Southern Hemisphere Mining Ltd

Los Pumas Manganese Project
Mineral Resource Estimate

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PROJECT COMPLETION DATE: November 2022

SOUTHERN HEMISPHERE MINING LTD

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1 EXECUTIVE SUMMARY

Southern Hemisphere Mining Limited has requested GCS to complete a JORC 2012 compliant Mineral Resource Estimate (MRE) and review of the current status of drilling for the Los Pumas Manganese Project located in Northern Chile.

The resulting assays were modelled in Leapfrog and Surpac as an RBF model which was then used to produce an ordinary kriged estimation within Surpac. Using a cut-off grade 0f 2.5% Manganese. This resulted in nominally indicated and inferred resources totaling 30.2mt at 6.24% Mn.

Further upside is evident for exploration of Manganese feeder zones within the orebody which outcrop at surface and have had little or no prior exploration.

Table 1 Total JORC Resources for the Los Pumas Manganese Project at a 2.5% Mn cut-off

Rescat	Tonnes	Mn	Al	Fe2O3	K	P	SiO2	SG
Indicated	23,324,038	6.21	5.71	2.78	2.98	0.05	57.07	2.15
Inferred	6,940,715	6.34	5.85	3.05	2.83	0.05	54.61	2.14
Grand Total	**30,264,753**	**6.24**	**5.74**	**2.84**	**2.95**	**0.05**	**56.50**	**2.15**

2 INTRODUCTION

2.1 Scope of Work

In October 2020, Southern Hemisphere Mining Limited (SUH) requested Global Commodity Solutions (GCS) undertake a JORC Mineral Resource Estimate (MRE) and review of the current status of drilling for the Los Pumas Manganese Project located east of Arica, Northern Chile.

The scope of work for the Los Pumas JORC Mineral Resource Estimate (MRE) is outlined as follows:

- Data Import and validation:
  - Import and validation of all drill hole data including collar, survey, geological, structural mineralisation, oxidation and assay information, including any processing of new assay data.
- Geology and Mineralisation Modelling:
  - Interpretation and solid modelling of main structural features.
  - Interpretation and surface and/or solid modelling of main mineralisation units.
- Geostatistical Analysis:
  - Statistical Analysis – composite length, grade distributions, top-cuts.
  - Continuity Analysis – variography (if applicable) for all mineralisation domains.
- Block Modelling:
  - Block model creation, estimation parameter optimisation (KNA), coding and attribute assignment.
  - Grade estimation.
  - Block model depletion, validation and classification.
- Reporting:
  - A memo outlining methods and results including JORC Table 1.

2.2 Data Supplied

Southern Hemisphere Mining has provided GCS with the following information prior to and/or during the Mineral Resource estimation:

- Validated drill hole data,
- Topographic surface,
- Density data;
- Geological mapping data
- Previous reports

3 PROJECT DESCRIPTION AND LOCATION

The Los Pumas Manganese Project is located in northern Chile, approximately 175km or 3 hours drive north-east of Arica, the major port city in the Region XV of Chile. Access from Arica to the Los Pumas Project is via the International Highway from Arica to La Paz to the regional administrative centre of Putre, then via a well maintained gravel road to the project area.

Figure 1. The Los Pumas Manganese Project Location.

3.1 Tenements

The Los Pumas Manganese Project consists of 7 tenements SUH hold in the area. The total area is approximately 1209 hectares.

The land tenure and SUH's ownership is not part of the scope here and has not been reviewed.

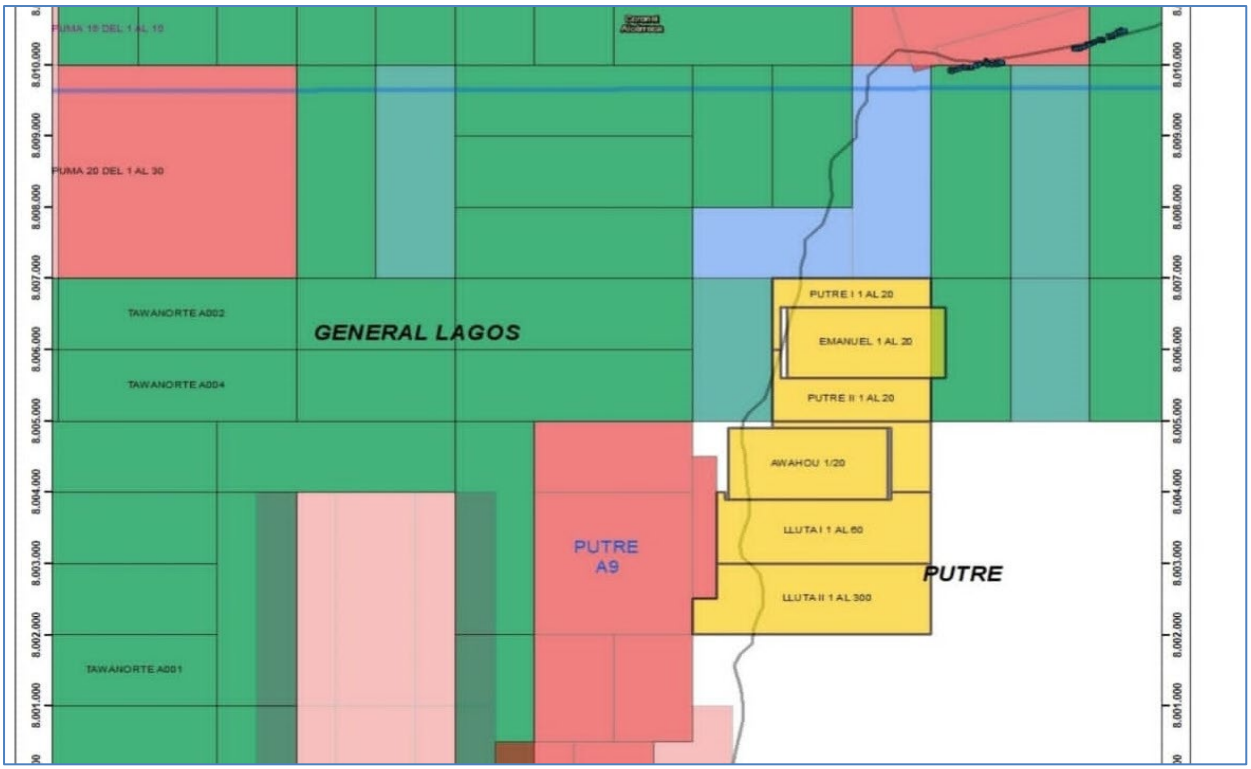


Figure 2. Puma Manganese Project Tenements

Figure 3 Los Pumas landscape and tenement markers

4 GEOLOGY

4.1 Regional Geology

The Los Pumas Project is part of the Tertiary and Quaternary volcanic sequences that forms the Andes Mountains in northern Chile.

The oldest rocks are of Oligocene – Miocene age, comprising volcano-sedimentary sequences including basaltic to dacitic flows and pyroclastic rocks. The rocks can be found outcropping to the south, west and east of the Los Pumas Project.

The Lower Miocene to Middle volcanic complex is represented by partially eroded lava flows, and pyroclastic rocks of andesitic composition, basaltic to dacitic and sedimentary sequences. These later units have been variously called the Atacama Gravels and Altos de Pica Formation.

The Upper Miocene - Pliocene is characterized by volcanic sequences (domes, lava flow and pyroclastic deposits) of andesitic to dacitic composition with intercalated alluvial material.

The Pliocene - Pleistocene volcanic complex consists of lava flows and pyroclastic rocks of variable composition from rhyolites to andesites.

The Pleistocene - Holocene and Quaternary sequences are again represented by strata volcanoes and volcanic complexes of basaltic to rhyolitic composition. This includes the Taapacá, Parinacota and Lascar volcanoes which are found in the region.

The main river system that exposes the Los Pumas mineralisation runs in a north-south direction and possibly represents a major shear structure that potentially has a strong control on the location of manganese mineralisation in the region.

4.2 Project Geology

The geology of the Los Pumas Project is dominated by volcanic rocks of the Huaylas Formation (Upper Miocene age) and the Lauca Ignimbrite (Upper Pliocene) as shown in Figure xx. These have been subsequently overlain by Pleistocene pyroclastics, andesites and dacites and sedimentary units including primarily pumice, ignimbrites and a mixture of acid volcanic rocks (dacites and rhyodacites). Six major volcanic centers are clearly visible from the Los Pumas Project with the closest being approximately 4km to the east

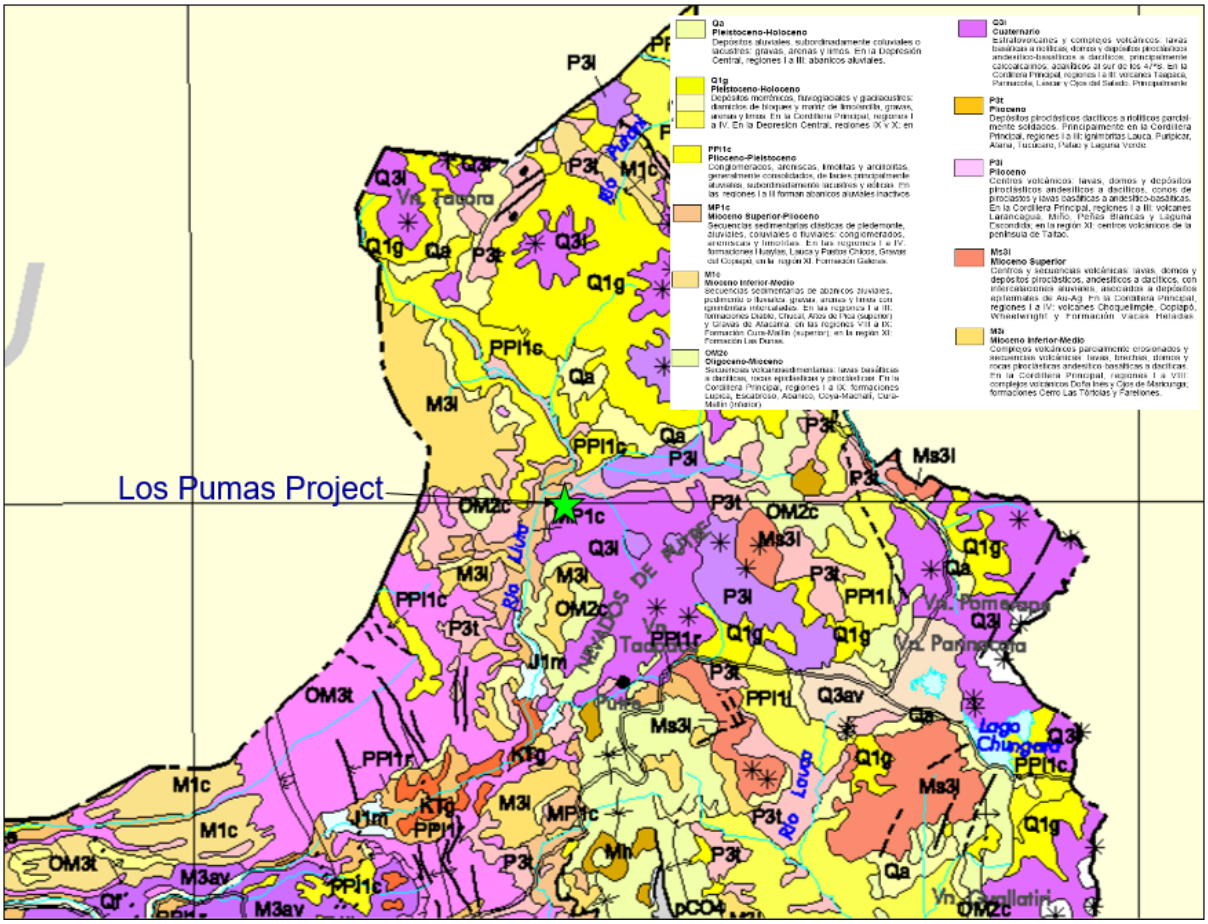


Figure 4 The Los Pumas Manganese Project Regional Geology

Figure 5 Manganese feeder zones

4.3 Mineralisation

The manganese mineralisation at Los Pumas is divided into the north and south targets and is separated by the Taapaca volcanic dacitic-andesitic flow. The north target is approximately 1.7km by 0.6km in area and with multiple mineralised zones having approximately 1m to 10m in thickness, while the south target is 1km by 0.2km in area and has similar multiple zones and thicknesses.

Mineralisation outcrops from surface in most cases, extending up to a maximum depth of 50m below surface.

The Lauca Ignimbrite is important in that this unit hosts the majority of the manganese mineralisation identified at Los Pumas. The manganese has formed manto style mineralisation having been hydrothermally injected into the flat lying ignimbrite layer along paths of weakness associated with subvertical faults, preferentially oriented N-NW, with subordinate structures oriented N-S and ENE

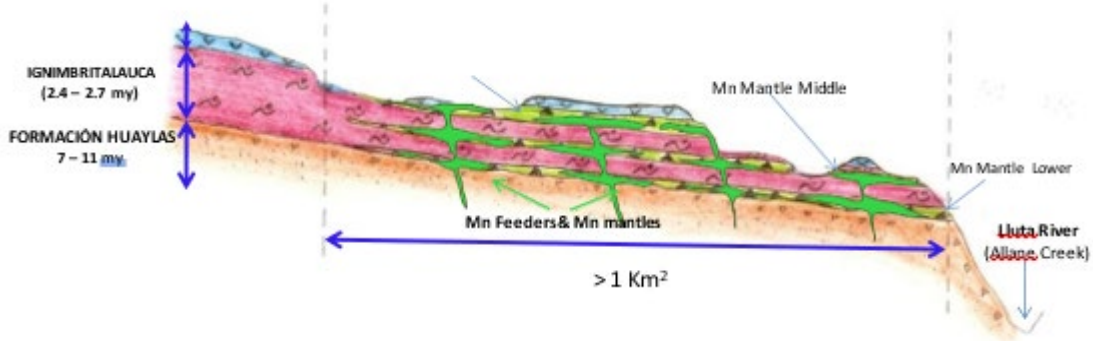


Figure 6 Puma Managnese Deposit Geology and Mineralisation Cross-Section

5 DATA VERIFICATION

5.1 Drillhole Database Review

The Southern Hemisphere Mining' drill hole database wasupplied in Excel and CSV format. These files were imported into an MSAccess database created by GCS.

GCS reviewed the input data included locating and authenticating drillholes to be used in the Resource Estimation. The following data have been reviewed:

- Collar positions
- Assay and lithology tables
- Density readings

No significant errors were identified by GCS.

5.2 QAQC

QAQC review was completed by Coffey for the previous resource estimate in 2011. There has been no additional drilling since then so the QAQC review is valid for this MRE. A summary of the QAQC information is contained in Section 1 of Table 1 in the appendices.

5.3 GCS Site Visit

GCS did not visit the Los Pumas site due to the COVID-19 restrictions on travel that existing during the time of the MRE.

6 INPUT DATA

6.1 Data Sources

All drilling data used in the 2021 Los Pumas Manganese Project MRE was supplied by SUH in excel format. This was imported into an MS Access database that GCS created. This data was current on the 3rd July 2021.

6.2 Grid Coordinate System

At Los Pumas, all drillhole positions are recorded in the WGS84 Zone 19J grid system, including the historical holes.

6.3 Drillhole Data

A total of 519 drillholes have been used in this Mineral Resource estimate with a total of 14,855 meters. Within this dataset there are 32 diamond drillholes for 652m and 487 reverse circulation drill holes for 14,203m.

6.4 Topography

The topography has been acquired via a traditional topographic survey. Topographic data has been provided by SUH. This data was edited and merged with the surrounding SRTM data to increase coverage. The topographic surface was processed with Leapfrog and exported to Surpac format.

6.5 Data Validation

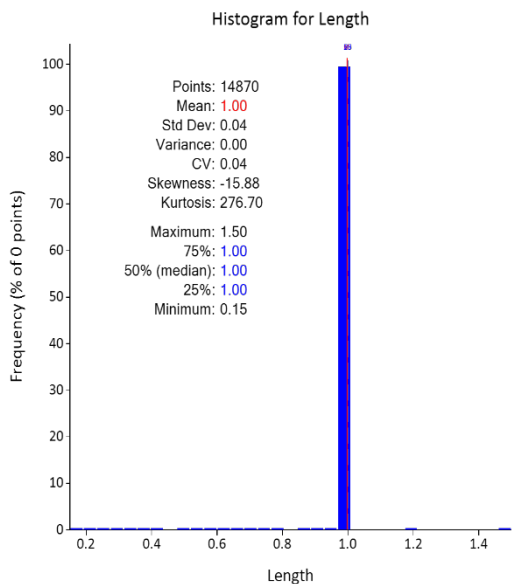


Figure 7 sample length analysis

6.5.1 Drillholes

GCS conducted a high-level validation of the provided drillhole data only with reliance on Coffey's report for database validation.

6.5.2 Sample Lengths

With some minor variation, most sampling has been completed on 1m intervals.

6.5.3 Bulk Density

Bulk density measurements were taken from core via the Archimedes method. The original dataset generated in 2011 required additional data as recommended by Coffey and in 2022 SUH completed a further 352 SG measurements .

6.5.4 Sample Recovery

Core recovery within the Southern Hemisphere Mining drilling has not been calculated as the data does not contain quantified recoveries per se but is only mentioned in the comments.

6.6 Wireframes

The wireframes used in the MRE have been created by utilising the RBF modelling tools within Leapfrog on composites 2% Mn and above, which were then exported and refined in Surpac. The wireframing of Los Pumas is shown below:

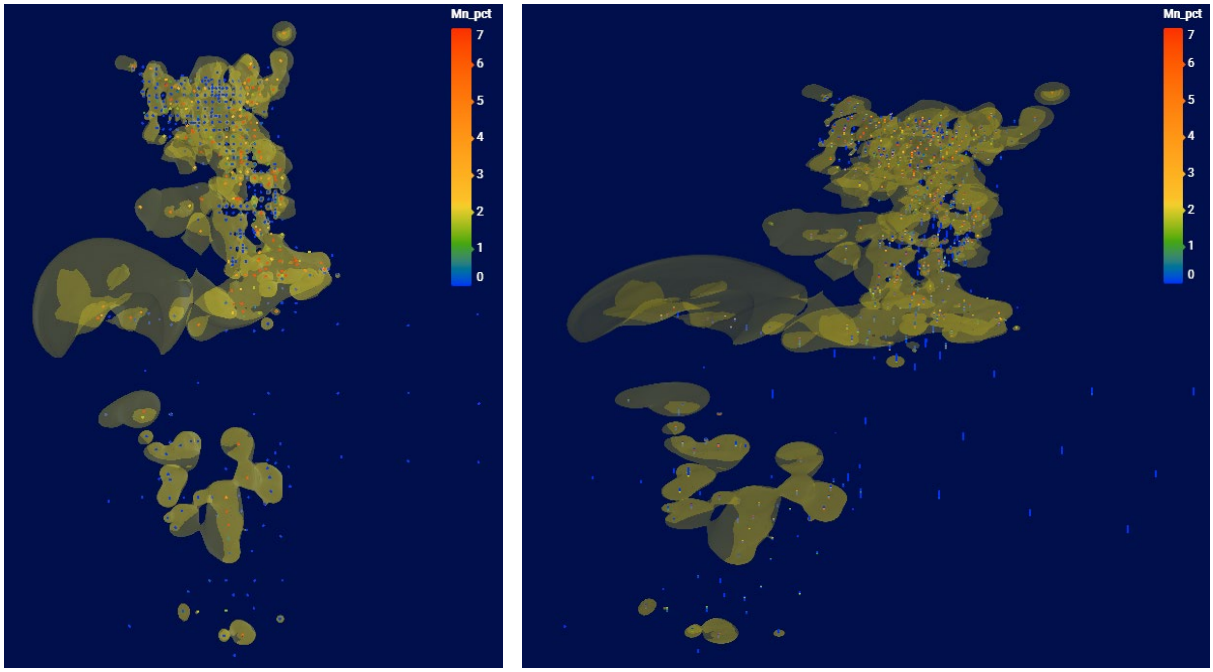


Figure 8. Plan and Oblique View of the Los Pumas Manganese Project Leapfrog Model

7 STATISTICAL ANALYSIS

7.1 Drillhole Sample Assays

Manganese analytical results below the limit of detection have been reported as a zero or -0.01. Missing values have been coded -1 within the assay table, which is subsequently ignored during compositing.

7.2 Sample Compositing

The drillhole data has been composited downhole prior to the geostatistical analysis, continuity modelling and grade estimation process to 1 meter in order to fit within the relatively flat and thin model domains.

The compositing has been run within the wireframes as hard boundaries with a variable sample length method, which keeps the sample intervals as close to a set to fixed with 75% of the sample accepted at the boundary.

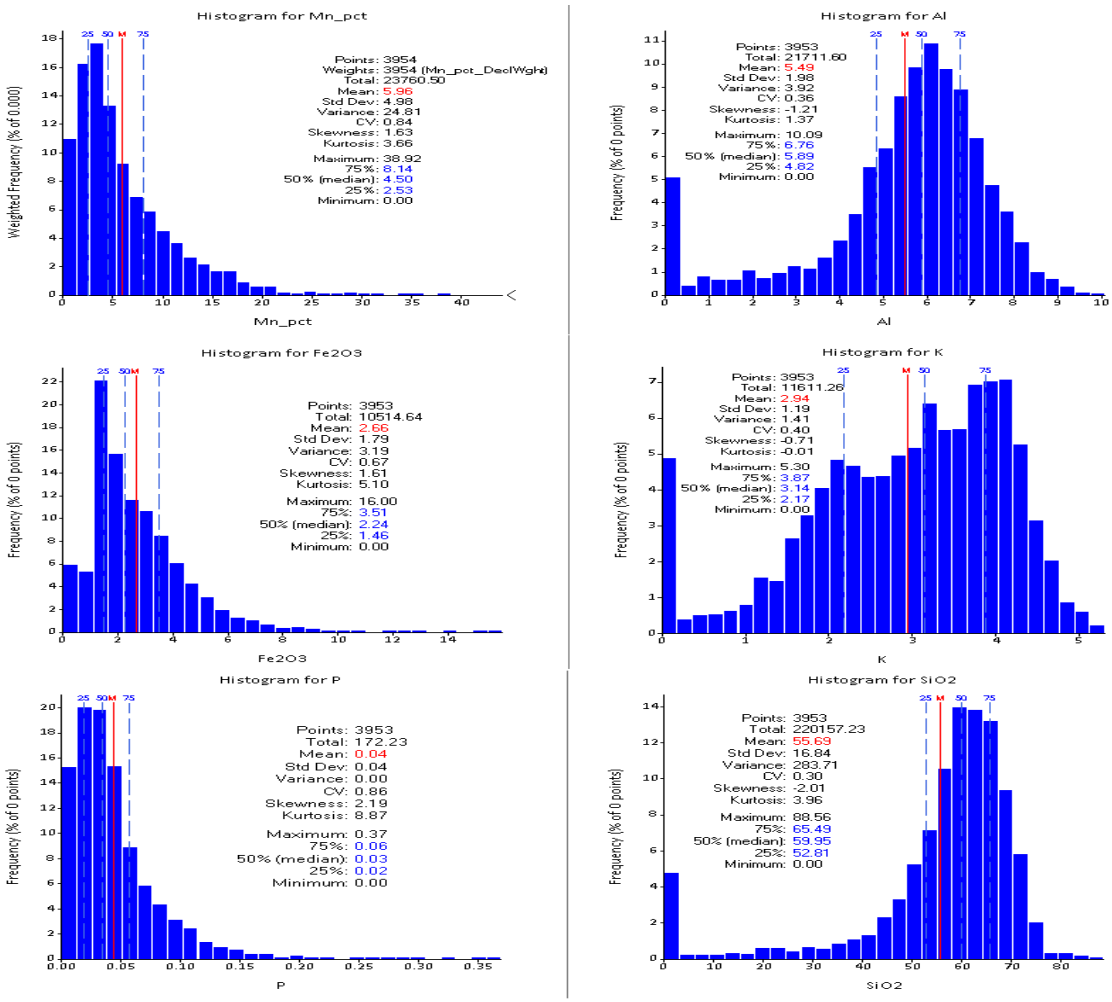


Figure 9 Histogram and statistics of MnO, Mn, Al, K, P, Fe2O3 within the model domains

7.3 Top-cutting

Composites within each of the mineralised domains have been analysed to ensure that the grade distribution is indicative of a single population, with no requirement for additional sub-domaining, and to identify any extreme values which could have an undue influence on the estimation of grade within the domain.

For all the Manganese composites top cutting to 30% was completed.

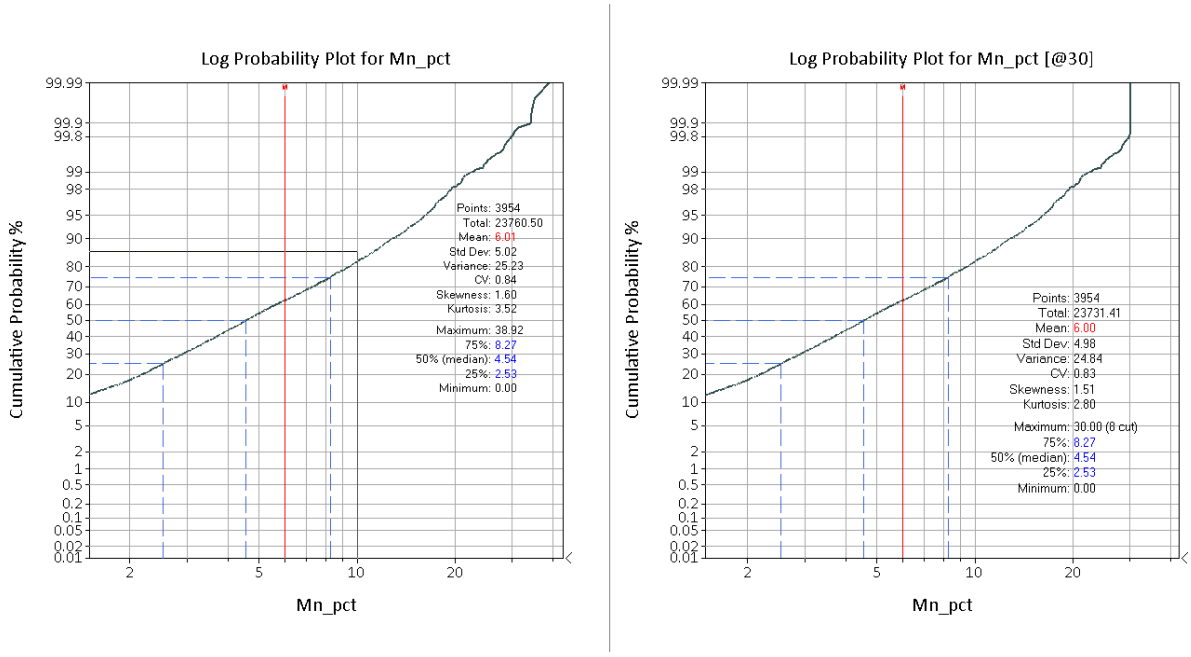


Figure 10 Raw vs Cut Mn% grade using a 30% Mn top cut

7.4 Declustering

While Ordinary Kriging and downhole compositing provide some limits of the effect of clustered data, it is important to gauge the impact of sample clustering at a range of cell sizes to determine if there is a potential problem.

Analysis of composites within the mineralisation wireframes shows a minor change in grade when tested against declustering at the selected block model size (12.5 x 12.5 x 2 meters).

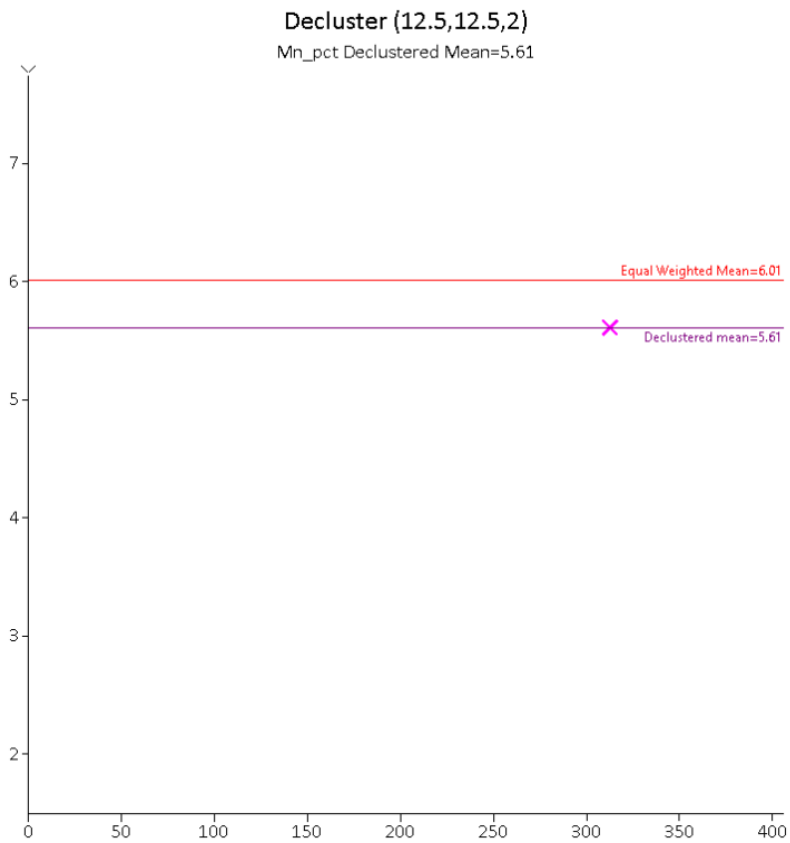


Figure 11. Declustering effects of Los Pumas Manganese Project mineralised domains.

The data within the Los Pumas MRE is slightly clustered around the higher grades as the declustered mean of Mn% is 5.61 as compared to the native mean of 6.01 Mn%.

8 VARIOGRAPHY

Variographic analysis has been undertaken on the composites for the mineralisation domain. Traditional variograms for each element have been generated in Snowden Supervisor v8.9.1 using the following approach:

- All variograms have been standardised to a sill of one,
- The nugget effect has been modelled from the true downhole variogram,
- Variograms have been modelled using two-structure nested spherical variograms.

Variogram model parameters for all the estimated elements have been provided in Table 2.

Table 2 Variogram Parameters

Element	Surpac Angles			Structure			Range 1 (R1)			Range 2 (R2)		
	Z	X	Y	Nugget	Sill 1	Sill 2	Major	Semi	Minor	Major	Semi	Minor
Mn%	65.0	0.0	-5.0	0.15	0.71	0.14	49	41	5	118	51	18
Al%	120.0	-35.0	0.0	0.15	0.71	0.14	48	8	10	240	240	47
Fe2O3%	60.0	0.0	-20.0	0.15	0.70	0.15	49	41	5	118	51	18
K%	65.0	0.0	-5.0	0.06	0.55	0.39	41	22	8	214	56	28
P%	60.0	-0.4	-5.0	0.13	0.62	0.25	75	50	15	240	240	19
SiO2%	45.9	20.7	-22.2	0.17	0.46	0.37	45	24	7	110	50	8

Variograms for each element within the mineralisation wireframes have been provided in Figure 12.

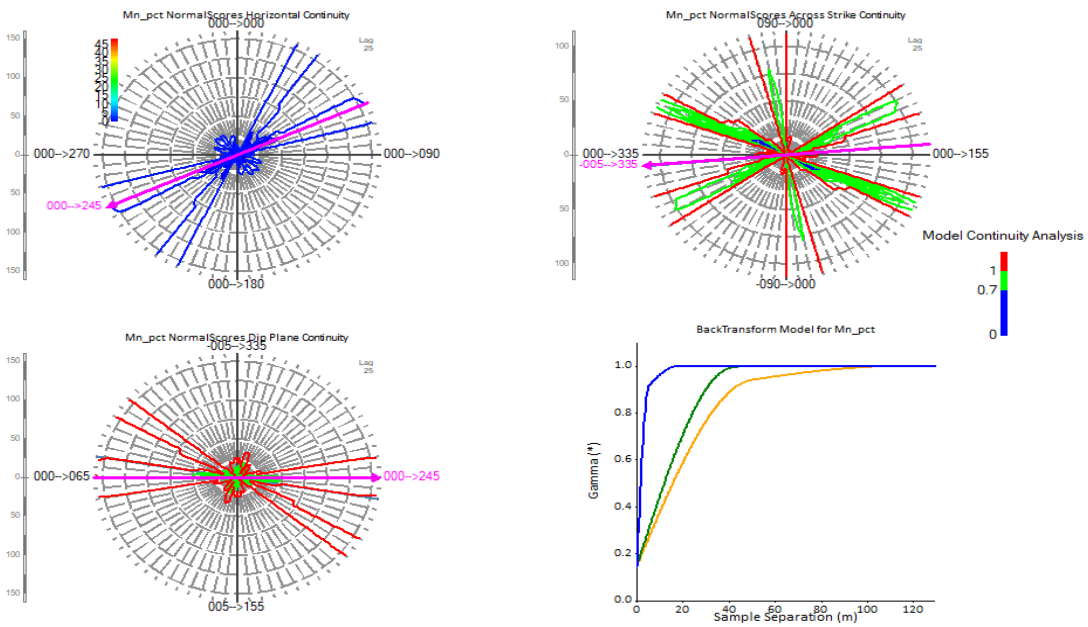


Figure 12 Variogram fans and back-transformed variography model for Mn%

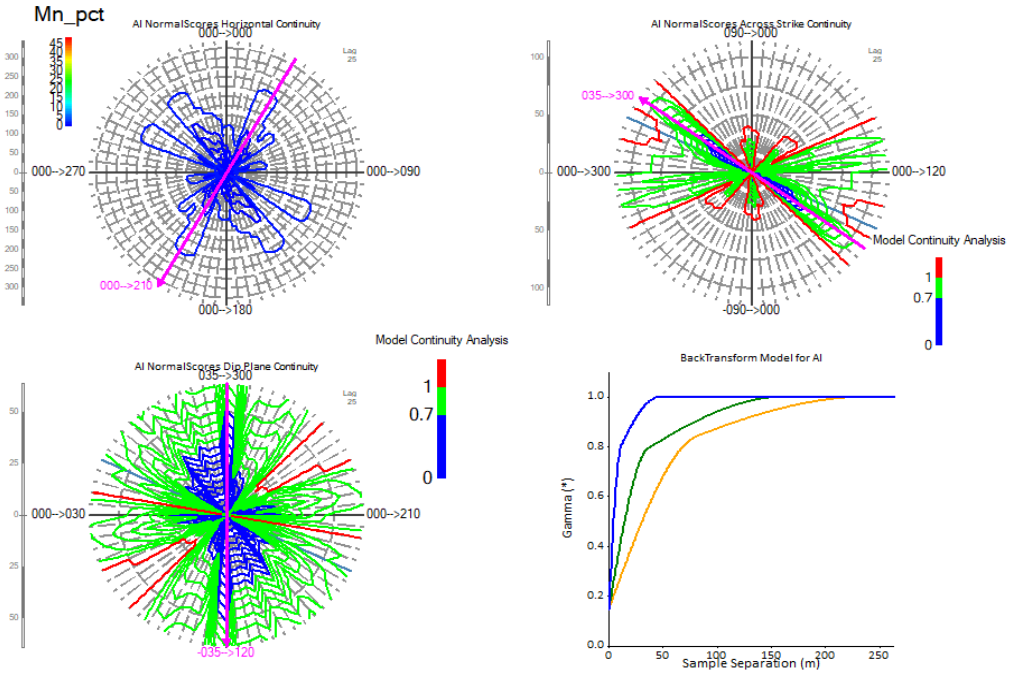


Figure 13 Variogram fans and back-transformed variography model for Al%

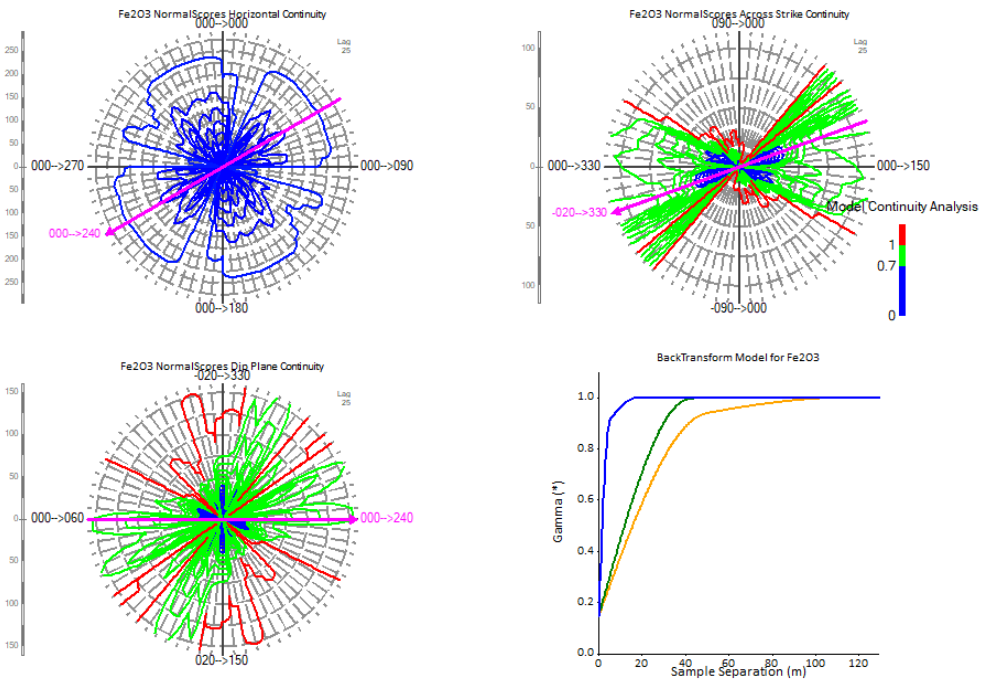


Figure 14 Variogram fans and back-transformed variography model for Fe2O3%

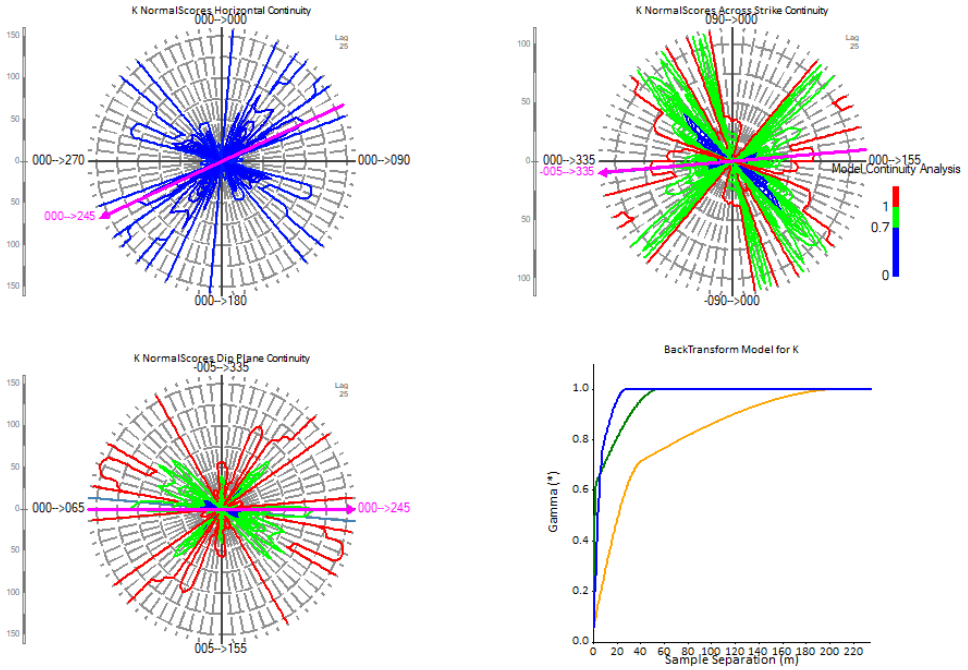


Figure 15 Variogram fans and back-transformed variography model for K%

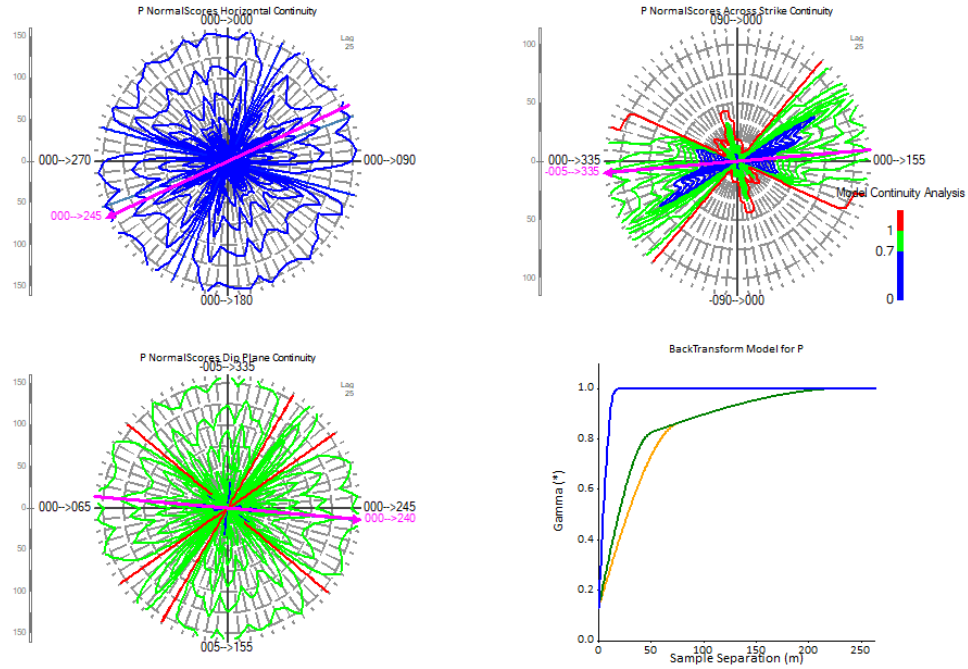


Figure 16 Variogram fans and back-transformed variography model for P%

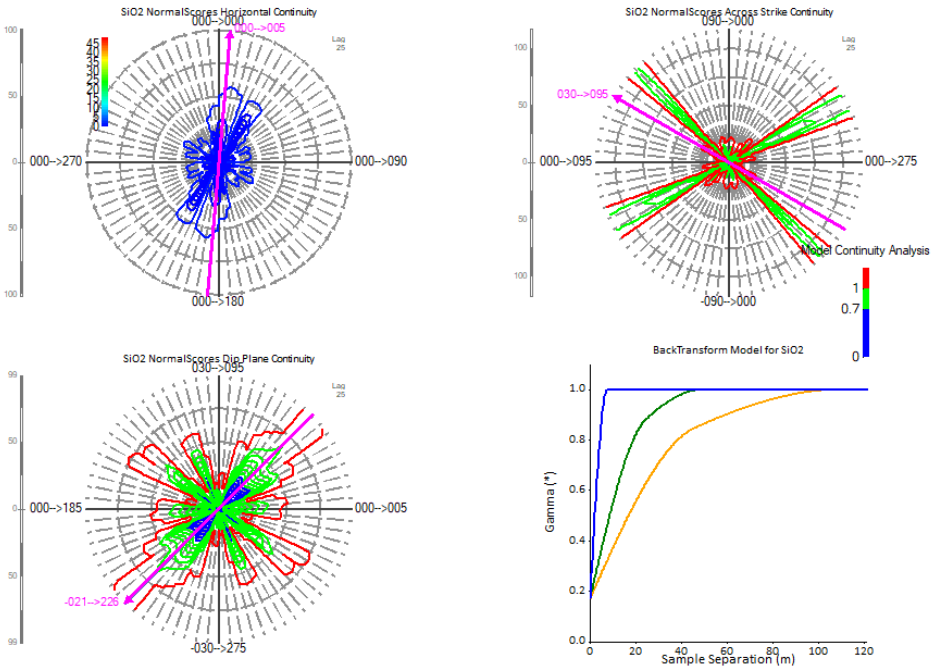


Figure 17 Variogram fans and back-transformed variography model for SiO2%

9 KRIGING NEIGHBOURHOOD ANALYSIS

A Kriging Neighbourhood Analysis (KNA) has been undertaken on the global Manganese mineralisation in order to determine the optimal block size and estimation parameters for the block model and estimation.

9.1 Block Size

Determining the optimal block size is the first step in the KNA process.

A range of block sizes has been tested, with the 12.5 m x 12.5 m x 1 m block size returning the best result indicating the best kriging efficiency, slope of regression and negative weights.

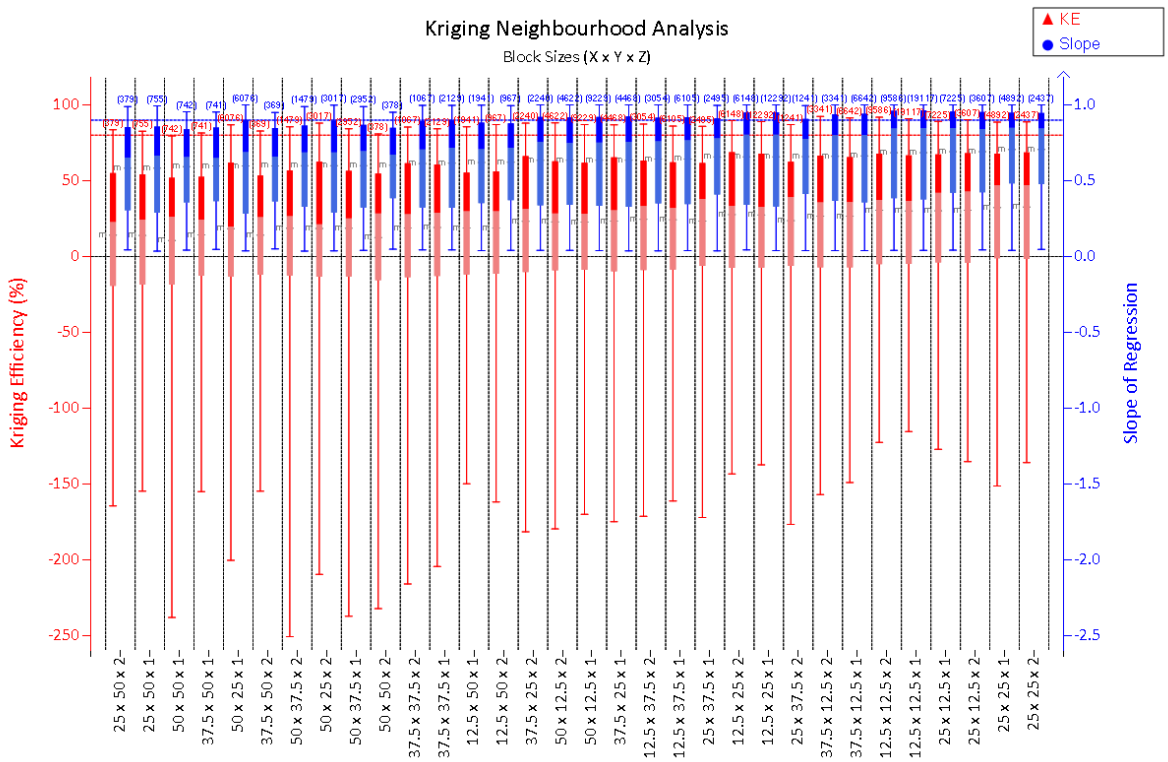


Figure 18. Block Size testing for all domains.

9.2 Number of Informing Samples

The next stage is reviewing the number of informing samples. The kriging efficiency and slopes of regression flatten off at around 24 samples. The negative weights begin to be of influence at 26 samples; therefore the optimal number of informing samples is between 4 and 24.

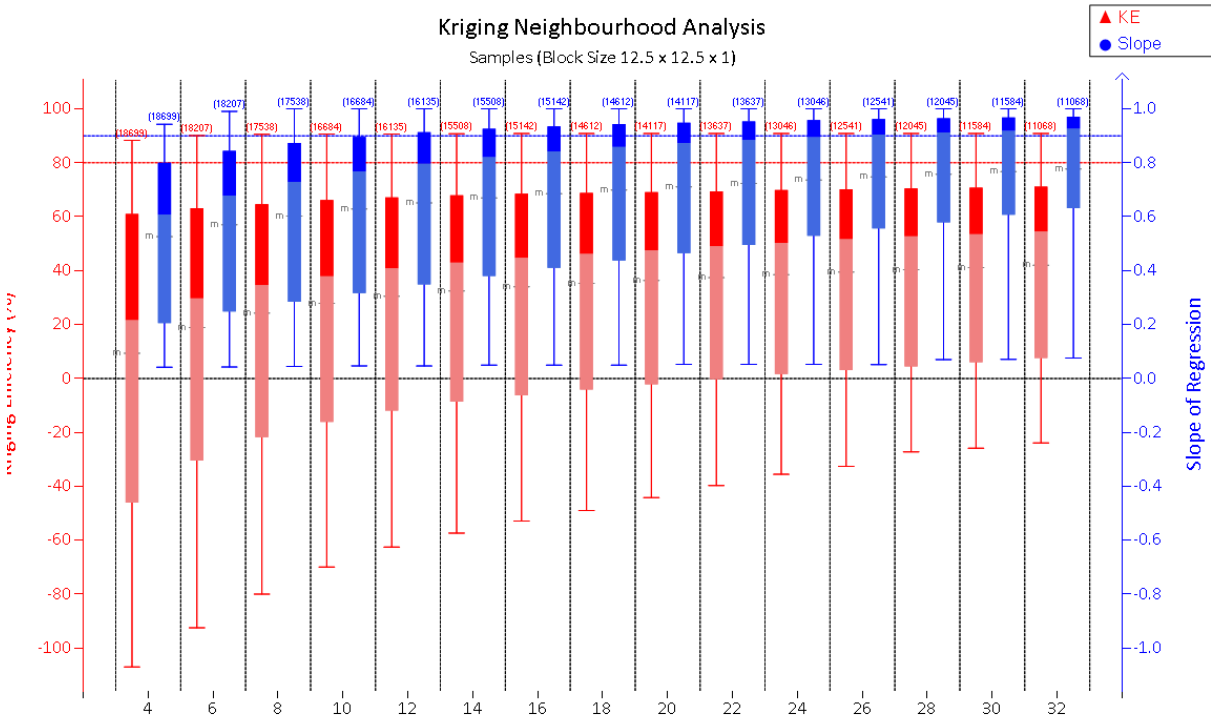


Figure 19. Number of informing samples test KE/Slope for all domains.

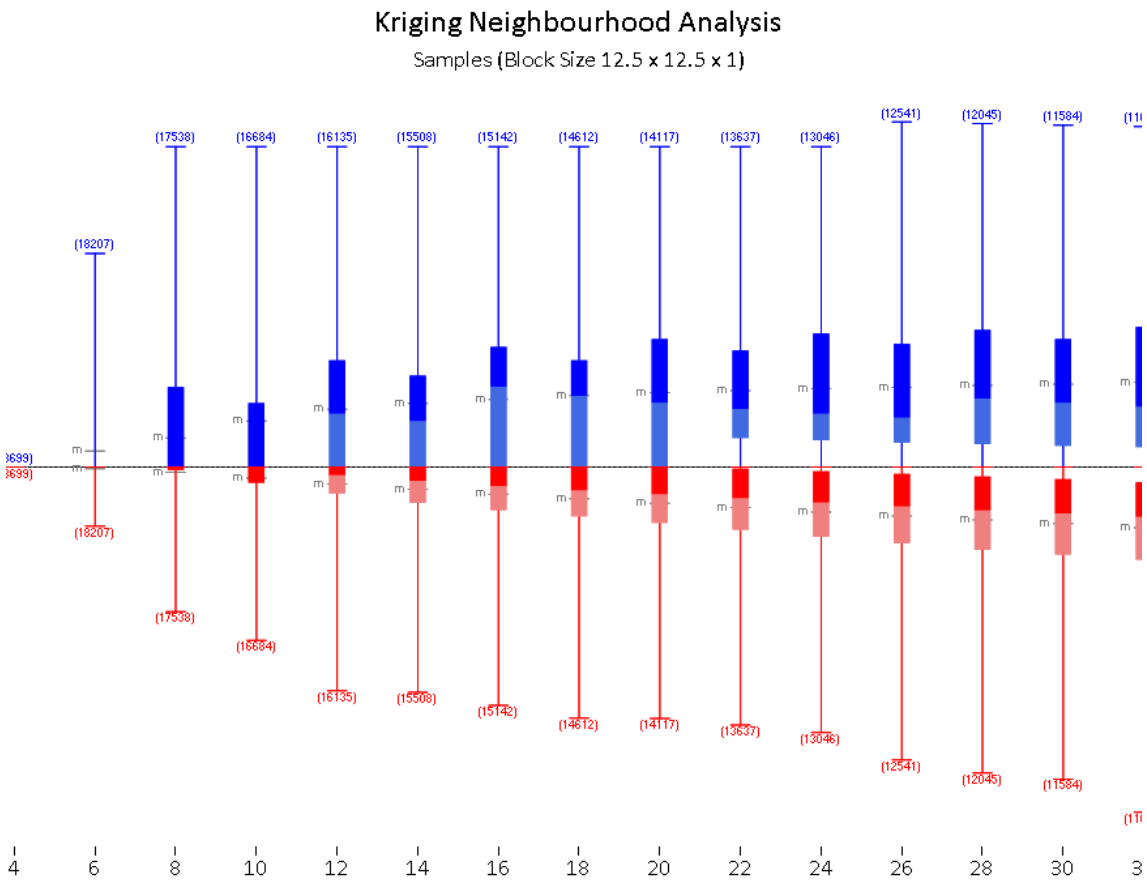


Figure 20. Number of informing samples test Negative Weights for all domains

9.3 Search Ellipse

Search ellipse distances have been tested at the multiples and divisions of the variogram range to determine the optimal search ellipse size.

The results indicate that from 187 m x 84 m x 20 m and larger, there is no significant increase in the kriging efficiencies or slopes and no further decrease in negative weights (Figure 11). This search ellipse size has been selected based on consideration of it covering 4-5 times the drill spacing and greater than any variography range.

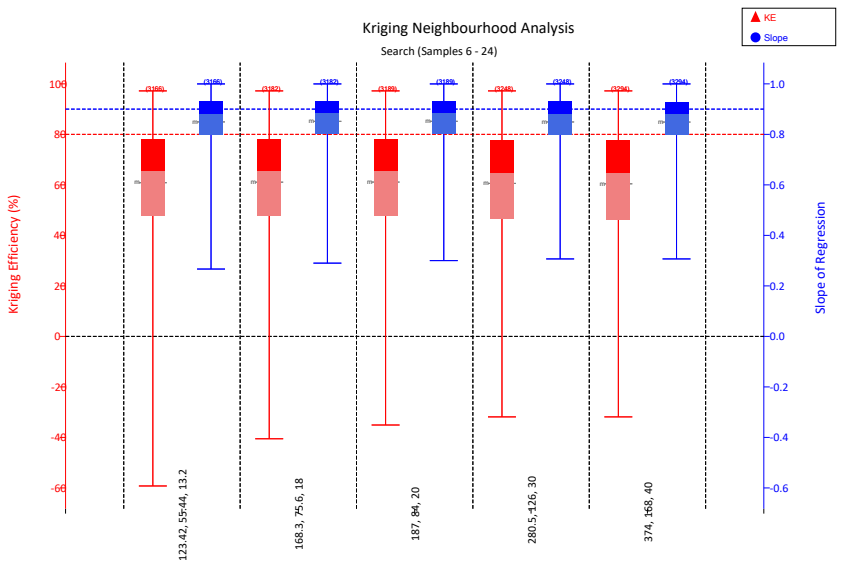


Figure 21. Search ellipse tests for all domains.

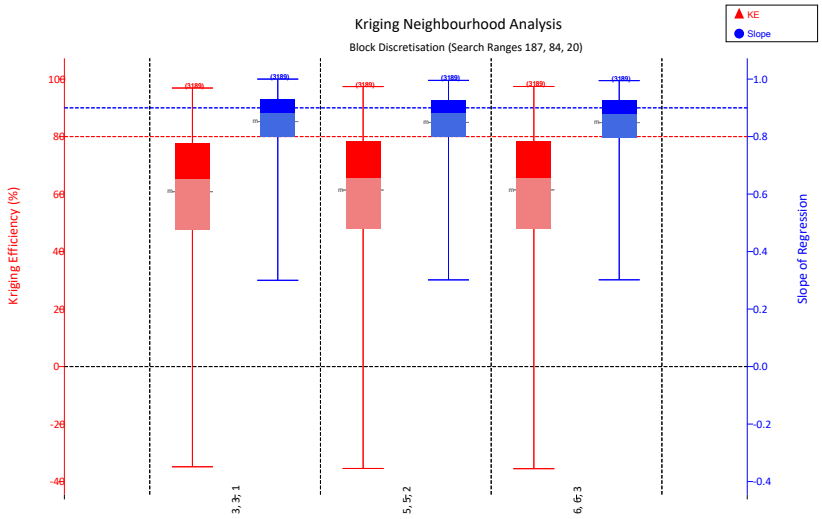


Figure 22. Block Discretisation tests for all domains

The search ellipse sizes, orientation and numbers of samples used in the grade interpolation for each estimation pass have been summarised in the table below.

Table 3. Summary of the estimation parameters used for Los Pumas Manganese Project MRE.

Element	First Pass						Second Pass						Third Pass					
	Search			**# Samples**		**DH**	**Second Pass**			**# Samples**		**DH**	**Third Pass**			**# Samples**		**DH**
	Major	**Semi-Major**	**Minor**	**Min**	**Max**	**Limit**	**Major**	**Semi-Major**	**Minor**	**Min**	**Max**	**Limit**	**Major**	**Semi-Major**	**Minor**	**Min**	**Max**	**Limit**
Mn%	58.9	25.3	8.9	4	16	2	118	51	18	3	20	3	177	76	27	2	24	4
Al%	*120.0*	*120.0*	*23.4*	*4*	*16*	*2*	240	240	47	3	20	3	360	360	70	2	24	4
Fe2O3%	*58.9*	*25.3*	*8.9*	*4*	*16*	*2*	118	51	18	3	20	3	177	76	27	2	24	4
K%	*106.9*	*28.2*	*14.1*	*4*	*16*	*2*	214	56	28	3	20	3	321	85	42	2	24	4
P%	*120.0*	*120.0*	*9.5*	*4*	*16*	*2*	240	240	19	3	20	3	360	360	29	2	24	4
SiO2%	*55.2*	*24.8*	*3.9*	*4*	*16*	*2*	110	50	8	3	20	3	166	74	12	2	24	4

10 BLOCK MODEL AND GRADE ESTIMATION

10.1 Block Model Construction

The block model was created to cover all wireframe extents. The block model parameters and attributes are given in Table 3 below.

Table 4. Block model prototype parameters and attributes.

Type	Y	X	Z
Minimum Coordinates	8002000	431500	3600
Maximum Coordinates	8007500	434500	3900
User Block Size	12.5	12.5	1
Min. Block Size	6.25	6.25	0.5
Rotation	0	0	0

Attribute Name	Description
avgandist	Average distance to samples
bv	Block Variance
cbs	Regression Slope
dhw	Drillhole Weight
est_dip	Search elipse dip
est_dipdir	Search elipse dipdir
kew	Kriging Efficiency Weight
kvw	Kriging Var Weight
minzone	Mineral Zone
ndh	Drill hole number
ndhw	Contributing Drillholes Weight
neardistsamp	Nearest Anistropic Distance
nsw	Sample Numbers Weight
numsamp	Sample number
nw	Number Negative Weights
ok_al	Al (%) ordinary kriged
ok_fe2o3	Fe2O3 (%) ordinary kriged
ok_k	K (%) ordinary kriged
ok_mn	Mn (%) ordinary kriged
ok_p	P (%) ordinary kriged
ok_sio2	SiO2 (%) ordinary kriged
pass	Co Estimation Pass
rescat	Resource Category
rsw	Regression Slope Weight
sg	Average Density per Zone
truedistsamp	Nearest True Distance
wrs	Weighted Rescat Score

10.2 Domain Coding

The wireframes solid numbers have been used to code the model domains into the block model.

10.3 Grade Estimation

GCS has estimated the Mn, Al, Fe2O3, K, P and SiO2 grades using ordinary kriging into cells using the variography for each element.

Boundaries between the different wireframes have been treated as hard boundaries to prevent high-grade or low-grade smearing between individual wireframes.

10.4 Un-estimated Blocks

All the blocks within the mineralised domains have been filled with three search passes.

10.5 Depletion

The Los Pumas Manganese Project has not been mined historically; therefore the model is cut with topography only.

10.6 Model Validation

Validation checks have been undertaken on all stages of the modelling and estimation process. Final grade estimates and models have been validated using:

- A visual comparison of block grade estimates versus the input drillhole data,
- A global comparison of the average composite versus the estimated block grades,
- Moving window averages/swathe plots comparing the mean block grades to the composites.

10.6.1 Visual Validation

A visual comparison of composite sample grade and block grade has been conducted in long section, cross-section and plan view. The block model, as estimated appears to reflect the composite data reasonably well.

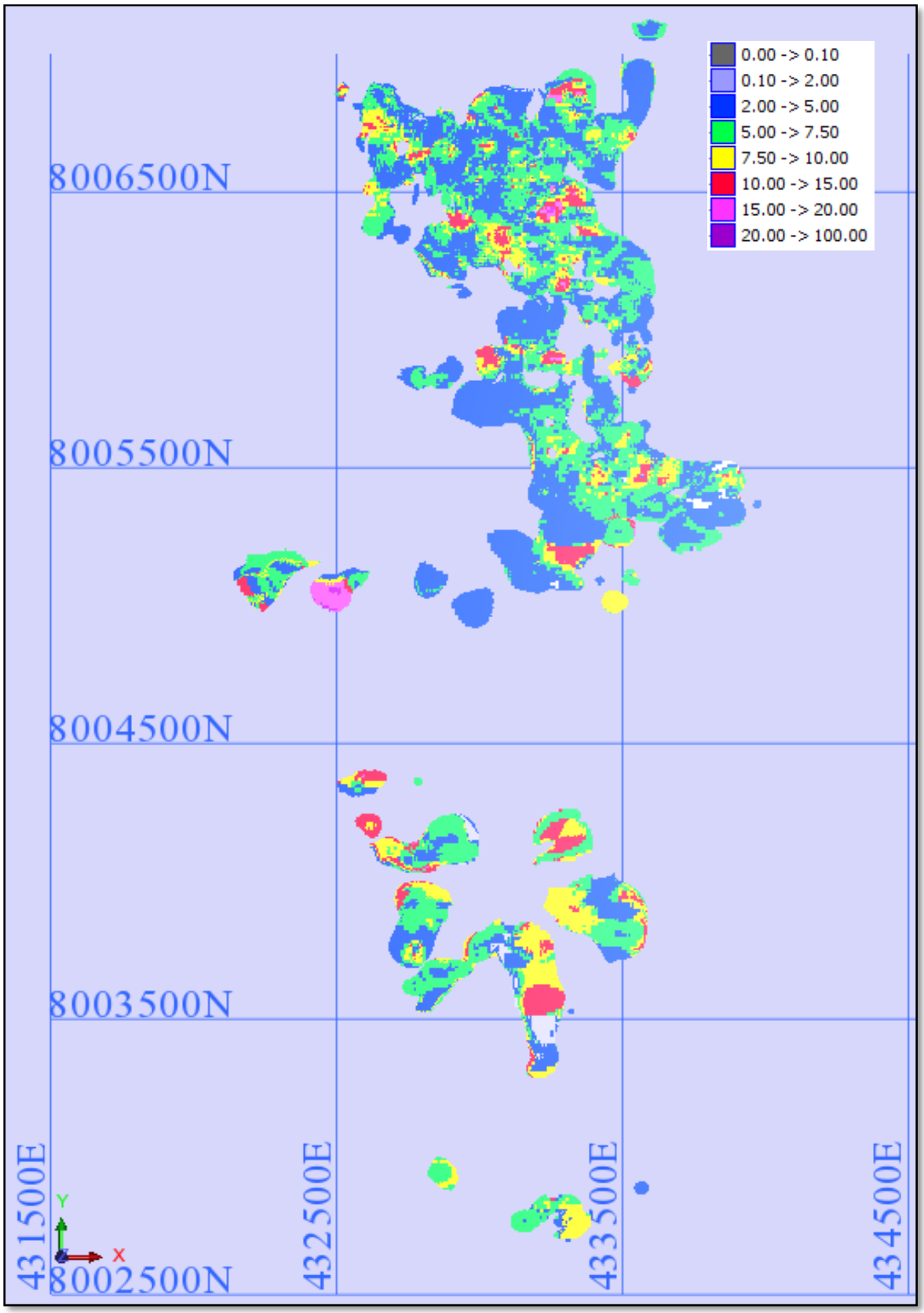


Figure 23. Plan view of block model and drillholes coloured by Mn%

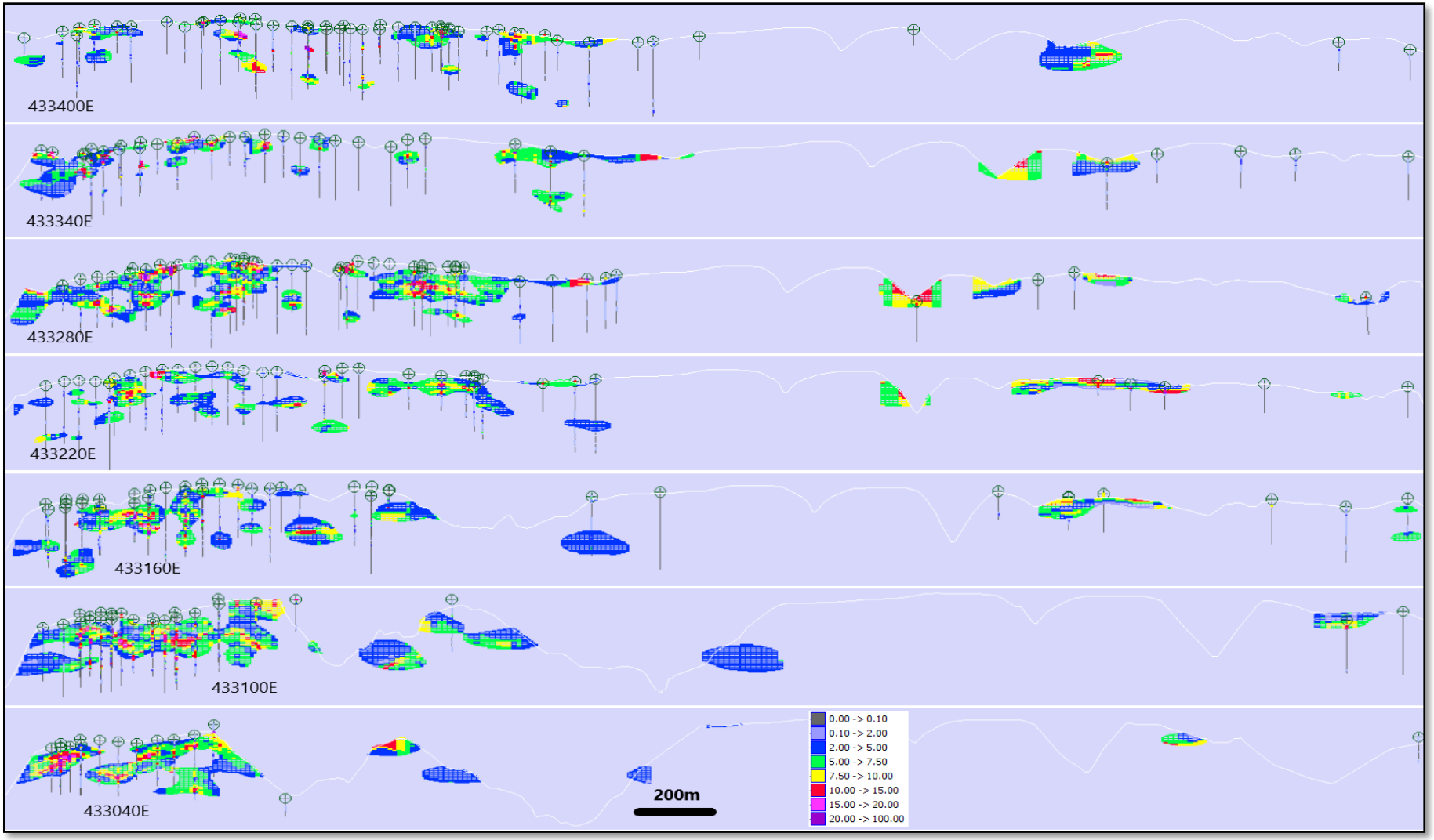


Figure 24. Cross-Sections 433040E to 433400E looking East (5X vertical exaggeration).

10.6.2 Global Comparisons

The final grade estimates have been validated statistically against the input assay composites. Table 5 provides a comparison of the estimated grades compared to the raw input grades and declustered input grades within the mineralised domains which have an average variance of -2%.

Table 5. Global validation statistics of all domains.

Statistic	Sample Data	Declustered Sample Data	BlockData1 (TonnageWeighted)	BlockData1 Vs Sample %Diff	BlockData1 Vs Declustered %Diff
Points	3,954	3,954	275,070	6857%	6857%
Mean	6.01	5.61	5.49	-9%	**-2%**
Std Dev	5.02	4.87	3.21	-36%	-34%
Variance	25.23	23.71	10.31	-59%	-57%
CV	0.84	0.87	0.59	-30%	-33%
Skewness	1.60	1.72	0.78	-51%	-55%
Kurtosis	3.52	4.04	2.27	-35%	-44%
Log Mean	1.53	1.46	1.72	12%	17%
Log Variance	0.72	0.72	0.19	-74%	-74%
Geom. Mean	4.64	4.33	5.59	20%	29%
Log-Est. Mean	6.64	6.21	6.13	-8%	-1%
Maximum	38.92	38.92	30.61	-21%	-21%
75%	8.27	7.57	7.13	-14%	-6%
50%	4.54	4.15	5.23	15%	26%
25%	2.53	2.36	3.83	51%	62%
Minimum	-	-	-	0%	0%

10.6.3 Swath Plots

Figure 25 contains the validation trend plots or swath plots for the Mn grades in all estimated wireframes. These graphs compare the mean of the estimated grades to the mean of the composite grades. The swathe plots indicate good local estimation of the input grades in both the north, east and vertical directions. There is a low degree of variance in the declustered input composite grades.

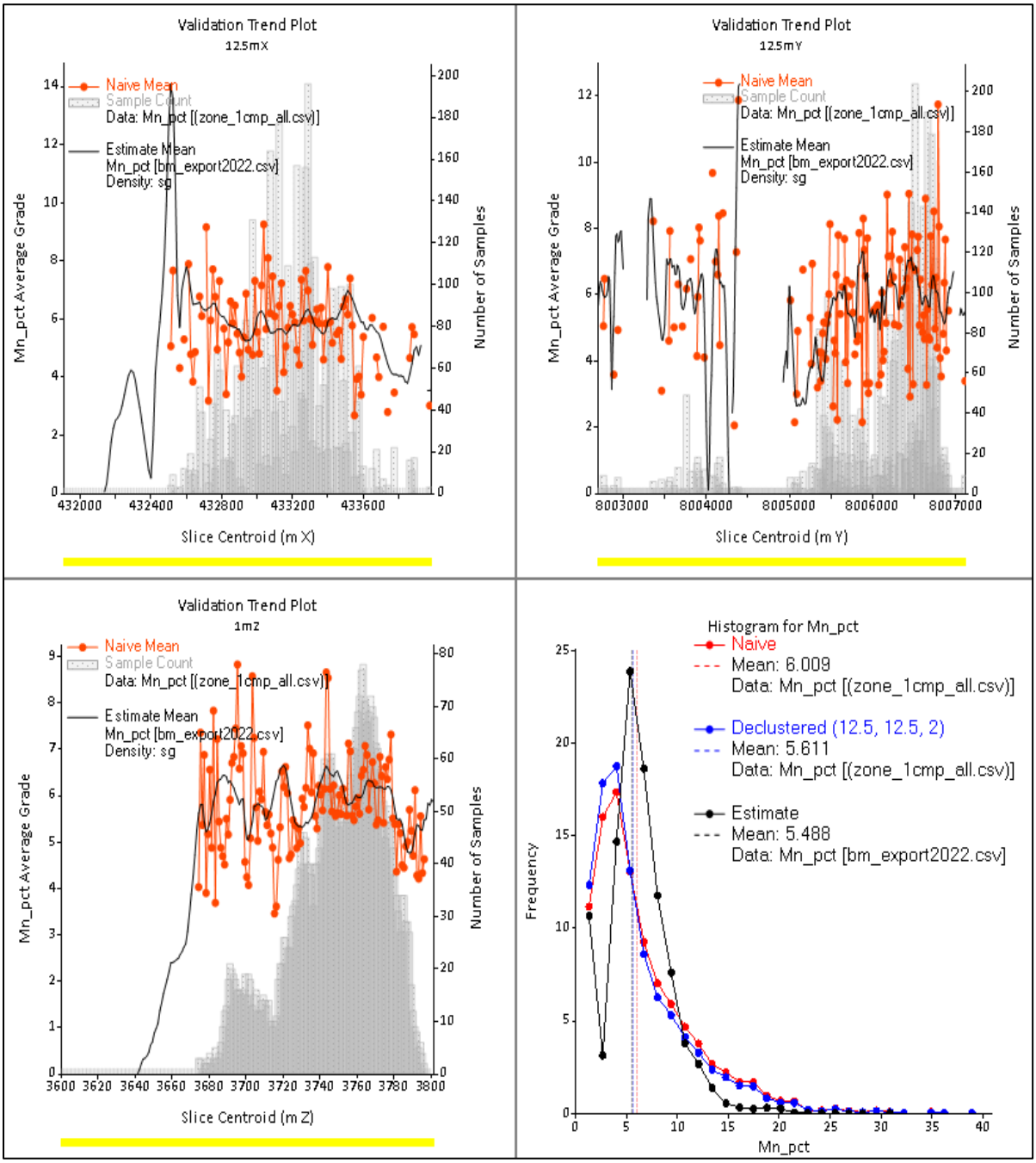


Figure 25 Global Swath plots for all wireframes

11 BULK DENSITY

Bulk densities were found to have a very weak correlation with Mn grade (R^2 = 0.1986). This relationship (y=0.0125x+1.9583) has not been used to calculate the block density via the estimated block OK_Mn grade, although it is a possible alternative.

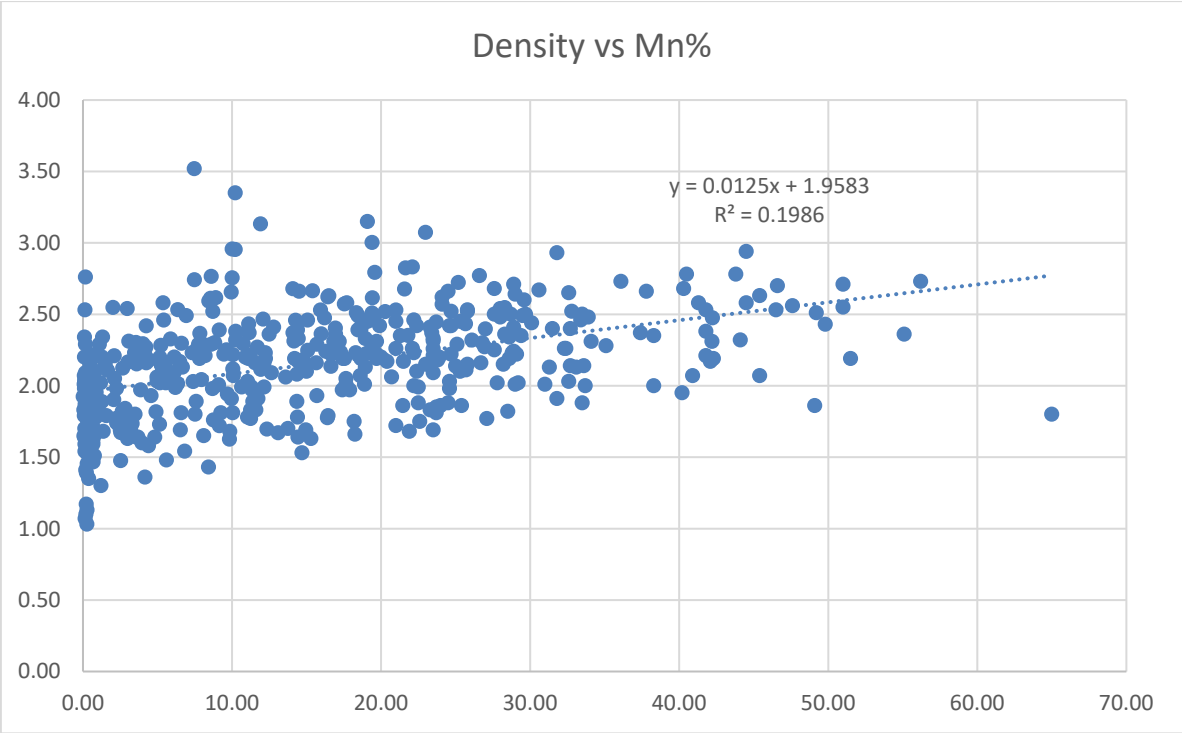


Figure 26. Scatter plot of Mn vs Density correlation

Instead, the SG values for Mn grade ranges or bins has been used to assign the SG for the blocks.

Table 6 Density grade bins

Mn% From	Mn% To	Average SG
0	2	1.84
2	4	1.95
4	6	2.17
6	10	2.19
10	20	2.25
20	40	2.36
40	65	2.55

The waste zones have been given density 1.84 which is the average density of waste samples within the drill hole density measurements.

12 RESOURCE CLASSIFICATION

Classification of the Los Pumas Manganese Project Mineral Resource Estimate has been completed in accordance with the *Australasian Code for Reporting of Mineral Resources and Ore Reserves*.

The resource classification approach applies weights to key parts of the estimate including, confidence in drillhole/wireframe location, number of contributing samples, the estimate pass, the number of contributing drillholes, Kriging Variance (KV), Kriging Efficiency (KE), and the Regression Slope of the estimate (RS). Good results in each get a weighting of 1, low gets a 3, with average/ok results getting a 2. These weights are then used to assign a weighted resource categorisation score. The numbers adopted are below:

Table 7. Resource categorisation parameters

Item	Code	1	2	3	*NA*
Drillhole Accuracy	*DHW*	*1*	*3*	*5*	
*Pass * 2*	*Pass*	*1/3 var*	*2/3 var*	*3/3 var*	*1.5 range*
Sample Numbers	NSW	6-24	4-24	2 - 24	
Drillholes	ndhw	5	3	1	
Kriging Variance (KV)	KVW	<0.2	0.2 to 0.4	>0.4	
Kriging Efficiency (KE)	KEW	>=0.5	0.3 to 0.5	<=0.3	
Regression Slope (RS)	RSW	>=05	0.2 to 0.6	<=0.2	
Weighted Res Score	WRS	0 to 1.0	1.0 to 1.8	1.8 to 3.0	*>3*
		Measured	**Indicated**	**Inferred**	***Unclassified***

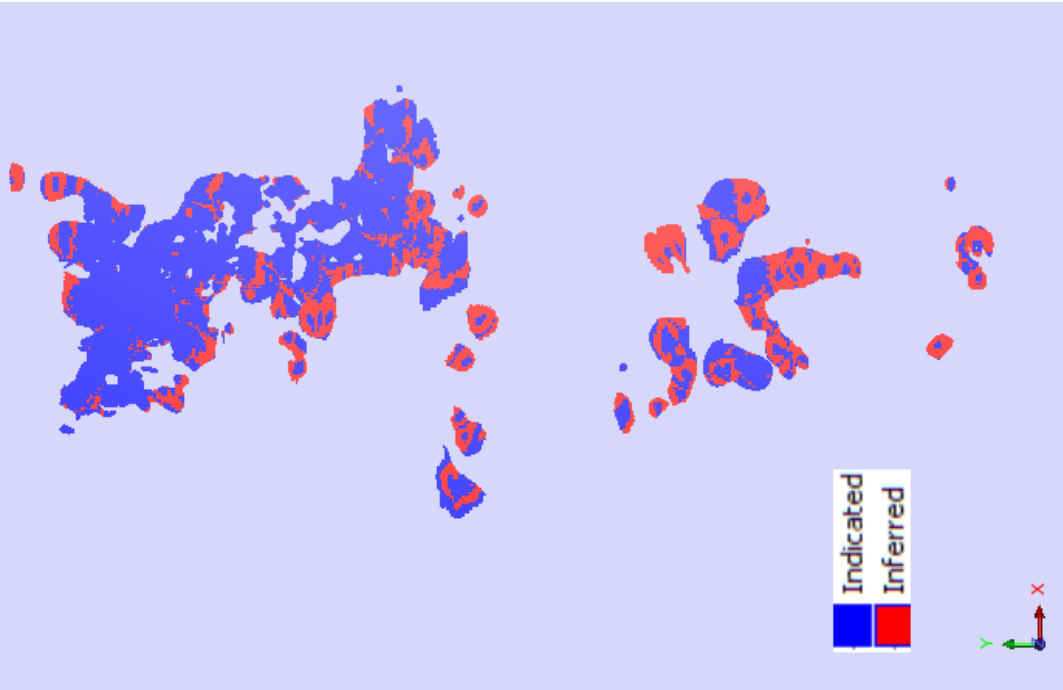


Figure 27. Plan View of the Los Pumas Manganese Project Resource Categories.

13 MINERAL RESOURCE REPORTING

13.1 Mineral Resource

The current JORC Mineral Resource Inventory for the Los Pumas Manganese Deposit has been reported at various cut-offs as at the November 11 2022.

Table 8. Total estimated JORC resource for the Los Pumas Manganese Project resources at various Mn% cut-offs

CutOff 2.5% Mn

Rescat	Tonnes	Mn	Al	Fe2O3	K	P	SiO2	SG
Indicated	23,324,038	6.21	5.71	2.78	2.98	0.05	57.07	2.15
Inferred	6,940,715	6.34	5.85	3.05	2.83	0.05	54.61	2.14
Grand Total	**30,264,753**	**6.24**	**5.74**	**2.84**	**2.95**	**0.05**	**56.50**	**2.15**

CutOff 4.0% Mn

Rescat	Tonnes	Mn	Al	Fe2O3	K	P	SiO2	SG
Indicated	19,368,242	6.78	5.69	2.78	3.01	0.05	56.66	2.19
Inferred	5,644,841	7.03	5.85	3.07	2.83	0.05	53.24	2.19
Grand Total	**25,013,083**	**6.84**	**5.73**	**2.84**	**2.97**	**0.05**	**55.89**	**2.19**

13.2 Grade-Tonnage Reporting

The impact of the cut-off grade on the MRE tonnes and Manganese grades is provided in Figure 28.

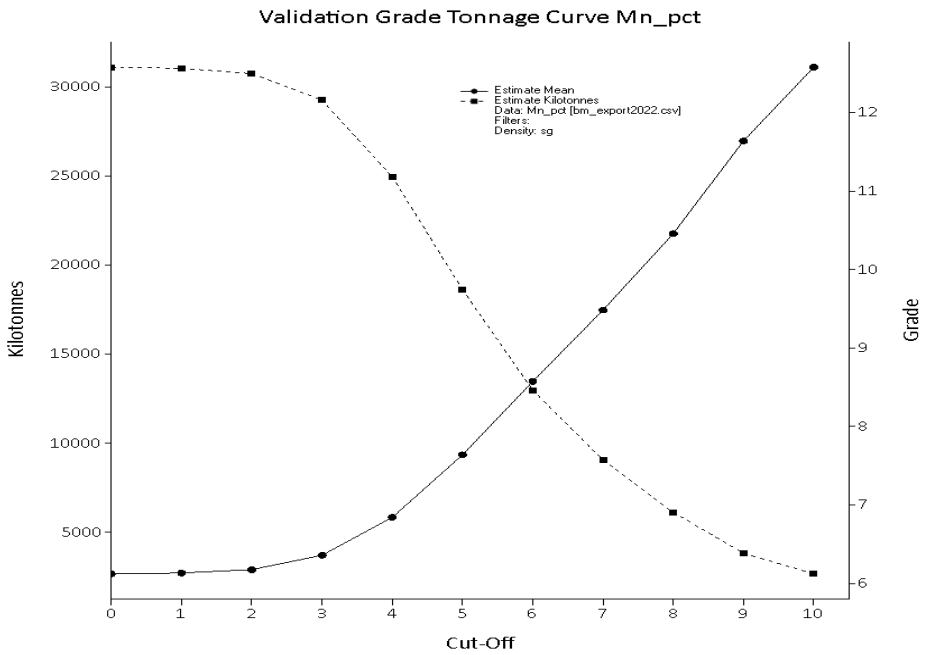


Figure 28 Grade tonnage curve for Indicated, Inferred and Unclassified JORC resources at the Puma deposit.

14 CONCLUSIONS AND RECOMMENDATIONS

It is GCS' opinion that this MRE fairly reflects the current tonnes and grades of the mineralisation at the Los Pumas Manganese Project.

The Los Pumas deposit is open at depth and along strike and these targets should be delineated on an approximate maximum 50m grid prior to completing an update to the JORC Mineral Resource Estimate and mining studies.

Feeder zones previously not tested near surface and geological boundary samples taken from future drilling will better define the grade given the strong visual correlation with manganese grade.

SG estimate would benefit from more data points spread evenly across the deposit, taken from any future diamond drilling.

GCS recommends that a drone topographical survey be completed to accurately cover the MRE area and beyond the likely pit and infrastructure extents.

Geology data contained in the database comments should be extracted and placed into it own table/fields so that it can be analysed/utilised.

APPENDIX A REFERENCES

Dreyer, I. (2010). *Los Pumas Project, Chile Technical Report.* Coffey Mining Pty Ltd.

Dreyer, I. (2011). *Los Pumas Manganese Project, Chile 43-101 Technical Report.* Coffey Mining Pty Ltd.

JORC. (2012). *The JORC Code, 2012 Edition, Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves.* AusIMM.

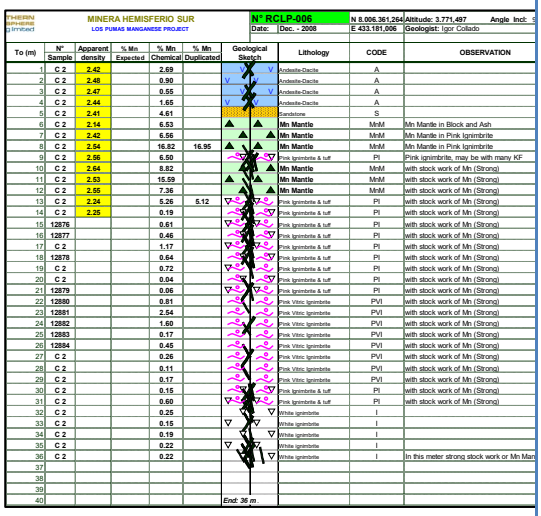
APPENDIX B TABLE 1

JORC Code, 2012 Edition – Table 1 Los Pumas Project

Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	• Commentary
Sampling techniques	• *Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.* • *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* • *Aspects of the determination of mineralisation that are Material to the Public Report.* • *In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.*	• *4 techniques have been carried out, depending on the type of sampling* • ***Diamond Drill Holes** Drill core was marked up on geological intervals, but with intervals not exceeding 1m in length. The core was then cut in half using a diamond core saw. Half the core sample was taken and broken up and submitted to the laboratory for analysis, whilst the remaining ½ core has been stored for future reference. The core were photographed.* • ***Reverse Circulation Drill Holes** = RCH samples were taken on 1m downhole intervals and split to 5kg using a riffle splitter. The 5kg samples were then sieved with the residual coarse RC chips stored in a chip tray for later reference. The chip trays were photographed. The chips were then logged by SHM taking note of the manganese mineralisation and lithology. The bulk reject samples have been retained at the Los Pumas Project.* • ***Bulk Surface sampling,** chip and chip channel samples of variable weight between 0.5 and 5 kg extracted by hammer and chisel, for different objectives (density, metallurgy, grades, mineralogy).* • ***Exploratión Shafts**, Equiprobabilistic extraction samples weighing approximately 5 kg extracted from 'marinas' of vertical work.*
Drilling techniques	• *Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	• *The Los Pumas project was drilled in early 2009 with the first hole commencing on the 16th December 2008. A total of 487 holes of RC were completed for 14,204m by July 2010. The company contracted to undertake the drilling was AC Perforations, utilising an Ingersoll Rand reverse circulation drill rig with a 5½" face sampling hammer.* • *Additional drilling was undertaken by SHM using diamond core (DC) to allow for metallurgical samples along with bulk*

Criteria	JORC Code explanation	• Commentary
		density and where applicable infill resource drilling to be completed. 32 diamond drilling (DD) holes were completed for a total of 652.2m. Core was drilled to HQ and NQ size using standard wireline drilling.
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.*	• *The RC samples (cutting), coming from the cyclone, are weighed to ensure that the recovery is acceptable. Theoretical Weight = π r2 (perforation radius x rock density x length (1 m).* • *The DDH samples (core), are measured for their length and compared with the data from the drilling report* • *The average recovery in diamond drilling (cores) is over 90%, there are no major structures (faults) that could reduce recovery. On the other hand, the recoveries from reverse circulation drilling (cutting) average over 80%, due to the loss of fine material and less than 80% when the drilling intersects water tables.*
Logging	• *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* • *The total length and percentage of the relevant intersections logged.*	• *The RC and DDH drill samples are preliminary mapped in the field (quick log), using a simple format that includes estimated grade, lithology and main geological features. All RC and diamond were logged in entirety* • *The previous samples are subsequently logged according to the following format*  • *Surface samples are also described and include the following geological features = mineral body typology (ignimbrite mantle, conglomerate mantle, feeder); Lithology, occurrence Ore*

MINERA HEMISFERIO SUR
LOS PUMAS MANGANESE PROJECT

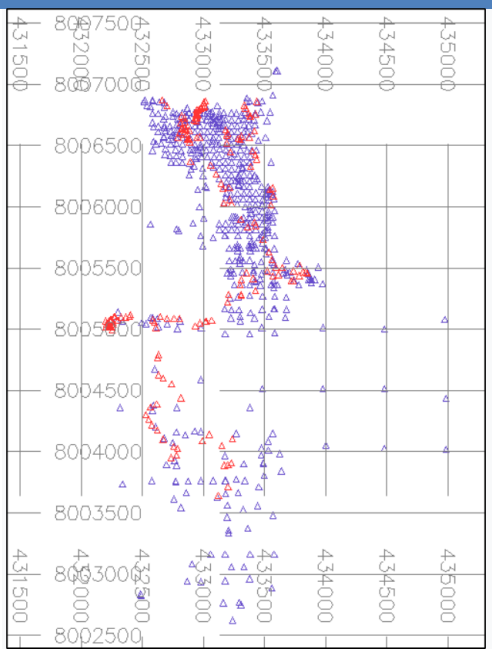
N° RCLP-006 | Date: Dec. - 2008 | N 8.006.361,264 E 433.181,006 | Altitude: 3.771,497 | Angle Incl: | Geologist: Igor Collado

To (m)	N° Sample	Apparent density	% Mn Expected	% Mn Chemical	% Mn Duplicated	Geological Sketch	Lithology	CODE	OBSERVATION
1	C 2	2.42		2.69			Andesite-Dacite	A	
2	C 2	2.48		0.90			Andesite-Dacite	A	
3	C 2	2.47		0.55			Andesite-Dacite	A	
4	C 2	2.44		1.65			Andesite-Dacite	A	
5	C 2	2.41		4.61			Sandstone	S	
6	C 2	2.14		6.53			Mn Mantle	MnM	Mn Mantle in Block and Ash
7	C 2	2.42		6.56			Mn Mantle	MnM	Mn Mantle in Pink Ignimbrite
8	C 2	2.54		16.82	16.95		Mn Mantle	MnM	Mn Mantle in Pink Ignimbrite
9	C 2	2.56		6.50			Pink Ignimbrite & tuff	PI	Pink ignimbrite, may be with many KF
10	C 2	2.64		8.82			Mn Mantle	MnM	with stock work of Mn (Strong)
11	C 2	2.53		15.59			Mn Mantle	MnM	with stock work of Mn (Strong)
12	C 2	2.55		7.36			Mn Mantle	MnM	with stock work of Mn (Strong)
13	C 2	2.24		5.26	5.12		Pink Ignimbrite & tuff	PI	with stock work of Mn (Strong)
14	C 2	2.25		0.19			Pink Ignimbrite & tuff	PI	with stock work of Mn (Strong)
15	12876			0.61			Pink Ignimbrite & tuff	PI	with stock work of Mn (Strong)
16	12877			0.46			Pink Ignimbrite & tuff	PI	with stock work of Mn (Strong)
17	C 2			1.17			Pink Ignimbrite & tuff	PI	with stock work of Mn (Strong)
18	12878			0.64			Pink Ignimbrite & tuff	PI	with stock work of Mn (Strong)
19	C 2			0.72			Pink Ignimbrite & tuff	PI	with stock work of Mn (Strong)
20	C 2			0.04			Pink Ignimbrite & tuff	PI	with stock work of Mn (Strong)
21	12879			0.06			Pink Ignimbrite & tuff	PI	with stock work of Mn (Strong)
22	12880			0.81			Pink Vitric Ignimbrite	PVI	with stock work of Mn (Strong)
23	12881			2.54			Pink Vitric Ignimbrite	PVI	with stock work of Mn (Strong)
24	12882			1.60			Pink Vitric Ignimbrite	PVI	with stock work of Mn (Strong)
25	12883			0.17			Pink Vitric Ignimbrite	PVI	with stock work of Mn (Strong)
26	12884			0.45			Pink Vitric Ignimbrite	PVI	with stock work of Mn (Strong)
27	C 2			0.26			Pink Vitric Ignimbrite	PVI	with stock work of Mn (Strong)
28	C 2			0.11			Pink Vitric Ignimbrite	PVI	with stock work of Mn (Strong)
29	C 2			0.17			Pink Vitric Ignimbrite	PVI	with stock work of Mn (Strong)
30	C 2			0.15			Pink Ignimbrite & tuff	PI	with stock work of Mn (Strong)
31	C 2			0.60			Pink Ignimbrite & tuff	PI	with stock work of Mn (Strong)
32	C 2			0.25			White Ignimbrite	I	
33	C 2			0.15			White Ignimbrite	I	
34	C 2			0.19			White Ignimbrite	I	
35	C 2			0.22			White Ignimbrite	I	
36	C 2			0.22			White Ignimbrite	I	In this meter strong stock work or Mn Man
37									
38									
39									
40						End: 36 m			

Criteria	JORC Code explanation	• Commentary
		(matrix/cement, impregnation, massive); texture/structure.
Sub-sampling techniques and sample preparation	• *If core, whether cut or sawn and whether quarter, half or all core taken.* • *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* • *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	• *Some core has been used for metallurgical and bulk density testwork. In these cases, ¼ core remains. The core is stored in a warehouse at Hotel Vicuñas in Putre, near the Los Pumas Project, and a few boxes, are stored in Andes Analytical Assay Limitada (AAA) Lab at Arica City.* • *Drill core was marked up on geological intervals, but with intervals not exceeding 1m in length. The core was then cut in half using a diamond core saw. Half the core sample was taken and broken up and submitted to the laboratory for analysis. RC samples were taken on 1m downhole intervals and split to 5kg using a riffle splitter.*
Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* • *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.* • *Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.*	• *After sample preparation, 50g pulps were sent by air to the AAA laboratory in Santiago. This laboratory has an ISO 9001:2008 certification for quality management systems. The samples were then analysed by four acid digest (a total digest technique) and ICP AES (analysing for 33 elements). The laboratory certificates for all samples have been obtained from SHM and random checks have been completed on 10 holes to ensure the veracity of the data upload procedures.* Ag PPM / Fe % / S % Al % / Ga PPM / Sb PPM As PPM / K % / Sc PPM Ba PPM / La PPM / Sr PPM Be PPM / Mn PPM / Th PPM Bi PPM / Mn % / Ti % Ca % / Mo PPM / Tl PPM Cd PPM / Na % / U PPM Co PPM / Ni PPM / V PPM Cr PPM / P PPM / W PPM Cu PPM / Pb PPM / Zn PPM ***QAQC*** ***Standard Data*** • *No independent or client generated certified standards have been included in*

Criteria	JORC Code explanation	• Commentary
		the assay methodology by SHM. Coffey Mining recommends that in future SHM submit certified manganese standards at a rate of 5% of the total samples to ensure laboratory accuracy. ***Field Duplicate Data*** • *Field duplicates were prepared in the field (1 in 20 or 5%) by passing the bulk RC 1m sample through the splitter to produce a second 5kg sample. This was then sent to the laboratory to be prepared and analysed in the same manner described. The results were analysed by Coffey Mining and are presented in Figure 14.2.2_1 below and show excellent precision which suggests that the current sample reduction methodology is adequate.* ***Laboratory Duplicate Data*** • *No laboratory pulp duplicate data are available from AAA laboratory.* ***Blanks*** • *A total of 22 blank samples were sent to AAA laboratory. The results were reviewed by Coffey Mining and are presented in Figure 14.2.4_1 below. Coffey Mining recommends that in future an increased number of blanks are submitted to assess laboratory processes at a submission rate of 1 in 20 samples.* ***Umpire Assays*** • *A total of 58 pulp samples were sent to ALS Chemex in La Serena for analysis by four acid ICP-AES (and by AAS for Mn >10%). These are pulps that have been processed by AAA laboratory and then forwarded to ALS Chemex.* • *ALS submitted 1 standard, one blank and one pulp duplicate as part of the ALS internal QAQC program. Coffey Mining reviewed the ALS QAQC report and noted no issues with the internal QAQC.* • *The umpire assay results were analysed by Coffey Mining and are presented in Figure 14.2.5_1 below. The results are that AAA show a low relative bias to the ALS results. Coffey recommends that client standards are submitted to both ALS and AAA in sufficient quantities that a comparison can be completed between the results of each laboratory. Coffey recommends that the insertion rate of*

Criteria	JORC Code explanation	• Commentary
		standards to the umpire laboratory be significantly increased from the rate recommended in Section 14.2.1 so that a statistically robust dataset is gathered (ideally, more than 100 standards through the umpire laboratory).
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	• *12 twin holes were drilled to verify grades and geological features.* • *Ian Dreyer of Coffey Mining has reviewed the protocols and procedures for unit operations for sampling, chemical analysis, geological logging, QA/QC and DB data management.* • *There have been no adjustments to the assay data.*
Location of data points	• *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• *The drilling data were established with geodetic topography in Datum PSDat56 Huso 19 S. As the drillholes are vertical and short (25m) no downhole surveys were completed.* • *The surface sampling data, in all cases, were established with a GPS explorer on Datum WGS84.* • *The project has a surface topography in Datum PSDat56*
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.* • *Whether sample compositing has been applied.*	• *Holes were mostly drilled to an average 25m depth. Holes were drilled on a spacing of approximately 50m by 50m in north area varying to 200m by 200m in south area. Recent drilling has infilled some pockets of the northern area to 25m x 25m. The data spacing is considered good enough for mineral resource calculation.* • *The project has a surface topography in Datum PSDat56*

Criteria	JORC Code explanation	• Commentary
		 • *Drill Holes and Surface sampling*
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.*	• *The manganese mineralisation is predominantly horizontal so the mineralised intercepts represent close to the true thickness of mineralisation (vertical drillholes).*
Sample security	• *The measures taken to ensure sample security.*	• *The samples were collected and sent to the AAA and ALS laboratories by qualified geologists, Igor Collado and Marco Carrasco, QP CMCH Reg No 0336 and 0400, respectively.*
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• *Coffey Mining de Australia completed an external review and a NI43-101 compliant report.*

Criteria	JORC Code explanation	• Commentary
		Los Pumas Manganese Project, Chile Technical Report Prepared by Coffey Mining Pty Ltd on behalf of: Southern Hemisphere Mining Limited Effective Date: 21 March 2011 Qualified Persons: Ian Dreyer - BSc (Geol.), AUSIMM

Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	• *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* • *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*	• The licences which make up the Los Pumas Project are 100% owned by Southern Hemisphere Mining and are in good standing.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• All exploration work on the project has been completed by Southern Hemisphere Mining Ltd. Small scale mining was done by a German company during WW2 who did some trenches and small underground adits. No other exploration work has been done on the project by other parties.

Criteria	JORC Code explanation	Commentary
Geology	• *Deposit type, geological setting and style of mineralisation.*	• The primary exploration model associated with the Los Pumas Project is "manto" style mineralisation comprising sub-horizontal, stratabound deposits (or mantos) and their postulated sub-vertical feeder zones. • The manto model involves the introduction of mineralised hydrothermal solutions via steeply dipping feeder zones usually expressed as faults or breccia zones. These solutions then selectively invade and mineralize relatively porous and permeable horizons within the adjacent stratigraphic profile. Where a feeder zone successively intersects a series of permeable horizons within the stratigraphy, stacked mineralised mantos may be developed. These stacked mantos are often characterized by a vertical metal zonation.
Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:* ○ *easting and northing of the drill hole collar* ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* ○ *dip and azimuth of the hole* ○ *down hole length and interception depth* ○ *hole length.* • *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*	• See Appendix
Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.* • *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths*	• No data aggregation methods were used

Criteria	JORC Code explanation	Commentary
	of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail. • *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').*	• The Manganese mineralisation at Los Pumas is horizontal or flat lying therefore vertical drillholes would approximate true widths of the mineralisation. In addition the Mn mineralisation is black and the surrounding rocks are either pink or white so it is very easy to visually identify the Manganese.
Diagrams	• *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	• Appropriate maps and sections have been included in the report
Balanced reporting	• *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	• NA
Other substantive exploration data	• *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	• NA

Criteria	JORC Code explanation	Commentary
Further work	• *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• Further drilling is planned to test the outcropping mineralisation for grade and thickness.

Section 3 Estimation and Reporting of Mineral Resources

(Criteria listed in section 1, and where relevant in section 2, also apply to this section.)

Criteria	JORC Code explanation	Commentary
Database integrity	• *Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.* • *Data validation procedures used.*	• The database was supplied by Coffey Mining who validated the database previously. • All drill hole data was exported to an MS Access database and linked to Dassault Geovia Surpac.
Site visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* • *If no site visits have been undertaken indicate why this is the case.*	• GCS did not visit the Los Pumas site due to the COVID-19 restrictions on travel that existing during the time of the MRE
Geological interpretation	• *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.* • *Nature of the data used and of any assumptions made.* • *The effect, if any, of alternative interpretations on Mineral Resource estimation.* • *The use of geology in guiding and controlling Mineral Resource estimation.* • *The factors affecting continuity both of grade and geology.*	• Surface diamond and reverse circulation (RC) drillholes have been logged for lithology, structure, alteration and mineralisation. The lithological logging and grade values obtained from the drillholes show good continuity of both geology and grade along strike and down dip.
Dimensions	• *The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*	• The surface geology that hosts the mineralisation has been mapped extensively, and this was utilised in the modelling of the mineralisation along strike for approximately 4,000m, which is the extent of the drilling. • The mineralisation has been modelled in wireframes that extend from surface to a vertical depth of 60m. • The apparent mineralised thickness ranges from 0.5m to 36m.

Criteria	JORC Code explanation	Commentary
Estimation and modelling techniques	• *The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.* • *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* • *The assumptions made regarding recovery of by-products.* • *Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).* • *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.* • *Any assumptions behind modelling of selective mining units.* • *Any assumptions about correlation between variables.* • *Description of how the geological interpretation was used to control the resource estimates.* • *Discussion of basis for using or not using grade cutting or capping.* • *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*	• Grade estimation of Mn# Al% Fe2O3% K% P% SiO2% has been completed using Ordinary Kriging (OK) into the Mineralised wireframe using Geovia Surpac software version 7.1. • The influence of extreme assays has been reduced by top-cutting where required. The top-cut thresholds have been determined using a combination of histograms, log probability and mean variance plots. Top-cuts have been reviewed and applied to the composites on a deposit basis. • Datamine Supervisor software was used to analyse the variography within each of the lodes for each estimated element individually. • Downhole compositing has been undertaken within the domain/lode boundaries at 1m intervals. • Only composites within each of the 58 wireframed mineralised solids were allowed to inform that solids' estimate. ie there was a hard boundary was applied for each block. • No assumptions have been made regarding recovery of any by-products nor deleterious elements. • The drillhole data spacing ranges from 20m by 20m to 60m by 60m resource definition drillhole spacing. • The block model parent block size is 12.5 m (X) by 12.5 m (Y) by 1 m (Z), which is considered appropriate for the dominant drillhole spacing. A sub-block size of 6.25 m (X) by 6.25 m (Y) by 0.5 m (Z) has been used to allow the estimate to fill the mineralisation edges. The grade has been estimated at the parent block scale using 3 passes, the parameters of which are withing the body of this report in Table 3. • The search ellipses and variographic rotations applied during the estimation of all domain blocks have been determined using the mid-line surface of each lode within the

Criteria	JORC Code explanation	Commentary
		dynamic anisotropy function in Surpac • The Mineral Resource estimate has been validated using visual validation tools such as sectional and plan views within Surpac comparing the drill holes with the modelled blocks, and volume comparisons with each blocks wireframes, mean grade comparisons between the block model and composite grade means. Swathe plots comparing the composite grades and block model grades by Northing, Easting and RL have also been evaluated using Snowden Supervisor tools. • There has been no historical production at the Los Pumas Project. • No selective mining units are assumed in this estimate. • No correlation between variables has been assumed.
Moisture	• *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	• The tonnes have been estimated on a dry basis.
Cut-off parameters	• *The basis of the adopted cut-off grade(s) or quality parameters applied.*	• It is anticipated that open pit mining is likely to be the most appropriate way to mine the mineralisation at the Los Pumas Project. Economic cut-off grades will be heavily dependent on mining costs and prevailing metal prices.
Mining factors or assumptions	• *Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*	• Selective open pit mining methods have been assumed with a minimum mining witdth of 2m

Criteria	JORC Code explanation	Commentary
Metallurgical factors or assumptions	• *The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	• Several phases of metallurgical testwork have been completed by Transmin and Mintek for Southern Hemisphere Mining Ltd. Transmin completed Heavy Liquid Separation work on the samples which provided enough data for Mintek to complete pilot plant scale Dense Media Separation testwork which demonstrated a 95% Mn recovery to a 38% Mn concentrate.
Environmen-tal factors or assumptions	• *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	• SNC Lavalin produced a PEA report which covered the tailings design and location and an environmental report was prepared by Cedrem Consultores, Macroforest Gestion Ambiental and Minería & Medio Ambiente Ltda to conduct initial and follow up Environment Impact Assessment Reports respectively
Bulk density	• *Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.* • *The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.* • *Discuss assumptions for bulk density estimates used in the*	• A total of 157 samples were measured for Bulk Density for the previous resource estimate which is considered low so an additional 345 samples were sent for bulk density testing at ASL La Serena using the displacement method which is the dry weight of the sample (grams) divided by the volume of water displaced (cm^3).

Criteria	JORC Code explanation	Commentary
	evaluation process of the different materials.	
Classification	• *The basis for the classification of the Mineral Resources into varying confidence categories.* • *Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).* • *Whether the result appropriately reflects the Competent Person's view of the deposit.*	• The classification of resources at the Los Pumas Manganese Project as "Indicated" or "Inferred" has been based on geological understanding, data quality, sample spacing and geostatistical analysis. • The Mineral Resource classification has been completed by weighting key parts of the estimate including, confidence in drillholes / wireframe location, the estimate pass, and the Regression Slope (RS), to produce a Weighted Resource Category Score (WRCS). • Resources have been classified as "Indicated" if WRCS is between 1.2 and 2.2. • Resources have been classified as "Inferred" if WRCS is greater than 2.2 and the model estimates fall within 1.5 variogram range of informing drill holes. • The input data is comprehensive in its coverage of the mineralisation and does not misrepresent in-situ mineralisation. The definition of mineralised zones is based on a good geological understanding producing a robust model of mineralised domains. • The resource estimate appropriately reflects the view of the Competent Person that the data quality and validation criteria, as well as the resource methodology and check procedures, are reliable and consistent with criteria as defined by the JORC Code.
Audits or reviews	• *The results of any audits or reviews of Mineral Resource estimates.*	• No audits or reviews have been completed.
Discussion of relative accuracy/ confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that*	• The relative accuracy of the Mineral Resource estimate is reflected in the reporting of the Mineral Resource as per the guidelines of the 2012 JORC Code. • The mineralisation geometry and continuity has been adequately interpreted to reflect the level of Indicated and Inferred Mineral Resources. • The recent data quality is considered very good, and all drill holes drilled by Southern Hemisphere Mining, upon which the majority of the MRE is based, have detailed logs produced by

Criteria	JORC Code explanation	Commentary
	could affect the relative accuracy and confidence of the estimate. • *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* • *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	qualified geologists. • Historical data has been used and attributed confidence levels reflected in the resource categorisation. Unreliable data has been excised from the MRE. • Independent recognised laboratories have been used for all analyses. • The Mineral Resource statement relates to global estimates of tonnes at or above the underground cut-off of 2.0% Mn. • The deposit is not currently being mined.

APPENDIX C MRE DRILLHOLE LIST

Drillhole	Type	Easting UTM Zone 18S	Northing UTM Zone 18S	Azimuth (degrees)	Dip (degrees)	RL (m)	Total Depth (m)
DDHLP001	DD	432,970.5	8,006,772.2	0	-90	3,741.8	14.90
DDHLP002	DD	432,937.6	8,006,463.8	0	-90	3,749.7	33.00
DDHLP003	DD	433,288.9	8,006,255.4	0	-90	3,781.5	31.55
DDHLP004	DD	433,279.9	8,005,663.4	0	-90	3,776.5	24.00
DDHLP005	DD	433,339.1	8,006,773.5	0	-90	3,773.0	16.35
DDHLP006	DD	432,785.2	8,006,632.9	0	-90	3,712.5	15.50
DDHLP007	DD	432,751.2	8,006,737.1	0	-90	3,705.9	18.70
DDHLP008	DD	432,520.9	8,006,873.5	0	-90	3,681.2	7.50
DDHLP009	DD	432,941.4	8,006,392.8	0	-90	3,747.2	42.35
DDHLP010	DD	433,382.1	8,006,066.2	0	-90	3,782.5	37.30
DDHLP011	DD	433,297.2	8,005,563.2	0	-90	3,777.2	36.00
DDHLP012	DD	433,875.0	8,005,411.4	0	-90	3,794.6	21.00
DDHLP013	DD	433,936.9	8,005,508.7	0	-90	3,801.6	13.40
DDHLP014	DD	433,490.0	8,003,907.0	0	-90	3,775.5	20.90
DDHLP015	DD	433,180.8	8,003,762.3	0	-90	3,765.3	21.00
DDHLP016	DD	432,774.9	8,003,758.1	0	-90	3,755.3	29.60
DDHLP017	DD	433,565.5	8,005,464.9	0	-90	3,785.2	19.50
DDHLP018	DD	433,288.4	8,006,172.8	0	-90	3,779.1	32.95
DDHLP019	DD	432,609.8	8,004,202.4	0	-90	3,746.0	25.30
DDHLP020	DD	432,589.7	8,004,382.3	0	-90	3,744.3	13.30
DDHLP021	DD	433,276.1	8,005,913.7	0	-90	3,776.2	19.40
DDHLP022	DD	433,179.5	8,006,663.5	0	-90	3,763.7	19.40
DDHLP023	DD	433,377.8	8,006,361.1	0	-90	3,786.1	8.90
DDHLP024	DD	433,417.0	8,006,255.2	0	-90	3,789.0	6.00
DDHLP025	DD	433,004.0	8,005,911.2	0	-90	3,744.6	11.80
DDHLP026	DD	433,412.2	8,005,482.1	0	-90	3,779.6	20.80

DDHLP027	DD	433,483.6	8,006,024.3	0	-90	3,787.1	11.75
DDHLP028	DD	433,567.3	8,005,873.1	0	-90	3,795.9	13.40
DDHLP029	DD	433,351.3	8,006,858.9	0	-90	3,773.6	28.40
DDHLP030	DD	433,518.2	8,006,703.2	0	-90	3,788.9	17.65
DDHLP031	DD	433,355.6	8,006,461.6	0	-90	3,782.8	10.25
DDHLP032	DD	432,600.9	8,004,677.0	0	-90	3,745.5	10.35
RCLP001	RC	432,970.1	8,006,771.0	0	-90	3,741.5	18.00
RCLP002	RC	433,198.9	8,006,573.0	0	-90	3,766.0	60.00
RCLP003	RC	433,366.3	8,006,749.9	0	-90	3,775.9	42.00
RCLP004	RC	433,543.9	8,006,775.5	0	-90	3,787.8	13.00
RCLP005	RC	433,169.0	8,006,772.5	0	-90	3,761.2	30.00
RCLP006	RC	433,181.0	8,006,361.3	0	-90	3,771.5	36.00
RCLP007	RC	433,379.4	8,006,364.5	0	-90	3,785.9	43.00
RCLP008	RC	433,180.4	8,006,165.8	0	-90	3,770.3	35.00
RCLP009	RC	433,171.6	8,006,025.5	0	-90	3,769.2	27.00
RCLP010	RC	433,177.5	8,005,764.1	0	-90	3,769.3	11.00
RCLP011	RC	433,212.1	8,005,562.1	0	-90	3,770.9	24.00
RCLP012	RC	433,252.3	8,005,365.3	0	-90	3,768.4	37.00
RCLP013	RC	433,177.1	8,005,166.0	0	-90	3,765.7	36.50
RCLP014	RC	433,178.3	8,004,963.5	0	-90	3,768.2	47.00
RCLP015	RC	433,296.1	8,002,770.7	0	-90	3,759.3	24.00
RCLP016	RC	433,163.4	8,002,764.6	0	-90	3,764.5	27.00
RCLP017	RC	433,238.2	8,002,623.3	0	-90	3,763.8	22.00
RCLP018	RC	433,179.3	8,002,946.1	0	-90	3,759.3	34.00
RCLP019	RC	433,178.0	8,003,163.7	0	-90	3,764.0	28.00
RCLP020	RC	433,205.1	8,003,361.0	0	-90	3,763.6	16.00
RCLP021	RC	433,196.1	8,003,564.7	0	-90	3,767.4	11.00
RCLP022	RC	433,178.6	8,003,761.8	0	-90	3,765.2	20.00
RCLP023	RC	433,176.8	8,003,968.5	0	-90	3,768.8	18.00
RCLP024	RC	432,979.5	8,004,165.9	0	-90	3,762.1	18.00

RCLP025	RC	433,379.1	8,004,361.5	0	-90	3,781.4	11.00
RCLP026	RC	432,319.2	8,004,359.6	0	-90	3,717.2	17.50
RCLP027	RC	432,783.9	8,004,360.0	0	-90	3,754.7	15.00
RCLP028	RC	432,687.2	8,006,743.7	0	-90	3,706.2	24.00
RCLP029	RC	432,893.5	8,006,565.5	0	-90	3,741.2	19.00
RCLP030	RC	432,743.5	8,006,553.6	0	-90	3,707.0	30.00
RCLP031	RC	432,943.3	8,006,394.9	0	-90	3,747.7	47.00
RCLP032	RC	433,376.7	8,006,564.4	0	-90	3,783.6	36.00
RCLP033	RC	433,382.4	8,006,164.2	0	-90	3,784.0	30.00
RCLP034	RC	433,384.5	8,005,977.0	0	-90	3,782.4	30.00
RCLP035	RC	433,565.3	8,006,126.5	0	-90	3,796.6	37.00
RCLP036	RC	433,553.3	8,006,364.5	0	-90	3,792.6	19.00
RCLP037	RC	433,509.1	8,006,567.4	0	-90	3,795.0	19.00
RCLP038	RC	433,581.1	8,005,968.4	0	-90	3,798.1	35.00
RCLP039	RC	433,581.8	8,005,765.8	0	-90	3,795.7	32.00
RCLP040	RC	433,377.6	8,005,562.3	0	-90	3,780.7	17.00
RCLP041	RC	433,564.0	8,005,547.4	0	-90	3,788.6	11.00
RCLP042	RC	433,381.7	8,005,363.6	0	-90	3,774.8	20.00
RCLP043	RC	433,858.2	8,005,452.3	0	-90	3,794.8	17.00
RCLP044	RC	433,377.8	8,005,764.4	0	-90	3,783.3	34.00
RCLP045	RC	433,975.5	8,005,371.9	0	-90	3,797.6	20.00
RCLP046	RC	433,780.7	8,005,363.5	0	-90	3,788.3	36.00
RCLP047	RC	433,579.6	8,005,362.8	0	-90	3,780.9	20.00
RCLP048A	RC	433,577.3	8,005,165.3	0	-90	3,781.7	11.00
RCLP048B	RC	433,581.5	8,005,166.6	0	-90	3,781.4	23.00
RCLP049	RC	433,384.7	8,005,137.2	0	-90	3,773.6	19.00
RCLP050	RC	433,380.0	8,004,963.1	0	-90	3,777.3	15.00
RCLP051	RC	432,338.9	8,003,734.9	0	-90	3,734.2	18.00
RCLP052	RC	432,577.8	8,003,763.0	0	-90	3,748.3	17.00
RCLP053	RC	432,775.1	8,003,757.1	0	-90	3,755.1	29.00

RCLP054	RC	432,977.9	8,003,763.8	0	-90	3,758.1	29.00
RCLP055	RC	433,337.8	8,003,763.9	0	-90	3,772.6	17.00
RCLP056	RC	433,325.3	8,003,527.8	0	-90	3,774.3	22.00
RCLP057	RC	433,568.3	8,003,481.5	0	-90	3,781.9	20.00
RCLP058	RC	433,364.1	8,003,374.9	0	-90	3,773.0	17.00
RCLP059	RC	433,329.3	8,003,903.1	0	-90	3,767.6	28.00
RCLP060	RC	433,382.7	8,003,162.8	0	-90	3,773.7	19.00
RCLP061	RC	433,580.5	8,003,162.4	0	-90	3,784.3	21.00
RCLP062	RC	433,061.2	8,003,161.7	0	-90	3,754.8	17.00
RCLP063	RC	433,287.5	8,003,663.6	0	-90	3,773.5	22.00
RCLP064	RC	433,194.6	8,003,465.7	0	-90	3,766.1	20.00
RCLP065	RC	433,184.3	8,003,659.2	0	-90	3,767.2	24.00
RCLP066	RC	433,114.0	8,003,630.5	0	-90	3,759.7	35.00
RCLP067	RC	433,563.4	8,002,885.6	0	-90	3,769.1	30.00
RCLP068	RC	433,376.7	8,002,963.1	0	-90	3,768.7	20.00
RCLP069	RC	433,332.0	8,003,058.6	0	-90	3,771.4	26.00
RCLP070	RC	433,231.5	8,003,058.9	0	-90	3,765.4	20.00
RCLP071	RC	432,572.3	8,005,097.4	0	-90	3,725.2	12.00
RCLP072	RC	433,566.6	8,004,149.6	0	-90	3,791.9	19.00
RCLP073	RC	433,490.1	8,003,905.7	0	-90	3,775.6	24.00
RCLP074	RC	433,417.6	8,006,257.2	0	-90	3,789.0	19.00
RCLP075	RC	433,079.4	8,006,466.5	0	-90	3,758.8	35.00
RCLP076	RC	432,986.2	8,006,461.5	0	-90	3,749.9	41.00
RCLP077	RC	432,900.0	8,006,444.4	0	-90	3,742.7	18.00
RCLP078	RC	433,068.9	8,006,360.2	0	-90	3,762.7	34.00
RCLP079	RC	433,289.7	8,006,253.7	0	-90	3,781.5	44.00
RCLP080A	RC	432,584.1	8,006,866.5	0	-90	3,687.3	5.00
RCLP080B	RC	432,585.3	8,006,870.3	0	-90	3,688.0	8.00
RCLP081	RC	432,782.9	8,006,632.6	0	-90	3,712.3	20.00
RCLP082	RC	432,682.4	8,006,643.5	0	-90	3,706.5	22.00

RCLP083	RC	432,581.7	8,006,687.9	0	-90	3,696.7	13.00
RCLP084A	RC	432,512.6	8,006,855.3	0	-90	3,680.5	9.00
RCLP084B	RC	432,519.7	8,006,872.3	0	-90	3,681.1	8.00
RCLP085	RC	432,681.2	8,006,852.9	0	-90	3,694.2	11.00
RCLP086	RC	432,749.4	8,006,737.0	0	-90	3,705.8	22.00
RCLP087	RC	432,771.6	8,006,467.9	0	-90	3,708.1	17.00
RCLP088	RC	432,683.8	8,006,426.8	0	-90	3,695.4	18.00
RCLP089	RC	432,582.2	8,006,460.1	0	-90	3,695.2	9.00
RCLP090	RC	432,883.2	8,006,260.8	0	-90	3,712.4	24.00
RCLP091	RC	432,777.6	8,006,364.1	0	-90	3,700.1	13.00
RCLP092	RC	432,998.4	8,006,253.6	0	-90	3,728.2	16.00
RCLP093	RC	432,953.5	8,006,140.8	0	-90	3,700.3	12.00
RCLP094	RC	432,813.7	8,006,726.1	0	-90	3,721.8	18.00
RCLP095	RC	432,880.0	8,006,664.8	0	-90	3,731.1	24.00
RCLP096	RC	433,271.7	8,006,767.1	0	-90	3,766.4	16.00
RCLP097	RC	433,279.4	8,006,660.8	0	-90	3,771.0	30.00
RCLP098	RC	433,592.9	8,007,110.5	0	-90	3,788.7	21.00
RCLP099	RC	433,480.0	8,006,863.5	0	-90	3,782.1	16.00
RCLP100	RC	433,378.0	8,006,865.0	0	-90	3,776.3	11.00
RCLP101	RC	433,470.3	8,006,774.4	0	-90	3,782.7	12.00
RCLP102	RC	432,968.3	8,005,999.4	0	-90	3,711.3	10.00
RCLP103	RC	433,015.3	8,006,169.5	0	-90	3,715.7	12.00
RCLP104	RC	432,995.5	8,006,314.3	0	-90	3,740.9	19.00
RCLP105	RC	433,773.6	8,005,534.1	0	-90	3,795.2	11.00
RCLP106	RC	433,680.8	8,005,564.1	0	-90	3,796.9	18.00
RCLP107	RC	433,883.3	8,005,406.4	0	-90	3,794.7	14.00
RCLP108	RC	433,743.6	8,005,399.9	0	-90	3,788.7	9.00
RCLP109	RC	432,786.3	8,005,006.9	0	-90	3,753.2	20.00
RCLP110	RC	433,217.5	8,005,254.1	0	-90	3,765.8	20.00
RCLP111	RC	433,178.9	8,005,762.5	0	-90	3,769.4	19.00

RCLP112	RC	433,282.9	8,005,764.5	0	-90	3,778.8	22.00
RCLP113	RC	433,279.7	8,005,664.8	0	-90	3,776.5	20.00
RCLP114	RC	433,381.9	8,005,669.1	0	-90	3,781.5	13.00
RCLP115	RC	433,501.0	8,005,664.3	0	-90	3,788.9	12.00
RCLP116	RC	433,382.0	8,005,865.6	0	-90	3,781.7	16.00
RCLP117	RC	433,381.7	8,006,065.2	0	-90	3,782.3	24.00
RCLP118	RC	433,281.3	8,006,065.1	0	-90	3,777.9	28.00
RCLP119	RC	433,181.4	8,006,079.0	0	-90	3,771.1	28.00
RCLP120	RC	433,129.1	8,006,231.0	0	-90	3,766.2	18.00
RCLP121	RC	433,483.7	8,006,060.7	0	-90	3,785.7	34.00
RCLP122	RC	433,579.3	8,006,065.8	0	-90	3,796.8	19.00
RCLP123	RC	433,291.7	8,006,359.0	0	-90	3,779.9	15.00
RCLP124	RC	433,302.3	8,006,468.8	0	-90	3,777.9	30.00
RCLP125	RC	433,300.4	8,006,552.8	0	-90	3,776.0	21.00
RCLP126	RC	433,337.8	8,006,768.6	0	-90	3,772.6	16.00
RCLP127	RC	433,185.5	8,006,466.4	0	-90	3,769.6	28.00
RCLP128	RC	432,977.7	8,006,571.5	0	-90	3,745.8	24.00
RCLP129	RC	433,080.0	8,006,567.4	0	-90	3,753.0	29.00
RCLP130	RC	433,498.7	8,003,806.7	0	-90	3,787.3	26.00
RCLP131	RC	433,636.4	8,003,841.6	0	-90	3,780.8	13.00
RCLP132	RC	433,454.2	8,003,713.5	0	-90	3,786.7	24.00
RCLP133	RC	433,444.8	8,003,559.5	0	-90	3,787.7	11.00
RCLP134	RC	433,077.4	8,003,763.1	0	-90	3,754.8	29.00
RCLP135	RC	432,878.4	8,003,761.4	0	-90	3,757.3	20.00
RCLP136	RC	432,815.9	8,003,544.9	0	-90	3,746.6	12.00
RCLP137	RC	433,270.2	8,003,775.6	0	-90	3,769.4	18.00
RCLP138	RC	433,296.7	8,005,561.6	0	-90	3,777.1	24.00
RCLP139	RC	433,222.0	8,005,463.0	0	-90	3,770.0	24.00
RCLP140	RC	433,320.0	8,005,463.9	0	-90	3,774.4	34.00
RCLP141	RC	433,477.0	8,005,553.2	0	-90	3,783.8	40.00

RCLP142	RC	433,679.9	8,005,469.4	0	-90	3,790.1	17.00
RCLP143	RC	433,211.6	8,005,663.0	0	-90	3,771.8	24.00
RCLP144	RC	433,395.4	8,005,689.8	0	-90	3,782.8	30.00
RCLP145	RC	433,579.4	8,005,658.6	0	-90	3,793.7	27.00
RCLP146	RC	433,423.3	8,005,398.6	0	-90	3,778.3	30.00
RCLP147	RC	433,318.4	8,005,368.4	0	-90	3,771.6	36.00
RCLP148	RC	433,116.3	8,006,824.5	0	-90	3,751.2	30.00
RCLP149	RC	433,075.0	8,006,777.1	0	-90	3,752.6	40.00
RCLP150	RC	433,078.5	8,006,664.6	0	-90	3,755.5	40.00
RCLP151	RC	433,449.3	8,006,542.8	0	-90	3,791.2	20.00
RCLP152	RC	433,130.7	8,006,511.5	0	-90	3,761.6	24.00
RCLP153	RC	432,980.6	8,006,613.1	0	-90	3,748.0	24.00
RCLP154	RC	432,930.4	8,006,664.1	0	-90	3,742.4	22.00
RCLP155	RC	432,972.1	8,006,663.3	0	-90	3,747.9	33.00
RCLP156	RC	433,030.1	8,006,663.3	0	-90	3,752.6	30.00
RCLP157	RC	433,028.1	8,006,712.4	0	-90	3,749.9	33.00
RCLP158	RC	433,030.2	8,006,766.5	0	-90	3,748.0	26.00
RCLP159	RC	432,952.2	8,006,693.2	0	-90	3,742.7	23.00
RCLP160	RC	432,933.1	8,006,614.4	0	-90	3,743.4	29.00
RCLP161	RC	433,032.0	8,006,613.1	0	-90	3,751.5	35.00
RCLP162	RC	433,082.2	8,006,714.2	0	-90	3,754.9	31.00
RCLP163	RC	433,128.2	8,006,664.3	0	-90	3,759.1	36.00
RCLP164	RC	433,131.9	8,006,714.9	0	-90	3,759.0	40.00
RCLP165	RC	433,130.1	8,006,765.0	0	-90	3,757.9	36.00
RCLP166	RC	433,183.2	8,006,714.3	0	-90	3,763.9	48.00
RCLP167	RC	433,228.2	8,006,765.9	0	-90	3,764.2	45.00
RCLP168	RC	433,230.8	8,006,711.4	0	-90	3,767.3	42.00
RCLP169	RC	433,229.8	8,006,665.7	0	-90	3,767.6	48.00
RCLP170	RC	433,232.4	8,006,613.3	0	-90	3,767.1	33.00
RCLP171	RC	433,179.0	8,006,616.3	0	-90	3,763.8	34.00

RCLP172	RC	433,280.5	8,006,614.8	0	-90	3,771.0	30.00
RCLP173	RC	433,279.4	8,006,560.7	0	-90	3,773.2	21.00
RCLP174	RC	433,284.0	8,006,712.7	0	-90	3,770.0	33.00
RCLP175	RC	433,329.3	8,006,716.3	0	-90	3,774.6	38.00
RCLP176	RC	433,373.1	8,006,716.3	0	-90	3,778.0	40.00
RCLP177	RC	433,333.2	8,006,671.6	0	-90	3,775.6	18.00
RCLP178	RC	433,331.1	8,006,614.2	0	-90	3,776.6	29.00
RCLP179	RC	433,369.6	8,006,665.1	0	-90	3,777.6	36.00
RCLP180	RC	433,364.3	8,006,611.7	0	-90	3,779.4	30.00
RCLP181	RC	433,420.6	8,006,758.0	0	-90	3,780.7	30.00
RCLP182	RC	433,354.7	8,006,889.5	0	-90	3,775.0	30.00
RCLP183	RC	433,569.4	8,006,912.3	0	-90	3,786.0	28.00
RCLP184	RC	433,415.2	8,006,710.5	0	-90	3,782.8	30.00
RCLP185	RC	433,422.9	8,006,668.1	0	-90	3,784.7	30.00
RCLP186	RC	433,397.2	8,006,602.7	0	-90	3,783.8	18.00
RCLP187	RC	433,397.8	8,006,462.8	0	-90	3,786.3	21.00
RCLP188	RC	433,432.1	8,006,462.0	0	-90	3,789.3	18.00
RCLP189	RC	433,329.8	8,006,564.7	0	-90	3,778.4	18.00
RCLP190	RC	433,311.3	8,006,750.2	0	-90	3,770.0	24.00
RCLP191	RC	433,082.9	8,006,612.8	0	-90	3,755.5	30.00
RCLP192	RC	433,131.6	8,006,613.8	0	-90	3,759.2	29.00
RCLP193	RC	433,128.0	8,006,566.1	0	-90	3,756.3	18.00
RCLP194	RC	433,027.3	8,006,564.7	0	-90	3,750.7	24.00
RCLP195	RC	433,072.5	8,006,511.1	0	-90	3,756.3	40.00
RCLP196	RC	433,028.4	8,006,509.4	0	-90	3,752.5	30.00
RCLP197	RC	432,978.3	8,006,511.7	0	-90	3,748.3	39.00
RCLP198	RC	432,928.6	8,006,511.9	0	-90	3,744.6	27.00
RCLP199	RC	432,925.6	8,006,464.9	0	-90	3,744.8	30.00
RCLP200	RC	432,932.9	8,006,411.7	0	-90	3,746.9	47.00
RCLP201	RC	432,984.4	8,006,409.8	0	-90	3,751.3	36.00

RCLP202	RC	433,034.7	8,006,411.0	0	-90	3,755.9	42.00
RCLP203	RC	433,024.9	8,006,464.7	0	-90	3,753.3	30.00
RCLP204	RC	433,129.9	8,006,412.3	0	-90	3,766.6	35.00
RCLP205	RC	433,090.8	8,006,410.1	0	-90	3,763.6	37.00
RCLP206	RC	433,131.2	8,006,361.5	0	-90	3,768.6	40.00
RCLP207	RC	433,182.7	8,006,419.9	0	-90	3,770.7	45.00
RCLP208	RC	433,232.3	8,006,413.5	0	-90	3,775.0	44.00
RCLP209	RC	433,227.8	8,006,462.1	0	-90	3,773.7	40.00
RCLP210	RC	433,227.9	8,006,509.5	0	-90	3,771.5	33.00
RCLP211	RC	433,232.4	8,006,557.4	0	-90	3,769.4	40.00
RCLP212	RC	433,229.3	8,006,364.6	0	-90	3,775.2	30.00
RCLP213	RC	433,182.6	8,006,512.0	0	-90	3,767.4	27.00
RCLP214	RC	433,281.2	8,006,412.8	0	-90	3,778.2	24.00
RCLP215	RC	433,279.6	8,006,512.9	0	-90	3,775.2	36.00
RCLP216	RC	433,328.1	8,006,508.4	0	-90	3,779.0	28.00
RCLP217	RC	433,382.9	8,006,411.6	0	-90	3,783.4	24.00
RCLP218	RC	433,382.1	8,006,312.9	0	-90	3,787.4	41.00
RCLP219	RC	433,330.9	8,006,412.2	0	-90	3,780.7	24.00
RCLP220	RC	433,327.8	8,006,362.4	0	-90	3,782.8	18.00
RCLP221	RC	433,319.1	8,006,318.7	0	-90	3,782.7	24.00
RCLP222	RC	433,231.9	8,006,311.0	0	-90	3,776.6	37.00
RCLP223	RC	433,180.4	8,006,312.7	0	-90	3,772.9	28.00
RCLP224	RC	433,229.7	8,006,259.9	0	-90	3,776.9	40.00
RCLP225	RC	433,180.7	8,006,260.8	0	-90	3,773.3	36.00
RCLP226	RC	433,232.7	8,006,213.0	0	-90	3,776.5	40.00
RCLP227	RC	433,285.3	8,006,210.9	0	-90	3,780.3	36.00
RCLP228	RC	433,329.5	8,006,165.8	0	-90	3,781.9	24.00
RCLP229	RC	432,565.7	8,005,857.2	0	-90	3,701.9	12.00
RCLP230	RC	432,917.5	8,005,864.9	0	-90	3,718.8	18.00
RCLP231	RC	432,780.8	8,005,819.9	0	-90	3,716.2	30.00

RCLP232	RC	432,977.8	8,005,764.8	0	-90	3,729.3	24.00
RCLP233	RC	432,996.5	8,005,682.3	0	-90	3,728.3	32.00
RCLP234	RC	433,129.9	8,005,863.9	0	-90	3,766.3	29.00
RCLP235	RC	433,130.9	8,005,814.6	0	-90	3,766.3	48.00
RCLP236	RC	433,181.0	8,005,812.3	0	-90	3,771.4	30.00
RCLP237	RC	433,180.5	8,005,863.4	0	-90	3,771.6	36.00
RCLP238	RC	433,409.5	8,005,464.7	0	-90	3,778.9	45.00
RCLP239	RC	433,504.2	8,005,478.9	0	-90	3,783.2	54.00
RCLP240	RC	433,280.8	8,006,110.3	0	-90	3,777.4	40.00
RCLP241	RC	433,331.0	8,006,110.5	0	-90	3,781.3	35.00
RCLP242	RC	433,380.3	8,006,111.3	0	-90	3,783.4	47.00
RCLP243	RC	433,429.3	8,006,064.6	0	-90	3,784.1	41.00
RCLP244	RC	433,430.6	8,006,112.6	0	-90	3,785.8	35.00
RCLP245	RC	433,526.5	8,006,114.4	0	-90	3,791.3	35.00
RCLP246	RC	433,481.1	8,006,112.9	0	-90	3,788.8	35.00
RCLP247	RC	433,477.6	8,006,165.6	0	-90	3,790.7	47.00
RCLP248	RC	433,380.9	8,006,212.7	0	-90	3,784.6	47.00
RCLP249	RC	433,379.7	8,006,262.1	0	-90	3,786.2	32.00
RCLP250	RC	433,331.3	8,006,212.1	0	-90	3,783.1	25.00
RCLP251	RC	433,428.6	8,006,213.5	0	-90	3,788.5	47.00
RCLP252	RC	433,427.8	8,006,015.2	0	-90	3,783.8	29.00
RCLP253	RC	433,479.2	8,006,012.9	0	-90	3,787.1	35.00
RCLP254	RC	433,480.1	8,005,964.6	0	-90	3,786.7	47.00
RCLP255	RC	433,530.3	8,006,013.6	0	-90	3,792.3	29.00
RCLP256	RC	433,569.5	8,005,916.2	0	-90	3,796.1	23.00
RCLP257	RC	433,530.9	8,005,964.3	0	-90	3,791.8	40.00
RCLP258	RC	433,531.5	8,005,912.3	0	-90	3,791.6	40.00
RCLP259	RC	433,481.6	8,005,912.9	0	-90	3,788.5	33.00
RCLP260	RC	433,481.2	8,005,860.6	0	-90	3,788.9	40.00
RCLP261	RC	433,428.7	8,005,861.9	0	-90	3,785.0	26.00

RCLP262	RC	433,431.0	8,005,813.2	0	-90	3,786.1	29.00
RCLP263	RC	433,431.0	8,005,912.8	0	-90	3,785.9	35.00
RCLP264	RC	433,380.3	8,005,812.2	0	-90	3,783.1	35.00
RCLP265	RC	433,330.8	8,005,812.6	0	-90	3,781.6	33.00
RCLP266	RC	433,330.6	8,005,863.2	0	-90	3,781.2	29.00
RCLP267	RC	433,188.5	8,006,112.3	0	-90	3,770.6	45.00
RCLP268	RC	433,222.8	8,006,105.7	0	-90	3,773.0	47.00
RCLP269	RC	433,228.7	8,006,064.0	0	-90	3,773.9	41.00
RCLP270	RC	433,327.3	8,006,066.0	0	-90	3,780.4	35.00
RCLP271	RC	433,221.2	8,006,165.9	0	-90	3,774.3	37.00
RCLP272	RC	433,188.0	8,006,206.5	0	-90	3,772.3	32.00
RCLP273	RC	433,330.5	8,006,262.6	0	-90	3,784.0	29.00
RCLP274	RC	433,285.4	8,006,310.4	0	-90	3,779.5	50.00
RCLP275	RC	433,252.7	8,006,433.4	0	-90	3,776.2	47.00
RCLP276	RC	433,084.1	8,006,324.5	0	-90	3,764.5	24.00
RCLP277	RC	433,130.8	8,006,311.1	0	-90	3,768.9	40.00
RCLP278	RC	432,901.1	8,006,515.2	0	-90	3,743.0	35.00
RCLP279	RC	433,133.6	8,006,469.9	0	-90	3,764.8	35.00
RCLP280	RC	432,982.8	8,006,713.5	0	-90	3,745.1	29.00
RCLP281	RC	432,890.5	8,006,464.1	0	-90	3,742.1	28.00
RCLP282	RC	432,871.8	8,006,600.5	0	-90	3,735.9	29.00
RCLP283	RC	432,880.9	8,006,713.6	0	-90	3,726.3	29.00
RCLP284	RC	432,837.2	8,006,712.9	0	-90	3,723.9	28.00
RCLP285A	RC	432,832.7	8,006,686.5	0	-90	3,721.8	5.00
RCLP285B	RC	432,830.2	8,006,690.7	0	-90	3,721.7	23.00
RCLP286	RC	432,857.2	8,006,745.1	0	-90	3,726.4	29.00
RCLP287	RC	432,778.0	8,006,566.4	0	-90	3,709.6	19.00
RCLP288	RC	432,731.2	8,006,618.3	0	-90	3,708.7	18.00
RCLP289	RC	432,781.0	8,006,602.3	0	-90	3,713.1	17.00
RCLP290	RC	432,689.1	8,006,619.3	0	-90	3,708.2	26.00

RCLP291	RC	432,679.6	8,006,664.4	0	-90	3,705.8	31.00
RCLP292	RC	432,675.5	8,006,715.0	0	-90	3,709.7	29.00
RCLP293	RC	432,726.6	8,006,661.4	0	-90	3,708.2	19.00
RCLP294	RC	432,629.1	8,006,657.7	0	-90	3,702.5	17.00
RCLP295	RC	432,629.3	8,006,615.1	0	-90	3,699.9	23.00
RCLP296	RC	432,593.4	8,006,653.0	0	-90	3,698.3	17.00
RCLP297	RC	432,779.9	8,006,517.4	0	-90	3,709.1	21.00
RCLP298	RC	432,779.4	8,006,416.2	0	-90	3,704.6	19.00
RCLP299	RC	432,830.4	8,006,362.7	0	-90	3,705.9	16.00
RCLP300	RC	432,736.1	8,006,367.2	0	-90	3,697.2	16.00
RCLP301	RC	433,478.7	8,005,751.4	0	-90	3,788.8	45.00
RCLP302	RC	433,473.2	8,005,454.3	0	-90	3,781.1	53.00
RCLP303	RC	433,379.5	8,005,911.8	0	-90	3,781.3	45.00
RCLP304	RC	433,385.6	8,005,948.0	0	-90	3,782.2	40.00
RCLP305	RC	433,248.9	8,005,917.7	0	-90	3,774.2	40.00
RCLP306	RC	433,228.6	8,005,863.5	0	-90	3,776.1	35.00
RCLP307	RC	433,230.7	8,005,813.8	0	-90	3,776.2	35.00
RCLP308	RC	433,279.9	8,005,812.8	0	-90	3,779.4	29.00
RCLP309	RC	433,282.0	8,005,863.7	0	-90	3,780.5	29.00
RCLP310	RC	433,328.7	8,005,910.9	0	-90	3,777.0	35.00
RCLP311	RC	433,428.1	8,005,964.5	0	-90	3,784.5	39.00
RCLP312	RC	433,343.6	8,006,001.0	0	-90	3,779.4	29.00
RCLP313	RC	433,378.3	8,006,012.5	0	-90	3,781.6	29.00
RCLP314	RC	433,280.1	8,006,021.5	0	-90	3,777.5	41.00
RCLP315	RC	433,526.5	8,006,164.6	0	-90	3,795.1	29.00
RCLP316	RC	433,533.8	8,006,052.9	0	-90	3,791.6	33.00
RCLP317	RC	433,531.0	8,005,812.5	0	-90	3,792.6	29.00
RCLP318	RC	432,830.3	8,006,568.2	0	-90	3,713.8	23.00
RCLP319	RC	432,827.4	8,006,617.6	0	-90	3,720.6	21.00
RCLP320	RC	432,830.2	8,006,516.0	0	-90	3,712.8	23.00

RCLP321	RC	432,829.7	8,006,412.3	0	-90	3,709.2	16.00
RCLP322	RC	432,820.3	8,006,454.8	0	-90	3,710.0	17.00
RCLP323	RC	432,612.5	8,006,516.5	0	-90	3,705.2	29.00
RCLP324	RC	432,595.0	8,006,535.2	0	-90	3,703.7	29.00
RCLP325	RC	432,655.4	8,006,517.3	0	-90	3,704.0	34.00
RCLP326A	RC	432,679.8	8,006,572.4	0	-90	3,703.3	5.00
RCLP326B	RC	432,674.6	8,006,571.3	0	-90	3,702.9	11.00
RCLP327	RC	432,732.4	8,006,512.7	0	-90	3,705.8	20.00
RCLP328	RC	432,583.0	8,006,763.2	0	-90	3,693.8	17.00
RCLP329	RC	432,566.7	8,006,817.0	0	-90	3,691.6	17.00
RCLP330	RC	432,679.2	8,006,814.5	0	-90	3,701.1	23.00
RCLP331	RC	432,639.3	8,006,855.1	0	-90	3,695.0	17.00
RCLP332	RC	432,629.9	8,006,762.4	0	-90	3,703.2	29.00
RCLP333	RC	432,749.6	8,006,775.7	0	-90	3,702.7	17.00
RCLP334	RC	432,779.2	8,006,762.3	0	-90	3,707.2	17.00
RCLP335	RC	432,789.1	8,006,718.3	0	-90	3,717.2	23.00
RCLP336	RC	432,784.9	8,006,672.2	0	-90	3,716.4	17.00
RCLP337	RC	432,924.8	8,006,765.2	0	-90	3,723.0	17.00
RCLP338	RC	432,728.3	8,006,416.3	0	-90	3,700.3	16.00
RCLP339	RC	432,718.0	8,006,552.5	0	-90	3,707.0	23.00
RCLP340	RC	432,742.5	8,006,580.6	0	-90	3,707.7	20.00
RCLP341	RC	432,888.1	8,006,357.6	0	-90	3,724.8	32.00
RCLP342	RC	432,923.4	8,006,333.1	0	-90	3,726.3	23.00
RCLP343	RC	433,033.1	8,006,789.7	0	-90	3,747.8	29.00
RCLP344	RC	433,006.9	8,006,765.0	0	-90	3,745.4	35.00
RCLP345	RC	433,033.9	8,006,741.1	0	-90	3,748.8	30.00
RCLP346	RC	433,054.1	8,006,766.8	0	-90	3,750.5	33.00
RCLP347	RC	433,081.1	8,006,737.0	0	-90	3,754.1	36.00
RCLP348	RC	433,057.0	8,006,712.9	0	-90	3,752.9	36.00
RCLP349	RC	433,106.2	8,006,713.4	0	-90	3,757.0	30.00

RCLP350	RC	433,078.0	8,006,687.9	0	-90	3,755.2	40.00
RCLP351	RC	433,156.2	8,006,665.8	0	-90	3,761.7	38.00
RCLP352	RC	432,868.9	8,006,806.5	0	-90	3,717.2	12.00
RCLP353	RC	432,865.4	8,006,804.4	0	-90	3,717.2	23.00
RCLP354	RC	432,826.3	8,006,768.3	0	-90	3,714.2	17.00
RCLP355	RC	432,883.0	8,006,769.1	0	-90	3,723.0	29.00
RCLP356	RC	433,125.5	8,006,639.6	0	-90	3,758.8	40.00
RCLP357	RC	433,105.1	8,006,661.9	0	-90	3,757.4	29.00
RCLP358	RC	433,129.8	8,006,738.7	0	-90	3,758.6	35.00
RCLP359	RC	433,156.2	8,006,713.6	0	-90	3,761.1	41.00
RCLP360	RC	433,128.7	8,006,688.9	0	-90	3,759.1	40.00
RCLP361	RC	433,105.9	8,006,514.7	0	-90	3,759.2	35.00
RCLP362	RC	433,074.5	8,006,537.9	0	-90	3,754.8	40.00
RCLP363	RC	432,980.9	8,006,488.8	0	-90	3,748.8	33.00
RCLP364	RC	432,956.0	8,006,464.7	0	-90	3,746.9	33.00
RCLP365	RC	432,980.0	8,006,439.7	0	-90	3,750.0	39.00
RCLP366	RC	433,507.5	8,006,107.6	0	-90	3,789.5	26.00
RCLP367	RC	433,283.5	8,006,235.0	0	-90	3,781.0	42.00
RCLP368	RC	433,260.8	8,006,212.4	0	-90	3,778.6	36.00
RCLP369	RC	433,289.6	8,006,184.7	0	-90	3,779.5	27.00
RCLP370	RC	433,309.0	8,006,210.7	0	-90	3,781.9	30.00
RCLP371	RC	433,528.5	8,006,134.5	0	-90	3,792.4	26.00
RCLP372	RC	433,526.3	8,006,076.7	0	-90	3,789.1	19.00
RCLP373	RC	433,552.9	8,005,913.8	0	-90	3,792.9	24.00
RCLP374	RC	433,530.8	8,005,889.1	0	-90	3,792.2	45.00
RCLP375	RC	433,529.7	8,005,938.1	0	-90	3,790.7	36.00
RCLP376	RC	433,531.1	8,005,836.7	0	-90	3,792.8	47.00
RCLP377	RC	433,506.5	8,005,812.4	0	-90	3,790.5	35.00
RCLP378	RC	433,507.8	8,005,908.2	0	-90	3,790.2	34.00
RCLP379	RC	433,261.4	8,005,919.2	0	-90	3,774.6	35.00

RCLP380	RC	433,504.1	8,005,751.0	0	-90	3,790.2	39.00
RCLP381	RC	433,478.7	8,005,775.8	0	-90	3,788.9	35.00
RCLP382	RC	433,455.3	8,005,748.8	0	-90	3,786.7	35.00
RCLP383	RC	433,530.6	8,005,787.7	0	-90	3,791.5	24.00
RCLP384	RC	433,421.8	8,005,692.9	0	-90	3,783.7	29.00
RCLP385	RC	433,393.2	8,005,716.7	0	-90	3,782.9	29.00
RCLP386	RC	433,430.5	8,005,663.6	0	-90	3,783.4	29.00
RCLP387	RC	433,406.4	8,005,667.4	0	-90	3,782.4	40.00
RCLP388	RC	433,383.6	8,005,642.1	0	-90	3,780.4	32.00
RCLP389	RC	433,373.4	8,005,690.0	0	-90	3,781.4	29.00
RCLP390	RC	433,303.6	8,005,664.5	0	-90	3,777.8	28.00
RCLP391	RC	433,253.4	8,005,665.3	0	-90	3,774.5	35.00
RCLP392	RC	433,278.1	8,005,689.4	0	-90	3,777.1	35.00
RCLP393	RC	433,322.4	8,005,562.0	0	-90	3,778.3	29.00
RCLP394	RC	433,297.9	8,005,585.9	0	-90	3,776.8	35.00
RCLP395	RC	433,263.4	8,005,560.5	0	-90	3,774.5	33.00
RCLP396	RC	433,298.4	8,005,536.6	0	-90	3,776.4	35.00
RCLP397	RC	433,196.1	8,005,463.2	0	-90	3,763.6	29.00
RCLP398	RC	433,226.6	8,005,488.1	0	-90	3,770.9	29.00
RCLP399	RC	433,222.9	8,005,438.1	0	-90	3,769.0	41.00
RCLP400	RC	433,247.3	8,005,463.2	0	-90	3,770.8	38.00
RCLP401	RC	433,280.7	8,005,639.2	0	-90	3,775.7	40.00
RCLP402	RC	433,563.8	8,005,572.8	0	-90	3,789.1	23.00
RCLP403	RC	433,685.8	8,005,442.3	0	-90	3,788.6	29.00
RCLP404	RC	433,706.5	8,005,467.5	0	-90	3,790.9	18.00
RCLP405	RC	433,652.1	8,005,460.1	0	-90	3,788.4	26.00
RCLP406	RC	433,669.9	8,005,490.3	0	-90	3,790.9	17.00
RCLP407	RC	433,859.4	8,005,406.8	0	-90	3,793.1	17.00
RCLP408	RC	433,883.7	8,005,380.5	0	-90	3,793.9	20.00
RCLP409	RC	433,909.9	8,005,406.7	0	-90	3,796.2	15.00

RCLP410	RC	433,577.8	8,005,393.6	0	-90	3,781.1	29.00
RCLP411	RC	433,605.2	8,005,362.5	0	-90	3,782.4	29.00
RCLP412	RC	433,578.6	8,005,339.5	0	-90	3,781.3	45.00
RCLP413	RC	433,557.3	8,005,365.1	0	-90	3,779.3	40.00
RCLP414	RC	432,299.5	8,005,138.5	0	-90	3,678.4	11.00
RCLP415	RC	432,262.5	8,005,055.7	0	-90	3,683.5	28.00
RCLP416	RC	432,342.9	8,005,065.7	0	-90	3,706.9	27.00
RCLP417	RC	433,625.8	8,003,983.3	0	-90	3,790.8	58.00
RCLP418	RC	433,475.3	8,003,973.9	0	-90	3,778.9	34.00
RCLP419	RC	432,977.2	8,002,938.3	0	-90	3,711.0	27.00
RCLP420	RC	432,908.3	8,003,083.4	0	-90	3,700.1	12.00
RCLP421	RC	432,869.7	8,002,942.2	0	-90	3,696.9	30.00
RCLP422	RC	433,266.6	8,004,148.4	0	-90	3,756.7	24.00
RCLP423	RC	432,285.8	8,005,075.6	0	-90	3,681.3	20.00
RCLP424	RC	433,261.4	8,005,895.5	0	-90	3,776.2	36.00
RCLP425	RC	433,230.3	8,005,918.1	0	-90	3,770.6	27.00
RCLP426	RC	432,982.6	8,005,007.5	0	-90	3,759.2	56.00
RCLP427	RC	432,979.3	8,004,588.3	0	-90	3,764.3	50.00
RCLP428	RC	433,478.2	8,005,013.6	0	-90	3,780.1	54.00
RCLP429	RC	433,481.2	8,004,513.0	0	-90	3,783.4	42.00
RCLP430	RC	433,977.2	8,005,013.3	0	-90	3,804.5	40.00
RCLP431	RC	434,480.3	8,005,001.3	0	-90	3,838.1	47.00
RCLP432	RC	434,975.4	8,005,082.4	0	-90	3,893.8	47.00
RCLP433	RC	433,583.5	8,004,968.6	0	-90	3,784.7	47.00
RCLP434	RC	432,749.5	8,004,075.6	0	-90	3,743.5	35.00
RCLP435	RC	432,677.6	8,004,107.9	0	-90	3,746.4	27.00
RCLP436	RC	432,779.0	8,004,162.4	0	-90	3,752.1	40.00
RCLP437	RC	433,979.2	8,004,513.3	0	-90	3,811.8	47.00
RCLP438	RC	434,481.9	8,004,516.4	0	-90	3,847.9	47.00
RCLP439	RC	433,530.9	8,004,084.4	0	-90	3,785.5	47.00

RCLP440	RC	434,003.4	8,004,055.4	0	-90	3,816.4	50.00
RCLP441	RC	434,480.6	8,004,024.8	0	-90	3,848.8	47.00
RCLP442	RC	434,983.6	8,004,016.8	0	-90	3,877.7	47.00
RCLP443	RC	434,987.2	8,004,438.2	0	-90	3,892.7	47.00
RCLP444	RC	432,763.7	8,003,928.8	0	-90	3,746.0	40.00
RCLP445	RC	432,862.8	8,003,666.6	0	-90	3,751.8	35.00
RCLP446	RC	432,760.7	8,003,614.2	0	-90	3,748.7	29.00
RCLP447	RC	433,532.1	8,004,010.1	0	-90	3,780.6	25.00
RCLP448	RC	433,475.0	8,004,031.6	0	-90	3,780.4	24.00
RCLP449	RC	432,928.4	8,004,166.3	0	-90	3,759.9	35.00
RCLP450	RC	432,582.3	8,004,338.6	0	-90	3,745.9	40.00
RCLP451	RC	433,303.2	8,005,068.7	0	-90	3,772.3	29.00
RCLP452	RC	433,300.9	8,005,103.0	0	-90	3,770.4	30.00
RCLP453	RC	433,539.6	8,005,105.7	0	-90	3,777.6	40.00
RCLP454	RC	433,289.7	8,005,159.2	0	-90	3,769.8	32.00
RCLP455	RC	433,282.8	8,005,264.2	0	-90	3,768.8	36.00
RCLP456	RC	433,231.1	8,005,156.9	0	-90	3,767.2	48.00
RCLP457	RC	433,378.1	8,005,275.0	0	-90	3,773.4	41.00
RCLP458	RC	433,463.0	8,005,358.0	0	-90	3,777.4	51.00
RCLP459	RC	433,485.5	8,005,271.0	0	-90	3,778.8	48.00
RCLP460	RC	433,463.0	8,005,411.8	0	-90	3,779.8	47.00
RCLP461	RC	433,481.0	8,005,705.8	0	-90	3,788.2	39.00
RCLP462	RC	433,515.6	8,005,617.1	0	-90	3,788.2	33.00
RCLP463	RC	433,417.6	8,005,528.3	0	-90	3,781.4	35.00
RCLP464	RC	433,582.9	8,005,269.5	0	-90	3,783.6	47.00
RCLP465	RC	433,479.5	8,005,161.8	0	-90	3,777.5	45.00
RCLP466	RC	433,678.3	8,005,261.9	0	-90	3,787.3	45.00
RCLP467	RC	433,226.0	8,005,092.9	0	-90	3,768.5	50.00
RCLP468	RC	433,417.2	8,005,092.8	0	-90	3,774.3	48.00
RCLP469	RC	433,678.8	8,005,161.6	0	-90	3,785.4	42.00

RCLP470	RC	433,577.3	8,005,165.4	0	-90	3,781.6	54.00
RCLP471	RC	433,673.5	8,005,097.5	0	-90	3,781.5	48.00
RCLP472	RC	432,809.0	8,005,070.0	0	-90	3,736.5	31.00
RCLP473	RC	432,701.2	8,005,046.3	0	-90	3,739.2	36.00
RCLP474	RC	432,626.5	8,005,088.7	0	-90	3,732.4	24.00
RCLP475	RC	432,629.4	8,005,021.8	0	-90	3,733.8	18.00
RCLP476	RC	432,527.9	8,005,043.9	0	-90	3,723.2	18.00
RCLP477	RC	432,495.7	8,005,058.5	0	-90	3,721.5	17.00
RCLP478	RC	432,852.6	8,004,137.4	0	-90	3,755.8	30.00
RCLP479	RC	432,699.2	8,003,895.6	0	-90	3,751.5	30.00
RCLP480	RC	432,779.0	8,003,890.3	0	-90	3,755.3	35.00
RCLP481	RC	432,485.8	8,002,837.5	0	-90	3,559.3	18.00
RCLP482	RC	432,492.6	8,002,828.4	0	-90	3,559.5	6.00