MADRID-BOSTON PROJECT

FINAL ENVIRONMENTAL IMPACT STATEMENT

Volume 1 Annex V1-7 Type A Water Licence Applications

Package P5-21

Geochemical Characterization of Waste Rock and Ore from the Madrid South Deposit, Hope Bay Project

TMAC RESOURCES

Geochemical Characterization of Waste Rock and Ore from the Madrid South Deposit, Hope Bay Project

Prepared for

TMAC Resources Inc.

Prepared by

srk consulting

SRK Consulting (Canada) Inc.
1CT022.013
November 2017

Geochemical Characterization of Waste Rock and Ore from the Madrid South Deposit, Hope Bay Project

November 2017

Prepared for

TMAC Resources Inc.
372 Bay Street, Suite 901
Toronto, ON M5H 2W9
Canada

Tel: +1 416 628 0216
Web: www.tmacresources.com

Prepared by

SRK Consulting (Canada) Inc.
2200–1066 West Hastings Street
Vancouver, BC V6E 3X2
Canada

Tel: +1 604 681 4196
Web: www.srk.com

Project No: 1CT022.013

File Name: HopeBay_MadridS_FEIS_Report_1CT022.013_20171117_LNB.docx

Technical Summary

The Hope Bay Project (the Project) is a gold mining and milling undertaking of TMAC Resources Inc. The Project consists of two phases: Phase 1 (Doris project), which is currently being carried out under an existing Water Licence, and Phase 2 (Madrid-Boston project) which is in the environmental assessment stage. Phase 1 includes mining and infrastructure at Doris only, while Phase 2 includes mining and infrastructure at Madrid (Madrid North and Madrid South mines) and Boston (Boston Mine) located approximately 10 and 60 km south from Doris Mine respectively. TMAC retained SRK to provide geochemical expertise for the Project.

This report documents the methods and results of geochemical characterization completed to evaluate the metal leaching and acid rock drainage potential of waste rock and ore associated with development of the proposed underground mining operations at Madrid South.

The findings are based on the results of acid-base accounting, mineralogy data and results from kinetic tests, including humidity cell tests and barrel tests on a number of samples from this area. This report contains the most current geochemical database for the Madrid South deposit and supersedes SRK (2015a), which was prepared as part of TMAC's Type B water licence submission to the Nunavut Water Board for the bulk exploration program at Madrid South.

The most volumetrically significant rock types for the Madrid South deposit include mafic to ultramafic metavolcanics (1), intermediate volcanics (2), and late porphyry granitoids (9). Less significant rock types characterized include quartz veining (12q), which is associated with gold mineralization, intermediate to felsic volcanics (3ao), early gabbro intrusives (7), late gabbro intrusive (10a), late mafic dykes (10b), and carbonate vein (12c).

The samples were characterized by low sulphur content, with 95% of samples containing less than 0.5% total sulphur. The sulphide mineralogy was primarily pyrite with trace levels of chalcopyrite, gersdorffite, pyhrrotite, arsenopyrite, cobaltite, sphalerite and tetrahedrite. Overall, ferroan dolomite was the most abundant carbonate mineral, followed by calcite. The occurrence of magnesite and magnesium siderite was overall less significant, both in quantity and occurrence. Levels of NP and TIC were high (median values for all rock types greater than 75 kg$CaCO_3$ eq/t). The potential overestimation of neutralization potential due to the presence of NP-neutral iron carbonates was assessed by calculating an effective TIC ($TIC_{(Ca+Mg)}$) based on the lowest calcium-plus-magnesium content in the Madrid South humidity cell test samples. Regardless of buffering method used (NP, TIC or $TIC_{(Ca+Mg)}$), all samples were classified as non-PAG.

All the volumetrically significant rock types contained samples with solid-phase arsenic concentrations that were enriched relative to typical crustal abundance. Overall highest arsenic levels were exhibited for samples of quartz vein (median levels greater than 100 ppm) while samples of mafic volcanics (1), intermediate volcanics (2), and late porphyry granitoids (9) contained median levels of less than 10 ppm.

Five humidity cell tests of Madrid South waste rock were operated as part of the characterization program. All samples yielded leachates with neutral pH. The typical and high sulphur samples of mafic volcanics and late porphyry granitoids had low sulphate release rates (maximum 1 mg/kg/week), indicating very low rates of sulphide oxidation. Arsenic, cobalt and nickel leaching rates were appreciably higher in the samples with high sulphide content.

Two barrel tests were set up using mafic to ultramafic metavolcanics (W15) and late porphyry granitoids (W16) from the Madrid South area, as well as a blank barrel (W12) to assess potential contamination. The pH for the two barrels were circumneutral. Parameter levels were low and stable with the exception of arsenic, cobalt, copper, molybdenum, nickel and uranium concentrations in barrel W16 (late porphyry graintoid), which exhibited increasing trends. All average release rates for barrel W16 were at least an order of magnitude lower than the highest stable humidity cell test rate of the same rock type, with the exception of copper and molybdenum which were more than five times lower than the highest stable HCT rate.

The potential for ARD from Madrid South waste rock is low. Neutral pH metal leaching from the relatively small proportion of samples that contain higher sulphur concentrations is of concern, specifically related to arsenic and, to a lesser extent, cobalt, copper, nickel, molybdenum and uranium.

Table of Contents

Technical Summary ii

1 Introduction 1

1.1 Scope 1

1.2 Geological Context 2

1.3 Development Concept 3

2 Methods 5

2.1 Static Tests 5

2.1.1 Sample Selection 5

2.1.2 Analytical Program 5

2.1.3 Assignment of Geological Attributes and Economic Classifications 5

2.2 Humidity Cells 6

2.3 Field Barrel Tests 7

2.4 Data Quality Assurance/Quality Control 9

3 Results & Discussion 10

3.1 Static Tests 10

3.1.1 Dataset 10

3.1.2 Mineralogy 11

3.1.3 Acid-Base Accounting 15

3.1.4 Solid-Phase Elemental Composition 23

3.2 Humidity Cell Tests 25

3.2.1 Pre-Test Sample Characterization 25

3.2.2 Humidity Cell Data 31

3.2.3 Post-Test Sample Characterization 33

3.3 Barrel Tests 36

3.3.1 Sample Characterization 36

3.3.2 Barrel Data 39

4 Conclusions 44

5 References 47

List of Tables

Table 2-1: Summary of Humidity Cell Testing Program 6

Table 2-2: Analytical Frequency of SRK Humidity Cell Tests 7

Table 2-3: Status of Humidity Cell Testing Program 7

Table 2-4: Summary and Status of Field Barrel Testing Program 8

Table 2-5: Overview of Geochemical Database for Madrid South Barrel Tests....9

Table 3-1: Median Mineral Content for Madrid South Rock Types 12

Table 3-2: Summary of Mineral Data for Madrid South Rock Types....13

Table 3-3: Carbonate Mineral Stoichiometric Formulae for Humidity Cell Test Samples 15

Table 3-4: ARD Classifications According to Rock Type 22

Table 3-5: Summary of Madrid South Elevated Solid-Phase Elements....24

Table 3-6: Carbonate Mineralogy for Humidity Cell Test Samples 27

Table 3-7: Sulphur Mineralogy for Humidity Cell Test Samples....27

Table 3-8: ABA Data for Madrid South Humidity Cell Test Samples 29

Table 3-9: Percentile Rank of Sulphide Sulphur, NP and TIC for Madrid South Humidity Cell Tests....30

Table 3-10: Percentile Rank of Arsenic Levels, Madrid South Humidity Cell Tests....31

Table 3-11: ABA Data for Madrid South Humidity Cell Test Residues 35

Table 3-12: Mineralogy Data for Madrid South Barrel Test Samples....36

Table 3-13: ABA Data and Percentile Ranks for Madrid South Barrel Test Samples....38

Table 3-14: Percentile Rank of Arsenic Levels, Madrid South Barrel Test Samples 39

Table 3-15: Comparison of Release Rates from Late Porphyryr Granitoid Barrrel (W16) and Humidity Cell Tests (HCTs) 43

List of Figures

Figure 1-1 Location of the Main Deposits, Hope Bay Project..2

Figure 1-2: Geology of Patch 14 Deposit 3

Figure 1-3: Plan View of Madrid South ABA Samples 4

Figure 3-1: Percentile Distribution of Ferroan Dolomite by Rock Type 14

Figure 3-2: Percentile Distribution of Calcite by Rock Type 14

Figure 3-3: Percentile Distribution of Sulphur by Rock Type..16

Figure 3-4: Percentile Distribution of Modified NP by Rock Type 17

Figure 3-5: Percentile Distribution of TIC by Rock Type 18

Figure 3-6: Comparison of NP and TIC Levels..18

Figure 3-7: Percentile Distribution of $TIC_{(Ca+Mg)}$ by Rock Type 19

Figure 3-8: Comparison of NP and $TIC_{(Ca+Mg)}$ Levels 19

Figure 3-9: Comparison of TIC and Calcite Levels 20

Figure 3-10: NP to AP (Expressed as Sulphur) by Rock Type..20

Figure 3-11: TIC to AP (Expressed as Sulphur) by Rock Type..21

Figure 3-12: $TIC_{(Ca+Mg)}$ to AP (Expressed as Sulphur) by Rock Type..21

Figure 3-13: Percentile Distribution of Arsenic by Rock Type, Madrid South 24

Figure 3-14: Percentile Distribution of Arsenic by Ore Deposit for Mafic Metavolcanic (1) and Quartz Vein (12q) Samples 25

Figure 3-15: pH, Sulphate, Arsenic, Cobalt, Nickel and Uranium Release Rates for Humidity Cell Tests .34

Figure 3-15: Lab pH in Madrid South Barrel Test Leachates..40

Figure 3-16: Sulphate Concentrations in Madrid South Barrel Test Leachates 41

Figure 3-17: Arsenic, Cobalt, Copper, Molybdenum, Nickel and Uranium Concentrations in Madrid South Barrel Test Leachates..42

Appendices

Appendix A: Spatial Location, Geological Attributes & Economic Classification of Madrid South Sample Set

Appendix B: HBML Standard Lithology Codes,

Appendix C: Summary of Field Barrel Test Sample Intervals, Madrid South

Appendix D: Semi-quantitative Mineralogy Data, Madrid South *

Appendix E: Acid-Base Accounting Data, Madrid South

Appendix F: Solid-Phase Trace Element Data (Aqua Regia Digestion), Madrid South

Appendix G: Statistical Analysis of Solid-Phase Elemental Data by Lithology, Madrid South

Appendix H: Humidity Cell Sample Mineralogy and Solid-Phase Elemental Data, Madrid South

Appendix H-1: Mineralogy

Appendix H-2: Solid-Phase Trace Metal Data for Humidity Cell Samples - ICP Metals by Aqua Regia Digestion

Appendix I: Humidity Cell Test Results, Madrid South

Appendix I-1: Summary of ABA and Kinetic Test Results

Appendix I-2: Summary of Trace Element Stable Release Rates for Humidity Cell Tests

Appendix I-3: Summary of General Parameter, Nutrient & Ionic Stable Release Rates for Humidity Cell Tests

Appendix I-4: Summary of Kinetic Test Depletion Rates

Appendix I-5: Low-level Sulphate Data for Last Two Cycles of Selected Humidity Cell Tests

Appendix J: Humidity Cell Test Graphs and Raw Data, Madrid South

Appendix J-1: Waste Rock Humidity Cell Graphs

Appendix J-2: Madrid South Humidity Cell Test Raw Data

Appendix K: Solid-Phase Trace Metal Data - ICP Metals by Aqua Regia Digestion, Madrid South Barrel Samples

Appendix L: Field Barrel Sample Solid-Phase Elemental Data, Madrid South

Appendix L-1: Field Barrel Concentration Graphs, Madrid South

Appendix L-2: Monitoring Data for Madrid South Barrel Tests

Appendix L-3: Release Rates for Madrid South Barrel Tests

Change Log

The following table provides an overview of material changes to this report from the previous version issued as Appendix V3-4D as part of the DEIS for Phase 2 of the Hope Bay Project dated December 2016.

Changes by Section

Information Request, Technical Comment, or Other Change	Section	Comments
INAC-IR47	1.3	Waste rock management and conservative source term derivation method preclude the need to breakdown volumes of ore and waste rock by lithology.
INAC-TRC14	3.1.3	Best practice guidelines used for ARD classifications.

1 Introduction

1.1 Scope

The Hope Bay Project (the Project) is a gold mining and milling undertaking of TMAC Resources Inc. The Project is located 705 km northeast of Yellowknife and 153 km southwest of Cambridge Bay in Nunavut Territory, and is situated east of Bathurst Inlet. The Project comprises of three distinct areas of known mineralization plus extensive exploration potential and targets. The three areas that host mineral resources are Doris, Madrid, and Boston.

The Project consists of two phases; Phase 1 (Doris project), which is currently being carried out under an existing Water Licence, and Phase 2 (Madrid-Boston project) which is in the environmental assessment and regulatory stage. Phase 1 includes mining and infrastructure at Doris, while Phase 2 includes mining and infrastructure at Madrid and Boston located approximately 10 and 60 km due south from Doris, respectively. (Figure 1.1).

TMAC acquired Hope Bay in early 2013 from Hope Bay Mining Ltd. (HBML), a wholly owned subsidiary of Newmont Mining. The previous owner, HBML, with assistance from SRK Consulting (Canada) Inc., completed a comprehensive geochemical characterization program of waste rock and ore associated with Madrid South, which has also been referred to as the Patch 14 and Wolverine deposits. The characterization work was in support of ongoing feasibility, environmental assessment and permitting studies, including a Type B water licence submission to the Nunavut Water Board (NWB) in support of the bulk exploration program at Madrid South.

At the request of TMAC, SRK has prepared this report to present the methods and results for the Madrid South area testing program and to assess the metal leaching and acid rock drainage (ML/ARD) potential of waste rock and ore that would be produced as part of the proposed underground mining activities for the Project. The findings are based on acid-base accounting and mineralogy data obtained from sampling conducted in 2009 and 2010, and results from kinetic tests initiated in 2010, including humidity cell tests and barrel tests on a number of samples from this area. The humidity cell tests operated until 2012. Monitoring of the barrel tests is ongoing and data up until 2015 are presented. This report contains the most current geochemical database for the Madrid South deposit and supersedes SRK (2015a)[1], which was prepared as part of TMAC's Type B water licence submission for the bulk exploration program at Madrid South. Madrid South source terms for the Project are presented in SRK (2017a).

[1]Updated sections include Sections 2.3 (Field Barrel Tests), 3.1.2 (Mineralogy), 0 (

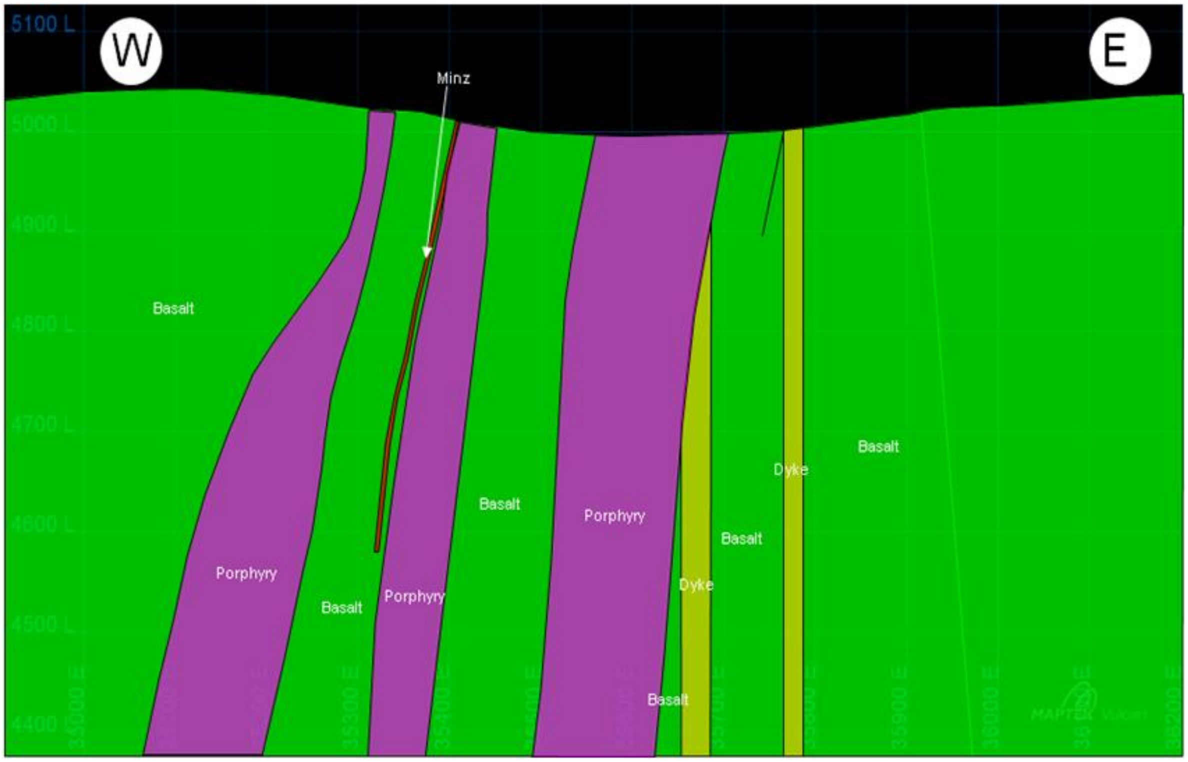
Acid-Base **Accounting**), 3.3.2 (Barrel Data) and 4 (Conclusions) of this report.

Figure 1.1: Location of the Main Deposits, Hope Bay Project

1.2 Geological Context

Madrid South is comprised of the Patch 14 and Wolverine ore bodies. Figure 1.2 presents a schematic of the Patch 14 deposit geology. The geology in the Patch 14 area consists of north-south trending stratigraphy consisting of thick metavolcanic sequences of pillow basalt and minor interflow sediments. These sediments are not proximal to the mine plan. The metavolcanic sequence is immediately west of a regional structure and is intruded by quartz-feldspar porphyry bodies and gabbroic dykes. Mineralized quartz veins are located at the contacts between porphyry intrusions and pillow basalts. Gold is found in 1 m to 3 m quartz veins containing visible gold associated with tourmaline, chlorite, white mica septa and wall rock inclusions accompanied with 1% to 2% fine grain pyrite. High grade mineralization is found in a subvertical shoot, plunging steeply to the north. Once outside the shoot margins, there is a sharp decrease in grade. Alteration in the immediate vicinity of the veins consists of moderate dolomite-sericite-ankerite-albite alteration with zones of intense complete carbonate replacement. Outside the zone of alteration, sulphide levels diminish.

The Wolverine deposit, located to the west of Patch 14 and the mine workings, has similar geological features to Patch 14; however, the Wolverine deposit is described as more of a vein system.



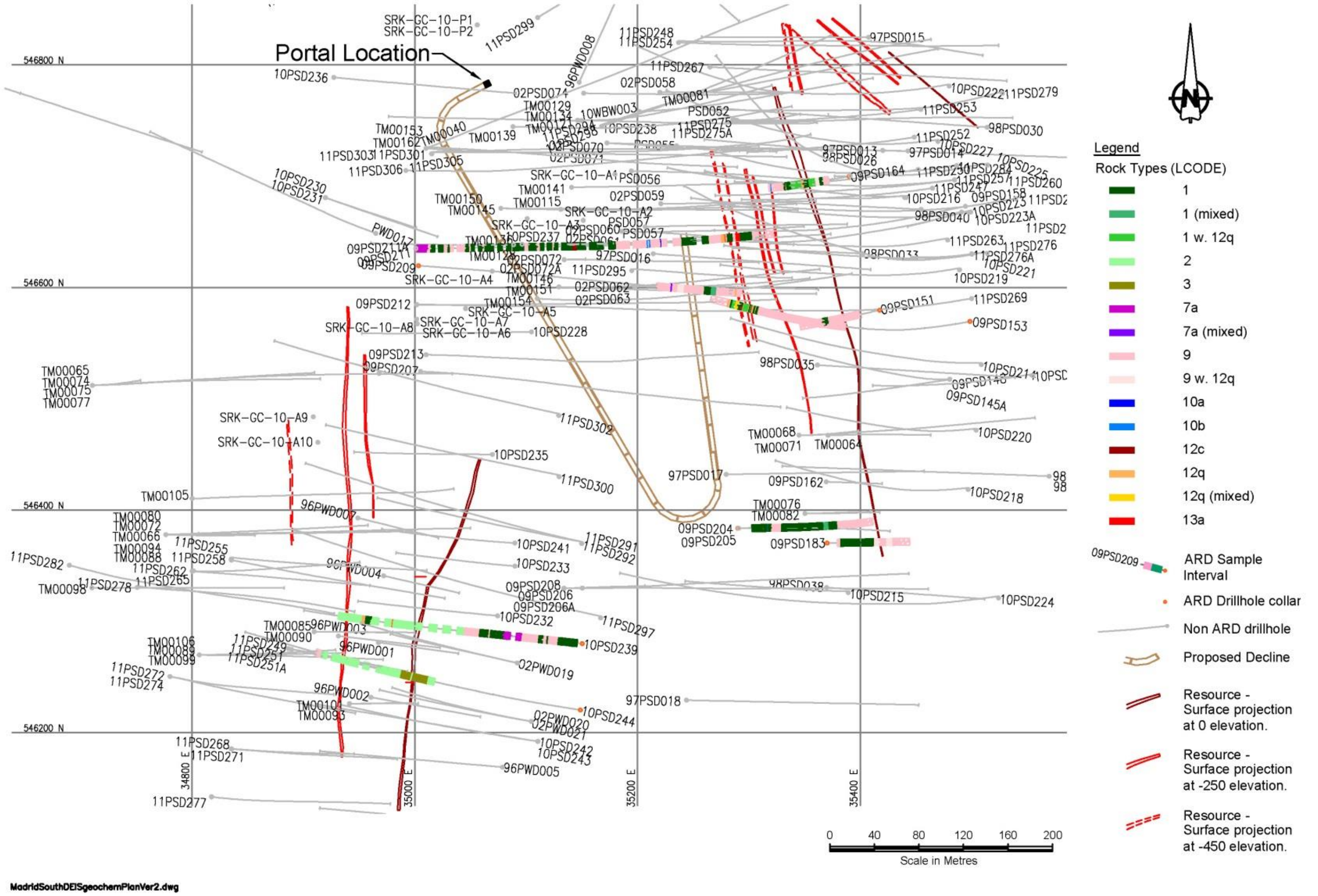
Provided by client

Figure 1.2: Geology of Patch 14 Deposit

1.3 Development Concept

Figure 1.3 presents the proposed Madrid South portal location, the decline, the surface projection of the ore body at three different depths and the ABA sample set. The mining envelope for the Madrid South is not yet defined, but will be in the immediate vicinity of the ore zones. The majority of the development rock is expected to be comprised of mafic volcanics (rock type 1) or quartz feldspar porphyry (rock type 9).

Detailed mine plans are continuously under development and modification, and given the nature of the deposit will remain in flux throughout the mine life. This is consistent with the mine planning at the existing Doris Mine. However, because the mining method will result in a net backfill deficit situation, all mine waste rock being developed at the project site will ultimately be returned underground. As a result, in lieu of a detailed volumetric breakdown of volumes of ore and waste rock by lithological unit intercepting mine workings, TMAC has developed conservative source loads (SRK 2017) by selecting base case and upper bound values in all cases. All of these source loads are individually developed for each deposit taking into consideration the unique lithological units present in each.



\\VAN-SVR0\Projects\01_SITES\Hope.Bay\!ACAD\2016 Drawings\GeochemFigures\MadridSouthDEISPlanVer2.dwg

Figure 1.3: Plan View of Madrid South ABA Samples

2 Methods

2.1 Static Tests

2.1.1 Sample Selection

The objective of the waste rock geochemical program was to provide spatial and geological coverage of the development of the Madrid South deposits. Sample selection was conducted in two phases. A complete list of samples is provided in Appendix A.

Selection of the first sample set in 2009 was based on reviewing the spatial relationship between the 2009 exploration drillholes and the geological solid for the Patch 14 deposit. At the time of selection, no drawings of the underground workings were available. A total of 122 samples were selected from six drillholes distributed across three cross-sections of the deposit (Figure 1.3). The objective was to continuously sample the intervals that intersected the ore body. Samples were chosen by SRK using geological logs. Each sample was approximately 10 m in length, with selection based primarily on continuity of lithology and secondarily on continuity of alteration and pyrite content.

Additional samples from the Patch 14 and Wolverine deposits were selected in September 2010 with the objective of providing spatial and geological coverage of both deposits and the mine workings situated between. Drillhole selection was based on review of the spatial relationship between the 2009 Patch 14 acid-base accounting (ABA) samples, the geological solids for the Patch 14 and Wolverine deposits, and the August 2010 version of the mine workings. A total of 139 samples were selected from three drillholes using the same sample selection rationale as for 2009.

2.1.2 Analytical Program

The 261 samples selected were composites of exploration pulps, typically of 1 m length. The pulps were shipped in 2009 and 2010 to Maxxam Analytics (Maxxam, formerly Cantest Ltd.) in Burnaby, BC, where weight-averaged composites were made according to SRK instructions.

All samples were analyzed at Maxxam for paste pH, total sulphur (Leco), sulphate (HCl leach), total carbon (Leco), total inorganic carbon (TIC), modified Sobek NP and trace metals (aqua regia digestion followed by ICP-MS finish). TIC was determined by using a Leco furnace to directly measure CO_2 gas evolved from HCl treatment of the sample. A 250 g split from each sample was shipped to Newmont Metallurgical Services (NMS) in Englewood, Colorado where mineralogy was determined using XRD with Rietveld refinement and whole pattern fitting.

2.1.3 Assignment of Geological Attributes and Economic Classifications

For each sample, the lithology and alteration type were assigned on a length-averaged basis using HBML's database of Madrid geology logs. A summary of the method of assignment is presented in Section 2.3 of SRK (2015b). Economic classification of each sample was assigned by a Newmont geologist in 2011. A sample was classified as ore if the raw gold assay data was greater than 5 g/t over an interval of greater than 2.5 m of true thickness or 2.5 m composite. The geological attributes and economic classification for each of the samples are presented in Appendix A. HBML's standard lithology codes are presented in Appendix B.

2.2 Humidity Cells

There were five humidity cell test samples from the Patch 14 deposit (Table 2-1). Samples were selected from the 2009 static geochemical sample set. Four rock types were selected for kinetic testing on the basis of their projected volumetric significance in Madrid South deposit, specifically mafic metavolcanic (1), early gabbro (7a), late porphyry granitoid (9) and quartz vein (12q).

Table 2-1: Summary of Humidity Cell Testing Program

Sample ID	ABA ID	Lithology	Rock Type	Selection Rationale	Preliminary Economic Classification
HC-63	09PSD209-SRK-WR-671	1	Mafic Volcanic	Typical S	Waste
HC-61	09PSD153-SRK-WR-582	1	Mafic Volcanic	Worst case S	Waste
HC-62	09PSD209-SRK-WR-665	7ac mixed	Mixed Early Gabbro (Melanogabbro) Intrusive	Only sample available in ABA sample set	Waste
HC-60	09PSD151-SRK-WR-559	9	Late Porphyry Granitoid	Typical S	Waste
HC-64	09PSD209-SRK-WR-677	9	Late Porphyry Granitoid	Worst case S	Waste

For the mafic metavolcanics and late porphyry granitoid rock types, both typical and "worst case" samples (with respect to sulphur content) were selected because these rock types are volumetrically significant. Typical was defined as between 40th and 60th percentile sulphur levels and worst case as 95th percentile. A secondary objective was to select samples with typical levels of NP, TIC and selected trace elements (e.g. arsenic), though this was not always possible. The only sample of early gabbro (7a) in the Madrid South ABA database at the time of selection was mixed with other rock types. This interval was selected for the humidity cell test program. All samples were economically classified as waste.

Samples were collected as splits of drill core by HBML geologists in October 2010 under the direction of SRK. Samples were shipped from site to NMS for sample preparation. For each sample, a humidity cell test charge and pulp sample were shipped to Maxxam. Samples were analyzed for Modified ABA and trace element content using the same analytical suite outlined in Section 2.1.2. At NMS, the mineralogy of each humidity cell test sample was also determined using XRD with Rietveld refinement and whole pattern fitting and by mineral liberation analyzer (MLA). The scanning electron microscope (SEM) was used to determine the stoichiometric composition of the iron carbonates. The humidity cell tests using the ASTM (2001) method were initiated in February 2011. Table 2-2 outlines the list of analytes and frequency. Table 2-3 inventories the status of the humidity cell program and the data received and included in this report. The data for humidity cell tests have undergone QA/QC and are considered to be acceptable and final.

After the humidity cell tests were considered complete, the last two cycles of HC-60, HC-63 and HC−64 were analyzed for low level sulphate (detection limit of 0.06 mg/L) at SGS laboratories in Lakefield, Ontario. In contrast, the detection limit for sulphate at Maxxam during the last cycles was 0.5 mg/L. The objective of the low level analysis was to determine if sulphate leaching was occurring at levels less than the limit of detection provided by Maxxam.

Table 2-2: Analytical Frequency of SRK Humidity Cell Tests

General Parameters	Frequency
pH, EC, SO4	weekly
Alkalinity, acidity	weekly
ORP or Eh	weekly
Metals	
ICP-MS (trace elements)	0, 1, 2, 4, 8, 12, 16 …, 40
ICP-OES suite[1]	weekly
Hg by CV	0, 1, 2, 4, 8, 12, 16 …, 40
Ions and Nutrients	
F, Cl, P, TDS	0, 1, 2, 4, 8, 12, 16 …, 40
NO_2, NO_3, NH_4	0, 1, 2, 4, 8, 12, 16 …, 40

[1]Al, Ca, Cu, Fe, Mg, K, Na, Zn

Table 2-3: Status of Humidity Cell Testing Program

Sample ID	Status	No. of Cycles Reported	Date of Last Cycle Reported
HC-60	Complete	49	Jan 31, 2012
HC-61	Complete	81	Sep 11, 2012
HC-62	Complete	49	Jan 31, 2012
HC-63	Complete	49	Jan 31, 2012
HC-64	Complete	49	Jan 31, 2012

2.3 Field Barrel Tests

A barrel test is a large scale kinetic test. Each barrel is loaded with hundreds of kilograms of broken up drill core and allowed to weather under site climactic conditions. Leachate accumulates in a collection bucket, and is typically collected approximately once per month between the months of June and September or October.

In September 2010, two field barrel tests were set up with Patch 14 drill core representing the volumetrically significant rock types mafic volcanic (1) and late porphyry granitoid (Table 2-4). In addition to these tests, there are two additional barrel tests representing comparable rock types from the Doris Area (SRK 2015c), and four barrel tests representing comparable rock types from the other Madrid area deposits (SRK 2017b).

The Madrid South barrel tests were set-up in a core storage area at Windy Camp alongside an existing empty barrel test representing a test blank (Sample W12). Windy Camp, situated within the Madrid deposit area, was selected as the location of the barrel tests in 2008 due to its proximity to drill core from other deposits. Additionally, this location is sufficiently remote in that it is unlikely to be disturbed or influenced by dust. In 2012, all the barrel tests located at Windy Camp were moved from the core storage area into the Windy camp area. The samples collected in August 2012 were the first sample collected in the new location.

The Madrid South barrel test samples were selected based on obtaining sufficient volumes of material from drillholes characterized as part of SRK's 2009 static geochemical program. For each barrel test, chip samples along the barrel sample interval were collected for geochemical characterization. The chip samples were shipped to NMS for preparation and submitted to Maxxam for modified ABA, TIC and trace elements. Mineralogy by XRD with Rietveld refinement and whole pattern fitting was determined at NMS. Barrel test intervals are provided in Appendix C.

Table 2-4: Summary and Status of Field Barrel Testing Program

ID	Rock Code	Rock Type	Program
W15	1	Mafic Metavolcanic	2010
W16	9	Late Porphyry Granitoid	2010
W12	Blank	Blank	2009

Barrel monitoring occurred between 2009 and 2012 and has been ongoing since 2015. The barrels are inspected for leachate on a monthly basis between the months of June and October. Field measurements include leachate volume, pH, EC, and ORP and samples are collected for analysis. After sampling, any excess leachate is removed from the bucket and the bucket rinsed. Samples are submitted to ALS Laboratory in Vancouver, BC for analysis of the following parameters:

- pH, electrical conductivity, alkalinity, sulphate;
- Bromide, chloride, fluoride;
- Ammonia, nitrate, nitrite; and
- Dissolved trace elements by ICP-MS (30 parameter). Trace element detection limits are higher than for the humidity cell tests.

To date there have been eight sampling events (June, July and August 2011; June and August 2012; August 2014; July and August 2015), though low volumes have prohibited the determination of the full suite of analytical parameters and field measurements (Table 2-5); additional sampling events occurred for the blank (W12) in July and August 2010.

Table 2-5: Overview of Geochemical Database for Madrid South Barrel Tests

Date	Barrel ID	Field Data	Lab Data	Comment
22-Jun-2011	W12	x	x	Some major ions not analyzed.
	W15	x	x	Physico-chemical parameters and some major ions not analyzed.
	W16		x	Some major ions not analyzed.
27-Jul-2011	W12		x	
	W15		x	
	W16		x	
24-Aug-2011	W12			Volume of water insufficient for field measurements and analysis.
	W15			Volume of water insufficient for field measurements and analysis.
	W16		x	Some major ions not analyzed.
12-Jun-2012	W12	x	x	
	W15	x	x	
	W16	x	x	
9-Aug-2012	W12			Volume of water insufficient for field measurements and analysis.
	W15			Volume of water insufficient for field measurements and analysis.
	W16	x		Volume of water insufficient for analysis.
4-Aug-2014	W12			Volume of water insufficient for field measurements and analysis.
	W15	x	x	
	W16			Volume of water insufficient for field measurements and analysis.
12-Jul-2015	W12	x	x	
	W15	x	x	
	W16	x	x	
16-Aug-2015	W12	x	x	
	W15	x	x	
	W16	x	x	

Y:\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201605_Madrid S_DEIS\Working Files\[1CT022.004_HopeBay_MadridS_Tables_Rev00_JEM.xlsx]

For QA/QC purposes, travel and/or equipment blanks were taken in August and September 2014, as well as in July and August 2015. Sample duplicates were taken in August and September 2014 and in August 2015. QA/QC of the data was performed by SRK.

2.4 Data Quality Assurance/Quality Control

The quality of data for the static and kinetic testing was assessed by SRK using rigorous QA/QA procedures. A number of samples were requested for re-analysis with all re-analyzed data deemed acceptable. All re-analyzed data were included in this report.

3 Results & Discussion

3.1 Static Tests

3.1.1 Dataset

The distribution of the samples relative to the Madrid South proposed portal and decline and the surface projection of the ore body at three different depths are shown in Figure 1.3. The sample set includes the following rock types, with lithology codes denoted in parentheses and defined in Appendix B:

- Mafic to Ultramafic Metavolcanics (1a,1p, 1pd) – unmixed (1), mixed with quartz vein (1 with 12q) and mixed with other lithologies (1 mixed);
- Intermediate Volcanics (2a, 2p and 2pd) – unmixed (2);
- Intermediate to Felsic Volcanics (3ao) – unmixed (3);
- Early Gabbro (Melanogabbro) Intrusives (7a, 7ac) – unmixed (7a) and mixed with other lithologies (7a mixed);
- Late Porphyry Granitoids (9p, 9pf, 9pq) – unmixed (9), mixed with quartz vein (9 with 12q) and mixed with other lithologies (9 mixed);
- Late Gabbro Intrusives (10a) – unmixed (10a);
- Late Mafic Dyke (10b) – unmixed (10b);
- Quartz Vein (12q) – unmixed (12q) and mixed (12q mixed);
- Carbonate Vein (12c); and
- Madrid Deformation Zone (13a).

The most volumetrically significant rock types for the Madrid South deposit area include the mafic to ultramafic metavolcanics (1), intermediate volcanics (2) and late porphyry granitoids (9). Quartz veins (12q) are less significant but associated with the ore. The other rock types listed above are less prevalent, both in the deposit area and sample set, with fewer than ten samples in each group. All data are presented, though interpretations will focus on the dominant lithological groups from a geological and sample distribution perspective.

The ABA data for the sub-lithologies from rock types mafic metavolcanics (1), intermediate volcanics (2), early gabbro intrusives (7) and late porphyry granitoids (9) were compared to determine if the samples could be grouped together (e.g., samples of 1a, 1p and 1pd as “1” and 2a, 2p and 2pd as “2” etc.). There were no clear differences; therefore, samples were grouped together for the purposes of data analysis.

3.1.2 Mineralogy

This section presents the XRD bulk mineralogical data for the static test sample set and the stoichiometric mineral formulae for iron carbonate minerals as determined by SEM.

Bulk Mineralogy (XRD Data)

All 261 samples were analyzed for mineralogy by XRD (Appendix D). For each rock type, Table 3-1 presents the median concentration of each of the minerals detected by XRD, Table 3-2 provides a summary of the major minerals, carbonates and sulphides, and Figure 3.1 to Figure 3.2 illustrate the distribution of ferroan dolomite and calcite.

Quartz, ferroan dolomite and chlorite or chamosite chlorite (an iron end member of the chlorite group) were the dominant minerals in most rock types. Albite, calcite, muscovite/sericite, plagioclase, paragonite, and epidote were present at median concentrations of at least 5% in some rock types (Table 3-1). From an ARD perspective, carbonate and sulphide minerals are of the greatest importance and the focus of this discussion.

Carbonate minerals identified by XRD at Madrid South include ferroan dolomite, calcite, magnesite and a solid-solution of siderite/magnesite. Ferroan dolomite was the most abundant carbonate mineral, with median concentrations ranging from below detection (1%) to 38%. Calcite, magnesite and siderite/magnesite were present at significantly lower levels as compared with ferroan dolomite. Median values for calcite ranged from below detection to 13% and for siderite/magnesite from below detection to 4%.

As previously noted, many rock types in the sample set are not volumetrically significant and also have less than ten samples in the geochemical sample set. Some key differences between the dominant rock types are discussed as follows:

- Median levels of ferroan dolomite (Figure 3.1) ranged from 8 to 34% for mafic volcanics (1), late porphyry granitoids (9) and quartz vein (12q) but were below the limit of detection for intermediate volcanics (2). Levels were highest for samples of quartz vein (12q).
- Calcite was present at median levels of greater than 5% in mafic metavolcanics (1), and intermediate volcanics (2) but was below detection for late porphyry granitoids (9) and quartz vein (12q). Overall, with the exception of early gabbro (7a) and carbonate veins (12c), calcite was typically not detected in samples of other rock types.
- Magnesite was present in only selected samples from the overall sample set, including two samples of mafic metavolcanics (1) and one sample of mafic metavolcanics mixed with other rock types (1 mixed).
- Siderite/magnesite was detected in less than 10% of samples, including selected samples of mafic volcanics (1), late porphyry granitoids (9), mafic dyke (10b) and quartz vein (12q).

Pyrite was the only sulphide mineral detected by XRD with levels at or near the detection limit of 1%. Overall, the occurrence of detectable pyrite was low. Samples of quartz vein (12q) had the highest pyrite levels, with 90th percentile levels of 2%. In contrast, 90th percentile levels for mafic volcanics (1), intermediate volcanics (2), and late porphyry granitoids (9) were below detection.

Table 3-1: Median Mineral Content for Madrid South Rock Types

Lithology	Albite	Amphibole	Ferroan Dolomite	Calcite	Chamosite Chlorite	Chlorite	Epidote	Gypsum	Muscovite	Muscovite/Sericite	Paragonite	Plagioclase	Pyrite	Quartz	Rutile	Scheelite	Siderite/Magnesite	Tourmaline	Count
Mafic to ultramafic metavolcanics (1a, 1p, 1pd)	nd	nd	8	6	13	nd	nd	nd	nd	nd	nd	nd	nd	24	1	nd	nd	nd	92
Mafic to ultramafic metavolcanics (1) Mixed with Quartz Vein (12q)	nd	nd	37	nd	nd	5	nd	nd	nd	nd	23	nd	nd	30	2	nd	4	nd	2
Mixed mafic to ultramafic metavolcanics (1 mixed)	nd	nd	36	nd	nd	3	nd	nd	nd	3	17	nd	nd	30	2	nd	1	nd	4
Intermediate volcanics (2a, 2p, 2pd)	16	4	nd	11	26	nd	9	nd	nd	nd	nd	nd	nd	23	nd	nd	nd	nd	28
Intermediate to felsic volcanics (3ao)	42	nd	4	3	5	nd	nd	nd	12	nd	nd	nd	nd	33	nd	nd	nd	nd	6
Early gabbro intrusives (7a)	20	5	nd	9	27	nd	11	nd	nd	nd	nd	nd	nd	23	nd	nd	nd	nd	5
Mixed early gabbro (melangabbro) intrusives (7ac mixed)	nd	nd	12	4	nd	28	nd	2	nd	6	5	26	nd	17	nd	nd	nd	nd	1
Late porphyry granitoids (9p, 9pf, 9pq)	nd	nd	11	nd	nd	nd	nd	nd	nd	11	9	6	nd	37	nd	nd	nd	nd	97
Late porphyry granitoids mixed with quartz vein (9 w. 12q)	nd	nd	15	nd	nd	nd	nd	nd	nd	11	13	21	nd	40	nd	nd	nd	nd	4
Late gabbro intrusives (10a)	35	nd	18	nd	26	nd	nd	nd	nd	nd	nd	nd	1	21	1	nd	nd	nd	1
Late mafic dyke (10b)	15	nd	13	1	5	4	nd	nd	2	7	2	12	1	18	1	nd	nd	nd	4
Quartz vein (12q)	nd	nd	34	nd	nd	nd	nd	nd	nd	nd	16	nd	nd	37	nd	nd	nd	nd	12
Mixed quartz veins (12q w. 1a)	nd	nd	22	nd	nd	nd	nd	nd	nd	5	11	nd	2	58	1	1	nd	2	1
Carbonate vein (12c)	nd	nd	16	13	22	nd	nd	nd	2	nd	nd	nd	nd	33	1	nd	nd	nd	3
Madrid deformation zone (13a)	nd	nd	38	1	3	nd	nd	nd	4	nd	24	nd	nd	30	1	nd	nd	nd	1

nd = non-detectable

Table 3-2: Summary of Mineral Data for Madrid South Rock Types

Lithology	n	Dominant Minerals (i.e. with median concentrations >5%)					Carbonates																Sulphides			
		Ferroan Dolomite	Chlorite[1]	Plagioclase	Quartz	Other	Ferroan Dolomite				Calcite				Magnesite				Siderite/Magnesite				Pyrite			
							P25	P50	P75	P90	P25	P50	P75	P90	P25	P50	P75	P90	P25	P50	P75	P90	P25	P50	P75	P90
Mafic to ultramafic metavolcanics (1a,1p)	92	x	x		x	Calcite	bd	8	32	36	1	6	13	19	bd	bd	bd	bd	bd	bd	bd	2	bd	bd	bd	bd
Mafic to ultramafic metavolcanics mixed with Quartz Vein (1 w. 12q)	2	x	x		x	Paragonite	36	37	37	38	bd	bd	bd	bd	bd	bd	bd	Bd	3	4	5	6	bd	bd	bd	bd
Mixed mafic to ultramafic metavolcanics (1 mixed)	4	x			x	Paragonite	32	36	41	47	bd	bd	bd	1	bd	bd	1	4	bd	1	2	3	bd	bd	1	1
Intermediate volcanics (2a, 2p, 2pd)	28		x		x	Albite, Calcite, Epidote	bd	bd	Bd	2	7	11	18	21	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd
Intermediate to felsic volcanics (3ao)	6		x		x	Albite, Muscovite	1	4	8	13	1	3	4	5	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd
Early gabbro intrusives (7a)	5		x		x	Albite, Calcite, Epidote	bd	bd	1	4	2	9	11	13	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd
Mixed early gabbro (melanogabbro) intrusives (7ac)	1	x	x	x	x	Muscovite/Sericite, Paragonite	12	12	12	12	4	4	4	4	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd
Late porphyry granitoids (9p, 9pf, 9pq)	97	x		x	x	Muscovite/Sericite, Paragonite	9	11	14	16	bd	bd	1	4	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd
Late porphyry granitoids mixed with quartz vein (9 w. 12q)	4	x		x	x	Muscovite/Sericite, Paragonite	11	15	20	24	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd
Late gabbro intrusives (10a)	1	x	x		x	Albite	18	18	18	18	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	1	1	1	1
Late mafic dyke (10b)	4	x		x	x	Albite, Muscovite/Sericite	8	13	17	18	bd	1	3	6	bd	bd	bd	bd	bd	bd	bd	1	bd	1	1	1
Quartz vein (12q)	12	x			x	Paragonite	18	34	43	44	bd	bd	bd	1	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	1	2
Mixed quartz vein (12q)	1	x			x	Paragonite	22	22	22	22	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	1	2
Carbonate vein (12c)	3	x	x		x	Calcite	8	16	29	36	7	13	16	17	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd
Madrid deformation zone (13a)	1	x	x		x	Paragonite	38	38	38	38	1	1	1	1	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd	bd

bd = below detection limit
[1] denotes presence of chlorite OR chamosite chlorite

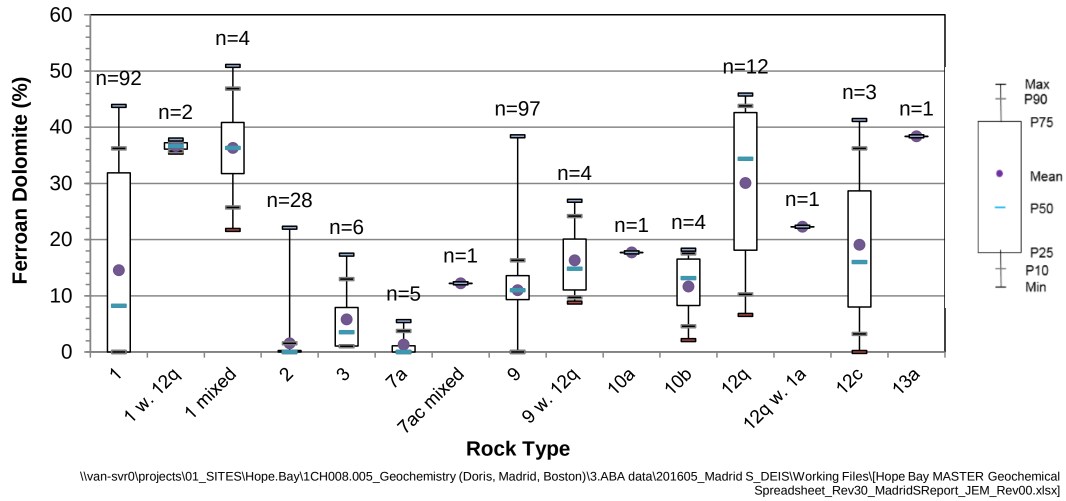


Figure 3.1: Percentile Distribution of Ferroan Dolomite by Rock Type

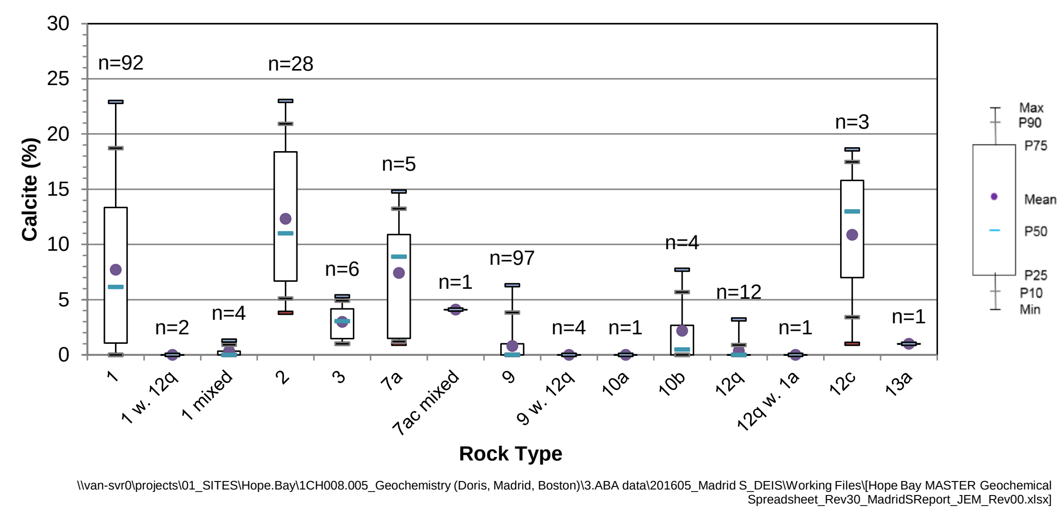


Figure 3.2: Percentile Distribution of Calcite by Rock Type

(The analytical limit of detection (LOD) is 1%. For data below the LOD, levels were assumed to be zero).

Stoichiometry of Iron Carbonates (SEM Data)

The stoichiometric mineral formulae for iron carbonate minerals from the five humidity cell samples were determined by SEM and are presented in Table 3-3.

- For ferroan dolomite and magnesium-rich siderite, iron is in solid-solution with magnesium. Carbonate minerals containing iron have less buffering capacity than those containing calcium or magnesium because the ferrous iron liberated due to carbonate dissolution oxidizes to ferric iron, which then hydrolyzes to iron (oxy)hydroxides. The latter process generates acidity. For ferroan dolomite, the stoichiometric content for iron ranged from 0.14 to 0.37. The proportion of iron in magnesium-rich siderite was higher, with content ranging from 0.58 to 0.62.

Table 3-3: Carbonate Mineral Stoichiometric Formulae for Humidity Cell Test Samples

HC #	Rock Type[1]	Sulphide % Rank	Preliminary Economic Classification	Ferroan Dolomite $Ca(Fe,Mg)CO_3$	Siderite $FeCO_3$
HC-63	1	90	W	$Ca(Mg_{0.73}Fe_{0.27})CO_3$	-
HC-61	1	97	W	$Ca(Mg_{0.65}Fe_{0.35})CO_3$	$(Mg_{0.42}Fe_{0.58})CO_3$
HC-62	7ac mixed	0	W	$Ca(Mg_{0.86}Fe_{0.14})CO_3$	-
HC-60	9	0 to 51	W	$Ca(Mg_{0.63}Fe_{0.37})CO_3$	$(Mg_{0.41}Fe_{0.59})CO_3$
HC-64	9	92	W	$Ca(Mg_{0.69}Fe_{0.31})CO_3$	$(Mg_{0.38}Fe_{0.62})CO_3$

[1]Rock codes as follows: 1 = mafic volcanics; 7a = early gabbro; 9 = late porphyry granitoids
Absence of formula indicates mineral was below detection.

3.1.3 Acid-Base Accounting

ABA data was generated for all 261 samples (Appendix E). The data is presented according to rock type and not in the context of alteration as there were no clear trends between the ARD classifications and alteration types.

- Paste pH values for Madrid South samples were alkaline with values ranging from 8.3 to 10.1.
- Sulphur speciation data indicate that essentially all of the sulphur occurred as sulphide. Exceptions included the one sample of mixed early gabbro (7ac) and two samples of late mafic dyke (10b), with sulphate as the dominant sulphur form. The presence of gypsum was confirmed for the sample of mixed early gabbro; however, sulphate levels for the samples of late mafic dyke (0.07%) were within the level of analytical uncertainty and too low to be detected. Some key differences between dominant rock types are discussed as follows (Figure 3.3):
- The sample set was typically characterized by low sulphur levels, where 85% of samples have total sulphur levels of less than 0.2% and 95% of samples have less than 0.5%.
- Overall, total sulphur levels for the dominant rock types were low, with the highest levels observed for samples of quartz vein (12q, median level of 0.46%). Median levels were below 0.1% for mafic metavolcanics (1), intermediate volcanics (2) and late porphyry granitoids (9). The late porphyry granitoid sample set had median levels below the analytical detection limit (0.02%).
- Samples with higher sulphur were typically within close proximity to quartz veins (12q).

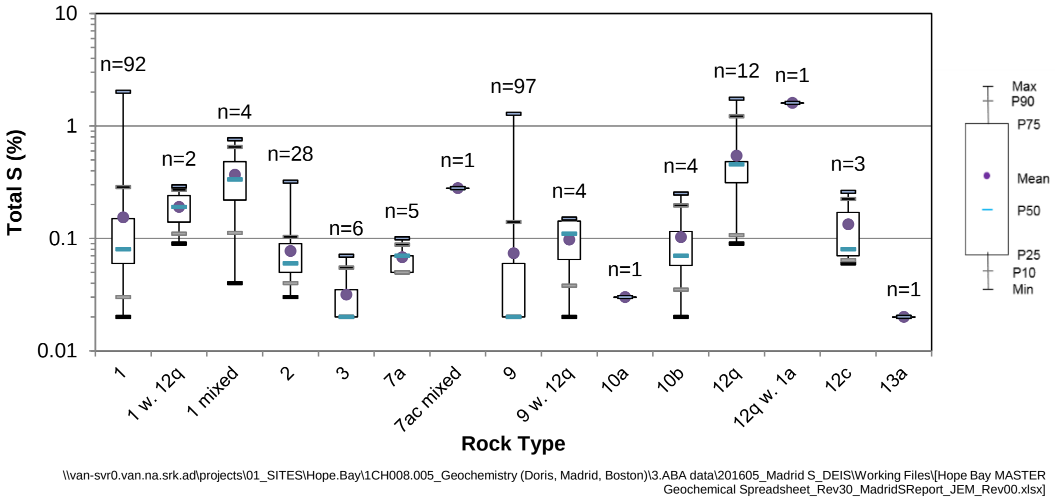


Figure 3.3: Percentile Distribution of Sulphur by Rock Type

- Figure 3.4 and Figure 3.5 present the distribution of NP and TIC according to rock type, while Figure 3.6 presents the relationship between NP and TIC. Some key observations are discussed as follows:
- NP and TIC levels for the sample set were high, with median modified NP levels for all rock types greater than 75 kg $CaCO_3$ eq/t and an overall minimum value of 17 kg $CaCO_3$ eq/t.
- Of the dominant lithological groups, minimum median levels of NP and TIC were 95 kg $CaCO_3$ eq/t.
- For all rock types, levels of TIC were higher than modified NP. This suggests the presence of iron carbonate minerals in the samples, which results in TIC values that overestimate the actual amount of carbonate capable of providing buffering. For these samples, NP is likely to provide a more conservative estimate of buffering capacity.

To account for potential overestimation of neutralization potential from TIC due to the presence of NP-neutral iron carbonates, an effective TIC was calculated based on SEM results (Section 3.1.2). The effective TIC, or $TIC_{(Ca+Mg)}$, was calculated as follows for the Madrid South:

$$TIC_{(Ca+Mg)} = TIC*0.82$$

The factor of 0.82 represents the minimum stoichiometric proportion of calcium-plus-magnesium content in ferroan dolomite found in SEM analysis of ferroan dolomite mineral grains in the Madrid South humidity cell test samples (Table 3-3). The sample with the lowest calcium-plus-magnesium content was HC-60, with the following stoichiometry: $Ca(Mg_{0.63}Fe_{0.37})CO_3$. Figure 3.7 presents the distribution of $TIC_{(Ca+Mg)}$ according to rock type while Figure 3.8 presents the relationship between NP and $TIC_{(Ca+Mg)}$. Some key observations include:

- $TIC_{(Ca+Mg)}$ levels are high, with median levels greater than 99 kg $CaCO_3$ eq/t for the volumetrically significant lithological groups. For all rock types, the median $TIC_{(Ca+Mg)}$ was greater than 60 kg $CaCO_3$ eq/t.

- Levels of $TIC_{(Ca+Mg)}$ were closer to parity with modified NP compared to TIC (Figure 3.6). A subset of mafic metavolcanics (1) and the majority of intermediate volcanics (2) samples are above the 1:1 line indicating that the $TIC_{(Ca+Mg)}$ method overestimates the amount of NP-neutral iron carbonates in these samples (Figure 3.8). For selected samples from these rock types, calcite content was at near parity with TIC (Figure 3.9), indicating that calcite is the dominant buffering mineral, and not ferroan dolomite. The XRD data confirm the absence of ferroan dolomite, with ferroan dolomite levels below detection for the lower quartile of mafic metavolcanics (1) and majority (75%) of intermediate volcanics (2). Applying the correction to samples where calcite is the dominant carbonate mineral is not warranted; however, it is a conservative approach.
- Depending on the sample, either modified NP or $TIC_{(Ca+Mg)}$ provides the most conservative estimate of buffering capacity.

Figure 3.10 to Figure 3.12 and Table 3-4 show the ARD classifications of samples. ARD classifications are not on the basis of total sulphur and fulfill the best practice guidelines outlined in MEND (2009). All samples were classified as non-PAG using Modified NP, TIC and $TIC_{(Ca+Mg)}$.

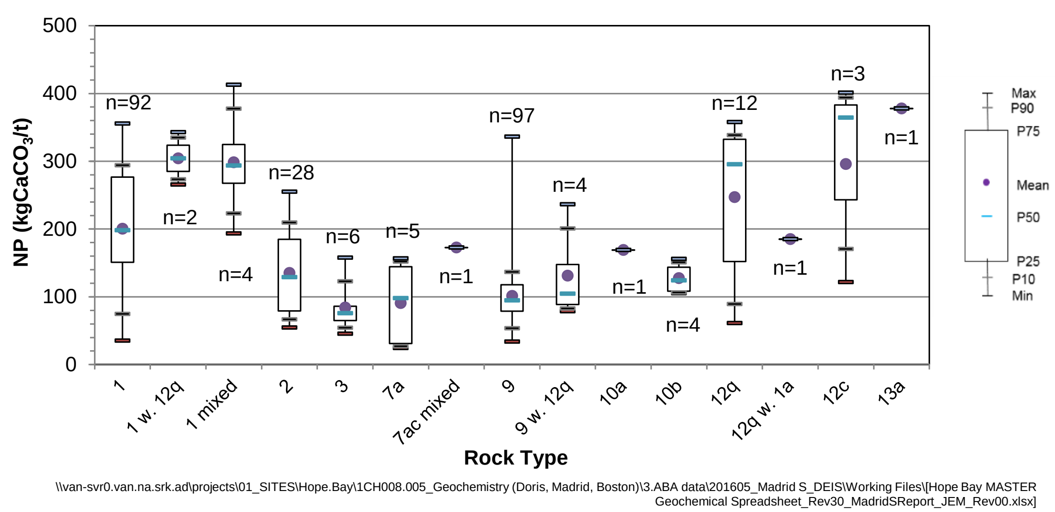


Figure 3.4: Percentile Distribution of Modified NP by Rock Type

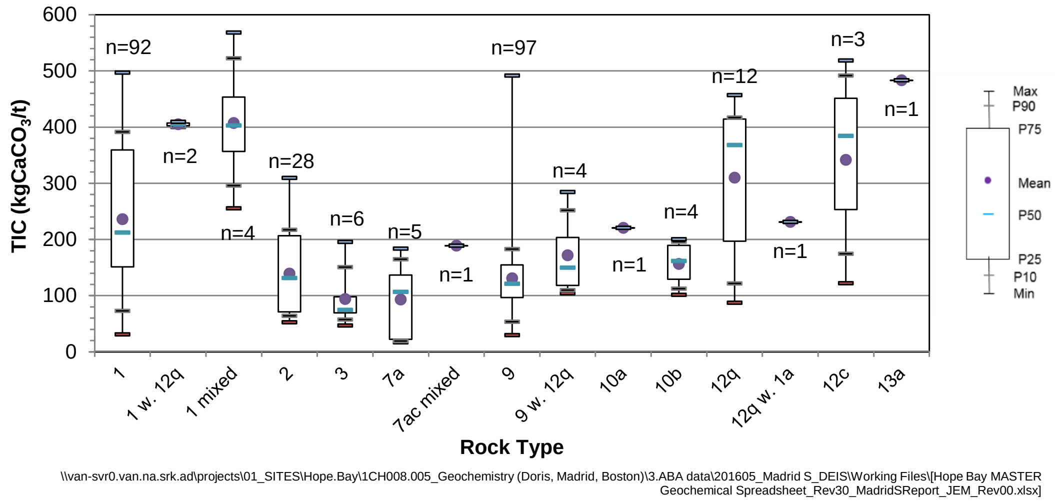


Figure 3.5: Percentile Distribution of TIC by Rock Type

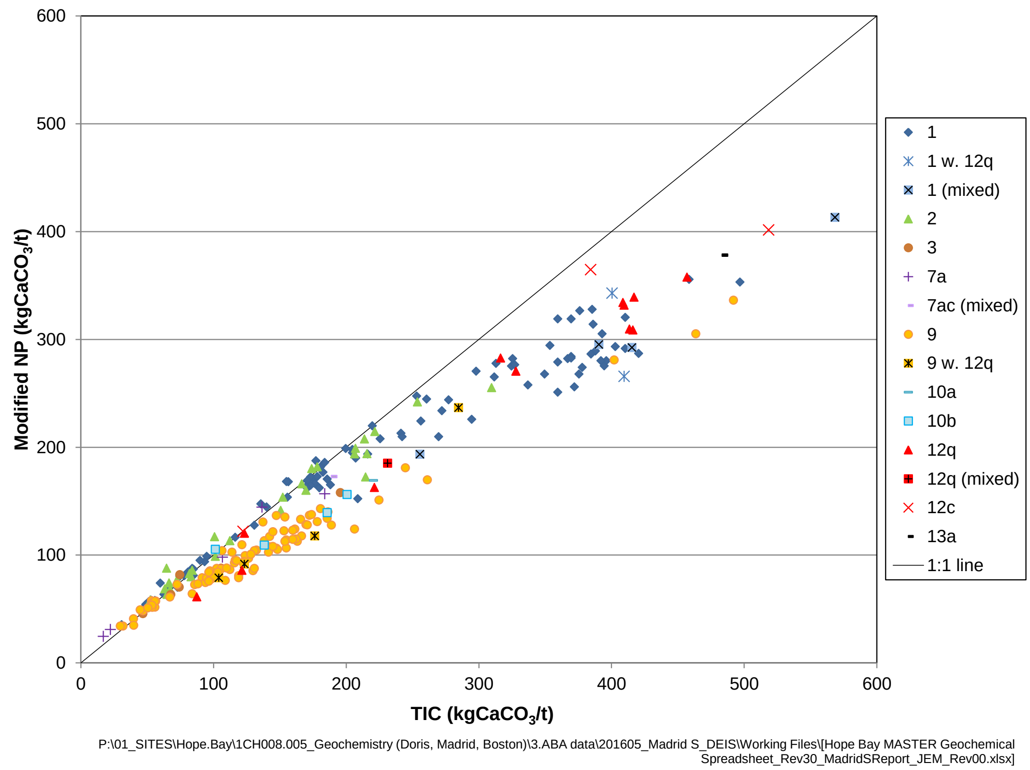


Figure 3.6: Comparison of NP and TIC Levels

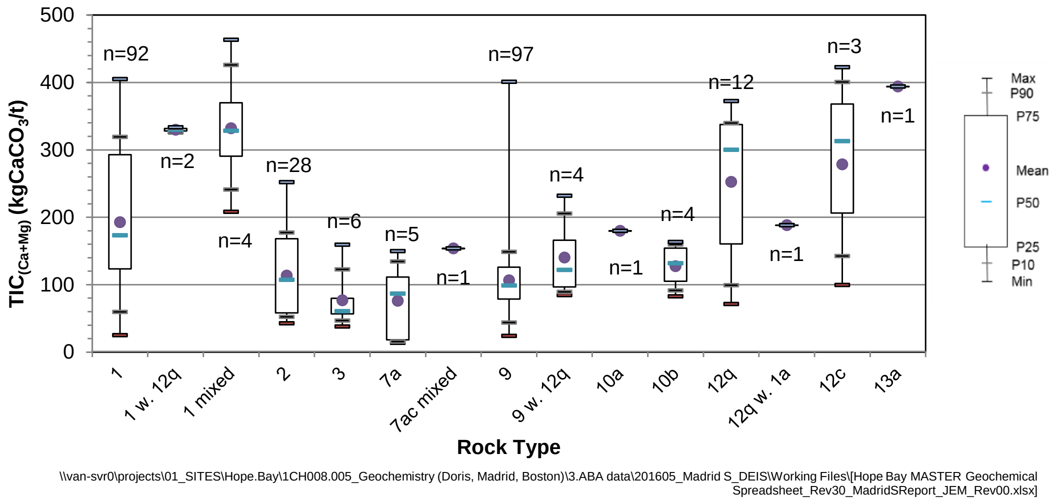


Figure 3.7: Percentile Distribution of $TIC_{(Ca+Mg)}$ by Rock Type

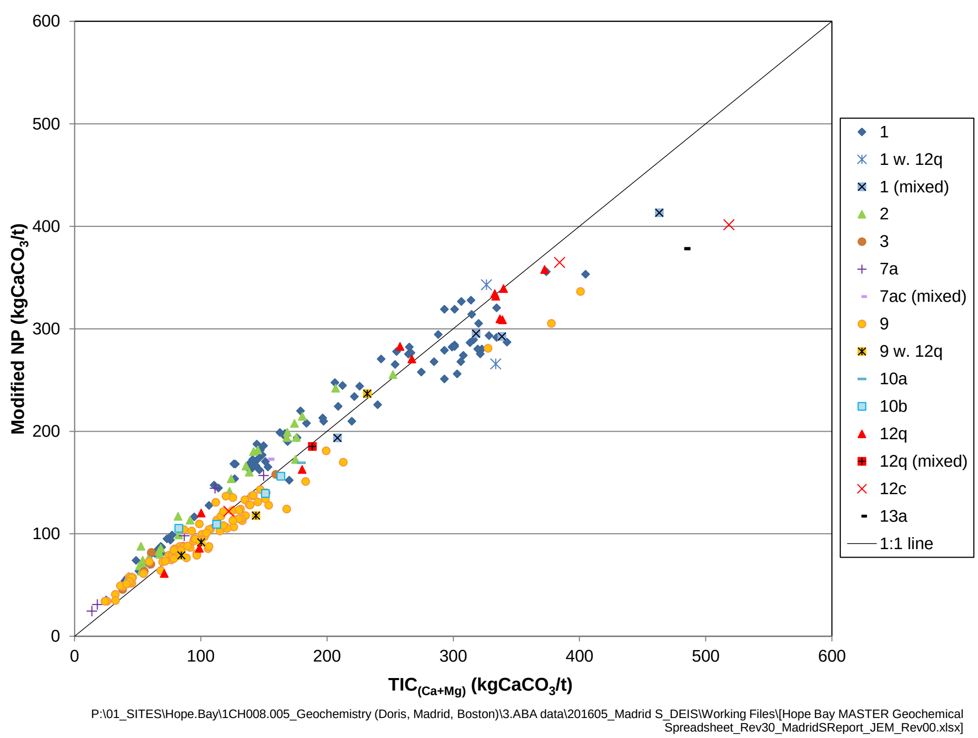
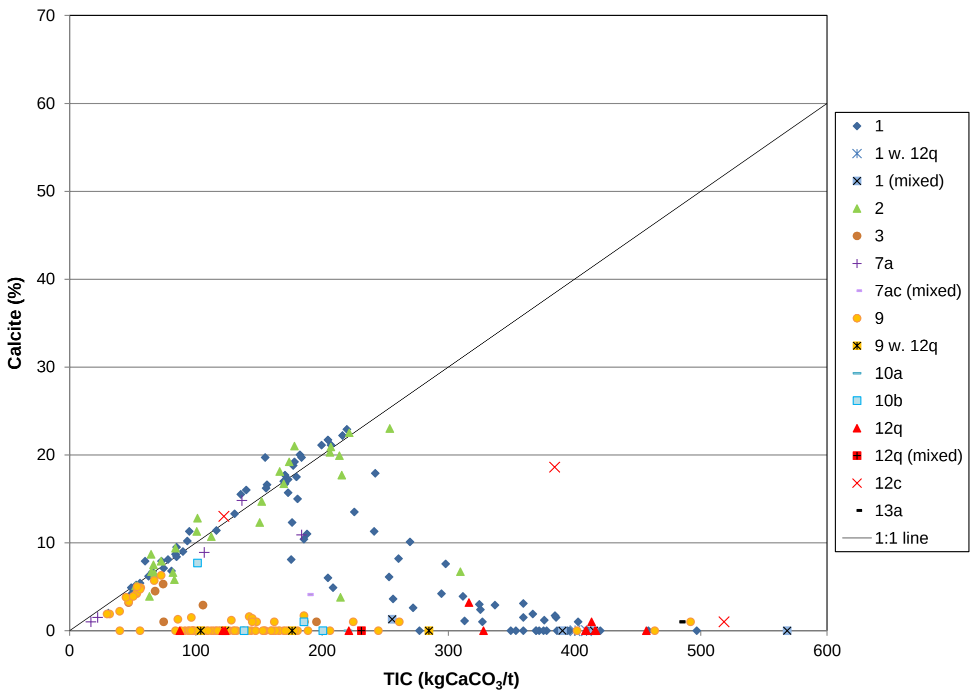
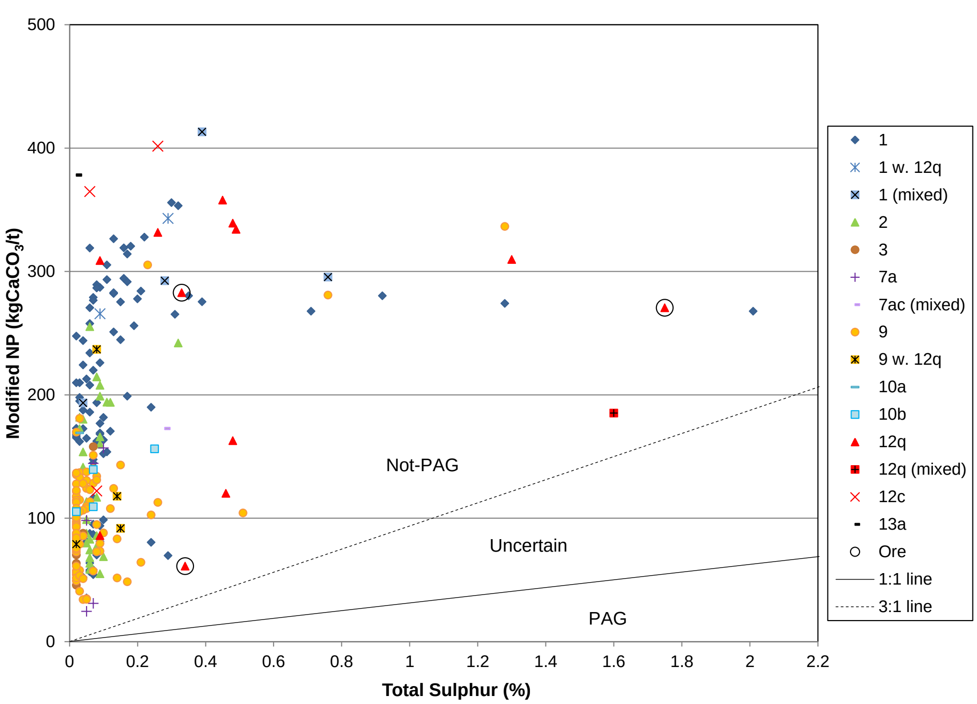


Figure 3.8: Comparison of NP and $TIC_{(Ca+Mg)}$ Levels



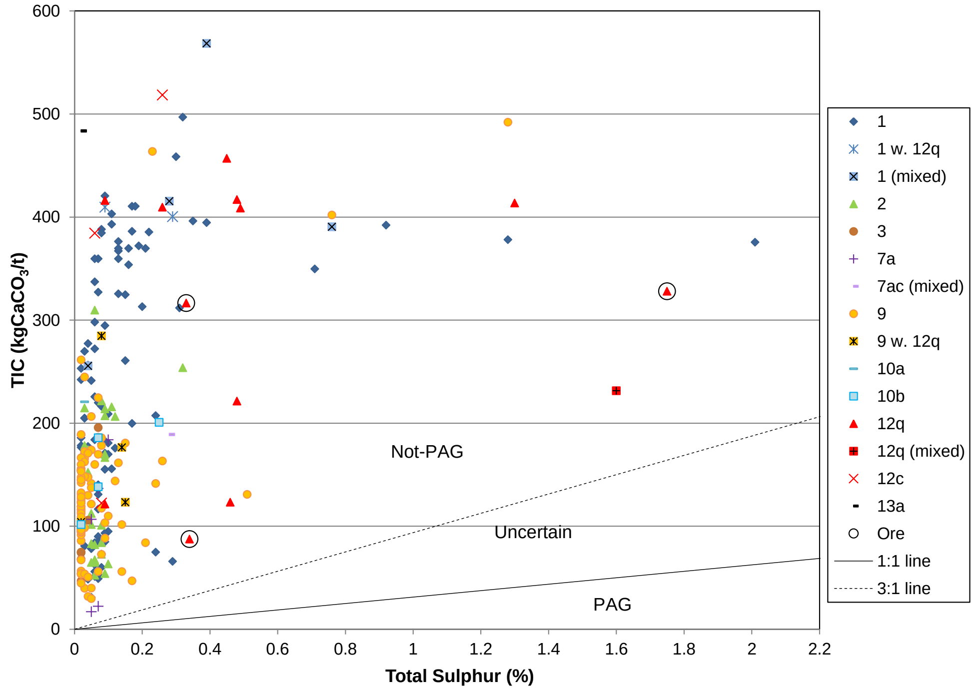
P:\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201605_Madrid S_DEIS\Working Files\[Hope Bay MASTER Geochemical Spreadsheet_Rev30_MadridSReport_JEM_Rev00.xlsx]

Figure 3.9: Comparison of TIC and Calcite Levels



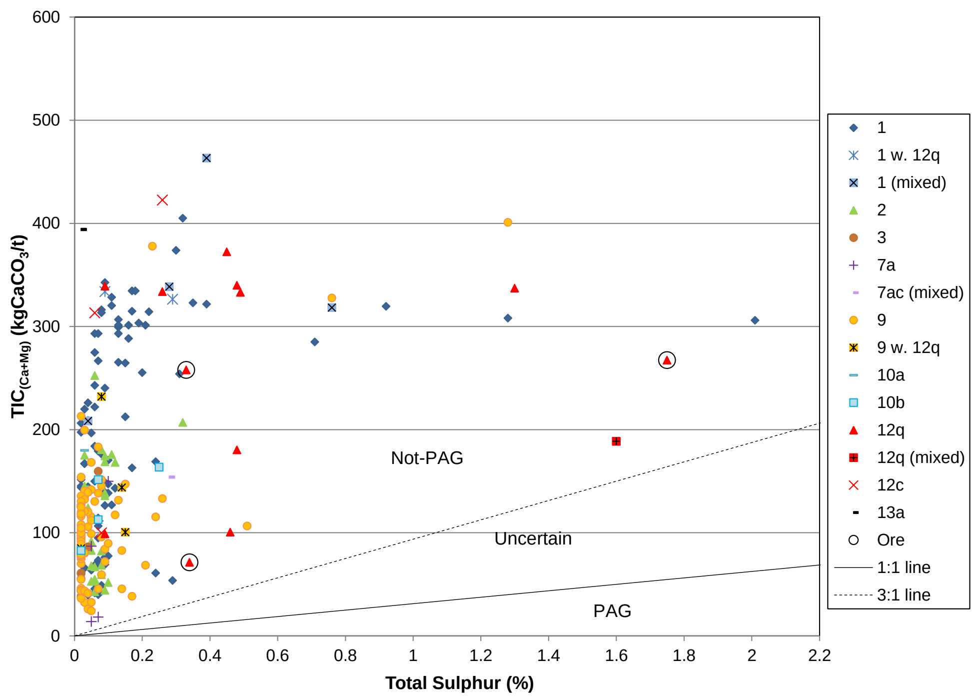
P:\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201605_Madrid S_DEIS\Working Files\[Hope Bay MASTER Geochemical Spreadsheet_Rev30_MadridSReport_JEM_Rev00.xlsx]

Figure 3.10: NP to AP (Expressed as Sulphur) by Rock Type



P:\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201605_Madrid S_DEIS\Working Files\[Hope Bay MASTER Geochemical Spreadsheet_Rev30_MadridSReport_JEM_Rev00.xlsx]

Figure 3.11: TIC to AP (Expressed as Sulphur) by Rock Type



P:\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201605_Madrid S_DEIS\Working Files\[Hope Bay MASTER Geochemical Spreadsheet_Rev30_MadridSReport_JEM_Rev00.xlsx]

Figure 3.12: $TIC_{(Ca+Mg)}$ to AP (Expressed as Sulphur) by Rock Type

Table 3-4: ARD Classifications According to Rock Type

Lithology	Number of Samples	ARD Classification (% of Samples)								
		Nonf-PAG			Uncertain			PAG		
		(NP, TIC or $TIC_{(Ca+Mg)}$)/AP >3			1 < (NP, TIC or $TIC_{(Ca+Mg)}$)AP <3			(NP, TIC or $TIC_{(Ca+Mg)}$)/AP <1		
		NP/AP	TIC/AP	$TIC_{(Ca+Mg)}$/AP	NP/AP	TIC/AP	$TIC_{(Ca+Mg)}$/AP	NP/AP	TIC/AP	$TIC_{(Ca+Mg)}$/AP
Mafic to ultramafic volcanics (1a, 1p, 1pd)	92	100%	100%	100%	0%	0%	0%	0%	0%	0%
Mafic to ultramafic volcanics (1) mixed with Quartz Vein (12q) only	2	100%	100%	100%	0%	0%	0%	0%	0%	0%
Mixed mafic to ultramafic volcanics (1)	4	100%	100%	100%	0%	0%	0%	0%	0%	0%
Intermediate volcanics (2a, 2p, 2pd)	28	100%	100%	100%	0%	0%	0%	0%	0%	0%
Intermediate to felsic volcanics (3ao)	6	100%	100%	100%	0%	0%	0%	0%	0%	0%
Early gabbro intrusives (7a)	5	100%	100%	100%	0%	0%	0%	0%	0%	0%
Mixed early gabbro (melangabbro) intrusives (7ac)	1	100%	100%	100%	0%	0%	0%	0%	0%	0%
Late porphyry granitoids (9p, 9pf, 9pq)	97	100%	100%	100%	0%	0%	0%	0%	0%	0%
Late porphyry granitoids mixed with quartz vein (9 w. 12q)	4	100%	100%	100%	0%	0%	0%	0%	0%	0%
Late gabbro intrusives (10a)	1	100%	100%	100%	0%	0%	0%	0%	0%	0%
Late mafic dyke (10b)	4	100%	100%	100%	0%	0%	0%	0%	0%	0%
Quartz vein (12q)	12	100%	100%	100%	0%	0%	0%	0%	0%	0%
Mixed quartz veins (12q w. 1a)	1	100%	100%	100%	0%	0%	0%	0%	0%	0%
Carbonate vein (12c)	3	100%	100%	100%	0%	0%	0%	0%	0%	0%
Madrid deformation zone (DEFZ)	1	100%	100%	100%	0%	0%	0%	0%	0%	0%

\\van-svr0\projects\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201605_Madrid S_DEIS\Working Files\[Hope Bay MASTER Geochemical Spreadsheet_Rev30_MadridSReport_JEM_Rev00.xlsx]

3.1.4 Solid-Phase Elemental Composition

Solid-phase trace elemental data were available for all 261 samples (Appendix F). A statistical analysis of each element for the different rock types from Madrid South is presented in Appendix G.

Parameters were screened by comparing 90th percentile levels against ten times the average crustal abundance for basalt (Price 1997). Table 3-5 presents a summary of elevated parameters according to lithology.

Parameters listed in Table 3-5 that are neutral pH mobile elements include arsenic and selenium. Arsenic was elevated for all significant rock types (mafic volcanics (1), intermediate volcanics (2), late porphyry granitoids (9) and quartz vein (12q)). For selenium and also bismuth, the limit of analytical detection was higher than the respective levels for crustal abundance and data for these parameters were below or near the limit of analytical detection. Accordingly, selenium and bismuth could not be assessed. Other trace elements that were elevated include tungsten and sulphur. Elevated gold content in some of the rock types such as mafic to ultramafic metavolcanics (1), late porphyry granitoids (9) and quartz vein (12q) is consistent with the presence of gold-bearing sulphide mineralization at Madrid South. All other elements were below the screening criteria suggesting no appreciable enrichment in the samples.

Humidity cell data for similar rocks from Madrid North, Boston and, to a lesser degree, Doris, has shown that arsenic has the greatest potential for leaching under neutral pH conditions. Figure 3.10 represents the solid-phase arsenic content for Madrid South rock types. Arsenic is highest in samples of quartz vein (12q) with median levels greater than 100 ppm. Arsenic levels for mafic volcanic (1) intermediate volcanic (2) and porphyry granitoid (9) samples were relatively low (median values less than 10 ppm).

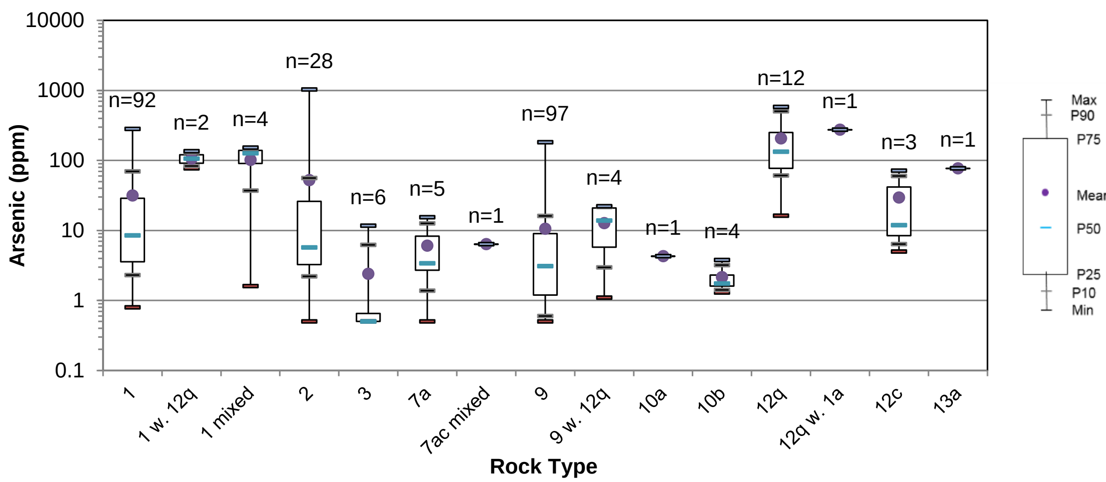
Figure 3.11 compares the arsenic content for mafic volcanic (1) and quartz veins (12q) from Madrid South, Madrid North, and Boston. Presently, the only ABA samples for porphyry granitoids (9) are from Madrid South, which precludes the ability to do a regional comparison. For mafic metavolcanics (1), arsenic levels at Madrid South were lower than Boston and the other Madrid deposits, and generally similar to Doris. Arsenic content for Madrid South quartz vein (12q) samples were lower than Boston but higher than both Doris and the other Madrid deposits. Arsenic leaching is further evaluated using kinetic tests of representative samples of waste rock from Madrid South and to provide site specific leach rates to support the environmental assessment for this project (Sections 3.2 and 3.3).

Table 3-5: Summary of Madrid South Elevated Solid-Phase Elements

Lithology	P90 > 10x Crustal Abundance for Basalt	P90 > 5x Abundance of Basalt	No. of Samples
Mafic to Ultramafic Metavolcanics (1a,1p)	As	S	92
Mafic to Ultramafic Metavolcanics Mixed with Quartz Vein (1 w. 12q)	As	S	2
Mixed Mafic to Ultramafic Metavolcanics (1)	As, W, S		4
Intermediate Volcanics (2a, 2p, 2pd)	As		28
Intermediate to Felsic Volcanics (3ao)			6
Early Gabbro Intrusives (7a)		As	5
Mixed Early Gabbro (Melanogabbro) Intrusives (7ac)		S	1
Late Porphyry Granitoids (9p, 9pf, 9pq)		As	97
Late Porphyry Granitoids Mixed with Quartz Vein (9 w. 12q)	As		4
Late Gabbro Intrusives (10a)			1
Late Mafic Dyke (10b)		S	4
Quartz Vein (12q)	Ag, As, W, S		12
Mixed Quartz Vein (12q)	As, W, S	Ag	1
Carbonate Vein (12c)	As	S	3
Madrid Deformation Zone (DEFZ)	As		1

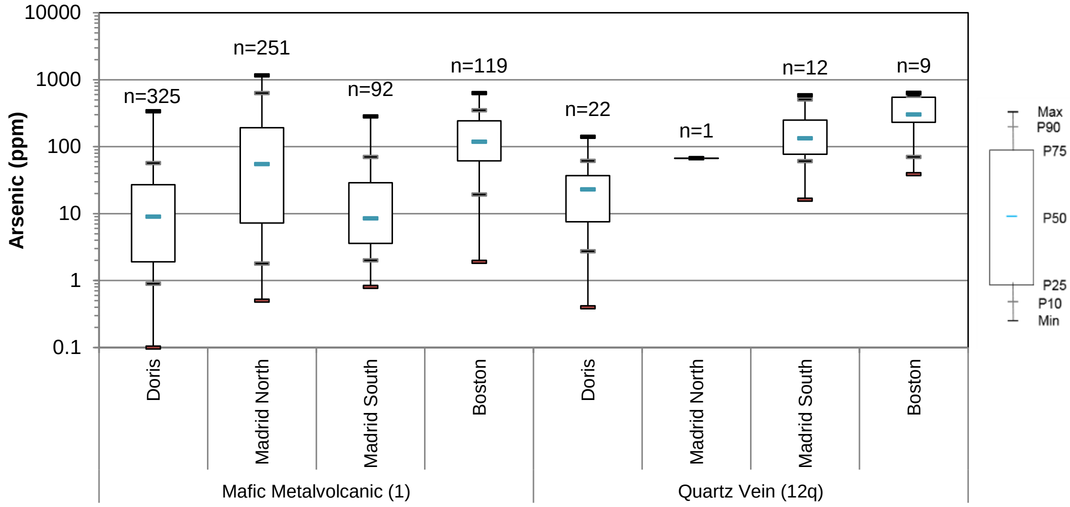
P:\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201109_Pactch14Report\Working Files\[Hope Bay MASTER Geochemical Spreadsheet_Rev30_Patch14Report_als_Rev00.xlsx]

Notes: Bismuth and selenium were not assessed because their respective detection limits were high relative to the average crustal abundance.



\\van-svr0\projects\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201605_Madrid S_DEIS\Working Files\[Hope Bay MASTER Geochemical Spreadsheet_Rev30_MadridSReport_JEM_Rev00.xlsx]

Figure 3.13: Percentile Distribution of Arsenic by Rock Type, Madrid South



Y:\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201605_Madrid S_DEIS\Working Files\[Hope Bay MASTER Geochemical Spreadsheet_Rev30_MadridSReport_JEM_Rev00.xlsx]

Figure 3.14: Percentile Distribution of Arsenic by Ore Deposit for Mafic Metavolcanic (1) and Quartz Vein (12q) Samples

3.2 Humidity Cell Tests

There are five humidity cell tests from the Madrid South deposit area.

3.2.1 Pre-Test Sample Characterization

The basic geochemical characteristics of the humidity cell samples, including mineralogy, ABA and trace element composition, are described in the following text. Appendix H presents the bulk mineralogy (by XRD and MLA) and trace element composition data. Bulk XRD data for the samples is also presented in Appendix D. The mineralogy presented in Appendix D was determined on the pulp sample, whereas the data presented in Appendix H represent analysis for the drill core split obtained for the humidity cell program. Selected mineralogy data are presented in Table 3-3, Table 3-6, Table 3-7, and ABA data are presented in Table 3-8.

Mineralogy

Bulk mineralogy was determined by quantitative XRD and MLA. A summary of the carbonate and sulphur minerals are presented in Table 3-6 and Table 3-7, respectively. The stoichiometric mineral formulae for iron carbonate minerals were determined by SEM and are presented in Table 3-3. The bulk mineralogical results for the humidity cell tests were similar to the results of the full Madrid South sample set (Table 3-1 and Table 3-2). Specific findings for the humidity cell samples are described as follows:

- Carbonate content was high and predominantly present as iron carbonates (specifically ferroan dolomite ($Ca(Mg_{(x-1)}Fe_x)CO_3$) and magnesium-rich siderite (($(Mg_{(x-1)}Fe_x)CO_3$)). The presence of calcite ($CaCO_3$) as a secondary carbonate mineral was confirmed for sample HC-62.

- As discussed in Section 3.1.2 and presented in Table 3-3, the stoichiometric content for iron in ferroan dolomite ranged from 0.14 to 0.37. The proportion of iron in magnesium-rich siderite was higher, with content ranging from 0.58 to 0.62.
- Sulphide minerals, specifically pyrite, were detected by XRD in sample HC-61 only, as all other samples contained low sulphide levels (< 0.2%). Trace level sulphides indicated by MLA include chalcopyrite, gersdorffite, pyhrrotite, arsenopyrite, cobaltite, sphalerite and tetrahedrite.
- Sulphate minerals (2% by XRD and 0.6% by MLA) were detected in sample HC-62. The XRD classified the sulphate minerals as gypsum whereas MLA identified them as anhydrite/gypsum.
- Sulphides levels indicated by XRD, MLA and ABA are comparable.

Table 3-6: Carbonate Mineralogy for Humidity Cell Test Samples

HC #	Rock Type[1]	Sulphide % Rank	Preliminary Economic Classification	Carbonates							
				Ferroan Dolomite $Ca(Fe,Mg)CO_3$		Siderite $FeCO_3$		Magnesite $MgCO_3$	Siderite/Magnesite $(Fe,Mg)CO_3$	Calcite $CaCO_3$	
				XRD[2]	MLA	XRD	MLA	XRD	XRD	XRD	MLA
HC-63	1	90	W	37	34	bd	bd	bd	bd	bd	0.03
HC-61	1	97	W	35	33	2	1.6	bd	bd	bd	0.07
HC-62	7ac mixed	0	W	13	14	bd	bd	bd	bd	4	3.1
HC-60	9	0 to 51	W	12	9	bd	<0.01	bd	bd	bd	<0.01
HC-64	9	92	W	40	39	4	4.2	bd	bd	bd	0.18

*For HC-62, total sulphur rank determined by comparison with early gabbro samples (7a, mixed and unmixed)

[1]Rock codes as follows: **1** = mafic volcanics; **7a** = early gabbro; **9** = late porphyry granitoids

[2]XRD data generated for pulp sample. Additional XRD data, generated on HCT sample, provided in Appendix H

bd = below detection limit

Table 3-7: Sulphur Mineralogy for Humidity Cell Test Samples

HC #	Sulphates													
	Anhydrite/Gypsum $CaSO_4.H_2O$		Pyrite FeS_2	Pyrite FeS_2	Chalcopyrite $CuFeS_2$	Gersdorffite NiAsS	Pyrrhotite $Fe_{(1-x)}S$	Arsenopyrite FeAsS	Cobaltite CoAsS	Sphalerite ZnS	Tetrahedrite Cu_3SbS	Sulphide S %S		
	XRD	MLA	XRD	MLA	MLA	MLA	MLA	MLA	MLA	MLA	MLA	XRD	MLA	ABA
HC-63	bd	<0.01	bd	0.02	<0.01	<0.01	bd	bd	bd	bd	bd	bd	0.02	0.2
HC-61	bd	bd	2	2.1	0.02	0.01	<0.01	<0.01	0.01	bd	<0.01	1.1	1.1	0.8
HC-62	1	0.6	bd	<0.01	<0.01	bd	bd	bd	bd	bd	bd	bd	0.01	<0.01
HC-60	bd	bd	bd	<0.01	<0.01	bd	bd	bd	bd	bd	bd	bd	0.01	0.02
HC-64	bd	bd	bd	0.72	0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	bd	0.40	0.26

[1]Identified as anhydrite/gypsum. Mineralogical formula for anydrite is CaSO4.

bd = below detection limit

Acid-Base Accounting

ABA data for the humidity cell samples are presented in Table 3-8. For each sample there are ABA data for the drill core split obtained for the humidity cell test (denoted as HCT in Table 3-8), and also for the pulp sample that was characterized as part of the initial static test program (Section 0). For sample HC-61 (mafic volcanics), levels of sulphide, NP and TIC were higher for the humidity cell samples than the pulps. This difference could be due to sample heterogeneity. For HC-60, HC-62, HC-63 and HC-64, levels were generally comparable. Table 3-9 presents the percentile rank of the ABA parameters for each humidity cell test sample. Data are presented according to the rock type and economic classification using the expanded 2011 sample set. The ABA data for the Madrid South humidity cell tests were consistent with the data for the overall Madrid South sample set (Section 0); however, the presence of sulphate for sample HC-62 is anomalously high (0.20%), not only for the Madrid South area but for all of the Hope Bay deposits studied thus far.

Humidity cell samples were selected in 2010 based on the 2009 ABA sample set. At the time of selection of HC-62, the only sample of early gabbro (7ac) in the ABA sample set was mixed. In the expanded sample set, HC-62 remains the only mixed early gabbro sample. Calculations for HC-62 in Table 3-9 were relative to the overall early gabbro sample set (both mixed and unmixed).

Table 3-8: ABA Data for Madrid South Humidity Cell Test Samples

Humidity Cell #	Rock Type[1]	Preliminary Economic Classification	Sample Type	Paste pH	Total Sulphur	Sulphate Sulphur	Sulphide Sulphur	NP[2]	TIC	$TIC_{(Ca+Mg)}$	NP/AP	TIC/AP	$TIC_{(Ca+Mg)}$/AP
					%S	%S	%S	kgCaCO$_3$/t					
HC-63	1	W	HCT	9.6	0.16	<0.01	0.16	300	380	310	non-PAG	non-PAG	non-PAG
			Pulp	9.1	0.13	<0.01	0.13	280	370	300			
HC-61	1	W	HCT	9.8	0.83	<0.01	0.83	280	390	320	non-PAG	non-PAG	non-PAG
			Pulp	9.9	0.71	<0.01	0.71	270	350	290			
HC-62	7a mixed	W	HCT	8.5	0.2	0.2	<0.02	170	190	150	non-PAG	non-PAG	non-PAG
			Pulp	8.4	0.28	0.23	0.05	170	190	150			
HC-60	9	W	HCT	10	<0.02	<0.01	<0.02	100	140	110	non-PAG	non-PAG	non-PAG
			Pulp	10	<0.02	<0.01	<0.02	93	120	95			
HC-64	9	W	HCT	9.8	0.27	<0.01	0.27	350	470	390	non-PAG	non-PAG	non-PAG
			Pulp	9.5	0.23	<0.01	0.23	310	460	380			

Y:\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201605_Madrid S_DEIS\Working Files\[1CT022.004_HopeBay_MadridS_Tables_Rev00_JEM.xlsx]

[1]Rock codes as follows: 1 = mafic volcanics; 7ac = early gabbro; 9 = late porphyry granitoids, Fizz test was strong for all samples

[2]NP determined using MEND (1991) method

HCT = humidity cell test

Table 3-9: Percentile Rank of Sulphide Sulphur, NP and TIC for Madrid South Humidity Cell Tests

Humidity Cell #	No. of Samples	Sample Type	Sulphide Sulphur		NP[1]		TIC	
			%S	%Rank	kgCaCO$_3$/t	%Rank	kgCaCO$_3$/t	%Rank
HC-63	92	HCT	0.16	77	299	91	383	85
		Pulp	0.13	69	283	82	370	78
HC-61	92	HCT	0.83	97	281	80	388	89
		Pulp	0.71	97	268	68	350	71
HC-62	6*	HCT	0.02	0	169	95	189	100
		Pulp	0.05	19	173	100	189	100
HC-60	97	HCT	0.02	0 to 51	102	55	137	60
		Pulp	0.02	0 to 51	93	47	116	45
HC-64	97	HCT	0.27	97	348	>100	473	99
		Pulp	0.23	95	305	99	464	99

P:\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201208_Patch14Report\Working Files\[Hope Bay MASTER Geochemical Spreadsheet_Rev30_Patch14Report_als_Rev01.xlsx]

*For HC-62, comparison to all early gabbro samples (7a, mixed and unmixed)
[1]NP determined using MEND (1991) method

Trace Elements

Trace element data for the humidity cell samples are presented in Appendix H.

Trace element data are available for the overall Madrid South sample set, as discussed in Section 3.1.4. Most of the samples selected for humidity cell testing had comparable trace element concentrations. However, the two humidity cell samples selected to represent material with a higher sulphur content (HC-61 and HC-64) contained arsenic levels greater than ten times the average crustal abundance for basalt (Price 1997). Additionally, arsenic levels were greater than P95 levels for their respective rock type and economic classification (Table 3-10). Tungsten levels were also enriched relative to the average crustal abundance for basalt for sample HC-61.

Table 3-10: Percentile Rank of Arsenic Levels, Madrid South Humidity Cell Tests

Humidity Cell #	Rock Type[1]	No. of Samples	Sample Type	As	
				ppm	% Rank
HC-63	1	92	HCT	7	45
			Pulp	4	32
HC-61	1	92	HCT	214	97
			Pulp	218	98
HC-62	7ac mixed	6*	HCT	7	69
			Pulp	6	60
HC-60	9	97	HCT	3	45
			Pulp	2	40
HC-64	9	97	HCT	126	98
			Pulp	115	98

Note:

[1]Rock codes as follows: 1 = mafic volcanics; 7a = early gabbro; 9 = late porphyry granitoids

*Comparison to all early gabbro samples (mixed and unmixed)

3.2.2 Humidity Cell Data

As outlined in Table 2-3, this report contains the final data sets for the five humidity cell tests from the Madrid South deposit. Table 2-2 presents the analytical program for the tests. Appendix I contains humidity cell results, including summaries of key data, stable release rates of selected parameters and depletion calculations. Figures showing trends and the raw data for the humidity cell tests are provided in Appendix J.

Concentrations and Trends

For the humidity cell tests, maximum concentrations and pHs were typically highest during the initial stages, after which they decreased with time and levelled out. The pHs were neutral to alkaline for the duration of the test.

Sulphate concentrations were initially high and decreased rapidly. Sulphate concentrations for HC-62 (mixed early gabbro) were high compared to the other samples, with levels greater than 100 mg/L until cycle 40, after which sulphate levels trended downwards. The sulphide content in HC-62 is low (<0.02%); therefore, sulphate leaching is likely related to the presence of gypsum, as indicated by mineralogy and ABA, and not sulphide oxidation.

Sulphate release rates were stable[2] for all samples except for HC-62. For HC-62, the stable rate was calculated based on the last five cycles of available data. Stable sulphate release rates for samples of mafic volcanic (rock type 1, HC-61 and HC-63) and late porphyry granitoid (rock type 9, HC-60 and HC-64) were below 2 mg/kg/week and near the analytical detection limit for sulphate (1 mg/L). In

[2]Stable release rates calculated based on uniform sulphate concentrations over a period of time. For tests where sulphate leaching trends had not yet stabilized, the stable rate was based on the last five cycles of data.

contrast, the stable sulphate release rate for HC-62 (rock type 7ac, and containing gypsum) was 23 mg/kg/week.

Sulphate release rates were low (maximum 1.1 mg/kg/week) for the humidity cell samples selected for their statistically high (95th percentile) sulphide content; however, these samples contained relatively low sulphide levels (Table 3-9). Upon completion of HC-60, HC-63 and HC-64, the last two cycles analyzed sulphate at a lower detection limit (0.06 mg/L versus 1 mg/L), with the objective of refining the sulphate release rates. Sulphate levels were lower for HC-60 only (Appendix I).

Alkalinity levels were stable and were in the range of 15 to 30 mg/L for all tests. Alkalinity levels were highest for HC-61.

For all samples except HC-62, the molar ratio ((Ca+Mg)/SO_4) is approximately 10 or higher, suggesting the dissolution of carbonate minerals, and alkalinity production rates, are in response to the addition of deionized water, and not the oxidation of sulphides. For HC-62 (early gabbro), the carbonate molar ratio was slightly higher than 1; however, as previously discussed, the elevated levels of sulphate and calcium leaching are likely related to dissolution of sulphate minerals rather than sulphide oxidation and reactions with carbonate minerals.

In terms of trace elements, samples containing higher sulphide (HC-61 and HC-64) or mixed early gabbro (7ac, HC-62) exhibited elevated concentrations for specific elements relative to the other samples, and are described below.

For the high sulphide samples (HC-61 and HC-64):

- Stable arsenic release rates (0.056 and 0.097 mg/kg/week for HC-61 and HC-64, respectively) were two to three orders of magnitudes higher than the low sulphide samples (0.0005 to 0.0025 mg/kg/week). Arsenic trends for all samples were decreasing.
- Stable cobalt release rates (0.0011 and 0.00087 mg/kg/week for HC-61 and HC-64, respectively) were one to two orders of magnitudes higher than the low sulphide samples (0.000013 to 0.000028 mg/kg/week). Cobalt trends for all samples were stable.
- Stable nickel release rates (0.00058 and 0.00072 mg/kg/week for HC-61 and HC-64, respectively) were an order of magnitude higher than all other samples. Samples HC-60, HC-62 and HC-63 had comparable leaching rates, ranging from 0.000032 to 0.00005 mg/kg/week. Nickel trends for all samples were stable.

For the samples containing typical sulphide levels (HC-60 and HC-62):

- Stable release rates of uranium were comparable (0.0001 and 0.00004 mg/kg/week for HC-60 and HC-62, respectively) and higher than the other samples (0.0000012 to 0.0000019 mg/kg/week). Uranium trends for HC-60 and HC-62 were decreasing whereas rates for the other humidity cell tests were stable. Solid-phase uranium content was highest for sample HC-62 (0.9 ppm). Uranium levels for HC-60 (0.2 ppm) were comparable to the other samples (0.1 ppm).

For the sample of mixed early gabbro (7ac, HC-62):

- Stable release rates of barium, calcium, manganese and strontium were elevated relative to the other humidity cell tests and likely indicate the dissolution of carbonate and gypsum minerals in response to deionized water addition.

Depletion Calculations

Depletion calculations are presented in Appendix I.

Depletion calculations based on stable release rates suggest that all of the humidity cell tests will remain neutral. For HC-62, sulphate was the dominant sulphur mineral and sulphide levels were below detection, as determined by ABA and mineralogy. Accordingly, sulphate leaching for HC-62 was due to the dissolution of gypsum. Although it is not possible to estimate depletion times for this sample given the low sulphide content (<0.02%), this sample is considered low risk from an ARD perspective as the low sulphide content will limit acidity loadings.

3.2.3 Post-Test Sample Characterization

The geochemical characteristics (ABA and trace element composition) of the material remaining after the operation of the humidity cell samples are presented in the following text. ABA data are presented in Table 3-8 and Table 3-11, and Appendix K presents the trace element composition data.

Acid-Base Accounting

The ABA data for the humidity cell test residues (post-HCT) are presented in Table 3-11. The ABA data of the material loaded into the tests prior to operation (pre-HCT and Section 3.2.1) are also presented for comparison.

For all samples except HC-62, pre- and post-test total sulphur and sulphide levels were equivalent, indicating negligible loss of the sulphide content. For the high sulphide samples (HC-61 and HC-64), post-test sulphur levels were slightly higher, but this is likely attributable to analytical uncertainty or sample heterogeneity. For HC-62, the lower post-test total sulphur levels are related to the leaching of primary gypsum from the sample.

NP and TIC levels decreased over the course of humidity cell operation, with the absolute decrease in TIC levels more significant than NP. The smallest change in levels was observed for HC-62, which may be due to the absence of sulphide oxidation.

The ARD classification of the post-test residues is consistent with the initial classification of non-PAG.

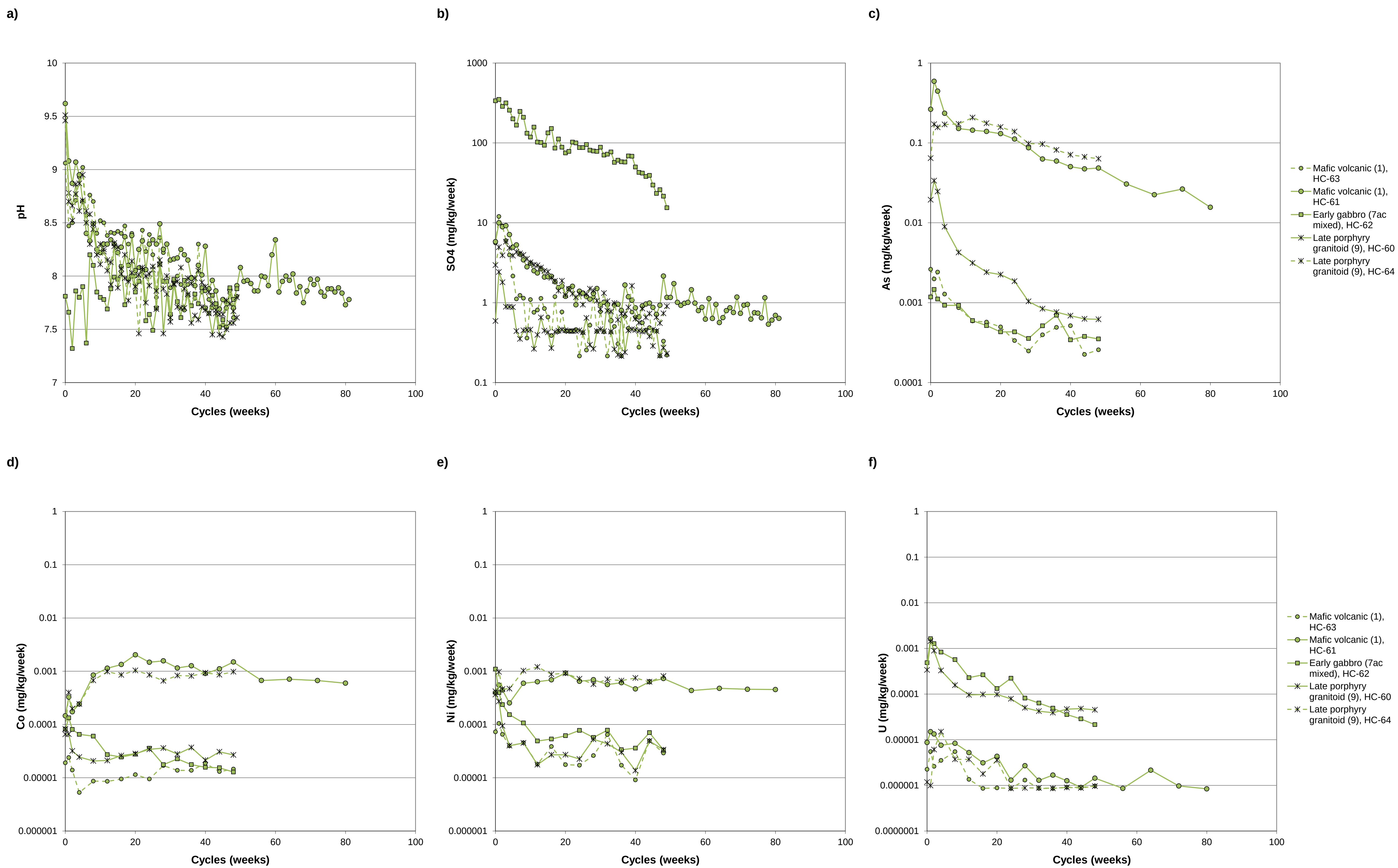


Figure 3.15: pH, Sulphate, Arsenic, Cobalt, Nickel and Uranium Release Rates for Humidity Cell Tests

P:\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201605_Madrid S_DEIS\Working Files\[all_HB_WR_LoadCharts.mc.REV08.xlsx]

Table 3-11: ABA Data for Madrid South Humidity Cell Test Residues

Humidity Cell #	Rock Type[1]	Sample Type	Paste pH	Total Sulphur	Sulphate Sulphur	Sulphide Sulphur	NP[2]	TIC	$TIC_{(Ca+Mg)}$	NP/ AP	TIC/AP	$TIC_{(Ca+Mg)}$/AP
				%S	%S	%S	kgCaCO$_3$/t					
HC-63	1	Pre-HCT	9.6	0.16	<0.01	0.16	300	380	310	non-PAG	non-PAG	non-PAG
		Post-HCT	9.5	0.16	<0.01	0.16	290	370	300			
HC-61	1	Pre-HCT	9.8	0.83	<0.01	0.83	280	390	320	non-PAG	non-PAG	non-PAG
		Post-HCT	9.5	0.86	0.01	0.85	280	360	290			
HC-62	7a mixed	Pre-HCT	8.5	0.2	0.2	<0.02	170	190	150	non-PAG	non-PAG	non-PAG
		Post-HCT	8.5	0.06	0.05	0.01	170	180	150			
HC-60	9	Pre-HCT	10	<0.02	<0.01	<0.02	100	140	110	non-PAG	non-PAG	non-PAG
		Post-HCT	9.7	<0.02	<0.01	<0.02	99	130	100			
HC-64	9	Pre-HCT	9.8	0.27	<0.01	0.27	350	470	390	non-PAG	non-PAG	non-PAG

Y:\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201605_Madrid S_DEIS\Working Files\[1CT022.004_HopeBay_MadridS_Tables_Rev00_JEM.xlsx]

[1]Rock codes as follows: 1 = mafic volcanics; 7ac = early gabbro; 9 = late porphyry granitoids, Fizz test was strong for all samples except HC-60 test residue (slight)

[2]NP determined using MEND (1991) method

HCT = humidity cell test

Solid-Phase Elemental Composition

Solid-phase trace elemental data for the humidity cell residues are presented in Appendix K.

Trace element content for the post-test residues was consistent with the pre-test material. Arsenic was leached from the samples during the humidity cell test operation, as indicated by the lower levels in the post-test samples. For the higher sulphur samples (HC-61 and HC-64), arsenic levels remained greater than ten times the average crustal abundance for basalt (Price 1997). Also, tungsten levels were also enriched relative to the average crustal abundance for basalt for sample HC-61.

3.3 Barrel Tests

Two barrel tests from Madrid South, one containing mafic volcanics (1) and the other late porphyry granitoids (9) were set-up in 2010. The drill core intervals for each barrel are listed in Appendix C.

3.3.1 Sample Characterization

The basic geochemical characteristics of the barrel samples, including mineralogy, ABA and trace element composition are described in the following text. Mineralogy and ABA data are presented in Table 3-12 and Table 3-13, respectively. Appendix K presents the bulk mineralogy and trace element composition data.

Mineralogy

Mineralogy data by XRD for the barrels are presented in Table 3-12. The XRD results for the barrel tests were consistent with the static test samples characterized from Madrid South (Section 3.1.2) and are summarized as follows:

- Ferroan dolomite (Ca(Mg(x-1)Fex)CO3) was the dominant carbonate mineral and only iron carbonate mineral detected. Calcite (CaCO3) was also present.
- Pyrite was the only sulphide mineral detected and for sample W15 only. Given the detection limits of XRD (1%), levels were roughly comparable to those determined by ABA methods.

Table 3-12: Mineralogy Data for Madrid South Barrel Test Samples

Barrel ID	Rock Type	Carbonates		Sulphides		
		Ferroan Dolomite $Ca(Fe,Mg)(CO_3)_2$	Calcite $CaCO_3$	Pyrite FeS_2	Sulphide S	
		XRD	XRD	XRD	XRD	ABA
		mineral %		mineral %	%S	
W15	1	22	5	1	1	0.31
W16	9	13	1	bd	bd	0.04

[1]Rock codes as follows: 1 = mafic volcanics; 9 = late porphyry granitoids

Acid-Base Accounting

ABA data and the percentile rank for the barrel test samples are presented in Table 3-13. For each barrel sample there are data for two different sample types. Samples denoted as “barrel” were chip samples obtained along the barrel interval during the test set-up (Section 2.3). The samples described as pulp are from the initial ABA characterization program and represent continuous sampling of the barrel interval using exploration pulps (Section 2.1).

The ABA data for the barrel samples was consistent with the overall Madrid South sample set (Section 0). For samples W15 and W16, sulphur content was variable between sample types. This is likely an artefact of the different sampling, confirming that the distribution of sulphides is not continuous throughout the waste rock. For sample W15, the chip sample contained more sulphide than the pulp sample whereas the opposite was true for sample W16. Conversely, the values of NP and TIC were reproducible suggesting a more uniform distribution of buffering minerals. In general, the sulphur content of the pulp samples is considered to be more representative of average conditions in these samples.

Table 3-13: ABA Data and Percentile Ranks for Madrid South Barrel Test Samples

Barrel ID	No. of ABA Samples	Sample Type	Total S		NP[1]		TIC		$TIC_{(Ca+Mg)}$		NP/AP	TIC/AP	$TIC_{(Ca+Mg)}$/AP
			%S	%Rank	$kgCaCO_3/t$	%Rank	$kgCaCO_3/t$	%Rank	$kgCaCO_3/t$	%Rank			
W15	92	barrel	0.31	92	267	68	293	63	239	63	non-PAG	non-PAG	non-PAG
		pulp	0.12	68	246	62	287	62	234	62	non-PAG	non-PAG	non-PAG
W16	97	barrel	0.04	61	121	76	165	82	134	82	non-PAG	non-PAG	non-PAG
		pulp	0.14	90	120	76	166	83	135	83	non-PAG	non-PAG	non-PAG

Y:\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201605_Madrid S_DEIS\Working Files\[Hope Bay MASTER Geochemical Spreadsheet_Rev30_MadridSReport_JEM_Rev00.xlsx]

[1]NP determined using MEND (1991) method

Trace Elements

Trace element data were compared with ten times the average crustal abundance for basalt (Price 1997) to determine if any parameters were elevated. Arsenic levels were elevated for W15 only (mafic volcanic), which is consistent with the trace element data available for the overall Madrid South sample set (Section 3.1.4). The percentile rank of the barrel samples were 69% and 85% (Table 3-14) relative to the ABA samples corresponding to the same rock type.

Table 3-14: Percentile Rank of Arsenic Levels, Madrid South Barrel Test Samples

Barrel ID	Rock Type[1]	Preliminary Economic Classification	As	
			ppm	% Rank
W15	1	W	24	69
W16	9	W	12	85

P:\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201109_Pactch14Report\Working Files\[Hope Bay MASTER Geochemical Spreadsheet_Rev30_Patch14Report_als_Rev00.xlsx]

Note: [1]Rock codes as follows: 1 = mafic volcanics; 9 = late porphyry granitoids

3.3.2 Barrel Data

This section presents the results of the barrel monitoring. Madrid South source terms for the Project are discussed in SRK (2017a).

Barrels W15 and W16 were inspected for leachate on eight occasions (June, July and August 2011; June and August 2012; August 2014; July and August 2015); however, sufficient leachate was not available each time to produce the full analytical suite (Table 2-5).

The raw data, figures showing trends and release rates for the Madrid South barrel tests, and the Windy barrel blank are provided in Appendix L. Generally, maximum trace element concentrations in the test leachates were typically from the initial sample event and reflect the initial flushing of stored oxidation products.

pH values for both tests were circumneutral (pH 8.1) in the most recent sampling event (August 2015). pH has remained above 7.9 for all sampling events (Figure 3.16).

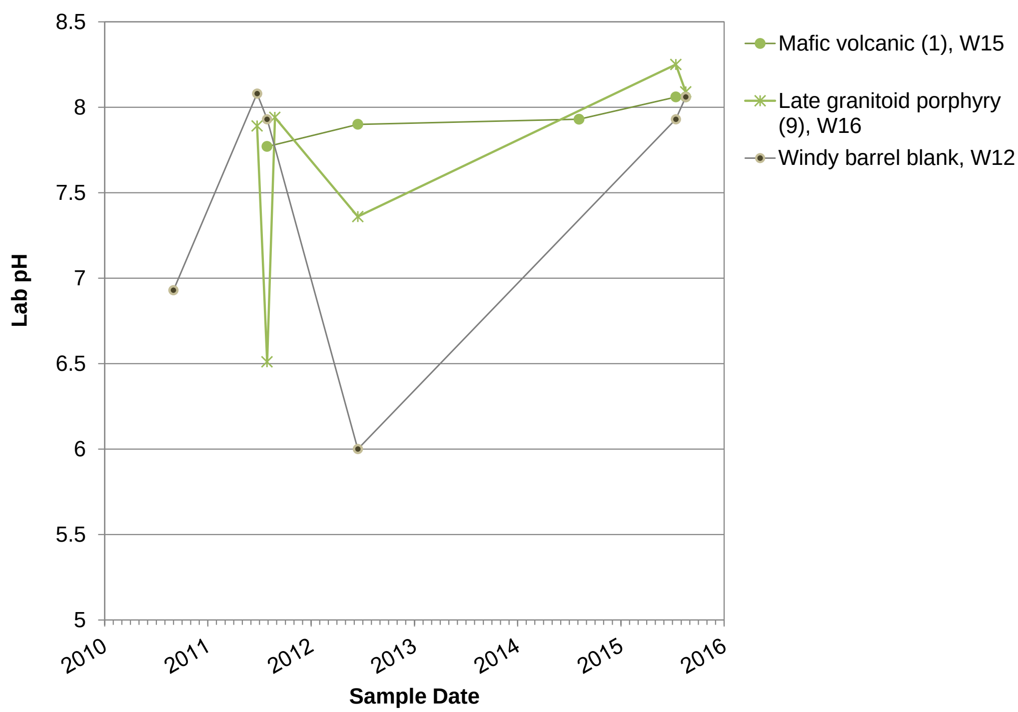
Sulphate concentrations for the mafic volcanics (W15) (typically 30 mg/L) appear to be an order of magnitude higher than late porphyry granitoids (W16) (less than 5.0 mg/L but as high as 15 mg/L), as would be expected given the higher sulphur content of W15. Sulphate concentrations in the test leachates have remained relatively stable for W15, while W16 increased up to 13 mg/L in July 2015, then decreased back to background concentrations (Figure 3.17).

For W16, levels of arsenic, cobalt, copper, molybdenum, nickel, and uranium have oscillated and exhibit increasing trends (Figure 3.18 a, b, c, d, e, and f). Concentrations of these elements have remained consistently higher than those of barrel test W15. The July 2015 data for W16 is anomalously and consistently high for a number of parameters, including arsenic, molybdenum, nickel and uranium, and likely represent sample variability.

Increasing trends for W16 and/or W15 were observed for alkalinity, aluminum, boron, calcium, and magnesium; however, the associated levels for the blank barrel test suggests that concentrations of these parameters are related to factors external to weathering of the waste rock (eg. dust). Levels of boron, calcium and magnesium for W15 are higher than the blank suggesting that the increasing trend is likely real.

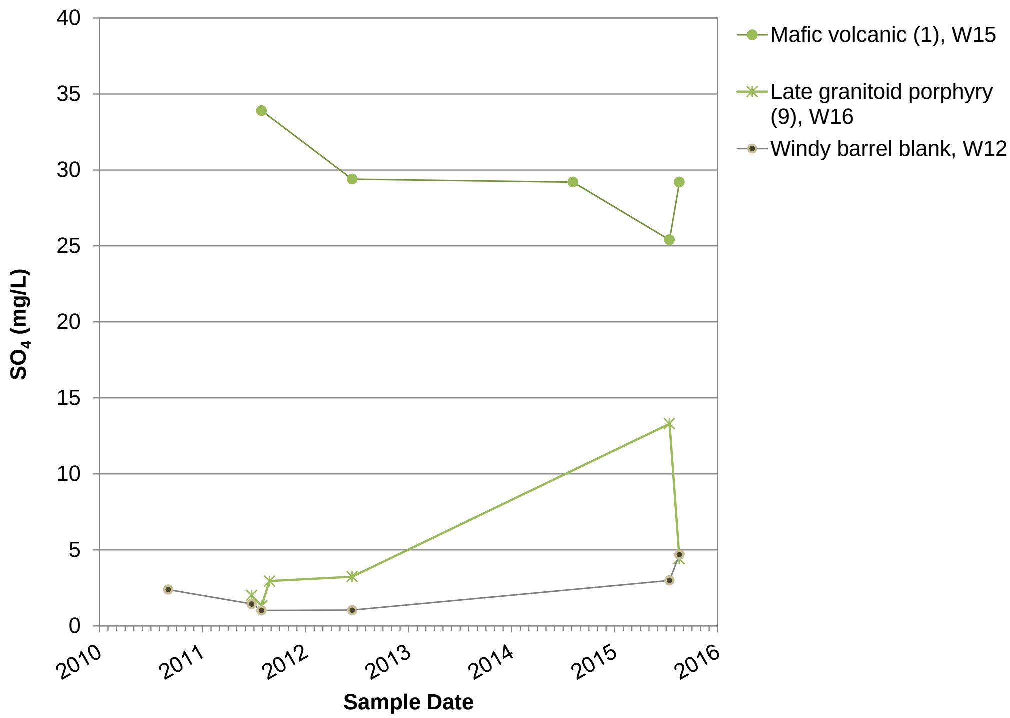
All other parameters had low and stable concentrations.

Table 3-15 compares the average release rates from barrel W16 and stable release rates from the humidity cell tests for sulphate and parameters that were identified as having increasing trends Figure 3.18. Data from W15 is not presented in Table 3-15, because all parameters exhibited low and stable leaching trends. All average release rates from W16 were at least an order of magnitude lower than the highest stable HCT rate from the same rock type, with the exception of copper and molybdenum rates. For copper and molybdenum, average barrel rates for W16 were more than five times lower than the highest stable HCT rate.



\\van-svr0.van.na.srk.ad\projects\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201605_Madrid S_DEIS\Working Files\BarrelData.1CHO008-014.graphs.rtc_rev06_JEM_Rev01.xlsx

Figure 3.16: Lab pH in Madrid South Barrel Test Leachates



\\van-svr0.van.na.srk.ad\projects\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201605_Madrid S_DEIS\Working Files\BarrelData.1CHO008-014.graphs.rtc_rev06_JEM_Rev01.xlsx

Figure 3.17: Sulphate Concentrations in Madrid South Barrel Test Leachates

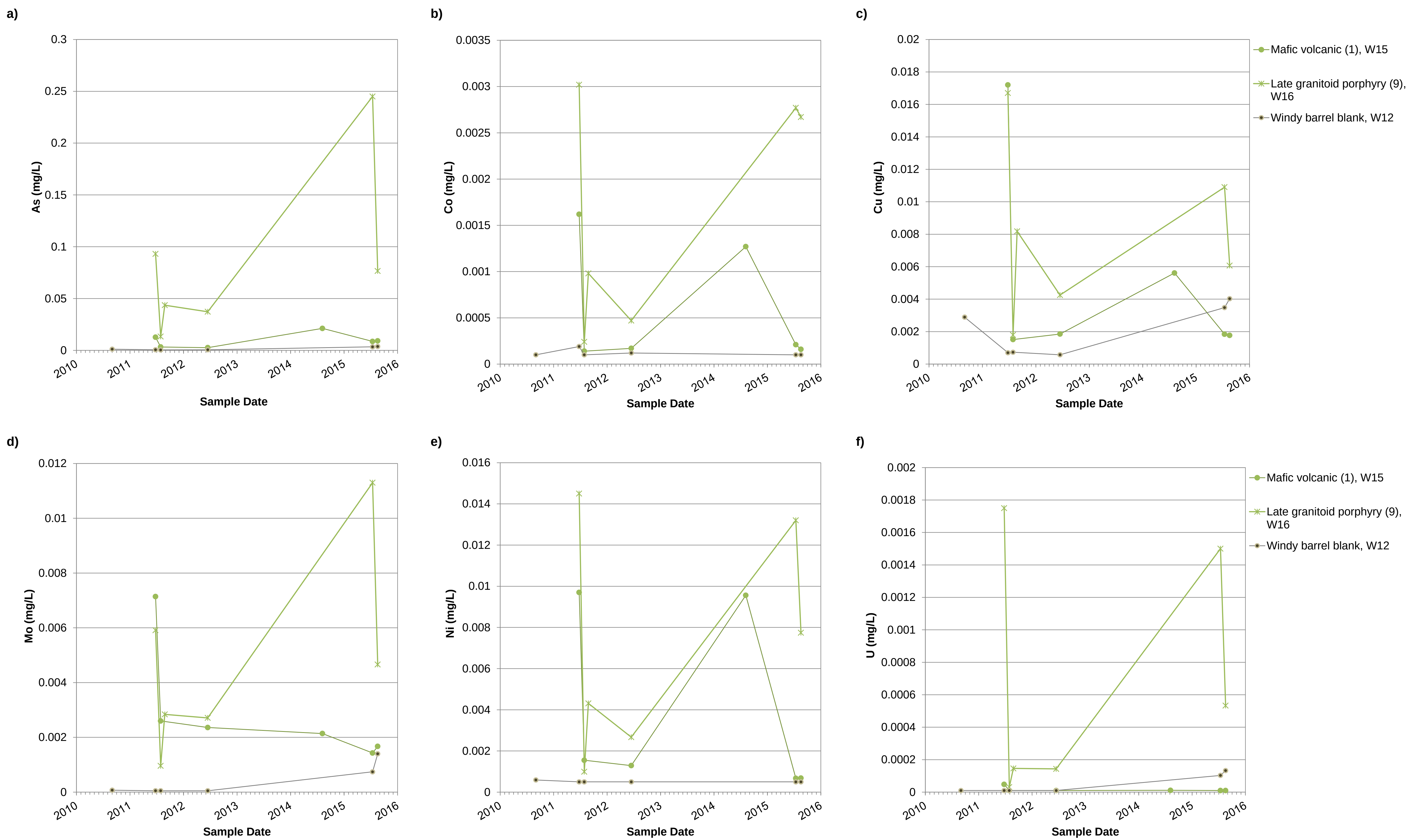


Figure 3.18: Arsenic, Cobalt, Copper, Molybdenum, Nickel and Uranium Concentrations in Madrid South Barrel Test Leachates

Table 3-15: Comparison of Release Rates from Late Porphyryr Granitoid Barrrel (W16) and Humidity Cell Tests (HCTs)

Parameter	Rock Type	Test Type	Sample D	Rate[1]
				mg/kg/week
Sulphate	9	Barrel	W16	0.04
		HCT	HC-60	0.48
			HC-64	1
Arsenic	9	Barrel	W16	0.0007
		HCT	HC-60	0.0025
			HC-64	0.097
Cobalt	9	Barrel	W16	0.000019
		HCT	HC-60	0.000028
			HC-64	0.00087
Copper	9	Barrel	W16	0.000051
		HCT	HC-60	0.0003
			HC-64	0.00022
Molybdenum	9	Barrel	W16	0.00004
		HCT	HC-60	0.00036
			HC-64	0.000041
Nickel	9	Barrel	W16	0.000061
		HCT	HC-60	0.000034
			HC-64	0.00072
Uranium	9	Barrel	W16	0.0000047
		HCT	HC-60	0.0001
			HC-64	0.0000012

\\van-svr0.van.na.srk.ad\projects\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201605_Madrid S_DEIS\Working Files\[BarrelData.1CHO008-014.graphs.rtc_rev06_JEM_Rev01.xlsx]

[1]Rate is average for barrel tests and stable rate for humidity cell test (HCT).

4 Conclusions

The most volumetrically significant rock types for the Madrid South deposit area include mafic to ultramafic metavolcanics (1), intermediate volcanics (2) and late porphyry granitoids (9). Less significant rock types characterized include quartz veining (12q), which is associated with gold mineralization, intermediate to felsic volcanics (3ao), early gabbro intrusives (7), late gabbro intrusive (10a), late mafic dykes (10b), and carbonate vein (12c).

Overall, ferroan dolomite was the most abundant carbonate mineral (median concentrations ranging from below detection to 38%); however, it was typically absent for samples of intermediate volcanics (2) and gabbro (7a). Calcite was also present at median levels greater than 5% in mafic volcanics (1) and intermediate volcanics (2) but was not detected in samples of late porphyry granitoid (9) or quartz vein (12q). The occurrence of magnesite and magnesium siderite was overall less significant, both in quantity and occurrence.

The samples were characterized by low sulphur content, with 95% of samples containing less than 0.5% total sulphur. The sulphide mineralogy was primarily pyrite with trace levels of chalcopyrite, gersdorffite, pyhrrotite, arsenopyrite, cobaltite, sphalerite and tetrahedrite. Sulphur levels for the deposit rock types were low, with the highest levels observed for samples of quartz vein (12q, median level of 0.46%). Median levels were below 0.1% for mafic metavolcanics (1), intermediate volcanics (2) and late porphyry granitoids (9). The late porphyry granitoid sample set had median levels below the analytical detection limit (0.02%). Levels of NP and TIC were high (median values for all rock types greater than 75 kg$CaCO_3$ eq/t). The overestimation of neutralization potential due to the presence of NP-neutral iron carbonates was assessed by calculating an effective TIC ($TIC_{(Ca+Mg)}$) based on the lowest calcium-plus-magnesium content in the Madrid South humidity cell test samples. Regardless of buffering method used (NP, TIC or $TIC_{(Ca+Mg)}$), all samples were classified as non-PAG.

All the volumetrically significant rock types contained samples with elevated solid-phase arsenic. Overall highest arsenic levels were exhibited for samples of quartz vein (median levels greater than 100 ppm) while samples of mafic volcanics (1), intermediate volcanics (2) and late porphyry granitoids (9) contained median levels of less than 10 ppm. Compared to other Hope Bay deposits, arsenic content for mafic volcanics from Madrid South was lower than Boston and Madrid North, and generally similar to Doris. Arsenic content for Madrid South quartz vein (12q) samples were lower than Boston but higher than both Doris and Madrid North.

Five humidity cell tests of Madrid South waste rock were operated as part of the characterization program. All samples yielded leachates with neutral pH. The typical and high sulphur samples of mafic volcanics and late porphyry granitoids had low sulphate release rates (maximum 1 mg/kg/week), indicating low rates of sulphide oxidation. Stable sulphate leaching rates for the sample of mixed early gabbro was higher (23 mg/kg/week); however, this likely reflects the leaching of primary sulphate minerals in the sample rather than sulphide oxidation. Arsenic, cobalt and nickel leaching rates were appreciably higher in the samples with high sulphide content.

The pH for the two barrels of Madrid South waste rock (mafic volcanic and late porphyry granitoid) were circumneutral. Parameter levels were low and stable with the exception of arsenic, cobalt, copper, molybdenum, nickel and uranium, which exhibited increasing trends for barrel W16 (late porphyry graintoid). All average release rates from W16 were at least an order of magnitude lower than the highest stable HCT rate from the same rock type, with the exception of copper and molybdenum rates from W16. For copper and molybdenum, average barrel rates for W16 were more than 5 times lower than the highest stable HCT rate.

The potential for ARD from Madrid South waste rock is low. Neutral pH metal leaching from the relatively small proportion of samples that contain higher sulphur concentrations is of concern, specifically related to arsenic and to a lesser extent cobalt, copper, nickel, molybdenum and uranium. Madrid South source terms for the Project are presented in SRK (2017a).

This report, "Geochemical Characterization of Waste Rock and Ore from the Madrid South Deposits, Hope Bay", was prepared by SRK Consulting (Canada) Inc.

Prepared by

Eduardo Marquez, MSc
Consultant (Geochemistry)

Lisa Barazzuol, MSc, PGeo (BC)
Senior Consultant (Geochemistry)

Reviewed by

Kelly Sexsmith, MS, PGeo (BC)
Principal Consultant (Environmental Geochemistry)

All data used as source material plus the text, tables, figures, and attachments of this document have been reviewed and prepared in accordance with generally accepted professional engineering and environmental practices.

Disclaimer—SRK Consulting (Canada) Inc. has prepared this document for TMAC Resources Inc.. Any use or decisions by which a third party makes of this document are the responsibility of such third parties. In no circumstance does SRK accept any consequential liability arising from commercial decisions or actions resulting from the use of this report by a third party.

The opinions expressed in this report have been based on the information available to SRK at the time of preparation. SRK has exercised all due care in reviewing information supplied by others for use on this project. Whilst SRK has compared key supplied data with expected values, the accuracy of the results and conclusions from the review are entirely reliant on the accuracy and completeness of the supplied data. SRK does not accept responsibility for any errors or omissions in the supplied information, except to the extent that SRK was hired to verify the data.

5 References

ASTM 2001. Standard Test for Accelerated Weathering of Solid Materials Using a Modified Humity Cell. Designation: D 5744-96 (Reapproved 2001).

MEND 1991. Acid Rock Drainage Prediction Manual. MEND Project 1.16-1b. Report prepared by Coastech Research for CANMET. (see http://www.nrcan.gc.ca/mms/canmet-mtb/mmsllmsm/mend/mendpubs-e.htm for publication information).

MEND 2009. Prediction Manual for Drainage Chemistry from Sulphidic Geological Materials. MEND Report 1.20.1, December 2009.

Price 1997. Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia, DRAFT. British Columbia Ministry of Employment and Investment, April 1997.

SRK 2015a. Geochemical Characterization of Waste Rock and Ore from the Patch 14 and Wolverine Deposits, Hope Bay. Report prepared for TMAC Resources Inc. by SRK Consulting (Canada) Inc. Project no. 1CT022.022, August 2015.

SRK 2015b. Static Testing and Mineralogical Characterization of Waste Rock and Ore from the Doris Deposit, Hope Bay. Report prepared for TMAC Resources Inc. by SRK Consulting (Canada) Inc. Project no. 1CT022.022, June 2015.

SRK 2015c. Kinetic Testing of Waste Rock and Ore from Doris Deposits, Hope Bay. Report prepared for Hope Bay Mining Ltd. by SRK Consulting (Canada) Inc. Project no. 1CT022.022, June 2015.

SRK Consulting (Canada) Inc., 2017a. Source Term Predictions for the Proposed Madrid North, Madrid South and Boston Mines Report, Hope Bay Project. Report Prepared for TMAC Resources Inc. 1CT022.013. November 2017.

SRK Consulting (Canada) Inc., 2017b. Geochemical Characterization of Waste Rock and Ore from the Madrid North Deposit, Hope Bay Project. Report Prepared for TMAC Resources Inc. 1CT022.013. November 2017.

Appendices

Appendix A:
Spatial Location, Geological Attributes & Economic Classification of Madrid South Sample Set

Sample ID	Drillhole	From (m)	To (m)	Economic Classification	Rock Type[1]		
					Group	LCODE	LCODE Summary
09PSD151-SRK-WR-561	09PSD151	79.47	89.63	W	1	1a	1a
09PSD153-SRK-WR-580	09PSD153	496.15	500.25	W	1	1a	1a
09PSD153-SRK-WR-582	09PSD153	501.76	505.19	W	1	1a	1a
09PSD153-SRK-WR-584	09PSD153	508.3	509.51	W	1	1a	1a
09PSD153-SRK-WR-586	09PSD153	510.46	513.21	W	1	1a	1a
09PSD153-SRK-WR-590	09PSD153	524.6	535.52	W	1	1a	1a
09PSD153-SRK-WR-593	09PSD153	544.91	547.84	W	1	1a	1a
09PSD164-SRK-WR-600	09PSD164	45.74	50.43	W	1	1a	1a
09PSD164-SRK-WR-603	09PSD164	67.5	78	W	1	1a	1a
09PSD164-SRK-WR-607	09PSD164	99	103.67	W	1	1a	1a
09PSD164-SRK-WR-609	09PSD164	105	108	W	1	1a	1a
09PSD183-SRK-WR-615	09PSD183	19.32	27.42	W	1	1p	1p
09PSD183-SRK-WR-616	09PSD183	27.42	37.7	W	1	1p	1p
09PSD183-SRK-WR-617	09PSD183	37.7	49.5	W	1	1p	1p
09PSD183-SRK-WR-618	09PSD183	49.5	58.5	W	1	1p	1p
09PSD183-SRK-WR-619	09PSD183	58.5	65.96	W	1	1p	1p
09PSD183-SRK-WR-620	09PSD183	65.96	71	W	1	1p	1p
09PSD205-SRK-WR-627	09PSD205	40.15	43	W	1	1p	1p
09PSD205-SRK-WR-628	09PSD205	43	53.12	W	1	1p	1p
09PSD205-SRK-WR-629	09PSD205	53.12	64.07	W	1	1a	1a
09PSD205-SRK-WR-630	09PSD205	64.07	75	W	1	1a	1a
09PSD205-SRK-WR-631	09PSD205	75	81.52	W	1	1a	1a
09PSD205-SRK-WR-633	09PSD205	82.58	85.4	W	1	1a	1a
09PSD205-SRK-WR-634	09PSD205	85.4	93.54	W	1	1a	1a
09PSD205-SRK-WR-638	09PSD205	118.55	127.33	W	1	1p	1p
09PSD205-SRK-WR-639	09PSD205	127.33	131.21	W	1	1p	1p
09PSD205-SRK-WR-640	09PSD205	131.21	145.67	W	1	1p	1p
09PSD205-SRK-WR-641	09PSD205	145.67	156	W	1	1a	1a
09PSD205-SRK-WR-642	09PSD205	156	165	W	1	1a	1a
09PSD205-SRK-WR-643	09PSD205	165	169.86	W	1	1a	1a
09PSD205-SRK-WR-644	09PSD205	169.86	177	W	1	1a	1a
09PSD205-SRK-WR-645	09PSD205	177	185.5	W	1	1a	1a
09PSD205-SRK-WR-646	09PSD205	185.5	191.11	W	1	1a	1a
09PSD205-SRK-WR-647	09PSD205	191.11	193	W	1	1a	1a
09PSD205-SRK-WR-648	09PSD205	193	194.22	W	1	1a	1a
09PSD205-SRK-WR-649	09PSD205	194.22	206	W	1	1a	1a
09PSD205-SRK-WR-650	09PSD205	206	216.5	W	1	1a	1a
09PSD205-SRK-WR-651	09PSD205	216.5	225.57	W	1	1a	1a
09PSD205-SRK-WR-652	09PSD205	225.57	236.36	W	1	1a	1a (0.99), 1p (0.01)
09PSD205-SRK-WR-653	09PSD205	236.36	243.76	W	1	1p	1p
09PSD205-SRK-WR-654	09PSD205	243.76	250.48	W	1	1p	1p
09PSD205-SRK-WR-655	09PSD205	250.48	256.23	W	1	1p	1p
09PSD209-SRK-WR-671	09PSD209	548.02	558.5	W	1	1a	1a
10PSD239-SRK-WR-706	10PSD239	7.9	13.29	W	1	1a	1a
10PSD239-SRK-WR-707	10PSD239	13.29	24.77	W	1	1p	1p
10PSD239-SRK-WR-708	10PSD239	24.77	34.04	W	1	1a	1a
10PSD239-SRK-WR-709	10PSD239	34.04	37	W	1	1a	1a
10PSD239-SRK-WR-712	10PSD239	51.75	54.22	W	1	1p	1p
10PSD239-SRK-WR-715	10PSD239	61.55	66.88	W	1	1p	1p
10PSD239-SRK-WR-721	10PSD239	119.91	129.5	W	1	1p	1p
10PSD239-SRK-WR-722	10PSD239	129.5	138.25	W	1	1p	1p
10PSD239-SRK-WR-724	10PSD239	139.82	147	W	1	1p	1p
10PSD239-SRK-WR-725	10PSD239	147	153.41	W	1	1p	1p
10PSD239-SRK-WR-740	10PSD239	305.8	311.9	W	1	1pd	1pd
10PSD239-SRK-WR-741	10PSD239	311.9	313	W	1	1pd	1pd
09PSD211A-SRK-WR-751	09PSD211A	39.3	49.5	W	1	1p	1p
09PSD211A-SRK-WR-752	09PSD211A	60	70.75	W	1	1p	1p
09PSD211A-SRK-WR-754	09PSD211A	81.25	86.25	W	1	1p	1p
09PSD211A-SRK-WR-758	09PSD211A	126.8	133.25	W	1	1p	1p
09PSD211A-SRK-WR-760	09PSD211A	137.33	147.5	W	1	1p	1p
09PSD211A-SRK-WR-761	09PSD211A	158	168.9	W	1	1p	1p
09PSD211A-SRK-WR-763	09PSD211A	170.58	179.25	W	1	1a	1a
09PSD211A-SRK-WR-764	09PSD211A	179.25	183	W	1	1a	1a
09PSD211A-SRK-WR-765	09PSD211A	183	193.5	W	1	1p	1p
09PSD211A-SRK-WR-766	09PSD211A	204	214	W	1	1p	1p
09PSD211A-SRK-WR-767	09PSD211A	224.5	234.2	W	1	1p	1p
09PSD211A-SRK-WR-769	09PSD211A	235.5	240.35	W	1	1p	1p
09PSD211A-SRK-WR-770	09PSD211A	240.35	247.03	W	1	1a	1a
09PSD211A-SRK-WR-771	09PSD211A	247.03	250	W	1	1p	1p
09PSD211A-SRK-WR-772	09PSD211A	250	251.5	W	1	1p	1p
09PSD211A-SRK-WR-773	09PSD211A	251.5	263.27	W	1	1p	1p

Footnotes:
[1]Codes defined in Appendix B. Numbers in parentheses indicate relative proportion of rock type.
[2]Alteration codes: VW=very weak, W=weak, M=moderate, S=strong, VS=very strong.

Sample ID	Drillhole	From (m)	To (m)	Economic Classification	Rock Type[1]		
					Group	LCODE	LCODE Summary
09PSD211A-SRK-WR-775	09PSD211A	272.19	286	W	1	1p	1p
09PSD211A-SRK-WR-776	09PSD211A	286	293.82	W	1	1p	1p
09PSD211A-SRK-WR-778	09PSD211A	297.27	307.5	W	1	1p	1p
09PSD211A-SRK-WR-779	09PSD211A	316	325.06	W	1	1p	1p
09PSD211A-SRK-WR-781	09PSD211A	329.2	338	W	1	1p	1p
09PSD211A-SRK-WR-782	09PSD211A	347	355.45	W	1	1p	1p
09PSD211A-SRK-WR-783	09PSD211A	355.45	367.75	W	1	1a	1a
09PSD211A-SRK-WR-785	09PSD211A	377	387.85	W	1	1p	1p
09PSD211A-SRK-WR-786	09PSD211A	387.85	397.5	W	1	1a	1a
09PSD211A-SRK-WR-787	09PSD211A	406.5	415.5	W	1	1a	1a
09PSD211A-SRK-WR-788	09PSD211A	415.5	424.35	W	1	1a	1a
09PSD211A-SRK-WR-789	09PSD211A	424.35	434.5	W	1	1p	1p
09PSD211A-SRK-WR-790	09PSD211A	446.7	454.35	W	1	1p	1p
09PSD211A-SRK-WR-791	09PSD211A	454.35	459.53	W	1	1a	1a
09PSD211A-SRK-WR-807	09PSD211A	584.29	590	W	1	1a	1a
09PSD211A-SRK-WR-808	09PSD211A	590	599	W	1	1a	1a
09PSD211A-SRK-WR-809	09PSD211A	599	609.5	W	1	1a	1a
09PSD211A-SRK-WR-810	09PSD211A	620	628.28	W	1	1a	1a
09PSD211A-SRK-WR-817	09PSD211A	655.42	663.97	W	1	1a	1a
09PSD211A-SRK-WR-820	09PSD211A	674.56	683	W	1	1a	1a
09PSD211A-SRK-WR-821	09PSD211A	683	691.86	W	1	1a	1a
09PSD153-SRK-WR-588	09PSD153	514.3	523.45	W	1 w. 12q	1a	1a (0.95), 12q (0.05)
09PSD164-SRK-WR-602	09PSD164	56.7	67.5	W	1 w. 12q	1a	1a (0.97), 12q (0.03)
09PSD153-SRK-WR-592	09PSD153	539.19	544.91	W	1 mixed	1a	1a (0.84), 12q (0.09), 12c (0.07)
09PSD164-SRK-WR-605	09PSD164	79.36	91.5	W	1 mixed	1a	1a (0.95), 12c (0.05)
09PSD164-SRK-WR-606	09PSD164	91.5	99	W	1 mixed	1a	1a (0.84), 12q (0.09), 12c (0.08)
09PSD209-SRK-WR-672	09PSD209	558.5	566.59	W	1 mixed	1a	1a (0.5), 9pq (0.5)
10PSD244-SRK-WR-685	10PSD244	227.17	236.16	W	2	2a	2a
10PSD244-SRK-WR-689	10PSD244	258.9	261	W	2	2a	2a
10PSD244-SRK-WR-693	10PSD244	276	278.5	W	2	2pd	2pd
10PSD244-SRK-WR-694	10PSD244	278.5	289	W	2	2pd	2pd
10PSD244-SRK-WR-695	10PSD244	289	300.23	W	2	2pd	2pd
10PSD244-SRK-WR-696	10PSD244	300.23	312	W	2	2a	2a
10PSD244-SRK-WR-697	10PSD244	323.03	331.5	W	2	2a	2a
10PSD244-SRK-WR-698	10PSD244	339	347	W	2	2a	2a
10PSD244-SRK-WR-699	10PSD244	347	351.2	W	2	2a	2a
10PSD244-SRK-WR-700	10PSD244	351.2	352.7	W	2	2a	2a
10PSD244-SRK-WR-701	10PSD244	352.7	357.9	W	2	2pd	2pd
10PSD244-SRK-WR-702	10PSD244	357.9	368	W	2	2pd	2pd
10PSD244-SRK-WR-703	10PSD244	368	377	W	2	2pd	2pd
10PSD244-SRK-WR-704	10PSD244	384.5	393.79	W	2	2pd	2pd
10PSD239-SRK-WR-729	10PSD239	175.03	185.5	W	2	2p	2p
10PSD239-SRK-WR-730	10PSD239	195	205.5	W	2	2p	2p
10PSD239-SRK-WR-731	10PSD239	214.5	225	W	2	2p	2p
10PSD239-SRK-WR-732	10PSD239	235.5	246	W	2	2p	2p
10PSD239-SRK-WR-733	10PSD239	246	256.09	W	2	2p	2p
10PSD239-SRK-WR-734	10PSD239	256.09	263.45	W	2	2p	2p
10PSD239-SRK-WR-735	10PSD239	263.45	271.57	W	2	2p	2p
10PSD239-SRK-WR-736	10PSD239	271.57	274.9	W	2	2p	2p
10PSD239-SRK-WR-738	10PSD239	276.4	286.5	W	2	2p	2p
10PSD239-SRK-WR-739	10PSD239	295.5	305.8	W	2	2p	2p
10PSD239-SRK-WR-743	10PSD239	317.8	320.1	W	2	2a	2a
10PSD239-SRK-WR-744	10PSD239	320.1	328.2	W	2	2a	2a
10PSD239-SRK-WR-745	10PSD239	328.2	340	W	2	2p	2p
10PSD239-SRK-WR-746	10PSD239	340	350.5	W	2	2p	2p
10PSD244-SRK-WR-686	10PSD244	236.16	245	W	3	3ao	3ao
10PSD244-SRK-WR-687	10PSD244	245	250	W	3	3ao	3ao
10PSD244-SRK-WR-688	10PSD244	250	258.9	W	3	3ao	3ao
10PSD244-SRK-WR-690	10PSD244	261	264.77	W	3	3ao	3ao
10PSD244-SRK-WR-691	10PSD244	264.77	274.2	W	3	3ao	3ao
10PSD244-SRK-WR-692	10PSD244	274.2	276	W	3	3ao	3ao
10PSD239-SRK-WR-719	10PSD239	91.6	100.5	W	7a	7a	7a
10PSD239-SRK-WR-720	10PSD239	109.5	119.91	W	7a	7a	7a
09PSD211A-SRK-WR-747	09PSD211A	2.9	10.5	W	7a	7a	7a
09PSD211A-SRK-WR-748	09PSD211A	10.5	19.5	W	7a	7a	7a
09PSD211A-SRK-WR-749	09PSD211A	19.5	31.44	W	7a	7a	7a
09PSD209-SRK-WR-665	09PSD209	494.54	497.19	W	7ac mixed	7ac	7ac (0.64), 12q (0.22), 7ab (0.15)
09PSD151-SRK-WR-556	09PSD151	30	41.26	W	9	9pf	9pf
09PSD151-SRK-WR-557	09PSD151	41.26	46.49	W	9	9pf	9pf
09PSD151-SRK-WR-558	09PSD151	46.49	58	W	9	9pf	9pf
09PSD151-SRK-WR-559	09PSD151	58	68.5	W	9	9pf	9pf
09PSD151-SRK-WR-560	09PSD151	68.5	79.47	W	9	9pf	9pf

Footnotes:

[1]Codes defined in Appendix B. Numbers in parentheses indicate relative proportion of rock type.

[2]Alteration codes: VW=very weak, W=weak, M=moderate, S=strong, VS=very strong.

Sample ID	Drillhole	From (m)	To (m)	Economic Classification	Rock Type[1] Group	LCODE	LCODE Summary
09PSD151-SRK-WR-562	09PSD151	89.63	100	W	9	9pf	9pf
09PSD151-SRK-WR-563	09PSD151	100	111	W	9	9pf	9pf
09PSD151-SRK-WR-564	09PSD151	111	123	W	9	9pf	9pf
09PSD153-SRK-WR-565	09PSD153	322.5	334.5	W	9	9p	9p
09PSD153-SRK-WR-566	09PSD153	334.5	346.5	W	9	9p	9p
09PSD153-SRK-WR-567	09PSD153	346.5	358.5	W	9	9p	9p
09PSD153-SRK-WR-568	09PSD153	358.5	370.5	W	9	9p	9p
09PSD153-SRK-WR-569	09PSD153	370.5	382.5	W	9	9p	9p
09PSD153-SRK-WR-570	09PSD153	382.5	394.5	W	9	9p	9p
09PSD153-SRK-WR-571	09PSD153	394.5	406.5	W	9	9p	9p
09PSD153-SRK-WR-572	09PSD153	406.5	418.5	W	9	9p	9p
09PSD153-SRK-WR-573	09PSD153	418.5	430.5	W	9	9p	9p
09PSD153-SRK-WR-574	09PSD153	430.5	441	W	9	9p	9p
09PSD153-SRK-WR-575	09PSD153	444	454.5	W	9	9p	9p
09PSD153-SRK-WR-576	09PSD153	454.5	465	W	9	9p	9p
09PSD153-SRK-WR-577	09PSD153	465	475.5	W	9	9p	9p
09PSD153-SRK-WR-578	09PSD153	475.5	486	W	9	9p	9p
09PSD153-SRK-WR-579	09PSD153	486	496.15	W	9	9p	9p
09PSD153-SRK-WR-594	09PSD153	547.84	549.56	W	9	9p	9p
09PSD153-SRK-WR-596	09PSD153	553.15	564	W	9	9p	9p
09PSD153-SRK-WR-597	09PSD153	564	574.5	W	9	9p	9p
09PSD153-SRK-WR-598	09PSD153	574.5	585	W	9	9p	9p
09PSD164-SRK-WR-599	09PSD164	36	45.74	W	9	9p	9p
09PSD164-SRK-WR-610	09PSD164	108	117	W	9	9p	9p
09PSD164-SRK-WR-611	09PSD164	117	126.9	W	9	9p	9p
09PSD164-SRK-WR-613	09PSD164	128.78	132	W	9	9p	9p
09PSD183-SRK-WR-614	09PSD183	16.35	19.32	W	9	9p	9p
09PSD183-SRK-WR-622	09PSD183	80.5	89.5	W	9	9p	9p
09PSD183-SRK-WR-624	09PSD183	98.03	106.5	W	9	9p	9p
09PSD183-SRK-WR-625	09PSD183	106.5	115.5	W	9	9p	9p
09PSD183-SRK-WR-626	09PSD183	115.5	123	W	9	9p	9p
09PSD205-SRK-WR-635	09PSD205	93.54	102.5	W	9	9p	9p
09PSD205-SRK-WR-636	09PSD205	102.5	110	W	9	9p	9p
09PSD205-SRK-WR-637	09PSD205	110	118.55	W	9	9p	9p
09PSD205-SRK-WR-656	09PSD205	256.23	268	W	9	9p	9p
09PSD205-SRK-WR-657	09PSD205	268	278.5	W	9	9p	9p
09PSD205-SRK-WR-658	09PSD205	278.5	289	W	9	9p	9p
09PSD205-SRK-WR-659	09PSD205	289	299.5	W	9	9p	9p
09PSD205-SRK-WR-660	09PSD205	299.5	310	W	9	9p	9p
09PSD205-SRK-WR-661	09PSD205	310	317.5	W	9	9p	9p
09PSD205-SRK-WR-662	09PSD205	317.5	327	W	9	9p	9p
09PSD209-SRK-WR-663	09PSD209	473.13	485	W	9	9p	9p
09PSD209-SRK-WR-664	09PSD209	485	494.54	W	9	9p	9p
09PSD209-SRK-WR-666	09PSD209	497.19	506	W	9	9p	9p
09PSD209-SRK-WR-668	09PSD209	516.39	526.5	W	9	9pf	9pf
09PSD209-SRK-WR-669	09PSD209	526.5	537.5	W	9	9pf	9pf
09PSD209-SRK-WR-670	09PSD209	537.5	548.02	W	9	9pf	9pf
09PSD209-SRK-WR-673	09PSD209	566.59	575.5	W	9	9pq	9pq
09PSD209-SRK-WR-674	09PSD209	575.5	584.5	W	9	9pq	9pq
09PSD209-SRK-WR-675	09PSD209	584.5	593.54	W	9	9pq	9pq
09PSD209-SRK-WR-677	09PSD209	595.88	603	W	9	9p	9p
10PSD244-SRK-WR-705	10PSD244	393.79	400	W	9	9pf	9pf
10PSD239-SRK-WR-710	10PSD239	37	41	W	9	9pf	9pf
10PSD239-SRK-WR-711	10PSD239	41	51.75	W	9	9pf	9pf
10PSD239-SRK-WR-713	10PSD239	54.22	55.46	W	9	9pf	9pf
10PSD239-SRK-WR-714	10PSD239	55.46	61.55	W	9	9pf	9pf
10PSD239-SRK-WR-716	10PSD239	66.88	74.8	W	9	9pf	9pf
10PSD239-SRK-WR-717	10PSD239	74.8	83.5	W	9	9pf	9pf
10PSD239-SRK-WR-718	10PSD239	83.5	91.6	W	9	9pf	9pf
10PSD239-SRK-WR-723	10PSD239	138.25	139.82	W	9	9pf	9pf
10PSD239-SRK-WR-726	10PSD239	153.41	161.91	W	9	9pq	9pq
10PSD239-SRK-WR-727	10PSD239	161.91	168.5	W	9	9pf	9pf
10PSD239-SRK-WR-728	10PSD239	168.5	175.03	W	9	9pf	9pf
09PSD211A-SRK-WR-750	09PSD211A	31.44	39.3	W	9	9pq	9pq
09PSD211A-SRK-WR-753	09PSD211A	70.75	81.25	W	9	9p	9p
09PSD211A-SRK-WR-755	09PSD211A	86.25	96.5	W	9	9pf	9pf
09PSD211A-SRK-WR-756	09PSD211A	107	117.5	W	9	9pf	9pf
09PSD211A-SRK-WR-757	09PSD211A	117.5	126.8	W	9	9pf	9pf
09PSD211A-SRK-WR-759	09PSD211A	133.25	137.33	W	9	9pf	9pf
09PSD211A-SRK-WR-762	09PSD211A	168	170.58	W	9	9pf	9pf
09PSD211A-SRK-WR-768	09PSD211A	234.2	235.5	W	9	9pf	9pf
09PSD211A-SRK-WR-774	09PSD211A	263.27	272.19	W	9	9pf	9pf

Footnotes:

[1]Codes defined in Appendix B. Numbers in parentheses indicate relative proportion of rock type.

[2]Alteration codes: VW=very weak, W=weak, M=moderate, S=strong, VS=very strong.

Sample ID	Drillhole	From (m)	To (m)	Economic Classification	Rock Type[1]		
					Group	LCODE	LCODE Summary
09PSD211A-SRK-WR-777	09PSD211A	293.82	297.27	W	9	9pf	9pf
09PSD211A-SRK-WR-780	09PSD211A	325.06	329.2	W	9	9pf	9pf
09PSD211A-SRK-WR-792	09PSD211A	459.53	470	W	9	9p	9p
09PSD211A-SRK-WR-793	09PSD211A	470	479	W	9	9p	9p
09PSD211A-SRK-WR-794	09PSD211A	479	488.5	W	9	9p	9p
09PSD211A-SRK-WR-795	09PSD211A	496	506.5	W	9	9p	9p
09PSD211A-SRK-WR-796	09PSD211A	506.5	510.9	W	9	9p	9p
09PSD211A-SRK-WR-797	09PSD211A	510.9	521.19	W	9	9p	9p
09PSD211A-SRK-WR-799	09PSD211A	523.33	525.47	W	9	9p	9p
09PSD211A-SRK-WR-801	09PSD211A	528.28	535.5	W	9	9p	9p
09PSD211A-SRK-WR-802	09PSD211A	535.5	537	W	9	14l	14l
09PSD211A-SRK-WR-803	09PSD211A	537	546.6	W	9	9pf	9pf
09PSD211A-SRK-WR-805	09PSD211A	548.29	559.5	W	9	9pf	9pf
09PSD211A-SRK-WR-806	09PSD211A	571.5	584.29	W	9	9pf	9pf
09PSD211A-SRK-WR-811	09PSD211A	628.28	637	W	9	9pq	9pq
09PSD211A-SRK-WR-812	09PSD211A	637	646.84	W	9	9pq	9pq
09PSD211A-SRK-WR-816	09PSD211A	654	655.42	W	9	9p	9p
09PSD211A-SRK-WR-818	09PSD211A	663.97	668	W	9	9p	9p
09PSD211A-SRK-WR-822	09PSD211A	691.86	702	W	9	9p	9p
09PSD211A-SRK-WR-823	09PSD211A	712.5	723	W	9	9p	9p
09PSD164-SRK-WR-601	09PSD164	50.43	56.7	W	9 w. 12q	9p	9p (0.65), 12q (0.35)
09PSD183-SRK-WR-621	09PSD183	71	80.5	W	9 w. 12q	9p	9p (0.94), 12q (0.06)
09PSD183-SRK-WR-623	09PSD183	89.5	98.03	W	9 w. 12q	9p	9p (0.9), 12q (0.1)
09PSD209-SRK-WR-667	09PSD209	506	516.39	W	9 w. 12q	9p	9p (0.91), 12q (0.09)
09PSD211A-SRK-WR-804	09PSD211A	546.6	548.29	W	10a	10a	10a
09PSD164-SRK-WR-612	09PSD164	126.9	128.78	W	10b	10b	10b
09PSD205-SRK-WR-632	09PSD205	81.52	82.58	W	10b	10b	10b
09PSD211A-SRK-WR-798	09PSD211A	521.19	523.33	W	10b	10b	10b
09PSD211A-SRK-WR-800	09PSD211A	525.47	528.28	W	10b	10b	10b
09PSD153-SRK-WR-581	09PSD153	500.25	501.76	W	12q	12q	12q
09PSD153-SRK-WR-583	09PSD153	505.19	508.3	W	12q	12q	12q
09PSD153-SRK-WR-585	09PSD153	509.51	510.46	W	12q	12q	12q
09PSD153-SRK-WR-587	09PSD153	513.21	514.3	W	12q	12q	12q
09PSD153-SRK-WR-589	09PSD153	523.45	524.6	W	12q	12q	12q
09PSD153-SRK-WR-595	09PSD153	549.56	553.15	O	12q	12q	12q
09PSD164-SRK-WR-604	09PSD164	78	79.36	W	12q	12q	12q
09PSD164-SRK-WR-608	09PSD164	103.67	105	O	12q	12q	12q
09PSD209-SRK-WR-676	09PSD209	593.54	595.88	W	12q	12q	12q
10PSD239-SRK-WR-742	10PSD239	313	317.8	O	12q	12q	12q
09PSD211A-SRK-WR-813	09PSD211A	646.84	649.86	W	12q	12q	12q
09PSD211A-SRK-WR-814	09PSD211A	649.86	651.72	W	12q	12q	12q
09PSD153-SRK-WR-591	09PSD153	535.52	539.19	W	12q w. 1a	12q	12q (0.85), 1a (0.15)
10PSD239-SRK-WR-737	10PSD239	274.9	276.4	W	12c	12C	12C
09PSD211A-SRK-WR-784	09PSD211A	367.75	377	W	12c	12c	12c
09PSD211A-SRK-WR-815	09PSD211A	651.72	654	W	12c	12c	12c
09PSD211A-SRK-WR-819	09PSD211A	668	674.56	W	13a	13a	13a

\\VAN-SVR0\Projects\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201109_Pactch14Report\Working Files\Hope Bay MASTER Geochemical Spreadsheet_Rev30_Patch14Report_als_Rev00

Footnotes:
[1]Codes defined in Appendix B. Numbers in parentheses indicate relative proportion of rock type.
[2]Alteration codes: VW=very weak, W=weak, M=moderate, S=strong, VS=very strong.

Appendix B:
HBML Standard Lithology Codes

Hope Bay Mining Lithology Codes (2008 lithology coding standard)

CODE	CODEDESC	MOD1	MOD1DESC	MOD2	MOD2DESC
1	Ultramafic Volcanic	u	Ultramafic	x	Spinifex Texture
1	Mafic Volcanic	a	Flow	d	Breccia
1	Mafic Volcanic	i	Massive	f	Feldspar phyric (? Should be used for Boston "Gabbro")
1	Mafic Volcanic	o	Fragmental	h	Harrisitic (Type example should be displayed)
1	Mafic Volcanic	p	Pillow	j	<30cm and <50% intercalated / Interflow Chert/Argillite/Sandstone
1	Mafic Volcanic			r	Polysutured
1	Mafic Volcanic			v	Variolitic
1	Mafic Volcanic			y	Amigdaloidal / Vesicular
2	Intermediate Volcanic	a	Flow	d	Breccia
2	Intermediate Volcanic	i	Massive	f	Feldspar phyric (? Should be used for Boston "Gabbro")
2	Intermediate Volcanic	o	Fragmental	g	PGP - Madrid Deposit
2	Intermediate Volcanic	p	Pillow	h	Harrisitic (Type example should be displayed)
2	Intermediate Volcanic			j	<30cm and <50% intercalated / Interflow Chert/Argillite/Sandstone
2	Intermediate Volcanic			r	Polysutured
2	Intermediate Volcanic			v	Variolitic
2	Intermediate Volcanic			y	Amigdaloidal / Vesicular flow
3	Intermediate to Felsic Volcanic	a	Flow	c	Lapilli
3	Intermediate to Felsic Volcanic	b	Tuff	d	Breccia (Flow Top, Autoclastic)
3	Intermediate to Felsic Volcanic			f	Porphyritic
3	Intermediate to Felsic Volcanic			w	Flow banded
3	Intermediate to Felsic Volcanic			y	Amigdaloidal / Vesicular
3	Intermediate to Felsic Volcanic			o	Heterolithic
4	Felsic Metavolcanic rocks	a	Flow	c	Lapilli
4	Felsic Metavolcanic rocks	b	Tuff	d	Breccia (Flow Top, Autoclastic)
4	Felsic Metavolcanic rocks			f	Porphyritic
4	Felsic Metavolcanic rocks			w	Flow banded
4	Felsic Metavolcanic rocks			y	Amigdaloidal / Vesicular
4	Felsic Metavolcanic rocks			o	Heterolithic
5	Sedimentary Rocks	a	Argillite	f	Feldspathic
5	Sedimentary Rocks	b	Siltstone	i	Graphitic
5	Sedimentary Rocks	c	Wacke	j	<30cm and <50% Mafic Fragments
5	Sedimentary Rocks	d	Conglomerate	l	Lithic
5	Sedimentary Rocks	g	Iron Formation	m	Magnetite
5	Sedimentary Rocks	h	Chert	o	Polymict
5	Sedimentary Rocks	v	Sandstone	q	Quartz
5	Sedimentary Rocks			u	Argillitic Interbeds
5	Sedimentary Rocks			w	Wacke Interbeds
6	Post Volcanic Sedimentary Rocks	a	Argillite	f	Feldspathic
6	Post Volcanic Sedimentary Rocks	b	Siltstone	i	Graphitic
6	Post Volcanic Sedimentary Rocks	c	Wacke	j	<30cm and <50% Mafic Fragments
6	Post Volcanic Sedimentary Rocks	d	Conglomerate	l	Lithic
6	Post Volcanic Sedimentary Rocks	g	Iron Formation	m	Magnetite
6	Post Volcanic Sedimentary Rocks	h	Chert	o	Polymict
6	Post Volcanic Sedimentary Rocks	v	Sandstone	q	Quartz
6	Post Volcanic Sedimentary Rocks	r	Limestone/Marble	u	Argillitic Interbeds
6	Post Volcanic Sedimentary Rocks			w	Wacke Interbeds
7	Early Mafic / UM Intrusions	a	Gabbro	b	Leucogabbro
7	Early Mafic / UM Intrusions			c	Melanogabbro
8	Synvolcanic Granitoid Rocks	a	Tonalite	f	Feldspar Phyric
8	Synvolcanic Granitoid Rocks	b	Trondjhemite	q	Quartz Phyric
8	Synvolcanic Granitoid Rocks	c	Granodiorite		
8	Synvolcanic Granitoid Rocks	d	Diorite/Quartz Diorite		
9	Late Felsic Intrusive	k	Felsic Dyke	f	Feldspar
9	Late Felsic Intrusive	n	Intermediate Dyke	q	Quartz
9	Late Felsic Intrusive	p	Porphyry		
10	Late Mafic Intrusion	a	Gabbro		
10	Late Mafic Intrusion	b	Mafic Dyke - Fine to Medium Grained		
11	Diabase	c	Diabase	m	Magnetic
11	Diabase			n	Non-Magnetic
12	Vein >30cm or Zone of >70% Single Vein E	c	Carbonate Dominated		
12	Vein >30cm or Zone of >70% Single Vein E	q	Quartz Dominated		
13	Significant Structure	a	Madrid Deformation Zone (DEFZ	f	Felsic
13	Significant Structure			m	Mafic
13	Significant Structure			s	Sedimentary
14	Missing Core	a	Ground		
14	Missing Core	b	Void		
14	Missing Core	d	Wedge		
14	Missing Core	l	Lost		
15	Casing	a	Ice		
15	Casing	b	Lake		
15	Casing	c	Overburden		

Appendix C:
Summary of Field Barrel Test Sample Intervals, Madrid South

Appendix C: Summary of Field Barrel Test Sample Intervals, Madrid South

Barrel ID	LCODE	Drillhole	From (m)	To (m)	Length (m)	Mass (kg)	Set-up Year
W15	1	09PSD205	156.31	216	59.69	129.1	2010
W16	9	09PSD209	517	548	31	104	2010
			571	592	21		

Appendix D:
Semi-quantitative Mineralogy Data, Madrid South*

*There are also samples from Doris included in the mineralogy reports

Newmont Mining Corporation
Malozemoff Technical Facility
10101 E. Dry Creek Road
Englewood, CO 80112
Phone 303.708.4340
Facsimile 303.708.4020
daniel.lopez@newmont.com

Memorandum

TO: K. Murphey/Inverness

File 11479
MI 209567, 209568, 209570
209571, 209572, 209573

FROM: D. Lopez/Inverness

DATE: April 13, 2010

COPY: L. Barazzuol/SRK
D. Brosnahan/Inverness
K. M. Le Vier/Inverness
M. McComb/Inverness
K. Sexsmith/SRK

SUBJECT: Semiquantitative Mineralogy of One Hundred and Twenty-two Patch-14 Samples from Hope Bay

---

One hundred and twenty-two Patch-14 samples from Hope Bay were submitted by K. Murphey for identification of mineral content by XRD. The results of the analysis are shown in Table I, where quantities were determined by Rietveld refinement and whole pattern fitting. Samples were divided according to Hole ID.

XRD analyses show that most samples from Patch-14 are carbonate-rich, containing varying amounts of ankerite/dolomite and calcite. Most samples also contain significant amounts of plagioclase, paragonite, and muscovite. Samples from Hole 09PSD151 contain 26-54% quartz, 10-25% ankerite, 9-26% paragonite, 0-26% plagioclase, and 0-16% muscovite/sericite. Sample SRK-WR-561 contains 15% chlorite, 8% magnesite, and trace amounts of pyrite and rutile.

Samples SRK-WR-565 to 578 from Hole 09PSD153 are richer in plagioclase (25-41%), and muscovite/sericite (13-20%). The samples contain lesser amounts of ankerite/dolomite (8-17%) with minor amounts of paragonite (0-6%) and chlorite (0-2%). Calcite (tr-1%) was detected in samples SRK-WR-565 and 566. The remaining samples, with the exception of SRK-WR-589 and 595, are richer in ankerite/dolomite (13-46%) and paragonite (9-26%). Chlorite (0-10%) is detected in several samples, along with minor amounts of siderite (0-4%), pyrite (0-2%), and rutile (0-2%). Some samples contained trace/minor amounts of tourmaline, magnesite, calcite, and scheelite. Samples SRK-WR-589 and 595 are siliceous, containing >82% quartz.

Samples from Hole PSD164 are carbonate-rich containing varying amounts of ankerite/dolomite (13-51%), siderite (0-6%), and magnesite (5% detected in SRK-WR-609). Other major mineral constituents are quartz (19-50%), paragonite (9-24%), and muscovite (0-16%). Plagioclase (11-28%) was detected in SRK-WR-599 and 610 to 613. Chlorite (0-8%) was detected in several samples. Minor amounts of pyrite were detected in samples SRK-WR-600 and 608.

Samples from Hole 09PSD183 contain varying amounts of quartz (13-52%), ankerite/dolomite (0-35%), plagioclase (0-36%), paragonite (0-21%), and muscovite/sericite (0-15%). Samples SRK-WR-615 to 620 are chlorite-rich containing 16-54%, with all but one sample containing calcite (3-15%). SRK-WR-617 and 618 contain 11-16% amphibole with SRK-WR-618 also containing 14% epidote and 1% zunyite.

Major mineral constituents detected in samples from Hole 09PSD205 are ankerite/dolomite (0-40%), chlorite (0-49%), and plagioclase (0-36%). Lesser amounts of paragonite (0-19%), muscovite/sericite (0-15%), and calcite (0-19%) were detected in samples throughout most of this suite.

Samples from Hole 09PSD209 contain varying amounts of quartz (17-57%), ankerite/dolomite (12-38%), plagioclase (0-28%), and paragonite (5-21%). Chlorite (0-28%) and calcite (0-4%) were detected in several samples.

TABLE I
Semiquantitative XRD Data (Wt.%) of One Hundred and Twenty-two Patch-14 Samples from Hope Bay

	Sample ID	ANK	CHL	MAGN	MUSC	PG	PLAG	PY	QTZ	RUT
Hole 09PSD151	SRK-WR-556	10			16	12	20		42	
	SRK-WR-557	14			15	9	15		47	
	SRK-WR-558	13			13	10	25		39	
	SRK-WR-559	12			13	10	26		39	
	SRK-WR-560	11			16	17	7		50	
	SRK-WR-561	25	15	8		26		tr	26	tr
	SRK-WR-562	12			14	20			54	
	SRK-WR-563	12			13	18	8		50	
	SRK-WR-564	10			13	16	15		47	

Table I cont'd

Hole	Sample ID	ANK	CAL	CHL	MAGN	MUSC	PG	PLAG	PY	QTZ	RUT	SHEE	SID	TOUR
Hole 09PSD153	SRK-WR-565	8	1	2		14	5	35		36				
	SRK-WR-566	9	tr	2		13	5	37		35				
	SRK-WR-567	10		1		15	6	34		34				
	SRK-WR-568	11		2		15	5	34		34				
	SRK-WR-569	10		2		16	4	33		35				
	SRK-WR-570	10		1		13	5	39		32				
	SRK-WR-571	10				15	4	37		34				
	SRK-WR-572	11		tr		14	3	37		35				
	SRK-WR-573	10		2		15	5	30		38				
	SRK-WR-574	10				16	3	37		35				
	SRK-WR-575	10				17		41		32				
	SRK-WR-576	10				17		39		34				
	SRK-WR-577	11				20		31		38				
	SRK-WR-578	17				15	5	25		39				
	SRK-WR-579	13				13	16	13		46				
	SRK-WR-580	33		3		10	24			24	2		4	
	SRK-WR-581	44		tr		3	12			37	tr			4
	SRK-WR-582	35		8			26		2	25	1		2	
	SRK-WR-583	44		1			19	7		27	tr			2
	SRK-WR-584	38		8		tr	22			28	2		2	
	SRK-WR-585	42		7			15		1	33	1		tr	
	SRK-WR-586	36		10		tr	21			30	1		2	
	SRK-WR-587	46		4		tr	17		1	32	tr			
	SRK-WR-588	38		10		tr	22		tr	28	1		1	
	SRK-WR-589	13					4		tr	82				
	SRK-WR-590	34		7		9	20		2	24	2		4	
	SRK-WR-591	22				5	11		2	58	tr	tr		2
	SRK-WR-592	35		4	6		21		2	30	2			
	SRK-WR-593	33		6		11	17		2	26	1		4	
	SRK-WR-594	34				9	21		2	29	2		3	
	SRK-WR-595	7					6		tr	87		tr		
	SRK-WR-596	14				15	17			53	1			
	SRK-WR-597	13	2			16	15			51	2			
	SRK-WR-598	14	1			15	9	19		42	1			

Table I cont'd

Hole 09PSD164

Sample ID	ANK	CHL	MAGN	MUSC	PG	PLAG	PY	QTZ	RUT	SID
SRK-WR-599	13			11	12	23		41		
SRK-WR-600	43			2	18		1	31	2	2
SRK-WR-601	27			9	14			50	tr	
SRK-WR-602	36				24			31	2	6
SRK-WR-603	36	1		tr	22			34	1	6
SRK-WR-604	39	4			19			35	tr	3
SRK-WR-605	38	2		3	22			29	2	4
SRK-WR-606	51			3	13			30	tr	2
SRK-WR-607	44			6	19			24	2	6
SRK-WR-608	33			11	15		3	37	1	
SRK-WR-609	33		5	4	17			37	1	3
SRK-WR-610	18			11	15	11		43	1	
SRK-WR-611	17	2		13	10	22		36	tr	
SRK-WR-612	18	8		16	9	28		19	tr	2
SRK-WR-613	17	1		14	9	23		35	tr	

Hole 09PSD183

Sample ID	AMP	ANK	CAL	CHL	EPI	MUSC	PG	PLAG	QTZ	RUT	ZUNY
SRK-WR-614		13				11	21		52	2	
SRK-WR-615		23	3	25		6	14		29	tr	
SRK-WR-616		14	6	40			10	12	18	tr	
SRK-WR-617	11	11	8	36			8	8	18	tr	
SRK-WR-618	16		8	33	14			14	13	tr	1
SRK-WR-619		1	15	54				14	16	tr	
SRK-WR-620		35		16			20		28	tr	
SRK-WR-621		12				11	13	23	42		
SRK-WR-622		10				12	9	33	37		
SRK-WR-623		9				14	7	34	37		
SRK-WR-624		11				15	7	31	37		
SRK-WR-625		10				11	8	36	35		
SRK-WR-626		10				13	9	31	37		

Table I cont'd

	Sample ID	ANK	CAL	CHL	EPI	MUSC	PG	PLAG	PY	QTZ	RUT	TOUR
Hole 09PSD205	SRK-WR-627	9	10	37				24		18	tr	
	SRK-WR-628	19	6	32		11		7		23	tr	
	SRK-WR-629		19	43				21		17	tr	
	SRK-WR-630		17	40	3			22		19	tr	
	SRK-WR-631	12	11	28		8	7	9		25	tr	
	SRK-WR-632	2	8	33		15		25		18		
	SRK-WR-633	20	8	30		7	13			22	tr	
	SRK-WR-634	20	4	25		10	11	6		25	tr	
	SRK-WR-635	16				11	17	15		41	1	
	SRK-WR-636	16		tr		10	15	16		41	1	
	SRK-WR-637	13		tr		9	17	14		44	2	
	SRK-WR-638	5	12	44			5	16		17	tr	
	SRK-WR-639	36		20		2	15			25	tr	
	SRK-WR-640	29	3	23			12	9		24	tr	
	SRK-WR-641	27	2	26			12	6		25	tr	
	SRK-WR-642	34	1	19			17			28	tr	
	SRK-WR-643	32	2	21			14			31	tr	
	SRK-WR-644	23	tr	32		7	13	5		21	tr	
	SRK-WR-645	34	1	14		8	13			25	tr	4
	SRK-WR-646	32	tr	21		11	13			22	tr	
	SRK-WR-647	36	tr	15		5	16			26	tr	
	SRK-WR-648	37		6			6	15	1	36	tr	
	SRK-WR-649	6	11	49				19		16	tr	
	SRK-WR-650	tr	17	43				22		17	tr	
	SRK-WR-651	28	2	24			14	8		22	tr	
	SRK-WR-652	31	2	21			18			28	tr	
	SRK-WR-653	27	3	25			17			27	tr	
	SRK-WR-654	34	2	19			19			26	tr	
	SRK-WR-655	40		12			19			28	tr	
	SRK-WR-656	16				12	12	22		39		
	SRK-WR-657	13				13	8	31		35		
	SRK-WR-658	12				13	8	32		35		
	SRK-WR-659	12				15	6	35		33		
	SRK-WR-660	11				14	6	36		33		
	SRK-WR-661	11				15	10	27		39		
	SRK-WR-662	12				14	8	30		36		

Table I cont'd

	Sample ID	ANK	CAL	CHL	GYP	MUSC	PG	PLAG	PY	QTZ	RUT	SID
Hole 09PSD209	SRK-WR-663	16		1		12	11	24		35	tr	
	SRK-WR-664	20		tr		12	11	21		36	tr	
	SRK-WR-665	12	4	28	2	6	5	26		17		
	SRK-WR-666	13	tr	1		13	9	28		35		
	SRK-WR-667	18				11	14	18		39		
	SRK-WR-668	15				14	17	10		45		
	SRK-WR-669	14				12	9	28		37		
	SRK-WR-670	16		tr		10	13	25		36		
	SRK-WR-671	32		24		7	13			23	tr	
	SRK-WR-672	22	1	11		9	14	10		32	tr	
	SRK-WR-673	16	2	2		13	15	6		45	1	
	SRK-WR-674	14	1			12	13	14		45	1	
	SRK-WR-675	21				13	13	5		46	1	
	SRK-WR-676	20				5	17		1	57	1	
	SRK-WR-677	38		3		5	21			27	2	5

Mineral Key

Mineral	Formula	Mineral	Formula
Amphibole (AMP)	$Ca_2(Mg,Fe,Al)_5(Al,Si)8O_{22}(OH)_2$	Plagioclase (PLAG)	$(Ca,Na)(Al,Si)AlSi_2O_8$
Ankerite/Dolomite (ANK)	$Ca(Fe,Mg)(CO_3)_2$	Pyrite (PY)	FeS_2
Calcite (CAL)	$CaCO_3$	Quartz (QTZ)	SiO_2
Chlorite (CHL)	$(Mg,Fe,Al)_6(Al,Si)_4O_{10}(OH)_8$	Rutile (RUT)	TiO_2
Epidote (EPI)	$Ca_2(Al, Fe)_3(SiO_4)_3(OH)$	Scheelite (SHEE)	$Ca(WO_4)$
Gypsum (GYP)	$CaSO_4 \cdot 2(H_2O)$	Siderite (SID)	$FeCO_3$
Magnesite (MAGN)	$MgCO_3$	Tourmaline (TOUR)	$Na(Fe,Mg)_3Al_6Si_6O_{18}(BO_3)_3(OH)_4$
Muscovite/Sericite (MUSC)	$KAl_2(AlSi_3O_{10})(OH)_2$	Zunyite (ZUNY)	$Al_{13}Si_5O_{20}(OH,F)_{18}Cl$
Paragonite (PG)	$NaAl_3Si_3O_{10}(OH)_2$		

NEWMONT
The Gold Company

Newmont Mining Corporation
Malozemoff Technical Facility
10101 E. Dry Creek Road
Englewood, CO 80112
Phone: 303.708.4127
alyssa.melberg@newmont.com

Memorandum

File D1200160
MI 211519

TO: C. Bucknam/Inverness

FROM: A. Melberg/Inverness

DATE: March 31, 2011

COPY: D. Brosnahan/Inverness
D. Doerr/Inverness
L. Barazzuol/SRK
D. Snyder/Inverness
D. Lopez/Inverness
K. M. Le Vier/Inverness

SUBJECT: Semiquantitative Mineralogy of Wolverine, Patch 14 and Doris Connector Composites from Hope Bay

---

One hundred sixty-seven samples were submitted by C. Bucknam for identification of their mineral content by XRD. Quantities were determined by Reitveld refinement and whole pattern fitting, using Spherical Harmonics (to help correct for orientation effects) and the Brindley particle size correction (to help correct for varying micro-absorption factors of the phases identified). The results of the XRD analyses are shown in Table I.

All samples contain variable concentrations of quartz (5%-58%). Most samples contain albite plagioclase (1%-63%), chamosite chlorite (<1%-39%), and muscovite (2%-19%). Carbonates calcite, ankerite/dolomite, and siderite are present in the suite. Calcite (<1%-23%) was detected in most samples, ankerite/dolomite (<1%-41%) was detected more commonly in the latter portion of the suite, and siderite (1%-12%) was only detected in samples at the end of the suite. Amphibole (2%-28%) and epidote (2%-25%) were detected more often in the earlier portion of the suite, and frequently occurring together. Paragonite (<1%-30%) was detected more commonly in samples in the latter portion of the suite. Trace rutile (<1%-2%) was detected in numerous samples. Trace pyrite (<1%-3%) was detected in few samples in the earlier portion of the suite and more frequently in the latter samples. Pyroxene was detected in samples 10PSD239-SRK-WR-747 and -748 (11% and 6%, respectively).

Table I
Semiquantitative XRD Data (Wt%) of Wolverine, Patch 14 and Doris Connector Composites from Hope Bay

Sample Name	Color	QTZ	ALB	CHAM	CAL	ANK/DOL	MUS	AMP	EPI	PARA	RUT	PY	PX	SID
10PSD244-SRK-WR-685	very light gray	25	32	26	12		5				<1			
10PSD244-SRK-WR-686	very light gray	28	56	6	3	<1	6							
10PSD244-SRK-WR-687	very light gray	27	54	9	5	<1	5							
10PSD244-SRK-WR-688	very light gray	32	43	7	5	1	12							
10PSD244-SRK-WR-689	very light gray	35	20	13	4	14	14							
10PSD244-SRK-WR-690	very light gray	38	36	4	3	6	14							
10PSD244-SRK-WR-691	very light gray	35	40	4	<1	9	12							
10PSD244-SRK-WR-692	very light gray	42	19	4	<1	17	17							
10PSD244-SRK-WR-693	very light gray	35	4	20	7	22	11				1			
10PSD244-SRK-WR-694	very light gray	28	15	32	20		4				<1			
10PSD244-SRK-WR-695	very light gray	25	26	32	17	<1								
10PSD244-SRK-WR-696	very light gray	27	17	35	15	<1			6					
10PSD244-SRK-WR-697	very light gray	14	18	21	4			22	21					
10PSD244-SRK-WR-698	very light gray	13	18	23	8			21	17					
10PSD244-SRK-WR-699	very light gray	26	15	32	20		6				<1			
10PSD244-SRK-WR-700	very light gray	36	8	22	23	1	10					<1		
10PSD244-SRK-WR-701	very light gray	29	11	33	18	2	7				<1			
10PSD244-SRK-WR-702	very light gray	16	19	25	7			17	18					
10PSD244-SRK-WR-703	very light gray	20	15	26	11			11	17					
10PSD244-SRK-WR-704	very light gray	15	17	20	6			20	23					
10PSD244-SRK-WR-705	very light gray	26	63	9	2									
10PSD239-SRK-WR-706	very light gray	26	16	33	17				8		<1			
10PSD239-SRK-WR-707	very light gray	25	12	32	18				14		<1			
10PSD239-SRK-WR-708	very light gray	23	21	32	16	1			7					
10PSD239-SRK-WR-709	very light gray	34		17	<1	32				16				
10PSD239-SRK-WR-710	very light gray	49	8	3		10	7			23				
10PSD239-SRK-WR-711	very light gray	42	29	2		8	15			5				
10PSD239-SRK-WR-712	very light gray	27		8		39	4			22				

Table I, continued…

Sample Name	Color	QTZ	ALB	CHAM	CAL	ANK/DOL	MUS	AMP	EPI	PARA	RUT	PY	PX	SID
10PSD239-SRK-WR-713	very light gray	55		2		11	8			24		<1		
10PSD239-SRK-WR-714	very light gray	48	10	3		9	11			20				
10PSD239-SRK-WR-715	yellowish gray	28		12		36	3			21				
10PSD239-SRK-WR-716	white	43	25	5		7	14			5	<1	<1		
10PSD239-SRK-WR-717	white	30	54	5		3	8							
10PSD239-SRK-WR-718	white	34	47	4		5	10							
10PSD239-SRK-WR-719	yellowish gray	23	18	34	9	1		5	11					
10PSD239-SRK-WR-720	yellowish gray	24	20	39	15				3					
10PSD239-SRK-WR-721	yellowish gray	23	19	38	20						<1			
10PSD239-SRK-WR-722	yellowish gray	24	16	35	19		6				<1			
10PSD239-SRK-WR-723	white	36	37	6	4		18							
10PSD239-SRK-WR-724	yellowish gray	27	11	34	20				9					
10PSD239-SRK-WR-725	yellowish gray	22	21	31	16			2	8			<1		
10PSD239-SRK-WR-726	white	28	51	8	4		9							
10PSD239-SRK-WR-727	white	37	41	5	3		14							
10PSD239-SRK-WR-728	white	28	52	9	5		6							
10PSD239-SRK-WR-729	yellowish gray	13	21	32	5			17	12					
10PSD239-SRK-WR-730	yellowish gray	23	13	31	11			8	15					
10PSD239-SRK-WR-731	yellowish gray	15	16	23	7			20	20					
10PSD239-SRK-WR-732	yellowish gray	9	18	19	5			25	24		<1			
10PSD239-SRK-WR-733	yellowish gray	14	17	24	8			18	19					
10PSD239-SRK-WR-734	yellowish gray	34	5	30	23		9							
10PSD239-SRK-WR-735	yellowish gray	24	20	38	18									
10PSD239-SRK-WR-736	yellowish gray	26	20	36	19									
10PSD239-SRK-WR-737	white	33		22	19	16	10				<1			
10PSD239-SRK-WR-738	yellowish gray	31	5	32	21	<1	9				1			
10PSD239-SRK-WR-739	yellowish gray	16	16	29	9			14	16					
10PSD239-SRK-WR-740	yellowish gray	24	19	36	21	<1								
10PSD239-SRK-WR-741	yellowish gray	29	6	24	4	23	14					<1		

Table I, continued…

Sample Name	Color	QTZ	ALB	CHAM	CAL	ANK/DOL	MUS	AMP	EPI	PARA	RUT	PY	PX	SID
10PSD239-SRK-WR-742	very light gray	26	7	16	3	28	16		3					
10PSD239-SRK-WR-743	yellowish gray	27	9	37	21		6							
10PSD239-SRK-WR-744	white	17	12	24	9			17	21					
10PSD239-SRK-WR-745	yellowish gray	13	15	21	13			18	19		<1			
10PSD239-SRK-WR-746	yellowish gray	13	12	19	7			25	24		<1			
10PSD239-SRK-WR-747	yellowish gray	5	30	17	<1			21	16				11	
10PSD239-SRK-WR-748	yellowish gray	8	21	22	2			23	19				6	
10PSD239-SRK-WR-749	yellowish gray	35	10	27	11	6	8		3					
10PSD239-SRK-WR-750	white	38	33	4		9	11			5				
10PSD239-SRK-WR-751	yellowish gray	34	7	23	8	16	7			6				
10PSD239-SRK-WR-752	yellowish gray	17	15	27	11			14	16					
10PSD239-SRK-WR-753	white	31	49	9	4		7							
10PSD239-SRK-WR-754	yellowish gray	29	13	28	22		8							
10PSD239-SRK-WR-755	white	29	51	8	5		8							
10PSD239-SRK-WR-756	white	31	43	9	5		12							
10PSD239-SRK-WR-757	white	29	50	8	5		8							
10PSD239-SRK-WR-758	yellowish gray	23	18	34	18		6				<1			
10PSD239-SRK-WR-759	white	30	46	10	6		8				<1			
10PSD239-SRK-WR-760	yellowish gray	27	16	32	20		5				<1			
10PSD239-SRK-WR-761	yellowish gray	10	19	18	10			23	19		<1			
10PSD239-SRK-WR-762	white	28	51	9	6		3		2					
10PSD239-SRK-WR-763	yellowish gray	17	19	28	9		3	15	8					
10PSD239-SRK-WR-764	yellowish gray	32		33	21		13							
10PSD239-SRK-WR-765	yellowish gray	12	21	17	9			23	18		<1			
10PSD239-SRK-WR-766	yellowish gray	11	16	19	4			27	22		<1			
10PSD239-SRK-WR-767	yellowish gray	12	19	21	8			21	18		<1			
10PSD239-SRK-WR-768	white	25	57	8	2		2	4	3					
10PSD239-SRK-WR-769	yellowish gray	23	17	25	17		5	5	7		<1			
10PSD239-SRK-WR-770	light greenish gray	15	20	30	8			15	10		<1			

Table I, continued…

Sample Name	Color	QTZ	ALB	CHAM	CAL	ANK/DOL	MUS	AMP	EPI	PARA	RUT	PY	PX	SID
10PSD239-SRK-WR-771	light greenish gray	15	13	19	7			20	25		<1			
10PSD239-SRK-WR-772	light greenish gray	16	14	17	7			21	25		<1			
10PSD239-SRK-WR-773	light greenish gray	24	15	29	16		5	3	8		<1			
10PSD239-SRK-WR-774	white	27	51	9	5		8							
10PSD239-SRK-WR-775	yellowish gray	12	18	19	8			21	21		<1			
10PSD239-SRK-WR-776	yellowish gray	18	14	25	10			14	18		<1			
10PSD239-SRK-WR-777	white	24	59	7	2			3	4					
10PSD239-SRK-WR-778	yellowish gray	9	20	15	5			28	23		<1			
10PSD239-SRK-WR-779	yellowish gray	14	18	19	5			24	20		<1			
10PSD239-SRK-WR-780	greenish white	25	60	9	4				2					
10PSD239-SRK-WR-781	greenish white	20	21	28	16		4	5	7		<1			
10PSD239-SRK-WR-782	greenish white	31		34	23		12				<1			
10PSD239-SRK-WR-783	greenish white	22	16	36	13			5	7		<1			
10PSD239-SRK-WR-784	greenish white	17	16	25	13			14	15		<1			
10PSD239-SRK-WR-785	greenish white	16	18	25	11			14	15		<1			
10PSD239-SRK-WR-786	greenish white	10	17	19	5			27	21		<1			
10PSD239-SRK-WR-787	greenish white	11	21	23	4			24	16		<1			
10PSD239-SRK-WR-788	greenish white	9	21	20	2			27	20		<1			
10PSD239-SRK-WR-789	greenish white	10	19	18	6			26	20		<1			
10PSD239-SRK-WR-790	greenish white	24	20	33	22						<1			
10PSD239-SRK-WR-791	greenish white	22	24	32	14	7					<1			
10PSD239-SRK-WR-792	white	41	22	3	<1	12	13			8				
10PSD239-SRK-WR-793	white	42	22	3		11	12			9				
10PSD239-SRK-WR-794	white	43	18	3		12	14			10				
10PSD239-SRK-WR-795	greenish white	41	11	5		16	8			20				
10PSD239-SRK-WR-796	white	41	18	2	<1	14	11			14				
10PSD239-SRK-WR-797	white	38	28	3		12	11			9				
10PSD239-SRK-WR-798	greenish whitewhite	11	61	11		10	4			3	<1	<1		
10PSD239-SRK-WR-799	white	37	31	3		11	15			2	<1			

Table I, continued…

Sample Name	Color	QTZ	ALB	CHAM	CAL	ANK/DOL	MUS	AMP	EPI	PARA	RUT	PY	PX	SID
10PSD239-SRK-WR-800	greenish white	22	31	9	<1	16	19			1	<1	<1		
10PSD239-SRK-WR-801	white	36	28	2		13	11			10	<1			
10PSD239-SRK-WR-802	white	36	31	1		10	10			11	<1			
10PSD239-SRK-WR-803	white	38	26	3		14	14			6	<1			
10PSD239-SRK-WR-804	greenish white	21	35	26		18					<1	<1		
10PSD239-SRK-WR-805	white	41	24	2		13	13			8				
10PSD239-SRK-WR-806	white	38	22			13	11			15	<1	<1		
10PSD239-SRK-WR-807	light greenish gray	18	29	29	5	14				5	<1			
10PSD239-SRK-WR-808	light greenish gray	28	9	28	10	11	12				<1			
10PSD239-SRK-WR-809	light greenish gray	6	32	21	7			18	15		<1			
10PSD239-SRK-WR-810	light greenish gray	26	5	15	3	27	5			18	<1			
10PSD239-SRK-WR-811	white	45	8		<1	9	13			23				
10PSD239-SRK-WR-812	white	42	4	<1	<1	16	14			22	<1			
10PSD239-SRK-WR-813	white	58				10	9			23				
10PSD239-SRK-WR-814	white	38		<1	<1	35	6			18		2		
10PSD239-SRK-WR-815	white	46			<1	41	2			10				
10PSD239-SRK-WR-816	white	25		<1	<1	38	3			30		2		
10PSD239-SRK-WR-817	greenish white	32		6	<1	33	2			26	<1			
10PSD239-SRK-WR-818	white	50			<1	19	15			15				
10PSD239-SRK-WR-819	light greenish gray	30		3	<1	38	4			24	<1			
10PSD239-SRK-WR-820	light greenish gray	30	4	16	4	20	3			22	<1			
10PSD239-SRK-WR-821	white	29	14	29	18	5				4	1	<1		
10PSD239-SRK-WR-822	white	39	31	1	1	8	10			10				
10PSD239-SRK-WR-823	yellowish white	38	37	3	2	5	11			5				
05TDD584-SRK-WR-824	greenish white	37	1	6	<1	25	8			18	2			3
05TDD584-SRK-WR-825	light greenish gray	46	5	13		19	6			9	1			
06TDD607-SRK-WR-826	light greenish gray	33	20	14	<1	21	7			3	1			2
95TDD063-SRK-WR-827	white	31	13	3		25	8			13	1			6
95TDD063-SRK-WR-828	light greenish gray	34	17	9		22	3			12	1			2

Table I, continued…

Sample Name	Color	QTZ	ALB	CHL	CAL	ANK/DOL	MUS	AMP	EPI	PARA	RUT	PY	PX	SID
95TDD063-SRK-WR-829	light greenish gray	35	12	8	<1	22	4			13	1	1		4
95TDD063-SRK-WR-830	light greenish gray	43		4		22	19			6	2	1		3
95TDD063-SRK-WR-831	light greenish gray	40		18	<1	21	7			12	2			
95TDD063-SRK-WR-832	light greenish gray	35	19	18	<1	20	5				1	<1		1
95TDD063-SRK-WR-833	light greenish gray	37	16	25	2	11	3			3	2	<1		2
95TDD063-SRK-WR-834	light greenish gray	33	23	30	8	1	2				2	<1		
96TDM098-SRK-WR-835	white	34		2	<1	22	13			14	2	1		11
96TDM098-SRK-WR-836	white	38		3	<1	19	12			13	2			12
TDD207-SRK-WR-837	white	54		1		16	19			5	1			5
TDD207-SRK-WR-838	white	38		1		27	18			7	1			8
TDD207-SRK-WR-839	white	46		3		23	6			17	1			4
TDD216A-SRK-WR-840	white	42		1		21	18			6	2	2		8
TDD216A-SRK-WR-841	white	30	17	8		17	13			8	2	<1		7
TDD216A-SRK-WR-842	light greenish gray	38	27	13		15	3			<1	1	<1		2
TDD216A-SRK-WR-843	greenish white	29	13	10		20	16			3	1	<1		6
TDD216A-SRK-WR-844	greenish white	33	7	12		23	9			9	2	2		4
TDD219-SRK-WR-845	greenish white	34	4	5		20	16			12	2	2		6
TDD219-SRK-WR-846	greenish white	26	25	11		17	6			7	1			8
TDD219-SRK-WR-847	greenish white	34	12	6		19	10			10	1	1		6
TDD219-SRK-WR-848	greenish white	30	9	9		21	10			13	2	2		4
TDD224-SRK-WR-849	greenish white	37		7		21	15			12	2	1		6
TDD224-SRK-WR-850	greenish white	37	4	5		22	8			16	1	3		5
TDD382-SRK-WR-851	greenish white	28	13	13	<1	27	12			4	2			2

Mineral Key

Mineral	Formula
Quartz (QTZ)	SiO_2
Albite Plagioclase (ALB)	$NaAlSi_3O_8$
Chamosite Chlorite (CHL)	$(Fe,Mg)_5Al(AlSi_3O_{10})(OH)_8$
Calcite (CAL)	$CaCO_3$
Ankerite/Dolomite (ANK/DOL)	$Ca(Fe,Mg)(CO_3)_2$ - $CaMg(CO_3)_2$
Muscovite (MUS)	$KAl_2(AlSi_3O_{10})(OH)_2$
Amphibole (AMP)	$Ca_2(Mg,Fe)_5Si_8O_{22}(OH)_2$
Epidote (EPI)	$Ca_2(Fe,Al)Al_2(Si_2O_7)(SiO_4)(O,OH)_2$
Paragonite (PAR)	$NaAl_2(OH)_2(AlSi_3O_{10})$
Rutile (RUT)	TiO_2
Pyrite (PY)	FeS_2
Pyroxene (PX)	$Ca(Mg,Fe)Si_2O_6$
Siderite (SID)	$(Fe,Mg)CO_3$

Appendix E:
Acid-Base Accounting Data, Madrid South

Appendix E: Acid-Base Accounting (ABA) Data, Madrid South

CANTEST
A Maxxam Company

CANTEST Ltd. 4606 Canada Way, Burnaby, BC Canada V5G 1K5 Tel: 604 734 7276 Fax: 604 731 2386 www.cantest.com

Newmont, Hope Bay, Patch-14, 20, 23 & 30-Nov-09

Reported: 30-Dec-09; With re-run QAQC 22-Jan-10

Table 1: ABA Test Results for Newmont-Hopebay Patch-14 (556 to 677) Composites - December 2009

			Acme		Acme		Acme				Mod. ABA NP		
S. No.	Sample ID	Paste pH	Total Carbon (Wt.%)	TOC* (Wt.%)	CO2 (Wt.%)	CaCO3 Equiv.** (Kg CaCO3/Tonne)	Total Sulphur (Wt.%)	Sulphate Sulphur (Wt.%)	Sulphide Sulphur*** (Wt.%)	Maximum Potential Acidity**** (Kg CaCO3/Tonne)	Neutralization Potential (Kg CaCO3/Tonne)	Net Neutralization Potential***** (Kg CaCO3/Tonne)	Fizz Rating
Patch-14 (556 to 677) 122 Samples													
Hole: 09PSD151													
556	09PSD151-SRK-WR-556	9.7	1.36	0.12	4.55	103.4	0.09	<0.01	0.09	2.8	79.6	76.7	Strong
557	09PSD151-SRK-WR-557	9.6	1.90	0.24	6.09	138.4	0.06	<0.01	0.06	1.9	113.3	111.5	Moderate
558	09PSD151-SRK-WR-558	9.9	1.63	0.26	5.02	114.1	<0.02	<0.01	<0.02	<0.6	102.6	102.6	Strong
559	09PSD151-SRK-WR-559	10.0	1.50	0.11	5.10	115.9	<0.02	<0.01	<0.02	<0.6	92.6	92.6	Strong
560	09PSD151-SRK-WR-560	9.9	1.57	0.17	5.13	116.6	<0.02	<0.01	<0.02	<0.6	95.1	95.1	Strong
561	09PSD151-SRK-WR-561	9.6	4.81	0.49	15.84	360.0	0.13	<0.01	0.13	4.1	250.9	246.9	Strong
562	09PSD151-SRK-WR-562	9.9	1.66	0.14	5.57	126.6	<0.02	<0.01	<0.02	<0.6	97.0	97.0	Strong
563	09PSD151-SRK-WR-563	9.9	1.44	0.00	5.46	124.1	<0.02	<0.01	<0.02	<0.6	99.5	99.5	Strong
564	09PSD151-SRK-WR-564	9.8	1.33	0.15	4.33	98.4	<0.02	<0.01	<0.02	<0.6	77.6	77.6	Moderate
Hole: 09PSD153													
565	09PSD153-SRK-WR-565	10.0	1.09	0.06	3.78	85.9	<0.02	<0.01	<0.02	<0.6	72.6	72.6	Strong
566	09PSD153-SRK-WR-566	10.0	1.22	0.05	4.29	97.5	<0.02	<0.01	<0.02	<0.6	83.6	83.6	Moderate
567	09PSD153-SRK-WR-567	9.9	1.23	0.13	4.03	91.6	<0.02	<0.01	<0.02	<0.6	78.9	78.9	Strong
568	09PSD153-SRK-WR-568	9.9	1.30	0.07	4.51	102.5	<0.02	<0.01	<0.02	<0.6	87.6	87.6	Strong
569	09PSD153-SRK-WR-569	9.8	1.26	0.03	4.51	102.5	<0.02	<0.01	<0.02	<0.6	80.7	80.7	Strong
570	09PSD153-SRK-WR-570	9.9	1.22	0.08	4.18	95.0	<0.02	<0.01	<0.02	<0.6	78.9	78.9	Strong
571	09PSD153-SRK-WR-571	9.9	1.40	0.13	4.66	105.9	<0.02	<0.01	<0.02	<0.6	87.0	87.0	Moderate
572	09PSD153-SRK-WR-572	9.9	1.26	0.09	4.29	97.5	<0.02	<0.01	<0.02	<0.6	80.7	80.7	Strong
573	09PSD153-SRK-WR-573	9.9	1.23	0.10	4.14	94.1	<0.02	<0.01	<0.02	<0.6	74.5	74.5	Strong
574	09PSD153-SRK-WR-574	10.0	1.18	0.12	3.89	88.4	0.09	<0.01	0.09	2.8	73.3	70.4	Strong
575	09PSD153-SRK-WR-575	10.0	1.21	0.07	4.18	95.0	<0.02	<0.01	<0.02	<0.6	78.8	78.8	Moderate
576	09PSD153-SRK-WR-576	9.9	1.26	0.08	4.33	98.4	0.03	<0.01	0.03	0.9	78.9	77.9	Strong
577	09PSD153-SRK-WR-577	9.9	1.31	0.09	4.47	101.6	0.13	<0.01	0.13	4.1	83.2	79.2	Strong
578	09PSD153-SRK-WR-578	10.1	2.04	0.19	6.78	154.1	<0.02	<0.01	<0.02	<0.6	135.2	135.2	Strong
579	09PSD153-SRK-WR-579	10.1	1.60	0.14	5.35	121.6	0.05	<0.01	0.05	1.6	109.6	108.0	Strong
580	09PSD153-SRK-WR-580	9.9	4.48	0.01	16.39	372.5	0.06	<0.01	0.06	1.9	255.9	254.0	Strong
581	09PSD153-SRK-WR-581	9.6	5.28	0.36	18.04	410.0	0.26	<0.01	0.26	8.1	331.7	323.5	Strong
582	09PSD153-SRK-WR-582	9.9	4.61	0.41	15.40	350.0	0.71	<0.01	0.71	22.2	267.8	245.6	Strong
583	09PSD153-SRK-WR-583	9.9	5.33	0.32	18.37	417.5	0.48	<0.01	0.48	15.0	339.2	324.2	Strong
584	09PSD153-SRK-WR-584	9.9	5.06	0.32	17.38	395.0	0.39	<0.01	0.39	12.2	275.4	263.2	Strong
585	09PSD153-SRK-WR-585	9.8	5.30	0.39	18.00	409.1	0.49	<0.01	0.49	15.3	334.2	318.9	Strong
586	09PSD153-SRK-WR-586	9.9	4.81	0.37	16.28	370.0	0.21	<0.01	0.21	6.6	284.1	277.6	Strong
587	09PSD153-SRK-WR-587	9.8	5.77	0.28	20.13	457.5	0.45	<0.01	0.45	14.1	357.9	343.8	Strong
588	09PSD153-SRK-WR-588	9.8	5.18	0.37	17.64	400.9	0.29	<0.01	0.29	9.1	342.9	333.8	Strong
589	09PSD153-SRK-WR-589	9.0	1.80	0.32	5.43	123.4	0.46	<0.01	0.46	14.4	120.2	105.8	Strong
590	09PSD153-SRK-WR-590	9.7	4.60	0.06	16.65	378.4	1.28	<0.01	1.28	40.0	274.0	234.0	Strong
591	09PSD153-SRK-WR-591	9.5	2.80	0.02	10.19	231.6	1.60	<0.01	1.60	50.0	185.2	135.2	Strong
592	09PSD153-SRK-WR-592	9.8	4.78	0.09	17.20	390.9	0.76	<0.01	0.76	23.8	295.4	271.6	Strong
593	09PSD153-SRK-WR-593	9.6	4.67	0.16	16.54	375.9	2.01	0.01	2.00	62.5	267.8	205.3	Strong
594	09PSD153-SRK-WR-594	9.9	4.77	0.00	17.71	402.5	0.76	<0.01	0.76	23.8	280.9	257.1	Strong
595	09PSD153-SRK-WR-595	9.4	0.99	0.00	3.85	87.5	0.34	<0.01	0.34	10.6	61.2	50.5	Strong
596	09PSD153-SRK-WR-596	10.0	1.93	0.00	7.11	161.6	0.13	<0.01	0.13	4.1	124.1	120.1	Moderate
597	09PSD153-SRK-WR-597	10.0	1.55	0.00	6.27	142.5	<0.02	<0.01	<0.02	<0.6	117.2	117.2	Moderate
598	09PSD153-SRK-WR-598	10.1	1.87	0.13	6.38	145.0	<0.02	<0.01	<0.02	<0.6	121.6	121.6	Strong
Hole: 09PSD164													
599	09PSD164-SRK-WR-599	10.0	1.65	0.09	5.72	130.0	0.04	<0.01	0.04	1.3	85.4	84.2	Strong
600	09PSD164-SRK-WR-600	9.8	5.76	0.25	20.20	459.1	0.30	<0.01	0.30	9.4	355.7	346.3	Strong
601	09PSD164-SRK-WR-601	9.9	3.43	0.01	12.54	285.0	0.08	<0.01	0.08	2.5	236.8	234.3	Moderate
602	09PSD164-SRK-WR-602	9.9	5.09	0.17	18.04	410.0	0.09	<0.01	0.09	2.8	265.7	262.9	Moderate
603	09PSD164-SRK-WR-603	9.9	5.21	0.16	18.52	420.9	0.09	<0.01	0.09	2.8	287.0	284.2	Strong
604	09PSD164-SRK-WR-604	9.7	5.25	0.25	18.33	416.6	0.09	<0.01	0.09	2.8	308.8	306.0	Strong
605	09PSD164-SRK-WR-605	9.8	5.14	0.15	18.30	415.9	0.28	<0.01	0.28	8.8	292.5	283.7	Strong
606	09PSD164-SRK-WR-606	9.8	6.68	0.00	25.04	569.1	0.39	<0.01	0.39	12.2	413.1	400.9	Strong
607	09PSD164-SRK-WR-607	9.8	6.22	0.25	21.89	497.5	0.32	<0.01	0.32	10.0	353.2	343.2	Strong
608	09PSD164-SRK-WR-608	9.5	4.17	0.23	14.45	328.4	1.75	<0.01	1.75	54.7	270.5	215.8	Strong
609	09PSD164-SRK-WR-609	9.8	4.90	0.24	17.09	388.4	0.08	<0.01	0.08	2.5	289.2	286.7	Strong
610	09PSD164-SRK-WR-610	9.8	2.33	0.16	7.96	180.9	0.15	<0.01	0.15	4.7	143.0	138.3	Strong
611	09PSD164-SRK-WR-611	9.6	2.20	0.13	7.59	172.5	0.03	<0.01	0.03	0.9	136.8	135.9	Strong
612	09PSD164-SRK-WR-612	9.5	2.47	0.06	8.84	200.9	0.25	0.01	0.24	7.5	156.1	148.6	Strong
613	09PSD164-SRK-WR-613	9.8	2.20	0.11	7.66	174.1	0.05	<0.01	0.05	1.6	137.4	135.9	Strong
Hole: 09PSD183													
614	09PSD183-SRK-WR-614	10.0	1.58	0.10	5.43	123.4	<0.02	<0.01	<0.02	<0.6	94.2	94.2	Strong
615	09PSD183-SRK-WR-615	9.2	3.45	0.18	11.99	272.5	0.06	<0.01	0.06	1.9	233.8	232.0	Strong
616	09PSD183-SRK-WR-616	8.7	2.63	0.17	9.02	205.0	0.03	<0.01	0.03	0.9	197.9	196.9	Strong
617	09PSD183-SRK-WR-617	8.7	2.29	0.18	7.74	175.9	0.12	<0.01	0.12	3.8	170.4	166.6	Strong
618	09PSD183-SRK-WR-618	8.7	0.80	0.08	2.64	60.0	0.08	<0.01	0.08	2.5	74.0	71.5	Strong
619	09PSD183-SRK-WR-619	8.6	2.32	0.15	7.96	180.9	0.10	<0.01	0.10	3.1	181.6	178.5	Strong
620	09PSD183-SRK-WR-620	9.5	4.54	0.29	15.58	354.1	0.16	<0.01	0.16	5.0	294.3	289.3	Strong

Appendix E: Acid-Base Accounting (ABA) Data, Madrid South

			Acme		Acme		Acme				Mod. ABA NP		
S. No.	Sample ID	Paste pH	Total Carbon (Wt.%)	TOC* (Wt.%)	CO2 (Wt.%)	CaCO3 Equiv.** (Kg CaCO3/Tonne)	Total Sulphur (Wt.%)	Sulphate Sulphur (Wt.%)	Sulphide Sulphur*** (Wt.%)	Maximum Potential Acidity**** (Kg CaCO3/Tonne)	Neutralization Potential (Kg CaCO3/Tonne)	Net Neutralization Potential***** (Kg CaCO3/Tonne)	Fizz Rating
621	09PSD183-SRK-WR-621	9.9	1.54	0.06	5.43	123.4	0.15	<0.01	0.15	4.7	91.7	87.0	Strong
622	09PSD183-SRK-WR-622	9.8	1.34	0.17	4.29	97.5	<0.02	<0.01	<0.02	<0.6	85.3	85.3	Strong
623	09PSD183-SRK-WR-623	9.8	0.89	0.00	4.58	104.1	<0.02	<0.01	<0.02	<0.6	78.9	78.9	Moderate
624	09PSD183-SRK-WR-624	9.8	1.34	0.10	4.55	103.4	<0.02	<0.01	<0.02	<0.6	84.1	84.1	Strong
625	09PSD183-SRK-WR-625	9.9	1.27	0.08	4.36	99.1	<0.02	<0.01	<0.02	<0.6	80.3	80.3	Strong
626	09PSD183-SRK-WR-626	9.9	1.33	0.05	4.69	106.6	<0.02	<0.01	<0.02	<0.6	104.0	104.0	Strong
Hole: 09PSD205													
627	09PSD205-SRK-WR-627	8.6	2.25	0.02	8.18	185.9	<0.02	<0.01	<0.02	<0.6	170.5	170.5	Strong
628	09PSD205-SRK-WR-628	8.5	3.27	0.23	11.15	253.4	<0.02	<0.01	<0.02	<0.6	247.5	247.5	Strong
629	09PSD205-SRK-WR-629	8.5	2.19	0.06	7.81	177.5	0.04	<0.01	0.04	1.3	187.5	186.3	Strong
630	09PSD205-SRK-WR-630	8.7	1.99	0.11	6.89	156.6	<0.02	<0.01	<0.02	<0.6	167.9	167.9	Strong
631	09PSD205-SRK-WR-631	8.9	2.98	0.08	10.63	241.6	0.05	<0.01	0.05	1.6	212.9	211.3	Strong
632	09PSD205-SRK-WR-632	8.7	1.28	0.06	4.47	101.6	<0.02	<0.01	<0.02	<0.6	105.3	105.3	Strong
633	09PSD205-SRK-WR-633	9.0	3.72	0.14	13.13	298.4	0.06	<0.01	0.06	1.9	270.5	268.6	Strong
634	09PSD205-SRK-WR-634	9.3	3.20	0.12	11.29	256.6	0.04	<0.01	0.04	1.3	224.2	222.9	Strong
635	09PSD205-SRK-WR-635	10.0	2.04	0.05	7.30	165.9	0.03	<0.01	0.03	0.9	133.1	132.1	Strong
636	09PSD205-SRK-WR-636	9.7	2.12	0.08	7.48	170.0	0.07	<0.01	0.07	2.2	128.3	126.1	Strong
637	09PSD205-SRK-WR-637	9.7	1.68	0.00	6.23	141.6	0.05	<0.01	0.05	1.6	107.7	106.1	Strong
638	09PSD205-SRK-WR-638	8.7	2.20	0.08	7.77	176.6	<0.02	<0.01	<0.02	<0.6	166.5	166.5	Strong
639	09PSD205-SRK-WR-639	9.3	4.83	0.39	16.28	370.0	0.16	<0.01	0.16	5.0	319.0	314.0	Strong
640	09PSD205-SRK-WR-640	9.1	4.11	0.21	14.30	325.0	0.15	<0.01	0.15	4.7	275.2	270.6	Strong
641	09PSD205-SRK-WR-641	9.0	4.18	0.27	14.34	325.9	0.13	<0.01	0.13	4.1	282.1	278.0	Strong
642	09PSD205-SRK-WR-642	9.1	4.02	0.26	13.79	313.4	0.20	<0.01	0.20	6.3	277.7	271.5	Strong
643	09PSD205-SRK-WR-643	9.4	4.56	0.00	16.98	385.9	0.22	<0.01	0.22	6.9	327.8	320.9	Strong
644	09PSD205-SRK-WR-644	9.2	3.57	0.24	12.21	277.5	0.04	<0.01	0.04	1.3	244.0	242.7	Strong
645	09PSD205-SRK-WR-645	9.6	4.89	0.37	16.57	376.6	0.13	<0.01	0.13	4.1	326.5	322.5	Strong
646	09PSD205-SRK-WR-646	9.4	4.60	0.00	17.31	393.4	0.11	<0.01	0.11	3.4	305.2	301.8	Strong
647	09PSD205-SRK-WR-647	9.2	4.79	0.03	17.45	396.6	0.35	<0.01	0.35	10.9	280.3	269.4	Strong
648	09PSD205-SRK-WR-648	8.7	4.66	0.00	17.27	392.5	0.92	0.01	0.91	28.4	280.3	251.9	Strong
649	09PSD205-SRK-WR-649	8.5	2.24	0.00	8.29	188.4	0.02	<0.01	0.02	0.6	165.2	164.6	Strong
650	09PSD205-SRK-WR-650	8.3	2.02	0.00	7.52	170.9	0.03	0.02	0.01	0.3	162.1	161.8	Strong
651	09PSD205-SRK-WR-651	8.6	4.33	0.00	16.17	367.5	0.13	<0.01	0.13	4.1	282.1	278.0	Strong
652	09PSD205-SRK-WR-652	9.1	4.27	0.00	15.84	360.0	0.07	<0.01	0.07	2.2	279.0	276.8	Strong
653	09PSD205-SRK-WR-653	9.4	4.03	0.00	14.85	337.5	0.06	<0.01	0.06	1.9	257.8	255.9	Strong
654	09PSD205-SRK-WR-654	9.3	4.62	0.00	16.94	385.0	0.08	<0.01	0.08	2.5	286.5	284.0	Strong
655	09PSD205-SRK-WR-655	9.5	4.86	0.00	18.08	410.9	0.17	<0.01	0.17	5.3	291.6	286.2	Strong
656	09PSD205-SRK-WR-656	9.8	1.81	0.00	6.82	155.0	0.02	<0.01	0.02	0.6	106.5	105.8	Strong
657	09PSD205-SRK-WR-657	9.7	1.46	0.03	5.24	119.1	<0.02	<0.01	<0.02	<0.6	80.8	80.8	Strong
658	09PSD205-SRK-WR-658	9.8	1.38	0.00	5.24	119.1	<0.02	<0.01	<0.02	<0.6	78.9	78.9	Strong
659	09PSD205-SRK-WR-659	9.7	1.43	0.00	5.39	122.5	<0.02	<0.01	<0.02	<0.6	93.0	93.0	Moderate
660	09PSD205-SRK-WR-660	9.8	1.33	0.00	4.95	112.5	<0.02	<0.01	<0.02	<0.6	86.5	86.5	Moderate
661	09PSD205-SRK-WR-661	9.7	1.29	0.00	4.80	109.1	0.02	<0.01	0.02	0.6	76.4	75.8	Strong
662	09PSD205-SRK-WR-662	9.7	1.56	0.00	5.76	130.9	<0.02	<0.01	<0.02	<0.6	87.7	87.7	Strong
Hole: 09PSD209													
663	09PSD209-SRK-WR-663	9.3	1.98	0.00	7.33	166.6	<0.02	<0.01	<0.02	<0.6	117.7	117.7	Strong
664	09PSD209-SRK-WR-664	9.2	2.29	0.02	8.32	189.1	<0.02	<0.01	<0.02	<0.6	127.7	127.7	Strong
665	09PSD209-SRK-WR-665	8.4	2.30	0.03	8.32	189.1	0.28	0.23	0.05	1.6	172.7	171.1	Strong
666	09PSD209-SRK-WR-666	9.1	1.71	0.00	6.49	147.5	0.04	<0.01	0.04	1.3	106.4	105.1	Strong
667	09PSD209-SRK-WR-667	9.3	2.10	0.00	7.77	176.6	0.14	<0.01	0.14	4.4	117.8	113.4	Strong
668	09PSD209-SRK-WR-668	9.5	1.86	0.13	6.34	144.1	0.12	<0.01	0.12	3.8	107.8	104.0	Strong
669	09PSD209-SRK-WR-669	9.3	1.73	0.03	6.23	141.6	0.24	<0.01	0.24	7.5	102.6	95.1	Strong
670	09PSD209-SRK-WR-670	9.3	1.97	0.01	7.19	163.4	0.26	<0.01	0.26	8.1	112.7	104.6	Strong
671	09PSD209-SRK-WR-671	9.1	4.53	0.09	16.28	370.0	0.13	<0.01	0.13	4.1	282.8	278.7	Strong
672	09PSD209-SRK-WR-672	9.4	3.15	0.08	11.26	255.9	0.04	<0.01	0.04	1.3	193.4	192.2	Strong
673	09PSD209-SRK-WR-673	9.5	2.22	0.00	8.18	185.9	0.08	<0.01	0.08	2.5	133.9	131.4	Moderate
674	09PSD209-SRK-WR-674	9.5	1.76	0.00	6.53	148.4	0.03	<0.01	0.03	0.9	105.2	104.3	Strong
675	09PSD209-SRK-WR-675	9.5	2.90	0.00	10.78	245.0	0.03	<0.01	0.03	0.9	180.8	179.9	Strong
676	09PSD209-SRK-WR-676	9.5	2.62	0.00	9.75	221.6	0.48	<0.01	0.48	15.0	162.7	147.7	Strong
677	09PSD209-SRK-WR-677	9.5	5.54	0.00	20.42	464.1	0.23	<0.01	0.23	7.2	305.3	298.1	Strong
Detection Limits		*0.5*	*0.02*	*0.02*	*0.02*	*0.5*	*0.02*	*0.01*	*0.02*	*0.6*			
CANTEST SOP No:		7160	LECO	Calcula	LECO	Calculation	LECO	7410	Calculation	Calculation	7150	Calculation	7150

P:\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201109_Pactch14Report\Appendices\[App E and F_ ABA and Metals Data.xls]AppE

Notes:

Total sulphur, total carbon and carbonate carbon (CO2; HCl direct method) done by Leco at Acme Labs.

Calculations:

*TOC (Total Organic Carbon) is based on total carbon and CO2 values.

**CaCO3 equivalents is based on carbonate carbon.

***Sulphide sulphur is based on difference between total sulphur and sulphate sulphur.

****MPA (Maximum Potential Acidity) is based on sulphide sulphur .

*****NNP (Net Neutralization Potential) is based on difference between neutralization potential (NP) and MPA.

References:

Reference for Mod ABA NP method (SOP No. 7150): MEND Acid Rock Drainage Prediction Manual, MEND Project 1.16.1b (pages 6.2-11 to 17), March 1991.

Appendix E: Acid-Base Accounting (ABA) Data, Madrid South

Maxxam

Maxxam Analytics 4606 Canada Way, Burnaby, BC Canada V5G 1K5 Tel: 604 734 7276 Fax: 604 731 2386 www.maxxam.ca

Reported to NMS & SRK: 18-Jan-11

Newmont, Hope Bay (Wolverine and Patch 14; 747 to 823) Comps, Oct10

Page 1 of 5

Table 1: ABA Test Results for 77 Hope Bay (Wolverine and Patch 14; 747 to 823) Composite Samples - January 2011

S. No.	Sample ID	Paste pH	Acme Total Carbon (Wt.%)	TOC* (Wt.%)	Acme CO2 (Wt.%)	CaCO3 Equiv.** (Kg CaCO3/Tonne)	Acme Total Sulphur (Wt.%)	Sulphate Sulphur (Wt.%)	Sulphide Sulphur*** (Wt.%)	Maximum Potential Acidity**** (Kg CaCO3/Tonne)	Mod. ABA NP Neutralization Potential (Kg CaCO3/Tonne)	Net Neutralization Potential***** (Kg CaCO3/Tonne)	Fizz Rating
77 Wolverine and Patch 14 Composites													
Hole ID: 09PSD211A													
1	09PSD211A-SRK-WR-747	8.9	0.21	0.01	0.75	17.0	0.05	<0.01	0.05	1.6	24.5	22.9	Moderate
2	09PSD211A-SRK-WR-748	8.8	0.27	0.00	0.98	22.3	0.07	<0.01	0.07	2.2	30.9	28.7	Moderate
3	09PSD211A-SRK-WR-749	8.6	2.05	0.00	8.10	184.1	0.10	<0.01	0.10	3.1	156.9	153.8	Strong
4	09PSD211A-SRK-WR-750	9.3	1.39	0.00	5.17	117.5	0.08	<0.01	0.08	2.5	94.8	92.3	Strong
5	09PSD211A-SRK-WR-751	8.8	3.09	0.00	11.48	260.9	0.15	<0.01	0.15	4.7	244.6	240.0	Strong
6	09PSD211A-SRK-WR-752	8.6	1.10	0.00	4.18	95.0	0.10	<0.01	0.10	3.1	98.7	95.6	Strong
7	09PSD211A-SRK-WR-753	9.2	0.55	0.01	1.97	44.8	0.02	<0.01	0.02	0.6	49.1	48.5	Strong
8	09PSD211A-SRK-WR-754	8.5	2.43	0.00	9.02	205.0	0.03	<0.01	0.03	0.9	194.9	193.9	Strong
9	09PSD211A-SRK-WR-755	9.3	0.63	0.00	2.39	54.3	<0.02	<0.01	<0.02	<0.6	56.2	56.2	Strong
10	09PSD211A-SRK-WR-756	9.6	0.65	0.00	2.37	53.9	<0.02	<0.01	<0.02	<0.6	51.5	51.5	Strong
11	09PSD211A-SRK-WR-757	9.5	0.69	0.02	2.46	55.9	0.07	<0.01	0.07	2.2	57.2	55.0	Strong
12	09PSD211A-SRK-WR-758	8.6	2.03	0.00	7.52	170.9	0.09	<0.01	0.09	2.8	169.0	166.2	Strong
13	09PSD211A-SRK-WR-759	9.5	0.76	0.00	2.96	67.3	<0.02	<0.01	<0.02	<0.6	61.1	61.1	Strong
14	09PSD211A-SRK-WR-760	8.5	2.28	0.07	8.10	184.1	0.06	<0.01	0.06	1.9	185.9	184.1	Strong
15	09PSD211A-SRK-WR-761	8.7	1.11	0.00	4.11	93.4	0.09	<0.01	0.09	2.8	93.7	90.9	Strong
16	09PSD211A-SRK-WR-762	9.1	0.90	0.03	3.20	72.7	0.08	<0.01	0.08	2.5	72.7	70.2	Strong
17	09PSD211A-SRK-WR-763	8.5	1.11	0.03	3.96	90.0	0.07	<0.01	0.07	2.2	95.1	92.9	Strong
18	09PSD211A-SRK-WR-764	8.5	2.33	0.00	9.13	207.5	0.24	<0.01	0.24	7.5	189.8	182.3	Strong
19	09PSD211A-SRK-WR-765	8.5	1.04	0.03	3.70	84.1	0.06	<0.01	0.06	1.9	87.6	85.7	Strong
20	09PSD211A-SRK-WR-766	8.5	0.62	0.01	2.25	51.1	0.06	<0.01	0.06	1.9	56.5	54.7	Strong
21	09PSD211A-SRK-WR-767	8.5	1.06	0.04	3.74	85.0	0.09	<0.01	0.09	2.8	81.1	78.3	Strong
22	09PSD211A-SRK-WR-768	9.5	0.38	0.00	1.40	31.8	0.04	<0.01	0.04	1.3	34.0	32.8	Strong
23	09PSD211A-SRK-WR-769	8.3	1.99	0.00	7.48	170.0	0.10	<0.01	0.10	3.1	163.4	160.3	Strong
24	09PSD211A-SRK-WR-770	8.4	0.96	0.02	3.44	78.2	0.05	<0.01	0.05	1.6	80.9	79.3	Strong
25	09PSD211A-SRK-WR-771	8.5	0.82	0.03	2.90	65.9	0.29	<0.01	0.29	9.1	69.6	60.5	Strong
26	09PSD211A-SRK-WR-772	8.5	0.94	0.04	3.29	74.8	0.24	<0.01	0.24	7.5	80.4	72.9	Strong
27	09PSD211A-SRK-WR-773	8.5	1.88	0.01	6.86	155.9	0.11	<0.01	0.11	3.4	153.6	150.2	Strong
28	09PSD211A-SRK-WR-774	9.6	0.65	0.01	2.36	53.6	0.03	<0.01	0.03	0.9	53.4	52.5	Strong
29	09PSD211A-SRK-WR-775	8.7	0.88	0.00	3.21	73.0	0.08	<0.01	0.08	2.5	70.1	67.6	Strong
30	09PSD211A-SRK-WR-776	8.5	1.02	0.00	3.74	85.0	0.07	<0.01	0.07	2.2	86.8	84.6	Strong
31	09PSD211A-SRK-WR-777	9.5	0.37	0.01	1.31	29.8	0.05	<0.01	0.05	1.6	34.2	32.6	Strong
32	09PSD211A-SRK-WR-778	8.6	0.62	0.03	2.16	49.1	0.07	<0.01	0.07	2.2	54.1	52.0	Strong
33	09PSD211A-SRK-WR-779	8.5	0.64	0.00	2.33	53.0	0.07	<0.01	0.07	2.2	58.2	56.0	Strong
34	09PSD211A-SRK-WR-780	9.4	0.60	0.00	2.23	50.7	0.04	<0.01	0.04	1.3	50.9	49.6	Strong
35	09PSD211A-SRK-WR-781	8.5	1.73	0.10	5.98	135.9	0.07	<0.01	0.07	2.2	147.5	145.3	Strong
36	09PSD211A-SRK-WR-782	8.5	2.79	0.15	9.68	220.0	0.07	<0.01	0.07	2.2	219.9	217.7	Strong
37	09PSD211A-SRK-WR-783	8.3	1.57	0.00	5.76	130.9	0.07	<0.01	0.07	2.2	127.6	125.5	Strong
38	09PSD211A-SRK-WR-784	8.4	1.50	0.03	5.39	122.5	0.08	<0.01	0.08	2.5	122.0	119.5	Strong
39	09PSD211A-SRK-WR-785	8.5	1.38	0.00	5.13	116.6	0.07	<0.01	0.07	2.2	116.5	114.3	Strong
40	09PSD211A-SRK-WR-786	8.6	0.66	0.00	2.46	55.9	0.06	<0.01	0.06	1.9	57.8	55.9	Strong
41	09PSD211A-SRK-WR-787	8.5	0.59	0.01	2.14	48.6	0.04	<0.01	0.04	1.3	52.1	50.9	Strong
42	09PSD211A-SRK-WR-788	8.5	0.36	0.00	1.36	30.9	0.05	<0.01	0.05	1.6	35.3	33.7	Strong
43	09PSD211A-SRK-WR-789	8.4	0.75	0.00	2.76	62.7	0.06	<0.01	0.06	1.9	63.6	61.7	Strong
44	09PSD211A-SRK-WR-790	8.4	2.41	0.00	9.53	216.6	0.08	<0.01	0.08	2.5	193.6	191.1	Strong
45	09PSD211A-SRK-WR-791	8.5	2.60	0.00	9.94	225.9	0.06	<0.01	0.06	1.9	207.9	206.0	Strong
46	09PSD211A-SRK-WR-792	9.8	1.94	0.00	7.15	162.5	0.03	<0.01	0.03	0.9	114.8	113.9	Strong
47	09PSD211A-SRK-WR-793	9.6	1.78	0.00	6.82	155.0	<0.02	<0.01	<0.02	<0.6	113.9	113.9	Strong
48	09PSD211A-SRK-WR-794	9.5	1.88	0.00	7.04	160.0	<0.02	<0.01	<0.02	<0.6	114.4	114.4	Strong
49	09PSD211A-SRK-WR-795	9.6	2.43	0.00	9.09	206.6	0.05	<0.01	0.05	1.6	124.1	122.5	Strong
50	09PSD211A-SRK-WR-796	9.0	2.26	0.02	8.21	186.6	0.07	<0.01	0.07	2.2	140.1	137.9	Strong
51	09PSD211A-SRK-WR-797	9.4	1.77	0.00	6.49	147.5	<0.02	0.01	<0.02	<0.6	136.6	136.6	Moderate
52	09PSD211A-SRK-WR-798	8.5	1.61	0.00	6.09	138.4	0.07	0.07	0.00	0.0	109.2	109.2	Moderate
53	09PSD211A-SRK-WR-799	9.0	1.75	0.00	6.78	154.1	<0.02	0.01	<0.02	<0.6	112.7	112.7	Strong
54	09PSD211A-SRK-WR-800	8.4	2.14	0.00	8.18	185.9	0.07	0.07	0.00	0.0	139.3	139.3	Strong
55	09PSD211A-SRK-WR-801	9.3	1.96	0.12	6.75	153.4	<0.02	0.01	<0.02	<0.6	122.5	122.5	Strong
56	09PSD211A-SRK-WR-802	8.9	1.67	0.02	6.05	137.5	0.05	<0.01	0.05	1.6	130.6	129.1	Strong
57	09PSD211A-SRK-WR-803	9.1	2.02	0.00	7.52	170.9	0.04	0.01	0.03	0.9	128.0	127.1	Strong
58	09PSD211A-SRK-WR-804	8.8	2.53	0.00	9.72	220.9	0.03	0.02	0.01	0.3	169.2	168.9	Moderate
59	09PSD211A-SRK-WR-805	9.7	1.98	0.06	7.04	160.0	0.06	<0.01	0.06	1.9	123.0	121.1	Strong
60	09PSD211A-SRK-WR-806	9.5	2.12	0.00	7.85	178.4	0.08	<0.01	0.08	2.5	131.0	128.5	Strong
61	09PSD211A-SRK-WR-807	8.6	2.66	0.15	9.20	209.1	0.10	<0.01	0.10	3.1	152.2	149.1	Strong
62	09PSD211A-SRK-WR-808	8.7	3.12	0.00	11.88	270.0	0.03	<0.01	0.03	0.9	209.7	208.8	Strong
63	09PSD211A-SRK-WR-809	8.8	0.98	0.01	3.56	80.9	0.03	<0.01	0.03	0.9	84.2	83.3	Strong
64	09PSD211A-SRK-WR-810	9.1	4.21	0.00	15.84	360.0	0.06	<0.01	0.06	1.9	319.0	317.1	Strong
65	09PSD211A-SRK-WR-811	9.8	1.70	0.00	6.38	145.0	<0.02	<0.01	<0.02	<0.6	108.0	108.0	Strong
66	09PSD211A-SRK-WR-812	9.9	2.63	0.00	9.90	225.0	0.07	<0.01	0.07	2.2	151.0	148.8	Strong
67	09PSD211A-SRK-WR-813	9.7	1.44	0.00	5.35	121.6	0.09	<0.01	0.09	2.8	85.8	83.0	Strong
68	09PSD211A-SRK-WR-814	9.3	5.10	0.13	18.22	414.1	1.30	0.01	1.29	40.3	309.6	269.3	Strong
69	09PSD211A-SRK-WR-815	9.3	6.36	0.13	22.84	519.1	0.26	<0.01	0.26	8.1	401.5	393.3	Strong
70	09PSD211A-SRK-WR-816	9.2	5.78	0.00	21.67	492.5	1.28	0.01	1.27	39.7	336.4	296.7	Strong
71	09PSD211A-SRK-WR-817	9.5	4.67	0.00	17.75	403.4	0.11	<0.01	0.11	3.4	293.4	289.9	Strong
72	09PSD211A-SRK-WR-818	9.7	3.09	0.00	11.51	261.6	<0.02	<0.01	<0.02	<0.6	169.7	169.7	Strong
73	09PSD211A-SRK-WR-819	9.6	5.77	0.00	21.30	484.1	0.02	<0.01	0.02	0.6	378.1	377.5	Strong

Appendix E: Acid-Base Accounting (ABA) Data, Madrid South

S. No.	Sample ID	Paste pH	Acme Total Carbon (Wt.%)	TOC* (Wt.%)	Acme CO2 (Wt.%)	CaCO3 Equiv.** (Kg CaCO3/Tonne)	Acme Total Sulphur (Wt.%)	Sulphate Sulphur (Wt.%)	Sulphide Sulphur*** (Wt.%)	Maximum Potential Acidity**** (Kg CaCO3/Tonne)	Mod. ABA NP Neutralization Potential (Kg CaCO3/Tonne)	Net Neutralization Potential***** (Kg CaCO3/Tonne)	Fizz Rating
74	09PSD211A-SRK-WR-820	9.1	3.38	0.00	12.98	295.0	0.09	0.01	0.08	2.5	225.9	223.4	Strong
75	09PSD211A-SRK-WR-821	8.4	2.91	0.00	10.67	242.5	0.02	0.02	0.00	0.0	209.8	209.8	Strong
76	09PSD211A-SRK-WR-822	9.9	1.50	0.00	5.65	128.4	<0.02	<0.01	<0.02	<0.6	100.6	100.6	Strong
77	09PSD211A-SRK-WR-823	9.8	1.13	0.00	4.25	96.6	<0.02	<0.01	<0.02	<0.6	75.7	75.7	Strong
Detection Limits		*0.5*	*0.02*	*0.02*	*0.02*	*0.5*	*0.02*	*0.01*	*0.02*	*0.6*			
Maxxam SOP No:		*7160*	*LECO*	*Calculation*	*LECO*	*Calculation*	*LECO*	*7410*	*Calculation*	*Calculation*	*7150*	*Calculation*	*7150*

P:\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201109_Pactch14Report\Appendices\[App E and F_ ABA and Metals Data.xls]AppE

Notes:

Total sulphur, total carbon and carbonate carbon (CO2; HCl direct method) done by Leco at Acme Labs.

CO2 Analysis: A 0.2g of pulp sample is digested with 6 ml of 1.8N HCl in a hot water bath of 70 ˚C for 30 minutes. The CO2 that evolves is trapped in a gas chamber that is controlled with a stopcock, once the stopcock is opened the CO2 gas is swept into the Leco analyser with an oxygen carrier gas. Leco then determines the CO2 as total-carbon which is calculated to total CO2.

Calculations:

*TOC (Total Organic Carbon) is based on total carbon and CO2 values.

**CaCO3 equivalents is based on carbonate carbon.

***Sulphide sulphur is based on difference between total sulphur and sulphate sulphur.

****MPA (Maximum Potential Acidity) is based on sulphide sulphur .

*****NNP (Net Neutralization Potential) is based on difference between neutralization potential (NP) and MPA.

References:

Reference for Mod ABA NP method (SOP No. 7150): MEND Acid Rock Drainage Prediction Manual, MEND Project 1.16.1b (pages 6.2-11 to 17), March 1991.

Draft Report to NMS & SRK: 4-Jan-11
Final Report to NMS & SRK: 25-Jan-11

Maxxam

Maxxam Analytics 4606 Canada Way, Burnaby, BC Canada V5G 1K5 Tel: 604 734 7276 Fax: 604 731 2386 www.maxxam.ca

Newmont - Hope Bay, 62 (Wolverine and Patch 14) & 28 Doris Connector (10262010) composites, various dates
Page 1 of 6

Table 1: ABA Test Results for 62 (Wolverine and Patch 14) & 28 Doris Connector composites (10262010) Samples - December 2010

			Acme		Acme		Acme				Mod. ABA NP		
S. No.	Sample ID	Paste pH	Total Carbon (Wt.%)	TOC* (Wt.%)	CO2 (Wt.%)	CaCO3 Equiv.** (Kg CaCO3/Tonne)	Total Sulphur (Wt.%)	Sulphate Sulphur (Wt.%)	Sulphide Sulphur*** (Wt.%)	Maximum Potential Acidity**** (Kg CaCO3/Tonne)	Neutralization Potential (Kg CaCO3/Tonne)	Net Neutralization Potential***** (Kg CaCO3/Tonne)	Fizz Rating
62 Wolverine and Patch 14 Composites													
Hole ID: 10PSD244													
1	10PSD244-SRK-WR-685	9.0	**1.64**	0.00	**6.64**	150.9	0.04	<0.01	0.04	1.3	141.3	140.1	Strong
2	10PSD244-SRK-WR-686	9.8	0.53	0.00	2.06	46.8	<0.02	<0.01	<0.02	<0.6	45.6	45.6	Strong
3	10PSD244-SRK-WR-687	9.4	0.78	0.00	2.99	68.0	0.02	<0.01	0.02	0.6	63.3	62.7	Strong
4	10PSD244-SRK-WR-688	9.5	0.85	0.00	3.27	74.3	<0.02	<0.01	<0.02	<0.6	70.2	70.2	Strong
5	10PSD244-SRK-WR-689	9.3	2.41	0.00	9.46	215.0	0.03	<0.01	0.03	0.9	172.5	171.5	Strong
6	10PSD244-SRK-WR-690	9.7	1.18	0.00	4.66	105.9	0.04	<0.01	0.04	1.3	87.7	86.4	Strong
7	10PSD244-SRK-WR-691	9.6	1.17	0.27	3.29	74.8	<0.02	<0.01	<0.02	<0.6	81.7	81.7	Strong
8	10PSD244-SRK-WR-692	9.0	2.30	0.00	8.62	195.9	0.07	<0.01	0.07	2.2	157.9	155.7	Strong
9	10PSD244-SRK-WR-693	8.7	3.47	0.00	13.64	310.0	0.06	<0.01	0.06	1.9	255.2	253.3	Strong
10	10PSD244-SRK-WR-694	8.5	2.47	0.00	9.42	214.1	0.09	<0.01	0.09	2.8	207.7	204.9	Strong
11	10PSD244-SRK-WR-695	8.5	1.94	0.00	7.48	170.0	0.09	<0.01	0.09	2.8	159.9	157.1	Strong
12	10PSD244-SRK-WR-696	8.7	1.74	0.00	6.71	152.5	0.04	<0.01	0.04	1.3	153.6	152.4	Strong
13	10PSD244-SRK-WR-697	8.8	0.75	0.00	2.79	63.4	0.10	<0.01	0.10	3.1	68.7	65.6	Strong
14	10PSD244-SRK-WR-698	8.7	**0.86**	0.00	**3.20**	72.7	0.08	<0.01	0.08	2.5	77.2	74.7	Strong
15	10PSD244-SRK-WR-699	8.5	2.36	0.00	9.09	206.6	0.12	<0.01	0.12	3.8	193.9	190.1	Strong
16	10PSD244-SRK-WR-700	8.7	2.93	0.00	11.18	254.1	0.32	<0.01	0.32	10.0	242.0	232.0	Strong
17	10PSD244-SRK-WR-701	8.5	2.45	0.00	9.50	215.9	0.11	<0.01	0.11	3.4	193.9	190.5	Strong
18	10PSD244-SRK-WR-702	8.7	0.91	-0.07	**3.61**	82.0	0.06	<0.01	0.06	1.9	**82.9**	81.0	Strong
19	10PSD244-SRK-WR-703	8.7	1.33	0.00	4.95	112.5	0.05	<0.01	0.05	1.6	113.3	111.8	Strong
20	10PSD244-SRK-WR-704	8.6	**0.89**	0.00	**3.66**	83.2	0.05	<0.01	0.05	1.6	79.8	78.2	Strong
21	10PSD244-SRK-WR-705	9.8	0.47	0.00	1.75	39.8	0.03	<0.01	0.03	0.9	40.8	39.9	Strong
Hole ID: 10PSD239													
22	10PSD239-SRK-WR-706	8.4	2.00	0.00	7.63	173.4	0.05	<0.01	0.05	1.6	164.7	163.1	Strong
23	10PSD239-SRK-WR-707	8.6	2.00	0.00	7.92	180.0	0.08	<0.01	0.08	2.5	162.3	159.8	Strong
24	10PSD239-SRK-WR-708	8.5	2.07	0.00	7.63	173.4	0.04	<0.01	0.04	1.3	172.5	171.2	Strong
25	10PSD239-SRK-WR-709	8.7	3.68	0.00	14.41	327.5	0.07	<0.01	0.07	2.2	276.5	274.3	Moderate
26	10PSD239-SRK-WR-710	9.8	1.46	0.00	5.83	132.5	0.02	<0.01	0.02	0.6	104.6	104.0	Strong
27	10PSD239-SRK-WR-711	9.7	1.15	0.00	4.25	96.6	<0.02	<0.01	<0.02	<0.6	84.0	84.0	Moderate
28	10PSD239-SRK-WR-712	9.3	4.81	0.00	18.08	410.9	0.18	<0.01	0.18	5.6	320.4	314.8	Strong
29	10PSD239-SRK-WR-713	9.7	1.52	0.00	5.76	130.9	0.51	<0.01	0.51	15.9	104.1	88.2	Strong
30	10PSD239-SRK-WR-714	9.7	1.25	0.00	4.84	110.0	0.10	<0.01	0.10	3.1	88.0	84.9	Strong
31	10PSD239-SRK-WR-715	9.1	4.42	0.00	17.01	386.6	0.17	<0.01	0.17	5.3	314.0	308.7	Strong
32	10PSD239-SRK-WR-716	9.4	0.97	0.00	3.70	84.1	0.21	<0.01	0.21	6.6	64.1	57.6	Slight
33	10PSD239-SRK-WR-717	9.4	0.50	0.02	1.76	40.0	0.05	<0.01	0.05	1.6	34.8	33.2	Slight
34	10PSD239-SRK-WR-718	9.3	0.66	0.00	2.46	55.9	0.14	<0.01	0.14	4.4	51.6	47.2	Slight
35	10PSD239-SRK-WR-719	8.6	1.26	0.00	4.70	106.8	0.05	<0.01	0.05	1.6	98.1	96.6	Strong
36	10PSD239-SRK-WR-720	8.7	1.77	0.13	6.02	136.8	0.07	<0.01	0.07	2.2	144.3	142.2	Strong
37	10PSD239-SRK-WR-721	8.7	2.14	0.00	8.04	182.7	0.09	<0.01	0.09	2.8	176.8	173.9	Strong
38	10PSD239-SRK-WR-722	8.7	**1.70**	0.00	**7.85**	178.4	<0.02	<0.01	<0.02	<0.6	172.7	172.7	Strong
39	10PSD239-SRK-WR-723	9.8	0.68	0.04	2.35	53.4	<0.02	<0.01	<0.02	<0.6	54.1	54.1	Strong
40	10PSD239-SRK-WR-724	8.8	2.06	0.20	6.83	155.2	0.09	<0.01	0.09	2.8	168.1	165.3	Strong
41	10PSD239-SRK-WR-725	8.8	1.75	0.07	6.17	140.2	0.07	<0.01	0.07	2.2	144.7	142.5	Strong
42	10PSD239-SRK-WR-726	9.5	0.68	0.04	2.35	53.4	0.03	0.01	0.02	0.6	57.7	57.0	Strong
43	10PSD239-SRK-WR-727	9.7	0.57	0.01	2.07	47.0	0.17	<0.01	0.17	5.3	48.4	43.1	Strong
44	10PSD239-SRK-WR-728	9.6	0.67	0.00	2.49	56.6	0.02	<0.01	0.02	0.6	57.3	56.7	Strong
45	10PSD239-SRK-WR-729	9.1	0.63	0.00	2.31	52.5	0.06	<0.01	0.06	1.9	58.4	56.5	Strong
46	10PSD239-SRK-WR-730	8.8	1.36	0.15	4.44	100.9	0.08	<0.01	0.08	2.5	116.9	114.4	Strong
47	10PSD239-SRK-WR-731	8.9	0.93	0.12	2.97	67.5	0.06	<0.01	0.06	1.9	68.0	66.1	Strong
48	10PSD239-SRK-WR-732	8.9	0.65	0.00	2.38	54.1	0.09	<0.01	0.09	2.8	54.9	52.1	Strong
49	10PSD239-SRK-WR-733	8.8	0.80	0.00	2.93	66.6	0.06	<0.01	0.06	1.9	74.1	72.2	Strong
50	10PSD239-SRK-WR-734	8.8	2.68	0.02	9.76	221.8	0.08	<0.01	0.08	2.5	214.5	212.0	Strong
51	10PSD239-SRK-WR-735	8.6	2.07	0.07	7.34	166.8	0.09	<0.01	0.09	2.8	166.0	163.1	Strong
52	10PSD239-SRK-WR-736	8.7	2.26	0.17	7.67	174.3	0.04	<0.01	0.04	1.3	180.1	178.9	Strong
53	10PSD239-SRK-WR-737	8.7	4.58	0.00	16.93	384.8	0.06	<0.01	0.06	1.9	364.7	362.8	Strong
54	10PSD239-SRK-WR-738	8.6	2.53	0.04	9.12	207.3	0.09	<0.01	0.09	2.8	198.9	196.1	Strong
55	10PSD239-SRK-WR-739	8.9	1.01	0.00	3.70	84.1	0.08	<0.01	0.08	2.5	85.7	83.2	Strong
56	10PSD239-SRK-WR-740	8.7	2.53	0.13	8.80	200.0	0.17	<0.01	0.17	5.3	198.8	193.5	Strong
57	10PSD239-SRK-WR-741	9.0	3.92	0.18	13.73	312.0	0.31	<0.01	0.31	9.7	265.2	255.6	Strong
58	10PSD239-SRK-WR-742	9.1	4.02	0.22	13.94	316.8	0.33	<0.01	0.33	10.3	282.7	272.4	Strong
59	10PSD239-SRK-WR-743	8.8	2.32	0.18	7.85	178.4	0.03	<0.01	0.03	0.9	181.8	180.8	Strong
60	10PSD239-SRK-WR-744	8.8	0.99	0.21	2.85	64.8	0.05	<0.01	0.05	1.6	87.7	86.1	Strong
61	10PSD239-SRK-WR-745	8.9	1.19	0.00	4.47	101.6	0.05	<0.01	0.05	1.6	98.8	97.2	Strong
62	10PSD239-SRK-WR-746	8.9	0.77	0.00	2.86	65.0	0.06	<0.01	0.06	1.9	63.4	61.6	Strong

Appendix E: Acid-Base Accounting (ABA) Data, Madrid South

S. No.	Sample ID	Paste pH	Acme Total Carbon (Wt.%)	TOC* (Wt.%)	Acme CO2 (Wt.%)	CaCO3 Equiv.** (Kg CaCO3/Tonne)	Acme Total Sulphur (Wt.%)	Sulphate Sulphur (Wt.%)	Sulphide Sulphur*** (Wt.%)	Maximum Potential Acidity**** (Kg CaCO3/Tonne)	Mod. ABA NP Neutralization Potential (Kg CaCO3/Tonne)	Net Neutralization Potential***** (Kg CaCO3/Tonne)	Fizz Rating
28 Doris Connector Composites													
Hole ID: 05TDD584													
1	05TDD584-SRK-WR-824	9.0	3.87	0.00	15.29	347.5	0.09	<0.01	0.09	2.8	216.6	213.8	Strong
2	05TDD584-SRK-WR-825	9.3	2.76	0.00	10.38	235.9	0.73	<0.01	0.73	22.8	163.4	140.6	Strong
Hole ID: 06TDD607													
3	06TDD607-SRK-WR-826	8.7	3.57	0.18	12.43	282.5	0.12	<0.01	0.12	3.8	189.1	185.4	Strong
Hole ID: 95TDD063													
4	95TDD063-SRK-WR-827	9.2	4.67	0.38	15.73	357.5	0.08	<0.01	0.08	2.5	210.3	207.8	Strong
5	95TDD063-SRK-WR-828	8.9	3.68	0.28	12.47	283.4	0.15	<0.01	0.15	4.7	167.9	163.2	Strong
6	95TDD063-SRK-WR-829	8.9	3.84	0.37	12.72	289.1	0.32	0.01	0.31	9.7	188.4	178.7	Strong
7	95TDD063-SRK-WR-830	8.7	3.81	0.30	12.87	292.5	0.76	0.01	0.75	23.4	171.6	148.2	Strong
8	95TDD063-SRK-WR-831	8.5	3.21	0.53	9.83	223.4	0.13	<0.01	0.13	4.1	179.7	175.6	Strong
9	95TDD063-SRK-WR-832	8.6	3.34	0.34	11.00	250.0	0.09	<0.01	0.09	2.8	157.2	154.4	Strong
10	95TDD063-SRK-WR-833	8.5	2.23	0.15	7.63	173.4	0.54	0.01	0.53	16.6	131.3	114.7	Strong
11	95TDD063-SRK-WR-834	8.4	1.60	0.18	5.21	118.4	0.17	<0.01	0.17	5.3	123.9	118.6	Strong
Hole ID: 96TDM098													
12	96TDM098-SRK-WR-835	9.5	**4.08**	0.00	**16.57**	376.6	0.22	<0.01	0.22	6.9	182.2	175.3	Strong
13	96TDM098-SRK-WR-836	9.5	4.55	0.35	15.40	350.0	0.10	<0.01	0.10	3.1	147.2	144.1	Strong
Hole ID: TDD207													
14	TDD207-SRK-WR-837	8.6	3.20	0.28	10.71	243.4	1.78	0.01	1.77	55.3	130.5	75.2	Strong
15	TDD207-SRK-WR-838	9.0	4.80	0.42	16.07	365.2	0.14	<0.01	0.14	4.4	209.7	205.3	Strong
16	TDD207-SRK-WR-839	9.2	4.19	0.15	14.82	336.8	0.45	<0.01	0.45	14.1	171.6	157.5	Strong
Hole ID: TDD216A													
17	TDD216A-SRK-WR-840	8.7	3.94	0.22	13.65	310.2	1.88	0.01	1.87	58.4	172.1	113.7	Strong
18	TDD216A-SRK-WR-841	9.1	3.84	0.25	13.17	299.3	0.28	<0.01	0.28	8.8	148.4	139.7	Strong
19	TDD216A-SRK-WR-842	9.0	2.77	0.19	9.47	215.2	0.17	<0.01	0.17	5.3	138.9	133.6	Strong
20	TDD216A-SRK-WR-843	8.9	4.14	0.33	13.98	317.7	0.27	<0.01	0.27	8.4	194.6	186.2	Strong
21	TDD216A-SRK-WR-844	8.8	4.22	0.15	14.93	339.3	1.22	0.01	1.21	37.8	209.0	171.2	Strong
Hole ID: TDD219													
22	TDD219-SRK-WR-845	8.7	3.85	0.37	12.77	290.2	1.71	0.01	1.70	53.1	161.5	108.4	Strong
23	TDD219-SRK-WR-846	8.9	3.42	0.25	11.63	264.3	0.43	0.01	0.42	13.1	132.8	119.6	Strong
24	TDD219-SRK-WR-847	8.8	3.52	0.00	13.06	296.8	1.09	0.01	1.08	33.8	159.7	125.9	Strong
25	TDD219-SRK-WR-848	8.6	3.91	0.17	13.72	311.8	1.73	0.01	1.72	53.8	183.4	129.7	Strong
Hole ID: TDD224													
26	TDD224-SRK-WR-849	8.7	4.11	0.43	13.50	306.8	0.94	0.01	0.93	29.1	159.0	130.0	Strong
27	TDD224-SRK-WR-850	8.7	3.86	0.14	13.65	310.2	2.68	0.01	2.67	83.4	163.5	80.0	Strong
Hole ID: TDD382													
28	TDD382-SRK-WR-851	9.0	4.03	0.29	13.72	311.8	0.12	<0.01	0.12	3.8	195.3	191.6	Strong
Detection Limits		*0.5*	*0.02*	*0.02*	*0.02*	*0.5*	*0.02*	*0.01*	*0.02*	*0.6*			
Maxxam SOP No:		*7160*	*LECO*	*Calculation*	*LECO*	*Calculation*	*LECO*	*7410*	*Calculation*	*Calculation*	*7150*	*Calculation*	*7150*

P:\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201109_Pactch14Report\Appendices\[App E and F_ ABA and Metals Data.xls]AppE

Notes:

Total sulphur, total carbon and carbonate carbon (CO2; HCl direct method) done by Leco at Acme Labs.

CO2 Analysis: A 0.2g of pulp sample is digested with 6 ml of 1.8N HCl in a hot water bath of 70 ˚C for 30 minutes. The CO2 that evolves is trapped in a gas chamber that is controlled with a stopcock, once the stopcock is opened the CO2 gas is swept into the Leco analyser with an oxygen carrier gas. Leco then determines the CO2 as total-carbon which is calculated to total CO2.

Calculations:

*TOC (Total Organic Carbon) is based on total carbon and CO2 values.

**CaCO3 equivalents is based on carbonate carbon.

***Sulphide sulphur is based on difference between total sulphur and sulphate sulphur.

****MPA (Maximum Potential Acidity) is based on sulphide sulphur .

*****NNP (Net Neutralization Potential) is based on difference between neutralization potential (NP) and MPA.

References:

Reference for Mod ABA NP method (SOP No. 7150): MEND Acid Rock Drainage Prediction Manual, MEND Project 1.16.1b (pages 6.2-11 to 17), March 1991.

Appendix F:
Solid-Phase Trace Element Data (Aqua Regia Digestion), Madrid South

CANTEST
A Maxxam Company
CANTEST Ltd. 4606 Canada Way, Burnaby, BC Canada V5G 1K5 Tel: 604 734 7276 Fax: 604 731 2386 www.cantest.com

Newmont, Hope Bay, Patch-14, 20, 23 & 30-Nov-09
Page 3 of 5

Table 3: Trace Metals Using Aqua Regia Digestion with ICP-MS Finish for Newmont-Hopebay Patch-14 (556 to 677) Composites - December 2009

S. No.	Sample ID	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Hg	Sc	Tl	S	Ga	Se
		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	ppm	%	ppm	ppm
Patch-14 (556 to 677) 122 Samples																																					
Hole: 09PSD151																																					
556	09PSD151-SRK-WR-556	0.5	11.6	1.4	27	<0.1	11.4	8.9	207	1.74	9.4	0.2	8.9	1.0	95	<0.1	0.2	<0.1	7	2.14	0.027	6	74	0.70	46	<0.001	<20	0.65	0.138	0.19	<0.1	<0.01	1.7	<0.1	0.09	2	<0.5
557	09PSD151-SRK-WR-557	0.9	9.5	1.4	33	<0.1	11.0	8.7	259	2.11	3.5	0.2	4.9	0.8	114	<0.1	0.2	<0.1	6	2.98	0.027	5	85	0.95	228	<0.001	<20	0.59	0.113	0.20	<0.1	<0.01	1.6	<0.1	0.06	2	<0.5
558	09PSD151-SRK-WR-558	0.5	9.2	11.3	33	<0.1	10.8	7.9	255	1.83	2.0	0.2	3.8	0.9	97	<0.1	0.3	<0.1	6	2.59	0.028	5	71	0.83	64	<0.001	<20	0.47	0.105	0.15	<0.1	<0.01	1.9	<0.1	<0.05	1	<0.5
559	09PSD151-SRK-WR-559	0.5	12.3	1.2	35	<0.1	9.4	6.6	237	1.59	2.3	0.2	3.2	0.8	74	<0.1	0.1	<0.1	5	2.36	0.028	5	67	0.75	34	<0.001	<20	0.40	0.095	0.14	<0.1	<0.01	1.7	<0.1	<0.05	1	<0.5
560	09PSD151-SRK-WR-560	0.3	6.0	1.4	25	<0.1	11.2	6.2	231	1.60	10.1	0.2	4.0	0.8	70	<0.1	0.2	<0.1	6	2.41	0.026	4	56	0.78	39	<0.001	<20	0.66	0.146	0.16	0.3	<0.01	1.9	<0.1	<0.05	2	<0.5
561	09PSD151-SRK-WR-561	0.2	110.3	1.3	56	<0.1	90.7	37.0	1187	6.75	20.5	<0.1	93.7	<0.1	86	<0.1	0.4	<0.1	87	6.29	0.018	<1	115	3.73	48	0.001	<20	1.77	0.119	0.07	57.9	<0.01	20.7	<0.1	0.12	5	<0.5
562	09PSD151-SRK-WR-562	0.3	7.3	1.1	26	<0.1	5.6	4.4	302	1.64	6.0	0.2	257.5	0.7	40	<0.1	0.3	<0.1	3	2.59	0.025	2	85	0.81	24	<0.001	<20	0.40	0.099	0.11	<0.1	<0.01	0.9	<0.1	<0.05	1	<0.5
563	09PSD151-SRK-WR-563	0.5	21.7	1.1	22	0.1	10.4	6.4	378	1.79	13.8	0.1	33.2	0.6	44	<0.1	0.2	<0.1	4	2.66	0.025	2	97	0.80	30	<0.001	<20	0.43	0.109	0.10	0.4	<0.01	1.2	<0.1	<0.05	1	<0.5
564	09PSD151-SRK-WR-564	0.3	6.6	1.3	24	<0.1	4.8	4.9	488	1.57	6.1	0.2	13.6	0.7	50	<0.1	0.1	<0.1	3	2.14	0.024	3	83	0.58	31	<0.001	<20	0.53	0.125	0.14	<0.1	<0.01	1.0	<0.1	<0.05	1	<0.5
Hole: 09PSD153																																					
565	09PSD153-SRK-WR-565	0.6	14.2	1.1	33	<0.1	11.7	6.3	176	1.48	<0.5	0.2	2.9	0.8	76	<0.1	<0.1	<0.1	6	1.96	0.026	5	92	0.53	46	0.001	<20	0.40	0.086	0.13	<0.1	<0.01	1.1	<0.1	<0.05	2	<0.5
566	09PSD153-SRK-WR-566	0.5	18.0	1.2	38	<0.1	10.6	5.6	190	1.52	0.6	0.2	1.9	0.7	71	<0.1	<0.1	<0.1	5	2.03	0.026	4	98	0.66	61	<0.001	<20	0.34	0.070	0.10	<0.1	<0.01	1.1	<0.1	<0.05	1	<0.5
567	09PSD153-SRK-WR-567	0.5	10.3	0.9	40	<0.1	10.2	6.6	197	1.55	<0.5	0.1	0.7	0.8	67	<0.1	<0.1	<0.1	5	2.01	0.028	4	84	0.67	43	<0.001	<20	0.30	0.057	0.10	<0.1	<0.01	1.0	<0.1	<0.05	1	<0.5
568	09PSD153-SRK-WR-568	0.5	28.4	1.0	41	<0.1	10.0	7.4	228	1.61	1.5	0.1	0.9	0.7	77	<0.1	0.2	<0.1	4	2.13	0.025	3	75	0.72	59	<0.001	<20	0.32	0.053	0.10	<0.1	<0.01	1.1	<0.1	<0.05	1	<0.5
569	09PSD153-SRK-WR-569	0.5	27.2	0.8	37	<0.1	10.1	7.5	254	1.63	1.7	0.1	1.4	0.7	79	<0.1	0.1	<0.1	5	2.11	0.026	4	74	0.66	62	<0.001	<20	0.32	0.055	0.11	<0.1	<0.01	1.2	<0.1	<0.05	1	<0.5
570	09PSD153-SRK-WR-570	0.5	2.4	0.8	36	<0.1	10.7	6.6	250	1.56	<0.5	0.1	0.9	0.7	71	<0.1	<0.1	<0.1	4	2.04	0.028	4	70	0.62	101	<0.001	<20	0.29	0.062	0.10	<0.1	<0.01	1.1	<0.1	<0.05	1	<0.5
571	09PSD153-SRK-WR-571	0.5	5.8	0.9	38	<0.1	8.8	6.2	253	1.58	0.6	0.2	1.2	0.7	78	<0.1	<0.1	<0.1	4	2.28	0.026	4	77	0.69	55	<0.001	<20	0.29	0.066	0.12	<0.1	<0.01	1.0	<0.1	<0.05	1	<0.5
572	09PSD153-SRK-WR-572	0.5	23.7	1.2	46	<0.1	9.8	6.4	249	1.56	<0.5	0.1	0.9	0.7	87	<0.1	<0.1	<0.1	5	2.06	0.025	5	88	0.64	64	<0.001	<20	0.39	0.086	0.15	<0.1	<0.01	1.0	<0.1	<0.05	2	<0.5
573	09PSD153-SRK-WR-573	0.4	60.8	3.5	43	<0.1	10.9	7.9	226	1.69	3.6	0.1	8.9	0.7	89	<0.1	<0.1	0.5	4	1.99	0.025	5	91	0.61	38	<0.001	<20	0.46	0.085	0.15	<0.1	<0.01	1.1	<0.1	<0.05	2	<0.5
574	09PSD153-SRK-WR-574	0.4	22.1	1.3	37	<0.1	11.2	7.4	199	1.65	3.6	0.2	8.2	0.7	93	<0.1	0.1	<0.1	4	2.02	0.028	5	93	0.57	42	<0.001	<20	0.39	0.082	0.16	<0.1	<0.01	1.2	<0.1	0.09	1	<0.5
575	09PSD153-SRK-WR-575	1.4	61.6	1.2	38	<0.1	11.3	7.4	195	1.60	1.8	0.2	1.7	0.8	118	<0.1	0.1	0.4	5	2.01	0.027	5	87	0.62	63	<0.001	<20	0.35	0.071	0.17	<0.1	<0.01	1.2	<0.1	<0.05	1	<0.5
576	09PSD153-SRK-WR-576	1.1	76.1	1.3	36	0.1	10.3	7.3	192	1.69	2.9	0.2	11.7	0.7	113	<0.1	0.1	0.2	4	2.12	0.026	5	88	0.63	113	<0.001	<20	0.36	0.071	0.18	<0.1	<0.01	1.2	<0.1	<0.05	2	<0.5
577	09PSD153-SRK-WR-577	0.5	39.0	1.5	28	0.1	10.4	7.2	175	1.76	18.3	0.2	89.9	0.8	84	<0.1	0.1	0.3	4	2.19	0.028	4	81	0.65	39	<0.001	<20	0.35	0.063	0.16	<0.1	<0.01	1.2	<0.1	0.16	1	<0.5
578	09PSD153-SRK-WR-578	1.2	41.9	1.0	30	<0.1	11.6	6.4	272	1.84	6.0	0.1	1.1	0.7	102	<0.1	0.2	0.3	5	3.31	0.025	4	95	1.15	32	<0.001	<20	0.34	0.074	0.14	<0.1	<0.01	1.2	<0.1	<0.05	1	<0.5
579	09PSD153-SRK-WR-579	0.9	53.8	1.0	23	<0.1	12.5	7.4	250	1.78	12.9	0.2	0.6	0.7	66	<0.1	0.3	0.4	4	2.66	0.028	5	109	0.85	27	<0.001	<20	0.45	0.104	0.12	<0.1	<0.01	1.4	<0.1	<0.05	1	<0.5
580	09PSD153-SRK-WR-580	0.4	156.4	1.5	91	<0.1	93.7	41.0	1259	6.54	143.7	<0.1	82.8	<0.1	91	0.1	0.5	0.3	37	6.99	0.018	<1	113	2.50	17	0.001	<20	0.69	0.125	0.07	0.2	<0.01	15.1	<0.1	0.18	2	0.6
581	09PSD153-SRK-WR-581	0.5	67.3	1.8	57	0.2	46.4	23.4	1371	5.66	82.1	<0.1	276.1	<0.1	99	0.2	1.0	<0.1	25	8.56	0.014	<1	152	2.60	8	0.002	<20	0.25	0.073	0.03	0.2	<0.01	11.7	<0.1	0.25	<1	<0.5
582	09PSD153-SRK-WR-582	0.4	145.8	1.6	75	0.2	96.0	44.5	1262	6.72	217.9	<0.1	443.4	<0.1	68	<0.1	0.8	<0.1	48	7.07	0.020	<1	134	2.48	11	<0.001	<20	0.94	0.130	0.05	79.8	<0.01	14.6	<0.1	0.69	2	1.1
583	09PSD153-SRK-WR-583	0.4	82.5	1.4	48	0.3	63.3	32.5	1276	5.55	142.7	<0.1	739.4	<0.1	71	0.1	0.7	<0.1	30	8.64	0.014	<1	115	2.81	8	0.001	<20	0.31	0.093	0.03	0.4	<0.01	11.5	<0.1	0.50	<1	0.6
584	09PSD153-SRK-WR-584	0.3	118.2	0.9	70	<0.1	85.2	39.2	1404	6.92	282.2	<0.1	32.6	<0.1	59	0.1	0.3	<0.1	51	7.75	0.017	<1	112	2.72	8	<0.001	<20	0.88	0.128	0.04	0.4	<0.01	16.1	<0.1	0.37	2	0.6
585	09PSD153-SRK-WR-585	0.4	80.6	1.3	68	0.1	77.3	29.4	1498	6.68	514.8	<0.1	43.8	<0.1	66	0.1	0.4	<0.1	46	8.68	0.014	<1	176	2.94	9	<0.001	<20	0.75	0.105	0.04	0.3	<0.01	13.9	<0.1	0.48	2	0.6
586	09PSD153-SRK-WR-586	0.2	114.3	0.9	70	<0.1	83.5	36.7	1406	6.63	144.0	<0.1	7.2	<0.1	55	0.1	0.3	<0.1	55	7.48	0.017	<1	115	2.68	10	0.002	<20	0.99	0.114	0.04	0.4	<0.01	16.1	<0.1	0.21	3	<0.5
587	09PSD153-SRK-WR-587	0.5	95.8	1.9	57	0.5	56.8	25.9	1411	6.19	123.5	<0.1	2620.7	<0.1	61	0.1	0.5	<0.1	38	9.40	0.013	<1	146	3.14	7	<0.001	<20	0.37	0.098	0.03	0.6	<0.01	10.5	<0.1	0.44	1	<0.5
588	09PSD153-SRK-WR-588	0.3	120.7	1.0	65	0.1	77.5	37.3	1412	6.90	135.7	<0.1	125.7	<0.1	56	0.1	0.3	<0.1	57	8.42	0.019	<1	119	3.05	9	<0.001	<20	1.03	0.124	0.04	1.0	<0.01	17.8	<0.1	0.28	3	<0.5
589	09PSD153-SRK-WR-589	0.7	15.0	1.3	18	0.4	22.8	9.1	449	2.28	95.3	<0.1	908.3	<0.1	32	<0.1	0.3	<0.1	10	2.96	0.044	<1	252	1.03	4	<0.001	<20	0.11	0.036	0.02	>100	<0.01	5.0	<0.1	0.49	<1	<0.5
590	09PSD153-SRK-WR-590	0.2	123.2	1.5	56	0.5	95.1	41.9	1124	6.58	267.1	<0.1	733.6	<0.1	60	0.1	0.5	<0.1	44	6.87	0.018	<1	95	2.97	11	<0.001	<20	0.86	0.121	0.07	2.2	<0.01	15.9	<0.1	1.25	2	<0.5
591	09PSD153-SRK-WR-591	0.7	44.9	2.8	26	0.7	51.3	22.6	663	3.90	275.5	<0.1	2757.8	<0.1	50	<0.1	0.4	0.2	15	4.69	0.037	<1	239	1.61	8	<0.001	<20	0.24	0.068	0.04	>100	<0.01	7.6	<0.1	1.57	<1	0.8
592	09PSD153-SRK-WR-592	0.6	93.2	2.2	52	0.2	87.4	39.8	1073	5.87	152.8	<0.1	281.8	<0.1	70	0.1	0.2	<0.1	37	7.66	0.006	<1	162	3.07	13	<0.001	<20	0.63	0.112	0.06	3.6	<0.01	16.1	<0.1	0.79	1	0.5
593	09PSD153-SRK-WR-593	0.6	240.2	2.7	76	0.6	64.6	49.8	1248	7.78	167.8	<0.1	2563.1	<0.1	61	<0.1	0.2	<0.1	56	6.69	0.012	<1	177	2.52	12	<0.001	<20	0.66	0.079	0.06	0.8	<0.01	14.3	<0.1	1.74	2	1.3
594	09PSD153-SRK-WR-594	0.6	126.9	2.4	52	0.3	63.5	31.9	1337	5.70	157.7	<0.1	1385.4	0.1	60	<0.1	0.2	<0.1	22	6.78	0.011	<1	146	2.49	10	<0.001	<20	0.28	0.084	0.05	0.6	<0.01	9.3	<0.1	0.73	<1	1.1
595	09PSD153-SRK-WR-595	1.0	374.1	233.4	121	36.2	13.5	7.0	190	1.31	188.3	<0.1	>100000.0	0.2	27	0.2	28.5	0.1	5	1.61	0.006	<1	186	0.51	4	<0.001	<20	0.05	0.021	0.02	83.0	0.19	1.5	<0.1	0.32	<1	1.8
596	09PSD153-SRK-WR-596	0.5	22.1	2.2	46	0.2	13.6	7.3	347	1.99	32.6	0.2	213.0	0.6	42	<0.1	0.3	<0.1	4	3.10	0.024	2	113	0.99	20	<0.001	<20	0.35	0.094	0.09	4.2	<0.01	1.3	<0.1	0.13	<1	<0.5
597	09PSD153-SRK-WR-597	0.4	7.9	1.9	27	<0.1	6.5	4.6	276	1.61	10.8	0.2	1.1	0.7	65	<0.1	0.2	<0.1	3	3.20	0.025	4	74	0.95	26	<0.001	<20	0.38	0.089	0.11	0.3	<0.01	0.9	<0.1	<0.05	1	<0.5
598	09PSD153-SRK-WR-598	0.5	16.5	1.8	73	<0.1	7.6	4.7	306	1.77	10.8	0.2	0.9	0.7	86	0.2	0.5	<0.1	3	3.22	0.023	3	93	0.98	27	<0.001	<20	0.37	0.084	0.11	0.1	<0.01	1.0	<0.1	<0.05	1	<0.5
Hole: 09PSD164																																					
599	09PSD164-SRK-WR-599	0.6	25.7	0.9	31	<0.1	13.7	7.1	246	1.71	8.7	0.2	1.6	0.7	74	<0.1	0.5	<0.1	5	2.71	0.025	4	88	0.92	33	<0.001	<20	0.41	0.102	0.13	0.3	<0.01	1.5	<0.1	<0.05	1	<0.5
600	09PSD164-SRK-WR-600	0.4	119.2	1.4	63	0.1	64.8	25.6	1172	5.64	70.6	<0.1	10.7	<0.1	114	<0.1	0.3	<0.1	30	9.17	0.014	<1	85	3.23	11	<0.001	<20	0.27	0.085	0.05	0.3	<0.01	13.1	<0.1	0.30	<1	<0.5
601	09PSD164-SRK-WR-601	0.5	30.2	1.4	46	<0.1	29.9	11.4	604	3.14	22.2	0.1	1.7	0.5	95	<0.1	0.7	<0.1	10	6.03	0.020	2	98	2.16	25	<0.001	<20	0.32	0.089	0.07	0.2	<0.01	4.5	<0.1	0.08	<1	<0.5
602	09PSD164-SRK-WR-602	0.2	121.1	0.9	58	<0.1	79.7	38.4	1143	6.47	77.1	<0.1	3.7	<0.1	56	<0.1	0.2	<0.1	37	6.56	0.017	<1	74	2.64	10	<0.001	<20	0.37	0.112	0.05	<0.1	<0.01	16.9	<0.1	0.08	<1	<0.5
603	09PSD164-SRK-WR-603	0.3	127.8	2.3	59	<0.1	86.5	36.8	1278	6.75	90.0	<0.1	13.2	<0.1	60	0.1	0.3	<0.1	41	7.13	0.019	<1	111	2.80	12	<0.001	<20	0.66	0.147	0.06	<0.1	<0.01	18.7	<0.1	0.08	1	<0.5
604	09PSD164-SRK-WR-604	0.4	107.5	1.0	65	<0.1	75.2	23.3	1269	6.23	60.7	<0.1	10.8	<0.1	61	0.1	0.3	<0.1	46	7.85	0.012	<1	146	2.79	8	0.003	<20	0.85	0.143	0.07	<0.1	<0.01	14.5	<0.1	0.08	2	<0.5
605	09PSD164-SRK-WR-605	0.2	129.9	1.1	61	<0.1	93.8	40.8	1405	6.73	134.6	<0.1	18.2	<0.1	57	<0.1	0.3	<0.1	40	7.63	0.019	<1	67	2.69	11	<0.001	<20	0.69	0.133	0.07	<0.1	<0.01	17.6	<0.1	0.25	1	<0.5
606	09PSD164-SRK-WR-606	0.3	67.0	1.5	52	0.7	63.2	26.3	1475	5.89	120.0	<0.1	2310.3	0.2	91	<0.1	0.2	<0.1	31	9.72	0.024	<1	69	3.65	14	<0.001	<20	0.29	0.083	0.06	10.3	<0.01	10.2	<0.1	0.33	<1	<0.5
607	09PSD164-SRK-WR-607	0.2	107.5	3.5	60	<0.1	50.8	27.2	1811	7.59	103.7	<0.1	303.0	<0.1	81	0.1	0.2	<0.1	36	8.69	0.011	<1	52	3.23	12	<0.001	<20	0.34	0.094	0.07	0.7	<0.01	14.6	<0.1	0.28	<1	<0.5
608	09PSD164-SRK-WR-608	0.6	101.1	4.4	48	1.6	84.3	25.6	1032	5.20	435.7	<0.1	4997.1	0.2	88	<0.1	0.3	0.1	15	6.76	0.012	<1	178	2.19	17	<0.001	<20	0.38	0.105	0.08	2.2	<0.01	7.0	<0.1	1.58	1	0.9
609	09PSD164-SRK-WR-609	0.3	79.3	1.5	56	<0.1	66.2	28.1	1186	5.49	64.2	<0.1	53.0	0.1	99	<0.1	0.3	<0.1	29	6.96	0.017	<1	104	2.80	39	<0.001	<20	0.38	0.099	0.07	2.7	<0.01	11.2	<0.1	0.08	<1	<0.5
610	09PSD164-SRK-WR-610	0.8	106.4	1.3	37	<0.1	32.0	13.6	525	2.73	27.3	0.1	2.8	0.5	81	<0.1	0.3	0.1	8	3.73	0.024	2	95	1.05	47	<0.001	<20	0.44	0.114	0.11	<0.1	<0.01	3.5	<0.1	0.14	1	<0.5
611	09PSD164-SRK-WR-611	0.5	17.4	1.4	35	<0.1	25.0	11.7	479	2.46	4.7	0.1	7.6	0.5	108	<0.1	0.1	<0.1	10	3.51	0.023	2	72	1.06	129	<0.001	<20	0.68	0.133	0.19	<0.1	<0.01	3.5	<0.1	<0.05	2	<0.5
612	09PSD164-SRK-WR-612	0.3	49.8	2.5	83	<0.1	9.2	19.9	896	4.36	3.8	0.3	2.1	1.6	178	<0.1	0.1	0.1	34	4.20	0.138	11	27	1.69	227	0.003	<20	1.28	0.114	0.19	<0.1	<0.01	4.8	<0.1	0.27	4	<0.5
613	09PSD164-SRK-WR-613	0.6	35.7	1.8	45	<0.1	25.1	12.8	546	2.72	2.9	0.2	0.7	0.6	106	<0.1	0.1	<0.1	11	3.59	0.034	3	103	1.10	51	<0.001	<20	0.63	0.121	0.17	<0.1	<0.01	3.3	<0.1	<0.05	2	<0.5

Appendix F: Solid-Phase Trace Element Data (Aqua Regia Digestion), Madrid South

S. No.	Sample ID	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Hg	Sc	Tl	S	Ga	Se
		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	ppm	%	ppm	ppm
Hole: 09PSD183																																					
614	09PSD183-SRK-WR-614	0.6	25.8	18.0	33	<0.1	9.9	6.4	308	1.67	2.5	0.2	0.7	0.7	31	<0.1	0.2	0.2	4	2.57	0.027	3	42	0.82	16	<0.001	<20	0.41	0.111	0.09	<0.1	<0.01	1.5	<0.1	<0.05	1	<0.5
615	09PSD183-SRK-WR-615	0.3	101.5	0.4	72	<0.1	59.3	35.0	1254	6.97	14.8	<0.1	5.7	0.2	67	<0.1	0.2	<0.1	117	6.10	0.025	<1	80	2.90	7	0.001	<20	2.42	0.058	0.03	<0.1	<0.01	16.8	<0.1	0.06	7	<0.5
616	09PSD183-SRK-WR-616	0.2	107.3	0.3	60	<0.1	91.5	41.1	1185	7.49	2.4	<0.1	2.4	<0.1	65	<0.1	0.1	<0.1	186	5.89	0.023	1	215	4.21	5	0.008	<20	3.82	0.031	0.02	<0.1	<0.01	21.7	<0.1	<0.05	11	<0.5
617	09PSD183-SRK-WR-617	0.2	138.6	2.3	78	0.1	95.8	41.7	1330	7.21	24.2	<0.1	3.8	<0.1	36	<0.1	0.1	<0.1	160	5.82	0.018	<1	193	3.65	3	0.141	<20	3.86	0.032	0.02	<0.1	<0.01	15.3	<0.1	0.12	8	0.8
618	09PSD183-SRK-WR-618	0.2	136.8	1.2	66	<0.1	77.9	35.3	1014	5.16	8.6	<0.1	2.3	<0.1	36	<0.1	0.2	<0.1	115	3.24	0.017	<1	189	2.63	1	0.273	<20	3.18	0.027	0.02	<0.1	<0.01	7.0	<0.1	0.08	5	<0.5
619	09PSD183-SRK-WR-619	0.1	123.2	0.5	70	<0.1	87.3	40.3	1375	7.08	21.5	<0.1	22.1	<0.1	42	<0.1	0.2	<0.1	201	7.21	0.017	<1	201	3.21	3	0.122	<20	4.31	0.011	<0.01	<0.1	<0.01	21.1	<0.1	0.09	10	<0.5
620	09PSD183-SRK-WR-620	0.1	112.7	0.6	62	<0.1	81.6	39.0	1350	6.70	49.7	<0.1	106.2	<0.1	59	<0.1	0.1	<0.1	87	7.52	0.019	<1	106	3.04	7	0.001	<20	1.66	0.094	0.03	0.1	<0.01	17.8	<0.1	0.15	5	<0.5
621	09PSD183-SRK-WR-621	0.4	11.4	0.9	27	0.1	11.6	7.4	255	1.78	20.4	0.2	358.9	0.9	71	<0.1	0.1	<0.1	6	2.50	0.025	4	84	0.85	29	<0.001	<20	0.39	0.097	0.11	<0.1	<0.01	1.9	<0.1	0.14	1	<0.5
622	09PSD183-SRK-WR-622	0.3	2.3	14.5	27	<0.1	8.6	5.7	209	1.42	0.7	0.1	0.9	1.0	79	<0.1	<0.1	<0.1	7	2.12	0.026	4	80	0.75	38	<0.001	<20	0.36	0.097	0.11	<0.1	<0.01	1.4	<0.1	<0.05	1	<0.5
623	09PSD183-SRK-WR-623	0.4	5.4	0.7	27	<0.1	8.9	6.0	197	1.46	1.1	0.1	<0.5	0.8	83	<0.1	<0.1	<0.1	5	1.94	0.029	4	95	0.62	57	<0.001	<20	0.36	0.089	0.12	<0.1	<0.01	1.3	<0.1	<0.05	1	<0.5
624	09PSD183-SRK-WR-624	0.4	4.4	1.0	32	<0.1	9.2	6.8	237	1.64	1.6	0.2	3.1	0.8	89	<0.1	0.1	<0.1	6	2.19	0.026	4	90	0.68	71	<0.001	<20	0.43	0.098	0.16	<0.1	<0.01	1.6	<0.1	<0.05	1	<0.5
625	09PSD183-SRK-WR-625	0.5	6.6	0.9	30	<0.1	9.2	5.8	232	1.47	0.7	0.1	7.2	0.8	81	<0.1	<0.1	<0.1	6	2.09	0.027	4	79	0.65	99	<0.001	<20	0.37	0.103	0.11	<0.1	<0.01	1.4	<0.1	<0.05	1	<0.5
626	09PSD183-SRK-WR-626	0.6	13.2	1.1	33	<0.1	11.2	7.1	241	1.69	1.5	0.2	1.8	0.8	97	<0.1	<0.1	<0.1	5	2.05	0.026	4	85	0.77	44	<0.001	<20	0.39	0.097	0.11	<0.1	<0.01	1.5	<0.1	<0.05	2	<0.5
Hole: 09PSD205																																					
627	09PSD205-SRK-WR-627	0.7	103.0	1.0	112	<0.1	117.2	42.5	1139	7.07	0.8	<0.1	2.6	<0.1	101	0.1	<0.1	<0.1	207	5.75	0.018	1	246	4.53	151	0.008	<20	4.49	0.011	<0.01	<0.1	<0.01	23.9	<0.1	<0.05	12	<0.5
628	09PSD205-SRK-WR-628	0.3	79.6	0.8	67	<0.1	110.4	37.8	1339	6.52	1.9	<0.1	3.7	<0.1	84	<0.1	0.2	<0.1	129	6.66	0.018	1	178	4.31	29	0.003	<20	3.71	0.019	0.08	<0.1	<0.01	13.9	<0.1	<0.05	8	<0.5
629	09PSD205-SRK-WR-629	0.3	119.5	0.5	59	<0.1	114.5	36.8	1233	6.50	1.7	<0.1	2.3	<0.1	83	<0.1	0.2	0.5	193	7.09	0.019	1	232	3.81	13	0.092	<20	4.40	0.010	0.01	<0.1	<0.01	21.0	<0.1	<0.05	11	<0.5
630	09PSD205-SRK-WR-630	0.1	62.4	0.8	56	<0.1	91.3	35.1	1162	5.78	2.6	<0.1	2.2	0.2	107	0.1	0.3	0.2	163	6.54	0.031	4	197	3.41	78	0.103	<20	3.83	0.016	0.01	<0.1	<0.01	15.4	<0.1	<0.05	10	<0.5
631	09PSD205-SRK-WR-631	0.2	76.4	1.0	56	<0.1	88.5	32.6	1122	5.58	4.9	<0.1	2.2	0.1	119	<0.1	0.3	0.1	106	7.13	0.018	1	147	2.99	26	0.002	<20	3.19	0.046	0.08	<0.1	<0.01	11.0	<0.1	<0.05	8	<0.5
632	09PSD205-SRK-WR-632	0.3	38.6	1.3	68	<0.1	9.4	18.4	627	4.54	1.3	0.2	2.5	1.4	75	<0.1	0.2	<0.1	55	3.90	0.135	22	17	1.96	76	0.003	<20	2.93	0.033	0.15	<0.1	<0.01	3.7	<0.1	<0.05	9	<0.5
633	09PSD205-SRK-WR-633	0.2	71.6	1.0	58	<0.1	107.5	37.0	1399	6.55	3.5	<0.1	1.8	<0.1	99	<0.1	0.1	<0.1	100	7.79	0.021	1	143	3.10	19	0.001	<20	2.85	0.062	0.09	<0.1	<0.01	11.1	<0.1	0.07	7	<0.5
634	09PSD205-SRK-WR-634	0.3	120.0	1.0	67	<0.1	87.8	31.2	1019	5.60	1.8	<0.1	0.9	0.1	74	<0.1	0.1	0.1	95	5.99	0.020	1	151	3.31	15	0.001	<20	2.65	0.055	0.05	<0.1	<0.01	12.9	<0.1	<0.05	7	<0.5
635	09PSD205-SRK-WR-635	0.9	15.7	1.0	35	<0.1	15.5	9.5	488	2.21	2.9	0.1	1.4	0.5	65	<0.1	0.2	0.1	6	3.38	0.026	2	89	1.09	26	<0.001	<20	0.30	0.070	0.08	<0.1	<0.01	2.2	<0.1	<0.05	<1	<0.5
636	09PSD205-SRK-WR-636	0.6	22.2	1.0	42	<0.1	22.6	12.9	505	2.50	7.8	0.1	2.9	0.4	74	<0.1	0.2	<0.1	6	3.51	0.026	2	102	1.03	34	<0.001	<20	0.29	0.061	0.07	<0.1	<0.01	2.9	<0.1	0.08	<1	<0.5
637	09PSD205-SRK-WR-637	0.7	18.5	0.8	28	<0.1	15.8	8.7	410	2.06	10.0	0.1	3.8	0.5	55	<0.1	0.4	<0.1	6	2.89	0.025	2	94	0.99	36	<0.001	<20	0.36	0.068	0.07	<0.1	<0.01	2.0	<0.1	<0.05	1	<0.5
638	09PSD205-SRK-WR-638	0.4	351.8	1.1	74	0.1	109.5	38.7	1450	6.17	1.9	<0.1	2.4	<0.1	107	0.1	0.1	<0.1	171	6.17	0.019	<1	214	3.57	2	0.017	<20	4.09	0.014	<0.01	<0.1	<0.01	18.2	<0.1	<0.05	10	0.7
639	09PSD205-SRK-WR-639	0.2	106.0	0.6	50	<0.1	96.5	33.3	1454	6.19	38.5	<0.1	16.8	<0.1	65	<0.1	0.2	<0.1	84	7.87	0.016	<1	169	3.97	6	0.002	<20	1.89	0.045	0.02	<0.1	<0.01	17.0	<0.1	0.16	5	0.6
640	09PSD205-SRK-WR-640	0.2	208.0	0.4	59	<0.1	105.2	39.4	1249	6.29	19.0	<0.1	2.4	<0.1	48	<0.1	<0.1	<0.1	114	6.42	0.017	<1	179	3.62	2	0.002	<20	2.35	0.042	<0.01	<0.1	<0.01	19.9	<0.1	0.14	6	0.5
641	09PSD205-SRK-WR-641	0.2	109.0	0.4	61	<0.1	95.2	38.6	1291	6.41	18.9	<0.1	2.6	<0.1	44	<0.1	<0.1	<0.1	119	6.46	0.017	<1	187	3.90	3	0.001	<20	2.52	0.039	<0.01	<0.1	<0.01	20.1	<0.1	0.08	6	<0.5
642	09PSD205-SRK-WR-642	0.3	99.5	0.3	61	<0.1	97.0	37.2	1185	6.10	28.3	<0.1	18.8	<0.1	45	0.1	<0.1	<0.1	99	6.32	0.016	<1	204	3.56	2	0.001	<20	2.19	0.046	0.01	<0.1	<0.01	18.7	<0.1	0.16	6	0.6
643	09PSD205-SRK-WR-643	0.2	99.0	0.5	56	<0.1	93.1	36.4	1229	5.82	31.4	<0.1	65.6	<0.1	54	<0.1	<0.1	<0.1	72	7.33	0.019	<1	162	3.76	13	<0.001	<20	1.69	0.048	0.03	0.2	<0.01	12.4	<0.1	0.20	4	<0.5
644	09PSD205-SRK-WR-644	0.5	99.2	0.3	60	<0.1	190.4	45.6	1159	6.38	3.6	<0.1	7.1	<0.1	30	<0.1	0.1	<0.1	110	5.46	0.014	<1	214	4.91	4	0.001	<20	3.40	0.035	0.02	<0.1	<0.01	16.1	<0.1	<0.05	7	<0.5
645	09PSD205-SRK-WR-645	0.3	62.5	0.3	48	<0.1	108.2	34.6	1154	5.13	21.5	<0.1	39.3	<0.1	51	<0.1	<0.1	<0.1	53	7.42	0.008	<1	252	4.03	4	<0.001	<20	1.58	0.050	0.02	0.1	<0.01	11.8	<0.1	0.11	3	<0.5
646	09PSD205-SRK-WR-646	0.2	72.7	0.2	62	<0.1	148.0	47.4	1283	6.17	41.5	<0.1	14.1	0.2	55	<0.1	<0.1	<0.1	99	6.91	0.009	<1	270	4.32	6	0.001	<20	2.53	0.061	0.03	0.2	<0.01	16.6	<0.1	0.09	6	<0.5
647	09PSD205-SRK-WR-647	0.4	78.3	1.4	58	<0.1	44.2	39.7	1482	6.55	51.6	<0.1	31.9	0.2	62	0.3	0.2	<0.1	99	6.95	0.014	<1	101	3.17	6	0.002	<20	1.77	0.070	0.03	0.2	<0.01	21.1	<0.1	0.29	5	0.6
648	09PSD205-SRK-WR-648	0.4	43.0	0.5	33	0.3	16.6	26.1	1643	5.91	42.8	<0.1	9.8	0.2	58	<0.1	<0.1	<0.1	72	6.93	0.014	<1	128	2.51	3	0.002	<20	0.77	0.046	0.01	0.2	<0.01	18.4	<0.1	0.85	3	0.6
649	09PSD205-SRK-WR-649	0.1	101.8	0.3	65	0.2	75.4	45.1	1280	7.23	3.0	<0.1	9.2	0.2	73	<0.1	<0.1	<0.1	224	5.60	0.025	1	193	3.83	3	0.014	<20	4.19	0.010	<0.01	<0.1	<0.01	22.3	<0.1	<0.05	12	<0.5
650	09PSD205-SRK-WR-650	0.1	112.4	0.1	54	<0.1	95.1	43.8	1192	6.58	1.4	<0.1	7.1	0.2	79	<0.1	<0.1	<0.1	216	5.75	0.020	<1	238	4.10	3	0.016	<20	4.50	0.008	<0.01	<0.1	<0.01	23.2	<0.1	<0.05	11	<0.5
651	09PSD205-SRK-WR-651	0.3	106.2	0.2	63	<0.1	96.6	46.2	1338	6.07	27.1	<0.1	22.4	0.2	50	<0.1	<0.1	<0.1	123	6.53	0.016	<1	160	3.99	6	0.002	<20	2.54	0.061	0.03	0.1	<0.01	18.4	<0.1	0.09	7	0.7
652	09PSD205-SRK-WR-652	0.2	112.3	<0.1	65	<0.1	81.7	39.8	1280	6.36	16.1	<0.1	7.7	0.2	31	<0.1	<0.1	<0.1	109	6.48	0.018	<1	133	3.20	15	0.002	<20	2.21	0.080	0.03	<0.1	<0.01	18.3	<0.1	0.06	6	0.5
653	09PSD205-SRK-WR-653	0.2	121.1	<0.1	64	<0.1	90.5	43.9	1271	6.11	2.3	<0.1	12.3	0.2	30	<0.1	<0.1	<0.1	114	6.15	0.020	<1	128	2.93	9	0.002	<20	2.35	0.079	0.03	<0.1	<0.01	17.9	<0.1	<0.05	6	0.6
654	09PSD205-SRK-WR-654	0.2	118.2	<0.1	70	<0.1	89.8	45.3	1353	6.62	2.5	<0.1	7.9	0.2	42	<0.1	<0.1	<0.1	110	6.89	0.019	<1	122	3.17	35	0.001	<20	2.10	0.097	0.02	<0.1	<0.01	18.2	<0.1	0.05	5	<0.5
655	09PSD205-SRK-WR-655	0.2	116.1	0.6	97	<0.1	82.4	39.8	1479	6.71	56.4	<0.1	75.9	0.2	67	0.2	<0.1	<0.1	81	7.14	0.019	<1	104	2.90	9	0.001	<20	1.62	0.086	0.04	0.2	<0.01	16.7	<0.1	0.14	4	<0.5
656	09PSD205-SRK-WR-656	0.4	14.9	0.5	24	<0.1	8.9	6.8	242	1.66	9.2	0.1	6.5	0.7	48	<0.1	0.1	<0.1	6	2.80	0.025	4	61	0.92	29	<0.001	<20	0.36	0.093	0.10	<0.1	<0.01	1.6	<0.1	<0.05	1	<0.5
657	09PSD205-SRK-WR-657	0.5	9.3	1.0	35	<0.1	11.2	6.9	216	1.57	2.3	0.2	<0.5	0.9	74	<0.1	0.1	<0.1	5	2.23	0.028	4	124	0.70	41	<0.001	<20	0.39	0.100	0.12	<0.1	<0.01	1.6	<0.1	<0.05	1	<0.5
658	09PSD205-SRK-WR-658	0.3	7.1	1.0	25	<0.1	10.6	7.0	183	1.56	0.5	0.2	<0.5	1.1	79	<0.1	<0.1	<0.1	6	2.11	0.029	4	107	0.71	41	<0.001	<20	0.40	0.095	0.12	<0.1	<0.01	1.7	<0.1	<0.05	2	<0.5
659	09PSD205-SRK-WR-659	0.3	17.8	1.1	34	<0.1	9.3	7.0	209	1.58	0.8	0.2	<0.5	1.0	90	<0.1	<0.1	<0.1	6	2.19	0.029	4	75	0.71	43	<0.001	<20	0.36	0.083	0.12	<0.1	<0.01	1.6	<0.1	<0.05	1	<0.5
660	09PSD205-SRK-WR-660	0.2	10.1	0.8	30	<0.1	9.0	6.6	210	1.47	0.6	0.1	9.1	0.8	78	<0.1	<0.1	<0.1	6	2.07	0.026	4	78	0.63	49	<0.001	<20	0.32	0.085	0.11	<0.1	<0.01	1.4	<0.1	<0.05	1	<0.5
661	09PSD205-SRK-WR-661	0.4	20.1	0.8	29	<0.1	9.4	6.4	215	1.49	2.5	0.1	3.7	0.8	76	<0.1	<0.1	<0.1	4	1.98	0.027	4	109	0.60	206	<0.001	<20	0.36	0.094	0.12	<0.1	<0.01	1.4	<0.1	<0.05	1	<0.5
662	09PSD205-SRK-WR-662	0.5	19.8	1.2	37	<0.1	10.4	7.6	224	1.73	1.8	0.2	3.0	0.8	81	<0.1	<0.1	<0.1	4	2.32	0.027	4	108	0.69	33	<0.001	<20	0.33	0.085	0.11	<0.1	<0.01	1.5	<0.1	<0.05	1	<0.5
Hole: 09PSD209																																					
663	09PSD209-SRK-WR-663	0.4	49.8	2.8	53	<0.1	26.7	12.3	509	2.41	<0.5	0.1	<0.5	0.5	107	<0.1	<0.1	<0.1	10	2.95	0.025	2	72	0.98	44	<0.001	<20	0.54	0.096	0.11	<0.1	<0.01	3.2	<0.1	<0.05	2	<0.5
664	09PSD209-SRK-WR-664	1.0	56.4	2.5	77	<0.1	26.9	13.4	571	2.60	1.0	0.1	<0.5	0.5	113	<0.1	0.1	<0.1	9	3.56	0.025	3	73	1.07	56	<0.001	<20	0.48	0.094	0.10	<0.1	<0.01	3.3	<0.1	<0.05	2	<0.5
665	09PSD209-SRK-WR-665	0.5	27.7	4.6	70	<0.1	151.0	27.8	712	3.44	6.4	0.9	<0.5	5.7	324	<0.1	0.2	<0.1	72	5.32	0.155	48	235	3.54	596	0.007	<20	2.21	0.043	0.03	<0.1	0.01	9.9	<0.1	0.25	9	<0.5
666	09PSD209-SRK-WR-666	0.5	33.5	1.3	48	<0.1	18.3	10.3	373	2.14	1.5	0.1	<0.5	0.7	83	<0.1	0.1	<0.1	8	2.67	0.027	4	86	0.85	69	<0.001	<20	0.51	0.086	0.11	<0.1	<0.01	2.4	<0.1	<0.05	2	<0.5
667	09PSD209-SRK-WR-667	0.5	21.5	1.4	35	<0.1	23.9	12.0	392	2.34	7.3	0.1	5.3	0.4	79	<0.1	0.2	<0.1	7	3.18	0.022	2	101	0.87	49	<0.001	<20	0.39	0.099	0.10	0.5	<0.01	2.5	<0.1	0.15	1	<0.5
668	09PSD209-SRK-WR-668	0.6	19.5	1.2	36	<0.1	19.4	9.8	357	2.08	9.0	0.2	3.3	0.6	72	<0.1	0.1	<0.1	6	2.76	0.023	3	99	0.80	23	<0.001	<20	0.43	0.110	0.09	0.5	<0.01	2.0	<0.1	0.12	1	<0.5
669	09PSD209-SRK-WR-669	0.5	20.3	1.4	47	<0.1	15.8	8.8	338	1.93	3.0	0.1	1.0	0.6	73	<0.1	0.1	<0.1	5	2.56	0.024	3	92	0.74	35	<0.001	<20	0.37	0.088	0.10	0.5	<0.01	1.7	<0.1	0.23	1	<0.5
670	09PSD209-SRK-WR-670	0.5	31.7	1.9	56	<0.1	22.2	11.5	421	2.31	4.3	0.1	1.8	0.5	77	0.1	0.3	0.1	8	3.03	0.024	2	92	0.87	48	<0.001	<20	0.42	0.102	0.09	0.5	<0.01	2.2	<0.1	0.25	2	<0.5
671	09PSD209-SRK-WR-671	0.2	68.8	1.0	63	<0.1	97.4	38.5	1170	6.48	4.3	<0.1	4.9	<0.1	124	<0.1	<0.1	<0.1	93	7.25	0.018	<1	196	3.75	12	<0.001	<20	2.08	0.072	0.04	0.5	<0.01	16.3	<0.1	0.11	5	<0.5
672	09PSD209-SRK-WR-672	0.3	50.0	1.3	51	<0.1	79.0	22.2	713	3.73	1.6	<0.1	1.5	0.4	83	<0.1	<0.1	<0.1	33	5.08	0.019	1	139	2.06	33	<0.001	<20	1.16	0.090	0.07	0.5	<0.01	6.7	<0.1	<0.05	3	<0.5
673	09PSD209-SRK-WR-673	0.3	13.0	1.5	36	<0.1	32.6	10.4	434	2.13	4.2	<0.1	<0.5	0.6	68	<0.1	<0.1	<0.1	7	3.70	0.031	3	74	1.00	29	<0.001	<20	0.47	0.099	0.10	0.5	<0.01	2.3	<0.1	<0.05	1	<0.5
674	09PSD209-SRK-WR-674	0.4	23.4	1.8	31	<0.1	13.5	7.7	307	1.86	10.6	<0.1	0.9	0.5	76	<0.1	<0.1	<0.1	4	2.62	0.023	3	70	0.74	27	<0.001	<20	0.40	0.097	0.09	0.6	<0.01	1.5	<0.1	<0.05	1	<0.5
675	09PSD209-SRK-WR-675	0.6	39.9	1.6	37	<0.1	21.9	9.9	493	2.50	31.7	<0.1	4.5	0.4	73	<0.1	0.4	<0.1	6	4.71	0.021	3	57	1.40	26	<0.001	<20	0.39	0.091	0.09	0.6	<0.01	2.4	<0.1	<0.05	1	<0.5
676	09PSD209-SRK-WR-676	0.6	45.5	1.8	28	0.2	29.1	16.5	521	2.86	62.4	<0.1	318.5	0.3	40	<0.1	0.1	<0.1	12	3.88	0.014	<1	197	1.38	12	<0.001	<20	0.30	0.071	0.06	2.8	<0.01	4.8	<0.1	0.43	<1	0.6
677	09PSD209-SRK-WR-677	0.2	115.3	1.4	60	<0.1	83.2	35.8	1351	6.82	115.3	<0.1	12.2	<0.1	49	<0.1	0.2	<0.1	37	7.98	0.016	<1	81	3.05	8	<0.001	<20	0.58	0.098	0.05	0.5	<0.01	14.8	<0.1	0.19	1	0.6

Appendix F: Solid-Phase Trace Element Data (Aqua Regia Digestion), Madrid South

S. No.	Sample ID	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Hg	Sc	Tl	S	Ga	Se
		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	ppm	%	ppm	ppm
QAQC																																					
Duplicates																																					
577	09PSD153-SRK-WR-577	0.5	44.1	1.4	30	0.2	10.2	7.1	164	1.71	18.6	0.2	133	0.7	81	<0.1	<0.1	0.3	3	2.17	0.026	4	78	0.63	41	<0.001	<20	0.35	0.062	0.16	<0.1	<0.01	1.3	<0.1	0.16	1	<0.5
583	09PSD153-SRK-WR-583	0.4	82.0	1.4	51	0.4	61.9	31.8	1289	5.64	139.2	<0.1	1021.5	<0.1	71	0.1	0.8	<0.1	30	8.72	0.013	<1	118	2.84	8	<0.001	<20	0.32	0.092	0.03	0.5	<0.01	11.7	<0.1	0.51	<1	0.5
594	09PSD153-SRK-WR-594	0.6	129.1	2.6	53	0.5	63.6	32.3	1346	5.61	166.4	<0.1	2114.1	0.2	61	<0.1	0.2	<0.1	22	6.73	0.013	<1	146	2.47	10	<0.001	<20	0.29	0.082	0.05	0.7	<0.01	9.6	<0.1	0.74	<1	1.0
601	09PSD164-SRK-WR-601	0.6	30.4	1.3	43	<0.1	29.5	11.4	608	3.03	21.6	0.1	7.8	0.5	86	<0.1	0.1	<0.1	8	6.16	0.019	2	88	2.08	25	<0.001	<20	0.30	0.085	0.07	<0.1	<0.01	4.6	<0.1	0.08	<1	<0.5
	09PSD164-SRK-WR-601Dup	0.5	33.2	1.6	48	<0.1	30.4	12.3	612	3.14	23.2	0.1	6	0.5	91	<0.1	0.2	<0.1	8	6.23	0.02	2	90	2.12	25	<0.001	<20	0.31	0.087	0.07	0.1	<0.01	4.5	<0.1	0.08	<1	<0.5
608	09PSD164-SRK-WR-608	0.5	98.1	4.5	49	1.8	82.3	26.8	1046	5.26	440.4	<0.1	5324.1	0.2	90	0.1	0.3	0.1	15	6.78	0.011	<1	181	2.21	17	<0.001	<20	0.38	0.105	0.08	2.2	<0.01	7.3	<0.1	1.60	<1	0.9
644	09PSD205-SRK-WR-644	0.1	92.6	0.3	62	<0.1	188.3	46.6	1147	6.09	3.5	<0.1	5.1	<0.1	31	0.1	<0.1	<0.1	108	5.33	0.015	<1	213	4.81	4	0.002	<20	3.37	0.035	0.02	0.1	<0.01	16.1	<0.1	<0.05	7	<0.5
673	09PSD209-SRK-WR-673	0.3	12.3	1.4	35	<0.1	31.9	10.8	430	2.13	4.7	0.1	<0.5	0.6	67	<0.1	0.1	<0.1	7	3.65	0.033	3	75	1.00	29	<0.001	<20	0.48	0.099	0.10	0.5	<0.01	2.2	<0.1	<0.05	1	<0.5
Reference Material (1)																																					
STD OREAS45PA (1)		1.2	564.7	20.2	119	0.3	300.9	103.6	1076	16.68	4.5	1.3	37.8	7.2	16	0.1	0.4	0.2	218	0.24	0.035	16	773	0.12	192	0.154	<20	3.34	0.003	0.08	<0.1	0.03	43.4	<0.1	<0.05	18	0.6
STD OREAS45PA (2)		1.4	570.4	19.4	118	0.3	301.4	102.6	1089	16.86	4.4	1.1	43.3	6.5	15	<0.1	0.5	0.2	221	0.24	0.034	16	774	0.13	188	0.147	<20	3.43	0.004	0.08	<0.1	0.03	44.4	<0.1	<0.05	18	0.7
STD OREAS45PA (3)		1.3	578.7	18.4	114	0.3	297.7	96.7	1081	16.95	4.3	1.2	37.3	6.7	15	0.1	0.4	0.2	218	0.24	0.033	16	772	0.13	175	0.149	<20	3.36	0.005	0.08	<0.1	0.03	43.1	<0.1	<0.05	17	<0.5
STD OREAS45PA (4)		1.1	611.3	16.0	113	0.2	311.7	101.2	1092	16.12	3.6	1.0	34.9	5.8	15	<0.1	0.4	0.2	221	0.24	0.033	16	791	0.14	172	0.168	<20	3.71	0.002	0.08	<0.1	0.02	45.9	<0.1	<0.05	15	0.7
STD OREAS45PA (5)		1.3	636.2	18.8	119	0.3	322.8	114.0	1122	16.82	4.8	1.2	37.3	6.7	14	0.1	0.3	0.2	236	0.24	0.036	16	869	0.10	186	0.156	<20	3.63	0.005	0.08	<0.1	0.03	43.2	<0.1	<0.05	17	<0.5
STD OREAS45PA (6)		1.2	622.0	17.3	120	0.3	310.9	111.8	1148	16.37	4.2	1.1	43.2	6.2	15	0.1	0.4	0.2	223	0.24	0.036	16	863	0.11	205	0.142	<20	3.58	0.004	0.08	<0.1	0.02	43.9	<0.1	<0.05	17	0.8
STD OREAS45PA (7)		1.4	565.9	20.8	114	0.3	290.1	105.0	1059	17.62	4.5	1.3	38.5	7.3	14	<0.1	0.5	0.2	217	0.23	0.036	16	753	0.12	197	0.155	<20	3.35	0.007	0.07	<0.1	0.03	47.4	<0.1	<0.05	16	0.6
STD OREAS45PA (8)		1.0	532.6	19.0	108	0.3	282.9	98.4	1012	16.40	3.3	1.2	35.1	6.5	14	0.1	0.2	0.2	206	0.23	0.031	16	772	0.11	176	0.154	<20	3.29	0.006	0.07	<0.1	<0.01	41.4	<0.1	<0.05	16	<0.5
True Value STD OREAS45PA		**0.9**	**600**	**19**	**119**	**0.3**	**281**	**104**	**1130**	**16.559**	**4.2**	**1.2**	**43**	**6**	**14**	**0.09**	**0.13**	**0.18**	**221**	**0.2411**	**0.034**	**16.2**	**873**	**0.095**	**187**	**0.124**		**3.34**	**0.011**	**0.0665**	**0.011**	**0.03**	**43**	**0.07**	**0.03**	**16.8**	**0.54**
Percent Difference (1)		33.3	-5.9	6.3	0.0	0.0	7.1	-0.4	-4.8	0.7	7.1	8.3	-12.1	20.0	14.3	11.1	207.7	11.1	-1.4	-0.5	2.9	-1.2	-11.5	26.3	2.7	24.2		0.0	-72.7	20.3		0.0	0.9	0.0	0.0	7.1	11.1
Percent Difference (2)		55.6	-4.9	2.1	-0.8	0.0	7.3	-1.3	-3.6	1.8	4.8	-8.3	0.7	8.3	7.1	0.0	284.6	11.1	0.0	-0.5	0.0	-1.2	-11.3	36.8	0.5	18.5		2.7	-63.6	20.3		0.0	3.3	0.0	0.0	7.1	29.6
Percent Difference (3)		44.4	-3.5	-3.2	-4.2	0.0	5.9	-7.0	-4.3	2.4	2.4	0.0	-13.3	11.7	7.1	11.1	207.7	11.1	-1.4	-0.5	-2.9	-1.2	-11.6	36.8	-6.4	20.2		0.6	-54.5	20.3		0.0	0.2	0.0	0.0	1.2	-7.4
Percent Difference (4)		22.2	1.9	-15.8	-5.0	-33.3	10.9	-2.7	-3.4	-2.7	-14.3	-16.7	-18.8	-3.3	7.1	0.0	207.7	11.1	0.0	-0.5	-2.9	-1.2	-9.4	47.4	-8.0	35.5		11.1	-81.8	20.3		-33.3	6.7	0.0	0.0	-10.7	29.6
Percent Difference (5)		44.4	6.0	-1.1	0.0	0.0	14.9	9.6	-0.7	1.6	14.3	0.0	-13.3	11.7	0.0	11.1	130.8	11.1	6.8	-0.5	5.9	-1.2	-0.5	5.3	-0.5	25.8		8.7	-54.5	20.3		0.0	0.5	0.0	0.0	1.2	-7.4
Percent Difference (6)		33.3	3.7	-8.9	0.8	0.0	10.6	7.5	1.6	-1.1	0.0	-8.3	0.5	3.3	7.1	11.1	207.7	11.1	0.9	-0.5	5.9	-1.2	-1.1	15.8	9.6	14.5		7.2	-63.6	20.3		-33.3	2.1	0.0	0.0	1.2	48.1
Percent Difference (7)		55.6	-5.7	9.5	-4.2	0.0	3.2	1.0	-6.3	6.4	7.1	8.3	-10.5	21.7	0.0	0.0	284.6	11.1	-1.8	-4.6	5.9	-1.2	-13.7	26.3	5.3	25.0		0.3	-36.4	5.3		0.0	10.2	0.0	0.0	-4.8	11.1
Percent Difference (8)		11.1	-11.2	0.0	-9.2	0.0	0.7	-5.4	-10.4	-1.0	-21.4	0.0	-18.4	8.3	0.0	11.1	53.8	11.1	-6.8	-4.6	-8.8	-1.2	-11.6	15.8	-5.9	24.2		-1.5	-45.5	5.3		-66.7	-3.7	0.0	0.0	-4.8	-7.4
Reference Material (2)																																					
STANDARD DS7 (1)		20.9	105.8	72.7	404	0.9	55.6	9.1	615	2.36	50.3	5.5	52.3	4.9	83	6.5	6.8	5.1	83	0.99	0.077	14	198	1.01	411	0.136	34	1.02	0.097	0.41	3.6	0.20	2.5	4.3	0.21	4	3.5
STANDARD DS7 (2)		20.2	102.6	67.4	398	0.8	54.0	8.8	591	2.31	55.4	4.7	51.4	4.4	83	6.3	6.7	4.9	83	0.96	0.075	13	195	1.00	391	0.131	35	0.99	0.097	0.42	3.7	0.18	2.3	3.9	0.20	5	3.3
STANDARD DS7 (3)		19.7	100.7	68.5	386	0.8	54.5	8.9	639	2.42	53.1	5.1	79.4	4.6	82	6.2	6.2	4.7	84	0.97	0.077	13	219	1.01	409	0.140	32	1.04	0.098	0.46	3.5	0.18	2.4	4.0	0.20	5	3.3
STANDARD DS7 (4)		19.1	101.8	66.2	374	0.8	54.2	9.1	603	2.28	48.5	4.9	47.8	4.9	78	5.8	5.3	4.5	81	0.98	0.072	13	205	1.00	367	0.131	26	1.01	0.097	0.41	3.3	0.19	2.4	3.8	0.19	4	4.0
STANDARD DS7 (5)		20.3	104.1	61.7	372	0.7	56.8	9.0	582	2.29	47.2	4.3	88.6	4.3	70	5.6	4.9	4.2	78	0.94	0.075	12	201	0.97	385	0.125	34	0.99	0.079	0.41	3.4	0.17	2.2	3.9	0.19	4	2.9
STANDARD DS7 (6)		20.7	105.2	66.2	399	0.8	56.8	9.6	634	2.38	51.9	4.6	56.0	4.4	76	6.7	5.8	4.7	83	1.00	0.081	13	213	1.03	426	0.132	32	1.06	0.102	0.44	3.7	0.20	2.4	3.9	0.20	5	4.2
STANDARD DS7 (7)		19.1	106.5	62.7	381	0.7	51.6	8.7	558	2.26	47.3	5.0	53.9	4.6	71	6.1	5.5	4.6	76	0.89	0.075	12	181	0.93	376	0.127	34	0.94	0.095	0.39	3.4	0.18	2.5	3.7	0.19	4	3.4
STANDARD DS7 (8)		19.5	94.6	65.7	375	0.8	49.0	8.0	552	2.20	47.4	5.2	47.2	4.8	73	6.4	4.9	4.4	76	0.91	0.068	12	175	0.93	364	0.123	36	0.93	0.095	0.38	3.9	0.15	2.1	3.7	0.19	4	3.7
True Value STD DS7		**20.5**	**109**	**70.6**	**411**	**0.9**	**56.0**	**9.7**	**627**	**2.4**	**48.2**	**4.9**	**70.0**	**4.4**	**68.7**	**6.4**	**4.6**	**4.5**	**84.0**	**0.9**	**0.1**	**11.7**	**179**	**1.1**	**370**	**0.1**	**39**	**1.0**	**0.1**	**0.4**	**3.4**	**0.2**	**2.5**	**4.2**	**0.2**	**4.6**	**3.5**
Percent Difference (1)		2.0	-2.9	3.0	-1.7	1.1	-0.7	-6.2	-1.9	-1.3	4.4	12.2	-25.3	11.4	20.8	1.9	47.8	13.1	-1.2	6.5	-3.8	19.7	10.6	-3.8	11.0	9.7	-12.8	6.4	9.0	-6.8	5.9	0.0	0.0	2.6	10.5	-13.0	0.0
Percent Difference (2)		-1.5	-5.9	-4.5	-3.2	-10.1	-3.6	-9.3	-5.7	-3.3	14.9	-4.1	-26.6	0.0	20.8	-1.3	45.7	8.6	-1.2	3.2	-6.3	11.1	8.9	-4.8	5.6	5.6	-10.3	3.2	9.0	-4.5	8.8	-10.0	-8.0	-6.9	5.3	8.7	-5.7
Percent Difference (3)		-3.9	-7.6	-3.0	-6.1	-10.1	-2.7	-8.2	1.9	1.3	10.2	4.1	13.4	4.5	19.4	-2.8	34.8	4.2	0.0	4.3	-3.8	11.1	22.3	-3.8	10.5	12.9	-17.9	8.4	10.1	4.5	2.9	-10.0	-4.0	-4.5	5.3	8.7	-5.7
Percent Difference (4)		-6.8	-6.6	-6.2	-9.0	-10.1	-3.2	-6.2	-3.8	-4.6	0.6	0.0	-31.7	11.4	13.5	-9.1	15.2	-0.2	-3.6	5.4	-10.0	11.1	14.5	-4.8	-0.9	5.6	-33.3	5.3	9.0	-6.8	-2.9	-5.0	-4.0	-9.3	0.0	-13.0	14.3
Percent Difference (5)		-1.0	-4.5	-12.6	-9.5	-21.3	1.4	-7.2	-7.2	-4.2	-2.1	-12.2	26.6	-2.3	1.9	-12.2	6.5	-6.9	-7.1	1.1	-6.3	2.6	12.3	-7.6	4.0	0.8	-12.8	3.2	-11.2	-6.8	0.0	-15.0	-12.0	-6.9	0.0	-13.0	-17.1
Percent Difference (6)		1.0	-3.5	-6.2	-2.9	-10.1	1.4	-1.0	1.1	-0.4	7.7	-6.1	-20.0	0.0	10.6	5.0	26.1	4.2	-1.2	7.5	1.3	11.1	19.0	-1.9	15.0	6.5	-17.9	10.5	14.6	0.0	8.8	0.0	-4.0	-6.9	5.3	8.7	20.0
Percent Difference (7)		-6.8	-2.3	-11.2	-7.3	-21.3	-7.9	-10.3	-11.0	-5.4	-1.9	2.0	-23.0	4.5	3.3	-4.4	19.6	2.0	-9.5	-4.3	-6.3	2.6	1.1	-11.4	1.5	2.4	-12.8	-2.0	6.7	-11.4	0.0	-10.0	0.0	-11.7	0.0	-13.0	-2.9
Percent Difference (8)		-4.9	-13.2	-6.9	-8.8	-10.1	-12.5	-17.5	-12.0	-7.9	-1.7	6.1	-32.6	9.1	6.3	0.3	6.5	-2.4	-9.5	-2.2	-15.0	2.6	-2.2	-11.4	-1.7	-0.8	-7.7	-3.0	6.7	-13.6	14.7	-25.0	-16.0	-11.7	0.0	-13.0	5.7
Detection Limits		0.1	0.1	0.1	1	0.1	0.1	0.1	1	0.01	0.5	0.1	0.5	0.1	1	0.1	0.1	0.1	2	0.01	0.001	1	1	0.01	1	0.001	1	0.01	0.001	0.01	0.1	0.01	0.1	0.1	0.05	1	0.5
Method		1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX	1DX

P:\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201109_Pactch14Report\Appendices\[App E and F_ ABA and Metals Data.xls]AppF_1

Note:
Analysis done at Acme Labs.
Note: RE = Repeat (analyzed from the same extract)
Duplicates: Analysis done on another cut of the pulp sample

Acme's Comment on 1DX Package RDP:
1DX is generally listed as having a reproducibility of 10-15%. This is however dependent on
A) Proper sample preparation – Acme protocol states pulverization must meet 85% passing 200mesh. [Ivy's note: Cantest's samples meet this requirement]
B) The concentration of the analyte in the sample relative to the detection limit.
Acme uses a formula to evaluate each element, any one element in the 1DX failing will not cause a failure of the replicate but if many of the elements are flagged then the samples are sent for reanalysis.

P(% Diff) = (100xSDL)/(CONC) + LR
SDL=statistical detection limit
LR = Limiting Repeatability
For example assuming the SDL = DL of the method for Cu with a DL of 0.1 and a LR of 10%

If the sample concentration is at DL = 0.1 then the allowable % difference is 110%
If the sample concentration is at 10 x DL then the allowable % difference is 20%
If the sample concentration is 100 x DL then the allowable % difference is 11%
If the sample concentration is 1000 x DL then the allowable % difference is 10.1%

Appendix F: Solid-Phase Trace Element Data (Aqua Regia Digestion), Madrid South

Maxxam Analytics 4606 Canada Way, Burnaby, BC Canada V5G 1K5 Tel: 604 734 7276 Fax: 604 731 2386 www.maxxam.ca

Newmont, Hope Bay (Wolverine and Patch 14; 747 to 823) Comps, Oct10

Page 3 of 5

Table 3: Trace Metals Using Aqua Regia Digestion with ICP-MS Finish for 77 Hope Bay (Wolverine and Patch 14; 747 to 823) Composite Samples - January 2011

S. No.	Sample ID	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au*	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Hg	Sc	Tl	S	Ga	Se	Te
		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm
77 Wolverine and Patch 14 Composites																																						
Hole ID: 09PSD211A																																						
1	09PSD211A-SRK-WR-747	0.1	141.5	0.2	54	<0.1	67.1	31	739	4.38	<0.5	<0.1	2.8	0.3	19	<0.1	<0.1	<0.1	83	1.24	0.024	1	125	2.06	3	0.24	<20	2.53	0.094	<0.01	<0.1	<0.01	3.7	<0.1	<0.05	5	<0.5	<0.2
2	09PSD211A-SRK-WR-748	0.1	118.4	1	51	<0.1	123.4	37.1	789	4.37	8.3	<0.1	2.7	0.2	19	0.1	<0.1	<0.1	78	1.37	0.019	1	153	2.74	2	0.199	<20	2.98	0.064	<0.01	<0.1	<0.01	3	<0.1	0.05	5	<0.5	<0.2
3	09PSD211A-SRK-WR-749	0.2	87	0.4	50	<0.1	132.6	38.3	1082	5.41	15.5	<0.1	42.4	0.1	34	<0.1	<0.1	<0.1	109	5.11	0.016	1	210	3.9	9	0.057	<20	4	0.018	0.06	<0.1	<0.01	10.8	<0.1	0.06	8	<0.5	<0.2
4	09PSD211A-SRK-WR-750	0.6	32	0.8	41	<0.1	27.9	11.6	512	2.52	16.7	0.1	10.7	0.5	48	<0.1	<0.1	<0.1	22	2.36	0.025	4	106	1.3	26	<0.001	<20	1.31	0.14	0.17	<0.1	<0.01	2.9	<0.1	0.07	5	<0.5	<0.2
5	09PSD211A-SRK-WR-751	0.2	96.6	0.4	59	<0.1	103.4	38.9	1250	6.16	30	<0.1	88.3	<0.1	49	<0.1	<0.1	<0.1	123	6.46	0.02	<1	183	3.71	8	0.065	<20	3.5	0.038	0.06	<0.1	<0.01	14.5	<0.1	0.12	7	<0.5	<0.2
6	09PSD211A-SRK-WR-752	0.2	105	0.7	54	<0.1	101.5	39.4	1073	5.64	3.5	<0.1	7.3	<0.1	29	<0.1	<0.1	<0.1	116	3.78	0.018	2	197	3.18	1	0.225	<20	3.78	0.017	0.05	<0.1	<0.01	8	<0.1	0.09	6	<0.5	<0.2
7	09PSD211A-SRK-WR-753	0.6	30.5	0.9	49	<0.1	25	11.7	400	2.53	1.6	0.1	4.3	0.5	20	<0.1	<0.1	<0.1	36	1.78	0.027	5	101	1.25	42	0.008	<20	1.75	0.08	0.14	<0.1	<0.01	2.3	<0.1	<0.05	8	<0.5	<0.2
8	09PSD211A-SRK-WR-754	0.2	93.3	0.4	57	<0.1	100.9	37.3	1333	6	3.7	<0.1	2.7	<0.1	57	<0.1	<0.1	<0.1	139	7.25	0.02	2	197	3.05	13	0.069	<20	4.21	0.006	0.06	<0.1	<0.01	13.2	<0.1	<0.05	8	<0.5	<0.2
9	09PSD211A-SRK-WR-755	0.5	30.4	1.6	50	<0.1	27.7	12	395	2.47	1.2	0.1	0.5	0.5	31	<0.1	<0.1	<0.1	33	2.12	0.027	5	117	1.01	46	0.024	<20	1.61	0.075	0.14	<0.1	<0.01	2.5	<0.1	<0.05	8	<0.5	<0.2
10	09PSD211A-SRK-WR-756	0.4	29.6	3.5	53	<0.1	24.6	11.3	342	2.29	3.3	0.2	7	0.5	56	<0.1	0.1	<0.1	22	2.03	0.027	5	80	1.08	28	0.02	<20	1.47	0.033	0.1	<0.1	<0.01	1.6	<0.1	<0.05	7	<0.5	<0.2
11	09PSD211A-SRK-WR-757	0.3	31.5	2.7	50	<0.1	24.4	11.2	353	2.35	8.3	0.1	17.3	0.5	50	<0.1	<0.1	<0.1	28	2.14	0.026	4	82	0.98	21	0.01	<20	1.42	0.039	0.08	<0.1	<0.01	2.2	<0.1	0.07	7	<0.5	<0.2
12	09PSD211A-SRK-WR-758	0.2	103.9	1.5	58	<0.1	107	39.5	1145	6.37	8	<0.1	6.7	0.1	60	0.1	<0.1	<0.1	182	6.41	0.02	1	222	3.76	3	0.198	<20	4.51	0.004	0.02	0.1	<0.01	20.3	<0.1	0.08	10	<0.5	<0.2
13	09PSD211A-SRK-WR-759	0.5	35.1	2.7	51	<0.1	24.6	12.7	400	2.59	1	<0.1	<0.5	0.5	52	<0.1	<0.1	<0.1	31	2.44	0.026	4	62	1.07	19	0.017	<20	1.62	0.036	0.08	<0.1	<0.01	2.1	<0.1	<0.05	7	<0.5	<0.2
14	09PSD211A-SRK-WR-760	0.2	110.4	1.2	62	<0.1	112.5	43.3	1369	6.7	5	<0.1	0.8	<0.1	84	<0.1	<0.1	<0.1	168	6.96	0.019	1	224	3.52	5	0.149	<20	4.71	0.002	0.03	<0.1	<0.01	17.9	<0.1	0.05	10	<0.5	<0.2
15	09PSD211A-SRK-WR-761	0.3	117.3	0.8	52	<0.1	94.6	33.7	980	4.37	3.1	<0.1	0.9	<0.1	27	<0.1	<0.1	<0.1	78	3.89	0.018	<1	186	1.87	1	0.245	<20	2.62	0.016	<0.01	<0.1	<0.01	3.3	<0.1	0.08	4	<0.5	<0.2
16	09PSD211A-SRK-WR-762	0.6	76.8	4.1	93	0.1	40.1	14.8	491	2.75	1.8	0.1	<0.5	0.6	23	0.4	<0.1	<0.1	58	3.02	0.025	6	157	1.07	14	0.128	<20	1.61	0.069	0.06	<0.1	<0.01	5.1	<0.1	0.08	7	<0.5	<0.2
17	09PSD211A-SRK-WR-763	0.2	113.4	1.8	81	<0.1	111.7	40	1120	5.95	12.7	<0.1	<0.5	<0.1	28	0.2	<0.1	<0.1	140	3.58	0.022	1	237	3.7	5	0.187	<20	4.18	0.011	0.02	<0.1	<0.01	11.3	<0.1	<0.05	8	<0.5	<0.2
18	09PSD211A-SRK-WR-764	0.3	151	56.5	1672	1.3	110.2	44.1	1274	6.49	42.5	<0.1	891.4	<0.1	27	7.5	<0.1	<0.1	110	7.3	0.017	1	190	3.49	19	0.057	<20	4.64	<0.001	0.1	0.2	<0.01	9.1	<0.1	0.21	8	0.6	<0.2
19	09PSD211A-SRK-WR-765	0.2	115.6	1.7	68	<0.1	94.5	35.1	964	4.62	5.8	<0.1	1.2	<0.1	25	0.2	<0.1	<0.1	93	3.8	0.017	<1	192	2.05	3	0.273	<20	2.99	0.024	0.01	<0.1	<0.01	5.4	<0.1	0.06	5	<0.5	<0.2
20	09PSD211A-SRK-WR-766	0.2	118.7	0.5	45	<0.1	88.1	31.8	839	4.36	3.4	<0.1	<0.5	<0.1	21	<0.1	<0.1	<0.1	86	2.55	0.019	1	188	2.23	2	0.254	<20	2.81	0.025	0.02	<0.1	<0.01	5	<0.1	0.06	4	<0.5	<0.2
21	09PSD211A-SRK-WR-767	0.2	107.4	0.7	54	<0.1	99.3	35.1	981	4.91	27.9	<0.1	<0.5	<0.1	27	<0.1	<0.1	<0.1	108	3.73	0.018	<1	195	2.33	2	0.27	<20	3.15	0.021	<0.01	<0.1	<0.01	7.8	<0.1	0.09	6	<0.5	<0.2
22	09PSD211A-SRK-WR-768	0.4	33.5	1.4	39	<0.1	30.4	10.9	388	2.34	19.2	0.1	<0.5	0.5	18	<0.1	<0.1	<0.1	50	1.49	0.027	4	104	1.02	14	0.111	<20	1.36	0.103	0.04	<0.1	<0.01	3.5	<0.1	<0.05	7	<0.5	<0.2
23	09PSD211A-SRK-WR-769	0.2	120.3	1	109	<0.1	110.8	42.4	1312	6.2	25.3	<0.1	17.4	<0.1	30	0.3	<0.1	<0.1	130	6.47	0.019	1	204	2.73	11	0.21	<20	4	0.009	0.07	<0.1	<0.01	10.2	<0.1	0.07	7	<0.5	<0.2
24	09PSD211A-SRK-WR-770	0.2	104.3	0.3	52	<0.1	96.9	35.9	1050	5.55	7.5	<0.1	<0.5	<0.1	29	<0.1	<0.1	<0.1	134	3.25	0.021	1	217	3.35	<1	0.225	<20	3.86	0.012	<0.01	<0.1	<0.01	11.7	<0.1	<0.05	7	<0.5	<0.2
25	09PSD211A-SRK-WR-771	0.3	130.6	1.1	54	<0.1	96.7	35.7	921	4.65	3.7	<0.1	15.6	<0.1	27	0.1	<0.1	<0.1	72	3.1	0.017	<1	192	2.02	<1	0.26	<20	2.8	0.013	<0.01	<0.1	<0.01	3.7	<0.1	0.29	4	1	<0.2
26	09PSD211A-SRK-WR-772	0.2	127.2	0.8	49	<0.1	101.9	36.6	869	4.49	3.7	<0.1	1.6	<0.1	28	0.1	<0.1	<0.1	75	3.61	0.019	<1	189	1.87	<1	0.247	<20	2.72	0.017	<0.01	<0.1	<0.01	3.4	<0.1	0.26	3	0.7	<0.2
27	09PSD211A-SRK-WR-773	0.2	105.2	0.7	62	<0.1	110.6	42.2	1291	6.16	8.5	<0.1	1.7	<0.1	30	0.1	<0.1	<0.1	124	5.97	0.017	<1	201	3.11	9	0.19	<20	4.13	0.009	0.04	<0.1	<0.01	8.3	<0.1	0.08	7	<0.5	<0.2
28	09PSD211A-SRK-WR-774	0.6	40.3	3.8	64	<0.1	29	12.6	399	2.5	5.6	0.2	0.6	0.7	25	<0.1	<0.1	<0.1	35	2.26	0.029	4	99	0.78	30	0.1	<20	1.38	0.048	0.12	<0.1	<0.01	2.9	<0.1	<0.05	7	<0.5	<0.2
29	09PSD211A-SRK-WR-775	0.3	120.3	1	48	<0.1	98.6	33	904	4.37	6.1	<0.1	0.7	0.3	35	<0.1	<0.1	<0.1	81	3.23	0.021	2	181	1.94	5	0.237	<20	2.74	0.017	0.01	<0.1	<0.01	3.7	<0.1	0.07	4	<0.5	<0.2
30	09PSD211A-SRK-WR-776	0.2	119.2	1.6	59	<0.1	105.2	38.8	1031	5.14	9.1	<0.1	<0.5	<0.1	28	0.1	<0.1	<0.1	97	3.67	0.018	<1	194	2.59	8	0.223	<20	3.46	0.009	0.03	<0.1	<0.01	4.8	<0.1	0.05	5	<0.5	<0.2
31	09PSD211A-SRK-WR-777	0.6	37.2	2.6	47	<0.1	26	11.4	360	2.38	<0.5	0.1	1.3	0.5	19	<0.1	<0.1	<0.1	44	1.52	0.026	3	145	0.9	13	0.108	<20	1.32	0.108	0.03	<0.1	<0.01	2.7	<0.1	0.06	7	<0.5	<0.2
32	09PSD211A-SRK-WR-778	0.2	121.9	0.3	46	<0.1	88.1	29.9	792	4.06	1.7	<0.1	<0.5	<0.1	27	<0.1	<0.1	<0.1	74	2.65	0.016	<1	186	1.73	2	0.276	<20	2.53	0.029	<0.01	<0.1	<0.01	3.9	<0.1	0.06	4	<0.5	<0.2
33	09PSD211A-SRK-WR-779	0.2	113.8	0.3	51	<0.1	98.6	36.9	884	4.65	6.1	<0.1	<0.5	<0.1	23	<0.1	<0.1	<0.1	78	2.57	0.018	<1	194	2.39	1	0.23	<20	3.14	0.02	<0.01	<0.1	<0.01	3.5	<0.1	0.06	4	<0.5	<0.2
34	09PSD211A-SRK-WR-780	0.8	43	2.7	51	<0.1	27.7	12.8	407	2.51	0.6	0.1	0.5	0.6	19	<0.1	<0.1	<0.1	51	2.15	0.028	4	143	1.05	12	0.101	<20	1.53	0.094	0.02	<0.1	<0.01	3.6	<0.1	<0.05	8	<0.5	<0.2
35	09PSD211A-SRK-WR-781	0.2	118.2	1	63	<0.1	113.1	42.3	1220	6.18	8.4	<0.1	<0.5	<0.1	26	0.1	<0.1	<0.1	143	5.72	0.016	<1	226	2.97	6	0.221	<20	4.08	0.011	0.02	<0.1	<0.01	10	<0.1	0.05	8	<0.5	<0.2
36	09PSD211A-SRK-WR-782	0.4	99	0.5	62	<0.1	113.6	42.7	1374	6.55	8.2	<0.1	<0.5	<0.1	49	0.1	<0.1	<0.1	120	8.55	0.019	<1	187	3.13	9	0.118	<20	4.7	<0.001	0.07	0.3	<0.01	10.3	<0.1	<0.05	8	<0.5	<0.2
37	09PSD211A-SRK-WR-783	0.3	109.1	0.6	60	<0.1	108.9	41.8	1182	6.18	6	<0.1	5.4	<0.1	33	<0.1	<0.1	<0.1	147	4.99	0.021	<1	221	3.73	3	0.197	<20	4.55	0.005	<0.01	<0.1	<0.01	10.3	<0.1	<0.05	8	<0.5	<0.2
38	09PSD211A-SRK-WR-784	0.3	119.5	0.8	56	<0.1	100.5	39.6	1092	5.22	11.9	<0.1	2.8	<0.1	31	<0.1	<0.1	<0.1	106	5	0.016	<1	218	2.53	2	0.207	<20	3.46	0.011	<0.01	<0.1	<0.01	5.7	<0.1	0.08	6	0.6	<0.2
39	09PSD211A-SRK-WR-785	0.2	106.8	1.1	67	<0.1	100.4	36.1	1084	5.04	3.5	<0.1	4.5	<0.1	26	0.1	<0.1	<0.1	100	4.72	0.017	<1	200	2.42	2	0.252	<20	3.36	0.015	<0.01	<0.1	<0.01	5	<0.1	0.06	6	<0.5	<0.2
40	09PSD211A-SRK-WR-786	0.2	126.8	0.8	49	<0.1	88.6	32.3	859	4.32	2	<0.1	2.4	<0.1	44	<0.1	<0.1	<0.1	81	2.84	0.021	<1	196	1.98	1	0.246	<20	2.89	0.017	<0.01	<0.1	<0.01	3.7	<0.1	0.07	4	<0.5	<0.2
41	09PSD211A-SRK-WR-787	0.2	117.5	0.3	53	<0.1	113.9	37	886	4.78	3	<0.1	1.5	<0.1	32	<0.1	<0.1	<0.1	91	2.33	0.022	<1	209	2.78	1	0.226	<20	3.34	0.02	<0.01	<0.1	<0.01	3.9	<0.1	<0.05	5	<0.5	<0.2
42	09PSD211A-SRK-WR-788	0.1	110.9	1.4	50	<0.1	108.4	34.5	799	4.45	2.5	<0.1	1.6	<0.1	35	<0.1	<0.1	<0.1	77	1.85	0.02	<1	196	2.42	20	0.258	<20	3.09	0.023	<0.01	<0.1	<0.01	3.2	<0.1	0.05	5	<0.5	<0.2
43	09PSD211A-SRK-WR-789	0.2	115.1	0.4	48	<0.1	92.3	31.5	874	4.27	1.4	<0.1	4.1	<0.1	28	<0.1	<0.1	<0.1	71	2.98	0.017	<1	176	1.88	2	0.261	<20	2.72	0.026	<0.01	<0.1	<0.01	3.3	<0.1	0.06	4	<0.5	<0.2
44	09PSD211A-SRK-WR-790	0.2	109.4	1.5	81	<0.1	107.6	42.6	1292	6.54	19.2	<0.1	2.4	<0.1	80	<0.1	<0.1	<0.1	184	7.24	0.018	1	211	3.43	6	0.064	<20	4.6	0.006	0.06	<0.1	<0.01	21.9	<0.1	0.06	10	<0.5	<0.2
45	09PSD211A-SRK-WR-791	0.2	118.5	1.2	69	<0.1	105.4	43	1417	7.29	3.5	<0.1	1.7	<0.1	133	<0.1	<0.1	<0.1	205	6.18	0.022	<1	176	3.85	<1	0.011	<20	4.79	0.006	<0.01	<0.1	<0.01	24.7	<0.1	0.06	12	0.7	<0.2
46	09PSD211A-SRK-WR-792	0.3	24.2	1.1	45	<0.1	29.1	13.9	425	2.82	4.6	0.1	1.9	0.5	85	<0.1	<0.1	<0.1	15	3.2	0.027	4	62	1.19	29	<0.001	<20	1.03	0.126	0.12	<0.1	<0.01	2.5	<0.1	<0.05	4	<0.5	<0.2
47	09PSD211A-SRK-WR-793	0.4	42.9	1.3	50	<0.1	26.5	12.8	402	2.6	1.1	0.1	1.2	0.5	94	<0.1	<0.1	<0.1	13	2.89	0.026	4	53	1.19	38	<0.001	<20	0.98	0.129	0.13	1.8	<0.01	2.6	<0.1	<0.05	3	<0.5	<0.2
48	09PSD211A-SRK-WR-794	0.4	26.5	1.5	51	<0.1	27.6	12.6	450	2.63	2.1	<0.1	1.7	0.5	103	<0.1	<0.1	<0.1	14	3.03	0.027	4	78	1.25	33	<0.001	<20	0.95	0.139	0.12	<0.1	<0.01	2.8	<0.1	<0.05	3	<0.5	<0.2
49	09PSD211A-SRK-WR-795	0.6	76.1	1.3	57	<0.1	47.4	20.5	653	3.76	4.9	<0.1	2.8	0.3	126	<0.1	<0.1	<0.1	31	3.93	0.027	2	75	1.76	24	<0.001	<20	1.27	0.124	0.08	<0.1	<0.01	6	<0.1	0.06	4	<0.5	<0.2
50	09PSD211A-SRK-WR-796	0.8	41.1	1.3	48	<0.1	28	14	509	2.76	9.9	<0.1	8.1	0.4	114	<0.1	<0.1	0.1	14	3.49	0.027	2	69	1.25	51	<0.001	<20	0.75	0.113	0.12	<0.1	<0.01	3.7	<0.1	0.07	2	<0.5	<0.2
51	09PSD211A-SRK-WR-797	0.4	27.3	1.2	43	<0.1	22.5	11.2	458	2.35	2.4	<0.1	2	0.5	99	<0.1	<0.1	<0.1	10	2.83	0.027	3	79	1.03	55	<0.001	<20	0.69	0.11	0.11	<0.1	<0.01	2.4	<0.1	<0.05	2	<0.5	<0.2
52	09PSD211A-SRK-WR-798	0.4	19	2.1	85	<0.1	6.2	22.1	840	4.33	1.7	0.3	1.1	1.6	196	<0.1	<0.1	<0.1	87	2.75	0.142	15	33	2.15	272	0.008	<20	1.93	0.053	0.03	<0.1	<0.01	7.4	<0.1	0.07	10	<0.5	<0.2
53	09PSD211A-SRK-WR-799	0.6	36	1.2	46	<0.1	26.8	12.1	523	2.24	0.8	0.1	1.1	0.5	96	<0.1	<0.1	<0.1	8	2.81	0.028	4	68	1.06	35	<0.001	<20	0.55	0.053	0.13	<0.1	<0.01	1.9	<0.1	<0.05	2	<0.5	<0.2
54	09PSD211A-SRK-WR-800	0.3	42.2	2.3	82	<0.1	7.3	21.1	881	4.27	1.8	0.2	0.5	1.6	238	<0.1	<0.1	<0.1	32	3.87	0.145	19	27	1.82	186	0.004	<20	1.61	0.038	0.14	<0.1	<0.01	4	<0.1	0.09	5	<0.5	<0.2
55	09PSD211A-SRK-WR-801	1.1	56.3	1.4	45	<0.1	25.4	12	576	2.6	1.7	0.1	0.9	0.5	118	<0.1	<0.1	<0.1	8	3.2	0.027	2	92	1.13	35	<0.001	<20	0.43	0.066	0.09	<0.1	<0.01	2.7	<0.1	<0.05	2	<0.5	<0.2
56	09PSD211A-SRK-WR-802	0.5	67	1.4	44	<0.1	17.6	10.4	394	2.07	3.1	<0.1	<0.5	0.4	104	<0.1	<0.1	0.1	4	2.76	0.026	2	76	0.95	28	<0.001	<20	0.38	0.072	0.09	<0.1	<0.01	2.2	<0.1	0.06	1	<0.5	<0.2
57	09PSD211A-SRK-WR-803	1	98.1	2	51	<0.1	34.8	14	569	2.64	4.1	0.1	0.7	0.8	116	<0.1	<0.1	<0.1	10	3.25	0.034	4	82	1.29	51	<0.001	<20	0.66	0.066	0.1	<0.1	<0.01	3.1	<0.1	0.05	2	<0.5	<0.2
58	09PSD211A-SRK-WR-804	<0.1	3.6	4.8	75	<0.1	213.5	32.4	855	4.43	4.3	0.7	0.9	7.3	198	<0.1	<0.1	<0.1	100	4.4	0.205	70	311	5.49	651	0.005	<20	3.58	0.023	<0.01	<0.1	<0.01	11.6	<0.1	<0.05	11	<0.5	<0.2

Appendix F: Solid-Phase Trace Element Data (Aqua Regia Digestion), Madrid South

S. No.	Sample ID	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au* ppb	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Hg ppm	Sc ppm	Tl ppm	S %	Ga ppm	Se ppm	Te ppm
59	09PSD211A-SRK-WR-805	0.6	28.8	1.1	50	<0.1	22.8	11.7	494	2.48	7	0.1	1.2	0.4	74	<0.1	<0.1	<0.1	7	3.17	0.028	3	80	1.12	22	<0.001	<20	0.51	0.071	0.09	<0.1	<0.01	2.6	<0.1	0.06	2	<0.5	<0.2
60	09PSD211A-SRK-WR-806	0.6	31	0.9	45	<0.1	22.2	12.1	510	2.58	3.1	0.1	<0.5	0.5	82	<0.1	<0.1	<0.1	8	3.52	0.028	2	85	1	58	<0.001	<20	0.56	0.118	0.14	<0.1	<0.01	2.7	<0.1	0.09	2	<0.5	<0.2
61	09PSD211A-SRK-WR-807	0.2	68	0.5	66	<0.1	124.9	44.6	1260	7.11	4.1	<0.1	0.9	<0.1	79	<0.1	<0.1	<0.1	183	5.05	0.018	<1	314	4.65	4	0.004	<20	4.56	0.03	0.01	<0.1	<0.01	24.5	<0.1	0.09	10	<0.5	<0.2
62	09PSD211A-SRK-WR-808	0.1	67.7	0.5	58	<0.1	104.2	39.9	1315	6.91	3.2	<0.1	1.4	<0.1	91	<0.1	<0.1	<0.1	134	6.96	0.019	<1	186	3.82	22	0.003	<20	4.26	0.014	0.09	<0.1	<0.01	15.4	<0.1	<0.05	9	<0.5	<0.2
63	09PSD211A-SRK-WR-809	0.2	56.7	0.3	43	<0.1	90.4	33.7	960	4.71	14.2	<0.1	0.7	<0.1	53	<0.1	<0.1	<0.1	113	3.2	0.02	<1	198	2.58	4	0.275	22	2.86	0.029	<0.01	<0.1	<0.01	7.8	<0.1	<0.05	6	<0.5	<0.2
64	09PSD211A-SRK-WR-810	0.6	143.6	0.7	55	0.1	134	39.5	1199	6.08	49.8	<0.1	1.2	<0.1	103	0.1	0.5	<0.1	94	7.18	0.015	<1	149	3.6	13	0.021	<20	2.42	0.076	0.06	<0.1	<0.01	15.5	<0.1	<0.05	6	0.6	<0.2
65	09PSD211A-SRK-WR-811	0.3	15.2	1.2	44	<0.1	11.6	6.9	344	1.87	8.2	0.1	1.2	0.7	61	<0.1	<0.1	<0.1	4	2.94	0.027	3	57	0.77	26	<0.001	<20	0.54	0.132	0.12	<0.1	<0.01	1.4	<0.1	<0.05	1	<0.5	<0.2
66	09PSD211A-SRK-WR-812	0.6	56.3	1.6	45	<0.1	38.1	17	537	3.15	63.4	<0.1	15.9	0.4	89	<0.1	<0.1	<0.1	14	4.18	0.023	2	50	1.37	33	<0.001	<20	0.75	0.158	0.15	<0.1	<0.01	4.6	<0.1	0.08	2	<0.5	<0.2
67	09PSD211A-SRK-WR-813	0.4	6.6	0.8	22	0.1	9.9	4.9	305	1.7	16.2	0.1	787.7	0.4	31	<0.1	<0.1	<0.1	5	2.44	0.025	2	160	0.79	25	<0.001	<20	0.74	0.178	0.12	0.4	<0.01	1	<0.1	0.11	2	<0.5	<0.2
68	09PSD211A-SRK-WR-814	0.4	111.3	1.8	49	0.3	68.9	32.6	1872	6.35	585.1	<0.1	96.9	<0.1	58	<0.1	<0.1	<0.1	35	8.18	0.016	<1	145	2.63	18	<0.001	<20	0.86	0.186	0.12	0.4	<0.01	11.9	<0.1	1.35	2	1.1	1
69	09PSD211A-SRK-WR-815	0.4	18	1.2	45	0.2	36.6	12.9	1383	4.85	71.8	<0.1	195.3	<0.1	64	<0.1	<0.1	<0.1	22	9.59	0.005	<1	135	3.78	11	<0.001	<20	0.35	0.098	0.06	0.3	<0.01	7.2	<0.1	0.24	<1	<0.5	<0.2
70	09PSD211A-SRK-WR-816	0.9	121	1.2	48	0.4	84.2	41.4	1534	6.2	181.7	<0.1	185.1	<0.1	61	<0.1	<0.1	<0.1	32	8.86	0.018	<1	95	3.17	13	<0.001	<20	0.67	0.164	0.08	0.3	<0.01	15.1	<0.1	1.19	1	1.2	0.3
71	09PSD211A-SRK-WR-817	0.2	113.3	0.7	65	<0.1	84.6	39.2	1463	6.4	28.4	<0.1	27.5	<0.1	49	0.1	<0.1	<0.1	77	7.54	0.019	<1	110	2.81	14	<0.001	<20	1.69	0.2	0.08	<0.1	<0.01	18.2	<0.1	0.11	4	<0.5	<0.2
72	09PSD211A-SRK-WR-818	0.6	125.5	1.2	48	<0.1	22.5	10.2	606	2.95	12.5	0.1	18.3	0.5	94	<0.1	<0.1	0.4	11	5.41	0.023	3	75	1.92	45	<0.001	<20	0.89	0.195	0.17	<0.1	<0.01	2.9	<0.1	<0.05	2	<0.5	<0.2
73	09PSD211A-SRK-WR-819	0.4	100.7	1.1	68	<0.1	94.2	35.3	1257	5.95	77.4	<0.1	14.6	<0.1	90	0.1	<0.1	<0.1	48	9.09	0.012	<1	82	3.17	25	<0.001	<20	1.12	0.16	0.08	<0.1	<0.01	13.7	<0.1	<0.05	3	<0.5	<0.2
74	09PSD211A-SRK-WR-820	0.2	123.1	0.5	66	<0.1	126.3	44.7	1155	6.21	9.9	<0.1	8.3	<0.1	53	0.1	<0.1	<0.1	115	6.63	0.019	<1	156	2.83	18	0.001	<20	2.79	0.122	0.05	<0.1	<0.01	17.4	<0.1	0.08	7	0.6	<0.2
75	09PSD211A-SRK-WR-821	0.2	125	0.7	69	<0.1	107.3	41.8	1340	6.41	4.3	<0.1	10.8	<0.1	75	0.1	<0.1	<0.1	163	7.82	0.018	<1	159	2.73	10	0.008	<20	3.95	0.032	0.02	<0.1	<0.01	19.5	<0.1	0.07	10	<0.5	<0.2
76	09PSD211A-SRK-WR-822	0.4	15.4	1.4	44	<0.1	10.2	6.4	270	1.53	1.1	0.2	1.9	1	76	<0.1	<0.1	<0.1	7	2.59	0.026	6	50	0.84	54	<0.001	<20	0.75	0.135	0.16	<0.1	<0.01	1.3	<0.1	<0.05	3	<0.5	<0.2
77	09PSD211A-SRK-WR-823	0.5	14.7	1.2	43	<0.1	10.3	6.6	235	1.41	0.8	0.1	1.2	0.9	79	<0.1	<0.1	<0.1	6	2.22	0.029	7	91	0.66	26	0.001	<20	0.52	0.054	0.07	<0.1	<0.01	1.1	<0.1	<0.05	2	<0.5	<0.2
QAQC																																						
Duplicates																																						
29	09PSD211A-SRK-WR-775	0.2	116.1	0.9	48	<0.1	96.3	32.7	916	4.39	6	<0.1	1.2	0.3	35	<0.1	<0.1	<0.1	81	3.26	0.02	2	178	1.97	5	0.249	<20	2.71	0.018	0.01	<0.1	<0.01	3.7	<0.1	0.07	4	<0.5	<0.2
39	09PSD211A-SRK-WR-785	0.2	112.3	1.1	68	<0.1	101.7	37.6	1125	5.1	3.5	<0.1	2.4	<0.1	27	0.1	<0.1	<0.1	101	4.8	0.017	<1	200	2.51	2	0.244	<20	3.41	0.015	<0.01	<0.1	<0.01	5.3	<0.1	0.06	5	0.7	<0.2
Reference Material (1)																																						
STD OREAS45PA (1)		1	577.5	19.2	109	0.3	274.1	103.7	1057	16.32	2.4	1.3	45.1	7.1	13	<0.1	<0.1	<0.1	221	0.22	0.033	15	796	0.1	169	0.146	<20	3.25	0.008	0.07	<0.1	0.02	41.4	<0.1	<0.05	16	<0.5	<0.2
STD OREAS45PA (2)		1.1	592.9	20.8	116	0.3	294.1	109.6	1123	16.15	4.6	1.3	47.7	7	14	0.1	0.1	0.2	216	0.24	0.036	17	804	0.1	192	0.134	<20	3.21	0.008	0.08	<0.1	0.03	42.2	<0.1	<0.05	17	<0.5	<0.2
STD OREAS45PA (3)		0.9	643.8	19.2	120	0.3	318.2	111	1152	17.66	5.1	1.2	42.2	6.5	15	<0.1	<0.1	0.2	223	0.26	0.037	15	843	0.12	168	0.149	<20	3.92	0.004	0.09	<0.1	0.03	47	<0.1	<0.05	18	0.6	<0.2
STD OREAS45PA (4)		1	626.7	19.6	123	0.3	308.6	113.6	1148	17.18	4.7	1.2	48	7.1	16	<0.1	<0.1	0.2	222	0.26	0.037	16	830	0.1	172	0.15	<20	3.58	0.004	0.08	<0.1	0.02	45.6	<0.1	<0.05	18	<0.5	<0.2
True Value STD OREAS45PA		**0.9**	**600**	**19**	**119**	**0.3**	**281**	**104**	**1130**	**16.559**	**4.2**	**1.2**	**43**	**6**	**14**	**0.09**	**0.13**	**0.18**	**221**	**0.2411**	**0.034**	**16.2**	**873**	**0.095**	**187**	**0.124**		**3.34**	**0.011**	**0.0665**	**0.011**	**0.03**	**43**	**0.07**	**0.03**	**16.8**	**0.54**	
Percent Difference (1)		11.1	-3.8	1.1	-8.4	0.0	-2.5	-0.3	-6.5	-1.4	-42.9	8.3	4.9	18.3	-7.1				0.0	-8.8	-2.9	-7.4	-8.8	5.3	-9.6	17.7		-2.7	-27.3	5.3		-33.3	-3.7			-4.8		
Percent Difference (2)		22.2	-1.2	9.5	-2.5	0.0	4.7	5.4	-0.6	-2.5	9.5	8.3	10.9	16.7	0.0	11.1	-23.1	11.1	-2.3	-0.5	5.9	4.9	-7.9	5.3	2.7	8.1		-3.9	-27.3	20.3		0.0	-1.9			1.2		
Percent Difference (3)		0.0	7.3	1.1	0.8	0.0	13.2	6.7	1.9	6.6	21.4	0.0	-1.9	8.3	7.1			11.1	0.9	7.8	8.8	-7.4	-3.4	26.3	-10.2	20.2		17.4	-63.6	35.3		0.0	9.3			7.1	11.1	
Percent Difference (4)		11.1	4.5	3.2	3.4	0.0	9.8	9.2	1.6	3.8	11.9	0.0	11.6	18.3	14.3			11.1	0.5	7.8	8.8	-1.2	-4.9	5.3	-8.0	21.0		7.2	-63.6	20.3		-33.3	6.0			7.1		
Reference Material (2)																																						
STD DS7 (1)		19.6	113	65.7	411	0.9	55.2	9.3	651	2.41	55.1	4.5	54.1	4.3	79	5.8	3.6	4.2	81	0.99	0.081	12	189	1.06	387	0.132	35	1.08	0.102	0.49	3	0.21	2.5	3.8	0.2	5	3.3	1.4
STD DS7 (2)		20.9	105.8	72.7	377	1	55.3	9.3	590	2.28	49.6	5	56.3	4.5	65	6	5.3	4.9	76	0.88	0.076	11	179	1	400	0.121	34	0.94	0.085	0.42	3.4	0.21	2	3.9	0.19	4	3.2	1.4
STD DS7 (3)		18.6	105.5	71.3	372	0.9	47.4	8.6	578	2.22	49.4	4.3	49.1	4.1	65	5.1	4.1	4.1	77	0.87	0.066	11	178	0.97	368	0.117	28	0.94	0.086	0.44	3.1	0.19	1.9	3.9	0.18	4	2.9	1.1
STD DS7 (4)		19.9	115.1	66.8	398	0.9	54.3	8.5	619	2.37	49.7	4.4	52.4	4.2	75	5.6	3.7	4.3	80	0.95	0.083	12	181	1.05	372	0.117	30	1	0.095	0.47	3.3	0.18	2.3	3.5	0.2	5	2.6	0.9
STD DS7 (5)		20.1	102.4	67.4	380	0.9	50.1	9	600	2.28	53.3	4.7	59.7	4.1	69	6.2	4.2	4.6	76	0.9	0.075	11	180	1.01	407	0.115	39	0.97	0.089	0.49	3.4	0.21	2.3	3.9	0.19	5	3.4	1.1
True Value STD DS7		**20.5**	**109**	**70.6**	**411**	**0.90**	**56.0**	**9.7**	**627**	**2.39**	**50.0**	**4.9**	**70.0**	**4.4**	**72.0**	**6.40**	**4.6**	**4.50**	**84**	**0.93**	**0.08**	**13.0**	**192**	**1.05**	**410.0**	**0.124**	**39**	**1.020**	**0.089**	**0.44**	**3.4**	**0.2**	**2.5**	**4.20**	**0.19**	**5.0**	**3.5**	**1.18**
Percent Difference (1)		-4.4	3.7	-6.9	0.0	0.0	-1.4	-4.1	3.8	0.8	10.2	-8.2	-22.7	-2.3	9.7	-9.4	-21.7	-6.7	-3.6	6.5	1.3	-7.7	-1.6	1.0	-5.6	6.5	-10.3	5.9	14.6	11.4	-11.8	0.0	0.0	-9.5	5.3	0.0	-5.7	18.6
Percent Difference (2)		2.0	-2.9	3.0	-8.3	11.1	-1.3	-4.1	-5.9	-4.6	-0.8	2.0	-19.6	2.3	-9.7	-6.3	15.2	8.9	-9.5	-5.4	-5.0	-15.4	-6.8	-4.8	-2.4	-2.4	-12.8	-7.8	-4.5	-4.5	0.0	0.0	-20.0	-7.1	0.0	-20.0	-8.6	18.6
Percent Difference (3)		-9.3	-3.2	1.0	-9.5	0.0	-15.4	-11.3	-7.8	-7.1	-1.2	-12.2	-29.9	-6.8	-9.7	-20.3	-10.9	-8.9	-8.3	-6.5	-17.5	-15.4	-7.3	-7.6	-10.2	-5.6	-28.2	-7.8	-3.4	0.0	-8.8	-9.5	-24.0	-7.1	-5.3	-20.0	-17.1	-6.8
Percent Difference (4)		-2.9	5.6	-5.4	-3.2	0.0	-3.0	-12.4	-1.3	-0.8	-0.6	-10.2	-25.1	-4.5	4.2	-12.5	-19.6	-4.4	-4.8	2.2	3.8	-7.7	-5.7	0.0	-9.3	-5.6	-23.1	-1.9	6.7	6.8	-2.9	-14.3	-8.0	-16.7	5.3	0.0	-25.7	-23.7
Percent Difference (5)		-2.0	-6.1	-4.5	-7.5	0.0	-10.5	-7.2	-4.3	-4.6	6.6	-4.1	-14.7	-6.8	-4.2	-3.1	-8.7	2.2	-9.5	-3.2	-6.3	-15.4	-6.3	-3.8	-0.7	-7.3	0.0	-4.9	0.0	11.4	0.0	0.0	-8.0	-7.1	0.0	0.0	-2.9	-6.8

Appendix F: Solid-Phase Trace Element Data (Aqua Regia Digestion), Madrid South

S. No.	Sample ID	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au* ppb	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm
Reference Material (3)																			
STD DS8 (1)		14	121.7	125.8	306	1.5	40	7.8	613	2.45	23.4	2.7	90.4	6.7	62	2.3	5	6.8	39
STD DS8 (2)		12.7	109.5	108.6	314	1.6	38	7.3	642	2.52	27.2	2.5	79.2	6.2	68	2.1	3.2	5.8	41
STD DS8 (3)		13.3	106.7	114.4	308	1.4	36.7	7.5	629	2.5	27.2	2.5	92.8	6.3	66	1.9	3.8	6.1	41
STD DS8 (4)		12.8	107.1	127.7	316	1.7	37.7	7.7	621	2.48	28.7	2.8	122.1	7	66	2.5	4.6	7.1	41
STD DS8 (5)		14.6	113.8	135	315	1.6	40	7.7	614	2.45	23.9	2.8	93.4	6.2	65	2.2	4.5	6.4	40
True Value STD DS8		**13.4**	**110**	**123.0**	**312**	**1.69**	**38.1**	**7.5**	**615**	**2.46**	**26.0**	**2.8**	**107**	**6.9**	**67.7**	**2.38**	**4.8**	**6.67**	**41**
Percent Difference (1)		4.2	10.6	2.3	-1.9	-11.2	5.0	4.0	-0.3	-0.4	-10.0	-3.6	-15.5	-2.8	-8.4	-3.4	4.2	1.9	-5.1
Percent Difference (2)		-5.5	-0.5	-11.7	0.6	-5.3	-0.3	-2.7	4.4	2.4	4.6	-10.7	-26.0	-10.0	0.4	-11.8	-33.3	-13.0	-0.2
Percent Difference (3)		-1.0	-3.0	-7.0	-1.3	-17.2	-3.7	0.0	2.3	1.6	4.6	-10.7	-13.3	-8.6	-2.5	-20.2	-20.8	-8.5	-0.2
Percent Difference (4)		-4.8	-2.6	3.8	1.3	0.6	-1.0	2.7	1.0	0.8	10.4	0.0	14.1	1.6	-2.5	5.0	-4.2	6.4	-0.2
Percent Difference (5)		8.6	3.5	9.8	1.0	-5.3	5.0	2.7	-0.2	-0.4	-8.1	0.0	-12.7	-10.0	-4.0	-7.6	-6.3	-4.0	-2.7
Detection Limits		*0.1*	*0.1*	*0.1*	*1*	*0.1*	*0.1*	*0.1*	*1*	*0.01*	*0.5*	*0.1*	*0.5*	*0.1*	*1*	*0.1*	*0.1*	*0.1*	*2*
Acme Group No.		*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*

S. No.	Sample ID	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Hg ppm	Sc ppm	Tl ppm	S %	Ga ppm	Se ppm	Te ppm
Reference Material (3)																				
STD DS8 (1)		0.68	0.08	13	123	0.61	275	0.118	<20	0.9	0.085	0.37	3	0.19	1.9	5.3	0.16	4	5.4	3.8
STD DS8 (2)		0.73	0.093	13	112	0.64	260	0.116	<20	0.97	0.095	0.45	2.4	0.18	2.1	4.8	0.16	5	5.1	5.2
STD DS8 (3)		0.71	0.087	14	113	0.63	266	0.115	<20	0.94	0.091	0.42	2.7	0.16	2.1	5	0.16	5	4.4	4.9
STD DS8 (4)		0.71	0.08	13	113	0.62	298	0.112	<20	0.93	0.088	0.45	2.6	0.18	2	6	0.16	5	5.3	6.1
STD DS8 (5)		0.7	0.079	15	121	0.6	291	0.123	<20	0.91	0.083	0.41	2.9	0.21	1.7	5.7	0.15	5	5.3	2.5
True Value STD DS8		**0.7**	**0.08**	**14.6**	**115**	**0.60**	**279**	**0.113**	**2.60**	**0.93**	**0.0883**	**0.41**	**3.0**	**0.2**	**2.3**	**5.40**	**0.17**	**4.7**	**5.2**	**5**
Percent Difference (1)		-2.9	0.0	-11.0	7.0	0.9	-1.4	4.4		-3.2	-3.7	-9.8	0.0	-1.0	-17.4	-1.9	-4.7	-14.9	3.3	-24.0
Percent Difference (2)		4.3	16.3	-11.0	-2.6	5.9	-6.8	2.7		4.3	7.6	9.8	-20.0	-6.3	-8.7	-11.1	-4.7	6.4	-2.5	4.0
Percent Difference (3)		1.4	8.7	-4.1	-1.7	4.2	-4.7	1.8		1.1	3.1	2.4	-10.0	-16.7	-8.7	-7.4	-4.7	6.4	-15.9	-2.0
Percent Difference (4)		1.4	0.0	-11.0	-1.7	2.6	6.8	-0.9		0.0	-0.3	9.8	-13.3	-6.3	-13.0	11.1	-4.7	6.4	1.3	22.0
Percent Difference (5)		0.0	-1.3	2.7	5.2	-0.7	4.3	8.8		-2.2	-6.0	0.0	-3.3	9.4	-26.1	5.6	-10.7	6.4	1.3	-50.0
Detection Limits		*0.01*	*0.001*	*1*	*1*	*0.01*	*1*	*0.001*	*20*	*0.01*	*0.001*	*0.01*	*0.1*	*0.01*	*0.1*	*0.1*	*0.05*	*1*	*0.5*	*0.2*
Acme Group No.		*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*

P:\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201109_Pactch14Report\Appendices\[App E and F_ ABA and Metals Data.xls]AppF_2

Note:

Analysis done at Acme Labs.

Note: RE = Repeat (analyzed from the same extract)

Duplicates: Analysis done on another cut of the pulp sample

* Refractory and graphitic samples can potentially limit Au solubility

Acme's Comment on 1DX Package RDP:

1DX is generally listed as having a reproducibility of 10-15%. This is however dependent on

A) Proper sample preparation – Acme protocol states pulverization must meet 85% passing 200mesh. [Ivy's note: Maxxam's samples meet this requirement]

B) The concentration of the analyte in the sample relative to the detection limit.

Acme uses a formula to evaluate each element, any one element in the 1DX failing will not cause a failure of the replicate but if many of the elements are flagged then the samples are sent for reanalysis.

P(% Diff) = (100xSDL)/(CONC) + LR

SDL=statistical detection limit

LR = Limiting Repeatability

For example assuming the SDL = DL of the method for Cu with a DL of 0.1 and a LR of 10%

If the sample concentration is at DL = 0.1 then the allowable % difference is 110%

If the sample concentration is at 10 x DL then the allowable % difference is 20%

If the sample concentration is 100 x DL then the allowable % difference is 11%

If the sample concentration is 1000 x DL then the allowable % difference is 10.1%

Maxxam

Maxxam Analytics 4606 Canada Way, Burnaby, BC Canada V5G 1K5 Tel: 604 734 7276 Fax: 604 731 2386 www.maxxam.ca

Newmont - Hope Bay, 62 (Wolverine and Patch 14) & 28 Doris Connector (10262010) composites, various dates

Table 3: Trace Metals Using Aqua Regia Digestion with ICP-MS Finish for 62 (Wolverine and Patch 14) & 28 Doris Connector composites (10262010) Samples - December 2010

S. No.	Sample ID	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au* ppb	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Hg ppm	Sc ppm	Tl ppm	S %	Ga ppm	Se ppm	Te ppm
62 Wolverine and Patch 14 Composites																																						
Hole ID: 10PSD244																																						
1	10PSD244-SRK-WR-685	0.2	93.2	0.9	59	<0.1	80.6	33.9	906	5.24	2.6	<0.1	2.7	0.1	56	<0.1	<0.1	<0.1	144	5.01	0.019	2	189	2.79	7	0.046	<20	3.53	0.018	0.02	<0.1	<0.01	15.6	<0.1	<0.05	9	<0.5	<0.2
2	10PSD244-SRK-WR-686	0.9	21.7	1	48	<0.1	15.3	8.5	260	1.75	<0.5	<0.1	4.5	0.4	22	<0.1	<0.1	0.1	20	1.59	0.024	7	95	0.66	19	0.003	<20	0.97	0.047	0.05	<0.1	0.01	1.8	<0.1	<0.05	6	0.5	<0.2
3	10PSD244-SRK-WR-687	0.5	30.7	0.6	64	<0.1	30.8	12.6	475	2.55	<0.5	<0.1	1.6	0.3	30	<0.1	<0.1	<0.1	42	2.36	0.024	5	118	1.03	14	0.004	<20	1.57	0.044	0.04	<0.1	0.01	4.1	<0.1	<0.05	7	<0.5	<0.2
4	10PSD244-SRK-WR-688	0.5	22.1	0.8	102	<0.1	21.5	10.3	419	1.99	<0.5	<0.1	0.5	0.4	47	<0.1	<0.1	<0.1	14	2.51	0.027	6	65	0.66	15	0.001	<20	1.21	0.035	0.07	<0.1	<0.01	1.2	<0.1	<0.05	6	<0.5	<0.2
5	10PSD244-SRK-WR-689	0.4	108.2	1.2	83	<0.1	67.3	27.5	1053	4.45	0.5	<0.1	0.8	0.2	86	<0.1	<0.1	<0.1	67	4.89	0.021	3	136	2.43	11	0.002	<20	2.31	0.024	0.06	<0.1	<0.01	7.1	<0.1	<0.05	5	<0.5	<0.2
6	10PSD244-SRK-WR-690	0.4	27.7	1.1	138	<0.1	22.8	12.3	452	2.08	<0.5	0.1	<0.5	0.4	61	0.1	<0.1	<0.1	10	2.63	0.026	5	60	0.76	22	<0.001	<20	0.93	0.045	0.09	<0.1	<0.01	1.3	<0.1	<0.05	4	<0.5	<0.2
7	10PSD244-SRK-WR-691	0.3	18	0.6	52	<0.1	20.6	9.5	414	2.03	0.7	<0.1	<0.5	0.4	34	<0.1	<0.1	<0.1	12	2.08	0.024	5	59	1.01	29	<0.001	<20	0.95	0.078	0.1	<0.1	<0.01	1.4	<0.1	<0.05	4	<0.5	<0.2
8	10PSD244-SRK-WR-692	1.8	33.4	1.8	38	0.1	33.1	13.7	715	2.44	11.7	<0.1	34.9	0.3	42	<0.1	<0.1	<0.1	18	3.66	0.024	3	77	1.81	26	0.001	<20	1.06	0.068	0.16	0.2	<0.01	2.8	<0.1	0.09	3	<0.5	<0.2
9	10PSD244-SRK-WR-693	0.3	102.1	1.5	69	<0.1	108.7	39.7	1281	6.23	3.4	<0.1	5.3	<0.1	85	<0.1	<0.1	<0.1	121	7.04	0.018	1	179	3.94	14	0.002	<20	3.49	0.019	0.08	<0.1	<0.01	12.2	<0.1	0.07	7	<0.5	<0.2
10	10PSD244-SRK-WR-694	0.1	113.4	1.3	63	<0.1	102.2	43.4	1397	6.85	3.1	<0.1	3.5	<0.1	96	0.1	<0.1	<0.1	183	7.83	0.017	1	234	3.53	6	0.022	<20	4.54	0.011	0.02	<0.1	0.01	18	<0.1	0.09	11	0.6	<0.2
11	10PSD244-SRK-WR-695	0.2	111.3	0.7	63	<0.1	105.5	43.3	1359	6.68	7.4	<0.1	1.8	<0.1	51	<0.1	<0.1	<0.1	187	6.39	0.018	1	238	3.53	2	0.238	<20	4.24	0.016	<0.01	0.2	0.01	16.5	<0.1	0.11	10	0.6	<0.2
12	10PSD244-SRK-WR-696	0.1	103.5	1.2	61	<0.1	122.5	41.4	1175	6.12	25.1	<0.1	1.3	0.1	42	<0.1	<0.1	<0.1	159	5.55	0.019	1	244	3.88	2	0.17	<20	4.14	0.012	<0.01	<0.1	<0.01	14.3	<0.1	<0.05	9	<0.5	<0.2
13	10PSD244-SRK-WR-697	0.2	121.5	1.1	52	<0.1	92.9	35.4	881	4.58	2	<0.1	2	<0.1	24	0.2	<0.1	<0.1	80	2.79	0.018	<1	196	2.25	3	0.282	<20	2.81	0.026	<0.01	<0.1	<0.01	2.8	<0.1	0.13	4	<0.5	<0.2
14	10PSD244-SRK-WR-698	0.2	118.5	0.7	50	<0.1	109.1	37.3	931	4.88	2.8	<0.1	1.8	<0.1	34	0.1	<0.1	<0.1	104	3.24	0.017	<1	203	2.46	2	0.29	<20	3.06	0.024	<0.01	<0.1	<0.01	6.2	<0.1	0.11	5	0.8	<0.2
15	10PSD244-SRK-WR-699	0.1	115.3	1.2	64	<0.1	113.8	46	1277	6.8	69.8	<0.1	9.2	<0.1	62	<0.1	<0.1	<0.1	157	7.71	0.018	1	213	3.21	12	0.094	<20	4.2	0.006	0.07	<0.1	<0.01	14.2	<0.1	0.14	9	0.6	<0.2
16	10PSD244-SRK-WR-700	0.6	90.2	5.3	102	0.2	83.6	32.3	1214	5.11	1033	<0.1	635.8	<0.1	99	0.2	1.2	<0.1	90	9.07	0.015	1	140	2.52	13	0.004	<20	3.27	0.007	0.08	0.2	0.03	9.8	<0.1	0.38	6	<0.5	0.3
17	10PSD244-SRK-WR-701	0.2	114.7	4.7	66	<0.1	103.5	43.2	1314	6.32	90.8	<0.1	4.8	<0.1	44	0.1	0.2	<0.1	155	7.2	0.017	1	202	3.69	9	0.088	<20	4.05	0.008	0.05	<0.1	<0.01	14.3	<0.1	0.11	9	0.8	<0.2
18	10PSD244-SRK-WR-702	0.1	124.1	0.9	54	<0.1	100.9	38.8	1077	5.4	4.1	<0.1	2.1	<0.1	21	<0.1	<0.1	<0.1	118	3.25	0.017	<1	212	2.96	2	0.236	<20	3.36	0.034	0.01	<0.1	0.02	6.9	<0.1	0.07	6	<0.5	<0.2
19	10PSD244-SRK-WR-703	0.2	119.7	0.6	57	<0.1	104.8	39	1084	5.47	6.4	<0.1	0.6	<0.1	26	<0.1	<0.1	<0.1	122	4.61	0.017	<1	231	2.93	3	0.211	<20	3.41	0.018	<0.01	<0.1	<0.01	7.2	<0.1	0.05	6	0.7	<0.2
20	10PSD244-SRK-WR-704	0.2	116.7	0.8	53	<0.1	99.9	34.2	907	4.54	2.3	<0.1	<0.5	<0.1	29	0.1	<0.1	<0.1	88	3.25	0.017	<1	196	2.18	6	0.239	<20	2.87	0.028	0.01	0.2	<0.01	4.4	<0.1	0.06	4	0.7	<0.2
21	10PSD244-SRK-WR-705	0.7	29.2	3.9	52	<0.1	23.7	11	315	2.22	0.9	0.2	1	0.8	23	<0.1	<0.1	<0.1	38	1.54	0.025	4	135	0.98	27	0.093	<20	1.28	0.106	0.09	<0.1	<0.01	2.8	<0.1	<0.05	8	<0.5	<0.2
Hole ID: 10PSD239																																						
22	10PSD239-SRK-WR-706	0.2	105.5	0.5	60	<0.1	107.1	41.6	1247	5.94	3.9	<0.1	2.7	<0.1	38	<0.1	<0.1	<0.1	166	6.29	0.018	1	244	3.1	1	0.162	<20	4	0.013	0.02	<0.1	0.01	16.3	<0.1	0.06	8	<0.5	<0.2
23	10PSD239-SRK-WR-707	0.2	103.6	0.4	62	<0.1	107.2	41	1293	5.74	8.5	<0.1	2	<0.1	33	<0.1	<0.1	<0.1	143	6.62	0.016	<1	224	3.1	1	0.191	<20	3.66	0.011	0.02	<0.1	0.01	11.1	<0.1	0.06	7	<0.5	<0.2
24	10PSD239-SRK-WR-708	0.1	112.4	0.3	61	<0.1	112.5	43.1	1275	6.6	22.2	<0.1	2.4	<0.1	31	<0.1	<0.1	<0.1	197	6.65	0.018	1	253	3.77	1	0.087	<20	4.44	0.013	0.01	<0.1	<0.01	22.3	<0.1	<0.05	11	0.6	<0.2
25	10PSD239-SRK-WR-709	0.3	110.5	0.5	58	<0.1	105.3	41	1314	6.48	6.9	<0.1	5.7	<0.1	43	<0.1	<0.1	<0.1	128	6.38	0.018	1	197	4.42	8	0.002	<20	3.21	0.066	0.03	<0.1	<0.01	18	<0.1	0.08	7	0.7	<0.2
26	10PSD239-SRK-WR-710	0.3	15.8	0.6	30	<0.1	15.3	7.9	379	1.64	1.2	0.1	<0.5	0.7	30	<0.1	<0.1	<0.1	6	2.48	0.025	5	93	1.33	19	<0.001	<20	0.89	0.117	0.1	<0.1	<0.01	1.3	<0.1	<0.05	3	<0.5	<0.2
27	10PSD239-SRK-WR-711	0.3	8.9	0.6	35	<0.1	12.5	6.9	298	1.44	0.7	<0.1	0.6	0.8	19	<0.1	<0.1	<0.1	6	1.94	0.027	8	70	1.12	30	0.001	<20	0.91	0.101	0.16	<0.1	<0.01	1	<0.1	<0.05	4	<0.5	<0.2
28	10PSD239-SRK-WR-712	0.3	113	0.9	56	<0.1	100.4	37.7	1189	5.22	14.2	<0.1	24.6	<0.1	55	<0.1	<0.1	<0.1	64	7.49	0.017	1	121	3.42	13	0.001	<20	1.77	0.088	0.09	<0.1	<0.01	11.1	<0.1	0.15	4	<0.5	<0.2
29	10PSD239-SRK-WR-713	1.8	12.5	1.1	21	<0.1	20.4	8.9	306	1.98	11.7	<0.1	75	0.5	37	<0.1	<0.1	<0.1	7	2.56	0.034	2	157	1.08	14	<0.001	<20	0.6	0.103	0.1	<0.1	0.01	1	<0.1	0.59	2	0.7	<0.2
30	10PSD239-SRK-WR-714	1	17	0.9	32	<0.1	14.6	7.6	271	1.73	7.2	0.1	35.9	0.6	39	<0.1	<0.1	<0.1	6	2.04	0.026	4	126	0.89	18	<0.001	<20	0.8	0.12	0.12	<0.1	0.02	1	<0.1	0.11	3	<0.5	<0.2
31	10PSD239-SRK-WR-715	0.2	110.2	0.9	65	<0.1	107.1	41	1182	5.91	54.9	<0.1	20.8	<0.1	79	<0.1	<0.1	<0.1	76	7.32	0.019	1	142	3.97	17	0.002	<20	2.35	0.082	0.09	<0.1	<0.01	12.8	<0.1	0.17	5	0.7	<0.2
32	10PSD239-SRK-WR-716	1.3	20.3	1.5	36	<0.1	16.3	8.2	290	1.82	15.8	0.1	28	0.6	25	<0.1	<0.1	<0.1	7	1.64	0.027	4	148	0.97	28	<0.001	<20	0.89	0.091	0.16	<0.1	<0.01	0.9	<0.1	0.22	3	<0.5	<0.2
33	10PSD239-SRK-WR-717	0.5	18.5	0.7	47	<0.1	13.8	7.4	206	1.81	4.6	0.2	1.7	0.7	10	<0.1	<0.1	<0.1	16	0.89	0.029	7	137	0.93	30	0.001	<20	1.11	0.101	0.11	<0.1	<0.01	1.4	<0.1	0.08	6	<0.5	<0.2
34	10PSD239-SRK-WR-718	0.6	20.2	1.2	38	<0.1	14.3	7.6	229	1.81	10.2	0.2	7.7	0.6	8	<0.1	<0.1	<0.1	14	1.15	0.026	5	137	1.07	23	0.001	<20	1.05	0.08	0.12	<0.1	<0.01	1.4	<0.1	0.16	5	<0.5	<0.2
35	10PSD239-SRK-WR-719	0.2	119.3	0.6	67	<0.1	130.7	44.2	1134	5.84	2.7	<0.1	<0.5	<0.1	69	<0.1	<0.1	<0.1	151	4.29	0.021	1	236	4.14	4	0.206	<20	4.2	0.007	0.01	<0.1	<0.01	13.9	<0.1	0.07	9	<0.5	<0.2
36	10PSD239-SRK-WR-720	0.3	145.3	0.9	72	<0.1	98.4	44.7	1334	7.19	3.4	<0.1	<0.5	<0.1	55	0.1	<0.1	<0.1	228	6.05	0.025	1	255	4.11	1	0.19	<20	4.76	<0.001	<0.01	<0.1	<0.01	25.4	<0.1	0.07	11	<0.5	<0.2
37	10PSD239-SRK-WR-721	0.2	118.1	1.9	78	<0.1	119.3	44.2	1534	7.06	6.1	<0.1	0.9	<0.1	46	0.2	<0.1	<0.1	200	7.83	0.02	1	250	3.96	3	0.225	<20	4.8	<0.001	<0.01	<0.1	<0.01	21.2	<0.1	0.07	11	<0.5	<0.2
38	10PSD239-SRK-WR-722	0.3	120.6	1.6	71	<0.1	121.5	44.7	1381	6.61	5	<0.1	<0.5	<0.1	45	0.1	<0.1	<0.1	170	7.44	0.019	1	229	3.42	8	0.204	<20	4.37	<0.001	0.03	<0.1	<0.01	14.8	<0.1	<0.05	10	<0.5	<0.2
39	10PSD239-SRK-WR-723	0.7	15.3	2	37	<0.1	13.3	7.2	280	1.61	<0.5	0.2	<0.5	0.7	24	<0.1	<0.1	<0.1	9	2.11	0.026	6	75	0.63	28	0.033	<20	0.98	0.027	0.12	<0.1	<0.01	0.8	<0.1	<0.05	4	<0.5	<0.2
40	10PSD239-SRK-WR-724	0.3	123.3	1.5	70	<0.1	117.7	43.1	1329	6.07	4.8	<0.1	13	<0.1	51	<0.1	<0.1	<0.1	135	7.33	0.019	1	212	3.03	8	0.182	<20	3.9	<0.001	0.03	0.1	<0.01	9.9	<0.1	0.08	7	<0.5	<0.2
41	10PSD239-SRK-WR-725	0.2	123.4	1.5	67	<0.1	107.4	42	1264	5.76	9.7	<0.1	0.7	<0.1	37	<0.1	<0.1	<0.1	143	6.04	0.019	1	221	3.3	2	0.216	<20	3.85	0.004	<0.01	<0.1	<0.01	9.5	<0.1	0.07	8	<0.5	<0.2
42	10PSD239-SRK-WR-726	0.7	31.7	3.5	49	<0.1	35.4	11.2	332	2.09	1.9	0.2	<0.5	1.5	95	<0.1	<0.1	<0.1	26	2.24	0.047	17	130	1.04	197	0.024	<20	1.24	0.041	0.08	<0.1	<0.01	2.5	<0.1	<0.05	6	<0.5	<0.2
43	10PSD239-SRK-WR-727	0.8	19.9	1.7	42	<0.1	13.2	8	248	1.77	6.4	0.2	55.2	0.7	62	<0.1	<0.1	<0.1	9	1.83	0.028	4	113	0.57	19	<0.001	<20	0.91	0.033	0.11	<0.1	<0.01	1	<0.1	0.19	4	<0.5	<0.2
44	10PSD239-SRK-WR-728	0.6	32.5	0.6	42	<0.1	26.6	11.9	350	2.42	2.7	0.1	1.4	0.5	33	<0.1	<0.1	<0.1	33	2.1	0.028	5	126	0.88	15	0.006	<20	1.33	0.038	0.05	<0.1	<0.01	3	<0.1	<0.05	7	<0.5	<0.2
45	10PSD239-SRK-WR-729	0.2	131	0.5	59	<0.1	109.7	40.5	1143	6.09	5.4	<0.1	<0.5	<0.1	23	<0.1	<0.1	<0.1	141	2.42	0.02	1	237	3.88	1	0.275	<20	3.98	0.02	0.02	<0.1	0.02	9.3	<0.1	0.06	8	<0.5	<0.2
46	10PSD239-SRK-WR-730	0.2	128.6	0.7	68	<0.1	115.4	43.5	1127	5.91	11.9	<0.1	21.6	<0.1	25	<0.1	<0.1	<0.1	122	5.14	0.021	<1	240	3	6	0.208	<20	3.79	0.004	0.01	0.3	0.01	6.6	<0.1	0.09	7	<0.5	<0.2
47	10PSD239-SRK-WR-731	0.2	127	0.7	60	<0.1	106.4	37.1	916	4.87	3.3	<0.1	1.5	<0.1	19	0.1	<0.1	<0.1	92	3.42	0.017	<1	210	2.43	5	0.232	<20	3.11	0.013	0.01	<0.1	<0.01	4.1	<0.1	0.07	5	<0.5	<0.2
48	10PSD239-SRK-WR-732	0.3	135.5	0.4	54	<0.1	101.7	35.4	844	4.39	4.9	<0.1	<0.5	<0.1	29	0.1	<0.1	<0.1	78	2.71	0.016	<1	201	1.88	2	0.258	<20	2.65	0.02	<0.01	<0.1	<0.01	3.5	<0.1	0.1	4	<0.5	<0.2
49	10PSD239-SRK-WR-733	0.2	122.3	0.7	56	<0.1	102.8	36.1	962	4.82	3.7	<0.1	1.6	<0.1	25	0.1	<0.1	<0.1	100	3.14	0.016	<1	205	2.37	1	0.225	<20	2.99	0.014	<0.01	<0.1	<0.01	5.7	<0.1	0.08	5	<0.5	<0.2
50	10PSD239-SRK-WR-734	0.5	109.8	1.6	65	<0.1	111.1	40.8	1280	6.19	43.8	<0.1	91.9	<0.1	52	0.2	<0.1	<0.1	127	8.99	0.019	<1	228	3.14	24	0.119	<20	4.18	<0.001	0.07	0.7	<0.01	11.2	<0.1	0.08	9	<0.5	<0.2
51	10PSD239-SRK-WR-735	0.1	120.5	0.7	69	<0.1	119.6	43.5	1360	6.73	10.4	<0.1	3	<0.1	48	<0.1	<0.1	<0.1	194	6.78	0.018	1	232	3.66	2	0.181	<20	4.47	0.003	<0.01	<0.1	<0.01	21.3	<0.1	0.07	10	<0.5	<0.2
52	10PSD239-SRK-WR-736	0.1	116.9	0.4	66	<0.1	119.1	45.3	1296	6.65	28.6	<0.1	1.3	<0.1	53	<0.1	<0.1	<0.1	180	7.19	0.019	1	223	3.46	8	0.064	<20	4.54	0.004	0.03	<0.1	<0.01	20.2	<0.1	<0.05	11	<0.5	<0.2
53	10PSD239-SRK-WR-737	0.5	104.4	0.8	56	<0.1	90.4	33	1772	5.54	5	<0.1	3	<0.1	93	<0.1	<0.1	<0.1	98	11.95	0.021	2	205	3.8	17	0.003	<20	3.1	0.002	0.08	<0.1	<0.01	11.1	<0.1	<0.05	7	<0.5	<0.2
54	10PSD239-SRK-WR-738	0.2	124.7	0.8	73	<0.1	123.1	44.3	1414	7.14	29.5	<0.1	4.5	<0.1	78	<0.1	<0.1	<0.1	151	8.35	0.021	1	213	3.72	7	0.006	<20	4.8	<0.001	0.04	<0.1	<0.01	14.1	<0.1	0.09	10	<0.5	<0.2
55	10PSD239-SRK-WR-739	0.1	126.4	0.6	65	<0.1	110.9	41.4	1154	5.48	4.4	<0.1	2.3	<0.1	45	0.1	<0.1	<0.1	117	3.7	0.018	<1	211	2.93	<1	0.231	<20	3.37	0.008	<0.01	<0.1	<0.01	7.9	<0.1	0.09	6	<0.5	<0.2
56	10PSD239-SRK-WR-740	0.2	110.1	0.6	63	0.1	110.2	40.2	1470	6.78	42.5	<0.1	378.1	<0.1	57	<0.1	<0.1	<0.1	181	8.02	0.019	1	212	3.31	2	0.082	<20	4.28	0.003	<0.01	<0.1	<0.01	21.6	<0.1	0.18	11	<0.5	<0.2
57	10PSD239-SRK-WR-741	0.2	108.8	1	63	<0.1	112	41.6	1477	6.66	213.8	<0.1	51.1	<0.1	84	<0.1	<0.1	<0.1	81	7.76	0.018	<1	141	3.84	10	0.002	<20	2.83	0.002	0.08	1.2	<0.01	9.9	<0.1	0.31	6	<0.5	<0.2
58	10PSD239-SRK-WR-742	0.2	103.9	1.9	60	<0.1	105.4	41.4	1319	5.9	183.9	<0.1	204.6	<0.1	87	<0.1	<0.1	<0.1	63	7.7	0.014	1	121	3.71	10	0.002	<20	2.57	0.001	0.09	0.2	<0.01	8	<0.1	0.34	5	<0.5	<0.2

Appendix F: Solid-Phase Trace Element Data (Aqua Regia Digestion), Madrid South

S. No.	Sample ID	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au*	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Hg	Sc	Tl	S	Ga	Se	Te
		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm
59	10PSD239-SRK-WR-743	0.1	122	0.7	71	<0.1	120.4	46	1318	6.79	50.5	<0.1	14	<0.1	55	<0.1	<0.1	<0.1	159	7.49	0.02	1	220	3.78	9	0.034	<20	4.73	<0.001	0.04	<0.1	0.01	14.1	<0.1	<0.05	10	<0.5	<0.2
60	10PSD239-SRK-WR-744	0.2	124.4	0.7	55	<0.1	94.9	35.6	909	4.58	6	<0.1	63.2	<0.1	22	<0.1	<0.1	<0.1	95	3.57	0.017	<1	196	2.48	1	0.152	<20	2.96	0.006	<0.01	<0.1	<0.01	6.6	<0.1	0.06	5	<0.5	<0.2
61	10PSD239-SRK-WR-745	0.2	124.8	0.2	53	<0.1	101.7	35.5	1028	4.58	9.3	<0.1	4.7	<0.1	17	0.1	<0.1	<0.1	81	4.61	0.015	<1	181	2.16	1	0.211	<20	2.71	0.014	<0.01	<0.1	<0.01	3.8	<0.1	0.06	5	<0.5	<0.2
62	10PSD239-SRK-WR-746	0.2	126.9	0.4	52	<0.1	91.7	33.3	802	4.21	1.4	<0.1	1.3	<0.1	18	<0.1	<0.1	<0.1	69	2.7	0.016	<1	183	2	1	0.172	<20	2.59	0.011	<0.01	<0.1	<0.01	3.2	<0.1	0.07	3	<0.5	<0.2
28 Doris Connector Composites																																				
Hole ID: 05TDD584																																				
1	05TDD584-SRK-WR-824	0.8	38.8	1	78	<0.1	13.2	26.2	2102	8.19	8.9	<0.1	83.4	0.3	44	<0.1	<0.1	<0.1	19	6.05	0.073	3	93	1.81	10	0.002	<20	1.42	0.045	0.05	0.1	<0.01	11.6	<0.1	0.09	4	<0.5	<0.2
2	05TDD584-SRK-WR-825	0.8	38.2	1.3	138	<0.1	3.8	32.3	1659	8.79	32.4	<0.1	272.4	0.2	50	0.1	<0.1	<0.1	31	4.69	0.082	1	81	1.26	7	0.003	<20	1.99	0.023	0.04	3.4	<0.01	9.8	<0.1	0.72	8	<0.5	<0.2
Hole ID: 06TDD607																																				
3	06TDD607-SRK-WR-826	0.5	32.1	0.8	107	<0.1	2.9	29	2247	8.71	3	<0.1	3.4	0.3	49	0.2	<0.1	<0.1	40	5.56	0.086	3	28	1.57	14	0.003	<20	1.95	0.035	0.07	<0.1	<0.01	13.7	<0.1	0.14	10	<0.5	<0.2
Hole ID: 95TDD063																																				
4	95TDD063-SRK-WR-827	0.6	44.8	0.6	91	<0.1	2.6	25.6	2478	8.96	1.5	<0.1	1.4	0.3	71	<0.1	<0.1	<0.1	23	6.26	0.086	4	52	1.5	31	0.002	<20	1.07	0.119	0.14	<0.1	<0.01	11.5	<0.1	0.08	4	<0.5	<0.2
5	95TDD063-SRK-WR-828	0.5	33.9	0.7	93	<0.1	1.9	26.2	2129	8.85	5.2	<0.1	<0.5	0.3	66	<0.1	<0.1	<0.1	37	5.56	0.086	3	50	1.46	12	0.002	<20	1.77	0.086	0.07	<0.1	<0.01	16.3	<0.1	0.15	8	<0.5	<0.2
6	95TDD063-SRK-WR-829	0.6	35.7	0.8	98	<0.1	2.2	29.1	2242	8.76	6.9	<0.1	109.3	0.3	52	<0.1	<0.1	<0.1	34	5.47	0.086	3	59	1.55	15	0.002	<20	1.64	0.1	0.08	<0.1	<0.01	16.4	<0.1	0.32	7	<0.5	<0.2
7	95TDD063-SRK-WR-830	0.9	36	1.4	40	<0.1	2.7	28.2	2066	8.37	20.5	<0.1	27.7	0.3	37	<0.1	<0.1	<0.1	20	5.38	0.086	3	71	1.86	24	0.002	<20	1.61	0.057	0.18	<0.1	<0.01	10.1	<0.1	0.78	5	<0.5	<0.2
8	95TDD063-SRK-WR-831	0.6	30.6	0.5	81	<0.1	3.4	25.9	1798	9.31	4.3	<0.1	4	0.3	25	<0.1	<0.1	<0.1	33	5.06	0.085	5	53	2.29	18	0.003	<20	3.03	0.048	0.1	<0.1	<0.01	13	<0.1	0.13	9	<0.5	<0.2
9	95TDD063-SRK-WR-832	0.6	25.6	0.5	122	<0.1	2.8	29.3	2269	10.03	1.9	<0.1	2	0.3	44	<0.1	<0.1	<0.1	47	5.29	0.086	3	37	1.69	19	0.005	<20	2.67	0.038	0.08	<0.1	<0.01	14.8	<0.1	0.09	12	<0.5	<0.2
10	95TDD063-SRK-WR-833	0.7	93.7	0.9	135	<0.1	12.1	35.2	1883	11.52	10.1	<0.1	3.1	0.2	41	<0.1	<0.1	<0.1	148	3.78	0.08	2	40	2.3	4	0.01	<20	3.72	0.03	0.03	<0.1	<0.01	22	<0.1	0.64	16	0.8	<0.2
11	95TDD063-SRK-WR-834	0.4	65	0.5	121	<0.1	22.5	37	1490	10.51	6.7	<0.1	1.6	0.3	41	<0.1	<0.1	<0.1	163	4.56	0.073	4	48	2.16	4	0.014	<20	4.04	0.02	0.03	<0.1	<0.01	24.8	<0.1	0.18	17	<0.5	<0.2
Hole ID: 96TDM098																																				
12	96TDM098-SRK-WR-835	0.4	72.4	0.8	73	<0.1	17.3	34.7	1777	9.31	24.9	<0.1	1.2	0.2	38	0.1	<0.1	<0.1	20	5.35	0.067	3	50	1.75	15	0.001	<20	0.61	0.071	0.13	<0.1	<0.01	7.7	<0.1	0.22	2	<0.5	<0.2
13	96TDM098-SRK-WR-836	0.4	31.4	0.7	71	<0.1	5.7	28	2234	9.72	8.3	<0.1	<0.5	0.4	34	<0.1	<0.1	<0.1	13	4.96	0.086	3	43	1.46	20	0.002	<20	0.7	0.093	0.1	<0.1	<0.01	8.5	<0.1	0.1	2	<0.5	<0.2
Hole ID: TDD207																																				
14	TDD207-SRK-WR-837	1.4	29	2.9	36	0.2	4.5	21.8	1661	6.54	35.5	<0.1	65.4	0.2	38	<0.1	<0.1	0.1	5	3.91	0.072	<1	80	1.18	10	<0.001	<20	0.27	0.038	0.09	<0.1	<0.01	6	<0.1	1.71	<1	1	<0.2
15	TDD207-SRK-WR-838	0.5	29	1.4	69	<0.1	2.4	24.4	2303	8.84	8.7	<0.1	1.7	0.2	59	0.2	<0.1	<0.1	7	6.22	0.081	2	49	1.43	13	0.001	<20	0.36	0.046	0.11	<0.1	<0.01	7.4	<0.1	0.14	1	<0.5	<0.2
16	TDD207-SRK-WR-839	0.7	35.9	1.1	61	0.1	3.9	23.7	2020	7.8	7.3	<0.1	581.6	0.2	50	<0.1	<0.1	<0.1	8	5.88	0.082	2	67	1.23	10	0.001	<20	0.52	0.054	0.06	<0.1	<0.01	8.9	<0.1	0.44	2	<0.5	<0.2
Hole ID: TDD216A																																				
17	TDD216A-SRK-WR-840	0.4	30.6	3.2	44	0.3	3.5	25.9	1950	8.48	44.7	<0.1	159.2	0.2	35	<0.1	<0.1	0.1	8	4.72	0.082	1	32	1.56	11	<0.001	<20	0.33	0.048	0.1	<0.1	<0.01	8.5	<0.1	2.04	1	0.6	<0.2
18	TDD216A-SRK-WR-841	0.3	63.9	0.9	118	<0.1	17.5	30.7	1643	8.6	9.7	<0.1	22.5	0.2	48	0.2	<0.1	<0.1	61	4.14	0.066	2	27	1.96	11	0.002	<20	1.27	0.035	0.08	<0.1	<0.01	12.9	<0.1	0.28	6	0.9	<0.2
19	TDD216A-SRK-WR-842	0.3	40.2	0.3	90	<0.1	16.5	27.9	1541	8.21	17.4	<0.1	58.9	0.1	39	<0.1	<0.1	<0.1	93	3.67	0.069	2	35	1.6	5	0.004	<20	2	0.022	0.03	<0.1	<0.01	16.9	<0.1	0.16	10	<0.5	<0.2
20	TDD216A-SRK-WR-843	0.4	55.5	0.4	94	<0.1	19	30.5	1704	8.95	19.5	<0.1	8.3	0.1	42	0.2	<0.1	<0.1	55	4.79	0.069	2	23	1.87	9	0.002	<20	1.32	0.022	0.08	<0.1	<0.01	11.6	<0.1	0.26	6	<0.5	<0.2
21	TDD216A-SRK-WR-844	0.2	57.9	0.8	105	<0.1	16.5	33.3	2205	9.57	27.1	<0.1	188.2	0.1	36	<0.1	<0.1	<0.1	80	5.56	0.075	1	22	2.05	7	0.002	<20	1.71	0.027	0.05	<0.1	<0.01	13.7	<0.1	1.14	7	0.7	<0.2
Hole ID: TDD219																																				
22	TDD219-SRK-WR-845	0.4	71.8	2.1	66	0.2	10.6	28.8	1713	7.92	32.3	<0.1	173.9	0.2	31	<0.1	<0.1	<0.1	28	4.71	0.077	1	28	1.85	9	<0.001	<20	0.72	0.046	0.08	<0.1	<0.01	10.4	<0.1	1.7	3	1.1	<0.2
23	TDD219-SRK-WR-846	0.6	55	0.6	178	<0.1	17.8	32.8	1708	9.09	8.1	<0.1	50.4	0.1	42	0.3	<0.1	<0.1	66	3.84	0.077	2	28	1.7	7	0.002	<20	1.43	0.036	0.05	<0.1	<0.01	16.3	<0.1	0.43	8	<0.5	<0.2
24	TDD219-SRK-WR-847	0.4	54	0.8	74	<0.1	21.8	29.3	1603	8	37.3	<0.1	50.2	0.1	39	<0.1	<0.1	<0.1	40	4.29	0.067	1	28	1.77	8	0.002	<20	1.08	0.036	0.07	<0.1	<0.01	12.9	<0.1	1.03	4	0.6	<0.2
25	TDD219-SRK-WR-848	0.5	79	1	80	0.1	14.2	29.4	2169	9.3	42.4	<0.1	173.9	0.1	34	<0.1	<0.1	<0.1	43	5.03	0.074	1	26	1.89	6	0.002	<20	1.38	0.034	0.05	<0.1	<0.01	13.8	<0.1	1.6	6	1.1	0.3
Hole ID: TDD224																																				
26	TDD224-SRK-WR-849	0.3	36.6	1.1	84	0.1	4.2	28.2	2111	9.01	19.3	<0.1	116.6	0.1	25	<0.1	<0.1	<0.1	19	4.87	0.089	1	17	1.79	9	0.002	<20	1.21	0.034	0.07	<0.1	<0.01	9.5	<0.1	0.98	5	0.9	<0.2
27	TDD224-SRK-WR-850	0.4	38.6	1.1	89	0.1	2.7	30.3	1882	9.83	52.8	<0.1	279.7	0.1	27	0.1	<0.1	<0.1	16	5.12	0.082	<1	31	1.32	7	0.001	<20	0.89	0.05	0.06	<0.1	<0.01	10.1	<0.1	2.51	4	1.6	<0.2
Hole ID: TDD382																																				
28	TDD382-SRK-WR-851	0.4	36.1	0.7	119	<0.1	1.6	27.2	2230	9.12	2.2	<0.1	2.8	0.2	58	0.1	<0.1	<0.1	27	5.93	0.094	2	18	1.51	10	0.002	<20	1.71	0.023	0.06	<0.1	<0.01	10.3	<0.1	0.13	7	0.6	<0.2
QAQC																																				
Duplicates																																				
31	10PSD239-SRK-WR-715	0.2	107.4	0.9	63	<0.1	103.4	37.9	1131	5.65	51.4	<0.1	30.5	<0.1	71	<0.1	<0.1	<0.1	74	7.06	0.017	1	140	3.91	16	0.002	<20	2.26	0.078	0.09	<0.1	<0.01	13.6	<0.1	0.16	5	<0.5	<0.2
31	10PSD239-SRK-WR-715 **re-run**	0.3	115.2	1.8	66	<0.1	117.8	43.9	1131	5.81	59.4		**26.2**	<0.1	**91**	<0.1	<0.1	<0.1	84	6.14	**0.017**	1	147	4.17	19	0.001	<20	2.35	0.092	0.09	<0.1	<0.01	12.7	<0.1	0.2	6	0.7	<0.2
38	10PSD239-SRK-WR-722	0.3	121	1.6	72	<0.1	120.1	44.6	1342	6.51	5.1	<0.1	0.8	<0.1	43	0.2	<0.1	<0.1	167	7.38	0.019	1	227	3.34	7	0.193	<20	4.24	<0.001	0.03	<0.1	<0.01	14.4	<0.1	<0.05	10	<0.5	<0.2
38	10PSD239-SRK-WR-722 **re-run**	0.5	117.5	1.6	70	<0.1	124	46.6	1283	6.65	5.3		3.1	0.1	50	**0.1**	<0.1	<0.1	169	5.91	0.015	1	246	3.4	8	0.207	<20	4.42	0.008	0.03	<0.1	<0.01	13.6	<0.1	0.06	11	0.7	<0.2
38	10PSD239-SRK-WR-722 **re-run dup**	0.3	113.5	1.5	68	<0.1	118.4	44.1	1239	6.44	5		4.4	<0.1	47	**0.1**	<0.1	<0.1	163	5.75	0.014	1	239	3.29	8	0.206	<20	4.25	0.008	0.03	<0.1	<0.01	13.3	<0.1	0.05	10	0.6	<0.2
25	TDD219-SRK-WR-848	0.4	76.9	1.1	81	<0.1	14.4	29.4	2150	9.27	40.6	<0.1	18.3	0.1	32	0.1	<0.1	<0.1	43	4.95	0.074	1	26	1.85	6	0.002	<20	1.39	0.035	0.05	<0.1	<0.01	13	<0.1	1.57	5	0.9	<0.2
Reference Material (1)																																				
STD OREAS45PA (1)		1	597	19.7	115	0.4	303.9	111.5	1108	16	4.5	1.1	49.2	6.5	12	<0.1	0.1	0.2	222	0.24	0.034	16	930	0.1	176	0.14	<20	3.38	0.008	0.08	<0.1	0.03	42	<0.1	<0.05	17	0.8	<0.2
STD OREAS45PA (2)		0.9	632.6	21.4	134	0.3	315.5	115	1209	17.07	4.2	1.3	44.3	7.5	16	0.1	<0.1	0.2	238	0.26	0.038	17	877	0.12	199	0.14	<20	3.72	0.004	0.08	<0.1	0.04	46	<0.1	<0.05	18	<0.5	<0.2
STD OREAS45PA (3)		1.1	589.3	21.5	110	0.3	292.1	106.4	1121	16.07	4.6	1.3	45.9	7.3	14	<0.1	0.2	0.2	217	0.22	0.032	18	767	0.11	201	0.134	<20	3.17	0.008	0.07	<0.1	0.04	41	0.1	<0.05	16	<0.5	<0.2
STD OREAS45PA (4)		1.1	555.4	14.1	117	0.3	264.9	105.1	1107	15.42	4.9	0.9	45.2	5	11	<0.1	0.1	0.1	214	0.23	0.034	15	842	0.1	166	0.119	<20	2.99	0.005	0.07	<0.1	0.03	41.5	<0.1	<0.05	17	<0.5	<0.2
True Value STD OREAS45PA		**0.9**	**600**	**19**	**119**	**0.3**	**281**	**104**	**1130**	**16.559**	**4.2**	**1.2**	**43**	**6**	**14**	**0.09**	**0.13**	**0.18**	**221**	**0.2411**	**0.034**	**16.2**	**873**	**0.095**	**187**	**0.124**		**3.34**	**0.011**	**0.0665**	**0.011**	**0.03**	**43**	**0.07**	**0.03**	**16.8**	**0.54**	
Percent Difference (1)		11.1	-0.5	3.7	-3.4	33.3	8.1	7.2	-1.9	-3.4	7.1	-8.3	14.4	8.3	-14.3		-23.1	11.1	0.5	-0.5	0.0	-1.2	6.5	5.3	-5.9	12.9		1.2	-27.3	20.3		0.0	-2.3			1.2	48.1	
Percent Difference (2)		0.0	5.4	12.6	12.6	0.0	12.3	10.6	7.0	3.1	0.0	8.3	3.0	25.0	14.3	11.1		11.1	7.7	7.8	11.8	4.9	0.5	26.3	6.4	12.9		11.4	-63.6	20.3		33.3	7.0			7.1		
Percent Difference (3)		22.2	-1.8	13.2	-7.6	0.0	4.0	2.3	-0.8	-3.0	9.5	8.3	6.7	21.7	0.0		53.8	11.1	-1.8	-8.8	-5.9	11.1	-12.1	15.8	7.5	8.1		-5.1	-27.3	5.3		33.3	-4.7	42.9		-4.8		
Percent Difference (4)		22.2	-7.4	-25.8	-1.7	0.0	-5.7	1.1	-2.0	-6.9	16.7	-25.0	5.1	-16.7	-21.4		-23.1	-44.4	-3.2	-4.6	0.0	-7.4	-3.6	5.3	-11.2	-4.0		-10.5	-54.5	5.3		0.0	-3.5			1.2		
Reference Material (2)																																				
STD DS7 (1)		21.6	103.8	66.3	386	1.1	56.7	9.3	622	2.34	47.7	4.3	50.9	4.2	65	6	3.7	4.4	81	0.92	0.078	11	206	1.03	399	0.121	33	0.98	0.092	0.43	3.2	0.21	2	4.1	0.19	4	3.9	1.6
STD DS7 (2)		20.4	112.6	71.2	395	0.9	54.9	9.2	596	2.31	49.1	4.7	101.7	4.5	72	6.2	3.7	4.5	76	0.93	0.078	13	187	1.02	376	0.117	32	1	0.093	0.42	2.9	0.2	2.4	4	0.19	5	3	1
STD DS7 (3)		19.6	109.6	66.1	402	0.9	53.5	9	610	2.27	47.8	4.6	60.4	4.4	63	6.1	5.1	4.3	78	0.89	0.074	11	184	1	378	0.126	34	0.97	0.084	0.46	3.4	0.21	2.2	3.9	0.19	4	2.5	1.3
True Value STD DS7		**20.5**	**109**	**70.6**	**411**	**0.90**	**56.0**	**9.7**	**627**	**2.39**	**50.0**	**4.9**	**70.0**	**4.4**	**72.0**	**6.40**	**4.6**	**4.50**	**84**	**0.93**	**0.08**	**13.0**	**192**	**1.05**	**410.0**	**0.124**	**39**	**1.020**	**0.089**	**0.44**	**3.4**	**0.2**	**2.5**	**4.20**	**0.19**	**5.0**	**3.5**	**1.18**
Percent Difference (1)		5.4	-4.8	-6.1	-6.1	22.2	1.3	-4.1	-0.8	-2.1	-4.6	-12.2	-27.3	-4.5	-9.7	-6.3	-19.6	-2.2	-3.6	-1.1	-2.5	-15.4	7.3	-1.9	-2.7	-2.4	-15.4	-3.9	3.4	-2.3	-5.9	0.0	-20.0	-2.4	0.0	-20.0	11.4	35.6
Percent Difference (2)		-0.5	3.3	0.8	-3.9	0.0	-2.0	-5.2	-4.9	-3.3	-1.8	-4.1	45.3	2.3	0.0	-3.1	-19.6	0.0	-9.5	0.0	-2.5	0.0	-2.6	-2.9	-8.3	-5.6	-17.9	-1.9	4.5	-4.5	-14.7	-4.8	-4.0	-4.8	0.0	0.0	-14.3	-15.3
Percent Difference (3)		-4.4	0.6	-6.4	-2.2	0.0	-4.5	-7.2	-2.7	-5.0	-4.4	-6.1	-13.7	0.0	-12.5	-4.7	10.9	-4.4	-7.1	-4.3	-7.5	-15.4	-4.2	-4.8	-7.8	1.6	-12.8	-4.9	-5.6	4.5	0.0	0.0	-12.0	-7.1	0.0	-20.0	-28.6	10.2

Appendix F: Solid-Phase Trace Element Data (Aqua Regia Digestion), Madrid South

S. No.	Sample ID	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au* ppb	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Hg ppm	Sc ppm	Tl ppm	S %	Ga ppm	Se ppm	Te ppm
Reference Material (3)																																						
STD DS8 (1)		12.4	115.1	129.3	333	1.8	37.9	7.9	617	2.41	27.1	2.8	102.1	6.5	62	2.3	4.9	6.4	39	0.68	0.078	13	118	0.61	277	0.115	<20	0.89	0.082	0.42	3.1	0.19	2.1	5.8	0.16	5	5.3	6
STD DS8 (2)		13.8	112.5	98.5	327	1.8	39.2	7.8	623	2.54	28.2	1.9	86.1	5	57	2.4	3.7	5.1	41	0.71	0.087	13	125	0.63	272	0.12	<20	0.93	0.084	0.43	2.8	0.17	2	5.5	0.18	5	5.2	6.2
True Value STD DS8		**13.4**	**110**	**123.0**	**312**	**1.69**	**38.1**	**7.5**	**615**	**2.46**	**26.0**	**2.8**	**107**	**6.9**	**67.7**	**2.38**	**4.8**	**6.67**	**41**	**0.7**	**0.08**	**14.6**	**115**	**0.60**	**279**	**0.113**	**2.60**	**0.93**	**0.0883**	**0.41**	**3.0**	**0.2**	**2.3**	**5.40**	**0.17**	**4.7**	**5.2**	**5**
Percent Difference (1)		-7.7	4.6	5.1	6.7	6.5	-0.5	5.3	0.3	-2.0	4.2	0.0	-4.6	-5.7	-8.4	-3.4	2.1	-4.0	-5.1	-2.9	-2.5	-11.0	2.6	0.9	-0.7	1.8		-4.3	-7.1	2.4	3.3	-1.0	-8.7	7.4	-4.7	6.4	1.3	20.0
Percent Difference (2)		2.7	2.3	-19.9	4.8	6.5	2.9	4.0	1.3	3.3	8.5	-32.1	-19.5	-27.4	-15.8	0.8	-22.9	-23.5	-0.2	1.4	8.7	-11.0	8.7	4.2	-2.5	6.2		0.0	-4.9	4.9	-6.7	-11.5	-13.0	1.9	7.2	6.4	-0.6	24.0
Detection Limits		*0.1*	*0.1*	*0.1*	*1*	*0.1*	*0.1*	*0.1*	*1*	*0.01*	*0.5*	*0.1*	*0.5*	*0.1*	*1*	*0.1*	*0.1*	*0.1*	*2*	*0.01*	*0.001*	*1*	*1*	*0.01*	*1*	*0.001*	*20*	*0.01*	*0.001*	*0.01*	*0.1*	*0.01*	*0.1*	*0.1*	*0.05*	*1*	*0.5*	*0.2*
Acme Group No.		*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*	*1DX*

P:\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201109_Pactch14Report\Appendices\[App E and F_ ABA and Metals Data.xls]AppF_3

Note:

Analysis done at Acme Labs.

Note: RE = Repeat (analyzed from the same extract)

Duplicates: Analysis done on another cut of the pulp sample

* Refractory and graphitic samples can potentially limit Au solubility

Acme's Comment on 1DX Package RDP:

1DX is generally listed as having a reproducibility of 10-15%. This is however dependent on

A) Proper sample preparation – Acme protocol states pulverization must meet 85% passing 200mesh. [Ivy's note: Maxxam's samples meet this requirement]

B) The concentration of the analyte in the sample relative to the detection limit.

Acme uses a formula to evaluate each element, any one element in the 1DX failing will not cause a failure of the replicate but if many of the elements are flagged then the samples are sent for reanalysis.

P(% Diff) = (100xSDL)/(CONC) + LR

SDL=statistical detection limit

LR = Limiting Repeatability

For example assuming the SDL = DL of the method for Cu with a DL of 0.1 and a LR of 10%

If the sample concentration is at DL = 0.1 then the allowable % difference is 110%

If the sample concentration is at 10 x DL then the allowable % difference is 20%

If the sample concentration is 100 x DL then the allowable % difference is 11%

If the sample concentration is 1000 x DL then the allowable % difference is 10.1%

Appendix G:
Statistical Analysis of Solid-Phase Elemental Data by Lithology, Madrid South

Appendix G: Statistical Analysis of Solid-Phase Elemental Data by Lithology, Madrid South

Lithology	Statistical Summary	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Hg	Sc	Tl	S	Ga	Se
		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppb	ppm	ppm	%	ppm	ppm
Mafic to Ultramafic Metavolcanics (1a,1p)	P000	0.1	43	0.1	33	0.1	16.6	25.6	792	4.06	0.8	0.1	1	0.1	21	0.1	0.1	0.1	29	1.85	0.008	1	52	1.73	1	0.001	20	0.27	0.001	0.01	0.1	10	3.2	0.1	0.05	1	0.5
	P010	0.2	77	0.3	50	0.1	81.6	32.64	925	4.65	2.3	0.1	1	0.1	27	0.1	0.1	0.1	55	3.231	0.016	1	111.1	2.336	1	0.001	20	0.945	0.004	0.01	0.1	10	4.0	0.1	0.05	3	0.5
	P025	0.2	104	0.4	56	0.1	90.3	36.05	1135	5.63	3.6	0.1	2	0.1	33	0.1	0.1	0.1	80	5.565	0.017	1	146	2.73	2.75	0.001	20	2.205	0.011	0.01	0.1	10	10.0	0.1	0.05	4	0.5
	P050	0.2	112	0.8	62	0.1	99.0	39.4	1250	6.20	8.5	0.1	5	0.1	52	0.1	0.1	0.1	110	6.505	0.018	1	189.5	3.19	6	0.015	20	3.04	0.027	0.02	0.1	10	15.0	0.1	0.07	6	0.5
	P075	0.3	120	1.2	67	0.1	109.1	42.23	1334	6.613	28.8	0.1	18	0.1	74	0.1	0.1	0.1	143	7.218	0.019	1	211.3	3.735	12	0.206	20	4.02	0.067	0.05	0.1	10	18.2	0.1	0.125	8	0.5
	P090	0.4	130	1.6	76	0.1	114.4	44.47	1447	7.051	70.0	0.1	82	0.2	98	0.1	0.3	0.1	183.9	7.729	0.021	1	231.7	3.988	19	0.252	20	4.50	0.099	0.07	0.4	10	21.2	0.1	0.278	10	0.7
	P100	0.7	352	56.5	1672	1.3	190.4	49.8	1811	7.78	282.2	0.1	2563	0.3	133	7.5	0.8	0.5	224	9.17	0.031	4	314	4.91	151	0.276	22	4.80	0.200	0.10	79.8	10	24.7	0.1	1.74	12	1.3
	n	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92
Mafic to Ultramafic Metavolcanics Mixed with Quartz Vein (1 w. 12q)	P000	0.2	120.7	0.9	58	0.1	77.5	37.3	1143	6.47	77.1	0.1	4	0.1	56	0.1	0.2	0.1	37	6.56	0.017	1	74	2.64	9	0.001	20	0.37	0.112	0.04	0.1	10	16.9	0.1	0.08	1	0.5
	P010	0.2	120.7	0.9	59	0.1	77.72	37.41	1170	6.513	83.0	0.1	16	0.1	56	0.1	0.2	0.1	39	6.746	0.017	1	79	2.681	9.1	0.001	20	0.436	0.113	0.041	0.2	10	17.0	0.1	0.10	1	0.5
	P025	0.2	120.8	0.9	60	0.1	78.05	37.58	1210	6.578	91.8	0.1	34	0.1	56	0.1	0.2	0.1	42	7.025	0.018	1	85	2.743	9.25	0.001	20	0.535	0.115	0.043	0.3	10	17.1	0.1	0.13	2	0.5
	P050	0.3	120.9	1.0	62	0.1	78.6	37.85	1278	6.685	106.4	0.1	65	0.1	56	0.1	0.3	0.1	47	7.49	0.018	1	97	2.845	9.5	0.001	20	0.70	0.118	0.045	0.6	10	17.4	0.1	0.18	2	0.5
	P075	0.3	121	1.0	63	0.1	79.15	38.13	1345	6.793	121.1	0.1	95	0.1	56	0.1	0.3	0.1	52	7.955	0.019	1	107.8	2.948	9.75	0.001	20	0.865	0.121	0.048	0.8	10	17.6	0.1	0.23	3	0.5
	P090	0.3	121.1	1.0	64	0.1	79.48	38.29	1385	6.857	129.8	0.1	114	0.1	56	0.1	0.3	0.1	55	8.234	0.019	1	114.5	3.009	9.9	0.001	20	0.964	0.123	0.049	0.9	10	17.7	0.1	0.26	3	0.5
	P100	0.3	121.1	1	65	0.1	79.7	38.4	1412	6.9	135.7	0.1	126	0.1	56	0.1	0.3	0.1	57	8.42	0.019	1	119	3.05	10	0.001	20	1.03	0.124	0.05	1	10	17.8	0.1	0.28	3	0.5
	n	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mixed Mafic to Ultramafic Metavolcanics (1)	P000	0.2	50	1.1	51	0.1	63.2	22.2	713	3.73	1.6	0.1	2	0.1	57	0.1	0.1	0.1	31	5.08	0.006	1	67	2.06	11	0.001	20	0.29	0.083	0.06	0.1	10	6.7	0.1	0.05	1	0.5
	P010	0.2	55	1.2	51	0.1	67.9	23.43	821	4.372	37.1	0.1	7	0.1	61	0.1	0.1	0.1	32	5.845	0.01	1	68	2.249	11.6	0.001	20	0.392	0.085	0.06	0.2	10	7.8	0.1	0.11	1	0.5
	P025	0.3	63	1.3	52	0.1	75.1	25.28	983	5.335	90.4	0.1	14	0.1	67	0.1	0.2	0.1	33	6.993	0.016	1	69	2.533	12.5	0.001	20	0.545	0.088	0.06	0.4	10	9.3	0.1	0.20	1	0.5
	P050	0.3	80	1.4	52	0.2	83.2	33.05	1239	5.88	127.3	0.1	150	0.2	77	0.1	0.2	0.1	35	7.645	0.019	1	104	2.88	13.5	0.001	20	0.66	0.101	0.065	2.1	10	13.2	0.1	0.29	1	0.5
	P075	0.4	102	1.7	54	0.3	89.0	40.05	1423	6.10	139.2	0.1	789	0.3	85	0.1	0.2	0.1	38	8.175	0.02	1	145	3.215	18.75	0.001	20	0.808	0.117	0.07	5.3	10	16.5	0.1	0.445	2	0.5
	P090	0.5	119	2.0	58	0.6	91.9	40.5	1454	6.478	147.3	0.1	1702	0.3	89	0.1	0.3	0.1	39	9.10	0.023	1	155	3.476	27.3	0.001	20	1.019	0.127	0.07	8.3	10	17.2	0.1	0.652	2	0.5
	P100	0.6	129.9	2.2	61	0.7	93.8	40.8	1475	6.73	152.8	0.1	2310	0.4	91	0.1	0.3	0.1	40	9.72	0.024	1	162	3.65	33	0.001	20	1.16	0.133	0.07	10.3	10	17.6	0.1	0.79	3	0.5
	n	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Intermediate volcanics (2a, 2p, 2pd)	P000	0.1	90	0.2	50	0.1	67.3	27.5	802	4.21	0.5	0.1	0.5	0.1	17	0.1	0.1	0.1	67	2.42	0.015	1	136	1.88	1	0.002	20	2.31	0.001	0.01	0.1	10	2.8	0.1	0.05	3	0.5
	P010	0.1	103	0.4	53	0.1	89.3	33.72	899	4.513	2.2	0.1	0.57	0.1	20	0.1	0.1	0.1	79	2.766	0.016	1	180.4	2.174	1	0.005	20	2.692	0.002	0.01	0.1	10	3.7	0.1	0.05	4	0.5
	P025	0.1	113	0.7	55	0.1	100.7	35.48	927	4.76	3.3	0.1	1.3	0.1	25	0.1	0.1	0.1	92	3.25	0.017	1	196	2.43	2	0.060	20	2.983	0.006	0.01	0.1	10	6.1	0.1	0.06	5	0.5
	P050	0.2	120	0.7	62	0.1	105.2	39.35	1135	5.475	5.7	0.1	2.2	0.1	43	0.1	0.1	0.1	121.5	4.95	0.018	1	210.5	2.945	4	0.177	20	3.45	0.013	0.01	0.1	10	8.6	0.1	0.07	7	0.5
	P075	0.2	125	1.2	67	0.1	111.8	43.33	1285	6.40	26.0	0.1	4.925	0.1	55	0.1	0.1	0.1	155.5	7.193	0.019	1	228.8	3.563	8.25	0.233	20	4.185	0.019	0.04	0.1	10	14.2	0.1	0.093	9	0.5
	P090	0.3	127	1.5	72	0.1	119.8	44.6	1359	6.79	56.3	0.1	34.08	0.1	85	0.13	0.1	0.1	180.9	7.986	0.02	1	237.3	3.81	12.3	0.263	20	4.54	0.025	0.07	0.2	13	17.0	0.1	0.116	10	0.7
	P100	0.6	136	5.3	102	0.2	123.1	46.0	1414	7.14	1033	0.1	635.8	0.2	99	0.2	1.2	0.1	194	9.07	0.021	3	244	3.94	24	0.290	20	4.8	0.034	0.08	0.7	30	21.3	0.1	0.38	11	0.8
	n	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
Intermediate to felsic volcanics (3ao)	P000	0.3	18	0.6	38	0.1	15.3	8.5	260	1.75	0.5	0.1	0.5	0.3	22	0.1	0.1	0.1	10	1.59	0.024	3	59	0.66	14	0.001	20	0.93	0.035	0.04	0.1	10	1.2	0.1	0.05	3	0.5
	P010	0.4	20	0.6	43	0.1	18.0	9.0	337	1.87	0.5	0.1	0.5	0.3	26	0.1	0.1	0.1	11	1.835	0.024	4	60	0.66	14.5	0.001	20	0.94	0.040	0.045	0.1	10	1.3	0.1	0.05	4	0.5
	P025	0.4	22	0.7	49	0.1	20.8	9.7	415	2.0	0.5	0.1	0.5	0.3	31	0.1	0.1	0.1	13	2.15	0.024	5	61	0.685	16	0.001	20	0.955	0.044	0.055	0.1	10	1.3	0.1	0.05	4	0.5
	P050	0.5	25	0.9	58	0.1	22.2	11.3	436	2.055	0.5	0.1	1.05	0.4	38	0.1	0.1	0.1	16	2.435	0.024	5	71	0.885	20.5	0.001	20	1.015	0.046	0.08	0.1	10	1.6	0.1	0.05	5	0.5
	P075	0.8	30	1.1	93	0.1	28.8	12.5	469	2.35	0.65	0.1	3.775	0.4	46	0.1	0.1	0.1	20	2.60	0.026	6	91	1.025	25	0.003	20	1.173	0.063	0.10	0.1	10	2.6	0.1	0.05	6	0.5
	P090	1.4	32	1.5	120	0.1	32.0	13.2	595	2.50	6.2	0.1	19.7	0.4	54	0.1	0.1	0.1	31	3.145	0.027	7	107	1.42	27.5	0.004	20	1.39	0.073	0.13	0.2	10	3.5	0.1	0.07	7	0.5
	P100	1.8	33	1.8	138	0.1	33.1	13.7	715	2.55	11.7	0.1	34.9	0.4	61	0.1	0.1	0.1	42	3.66	0.027	7	118	1.81	29	0.004	20	1.57	0.078	0.16	0.2	10	4.1	0.1	0.09	7	0.5
	n	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Early gabbro intrusives (7a)	P000	0.1	87	0.2	50	0.1	67.1	31.0	739	4.37	0.5	0.1	0.5	0.1	19	0.1	0.1	0.1	78	1.24	0.016	1	125	2.06	1	0.057	20	2.53	0.001	0.01	0.1	10	3.0	0.1	0.05	5	0.5
	P010	0.1	100	0.3	50	0.1	79.6	33.4	759	4.374	1.38	0.1	0.5	0.1	19	0.1	0.1	0.1	80	1.292	0.017	1	136.2	2.332	1.4	0.110	20	2.71	0.003	0.01	0.1	10	3.3	0.1	0.05	5	0.5
	P025	0.1	118	0.4	51	0.1	98.4	37.1	789	4.38	2.7	0.1	0.5	0.1	19	0.1	0.1	0.1	83	1.37	0.019	1	153	2.74	2	0.190	20	2.98	0.007	0.01	0.1	10	3.7	0.1	0.05	5	0.5
	P050	0.2	119	0.6	54	0.1	123.4	38.3	1082	5.41	3.4	0.1	2.7	0.1	34	0.1	0.1	0.1	109	4.29	0.021	1	210	3.90	3	0.199	20	4.00	0.018	0.01	0.1	10	10.8	0.1	0.06	8	0.5
	P075	0.2	142	0.9	67	0.1	130.7	44.2	1134	5.84	8.3	0.1	2.8	0.2	55	0.1	0.1	0.1	151	5.11	0.024	1	236	4.11	4	0.206	20	4.20	0.064	0.01	0.1	10	13.9	0.1	0.07	9	0.5
	P090	0.3	144	1.0	70	0.1	131.8	44.5	1254	6.65	12.62	0.1	26.56	0.3	63	0.1	0.1	0.1	197.2	5.674	0.025	1	247.4	4.128	7	0.226	20	4.536	0.082	0.04	0.1	10	20.8	0.1	0.07	10	0.5
	P100	0.3	145.3	1	72	0.1	132.6	44.7	1334	7.19	15.5	0.1	42.4	0.3	69	0.1	0.1	0.1	228	6.05	0.025	1	255	4.14	9	0.240	20	4.76	0.094	0.06	0.1	10	25.4	0.1	0.07	11	0.5
	n	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Mixed Early Gabbro (Melanogabbro) Intrusives (7ac)	P000	0.5	28	4.6	70	0.1	151	27.8	712	3.44	6.4	0.9	0.5	5.7	324	0.1	0.2	0.1	72	5.32	0.155	48	235	3.54	596	0.007	20	2.21	0.043	0.03	0.1	10	9.9	0.1	0.25	9	0.5
	P010	0.5	28	4.6	70	0.1	151	27.8	712	3.44	6.4	0.9	0.5	5.7	324	0.1	0.2	0.1	72	5.32	0.155	48	235	3.54	596	0.007	20	2.21	0.043	0.03	0.1	10	9.9	0.1	0.25	9	0.5
	P025	0.5	28	4.6	70	0.1	151	27.8	712	3.44	6.4	0.9	0.5	5.7	324	0.1	0.2	0.1	72	5.32	0.155	48	235	3.54	596	0.007	20	2.21	0.043	0.03	0.1	10	9.9	0.1	0.25	9	0.5
	P050	0.5	28	4.6	70	0.1	151	27.8	712	3.44	6.4	0.9	0.5	5.7	324	0.1	0.2	0.1	72	5.32	0.155	48	235	3.54	596	0.007	20	2.21	0.043	0.03	0.1	10	9.9	0.1	0.25	9	0.5
	P075	0.5	28	4.6	70	0.1	151	27.8	712	3.44	6.4	0.9	0.5	5.7	324	0.1	0.2	0.1	72	5.32	0.155	48	235	3.54	596	0.007	20	2.21	0.043	0.03	0.1	10	9.9	0.1	0.25	9	0.5
	P090	0.5	28	4.6	70	0.1	151	27.8	712	3.44	6.4	0.9	0.5	5.7	324	0.1	0.2	0.1	72	5.32	0.155	48	235	3.54	596	0.007	20	2.21	0.043	0.03	0.1	10	9.9	0.1	0.25	9	0.5
	P100	0.5	28	4.6	70	0.1	151	27.8	712	3.44	6.4	0.9	0.5	5.7	324	0.1	0.2	0.1	72	5.32	0.155	48	235	3.54	596	0.007	20	2.21	0.043	0.03	0.1	10	9.9	0.1	0.25	9	0.5
	n	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Late Porphyry Granitoids (9p, 9pf, 9pq)	P000	0.2	2	0.5	21	0.1	4.8	4.4	175	1.41	0.5	0.1	1	0.1	8	0.1	0.1	0.1	3	0.89	0.011	1	42	0.53	8	0.001	20	0.28	0.027	0.02	0.1	10	0.8	0.1	0.05	1	0.5
	P010	0.3	9	0.8	27	0.1	9.3	6.4	208	1.556	0.6	0.1	1	0.5	25	0.1	0.1	0.1	4	1.972	0.024	2	65	0.63	17.2	0.001	20	0.336	0.054	0.076	0.1	10	1.0	0.1	0.05	1	0.5
	P025	0.4	15	1	33	0.1	10.6	6.9	241	1.64	1.2	0.1	1	0.5	50	0.1	0.1	0.1	5	2.11	0.025	3	75	0.71	26	0.001	20	0.38	0.071	0.09	0.1	10	1.2	0.1	0.05	1	0.5
	P050	0.5	24	1.3	39	0.1	14.6	8.2	332	1.87	3.1	0.1	2	0.7	74	0.1	0.1	0.1	6	2.48	0.026	4	86	0.93	34	0.001	20	0.48	0.094	0.11	0.1	10	1.7	0.1	0.05	2	0.5
	P075	0.6	37	1.7	48	0.1	25.4	11.7	450	2.48	9	0.2	7	0.8	89	0.1	0.1	0.1	13	3.03	0.027	4	101	1.07	48	0.001	20	0.89	0.109	0.14	0.1	10	2.7	0.1	0.06	3	0.5
	P090	0.9	64	2.7	52	0.1	31.0	13.5	530	2.724	16.16	0.2	13	0.8	106	0.1	0.24	0.1	32	3.572	0.028	5	127.6	1.266	64	0.018	20	1.324	0.130	0.16	0.4	10	3.5	0.1	0.148	7	0.5
	P100	1.8	127	18	93	0.4	84.2	41.4	1534	6.82	181.7	0.2	1385	1.5	126	0.4	0.5	0.5	58	8.86	0.047	17	157	3.17	228	0.128	20	1.75	0.195	0.20	4.2	20	15.1	0.1	1.19	8	1.2
	n	97	97	97	97	97	97	97	97	97	97	97	56	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97

Appendix G: Statistical Analysis of Solid-Phase Elemental Data by Lithology, Madrid South

Lithology	Statistical Summary	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Hg	Sc	Tl	S	Ga	Se
		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppb	ppm	ppm	%	ppm	ppm
Late Porphyry Granitoids Mixed with Quartz Vein (9 w. 12q)	P000	0.4	5	0.7	27	0.1	8.9	6.0	197	1.46	1.1	0.1	1	0.4	71	0.1	0.1	0.1	5	1.94	0.02	2	84	0.62	25	0.001	20	0.32	0.089	0.07	0.1	10	1.3	0.1	0.05	1	0.5
	P010	0.4	7	0.8	27	0.1	9.7	6.4	214	1.556	2.96	0.1	1	0.4	73	0.1	0.1	0.1	5	2.108	0.021	2	87	0.689	26.2	0.001	20	0.332	0.089	0.079	0.1	10	1.5	0.1	0.059	1	0.5
	P025	0.4	10	0.9	27	0.1	10.9	7.1	241	1.70	5.75	0.1	1	0.5	77	0.1	0.1	0.1	6	2.36	0.022	2	92	0.793	28	0.001	20	0.35	0.089	0.093	0.1	10	1.8	0.1	0.073	1	0.5
	P050	0.5	16	1.2	31	0.1	17.8	9.4	324	2.06	13.85	0.1	4	0.7	81	0.1	0.15	0.1	7	2.84	0.024	3	97	0.86	39	0.001	20	0.375	0.093	0.105	0.2	10	2.2	0.1	0.11	1	0.5
	P075	0.5	24	1.4	38	0.1	25.4	11.55	445	2.54	20.85	0.125	94	0.8	86	0.1	0.325	0.1	8	3.893	0.026	4	99	1.193	51	0.001	20	0.39	0.098	0.113	0.3	10	3.0	0.1	0.143	1	0.5
	P090	0.5	28	1.4	43	0.1	28.1	11.82	540	2.90	21.66	0.17	253	0.9	91	0.1	0.55	0.1	9	5.175	0.028	4	100.1	1.773	54.6	0.001	20	0.39	0.098	0.117	0.4	10	3.9	0.1	0.147	1	0.5
	P100	0.5	30	1.4	46	0.1	29.9	12.0	604	3.14	22.2	0.2	359	0.9	95	0.1	0.7	0.1	10	6.03	0.029	4	101	2.16	57	0.001	20	0.39	0.099	0.12	0.5	10	4.5	0.1	0.15	1	0.5
	n	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Late Gabbro Intrusives (10a)	P000	0.1	4	4.8	75	0.1	213.5	32.4	855	4.43	4.3	0.7	0.9	7.3	198	0.1	0.1	0.1	100	4.40	0.205	70	311	5.49	651	0.005	20	3.58	0.023	0.01	0.1	10	11.6	0.1	0.05	11	0.5
	P010	0.1	4	4.8	75	0.1	213.5	32.4	855	4.43	4.3	0.7	0.9	7.3	198	0.1	0.1	0.1	100	4.40	0.205	70	311	5.49	651	0.005	20	3.58	0.023	0.01	0.1	10	11.6	0.1	0.05	11	0.5
	P025	0.1	4	4.8	75	0.1	213.5	32.4	855	4.43	4.3	0.7	0.9	7.3	198	0.1	0.1	0.1	100	4.40	0.205	70	311	5.49	651	0.005	20	3.58	0.023	0.01	0.1	10	11.6	0.1	0.05	11	0.5
	P050	0.1	4	4.8	75	0.1	213.5	32.4	855	4.43	4.3	0.7	0.9	7.3	198	0.1	0.1	0.1	100	4.40	0.205	70	311	5.49	651	0.005	20	3.58	0.023	0.01	0.1	10	11.6	0.1	0.05	11	0.5
	P075	0.1	4	4.8	75	0.1	213.5	32.4	855	4.43	4.3	0.7	0.9	7.3	198	0.1	0.1	0.1	100	4.40	0.205	70	311	5.49	651	0.005	20	3.58	0.023	0.01	0.1	10	11.6	0.1	0.05	11	0.5
	P090	0.1	4	4.8	75	0.1	213.5	32.4	855	4.43	4.3	0.7	0.9	7.3	198	0.1	0.1	0.1	100	4.40	0.205	70	311	5.49	651	0.005	20	3.58	0.023	0.01	0.1	10	11.6	0.1	0.05	11	0.5
	P100	0.1	4	4.8	75	0.1	213.5	32.4	855	4.43	4.3	0.7	0.9	7.3	198	0.1	0.1	0.1	100	4.40	0.205	70	311	5.49	651	0.005	20	3.58	0.023	0.01	0.1	10	11.6	0.1	0.05	11	0.5
	n	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Late Mafic Dyke (10b)	P000	0.3	19	1.3	68	0.1	6.2	18.4	627	4.27	1.3	0.2	2	1.4	75	0.1	0.1	0.1	32	2.75	0.135	11	17	1.69	76	0.003	20	1.28	0.033	0.03	0.1	10	3.7	0.1	0.05	4	0.5
	P010	0.3	25	1.5	72	0.1	6.5	18.85	691	4.288	1.42	0.2	2	1.5	105.9	0.1	0.1	0.1	33	3.086	0.136	12	20	1.729	109	0.003	20	1.379	0.035	0.063	0.1	10	3.8	0.1	0.056	4	0.5
	P025	0.3	34	1.9	79	0.1	7.0	19.53	787	4.315	1.6	0.2	2	1.6	152.3	0.1	0.1	0.1	34	3.59	0.137	14	25	1.788	158.5	0.003	20	1.528	0.037	0.113	0.1	10	3.9	0.1	0.065	5	0.5
	P050	0.3	40	2.2	83	0.1	8.3	20.5	861	4.345	1.75	0.25	2	1.6	187	0.1	0.1	0.1	45	3.885	0.14	17	27	1.89	206.5	0.004	20	1.77	0.046	0.145	0.1	10	4.4	0.1	0.08	7	0.5
	P075	0.3	44	2.4	84	0.1	9.3	21.35	885	4.405	2.3	0.3	2	1.6	206.5	0.1	0.125	0.1	63	3.975	0.143	20	29	2.008	238.3	0.005	20	2.18	0.068	0.16	0.1	10	5.5	0.1	0.135	9	0.5
	P090	0.4	48	2.4	84	0.1	9.3	21.8	892	4.486	3.2	0.3	2	1.6	225.4	0.1	0.17	0.1	77	4.11	0.144	21	31	2.093	258.5	0.007	20	2.63	0.096	0.178	0.1	10	6.6	0.1	0.216	10	0.5
	P100	0.4	50	2.5	85	0.1	9.4	22.1	896	4.54	3.8	0.3	3	1.6	238	0.1	0.2	0.1	87	4.20	0.145	22	33	2.15	272	0.008	20	2.93	0.114	0.19	0.1	10	7.4	0.1	0.27	10	0.5
	n	4	4	4	4	4	4	4	4	4	4	4	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Quartz Vein (12q)	P000	0.2	7	0.8	18	0.1	9.9	4.9	190	1.31	16.2	0.1	10.8	0.1	27	0.1	0.1	0.1	5	1.61	0.006	1	115	0.51	4	0.001	20	0.05	0.001	0.02	0.1	10	1.0	0.1	0.08	1	0.5
	P010	0.4	18	1.0	23	0.1	14.43	7.2	319	1.758	60.87	0.1	37.2	0.1	31	0.1	0.1	0.1	6	2.492	0.012	1	123.4	0.814	4.3	0.001	20	0.124	0.023	0.021	0.2	10	1.8	0.1	0.124	1	0.5
	P025	0.4	62	1.3	43	0.1	27.53	14.65	503	2.715	77.18	0.1	276	0.1	38	0.1	0.1	0.1	12	3.65	0.013	1	145.8	1.293	7.75	0.001	20	0.288	0.062	0.03	0.3	10	5.0	0.1	0.30	1	0.5
	P050	0.5	89	1.8	53	0.3	60.05	24.5	1273	5.605	133.1	0.1	739	0.1	61	0.1	0.3	0.1	28	7.775	0.014	1	156	2.615	8.5	0.001	20	0.375	0.096	0.05	0.4	10	9.3	0.1	0.435	1	0.6
	P075	0.6	105	1.9	61	0.4	75.73	30.18	1381	6.20	250.2	0.1	2621	0.2	75	0.1	0.6	0.1	40	8.58	0.015	1	180	2.843	13.25	0.001	20	0.775	0.115	0.083	2.4	10	11.8	0.1	0.493	2	0.7
	P090	0.7	111	4.2	68	1.5	83.6	32.59	1489	6.338	506.9	0.1	23998	0.3	88	0.2	1.0	0.1	46	8.68	0.024	1	195.9	3.12	17.9	0.002	20	0.859	0.175	0.117	74.98	10	13.7	0.1	1.265	2	1.1
	P100	1	374	233	121	36.2	105.4	41.4	1872	6.68	585.1	0.1	100000	0.4	99	0.2	28.5	0.1	63	9.40	0.044	2	252	3.71	25	0.003	20	2.57	0.186	0.12	100	190	14.5	0.1	1.58	5	1.8
	n	12	12	12	12	12	12	12	12	12	12	12	9	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Mixed Quartz Vein (12q)	P000	0.7	45	2.8	26	0.7	51.3	22.6	663	3.90	275.5	0.1	2758	0.1	50	0.1	0.4	0.2	15	4.69	0.037	1	239	1.61	8	0.001	20	0.24	0.068	0.04	100	10	7.6	0.1	1.57	1	0.8
	P010	0.7	45	2.8	26	0.7	51.3	22.6	663	3.90	275.5	0.1	2758	0.1	50	0.1	0.4	0.2	15	4.69	0.037	1	239	1.61	8	0.001	20	0.24	0.068	0.04	100	10	7.6	0.1	1.57	1	0.8
	P025	0.7	45	2.8	26	0.7	51.3	22.6	663	3.90	275.5	0.1	2758	0.1	50	0.1	0.4	0.2	15	4.69	0.037	1	239	1.61	8	0.001	20	0.24	0.068	0.04	100	10	7.6	0.1	1.57	1	0.8
	P050	0.7	45	2.8	26	0.7	51.3	22.6	663	3.90	275.5	0.1	2758	0.1	50	0.1	0.4	0.2	15	4.69	0.037	1	239	1.61	8	0.001	20	0.24	0.068	0.04	100	10	7.6	0.1	1.57	1	0.8
	P075	0.7	45	2.8	26	0.7	51.3	22.6	663	3.90	275.5	0.1	2758	0.1	50	0.1	0.4	0.2	15	4.69	0.037	1	239	1.61	8	0.001	20	0.24	0.068	0.04	100	10	7.6	0.1	1.57	1	0.8
	P090	0.7	45	2.8	26	0.7	51.3	22.6	663	3.90	275.5	0.1	2758	0.1	50	0.1	0.4	0.2	15	4.69	0.037	1	239	1.61	8	0.001	20	0.24	0.068	0.04	100	10	7.6	0.1	1.57	1	0.8
	P100	0.7	45	2.8	26	0.7	51.3	22.6	663	3.90	275.5	0.1	2758	0.1	50	0.1	0.4	0.2	15	4.69	0.037	1	239	1.61	8	0.001	20	0.24	0.068	0.04	100	10	7.6	0.1	1.57	1	0.8
	n	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Carbonate Vein (12c)	P000	0.3	18	0.8	45	0.1	36.6	12.9	1092	4.85	5.0	0.1	2.8	0.1	31	0.1	0.1	0.1	22	5.00	0.005	1	135	2.53	2	0.001	20	0.35	0.002	0.01	0.1	10	5.7	0.1	0.05	1	0.5
	P010	0.3	35	0.8	47	0.1	47.36	16.92	1150	4.924	6.4	0.1	2.84	0.1	38	0.1	0.1	0.1	37	5.92	0.007	1	149	2.78	3.8	0.001	20	0.90	0.004	0.02	0.1	10	6.0	0.1	0.056	2	0.5
	P025	0.4	61	0.8	51	0.1	63.5	23.0	1238	5.035	8.5	0.1	2.9	0.1	48	0.1	0.1	0.1	60	7.30	0.011	1	170	3.155	6.5	0.002	20	1.73	0.007	0.035	0.1	10	6.5	0.1	0.065	4	0.5
	P050	0.4	104	0.8	56	0.1	90.4	33.0	1383	5.22	11.9	0.1	3	0.1	64	0.1	0.1	0.1	98	9.59	0.016	1	205	3.78	11	0.003	20	3.10	0.011	0.06	0.1	10	7.2	0.1	0.08	6	0.5
	P075	0.5	112	1.0	56	0.2	95.45	36.3	1578	5.38	41.9	0.1	99	0.1	79	0.1	0.1	0.1	102	10.77	0.019	2	211.5	3.79	14	0.105	20	3.28	0.055	0.07	0.2	10	9.2	0.1	0.16	7	0.6
	P090	0.5	116	1.1	56	0.2	98.48	38.28	1694	5.476	59.8	0.1	157	0.1	87	0.1	0.1	0.1	104.4	11.48	0.02	2	215.4	3.80	15.8	0.166	20	3.388	0.081	0.076	0.3	10	10.3	0.1	0.208	7	0.6
	P100	0.5	120	1.2	56	0.2	100.5	39.6	1772	5.54	71.8	0.1	195	0.1	93	0.1	0.1	0.1	106	11.95	0.021	2	218	3.80	17	0.207	20	3.46	0.098	0.08	0.3	10	11.1	0.1	0.24	7	0.6
	n	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Madrid deformation zone (13a)	P000	0.4	100.7	1.1	68	0.1	94.2	35.3	1257	5.95	77.4	0.1	15	0.1	90	0.1	0.1	0.1	48	9.09	0.012	1	82	3.17	25	0.001	20	1.12	0.160	0.08	0.1	10	13.7	0.1	0.05	3	0.5
	P010	0.4	100.7	1.1	68	0.1	94.2	35.3	1257	5.95	77.4	0.1	15	0.1	90	0.1	0.1	0.1	48	9.09	0.012	1	82	3.17	25	0.001	20	1.12	0.160	0.08	0.1	10	13.7	0.1	0.05	3	0.5
	P025	0.4	100.7	1.1	68	0.1	94.2	35.3	1257	5.95	77.4	0.1	15	0.1	90	0.1	0.1	0.1	48	9.09	0.012	1	82	3.17	25	0.001	20	1.12	0.160	0.08	0.1	10	13.7	0.1	0.05	3	0.5
	P050	0.4	100.7	1.1	68	0.1	94.2	35.3	1257	5.95	77.4	0.1	15	0.1	90	0.1	0.1	0.1	48	9.09	0.012	1	82	3.17	25	0.001	20	1.12	0.160	0.08	0.1	10	13.7	0.1	0.05	3	0.5
	P075	0.4	100.7	1.1	68	0.1	94.2	35.3	1257	5.95	77.4	0.1	15	0.1	90	0.1	0.1	0.1	48	9.09	0.012	1	82	3.17	25	0.001	20	1.12	0.160	0.08	0.1	10	13.7	0.1	0.05	3	0.5
	P090	0.4	100.7	1.1	68	0.1	94.2	35.3	1257	5.95	77.4	0.1	15	0.1	90	0.1	0.1	0.1	48	9.09	0.012	1	82	3.17	25	0.001	20	1.12	0.160	0.08	0.1	10	13.7	0.1	0.05	3	0.5
	P100	0.4	100.7	1.1	68	0.1	94.2	35.3	1257	5.95	77.4	0.1	15	0.1	90	0.1	0.1	0.1	48	9.09	0.012	1	82	3.17	25	0.001	20	1.12	0.160	0.08	0.1	10	13.7	0.1	0.05	3	0.5
	n	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
*Ave. Crustal Abudance for Basalt**		***1.5***	***87***	***6***	***105***	***0.11***	***130***	***48***	***1500***	***8.65***	***2***	***1***	***4***	***4***	***465***	***0.22***	***0.2***	***0.007***	***250***	***7.6***	***0.11***	***15***	***170***	***4.6***	***330***	***1.38***	***5***	***7.8***	***1.8***	***0.83***	***0.7***	***90***	***30***	***0.21***	***0.03***	***17***	***0.05***

*Price (1997)

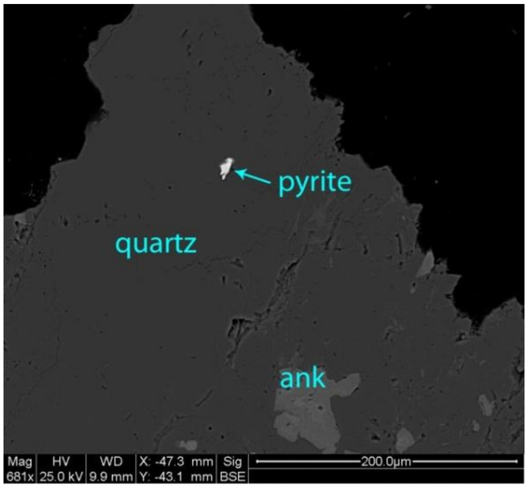
P:\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201109_Pactch14Report\Working Files\[Hope Bay MASTER Geochemical Spreadsheet_Rev30_Patch14Report_als_Rev00.xlsx]

Appendix H:
Humidity Cell Sample Mineralogy and Solid-Phase Elemental Data, Madrid South

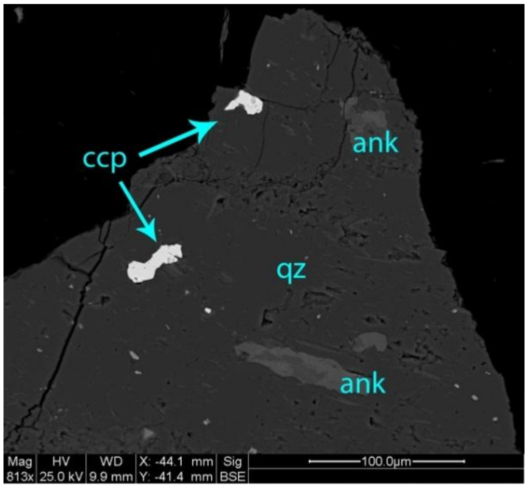
Appendix H-1: Mineralogy

09PSD151, 58-68.5m (HC-60) - Predominately composed of quartz and plagioclase (albite/andesine). Lesser amounts of muscovite/sericite, ferroan dolomite, and paragonite were also detected by MLA and XRD. MLA detected <0.01% pyrite and chalcopyrite. Sulfide associations and exposures are not described because sulfide weight percentages are <0.01%. Pyrite had a P_{50} and P_{80} of 7µm and 10µm, respectively. Fine-grained pyrite was detected containing anhedral crystals. EDS analyses showed that ferroan dolomite and Mg-rich siderite had compositions of $Ca(Mg_{0.63}Fe_{0.37})CO_3$ and $(Mg_{0.41}Fe_{0.59})CO_3$, respectively.

	Mineral Weight %	
	MLA	XRD
Mineral	Wt%	Wt%
Quartz	54.65	42
Albite/Andesine	21.49	27
Muscovite	11.97	13
Ferroan dolomite	9.00	12
Paragonite	2.52	6
Apatite	0.13	
Rutile	0.10	
Ilmenite	0.09	
Zircon	0.01	
Barite	<0.01	
Calcite	<0.01	
Chalcopyrite	**<0.01**	
Chlorite	<0.01	
Chromite	<0.01	
FeClay	<0.01	
Gold	<0.01	
K-feldspar	<0.01	
Monazite	<0.01	
Pyrite	**<0.01**	
Pyrophyllite	<0.01	
Siderite	<0.01	
Sphene	<0.01	
Tourmaline	<0.01	
Xenotime	<0.01	



BSE image of bright anhedral pyrite in dark gray quartz and light gray ferroan dolomite/ankerite (ank).



BSE image of bright chalcopyrite (ccp) grains in dark gray quartz (qz) and light gray ferroan dolomite/ankerite (ank).

Sulfide Mineral Associations and Sulfide Exposure

Tables are not included because sulfide weight percentages were <0.01%.

Pyrite Grain Size by Percent Passing

P-value	µm
P50	7.07
P80	9.81

Chemical Compositions of Ferroan Dolomite and Mg-rich Siderite

Ferroan Dolomite			
MgO	CaO	FeO	CO_2
14.3	25.6	15	45.2

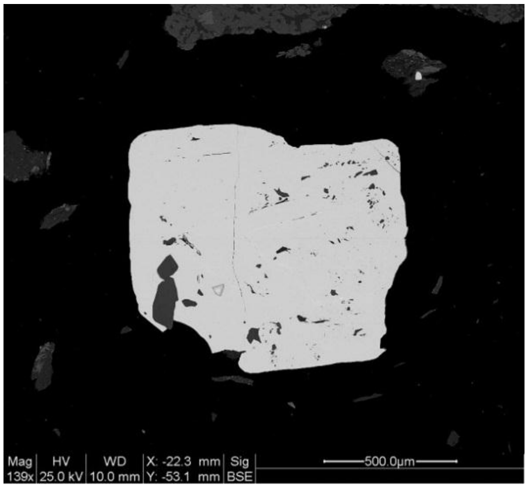
Mg-rich Siderite			
MgO	CaO	FeO	CO_2
16.5	0.5	42	41.6

Formula: $Ca(Mg_{0.63}Fe_{0.37})CO_3$

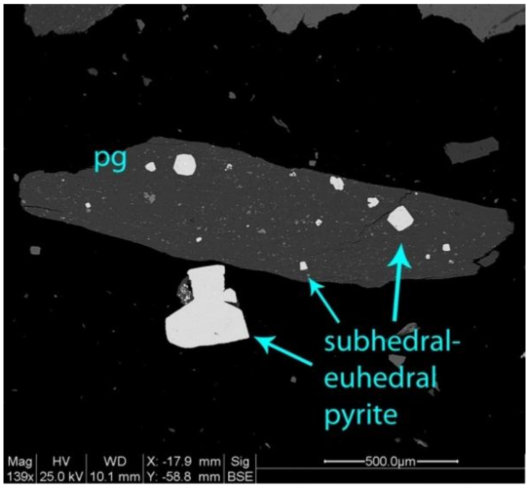
Formula: $(Mg_{0.41}Fe_{0.59})CO_3$

09PSD153, 501.76-505.19m (HC-61) **-** Predominately composed of ferroan dolomite, paragonite, and quartz. Lesser amounts of chlorite, pyrite, siderite, and rutile were also detected by MLA and XRD. MLA detected 2.06% pyrite which agrees with measured sulfur quantities (0.91% S) shown in Table IV. MLA also detected 0.02% chalcopyrite, 0.01% cobaltite and gersdorffite, and <0.01% arsenopyrite, pyrrhotite, and tetrahedrite. Pyrite was mainly associated with paragonite and 33% of its grain boundary had a free surface. Six percent of pyrite particles were encapsulated, 9% were liberated, and 84% had intermediate exposure. Pyrite had a P_{50} and P_{80} of 525µm and 657µm, respectively. Fine to coarse-grained pyrite was detected containing subhedral to euhedral crystals with some sieve texture. Chalcopyrite was mainly associated with ferroan dolomite and 9% of its grain boundary had a free surface. Sixty-eight percent of chalcopyrite particles were encapsulated, 1% was liberated, and 31% had intermediate exposure. Cobaltite was mainly associated with paragonite and only 1% of its grain boundary had a free surface. Ninety-eight percent of cobaltite particles were encapsulated, the remaining 2% had intermediate exposure. Gersdorffite was mainly associated with paragonite and only 2% of its grain boundary had a free surface. Seventy-two percent of gersdorffite particles were encapsulated, the remaining 28% had intermediate exposure. EDS analyses showed that ferroan dolomite and Mg-rich siderite had compositions of $Ca(Mg_{0.65}Fe_{0.35})CO_3$ and $(Mg_{0.42}Fe_{0.58})CO_3$, respectively.

	Mineral Weight %	
	MLA	XRD
Mineral	Wt%	Wt%
Ferroan dolomite	33.14	35
Paragonite	29.11	30
Quartz	18.98	29
Chlorite	6.99	3
Muscovite	4.06	
Albite/Andesine	2.97	
Pyrite	**2.06**	**1**
Siderite	1.59	2
Tourmaline	0.69	
Apatite	0.11	
Rutile	0.09	<1
Calcite	0.07	
Scheelite	0.05	
Ilmenite	0.03	
Chalcopyrite	**0.02**	
Cobaltite	**0.01**	
Gersdorffite	**0.01**	
Magnetite	0.01	
Arsenopyrite	**<0.01**	
FeClay	<0.01	
Gold	<0.01	
Monazite	<0.01	
Pyrophyllite	<0.01	
Pyrrhotite	**<0.01**	
Sphene	<0.01	
Tetrahedrite	**<0.01**	
Xenotime	<0.01	



BSE image of a bright large subhedral pyrite particle that is liberated and contains sieve texture.



BSE image of bright subhedral to euhedral pyrite. The image shows liberated pyrite and encapsulated pyrite in dark gray paragonite (pg).

Sulfide Mineral Associations

Percent of sulfide's grain boundary associated with:	Albite/Andesine	Apatite	Chalcopyrite	Chlorite	Ferroan dolomite	Gersdorffite	Muscovite	Paragonite	Pyrite	Quartz	Siderite	Free Surface	OTHER
Chalcopyrite	11.39	1.73	n/a	11.50	17.39	1.07	11.18	6.42	7.65	14.85	6.69	9.33	0.80
Cobaltite	n/a	n/a	n/a	2.90	4.68	2.04	0.41	86.20	2.06	0.58	n/a	1.14	n/a
Gersdorffite	n/a	n/a	1.20	15.21	3.64	n/a	9.34	57.21	4.82	2.77	1.56	2.46	1.79
Pyrite	0.49	n/a	0.51	3.89	7.90	0.28	5.10	45.48	n/a	1.67	0.85	32.36	1.47

Sulfide Exposure

Percent of Sulfide at Particle Periphery:	0% (not exposed)	0%< x <100%	100% (liberated)
Chalcopyrite	68.00	30.95	1.05
Cobaltite	97.77	2.23	n/a
Gersdorffite	72.43	27.57	n/a
Pyrite	6.46	84.33	9.20

Pyrite Grain Size by Percent Passing

P-value	µm
P50	525.22
P80	657.10

Chemical Compositions of Ferroan Dolomite and Mg-rich Siderite

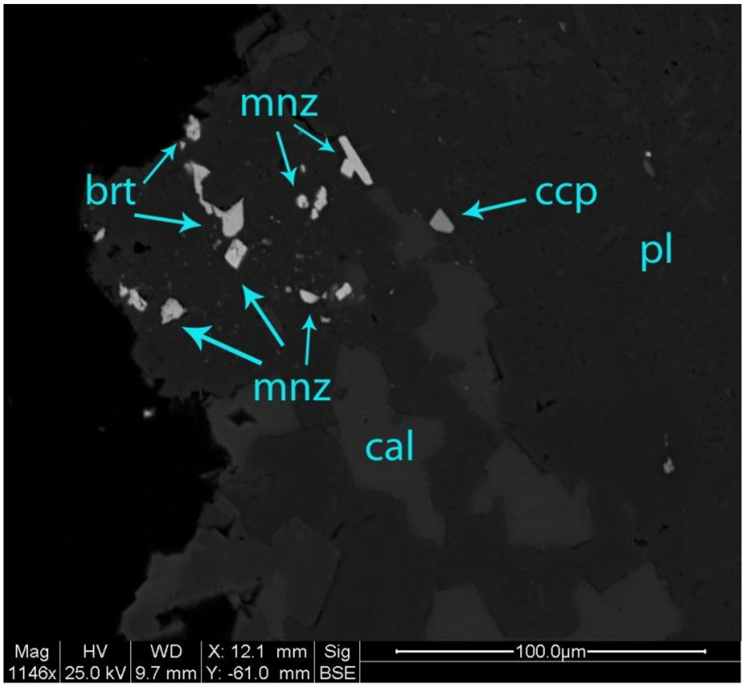
Ferroan Dolomite			
MgO	CaO	FeO	CO_2
14.8	25.8	14.3	45.2
Formula: $Ca(Mg_{0.65}Fe_{0.35})CO_3$			

Mg-rich Siderite			
MgO	CaO	FeO	CO_2
16.6	0.6	41.8	41.6
Formula: $(Mg_{0.42}Fe_{0.58})CO_3$			

09PSD209, 494.54-497.19m (HC-62) **-** Predominately composed of plagioclase (albite/andesine). Lesser amounts of chlorite, ferroan dolomite, quartz, calcite, muscovite/sericite, apatite, anhydrite/gypsum, paragonite, and rutile were also detected by MLA and XRD. MLA detected <0.01% chalcopyrite. Sulfide associations and exposures are not described because sulfide weight percentages were <0.01%. Pyrite was not detected in this sample. EDS analyses showed that ferroan dolomite had a composition of $Ca(Mg_{0.86}Fe_{0.14})CO_3$. Siderite was not detected in this sample by MLA or XRD.

	Mineral Weight %	
	MLA	XRD
Mineral	Wt%	Wt%
Albite/Andesine	48.91	35
Chlorite	19.66	16
Ferroan dolomite	14.48	13
Quartz	9.68	25
Calcite	3.07	3
Muscovite	1.05	3
Apatite	0.79	<1*
Anhydrite/Gypsum	0.63	1
Magnetite	0.59	
Tourmaline	0.54	
Paragonite	0.20	3
Rutile	0.14	<1
Ilmenite	0.12	
Monazite	0.08	
Barite	0.04	
Biotite	<0.01	
Chalcopyrite	**<0.01**	
Chromite	<0.01	
FeClay	<0.01	
Iron	<0.01	
K-feldspar	<0.01	
Pyrophyllite	<0.01	
Sphene	<0.01	
Xenotime	<0.01	
Zircon	<0.01	

*<1% pyrite was initially reported, but revisiting the XRD spectrum showed it was actually apatite, which agrees with MLA values.



BSE image of bright monazite (mnz) and barite (brt) grains and one light gray chalcopyrite (ccp) grain in plagioclase (pl) and calcite (cal).

Sulfide Mineral Associations, Sulfide Exposure, and Pyrite Grain Size

Tables are not included because sulfide weight percentages were <0.01%. Pyrite was not detected in this sample.

Chemical Compositions of Ferroan Dolomite

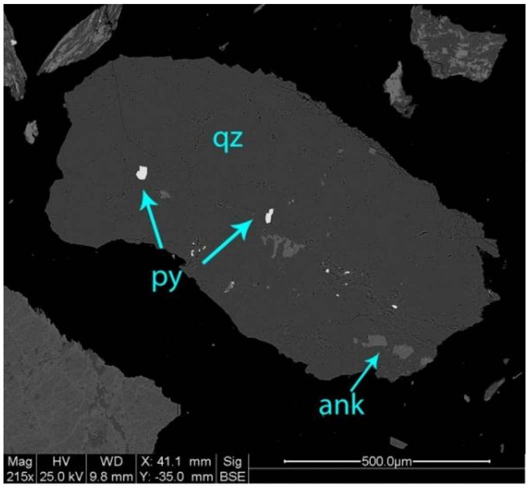
Ferroan Dolomite			
MgO	CaO	FeO	CO_2
21.3	27.1	6.4	45.2

Formula: $Ca(Mg_{0.86}Fe_{0.14})CO_3$

Siderite was not detected in this sample by MLA or XRD.

19PSD209, 548.02-558.5m (HC-63) **-** Predominately composed of ferroan dolomite and quartz. Lesser amounts of chlorite, paragonite, calcite, and rutile were also detected by MLA and XRD. MLA detected 0.02% pyrite and <0.01% chalcopyrite and gersdorffite. Pyrite was mainly associated with ferroan dolomite and quartz. Nineteen percent of pyrite's grain boundary had a free surface. Thirty-eight percent of pyrite particles were encapsulated, 21% were liberated, and 41% had intermediate exposure. Pyrite had a P_{50} and P_{80} of 25µm and 37µm, respectively. Fine to coarse-grained pyrite was detected containing subhedral crystals without sieve texture. EDS analyses showed that ferroan dolomite had a composition of $Ca(Mg_{0.73}Fe_{0.27})CO_3$. Siderite was not detected in this sample by MLA or XRD.

	Mineral Weight %	
	MLA	XRD
Mineral	Wt%	Wt%
Ferroan dolomite	34.05	37
Quartz	27.94	30
Chlorite	18.00	13
Paragonite	7.71	19
Tourmaline	4.36	
Albite/Andesine	4.10	
Muscovite	3.48	
Rutile	0.13	<1
Ilmenite	0.09	
Apatite	0.06	
Calcite	0.03	<1
Pyrite	**0.02**	
Anhydrite/Gypsum	<0.01	
Chalcopyrite	**<0.01**	
FeClay	<0.01	
Gersdorffite	**<0.01**	
K-feldspar	<0.01	
Monazite	<0.01	
Pyrophyllite	<0.01	
Sphene	<0.01	
Xenotime	<0.01	
Zircon	<0.01	



BSE image of bright subhedral pyrite (py) in dark gray quartz (qz) and light gray ferroan dolomite/ankerite (ank).

BSE image of bright gersdorffite rimming light gray pyrite.

NEWMONT

Sulfide Mineral Associations

Percent of sulfide's grain boundary associated with:	Albite/Andesine	Chlorite	Ferroan dolomite	Gersdorffite	Muscovite	Paragonite	Quartz	Rutile	Tourmaline	Free Surface	OTHER
Pyrite	5.11	9.11	25.78	1.54	6.25	7.18	19.95	1.54	3.82	18.73	0.98

Sulfide Exposure

Percent of Sulfide at Particle Periphery:	0% (not exposed)	0%< x <100%	100% (liberated)
Pyrite	38.24	40.81	20.96

Pyrite Grain Size by Percent Passing

P-value	µm
P50	25.47
P80	36.56

Chemical Compositions of Ferroan Dolomite

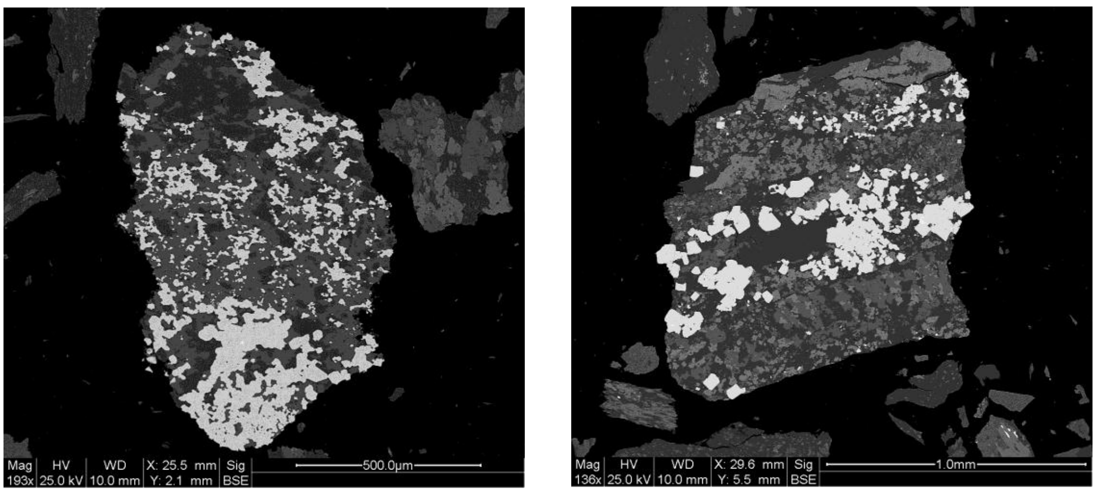
Ferroan Dolomite			
MgO	CaO	FeO	CO_2
17.2	25.9	11.6	45.2

Formula: $Ca(Mg_{0.73}Fe_{0.27})CO_3$

Siderite was not detected in this sample by MLA or XRD.

09PSD209, 595.88-603m (HC-64) **-** Predominately composed of ferroan dolomite, paragonite, and quartz. Lesser amounts of chlorite, siderite, calcite, and rutile were also detected by MLA and XRD. MLA detected 0.72% pyrite, 0.02% gersdorffite, 0.01% chalcopyrite, and <0.01% arsenopyrite, cobaltite, pyrrhotite, sphalerite, and tetrahedrite. Pyrite was mainly associated with ferroan dolomite and quartz. Nine percent of pyrite's grain boundary had a free surface. Five percent of pyrite particles were encapsulated, 1% was liberated, and 93% had intermediate exposure. Pyrite had a P_{50} and P_{80} of 104μm and 229μm, respectively. Fine to coarse-grained pyrite was detected containing anhedral to euhedral crystals without sieve texture. Chalcopyrite was mainly associated with chlorite and 6% of its grain boundary had a free surface. Sixty-seven percent of chalcopyrite particles were encapsulated, <1% were liberated, and 33% had intermediate exposure. Gersdorffite was mainly associated with paragonite and 8% of its grain boundary had a free surface. Seventy-one percent of gersdorffite particles were encapsulated, 3% were liberated, and 27% had intermediate exposure. EDS analyses showed that ferroan dolomite and Mg-rich siderite had compositions of $Ca(Mg_{0.69}Fe_{0.31})CO_3$ and $(Mg_{0.38}Fe_{0.62})CO_3$, respectively.

	Mineral Weight %	
	MLA	XRD
Mineral	Wt%	Wt%
Ferroan dolomite	38.72	40
Paragonite	21.60	23
Quartz	18.99	30
Albite/Andesine	7.56	
Siderite	4.24	4
Muscovite	4.03	
Chlorite	3.04	2
Pyrite	**0.72**	
Tourmaline	0.43	
Rutile	0.19	<1
Calcite	0.18	<1
Ilmenite	0.11	
Magnetite	0.09	
Apatite	0.05	
Gersdorffite	**0.02**	
Chalcopyrite	**0.01**	
Arsenopyrite	**<0.01**	
Barite	<0.01	
Cobaltite	**<0.01**	
FeClay	<0.01	
Iron	<0.01	
K-feldspar	<0.01	
Monazite	<0.01	
Pyrophyllite	<0.01	
Pyrrhotite	**<0.01**	
Sphalerite	**<0.01**	
Sphene	<0.01	
Tetrahedrite	**<0.01**	
Xenotime	<0.01	



BSE images of bright anhedral to euhedral pyrite disseminated in light gray chlorite, medium gray ferroan dolomite/ankerite, and dark gray quartz.

NEWMONT

Sulfide Mineral Associations

Percent of sulfide's grain boundary associated with:	Albite/Andesine	Chlorite	Cobaltite	Ferroan dolomite	Muscovite	Paragonite	Pyrite	Quartz	Siderite	Tourmaline	Free Surface	OTHER
Chalcopyrite	3.74	19.83	n/a	14.40	3.34	4.52	15.69	13.44	18.94	n/a	6.10	n/a
Gersdorffite	7.75	7.48	1.51	8.91	7.62	36.02	8.63	7.33	2.41	2.32	7.76	2.25
Pyrite	3.50	4.26	0.02	34.56	3.24	12.18	n/a	26.44	3.63	1.61	9.32	1.24

Sulfide Exposure

Percent of Sulfide at Particle Periphery:	0% (not exposed)	0%< x <100%	100% (liberated)
Chalcopyrite	66.51	32.95	0.54
Gersdorffite	70.06	26.64	3.30
Pyrite	5.28	93.36	1.36

Pyrite Grain Size by Percent Passing

P-value	µm
P50	103.68
P80	229.10

Chemical Compositions of Ferroan Dolomite and Mg-rich Siderite

Ferroan Dolomite			
MgO	CaO	FeO	CO_2
15.9	26.1	12.8	45.2

Formula: $Ca(Mg_{0.69}Fe_{0.31})CO_3$

Mg-rich Siderite			
MgO	CaO	FeO	CO_2
14.8	0.6	43.6	41.6

Formula: $(Mg_{0.38}Fe_{0.62})CO_3$

Appendix H-2:
Solid-Phase Trace Metal Data for Humidity Cell Samples - ICP Metals by Aqua Regia Digestion

Appendix H-2: Solid-Phase Trace Metal Data for Humidity Cell Samples - ICP Metals by Aqua Regia Digestion

				Al ppm	Sb ppm	As ppm	Ba ppm	Bi ppm	B ppm	Cd ppm	Ca ppm	r ppm	o ppm	Cu ppm	Fe ppm	Pb ppm	Mg ppm	Mn ppm	Hg ppm	o ppm	Ni ppm	P ppm	K ppm	Se ppm	Ag ppm	Na ppm	Sr ppm	Tl ppm	Th ppm	Ti ppm	U ppm	V ppm	W ppm	Zn ppm
HC #	**Rock Type**[1]	**Sulphide** % Rank[2]	**Preliminary Economic Classification**	**Al** ppm	**Sb** ppm	**As** ppm	**Ba** ppm	**Bi** ppm	**B** ppm	**Cd** ppm	**Ca** ppm	**Cr** ppm	**Co** ppm	**Cu** ppm	**Fe** ppm	**Pb** ppm	**Mg** ppm	**Mn** ppm	**Hg** ppm	**Mo** ppm	**Ni** ppm	**P** ppm	**K** ppm	**Se** ppm	**Ag** ppm	**Na** ppm	**Sr** ppm	**Tl** ppm	**Th** ppm	**Ti** ppm	**U** ppm	**V** ppm	**W** ppm	**Zn** ppm
HC-63	1	77	W	23,700	0.1	7.3	13	0.1	20	0.1	72,600	136	42.3	79.6	64,100	0.8	40,800	1,266	0.01	0.3	100.4	180	400	0.5	0.1	910	142	0.1	0.1	10	0.1	103	0.1	66
HC-61	1	97	W	9,000	0.3	214	12	0.1	20	0.1	71,300	60	51.2	167.4	65,100	1.7	25,400	1,215	0.01	0.6	97.8	210	600	0.9	0.4	1,320	71	0.1	0.1	10	0.1	42	54.7	76
HC-62*	7ac mixed	0	W	25,300	0.1	7.3	575	0.1	20	0.1	52,100	239	29	31.7	34,000	4.2	39,200	765	0.01	0.7	162.2	1,480	300	0.5	0.1	540	355	0.1	5.3	60	0.8	74	0.1	77
HC-60	9	0 to 51	W	4,200	0.1	2.7	35	0.1	20	0.1	26,200	30	6.9	24.8	17,300	1.3	8,400	255	0.01	0.6	8.7	280	1,300	0.5	0.1	1,040	79	0.1	0.8	10	0.2	6	0.1	41
HC-64	9	97	W	7,300	0.1	126	9	0.1	20	0.1	83,500	52	40.2	118.2	68,500	1.5	34,400	1,457	0.01	0.4	92.7	160	500	0.6	0.1	1,310	61	0.1	0.1	10	0.1	41	0.1	72
Average Crustal Abundance for Basalt (Price 1997)				*78,000*	*0.2*	*2*	*330*	*0.007*	*5*	*0.22*	*76,000*	*170*	*48*	*87*	*86,500*	*6*	*46,000*	*1,500*	*0.09*	*1.5*	*130*	*1,100*	*8,300*	*0.05*	*0.11*	*18,000*	*465*	*0.21*	*4*	*13,800*	*1*	*250*	*0.7*	*105*

[1]Rock codes as follows: **1** = mafic volcanics; **7ac** = early gabbro; 9 = late porphyry granitoids

*For HC-62, percent rank of sulphide determined by comparion with early gabbro samples (7a, mixed and unmixed)

P:\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201208_Patch14Report\Working Files\[HB_WR_Outcomes.mc.REV14.xlsx]

Appendix I:
Humidity Cell Test Results, Madrid South

Appendix I-1:
Summary of ABA and Kinetic Test Results

Appendix I-1: Summary of ABA and Kinetic Test Results

Humidity Cell #	Rock Type[1]	Sulphide % Rank[2]	Preliminary Economic Classification	Static Test Results: Sulphide Sulphur	NP	TIC	NP/AP	TIC/AP	Kinetic Test Results: pH		SO4 Release Rates: Initial	SO4 Release Rates: Stable	As Release Rates: Initial	As Release Rates: Stable
HC-63	1	77	W	0.16	299	383	59.9	76.5	7.5	9.1	5.6	0.6	0.0026	0.0005
HC-61	1	97	W	0.83	281	388	10.8	14.9	0.0	9.6	5.8	1.1	0.2639	0.0562
HC-62*	7ac mixed	0	W	<0.02	169	189	27.0	30.3	7.3	8.2	336	23	0.0012	0.0005
HC-60	9	0 to 51	W	0.02	102	137	163.7	218.5	7.4	9.5	0.6	0.5	0.0194	0.0025
HC-64	9	97	W	0.27	348	473	41.2	56.1	7.5	9.5	3	1	0.0643	0.0968

NP determined using the modified (MEND 1991) method.

[1]Rock codes as follows: 1 = mafic volcanics; 7ac = early gabbro; 9 = late porphyry granitoids

*For HC-62, percent rank of sulphide determined by comparion with early gabbro samples (7a, mixed and unmixed)

Appendix I-2: Summary of Trace Element Stable Release Rates for Humidity Cell Tests

Appendix I-2: Summary of Trace Element Stable Release Rates for Humidity Cell Tests

HC #	Rock Type[1]	Sulphide % Rank[2]	Preliminary Economic Classification	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu
				mg/kg/week											
HC-63	1	77	W	0.018	0.00028	0.00048	0.00034	0.0000047	0.0000023	0.023	0.0000025	1.8	0.000047	0.000013	0.00013
HC-61	1	97	W	0.0071	0.0005	0.056	0.0001	0.0000046	0.0000023	0.023	0.0000023	2.7	0.000046	0.0011	0.00039
HC-62	7ac mixed	0	W	0.031	0.00014	0.00046	0.0085	0.0000044	0.0000022	0.022	0.0000025	24	0.000044	0.000017	0.00043
HC-60	9	0 to 51	W	0.025	0.00022	0.0025	0.00074	0.0000045	0.0000022	0.025	0.0000023	1.8	0.000045	0.000028	0.0003
HC-64	9	97	W	0.0091	0.00033	0.097	0.000089	0.0000044	0.0000022	0.022	0.0000022	2.4	0.000044	0.00087	0.00022

HC #	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	P	K	Se	Si
	mg/kg/week											
HC-63	0.00084	0.000024	0.00033	1.1	0.0018	0.00094	0.00007	0.000032	0.0018	0.29	0.000035	0.14
HC-61	0.0021	0.00003	0.00025	1.3	0.0024	0.0011	0.000081	0.00058	0.0014	0.26	0.000079	0.12
HC-62	0.00079	0.000027	0.00044	1.9	0.0069	0.0009	0.00016	0.00005	0.0015	0.067	0.000046	0.22
HC-60	0.0013	0.000023	0.00024	0.96	0.0013	0.0009	0.00036	0.000034	0.002	0.62	0.000019	0.21
HC-64	0.0013	0.000013	0.00022	1.2	0.0023	0.00091	0.000041	0.00072	0.0018	0.2	0.000088	0.14

HC #	Ag	Na	Sr	Tl	Sn	Ti	U	V	Zn	Zr
	mg/kg/week									
HC-63	0.0000023	0.23	0.0082	0.00000093	0.000048	0.00023	0.0000014	0.00012	0.00036	0.000047
HC-61	0.0000023	0.086	0.0062	0.00000099	0.000089	0.00023	0.0000017	0.00017	0.00033	0.000046
HC-62	0.0000025	0.12	0.57	0.000002	0.000063	0.00022	0.00004	0.000089	0.00027	0.000044
HC-60	0.0000023	0.72	0.0062	0.0000009	0.00005	0.00022	0.0001	0.00012	0.0005	0.000048
HC-64	0.0000022	0.12	0.0049	0.00000089	0.000051	0.00022	0.0000012	0.00026	0.00024	0.000044

[1]Rock codes as follows: **1** = mafic volcanics; **7ac** = early gabbro; **9** = late porphyry granitoid

*For HC-62, percent rank of sulphide determined by comparion with early gabbro samples (7a, mixed and unmixed)

Appendix I-3:
Summary of General Parameter, Nutrient & Ionic
Stable Release Rates for Humidity Cell Tests

Appendix I-3: Summary of General Parameter, Nutrient & Ionic Release Rates for Humidity Cell Tests

Humidity Cell #	Rock Type[1]	Sulphide % Rank[2]	Preliminary Economic Classification	SO4	Alkalinity	Fluoride	Chloride	Nitrate-N	Nitrite-N	Total Ammonia	Diss.-P	TDS
				mg/kw/wee								
HC-63	1	77	W	0.57	9.4	0.01	0.32	0.01	0.00	0.07	0.00	12
HC-61	1	97	W	1.1	11	0.01	0.29	0.02	0.00	0.08	0.02	15
HC-62*	7ac mixed	0	W	23	9.1	0.01	2.30	0.01	0.00	0.14	0.00	85
HC-60	9	0 to 51	W	0.48	9.4	0.01	1.10	0.01	0.00	0.08	0.00	13
HC-64	9	97	W	1	9.9	0.01	0.25	0.01	0.00	0.08	0.03	14

[1]Rock codes as follows: **1** = mafic volcanics; **7ac** = early gabbro; **9** = late porphyry granitoid

*For HC-62, percent rank of sulphide determined by comparion with early gabbro samples (7a, mixed and unmixed)

Appendix I-4:
Summary of Kinetic Test Depletion Rates

Appendix I-4: Summary of Kinetic Test Depletion Rates

HC #	Rock Type[1]	Sulphide	Preliminary Economic Classification	Sulphide	NP/AP	TIC/AP	(Ca+Mg)/ SO4	Stable SO4 Release Rate	Time to Depletion			NP Depletion > AP Depletion	TIC Depletion > AP Depletion	Ca+Mg/ SO4 < NP/AP	Ca+Mg/ SO4 < TIC/AP	Prediction	
									NP	TIC	Sulphide					Neutral	Acidic
		% Rank[2]		%S				mg/kg/wk	years								
HC-63	1	77	W	0.16	59.9	76.5	15.1	0.57	636	814	160	Yes	Yes	Yes	Yes	likely	
HC-61	1	97	W	0.83	10.8	14.9	10.9	1.1	446	617	450	No	Yes	No	Yes	likely	
HC-62*	7ac mixed	0	W	<0.02	27.0	30.3	2.8	23	46	52	-0.4	Yes	Yes	Yes	Yes	likely	
HC-60	9	0 to 51	W	0.02	163.7	218.5	16.6	0.48	233	312	23	Yes	Yes	Yes	Yes	likely	
HC-64	9	97	W	0.27	41.2	56.1	10.2	1.0	625	851	153	Yes	Yes	Yes	Yes	likely	

[1]Rock codes as follows: **1** = mafic volcanics; **7a** = early gabbro; **9** = late porphyry granitoids

*For HC-62, percent rank of sulphide determined by comparion with early gabbro samples (7a, mixed and unmixed)

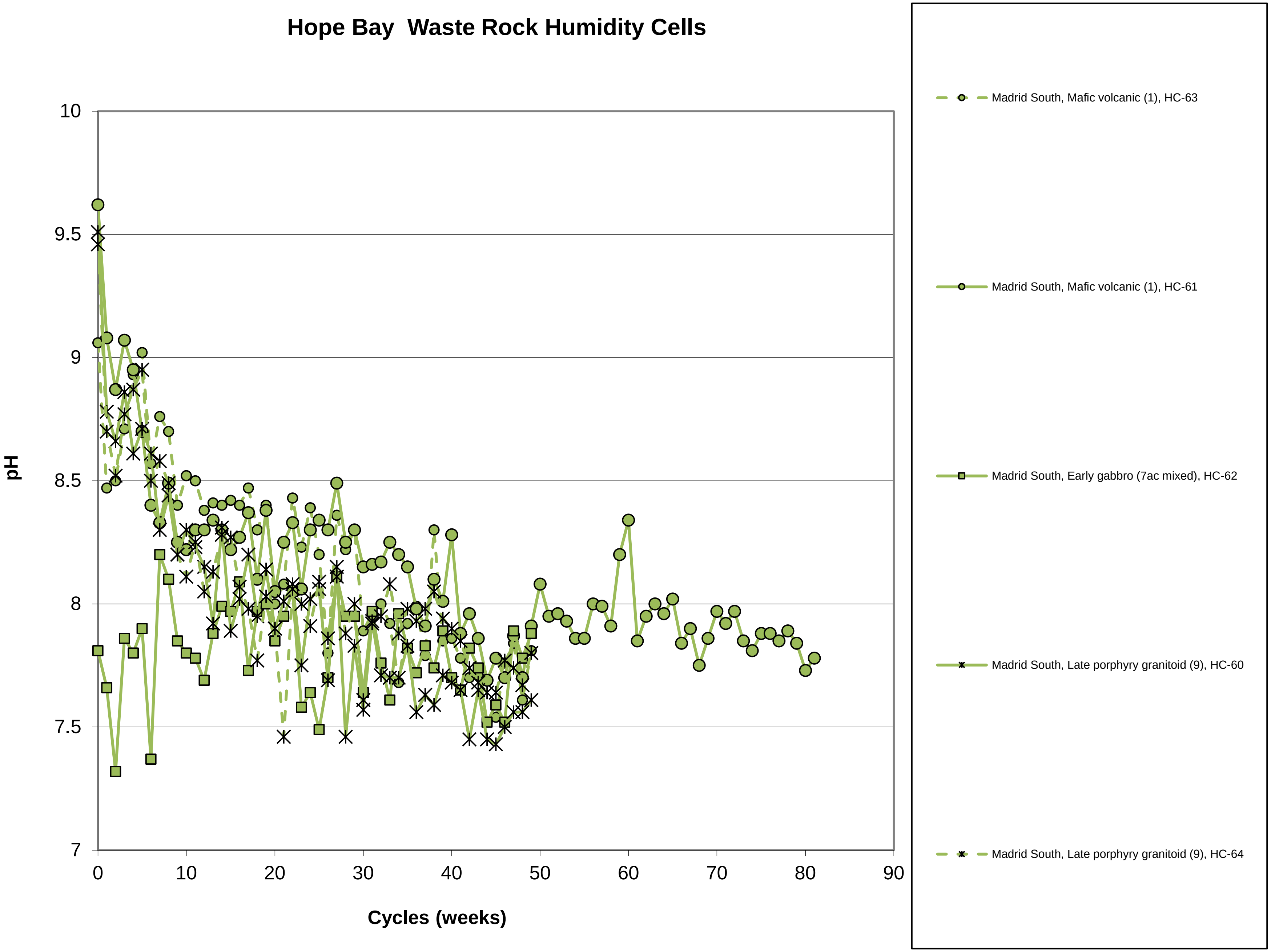
Appendix I-5:
Low-level Sulphate Data for Last Two Cycles of Selected Humidity Cell Tests

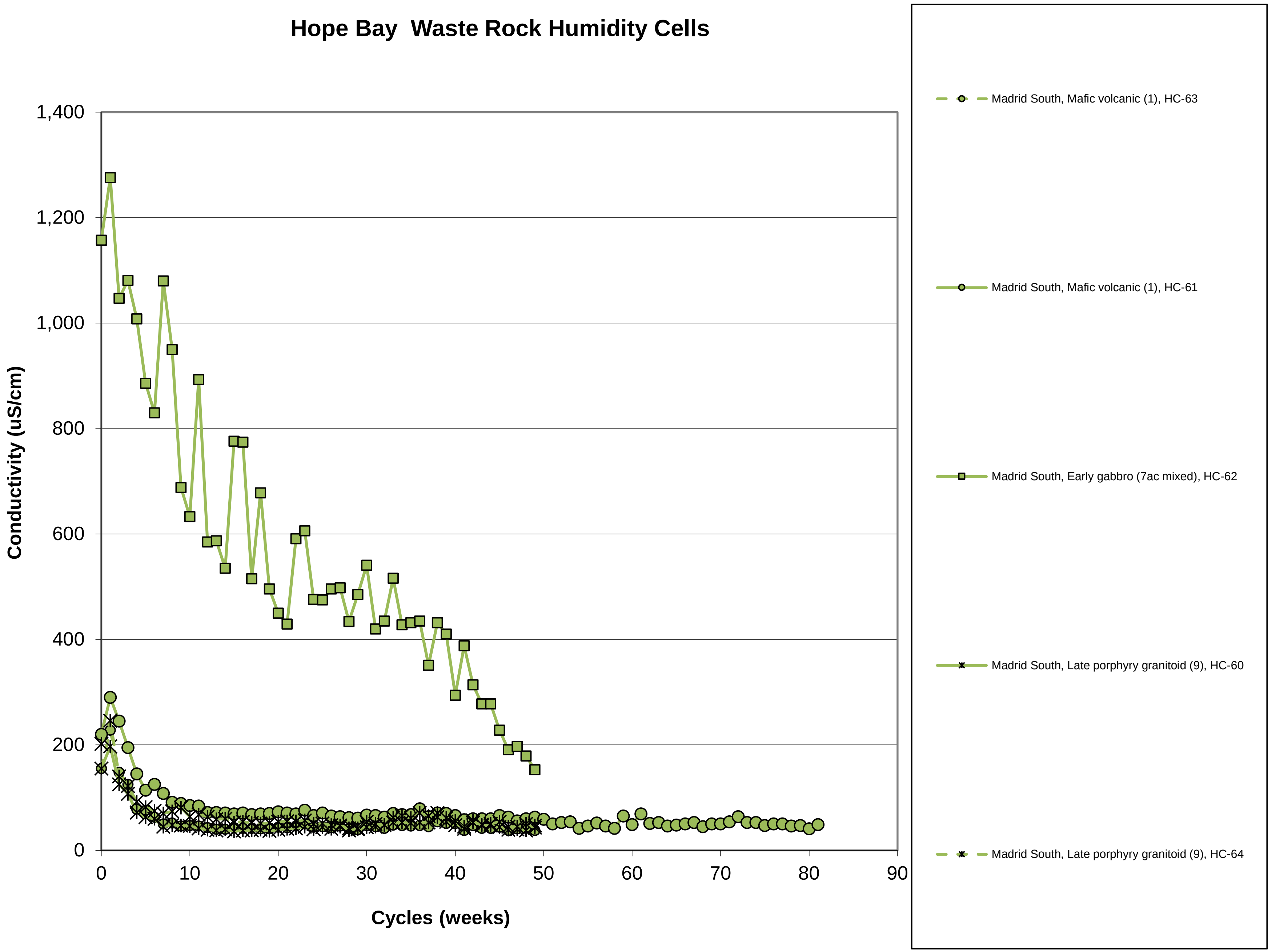
Appendix I-5: Low-level Sulphate Data for Last Two Cycles of Selected Humidity Cell Tests

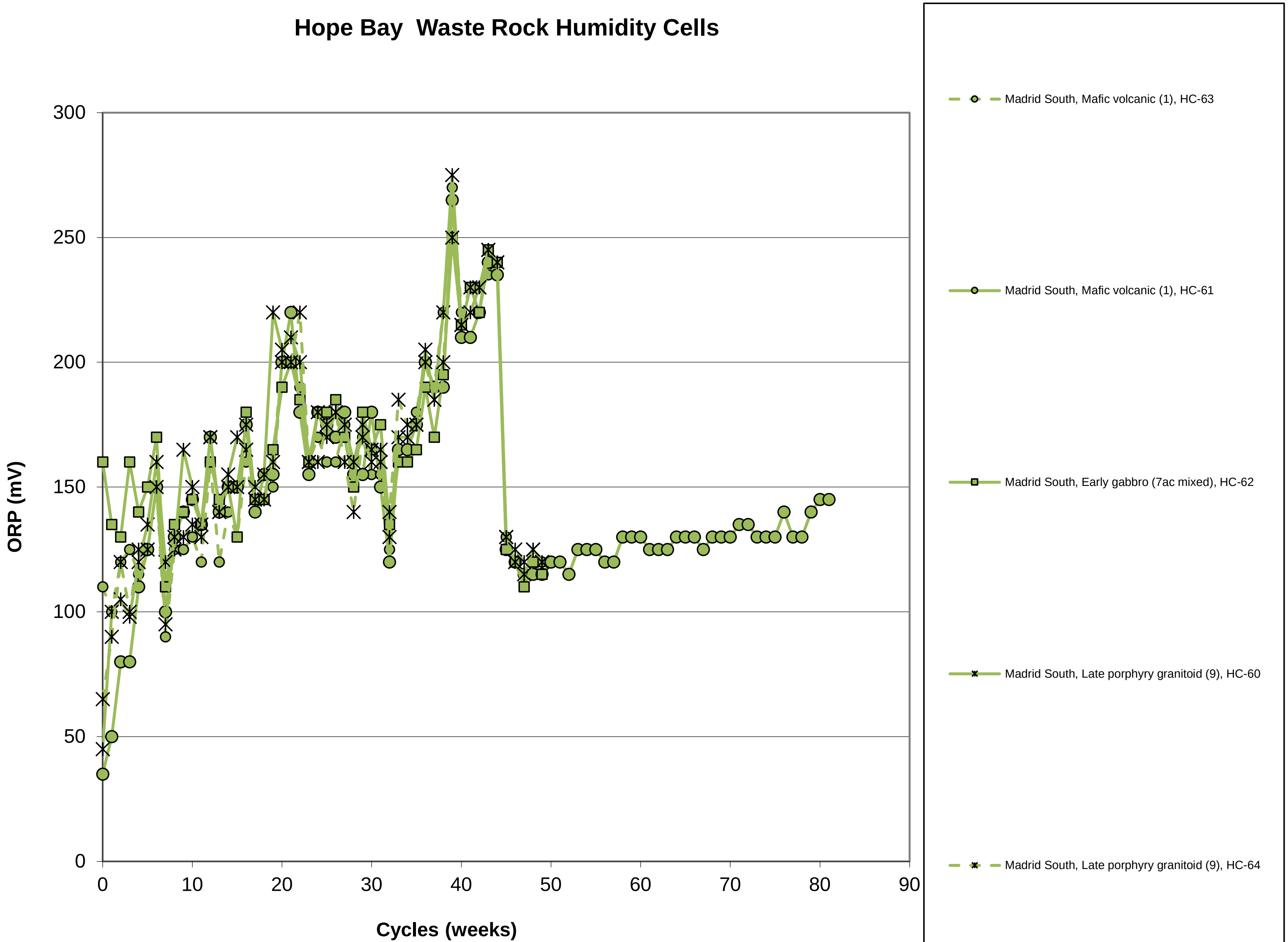
HC #	Cycle	SO4 (mg/L)		RPD%
		Maxxam	Lakefield	
HC-60	47	0.5	0.14	-112.5
HC-60	49	0.53	0.14	-116.4
HC-63	47	0.5	0.58	14.8
HC-63	49	0.5	0.64	24.6
HC-64	47	1.29	1.6	21.5
HC-64	49	2.03	1.5	-30.0
Detection Limit		0.5	0.06	--

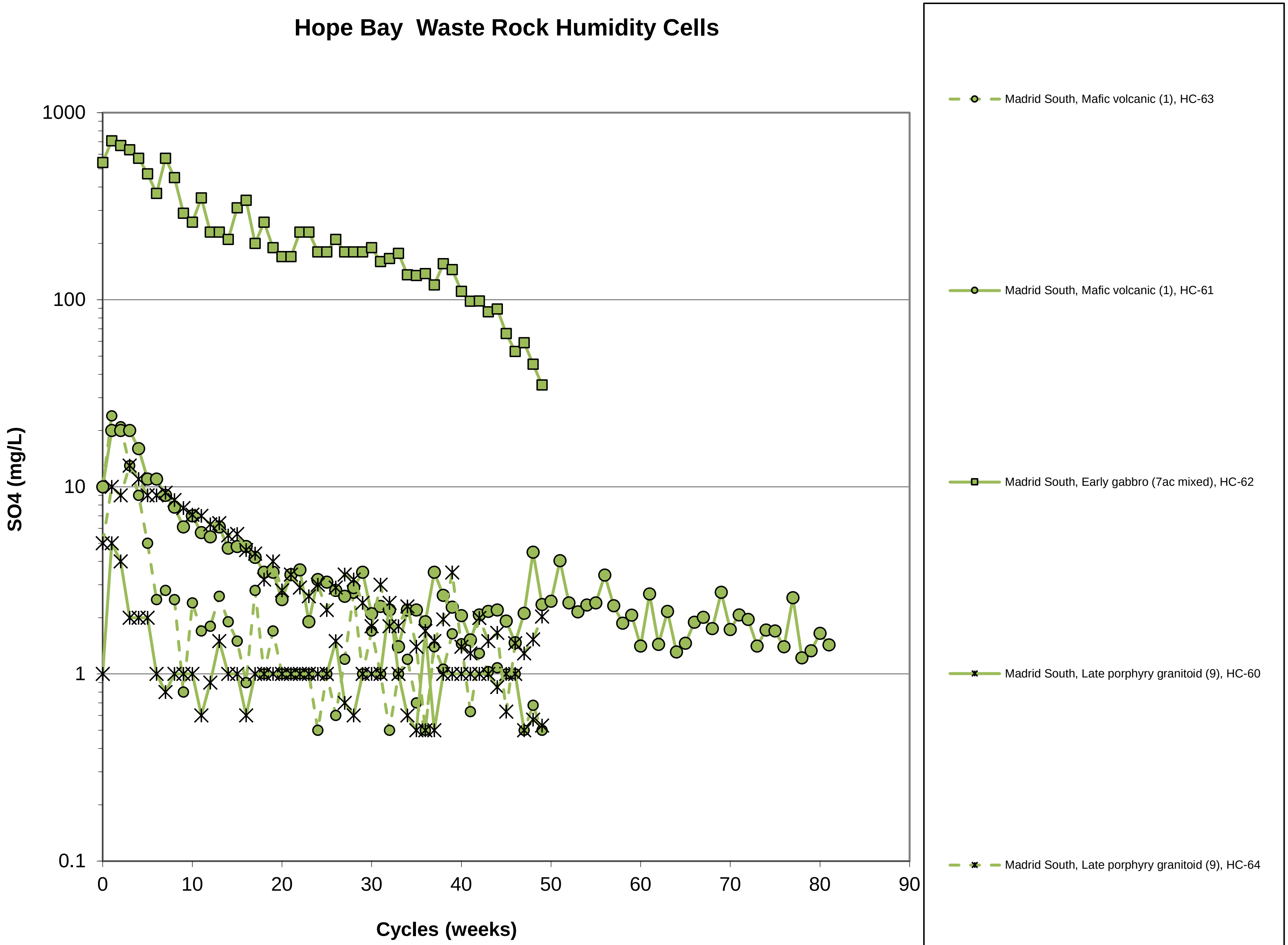
Appendix J:
Humidity Cell Test Graphs and Raw Data, Madrid South

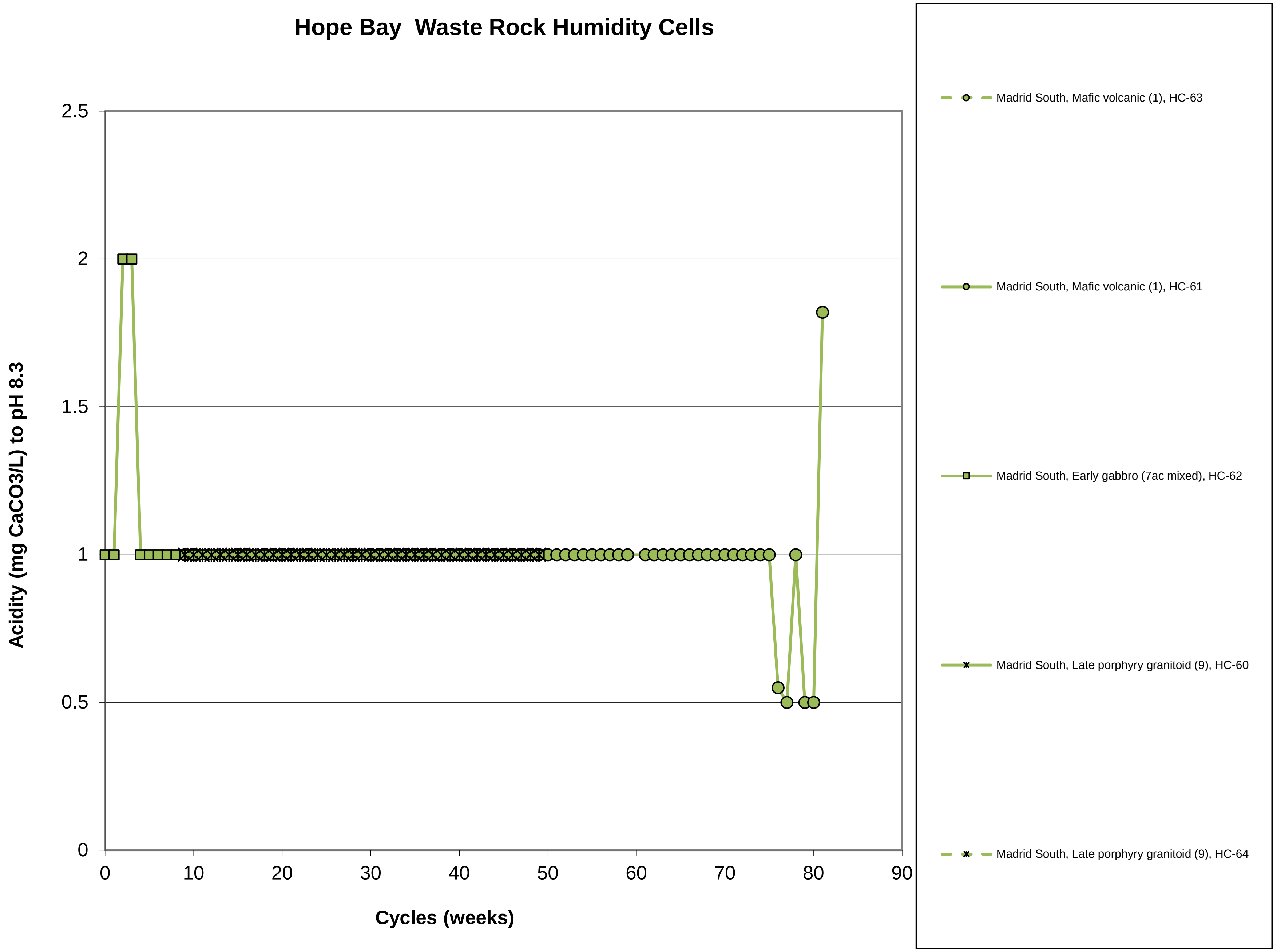
Appendix J-1:
Waste Rock Humidity Cell Graphs

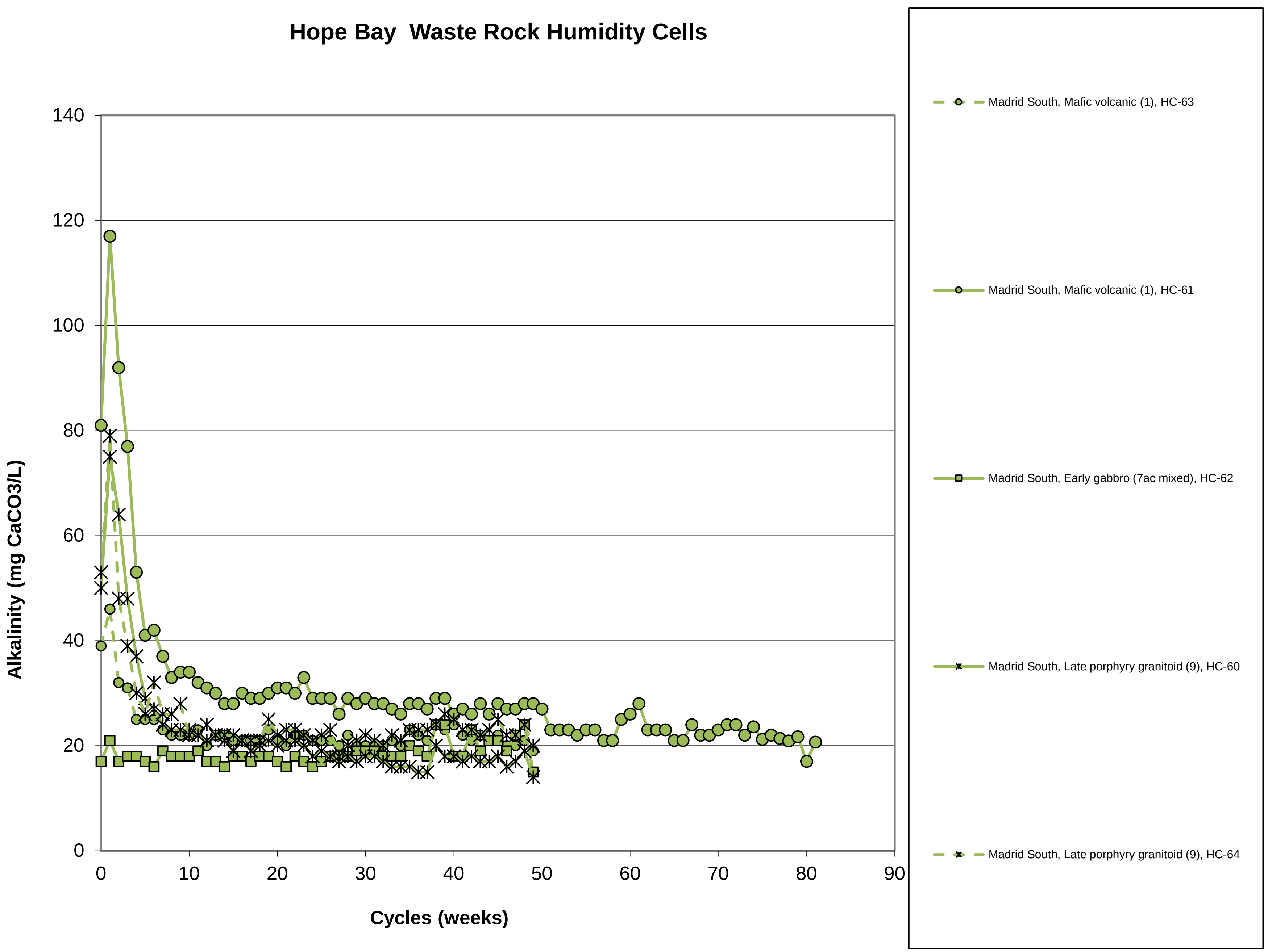

Hope Bay Waste Rock Humidity Cells
pH
10
9.5
9
8.5
8
7.5
7
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64


Hope Bay Waste Rock Humidity Cells
Conductivity (uS/cm)
1,400
1,200
1,000
800
600
400
200
0
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

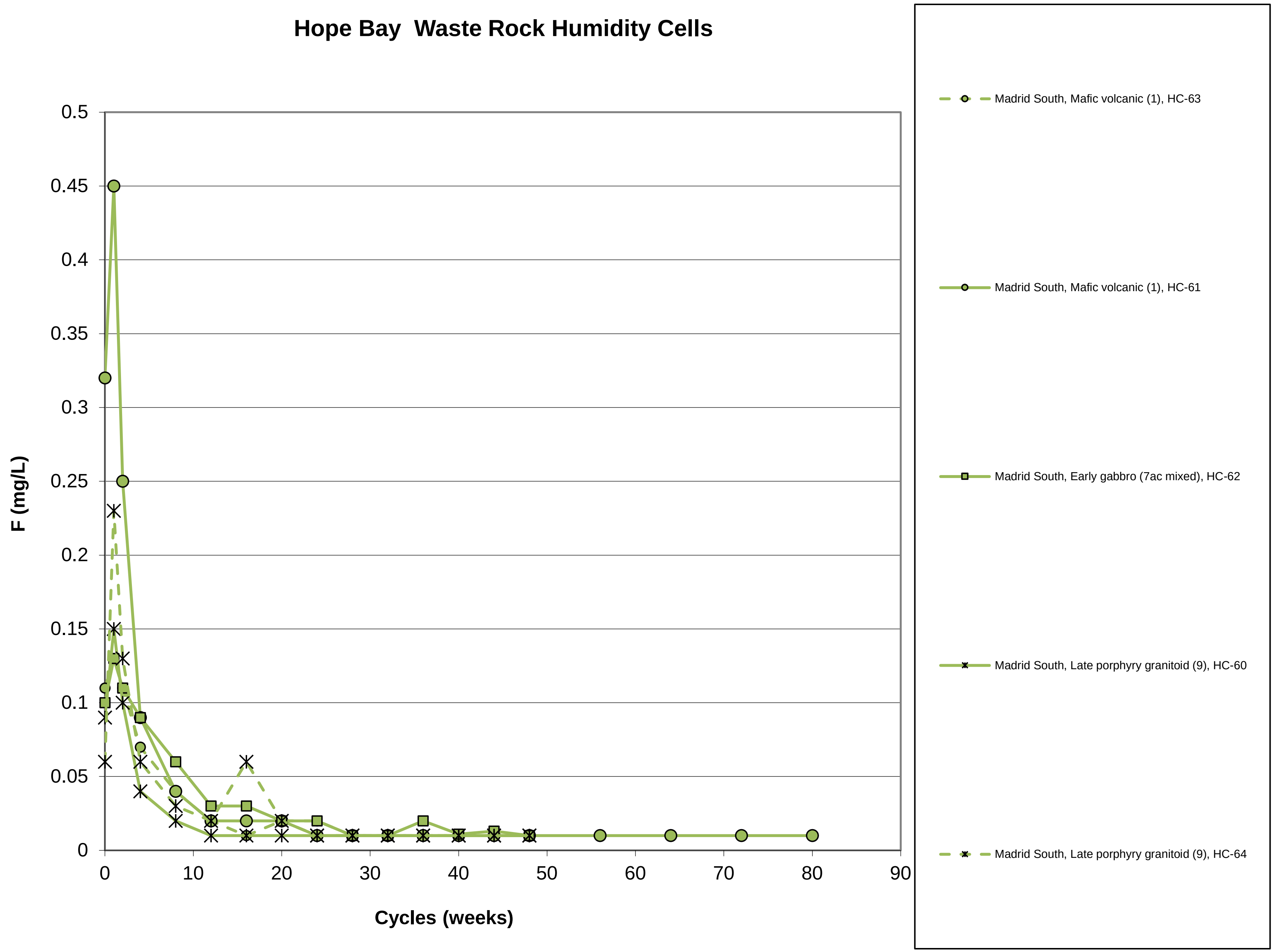

Hope Bay Waste Rock Humidity Cells
ORP (mV)
300
250
200
150
100
50
0
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

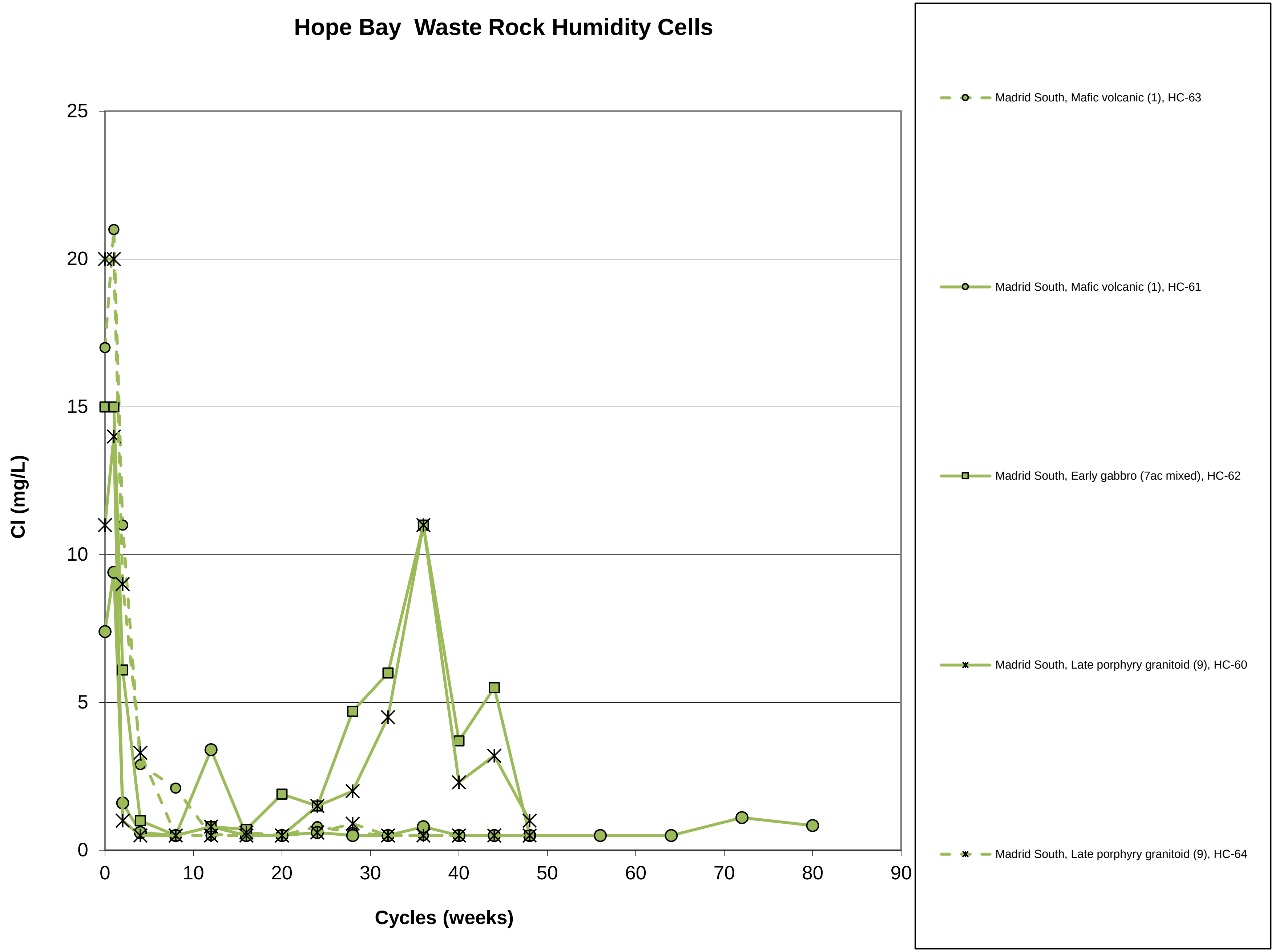

Hope Bay Waste Rock Humidity Cells
SO4 (mg/L)
1000
100
10
1
0.1
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

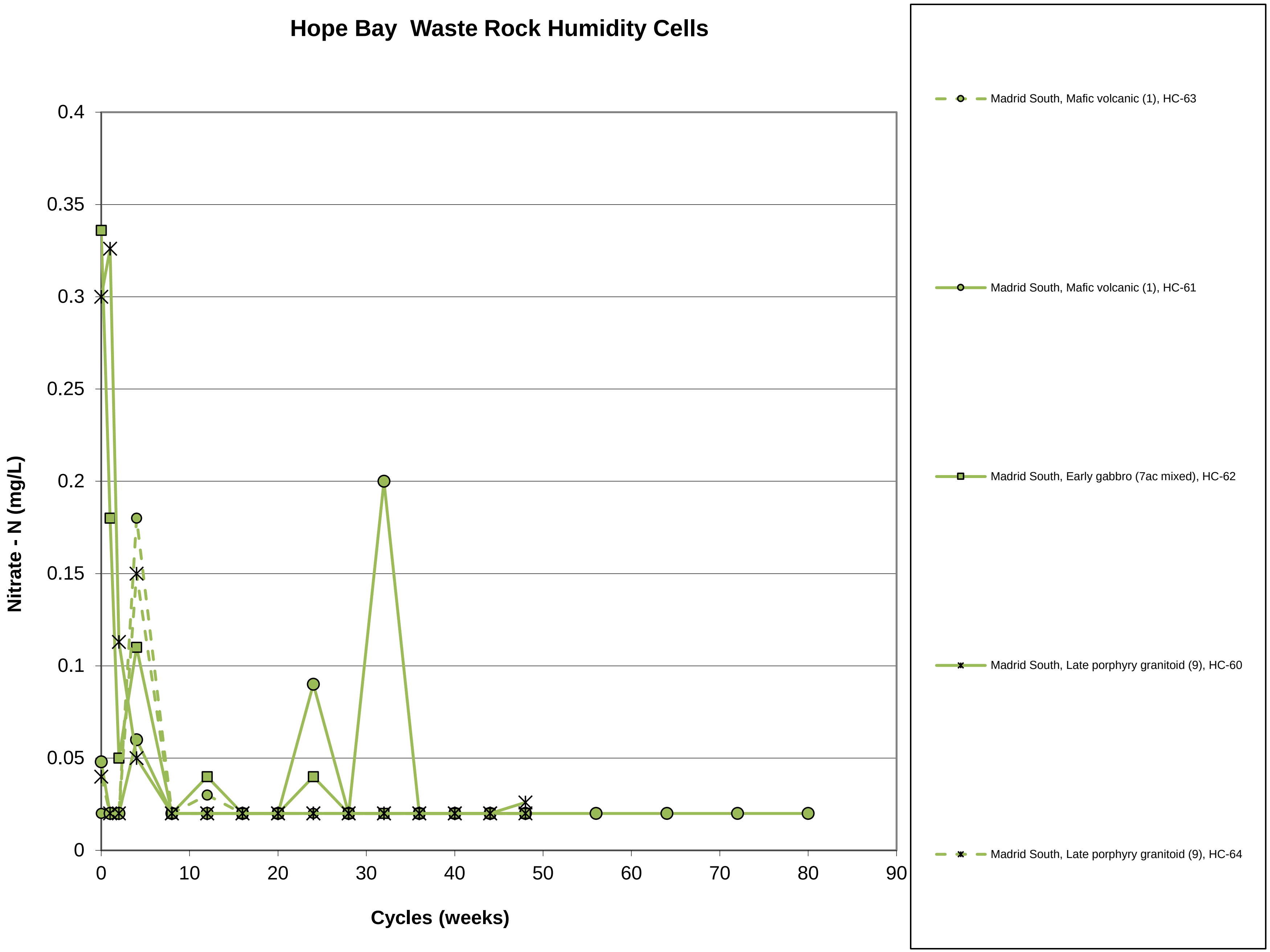

Hope Bay Waste Rock Humidity Cells
Acidity (mg CaCO3/L) to pH 8.3
Cycles (weeks)
0
0.5
1
1.5
2
2.5
0
10
20
30
40
50
60
70
80
90
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

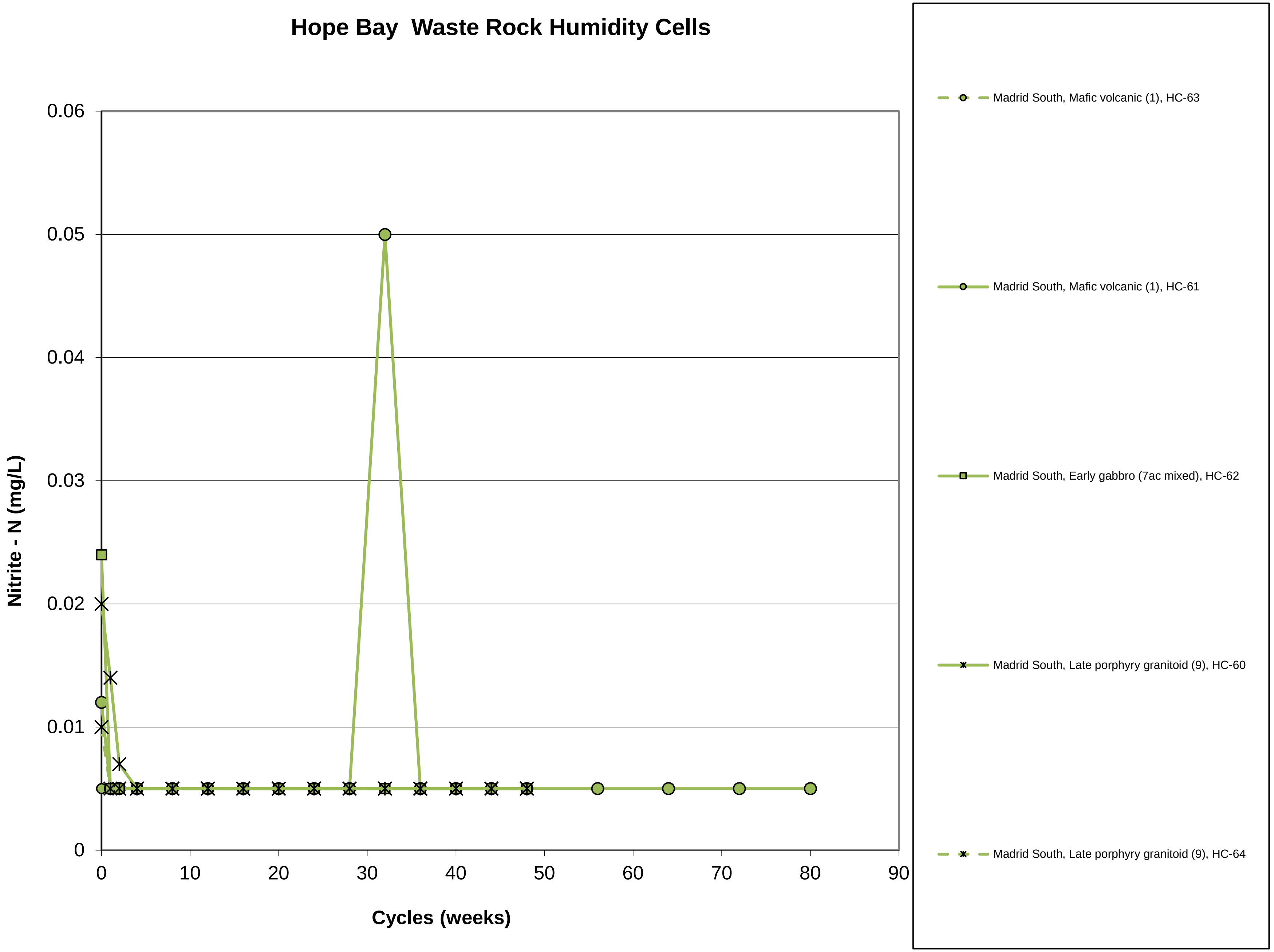


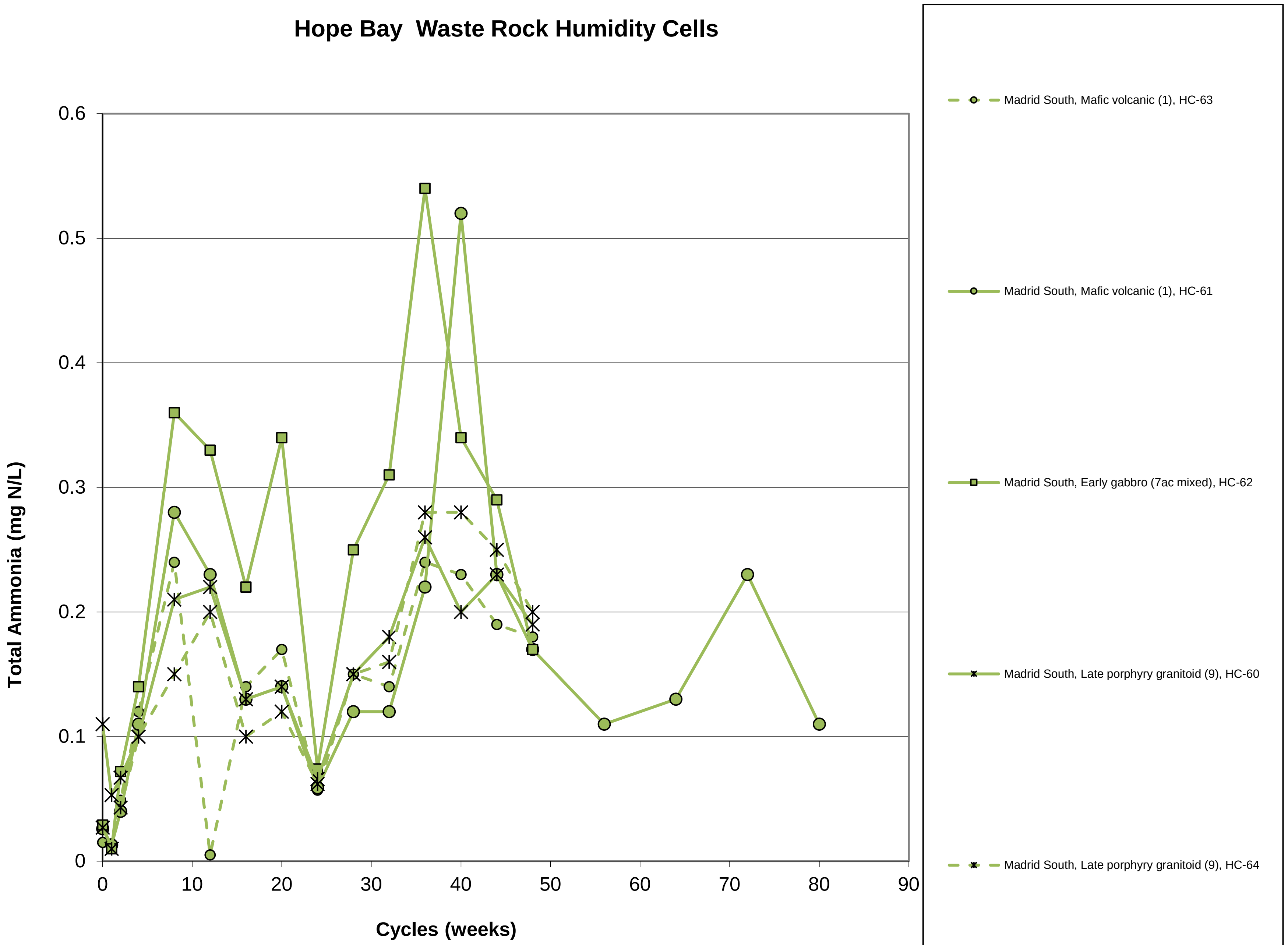
Y:\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201605_Madrid S_DEIS\Working Files\all_HB_WR_ConcCharts.mc.REV09

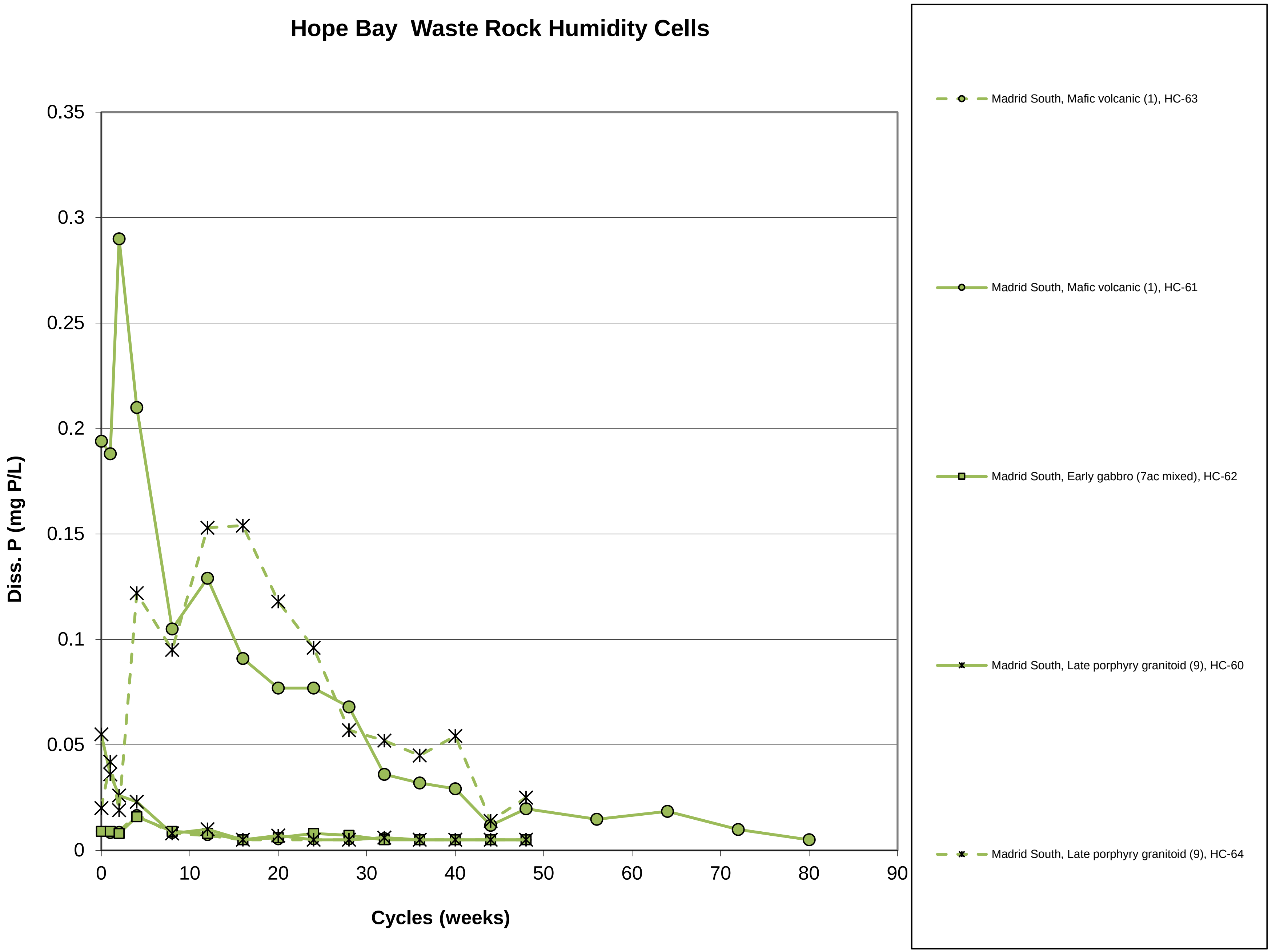

Hope Bay Waste Rock Humidity Cells
F (mg/L)
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

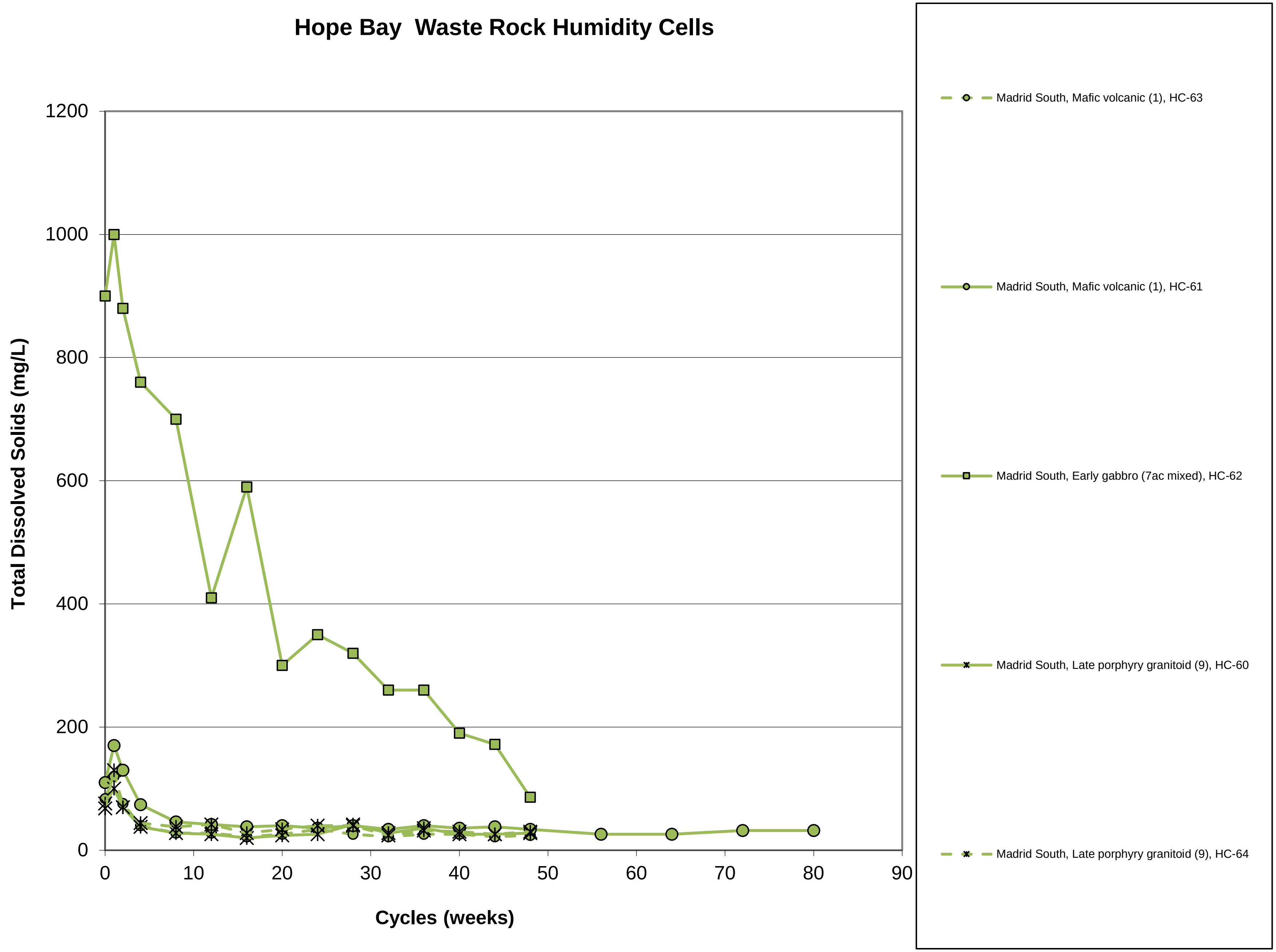

Hope Bay Waste Rock Humidity Cells
Cl (mg/L)
0
5
10
15
20
25
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

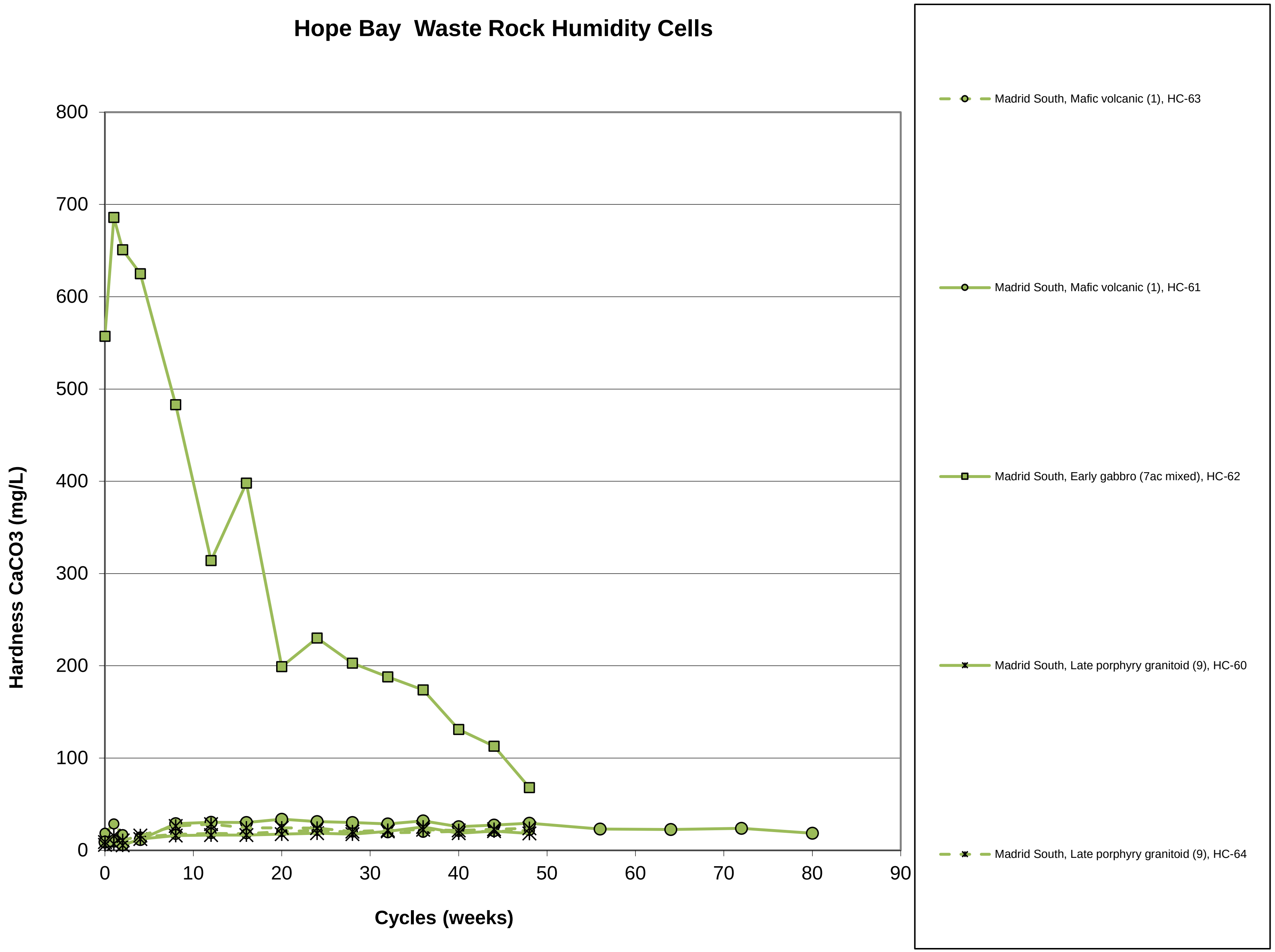

Hope Bay Waste Rock Humidity Cells
Nitrate - N (mg/L)
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

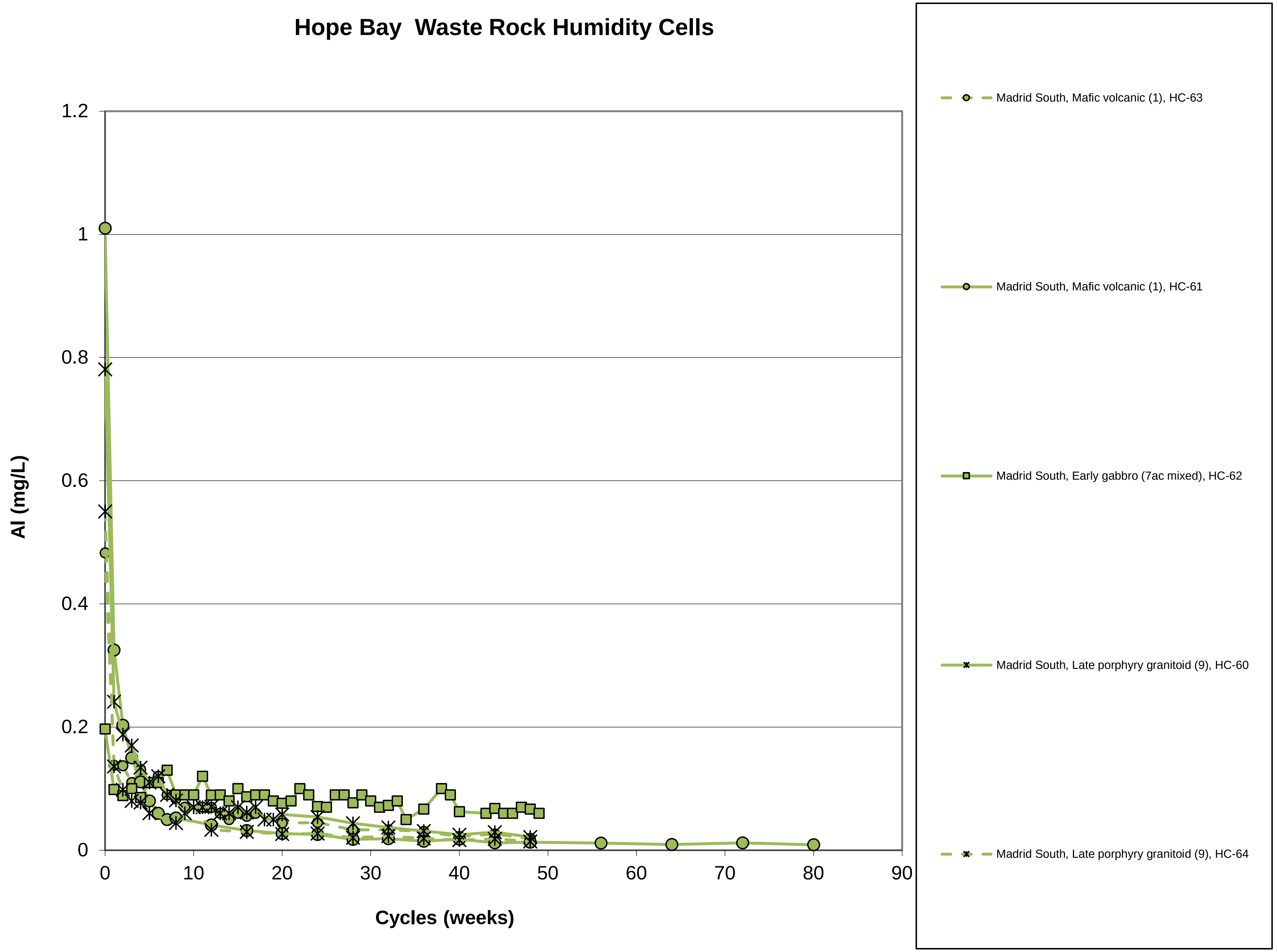

Hope Bay Waste Rock Humidity Cells
Nitrite - N (mg/L)
0.06
0.05
0.04
0.03
0.02
0.01
0
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

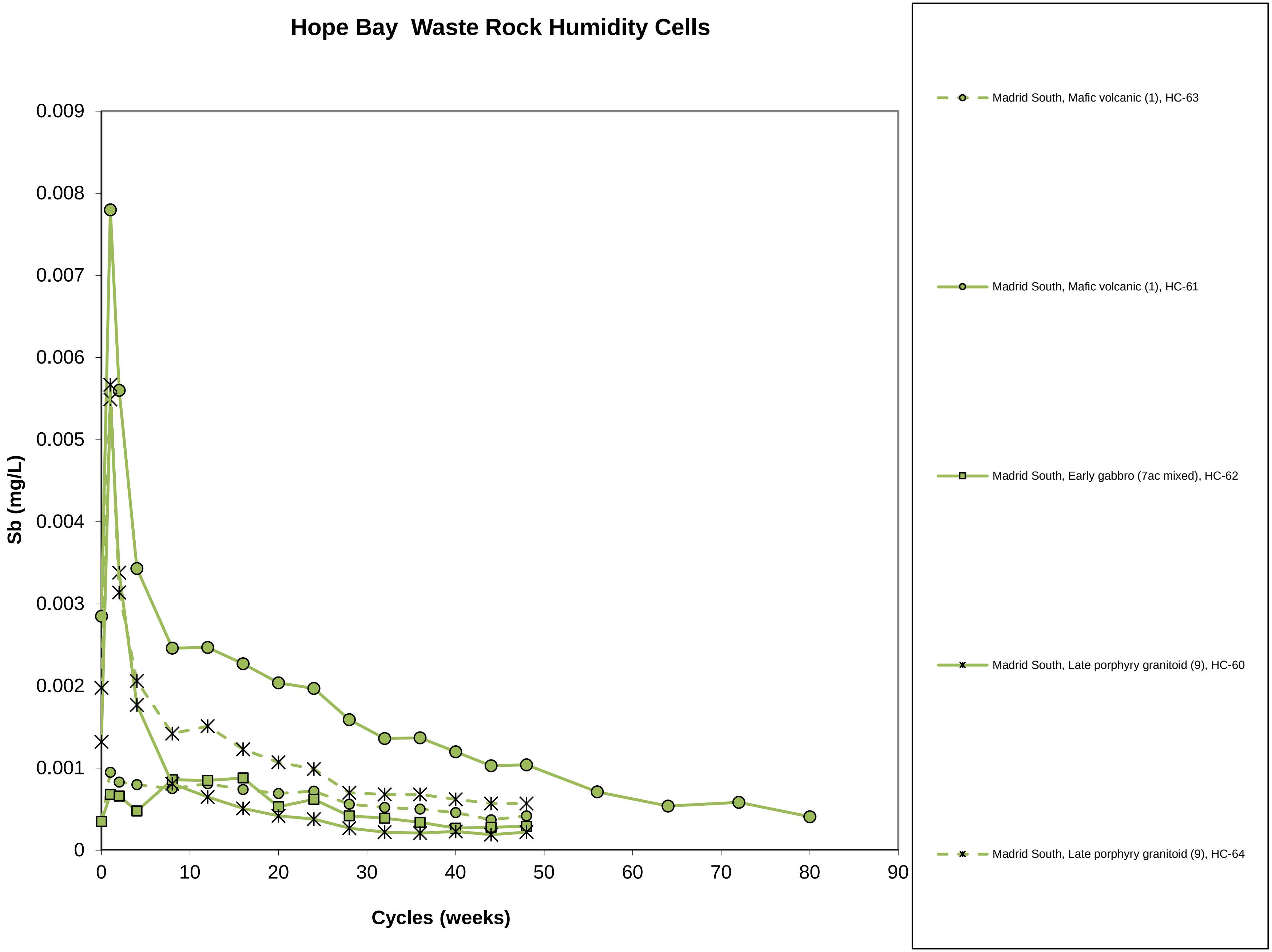

Hope Bay Waste Rock Humidity Cells
Total Ammonia (mg N/L)
0.6
0.5
0.4
0.3
0.2
0.1
0
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

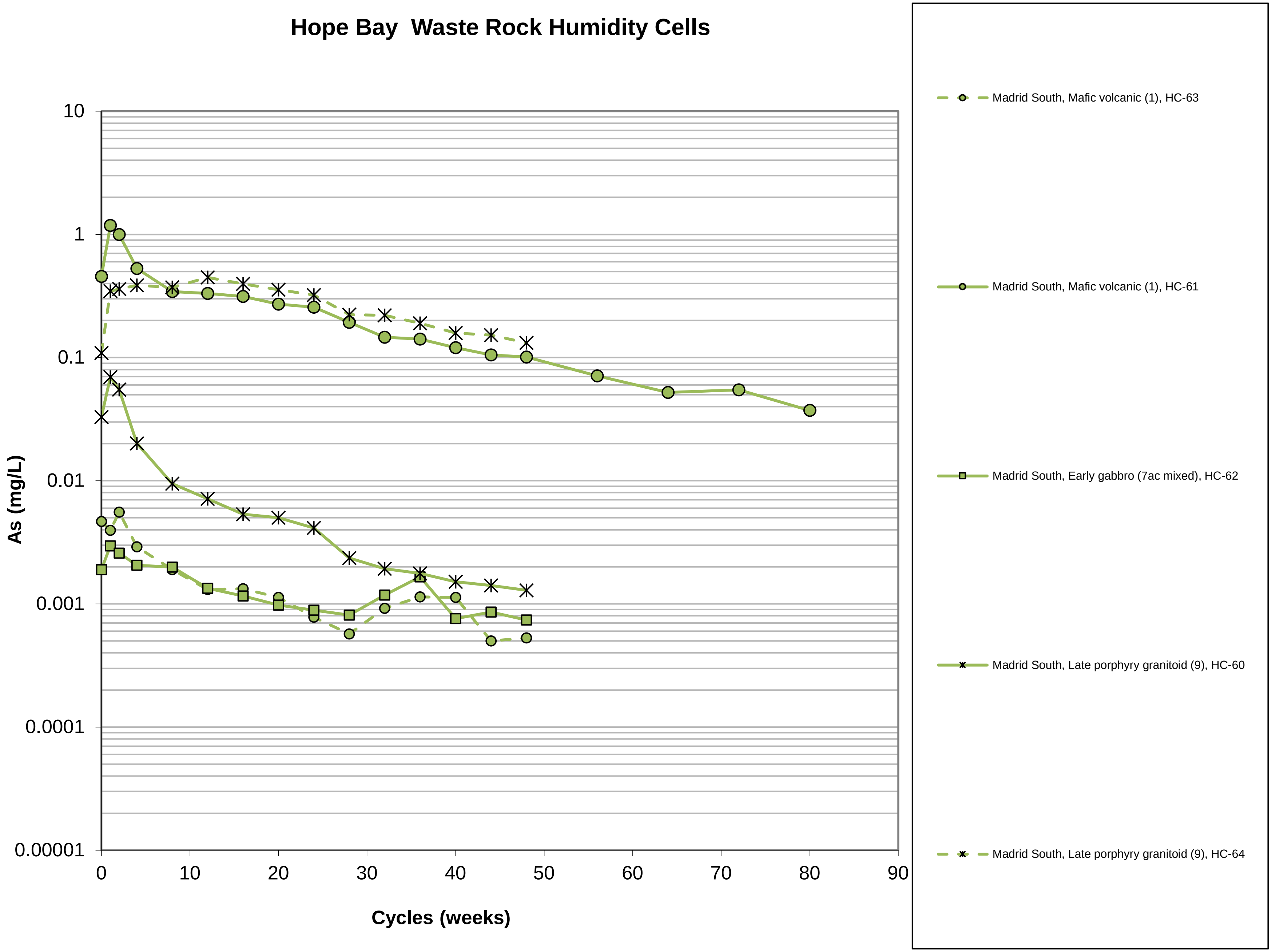

Hope Bay Waste Rock Humidity Cells
Diss. P (mg P/L)
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

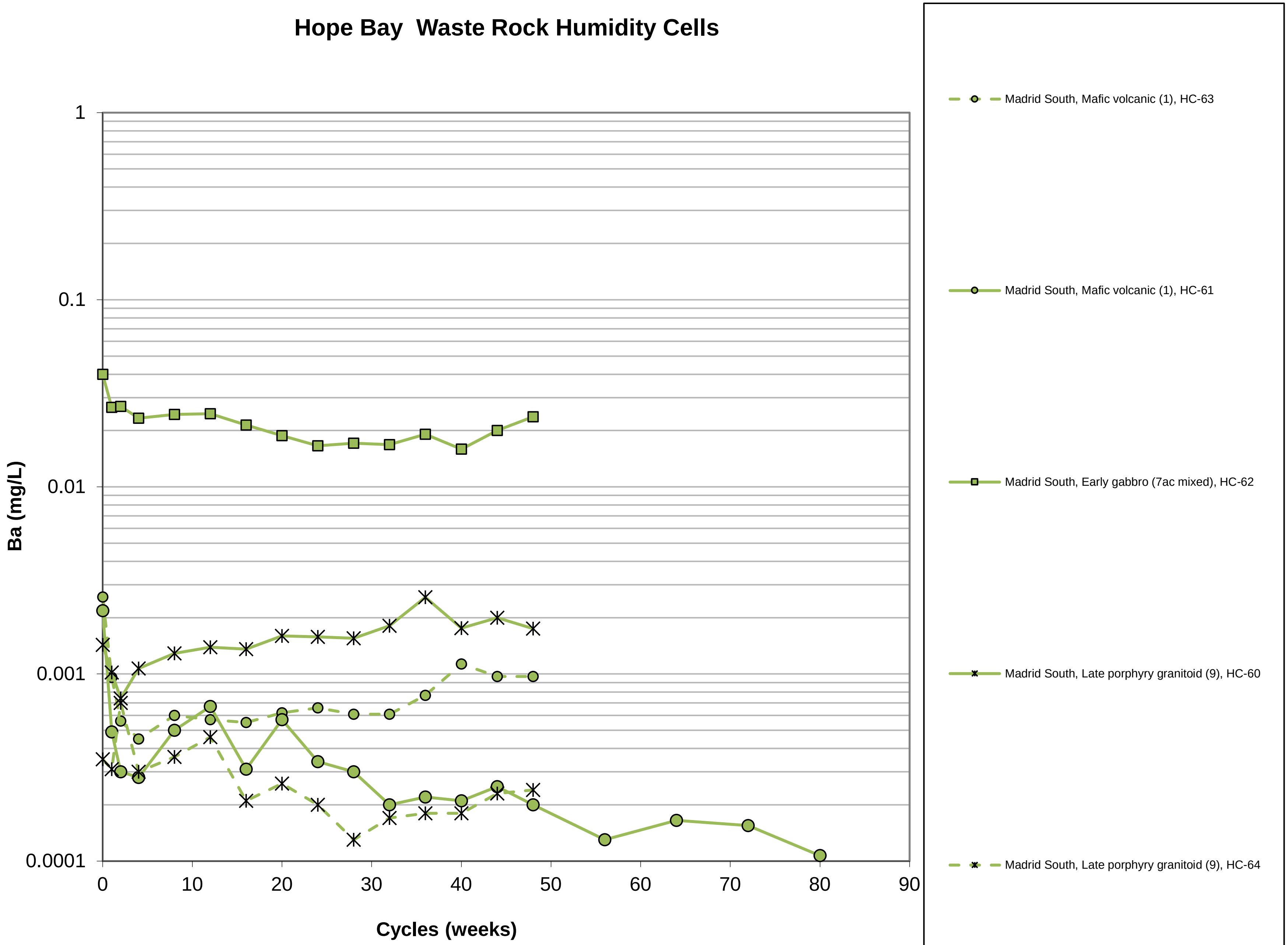

Hope Bay Waste Rock Humidity Cells
Total Dissolved Solids (mg/L)
0
200
400
600
800
1000
1200
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

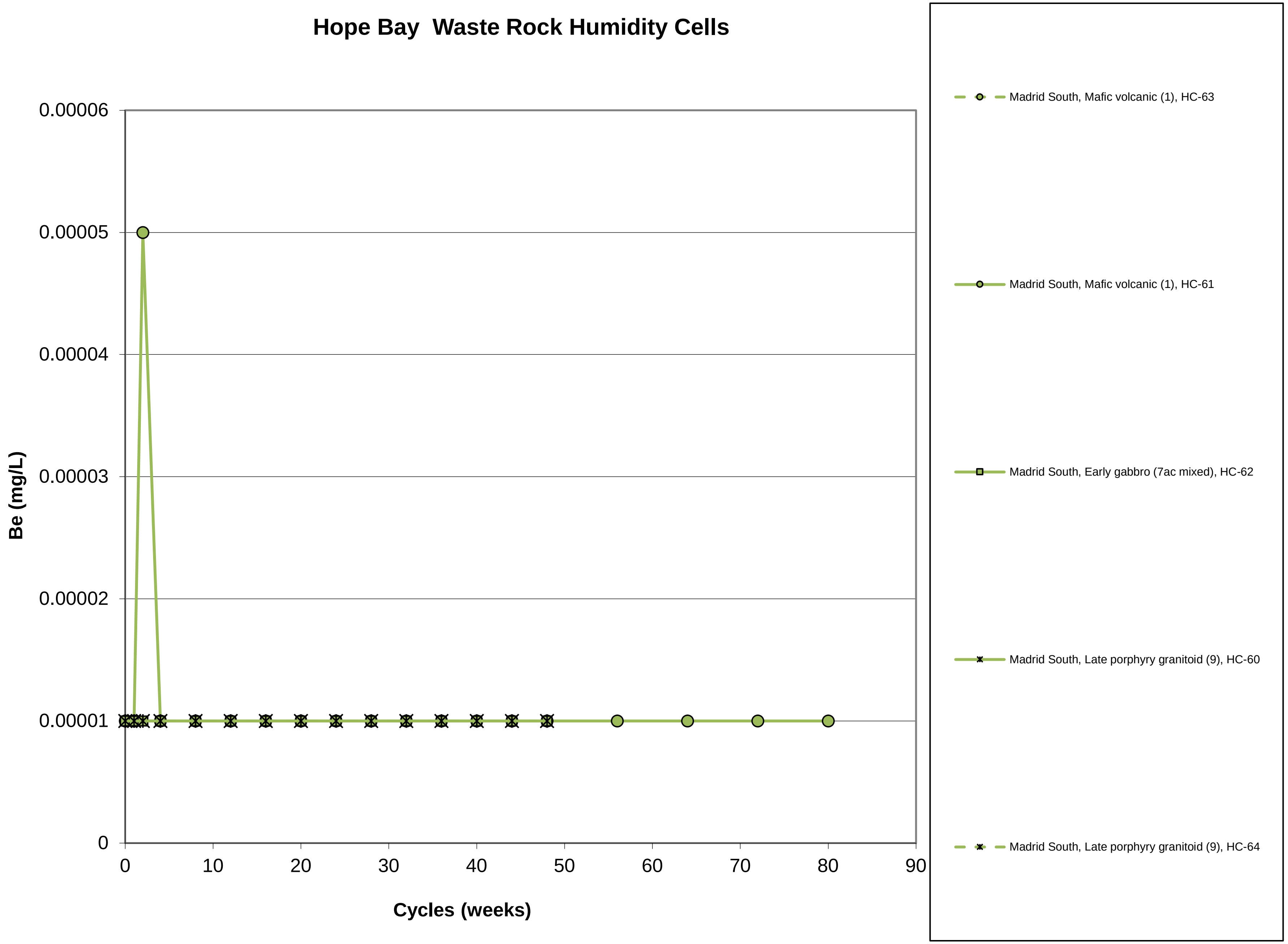

Hope Bay Waste Rock Humidity Cells
Hardness CaCO3 (mg/L)
0
100
200
300
400
500
600
700
800
Cycles (weeks)
0
10
20
30
40
50
60
70
80
90
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

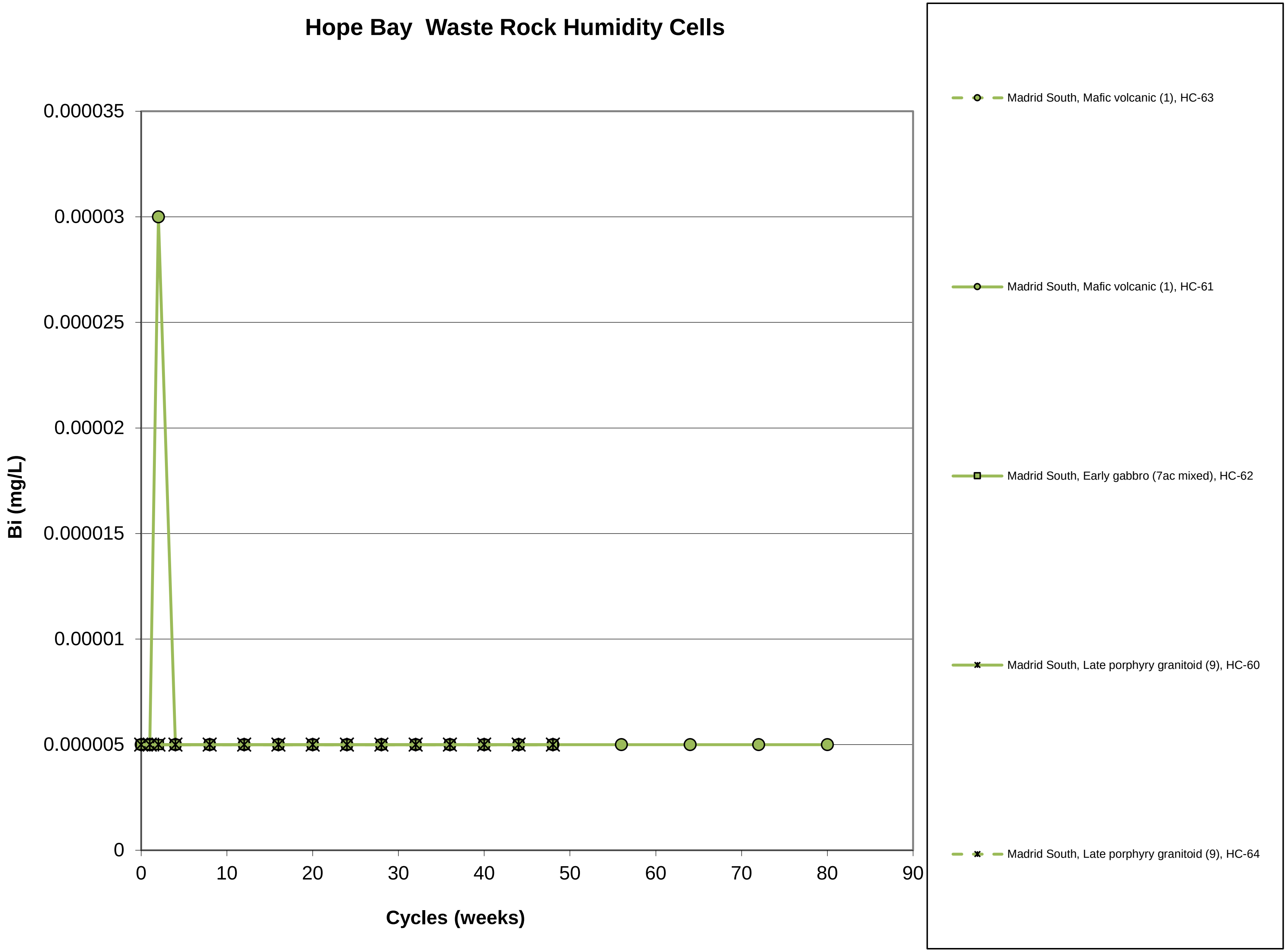

Hope Bay Waste Rock Humidity Cells
Al (mg/L)
Cycles (weeks)
1.2
1
0.8
0.6
0.4
0.2
0
0
10
20
30
40
50
60
70
80
90
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

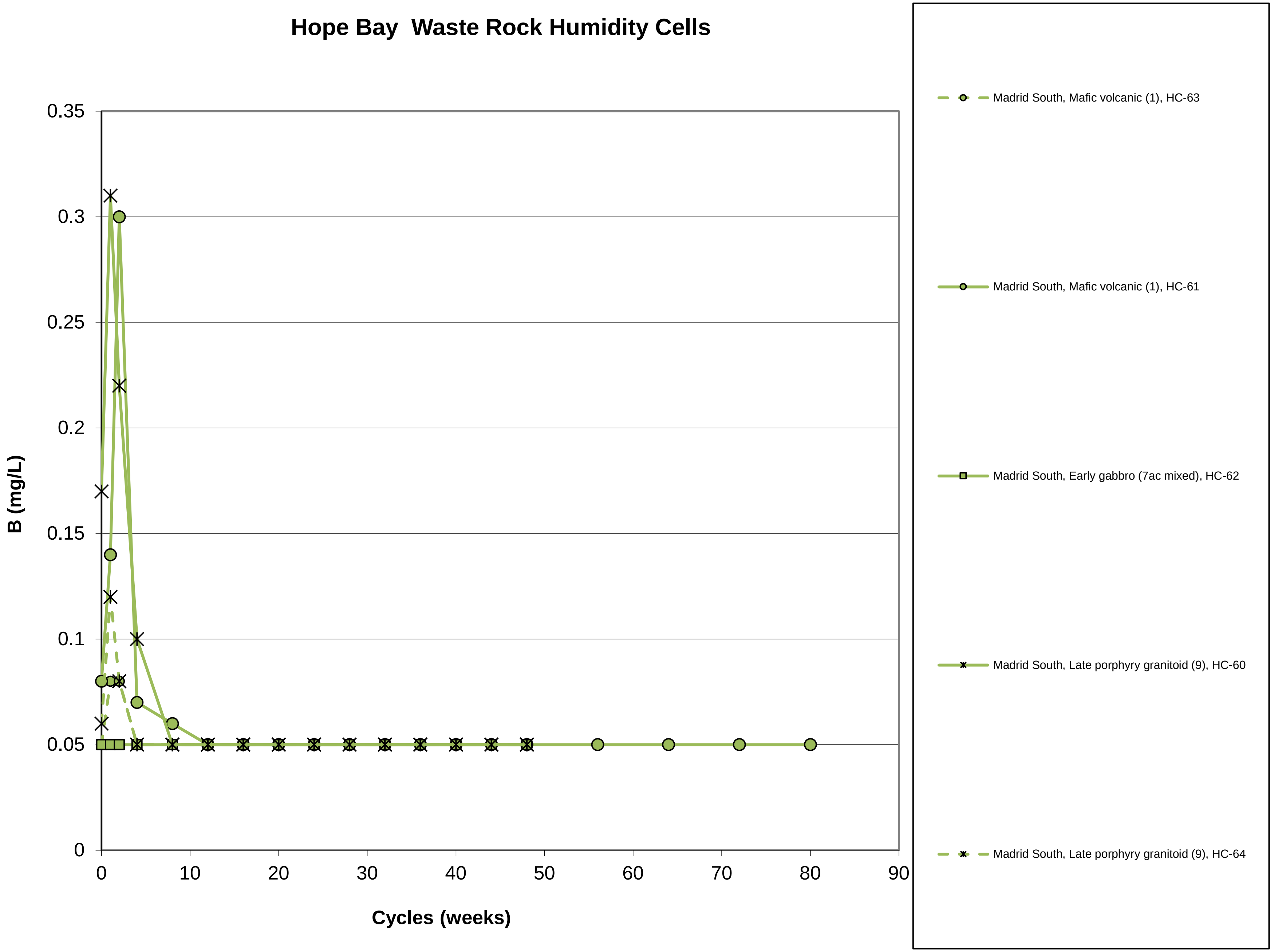

Hope Bay Waste Rock Humidity Cells
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
Sb (mg/L)
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

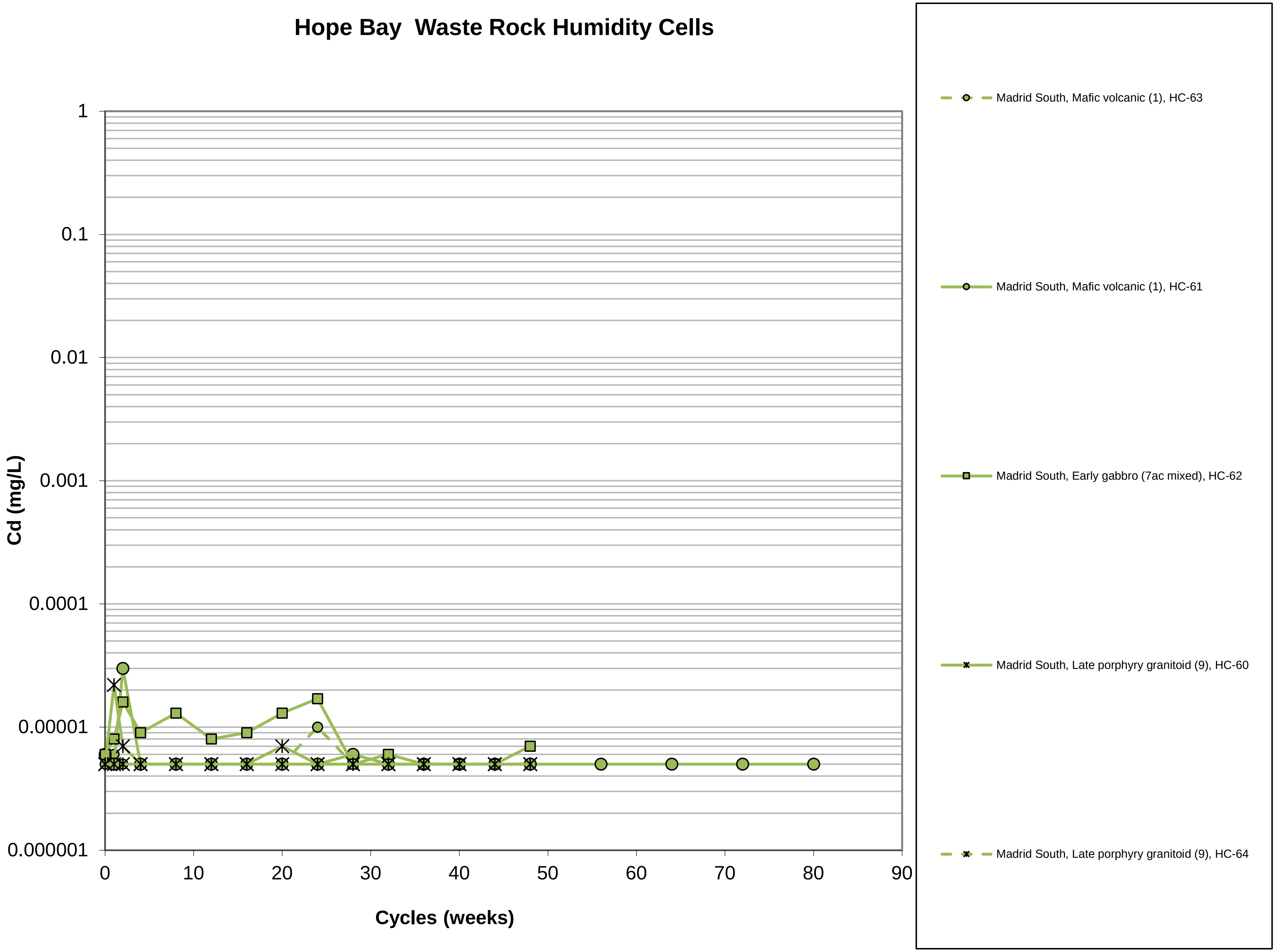

Hope Bay Waste Rock Humidity Cells
10
1
0.1
0.01
0.001
0.0001
0.00001
As (mg/L)
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

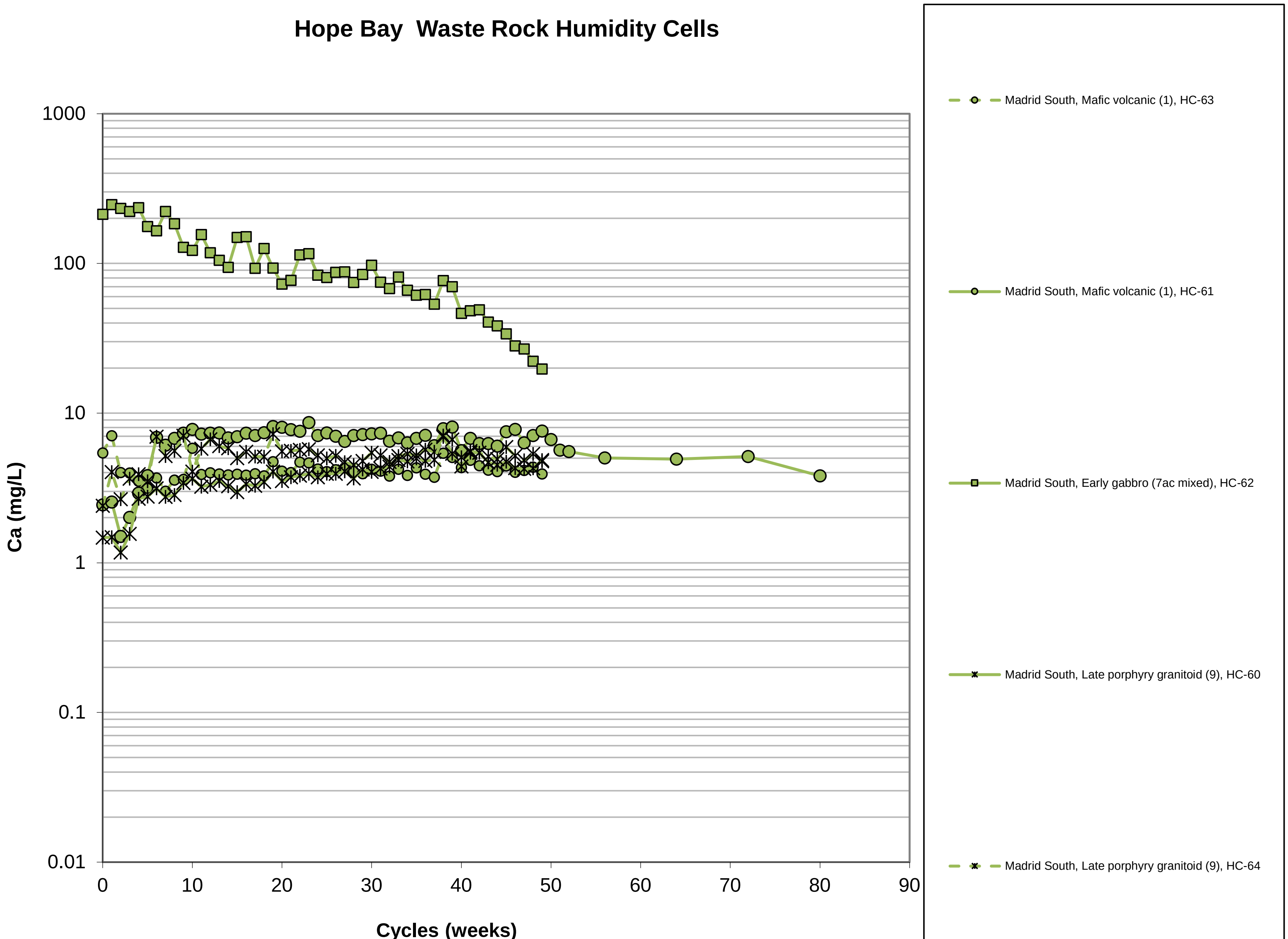

Hope Bay Waste Rock Humidity Cells
Ba (mg/L)
1
0.1
0.01
0.001
0.0001
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

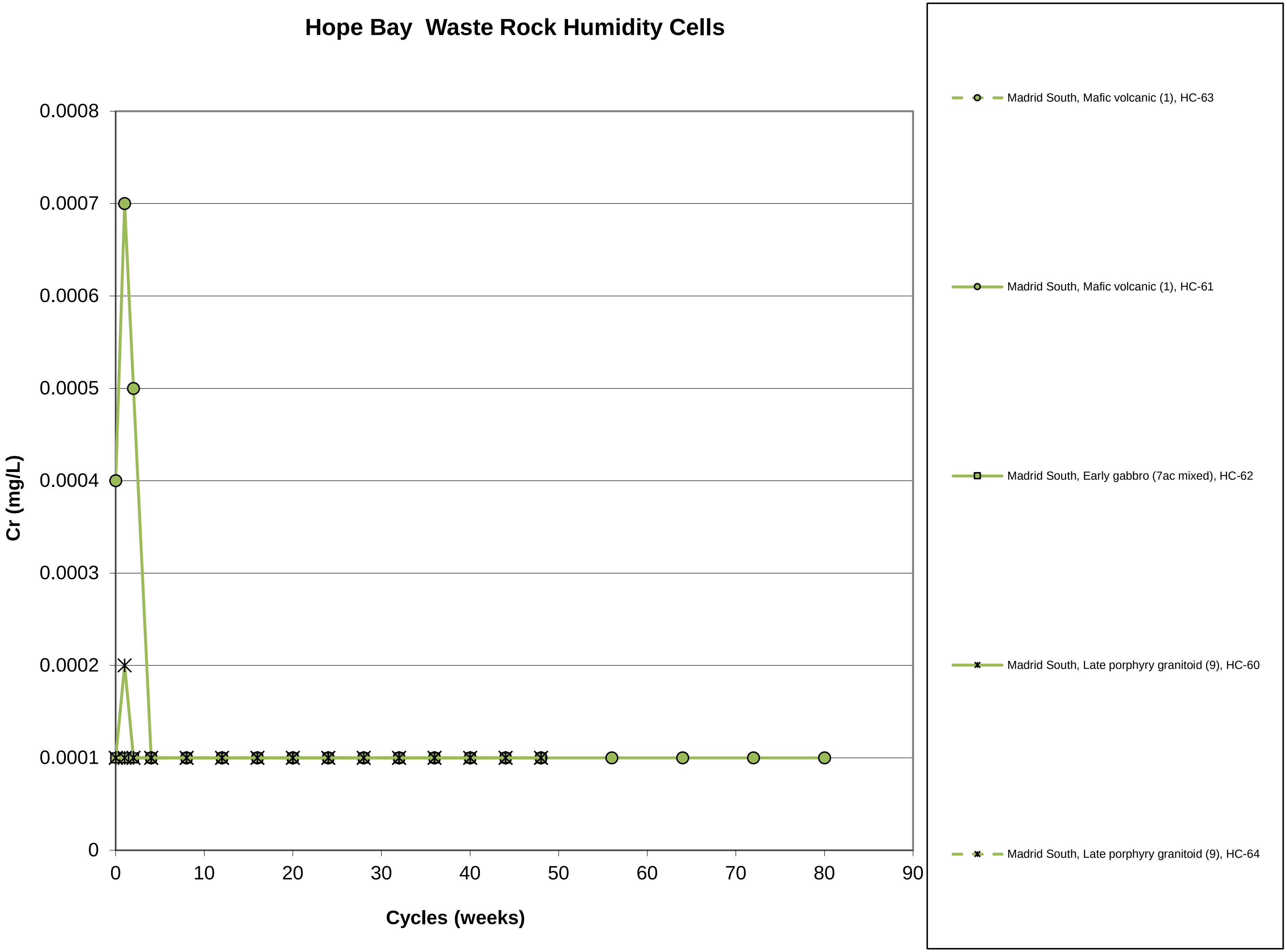

Hope Bay Waste Rock Humidity Cells
Be (mg/L)
0.00006
0.00005
0.00004
0.00003
0.00002
0.00001
0
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

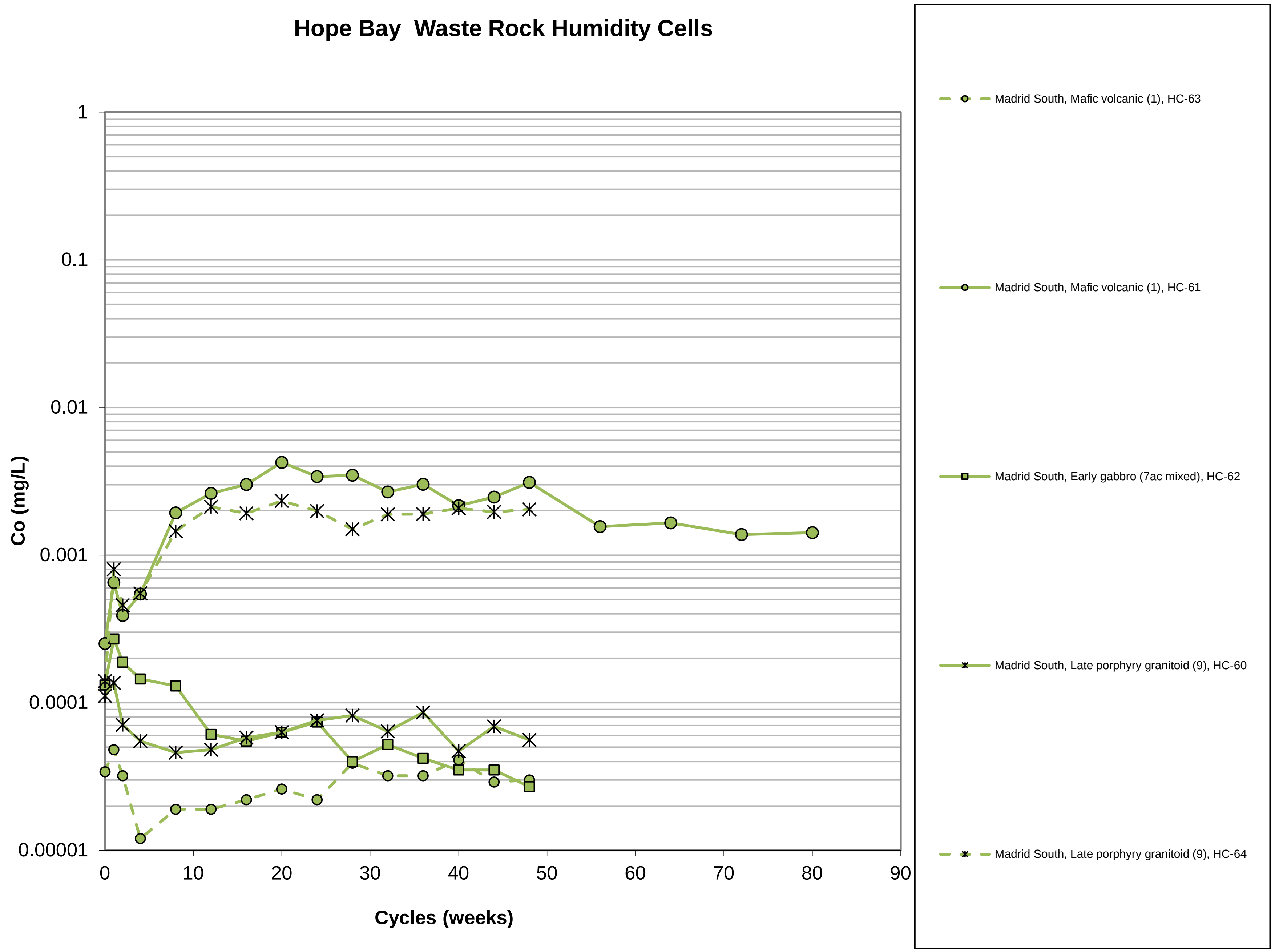

Hope Bay Waste Rock Humidity Cells
Bi (mg/L)
0.000035
0.00003
0.000025
0.00002
0.000015
0.00001
0.000005
0
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

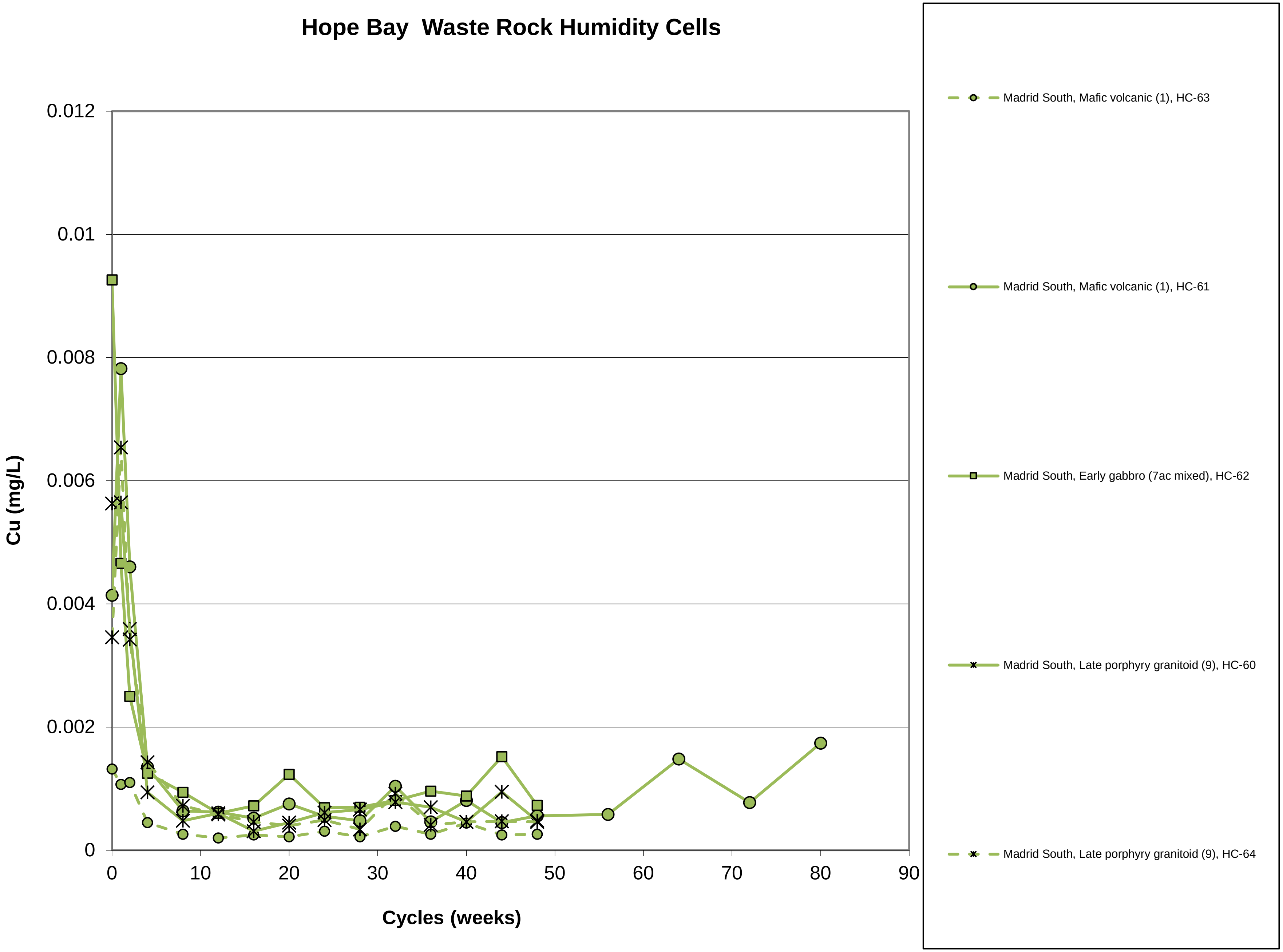

Hope Bay Waste Rock Humidity Cells
B (mg/L)
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

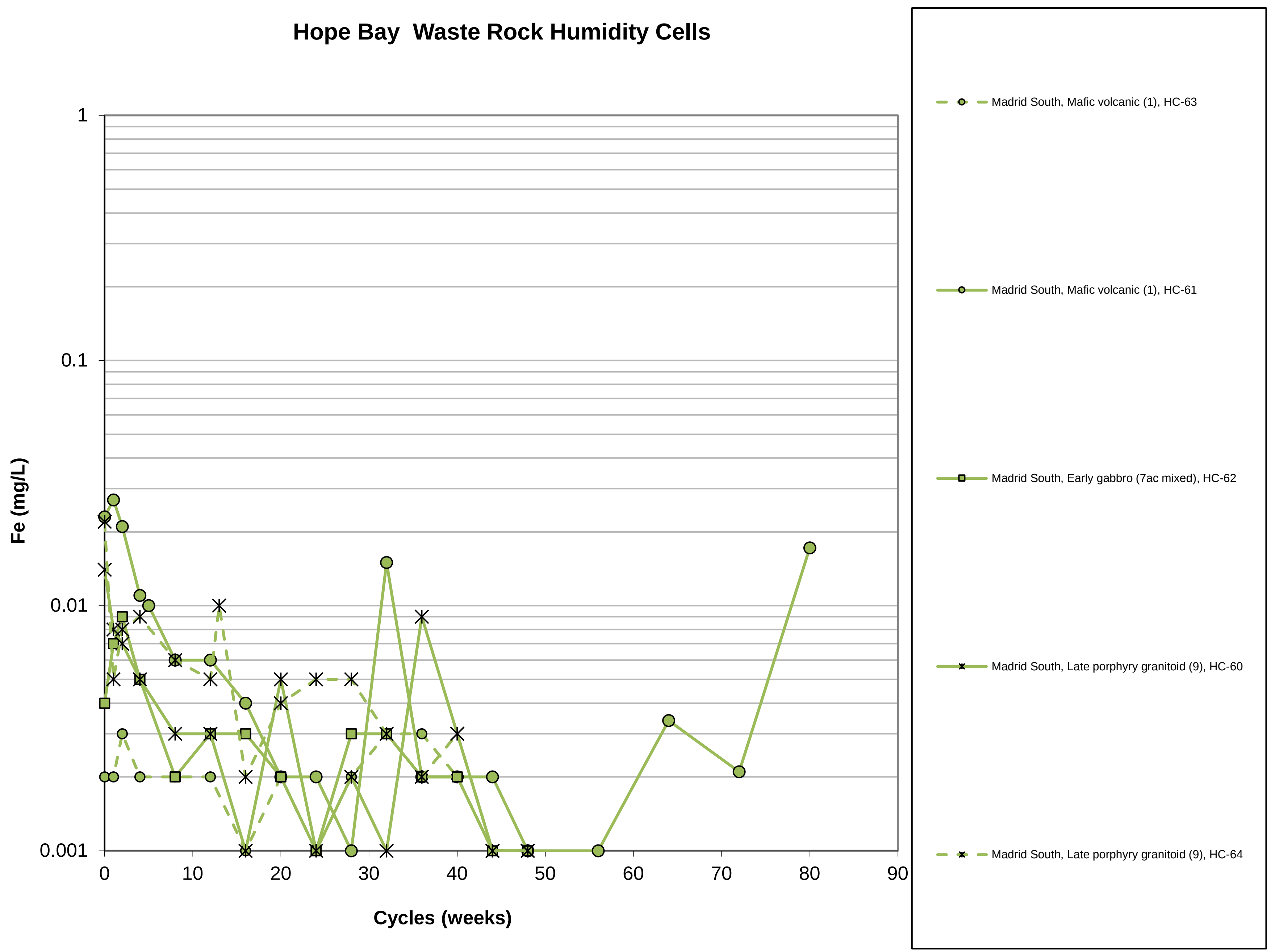

Hope Bay Waste Rock Humidity Cells
Cd (mg/L)
1
0.1
0.01
0.001
0.0001
0.00001
0.000001
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

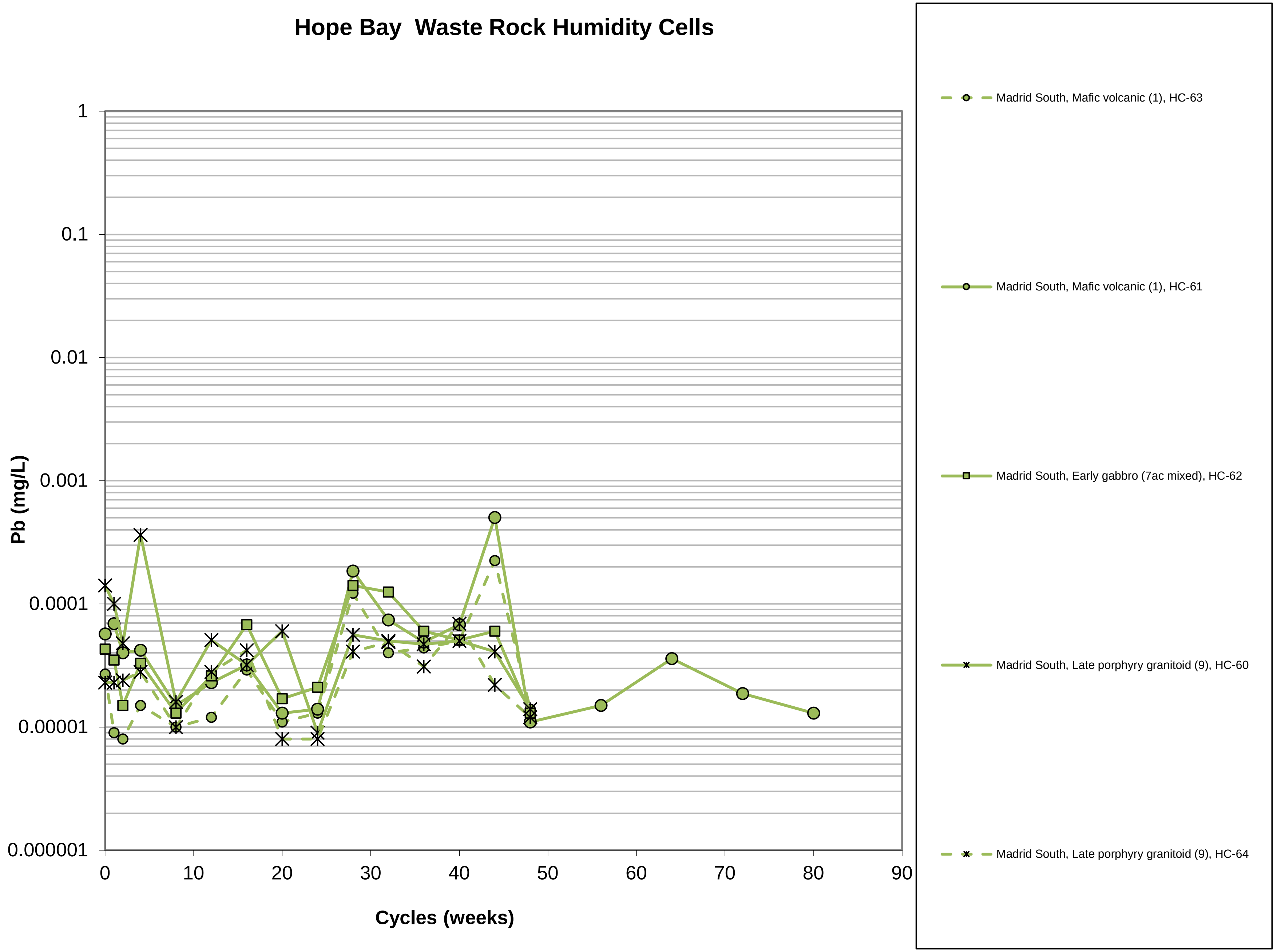

Hope Bay Waste Rock Humidity Cells
1000
100
10
1
0.1
0.01
Ca (mg/L)
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

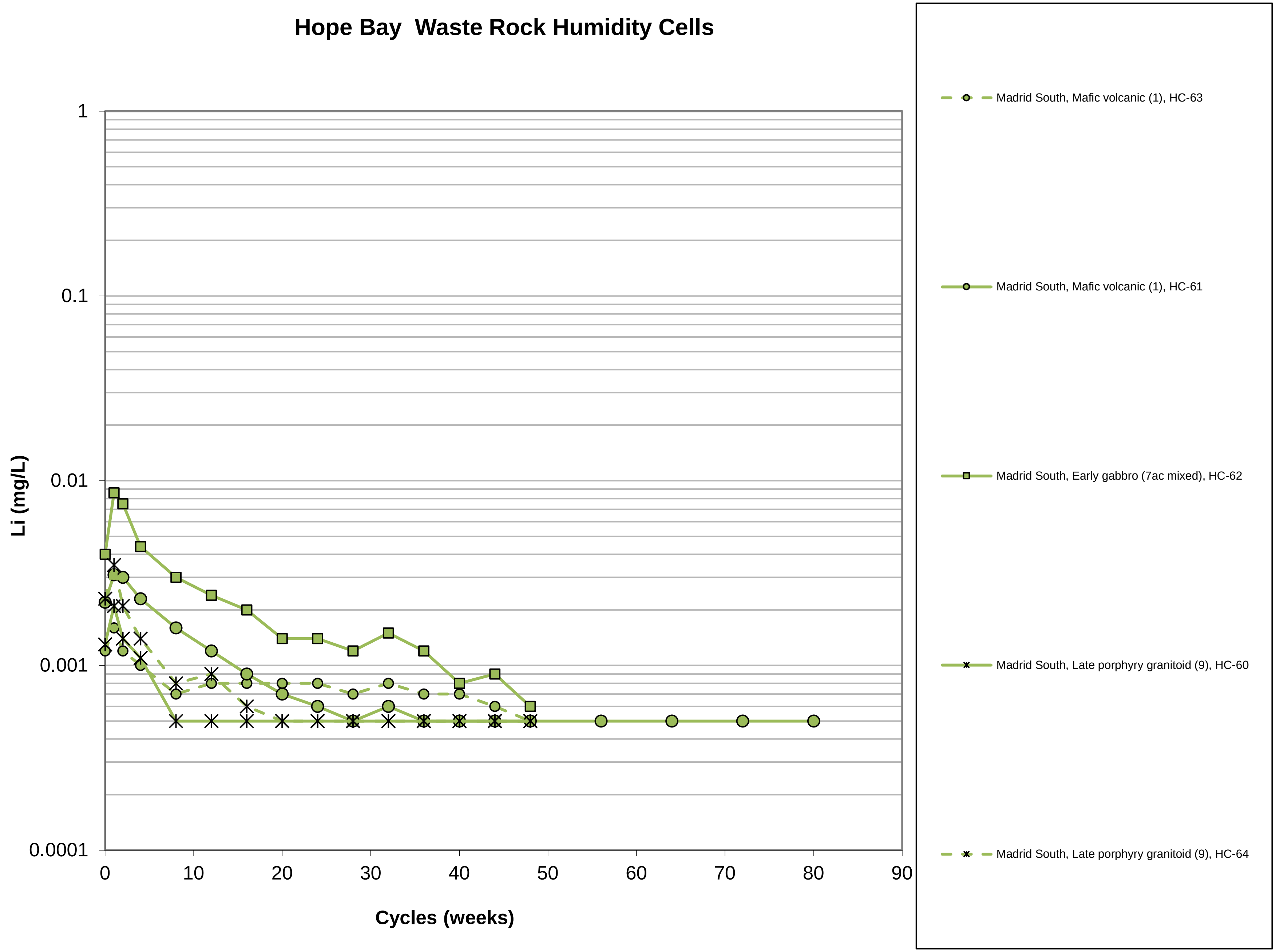

Hope Bay Waste Rock Humidity Cells
Cr (mg/L)
0.0008
0.0007
0.0006
0.0005
0.0004
0.0003
0.0002
0.0001
0
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

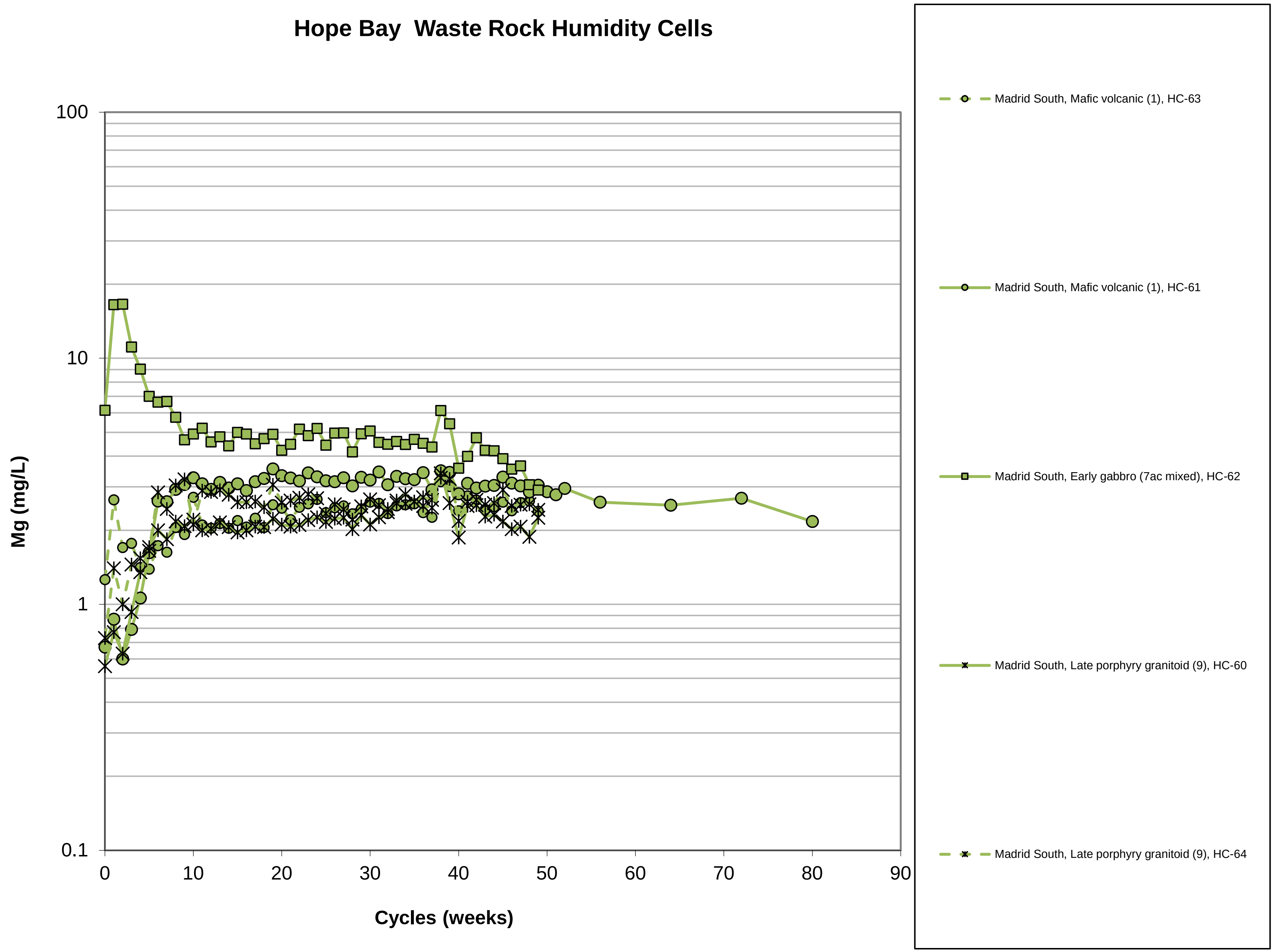

Hope Bay Waste Rock Humidity Cells
Co (mg/L)
1
0.1
0.01
0.001
0.0001
0.00001
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

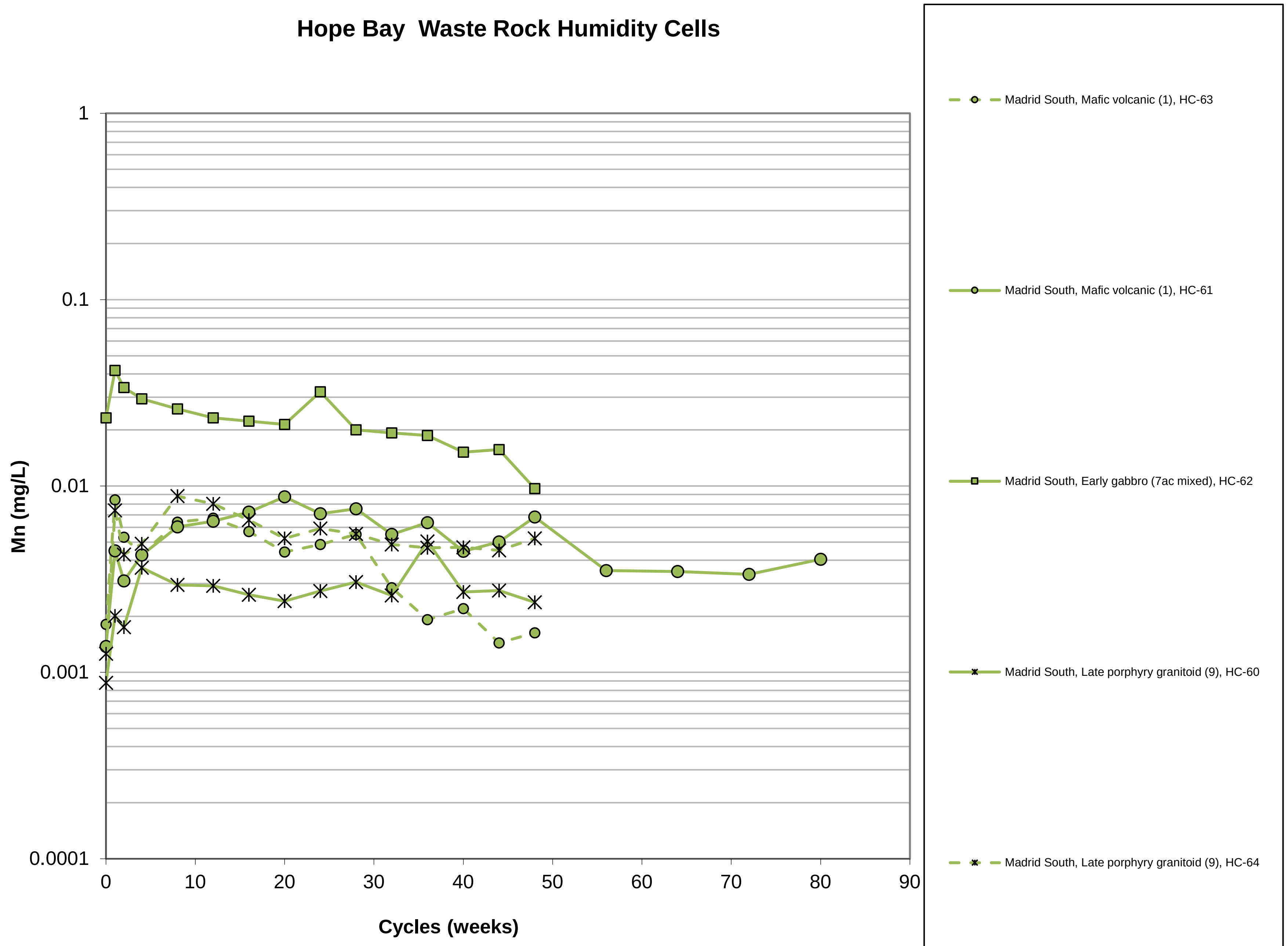

Hope Bay Waste Rock Humidity Cells
Cu (mg/L)
0.012
0.01
0.008
0.006
0.004
0.002
0
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

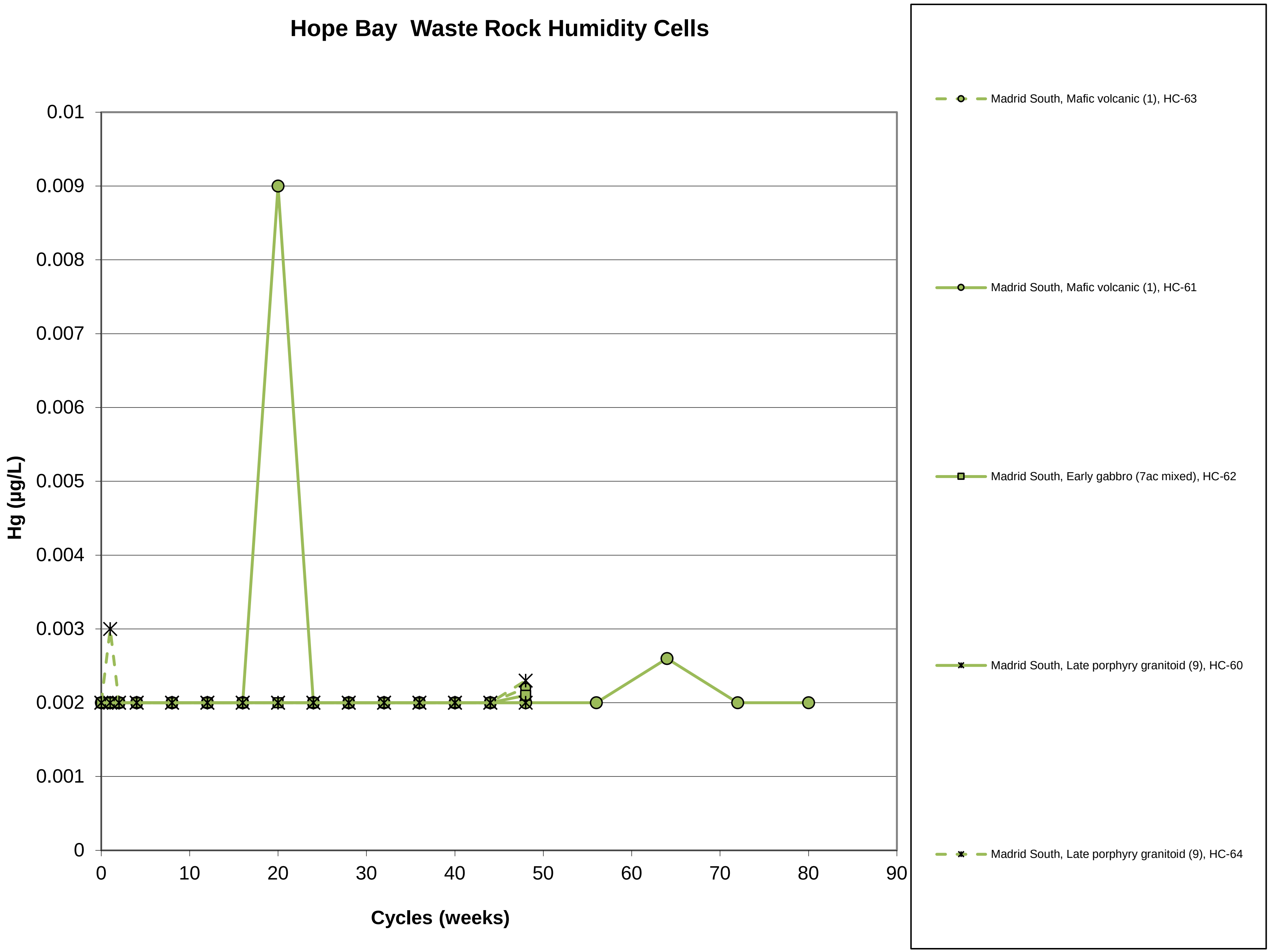

Hope Bay Waste Rock Humidity Cells
Fe (mg/L)
1
0.1
0.01
0.001
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

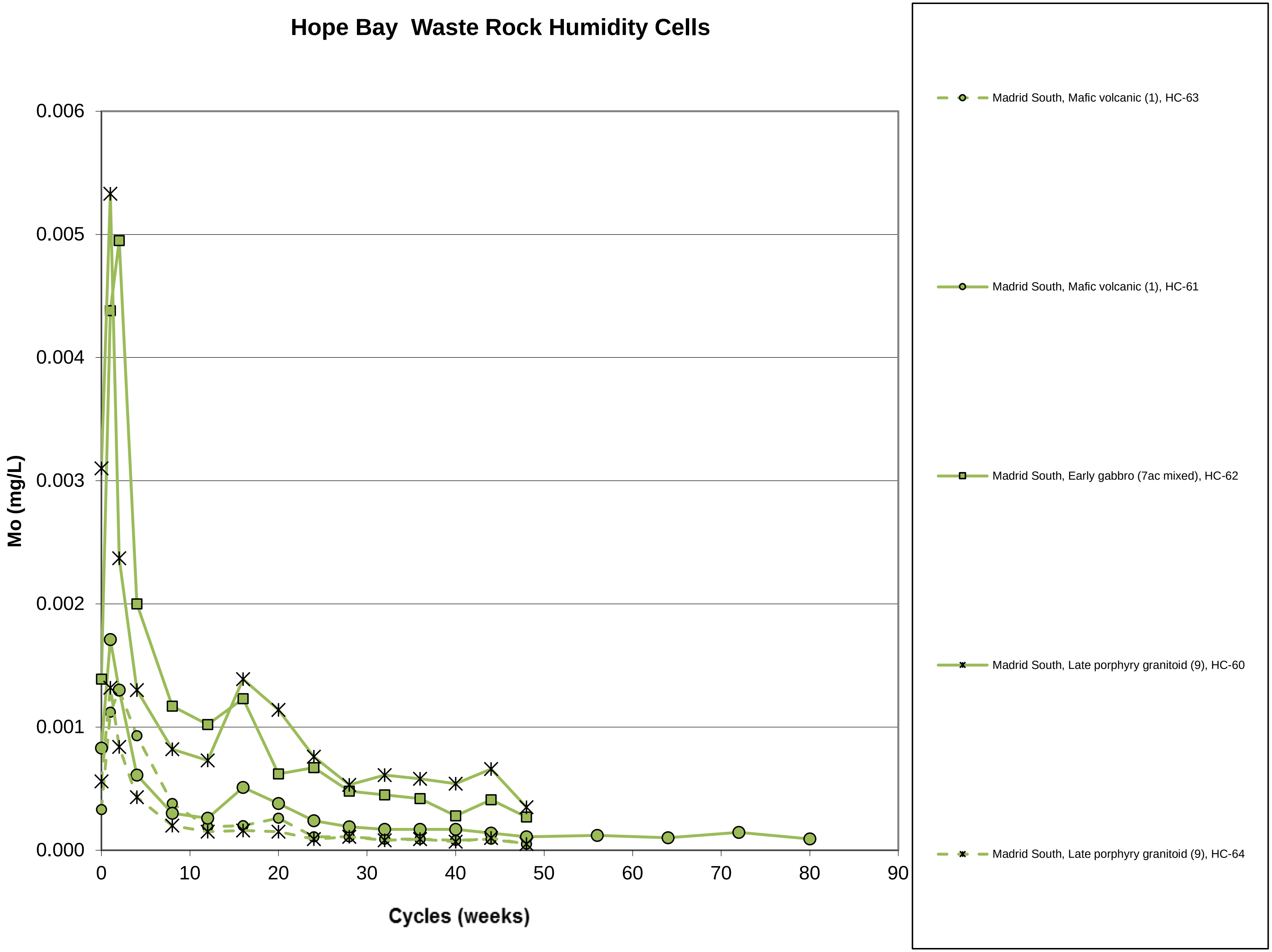

Hope Bay Waste Rock Humidity Cells
Pb (mg/L)
1
0.1
0.01
0.001
0.0001
0.00001
0.000001
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

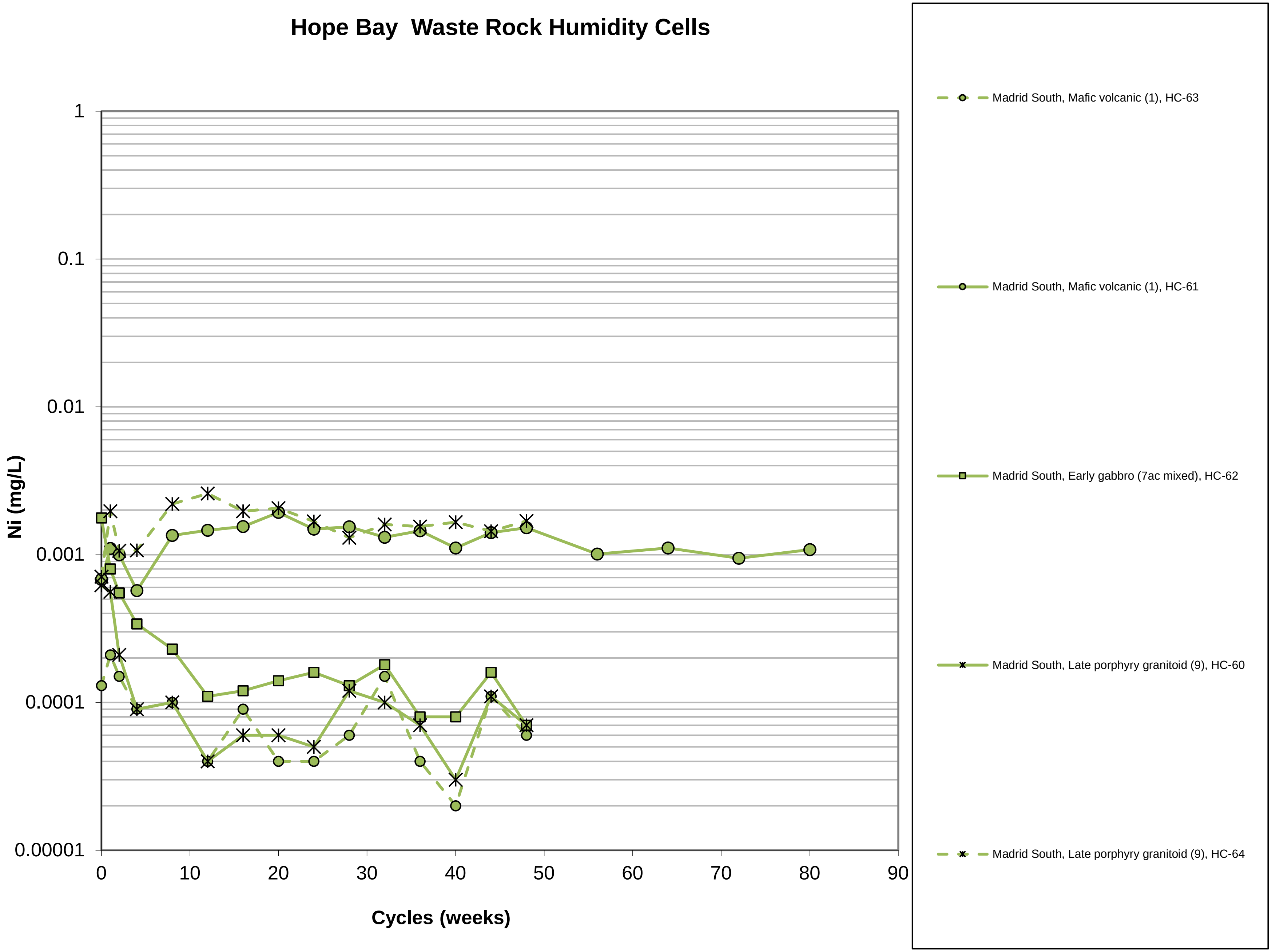

Hope Bay Waste Rock Humidity Cells
Li (mg/L)
1
0.1
0.01
0.001
0.0001
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

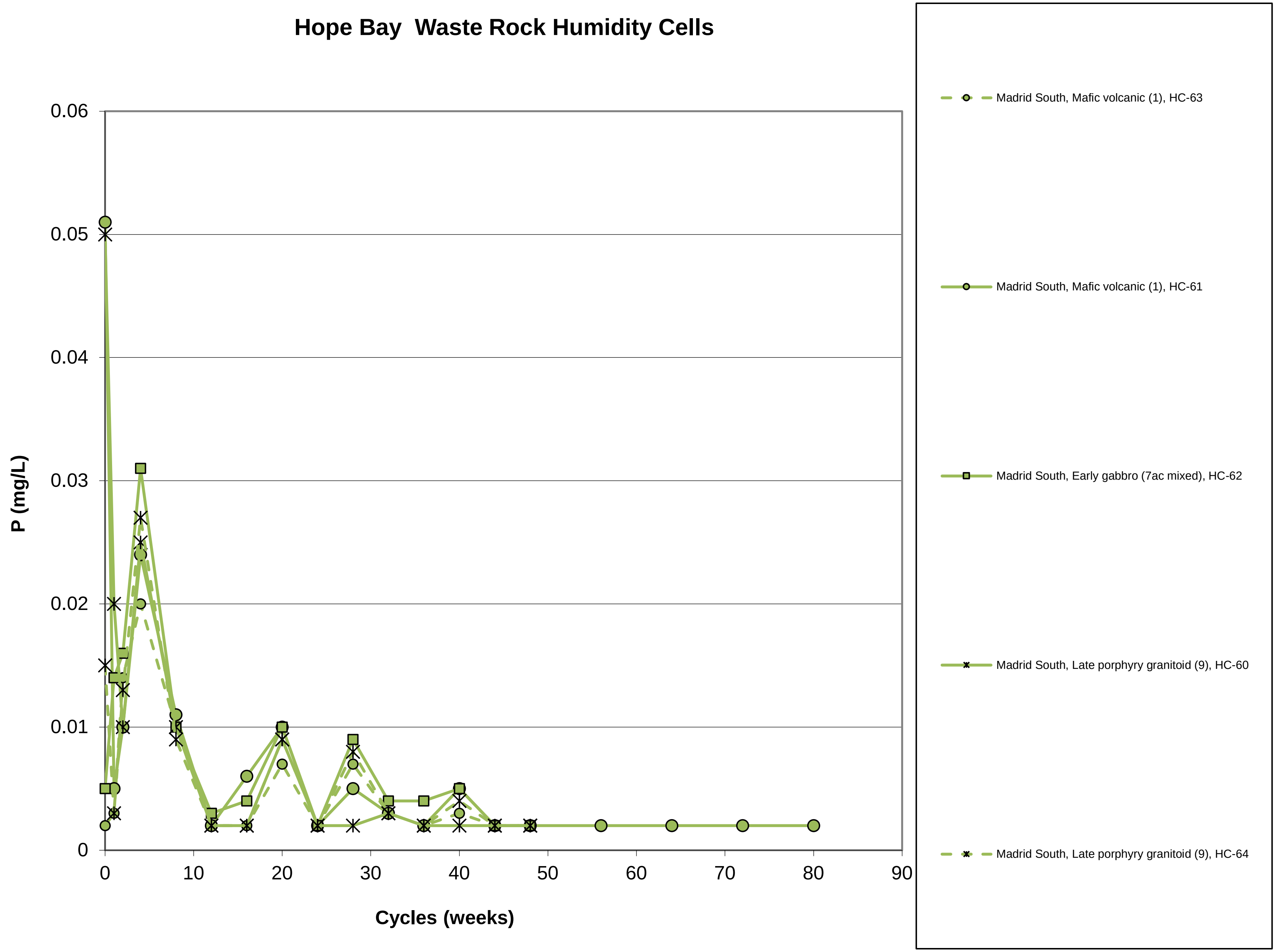

Hope Bay Waste Rock Humidity Cells
Mg (mg/L)
100
10
1
0.1
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

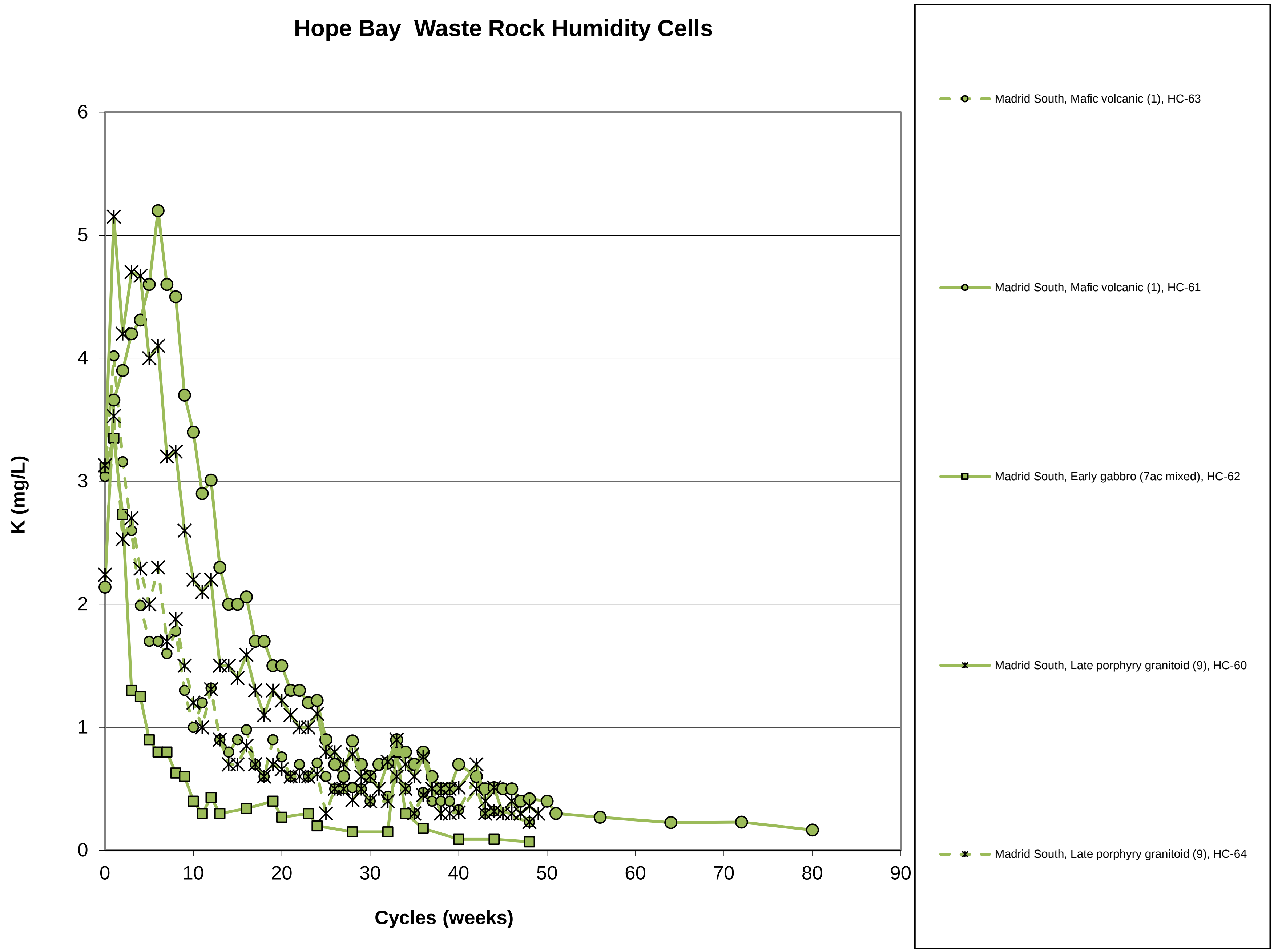

Hope Bay Waste Rock Humidity Cells
Mn (mg/L)
1
0.1
0.01
0.001
0.0001
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

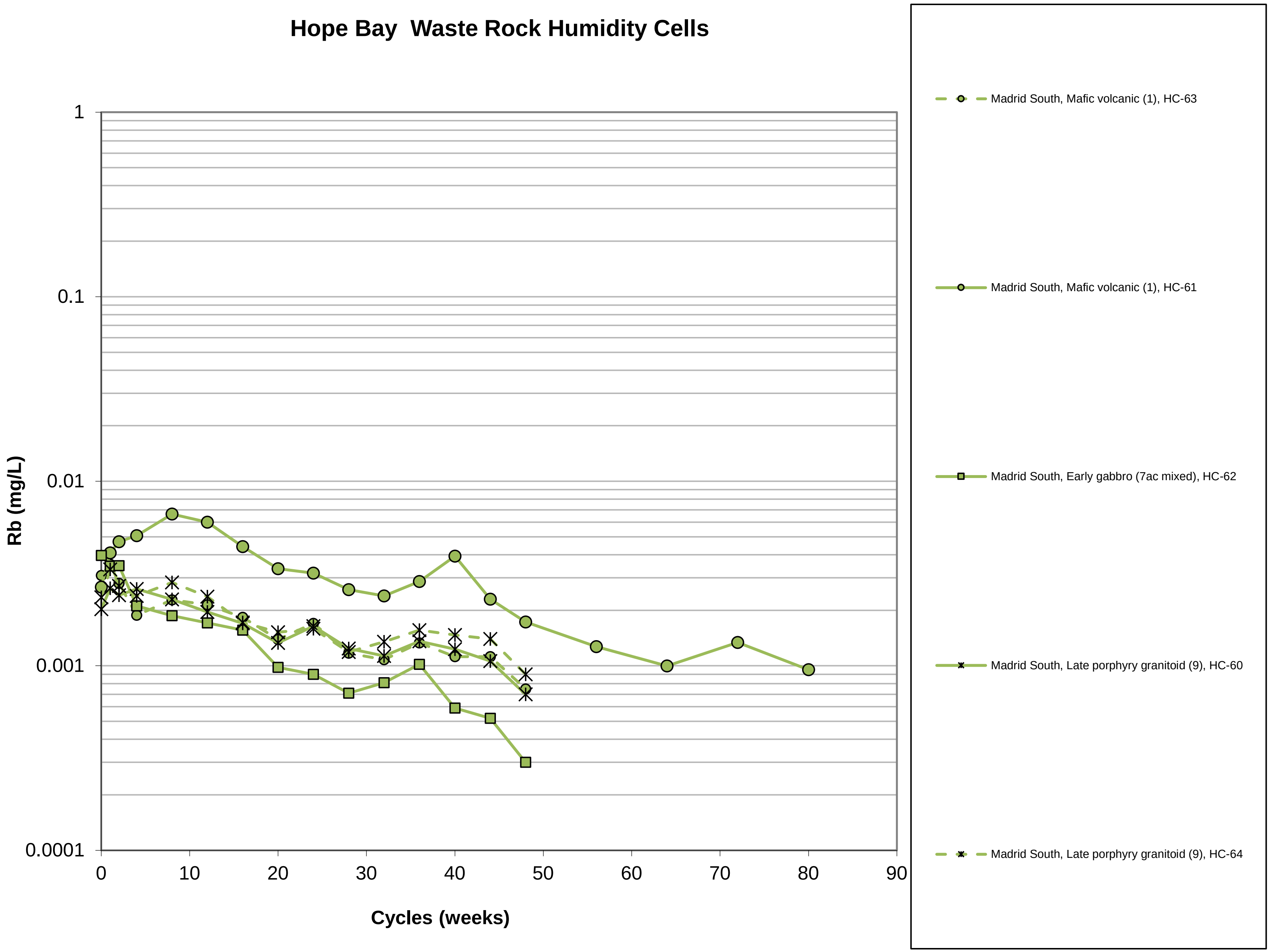

Hope Bay Waste Rock Humidity Cells
Hg (µg/L)
Cycles (weeks)
0.01
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
0
10
20
30
40
50
60
70
80
90
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

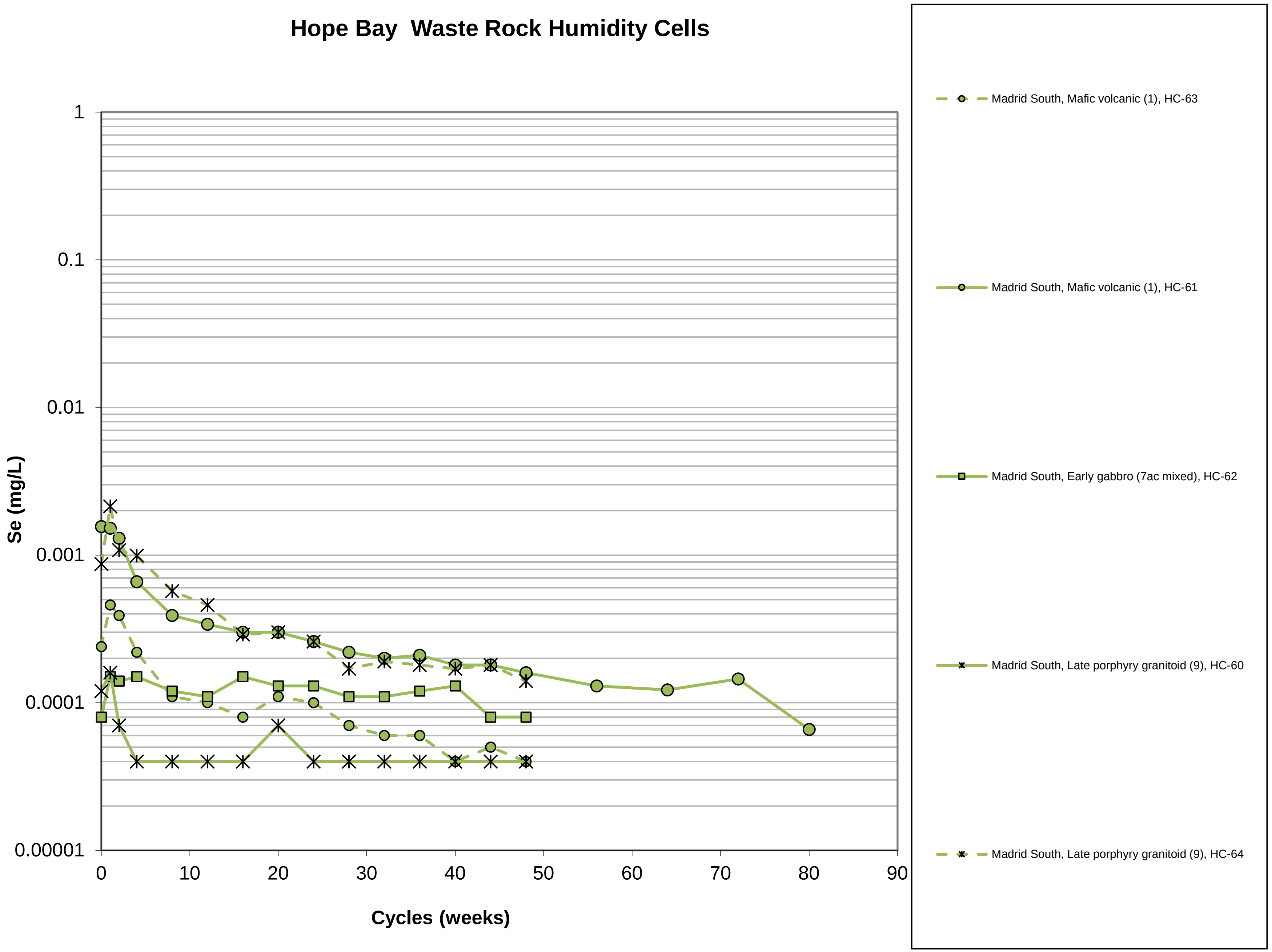

Hope Bay Waste Rock Humidity Cells
Mo (mg/L)
0.006
0.005
0.004
0.003
0.002
0.001
0.000
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

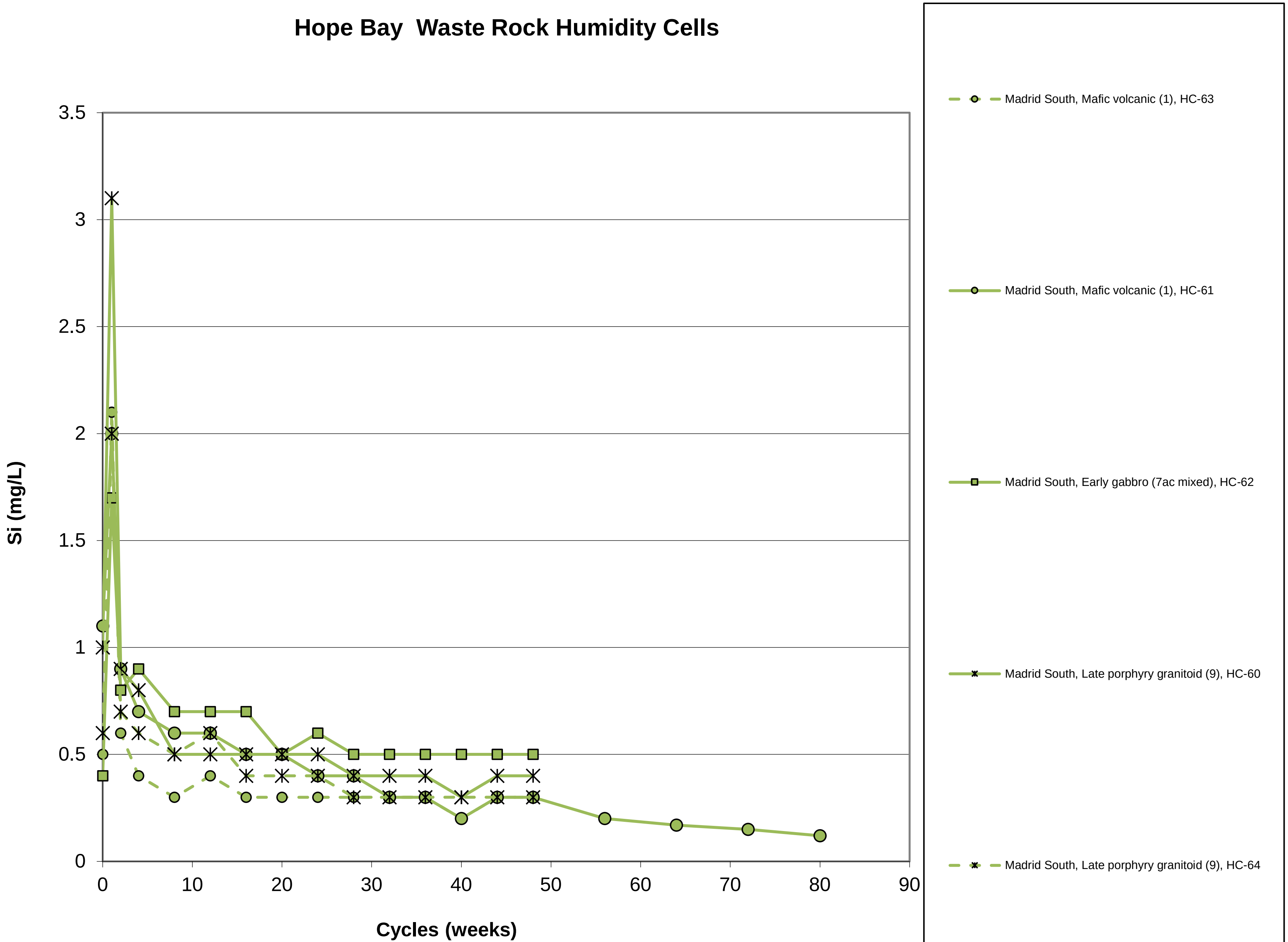

Hope Bay Waste Rock Humidity Cells
Ni (mg/L)
1
0.1
0.01
0.001
0.0001
0.00001
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

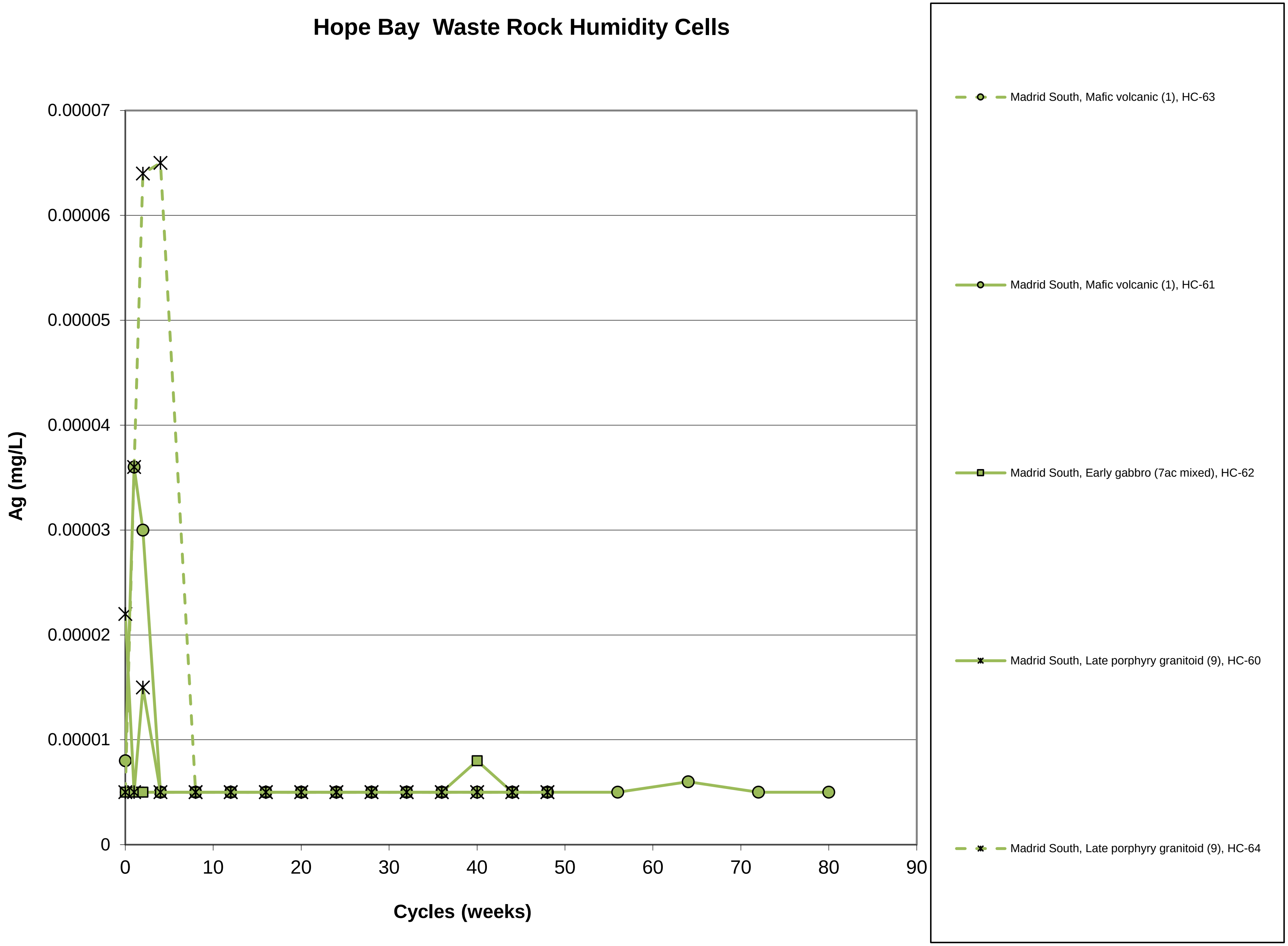

Hope Bay Waste Rock Humidity Cells
P (mg/L)
0.06
0.05
0.04
0.03
0.02
0.01
0
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

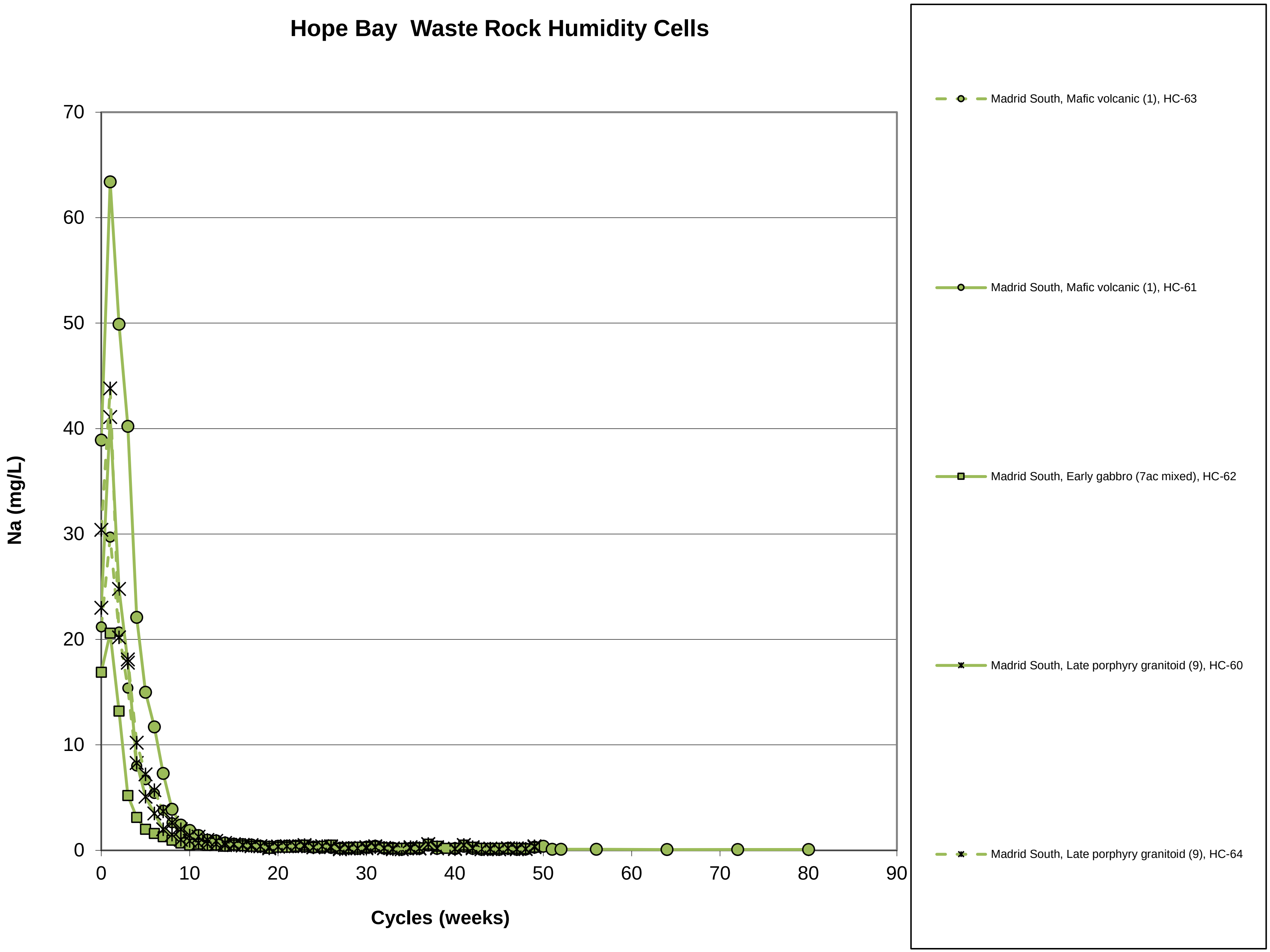

Hope Bay Waste Rock Humidity Cells
K (mg/L)
Cycles (weeks)
0
1
2
3
4
5
6
0
10
20
30
40
50
60
70
80
90
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

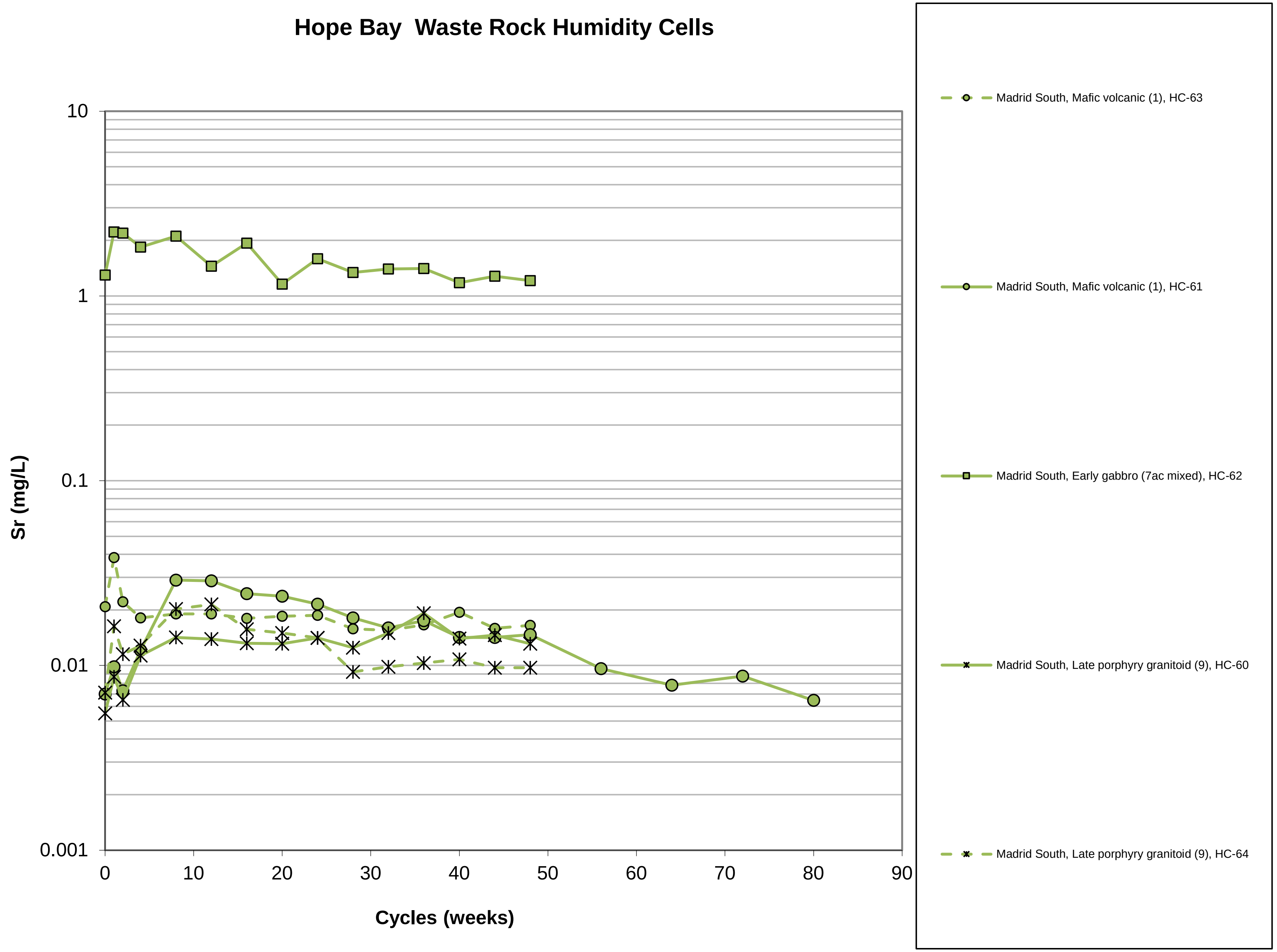

Hope Bay Waste Rock Humidity Cells
Rb (mg/L)
1
0.1
0.01
0.001
0.0001
0 10 20 30 40 50 60 70 80 90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

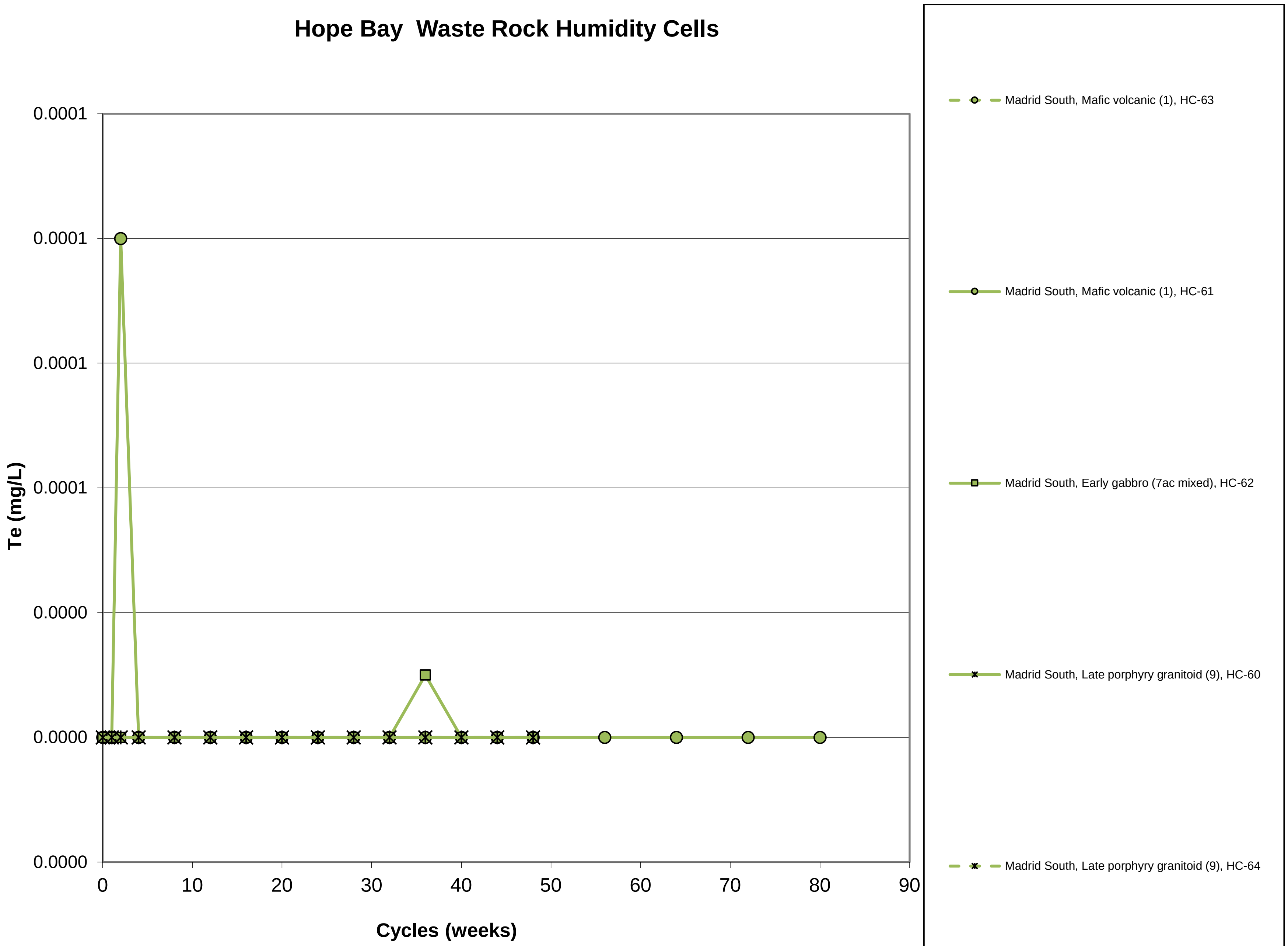

Hope Bay Waste Rock Humidity Cells
Se (mg/L)
1
0.1
0.01
0.001
0.0001
0.00001
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

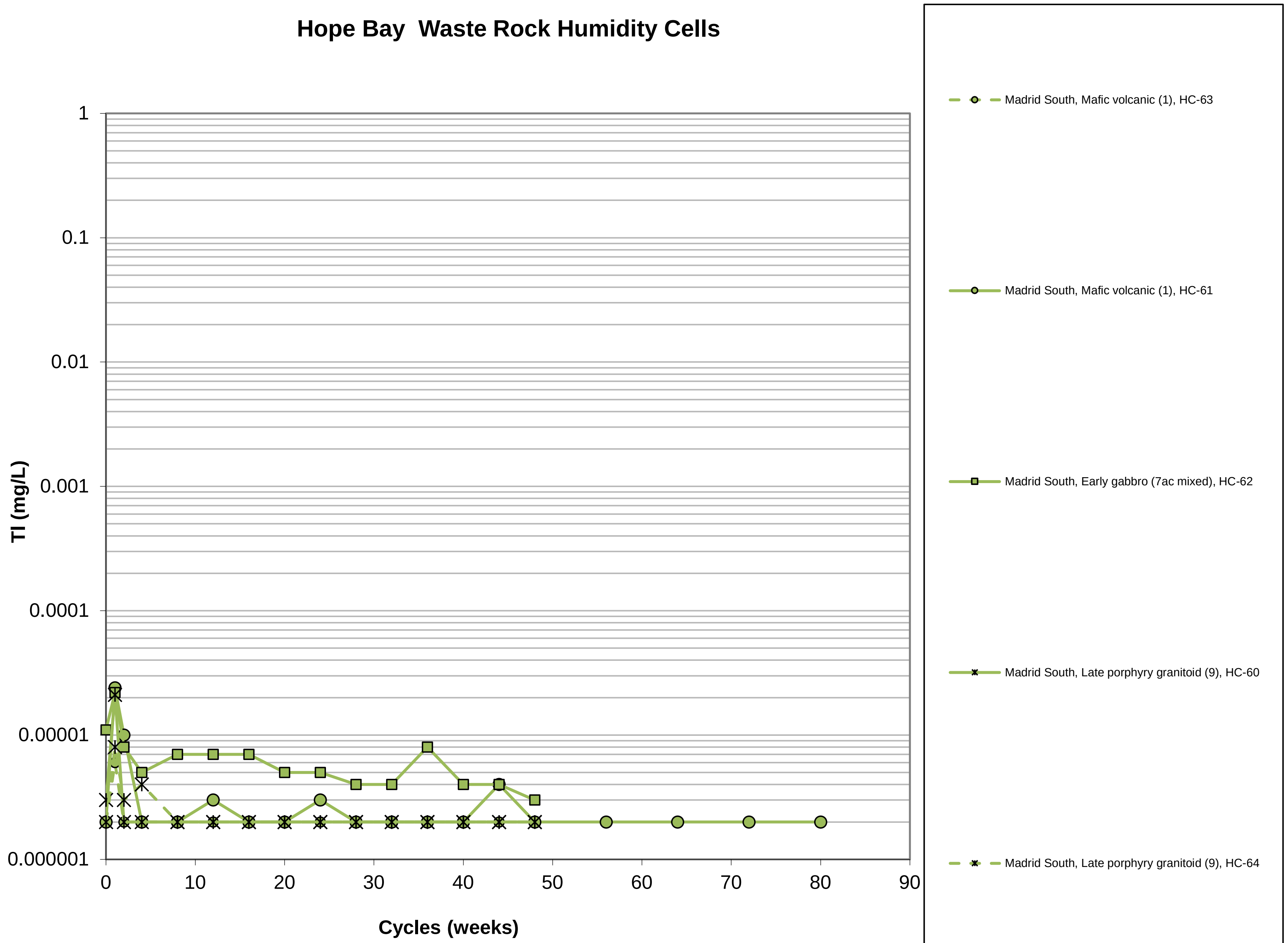

Hope Bay Waste Rock Humidity Cells
Si (mg/L)
Cycles (weeks)
3.5
3
2.5
2
1.5
1
0.5
0
0
10
20
30
40
50
60
70
80
90
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

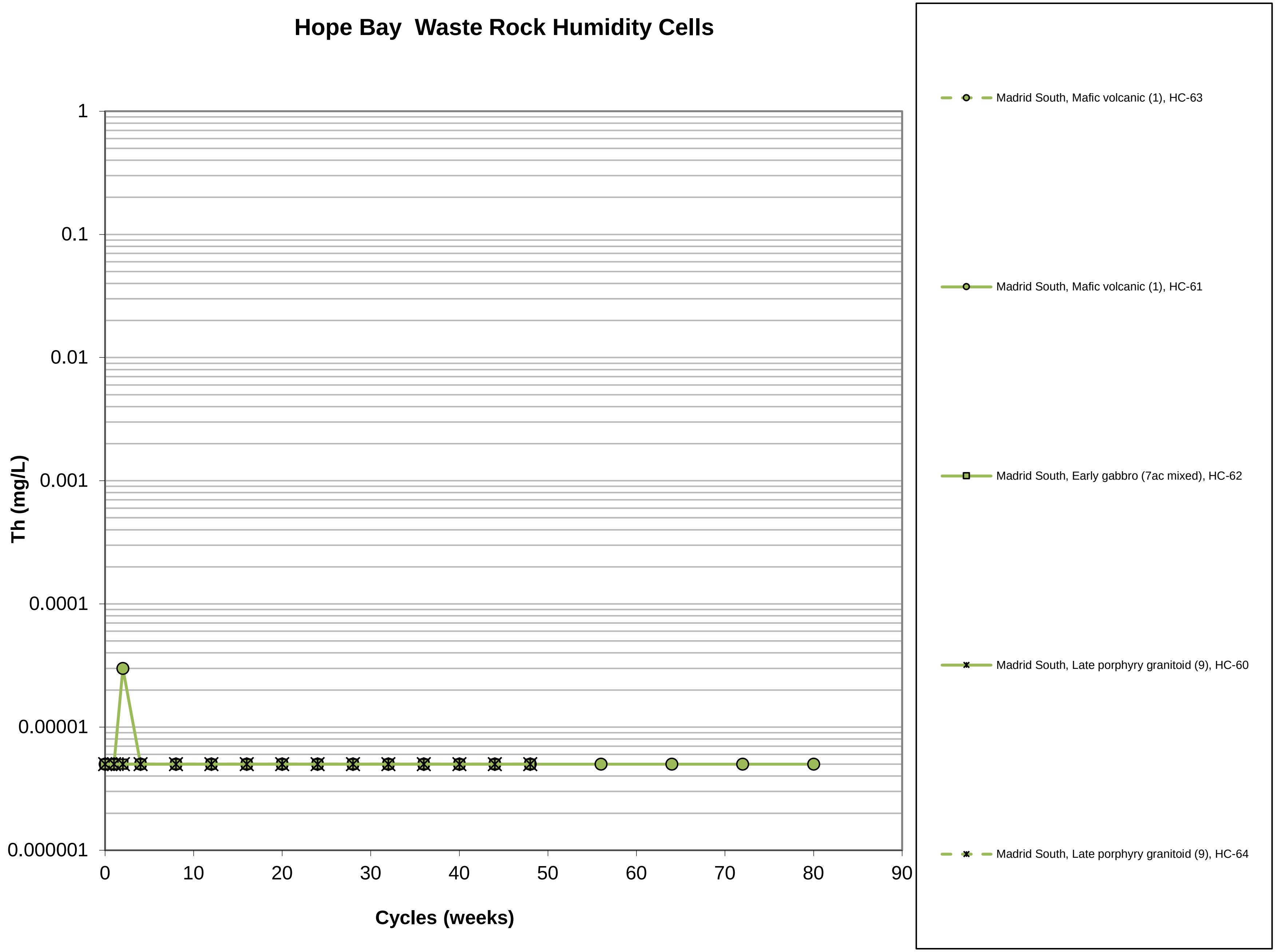

Hope Bay Waste Rock Humidity Cells
0.00007
0.00006
0.00005
0.00004
0.00003
0.00002
0.00001
0
Ag (mg/L)
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

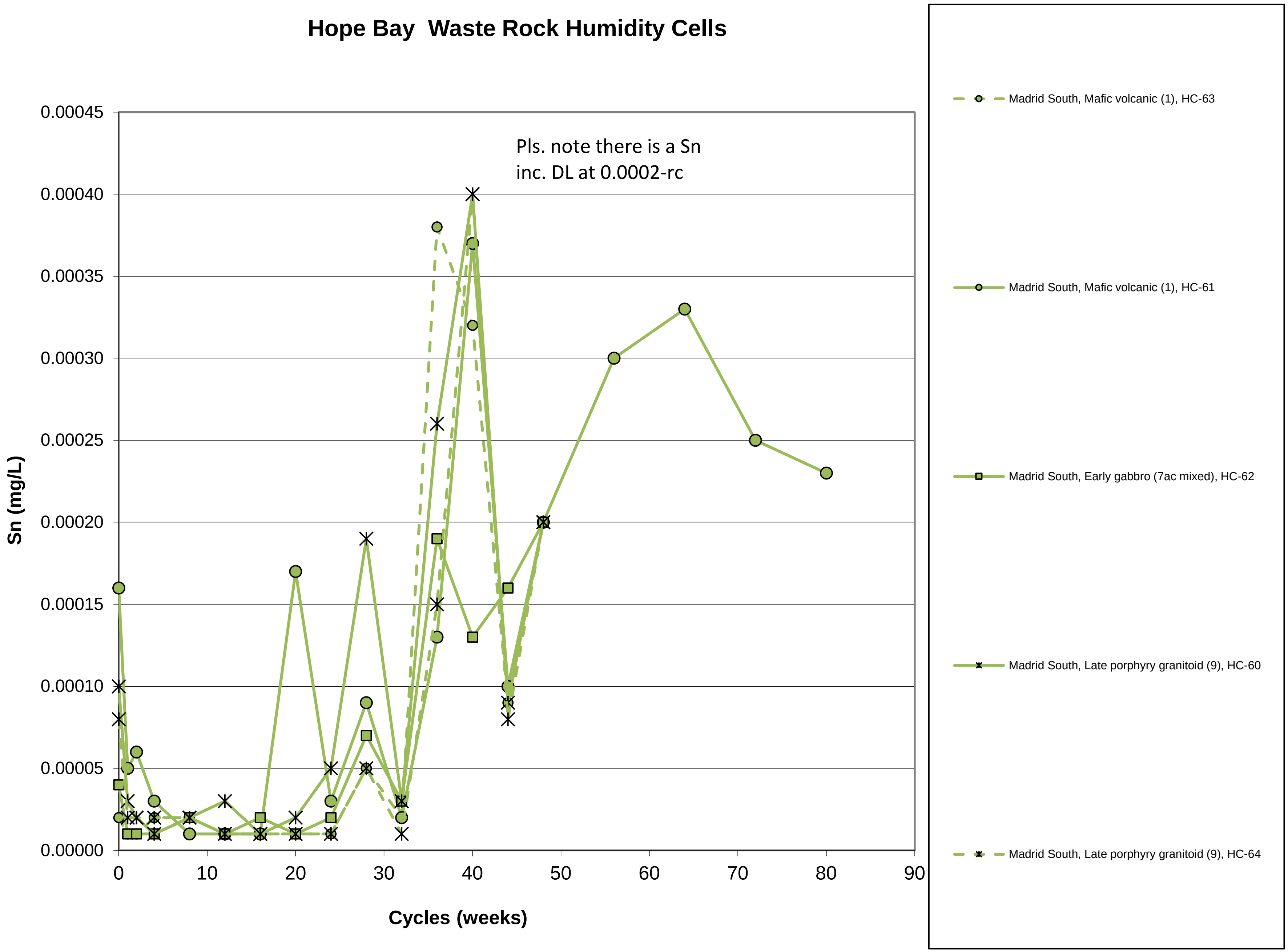

Hope Bay Waste Rock Humidity Cells
Na (mg/L)
0
10
20
30
40
50
60
70
Cycles (weeks)
0
10
20
30
40
50
60
70
80
90
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

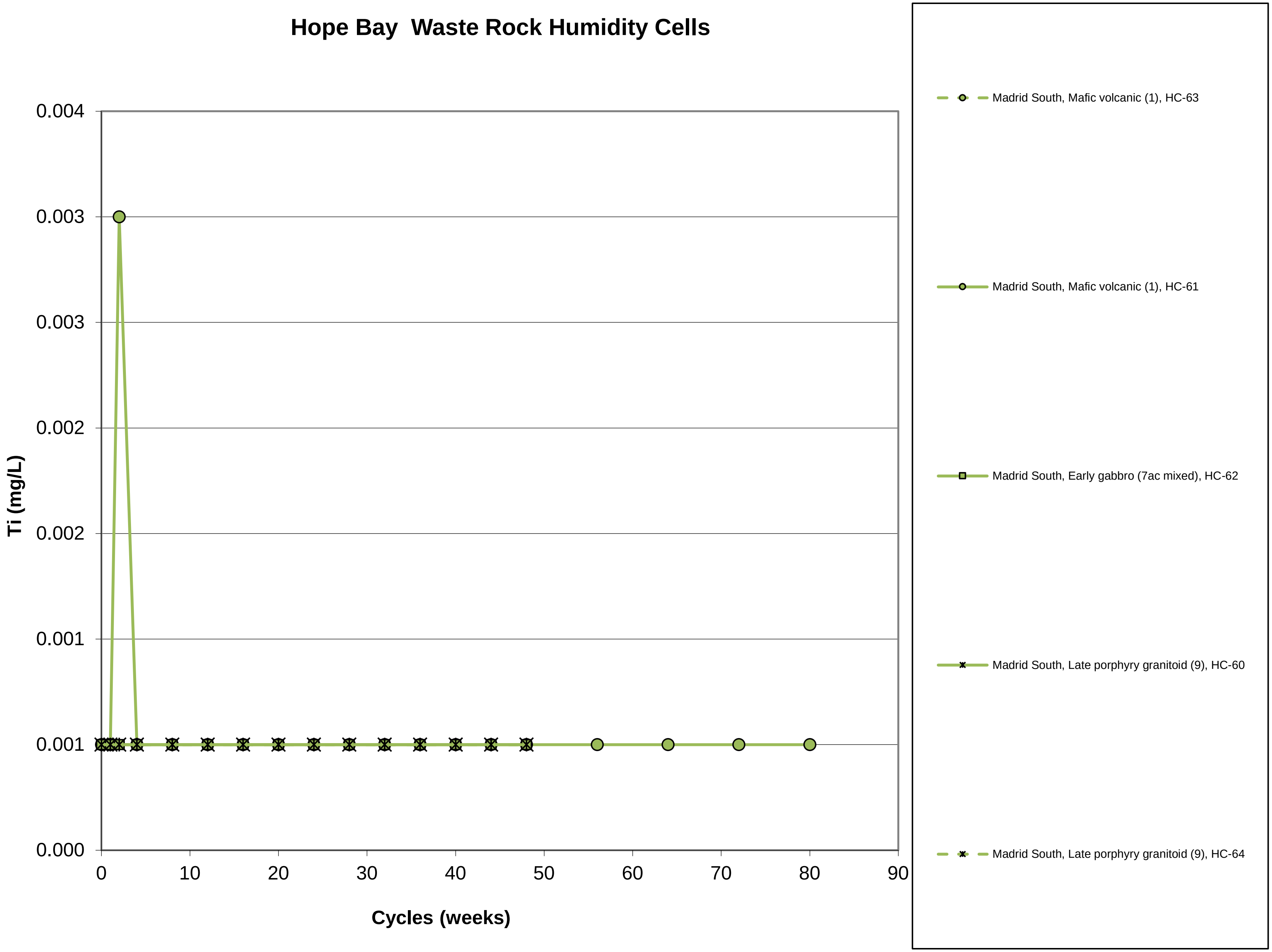

Hope Bay Waste Rock Humidity Cells
Sr (mg/L)
10
1
0.1
0.01
0.001
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

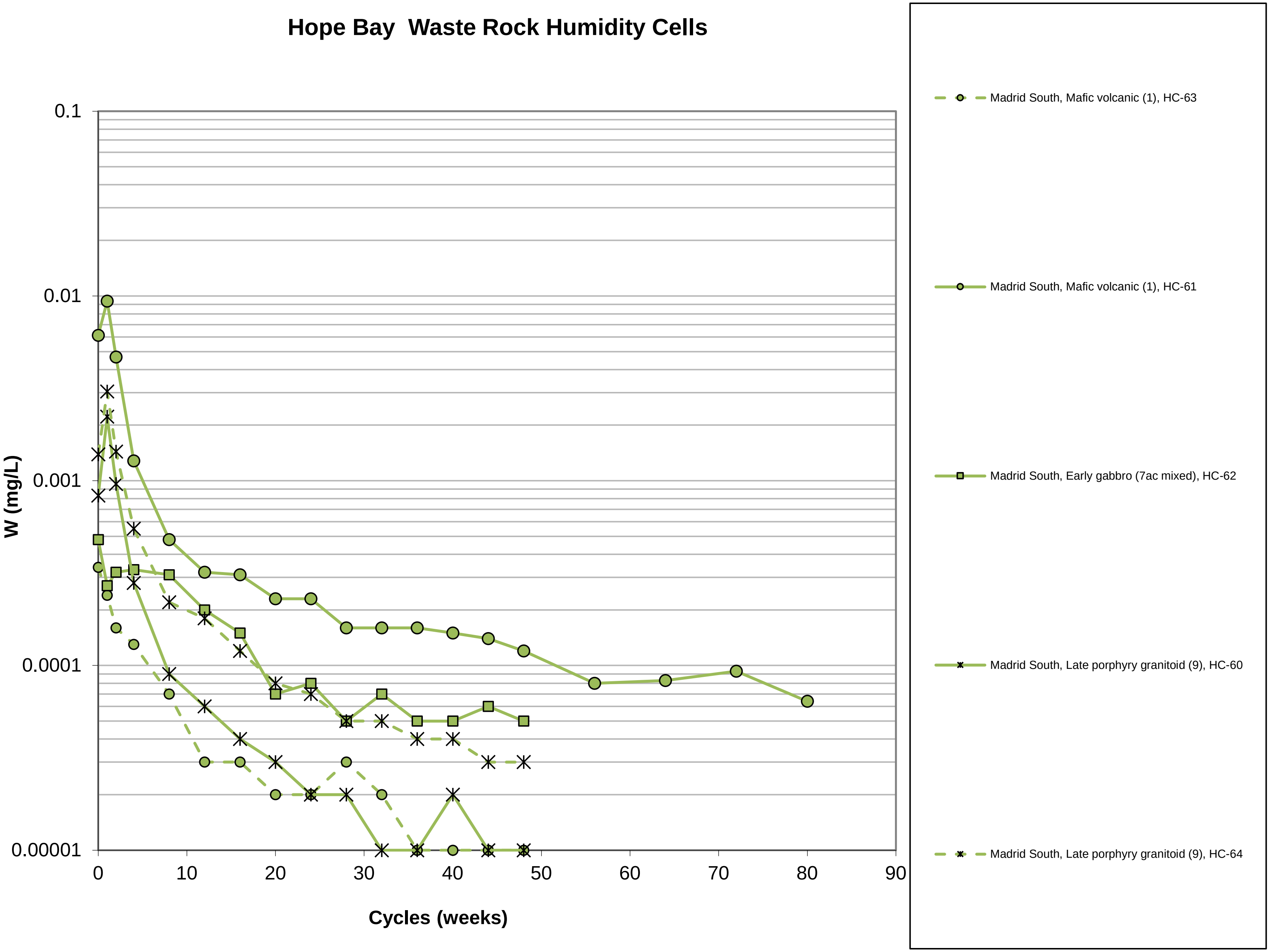

Hope Bay Waste Rock Humidity Cells
Te (mg/L)
0.0001
0.0001
0.0001
0.0001
0.0000
0.0000
0.0000
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

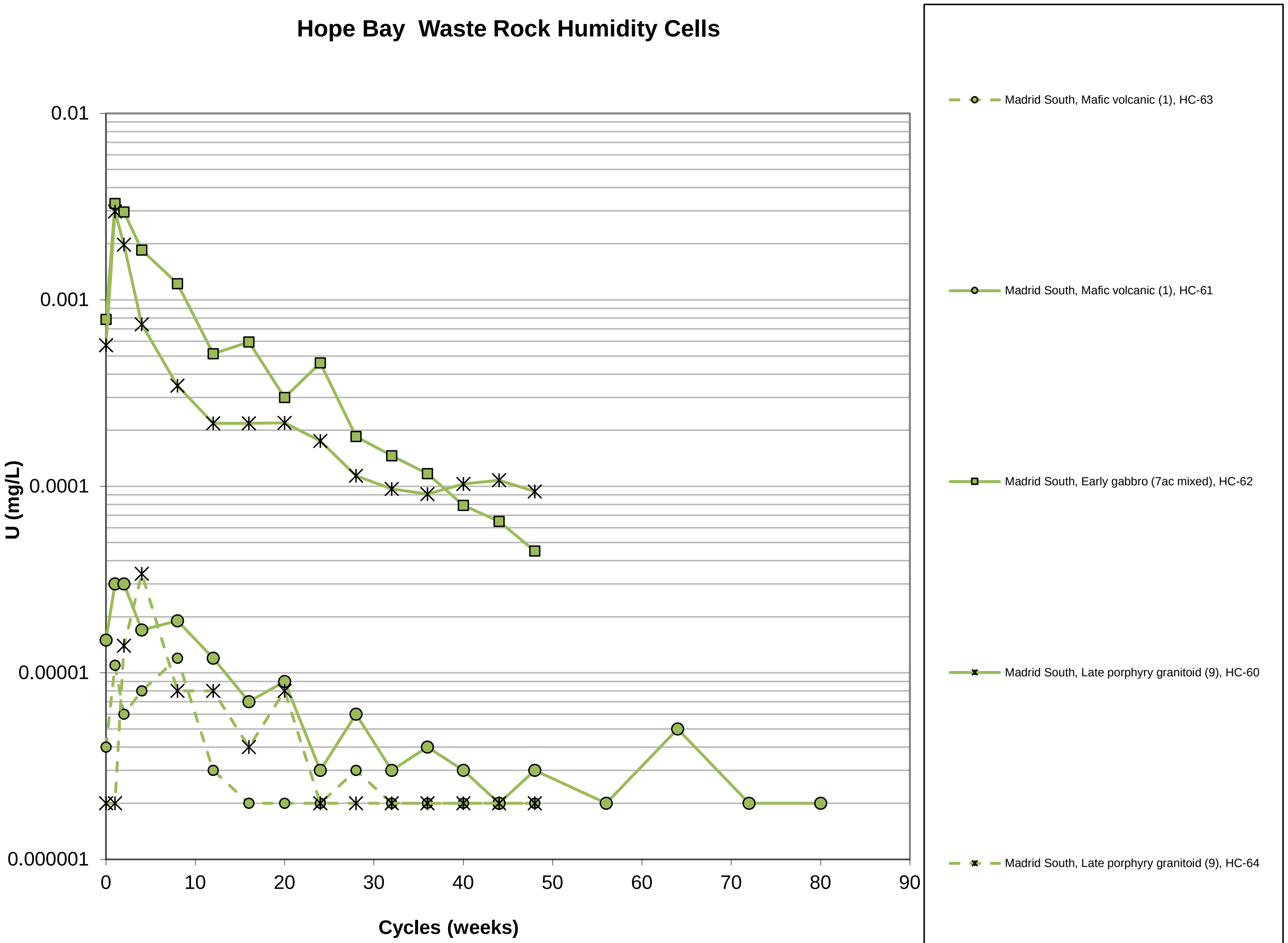

Hope Bay Waste Rock Humidity Cells
Tl (mg/L)
1
0.1
0.01
0.001
0.0001
0.00001
0.000001
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

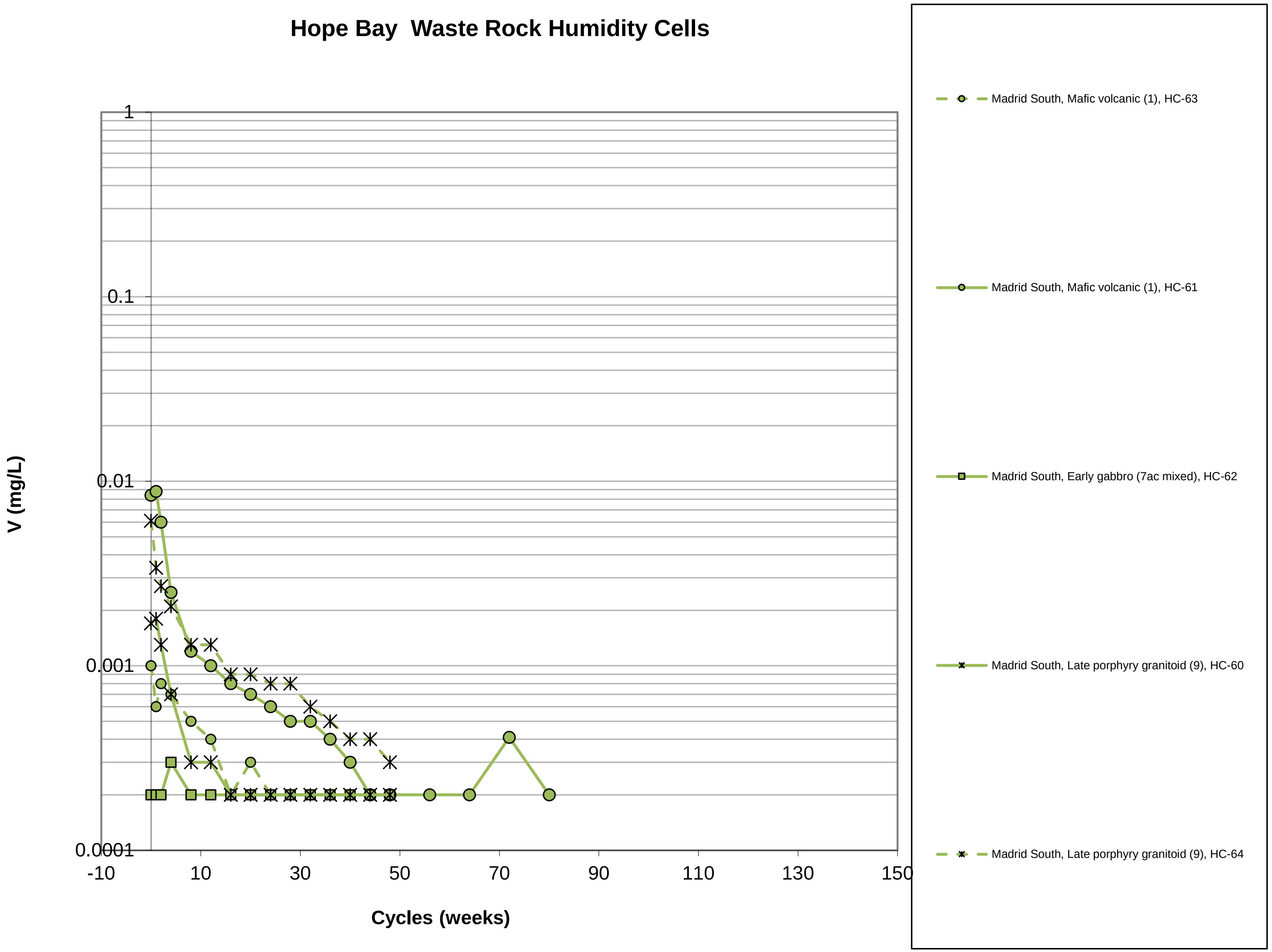

Hope Bay Waste Rock Humidity Cells
Th (mg/L)
1
0.1
0.01
0.001
0.0001
0.00001
0.000001
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

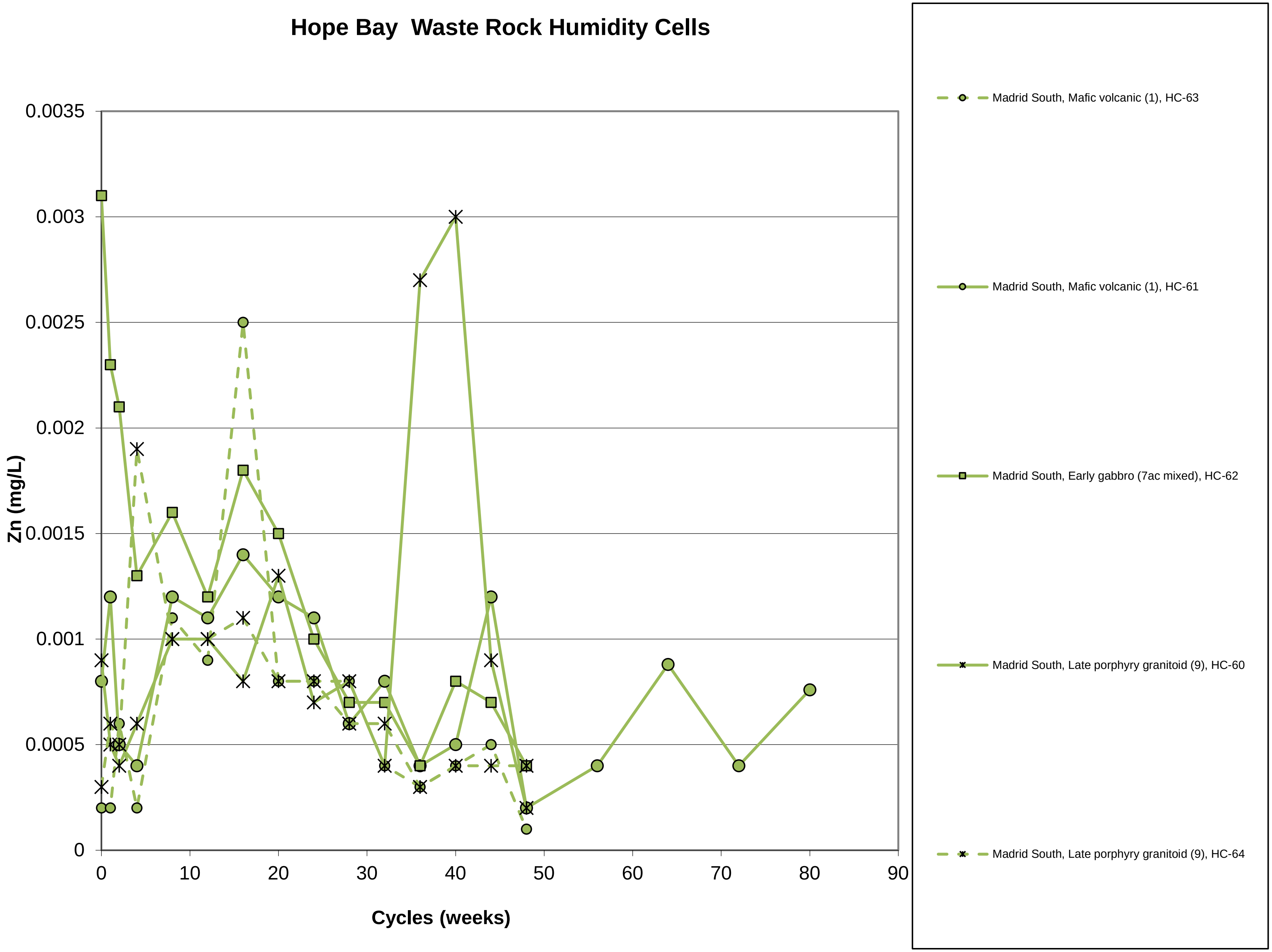

Hope Bay Waste Rock Humidity Cells
Pls. note there is a Sn inc. DL at 0.0002-rc
Sn (mg/L)
0.00045
0.00040
0.00035
0.00030
0.00025
0.00020
0.00015
0.00010
0.00005
0.00000
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

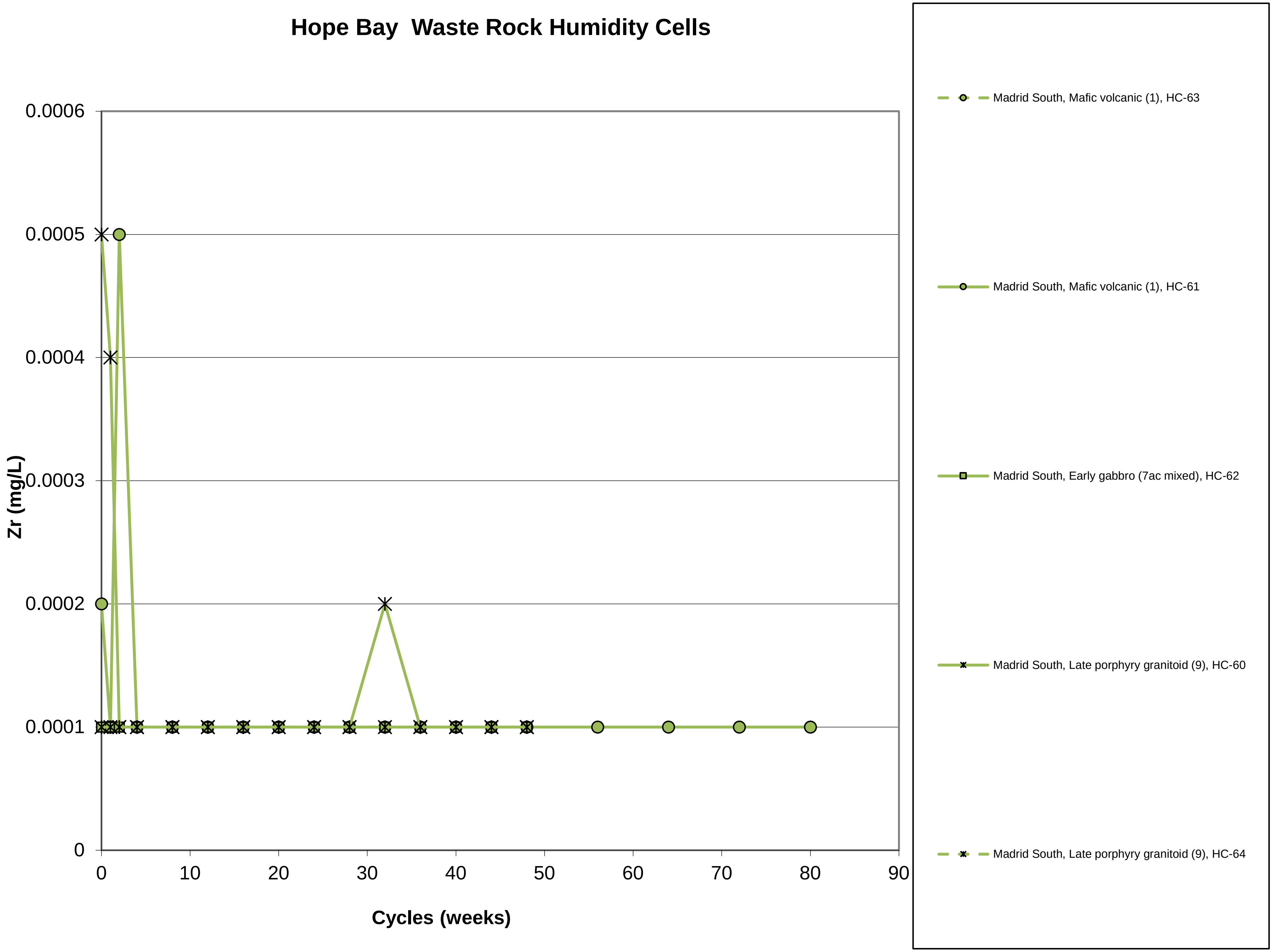

Hope Bay Waste Rock Humidity Cells
Ti (mg/L)
0.004
0.003
0.003
0.002
0.002
0.001
0.001
0.000
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

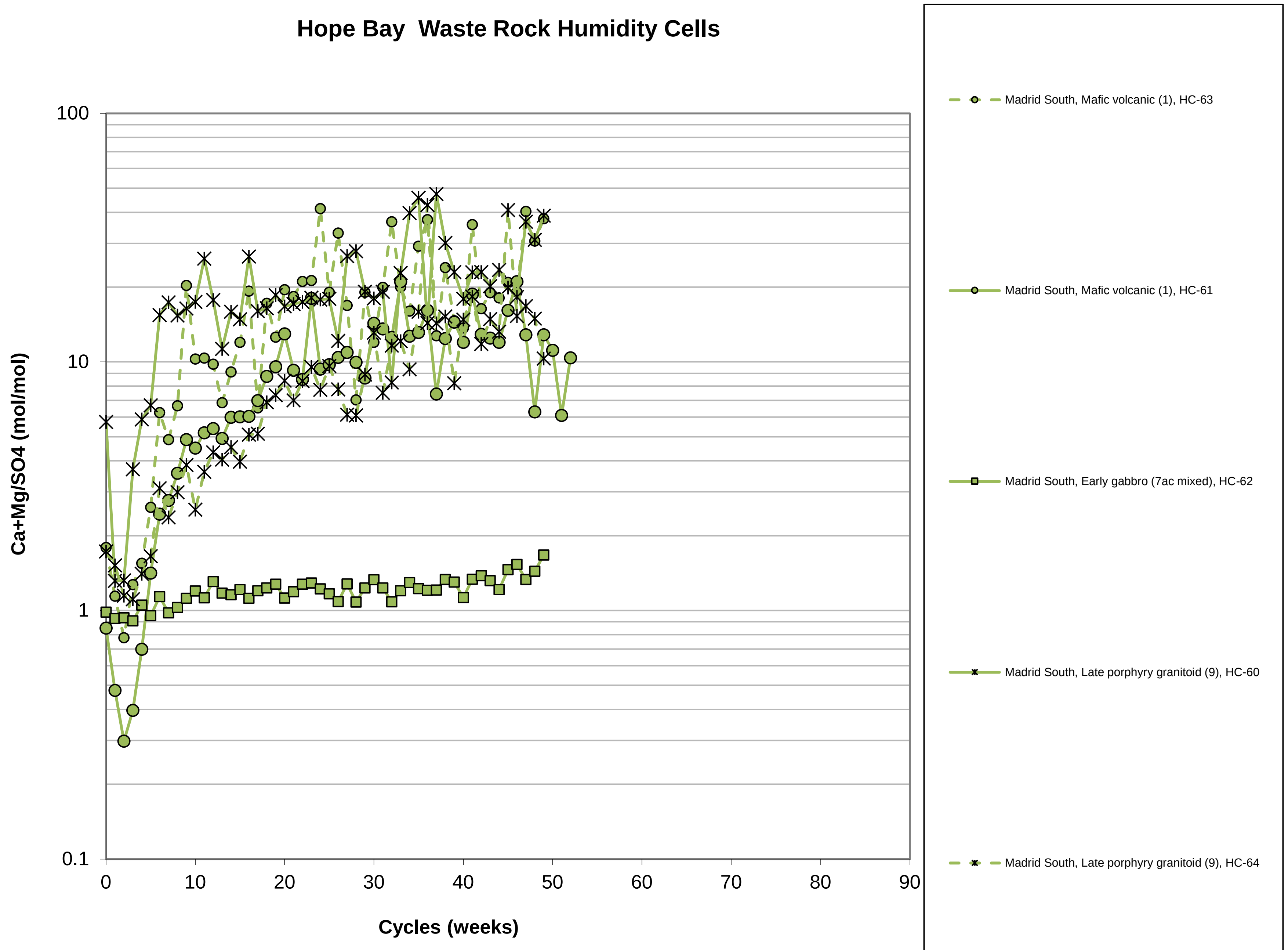

Hope Bay Waste Rock Humidity Cells
W (mg/L)
0.1
0.01
0.001
0.0001
0.00001
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64


Hope Bay Waste Rock Humidity Cells
U (mg/L)
0.01
0.001
0.0001
0.00001
0.000001
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64


Hope Bay Waste Rock Humidity Cells
V (mg/L)
1
0.1
0.01
0.001
0.0001
-10
10
30
50
70
90
110
130
150
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64


Hope Bay Waste Rock Humidity Cells
Zn (mg/L)
0
0.0005
0.001
0.0015
0.002
0.0025
0.003
0.0035
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64


Hope Bay Waste Rock Humidity Cells
Zr (mg/L)
0.0006
0.0005
0.0004
0.0003
0.0002
0.0001
0
0
10
20
30
40
50
60
70
80
90
Cycles (weeks)
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64


Hope Bay Waste Rock Humidity Cells
Ca+Mg/SO4 (mol/mol)
Cycles (weeks)
100
10
1
0.1
0
10
20
30
40
50
60
70
80
90
Madrid South, Mafic volcanic (1), HC-63
Madrid South, Mafic volcanic (1), HC-61
Madrid South, Early gabbro (7ac mixed), HC-62
Madrid South, Late porphyry granitoid (9), HC-60
Madrid South, Late porphyry granitoid (9), HC-64

Appendix J-2:
Madrid South Humidity Cell Test Raw Data

HC-60
Sample Weight = **1kg**

																		Dissolved Metals by ICP-MS (Cantest)					
		Volume (ml)		pH	EC	ORP	SO4	Acidity (mg CaCO3/l)		Alkalinity	Fluoride	Chloride	Nitrate-N	Nitrite-N	Total Ammonia	Diss.-P	TDS	Hardness CaCO3	Al	Sb	As	Ba	Be
Date	Accum.	Input	Output	(pH Units)	(µS/cm)	(mV)	(mg/l)	to pH 4.5	to pH 8.3	to pH 4.5	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mgN/l)	(mgP/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
	Weeks	5	5	0.01	1	50	1	1	1	1	0.1	0.2	0.02	0.002	0.01	0.001	10	0.02	0.02	0.02			Calculation
22-Feb-11	0	750	590	9.51	155	45	1	--	--	50	0.09	11	0.3	0.02	0.11	0.055	76	6	0.781	0.00132	0.0329	0.00143	0.00001
1-Mar-11	1	500	485	8.78	197	100	5	--	--	75	0.15	14	0.326	0.014	0.053	0.036	100	6.9	0.241	0.00549	0.0694	0.00102	0.00001
8-Mar-11	2	500	450	8.66	125	105	4	--	--	64	0.1	1	0.113	0.007	0.067	0.026	70	5.5	0.188	0.00338	0.0548	0.00074	0.00001
15-Mar-11	3	500	445	8.86	107	98	2	--	--	48	--	--	--	--	--	--	--	--	0.17	--	--	--	--
22-Mar-11	4	500	445	8.61	72	120	2	--	--	37	0.04	0.5	0.05	0.005	0.1	0.023	38	12.3	0.134	0.00177	0.0201	0.00107	0.00001
29-Mar-11	5	500	440	8.71	63	135	2	--	--	29	--	--	--	--	--	--	--	--	0.11	--	--	--	--
5-Apr-11	6	500	440	8.61	60	160	1	--	--	27	--	--	--	--	--	--	--	--	0.12	--	--	--	--
12-Apr-11	7	500	440	8.3	45	120	0.8	--	--	24	--	--	--	--	--	--	--	--	0.09	--	--	--	--
19-Apr-11	8	500	450	8.44	48	125	1	--	--	23	0.02	0.5	0.02	0.005	0.21	0.008	28	16.1	0.0809	0.00081	0.00946	0.00129	0.00001
26-Apr-11	9	500	455	8.2	47	165	1	--	1	23	--	--	--	--	--	--	--	--	0.06	--	--	--	--
3-May-11	10	500	460	8.3	46	150	1	--	--	23	--	--	--	--	--	--	--	--	0.07	--	--	--	--
10-May-11	11	500	440	8.23	42	135	0.6	--	1	22	--	--	--	--	--	--	--	--	0.07	--	--	--	--
17-May-11	12	500	440	8.15	39	170	0.9	--	1	21	0.01	0.8	0.02	0.005	0.22	0.01	26	16.6	0.0705	0.00065	0.00713	0.00139	0.00001
24-May-11	13	500	435	7.92	38	140	1.5	--	1	22	--	--	--	--	--	--	--	--	0.06	--	--	--	--
31-May-11	14	500	445	8.31	40	155	1	--	--	21	--	--	--	--	--	--	--	--	0.06	--	--	--	--
7-Jun-11	15	500	425	7.89	36	170	1	--	1	19	--	--	--	--	--	--	--	--	0.07	--	--	--	--
14-Jun-11	16	500	450	8.02	38	165	0.6	--	1	21	0.01	0.5	0.02	0.005	0.13	0.005	20	16.6	0.0612	0.00051	0.00535	0.00136	0.00001
21-Jun-11	17	500	430	8.2	38	150	1	--	1	19	--	--	--	--	--	--	--	--	0.07	--	--	--	--
28-Jun-11	18	500	445	7.95	39	155	1	--	1	20	--	--	--	--	--	--	--	--	0.05	--	--	--	--
5-Jul-11	19	500	460	8.14	37	220	1	--	1	21	--	--	--	--	--	--	--	--	0.05	--	--	--	--
12-Jul-11	20	500	450	7.9	39	205	1	--	1	20	0.01	0.5	0.02	0.005	0.14	0.007	24	17.5	0.0582	0.00042	0.005	0.0016	0.00001
19-Jul-11	21	500	440	8.01	41	210	1	--	1	21	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Jul-11	22	500	440	8.08	42	200	1	--	1	21	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Aug-11	23	500	440	7.75	45	160	1	--	1	20	--	--	--	--	--	--	--	--	--	--	--	--	--
9-Aug-11	24	500	450	8.02	40	180	1	--	1	18	0.01	1.5	0.02	0.005	0.066	0.005	26	18.6	0.054	0.00038	0.00413	0.00158	0.00001
16-Aug-11	25	500	425	8.06	44	170	1	--	1	19	--	--	--	--	--	--	--	--	--	--	--	--	--
23-Aug-11	26	500	430	7.69	41	180	1.5	--	1	18	--	--	--	--	--	--	--	--	--	--	--	--	--
30-Aug-11	27	500	425	8.15	45	175	0.7	--	1	17	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Sep-11	28	500	440	7.46	38	160	0.6	--	1	18	0.01	2	0.02	0.005	0.15	0.005	42	17.5	0.0437	0.00027	0.00236	0.00155	0.00001
13-Sep-11	29	500	440	7.83	40	175	1	--	1	17	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Sep-11	30	500	465	7.57	44	165	1	--	1	18	--	--	--	--	--	--	--	--	--	--	--	--	--
27-Sep-11	31	500	440	7.93	45	165	1	--	1	18	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Oct-11	32	500	435	7.71	49	130	2.4	--	1	17	0.01	4.5	0.02	0.005	0.18	0.006	28	20.7	0.0369	0.00022	0.00193	0.00181	0.00001
11-Oct-11	33	500	435	7.7	62	170	1	--	1	16	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Oct-11	34	500	435	7.7	65	170	0.6	--	1	16	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Oct-11	35	500	445	7.83	61	175	0.5	--	1	16	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Nov-11	36	500	430	7.56	71	205	1.7	--	1	15	0.01	11	0.02	0.005	0.26	0.005	36	25.4	0.0311	0.00021	0.00177	0.00257	0.00001
8-Nov-11	37	500	480	7.63	65	185	0.5	--	1	15	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Nov-11	38	500	450	7.59	71	220	1	--	1	20	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Nov-11	39	500	465	7.71	54	275	1	--	1	18	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Nov-11	40	500	455	7.68	48	215	1	--	1	18	0.01	2.3	0.02	0.005	0.2	0.005	26	18.7	0.0251	0.00023	0.00151	0.00176	0.00001
6-Dec-11	41	500	445	7.65	45	220	1	--	1	17	--	--	--	--	--	--	--	--	--	--	--	--	--
13-Dec-11	42	500	435	7.45	57	230	1	--	1	18	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Dec-11	43	500	440	7.65	47	245	1	--	1	17	--	--	--	--	--	--	--	--	--	--	--	--	--
27-Dec-11	44	500	445	7.45	47	240	0.85	--	1	17	0.01	3.2	0.02	0.005	0.23	0.005	26	20.8	0.0294	0.00019	0.00141	0.002	0.00001
3-Jan-12	45	500	460	7.43	44	130	1	--	1	18	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Jan-12	46	500	440	7.5	39	120	1	--	1	16	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Jan-12	47	500	435	7.56	40	115	0.5	--	1	17	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Jan-12	48	500	480	7.56	38	125	0.57	--	1	19	0.01	1	0.026	0.005	0.19	0.005	28	18.4	0.0215	0.00022	0.00129	0.00175	0.00001
31-Jan-12	49	500	435	7.61	47	120	0.53	--	1	14	--	--	--	--	--	--	--	--	--	--	--	--	--
Terminated																							

HC-60
Sample Weight = 1kg

Date	Accum. Weeks	Bi mg/l	B mg/l	Cs mg/l	Cd mg/l	Ca mg/l	Cr mg/l	Co mg/l	Cu mg/l	La mg/l	Fe mg/l	Pb mg/l	Li mg/l	Mg mg/l	Mn mg/l	P mg/L	Hg (CVAF) µg/L	Mo mg/l	Ni mg/l	Re mg/L	K mg/l	Rb mg/l	Se mg/l	Si mg/l
		0.005	0.001	0.0001	0.001	0.001	0.001	0.001	0.02	0.0001	0.0002	0.05	0.001	0.001	0.001	0.015	0.02	0.001	0.001	0.0001	0.001	0.0001	0.00002	0.0005
22-Feb-11	0	0.000005	0.17	0.00007	0.000005	1.47	0.0001	0.000111	0.00563	0.00005	0.014	0.000141	0.0013	0.56	0.00088	0.05	0.002	0.0031	0.00062	--	3.13	0.00203	0.00012	1
1-Mar-11	1	0.000005	0.31	0.00015	0.000022	1.48	0.0002	0.000136	0.00565	0.00005	0.008	0.0001	0.0021	0.77	0.00201	0.02	0.002	0.00533	0.00056	--	5.15	0.00263	0.00016	3.1
8-Mar-11	2	0.000005	0.22	0.00013	0.000007	1.17	0.0001	0.000071	0.00359	0.00005	0.007	0.000048	0.0014	0.63	0.00175	0.01	0.002	0.00237	0.00021	--	4.2	0.00241	0.00007	0.9
15-Mar-11	3	--	--	--	--	1.56	--	--	--	--	--	--	--	0.93	--	--	--	--	--	--	4.7	--	--	--
22-Mar-11	4	0.000005	0.1	0.00012	0.000005	2.68	0.0001	0.000055	0.00094	0.00005	0.005	0.000363	0.0011	1.35	0.00364	0.025	0.002	0.0013	0.00009	--	4.67	0.00261	0.00004	0.8
29-Mar-11	5	--	--	--	--	2.77	--	--	--	--	--	--	--	1.71	--	--	--	--	--	--	4	--	--	--
5-Apr-11	6	--	--	--	--	3.14	--	--	--	--	--	--	--	2	--	--	--	--	--	--	4.1	--	--	--
12-Apr-11	7	--	--	--	--	2.76	--	--	--	--	--	--	--	1.84	--	--	--	--	--	--	3.2	--	--	--
19-Apr-11	8	0.000005	0.05	0.00011	0.000005	2.84	0.0001	0.000046	0.00048	0.00005	0.003	0.000016	0.0005	2.17	0.00295	0.01	0.002	0.00082	0.0001	--	3.24	0.00229	0.00004	0.5
26-Apr-11	9	--	--	--	--	3.42	--	--	--	--	--	--	--	2.08	--	--	--	--	--	--	2.6	--	--	--
3-May-11	10	--	--	--	--	3.64	--	--	--	--	--	--	--	2.21	--	--	--	--	--	--	2.2	--	--	--
10-May-11	11	--	--	--	--	3.22	--	--	--	--	--	--	--	2	--	--	--	--	--	--	2.1	--	--	--
17-May-11	12	0.000005	0.05	0.00011	0.000005	3.32	0.0001	0.000048	0.0006	0.00005	0.003	0.000051	0.0005	2.03	0.00291	0.002	0.002	0.00073	0.00004	--	2.2	0.00196	0.00004	0.5
24-May-11	13	--	--	--	--	3.52	--	--	--	--	--	--	--	2.15	--	--	--	--	--	--	1.5	--	--	--
31-May-11	14	--	--	--	--	3.25	--	--	--	--	--	--	--	2.06	--	--	--	--	--	--	1.5	--	--	--
7-Jun-11	15	--	--	--	--	2.96	--	--	--	--	--	--	--	1.96	--	--	--	--	--	--	1.4	--	--	--
14-Jun-11	16	0.000005	0.05	0.00012	0.000005	3.35	0.0001	0.000058	0.00031	0.00005	0.001	0.000032	0.0005	2	0.00261	0.002	0.002	0.00139	0.00006	--	1.59	0.0017	0.00004	0.5
21-Jun-11	17	--	--	--	--	3.27	--	--	--	--	--	--	--	2.07	--	--	--	--	--	--	1.3	--	--	--
28-Jun-11	18	--	--	--	--	3.47	--	--	--	--	--	--	--	2.06	--	--	--	--	--	--	1.1	--	--	--
5-Jul-11	19	--	--	--	--	4.07	--	--	--	--	--	--	--	2.23	--	--	--	--	--	--	1.3	--	--	--
12-Jul-11	20	0.000005	0.05	0.00011	0.000007	3.51	0.0001	0.000063	0.00045	0.00005	0.005	0.00006	0.0005	2.11	0.00241	0.009	0.002	0.00114	0.00006	--	1.22	0.00133	0.00007	0.5
19-Jul-11	21	--	--	--	--	3.73	--	--	--	--	--	--	--	2.07	--	--	--	--	--	--	1.1	--	--	--
26-Jul-11	22	--	--	--	--	3.82	--	--	--	--	--	--	--	2.1	--	--	--	--	--	--	1	--	--	--
2-Aug-11	23	--	--	--	--	3.94	--	--	--	--	--	--	--	2.2	--	--	--	--	--	--	1	--	--	--
9-Aug-11	24	0.000005	0.05	0.00011	0.000005	3.72	0.0001	0.000076	0.00061	0.00005	0.001	0.000009	0.0005	2.26	0.00273	0.002	0.002	0.00076	0.00005	--	1.11	0.00164	0.00004	0.5
16-Aug-11	25	--	--	--	--	3.93	--	--	--	--	--	--	--	2.16	--	--	--	--	--	--	0.8	--	--	--
23-Aug-11	26	--	--	--	--	3.93	--	--	--	--	--	--	--	2.23	--	--	--	--	--	--	0.8	--	--	--
30-Aug-11	27	--	--	--	--	4.08	--	--	--	--	--	--	--	2.25	--	--	--	--	--	--	0.7	--	--	--
6-Sep-11	28	0.000005	0.05	0.0001	0.000005	3.66	0.0001	0.000082	0.00066	0.00005	0.002	0.000056	0.0005	2.02	0.00305	0.002	0.002	0.00053	0.00012	--	0.78	0.00124	0.00004	0.4
13-Sep-11	29	--	--	--	--	4.2	--	--	--	--	--	--	--	2.3	--	--	--	--	--	--	0.6	--	--	--
20-Sep-11	30	--	--	--	--	4.05	--	--	--	--	--	--	--	2.11	--	--	--	--	--	--	0.6	--	--	--
27-Sep-11	31	--	--	--	--	4.26	--	--	--	--	--	--	--	2.26	--	--	--	--	--	--	0.5	--	--	--
4-Oct-11	32	0.000005	0.05	0.00014	0.000005	4.38	0.0001	0.000064	0.00078	0.00005	0.001	0.00005	0.0005	2.37	0.00259	0.003	0.002	0.00061	0.0001	--	0.72	0.00113	0.00004	0.4
11-Oct-11	33	--	--	--	--	5.16	--	--	--	--	--	--	--	2.64	--	--	--	--	--	--	0.9	--	--	--
18-Oct-11	34	--	--	--	--	5.33	--	--	--	--	--	--	--	2.8	--	--	--	--	--	--	0.7	--	--	--
25-Oct-11	35	--	--	--	--	5.22	--	--	--	--	--	--	--	2.62	--	--	--	--	--	--	0.6	--	--	--
1-Nov-11	36	0.000005	0.05	0.00017	0.000005	5.69	0.0001	0.000086	0.0007	0.00005	0.009	0.000047	0.0005	2.72	0.00504	0.002	0.002	0.00058	0.00007	--	0.76	0.00136	0.00004	0.4
8-Nov-11	37	--	--	--	--	5.51	--	--	--	--	--	--	--	2.66	--	--	--	--	--	--	0.5	--	--	--
15-Nov-11	38	--	--	--	--	6.94	--	--	--	--	--	--	--	3.41	--	--	--	--	--	--	0.5	--	--	--
22-Nov-11	39	--	--	--	--	5.35	--	--	--	--	--	--	--	2.58	--	--	--	--	--	--	0.5	--	--	--
29-Nov-11	40	0.000005	0.05	0.00015	0.000005	4.4	0.0001	0.000047	0.00046	0.00005	0.003	0.00005	0.0005	1.87	0.0027	0.002	0.002	0.00054	0.00003	--	0.51	0.00123	0.00004	0.3
6-Dec-11	41	--	--	--	--	5.43	--	--	--	--	--	--	--	2.51	--	--	--	--	--	--	--	--	--	--
13-Dec-11	42	--	--	--	--	5.43	--	--	--	--	--	--	--	2.53	--	--	--	--	--	--	0.7	--	--	--
20-Dec-11	43	--	--	--	--	4.68	--	--	--	--	--	--	--	2.27	--	--	--	--	--	--	0.4	--	--	--
27-Dec-11	44	0.000005	0.05	0.00013	0.000005	4.51	0.0001	0.000069	0.00095	0.00005	0.001	0.000041	0.0005	2.31	0.00275	0.002	0.002	0.00066	0.00011	--	0.51	0.00106	0.00004	0.4
3-Jan-12	45	--	--	--	--	4.74	--	--	--	--	--	--	--	2.17	--	--	--	--	--	--	0.3	--	--	--
10-Jan-12	46	--	--	--	--	4.29	--	--	--	--	--	--	--	2.02	--	--	--	--	--	--	0.4	--	--	--
17-Jan-12	47	--	--	--	--	4.24	--	--	--	--	--	--	--	2.07	--	--	--	--	--	--	0.3	--	--	--
24-Jan-12	48	0.000005	0.05	0.00009	0.000005	4.28	0.0001	0.000056	0.00048	0.00005	0.001	0.000014	0.0005	1.88	0.00238	0.002	0.002	0.00035	0.00007	--	0.36	0.0007	0.00004	0.4
31-Jan-12	49	--	--	--	--	4.86	--	--	--	--	--	--	--	2.25	--	--	--	--	--	--	0.3	--	--	--
Terminated																								

HC-60
Sample Weight = 1kg

Date	Accum. Weeks	Ag mg/l	Na mg/l	Sr mg/l	Te mg/l	Tl mg/l	Th mg/l	Sn mg/l	Ti mg/l	W mg/l	U mg/l	V mg/l	Zn mg/l	Zr mg/l
		0.001	0.15	0.1	0.001	0.25	0.00025	0.05	0.001	0.0001	0.001	0.0001	0.0005	0.001
22-Feb-11	0	0.000022	23	0.00551	0.00002	0.000003	0.000005	0.0001	0.0005	0.00083	0.000571	0.0017	0.0009	0.0005
1-Mar-11	1	0.000005	41.1	0.00868	0.00002	0.000021	0.000005	0.00003	0.0005	0.00222	0.00298	0.0018	0.0005	0.0004
8-Mar-11	2	0.000015	24.8	0.00651	0.00002	0.000002	0.000005	0.00002	0.0005	0.00096	0.00198	0.0013	0.0004	0.0001
15-Mar-11	3	--	17.8	--	--	--	--	--	--	--	--	--	--	--
22-Mar-11	4	0.000005	8.29	0.0113	0.00002	0.000002	0.000005	0.00001	0.0005	0.00028	0.000739	0.0007	0.0006	0.0001
29-Mar-11	5	--	5.1	--	--	--	--	--	--	--	--	--	--	--
5-Apr-11	6	--	3.5	--	--	--	--	--	--	--	--	--	--	--
12-Apr-11	7	--	2	--	--	--	--	--	--	--	--	--	--	--
19-Apr-11	8	0.000005	1.49	0.0142	0.00002	0.000002	0.000005	0.00002	0.0005	0.00009	0.000347	0.0003	0.001	0.0001
26-Apr-11	9	--	1	--	--	--	--	--	--	--	--	--	--	--
3-May-11	10	--	0.9	--	--	--	--	--	--	--	--	--	--	--
10-May-11	11	--	0.7	--	--	--	--	--	--	--	--	--	--	--
17-May-11	12	0.000005	0.64	0.0139	0.00002	0.000002	0.000005	0.00003	0.0005	0.00006	0.000218	0.0003	0.001	0.0001
24-May-11	13	--	0.6	--	--	--	--	--	--	--	--	--	--	--
31-May-11	14	--	0.5	--	--	--	--	--	--	--	--	--	--	--
7-Jun-11	15	--	0.5	--	--	--	--	--	--	--	--	--	--	--
14-Jun-11	16	0.000005	0.45	0.0132	0.00002	0.000002	0.000005	0.00001	0.0005	0.00004	0.000218	0.0002	0.0008	0.0001
21-Jun-11	17	--	0.4	--	--	--	--	--	--	--	--	--	--	--
28-Jun-11	18	--	0.4	--	--	--	--	--	--	--	--	--	--	--
5-Jul-11	19	--	0.2	--	--	--	--	--	--	--	--	--	--	--
12-Jul-11	20	0.000005	0.38	0.0131	0.00002	0.000002	0.000005	0.00002	0.0005	0.00003	0.000219	0.0002	0.0013	0.0001
19-Jul-11	21	--	0.4	--	--	--	--	--	--	--	--	--	--	--
26-Jul-11	22	--	0.4	--	--	--	--	--	--	--	--	--	--	--
2-Aug-11	23	--	0.4	--	--	--	--	--	--	--	--	--	--	--
9-Aug-11	24	0.000005	0.31	0.0141	0.00002	0.000002	0.000005	0.00005	0.0005	0.00002	0.000175	0.0002	0.0007	0.0001
16-Aug-11	25	--	0.4	--	--	--	--	--	--	--	--	--	--	--
23-Aug-11	26	--	0.4	--	--	--	--	--	--	--	--	--	--	--
30-Aug-11	27	--	0.2	--	--	--	--	--	--	--	--	--	--	--
6-Sep-11	28	0.000005	0.23	0.0125	0.00002	0.000002	0.000005	0.00019	0.0005	0.00002	0.000114	0.0002	0.0008	0.0001
13-Sep-11	29	--	0.2	--	--	--	--	--	--	--	--	--	--	--
20-Sep-11	30	--	0.3	--	--	--	--	--	--	--	--	--	--	--
27-Sep-11	31	--	0.4	--	--	--	--	--	--	--	--	--	--	--
4-Oct-11	32	0.000005	0.23	0.015	0.00002	0.000002	0.000005	0.00003	0.0005	0.00001	0.000097	0.0002	0.0004	0.0002
11-Oct-11	33	--	0.2	--	--	--	--	--	--	--	--	--	--	--
18-Oct-11	34	--	0.1	--	--	--	--	--	--	--	--	--	--	--
25-Oct-11	35	--	0.3	--	--	--	--	--	--	--	--	--	--	--
1-Nov-11	36	0.000005	0.22	0.0192	0.00002	0.000002	0.000005	0.00026	0.0005	0.00001	0.000091	0.0002	0.0027	0.0001
8-Nov-11	37	--	0.6	--	--	--	--	--	--	--	--	--	--	--
15-Nov-11	38	--	0.3	--	--	--	--	--	--	--	--	--	--	--
22-Nov-11	39	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Nov-11	40	0.000005	0.16	0.014	0.00002	0.000002	0.000005	0.0004	0.0005	0.00002	0.000103	0.0002	0.003	0.0001
6-Dec-11	41	--	0.5	--	--	--	--	--	--	--	--	--	--	--
13-Dec-11	42	--	0.3	--	--	--	--	--	--	--	--	--	--	--
20-Dec-11	43	--	0.1	--	--	--	--	--	--	--	--	--	--	--
27-Dec-11	44	0.000005	0.17	0.0146	0.00002	0.000002	0.000005	0.00009	0.0005	0.00001	0.000108	0.0002	0.0009	0.0001
3-Jan-12	45	--	0.1	--	--	--	--	--	--	--	--	--	--	--
10-Jan-12	46	--	0.2	--	--	--	--	--	--	--	--	--	--	--
17-Jan-12	47	--	0.2	--	--	--	--	--	--	--	--	--	--	--
24-Jan-12	48	0.000005	0.14	0.0131	0.00002	0.000002	0.000005	0.0002	0.0005	0.00001	0.000094	0.0002	0.0002	0.0001
31-Jan-12	49	--	0.3	--	--	--	--	--	--	--	--	--	--	--
Terminated														

HC-61
Sample Weight = 1kg

																		Dissolved Metals by ICP-MS (Cantest)					
		Volume (ml)		pH	EC	ORP	SO4	Acidity (mg CaCO3/l)		Alkalinity	Fluoride	Chloride	Nitrate-N	Nitrite-N	Total Ammonia	Diss.-P	TDS	Hardness CaCO3	Al	Sb	As	Ba	Be
Date	Accum. Weeks	Input	Output	(pH Units)	(µS/cm)	(mV)	(mg/l)	to pH 4.5	to pH 8.3	to pH 4.5	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mgN/l)	(mgP/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
		5	5	0.01	1	50	1	1	1	1	0.1	0.2	0.02	0.002	0.01	0.001	10	0.02	0.02	0.02			Calculatior
22-Feb-11	0	750	580	9.62	220	35	10	--	--	81	0.32	7.4	0.048	0.012	0.026	0.194	110	8.9	1.01	0.00285	0.455	0.00218	0.00001
1-Mar-11	1	500	500	9.08	290	50	20	--	--	117	0.45	9.4	0.02	0.005	0.013	0.188	170	10	0.325	0.0078	1.18	0.00049	0.00001
8-Mar-11	2	500	445	8.87	245	80	20	--	--	92	0.25	1.6	0.02	0.005	0.04	0.29	130	6.3	0.203	0.0056	0.998	0.0003	0.00005
15-Mar-11	3	500	460	9.07	195	80	20	--	--	77	--	--	--	--	--	--	--	--	0.15	--	--	--	--
22-Mar-11	4	500	445	8.95	145	110	16	--	--	53	0.09	0.6	0.06	0.005	0.11	0.21	74	11.7	0.111	0.00343	0.528	0.00028	0.00001
29-Mar-11	5	500	450	8.7	114	125	11	--	--	41	--	--	--	--	--	--	--	--	0.08	--	--	--	--
5-Apr-11	6	500	480	8.4	125	150	11	--	--	42	--	--	--	--	--	--	--	--	0.06	--	--	--	--
12-Apr-11	7	500	450	8.33	108	100	9	--	--	37	--	--	--	--	--	--	--	--	0.05	--	--	--	--
19-Apr-11	8	500	440	8.49	91	130	7.8	--	--	33	0.04	0.5	0.02	0.005	0.28	0.105	46	29	0.0526	0.00246	0.344	0.0005	0.00001
26-Apr-11	9	500	460	8.25	89	140	6.1	--	1	34	--	--	--	--	--	--	--	--	--	--	--	--	--
3-May-11	10	500	445	8.22	85	145	7	--	1	34	--	--	--	--	--	--	--	--	--	--	--	--	--
10-May-11	11	500	440	8.3	84	135	5.7	--	--	32	--	--	--	--	--	--	--	--	--	--	--	--	--
17-May-11	12	500	435	8.3	72	170	5.4	--	--	31	0.02	3.4	0.02	0.005	0.23	0.129	42	30.4	0.0411	0.00247	0.332	0.00067	0.00001
24-May-11	13	500	435	8.34	72	140	6.1	--	--	30	--	--	--	--	--	--	--	--	--	--	--	--	--
31-May-11	14	500	445	8.3	71	150	4.7	--	--	28	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Jun-11	15	500	440	8.22	69	150	4.8	--	1	28	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jun-11	16	500	445	8.27	71	175	4.8	--	1	30	0.02	0.5	0.02	0.005	0.13	0.091	38	30.2	0.032	0.00227	0.313	0.00031	0.00001
21-Jun-11	17	500	435	8.37	68	140	4.2	--	--	29	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Jun-11	18	500	440	8.1	69	155	3.5	--	1	29	--	--	--	--	--	--	--	--	--	--	--	--	--
5-Jul-11	19	500	460	8.38	70	155	3.5	--	1	30	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Jul-11	20	500	480	8.05	73	200	2.5	--	1	31	0.02	0.5	0.02	0.005	0.14	0.077	40	33.8	0.027	0.00204	0.272	0.00057	0.00001
19-Jul-11	21	500	440	8.25	71	220	3.4	--	1	31	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Jul-11	22	500	445	8.33	69	180	3.6	--	--	30	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Aug-11	23	500	495	8.06	76	155	1.9	--	1	33	--	--	--	--	--	--	--	--	--	--	--	--	--
9-Aug-11	24	500	435	8.3	66	180	3.2	--	--	29	0.01	0.6	0.09	0.005	0.059	0.077	36	31.2	0.0256	0.00197	0.257	0.00034	0.00001
16-Aug-11	25	500	425	8.34	71	175	3.1	--	--	29	--	--	--	--	--	--	--	--	--	--	--	--	--
23-Aug-11	26	500	425	8.3	65	170	2.8	--	--	29	--	--	--	--	--	--	--	--	--	--	--	--	--
30-Aug-11	27	500	425	8.49	64	180	2.6	--	--	26	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Sep-11	28	500	450	8.25	62	155	2.9	--	1	29	0.01	0.5	0.02	0.005	0.12	0.068	40	30.1	0.0175	0.00159	0.193	0.0003	0.00001
13-Sep-11	29	500	430	8.3	61	155	3.5	--	--	28	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Sep-11	30	500	450	8.15	67	180	2.1	--	1	29	--	--	--	--	--	--	--	--	--	--	--	--	--
27-Sep-11	31	500	440	8.16	66	150	2.3	--	1	28	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Oct-11	32	500	430	8.17	63	120	2.2	--	1	28	0.01	0.5	0.2	0.05	0.12	0.036	34	28.8	0.0188	0.00136	0.146	0.0002	0.00001
11-Oct-11	33	500	425	8.25	70	165	1.4	--	1	27	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Oct-11	34	500	425	8.2	68	165	2.2	--	1	26	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Oct-11	35	500	435	8.15	68	175	2.2	--	1	28	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Nov-11	36	500	420	7.98	79	200	1.9	--	1	28	0.01	0.8	0.02	0.005	0.22	0.032	40	31.9	0.0148	0.00137	0.141	0.00022	0.00001
8-Nov-11	37	500	475	7.91	64	190	3.5	--	1	27	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Nov-11	38	500	450	8.1	71	190	2.63	--	1	29	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Nov-11	39	500	470	8.01	70	265	2.28	--	1	29	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Nov-11	40	500	420	8.28	66	210	2.05	--	1	26	0.01	0.5	0.02	0.005	0.52	0.0292	36	25.6	0.0181	0.0012	0.12	0.00021	0.00001
6-Dec-11	41	500	435	7.88	58	210	1.52	--	1	27	--	--	--	--	--	--	--	--	--	--	--	--	--
13-Dec-11	42	500	440	7.96	60	220	2.07	--	1	26	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Dec-11	43	500	445	7.86	60	240	2.16	--	1	28	--	--	--	--	--	--	--	--	--	--	--	--	--

HC-61
Sample Weight = 1kg

																		Dissolved Metals by ICP-MS (Cantest)					
		Volume (ml)		pH	EC	ORP	SO4	Acidity (mg CaCO3/l)		Alkalinity	Fluoride	Chloride	Nitrate-N	Nitrite-N	Total Ammonia	Diss.-P	TDS	Hardness CaCO3	Al	Sb	As	Ba	Be
Date	Accum.	Input	Output	(pH Units)	(µS/cm)	(mV)	(mg/l)	to pH 4.5	to pH 8.3	to pH 4.5	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mgN/l)	(mgP/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
	Weeks	5	5	0.01	1	50	1	1	1	1	0.1	0.2	0.02	0.002	0.01	0.001	10	0.02	0.02	0.02			Calculation
27-Dec-11	44	500	450	7.69	60	235	2.2	--	1	26	0.01	0.5	0.02	0.005	0.23	0.0119	38	27.5	0.0119	0.00103	0.105	0.00025	0.00001
3-Jan-12	45	500	455	7.78	66	125	1.92	--	1	28	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Jan-12	46	500	485	7.7	63	120	1.47	--	1	27	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Jan-12	47	500	440	7.87	56	115	2.11	--	1	27	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Jan-12	48	500	480	7.7	60	115	4.48	--	1	28	0.01	0.5	0.02	0.005	0.17	0.0197	34	29.4	0.0131	0.00104	0.101	0.0002	0.00001
31-Jan-12	49	500	495	7.91	63	115	2.35	--	1	28	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Feb-12	50	500	475	8.08	59	120	2.45	--	1	27	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Feb-12	51	500	430	7.95	50	120	4.03	--	1	23	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Feb-12	52	500	420	7.96	53	115	2.4	--	1	23	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Feb-12	53	500	430	7.93	54	125	2.15	--	1	23	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Mar-12	54	500	420	7.86	42	125	2.34	--	1	22	--	--	--	--	--	--	--	--	--	--	--	--	--
13-Mar-12	55	500	420	7.86	46	125	2.4	--	1	23	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Mar-12	56	500	430	8	52	120	3.38	--	1	23	0.01	0.5	0.02	0.005	0.11	0.0148	26	23.2	0.0117	0.00071	0.0711	0.00013	0.00001
27-Mar-12	57	500	425	7.99	46	120	2.32	--	1	21	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Apr-12	58	500	425	7.91	42	130	1.87	--	1	21	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Apr-12	59	500	425	8.2	65	130	2.06	--	1	25	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Apr-12	60	500	440	8.34	49	130	1.41	--	--	26	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Apr-12	61	500	420	7.85	69	125	2.68	--	1	28	--	--	--	--	--	--	--	--	--	--	--	--	--
1-May-12	62	500	440	7.95	51	125	1.44	--	1	23	--	--	--	--	--	--	--	--	--	--	--	--	--
8-May-12	63	500	440	8	53	125	2.16	--	1	23	--	--	--	--	--	--	--	--	--	--	--	--	--
15-May-12	64	500	430	7.96	46	130	1.31	--	1	23	0.01	0.5	0.02	0.005	0.13	0.0185	26	22.7	0.00945	0.000537	0.0522	0.000165	0.00001
22-May-12	65	500	445	8.02	48	130	1.46	--	1	21	--	--	--	--	--	--	--	--	--	--	--	--	--
29-May-12	66	500	420	7.84	50	130	1.89	--	1	21	--	--	--	--	--	--	--	--	--	--	--	--	--
5-Jun-12	67	500	430	7.9	53	125	2.01	--	1	24	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Jun-12	68	500	430	7.75	45	130	1.75	--	1	22	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Jun-12	69	500	430	7.86	50	130	2.73	--	1	22	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Jun-12	70	500	425	7.97	50	130	1.73	--	1	23	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Jul-12	71	500	450	7.92	54	135	2.07	--	1	24	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Jul-12	72	500	485	7.97	64	135	1.96	--	1	24	0.01	1.1	0.02	0.005	0.23	0.0099	32	23.9	0.012	0.000584	0.0546	0.000155	0.00001
17-Jul-12	73	500	440	7.85	53	130	1.41	--	1	22	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Jul-12	74	500	435	7.81	53	130	1.72	--	1	23.6	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Jul-12	75	500	435	7.88	47	130	1.7	--	1	21.2	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Aug-12	76	500	460	7.88	50	140	1.4	--	0.55	22	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Aug-12	77	500	450	7.85	50	130	2.56	--	0.5	21.4	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Aug-12	78	500	440	7.89	46	130	1.22	--	1	20.9	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Aug-12	79	500	455	7.84	47	140	1.33	--	0.5	21.7	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Sep-12	80	500	420	7.73	41	145	1.65	--	0.5	17	0.01	0.84	0.02	0.005	0.11	0.005	32	18.5	0.00887	0.000409	0.0372	0.000107	0.00001
11-Sep-12	81	500	445	7.78	49	145	1.43	--	1.82	20.7	--	--	--	--	--	--	--	--	--	--	--	--	--
Terminated																							

HC-61
Sample Weight = 1kg

Date	Accum. Weeks	Bi mg/l	B mg/l	Cs mg/l	Cd mg/l	Ca mg/l	Cr mg/l	Co mg/l	Cu mg/l	La mg/l	Fe mg/l	Pb mg/l	Li mg/l	Mg mg/l	Mn mg/l	P mg/L	Hg (CVAF) µg/L	Mo mg/l	Ni mg/l	Re mg/L	K mg/l	Rb mg/l	Se mg/l
		0.005	0.001	0.0001	0.001	0.001	0.001	0.001	0.02	0.0001	0.0002	0.05	0.001	0.001	0.001	0.015	0.02	0.001	0.001	0.0001	0.001	0.0001	0.00002
22-Feb-11	0	0.000005	0.08	0.00095	0.000006	2.44	0.0004	0.000251	0.00414	0.00005	0.023	0.000057	0.0022	0.67	0.00138	0.051	0.002	0.00083	0.00068	--	2.14	0.00267	0.00156
1-Mar-11	1	0.000005	0.14	0.0019	0.000005	2.55	0.0007	0.000654	0.00782	0.00005	0.027	0.000069	0.0031	0.87	0.00449	0.005	0.002	0.00171	0.0011	--	3.66	0.00409	0.00152
8-Mar-11	2	0.00003	0.3	0.0024	0.00003	1.5	0.0005	0.00039	0.0046	0.0003	0.021	0.00004	0.003	0.6	0.0031	0.01	0.002	0.0013	0.001	--	3.9	0.0047	0.0013
15-Mar-11	3	--	--	--	--	2.01	--	--	--	--	--	--	--	0.79	--	--	--	--	--	--	4.2	--	--
22-Mar-11	4	0.000005	0.07	0.00263	0.000005	2.92	0.0001	0.000544	0.00135	0.00005	0.011	0.000042	0.0023	1.06	0.00426	0.024	0.002	0.00061	0.00057	--	4.31	0.00508	0.00066
29-Mar-11	5	--	--	--	--	3.82	--	--	--	--	0.01	--	--	1.62	--	--	--	--	--	--	4.6	--	--
5-Apr-11	6	--	--	--	--	6.88	--	--	--	--	--	--	--	2.63	--	--	--	--	--	--	5.2	--	--
12-Apr-11	7	--	--	--	--	6.1	--	--	--	--	--	--	--	2.61	--	--	--	--	--	--	4.6	--	--
19-Apr-11	8	0.000005	0.06	0.00352	0.000005	6.79	0.0001	0.00193	0.00064	0.00005	0.006	0.000015	0.0016	2.93	0.00603	0.011	0.002	0.0003	0.00135	--	4.5	0.00664	0.00039
26-Apr-11	9	--	--	--	--	7.34	--	--	--	--	--	--	--	3.07	--	--	--	--	--	--	3.7	--	--
3-May-11	10	--	--	--	--	7.78	--	--	--	--	--	--	--	3.27	--	--	--	--	--	--	3.4	--	--
10-May-11	11	--	--	--	--	7.24	--	--	--	--	--	--	--	3.09	--	--	--	--	--	--	2.9	--	--
17-May-11	12	0.000005	0.05	0.00335	0.000005	7.34	0.0001	0.00262	0.00062	0.00005	0.006	0.000023	0.0012	2.93	0.00648	0.002	0.002	0.00026	0.00146	--	3.01	0.006	0.00034
24-May-11	13	--	--	--	--	7.38	--	--	--	--	--	--	--	3.13	--	--	--	--	--	--	2.3	--	--
31-May-11	14	--	--	--	--	6.84	--	--	--	--	--	--	--	2.97	--	--	--	--	--	--	2	--	--
7-Jun-11	15	--	--	--	--	6.95	--	--	--	--	--	--	--	3.09	--	--	--	--	--	--	2	--	--
14-Jun-11	16	0.000005	0.05	0.00266	0.000005	7.33	0.0001	0.00301	0.00052	0.00005	0.004	0.000032	0.0009	2.9	0.00725	0.006	0.002	0.00051	0.00155	--	2.06	0.00442	0.0003
21-Jun-11	17	--	--	--	--	7.07	--	--	--	--	--	--	--	3.15	--	--	--	--	--	--	1.7	--	--
28-Jun-11	18	--	--	--	--	7.41	--	--	--	--	--	--	--	3.25	--	--	--	--	--	--	1.7	--	--
5-Jul-11	19	--	--	--	--	8.13	--	--	--	--	--	--	--	3.55	--	--	--	--	--	--	1.5	--	--
12-Jul-11	20	0.000005	0.05	0.00207	0.000005	8.05	0.0001	0.00425	0.00075	0.00005	0.002	0.000013	0.0007	3.33	0.00875	0.01	0.009	0.00038	0.00193	--	1.5	0.00336	0.0003
19-Jul-11	21	--	--	--	--	7.76	--	--	--	--	--	--	--	3.26	--	--	--	--	--	--	1.3	--	--
26-Jul-11	22	--	--	--	--	7.56	--	--	--	--	--	--	--	3.17	--	--	--	--	--	--	1.3	--	--
2-Aug-11	23	--	--	--	--	8.64	--	--	--	--	--	--	--	3.42	--	--	--	--	--	--	1.2	--	--
9-Aug-11	24	0.000005	0.05	0.00201	0.000005	7.07	0.0001	0.0034	0.00055	0.00005	0.002	0.000014	0.0006	3.3	0.00711	0.002	0.002	0.00024	0.00149	--	1.22	0.00318	0.00026
16-Aug-11	25	--	--	--	--	7.38	--	--	--	--	--	--	--	3.18	--	--	--	--	--	--	0.9	--	--
23-Aug-11	26	--	--	--	--	7	--	--	--	--	--	--	--	3.15	--	--	--	--	--	--	0.7	--	--
30-Aug-11	27	--	--	--	--	6.47	--	--	--	--	--	--	--	3.27	--	--	--	--	--	--	0.6	--	--
6-Sep-11	28	0.000005	0.05	0.00171	0.000006	7.08	0.0001	0.00348	0.00048	0.00005	0.001	0.000185	0.0005	3.03	0.00754	0.005	0.002	0.00019	0.00154	--	0.89	0.00259	0.00022
13-Sep-11	29	--	--	--	--	7.18	--	--	--	--	--	--	--	3.28	--	--	--	--	--	--	0.7	--	--
20-Sep-11	30	--	--	--	--	7.26	--	--	--	--	--	--	--	3.2	--	--	--	--	--	--	0.6	--	--
27-Sep-11	31	--	--	--	--	7.34	--	--	--	--	--	--	--	3.45	--	--	--	--	--	--	0.7	--	--
4-Oct-11	32	0.000005	0.05	0.00167	0.000005	6.48	0.0001	0.00268	0.00104	0.00005	0.015	0.000074	0.0006	3.06	0.00551	0.003	0.002	0.00017	0.00131	--	0.71	0.00239	0.0002
11-Oct-11	33	--	--	--	--	6.84	--	--	--	--	--	--	--	3.31	--	--	--	--	--	--	0.9	--	--
18-Oct-11	34	--	--	--	--	6.32	--	--	--	--	--	--	--	3.24	--	--	--	--	--	--	0.8	--	--
25-Oct-11	35	--	--	--	--	6.78	--	--	--	--	--	--	--	3.21	--	--	--	--	--	--	0.7	--	--
1-Nov-11	36	0.000005	0.05	0.00246	0.000005	7.12	0.0001	0.00302	0.00046	0.00005	0.002	0.000049	0.0005	3.43	0.00636	0.002	0.002	0.00017	0.00145	--	0.8	0.00286	0.00021
8-Nov-11	37	--	--	--	--	6.05	--	--	--	--	--	--	--	2.92	--	--	--	--	--	--	0.6	--	--
15-Nov-11	38	--	--	--	--	7.88	--	--	--	--	--	--	--	3.49	--	--	--	--	--	--	0.5	--	--
22-Nov-11	39	--	--	--	--	8.08	--	--	--	--	--	--	--	3.44	--	--	--	--	--	--	0.5	--	--
29-Nov-11	40	0.000005	0.05	0.00354	0.000005	5.62	0.0001	0.00216	0.00081	0.00005	0.002	0.000068	0.0005	2.81	0.00447	0.005	0.002	0.00017	0.00111	--	0.7	0.00393	0.00018
6-Dec-11	41	--	--	--	--	6.79	--	--	--	--	--	--	--	3.1	--	--	--	--	--	--	--	--	--
13-Dec-11	42	--	--	--	--	6.25	--	--	--	--	--	--	--	2.97	--	--	--	--	--	--	0.6	--	--
20-Dec-11	43	--	--	--	--	6.27	--	--	--	--	--	--	--	3.02	--	--	--	--	--	--	0.5	--	--

HC-61
Sample Weight = 1kg

Date	Accum.	Bi	B	Cs	Cd	Ca	Cr	Co	Cu	La	Fe	Pb	Li	Mg	Mn	P	Hg (CVAF)	Mo	Ni	Re	K	Rb	Se
		mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/L	µg/L	mg/l	mg/l	mg/L	mg/l	mg/l	mg/l
	Weeks	0.005	0.001	0.0001	0.001	0.001	0.001	0.001	0.02	0.0001	0.0002	0.05	0.001	0.001	0.001	0.015	0.02	0.001	0.001	0.0001	0.001	0.0001	0.00002
27-Dec-11	44	0.000005	0.05	0.00199	0.000005	6.01	0.0001	0.00247	0.00045	0.00005	0.002	0.000504	0.0005	3.04	0.00502	0.002	0.002	0.00014	0.00141	--	0.51	0.0023	0.00018
3-Jan-12	45	--	--	--	--	7.51	--	--	--	--	--	--	--	3.29	--	--	--	--	--	--	0.5	--	--
10-Jan-12	46	--	--	--	--	7.78	--	--	--	--	--	--	--	3.11	--	--	--	--	--	--	0.5	--	--
17-Jan-12	47	--	--	--	--	6.32	--	--	--	--	--	--	--	3.03	--	--	--	--	--	--	0.4	--	--
24-Jan-12	48	0.000005	0.05	0.00149	0.000005	7.07	0.0001	0.00311	0.00056	0.00005	0.001	0.000011	0.0005	2.86	0.00683	0.002	0.002	0.00011	0.00152	--	0.42	0.00173	0.00016
31-Jan-12	49	--	--	--	--	7.58	--	--	--	--	--	--	--	3.05	--	--	--	--	--	--	--	--	--
7-Feb-12	50	--	--	--	--	6.66	--	--	--	--	--	--	--	2.87	--	--	--	--	--	--	0.4	--	--
14-Feb-12	51	--	--	--	--	5.65	--	--	--	--	--	--	--	2.79	--	--	--	--	--	--	0.3	--	--
21-Feb-12	52	--	--	--	--	5.53	--	--	--	--	--	--	--	2.96	--	--	--	--	--	--	--	--	--
28-Feb-12	53	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Mar-12	54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
13-Mar-12	55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Mar-12	56	0.000005	0.05	0.0011	0.000005	5.02	0.0001	0.00156	0.00058	0.00005	0.001	0.000015	0.0005	2.6	0.00352	0.002	0.002	0.00012	0.00101	--	0.27	0.00127	0.00013
27-Mar-12	57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Apr-12	58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Apr-12	59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Apr-12	60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Apr-12	61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-May-12	62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-May-12	63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-May-12	64	0.000005	0.05	0.00109	0.000005	4.93	0.0001	0.00165	0.00148	0.00005	0.0034	0.000036	0.0005	2.53	0.00348	0.002	0.0026	0.000102	0.00111	--	0.227	0.000997	0.000122
22-May-12	65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-May-12	66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5-Jun-12	67	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Jun-12	68	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Jun-12	69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Jun-12	70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Jul-12	71	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Jul-12	72	0.000005	0.05	0.00182	0.000005	5.13	0.0001	0.00138	0.000775	0.00005	0.0021	1.87E-05	0.0005	2.7	0.00336	0.002	0.002	0.000146	0.000946	--	0.231	0.00134	0.000145
17-Jul-12	73	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Jul-12	74	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Jul-12	75	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Aug-12	76	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Aug-12	77	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Aug-12	78	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Aug-12	79	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Sep-12	80	0.000005	0.05	0.000943	0.000005	3.81	0.0001	0.00142	0.00174	0.00005	0.0172	0.000013	0.0005	2.17	0.00404	0.002	0.002	0.000092	0.00108	--	0.166	0.000953	0.000066
11-Sep-12	81	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Terminated																							

HC-61
Sample Weight = 1kg

Date	Accum. Weeks	Si mg/l	Ag mg/l	Na mg/l	Sr mg/l	Te mg/l	Tl mg/l	Th mg/l	Sn mg/l	Ti mg/l	W mg/l	U mg/l	V mg/l	Zn mg/l	Zr mg/l
		0.0005	0.001	0.15	0.1	0.001	0.25	0.00025	0.05	0.001	0.0001	0.001	0.0001	0.0005	0.001
22-Feb-11	0	1.1	0.000008	38.9	0.00701	0.00002	0.000002	0.000005	0.00016	0.0005	0.00613	0.000015	0.0084	0.0008	0.0002
1-Mar-11	1	2	0.000036	63.4	0.00985	0.00002	0.000024	0.000005	0.00005	0.0005	0.00938	0.00003	0.0088	0.0012	0.0001
8-Mar-11	2	0.9	0.00003	49.9	0.0073	0.0001	0.00001	0.00003	0.00006	0.003	0.00467	0.00003	0.006	0.0005	0.0005
15-Mar-11	3	--	--	40.2	--	--	--	--	--	--	--	--	--	--	--
22-Mar-11	4	0.7	0.000005	22.1	0.0121	0.00002	0.000002	0.000005	0.00003	0.0005	0.00128	0.000017	0.0025	0.0004	0.0001
29-Mar-11	5	--	--	15	--	--	--	--	--	--	--	--	--	--	--
5-Apr-11	6	--	--	11.7	--	--	--	--	--	--	--	--	--	--	--
12-Apr-11	7	--	--	7.3	--	--	--	--	--	--	--	--	--	--	--
19-Apr-11	8	0.6	0.000005	3.89	0.029	0.00002	0.000002	0.000005	0.00001	0.0005	0.00048	0.000019	0.0012	0.0012	0.0001
26-Apr-11	9	--	--	2.4	--	--	--	--	--	--	--	--	--	--	--
3-May-11	10	--	--	1.9	--	--	--	--	--	--	--	--	--	--	--
10-May-11	11	--	--	1.4	--	--	--	--	--	--	--	--	--	--	--
17-May-11	12	0.6	0.000005	0.96	0.0287	0.00002	0.000003	0.000005	0.00001	0.0005	0.00032	0.000012	0.001	0.0011	0.0001
24-May-11	13	--	--	0.9	--	--	--	--	--	--	--	--	--	--	--
31-May-11	14	--	--	0.7	--	--	--	--	--	--	--	--	--	--	--
7-Jun-11	15	--	--	0.6	--	--	--	--	--	--	--	--	--	--	--
14-Jun-11	16	0.5	0.000005	0.55	0.0245	0.00002	0.000002	0.000005	0.00001	0.0005	0.00031	0.000007	0.0008	0.0014	0.0001
21-Jun-11	17	--	--	0.5	--	--	--	--	--	--	--	--	--	--	--
28-Jun-11	18	--	--	0.4	--	--	--	--	--	--	--	--	--	--	--
5-Jul-11	19	--	--	0.3	--	--	--	--	--	--	--	--	--	--	--
12-Jul-11	20	0.5	0.000005	0.39	0.0237	0.00002	0.000002	0.000005	0.00017	0.0005	0.00023	0.000009	0.0007	0.0012	0.0001
19-Jul-11	21	--	--	0.4	--	--	--	--	--	--	--	--	--	--	--
26-Jul-11	22	--	--	0.4	--	--	--	--	--	--	--	--	--	--	--
2-Aug-11	23	--	--	0.4	--	--	--	--	--	--	--	--	--	--	--
9-Aug-11	24	0.4	0.000005	0.3	0.0215	0.00002	0.000003	0.000005	0.00003	0.0005	0.00023	0.000003	0.0006	0.0011	0.0001
16-Aug-11	25	--	--	0.3	--	--	--	--	--	--	--	--	--	--	--
23-Aug-11	26	--	--	0.4	--	--	--	--	--	--	--	--	--	--	--
30-Aug-11	27	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
6-Sep-11	28	0.4	0.000005	0.22	0.0181	0.00002	0.000002	0.000005	0.00009	0.0005	0.00016	0.000006	0.0005	0.0006	0.0001
13-Sep-11	29	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
20-Sep-11	30	--	--	0.3	--	--	--	--	--	--	--	--	--	--	--
27-Sep-11	31	--	--	0.4	--	--	--	--	--	--	--	--	--	--	--
4-Oct-11	32	0.3	0.000005	0.21	0.016	0.00002	0.000002	0.000005	0.00002	0.0005	0.00016	0.000003	0.0005	0.0008	0.0001
11-Oct-11	33	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
18-Oct-11	34	--	--	0.1	--	--	--	--	--	--	--	--	--	--	--
25-Oct-11	35	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
1-Nov-11	36	0.3	0.000005	0.2	0.0175	0.00002	0.000002	0.000005	0.00013	0.0005	0.00016	0.000004	0.0004	0.0004	0.0001
8-Nov-11	37	--	--	0.5	--	--	--	--	--	--	--	--	--	--	--
15-Nov-11	38	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
22-Nov-11	39	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Nov-11	40	0.2	0.000005	0.16	0.0142	0.00002	0.000002	0.000005	0.00037	0.0005	0.00015	0.000003	0.0003	0.0005	0.0001
6-Dec-11	41	--	--	0.4	--	--	--	--	--	--	--	--	--	--	--
13-Dec-11	42	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
20-Dec-11	43	--	--	0.1	--	--	--	--	--	--	--	--	--	--	--

HC-61
Sample Weight = 1kg

Date	Accum. Weeks	Si mg/l	Ag mg/l	Na mg/l	Sr mg/l	Te mg/l	Tl mg/l	Th mg/l	Sn mg/l	Ti mg/l	W mg/l	U mg/l	V mg/l	Zn mg/l	Zr mg/l
		0.0005	0.001	0.15	0.1	0.001	0.25	0.00025	0.05	0.001	0.0001	0.001	0.0001	0.0005	0.001
27-Dec-11	44	0.3	0.000005	0.13	0.0142	0.00002	0.000004	0.000005	0.0001	0.0005	0.00014	0.000002	0.0002	0.0012	0.0001
3-Jan-12	45	--	--	0.1	--	--	--	--	--	--	--	--	--	--	--
10-Jan-12	46	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
17-Jan-12	47	--	--	0.1	--	--	--	--	--	--	--	--	--	--	--
24-Jan-12	48	0.3	0.000005	0.13	0.0147	0.00002	0.000002	0.000005	0.0002	0.0005	0.00012	0.000003	0.0002	0.0002	0.0001
31-Jan-12	49	--	--	0.3	--	--	--	--	--	--	--	--	--	--	--
7-Feb-12	50	--	--	0.4	--	--	--	--	--	--	--	--	--	--	--
14-Feb-12	51	--	--	0.1	--	--	--	--	--	--	--	--	--	--	--
21-Feb-12	52	--	--	0.1	--	--	--	--	--	--	--	--	--	--	--
28-Feb-12	53	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Mar-12	54	--	--	--	--	--	--	--	--	--	--	--	--	--	--
13-Mar-12	55	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Mar-12	56	0.2	0.000005	0.1	0.00961	0.00002	0.000002	0.000005	0.0003	0.0005	0.00008	0.000002	0.0002	0.0004	0.0001
27-Mar-12	57	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Apr-12	58	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Apr-12	59	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Apr-12	60	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Apr-12	61	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-May-12	62	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-May-12	63	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-May-12	64	0.17	0.000006	0.075	0.00782	0.00002	0.000002	0.000005	0.00033	0.0005	0.000083	0.000005	0.0002	0.00088	0.0001
22-May-12	65	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-May-12	66	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5-Jun-12	67	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Jun-12	68	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Jun-12	69	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Jun-12	70	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Jul-12	71	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Jul-12	72	0.15	0.000005	0.077	0.00875	0.00002	0.000002	0.000005	0.00025	0.0005	0.000093	0.000002	0.00041	0.0004	0.0001
17-Jul-12	73	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Jul-12	74	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Jul-12	75	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Aug-12	76	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Aug-12	77	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Aug-12	78	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Aug-12	79	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Sep-12	80	0.12	0.000005	0.077	0.00647	0.00002	0.000002	0.000005	0.00023	0.0005	0.000064	0.000002	0.0002	0.00076	0.0001
11-Sep-12	81	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Terminated															

HC-62
Sample Weight = 1kg

Date	Accum. Weeks	Volume (ml) Input	Volume (ml) Output	pH (pH Units)	EC (µS/cm)	ORP (mV)	SO4 (mg/l)	Acidity (mg CaCO3/l) to pH 4.5	Acidity (mg CaCO3/l) to pH 8.3	Alkalinity to pH 4.5	Fluoride (mg/l)	Chloride (mg/l)	Nitrate-N (mg/l)	Nitrite-N (mg/l)	Total Ammonia (mgN/l)	Diss.-P (mgP/l)	TDS (mg/l)	Dissolved Metals by ICP-MS (Cantest) Hardness CaCO3 (mg/l)	Al (mg/l)	Sb (mg/l)	As (mg/l)	Ba (mg/l)
		5	5	0.01	1	50	1	1	1	1	0.1	0.2	0.02	0.002	0.01	0.001	10	0.02	0.02	0.02		(
22-Feb-11	0	750	620	7.81	1157	160	542	--	1	17	0.1	15	0.336	0.024	0.029	0.009	900	557	0.197	0.00035	0.0019	0.0399
1-Mar-11	1	500	495	7.66	1276	135	707	--	1	21	0.13	15	0.18	0.005	0.01	0.009	1000	686	0.0987	0.00068	0.00296	0.0266
8-Mar-11	2	500	430	7.32	1047	130	667	--	2	17	0.11	6.1	0.05	0.005	0.072	0.008	880	651	0.0888	0.00066	0.00258	0.0269
15-Mar-11	3	500	500	7.86	1081	160	633	--	2	18	--	--	--	--	--	--	--	--	0.1	--	--	--
22-Mar-11	4	500	450	7.8	1008	140	571	--	1	18	0.09	1	0.11	0.005	0.14	0.016	760	625	0.0859	0.00048	0.00206	0.0233
29-Mar-11	5	500	425	7.9	886	150	471	--	1	17	--	--	--	--	--	--	--	--	0.11	--	--	--
5-Apr-11	6	500	450	7.37	830	170	370	--	1	16	--	--	--	--	--	--	--	--	0.11	--	--	--
12-Apr-11	7	500	435	8.2	1080	110	570	--	1	19	--	--	--	--	--	--	--	--	0.13	--	--	--
19-Apr-11	8	500	465	8.1	950	135	450	--	1	18	0.06	0.5	0.02	0.005	0.36	0.009	700	483	0.09	0.00086	0.00199	0.0244
26-Apr-11	9	500	455	7.85	688	140	290	--	1	18	--	--	--	--	--	--	--	--	0.09	--	--	--
3-May-11	10	500	455	7.8	633	145	260	--	1	18	--	--	--	--	--	--	--	--	0.09	--	--	--
10-May-11	11	500	450	7.78	893	135	350	--	1	19	--	--	--	--	--	--	--	--	0.12	--	--	--
17-May-11	12	500	445	7.69	585	160	230	--	1	17	0.03	0.8	0.04	0.005	0.33	0.008	410	314	0.0897	0.00085	0.00134	0.0246
24-May-11	13	500	440	7.88	587	145	230	--	1	17	--	--	--	--	--	--	--	--	0.09	--	--	--
31-May-11	14	500	445	7.99	535	150	210	--	1	16	--	--	--	--	--	--	--	--	0.08	--	--	--
7-Jun-11	15	500	430	7.97	776	130	310	--	1	18	--	--	--	--	--	--	--	--	0.1	--	--	--
14-Jun-11	16	500	445	8.09	774	180	340	--	1	18	0.03	0.7	0.02	0.005	0.22	0.005	590	398	0.0867	0.00088	0.00116	0.0214
21-Jun-11	17	500	430	7.73	515	145	200	--	1	17	--	--	--	--	--	--	--	--	0.09	--	--	--
28-Jun-11	18	500	430	7.97	678	145	260	--	1	18	--	--	--	--	--	--	--	--	0.09	--	--	--
5-Jul-11	19	500	465	8	496	165	190	--	1	18	--	--	--	--	--	--	--	--	0.08	--	--	--
12-Jul-11	20	500	440	7.85	450	190	170	--	1	17	0.02	1.9	0.02	0.005	0.34	0.006	300	199	0.0762	0.00053	0.00098	0.0188
19-Jul-11	21	500	460	7.95	429	200	170	--	1	16	--	--	--	--	--	--	--	--	0.08	--	--	--
26-Jul-11	22	500	445	8.05	591	185	230	--	1	18	--	--	--	--	--	--	--	--	0.1	--	--	--
2-Aug-11	23	500	435	7.58	606	160	230	--	1	17	--	--	--	--	--	--	--	--	0.09	--	--	--
9-Aug-11	24	500	485	7.64	476	180	180	--	1	16	0.02	1.5	0.04	0.005	0.074	0.008	350	230	0.071	0.00062	0.00089	0.0166
16-Aug-11	25	500	485	7.49	475	180	180	--	1	17	--	--	--	--	--	--	--	--	0.07	--	--	--
23-Aug-11	26	500	455	7.7	496	185	210	--	1	18	--	--	--	--	--	--	--	--	0.09	--	--	--
30-Aug-11	27	500	450	8.11	498	170	180	--	1	18	--	--	--	--	--	--	--	--	0.09	--	--	--
6-Sep-11	28	500	440	7.95	434	150	180	--	1	18	0.01	4.7	0.02	0.005	0.25	0.0071	320	203	0.0772	0.00042	0.00081	0.0171
13-Sep-11	29	500	435	7.95	485	180	180	--	1	19	--	--	--	--	--	--	--	--	0.09	--	--	--
20-Sep-11	30	500	465	7.64	541	165	190	--	1	19	--	--	--	--	--	--	--	--	0.08	--	--	--
27-Sep-11	31	500	440	7.97	420	175	160	--	1	19	--	--	--	--	--	--	--	--	0.07	--	--	--
4-Oct-11	32	500	435	7.76	435	135	166	--	1	18	0.01	6	0.02	0.005	0.31	0.005	260	188	0.073	0.00039	0.00118	0.0168
11-Oct-11	33	500	435	7.61	516	160	177	--	1	18	--	--	--	--	--	--	--	--	0.08	--	--	--
18-Oct-11	34	500	420	7.96	428	160	136	--	1	18	--	--	--	--	--	--	--	--	0.05	--	--	--
25-Oct-11	35	500	450	7.82	432	165	135	--	1	20	--	--	--	--	--	--	--	--	--	--	--	--
1-Nov-11	36	500	420	7.72	435	190	138	--	1	19	0.02	11	0.02	0.005	0.54	0.005	260	174	0.0669	0.00034	0.00166	0.0191
8-Nov-11	37	500	480	7.83	351	170	120	--	1	18	--	--	--	--	--	--	--	--	--	--	--	--
15-Nov-11	38	500	440	7.74	432	195	156	--	1	24	--	--	--	--	--	--	--	--	0.1	--	--	--
22-Nov-11	39	500	470	7.89	410	250	145	--	1	24	--	--	--	--	--	--	--	--	0.09	--	--	--
29-Nov-11	40	500	450	7.7	294	215	111	--	1	18	0.011	3.7	0.02	0.005	0.34	0.005	190	131	0.0628	0.00027	0.00076	0.0159
6-Dec-11	41	500	435	7.65	388	230	98.2	--	1	18	--	--	--	--	--	--	--	--	--	--	--	--
13-Dec-11	42	500	425	7.82	314	220	98.5	--	1	23	--	--	--	--	--	--	--	--	--	--	--	--
20-Dec-11	43	500	440	7.74	278	245	86.2	--	1	19	--	--	--	--	--	--	--	--	0.06	--	--	--
27-Dec-11	44	500	440	7.52	278	240	89.2	--	1	21	0.013	5.5	0.02	0.005	0.29	0.005	172	113	0.0681	0.00028	0.00086	0.02
3-Jan-12	45	500	450	7.59	228	125	66	--	1	21	--	--	--	--	--	--	--	--	0.06	--	--	--
10-Jan-12	46	500	440	7.52	191	120	53	--	1	19	--	--	--	--	--	--	--	--	0.06	--	--	--
17-Jan-12	47	500	440	7.89	197	110	59	--	1	22	--	--	--	--	--	--	--	--	0.07	--	--	--
24-Jan-12	48	500	475	7.78	179	120	45.3	--	1	24	0.01	0.5	0.02	0.005	0.17	0.005	86	68.1	0.0669	0.00029	0.00074	0.0237
31-Jan-12	49	500	440	7.88	153	115	35.1	--	1	15	--	--	--	--	--	--	--	--	0.06	--	--	--
Terminated																						

HC-62
Sample Weight = 1kg

Date	Accum. Weeks	Be	Bi	B	Cs	Cd	Ca	Cr	Co	Cu	La	Fe	Pb	Li	Mg	Mn	P	Hg (CVAF)	Mo	Ni	Re	K	Rb
		(mg/l)	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/L	µg/L	mg/l	mg/l	mg/L	mg/l	mg/l
		Calculation	0.005	0.001	0.0001	0.001	0.001	0.001	0.001	0.02	0.0001	0.0002	0.05	0.001	0.001	0.001	0.015	0.02	0.001	0.001	0.0001	0.001	0.0001
22-Feb-11	0	0.00001	0.000005	0.05	0.00134	0.000006	213	0.0001	0.000132	0.00926	0.00005	0.004	0.000043	0.004	6.14	0.0232	0.005	0.002	0.00139	0.00177	--	3.11	0.00396
1-Mar-11	1	0.00001	0.000005	0.05	0.00109	0.000008	247	0.0001	0.00027	0.00466	0.00005	0.007	0.000035	0.0086	16.5	0.0417	0.014	0.002	0.00438	0.0008	--	3.35	0.00347
8-Mar-11	2	0.00001	0.000005	0.05	0.0011	0.000016	233	0.0001	0.000188	0.0025	0.00005	0.009	0.000015	0.0075	16.6	0.0338	0.016	0.002	0.00495	0.00055	--	2.73	0.00349
15-Mar-11	3	--	--	--	--	--	222	--	--	--	--	--	--	--	11.1	--	--	--	--	--	--	1.3	--
22-Mar-11	4	0.00001	0.000005	0.05	0.00087	0.000009	236	0.0001	0.000145	0.00125	0.00005	0.005	0.000033	0.0044	9.03	0.0294	0.031	0.002	0.002	0.00034	--	1.25	0.00211
29-Mar-11	5	--	--	--	--	--	176	--	--	--	--	--	--	--	7.01	--	--	--	--	--	--	0.9	--
5-Apr-11	6	--	--	--	--	--	165	--	--	--	--	--	--	--	6.63	--	--	--	--	--	--	0.8	--
12-Apr-11	7	--	--	--	--	--	222	--	--	--	--	--	--	--	6.68	--	--	--	--	--	--	0.8	--
19-Apr-11	8	0.00001	0.000005	0.05	0.00118	0.000013	184	0.0001	0.00013	0.00094	0.00005	0.002	0.000013	0.003	5.76	0.0259	0.01	0.002	0.00117	0.00023	--	0.63	0.00187
26-Apr-11	9	--	--	--	--	--	128	--	--	--	--	--	--	--	4.66	--	--	--	--	--	--	0.6	--
3-May-11	10	--	--	--	--	--	122	--	--	--	--	--	--	--	4.92	--	--	--	--	--	--	0.4	--
10-May-11	11	--	--	--	--	--	156	--	--	--	--	--	--	--	5.2	--	--	--	--	--	--	0.3	--
17-May-11	12	0.00001	0.000005	0.05	0.00115	0.000008	118	0.0001	0.000061	0.0006	0.00005	0.003	0.000026	0.0024	4.57	0.0232	0.003	0.002	0.00102	0.00011	--	0.43	0.00171
24-May-11	13	--	--	--	--	--	105	--	--	--	--	--	--	--	4.79	--	--	--	--	--	--	0.3	--
31-May-11	14	--	--	--	--	--	94.2	--	--	--	--	--	--	--	4.4	--	--	--	--	--	--	--	--
7-Jun-11	15	--	--	--	--	--	149	--	--	--	--	--	--	--	5	--	--	--	--	--	--	--	--
14-Jun-11	16	0.00001	0.000005	0.05	0.00129	0.000009	151	0.0001	0.000055	0.00072	0.00005	0.003	0.000068	0.002	4.92	0.0223	0.004	0.002	0.00123	0.00012	--	0.34	0.00156
21-Jun-11	17	--	--	--	--	--	92.9	--	--	--	--	--	--	--	4.49	--	--	--	--	--	--	--	--
28-Jun-11	18	--	--	--	--	--	126	--	--	--	--	--	--	--	4.71	--	--	--	--	--	--	--	--
5-Jul-11	19	--	--	--	--	--	93.2	--	--	--	--	--	--	--	4.91	--	--	--	--	--	--	0.4	--
12-Jul-11	20	0.00001	0.000005	0.05	0.00094	0.000013	72.7	0.0001	0.000063	0.00123	0.00005	0.002	0.000017	0.0014	4.23	0.0214	0.01	0.002	0.00062	0.00014	--	0.27	0.00098
19-Jul-11	21	--	--	--	--	--	77.2	--	--	--	--	--	--	--	4.47	--	--	--	--	--	--	--	--
26-Jul-11	22	--	--	--	--	--	114	--	--	--	--	--	--	--	5.15	--	--	--	--	--	--	--	--
2-Aug-11	23	--	--	--	--	--	116	--	--	--	--	--	--	--	4.85	--	--	--	--	--	--	0.3	--
9-Aug-11	24	0.00001	0.000005	0.05	0.00079	0.000017	83.4	0.0001	0.000074	0.00069	0.00005	0.001	0.000021	0.0014	5.19	0.032	0.002	0.002	0.00067	0.00016	--	0.2	0.0009
16-Aug-11	25	--	--	--	--	--	80.5	--	--	--	--	--	--	--	4.43	--	--	--	--	--	--	--	--
23-Aug-11	26	--	--	--	--	--	87.1	--	--	--	--	--	--	--	4.97	--	--	--	--	--	--	--	--
30-Aug-11	27	--	--	--	--	--	88	--	--	--	--	--	--	--	4.98	--	--	--	--	--	--	--	--
6-Sep-11	28	0.00001	0.000005	0.05	0.00079	0.000005	74.5	0.0001	0.00004	0.0007	0.00005	0.003	0.000141	0.0012	4.16	0.02	0.009	0.002	0.00048	0.00013	--	0.15	0.00071
13-Sep-11	29	--	--	--	--	--	84.5	--	--	--	--	--	--	--	4.93	--	--	--	--	--	--	--	--
20-Sep-11	30	--	--	--	--	--	97.2	--	--	--	--	--	--	--	5.06	--	--	--	--	--	--	--	--
27-Sep-11	31	--	--	--	--	--	74.9	--	--	--	--	--	--	--	4.55	--	--	--	--	--	--	--	--
4-Oct-11	32	0.00001	0.000005	0.05	0.00081	0.000006	67.8	0.0001	0.000052	0.00081	0.00008	0.003	0.000125	0.0015	4.47	0.0193	0.004	0.002	0.00045	0.00018	--	0.15	0.00081
11-Oct-11	33	--	--	--	--	--	81.2	--	--	--	--	--	--	--	4.59	--	--	--	--	--	--	0.8	--
18-Oct-11	34	--	--	--	--	--	66.3	--	--	--	--	--	--	--	4.46	--	--	--	--	--	--	0.3	--
25-Oct-11	35	--	--	--	--	--	61.3	--	--	--	--	--	--	--	4.68	--	--	--	--	--	--	--	--
1-Nov-11	36	0.00001	0.000005	0.05	0.00127	0.000005	62.1	0.0001	0.000042	0.00096	0.00005	0.002	0.00006	0.0012	4.51	0.0187	0.004	0.002	0.00042	0.00008	--	0.18	0.00102
8-Nov-11	37	--	--	--	--	--	53.4	--	--	--	--	--	--	--	4.36	--	--	--	--	--	--	--	--
15-Nov-11	38	--	--	--	--	--	76.8	--	--	--	--	--	--	--	6.13	--	--	--	--	--	--	--	--
22-Nov-11	39	--	--	--	--	--	69.8	--	--	--	--	--	--	--	5.42	--	--	--	--	--	--	--	--
29-Nov-11	40	0.00001	0.000005	0.05	0.00083	0.000005	46.4	0.0001	0.000035	0.00088	0.00005	0.002	0.000051	0.0008	3.57	0.0152	0.005	0.002	0.00028	0.00008	--	0.09	0.00059
6-Dec-11	41	--	--	--	--	--	48.2	--	--	--	--	--	--	--	3.99	--	--	--	--	--	--	--	--
13-Dec-11	42	--	--	--	--	--	49	--	--	--	--	--	--	--	4.75	--	--	--	--	--	--	--	--
20-Dec-11	43	--	--	--	--	--	40.5	--	--	--	--	--	--	--	4.23	--	--	--	--	--	--	--	--
27-Dec-11	44	0.00001	0.000005	0.05	0.00072	0.000005	38.3	0.0001	0.000035	0.00152	0.00005	0.001	0.00006	0.0009	4.21	0.0157	0.002	0.002	0.00041	0.00016	--	0.09	0.00052
3-Jan-12	45	--	--	--	--	--	33.8	--	--	--	--	--	--	--	3.91	--	--	--	--	--	--	--	--
10-Jan-12	46	--	--	--	--	--	28.1	--	--	--	--	--	--	--	3.54	--	--	--	--	--	--	--	--
17-Jan-12	47	--	--	--	--	--	26.8	--	--	--	--	--	--	--	3.65	--	--	--	--	--	--	--	--
24-Jan-12	48	0.00001	0.000005	0.05	0.00041	0.000007	22.2	0.0001	0.000027	0.00073	0.00005	0.001	0.000013	0.0006	3.06	0.0097	0.002	0.0021	0.00027	0.00007	--	0.07	0.0003
31-Jan-12	49	--	--	--	--	--	19.7	--	--	--	--	--	--	--	2.91	--	--	--	--	--	--	--	--
Terminated																							

HC-62
Sample Weight = 1kg

Date	Accum. Weeks	Se mg/l	Si mg/l	Ag mg/l	Na mg/l	Sr mg/l	Te mg/l	Tl mg/l	Th mg/l	Sn mg/l	Ti mg/l	W mg/l	U mg/l	V mg/l	Zn mg/l	Zr mg/l
		0.00002	**0.0005**	**0.001**	**0.15**	**0.1**	**0.001**	**0.25**	**0.00025**	**0.05**	**0.001**	**0.0001**	**0.001**	**0.0001**	**0.0005**	**0.001**
22-Feb-11	0	0.00008	0.4	0.000005	16.9	1.3	0.00002	0.000011	0.000005	0.00004	0.0005	0.00048	0.000786	0.0002	0.0031	0.0001
1-Mar-11	1	0.00015	1.7	0.000005	20.6	2.22	0.00002	0.000022	0.000005	0.00001	0.0005	0.00027	0.00329	0.0002	0.0023	0.0001
8-Mar-11	2	0.00014	0.8	0.000005	13.2	2.19	0.00002	0.000008	0.000005	0.00001	0.0005	0.00032	0.00296	0.0002	0.0021	0.0001
15-Mar-11	3	--	--	--	5.2	--	--	--	--	--	--	--	--	--	--	--
22-Mar-11	4	0.00015	0.9	0.000005	3.13	1.84	0.00002	0.000005	0.000005	0.00001	0.0005	0.00033	0.00185	0.0003	0.0013	0.0001
29-Mar-11	5	--	--	--	2	--	--	--	--	--	--	--	--	--	--	--
5-Apr-11	6	--	--	--	1.6	--	--	--	--	--	--	--	--	--	--	--
12-Apr-11	7	--	--	--	1.3	--	--	--	--	--	--	--	--	--	--	--
19-Apr-11	8	0.00012	0.7	0.000005	0.96	2.11	0.00002	0.000007	0.000005	0.00002	0.0005	0.00031	0.00122	0.0002	0.0016	0.0001
26-Apr-11	9	--	--	--	0.7	--	--	--	--	--	--	--	--	--	--	--
3-May-11	10	--	--	--	0.5	--	--	--	--	--	--	--	--	--	--	--
10-May-11	11	--	--	--	0.6	--	--	--	--	--	--	--	--	--	--	--
17-May-11	12	0.00011	0.7	0.000005	0.49	1.45	0.00002	0.000007	0.000005	0.00001	0.0005	0.0002	0.000515	0.0002	0.0012	0.0001
24-May-11	13	--	--	--	0.5	--	--	--	--	--	--	--	--	--	--	--
31-May-11	14	--	--	--	0.4	--	--	--	--	--	--	--	--	--	--	--
7-Jun-11	15	--	--	--	0.5	--	--	--	--	--	--	--	--	--	--	--
14-Jun-11	16	0.00015	0.7	0.000005	0.44	1.93	0.00002	0.000007	0.000005	0.00002	0.0005	0.00015	0.000595	0.0002	0.0018	0.0001
21-Jun-11	17	--	--	--	0.4	--	--	--	--	--	--	--	--	--	--	--
28-Jun-11	18	--	--	--	0.4	--	--	--	--	--	--	--	--	--	--	--
5-Jul-11	19	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
12-Jul-11	20	0.00013	0.5	0.000005	0.3	1.16	0.00002	0.000005	0.000005	0.00001	0.0005	0.00007	0.0003	0.0002	0.0015	0.0001
19-Jul-11	21	--	--	--	0.3	--	--	--	--	--	--	--	--	--	--	--
26-Jul-11	22	--	--	--	0.4	--	--	--	--	--	--	--	--	--	--	--
2-Aug-11	23	--	--	--	0.5	--	--	--	--	--	--	--	--	--	--	--
9-Aug-11	24	0.00013	0.6	0.000005	0.29	1.59	0.00002	0.000005	0.000005	0.00002	0.0005	0.00008	0.000459	0.0002	0.001	0.0001
16-Aug-11	25	--	--	--	0.4	--	--	--	--	--	--	--	--	--	--	--
23-Aug-11	26	--	--	--	0.5	--	--	--	--	--	--	--	--	--	--	--
30-Aug-11	27	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
6-Sep-11	28	0.00011	0.5	0.000005	0.23	1.34	0.00002	0.000004	0.000005	0.00007	0.0005	0.00005	0.000185	0.0002	0.0007	0.0001
13-Sep-11	29	--	--	--	0.3	--	--	--	--	--	--	--	--	--	--	--
20-Sep-11	30	--	--	--	0.3	--	--	--	--	--	--	--	--	--	--	--
27-Sep-11	31	--	--	--	0.4	--	--	--	--	--	--	--	--	--	--	--
4-Oct-11	32	0.00011	0.5	0.000005	0.23	1.4	0.00002	0.000004	0.000005	0.00003	0.0005	0.00007	0.000146	0.0002	0.0007	0.0001
11-Oct-11	33	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
18-Oct-11	34	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
25-Oct-11	35	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
1-Nov-11	36	0.00012	0.5	0.000005	0.24	1.41	0.00003	0.000008	0.000005	0.00019	0.0005	0.00005	0.000117	0.0002	0.0004	0.0001
8-Nov-11	37	--	--	--	0.6	--	--	--	--	--	--	--	--	--	--	--
15-Nov-11	38	--	--	--	0.4	--	--	--	--	--	--	--	--	--	--	--
22-Nov-11	39	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
29-Nov-11	40	0.00013	0.5	0.000008	0.19	1.18	0.00002	0.000004	0.000005	0.00013	0.0005	0.00005	0.000079	0.0002	0.0008	0.0001
6-Dec-11	41	--	--	--	0.5	--	--	--	--	--	--	--	--	--	--	--
13-Dec-11	42	--	--	--	0.3	--	--	--	--	--	--	--	--	--	--	--
20-Dec-11	43	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
27-Dec-11	44	0.00008	0.5	0.000005	0.17	1.28	0.00002	0.000004	0.000005	0.00016	0.0005	0.00006	0.000065	0.0002	0.0007	0.0001
3-Jan-12	45	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
10-Jan-12	46	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
17-Jan-12	47	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
24-Jan-12	48	0.00008	0.5	0.000005	0.15	1.21	0.00002	0.000003	0.000005	0.0002	0.0005	0.00005	0.000045	0.0002	0.0004	0.0001
31-Jan-12	49	--	--	--	0.3	--	--	--	--	--	--	--	--	--	--	--
Terminated																

HC-63
Sample Weight = 1kg

																		Dissolved Metals by ICP-MS (Cantest)				
		Volume (ml)		pH	EC	ORP	SO4	Acidity (mg CaCO3/l)		Alkalinity	Fluoride	Chloride	Nitrate-N	Nitrite-N	Total Ammonia	Diss.-P	TDS	Hardness CaCO3	Al	Sb	As	Ba
Date	Accum.	Input	Output	(pH Units)	(µS/cm)	(mV)	(mg/l)	to pH 4.5	to pH 8.3	to pH 4.5	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mgN/l)	(mgP/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
	Weeks	5	5	0.01	1	50	1	1	1	1	0.1	0.2	0.02	0.002	0.01	0.001	10	0.02	0.02	0.02		
22-Feb-11	0	750	560	9.06	155	110	10	--	--	39	0.11	17	0.02	0.005	0.015	0.009	84	18.7	0.483	0.00035	0.00467	0.00258
1-Mar-11	1	500	500	8.47	228	100	24	--	--	46	0.13	21	0.02	0.005	0.014	0.008	120	28.6	0.138	0.00095	0.00396	0.00096
8-Mar-11	2	500	435	8.5	148	120	21	--	--	32	0.11	11	0.02	0.005	0.049	0.009	76	17	0.137	0.00083	0.00556	0.00056
15-Mar-11	3	500	460	8.71	125	125	13	--	--	31	--	--	--	--	--	--	--	--	0.11	--	--	--
22-Mar-11	4	500	440	8.93	78	115	9	--	--	25	0.07	2.9	0.18	0.005	0.12	0.017	40	14.5	0.131	0.0008	0.00291	0.00045
29-Mar-11	5	500	430	9.02	76	125	5	--	--	25	--	--	--	--	--	--	--	--	0.11	--	--	--
5-Apr-11	6	500	445	8.57	63	150	2.5	--	--	25	--	--	--	--	--	--	--	--	0.12	--	--	--
12-Apr-11	7	500	440	8.76	50	90	2.8	--	--	23	--	--	--	--	--	--	--	--	0.09	--	--	--
19-Apr-11	8	500	455	8.7	52	125	2.5	--	--	22	0.04	2.1	0.02	0.005	0.24	0.008	28	17.3	0.0836	0.00075	0.0019	0.0006
26-Apr-11	9	500	450	8.4	46	125	0.8	--	--	22	--	--	--	--	--	--	--	--	0.07	--	--	--
3-May-11	10	500	455	8.52	47	130	2.4	--	--	22	--	--	--	--	--	--	--	--	--	--	--	--
10-May-11	11	500	445	8.5	46	120	1.7	--	--	23	--	--	--	--	--	--	--	--	0.07	--	--	--
17-May-11	12	500	450	8.38	43	160	1.8	--	--	20	0.02	0.5	0.03	0.005	0.005	0.007	28	18.4	0.0693	0.00081	0.00131	0.00057
24-May-11	13	500	435	8.41	40	120	2.6	--	--	22	--	--	--	--	--	--	--	--	0.06	--	--	--
31-May-11	14	500	445	8.4	40	140	1.9	--	--	22	--	--	--	--	--	--	--	--	0.05	--	--	--
7-Jun-11	15	500	440	8.42	43	130	1.5	--	--	21	--	--	--	--	--	--	--	--	0.06	--	--	--
14-Jun-11	16	500	430	8.4	42	160	0.9	--	--	21	0.01	0.5	0.02	0.005	0.14	0.005	22	18.1	0.055	0.00074	0.00133	0.00055
21-Jun-11	17	500	425	8.47	42	140	2.8	--	--	21	--	--	--	--	--	--	--	--	0.06	--	--	--
28-Jun-11	18	500	435	8.3	41	145	1	--	--	21	--	--	--	--	--	--	--	--	--	--	--	--
5-Jul-11	19	500	450	8.4	41	150	1.7	--	--	23	--	--	--	--	--	--	--	--	--	--	--	--
12-Jul-11	20	500	440	8	44	200	1	--	1	21	0.02	0.5	0.02	0.005	0.17	0.005	26	20.4	0.0441	0.00069	0.00113	0.00062
19-Jul-11	21	500	440	8.08	43	200	1	--	1	20	--	--	--	--	--	--	--	--	--	--	--	--
26-Jul-11	22	500	440	8.43	46	190	1	--	--	22	--	--	--	--	--	--	--	--	--	--	--	--
2-Aug-11	23	500	460	8.23	50	160	1	--	--	22	--	--	--	--	--	--	--	--	--	--	--	--
9-Aug-11	24	500	430	8.39	44	170	0.5	--	--	21	0.02	0.8	0.02	0.005	0.057	0.005	34	21.6	0.045	0.00072	0.00078	0.00066
16-Aug-11	25	500	420	8.2	45	160	1	--	1	21	--	--	--	--	--	--	--	--	--	--	--	--
23-Aug-11	26	500	425	7.8	43	160	0.6	--	1	21	--	--	--	--	--	--	--	--	--	--	--	--
30-Aug-11	27	500	435	8.36	46	175	1.2	--	--	20	--	--	--	--	--	--	--	--	--	--	--	--
6-Sep-11	28	500	435	8.22	41	160	2.7	--	1	22	0.01	0.6	0.02	0.005	0.15	0.005	26	19.8	0.033	0.00056	0.00057	0.00061
13-Sep-11	29	500	435	8.3	39	170	1	--	--	20	--	--	--	--	--	--	--	--	--	--	--	--
20-Sep-11	30	500	455	7.89	47	155	1.7	--	1	20	--	--	--	--	--	--	--	--	--	--	--	--
27-Sep-11	31	500	430	7.96	45	155	1	--	1	20	--	--	--	--	--	--	--	--	--	--	--	--
4-Oct-11	32	500	430	8	42	125	0.5	--	1	20	0.01	0.5	0.02	0.005	0.14	0.006	22	19.1	0.0331	0.00052	0.00092	0.00061
11-Oct-11	33	500	425	7.92	48	165	1	--	1	21	--	--	--	--	--	--	--	--	--	--	--	--
18-Oct-11	34	500	420	7.68	47	165	1.2	--	1	20	--	--	--	--	--	--	--	--	--	--	--	--
25-Oct-11	35	500	435	7.92	46	180	0.7	--	1	23	--	--	--	--	--	--	--	--	--	--	--	--
1-Nov-11	36	500	430	7.99	47	200	0.5	--	1	22	0.01	0.5	0.02	0.005	0.24	0.005	26	19.5	0.0306	0.0005	0.00114	0.00077
8-Nov-11	37	500	480	7.79	45	190	1.4	--	1	21	--	--	--	--	--	--	--	--	--	--	--	--
15-Nov-11	38	500	450	8.3	54	220	1.06	--	--	24	--	--	--	--	--	--	--	--	--	--	--	--
22-Nov-11	39	500	465	7.85	51	270	1.64	--	1	23	--	--	--	--	--	--	--	--	--	--	--	--
29-Nov-11	40	500	455	7.86	51	220	1.45	--	1	24	0.01	0.5	0.02	0.005	0.23	0.005	26	20.7	0.0224	0.00046	0.00113	0.00113
6-Dec-11	41	500	440	7.78	38	230	0.63	--	1	22	--	--	--	--	--	--	--	--	--	--	--	--
13-Dec-11	42	500	435	7.7	47	230	1.29	--	1	21	--	--	--	--	--	--	--	--	--	--	--	--
20-Dec-11	43	500	440	7.71	42	235	1.03	--	1	22	--	--	--	--	--	--	--	--	--	--	--	--
27-Dec-11	44	500	450	7.52	42	240	1.08	--	1	21	0.01	0.5	0.02	0.005	0.19	0.005	22	20.4	0.0263	0.00037	0.0005	0.00097
3-Jan-12	45	500	450	7.54	44	130	1	--	1	22	--	--	--	--	--	--	--	--	--	--	--	--
10-Jan-12	46	500	440	7.76	38	120	1	--	1	20	--	--	--	--	--	--	--	--	--	--	--	--
17-Jan-12	47	500	430	7.84	41	110	0.5	--	1	20	--	--	--	--	--	--	--	--	--	--	--	--
24-Jan-12	48	500	485	7.61	42	115	0.68	--	1	21	0.01	0.5	0.02	0.005	0.18	0.005	24	21.7	0.019	0.00042	0.00053	0.00097
31-Jan-12	49	500	440	7.81	38	120	0.5	--	1	19	--	--	--	--	--	--	--	--	--	--	--	--
Terminated																						

HC-63
Sample Weight = 1kg

Date	Accum. Weeks	Be (mg/l)	Bi mg/l	B mg/l	Cs mg/l	Cd mg/l	Ca mg/l	Cr mg/l	Co mg/l	Cu mg/l	La mg/l	Fe mg/l	Pb mg/l	Li mg/l	Mg mg/l	Mn mg/l	P mg/L	Hg (CVAF) µg/L	Mo mg/l	Ni mg/l	Re mg/L	K mg/l	Rb mg/l
		Calculation	0.005	0.001	0.0001	0.001	0.001	0.001	0.001	0.02	0.0001	0.0002	0.05	0.001	0.001	0.001	0.015	0.02	0.001	0.001	0.0001	0.001	0.0001
22-Feb-11	0	0.00001	0.000005	0.05	0.00077	0.000005	5.41	0.0001	0.000034	0.00132	0.00005	0.002	0.000027	0.0012	1.26	0.00181	0.002	0.002	0.00033	0.00013	--	3.04	0.00309
1-Mar-11	1	0.00001	0.000005	0.08	0.00114	0.000006	7.05	0.0001	0.000048	0.00107	0.00005	0.002	0.000009	0.0016	2.66	0.00843	0.003	0.002	0.00112	0.00021	--	4.02	0.00355
8-Mar-11	2	0.00001	0.000005	0.08	0.00102	0.000005	4.01	0.0001	0.000032	0.0011	0.00005	0.003	0.000008	0.0012	1.7	0.00531	0.014	0.002	0.0013	0.00015	--	3.16	0.0028
15-Mar-11	3	--	--	--	--	--	3.98	--	--	--	--	--	--	--	1.77	--	--	--	--	--	--	2.6	--
22-Mar-11	4	0.00001	0.000005	0.05	0.00062	0.000005	3.5	0.0001	0.000012	0.00045	0.00005	0.002	0.000015	0.001	1.41	0.00431	0.02	0.002	0.00093	0.00009	--	1.99	0.00188
29-Mar-11	5	--	--	--	--	--	3.14	--	--	--	--	--	--	--	1.39	--	--	--	--	--	--	1.7	--
5-Apr-11	6	--	--	--	--	--	3.68	--	--	--	--	--	--	--	1.73	--	--	--	--	--	--	1.7	--
12-Apr-11	7	--	--	--	--	--	3.01	--	--	--	--	--	--	--	1.63	--	--	--	--	--	--	1.6	--
19-Apr-11	8	0.00001	0.000005	0.05	0.0008	0.000005	3.57	0.0001	0.000019	0.00026	0.00005	0.002	0.00001	0.0007	2.05	0.00639	0.01	0.002	0.00038	0.0001	--	1.78	0.00228
26-Apr-11	9	--	--	--	--	--	3.61	--	--	--	--	--	--	--	1.92	--	--	--	--	--	--	1.3	--
3-May-11	10	--	--	--	--	--	5.82	--	--	--	--	--	--	--	2.72	--	--	--	--	--	--	1	--
10-May-11	11	--	--	--	--	--	3.89	--	--	--	--	--	--	--	2.1	--	--	--	--	--	--	1.2	--
17-May-11	12	0.00001	0.000005	0.05	0.0009	0.000005	3.99	0.0001	0.000019	0.0002	0.00005	0.002	0.000012	0.0008	2.04	0.00672	0.002	0.002	0.00019	0.00004	--	1.32	0.00214
24-May-11	13	--	--	--	--	--	3.92	--	--	--	--	--	--	--	2.13	--	--	--	--	--	--	0.9	--
31-May-11	14	--	--	--	--	--	3.86	--	--	--	--	--	--	--	2.04	--	--	--	--	--	--	0.8	--
7-Jun-11	15	--	--	--	--	--	3.9	--	--	--	--	--	--	--	2.19	--	--	--	--	--	--	0.9	--
14-Jun-11	16	0.00001	0.000005	0.05	0.00086	0.000005	3.85	0.0001	0.000022	0.00025	0.00005	0.001	0.000029	0.0008	2.06	0.0057	0.002	0.002	0.0002	0.00009	--	0.98	0.00183
21-Jun-11	17	--	--	--	--	--	3.94	--	--	--	--	--	--	--	2.24	--	--	--	--	--	--	0.7	--
28-Jun-11	18	--	--	--	--	--	3.81	--	--	--	--	--	--	--	2.05	--	--	--	--	--	--	0.6	--
5-Jul-11	19	--	--	--	--	--	4.74	--	--	--	--	--	--	--	2.54	--	--	--	--	--	--	0.9	--
12-Jul-11	20	0.00001	0.000005	0.05	0.00072	0.000005	4.1	0.0001	0.000026	0.00022	0.00005	0.002	0.000011	0.0008	2.46	0.00443	0.007	0.002	0.00026	0.00004	--	0.76	0.00139
19-Jul-11	21	--	--	--	--	--	4.01	--	--	--	--	--	--	--	2.21	--	--	--	--	--	--	0.6	--
26-Jul-11	22	--	--	--	--	--	4.7	--	--	--	--	--	--	--	2.48	--	--	--	--	--	--	0.7	--
2-Aug-11	23	--	--	--	--	--	4.65	--	--	--	--	--	--	--	2.56	--	--	--	--	--	--	0.6	--
9-Aug-11	24	0.00001	0.000005	0.05	0.00078	0.00001	4.23	0.0001	0.000022	0.00031	0.00005	0.001	0.000013	0.0008	2.67	0.00486	0.002	0.002	0.00011	0.00004	--	0.71	0.0017
16-Aug-11	25	--	--	--	--	--	4.06	--	--	--	--	--	--	--	2.36	--	--	--	--	--	--	0.6	--
23-Aug-11	26	--	--	--	--	--	4.19	--	--	--	--	--	--	--	2.47	--	--	--	--	--	--	0.5	--
30-Aug-11	27	--	--	--	--	--	4.31	--	--	--	--	--	--	--	2.51	--	--	--	--	--	--	0.5	--
6-Sep-11	28	0.00001	0.000005	0.05	0.00069	0.000005	4.08	0.0001	0.000039	0.00022	0.00005	0.002	0.000122	0.0007	2.33	0.00551	0.007	0.002	0.00011	0.00006	--	0.51	0.00117
13-Sep-11	29	--	--	--	--	--	3.93	--	--	--	--	--	--	--	2.44	--	--	--	--	--	--	0.5	--
20-Sep-11	30	--	--	--	--	--	4.22	--	--	--	--	--	--	--	2.6	--	--	--	--	--	--	0.4	--
27-Sep-11	31	--	--	--	--	--	4.09	--	--	--	--	--	--	--	2.57	--	--	--	--	--	--	--	--
4-Oct-11	32	0.00001	0.000005	0.05	0.00072	0.000005	3.79	0.0001	0.000032	0.00039	0.00005	0.003	0.00004	0.0008	2.34	0.00285	0.003	0.002	0.00009	0.00015	--	0.44	0.00108
11-Oct-11	33	--	--	--	--	--	4.21	--	--	--	--	--	--	--	2.51	--	--	--	--	--	--	0.8	--
18-Oct-11	34	--	--	--	--	--	3.84	--	--	--	--	--	--	--	2.54	--	--	--	--	--	--	0.5	--
25-Oct-11	35	--	--	--	--	--	4.31	--	--	--	--	--	--	--	2.56	--	--	--	--	--	--	0.3	--
1-Nov-11	36	0.00001	0.000005	0.05	0.00095	0.000005	3.9	0.0001	0.000032	0.00026	0.00005	0.003	0.000044	0.0007	2.36	0.00192	0.002	0.002	0.00009	0.00004	--	0.47	0.00133
8-Nov-11	37	--	--	--	--	--	3.73	--	--	--	--	--	--	--	2.26	--	--	--	--	--	--	0.4	--
15-Nov-11	38	--	--	--	--	--	5.4	--	--	--	--	--	--	--	3.15	--	--	--	--	--	--	0.4	--
22-Nov-11	39	--	--	--	--	--	5.06	--	--	--	--	--	--	--	3.01	--	--	--	--	--	--	0.4	--
29-Nov-11	40	0.00001	0.000005	0.05	0.00088	0.000005	4.33	0.0001	0.000041	0.00044	0.00005	0.002	0.00005	0.0007	2.4	0.0022	0.003	0.002	0.00008	0.00002	--	0.33	0.00112
6-Dec-11	41	--	--	--	--	--	4.83	--	--	--	--	--	--	--	2.76	--	--	--	--	--	--	--	--
13-Dec-11	42	--	--	--	--	--	4.45	--	--	--	--	--	--	--	2.65	--	--	--	--	--	--	0.6	--
20-Dec-11	43	--	--	--	--	--	4.15	--	--	--	--	--	--	--	2.43	--	--	--	--	--	--	0.3	--
27-Dec-11	44	0.00001	0.000005	0.05	0.00077	0.000005	4.06	0.0001	0.000029	0.00025	0.00005	0.001	0.000225	0.0006	2.49	0.00144	0.002	0.002	0.00009	0.00011	--	0.32	0.00112
3-Jan-12	45	--	--	--	--	--	4.44	--	--	--	--	--	--	--	2.6	--	--	--	--	--	--	--	--
10-Jan-12	46	--	--	--	--	--	4.02	--	--	--	--	--	--	--	2.4	--	--	--	--	--	--	--	--
17-Jan-12	47	--	--	--	--	--	4.14	--	--	--	--	--	--	--	2.59	--	--	--	--	--	--	--	--
24-Jan-12	48	0.00001	0.000005	0.05	0.00058	0.000005	4.36	0.0001	0.00003	0.00026	0.00005	0.001	0.000014	0.0005	2.63	0.00163	0.002	0.0022	0.00005	0.00006	--	0.23	0.00075
31-Jan-12	49	--	--	--	--	--	3.92	--	--	--	--	--	--	--	2.39	--	--	--	--	--	--	--	--
Terminated																							

HC-63
Sample Weight = 1kg

Date	Accum. Weeks	Se	Si	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	W	U	V	Zn	Zr
		mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
		0.00002	**0.0005**	**0.001**	**0.15**	**0.1**	**0.001**	**0.25**	**0.00025**	**0.05**	**0.001**	**0.0001**	**0.001**	**0.0001**	**0.0005**	**0.001**
22-Feb-11	0	0.00024	0.5	0.000005	21.2	0.0208	0.00002	0.000002	0.000005	0.00002	0.0005	0.00034	0.000004	0.001	0.0002	0.0001
1-Mar-11	1	0.00046	2.1	0.000005	29.7	0.0384	0.00002	0.000006	0.000005	0.00001	0.0005	0.00024	0.000011	0.0006	0.0002	0.0001
8-Mar-11	2	0.00039	0.6	0.000005	20.7	0.0221	0.00002	0.000002	0.000005	0.00001	0.0005	0.00016	0.000006	0.0008	0.0006	0.0001
15-Mar-11	3	--	--	--	15.4	--	--	--	--	--	--	--	--	--	--	--
22-Mar-11	4	0.00022	0.4	0.000005	8	0.0181	0.00002	0.000002	0.000005	0.00002	0.0005	0.00013	0.000008	0.0007	0.0002	0.0001
29-Mar-11	5	--	--	--	6.7	--	--	--	--	--	--	--	--	--	--	--
5-Apr-11	6	--	--	--	5.4	--	--	--	--	--	--	--	--	--	--	--
12-Apr-11	7	--	--	--	3.8	--	--	--	--	--	--	--	--	--	--	--
19-Apr-11	8	0.00011	0.3	0.000005	2.63	0.019	0.00002	0.000002	0.000005	0.00002	0.0005	0.00007	0.000012	0.0005	0.0011	0.0001
26-Apr-11	9	--	--	--	1.5	--	--	--	--	--	--	--	--	--	--	--
3-May-11	10	--	--	--	1.5	--	--	--	--	--	--	--	--	--	--	--
10-May-11	11	--	--	--	1.2	--	--	--	--	--	--	--	--	--	--	--
17-May-11	12	0.0001	0.4	0.000005	0.93	0.019	0.00002	0.000002	0.000005	0.00001	0.0005	0.00003	0.000003	0.0004	0.0009	0.0001
24-May-11	13	--	--	--	0.8	--	--	--	--	--	--	--	--	--	--	--
31-May-11	14	--	--	--	0.6	--	--	--	--	--	--	--	--	--	--	--
7-Jun-11	15	--	--	--	0.6	--	--	--	--	--	--	--	--	--	--	--
14-Jun-11	16	0.00008	0.3	0.000005	0.52	0.018	0.00002	0.000002	0.000005	0.00001	0.0005	0.00003	0.000002	0.0002	0.0025	0.0001
21-Jun-11	17	--	--	--	0.5	--	--	--	--	--	--	--	--	--	--	--
28-Jun-11	18	--	--	--	0.4	--	--	--	--	--	--	--	--	--	--	--
5-Jul-11	19	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
12-Jul-11	20	0.00011	0.3	0.000005	0.34	0.0185	0.00002	0.000002	0.000005	0.00001	0.0005	0.00002	0.000002	0.0003	0.0008	0.0001
19-Jul-11	21	--	--	--	0.3	--	--	--	--	--	--	--	--	--	--	--
26-Jul-11	22	--	--	--	0.3	--	--	--	--	--	--	--	--	--	--	--
2-Aug-11	23	--	--	--	0.5	--	--	--	--	--	--	--	--	--	--	--
9-Aug-11	24	0.0001	0.3	0.000005	0.29	0.0187	0.00002	0.000002	0.000005	0.00001	0.0005	0.00002	0.000002	0.0002	0.0008	0.0001
16-Aug-11	25	--	--	--	0.4	--	--	--	--	--	--	--	--	--	--	--
23-Aug-11	26	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
30-Aug-11	27	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
6-Sep-11	28	0.00007	0.3	0.000005	0.18	0.0158	0.00002	0.000002	0.000005	0.00005	0.0005	0.00003	0.000003	0.0002	0.0008	0.0001
13-Sep-11	29	--	--	--	0.3	--	--	--	--	--	--	--	--	--	--	--
20-Sep-11	30	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
27-Sep-11	31	--	--	--	0.3	--	--	--	--	--	--	--	--	--	--	--
4-Oct-11	32	0.00006	0.3	0.000005	0.17	0.0155	0.00002	0.000002	0.000005	0.00002	0.0005	0.00002	0.000002	0.0002	0.0004	0.0001
11-Oct-11	33	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
18-Oct-11	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Oct-11	35	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
1-Nov-11	36	0.00006	0.3	0.000005	0.16	0.0166	0.00002	0.000002	0.000005	0.00038	0.0005	0.00001	0.000002	0.0002	0.0003	0.0001
8-Nov-11	37	--	--	--	0.6	--	--	--	--	--	--	--	--	--	--	--
15-Nov-11	38	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
22-Nov-11	39	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Nov-11	40	0.00004	0.2	0.000005	0.12	0.0194	0.00002	0.000002	0.000005	0.00032	0.0005	0.00001	0.000002	0.0002	0.0004	0.0001
6-Dec-11	41	--	--	--	0.5	--	--	--	--	--	--	--	--	--	--	--
13-Dec-11	42	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
20-Dec-11	43	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27-Dec-11	44	0.00005	0.3	0.000005	0.11	0.0159	0.00002	0.000002	0.000005	0.00009	0.0005	0.00001	0.000002	0.0002	0.0005	0.0001
3-Jan-12	45	--	--	--	0.1	--	--	--	--	--	--	--	--	--	--	--
10-Jan-12	46	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
17-Jan-12	47	--	--	--	0.1	--	--	--	--	--	--	--	--	--	--	--
24-Jan-12	48	0.00004	0.3	0.000005	0.1	0.0165	0.00002	0.000002	0.000005	0.0002	0.0005	0.00001	0.000002	0.0002	0.0001	0.0001
31-Jan-12	49	--	--	--	0.3	--	--	--	--	--	--	--	--	--	--	--
Terminated																

HC-64
Sample Weight = 1kg

Date	Accum. Weeks	Volume (ml) Input	Volume (ml) Output	pH (pH Units)	EC (µS/cm)	ORP (mV)	SO4 (mg/l)	Acidity (mg CaCO3/l) to pH 4.5	Acidity (mg CaCO3/l) to pH 8.3	Alkalinity to pH 4.5	Fluoride (mg/l)	Chloride (mg/l)	Nitrate-N (mg/l)	Nitrite-N (mg/l)	Total Ammonia (mgN/l)	Diss.-P (mgP/l)	TDS (mg/l)	Dissolved Metals by ICP-MS (Cantest) Hardness CaCO3 (mg/l)	Al (mg/l)	Sb (mg/l)	As (mg/l)	Ba (mg/l)
		5	5	0.01	1	50	1	1	1	1	0.1	0.2	0.02	0.002	0.01	0.001	10	0.02	0.02	0.02		(
22-Feb-11	0	750	590	9.46	202	65	5	--	--	53	0.06	20	0.04	0.01	0.027	0.02	68	9	0.55	0.00198	0.109	0.00035
1-Mar-11	1	500	495	8.7	246	90	10	--	--	79	0.23	20	0.02	0.005	0.01	0.042	130	15.8	0.136	0.00567	0.346	0.00031
8-Mar-11	2	500	435	8.52	140	120	9	--	--	48	0.13	9	0.02	0.005	0.043	0.019	70	10.8	0.0982	0.00314	0.36	0.0007
15-Mar-11	3	500	445	8.77	122	100	13	--	--	39	--	--	--	--	--	--	--	--	0.08	--	--	--
22-Mar-11	4	500	440	8.87	92	125	11	--	--	30	0.06	3.3	0.15	0.005	0.1	0.122	44	16.1	0.0773	0.00206	0.387	0.0003
29-Mar-11	5	500	430	8.95	82	125	9	--	--	26	--	--	--	--	--	--	--	--	0.06	--	--	--
5-Apr-11	6	500	480	8.5	75	150	9	--	--	32	--	--	--	--	--	--	--	--	--	--	--	--
12-Apr-11	7	500	445	8.58	70	95	9.3	--	--	26	--	--	--	--	--	--	--	--	--	--	--	--
19-Apr-11	8	500	465	8.49	74	130	8.5	--	--	26	0.03	0.5	0.02	0.005	0.15	0.095	38	26.5	0.044	0.00142	0.372	0.00036
26-Apr-11	9	500	460	8.2	81	130	7.7	--	1	28	--	--	--	--	--	--	--	--	--	--	--	--
3-May-11	10	500	450	8.11	64	135	7.1	--	1	22	--	--	--	--	--	--	--	--	0.07	--	--	--
10-May-11	11	500	425	8.25	68	130	7	--	1	22	--	--	--	--	--	--	--	--	--	--	--	--
17-May-11	12	500	465	8.05	64	170	6.3	--	1	24	0.02	0.5	0.02	0.005	0.2	0.153	42	28.4	0.0333	0.00151	0.447	0.00046
24-May-11	13	500	430	8.13	59	140	6.4	--	1	22	--	--	--	--	--	--	--	--	--	--	--	--
31-May-11	14	500	455	8.28	60	150	5.5	--	1	22	--	--	--	--	--	--	--	--	--	--	--	--
7-Jun-11	15	500	435	8.27	53	150	5.6	--	1	22	--	--	--	--	--	--	--	--	--	--	--	--
14-Jun-11	16	500	445	8.07	54	175	4.6	--	1	21	0.06	0.6	0.02	0.005	0.1	0.154	28	24.4	0.0297	0.00123	0.396	0.00021
21-Jun-11	17	500	425	7.98	52	145	4.4	--	1	21	--	--	--	--	--	--	--	--	--	--	--	--
28-Jun-11	18	500	440	7.77	51	145	3.2	--	1	21	--	--	--	--	--	--	--	--	--	--	--	--
5-Jul-11	19	500	470	8.03	52	160	4	--	1	25	--	--	--	--	--	--	--	--	--	--	--	--
12-Jul-11	20	500	445	7.9	54	200	2.8	--	1	22	0.02	0.5	0.02	0.005	0.12	0.118	34	24.5	0.0262	0.00107	0.355	0.00026
19-Jul-11	21	500	435	7.46	55	200	3.4	--	1	23	--	--	--	--	--	--	--	--	--	--	--	--
26-Jul-11	22	500	445	8.06	55	220	2.9	--	1	23	--	--	--	--	--	--	--	--	--	--	--	--
2-Aug-11	23	500	450	8	57	160	2.6	--	1	22	--	--	--	--	--	--	--	--	--	--	--	--
9-Aug-11	24	500	430	7.91	50	160	3	--	1	21	0.01	0.6	0.02	0.005	0.062	0.096	40	24.2	0.0273	0.00099	0.322	0.0002
16-Aug-11	25	500	430	8.09	51	175	2.2	--	1	22	--	--	--	--	--	--	--	--	--	--	--	--
23-Aug-11	26	500	440	7.86	48	180	2.9	--	1	23	--	--	--	--	--	--	--	--	--	--	--	--
30-Aug-11	27	500	440	8.11	47	160	3.4	--	1	18	--	--	--	--	--	--	--	--	--	--	--	--
6-Sep-11	28	500	440	7.88	42	140	3.2	--	1	20	0.01	0.9	0.02	0.005	0.15	0.057	40	20.3	0.0204	0.0007	0.223	0.00013
13-Sep-11	29	500	440	8	42	170	2.4	--	1	21	--	--	--	--	--	--	--	--	--	--	--	--
20-Sep-11	30	500	460	7.61	54	160	1.8	--	1	22	--	--	--	--	--	--	--	--	--	--	--	--
27-Sep-11	31	500	440	7.92	50	160	3	--	1	21	--	--	--	--	--	--	--	--	--	--	--	--
4-Oct-11	32	500	440	7.95	48	140	1.8	--	1	20	0.01	0.5	0.02	0.005	0.16	0.052	24	21.8	0.0231	0.00068	0.22	0.00017
11-Oct-11	33	500	430	8.08	53	185	1.8	--	1	22	--	--	--	--	--	--	--	--	--	--	--	--
18-Oct-11	34	500	430	7.88	53	175	2.3	--	1	21	--	--	--	--	--	--	--	--	--	--	--	--
25-Oct-11	35	500	435	7.98	52	175	1.4	--	1	23	--	--	--	--	--	--	--	--	--	--	--	--
1-Nov-11	36	500	430	7.93	53	200	0.5	--	1	23	0.01	0.5	0.02	0.005	0.28	0.045	32	22.3	0.0191	0.00068	0.19	0.00018
8-Nov-11	37	500	480	7.98	53	185	1.5	--	1	23	--	--	--	--	--	--	--	--	--	--	--	--
15-Nov-11	38	500	445	8.05	63	200	1.96	--	1	24	--	--	--	--	--	--	--	--	--	--	--	--
22-Nov-11	39	500	465	7.94	61	250	3.49	--	1	26	--	--	--	--	--	--	--	--	--	--	--	--
29-Nov-11	40	500	450	7.9	56	215	1.4	--	1	25	0.01	0.5	0.02	0.005	0.28	0.0542	30	21.7	0.0164	0.00062	0.158	0.00018
6-Dec-11	41	500	435	7.85	41	230	1.29	--	1	23	--	--	--	--	--	--	--	--	--	--	--	--
13-Dec-11	42	500	425	7.74	53	230	1.99	--	1	23	--	--	--	--	--	--	--	--	--	--	--	--
20-Dec-11	43	500	435	7.68	49	245	1.5	--	1	22	--	--	--	--	--	--	--	--	--	--	--	--
27-Dec-11	44	500	440	7.64	50	240	1.66	--	1	23	0.01	0.5	0.02	0.005	0.25	0.014	26	22.9	0.0185	0.00057	0.152	0.00023
3-Jan-12	45	500	455	7.64	54	130	0.63	--	1	25	--	--	--	--	--	--	--	--	--	--	--	--
10-Jan-12	46	500	450	7.77	45	125	1.46	--	1	22	--	--	--	--	--	--	--	--	--	--	--	--
17-Jan-12	47	500	430	7.74	45	120	1.29	--	1	22	--	--	--	--	--	--	--	--	--	--	--	--
24-Jan-12	48	500	480	7.67	50	125	1.53	--	1	24	0.01	0.5	0.02	0.005	0.2	0.025	30	23.8	0.0143	0.00057	0.132	0.00024
31-Jan-12	49	500	445	7.8	43	120	2.03	--	1	20	--	--	--	--	--	--	--	--	--	--	--	--
Terminated																						

HC-64
Sample Weight = 1kg

Date	Accum. Weeks	Be (mg/l)	Bi mg/l	B mg/l	Cs mg/l	Cd mg/l	Ca mg/l	Cr mg/l	Co mg/l	Cu mg/l	La mg/l	Fe mg/l	Pb mg/l	Li mg/l	Mg mg/l	Mn mg/l	P mg/L	Hg (CVAF) µg/L	Mo mg/l	Ni mg/l	Re mg/L	K mg/l	Rb mg/l
		Calculation	0.005	0.001	0.0001	0.001	0.001	0.001	0.001	0.02	0.0001	0.0002	0.05	0.001	0.001	0.001	0.015	0.02	0.001	0.001	0.0001	0.001	0.0001
22-Feb-11	0	0.00001	0.000005	0.06	0.00044	0.000005	2.4	0.0001	0.00014	0.00346	0.00005	0.022	0.000023	0.0023	0.73	0.00126	0.015	0.002	0.00056	0.00071	--	2.24	0.00235
1-Mar-11	1	0.00001	0.000005	0.12	0.00126	0.000005	4.04	0.0001	0.000803	0.00654	0.00005	0.005	0.000023	0.0035	1.4	0.0074	0.003	0.003	0.00132	0.00197	--	3.53	0.00333
8-Mar-11	2	0.00001	0.000005	0.08	0.00087	0.000005	2.66	0.0001	0.000457	0.00342	0.00005	0.008	0.000024	0.0021	1	0.00429	0.013	0.002	0.00084	0.00106	--	2.53	0.00271
15-Mar-11	3	--	--	--	--	--	3.64	--	--	--	--	--	--	--	1.45	--	--	--	--	--	--	2.7	--
22-Mar-11	4	0.00001	0.000005	0.05	0.00089	0.000005	3.91	0.0001	0.000551	0.00143	0.00005	0.009	0.000028	0.0014	1.54	0.0049	0.027	0.002	0.00043	0.00107	--	2.29	0.00239
29-Mar-11	5	--	--	--	--	--	3.5	--	--	--	--	--	--	--	1.65	--	--	--	--	--	--	2	--
5-Apr-11	6	--	--	--	--	--	6.96	--	--	--	--	--	--	--	2.85	--	--	--	--	--	--	2.3	--
12-Apr-11	7	--	--	--	--	--	5.17	--	--	--	--	--	--	--	2.44	--	--	--	--	--	--	1.7	--
19-Apr-11	8	0.00001	0.000005	0.05	0.00095	0.000005	5.6	0.0001	0.00145	0.00072	0.00005	0.006	0.00001	0.0008	3.04	0.00882	0.009	0.002	0.0002	0.0022	--	1.88	0.00283
26-Apr-11	9	--	--	--	--	--	7.06	--	--	--	--	--	--	--	3.22	--	--	--	--	--	--	1.5	--
3-May-11	10	--	--	--	--	--	4.06	--	--	--	--	--	--	--	2.11	--	--	--	--	--	--	1.2	--
10-May-11	11	--	--	--	--	--	5.77	--	--	--	--	--	--	--	2.9	--	--	--	--	--	--	1	--
17-May-11	12	0.00001	0.000005	0.05	0.00108	0.000005	6.67	0.0001	0.00212	0.00058	0.00005	0.005	0.000028	0.0009	2.86	0.00803	0.002	0.002	0.00015	0.00259	--	1.31	0.00237
24-May-11	13	--	--	--	--	--	6.01	--	--	--	--	0.01	--	--	2.91	--	--	--	--	--	--	0.9	--
31-May-11	14	--	--	--	--	--	5.82	--	--	--	--	--	--	--	2.79	--	--	--	--	--	--	0.7	--
7-Jun-11	15	--	--	--	--	--	5	--	--	--	--	--	--	--	2.6	--	--	--	--	--	--	0.7	--
14-Jun-11	16	0.00001	0.000005	0.05	0.00084	0.000005	5.51	0.0001	0.00192	0.00046	0.00005	0.002	0.000042	0.0006	2.6	0.00657	0.002	0.002	0.00016	0.00197	--	0.85	0.00172
21-Jun-11	17	--	--	--	--	--	5.12	--	--	--	--	--	--	--	2.62	--	--	--	--	--	--	0.7	--
28-Jun-11	18	--	--	--	--	--	5.11	--	--	--	--	--	--	--	2.48	--	--	--	--	--	--	0.6	--
5-Jul-11	19	--	--	--	--	--	7.23	--	--	--	--	--	--	--	3.06	--	--	--	--	--	--	0.7	--
12-Jul-11	20	0.00001	0.000005	0.05	0.00074	0.000005	5.55	0.0001	0.00233	0.0004	0.00005	0.004	0.000008	0.0005	2.59	0.00524	0.009	0.002	0.00015	0.00206	--	0.66	0.00152
19-Jul-11	21	--	--	--	--	--	5.59	--	--	--	--	--	--	--	2.64	--	--	--	--	--	--	0.6	--
26-Jul-11	22	--	--	--	--	--	5.67	--	--	--	--	--	--	--	2.71	--	--	--	--	--	--	0.6	--
2-Aug-11	23	--	--	--	--	--	5.74	--	--	--	--	--	--	--	2.8	--	--	--	--	--	--	0.6	--
9-Aug-11	24	0.00001	0.000005	0.05	0.00086	0.000005	5.22	0.0001	0.00199	0.00049	0.00005	0.005	0.000008	0.0005	2.7	0.00591	0.002	0.002	0.00009	0.00168	--	0.62	0.00159
16-Aug-11	25	--	--	--	--	--	4.98	--	--	--	--	--	--	--	2.34	--	--	--	--	--	--	0.3	--
23-Aug-11	26	--	--	--	--	--	5.18	--	--	--	--	--	--	--	2.55	--	--	--	--	--	--	0.5	--
30-Aug-11	27	--	--	--	--	--	4.7	--	--	--	--	--	--	--	2.43	--	--	--	--	--	--	0.5	--
6-Sep-11	28	0.00001	0.000005	0.05	0.00066	0.000005	4.5	0.0001	0.0015	0.00034	0.00005	0.005	0.000041	0.0005	2.21	0.00554	0.008	0.002	0.00011	0.0013	--	0.41	0.00119
13-Sep-11	29	--	--	--	--	--	4.79	--	--	--	--	--	--	--	2.5	--	--	--	--	--	--	0.5	--
20-Sep-11	30	--	--	--	--	--	5.44	--	--	--	--	--	--	--	2.67	--	--	--	--	--	--	0.4	--
27-Sep-11	31	--	--	--	--	--	5.23	--	--	--	--	--	--	--	2.53	--	--	--	--	--	--	--	--
4-Oct-11	32	0.00001	0.000005	0.05	0.00084	0.000005	4.72	0.0001	0.00189	0.00092	0.00005	0.003	0.000049	0.0005	2.44	0.00486	0.003	0.002	0.00008	0.0016	--	0.4	0.00135
11-Oct-11	33	--	--	--	--	--	4.85	--	--	--	--	--	--	--	2.58	--	--	--	--	--	--	0.6	--
18-Oct-11	34	--	--	--	--	--	4.75	--	--	--	--	--	--	--	2.56	--	--	--	--	--	--	0.5	--
25-Oct-11	35	--	--	--	--	--	4.98	--	--	--	--	--	--	--	2.62	--	--	--	--	--	--	0.3	--
1-Nov-11	36	0.00001	0.000005	0.05	0.00117	0.000005	4.78	0.0001	0.0019	0.00041	0.00005	0.002	0.000031	0.0005	2.51	0.00467	0.002	0.002	0.00009	0.00155	--	0.45	0.00156
8-Nov-11	37	--	--	--	--	--	4.88	--	--	--	--	--	--	--	2.47	--	--	--	--	--	--	0.5	--
15-Nov-11	38	--	--	--	--	--	7.07	--	--	--	--	--	--	--	3.27	--	--	--	--	--	--	0.3	--
22-Nov-11	39	--	--	--	--	--	6.65	--	--	--	--	--	--	--	3.23	--	--	--	--	--	--	0.3	--
29-Nov-11	40	0.00001	0.000005	0.05	0.00109	0.000005	5.07	0.0001	0.00208	0.00046	0.00005	0.003	0.000069	0.0005	2.18	0.00469	0.004	0.002	0.00007	0.00166	--	0.31	0.00147
6-Dec-11	41	--	--	--	--	--	5.58	--	--	--	--	--	--	--	2.61	--	--	--	--	--	--	--	--
13-Dec-11	42	--	--	--	--	--	5.43	--	--	--	--	--	--	--	2.66	--	--	--	--	--	--	0.5	--
20-Dec-11	43	--	--	--	--	--	5.12	--	--	--	--	--	--	--	2.54	--	--	--	--	--	--	0.3	--
27-Dec-11	44	0.00001	0.000005	0.05	0.00109	0.000005	4.92	0.0001	0.00196	0.00047	0.00005	0.001	0.000022	0.0005	2.58	0.00452	0.002	0.002	0.0001	0.00144	--	0.32	0.0014
3-Jan-12	45	--	--	--	--	--	5.93	--	--	--	--	--	--	--	2.92	--	--	--	--	--	--	--	--
10-Jan-12	46	--	--	--	--	--	5.19	--	--	--	--	--	--	--	2.51	--	--	--	--	--	--	0.3	--
17-Jan-12	47	--	--	--	--	--	4.84	--	--	--	--	--	--	--	2.54	--	--	--	--	--	--	0.3	--
24-Jan-12	48	0.00001	0.000005	0.05	0.0008	0.000005	5.33	0.0001	0.00204	0.00046	0.00005	0.001	0.000012	0.0005	2.55	0.00523	0.002	0.0023	0.00005	0.00169	--	0.23	0.0009
31-Jan-12	49	--	--	--	--	--	4.76	--	--	--	--	--	--	--	2.42	--	--	--	--	--	--	--	--
Terminated																							

HC-64
Sample Weight = 1kg

Date	Accum. Weeks	Se mg/l	Si mg/l	Ag mg/l	Na mg/l	Sr mg/l	Te mg/l	Tl mg/l	Th mg/l	Sn mg/l	Ti mg/l	W mg/l	U mg/l	V mg/l	Zn mg/l	Zr mg/l
		0.00002	0.0005	0.001	0.15	0.1	0.001	0.25	0.00025	0.05	0.001	0.0001	0.001	0.0001	0.0005	0.001
22-Feb-11	0	0.00087	0.6	0.000005	30.4	0.00712	0.00002	0.000002	0.000005	0.00008	0.0005	0.00139	0.000002	0.0061	0.0003	0.0001
1-Mar-11	1	0.00214	2	0.000036	43.8	0.0163	0.00002	0.000008	0.000005	0.00002	0.0005	0.00304	0.000002	0.0034	0.0006	0.0001
8-Mar-11	2	0.00108	0.7	0.000064	20.2	0.0115	0.00002	0.000003	0.000005	0.00002	0.0005	0.00144	0.000014	0.0027	0.0005	0.0001
15-Mar-11	3	--	--	--	18.1	--	--	--	--	--	--	--	--	--	--	--
22-Mar-11	4	0.00099	0.6	0.000065	10.2	0.0128	0.00002	0.000004	0.000005	0.00002	0.0005	0.00055	0.000034	0.0021	0.0019	0.0001
29-Mar-11	5	--	--	--	7.2	--	--	--	--	--	--	--	--	--	--	--
5-Apr-11	6	--	--	--	5.7	--	--	--	--	--	--	--	--	--	--	--
12-Apr-11	7	--	--	--	3.7	--	--	--	--	--	--	--	--	--	--	--
19-Apr-11	8	0.00057	0.5	0.000005	2.62	0.0202	0.00002	0.000002	0.000005	0.00002	0.0005	0.00022	0.000008	0.0013	0.001	0.0001
26-Apr-11	9	--	--	--	2	--	--	--	--	--	--	--	--	--	--	--
3-May-11	10	--	--	--	1.4	--	--	--	--	--	--	--	--	--	--	--
10-May-11	11	--	--	--	1.3	--	--	--	--	--	--	--	--	--	--	--
17-May-11	12	0.00046	0.6	0.000005	0.98	0.0214	0.00002	0.000002	0.000005	0.00001	0.0005	0.00018	0.000008	0.0013	0.001	0.0001
24-May-11	13	--	--	--	0.9	--	--	--	--	--	--	--	--	--	--	--
31-May-11	14	--	--	--	0.7	--	--	--	--	--	--	--	--	--	--	--
7-Jun-11	15	--	--	--	0.6	--	--	--	--	--	--	--	--	--	--	--
14-Jun-11	16	0.00029	0.4	0.000005	0.53	0.0157	0.00002	0.000002	0.000005	0.00001	0.0005	0.00012	0.000004	0.0009	0.0011	0.0001
21-Jun-11	17	--	--	--	0.5	--	--	--	--	--	--	--	--	--	--	--
28-Jun-11	18	--	--	--	0.4	--	--	--	--	--	--	--	--	--	--	--
5-Jul-11	19	--	--	--	0.3	--	--	--	--	--	--	--	--	--	--	--
12-Jul-11	20	0.0003	0.4	0.000005	0.34	0.015	0.00002	0.000002	0.000005	0.00001	0.0005	0.00008	0.000008	0.0009	0.0008	0.0001
19-Jul-11	21	--	--	--	0.4	--	--	--	--	--	--	--	--	--	--	--
26-Jul-11	22	--	--	--	0.4	--	--	--	--	--	--	--	--	--	--	--
2-Aug-11	23	--	--	--	0.5	--	--	--	--	--	--	--	--	--	--	--
9-Aug-11	24	0.00026	0.4	0.000005	0.29	0.0141	0.00002	0.000002	0.000005	0.00001	0.0005	0.00007	0.000002	0.0008	0.0008	0.0001
16-Aug-11	25	--	--	--	0.4	--	--	--	--	--	--	--	--	--	--	--
23-Aug-11	26	--	--	--	0.3	--	--	--	--	--	--	--	--	--	--	--
30-Aug-11	27	--	--	--	0.1	--	--	--	--	--	--	--	--	--	--	--
6-Sep-11	28	0.00017	0.3	0.000005	0.18	0.00923	0.00002	0.000002	0.000005	0.00005	0.0005	0.00005	0.000002	0.0008	0.0006	0.0001
13-Sep-11	29	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
20-Sep-11	30	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
27-Sep-11	31	--	--	--	0.3	--	--	--	--	--	--	--	--	--	--	--
4-Oct-11	32	0.00019	0.3	0.000005	0.19	0.00983	0.00002	0.000002	0.000005	0.00001	0.0005	0.00005	0.000002	0.0006	0.0006	0.0001
11-Oct-11	33	--	--	--	0.1	--	--	--	--	--	--	--	--	--	--	--
18-Oct-11	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Oct-11	35	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
1-Nov-11	36	0.00018	0.3	0.000005	0.18	0.0103	0.00002	0.000002	0.000005	0.00015	0.0005	0.00004	0.000002	0.0005	0.0003	0.0001
8-Nov-11	37	--	--	--	0.6	--	--	--	--	--	--	--	--	--	--	--
15-Nov-11	38	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
22-Nov-11	39	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Nov-11	40	0.00017	0.3	0.000005	0.12	0.0108	0.00002	0.000002	0.000005	0.0004	0.0005	0.00004	0.000002	0.0004	0.0004	0.0001
6-Dec-11	41	--	--	--	0.5	--	--	--	--	--	--	--	--	--	--	--
13-Dec-11	42	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
20-Dec-11	43	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27-Dec-11	44	0.00018	0.3	0.000005	0.12	0.00974	0.00002	0.000002	0.000005	0.00008	0.0005	0.00003	0.000002	0.0004	0.0004	0.0001
3-Jan-12	45	--	--	--	0.1	--	--	--	--	--	--	--	--	--	--	--
10-Jan-12	46	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--	--
17-Jan-12	47	--	--	--	0.1	--	--	--	--	--	--	--	--	--	--	--
24-Jan-12	48	0.00014	0.3	0.000005	0.12	0.00974	0.00002	0.000002	0.000005	0.0002	0.0005	0.00003	0.000002	0.0003	0.0004	0.0001
31-Jan-12	49	--	--	--	0.4	--	--	--	--	--	--	--	--	--	--	--
Terminated																

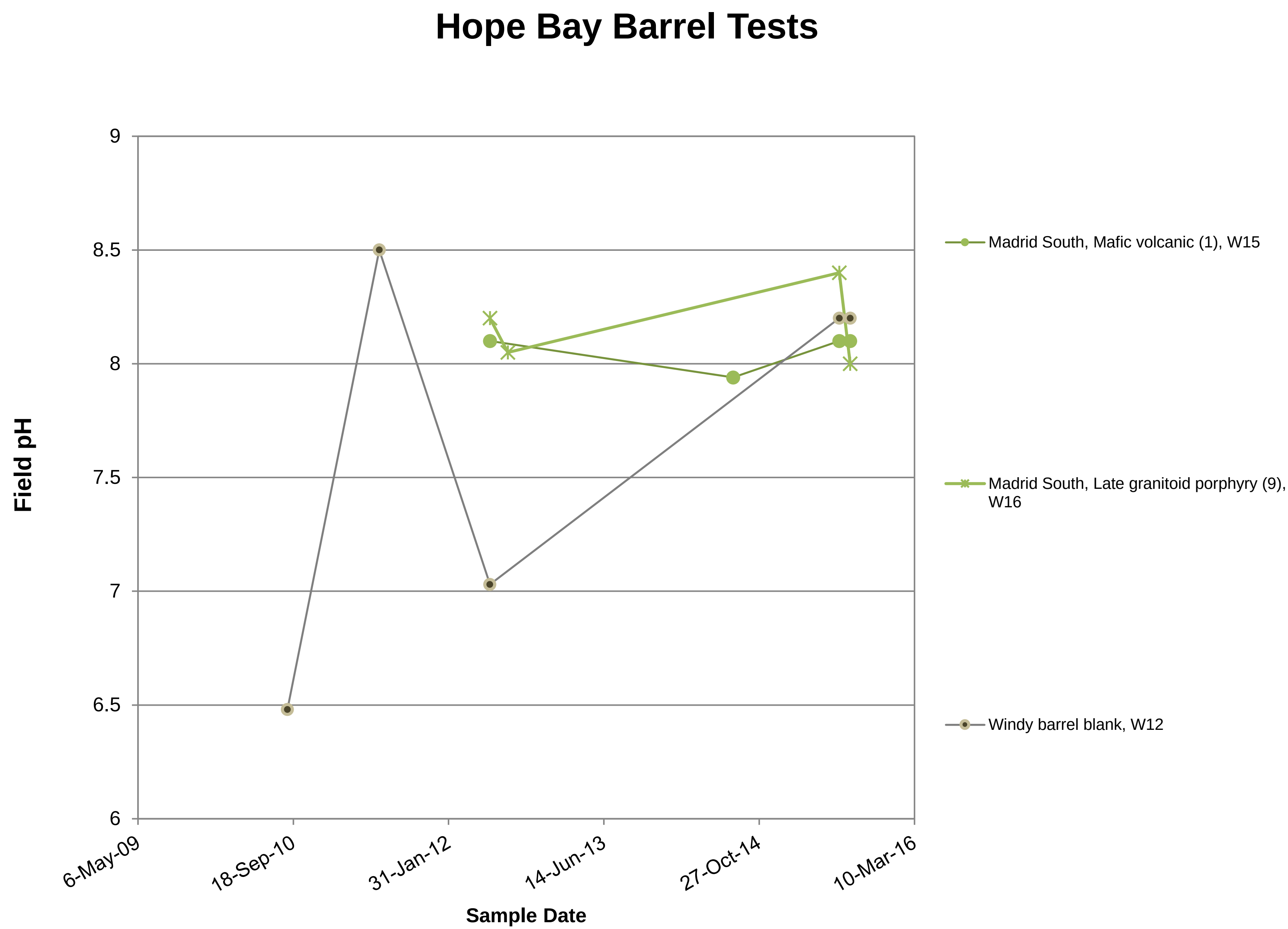
Appendix K:
Solid-Phase Trace Metal Data - ICP Metals by Aqua Regia Digestion, Madrid South Barrel Samples

Appendix K: Solid-Phase Trace Metal Data - ICP Metals by Aqua Regia Digestion, Madrid South Barrel Samples

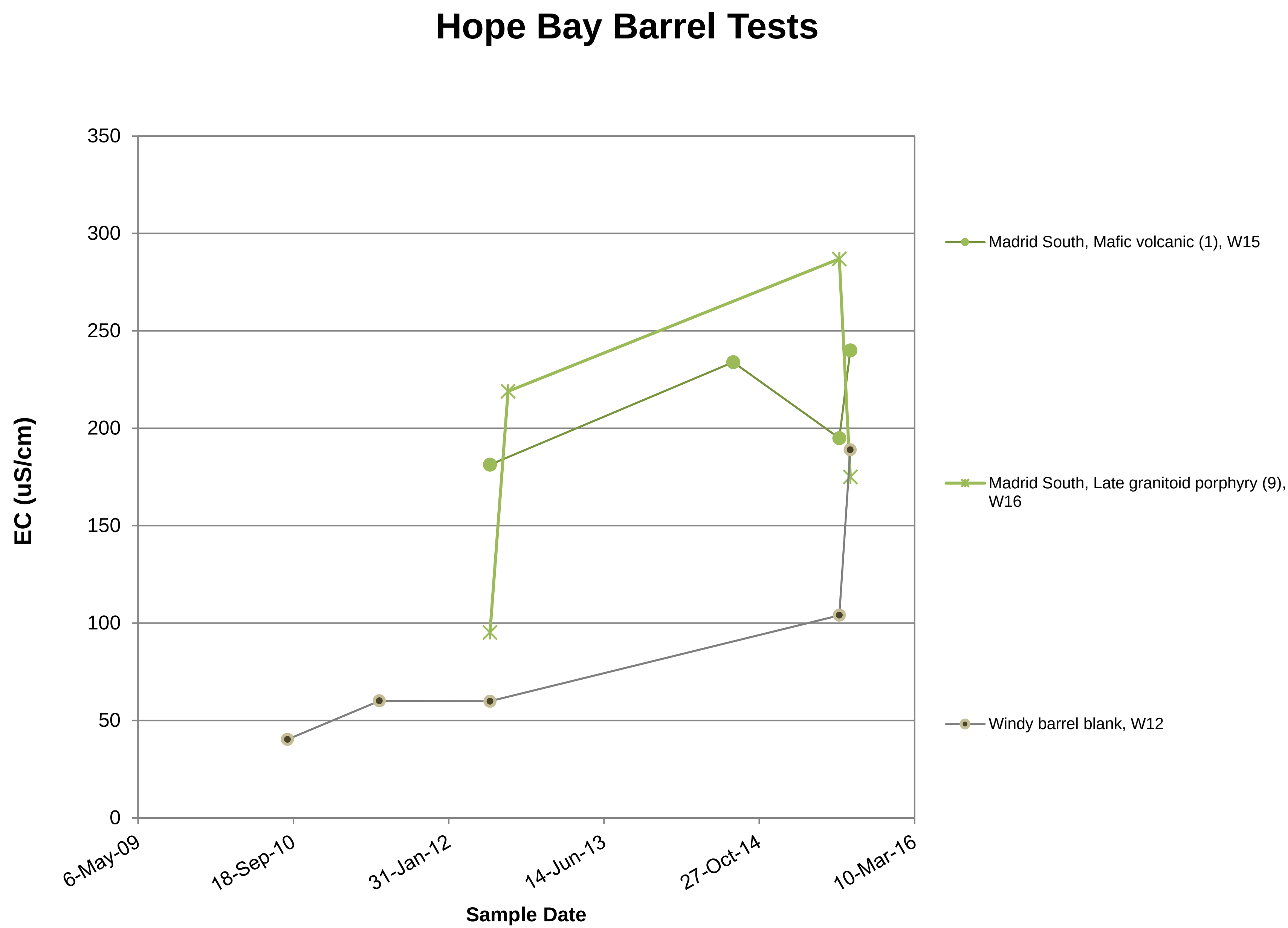
Barrel ID	Rock Type	Al	Sb	As	Ba	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Mg	Mn	Hg	Mo	Ni	P	K	Se	Ag	Na	Sr	Tl	Th	Ti	U	V	W	Zn
		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
W15	1	31,300	<0.1	23.8	8	<0.1	<20	<0.1	70,700	188	43.1	131.3	64,500	<0.1	39,700	1,232	<0.01	0.4	101.2	180	400	<0.5	-0.1	850	70	<0.1	<0.1	30	<0.1	150	<0.1	58
W16	9	5,200	<0.1	11.6	31	<0.1	<20	<0.1	33,400	26	8.8	51.1	20,500	1.4	9,000	391	<0.01	0.8	16.6	240	1,200	<0.5	-0.1	1,230	77	<0.1	0.6	<10	0.1	6	<0.1	44
*Average Crustal Abudance for Basalt**		*78,000*	*0.2*	*2*	*330*	*0.007*	*5*	*0.22*	*76,000*	*170*	*48*	*87*	*86,500*	*6*	*46,000*	*1,500*	*0.09*	*1.5*	*130*	*1,100*	*8,300*	*0.05*	*0.11*	*18,000*	*465*	*0.21*	*4*	*13,800*	*1*	*250*	*0.7*	*105*

Appendix L:
Field Barrel Sample Solid-Phase Elemental Data, Madrid South

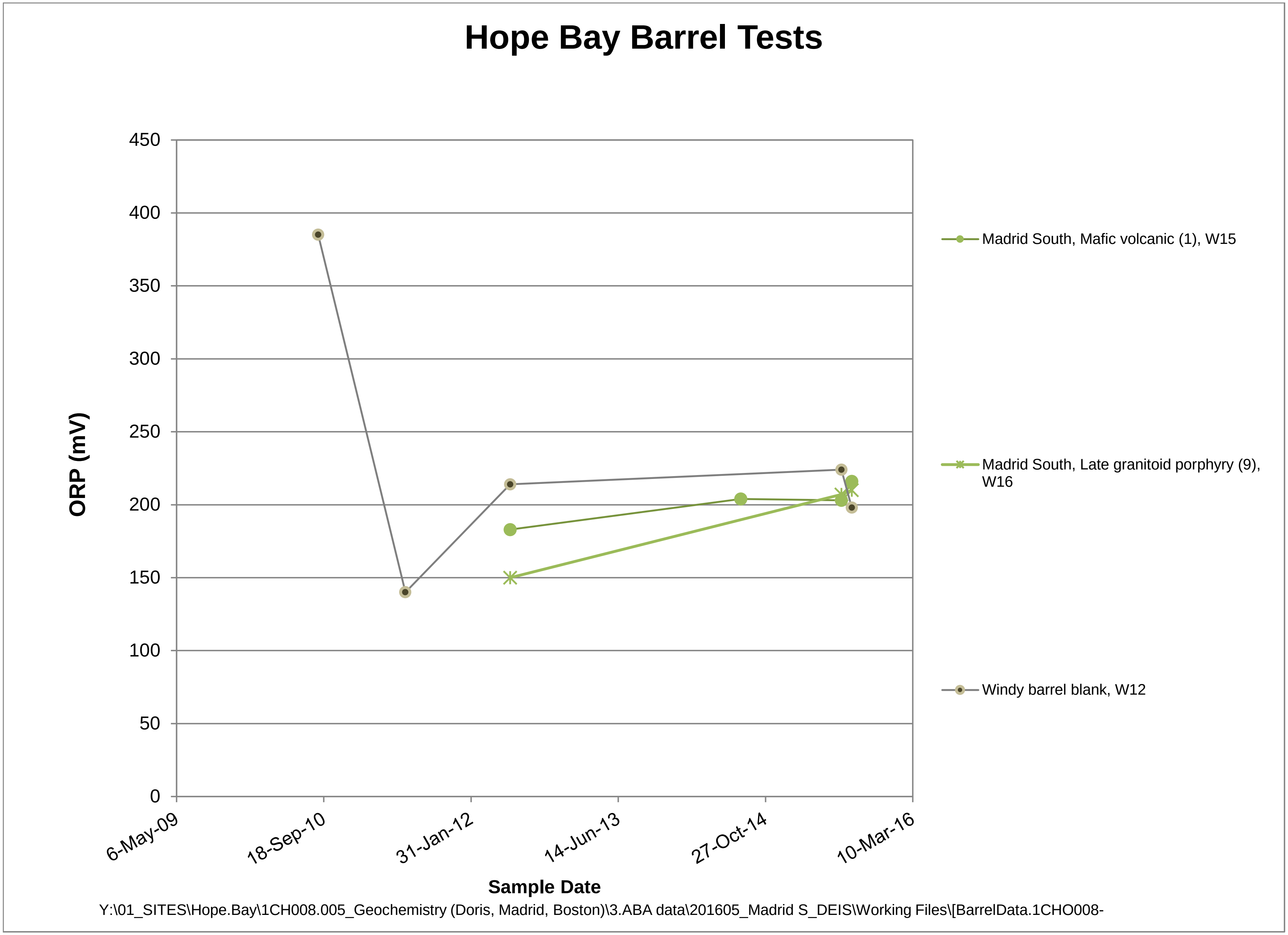
Appendix L-1:
Field Barrel Concentration Graphs, Madrid South

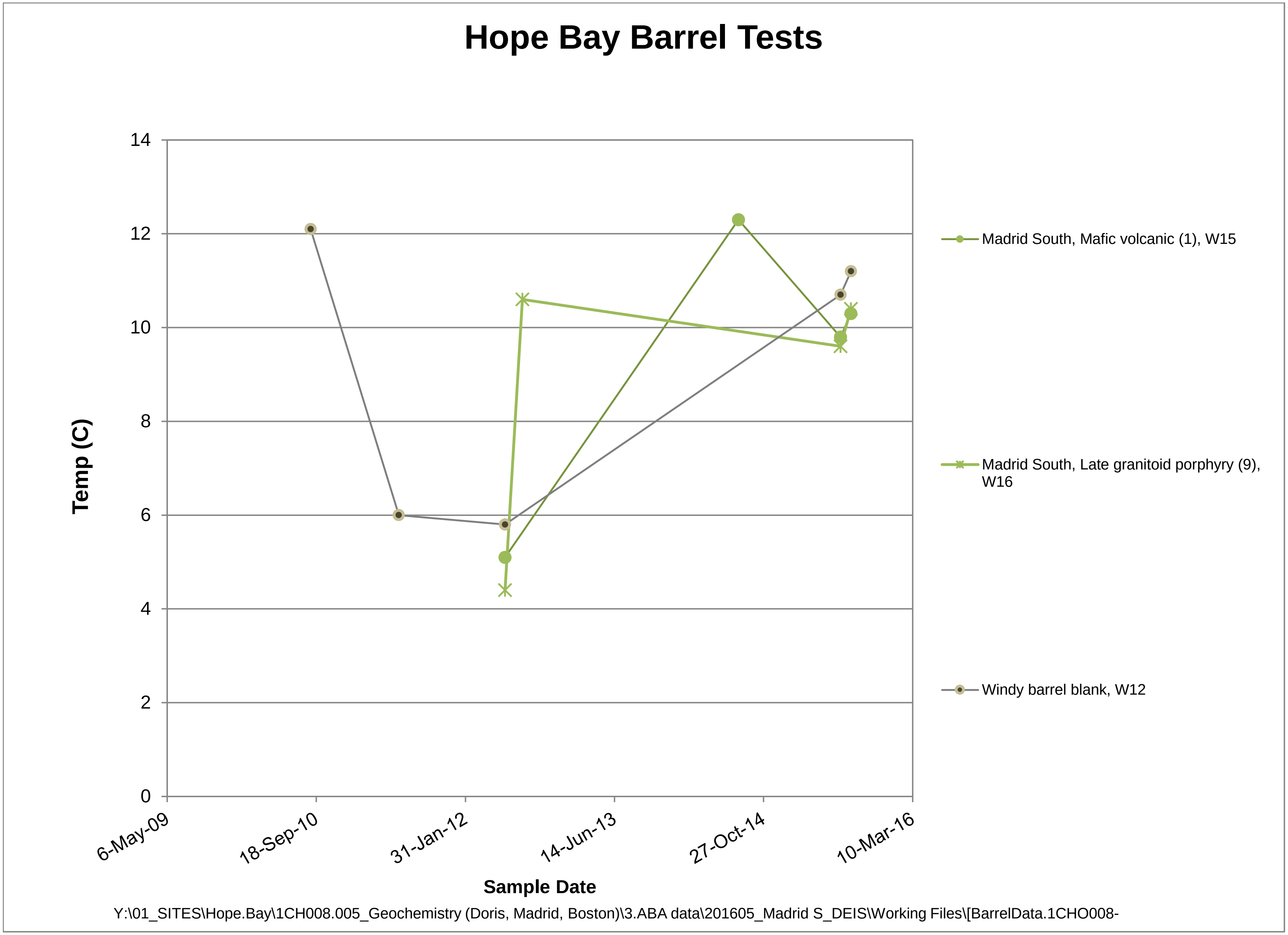


Y:\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201605_Madrid S_DEIS\Working Files\[BarrelData.1CHO008-

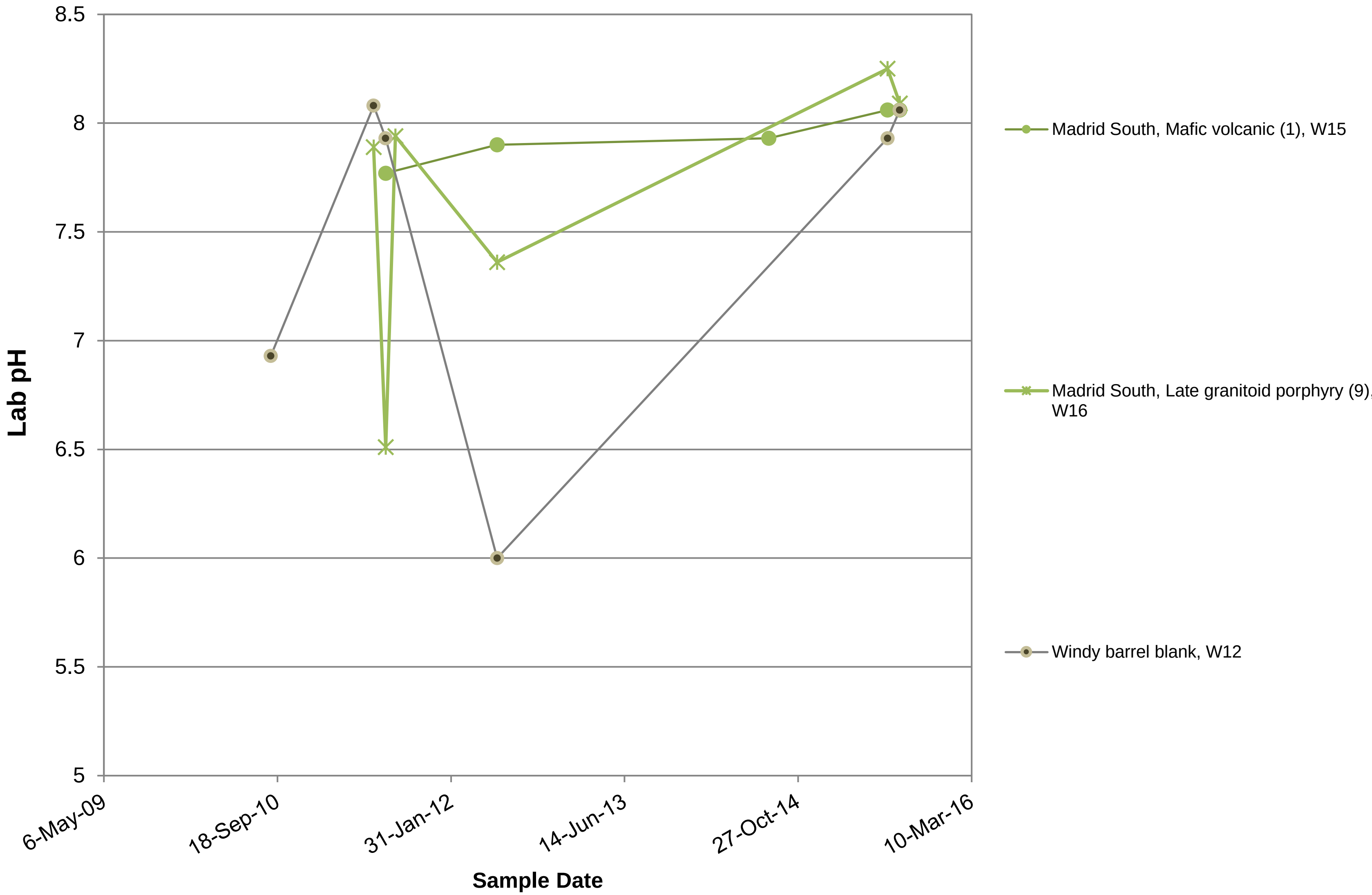


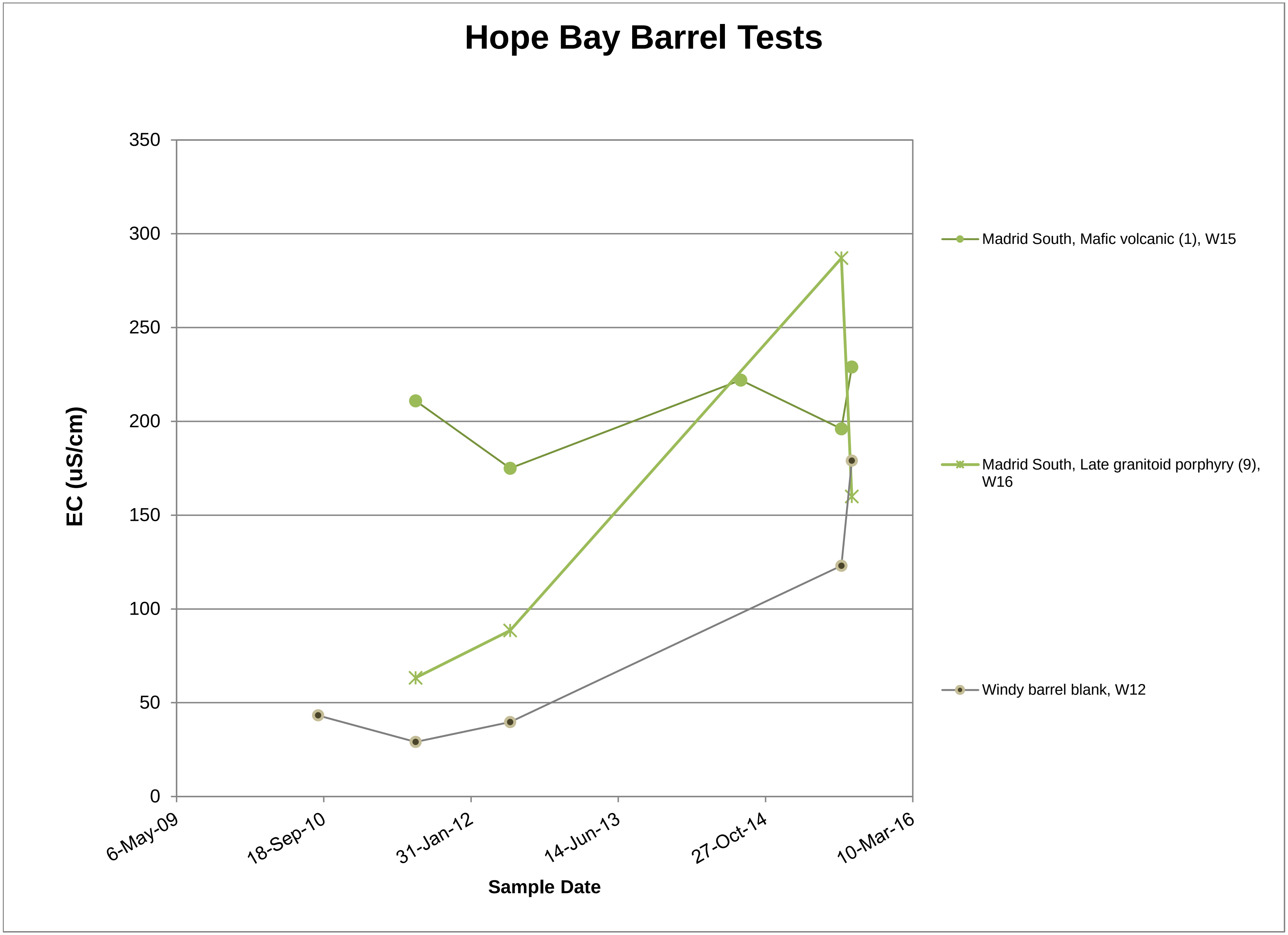
Y:\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201605_Madrid S_DEIS\Working Files\[BarrelData.1CHO008-

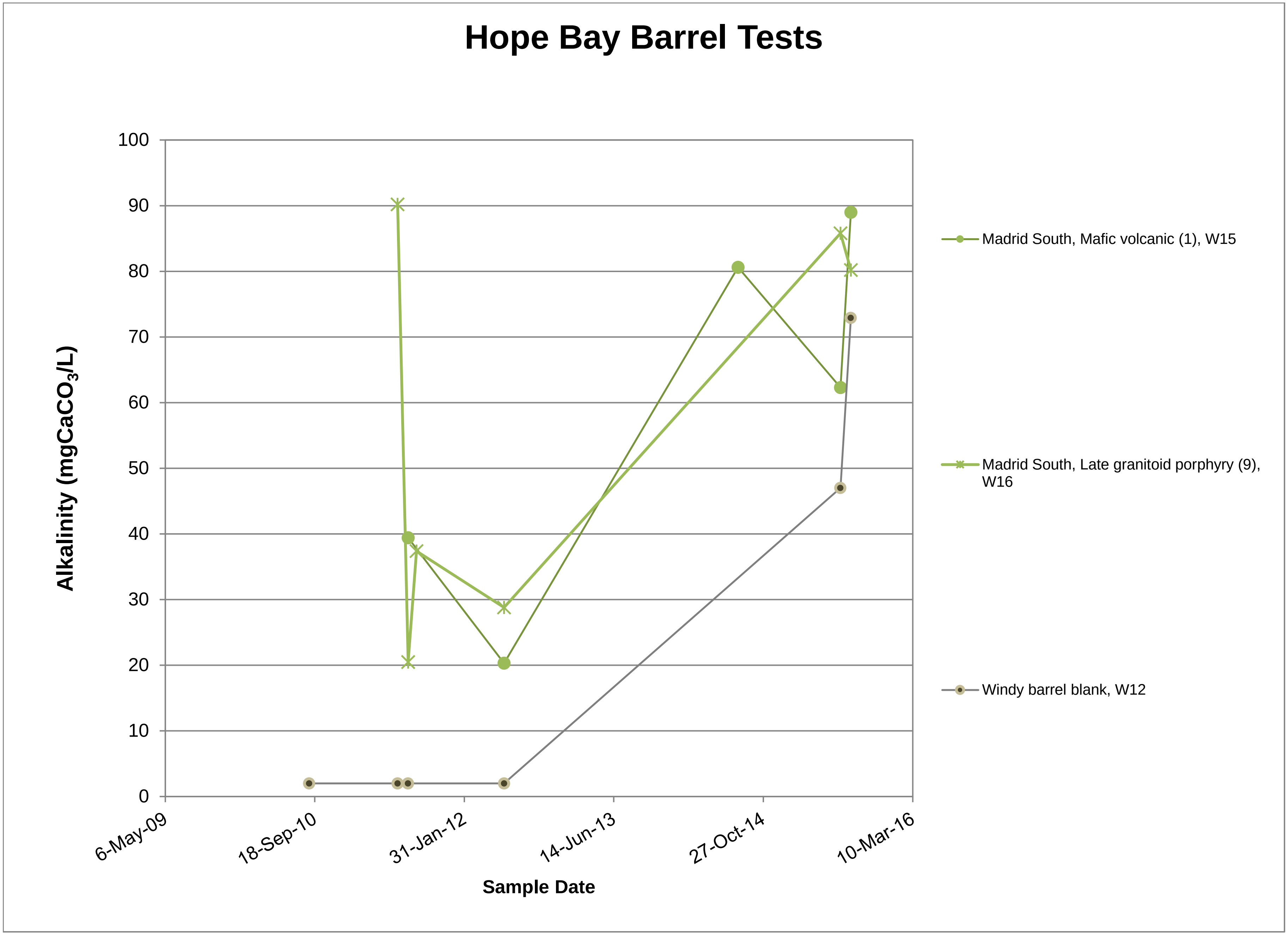

Hope Bay Barrel Tests
ORP (mV)
450
400
350
300
250
200
150
100
50
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12
Y:\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201605_Madrid S_DEIS\Working Files\[BarrelData.1CHO008-

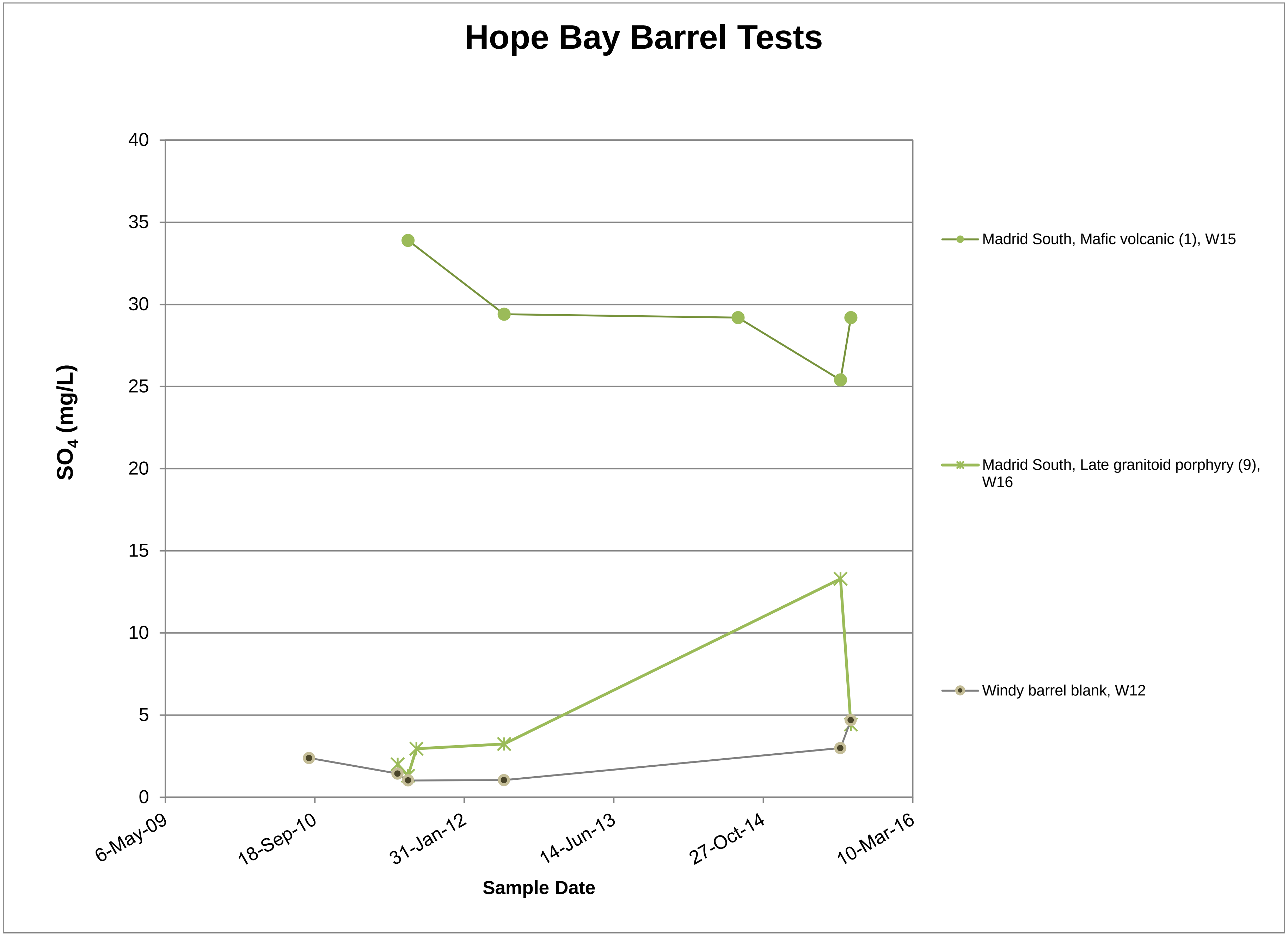

Hope Bay Barrel Tests
Temp (C)
14
12
10
8
6
4
2
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12
Y:\01_SITES\Hope.Bay\1CH008.005_Geochemistry (Doris, Madrid, Boston)\3.ABA data\201605_Madrid S_DEIS\Working Files\[BarrelData.1CHO008-

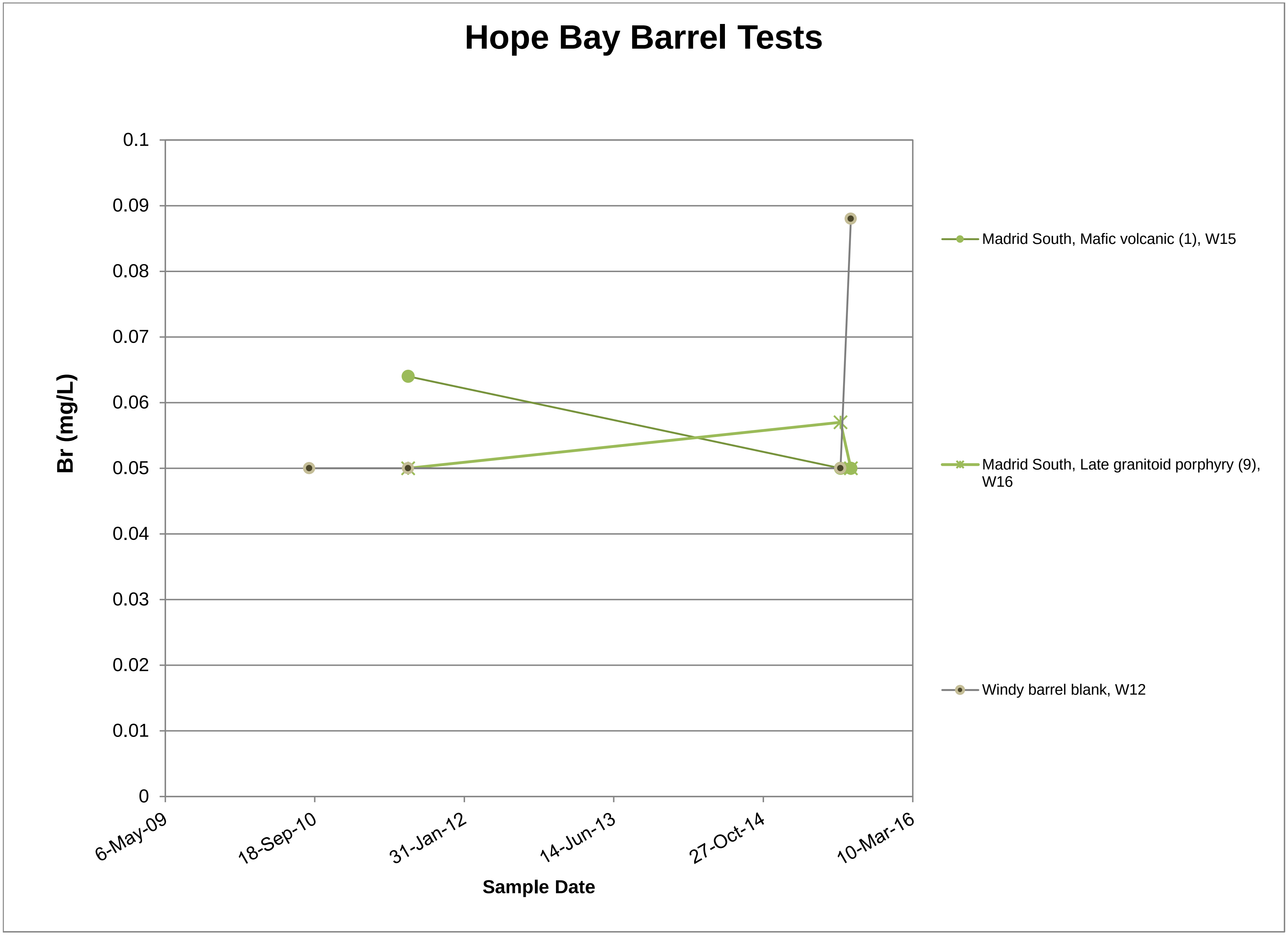
Hope Bay Barrel Tests

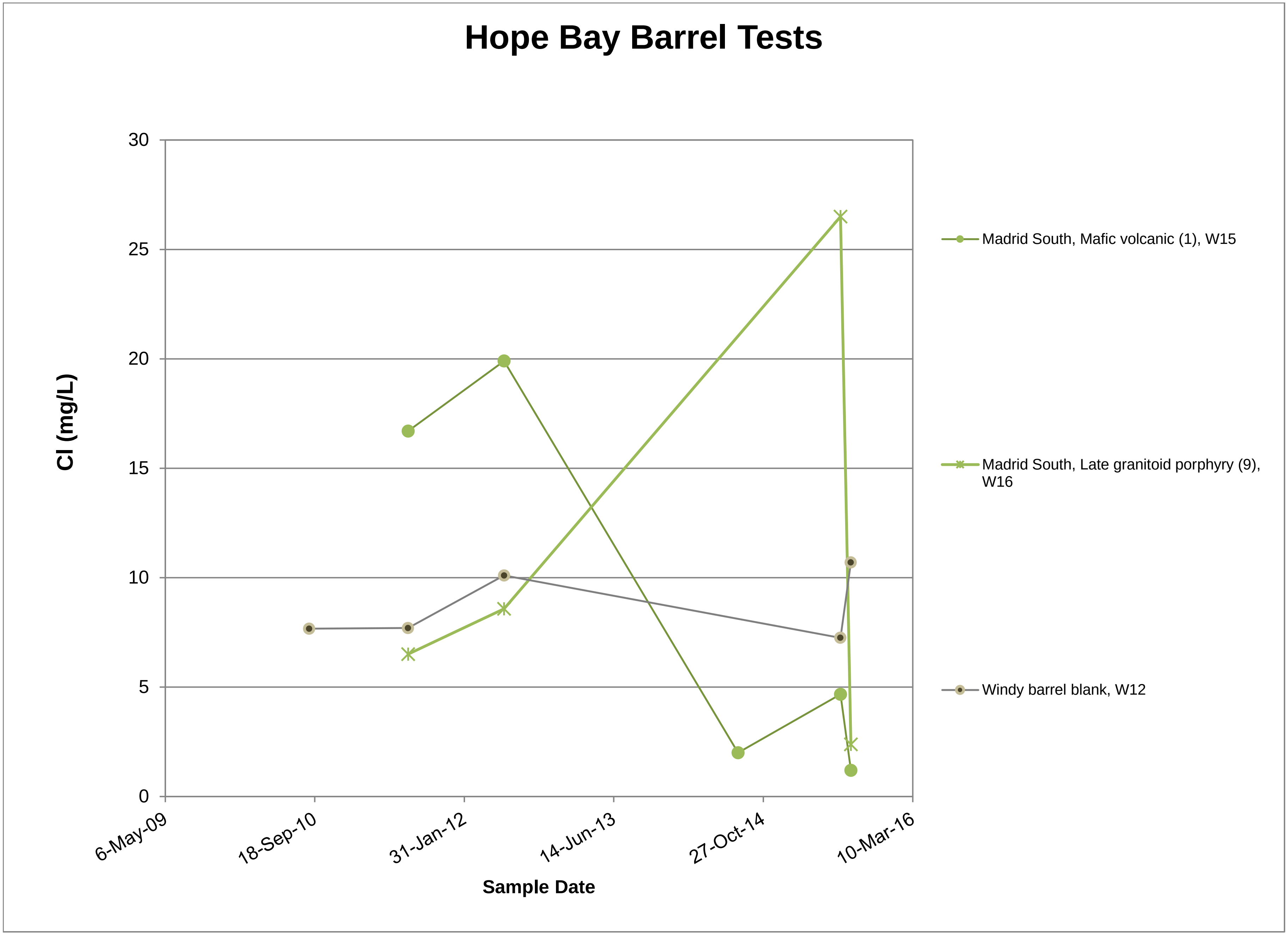


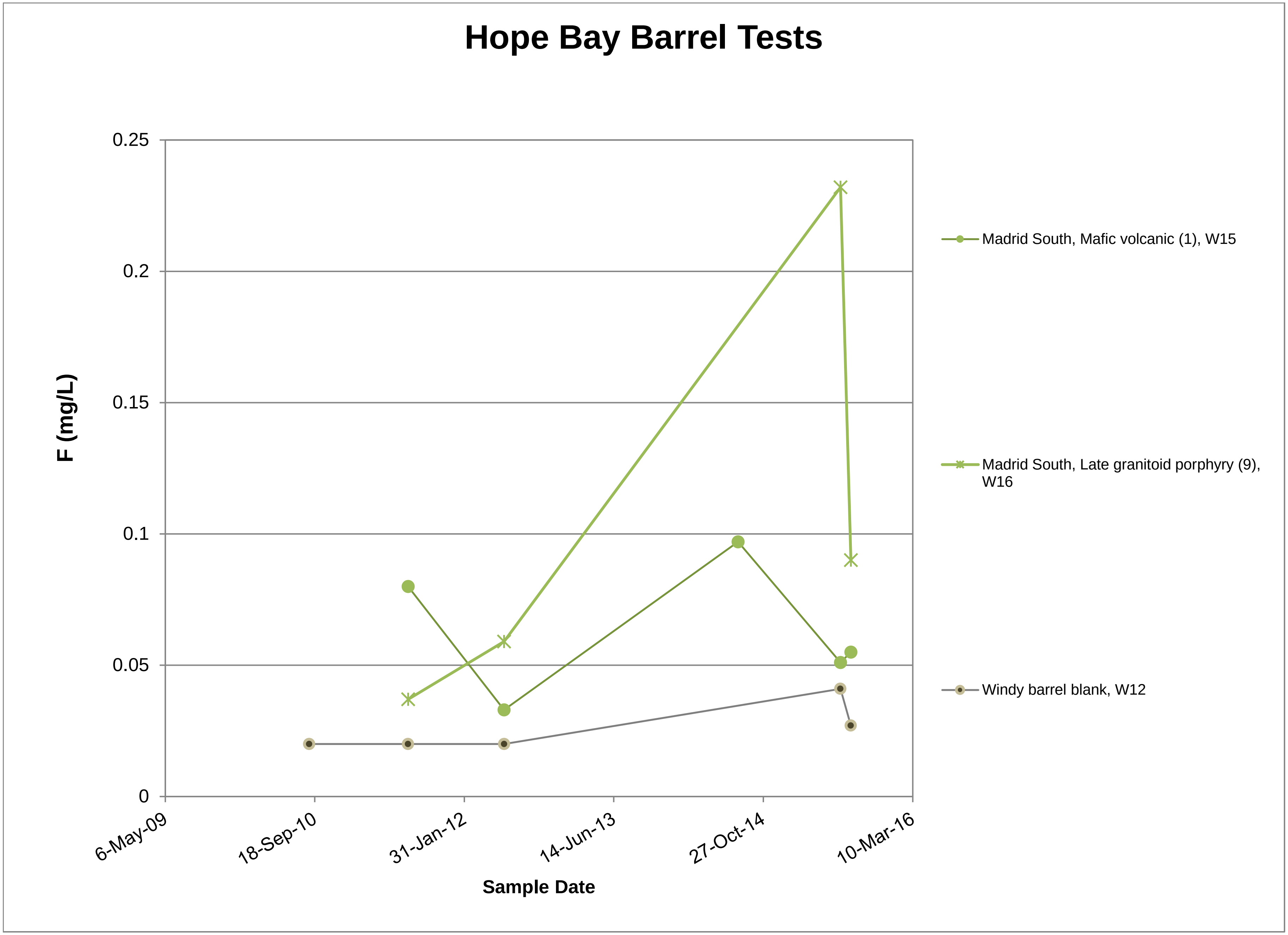

Hope Bay Barrel Tests
EC (uS/cm)
350
300
250
200
150
100
50
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

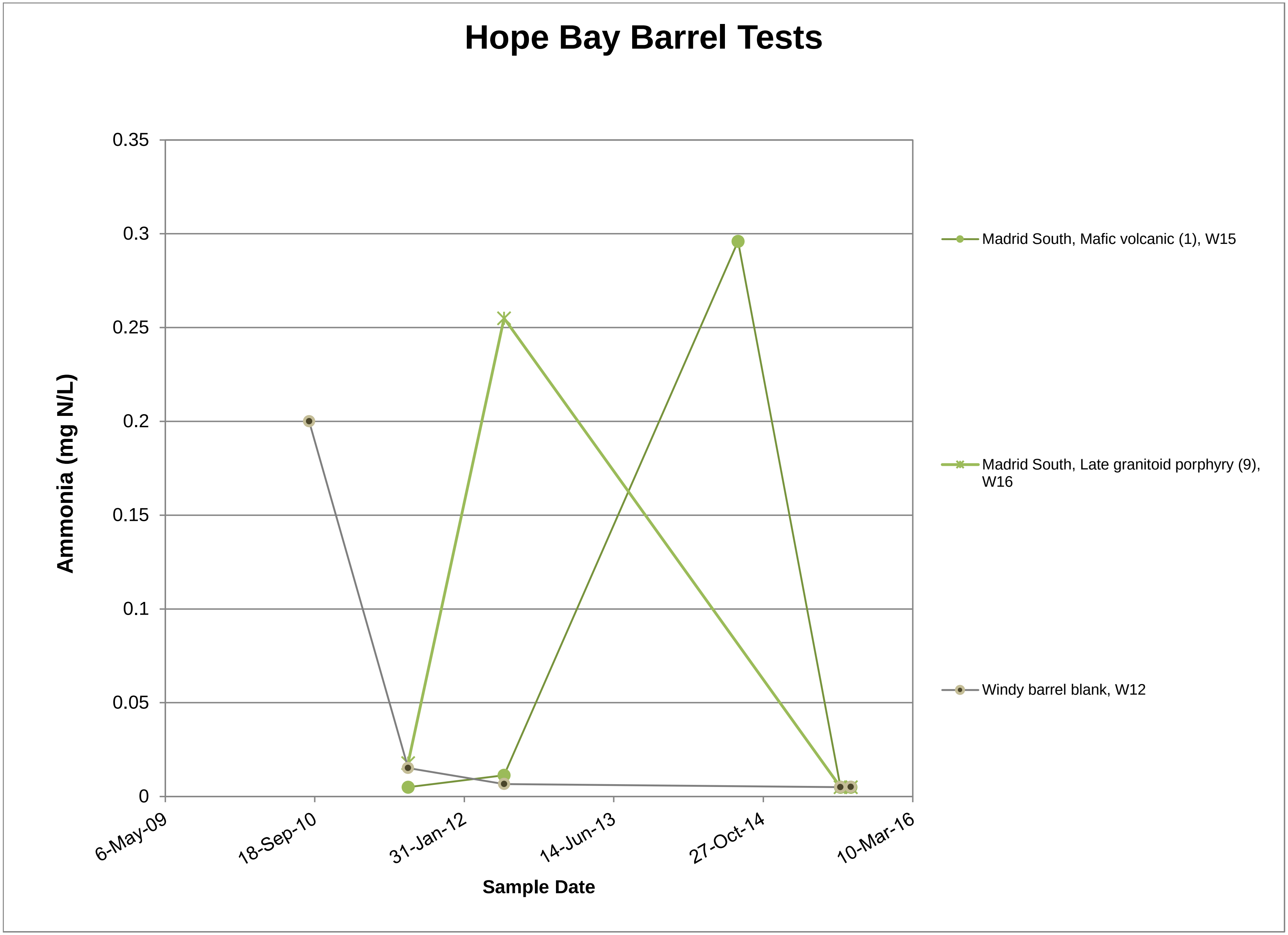

Hope Bay Barrel Tests
Alkalinity (mgCaCO3/L)
100
90
80
70
60
50
40
30
20
10
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

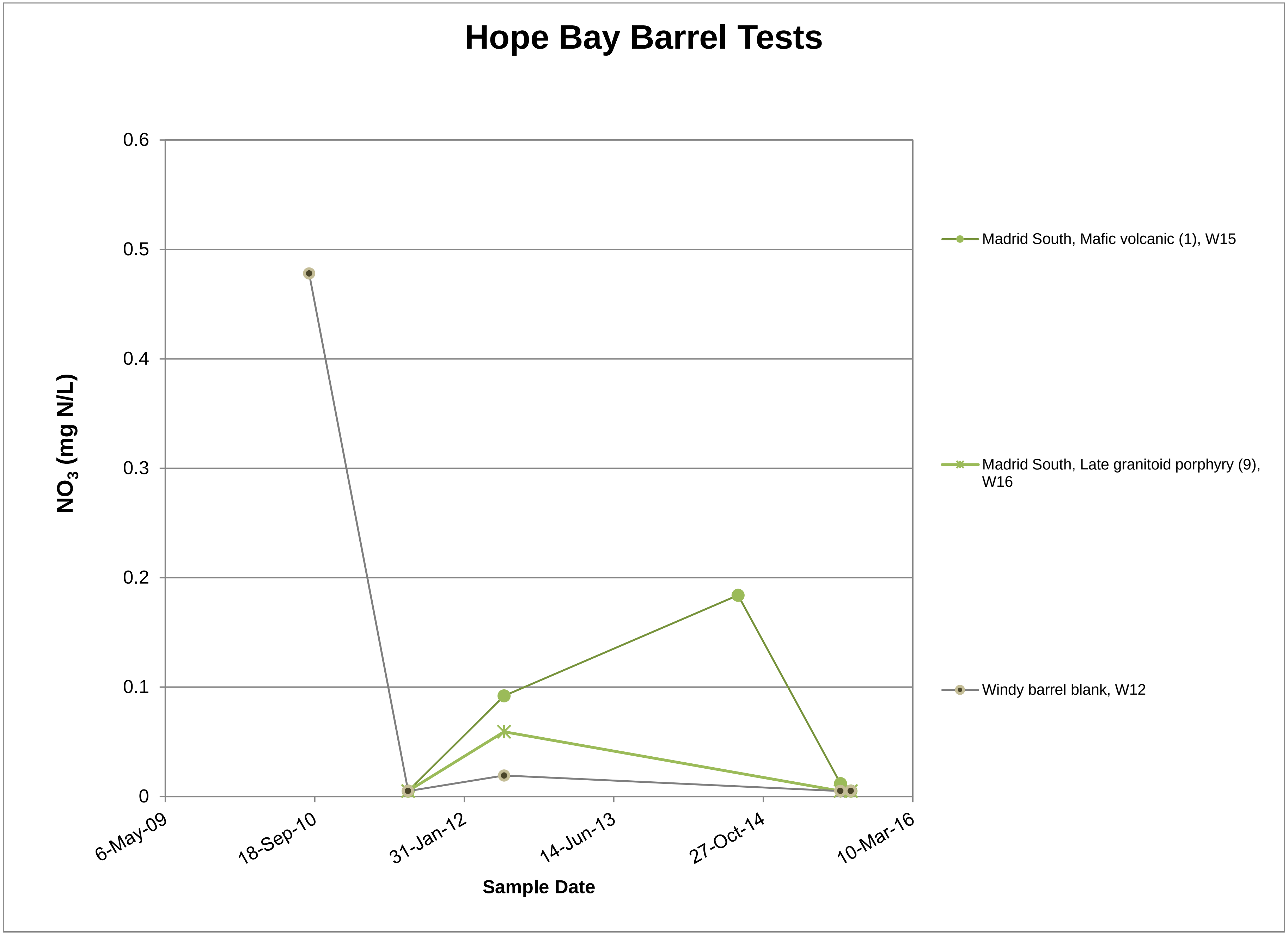

Hope Bay Barrel Tests
40
35
30
25
20
15
10
5
0
SO4 (mg/L)
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

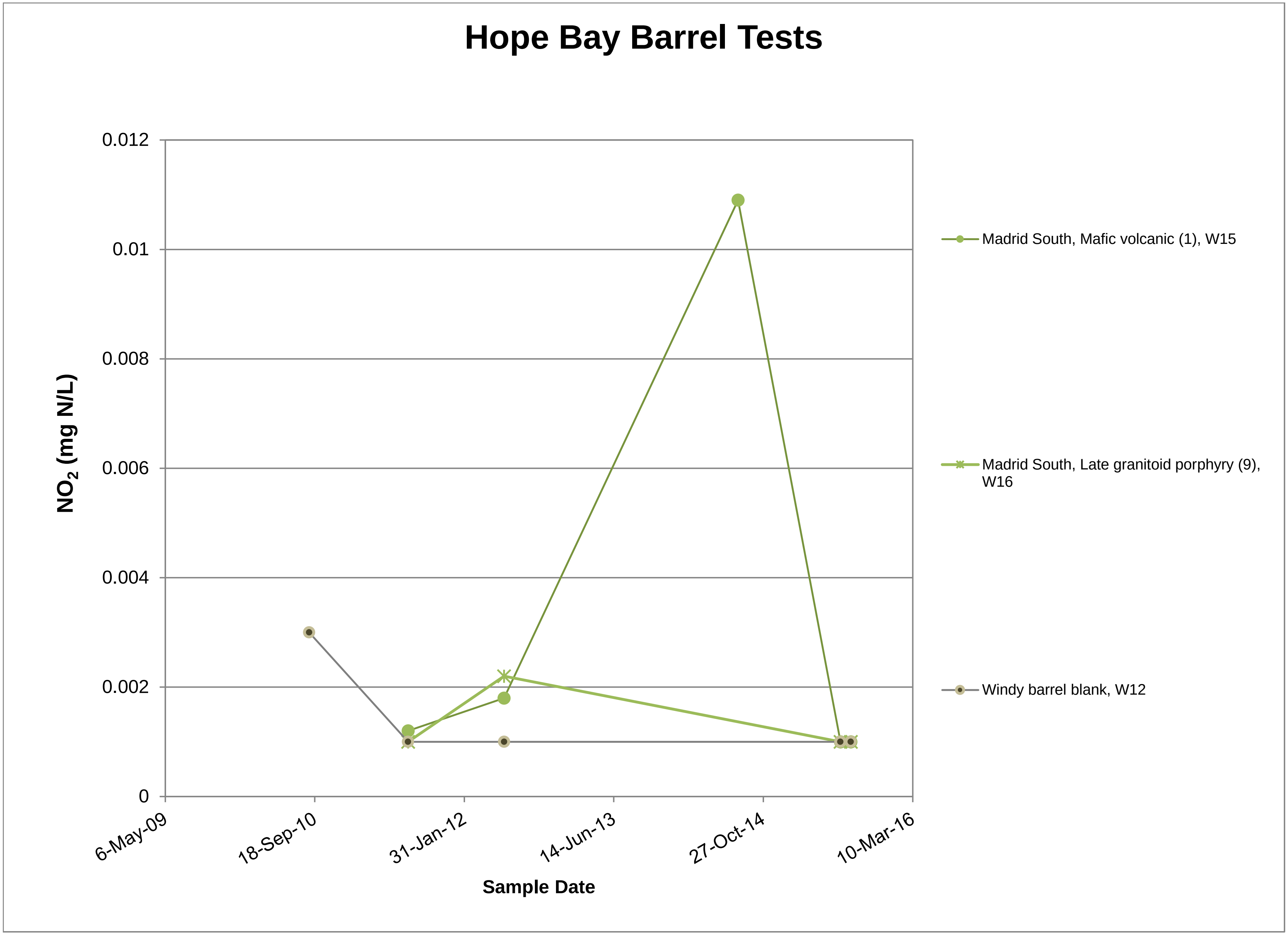

Hope Bay Barrel Tests
Br (mg/L)
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

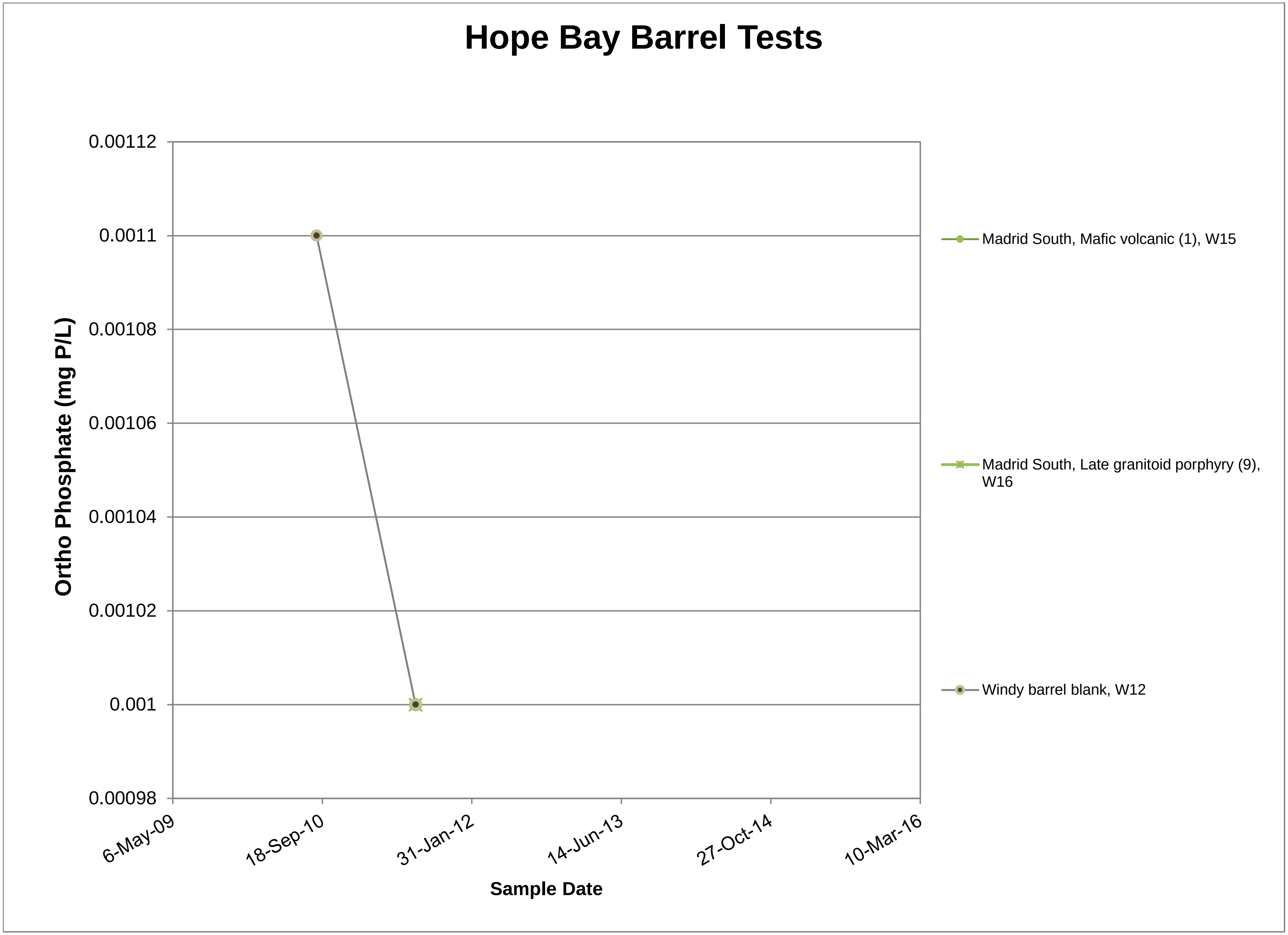

Hope Bay Barrel Tests
Cl (mg/L)
30
25
20
15
10
5
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

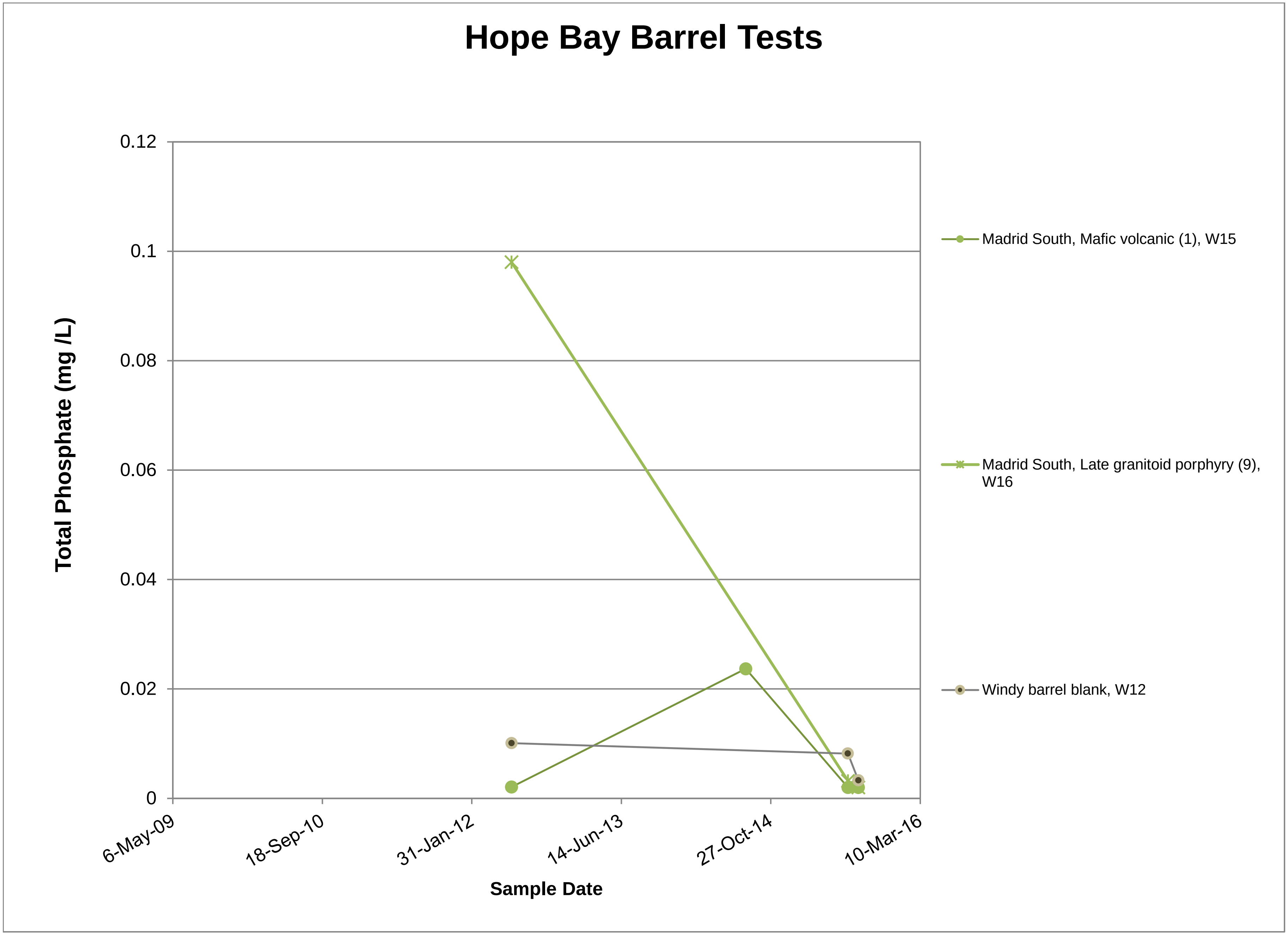

Hope Bay Barrel Tests
F (mg/L)
0.25
0.2
0.15
0.1
0.05
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

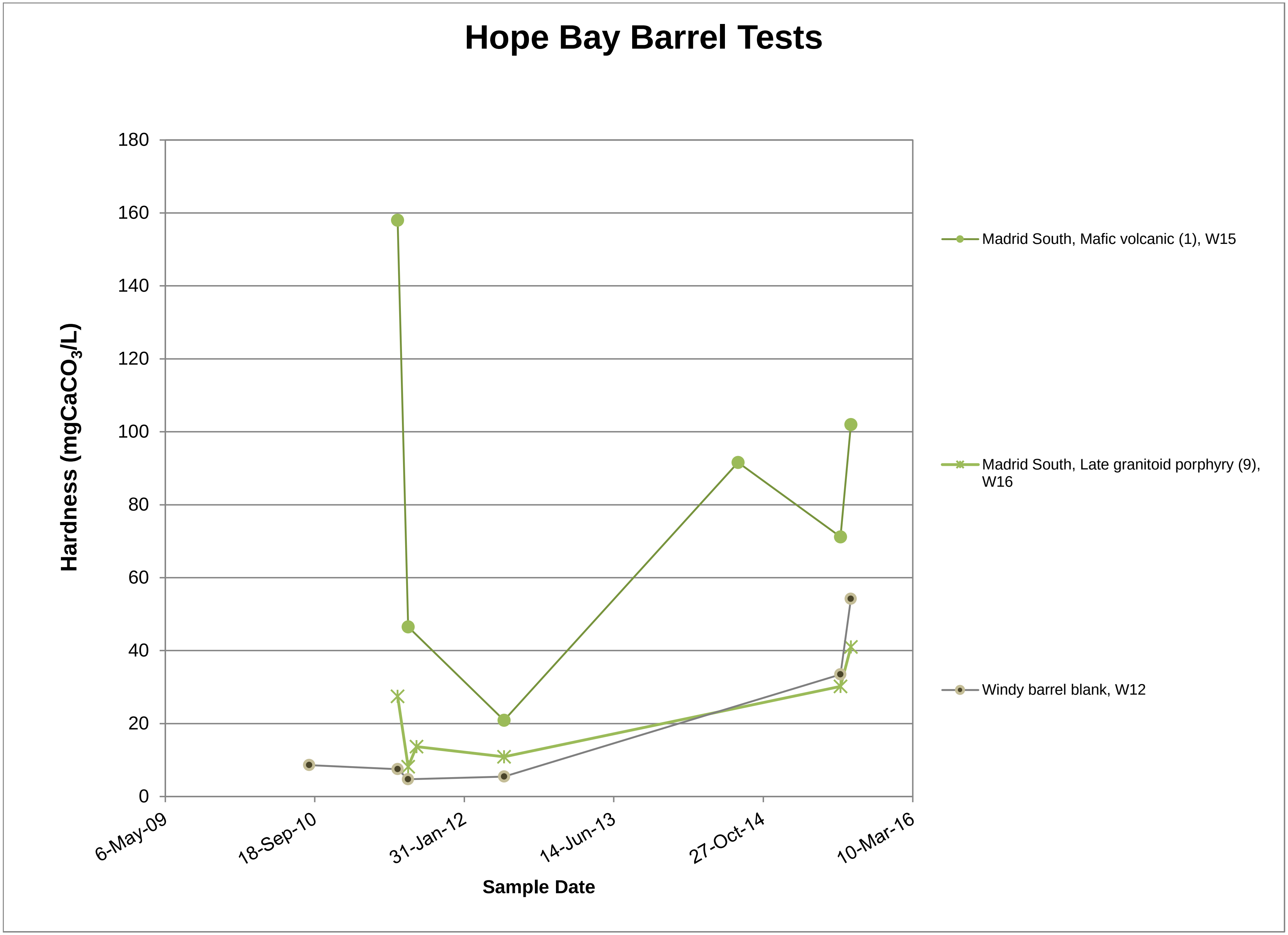

Hope Bay Barrel Tests
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
Ammonia (mg N/L)
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

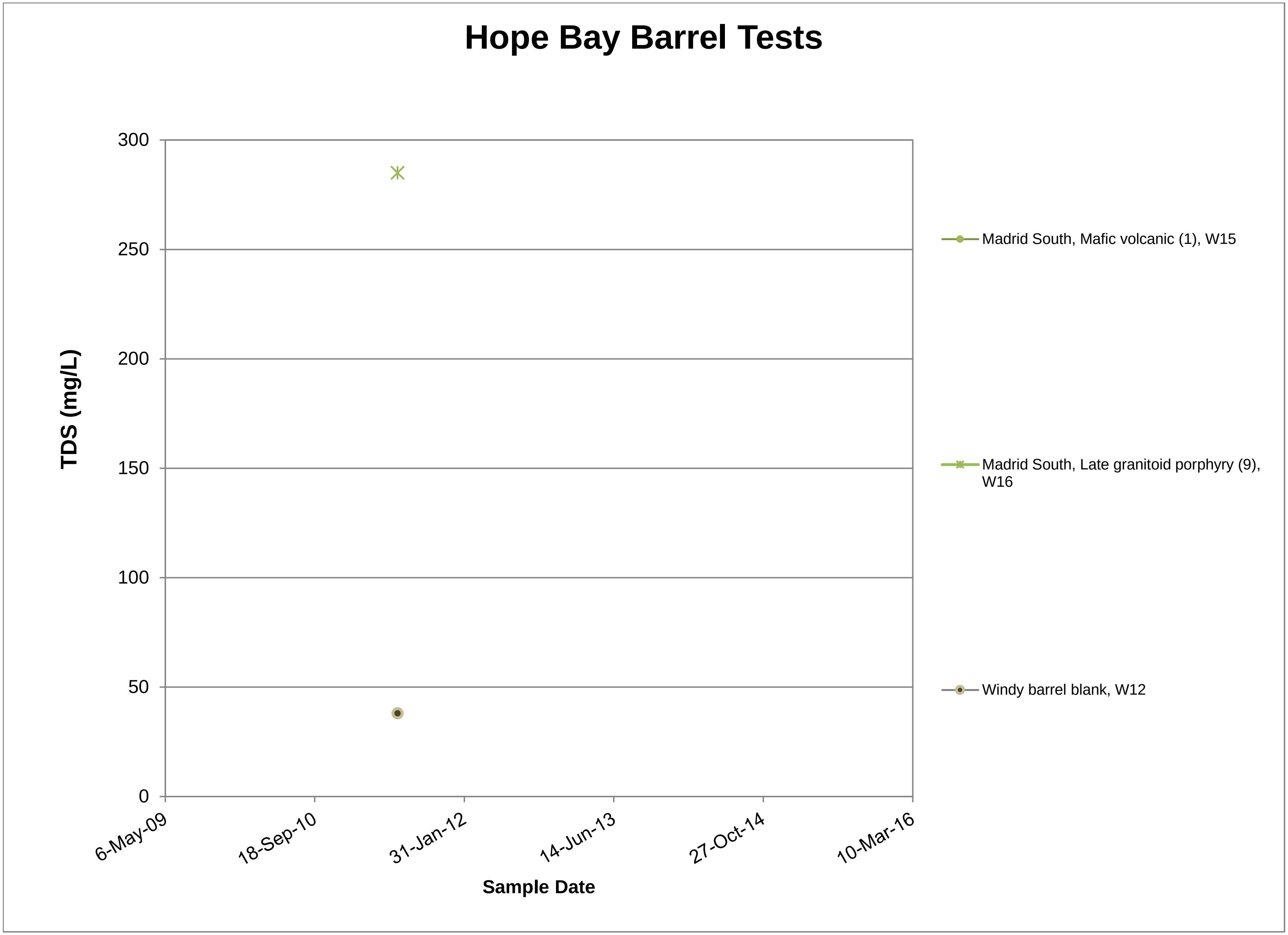

Hope Bay Barrel Tests
0.6
0.5
0.4
0.3
0.2
0.1
0
NO_3 (mg N/L)
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

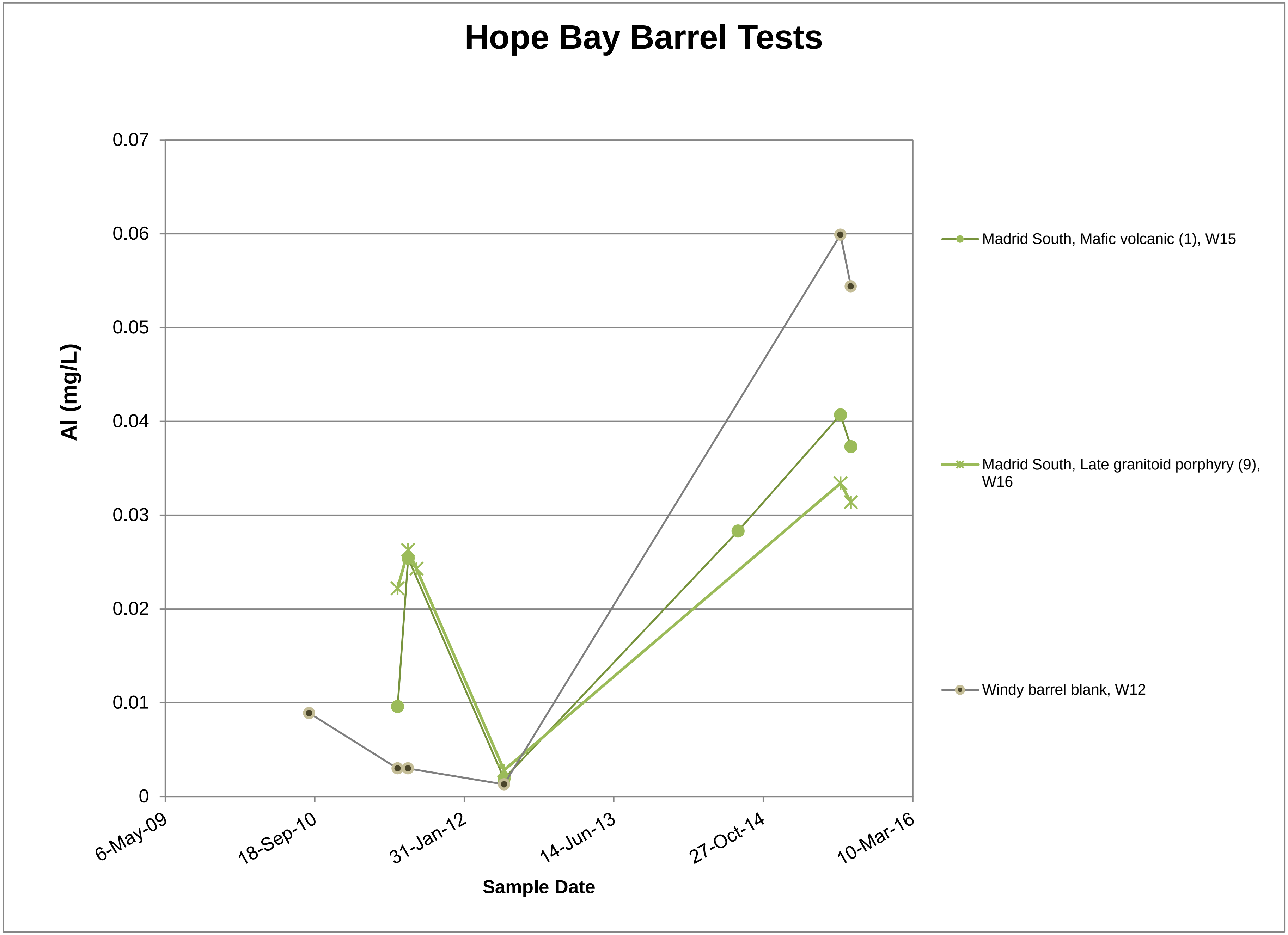

Hope Bay Barrel Tests
0.012
0.01
0.008
0.006
0.004
0.002
0
NO2 (mg N/L)
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

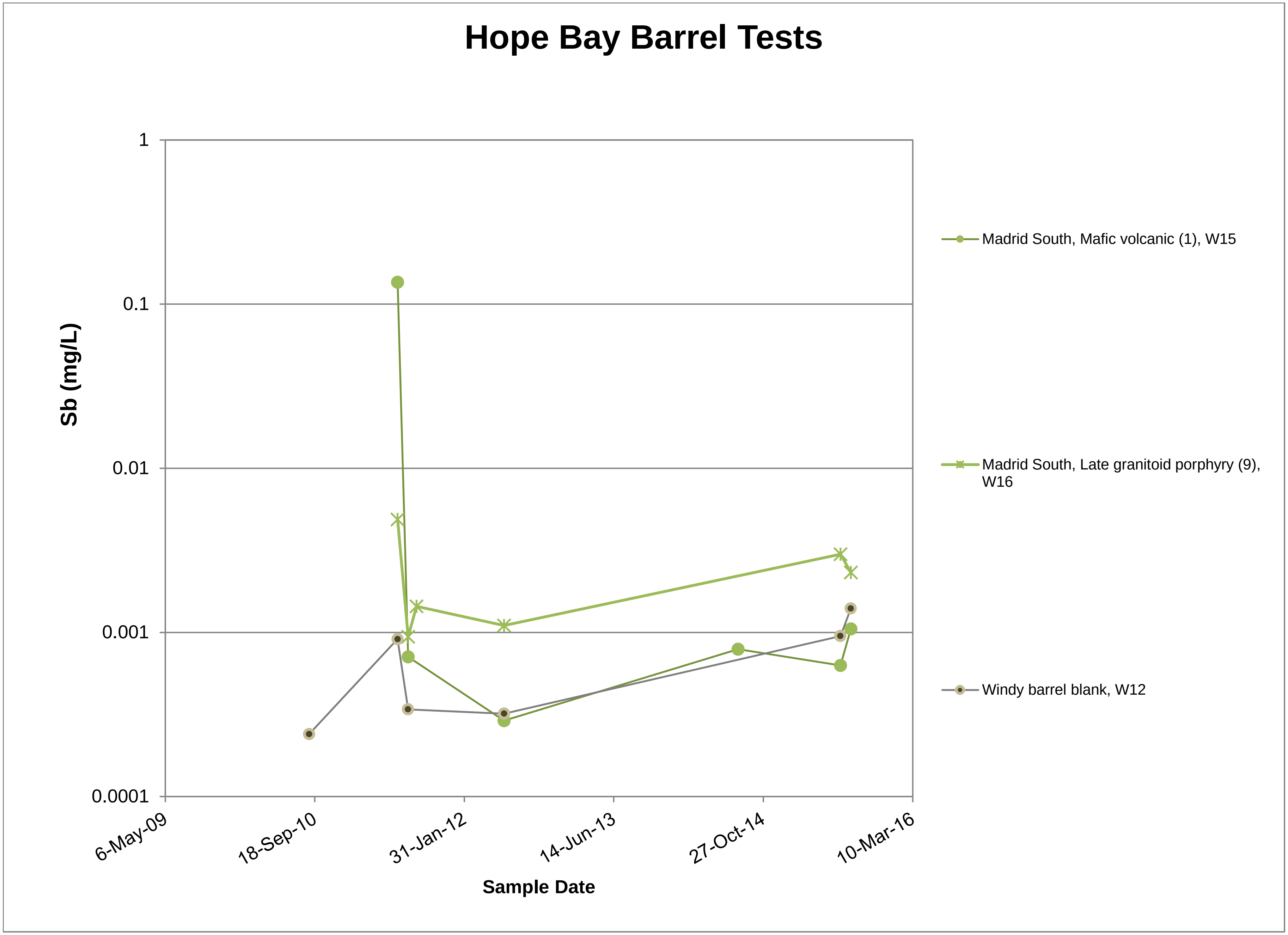

Hope Bay Barrel Tests
Ortho Phosphate (mg P/L)
0.00112
0.0011
0.00108
0.00106
0.00104
0.00102
0.001
0.00098
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

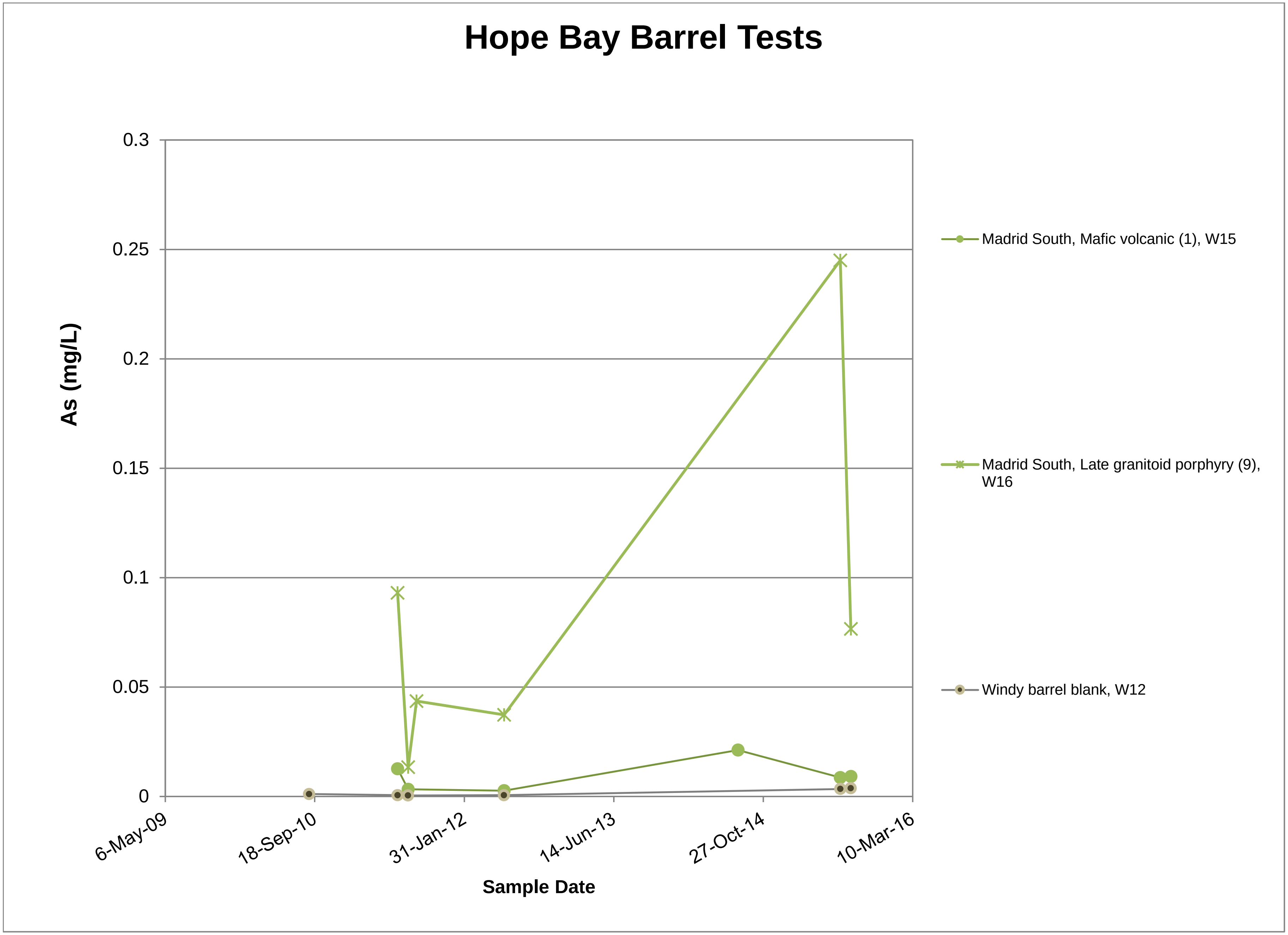

Hope Bay Barrel Tests
Total Phosphate (mg /L)
0.12
0.1
0.08
0.06
0.04
0.02
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

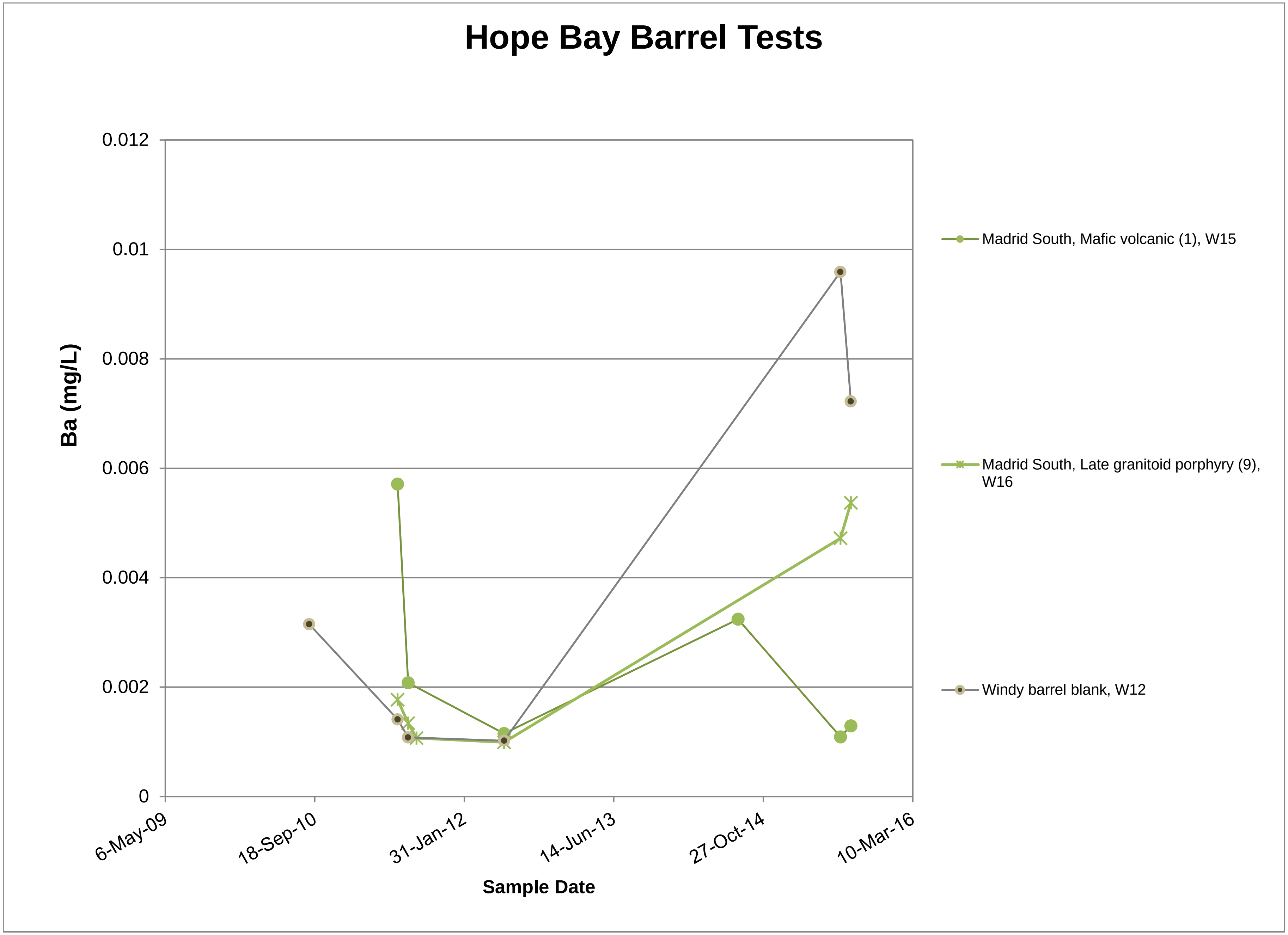

Hope Bay Barrel Tests
Hardness (mgCaCO3/L)
180
160
140
120
100
80
60
40
20
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

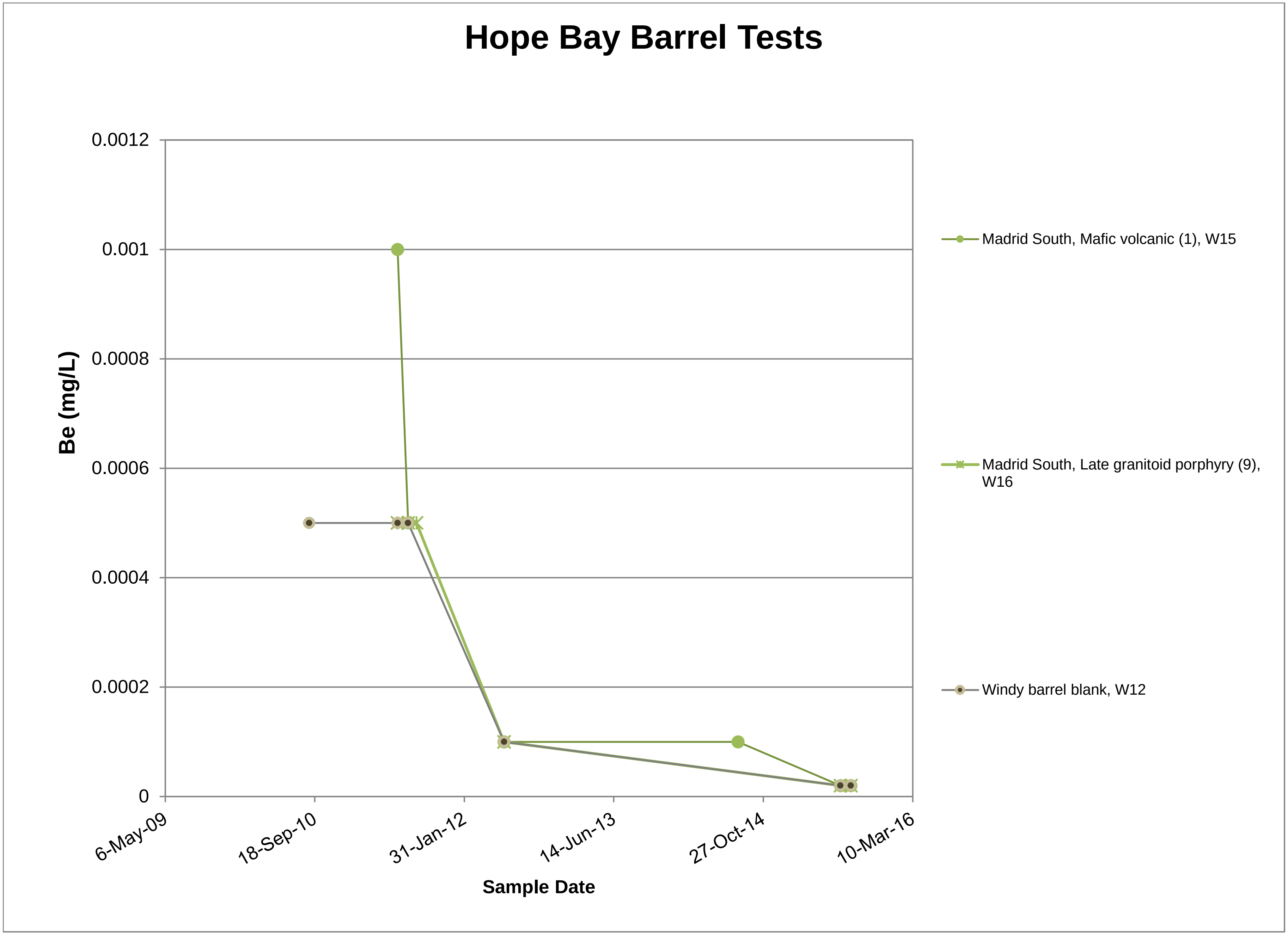

Hope Bay Barrel Tests
TDS (mg/L)
300
250
200
150
100
50
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

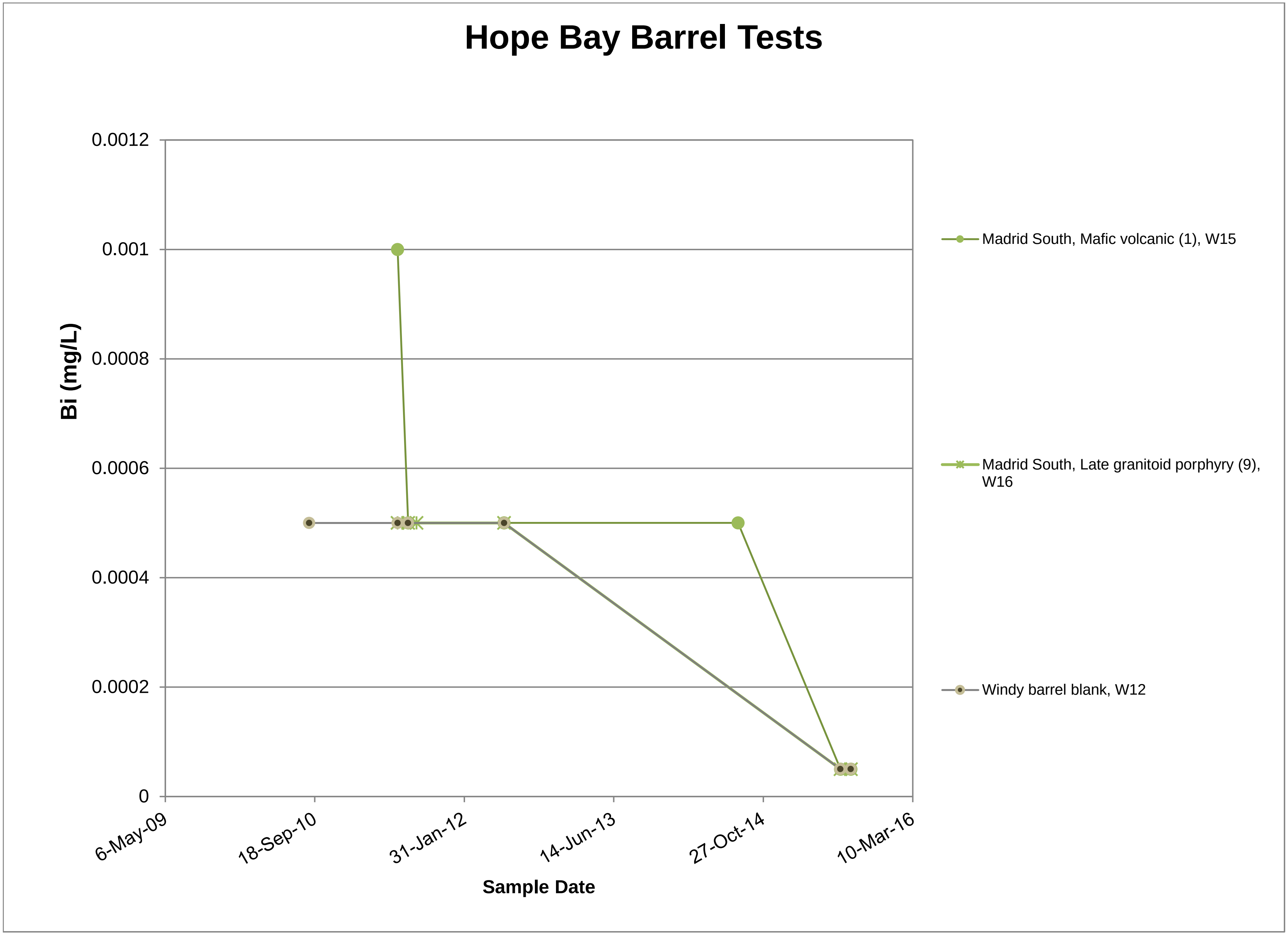

Hope Bay Barrel Tests
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
Al (mg/L)
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

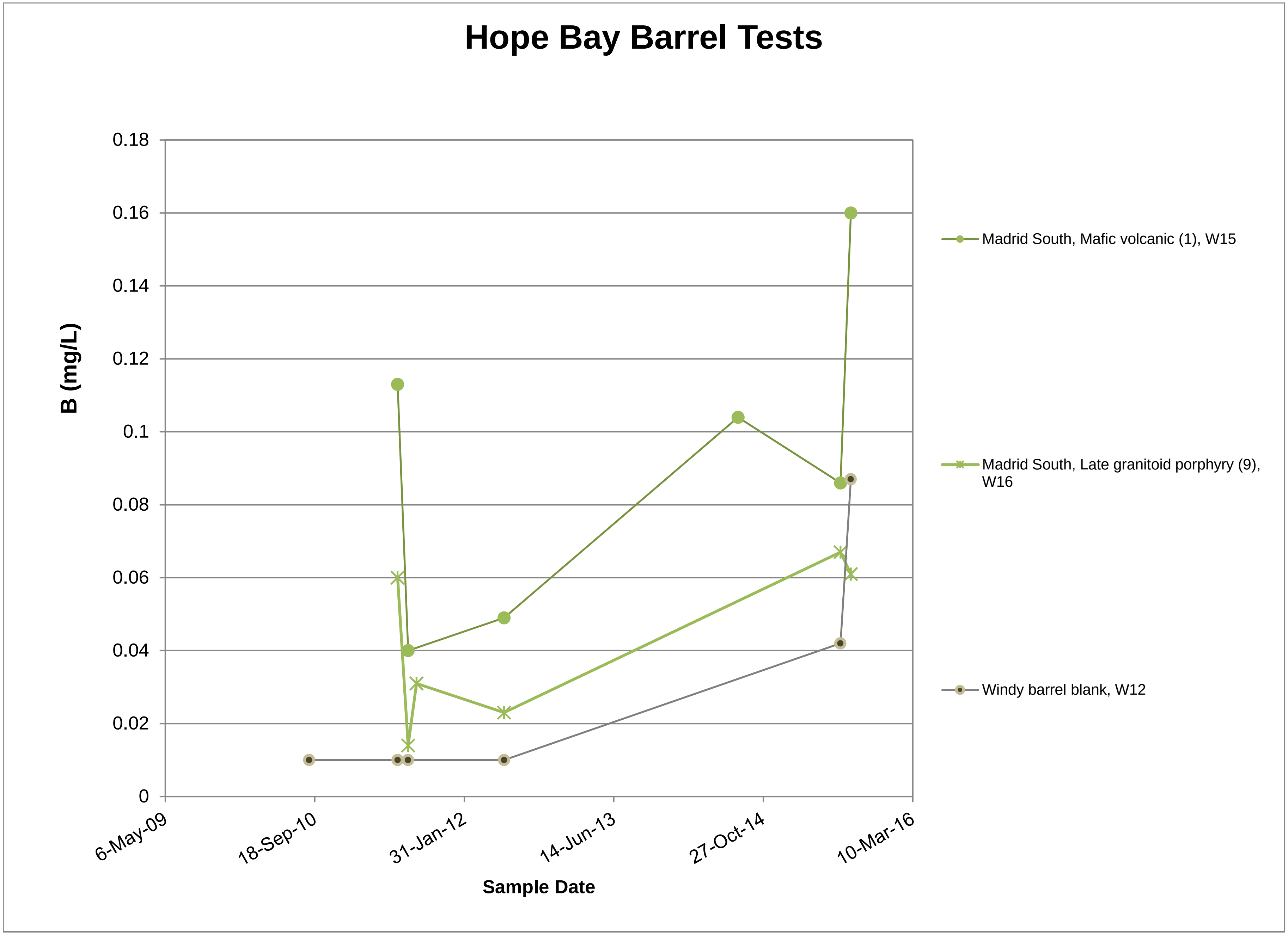

Hope Bay Barrel Tests
Sb (mg/L)
1
0.1
0.01
0.001
0.0001
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

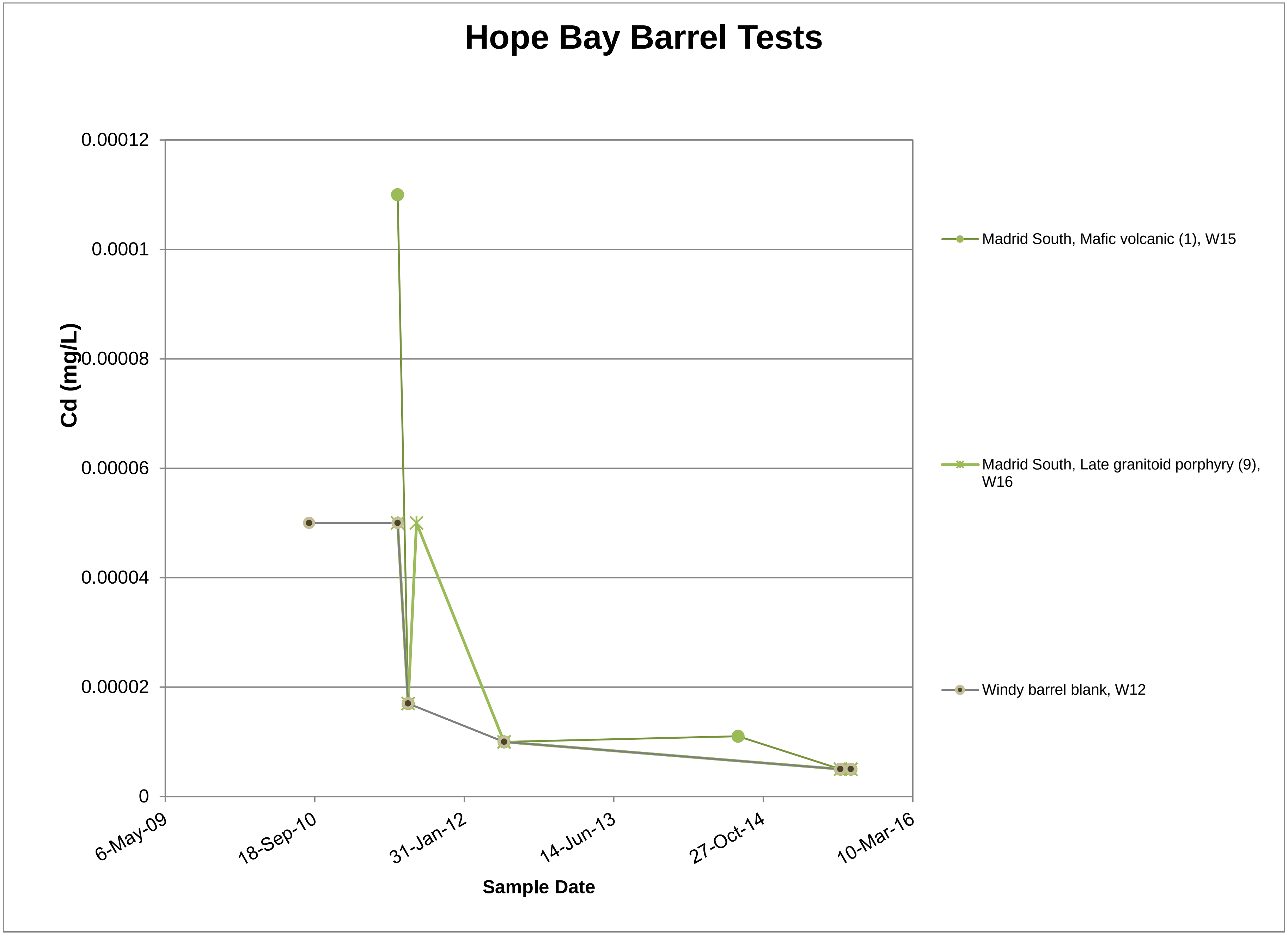

Hope Bay Barrel Tests
As (mg/L)
0.3
0.25
0.2
0.15
0.1
0.05
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

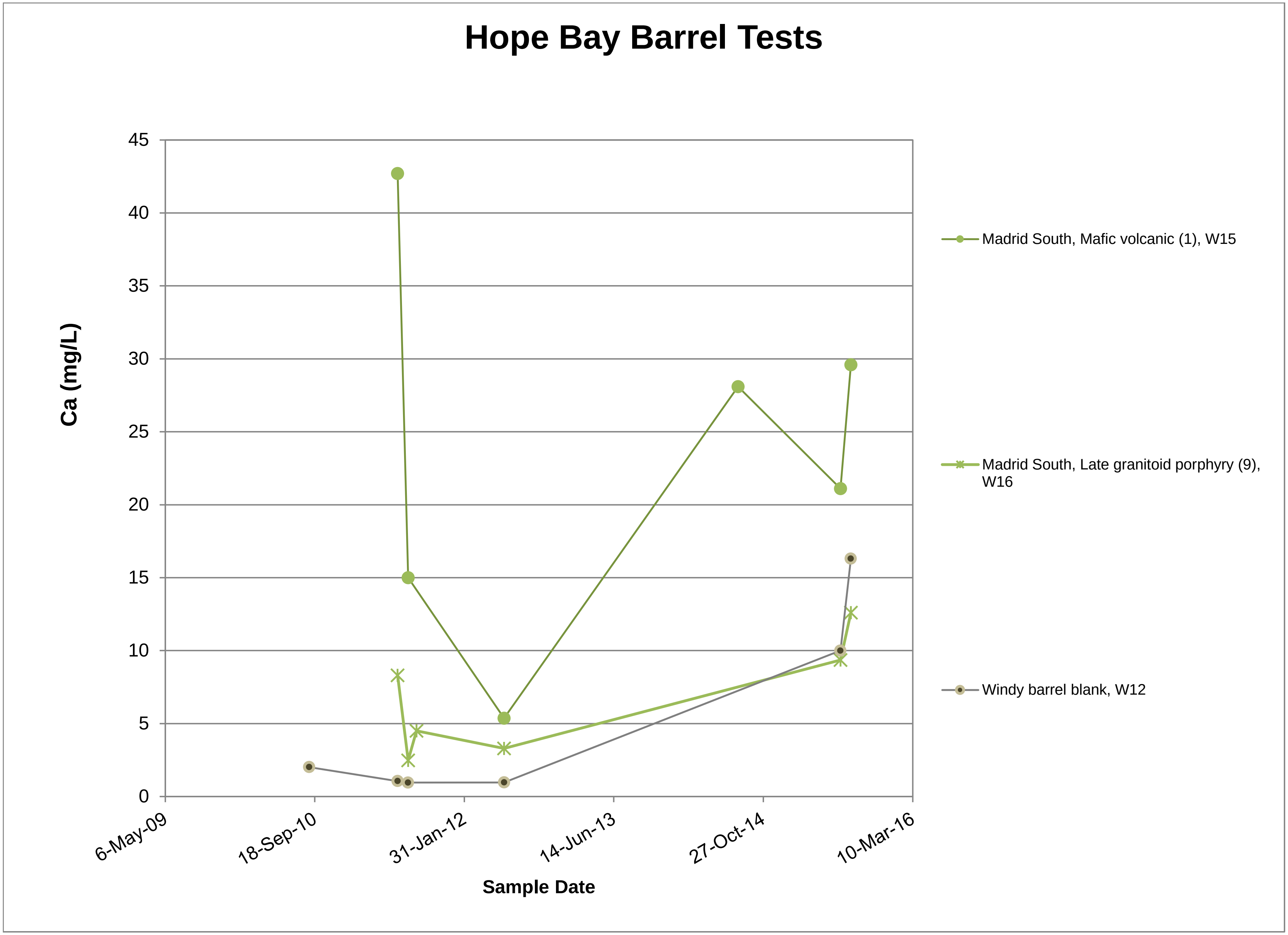

Hope Bay Barrel Tests
Ba (mg/L)
0.012
0.01
0.008
0.006
0.004
0.002
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

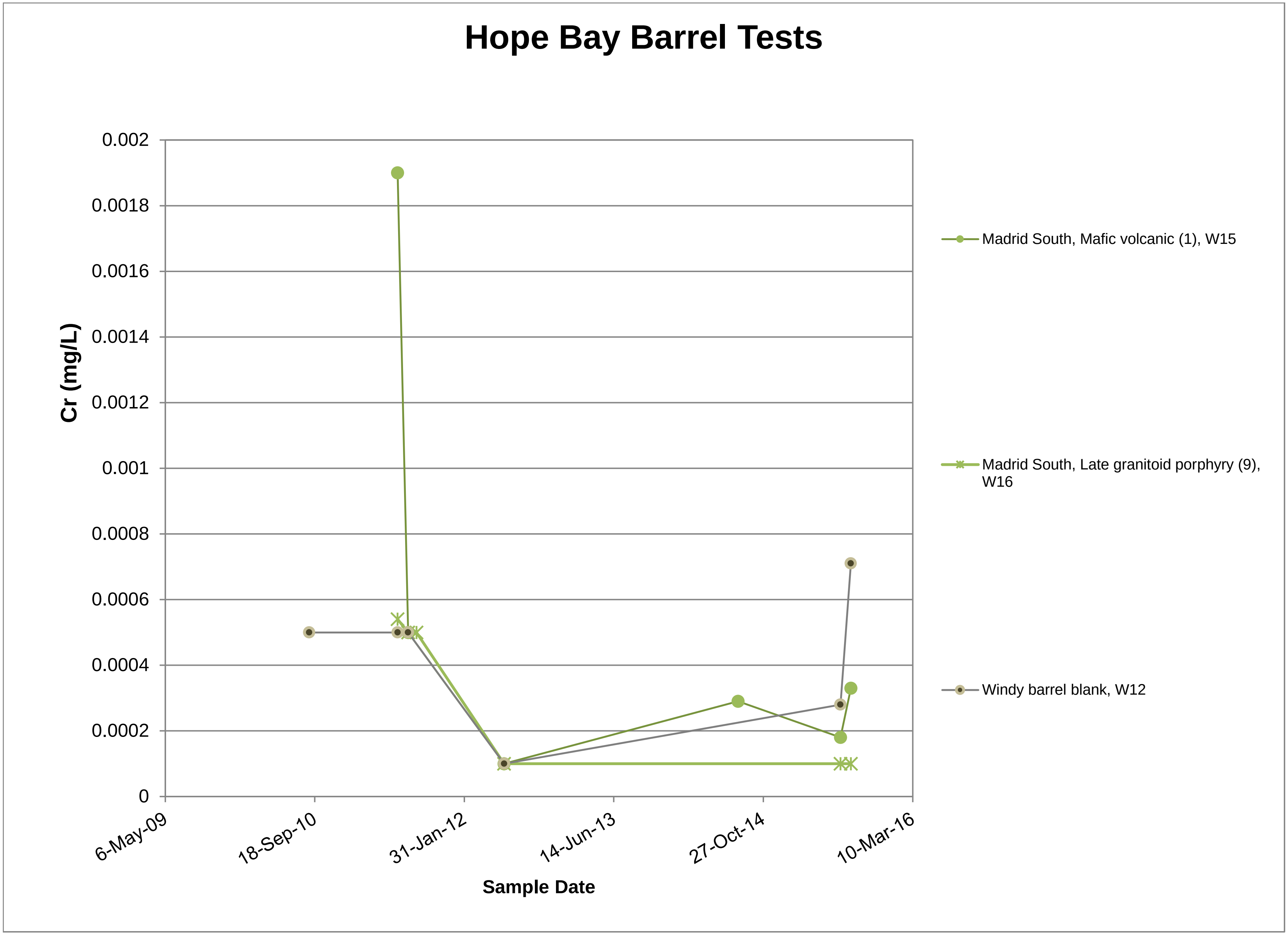

Hope Bay Barrel Tests
Be (mg/L)
0.0012
0.001
0.0008
0.0006
0.0004
0.0002
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

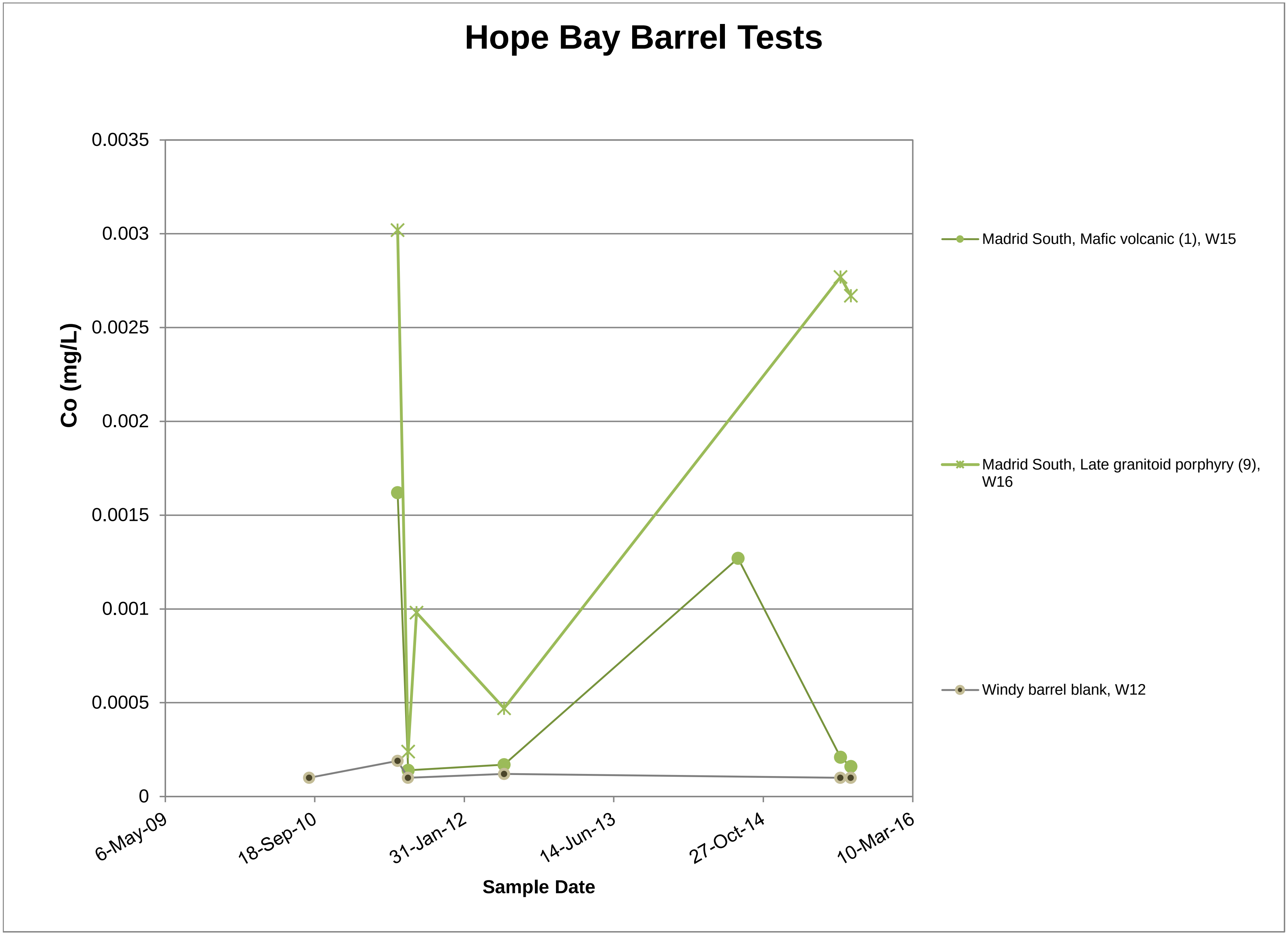

Hope Bay Barrel Tests
Bi (mg/L)
0.0012
0.001
0.0008
0.0006
0.0004
0.0002
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

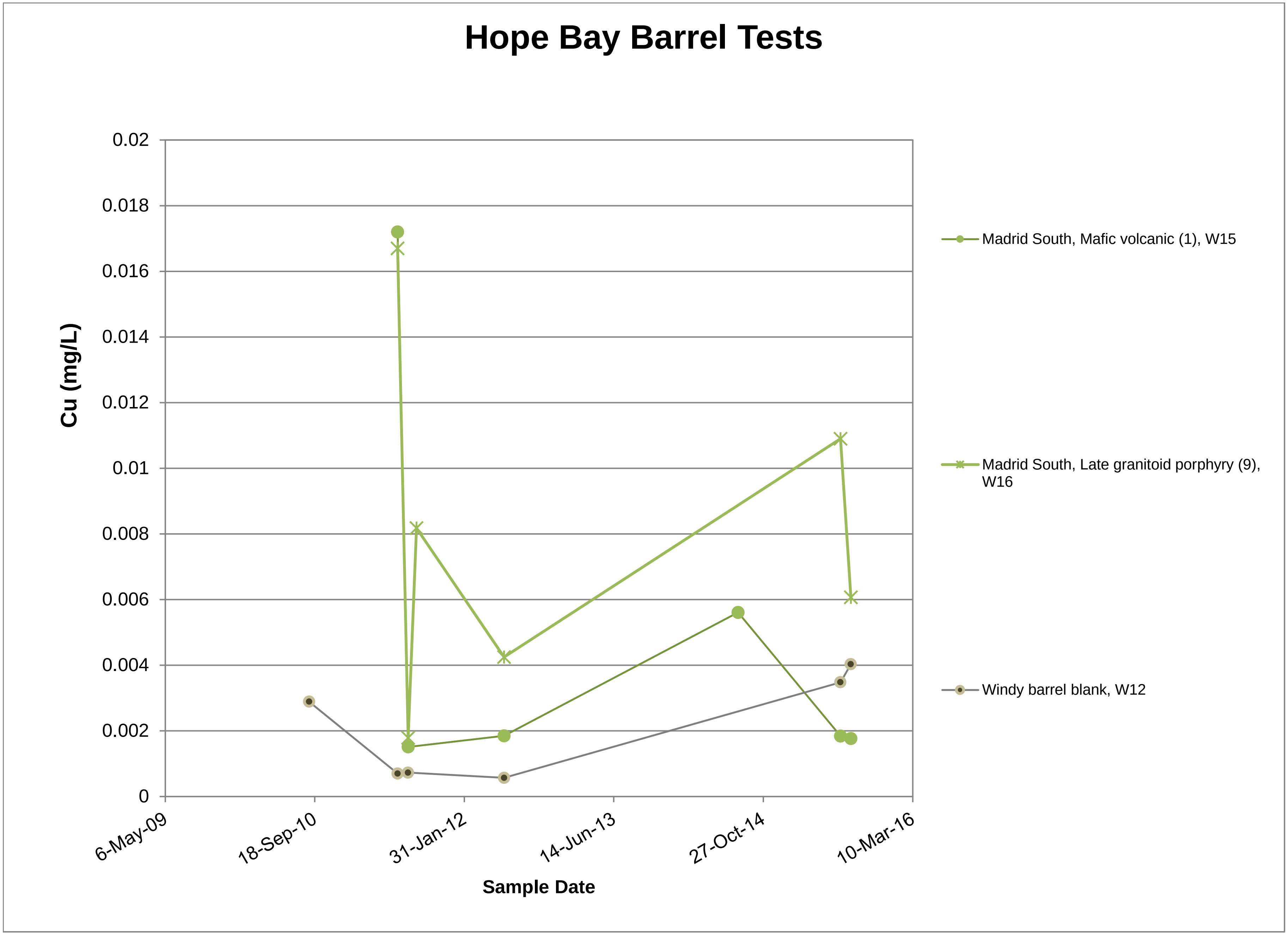

Hope Bay Barrel Tests
B (mg/L)
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

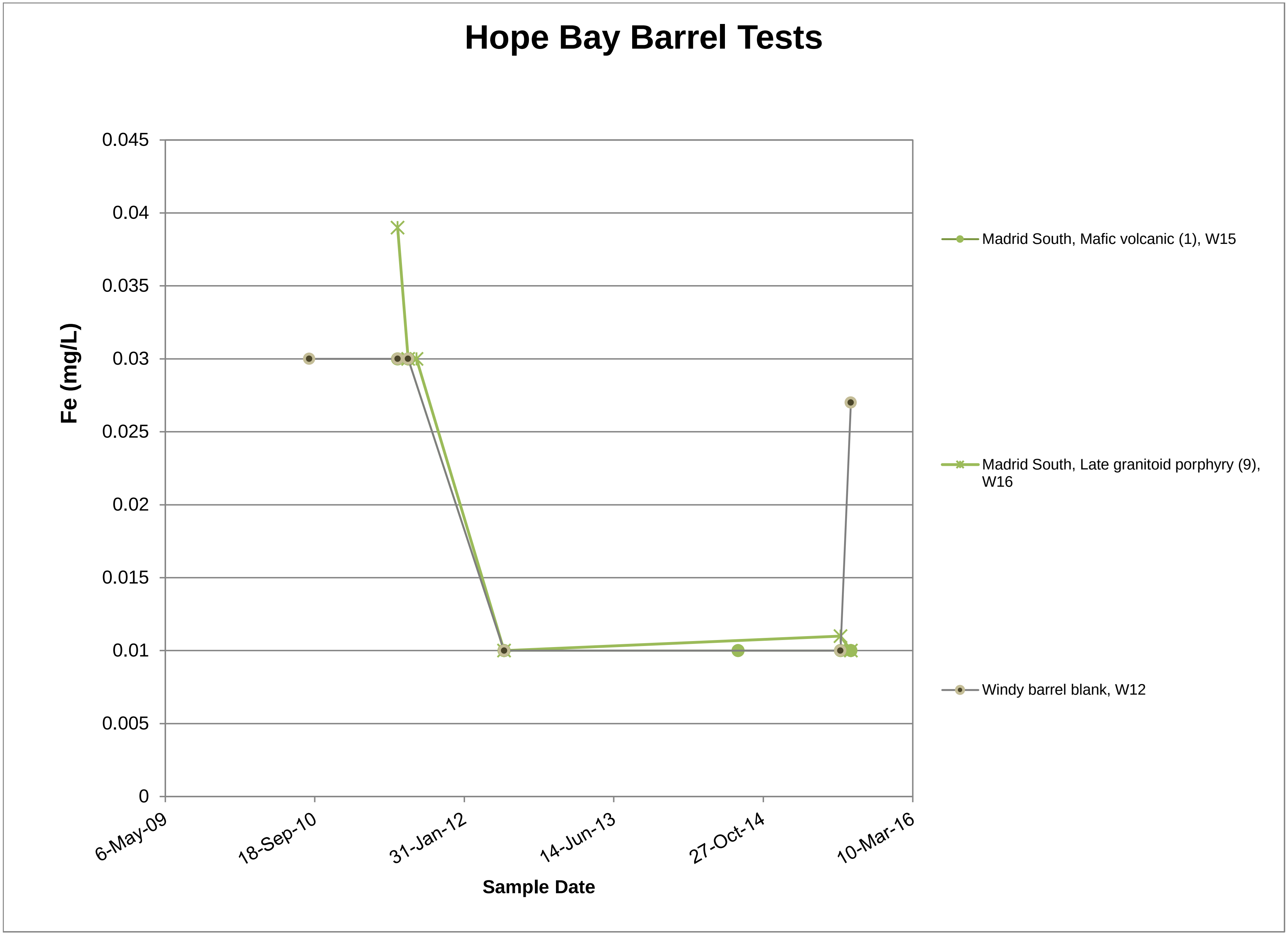

Hope Bay Barrel Tests
Cd (mg/L)
0.00012
0.0001
0.00008
0.00006
0.00004
0.00002
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

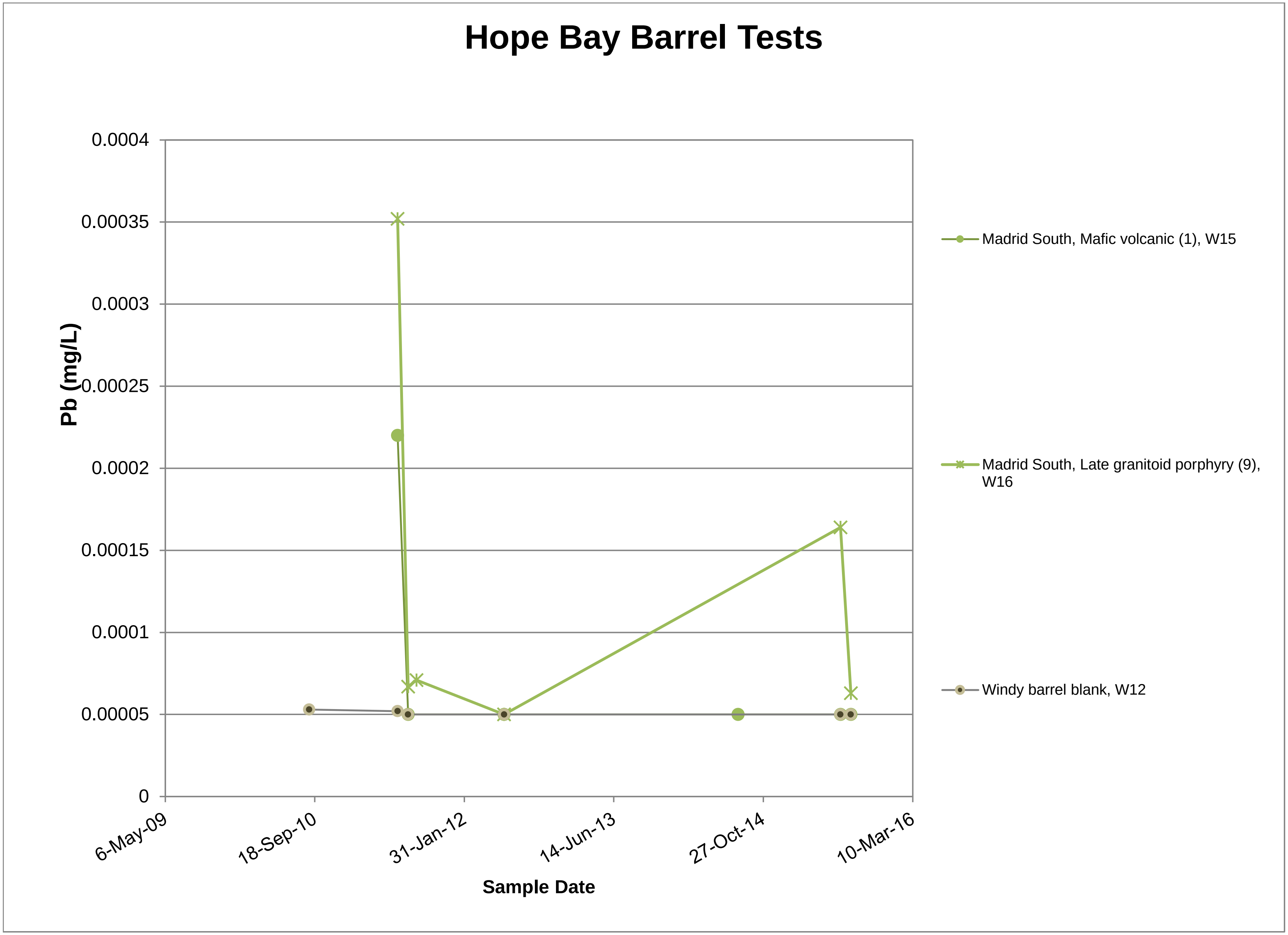

Hope Bay Barrel Tests
Ca (mg/L)
45
40
35
30
25
20
15
10
5
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

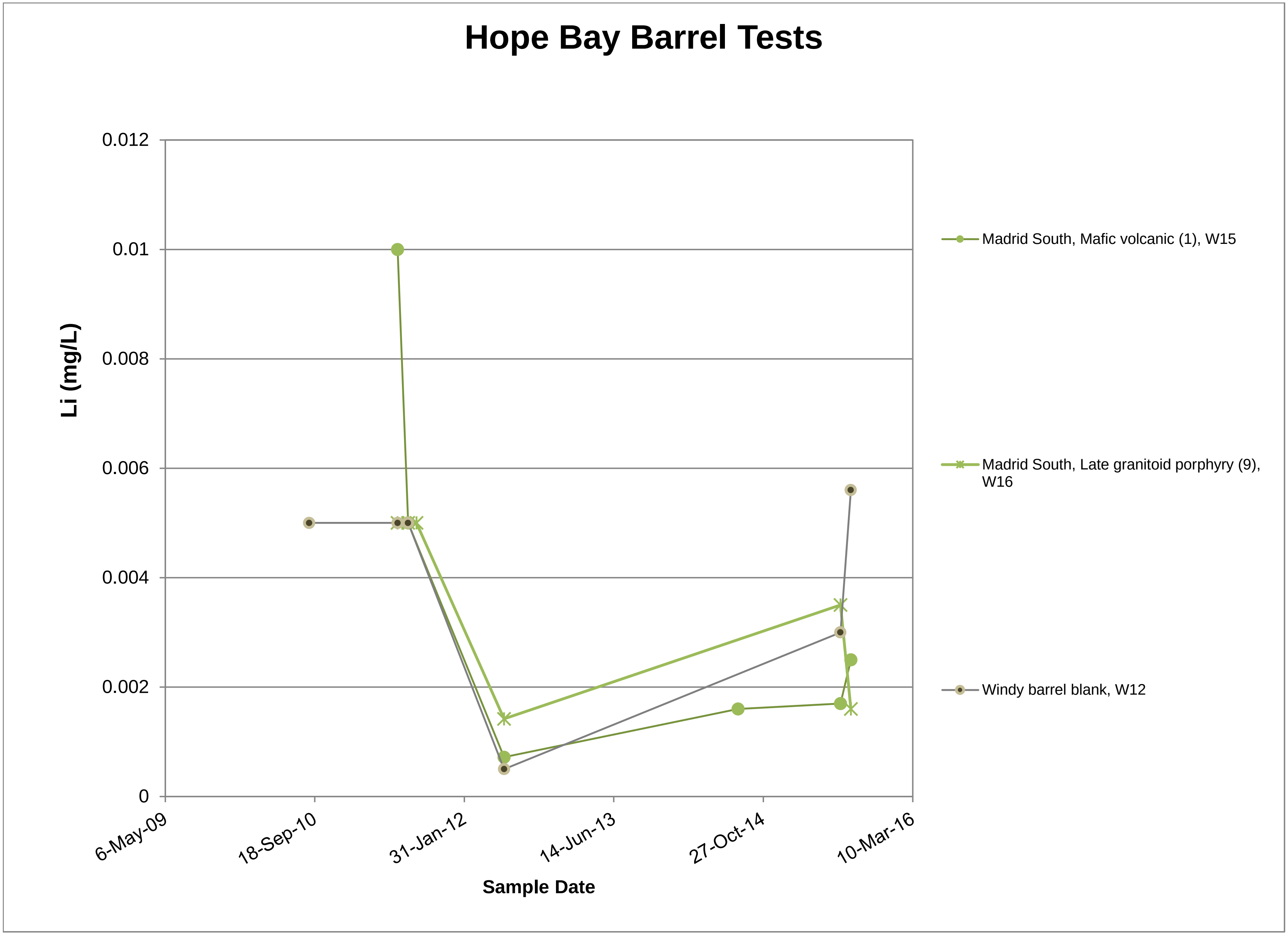

Hope Bay Barrel Tests
Cr (mg/L)
0.002
0.0018
0.0016
0.0014
0.0012
0.001
0.0008
0.0006
0.0004
0.0002
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

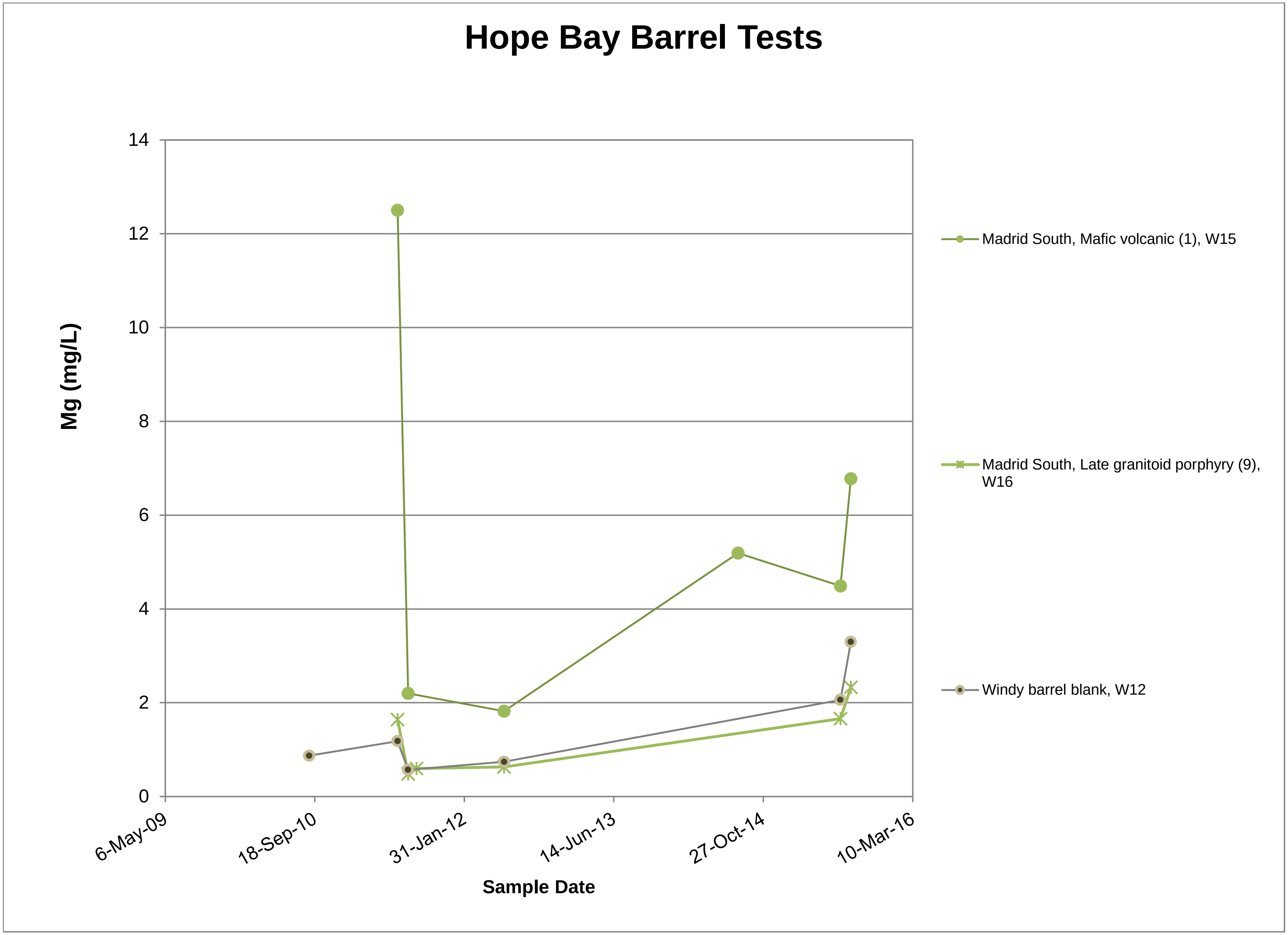

Hope Bay Barrel Tests
Co (mg/L)
0.0035
0.003
0.0025
0.002
0.0015
0.001
0.0005
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

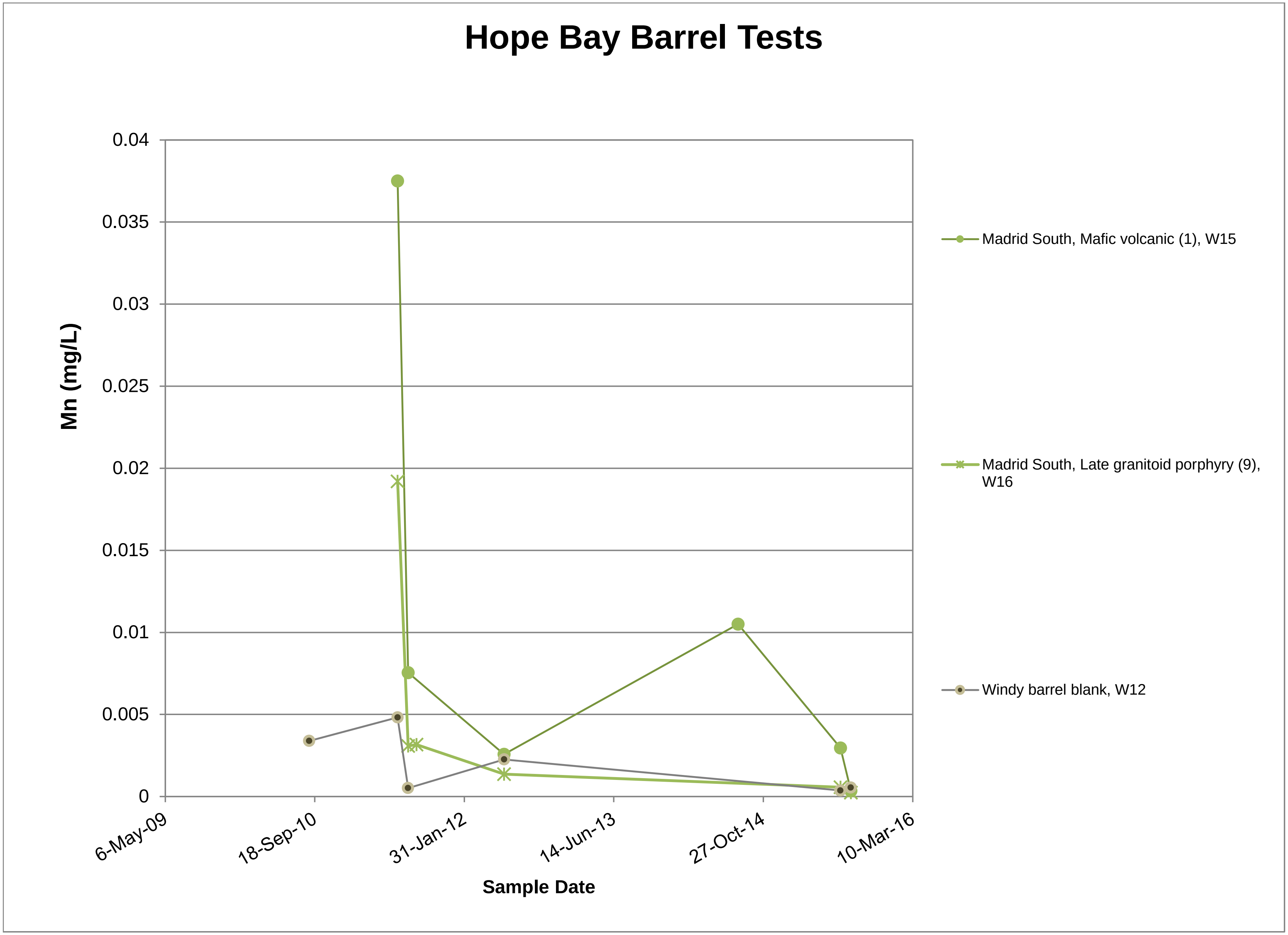

Hope Bay Barrel Tests
Cu (mg/L)
0.02
0.018
0.016
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

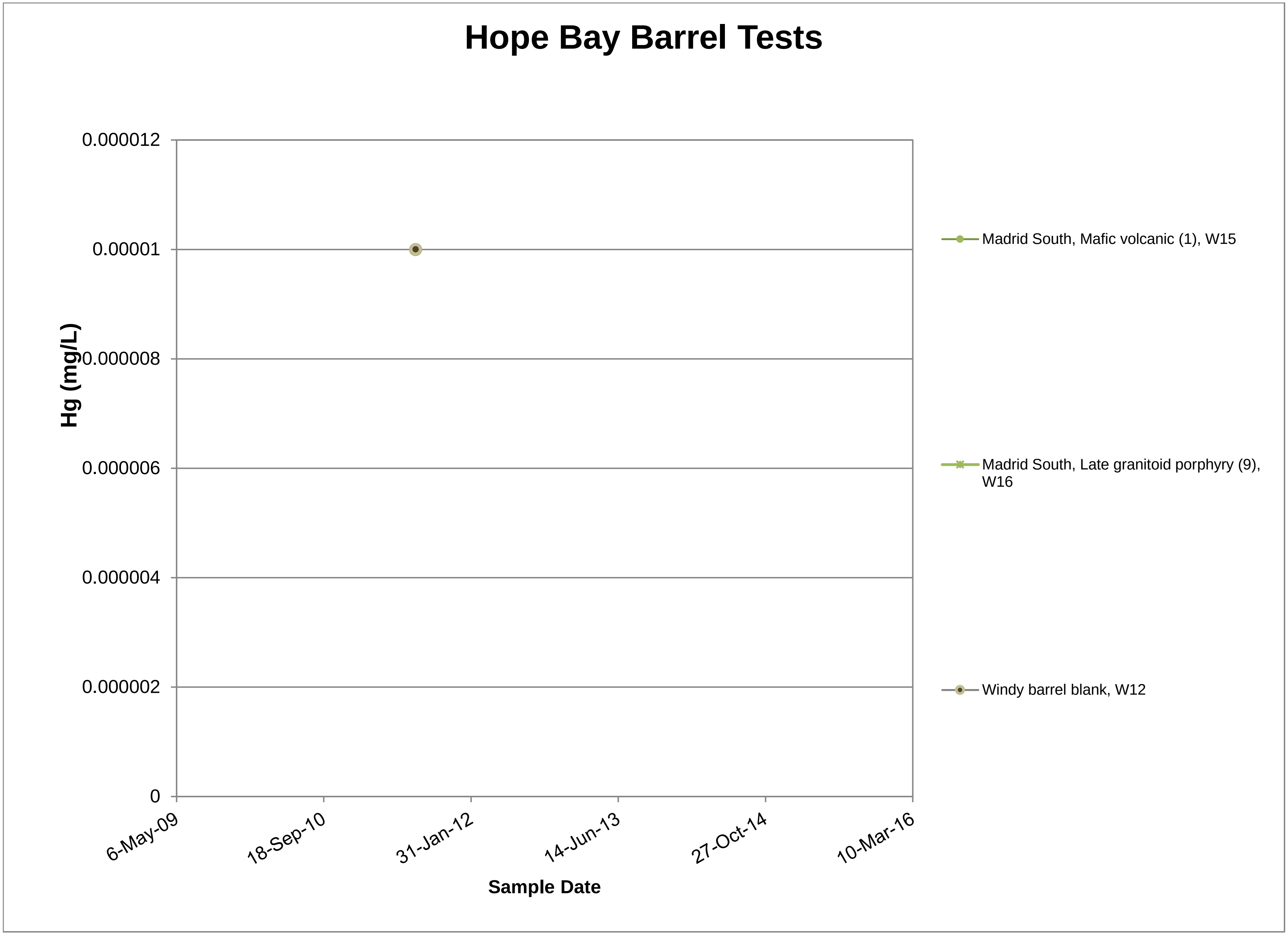

Hope Bay Barrel Tests
Fe (mg/L)
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

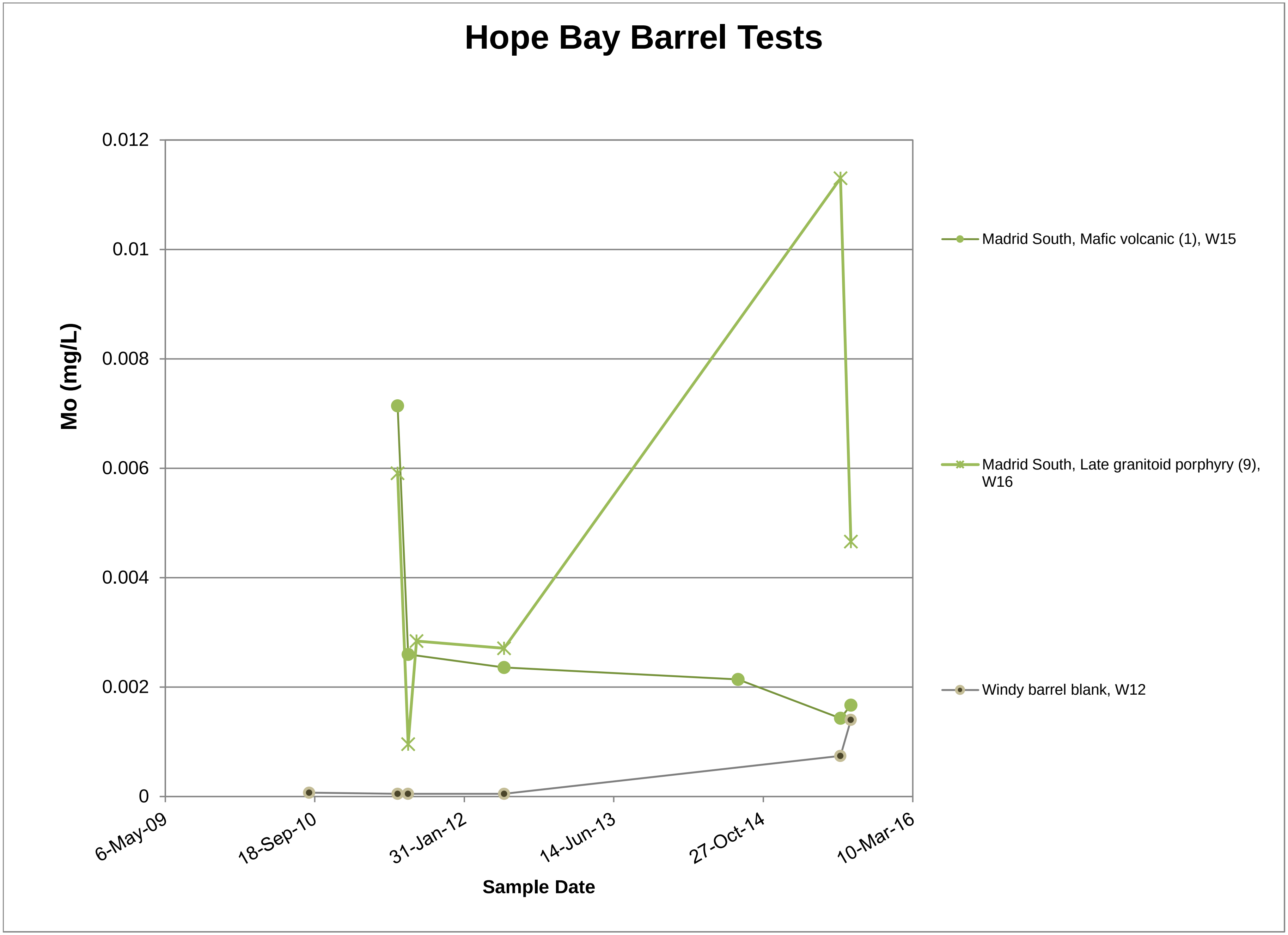

Hope Bay Barrel Tests
Pb (mg/L)
0.0004
0.00035
0.0003
0.00025
0.0002
0.00015
0.0001
0.00005
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

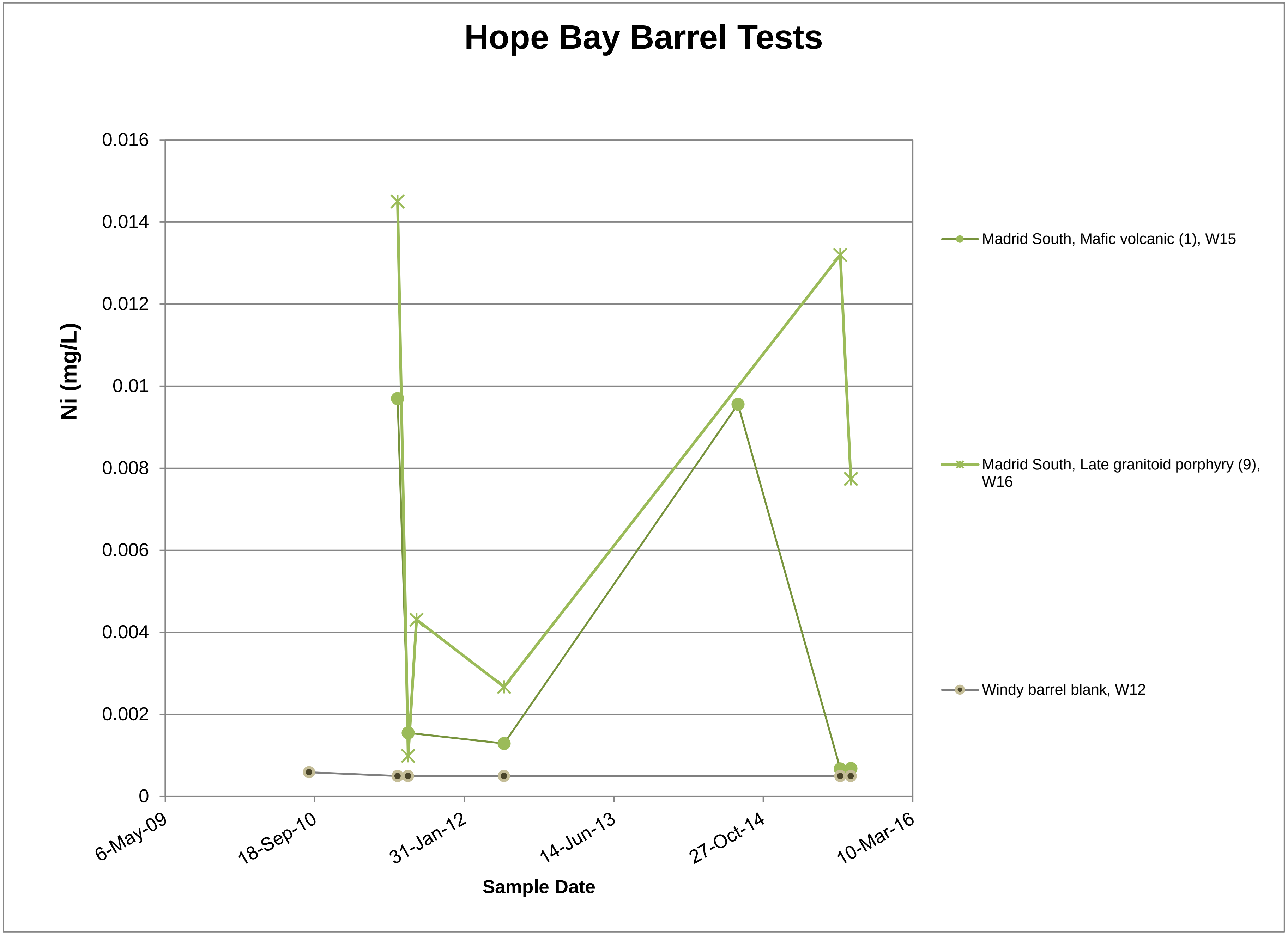

Hope Bay Barrel Tests
Li (mg/L)
0.012
0.01
0.008
0.006
0.004
0.002
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

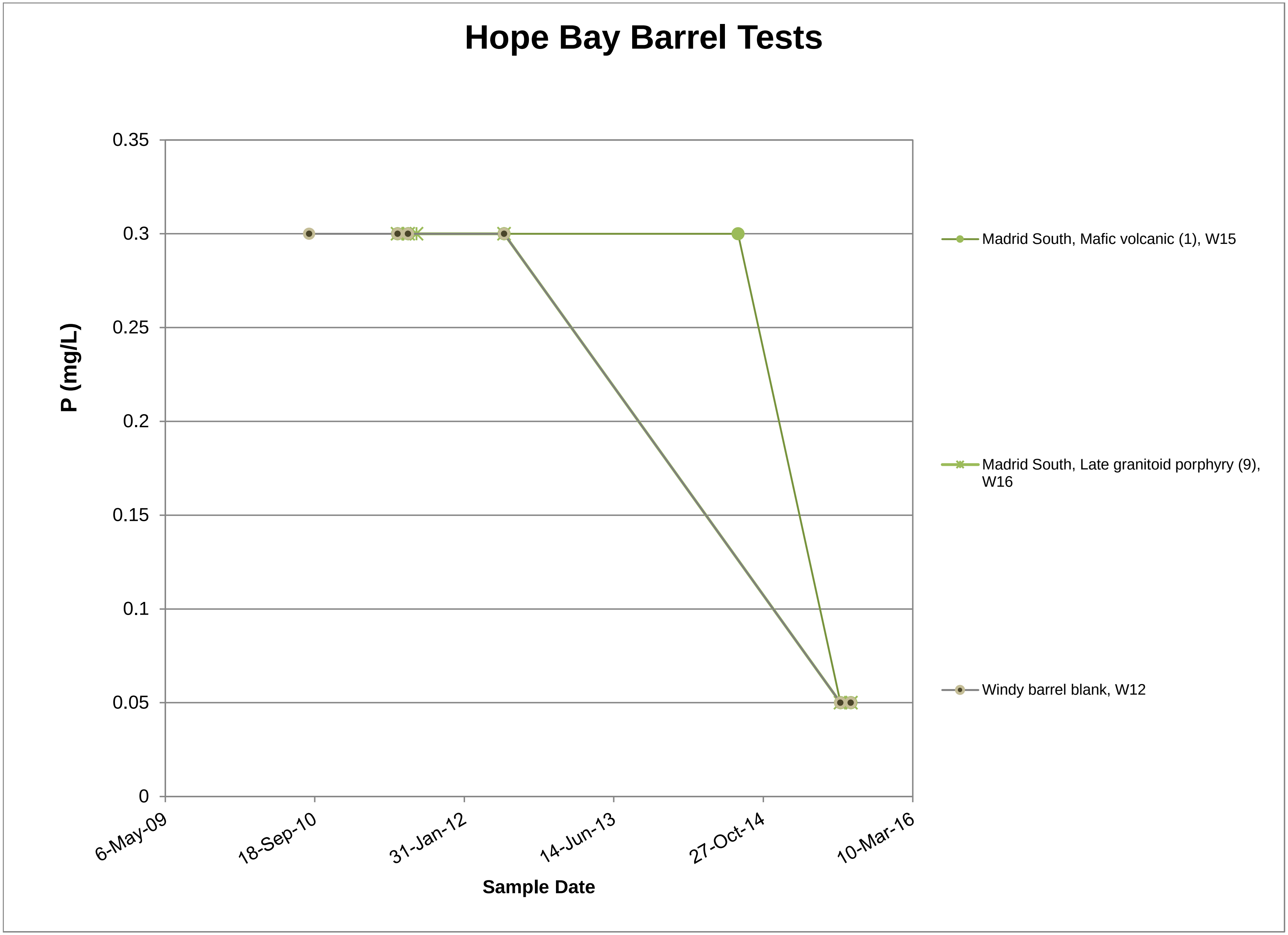

Hope Bay Barrel Tests
Mg (mg/L)
14
12
10
8
6
4
2
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

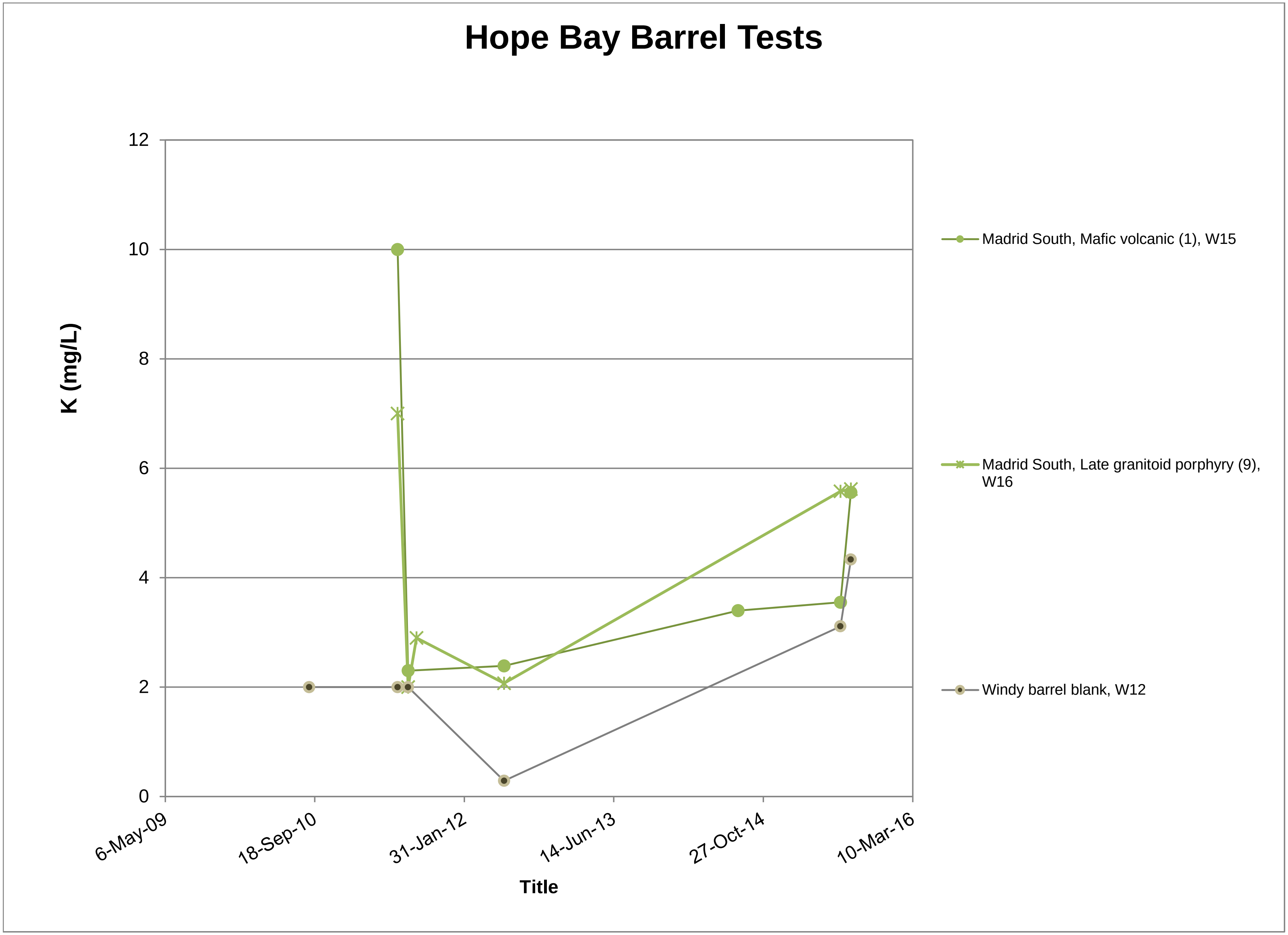

Hope Bay Barrel Tests
Mn (mg/L)
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

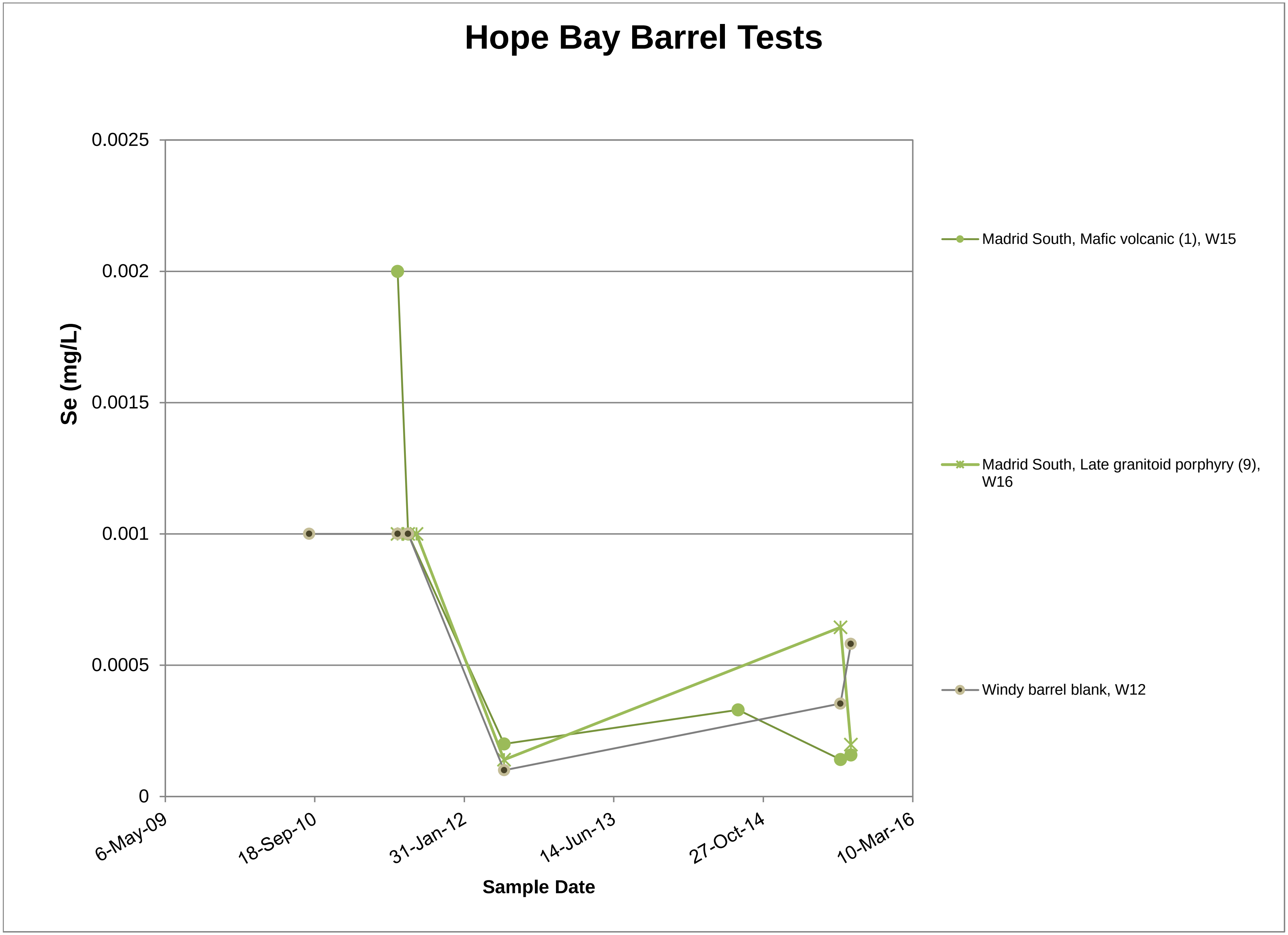

Hope Bay Barrel Tests
0.000012
0.00001
0.000008
0.000006
0.000004
0.000002
0
Hg (mg/L)
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

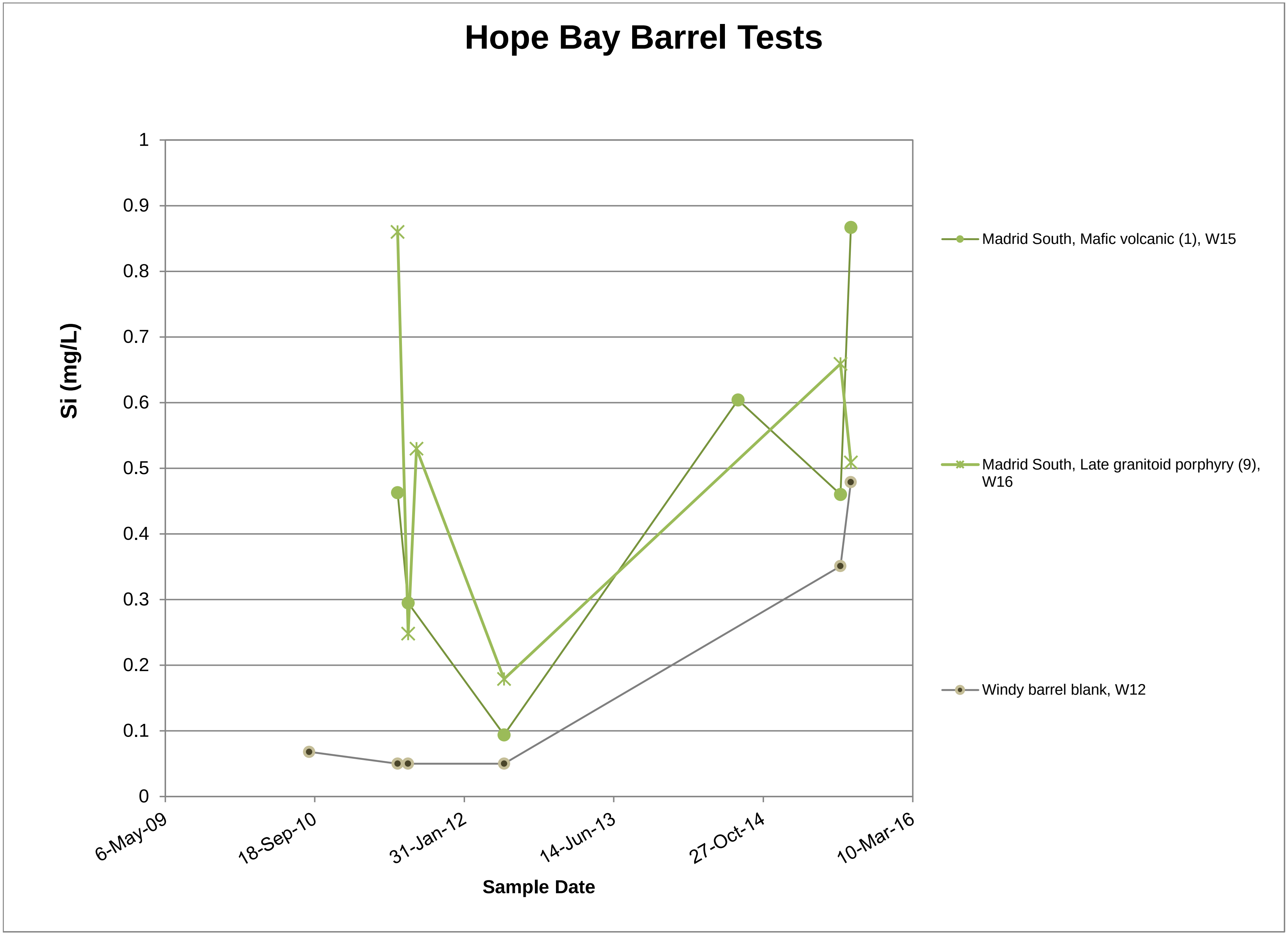

Hope Bay Barrel Tests
Mo (mg/L)
0.012
0.01
0.008
0.006
0.004
0.002
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

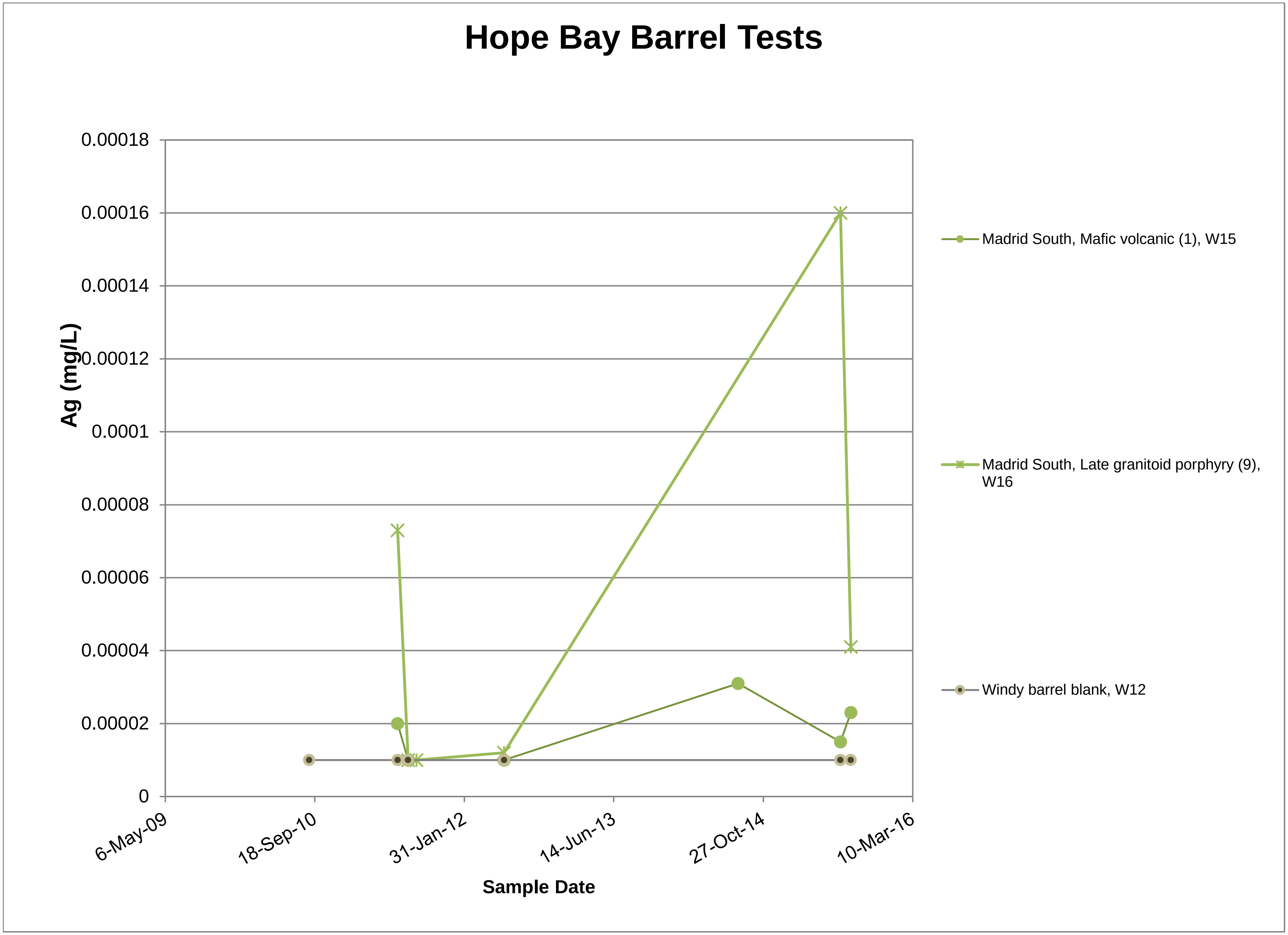

Hope Bay Barrel Tests
Ni (mg/L)
0.016
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

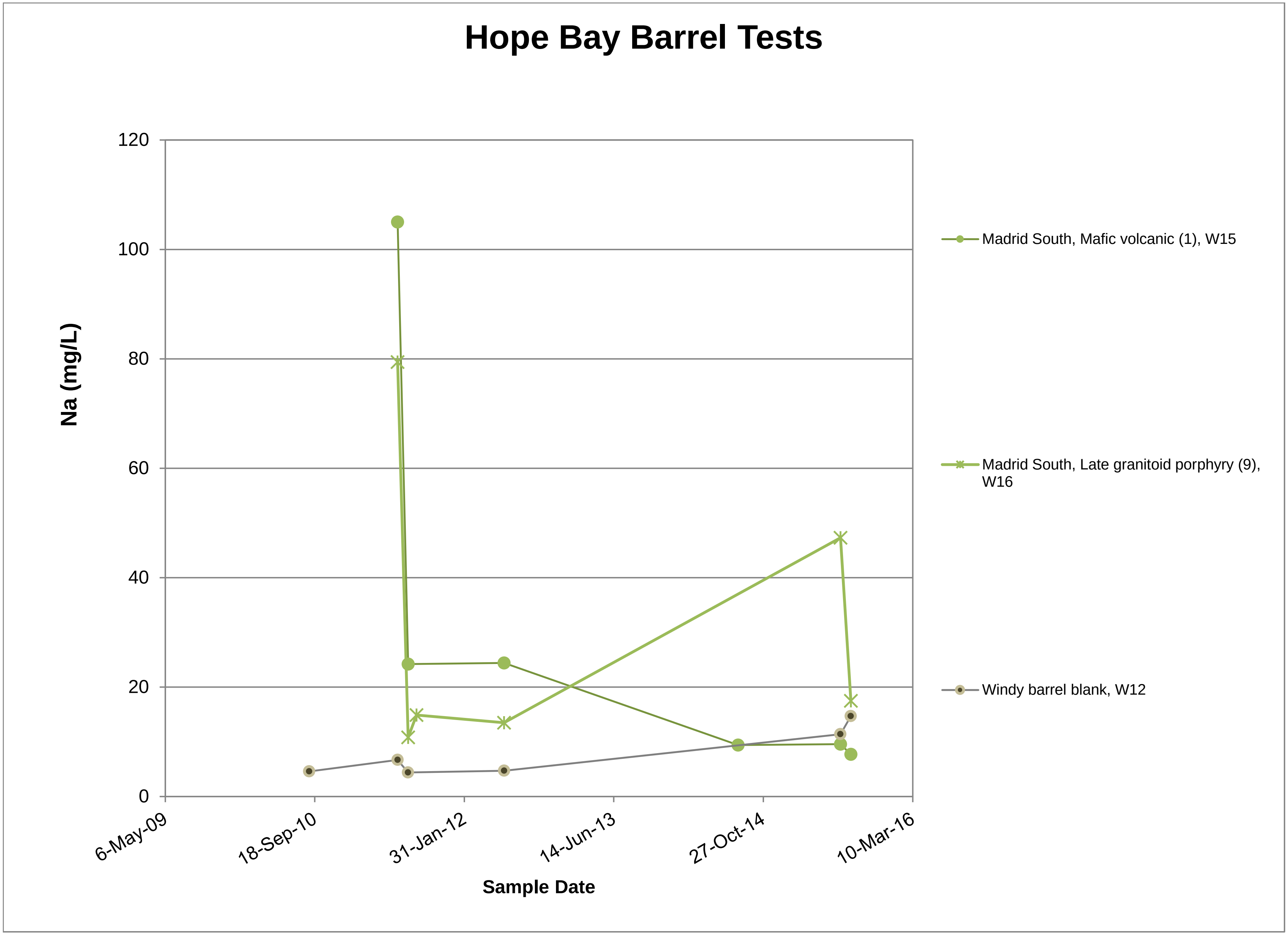

Hope Bay Barrel Tests
P (mg/L)
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

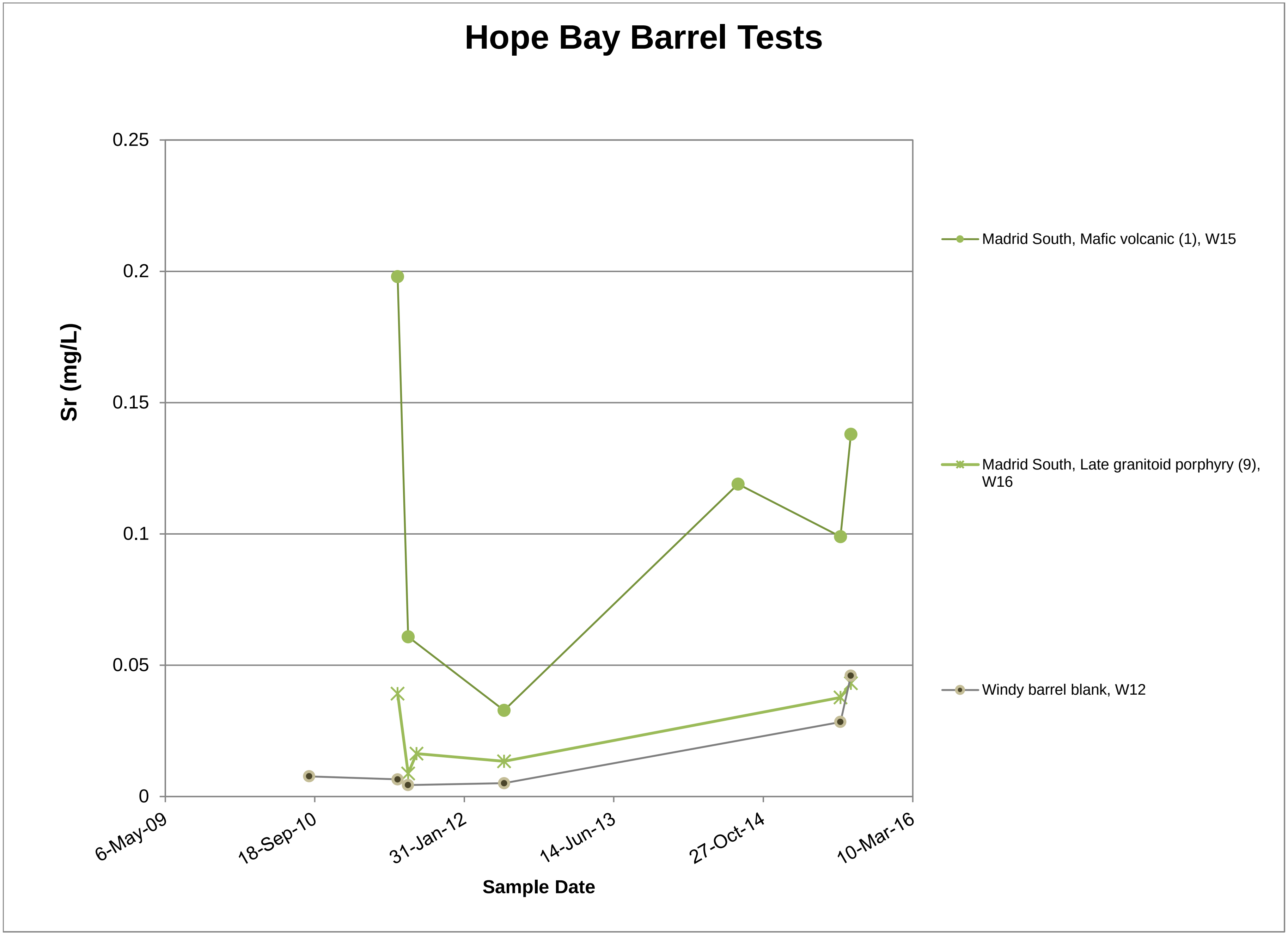

Hope Bay Barrel Tests
K (mg/L)
0
2
4
6
8
10
12
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Title
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

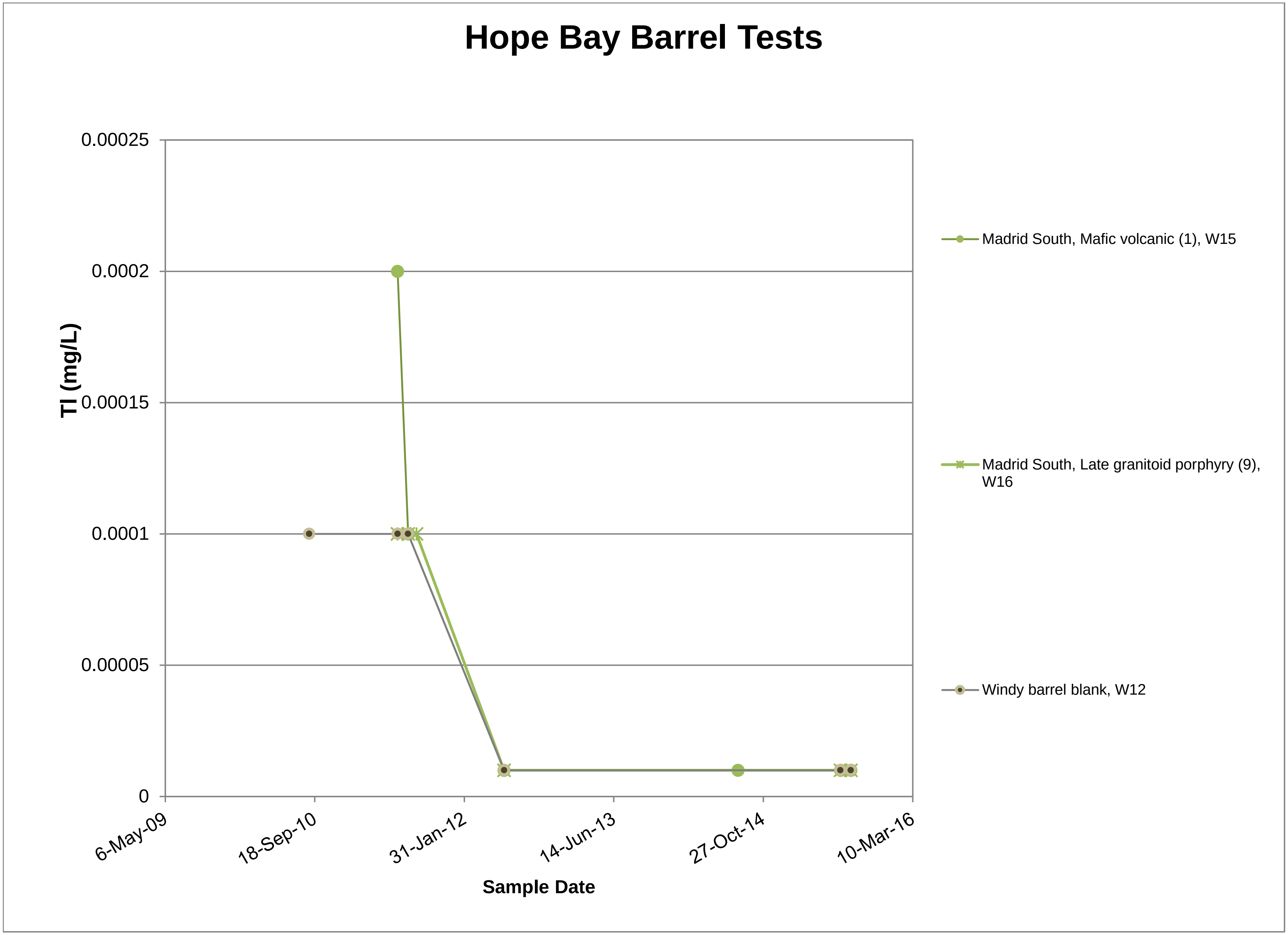

Hope Bay Barrel Tests
Se (mg/L)
0.0025
0.002
0.0015
0.001
0.0005
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

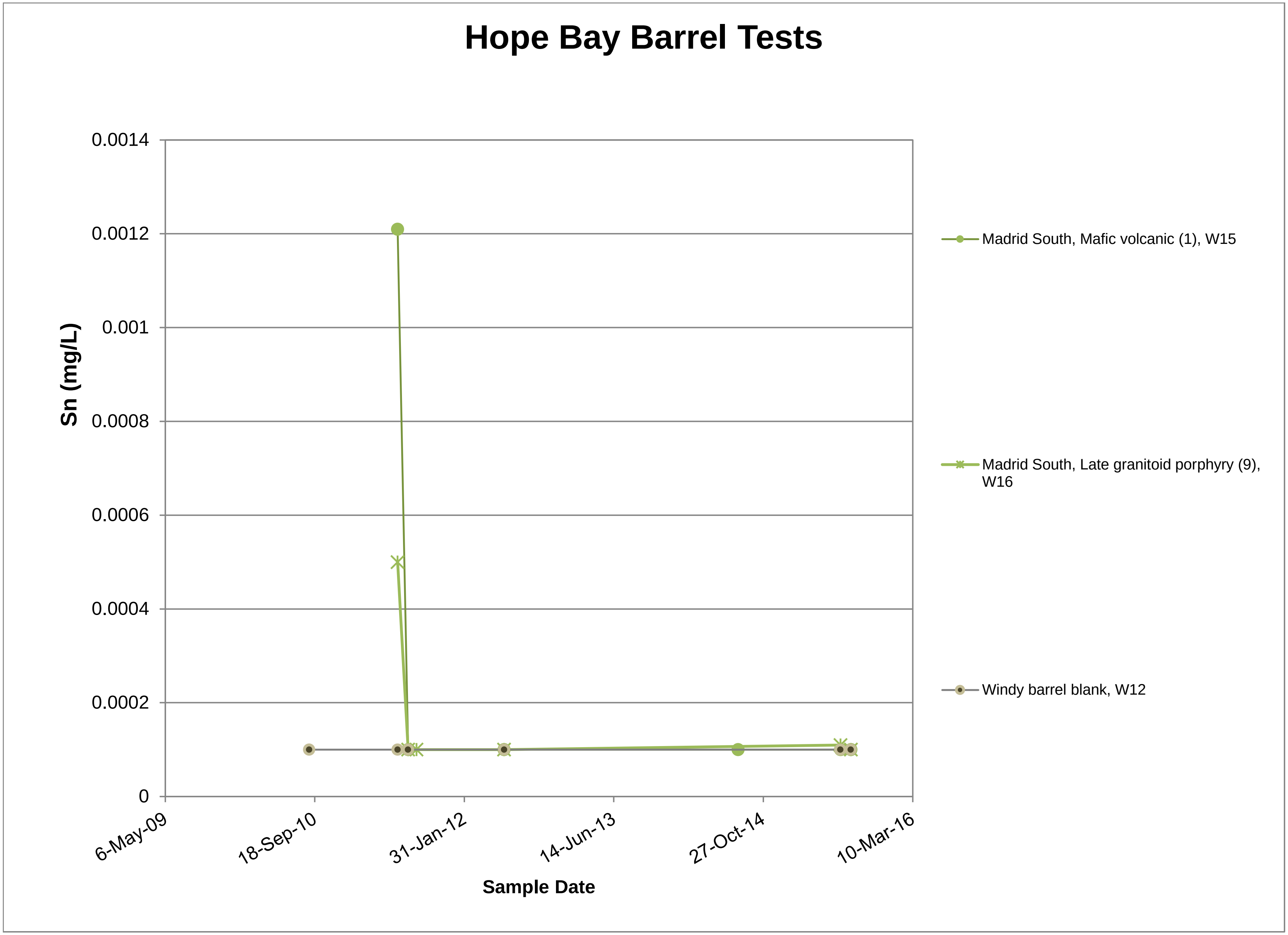

Hope Bay Barrel Tests
Si (mg/L)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

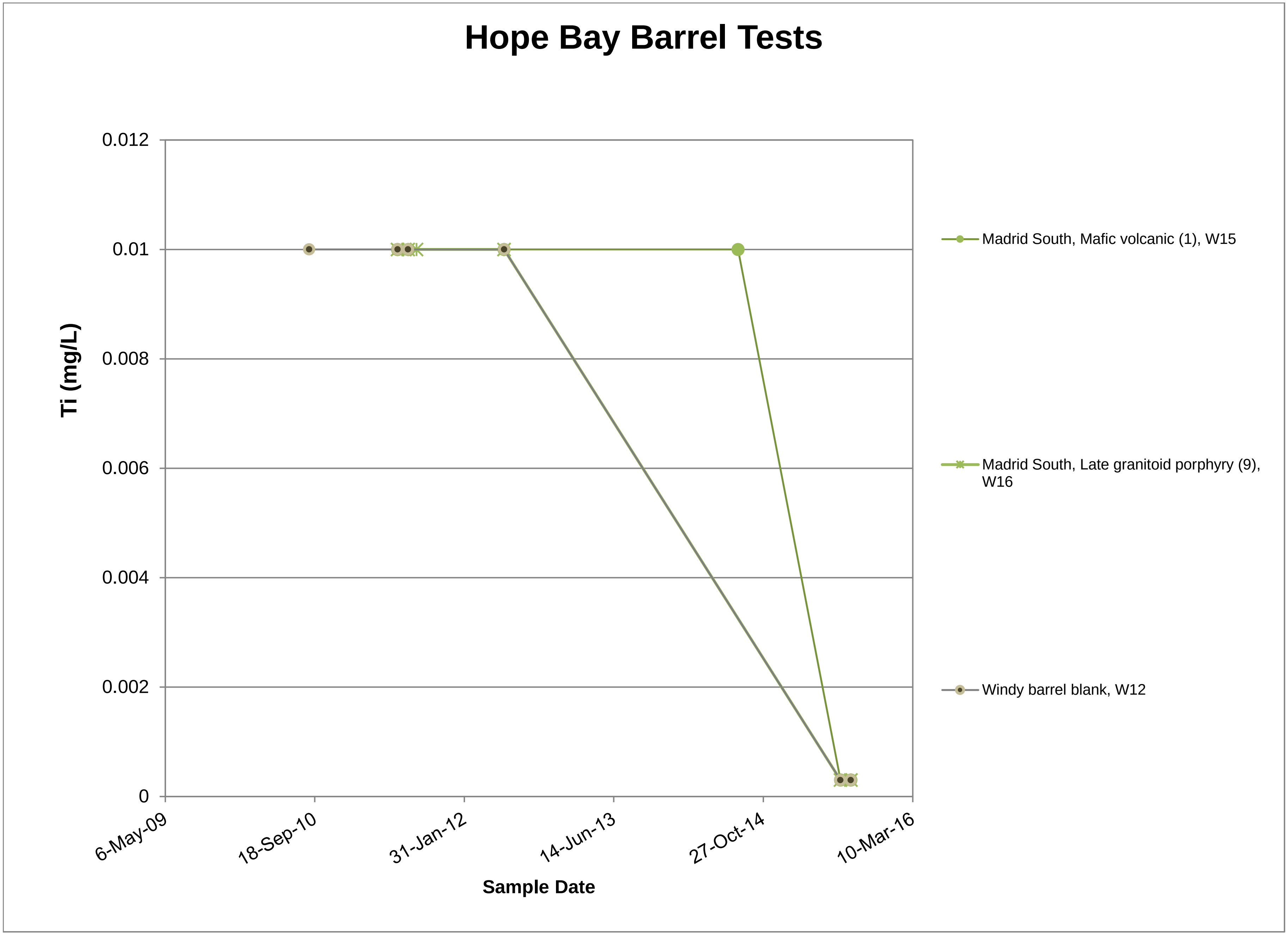

Hope Bay Barrel Tests
Ag (mg/L)
0.00018
0.00016
0.00014
0.00012
0.0001
0.00008
0.00006
0.00004
0.00002
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

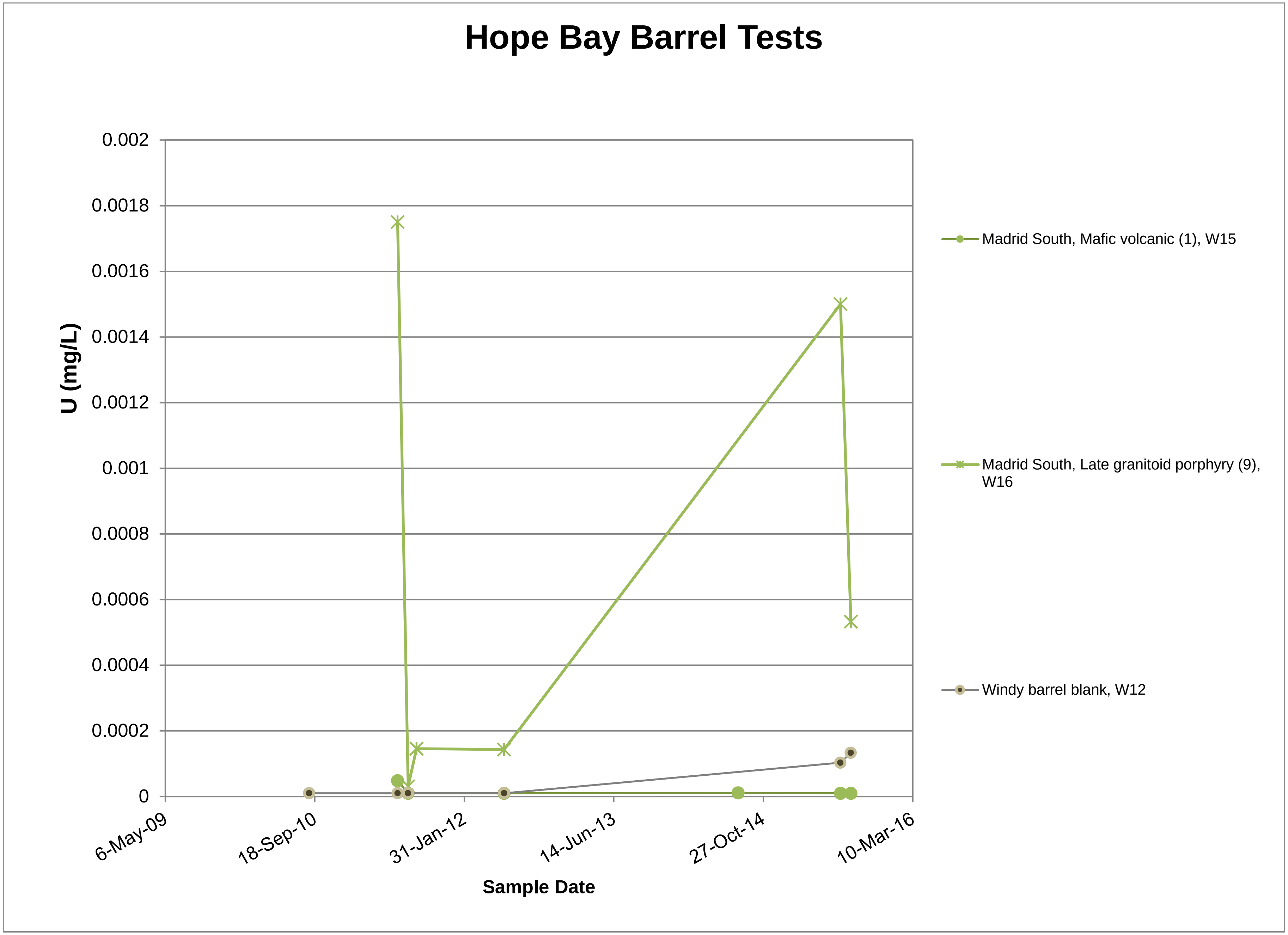

Hope Bay Barrel Tests
Na (mg/L)
0
20
40
60
80
100
120
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

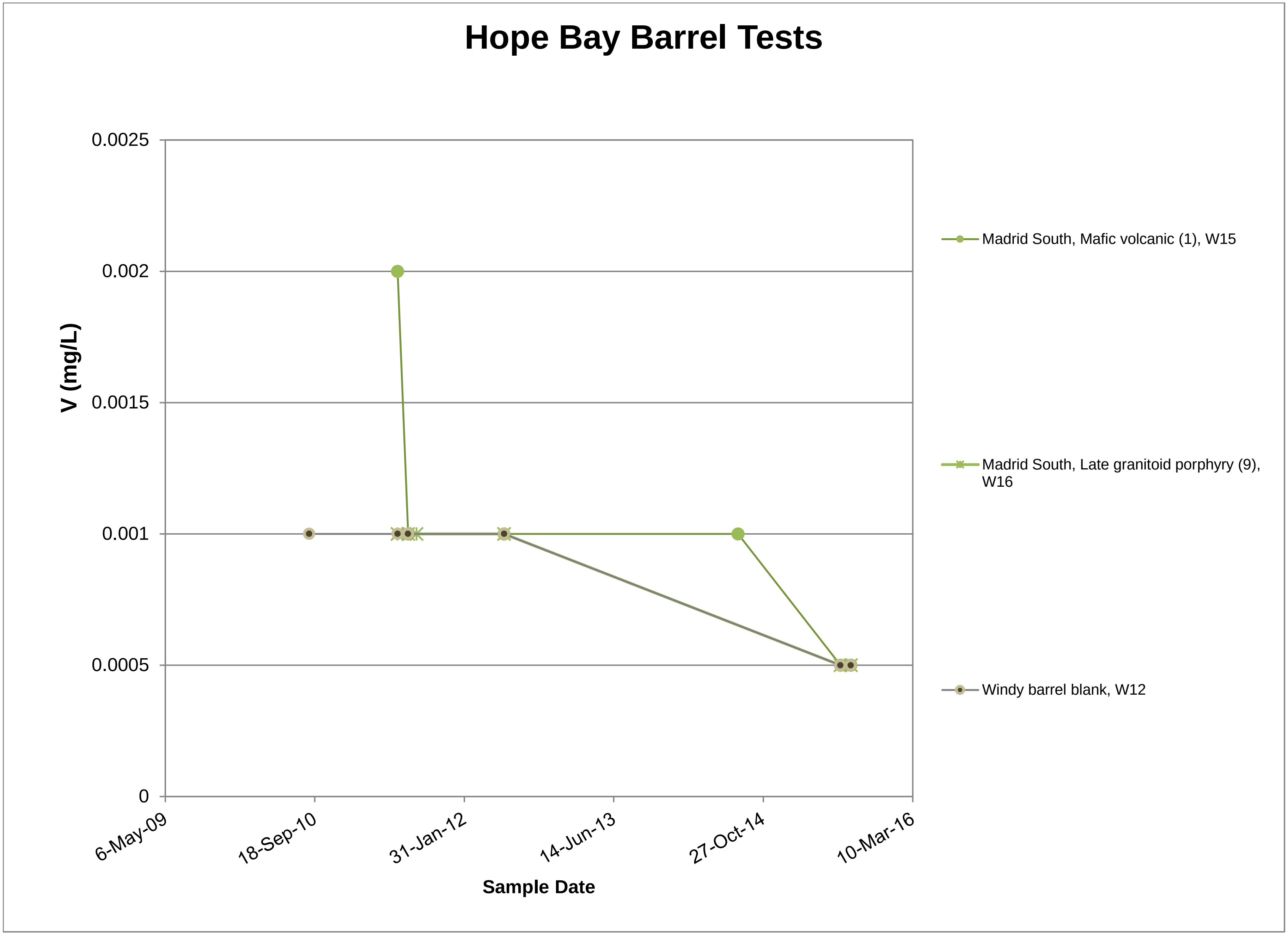

Hope Bay Barrel Tests
Sr (mg/L)
0.25
0.2
0.15
0.1
0.05
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

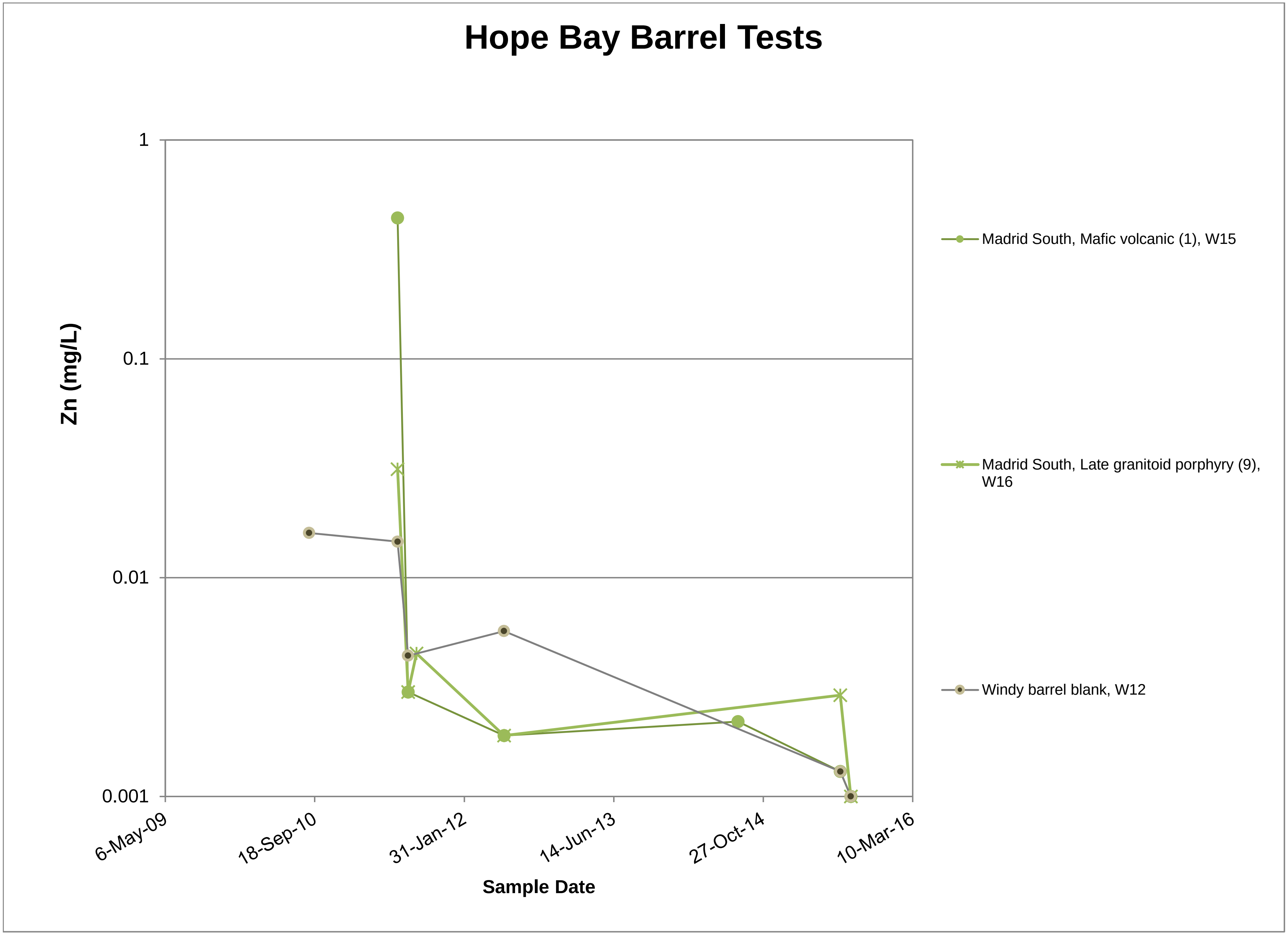

Hope Bay Barrel Tests
Tl (mg/L)
0.00025
0.0002
0.00015
0.0001
0.00005
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12


Hope Bay Barrel Tests
Sn (mg/L)
0.0014
0.0012
0.001
0.0008
0.0006
0.0004
0.0002
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12


Hope Bay Barrel Tests
Ti (mg/L)
0.012
0.01
0.008
0.006
0.004
0.002
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12


Hope Bay Barrel Tests
U (mg/L)
0.002
0.0018
0.0016
0.0014
0.0012
0.001
0.0008
0.0006
0.0004
0.0002
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12


Hope Bay Barrel Tests
V (mg/L)
0.0025
0.002
0.0015
0.001
0.0005
0
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12


Hope Bay Barrel Tests
Zn (mg/L)
1
0.1
0.01
0.001
6-May-09
18-Sep-10
31-Jan-12
14-Jun-13
27-Oct-14
10-Mar-16
Sample Date
Madrid South, Mafic volcanic (1), W15
Madrid South, Late granitoid porphyry (9), W16
Windy barrel blank, W12

Appendix L-2:
Monitoring Data for Madrid South Barrel Tests

Sample ID	Date	Volume	ALS Sample ID	Field pH	Field EC	Field ORP	Field Temp	Lab pH	Lab EC	Acidity	Alkalinity	SO4	Br	Cl	F	Ammonia	NO3	NO2
		L			uS/cm	mV	C		uS/cm	mgCaCO3/L	mgCaCO3/L	mg/L	mg/L	mg/L	mg/L	mg N/L	mg N/L	mg N/L
W12	06-Jul-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
W12	30-Aug-10	4.37	L928581-18	6.48	40.3	385	12.1	6.93	43.2	--	2	2.39	0.05	7.67	0.02	0.200	0.478	0.0030
W12	22-Jun-11	11.68	L1024966-12	8.5	60.1	140	6	8.08	--	1.6	2	1.44	--	--	--	--	--	--
W12	27-Jul-11	--	L1038624-18	--	--	--	--	7.93	29.1	1.3	2	1.02	0.05	7.7	0.02	0.0152	0.005	0.001
W12	24-Aug-11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
W12	12-Jun-12	12.32	L1163258-13	7.03	59.9	214	5.8	6	39.7	2.1	2	1.04	--	10.1	0.02	0.0067	0.0192	0.001
W12	9-Aug-12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
W-12	12-Jul-15	9.24	L1642342-11	8.2	104	224	10.7	7.93	123	1.7	47	2.99	0.05	7.25	0.041	0.005	0.005	0.001
W-12	16-Aug-15	14.16	L1659572-5	8.2	189	198	11.2	8.06	179	1.2	72.9	4.69	0.088	10.7	0.027	0.0051	<0.005	<0.001
W15	22-Jun-11	0.05	L1024966-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
W15	27-Jul-11	--	L1038624-21	--	--	--	--	7.77	211	3	39.4	33.9	0.064	16.7	0.08	0.005	0.005	0.0012
W15	24-Aug-11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
W15	12-Jun-12	10.53	L1163258-5	8.1	181.3	183	5.1	7.9	175	2.5	20.3	29.4	--	19.9	0.033	0.0113	0.092	0.0018
W15	9-Aug-12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
W15	4-Aug-14	4.47	L1497358-6	7.94	234	204	12.3	7.93	222	2.6	80.6	29.2	--	2	0.097	0.296	0.184	0.0109
W-15	12-Jul-15	20.94	L16423424	8.1	195	203	9.8	8.06	196	1	62.3	25.4	0.05	4.67	0.051	0.005	0.0117	0.001
W-15	16-Aug-15	4.93	L1659572-10	8.1	240	216	10.3	8.06	229	2	89	29.2	<0.05	1.2	0.055	<0.005	<0.005	<0.001
W16	22-Jun-11	1.24	L1024966-16	--	--	--	--	7.89	--	5.5	90.2	2	--	--	--	--	--	--
W16	27-Jul-11	--	L1038624-22	--	--	--	--	6.51	63.3	5.1	20.5	1.31	0.05	6.51	0.037	0.0178	0.005	0.001
W16	24-Aug-11	0.34	L1052916-7	--	--	--	--	7.94	--	3.3	37.4	2.95	--	--	--	--	--	--
W16	12-Jun-12	13.08	L1163258-15	8.2	95.2	150	4.4	7.36	88.5	4.3	28.8	3.24	--	8.58	0.059	0.255	0.0592	0.0022
W16	09-Aug-12	--	--	8.05	219	--	10.6	--	--	--	--	--	--	--	--	--	--	--
W-16	04-Aug-14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
W-16	12-Jul-15	20.32	L1642342-3	8.4	287	207	9.6	8.25	287	1	85.8	13.3	0.057	26.5	0.232	0.005	0.005	0.001
W-16	16-Aug-15	16.01	L1659572-2	8	175	210	10.4	8.09	160	<1	80.2	4.42	<0.05	2.38	0.09	<0.005	<0.005	<0.001

Footnotes
All metals are dissolved
W12: blank barrel that was set up Aug 15, 2009
W15: Setup Oct 1, 2010 and contains 129.1 kg of drill core.
W16: Setup Oct 1 ,2012 and contains 104 kg of drill core.
Detection limits recorded as of August 2015

Sample ID	Ortho Phosphate	Total Phosphate	Hardness	TDS	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb
	mg P/L	mg/L	mgCaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
W12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
W12	0.0011	--	8.62	--	0.0089	0.00024	0.00113	0.00315	0.0005	0.0005	0.01	0.00005	2.02	0.0005	0.0001	0.00289	0.03	0.000053
W12	--	--	7.52	38	0.003	0.00091	0.00061	0.00141	0.0005	0.0005	0.01	0.00005	1.06	0.0005	0.00019	0.0007	0.03	0.000052
W12	0.001	--	4.74	--	0.003	0.00034	0.00045	0.00108	0.0005	0.0005	0.01	0.000017	0.958	0.0005	0.0001	0.00073	0.03	0.00005
W12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
W12	--	0.0101	5.46	--	0.0013	0.00032	0.00057	0.00102	0.0001	0.0005	0.01	0.00001	0.965	0.0001	0.00012	0.00057	0.01	0.00005
W12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
W-12	--	0.0082	33.5	--	0.0599	0.00095	0.00344	0.00959	0.00002	0.00005	0.042	0.000005	10	0.00028	0.0001	0.00348	0.01	0.00005
W-12	--	0.0033	54.2	--	0.0544	0.0014	0.00374	0.00722	<0.00002	<0.00005	0.087	<0.000005	16.3	0.00071	0.0001	0.00403	0.027	<0.00005
W15	--	--	158	--	0.0096	0.136	0.0127	0.00571	0.001	0.001	0.113	0.00011	42.7	0.0019	0.00162	0.0172	0.03	0.00022
W15	0.001	--	46.5	--	0.0254	0.00071	0.00327	0.00208	0.0005	0.0005	0.04	0.000017	15	0.0005	0.00014	0.00151	0.03	0.00005
W15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
W15	--	0.0021	20.9	--	0.0019	0.00029	0.00264	0.00115	0.0001	0.0005	0.049	0.00001	5.37	0.0001	0.00017	0.00185	0.01	0.00005
W15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
W15	--	0.0237	91.6	--	0.0283	0.00079	0.0212	0.00324	0.0001	0.0005	0.104	0.000011	28.1	0.00029	0.00127	0.00561	0.01	0.00005
W-15	--	0.002	71.2	--	0.0407	0.00063	0.00864	0.00109	0.00002	0.00005	0.086	0.000005	21.1	0.00018	0.00021	0.00184	0.01	0.00005
W-15	--	<0.002	102	--	0.0373	0.00105	0.00919	0.00129	<0.00002	<0.00005	0.16	<0.000005	29.6	0.00033	0.00016	0.00177	<0.01	<0.00005
W16	--	--	27.5	285	0.0222	0.00488	0.0931	0.00177	0.0005	0.0005	0.06	0.00005	8.31	0.00054	0.00302	0.0167	0.039	0.000352
W16	0.001	--	8.16	--	0.0263	0.00094	0.0134	0.00134	0.0005	0.0005	0.014	0.000017	2.48	0.0005	0.00024	0.00179	0.03	0.000067
W16	--	--	13.7	--	0.0243	0.00144	0.0436	0.00107	0.0005	0.0005	0.031	0.00005	4.5	0.0005	0.00098	0.00818	0.03	0.000071
W16	--	0.098	10.9	--	0.0028	0.0011	0.0373	0.000992	0.0001	0.0005	0.023	0.00001	3.3	0.0001	0.00047	0.00425	0.01	0.00005
W16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
W-16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
W-16	--	0.0032	30.2	--	0.0334	0.00299	0.245	0.00472	0.00002	0.00005	0.067	0.000005	9.35	0.0001	0.00277	0.0109	0.011	0.000164
W-16	--	<0.002	41	--	0.0314	0.00232	0.0766	0.00537	<0.00002	<0.00005	0.061	<0.000005	12.6	<0.0001	0.00267	0.00607	<0.01	0.000063

Footnotes
All metals are dissolved
W12: blank barrel that was set up Aug 15, 2009
W15: Setup Oct 1, 2010 and contains 129.1 kg of drill core.
W16: Setup Oct 1 ,2012 and contains 104 kg of drill core.
Detection limits recorded as of August 2015

Sample ID	Li	Mg	Mn	Hg	Mo	Ni	P	K	Se	Si	Ag	Na	Sr	Tl	Sn	Ti	U	V	Zn
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
W12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
W12	0.005	0.87	0.00339	--	0.000071	0.00059	0.3	2	0.001	0.068	0.00001	4.6	0.00770	0.0001	0.0001	0.01	0.00001	0.001	0.0160
W12	0.005	1.18	0.00482	--	0.00005	0.0005	0.3	2	0.001	0.05	0.00001	6.7	0.00652	0.0001	0.0001	0.01	0.00001	0.001	0.0146
W12	0.005	0.57	0.000517	0.00001	0.00005	0.0005	0.3	2	0.001	0.05	0.00001	4.4	0.00437	0.0001	0.0001	0.01	0.00001	0.001	0.0044
W12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
W12	0.0005	0.74	0.00226	--	0.00005	0.0005	0.3	0.287	0.0001	0.05	0.00001	4.73	0.00508	0.00001	0.0001	0.01	0.00001	0.001	0.0057
W12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
W-12	0.003	2.06	0.00037	--	0.000743	0.0005	0.05	3.11	0.000354	0.351	0.00001	11.4	0.0284	0.00001	0.0001	0.0003	0.000103	0.0005	0.0013
W-12	0.0056	3.3	0.00055	--	0.0014	<0.0005	<0.05	4.33	0.000581	0.479	<0.00001	14.7	0.046	0.00001	0.0001	0.0003	0.000133	0.0005	0.001
W15	0.01	12.5	0.0375	--	0.00714	0.0097	0.3	10	0.002	0.463	0.00002	105	0.198	0.0002	0.00121	0.01	0.000048	0.002	0.44
W15	0.005	2.2	0.00755	0.00001	0.0026	0.00155	0.3	2.3	0.001	0.295	0.00001	24.2	0.0608	0.0001	0.0001	0.01	0.00001	0.001	0.003
W15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
W15	0.00072	1.82	0.00258	--	0.00236	0.00129	0.3	2.39	0.0002	0.094	0.00001	24.4	0.0328	0.00001	0.0001	0.01	0.00001	0.001	0.0019
W15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
W15	0.0016	5.19	0.0105	--	0.00214	0.00956	0.3	3.4	0.00033	0.604	0.000031	9.43	0.119	0.00001	0.0001	0.01	0.000011	0.001	0.0022
W-15	0.0017	4.49	0.00296	--	0.00143	0.00067	0.05	3.55	0.000141	0.46	0.000015	9.57	0.099	0.00001	0.0001	0.0003	0.00001	0.0005	0.0013
W-15	0.0025	6.78	0.00035	--	0.00167	0.00068	<0.05	5.56	0.000158	0.867	0.000023	7.7	0.138	<0.00001	<0.0001	<0.0003	<0.00001	<0.0005	<0.001
W16	0.005	1.64	0.0192	--	0.00591	0.0145	0.3	7	0.001	0.86	0.000073	79.4	0.0392	0.0001	0.0005	0.01	0.00175	0.001	0.0313
W16	0.005	0.48	0.00308	0.00001	0.000959	0.00099	0.3	2	0.001	0.248	0.00001	10.8	0.00879	0.0001	0.0001	0.01	0.000031	0.001	0.003
W16	0.005	0.6	0.00316	--	0.00284	0.00431	0.3	2.9	0.001	0.53	0.00001	14.9	0.0163	0.0001	0.0001	0.01	0.000146	0.001	0.0045
W16	0.00142	0.63	0.00136	--	0.00271	0.00267	0.3	2.07	0.00014	0.179	0.000012	13.5	0.0134	0.00001	0.0001	0.01	0.000143	0.001	0.0019
W16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
W-16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
W-16	0.0035	1.66	0.00056	--	0.0113	0.0132	0.05	5.58	0.000644	0.659	0.00016	47.3	0.0377	0.00001	0.00011	0.0003	0.0015	0.0005	0.0029
W-16	0.0016	2.33	0.00024	--	0.00466	0.00774	<0.05	5.62	0.000198	0.509	0.000041	17.5	0.0431	<0.00001	<0.0001	<0.0003	0.000533	<0.0005	<0.001

Footnotes
All metals are dissolved
W12: blank barrel that was set up Aug 15, 2009
W15: Setup Oct 1, 2010 and contains 129.1 kg of drill core.
W16: Setup Oct 1 ,2012 and contains 104 kg of drill core.
Detection limits recorded as of August 2015

Appendix L-3:
Release Rates for Madrid South Barrel Tests

Appendix L-3: Release Rates for Madrid South Barrels, W15 and W16

Barrel ID	Rock Type	Alkalinity mgCaCO3/kg/wk			SO_4 mg/kg/week			F mg/kg/week		
		Min.	Average	Max.	Min.	Average	Max.	Min.	Average	Max.
W15	1	0.027	0.24	0.68	0.0098	0.094	0.22	0.000032	0.00017	0.00042
W16	9	0.028	0.59	2.5	0.00063	0.04	0.14	0.00018	0.0013	0.0028

Barrel ID	Rock Type	Al mg/kg/wk			Sb mg/kg/wk			As mg/kg/wk		
		Min.	Average	Max.	Min.	Average	Max.	Min.	Average	Max.
W15	1	9.9E-08	0.000087	0.00028	2.6E-07	0.0000025	0.000008	1.3E-07	0.000022	0.00007
W16	9	0.000007	0.00023	0.00097	0.0000012	0.000018	0.000071	0.000029	0.0007	0.0024

Barrel ID	Rock Type	Ba mg/kg/wk			Be mg/kg/wk			B mg/kg/wk		
		Min.	Average	Max.	Min.	Average	Max.	Min.	Average	Max.
W15	1	5.9E-08	0.0000034	0.0000098	1E-08	9.1E-08	1.9E-07	0.0000012	0.00033	0.0012
W16	9	5.6E-07	0.000038	0.00017	8E-08	3.1E-07	6.2E-07	0.000019	0.00045	0.0019

Barrel ID	Rock Type	Cd mg/kg/wk			Ca mg/kg/wk			Cr mg/kg/wk		
		Min.	Average	Max.	Min.	Average	Max.	Min.	Average	Max.
W15	1	1.1E-09	1.6E-08	3.8E-08	0.00044	0.063	0.23	2E-08	6.9E-07	0.0000025
W16	9	1.6E-08	5.2E-08	1.5E-07	0.0026	0.088	0.39	1.7E-07	8.7E-07	0.0000031

Barrel ID	Rock Type	Co mg/kg/wk			Cu mg/kg/wk			Fe mg/kg/wk		
		Min.	Average	Max.	Min.	Average	Max.	Min.	Average	Max.
W15	1	1.7E-08	5.4E-07	0.0000012	1.8E-07	0.0000051	0.000014	3.1E-07	0.000027	0.000076
W16	9	7.9E-07	0.000019	0.000082	0.0000053	0.000051	0.00019	0.000012	0.000084	0.00031

Barrel ID	Rock Type	Pb			Li			Mg		
		mg/kg/wk			mg/kg/wk			mg/kg/wk		
		Min.	Average	Max.	Min.	Average	Max.	Min.	Average	Max.
W15	1	2.3E-09	1.3E-07	3.8E-07	0.0000001	0.0000054	0.000019	0.00013	0.014	0.052
W16	9	5.7E-08	5.8E-07	0.0000019	0.0000016	0.000015	0.000049	0.00048	0.016	0.072

Barrel ID	Rock Type	Mn			Hg			Mo		
		mg/kg/wk			mg/kg/wk			mg/kg/wk		
		Min.	Average	Max.	Min.	Average	Max.	Min.	Average	Max.
W15	1	3.9E-07	0.0000043	0.0000098	#N/A	#N/A	#N/A	7.3E-08	0.0000046	0.000013
W16	9	0.0000022	0.0000045	0.0000074	#N/A	#N/A	#N/A	0.0000019	0.00004	0.00014

Barrel ID	Rock Type	Ni			Se			Ag		
		mg/kg/wk			mg/kg/wk			mg/kg/wk		
		Min.	Average	Max.	Min.	Average	Max.	Min.	Average	Max.
W15	1	0.0000001	0.0000026	0.0000052	2.1E-08	4.4E-07	0.0000012	2E-10	5.1E-08	1.8E-07
W16	9	0.0000035	0.000061	0.00024	3.2E-07	0.000002	0.0000061	8.1E-09	3.9E-07	0.0000013

Barrel ID	Rock Type	Tl			U			V		
		mg/kg/wk			mg/kg/wk			mg/kg/wk		
		Min.	Average	Max.	Min.	Average	Max.	Min.	Average	Max.
W15	1	2.1E-09	2.7E-08	7.6E-08	5E-10	2.7E-08	7.6E-08	2.1E-08	0.0000016	0.0000038
W16	9	3E-08	9.8E-08	3.1E-07	1.2E-07	0.0000047	0.000016	3.2E-07	0.0000043	0.000015

Barrel ID	Rock Type	Zn mg/kg/wk		
		Min.	Average	Max.
W15	1	7.3E-07	0.0000042	0.0000076
W16	9	0.0000036	0.000012	0.000031