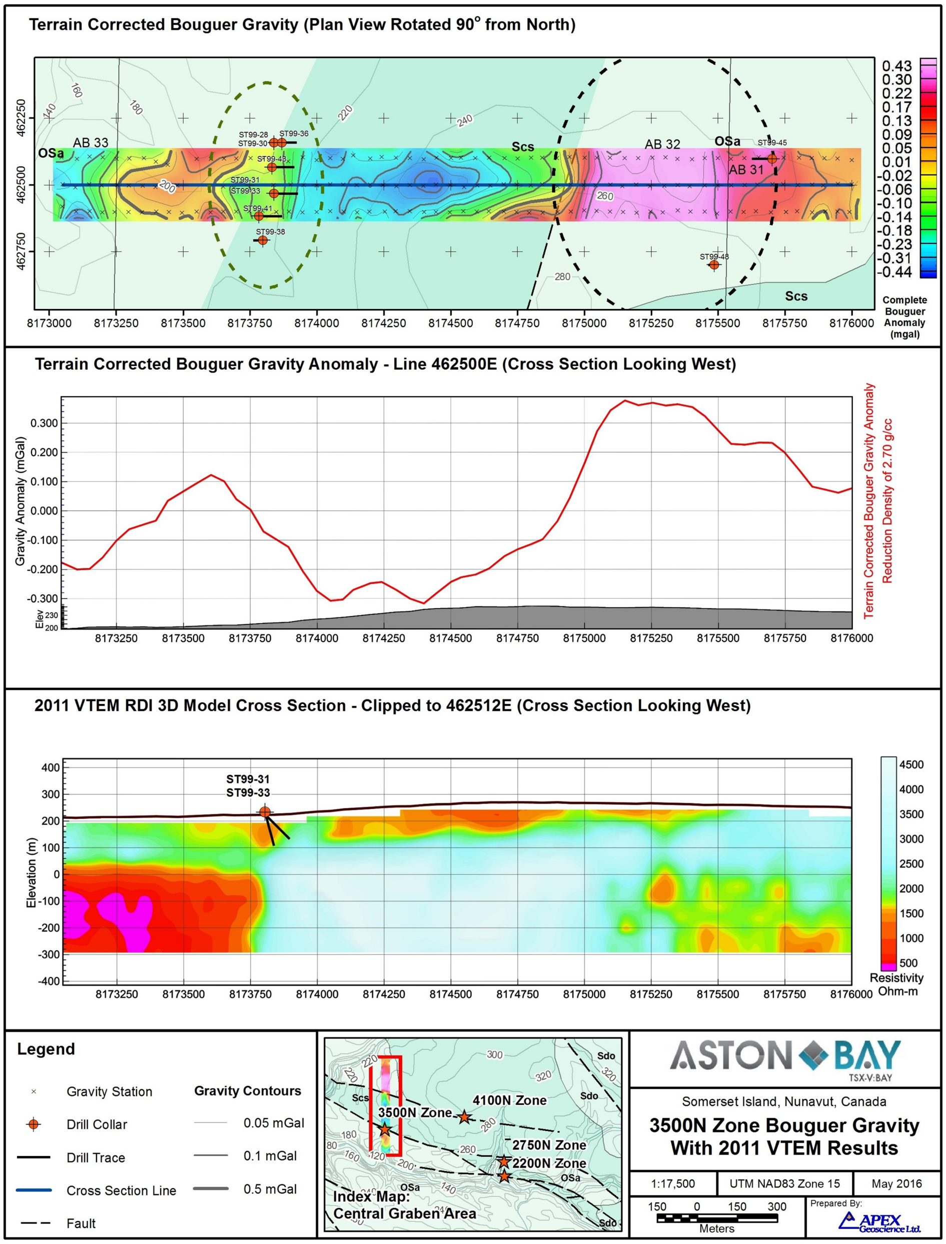
Gravity readings were recorded along three 100m-spaced orientation lines at both the 3500N and 4100N zones. These principal profiles were designed to test the gravity response over drill-confirmed zones of copper mineralization as well as the Central Graben, a structural system considered to be important in the process of mineralization at the Property. A 600 m x 200 m 0.6 mGal high is observed in the profile and gridded data coincident with a strong VTEM conductance anomaly and drill-tested mineralization at the 4100N Zone (see Figure 9.5).

**Figure 9.5 4100N Zone Bouguer Gravity and 2011 VTEM Results**



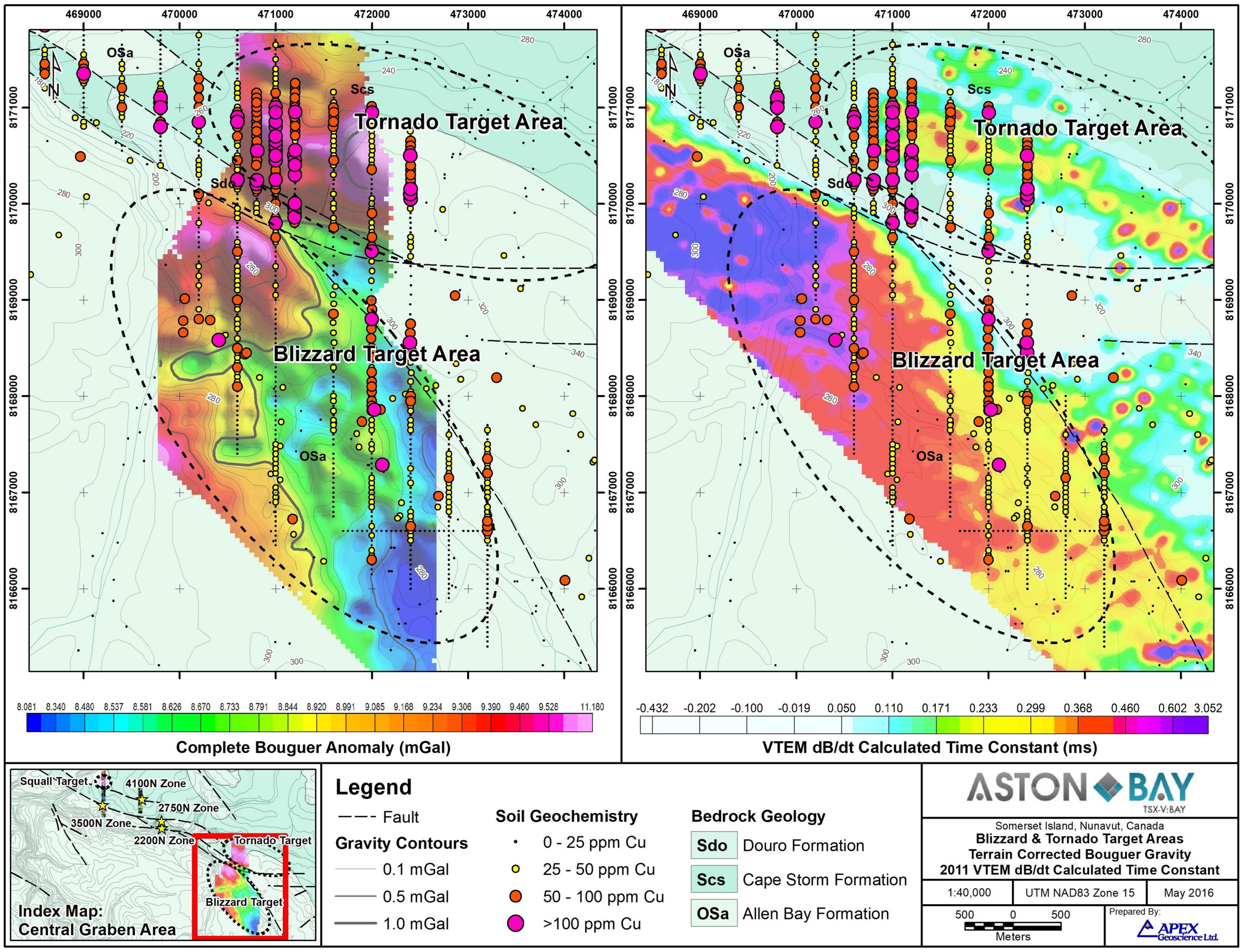
A 350 m x 200 m 0.2 mGal high is observed broadly coincident with known mineralization at the 3500N Zone, which lacks a significant VTEM response (see Figure 9.6). The 3500N Zone survey also identified a 0.35 mGal anomaly approximately 4.5 km west-northwest along strike from the 4100N Zone, straddling the north bounding fault of the Central Graben and coincident with a weak to moderate surface copper geochemical anomaly. The gravity anomaly, known as the Squall Target Area, is open to the east and west.

**Figure 9.6 3500N Zone Bouguer Gravity and 2011 VTEM Results**




Gravity data were also collected over the Blizzard Target Area (formerly the SE Anomaly) and the Tornado Target Area (formerly the Eastern Extension), both identified as positive conductance anomalies by the 2011 VTEM survey. Both targets are also associated with surface copper geochemical anomalies (see Figure 9.7).

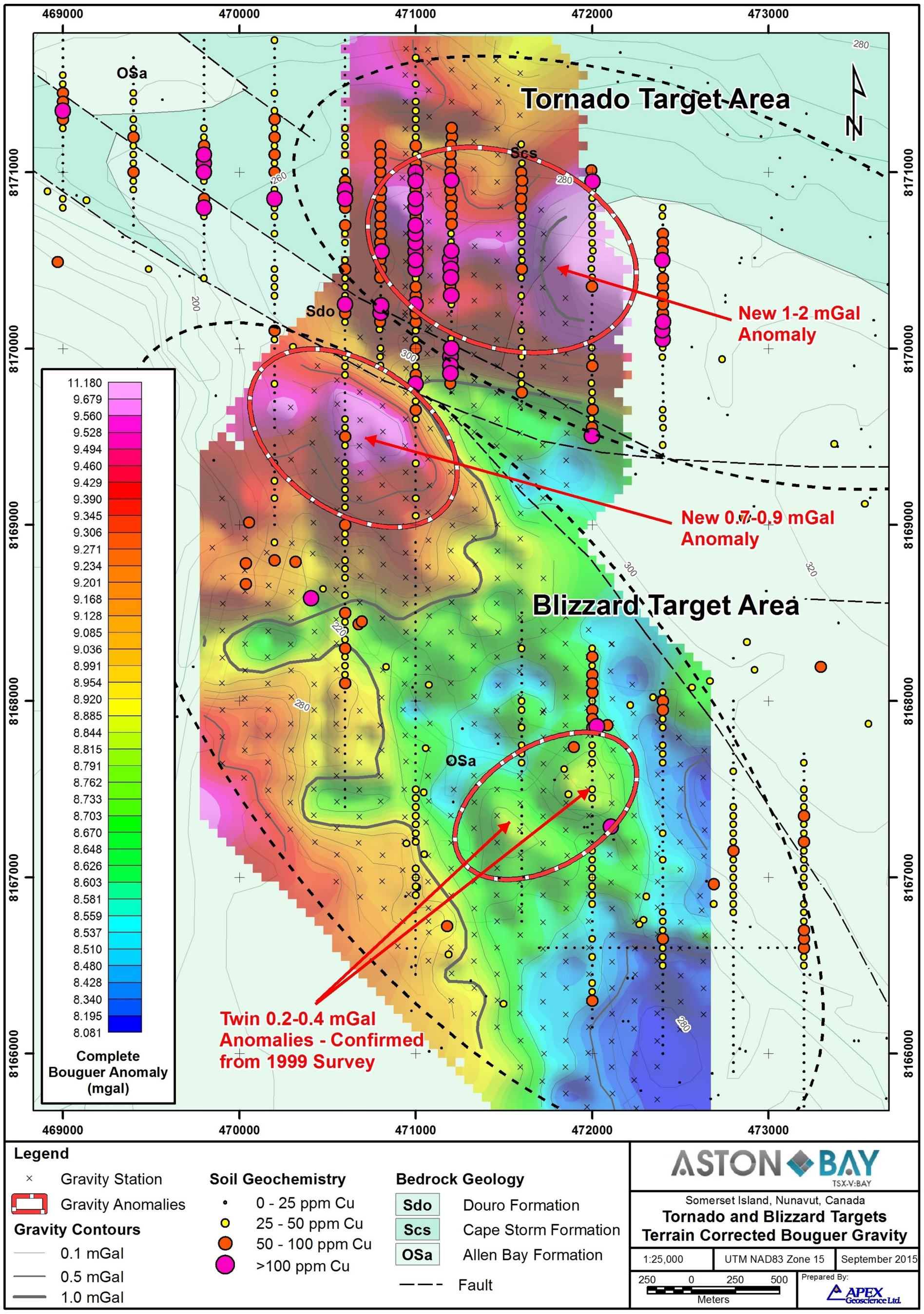
**Figure 9.7 Blizzard and Tornado Target Areas Terrain Corrected Bouguer Gravity and 2011 VTEM dB/dt Calculated Time Constant**




The Blizzard Target Area (previously known as the "SE Anomaly") is defined by a broad area of elevated conductance within the Allen Bay Formation, located approximately 8 to 10 km southeast along strike from the Storm Copper Prospect. Two anomalous zones were identified by the 2015 gravity survey at Blizzard. Twin 400 m x 400 m 0.2 mGal highs were observed in the southeast of the grid area, within a slightly elevated background (~0.1 mGal). These anomalies are spatially coincident with a 0.3 mGal anomaly identified by a 1999 ground gravity survey (see Figure 9.8).

Approximately 2.5 km northwest of the 1999 anomaly, a 0.7 mGal anomaly, measuring approximately 1,200 m x 600 m was identified coincident with the northeastern margin of the Blizzard VTEM conductance anomaly. The anomaly abuts the southern bounding fault of the Central Graben within a structurally complex area, with the Allen Bay, Cape Storm and Douro formations juxtaposed surrounding a small sub-graben feature. The size and amplitude of the gravity anomaly are conservative estimates. Depending on where the edge of the anomaly is defined, it could be as large as 1,400 m x 1,200 m and up to 0.9 mGal in amplitude.

**Figure 9.8 Blizzard and Tornado Target Areas Terrain Corrected Bouguer Gravity**




The Tornado Target Area (previously known as the "Eastern Extension") is defined by an approximately 4 km x 1.5 km zone of elevated conductance north of the Blizzard VTEM anomaly. It is located approximately 5 km along strike from the 2200N and 2750N zones. The 2015 gravity surveys identified a 1.0 mGal anomaly measuring approximately 1,100 m north-south, located approximately 400 m northeast of the 0.7 mGal anomaly in the Blizzard Target Area, on the opposite side of the sub-graben feature. The Tornado anomaly lies on the edge of the grid, making the size and amplitude difficult to estimate. It is not possible to estimate the east-west dimension. A single point at the edge of the grid increases the amplitude of the anomaly to 2.0 mGal.

The interpretation and 3-dimensional (3D) inversion of the 2015 gravity data was completed by Campbell & Walker Geophysics Ltd. The new data was reviewed in relation to the 2011 VTEM airborne data set, historical ground gravity data, geological mapping and previously selected exploration targets. Results from the 3D inversion suggest that the depth to the centre of the 4100N and 3500N gravity anomalies are deeper than defined by current drilling. Similar depth to centre is modelled at Tornado and Blizzard.

The 2015 gravity surveys successfully identified anomalies spatially consistent with drill tested mineralization in the 4100N and 3500N zones. The 4100N Zone is characterized by a strong VTEM conductance response, while the 3500N Zone was not previously identified in the VTEM data. Both zones showed significant gravity responses, highlighting the potential of the gravity method for target generation and EM target corroboration at the Aston Bay Property.

Three promising gravity anomalies were identified during 2015: the Squall, Blizzard and Tornado targets. All three targets lie within prospective geologic structures along strike from the known Storm Copper zones. Given the success with the orientation surveys, these targets should be of high priority for follow up work. Further ground or airborne gravity surveying could help significantly in identifying additional targets at the Property.

## 9.5 2016 EXPLORATION

The Company signed an option agreement with BHP Billiton Ltd. ("BHP") on May 31, 2016 and, as operator for the 2016 summer program, Aston Bay commenced exploration activities in early July 2016. The exploration program comprised diamond drilling, borehole electromagnetic (EM) geophysical surveys, logging of historical drill core, prospecting, and soil sampling. A total of 2,005 soil samples and 21 rock samples were collected. Twelve exploration diamond drill holes, totalling 1,951 metres, were completed at the 2750N, 3600N and 4100N zones at the Storm Prospect, and at the Tornado and Hurricane target areas. Down-hole time-domain electromagnetic surveys were completed on 5 of the 12 drill holes, and 119 core samples were sent to Zonge International Inc. for petrophysical measurements. The drilling program is discussed further in section 10.0.

The 2016 soil sampling and prospecting program provided broad, systematic coverage of the prospective geological units within the Aston Bay Property. Rock sampling was not mandated as part of the program, but it was encouraged if any rocks exhibiting promising mineralization or alteration were encountered. A total of 2,005 soil samples and 21 rock samples were collected during the 2016 program. The program was designed primarily as a "first pass" to test for anomalous levels of base metals (mainly copper) in previously unexplored or historically underexplored areas.

The soil samples were collected along east-west (090°) or northeast-southwest (235°) oriented lines with a line spacing of 4 km and a sample spacing of 500 m. Line length varied from 5 to 32 km. Several detail grids were also completed with a line spacing of 400 m and a sample spacing of 100 m to 200 m. The 4 km spaced lines were designed as a systematic regional prospecting and data gathering exercise whereas the detailed grids were completed to follow up on previously identified targets or anomalies. Several infill lines were also completed toward the end of the program based on preliminary anomalies identified by on-site X-Ray Fluorescence (XRF) analysis of the soil samples. The infill lines improved the line spacing to 2 km and typically consisted of about 20 samples each spaced 500 m apart.

Univariate statistical analysis was applied to the soil geochemical data assuming a homogenous normal population derived from carbonate host rocks. Statistical analysis was completed in Microsoft Excel for copper (Cu), lead (Pb) and zinc (Zn). The 70th, 90th, 95th and 97.5th percentiles were used to determine threshold and anomalous samples in the population. Summary statistics for the soil sampling results are presented in Table 9.2. Figures 9.9 and 9.10 provide an overview of the 2016 exploration program, with graduated symbols illustrating the distribution of copper and zinc anomalies, respectively.

**TABLE 9.2**
**2016 SOIL SAMPLING GEOCHEMISTRY SUMMARY STATISTICS**

| | | Cu (ppm) | Pb (ppm) | Zn (ppm) |
|---|---|---|---|---|
| **Min** | | 0.64 | 0.72 | 2 |
| **Max** | | 395 | 195.5 | 1935 |
| **Mean** | | 11.23 | 7.82 | 28.8 |
| **Median** | | 7.87 | 6.87 | 21.5 |
| **Percentile (Count)** | **70th** | 10.95 (615) | 8.31 (615) | 30.0 (614) |
| | **90th** | 16.87 (205) | 11.47 (205) | 49.0 (205) |
| | **95th** | 25.47 (103) | 13.9 (102) | 60.4 (103) |
| | **97.5th** | 47.31 (52) | 17.72 (52) | 87.8 (52) |

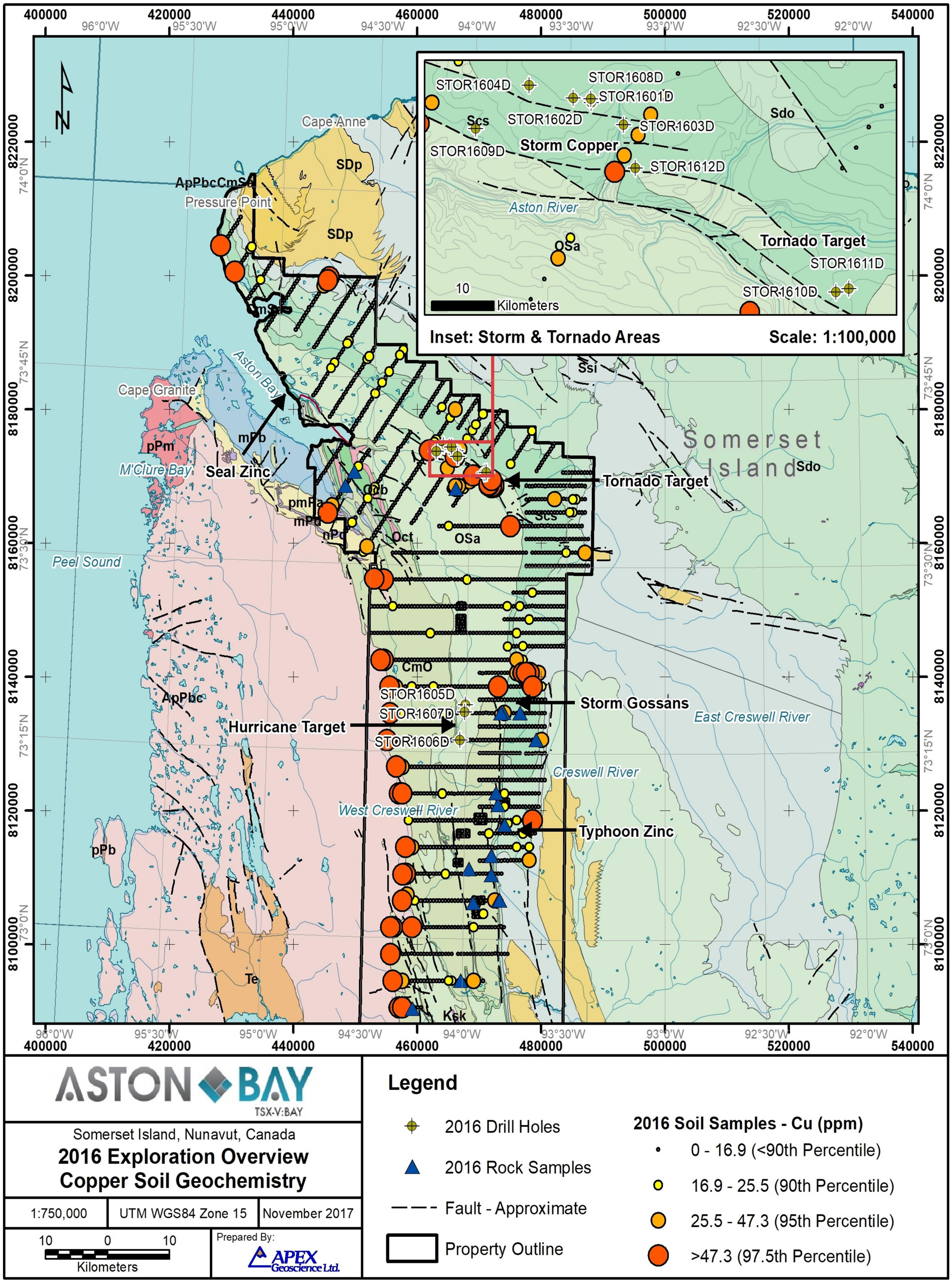
The 2016 soil sampling campaign identified a number of significant anomalies and trends. Many of the anomalies are associated with previously unexplored or underexplored areas, and all warrant follow-up, including additional sampling and geophysics. Interestingly, several of the anomalies are related to geological units that are not historically associated with mineralization observed on the property. Most notable is a copper and zinc anomaly related to the unconformable contact between the Archaean basement and the overlying Phanerozoic sedimentary units. The unconformity could represent a potential trap for mineralizing fluids at the base of the Phanerozoic stratigraphy.

Elevated zinc and/or copper values also appear to be associated with Douro Formation sediments in a number of areas, especially adjacent to the contact between the Douro Formation and Cape Storm Formation. Multiple highly anomalous zinc values are observed in an area approximately 12 km east of the Tornado Target Area. Similarly, anomalous zinc and copper values are associated with Douro sediments east and southeast of the Typhoon Zinc Showing.

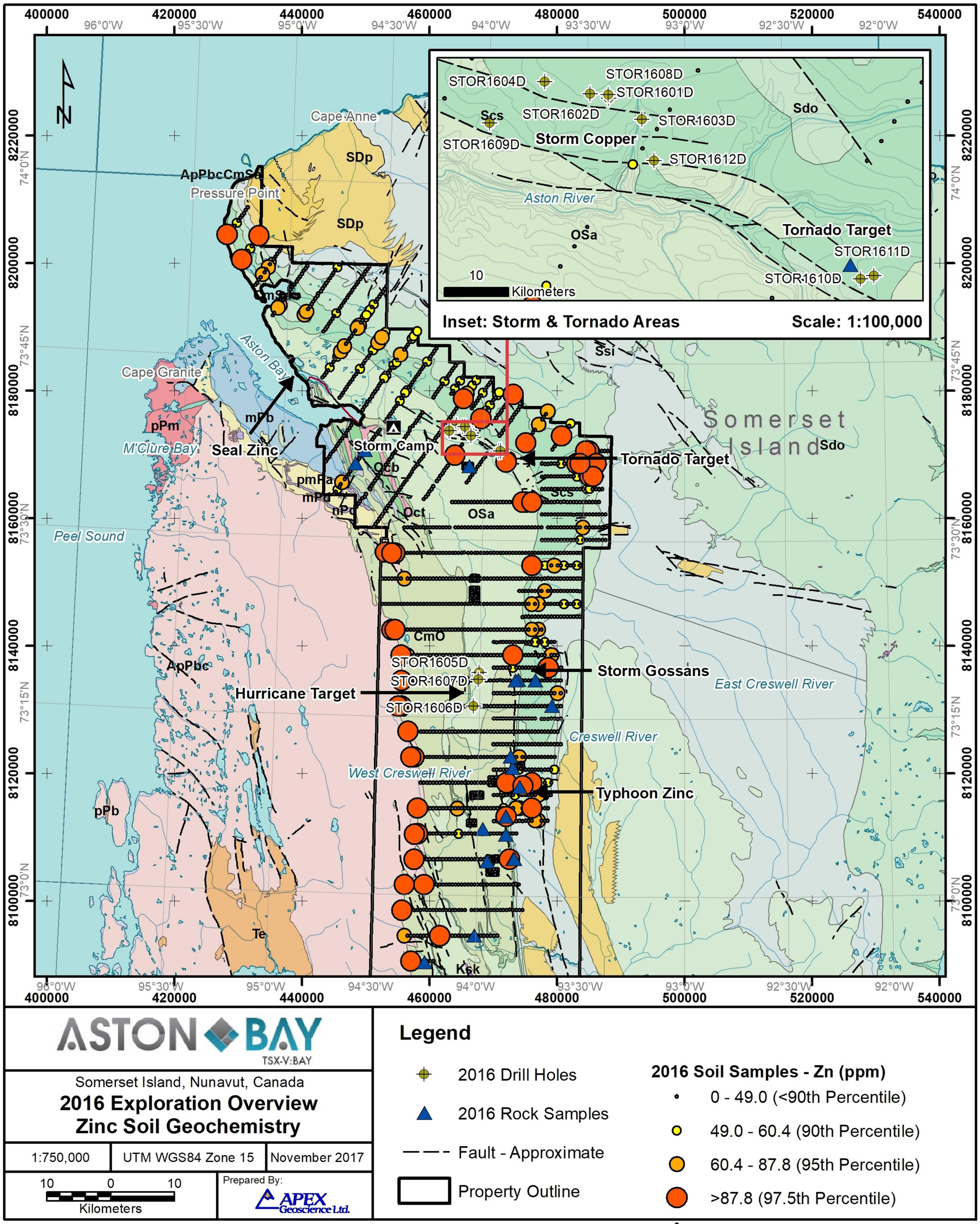
Geochemical anomalies were also observed in the Allen Bay Formation, which hosts the Storm Copper Prospect. Approximately 5 km east of Hurricane, elevated copper (± zinc) in soil values are observed with Allen Bay Formation sediments, adjacent to historical rock and soil anomalies at the "Storm Gossans". The Storm Gossans, discovered by Cominco during a regional sampling campaign, are located along the same structural trend that hosts Storm Copper.

Anomalous copper and zinc values were returned from sampling along the northwest coast of Aston Bay, approximately 20 km northwest of Seal Zinc, and south of Pressure Point. Samples with elevated values were generally taken from Allen Bay Formation sediments, near the contact with the younger Cape Storm Formation. Sampling completed in the same area during 2014 produced results consistent with the 2016 survey.

**Figure 9.9 2016 Exploration Overview – Copper Soil Geochemistry**



## Figure 9.10 2016 Exploration Overview – Zinc Soil Geochemistry



## 9.7 2017 EXPLORATION

The Company commenced the 2017 exploration program on July 9, 2017. A surface geological reconnaissance program and core review, led by Dr. David Broughton, Chief Geologist of Aston Bay, was undertaken. While on site, efforts were also made to improve the camp facilities in preparation for a planned drill program in 2018.

A Property-wide Falcon Plus Airborne Gravity Gradiometry survey was also completed by CGG Multi-Physics, with over 14,672 line kilometres flown at a 200-metre line spacing. Results are pending.

# 10.0 DRILLING

## 10.1 SEAL ZINC DEPOSIT

Aston Bay has not carried out any drilling at the Seal Zinc Deposit.

## 10.2 EXPLORATION DRILLING

During July and August of 2016, a 12-hole exploration drilling program, totalling 1,951.1 m, was completed at a number of specific geophysical and structural targets at the Property. A total of seven holes were drilled in the vicinity of the 4100N Zone, the 3750N Zone and the 2750N Zone at the Storm Copper Prospect (holes STOR1601D – STOR1604D, STOR1608D – STOR1609D and STOR1612D); two holes at the Tornado target area (holes STOR1610D and STOR1611D); and three at the Hurricane target area (holes STOR1605D – STOR1607D). The drill collar locations, azimuths, inclinations and hole depths for the twelve diamond holes are presented in Table 10.1. Drill hole locations are also shown in Figures 9.9 and 9.10.

**TABLE 10.1**
**2016 DRILL COLLAR LOCATIONS AT ASTON BAY PROPERTY**

| Hole ID | Target Area | Easting (WGS84) | Northing (WGS84) | Azimuth | Dip | Hole Depth (m) |
|---|---|---|---|---|---|---|
| STOR1601D | 4100N | 465624 | 8174249 | 000 | -75 | 149.7 |
| STOR1602D | 4100N | 465231 | 8174343 | 180 | -60 | 123.4 |
| STOR1603D | 2750N | 466322 | 8173806 | 240 | -60 | 179 |
| STOR1604D | 4100N | 464286 | 8174600 | 180 | -90 | 122 |
| STOR1605D | HURRICANE | 467850 | 8135800 | 090 | -80 | 200 |
| STOR1606D | HURRICANE | 466945 | 8130550 | 270 | -80 | 279 |
| STOR1607D | HURRICANE | 467703 | 8134739 | 270 | -80 | 159 |
| STOR1608D | 4100N | 465618 | 8174324 | 180 | -75 | 179 |
| STOR1609D | 3500N | 463133 | 8173730 | 180 | -60 | 125 |
| STOR1610D | TORNADO | 470892 | 8170472 | 240 | -75 | 180 |
| STOR1611D | TORNADO | 471170 | 8170540 | 240 | -75 | 108 |
| STOR1612D | 2750N | 466575 | 8172947 | 180 | -80 | 147 |
| | | | | | **Total:** | **1951.1** |

The Company encountered visual copper mineralization in three of the seven holes at the Storm Copper Prospect (holes STOR1601D, STOR1602D and STOR1608D). A summary of significant intercepts is provided in Table 10.2. The true widths of the intersected zones are unknown but are estimated to be approximately 75% to 100% of the core width intersected.

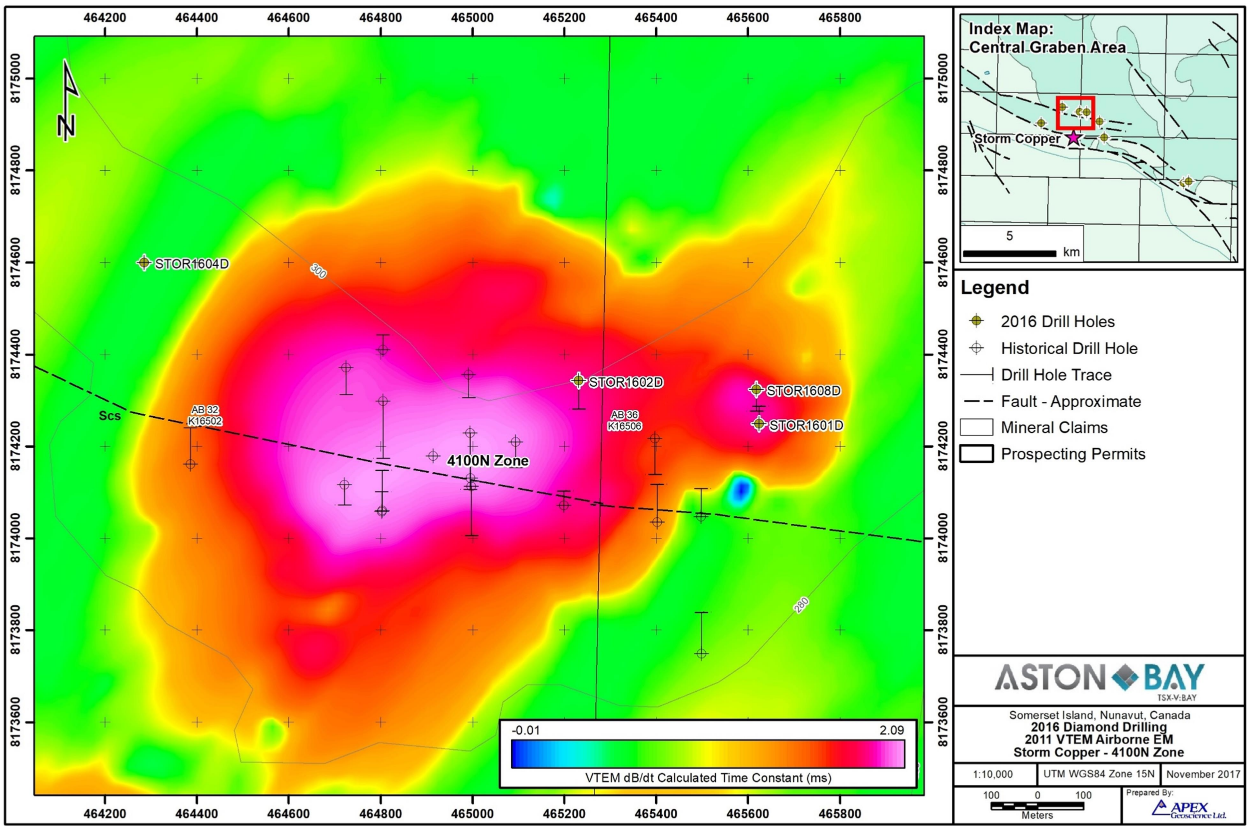
**TABLE 10.2**
**2016 SIGNIFICANT DRILL INTERCEPTS**

| Hole ID | Prospect | From (m) | To (m) | Length (m)* | Cu (%) |
|---|---|---|---|---|---|
| STOR1601D | 4100N Zone Extension | 93.00 | 109.00 | 16.00 | 3.07 |
| | *Includes* | 93.00 | 101.00 | 8.00 | 5.45 |
| STOR1602D | 4100N Zone Extension | 72.00 | 76.00 | 4.00 | 1.17 |
| STOR1608D | 4100N Zone North | 86.00 | 106.00 | 20.00 | 0.44 |
| | *Includes* | 104.00 | 106.00 | 2.00 | 0.97 |

**True width is estimated to be approximately 75 % – 100% of core length.*

Four holes were drilled at the 4100N Zone testing geophysical anomalies. Drill hole STOR1601D (-75°/000 azimuth) was collared approximately 200 m east along strike from the historically drilled extent of the 4100N Zone. The hole targeted a strong electromagnetic (EM) anomaly identified from the 2011 VTEM and 2000 GEOTEM airborne survey data (see Figure 10.1). STOR1608D (-75°/180 azimuth) was collared 75 m north of STOR1601D, testing the same anomaly. Both drill holes were collared in Cape Storm Formation stratigraphy and drilled into the main Allen Bay Formation.

**Figure 10.1 2016 Diamond Drilling and 2011 VTEM dB/dt Calculated Time Constant – 4100N Zone**




Multiple zones of hydrothermal (dissolution) breccia were intersected in both STOR1601D and STOR1608D. Drill hole STOR1601D encountered significant copper mineralization between 93.6 m and 115.0 m hole depth. Chalcocite ± chalcopyrite/bornite mineralization occurs as breccia infill, veinlets, or stringers associated with hydrothermal dolomitization and recrystallization of dolomite breccias within dolowackestone host rocks. Geochemical analysis of the mineralized zone returned a composite grade of 2.30% Cu with 9.4 g/t Ag over 22.0 m core length, starting at 93.0 m.

STOR1608D encountered analogous hydrothermal dolomitization and recrystallized dolomite in host breccias, however, copper mineralization was of lower intensity. Chalcocite ± chalcopyrite mineralization is associated with stringers, veinlets or weak breccia infill, within dolowackestone host rocks. A composite grade of 0.44% Cu with 1.7 g/t Ag over 20 m core length was returned, starting at 86 m hole depth.

Drill hole STOR1602D (-60°/180 azimuth) was drilled in the northeast quadrant of the 4100N Zone VTEM anomaly, and was designed to test the northeast extension of mineralization in the zone (see Figure 10.1). The hole collared into Cape Storm Formation laminated dolowackestones and passed into Allen Bay Formation stratigraphy at 51.5 m down hole. Sporadic chalcocite/chalcopyrite ± bornite mineralization was encountered between 65 m and 80 m hole depth, associated with dolomitic hydrothermal (dissolution) breccia infill. The strongest zone of mineralization occurred between 72 m and 78 m within a brecciated stromatoporoid packstone unit, returning a composite grade of 0.88% Cu with 3.0 g/t Ag over 6.0 m core length.

Drilling at the 4100N Zone during 2016 demonstrated the potential for extending the known copper showings at Storm laterally. Drill holes STOR1601D, STOR1602D and STOR1608D all intersected significant copper mineralization, increasing the known extent of the 4100N Zone by up to 225 m east and 100 m north. The success of these holes also validates the effectiveness of the VTEM system in targeting copper mineralization on the Property. A coincident gravity anomaly, identified during the 2015 exploration program, provides additional confidence and an effective combination for targeting copper mineralization on the Property.

The remaining nine holes encountered no visual copper mineralization and no significant copper mineralization was detected in the assay results. The Storm Copper drill holes at the 3500N and 2750N zones primarily targeted historical Induced Polarization (IP) chargeability anomalies in areas with weak to moderate surface geochemical responses. The IP data appears to effectively map geology and structure; however, despite the high chargeability of chalcocite (the primary copper mineral at Storm) and a moderate anomaly coincident with the 4100N Zone, it appears to be less reliable than EM at detecting copper mineralization at Storm.

The Tornado drill holes were primarily designed to test a geological and structural target associated with the Central Graben, and were not situated on the core of the geochemical and geophysical anomalies associated with Tornado. An approximately 4 km by 1.5 km zone of elevated VTEM conductance is observed in the Tornado area, coincident with a 1.0 to 2.0 mGal anomaly identified by the 2015 gravity surveys, measuring approximately 1,100 m north-south (see Figures 9.7 and 9.8). The area has since been covered by the 2017 Falcon Plus Airborne Gravity Gradiometry survey.

Drilling at Hurricane targeted an extensive, high-amplitude GEOTEM conductance anomaly. Three drill holes failed to intersect any significant mineralization, alteration or favourable breccia units. Given the coincident location of the Aston River valley, the anomaly may be partially explained by shallow fluvial deposits in the river valley; however, the core of the anomaly was interpreted to be related to a deeper bedrock source. The source anomaly could be explained by the presence of argillaceous and shale/mudstone units observed in the drill core or it could represent a target deeper than defined by the 2016 drilling.

## 11.0 SAMPLE PREPARATION, ANALYSES AND SECURITY

## 11.1 SEAL ZINC DEPOSIT SAMPLE PREPARATION, ANALYSES AND SECURITY

Little information is available specific to the 1995 and 1996 Seal Zinc Deposit drill program sample preparation, analyses and security. The work was completed by Cominco personnel and/or contractors retained by Cominco, and geochemical analyses were performed at the Cominco laboratory in Ontario. It is assumed that industry standard practices for sample preparation, analyses and security were adhered to.

The 2012 APEX and Aston Bay drill core re-sampling program focused primarily on mineralized zones, and wherever possible, the original Cominco sample intervals were used. The majority of the drill core intervals sampled in 2012 were previously sampled by Cominco resulting in only half cores remaining. The half core was again halved to obtain a representative (quarter core) sample over the desired intervals. In addition to resampling the previously sampled portions of the drill core, several samples were taken from previously un-sampled portions of the core. These samples were collected where mineralization was noted in visual examination of the core, where shoulder samples had not been collected around historic mineralized intervals, or where un-sampled intervals existed between mineralized zones. All sampled drill core was halved using either a core splitter or a diamond bladed rock saw. For each sample, half was left in its original position in the core box, on site, for future reference. The other half was placed, along with a numbered sample tag, into a labelled plastic sample bag, and sealed. The minimum sample length was 0.5 m, the maximum sample length was 2.0 m, and the average sample length was 1.25 m.

Drill core samples were placed into a labelled plastic sample bag along with a sample tag inscribed with the unique sample number. The plastic bags were placed into woven poly (rice) bags for shipment to the analyzing laboratory. Cable ties were used to securely close the bags, and numbered security tags were applied to each rice bag. All drill core samples were delivered to the ALS preparation lab in Yellowknife, Northwest Territories.

Once received by ALS Minerals, drill core samples were logged in to the ALS Minerals computerized tracking system and assigned bar code labels. Samples were dried prior to preparation and then crushed to pass a U.S. Standard No. 10 mesh, or 2 mm screen (70% minimum pass) using a mechanical jaw crusher. The samples were subsequently split to 250 g using a riffle splitter, and sample splits were pulverized to pass a U.S. Standard No. 200 mesh, or 0.075 mm screen (85% minimum pass) using a steel ring mill. The prepared samples were then shipped within the ALS Minerals network to the Vancouver Minerals Lab, located in North Vancouver, British Columbia.

Drill core sample pulps were subject to multi-element trace level analysis by ICP-AES using four acid digestion. A prepared sample (0.25 g) is digested with perchloric, nitric, hydrofluoric, and hydrochloric acids. The residue is topped up with dilute hydrochloric acid and the resulting solution is analyzed by ICP-AES. Results are corrected for spectral interference. Samples that returned values greater than 100 ppm for Ag, and greater than 1% (10,000 ppm) Cu, Pb, or Zn were subjected to ore-grade (OG) element ICP-AES analysis. A prepared sample is digested with nitric, perchloric, hydrofluoric, and hydrochloric acids, and then evaporated to incipient dryness. Hydrochloric acid and de-ionized water are added for further digestion, and the sample is heated for an additional allotted time. The sample is then cooled to room temperature and transferred to a 100 mL volumetric flask. The resulting solution is diluted to volume with de-ionized water, homogenized, and the solution is analyzed by ICP-AES or by ICP-AAS.

ALS Minerals has developed and implemented at each of its locations a Quality Management System (QMS) designed to ensure the production of consistently reliable data. The system covers all laboratory activities and takes into consideration the requirements of ISO standards.

The QMS operates under global and regional Quality Control (QC) teams responsible for the execution and monitoring of the Quality Assurance (QA) and Quality Control programs in each department, on a regular basis. Audited both internally and by outside parties, these programs include, but are not limited to, proficiency testing of a variety of parameters, ensuring that all key methods have standard operating procedures (SOPs) that are in place and being followed properly, and ensuring that quality control standards are producing consistent results.

ALS maintains ISO registrations and accreditations. ISO registration and accreditation provides independent verification that a QMS is in operation at the location in question. All ALS laboratories are either certified to ISO 9001:2008 or accredited to ISO 17025:2005.

The QA/QC measures employed by APEX and the Company for the 2012 drill core sampling involved inserting blanks, analytical standards and field duplicates into the sample stream. Standards and blanks inserted into the sample stream were compared to expected values to ensure the lab results fall within the acceptable margin of error. Similarly, duplicate sample results were compared to ensure the repeatability of the lab results.

It is the authors' opinion that the sample collection, preparation, security, analytical and QA/QC measures used during the 2016 drilling program were adequate for this stage of exploration at the Aston Bay Property.

## 11.2 2016 EXPLORATION DRILLING SAMPLE PREPARATION, ANALYSES AND SECURITY

A total of 404 drill core intervals were selected and sent for analysis, totalling 1100.2 metres of core length. Each interval was typically either 2 or 3 metres in length, depending on the intensity of visual mineralization. The sample intervals were marked out and tagged on-site by the BHP geologists. XRF measurements were also taken on each sampled interval prior to shipping. Once the on-site processing and logging was complete, a lid was screwed on to each box and the core was backhauled to Yellowknife, NT for further processing.

Core processing in Yellowknife was completed by APEX personnel. Upon receipt, the boxes were first organized by hole number and box number. Any boxes containing marked sample intervals were transported to a cutting facility and sawed in half using a diamond bladed rock saw. Duplicate samples were cut into quarters. For each sample, one half core was left in the box and the other half was sent for analysis. For duplicate samples, one quarter was used as the "original" sample and the other quarter as the "duplicate" sample. The remaining half core was left in the box. Upon completion of the cutting and sampling, the box lids were replaced, and all of the drill core was moved to a secure storage facility.

Drill core samples were placed into a labelled plastic sample bag along with a sample tag inscribed with the unique sample number. The plastic bags were placed into woven poly (rice) bags for shipment to the analyzing laboratory. Cable ties were used to securely close the bags, and numbered security tags were applied to each rice bag. All drill core samples were delivered to the ALS preparation lab in Yellowknife, Northwest Territories.

Once received by ALS, drill core samples are logged in to the ALS computerized tracking system, assigned bar code labels and weighed. The samples are then dried and crushed to pass a U.S. Standard No. 10 mesh, or 2 mm screen (70% minimum pass). A 500 g split is taken and pulverized to pass a U.S. Standard No. 200 mesh, or 75 micron screen (85% minimum pass). The prepared samples were then shipped within the ALS Minerals network to the Vancouver Minerals Lab, located in North Vancouver, British Columbia.

The prepared samples are analyzed by ALS Geochemistry Method ME-MS61 – Ultra-Trace Level Method Using ICP-MS and ICP-AES. A prepared sample (0.25 g) is digested with perchloric, nitric and hydrofluoric acids. The residue is leached with dilute hydrochloric acid and diluted to volume. The final solution is then analyzed by inductively coupled plasma atomic emission spectrometry and inductively coupled plasma mass spectrometry with results corrected for spectral inter-element interferences. Samples that returned values greater than 100 ppm for Ag, and greater than 1% (10,000 ppm) Cu, Pb, or Zn were subjected to ore-grade (OG) element ICP-AES analysis. A prepared sample is digested with nitric, perchloric, hydrofluoric, and hydrochloric acids, and then evaporated to incipient dryness. Hydrochloric acid and de-ionized water are added for further digestion, and the sample is heated for an additional allotted time. The sample is then cooled to room temperature and transferred to a 100 mL volumetric flask. The resulting solution is diluted to volume with de-ionized water, homogenized, and the solution is analyzed by ICP-AES or by ICP-AAS.

The QA/QC measures employed in the field during the 2016 drilling program in included inserting analytical standards into the sample stream at a rate of approximately 1 standard per 35 samples and blank samples at a rate of approximately 1 blank per 20 samples. Duplicate samples were inserted at a rate of approximately 1 duplicate per 20 samples. Core duplicates were either quartered core samples or derived from cuttings. Standards and blanks inserted into the sample stream were compared to expected values to ensure the lab results fall within the acceptable margin of error. Similarly, duplicate sample results were compared to ensure the repeatability of the lab results. The QAQC program was designed and approved by Michael Dufresne, P.Geo., the Qualified Person.

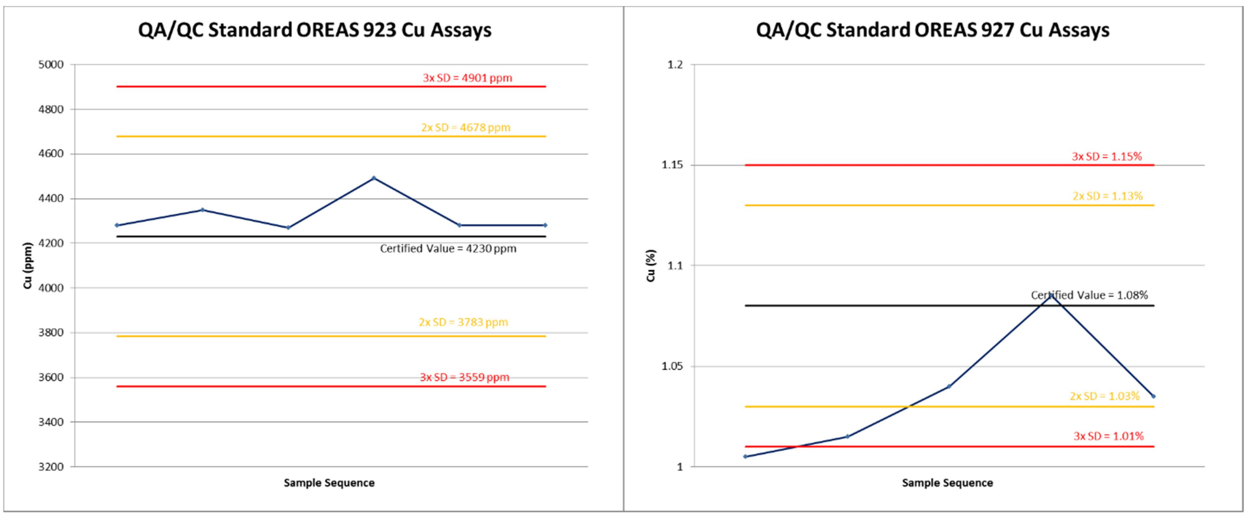
### *Standards*

Analytical standards were inserted into the sample stream to verify the accuracy of laboratory results. Two standards were selected for the soil sampling program: OREAS 923 and OREAS 927 Certified Reference Materials (CRMs). QA/QC summary charts for OREAS 923 and OREAS 927 are presented in Figures 10.1 to 10.4. The charts indicate the measured values for each analytical standard in addition to the certified value, and the second and third "between laboratory" standard deviations for copper (Cu), lead (Pb), zinc (Zn) and silver (Ag) for the drill core (4 acid digestion).

There are two general industry criteria employed by which standards are assigned a "pass" or "reviewable" status. First, a "reviewable" standard is defined as any standard occurring anywhere in the sample sequence returning greater than three standard deviations (>3SD) above or below the accepted value for the element (Cu, Pb, Zn, Ag). Second, if two or more consecutive standards from the same batch return values greater than two standard deviations (>2SD) above or below the accepted value on the same side of the mean for at least one element, they are classified as "reviewable". QA/QC samples falling outside the established limits are flagged and subject to review and possible re-analysis, along with the 10 preceding and succeeding samples.

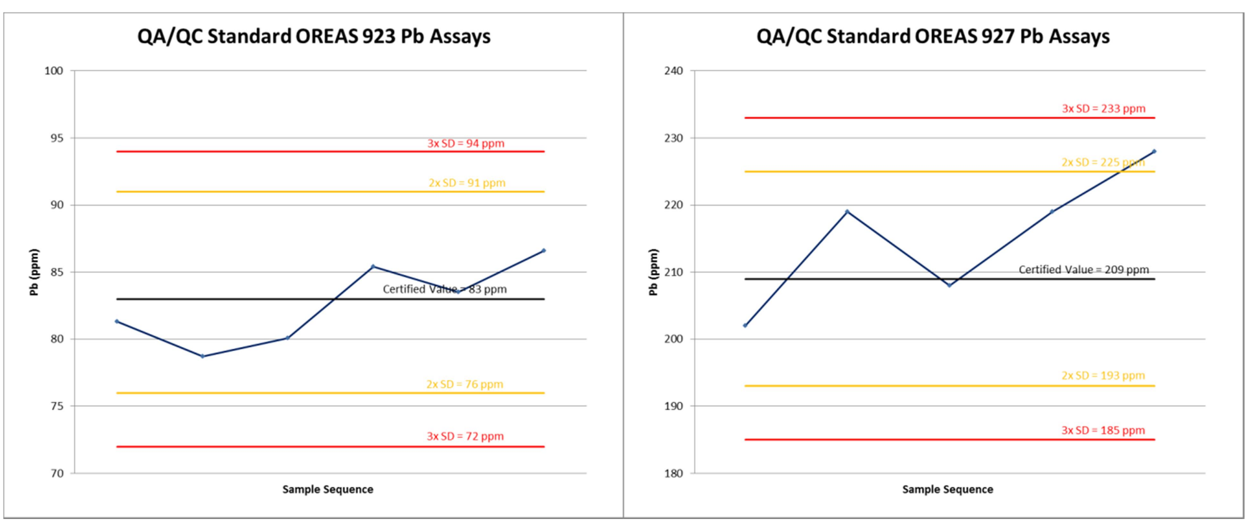
A total of 11 analytical standards (6 OREAS 923 and 5 OREAS 927) were inserted into the sample stream of 404 drill core samples. Of the 11 standards analyzed, 1 was initially considered reviewable according to the criteria outlined above. One sample was flagged for returning a value >3SD below the certified value for Cu in OREAS 923 (see Figure 10.1). The sample returned a conservative (low) value only slightly >3SD from the certified value, and was therefore deemed acceptable.

**Figure 11.1 QA/QC Analytical Standards (Cu) – 4 Acid Digestion**

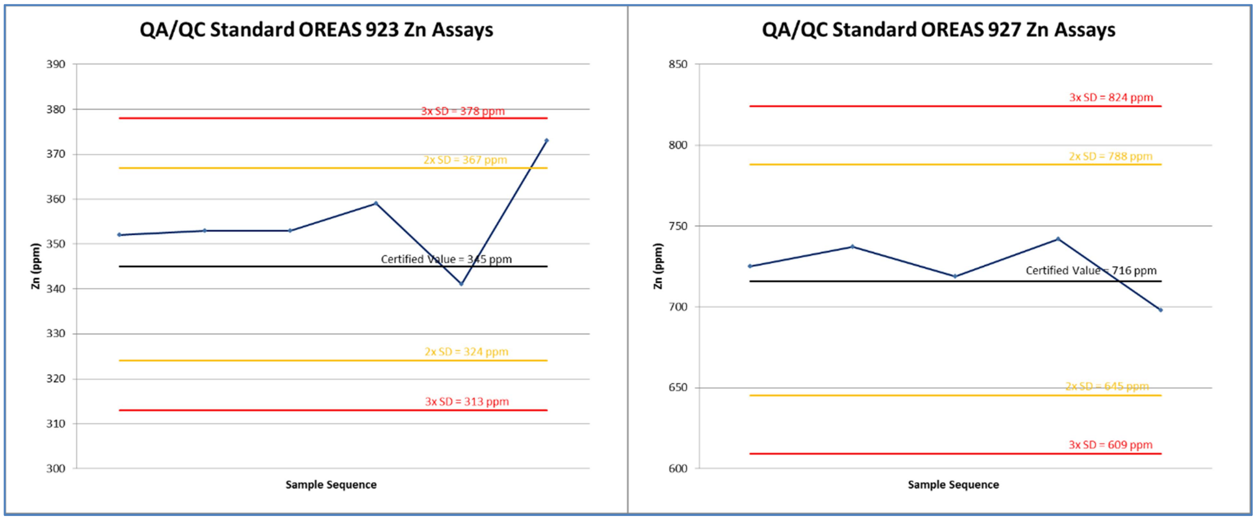



No reviewable samples were observed in the Pb, Zn or Ag values (see Figures 10.2 to 10.4).

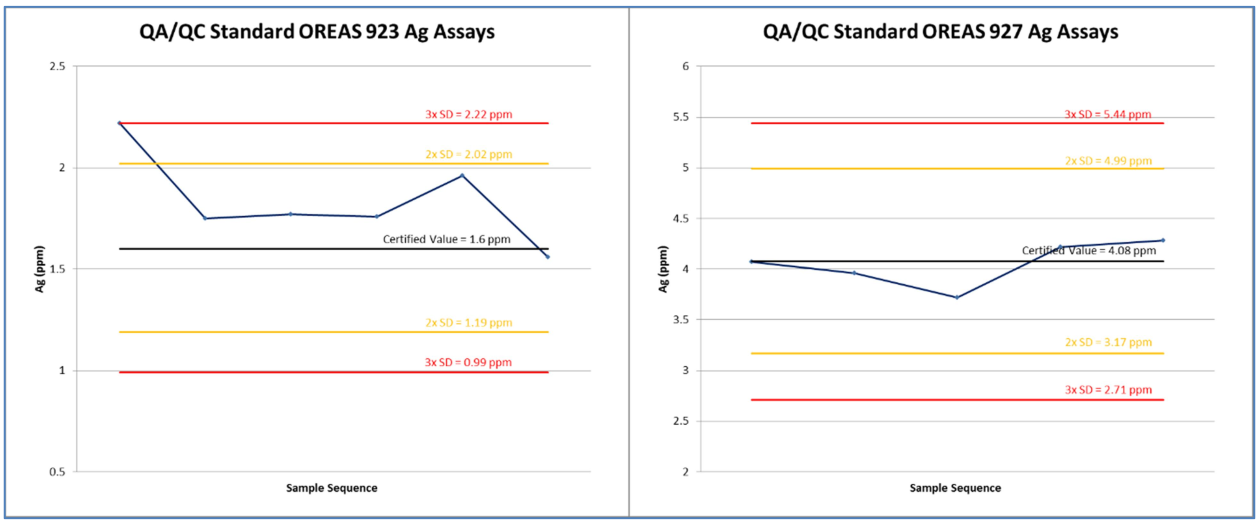
**Figure 11.2 QA/QC Analytical Standards (Pb) – 4 Acid Digestion**



## Figure 11.3 QA/QC Analytical Standards (Zn) – 4 Acid Digestion




## Figure 11.4 QA/QC Analytical Standards (Ag) – 4 Acid Digestion

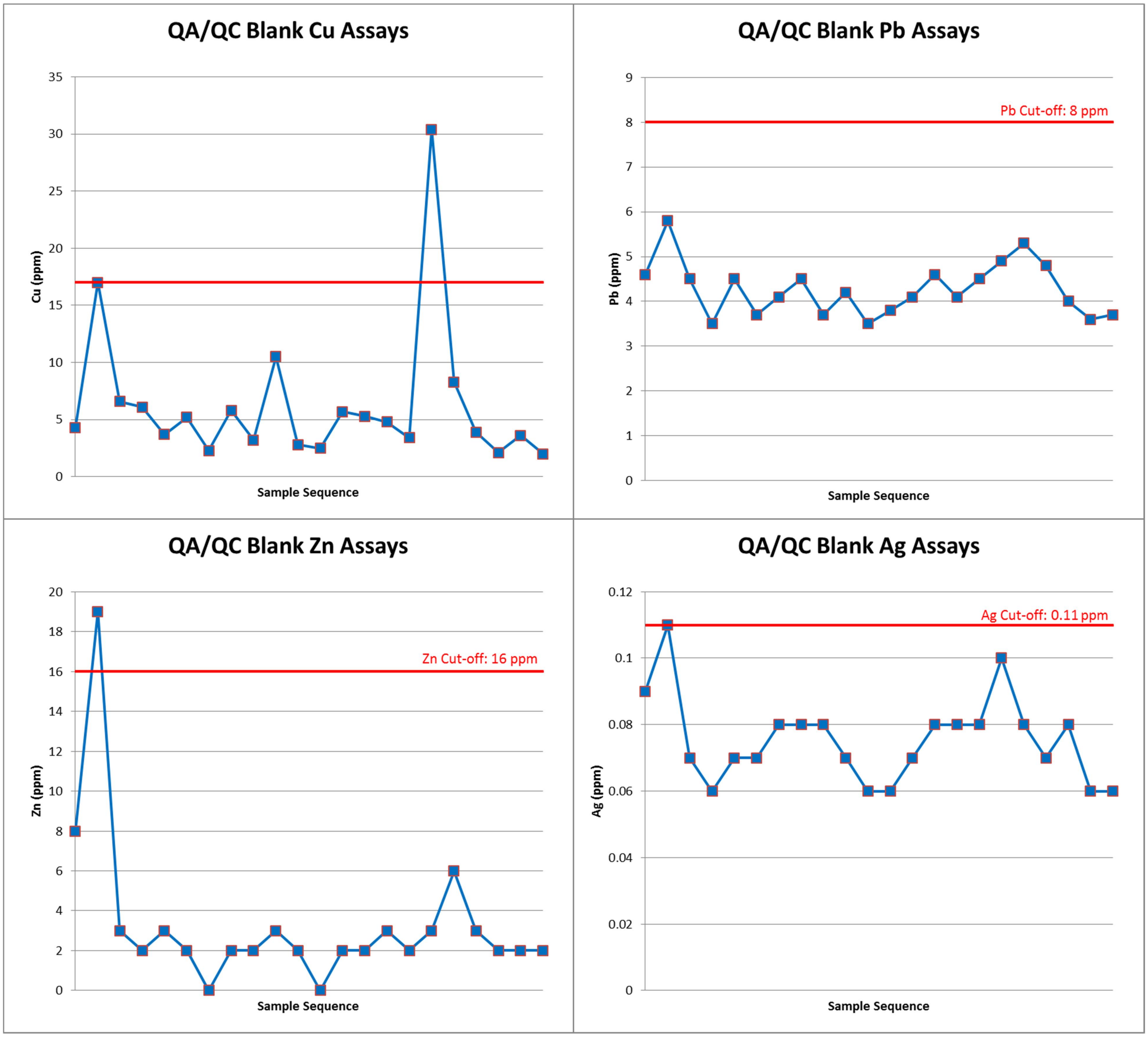



### *Blanks*

Blank samples were inserted into the sample stream to check for contamination during the sample preparation procedures. Laboratory prepared ½" Mesh Silica Blanks (500g) were used for blank samples. Blank samples returning greater than 17 ppm Cu, 8 ppm Pb, 16 ppm Zn and/or 0.11 ppm Ag were flagged for review. Cut-off grades were chosen as the median value for each value in the drilling results, excluding QA/QC samples.

Of the 22 blank samples analyzed, 2 were initially considered reviewable based on the criteria outlined above (see Figure 10.5). Samples CAN000045 and CAN000348 returned values greater than the cut-off for Zn and Cu, respectively. In addition, subtle spikes are seen in Cu, Pb, Zn and Ag values for both samples, suggesting minor contamination during sample preparation. This level of contamination is not considered material for this type of base metal project at the exploration stage, so no further review was conducted.

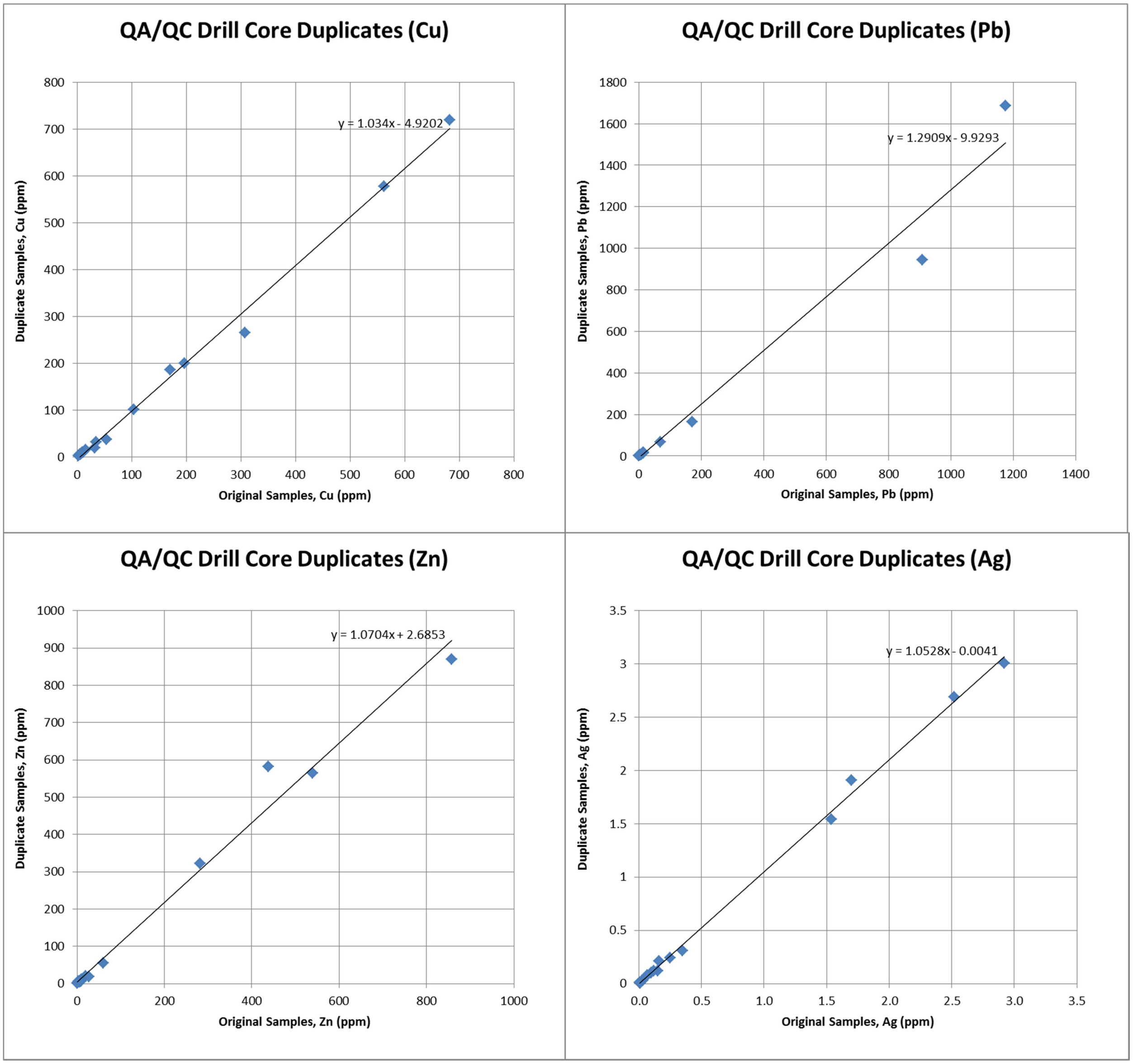
**Figure 11.5 QA/QC Blank Samples**




### *Duplicates*

Duplicate drill core samples were collected to assess the repeatability of individual analytical values. A total of 17 duplicate samples were collected and analyzed. Charts showing original versus duplicate values for Cu, Pb, Zn and Ag show good overall repeatability of the drill core data (see Figure 10.6).

## Figure 11.6 QA/QC Duplicate Samples




It is the authors' opinion that the sample collection, preparation, security, analytical and QA/QC measures used during the 2016 drilling program were adequate for this stage of exploration at the Aston Bay Property.

## 11.3 SEAL ZINC DEPOSIT HISTORICAL VS. 2012 DRILL CORE ASSAY DATA

During 2012, APEX Geoscience Ltd. ("APEX") conducted a drill core resampling program at the Seal Zinc Deposit on behalf of Aston Bay. APEX geologists, Christopher Livingstone and Kristopher Raffle, P.Geo., examined the data and their findings are detailed below.

The program included resampling of the mineralized zones in a number of holes at the Seal Zinc Deposit for which assay results were not, at the time, publicly available. A total of 158 quarter sawn drill core samples, having a total composite length of 185.2 m, were collected from 11 holes (AB95-02 to AB95-08 and AB95-10 to AB95-13). The samples were sent to ALS for analysis. Wherever possible, original Cominco sample intervals were duplicated.

In December 2012, Aston Bay acquired the proprietary Seal Zinc Deposit drill database from Teck Resources. To facilitate comparison of original Cominco versus re-sampled drill core analyses, 1 m composites (totaling 114.5 m) were calculated for all samples within a three-dimensional mineralization envelope, defined by similar geological characteristics, using a 1% zinc (Zn) lower cut-off grade. Summary statistics of paired historical and 2012 re-sampled drill core analyses compare favorably, with a 0.46% Zn and 1.7 g/t Ag average decrease in re-sampled versus historical Cominco values at an average grade of approximately 5% Zn and 24 g/t Ag (Table 11.1).

**TABLE 11.1**
**SEAL ZINC DEPOSIT SUMMARY STATISTICS**
**FOR HISTORICAL AND 2012 RE-SAMPLED 1 METRE COMPOSITE DRILL CORE ANALYSES**

| | Historical Zn (%) | 2012 Zn (%) | Historical Ag (ppm) | 2012 Ag (ppm) |
|---|---|---|---|---|
| **Mean** | 5.17 | 4.71 | 25.2 | 23.5 |
| **Median** | 1.67 | 1.71 | 13.9 | 12.6 |
| **Standard Deviation** | 6.90 | 5.96 | 29.10 | 28.89 |

Individual drill hole composite grades returned slightly lower average grades for the 2012 sampling, typically a difference of 0.2% to 0.5% Zn over the width of each mineralized zone (Table 11.2). The exception is drill hole AB95-02, where the historical data reports 10.58% Zn over 18.8 m versus 8.46% Zn over the same interval in the 2012 data, a difference of 2.12% Zn. The discrepancy is likely due to sampling bias resulting from the heterogeneity of the semi-massive to massive sphalerite mineralization, which is especially important to consider with this high grade intercept. In addition, mineralized intercepts from the Seal Zinc Deposit have mostly decomposed to sand and gravel (Figure 11.7); this could result in further sampling bias due to gravity settling of sulphide minerals. Cominco reported that the entire mineralized rock package is contained in permafrost and that the mineralized zones in the drill core quickly decomposed upon thawing. Weathering of this unconsolidated material over 17 years could have degraded the sphalerite to lower grade species such as smithsonite or hemimorphite. Furthermore, as is common with older drill core, it is possible that pieces of mineralized core were removed over the years for a variety of reasons.

**TABLE 11.2**
**SEAL ZINC DEPOSIT HISTORICAL AND 2012 MINERALIZED ZONE**
**DRILL CORE COMPOSITE GRADES**

| Hole ID | From (m) | To (m) | Interval (m) | Historical Zn (%) | 2012 Zn (%) | Change (%) | Historical Ag (ppm) | 2012 Ag (ppm) | Change (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| AB95-02 | 51.8 | 70.6 | 18.8 | 10.58 | 8.46 | -2.12 | 28.7 | 24.2 | -4.50 |
| AB95-03 | 76.0 | 99.7 | 23.7 | 6.23 | 6.01 | -0.22 | 27.2 | 21.0 | -6.12 |
| AB95-06 | 101.5 | 132.3 | 30.8 | 5.11 | 4.63 | -0.49 | 23.0 | 22.3 | -0.68 |
| AB95-07 | 119.8 | 137.0 | 17.2 | 3.49 | 3.24 | -0.25 | 22.6 | 21.9 | -0.70 |
| AB95-10 | 137.0 | 146.0 | 9.0 | 1.44 | 1.28 | -0.17 | 23.6 | 22.3 | -1.36 |
| AB95-11 | 191.0 | 206.0 | 15.0 | 1.06 | 0.86 | -0.20 | 25.6 | 26.0 | +0.41 |

**Figure 11.7 Representative Photograph of Seal Zinc Deposit Mineralized Intercept**


X-Y scatter plots of all 1 m composites for Zn and Ag show an overall good correlation between the historical and 2012 re-sampled grades, despite a small number of outliers (Figure 11.8). Quantile-Quantile (Q-Q) plots, show ascending Zn and Ag values for the historical versus 2012 data plotted against each other to assess the potential for systematic bias across the range of Zn and Ag values (Figure 11.9). The Q-Q plot for Zn again illustrates a slight decrease in 2012 re-sampled versus historical Cominco grades. The Q-Q plot for Ag shows good agreement between historical and 2012 re-sampled grades.

**Figure 11.8 Seal Deposit 1m Composite X-Y Scatter Plots for Zn and Ag**

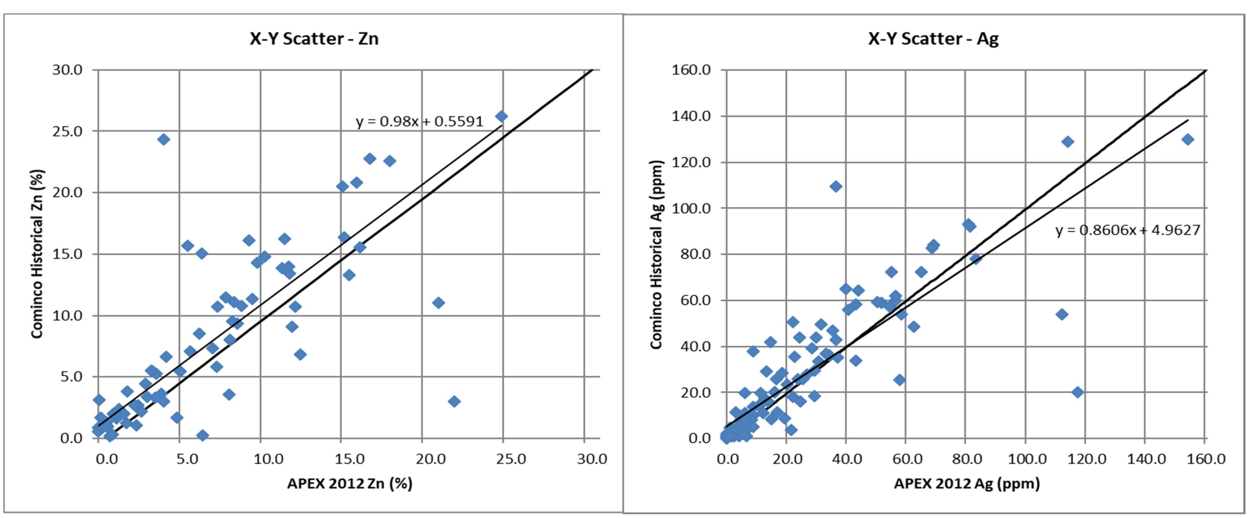
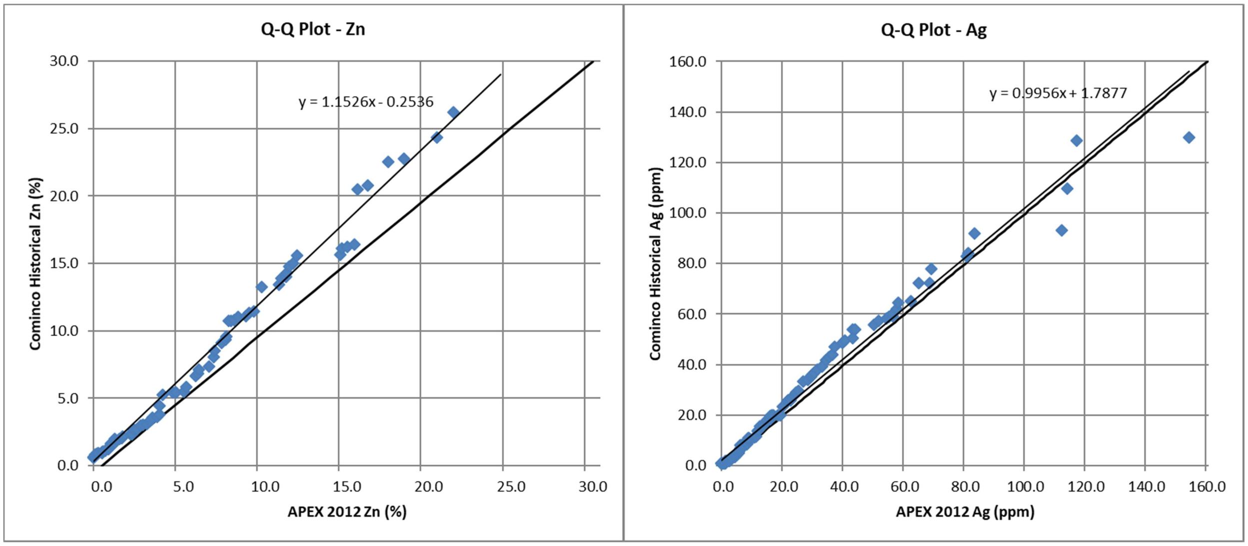


**Figure 11.9 Seal Deposit 1m Composite Q-Q Plots for Zn and Ag**




Overall, APEX concluded that the 2012 sampling is in broad agreement with the historically reported values. Importantly, the results of the 2012 re-sampling program verify the presence of high grade zinc and silver in Seal Zinc Deposit drill holes, and confirm the validity of the historically reported analytical results.

It is the author's opinion that the sample preparation, analysis and security procedures undertaken at the Seal Zinc Deposit, as well as the check assaying carried out on the historical drill core were sufficient for the current Mineral Resource Estimate.

## 12.0 DATA VERIFICATION

### 12.1 SITE VISIT AND INDEPENDENT SAMPLING

Mr. Eugene Puritch, P. Eng., FEC, CET, visited the Aston Bay project on July 3, 2013 for the purpose of completing a site visit and an independent verification sampling program. Ten samples were collected from seven diamond drill holes at the Seal Zinc Deposit by taking a quarter split of the half core remaining in the box. An effort was made to sample a range of grades. Mr. Puritch's 2013 site visit is considered to be current since no drilling has taken place since then on the Seal Deposit

The samples were selected by Mr. Puritch, and placed into sample bags that were sealed with tape and placed into a larger bag.

The samples were transported by Mr. Puritch to the P&E office in Brampton, ON. From there they were sent by courier to AGAT Laboratories, ("AGAT") in Mississauga for analysis.

AGAT is an independent lab that has developed and implemented at each of its locations a Quality Management System (QMS) designed to ensure the production of consistently reliable data. The system covers all laboratory activities and takes into consideration the requirements of ISO standards.

AGAT maintains ISO registrations and accreditations, which provide independent verification that a QMS is in operation at the location in question. Most AGAT laboratories are registered or are pending registration to ISO 9001:2000.

Samples were analysed for zinc using Sodium Peroxide Fusion with ICP-OES finish and for silver by Aqua Regia Digest with AAS finish.

A comparison of the results is presented in Figure 12.1 and Figure 12.2.

**Figure 12.1 Seal Zinc Deposit Results of Verification Sampling by P&E for Zinc**

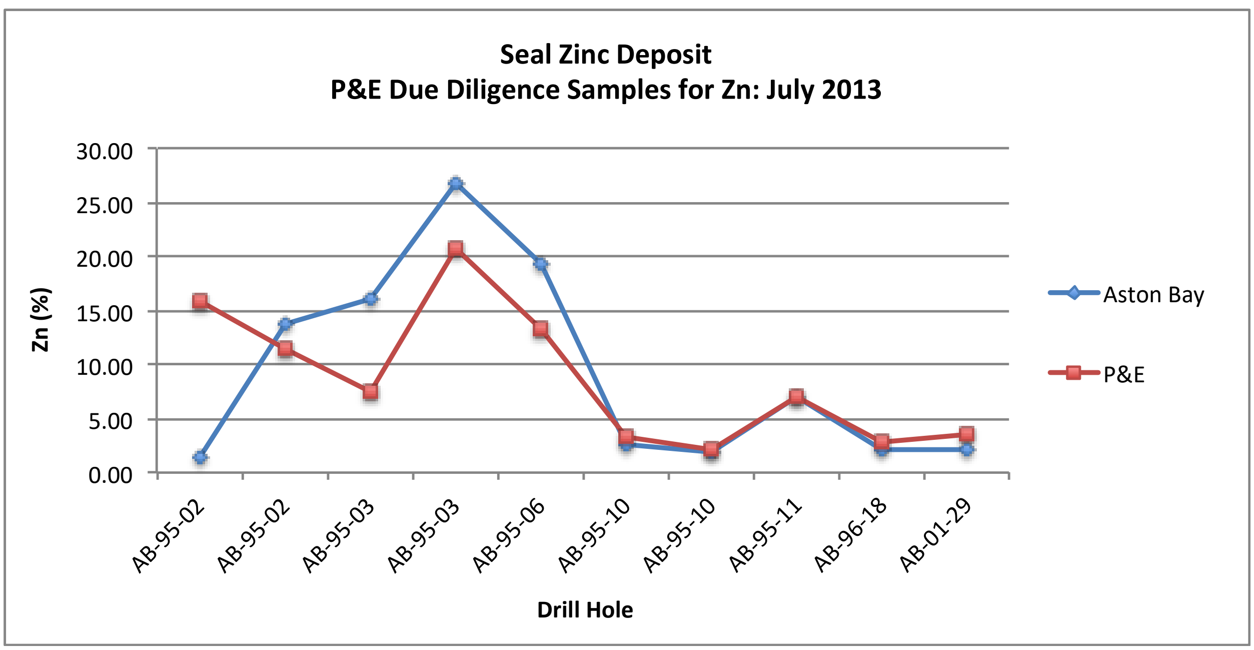
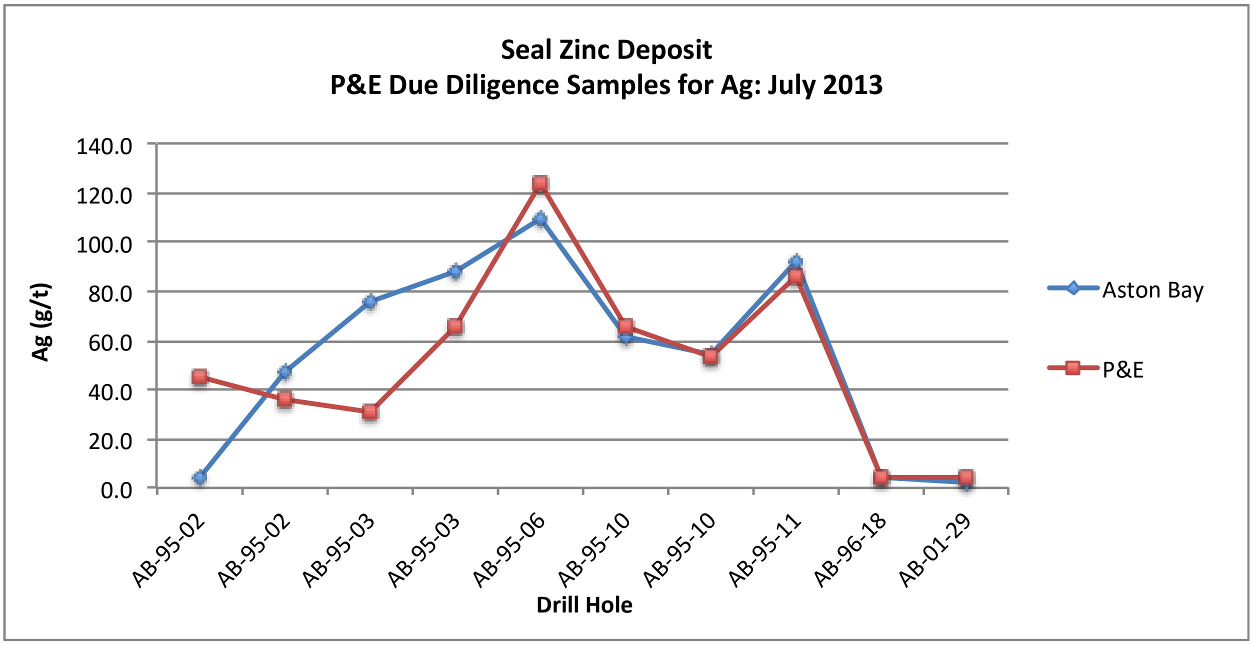


**Figure 12.2 Seal Zinc Deposit Results of Verification Sampling by P&E for Silver**




Excepting sample AB-05-02, which returned much higher values in the site visit samples for both Zn and Ag and could potentially represent a mismatched sample, there is good correlation between the assay values in Aston Bay's database and the independent verification samples collected by P&E and analyzed at AGAT. It is P&E's opinion that the data are of good quality and appropriate for use in the current Mineral Resource Estimate.

## 13.0 MINERAL PROCESSING AND METALLURGICAL TESTING

As of the date of this report, to the knowledge of P&E, there has been no metallurgical testing of mineralization on the Aston Bay Property.

## 14.0 MINERAL RESOURCE ESTIMATE

### 14.1 INTRODUCTION

This purpose of this report section is to summarize the Mineral Resource Estimate of the Seal Zinc Deposit. The Mineral Resource Estimate presented herein is reported in accordance with the Canadian Securities Administrators' National Instrument 43-101 and has been estimated in conformity with generally accepted CIM "Estimation of Mineral Resource and Mineral Reserves Best Practices" guidelines. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. There is no guarantee that all or any part of the Mineral Resource will be converted into Mineral Reserve. Confidence in the estimate of Inferred Mineral Resources is insufficient to allow the meaningful application of technical and economic parameters or to enable an evaluation of economic viability worthy of public disclosure. Mineral Resources may be affected by further infill and exploration drilling that may result in increases or decreases in subsequent Mineral Resource Estimates.

This Mineral Resource Estimate was undertaken by Yungang Wu, P.Geo. of P&E Mining Consultants Inc. of Brampton, Ontario, an independent Qualified Persons in terms of NI 43-101. Information and data were supplied by Aston Bay Holdings Ltd. The effective date of this Mineral Resource Estimate is October 6, 2017.

### 14.2 DATABASE

All drilling and assay data were provided in the form of Excel data files by Aston Bay. The Geovia GEMS database for this Mineral Resource Estimate, constructed by P&E, consisted of 24 drill holes totalling 4,293.7 metres. The drill holes were completed in 1995 and 1996 with dips between -55 to -90 degrees, however, down hole surveying was not performed. A drill hole plan is shown in Appendix I.

The assay table of the database contained a total of 250 assays for Ag, Zn, Cu, Pb etc.

All drillhole survey and assay values are expressed in metric units, while grid coordinates are in the NAD83, Zone 15North UTM geodetic reference system.

### 14.3 DATA VERIFICATION

P&E conducted data verification for silver and zinc assays contained in the Mineral Resource wireframes against laboratory certificates that were obtained directly from ALS Canada Ltd laboratory in North Vancouver, BC and no errors were found.

In addition to the data verification reported above, P&E reviewed the QAQC for the Seal Zinc Deposit analyses and concludes that the analyses are acceptable (See section 11 of this report). In P&E's opinion, the drill hole and assay database may be used for the estimation of Mineral Resources.

### 14.4 DOMAIN INTERPRETATION

A total of three mineralization domains (wireframes) were generated based on a cut-off grade of 2.5% ZnEq. The formula applied for ZnEq% was ZnEq% = Zn% + (Ag g/t/39). Minimum constrained sample length for interpretation was 2.0 metres. In some cases, mineralization below the above mentioned cut-off was included for the purpose of maintaining zonal continuity and the minimum thickness. The wireframes were typically extended no more than 50 metres into undrilled territory. The mineralization domains are detailed in Table 14.1 and the 3D domains are presented in Appendix II.

The resulting domains were used as hard boundaries during the Mineral Resource estimation, for rock coding, statistical analysis and compositing limits.

Topography and overburden surfaces were created using drill hole collars and logs respectively.

A unique model rock type code was assigned for each mineralized domain in the Mineral Resource model. The rock type codes applied for the Mineral Resource model are tabulated in table 14.1.

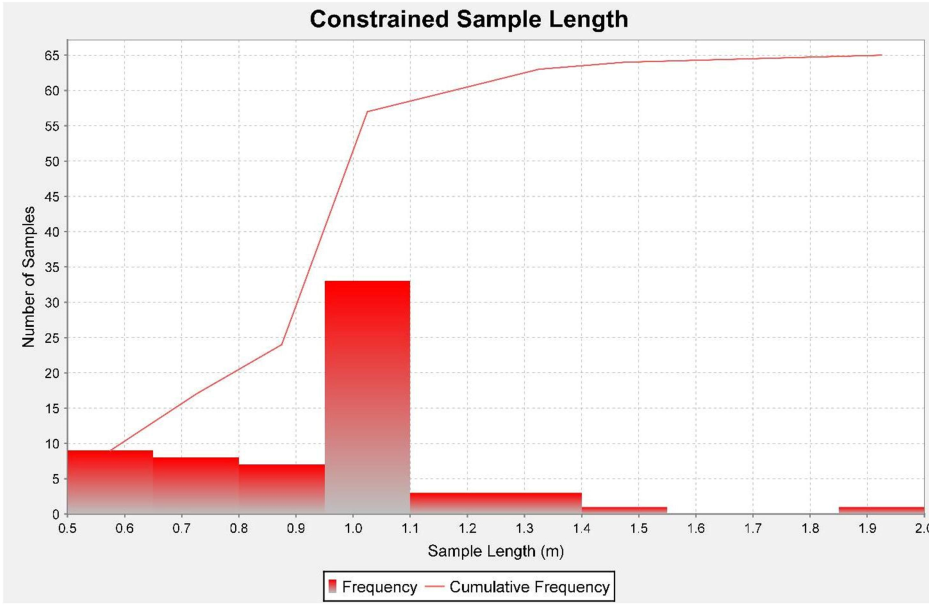
**TABLE 14.1**
**DESCRIPTION OF MINERALIZATION DOMAINS AND MODEL ROCK TYPE CODES**

| Domain | Rock Type Code | Strike | Dip Direction | Dip | Strike Length (m) | Down Dip Length (m) | True Thickness (m) | Volume m3 |
|---|---|---|---|---|---|---|---|---|
| MINZ1 | 100 | 320° | 50° | -65° | 365 | 65-110 | 1.2-7.9 | 136,661 |
| MINZ2 | 200 | 320° | 50° | -65° | 450 | 60-115 | 1.7-6.8 | 158,729 |
| MINZ3 | 300 | 320° | 50° | -65° | 70 | 50-55 | 2.8 | 9,337 |
| Air | 0 | | | | | | | |
| OVB | 10 | | | | | | | |
| Waste | 99 | | | | | | | |

## 14.5 COMPOSITING

As shown in Figure 14.1, more than 50% of the constrained sample lengths were 1 metre, with an average of 0.92 metres. In order to regularize the assay sampling intervals for grade interpolation, a one metre compositing length was selected for the drill hole intervals that fell within the constraints of the above-mentioned domains. The composites were calculated for Zn and Ag over 1.0 metre lengths starting at the first point of intersection between assay data hole and hanging wall of the 3-D zonal constraint. The compositing process was halted upon exit from the footwall of the aforementioned constraint. Un-assayed intervals and below detection limit assays were set to 0.001% and 0.001g/t for Zn and Ag respectively. Any composites that were less than 0.25 metres in length were discarded so as not to introduce any short sample bias in the grade interpolation process. The composite statistics are summarized in table 14.2. The composite data were utilized for grade capping.

**Figure 14.1 Distribution of Constrained Sample Length**




| TABLE 14.2 BASIC STATISTICS OF ALL CONSTRAINED RAW ASSAYS AND COMPOSITES | | | | | |
|---|---|---|---|---|---|
| **Variable** | **Zn_ Assays** | **Ag_ Assays** | **Zn_ Composites** | **Ag_ Composites** | **Assay Length** |
| Number of samples | 65 | 65 | 64 | 64 | 65 |
| Minimum value | 0.09% | 1.0g/t | 0.13% | 1.0g/t | 0.50m |
| Maximum value | 33.80% | 140.0g/t | 31.16% | 130.0 g/t | 2.00m |
| Mean | 9.70% | 44.6g/t | 9.45% | 43.2g/t | 0.92m |
| Median | 6.00% | 32.0g/t | 6.87% | 36.5g/t | 1.00m |
| Geometric Mean | 5.24% | 28.8 g/t | 5.99% | 31.1g/t | 0.89m |
| Variance | 72.89 | 1160.22 | 56.02 | 920.5 | 0.06 |
| Standard Deviation | 8.54 | 34.06 | 7.48 | 30.34 | 0.25 |
| Coefficient of variation | 0.88 | 0.76 | 0.79 | 0.7 | 0.27 |

## 14.6 GRADE CAPPING

Grade capping was investigated on the composites of each mineralized domain to ensure that the possible influence of erratic high values did not bias the database. Log-normal histograms of Zn and Ag composites were generated for each mineralized domain and the resulting graphs are exhibited in Appendix III. The investigations concluded that capping was not required for both Zn and Ag.

## 14.7 SEMI-VARIOGRAPHY

A semi-variography study was performed as a guide to determining a grade interpolation search strategy. Semi-variograms were attempted along strike, down dip and across dip, however, it was not possible to develop any variograms due to the insufficient data population.

## 14.8 BULK DENSITY

Ten site visit verification samples were taken from Seal Zinc Deposit by Eugene. Puritch, P.Eng, FEC, CET of P&E Mining Consultants Inc. during his site visit in July 2013 and analyzed for bulk density at Agat Laboratories in Mississauga, Ontario. The bulk density measurement resulted in an average bulk density of 3.80 t/m3 ranging from 3.13 t/m3 to 4.33 t/m3. The average bulk density 3.80 t/m3 was applied for the Mineral Resource Estimate. P&E recommends that a systematic bulk density sampling and measuring program should be carried out in future drilling programs.

## 14.9 BLOCK MODELING

The Seal Zinc Deposit Mineral Resource block model was constructed using Geovia GEMS V6.8 modelling software. The block model origin and block size are tabulated in table 14.3. The block model was rotated 40° counter clockwise in order that the Y axis aligns with the deposit strike at azimuth 320°. The block model consists of separate attributes for estimated grades, rock type, volume percent, bulk density and classification.

**TABLE 14.3**
**BLOCK MODEL DEFINITION**

| Direction | Origin | # of Blocks | Block Size (m) |
|---|---|---|---|
| X | 438,989 | 146 | 2.5 |
| Y | 8,183,406 | 160 | 5 |
| Z | 100 | 42 | 5 |
| Rotation | 40° (counter clockwise) | | |

All blocks in the rock type block model were initially assigned a waste rock code of 99, corresponding to the surrounding country rocks. All mineralized domains were used to code all blocks within the rock type block model that contain 1 % or greater volume within the domains. These blocks were assigned their appropriate individual rock codes as indicated in Table 14.1. The overburden and topographic surfaces were subsequently utilized to assign rock code 10 for overburden and 0 for air, to all blocks 50 % or greater above the surface respectively.

A volume percent block model was set up to accurately represent the volume and subsequent tonnage that was occupied by each block inside the constraining domains. As a result, the domain boundaries were properly represented by the volume percent model ability to measure individual infinitely variable block inclusion percentages within that domain. The minimum volume percentage of the mineralized block was set to 1%.

A uniform bulk density of 3.80 t/m3 was applied to each mineralized block.

Zn block model grades were interpolated with Inverse Distance Squared (1/d2), while Ag block model grades were interpolated with Inverse Distance Cubed (1/d3), both applied to composites. Two grade interpolation passes were executed for the grade interpolation to progressively capture the sample points in order to avoid over smoothing and preserve local grade variability. Search ellipsoids were aligned with the strike and dip of each domain accordingly. Grade blocks were interpolated using the following parameters in Table 14.4.

| Table 14.4<br>Zn & Ag Block Model Interpolation Parameters | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Element** | **Pass** | **Dip Range (m)** | **Strike Range (m)** | **Across Dip Range (m)** | **Max # of Sample per Hole** | **Min # Sample** | **Max # Sample** |
| Zn & Ag | I | 50 | 50 | 15 | 2 | 3 | 16 |
| | II | 100 | 100 | 30 | 2 | 1 | 16 |

Selected cross-sections and plans of the Zn grade blocks are presented in Appendix IV.

The Zn equivalent blocks were manipulated using formula **ZnEq% = Zn% + (Ag g/t/39).**

## 14.10 MINERAL RESOURCE CLASSIFICATION

In P&E's opinion, the drilling, assaying and exploration work of the Seal Zinc Deposit supporting this Mineral Resource Estimate are sufficient to indicate a reasonable prospect for economic extraction and thus qualify it as a Mineral Resource under the CIM definition standards. The Mineral Resources of the Seal Zinc Deposit were classified as Inferred based on the geological interpretation and drill hole spacing.

## 14.11 MINERAL RESOURCE ESTIMATE

The Mineral Resource Estimate was derived from applying a ZnEq% cut-off grade to the block model and reporting the resulting tonnes and grade for potentially mineable areas. The following calculation demonstrates the rationale supporting the ZnEq% cut-off grade that determines the underground potentially economic portions of the constrained mineralization.

<u>ZnEq% Cut-Off Grade Calculation</u>

| | |
|---|---|
| Zn Price | US$1.00/lb based on approx. two year trailing av'g at Sep 30/17 |
| Ag Price | US$17/oz based on two year trailing av'g at Sep 30/17 |
| US$ Exchange Rate | $0.76 based on two year trailing av'g at Sep 30/17 |
| Zn & Ag Process Recovery | 90% |
| Concentration Ratio | 8:1 |
| Zn & Ag Smelter Payable | 95% |
| Concentrate Freight | $60/DMT |
| Smelter Treatment | $100/DMT |
| Mining Cost | $50/tonne mined |
| Process Cost | $25/tonne milled |
| General & Admin | $10/tonne milled |

Therefore, the ZnEq% cut-off grade for the underground Mineral Resource Estimate is calculated as follows:

Mining, Processing, G&A, Concentrate Freight & Smelter Treatment costs per ore tonne = ($50 + $25 + $10) + (($60 + $100)/8) = $105/tonne

**[($105)/[($1 x 22.046)/0.76x 90% Recovery x 95% Payable] = 4.7%** **<u>Use 4.0%</u>**

## 14.11 MINERAL RESOURCE ESTIMATE STATEMENT

The resulting Mineral Resource Estimate is tabulated in the Table 14.5. P&E considers that the zinc and silver mineralization of the Seal Zinc Deposit is potentially amenable to underground extraction.

**TABLE 14.5**
**MINERAL RESOURCE ESTIMATE STATEMENT 4.0% ZNEQ CUT-OFF(1-3)**

| Classification | Tonnage kt | Zn % | Contained Zn kt | Ag g/t | Contained Ag koz | ZnEq% |
|---|---|---|---|---|---|---|
| Inferred | 1,006 | 10.24 | 103 | 46.6 | 1,505 | 11.44 |

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

*(2) The Inferred Mineral Resources in this estimate has a lower level of confidence than that applied to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of the Inferred Mineral Resource could be upgraded to an Indicated Mineral Resource with continued exploration.*

*(3) The Mineral Resources in this report were estimated using the Canadian Institute of Mining, Metallurgy and Petroleum (CIM), CIM Standards on Mineral Resources and Reserves, Definitions and Guidelines prepared by the CIM Standing Committee on Reserve Definitions and adopted by the CIM Council.*

## 14.12 MINERAL RESOURCE ESTIMATE SENSITIVITY

Mineral Resources are sensitive to the selection of a reporting ZnEq% cut-off grade. The sensitivities of the ZnEq% cut-off are demonstrated in Table 14.6.

**TABLE 14.6**
**ZNEQ% CUT-OFF SENSITIVITY OF MINERAL RESOURCE ESTIMATE**

| Cut-off ZnEq% | Tonnage tonnes | Zn % | Contained Zn tonnes | Ag g/t | Contained Ag oz | ZnEq % |
|---|---|---|---|---|---|---|
| 10.0 | 511,582 | 13.90 | 71,110 | 54.84 | 902,040 | 15.31 |
| 9.0 | 658,524 | 12.69 | 83,553 | 51.07 | 1,081,316 | 14.00 |
| 8.0 | 763,821 | 11.97 | 91,448 | 49.65 | 1,219,338 | 13.25 |
| 7.0 | 825,503 | 11.55 | 95,341 | 49.66 | 1,318,115 | 12.82 |
| 6.0 | 862,143 | 11.30 | 97,387 | 49.03 | 1,359,135 | 12.55 |
| 5.0 | 910,482 | 10.94 | 99,626 | 48.03 | 1,405,874 | 12.17 |
| 4.0 | 1,006,081 | 10.24 | 103,061 | 46.54 | 1,505,355 | 11.44 |
| 3.0 | 1,102,863 | 9.58 | 105,705 | 44.89 | 1,591,654 | 10.74 |
| 2.5 | 1,131,338 | 9.40 | 106,377 | 44.28 | 1,610,462 | 10.54 |
| 2.0 | 1,135,467 | 9.38 | 106,455 | 44.16 | 1,612,019 | 10.51 |

## 14.13 CONFIRMATION OF MINERAL RESOURCE ESTIMATE

The block model was validated using a number of industry standard methods including visual and statistical methods.

Visual examination of composites and block grades on successive plans and sections on-screen in order to confirm that the block model correctly reflects the distribution of sample grades.

Review of estimation parameters including:

- Number of composites used for estimation;
- Number of holes used for estimation;
- Mean distance to sample used;
- Number of passes used to estimate grade;
- Mean value of the composites used.

A comparison of the Zn and Ag mean composite grades and block model grades at a zero cut-off are presented in Table 14.7.

**TABLE 14.7**
**COMPARISON OF AVERAGE GRADE OF COMPOSITES AND BLOCK MODEL GRADES AT ZERO ZNEQ% CUT-OFF**

| Data Type | Zn% | Ag g/t |
|---|---|---|
| Constrained Assays | 9.70 | 44.6 |
| Composites | 9.45 | 43.2 |
| Block Model IDW* | 9.21 | 43.4 |
| Block Model NN** | 9.20 | 43.4 |

**block model grade interpolated using Inverse Distance Squared for Zn, and Cubed for Ag*
***block model grade interpolated using Nearest Neighbour*

Both Zn and Ag average block models grades agreed reasonably well with the average grades of composites used for grade estimation.

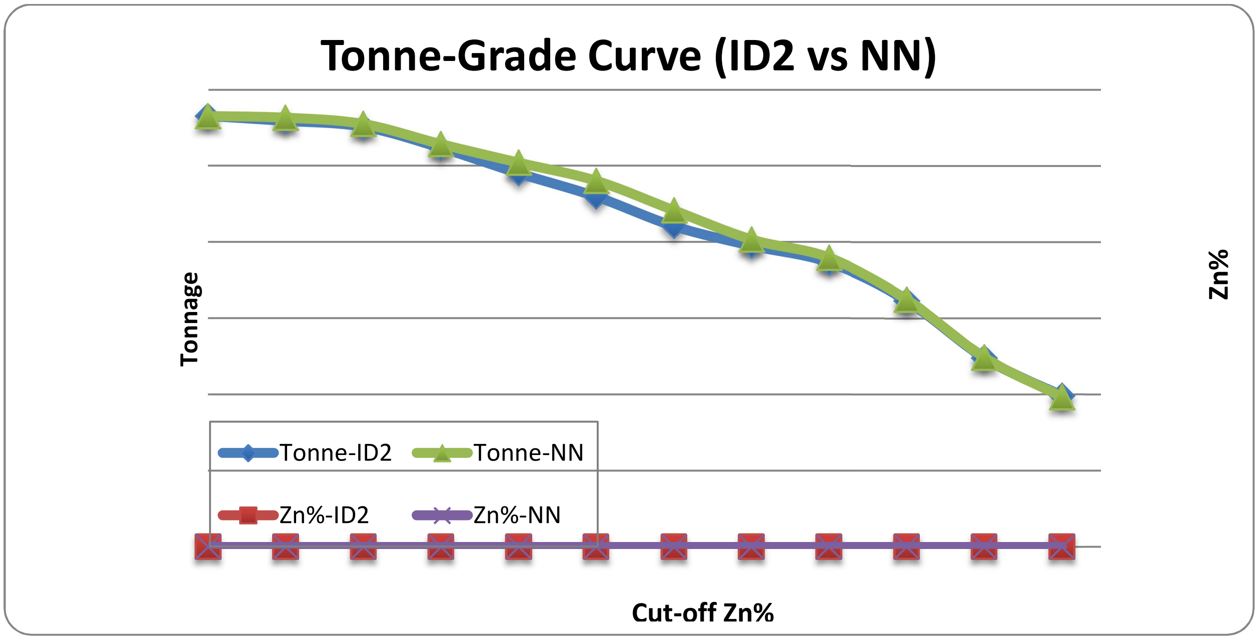
A volumetric comparison was performed with the block model volume versus the geometric calculated volume of the domain solids and the difference is detailed in Table 14.8.

**TABLE 14.8**
**VOLUME COMPARISON OF BLOCK MODEL WITH GEOMETRIC SOLIDS**

| | |
|---|---|
| Geometric Volume of Wireframes | 304,727 m3 |
| Block Model Volume | 304,758 m3 |
| Difference % | 0.01% |

A comparison of Zn grade interpolated with Inverse Distance Squared (1/d2) and Nearest Neighbor (NN) on a global basis is presented in Figure 14.2.

**Figure 14.2 Global Zn Grade and Tonnage Comparisons of ID2 and NN Interpolation**



## 15.0 MINERAL RESERVE ESTIMATES

This section is not applicable to this report.

# 16.0 MINING METHODS

This section is not applicable to this report.

## 17.0 RECOVERY METHODS

This section is not applicable to this report.

# 18.0 PROJECT INFRASTRUCTURE

This section is not applicable to this report.

## 19.0 MARKET STUDIES AND CONTRACTS

This section is not applicable to this report.

# 20.0 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

This section is not applicable to this report.

# 21.0 CAPITAL AND OPERATING COSTS

This section is not applicable to this report.

## 22.0 ECONOMIC ANALYSIS

This section is not applicable to this report.

# 23.0 ADJACENT PROPERTIES

This section is not applicable to this report.

## 24.0 OTHER RELEVANT DATA AND INFORMATION

The author is not aware of any other information of a material nature relating to the Aston Bay property.

## 25.0 INTERPRETATION AND CONCLUSIONS

The Aston Bay property remains largely unexplored, with opportunities for further exploration and potential discovery. Previous exploration has included several phases of airborne and ground geophysical surveying, geochemical sampling, and a limited amount of diamond drilling.

Exploration undertaken by Aston Bay has included a comprehensive review of historical data licenced from Teck Resources; including historical soil, stream sediment and rock samples, airborne and ground geophysics and drill results from the Seal Zinc Deposit and the Storm Copper Prospect.

Aston Bay has also carried out surface geological mapping in areas of known mineralization, prospecting and soil and rock sampling in areas where little is known about mineralization, gravity surveying over new target areas, core re-logging, check sampling of historical drill core at Seal Zinc Deposit and Storm Copper Prospect and drilled 12 exploration drill holes. The Company is currently undertaking a Property-wide Falcon Plus Airborne Gravity Gradiometry survey to further inform them about future exploration targets.

Mr. Eugene Puritch, P. Eng., FEC, CET visited the Aston Bay project on July 3, 2013 for the purpose of completing a site visit and an independent verification sampling program. Ten samples were collected from seven diamond drill holes at the Seal Zinc Deposit by taking a quarter split of the half core remaining in the box. P&E considers there to be good correlation between the assay values in Aston Bay's database and the independent verification samples collected by P&E and analyzed at AGAT. It is P&E's opinion that the data are of good quality and appropriate for use in the current Mineral Resource Estimate.

The authors also consider that the sample preparation, analysis and security procedures undertaken at the Seal Zinc Deposit, as well as the check assaying carried out on the historical drill core at the Seal Zinc Deposit, were sufficient for the current Mineral Resource Estimate.

In P&E's opinion, the drilling, assaying and exploration work of the Seal Zinc Deposit supporting this Mineral Resource Estimate are sufficient to indicate a reasonable prospect for economic extraction and thus qualify it as a Mineral Resource under the CIM definition standards. The Mineral Resources of the Seal Zinc Deposit were classified as Inferred based on the geological interpretation and drill hole spacing. P&E has estimated that the Seal Zinc Deposit contains an Inferred Mineral Resource of 1,006,000 tonnes at a grade of 10.24% zinc and 46.6 g/t silver, at a 4.0% ZnEq cut-off.

## 26.0 RECOMMENDATIONS

### 26.1 RECOMMENDATIONS AND PROPOSED 2018 BUDGET

P&E recommends that Aston Bay continue to advance the Seal Zinc Deposit with further drilling to better define the Deposit. The current Mineral Resource Estimate is classified as Inferred due to the current width of drill hole-spacing and geological interpretation and additional drilling will assist in increasing the confidence level of the resource to an Indicated category.

P&E further recommends the following:

- Evaluate data from the 2017 Property-wide Falcon Plus Airborne Gravity Gradiometry survey, conducted by CGG Multi-Physics to further inform target definition;
- Complete a Property-wide VTEM survey targeting copper in 2018 to further inform target definition;
- Further investigate the numerous copper and zinc anomalies along 144 km structural trend;
- Identify and prioritize future drilling targets;
- Continue to improve camp facilities for future exploration programs;

A recommended 2018 program with a budget of CAD$2,800,000 is presented in Table 26.1.

**TABLE 26.1**
**BUDGET FOR 2018 PROPOSED PROGRAM**

| Item | | Cost (CAD$) |
|---|---|---|
| VTEM Survey | 10,000 line km | 600,000 |
| Geology Compilation | | 50,000 |
| Geophysical Modelling | | 50,000 |
| Exploration Drilling | | |
| Seal Zinc Deposit | 500 m @ $500/m | 250,000 |
| Regional Targets | 2,000 m @ $500/m | 1,000,000 |
| Assays and logging | | 100,000 |
| Camp and Logistics | | 400,000 |
| Air and freight | | 350,000 |
| | | |
| **Total** | | **$2,800,000** |

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# 28.0 CERTIFICATES

## CERTIFICATE OF QUALIFIED PERSON

### EUGENE J. PURITCH, P. ENG., FEC, CET

I, Eugene J. Puritch, P. Eng., residing at 44 Turtlecreek Blvd., Brampton, Ontario, L6W 3X7, do hereby certify that:

1. I am an independent mining consultant and President of P & E Mining Consultants Inc.
2. This certificate applies to the technical report titled "Initial Mineral Resource Estimate and Technical Report for the Seal Zinc Deposit, Aston Bay Property, Somerset Island, Nunavut (the "Technical Report"), with an effective date of October 6, 2017.
3. I am a graduate of The Haileybury School of Mines, with a Technologist Diploma in Mining, as well as obtaining an additional year of undergraduate education in Mine Engineering at Queen's University. In addition I have also met the Professional Engineers of Ontario Academic Requirement Committee's Examination requirement for Bachelor's Degree in Engineering Equivalency. I am a mining consultant currently licensed by the Professional Engineers of Ontario (License No. 100014010) and registered with the Ontario Association of Certified Engineering Technicians and Technologists as a Senior Engineering Technologist. I am also a member of the National and Toronto Canadian Institute of Mining and Metallurgy.

   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.

   I have practiced my profession continuously since 1978. My summarized career experience is as follows:
   - Mining Technologist - H.B.M.& S. and Inco Ltd.,.................................................................... 1978-1980
   - Open Pit Mine Engineer – Cassiar Asbestos/Brinco Ltd.,......................................................... 1981-1983
   - Pit Engineer/Drill & Blast Supervisor – Detour Lake Mine,..................................................... 1984-1986
   - Self-Employed Mining Consultant – Timmins Area,................................................................ 1987-1988
   - Mine Designer/Resource Estimator – Dynatec/CMD/Bharti, ................................................... 1989-1995
   - Self-Employed Mining Consultant/Resource-Reserve Estimator ............................................. 1995-2004
   - President – P & E Mining Consultants Inc,........................................................................... 2004-Present
4. I have visited the Property that is the subject of this Technical Report on July 3, 2013.
5. I am responsible for coauthoring Sections 1, 14, 25 and 26 of the Technical Report.
6. I am independent of the Issuer applying the test in Section 1.5 of NI 43-101.
7. I have had no prior involvement with the project that is the subject of this Technical Report.
8. I have read NI 43-101 and Form 43-101F1. This Technical Report has been prepared in compliance therewith.
9. 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.

Effective Date: October 6, 2017
Signed Date: January 17, 2018

***{SIGNED AND SEALED}***
*[Eugene Puritch]*

___________________________________
Eugene J. Puritch, P.Eng., FEC, CET

## CERTIFICATE OF QUALIFIED PERSON

**RICHARD SUTCLIFFE, Ph.D., P. GEO.**

I, Richard Sutcliffe, Ph.D., P. Geo., residing at 100 Broadleaf Crescent, Ancaster, Ontario, do hereby certify that:

1. I am an independent geological consultant and Sr. Geological Advisor, P&E Mining Consultants Inc.
2. This certificate applies to the technical report titled "Initial Mineral Resource Estimate and Technical Report for the Seal Zinc Deposit, Aston Bay Property, Somerset Island, Nunavut (the "Technical Report"), with an effective date of October 6, 2017.
3. I am a graduate of the University of Toronto with a Bachelor of Science degree in Geology (1977). In addition, I have a Master of Science in Geology (1980) from University of Toronto and a Ph.D. in Geology (1986) from the University of Western Ontario. I have worked as a geologist for a total of 36 years since obtaining my M.Sc. degree. I am a geological consultant currently licensed by the Association of Professional Geoscientists of Ontario (License No 852).

   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.
   My relevant experience for the purpose of the Technical Report is:
   - Precambrian Geologist, Ontario Geological Survey ................................................................. 1980-1989
   - Senior Research Geologist, Ontario Geological Survey ........................................................... 1989-1991
   - Associate Professor of Geology, University of Western Ontario. ............................................. 1990-1992
   - President and CEO, URSA Major Minerals Inc.. ....................................................................... 1992-2012
   - President and CEO, Patricia Mining Corp.................................................................................. 1998-2008
   - President and CEO, Auriga Gold Corp. ..................................................................................... 2010-2012
   - Consulting Geologist.................................................................................................... 1992-Present

4. I have not visited the Property that is the subject of this report.
5. I am responsible for co-authoring Sections 1 to 10, 13, 25, 26 and authoring sections 15 to 24 of the Technical Report.
6. I am independent of the Issuer applying the test in Section 1.5 of NI 43-101.
7. I have had no prior involvement with the Property that is the subject of this Technical Report.
8. I have read NI 43-101 and Form 43-101F1 and this Technical Report has been prepared in compliance therewith.
9. 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.

Effective Date: October 6, 2017
Signed Date: January 17, 2018

***{SIGNED AND SEALED}***
*[Richard Sutcliffe]*

______________________________
Dr. Richard H. Sutcliffe, Ph.D., P.Geo.

## CERTIFICATE OF QUALIFIED PERSON

**JARITA BARRY, P.GEO.**

I, Jarita Barry, P.Geo., residing at 3053 Keniris Road, Nelson, British Columbia, V1L 6Z8, do hereby certify that:

1. I am an independent geological consultant contracted by P&E Mining Consultants Inc.
2. This certificate applies to the technical report titled "Initial Mineral Resource Estimate and Technical Report for the Seal Zinc Deposit, Aston Bay Property, Somerset Island, Nunavut (the "Technical Report"), with an effective date of October 6, 2017.
3. I am a graduate of RMIT University of Melbourne, Victoria, Australia, with a B.Sc. in Applied Geology. I have worked as a geologist for a total of 12 years since obtaining my B.Sc. degree. I am a geological consultant currently licensed by the Association of Professional Engineers and Geoscientists of British Columbia (License No. 40875) and Professional Engineers and Geoscientists Newfoundland & Labrador (License No. 08399). I am also a member of the Australasian Institute of Mining and Metallurgy of Australia (Member No. 305397);

   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.

   My relevant experience for the purpose of the Technical Report is:

   - Geologist, Foran Mining Corp. ....................2004
   - Geologist, Aurelian Resources Inc. ....................2004
   - Geologist, Linear Gold Corp. ....................2005-2006
   - Geologist, Búscore Consulting ....................2006-2007
   - Consulting Geologist (AusIMM) ....................2008-2014
   - Consulting Geologist, P.Geo. (APEGBC/AusIMM) ....................2014-Present

4. I have not visited the Property that is the subject of this Technical Report.
5. I am responsible for co-authoring Sections 1 to 10, 25, 26 and authoring sections 11 and 12.
6. I am independent of the Issuer applying all of the tests in section 1.5 of National Instrument 43-101.
7. I have had no prior involvement with the Property that is the subject of this Technical Report.
8. I have read NI 43-101 and Form 43-101F1 and the Technical Report has been prepared in compliance therewith.
9. 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.

Effective Date: October 6, 2017
Signed Date: January 17, 2018

***{SIGNED AND SEALED}***
*[Jarita Barry]*

______________________________
Jarita Barry, P.Geo.

## CERTIFICATE OF QUALIFIED PERSON

### YUNGANG WU, P.GEO.

I, Yungang Wu, P. Geo., residing at 4334 Trail Blazer Way, Mississauga, Ontario, L5R 0C3, do hereby certify that:

1. I am an independent consulting geologist contracted by P&E Mining Consultants Inc.
2. This certificate applies to the technical report titled "Initial Mineral Resource Estimate and Technical Report for the Seal Zinc Deposit, Aston Bay Property, Somerset Island, Nunavut (the "Technical Report"), with an effective date of October 6, 2017.
3. I am a graduate of Jilin University, China with a Master Degree in Mineral Deposits (1992). I am a geological consultant and a registered practising member of the Association of Professional Geoscientist of Ontario (Registration No. 1681). I am also a member of the Ontario Prospectors Association.

   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. My relevant experience for the purpose of the Technical Report is as follows:

   - Geologist –Geology and Mineral Bureau, Liaoning Province, China……………………..1992-1993
   - Senior Geologist – Committee of Mineral Resources and Reserves of Liaoning, China…1993-1998
   - VP – Institute of Mineral Resources and Land Planning, Liaoning, China………………..1998-2001
   - Project Geologist–Exploration Division, De Beers Canada………………………………..2003-2009
   - Mine Geologist – Victor Diamond Mine, De Beers Canada……………………………….2009-2011
   - Resource Geologist– Coffey Mining Canada……………………………………………….2011-2012
   - Consulting Geologist……………………………………………………………………….2013-Present

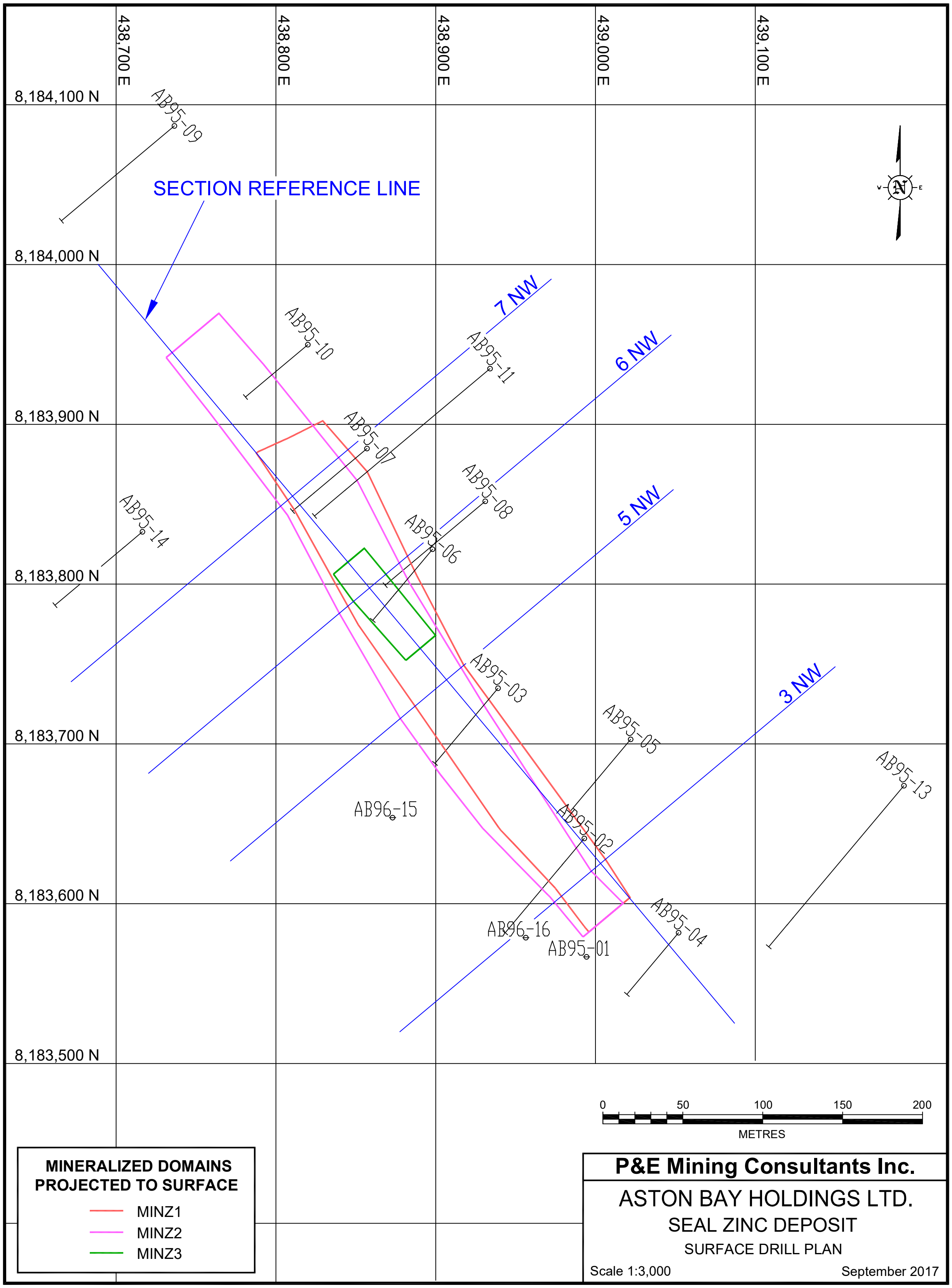
4. I have not visited the property that is the subject of this Technical Report.
5. I am responsible for co-authoring Sections 1, 14, 25 and 26 of the Technical Report.
6. I am independent of the Issuer applying all of the tests in section 1.5 of National Instrument 43-101.
7. I have had no prior involvement with the Property that is the subject of this Technical Report.
8. I have read NI 43-101 and Form 43-101F1 and the Technical Report has been prepared in compliance therewith.
9. 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.

Effective Date: October 6, 2017
Signed Date: January 17, 2018

***{SIGNED AND SEALED}***
*[Yungang Wu]*

_______________________________________
Yungang Wu, P.Geo.

# APPENDIX I. SURFACE DRILL HOLE PLAN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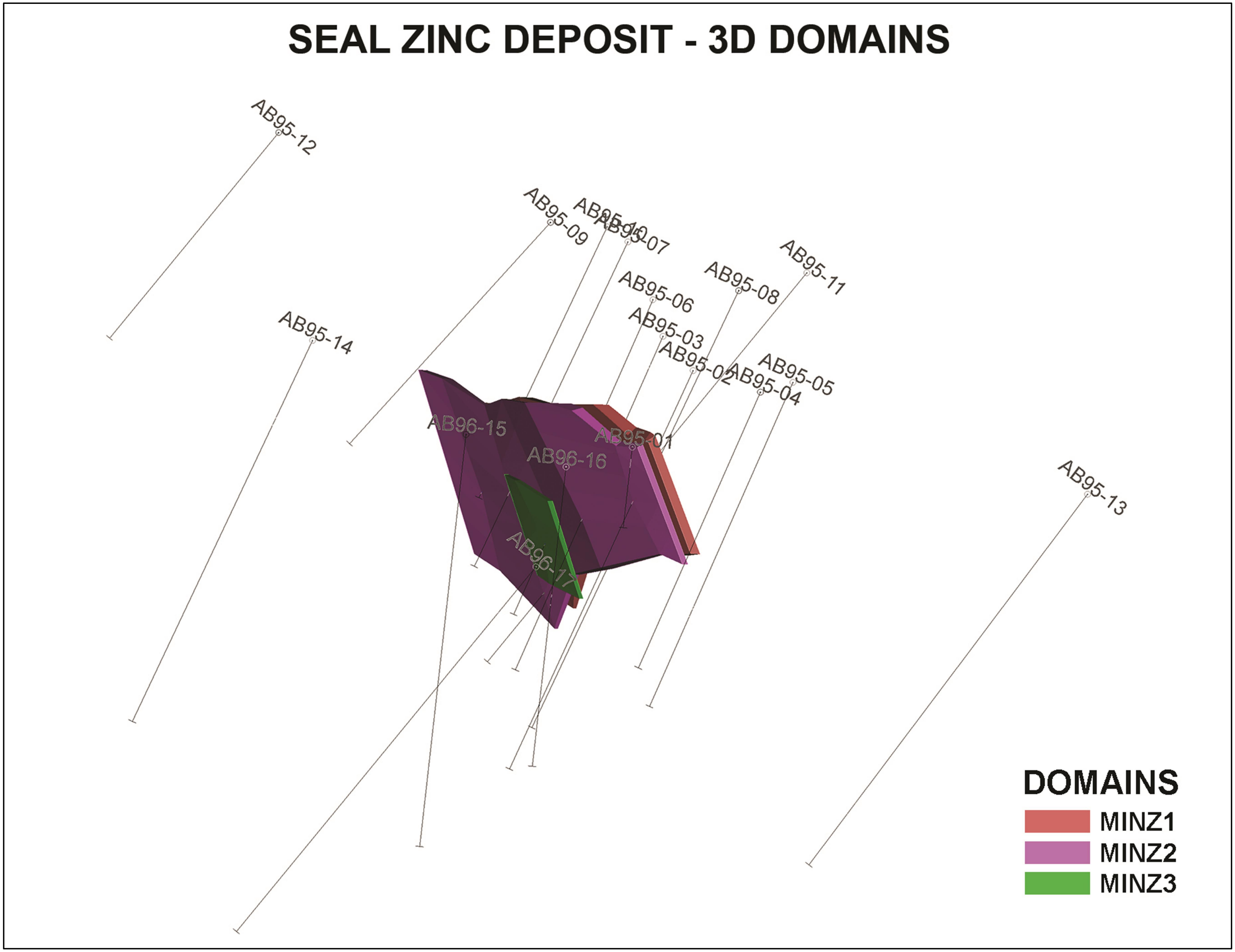
8,183,700 N
8,183,600 N
8,183,500 N
SECTION REFERENCE LINE
7 NW
6 NW
5 NW
3 NW
AB95-09
AB95-10
AB95-11
AB95-07
AB95-14
AB95-08
AB95-06
AB95-03
AB95-05
AB95-13
AB96-15
AB95-02
AB95-04
AB96-16
AB95-01
N
0
50
100
150
200
METRES
MINERALIZED DOMAINS PROJECTED TO SURFACE
MINZ1
MINZ2
MINZ3
P&E Mining Consultants Inc.
ASTON BAY HOLDINGS LTD.
SEAL ZINC DEPOSIT
SURFACE DRILL PLAN
Scale 1:3,000
September 2017

# APPENDIX II. 3D DOMAINS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AB95-09
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AB95-11
AB95-08
AB95-06
AB95-14
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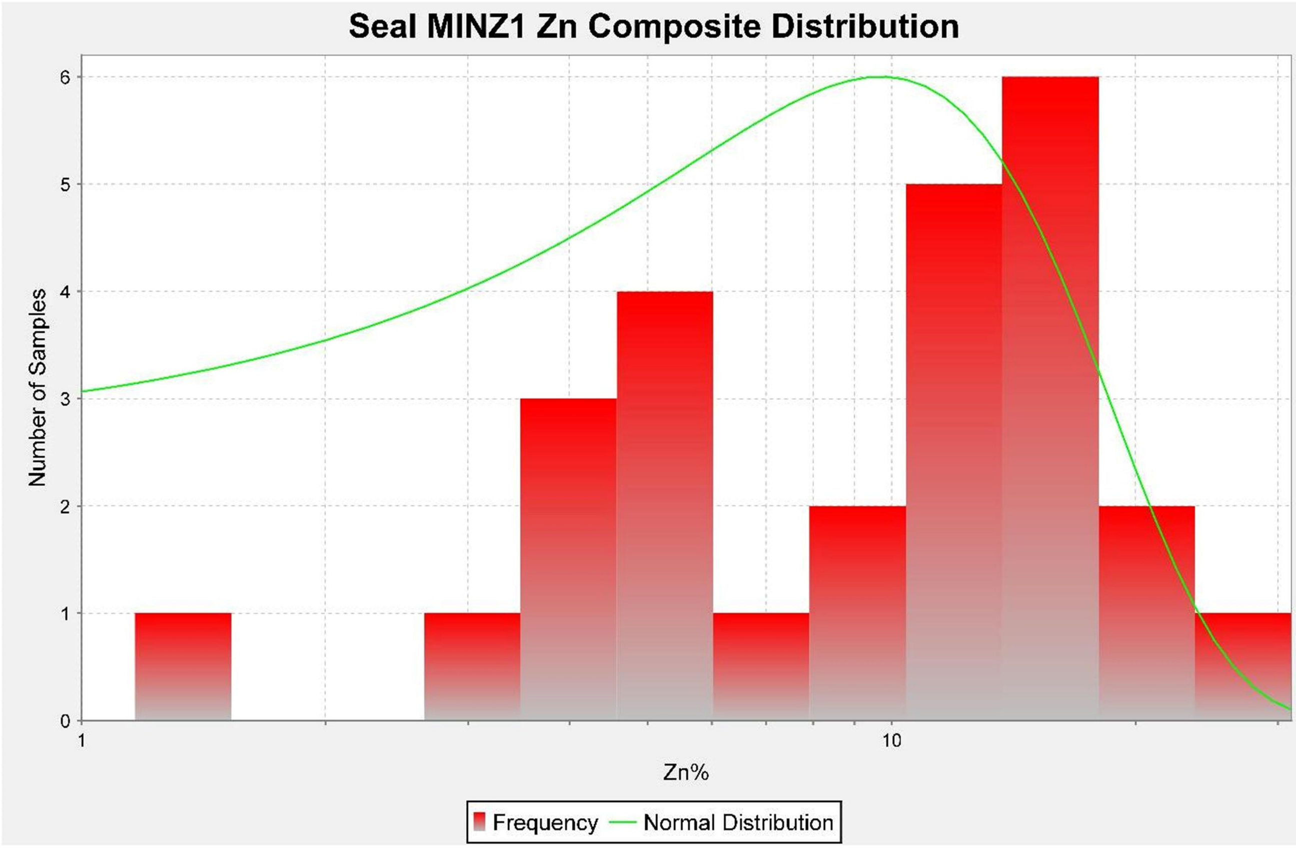
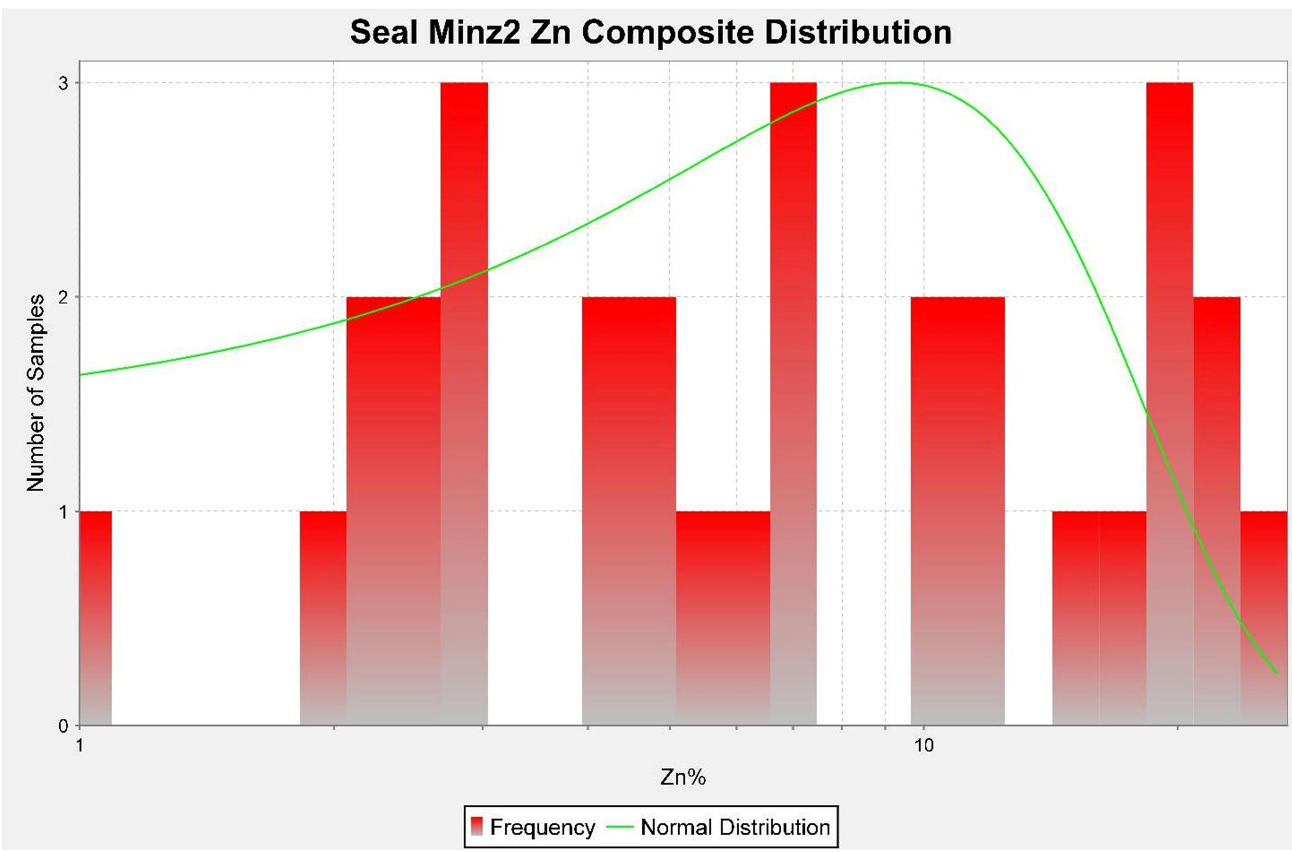
AB95-05
AB95-04
AB96-15
AB95-01
AB96-16
AB96-17
AB95-13
DOMAINS
MINZ1
MINZ2
MINZ3

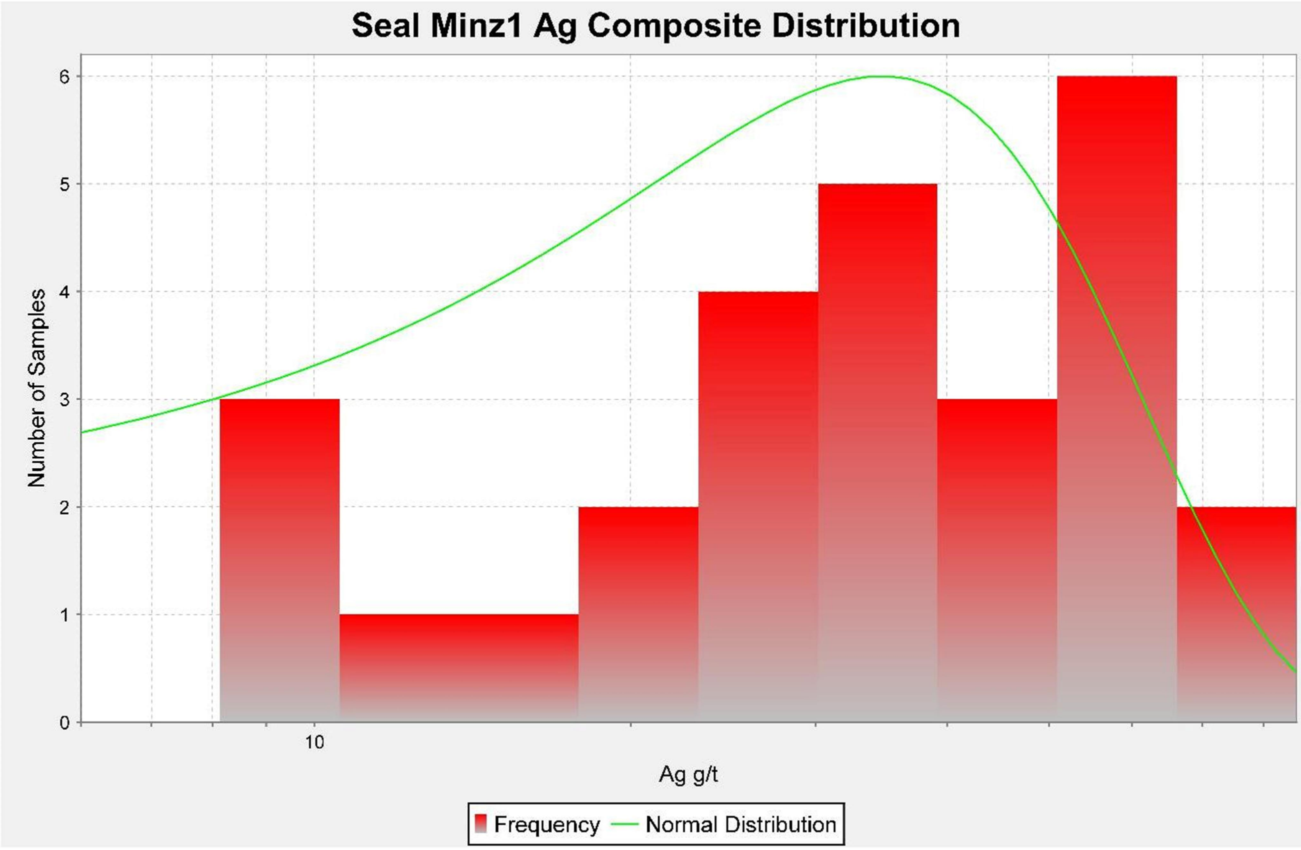
# APPENDIX III. LOG NORMAL HISTOGRAMS

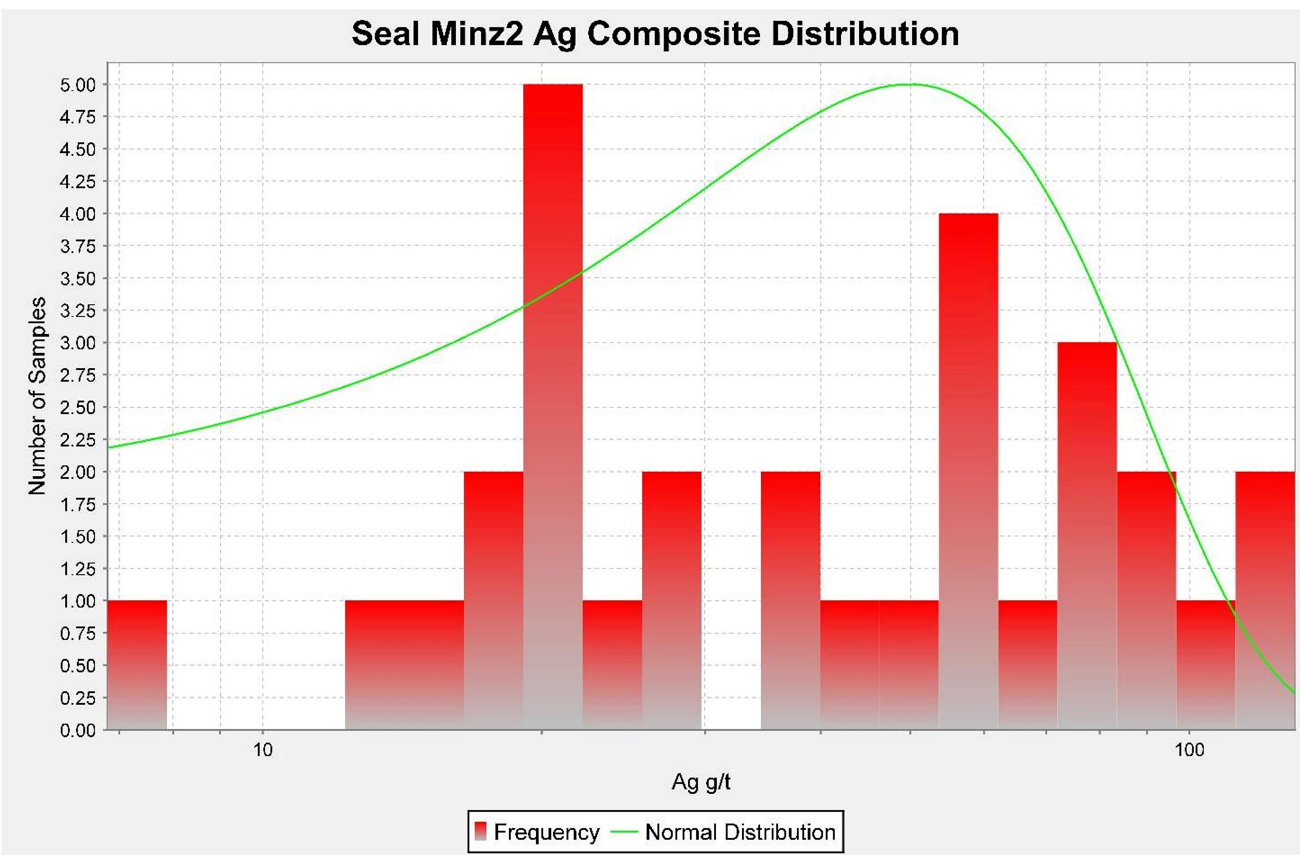


Seal MINZ1 Zn Composite Distribution
Number of Samples
0
1
2
3
4
5
6
1
10
Zn%
Frequency
Normal Distribution

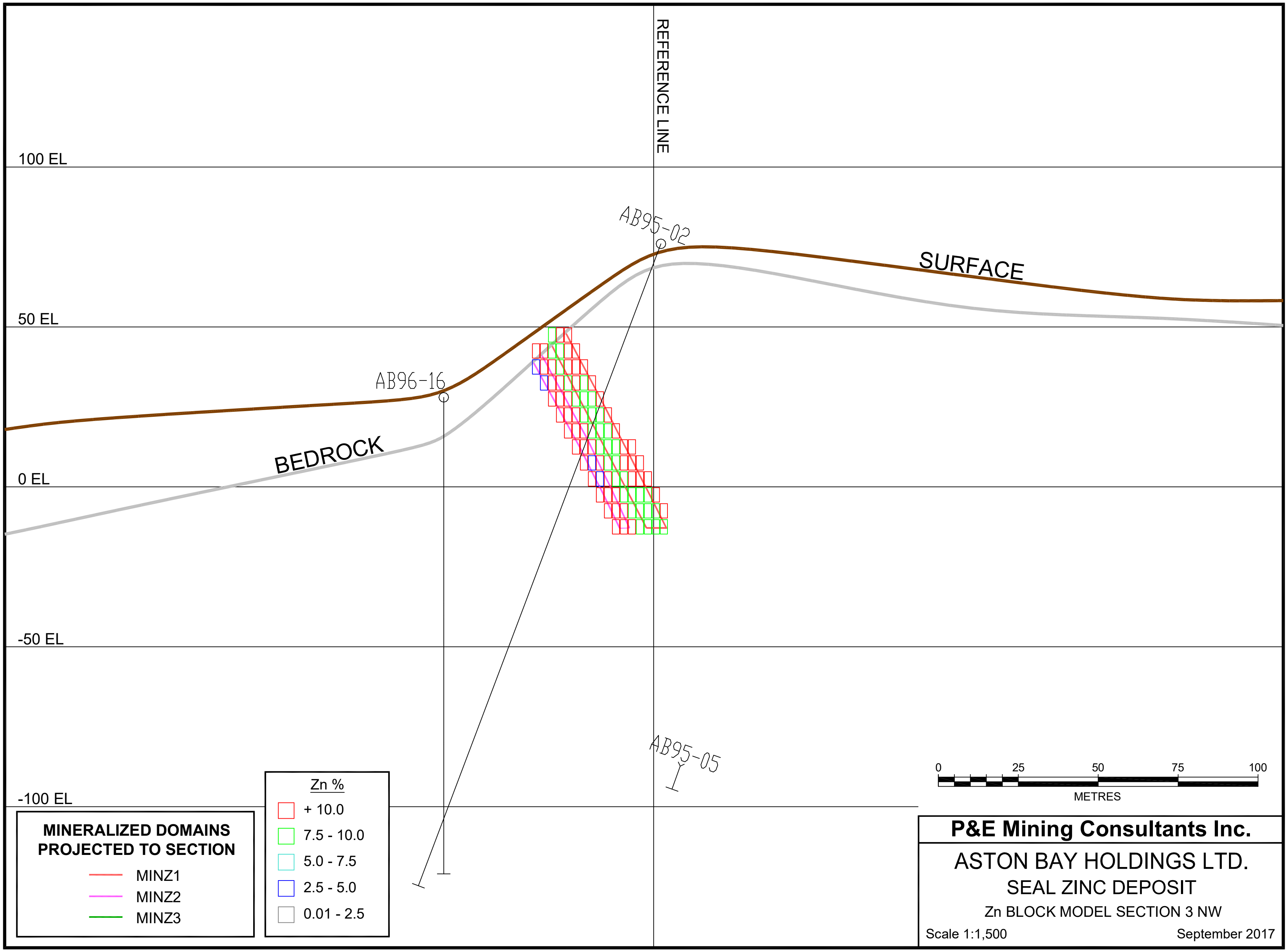



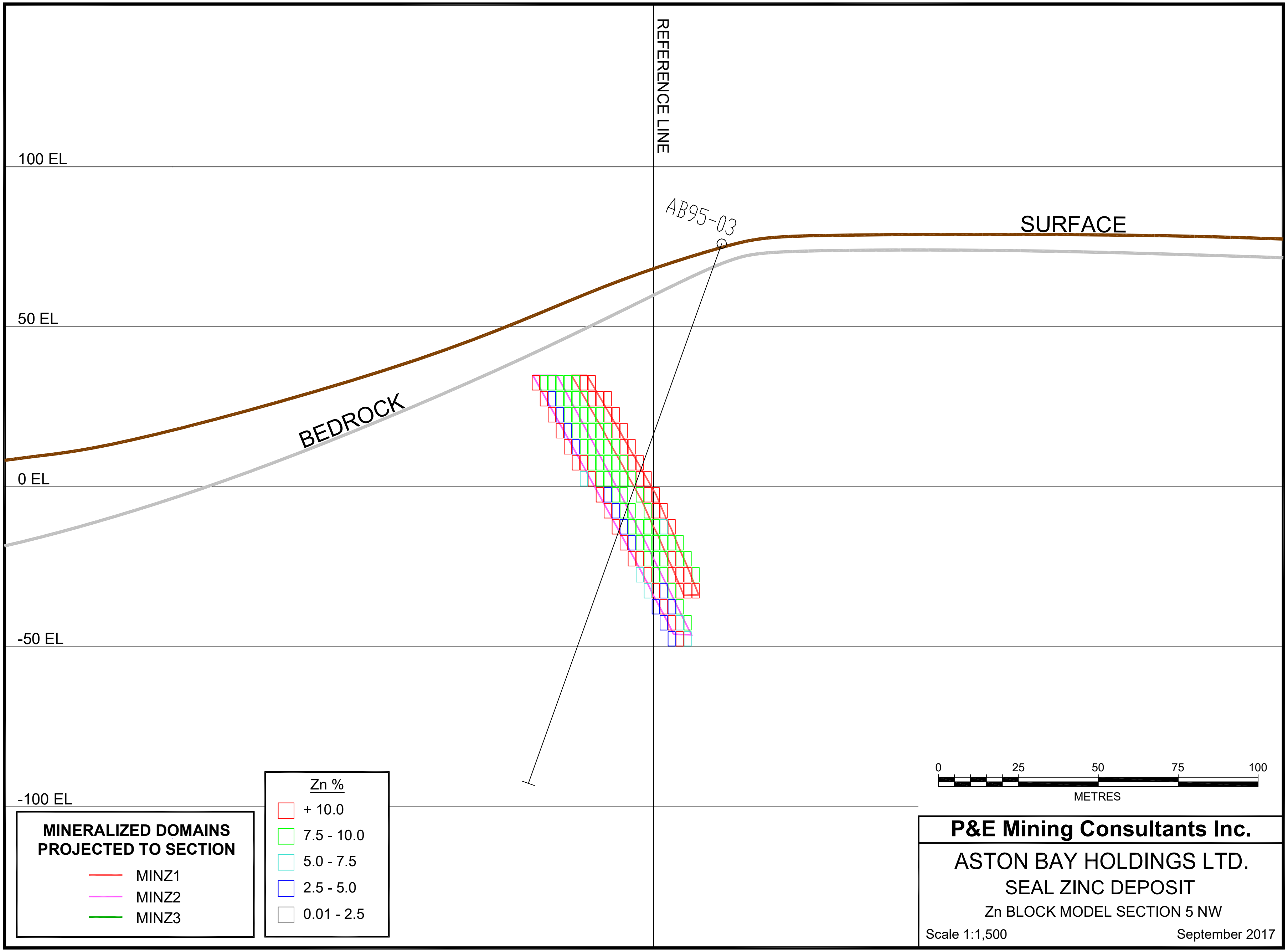
Seal Minz2 Zn Composite Distribution
Number of Samples
0
1
2
3
1
10
Zn%
Frequency
Normal Distribution

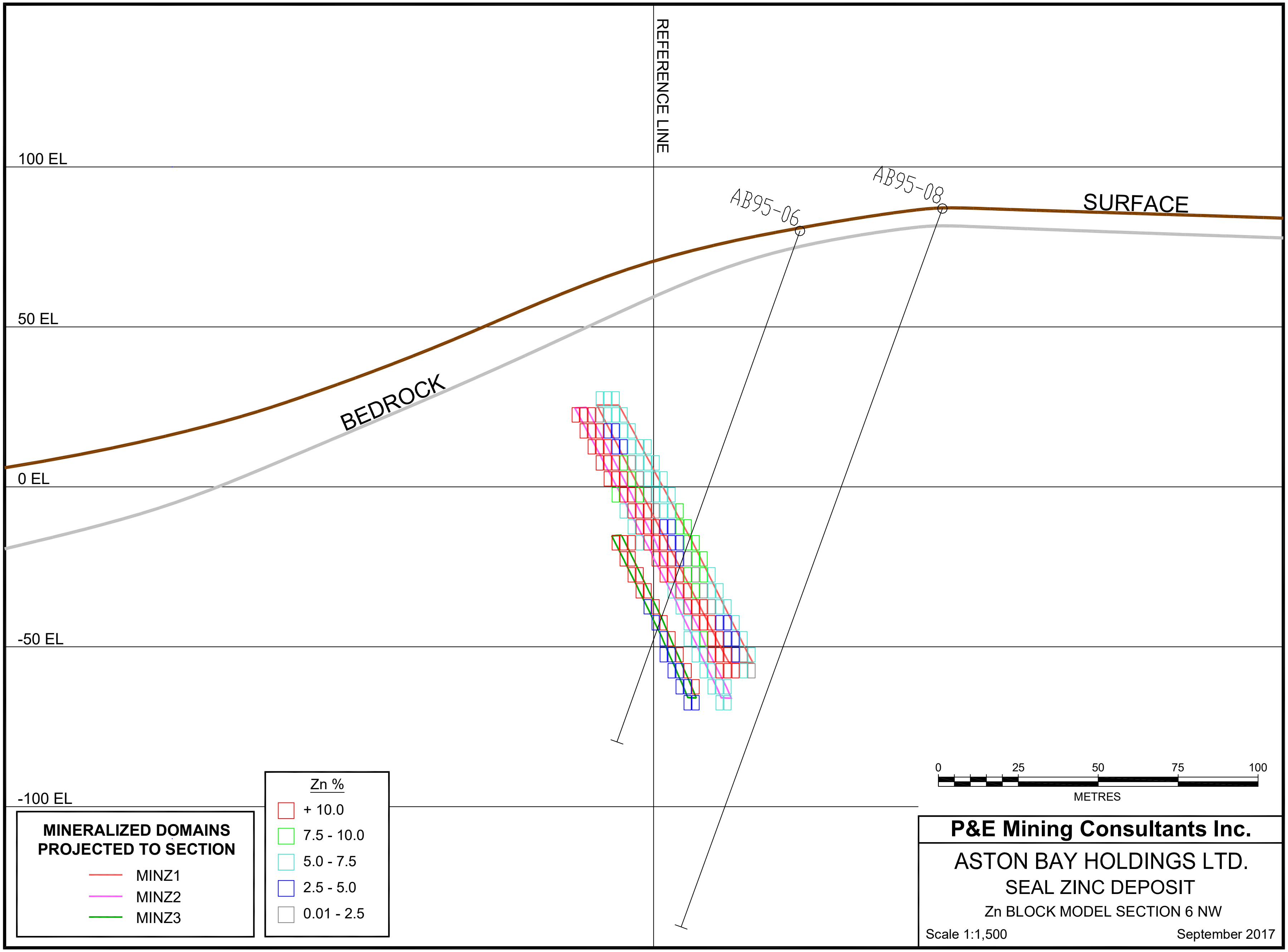

Seal Minz1 Ag Composite Distribution
Number of Samples
Ag g/t
10
0
1
2
3
4
5
6
Frequency
Normal Distribution

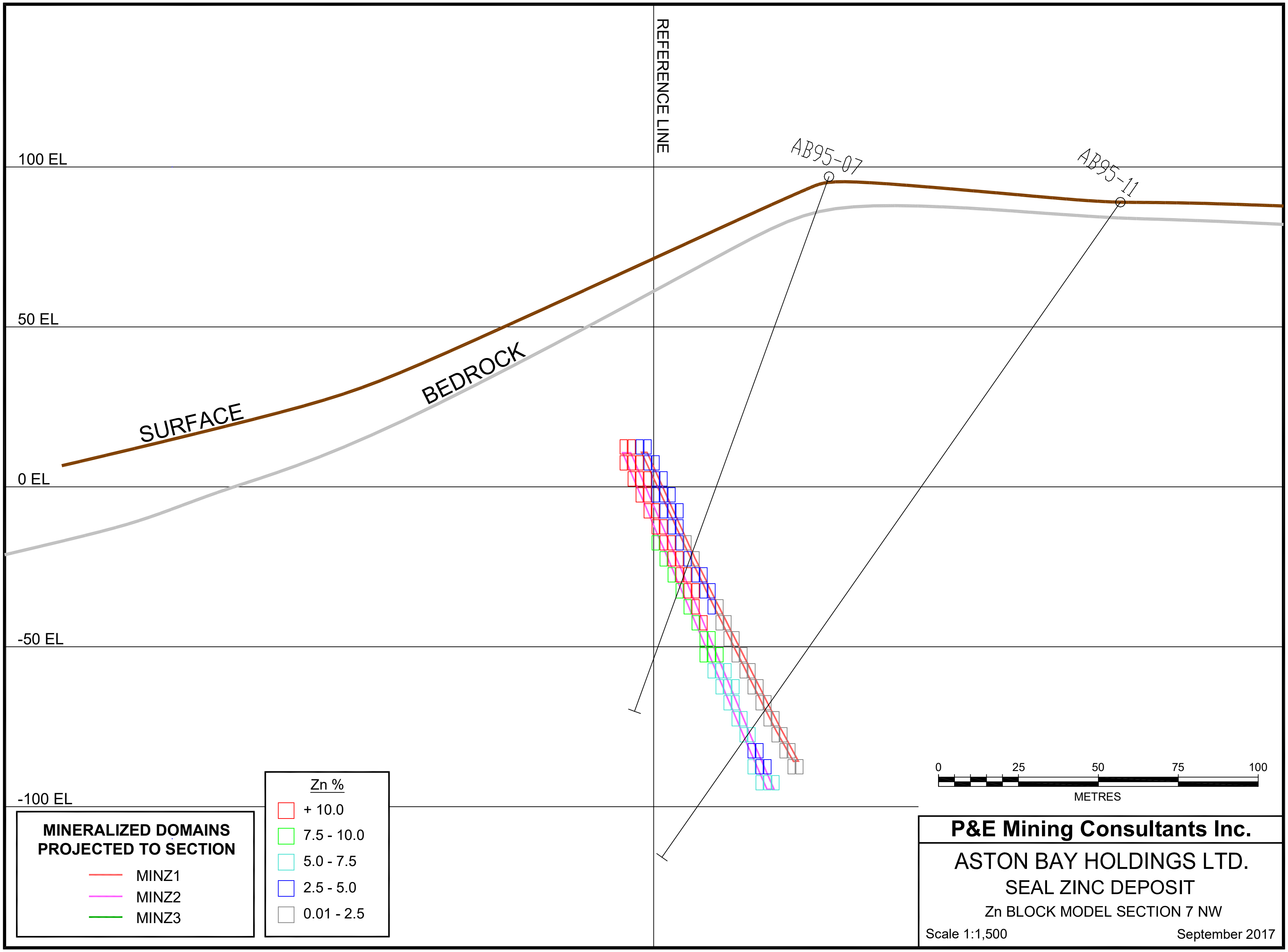

Seal Minz2 Ag Composite Distribution
Number of Samples
Ag g/t
10
100
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
2.25
2.50
2.75
3.00
3.25
3.50
3.75
4.00
4.25
4.50
4.75
5.00
Frequency
Normal Distribution

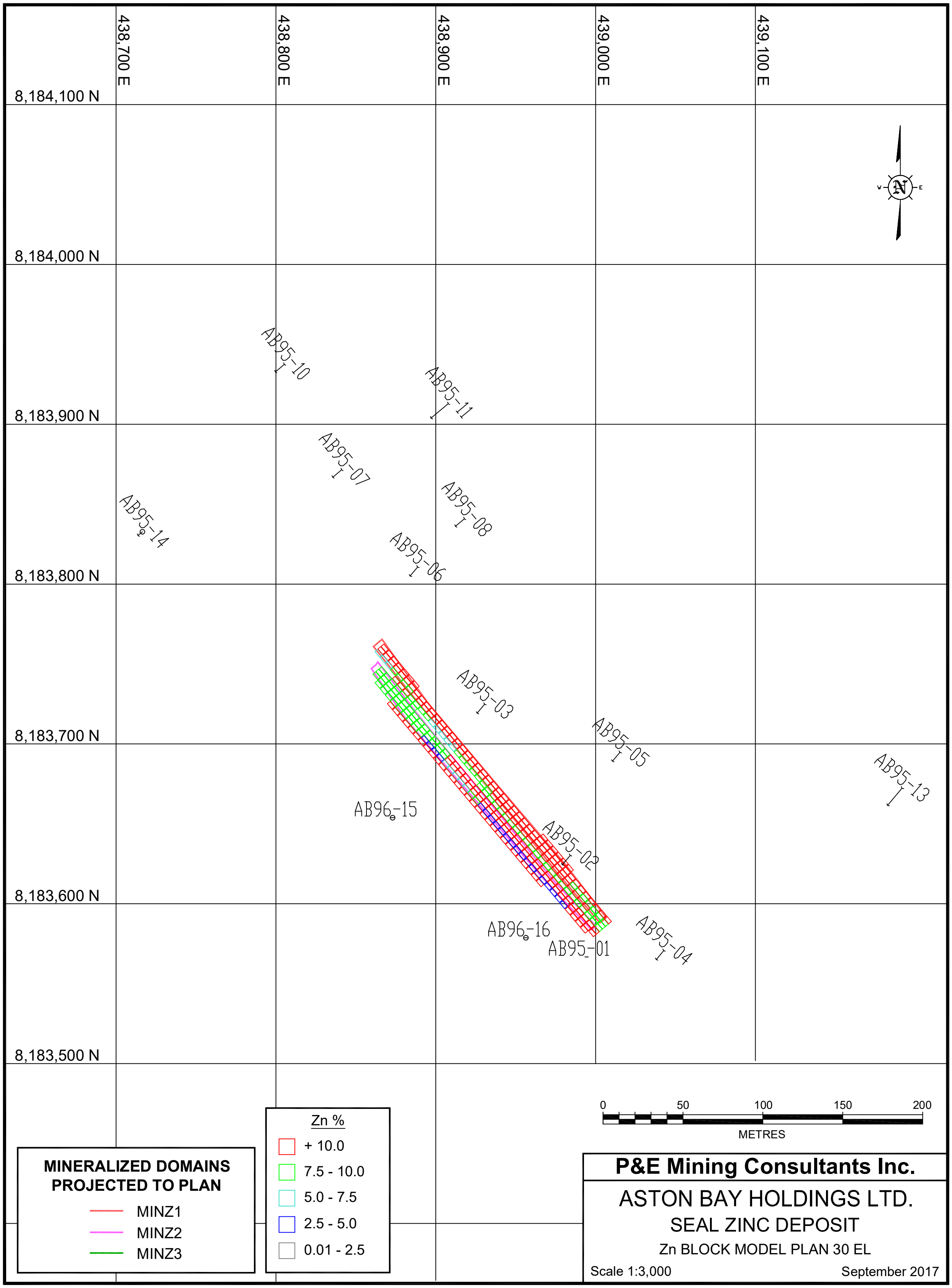
# APPENDIX IV. ZN BLOCK MODEL CROSS SECTIONS AND PLANS


REFERENCE LINE
100 EL
50 EL
0 EL
-50 EL
-100 EL
AB95-02
SURFACE
AB96-16
BEDROCK
AB95-05
0
25
50
75
100
METRES
MINERALIZED DOMAINS PROJECTED TO SECTION
MINZ1
MINZ2
MINZ3
Zn %
+ 10.0
7.5 - 10.0
5.0 - 7.5
2.5 - 5.0
0.01 - 2.5
P&E Mining Consultants Inc.
ASTON BAY HOLDINGS LTD.
SEAL ZINC DEPOSIT
Zn BLOCK MODEL SECTION 3 NW
Scale 1:1,500
September 2017


REFERENCE LINE
100 EL
50 EL
0 EL
-50 EL
-100 EL
AB95-03
SURFACE
BEDROCK
0
25
50
75
100
METRES
MINERALIZED DOMAINS PROJECTED TO SECTION
MINZ1
MINZ2
MINZ3
Zn %
+ 10.0
7.5 - 10.0
5.0 - 7.5
2.5 - 5.0
0.01 - 2.5
P&E Mining Consultants Inc.
ASTON BAY HOLDINGS LTD.
SEAL ZINC DEPOSIT
Zn BLOCK MODEL SECTION 5 NW
Scale 1:1,500
September 2017


REFERENCE LINE
100 EL
50 EL
0 EL
-50 EL
-100 EL
AB95-06
AB95-08
SURFACE
BEDROCK
0
25
50
75
100
METRES
MINERALIZED DOMAINS
PROJECTED TO SECTION
MINZ1
MINZ2
MINZ3
Zn %
+ 10.0
7.5 - 10.0
5.0 - 7.5
2.5 - 5.0
0.01 - 2.5
P&E Mining Consultants Inc.
ASTON BAY HOLDINGS LTD.
SEAL ZINC DEPOSIT
Zn BLOCK MODEL SECTION 6 NW
Scale 1:1,500
September 2017


REFERENCE LINE
100 EL
50 EL
0 EL
-50 EL
-100 EL
AB95-07
AB95-11
SURFACE
BEDROCK
0
25
50
75
100
METRES
MINERALIZED DOMAINS PROJECTED TO SECTION
MINZ1
MINZ2
MINZ3
Zn %
+ 10.0
7.5 - 10.0
5.0 - 7.5
2.5 - 5.0
0.01 - 2.5
P&E Mining Consultants Inc.
ASTON BAY HOLDINGS LTD.
SEAL ZINC DEPOSIT
Zn BLOCK MODEL SECTION 7 NW
Scale 1:1,500
September 2017


438,700 E
438,800 E
438,900 E
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439,100 E
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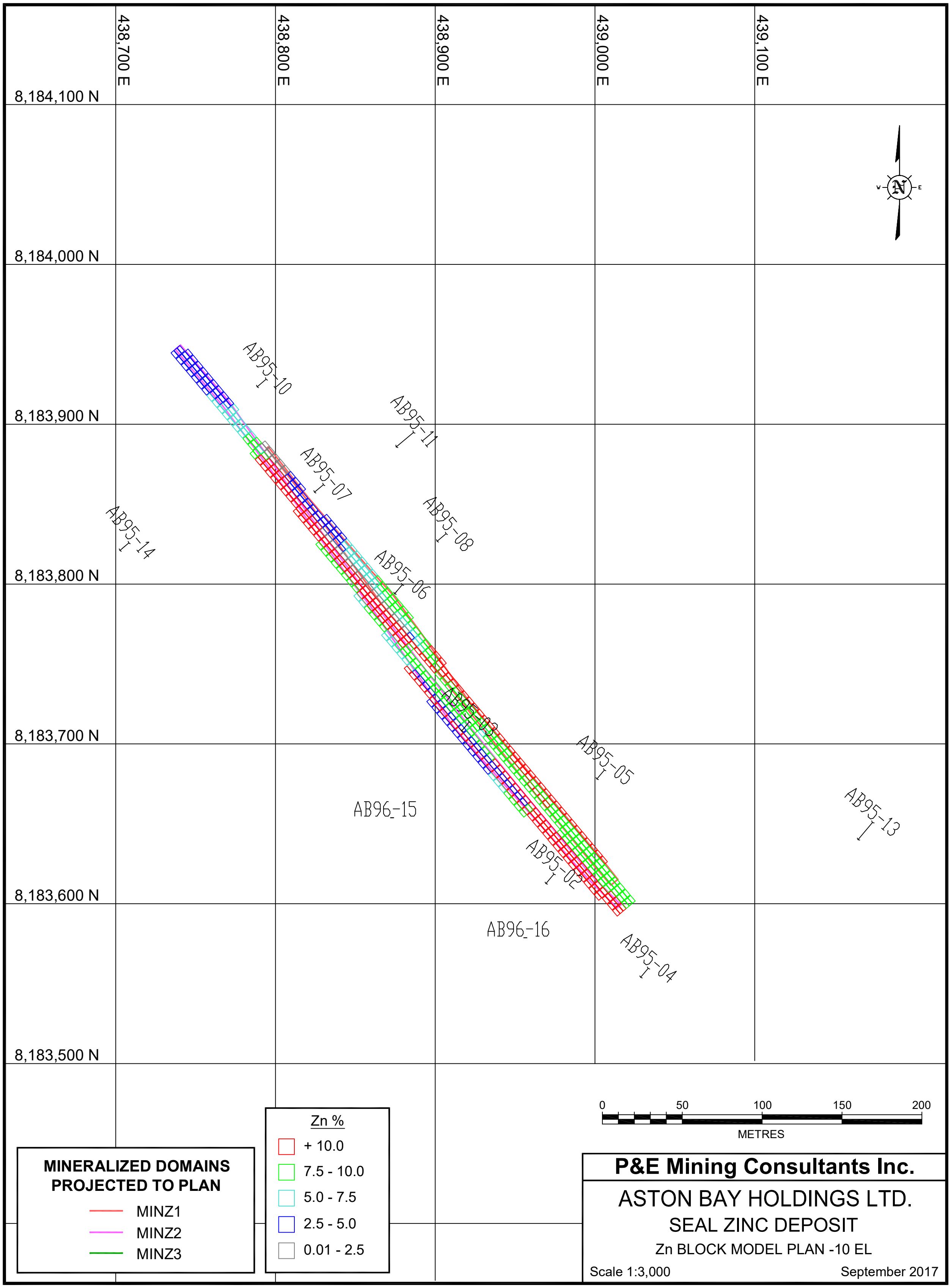
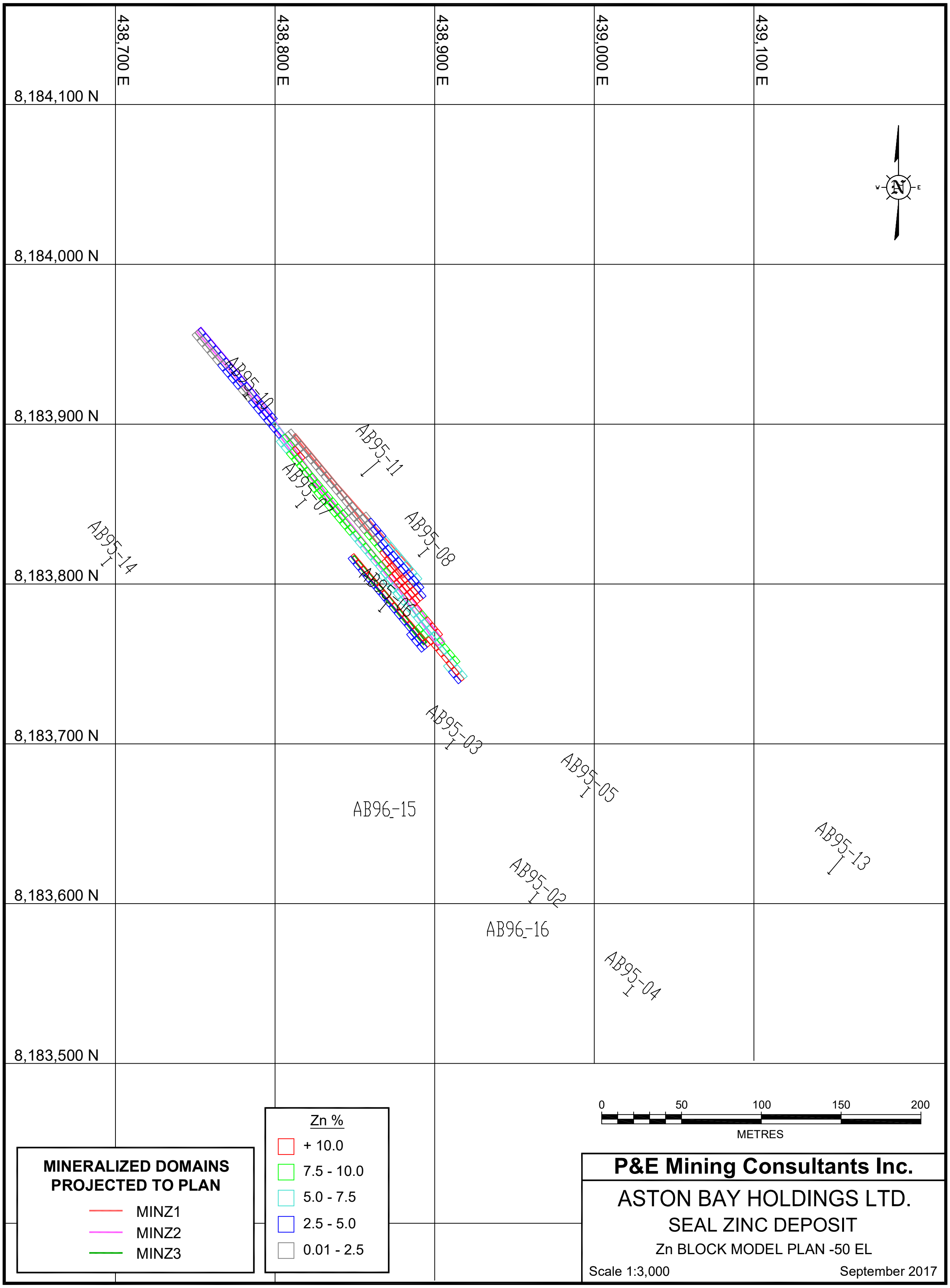
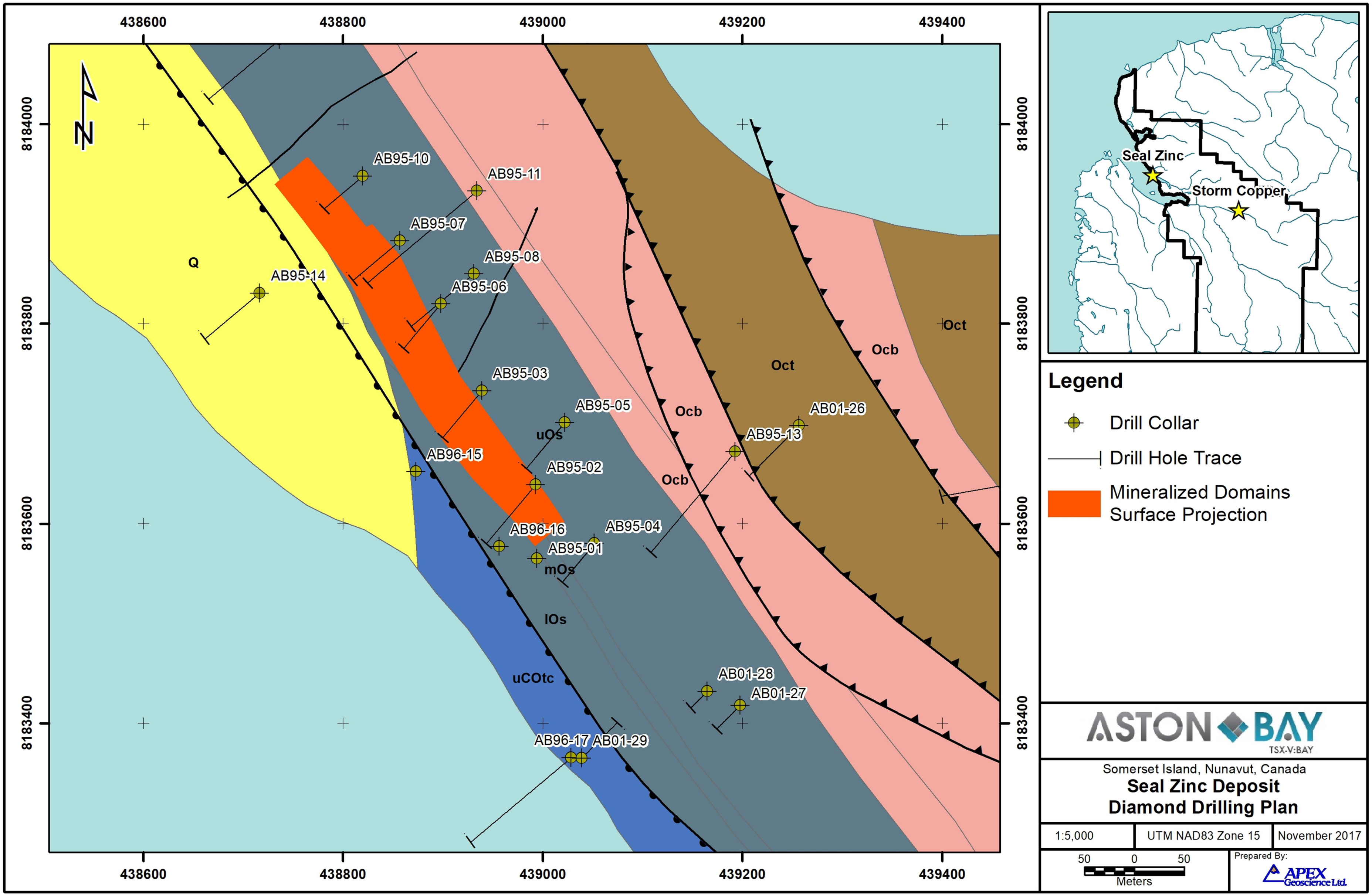
8,184,000 N
8,183,900 N
8,183,800 N
8,183,700 N
8,183,600 N
8,183,500 N
N
AB95-10
AB95-11
AB95-07
AB95-08
AB95-14
AB95-06
AB95-03
AB95-05
AB95-13
AB96-15
AB95-02
AB96-16
AB95-01
AB95-04
0
50
100
150
200
METRES
Zn %
+ 10.0
7.5 - 10.0
5.0 - 7.5
2.5 - 5.0
0.01 - 2.5
MINERALIZED DOMAINS
PROJECTED TO PLAN
MINZ1
MINZ2
MINZ3
P&E Mining Consultants Inc.
ASTON BAY HOLDINGS LTD.
SEAL ZINC DEPOSIT
Zn BLOCK MODEL PLAN 30 EL
Scale 1:3,000
September 2017


438,700 E
438,800 E
438,900 E
439,000 E
439,100 E
8,184,100 N
8,184,000 N
8,183,900 N
8,183,800 N
8,183,700 N
8,183,600 N
8,183,500 N
AB95-10
AB95-11
AB95-07
AB95-08
AB95-14
AB95-06
AB95-03
AB95-05
AB95-13
AB96-15
AB95-02
AB96-16
AB95-04
0
50
100
150
200
METRES
MINERALIZED DOMAINS
PROJECTED TO PLAN
MINZ1
MINZ2
MINZ3
Zn %
+ 10.0
7.5 - 10.0
5.0 - 7.5
2.5 - 5.0
0.01 - 2.5
P&E Mining Consultants Inc.
ASTON BAY HOLDINGS LTD.
SEAL ZINC DEPOSIT
Zn BLOCK MODEL PLAN -10 EL
Scale 1:3,000
September 2017



438,700 E
438,800 E
438,900 E
439,000 E
439,100 E
8,184,100 N
8,184,000 N
8,183,900 N
8,183,800 N
8,183,700 N
8,183,600 N
8,183,500 N
N
AB95-10
AB95-11
AB95-07
AB95-08
AB95-14
AB95-06
AB95-03
AB95-05
AB96-15
AB95-13
AB95-02
AB96-16
AB95-04
0
50
100
150
200
METRES
Zn %
+ 10.0
7.5 - 10.0
5.0 - 7.5
2.5 - 5.0
0.01 - 2.5
MINERALIZED DOMAINS PROJECTED TO PLAN
MINZ1
MINZ2
MINZ3
P&E Mining Consultants Inc.
ASTON BAY HOLDINGS LTD.
SEAL ZINC DEPOSIT
Zn BLOCK MODEL PLAN -50 EL
Scale 1:3,000
September 2017

# APPENDIX V. GEOLOGICAL PLAN AND CROSS SECTIONS, SEAL DEPOSIT



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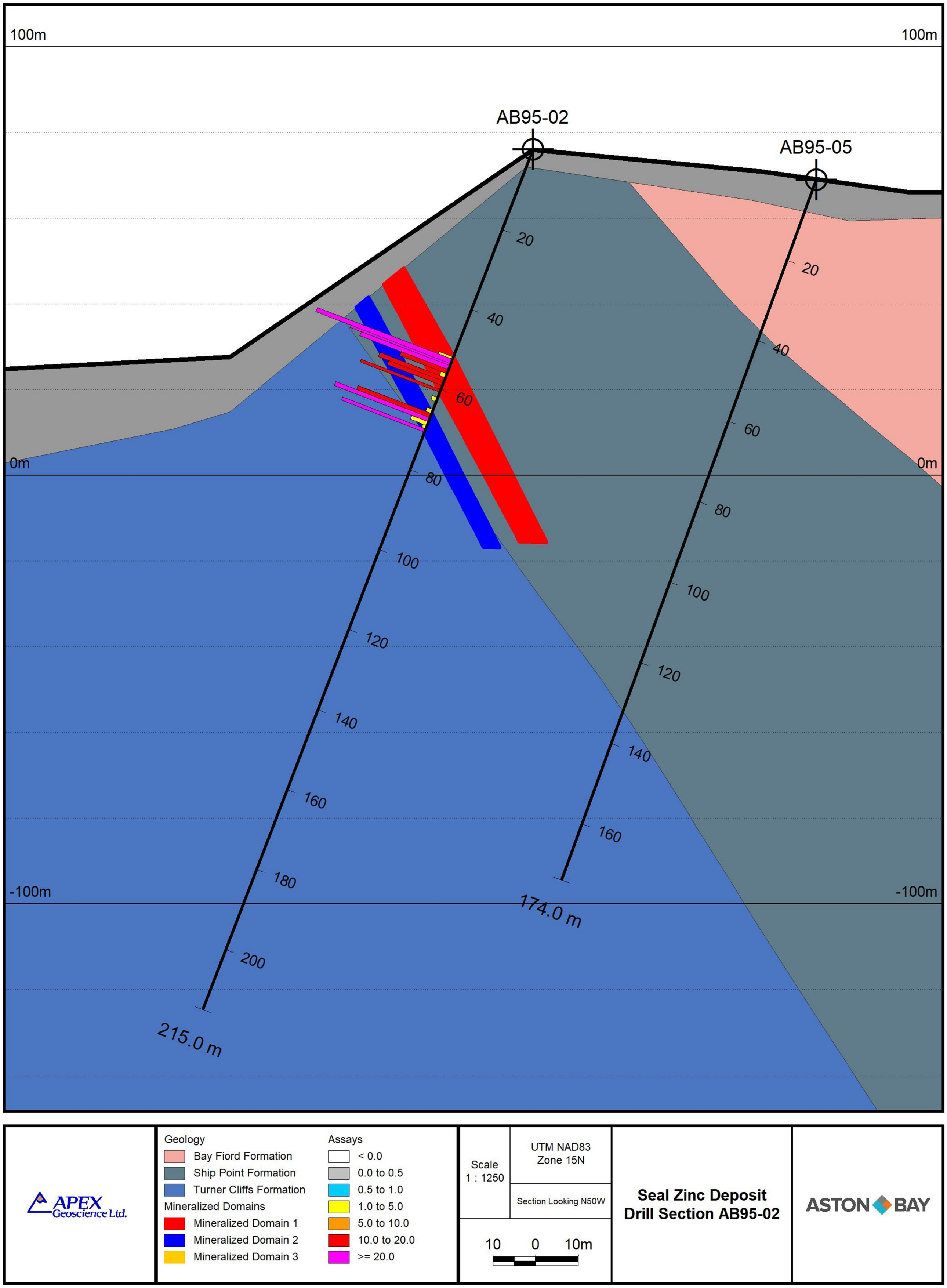
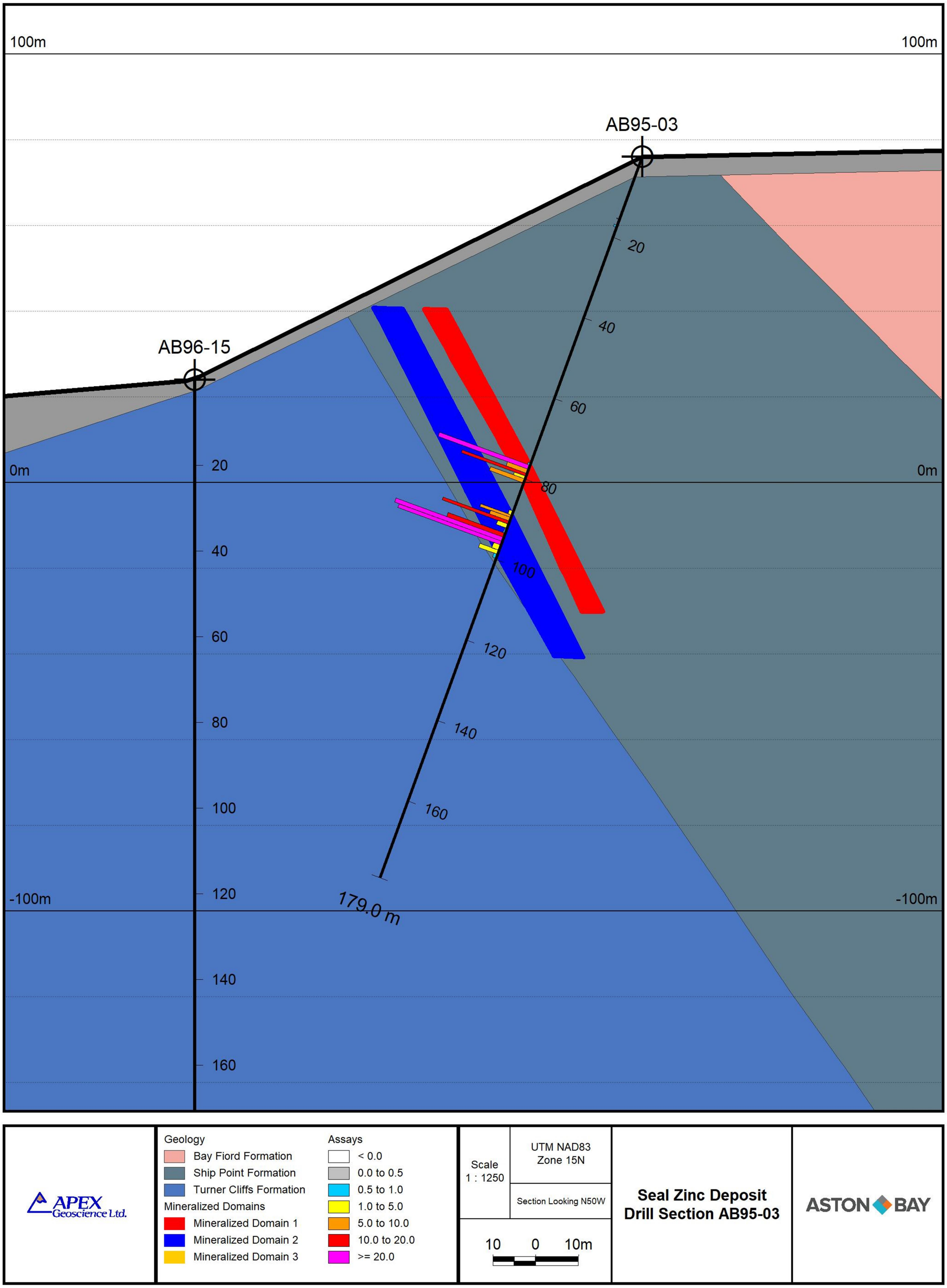
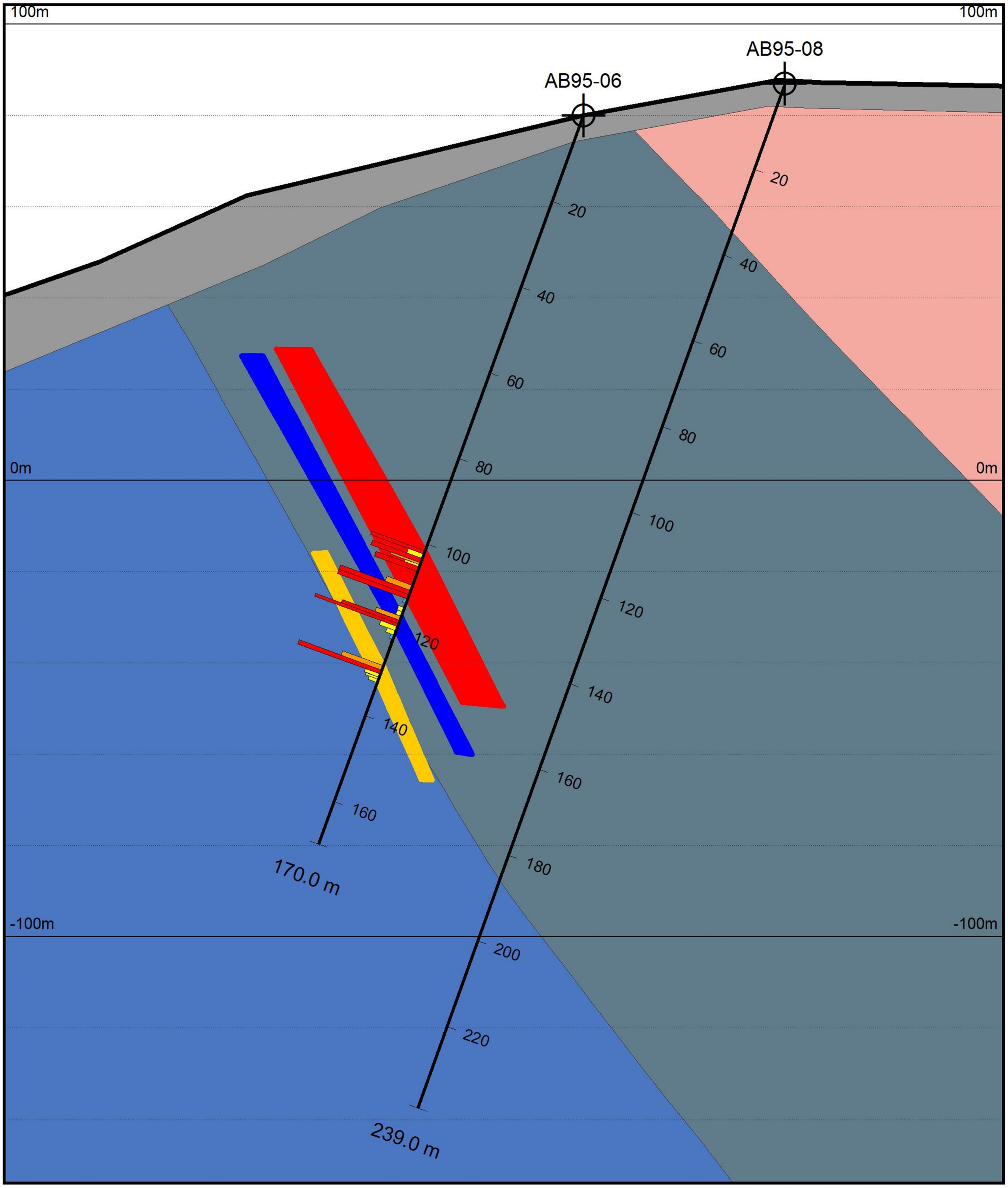

100m
100m
AB95-02
AB95-05
20
40
60
80
100
120
140
160
180
200
215.0 m
20
40
60
80
100
120
140
160
174.0 m
0m
0m
-100m
-100m
Geology
Bay Fiord Formation
Ship Point Formation
Turner Cliffs Formation
Mineralized Domains
Mineralized Domain 1
Mineralized Domain 2
Mineralized Domain 3
Assays
< 0.0
0.0 to 0.5
0.5 to 1.0
1.0 to 5.0
5.0 to 10.0
10.0 to 20.0
>= 20.0
APEX Geoscience Ltd.
Scale 1 : 1250
UTM NAD83 Zone 15N
Section Looking N50W
10 0 10m
Seal Zinc Deposit
Drill Section AB95-02
ASTON BAY


100m
100m
AB95-03
AB96-15
20
40
60
80
100
120
140
160
179.0 m
0m
0m
-100m
-100m
20
40
60
80
100
120
140
160
Geology
Bay Fiord Formation
Ship Point Formation
Turner Cliffs Formation
Mineralized Domains
Mineralized Domain 1
Mineralized Domain 2
Mineralized Domain 3
Assays
< 0.0
0.0 to 0.5
0.5 to 1.0
1.0 to 5.0
5.0 to 10.0
10.0 to 20.0
>= 20.0
Scale
1 : 1250
UTM NAD83
Zone 15N
Section Looking N50W
10 0 10m
Seal Zinc Deposit
Drill Section AB95-03




| Geology | Assays | Scale 1 : 1250 | UTM NAD83 Zone 15N | Seal Zinc Deposit Drill Section AB95-06 |
|---|---|---|---|---|
| Bay Fiord Formation | < 0.0 | | Section Looking N50W | |
| Ship Point Formation | 0.0 to 0.5 | 10 0 10m | | |
| Turner Cliffs Formation | 0.5 to 1.0 | | | |
| Mineralized Domains | 1.0 to 5.0 | | | |
| Mineralized Domain 1 | 5.0 to 10.0 | | | |
| Mineralized Domain 2 | 10.0 to 20.0 | | | |
| Mineralized Domain 3 | >= 20.0 | | | |

APEX Geoscience Ltd.

ASTON BAY